



## 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.

+

**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.



FMMX ATEX series 

with **MYCLEAN** + **zerospark®**

HPX 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 FMMX series 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

# FMMX 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



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## Description

## Technical data

### Filters for potentially explosive atmosphere

#### In-line

**Maximum working pressure up to 42 MPa (420 bar)**

**Flow rate up to 300 l/min**

FMMX 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 300 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 with external support "N", for filter element protection against the back pressure caused by the check valve in filters provided with the bypass valve
- 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:

- Agricultural machines
- Mobile machines




#### Filter with:

NBR seal in configuration **zerospark+**

   II 3G Ex h IIC T6 Gc X  
II 3D Ex h IIIC T85°C Dc X

FPM seal in configuration

**zerospark+**

   II 3G Ex h IIC T6... T4 Gc X  
II 3D Ex h IIIC T85°C...T115°C Dc X

#### 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) ±10%
- Other opening pressures on request.

#### Δp element type

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

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Connections

In-line Inlet/Outlet

#### Note

FMMX filters are provided for vertical mounting

#### Temperature

Seals	Ambient Temperature	Max fluid Temperature	Temperature Class	Max surface temperature
NBR	-15 °C ÷ +80 °C	+80 °C	T6	T85 °C
FPM	-15 °C ÷ +80 °C	+80 °C	T6	T85 °C
	-15 °C ÷ +95 °C	+95 °C	T5	T100 °C
	-15 °C ÷ +110 °C	+110 °C	T4	T115 °C

## Weights [kg] and volumes [dm³]

Filter series	Weights [kg]					Volumes [dm³]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
FMMX 050		3.11	3.48	3.90	4.36	5.54		0.34	0.48	0.63	0.81	1.23
FMMX 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					
		A03	A06	A10	A16	A25	M25
FMMX 050	1	42	43	79	82	106	147
	2	52	57	85	96	121	149
	3	66	69	97	106	130	150
	4	83	89	113	115	134	152
	5	107	110	130	134	141	154
FMMX 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.

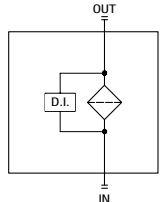
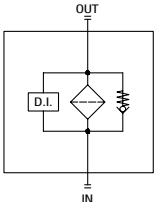
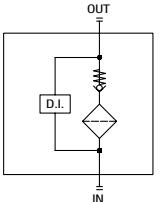
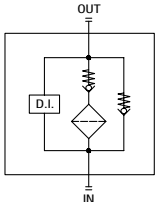
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

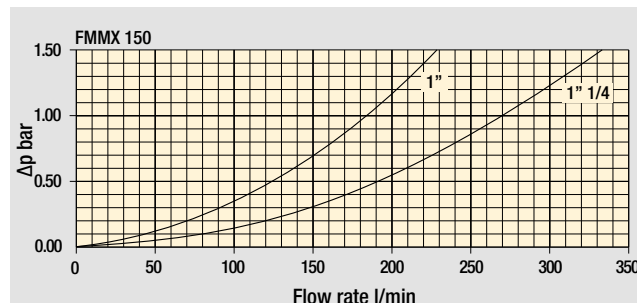
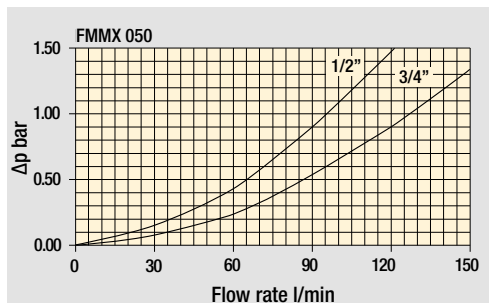
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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

