

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**



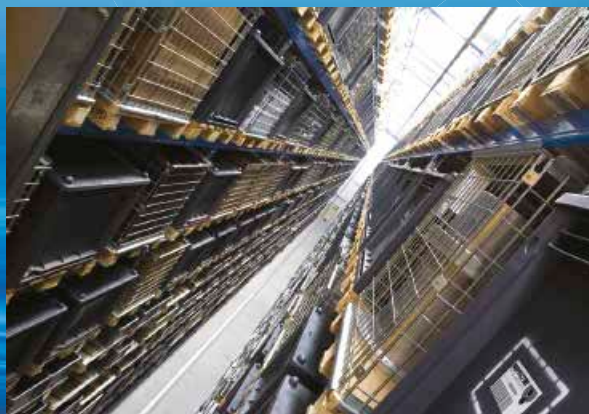
TECHNOLOGY

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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24		CORRECTIVE FACTOR

28	page	SUCTION FILTERS		up to Q_{max}
				l/min gpm
31	STR & MPA - MPM	Submerged suction filter, with bypass or magnetic filter		1000 264
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		700 185
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	900 238
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	700 185
125	MPF	Tank top semi-immersed filter, standard filter element disassembly	8 116	900 238
153	MPT	Tank top semi-immersed filter, easy filter element disassembly	8 116	300 79
171	MFB	Bowl assembly	8 116	700 185
179	MPH	Tank top semi-immersed filter, standard filter element disassembly	10 145	3500 925
203	MPI	Tank top semi-immersed filter, standard filter element disassembly	10 145	3500 925
215	FRI	Tank top semi-immersed filter, easy filter element disassembly, it can be used also as in-line filter	20 290	2500 660
231	RF2	Semi-immersed under-head filter, easy filter element disassembly	20 290	615 162
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	250 66
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	120 32
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			

322	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	175	46
341	LMP 210 - 211	In-line low & medium pressure filter, low flow rate	60	870	365	96
351	LMP 400 - 401 & 430 - 431	In-line low & medium pressure filter, high flow rate	60	870	780	206
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	4500	1189
383	LMD 211	In-line duplex medium pressure filter	60	870	200	53
391	LMD 400 - 401 & 431	In-line duplex low pressure filter	16	232	600	159
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	360	95
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					

			up to P _{max}		up to Q _{max}	
452	page	HIGH PRESSURE FILTERS	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	500	132
475	FHP	Typical high pressure filter for mobile applications, high flow rate	420	6092	630	166
493	FMM	Typical high pressure filter for mobile applications, low flow rate	420	6092	300	79
503	FHA 051	Filter optimized for use in high pressure operating systems, low flow rate	560	8122	150	40
511	FHM	High pressure filter with intermediate manifold construction	320	4641	400	106
529	FHB	High pressure for block mounting	320	4641	485	128
543	FHF 325	In-line manifold top mounting	350	5076	550	145
553	FHD	In-line duplex high pressure filter	350	5076	250	66
567	HPB	Pressure filter kits for integration in control manifolds	420	6092	300	79
576	CLOGGING INDICATORS					

			up to P _{max}		up to Q _{max}	
584	page	STAINLESS STEEL HIGH PRESSURE FILTERS	bar	psi	l/min	gpm
587	FZP	In-line pressure filter with threaded mount	420	6092	160	42
597	FZH	In-line pressure filter with threaded mount for higher pressure	700	10153	80	21
607	FZX	In-line pressure filter with threaded mount up to 1000 bar	1000	14504	10	3
615	FZM	Manifold top mounting	320	4641	70	18
623	FZB	Manifold side mounting	320	4641	70	18
631	FZD	Duplex pressure filter for continuous operation requirements	350	5076	60	16
641	CLOGGING INDICATORS					

page	CLOGGING INDICATORS
649	QUICK REFERENCE GUIDE

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

FOR EXAMPLE, THE MAXIMUM TOTAL PRESSURE DROP ALLOWED BY A NEW AND CLEAN RETURN FILTER HAVE TO BE IN THE RANGE 0.4 - 0.6 bar / 5.80 - 8.70 psi.

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_c of the housing is proportional to the fluid density (kg/dm^3 / lb/ft^3). The filter element pressure drop Δp_e is proportional to its viscosity (mm^2/s / SUS), the corrective factor Y have to be used in case of an oil viscosity different than $30 \text{ mm}^2/\text{s}$ (cSt) / 150 SUS.

Sizing data for single filter element, head at top

Δp_c = Filter housing pressure drop [bar / psi]

Δp_e = Filter element pressure drop [bar / psi]

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 - gpm)

V1 reference oil viscosity = $30 \text{ mm}^2/\text{s}$ (cSt) / 150 SUS

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

Filter element pressure drop calculation with an oil viscosity different than $30 \text{ mm}^2/\text{s}$ (cSt) / 150 SUS

International system:

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

Imperial system:

$$\Delta p_e = Y : 17.2 \times Q \times (V2:V1)$$

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

Verification formula

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

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

Application	Range: [bar]	[psi]
Suction filters	0.08 - 0.10 bar	1.16 - 1.45 psi
Return filters	0.4 - 0.6 bar	5.80 - 8.70 psi
Return - Suction filters (*)	0.8 - 1.0 bar	11.60 - 14.50 psi
Low & Medium Pressure filters	0.4 - 0.6 bar	5.80 - 8.70 psi return lines
	0.3 - 0.5 bar	4.35 - 7.25 psi lubrication lines
	0.3 - 0.4 bar	4.35 - 5.80 psi off-line in power systems
	0.1 - 0.3 bar	1.45 - 4.35 psi off-line in test benches
	0.4 - 0.6 bar	5.80 - 8.7 psi over-boost
High Pressure filters	0.8 - 1.5 bar	11.60 - 21.75 psi
Stainless Steel filters	0.8 - 1.5 bar	11.60 - 21.75 psi

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

Generic filter calculation example

Application data:

Tank top return filter

Pressure Pmax = 10 bar

Flow rate Q = 120 l/min

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

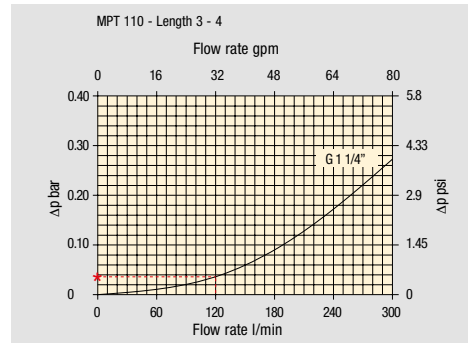
Oil density = 0.86 kg/dm^3

Required filtration efficiency = 25 μm with absolute filtration

With bypass valve and G 1 1/4" inlet connection

Calculation:

$\Delta p_c = 0.03 \text{ bar} / 0.43 \text{ psi}$ (see graphic below)



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

$$\Delta p_e = (2.00 : 1000) \times 120 \times (46 : 30) = 0.37 \text{ bar}$$

$$\Delta p_e = (2.00 : 17.2) \times 32 \times (216 : 150) = 5.36 \text{ psi}$$

Filter element	Absolute filtration H Series					Nominal filtration N Series		
	A03	A06	A10	A16	A25	P10	P25	M25 M60 M90
Return filters	74.00	50.08	20.00	16.00	9.00	6.43	5.51	4.40
MF 020	2 29.20	24.12	8.00	7.22	5.00	3.33	2.85	2.00
	3 22.00	19.00	6.56	5.33	4.33	1.68	1.44	1.30
MF 030 MFX 030	1 74.00	50.08	20.00	16.00	9.00	6.43	5.51	3.40
MF 100 MFX 100	1 28.20	24.40	8.67	8.17	6.88	4.62	3.96	1.25
	2 17.33	12.50	6.86	5.70	4.00	3.05	2.47	1.10
	3 10.25	9.00	3.65	3.33	2.50	1.63	1.32	0.96
	4 6.10	5.40	2.30	2.20	2.00	1.19	0.96	0.82

$$\Delta p_{\text{Tot.}} = 0.03 + 0.37 = 0.4 \text{ bar}$$

$$\Delta p_{\text{Tot.}} = 0.43 + 5.36 = 5.79 \text{ psi}$$

The selection is correct because the total pressure drop value is inside the admissible range for top tank return 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				
Type		A03	A06	A10	A16	A25
HP 011	1	332.71	250.07	184.32	152.36	128.36
	2	220.28	165.56	74.08	59.13	37.05
	3	123.24	92.68	41.48	33.08	20.72
	4	77.76	58.52	28.37	22.67	16.17
HP 039	2	70.66	53.20	25.77	20.57	14.67
	3	36.57	32.28	18.00	13.38	8.00
	4	26.57	23.27	12.46	8.80	5.58
HP 050	1	31.75	30.30	13.16	12.3	7.29
	2	24.25	21.26	11.70	9.09	4.90
	3	17.37	16.25	8.90	7.18	3.63
	4	12.12	10.75	6.10	5.75	3.08
	5	7.00	6.56	3.60	3.10	2.25
HP 135	1	20.33	18.80	9.71	8.66	4.78
	2	11.14	10.16	6.60	6.38	2.22
	3	6.48	6.33	3.38	3.16	2.14

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

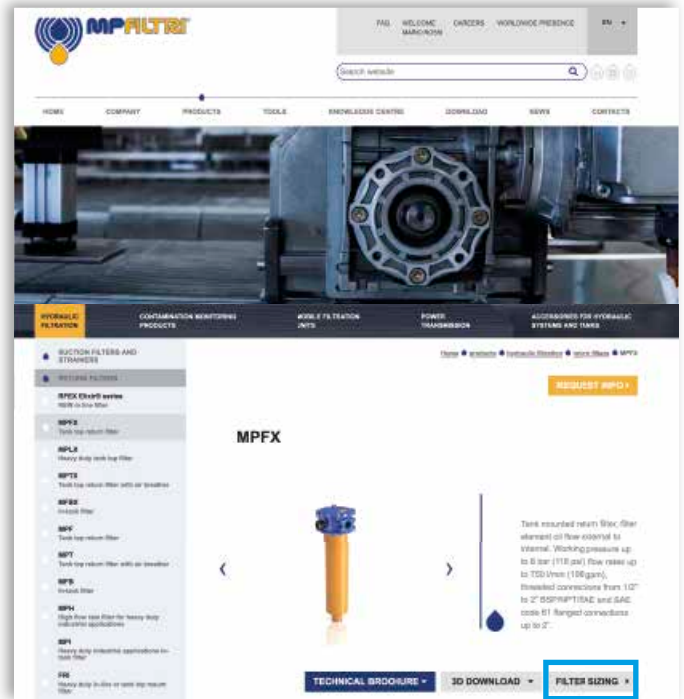
TYPICAL FILTER SIZING Selection Software

Step ①

Select "FILTER SIZING SOFTWARE" after login

OR

Select "FILTER SIZING" after login from a product page



Choose the type of filter family.
Enter the main data for sizing the filter
then push CALCULATE.

Step ②

Enter the main data for sizing the filter
then push CALCULATE.

PRODUCT SELECTION POWER TRANSMISSION SOFTWARE FILTER SIZING SOFTWARE

SUCTION LOW & MEDIUM PRESSURE HIGH PRESSURE
RETURN/SUCTION RETURN STAINLESS STEEL HIGH PRESSURE

Working Pressure (bar) * 5 Flow rate (l/min) * 90 DP max of the project (bar) * 0.5 Fluid Working Temperature (°C) * 40

Fluid * HLP - Mineral oils Fluid type * ISO VG 46 (SUS 216) Viscosity (cst) * 46 Viscosity (SUS) * 216

Filtration * A20 - 20 µm absolute inorganic microfibre Connection Type * G 1"

CALCULATE

PRODUCT SELECTION POWER TRANSMISSION SOFTWARE FILTER SIZING SOFTWARE

SUCTION LOW & MEDIUM PRESSURE HIGH PRESSURE
RETURN/SUCTION RETURN STAINLESS STEEL HIGH PRESSURE

Product: MPFX Working Pressure (bar) * 5 Flow rate (l/min) * 90 DP max of the project (bar) * 0.5 Fluid Working Temperature (°C) * 40

Fluid * HLP - Mineral oils Fluid type * ISO VG 46 (SUS 216) Viscosity (cst) * 46 Viscosity (SUS) * 216

Filtration * A20 - 20 µm absolute inorganic microfibre Connection Type * G 1"

CALCULATE

Step ③

Select the desired options to choose the appropriate filter type for the application.

Working Pressure 8 (bar) Fluid HLP
Flow rate 90 (l/min) Fluid type ISO VG 46 (SUS 216)
DP max of the project 0.5 (bar) Seal A - NBR
Working Temperature 40 (°C) Working Temperature with options -25 + 110 (°C)
Filtration 25 µm absolute inorganic microfibre Working Temperature with options -20 + 110 (°C)
Connection Type G 1" Viscosity 46 (cst) - 216 (SUS)

NEW SEARCH

Filter type MPFX: Tank top mounting - (Pmax) 1 Valve B: 1.75 bar System Seal A: NBR X RESET
Option1 Single or duplex DIN Standard NOT APPLICABLE Indicator Visual

CSV Excel Show 10 entries Search:

Image	Code	Press bar	Qmax psi	Qmax l/min	Qmax gpm	DP bar	DP psi	Housing DP bar	Housing DP psi	Element DP bar	Element DP psi	Connection	Seal	Link
	MPFX-100-3-A-G3-A20-HBPS1	8	116	25.74	25.3	0.47	7	0.12	2	0.35	5	G 1"	A	Adjustment Report
	MPFX-100-3-A-G3-A20-HBPS1	8	116	25.74	25.3	0.47	7	0.12	2	0.35	5	G 1"	A	Adjustment Report

TYPICAL FILTER SIZING

Step 4

Choose the most suitable filter from the proposed list.

