

NEW

Return filters

MPTX 116

Maximum working pressure up to 800 kPa (8 bar) - Flow rate up to 300 l/min



PASSION TO PERFORM



MPTX 116 GENERAL INFORMATION

Technical data

Return filter

Maximum working pressure up to 800 kPa (8 bar)
Flow rate up to 300 l/min

Filter housing materials

- Head: Aluminium
- Cover: Nylon
- Bowl: Nylon

Δp element type

- Microfibre filter elements - series H: 10 bar
- Fluid flow through the filter element from OUT to IN.

Temperature

From -25 °C to +110 °C

Bypass valve

- Opening pressure 175 kPa (1.75 bar)
- Opening pressure 300 kPa (3 bar)

Seals

- Standard NBR series A
- Optional FPM series V

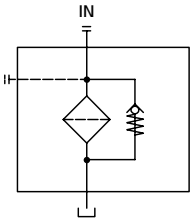
Note

MPTX filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

	Weights [kg]				Volumes [dm ³]					
	Length	1	2	3	4	Length	1	2	3	4
MPTX 116		1.10	1.15	1.25	1.50		0.72	0.93	1.28	1.74

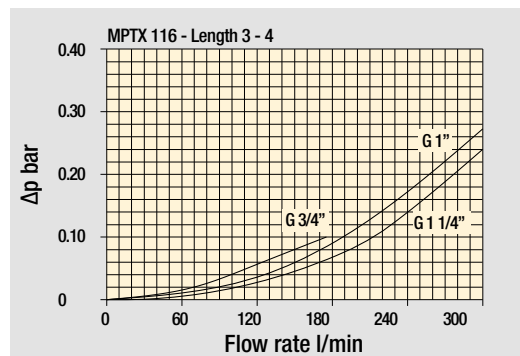
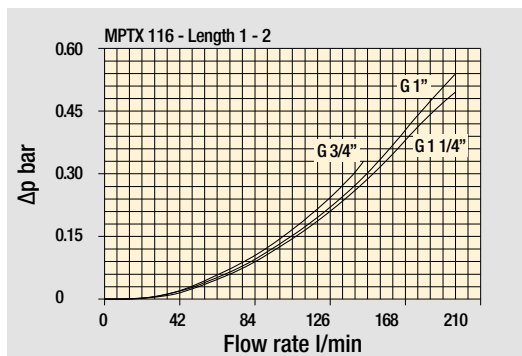
Hydraulic symbols



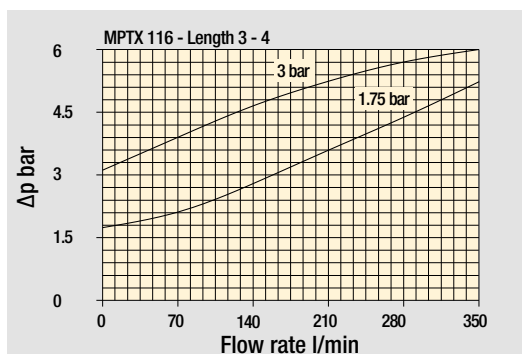
Pressure drop

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

Δp varies proportionally with density.



Filter housings Δp pressure drop



Bypass valve pressure drop

FILTER SIZING

THE CORRECT FILTER SIZING HAVE TO BE BASED ON THE TOTAL PRESSURE DROP DEPENDING BY THE APPLICATION. THE MAXIMUM TOTAL PRESSURE DROP ALLOWED BY A NEW AND CLEAN RETURN FILTER HAVE TO BE IN THE RANGE 0.4 ÷ 0.6 bar.

The pressure drop calculation is performed by adding together the value of the housing with the value of the filter element. The pressure drop Δp_c of the housing is proportional to the fluid density (kg/dm^3); all the graphs in the catalogue are referred to mineral oil with density of $0.86 \text{ kg}/\text{dm}^3$. The filter element pressure drop Δp_e is proportional to its viscosity (mm^2/s), the corrective factor Y have to be used in case of an oil viscosity different than $30 \text{ mm}^2/\text{s}$ (cSt).

