LOW & MEDIUM PRESSURE FILTERS

INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS

LPH630

EN

PASSION TO PERFORM

MP FILTRI®

ENGLISH

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1. Description

The hydraulic filters are components used to remove the contaminants from the hydraulic fluids used in the hydraulic systems, maximum pressure up to 10 bar, flow rate up to 1600 l/min.

2. General warnings

- Before the installation, use or maintenance of the filter carefully read the manual
- The system and the filter are pressurised! Be sure the system is at ambient pressure before starting any activity
- The fluid temperature inside the system and the filter can cause injuries to personnel or create a hazardous environment
- Any activity must be carried out by trained and certified specialists, they must use the correct protective equipment
- Any activity must be carried out using the correct tool
- Any activity must be carried out in accordance with the laws in force in the country where the system is in operation
- The data shown onto the nameplate must be complete and legible during the whole filter working life
- Connect the filter with an anti-loosening system and regularly check the condition of the connection
- The declared performances and the safety of the product are only guaranteed when MP Filtri original spare parts are used
- Warranty is only effective if MP Filtri original spare parts are used.

3. Tools

LPH630	TOOL	TIGHTENING TORQUE
Differential indicator	Wrench A/F 27/30/32	60 N·m
Barometric indicator G 1/8	Allen key A/F 5	5 N·m
Barometric indicator 1/8-27 NPT	Allen key 3/16"	5 N·m
Cover screws M10	Socket wrench A/F 15	41 N·m
Bowl bolts M10	Socket wrench A/F 17	46 N·m
Flange ISO 6162-1 P64M / Screw M12	Allen key A/F 19	70 N·m
Flange ISO 6162-1 P64 / Screw 1/2-13 UNC	Allen key A/F 3/4”	80 N·m
Bypass nut M8	Wrench A/F 15	20 N·m

4. Handling

- The unit is shipped in a cardboard box with dimensions depending on the order
- The handling must be carried out in accordance with the laws in force in the country of use of the product
- Handle the product with care, avoid impacts
- Store in a dry and frost-free room
- The unit should be stored in a suitable location away from the production area when not in use.
  The unit should be stored with the caps provided on the ports and the bowl's protective net, if present.
  This location should not impede any other production or personnel

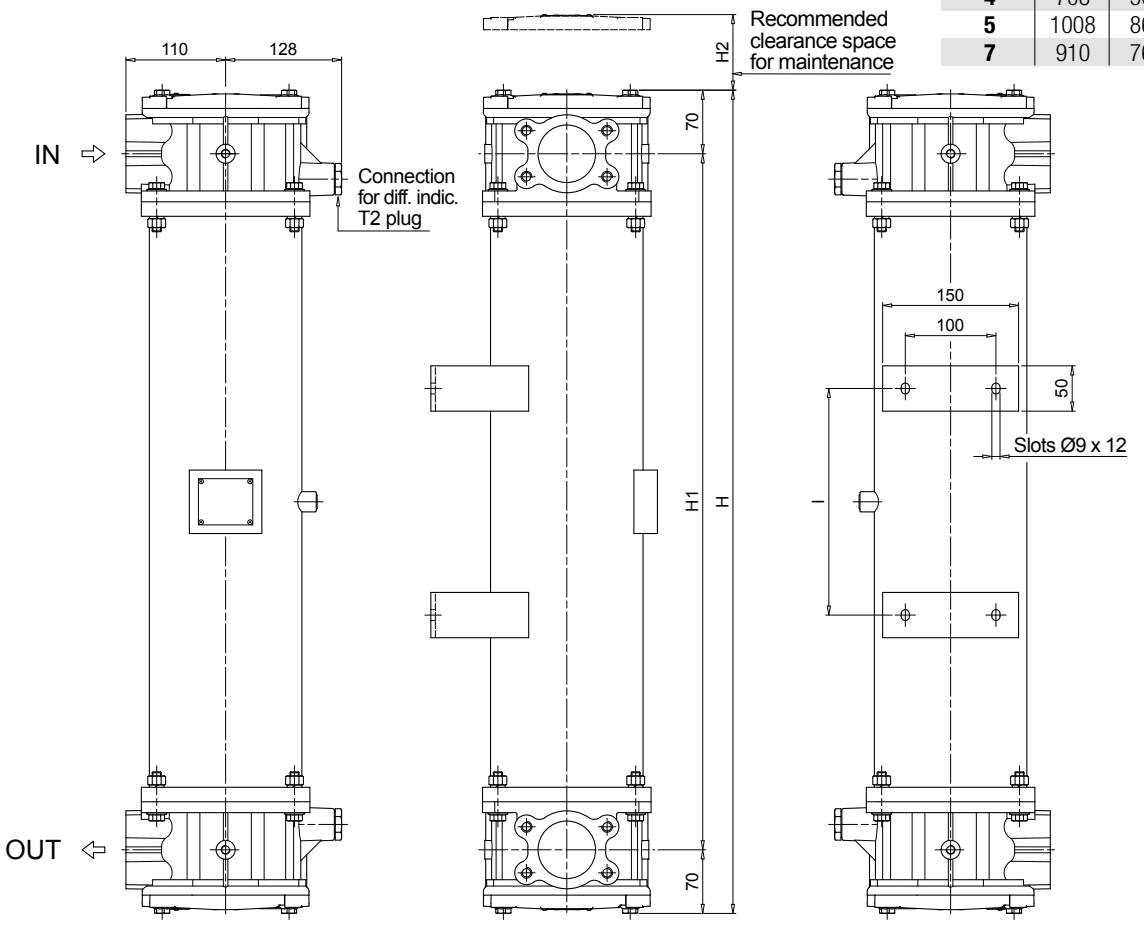
Please refer to the following Weight table:

