

FMM series

Maximum working pressure up to 42 MPa (420 bar) - Flow rate up to 300 l/min



INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS



FMM050



FMM150

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Description

Technical data

High Pressure filters

In-line

Maximum working pressure up to 42 MPa (420 bar)

Flow rate up to 300 l/min

FMM is a range of versatile high pressure filter for protection of sensitive components in high pressure hydraulic systems in the mobile machines.

They are directly connected to the lines of the system through the hydraulic fittings.

Available features:

- Female threaded connections up to 1 1/4", for a maximum flow rate of 250 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Low collapse filter element "N", for use with filters provided with bypass valve
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve in filters not provided with the bypass valve
- Visual, electrical and electronic differential clogging indicators

Common applications:

- Agricultural machines
- Mobile machines

Filter housing materials

- Head: Painted cast iron, black RAL 9005
- Housing: Phosphatized steel
- Bypass valve: Steel

Pressure

- Test pressure: 63 MPa (630 bar)
- Burst pressure: 126 MPa (1260 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 42 MPa (420 bar)

Bypass valve

- Opening pressure 600 kPa (6 bar) $\pm 10\%$
- Other opening pressures on request.

Δp element type

- Microfiber filter elements - series N-R: 20 bar
- Microfiber filter elements - series S: 210 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

Seals

- Standard NBR series A
- Optional FPM series V

Temperature

From -25 °C to +110 °C

Connections

In-line Inlet/Outlet

Note

FMM filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

Filter series	Weights [kg]					Volumes [dm³]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
FMM 050		3.11	3.48	3.90	4.36	5.54		0.34	0.48	0.63	0.81	1.23
FMM 150		7.50	9.50	10.90	-	-		0.60	1.00	1.25	-	-

Flow rates [l/min]

Filter series	Length	Filter element design - N Series						Filter element design - S Series				
		A03	A06	A10	A16	A25	M25	A03	A06	A10	A16	A25
FMM 050	1	42	43	79	82	106	147	29	39	57	59	74
	2	52	57	85	96	121	149	45	49	76	88	114
	3	66	69	97	106	130	150	58	61	89	99	125
	4	83	89	113	115	134	152	74	80	106	108	129
	5	107	110	130	134	141	154	93	95	111	121	139
FMM 150	1	81	88	156	163	179	295					
	2	142	145	227	230	236	312					
	3	170	180	242	245	263	315					

Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ bar.

The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

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.

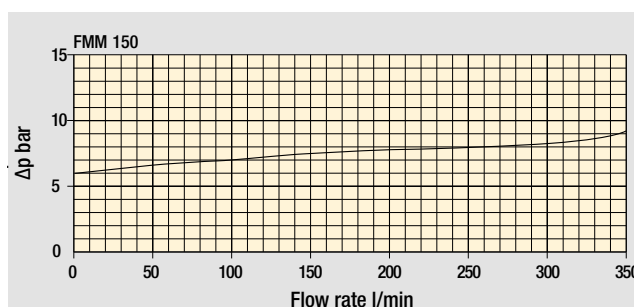
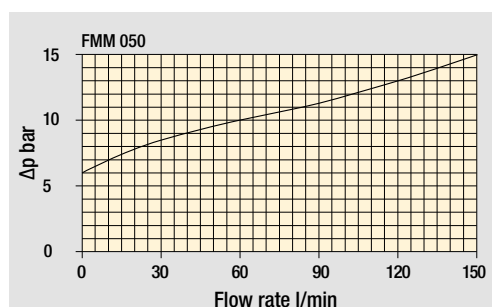
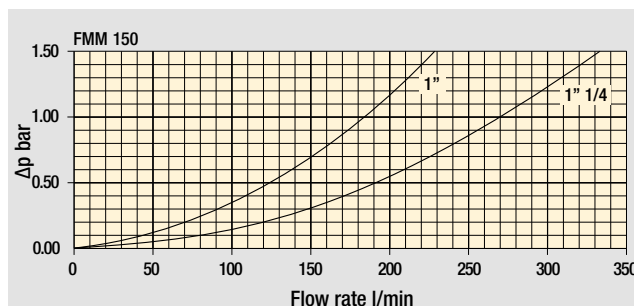
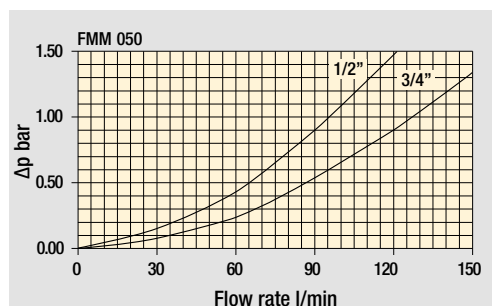
Hydraulic symbols

