

# FZH series

Maximum working pressure up to 70 Mpa (700 bar) - Flow rate up to 80 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 80 Mpa (700 bar)**  
**Flow rate up to 80 l/min**

FZH is a range of stainless steel high pressure filter for protection of sensitive components in high pressure hydraulic systems placed in difficult environmental conditions.

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

#### Available features:

- 1/2" female threaded connections, for a maximum flow rate of 80 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
- High collapse filter element "H", for use with filters not 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 or the reverse flow 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 or the reverse flow in filters not provided with the bypass valve
- High collapse filter element "U", for use with aggressive fluids
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-shore equipment
- Water filtration systems
- Systems with strong or corrosive environmental conditions
- Systems with corrosive fluids

### Filter housing materials

- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

### Seals

- Standard NBR series A
- Optional FPM series V
- Optional MFQ series F

### Bypass valve

Opening pressure 6 bar  $\pm$ 10%

### Note

FZH filters are provided for vertical mounting

### $\Delta p$ element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series N-R: 20 bar.

Element series "N - R":

- End cap: Polyamide
- Core tube: Tinned steel
- External/Internal support: Wire mesh Epoxy painted
- Media/Support/Pre-filter: Microfibre/Synthetic

Microfibre filter elements - series H-S: 210 bar.

Element series "H - S":

- End cap: Tinned steel
- Core tube: Tinned steel
- External support: Wire mesh Epoxy painted
- Internal support: Wire mesh Stainless steel
- Media/Support/Pre-filter: Microfibre/Synthetic

Stainless Steel Microfibre filter elements series U: 210 bar.

Element series "U":


- End cap: Stainless steel
- Core tube: Stainless steel
- External support: Stainless steel
- Internal support: Stainless steel
- Media/Support/Pre-filter: Microfibre/Synthetic

### Temperature




Seals	Ambient Temperature	Max fluid Temperature	Temperature Class	Max surface temperature
NBR	-15 °C ÷ +80 °C	+80 °C	T6	T85 °C
FPM / MFQ	-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

### Filter with:

NBR seal in configuration **zerospark<sup>+</sup>**

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

FPM / MFQ seal in configuration **zerospark<sup>+</sup>**

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

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]				Volumes [dm <sup>3</sup> ]					
	Length	1	2	3	4	Length	1	2	3	4
<b>FZH 012</b>		2.1	2.2	2.7	3.3		0.10	0.12	0.15	0.20
<b>FZH 040</b>		-	4.5	5.1	5.6		-	0.19	0.26	0.34

Flow rates [l/min]

Filter series	Length	Filter element design - N Series					Filter element design - H-U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
<b>FZH 012</b>	<b>1</b>	4	6	8	9	11	3	5	6	7	9
	<b>2</b>	7	9	17	20	26	5	7	14	17	23
	<b>3</b>	11	14	25	27	32	11	14	24	27	32
	<b>4</b>	17	20	29	31	34	13	16	26	29	33

Filter series	Length	Filter element design - R Series					Filter element design - S-U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
<b>FZH 040</b>	<b>2</b>	19	25	43	50	59	19	23	41	45	55
	<b>3</b>	34	37	53	62	74	31	34	48	52	66
	<b>4</b>	42	46	63	72	81	38	41	55	71	78

**Maximum flow rate for a complete stainless steel high 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.

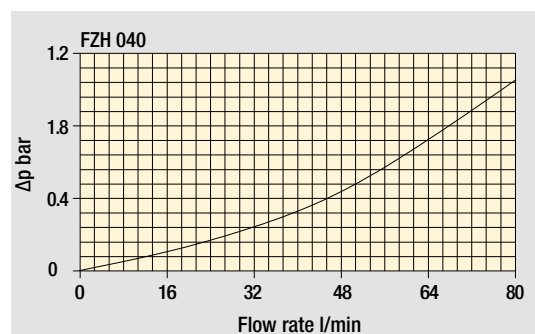
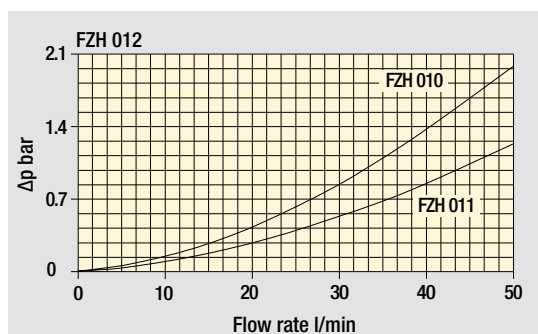
## Hydraulic symbols