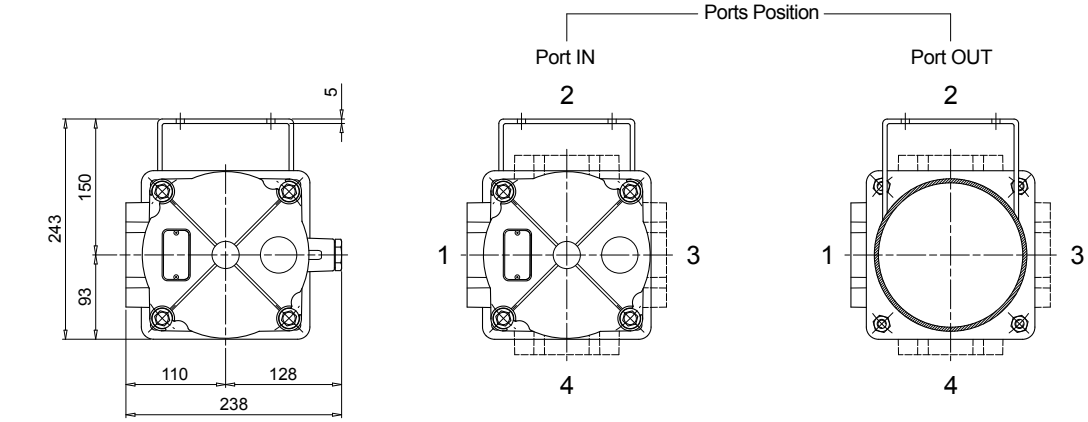
SERIES AND SIZE	WEIGHTS [kg]				
	Length	3	4	5	7
LPH630		20.5	22.5	29.1	27.00

5. Dimensional drawings

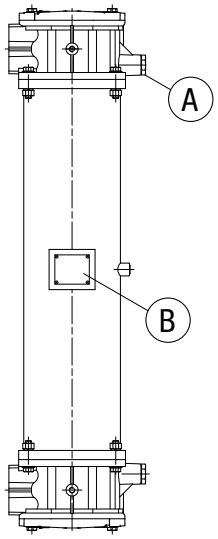
LPH630

Filter length	H [mm]	H1 [mm]	H2 [mm]	I [mm]
3	620	478	530	200
4	708	566	620	250
5	1008	866	920	250
7	910	768	820	250





6. Installation



(A) Clogging indicator connection
(B) Identification plate

- Check that the system working pressure does not exceed the maximum working pressure of the filter.
  The maximum working pressure of the filter is shown on the identification plate
- Check that the filter is compatible with the fluid used in the system
- Remove the plastic plugs from the inlet, the outlet and the indicator connection
- Check that the correct filter elements are fitted into the filter
- Check the flow direction (the flow is indicated by the arrow “IN” on the top head nameplate)
- Install the clogging indicator, if required.
  In the case of using an electrical clogging indicator, follow the electrical diagram for correct installation
- Fasten the filter to the bracket with the correct bolts. Be sure to fit the filter without any tension stress
- Check that there is appropriate clearance for maintenance and the filter elements replacement.
  Correct operation is only guaranteed if the filter is installed in a vertical orientation with the filter housing at the top
- Check for a good view of the clogging indicator
- Connect the filter to the hydraulic system, using the appropriate hydraulic fittings.

7. Commissioning

- Switch on the hydraulic system
- Check the filter is free of leaks
- Check the filter for leaks at the maximum working conditions (pressure, temperature …)
- Check the filter does not cause excessive pressure drop checking that the indicator does not show the alarm signal.

8. Standard maintenance

8.1 FILTER ELEMENT REPLACEMENT

The clogging indicator monitors the conditions of the filter element. The alarm signal shown by the differential indicator during the normal working conditions (pressure, temperatures …) means that the filter element needs to be replaced.

- Check the availability of the right spare filter element by comparing the part number shown on the element with that shown on the filter name plate or spare parts list
- For the disassembly and the assembly of the parts, please refer to the tools table in paragraph 3
- Switch off the system and depressurize the vessel
- (Figs. 1-2) The standard maintenance is carried out through the top head, please see the arrow and the “IN” sign on name plate of the cover
- (Fig. 3) Unfasten the cover screws by 2-3 turns, the cover is pushed outwards by a spring
- (Fig. 4) Press and at the same time rotate the cover clockwise until the heads of the screws match the recesses
- (Fig. 5) Remove the cover to which the spring remains assembled
- (Fig. 6) Pull the internal filter out after placing a vessel to collect the operating fluid