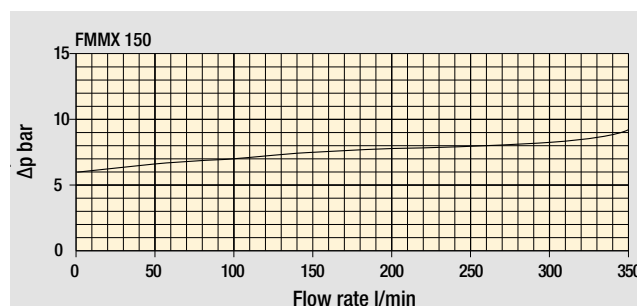
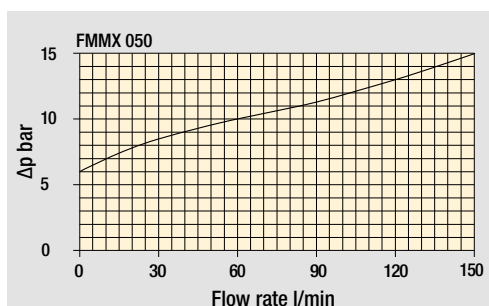
Filter series	Style S	Style B	Style T	Style D
FMMX 050	•	•	•	•
FMMX 150	•	•	•	•

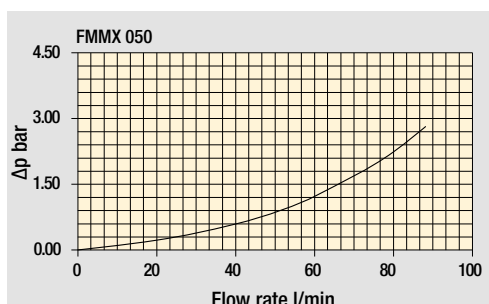


## Pressure drop

Filter housings  
 $\Delta p$  pressure drop



Bypass valve  
pressure drop





Filter housing  
with check valve



The curves are plotted using mineral oil with density of 0.86 kg/dm<sup>3</sup> in compliance with ISO 3968.  $\Delta p$  varies proportionally with density.

## Designation & Ordering code

### COMPLETE FILTER

Series and size		Configuration example: <b>FMMX050</b>									
<b>FMMX050</b> Filter featuring  Filter Element		<b>3</b>	<b>B</b>	<b>A</b>	<b>G</b>	<b>A10</b>	<b>N</b>	<b>Z01</b>	<b>EX</b>		
Length											
<b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>   <b>5</b>											
Valves											
<b>B</b> With bypass 6 bar											
<b>D</b> With check valve, with bypass 6 bar											
Seals											
<b>A</b> NBR											
<b>V</b> FPM											
Connections											
<b>A</b> M18x1.5 - ISO 6149											
<b>B</b> M22x1.5 - ISO 6149											
<b>C</b> G 1/2"											
<b>D</b> G 3/4"											
<b>E</b> 1/2" NPT											
<b>F</b> 3/4" NPT											
<b>G</b> SAE 8 - 3/4" - 16 UNF											
<b>H</b> SAE 12 - 1 1/16" - 12 UN											
Filtration rating (filter media)											
<b>A03</b> Inorganic microfiber 3 µm											
<b>A06</b> Inorganic microfiber 6 µm											
<b>A10</b> Inorganic microfiber 10 µm											
<b>A16</b> Inorganic microfiber 16 µm											
<b>A25</b> Inorganic microfiber 25 µm											
Element Δp											
<b>N</b> 20 bar											
Executions											
											
<b>Z01</b> Upper connection for clogging indicator											
<b>Z02</b> Without connection for clogging indicator											
<b>Z03</b> Frontal connection for clogging indicator											
<b>Zxx</b> Customized											
Certifications											
<b>EX</b> ATEX certifications											

### FILTER ELEMENT

Element series and size		Configuration example: <b>HPX050</b>					
<b>HPX050</b> Filter Element with  feature		<b>3</b>	<b>A10</b>	<b>A</b>	<b>N</b>	<b>Z01</b>	
Element length							
<b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>   <b>5</b>							
Filtration rating (filter media)							
<b>A03</b> Inorganic microfiber 3 µm							
<b>A06</b> Inorganic microfiber 6 µm							
<b>A10</b> Inorganic microfiber 10 µm							
<b>A16</b> Inorganic microfiber 16 µm							
<b>A25</b> Inorganic microfiber 25 µm							
Seals							
<b>A</b> NBR							
<b>V</b> FPM							
Element Δp							
<b>N</b> 20 bar							
Execution							
							
