

SERIES MSH

SPIN-ON FILTER - LOW PRESSURE LINE



Maximum working pressure 500 psi

Flow rate to 80 GPM

Description

MSH

This filter **MSH** series utilises spin-on canisters, with flow capabilities of 80 gpm and has a maximum working pressure of 500 psi, with a peak pressure rating of 700 psi.

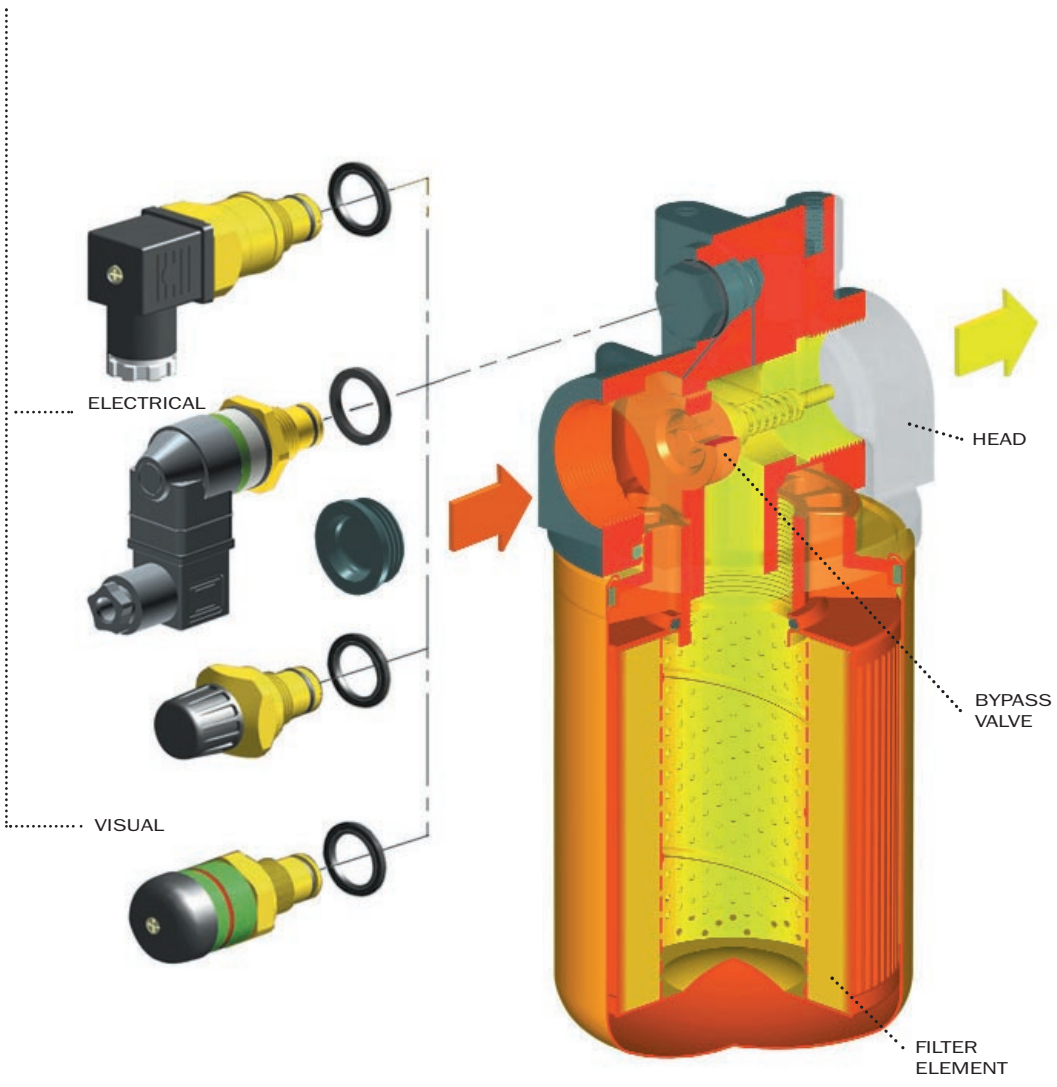
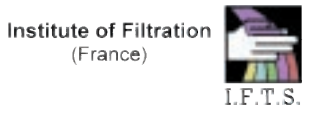
Technically, the **MSH** filters is a new concept, as the filter canister is seamless. Our unique sealing system ensures that the product will withstand medium pressure up to 700 psi.

The **MSH** filters feature a bypass valve and utilise a pressure differential indicator. A patented (no.22083A/86) head/bowl sealing system ensures leak free filters every time.

The **MSH** series is particularly suitable for use on supercharging or auxiliary, low-pressure lines. Ideally suited for use in a servo-assisted hydrostatic transmission where the servo line requires high-performance filtration at medium working pressures.

INDICATORS

New
absolute filter elements
independently tested
in the following Institutes:



Filter element:

Materials

End caps:

Galvanized steel
Nylon (MSH 050/070)

Support tube:

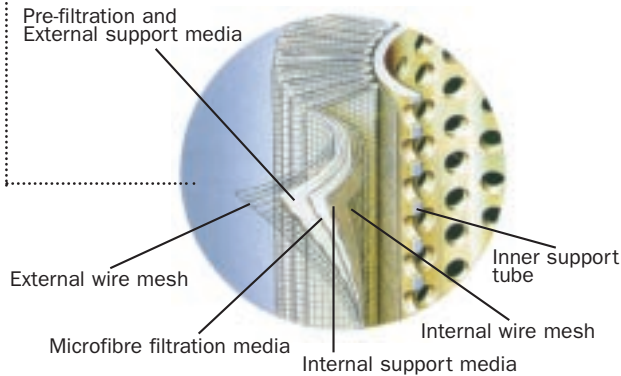
Galvanized steel

Support frames:

Galvanized steel with an epoxy coating

A Series

Inorganic microfibre



MP Filter elements - Conform to the following ISO standards

- ISO 2941 - Verification of collapse/burst resistance.
- ISO 2942 - Verification of fabrication integrity and determination of the first bubble point.
- ISO 2943 - Verification of material compatibility with fluids.
- ISO 3723 - Method for end load test.
- ISO 3724 - Verification of flow fatigue characteristics.
- ISO 3968 - Evaluation of pressure drop versus flow characteristics.
- ISO 16889 - Multi-pass method for evaluating filtration performance.

