SERIES

FMP 039

Maximum pressure 110 bar

Flow rates to 95 l/min

MP FILTRI spa

Technical data

FMP 039

Filter housing (Materials)

- Head: Anodized aluminium
- Housing: Anodized aluminium
- Bypass valve: Steel

Pressure

- Working pressure: 110 bar (11 MPa)
- Test pressure: 160 bar (16 MPa)
- Burst pressure: 390 bar (39 MPa)
- Pulse pressure fatigue test: 1.000.000 cycles with pressure from 0 to 110 bar (11 Mpa)

Temperature

- From -25°C to +110°C

Bypass valve

- Opening pressure 6 bar ±10%
- Other opening pressures on request

Δp Elements type

- Microfibre filter elements series N: 20 bar
- Stainless steel mesh elements series N: 20 bar

Seals

- Standard NBR series A
- Optional FPM series V

Weights (kg)

Length	2	3	4
• FMP 039	0,8	1,1	1,3

Volumes (dm^3)

Length	2	3	4
• FMP 039	0,28	0,35	0,43

Connections

- Inlet/Outlet in Line

Compatibility

- Housings compatible with: Mineral oils to ISO 2943 - aqueous emulsions synthetic fluids, water and glycol.
- The filter elements are compatible with: Mineral oils to ISO 2943, Synthetic fluids Aqueous emulsions, water and glycol (series W required).
- NBR seals series A, compatible with: Mineral oils to ISO 2943 - aqueous emulsions synthetic fluids, water and glycol.
- V series FPM seals, compatible with: Synthetic fluids type HS-HFDR-HFDS-HFDU To ISO 2943

Filter Element Area

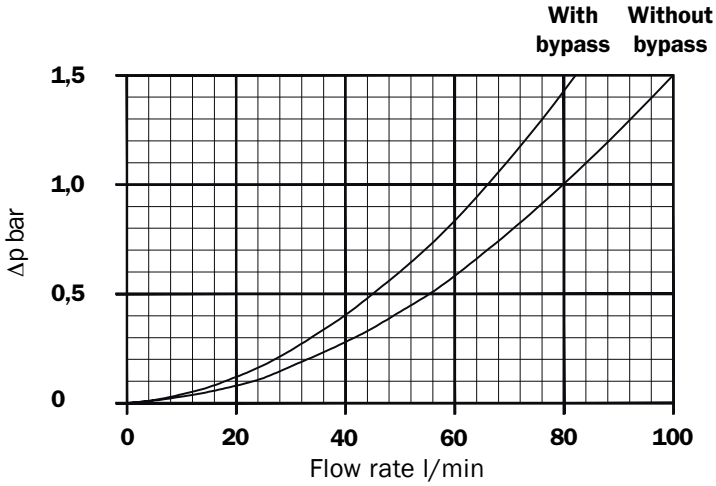
Filter element in stainless steel mesh

Type	Length 2	3	4
HP039	350	570	700
	Values expressed in **cm^2**		

Filter housings Δp pressure drop

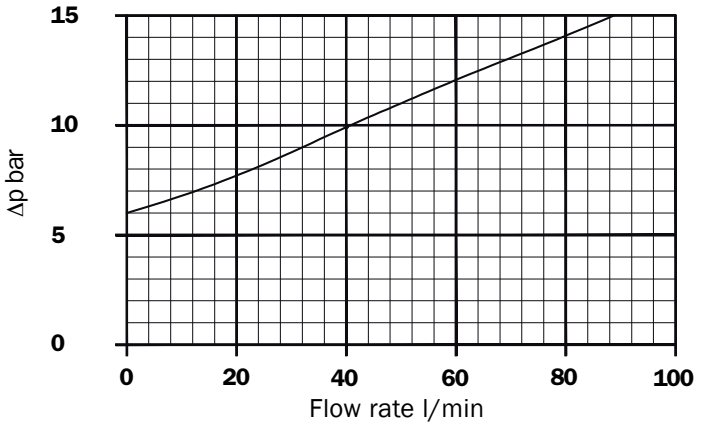
The curves are plotted utilising mineral oil with density of 0.86 kg/dm^3 to ISO 3968.

Δp varies proportionally with density.



Valves

Bypass valve pressure drop



Recommended maximum flow rate

- Pressure drop of filter assembly equal to Δp 1,5 bar.
- Oil kinematic viscosity 30 mm^2/s (cSt).
- Density 0,86 kg/dm^3.
- Connections of filter under test G 1/2".