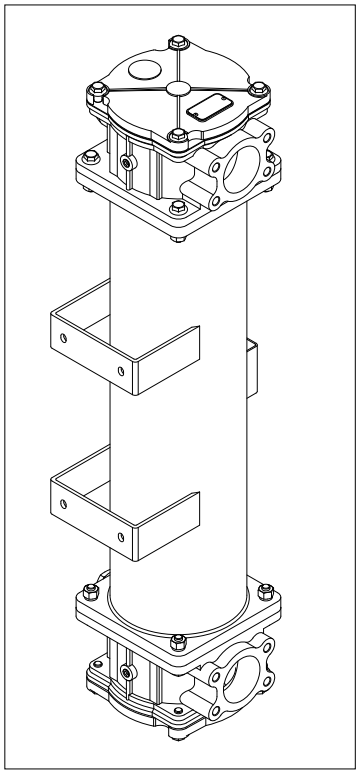


fig. 1

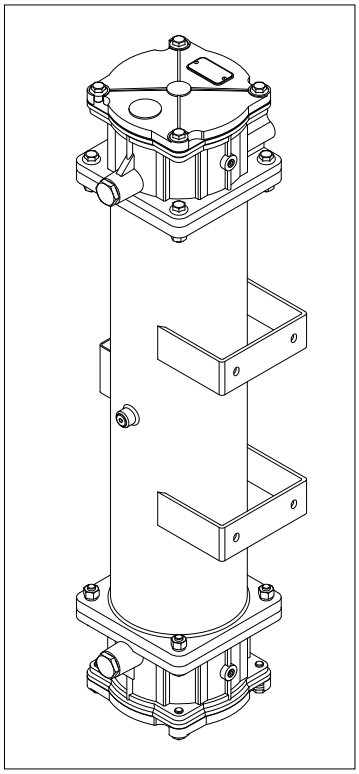


fig. 2

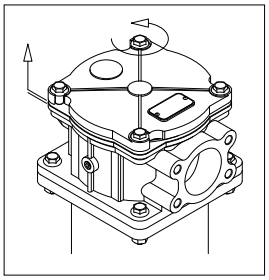


fig. 3

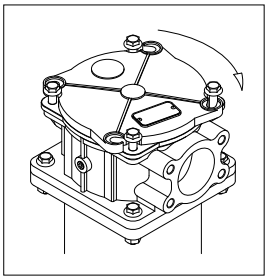


fig. 4

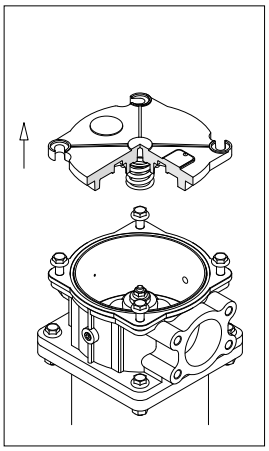


fig. 5

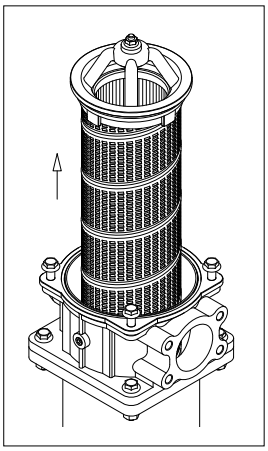


fig. 6

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- (Fig. 7) Empty the operating fluid from the internal filter into the collection vessel
- (Fig. 8) Unscrew the bypass nut at the bottom of the internal filter and pull the insert–tie rod assembly out
- Clean the cavity in the housing, the cover, and the insert–tie rod assembly. If there a magnetic filter is provided, remove the foreign bodies retained by it. Check for damage of any components
- Check the condition of the seals of the head and of the internal filter and, if necessary, replace them referring to the “Special maintenance” paragraph
- (Fig. 9) Lubricate with the operating fluid the filter element O-ring, the tie rod, and the insert seals, then fit the tie rod into the filter element end cap until the moulded gasket leans against the top cap. Pay attention not to damage the O-ring seal. Then screw the bypass in referring to the tightening torque table in paragraph 3
- (Fig. 10) Insert the internal filter until the O-Ring is seated in the conical seat of the head.
- (Fig.11) Lubricate the head O-ring, then mount the cover by fitting the spring onto the spigot of the insert. The plate must be oriented on the same side as the port “IN”.