Element material Absolute filtration

A Series

Inorganic microfibre with acrylic support

Contamination retention

as per ISO 16889: Multi-pass test.

New improved $\beta \geq 200$ filter elements with greater efficiency and increased dirt holding capacity

Filter elements	Dimensions for β (μm) values				Filtration ratios			ΔP (bar)
	$\beta \geq 2$ (50%)	$\beta \geq 20$ (95%)	$\beta \geq 75$ (98,7%)	$\beta \geq 200$ (99,5%)	β_2	β_{10}	β_{20}	
A03	-	2	2,4	3	20	> 10.000	> 10.000	7
A06	-	3	4,6	6	8	> 2.000	> 10.000	7
A10	3	6	7,8	10	1,5	≥ 200	> 10.000	7
A25	13	19	22	25	-	> 1,5	> 35	7

N.B. Other materials giving different degrees of filtration are available on request.

Filtering area Filter elements

Type CH	050	070	100	150
A03/A06	217	450	620	800
A10/A25	217	450	620	800

Values in in²

Element material Nominal filtration

P Series

Resin - impregnated paper

M Series

Square wire mesh (filtration degree is defined in microns by the maximum diameter of a sphere corresponding to the mesh size)

Filtering area Filter elements

Type CH	050	070	100	150
P10/P25	280	560	800	100
M25	190	250	320	450
M60	190	250	320	450
M90	190	250	320	450

Values in in²

Filter body:

Materials

Head

Aluminium

Bypass valve

Nylon

Selas

A Series: Nitrile (Buna-N)

V Series: Viton

Indicator

Brass

Working temperature

From -13 to +230°F

For temperatures outside this range, please consult our Sales Network Organization

Pressure filter body

Maximum working pressure up to 35 bar

Fatigue test: A filter subjected to pressure impulses from 0 to 500 psi will withstand 1.000.000 cycles.

Collapse pressure filter elements

75 psi

Bypass valve

Calibration pressure

Bypass valve, differential opening pressure:

35 psi ± 10%

Types of indicators

Description:

MSH series filters are fitted with , differential style indicators

switching at : 30 psi ± 10%

Visual indicator

V6 - Z6 Series

switching at : 30 psi ± 10%

Electrical indicator

N6 Series

switching at : 30 psi ± 10%

Visual-electrical indicator

K6* Series

switching at 30 psi ± 10%

*For K visual-electrical indicator, specify the voltage (il. K61 = LED: 24 volt)

{ 1 - 24 Volt
2 - 115 Volt
3 - 230 Volt

MP Filtri - Specification

Pressure differential indicator option

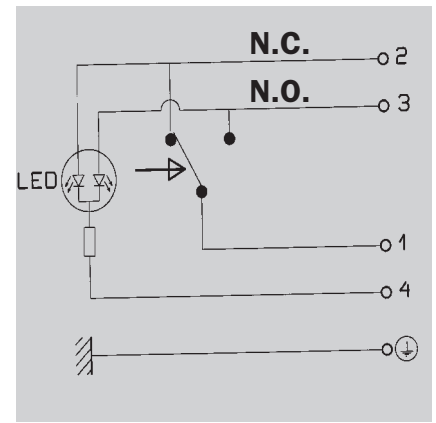
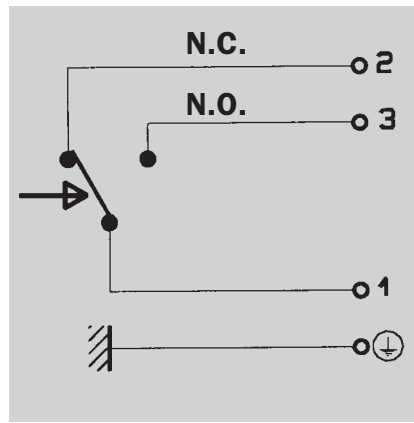
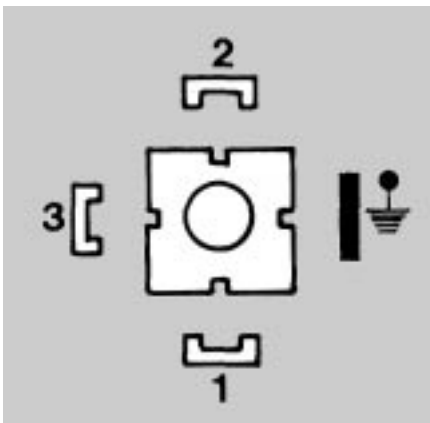
K - E - N Series

Supply voltage (50/60 Hz) (V)	Resistive load (A)	Inductive load (A)
Vca 125	5	2
Vca 250	5	2
Vcc 30	5	3
Vcc 125	0,5	0,03
Vcc 250	0,25	0,03