Filtration

	Length	A01	A03	A06	A10	A16	A25	M25
FMP 039	2	10	20	25	45	46	54	80
	3	16	32	35	50	58	66	90
	4	22	40	43	58	62	71	95

Flow rate l/min

Correct sizing of the filter must be based on a variable pressure drop depending on the application:

- pressure filter Δp from 0.8 to 1.5 bar

The pressure drop calculation is performed by adding together the value for the housing and the value for the filter element.
The pressure drop in the housing is proportional to the fluid density kg/dm^3; all the graphs in the catalogue are referred to mineral oil with density of 0.86 kg/dm^3.
The filter element pressure drop value is proportional to viscosity mm^2/s, the Y values in the catalogue are referred to viscosity of 30 mm^2/s.

Sizing data for single cartridge, head at top

Δp Tot.
Δpc Filter housing
Δpe Filter element
Y Multiplication factor (see below)
Q l/min = flow rate
V1 = reference viscosity 30 mm^2/s (cSt)
V2 = operating viscosity in mm^2/s (cSt)
Δp Tot. = Δpc + Δpe
Δpe = Y : 1000 x Q x (V2/V1)

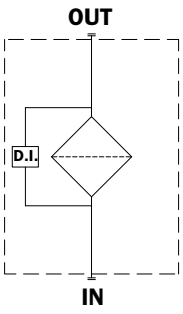
Multiplication factor “Y” for definition of the pressure drop of filter elements.

Reference viscosity 30 mm²/s

Filter Element	Absolute Filtration **Series N**					
Type	**A 0 3**	**A 0 6**	**A 1 0**	**A 1 6**	**A 2 5**	**M 2 5**
HP 039 2	70,66	53,20	25,77	20,57	14,67	0,490
3	36,57	32,28	18,00	13,38	08,00	02,90
4	26,57	23,27	12,46	09,88	05,58	02,20

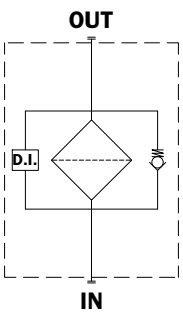
Symbols

Style **S**



Filter without bypass valve

Style **B**



Filter without bypass valve

Recommended maximum flow rate

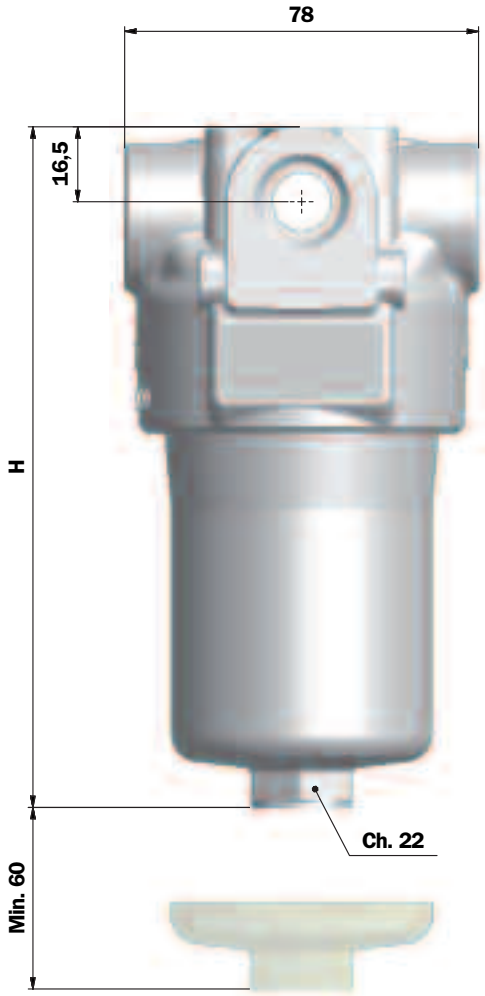
- Pressure drop of complete filter equal to Δp 1.5 bar.
- Oil kinematic viscosity 30 mm^2/s (cSt).
- Density 0.86 kg/dm^3.
- Connections of filter under test G 1/2".