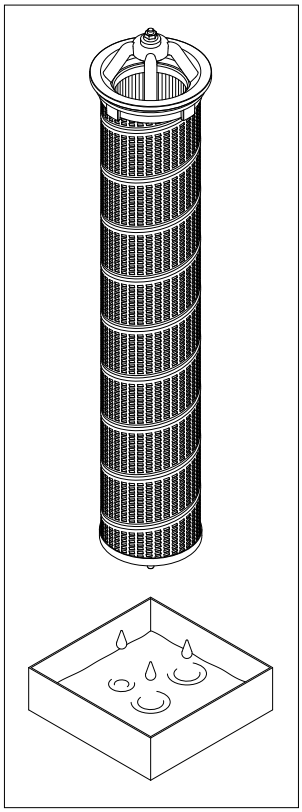

fig. 7

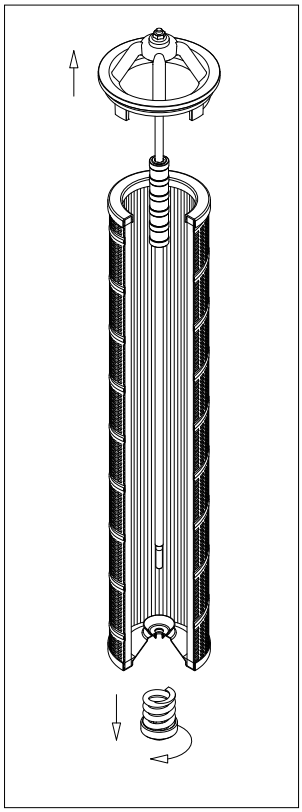

fig. 8

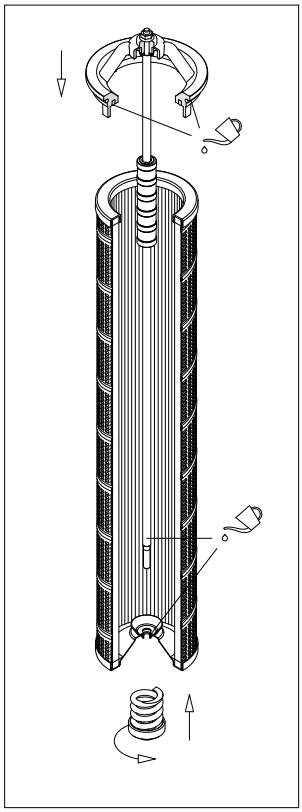

fig. 9

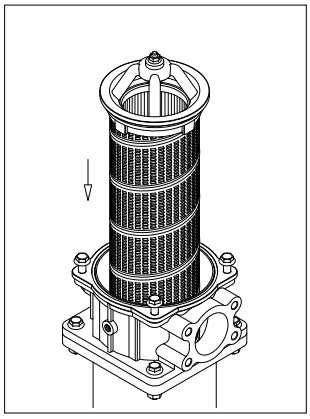

fig. 10

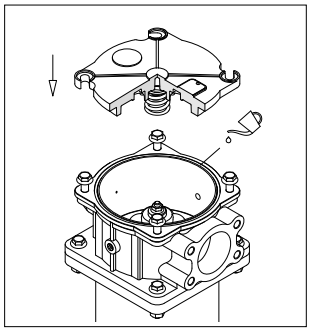

fig. 11

- (Fig. 12) Press and at the same time rotate the cover counterclockwise until the heads of the screws fit in slots
- (Fig. 13) Fasten the cover screws referring to the tightening torque table in paragraph 3
- Switch on the system and check the filter for leaks at the maximum working conditions (pressure, temperature…)
- Dispose of the replaced parts and the collected fluid in accordance with the laws in force in the country of use of the product.

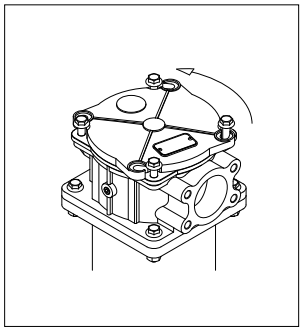

fig. 12

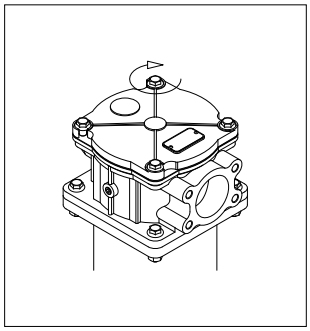

fig. 13

9. Special maintenance

9.1 CLOGGING INDICATOR (OR PLUG) REPLACEMENT

- Check the availability of the right spare parts by comparing the part numbers shown on them with that shown on the filter name plate or spare parts list
- For the disassembly and the assembly of the parts, please refer to the tools table in paragraph 3
- Switch off the system
- (Fig. 14) Remove the connector of the differential indicator by unfastening the central screw (only for electrical indicators)
- (Fig. 15) Unscrew the indicator body
- (Fig. 16) Lubricate with the operating fluid the thread and the O-ring of the indicator body, then screw the indicator body in referring to the tightening torque table in paragraph 3
- (Fig. 17) Insert the connector by fastening the central screw (only for electrical indicators)
- Switch on the system and check the filter for leaks at the maximum working conditions (pressure, temperature…)
- Dispose of the replaced parts in accordance with the laws in force in the country of use of the product.

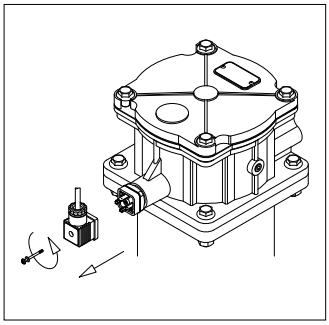

fig. 14

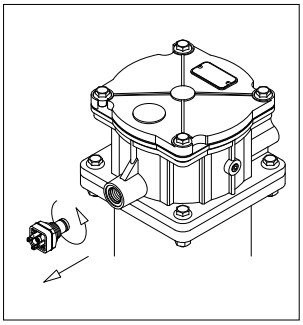

fig. 15

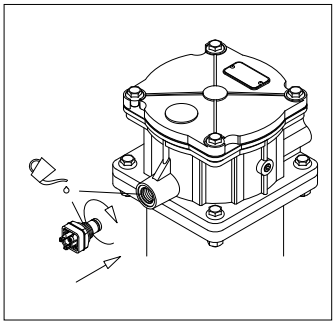

fig. 16

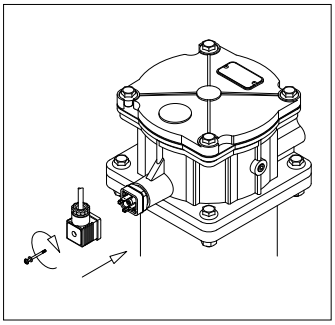

fig. 17

9.2 SEALS REPLACEMENT

- Check the availability of the right spare parts by comparing the part numbers shown on them with that shown on the filter name plate or spare parts list
- For the disassembly and the assembly of the parts, please refer to the tools table in paragraph 3
- Switch off the system and depressurize the vessel
- (Fig. 18-19) The complete seals replacement is carried out by demounting both heads, recognisable by the flow direction arrows and the “IN” and “OUT” signs on name plates of the cover.
  The two heads are interchangeable, **it is only necessary that the differential indicator is mounted on the head “IN”**
- (Fig. 20) On the head “IN” unfasten the cover screws by 2-3 turns, the cover is pushed outwards by a spring
- (Fig. 21) Press and at the same time rotate the cover clockwise until the heads of the screws match the recesses
- (Fig. 22) Remove the cover to which the spring remains assembled
- (Fig. 23) Pull the internal filter out after placing a vessel to collect the operating fluid