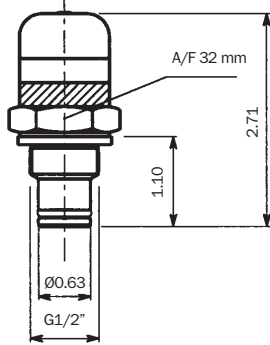
CONNECTOR DIN 43650

ELECTRICAL CONNECTION E - N SERIES

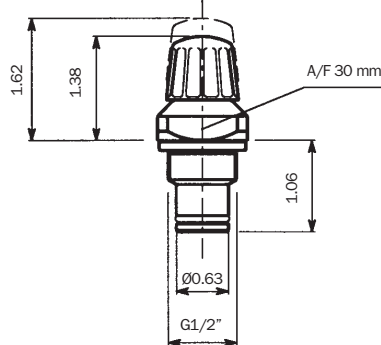
ELECTRICAL CONNECTION K SERIES



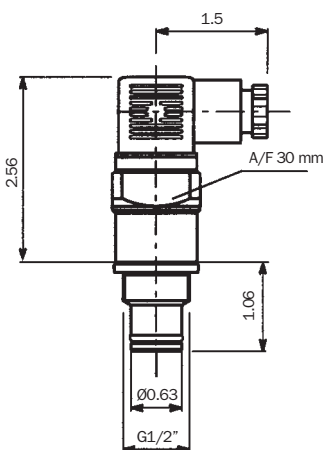
Visual V series



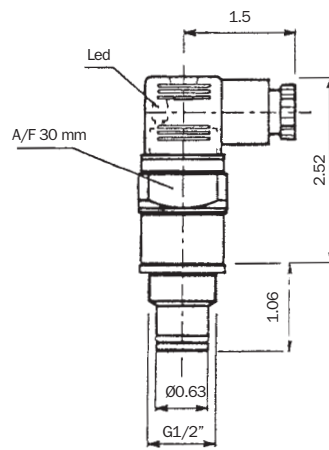
Visual Z series



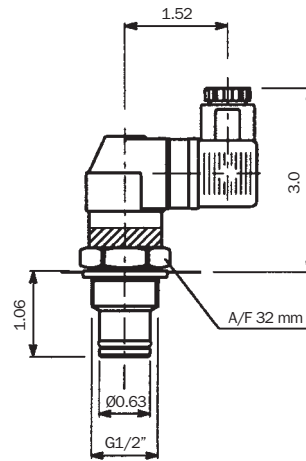
Electrical N series



Led visual - Electrical K series



Visual - Electrical E series



Fluid Compatibility

Filter head and bowls

compatible for use with:

- mineral oils (types HH-HL-HM-HR-HV-HG as per ISO 6743/4)
- water-based emulsions (types HFAE-HFAS as per ISO 6743/4)
- synthetic fluids (types HS-HFDR-HFDS-HFDU as per ISO 6743/4)
- water-glycol (types HFC as per ISO 6743/4)

Seals

A Series

Nitrile (Buna-N) compatible with mineral oils (types HH-HL-HM-HR-HV-HG as per ISO 6743/4)

water-based emulsions (types HFAE-HFAS as per ISO 6743/4)
water - glycol (types HFC as per ISO 6743/4)

V Series

Viton compatible with synthetic fluids (types HS-HFDR-HFDS-HFDU as per ISO 6743/4)

Filter elements

As per ISO 2943; suitable for mineral oils (types HH-HL-HM-HR-HV-HG as per ISO 6743/4) and synthetic fluids (A and M series only) (types HS-HFDR-HFDS-HFDU as per ISO 6743/4)
For water-based emulsions (types HFAE-HFAS as per ISO 6743/4) and fluids other than those mentioned, please consult our Sales Network Organization.

International standards for contamination fluid control

A general (no direct) comparison between ISO 4406 and NAS 1638 is given in table below.

Contamination codes ISO 4406			Correspondent codes NAS 1638	Recommended filtration degree	Typical applications
4µm(c)	6µm(c)	14µm(c)		<i>B x ≥ 200</i>	
14	12	9	3	3	High precision and laboratory servo-systems
17	15	12	6	3-6	Robotic and servo-systems
18	16	13	7	10-12	Very sensitive - high reliability systems
20	18	15	9	12-15	Sensitive - reliable systems
21	19	16	10	15-25	General equipment of limited reliability
23	21	18	12	25-40	Low - pressure equipment not in continuous service

Selection & installation information

Filter elements types

A Series

Absolute inorganic microfibre filtration media, available in 3, 6, 10 and 25 micron
Example - **A03, A06, A10** or **A25**

P Series

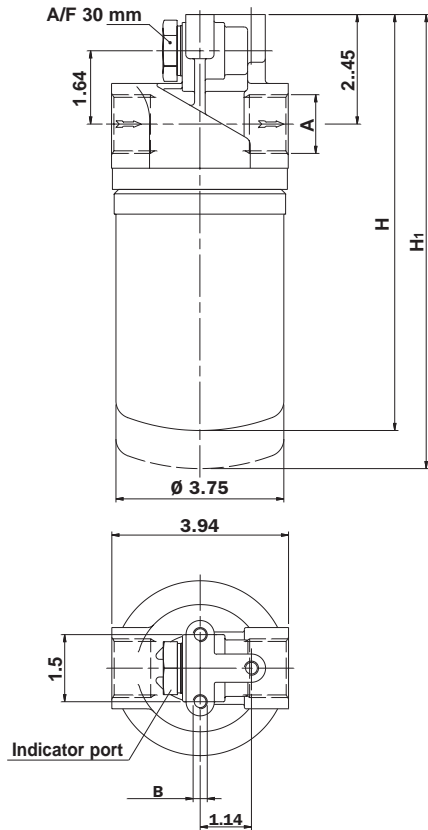
Nominal cellulose impregnated paper media, available in 10 and 25 micron.
Example - **P10** or **P25**

M Series

Metal mesh media, available in 25, 60, and 90 micron.
Example - **M25, M60** or **M90**.

