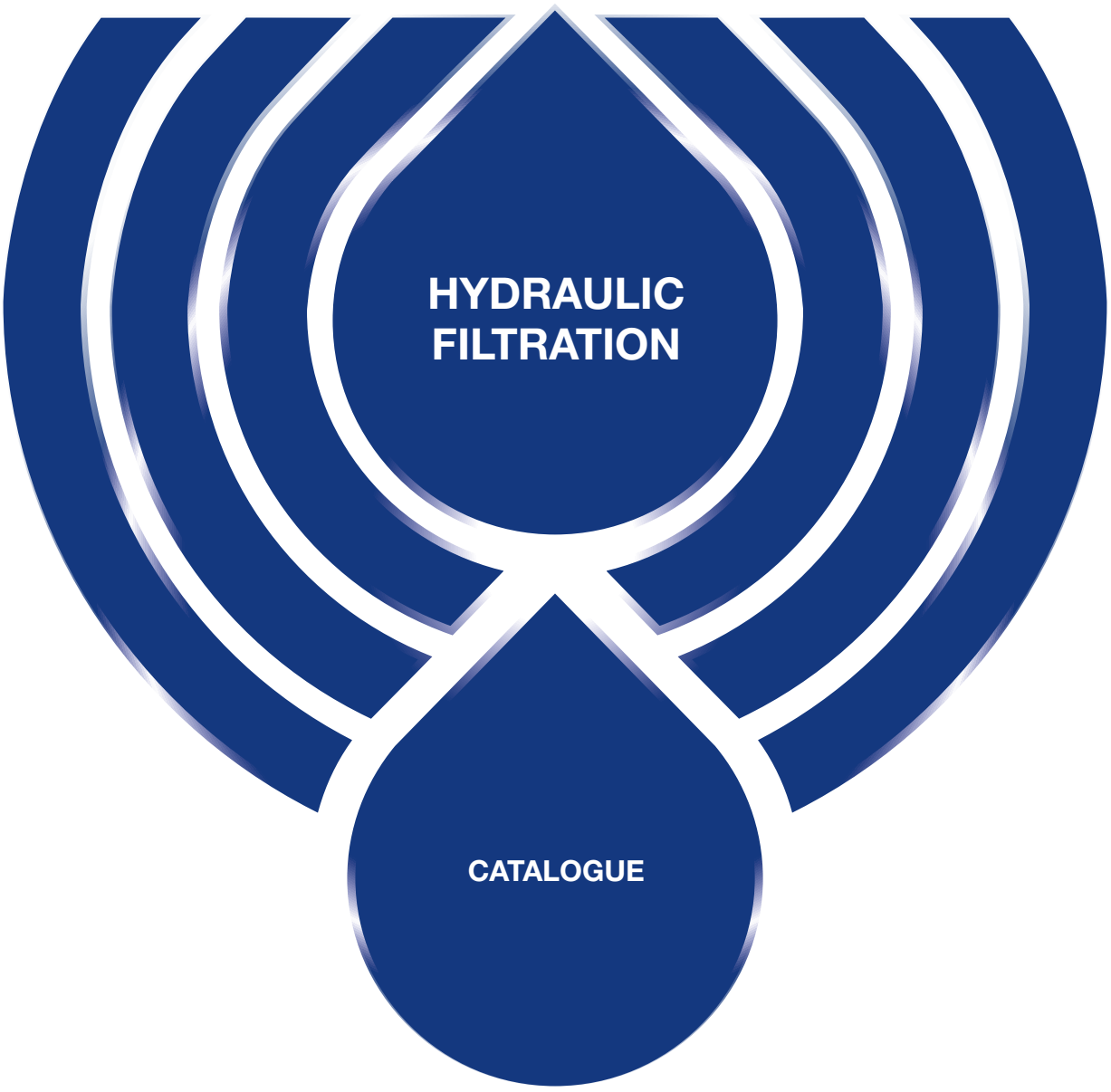
RETURN FILTERS



MPFILTRI®

PASSION TO PERFORM

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 important classification system for hydraulic fluids is the one defined by International Organization for Standardization (ISO), which established a classification system within their standard: "ISO 6743-4 Lubricants, Industrial Oils and Related Products" . In particular, the parts of interest for hydraulic fluids are:
- Lubricants, industrial oils and related products (class L)
- Classifications - Part 4L - Family H (Hydraulic systems)

The ISO 6743-4 classification system can be generally applied to the three primary classes of hydraulic fluids:

- Mineral Oils (i.e.: petroleum) Hydraulic Fluids (i.e.: HH: Mineral lubricants without corrosion inhibitors; HL: HH-type lubricants with oxidation reduction and anticorrosive additives; HM: HL-type lubricants with anti-wear additives; HV: HM-type lubricants with a higher viscosity grade and temperature properties; and others).

- Biodegradable Hydraulic Fluids (HExx), also defined as "Environmentally acceptable hydraulic fluids".

- Fire Resistant Hydraulic Fluids (HFxx), which could be further split into: Fire-resistant aqueous fluids (HFAx, HFB; HFC) ; Fire-resistant synthetic anhydrous fluids (HFDx).

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.

- KINEMATIC 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.
  Kinematic 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 FLUID COMPATIBILITY CHARTS

For more detailed information on specific fluid compatibility please refer to the fluid compatibility charts on our website:

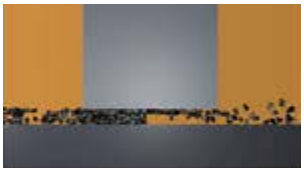
Scan or click me!

4 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.

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.

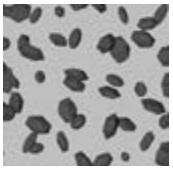
- CUSHION SUSPENSION
  Cause of increased noise and cavitation.
- FLUID OXIDATION
  Cause of corrosion acceleration of metal parts.
- MODIFICATION OF FLUID PROPERTIES
  (COMPRESSIBILITY MODULE, DENSITY, VISCOSITY)
  Cause of system's reduction of efficiency and of control.
  It is easy to understand how a system without proper contamination management is subject to higher costs than a system that is provided.
- MAINTENANCE
  Increase maintenance activities, spare parts, machine stop costs.
- ENERGY AND EFFICIENCY
  Efficiency and performance reduction due to friction, drainage, cavitation.

5 MEASURING THE SOLID CONTAMINATION LEVEL

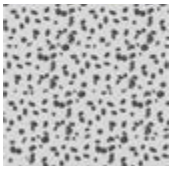
The level of contamination of a system identifies the amount of contaminant contained in a fluid. This parameter refers to a unit volume of fluid.
The level of contamination may be different at different points in the system. From the information in the previous paragraphs it is also apparent that the 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 WITH 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 allow tests to be conducted 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.

CLEAN MEMBRANE

CONTAMINATED MEMBRANE

- 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 Contamination Monitoring Products (CMP).
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 International Standards Organization standard ISO 4406 is the preferred method of quoting the number of solid contaminant particles in a sample. The level of contamination is defined by counting the number of particles of certain dimensions per unit of volume of fluid. The measurement is performed by Contamination Monitoring Products (CMP).

The numbers represent a code which identifies the number of particles of certain sizes in 1ml of fluid. Each code number has a particular size range.
The first scale number represents the number of particles equal to or larger than 4 $\mu m_{(c)}$ per millilitre of fluid;
The second scale number represents the number of particles equal to or larger than 6 $\mu m_{(c)}$ per millilitre of fluid;
The third scale number represents the number of particles equal to or larger than 14 $\mu m_{(c)}$ per millilitre of fluid.

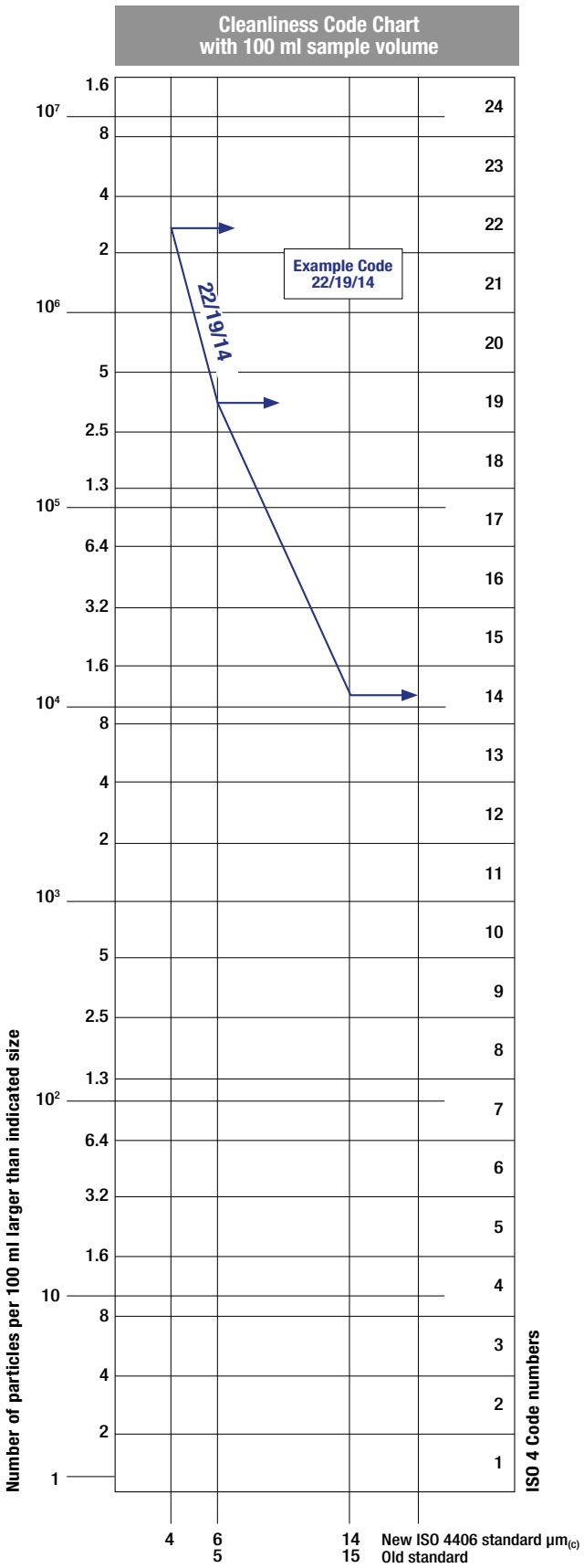
ISO 4406 - Allocation of Scale Numbers

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 Cleanliness Code System

Microscope counting examines the particles differently to Contamination Monitoring Products (CMP) 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 Contamination Monitoring Products (CMP).



- CUMULATIVE DISTRIBUTION OF THE PARTICLES SIZE
  SAE AS4059-1 and SAE AS4059-2

Classification example according to SAE AS4059 - Rev. G

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).

This SAE Aerospace Standard (AS) defines cleanliness levels for particulate contamination of hydraulic fluids and includes methods of reporting data relating to the contamination levels. Tables 1 and 2 below provide differential and cumulative particle counts respectively for counts obtained by an automatic particle counter, e.g. LPA3.

Table 1 - Class for differential measurement

Class	Dimension of contaminant Maximum Contamination Limits per 100 ml					(3)
	5-15 µm	15-25 µm	25-50 µm	50-100 µm	>100 µm	(1)
	6-14 $\mu m_{(c)}$	14-21 $\mu m_{(c)}$	21-38 $\mu m_{(c)}$	38-70 $\mu m_{(c)}$	>70 $\mu m_{(c)}$	(2)
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 $\mu m_{(c)}$ = 15 000 particles
14 - 21 $\mu m_{(c)}$ = 2 200 particles
21 - 38 $\mu m_{(c)}$ = 200 particles
38 - 70 $\mu m_{(c)}$ = 35 particles
> 70 $\mu m_{(c)}$ = 3 particles
SAE AS4059 REV G - Class 6

(1) Size range, optical microscope, based on longest dimension as measured per AS598 or ISO 4407. **(2)** Size range CMP calibrated per ISO 11171 or an optical or electron microscope with image analysis software, based on projected area equivalent diameter. **(3)** Contamination classes and particle count limits are identical to NAS 1638.

Table 2 - Class for cumulative measurement

Class	Dimension of contaminant Maximum Contamination Limits per 100 ml						(1)
	>1 µm	>5 µm	>15 µm	>25 µm	>50 µm	>100 µm	
	>4 $\mu m_{(c)}$	>6 $\mu m_{(c)}$	>14 $\mu m_{(c)}$	>21 $\mu m_{(c)}$	>38 $\mu m_{(c)}$	>70 $\mu m_{(c)}$	(2)
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 $\mu m_{(c)}$ = 45 000 particles
> 6 $\mu m_{(c)}$ = 15 000 particles
> 14 $\mu m_{(c)}$ = 1 500 particles
> 21 $\mu m_{(c)}$ = 250 particles
> 38 $\mu m_{(c)}$ = 15 particles
> 70 $\mu m_{(c)}$ = 3 particle
SAE AS4059 REV G
cpc* Class 6 6/6/5/5/4/2

(1) Size range, optical microscope, based on longest dimension as measured per AS598 or ISO 4407. **(2)** Size range, CMP calibrated per ISO 11171 or an optical or electron microscope with image analysis software, based on projected area equivalent diameter. **(3)** Contamination classes and particle count limits are identical to NAS 1638.

* cumulative particle count

- 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 100 ml volume at various size intervals (differential counts) rather than using cumulative counts as in ISO 4406. 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 Contamination Monitoring Products (CMP).

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 = 42 000 particles
15-25 µm = 2 200 particles
25-50 µm = 150 particles
50-100 µm = 18 particles
> 100 µm = 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

Example figure 1and 2

COMPARISON PHOTOGRAPH'S
1 graduation = 10µm

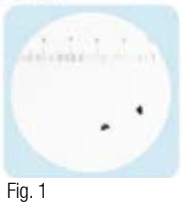


Fig. 1

Fig. 2

For other comparison photographs for contamination classes see the "*Filtration and Particle Analyser Handbook*".

Scan or click me!

- CLEANLINESS CODE COMPARISON

Although ISO 4406 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	SAE AS4059 Table 2	SAE AS4059 Table 1	NAS 1638
> 4 µm(c) 6 µm(c) 14 µm(c)	> 4 µm(c) 6 µm(c) 14 µm(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

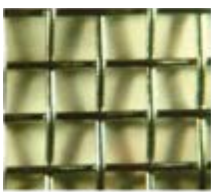
6 FILTRATION TECHNOLOGIES

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:

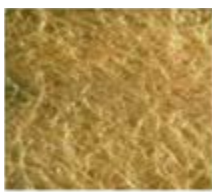
- SURFACE FILTRATION
  It is by direct interception. The filter prevents particles larger than the pores from continuing in the plant / system. Surface filters are generally manufactured with metal canvases or meshes.

- 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.

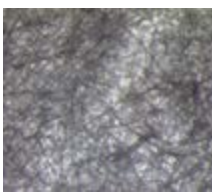
WIRE MESH FILTRATION

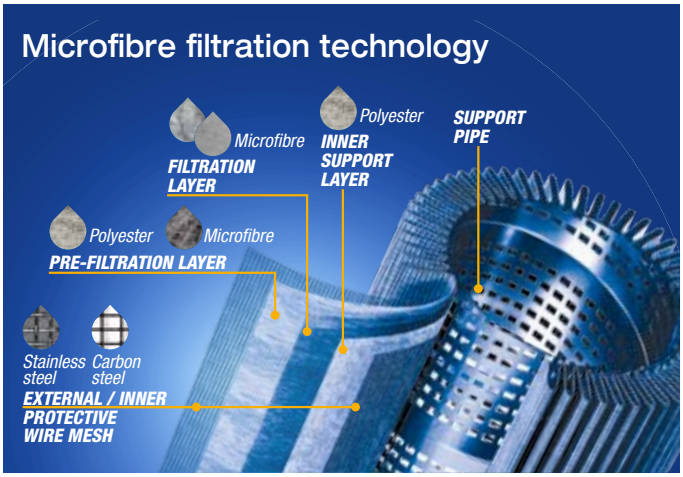


PAPER FILTRATION



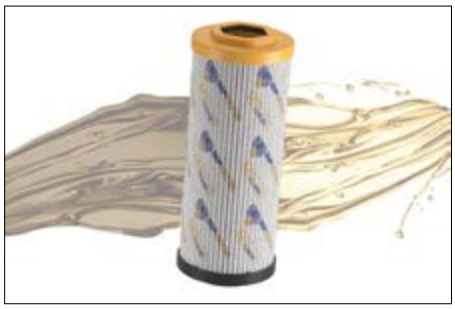
MICROFIBER FILTRATION





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		
$\beta_{x(c)}$ > 1000 ISO 16889	β_x > 200 ISO 4572	MP Filtri Filter media code
5 µm(c)	3 µm	A03
7 µm(c)	6 µm	A06
10 µm(c)	10 µm	A10
16 µm(c)	18 µm	A16
21 µm(c)	25 µm	A25

7 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 for pressures below 140 bar.

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 $\beta_{x(c)} \geq 1.000$	$\beta_{21(c)}$ >1000	$\beta_{15(c)}$ >1000	$\beta_{10(c)}$ >1000	$\beta_{7(c)}$ >1000	$\beta_{7(c)}$ >1000	$\beta_{5(c)}$ >1000
MP Filtri media code	A25	A16	A10	A06	A06	A03

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

8 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.
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.

9 FILTER SIZING 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 OLEODYNAMIC PLANTS FROM ENVIRONMENTAL WASTE
- PROTECTION OF OLEODYNAMIC 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 ($ß_{x(c)}$)*
  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.

10 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

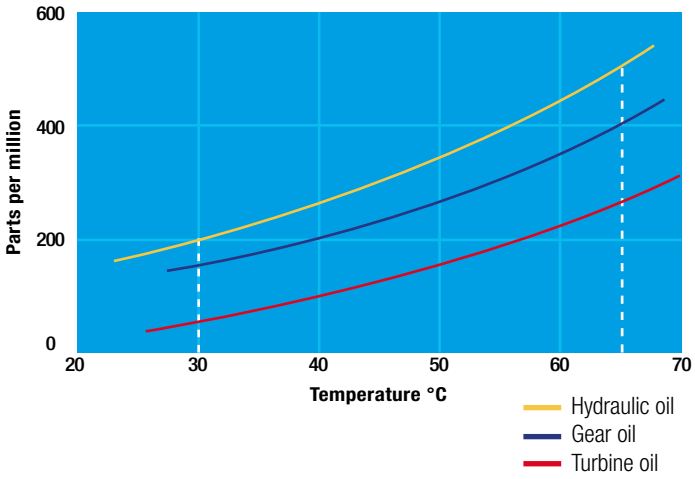
Hydraulic fluid power -- Fatigue pressure testing of metal pressure-containing envelopes -- Test method

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.

11 WATER IN HYDRAULIC AND LUBRICATING FLUIDS

Water Content

In mineral oils and non aqueous resistant fluids water is undesirable. Mineral oil usually has a water content of 50-300 ppm (@40°C) which it can support without adverse consequences.
Once the water content exceeds about 300ppm the oil starts to appear hazy. Above this level there is a danger of free water accumulating in the system in areas of low flow. This can lead to corrosion and accelerated wear.
Similarly, fire resistant fluids have a natural water which may be different to mineral oil.

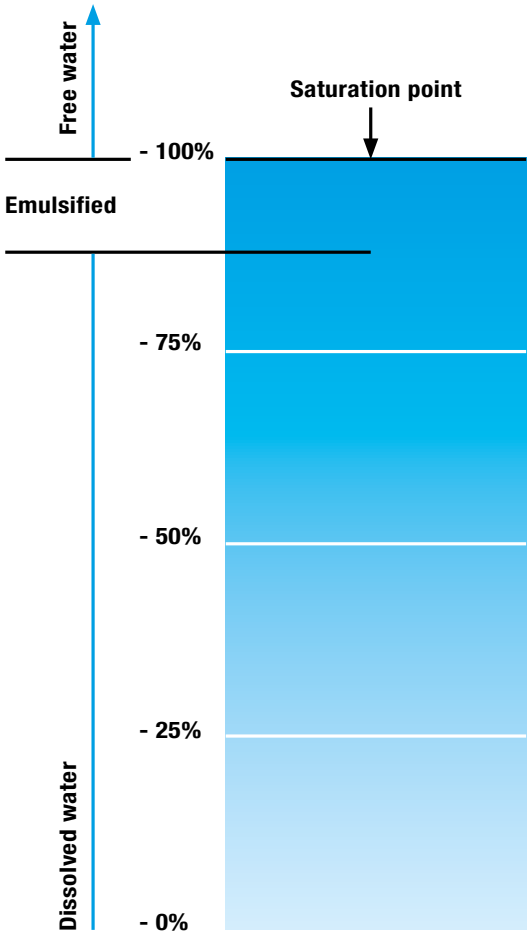


Saturation Levels

Since the effects of free (also emulsified) water is more harmful than those of dissolved water, water levels should remain well below the saturation point.

However, even water in solution can cause damage and therefore every reasonable effort should be made to keep saturation levels as low as possible. There is no such thing as too little water. As a guideline, we recommend maintaining saturation levels below 50% in all equipment.

TYPICAL WATER SATURATION LEVEL FOR NEW OILS
Examples:
Hydraulic oil @ 30°C = 200 ppm = 100% saturation
Hydraulic oil @ 65°C = 500 ppm = 100% saturation



WATER REMOVAL

Water is present everywhere, during storage, handling and servicing.

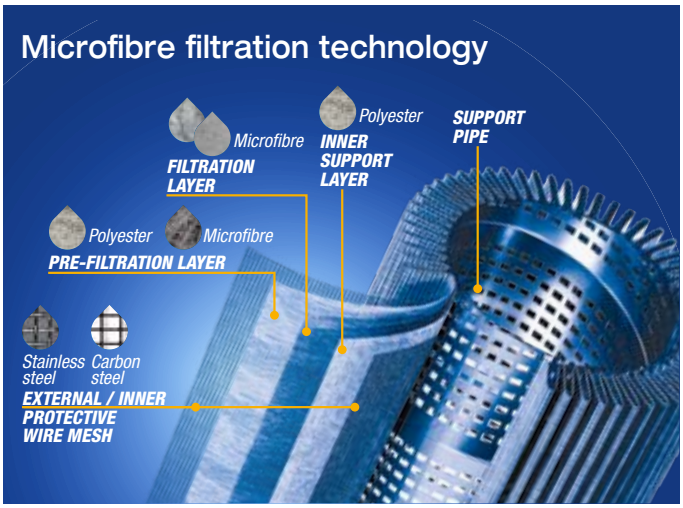
MP Filtri filter elements feature an absorbent media which protects hydraulic systems from both particulate and water contamination.
MP Filtri's filter element technology is available with inorganic microfiber media with a filtration rating 25 µm (therefore identified with media designation WA025), providing absolute filtration of solid particles to $\beta_{x(c)} = 1000$.
Absorbent media is made by water absorbent fibres which increase in size during the absorption process.
Free water is thus bonded to the filter media and completely removed from the system (it cannot even be squeezed out).

Filter Media

Fabric that absorbs water

Absorber media layer

The Filter Media has absorbed water



Microfibre filtration technology

By removing water from your fluid power system, you can prevent such key problems as:
- corrosion (metal etching)
- loss of lubricant power
- accelerated abrasive wear in hydraulic components
- valve-locking
- bearing fatigue
- viscosity variance (reduction in lubricating properties)
- additive precipitation and oil oxidation
- increase in acidity level
- increased electrical conductivity (loss of dielectric strength)
- slow/weak response of control systems

For more details please refer to our dedicate brochure "WATER REMOVAL"

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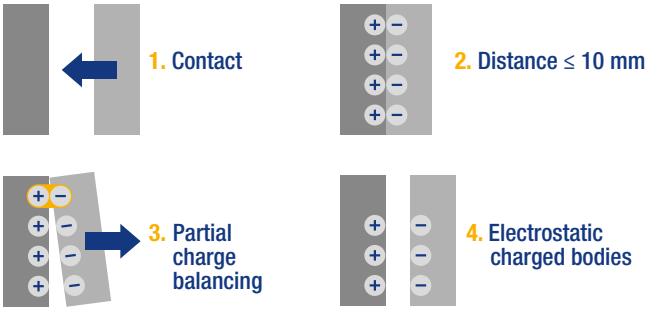
(12) THE ANTI-STATIC FILTERS

zerospark®

zerospark is a specialist solution designed to solve the problem of electrostatic discharge inside hydraulic filters. Caused by the electrical charge build-up due to the passage of oil through the filters, this can result in damage to filter elements, oils and circuit components. It can even cause fire hazards in environments where flammable materials are present.

THE TRIBOELECTRIC EFFECT
The body with the most electronegativity strips electrons from the other, generating a build-up of a net negative charge on itself. The other body is charged by the same amount but with the opposite sign, giving rise to very high potential differences. These, if not dissipated, can give rise to electrostatic discharges.



For more details please refer to our dedicate brochure "ZEROSPARK"

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Filters sizing software

The web-based software program will allow you to select the most suitable MP Filtri's Filters, in accordance with your process design requirements.

The program will automatically check your input design process prior to propose you the acceptable solutions and create an output in PDF report style format.

The MP Filtri Selection Tool software program is easy to use with a flexible fast design method and provides improved layout formats with full descriptions.

The web-based tool is available at MP Filtri website at following link:
https://www.mpfiltri.com/tools/

The related, complete user guide is available as Manual and downloadable from the "Download" section of MP Filtri website, as well as scanning the following QR code

Scan or click me!

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 8 families:

- **MPFX tank top semi-immersed filter with external / internal oil flow; standard filter element disassembly**
- **MPLX tank top semi-immersed filter completely interchangeable with Pall 8420 & 8520, with external / internal oil flow; easy filter element disassembly**
- **MPTX tank top semi-immersed filter with external / internal oil flow; easy filter element disassembly without any specific tool**
- **MFBX element and bowl assembly with optional cover and hold-down spring for dirtbox or molded tank applications**
- **MPHC 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 as option**
- **MPIC semi-immersed filter element specifically designed to be mounted directly on the oil tank; magnetic filter as option**
- **FRIC, 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**
- **RFMC semi-immersed filter with shut-off valve for side tank mounting, with external / internal oil flow; easy filter element disassembly without any specific tool.**

Return filters

FILTER SIZING Calculation

THE CORRECT FILTER SIZING HAS TO BE BASED ON THE TOTAL PRESSURE DROP DEPENDING ON THE APPLICATION.

The pressure drop calculation is performed by adding together the value of the housing with the value of the filter element. The pressure drop Δpc of the housing is proportional to the fluid density (kg/dm³ / lb/ft³).
The filter element pressure drop Δpe is proportional to its viscosity (mm²/s / SUS), the corrective factor Y have to be used in case of an oil viscosity different than 30 mm²/s (cSt) / 150 SUS.

Sizing data for single filter element, head at top

Δpc = Filter housing pressure drop [bar / psi]
Δpe = Filter element pressure drop [bar / psi]
Y = Corrective factor Y (see correspondent table), depending on the filter type, on the filter element size, on the filter element length and on the filter media
Q = flow rate (l/min - gpm)
V1 reference oil viscosity = 30 mm²/s (cSt) /150 SUS
V2 = operating oil viscosity in mm²/s (cSt) / SUS

Filter element pressure drop calculation with an oil viscosity different than 30 mm²/s (cSt) / 150 SUS

International system:
Δpe = Y : 1000 x Q x (V2:V1)

Imperial system:
Δpe = Y : 17.2 x Q x (V2:V1)

Δp Tot. = Δpc + Δpe

Verification formula

Δp Tot. ≤ Δp max allowed

Maximum total pressure drop (Δp max) allowed by a new and clean filter

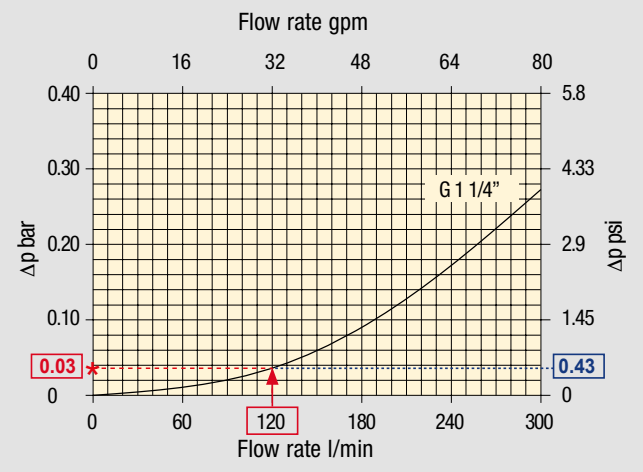
Filter family	Δp max	
	[bar]	[psi]
Return filters	0.50 bar	7.25 psi

Filter pressure drop calculation example

Application data:
Selected filter: **MPTX 110 length 40**
Selected filter element: **MF 100 length 40**
Selected connection: **G 1 1/4"**
Selected filtration rating: **25 µm** absolute filtration with microfibre
Flow rate Q = **120 l/min / 31.7 gpm**
Viscosity V2 = 46 mm²/s (cSt) / 216 SUS
Oil density = 0.86 kg/dm³ / 53.68 lb/ft³

Calculation:
Δpc = 0.03 bar / 0.43 psi (see graphic below)

MPTX 110 - Length 30 - 40



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.

Filter element		Absolute filtration Filter Elem. Δp Series: H					Nominal filtration Filter Elem. Δp Series: N		
Type	Length	A0003	A0006	A0010	A0016	A0025	P0010	P0025	M0025 M0060 M0090
MFX 030	10	74.00	50.08	20.00	16.00	9.00	6.43	5.51	3.40
MFX 100	10	28.20	24.40	8.67	8.17	6.88	4.62	3.96	1.25
	20	17.33	12.50	6.86	5.70	4.00	3.05	2.47	1.10
	30	10.25	9.00	3.65	3.33	2.50	1.63	1.32	0.96
→	40	6.10	5.40	2.30	2.20	2.00	1.19	0.96	0.82

Δpe = (2.00 : 1000) x 120 x (46 : 30) = 0.37 bar
Δpe = (2.00 : 17.2) x 32 x (216 : 150) = 5.36 psi

√ **Δp Tot. = 0.03 + 0.37 = 0.4 bar**
Δp Tot. = 0.43 + 5.36 = 5.79 psi

The selection is correct because the total pressure drop value is inside the admissible range for top tank return filters.
In case the max allowed total pressure drop is not verified, it is necessary to repeat the calculation changing the filter and/or filter element length/size.

Filter element		Absolute filtration Filter element ΔP Series: C					Nominal filtration Filter Element ΔP Series: C		
Type	Length	A0003	A0006	A0010	A0016	A0025	P0010	P0025	M0060 - M0090
FEX 060	10	11.63	10.79	5.1	4.78	4.26	4.58	3.22	0.89
	20	6.83	6.69	3.35	3.19	2.56	1.97	1.38	0.45
FEX 110	10	5.73	5.22	2.52	2.16	1.66	1.33	1.12	0.18
	20	3.72	3.59	1.79	1.76	1.22	0.9	0.76	0.1

Filter element		Absolute filtration Filter element ΔP Series: D					Nominal filtration Filter Element ΔP Series: D		
Type	Length	A0003	A0006	A0010	A0016	A0025	P0010	P0025	M0025 - M0060 M0090
MFX 030	10	74.00	50.08	20.00	16.00	9.00	6.43	5.51	3.40
MFX 100	10	28.20	24.40	8.67	8.17	6.88	4.62	3.96	1.25
	20	17.33	12.50	6.86	5.70	4.00	3.05	2.47	1.10
	30	10.25	9.00	3.65	3.33	2.50	1.63	1.32	0.96
	40	6.10	5.40	2.30	2.20	2.00	1.19	0.96	0.82
MFX 180	10	3.67	3.05	1.64	1.56	1.24	1.18	1.06	0.26
	20	1.69	1.37	0.68	0.54	0.51	0.43	0.39	0.12
MFX 400	10	3.20	2.75	1.39	1.33	1.06	0.96	0.87	0.22
	20	2.00	1.87	0.88	0.85	0.55	0.49	0.45	0.13
	30	1.90	1.60	0.63	0.51	0.49	0.39	0.35	0.11
MFX 750	10	1.08	0.84	0.49	0.36	0.26	0.21	0.19	0.06
MLX 250	20	3.00	3.04	1.46	1.25	1.17	1.27	1.01	0.20
MLX 660	20	1.29	1.26	0.52	0.44	0.38	1.27	1.01	0.10
CUC 025	10	78.00	48.00	28.00	24.00	9.33	9.33	8.51	1.25
CUC 040	10	25.88	20.88	10.44	10.00	3.78	3.78	3.30	1.25
CUC 100	10	15.20	14.53	5.14	4.95	2.00	2.00	0.17	1.10
CUC 250	10	3.25	2.55	1.55	1.35	0.71	0.71	0.59	0.25
CUC 630	10	1.96	1.68	0.85	0.72	0.24	0.42	0.36	0.09
CUC 850	10	1.06	0.84	0.42	0.33	0.17	0.17	0.13	0.04
DHC 250	20	3.61	4.08	1.81	1.71	1.35	1.21	0.98	0.60
	40	2.10	1.70	1.14	0.77	0.53	0.70	0.70	0.55
MRC 100	10	19.00	17.00	6.90	6.30	4.60	2.94	2.52	1.60
	20	11.70	10.80	4.40	4.30	3.00	2.94	2.52	1.37
	30	7.80	6.87	3.70	3.10	2.70	2.14	1.84	1.34
	40	5.50	4.97	2.60	2.40	2.18	1.72	1.47	1.34
	50	4.20	3.84	2.36	2.15	1.90	1.60	1.37	1.34
MRC 250	10	5.35	4.85	2.32	1.92	1.50	1.38	1.20	0.15
	20	4.00	3.28	1.44	1.10	1.07	0.96	0.83	0.13
	30	2.60	2.20	1.08	1.00	0.86	0.77	0.64	0.12
	40	1.84	1.56	0.68	0.56	0.44	0.37	0.23	0.11
MRC 630	10	3.10	2.48	1.32	1.14	0.92	0.83	0.73	0.09
	20	2.06	1.92	0.82	0.76	0.38	0.33	0.27	0.08
	30	1.48	1.30	0.60	0.56	0.26	0.22	0.17	0.08
	40	1.30	1.20	0.48	0.40	0.25	0.21	0.16	0.08
	50	0.74	0.65	0.30	0.28	0.13	0.10	0.08	0.04
MRC 850	10	0.60	0.43	0.34	0.25	0.13	0.12	0.09	0.03
	20	0.37	0.26	0.23	0.21	0.11	0.08	0.07	0.03
	30	0.27	0.18	0.17	0.17	0.05	0.04	0.04	0.02
	40	0.23	0.16	0.13	0.12	0.04	0.03	0.03	0.02

Corrective factor Y to be used for the filter element pressure drop calculation. The values depend to the filter size and length and to the filter media.
Reference oil viscosity 30 mm^2/s

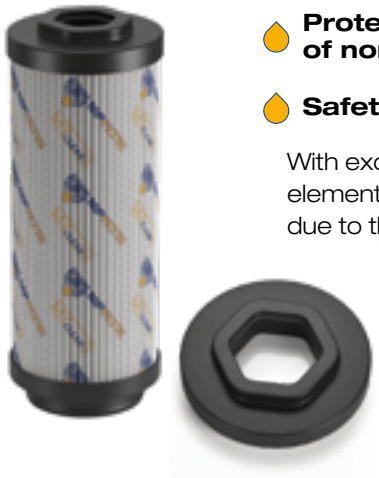
MYCLEAN

THE X CONCEPT FOR OUR FILTERS

**Protect the performance of your system with MYclean.
Quality and efficiency are fundamental for MP Filtri:
this exclusive new filter element possesses polygon shape geometry and specific seal that ensures only original spare parts can be used - ensuring correct operation and higher system reliability.**

RFEX series

with MYCLEAN FEX Filter Element



- **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 MP Filtri filter elements can be used, ensuring the best cleaning level of the oil due to the use of originals filter elements.

The products identified as RFEX are protected by:

- Italian Patent n° 102014902261205
- Canadian Patent n° 2,937,258
- European Patent n° 3 124 092 B1
- US Patent n° 20170030384 A1

RFEX series

Maximum working pressure up to 1.6 MPa (16 bar) - Flow rate up to 260 l/min

INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS

Please scan or click the QR codes to get updated electronic version of the related document:

RFEX060 RFEX110

For all the QR codes: Scan or click me!

RFEX GENERAL INFORMATION

Description

Return filter

Maximum working pressure up to 1.6 MPa (16 bar)
Flow rate up to 260 l/min

RFEX is a range of return filters for protection of the reservoir against the system contamination.
They are mounted in line to limit aeration or foam generation into the reservoir.

Available features:

- Female threaded connections up to 1 1/4" and SAE connections up to 1 5/8", for a maximum flow rate of 260 l/min
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve, to relieve excessive pressure drop across the filter media
- Visual, electrical, axial and radial pressure gauges
- MYclean interface connection for the filter element, to protect the product against non-original spare parts
- External protective wrap, to optimize the flow through the element and to save the element efficiency against non-proper handling

Common applications:

- Light Industrial equipment
- Mobile application

Technical data

Filter housing materials

- Head: Aluminium
- Bypass valve: Polyamide - Steel
- Bowl: Polyamide

Pressure

- Test pressure: 2.4 MPa (24 bar)
- Min. Burst pressure: 4.8 MPa (48 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 1.6 MPa (16 bar)

Bypass valve

Opening pressure 0.175 MPa (1.75 bar) ±10%

Filter element features

Filter		Filter element	
RFEX		FEX	
Δp Element type			
Element media	**Construction**	**Δp Series**	**Δp**
A - Microfiber	Standard	C	8 bar
M - Wire mesh	Standard	C	8 bar
P - Paper	Standard	C	8 bar
Please see ordering code tables to check element Δp series availability based on filter features.			
Flow direction through the filter element: From OUT to IN			

Seals

Standard NBR series A

Temperature

From -25 °C to +110 °C

Note

RFEX filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

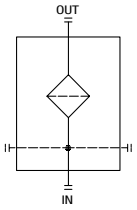
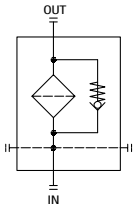
Filter series	Weights [kg]			Volumes [dm³]		
	Length	10	20	Length	10	20
RFEX 060		1.00	1.15		0.60	0.80
RFEX 110		1.90	2.10		1.60	2.00

Flow rates [l/min]

Filter element design - C Series								
Filter series	Length	A0010	A0016	A0025	M0060	M0090	P0010	P0025
RFEX 060	**10**	60	61	64	87	89	62	77
	20	69	70	75	91	92	79	93
RFEX 110	**10**	141	153	172	250	252	186	196
	20	166	168	191	255	256	207	215

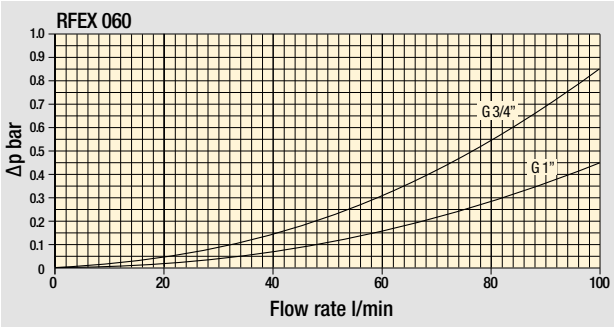
Maximum flow rate for a complete return filter with a pressure drop Δp = 0.5 bar.
The reference fluid has a kinematic viscosity of 30 mm^2/s (cSt) and a density of 0.86 kg/dm^3.
For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.
Please, contact our Sales Department for further additional information.

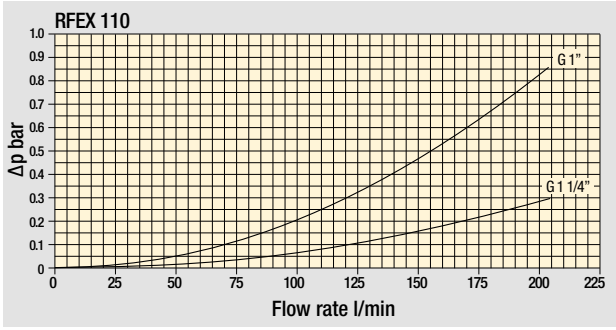
Hydraulic diagram

Filter series	00 - without bypass	17 - with bypass 1.75 bar
RFEX 060-110		

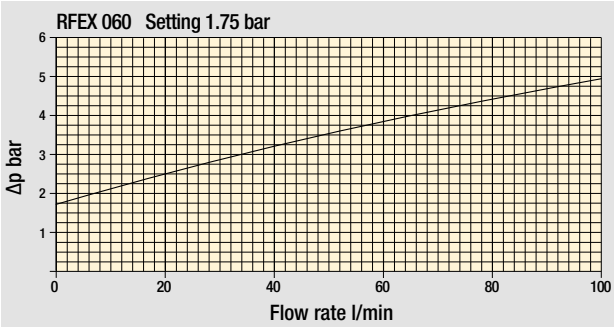
Pressure drop

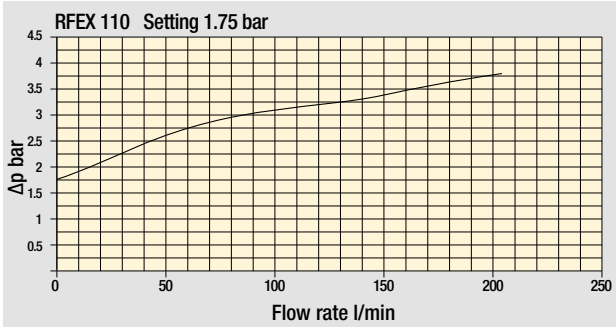
Filter housings
Δp pressure drop





Bypass valve
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.

Designation & Ordering code

COMPLETE FILTER

Example 1:	RFEX	060	10	A0010	C	A	17	FG034	0	6T	NN	P01	NN
Example 2:	RFEX	110	20	A0010	C	A	00	FS016	0	6T	NN	P01	NN

Series

RFEX Filter featuring MP Filtri Filter Element

Size

060

110

Length

10

20

Filtration rating (filter media)

A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin-impregnated paper	10 µm
P0025	Resin-impregnated paper	25 µm

Element Δp

C 8 bar

Seals and treatments

A NBR

Bypass

00 Without bypass

17 With bypass 1.75 bar

Connections	060	110
FG034 G 3/4”	•	-
FG100 G 1”	•	•
FG114 G 1 1/4”	-	•
FN034 3/4” NPT	•	-
FN100 1” NPT	•	•
FN114 1 1/4” NPT	-	•
FS012 SAE 12 - 1 1/16” - 12 UN	•	-
FS016 SAE 16 - 1 5/16” - 12 UN	•	•
FS020 SAE 20 - 1 5/8” - 12 UN	-	•

Additional connections

0 Without additional connections

Connections for clogging indicators

6T With both side indicator connections, with metal plugs

Additional features

NN Without additional features

Execution

P01 Standard catalogue item

Certificates

NN None

CLOGGING INDICATORS See pages 776-777

BEA Electrical pressure indicator

BEM Electrical pressure indicator

BLA Electrical / visual pressure indicator

BVA Axial pressure gauge

BVR Radial pressure gauge

BVP Visual pressure indicator with automatic reset

BVQ Visual pressure indicator with manual reset

Designation & Ordering code

FILTER ELEMENT

Example 1:	FEX	060	10	A0010	C	A	00	NN	P01	NN
Example 2:	FEX	110	20	A0010	C	A	00	NN	P01	NN

Series

FEX Filter element with MT feature

Size

060

110

Length

10

20

Filtration rating (filter media)

A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin-impregnated paper	10 µm
P0025	Resin-impregnated paper	25 µm

Element Δp

C 8 bar

Seals and treatments

A NBR

Bypass

00 Without bypass

Additional features

NN Without additional features

Execution

P01 Standard catalogue item

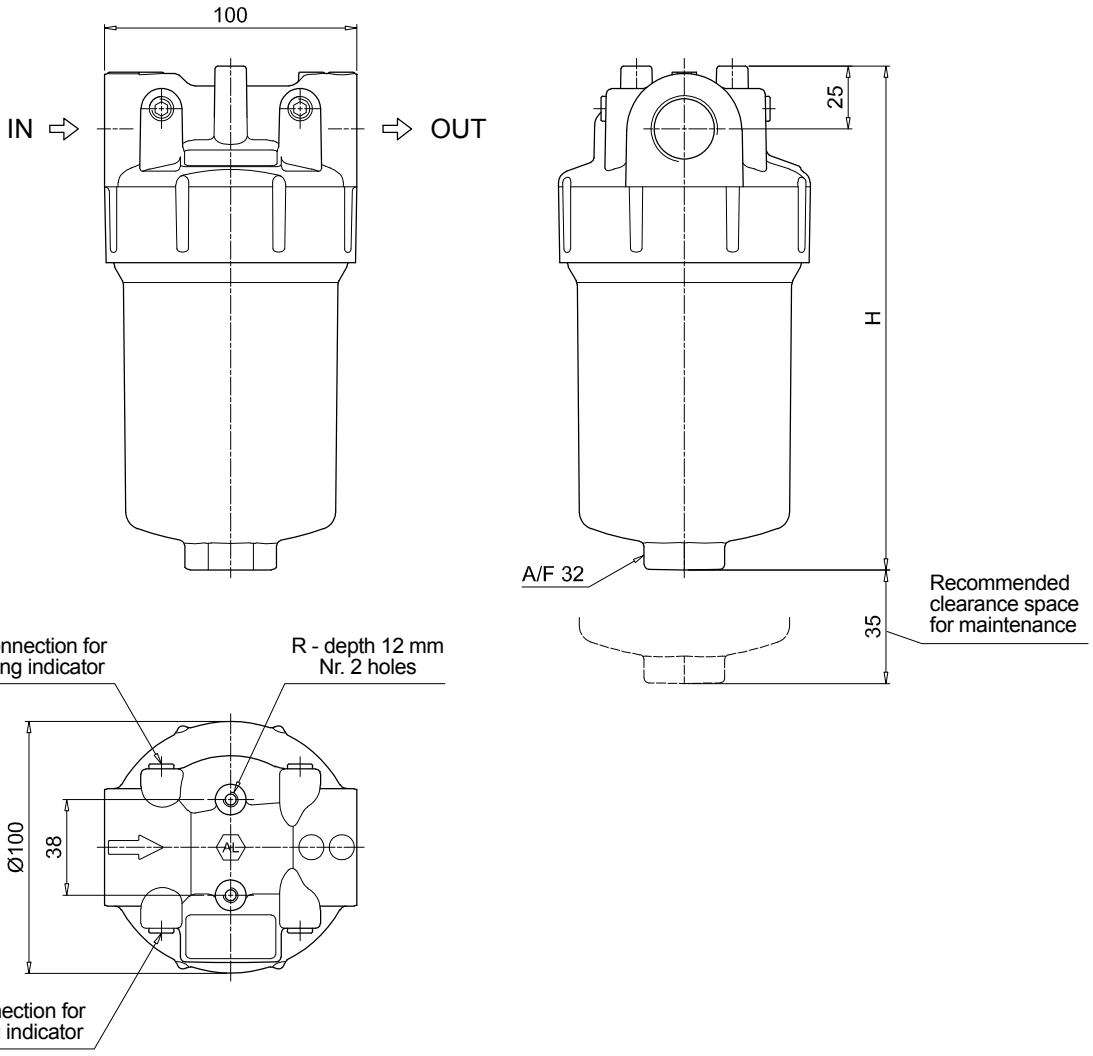
Certificates

NN None

Dimensions

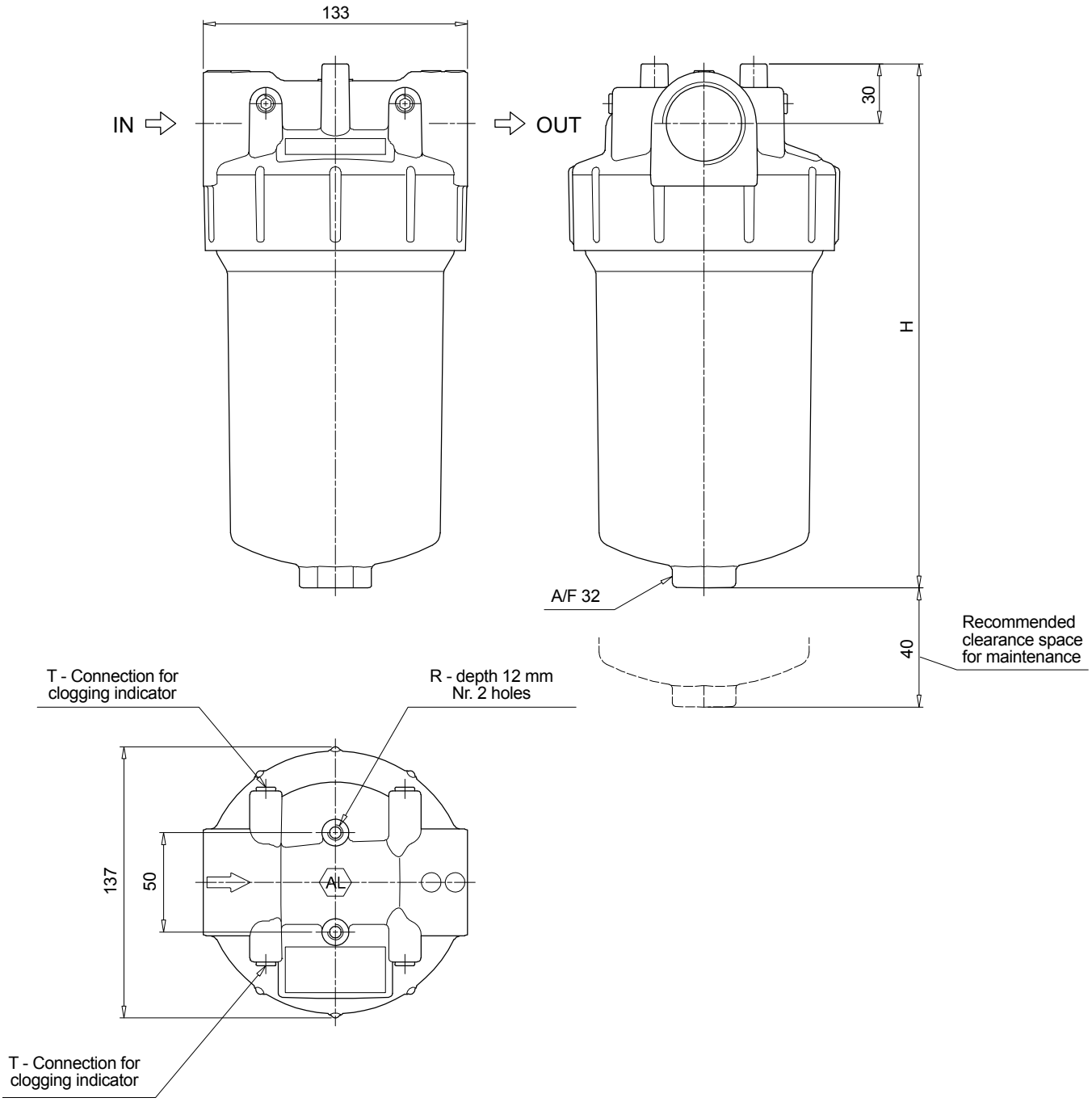
RFEX060	
Filter length	**H [mm]**
10	202
20	265

Connection	T	R
FG034	G 1/8”	M6
FG100	G 1/8”	M6
FN034	1/8” NPT	1/4” UNC
FN100	1/8” NPT	1/4” UNC
FS012	1/8” NPT	1/4” UNC
FS016	1/8” NPT	1/4” UNC

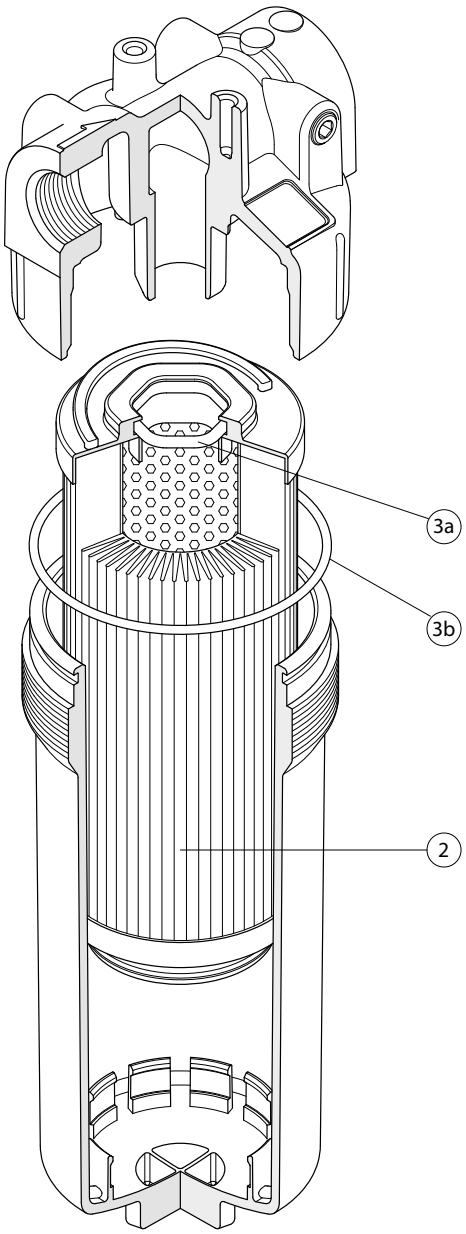


RFEX110	
Filter length	**H [mm]**
10	266
20	315

Connection	T	R
FG100	G 1/8"	M8
FG114	G 1/8"	M8
FN100	1/8" NPT	5/16" UNC
FN114	1/8" NPT	5/16" UNC
FS016	1/8" NPT	5/16" UNC
FS020	1/8" NPT	5/16" UNC



Order number for spare parts



Item:	Q.ty: 1 pc. (2)	Q.ty: 1 pc. (3) (3a ÷ 3b)
Filter series	**Filter element**	**Seal Kit code number NBR**
RFEX 060	See order table	02050771
RFEX 110		02050772

MYCLEAN

THE X CONCEPT FOR OUR FILTERS

Protect the performance of your system with MYclean.
Quality and efficiency are fundamental for MP Filtri:
this exclusive new filter element possesses polygon shape geometry and specific seal that ensures only original spare parts can be used - ensuring correct operation and higher system reliability.

MPFX series with MYCLEAN MFX Filter Element

- **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 MP Filtri filter elements can be used, ensuring the best cleaning level of the oil due to the use of originals filter elements.

The products identified as MPFX are protected by:

- Italian Patent n° 102014902261205
- Canadian Patent n° 2,937,258
- European Patent n° 3 124 092 B1
- US Patent n° 20170030384 A1

TOGETHER WITH MYCLEAN, AS OPTION, MPFX SERIES CAN BE PROVIDED WITH

zerospark®

THE ANTI-STATIC FILTERS

THE Z CONCEPT FOR OUR FILTERS

Zerospark® is a specialist solution designed to solve the problem of electrostatic discharge inside hydraulic filters. Caused by the electrical charge build-up due to the passage of oil through the filters, this can result in damage to filter elements, oils and circuit components. It can even cause fire hazards in environments where flammable materials are present.

MPFX series

Maximum working pressure up to 0.8 MPa (8 bar) - Flow rate up to 900 l/min

Description

Return filter

Maximum working pressure up to 0.8 MPa (8 bar)
Flow rate up to 900 l/min

MPFX is a range of return filters for protection of the reservoir against the system contamination.
They are directly fixed to the reservoir, in immersed or semi-immersed position.
The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

Available features:

- Female threaded connections up to 2" and flanged connections up to 2", for a maximum flow rate of 900 l/min
- Multiple connections, to connect several return lines or drains
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve integrated into the filter element, to relieve excessive pressure drop across the filter media
- 2, 3 or 4 fixing holes for installation, to suit a variety of reservoir surfaces
- O-ring or Flat Seal to suit a variety of reservoir surfaces
- Oil dipstick, to easily check the level of the fluid into the reservoir (sold as separate item)
- Extension tube, to be used in deep reservoirs (sold as separate item)
- Diffuser, to reduce the risk of aeration, foaming and noise (sold as separate item)
- Filler plug, to fill cleaned fluid into the tank without an additional connection
- Visual, electrical and electronic clogging indicators
- MYclean interface connection, to protect the product against non-original spare parts
- External protective wrap, to optimize the flow through the element and to save the element efficiency against non-proper handling

Common applications:

- Light Industrial equipment
- Mobile application

Technical data

Filter housing materials

- Head: Aluminium
- Cover: Polyamide: MPFX 030-100-104-110
  Aluminium: MPFX 181-182-184-191-192-194 400-410-450-750
- Bowl: Polyamide

Pressure

- Test pressure: 1.2 MPa (12 bar)
- Min. Burst pressure: 2.4 MPa (24 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 0.8 MPa (8 bar)

Bypass valve

- Opening pressure 0.175 MPa (1.75 bar) ±10%
- Opening pressure 0.3 MPa (3 bar) ±10%

Filter element features

Filter		Filter element	
MPFX		MFX	
Δp Element type			
Element media	**Construction**	**Δp Series**	**Δp**
A - Microfiber	Standard	D	10 bar
M - Wire mesh	Standard	D	10 bar
P - Paper	Standard	D	10 bar
Please see ordering code tables to check element Δp series availability based on filter features.			
Flow direction through the filter element: From OUT to IN			

Seals

- Standard NBR series A or W
- Optional FPM series V or Z

Temperature

From -25 °C to +110 °C

Note

MPFX filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

Filter series	Weights [kg]					Volumes [dm³]				
	Length	10	20	30	40	Length	10	20	30	40
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		3.95	4.25	4.50	-		3.70	4.60	5.40	-
MPFX 750		6.30	-	-	-		8.45	-	-	-

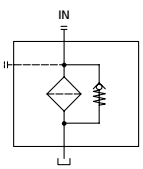
Flow rates [l/min]

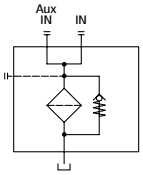
Filter series	Length	Filter element design - D series					Filter element design - D series		
		A0003	A0006	A0010	A0016	A0025	M0025 M0060 M0090	P0010	P0025
MPFX 030	**10**	7	10	24	29	47	84	60	66
MPFX 100-104-110	**10**	18	20	53	56	65	153	87	96
	20	28	38	65	75	95	158	111	123
	300	48	55	125	135	169	289	224	251
	4	79	89	180	185	198	306	264	289
MPFX 181-182-184	**10**	127	148	235	243	278	441	285	299
	20	231	262	358	382	388	472	404	412
MPFX 191-192-194	**20**	261	305	489	528	546	696	583	598
MPFX 400	**10**	150	171	294	304	350	585	370	390
	20	237	252	454	462	589	868	619	645
	30	248	288	553	609	621	885	680	703
MPFX 410	**10**	146	167	277	285	325	512	341	357
	20	226	239	396	402	485	644	503	519
	30	236	269	462	497	505	653	539	553
MPFX 450	**10**	150	171	294	304	350	585	370	390
	20	237	252	454	462	589	868	619	645
	30	248	288	553	609	621	885	680	703
MPFX 750	**10**	392	465	623	700	769	929	804	819

Maximum flow rate for a complete return filter with a pressure drop Δp = 0.5 bar.
The reference fluid has a kinematic viscosity of 30 mm^2/s (cSt) and a density of 0.86 kg/dm^3.
For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure.
Please, contact our Sales Department for further additional information.

Hydraulic diagram

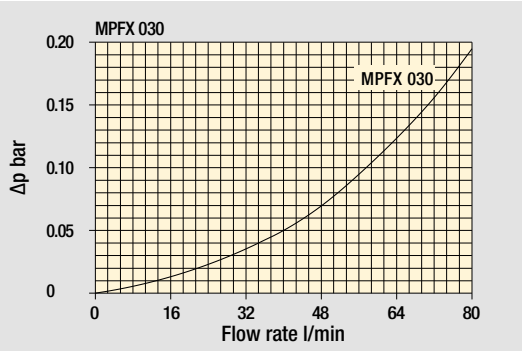
Filter series	17/30 - with bypass 1.75 bar/ 3 bar	
	Style 1 connection	Style 2 connections
MPFX 030	•	-
MPFX 100	•	-
MPFX 104	•	-
MPFX 110	-	•
MPFX 181	•	-
MPFX 182	-	•
MPFX 184	•	•
MPFX 191	•	-
MPFX 192	•	-
MPFX 194	•	•
MPFX 400	•	-
MPFX 410	-	•
MPFX 450	•	-
MPFX 750	•	-

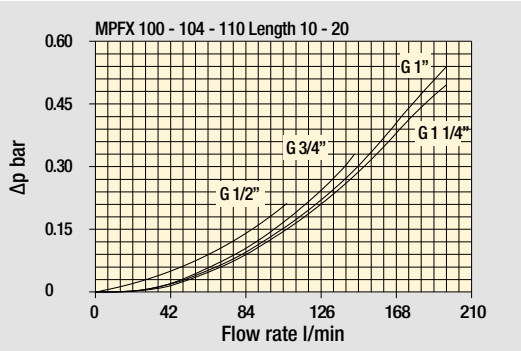


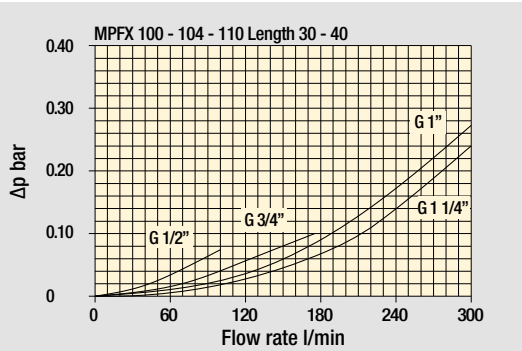


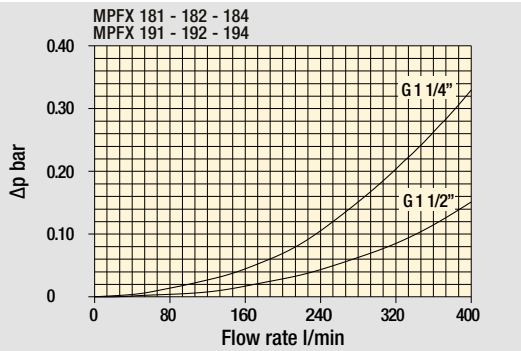
Pressure drop

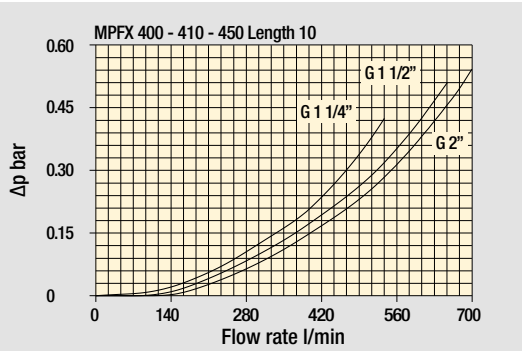
Filter housings Δp pressure drop

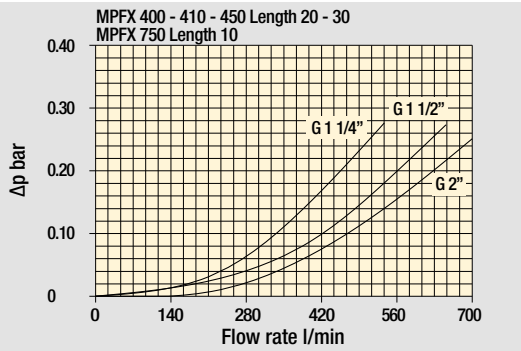




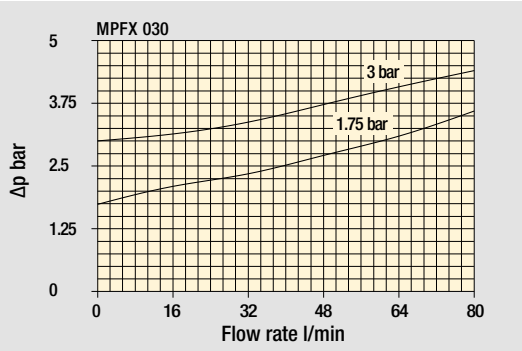


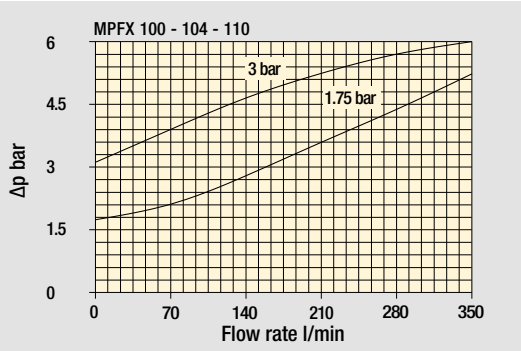


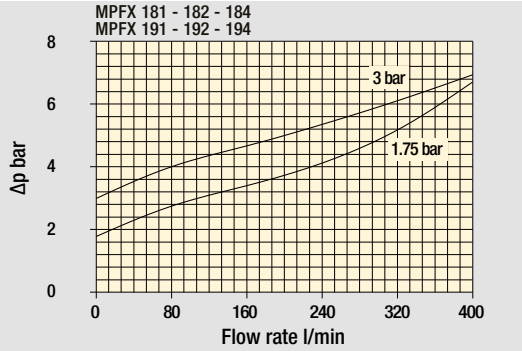


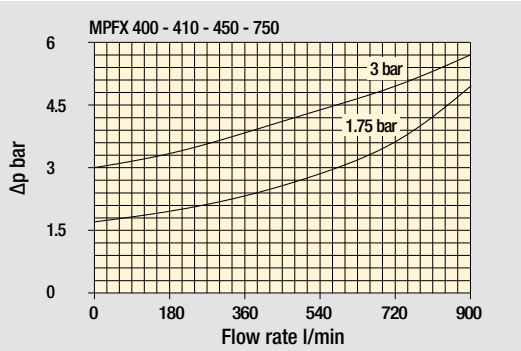


Bypass valve pressure drop



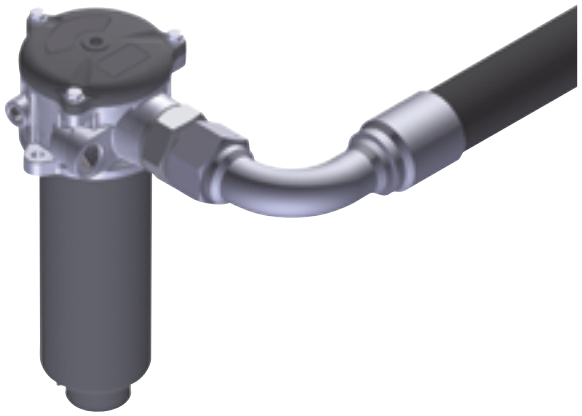




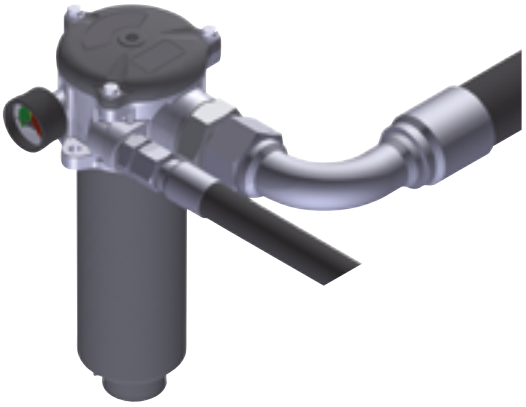


The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968. Δp varies proportionally with density.