Filter series	Style S	Style B	Style T	Style D	Style V	Style Z
<b>FZH 012</b>	•	•	-	-	•	•
<b>FZH 040</b>	•	•	•	•	•	•

## Pressure drop

Filter housings  $\Delta p$  pressure drop



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

Configuration example: **FZH012** | **2** | **B** | **F** | **B** | **2** | **A03** | **U** | **Z01** | **EX**

**Filter Series and size**  
**FZH012**

**Filter length**  
**1** | **2** | **3** | **4**

**Valves**  
**S** Without bypass  
**B** With bypass 6 bar  
**V** With reverse flow, without bypass  
**Z** With reverse flow, with bypass 6 bar

**Seals**  
**A** NBR  
**V** FPM  
**F** MFQ

**Connections**  
**A** G 1/4"  
**B** 1/4" NPT  
**C** SAE 5 - 1/2" - 20 UNF  
**D** G 3/8"  
**E** 3/8" NPT  
**F** SAE 6 - 9/16" - 18 UNF

**Connection for differential pressure indicator**  
**1** Without connection  
**2** With connection

Filtration rating (filter media)	Element $\Delta p$	Valves			
		S	B	V	Z
<b>A03</b> Inorganic microfiber 3 $\mu m$	<b>N</b> 20 bar	-	•	-	•
<b>A06</b> Inorganic microfiber 6 $\mu m$	<b>H</b> 210 bar	•	-	•	-
<b>A10</b> Inorganic microfiber 10 $\mu m$	<b>U</b> 210 bar, stainless steel filter element	•	•	•	•
<b>A16</b> Inorganic microfiber 16 $\mu m$					
<b>A25</b> Inorganic microfiber 25 $\mu m$					

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

**Certifications**  
**EX** ATEX certifications

### FILTER ELEMENT

Configuration example: **HP011** | **2** | **A03** | **F** | **U** | **Z01**

**Element series and size**  
**HP011**

**Element length**  
**1** | **2** | **3** | **4**

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber	3 $\mu m$
<b>A06</b> Inorganic microfiber	6 $\mu m$
<b>A10</b> Inorganic microfiber	10 $\mu m$
<b>A16</b> Inorganic microfiber	16 $\mu m$
<b>A25</b> Inorganic microfiber	25 $\mu m$

**Seals**  
**A** NBR  
**V** FPM  
**F** MFQ

Element $\Delta p$	
<b>N</b>	20 bar
<b>H</b>	210 bar
<b>U</b>	210 bar, stainless steel filter element

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

### CLOGGING INDICATORS

**DEZ** Electrical differential pressure indicator

**DVZ** Visual differential pressure indicator

See page 729

### PLUGS

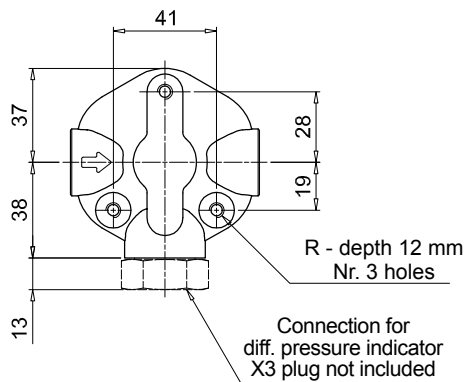
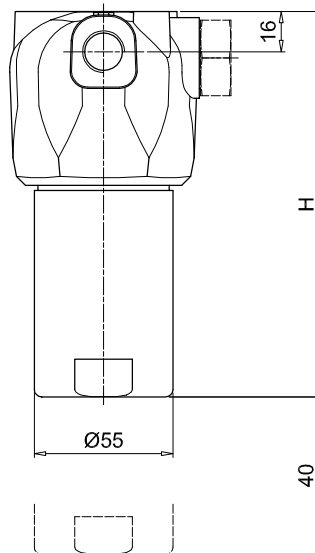
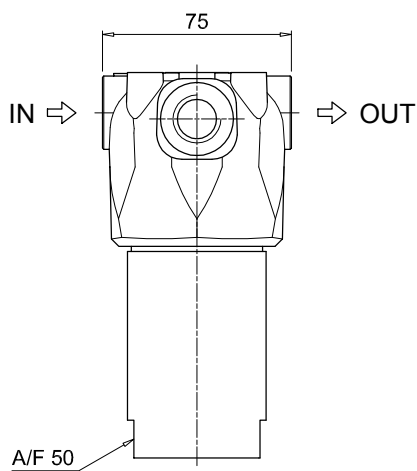
**X3** Stainless steel plug (not included)