Please refer to individual pressure drop curves to obtain filter assembly pressure drop information

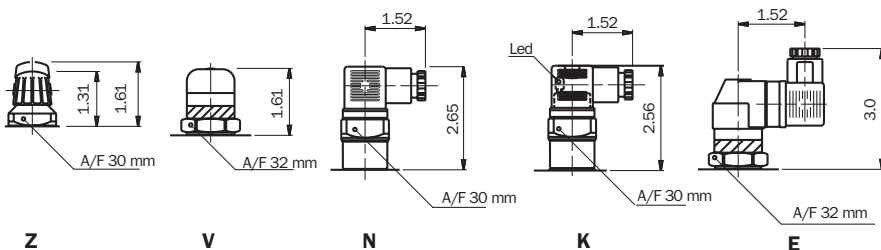
The following filter sizing recommendations are based using a mineral oil fluid at 150 SUS with a maximum total filter assembly (housing and filter element) pressure drop of 30% of the filter condition indicator (9 psi).



Lengths

Type	H	H1
050	9.15	10.3
070	12.8	14.0

Indicator



MSH SERIES 050 - SIZES

MSH050 - 070

Filter assembly	Flow rate gpm *	Port size BSP/NPT/SAE	Weight lbs **
A03	12	SEE TABLE BELOW	3.75
A06	13		
A10	19		
A25	27		
P10	24		
M60	32		

MSH SERIES 070 SIZES

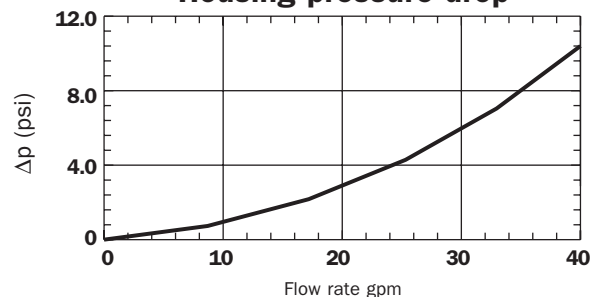
Filter assembly	Flow rate gpm *	Port size BSP/NPT/SAE	Weight lbs **
A03	23	SEE TABLE BELOW	4.8
A06	24		
A10	25		
A25	34		
P10	30		
M60	34		

* Flow rates with 150 SUS fluid viscosity
** Weight including filter element

Thread connections

Type	A	B
G1	1" BSP	M8
G2	3/4" BSP	M8
G3	1" NPT	5/16" UNC
G4	3/4" NPT	5/16" UNC
G5	SAE 16 - 1 5/16" - 12 UN	5/16" UNC
G6	SAE 12 - 1 1/16" - 12 UN	5/16" UNC

Housing pressure drop

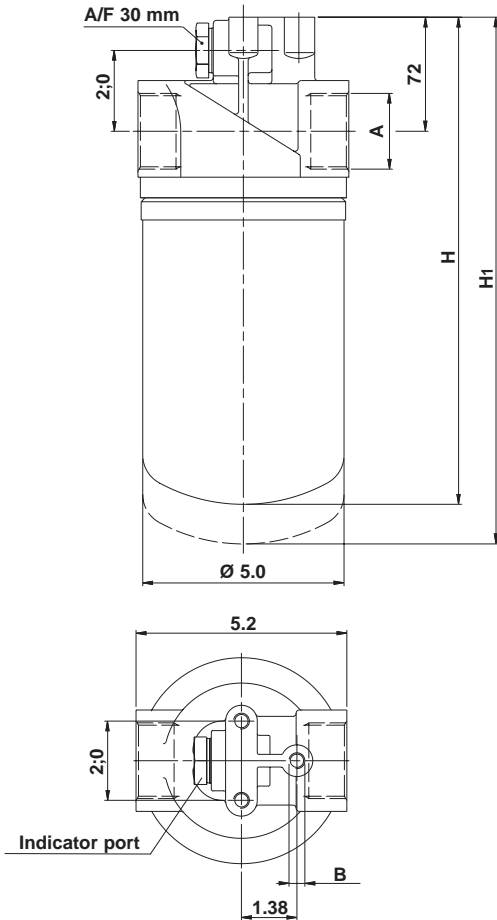


Selection & installation information

Filter elements types

Please refer to individual pressure drop curves to obtain filter assembly pressure drop information

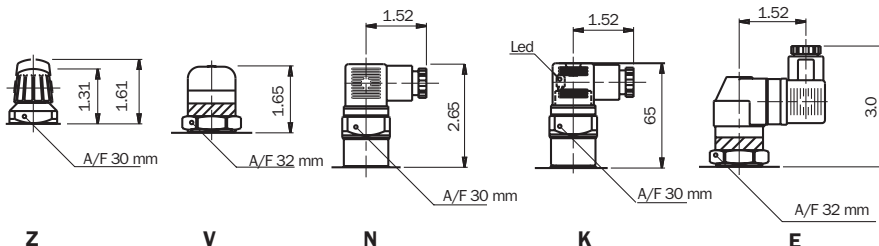
The following filter sizing recommendations are based using a mineral oil fluid at 150 SUS with a maximum total filter assembly (housing and filter element) pressure drop of 30% of the filter condition indicator (9 psi).



