

HYDRAULIC FILTRATION PRODUCTS

STAINLESS STEEL HIGH PRESSURE FILTERS



PASSION TO PERFORM





A WORLDWIDE LEADER IN THE FIELD OF HYDRAULIC FILTRATION EQUIPMENT.

Our company started life in 1964, when Bruno Pasotto decided to attempt to cater for the requests of a market still to be fully explored, with the study, design, development, production and marketing of a vast range of filters for hydraulic equipment, capable of satisfying the needs of manufacturers in all sectors. The quality of our products, our extreme competitiveness compared with major international producers and our constant activities of research, design and development has made us a worldwide leader in the field of hydraulic circuit filtering. Present for over 50 years in the market, we have played a truly decisive role in defining our sector, and by now we are a group capable of controlling our entire chain of production, monitoring all manufacturing processes to guarantee superior quality standards and to provide concrete solutions for the rapidly evolving needs of customers and the market.

MARKET LEADER



Our work is based on a skillful interaction between advanced technology and fine workmanship, **customizing products according to specific market requests**, focusing strongly on innovation and quality, and following every step in the manufacturing of both standard and special products, fully respecting customer expectations.



Our customer-oriented philosophy, which enables us to satisfy all customer requests **rapidly and with personalized products**, makes us a **dynamic and flexible enterprise**. The possibility of constantly controlling and monitoring the entire production process is essential to allow us to guarantee the quality of our products.

WORLDWIDE PRESENCE

Our foreign Branches enable us to offer a diversified range of products that allow us to successfully face the aggressive challenge of international competition, and also to maintain a stable presence at a local level.

The Group boasts **8** business branches



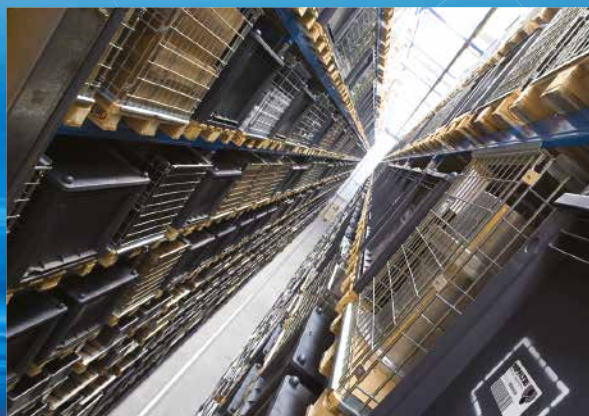
TECHNOLOGY

Our constant **quest for excellence in quality and technological innovation** allows us to offer only the best solutions and services for applications in many fields, including general industry, test rigs, lubrication, heavy engineering, renewable energies, naval engineering, offshore engineering, aviation systems, emerging technologies and mobile plant (i.e. tractors, excavators, concrete pumps, platforms).



AND PRODUCTION

Our high level of technological expertise means **we can rely entirely on our own resources, without resorting to external providers.** This in turn enables us to satisfy a growing number of customer requests, also exploiting our constantly updated range of machines and equipment, featuring **fully-automated workstations** capable of **24-hour production.**





SUCTION FILTERS

Flow rates
up to 875 l/min

- Mounting:
- Tank immersed
 - In-Line
 - In tank with shut off valve
 - In tank with flooded suction

RETURN FILTERS

Flow rates
up to 3000 l/min

- Pressure
up to 20 bar
- Mounting:
- In-Line
 - Tank top
 - In single and duplex designs

RETURN / SUCTION FILTERS

Flow rates
up to 300 l/min

- Pressure
up to 80 bar
- Mounting:
- In-Line
 - Tank top

SPIN-ON FILTERS

Flow rates
up to 365 l/min

- Pressure
up to 35 bar
- Mounting:
- In-Line
 - Tank top

LOW & MEDIUM PRESSURE FILTERS

Flow rates
up to 3000 l/min

- Pressure
up to 80 bar
- Mounting:
- In-Line
 - Parallel manifold version
 - In single and duplex designs

HIGH PRESSURE FILTERS

Flow rates
up to 750 l/min

- Pressure from 110 bar
up to 560 bar
- Mounting:
- In-Line
 - Manifold
 - In single and duplex designs

PRODUCT RANGE

MP Filtri can offer a vast and articulated range of products for the global market, suitable for all industrial sectors using hydraulic equipment.

This includes filters (suction, return, return/suction, spin-on, pressure, stainless steel pressure) and structural components (motor/pump bell-housings, transmission couplings, damping rings, foot brackets, aluminium tanks, cleaning covers).

We can provide all the skills and solutions required by the modern hydraulics industry to monitor contamination levels and other fluid conditions.

Mobile filtration units and a full range of accessories allow us to supply everything necessary for a complete service in the hydraulic circuits.



STAINLESS STEEL HIGH PRESSURE FILTERS

Flow rates up to 125 l/min
Pressure from 320 bar up to 1000 bar

- Mounting:
- In-Line
 - Manifold
 - In single and duplex designs

CONTAMINATION MONITORING PRODUCTS

- Online, in-line particle counters
- Off-line bottle sampling products
- Fully calibrated using relevant ISO standards
- A wide range of variants to support fluid types and communication protocols

MOBILE FILTRATION UNITS

Flow rates from 15 l/min up to 200 l/min

POWER TRANSMISSION PRODUCTS

- Aluminium bell-housings for motors from 0.12 kW to 400 kW
- Couplings in Aluminium Cast Iron - Steel
- Damping rings
- Foot bracket
- Aluminium tanks
- Cleaning covers

TANK ACCESSORIES

- Oil filler and air breather plugs
- Optical and electrical level gauges
- Pressure gauge valve selectors
- Pipe fixing brackets
- Pressure gauges

HYDRAULIC FILTRATION PRODUCTS

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28	page	SUCTION FILTERS			up to Q_{max}
					l/min gpm
31	STR & MPA - MPM	Submerged suction filter, with bypass or magnetic column			875 231
39	SF2 250 - 350	Semi-submerged positive head suction filter, low flow rate			160 42
47	SF2 500	Semi-submerged positive head suction filter, high flow rate			800 211
57	CLOGGING INDICATORS				

60	page	RETURN FILTERS		up to P_{max}	up to Q_{max}
			bar psi	l/min gpm	
63	MPFX	Tank top semi-immersed filter, standard filter element disassembly	8 116	750 198	
91	MPLX	Tank top semi-immersed filter, standard filter element disassembly	10 145	1800 476	
99	MPTX	Tank top semi-immersed filter, easy filter element disassembly	8 116	300 79	
117	MFBX	Bowl assembly	8 116	500 132	
125	MPF	Tank top semi-immersed filter, standard filter element disassembly	8 116	750 198	
153	MPT	Tank top semi-immersed filter, easy filter element disassembly	8 116	300 79	
171	MFB	Bowl assembly	8 116	500 132	
179	MPH	Tank top semi-immersed filter, standard filter element disassembly	10 145	3000 793	
203	MPI	Tank top semi-immersed filter, standard filter element disassembly	10 145	3000 793	
215	FRI	Tank top semi-immersed filter, easy filter element disassembly, it can be used also as in-line filter	20 290	1500 396	
231	RF2	Semi-immersed under-head filter, easy filter element disassembly	20 290	350 92	
238	CLOGGING INDICATORS				
248	ACCESSORIES				

250	page	RETURN / SUCTION FILTERS		up to P_{max}	up to Q_{max}
			bar psi	l/min gpm	
253	MRSX	Unique TANK TOP filter for mobile machinery, with combined filtration on return and suction to the inlet at the hydrostatic transmissions in closed circuit	10 145	300 79	
265	LMP 124 MULTIPORT	Unique IN-LINE filter for mobile machinery, with combined filtration on return and suction to the inlet at the hydrostatic transmissions in closed circuit	80 1160	200 53	
273	CLOGGING INDICATORS				

286	page	SPIN-ON FILTERS		up to P_{max}	up to Q_{max}
			bar psi	l/min gpm	
289	MPS	Low pressure filter, available with single cartridge (CS) for in-line or flange mounting or with two cartridge on the same axis on the opposite sides	12 174	365 96	
305	MSH	In-line low and medium pressure filter available with single cartridge (CH)	35 508	195 52	
311	CLOGGING INDICATORS				

page	LOW & MEDIUM PRESSURE FILTERS	up to P _{max}		up to Q _{max}		
		bar	psi	l/min	gpm	
325	LMP 110 - 120 - 123 MULTIPORT	In-line filter with Multiport design for multiple choice connection	80	1160	200	53
341	LMP 210 - 211	In-line low & medium pressure filter, low flow rate	60	870	330	87
351	LMP 400 - 401 & 430 - 431	In-line low & medium pressure filter, high flow rate	60	870	740	195
363	LMP 950 - 951	In-line filter, available with 2 and up to 6 different heads	30	435	2400	634
371	LMP 952 - 953 - 954	In-line low pressure filter specifically designed to be mounted in series	25	363	3000	793
383	LMD 211	In-line duplex medium pressure filter	60	870	330	87
391	LMD 400 - 401 & 431	In-line duplex low pressure filter	16	232	590	156
407	LMD 951	In-line duplex filter, available with 2 up to 6 different heads	16	232	1200	317
415	Filter elements designed according to DIN 24550					
417	LDP - LDD	In-line and duplex medium pressure filter	60	870	330	87
427	LMP 900 - 901	In-line low pressure filter	30	435	2000	528
435	LMP 902 - 903	In-line filter specifically designed to be mounted in series	20	290	3000	793
444	CLOGGING INDICATORS					
450	ACCESSORIES					

page	HIGH PRESSURE FILTERS	up to P _{max}		up to Q _{max}		
		bar	psi	l/min	gpm	
455	FMP 039	Filter high pressure, low flow rate applications	110	1595	80	21
463	FMP	Filter high pressure, high flow rate applications	320	4641	475	125
475	FHP	Typical high pressure filter for mobile applications, high flow rate	420	6092	750	198
493	FMM	Typical high pressure filter for mobile applications, low flow rate	420	6092	250	66
503	FHA 051	Filter optimized for use in high pressure operating systems, low flow rate	560	8122	140	37
511	FHM	High pressure filter with intermediate manifold construction	320	4641	450	119
529	FHB	High pressure for block mounting	320	4641	485	128
543	FHF 325	In-line manifold top mounting	350	5076	500	132
553	FHD	In-line duplex high pressure filter	350	5076	345	91
566	CLOGGING INDICATORS					

page	STAINLESS STEEL HIGH PRESSURE FILTERS	up to P _{max}		up to Q _{max}		
		bar	psi	l/min	gpm	
577	FZP	In-line pressure filter with threaded mount	420	6092	150	40
587	FZH	In-line pressure filter with threaded mount for higher pressure	700	10153	50	13
597	FZX	In-line pressure filter with threaded mount up to 1000 bar	1000	14504	10	3
605	FZM	Manifold top mounting	320	4641	70	18
613	FZB	Manifold side mounting	320	4641	75	20
621	FZD	Duplex pressure filter for continuous operation requirements	350	5076	90	24
631	CLOGGING INDICATORS					

page	CLOGGING INDICATORS
639	QUICK REFERENCE GUIDE

THE CORRECT FILTER SIZING HAVE TO BE BASED ON THE TOTAL PRESSURE DROP DEPENDING BY THE APPLICATION.

THE MAXIMUM TOTAL PRESSURE DROP ALLOWED BY A NEW AND CLEAN STAINLESS STEEL FILTER HAVE TO BE IN THE RANGE 0.8 ÷ 1.5 bar.

The pressure drop calculation is performed by adding together the value of the housing with the value of the filter element. The pressure drop Δp_{pc} of 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 $0.86 \text{ kg}/\text{dm}^3$.

The filter element pressure drop Δp_e is proportional to its viscosity (mm^2/s), the corrective factor Y have to be used in case of an oil viscosity different than $30 \text{ mm}^2/\text{s}$ (cSt).

Sizing data for single filter element, head at top

Δp_c = Filter housing pressure drop [bar]

Δp_e = Filter element pressure drop [bar]

Y = Corrective factor Y (see correspondent table), depending on the filter type, on the filter element size, on the filter element length and on the filter media

Q = flow rate (l/min)

V1 reference oil viscosity = $30 \text{ mm}^2/\text{s}$ (cSt)

V2 = operating oil viscosity in mm^2/s (cSt)

Filter element pressure drop calculation with an oil viscosity different than $30 \text{ mm}^2/\text{s}$ (cSt)

$\Delta p_e = Y : 1000 \times Q \times (V2:V1)$

$\Delta p_{Tot.} = \Delta p_c + \Delta p_e$

Verification formula

$\Delta p_{Tot.} \leq \Delta p_{max \text{ allowed}}$

Maximum total pressure drop (Δp_{max}) allowed by a new and clean filter

Application	Range (bar)
Suction filters	0.08 ÷ 0.10
Return filters	0.4 ÷ 0.6
Return - Suction filters*	0.8 ÷ 1.0
Low & Medium Pressure filters	0.4 ÷ 0.6 return lines
	0.3 ÷ 0.5 lubrication lines
	0.3 ÷ 0.4 off-line in power systems
	0.1 ÷ 0.3 off-line in test benches
High Pressure filters	0.4 ÷ 0.6 over-boost
High Pressure filters	0.8 ÷ 1.5
Stainless Steel filters	0.8 ÷ 1.5

* The suction flow rate should not exceed 30% of the return flow rate

Generic filter calculation example

Application data:

In-line filtration for system with corrosive fluid

Pressure Pmax = 150 bar

Flow rate Q = 50 l/min

Viscosity V2 = $46 \text{ mm}^2/\text{s}$ (cSt)

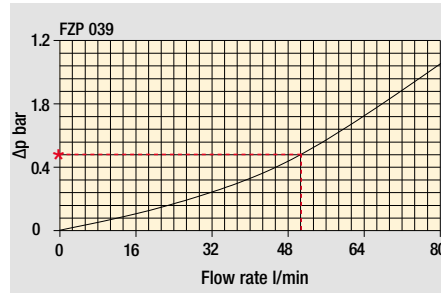
Oil density = $0.86 \text{ kg}/\text{dm}^3$

Required filtration efficiency = $25 \mu\text{m}$ with absolute filtration

With bypass valve and G 1/2" inlet connection

Calculation:

$\Delta p_c = 0.7 \text{ bar}$ (see graphic below)



Filter housings Δp pressure drop. The curves are plotted using mineral oil with density of $0.86 \text{ kg}/\text{dm}^3$ in compliance with ISO 3968. Δp varies proportionally with density.

$\Delta p_e = (6.70 : 1000) \times 50 \times (46 : 30) = 0.51 \text{ bar}$

Filter element	Absolute filtration H - U Series					
	Type	A03	A06	A10	A16	A25
HP 011	1	424.58	319.74	235.17	194.44	163.78
	2	281.06	211.25	94.53	75.45	47.26
	3	130.14	97.50	43.63	34.82	21.81
	4	109.39	82.25	36.79	29.37	18.40
HP 039	2	73.00	57.00	28.00	24.00	17.20
	3	40.90	36.33	21.88	18.80	11.20
	4	31.50	28.22	17.22	9.30	6.70
HP 050	1	47.33	34.25	21.50	20.50	14.71
	2	29.10	25.95	14.04	10.90	5.88
	3	20.85	19.50	10.68	8.61	4.36
	4	14.55	12.90	7.32	6.90	3.69
	5	9.86	9.34	6.40	4.80	2.50
HP 135	1	29.16	25.33	13.00	12.47	5.92
	2	14.28	11.04	7.86	7.60	4.44
	3	8.96	7.46	4.89	4.16	3.07

$\Delta p_{Tot.} = 0.70 + 0.51 = 1.21 \text{ bar}$

The selection is correct because the total pressure drop value is inside the admissible range for stainless steel filters.

In case the allowed max total pressure drop is not verified, it is necessary to repeat the calculation changing the filter length/size.