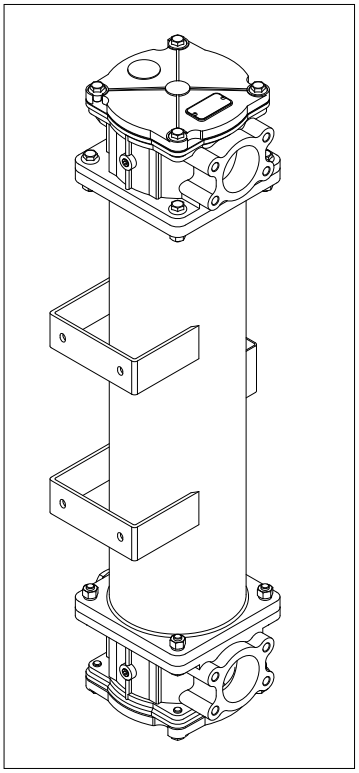

fig. 18

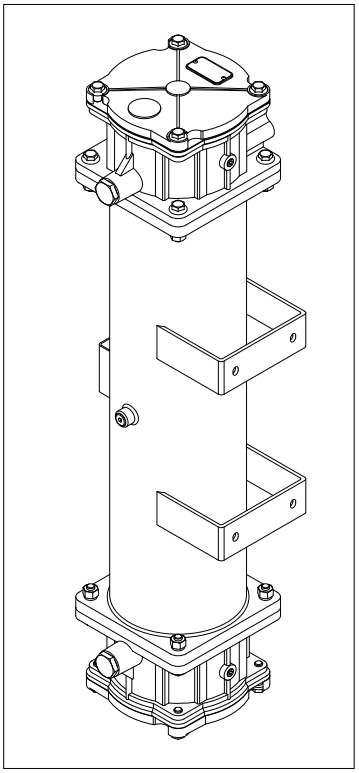

fig. 19

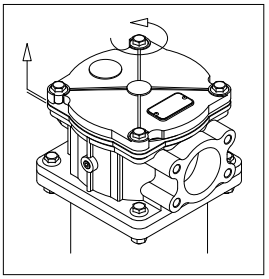

fig. 20

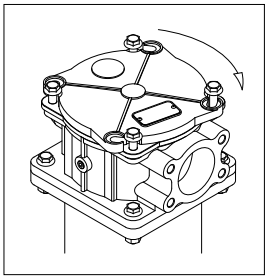

fig. 21

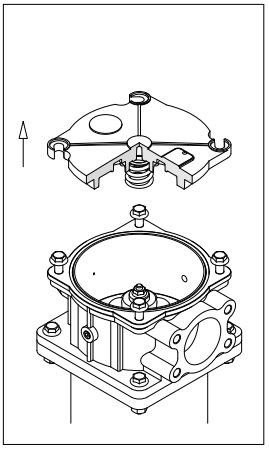

fig. 22

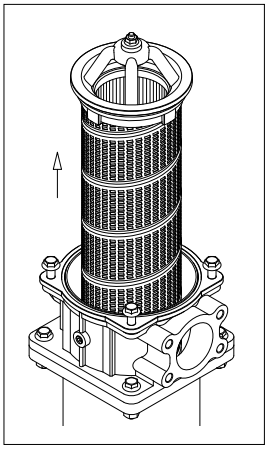

fig. 23

- (Fig. 24) Empty the operating fluid from the bowl and the internal filter into the collection vessel
- (Fig. 25) Unscrew the bypass nut at the bottom of the internal filter and pull the insert–tie rod assembly out
- For the dismounting of the head “OUT”, please refer to the instructions Fig. 20÷22 above
- Remove all the seal from the heads, the bowl, the insert, and the filter element, then and prepare the spare parts referring to the list in paragraph 12
- Clean the cavities in the housings, the covers, and the insert–tie rod assembly. If there a magnetic filter is provided, remove the foreign bodies retained by it. Check for damage of any components
- (Fig. 26) Fit the moulded gasket into the axial groove and the O-Ring onto the radial groove of the insert, embed the O-ring in the filter element end cap
- (Fig. 27) Lubricate with the operating fluid the filter element O-ring, the tie rod, and the insert seals, then fit the tie rod into the filter element end cap until the moulded gasket leans against the top cap. Pay attention not to damage the O-ring seal. Then screw the bypass in referring to the tightening torque table in paragraph 3