Image	Code	Pmax bar	Pmin psi	Pdiff bar	Qmax m³/min	Qmin US	Housing ΔP bar	Element ΔP bar	Complete filter ΔP bar	Connection	Seal	Link
	MPTX-100-5-A-Q3-A25-H-BPFI	8	116	25.74	25.3	5.47	7	0.12	2	0.35	5	G 1"
	MPTX-104-5-A-Q3-A25-H-BPFI	8	116	25.74	25.3	5.47	7	0.12	2	0.35	5	G 1"

Step 5

It is possible to change the filter modifying every parameter.



A SAVE YOUR FILTER'S REPORT



B MANUAL EDIT



SAVE IN YOUR ARCHIVE
typing your reference data and then SAVE AS PDF

A new
browser window
displays the pdf

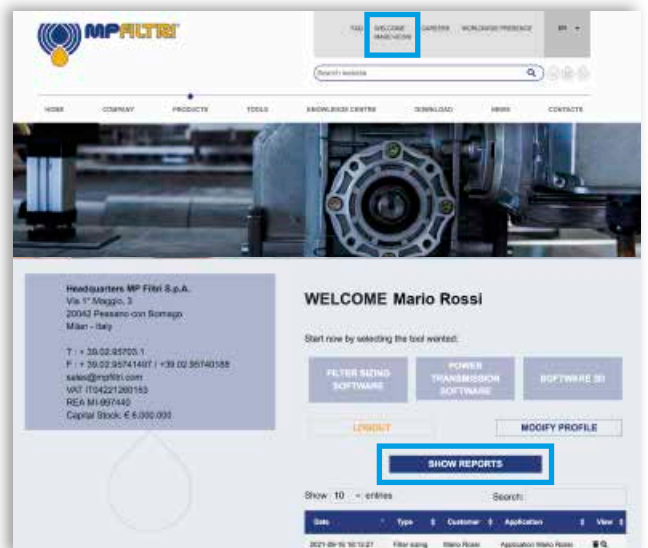
see **A**



Close the report window



By clicking your WELCOME button,
the SHOW REPORTS is displayed: select it to see your filters list.



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 see chapter at page 25

Stainless steel high pressure filters



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FZP series

Maximum working pressure up to 42 Mpa (420 bar) - Flow rate up to 160 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 160 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 \pm 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	10.2	11.5	-		0.45	0.78	1.00	-

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
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.

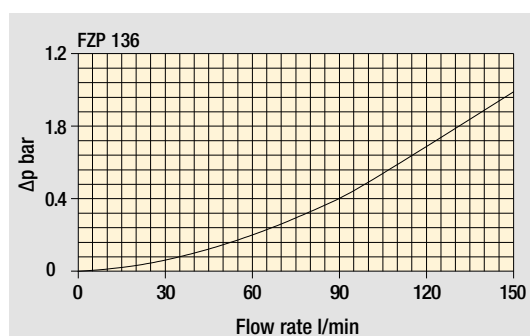
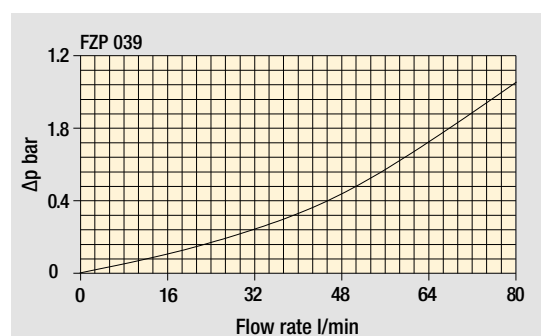
Please, contact our Sales Department for further additional information.

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

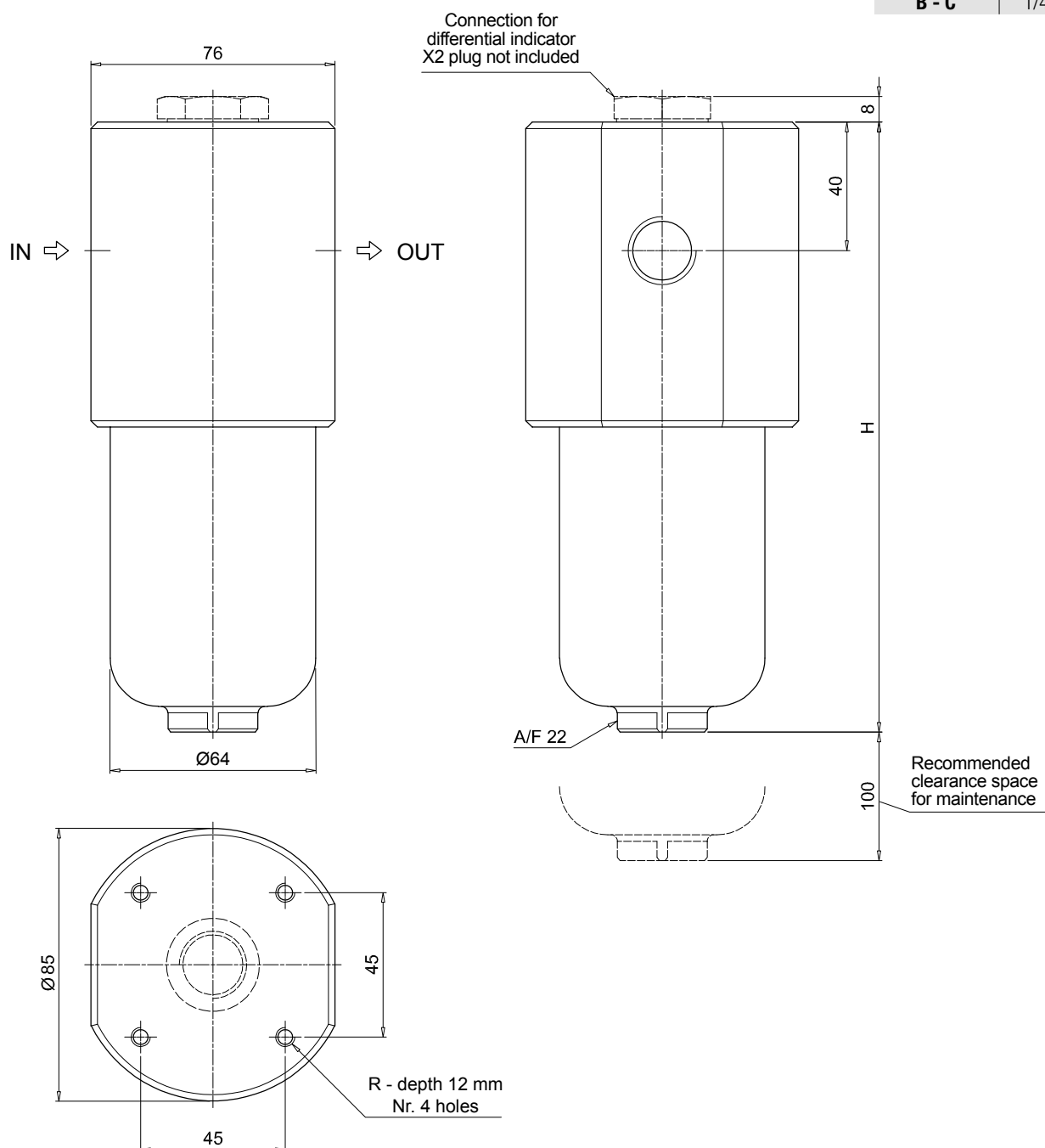


The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968. Δp varies proportionally with density.

COMPLETE FILTER

[illegible]

Differential indicators		page
DEH	Hazardous area electronic differential indicator	642
DEX	Electrical differential indicator	643
DLX	Electrical / visual differential indicator	643
Additional features		page
X2	Plug	644



FZP039

Filter length	H [mm]
2	179
3	222
4	266

Connections	R
A	M6
B - C	1/4" UNC

Designation & Ordering code

COMPLETE FILTER

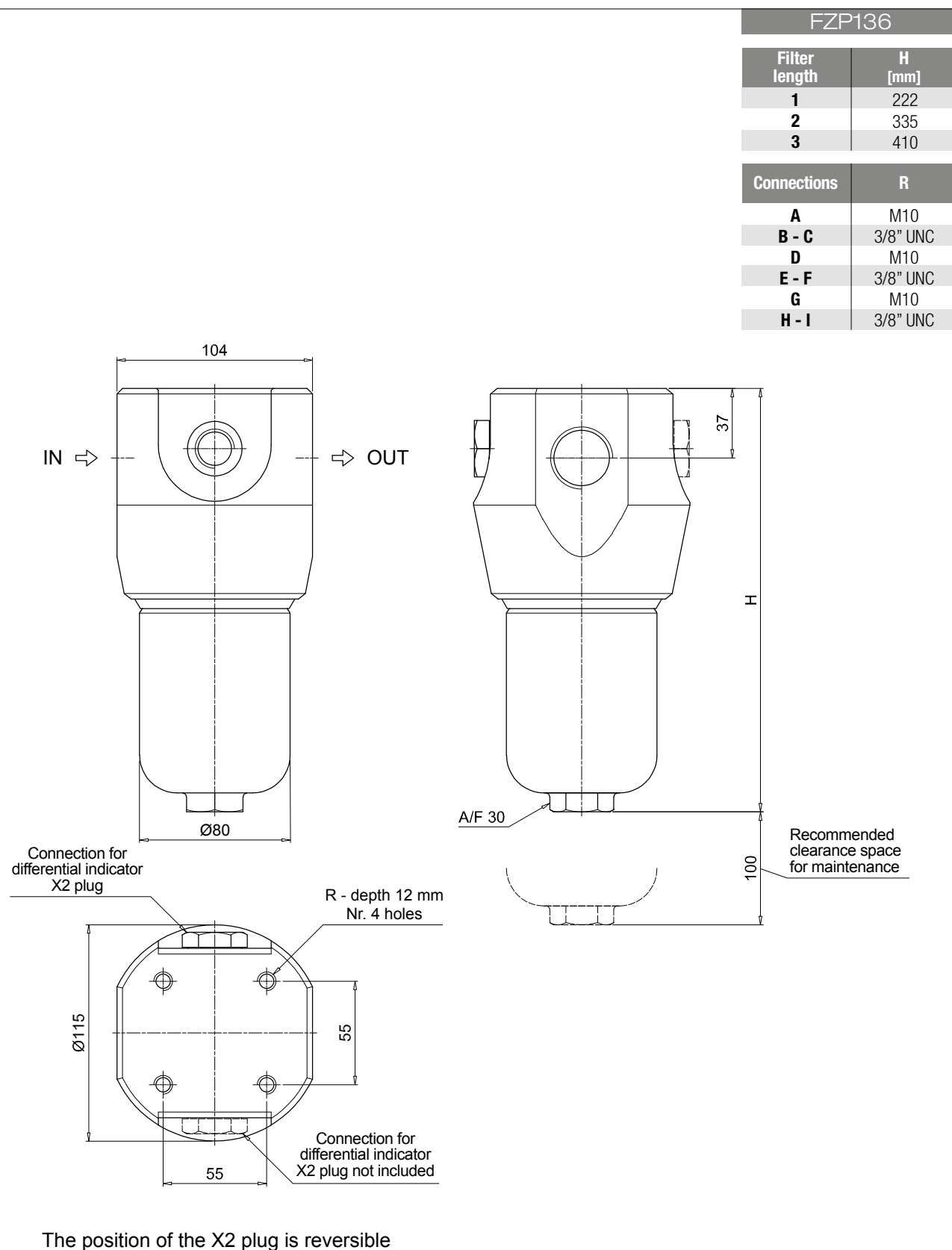
Series and size	Configuration example:	FZP136	1	B	A	B	6	A03	R	P01
FZP136										
Length										
1 2 3										
Valves										
S Without bypass										
B With bypass 6 bar										
Seals										
A NBR										
V FPM										
F MFQ										
Connections										
A G 3/4"										
B 3/4" NPT										
C SAE 12 - 1 1/16" - 12 UN										
D G 1"										
E 1" NPT										
F SAE 16 - 1 5/16" - 12 UN										
G G 1 1/4"										
H 1 1/4" NPT										
I SAE 20 - 1 5/8" - 12 UN										
Connections for differential indicators										
1 Without										
6 With two connections on both sides										
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										
										Valves
										S B
										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	Configuration example:	HP135	1	A03	A	R	P01
HP135							
Element length							
1 2 3							
Filtration rating (filter media)							
A03 Inorganic microfiber 3 µm							
A06 Inorganic microfiber 6 µm							
A10 Inorganic microfiber 10 µm							
A16 Inorganic microfiber 16 µm							
A25 Inorganic microfiber 25 µm							
							Valves
							S B
							R 20 bar •
							S 210 bar •
							U 210 bar, stainless steel filter element • •
							Execution
							P01 MP Filtri standard
							Pxx Customized

ACCESSORIES

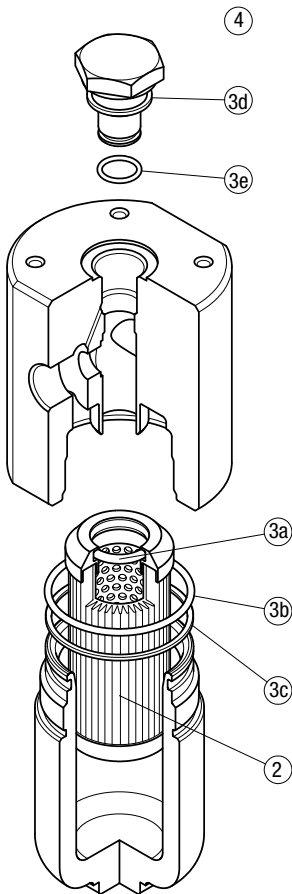
Differential indicators	page		page
DEH Hazardous area electronic differential indicator	642	DVX Visual differential indicator	643
DEX Electrical differential indicator	643	DVY Visual differential indicator	644
DLX Electrical / visual differential indicator	643		
Additional features	page		
X2 Plug	644		