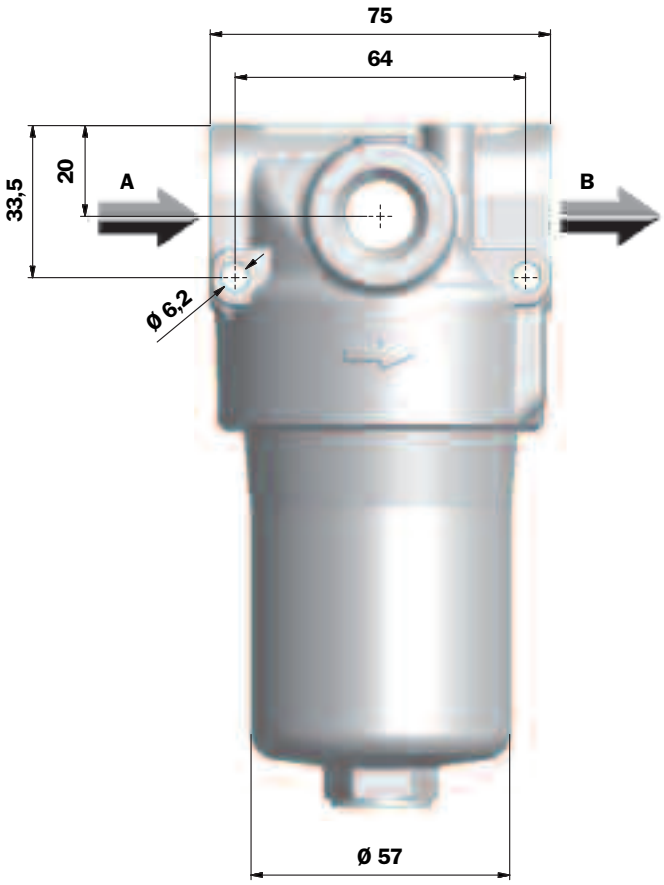
Filtration

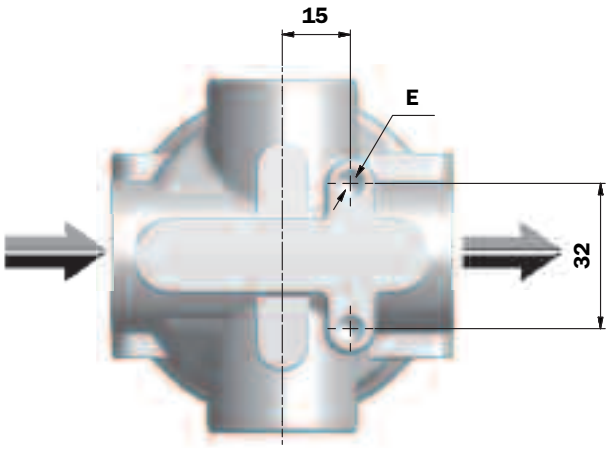
	Length.	A01	A03	A06	A10	A16	A25	M25
FMP 039	2	10	20	25	45	46	54	80
	3	16	32	35	50	58	66	90
	4	22	40	43	58	62	71	95

Flow rate l/min

FMP 039







Threaded Connections

St.	A - B	E
A	G 1/2"	M6
B	1/2" NPT	1/4" UNC
C	SAE 8 3/4" 16 UNF	1/4" UNC

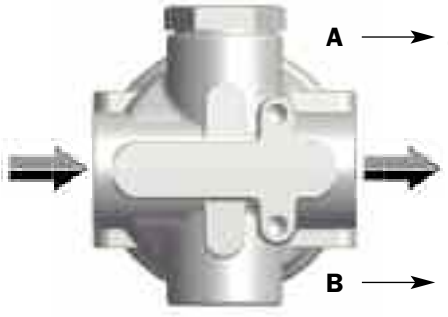
FMP 039

Length Filter	H mm
2	150
3	193
4	237

3D drawings available on website www.mpfiltri.com, under TOOLS/2D/3D CAD COMPONENTS

Execution 1:
Without indicator connection

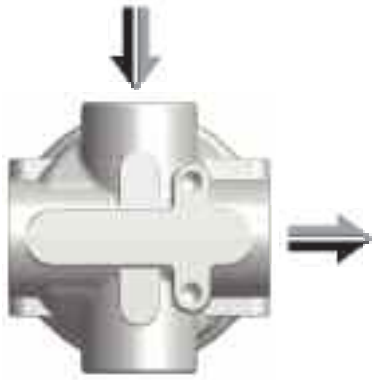
Execution 6:
Double indicator connection (A - B)