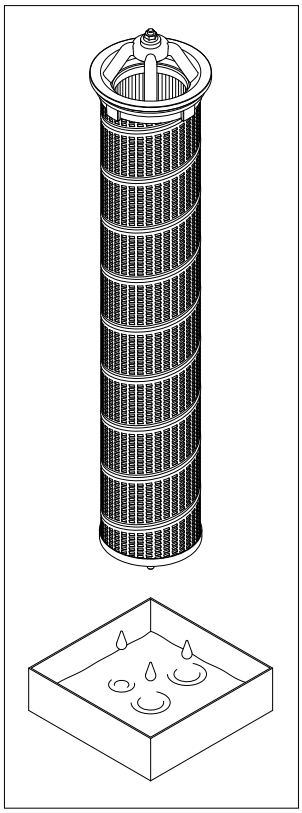

fig. 24

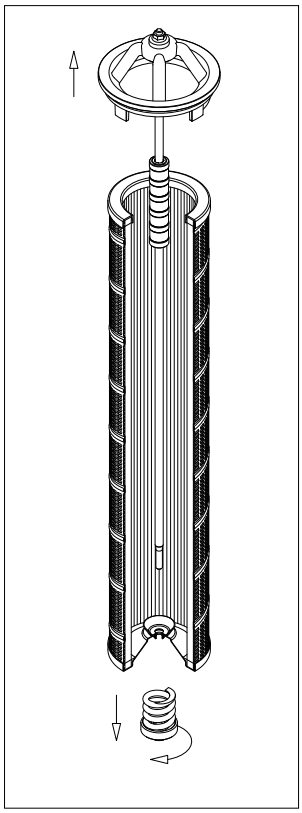

fig. 25

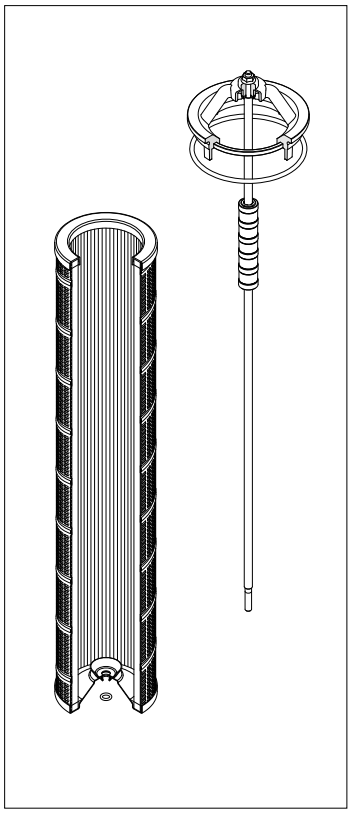

fig. 26

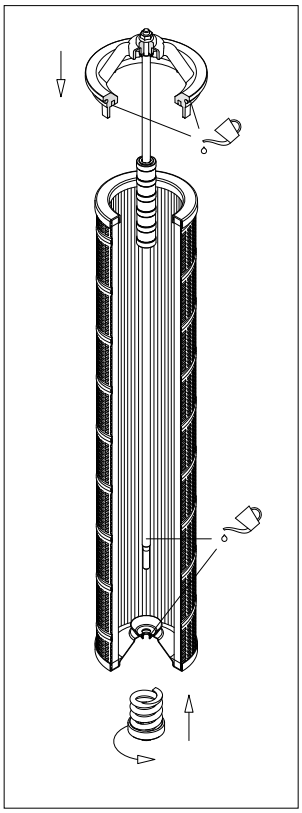

fig. 27

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- (Figs. 28-29) Fit the O-rings in grooves of the bow and the heads. An additional pair of O-rings is included in the seal kit for a legacy version of the cover.
- (Figs. 28-29) Replace the O-rings of the indicator body and T2 plug on both heads.
- For the mounting/dismounting of the indicator, please refer to the paragraph “Clogging indicator replacement” above (fig. 14÷17)

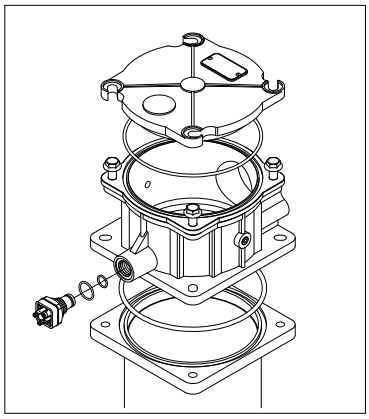


fig. 28

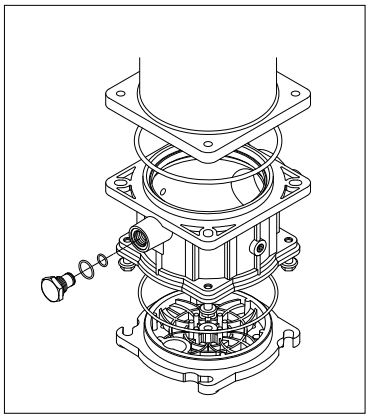


fig. 29

- (Fig. 30) Insert the internal filter until the O-Ring is seated in the conical seat of the head
- (Fig. 31) Lubricate the head O-ring, then mount the cover “IN” by fitting the spring onto the spigot of the insert. The plate must be oriented on the same side as the port “IN”
- (Fig. 32) Press and at the same time rotate the cover counterclockwise until the heads of the screws fit in slots
- (Fig. 33) Fasten the cover screws referring to the tightening torque table in paragraph 3
- For the mounting of the head “OUT”, please refer to the instructions Fig. 31÷33 above
- Switch on the system and check the filter for leaks at the maximum working conditions (pressure, temperature…)
- Dispose of the replaced parts in accordance with the laws in force in the country of use of the product.