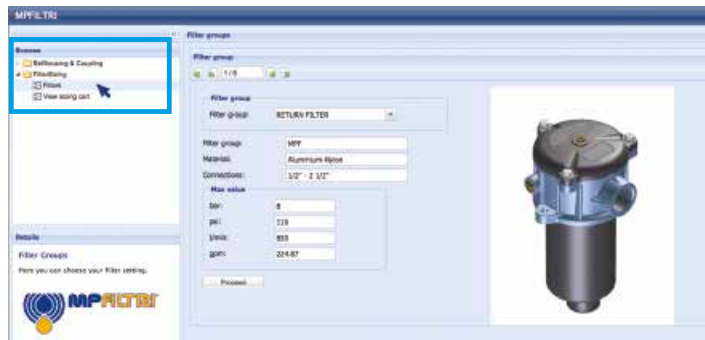
Corrective factor Y to be used for the filter element pressure drop calculation. The values depend to the filter size and length and to the filter media.
Reference oil viscosity 30 mm²/s

Stainless steel high pressure filters

Filter element		Absolute filtration N Series					Absolute filtration H - U Series				
Type		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
HP 011	1	332.71	250.07	184.32	152.36	128.36	424.58	319.74	235.17	194.44	163.78
	2	220.28	165.56	74.08	59.13	37.05	281.06	211.25	94.53	75.45	47.26
	3	123.24	92.68	41.48	33.08	20.72	130.14	97.50	43.63	34.82	21.81
	4	77.76	58.52	28.37	22.67	16.17	109.39	82.25	36.79	29.37	18.40
HP 039	2	70.66	53.20	25.77	20.57	14.67	73.00	57.00	28.00	24.00	17.20
	3	36.57	32.28	18.00	13.38	8.00	40.90	36.33	21.88	18.80	11.20
	4	26.57	23.27	12.46	8.80	5.58	31.50	28.22	17.22	9.30	6.70
HP 050	1	31.75	30.30	13.16	12.3	7.29	47.33	34.25	21.50	20.50	14.71
	2	24.25	21.26	11.70	9.09	4.90	29.10	25.95	14.04	10.90	5.88
	3	17.37	16.25	8.90	7.18	3.63	20.85	19.50	10.68	8.61	4.36
	4	12.12	10.75	6.10	5.75	3.08	14.55	12.90	7.32	6.90	3.69
	5	7.00	6.56	3.60	3.10	2.25	9.86	9.34	6.40	4.80	2.50
HP 135	1	20.33	18.80	9.71	8.66	4.78	29.16	25.33	13.00	12.47	5.92
	2	11.14	10.16	6.60	6.38	2.22	14.28	11.04	7.86	7.60	4.44
	3	6.48	6.33	3.38	3.16	2.14	8.96	7.46	4.89	4.16	3.07

TYPICAL FILTER SIZING Selection Software

Step 1 Select "FILTERS"



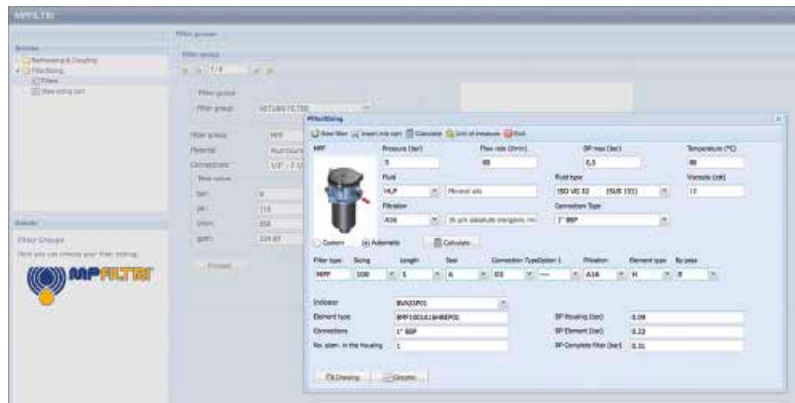
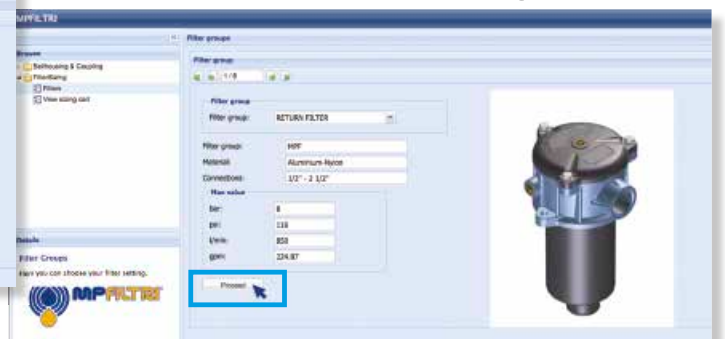
Step 2 Choose filter group (Return Filter, Pressure Filter, etc.)



Step 3 Choose filter type (MPF, MPT, etc.) in function of the max working pressure and the max flow rate



Step 4 Push "PROCEED"



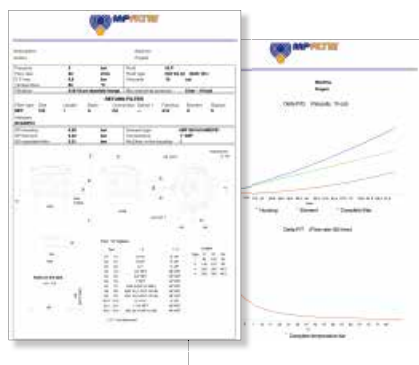
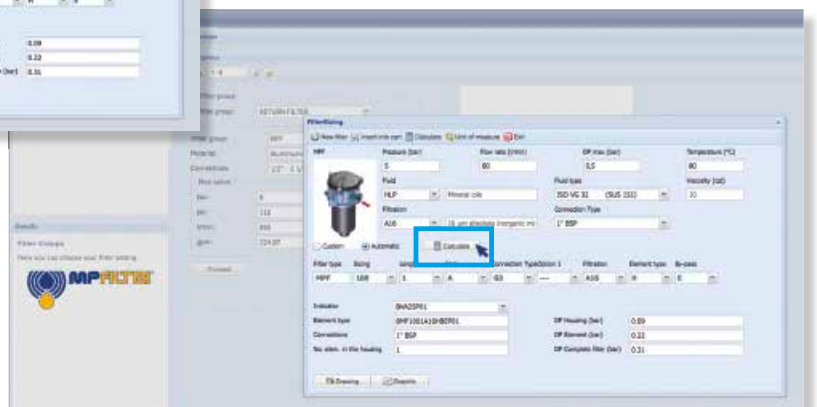
Step 5

Insert all application data to calculate the filter size following the sequence:

- working pressure
- working flow rate
- working pressure drop
- working temperature
- fluid material and fluid type
- filtration media
- connection type

Step 6

Push "CALCULATE" to have result; in case of any mistake, the system will advice which parameter is out of range to allow to modify/adjust the selection



Step 7

Download PDF Datasheet "Report.aspx" pushing the button "Drawing"

Stainless steel high pressure filters are used as process filters to protect individual valves or the entire hydraulic circuit from contamination as per ISO 4406.

6 versions are available with operating pressures ranging from 320 bar up to 1000 bar.

A range of products is available to resolve all filter mounting problems, in the following configurations:

- **FZP In-line pressure filter with threaded mount**
- **FZH In-line pressure filter with threaded mount for higher pressure**
- **FZX In-line pressure filter with threaded mount up to 1000 bar**
- **FZB Manifold side mounting**
- **FZM Manifold top mounting**
- **FZD Duplex pressure filter for continuous operation requirements**

FZ stainless steel filters are specifically designed for applications in the:

- **Process engineering**
- **Water hydraulics**
- **Offshore technology**
- **Marine technology**
- **High pressure hydraulics**
- **Any application in harsh or aggressive environment**

FILTER SIZING

For the proper corrective factor Y [click here](#)

Stainless steel high pressure filters



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FZP series

Maximum working pressure up to 42 Mpa (420 bar) - Flow rate up to 150 l/min



Description

Technical data

Stainless steel high pressure filters

In-line

Maximum working pressure up to 42 Mpa (420 bar)
Flow rate up to 150 l/min

FZP 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 1/4" female threaded connections, for a maximum flow rate of 150 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 "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 (-25 °C to +110 °C)
- Optional FPM series V (-20 °C to +120 °C)
- Optional MFQ series F (-50 °C to +120 °C)

Bypass valve

Opening pressure 6 bar ±10%

Temperature

From -50 °C to +120 °C

Note

FZP filters are provided for vertical mounting

Δp element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series R: 20 bar.

Element series "R":

- End cap: Nylon
- Core tube: Tinned Steel
- External/Internal support: Wire mesh Epox painted
- Media/Support/Pre-filter: Microfibre/Syntetic

Microfibre filter elements - series S: 210 bar.

Element series "S":

- End cap: Tinned Steel
- Core tube: Tinned Steel
- External support: Wire mesh Epox painted
- Internal support: Wire mesh Stainless Steel
- Media/Support/Pre-filter: Microfibre/Syntetic

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/Syntetic



Weights [kg] and volumes [dm³]

Filter series	Weights [kg]				Volumes [dm³]					
	Length	1	2	3	4	Length	1	2	3	4
FZP 039	-	-	4.5	5.1	5.6	-	-	0.19	0.26	0.34
FZP 136	8.3	8.3	10.2	11.5	-	0.45	0.78	1.00	-	-

Filter series	Length	Filter element design - R Series					Filter element design - S-U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
FZP 039	2	19	25	43	50	59	19	23	41	45	55
	3	34	37	53	62	74	31	34	48	52	66
	4	42	46	63	72	81	38	41	55	71	78
FZP 136	1	63	67	102	108	136	47	53	87	89	127
	2	95	100	122	123	159	81	95	113	115	138
	3	122	124	148	150	160	106	116	135	141	151

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 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.

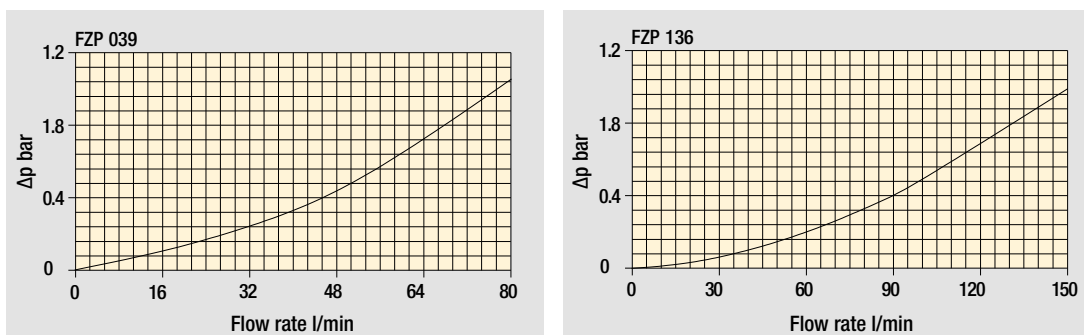
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure. Please, contact our Sales Department for further additional information.

Hydraulic symbols

Filter series	Style S	Style B	Style T	Style D	Style V	Style Z
FZP 039	•	•	•	•	•	•
FZP 136	•	•	•	•	•	•

Pressure drop

Filter housings Δp pressure drop



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	Configuration example: FZP039	2	B	F	B	2	A03	U	P01
FZP039									
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									
V FPM									
F MFQ									
Connections									
A G 1/2"									
B 1/2" NPT									
C SAE 8 - 3/4" - 16 UNF									
Connections for differential indicators									
1 Without									
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						Execution
	S	B	T	D	V	Z	
R 20 bar		•		•		•	P01 MP Filtri standard
S 210 bar	•		•		•		Pxx Customized
U 210 bar, stainless steel filter element	•	•	•	•	•	•	

FILTER ELEMENT

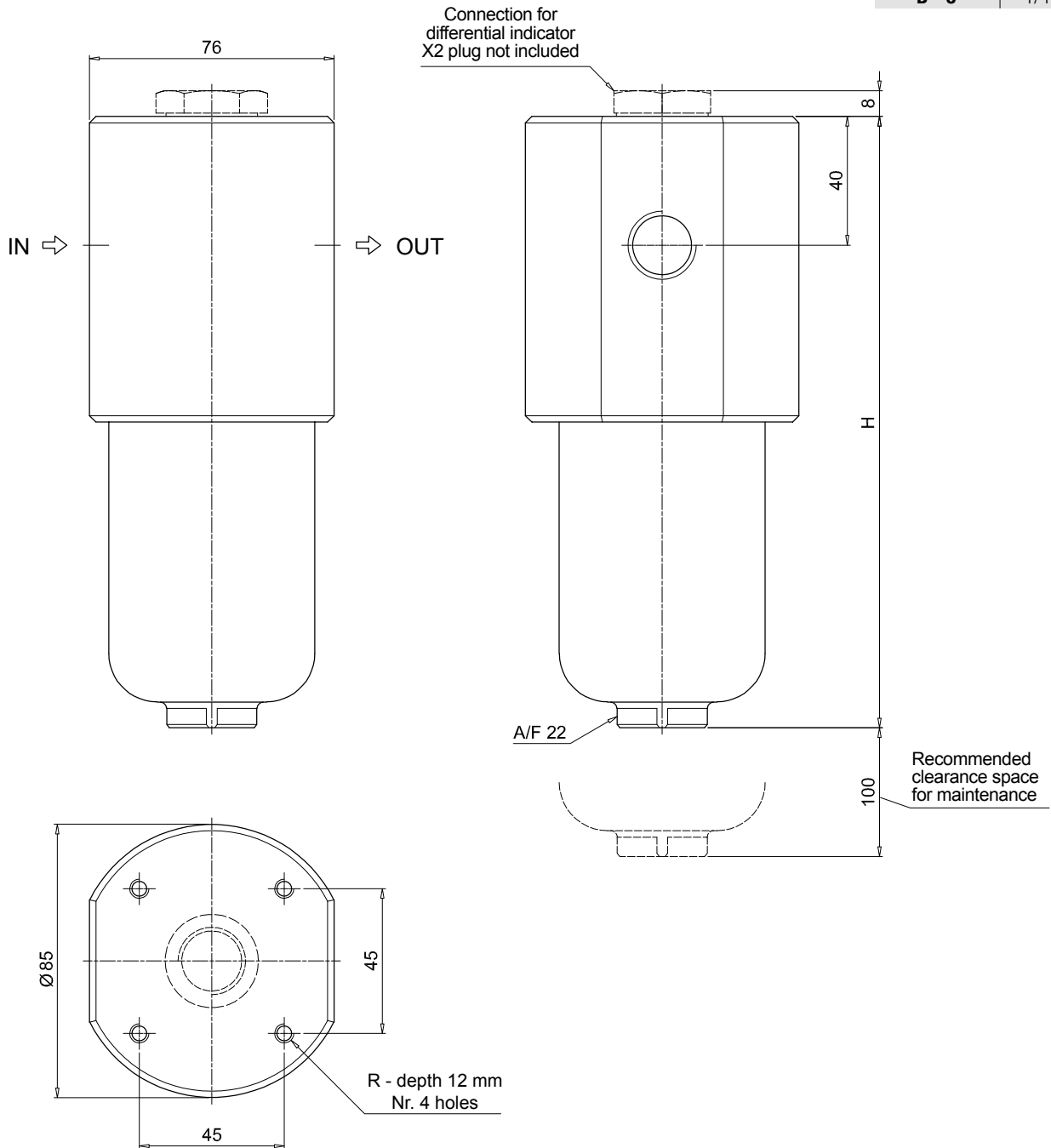
Element series and size	Configuration example: HP039	2	A03	F	U	P01
HP039						
Element length						
2 3 4						
Filtration rating (filter media)						
A03 Inorganic microfiber 3 µm						
A06 Inorganic microfiber 6 µm						
A10 Inorganic microfiber 10 µm						
A16 Inorganic microfiber 16 µm						
A25 Inorganic microfiber 25 µm						

Seals	Element Δp	Valves						Execution
		S	B	T	D	V	Z	
A NBR	R 20 bar		•		•		•	P01 MP Filtri standard
V FPM	S 210 bar	•		•		•		Pxx Customized
F MFQ	U 210 bar, stainless steel filter element	•	•	•	•	•	•	