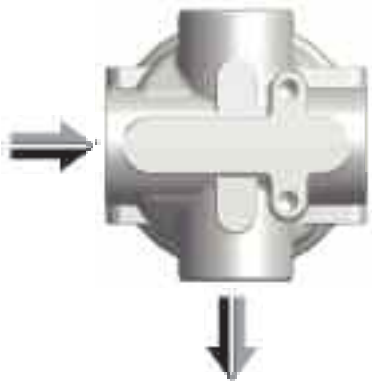


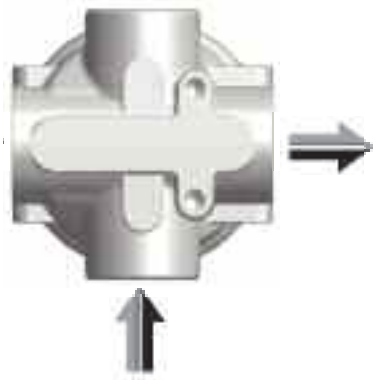
A → **Closure cap with standard T2 steel.**
The position of the cap is reversible.

B → **Standard closure cap with plastic thread protection.**
If necessary, the second plug T2 see page 7, the order code

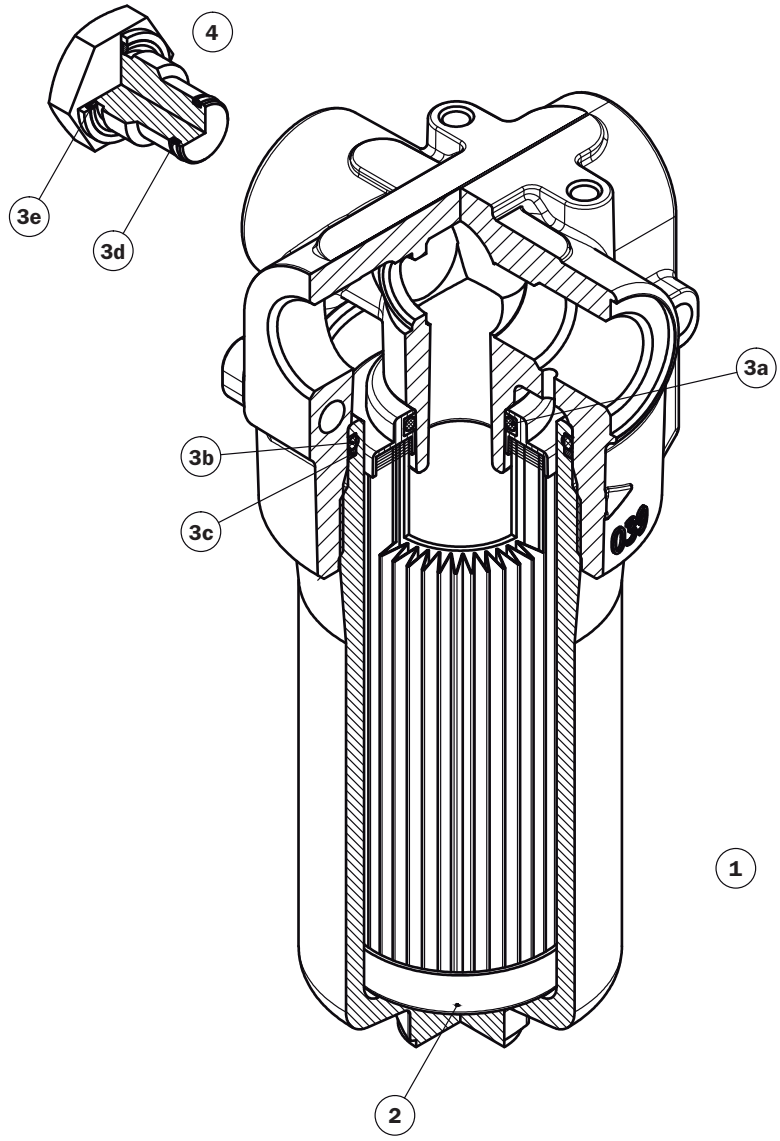
Options:
Possibility of special connections