Filter series	Style S	Style B	Style T	Style D
FMM 050	•	•	•	•
FMM 150	•	•	-	-

Pressure drop

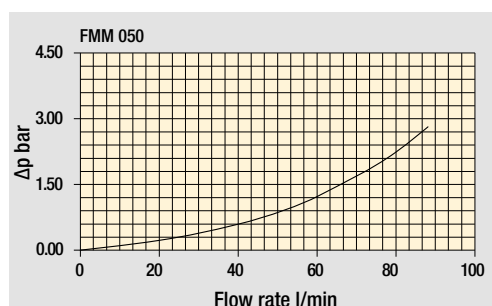
Filter housings

Δp pressure drop



Bypass valve

pressure drop



Filter housing
with check valve

Valves

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

Series and size **FMM050** Configuration example: **FMM050** **3** **B** **A** **G** **A10** **N** **P01**

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

Valves
S Without bypass
B With bypass 6 bar
T With check valve, without bypass
D With check valve, with bypass 6 bar

Seals
A NBR
V FPM

Connections
A M18x1.5 - ISO 6149 **E** 1/2" NPT
B M22x1.5 - ISO 6149 **F** 3/4" NPT
C G 1/2" **G** SAE 8 - 3/4" - 16 UNF
D G 3/4" **H** SAE 12 - 1 1/16" - 12 UN

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm

Element Δp	Valves			
	S	B	T	D
N 20 bar	-	•	-	-
R 20 bar	-	-	-	•
S 210 bar	•	-	•	-

Executions
P01 Upper connection for clogging indicator
P02 Without connection for clogging indicator
P03 Frontal connection for clogging indicator
Pxx Customized

FILTER ELEMENT

Element series and size **HP050** Configuration example: **HP050** **3** **A10** **A** **N** **P01**

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

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm

Seals
A NBR
V FPM

Element Δp
N 20 bar
R 20 bar
S 210 bar

Execution
P01 MP Filtri standard
Pxx Customized

CLOGGING INDICATORS

See page 727

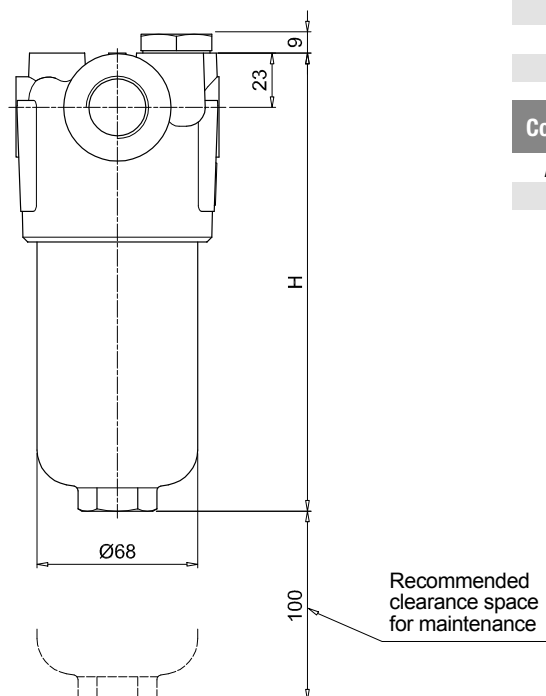
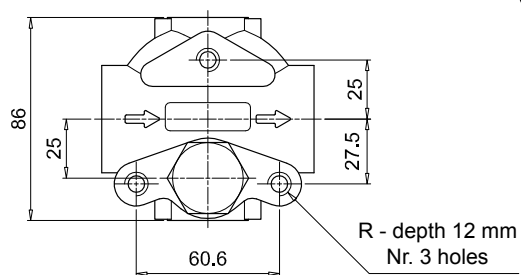
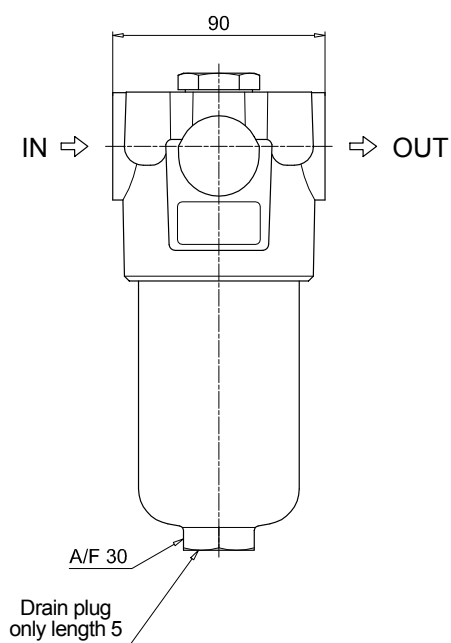
DEA Electrical differential pressure indicator
DEM Electrical differential pressure indicator
DEU Electrical differential pressure indicator
DLA Electrical / visual differential pressure indicator