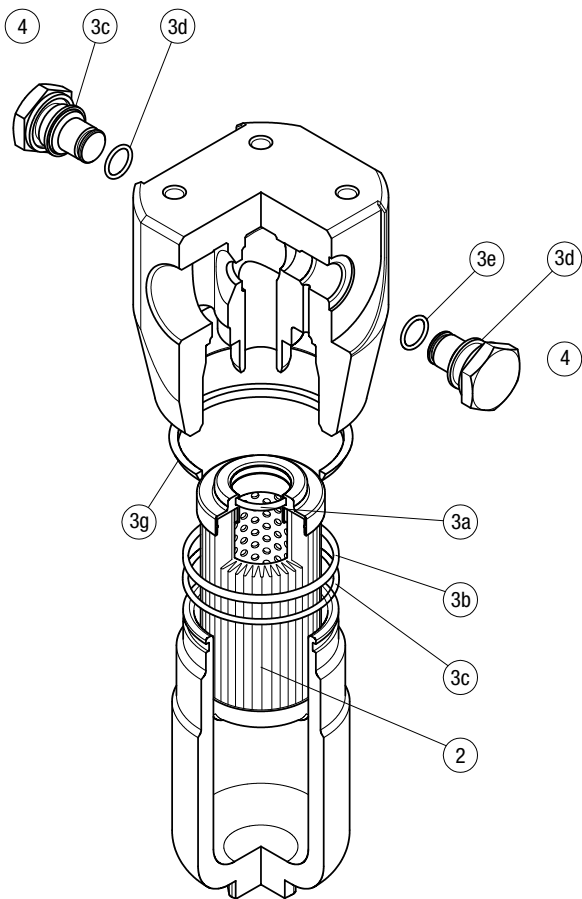
FZP SPARE PARTS

Order number for spare parts

FZP 039



FZP 136



Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	
Item:	2	3 (3a ÷ 3g)		4	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
		NBR	FPM	NBR	FPM
FZP 039	See order table	02050299	02050300	X2H	X2V
FZP 136		02050636	02050637		

FZH series

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



Description

Technical data

Stainless steel high pressure filters

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 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 [dm³]				
	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 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.

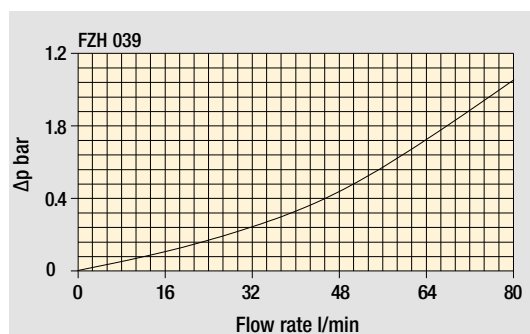
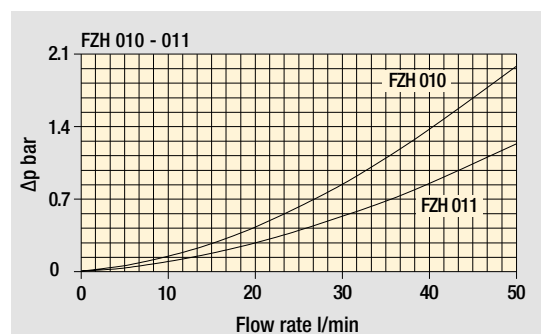
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure. Please, contact our Sales Department for further additional information.

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** |

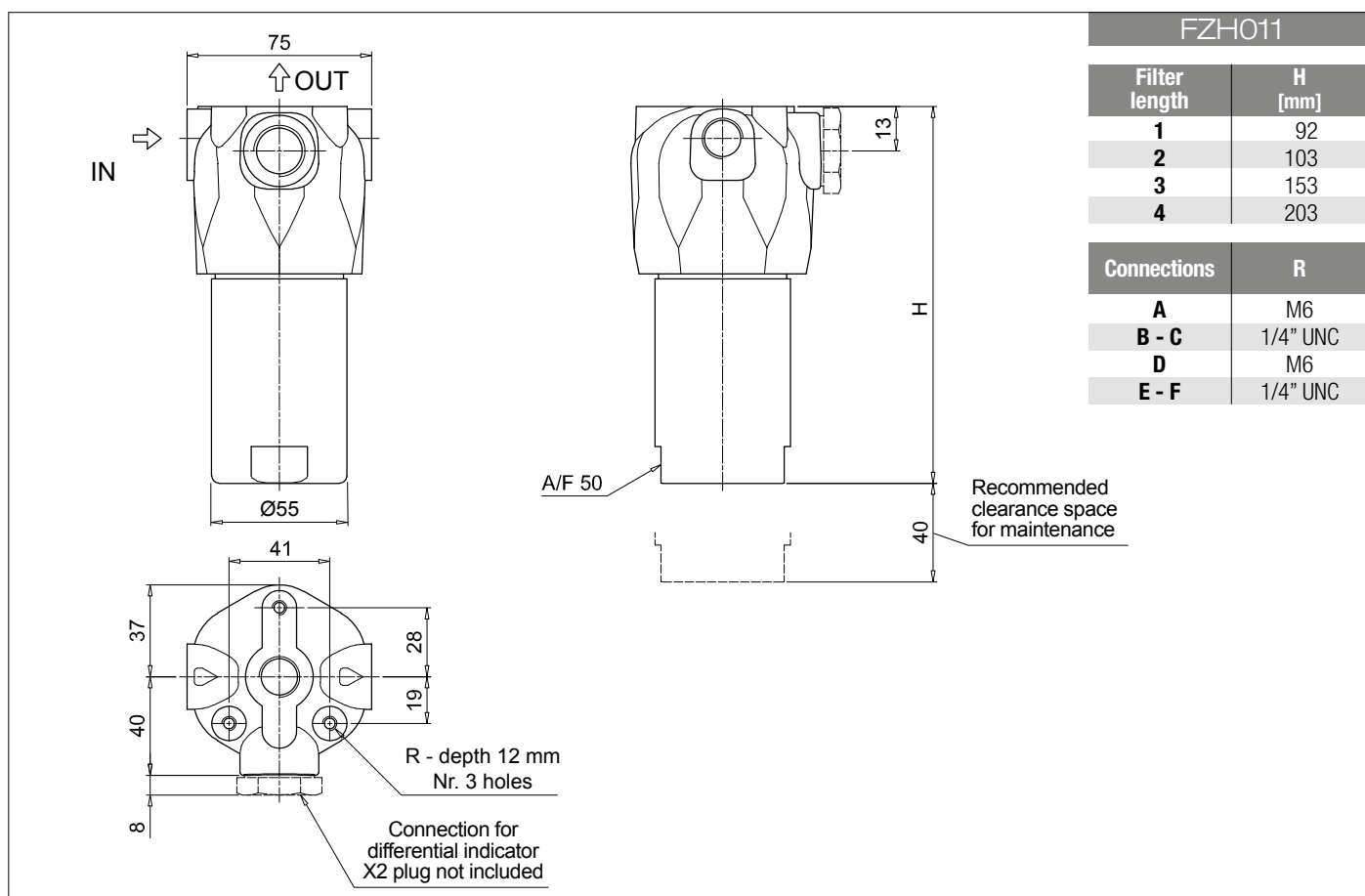
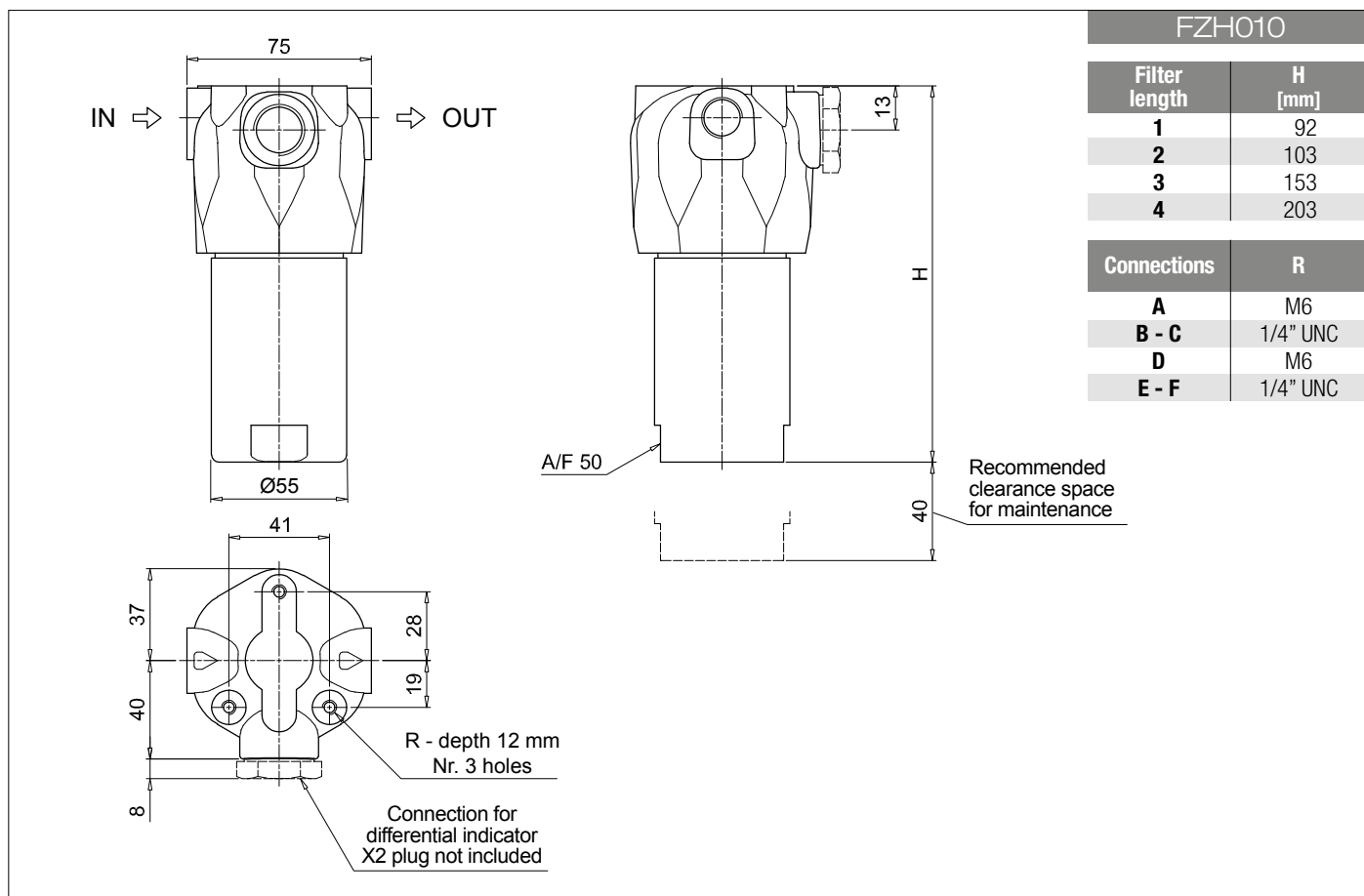
Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm

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	642	DVX	Visual differential indicator	643
DEX	Electrical differential indicator	643	DVY	Visual differential indicator	644
DLX	Electrical / visual differential indicator	643			
Additional features		page			
X2	Plug	644			



