

SERIES



MRSX

116 - 165 - 166

Return/Suction Filter



Maximum pressure 10 bar
Maximum flow to 300 l/min



Technical data

MRSX 116 - 165 - 166

Materials (Filter housing)

- Head: Aluminium
- Cover: Nylon (MRSX 116)
Aluminium (MRSX 165-166)
- Bowl: Nylon

Pressure

- Working pressure: 10 bar

Temperature

- From -25 °C to +110 °C

Δp Elements

- RSX: 10 bar
- Oil flow from exterior to interior.

Seals

- Standard NBR series A
- Optional FPM series V

Weights (kg)

Length	1	2	3
• MRSX 116	1,30	1,40	-
• MRSX 165	3,40	3,80	4,10
• MRSX 166	3,40	3,80	4,10

Volumes (dm³)

Length	1	2	3
• MRSX 116	0,80	1,00	-
• MRSX 165	2,00	2,60	3,00
• MRSX 166	2,00	2,60	3,00

MRSX

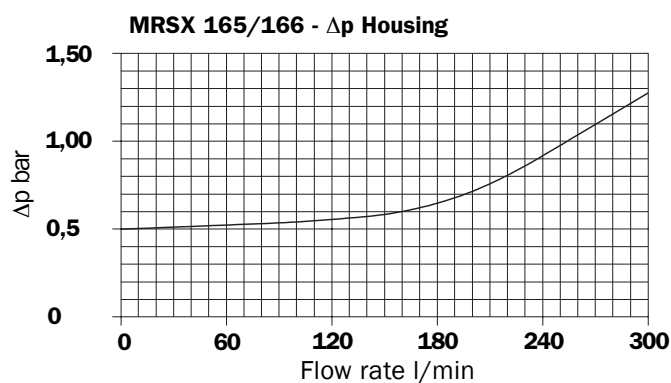
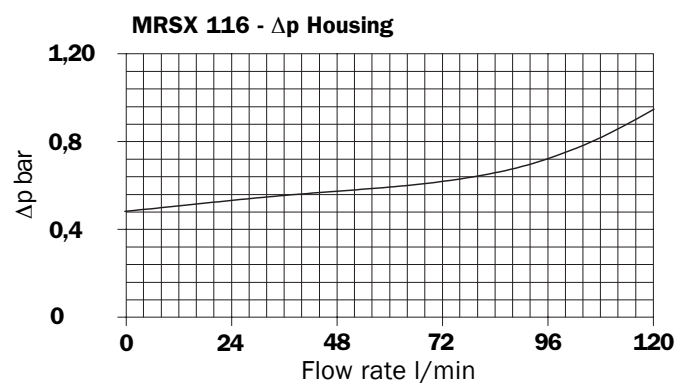
Compatibility (to ISO 2943)

- Mineral oils
- Synthetic fluids
- Biodegradable fluids

Filter housings Δp pressure drop

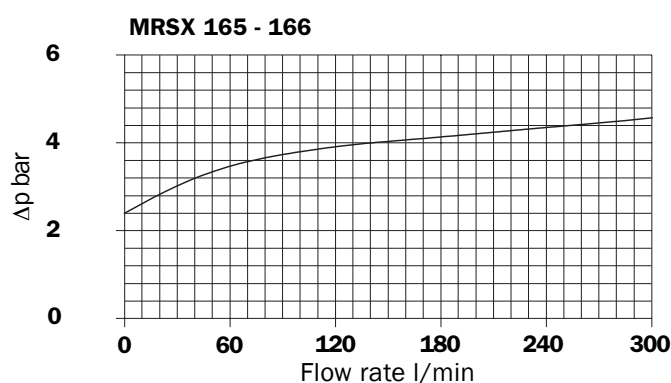
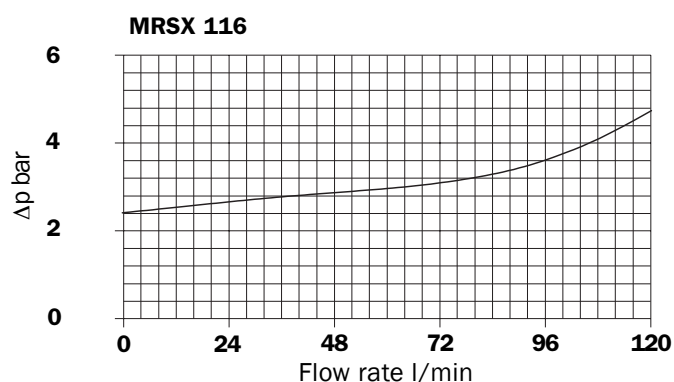
The curves are plotted utilising mineral oil with density of 0.86 kg/dm³ to ISO 3968.

Δp varies proportionally with density.



Valves

Bypass valve pressure drop



Multiplication factor "Y" for definition of the pressure drop of filter elements.

Reference viscosity 30 mm²/s

Filter Element	Absolute Filtration		
	A 1 0	A 1 6	A 2 5
RSX 116 1	5,12	4,33	3,85
	2,22	1,87	1,22
RSX 165 1	2,06	1,75	1,46
	1,24	1,05	0,96
	0,94	0,86	0,61

Sizing data for single cartridge, head at top

Δp Tot.

Δp_c Filter housing

Δp_e Filter element

Y Multiplication factor (see page 2)

Q l/min = flow rate

V1 = reference viscosity 30 mm²/s (cSt)

V2 = operating viscosity in mm²/s (cSt)

Δp Tot. = $\Delta p_c + \Delta p_e$

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

Calculation example with HLP Mineral Oil Variation in viscosity

Data:

Filter with in-line connections

Pressure = 6 bar

Flow rate = 200 l/min

Viscosity = 46 mm²/s (cSt)

Density = 0,86 Kg/dm³

Filtration = 10 µ absolute

With bypass valve

Practical example

Δp_e Filter housing

Q = 200 l/min

V₂ = 46 mm²/s (cSt)

P_{max} = 6 bar

Filtration = 10 µ absolute

Δp Tot. max = **0,4 bar** (max. recommended value)

$\Delta p_e = (1,24 : 1000) \times 200 \times (46/30) = 0,37 \text{ bar}$

Δp_c Filter housing

Q tot = 200 l/min

Q1 to the tank = 150 l/min

Q2 to the pump = 50 l/min

Filter type - MRSX 165 (see housings pressure drop)

Δp Tot. max 1 - 1,6 bar = $\Delta p_c + \Delta p_e$

Δp Tot. = **0,59 (Q1) + 0,37 = 0,96 bar**

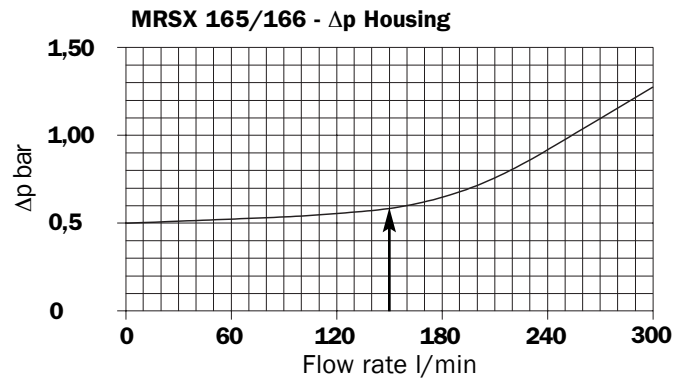
Sized filter type:

MRSX 165 2 F A G1 0 A10 S P01

Filter housings Δp pressure drop

The curves are plotted utilising mineral oil
with density of 0.86 kg/dm³ to ISO 3968.