Sizing data for single filter element, head at top

Δp_c = Filter housing pressure drop [bar]

Δp_e = Filter element pressure drop [bar]

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

Q = flow rate (l/min)

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

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

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

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

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

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

MPTX calculation example

Application data:

Tank top return filter

Pressure Pmax = 8 bar

Flow rate Q = 120 l/min

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

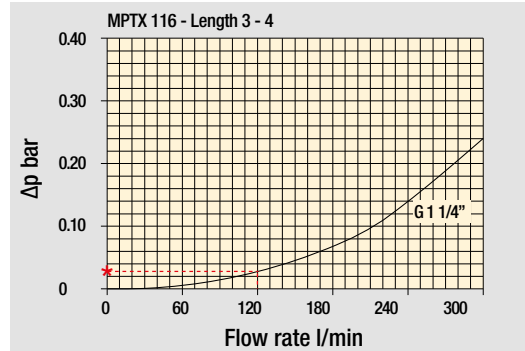
Oil density = $0.86 \text{ kg}/\text{dm}^3$

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

With bypass valve and G1 1/4" inlet connection

Calculation:

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



Filter housings Δp pressure drop.

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

$$\Delta p_e = (2.50 : 1000) \times 120 \times (46 : 30) = 0.46 \text{ bar}$$

MPTX corrective factor

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 $30 \text{ mm}^2/\text{s}$

Filter element	Absolute filtration H Series					Nominal filtration N Series			
	A03	A06	A10	A16	A25	P10	P25	M25 M60 M90	
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

$$\Delta p_{\text{Tot.}} = 0.03 + 0.46 = 0.49 \text{ bar}$$

The selection is correct because the total pressure drop value is inside the admissible range for tank top return filters.

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

Recommended maximum flow rate for complete MPTX filter

- Pressure drop of complete filter = Δp 0.5 bar
- Oil kinematic viscosity $30 \text{ mm}^2/\text{s}$ (cSt)
- Oil density $0.86 \text{ kg}/\text{dm}^3$
- Connections of filter under test: G1 1/4"

Filter size	Filter length	Flow rate (l/min)							
		Filtration rating							
		A03	A06	A10	A16	A25	P10	P25	M25 M60 M90
MPTX 116	1	18	20	57	60	71	103	99	269
	2	29	40	71	85	117	148	115	286
	3	48	55	127	137	173	232	261	303
	4	80	89	184	190	203	275	303	322

MPTX 116

Designation & Ordering code

COMPLETE FILTER

Series and size	Configuration example 1:	MPTX116	1	S	A	G1	M90	E	P01
MPTX116 Filter element with private spigot	Configuration example 2:	MPTX116	2	S	Z	G9	A03	B	P01

Length	
1 2 3 4	

Air breather	
S Without air breather	

Seals and treatments	Filtration rating		
	Axx	Mxx	Pxx
A NBR	•	•	•
V FPM	•	•	•
W NBR head anodized	•	•	
Z FPM head anodized	•	•	

filter element compatible with fluids HFA-HFB-HFC

Flat seal on the head on request

Connections	
G1 G3/4"	G6 1 1/4" NPT
G2 G1"	G7 SAE 12 - 1 1/16" - 12 UN
G3 G1 1/4"	G8 SAE 16 - 1 5/16" - 12 UN
G4 3/4" NPT	G9 SAE 20 - 1 5/8" - 12 UN
G5 1" NPT	

Filtration rating (filter media)	
A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm
A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm
A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm
A16 Inorganic microfiber 16 µm	P10 Resin impregnated paper 10 µm
A25 Inorganic microfiber 25 µm	P25 Resin impregnated paper 25 µm

Bypass valve	Execution
E 3 bar	P01 MP Filtri standard
B 1.75 bar	Pxx Customized

FILTER ELEMENT

Element series and size	Configuration example 2:	MFx100	1	M90	N	B	E	P01
MFx100 Filter element with private spigot	Configuration example 1:	MFx100	2	A03	W	V		P01

Element length	
1 2 3 4	

Filtration rating (filter media)	
A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm
A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm
A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm
A16 Inorganic microfiber 16 µm	P10 Resin impregnated paper 10 µm
A25 Inorganic microfiber 25 µm	P25 Resin impregnated paper 25 µm

Element Δp	Filter media		
	Axx	Mxx	Pxx
N 10 bar		•	•
H 10 bar	•		
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals	Bypass valve	Execution
B NBR	E 3 bar	P01 MP Filtri standard
V FPM	1.75 bar	Pxx Customized

ACCESSORIES

Indicators	
BVA Axial pressure gauge	
BVR Radial pressure gauge	
BVP Visual pressure indicator with automatic reset	
BVQ Visual pressure indicator with manual reset	

BEA Electrical pressure indicator
BEM Electrical pressure indicator
BLA Electrical / visual pressure indicator