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** |

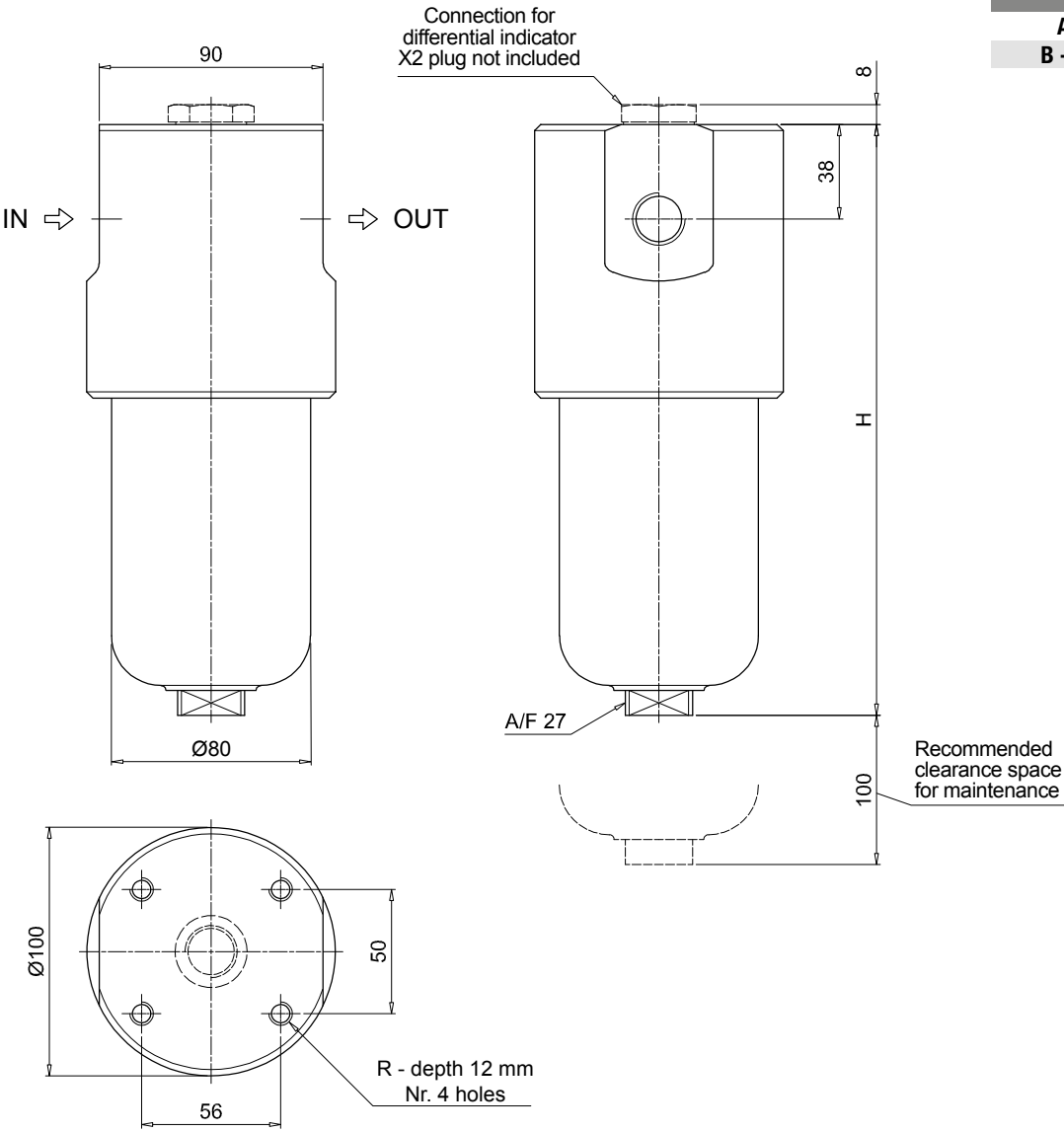
Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm

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

ACCESSORIES

Differential indicators		page			page
DEH	Hazardous area electronic differential indicator	642	DVX	Visual differential indicator	643
DEX	Electrical differential indicator	643	DVY	Visual differential indicator	644
DLX	Electrical / visual differential indicator	643			
Additional features		page			
X2	Plug	644			

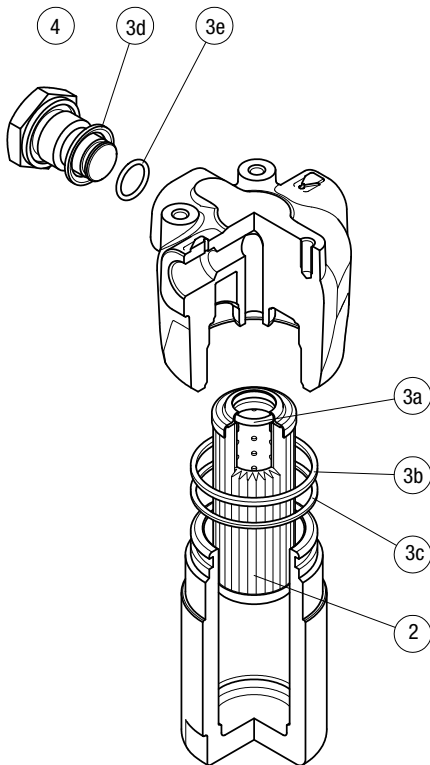


FZH039

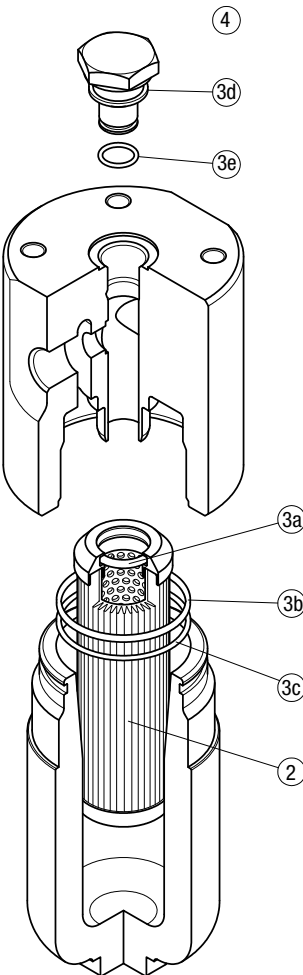
Filter length	H [mm]
2	200
3	243
4	287

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

FZH 010 - 011



FZH 039



Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	
Item:	2	3 (3a ÷ 3e)		4	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
		NBR	FPM	NBR	FPM
FZH 010-011	See order table	02050501	02050492	X2H	X2V
FZH 039		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 \pm 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 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
FZX 011	-	-	-	6.5	-	-	-	-	0.15	-

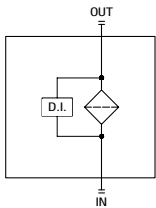
Filter series	Length	Filter element design - H-U Series				
		A03	A06	A10	A16	A25
FZX 011	3	1.57	1.63	1.73	1.74	1.77

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.

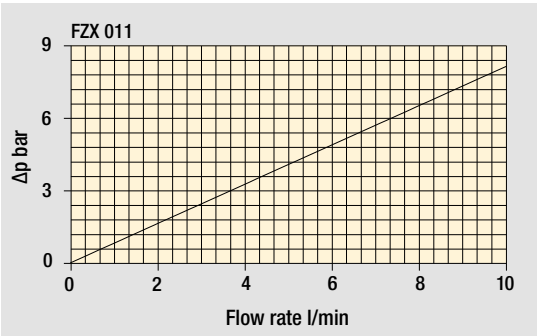
Hydraulic symbols

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.

Designation & Ordering code

COMPLETE FILTER

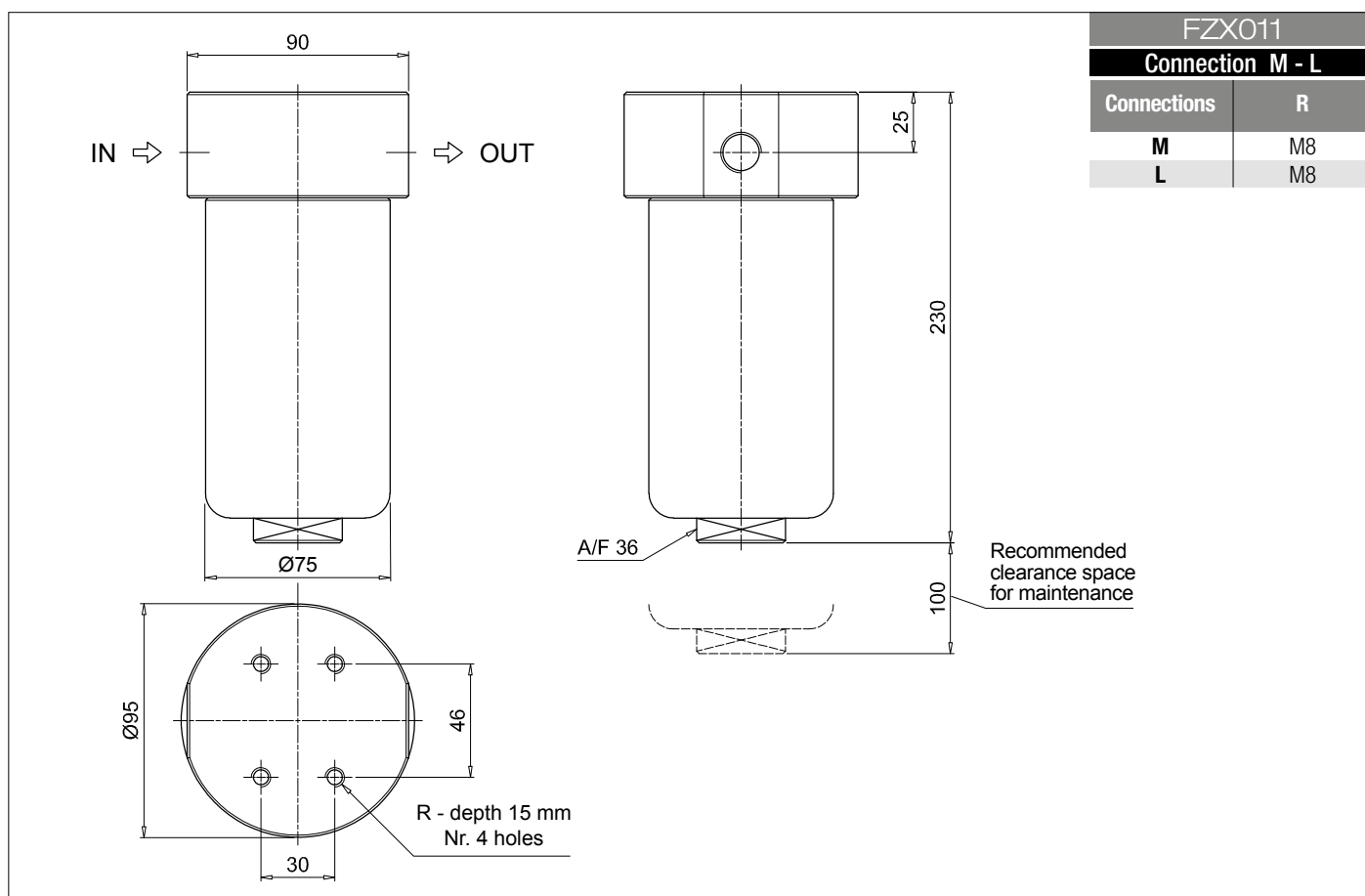
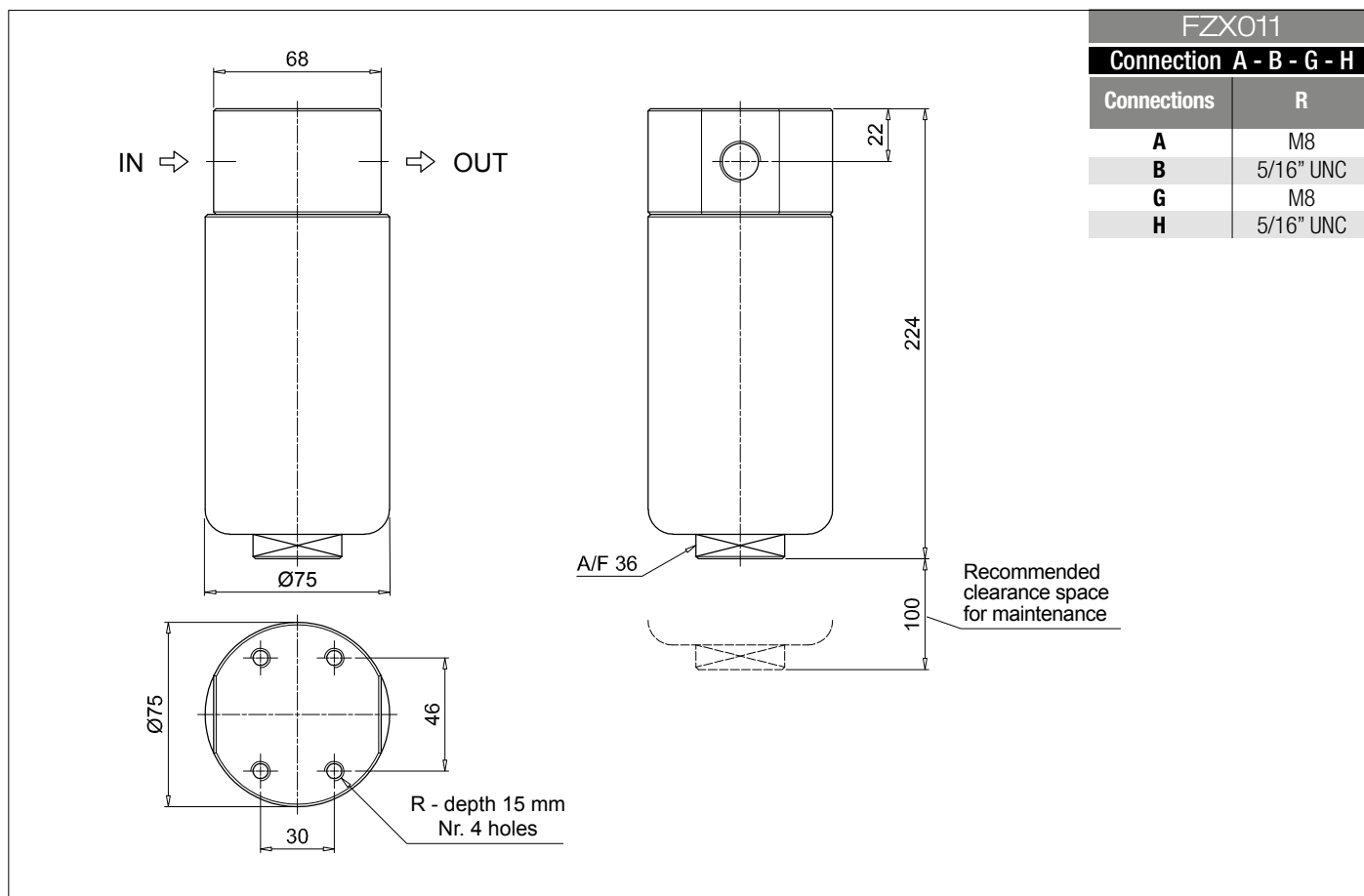
Series and size		Configuration example: FZX011 3 S V B 1 A03 U P01									
FZX011											
Length											
3											
Valves											
S Without bypass											
Seals											
A NBR											
V FPM											
F MFQ											
Connections											
		700 bar									
A G 1/4"											
B 1/4" NPT											
G G 1/2"											
H 1/2" NPT"											
		Autoclave 1000 bar									
M 9/16" - 18 UNF											
L 3/4" - 14 NPS											
Connection for differential indicators											
1 Without											
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	Execution
H 210 bar	P01 MP Filtri standard
U 210 bar, stainless steel filter element	Pxx Customized

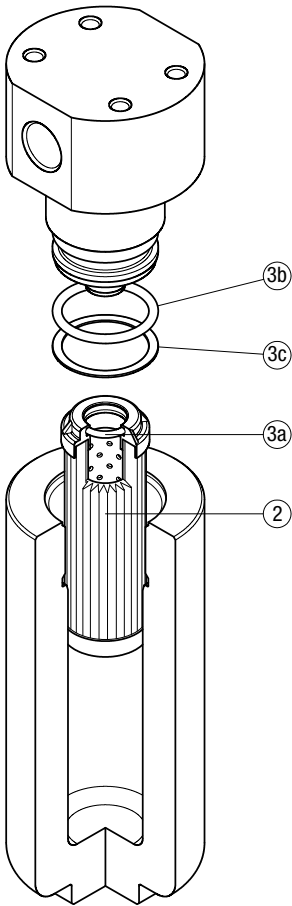
FILTER ELEMENT

Element series and size		Configuration example: HP011 3 A03 V U P01					
HP011							
Element length							
3							
Filtration rating (filter media)							
A03 Inorganic microfiber 3 µm							
A06 Inorganic microfiber 6 µm							
A10 Inorganic microfiber 10 µm							
A16 Inorganic microfiber 16 µm							
A25 Inorganic microfiber 25 µm							

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



FZX 011



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

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 \pm 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.