Δp varies proportionally with density.



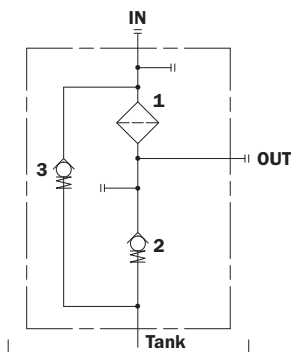
Hydraulic schemes

LEGEND

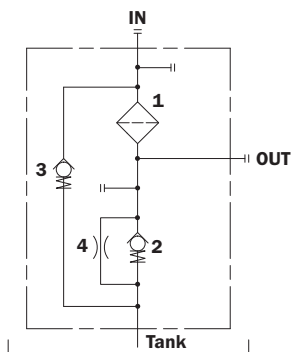
- | | |
|---|--|
| 1 - Filter element | 4 - Depressurization valve |
| 2 - Back-Pressure valve: opening pressure 0,5 bar $\pm$ 10% | 5 - Anti-Cavitation valve |
| 3 - Bypass valve: opening pressure 2,5 bar $\pm$ 10% | 6 - Safety filter element (wire mesh 60 μ m) |
| | 7 - Anti-Cavitation valve / Anti- Emptying valve |

MRSX 116

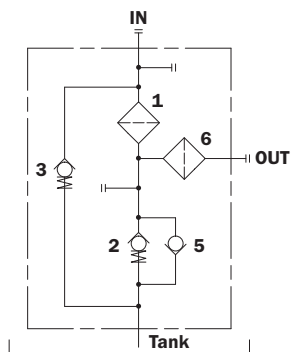
Valves "A" option



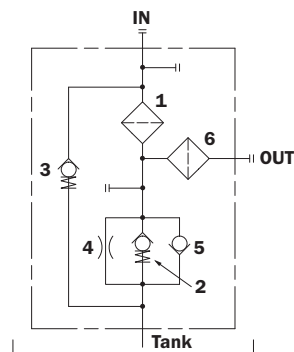
Valves "B" option



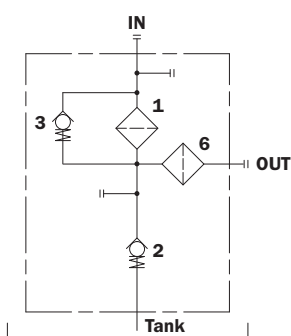
Valves "C" option



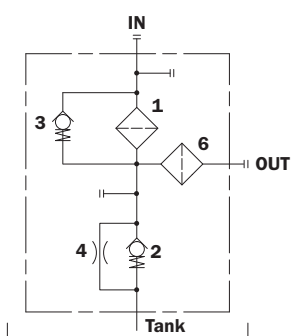
Valves "D" option



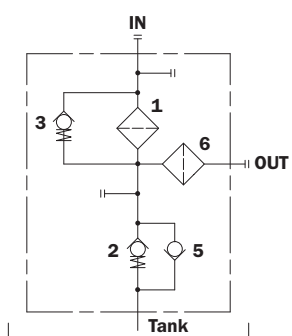
Valves "E" option



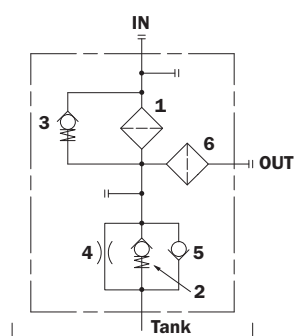
Valves "F" option



Valves "G" option

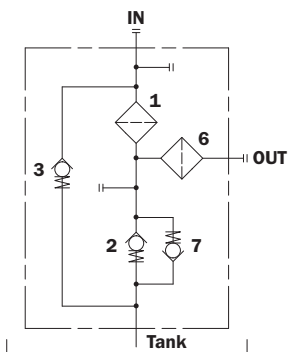


Valves "H" option

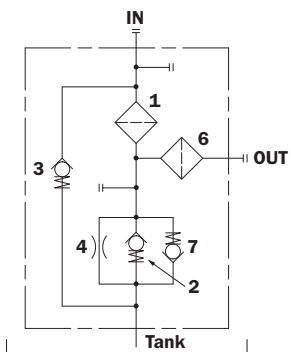


Suitable only for tank side-wall mounting

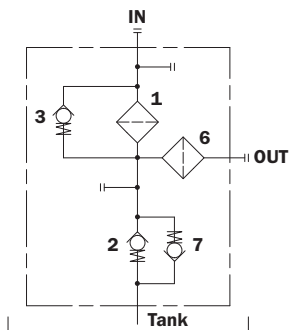
Valves "I" option



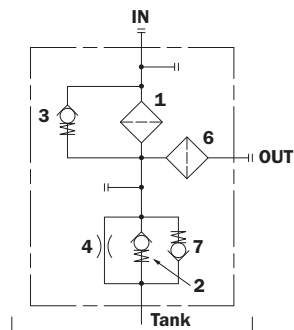