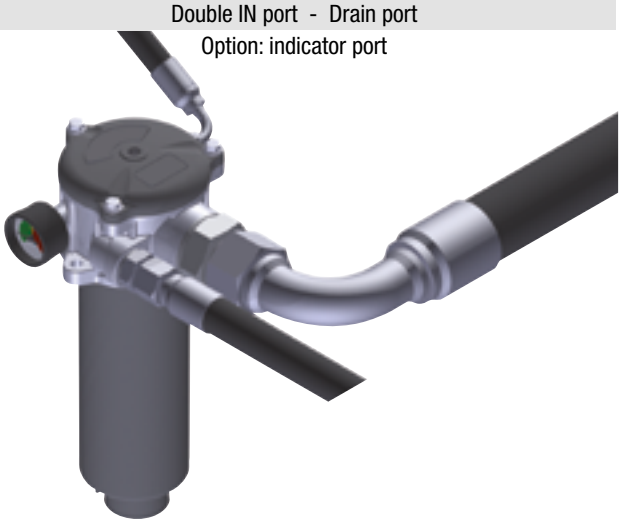
Standard - Single IN port



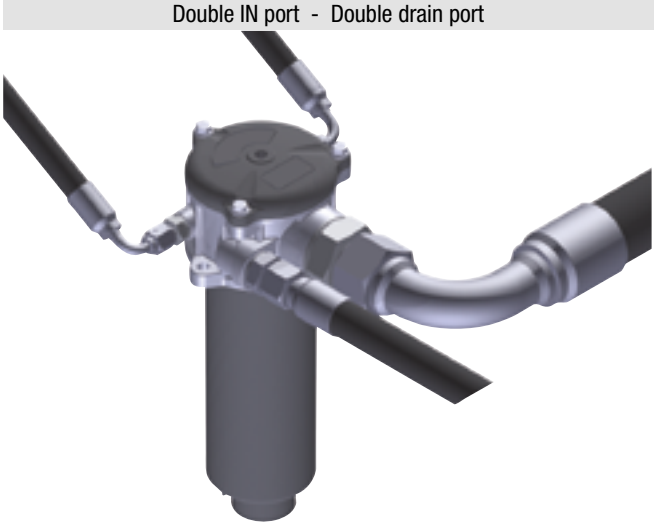
Double IN port
Option: double indicator port



Double IN port - Drain port
Option: indicator port



Double IN port - Double drain port



MPFX MPFX030

Designation & Ordering code

COMPLETE FILTER

Example: MPFX | 030 | 10 | Z0010 | D | A | 30 | FS008 | 0 | 1T | NN | P01 | NN

Series
MPFX Filter featuring MYCLEAN Filter Element

Size
030

Length
10

Filtration rating (filter media)

MYCLEAN	**A0003**	Inorganic microfiber	3 µm	
	A0006	Inorganic microfiber	6 µm	
	A0010	Inorganic microfiber	10 µm	
	A0016	Inorganic microfiber	16 µm	
	A0025	Inorganic microfiber	25 µm	
	M0025	Wire mesh	25 µm	
	M0060	Wire mesh	60 µm	
	M0090	Wire mesh	90 µm	
	P0010	Resin impregnated paper	10 µm	
	P0025	Resin impregnated paper	25 µm	
zerospark+	**Z0003**	Antistatic in. microf.	3 µm	
	Z0006	Antistatic in. microf.	6 µm	
	Z0010	Antistatic in. microf.	10 µm	
	Z0016	Antistatic in. microf.	16 µm	
	Z0025	Antistatic in. microf.	25 µm	

Element Δp
D 10 bar

Seals and treatments	A0xxx	M0xxx	P0xxx	Z0xxx
A NBR	•	•	•	•
V FPM	•	•	•	•
W NBR with filter and components surface treatment	•	•	-	•
Z FPM with filter and components surface treatment	•	•	-	•

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

Connections
FG012 G 1/2" **FN012** 1/2" NPT **FS008** SAE 8 - 3/4" - 16 UNF

Additional connections
0 Without additional connections

Connections for clogging indicators
1T With top indicator connection, with metal plug

Additional features
NN Without additional features

Execution
P01 Standard catalogue item

Certificates
NN None

CLOGGING INDICATORS

See pages 776-777

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

ACCESSORIES

See page 270

TE Polyamide extension tube

Designation & Ordering code

FILTER ELEMENT

Example: MFX | 030 | 10 | Z0010 | D | A | 30 | NN | P01 | NN

Series

MFX Filter element with MYCLEAN feature

Size

030

Length

10

Filtration rating (filter media)

MYCLEAN	**A0003**	Inorganic microfiber	3 µm	zerospark	**Z0003** Antistatic in. microf. 3 µm
	A0006	Inorganic microfiber	6 µm		**Z0006** Antistatic in. microf. 6 µm
	A0010	Inorganic microfiber	10 µm		**Z0010** Antistatic in. microf. 10 µm
	A0016	Inorganic microfiber	16 µm		**Z0016** Antistatic in. microf. 16 µm
	A0025	Inorganic microfiber	25 µm		**Z0025** Antistatic in. microf. 25 µm
	M0025	Wire mesh	25 µm		
	M0060	Wire mesh	60 µm		
	M0090	Wire mesh	90 µm		
	P0010	Resin impregnated paper	10 µm		
	P0025	Resin impregnated paper	25 µm		

Element Δp

D 10 bar

Seals and treatments

A NBR

V FPM

Bypass

17 With bypass 1.75 bar

30 With bypass 3.0 bar

Additional features

NN Without additional features

Execution

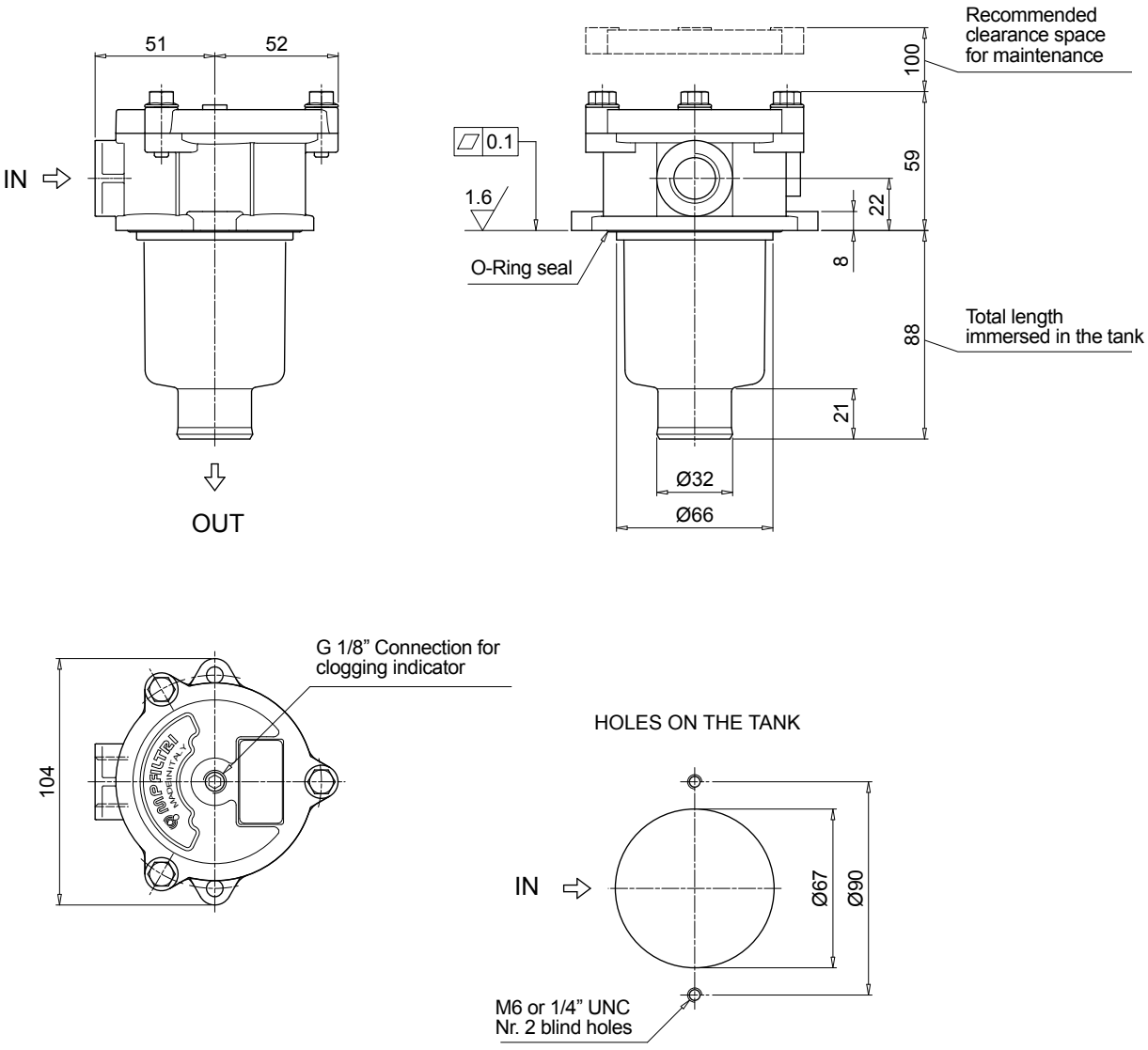
P01 Standard catalogue item

Certificates

NN None

Dimensions

MPFX030



Designation & Ordering code

COMPLETE FILTER

Example 1:	MPFX	100	20	A0006	D	W	17	FG100	0	1T	NN	P01	NN
Example 2:	MPFX	104	40	P0010	D	A	30	FS012	0	1T	NN	P01	NN

Series
MPFX Filter featuring MY CLEAN Filter Element

Size
100 **104**

Length
10 **30**
20 **40**

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Z0003	Antistatic in. microf.	3 µm
Z0006	Antistatic in. microf.	6 µm
Z0010	Antistatic in. microf.	10 µm
Z0016	Antistatic in. microf.	16 µm
Z0025	Antistatic in. microf.	25 µm

Element Δp
D 10 bar

Seals and treatments	A0xxx	M0xxx	P0xxx	Z0xxx
A NBR	•	•	•	•
V FPM	•	•	•	•
W NBR with filter and components surface treatment	•	•	-	•
Z FPM with filter and components surface treatment	•	•	-	•

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

Connections

FG012 G 1/2"	**FN012** 1/2" NPT	**FS008** SAE 8 - 3/4" - 16 UNF
FG034 G 3/4"	**FN034** 3/4" NPT	**FS012** SAE 12 - 1 1/16" - 12 UN
FG100 G 1"	**FN100** 1" NPT	**FS016** SAE 16 - 1 5/16" - 12 UN

Additional connections
0 Without additional connections

Connections for clogging indicators
1T With top indicator connection, with metal plug

Additional features
NN Without additional features

Execution
P01 Standard catalogue item

Certificates
NN None

CLOGGING INDICATORS

See pages 776-777

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

ACCESSORIES

See page 270

TE Polyamide extension tube
T5 Filler plug M30x1.5
DFS Diffuser with fast lock connection
DPT Dipstick

FILTER ELEMENT

Example 1:	MFX	100	20	A0006	D	A	17	NN	P01	NN
Example 2:	MFX	100	40	P0010	D	A	30	NN	P01	NN

Series
MFX Filter element with MYCLEAN feature

Size
100

Length
10 **30**
20 **40**

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Z0003	Antistatic in. microf.	3 µm
Z0006	Antistatic in. microf.	6 µm
Z0010	Antistatic in. microf.	10 µm
Z0016	Antistatic in. microf.	16 µm
Z0025	Antistatic in. microf.	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

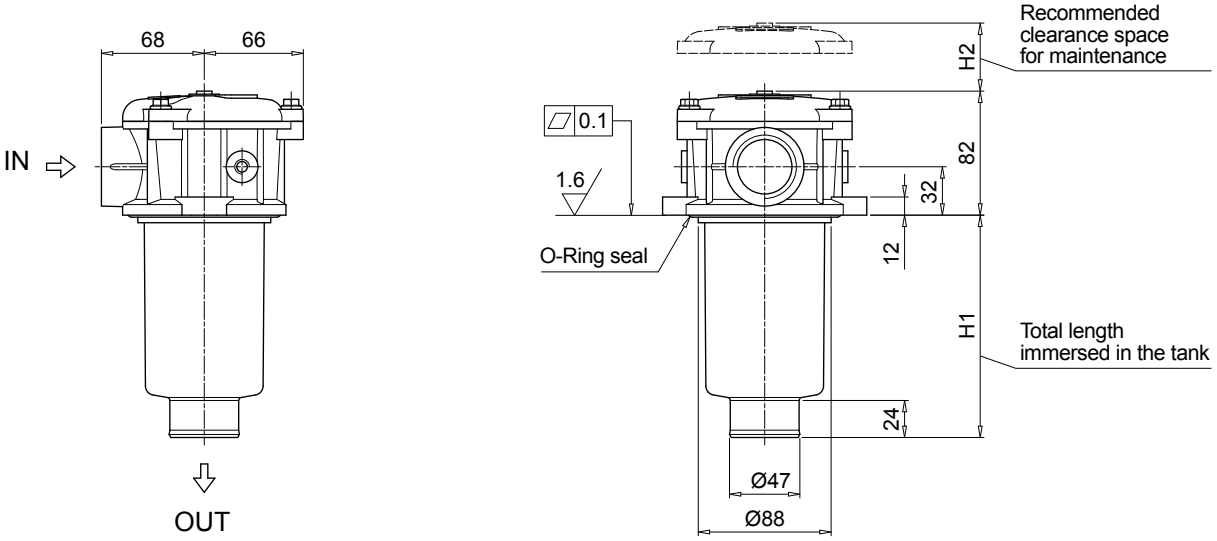
Additional features
NN Without additional features

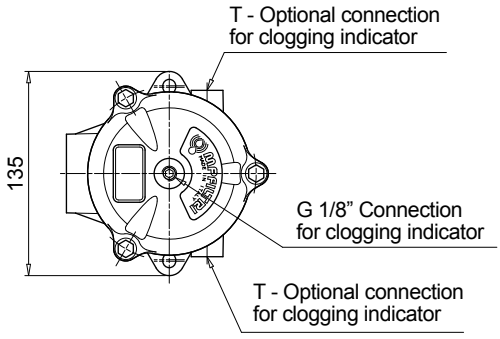
Execution
P01 Standard catalogue item

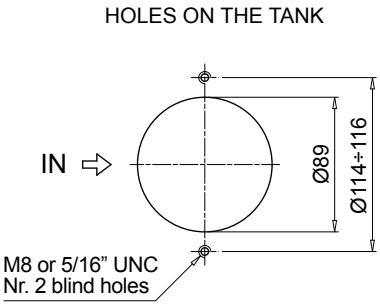
Certificates
NN None

Dimensions

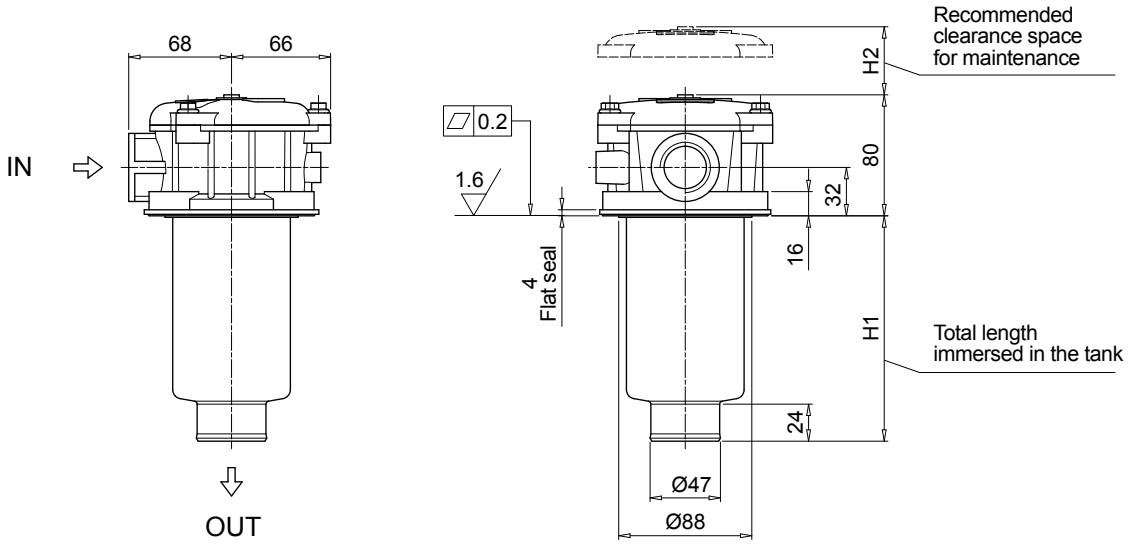
MPFX100		
Filter length	**H1 [mm]**	**H2 [mm]**
10	102	120
20	147	170
30	225	250
40	327	350

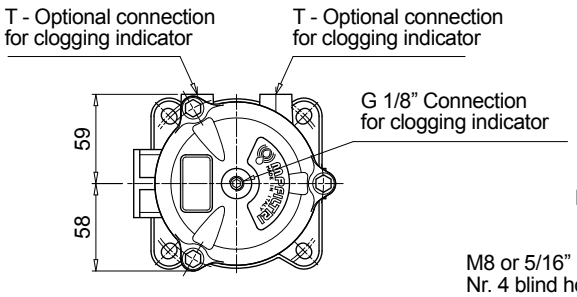


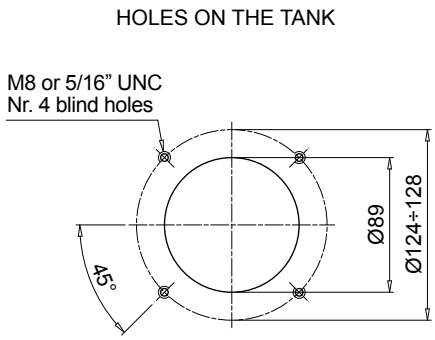




MPFX104		
Filter length	**H1 [mm]**	**H2 [mm]**
10	100	120
20	145	170
30	223	250
40	325	350







MPFX MPFX110

Designation & Ordering code

COMPLETE FILTER

Example: MPFX | 110 | 20 | Z0025 | D | Z | 30 | FN114 | 2 | 9T | NN | P01 | NN

Series
MPFX Filter featuring MY CLEAN Filter Element

Size
110

Length
10 **30**
20 **40**

Filtration rating (filter media)

MY CLEAN

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

zerospark+

Z0003	Antistatic in. microf.	3 µm
Z0006	Antistatic in. microf.	6 µm
Z0010	Antistatic in. microf.	10 µm
Z0016	Antistatic in. microf.	16 µm
Z0025	Antistatic in. microf.	25 µm

Element Δp
D 10 bar

Seals and treatments

		A0xxx	M0xxx	P0xxx	Z0xxx
A	NBR	•	•	•	•
V	FPM	•	•	•	•
W	NBR with filter and components surface treatment	•	•	-	•
Z	FPM with filter and components surface treatment	•	•	-	•

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

Connections

FG012 G 1/2”	**FN012** 1/2” NPT	**FS008** SAE 8 - 3/4” - 16 UNF
FG034 G 3/4”	**FN034** 3/4” NPT	**FS012** SAE 12 - 1 1/16” - 12 UN
FG100 G 1”	**FN100** 1” NPT	**FS016** SAE 16 - 1 5/16” - 12 UN
FG114 G 1 1/4”	**FN114** 1 1/4” NPT	**FS020** SAE 20 - 1 5/8” - 12 UN

Additional connections

1	Main connection	FG012, FG034, FG100, FG114	**G 3/8”**	Main connection	FN012, FN034, FN100, FN114	**3/8” NPT**	Main connection FS008, FS012, FS016, FS020 **SAE 6 - 9/16” 18 UNF**
2	Main connection	FG012, FG034, FG100, FG114	**G 1/2”**	Main connection	FN012, FN034, FN100, FN114	**1/2” NPT**	Main connection FS008, FS012, FS016, FS020 **SAE 8 - 3/4” 16 UNF**

Connections for clogging indicators
9T With multiple indicator connections, with metal plugs

Additional features
NN Without additional features

Execution
P01 Standard catalogue item

Certificates
NN None

CLOGGING INDICATORS

See pages 776-777

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

ACCESSORIES

See page 270

TE Polyamide extension tube
T5 Filler plug M30x1.5
DFS Diffuser with fast lock connection
DPT Dipstick

Designation & Ordering code

FILTER ELEMENT

Example: MFX | 100 | 20 | Z0025 | D | V | 30 | NN | P01 | NN

Series
MFX Filter element with MYCLEAN feature

Size
100

Length
10	**30**
20	**40**

Filtration rating (filter media)

MYCLEAN

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

zerospark

Z0003	Antistatic in. microf.	3 µm
Z0006	Antistatic in. microf.	6 µm
Z0010	Antistatic in. microf.	10 µm
Z0016	Antistatic in. microf.	16 µm
Z0025	Antistatic in. microf.	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

Additional features
NN Without additional features

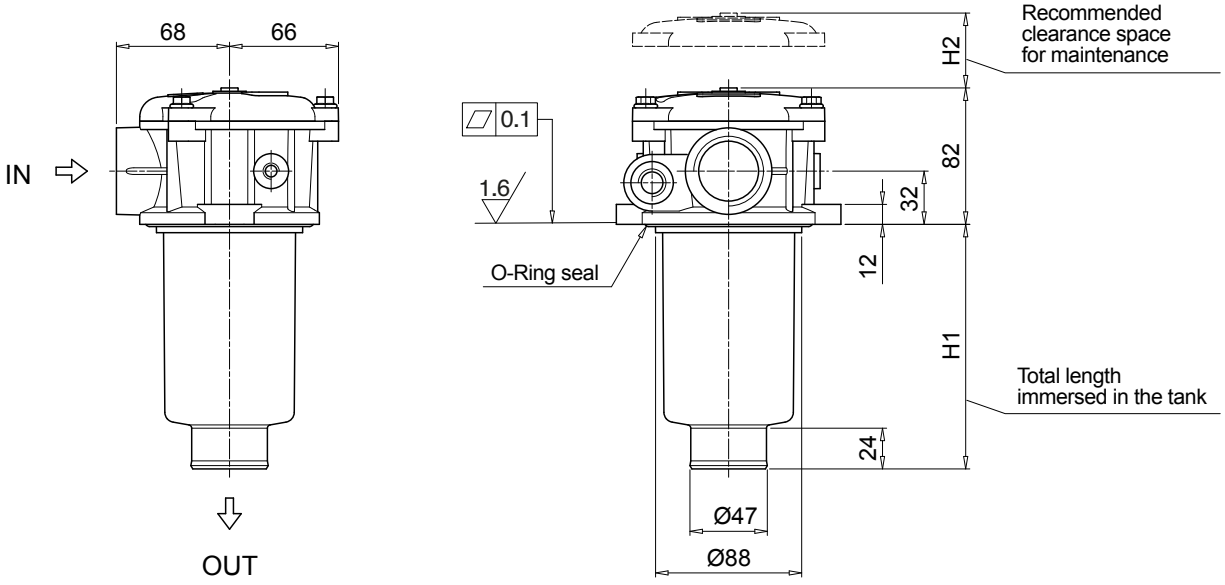
Execution
P01 Standard catalogue item

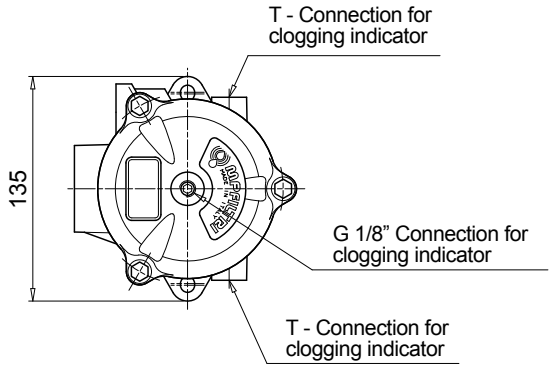
Certificates
NN None

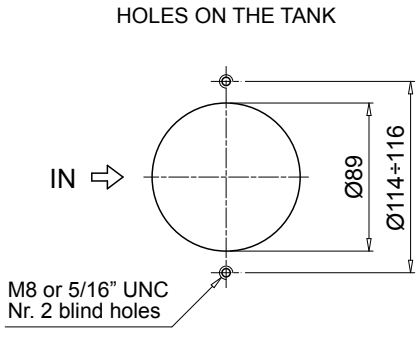
Dimensions

MPFX110		
Filter length	**H1 [mm]**	**H2 [mm]**
10	102	120
20	147	170
30	225	250
40	327	350

Connection	T
FG012	G 1/8”
FG034	
FG100	
FG114	
FN012	1/8” NPT
FN034	
FN100	
FN114	
FS008	
FS012	
FS016	
FS020	







Designation & Ordering code

COMPLETE FILTER

Example 1:	MPFX	181	10	A0025	D	A	30	FG112	0	1T	NN	P01	NN
Example 2:	MPFX	191	20	P0010	D	V	17	FS024	0	1T	SN	P01	NN

Series

MPFX Filter featuring MYCLEAN Filter Element

Size

181 **191**

Length	Size 181	Size 191
10	•	-
20	•	•

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Z0003	Antistatic in. microf.	3 µm
Z0006	Antistatic in. microf.	6 µm
Z0010	Antistatic in. microf.	10 µm
Z0016	Antistatic in. microf.	16 µm
Z0025	Antistatic in. microf.	25 µm

Element Δp

D 10 bar

Seals and treatments	A0xxx	M0xxx	P0xxx	Z0xxx
A NBR	•	•	•	•
V FPM	•	•	•	•
W NBR with filter and components surface treatment	•	•	-	•
Z FPM with filter and components surface treatment	•	•	-	•

Bypass

17 With bypass 1.75 bar

30 With bypass 3.0 bar

Connections

FG114	G 1 1/4”	**FN114**	1 1/4” NPT	**FS020**	SAE 20 - 1 5/8” - 12 UN
FG112	G 1 1/2”	**FN112**	1 1/2” NPT	**FS024**	SAE 24 - 1 7/8” - 12 UN

Additional connections

0 Without additional connections

Connections for clogging indicators

1T With top indicator connection, with metal plug

Additional features

NN Without additional features

SN With flat seal on head

Execution

P01 Standard catalogue item

Certificates

NN None

CLOGGING INDICATORS

See pages 776-777

BVA Axial pressure gauge

BVR Radial pressure gauge

BVP Visual pressure indicator with automatic reset

BVQ Visual pressure indicator with manual reset

BEA Electrical pressure indicator

BEM Electrical pressure indicator

BLA Electrical / visual pressure indicator

ACCESSORIES

See page 270

TE Polyamide extension tube

T5 Filler plug M30x1.5

DPT Dipstick

FILTER ELEMENT

Example 1:	MFX	180	10	A0025	D	A	30	NN	P01	NN
Example 2:	MFX	180	20	P0010	D	V	17	NN	P01	NN

Series
MFX Filter element with MYCLEAN feature

Size
180

Length
10
20

Filtration rating (filter media)

MYCLEAN

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

zerospark®

Z0003	Antistatic in. microf.	3 µm
Z0006	Antistatic in. microf.	6 µm
Z0010	Antistatic in. microf.	10 µm
Z0016	Antistatic in. microf.	16 µm
Z0025	Antistatic in. microf.	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

Additional features
NN Without additional features

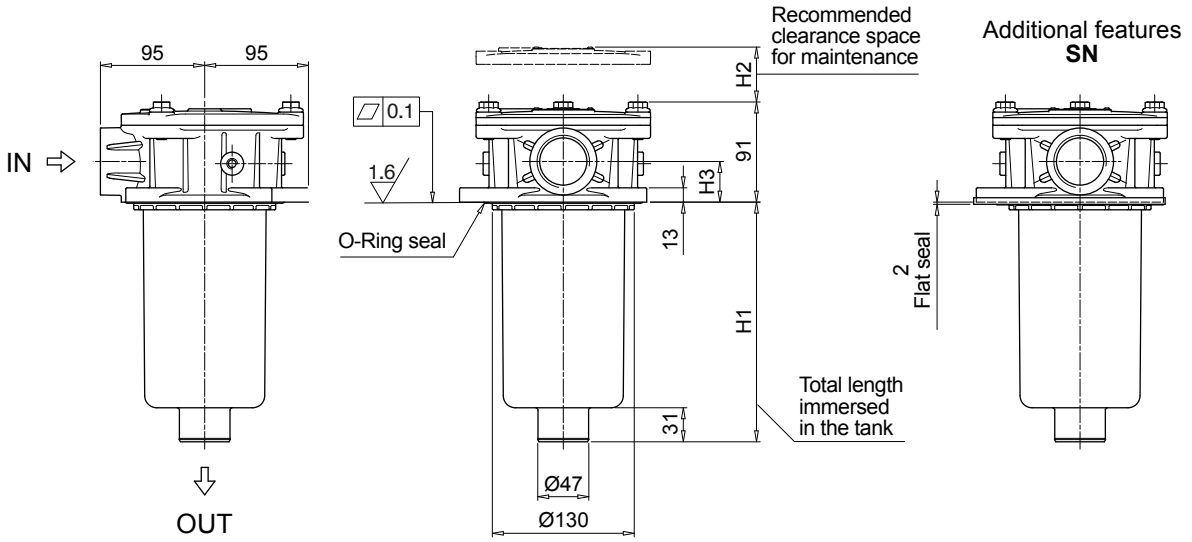
Execution
P01 Standard catalogue item

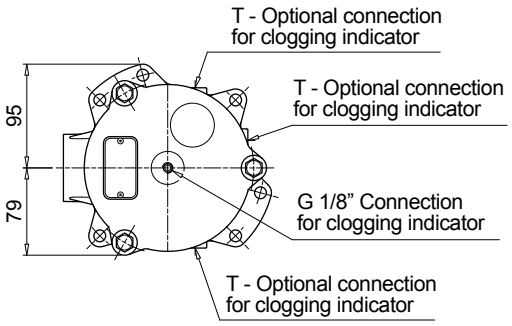
Certificates
NN None

Dimensions

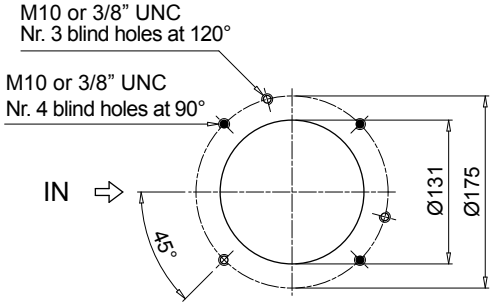
MPFX181		
Filter length	**H1 [mm]**	**H2 [mm]**
10	235	255
20	448	475

Connection	H3 [mm]
FG114	35
FN114	
FS020	
FG112	37
FN112	
FS024	

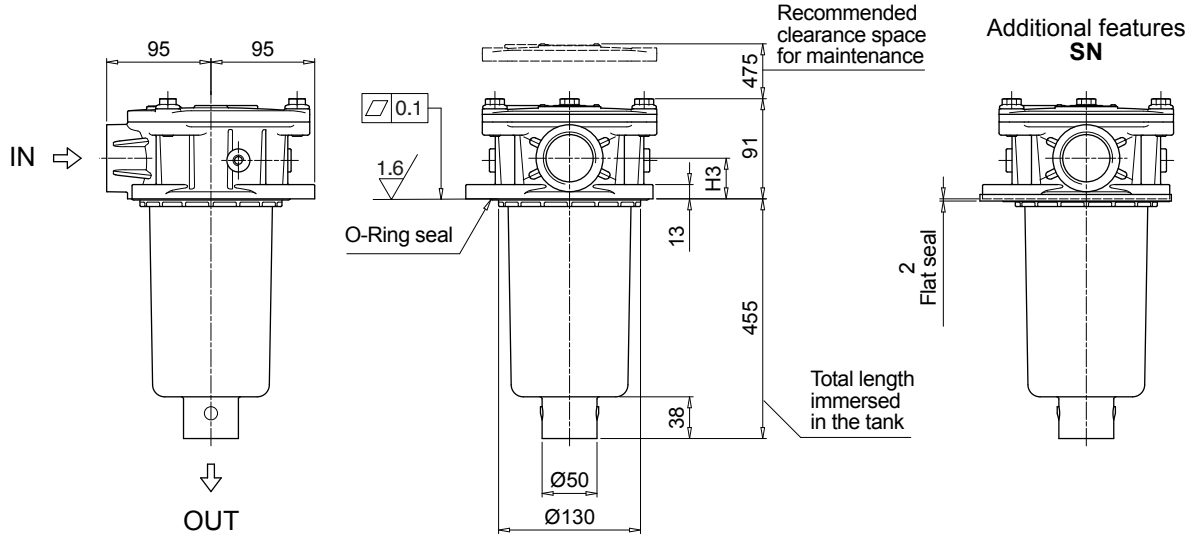


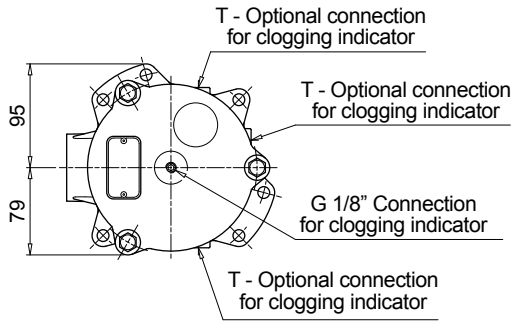


HOLES ON THE TANK
Option for 3 and 4 screws

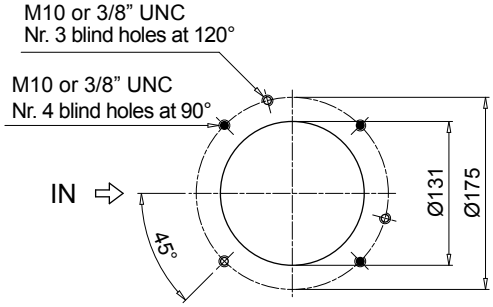


MPFX191	
Connection	**H3 [mm]**
FG114	35
FN114	
FS020	
FG112	37
FN112	
FS024	





HOLES ON THE TANK
Option for 3 and 4 screws



Designation & Ordering code

COMPLETE FILTER

Example 1:	MPFX	182	10	A0025	D	A	30	FN114	2	1T	NN	P01	NN
Example 2:	MPFX	192	20	P0010	D	V	17	FS020	1	1T	SN	P01	NN

Series

MPFX Filter featuring MY CLEAN Filter Element

Size

182 **192**

Length

Length	Size 182	Size 192
10	•	-
20	•	•

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm	**Z0003**	Antistatic in. microf.	3 µm
A0006	Inorganic microfiber	6 µm	**Z0006**	Antistatic in. microf.	6 µm
A0010	Inorganic microfiber	10 µm	**Z0010**	Antistatic in. microf.	10 µm
A0016	Inorganic microfiber	16 µm	**Z0016**	Antistatic in. microf.	16 µm
A0025	Inorganic microfiber	25 µm	**Z0025**	Antistatic in. microf.	25 µm
M0025	Wire mesh	25 µm			
M0060	Wire mesh	60 µm			
M0090	Wire mesh	90 µm			
P0010	Resin impregnated paper	10 µm			
P0025	Resin impregnated paper	25 µm			

Element Δp

D 10 bar

Seals and treatments

		A0xxx	M0xxx	P0xxx	Z0xxx
A	NBR	•	•	•	•
V	FPM	•	•	•	•
W	NBR with filter and components surface treatment	•	•	-	•
Z	FPM with filter and components surface treatment	•	•	-	•

Bypass

17 With bypass 1.75 bar

30 With bypass 3.0 bar

Connections

FG114 G 1 1/4” **FN114** 1 1/4” NPT **FS020** SAE 20 - 1 5/8” - 12 UN

Additional connections

1	Front thread	FG114	**G 1/2”**
		FN114	**1/2” NPT**
		FS020	**SAE 8 - 3/4” - 16 UNF**
2	Front thread	FG114	**G 3/4”**
		FN114	**3/4” NPT**
		FS020	**SAE 12 - 1 1/16” - 12 UN**

Connections for clogging indicators

1T With top indicator connection, with metal plug

Additional features

NN Without additional features

SN With flat seal on head

Execution

P01 Standard catalogue item

Certificates

NN None

CLOGGING INDICATORS

See pages 776-777

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

ACCESSORIES

See page 270

TE Polyamide extension tube
T5 Filler plug M30x1.5
DPT Dipstick

Designation & Ordering code

FILTER ELEMENT

Example 1:	MFX	180	10	A0025	D	A	30	NN	P01	NN
Example 2:	MFX	180	20	P0010	D	V	17	NN	P01	NN

Series
MFX Filter element with MYCLEAN feature

Size
180

Length
10
20

Filtration rating (filter media)

MYCLEAN

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

zerospark®

Z0003	Antistatic in. microf.	3 µm
Z0006	Antistatic in. microf.	6 µm
Z0010	Antistatic in. microf.	10 µm
Z0016	Antistatic in. microf.	16 µm
Z0025	Antistatic in. microf.	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

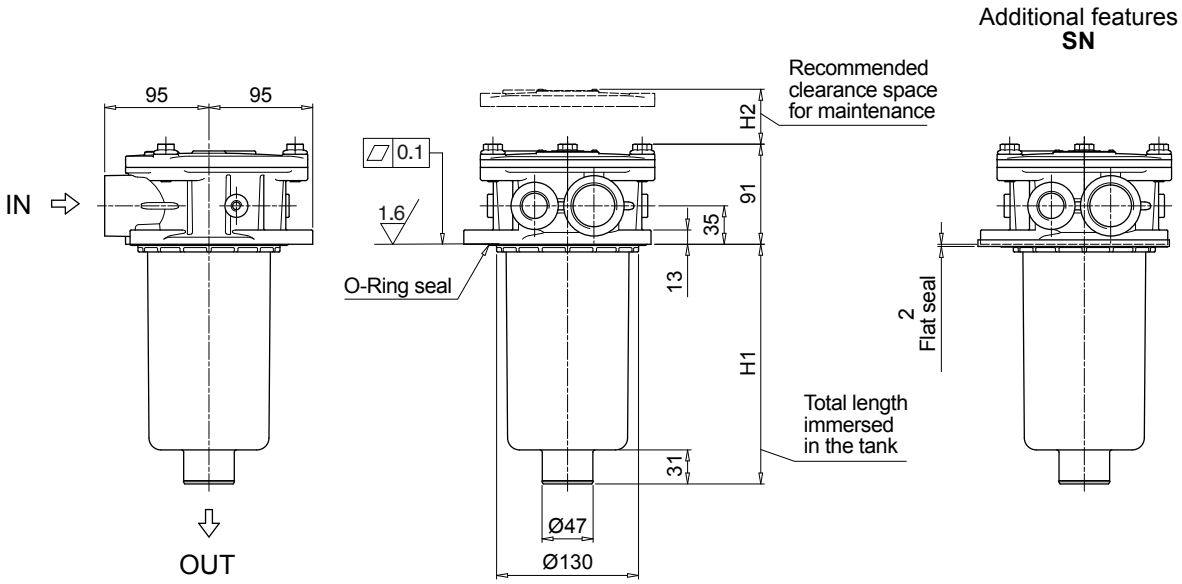
Additional features
NN Without additional features

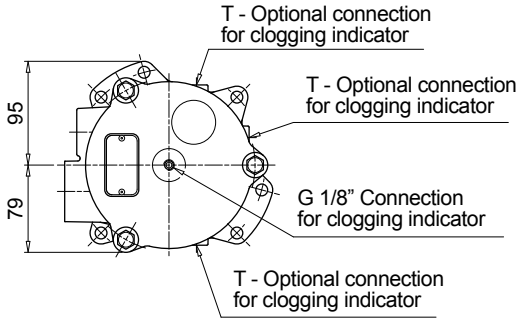
Execution
P01 Standard catalogue item

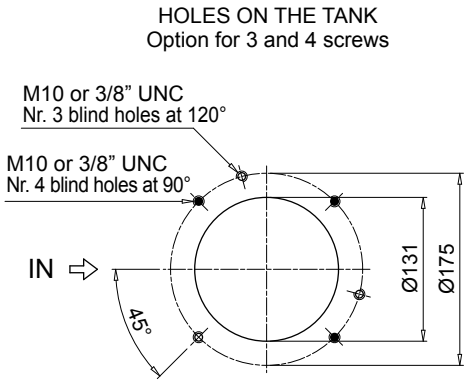
Certificates
NN None

Dimensions

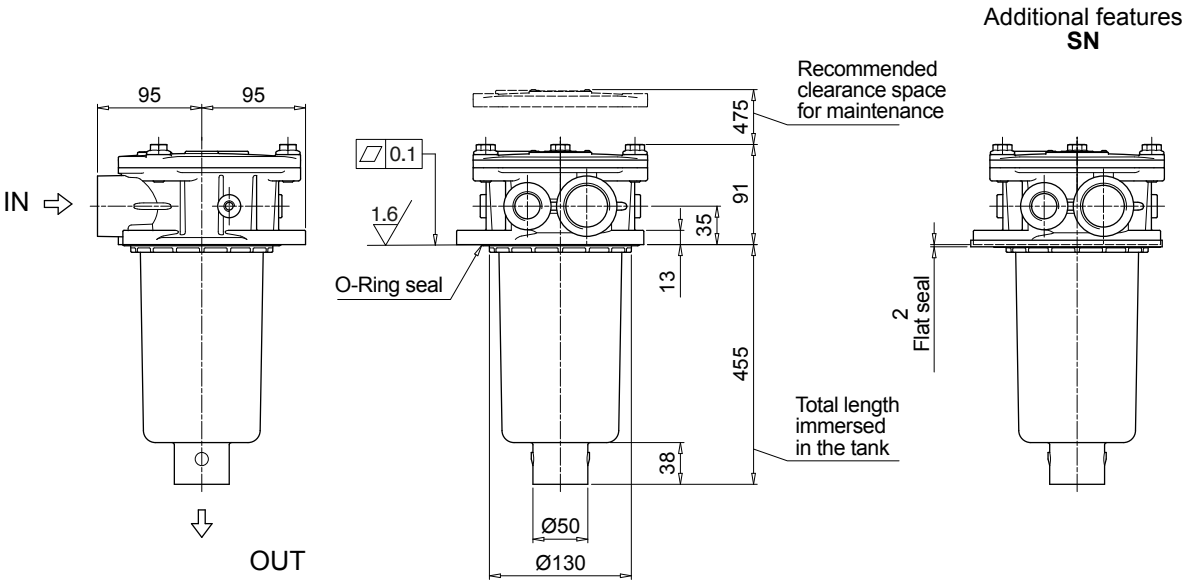
MPFX182		
Filter length	**H1 [mm]**	**H2 [mm]**
10	235	255
20	448	475

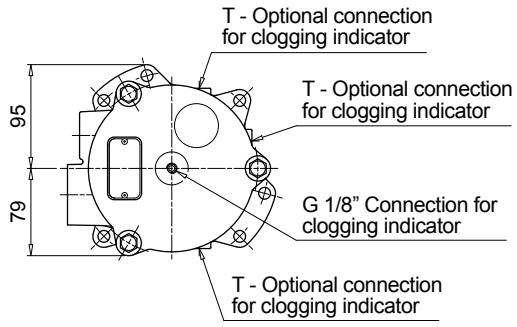


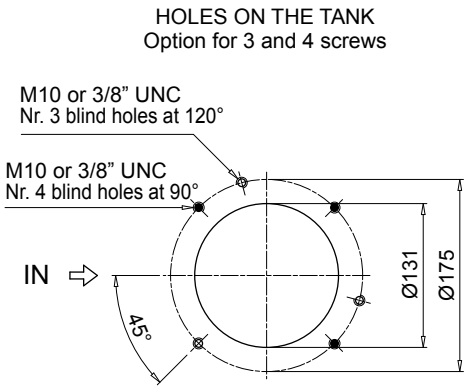




MPFX192


Additional features
SN
95
95
IN
OUT
0.1
1.6
O-Ring seal
475
91
35
13
455
38
Ø50
Ø130
Recommended
clearance space
for maintenance
Total length
immersed
in the tank
2
Flat seal


T - Optional connection
for clogging indicator
T - Optional connection
for clogging indicator
G 1/8" Connection for
clogging indicator
T - Optional connection
for clogging indicator
95
79


HOLES ON THE TANK
Option for 3 and 4 screws
M10 or 3/8" UNC
Nr. 3 blind holes at 120°
M10 or 3/8" UNC
Nr. 4 blind holes at 90°
IN
45°
Ø131
Ø175

Designation & Ordering code

COMPLETE FILTER

Example 1:	MPFX	184	10	A0025	D	A	30	FN114	0	9T	NN	P01	NN
Example 2:	MPFX	194	20	P0010	D	V	17	FS020	1	9T	NN	P01	NN

Series

MPFX Filter featuring MYCLEAN Filter Element

Size

184 **194**

Length

	Size 184	Size 194
10	•	-
20	•	•

Filtration rating (filter media)

MYCLEAN

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

zerospark+

Z0003	Antistatic in. microf.	3 µm
Z0006	Antistatic in. microf.	6 µm
Z0010	Antistatic in. microf.	10 µm
Z0016	Antistatic in. microf.	16 µm
Z0025	Antistatic in. microf.	25 µm

Element Δp

D 10 bar

Seals and treatments

		A0xxx	M0xxx	P0xxx	Z0xxx
A	NBR	•	•	•	•
V	FPM	•	•	•	•
W	NBR with filter and components surface treatment	•	•	-	•
Z	FPM with filter and components surface treatment	•	•	-	•

Bypass

17 With bypass 1.75 bar

30 With bypass 3.0 bar

Connections

FG114	G 1 1/4”	**FN114**	1 1/4” NPT	**FS020**	SAE 20 - 1 5/8” - 12 UN	**FE112**	1 1/2” SAE 3000 psi/M
FG112	G 1 1/2”	**FN112**	1 1/2” NPT	**FS024**	SAE 24 - 1 7/8” - 12 UN	**FF112**	1 1/2” SAE 3000 psi/UNC

Additional connections

0 Without additional connection

1	Main connection	FG114 / FG112	**G 1 1/4”**	Main connection	FS020 / FS024	**SAE 20 - 1 5/8” - 12 UN**
		FN114 / FN112	**1 1/4” NPT**		FE112 / FF112	**1 1/2” SAE 3000 psi/M**

Connections for clogging indicators

9T With multiple indicator connections, with metal plugs

Additional features

NN Without additional features

Execution

P01 Standard catalogue item

Certificates

NN None

CLOGGING INDICATORS

See pages 776-777

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

ACCESSORIES

See page 270

TE Polyamide extension tube
T5 Filler plug M30x1.5
DPT Dipstick

FILTER ELEMENT

Example 1:	MFX	180	10	A0025	D	A	30	NN	P01	NN
Example 2:	MFX	180	20	P0010	D	V	17	NN	P01	NN

Series
MFX Filter element with MYCLEAN feature

Size
180

Length
10
20

Filtration rating (filter media)

MYCLEAN

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

zerospark®

Z0003	Antistatic in. microf.	3 µm
Z0006	Antistatic in. microf.	6 µm
Z0010	Antistatic in. microf.	10 µm
Z0016	Antistatic in. microf.	16 µm
Z0025	Antistatic in. microf.	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

Additional features
NN Without additional features

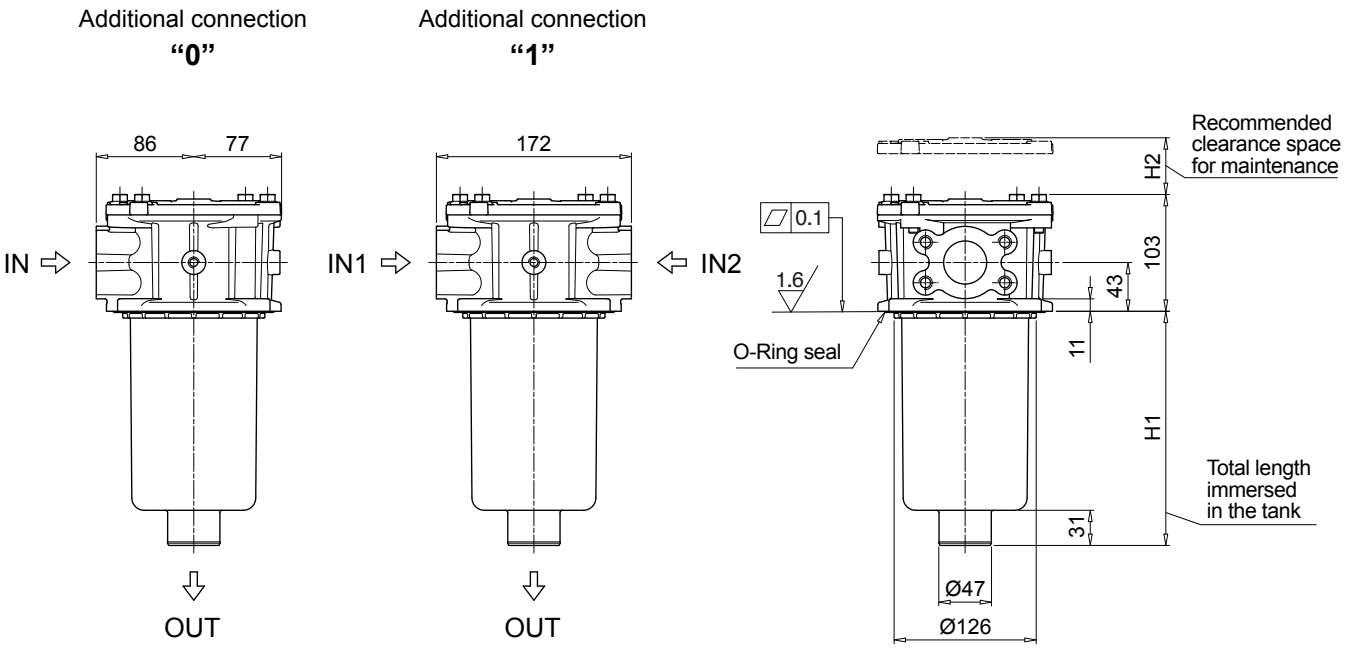
Execution
P01 Standard catalogue item

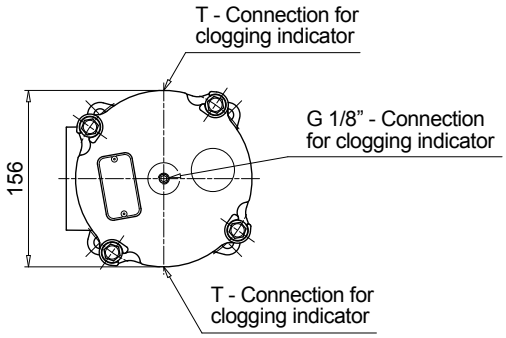
Certificates
NN None

Dimensions

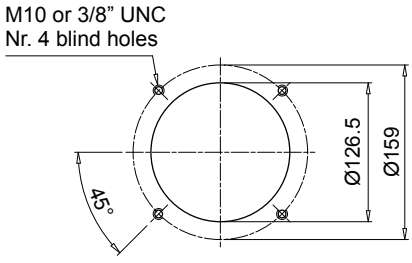
MPFX184		
Filter length	**H1 [mm]**	**H2 [mm]**
10	232	260
20	445	480

Connection	T
FG114	G 1/8”
FG112	
FN114	1/8” NPT
FN112	
FS020	
FS024	
FE112	G 1/8”
FF112	1/8” NPT



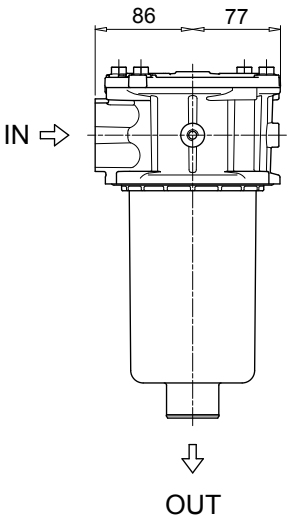


HOLES ON THE TANK

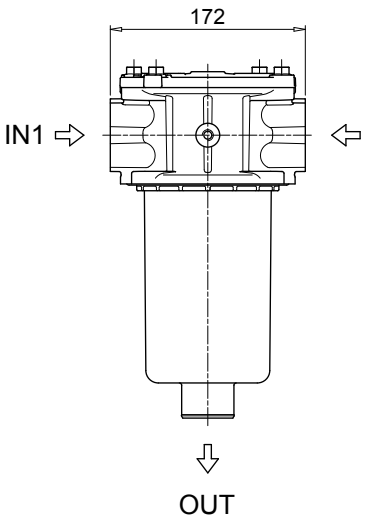


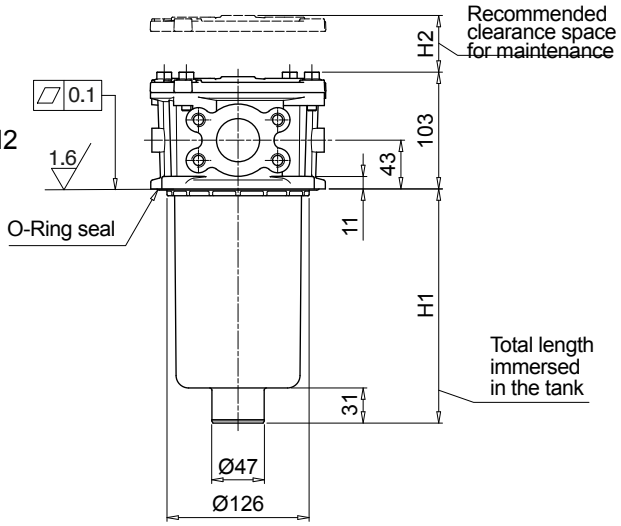
MPFX194	
Connection	**T**
FG114	G 1/8”
FG112	
FN114	1/8” NPT
FN112	
FS020	
FS024	
FE112	G 1/8”
FF112	1/8” NPT

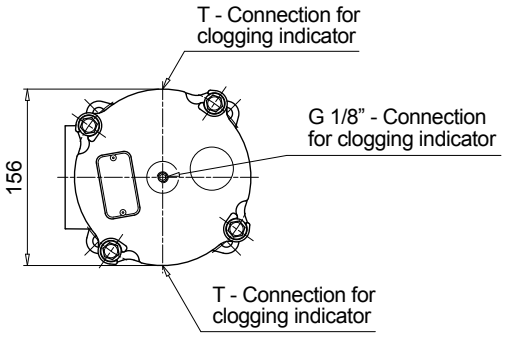
Additional connection **“0”**



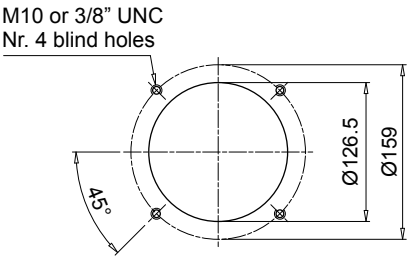
Additional connection **“1”**







HOLES ON THE TANK



MPFX MPFX400

Designation & Ordering code

COMPLETE FILTER

Example: MPFX | 400 | 10 | A0025 | D | A | 30 | FG112 | 0 | 1T | NN | P01 | NN

Series
MPFX Filter featuring MYCLEAN Filter Element

Size
400

Length
10
20
30

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm	**Z0003**	Antistatic in. microf.	3 µm
A0006	Inorganic microfiber	6 µm	**Z0006**	Antistatic in. microf.	6 µm
A0010	Inorganic microfiber	10 µm	**Z0010**	Antistatic in. microf.	10 µm
A0016	Inorganic microfiber	16 µm	**Z0016**	Antistatic in. microf.	16 µm
A0025	Inorganic microfiber	25 µm	**Z0025**	Antistatic in. microf.	25 µm
M0025	Wire mesh	25 µm			
M0060	Wire mesh	60 µm			
M0090	Wire mesh	90 µm			
P0010	Resin impregnated paper	10 µm			
P0025	Resin impregnated paper	25 µm			

Element Δp
D 10 bar

Seals and treatments	A0xxx	M0xxx	P0xxx	Z0xxx
A NBR	•	•	•	•
V FPM	•	•	•	•
W NBR with filter and components surface treatment	•	•	-	•
Z FPM with filter and components surface treatment	•	•	-	•

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

Connections

FG114	G 1 1/4”	**FN114**	1 1/4” NPT	**FS020**	SAE 20 - 1 5/8” - 12 UN
FG112	G 1 1/2”	**FN112**	1 1/2” NPT	**FS024**	SAE 24 - 1 7/8” - 12 UN
FG200	G 2”	**FN200**	2” NPT	**FS032**	SAE 32 - 2 1/2” - 12 UN

Additional connections
0 Without additional connections

Connections for clogging indicators
1T With top indicator connection, with metal plug

Additional features
NN Without additional features

Execution
P01 Standard catalogue item

Certificates
NN None

CLOGGING INDICATORS

See pages 776-777

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

ACCESSORIES

See page 270

TE Polyamide extension tube
T5 Filler plug M30x1.5
DPT Dipstick

Designation & Ordering code

FILTER ELEMENT

Example: MFX | 400 | 10 | A0025 | D | A | 30 | NN | P01 | NN

Series
MFX Filter element with MYCLEAN feature

Size
400

Length
10
20
30

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm	
A0006	Inorganic microfiber	6 µm	
A0010	Inorganic microfiber	10 µm	
A0016	Inorganic microfiber	16 µm	
A0025	Inorganic microfiber	25 µm	
M0025	Wire mesh	25 µm	
M0060	Wire mesh	60 µm	
M0090	Wire mesh	90 µm	
P0010	Resin impregnated paper	10 µm	
P0025	Resin impregnated paper	25 µm	

Z0003	Antistatic in. microf.	3 µm	
Z0006	Antistatic in. microf.	6 µm	
Z0010	Antistatic in. microf.	10 µm	
Z0016	Antistatic in. microf.	16 µm	
Z0025	Antistatic in. microf.	25 µm	

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

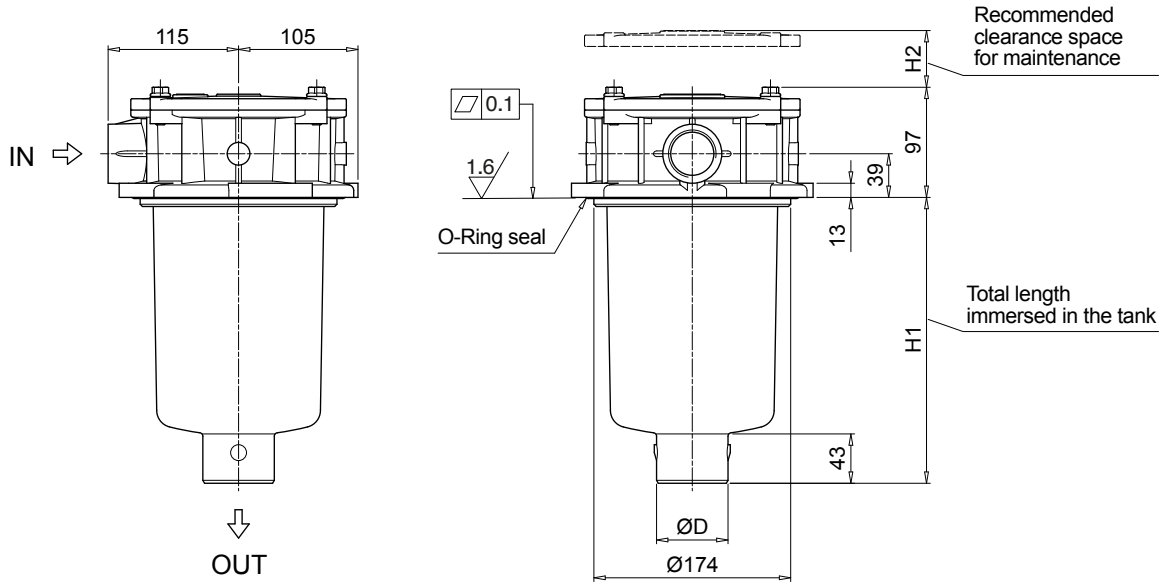
Additional features
NN Without additional features

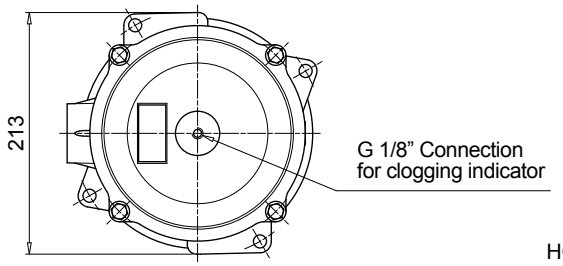
Execution
P01 Standard catalogue item

Certificates
NN None

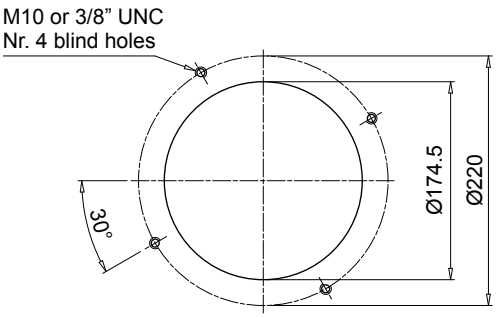
Dimensions

MPFX400			
Filter length	**H1 [mm]**	**H2 [mm]**	**D [mm]**
10	187	210	50
20	252	270	63
30	300	315	63





HOLES ON THE TANK



Designation & Ordering code

COMPLETE FILTER

Example:	MPFX	410	10	A0025	D	A	30	FN114	1	1T	NN	P01	NN

Series
MPFX Filter featuring MYCLEAN Filter Element

Size
410

Length
10
20
30

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm	**Z0003**	Antistatic in. microf.	3 µm
A0006	Inorganic microfiber	6 µm	**Z0006**	Antistatic in. microf.	6 µm
A0010	Inorganic microfiber	10 µm	**Z0010**	Antistatic in. microf.	10 µm
A0016	Inorganic microfiber	16 µm	**Z0016**	Antistatic in. microf.	16 µm
A0025	Inorganic microfiber	25 µm	**Z0025**	Antistatic in. microf.	25 µm
M0025	Wire mesh	25 µm			
M0060	Wire mesh	60 µm			
M0090	Wire mesh	90 µm			
P0010	Resin impregnated paper	10 µm			
P0025	Resin impregnated paper	25 µm			

Element Δp
D 10 bar

Seals and treatments		A0xxx	M0xxx	P0xxx	Z0xxx
A	NBR	•	•	•	•
V	FPM	•	•	•	•
W	NBR with filter and components surface treatment	•	•	-	•
Z	FPM with filter and components surface treatment	•	•	-	•

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

Connections
FG114 G 1 1/4" **FN114** 1 1/4" NPT **FS020** SAE 20 - 1 5/8" - 12 UN

Additional connections
1 Front thread
FG114 **G 1"**
FN114 **1" NPT**
FS020 **SAE 16 - 1 5/16" - 12 UN**

Connections for clogging indicators
1T With top indicator connection, with metal plug

Additional features
NN Without additional features

Execution
P01 Standard catalogue item

Certificates
NN None

CLOGGING INDICATORS

See pages 776-777

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

ACCESSORIES

See page 270

TE Polyamide extension tube
T5 Filler plug M30x1.5
DPT Dipstick

Designation & Ordering code

FILTER ELEMENT

Example: MFX | 400 | 10 | A0025 | D | A | 30 | NN | P01 | NN

Series
MFX Filter element with MYCLEAN feature

Size
400

Length
10
20
30

Filtration rating (filter media)

MYCLEAN	**A0003**	Inorganic microfiber	3 µm	zerospark	**Z0003** Antistatic in. microf. 3 µm
	A0006	Inorganic microfiber	6 µm		**Z0006** Antistatic in. microf. 6 µm
	A0010	Inorganic microfiber	10 µm		**Z0010** Antistatic in. microf. 10 µm
	A0016	Inorganic microfiber	16 µm		**Z0016** Antistatic in. microf. 16 µm
	A0025	Inorganic microfiber	25 µm		**Z0025** Antistatic in. microf. 25 µm
	M0025	Wire mesh	25 µm		
	M0060	Wire mesh	60 µm		
	M0090	Wire mesh	90 µm		
	P0010	Resin impregnated paper	10 µm		
	P0025	Resin impregnated paper	25 µm		

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

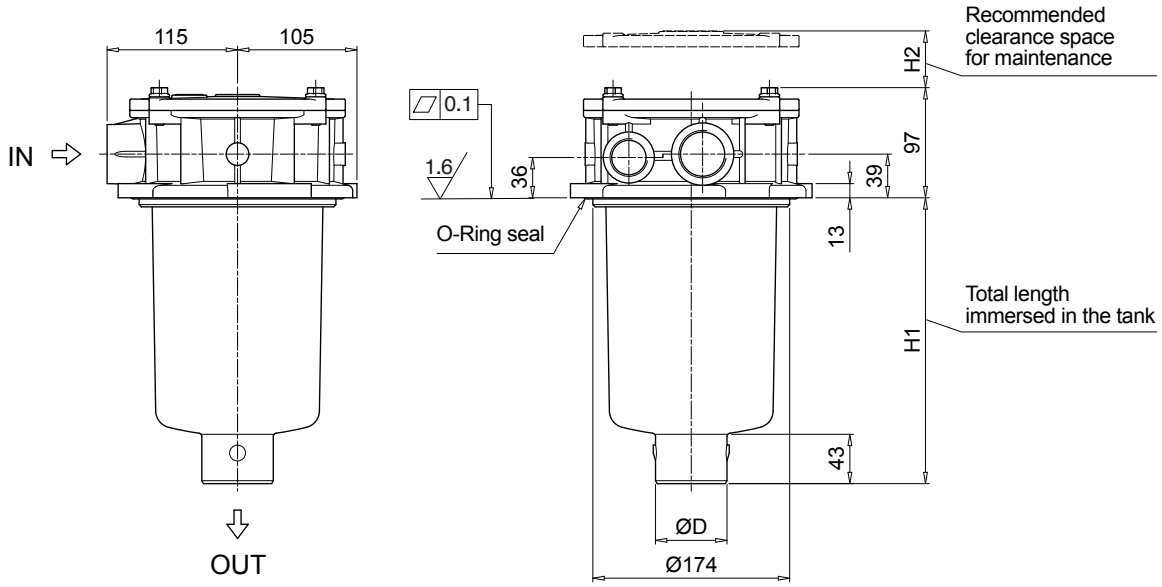
Additional features
NN Without additional features

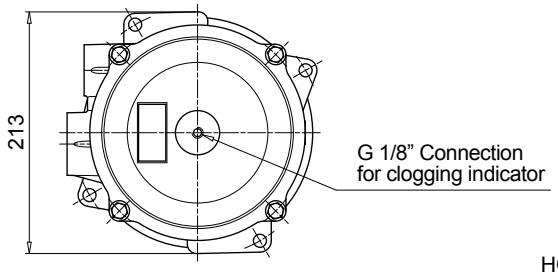
Execution
P01 Standard catalogue item

Certificates
NN None

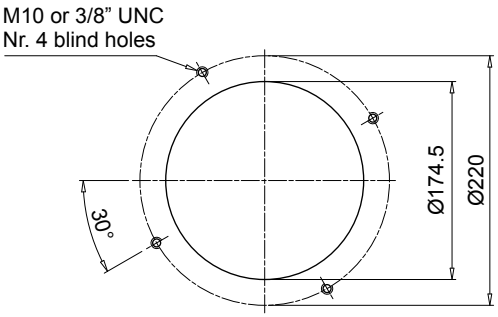
Dimensions

MPFX410			
Filter length	**H1 [mm]**	**H2 [mm]**	**D [mm]**
10	187	210	50
20	252	270	63
30	300	315	63





HOLES ON THE TANK



MPFX MPFX450

Designation & Ordering code

COMPLETE FILTER

Example: MPFX | 450 | 10 | A0025 | D | A | 30 | FN114 | 1 | 9T | NN | P01 | NN

Series
MPFX Filter featuring MYCLEAN Filter Element

Size
450

Length
10
20
30

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm	**Z0003**	Antistatic in. microf.	3 µm
A0006	Inorganic microfiber	6 µm	**Z0006**	Antistatic in. microf.	6 µm
A0010	Inorganic microfiber	10 µm	**Z0010**	Antistatic in. microf.	10 µm
A0016	Inorganic microfiber	16 µm	**Z0016**	Antistatic in. microf.	16 µm
A0025	Inorganic microfiber	25 µm	**Z0025**	Antistatic in. microf.	25 µm
M0025	Wire mesh	25 µm			
M0060	Wire mesh	60 µm			
M0090	Wire mesh	90 µm			
P0010	Resin impregnated paper	10 µm			
P0025	Resin impregnated paper	25 µm			

Element Δp
D 10 bar

Seals and treatments	A0xxx	M0xxx	P0xxx	Z0xxx
A NBR	•	•	•	•
V FPM	•	•	•	•
W NBR with filter and components surface treatment	•	•	-	•
Z FPM with filter and components surface treatment	•	•	-	•

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

Connections
FG200 G 2” | **FN200** 2” NPT | **FS032** SAE 32 - 2 1/2” - 12 UN | **FE200** 2” SAE 3000 psi/M | **FF200** 2” SAE 3000 psi/UNC

Additional connections
0 Without additional connection
1 Main connection
- FG200 / FE200 — **G 3/4”**
- FN200 / FF200 — **3/4” NPT**
- FS032 — **SAE 12 - 1 1/16” - 12 UN**

Connections for clogging indicators
9T With multiple indicator connections, with metal plugs

Additional features
NN Without additional features

Execution
P01 Standard catalogue item

Certificates
NN None

CLOGGING INDICATORS

See pages 776-777

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

ACCESSORIES

See page 270

TE Polyamide extension tube
T5 Filler plug M30x1.5
DPT Dipstick

FILTER ELEMENT

Example: MFX | 400 | 10 | A0025 | D | A | 30 | NN | P01 | NN

Series
MFX Filter element with MYCLEAN feature

Size
400

Length
10
20
30

Filtration rating (filter media)

MYCLEAN

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

zerospark

Z0003	Antistatic in. microf.	3 µm
Z0006	Antistatic in. microf.	6 µm
Z0010	Antistatic in. microf.	10 µm
Z0016	Antistatic in. microf.	16 µm
Z0025	Antistatic in. microf.	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

Additional features
NN Without additional features

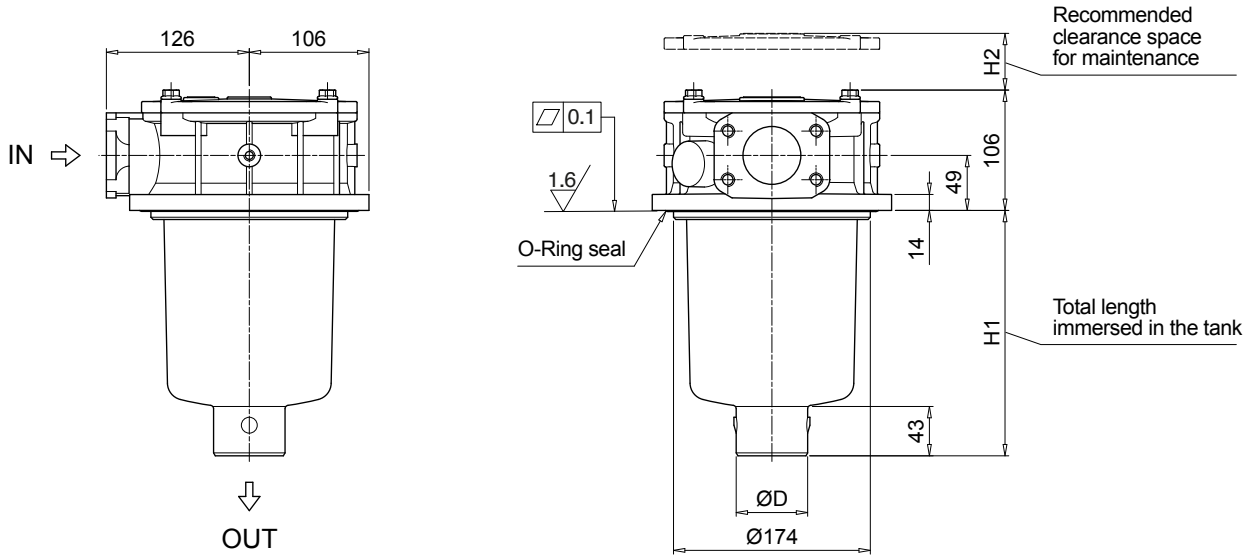
Execution
P01 Standard catalogue item

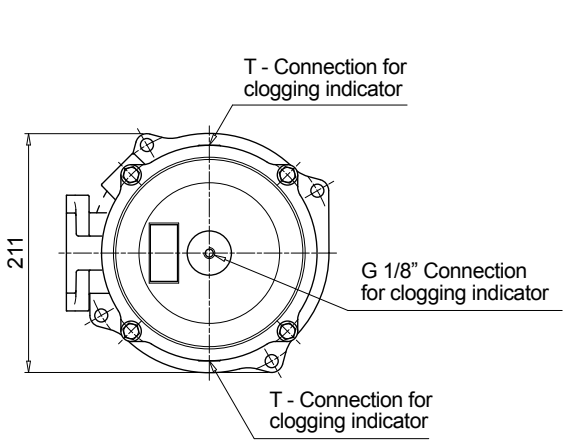
Certificates
NN None

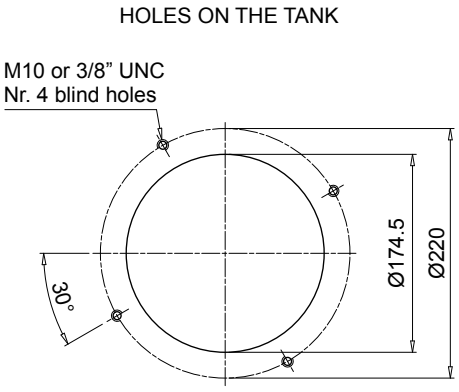
Dimensions

MPFX450 Additional connection "0"			
Filter length	H1 [mm]	H2 [mm]	D [mm]
10	187	210	50
20	252	270	63
30	300	315	63