<b>Z01</b> MP Filtri standard							
<b>Zxx</b> Customized							

### CLOGGING INDICATORS

See page 729

**DEH** Electrical differential pressure indicator 420 bar

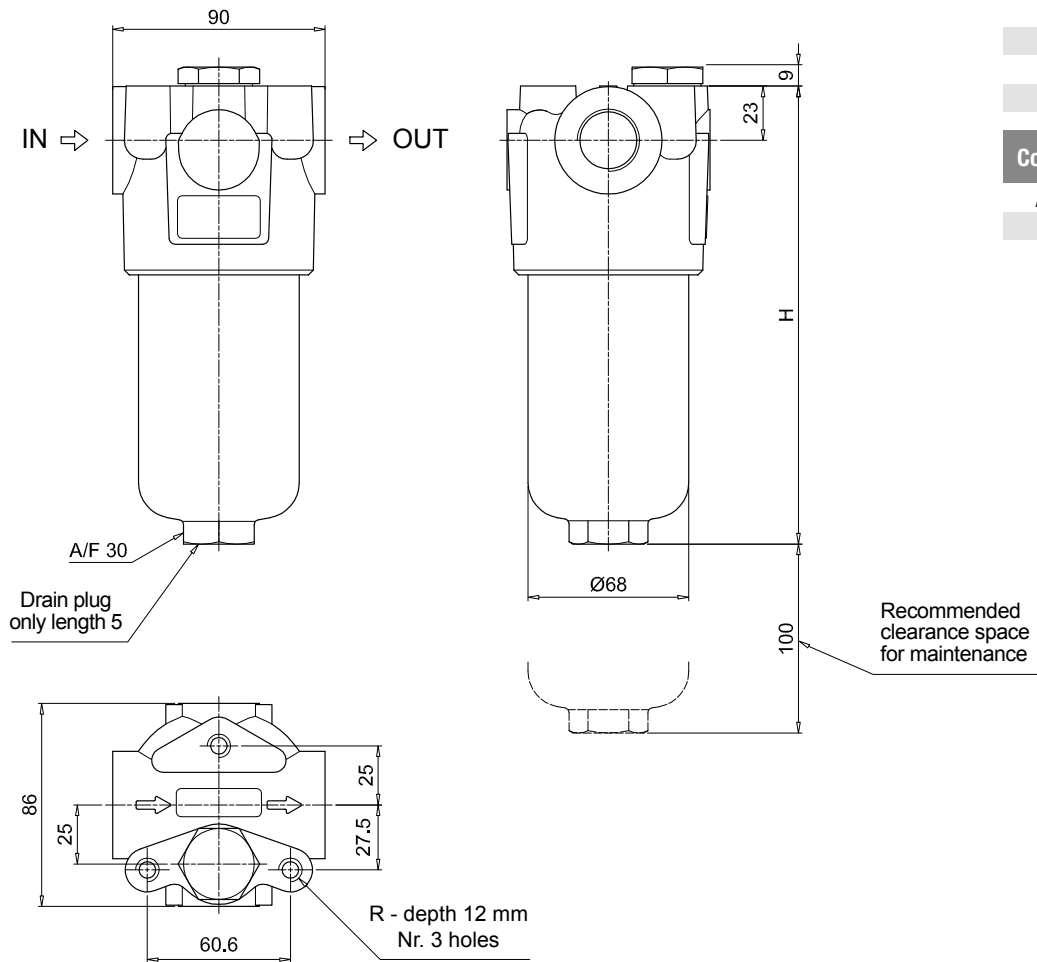
**DVM** Visual differential pressure indicator