Valves "L" option



Valves "M" option

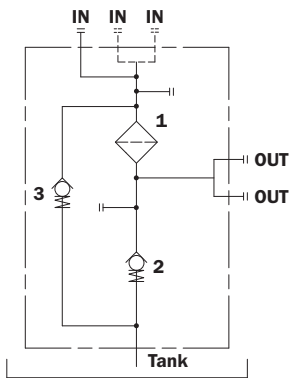


Valves "N" option

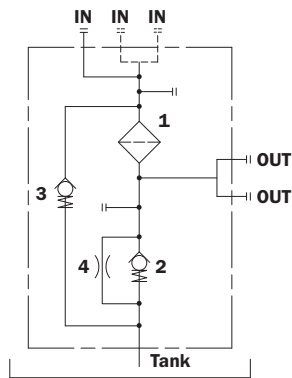


MRSX 165 - 166

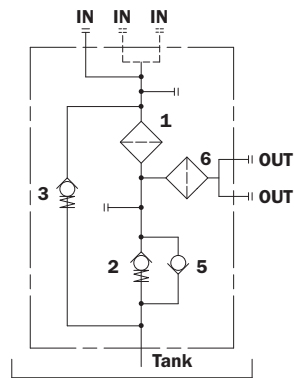
Valves "A" option



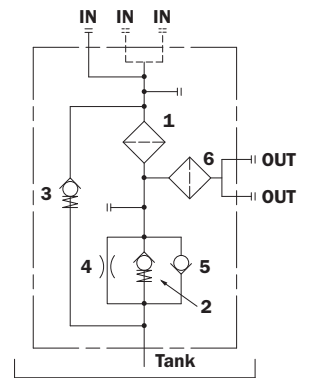
Valves "B" option



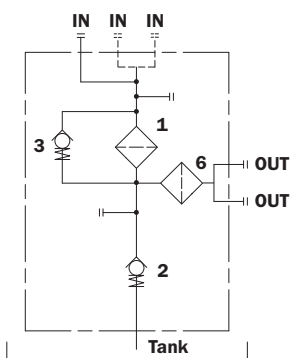
Valves "C" option



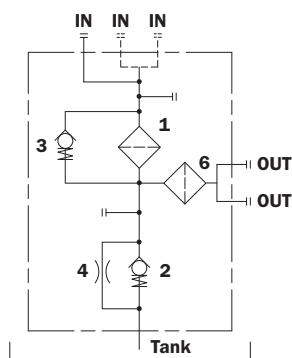
Valves "D" option



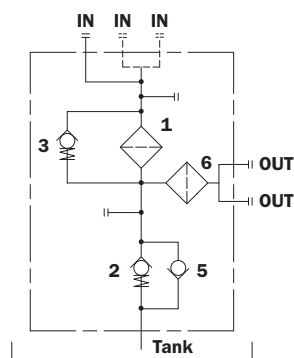
Valves "E" option



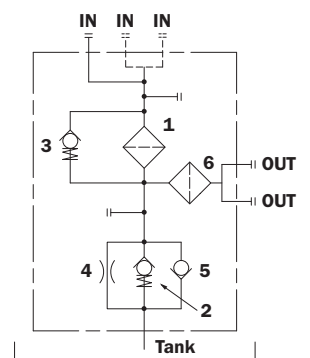
Valves "F" option



Valves "G" option

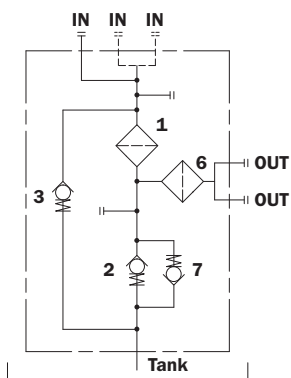


Valves "H" option

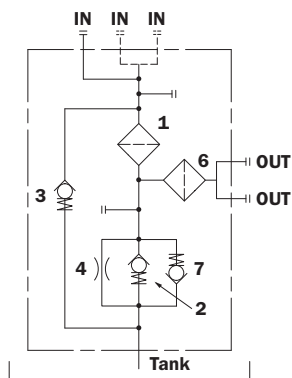


Suitable only for tank side-wall mounting

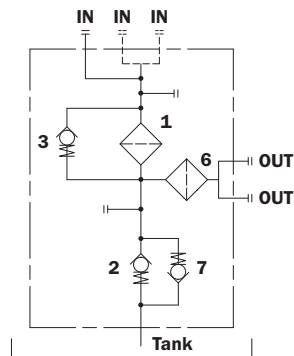
Valves "I" option



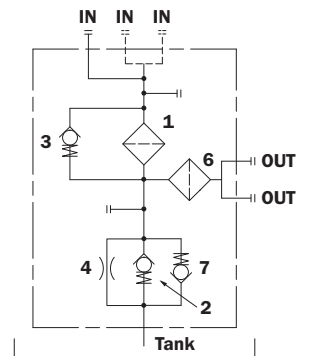
Valves "L" option



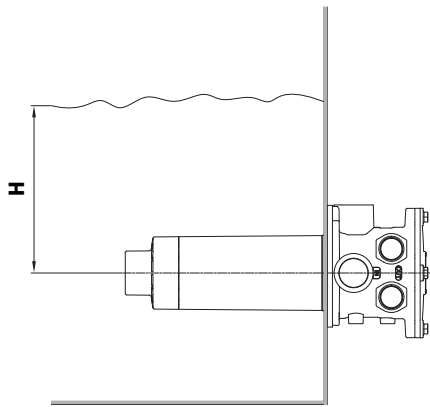
Valves "M" option



Valves "N" option



Tank side-wall mounting application

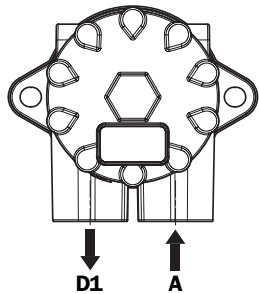


H= max. 800 mm

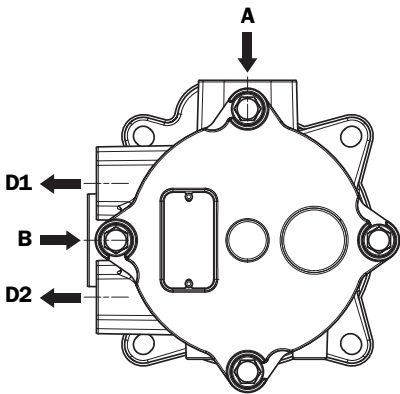
Only for hydraulic schemes:
A - B - E - F - I - L - M - N