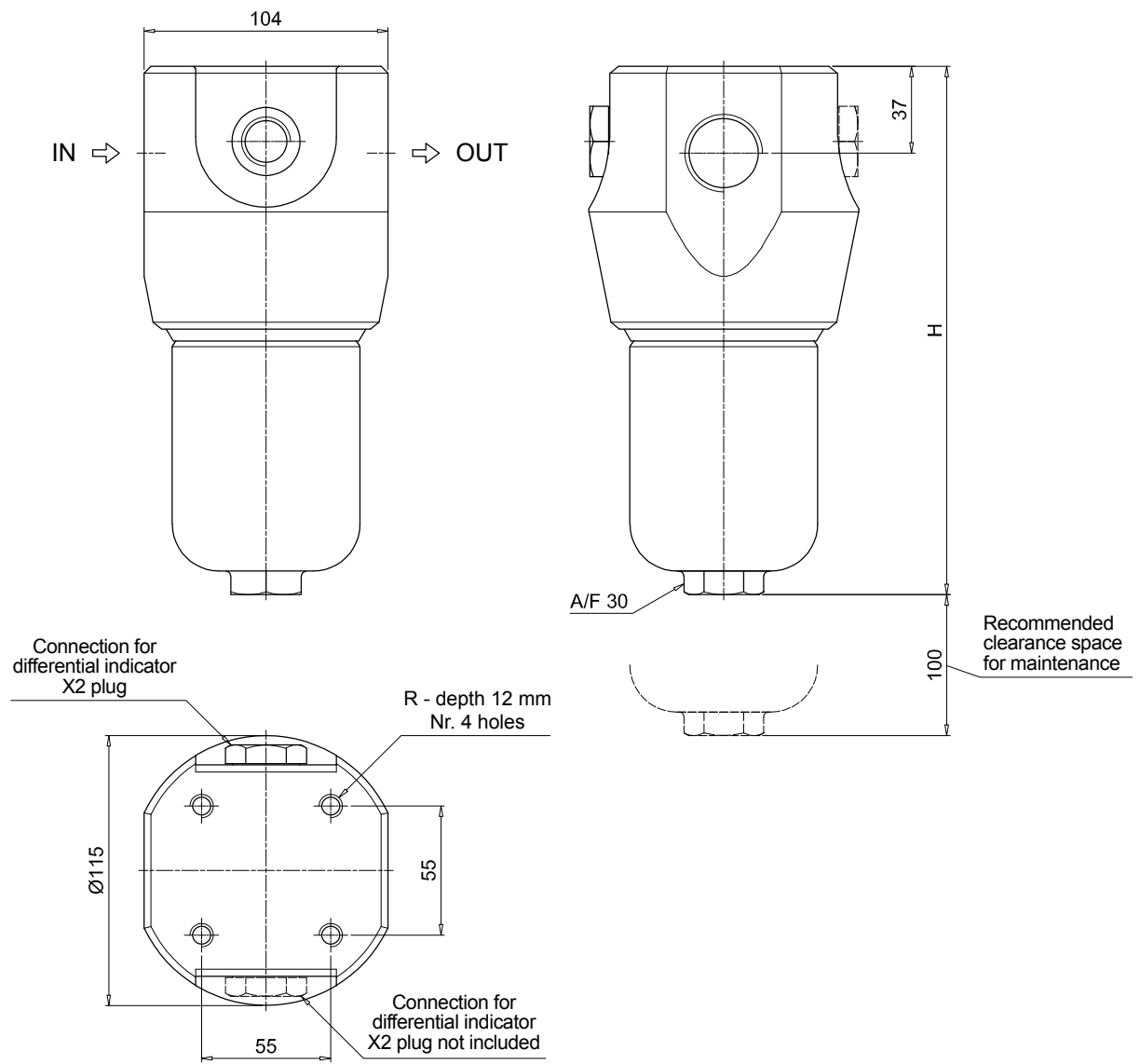
ACCESSORIES

Differential indicators	page		page
DEH Hazardous area electronic differential indicator	632	DVX Visual differential indicator	633
DEX Electrical differential indicator	633	DVY Visual differential indicator	634
DLX Electrical / visual differential indicator	633		
Additional features	page		
X2 Plug	634		

FZP039	
Filter length	H [mm]
2	179
3	222
4	266
Connections	R
A	M6
B - C	1/4" UNC



FZP136	
Filter length	H [mm]
1	222
2	335
3	410
Connections	R
A	M10
B - C	3/8" UNC
D	M10
E - F	3/8" UNC
G	M10
H - I	3/8" UNC



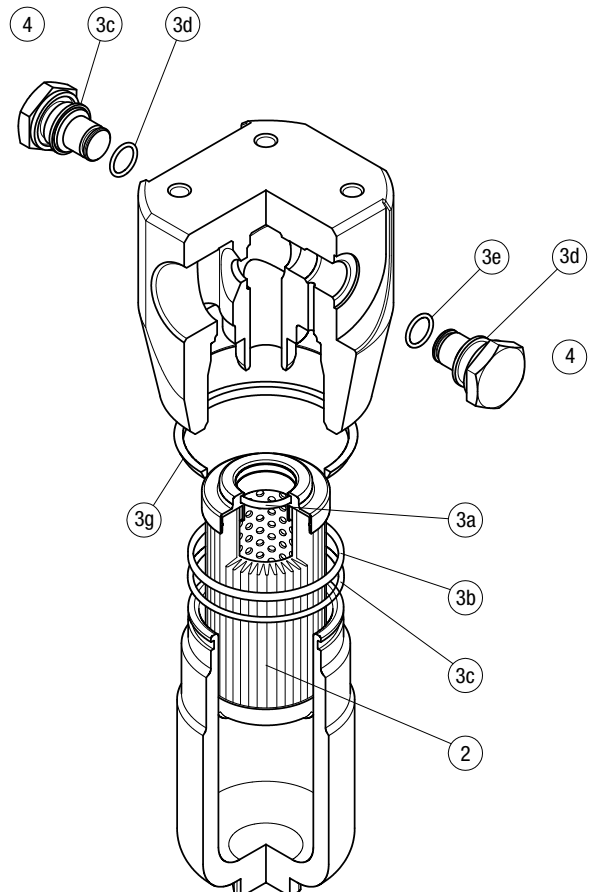
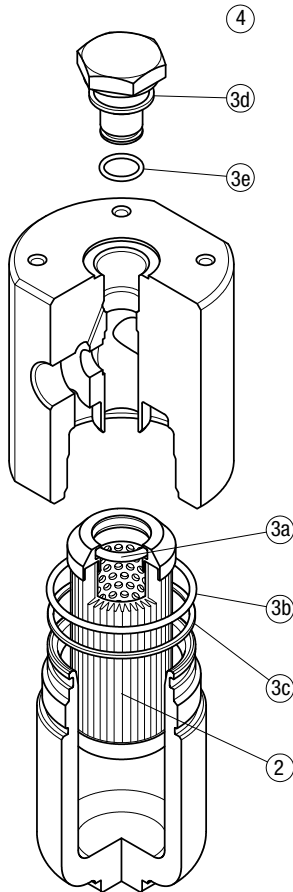
The position of the X2 plug is reversible

FZP SPARE PARTS

Order number for spare parts

FZP 039

FZP 136



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
FZP 039	See order table	NBR	FPM	NBR	FPM
		02050299	02050300	X2H	X2V
FZP 136		02050636	02050637		

FZH series

Maximum working pressure up to 70 Mpa (700 bar) - Flow rate up to 50 l/min



Description

Technical data

Stainless steel high pressure filters

In-line

Maximum working pressure up to 70 Mpa (700 bar)
Flow rate up to 50 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 50 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 (-25 °C to +110 °C)
- Optional FPM series V (-20 °C to +120 °C)
- Optional MFQ series F (-50 °C to +120 °C)

Bypass valve

Opening pressure 6 bar \pm 10%

Temperature

From -50 °C to +120 °C

Note

FZH filters are provided for vertical mounting

Δp 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: Nylon
- Core tube: Tinned Steel
- External/Internal support: Wire mesh Epox painted
- Media/Support/Pre-filter: Microfibre/Syntetic

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

Element series "H - S":

- End cap: Tinned Steel
- Core tube: Tinned Steel
- External support: Wire mesh Epox painted
- Internal support: Wire mesh Stainless Steel
- Media/Support/Pre-filter: Microfibre/Syntetic

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/Syntetic



Weights [kg] and volumes [dm³]

Filter series	Weights [kg]				Volumes [dm ³]					
	Length	1	2	3	4	Length	1	2	3	4
FZH 010-011		2.1	2.2	2.7	3.3		0.10	0.12	0.15	0.20
FZH 039		-	7.8	8.9	10.1		-	0.19	0.26	0.34

FILTER ASSEMBLY SIZING Flow rates [l/min]

Filter series	Length	Filter element design - R Series					Filter element design - S-U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
FZH 010	1	4	6	8	9	11	4	5	6	7	9
	2	7	9	17	20	26	5	7	14	17	23
	3	11	14	25	27	32	11	14	24	27	32
	4	17	20	29	31	34	13	16	26	29	33
FZH 011	1	4	6	8	9	11	3	5	6	7	9
	2	7	9	17	21	28	5	7	14	17	24
	3	11	14	26	30	37	11	14	25	29	36
	4	17	21	32	36	40	12	16	28	32	38
FZH 039	2	19	25	43	50	59	19	23	41	45	55
	3	34	37	53	62	74	31	34	48	52	66
	4	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 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.

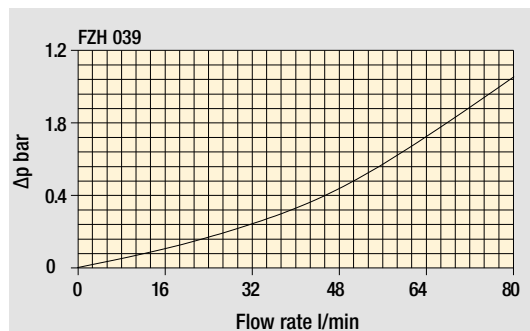
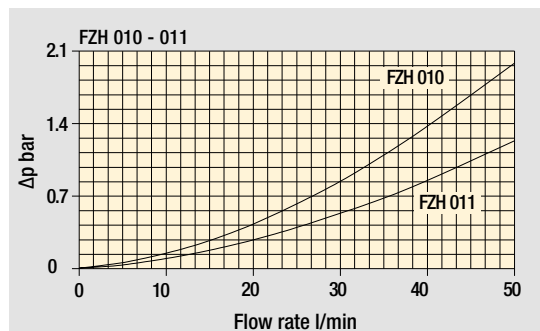
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure. Please, contact our Sales Department for further additional information.

Hydraulic symbols

Filter series	Style S	Style B	Style T	Style D	Style V	Style Z
FZH 010-011	•	•	•	•	•	•
FZH 039	•	•	•	•	•	•

Pressure drop

Filter housings Δp pressure drop



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 **FZH010** | **FZH011** Configuration example: **FZH010** **2** **B** **F** **B** **2** **A03** **U** **P01**

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

Connections for differential indicator
1 Without
2 With connection on the top

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	V	Z
N 20 bar		•		•
H 210 bar		•	•	
U 210 bar, stainless steel filter element	•	•	•	•

Execution	
P01 MP Filtri standard	
Pxx Customized	

FILTER ELEMENT

Element series and size **HP011** Configuration example: **HP011** **2** **A03** **F** **U** **P01**

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

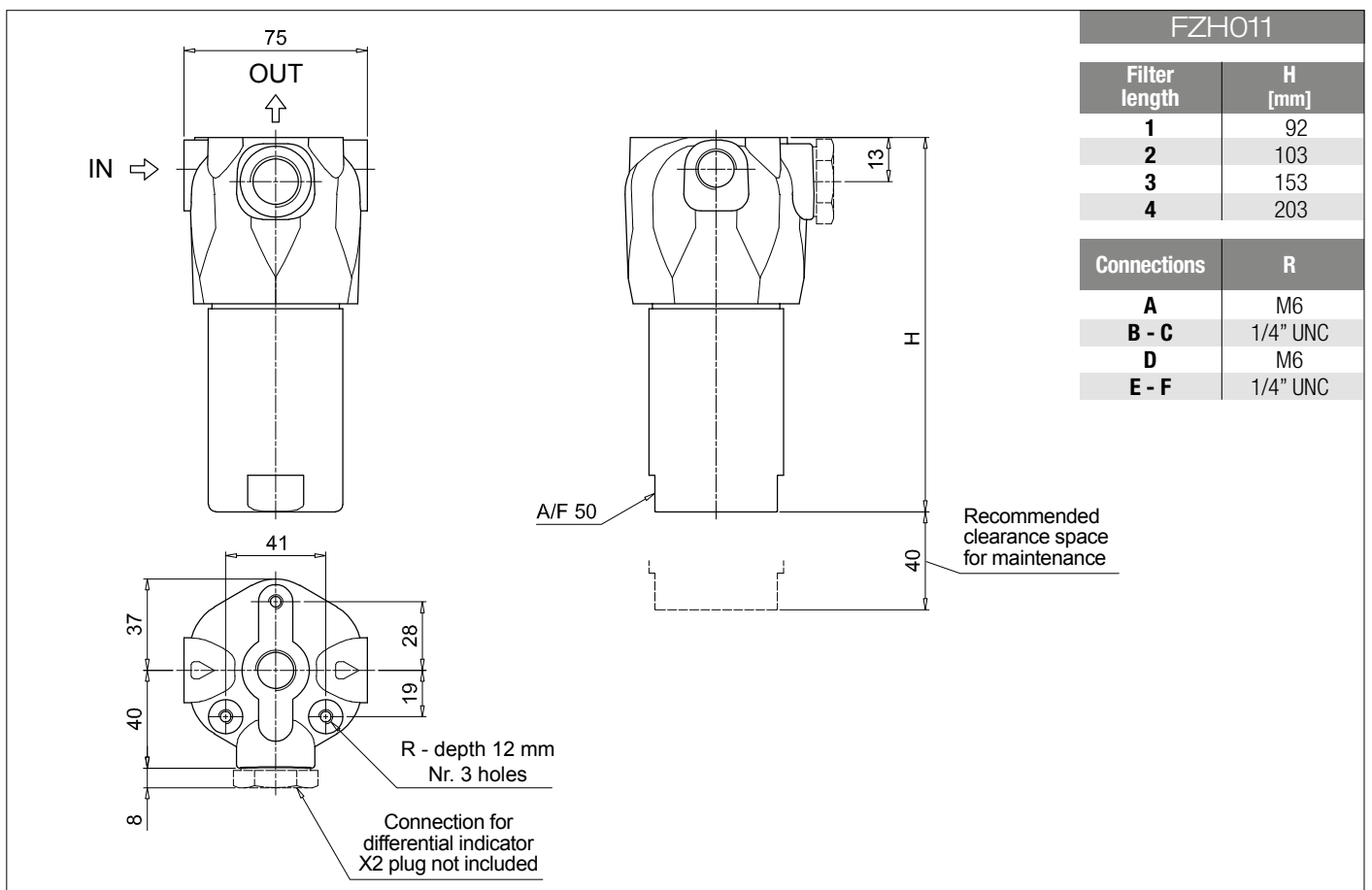
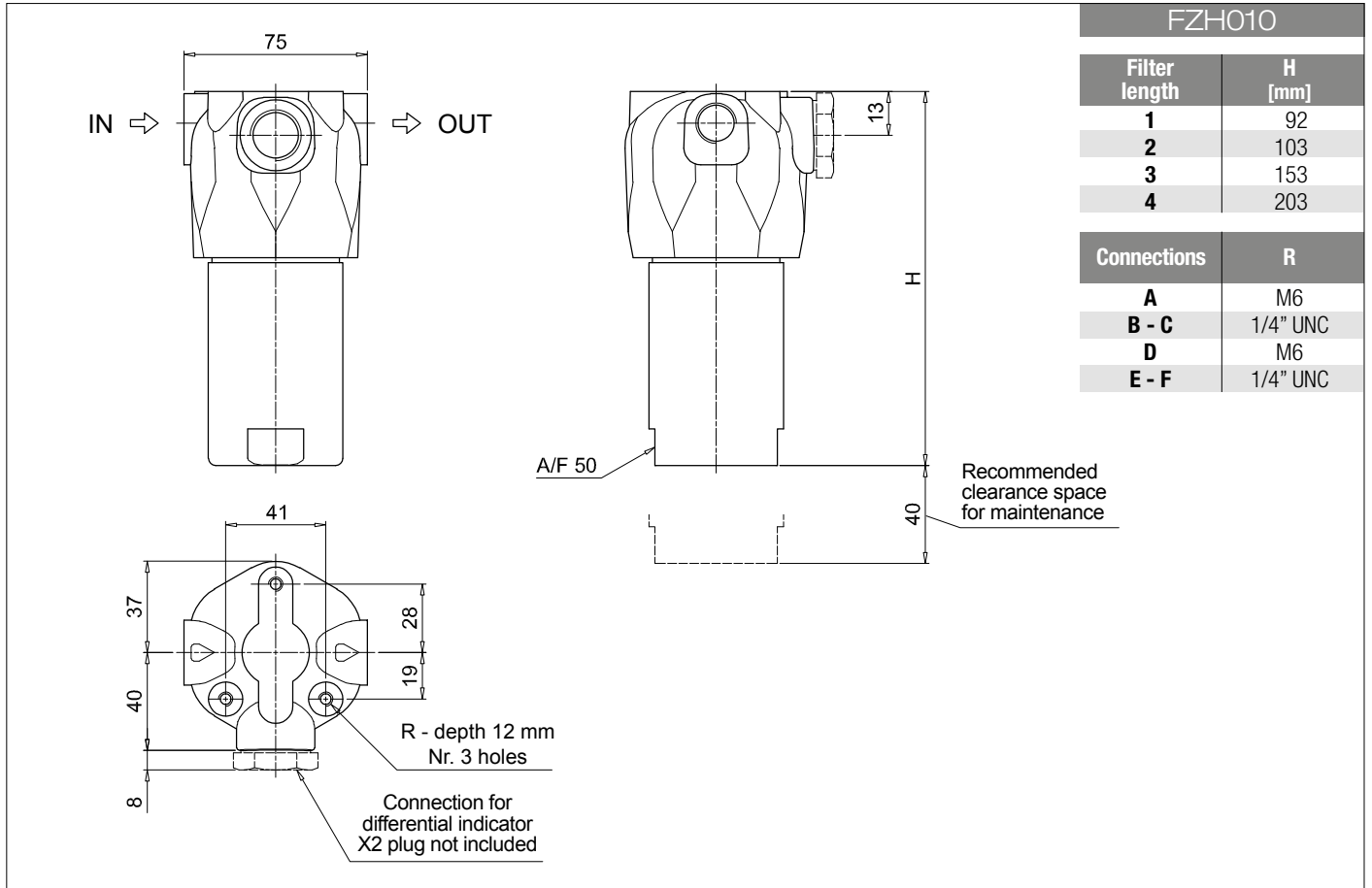
Filtration rating (filter media)	
A03 Inorganic microfiber	3 µm
A06 Inorganic microfiber	6 µm
A10 Inorganic microfiber	10 µm
A16 Inorganic microfiber	16 µm
A25 Inorganic microfiber	25 µm