**DVA** Visual differential pressure indicator

### PLUGS

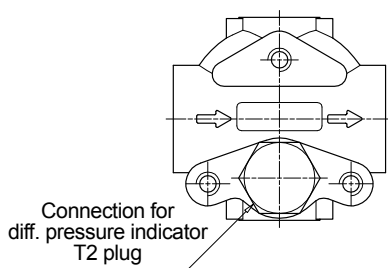
See page 747

**T2** Plug

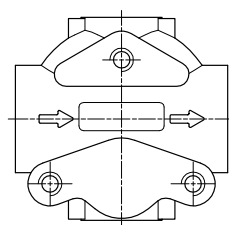


FMMX050	
Filter length	H [mm]
1	158
2	195
3	237
4	285
5	407
Connections	R
A-B-C-D	M10
E-F-G-H	3/8" UNC

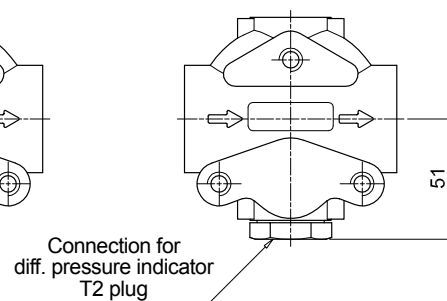
Execution P01



Execution P02



Execution P03



# FMMX FMMX150

## Designation & Ordering code

### COMPLETE FILTER

Series and size **FMMX150** Filter featuring **MY CLEAN** Filter Element

Config. example: **FMMX150** **2** **B** **A** **D** **2** **M25** **N** **Z01** **EX**

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

Valves  
**S** Without bypass | **B** With bypass 6 bar

Seals  
**A** NBR | **V** FPM

Connections  
**C** G1" | **F** 1 1/4" NPT  
**D** G1 1/4" | **G** SAE 16 - 1 5/16" - 12 UN  
**E** 1" NPT | **H** SAE 20 - 1 5/8" - 12 UN

Connections for differential 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  
**N** 20 bar

Execution  
**zerospark**  
**Z01** MP Filtri standard  
**Zxx** Customized

Certifications  
**EX** ATEX certifications

### FILTER ELEMENT

Element series and size **HPX150** Filter Element with **MY CLEAN** feature

Configuration example: **HPX150** **3** **A10** **A** **N** **Z01**

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

Execution  
**zerospark**  
**Z01** MP Filtri standard  
**Zxx** Customized

### CLOGGING INDICATORS

See page 729

**DEH** Electrical differential pressure indicator 420 bar

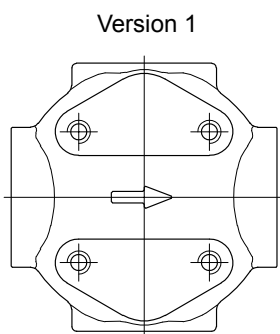
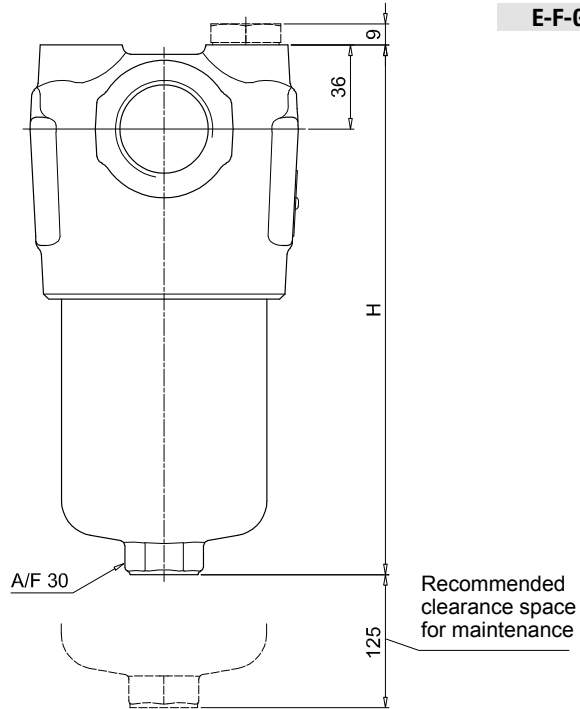
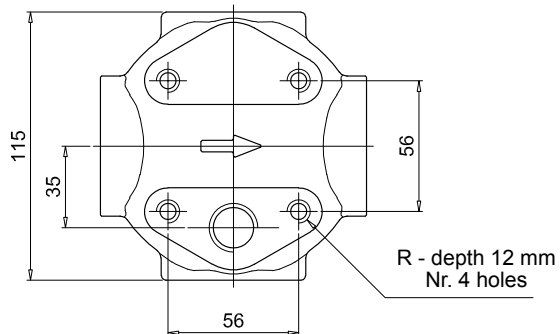
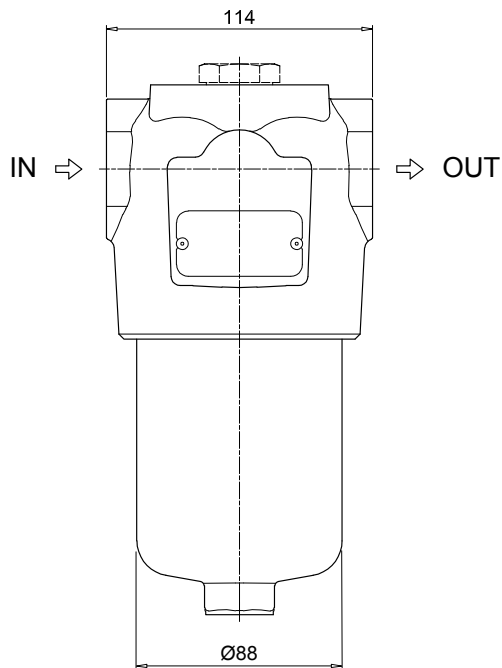
**DVM** Visual differential pressure indicator