Port configuration

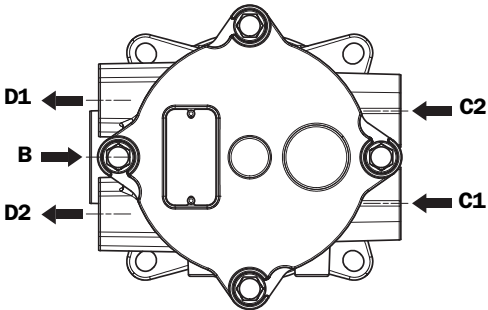
MRSX 116



MRSX 165



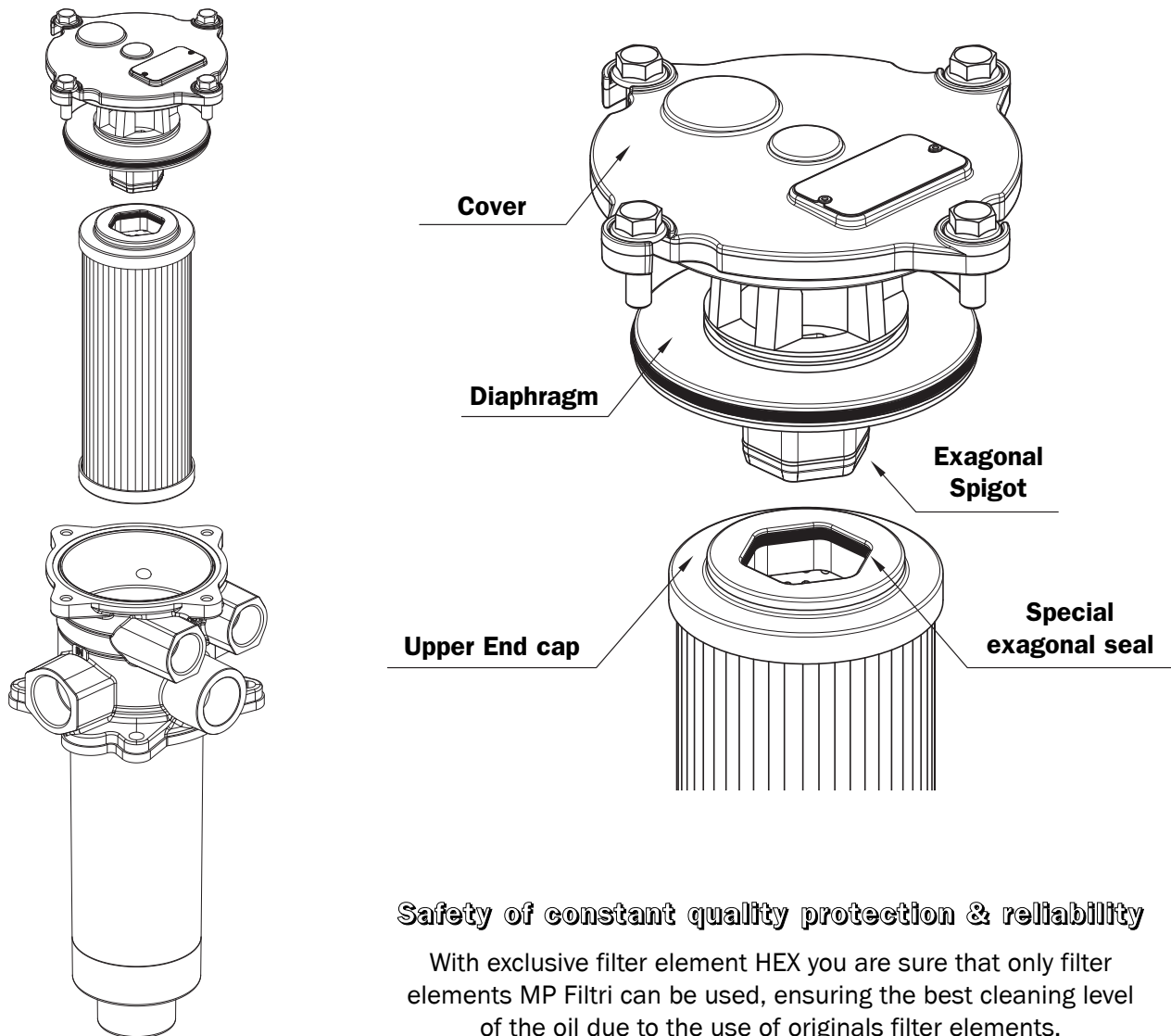
MRSX 166



Thread connections

Code	A (IN)	B (IN)	C1 (IN)	C2 (IN)	D1 (OUT)	D2 (OUT)	T (Indicator port)
MRSX 116 x x G1 0 xxx x P01	G 3/4"	-	-	-	G 3/4"	-	G 1/8"
MRSX 116 x x G2 0 xxx x P01	G 1"	-	-	-	G 1"	-	G 1/8"
MRSX 116 x x G3 0 xxx x P01	3/4" NPT	-	-	-	3/4" NPT	-	1/8" NPT
MRSX 116 x x G4 0 xxx x P01	1" NPT	-	-	-	1" NPT	-	1/8" NPT
MRSX 116 x x G5 0 xxx x P01	SAE 12	-	-	-	SAE 12	-	1/8" NPT
MRSX 116 x x G6 0 xxx x P01	SAE 16	-	-	-	SAE 16	-	1/8" NPT
MRSX 116 x x D1 0 xxx x P01	G 1"	-	-	-	G 3/4"	-	G 1/8"
MRSX 116 x x D2 0 xxx x P01	1" NPT	-	-	-	3/4" NPT	-	1/8" NPT
MRSX 116 x x D3 0 xxx x P01	SAE 16	-	-	-	SAE 12	-	1/8" NPT
MRSX 165 x x G1 0 xxx x P01	G 1 1/4"	-	-	-	G 1"	G 1"	G 1/8"
MRSX 165 x x G2 0 xxx x P01	1 1/4" NPT	-	-	-	1" NPT	1" NPT	1/8" NPT
MRSX 165 x x G3 0 xxx x P01	SAE 20	-	-	-	SAE 16	SAE 16	1/8" NPT
MRSX 165 x x G1 1 xxx x P01	G 1 1/4"	G 1 1/4"	-	-	G 1"	G 1"	G 1/8"
MRSX 165 x x G2 1 xxx x P01	1 1/4" NPT	1 1/4" NPT	-	-	1" NPT	1" NPT	1/8" NPT
MRSX 165 x x G3 1 xxx x P01	SAE 20	SAE 20	-	-	SAE 16	SAE 16	1/8" NPT
MRSX 166 x x G1 1 xxx x P01	-	G 1 1/4"	G 1"	G 1"	G 1"	G 1"	G 1/8"
MRSX 166 x x G2 1 xxx x P01	-	1 1/4" NPT	1" NPT	1" NPT	1" NPT	1" NPT	1/8" NPT
MRSX 166 x x G3 1 xxx x P01	-	SAE 20	SAE 16	SAE 16	SAE 16	SAE 16	1/8" NPT