DLE Electrical / visual differential pressure indicator
DTA Electronic differential pressure indicator
DVA Visual differential pressure indicator
DVM Visual differential pressure indicator

PLUGS

See page 747

T2 Plug

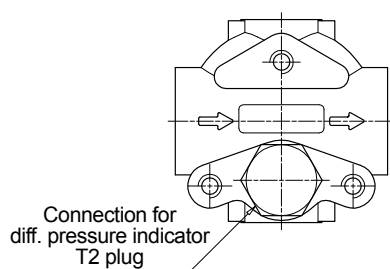


FMMO50

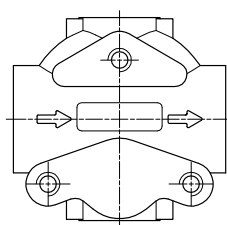
Filter length	H [mm]
1	158
2	195
3	237
4	285
5	407

Connections	R
A-B-C-D	M10
E-F-G-H	3/8" UNC

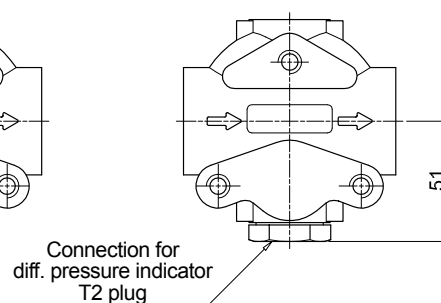
Execution P01



Execution P02



Execution P03



Designation & Ordering code

COMPLETE FILTER

Configuration example: **FMM150** **2** **B** **A** **D** **2** **M25** **N** **P01**

Series and size
FMM150

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

Valves
S Without bypass
B With bypass 6 bar

Seals
A NBR
V FPM

Connections
C G 1"
D G 1 1/4"
E 1" NPT
F 1 1/4" NPT
G SAE 16 - 1 5/16" - 12 UN
H SAE 20 - 1 5/8" - 12 UN

Connection for differential pressure indicator
1 Without connection
2 Upper connection
3 Frontal connection

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm

Element	Δp	S	B
N	20 bar	-	•
S	210 bar	•	•

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example: **HP150** **2** **M25** **A** **N** **P01**