Connections	T
FG200	G 1/8"
FN200	1/8" NPT
FS032	1/8" NPT
FE200	G 1/8"
FF200	1/8" NPT

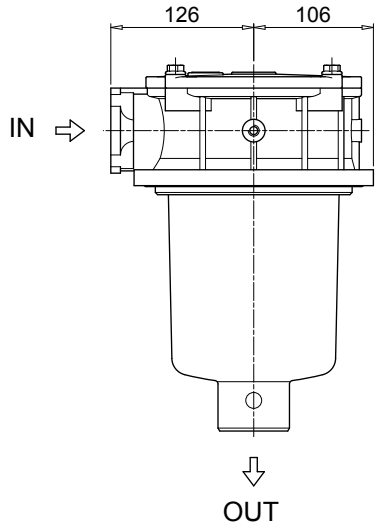


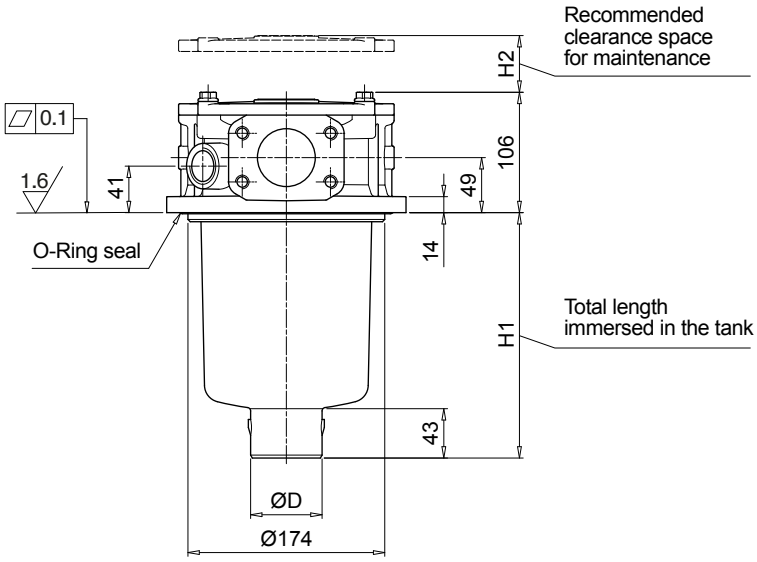


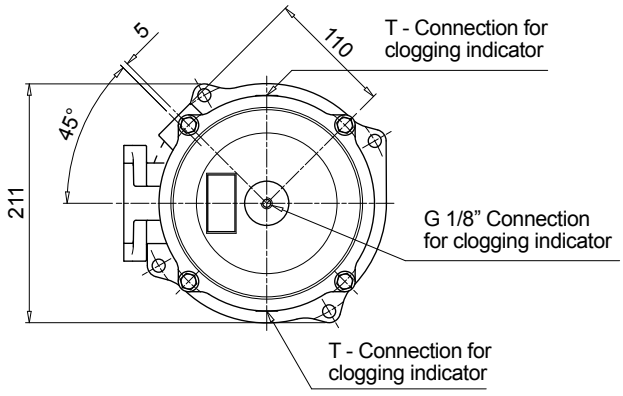


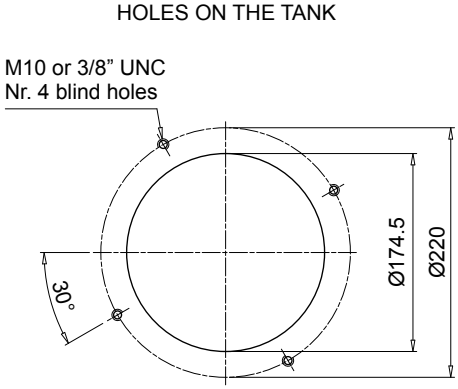
MPFX450			
Additional connection "1"			
Filter length	**H1 [mm]**	**H2 [mm]**	**D [mm]**
10	187	210	50
20	252	270	63
30	300	315	63

Connections	T
FG200	G 1/8"
FN200	1/8" NPT
FS032	1/8" NPT
FE200	G 1/8"
FF200	1/8" NPT









MPFX MPFX750

Designation & Ordering code

COMPLETE FILTER

Example: MPFX | 750 | 10 | A0025 | D | A | 30 | FG200 | 0 | 1T | NN | P01 | NN

Series
MPFX Filter featuring MYCLEAN Filter Element

Size
750

Length
10

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm	**Z0003**	Antistatic in. microf.	3 µm
A0006	Inorganic microfiber	6 µm	**Z0006**	Antistatic in. microf.	6 µm
A0010	Inorganic microfiber	10 µm	**Z0010**	Antistatic in. microf.	10 µm
A0016	Inorganic microfiber	16 µm	**Z0016**	Antistatic in. microf.	16 µm
A0025	Inorganic microfiber	25 µm	**Z0025**	Antistatic in. microf.	25 µm
M0025	Wire mesh	25 µm			
M0060	Wire mesh	60 µm			
M0090	Wire mesh	90 µm			
P0010	Resin impregnated paper	10 µm			
P0025	Resin impregnated paper	25 µm			

Element Δp
D 10 bar

Seals and treatments	A0xxx	M0xxx	P0xxx	Z0xxx
A NBR	•	•	•	•
V FPM	•	•	•	•
W NBR with filter and components surface treatment	•	•	-	•
Z FPM with filter and components surface treatment	•	•	-	•

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

Connections
FG200 G 2”
FN200 2” NPT
FS032 SAE 32 - 2 1/2” - 12 UN
FE200 2” SAE 3000 psi/M
FF200 2” SAE 3000 psi/UNC

Additional connections
0 Without additional connections

Connections for clogging indicators
1T With top indicator connection, with metal plug

Additional features
NN Without additional features

Execution
P01 Standard catalogue item

Certificates
NN None

CLOGGING INDICATORS

See pages 776-777

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

ACCESSORIES

See page 270

TE Polyamide extension tube
T5 Filler plug M30x1.5
DPT Dipstick

Designation & Ordering code

FILTER ELEMENT

Example: MFX | 750 | 10 | A0025 | D | A | 30 | NN | P01 | NN

Series
MFX Filter element with MYCLEAN feature

Size
750

Length
10

Filtration rating (filter media)

MYCLEAN	**A0003**	Inorganic microfiber	3 µm	zerospark	**Z0003** Antistatic in. microf. 3 µm
	A0006	Inorganic microfiber	6 µm		**Z0006** Antistatic in. microf. 6 µm
	A0010	Inorganic microfiber	10 µm		**Z0010** Antistatic in. microf. 10 µm
	A0016	Inorganic microfiber	16 µm		**Z0016** Antistatic in. microf. 16 µm
	A0025	Inorganic microfiber	25 µm		**Z0025** Antistatic in. microf. 25 µm
	M0025	Wire mesh	25 µm		
	M0060	Wire mesh	60 µm		
	M0090	Wire mesh	90 µm		
	P0010	Resin impregnated paper	10 µm		
	P0025	Resin impregnated paper	25 µm		

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

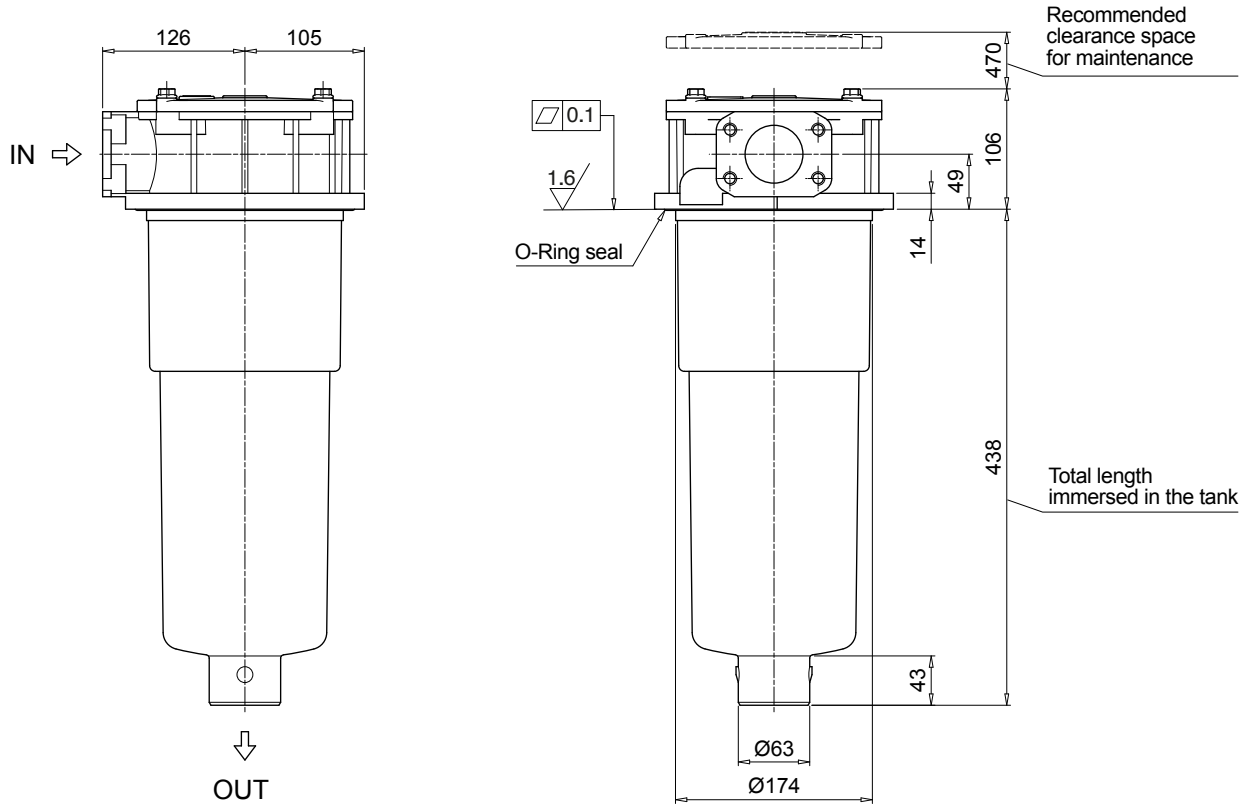
Additional features
NN Without additional features

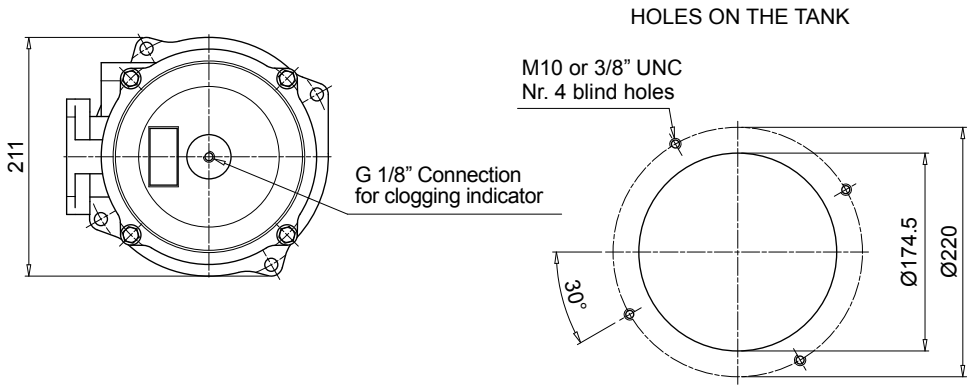
Execution
P01 Standard catalogue item

Certificates
NN None

Dimensions

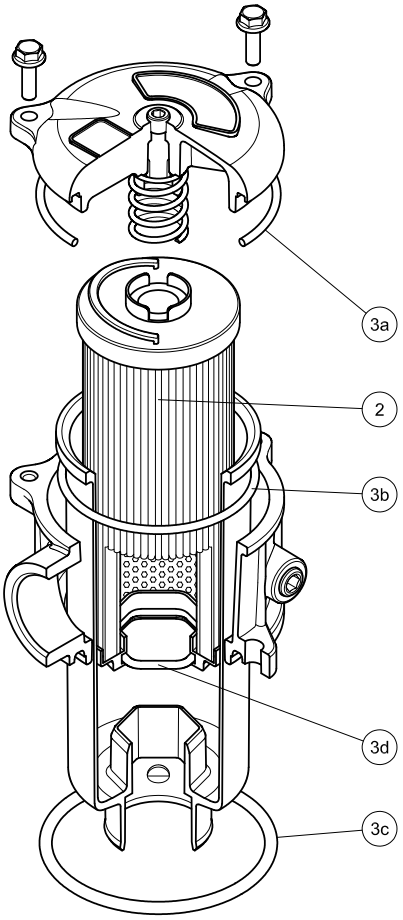
MPFX750



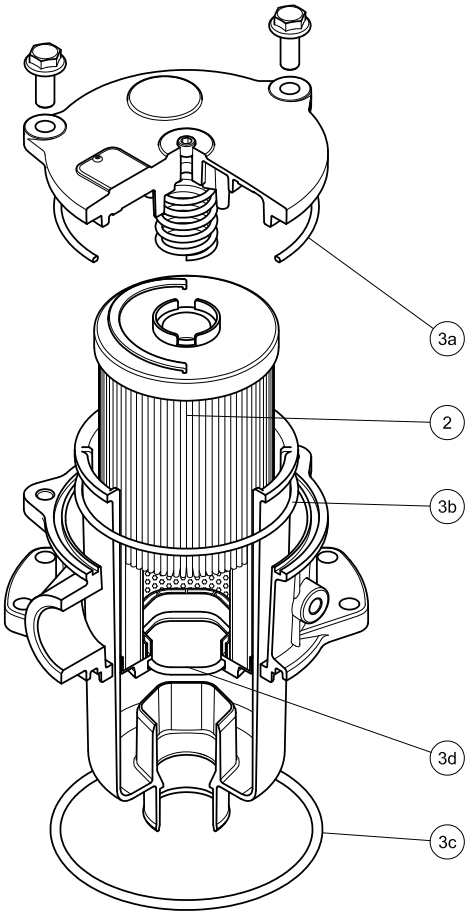


Order number for spare parts

MPFX 100



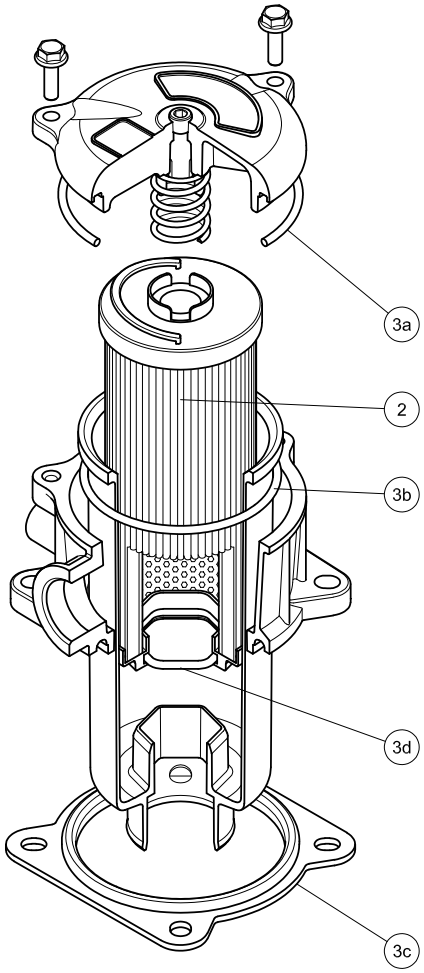
MPFX 181



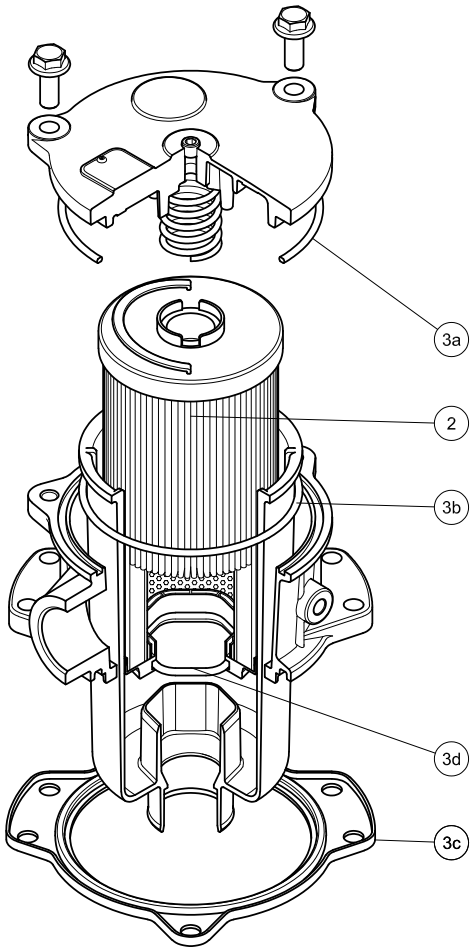
O-RING SEAL

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		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		02050691	02050692

MYCLEAN

THE X CONCEPT FOR OUR FILTERS

**Protect the performance of your system with MYclean.
Quality and efficiency are fundamental for MP Filtri:
this exclusive new filter element possesses polygon shape geometry and specific seal that ensures only original spare parts can be used - ensuring correct operation and higher system reliability.**

MPLX series

with MYCLEAN MLX Filter Element

- **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 MP Filtri filter elements can be used, ensuring the best cleaning level of the oil due to the use of originals filter elements.

The products identified as MPLX are protected by:

- Italian Patent n° 102014902261205
- Canadian Patent n° 2,937,258
- European Patent n° 3 124 092 B1
- US Patent n° 20170030384 A1

MPLX series

Maximum working pressure up to 1 MPa (10 bar) - Flow rate up to 1800 l/min

MPLX GENERAL INFORMATION

Description

Return filter

Maximum working pressure up to 1 MPa (10 bar)
Flow rate up to 1800 l/min

MPLX is a range of return filters for protection of the reservoir against the system contamination.
Completely interchangeable with Pall 8420 & 8520, they are directly fixed to the reservoir, in immersed or semi-immersed position.
The use of the diffuser is recommended, to place the filter output always immersed into the fluid to avoid aeration or foam generation into the reservoir.
The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

Available features:

- Flanged connections up to 3", for a maximum flow rate of 1800 l/min
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve, to relieve excessive pressure drop across the filter media
- 6 fixing holes for installation, to suit a variety of reservoir surfaces
- Diffuser, to reduce the risk of aeration, foaming and noise
- Filler plug, to fill cleaned fluid into the tank without an additional connection
- Visual, electrical and electronic differential clogging indicators
- MYclean interface connection for the filter element, to protect the product against non-original spare parts

Common applications:

- Heavy duty industrial equipment
- Heavy duty mobile equipment

Technical data

Filter housing materials

- Head: Anodized aluminium
- Cover: Anodized aluminium
- Bowl: Phosphatized steel
- Bypass valve: Steel

Pressure

- Test pressure: 1.5 MPa (15 bar)
- Min. Burst pressure: 3 MPa (30 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 1 MPa (10 bar)

Bypass valve

- Opening pressure 0.45 MPa (4.5 bar) ±10%

Filter element features

Filter		Filter element	
MPLX		MLX	
Δp Element type			
Element media	**Construction**	**Δp Series**	**Δp**
A - Microfiber	Standard	D	10 bar
M - Wire mesh	Standard	D	10 bar
P - Paper	Standard	D	10 bar
Please see ordering code tables to check element Δp series availability based on filter features.			
Flow direction 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

MPLX filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

Filter series	Weights [kg]		Volumes [dm³]	
	Length	20	Length	20
MPLX 250		8.95		2.90
MPLX 660		20.20		11.00

Flow rates [l/min]

		Filter element design - D Series						
Filter series	Length	A0003	A0006	A0010	A0016	A0025	M0025 M0060 M0090	P0010 P0025
MPLX 250	**20**	157	155	281	312	325	583	392
MPLX 660	**20**	376	384	820	925	1018	1732	1332

Maximum flow rate for a complete return filter with a pressure drop Δp = 0.5 bar.

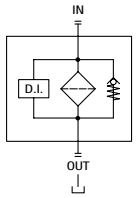
The reference fluid has a kinematic viscosity of 30 mm^2/s (cSt) and a density of 0.86 kg/dm^3.

For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.

You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure.

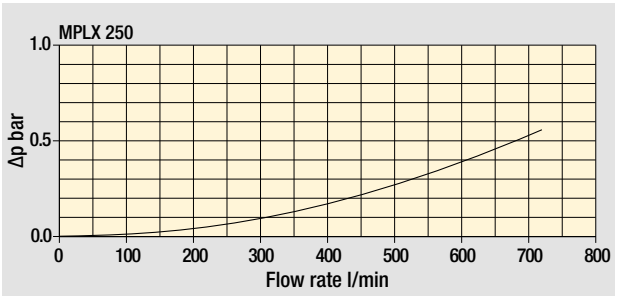
Please, contact our Sales Department for further additional information.

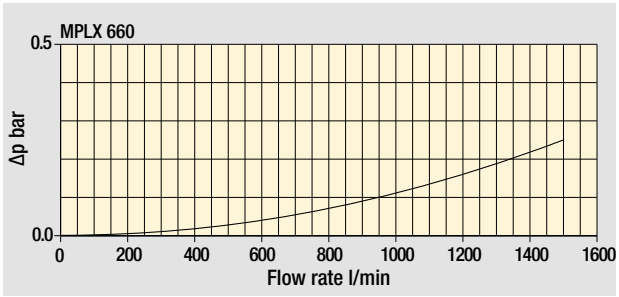
Hydraulic diagram

Filter series	45 - with bypass 4.5 bar
MPLX 250-660	

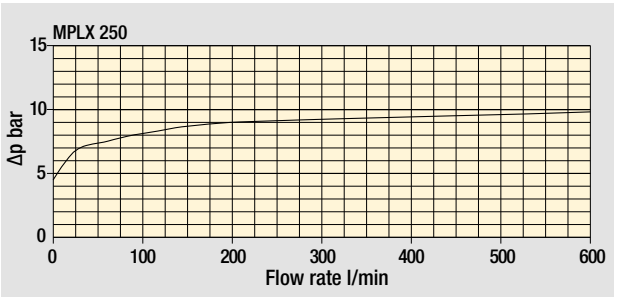
Pressure drop

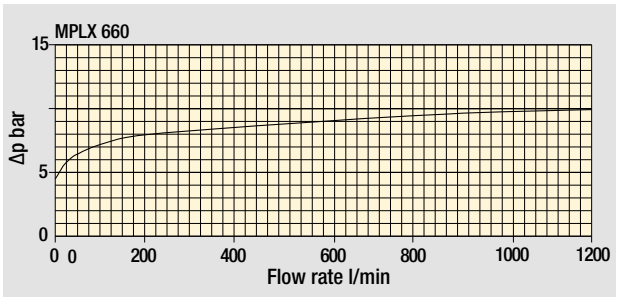
Filter housings Δp pressure drop





Bypass valve 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.

MPLX MPLX250 - MPLX660

Designation & Ordering code

COMPLETE FILTER

Example 1:	MPLX	250	20	A0010	D	A	45	FE200	1	1T	DA	P01	NN
Example 2:	MPLX	660	20	M0090	D	V	45	FF300	1	1T	NN	P01	NN

Series

MPLX Filter featuring MYCLEAN Filter Element

Size

250

660

Length

20

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp

D 10 bar

Seals and treatments

A NBR

V FPM

By-pass valve

45 4.5 bar

Connections		Size 250	Size 660
FE200	2” SAE 3000 psi/M	•	-
FE300	3” SAE 3000 psi/M	-	•
FF200	2” SAE 3000 psi/UNC	•	-
FF300	3” SAE 3000 psi/UNC	-	•

Additional connection

0 Without additional connection

Connections for clogging indicators

1T With top indicator connection, with metal plug

Additional features

DA With diffuser

NN Without additional features

Execution

P01 Standard catalogue item

Certificates

NN None

CLOGGING INDICATORS See pages 776-777

DEA	Electrical differential pressure indicator	**DTA**	Electronic differential pressure indicator
DEM	Electrical differential pressure indicator	**DTI**	I-O Link electronic differential pressure indicator
DEU	Electrical differential pressure indicator	**DVA**	Visual differential pressure indicator
DLA	Electrical / visual differential pressure indicator	**DVM**	Visual differential pressure indicator
DLE	Electrical / visual differential pressure indicator		

PLUGS See page 807

T2 Plug (not included)

Designation & Ordering code

FILTER ELEMENT

Example 1:	MLX	250	20	A0010	D	A	00	NN	P01	NN
Example 2:	MLX	660	20	M0090	D	V	00	NN	P01	NN

Series

MLX Filter element with MYCLEAN feature

Size

250

660

Length

20

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp

D 10 bar

Seals and treatments

A NBR

V FPM

By-pass valve

00 Without bypass

Additional features

NN Without

Execution

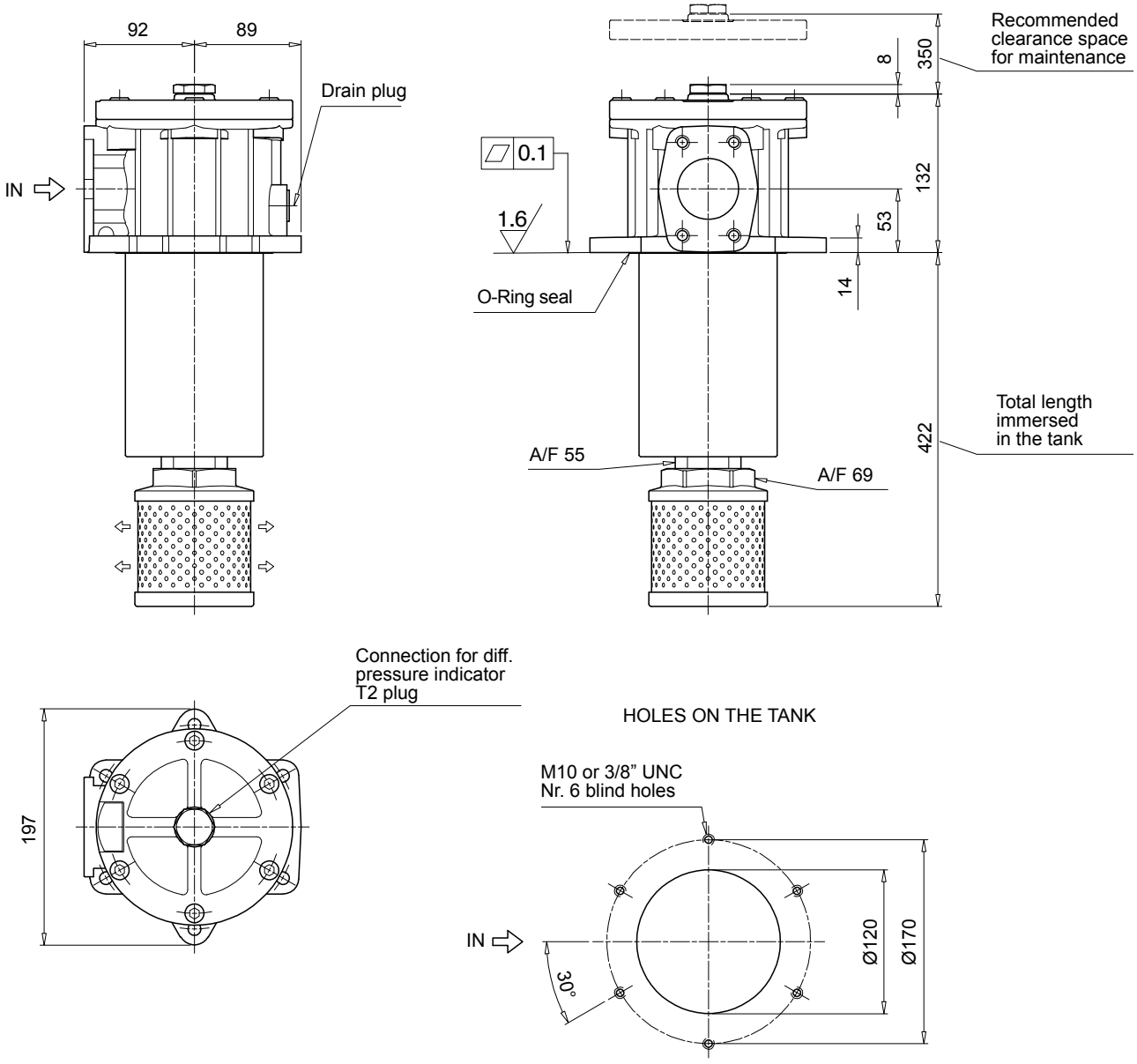
P01 Standard catalogue item

Certificates

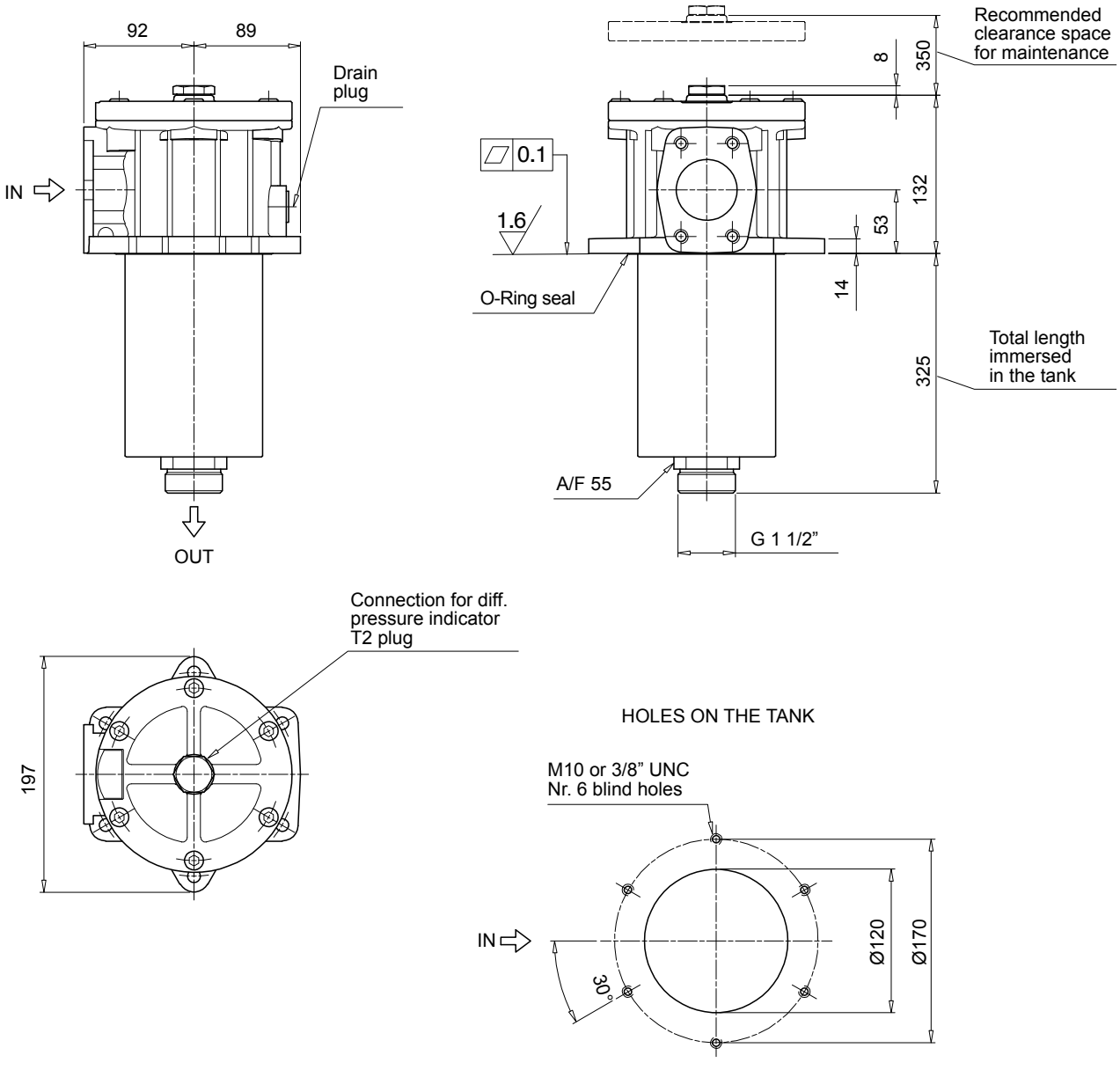
NN None

Dimensions

MPLX250
Additional features **DA**
with diffuser



MPLX250
Additional features **NN**
without diffuser

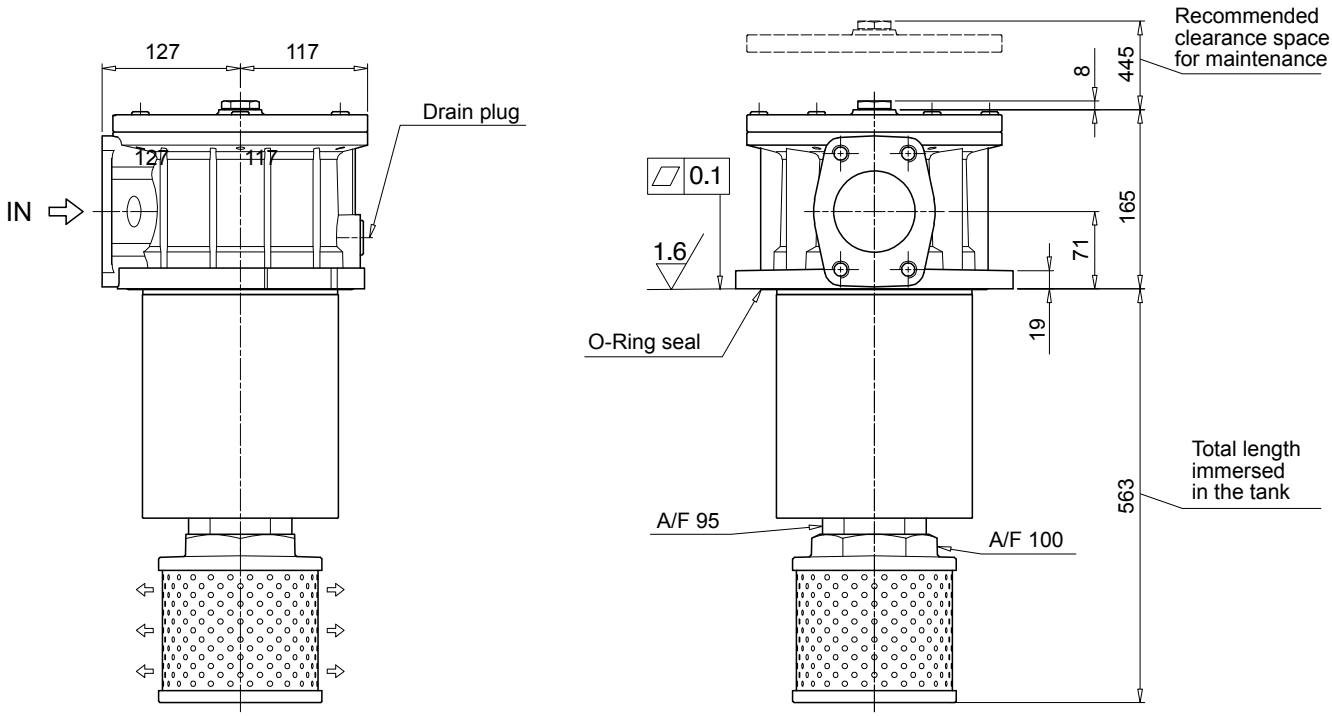


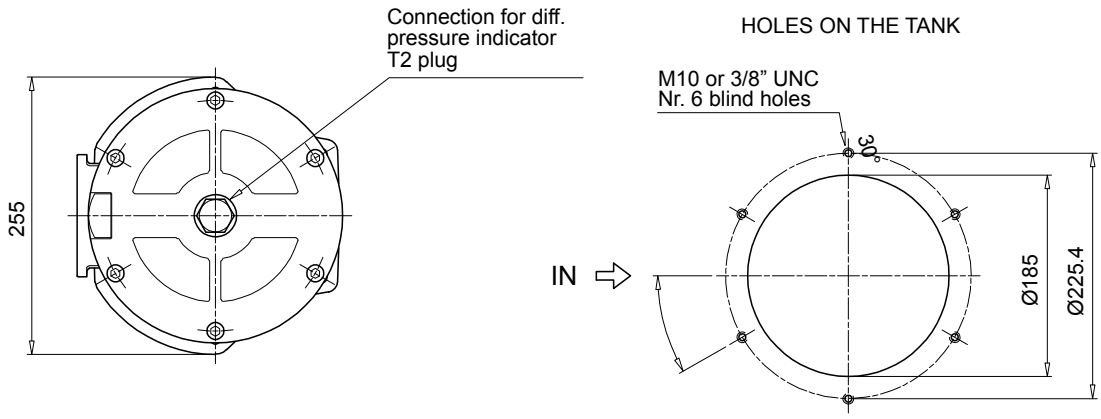
Dimensions

MPLX660

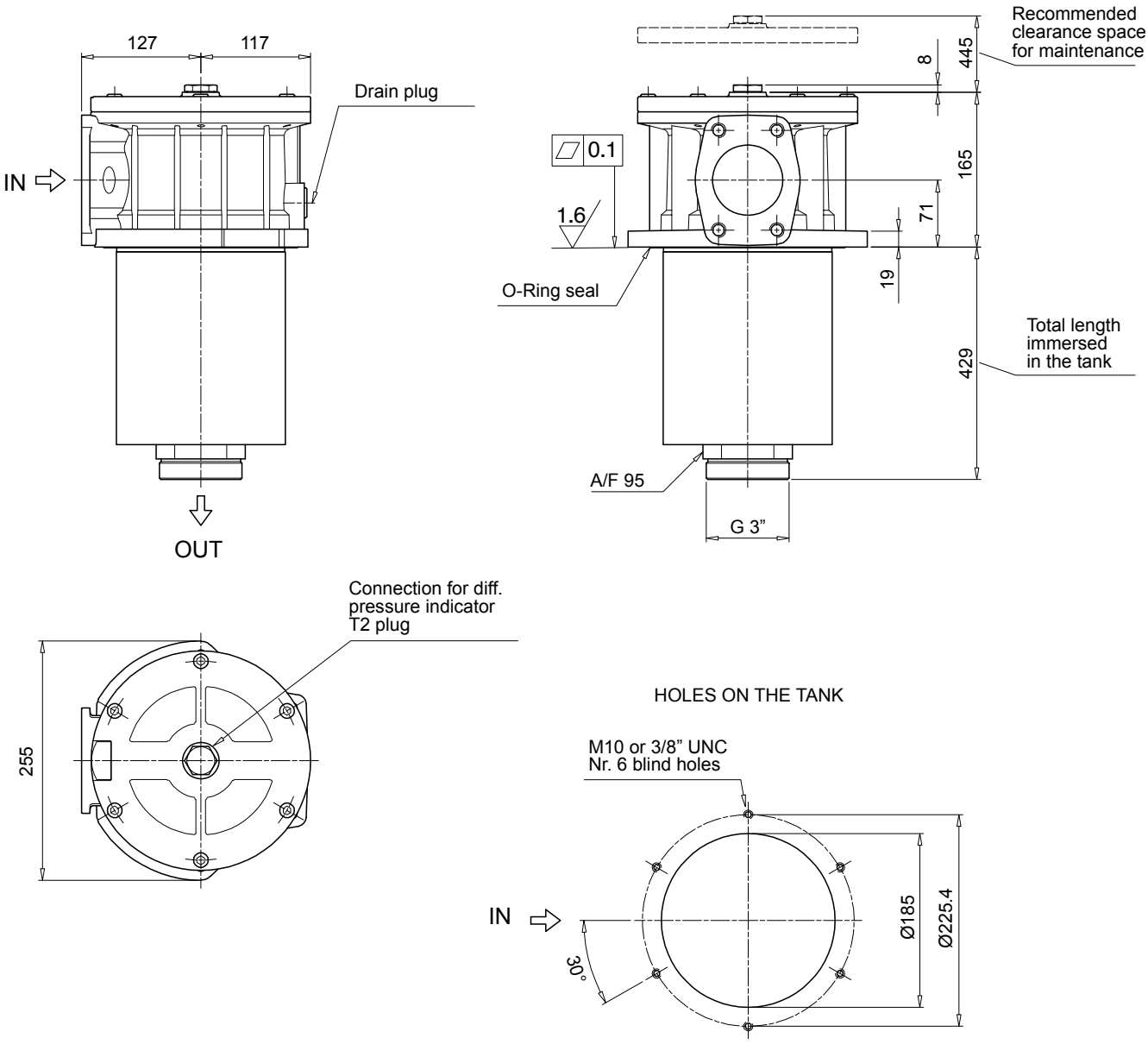
Additional features **DA**

with diffuser

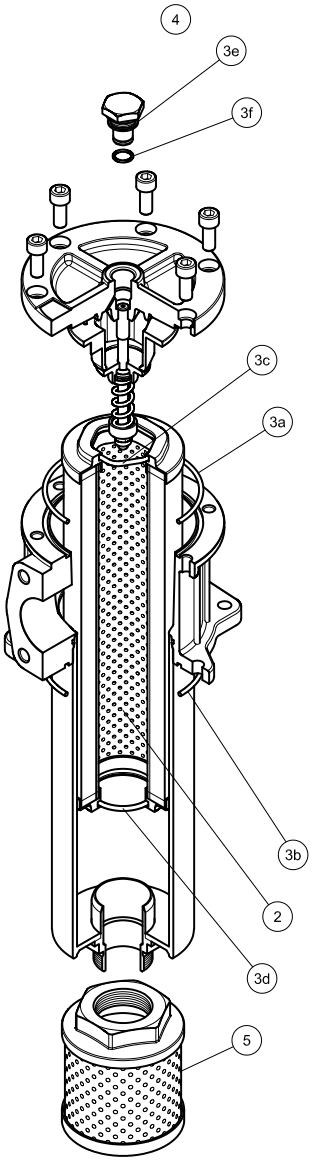




MPLX660
Additional features **NN**
without diffuser



Order number for spare parts



Item:	Q.ty: 1 pc. (2)	Q.ty: 1 pc. (3) (3a ÷ 3f)		Q.ty: 1 pc. (4)		Q.ty: 1 pc. (5)
Filter series	Filter element	Seal Kit code number NBR	Seal Kit code number FPM	Indicator connection plug NBR	Indicator connection plug FPM	Diffuser
MPLX 250	See order table	02050745	02050746	T2H	T2V	STD 100 C 115 P01
MPLX 660		02050747	02050748			STD 150 E 155 P01

MYCLEAN

THE X CONCEPT FOR OUR FILTERS

Protect the performance of your system with MYclean.
Quality and efficiency are fundamental for MP Filtri:
this exclusive new filter element possesses polygon shape geometry and specific seal that ensures only original spare parts can be used - ensuring correct operation and higher system reliability.

MPTX series

with MYCLEAN MFX Filter Element

- **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 MP Filtri filter elements can be used, ensuring the best cleaning level of the oil due to the use of originals filter elements.

The products identified as MPTX are protected by:

- Italian Patent n° 102014902261205
- Canadian Patent n° 2,937,258
- European Patent n° 3 124 092 B1
- US Patent n° 20170030384 A1

TOGETHER WITH MYCLEAN, AS OPTION, MPTX SERIES CAN BE PROVIDED WITH

zerospark®

THE ANTI-STATIC FILTERS

THE Z CONCEPT FOR OUR FILTERS

Zerospark® is a specialist solution designed to solve the problem of electrostatic discharge inside hydraulic filters. Caused by the electrical charge build-up due to the passage of oil through the filters, this can result in damage to filter elements, oils and circuit components. It can even cause fire hazards in environments where flammable materials are present.

MPTX series

Maximum working pressure up to 0.8 MPa (8 bar) - Flow rate up to 300 l/min

Description

Return filter

Maximum working pressure up to 0.8 MPa (8 bar)
Flow rate up to 300 l/min

MPTX is a range of return filters with integrated breather filter, for protection of the reservoir against the system contamination.
They are directly fixed to the reservoir, in immersed or semi-immersed position.
The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

Available features:

- Female threaded connections up to 1 1/4", for a maximum flow rate of 300 l/min
- Multiple connections, to connect several return lines or drains
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve integrated into the filter element, to relieve excessive pressure drop across the filter media
- 2, 3 or 6 fixing holes for installation, to suit a variety of reservoir surfaces
- O-ring or Flat Seal to suit a variety of reservoir surfaces
- Screw-in cover with a special shape, to allow the filter element replacement without the use of specific tools
- Oil dipstick, to easily check the level of the fluid into the reservoir (sold as separate item)
- Extension tube, to be used in deep reservoirs (sold as separate item)
- Diffuser, to reduce the risk of aeration, foaming and noise (sold as separate item)
- Integrated breather filter, to clean the air that moves into the reservoir as result of the oil level fluctuation
- Integrated breather filter with pressurization valve, to clean the air that moves into the reservoir as result of the oil level fluctuation and to guarantee the pressurization into the reservoir
- Visual, electrical and electronic clogging indicators
- MYclean interface connection, to protect the product against non-original spare parts
- External protective wrap, to optimize the flow through the element and to save the element efficiency against non-proper handling

Common applications:

- Light industrial equipment
- Mobile application

Technical data

Filter housing materials

- Head: Aluminium
- Cover: Polyamide
- Bowl: Polyamide

Pressure

- Test pressure: 1.2 MPa (12 bar)
- Min. Burst pressure: 2.4 MPa (24 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 0.8 MPa (8 bar)

Bypass valve

- Opening pressure 0.175 MPa (1.75 bar) ±10%
- Opening pressure 0.3 MPa (3 bar) ±10%

Filter element features

Filter		Filter element	
MPTX		MFX	
Δp Element type			
Element media	**Construction**	**Δp Series**	**Δp**
A - Microfiber	Standard	D	10 bar
M - Wire mesh	Standard	D	10 bar
P - Paper	Standard	D	10 bar
Please see ordering code tables to check element Δp series availability based on filter features.			
Flow direction through the filter element: From OUT to IN			

Seals

- Standard NBR series A or W
- Optional FPM series V or Z

Temperature

From -25 °C to +110 °C

Note

MPTX filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

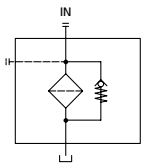
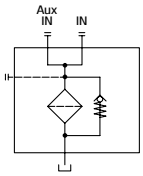
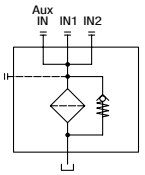
Filter series	Weights [kg]					Volumes [dm³]				
	Length	10	20	30	40	Length	10	20	30	40
MPTX 025		0.41	0.45	0.50	-		0.24	0.35	0.42	-
MPTX 027		0.44	0.48	0.55	-		0.24	0.35	0.42	-
MPTX 110		1.00	1.05	1.15	1.40		0.72	0.93	1.28	1.74
MPTX 114		1.10	1.15	1.25	1.50		0.72	0.93	1.28	1.74
MPTX 116		1.10	1.15	1.25	1.50		0.72	0.93	1.28	1.74
MPTX 120		1.00	1.05	1.15	1.40		0.72	0.93	1.28	1.74

Flow rates [l/min]

Filter series	Length	Filter element design - D series					Filter element design - D series		
		A0003	A0006	A0010	A0016	A0025	M0025 M0060 M0090	P0010	P0025
MPTX 025-027	**10**	7	10	23	28	42	59	51	54
	20	17	20	45	48	56	72	64	67
	30	21	24	50	55	59	76	74	75
MPTX 110-120 114-116	**10**	18	20	53	56	65	153	87	96
	20	28	38	65	75	95	158	111	123
	30	48	55	125	135	169	289	224	251
	40	79	89	180	185	198	306	264	289

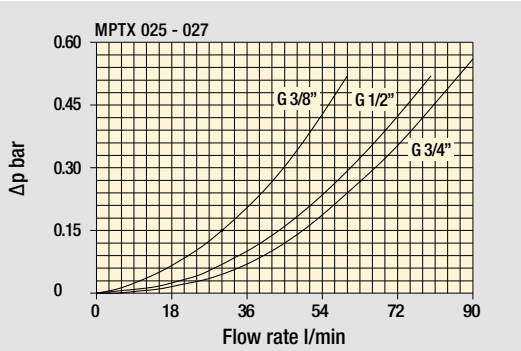
Maximum flow rate for a complete return filter with a pressure drop Δp = 0.5 bar.
The reference fluid has a kinematic viscosity of 30 mm^2/s (cSt) and a density of 0.86 kg/dm^3.
For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure.
Please, contact our Sales Department for further additional information.

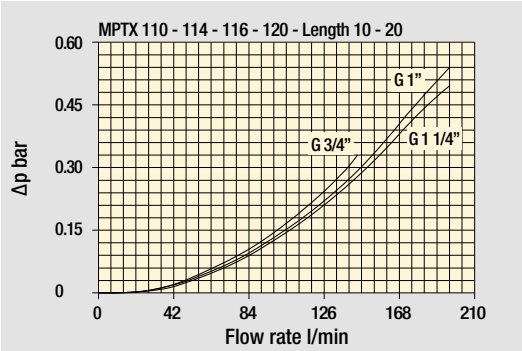
Hydraulic diagram

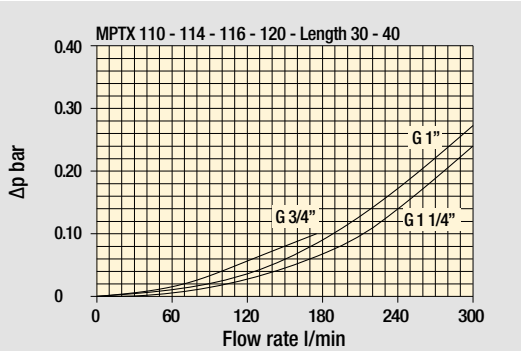
Filter series	17 / 30 - with bypass 1.75 / 3.0 bar		
	Single IN Port	Double IN Port	Triple IN port
MPTX 025	•	-	-
MPTX 027	•	-	-
MPTX 110	•	•	-
MPTX 114	•	-	-
MPTX 116	•	-	-
MPTX 120	-	-	•
			

Pressure drop

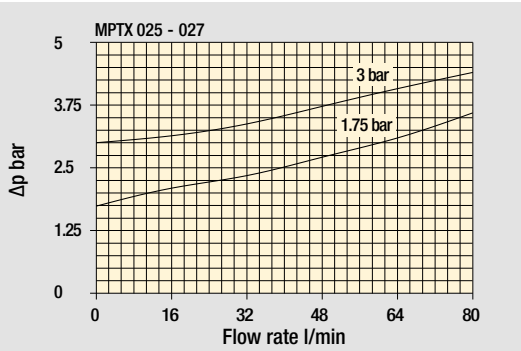
Filter housings Δp pressure drop

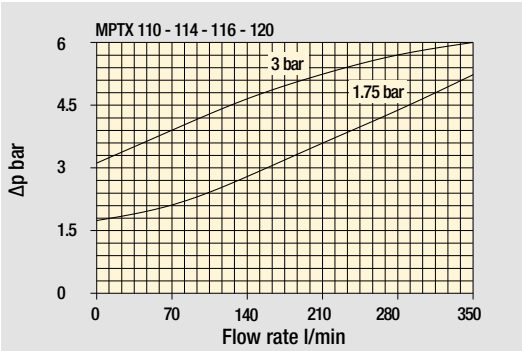




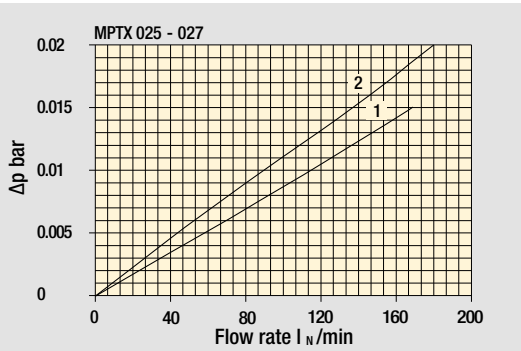


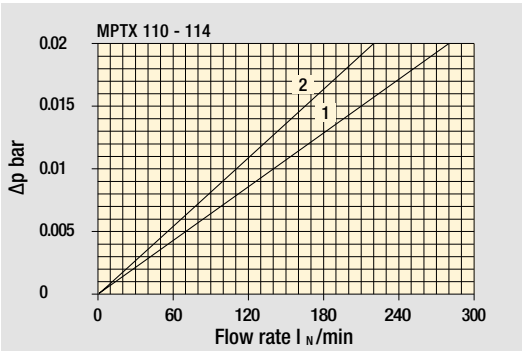
Bypass valve pressure drop





Air breather pressure drop





1 AS With air breather 10 µm

2 AR With anti-splash and SAP50 10 µm

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

MPTX 025 -027		
Air breather port plugged Indicator port	Air breather standard Indicator port	Anti-splash air breather & pressurized Double indicator port
		

Multiport - Multifunction

MPTX 110	
Standard - Single IN Port	Double IN Port - Double indicator port
	
Double IN Port Option: double drain port	Double IN Port - Indicator port Option: drain port
	

MPTX 120
Triple IN port Option: double drain port


Designation & Ordering code

COMPLETE FILTER

Example 1:	MPTX	025	10	A0006	D	Z	17	FG034	0	6T	NN	P01	NN
Example 2:	MPTX	027	30	P0010	D	A	30	FN034	0	3T	AS	P01	NN

Series
MPTX Filter featuring MYCLEAN Filter Element

Size
025 **027**

Length
10
20
30

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Z0003	Antistatic in. microf.	3 µm
Z0006	Antistatic in. microf.	6 µm
Z0010	Antistatic in. microf.	10 µm
Z0016	Antistatic in. microf.	16 µm
Z0025	Antistatic in. microf.	25 µm

Element Δp
D 10 bar

Seals and treatments	A0xxx	M0xxx	P0xxx	Z0xxx
A NBR	•	•	•	•
V FPM	•	•	•	•
W NBR with filter and components surface treatment	•	•	-	•
Z FPM with filter and components surface treatment	•	•	-	•

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

Connections

FG038	G 3/8"	**FN038**	3/8" NPT	**FS006**	SAE 6 - 9/16" - 18 UNF
FG012	G 1/2"	**FN012**	1/2" NPT	**FS008**	SAE 8 - 3/4" - 16 UNF
FG034	G 3/4"	**FN034**	3/4" NPT	**FS012**	SAE 12 - 1 1/16" - 12 UN

Additional connections
0 Without additional connections

	Size	
Connections for clogging indicators	025	027
3T With left indicator connection, with metal plug	-	•
6T With both side indicator connections, with metal plugs	•	-

Additional features
NN Without additional features
AS With air breather 10 µm
AR With anti-splash and air breather SAP050 10 µm
AP With anti-splash and air breather SAP050 10 µm pressurization 0.5 bar

Execution
P01 Standard catalogue item

Certificates
NN None

CLOGGING INDICATORS

See pages 776-777

BVA Axial pressure gauge
BVR Radial pressure gauge
BVP Visual pressure indicator with automatic reset
BVQ Visual pressure indicator with manual reset
BEA Electrical pressure indicator
BEM Electrical pressure indicator
BET Electrical pressure indicator
BLA Electrical / visual pressure indicator

ACCESSORIES

See page 270

TE Polyamide extension tube
DPT Dipstick

Designation & Ordering code

FILTER ELEMENT

Example 1:	MFX	020	20	A0006	D	V	17	NN	P01	NN
Example 2:	MFX	020	30	P0010	D	A	30	NN	P01	NN

Series
MFX Filter element with MYCLEAN feature

Size
020

Length
10
20
30

Filtration rating (filter media)

MYCLEAN

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

zerospark

Z0003	Antistatic in. microf.	3 µm
Z0006	Antistatic in. microf.	6 µm
Z0010	Antistatic in. microf.	10 µm
Z0016	Antistatic in. microf.	16 µm
Z0025	Antistatic in. microf.	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

Additional features
NN Without additional features

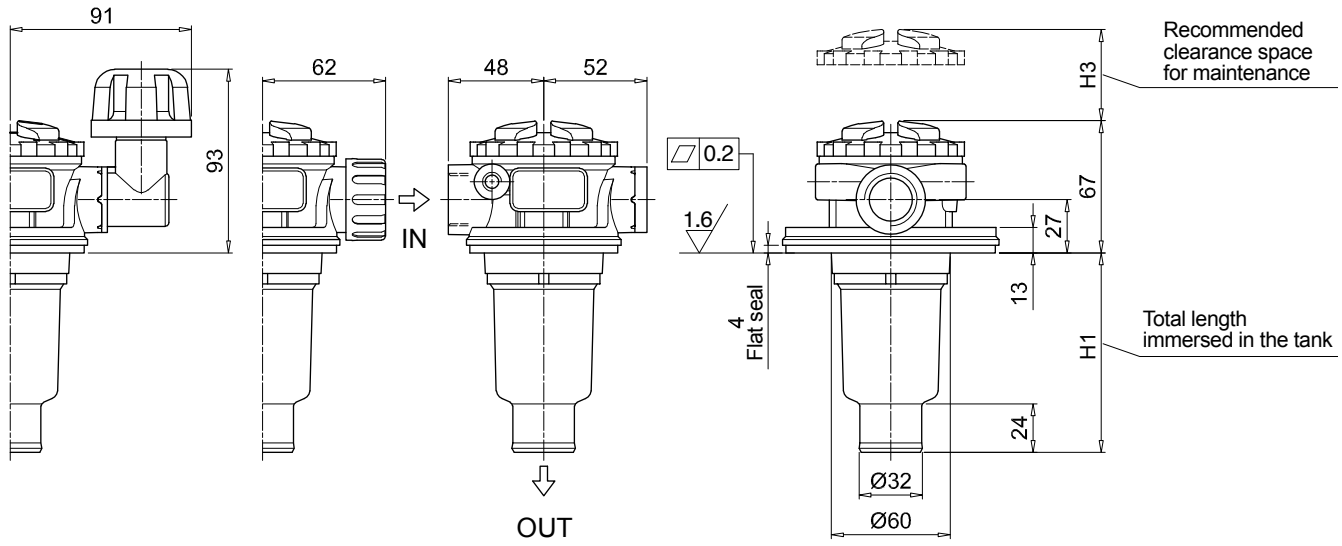
Execution
P01 Standard catalogue item

Certificates
NN None

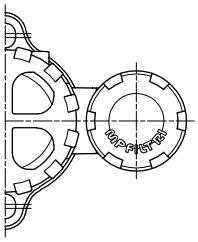
Dimensions

MPTX025		
Filter length	**H1 [mm]**	**H2 [mm]**
10	99	130
20	163	195
30	202	230

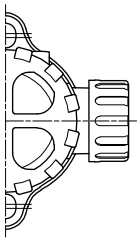
Connection	T
FG038	G 1/8”
FG012	
FG034	
FN038	1/8” NPT
FN012	
FN034	
FS006	1/8” NPT
FS008	
FS012	



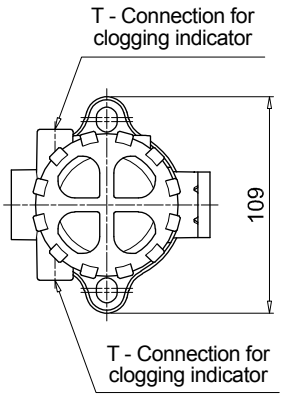
Additional features **AR / AP**



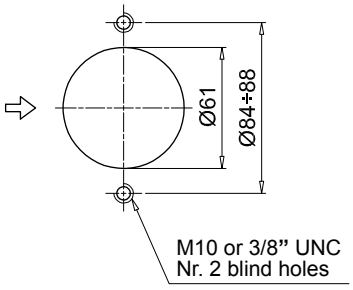
Additional features **AS**



Additional features **NN**

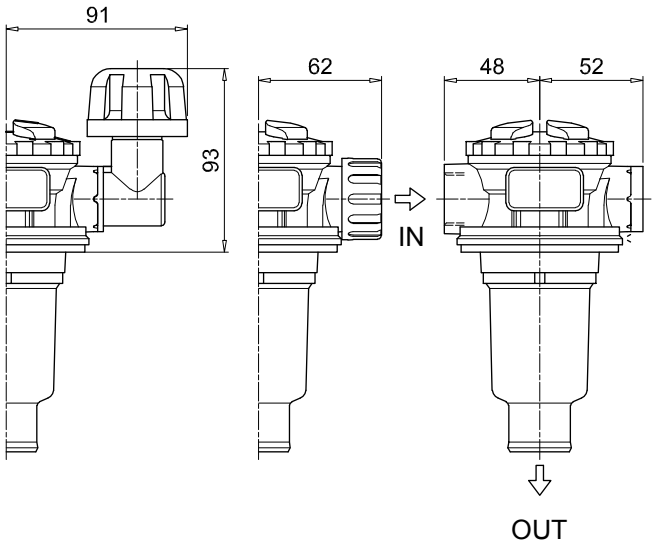


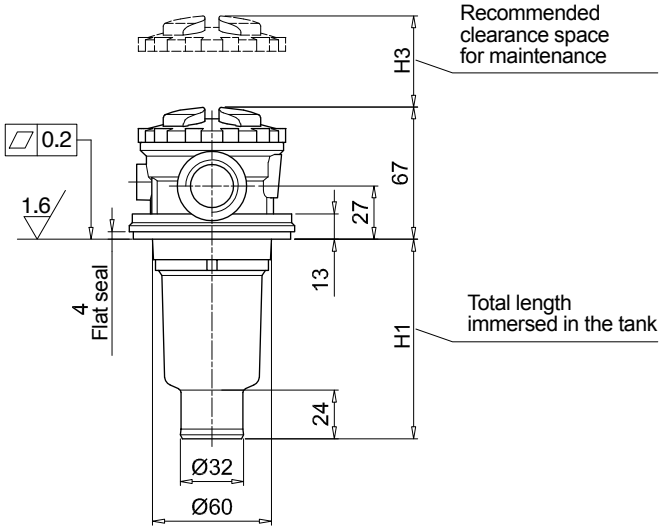
HOLES ON THE TANK



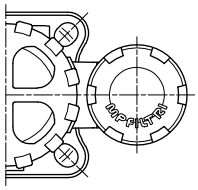
MPTX027		
Filter length	**H1 [mm]**	**H2 [mm]**
10	99	130
20	163	195
30	202	230

Connection	T
FG038	G 1/8”
FG012	
FG034	
FN038	1/8” NPT
FN012	
FN034	
FS006	1/8” NPT
FS008	
FS012	

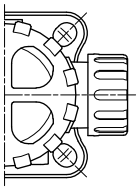




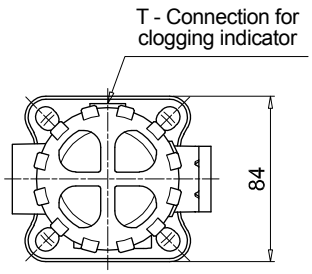
Additional features
AR / AP



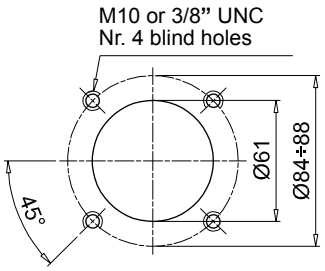
Additional features
AS



Additional features
NN



HOLES ON THE TANK



Designation & Ordering code

COMPLETE FILTER

Example: MPTX | 110 | 20 | Z0025 | D | Z | 30 | FG114 | 2 | 6T | AR | P01 | NN

Series
MPTX Filter featuring MYCLEAN Filter Element

Size
110

Length
10 **30**
20 **40**

Filtration rating (filter media)

MYCLEAN

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

zerospark+

Z0003	Antistatic in. microf.	3 µm
Z0006	Antistatic in. microf.	6 µm
Z0010	Antistatic in. microf.	10 µm
Z0016	Antistatic in. microf.	16 µm
Z0025	Antistatic in. microf.	25 µm

Element Δp
D 10 bar

Seals and treatments

		A0xxx	M0xxx	P0xxx	Z0xxx
A	NBR	•	•	•	•
V	FPM	•	•	•	•
W	NBR with filter and components surface treatment	•	•	-	•
Z	FPM with filter and components surface treatment	•	•	-	•

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

Connections

FG034	G 3/4"	**FN034**	3/4" NPT	**FS012**	SAE 12 - 1 1/16" - 12 UN
FG100	G 1"	**FN100**	1" NPT	**FS016**	SAE 16 - 1 5/16" - 12 UNF
FG114	G 1 1/4"	**FN114**	1 1/4" NPT	**FS020**	SAE 20 - 1 5/8" - 12 UN

Additional connections

0 Without additional connection

1	Main connection	FG034 FG100 FN114	**G 3/8"**	Main connection	FN034 FN100 FN114	**3/8" NPT**	Main connection	FS012 FS016 FS020	**SAE 6 - 9/16" 18 UNF**
2	Main connection	FG034 FG100 FN114	**G 1/2"**	Main connection	FN034 FN100 FN114	**1/2" NPT**	Main connection	FS012 FS016 FS020	**SAE 8 - 3/4" 16 UNF**

Connections for clogging indicators
6T With both side indicator connection, with metal plug

Additional features
NN Without additional features
AS With air breather 10 µm
AR With anti-splash and air breather SAP050 10 µm
AP With anti-splash and air breather SAP050 10 µm pressurization 0.5 bar

Execution
P01 Standard catalogue item

Certificates
NN None

CLOGGING INDICATORS

See pages 776-777

BVA Axial pressure gauge
BVR Radial pressure gauge
BVP Visual pressure indicator with automatic reset
BVQ Visual pressure indicator with manual reset
BEA Electrical pressure indicator
BEM Electrical pressure indicator
BET Electrical pressure indicator
BLA Electrical / visual pressure indicator

ACCESSORIES

See page 270

TE Polyamide extension tube
DFS Diffuser with fast lock connection
DPT Dipstick

Designation & Ordering code

FILTER ELEMENT

Example: MFX | 100 | 20 | Z0025 | D | V | 30 | NN | P01 | NN

Series
MFX Filter element with MYCLEAN feature

Size
100

Length
10	**30**
20	**40**

Filtration rating (filter media)

MYCLEAN

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

zerospark

Z0003	Antistatic in. microf.	3 µm
Z0006	Antistatic in. microf.	6 µm
Z0010	Antistatic in. microf.	10 µm
Z0016	Antistatic in. microf.	16 µm
Z0025	Antistatic in. microf.	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

Additional features
NN Without additional features

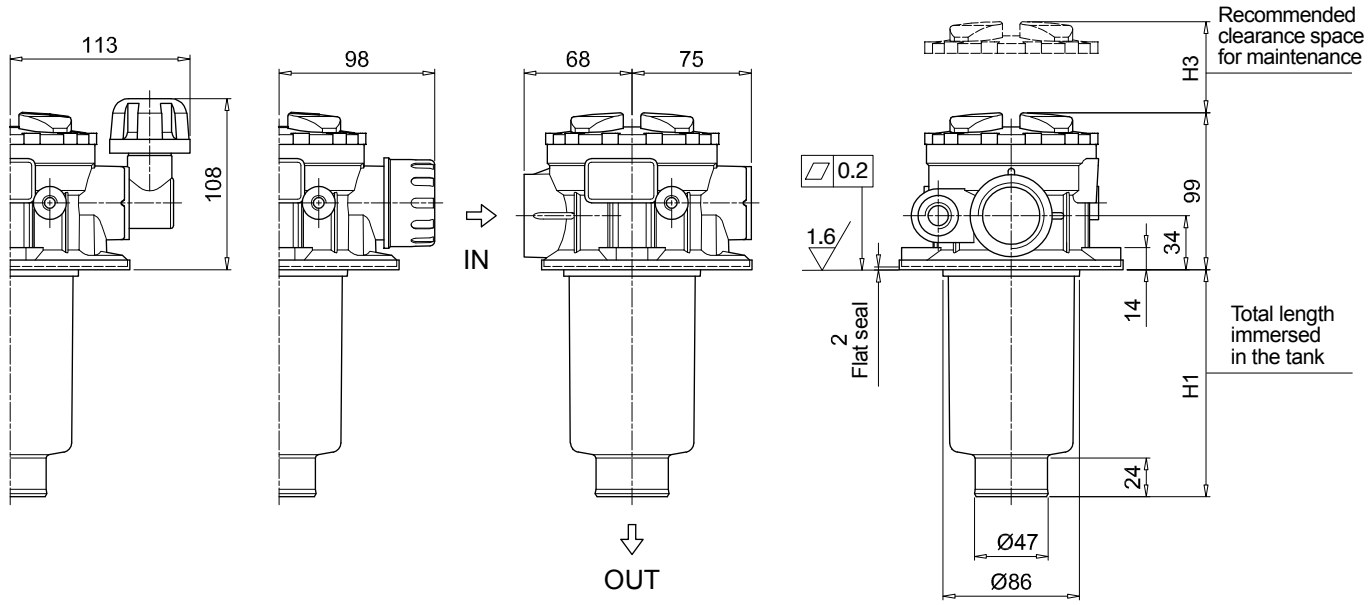
Execution
P01 Standard catalogue item

Certificates
NN None

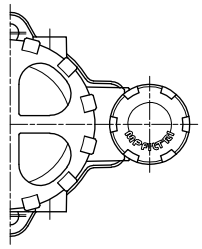
Dimensions

MPTX110		
Filter length	**H1 [mm]**	**H2 [mm]**
10	99	120
20	144	170
30	222	250
40	324	350