Lengths

Type	H	H1
100	12.1	13.3
150	14.0	15.2

Indicator



MSH SERIES 100 - SIZES

MSH100 - 150

Filter assembly	Flow rate gpm *	Port size BSP/NPT/SAE	Weight lbs **
A03	29	SEE TABLE BELOW	6.0
A06	32		
A10	42		
A25	56		
P10	53		
M60	66		

MSH SERIES 150 SIZES

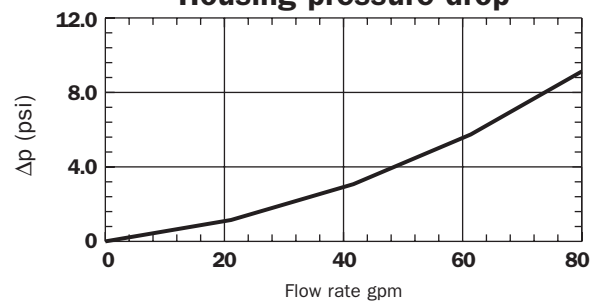
Filter assembly	Flow rate gpm *	Port size BSP/NPT/SAE	Weight kg **
A03	40	SEE TABLE BELOW	8.4
A06	43		
A10	47		
A25	60		
P10	70		
M60	73		

* Flow rates with 150 SUS fluid viscosity
** Weight including filter element

Thread connections

Type	A	B
G1	1 1/2" BSP	M10
G2	1 1/4" BSP	M10
G3	1 1/2" NPT	3/8" UNC
G4	1 1/4" NPT	3/8" UNC
G5	SAE 24 - 1 7/8" - 12 UN	3/8" UNC
G6	SAE 20 - 1 5/8" - 12 UN	3/8" UNC

Housing pressure drop



Pressure drop information

General

Pressure drop versus flow rate curve information for both housing and filter elements is in accordance with ISO 3968

Filter assembly pressure drop - $\Delta p_{\text{Total}} = \Delta p_{\text{Housing}} + \Delta p_{\text{Filter element}}$

Housing pressure drop - The housing pressure drop is proportional to the fluid density

Filter element pressure drop - Filter element pressure drop is proportional to kinematic viscosity therefore always check the fluid operating temperature and fluid type to obtain the working viscosity according to the following formula:

$$\Delta p_1 \text{ Filter element} = (\text{working viscosity} / \text{brochure viscosity}) \times \Delta p \text{ filter element}$$

Brochure viscosity 150 SUS

Filter assembly sizing example

- Customer requires a 48 gpm filter assembly
- Mineral oil fluid: 212 SUS
- 25 micron absolute filtration
- line application

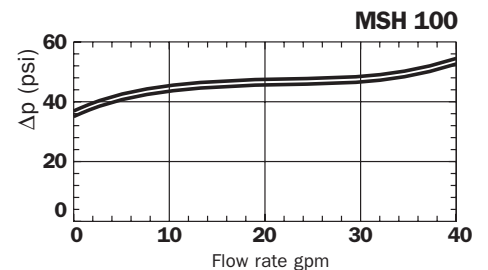
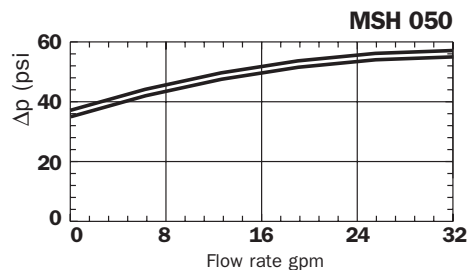
Selection :

- **Housing pressure drop** - MSH 100 with 48 gpm $\Delta p = 3.9$ psi (see curve on page 8)
- **Filter element pressure drop** brochure viscosity - CH 100A25 with 48 gpm $\Delta p = 2.9$ psi (see curve on page 10)
- **Filter element pressure drop** working viscosity - With 212 SUS $\Delta p_1 = 2.9 \times (212/150) = 4$ psi
- **Filter assembly pressure drop** $\Delta p_{\text{Total}} = \Delta p_{\text{Housing}} + \Delta p_1 \text{ Filter element} = 3.9 + 4.0 = 7.9$ psi* { Acceptable pressure drop value, as per our recommendations

Bypass valves pressure drop

The curves were obtained using a mineral oil with a density of 0,86.