Element series and size
HP150

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

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm

Seals
A NBR
V FPM

Element	Δp
N	20 bar
S	210 bar

Execution
P01 MP Filtri standard
Pxx Customized

CLOGGING INDICATORS

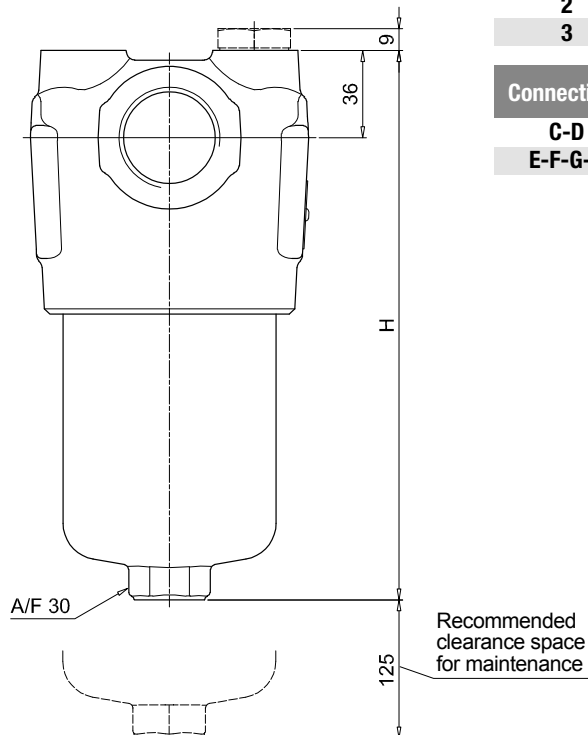
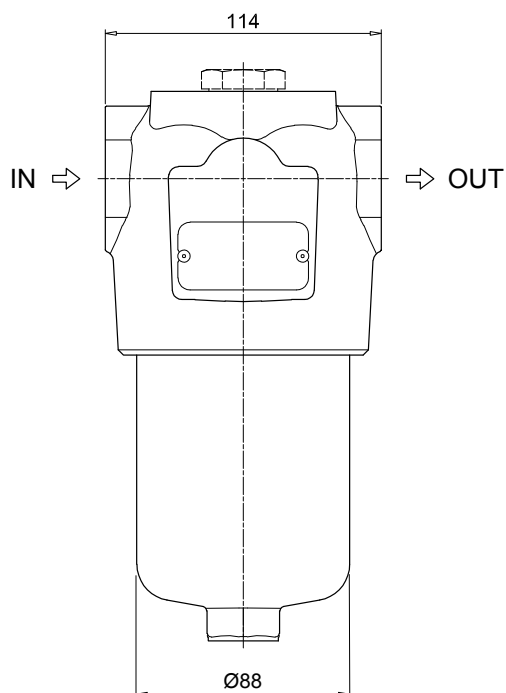
See page 727

DEA Electrical differential pressure indicator	DLE Electrical / visual differential pressure indicator
DEM Electrical differential pressure indicator	DTA 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

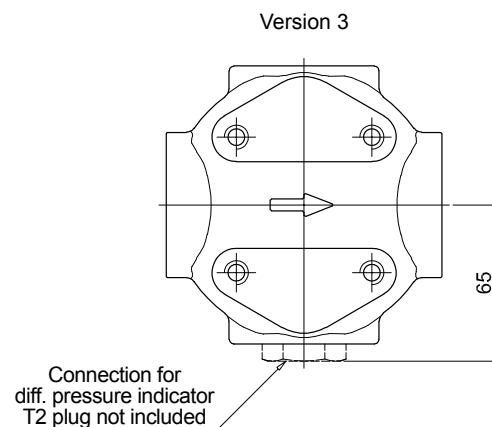
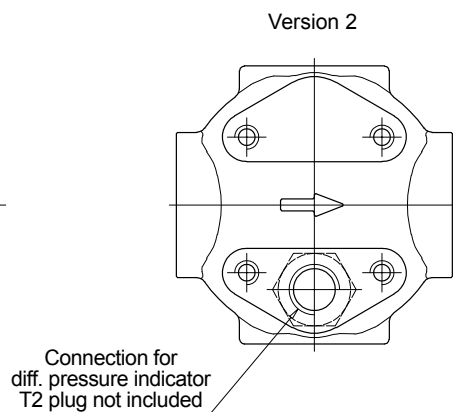
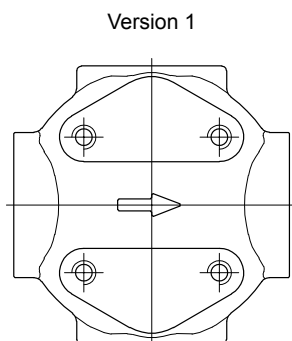
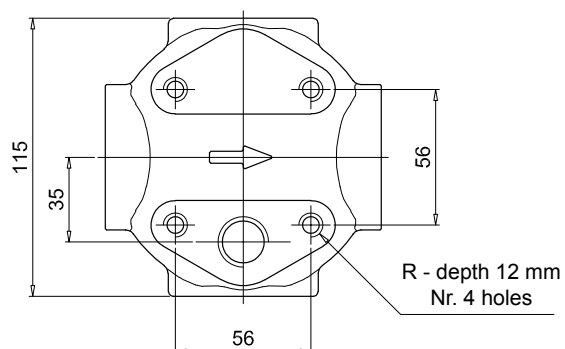
PLUGS

See page 747

T2 Plug (not included)