Contact
MP Filtri



Pos.	Description	Qty	FILTER Series FMP 039	
1	Filter assembly	1	See order table	
2	Filter element	1	See order table	
3	Seals kit	1	NBR 02050310	FPM 02050311
3a	O-Ring for filter element	1	OR 4087 Ø 21,82 x 3,53	
3b	O-Ring for housing	1	OR 3200 Ø 50,47 x 2,62	
3c	Anti-extrusion ring	1	Parbak 136 Ø 51,26 x 2,18	
3d	O-Ring	2	OR 2050 Ø 12,42 x 1,78	
3e	Seal	1	01030058 (HNBR)	01030046 (FPM)
4	Indicator Plug	1	T2H	T2V
-	Indicator	1	See order table	

Differential indicators

Order code

1	2	3	4	5	6	7

Example: NM 7 H A 11 P01

1 - Styles

NR	Electrical
KR	Electrical-Visual
NM	Electrical IP 67
U	Visual

2 - Differential trip pressure

6	2 bar ± 10% (filter without by-pass)
7	5 bar ± 10% (filter with by-pass)
8	7 bar ± 10% (filter without by-pass)

3 - Power supply voltage

(only for style KR - only voltage DC DC)

1	24 Volt
2	110 Volt

4 - Seals

H	HNBR Standard
V	FPM
x	Other on request

5 - Thermostat (only for style NM)

A	Without
C	50°C

6 - Electrical connector (only for style NM)

11	Connector AMP superseal series 1.5
21	Connector AMP timer
31	Connector DEUTSCH DT 04-2-P
32	Connector DEUTSCH DT 04-3-P
41	Length electrical cable 0,5 m

7 - Option

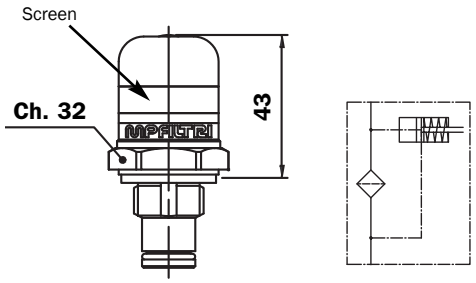
P01	MP standard

Pressure:

Working pressure 420 bar

Pulse pressure fatigue test: 1.000.000 cycles with pressure from 0 to 420 bar (42 MPa)

SERIES V VISUAL



Cover and lens in nylon.

Visual indicator green = Cartridge clean.
Visual indicator red = Cartridge clogged.

Tightening torque: 60 Nm.
Weight: 137 gr.

Order code

1	2	3

Example: E 7

1 - Style

V	Visual

2 - Differential trip pressure

6	2 bar ± 10%
7	5 bar ± 10%
8	7 bar ± 10%

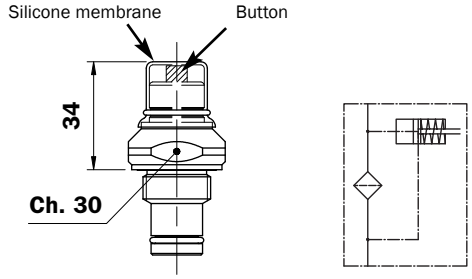
3 - Seals

FPM Standard

x	Other on request

Seal for indicator/filter head, Bonded Seal.

SERIES U VISUAL

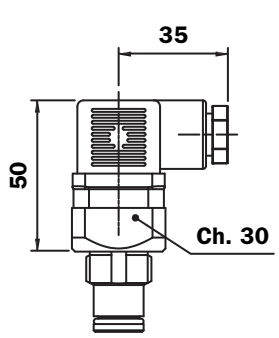


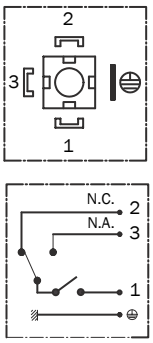
"U" indicator provide to accurate view indication of filter element condition.