**DVA** Visual differential pressure indicator

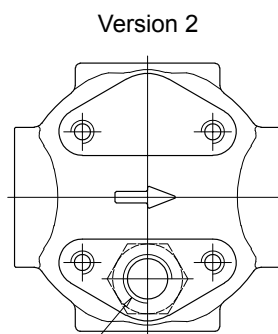
### PLUGS

See page 747

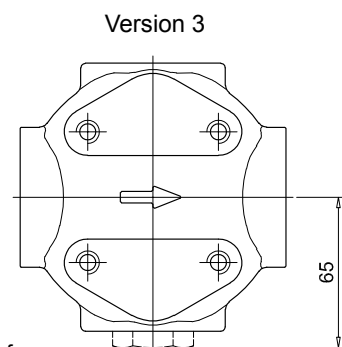
**T2** Plug



Connection for differential indicator  
T2 plug not included



Connection for differential indicator  
T2 plug not included



### FMMX150

Filter length	H [mm]
1	230
2	340
3	415

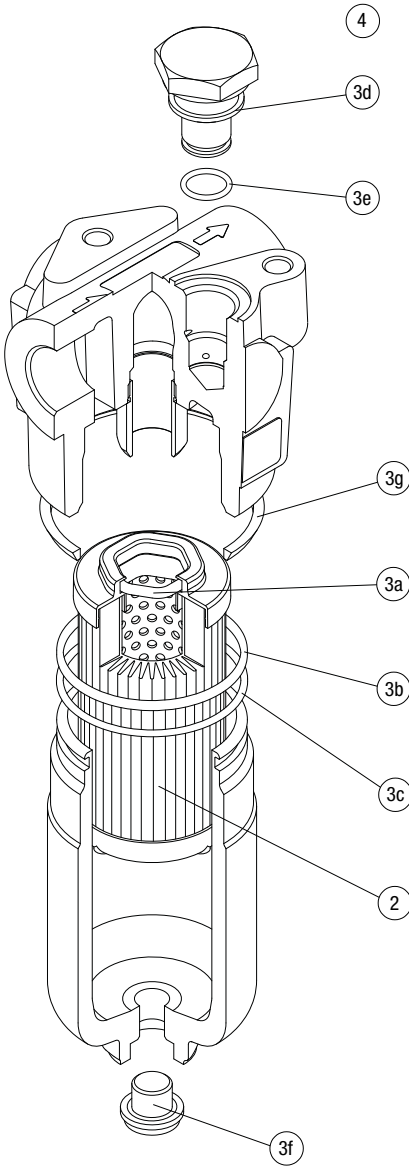
Connections	R
C-D	M10
E-F-G-H	3/8" UNC



# FMMX SPARE PARTS

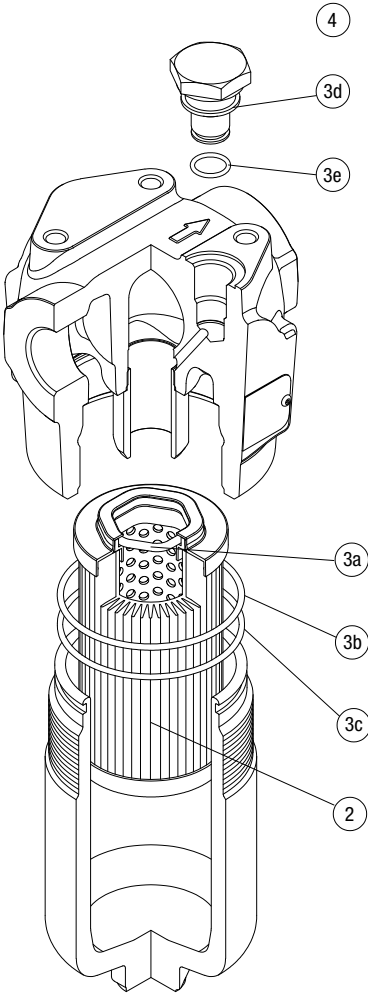
Order number for spare parts

## FMMX 050



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
	2	3 (3a ÷ 3g)		4	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
		NBR	FPM	NBR	FPM
FMMX 050	See order table	02050864	02050865	T2H	T2V

FMMX 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		
FMMX 150	See order table	02050868	02050869	T2H	T2V		

## FILTERS FOR POTENTIALLY EXPLOSIVE ATMOSPHERE

Designation & Ordering code

DIFFERENTIAL PRESSURE INDICATORS									
<b>Series</b>	Configuration example 1: DE H 50 F A 48 P01								
<b>DE</b> Electrical differential pressure indicator	Configuration example 2: DV X 70 V P01								
<b>DV</b> Visual differential pressure indicator									
<b>Type</b>	DE	DV							