Seals	Element Δp	Valves			
		S	B	V	Z
A NBR	N 20 bar		•		•
V FPM	H 210 bar		•	•	
F MFQ	U 210 bar, stainless steel filter element	•	•	•	•

Execution	
P01 MP Filtri standard	
Pxx Customized	

ACCESSORIES

Differential indicators	page		page
DEH Hazardous area electronic differential indicator	632	DVX Visual differential indicator	633
DEX Electrical differential indicator	633	DVY Visual differential indicator	634
DLX Electrical / visual differential indicator	633		
Additional features	page		
X2 Plug	634		



Designation & Ordering code

COMPLETE FILTER

Series and size **FZH039** Configuration example: **FZH039** **2** **T** **A** **A** **2** **A03** **S** **P01**

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
V FPM
F MFQ

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

Connections for differential indicator
1 Without
2 With connection on the top

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
R 20 bar		•		•		•
S 210 bar	•		•		•	
U 210 bar, stainless steel filter element	•	•	•	•	•	•

Execution	
P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Element series and size **HP039** Configuration example: **HP039** **2** **A03** **A** **S** **P01**

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

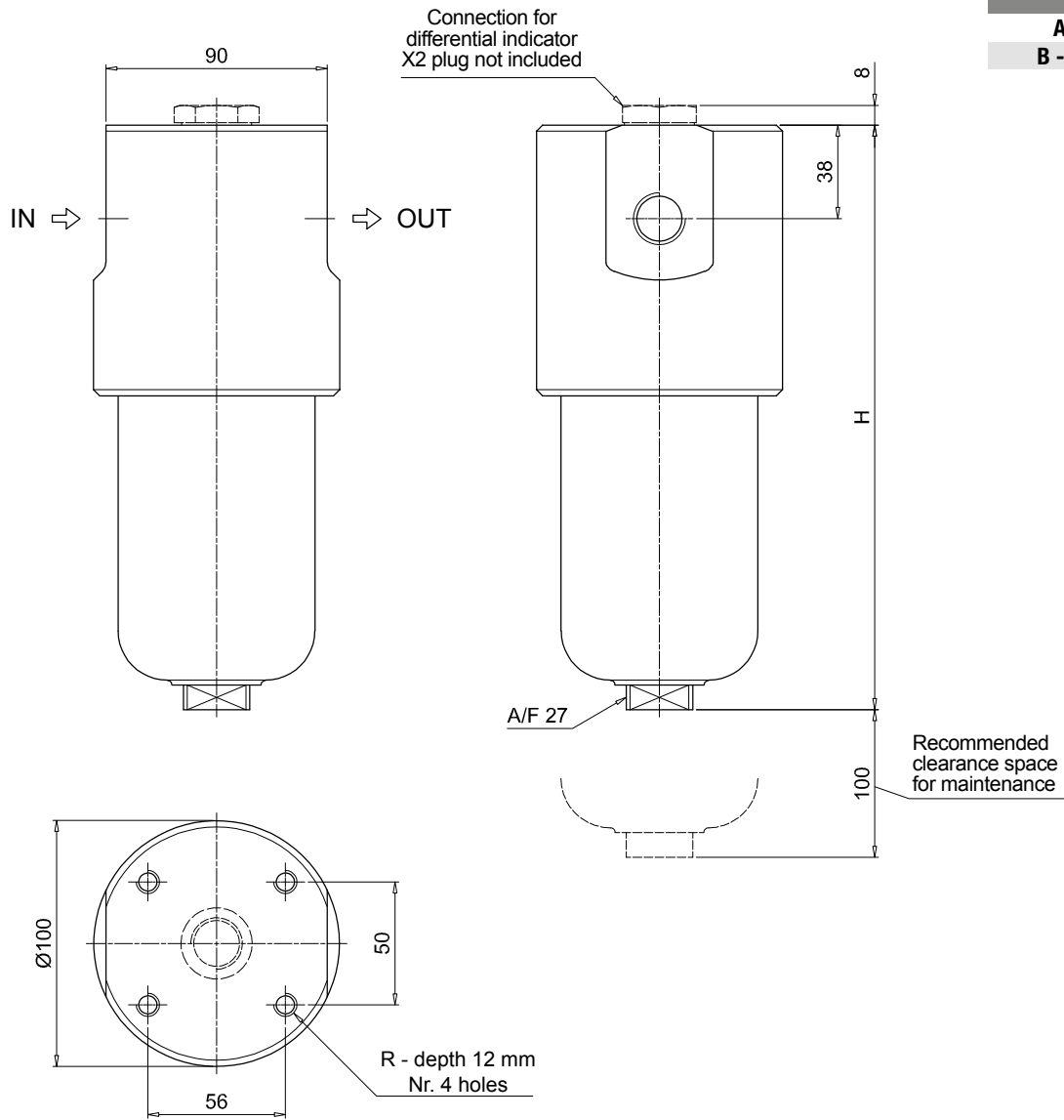
Seals	Element Δp	Valves					
		S	B	T	D	V	Z
A NBR	R 20 bar		•		•		•
V FPM	S 210 bar	•		•		•	
F MFQ	U 210 bar, stainless steel filter element	•	•	•	•	•	•

Execution	
P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Differential indicators	page		page
DEH Hazardous area electronic differential indicator	632	DVX Visual differential indicator	633
DEX Electrical differential indicator	633	DVY Visual differential indicator	634
DLX Electrical / visual differential indicator	633		
Additional features	page		
X2 Plug	634		

FZH039	
Filter length	H [mm]
2	200
3	243
4	287
Connections	R
A	M10
B - C	3/8" UNC

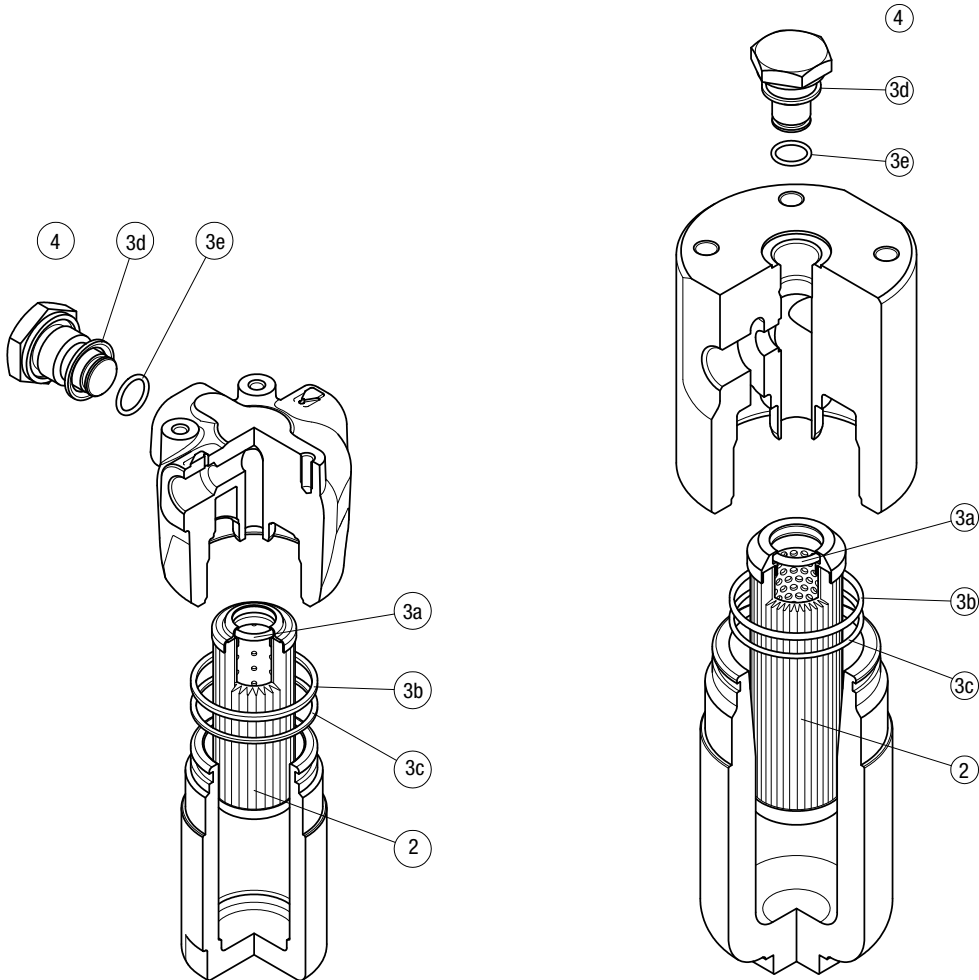


FZH SPARE PARTS

Order number for spare parts

FZH 010 - 011

FZH 039



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 010-011	See order table	NBR	FPM	NBR	FPM
FZH 039	See order table	02050501	02050492	X2H	X2V
		02050335	02050336		

FZX series

Maximum working pressure up to 100 Mpa (1000 bar) - Flow rate up to 10 l/min



Description

Technical data

Stainless steel high pressure filters

In-line

Maximum working pressure up to 100 Mpa (1000 bar)
Flow rate up to 10 l/min

FZX 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 10 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- High collapse filter element "H", for use with filters not provided with 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 (-25 °C to +110 °C)
- Optional FPM series V (-20 °C to +120 °C)
- Optional MFQ series F (-50 °C to +120 °C)

Bypass valve

Opening pressure 6 bar ±10%

Temperature

From -50 °C to +120 °C

Note

FZX filters are provided for vertical mounting

Δp element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series H: 210 bar.

Element series "H":

- 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



Weights [kg] and volumes [dm³]

Filter series	Weights [kg]					Volumes [dm ³]				
	Length	1	2	3	4	Length	1	2	3	4
FZX 011	-	-	6.5	-	-	-	-	0.15	-	-

Filter series	Length	Filter element design - H-U Series				
		A03	A06	A10	A16	A25
FZX 011	3	1.57	1.63	1.73	1.74	1.77

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

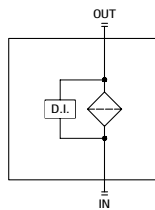
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

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.

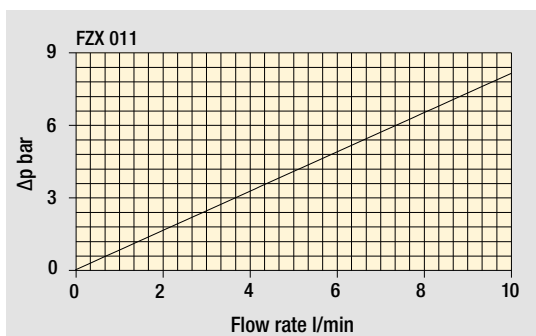
Hydraulic symbols

Filter series	Style S
FZX 011	•

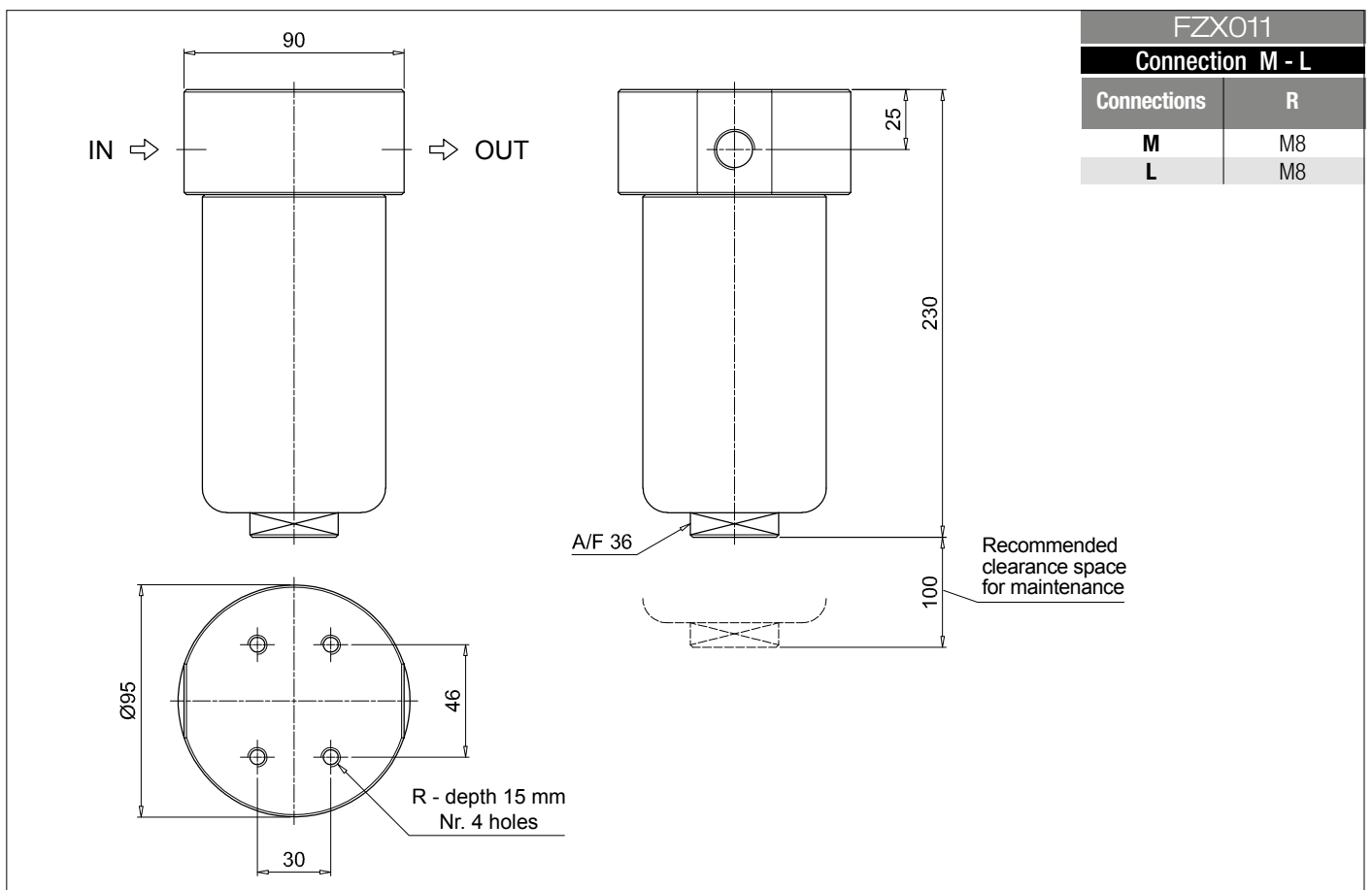
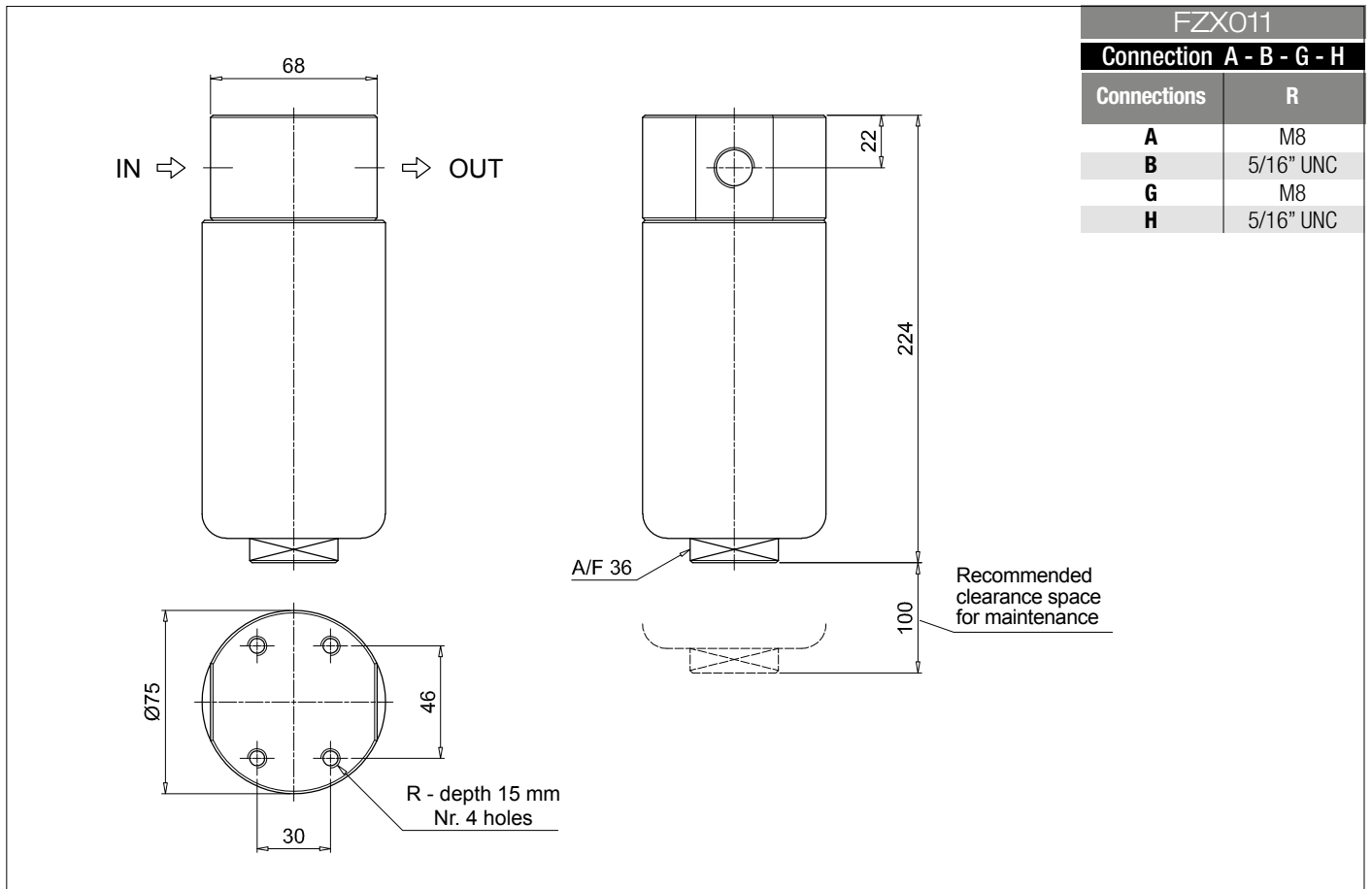