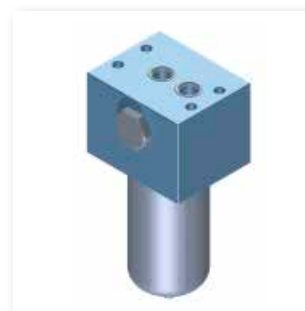
Element series "S":

- 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 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
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.

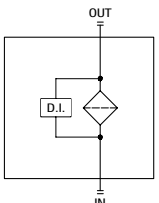
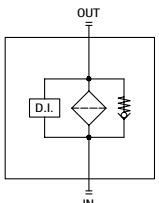
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

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.

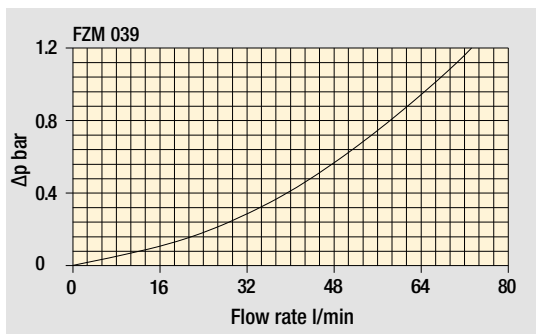
Please, contact our Sales Department for further additional information.

Hydraulic symbols

Filter series	Style S	Style B
FZM 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		Configuration example: FZM039 2 S A M 1 A10 H P01									
FZM039											
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	
		S	B
R	20 bar		•
S	210 bar	•	
U	210 bar. stainless steel filter element	•	•

Execution	
P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example: **HP039** **3** **A10** **A** **S** **P01**

Element series and size	
HP039	

Element length	
2	3

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

Seals	
A	NBR
V	FPM
F	MEQ

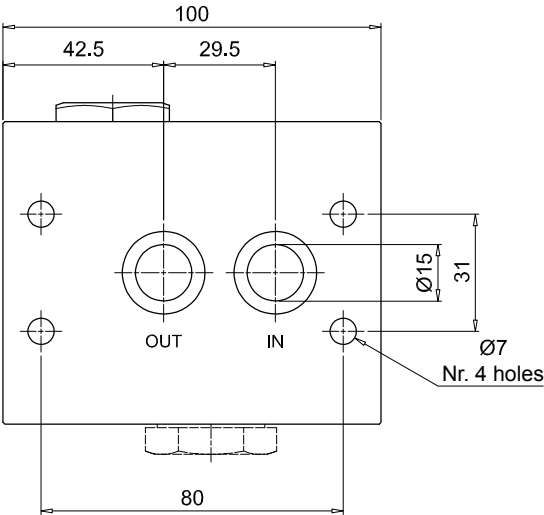
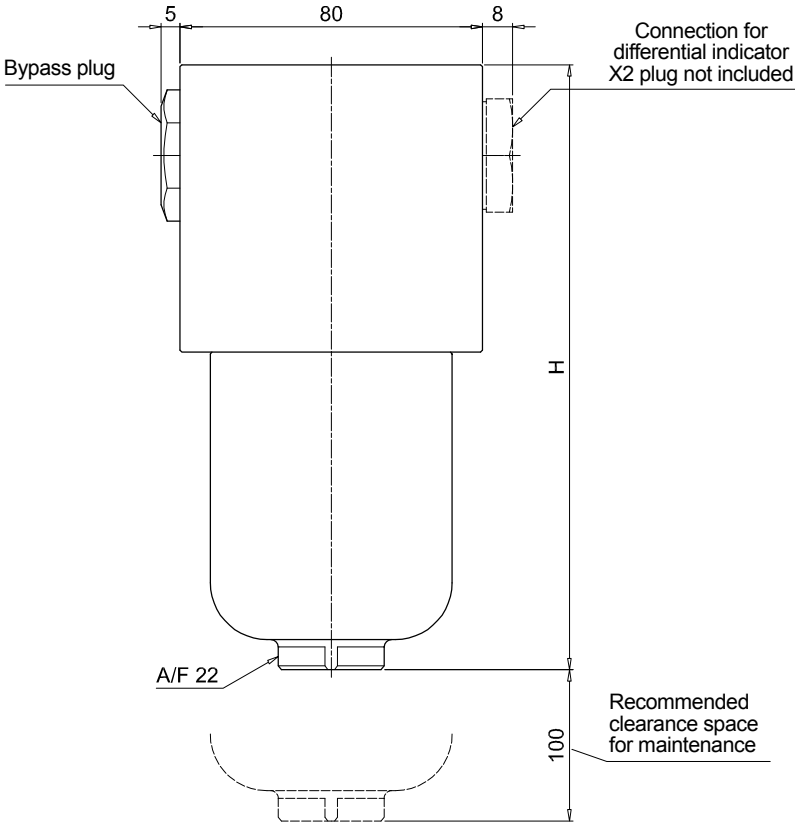
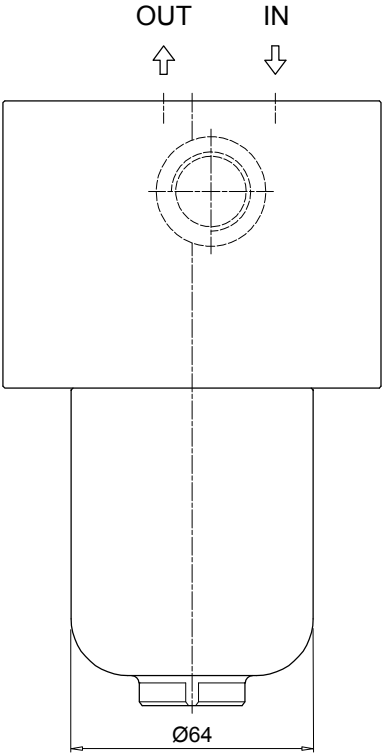
Element Δp	
R	20 bar
S	210 bar
U	210 bar. stainless steel filter element

Execution	
P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Differential indicators		page			page
DEH	Hazardous area electronic differential indicator	642	DVX	Visual differential indicator	643
DEX	Electrical differential indicator	643	DVY	Visual differential indicator	644
DLX	Electrical / visual differential indicator	643			
Additional features		page			
X2	Plug	644			

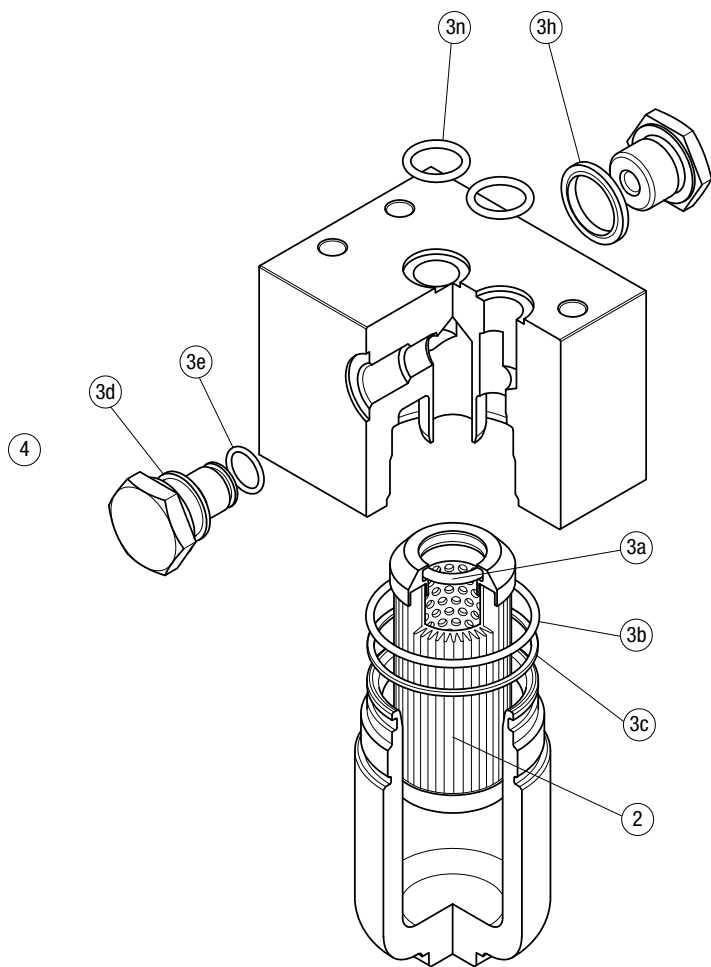
FZM039	
Filter length	H [mm]
2	160
3	203
4	247



FZM SPARE PARTS

Order number for spare parts

FZM 039



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

FZB 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

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 \pm 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 [dm³]				
	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.

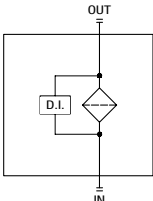
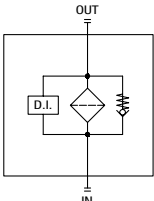
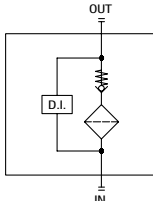
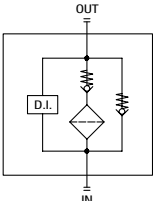
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

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.

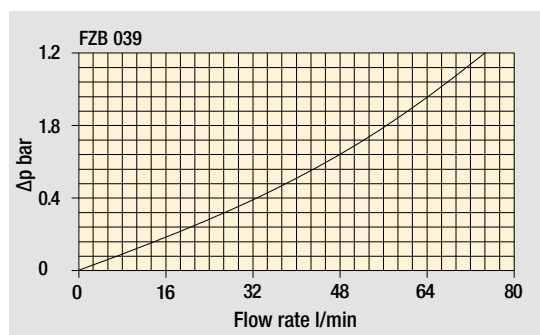
Please, contact our Sales Department for further additional information.

Hydraulic symbols

Filter series	Style S	Style B	Style T	Style D
FZB 039	•	•	•	•
				

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 FZB039	Configuration example: FZB039	2	T	A	F	2	A06	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									
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	S	B	T	D	Execution
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	2	A06	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						