See page 747

FZH012	
Filter length	H [mm]
<b>1</b>	93
<b>2</b>	104
<b>3</b>	154
<b>4</b>	204

Connections	R
<b>A</b>	M6
<b>B - C</b>	1/4" UNC
<b>D</b>	M6
<b>E - F</b>	1/4" UNC



## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **FZH040** | **2** | **T** | **A** | **A** | **2** | **A03** | **S** | **Z01** | **EX**

**Filter Series and size**  
**FZH040**

**Filter length**  
**2** | **3** | **4**

**Valves**  
**S** Without bypass  
**B** With bypass 6 bar  
**T** With check valve, without bypass  
**D** With check valve, with bypass 6 bar  
**V** With reverse flow, without bypass  
**Z** With reverse flow, with bypass 6 bar

**Seals**  
**A** NBR      **F** MFQ  
**V** FPM

**Connections**  
**A** G 1/2"  
**B** 1/2" NPT  
**C** SAE 8 - 3/4" - 16 UNF

**Connection for differential pressure indicator**  
**1** Without connection  
**2** With 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

Element Δp	Valves					
	S	B	T	D	V	Z
<b>R</b> 20 bar	-	•	-	•	-	•
<b>S</b> 210 bar	•	-	•	-	•	-
<b>U</b> 210 bar, stainless steel filter element	•	•	•	•	•	•

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

**Certifications**  
**EX** ATEX certifications

### FILTER ELEMENT

Configuration example: **HP039** | **2** | **A03** | **A** | **S** | **Z01**

**Element series and size**  
**HP039**

**Element length**  
**2** | **3** | **4**

**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

**Seals**  
**A** NBR  
**V** FPM  
**F** MFQ

**Element Δp**  
**R** 20 bar  
**S** 210 bar  
**U** 210 bar, stainless steel filter element

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

### CLOGGING INDICATORS

See page 729

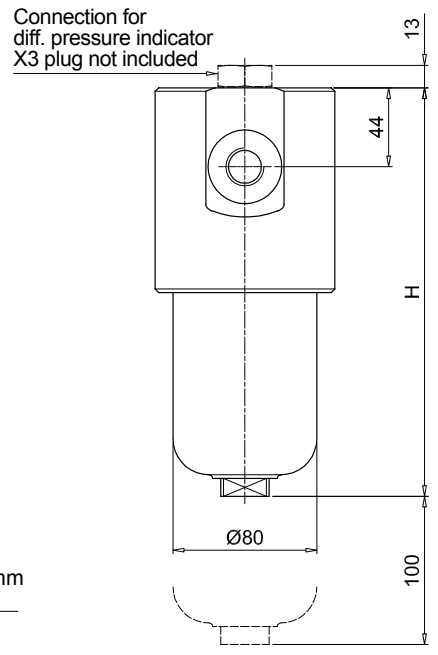
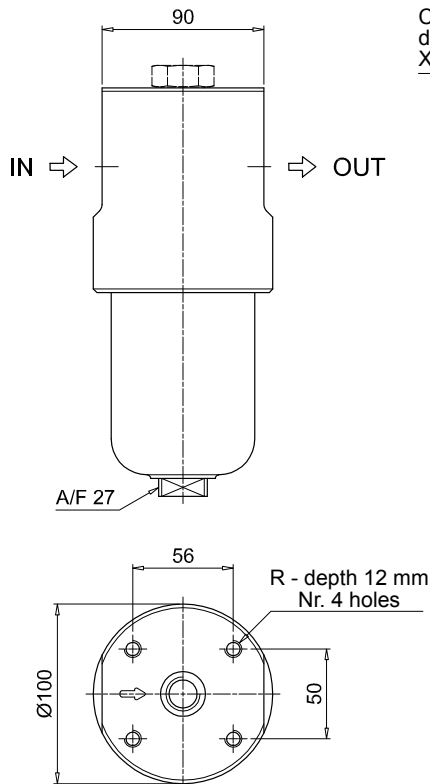
**DVZ** Visual differential pressure indicator