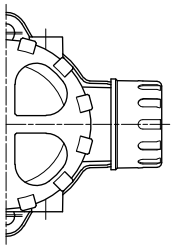
Connection	T
FG034	G 1/8”
FG100	
FG114	
FN034	1/8” NPT
FN100	
FN114	
FS012	1/8” NPT
FS016	
FS020	



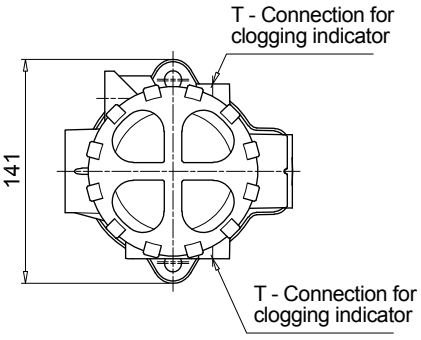
Additional features
AR / AP

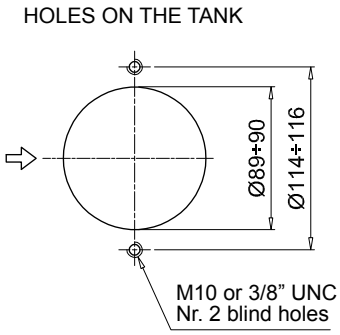


Additional features
AS



Additional features
NN





Designation & Ordering code

COMPLETE FILTER

Example 1:	MPTX	114	20	Z0025	D	Z	17	FG114	0	3T	AR	P01	NN
Example 2:	MPTX	116	30	P0010	D	V	30	FG114	0	3T	NN	P01	NN

Series
MPTX Filter featuring MYCLEAN Filter Element

Size
114
116

Length
10 **30**
20 **40**

Filtration rating (filter media)

MYCLEAN

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

zerospark+

Z0003	Antistatic in. microf.	3 µm
Z0006	Antistatic in. microf.	6 µm
Z0010	Antistatic in. microf.	10 µm
Z0016	Antistatic in. microf.	16 µm
Z0025	Antistatic in. microf.	25 µm

Element Δp
D 10 bar

Seals and treatments

		A0xxx	M0xxx	P0xxx	Z0xxx
A	NBR	•	•	•	•
V	FPM	•	•	•	•
W	NBR with filter and components surface treatment	•	•	-	•
Z	FPM with filter and components surface treatment	•	•	-	•

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

Connections

FG034	G 3/4"	**FN034**	3/4" NPT	**FS012**	SAE 12 - 1 1/16" - 12 UN
FG100	G 1"	**FN100**	1" NPT	**FS016**	SAE 16 - 1 5/16" - 12 UNF
FG114	G 1 1/4"	**FN114**	1 1/4" NPT	**FS020**	SAE 20 - 1 5/8" - 12 UN

Additional connections
0 Without additional connections

Connections for clogging indicators
3T With left indicator connection, with metal plug

Additional features

		Size 114	Size 116
NN	Without additional features	•	•
AS	With air breather 10 µm	•	-
AR	With anti-splash and air breather SAP050 10 µm	•	-
AP	With anti-splash and air breather SAP050 10 µm pressurization 0.5 bar	•	-

Execution
P01 Standard catalogue item

Certificates
NN None

CLOGGING INDICATORS

See pages 776-777

BVA Axial pressure gauge
BVR Radial pressure gauge
BVP Visual pressure indicator with automatic reset
BVQ Visual pressure indicator with manual reset
BEA Electrical pressure indicator
BEM Electrical pressure indicator
BET Electrical pressure indicator
BLA Electrical / visual pressure indicator

ACCESSORIES

See page 270

TE Polyamide extension tube
DFS Diffuser with fast lock connection
DPT Dipstick

Designation & Ordering code

FILTER ELEMENT

Example 1:	MFX	100	20	Z0025	D	V	17	NN	P01	NN
Example 2:	MFX	100	30	P0010	D	V	30	NN	P01	NN

Series
MFX Filter element with MYCLEAN feature

Size
100

Length
10 **30**
20 **40**

Filtration rating (filter media)

MYCLEAN

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

zerospark

Z0003	Antistatic in. microf.	3 µm
Z0006	Antistatic in. microf.	6 µm
Z0010	Antistatic in. microf.	10 µm
Z0016	Antistatic in. microf.	16 µm
Z0025	Antistatic in. microf.	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

Additional features
NN Without additional features

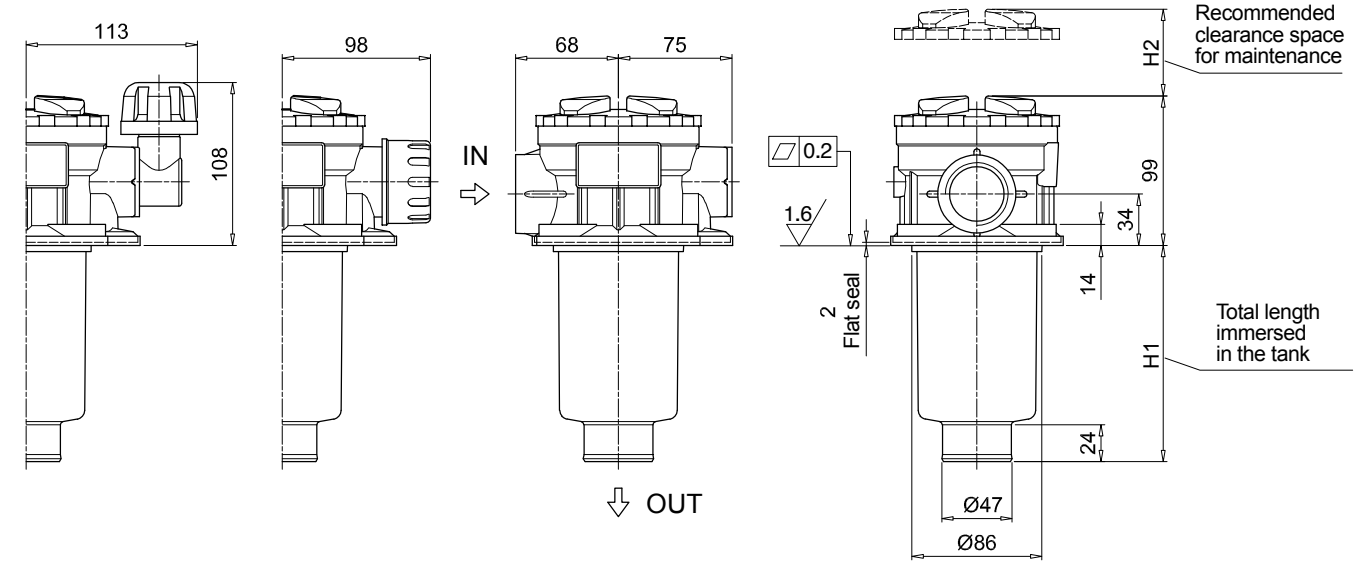
Execution
P01 Standard catalogue item

Certificates
NN None

Dimensions

MPTX114		
Filter length	**H1 [mm]**	**H2 [mm]**
10	99	120
20	144	170
30	222	250
40	324	350

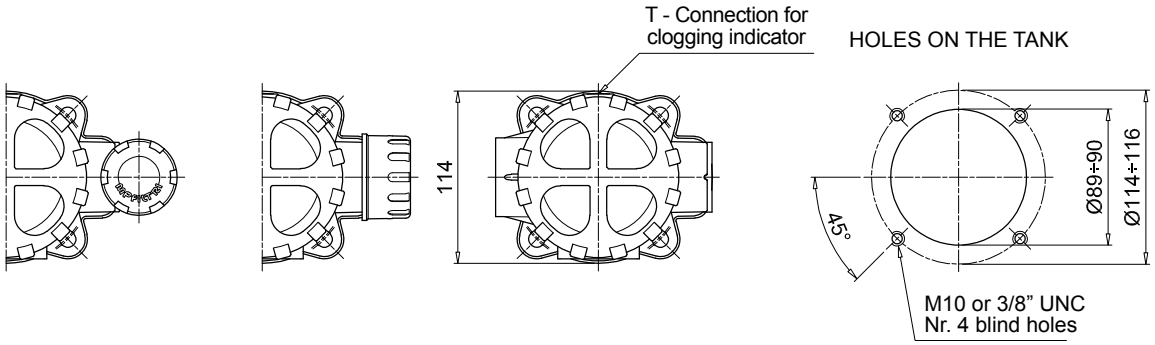
Connection	T
FG034	G 1/8”
FG100	
FG114	
FN034	1/8” NPT
FN100	
FN114	
FS012	1/8” NPT
FS016	
FS020	



Additional features
AR / AP

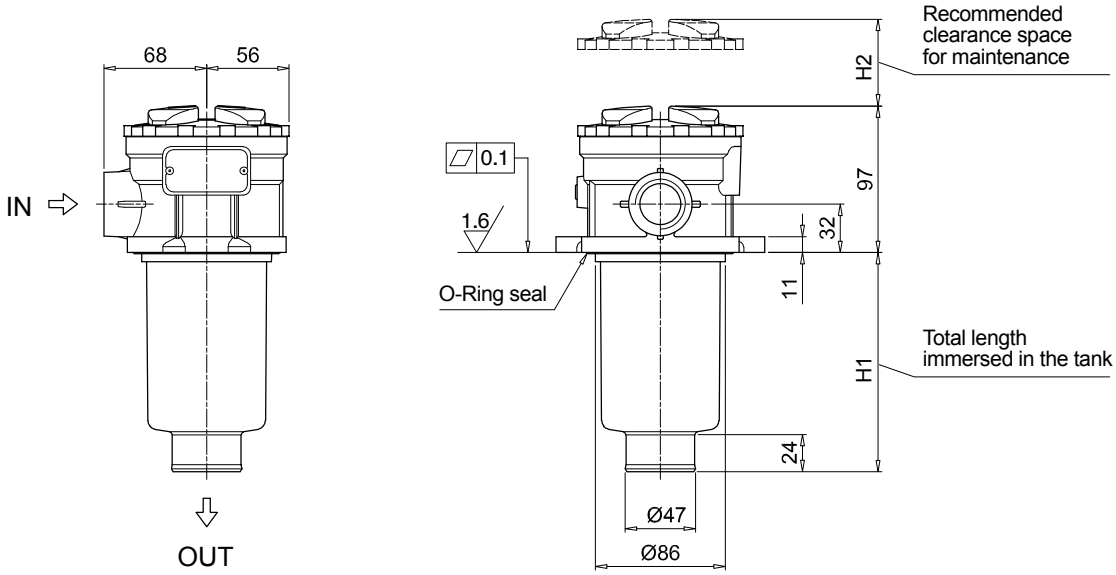
Additional features
AS

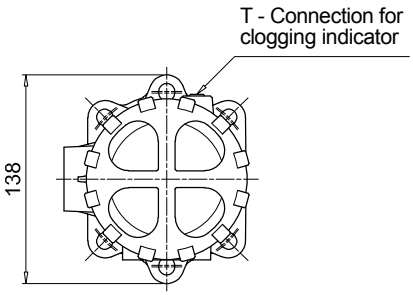
Additional features
NN

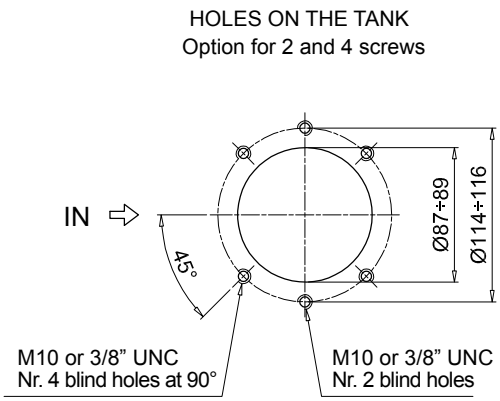


MPTX116		
Filter length	**H1 [mm]**	**H2 [mm]**
10	99	120
20	146	170
30	224	250
40	326	350

Connection	T
FG034	G 1/8”
FG100	
FG114	
FN034	1/8” NPT
FN100	
FN114	
FS012	1/8” NPT
FS016	
FS020	







Designation & Ordering code

COMPLETE FILTER

Example:	MPTX	120	20	Z0025	D	Z	30	FG114	2	6T	NN	P01	NN

Series
MPTX Filter featuring MYCLEAN Filter Element

Size
120

Length

10	**30**
20	**40**

Filtration rating (filter media)

MYCLEAN

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

zerospark+

Z0003	Antistatic in. microf.	3 µm
Z0006	Antistatic in. microf.	6 µm
Z0010	Antistatic in. microf.	10 µm
Z0016	Antistatic in. microf.	16 µm
Z0025	Antistatic in. microf.	25 µm

Element Δp
D 10 bar

Seals and treatments

		A0xxx	M0xxx	P0xxx	Z0xxx
A	NBR	•	•	•	•
V	FPM	•	•	•	•
W	NBR with filter and components surface treatment	•	•	-	•
Z	FPM with filter and components surface treatment	•	•	-	•

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

Connections (front + rear)

FG034	G 3/4" + G 3/4"	**FN034**	3/4" NPT + 3/4" NPT	**FS012**	SAE 12-1 1/16"-12 UN + SAE 12-1 1/16"-12 UN
FG100	G 1" + G 1"	**FN100**	1" NPT + 1" NPT	**FS016**	SAE 16-1 5/16"-12 UNF + SAE 16-1 5/16"-12 UNF
FG114	G 1 1/4" + G 3/4"	**FN114**	1 1/4" NPT + 3/4" NPT	**FS020**	SAE 20-1 5/8"-12 UN + SAE 12-1 1/16"-12 UN

Additional connections

0 Without additional connection

1	Main connection	FG034 / FG100 / FN114	**G 3/8"**	Main connection	FN034 / FN100 / FN114	**3/8" NPT**	Main connection	FS012 / FS016 / FS020	**SAE 6 - 9/16" 18 UNF**
2	Main connection	FG034 / FG100 / FN114	**G 1/2"**	Main connection	FN034 / FN100 / FN114	**1/2" NPT**	Main connection	FS012 / FS016 / FS020	**SAE 8 - 3/4" 16 UNF**

Connections for clogging indicators
6T With both side indicator connections, with metal plugs

Additional features
NN Without additional features

Execution
P01 Standard catalogue item

Certificates
NN None

CLOGGING INDICATORS

See pages 776-777

BVA Axial pressure gauge
BVR Radial pressure gauge
BVP Visual pressure indicator with automatic reset
BVQ Visual pressure indicator with manual reset
BEA Electrical pressure indicator
BEM Electrical pressure indicator
BET Electrical pressure indicator
BLA Electrical / visual pressure indicator

ACCESSORIES

See page 270

TE Polyamide extension tube
DFS Diffuser with fast lock connection
DPT Dipstick

FILTER ELEMENT

Example 1: MFX | 100 | 20 | Z0025 | D | V | 30 | NN | P01 | NN

Series
MFX Filter element with MYCLEAN feature

Size
100

Length
10 **30**
20 **40**

Filtration rating (filter media)

MYCLEAN

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

zerospark

Z0003	Antistatic in. microf.	3 µm
Z0006	Antistatic in. microf.	6 µm
Z0010	Antistatic in. microf.	10 µm
Z0016	Antistatic in. microf.	16 µm
Z0025	Antistatic in. microf.	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
17 With bypass 1.75 bar
30 With bypass 3.0 bar

Additional features
NN Without additional features

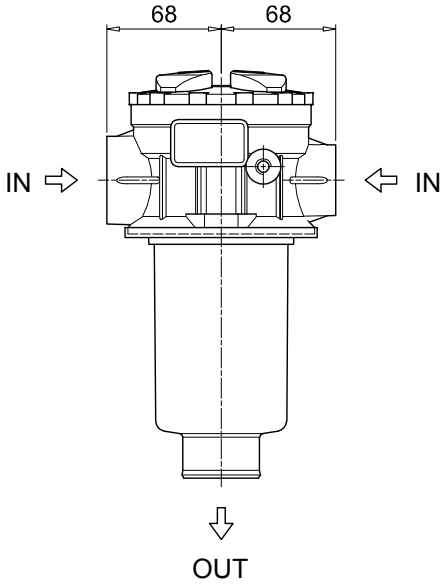
Execution
P01 Standard catalogue item

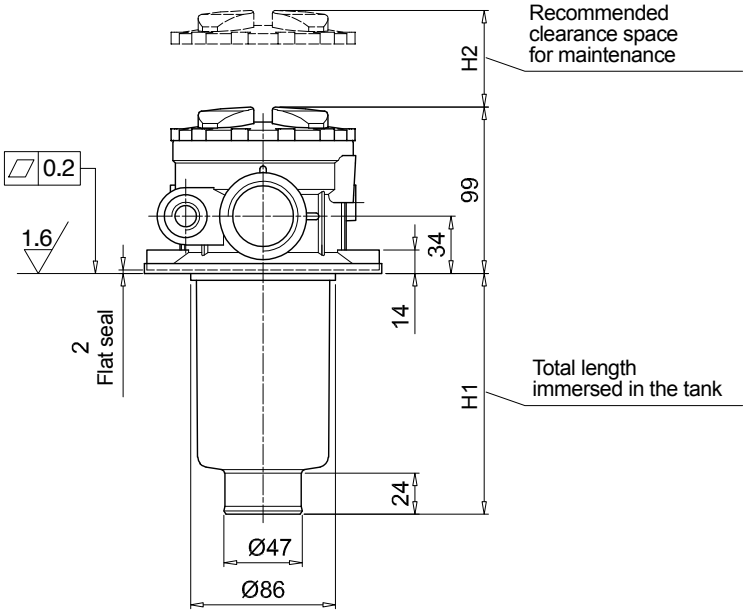
Certificates
NN None

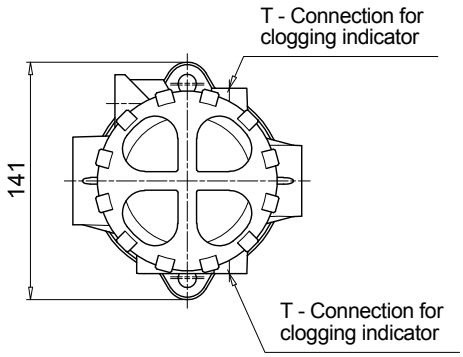
Dimensions

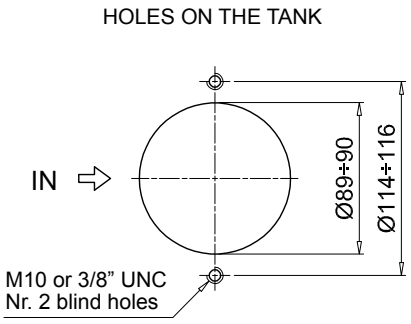
MPTX120		
Filter length	**H1 [mm]**	**H2 [mm]**
10	99	120
20	144	170
30	222	250
40	324	350

Connection	T
FG034	G 1/8”
FG100	
FG114	
FN034	1/8” NPT
FN100	
FN114	
FS012	1/8” NPT
FS016	
FS020	



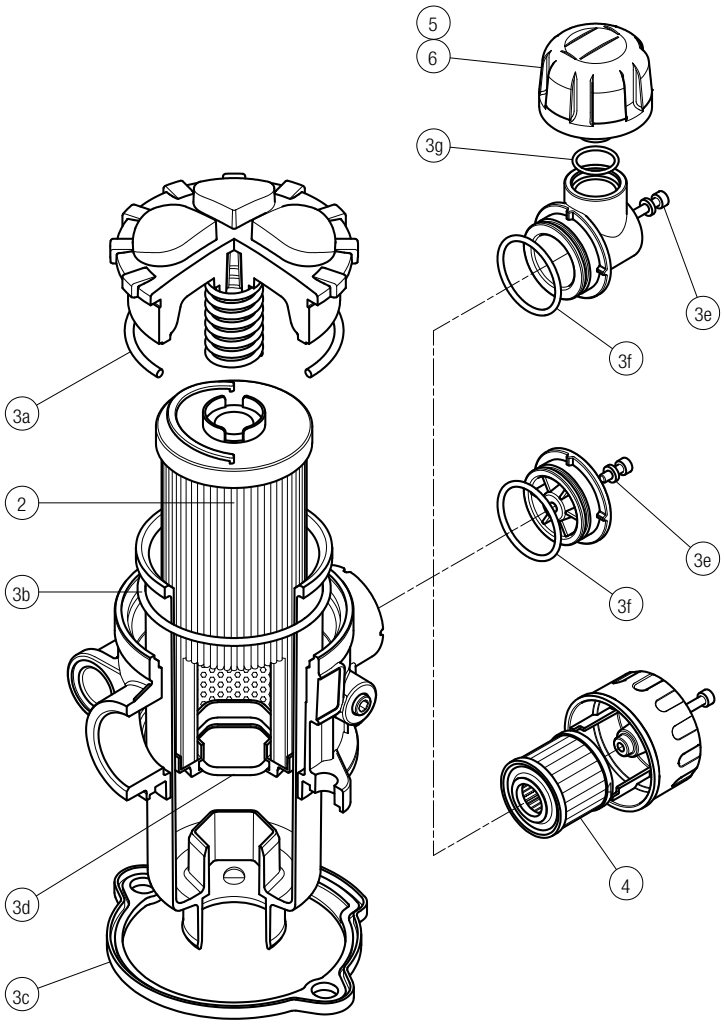






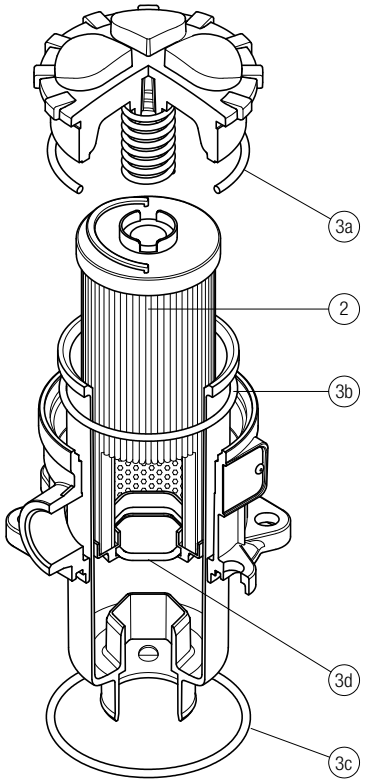
Order number for spare parts

MPTX 025 - 027 - 110



	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.
Item:	**2**	**3** (3a ÷ 3g)		**4**	**5**	**6**
Filter series	**Filter element**	**Seal Kit code number**		**Air breather filter element - version:**		
		NBR	**FPM**	**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

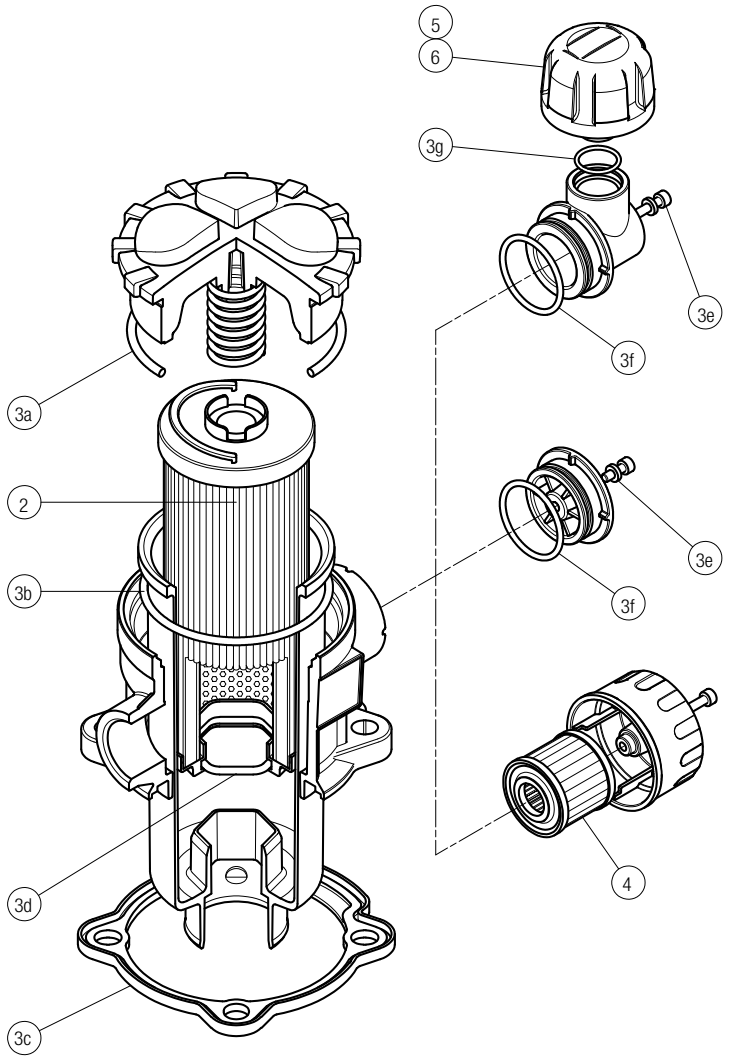
MPTX 116



	Q.ty: 1 pc.	Q.ty: 1 pc.	
Item:	**2**	**3** (3a ÷ 3d)	
Filter series	**Filter element**	**Seal Kit code number**	
		NBR	**FPM**
MPTX 116	See order table	02050737	02050738

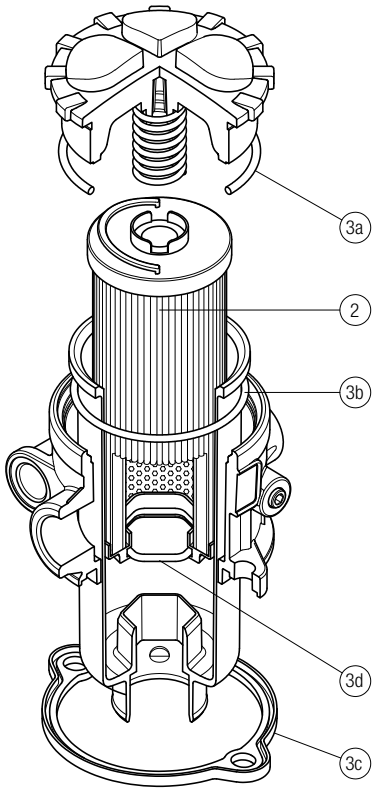
Order number for spare parts

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 A5L03	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

MYCLEAN

THE X CONCEPT FOR OUR FILTERS

**Protect the performance of your system with MYclean.
Quality and efficiency are fundamental for MP Filtri:
this exclusive new filter element possesses polygon shape geometry and specific seal that ensures only original spare parts can be used - ensuring correct operation and higher system reliability.**

MFBX series

with MYCLEAN MFX Filter Element

- **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 MP Filtri filter elements can be used, ensuring the best cleaning level of the oil due to the use of originals filter elements.

The products identified as MFBX are protected by:

- Italian Patent n° 102014902261205
- Canadian Patent n° 2,937,258
- European Patent n° 3 124 092 B1
- US Patent n° 20170030384 A1

TOGETHER WITH MYCLEAN, AS OPTION, MFBX SERIES CAN BE PROVIDED WITH

zerospark®

THE ANTI-STATIC FILTERS

THE Z CONCEPT FOR OUR FILTERS

Zerospark® is a specialist solution designed to solve the problem of electrostatic discharge inside hydraulic filters. Caused by the electrical charge build-up due to the passage of oil through the filters, this can result in damage to filter elements, oils and circuit components. It can even cause fire hazards in environments where flammable materials are present.

MFBX series
BOWL ASSEMBLY

Maximum working pressure up to 0.8 MPa (8 bar) - Flow rate up to 700 l/min

MFBX GENERAL INFORMATION

Description

Return filter | Bowl assembly

Maximum working pressure up to 0.8 MPa (8 bar)
Flow rate up to 700 l/min

MFBX is a range of return filter kits for protection of the reservoir against the system contamination.
They are directly integrated in the moulded reservoir in immersed or semi-immersed position to save space into the tank.
Treaded or flanged covers can be provided.
The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

Available features:

- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve integrated into the filter element, to relieve excessive pressure drop across the filter media
- Extension tube, to be used in deep reservoirs (sold as separate item)
- Diffuser, to reduce the risk of aeration, foaming and noise (sold as separate item)
- MyClean interface connection, to protect the product against non-original spare parts
- External protective wrap, to optimize the flow through the element and to save the element efficiency against non-proper handling

Common applications:

Mobile machines

Technical data

Bowl assembly materials

- Cover: Polyamide: MFBX 020-030-100
  Aluminium: MFBX 180-190
- Bowl: Polyamide

Filter element materials

- Caps: Polyamide
- Spring: Spring steel

Pressure

- Test pressure: 1.2 MPa (12 bar)
- Min. Burst pressure: 2.4 MPa (24 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 0.8 MPa (8 bar)

Bypass valve

- Opening pressure 0.175 MPa (1.75 bar) ±10%
- Opening pressure 0.3 MPa (3 bar) ±10%

Filter element features

Filter		Filter element	
MFBX		MFX	
Δp Element type			
Element media	Construction	Δp Series	Δp
A - Microfiber	Standard	D	10 bar
M - Wire mesh	Standard	D	10 bar
P - Paper	Standard	D	10 bar
Please see ordering code tables to check element Δp series availability based on filter features.			
Flow direction 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

MFBX filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

Filter series	Weights [kg]					Volumes [dm³]				
	Length	10	20	30	40	Length	10	20	30	40
MFBX 020		0.25	0.35	0.40	-		0.10	0.15	0.20	-
MFBX 030		0.25	-	-	-		0.15	-	-	-
MFBX 100		0.50	0.60	0.75	0.95		0.35	0.50	0.80	1.10
MFBX 180		1.60	2.40	-	-		1.50	2.90	-	-
MFBX 190		-	2.40	-	-		-	3.00	-	-

Flow rates [l/min]

Filter series	Length	Filter element design - D series					Filter element design - D series		
		A0003	A0006	A0010	A0016	A0025	M0025 M0060 M0090	P0010	P0025
MFBX 020	**10**	7	10	23	28	42	59	51	54
	20	17	20	45	48	56	72	64	67
	30	21	24	50	55	59	76	74	75
MFBX 030	**10**	7	10	24	29	47	84	60	66
MFBX 100	**10**	18	20	53	56	65	153	87	96
	20	28	38	65	75	95	158	111	123
	30	48	55	125	135	169	289	224	251
	40	79	89	180	185	198	306	264	289
MFBX 180	**10**	127	148	235	243	278	441	285	299
	20	231	262	358	382	388	472	404	412
MFBX 190	**20**	261	305	489	528	546	696	583	598

Maximum flow rate for a complete return filter with a pressure drop Δp = 0.5 bar.

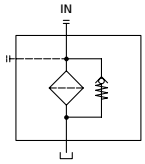
The reference fluid has a kinematic viscosity of 30 mm^2/s (cSt) and a density of 0.86 kg/dm^3.

For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.

You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure.

Please, contact our Sales Department for further additional information.

Hydraulic diagram

Filter series	17 / 30 - with bypass 1.75 / 3.0 bar
MFBX 020-030-100-180-190	

Designation & Ordering code

COMPLETE FILTER

Example 1:	MFBX	030	10	A0025	D	V	17	NN000	0	ON	CF	P01	NN
Example 2:	MFBX	190	20	Z0010	D	A	30	NN000	0	ON	NN	P01	NN

Series

MFBX Filter featuring MYCLEAN Filter Element

Size

020	**180**
030	**190**
100	

Length

Length	020	030	100	180	190
10	•	•	•	•	-
20	•	-	•	•	•
30	•	-	•	-	-
40	-	-	•	-	-

Filtration rating (filter media)

MYCLEAN

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

zerospark+

Z0003	Antistatic in. microf.	3 µm
Z0006	Antistatic in. microf.	6 µm
Z0010	Antistatic in. microf.	10 µm
Z0016	Antistatic in. microf.	16 µm
Z0025	Antistatic in. microf.	25 µm

Element Δp

D 10 bar

Seals and treatments

A NBR

V FPM

Bypass

17 With bypass 1.75 bar

30 With bypass 3.0 bar

Connections

NN000 Without connections

Additional connections

0 Without additional connections

Connections for clogging indicators

ON Without connections

Additional features

Additional features	020	030	100	180	190
NN Without additional features	•	•	•	•	•
CF With flanged cover	-	•	•	•	•
CT With threaded cover	•	-	•	-	-

Execution

P01 Standard catalogue item

Certificates

NN None

ACCESSORIES See page 270

TE Polyamide extension tube

DFS Diffuser with fast lock connection (only for MFBX 100)

Designation & Ordering code

FILTER ELEMENT

Example 1:	MFX	030	10	A0025	D	V	17	NN	P01	NN
Example 2:	MFX	180	20	Z0010	D	A	30	NN	P01	NN

Series

MFX Filter element with MYCLEAN feature

Size

020	MFBX 020
030	MFBX 030
100	MFBX 100
180	MFBX 180 MFBX 190

Length	020	030	100	180	190
10	•	•	•	•	-
20	•	-	•	•	•
30	•	-	•	-	-
40	-	-	•	-	-

Filtration rating (filter media)

MYCLEAN

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

zerospark

Z0003	Antistatic in. microf.	3 µm
Z0006	Antistatic in. microf.	6 µm
Z0010	Antistatic in. microf.	10 µm
Z0016	Antistatic in. microf.	16 µm
Z0025	Antistatic in. microf.	25 µm

Element Δp

D 10 bar

Seals and treatments

A NBR

V FPM

Bypass

17 With bypass 1.75 bar

30 With bypass 3.0 bar

Additional features

NN Without additional features

Execution

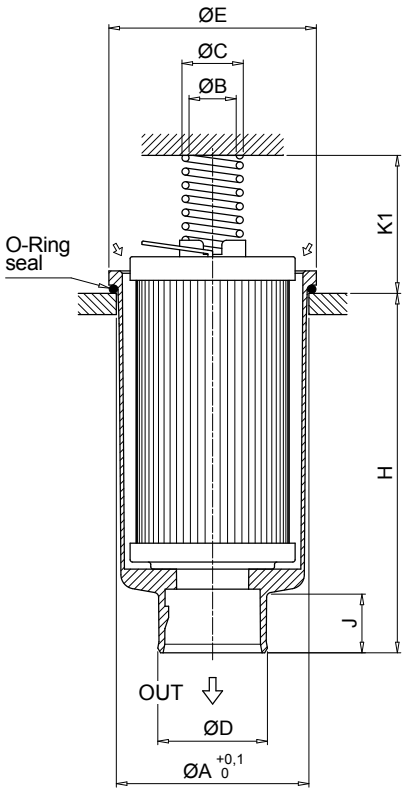
P01 Standard catalogue item

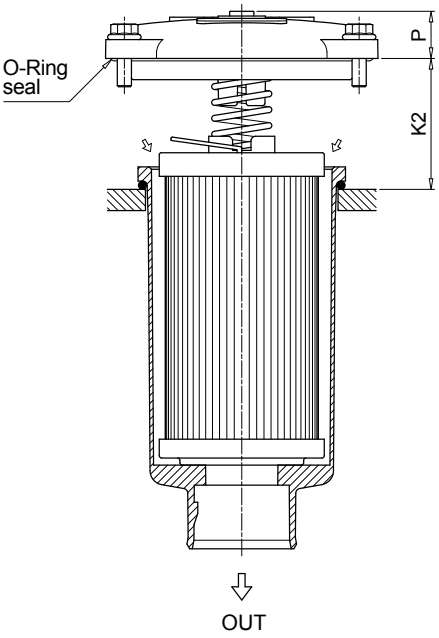
Certificates

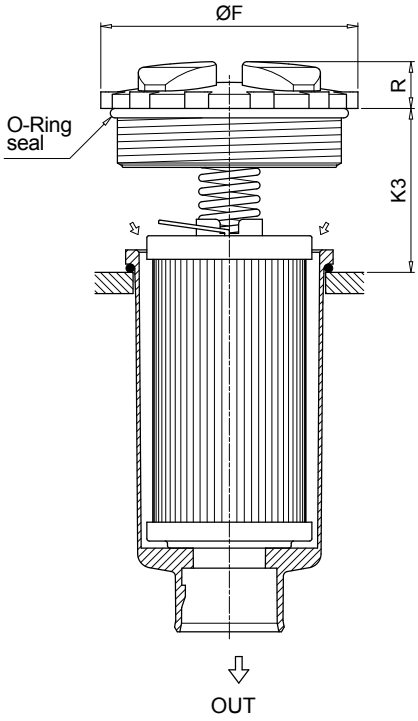
NN None

Dimensions

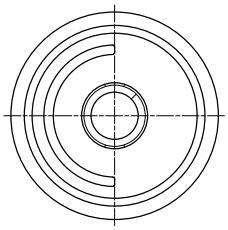
MFBX



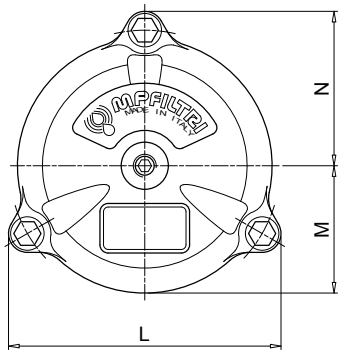




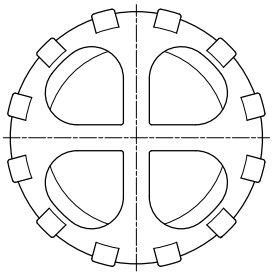
Additional features
NN



Additional features
CF



Additional features
CT



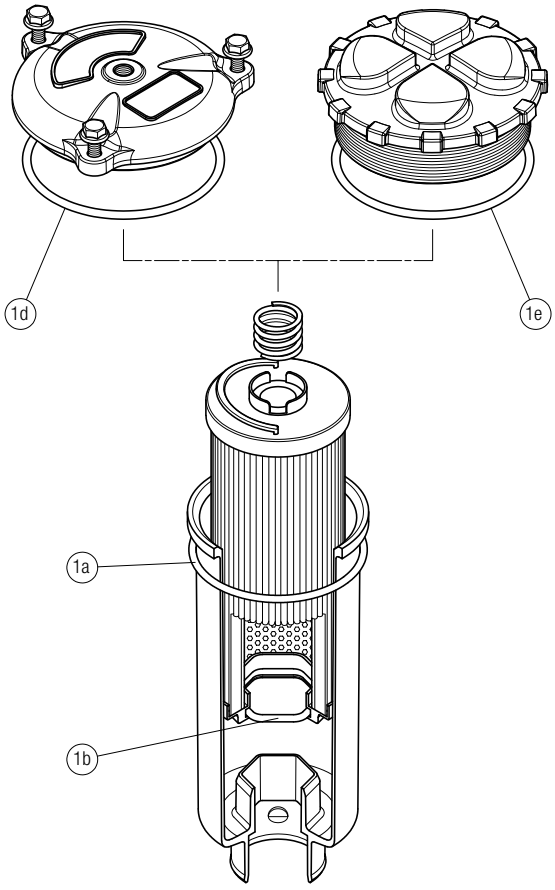
Filter size	Filter length	ØA [mm]	ØB [mm]	ØC [mm]	ØD [mm]	ØE [mm]	ØF [mm]	H [mm]	J [mm]	K1 [mm]	K2 [mm]	K3 [mm]	L [mm]	M [mm]	N [mm]	P [mm]	R [mm]
020	10	52	20.5	26	32	56	75	111	24	42	-	36	-	-	-	-	18
	20	52	20.5	26	32	56	75	175	24	42	-	36	-	-	-	-	18
	30	52	20.5	26	32	56	75	214	24	42	-	36	-	-	-	-	18
030	10	60.5	20	25.5	32	68	-	93	21	33	35	-	92	42	52	18	-
100	10	80.5	20	26	47	88	111	107	24	48	48	58	116	54	66	20	20
	20	80.5	20	26	47	88	111	154	24	48	48	58	116	54	66	20	20
	30	80.5	20	26	47	88	111	232	24	48	48	58	116	54	66	20	20
	40	80.5	20	26	47	88	111	334	24	48	48	58	116	54	66	20	20
180	10	112.5	26	33.5	47	121	-	236	31	58	58	-	159	76	95	21	-
	20	112.5	26	33.5	47	121	-	450	31	58	58	-	159	76	95	21	-
190	20	112.5	26	33.5	50	121	-	456	38	58	58	-	159	76	95	21	-

MFBX

Additional features

CF
With flanged cover

CT
With threaded cover



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

MDHC series

Maximum working pressure up to 1 MPa (10 bar) - Flow rate up to 500 l/min

MDHC250 GENERAL INFORMATION

Description

Return filter

Maximum working pressure up to 1 MPa (10 bar)
Flow rate up to 500 l/min

MDHC, is a technically advanced filtration product line for efficient and compact, hydraulic reservoir management. Designed to ensure overall system cleanliness, the filters are either installed in a semi immersed or fully immersed position. This new design reduces the volume of the air coming into the tank space and dramatically reduces the velocity of the air through the filter which in turn allows the separation of the air from the fluid. This insures that the system is protected against the effects caused by air contamination such as incorrect system response, cavitation, foaming and fluid degradation. The filtration from inside to outside allows for a cleaner filter element replacement which insures that any contaminated fluid remains within the used filter element.

Available features:

- Female threaded connections up to 1 1/2" and flanged connections up to 1 1/2", for a maximum flow rate of 500 l/min
- Multiple connections, to connect several return lines or drains
- In to Out filtration, to reduce the risk of residual contamination going into the system during the maintenance works
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve, to relieve excessive pressure drop across the filter media
- Flat Seal to suit a variety of reservoir surfaces
- Oil dipstick, to easily check the level of the fluid into the reservoir (separate item)
- Anti-drain membrane, to reduce the volume of air coming to the tank
- Optimized flow path, to reduce the speed of the fluid through the filter
- Diffuser with optimized output, to promote the air separation and to reduce the risk of foaming and noise
- Optional filler plug, to fill cleaned fluid into the tank without an additional plug
- Visual, electrical and electronic clogging indicators and differential pressure clogging indicators

Common applications:

Heavy duty industrial equipment
Large mobile machines with limited space for the tank

Technical data

Filter housing materials

- Head and cover: Aluminium
- Anti-drain membrane: Polyamide
- Diffuser: AISI 430
- Valve: Polyamide / Steel

Pressure

- Test pressure: 1.5 MPa (15 bar)
- Min. Burst pressure: 3 MPa (30 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 1 MPa (10 bar)

Bypass valve

- Opening pressure 0.175 MPa (1.75 bar) ±10%
- Opening pressure 0.3 MPa (3 bar) ±10%

Filter element features

Filter		Filter element	
MDHC		DHC	
Δp Element type			
Element media	**Construction**	**Δp Series**	**Δp**
A - Microfiber	Standard	D	10 bar
M - Wire mesh	Standard	D	10 bar
P - Paper	Standard	D	10 bar
Please see ordering code tables to check element Δp series availability based on filter features.			
Flow direction through the filter element: From IN to OUT			

Seals

- Standard NBR series A or W
- Optional FPM series V or Z

Temperature

From -25 °C to +110 °C

Note

MDHC filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

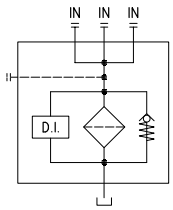
Filter series	Weights [kg]			Volumes [dm³]		
	Length	20	40	Length	20	40
MDHC 250		3.80	4.55		4.65	6.90

Flow rates [l/min]

Filter series	Length	Filter element design - D series					Filter element design - D series		
		A0003	A0006	A0010	A0016	A0025	M0025 M0060 M0090	P0010	P0025
MDHC 250	**20**	134	120	244	255	303	480	326	370
	40	217	256	338	419	487	465	437	694

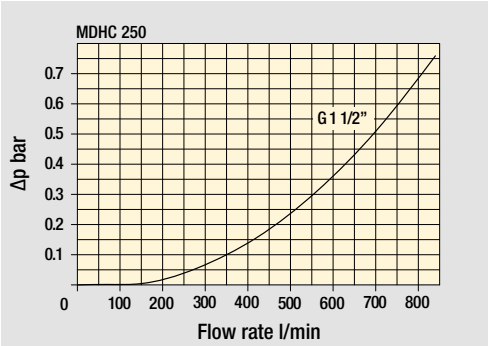
Maximum flow rate for a complete return filter with a pressure drop Δp = 0.5 bar.
The reference fluid has a kinematic viscosity of 30 mm^2/s (cSt) and a density of 0.86 kg/dm^3.
For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure.
Please, contact our Sales Department for further additional information.

Hydraulic diagram

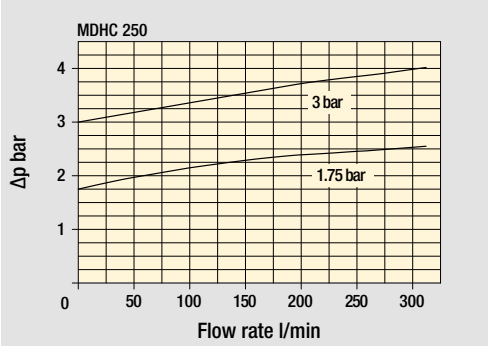
Filter series	17 / 30 - with bypass 1.75 / 3.0 bar Triple IN port
MDHC 250	

Pressure drop

Filter housings Δp pressure drop



Bypass valve 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.

MDHC250

Designation & Ordering code

COMPLETE FILTER

Example: MDHC | 250 | 20 | A0025 | D | W | 30 | FS024 | 1 | 9T | DA | P01 | NN

Series
MDHC

Size
250

Length
20
40

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp
D 10 bar

Seals and treatments

		A0xxx	M0xxx	P0xxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR with filter and components surface treatment	•	•	-
Z	FPM with filter and components surface treatment	•	•	-

By-pass valve
17 1.75 bar
30 3.0 bar

Connections
FG112 G 1 1/2" **FN112** 1 1/2" NPT **FS024** SAE 24 - 1 7/8" - 12 UN

Additional connections

			Left flange + thread	Right flange + thread
1	With additional connections	Front thread: FG112	1 1/2" SAE 3000 psi/M + G 1 1/4"	1 1/4" SAE 3000 psi/M + G 1"
		Front thread: FN112	1 1/2" SAE 3000 psi/UNC + 1 1/4" NPT	1 1/4" SAE 3000 psi/UNC + 1" NPT
		Front thread: FS024	1 1/2" SAE 3000 psi/UNC + SAE 20 - 1 5/8" - 12 UN	1 1/4" SAE 3000 psi/UNC + SAE 16 - 1 5/16" - 12 UN

Connections for clogging indicator
0N Without indicator connection
9T With multiple indicator connections, with metal plugs

Additional features
DA With diffuser

Execution
P01 Standard catalogue item

Certificates
NN None

CLOGGING INDICATORS

See pages 776-777

BVA Axial pressure gauge
BVR Radial pressure gauge
BVP Visual pressure indicator with automatic reset
BVQ Visual pressure indicator with manual reset
BEA Electrical pressure indicator
BEM Electrical pressure indicator
BLA Electrical / visual pressure indicator
DES Electrical differential pressure indicator
DVS Visual differential pressure indicator

PLUG

See page 807

T4 Plug

FILTER ELEMENT

Example 1: DHC | 250 | 20 | A0025 | D | A | 00 | NN | P01 | NN

Series
DHC

Size
250

Length
20
40

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
00 Without bypass

Additional features
NN Without additional features

Execution
P01 Standard catalogue item

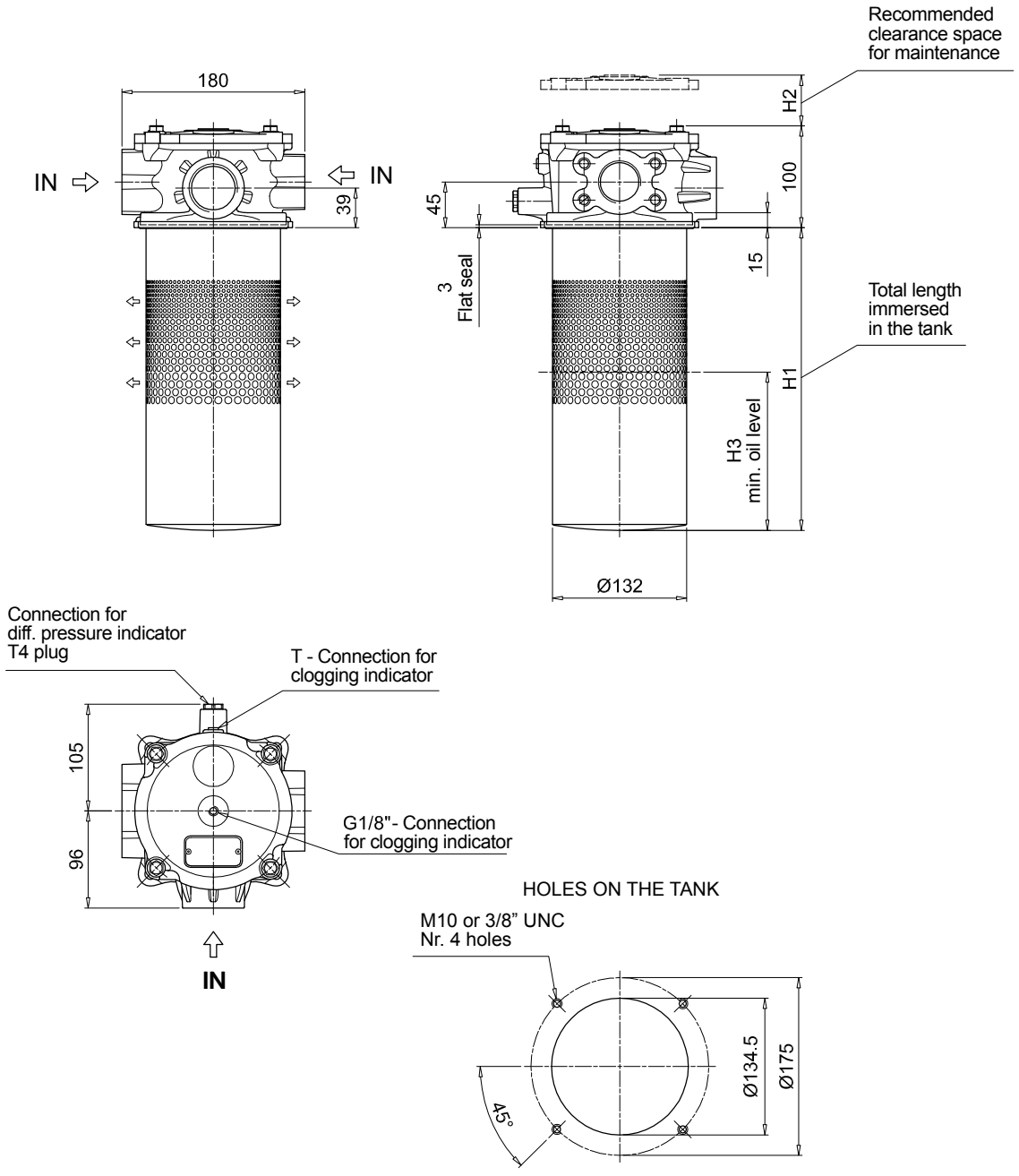
Certificates
NN None

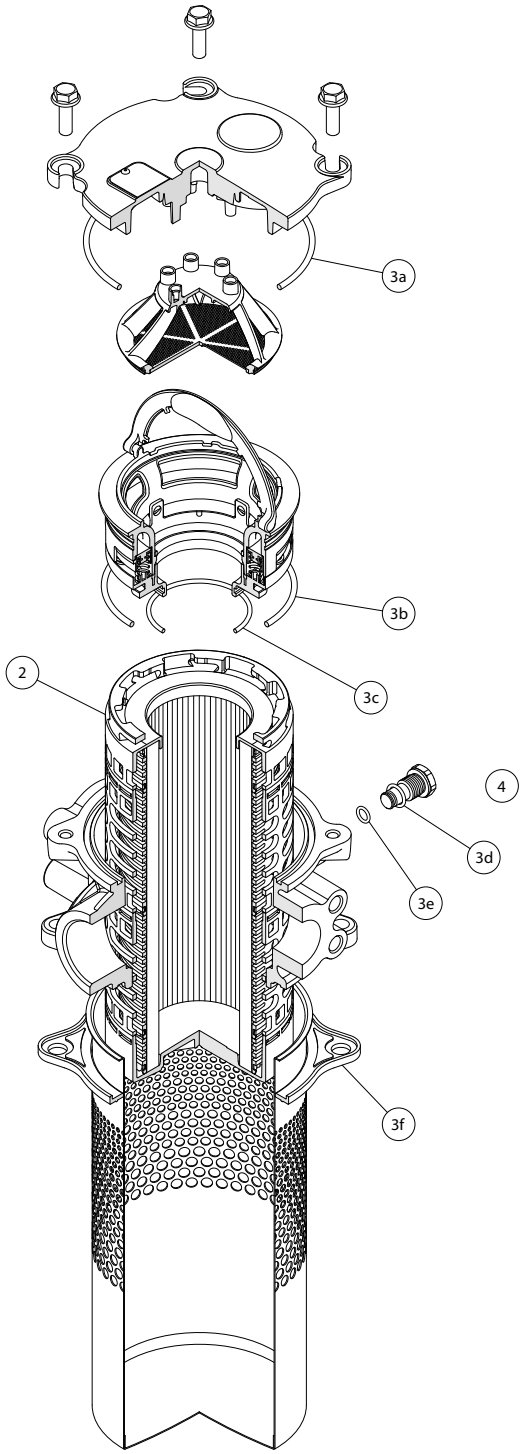
MDHC250

Dimensions

MDHC250			
Filter length	**H1 [mm]**	**H2 [mm]**	**H3 [mm]**
20	300	380	145
40	485	565	320

Connections	T
FG112	G 1/8"
FN112	1/8" NPT
FS024	1/8" NPT





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**	**FPM**	**Indicator connection plug NBR**
MDHC 250	See order table	02050850	02050851	T4A

MPHC series

Maximum working pressure up to 1 MPa (10 bar) - Flow rate up to 3500 l/min

Description

Return filter

Maximum working pressure up to 1 MPa (10 bar)
Flow rate up to 3500 l/min

MPHC is a range of return filters for protection of the reservoir against the system contamination. They are directly fixed to the reservoir, in immersed or semi-immersed position.
The use of the diffuser is recommended, to place the filter output always immersed into the fluid to avoid aeration or foam generation into the reservoir.
The filtration from inside to outside allows a cleaner filter element replacement, the dirty remains into the filter element.

Available features:

- Female threaded connections up to 1 1/2" and flanged connections up to 4", for a maximum flow rate of 3500 l/min
- Multiple connections, to connect several return lines or drains
- In to Out filtration, to reduce the risk of residual contamination going into the system during the maintenance works
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve, to relieve excessive pressure drop across the filter media
- Magnetic filter, to hold the ferrous particles
- 2, 3, 4 or 8 fixing holes for installation, to suit a variety of reservoir surfaces
- Flat Seal to suit a variety of reservoir surfaces
- Oil dipstick, to easily check the level of the fluid into the reservoir (separate item)
- Diffuser, to reduce the risk of aeration, foaming and noise
- Filler plug, to fill cleaned fluid into the tank without an additional plug
- Integrated breather filter, to clean the air that moves into the reservoir as result of the oil level fluctuation (MPH110/114)
- Integrated breather filter with pressurization valve, to clean the air that moves into the reservoir as result of the oil level fluctuation and to guarantee the pressurization into the reservoir (MPH110/114)
- Visual, electrical and electronic clogging indicators

Common applications:

Heavy duty industrial equipment

Technical data

Filter housing materials

- Head: Aluminium: MPHC 110-114-116-120-250
  Anodized Aluminium: MPHC 630-850
  Painted Aluminium: MPHC 660
- Cover: Polyamide: MPHC 110-114-116-120
  Aluminium: MPHC 250
  Anodized Aluminium: MPHC 630
  Painted Aluminium: MPHC 660
  Steel: MPHC 850
- Insert assembly: Polyamide: MPHC 110-114-116-120
  Aluminium: MPHC 250-630-660-850
- Diffuser: Stainless Steel
- Valve: Phosphatized Steel

Pressure

- Test pressure: 1.5 MPa (15 bar)
- Min. Burst pressure: 3 MPa (30 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 1 MPa (10 bar)

Bypass valve

- Opening pressure 0.175 MPa (1.75 bar)±10%
- Opening pressure 0.25 MPa (2.5 bar) ±10%, except for MPHC 850

Filter element features

Filter		Filter element	
MPHC		MRC	
Δp Element type			
Element media	**Construction**	**Δp Series**	**Δp**
A - Microfiber	Standard	D	10 bar
M - Wire mesh	Standard	D	10 bar
P - Paper	Standard	D	10 bar
Please see ordering code tables to check element Δp series availability based on filter features.			
Flow direction through the filter element: From IN to OUT			

Seals

- Standard NBR series A or W
- Optional FPM series V or Z

Temperature

From -25 °C to +110 °C

Note

MPHC filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

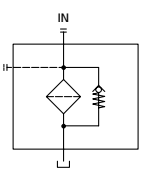
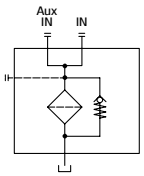
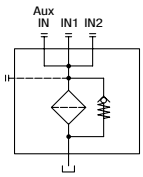
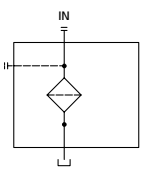
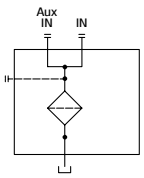
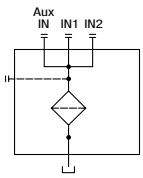
Filter series	Weights [kg]						Volumes [dm³]					
	Length	10	20	30	40	50	Length	10	20	30	40	50
MPHC 110		1.60	1.70	1.80	2.20	2.60		1.60	1.70	1.80	2.20	2.60
MPHC 114		1.60	1.70	1.80	2.20	2.60		1.60	1.70	1.80	2.20	2.60
MPHC 116		1.60	1.70	1.80	2.20	2.60		1.60	1.70	1.80	2.20	2.60
MPHC 120		1.60	1.70	1.80	2.20	2.60		1.60	1.70	1.80	2.20	2.60
MPHC 250		3.60	3.90	4.20	5.60	-		4.40	4.40	5.40	8.00	-
MPHC 630		6.50	7.00	7.40	8.50	10.50		7.30	9.00	11.00	13.00	19.20
MPHC 660		-	-	-	11.50	14.00		-	-	-	14.60	21.00
MPHC 850		32.00	35.00	38.00	42.00	-		13.00	16.50	21.00	25.00	-

Flow rates [l/min]

Filter series	Length	Filter element design - D series					Filter element design - D series		
		A0003	A0006	A0010	A0016	A0025	M0025 M0060 M0090	P0010	P0025
MPHC 110-114 116-120	1	26	29	72	79	107	282	164	190
	2	43	46	112	114	161	318	164	190
	3	64	72	132	156	178	324	219	251
	4	90	99	184	198	216	324	266	302
	5	117	128	201	219	244	324	282	318
MPHC 250	1	93	102	210	251	315	1093	339	383
	2	124	151	327	412	421	1122	460	514
	3	189	221	418	445	500	1137	544	616
	4	261	304	592	670	766	1166	832	923
MPHC 630	1	160	200	369	423	518	1894	565	632
	2	240	257	571	611	1045	1929	1137	1285
	3	330	374	745	788	1308	1938	1416	1577
	4	374	403	887	1010	1348	1956	1448	1612
	5	625	698	1210	1257	1723	2121	1839	1929
MPHC 660	4	370	399	903	1042	1460	2376	1596	1830
	5	624	699	1282	1343	1997	2663	2182	2331
MPHC 850	1	775	1041	1246	1568	2242	3311	2371	2625
	2	1176	1522	1682	1747	2449	3378	2684	2886
	3	1490	1914	1995	2014	3035	3405	3144	3220
	4	1668	2088	2305	2363	3169	3517	3272	3378

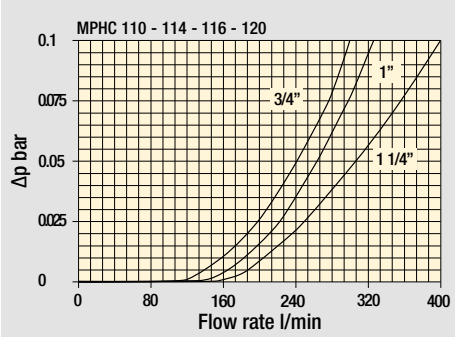
Maximum flow rate for a complete return filter with a pressure drop Δp = 0.5 bar.
The reference fluid has a kinematic viscosity of 30 mm^2/s (cSt) and a density of 0.86 kg/dm^3.
For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure.
Please, contact our Sales Department for further additional information.