Pressure drop

Filter housings Δp pressure drop

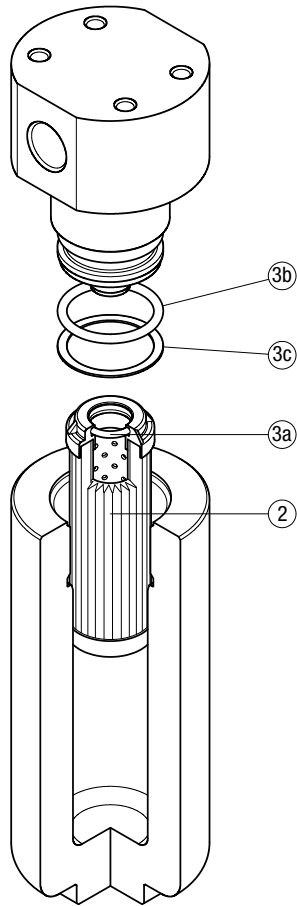


The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968. Δp varies proportionally with density.



Order number for spare parts

FZX 011



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
FZX 011	See order table	NBR	FPM
	2	02050643	02050644
		3 (3a + 3c)	

FZM series

Maximum working pressure up to 32 Mpa (320 bar) - Flow rate up to 70 l/min



Description

Technical data

Stainless steel high pressure filters

Manifold

Maximum working pressure up to 32 Mpa (320 bar)
Flow rate up to 70 l/min

FZM 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 top of the manifold, through the proper flanged interface.

Available features:

- Manifold connections up to Ø15 mm, for a maximum flow rate of 70 l/min
- ISO 4401 CETOP 3 and CETOP 5 interface, for direct mounting on the CETOP valves.
- 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 "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 (-25 °C to +110 °C)
- Optional FPM series V (-20 °C to +120 °C)
- Optional MFQ series F (-50 °C to +120 °C)

Bypass valve

Opening pressure 6 bar ±10%

Temperature

From -50 °C to +120 °C

Note

FZM filters are provided for vertical mounting

Δp element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series R: 20 bar.

Element series "R":

- End cap: Nylon
- Core tube: Tinned Steel
- External/Internal support: Wire mesh Epox painted
- Media/Support/Pre-filter: Microfibre/Syntetic

Microfibre filter elements - series S: 210 bar.

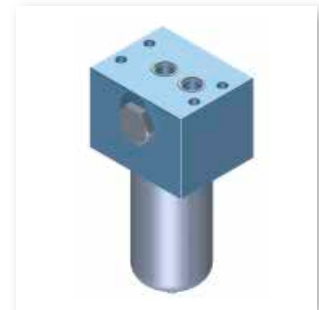
Element series "S":

- End cap: Tinned Steel
- Core tube: Tinned Steel
- External support: Wire mesh Epox painted
- Internal support: Wire mesh Stainless Steel
- Media/Support/Pre-filter: Microfibre/Syntetic

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/Syntetic



Weights [kg] and volumes [dm³]

Filter series	Weights [kg]					Volumes [dm ³]				
	Length	1	2	3	4	Length	1	2	3	4
FZM 039	-	5.0	5.6	6.1		-	0.19	0.26	0.34	

Filter series	Length	Filter element design - R Series					Filter element design - S-U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
FZM 039	2	19	25	41	47	54	19	23	39	43	51
	3	33	36	50	56	65	30	33	45	49	60
	4	41	44	58	64	70	37	39	51	63	68

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

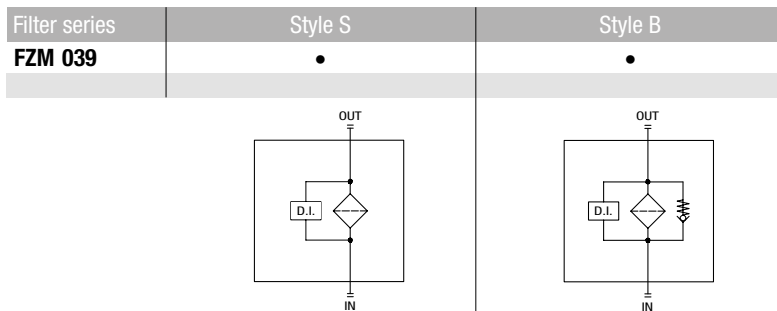
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

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.

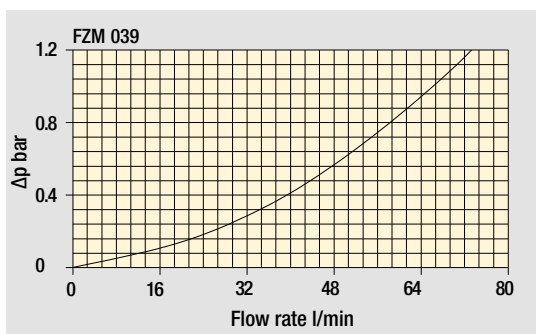
Please, contact our Sales Department for further additional information.

Hydraulic symbols



Pressure drop

Filter housings Δp pressure drop



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 FZM039	Configuration example: FZM039	2	S	A	M	1	A10	H	P01
Length 2 3 4									
Valves S Without bypass B With bypass 6 bar									
Seals A NBR V FPM F MFQ									
Connections M Manifold									
Connection for differential indicator 1 Without 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		Execution
	S	B	
R 20 bar		•	P01 MP Filtri standard
S 210 bar	•		Pxx Customized
U 210 bar, stainless steel filter element	•	•	

FILTER ELEMENT

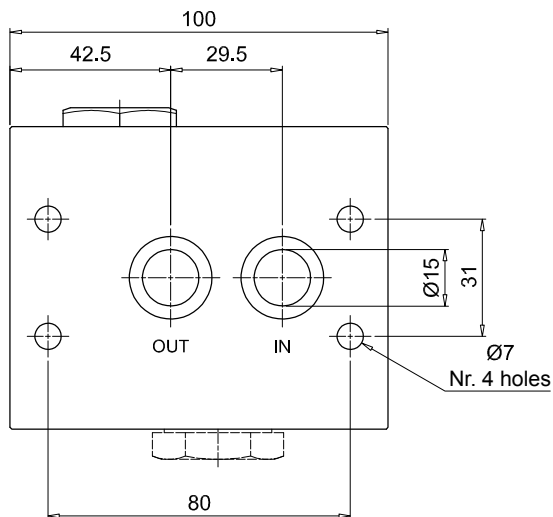
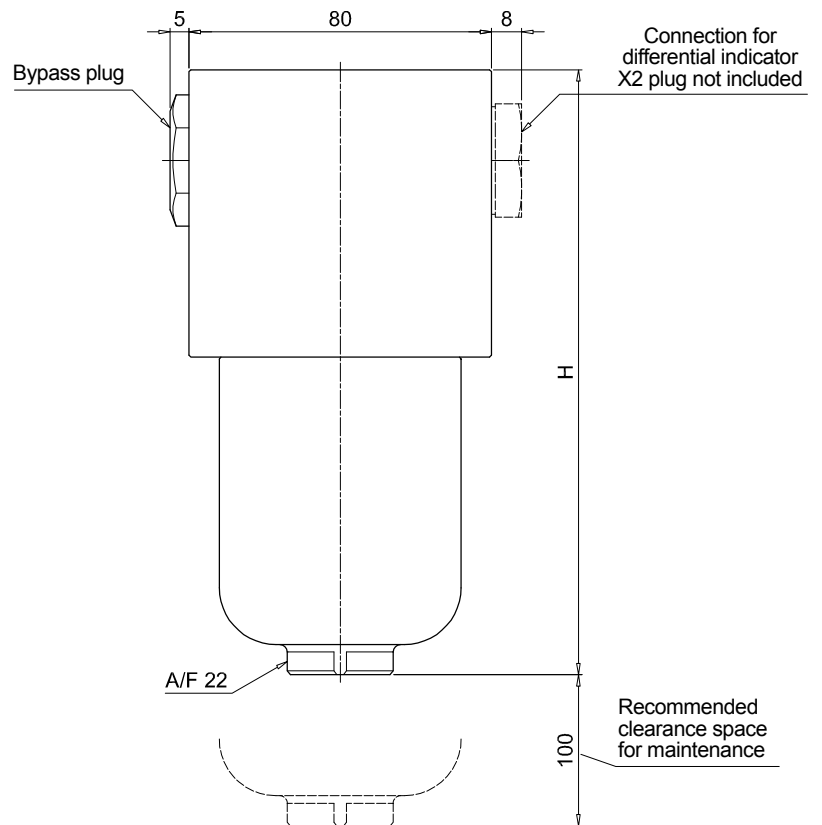
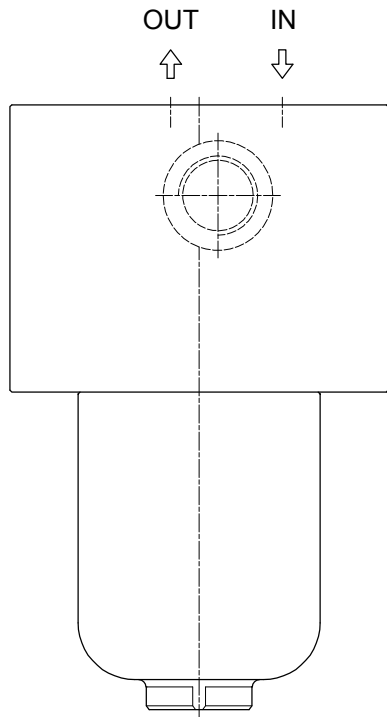
Element series and size HP039	Configuration example: HP039	3	A10	A	S	P01
Element length 2 3 4						
Filtration rating (filter media) A03 Inorganic microfiber 3 µm A06 Inorganic microfiber 6 µm A10 Inorganic microfiber 10 µm A16 Inorganic microfiber 16 µm A25 Inorganic microfiber 25 µm						

Seals	Element Δp	Execution
A NBR	R 20 bar	P01 MP Filtri standard
V FPM	S 210 bar	Pxx Customized
F MFQ	U 210 bar, stainless steel filter element	

ACCESSORIES

Differential indicators	page		page
DEH Hazardous area electronic differential indicator	632	DVX Visual differential indicator	633
DEX Electrical differential indicator	633	DVY Visual differential indicator	634
DLX Electrical / visual differential indicator	633		
Additional features	page		
X2 Plug	634		

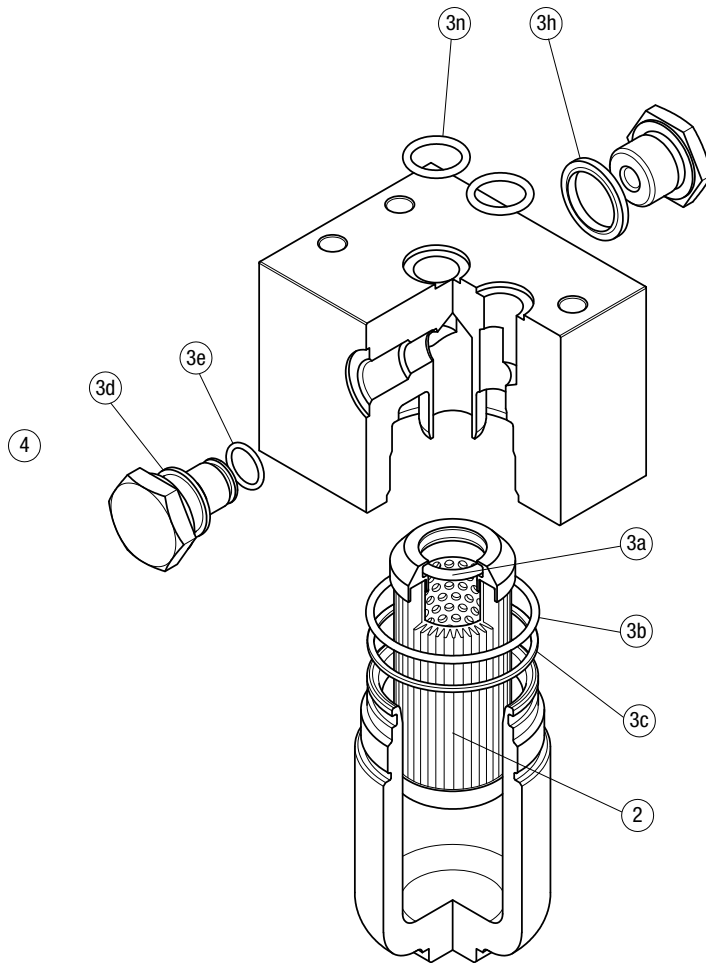
FZM039	
Filter length	H [mm]
2	160
3	203
4	247



FZM SPARE PARTS

Order number for spare parts

FZM 039



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
FZM 039	See order table	NBR	FPM	NBR	FPM
	2	3 (3a ÷ 3n)		4	
		02050651	02050652	X2H	X2V

FZB series

Maximum working pressure up to 32 Mpa (320 bar) - Flow rate up to 75 l/min



Description

Technical data

Stainless steel high pressure filters

Manifold

Maximum working pressure up to 32 Mpa (320 bar)
Flow rate up to 75 l/min

FZB 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 side of the manifold, through the proper flanged interface.

Available features:

- Manifold connections up to Ø16 mm, for a maximum flow rate of 75 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 "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 (-25 °C to +110 °C)
- Optional FPM series V (-20 °C to +120 °C)
- Optional MFQ series F (-50 °C to +120 °C)

Bypass valve

Opening pressure 6 bar ±10%

Temperature

From -50 °C to +120 °C

Note

FZB filters are provided for vertical mounting

Δp element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series R: 20 bar.

Element series "R":

- End cap: Nylon
- Core tube: Tinned Steel
- External/Internal support: Wire mesh Epox painted
- Media/Support/Pre-filter: Microfibre/Syntetic

Microfibre filter elements - series S: 210 bar.

Element series "S":

- End cap: Tinned Steel
- Core tube: Tinned Steel
- External support: Wire mesh Epox painted
- Internal support: Wire mesh Stainless Steel
- Media/Support/Pre-filter: Microfibre/Syntetic

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/Syntetic



Weights [kg] and volumes [dm³]

Filter series	Weights [kg]				Volumes [dm ³]					
	Length	1	2	3	4	Length	1	2	3	4
FZB 039	-	-	4.6	5.2	5.7	-	-	0.19	0.26	0.34

Filter series	Length	Filter element design - R Series					Filter element design - S Series					Filter element design - U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
FZB 039	2	18	23	39	44	52	18	22	37	40	48	18	22	37	40	48
	3	31	33	47	54	65	28	31	43	46	84	28	31	43	46	84
	4	38	41	56	63	71	34	36	48	62	68	34	36	48	62	68

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 mm²/s (cSt) and a density of 0.86 kg/dm³.

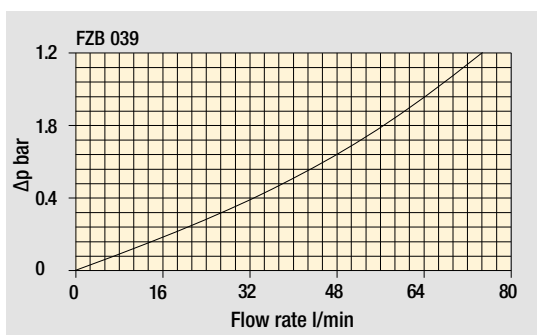
For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.