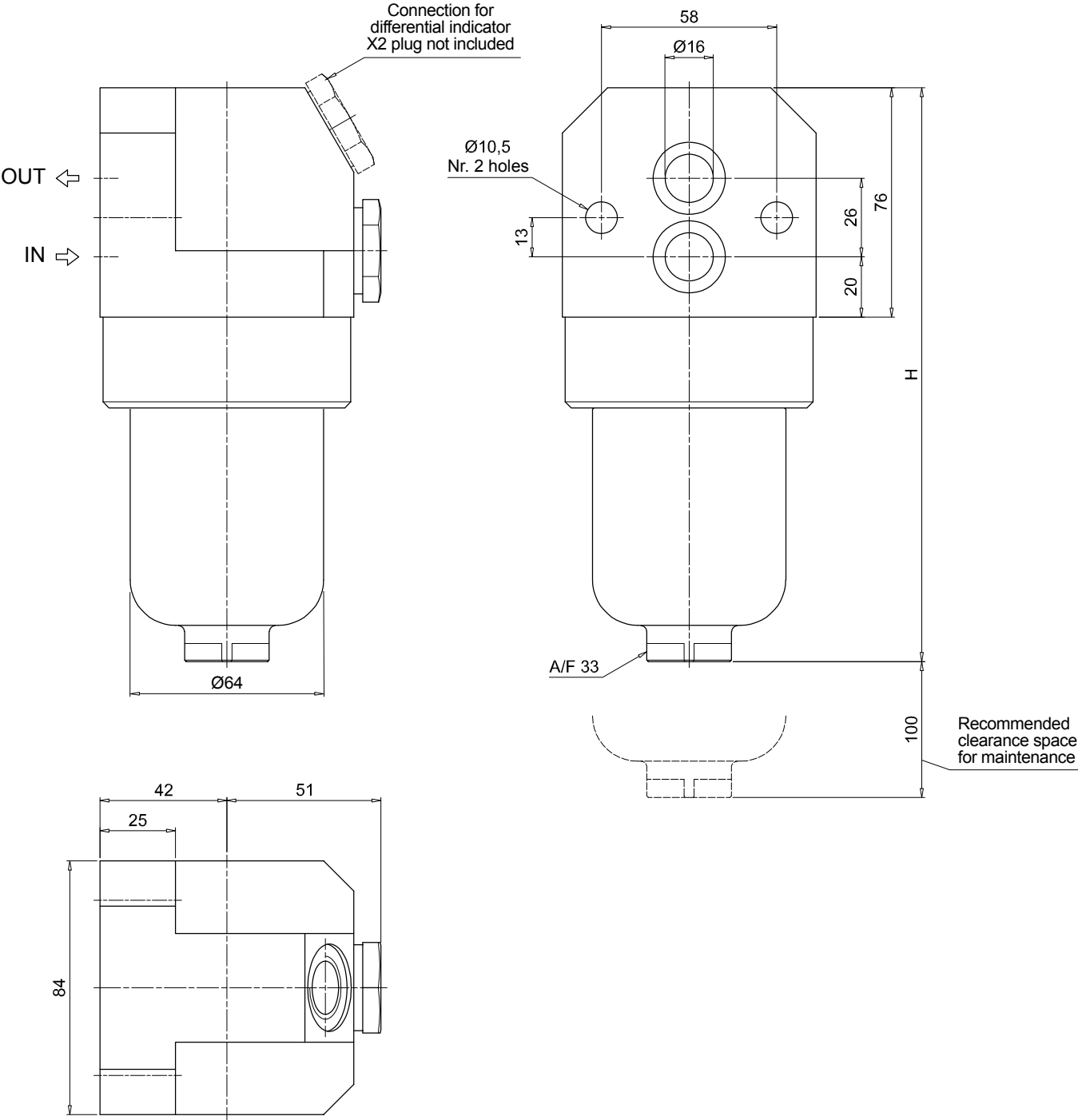
Seals	Element Δp	Execution
A NBR	R 20 bar	P01 MP Filtri standard
V FPM	S 210 bar	Pxx Customized
F MFQ	U 210 bar, stainless steel filter element	

ACCESSORIES

Differential indicators	page		page
DEH Hazardous area electronic differential indicator	642	DVX Visual differential indicator	643
DEX Electrical differential indicator	643	DVY Visual differential indicator	644
DLX Electrical / visual differential indicator	643		
Additional features	page		
X2 Plug	644		

FZB039

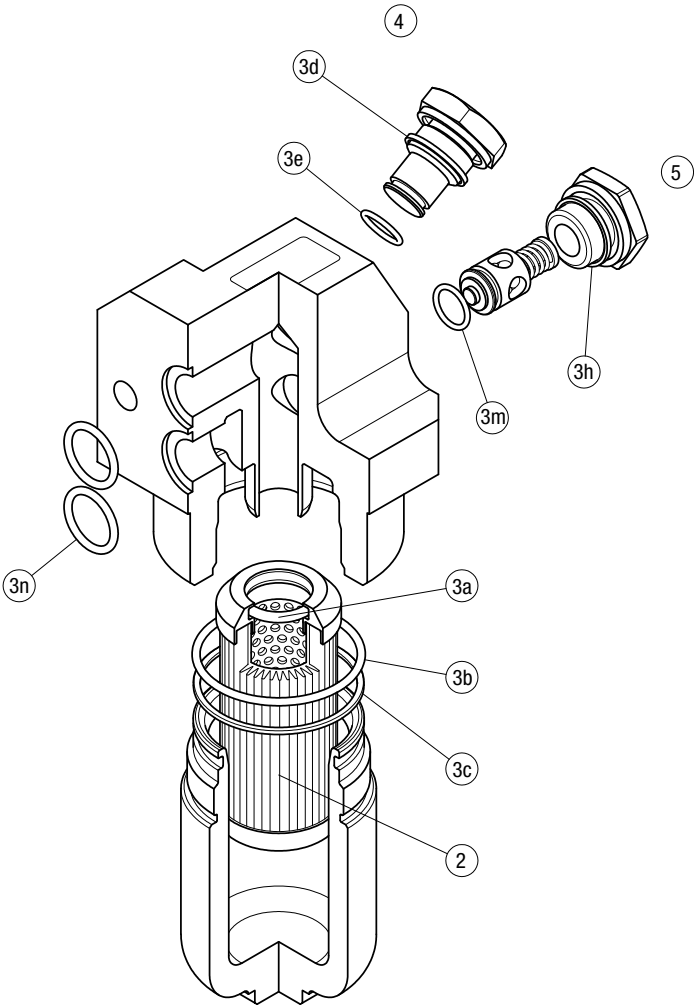
Filter length	H [mm]
2	190
3	233
4	277



FZB SPARE PARTS

Order number for spare parts

FZB 039



Item:		Seal Kit code number		Indicator connection plug		Bypass assembly / plug	
Filter series		NBR	FPM	NBR	FPM	NBR	FPM
FZB 039		02050647	02050648	X2H	X2V	02001286	02001295

FZD series

Maximum working pressure up to 35 Mpa (350 bar) - Flow rate up to 60 l/min



Description

Technical data

Stainless steel high pressure filters

Duplex

Maximum working pressure up to 35 Mpa (350 bar)

Flow rate up to 60 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 [dm³]					
	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.

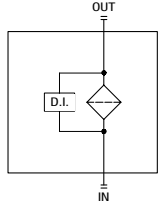
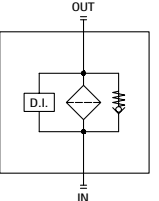
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

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.

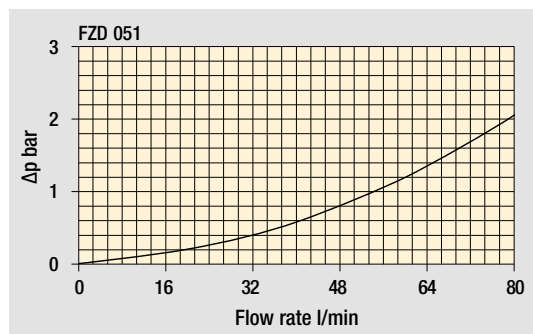
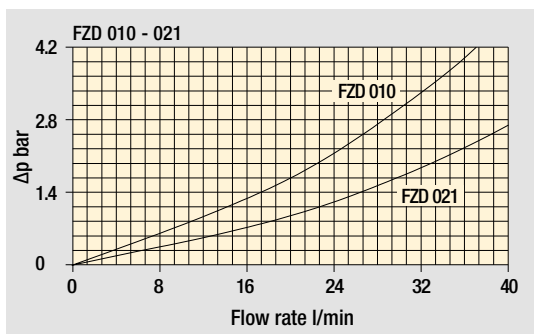
Hydraulic symbols

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			Execution				
			H	210 bar		P01	MP Filtri standard			
			U	210 bar, stainless steel filter element		Pxx	Customized			

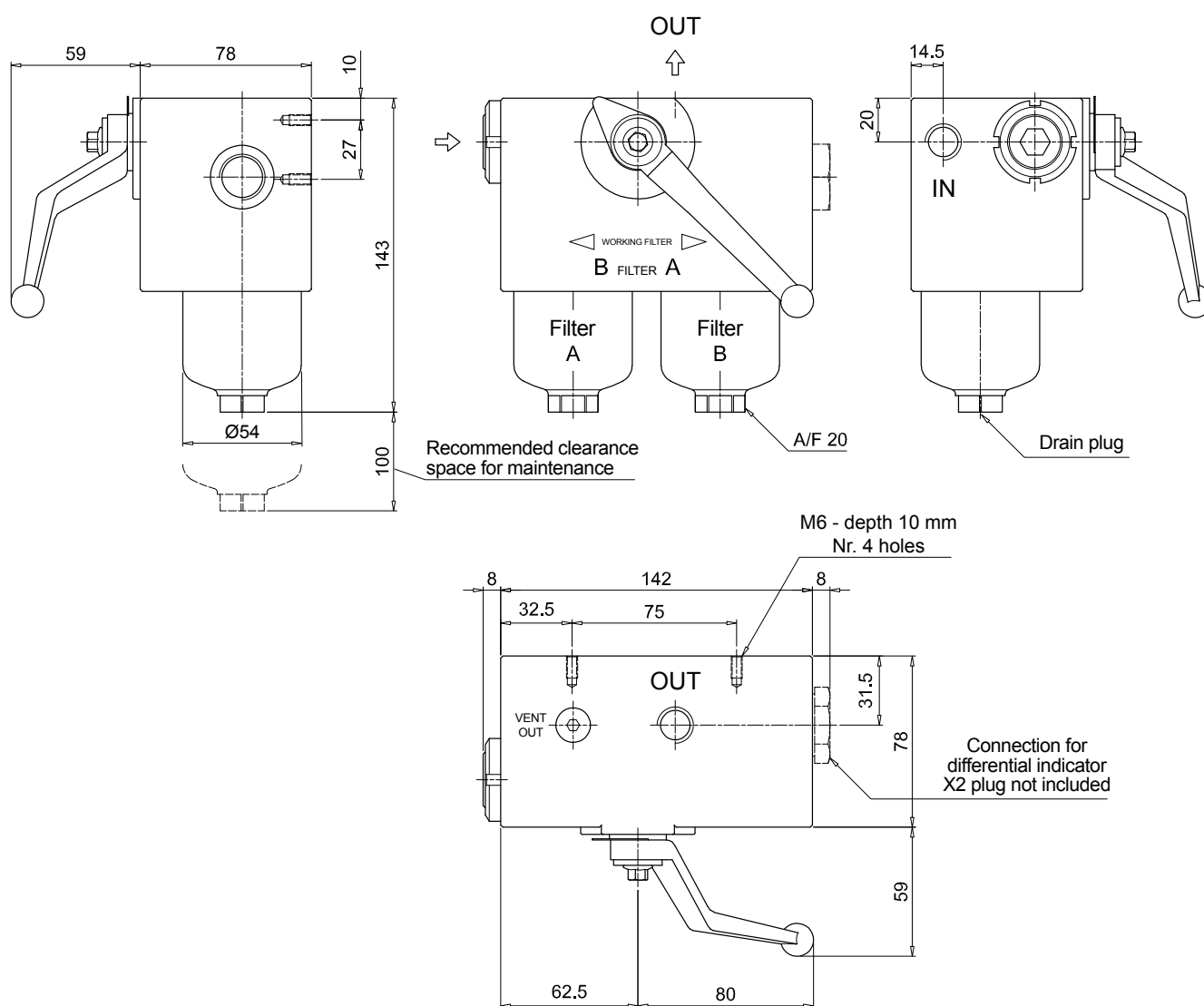
FILTER ELEMENT

Element series and size			Configuration example: HP011 4 A06 A H P01					
	FZD010	FZD021						
HP010	•							
HP011		•						
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		Element Δp		Execution	
			A	NBR	H	210 bar	P01	MP Filtri standard
			V	FPM	U	210 bar, stainless steel filter element	Pxx	Customized

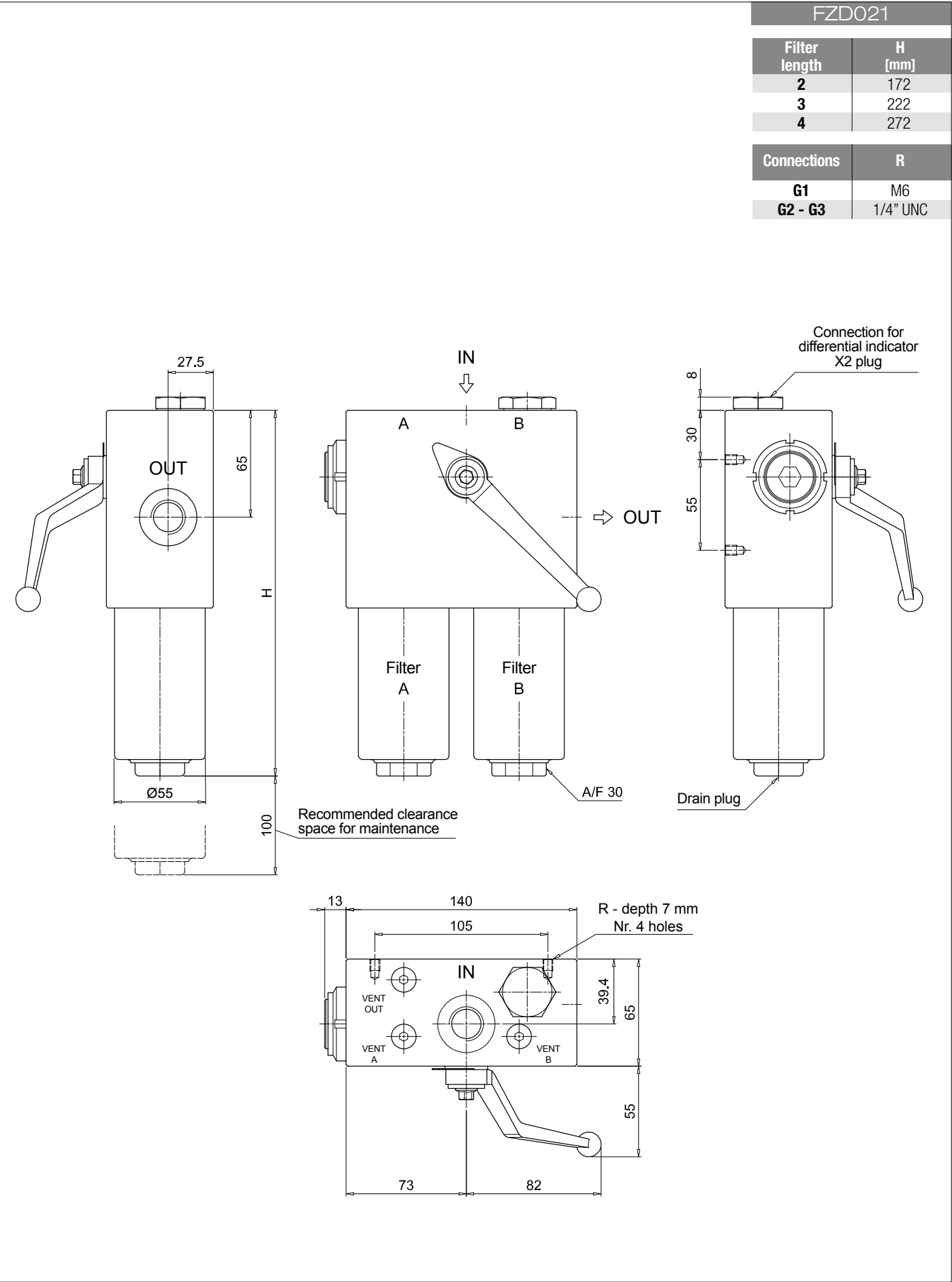
ACCESSORIES

Differential indicators		page			page
DEH	Hazardous area electronic differential indicator	642	DVX	Visual differential indicator	643
DEX	Electrical differential indicator	643	DVY	Visual differential indicator	644
DLX	Electrical / visual differential indicator	643			
Additional features		page			
X2	Plug	644			