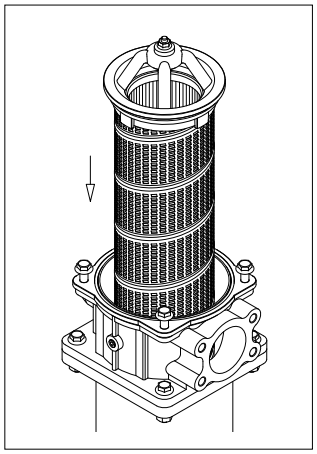


fig. 30

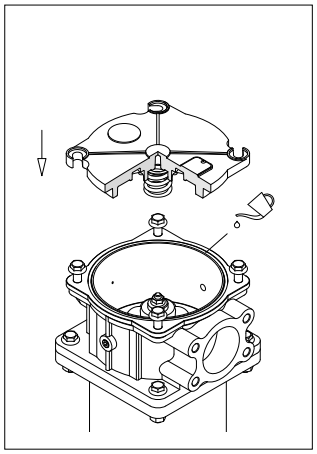


fig. 31

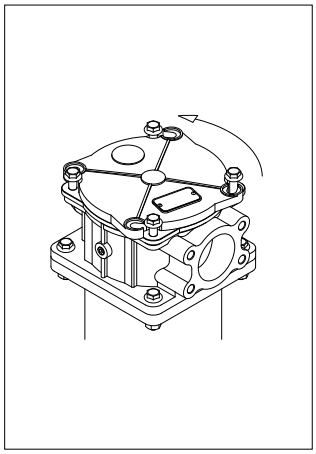


fig. 32

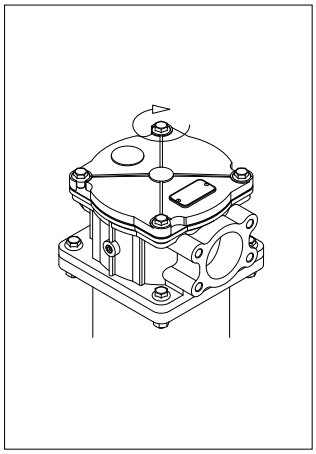


fig. 33

10. Instructions for use in explosive atmospheres

Hydraulic filters should be installed in applications in which special safety measures are required to prevent the triggering of explosive atmospheres, such as use in environments classified according to directive 1999/92/CE (ATEX) or the use of flammable fluids.

Conditions like the use of low conductivity fluids, which could cause electrostatic discharges, or installation near hot components, which could cause surfaces heating, could alter the safety of the filters.

MP FILTRI has carried out a voluntary certification of a part of the product range in compliance with directive 2014/34/EU, in order to guarantee an appropriate degree of safety in these particular conditions.

The content of the certification and the relative marking make them suitable for use in environments classified in accordance with directive 1999/92/CE (ATEX - ZONE 2).

11. Regulations

Hydraulic filters are not machines, but simple components.
Hydraulic filters are excluded from the scope of the Machinery Directive 2006/42/EC, they don't need the CE mark.
Hydraulic filters are designed to be fitted within a hydraulic system designed in accordance with the Machinery Directive 2006/42/EC.

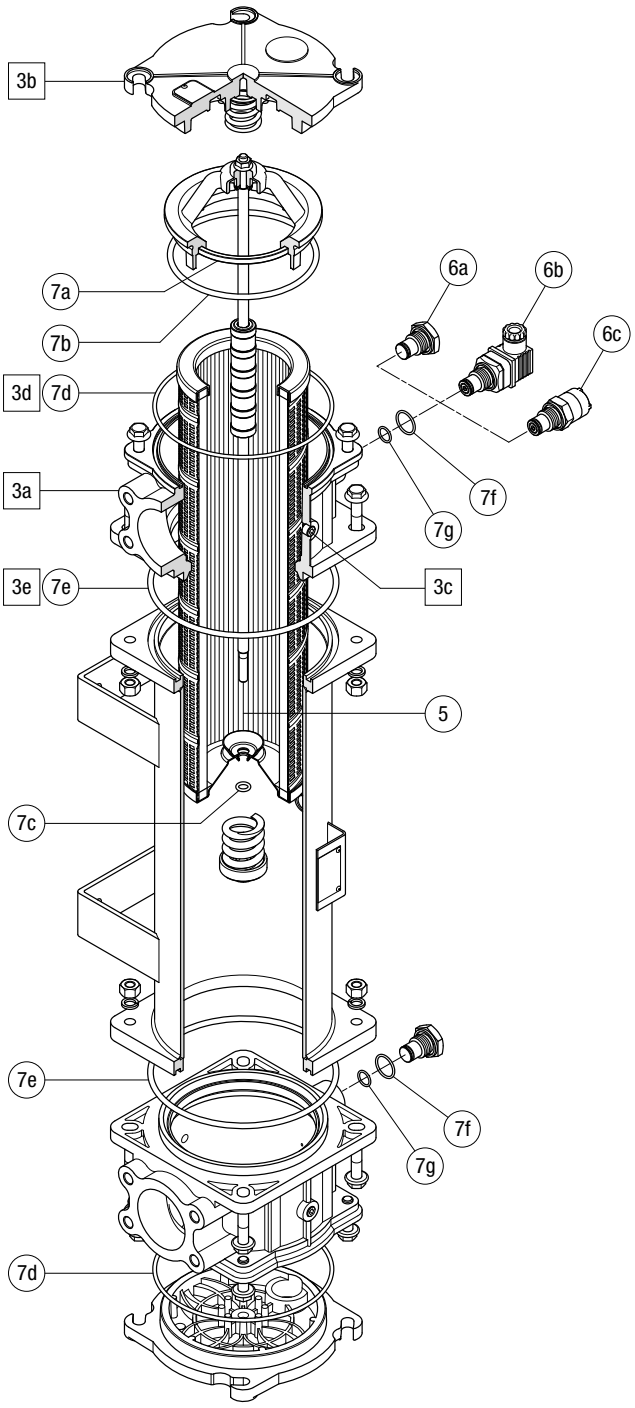
Hydraulic filters are pressurized components. The maximum working pressure PS is over 0.5 bar, so they are subject to the Directive 2014/68/EU (PED)
LPH filters are designed and manufactured for fluids included into the Group 2 defined by the Directive 2014/68/EU.
LPH filters do not need the CE marking in accordance with the Directive 2014/68/UE Article 4, Section 3.