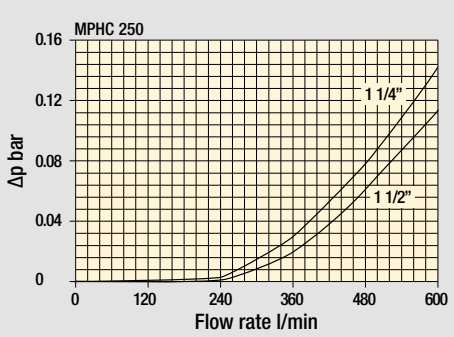
Hydraulic diagram

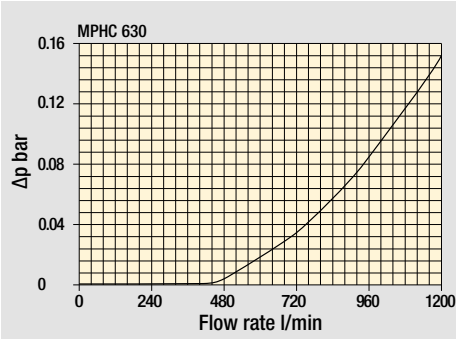
Filter series	Single IN Port	Double IN Port	Triple IN port
MPHC 110	•	•	-
MPHC 114	•	-	-
MPHC 116	•	-	-
MPHC 120	•	•	•
MPHC 250	•	•	-
MPHC 630	•	•	-
MPHC 660	•	-	-
MPHC 850	•	•	-
17 / 25 with bypass 1.75 / 2.5 bar			
00 without bypass			

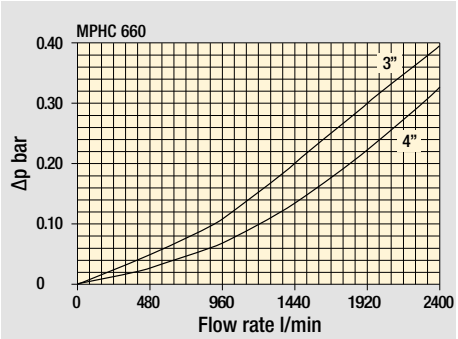
Pressure drop

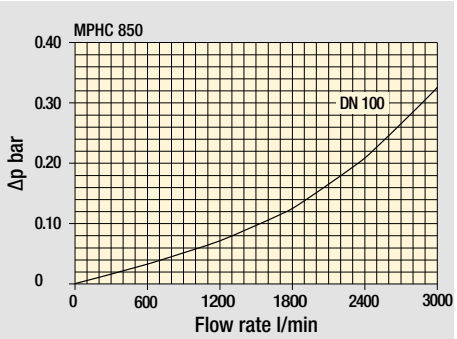
Filter housings Δp pressure drop



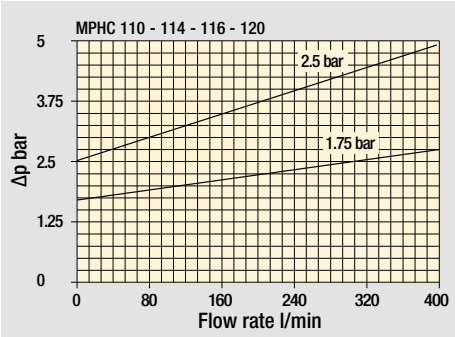


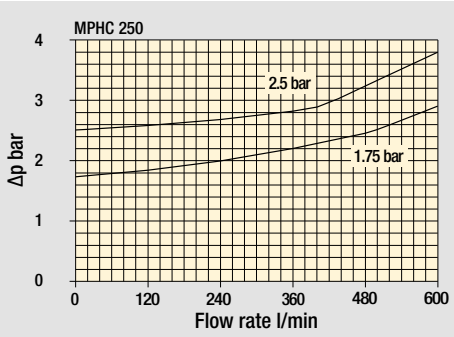


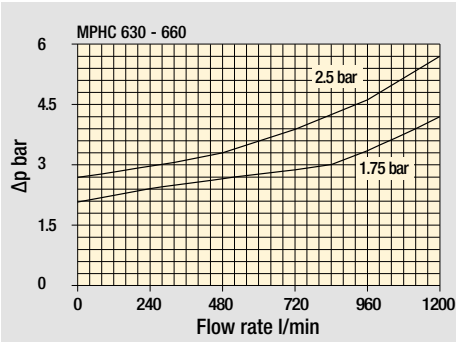


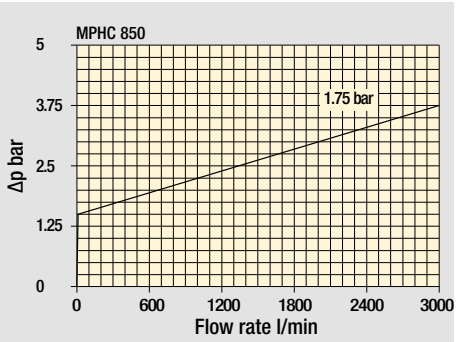


Bypass valve pressure drop

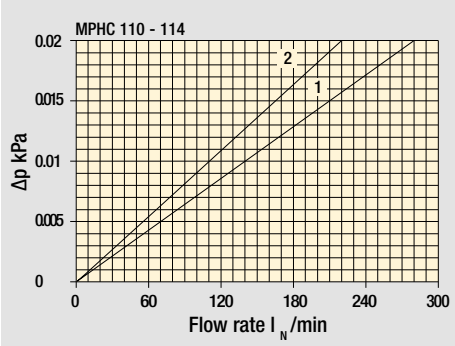








Air breather pressure drop



1 AS With air breather 10 µm
2 AR With anti-splash and SAP50 10 µm

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

Designation & Ordering code

COMPLETE FILTER

Example: MPHC | 110 | 50 | A0025 | D | W | 17 | FS012 | 1 | 6T | DA | P01 | NN

Series
MPHC

Size
110

Length
10 | **20** | **30** | **40** | **50**

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp

D	10 bar

Seals and treatments

		A0xxx	M0xxx	P0xxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR with filter and components surface treatment	•	•	-
Z	FPM with filter and components surface treatment	•	•	-

By-pass valve

00	Without bypass
17	With bypass 1.75 bar
25	With bypass 2.5 bar

Connections

FG034	G 3/4"	**FN034**	3/4" NPT	**FS012**	SAE 12 - 1 1/16" - 12 UN
FG100	G 1"	**FN100**	1" NPT	**FS016**	SAE 16 - 1 5/16" - 12 UN
FG114	G 1 1/4"	**FN114**	1 1/4" NPT	**FS020**	SAE 20 - 1 5/8" - 12 UN

Additional connections

1	Main connection	FG034 / FG100 / FN114	**G 3/8"**	Main connection	FN034 / FN100 / FN114	**3/8" NPT**	Main connection	FS012 / FS016 / FS020 **SAE 6 - 9/16" 18 UNF**
2	Main connection	FG034 / FG100 / FN114	**G 1/2"**	Main connection	FN034 / FN100 / FN114	**1/2" NPT**	Main connection	FS012 / FS016 / FS020 **SAE 8 - 3/4" 16 UNF**

Connections for clogging indicator
6T With both side indicator connection, with metal plug

Additional features

	Standard	With diffuser	With magnetic filter	With diffuser and magnetic filter
NN	Without air breather	**DA**	**MA**	**DE**
AS	With air breather 10 µm	**DB**	**MS**	**DF**
AR	With anti-splash air breather SAP050 10 µm	**DC**	**MR**	**DG**
AP	With anti-splash air breather SAP050 10 µm, press. 0.5 bar	**DD**	**MP**	**DH**

Execution
P01 Standard catalogue item

Certificates
NN None

CLOGGING INDICATORS

See pages 776-777

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

ACCESSORIES

See page 270

DPT	Dipstick

FILTER ELEMENT

Example: MRC | 100 | 50 | A0025 | D | A | 00 | NN | P01 | NN

Series
MRC

Size
100

Length
10 | **20** | **30** | **40** | **50**

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
00 Without bypass

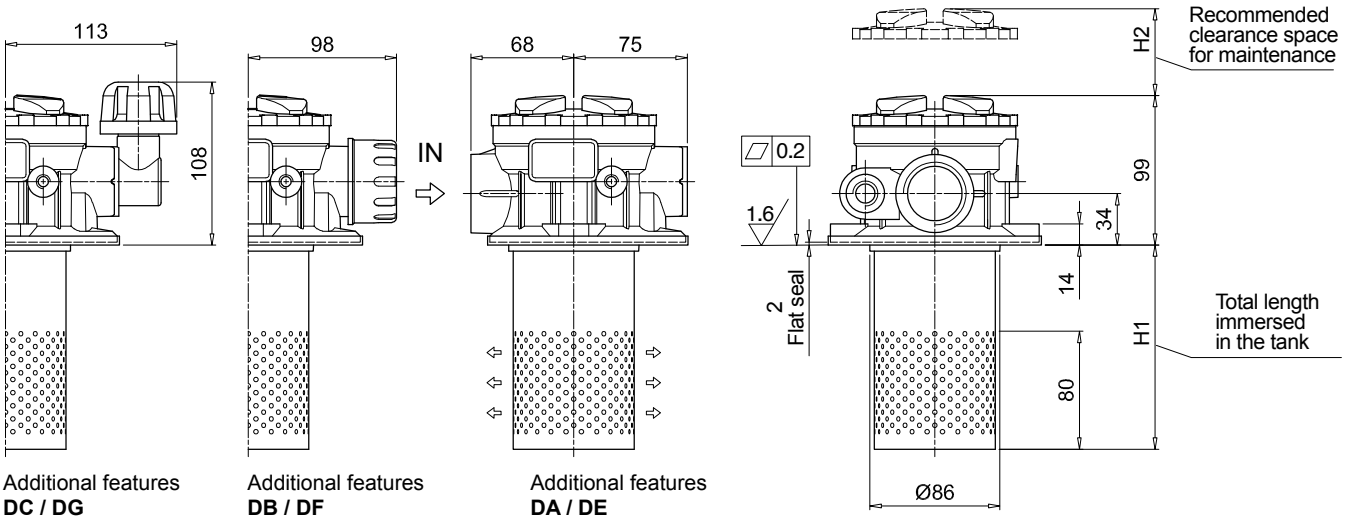
Additional features
NN Without additional features

Execution
P01 Standard catalogue item

Certificates
NN None

Dimensions

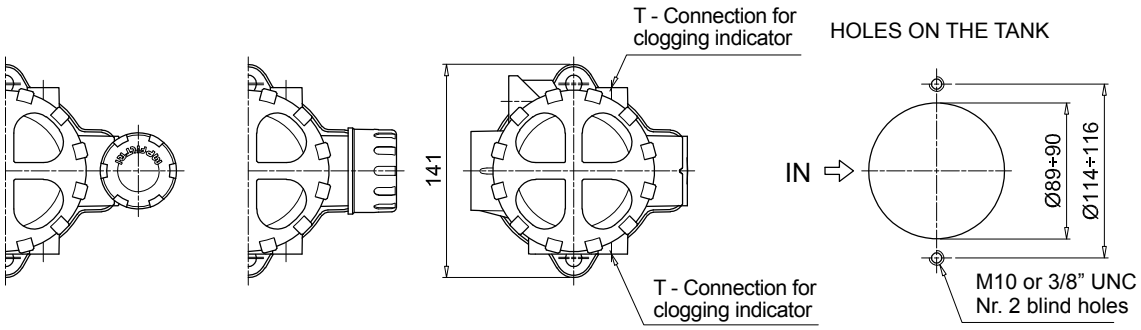
MPHC110 with diffuser		Filter length	H1 [mm]	H2 [mm]
Connection	**T**			
FG034	G 1/8"	**10**	188	255
FG100		**20**	188	255
FG114		**30**	238	305
FN034	1/8" NPT	**40**	338	405
FN100		**50**	438	505
FN114				
FS012	1/8" NPT			
FS016				
FS020				



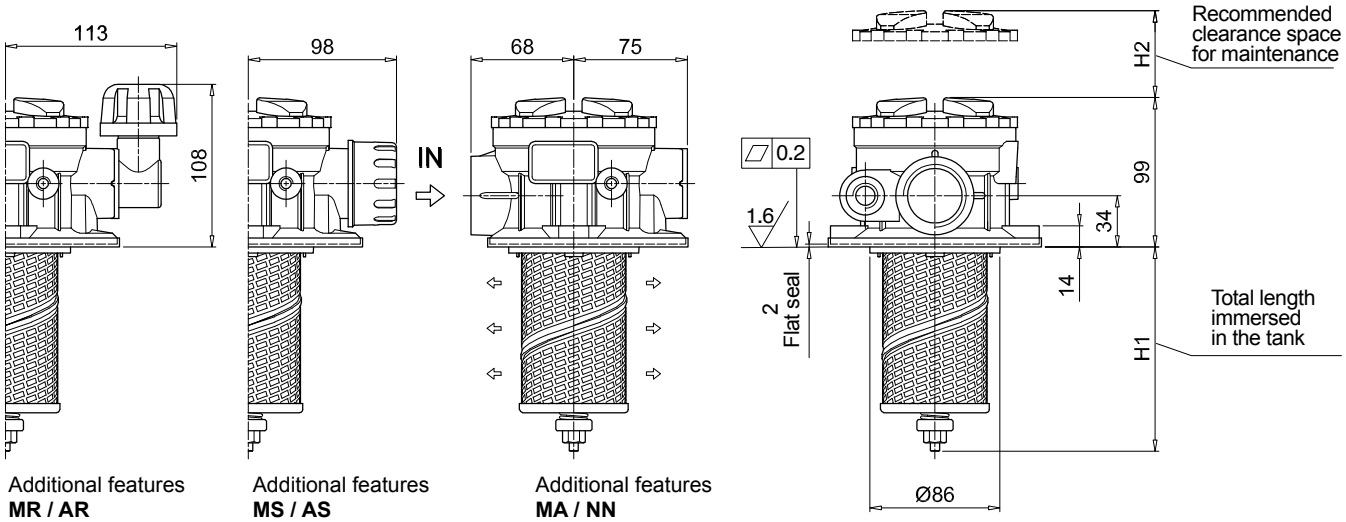
Additional features
DC / DG
DD / DH

Additional features
DB / DF

Additional features
DA / DE



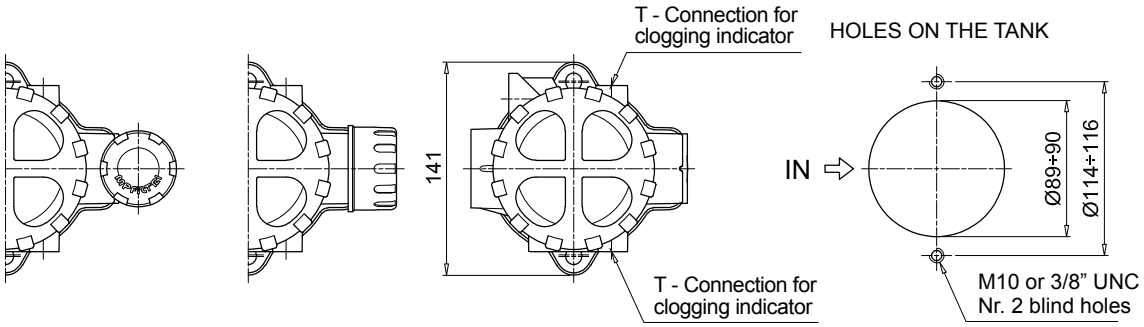
MPHC110 without diffuser				
Connection	**T**	**Filter length**	**H1 [mm]**	**H2 [mm]**
FG034	G 1/8"	**10**	129	190
FG100		**20**	173	235
FG114		**30**	223	285
FN034	1/8" NPT	**40**	323	385
FN100		**50**	423	485
FN114				
FS012	1/8" NPT			
FS016				
FS020				



Additional features
MR / AR
MP / AP

Additional features
MS / AS

Additional features
MA / NN



Designation & Ordering code

COMPLETE FILTER

Example:	MPHC	114	50	A0025	D	W	17	FS012	0	3T	DA	P01	NN

Series
MPHC

Size
114

Length
10 | 20 | 30 | 40 | 50

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp

D	10 bar

Seals and treatments

		A0xxx	M0xxx	P0xxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR with filter and components surface treatment	•	•	-
Z	FPM with filter and components surface treatment	•	•	-

By-pass valve

00	Without bypass
17	With bypass 1.75 bar
25	With bypass 2.5 bar

Connections

FG034	G 3/4”	**FN034**	3/4” NPT	**FS012**	SAE 12 - 1 1/16” - 12 UN
FG100	G 1”	**FN100**	1” NPT	**FS016**	SAE 16 - 1 5/16” - 12 UN
FG114	G 1 1/4”	**FN114**	1 1/4” NPT	**FS020**	SAE 20 - 1 5/8” - 12 UN

Additional connections

0	Without additional connections

Connections for clogging indicator

3T	With left indicator connection, with metal plug

Additional features

Standard		With diffuser	With magnetic filter	With diffuser and magnetic filter
NN	Without air breather	**DA**	**MA**	**DE**
AS	With air breather 10 µm	**DB**	**MS**	**DF**
AR	With anti-splash air breather SAP050 10 µm	**DC**	**MR**	**DG**
AP	With anti-splash air breather SAP050 10 µm, press. 0.5 bar	**DD**	**MP**	**DH**

Execution

P01	Standard catalogue item

Certificates

NN	None

CLOGGING INDICATORS

See pages 776-777

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

ACCESSORIES

See page 270

DPT	Dipstick

Designation & Ordering code

FILTER ELEMENT

Example: MRC | 100 | 50 | A0025 | D | A | 00 | NN | P01 | NN

Series
MRC

Size
100

Length
10 | **20** | **30** | **40** | **50**

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
00 Without bypass

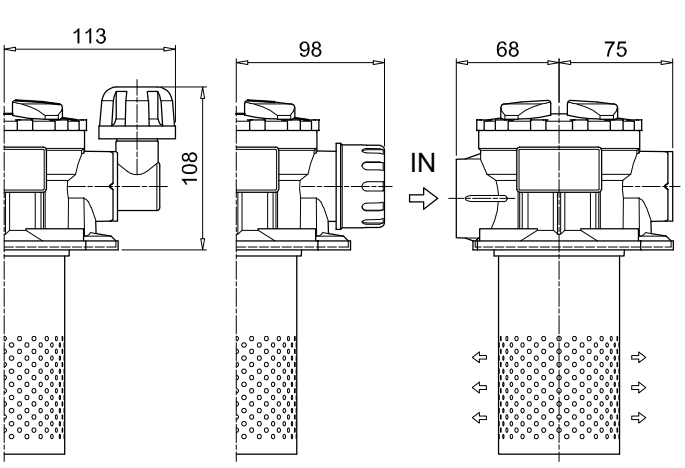
Additional features
NN Without additional features

Execution
P01 Standard catalogue item

Certificates
NN None

Dimensions

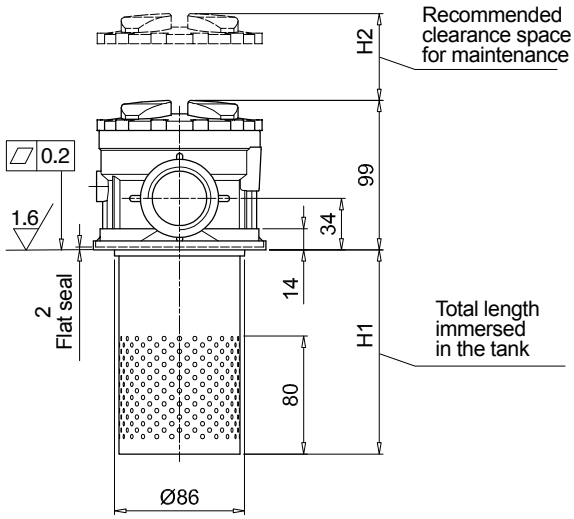
MPHC114 with diffuser				
Connection	**T**	**Filter length**	**H1 [mm]**	**H2 [mm]**
FG034	G 1/8”	**10**	188	255
FG100		**20**	188	255
FG114		**30**	238	305
FN034	1/8” NPT	**40**	338	405
FN100		**50**	438	505
FN114				
FS012	1/8” NPT			
FS016				
FS020				

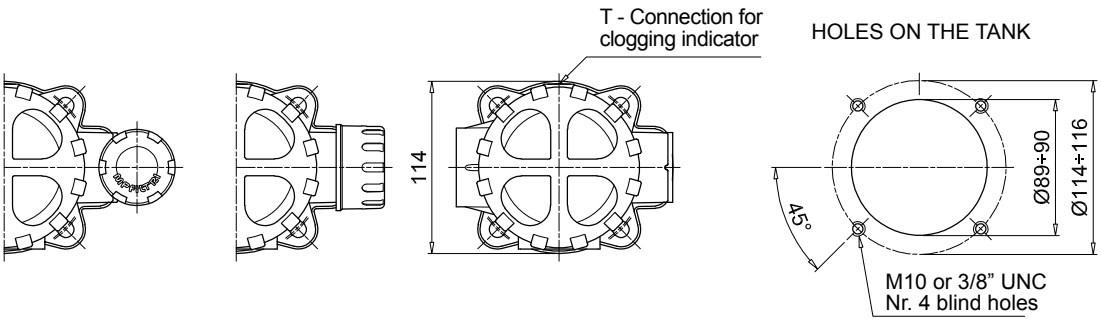


Additional features
DC / DG
DD / DH

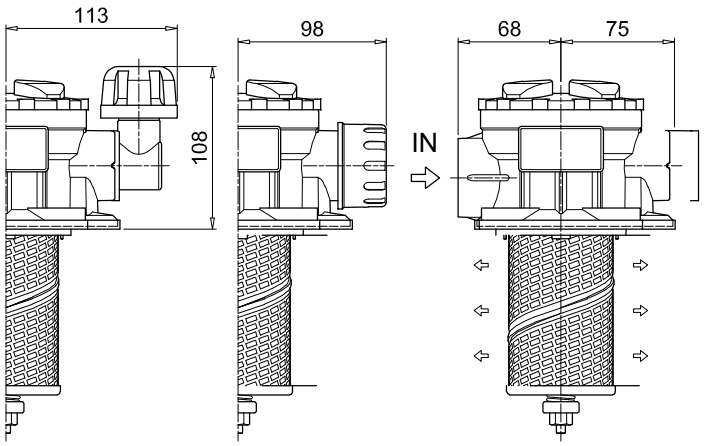
Additional features
DB / DF

Additional features
DA / DE





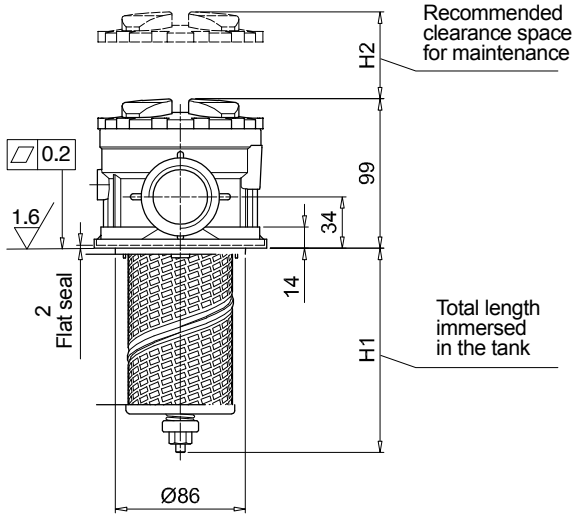
MPHC114 without diffuser				
Connection	**T**	**Filter length**	**H1 [mm]**	**H2 [mm]**
FG034	G 1/8"	**10**	129	190
FG100		**20**	173	235
FG114		**30**	223	285
FN034	1/8" NPT	**40**	323	385
FN100		**50**	423	485
FN114				
FS012	1/8" NPT			
FS016				
FS020				

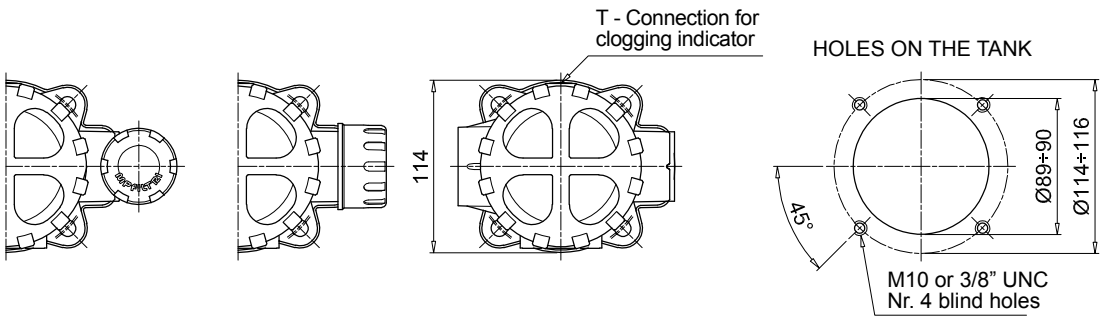


Additional features
MR / AR
MP / AP

Additional features
MS / AS

Additional features
MA / NN





Designation & Ordering code

COMPLETE FILTER

Example:	MPHC	116	50	A0025	D	W	17	FS012	0	3T	DA	P01	NN

Series
MPHC

Size
116

Length
10 | **20** | **30** | **40** | **50**

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp
D 10 bar

Seals and treatments

		A0xxx	M0xxx	P0xxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR with filter and components surface treatment	•	•	-
Z	FPM with filter and components surface treatment	•	•	-

Flat seal on head on request

By-pass valve

00	Without bypass
17	With bypass 1.75 bar
25	With bypass 2.5 bar

Connections

FG034	G 3/4”	**FN034**	3/4” NPT	**FS012**	SAE 12 - 1 1/16” - 12 UN
FG100	G 1”	**FN100**	1” NPT	**FS016**	SAE 16 - 1 5/16” - 12 UN
FG114	G 1 1/4”	**FN114**	1 1/4” NPT	**FS020**	SAE 20 - 1 5/8” - 12 UN

Additional connections
0 Without additional connections

Connections for clogging indicator
3T With left indicator connection, with metal plug

Additional features

DA	With diffuser
DE	With diffuser and magnetic filter
MA	With magnetic filter
NN	Without additional features

Execution
P01 Standard catalogue item

Certificates
NN None

CLOGGING INDICATORS

See pages 776-777

BVA	Axial pressure gauge	**BEA**	Electrical pressure indicator
BVR	Radial pressure gauge	**BEM**	Electrical pressure indicator
BVP	Visual pressure indicator with automatic reset	**BLA**	Electrical / visual pressure indicator
BVQ	Visual pressure indicator with manual reset		

ACCESSORIES

See page 270

DPT Dipstick

FILTER ELEMENT

Example: MRC | 100 | 50 | A0025 | D | A | 00 | NN | P01 | NN

Series
MRC

Size
100

Length
10 | **20** | **30** | **40** | **50**

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
00 Without bypass

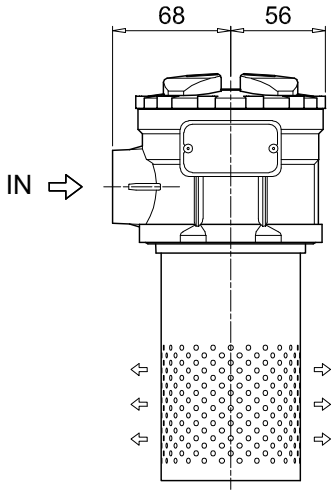
Additional features
NN Without additional features

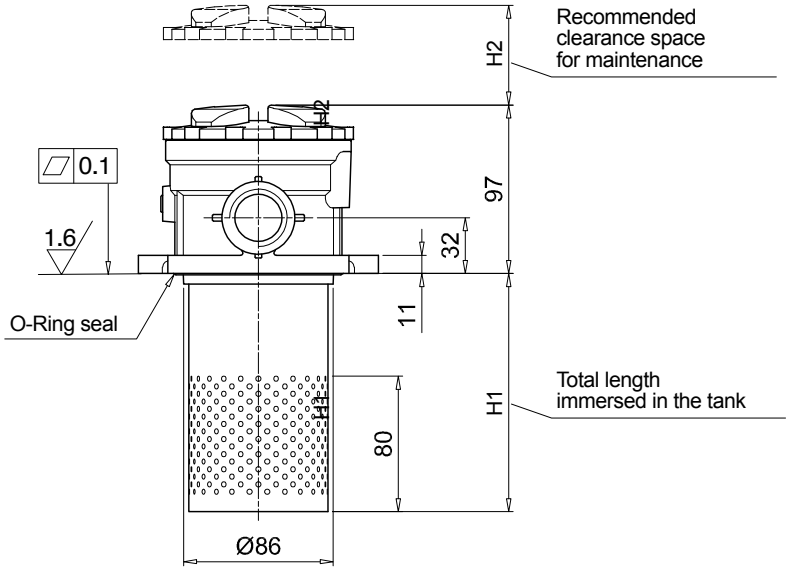
Execution
P01 Standard catalogue item

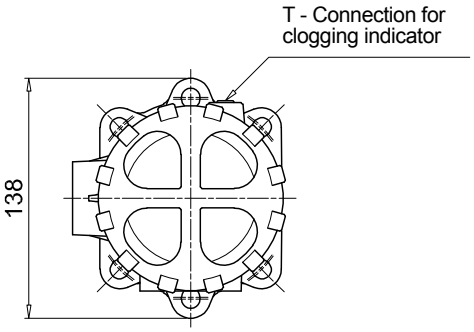
Certificates
NN None

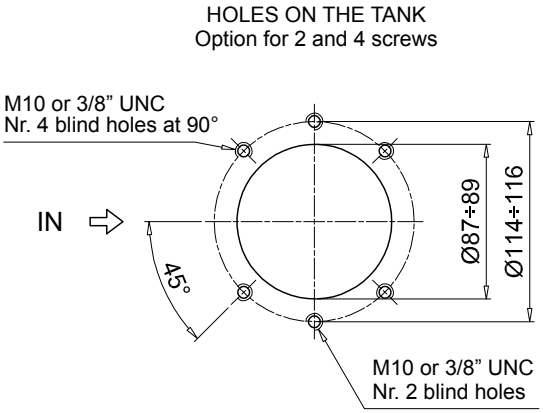
Dimensions

MPHC116		Filter length	H1 [mm]	H2 [mm]
Additional features **DA / DE**	**with diffuser**			
Connection	**T**			
FG034	G 1/8”	**10**	190	255
FG100		**20**	190	255
FG114		**30**	240	305
FN034	1/8” NPT	**40**	340	405
FN100		**50**	440	505
FN114				
FS012	1/8” NPT			
FS016				
FS020				

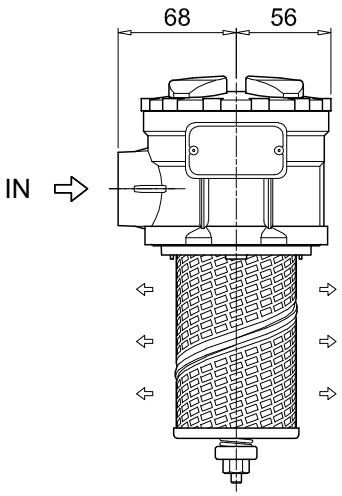


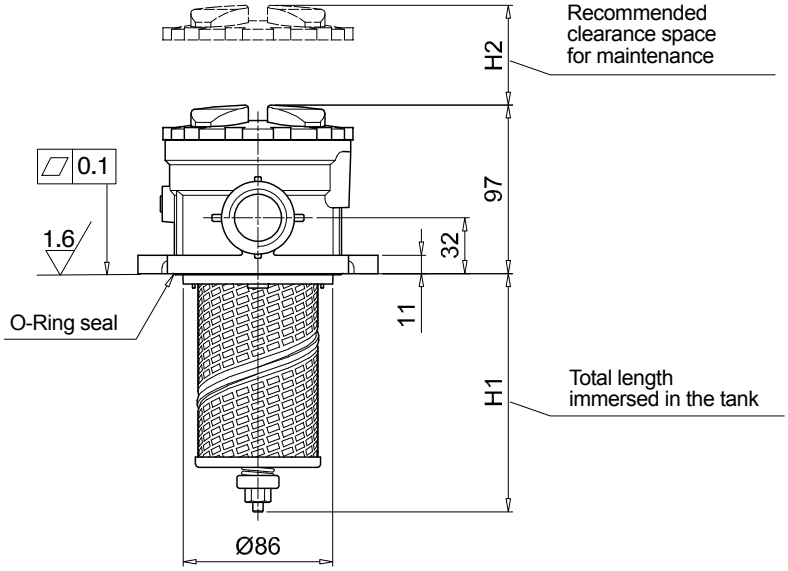


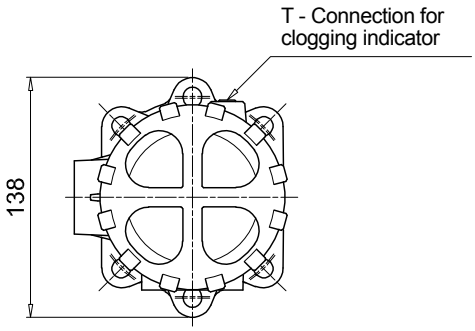


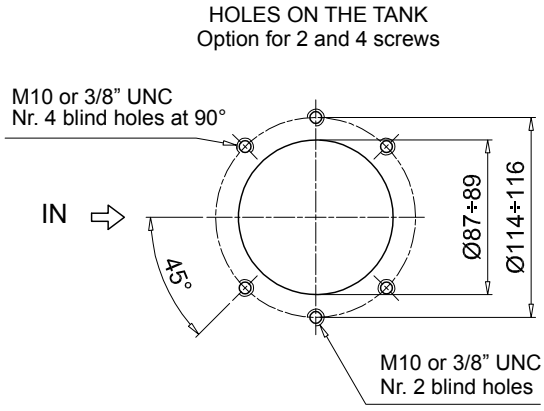


MPHC116				
Additional features **MA / NN**		**without diffuser**		
Connection	**T**	**Filter length**	**H1 [mm]**	**H2 [mm]**
FG034	G 1/8"	**10**	131	190
FG100		**20**	175	235
FG114		**30**	225	285
FN034	1/8" NPT	**40**	325	385
FN100		**50**	425	485
FN114				
FS012	1/8" NPT			
FS016				
FS020				









Designation & Ordering code

COMPLETE FILTER

Example: MPHC | 120 | 50 | A0025 | D | W | 17 | FS012 | 1 | 6T | DA | P01 | NN

Series
MPHC

Size
120

Length
10 | 20 | 30 | 40 | 50

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp

D	10 bar

Seals and treatments

		A0xxx	M0xxx	P0xxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR with filter and components surface treatment	•	•	-
Z	FPM with filter and components surface treatment	•	•	-

By-pass valve

00	Without bypass
17	With bypass 1.75 bar
25	With bypass 2.5 bar

Connections

FG034	G 3/4"	**FN034**	3/4" NPT	**FS012**	SAE 12 - 1 1/16" - 12 UN
FG100	G 1"	**FN100**	1" NPT	**FS016**	SAE 16 - 1 5/16" - 12 UN
FG114	G 1 1/4"	**FN114**	1 1/4" NPT	**FS020**	SAE 20 - 1 5/8" - 12 UN

Additional connections

1	Main connection	FG034 FG100 FN114	**G 3/8"**	Main connection	FN034 FN100 FN114	**3/8" NPT**	Main connection	FS012 FS016 FS020	**SAE 6 - 9/16" 18 UNF**
2	Main connection	FG034 FG100 FN114	**G 1/2"**	Main connection	FN034 FN100 FN114	**1/2" NPT**	Main connection	FS012 FS016 FS020	**SAE 8 - 3/4" 16 UNF**

Connections for clogging indicator

6T	With both side indicator connections, with metal plugs

Additional features

DA	With diffuser
DE	With diffuser and magnetic filter
MA	With magnetic filter
NN	Without additional features

Execution

P01	Standard catalogue item

Certificates

NN	None

CLOGGING INDICATORS

See pages 776-777

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

ACCESSORIES

See page 270

DPT	Dipstick

FILTER ELEMENT

Example: MRC | 100 | 50 | A0025 | D | A | 00 | NN | P01 | NN

Series
MRC

Size
100

Length
10 | **20** | **30** | **40** | **50**

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
00 Without bypass

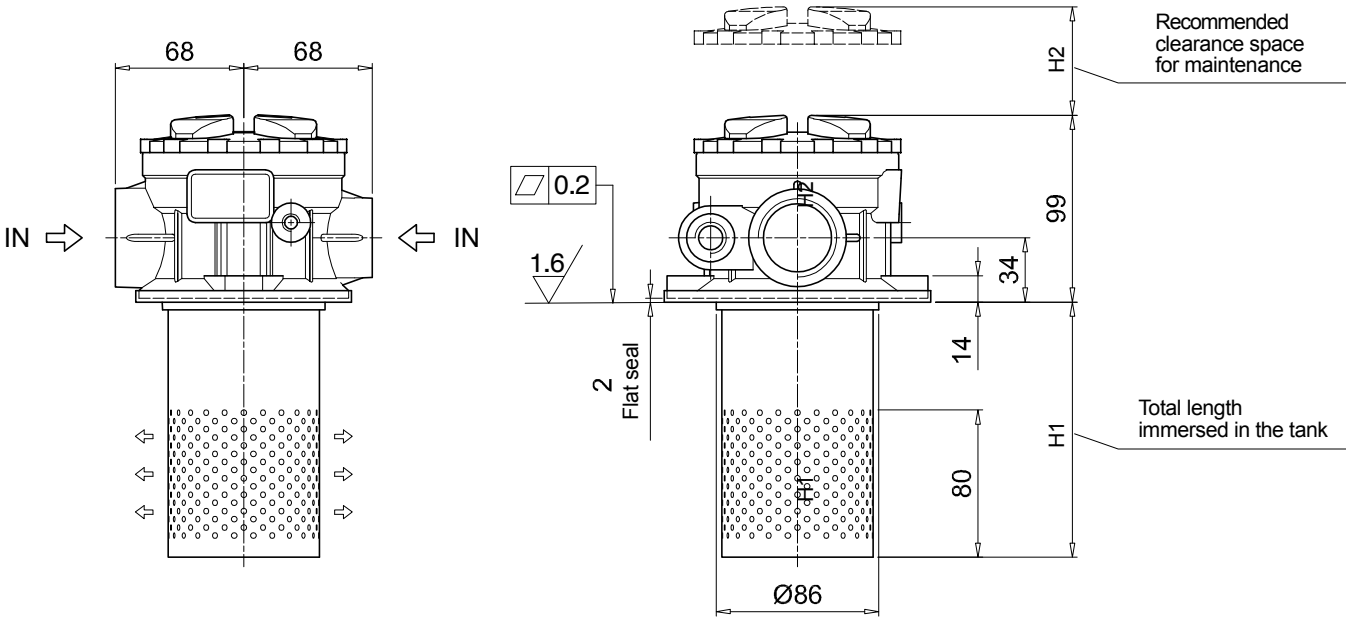
Additional features
NN Without additional features

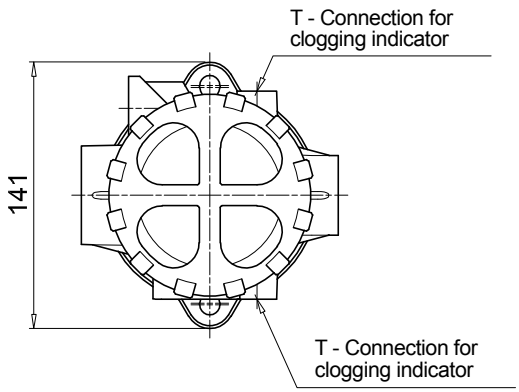
Execution
P01 Standard catalogue item

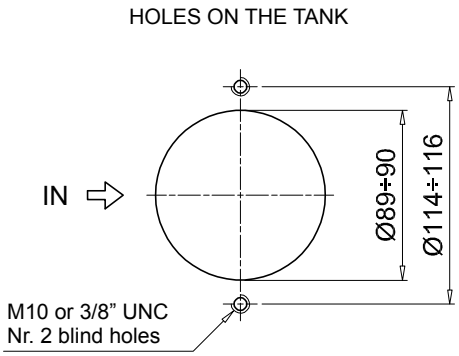
Certificates
NN None

Dimensions

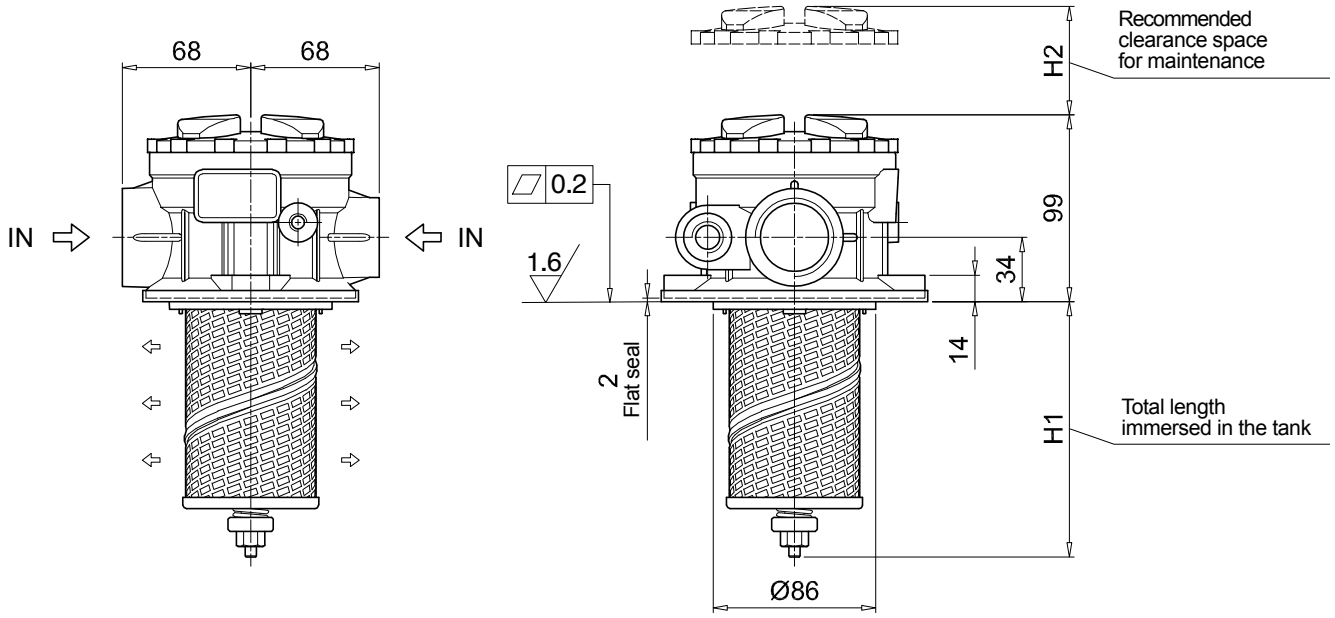
MPHC120				
Additional features **DA / DE**		**with diffuser**		
Connection	**T**	**Filter length**	**H1 [mm]**	**H2 [mm]**
FG034	G 1/8"	**10**	188	255
FG100		**20**	188	255
FG114		**30**	238	305
FN034	1/8" NPT	**40**	338	405
FN100		**50**	438	505
FN114				
FS012	1/8" NPT			
FS016				
FS020				

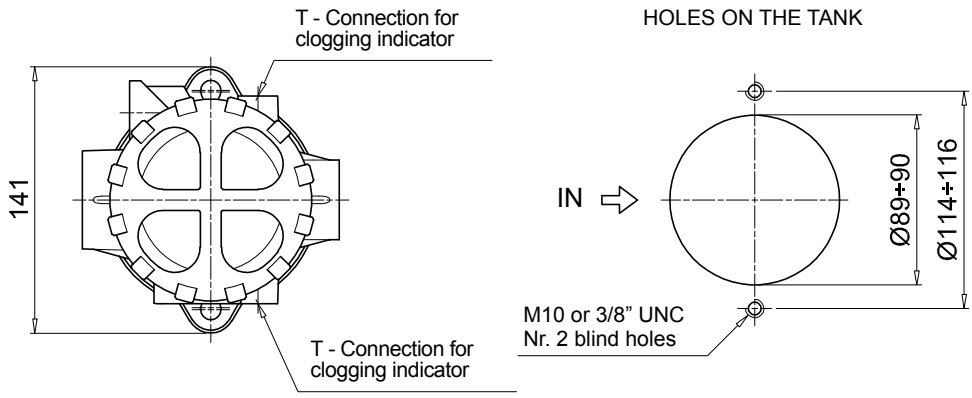






MPHC120				
Additional features **MA / NN**		**without diffuser**		
Connection	**T**	**Filter length**	**H1 [mm]**	**H2 [mm]**
FG034	G 1/8"	**10**	129	190
FG100		**20**	173	235
FG114		**30**	223	285
FN034	1/8" NPT	**40**	323	385
FN100		**50**	423	485
FN114				
FS012	1/8" NPT			
FS016				
FS020				





Designation & Ordering code

COMPLETE FILTER

Example: MPHC | 250 | 30 | M0090 | D | V | 25 | FS024 | 1 | 9T | DA | P01 | NN

Series
MPHC

Size
250

Length
10 | **20** | **30** | **40**

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp

D	10 bar

Seals and treatments

		A0xxx	M0xxx	P0xxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR with filter and components surface treatment	•	•	-
Z	FPM with filter and components surface treatment	•	•	-

By-pass valve

00	Without bypass
17	With bypass 1.75 bar
25	With bypass 2.5 bar

Connections

FG112 G 1 1/2" **FN112** 1 1/2" NPT **FS024** SAE 24 - 1 7/8" - 12 UN **FE112** 1 1/2" SAE 3000 psi/M **FF112** 1 1/2" SAE 3000 psi/UNC

Additional connections

0 Without additional connections

1 Main connection

FG112	**G 1 1/2"**
FN112	**1 1/2" NPT**
FS024	**SAE 24 - 1 7/8" - 12 UN**
FE112	**1 1/2" SAE 3000 psi/M**
FF112	**1 1/2" SAE 3000 psi/UNC**

Connections for clogging indicator

9T With multiple indicator connections, with metal plugs

Additional features

DA	With diffuser
DE	With diffuser and magnetic filter
MA	With magnetic filter
NN	Without additional features

Execution

P01 Standard catalogue item

Certificates

NN None

CLOGGING INDICATORS

See pages 776-777

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

ACCESSORIES

See page 270

DPT Dipstick

FILTER ELEMENT

Example: MRC | 250 | 30 | M0090 | D | V | 00 | NN | P01 | NN

Series
MRC

Size
250

Length
10 | **20** | **30** | **40**

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
00 Without bypass

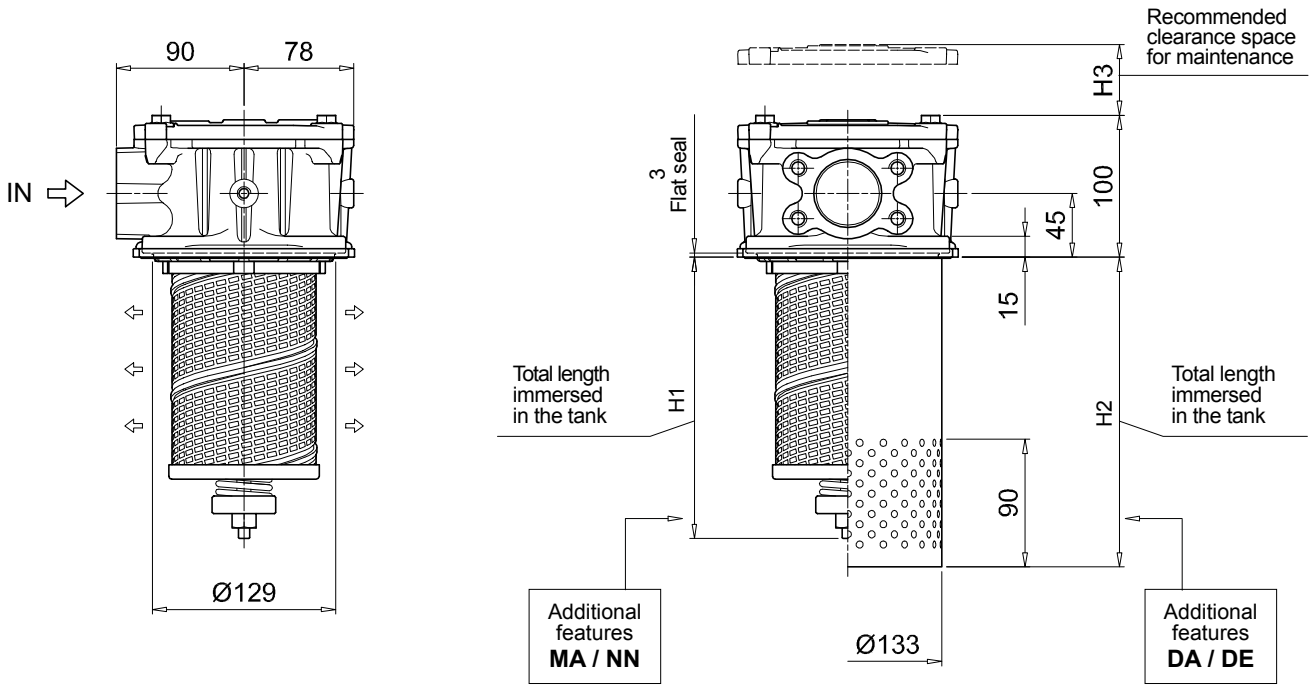
Additional features
NN Without additional features

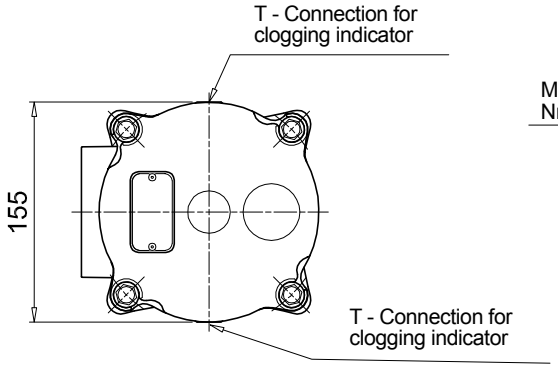
Execution
P01 Standard catalogue item

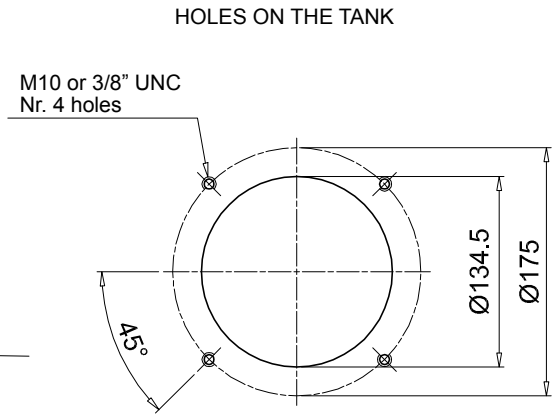
Certificates
NN None

Dimensions

MPHC250					
Additional connection "0"					
Connection	**T**	**Filter length**	**H1 [mm]**	**H2 [mm]**	**H3 [mm]**
FG112	G 1/8"	**10**	182	247	255
FN112	1/8" NPT	**20**	231	247	305
FS024	1/8" NPT	**30**	302	317	375
FE112	G 1/8"	**40**	502	507	580
FF112	1/8" NPT				

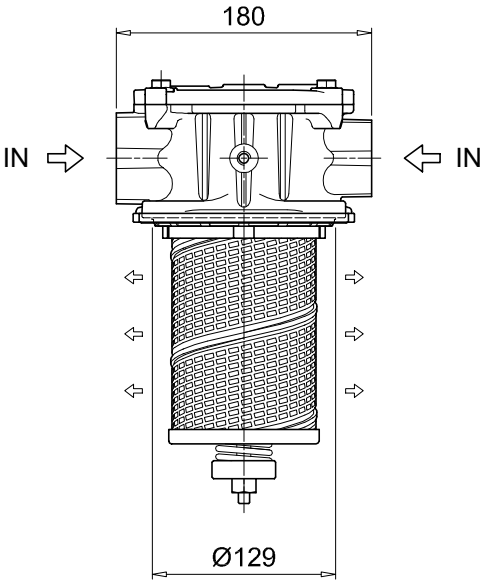


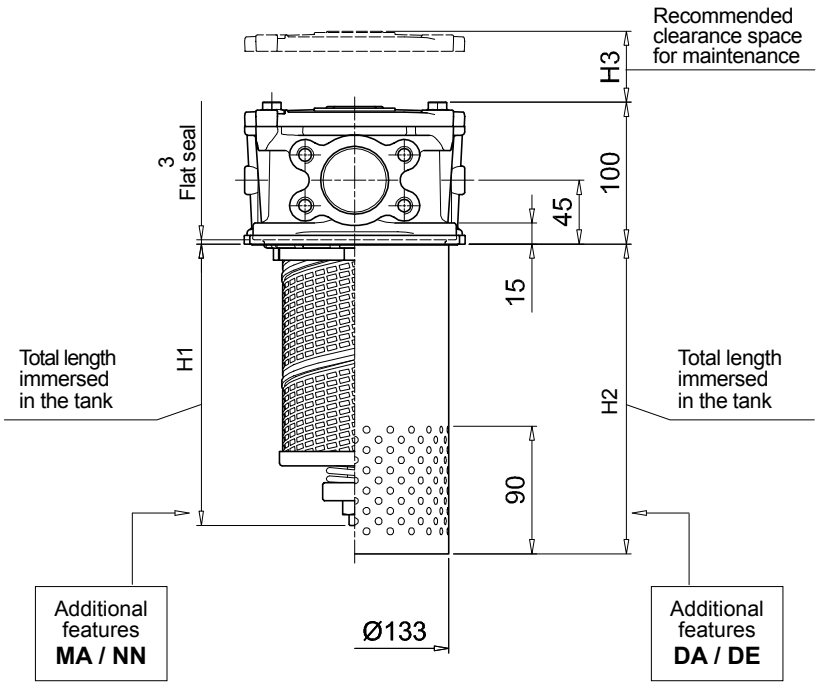




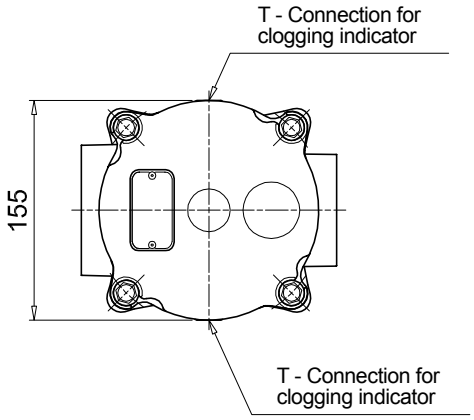
MPHC250	
Additional connection “1”	
Connection	**T**
FG112	G 1/8”
FN112	1/8” NPT
FS024	1/8” NPT
FE112	G 1/8”
FF112	1/8” NPT

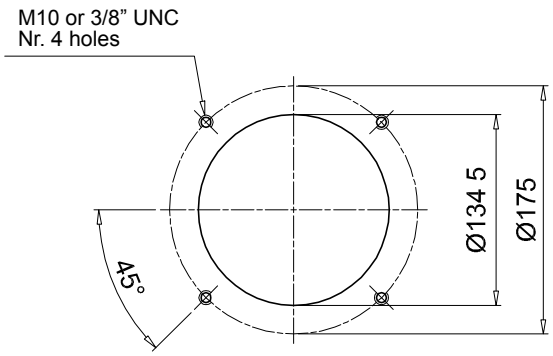
Filter length	**H1 [mm]**	**H2 [mm]**	**H3 [mm]**
10	182	247	255
20	231	247	305
30	302	317	375
40	502	507	580





HOLES ON THE TANK





Designation & Ordering code

COMPLETE FILTER

Example: MPHC | 630 | 50 | A0025 | D | W | 17 | FE212 | 1 | 6T | DA | P01 | NN

Series
MPHC

Size
630

Length
10 | 20 | 30 | 40 | 50

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp

D	10 bar

Seals and treatments

		A0xxx	M0xxx	P0xxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR with filter and components surface treatment	•	•	-
Z	FPM with filter and components surface treatment	•	•	-

By-pass valve

00	Without bypass
17	With bypass 1.75 bar
25	With bypass 2.5 bar

Connections

FE212	2 1/2” SAE 3000 psi/M
FF212	2 1/2” SAE 3000 psi/UNC

Additional connections

0	Without additional connections		
1	Main connection	FE212	**2” SAE 3000 psi/M**
		FF212	**2” SAE 3000 psi/UNC**

Connections for clogging indicator
6T With both side indicator connection, with metal plug

Additional features

DA	With diffuser
DE	With diffuser and magnetic filter
MA	With magnetic filter
NN	Without additional features

Execution
P01 Standard catalogue item

Certificates
NN None

CLOGGING INDICATORS

See pages 776-777

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

ACCESSORIES

See page 270

DPT Dipstick

FILTER ELEMENT

Example: MRC | 630 | 50 | A0025 | D | A | 00 | NN | P01 | NN

Series
MRC

Size
630

Length
10 | **20** | **30** | **40** | **50**

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
00 Without bypass

Additional features
NN Without additional features

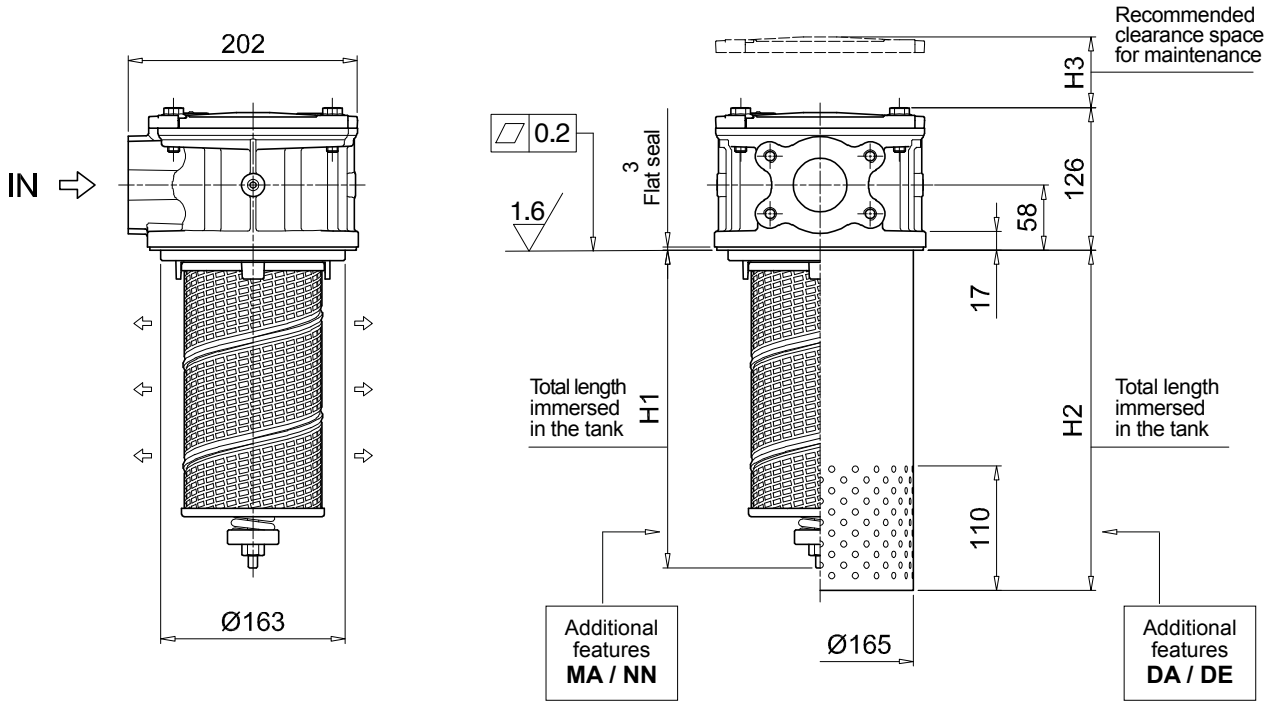
Execution
P01 Standard catalogue item

Certificates
NN None

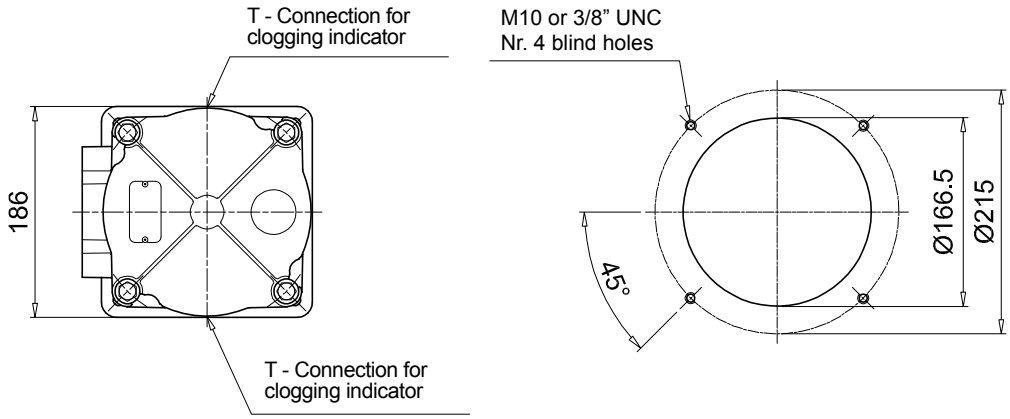
Dimensions

MPHC630	
Additional connection "0"	
Connection	**T**
FE212	G 1/8"
FF212	1/8" NPT

Filter length	H1 [mm]	H2 [mm]	H3 [mm]
10	260	278	330
20	340	358	410
30	440	458	510
40	528	548	600
50	829	848	900

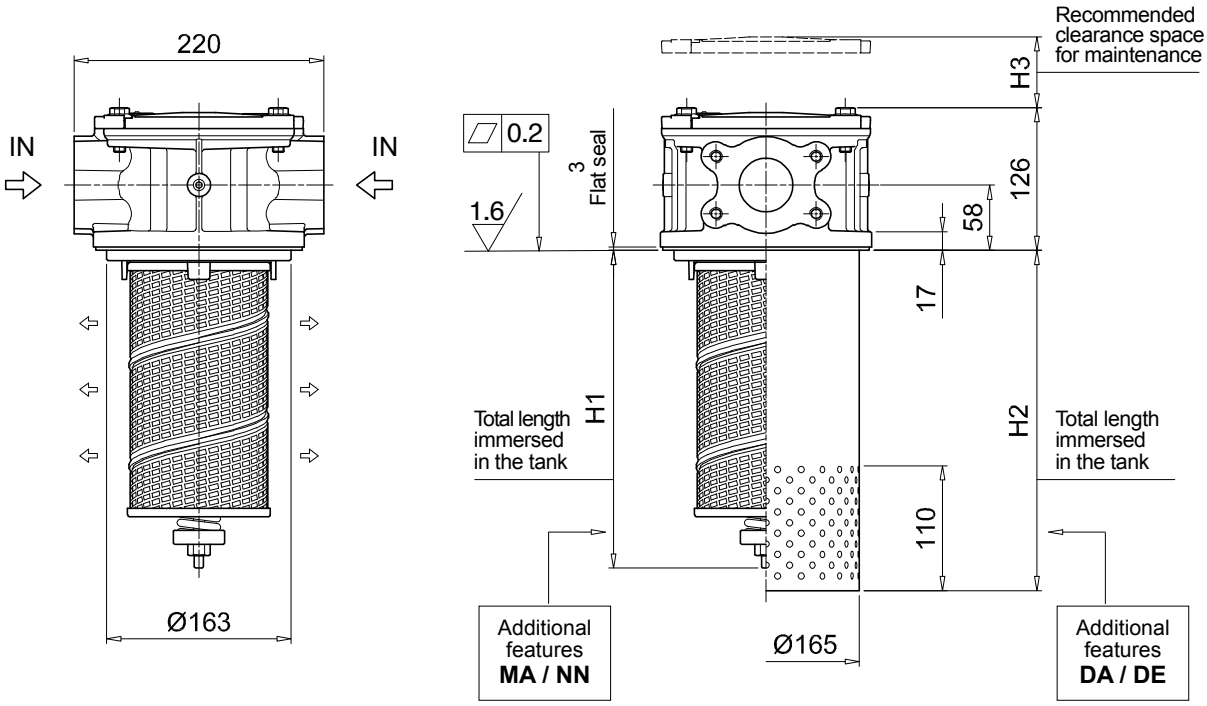


HOLES ON THE TANK

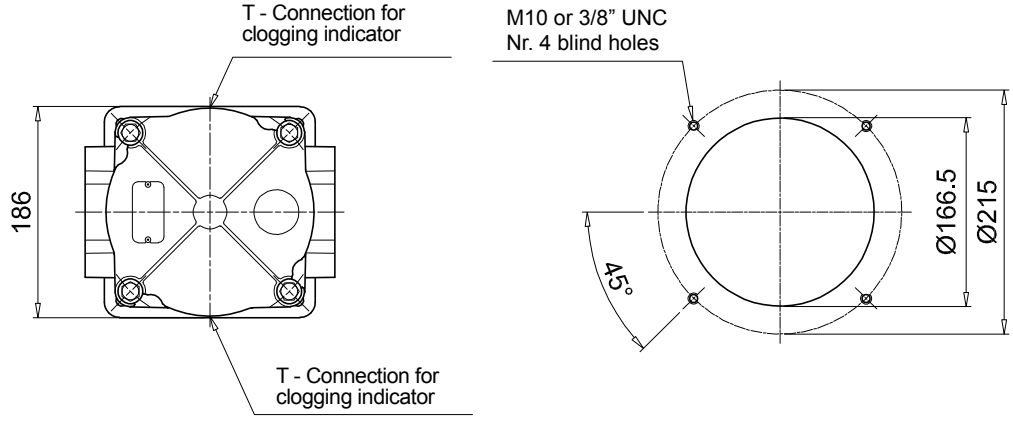


MPHC630	
Additional connection "1"	
Connection	**T**
FE212	G 1/8"
FF212	1/8" NPT

Filter length	H1 [mm]	H2 [mm]	H3 [mm]
10	260	278	330
20	340	358	410
30	440	458	510
40	528	548	600
50	829	848	900



HOLES ON THE TANK



Designation & Ordering code

COMPLETE FILTER

Example: MPHC | 660 | 40 | A0025 | D | W | 17 | FE300 | 0 | 9T | DA | P01 | NN

Series
MPHC

Size
660

Length
40 | **50**

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp
D 10 bar

Seals and treatments

		A0xxx	M0xxx	P0xxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR with filter and components surface treatment	•	•	-
Z	FPM with filter and components surface treatment	•	•	-

By-pass valve
00 Without bypass
17 With bypass 1.75 bar
25 With bypass 2.5 bar

Connections
FE300 3” SAE 3000 psi/M
FE400 4” SAE 3000 psi/M

Additional connections
0 Without additional connections

Connections for clogging indicator
9T With multiple indicator connections, with metal plugs

Additional features
DA With diffuser
DE With diffuser and magnetic filter
MA With magnetic filter
NN Without additional features

Execution
P01 Standard catalogue item

Certificates
NN None

CLOGGING INDICATORS See pages 776-777

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

ACCESSORIES See page 270

DPT Dipstick

FILTER ELEMENT

Example: MRC | 630 | 40 | A0025 | D | A | 00 | NN | P01 | NN

Series
MRC

Size
630

Length
40 | **50**

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
00 Without bypass

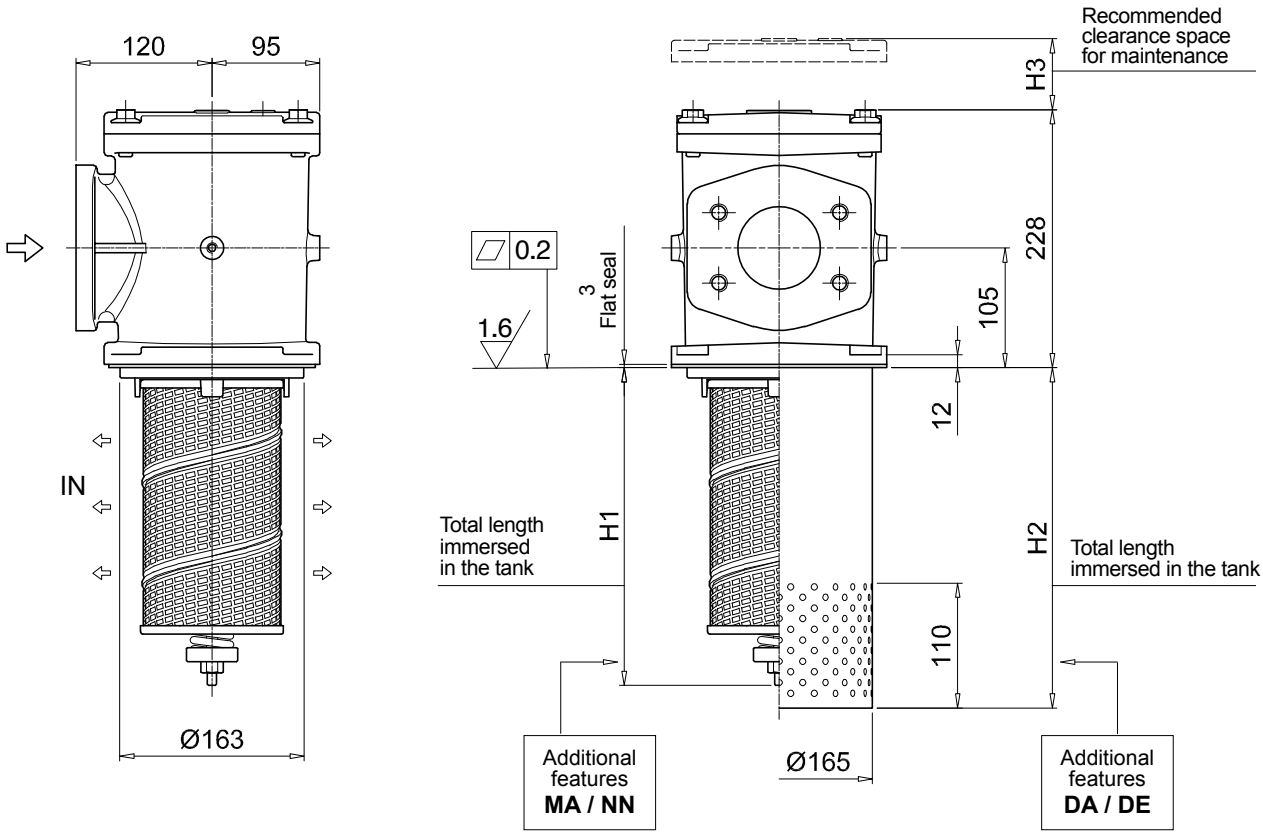
Additional features
NN Without additional features

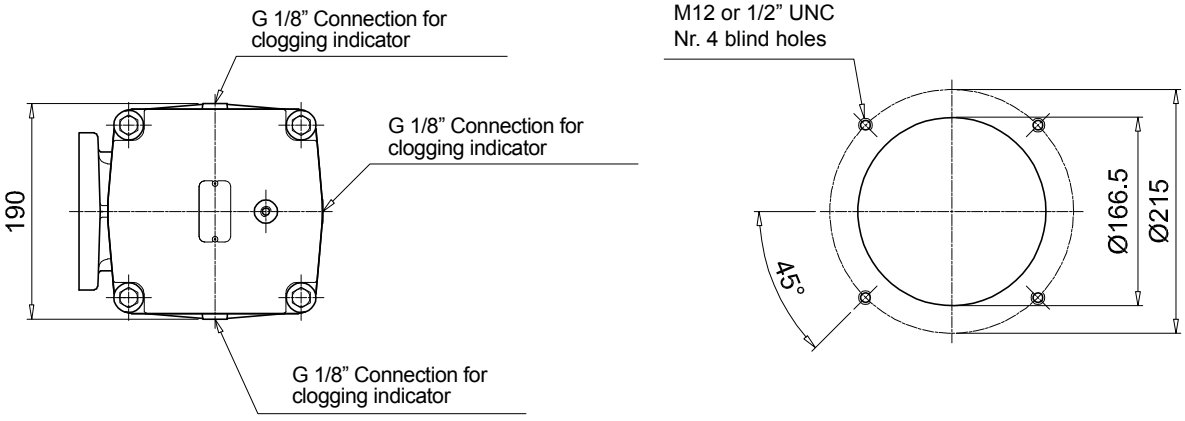
Execution
P01 Standard catalogue item

Certificates
NN None

Dimensions

MPHC660			
Filter length	**H1 [mm]**	**H2 [mm]**	**H3 [mm]**
40	538	548	610
50	838	848	910





Designation & Ordering code

COMPLETE FILTER

Example: MPHC | 850 | 20 | A0025 | D | W | 17 | FE300 | 1 | 1T | DA | P01 | NN

Series
MPHC

Size
850

Length
10 | 20 | 30 | 40

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp

D	10 bar

Seals and treatments

		A0xxx	M0xxx	P0xxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR with filter and components surface treatment	•	•	-
Z	FPM with filter and components surface treatment	•	•	-

By-pass valve

00	Without bypass
17	With bypass 1.75 bar

Connections

FE300	3” SAE 3000 psi/M
FF300	3” SAE 3000 psi/UNC

Additional connections

0	Without additional connections		
1	Main connection	FE300	**4” SAE 3000 psi/M**
		FF300	**4” SAE 3000 psi/UNC**
2	Main connection	FE300	**UNI 2223**
		FF300	**DN 100 PN 10/16**

Connections for clogging indicator

1T	With top indicator connection, with metal plug

Additional features

DA	With diffuser
DE	With diffuser and magnetic filter
MA	With magnetic filter
NN	Without additional features

Execution

P01	Standard catalogue item

Certificates

NN	None

CLOGGING INDICATORS

See pages 776-777

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

ACCESSORIES

See page 270

DPT	Dipstick

FILTER ELEMENT

Example: MRC | 850 | 20 | A0025 | D | A | 00 | NN | P01 | NN

Series
MRC

Size
850

Length
10 | **20** | **30** | **40**

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
00 Without bypass

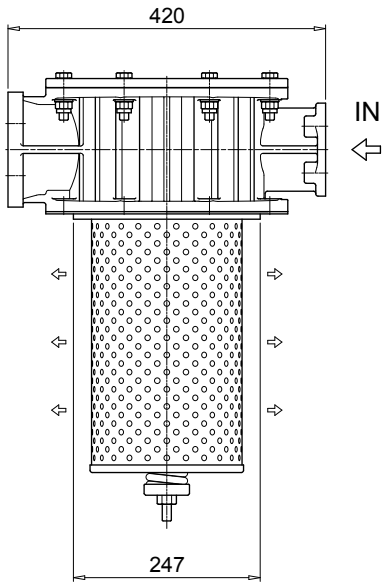
Additional features
NN Without additional features

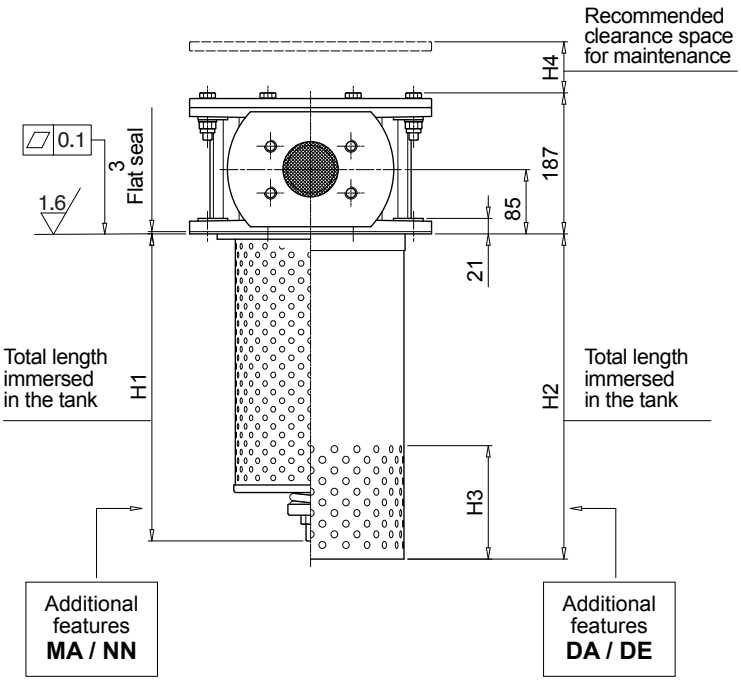
Execution
P01 Standard catalogue item

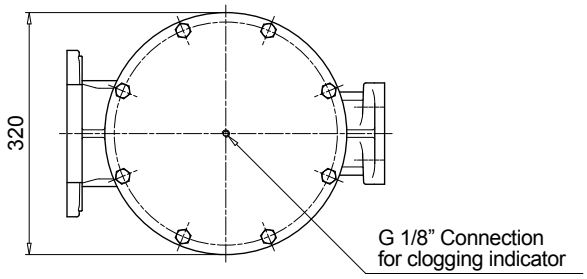
Certificates
NN None

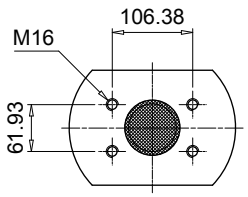
Dimensions

MPHC850				
Additional connection "0"				
Filter length	**H1 [mm]**	**H2 [mm]**	**H3 [mm]**	**H4 [mm]**
10	383	419	150	515
20	598	634	150	730
30	878	914	250	1010
40	1143	1179	250	1275

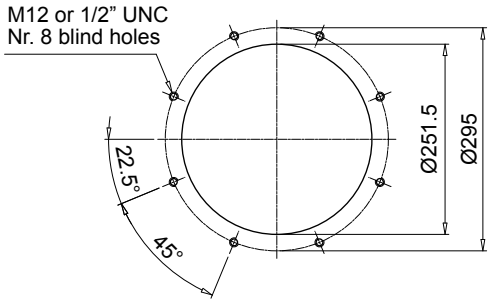




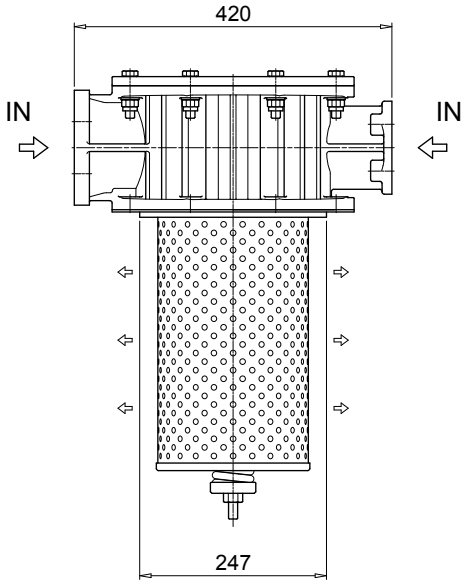


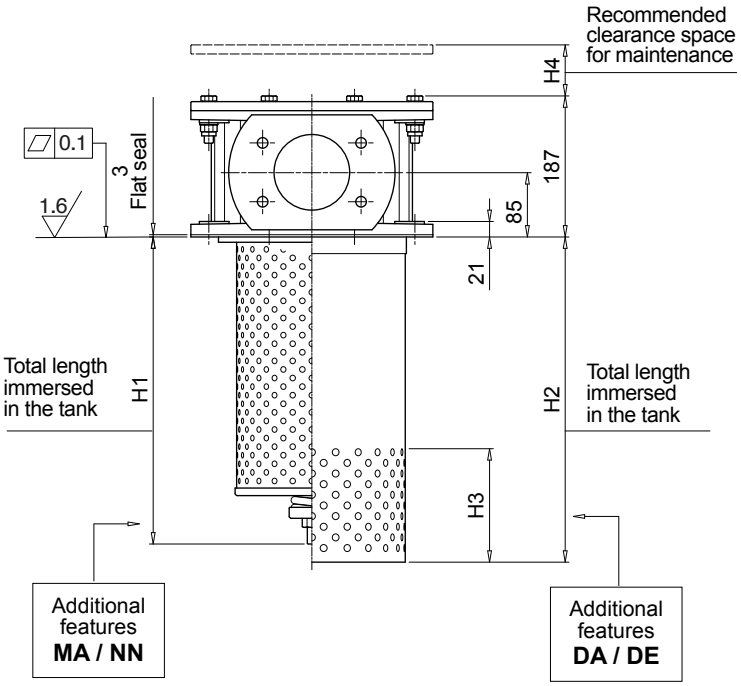


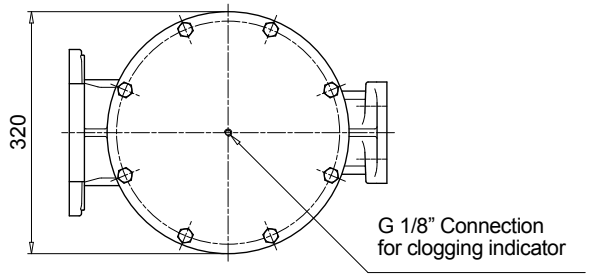
HOLES ON THE TANK



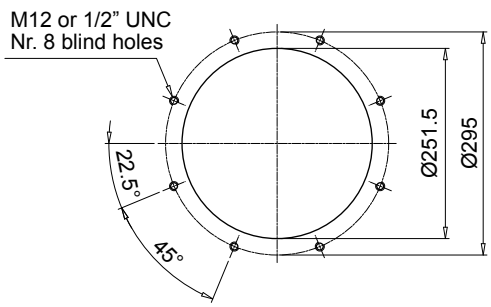
MPHC850				
Additional connection "1"				
Filter length	**H1 [mm]**	**H2 [mm]**	**H3 [mm]**	**H4 [mm]**
10	383	419	150	515
20	598	634	150	730
30	878	914	250	1010
40	1143	1179	250	1275