New filter element **HEX series** with exclusive interface connection



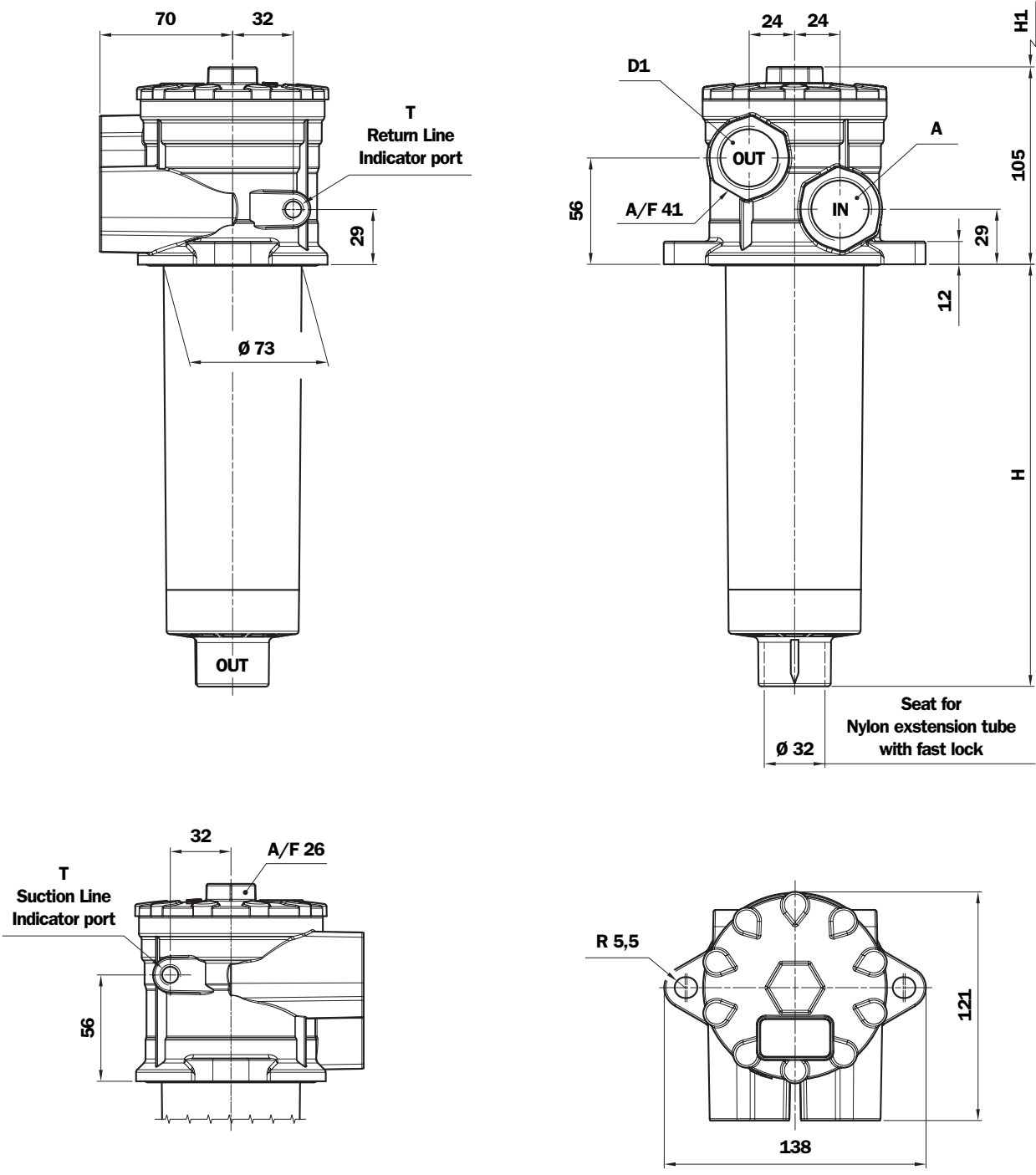
Safety of constant quality protection & reliability

With exclusive filter element HEX you are sure that only filter elements MP Filtri can be used, ensuring the best cleaning level of the oil due to the use of originals filter elements.

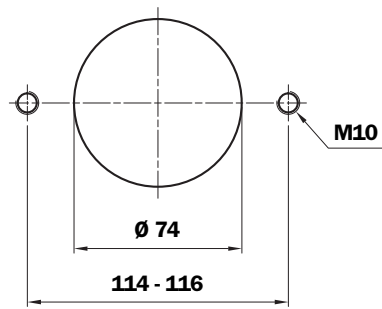
Note:

Available on request filter series MRS diaphragm with cylindrical spigot, element RS with standard O-Ring on the upper end cap.

MRSX 116



Holes on the tank

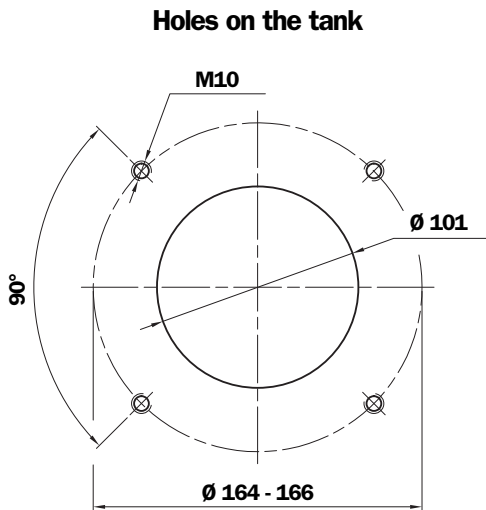
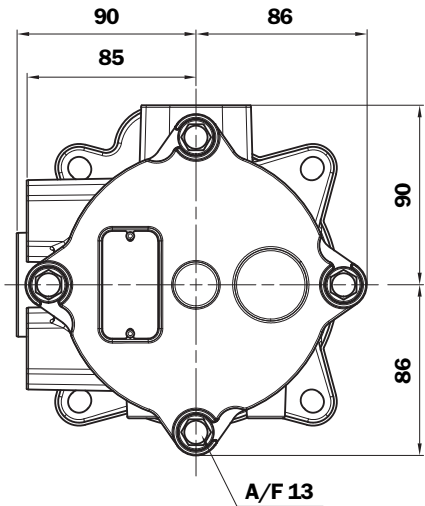
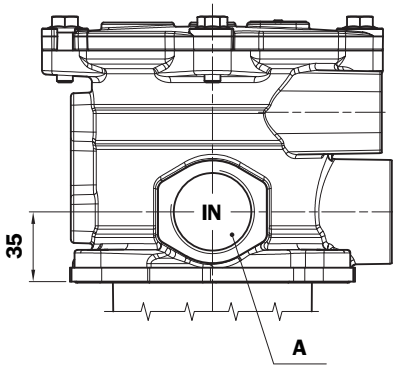
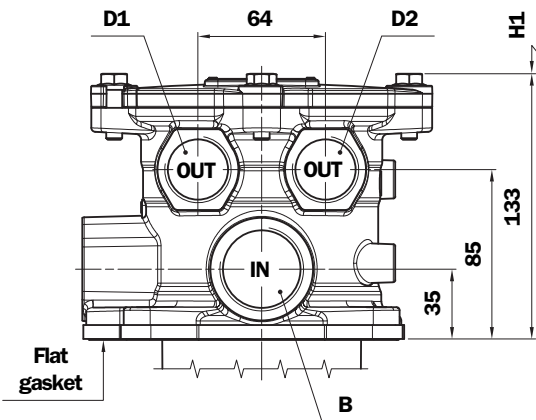
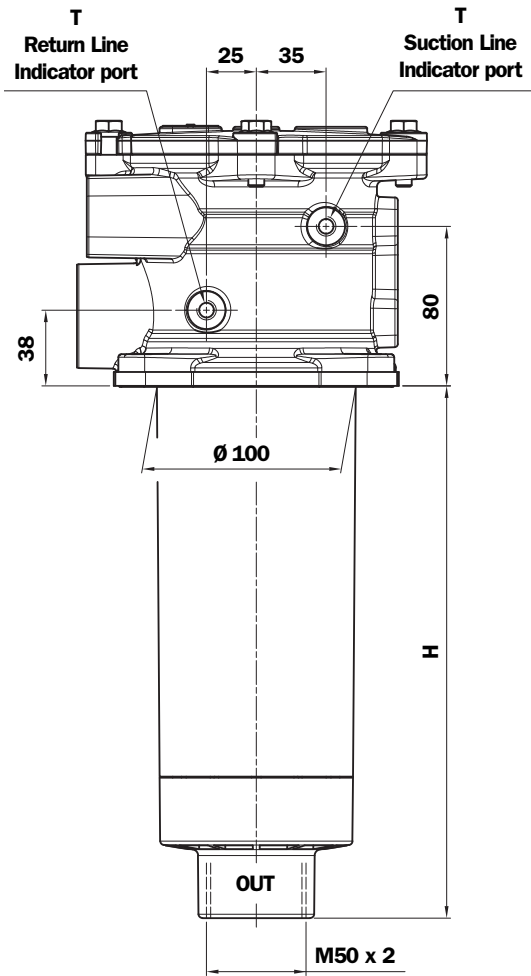