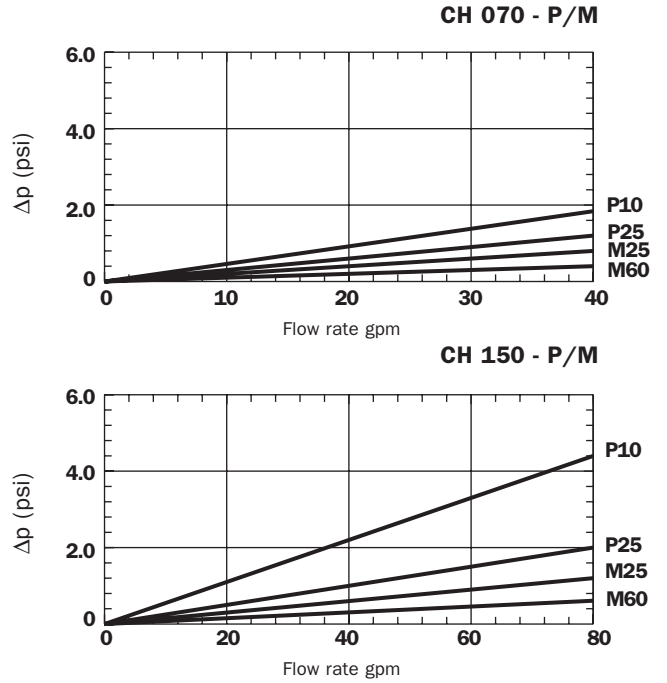
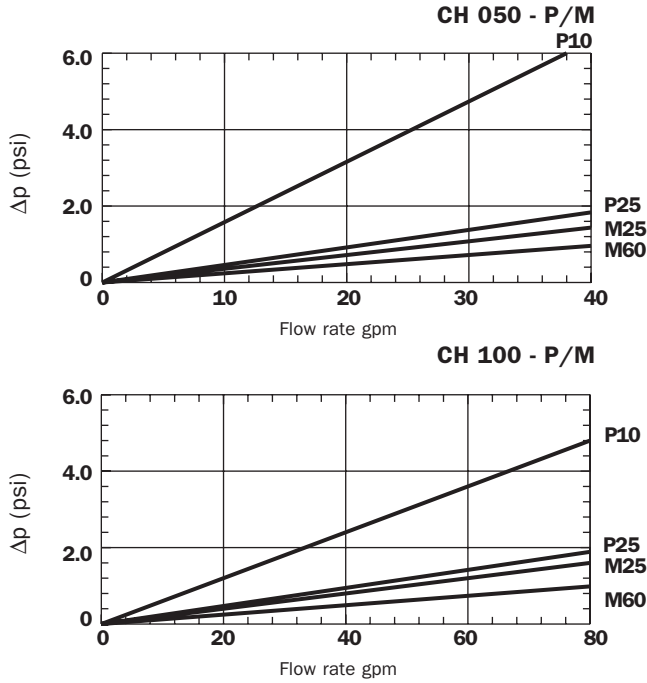
The Δp varies proportionally to the density.



FILTER ELEMENT

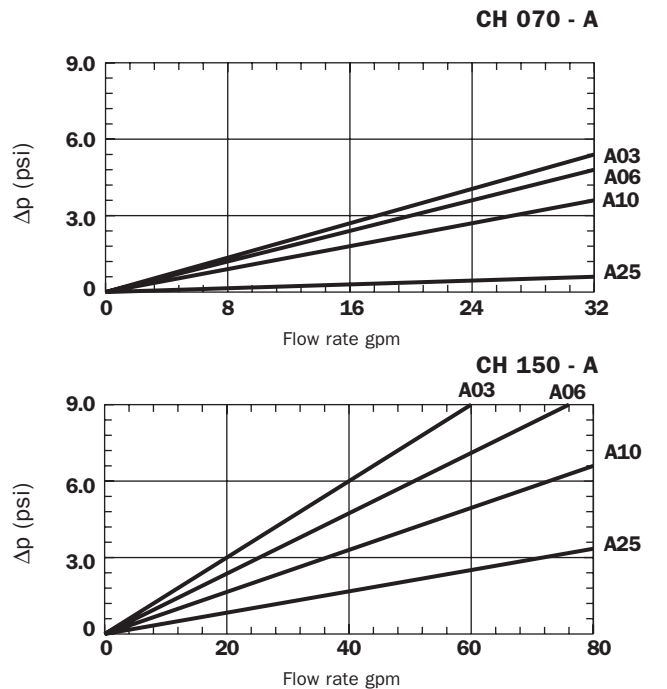
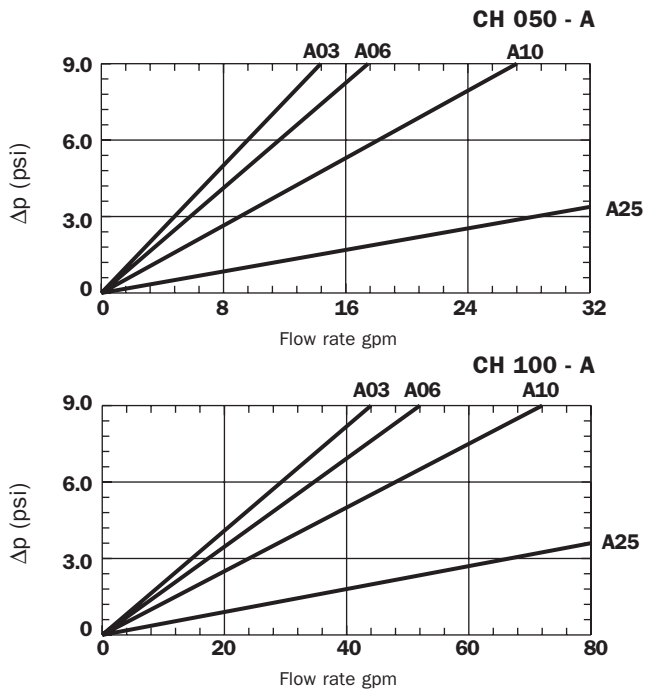
Filter elements - P/M Series

The curves were obtained using a mineral oil with a kinematic viscosity of 150 SUS.
The Δp varies proportionally to the fluid kinematic viscosity.



Filter elements - A Series

The curves were obtained using a mineral oil with a kinematic viscosity of 150 SUS.
The Δp varies proportionally to the fluid kinematic viscosity.