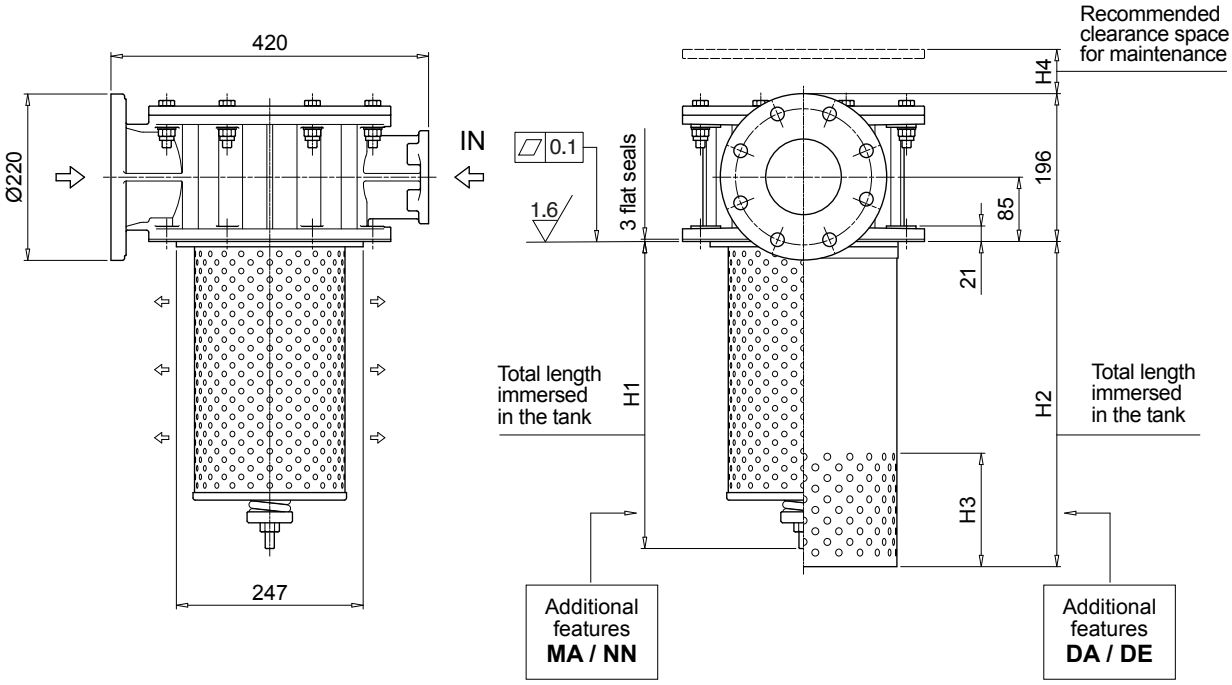


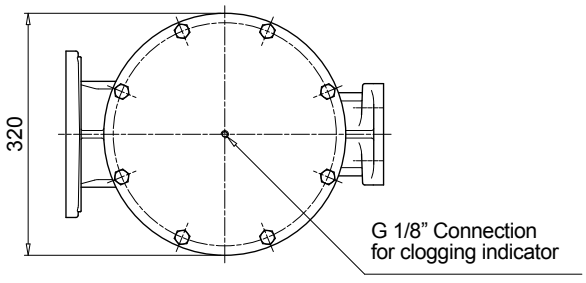
HOLES ON THE TANK



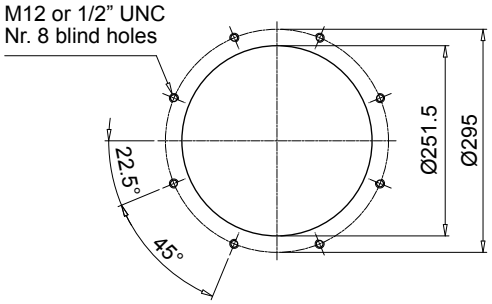
Dimensions

MPHC850				
Additional connection "2"				
Filter length	**H1 [mm]**	**H2 [mm]**	**H3 [mm]**	**H4 [mm]**
10	383	419	150	510
20	598	634	150	725
30	878	914	250	1005
40	1143	1179	250	1270



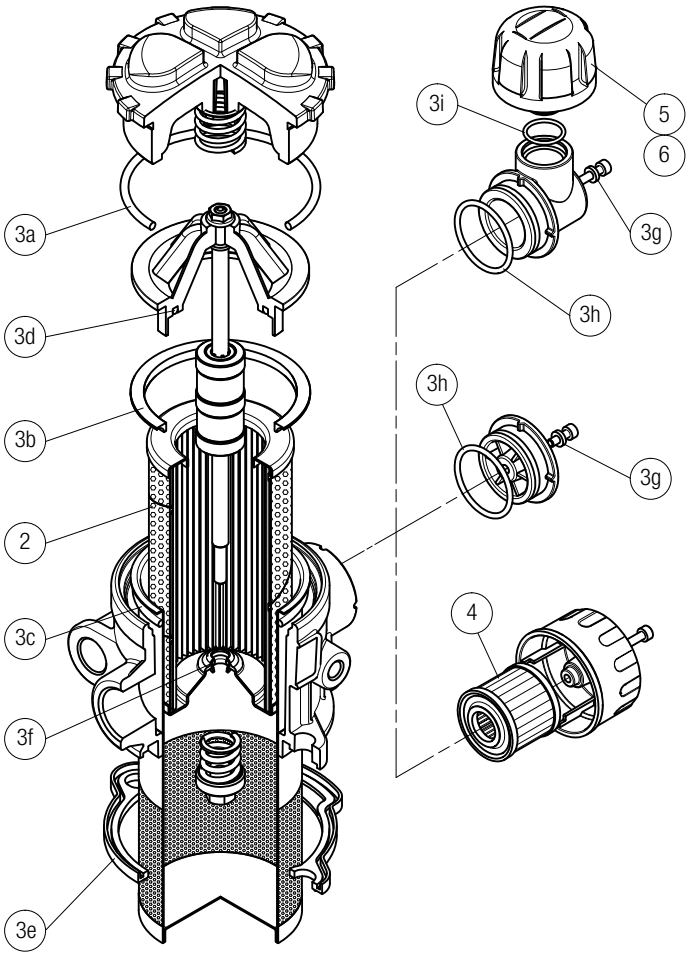


HOLES ON THE TANK



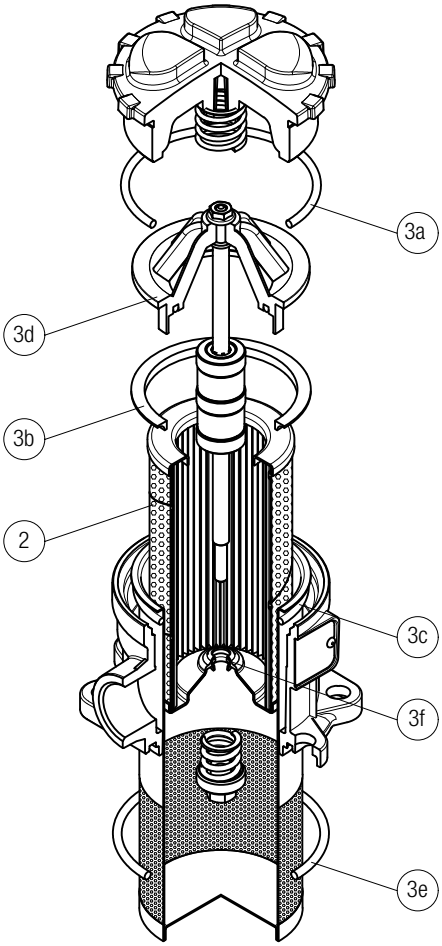
Order number for spare parts

MPHC 110 - 114

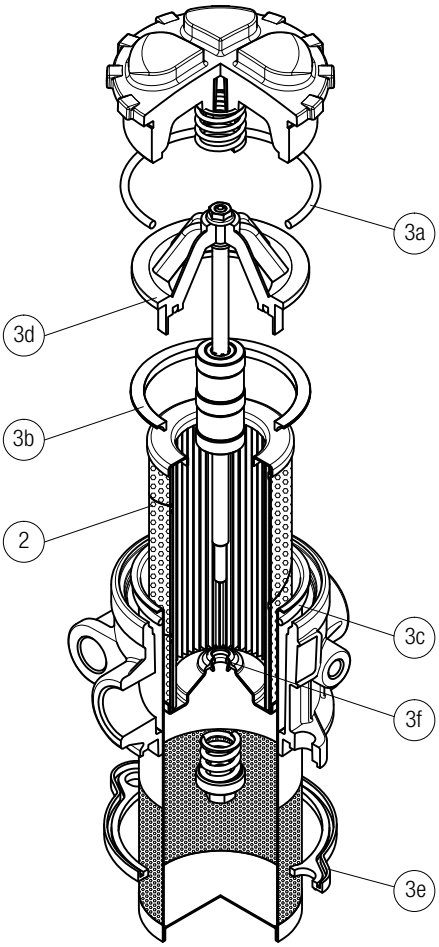


Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3i)		Q.ty: 1 pc. 4	Q.ty: 1 pc. 5	Q.ty: 1 pc. 6
Filter series	Filter element	Seal Kit code number		Air breather filter element - version:		
		NBR	FPM	C	D	P
MPHC 110	See order table	02050565	02050566	10 µm	10 µm	10 µm
MPHC 114		02050582	02050583	A3L03	SAP50G3L03A0P01	SAP50G3L03A1P01

MPHC 116



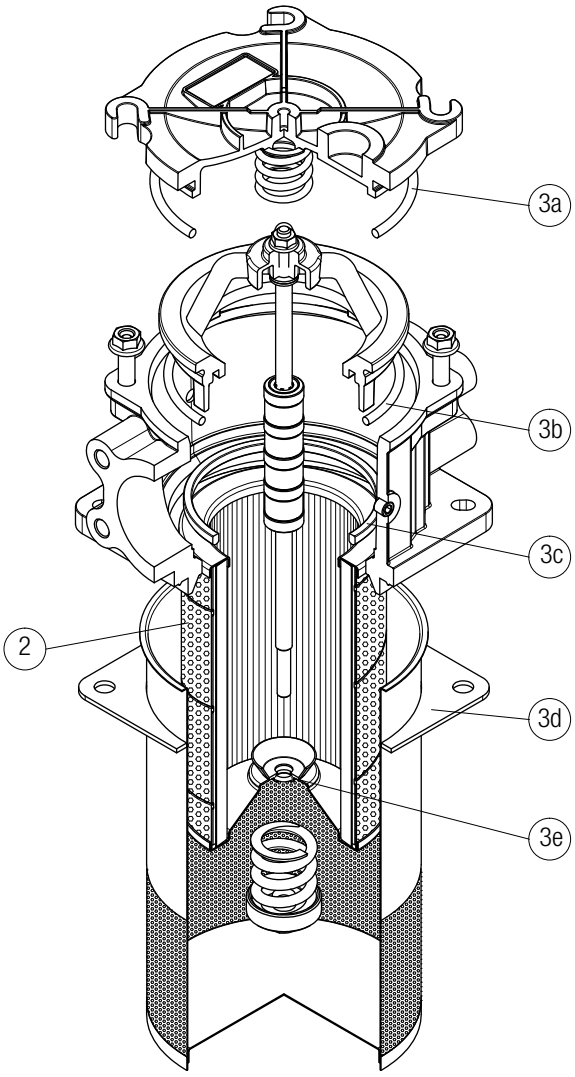
MPHC 120



Item:	Q.ty: 1 pc. (2)	Q.ty: 1 pc. (3) (3a ÷ 3f)	
Filter series	Filter element	Seal Kit code number NBR	FPM
MPHC 116	See order table	02050741	02050742
MPHC 120		02050567	02050568

Order number for spare parts

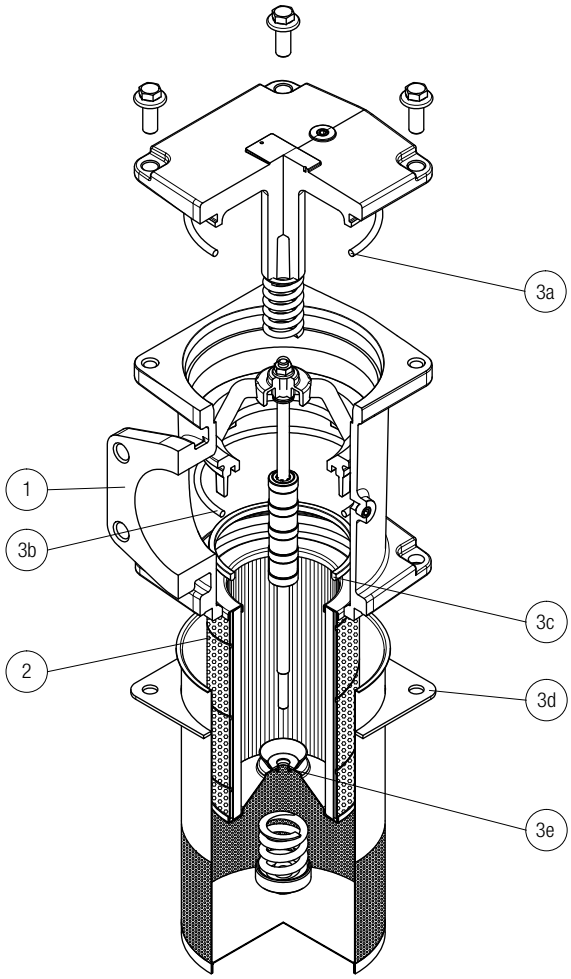
MPHC 250 - 630



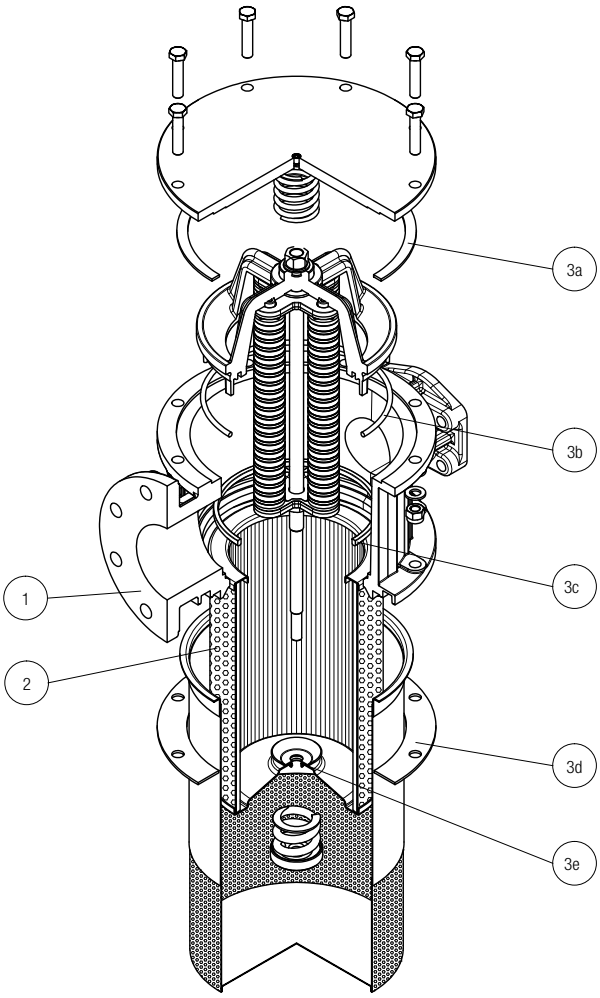
Item:	Q.ty: 1 pc. (2)	Q.ty: 1 pc. (3) (3a ÷ 3e)	
Filter series	Filter element	Seal Kit code number NBR	Seal Kit code number FPM
MPHC 250	See order table	02050151	02050152
MPHC 630		02050153	02050154

Order number for spare parts

MPHC 660



MPHC 850



Item:	Q.ty: 1 pc. (2)	Q.ty: 1 pc. (3) (3a ÷ 3e)	
Filter series	Filter element	Seal Kit code number NBR	FPM
MPHC 660	See order table	02050153	02050154
MPHC 850		02050155	02050156

MPIC series

Maximum working pressure up to 1 MPa (10 bar) - Flow rate up to 3500 l/min

Description

Return filter

Maximum working pressure up to 1 MPa (10 bar)
Flow rate up to 3500 l/min

MPIC is a range of return filter kits for protection of the reservoir against the system contamination.
They are directly integrated in the reservoir in immersed or semi-immersed position to save space into the tank.
The use of the diffuser is recommended, to place the filter output always immersed into the fluid to avoid aeration or foam generation into the reservoir.
The filtration from inside to outside allows a cleaner filter element replacement, the dirty remains into the filter element.

Available features:

- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve, to relieve excessive pressure drop across the filter media
- Magnetic filter, to hold the ferrous particles
- Oil dipstick, to easily check the level of the fluid into the reservoir (separate item)
- Diffuser, to reduce the risk of aeration, foaming and noise

Common applications:

Heavy duty industrial equipment

Technical data

Filter housing materials

- Insert assembly: Polyamide, GF reinforced: MPI 100
  Aluminium: MPIC 250-630-850
- Diffuser: Tinned Steel
- Valve: Steel

Pressure

- Test pressure: 1.5 MPa (15 bar)
- Min. Burst pressure: 3 MPa (30 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 1 MPa (10 bar)

Bypass valve

- Opening pressure 0.175 MPa (1.75 bar) ±10%
- Opening pressure 0.25 MPa (2.5 bar) ±10%, except for MPI 850

Filter element features

Filter		Filter element	
MPIC		MRC	
Δp Element type			
Element media	**Construction**	**Δp Series**	**Δp**
A - Microfiber	Standard	D	10 bar
M - Wire mesh	Standard	D	10 bar
P - Paper	Standard	D	10 bar
Please see ordering code tables to check element Δp series availability based on filter features.			
Flow direction through the filter element: From IN to OUT			

Seals

- Standard NBR series A or W
- Optional FPM series V or Z

Temperature

From -25 °C to +110 °C

Note

MPIC filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

Filter series	Weights [kg]						Volumes [dm³]					
	Length	10	20	30	40	50	Length	10	20	30	40	50
MPIC 100		0.90	1.00	1.20	1.50	1.80		0.90	0.90	1.20	1.60	1.80
MPIC 250		2.20	2.50	2.90	4.30	-		3.50	3.50	4.50	7.00	-
MPIC 630		3.40	3.90	4.30	5.40	6.60		5.80	7.40	9.50	11.40	13.50
MPIC 850		15.20	18.20	21.20	25.20	-		8.80	12.20	16.70	20.80	-

Flow rates [l/min]

Filters series	Length	Filter element design - D series					Filter element design - D series		
		A0003	A0006	A0010	A0016	A0025	M0025 M0060 M0090	P0010	P0025
MPIC 100	**10**	26	29	72	79	107	282	164	190
	20	43	46	112	114	161	318	164	190
	30	64	72	132	156	178	324	219	251
	40	90	99	184	198	216	324	266	302
	50	117	128	201	219	244	324	282	318
MPIC 250	**10**	93	102	210	251	315	1093	339	383
	20	124	151	327	412	421	1122	460	514
	30	189	221	418	445	500	1137	544	616
	40	261	304	592	670	766	1166	832	923
MPIC 630	**10**	160	200	369	423	518	1894	565	632
	20	240	257	571	611	1045	1929	1137	1285
	30	330	374	745	788	1308	1938	1416	1577
	40	374	403	887	1010	1348	1956	1448	1612
	50	625	698	1210	1257	1723	2121	1839	1929
MPIC 850	**10**	775	1041	1246	1568	2242	3311	2371	2625
	20	1176	1522	1682	1747	2449	3378	2684	2886
	30	1490	1914	1995	2014	3035	3405	3144	3220
	40	1668	2088	2305	2363	3169	3517	3272	3378

Maximum flow rate for a complete return filter with a pressure drop Δp = 0.5 bar.

The reference fluid has a kinematic viscosity of 30 mm^2/s (cSt) and a density of 0.86 kg/dm^3.

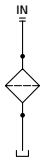
For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.

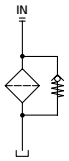
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure.

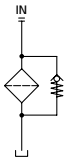
Please, contact our Sales Department for further additional information.

Hydraulic diagram

Filter series	00 - without bypass	17 - with bypass 1.75 bar	25 - with bypass 2.5 bar
MPIC 100	•	•	•
MPIC 250	•	•	•
MPIC 630	•	•	•
MPIC 850	•	•	-







Designation & Ordering code

COMPLETE FILTER

Example 1:	MPIC	100	20	A0016	D	Z	25	NN000	0	ON	MA	P01	NN
Example 2:	MPIC	630	50	P0010	D	V	00	NN000	0	ON	DE	P01	NN

Series
MPIC

Size

100	**630**
250	**850**

Length	100	250	630	850
10	•	•	•	•
20	•	•	•	•
30	•	•	•	•
40	•	•	•	•
50	•	-	•	-

Filtration rating (filter media)		
A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp	
D	10 bar

Seals and treatments		A0xxx	M0xxx	P0xxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR with filter and components surface treatment	•	•	-
Z	FPM with filter and components surface treatment	•	•	-

		Size			
By-pass valve		100	250	630	850
00	Without bypass	•	•	•	•
17	With bypass 1.75 bar	•	•	•	•
25	With bypass 2.5 bar	•	•	•	-

Connections
NN000 Without connection

Additional connections
0 Without additional connections

Connections for clogging indicator
ON Without indicator connections

Additional features
DA With diffuser
DE With diffuser and magnetic filter
MA With magnetic filter
NN Without additional features

Execution
P01 Standard catalogue item

Certificates
NN None

Designation & Ordering code

FILTER ELEMENT

Example 1:	MRC	100	20	A0016	D	V	00	NN	P01	NN
Example 2:	MRC	630	50	P0010	D	V	00	NN	P01	NN

Series

MRC

Size

100	**630**
250	**850**

Length	100	250	630	850
10	•	•	•	•
20	•	•	•	•
30	•	•	•	•
40	•	•	•	•
50	•	-	•	-

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp

D 10 bar

Seals and treatments

A NBR

V FPM

Bypass

00 Without bypass

Additional features

NN Without additional features

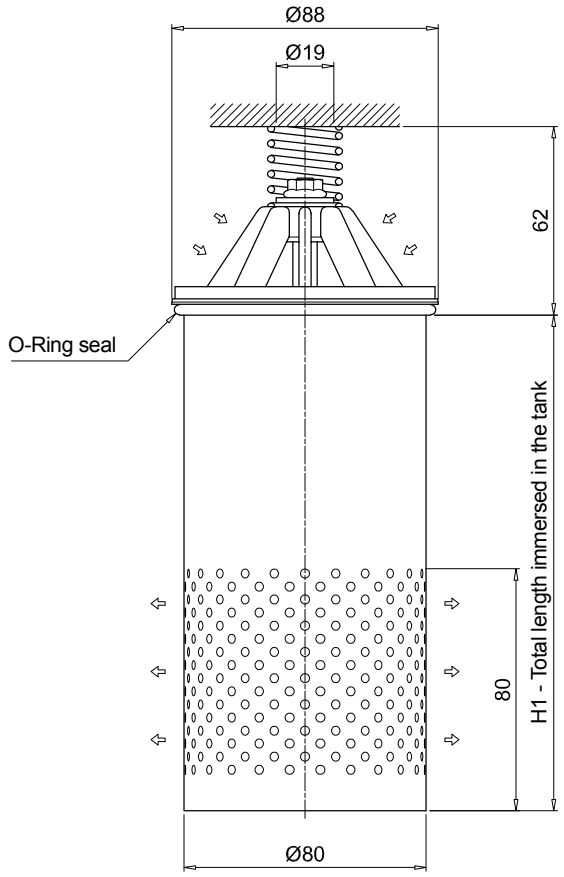
Execution

P01 Standard catalogue item

Certificates

NN None

Dimensions



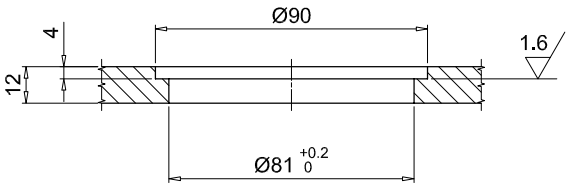
MPIC100

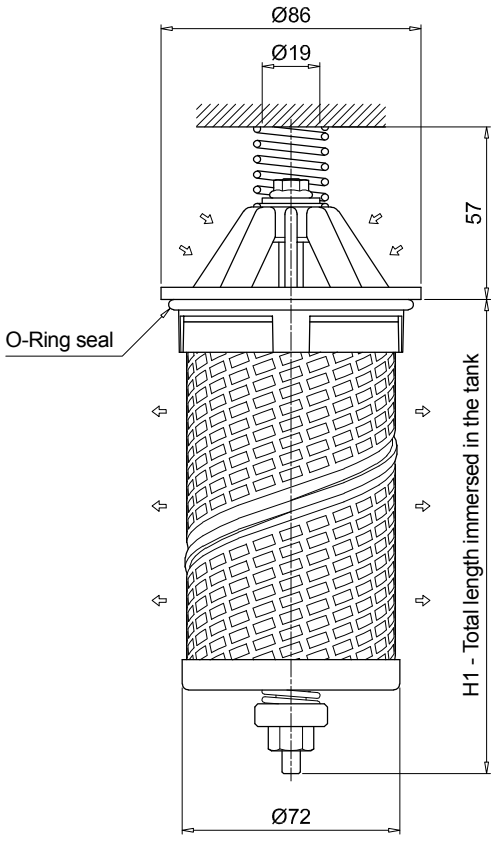
Additional features
DA / DE

with diffuser

Filter length	H1 [mm]
10	198
20	198
30	248
40	348
50	448

Filter seat





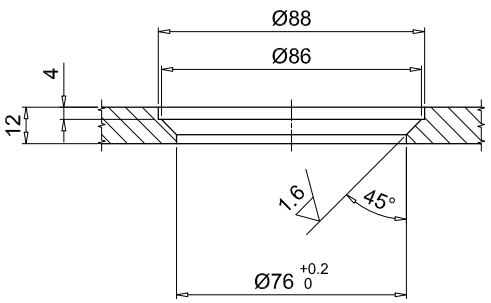
MPIC100

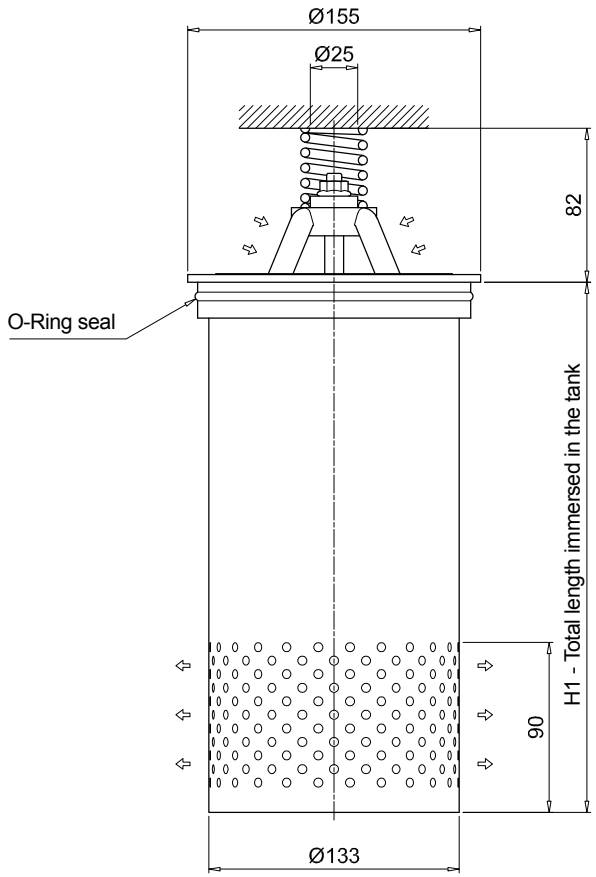
Additional features
MA / NN

without diffuser

Filter length	H1 [mm]
10	141
20	185
30	235
40	335
50	435

Filter seat





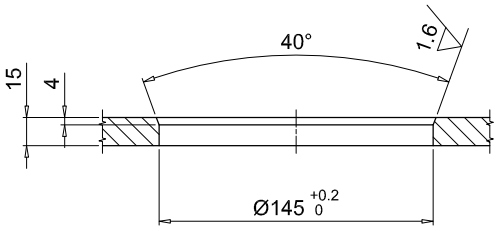
MPIC250

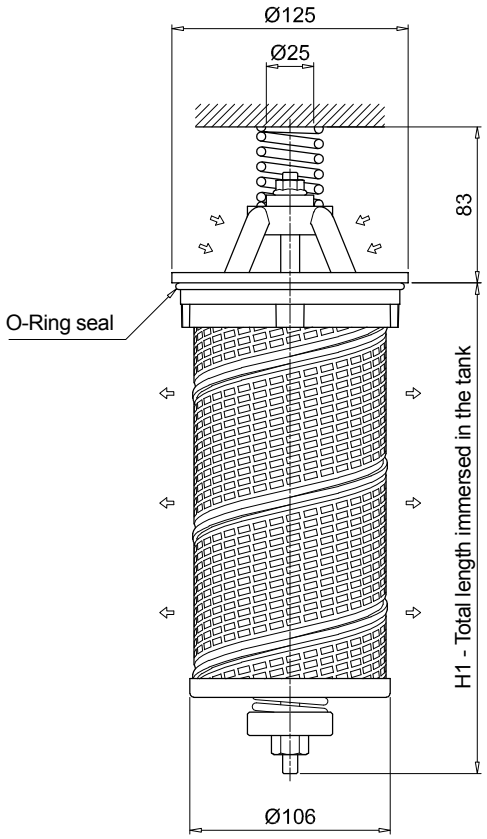
Additional features
DA / DE

with diffuser

Filter length	H1 [mm]
10	266
20	266
30	336
40	524

Filter seat





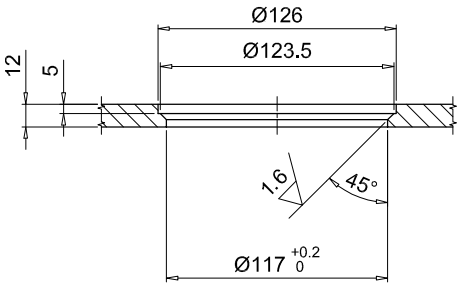
MPIC250

Additional features
MA / NN

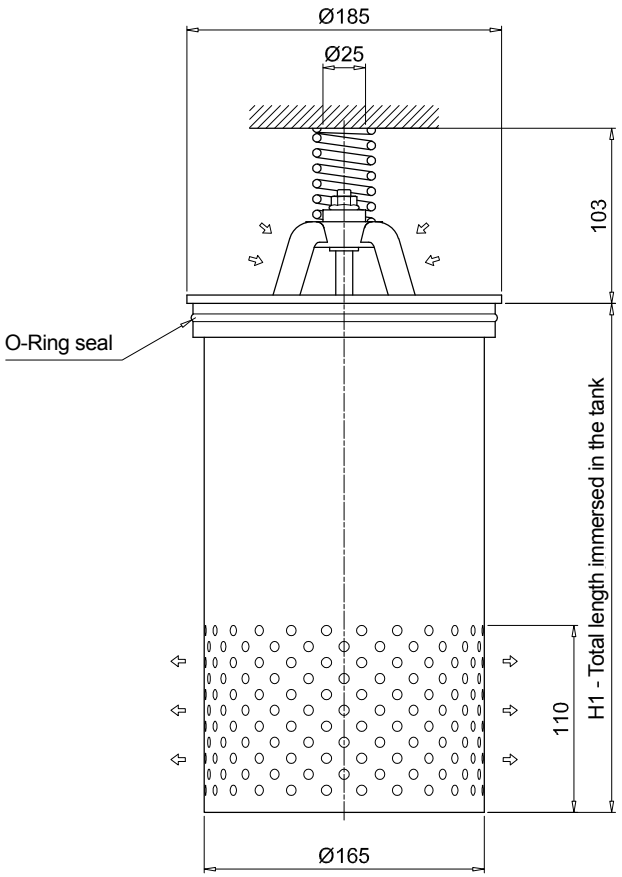
without diffuser

Filter length	H1 [mm]
10	193
20	243
30	313
40	516

Filter seat

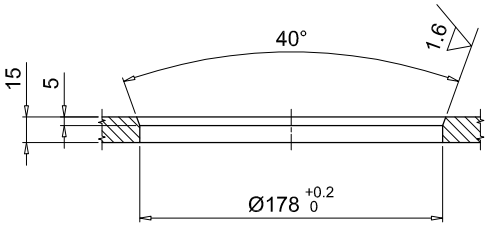


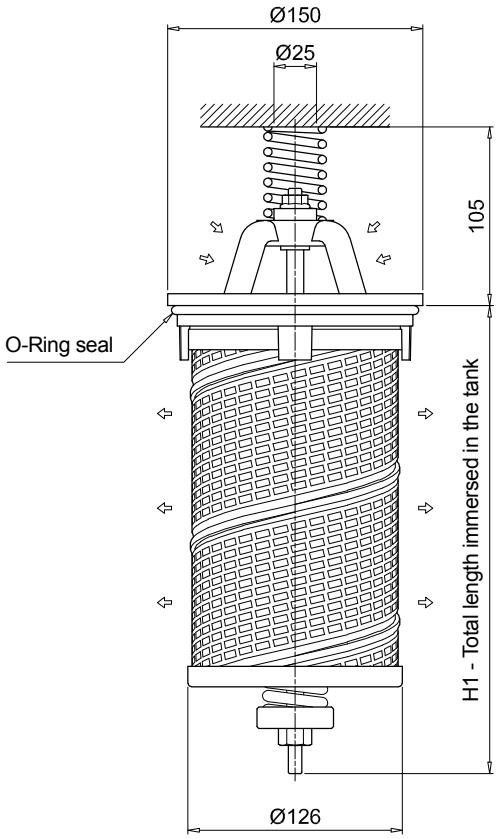
Dimensions



MPIC630	
Additional features **DA / DE**	
with diffuser	
Filter length	**H1 [mm]**
10	298
20	378
30	478
40	568
50	868

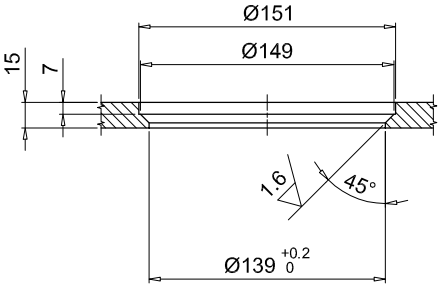
Filter seat

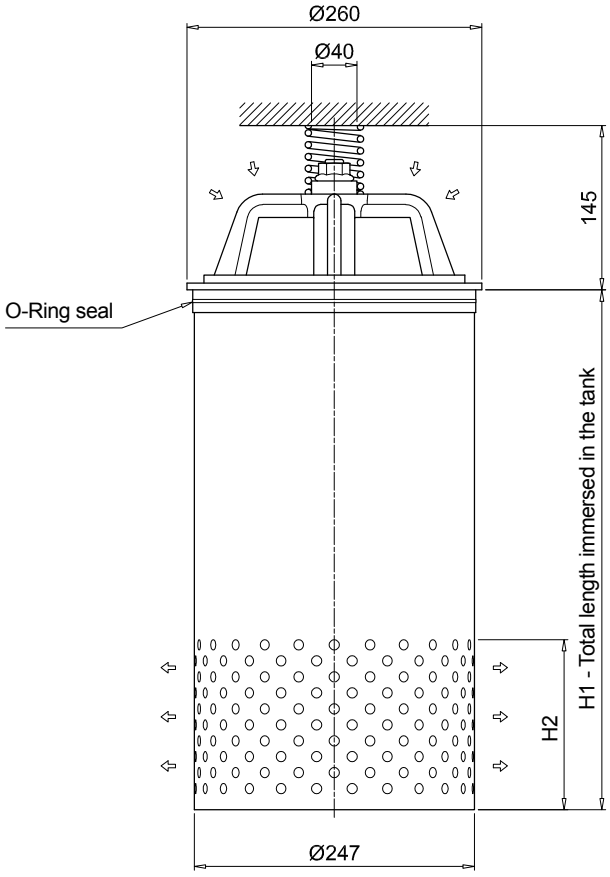




MPIC630	
Additional features **MA / NN**	
without diffuser	
Filter length	**H1 [mm]**
10	275
20	355
30	455
40	540
50	841

Filter seat





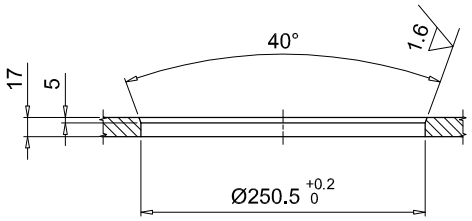
MPIC850

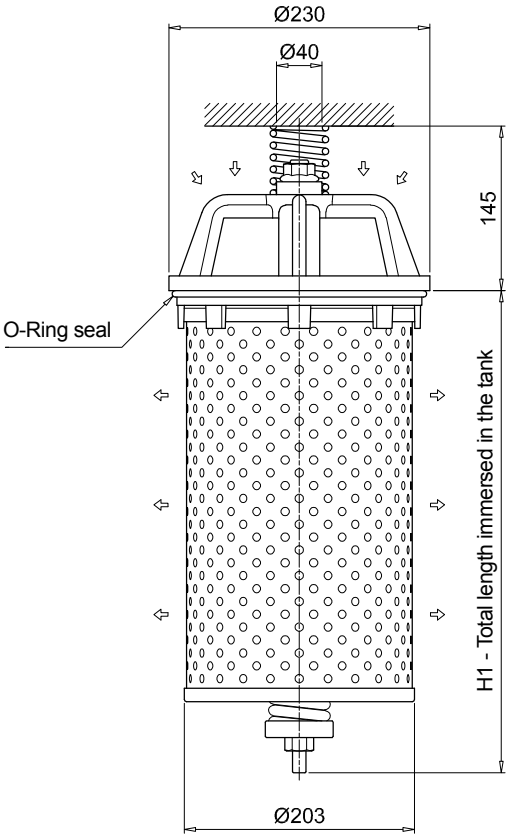
Additional features
DA / DE

with diffuser

Filter length	H1 [mm]	H2 [mm]
10	427	150
20	642	150
30	922	260
40	1187	260

Filter seat





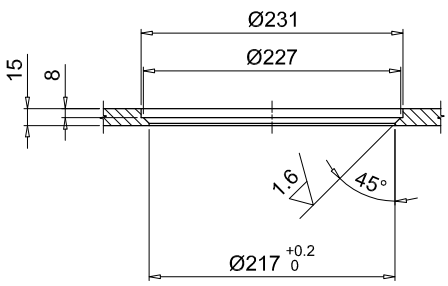
MPIC850

Additional features
MA / NN

without diffuser

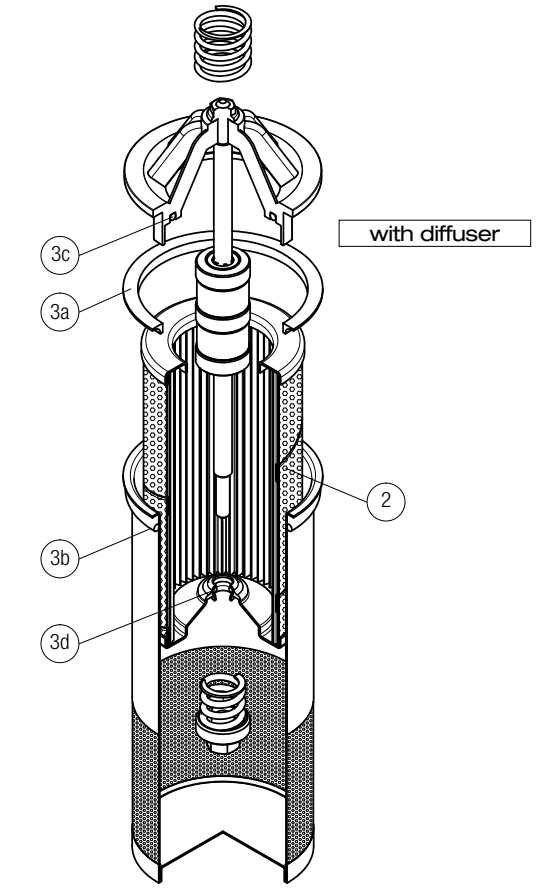
Filter length	H1 [mm]
10	405
20	620
30	900
40	1165

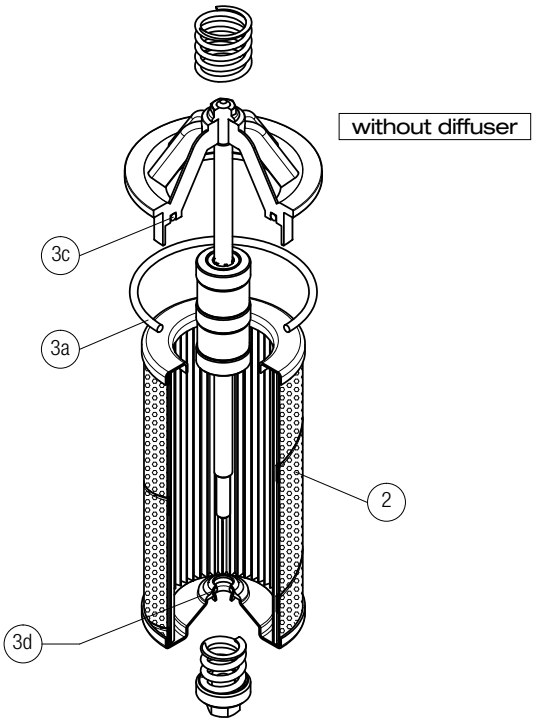
Filter seat



Order number for spare parts

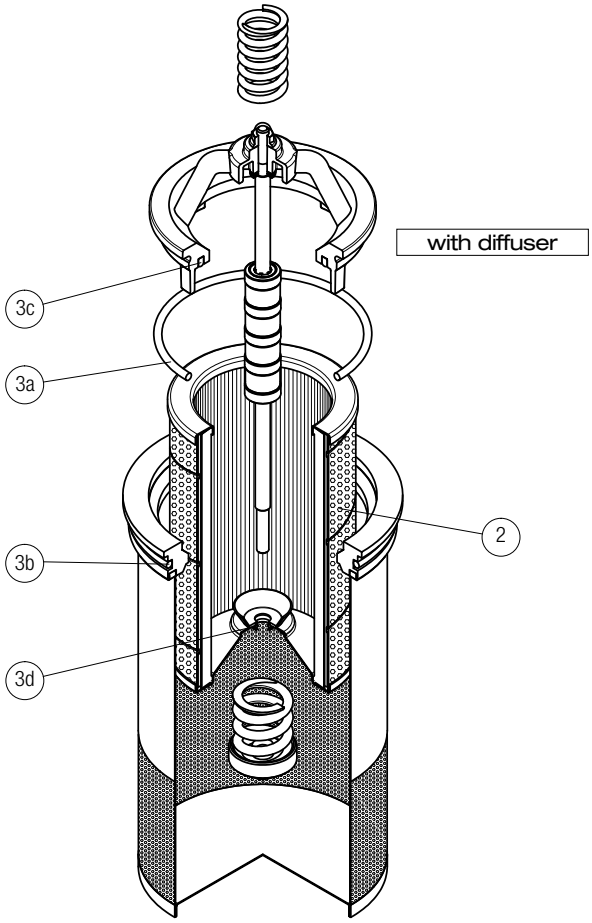
MPIC100

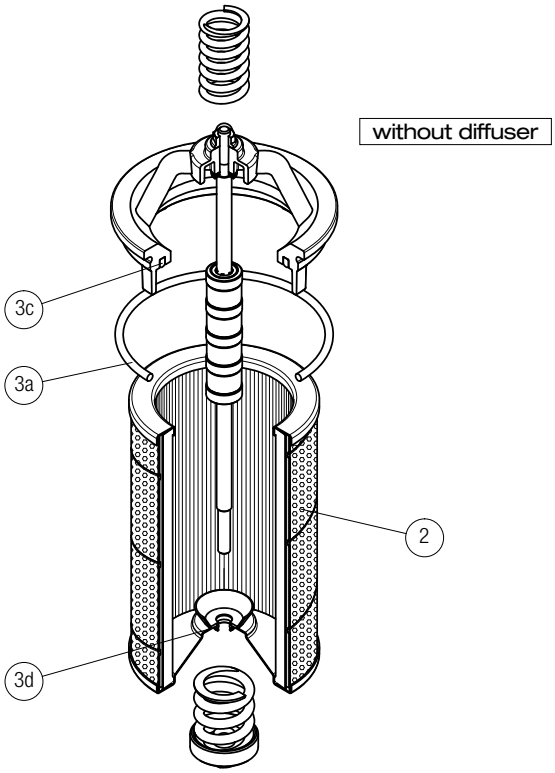




Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3d)	
Filter series	**Filter element**	**Seal Kit code number NBR**	**FPM**
MPIC 100	See order table	02050145	02050146

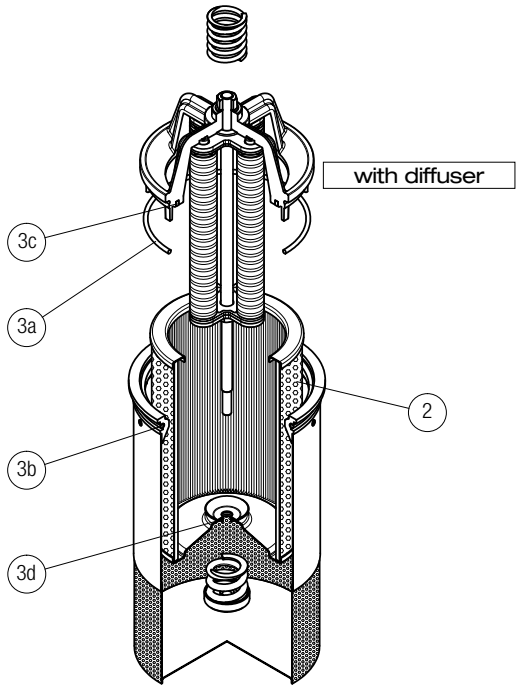
MPIC250 - MPIC630

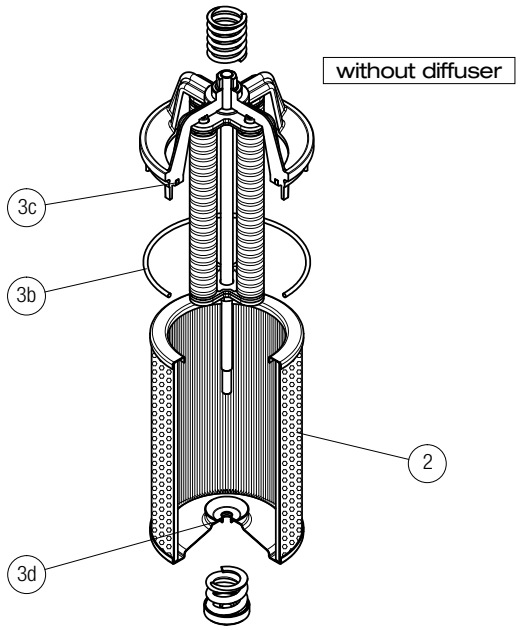




Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3d)	
Filter series	**Filter element**	**Seal Kit code number NBR**	**FPM**
MPIC 250	See order table	02050147	02050148
MPIC 630		02050112	02050113

MPIC850





Item:	Q.ty: 1 pc. (2)	Q.ty: 1 pc. (3) (3a ÷ 3d)	
Filter series	Filter element	Seal Kit code number NBR	FPM
MPIC 850	See order table	02050114	02050115

FRIC series

Maximum working pressure up to 2 MPa (20 bar) - Flow rate up to 2500 l/min

FRIC GENERAL INFORMATION

Description

Return filter

Maximum working pressure up to 2 MPa (20 bar)
Flow rate up to 2500 l/min

FRIC is a range of return filters for protection of the reservoir against the system contamination.
They could be directly fixed to the reservoir in immersed or semi-immersed position or connected to the lines of the system through the hydraulic fittings.
The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

Available features:

- Female threaded connections up to 2 1/2" and flanged connections up to 3 1/2", for a maximum flow rate of 2500 l/min
- Double input connections, to connect several return lines or drains
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve, to relieve excessive pressure drop across the filter media
- Visual, electrical and electronic differential clogging indicators

Common applications:

Heavy duty industrial equipment

Technical data

Filter housing materials

- Filter body: Aluminium: FRIC 255
  Anodized Aluminium: FRIC 025-040-100-250-630
  Phosphatized Steel: FRIC 850
- Cover: Polyamide, GF reinforced: FRIC 255
  Anodized Aluminium: FRIC 025-040-100-250-630-850
- Valve: Polyamide, GF reinforced - Steel

Pressure

- Test pressure: 3 MPa (30 bar)
- Min. Burst pressure: 6 MPa (60 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 2 MPa (20 bar)

Bypass valve

Opening pressure 0.24 MPa (2.4 bar) ±10%

Filter element features

Filter		Filter element	
FRIC		CUC	
Δp Element type			
Element media	Construction	Δp Series	Δp
A - Microfiber	Standard	D	10 bar
M - Wire mesh	Standard	D	10 bar
P - Paper	Standard	D	10 bar
Please see ordering code tables to check element Δp series availability based on filter features.			
Flow direction through the filter element: From OUT to IN			

Seals

- Standard NBR series A (or W only for FRIC850)
- Optional FPM series V (or Z only for FRIC850)

Temperature

From -25 °C to +110 °C

Note

FRIC filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

Filter series	Weights [kg]	Volumes [dm³]
	Length 10	Length 10
FRIC 025	1.0	0.28
FRIC 040	2.0	0.70
FRIC 100	3.8	1.09
FRIC 250	6.3	2.60
FRIC 255	4.2	3.20
FRIC 630	13.8	7.05
FRIC 850	48.0	21.50

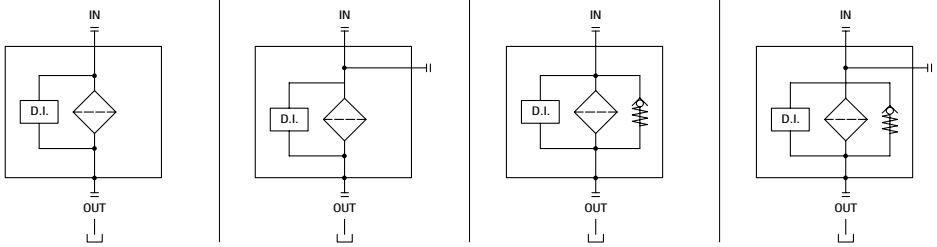
Flow rates [l/min]

		Filter element design - D Series							
Filter series	Length	A0003	A0006	A0010	A0016	A0025	M0025 M0060 M0090	P0010	P0025
FRIC 025	**10**	6	10	17	19	43	122	43	47
FRIC 040	**10**	19	23	43	45	94	155	94	102
FRIC 100	**10**	32	34	89	92	187	260	187	206
FRIC 250	**10**	144	179	271	300	448	645	448	490
FRIC 255	**10**	144	179	271	300	448	645	448	490
FRIC 630	**10**	242	279	508	577	834	1446	834	911
FRIC 850	**10**	440	541	971	1143	1705	2528	1705	1880

Maximum flow rate for a complete return filter with a pressure drop Δp = 0.5 bar.
The reference fluid has a kinematic viscosity of 30 mm^2/s (cSt) and a density of 0.86 kg/dm^3.
For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure.
Please, contact our Sales Department for further additional information.

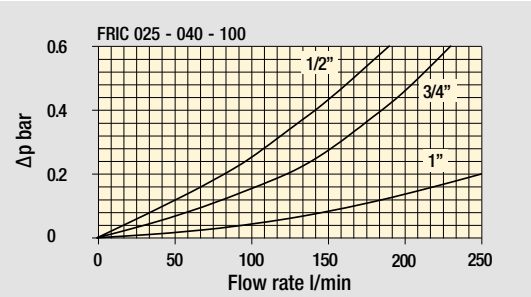
Hydraulic diagram

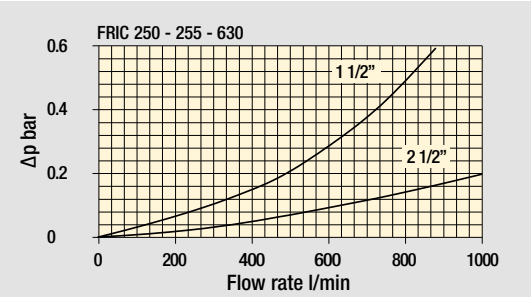
	00 - without bypass		24 - with bypass 2.4 bar	
Filter series	without additional connection	with additional connection	without additional connection	with additional connection
FRIC 025	-	•	-	•
FRIC 040	-	•	-	•
FRIC 100	-	•	-	•
FRIC 250	-	•	-	•
FRIC 255	•	-	•	-
FRIC 630	-	•	-	•
FRIC 850	•	-	•	-

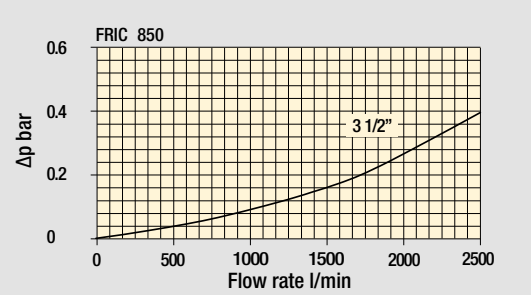


Pressure drop

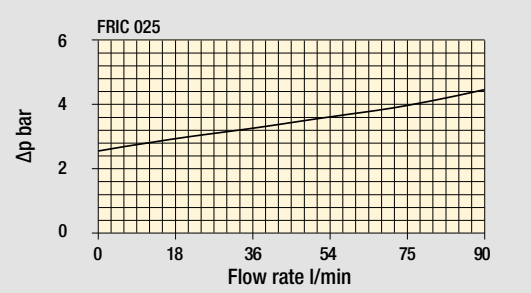
Filter housings Δp pressure drop

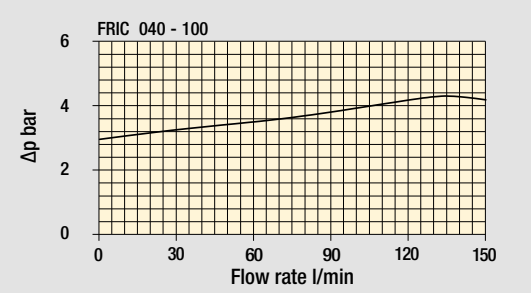


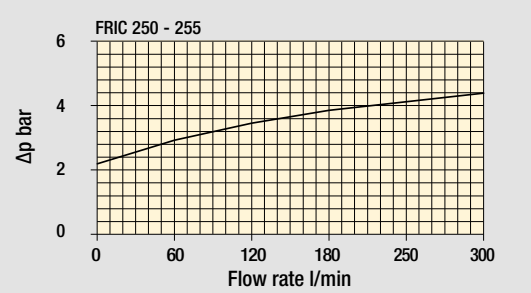


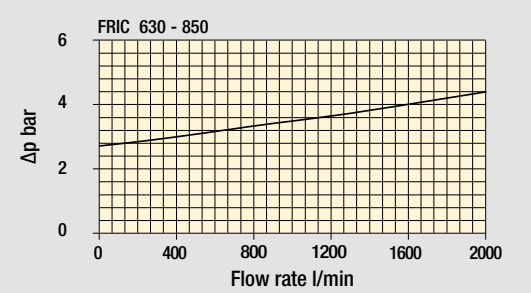


Bypass valve pressure drop









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.

Designation & Ordering code

COMPLETE FILTER

Example 1:	FRIC	025	10	A0025	D	A	00	FG012	1	1N	NN	P01	NN
Example 2:	FRIC	630	10	M0025	D	V	00	FF212	1	1N	NN	P01	NN

Series
FRIC

Size

025	**250**
040	**630**
100	

Length
10

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

By-pass valve
00 Without bypass
24 With bypass 2.4 bar

Connections	025	040	100	250	630
FG012 G 1/2”	•	-	-	-	-
FG034 G 3/4”	-	•	-	-	-
FG100 G 1”	-	-	•	-	-
FG112 G 1 1/2”	-	-	-	•	-
FG212 G 2 1/2”	-	-	-	-	•
FN012 1/2” NPT	•	-	-	-	-
FN034 3/4” NPT	-	•	-	-	-
FN100 1” NPT	-	-	•	-	-
FN112 1 1/2” NPT	-	-	-	•	-
FN212 2 1/2” NPT	-	-	-	-	•
FS008 SAE 8 - 3/4” - 16 UNF	•	-	-	-	-
FS012 SAE 12 - 1 1/16” - 12 UN	-	•	-	-	-
FS016 SAE 16 - 1 5/16” - 12 UN	-	-	•	-	-
FS024 SAE 24 - 1 7/8” - 12 UN	-	-	-	•	-
FS032 SAE 32 - 2 1/2” - 12 UN	-	-	-	-	•

Connections	025	040	100	250	630
FE100 1” SAE 3000 psi/M	-	-	•	-	-
FE112 1 1/2” SAE 3000 psi/M	-	-	-	•	-
FE212 2 1/2” SAE 3000 psi/M	-	-	-	-	•
FF100 1” SAE 3000 psi/UNC	-	-	•	-	-
FF112 1 1/2” SAE 3000 psi/UNC	-	-	-	•	-
FF212 2 1/2” SAE 3000 psi/UNC	-	-	-	-	•

Additional connections
1 With additional connection

Connections for clogging indicator
1N With top indicator connection

Additional features
NN Without additional features

Execution
P01 Standard catalogue item

Certificates
NN None

CLOGGING INDICATORS

See pages 776-777

DEA Electrical differential pressure indicator
DEM Electrical differential pressure indicator
DEU Electrical differential pressure indicator
DLA Electrical / visual differential pressure indicator
DLE Electrical / visual differential pressure indicator
DTA Electronic differential pressure indicator
DTI I-O Link electronic differential pressure indicator
DVA Visual differential pressure indicator
DVM Visual differential pressure indicator

PLUGS

See page 807

T2 Plug (not included)

Designation & Ordering code

FILTER ELEMENT

Example 1:	CUC	025	10	A0025	D	A	00	NN	P01	NN
Example 2:	CUC	630	10	M0025	D	V	00	NN	P01	NN