MRSX 116

Filter Length	H mm	H1 mm
1	203	240
2	263	300

See page 6 thread connections

MRSX 165

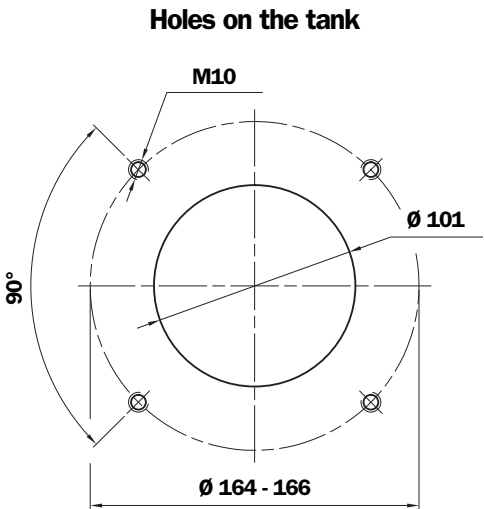
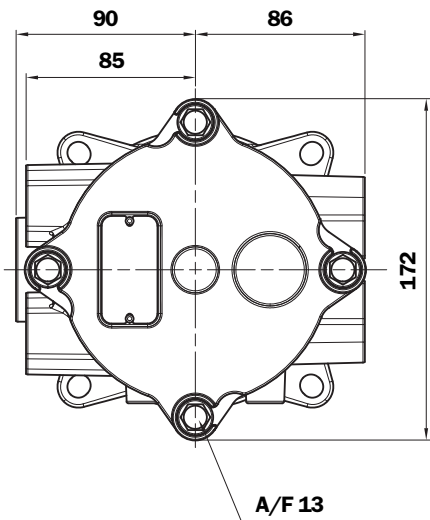
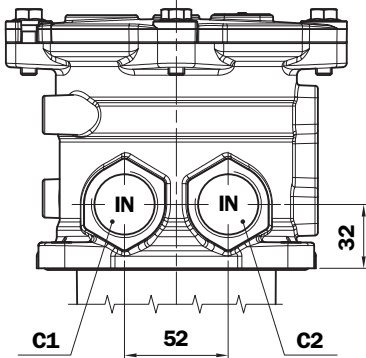
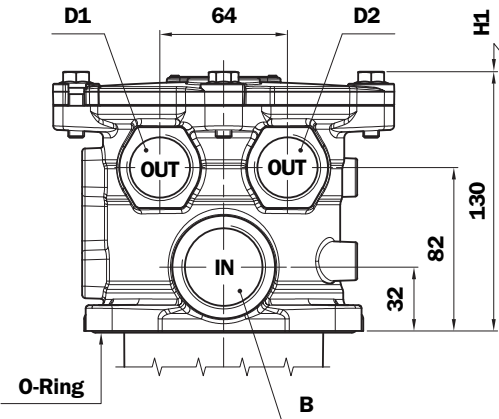
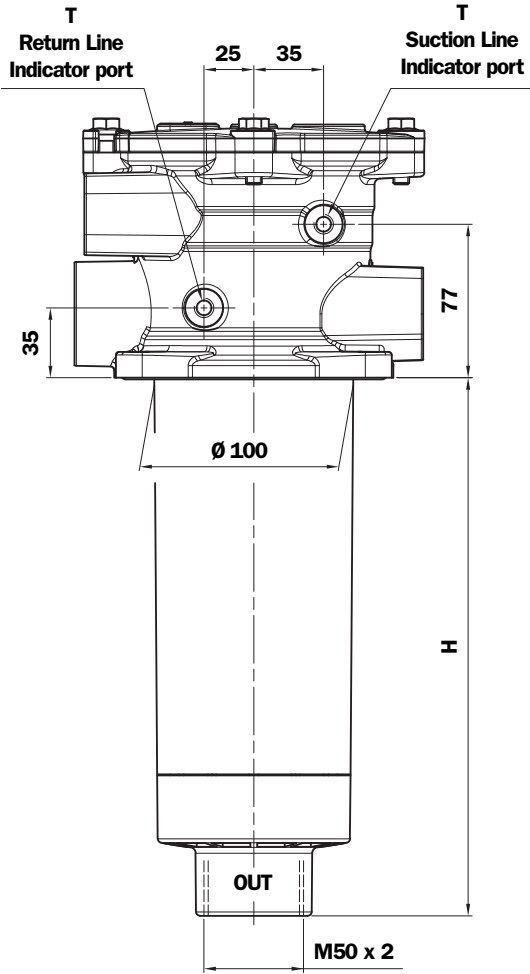