LPH filters do not contain any substance of very high concern (SVHC) in percentage higher than 0.1% in accordance with the Regulation (EC) No 1907/2006 (REACH)

LPH filters are designed and manufactured in accordance with the Commission Delegated Directive (EU) 2015/863 (RoHS).

LPH630

12. Spare parts list



LPH630

Item	Quantity	Description	Designation / Ordering code	
1	**1**	**Complete filter**	See “Ordering Code” table	
3	**1**	**Housing kit**		
3a	**1**	Head	Private dimensions	
3b	**1**	Cover assembly		
3c	**2**	Head plug	DIN 906-G1/8-A	
3d	**1**	Head / cover seal	O-Ring 4650 - di = 164.7 - d_2 = 3.53	
3e	**1**	Head / bowl seal	O-Ring 6670 - di = 170.82 - d_2 = 5.34	
5	**1**	**Filter element**	See “Ordering Code” table	
6	**1**	**Clogging indicator**		
7	**1**	**Seals kit**	NBR	FPM
			02050640	02050641
7a	**1**	Insert / filter element seal	Moulded gasket - Private dimensions	
7b	**1**	Insert / head seal	O-Ring 210 - di = 133.40 - d_2 = 5.34	
7c	**1**	Filter element /tie rod seal	O-Ring 112 - di = 9.92 - d_2 = 2.62	
7d	**2**	Head / cover seal	O-Ring 4650 - di = 164.7 - d_2 = 3.53	
7e	**2**	Head / bowl seal	O-Ring 6670 - di = 170.82 - d_2 = 5.34	
7f	**2**	Indicator seal	ORM 0210-20 - di = 21.00 - d_2 = 2.00	
7g	**2**	Indicator seal	O-Ring 2050 - di = 12.42 - d_2 = 1.78	

13. Ordering code

13.1 FILTER / HOUSING

FILTER / HOUSING / BOWL

Filter:	LPH630	7	C	E	1	1	A	F1	A10	P01
Housing kit:	LPH630		C	E	1	1	A	F1		P01

Filter Series and size

LPH630 Filter / housing

Filter length

3 | **4** | **5** | **7**

Bypass valve

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

Diffuser and magnetic filter

0 With magnetic filter
E Without magnetic filter

Port IN position

1 On the left of the bracket
2 On the same side as the bracket
3 On the right of the bracket
4 Opposite to the bracket

Port OUT position

1 On the left of the bracket
2 On the same side as the bracket
3 On the right of the bracket
4 Opposite to the bracket

Seals

A NBR
V FPM

Connection

F1 2 1/2" SAE 3000 psi/M
F3 2 1/2" SAE 3000 psi/UNC

Filtration rating (filter media)

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

WA025 Water absorber inorganic microfiber 25 µm

Execution

P01 MP Filtri standard
Pxx Customized

LPH630

13.2 FILTER ELEMENT

FILTER ELEMENT

Configuration example: MR630 | 7 | M25 | A | P01

Element series and size

MR630

Element length

3	4	5	7

Filtration rating (filter media)

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

Seals

A	NBR
V	FPM

Execution

P01	MP Filtri standard
Pxx	Customized

CLOGGING INDICATORS

DEA	Electrical differential indicator
DEM	Electrical differential indicator
DLA	Electrical / visual differential indicator
DLE	Electrical / visual differential indicator
DTA	Electrical differential indicator
DVA	Visual differential indicator
DVM	Visual differential indicator
T2	Plug

14. Troubleshooting

14.1 MISUSE OF THE PRODUCT

This product should be connected to a hydraulic line; this must not exceed upper pressure limit of the product.
his product should follow all standard operating procedures previously set at the operating location as well as the procedures required by the manufacturer.
Over-tighten of test points/hoses can damage threads causing the unit to fail.
The product is designed with no components in motion.

14.2 CLOGGING INDICATOR ALARM

In normal functioning of the system, the clogging of the filter by contaminants will result in a gradual increase in the pressure drop through the filter.
The filter element should be replaced before it is completely clogged and anyways before the pressure exceeds the setting value of the bypass valve. For this reason, we recommended using a clogging indicator (visual or electrical), that advises the appropriate timing for replacing the cartridge.
Should the clogging indicator be in alarm mode, it means that the pressure has already exceeded the guard threshold, and the cartridge has to be replaced.

14.3 LEAKS OF WORKING FLUID

Leaks from the connections with normal tightening may indicate seal damage during the warehousing process, fluid incompatibility, or unsuitable work conditions.

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