Series

CUC

Size

025	**250**
040	**630**
100	

Length

10

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp

D 10 bar

Seals and treatments

A NBR

V FPM

Bypass

00 Without bypass

Additional features

NN Without additional features

Execution

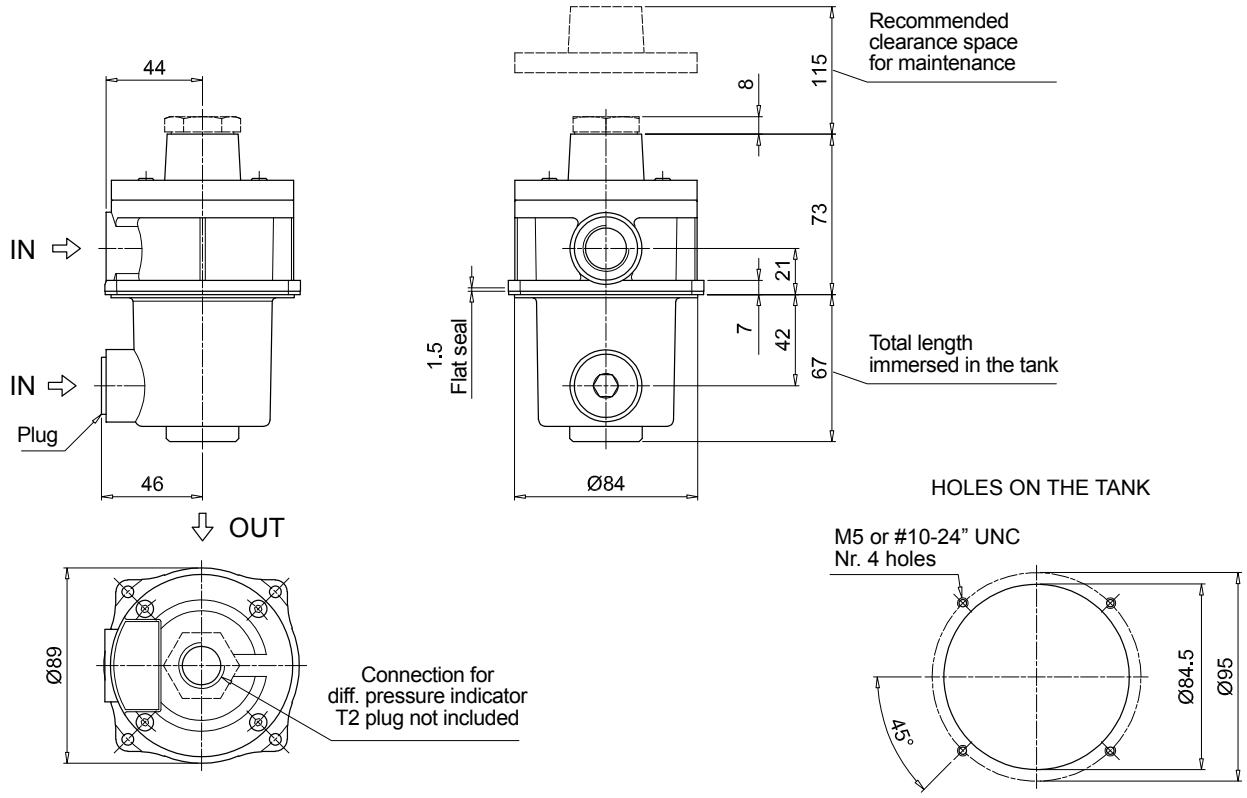
P01 Standard catalogue item

Certificates

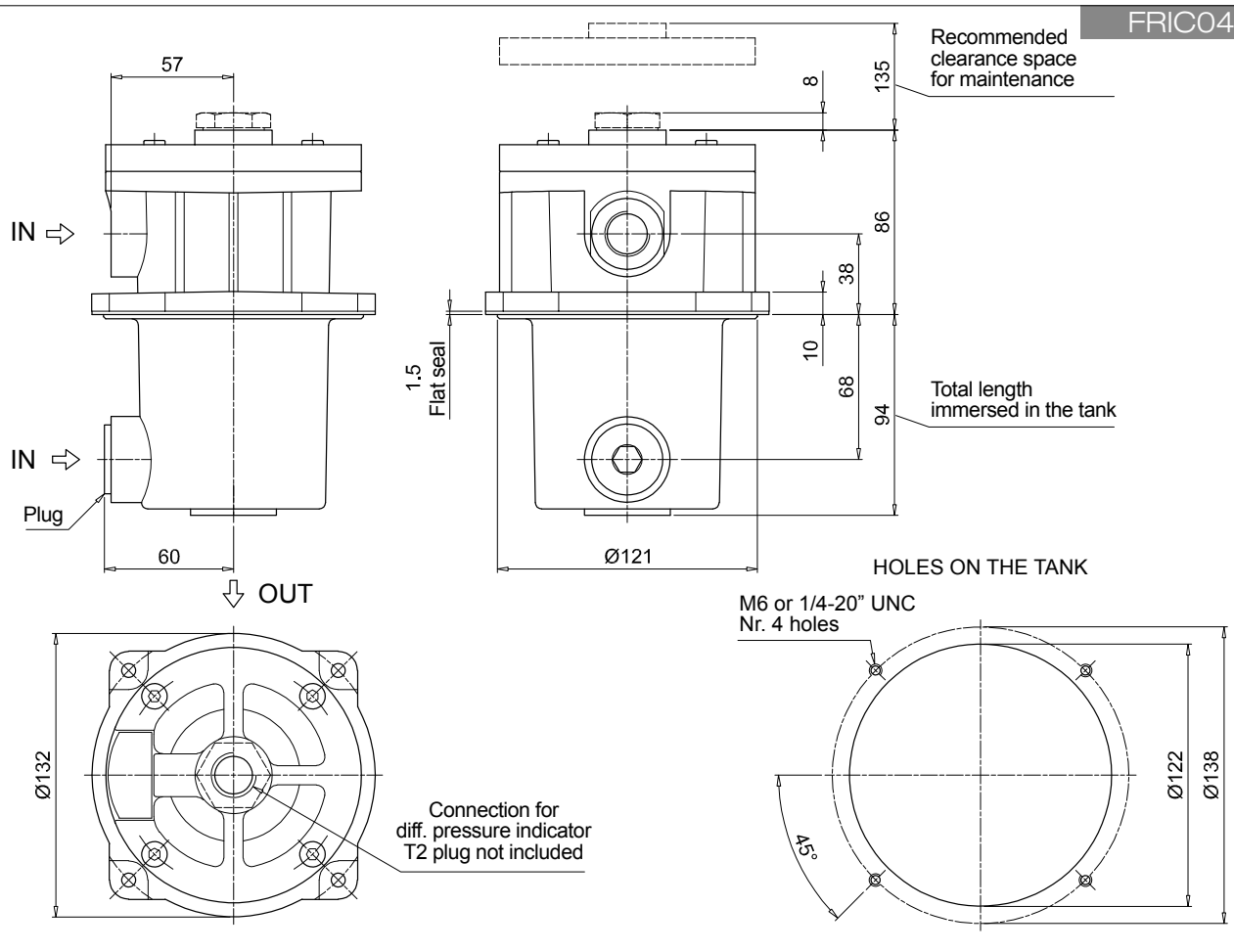
NN None

Dimensions

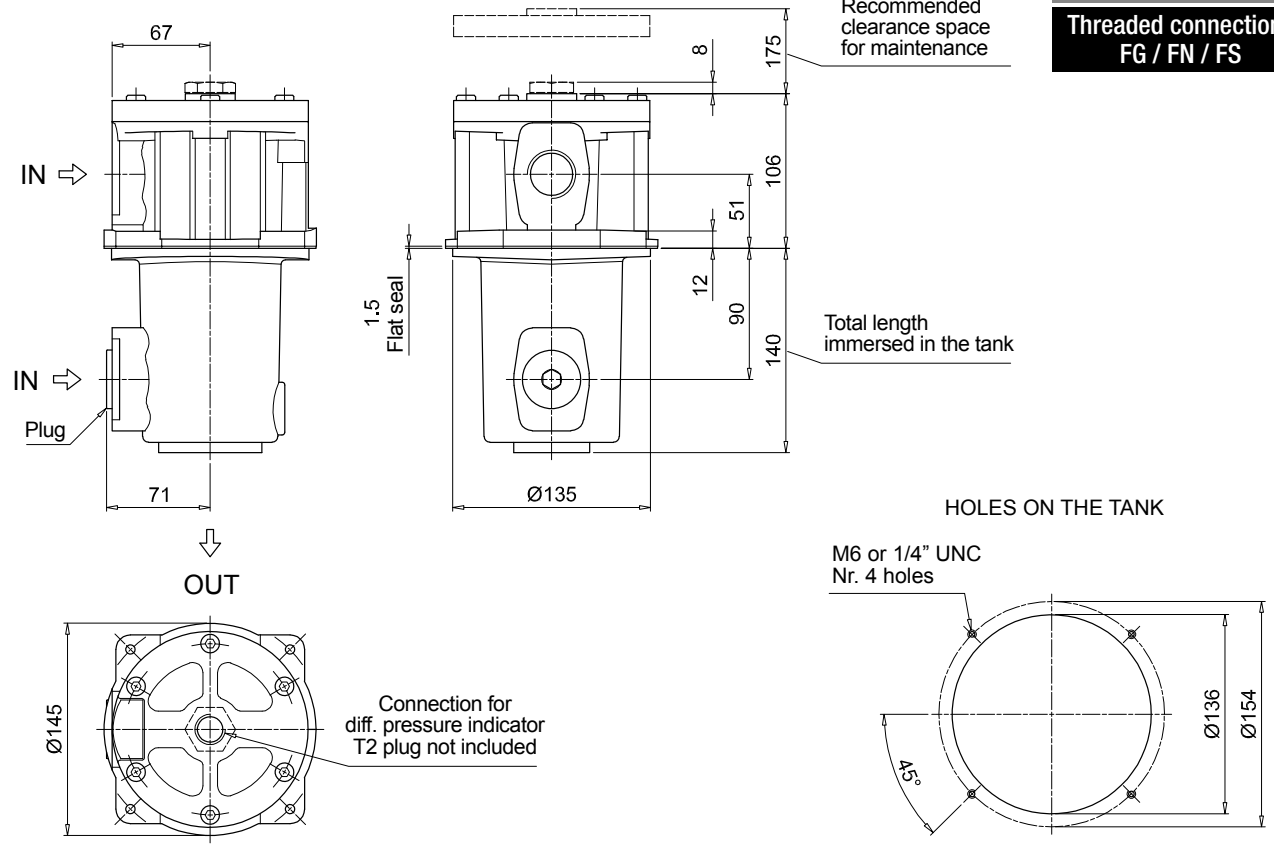
FRIC025



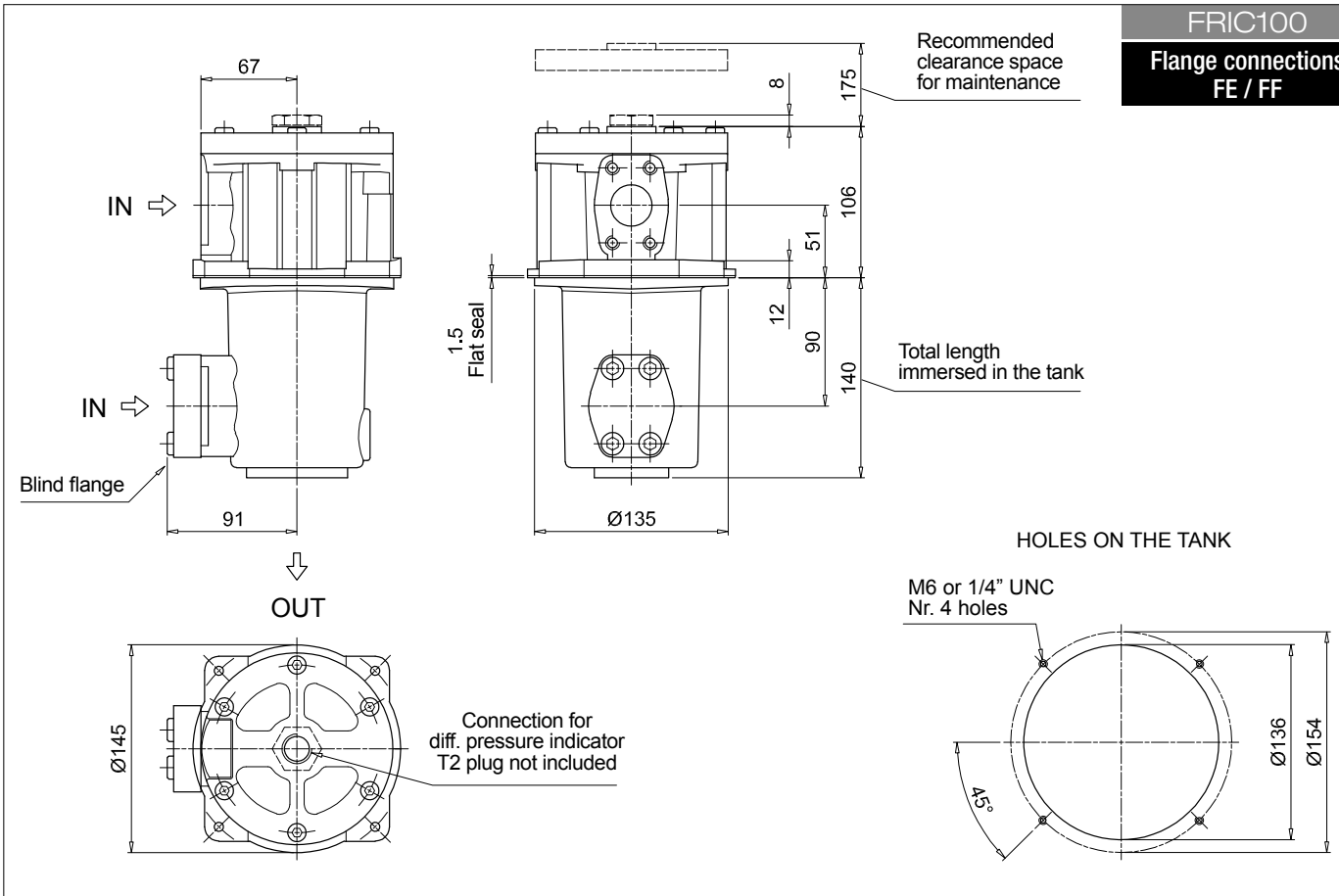
FRIC040



FRIC100
Threaded connections FG / FN / FS

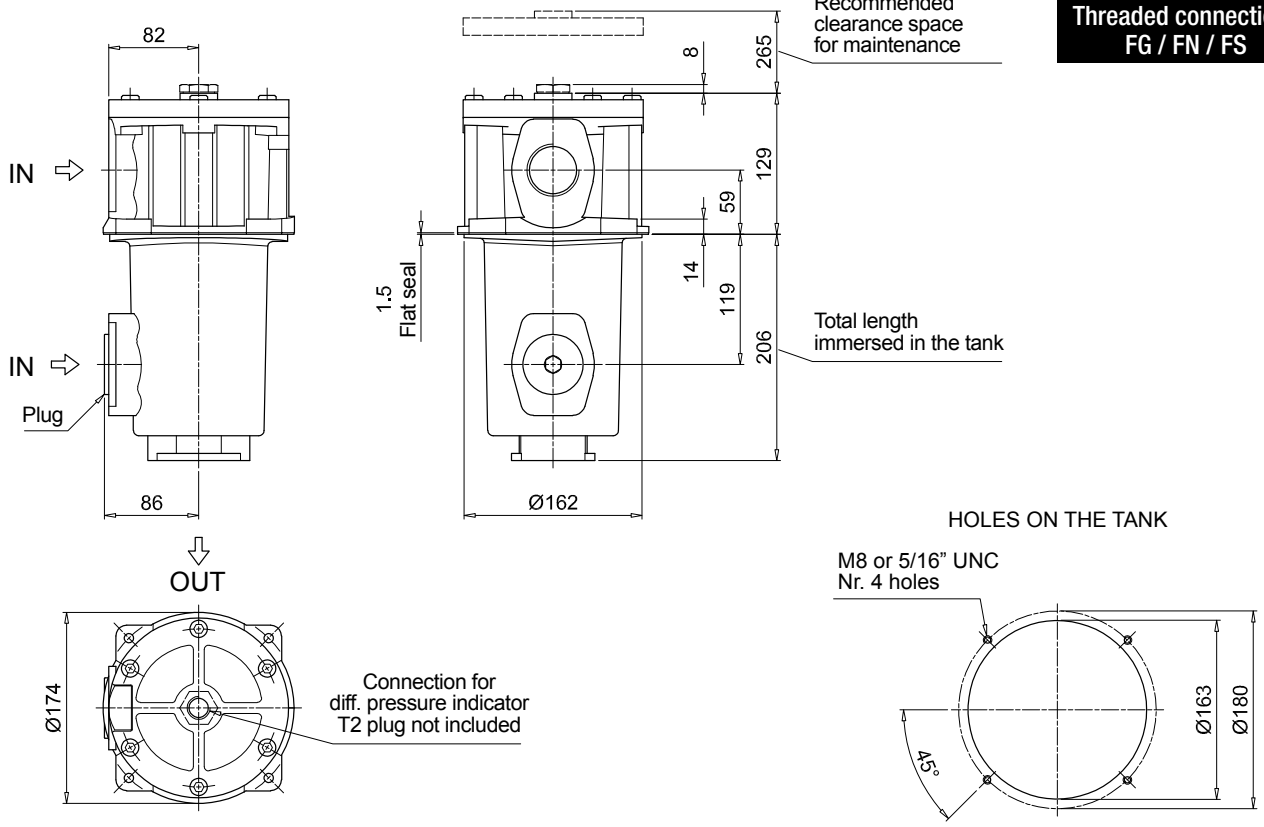


FRIC100
Flange connections FE / FF

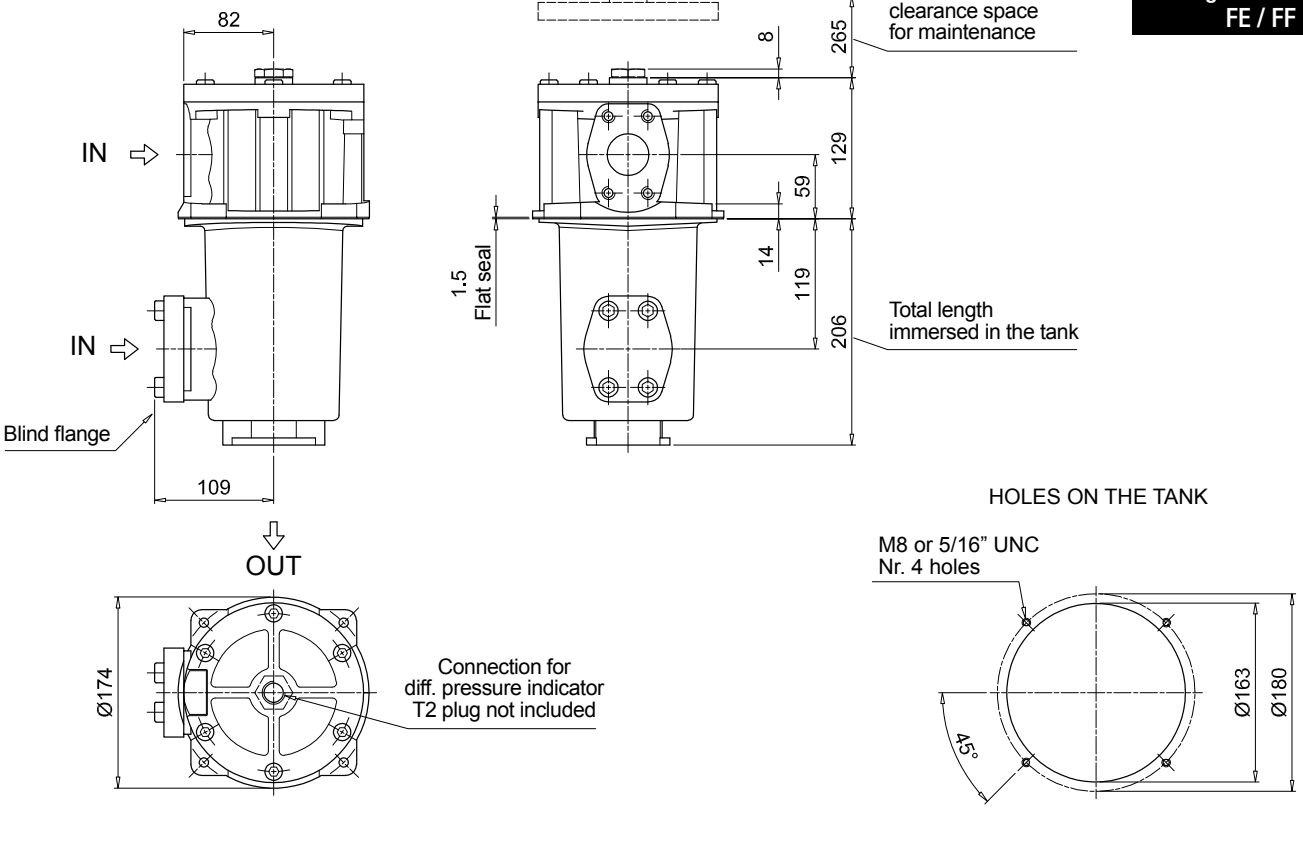


Dimensions

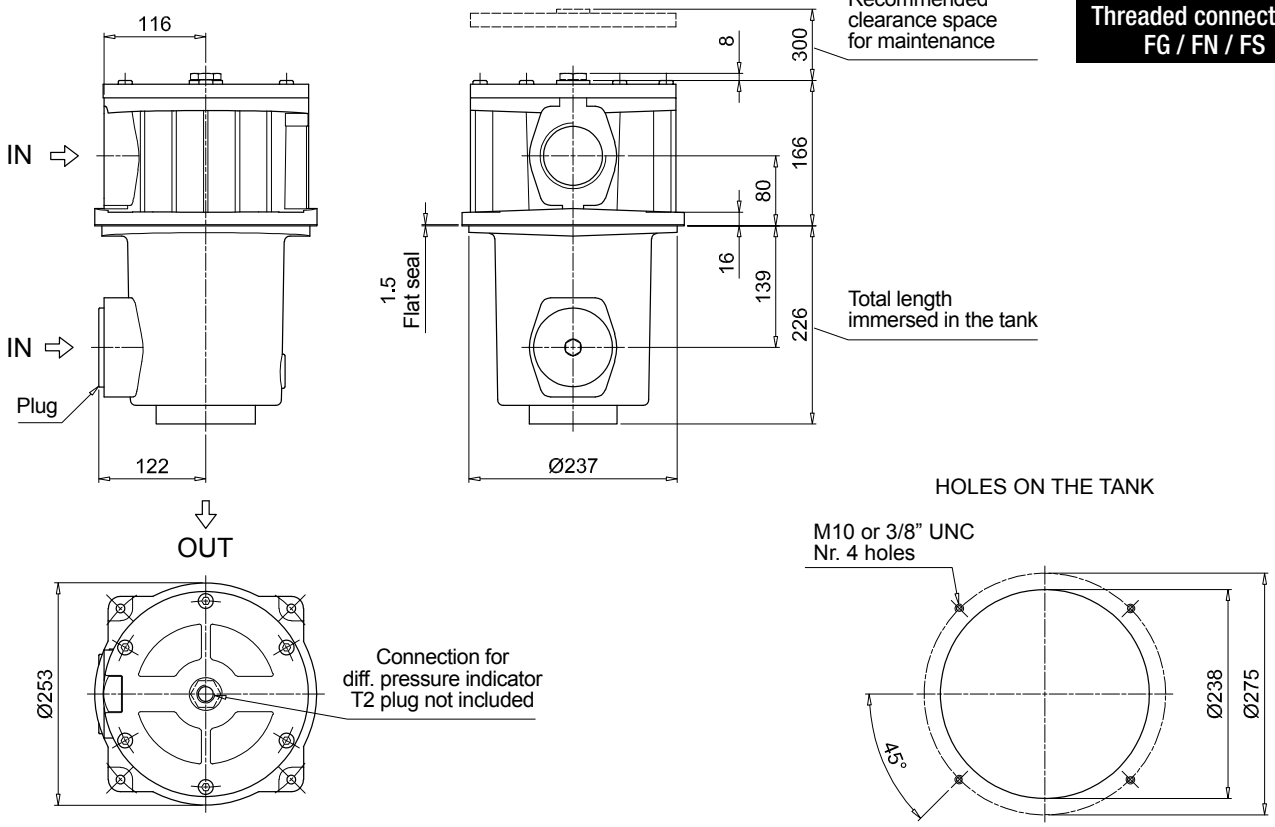
FRIC250
Threaded connections FG / FN / FS



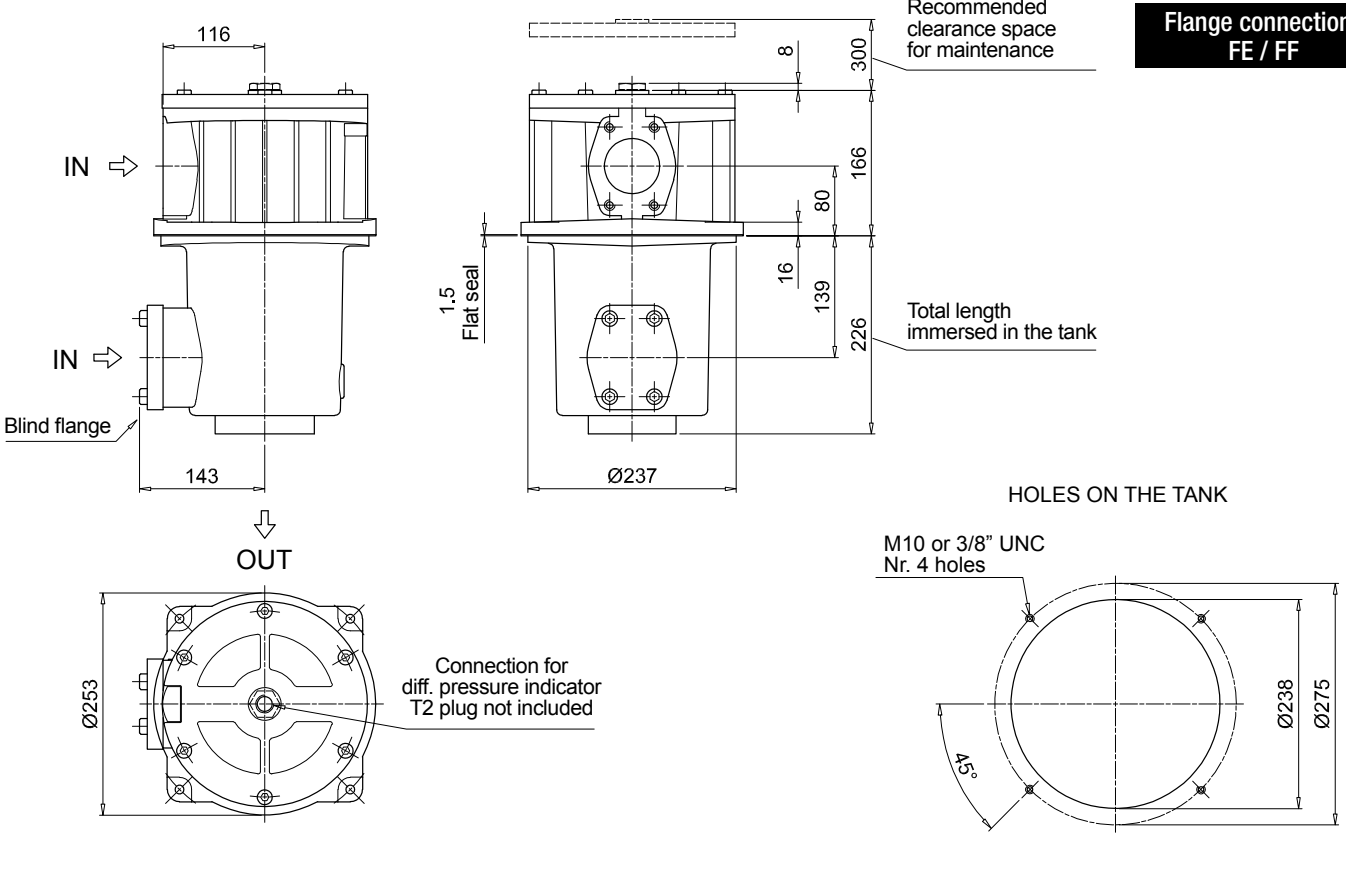
FRIC250
Flange connections FE / FF



FRIC630
Threaded connections FG / FN / FS



FRIC630
Flange connections FE / FF



Designation & Ordering code

COMPLETE FILTER

Example:	FRIC	255	10	A0025	D	A	24	FF112	0	5T	NN	P01	NN

Series
FRIC

Size
255

Length
10

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

By-pass valve
00 Without bypass
24 With bypass 2.4 bar

Connections

FG114	G 1 1/4"	**FN114**	1 1/4" NPT	**FS020**	SAE 20 - 1 5/8" - 12 UN	**FE112**	1 1/2" SAE 3000 psi/M
FG112	G 1 1/2"	**FN112**	1 1/2" NPT	**FS024**	SAE 24 - 1 7/8" - 12 UN	**FF112**	1 1/2" SAE 3000 psi/UNC

Additional connections
0 Without additional connections

Connections for clogging indicator
5T With rear indicator connection, with metal plug

Additional features
NN Without additional features

Execution
P01 Standard catalogue item

Certificates
NN None

CLOGGING INDICATORS See pages 776-777

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

PLUGS See page 807

T2 Plug (not included)

FILTER ELEMENT

Example 1: CUC | 250 | 10 | A0025 | D | A | 00 | NN | P01 | NN

Series
CUC

Size
250

Length
10

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
00 Without bypass

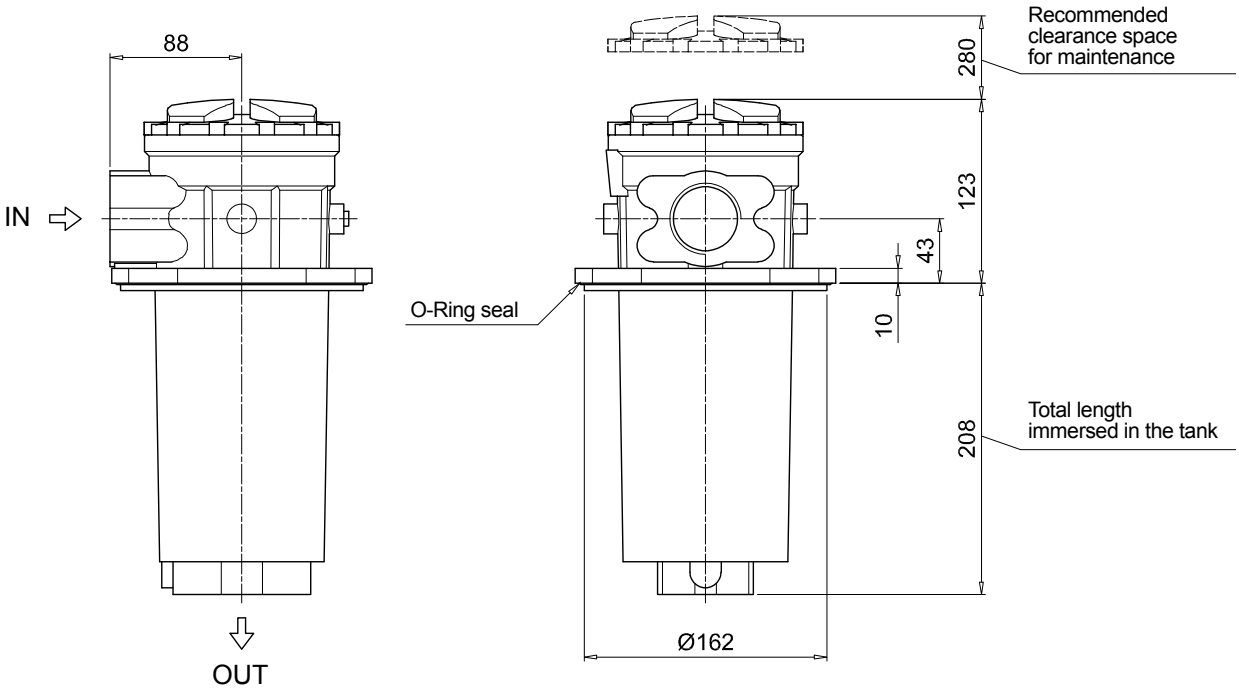
Additional features
NN Without additional features

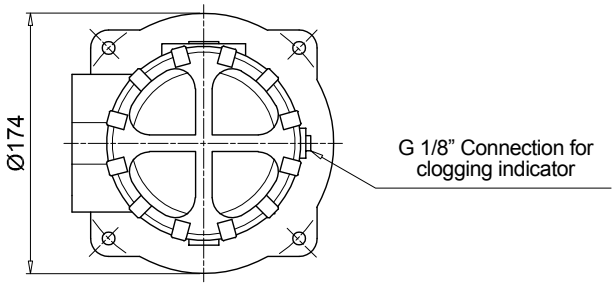
Execution
P01 Standard catalogue item

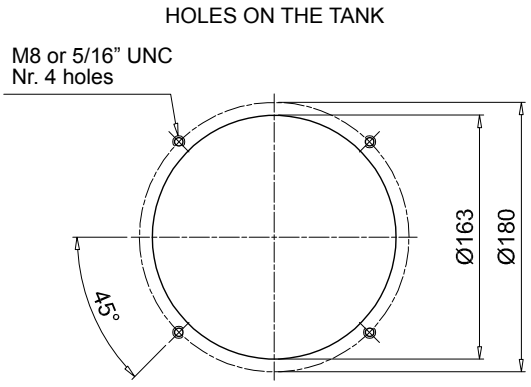
Certificates
NN None

Dimensions

FRIC255







Designation & Ordering code

COMPLETE FILTER

Example:	FRIC	850	10	A0025	D	A	24	FE312	0	1N	NN	P01	NN

Series
FRIC

Size
850

Length
10

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp

D	10 bar

Seals and treatments

		A0xxx	M0xxx	P0xxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR with filter element tinned tube	•	•	-
Z	FPM with filter element tinned tube	•	•	-

By-pass valve

00	Without bypass
24	With bypass 2.4 bar

Connections

FE312	3 1/2” SAE 3000 psi/M
FF312	3 1/2” SAE 3000 psi/UNC

Additional connections

0	Without additional connections

Connections for clogging indicator

1N	With top indicator connection

Additional features

NN	Without additional features

Execution

P01	Standard catalogue item

Certificates

NN	None

CLOGGING INDICATORS

See pages 776-777

DEA	Electrical differential pressure indicator
DEM	Electrical differential pressure indicator
DEU	Electrical differential pressure indicator
DLA	Electrical / visual differential pressure indicator
DLE	Electrical / visual differential pressure indicator
DTA	Electronic differential pressure indicator
DTI	I-O Link electronic differential pressure indicator
DVA	Visual differential pressure indicator
DVM	Visual differential pressure indicator

PLUGS

See page 807

T2	Plug (not included)

Designation & Ordering code

FILTER ELEMENT

Example : CUC | 850 | 10 | A0025 | D | A | 00 | NN | P01 | NN

Series
CUC

Size
850

Length
10

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM
W NBR with tinned tube
Z FPM with tinned tube

Bypass
00 Without bypass

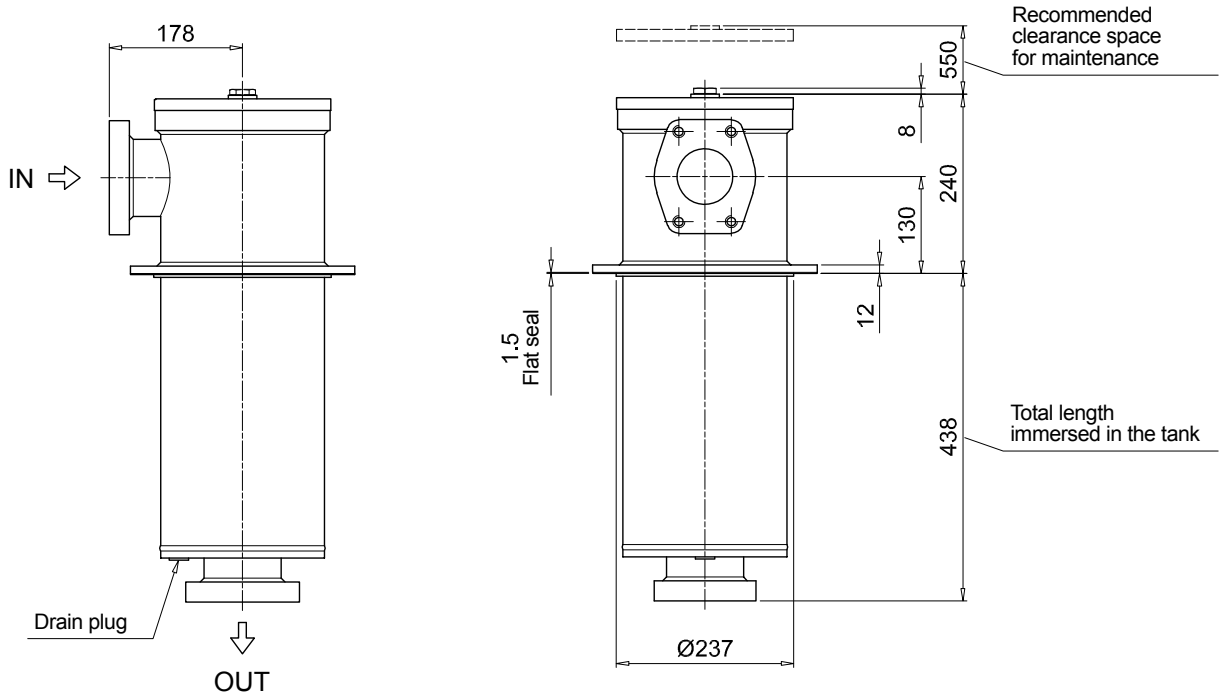
Additional features
NN Without additional features

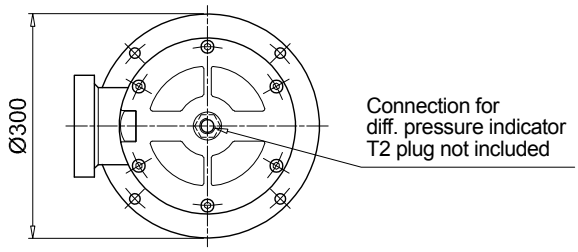
Execution
P01 Standard catalogue item

Certificates
NN None

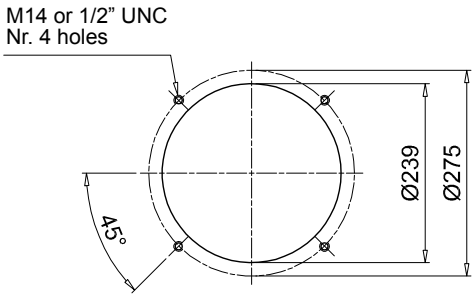
Dimensions

FRIC850



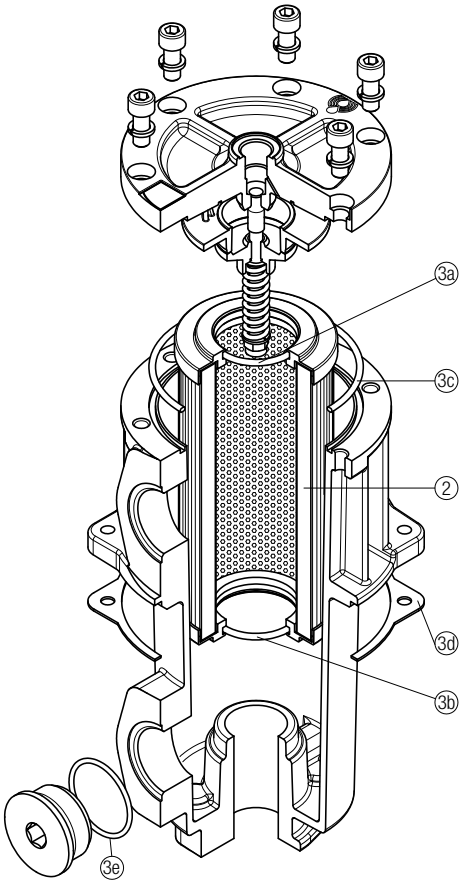


HOLES ON THE TANK



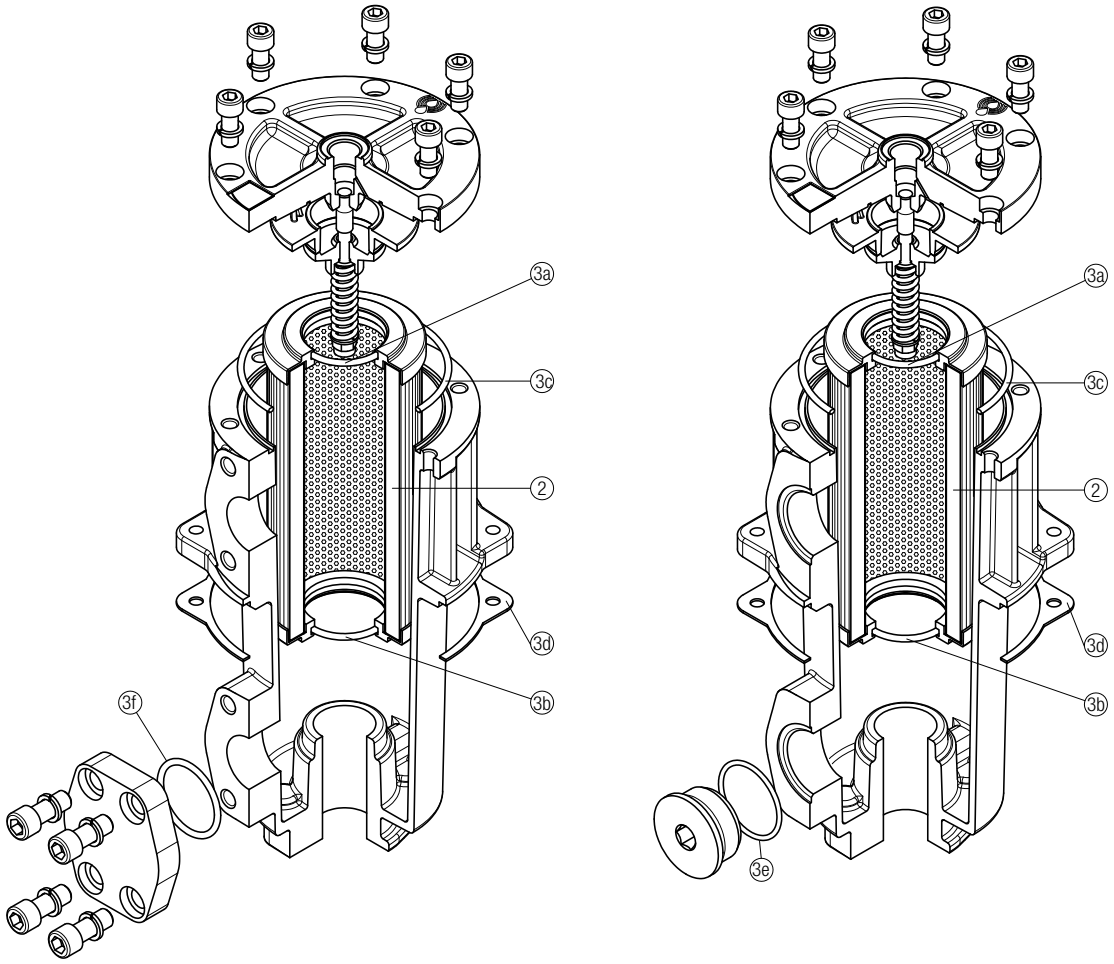
Order number for spare parts

FRIC 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
FRIC 025	See order table	02050213	02050220
FRIC 040		02050214	02050221

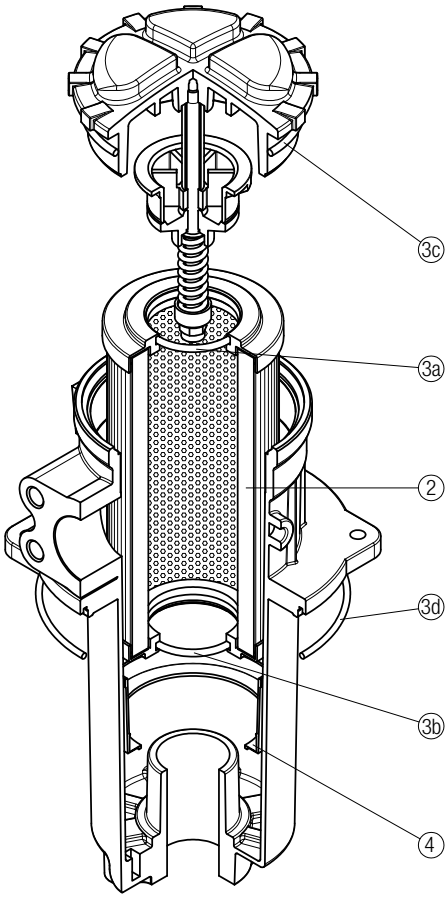
FRIC 100 - 250 - 630



Item:	Q.ty: 1 pc. (2)	Q.ty: 1 pc. (3) (3a ÷ 3f)	
Filter series	Filter element	Seal Kit code number NBR	FPM
FRIC 100	See order table	02050215	02050222
FRIC 250		02050216	02050223
FRIC 630		02050217	02050224

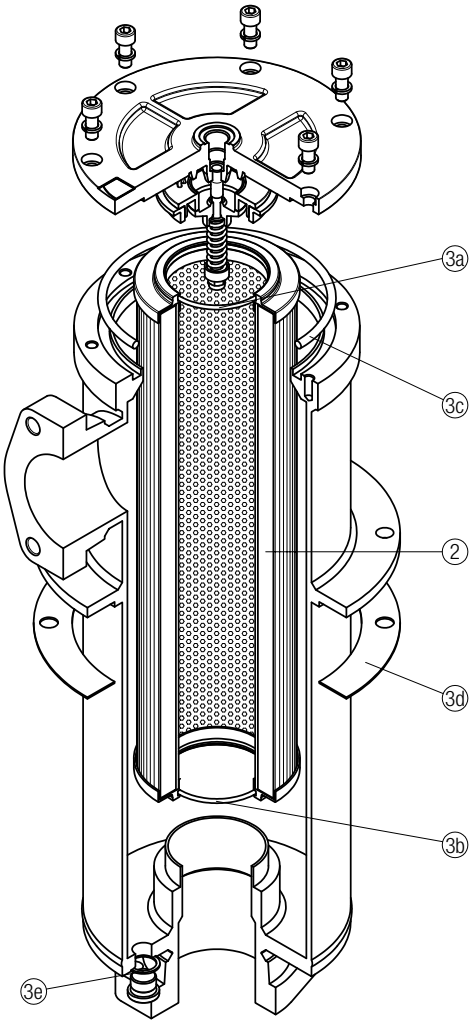
Order number for spare parts

FRIC 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**
FRIC 255	See order table	02050013	02050014	01060301

FRIC 850



Item:	Q.ty: 1 pc. (2)	Q.ty: 1 pc. (3) (3a ÷ 3e)	
Filter series	Filter element	Seal Kit code number NBR	FPM
FRIC 850	See order table	02050218	02050225

RFMC250 series

Maximum working pressure up to 2 MPa (20 bar) - Flow rate up to 615 l/min

RFMC250 GENERAL INFORMATION

Description

Return filter

Maximum working pressure up to 2 MPa (20 bar)
Flow rate up to 615 l/min

RFMC250 are ranges of return filters for side tank mounting with integrated shut-off valve for protection of the reservoir against the system contamination.
They are placed below the minimum oil level, directly connected to the return line of the system.
The shut-off valve closes automatically when the cover is removed, allowing the filter element replacement without the fluid drop.

Available features:

- Female threaded connections up to 1" and flanged connections up to 1 1/2", for a maximum flow rate of 615 l/min
- Bypass valve, to relieve excessive pressure drop across the filter media
- Magnetic filter, to hold the ferrous particles
- Visual, electrical and electronic clogging indicators

Common applications:

- Compact mobile machines
- Compact industrial equipment

Technical data

Filter housing materials

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

Pressure

- Test pressure: 3 MPa (30 bar)
- Min. Burst pressure: 6 MPa (60 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 2 MPa (20 bar)

Bypass valve

Opening pressure 0.175 MPa (1.75 bar) ±10%

Filter element features

Filter		Filter element	
RFMC		CUC	
Δp Element type			
Element media	**Construction**	**Δp Series**	**Δp**
A - Microfiber	Standard	D	10 bar
M - Wire mesh	Standard	D	10 bar
P - Paper	Standard	D	10 bar
Please see ordering code tables to check element Δp series availability based on filter features.			
Flow direction 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

RFMC filters mounting, see the drawings on page 265 and following

Weights [kg] and volumes [dm³]

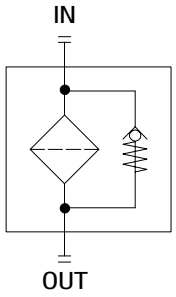
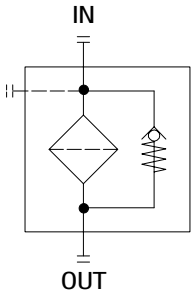
Filter series	Weights [kg]		Volumes [dm³]	
	Length	10	Length	10
RFMC 250		2.6		2.0

Flow rates [l/min]

		Filter element design - D Series							
Filter series	Length	A0003	A0006	A0010	A0016	A0025	M0025 M0060 M0090	P0010	P0025
RFMC 250	**10**	148	184	278	307	447	615	447	485

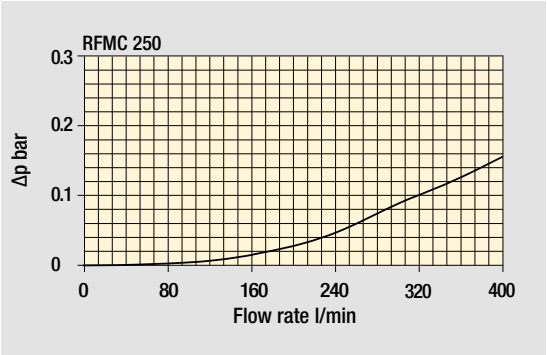
Maximum flow rate for a complete return filter with a pressure drop Δp = 0.5 bar.
The reference fluid has a kinematic viscosity of 30 mm^2/s (cSt) and a density of 0.86 kg/dm^3.
For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure.
Please, contact our Sales Department for further additional information.

Hydraulic diagram

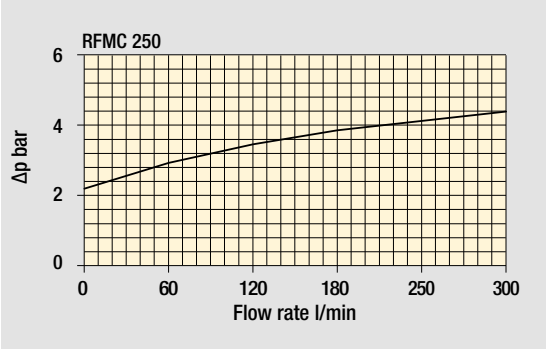
	17 / 30 - with bypass 1.7 / 3.0 bar	
Filter series	without additional connection	with additional connection
RFMC 250		

Pressure drop

Filter housings Δp pressure drop



Bypass valve 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.

RFMC250

Designation & Ordering code

COMPLETE FILTER

Example 1:	RFMC	250	10	A0010	D	A	17	FG034	0	5T	NN	P01	NN
Example 2:	RFMC	250	10	M0060	D	V	30	FS016	1	5T	NN	P01	NN

Series
RFMC

Size
250

Length
10

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

By-pass valve
17 With bypass 1.75 bar
30 With bypass 3.0 bar

Connections

FG100	G 1”	**FN100**	1” NPT	**FS016**	SAE 16 - 1 5/16” - 12 UN	**FE112**	1 1/2” SAE 3000 psi/M
FG114	G 1 1/4”	**FN114**	1 1/4” NPT	**FS020**	SAE 20 - 1 5/8” - 12 UN	**FF112**	1 1/2” SAE 3000 psi/UNC
FG112	G 1 1/2”	**FN112**	1 1/2” NPT	**FS024**	SAE 24 - 1 7/8” - 12 UN		

Additional connections
0 Without additional connections
1 Main connection FG112 / FS024 **G 1” / SAE 16 - 1 5/16” - 12 UN**

Connections for clogging indicator
5T With rear indicator connection, with metal plug

Additional features
NN Without additional features

Execution
P01 Standard catalogue item

Certificates
NN None

FILTER ELEMENT

Example 1:	CUC	250	10	A0010	D	A	00	NN	P01	NN
Example 2:	CUC	250	10	M0060	D	V	00	NN	P01	NN

Series
CUC

Size
250

Length
10

Filtration rating (filter media)

A0003	Inorganic microfiber	3 µm
A0006	Inorganic microfiber	6 µm
A0010	Inorganic microfiber	10 µm
A0016	Inorganic microfiber	16 µm
A0025	Inorganic microfiber	25 µm
M0025	Wire mesh	25 µm
M0060	Wire mesh	60 µm
M0090	Wire mesh	90 µm
P0010	Resin impregnated paper	10 µm
P0025	Resin impregnated paper	25 µm

Element Δp
D 10 bar

Seals and treatments
A NBR
V FPM

Bypass
00 Without bypass

Additional features
NN Without additional features

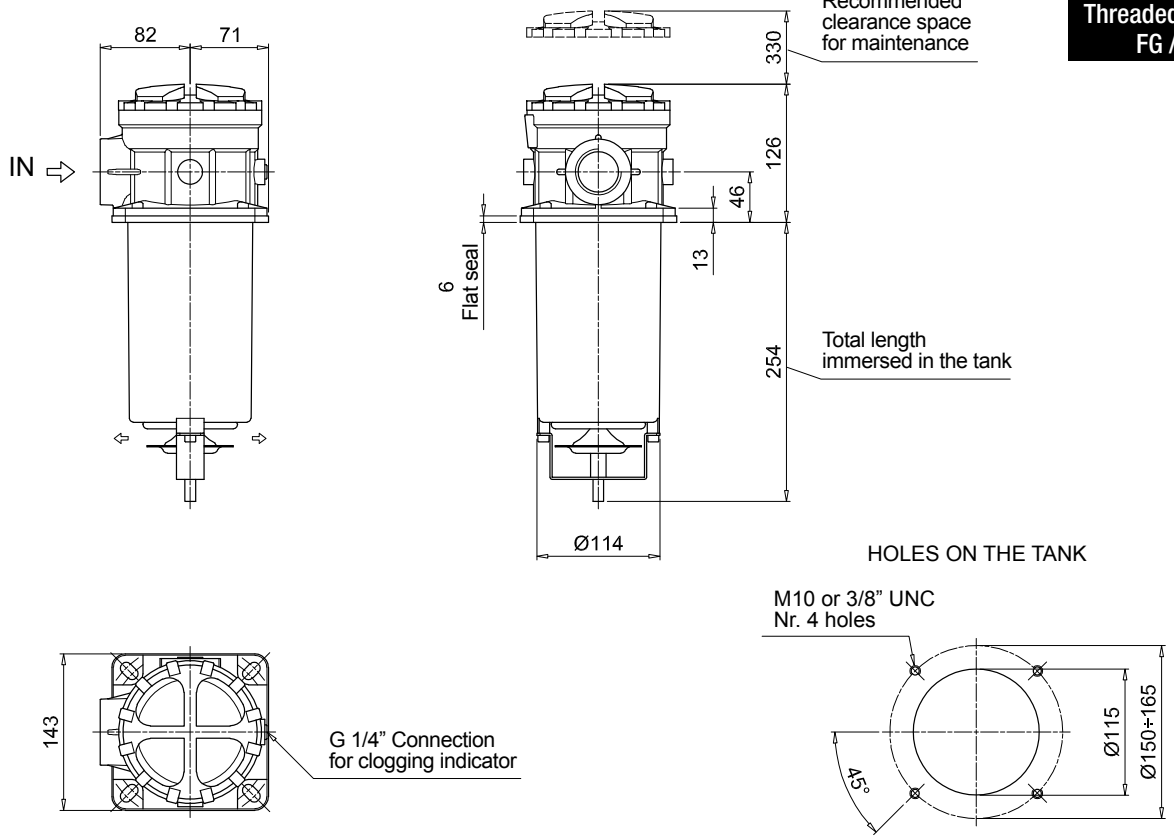
Execution
P01 Standard catalogue item

Certificates
NN None

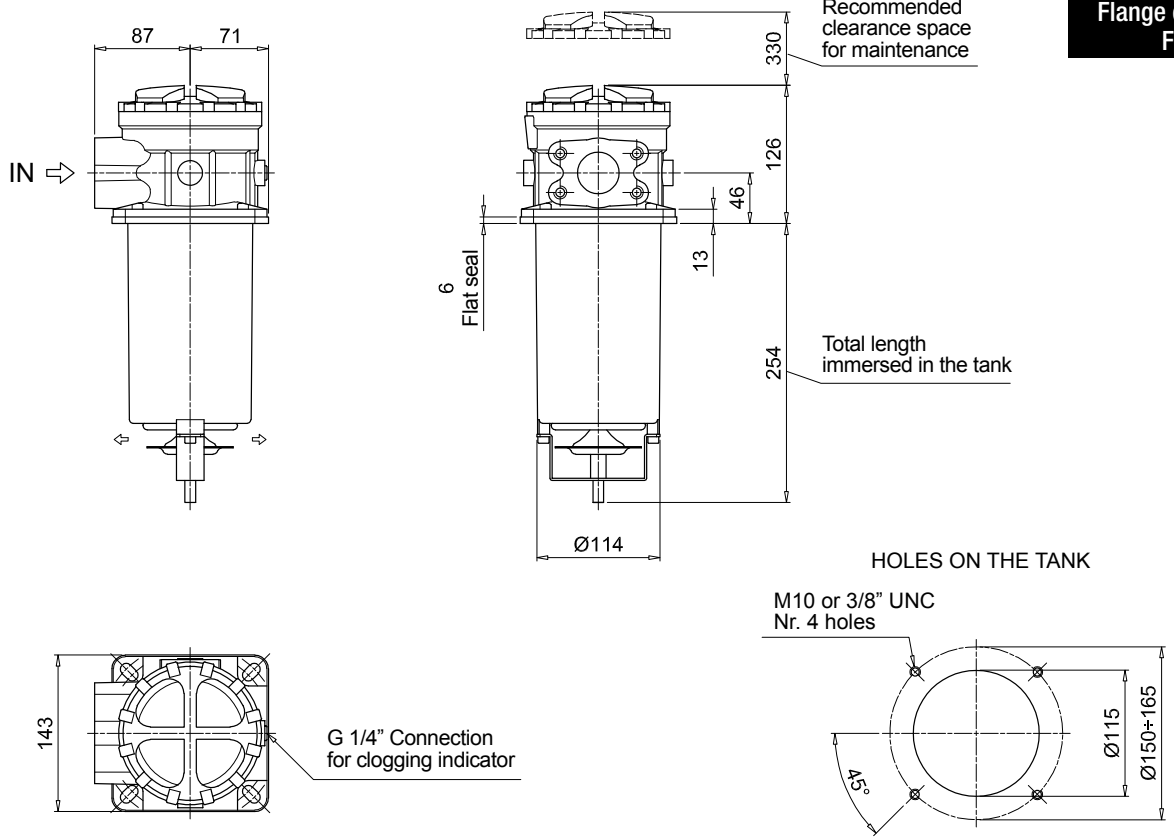
RFMC250

Dimensions

RFMC250
Threaded connections
FG / FN / FS

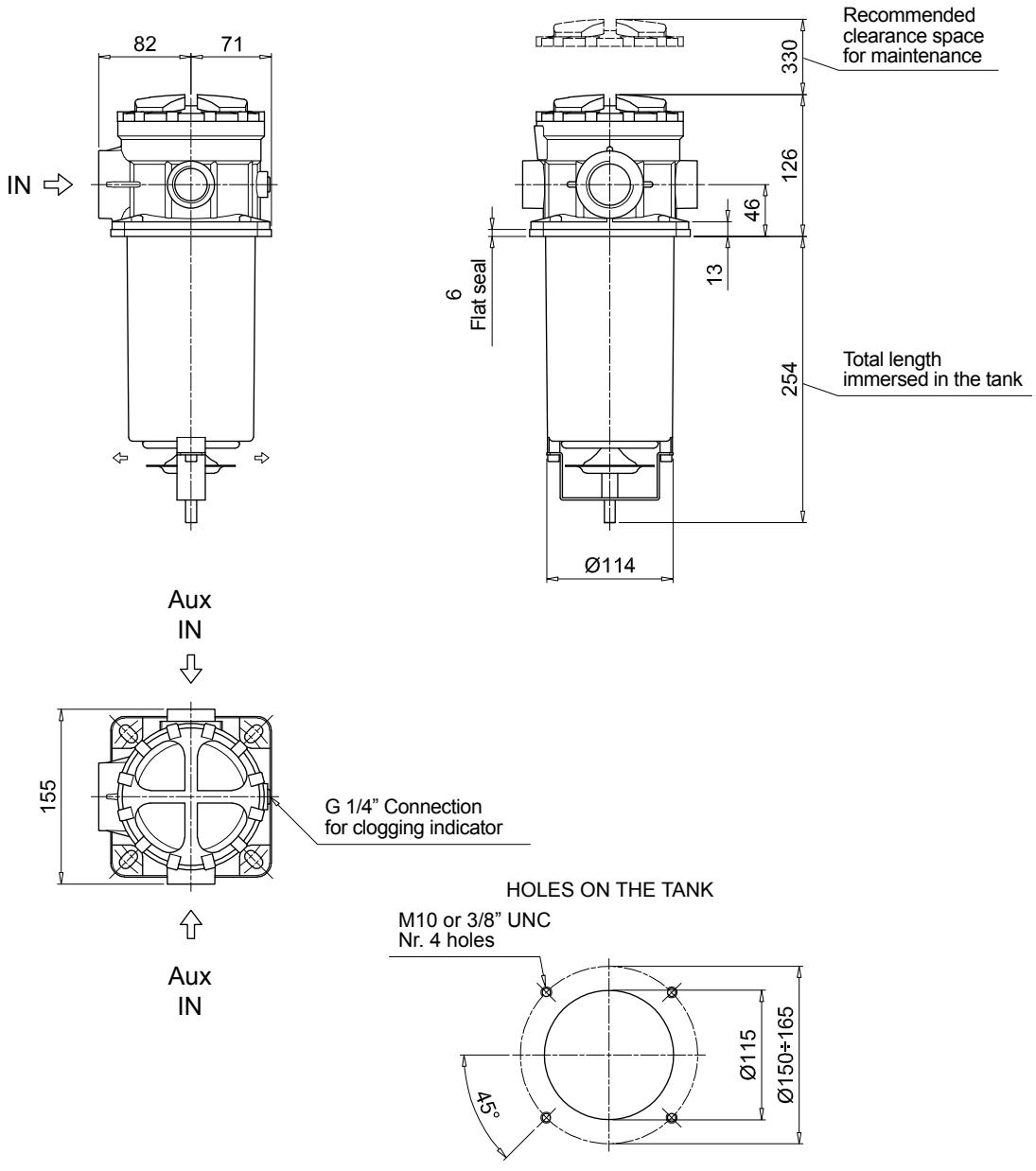


RFMC250
Flange connections
FE / FF



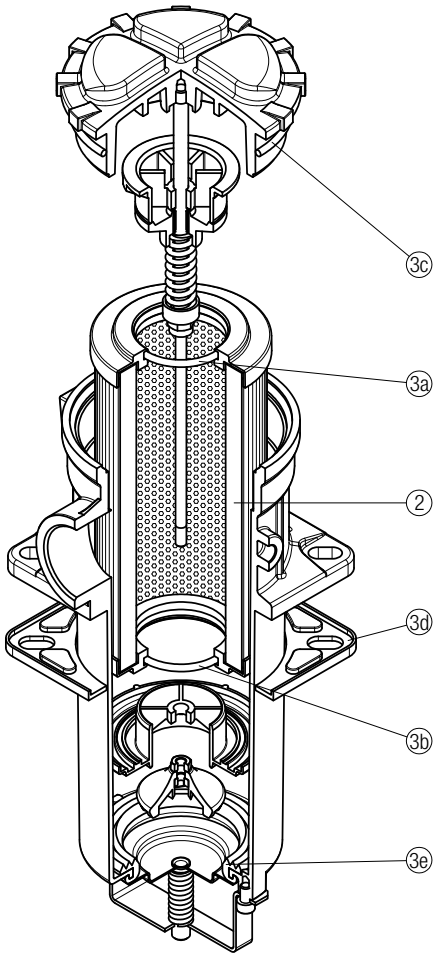
RFMC250

Additional connection "1"



Order number for spare parts

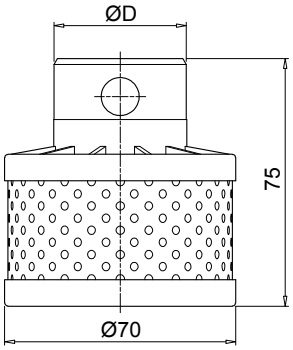
RFMC 250

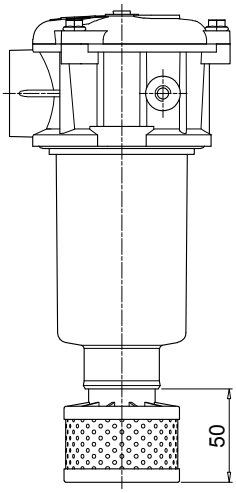


Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3e)	
Filter series	**Filter element**	**Seal Kit code number NBR**	**FPM**
RFMC 250	See order table	02050586	02050587

Accessories

DIFFUSER WITH FAST LOCK CONNECTION





Example: DFS | 40 | A | 075

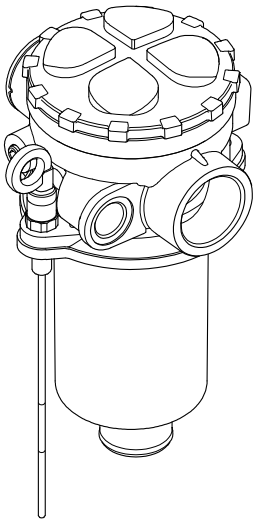
Series
DFS

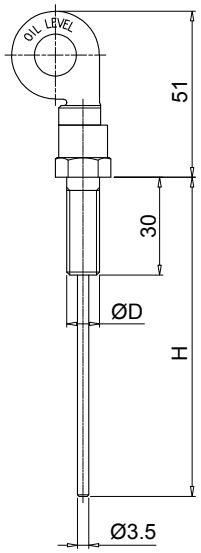
Size — **ØD [mm]**
40 40

Version
A Standard

Length
075 75 mm

DIPSTICK





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 ØD = M8
M10 Fastening with screws ØD = M10

Seals
A NBR
V FPM

Execution
P01 MP Filtri standard
Pxx Customized

Materials
- Screw: phosphatized steel
- Stick: phosphatized steel
- Handle: Polyamide

Technical data
Working temperature:
from -25 °C to +110 °C

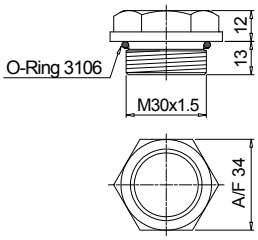
For any further information, please, contact our commercial dept.

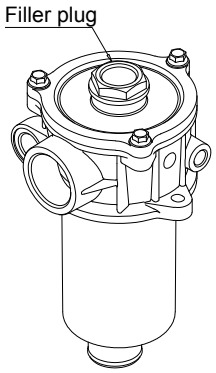
FILLER PLUG

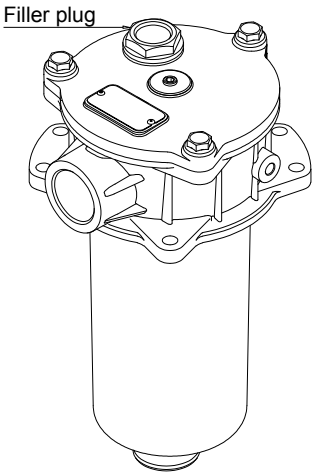
Series
T5

Materials
- Body: Polyamide
- Seal: NBR

Technical data
Tightening torque:
15 N·m







POLYAMIDE EXTENSION TUBE

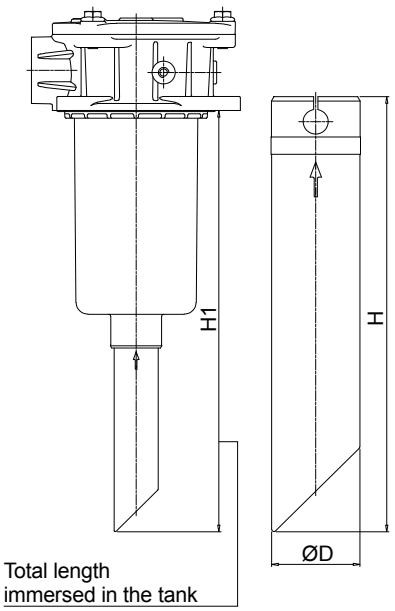
Example: TE | 40 | A | 250

Series
TE

Size	ØD [mm]
25	25
40	40
51	51
62	62

Material
A Polyamide

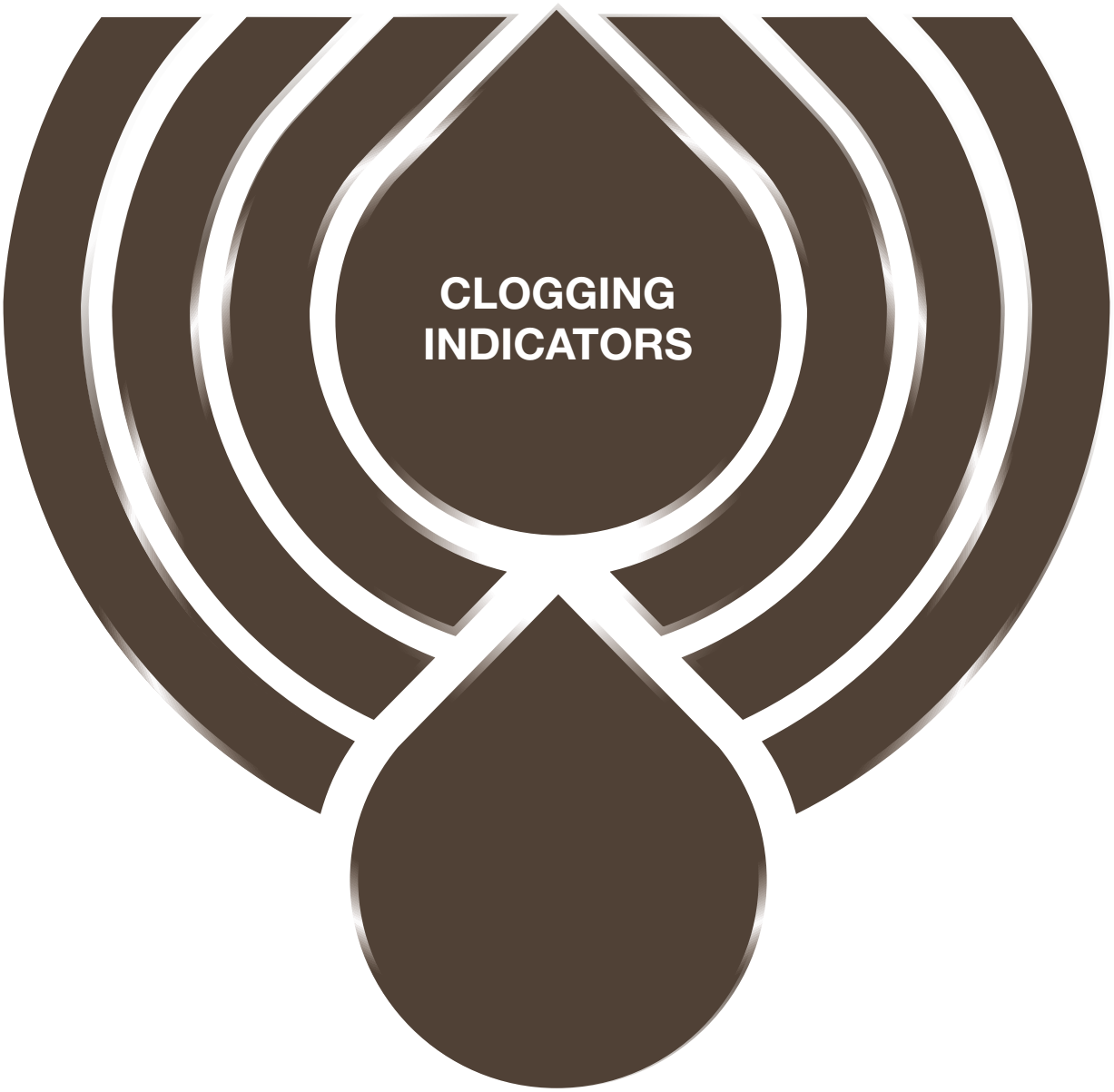
Length	H [mm]	25-40	51-62
200	200	•	•
250	250	•	-
300	300	•	•
350	350	•	-
400	400	•	•
450	450	•	-
500	500	•	•
600	600	-	•



COMPATIBILITY TABLE

Filter series	Filter size	Filter length	TE25	TE40	TE51	TE62	Tube length H1 [mm] 200	250	300	350	400	450	500	600
MPFX	030	10	•	-	-	-	266	316	366	416	466	516	566	-
	100 - 104 - 110	10	-	•	-	-	277	327	377	427	477	527	577	-
		20					322	372	422	472	522	572	622	-
		30					400	450	500	550	600	650	700	-
		40					502	552	602	652	702	752	802	-
	181 - 182 - 184	10	-	•	-	-	410	460	510	560	610	660	710	-
		20					623	673	723	773	823	873	923	-
	191 - 192 - 194	20	-	-	•	-	620	-	720	-	820	-	920	1020
	400 - 410 - 450	10	-	-	•	-	352	-	452	-	552	-	652	752
		20			-	•	411	-	511	-	611	-	711	811
		30					459	-	559	-	659	-	759	859
	750	10	-	-	-	•	597	-	697	-	797	-	897	997
MPTX	025 - 027	10	•	-	-	-	278	328	378	428	478	528	578	-
		20					342	392	442	492	542	592	642	-
		30					380	430	480	530	580	630	680	-
	110 - 114 - 116 - 120	10	-	•	-	-	273	323	373	423	473	523	573	-
		20					318	368	418	468	518	568	618	-
		30					396	446	496	546	596	656	696	-
		40					498	548	598	648	698	748	798	-
MFBX	100	10	-	•	-	-	284	334	384	434	484	534	584	-
		20					329	379	429	479	529	579	629	-
		30					407	457	507	557	607	657	707	-
		40					509	559	609	659	709	759	809	-

For any further information, please, contact our commercial dept.


CLOGGING
INDICATORS

Clogging indicators are devices that check the life time of the filter elements. They measure the pressure drop through the filter element directly connected to the filter housing.
These devices trip when the clogging of the filter element causes a pressure drop increasing across the filter element.
Filter elements are efficient only if their Dirt Holding Capacity is fully exploited. This is achieved by using filter housings equipped with clogging indicators.
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 differential pressure clogging indicator is also available. It provides both analogical 4-20 mA output and digital warning (75% of clogging) and alarm (clogging) outputs.

In the following pages you can find a reference guide about the types of clogging indicators available in the different families of MP Filtri's Hydraulic Filtration range of products.