Visual signal	Red button down: clean cartridge Red button up: clogging cartridge
Connection	G 1/2"
Tightening torque:	65 Nm
Weight:	128 gr

SERIES NR ELECTRICAL

Connector EN 175301-803 A/ISO 4400

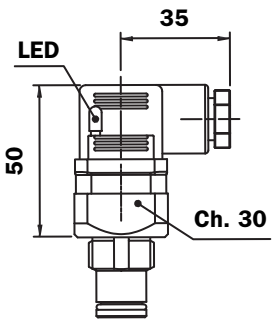


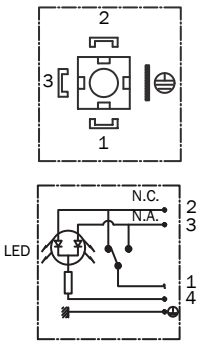


Switching type	N/O or N/C contacts (change over Contact)
Max. contact rating	0,8 A / 24 Vdc 0,17 A / 115 Vdc
Max power supply voltage	230 Vac
Electrical connection	EN 175301-803
Cable gland	PG 9
Protection rating	IP 65
Connection	G 1/2”
Tightening torque:	65 Nm
Weight:	123 gr

SERIES KR ELECTRICAL/VISUAL

Connector EN 175301-803 A/ISO 4400

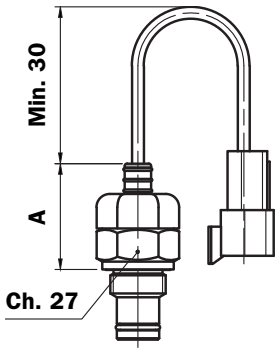




Switching type	N/O or N/C contacts (change over Contact)
Max. contact rating	0,8 A / 24 Vdc 0,17 A / 115 Vdc
Max power supply voltage	24 Vdc - 115 Vdc/ac - 230 Vac
Electrical connection	EN 175301-803 visual indicator by LED GREEN LED = Clean element. RED LED= Blocked element.
Cable gland	PG 9
Protection rating	IP 65
Connection	G 1/2”
Tightening torque:	65 Nm
Weight:	123 gr

SERIES NM ELECTRICAL

32



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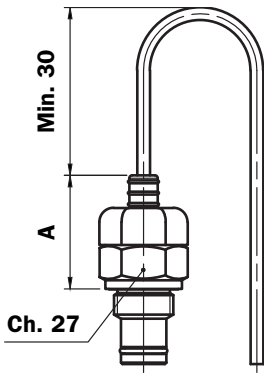

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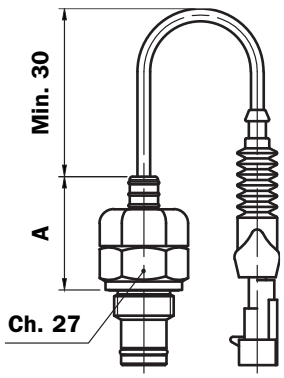

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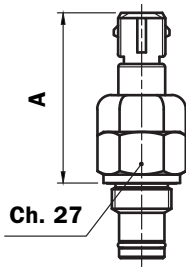

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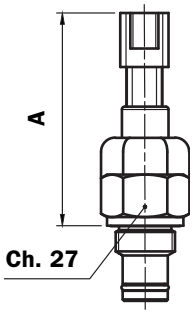
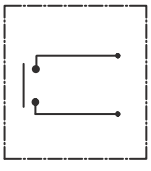
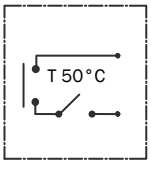


Length indicator NM

	A	
	Without thermostat	**With thermostat**
NM - 11	40	50
NM - 21	60	70
NM - 31	75	85
NM - 32	40	50
NM - 41	40	50





Switching type	N/O contacts N/O thermostat
Max. contact rating	0,8 A / 24 Vdc 0,17 A / 115 Vdc
Max power supply voltage	Max. 120 Vdc
Electrical connection	11 Connector AMP superseal series 1.5 21 Connector AMP timer 31 Connector DEUTSCH DT 04-2-P 32 Connector DEUTSCH DT 04-3-P 41 Length electrical cable 0,5 m
Protection rating	IP 67
Connection	G 1/2”
Tightening torque:	65 Nm
Weight:	125 gr

Notes

Ordering information FMP 039

Filter assembly
FMP039

	1	2	3	4	5	6	7	8
	☐	☐	☐	☐	☐	☐	☐	☐
Example: FMP039	**2**	**B**	**A**	**A**	**1**	**A10**	**N**	**P01**