Ordering information

MSH

Nominal sizes

050
070
100
150

Filter condition indicator

S	With threaded hole only
T2	Plug for indicator port
V6	Visual 30 psi
Z6	Visual 30 psi
N6	Electrical 30 psi
E6	Visual-electrical 30 psi
K6*	Visual-Electrical 30 psi * $\left\{ \begin{array}{l} 1 - 24 \text{ Volt} \\ 2 - 115 \text{ Volt} \\ 3 - 230 \text{ Volt} \end{array} \right.$

*For K visual-electrical indicator, specify the voltage (f.i.; K61 = LED: 24 volt)

Bypass valve

B	With bypass 35 psi
S	Without bypass

Filter elements M/P series

P10	Resin-impregnated paper $\beta_x \geq 2$
P25	
M25	Square wire mesh
M60	
M90	

Filter elements A series

A03	Inorganic microfibre $\beta_x \geq 200$
A06	
A10	
A25	

Seals

A	Nitrile (Buna - N)
V	Viton

Port options

Type	MSH 050-070	MSH 100-150
G1	1" BSP	1 1/2" BSP
G2	3/4" BSP	1 1/4" BSP
G3	1" NPT	1 1/2" NPT
G4	3/4" NPT	1 1/4" NPT
G5	SAE 16-1 5/16"- 12 UN	SAE 24-1 7/8"- 12 UN
G6	SAE 12-1 1/16"- 12 UN	SAE 20-1 5/8"- 12 UN

CH

Replacement element

SERIES

CLOGGING INDICATORS



Findynamica
drive and control products

Production summary



Contamination monitoring products

- Calibrated on test rigs manufactured and certified to ISO 11943 based on methods from ISO 11171
- On-line and In-line counting to 400 bar
- Bottle sampler options
- Mobile designs RS 232 - RS 485 digital bus interface



Suction filters

- Flow rates to 620 l/min
- Mounting:
- Tank immersed
 - In-Line
 - In tank with shut off valve
 - In tank with flooded suction



Return filters

- Flow rates to 3000 l/min
 - Pressure to 20 bar
- Mounting:
- In-Line
 - Tank top
 - In single and duplex designs



Pressure filters

- Flow rates to 700 l/min
 - Pressure from 110 bar to 560 bar
- Mounting:
- In-Line
 - Manifold
 - In single and duplex designs



Spin-On filters

- Flow rates to 300 l/min
 - Pressure to 35 bar
- Mounting:
- In-Line
 - Tank top

Production summary



Stainless Steel Pressure filters

- Flow rates to 100 l/min
- Pressure from 350 bar to 700 bar

Mounting:

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



In-Line filters

- Flow rates to 3000 l/min
- Pressure to 80 bar

Mounting:

- In-Line
- Parallel manifold version
- In single and duplex designs



Filtration units

- Flow rates from 15 l/min to 200 l/min
- In static and mobile style



Accessories

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

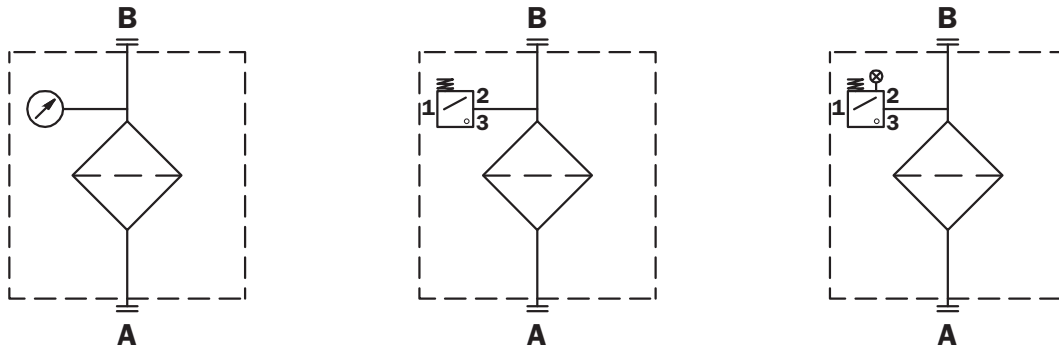


Mechanical Products

- Aluminium bell housings for motors from 0.12 kW to 400 kW
- Couplings in Aluminium - Cast Iron - Steel
- Damping rings
- Support feet
- Aluminium tanks
- Inspection doors

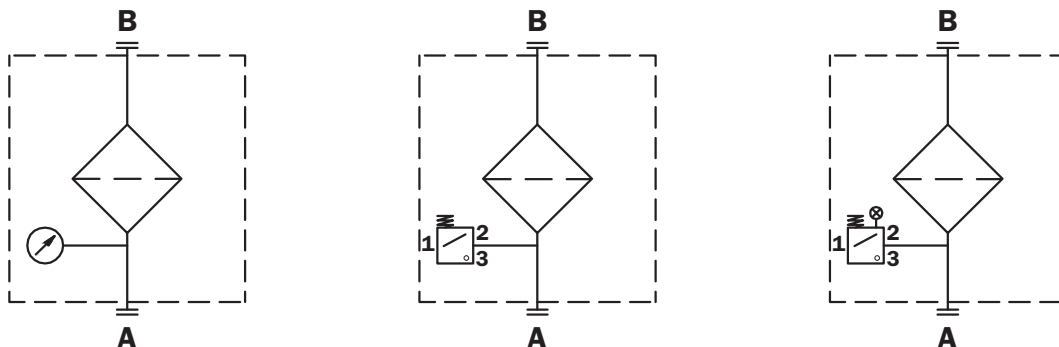
VACUUM INDICATORS

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.