FZD010



Dimensions



Designation & Ordering code

COMPLETE FILTER

Series and size		Configuration example: FZD051										3	B	A	G3	A03	U	P01		
FZD051																				
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				
Element Δp																	Valves		Execution	
R	20 bar																S	B	P01 MP Filtri standard	
S	210 bar																		Pxx Customized	
U	210 bar, stainless steel filter element																			

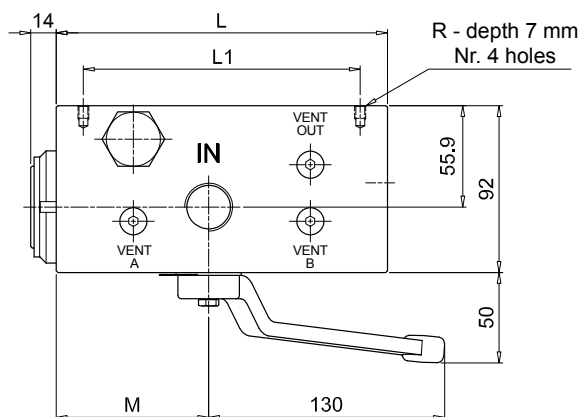
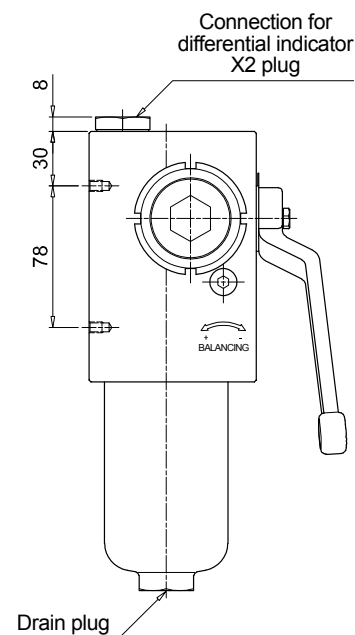
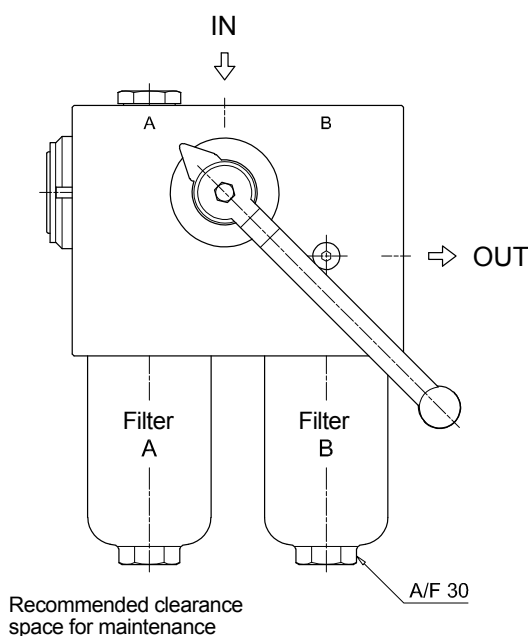
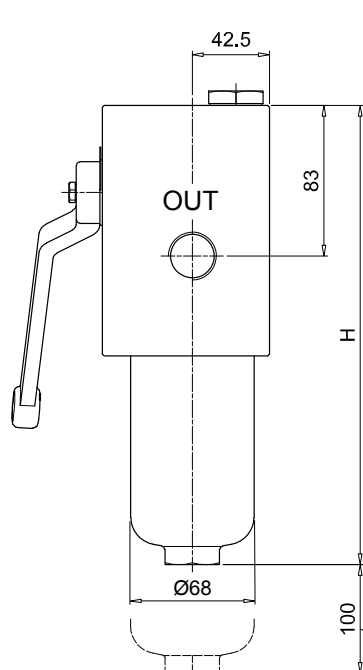
FILTER ELEMENT

Element series and size	Configuration example: HP050					
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					
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					

ACCESSORIES

Differential indicators		page			page
DEH	Hazardous area electronic differential indicator	642	DVX	Visual differential indicator	643
DEX	Electrical differential indicator	643	DVY	Visual differential indicator	644
DLX	Electrical / visual differential indicator	643			
Additional features		page			
X2	Plug	644			

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

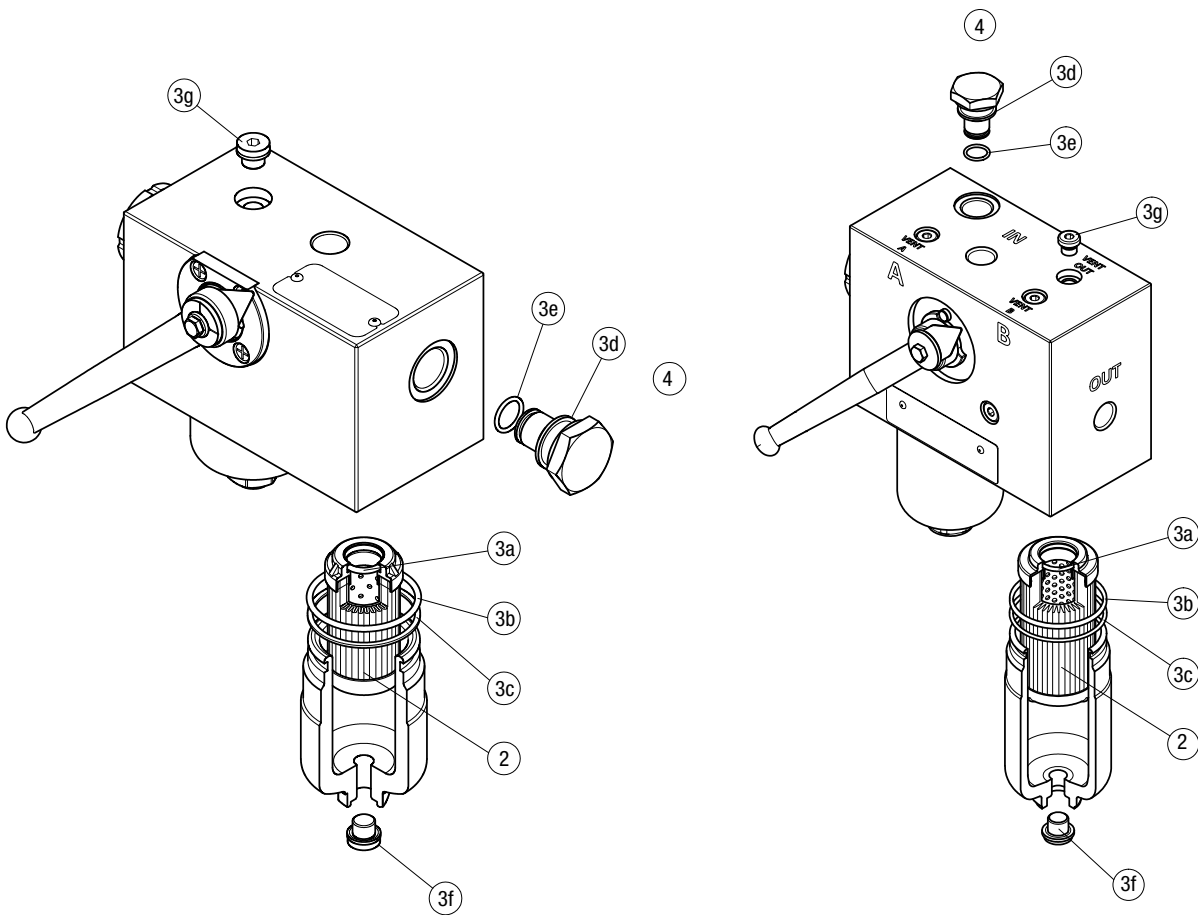


FZD SPARE PARTS

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	NBR
FZD 021		FPM	FPM
FZD 051			

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

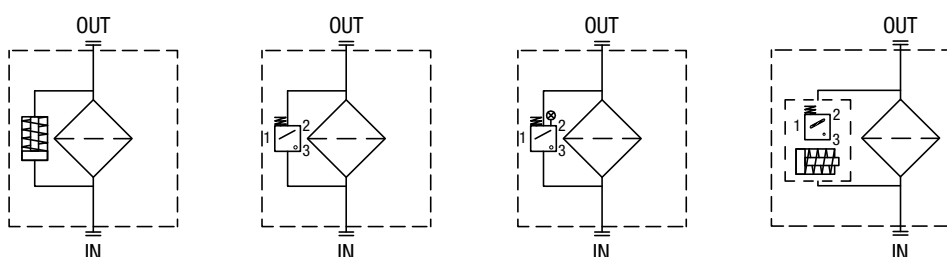
These type of devices can be provided with a visual, electrical or both signals.

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.

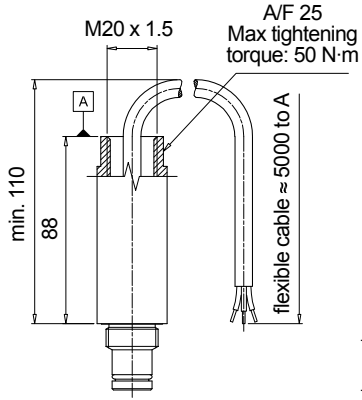
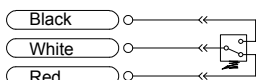





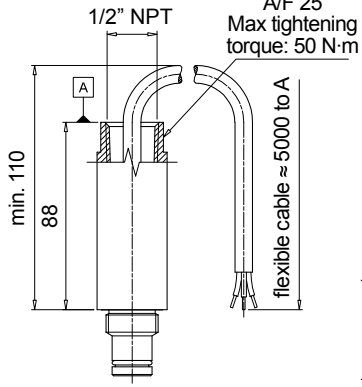
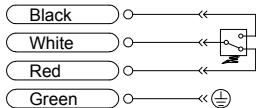






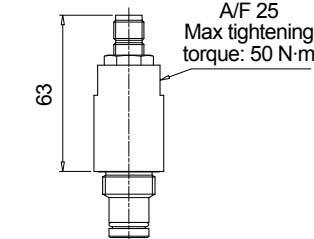
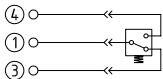







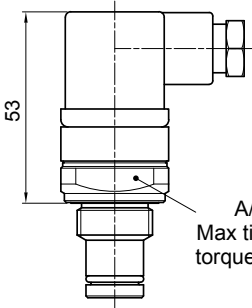
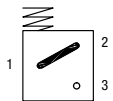
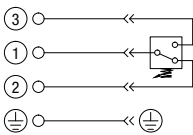
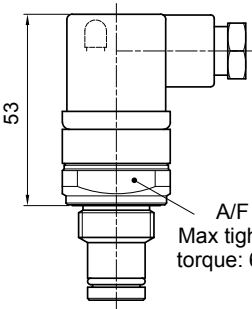
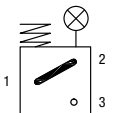
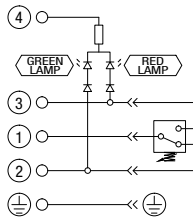
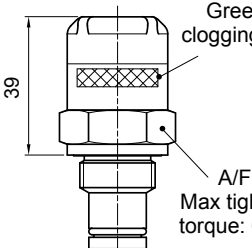
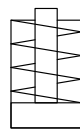
Quick reference guide

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

DIFFERENTIAL INDICATORS

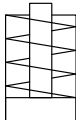
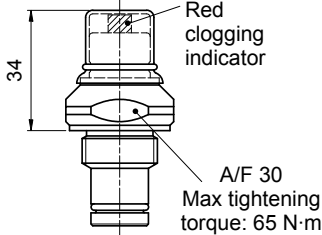
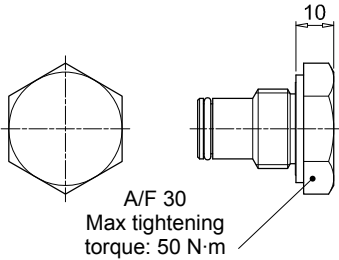
Dimensions