Filter element
HP 039

	1	6	3	7	8
	☐	☐	☐	☐	☐
Example: HP039	**2**	**A10**	**A**	**N**	**P01**

1 - Filter length

2	
3	
4	

2 - By-pass valve

S	Without bypass
B	With bypass Opening pressure: 6 bar

3 - Seals

A	NBR
V	FPM
	On request

4 - Connections

A	G 1/2”
B	1/2” NPT
C	SAE 8

5 - Indicator port

1	Without indicator port
6	With 2 indicators port*

6 - Filter element

A01	1 µ	Absolute filtration Inorganic microfibre ßx (c) ≥ 1000
A03	3 µ	
A06	6 µ	
A10	10 µ	
A16	16 µ	
A25	25 µ	
M25	25 µ	Nominal Filtration Metal mesh

7 - Collapse pressure

N	Δp= 20 bar

8 - Options

P01	MP Filtri standard
Pxx	Customer request

***Options**

Steel plug T2 has to be ordered separately

Code

- **T2H** Seal NBR
- **T2V** Seal FPM

Operating & Maintenance

Pressurized filters are utilized to remove contaminant from hydraulic systems.
Long working life of the hydraulic components and correct use of the hydraulic systems can be assured only when maintenance is performed correctly and at regular intervals.

Pressurized filters can be equipped with bypass valves, reverse flow valves, and check valves.

If the filters are not equipped with a bypass valve, only high strength filter cartridges should be used (Δp 210 bar) to avoid the risk of collapse due to the presence of contaminants retained during the filtration process.

- "H" series cartridges when by-pass valves are not installed.
- "S" series cartridges when reverse flow valves and duplex filters are installed.

When bypass valves are present and during flushing operations, we recommend the use of cartridges with low mechanical strength (Δp 20 bar).

- "N" series cartridges when reverse flow valves are not installed.
- "R" series cartridges when reverse flow valves and duplex filters are installed.

In order to prevent the filter elements from collapsing due to excessive hydraulic pressure it is essential to use differential indicators that serve to inform the user of the need to change the cartridge.
Effective contamination control can be assured only by the correct use of clogging indicators.

MAINTENANCE TOOLS

Differential Indicators

Wrenches	Ch. 27/30/32

Filter housing

Wrenches	Ch. 22

INSTALLATION

A Check that the pressure rating of the selected filter is higher than the system's maximum operating pressure (the maximum pressure value is shown on the nameplate).
B Check that the filter body contains the filter cartridge.
C Check that the operating fluid is compatible with the material of the body, cartridge, and seals.
D Secure the filter using the relevant threaded holes, to rigid brackets. Rigid installation makes it possible to unscrew the housing without introducing flexing of the hydraulic fittings, limiting any points of stress transfer.
E Install the filter in an accessible position for correct and trouble-free maintenance.
F Start the machine and check any of oil leaks from the filter and relative fittings.
G Repeat the visual inspection when the system arrives at the operating temperature of the oil.

MAINTENANCE

A All maintenance operations must be performed only by suitably trained personnel.
B The hydraulic system must be depressurized before performing maintenance operations (except in the case of FHD double filters).
C Maintenance must be carried out using suitable tools and containers to collect the fluid contained in the filter body. Spent fluids must be disposed of in compliance with statutory legislation.
D Do not use naked flames during maintenance operations.
E Use the utmost caution in relation to the temperature of the fluid. High temperatures can lead to residual pressure with resulting undesirable movements of mechanical parts.

CHANGING THE FILTER ELEMENT

A The date on which the filter elements are changed should be recorded in the machine datasheet.
B Spare parts installed must be in compliance with the specifications given in the machine operating and maintenance manual.
C Filter bodies should be handled carefully since they are cleaner than most work station.
D After having opened the filter to change the filter element, check the condition of the seals and change them if necessary.

CHANGING THE FILTER ELEMENT
FILTERS WITH IN-LINE AND MANIFIOLD TYPE CONNECTIONS

1 Depressurize system and filter.
2 Unscrew (the oil drain plug, first if present) the housing using the appropriate tools and extract the filter element (see fig. 2).

3 Collect the spent oil and cartridge in a suitable container and dispose of them in compliance with statutory legislation.

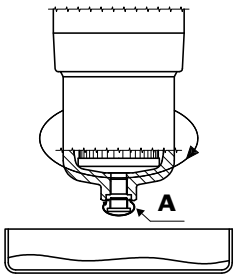


Fig. 1

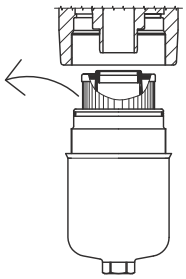


Fig. 2

!!! WARNING !!!