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
FZB 039	•	•	•	•



The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968. Δp varies proportionally with density.

Pressure drop
Filter housings Δp pressure drop

Designation & Ordering code

COMPLETE FILTER

Configuration example: **FZB039** | **2** | **T** | **A** | **F** | **2** | **A06** | **S** | **P01**

Series and size
FZB039

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

Seals
A NBR
V FPM
F MFQ

Connections
F Manifold

Connections for differential indicator
1 Without
2 With connection on the top

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				Execution
	S	B	T	D	
R 20 bar		•		•	P01 MP Filtri standard
S 210 bar	•		•		Pxx Customized
U 210 bar, stainless steel filter element	•	•	•	•	

FILTER ELEMENT

Configuration example: **HP039** | **2** | **A06** | **A** | **S** | **P01**

Element series and size
HP039

Element length
2 | 3 | 4

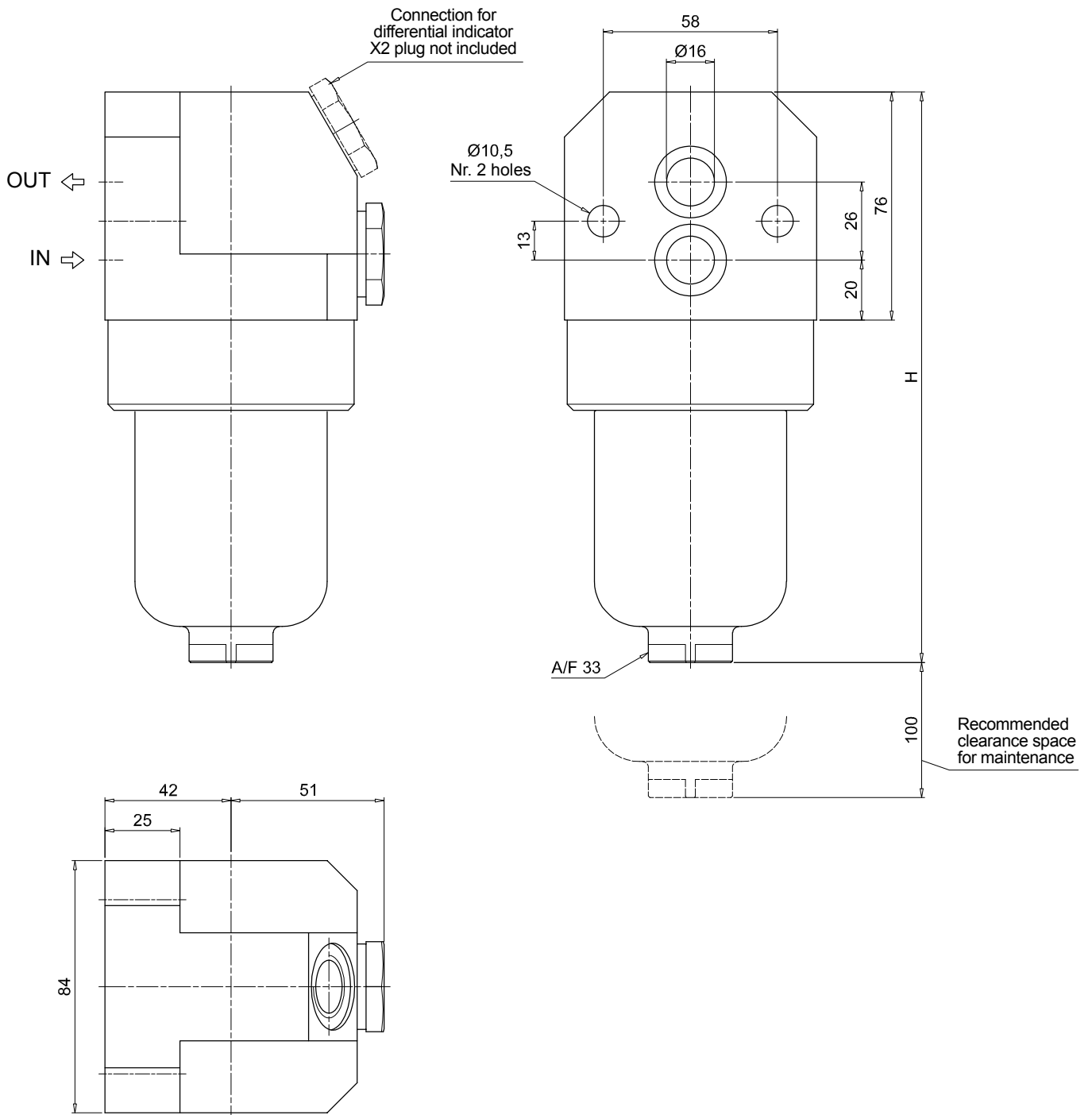
Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm

Seals	Element Δp	Execution
V FPM	S 210 bar	Pxx Customized
F MFQ	U 210 bar, stainless steel filter element	

ACCESSORIES

Differential indicators	page		page
DEH Hazardous area electronic differential indicator	632	DVX Visual differential indicator	633
DEX Electrical differential indicator	633	DVY Visual differential indicator	634
DLX Electrical / visual differential indicator	633		
Additional features	page		
X2 Plug	634		

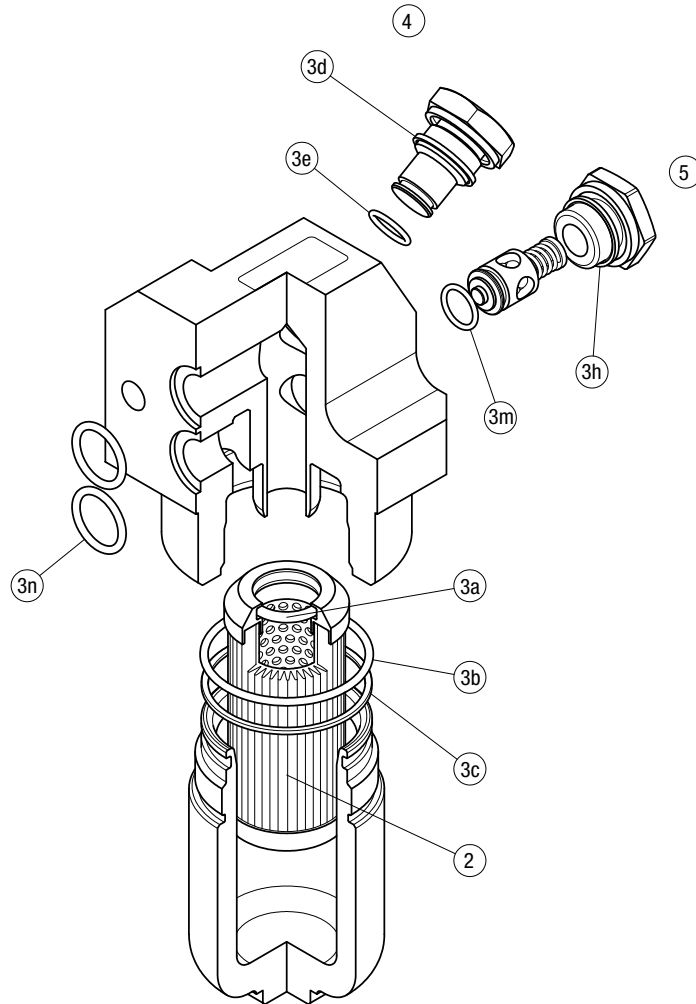
FZB039	
Filter length	H [mm]
2	190
3	233
4	277



FZB SPARE PARTS

Order number for spare parts

FZB 039



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug		Bypass assembly / plug	
		NBR	FPM	NBR	FPM	NBR	FPM
FZB 039	See order table	02050647	02050648	X2H	X2V	02001286	02001295

FZD series

Maximum working pressure up to 35 Mpa (350 bar) - Flow rate up to 90 l/min



Description

Technical data

Stainless steel high pressure filters

Duplex

Maximum working pressure up to 35 Mpa (350 bar)
Flow rate up to 90 l/min

FZD is a range of stainless steel high pressure duplex filter with integrated changeover function to allow the filter element replacement without the system shut-down. They are directly connected to the lines of the system through the hydraulic fittings.

Available features:

- Female threaded connections up to 3/4", for a maximum flow rate of 90 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Balancing valve, available for FZD051, to equalize the housing pressure before the switch.
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- 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:

- System where shut-down causes high costs
- System where shut-down causes safety issues

Filter housing materials

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

Seals

- Standard NBR series A (-25 °C to +110 °C)
- Optional FPM series V (-20 °C to +120 °C)
- Optional MFQ series F (-50 °C to +120 °C)

Bypass valve

Opening pressure 6 bar \pm 10%

Temperature

From -50 °C to +120 °C

Note

FZD filters are provided for vertical mounting

Δp element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series R: 20 bar.

Element series "R":

- End cap: Nylon
- Core tube: Tinned Steel
- External/Internal support: Wire mesh Epox painted
- Media/Support/Pre-filter: Microfibre/Syntetic

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

Element series "H - S":

- End cap: Tinned Steel
- Core tube: Tinned Steel
- External support: Wire mesh Epox painted
- Internal support: Wire mesh Stainless Steel
- Media/Support/Pre-filter: Microfibre/Syntetic

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/Syntetic



Weights [kg] and volumes [dm³]

Filter series	Weights [kg]					Volumes [dm ³]							
	Length	1	2	3	4	5	Length	1	2	3	4	4	
FZD 010	-	-	7.9	-	-	-	-	-	0.10	-	-	-	-
FZD 021	-	-	9.6	9.8	10.3	-	-	-	0.06	0.12	0.22	-	-
FZD 051	-	-	17.4	18.0	19.0	20.3	-	-	0.31	0.41	0.53	0.83	-

Filter series	Length	Filter element design - H Series					Filter element design - U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
FZD 010	2	4	5	7	8	11	4	5	7	8	11
	3	5	6	11	12	16	5	6	11	12	16
FZD 021	3	9	11	16	18	20	9	11	16	18	20
	4	10	12	17	19	21	10	12	17	19	21

Filter series	Length	Filter element design - R Series					Filter element design - S Series					Filter element design - U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
FZD 051	2	39	41	51	54	59	35	37	48	51	58	35	37	48	51	58
	3	45	46	54	56	61	41	43	52	54	60	41	43	52	54	60
	4	50	52	58	58	62	47	49	56	56	61	47	49	56	56	61
	5	56	57	61	62	63	53	53	57	59	63	53	53	57	59	63

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 mm²/s (cSt) and a density of 0.86 kg/dm³.

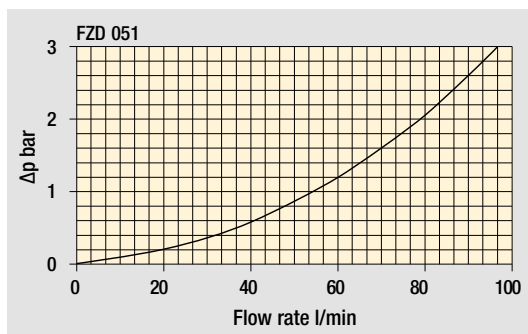
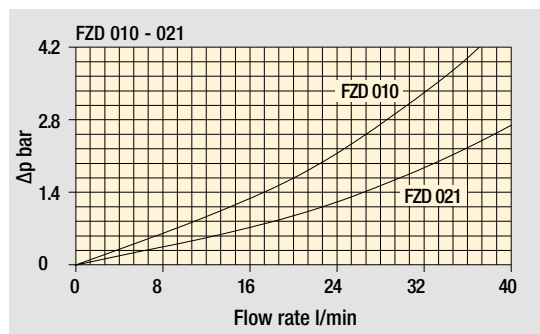
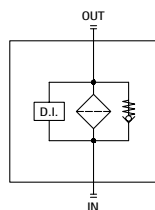
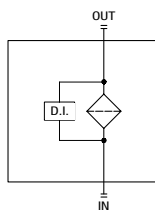
For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.

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
FZD 010	•	
FZD 021	•	
FZD 051	•	•



Pressure drop Filter housings Δp pressure drop

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		Configuration example: FZD021 4 S A G1 A06 H P01									
FZD010 FZD021											
Length	FZD010	FZD021									
2	•	•									
3		•									
4		•									
Valves											
S Without bypass											
Seals											
A NBR											
V FPM											
Connections	FZD010	FZD021									
G1	G 3/8"	G 1/2"									
G2	3/8" NPT	1/2" NPT									
G3	-	SAE 8 - 3/4" - 16 UNF									
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											
H 210 bar											
U 210 bar, stainless steel filter element											
Execution											
P01 MP Filtri standard											
Pxx Customized											

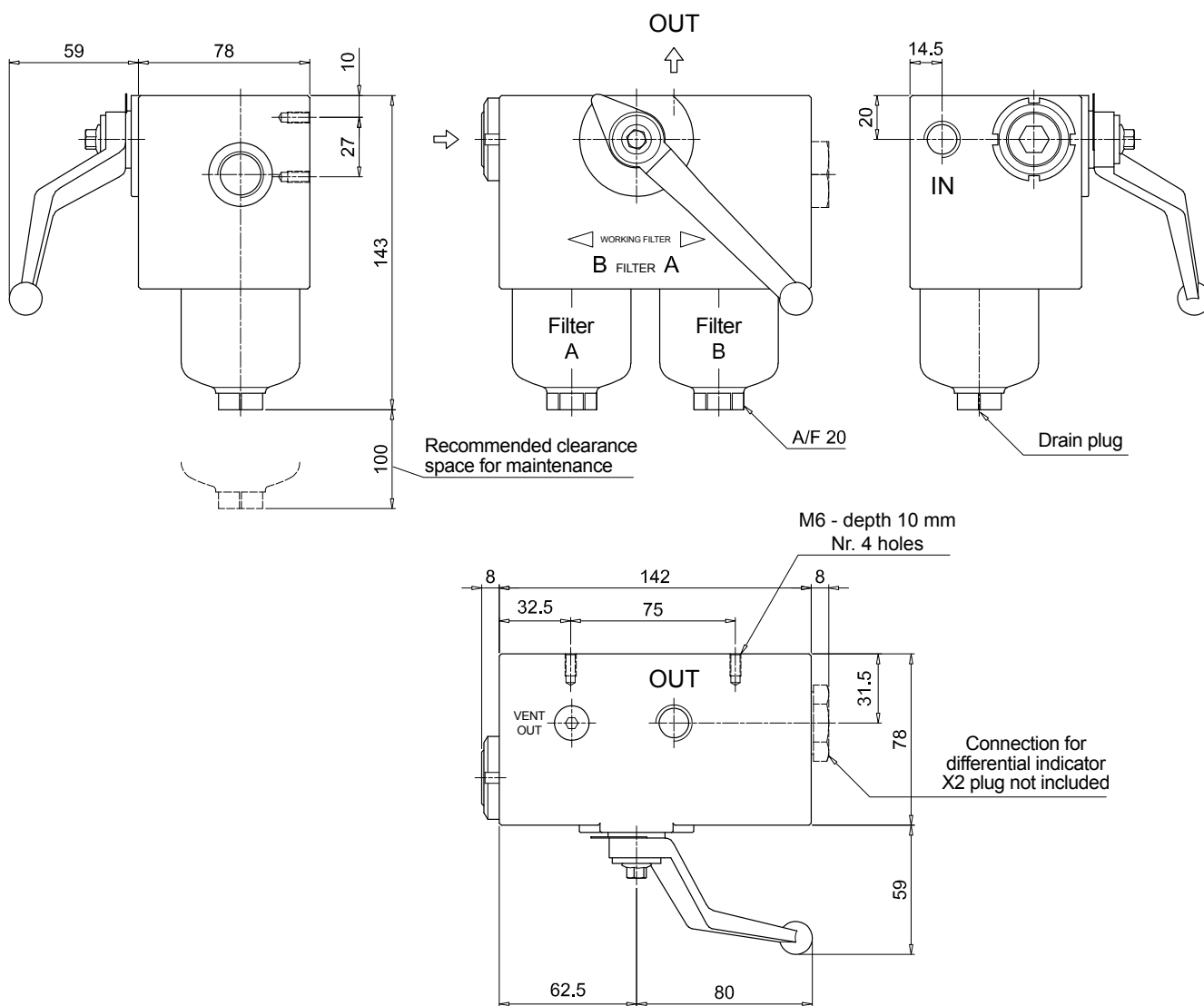
FILTER ELEMENT

Element series and size		Configuration example: HP011 4 A06 A H P01									
Element length	HP010	HP011									
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											
Element Δp											
H 210 bar											
U 210 bar, stainless steel filter element											
Execution											
P01 MP Filtri standard											
Pxx Customized											