### PLUGS

See page 747

**X3** Stainless steel plug (not included)

Valves S - B - T - D

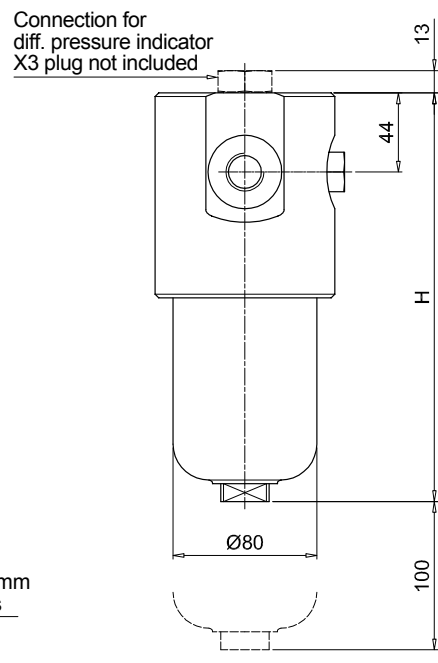
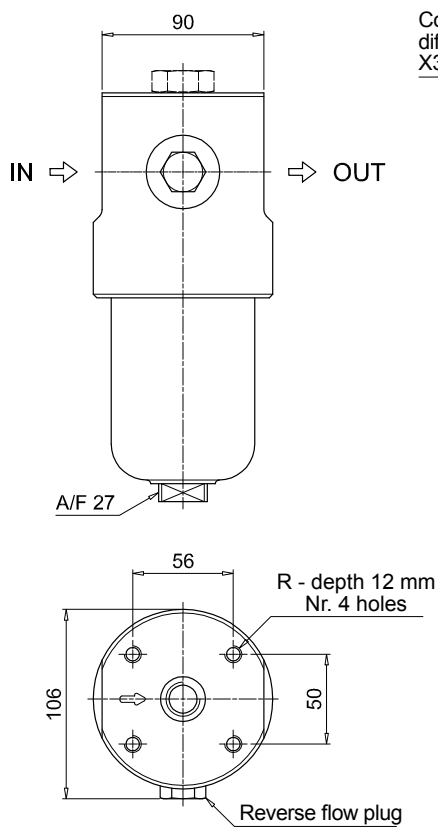