<b>A</b> With automatic reset	-	•							
<b>M</b> With manual reset	-	•							
<b>H</b> Stainless steel hazardous area 420 bar	•	-							
<b>X</b> Stainless steel standard type 420 bar	-	•							
<b>Y</b> Stainless steel optional type 420 bar	-	•							
<b>Pressure setting</b>	DEH	DVA	DVM	DVX	DVY				
<b>50</b> 5.0 bar	•	•	•	•	•				
<b>70</b> 7.0 bar	•	•	•	•	•				
<b>95</b> 9.5 bar	-	•	•	•	•				
<b>Seals</b>	DEH	DVA	DVM	DVX	DVY				
<b>H</b> HNBR	-	•	•	•	•				
<b>V</b> FPM	•	•	•	•	•				
<b>F</b> MFQ	•	-	-	-	-				
<b>Thermostat</b>	DEH								
<b>A</b> Without thermostat	•								
<b>T</b> With thermostat	-								
<b>Electrical connections</b>	DEH								
<b>48</b> Connection via three-core cable - fitting M20x1.5	•								
<b>49</b> Connection via four-core cable - fitting 1/2" NPT	•								
<b>70</b> Connection IEC 61076-2-101 D (M12)	•								
<b>Option</b>									
<b>P01</b> MP Filtri standard									
<b>Pxx</b> Customized									

PLUGS			
<b>Series</b>	Configuration example X2 H		
<b>T2</b> Plug			
<b>X2</b> Stainless Steel plug 420 bar			
<b>X3</b> Stainless Steel plug 700 bar (only for FZH)			
<b>Seals</b>	T2	X2	X3
<b>H</b> HNBR	•	•	•
<b>V</b> FPM	•	•	•
<b>F</b> MFQ	-	•	•