Additional features	
TE Extension tube	
DFS Diffuser with fast lock connection	

DPT Dipstick

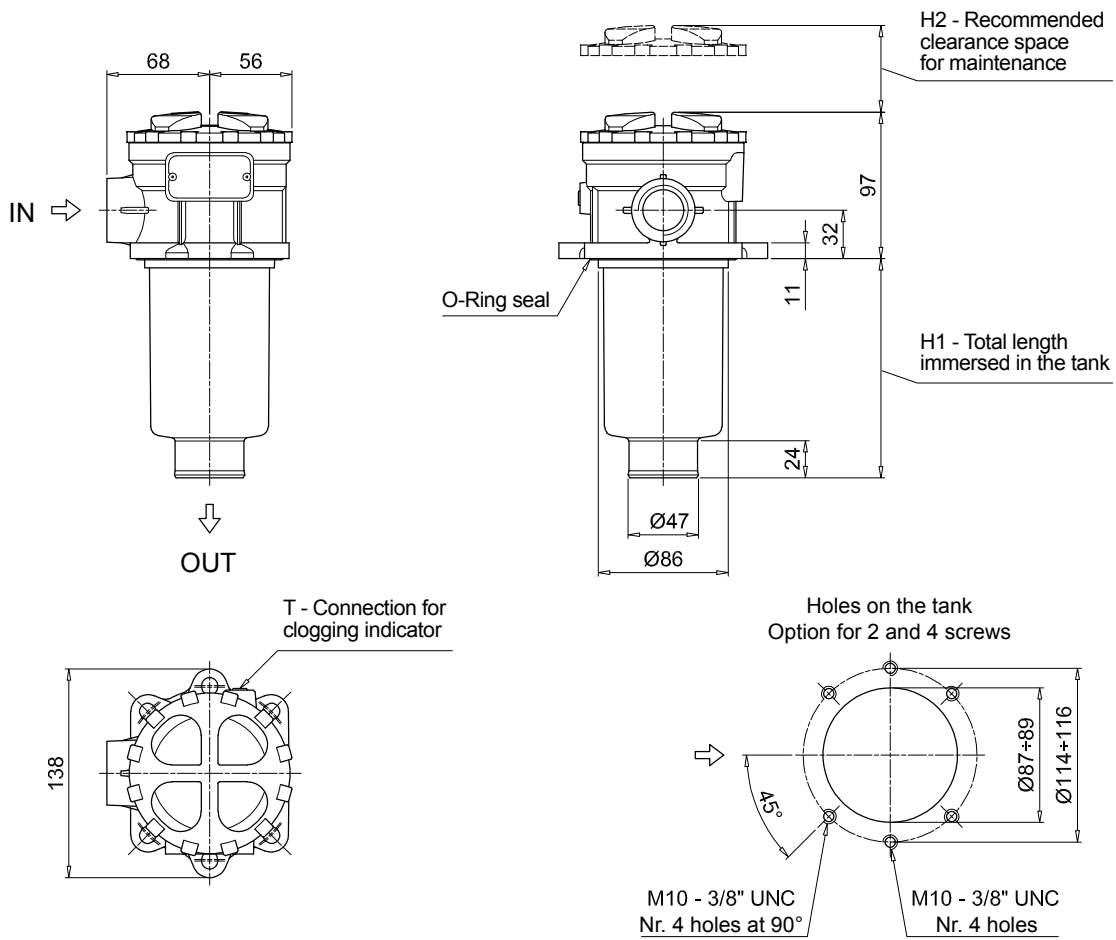
MPTX 116

Dimensions

MPTX116

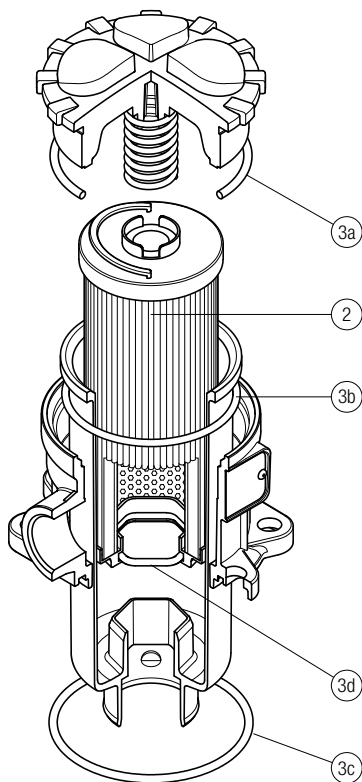
Filter length	H1 [mm]	H2 [mm]
1	99	120
2	146	170
3	224	250
4	326	350

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



MPTX 116 SPARE PARTS

Order number for spare parts



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
MPTX 116	See order table	02050737	02050738

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