ACCESSORIES

Differential indicators	page		page
DEH Hazardous area electronic differential indicator	632	DVX Visual differential indicator	633
DEX Electrical differential indicator	633	DVY Visual differential indicator	634
DLX Electrical / visual differential indicator	633		
Additional features	page		
X2 Plug	634		

FZD010

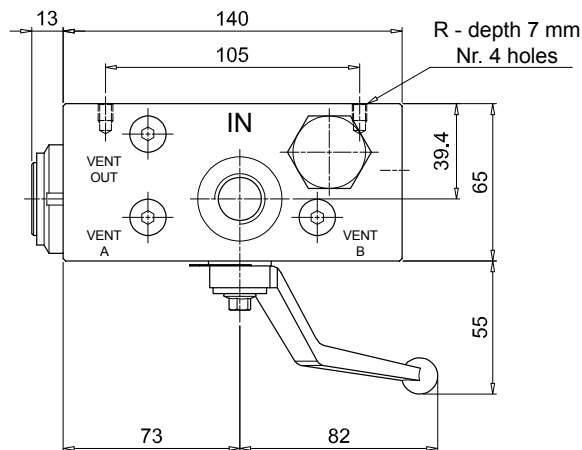
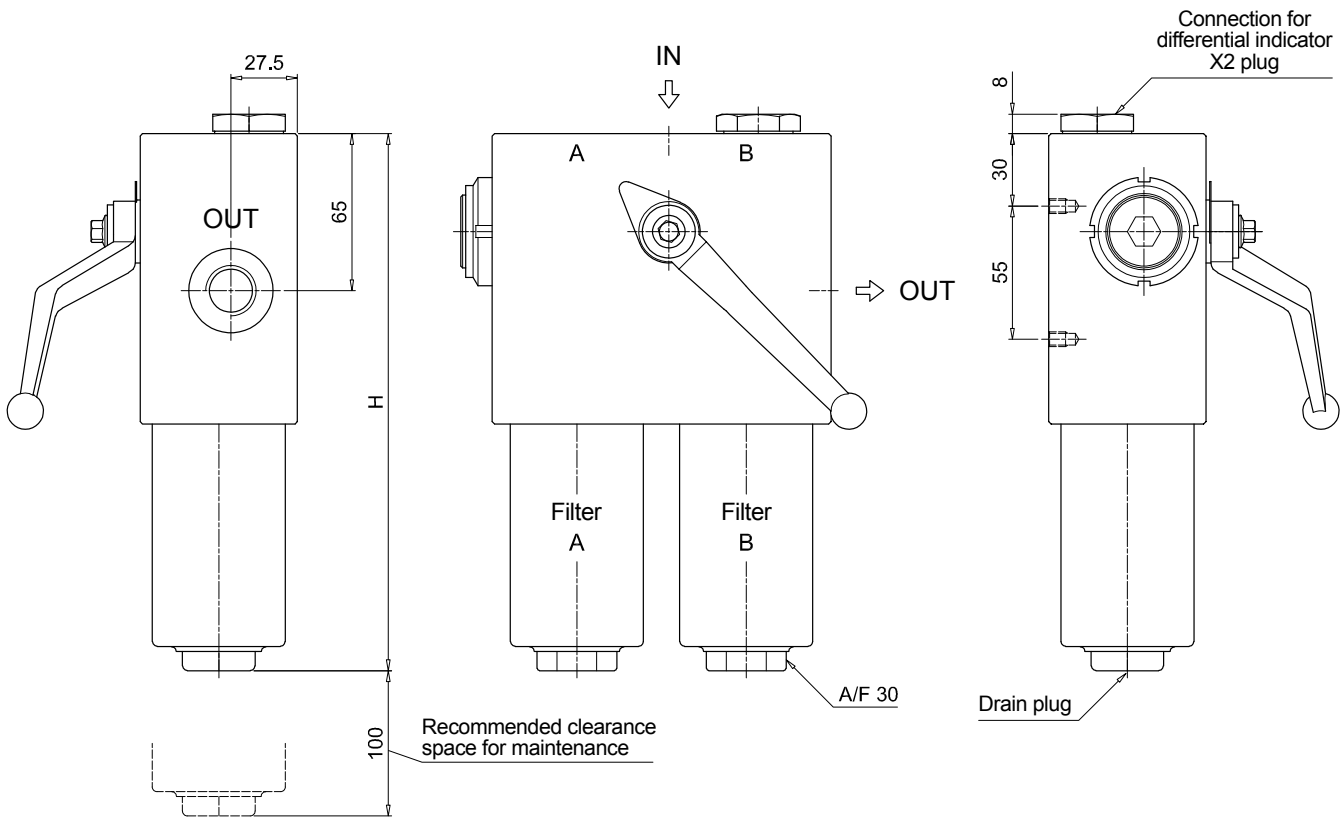


Dimensions

FZD021

Filter length	H [mm]
2	172
3	222
4	272

Connections	R
G1	M6
G2 - G3	1/4" UNC



Designation & Ordering code

COMPLETE FILTER

Series and size FZD051	Configuration example: FZD051 3 B A G3 A03 U P01																		
Length 2 3 4 5																			
Valves S Without bypass B With bypass 6 bar																			
Seals A NBR V FPM																			
Connections G1 G 3/4" G2 3/4" NPT G3 G 1/2" G4 1/2" NPT G5 SAE 8 - 3/4" - 16 UNF G6 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																			
	<table border="1"> <thead> <tr> <th rowspan="2">Element Δp</th> <th colspan="2">Valves</th> <th rowspan="2">Execution</th> </tr> <tr> <th>S</th> <th>B</th> </tr> </thead> <tbody> <tr> <td>R 20 bar</td> <td></td> <td>•</td> <td>P01 MP Filtri standard</td> </tr> <tr> <td>S 210 bar</td> <td>•</td> <td></td> <td>Pxx Customized</td> </tr> <tr> <td>U 210 bar, stainless steel filter element</td> <td>•</td> <td>•</td> <td></td> </tr> </tbody> </table>	Element Δp	Valves		Execution	S	B	R 20 bar		•	P01 MP Filtri standard	S 210 bar	•		Pxx Customized	U 210 bar, stainless steel filter element	•	•	
Element Δp	Valves		Execution																
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R 20 bar		•	P01 MP Filtri standard																
S 210 bar	•		Pxx Customized																
U 210 bar, stainless steel filter element	•	•																	

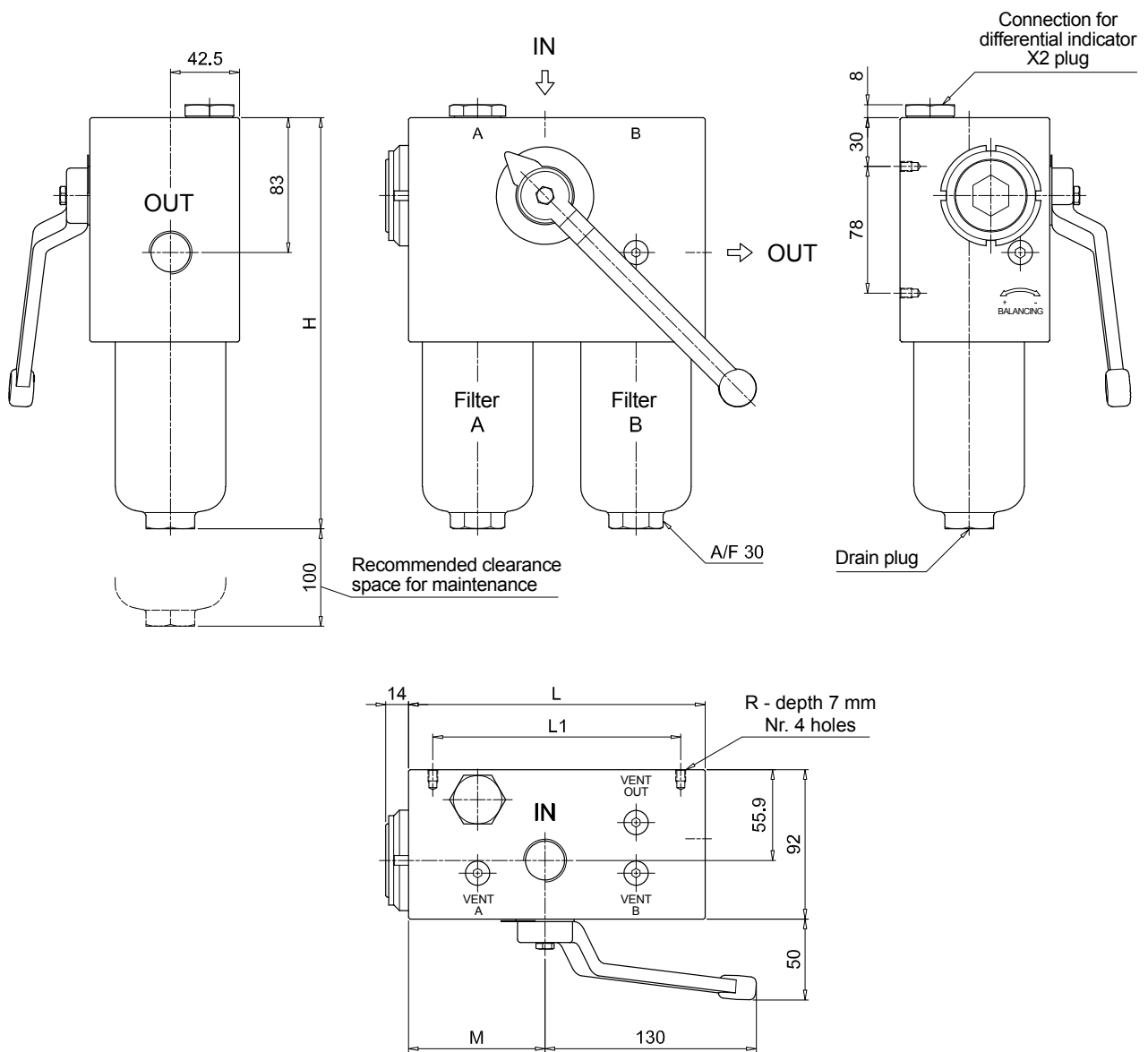
FILTER ELEMENT

Element series and size HP050	Configuration example: HP050 3 A03 A U P01												
Element length 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													
	<table border="1"> <thead> <tr> <th rowspan="2">Seals</th> <th rowspan="2">Element Δp</th> <th rowspan="2">Execution</th> </tr> </thead> <tbody> <tr> <td>A NBR</td> <td>R 20 bar</td> <td>P01 MP Filtri standard</td> </tr> <tr> <td>V FPM</td> <td>S 210 bar</td> <td>Pxx Customized</td> </tr> <tr> <td></td> <td>U 210 bar, stainless steel filter element</td> <td></td> </tr> </tbody> </table>	Seals	Element Δp	Execution	A NBR	R 20 bar	P01 MP Filtri standard	V FPM	S 210 bar	Pxx Customized		U 210 bar, stainless steel filter element	
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		A NBR	R 20 bar	P01 MP Filtri standard									
V FPM	S 210 bar	Pxx Customized											
	U 210 bar, stainless steel filter element												

ACCESSORIES

Differential indicators	page		page
DEH Hazardous area electronic differential indicator	632	DVX Visual differential indicator	633
DEX Electrical differential indicator	633	DVY Visual differential indicator	634
DLX Electrical / visual differential indicator	633		
Additional features	page		
X2 Plug	634		

FZD051			
Filter length	H [mm]		
2	253		
3	295		
4	343		
5	465		
Connections	R		
G1	M6		
G2	1/4" UNC		
G3	M6		
G4-G5-G6	1/4" UNC		
Valves	L [mm]	L1 [mm]	M [mm]
S	168	138	84
B	182.5	152.5	98.5

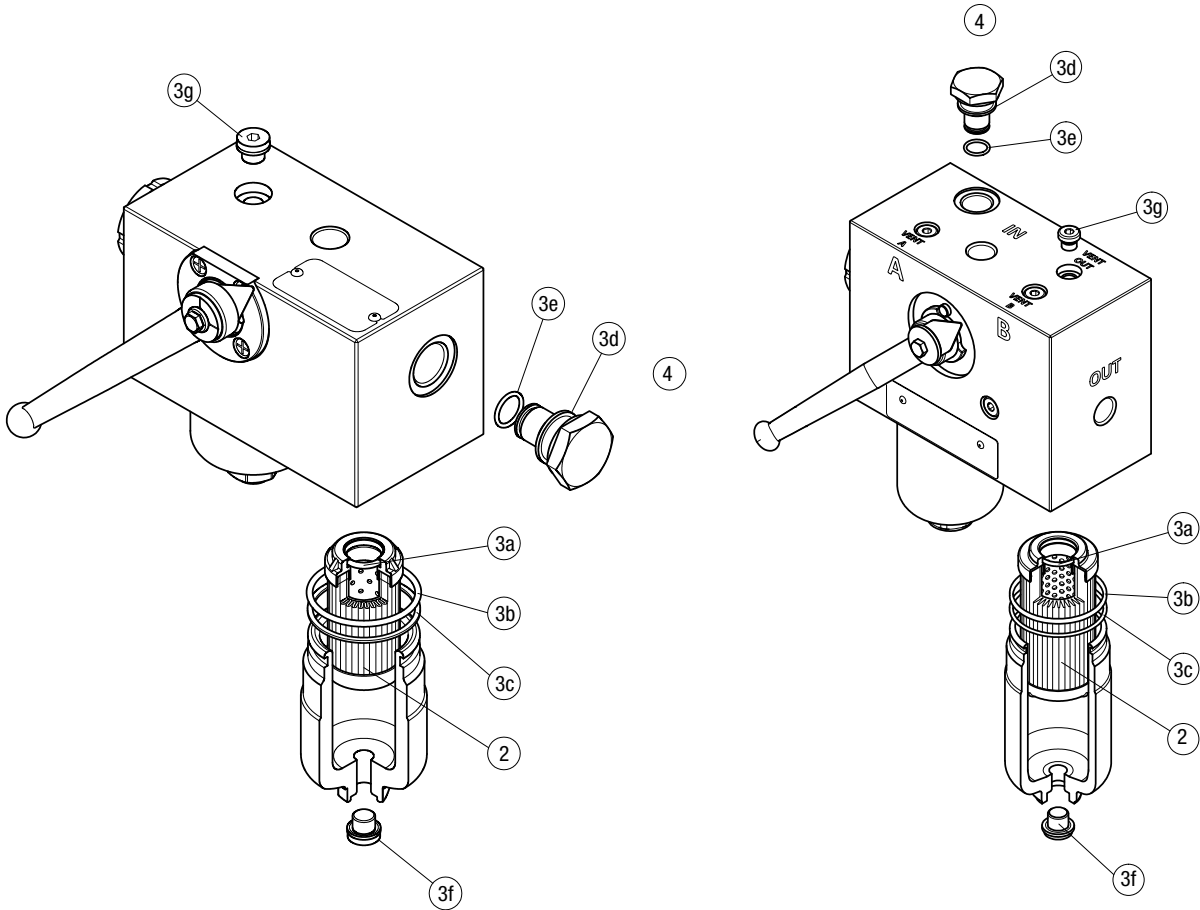


FZD SPARE PARTS

Order number for spare parts

FZD 010

FZD 021 - FZD 051



Item:	Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug		
FZD 010	See order table	NBR	FPM	NBR	FPM	
		02050613	02050655			
		02050796	02050797	X2H	X2V	
		02050800	02050801			

Clogging indicators

Differential indicators

Introduction

Filter elements are efficient only if their Dirt Holding Capacity is fully exploited. This is achieved by using filter housings equipped with clogging indicators.

These devices trip when the clogging of the filter element causes an increase in pressure drop across the filter element.

The indicator is set to alarm before the element becomes fully clogged.

MP Filtri can supply indicators of the following designs:

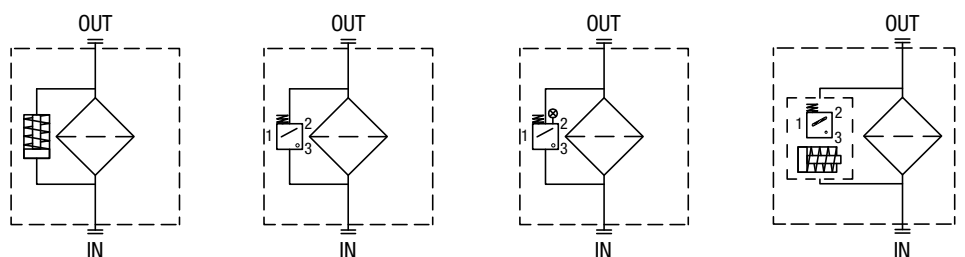
- Vacuum switches and gauges
- Pressure switches and gauges
- Differential pressure indicators

These type of devices can be provided with a visual, electrical or both signals.

Suitable indicator types

DIFFERENTIAL INDICATORS

Differential indicators are used on the Pressure line to check the efficiency of the filter element. They measure the pressure upstream and downstream of the filter element (differential pressure). Standard items are produced with special connection G 1/2" size. Also available in Stainless Steel models.