Clogging Indicators

DESIGNATION, ORDERING CODES & TECHNICAL DATA

INDEX

QUICK REFERENCE GUIDE

Ordering codes

Filter family	Filter series		Visual indicators	Electrical indicators	Electronic / Electrical-Visual indicators
SUCTION FILTERS		ELIXIR® SFEX 060-110	VVB20P01 VVS20P01	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01
SUCTION FILTERS	Suction Line	SFMC250	VVA20P01 VVR20P01	VEA21xA50P01 VEA21xA50P01UL	VLA21xA51P01 VLA21xA52P01 VLA21xA53P01 VLA21xA71P01
SUCTION FILTERS	Without bypass	SFSC 500 - 503 - 504 - 505 SFSC 510 - 535 - 540	VVA20P01 VVR20P01	VEA21xA50P01 VEA21xA50P01UL	VLA21xA51P01 VLA21xA52P01 VLA21xA53P01 VLA21xA71P01
RETURN FILTERS	With bypass 1.75 bar	ELIXIR® RFEX 060-110	BVA14P01 BVR14P01 BVP15HP01 BVQ15HP01	BEA15HA50P01 BEA15HA50P01UL BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01
RETURN FILTERS	Without bypass	ELIXIR® RFEX 060-110	BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01	BEA20HA50P01 BEA20HA50P01UL BEM20HA41P01	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01
RETURN FILTERS	With bypass 1.75 bar	MDHC 250	BVA14P01 BVR14P01 BVP15HP01 BVQ15HP01 DVS12HP01	BEA15HA50P01 BEA15HA50P01UL BEM15HA41P01 DES12HA10P01 DES12HA30P01 DES12HA80P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01
RETURN FILTERS	With bypass 3 bar	MDHC 250	BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01 DVS25HP01	BEA20HA50P01 BEA20HA50P01UL BEM20HA41P01 BET20HF10P01 BET20HF30P01 BET25HF10P01 BET25HF30P01 DES25HA10P01 DES25HA30P01 DES25HA80P01	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01
RETURN FILTERS	With bypass 1.75 bar	MPFX MPTX MPHC	BVA14P01 BVR14P01 BVP15HP01 BVQ15HP01	BEA15HA50P01 BEA15HA50P01UL BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01
RETURN FILTERS	With bypass 3 bar With bypass 2.5 bar	MPFX MPTX MPHC	BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01	BEA20HA50P01 BEA20HA50P01UL BEM20HA41P01 BET20HF10P01 BET20HF30P01	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01
RETURN FILTERS	With bypass 4.5 bar Return line	MPLX FRIC 025 - 040 - 100 - 250 - 630 - 850	DVA20xP01 DVM20xP01	DEA20xA50P01 DEM20xx10P01 DEM20xx20P01 DEM20xx30P01 DEM20xx35P01 DEU20VA50P01UL	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01 DTA20xF70P01 DTI20xA70P01
RETURN FILTERS	Return line	FRIC 255	BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01	BEA20HA50P01 BEA20HA50P01UL BEM20HA41P01	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01

Ordering codes

Filter family	Filter series		Visual indicators	Electrical indicators	Electronic / Electrical-Visual indicators
RETURN / SUCTION FILTERS	With bypass 2.5 bar	MRSX 116 - 165 - 166 Suction line	VVB20P01 VVS20P01	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01
		MRSX 116 - 165 - 166 Return line	BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01	BEA20HA50P01 BEA20HA50P01UL BEM20HA41P01 BET25HF10P01 BET25HF30P01 BET25HF50P01	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01
	With bypass 2.5 bar	LMP 124 MULTIPORT	BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01 DVA20xP01 DVM20xP01	BEA20HA50P01 BEA20HA50P01UL BEM20HA41P01 BET25HF10P01 BET25HF30P01 BET25HF50P01 DEA20xA50P01 DEM20xx10P01 DEM20xx20P01 DEM20xx30P01 DEM20xx35P01 DEU20VA50P01UL	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01 DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01 DTA20xF70P01 DTI20xA70P01
SPIN-ON FILTERS	Suction line	MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350	VVB20P01 VVS20P01	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01
	Return line	MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350	BVA14P01 BVR14P01 BVP15HP01 BVQ15HP01	BEA15HA50P01 BEA15HA50P01UL BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01
	In-line	MPS 051 - 071 - 101 - 151 MPS 301 - 351	DVA12xP01 DVM12xP01 DVA20xP01 DVM20xP01	DEA12xA50P01 DEM12xAxxP01 DEA20xA50P01 DEM20xAxxP01 DEU20VA50P01UL	DLA12xA51P01 DLA12xA52P01 DLA12xA71P01 DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE12xA50P01 DLE12xF50P01 DLE20xF50P01 DLE20xF50P01 DTA12xF70P01 DTA20xF70P01 DTI12xA70P01 DTI20xA70P01

QUICK REFERENCE GUIDE

Ordering codes

Filter family	Filter series		Visual indicators	Electrical indicators	Electronic / Electrical-Visual indicators
LOW & MEDIUM PRESSURE FILTERS		ELIXIR® HFEX 060-110	DVS25HP01	DES25HA50P01	
		ELIXIR® LFEX 060-080-110-160	DVS25HP01	DES25HA10P01 DES25HA30P01 DES25HA50P01 DES25HA80P01	
	With bypass 3.5 bar	LMP 110 LMP 112 - 116 - 118 - 119 MULTIPORT LMP 120 - 122 - 123 MULTIPORT LMP 210 - 211 - LDP LMP 400 - 401 & 430 - 431 LMP 900 - 901 LMP 902 - 903 LMP 950 - 951 LMP 952 - 953 - 954 LMD 211 - 400 - 401 - 431 - 951 - LDD	DVA20xP01 DVM20xP01	DEA20xA50P01 DEM20xx10P01 DEM20xx20P01 DEM20xx30P01 DEM20xx35P01 DEU20VA50P01UL	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01 DTA20xF70P01 DTI20xA70P01
	With bypass 2.5 bar	LPH 630	DVA20xP01 DVM20xP01	DEA20xA50P01 DEM20xx10P01 DEM20xx20P01 DEM20xx30P01 DEM20xx35P01 DEU20VA50P01UL	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01 DTA20xF70P01 DTI20xA70P01
	With bypass 1.75 bar	LPH 630	DVA12xP01 DVM12xP01	DEA12xA50P01 DEM12xx10P01 DEM12xx20P01 DEM12xx30P01 DEM12xx35P01	DLA12xA51P01 DLA12xA52P01 DLA12xA71P01 DLE12xA50P01 DLE12xF50P01 DTA12xF70P01 DTI12xA70P01
	Without bypass	ELIXIR® HFEX 060-110	DVS40HP01	DES40HA50P01	
		ELIXIR® LFEX 060-080-110-160	DVS40HP01	DES40HA10P01 DES40HA30P01 DES40HA50P01 DES40HA80P01	
	Without bypass	LMP 110 LMP 112 - 116 - 118 - 119 MULTIPORT LMP 120 - 122 - 123 MULTIPORT LMP 210 - 211 - LDP LMP 400 - 401 & 430 - 431 LMP 900 - 901 LMP 902 - 903 LMP 950 - 951 LMP 952 - 953 - 954 LMD 211 - 400 - 401 - 431 - 951 - LDD LPH 630	DVA50xP01 DVM50xP01	DEA50xA50P01 DEM50xx10P01 DEM50xx20P01 DEM50xx30P01 DEM50xx35P01 DEU50VA50P01UL	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01 DTA50xF70P01 DTI50xA70P01
HIGH CAPACITY INDUSTRIAL FILTERS	With bypass 3.5 bar	MLPX MLDX	DVA20xP01 DVM20xP01	DEA20xA50P01 DEM20xx10P01 DEM20xx20P01 DEM20xx30P01 DEM20xx35P01v	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01 DTA20xF70P01 DTI20xA70P01
	With bypass 1.75 bar	MLPC MLDC	DVA12xP01 DVM12xP01	DEA12xA50P01 DEM12xx10P01 DEM12xx20P01 DEM12xx30P01 DEM12xx35P01	DLA12xA51P01 DLA12xA52P01 DLA12xA71P01 DLE12xA50P01 DLE12xF50P01 DTA12xF70P01 DTI12xA70P01
	Without bypass	MLDC MLPC	DVA50xP01 DVM50xP01	DEA50xA50P01 DEM50xx10P01 DEM50xx20P01 DEM50xx30P01 DEM50xx35P01	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01 DTA50xF70P01 DTI50xA70P01

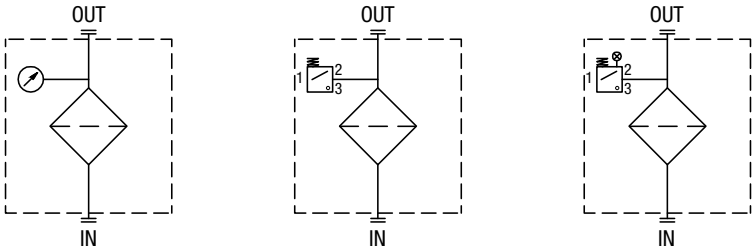
Ordering codes

Filter family	Filter series		Visual indicators	Electrical indicators	Electronic / Electrical-Visual indicators
HIGH PRESSURE FILTERS	With bypass 6 bar	FMP 039 - 065 - 135 - 320 FHP 010 - 011 - 065 - 135 - 350 - 351 - 500 FMMX 050 - 150 FMM 050 - 150 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 DEM50xx10P01 DEM50xx20P01 DEM50xx30P01 DEM50xx35P01 DEU50VA50P01UL	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01
	Without bypass	FMP 039 - 065 - 135 - 320 FHP 010 - 011 - 065 - 135 - 350 - 351 - 500 FMMX 050 - 150 FMM 050 - 150 FHA 051 FHM 006 - 007 - 010 - 050 - 065 - 135 - 320 - 500 FHB 050 - 135 - 320 FHF 325 FHD 021 - 051 - 326 - 333	DVA70xP01 DVA95xP01 DVM70xP01 DVM95xP01	DEA70xA50P01 DEA95xA50P01 DEM70xx10P01 DEM70xx20P01 DEM70xx30P01 DEM70xx35P01 DEU70VA50P01UL DEM95xx10P01 DEM95xx20P01 DEM95xx30P01 DEM95xx35P01	DLA70xA51P01 DLA70xA52P01 DLA70xA71P01 DLA95xA51P01 DLA95xA52P01 DLA95xA71P01 DLE70xA50P01 DLE70xF50P01 DLE95xA50P01 DLE95xF50P01 DTA70xF70P01 DTA95xF70P01 DTI70xA70P01 DTI95xA70P01
STAINLESS STEEL HIGH PRESSURE FILTERS	With bypass 6 bar	FZH 012 - 040	DVZ50xP01	DEZ50xA50P01	DLZ50xA51P01 DLZ50xA52P01
	Without bypass	FZH 012 - 040	DVZ70xP01 DVZ95xP01	DEZ70xA50P01 DEZ95xA50P01	DLZ70xA51P01 DLZ70xA52P01 DLZ95xA51P01 DLZ95xA52P01
	With bypass 6 bar	FZP 039 - 136 FZB 039 FZM 039 FZD 051	DVX50xP01 DVY50xP01	DEX50xA50P01	DLX50xA51P01 DLX50xA52P01
	Without bypass	FZP 039 - 136 FZB 039 FZM 039 FZD 010 - 021 - 051	DVX70xP01 DVX95xP01 DVY70xP01 DVY95xP01	DEX70xA50P01 DEX95xA50P01	DLX70xA51P01 DLX70xA52P01 DLX95xA51P01 DLX95xA52P01
FILTERS FOR POTENTIALLY EXPLOSIVE ATMOSPHERE	With bypass 6 bar	FMMX 050 - 150	DVA50xP01 DVM50xP01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01	
	Without bypass	FMMX 050 - 150	DVA70xP01 DVA95xP01 DVM70xP01 DVM95xP01	DEH70xA48P01 DEH70xA49P01 DEH70xA70P01	
	With bypass 6 bar	FZP 039 - 136	DVX50xP01 DVY50xP01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01	
	Without bypass	FZP 039 - 136	DVX70xP01 DVX95xP01 DVY70xP01 DVY95xP01	DEH70xA48P01 DEH70xA49P01 DEH70xA70P01	
	With bypass 6 bar	FZH 012 - 040	DVZ50xP01		
	Without bypass	FZH 012 - 040	DVZ70xP01 DVZ95xP01		

Suitable indicator types

V ACUUM INDICATORS

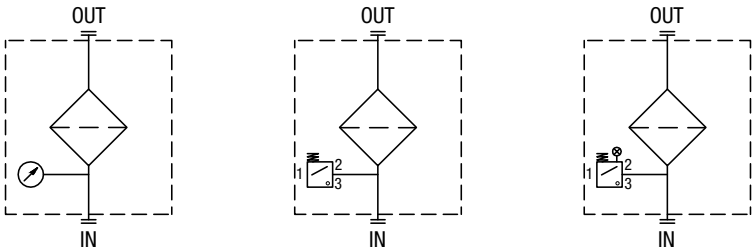
Vacuum indicators are used on the Suction line to check the efficiency of the filter element.
They measure the pressure downstream of the filter element.
Standard items are produced with R 1/4" EN 10226 connection.
Available products with R 1/8" EN 10226 to be fitted on MPS series.
Vacuum indicators are identified in the Hydraulic Filtration catalogue and in the Quick Reference Guide table by the letter "V".



Example:
V VVB20P01

B AROMETRIC (PRESSURE) INDICATORS

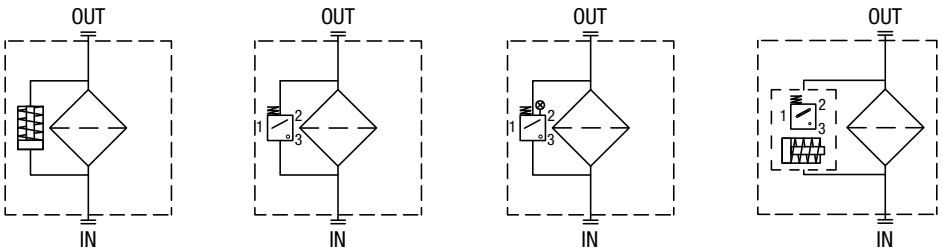
Pressure indicators are used on the Return line to check the efficiency of the filter element.
They measure the pressure upstream of the filter element.
Standard items are produced with R 1/8" EN 10226 connection.
Barometric (pressure) indicators are identified in the Hydraulic Filtration catalogue and in the Quick Reference Guide table by the letter "B"



Example:
B BVA14P01

D IFFERENTIAL PRESSURE INDICATORS

Differential pressure indicators are used on the Pressure line to check the efficiency 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.
Differential pressure indicators are identified in the Hydraulic Filtration catalogue and in the Quick Reference Guide table by the letter "D"



Example:
D DVA20xP01

Designation & Ordering code

APPLICABLE BAROMETRIC (PRESSURE) INDICATORS BY FILTER SERIES

Filter Series	BEA	BEM	BET	BLA	BVA	BVR	BVP	BVQ
RFEX	•	•	-	•	•	•	•	•
MPFX	•	•	•	•	•	•	•	•
MPLX	-	-	-	-	-	-	-	-
MPTX	•	•	•	•	•	•	•	•
MFBX	-	-	-	-	-	-	-	-
MDHC	•	•	•	•	•	•	•	•
MPHC	•	•	-	•	•	•	•	•
MPIC	-	-	-	-	-	-	-	-
FRIC (all sizes, except 255)	-	-	-	-	-	-	-	-
FRIC 255	•	•	-	•	•	•	•	•
RFMC	-	-	-	-	-	-	-	-

BAROMETRIC (PRESSURE) INDICATORS

Configuration example:								
Configuration example 1:	BE	A	15	H	A	41	P01	EX
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	•	•	**A** Axial connection pressure gauge
M With wired electrical connection	•	-	**R** Radial connection pressure gauge
T With thermal switch	•	-	**P** Visual indicator with automatic reset
			Q Visual indicator with manual reset

Pressure setting	BEA-BEM	BET	BLA	BVA-BVR-BVE-BVH	BVP-BVQ-BVN-BVO
14 1.4 bar	-	-	-	•	-
15 1.5 bar	•	-	•	-	•
20 2.0 bar	•	•	•	-	•
25 2.5 bar	-	•	-	•	-

Seals	BE	BLA	BVA-BVR-BVE-BVH	BVP-BVQ-BVN-BVO
H HNBR	•	•	-	•

Thermostat	BEA-BEM	BET	BLA	BV
A Without thermostat	•	-	•	-
F With thermostat	-	•	-	-

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 Vac	-	-	-	•	-
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc	-	-	-	•	-

Option	
P01	MP Filtri standard
Pxx	Customized

Certifications	BEA	BEM-BET	BL	BV
Without	•	•	•	•
EX ATEX certification	•	-	-	-
UL UL certification	•	-	-	-

Designation & Ordering code

APPLICABLE DIFFERENTIAL PRESSURE INDICATORS BY FILTER SERIES

Filter Series	DEA	DEM	DEU	DES	DLA	DLE	DTA	DTI	DVA	DVM	DVS
RFEX	-	-	-	-	-	-	-	-	-	-	-
MPFX	-	-	-	-	-	-	-	-	-	-	-
MPLX	•	•	•	-	•	•	•	•	•	•	-
MPTX	-	-	-	-	-	-	-	-	-	-	-
MFBX	-	-	-	-	-	-	-	-	-	-	-
MDHC	-	-	-	•	-	-	-	-	-	-	•
MPHC	-	-	-	-	-	-	-	-	-	-	-
MPIC	-	-	-	-	-	-	-	-	-	-	-
FRIC (all sizes, except 255)	•	•	•	-	•	•	•	•	•	•	-
FRIC 255	-	-	-	-	-	-	-	-	-	-	-
RFMC	-	-	-	-	-	-	-	-	-	-	-

DIFFERENTIAL PRESSURE INDICATORS

Configuration example								
1:	DE	M	20	H	F	50	P01	
2:	DE	U	50	V	A	50	P01	UL
3:	DL	E	20	V	A	71	P01	
4:	DT	A	20	H	F	70	P01	
5:	DV	M	20	V			P01	

Series

DE Electrical differential pressure indicator
DL Electrical/Visual differential pressure indicator
DT Electrical differential pressure indicator
DV Visual differential pressure indicator

Type	DE	DL	DT
A Standard type	•	•	•
I I-O Link type	-	-	•
M With wired electrical connection	•	-	-
U Standard type 210 bar, UL certified	•	-	-
E For high power supply	-	•	-
S Compact version	•	-	-

DV	
A	With automatic reset
M	With manual reset
S	With automatic reset

Pressure setting	DEA	DEM	DEU	DES	DL	DT	DVA	DVM	DVS
12 1.2 bar	-	-	-	•	-	-	-	-	•
20 2.0 bar	•	•	•	-	•	•	•	•	
25 2.5 bar	-	-	-	•	-	-	-	-	•
50 5.0 bar	•	•	•	-	•	•	•	•	-

Seals	DEA	DEM	DEU	DES	DL	DT	DVA	DVM	DVS
H HNBR	•	•	-	•	•	•	•	•	•
V FPM	•	•	•	-	•	•	•	•	-

Thermostat	DEA	DEM	DEU	DES	DLA	DLE	DTA	DTI
A Without thermostat	•	•	•	•	•	•	-	•
F With thermostat	-	•	-	-	-	•	•	-

Electrical connections	DEA	DEM	DEU	DES	DLA	DLE	DT
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	-	-	-	-	•	-	-
80 Connection Stud #10-32 UNF	-	-	-	•	-	-	-

Option	
P01	MP Filtri standard
Pxx	Customized

Certifications	DEU	OTHERS
Without	-	•
UL UL certification	•	-

PLUGS

Configuration example	T2	H

Series

T2 Plug
T4 Plug

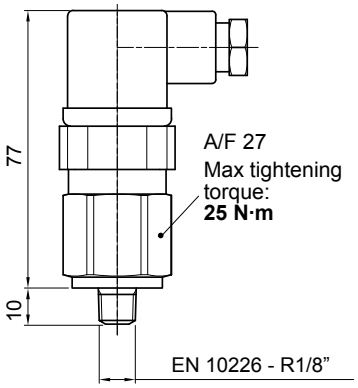
Seals	T2	T4
A NBR	-	•
H HNBR	•	-
V FPM	•	-

Dimensions

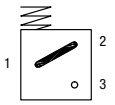
BEA*50 (EX)

Electrical Pressure Indicator
Connection EN 175301-803

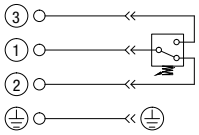
Settings	Ordering code
1.5 bar ±10%	BE A 15 H A 50 P01
	BE A 15 H A 50 P01 EX
2.0 bar ±10%	BE A 20 H A 50 P01
	BE A 20 H A 50 P01 EX



Hydraulic symbol



Electrical symbol



- Certification: ATEX, IECEx
- Certification included in EX version

Materials
- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR

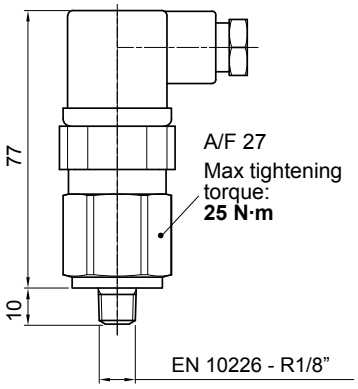
Technical data
- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

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

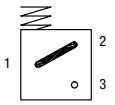
BEA*50 UL

Electrical Pressure Indicator
Connection EN 175301-803

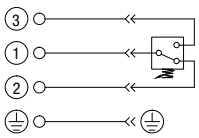
Settings	Ordering code
1.5 bar ±10%	BE A 15 H A 50 P01 UL
2.0 bar ±10%	BE A 20 H A 50 P01 UL



Hydraulic symbol



Electrical symbol



- Certification: UL
- Certification included as standard

Materials
- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR

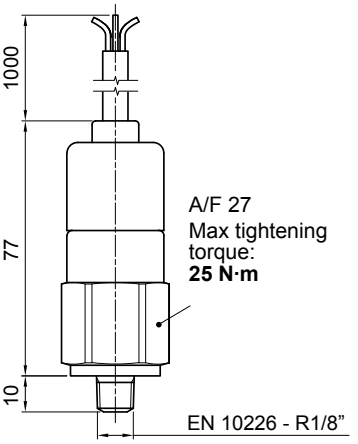
Technical data
- Max working pressure: 12 bar
- Proof pressure: 40 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

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

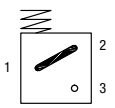
BEM*41

Electrical Pressure Indicator
Connection via four-core cable

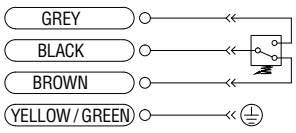
Settings	Ordering code
1.5 bar ±10%	BE M 15 H A 41 P01
2.0 bar ±10%	BE M 20 H A 41 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black polyamide
- 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 oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree of protection: IP67 according to EN 60529

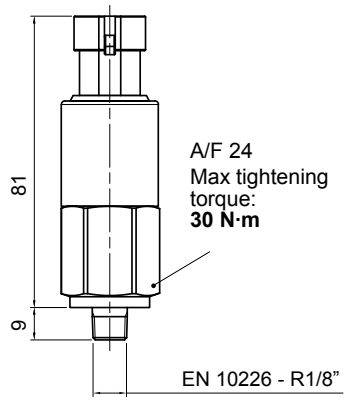
Electrical data
- Electrical connection: Four-core cable
- Resistive load: 5 A / 14 Vdc
  4 A / 30 Vdc
  5 A / 125 Vac
  4 A / 250 Vac
- CE certification

On request this indicator can be provided with main connectors in use for wirings.

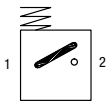
BET*F10

Electrical Pressure Indicator
Connection AMP Superseal series 1.5

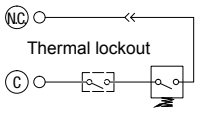
Settings	Ordering code
2.0 bar ±10%	BE T 20 H F 10 P01
2.5 bar ±10%	BE T 25 H F 10 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR

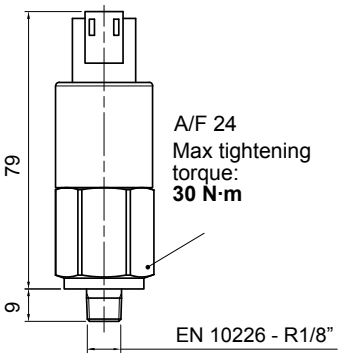
Technical data
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +100 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

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

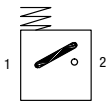
BET*F30

Electrical Pressure Indicator
Deutsch DT-04-2-P

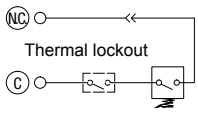
Settings	Ordering code
2.0 bar ±10%	BE T 20 H F 30 P01
2.5 bar ±10%	BE T 25 H F 30 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR

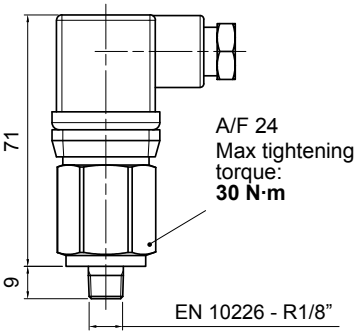
Technical data
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +100 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

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

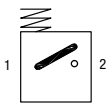
BET*F50

Electrical Pressure Indicator
Connection EN 175301-803

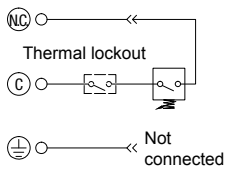
Settings	Ordering code
2.0 bar ±10%	BE T 20 H F 50 P01
2.5 bar ±10%	BE T 25 H F 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black polyamide
- 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 oils, Synthetic fluids HFB and 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

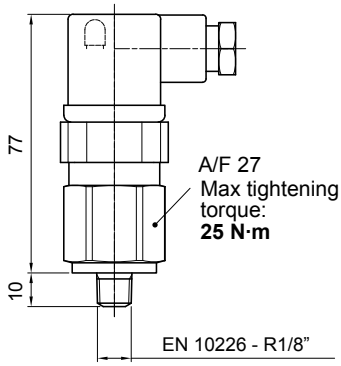
Dimensions

BL*51 - BL*52 - BL*53

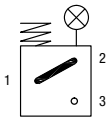
Electrical/Visual Pressure Indicator
Connection: EN 175301-803

51: Transparent base with lamps 24 Vdc
52: Transparent base with lamps 110 Vdc
53: Transparent base with lamps 230 Vac

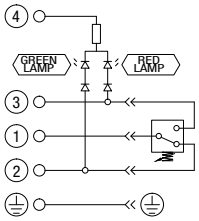
Settings	Ordering code
1.5 bar ±10%	BL A 15 H A xx P01
2.0 bar ±10%	BL A 20 H A xx P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Transparent polyamide
- 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 oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

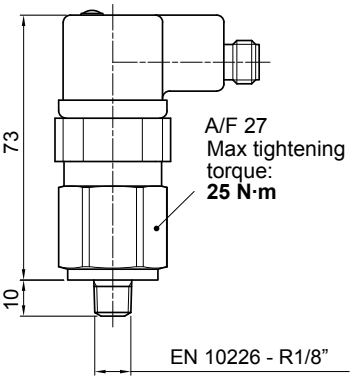
Electrical data

- Electrical connection:	EN 175301-803		
- Type	51	52	53
- Lamps	24 Vdc	110 Vdc	230 Vac
- Resistive load:	1 A / 24 Vdc	1 A / 110 Vdc	1 A / 230 Vac

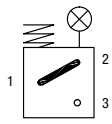
BL*71

Electrical/Visual Pressure Indicator
Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc

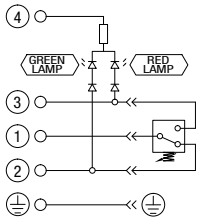
Settings	Ordering code
1.5 bar ±10%	BL A 15 H A 71 P01
2.0 bar ±10%	BL A 20 H A 71 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR

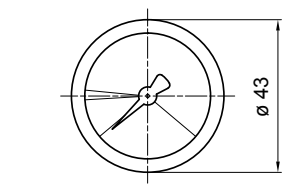
Technical data
- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

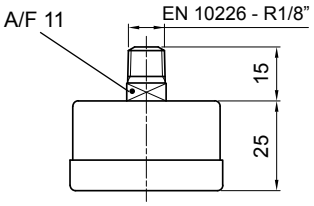
Electrical data
- Electrical connection: IEC 61076-2-101 D (M12)
- Lamps: 24 Vdc (black base)
- Resistive load: 0.4 A / 24 Vdc

BVA

Axial Pressure Gauge

Settings	Ordering code
1.4 bar ±10%	BV A 14 P01
2.5 bar ±10%	BV A 25 P01

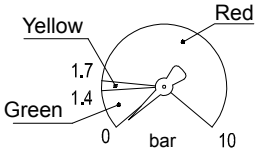




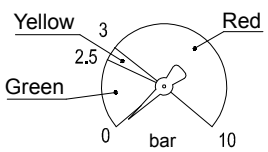
Hydraulic symbol

Dial scale

BV A 14 P01



BV A 25 P01



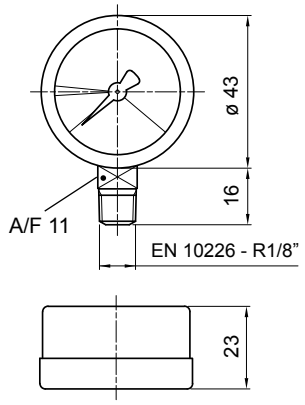
Materials
- Case: Painted Steel
- Window: Clear plastic
- Dial: Painted Steel
- Pointer: Black plastic
- Pressure connection: Brass
- Pressure element: Bourdon tube Cu-alloy sof t soldered, C type
- Movement: Cu-alloy

Technical data
- Max working pressure: Static: 7 bar
  Fluctuating: 6 bar
  Short time: 10 bar
- Working temperature: Ambient from -40 °C to +60 °C
  Fluid max +60 °C
  Storage from -40 °C to +60 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and 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

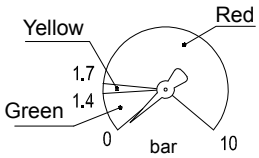
Settings	Ordering code
1.4 bar ±10%	BV R 14 P01
2.5 bar ±10%	BV R 25 P01



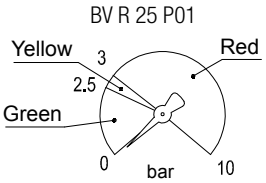
Hydraulic symbol

Dial scale

BV R 14 P01



BV R 25 P01



Materials

- Case:	Painted Steel
- Window:	Clear plastic
- Dial:	Painted Steel
- Pointer:	Black plastic
- Pressure connection:	Brass
- Pressure element:	Bourdon tube Cu-alloy sof t soldered, C type
- Movement:	Cu-alloy

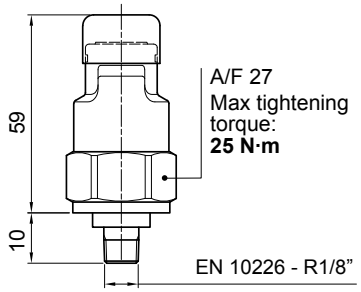
Technical data

- Max working pressure:	Static: 7 bar Fluctuating: 6 bar Short time: 10 bar
- Working temperature:	Ambient from -40 °C to +60 °C Fluid max +60 °C Storage from -40 °C to +60 °C
- Compatibility with fluids:	Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Accuracy:	Class 2.5 according to EN 13190
- Degree of protection:	IP31 according to EN 60529

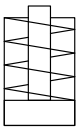
BVP - BVQ

Visual Pressure Indicator
BVP - Automatic reset
BVQ - Manual reset

Setting	Ordering code
1.5 bar ±10%	BV P 15 H P01
	BV Q 15 H P01
2.0 bar ±10%	BV P 20 H P01
	BV Q 20 H P01



Hydraulic symbol



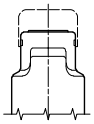
Materials

- Body:	Brass
- Cover / internal parts:	Polyamide
- Caps:	VMQ
- Seal:	HNBR

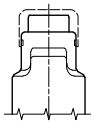
Technical data

- 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 oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree of protection:	IP45 according to EN 60529

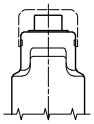
Signals



Absence of pressure
(no indicator)



Presence of pressure
(green button rises gradually)



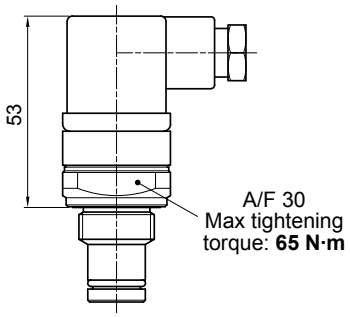
Clogged filter element
(red button risen)

Dimensions

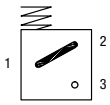
DEA*50

Electrical Differential Pressure Indicator
Connection: EN 175301-803

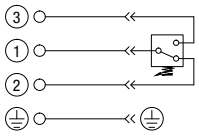
Settings	Ordering code
1.2 bar ±10%	DE A 12 x A 50 P01
2.0 bar ±10%	DE A 20 x A 50 P01
5.0 bar ±10%	DE A 50 x A 50 P01
7.0 bar ±10%	DE A 70 x A 50 P01
9.5 bar ±10%	DE A 95 x A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - FPM

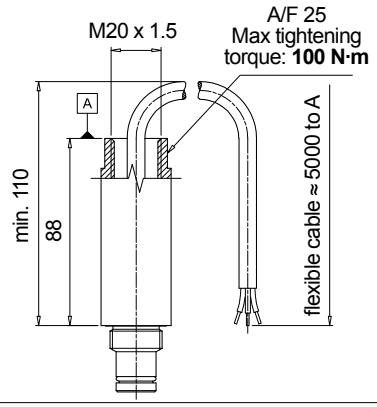
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653

Electrical data
- Electrical connection: EN 175301-803
- Resistive load: 0.2 A / 115 Vdc

DEH*48

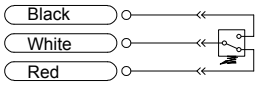
Hazardous Area
Electrical Differential Pressure Indicator
Connection via three-core cable - cable fitting M20x1.5

Settings	Ordering code
2.0 bar ±10%	DE H 20 x A 48 P01
5.0 bar ±10%	DE H 50 x A 48 P01
7.0 bar ±10%	DE H 70 x A 48 P01



Hydraulic symbol

Electrical symbol



- Certification / Approvals: ATEX, IECEx, EAC TR CU
- Certification included as standard

Materials
- Body: AISI 316L
- Contacts: Rhodium
- Seal: FPM - MFQ

Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Temperature range: T4=Tamb -60 °C to +125 °C (-76 to 257 °F) T6=Tamb -60 °C to +80 °C (-76 to 176 °F)
- Degree of protection: IP 66/67/68 according to EN 60529
- Connection type: Three-core cable, fitting M20x1.5
- Contact type: SPCO/SPDT (Hermetically sealed - Volt-free contacts)

Electrical data
- Resistive Load: 830 mA / 24 Vdc - 180 mA / 110 Vac
- Electrical Ratings: Ui = 30 Vdc / Ii = 250 mA / Pi = 1.3 W

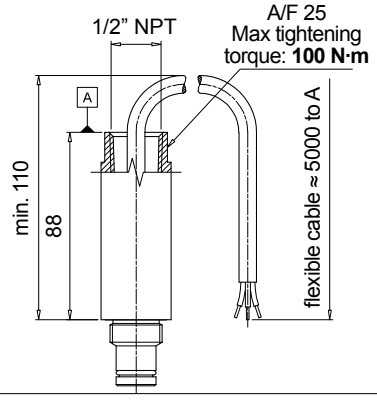
Atex Rating
II 1 GD Ex ia IIC T6 Ga
Ex ia IIC T4 Ga
Ex ia IIIC T_{200} 85 °C Da
Ex ia IIIC T_{200} 135 °C Da

IECEx Rating
Ex ia IIC T6 Ga
Ex ia IIC T4 Ga
Ex ia IIIC T_{200} 85 °C Da
Ex ia IIIC T_{200} 135 °C Da

DEH*49

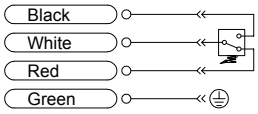
Hazardous Area
Electrical Differential Pressure Indicator
Connection via four-core cable - cable fitting 1/2" NPT

Settings	Ordering code
2.0 bar ±10%	DE H 20 x A 49 P01
5.0 bar ±10%	DE H 50 x A 49 P01
7.0 bar ±10%	DE H 70 x A 49 P01



Hydraulic symbol

Electrical symbol



- Certification / Approvals: ATEX, IECEx, EAC TR CU, UL/CSA
- Certification included as standard

Materials
- Body: AISI 316L
- Contacts: Rhodium
- Seal: FPM - MFQ

Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Temperature range: T4=Tamb -60 °C to +120 °C (-76 to 248 °F) T6=Tamb -60 °C to +70 °C (-76 to 158 °F) From -60 °C to +105 °C (-76 to 221 °F) : UL/CSA
- Degree of protection: IP 66/67/68 according to EN 60529
- Connection type: Four-core cable, fitting 1/2" NPT
- Contact type: SPCO/SPDT (Hermetically sealed - Volt-free contacts)

Electrical data
- Resistive Load: 830 mA / 24 Vdc - 180 mA / 110 Vac
- Electrical Ratings: Ui = 150 Vac/dc / Pi = 20 W

Atex Rating
II 2 GD Ex db IIC T6 Gb
Ex db IIC T4 Gb
Ex tb IIIC T85 °C Db
Ex tb IIIC T135 °C Db

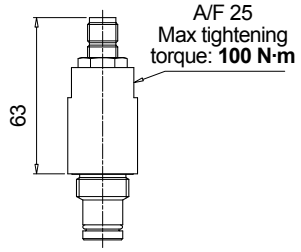
IECEx Rating
Ex db IIC T6 Gb
Ex db IIC T4 Gb
Ex tb IIIC T85 °C Db
Ex tb IIIC T135 °C Db

UL/CSA Rating
Class I Div 1 Groups A, B, C, & D
Class II Div 1 Groups E, F, & G
Class III Hazardous Locations

DEH*70

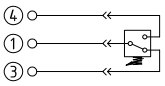
Hazardous Area
Electrical Differential Pressure Indicator
Connection IEC 61076-2-101 D (M12)

Settings	Ordering code
2.0 bar ±10%	DE H 20 x A 70 P01
5.0 bar ±10%	DE H 50 x A 70 P01
7.0 bar ±10%	DE H 70 x A 70 P01



Hydraulic symbol

Electrical symbol



- Certification / Approvals: ATEX, IECEx, EAC TR CU
- Certification included as standard

Materials
- Body: AISI 316L with internal engineered resin switch
- Contacts: Rhodium
- Seal: FPM - MFQ

Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Temperature range: T6=Tamb -60 °C to +80 °C (-76 to 176 °F)
- Degree of protection: IP 66/67 according to EN 60529
- Connection type: IEC 61076-2-101 D (M12)
- Contact type: SPCO/SPDT (Hermetically sealed - Volt-free contacts)

Electrical data
- Resistive Load: 830 mA / 24 Vdc - 180 mA / 110 Vdc
- Electrical Ratings: Ui = 30 Vdc / Ii = 250 mA / Pi = 1.3 W

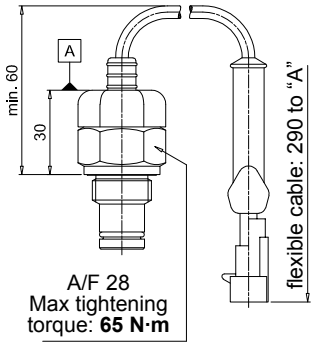
Atex Rating
II 1 GD Ex ia IIC T6 Ga
Ex ia IIIC T_{200} 135 °C Da

IECEx Rating
Ex ia IIC T6 Ga
Ex ia IIIC T_{200} 135 °C Da

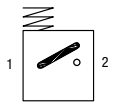
DEM*F10

Electrical Differential Pressure Indicator
Connection: AMP Superseal series 1.5

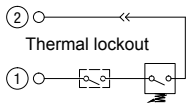
Settings	Ordering code
1.2 bar ±10%	DE M 12 x F 10 P01
2.0 bar ±10%	DE M 20 x F 10 P01
5.0 bar ±10%	DE M 50 x F 10 P01
7.0 bar ±10%	DE M 70 x F 10 P01
9.5 bar ±10%	DE M 95 x F 10 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - FPM

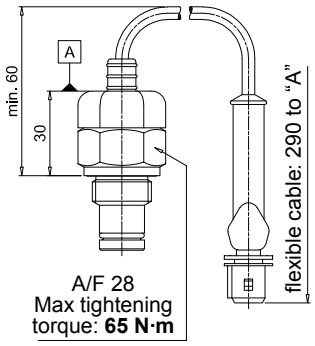
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

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")

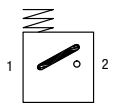
DEM*F20

Electrical Differential Pressure Indicator
AMP Time junior

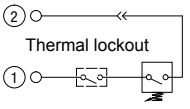
Settings	Ordering code
1.2 bar ±10%	DE M 12 x F 20 P01
2.0 bar ±10%	DE M 20 x F 20 P01
5.0 bar ±10%	DE M 50 x F 20 P01
7.0 bar ±10%	DE M 70 x F 20 P01
9.5 bar ±10%	DE M 95 x F 20 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black polyamide
- 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 oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

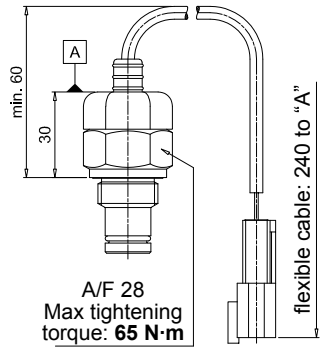
Electrical data
- Electrical connection: AMP Time junior
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option "F")

Dimensions

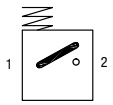
DEM*F30

Electrical Differential Pressure Indicator
Deutsch DT-04-2-P

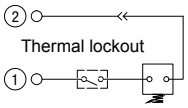
Settings	Ordering code
1.2 bar ±10%	DE M 12 x F 30 P01
2.0 bar ±10%	DE M 20 x F 30 P01
5.0 bar ±10%	DE M 50 x F 30 P01
7.0 bar ±10%	DE M 70 x F 30 P01
9.5 bar ±10%	DE M 95 x F 30 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - FPM

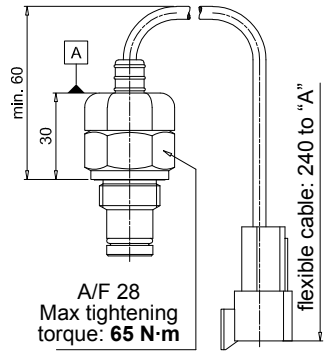
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

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")

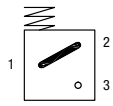
DEM*F35

Electrical Differential Pressure Indicator
Deutsch DT-04-3-P

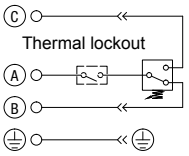
Settings	Ordering code
1.2 bar ±10%	DE M 12 x F 35 P01
2.0 bar ±10%	DE M 20 x F 35 P01
5.0 bar ±10%	DE M 50 x F 35 P01
7.0 bar ±10%	DE M 70 x F 35 P01
9.5 bar ±10%	DE M 95 x F 35 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - FPM

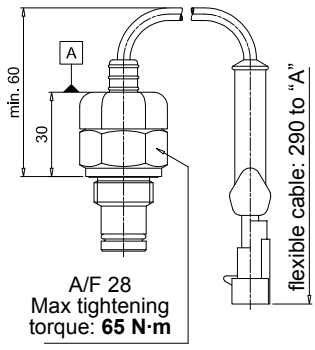
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

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")

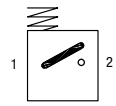
DEM*A10

Electrical Differential Pressure Indicator
Connection: AMP Superseal series 1.5

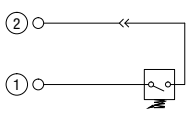
Settings	Ordering code
1.2 bar ±10%	DE M 12 x A 10 P01
2.0 bar ±10%	DE M 20 x A 10 P01
5.0 bar ±10%	DE M 50 x A 10 P01
7.0 bar ±10%	DE M 70 x A 10 P01
9.5 bar ±10%	DE M 95 x A 10 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - FPM

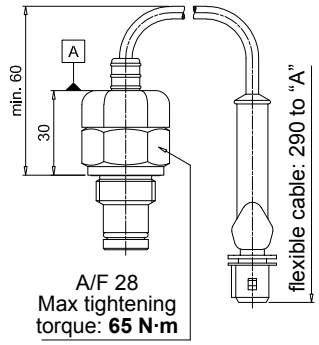
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

Electrical data
- Electrical connection: AMP Superseal series 1.5
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)

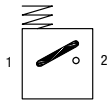
DEM*A20

Electrical Differential Pressure Indicator
AMP Time junior

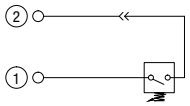
Settings	Ordering code
1.2 bar ±10%	DE M 12 x A 20 P01
2.0 bar ±10%	DE M 20 x A 20 P01
5.0 bar ±10%	DE M 50 x A 20 P01
7.0 bar ±10%	DE M 70 x A 20 P01
9.5 bar ±10%	DE M 95 x A 20 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - FPM

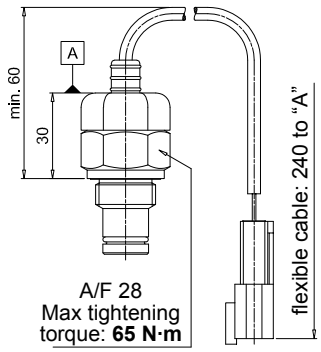
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

Electrical data
- Electrical connection: AMP Time junior
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)

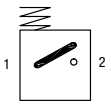
DEM*A30

Electrical Differential Pressure Indicator
Deutsch DT-04-2-P

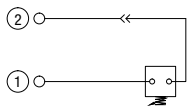
Settings	Ordering code
1.2 bar ±10%	DE M 12 x A 30 P01
2.0 bar ±10%	DE M 20 x A 30 P01
5.0 bar ±10%	DE M 50 x A 30 P01
7.0 bar ±10%	DE M 70 x A 30 P01
9.5 bar ±10%	DE M 95 x A 30 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - FPM

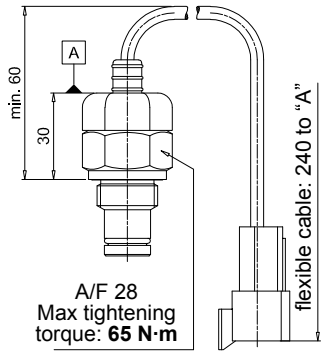
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

Electrical data
- Electrical connection: Deutsch DT-04-2-P
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)

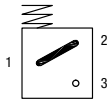
DEM*A35

Electrical Differential Pressure Indicator
Deutsch DT-04-3-P

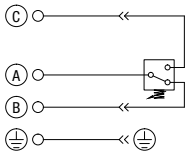
Settings	Ordering code
1.2 bar ±10%	DE M 12 x A 35 P01
2.0 bar ±10%	DE M 20 x A 35 P01
5.0 bar ±10%	DE M 50 x A 35 P01
7.0 bar ±10%	DE M 70 x A 35 P01
9.5 bar ±10%	DE M 95 x A 35 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black polyamide
- 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 oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

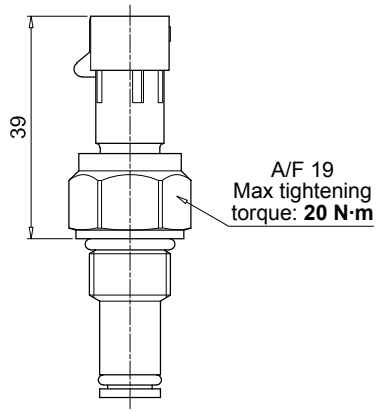
Electrical data
- Electrical connection: Deutsch DT-04-3-P
- Resistive load: 0.2 A / 115 Vdc
- Switching type: SPDT contact

Dimensions

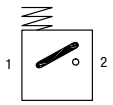
DES*10

Electrical Differential Pressure Indicator
AMP Superseal series 1.5

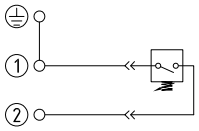
Settings	Ordering code
1.2 bar ±10%	DE S 12 H A 10 P01
2.5 bar ±10%	DE S 25 H A 10 P01
4.0 bar ±10%	DE S 40 H A 10 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Internal parts: Brass - Polyamide
- Contacts: Silver
- Seal: HNBR

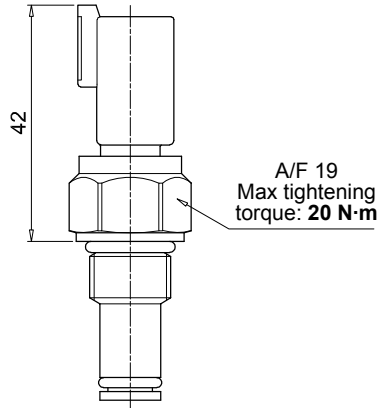
Technical data
- Max working pressure: 16 bar
- Proof pressure: 24 bar
- Burst pressure: 48 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP67 according to EN 60529

Electrical data
- Electrical connection: AMP Superseal series 1.5
- Resistive load: 0.2 A / 24 Vdc
- Switching type: Normally open contacts (NC on request)

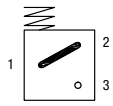
DES*30

Electrical Differential Pressure Indicator
Deutsch DT-04-2-P

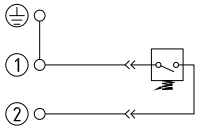
Settings	Ordering code
1.2 bar ±10%	DE S 12 H A 30 P01
2.5 bar ±10%	DE S 25 H A 30 P01
4.0 bar ±10%	DE S 40 H A 30 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Internal parts: Brass - Polyamide
- Contacts: Silver
- Seal: HNBR

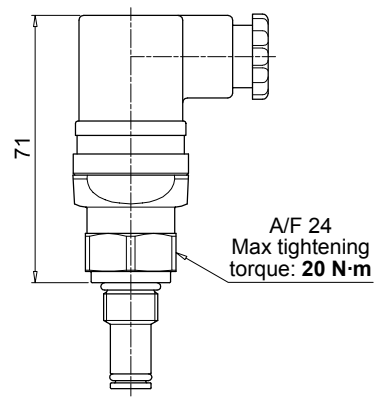
Technical data
- Max working pressure: 16 bar
- Proof pressure: 24 bar
- Burst pressure: 48 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP67 according to EN 60529

Electrical data
- Electrical connection: Deutsch DT-04-2-P
- Resistive load: 0.2 A / 24 Vdc
- Switching type: Normally open contacts (NC on request)

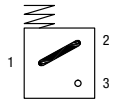
DES*50

Electrical Differential Pressure Indicator
Connection: EN 175301-803

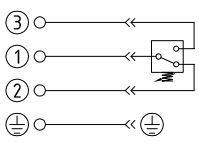
Settings	Ordering code
1.2 bar ±10%	DE S 12 H A 50 P01
2.4 bar ±10%	DE S 25 H A 50 P01
4.0 bar ±10%	DE S 40 H A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Aluminium
- Internal parts: Aluminium - Polyamide
- Contacts: Silver
- Seal: HNBR

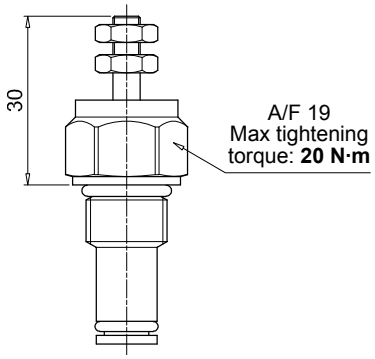
Technical data
- Max working pressure: 35 bar
- Proof pressure: 53 bar
- Burst pressure: 105 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529 IP69K according to EN 20653

Electrical data
- Electrical connection: EN 175301-803
- Resistive load: 0.2 A / 115 Vdc

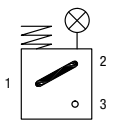
DES*80

Electrical Differential Pressure Indicator
Stud #10-32 UNF

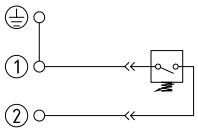
Settings	Ordering code
1.2 bar ±10%	DE S 12 H A 80 P01
2.5 bar ±10%	DE S 25 H A 80 P01
4.0 bar ±10%	DE S 40 H A 80 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Internal parts: Brass - Polyamide
- Contacts: Silver
- Seal: HNBR

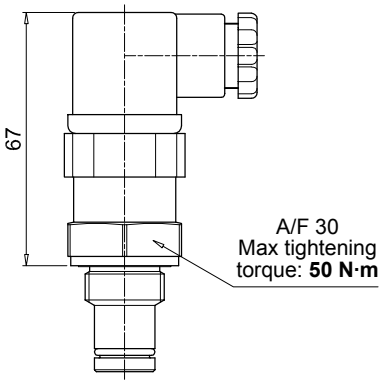
Technical data
- Max working pressure: 16 bar
- Proof pressure: 24 bar
- Burst pressure: 48 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP67 according to EN 60529

Electrical data
- Electrical connection: Stud #10-32 UNF
- Resistive load: 0.2 A / 24 Vdc
- Switching type: Normally open contacts (NC on request)

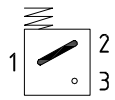
DEU*50 UL

Electrical Differential Pressure Indicator
Connection EN 175301-803

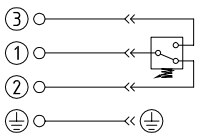
Settings	Ordering code
2.0 bar ±10%	DE U 20 V A 50 P01 UL
5.0 bar ±10%	DE U 50 V A 50 P01 UL
7.0 bar ±10%	DE U 70 V A 50 P01 UL



Hydraulic symbol



Electrical symbol



- Certification: UL
- Certification included as standard

Materials
- Body: Brass
- Base: Black Polyamide
- Contacts: Silver
- Seal: FPM

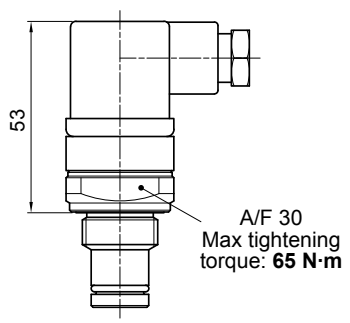
Technical data
- Max working pressure: 210 bar
- Proof pressure: 220 bar
- Burst pressure: 880 bar
- Working temperature: From --25 °C to +85 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

Electrical data
- Electrical connection: EN 175301-803
- Resistive load: 3 A / 30 Vdc
  3 A / 125 Vac
  3 (3) A / 250 Vac

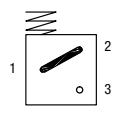
DEX*50

Electrical Differential Pressure Indicator
Connection: EN 175301-803

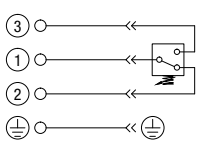
Settings	Ordering code
1.2 bar ±10%	DE X 12 x A 50 P01
2.0 bar ±10%	DE X 20 x A 50 P01
5.0 bar ±10%	DE X 50 x A 50 P01
7.0 bar ±10%	DE X 70 x A 50 P01
9.5 bar ±10%	DE X 95 x A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: AISI 316L
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - MFQ

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 oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529
  IP69K according to ISO 20653

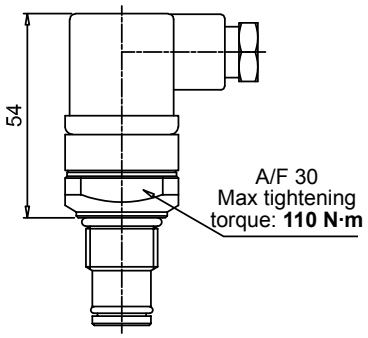
Electrical data
- Electrical connection: EN 175301-803
- Resistive load: 0.2 A / 115 Vdc

Dimensions

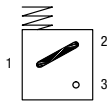
DEZ*50

Electrical Differential Pressure Indicator
Connection: EN 175301-803

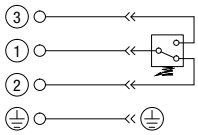
Settings	Ordering code
5.0 bar ±10%	DE Z 50 x A 50 P01
7.0 bar ±10%	DE Z 70 x A 50 P01
9.5 bar ±10%	DE Z 95 x A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: AISI 316L
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - MFQ

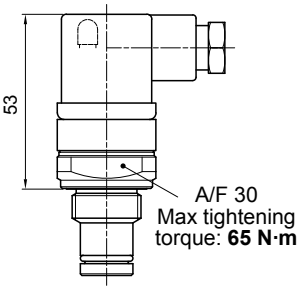
Technical data
- Max working pressure: 700 bar
- Proof pressure: 1050 bar
- Burst pressure: 2100 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653

Electrical data
- Electrical connection: EN 175301-803
- Resistive load: 0.2 A / 115 Vdc

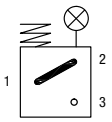
DLA*51 - DLA*52

Electrical/Visual Differential Pressure Indicator
Connection: EN 175301-803
51: Transparent base with lamps 24 Vdc
52: Transparent base with lamps 110 Vdc

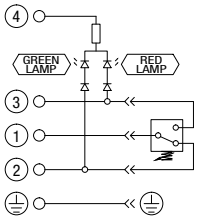
Settings	Ordering code
1.2 bar ±10%	DL A 12 x A xx P01
2.0 bar ±10%	DL A 20 x A xx P01
5.0 bar ±10%	DL A 50 x A xx P01
7.0 bar ±10%	DL A 70 x A xx P01
9.5 bar ±10%	DL A 95 x A xx P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Transparent polyamide
- 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 oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653

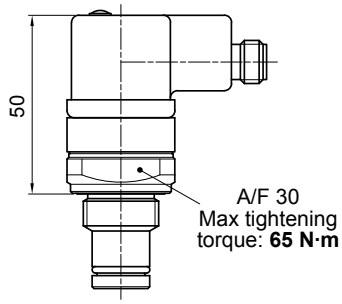
Electrical data

- Electrical connection:	EN 175301-803	
- Type	51	52
- Lamps	24 Vdc	110 Vdc
- Resistive load:	1 A / 24 Vdc	1 A / 110 Vdc

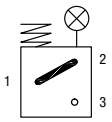
DLA*71

Electrical/Visual Differential pressure indicator
Connection IEC 61076-2-101 D (M12),
black base with lamps 24 Vdc

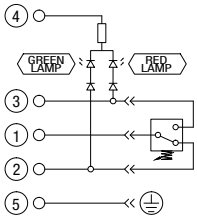
Settings	Ordering code
1.2 bar ±10%	DL A 12 x A 71 P01
2.0 bar ±10%	DL A 20 x A 71 P01
5.0 bar ±10%	DL A 50 x A 71 P01
7.0 bar ±10%	DL A 70 x A 71 P01
9.5 bar ±10%	DL A 95 x A 71 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - FPM

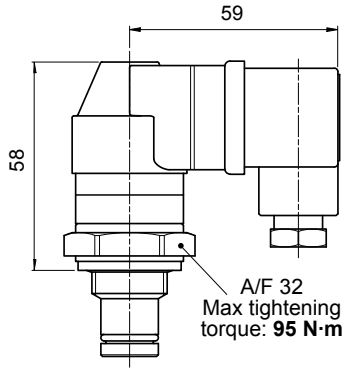
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529 IP69K according to ISO 20653

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

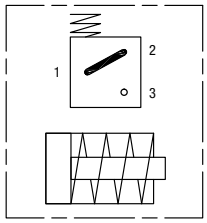
DLE*A50

Electrical/Visual Differential Pressure Indicator
Without term. Connections: EN 175301-803

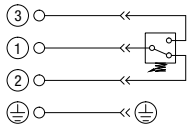
Settings	Ordering code
1.2 bar ±10%	DL E 12 x A 50 P01
2.0 bar ±10%	DL E 20 x A 50 P01
5.0 bar ±10%	DL E 50 x A 50 P01
7.0 bar ±10%	DL E 70 x A 50 P01
9.5 bar ±10%	DL E 95 x A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - FPM

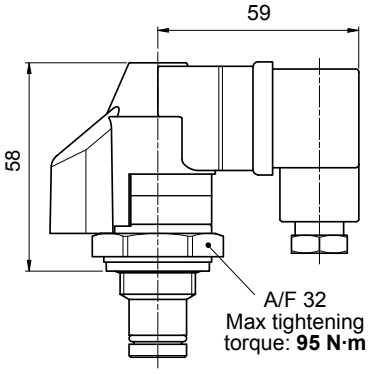
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

Electrical data
- Electrical connections: EN 175301-803
- Resistive load: 5 A / 250 Vac
- Available the connector with lamps

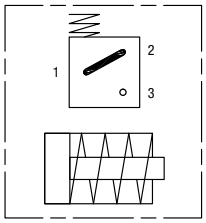
DLE*F50

Electrical/Visual Differential Pressure Indicator
With term. Connections: EN 175301-803

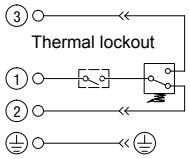
Settings	Ordering code
1.2 bar ±10%	DL E 12 x F 50 P01
2.0 bar ±10%	DL E 20 x F 50 P01
5.0 bar ±10%	DL E 50 x F 50 P01
7.0 bar ±10%	DL E 70 x F 50 P01
9.5 bar ±10%	DL E 95 x F 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black polyamide
- 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 oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

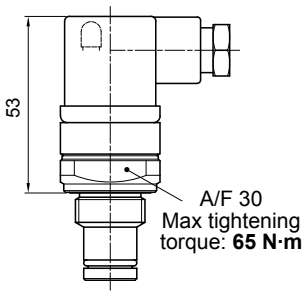
Electrical data
- Electrical connections: EN 175301-803
- Resistive load: 5 A / 250 Vac
- Thermal lockout setting: +30 °C

DLX*51 - DLX*52

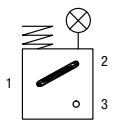
Electrical/Visual Differential Pressure Indicator
Connection: EN 175301-803

51: Transparent base with lamps 24 Vdc
52: Transparent base with lamps 110 Vdc

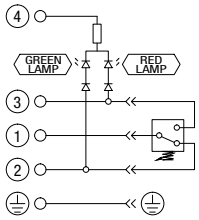
Settings	Ordering code
1.2 bar ±10%	DL X 12 x A 5x P01
2.0 bar ±10%	DL X 20 x A 5x P01
5.0 bar ±10%	DL X 50 x A 5x P01
7.0 bar ±10%	DL X 70 x A 5x P01
9.5 bar ±10%	DL X 95 x A 5x P01



Hydraulic symbol



Electrical symbol



Materials
- Body: AISI 316L
- Base: Transparent polyamide
- Contacts: Silver
- Seal: HNBR - MFQ

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 oils, Synthetic fluids HFB and 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:	1 A / 24 Vdc	1 A / 110 Vdc

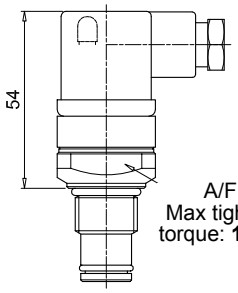
Dimensions

DLZ*51 - DLZ*52

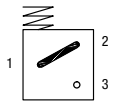
Electrical/Visual Differential Pressure Indicator
Connection: EN 175301-803

51: Transparent base with lamps 24 Vdc
52: Transparent base with lamps 110 Vdc

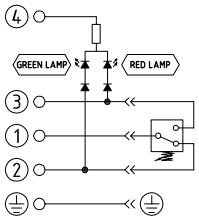
Settings	Ordering code
1.2 bar ±10%	DL Z 12 x A 5x P01
2.5 bar ±10%	DL Z 25 x A 5x P01
5.0 bar ±10%	DL Z 50 x A 5x P01
7.0 bar ±10%	DL Z 70 x A 5x P01
9.5 bar ±10%	DL Z 95 x A 5x P01



Hydraulic symbol



Electrical symbol



Materials
- Body: AISI 316L
- Base: Transparent polyamide
- Contacts: Silver
- Seal: HNBR - MFQ

Technical data
- Max working pressure: 700 bar
- Proof pressure: 1050 bar
- Burst pressure: 2100 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653

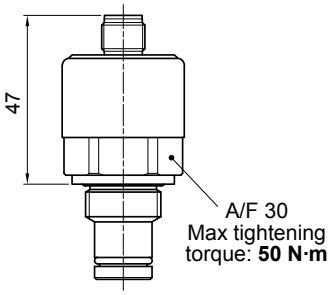
Electrical data

- Electrical connection:	EN 175301-803	
- Type	51	52
- Lamps	24 Vdc	110 Vdc
- Resistive load:	1 A / 24 Vdc	1 A / 110 Vdc

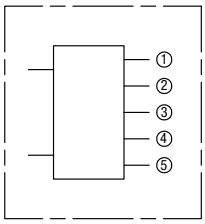
DTA*F70

Electronic Differential Pressure Indicator
Connection: IEC 61076-2-101 D (M12)

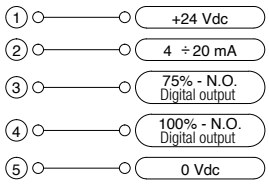
Settings	Ordering code
1.2 bar ±10%	DT A 12 x F 70 P01
2.0 bar ±10%	DT A 20 x F 70 P01
5.0 bar ±10%	DT A 50 x F 70 P01
7.0 bar ±10%	DT A 70 x F 70 P01
9.5 bar ±10%	DT A 95 x F 70 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Internal parts: Brass - Polyamide
- Contacts: Silver
- Seal: HNBR - FPM

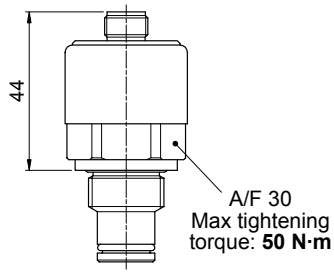
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP67 according to EN 60529

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)

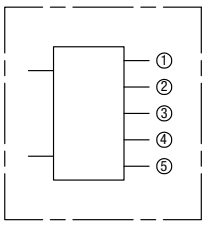
DTI*70

IO-Link Electronic Differential Pressure Indicator
Connection: IEC 61076-2-101 D (M12)

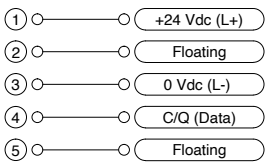
Settings	Ordering code
1.2 bar ±10%	DT I 12 x A 70 P01
2.0 bar ±10%	DT I 20 x A 70 P01
5.0 bar ±10%	DT I 50 x A 70 P01
7.0 bar ±10%	DT I 70 x A 70 P01
9.5 bar ±10%	DT I 95 x A 70 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Internal parts: Brass - Polyamide
- Contacts: Silver
- Seal: HNBR - FPM

Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP67 according to EN 60529

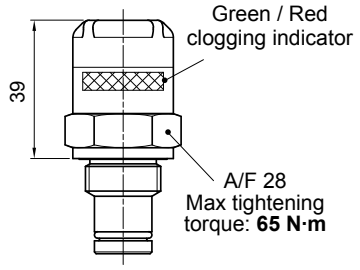
Electrical data
- Electrical connection: IEC 61076-2-101 D (M12)
- Power supply: 24 Vdc

IO-Link data
- Differential pressure [bar]: Float 32/4 byte
- Temperature [°C]: Float 32/4 byte
- State register: Unit 16/2 byte
- Errors register: Unit 16/2 byte

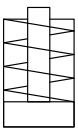
DVA

Visual Differential Pressure Indicator

Settings	Ordering code
1.2 bar ±10%	DV A 12 x P01
2.0 bar ±10%	DV A 20 x P01
5.0 bar ±10%	DV A 50 x P01
7.0 bar ±10%	DV A 70 x P01
9.5 bar ±10%	DV A 95 x P01



Hydraulic symbol



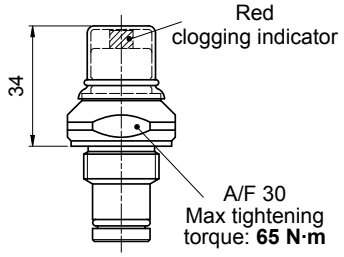
Materials
- Body: Brass
- Internal parts: Brass - Polyamide
- Seal: HNBR - FPM

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 oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

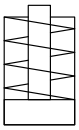
DVM

Visual Differential Pressure Indicator

Settings	Ordering code
1.2 bar ±10%	DV M 12 x P01
2.0 bar ±10%	DV M 20 x P01
5.0 bar ±10%	DV M 50 x P01
7.0 bar ±10%	DV M 70 x P01
9.5 bar ±10%	DV M 95 x P01



Hydraulic symbol



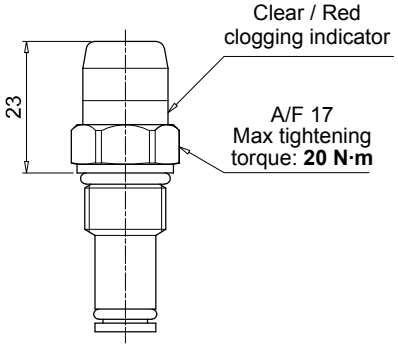
Materials
- Body: Brass
- Internal parts: Brass - Polyamide
- Seal: HNBR - FPM

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 oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

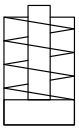
DVS

Visual Differential Pressure Indicator
Connection: EN 175301-803

Settings	Ordering code
1.2 bar ±10%	DV S 12 H P01
2.5 bar ±10%	DV S 25 H P01
4.0 bar ±10%	DV S 40 H P01



Hydraulic symbol



Materials
- Body: Brass
- Internal parts: Brass - Polyamide
- Seal: HNBR

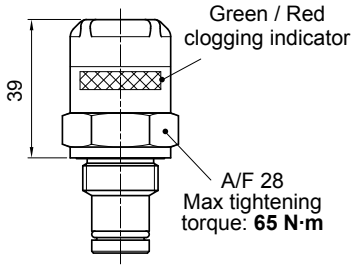
Technical data
- Reset: Automatic reset
- Max working pressure: 35 bar
- Proof pressure: 53 bar
- Burst pressure: 105 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP67 according to EN 60529

Dimensions

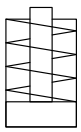
DVX

Visual Differential Pressure Indicator

Settings	Ordering code
1.2 bar ±10%	DV X 12 x P01
2.0 bar ±10%	DV X 20 x P01
5.0 bar ±10%	DV X 50 x P01
7.0 bar ±10%	DV X 70 x P01
9.5 bar ±10%	DV X 95 x P01



Hydraulic symbol



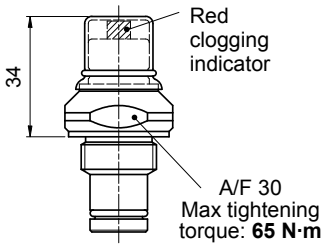
Materials
- Body: AISI 316L
- Internal parts: AISI 316L - Polyamide
- Seal: HNBR - MFQ

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 oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

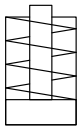
DVY

Visual Differential Pressure Indicator

Settings	Ordering code
1.2 bar ±10%	DV Y 12 x P01
2.0 bar ±10%	DV Y 20 x P01
5.0 bar ±10%	DV Y 50 x P01
7.0 bar ±10%	DV Y 70 x P01
9.5 bar ±10%	DV Y 95 x P01



Hydraulic symbol



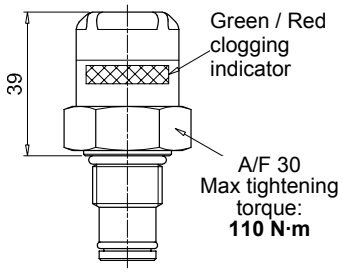
Materials
- Body: AISI 316L
- Internal parts: AISI 316L - Polyamide
- Seal: HNBR - MFQ

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 oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

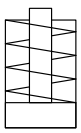
DVZ

Visual Differential Pressure Indicator

Settings	Ordering code
1.2 bar ±10%	DV Z 12 x P01
2.5 bar ±10%	DV Z 25 x P01
5.0 bar ±10%	DV Z 50 x P01
7.0 bar ±10%	DV Z 70 x P01
9.5 bar ±10%	DV Z 95 x P01



Hydraulic symbol



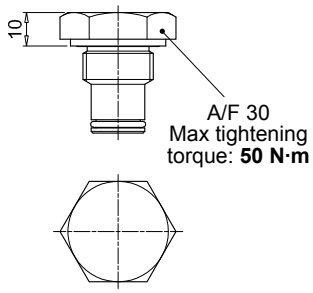
Materials
- Body: AISI 316L
- Internal parts: AISI 316L - Polyamide
- Seal: HNBR - MFQ

Technical data
- Reset: Automatic reset
- Max working pressure: 700 bar
- Proof pressure: 1050 bar
- Burst pressure: 2100 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

T2

Plug

Seal	Ordering code
HNBR	T2 H
FPM	T2 V

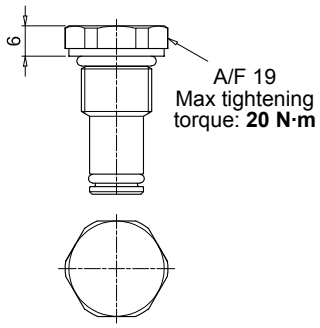


Materials
- Body:
  Phosphatized steel
- Seal:
  HNBR / FPM

T4

Plug

Seal	Ordering code
NBR	T4 A

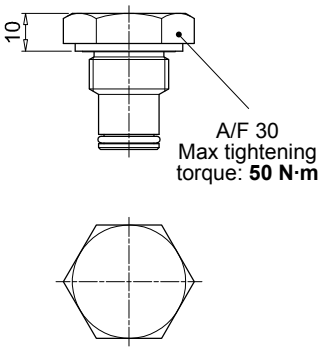


Materials
- Body:
  Anodized aluminium
- Seal:
  NBR

X2

Stainless Steel plug 420 bar

Seal	Ordering code
HNBR	X2 H
FPM	X2 V
MFQ	X2 F

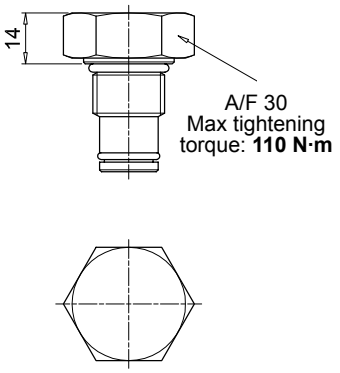


Materials
- Body:
  AISI 316L
- Seal:
  HNBR / FPM / MFQ

X3

Stainless Steel plug 700 bar (only for FZH)

Seal	Ordering code
HNBR	X3 H
FPM	X3 V
MFQ	X3 F



Materials
- Body:
  AISI 316L
- Seal:
  HNBR / FPM / MFQ

NOTES

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