MRSX 165

Filter Length	H mm	H1 mm
1	267	320
2	375	430
3	442	500

See page 6 thread connections

MRSX 166



MRSX 166

Filter Length	H mm	H1 mm
1	270	320
2	378	430
3	445	500

See page 6 thread connections

Ordering information MRSX 116 - 165 - 166

Filter assembly

MRSX

	1	2	3	4a	5	6	7	8	9
Example 1: MRSX	116	1	B	A	G1	0	A16	B	P01
Example 2: MRSX	165	2	C	B	G3	0	A10	S	P01
Example 3: MRSX	166	3	G	V	G2	1	A25	S	P01

Filter element

RSX

	1	2	7	4b	9
Example 1: RSX	116	1	A16	A	P01
Example 2: RSX	165	2	A10	A	P01
Example 3: RSX	165	3	A25	V	P01

1 - Size

Filter	Filter element
116	116
165	165
166	165

2 - Filter length

116	1	2	
165	1	2	3
166	1	2	3

3 - Valves option

A	E	
B	F	
C	G	
D	H	
I	M	Only for tank side-wall mounting applications (see point "8 - Style", option "B")
L	N	

See page 4-5 for "Hydraulic schemes"

4 - Seals

4a - Filter assembly

A	NBR - O-Ring on head
B	NBR - Flat gasket on head
V	FPM - O-Ring on head
D	FPM - Flat gasket on head

4b - Filter element

A	NBR
V	FPM

5 - Standard connections

MRSX 116

G1	G4	D1
G2	G5	D2
G3	G6	D3

See page 6 threaded connections

MRSX 165 - 166

G1	See page 6 threaded connections
G2	
G3	

6 - Additional IN connection

MRSX 116

0	Without additional IN connection
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MRSX 165

0	Without additional IN connection
1	With additional IN connection "B" (see page 6 threaded connections)

MRSX 166

1	With additional IN connection "B" (see page 6 threaded connections)
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7 - Filter element

A10	Inorganic microfibre 10 µ	Absolute filtration Inorganic Microfibre βx(c) ≥ 1000
A16	Inorganic microfibre 16 µ	
A25	Inorganic microfibre 25 µ	

8 - Style

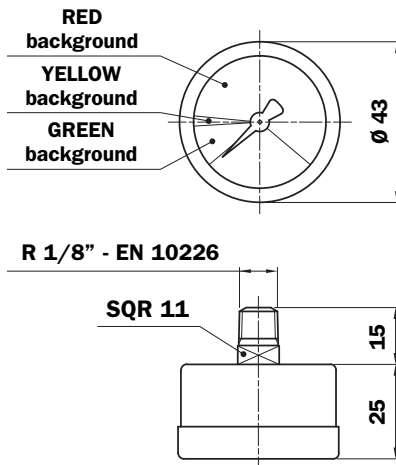
S	Standard
B	For tank side-wall mounting applications. Only for valves: A - B - E - F - I - L - M - N

9 - Option

P01	MP Filtri standard
Pxx	On request

Barometric indicators

BVA



Ordering code: **BVA25P01**

Pressure setting: 2,5 bar $\pm 10\%$

Axial Pressure Gauge

Materials:

- Case: Painted Steel
- Window: Clear plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tub cu-alloy soft soldered

Technical data:

- Indicator type: Axial pressure gauge
- Max working pressure: Static: 7 bar
Fluctuating: 6 bar
Short time: 10 bar
- Working temperature: From -40°C to +60°C
- Compatibility with fluids: Mineral oils, Synthetic fluids
HFA, HFB, HFC fluids in according to ISO 2943
- Accuracy class: cl. 2.5
- Protection degree: IP 31 in according to EN 60529

HYDRAULIC SYMBOL



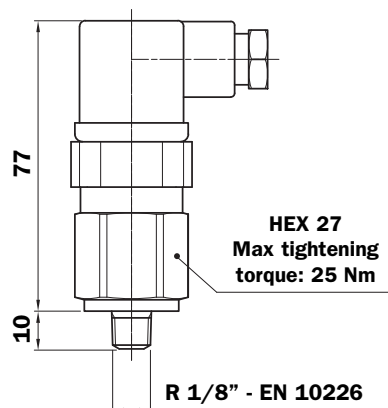
GRADUATED DISPLAY

GREEN BACKGROUND
(from 0 to 2,5 bar)
Clean filter element

YELLOW BACKGROUND
(from 2,5 to 3 bar)
Warning

RED BACKGROUND
(from 3 to 10 bar)
Bypass

BEA



Ordering code: **BEA25HA50P01**

Pressure setting: 2,5 bar $\pm 10\%$

Electrical Pressure Indicator

Materials:

- Body: Brass
- Internal parts: Brass - Nylon
- Seals: NBR

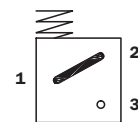
Technical data:

- Indicator type: Electrical pressure indicator
- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25°C to +80°C
- Compatibility with fluids: Mineral oils, Synthetic fluids
HFA, HFB, HFC fluids in according to ISO 2943

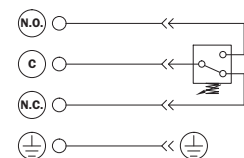
Electrical data:

- Resistive load: 5 A / 14 VDC
4 A / 30 VDC
5 A / 125 VAC
5 A / 250 VAC
- Electrical connections: 50 - EN 175301-803
- Protection degree: IP 65 in according to EN 60529
- Available ATEX product: II 1GD Ex ia IIC Tx Ex ia IIIC Tx°C X

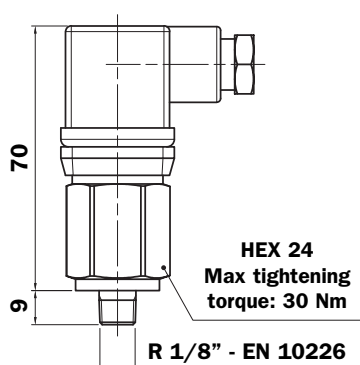
HYDRAULIC SYMBOL



ELECTRICAL SYMBOL



BET



Ordering code: **BET25HF50P01**

Pressure setting: 2,5 bar $\pm 10\%$

Electrical Pressure Indicator

Materials:

- Body: Brass
- Base - Ring: Nylon
- Contact: Silver
- Seals: HNBR

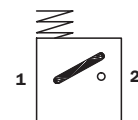
Technical data:

- Pressure switch type: Electrical pressure switch
- Pressure setting: 2,5 bar $\pm 10\%$
- Working pressure: 10 bar
- Proof pressure: 15 bar
- Max working temperature: +100°C
- Compatibility with fluids: Mineral oils, Synthetic fluids
HFA, HFB, HFC fluids in according to ISO 2943