FZH040	
Filter length	H [mm]
2	204
3	247
4	291

Connections	R
A	M10
B	3/8" UNC
C	3/8" UNC

Valves V - Z



Recommended clearance space for maintenance

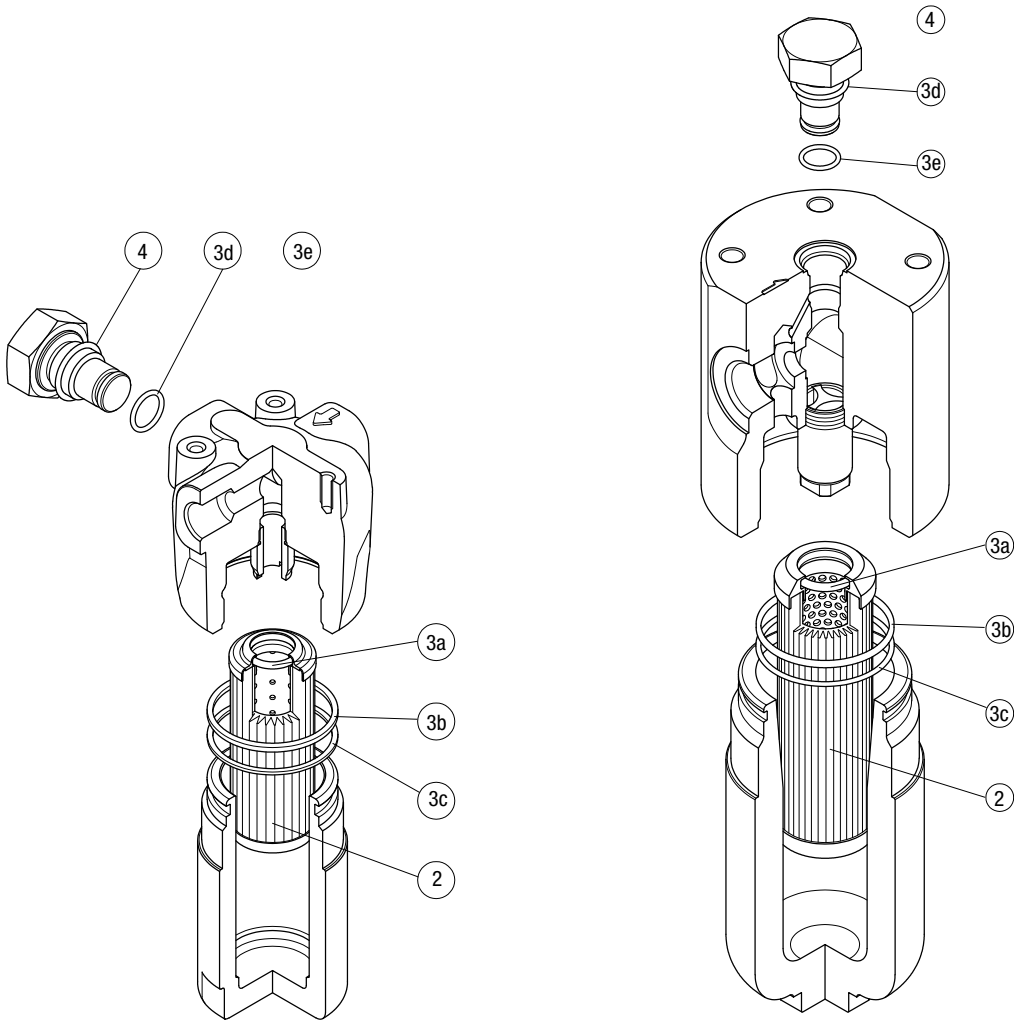
Recommended clearance space for maintenance

# FZH SPARE PARTS

Order number for spare parts

FZH 012

FZH 040



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
FZH 012	See order table	NBR	FPM	NBR	FPM
FZH 040	See order table	02050856	02050857	X2H	X2V
		02050860	02050861		



## FILTERS FOR POTENTIALLY EXPLOSIVE ATMOSPHERE

Designation & Ordering code

### DIFFERENTIAL PRESSURE INDICATORS

Series	Configuration example 1:						
<b>DE</b> Electrical differential pressure indicator	DE	H	50	F	A	48	P01
<b>DV</b> Visual differential pressure indicator	Configuration example 2:						
	DV	X	70	V			P01

Type	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	-	•

Pressure setting	DEH	DVA	DVM	DVX	DVY
<b>50</b> 5.0 bar	•	•	•	•	•
<b>70</b> 7.0 bar	•	•	•	•	•
<b>95</b> 9.5 bar	-	•	•	•	•

Seals	DEH	DVA	DVM	DVX	DVY
<b>H</b> HNBR	-	•	•	•	•
<b>V</b> FPM	•	•	•	•	•
<b>F</b> MFQ	•	-	-	-	-

Thermostat	DEH
<b>A</b> Without thermostat	•
<b>T</b> With thermostat	-

Electrical connections	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)	•

Option
<b>P01</b> MP Filtri standard
<b>Pxx</b> Customized

### PLUGS

Series	Configuration example	
<b>T2</b> Plug	X2	H
<b>X2</b> Stainless Steel plug 420 bar		
<b>X3</b> Stainless Steel plug 700 bar (only for FZH)		

Seals	T2	X2	X3
<b>H</b> HNBR	•	•	•
<b>V</b> FPM	•	•	•
<b>F</b> MFQ	-	•	•