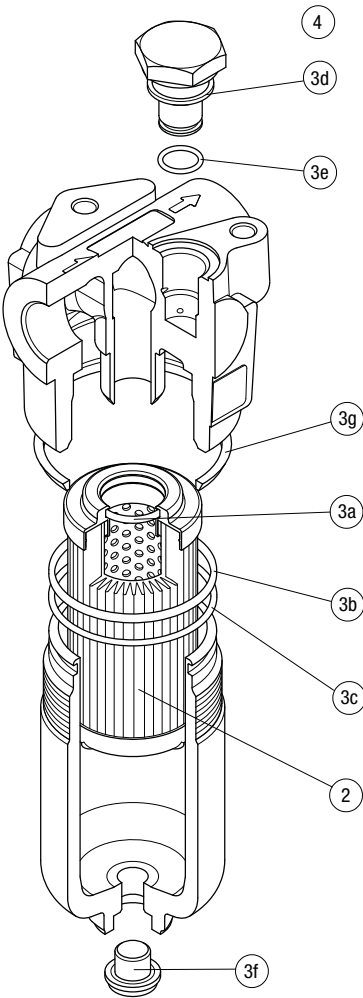
FMM150	
Filter length	H [mm]
1	230
2	340
3	415
Connections	R
C-D	M10
E-F-G-H	3/8" UNC



FMM SPARE PARTS

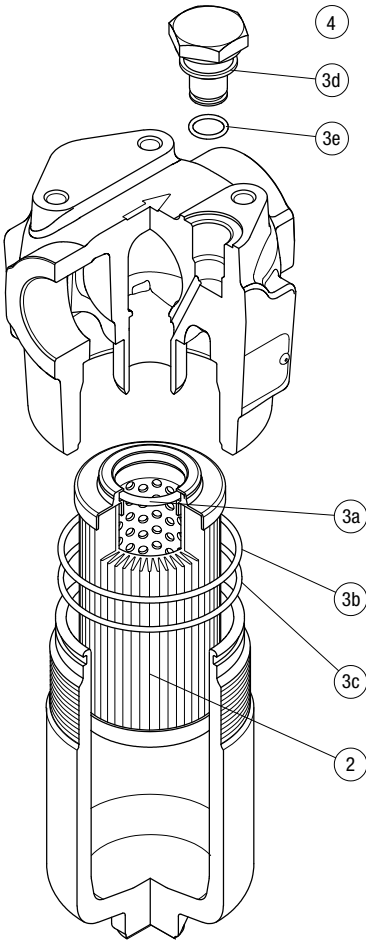
Order number for spare parts

FMM 050



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.
Filter series	Filter element	Seal Kit code number	Indicator connection plug
FMM 050	See order table	02050314	T2H
		02050315	T2V

FMM 150



Item:		Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	
		2		3 (3a ÷ 3e)		4	
Filter series	Filter element	Seal Kit code number		Indicator connection plug			
		NBR	FPM	NBR	FPM		
FMM 150	See order table	02050731	02050732	T2H	T2V		

DIFFERENTIAL PRESSURE INDICATORS

Series				Configuration example 1:									
DE Electrical differential pressure indicator				Configuration example 2:		DE	U	50	V	A	50	P01	UL
DL Electrical/Visual differential pressure indicator				Configuration example 3:		DL	E	20	V	A	71	P01	
DT Electronic differential pressure indicator				Configuration example 4:		DT	A	50	H	F	70	P01	
DV Visual differential pressure indicator				Configuration example 5:		DV	M	70	V		P01		
Type		DE	DL	DT	DV								
A Standard type		•	•	•	A With automatic reset								
M With wired electrical connection		•	-	-	M With manual reset								
U Standard type 210 bar, UL certified		•	-	-									
E For high power supply		-	•	-									
Pressure setting		DEA	DEM	DEU	DLA	DLE	DTA	DVA	DVM				
50 5.0 bar		•	•	•	•	•	•	•	•				
70 7.0 bar		•	•	•	•	•	•	•	•				
95 9.5 bar		•	•	-	•	•	•	•	•				
Seals		DEA	DEM	DEU	DLA	DLE	DTA	DVA	DVM				
H HNBR		•	•	-	•	•	•	•	•				
V FPM		•	•	•	•	•	•	•	•				
Thermostat		DEA	DEM	DEU	DLA	DLE	DT						
A Without thermostat		•	•	•	•	•	-						
F With thermostat		-	•	-	-	•	•						
Electrical connections		DEA	DEM	DEU	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		-	-	-	•	-	-						
Option													
P01 MP Filtri standard													
Pxx Customized													

PLUGS

Series		Configuration example	
T2	Plug	T2	H
Seals			
H	HNBR		
V	FPM		