Quick reference guide

Filter series	Visual indicator	Electrical indicator	Electrical / Visual indicator	Hazardous area electronic indicator NEW
With bypass valve FZH 010 - 011 - 039 FZP 039 - 136 FZX 011 FZB 039 FZM 039 FZD 051	DVX50xP01 DVY50xP01	DEX50xA50P01	DLX50xA51P01 DLX50xA52P01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01
Without bypass valve FZH 010 - 011 - 039 FZP 039 - 136 FZB 039 FZM 039 FZD 010 - 021 - 051	DVX70xP01 DVY70xP01	DEX70xA50P01	DLX70xA51P01 DLX70xA52P01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01

DIFFERENTIAL INDICATORS

Dimensions

DEH*48	
Hazardous Area Electronic Differential Indicator	
Settings	Ordering code
5.0 bar ±10%	DE H 50 x A 48 P01
7.0 bar ±10%	DE H 70 x A 48 P01

Connection diagram

Materials

- Body: AISI 316 Stainless steel
- Contacts: Rhodium (tungsten optional)
- Seal: MFQ - FPM

Protection class EX ia IIC T4/T6: Intrinsically safe

Temperature class T4 (135 °C) and T6 (85 °C)

Technical data

- Max working pressure: 420 bar
- Working temperature: From -60 °C to +125 °C
- Connection type: M20 x 1.5 - 3 core polyrad cable supplied with 5 meters
- Contact type: SPCO/SPDT (Hermetically sealed - volt free contacts)
- Compatibility with fluids: Mineral oils, Synthetic fluids
- Degree of protection: IP 66/67/68 according to EN 60529

Electrical data

- Current Ratings: 24v DC 830mA - 110v AC 180mA
- Electrical Ratings: Ui 30V - Li 250mA - Pi 1.3W

DEH*49	
Hazardous Area Electronic Differential Indicator	
Settings	Ordering code
5.0 bar ±10%	DE H 50 x A 49 P01
7.0 bar ±10%	DE H 70 x A 49 P01

Connection diagram

Materials

- Body: AISI 316 Stainless steel
- Contacts: Rhodium (tungsten optional)
- Seal: MFQ - FPM

Protection class Ex d IIC T4/T6: Flameproof

Temperature class T4 (135 °C) and T6 (85 °C)

Technical data

- Max working pressure: 420 bar
- Working temperature: From -60 °C to +120 °C : ATEX, IECEx, TRCU, INMETRO
From -60 °C to +105 °C : UL/CSA
- Connection type: 1/2" NPT - 3 core polyrad cable supplied with 5 meters
- Contact type: SPCO/SPDT (Hermetically sealed - volt free contacts)
- Compatibility with fluids: Mineral oils, Synthetic fluids
- Degree of protection: IP 66/67/68 according to EN 60529

Electrical data

- Current Ratings: 24v DC 830mA - 110v AC 180mA
- Electrical Ratings:

Supply Voltage	24 VDC 110 VAC
Max switching current	830mA 180mA
Max voltage	150 V AC/DC
Power watts	20 W VA

DEH*70	
Hazardous Area Electronic Differential Indicator	
Settings	Ordering code
5.0 bar ±10%	DE H 50 x A 70 P01
7.0 bar ±10%	DE H 70 x A 70 P01

Connection diagram

Materials

- Body: AISI 316 Stainless steel housing with internal engineered resin switch
- Contacts: Rhodium
- Seal: MFQ - FPM

Protection class EX ia IIC T6: Intrinsically safe

Temperature class T6 (85 °C)

Technical data

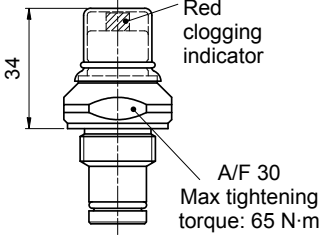
- Max working pressure: 420 bar
- Working temperature: From -20 °C to +80 °C
- Connection type: 4 pole male M12 connector - plastic
- Contact type: SPCO/SPDT (Hermetically sealed - volt free contacts)
- Compatibility with fluids: Mineral oils, Synthetic fluids
- Degree of protection: IP 66/67 according to EN 60529

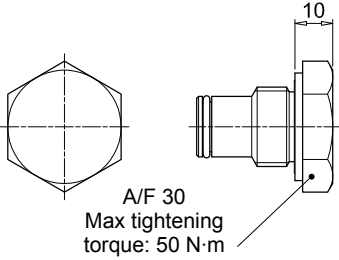
Electrical data

- Current Ratings: 24v DC 830mA - 110v AC 180mA
- Electrical Ratings: Ui 30V - Li 250mA - Pi 1.3W

DIFFERENTIAL INDICATORS

Dimensions

DVY		Hydraulic symbol	Materials - Body: AISI 316L - Internal parts: AISI 316L - Nylon - Contacts: Silver - Seal: HNBR - MFQ Technical data - Reset: Manual reset - Max working pressure: 420 bar - Proof pressure: 630 bar - Burst pressure: 1260 bar - Working temperature: From -25 °C to +110 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943 - Degree protection: IP65 according to EN 60529
Visual Differential Indicator			
Settings	Ordering code		
5.0 bar ±10%	DV Y 50 x P01		
7.0 bar ±10%	DV Y 70 x P01		
9.5 bar ±10%	DV Y 95 x P01		
			

X2		Materials
Indicator plug		
Seal	Ordering code	
HNBR	X2 H	
MFQ	X2 F	
		

DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATORS

Series
DE Electrical or Electronic differential indicator
DL Electrical / Visual differential indicator
DV Visual differential indicator

Configuration example 1:	DE	H	50	F	A	70	P01
Configuration example 2:	DE	X	50	H	A	50	P01
Configuration example 3:	DL	X	95	V	A	71	P01
Configuration example 4:	DV	Y	70	V			P01

Type	DE	DL	DV
H Hazardous area	•		
X Standard type	•	•	•
Y Optional type			•

Pressure setting
50 5.0 bar
70 7.0 bar
95 9.5 bar

Seals	DEH	DEX	DLX	DV
F MFQ	•			
H HNBR		•	•	•
V FPM	•	•	•	•

Thermostat
A Without

Electrical connections	DEH	DEX	DLX	DV
48 Connection M20	•			
49 Connection 1/2" NPT	•			
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)	•			

Option
P01 MP Filtri standard
Pxx Customized

DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATOR PLUG

Series
X2 Indicator plug
Seals
H HNBR
F MFQ

Configuration example	X2	H
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Clogging indicators are devices that check the life time of the filter elements. They measure the pressure drop through the filter element directly connected to the filter housing.

These devices trip when the clogging of the filter element causes a pressure drop increasing across the filter element.

Filter elements are efficient only if their Dirt Holding Capacity is fully exploited.

This is achieved by using filter housings equipped with clogging indicators.

The indicator is set to alarm before the element becomes fully clogged.

MP Filtri can supply indicators of the following designs:

- Vacuum switches and gauges**
- Pressure switches and gauges**
- Differential pressure indicators**

These type of devices can be provided with a visual, electrical or both signals.

The electronic differential pressure clogging indicator is also available.

It provides both analogical 4-20 mA output and digital warning (75% of clogging) and alarm (clogging) outputs.

Clogging Indicators



Clogging indicators



Suitable indicator types

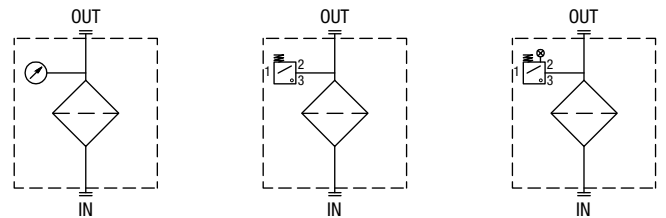
VACUUM INDICATORS

Vacuum indicators are used on the Suction line to check the efficiency of the filter element.

They measure the pressure downstream of the filter element.

Standard items are produced with R 1/4" EN 10226 connection.

Available products with R 1/8" EN 10226 to be fitted on MPS series.

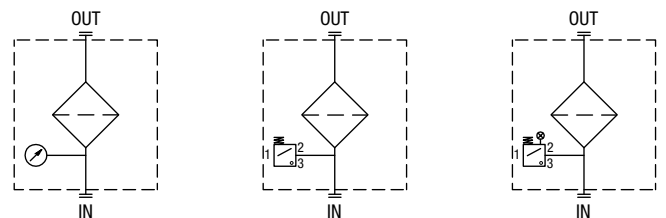


BAROMETRIC INDICATORS

Pressure indicators are used on the Return line to check the efficiency of the filter element.

They measure the pressure upstream of the filter element.

Standard items are produced with R 1/8" EN 10226 connection.



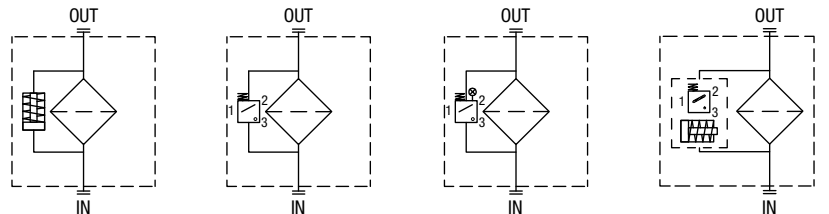
DIFFERENTIAL INDICATORS

Differential indicators are used on the Pressure line to check the efficiency of the filter element.


They measure the pressure upstream and downstream of the filter element (differential pressure).

Standard items are produced with special connection G 1/2" size.

Also available in Stainless Steel models.



Filter family	Filter series	Electrical indicator	Electrical / Visual indicator	Electronic indicator	Visual indicator
SUCTION FILTERS	ELIXIR® SFEX060-080-110-160	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01		VVB16P01 VVS16P01
	SF2 250 - 350 SF2 500 - 501 - 503 - 504 - 505 SF2 510 - 535 - 540	VEA21AA50P01	VLA21AA51P01 VLA21AA52P01 VLA21AA53P01 VLA21AA71P01		VVA16P01 VVR16P01
RETURN FILTERS	With bypass valve ELIXIR® RFEX060-080-110-160	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01		BVA14P01 BVR14P01 BVP15HP01 BVQ15HP01
	Without bypass valve ELIXIR® RFEX060-080-110-160	BEA20HA50P01 BEM20HA41P01	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01		BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01
	With bypass valve MPFX-MPTX-MPF-MPT - bypass 1.75 bar MPH - bypass 1.75 bar RF2250 - RF2350 - bypass 1.75 bar	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01		BVA14P01 BVR14P01 BVP15HP01 BVQ15HP01
	With bypass valve MPFX-MPTX-MPF-MPT - bypass 3 bar MPH - bypass 2.5 bar FRI 255 RF2250 - RF2350 - bypass 3 bar	BEA20HA50P01 BEM20HA41P01	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01		BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01
MPLX FRI 025 - 040 - 100 - 250 - 630 - 850	DEA20xA50P01 DEM20xA10P01 DEM20xA20P01 DEM20xA30P01 DEM20xA35P01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01	DTA20xF70P01	DVA20xP01 DVM20xP01	
RETURN / SUCTION FILTERS	Suction line MRSX 116 - 165 - 166	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01		VVB16P01 VVS16P01
	Return line MRSX 116 - 165 - 166 LMP 124 MULTIPORT	BEA25HA50P01 BEM25HA41P01 BET25HF10P01 BET25HF30P01 BET25HF50P01	BLA25HA51P01 BLA25HA52P01 BLA25HA53P01 BLA25HA71P01		BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01
SPIN-ON FILTERS	Suction line MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01		VVB16P01 VVS16P01
	Return line MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01		BVA14P01 BVR14P01 BVP20HP01 BVQ20HP01
	In-line MPS 051 - 071 - 101 - 151 MPS 301 - 351 MSH 050 - 070 - 100 - 150	DEA12xA50P01 DEM12xAxxP01	DLA12xA51P01 DLA12xA52P01 DLA12xA71P01 DLE12xA50P01 DLE12xF50P01 DLE20xF50P01 DLE20xF50P01	DTA12xA70P01 DTA12xF70P01 DTA20xA70P01 DTA20xF70P01	DVA12xP01 DVM12xP01

Filter family	Filter series	Electrical indicator	Electrical / Visual indicator	Electronic indicator	Visual indicator	Hazardous area electronic indicator 		
LOW & MEDIUM PRESSURE FILTERS	With bypass valve	ELIXIR® LFEX060-080-110-160	DES25HA10P01 DES25HA30P01 DES25HA80P01			DVS25HP01		
	Without bypass valve	ELIXIR® LFEX060-080-110-160	DES40HA10P01 DES40HA30P01 DES40HA80P01			DVS40HP01		
		LMP 110 - 112 - 116 - 118 - 119 MULTIPORT LMP 120 - 122 - 123 MULTIPORT LMP 210 - 211 - LDP				DVS25HP01 DVS40HP01		
	With bypass valve	LMP 400 - 401 & 430 - 431 LMP 900 - 901 LMP 902 - 903 LMP 950 - 951 LMP 952 - 953 - 954 LMD 211 - 400 - 401 - 431 - 951 - LDD	DEA20xA50P01 DEM20xAxxP01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01	DTA20xF70P01	DVA20xP01 DVM20xP01		
	Without bypass valve	LMP 110 - 112 - 116 - 118 - 119 MULTIPORT LMP 120 - 122 - 123 MULTIPORT LMP 210 - 211 - LDP LMP 400 - 401 & 430 - 431 LMP 900 - 901 LMP 902 - 903 LMP 950 - 951 LMP 952 - 953 - 954 LMD 211 - 400 - 401 - 431 - 951 - LDD	DEA50xA50P01 DEM50xAxxP01	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01	DTA50xF70P01	DVA50xP01 DVM50xP01		
	HIGH PRESSURE FILTERS	With bypass valve	FMP 039 - 065 - 135 - 320 FHP 010 - 011 - 065 - 135 - 350 - 500 FMM 050 - 150 FHA 051 FHM 006 - 007 - 010 - 050 - 065 - 135 - 320 - 500 FHB 050 - 065 - 135 - 320 FHF 325 FHD 021 - 051 - 326 - 333	DEA50xA50P01 DEM50xAxxP01	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01	DTA50xF70P01	DVA50xP01 DVM50xP01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01
		Without bypass valve	FMP 039 - 065 - 135 - 320 FHP 010 - 011 - 065 - 135 - 350 - 500 FMM 050 - 150 FHA 051 FHM 006 - 007 - 010 - 050 - 065 - 135 - 320 - 500 FHB 050 - 065 - 135 - 320 FHF 325 FHD 021 - 051 - 326 - 333	DEA70xA50P01 DEM70xAxxP01 DEA95xA50P01 DEM95xAxxP01	DLA70xA51P01 DLA70xA52P01 DLA70xA71P01 DLE70xA50P01 DLE70xF50P01 DLA95xA51P01 DLA95xA52P01 DLE95xA50P01 DLE95xF50P01	DTA70xF70P01 DTA95xF70P01	DVA70xP01 DVM70xP01 DVA95xP01 DVM95xP01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01
		With bypass valve	FZH 010 - 011 - 039 FZP 039 - 136 FZX 011 FZB 039 FZM 039 FZD 051	DEX50xA50P01	DLX50xA51P01 DLX50xA52P01		DVX50xP01 DVG50xP01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01
			Without bypass valve	FZH 010 - 011 - 039 FZP 039 - 136 FZB 039 FZM 039 FZD 010 - 021 - 051	DEX70xA50P01 DEX95xA50P01	DLX70xA51P01 DLX70xA52P01 DLX95xA51P01		DVX70xP01 DVG70xP01 DVG95xP01

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WORLDWIDE NETWORK

HEADQUARTERS

MP Filtri S.p.A.
Pessano con Bornago
Milano - Italy
+39 02 957031
sales@mpfiltri.it

BRANCH OFFICES

ITALFILTRI LLC
Moscow - Russia
+7 (495) 220 94 60
mpfiltrirussia@yahoo.com

MP Filtri Canada Inc.
Concord - Ontario - Canada
+1 905 303 1369
sales@mpfiltricanada.com

MP Filtri France SAS
Villeneuve la Garenne
France
+33 (0)1 40 86 47 00
sales@mpfiltrifrance.com

MP Filtri Germany GmbH
St. Ingbert - Germany
+49 (0) 6894 95652-0
sales@mpfiltri.de

MP Filtri India Pvt. Ltd.
Bangalore - India
+91 80 4147 7444 / +91 80 4146 1444
sales@mpfiltri.co.in

MP Filtri (Shanghai) Co., Ltd.
Shanghai - Minhang District - China
+86 21 58919916 116
sales@mpfiltrishanghai.com

MP Filtri U.K. Ltd.
Bourton on the Water
Gloucestershire - United Kingdom
+44 (0) 1451 822 522
sales@mpfiltri.co.uk

MP Filtri U.S.A. Inc.
Quakertown, PA - U.S.A.
+1 215 529 1300
sales@mpfiltriusa.com

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