4 To avoid damaging the components check and clean the following parts is neccessary:
- the thread of the housing and the seals and the thread of the head.
Check the condition of the seals - when chasing the seals lubricate the new seals with operating fluid prior to installation (see fig. 3).

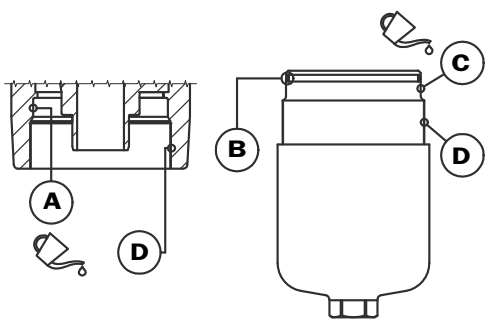


Fig. 3

5 Lubricate the filter element seal with the operating fluid before installing the new filter element (see fig. 4).

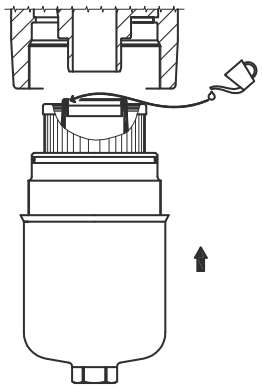


Fig. 4

6 Screw the housing onto the head using the correct tool. **WARNING:** Screw the housing fully home onto the head **"DO NOT APPLY EXCESSIVE TIGHTENING TORQUE".**

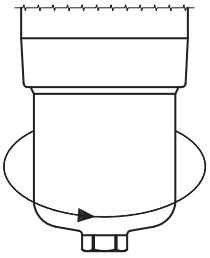


Fig. 5

7 Start the machine and check for the absence of leaks. Repeat the operation when the machine has reached its operating temperature.

Notes

New Headquarter:

MP FILTRI S.p.A. Italy
Via 1° Maggio, n. 3
20060 Pessano con Bornago
(Milano) Italy
Tel. +39.02/95703.1
Fax +39.02/95741497-95740188
email: sales@mpfiltri.com
http://www.mpfiltri.com

GREAT BRITAIN
MP FILTRI U.K. Ltd.
Bourton Industrial Park
Bourton on the Water
Gloucestershire GL54 2HQ UK
Phone: +44.01451-822522
Fax: +44.01451-822282
email: sales@mpfiltri.co.uk
http://www.hydraulicparticlecounter.com
http://www.mpfiltri.com

GERMANY
MP FILTRI D GmbH
Am Wasserturm 5
D-66265 Heusweiler/Holz
Phone: +49.06806-85022.0
Fax: +49.06806-85022.18
email: service@mpfiltri.de
http://www.mpfiltri.com

FRANCE
MP FILTRI FRANCE Sas
Parc d'activités des Chanteraines
8 rue du Commandant d'Estienne
d'Orves, Immeuble D3
92396 Villeneuve la Garenne - France
Phone: +33(0)1.40.86.47.00
Fax: +33(0)1.40.86.47.09
e-mail: sales@mpfiltrifrance.com
http: //www.mpfiltri.com

USA
MP FILTRI USA Inc.
2055 Quaker Pointe Drive
Quakertown, PA 18951
Phone: +1.215-529-1300
Fax: +1.215-529-1902
email: sales@mpfiltriusa.com
http://www.mpfiltriusa.com

CANADA
MP FILTRI CANADA Inc.
380 Four Valley Drive Concord
Ontario Canada L4K 5Z1
Phone: +1.905-303-1369
Fax: +1.905-303-7256
email: mail@mpfiltricanada.com
http://www.mpfiltricanada.com

RUSSIAN FEDERATION
MP FILTRI RUSSIA
Phone/Fax: +7(495)220-94-60
P.O. Box 44 127562 Moscow, Russia
email: mpfiltrirussia@yahoo.com
http://www.mpfiltri.ru

CHINA
MP FILTRI (Shanghai) Co. Ltd.
1280 Lianxi Road, 8 Bld - 2 Floor
Shanghai, Pudong
201204 P.R. China
Phone: + 86.21-58919916
Fax: + 86.21-58919667
email: sales@mpfiltrishanghai.com
http://www.mpfiltri.com

INDIA & UAE
MP FILTRI INDIA & UAE
Phone: +91.9945599899
e-mail: s.mishra@mpfiltri.com
http: //www.mpfiltri.com