<div>DEH*48</div> <div>Hazardous Area Electronic Differential Indicator</div> <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>5.0 bar ±10%</td><td>DE H 50 x A 48 P01</td></tr><tr><td>7.0 bar ±10%</td><td>DE H 70 x A 48 P01</td></tr></table> <div></div> <div><div></div><div>- Certification / Approvals: ATEX, IECEx, EAC TR CU, INMETRO - Certification included as standard</div></div>		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	<div>Materials</div> <div><div>- Body:</div><div>- Contacts:</div><div>- Seal:</div></div> <div>AISI 316L Rhodium FPM - MFQ</div> <div>Technical data</div> <div><div>- Max working pressure:</div><div>- Proof pressure:</div><div>- Burst pressure:</div><div>- Working temperature:</div><div>- Compatibility with fluids:</div></div> <div>420 bar 630 bar 1260 bar From -60 °C to +125 °C Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943 EX ia IIC T4/T6: Intrinsically safe</div> <div><div>- Protection class:</div><div>- Temperature class:</div><div>- Degree of protection:</div><div>- Connection type:</div><div>- Contact type:</div></div> <div>EX ia IIC T4/T6: Intrinsically safe T4 (135 °C) and T6 (85 °C) IP 66/67/68 according to EN 60529 Three-core cable, fitting M20x1.5 SPCO/SPDT (Hermetically sealed - Volt-free contacts)</div> <div>Electrical data</div> <div><div>- Resistive Load:</div><div>- Electrical Ratings:</div></div> <div>830 mA / 24 Vdc - 180 mA / 110 Vac Ui = 30 Vdc Ii = 250 mA Pi = 1.3 W</div>
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							
<div>DEH*49</div> <div>Hazardous Area Electronic Differential Indicator</div> <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>5.0 bar ±10%</td><td>DE H 50 x A 49 P01</td></tr><tr><td>7.0 bar ±10%</td><td>DE H 70 x A 49 P01</td></tr></table> <div></div> <div><div></div><div>- Certification / Approvals: ATEX, IECEx, EAC TR CU, INMETRO, UL/CSA Class I Division 1 Groups A-D, UL/CSA Class II Division 1 Groups E-G - Certification included as standard</div></div>		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	<div>Materials</div> <div><div>- Body:</div><div>- Contacts:</div><div>- Seal:</div></div> <div>AISI 316L Rhodium FPM - MFQ</div> <div>Technical data</div> <div><div>- Max working pressure:</div><div>- Proof pressure:</div><div>- Burst pressure:</div><div>- Working temperature:</div><div>- Compatibility with fluids:</div></div> <div>420 bar 630 bar 1260 bar From -60 °C to +120 °C : ATEX, IECEx, EAC TR CU, INMETRO From -60 °C to +105 °C : UL/CSA Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943 Ex d IIC T4/T6: Flameproof</div> <div><div>- Protection class:</div><div>- Temperature class:</div><div>- Degree of protection:</div><div>- Connection type:</div><div>- Contact type:</div></div> <div>Ex d IIC T4/T6: Flameproof T4 (135 °C) and T6 (85 °C) IP 66/67/68 according to EN 60529 Four-core cable, fitting 1/2" NPT SPCO/SPDT (Hermetically sealed - Volt-free contacts)</div> <div>Electrical data</div> <div><div>- Resistive Load:</div><div>- Max voltage</div><div>- Power</div></div> <div>830 mA / 24 Vdc - 180 mA / 110 Vac 150 Vac/dc 20 W</div>
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							
<div>DEH*70</div> <div>Hazardous Area Electronic Differential Indicator</div> <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>5.0 bar ±10%</td><td>DE H 50 x A 70 P01</td></tr><tr><td>7.0 bar ±10%</td><td>DE H 70 x A 70 P01</td></tr></table> <div></div> <div><div></div><div>- Certification / Approvals: ATEX, IECEx, EAC TR CU, INMETRO - Certification included as standard</div></div>		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	<div>Materials</div> <div><div>- Body:</div><div>- Contacts:</div><div>- Seal:</div></div> <div>AISI 316L with internal engineered resin switch Rhodium FPM - MFQ</div> <div>Technical data</div> <div><div>- Max working pressure:</div><div>- Proof pressure:</div><div>- Burst pressure:</div><div>- Working temperature:</div><div>- Compatibility with fluids:</div></div> <div>420 bar 630 bar 1260 bar From -60 °C to +80 °C Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943 EX ia IIC T6: Intrinsically safe</div> <div><div>- Protection class:</div><div>- Temperature class:</div><div>- Degree of protection:</div><div>- Connection type:</div><div>- Contact type:</div></div> <div>EX ia IIC T6: Intrinsically safe T6 (85 °C) IP 66/67 according to EN 60529 IEC 61076-2-101 D (M12) SPCO/SPDT (Hermetically sealed - Volt-free contacts)</div> <div>Electrical data</div> <div><div>- Resistive Load:</div><div>- Electrical Ratings:</div></div> <div>830 mA / 24 Vdc - 180 mA / 110 Vdc Ui = 30 Vdc Ii = 250 mA Pi = 1.3 W</div>
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							

<div>DEX*50</div> <div>Electrical Differential Indicator</div> <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>5.0 bar ±10%</td><td>DE X 50 x A 50 P01</td></tr><tr><td>7.0 bar ±10%</td><td>DE X 70 x A 50 P01</td></tr><tr><td>9.5 bar ±10%</td><td>DE X 95 x A 50 P01</td></tr></table> <div></div>		Settings	Ordering code	5.0 bar ±10%	DE X 50 x A 50 P01	7.0 bar ±10%	DE X 70 x A 50 P01	9.5 bar ±10%	DE X 95 x A 50 P01	<div>Hydraulic symbol</div> <div></div> <div>Electrical symbol</div> <div></div>	<div>Materials</div> <div><div>- Body:</div><div>- Base:</div><div>- Contacts:</div><div>- Seal:</div></div> <div><div>AISI 316L</div><div>Black Nylon</div><div>Silver</div><div>HNBR - MFQ</div></div> <div>Technical data</div> <div><div>- Max working pressure:</div><div>- Proof pressure:</div><div>- Burst pressure:</div><div>- Working temperature:</div><div>- Compatibility with fluids:</div><div>- Degree protection:</div></div> <div><div>420 bar</div><div>630 bar</div><div>1260 bar</div><div>From -25 °C to +110 °C</div><div>Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</div><div>IP66 according to EN 60529 IP69K according to ISO 20653</div></div> <div>Electrical data</div> <div><div>- Electrical connection:</div><div>- Resistive load:</div></div> <div><div>EN 175301-803</div><div>0.2 A / 115 Vdc</div></div>
Settings	Ordering code										
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7.0 bar ±10%	DE X 70 x A 50 P01										
9.5 bar ±10%	DE X 95 x A 50 P01										
<div>DLX*51 - DLX*52</div> <div>Electrical/Visual Differential Indicator</div> <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>5.0 bar ±10%</td><td>DL X 50 x A x x P01</td></tr><tr><td>7.0 bar ±10%</td><td>DL X 70 x A x x P01</td></tr><tr><td>9.5 bar ±10%</td><td>DL X 95 x A x x P01</td></tr></table> <div></div>		Settings	Ordering code	5.0 bar ±10%	DL X 50 x A x x P01	7.0 bar ±10%	DL X 70 x A x x P01	9.5 bar ±10%	DL X 95 x A x x P01	<div>Hydraulic symbol</div> <div></div> <div>Electrical symbol</div> <div></div>	<div>Materials</div> <div><div>- Body:</div><div>- Base:</div><div>- Contacts:</div><div>- Seal:</div></div> <div><div>AISI 316L</div><div>Transparent Nylon</div><div>Silver</div><div>HNBR - MFQ</div></div> <div>Technical data</div> <div><div>- Max working pressure:</div><div>- Proof pressure:</div><div>- Burst pressure:</div><div>- Working temperature:</div><div>- Compatibility with fluids:</div><div>- Degree protection:</div></div> <div><div>420 bar</div><div>630 bar</div><div>1260 bar</div><div>From -25 °C to +110 °C</div><div>Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</div><div>IP66 according to EN 60529 IP69K according to ISO 20653</div></div> <div>Electrical data</div> <div><div>- Electrical connection:</div><div>- Type</div><div>- Lamps</div><div>- Resistive load:</div></div> <div><div>EN 175301-803</div><div>51 52</div><div>24 Vdc 110 Vdc</div><div>1 A / 24 Vdc 1 A / 110 Vdc</div></div>
Settings	Ordering code										
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7.0 bar ±10%	DL X 70 x A x x P01										
9.5 bar ±10%	DL X 95 x A x x P01										
<div>DVX</div> <div>Visual Differential Indicator</div> <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>5.0 bar ±10%</td><td>DV X 50 x P01</td></tr><tr><td>7.0 bar ±10%</td><td>DV X 70 x P01</td></tr><tr><td>9.5 bar ±10%</td><td>DV X 95 x P01</td></tr></table> <div></div>		Settings	Ordering code	5.0 bar ±10%	DV X 50 x P01	7.0 bar ±10%	DV X 70 x P01	9.5 bar ±10%	DV X 95 x P01	<div>Hydraulic symbol</div> <div></div>	<div>Materials</div> <div><div>- Body:</div><div>- Internal parts:</div><div>- Contacts:</div><div>- Seal:</div></div> <div><div>AISI 316L</div><div>AISI 316L - Nylon</div><div>Silver</div><div>HNBR - MFQ</div></div> <div>Technical data</div> <div><div>- Reset:</div><div>- Max working pressure:</div><div>- Proof pressure:</div><div>- Burst pressure:</div><div>- Working temperature:</div><div>- Compatibility with fluids:</div><div>- Degree protection:</div></div> <div><div>Automatic reset</div><div>420 bar</div><div>630 bar</div><div>1260 bar</div><div>From -25 °C to +110 °C</div><div>Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</div><div>IP65 according to EN 60529</div></div>
Settings	Ordering code										
5.0 bar ±10%	DV X 50 x P01										
7.0 bar ±10%	DV X 70 x P01										
9.5 bar ±10%	DV X 95 x P01										

DIFFERENTIAL INDICATORS

Dimensions

DVY		Hydraulic symbol		Materials <ul style="list-style-type: none">- Body: AISI 316L- Internal parts: AISI 316L - Nylon- Contacts: Silver- Seal: HNBR - MFQ Technical data <ul style="list-style-type: none">- 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 <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>5.0 bar ±10%</td><td>DV Y 50 x P01</td></tr><tr><td>7.0 bar ±10%</td><td>DV Y 70 x P01</td></tr><tr><td>9.5 bar ±10%</td><td>DV Y 95 x P01</td></tr></table> 					Settings	Ordering code	5.0 bar ±10%	DV Y 50 x P01	7.0 bar ±10%
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		Indicator plug <table><tr><th>Seal</th><th>Ordering code</th></tr><tr><td>HNBR</td><td>X2 H</td></tr><tr><td>MFQ</td><td>X2 F</td></tr></table> 	Seal	Ordering code	HNBR	X2 H	MFQ	X2 F	Materials <ul style="list-style-type: none">- Body: AISI 316L- Seal: HNBR / MFQ
Seal	Ordering code								
HNBR	X2 H								
MFQ	X2 F								

DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATORS									
Series		Configuration example 1:							
DE Electrical differential indicator		DE	H	50	F	A	48	P01	
DL Electrical / Visual differential indicator		Configuration example 2:							
		DL	X	50	H	A	51	P01	
DV Visual differential indicator		Configuration example 3:							
		DV	Y	70	V			P01	
Type	DE	DL	DV						
H Hazardous area	•								
X Standard type	•	•	•						
Y Optional type			•						
Pressure setting	DEH	DEX	DL	DV					
50 5.0 bar	•	•	•	•					
70 7.0 bar	•	•	•	•					
95 9.5 bar		•	•	•					
Seals	DEH	DEX	DL	DV					
H HNBR		•	•	•					
V FPM	•	•	•	•					
F MFQ	•								
Thermostat	DEH	DEX	DL	DV					
A Without	•	•	•						
Electrical connections	DEH	DEX	DL	DV					
48 Connection via three-core cable - fitting M20x1.5		•							
49 Connection via four-core cable - fitting 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		Configuration example							
X2 Indicator plug		X2		H					
Seals									
H HNBR									
V FPM									
F MFQ									

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

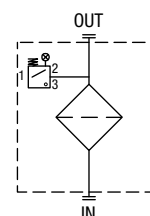
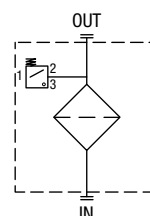
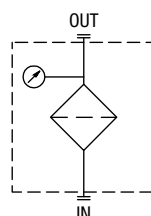
VACUUM INDICATORS

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.

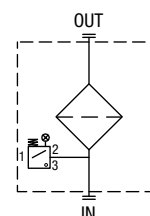
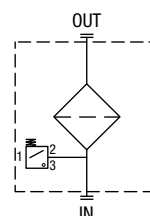
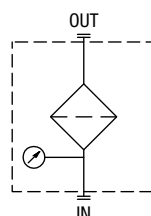


BAROMETRIC INDICATORS

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.



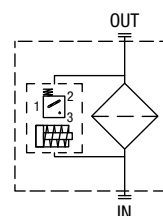
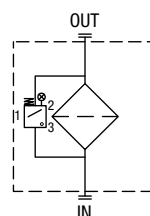
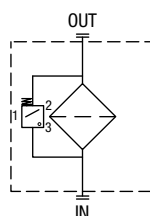
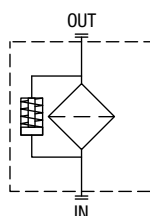
DIFFERENTIAL INDICATORS

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  LFEX060-080-110-160	DES25HA10P01 DES25HA30P01 DES25HA80P01			DVS25HP01	
	Without bypass valve  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	
	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	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01

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