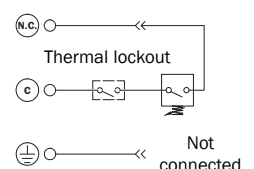
Electrical data:

- Electrical condition: Normally closed single contact
- Resistive load: 0,5 A / 48 VDC
- Thermostat condition: Open up to 30°C
- CE certification
- Protection degree: IP 65 in according to EN 60529

HYDRAULIC SYMBOL

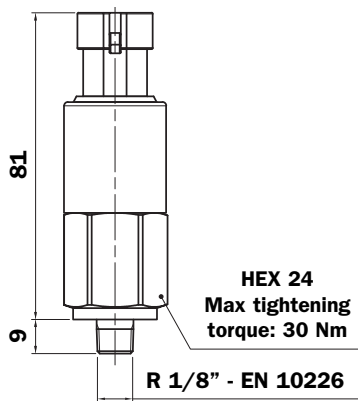


ELECTRICAL SYMBOL



Barometric indicators

BET



Ordering code: **BET25HF11P01**

Pressure setting: 2,5 bar $\pm 10\%$

Electrical Pressure Indicator

Materials:

- Body: Brass
- Base - Ring: Nylon
- Contact: Silver
- Seals: HNBR

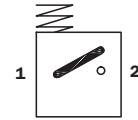
Technical data:

- Pressure switch type: Electrical pressure switch
- Pressure setting: 2,5 bar $\pm 10\%$
- Working pressure: 10 bar
- Proof pressure: 15 bar
- Max working temperature: $+100^{\circ}\text{C}$
- Compatibility with fluids: Mineral oils, Synthetic fluids
HFA, HFB, HFC fluids in according to ISO 2943

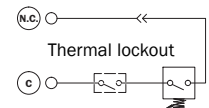
Electrical data:

- Electrical condition: Normally closed single contact
- Resistive load: 0,5 A / 48 Vdc
- Thermostat condition: Open up to 30°C
- CE certification
- Protection degree: IP 65 in according to EN 60529

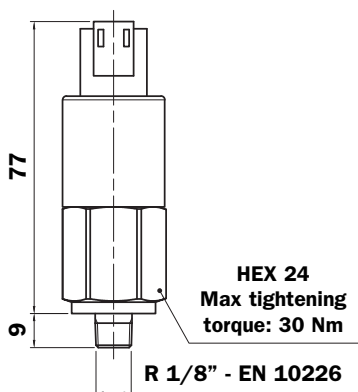
HYDRAULIC SYMBOL



ELECTRICAL SYMBOL



BET



Ordering code: **BET25HF31P01**

Pressure setting: 2,5 bar $\pm 10\%$

Electrical Pressure Indicator

Materials:

- Body: Brass
- Base - Ring: Nylon
- Contact: Silver
- Seals: HNBR

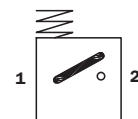
Technical data:

- Pressure switch type: Electrical pressure switch
- Pressure setting: 2,5 bar $\pm 10\%$
- Working pressure: 10 bar
- Proof pressure: 15 bar
- Max working temperature: $+100^{\circ}\text{C}$
- Compatibility with fluids: Mineral oils, Synthetic fluids
HFA, HFB, HFC fluids in according to ISO 2943

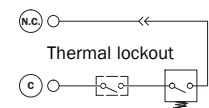
Electrical data:

- Electrical condition: Normally closed single contact
- Resistive load: 0,5 A / 48 Vdc
- Thermostat condition: Open up to 30°C
- CE certification
- Protection degree: IP 65 in according to EN 60529

HYDRAULIC SYMBOL

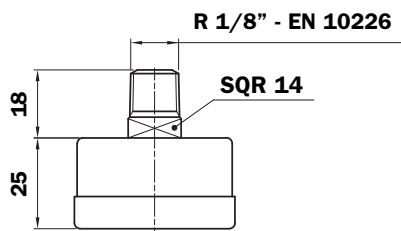
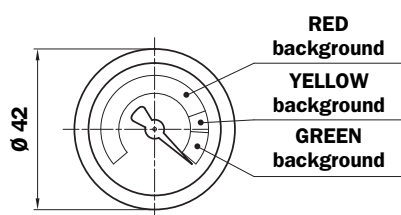


ELECTRICAL SYMBOL



Vaacum indicators

VVB



Ordering code: **VVB16P01**

Connection: R 1/8" EN 10226

Axial Vacuum Gauge

Materials:

- Case: Painted Steel
- Window: Clear plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tub Cu-alloy soft soldered

Technical data:

- Indicator type: Axial vacuum gauge
- Max working pressure: Static: 7 bar
Fluctuating: 6 bar
Short time: 10 bar
- Working temperature: From -40 °C to +60 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids
HFA, HFB, HFC fluids in according to ISO 2943
- Accuracy class: cl. 2.5
- Protection degree: IP 31 in according to EN 60529

HYDRAULIC SYMBOL



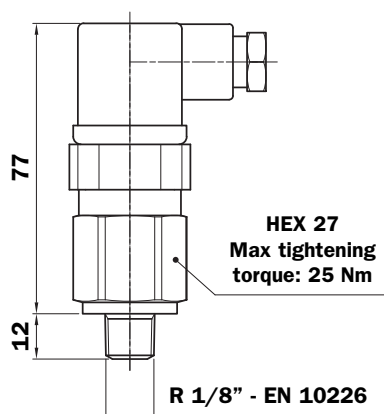
GRADUATED DISPLAY

GREEN BACKGROUND
(from 0 to -12 cmHg)
Clean filter element

YELLOW BACKGROUND
(from -12 to -18 cmHg)
Warning

RED BACKGROUND
(from -18 to -76 cmHg)
Warning

VEB



Ordering code: **VEB21AA50P01**

Connection: R 1/8" EN 10226

Electrical Vacuum Indicator

Materials:

- Body: Brass
- Internal parts: Brass - Nylon
- Seals: NBR

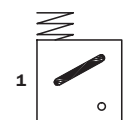
Technical data:

- Indicator type: Electrical vacuum indicator
- Setting pressure: -0,21 bar $\pm 10\%$
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids
HFA, HFB, HFC fluids in according to ISO 2943

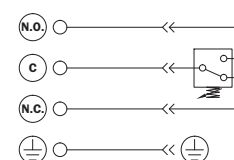
Electrical data:

- Resistive load: 5 A / 14 VDC
4 A / 30 VDC
5 A / 125 VAC
5 A / 250 VAC
- Electrical connections: 50 - EN 175301-803
- Protection degree: IP 65 in according to EN 60529
- Available Atex product  II 1GD Ex ia IIC Tx Ex ia IIIC Tx °C X

HYDRAULIC SYMBOL



ELECTRICAL SYMBOL





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