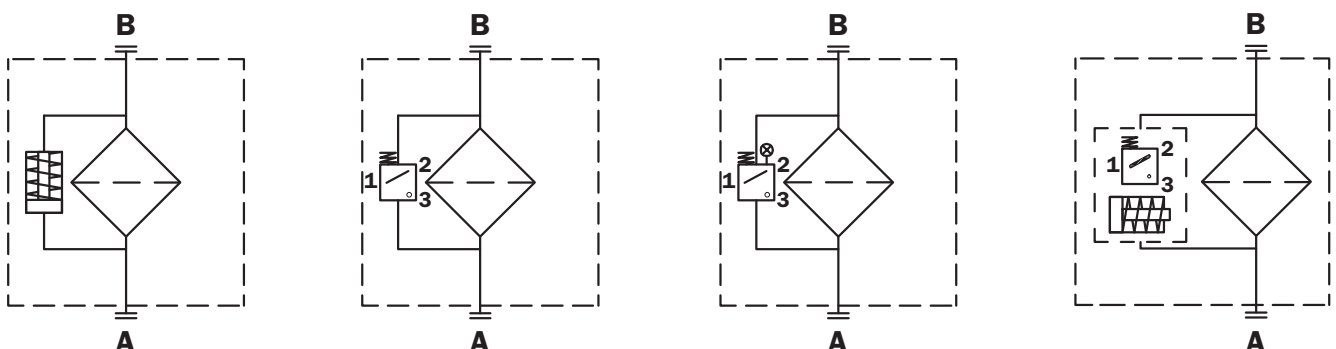
BAROMETRIC INDICATORS

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.



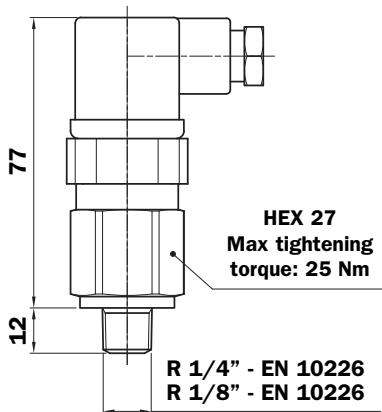
Quick reference guide

Filter series	VISUAL INDICATOR	ELECTRICAL INDICATOR	ELECTRICAL/VISUAL INDICATOR	ELECTRONIC INDICATOR
Suction filters				
SF2 250 - 251 - 350 SF2 500 - 501 - 502 - 503 - 504 - 505 SF2 510 - 535 - 540 FAS	VVA16P01 VVR16P01	VEA21AA50P01	VLA21AA51P01 VLA21AA52P01 VLA21AA53P01 VLA21AA71P01	
Return filters				
MPF - MPT with bypass 1,75 bar MPH with bypass 1,75 bar	BVA14P01 BVR14P01 BVP15HAP01 BVP15HMP01	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01	
MPF - MPT with bypass 3 bar MPH with bypass 2,5 bar FRI 255 RF2 250	BVA25P01 BVR25P01 BVP20HAP01 BVP20HMP01	BEA20HA50P01 BEM20HA41P01	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01	
FRI 025 - 040 - 100 - 250 - 630 - 850	DVA20xP01 DVM20xP01	DEA20xA50P01 DEM20xAxxP01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01	DTA20xF70P01
Suction/Return filters				
MRS 116 - 165 - 166 Suction line	VVB16P01 VVS16P01	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01	
MRS 116 - 165 - 166 Return line	BVA14P01 BVR14P01 BVP15HAP01 BVP15HMP01	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01	
Spin-On filters				
MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350 Suction line	VVB16P01 VVS16P01	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01	
MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350 MST 050 - 070 - 100 - 150 Return line	BVA14P01 BVR14P01 BVP15HAP01 BVP15HMP01	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01	
MPS 051 - 071 - 101 - 151 MPS 301 - 351 MSH 050 - 070 - 100 - 150 In-line	DVA12xP01 DVM12xP01	DEA12xA50P01 DEM12xAxxP01	DLA12xA51P01 DLA12xA52P01 DLA12xA71P01 DLE12xA50P01 DLE12xF50P01	

Quick reference guide

Filter series	VISUAL INDICATOR	ELECTRICAL INDICATOR	ELECTRICAL/VISUAL INDICATOR	ELECTRONIC INDICATOR
Low Pressure In-Line filters				
LMP 110 - 112 - 116 - 118 - 119 LMP 120 - 122 - 123 LMP 210 - 211 LMP 400 - 401 - 430 - 431 LMP 900 - 901 - 950 - 951 LMD 400 - 401 - 431 - 951 With bypass valve	DVA20xP01 DVM20xP01	DEA20xA50P01 DEM20xAxxP01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01	DTA20xF70P01
LMP 110 - 112 - 116 - 118 - 119 LMP 120 - 122 - 123 LMP 210 - 211 LMP 400 - 401 - 430 - 431 LMP 900 - 901 - 950 - 951 LMD 400 - 401 - 431 - 951 MPD 250 - 251 Without bypass valve	DVA50xP01 DVM50xP01	DEA50xA50P01 DEM50xAxxP01	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01	DTA50xF70P01
High Pressure In-Line filters				
FMP 039 - 065 - 135 - 320 FMM 050 FHP 010 - 011 - 065 - 135 - 320 - 500 FHB 050 - 135 - 320 FHM 006 - 007 - 010 - 050 - 135 - 320 - 500 FHF 325 FHD 021 - 051 - 326 - 333 With bypass valve	DVA50xP01 DVM50xP01	DEA50xA50P01 DEM50xAxxP01	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01	DTA50xF70P01
FMP 039 - 065 - 135 - 320 FMM 050 FHP 010 - 011 - 065 - 135 - 320 - 500 FHB 050 - 135 - 320 FHM 006 - 007 - 010 - 050 - 135 - 320 - 500 FHF 325 FHD 021 - 051 - 326 - 333 Without bypass valve	DVA70xP01 DVM70xP01	DEA70xA50P01 DEM70xAxxP01	DLA70xA51P01 DLA70xA52P01 DLA70xA71P01 DLE70xA50P01 DLE70xF50P01	DTA70xF70P01
Stainless Steel High Pressure In-Line filters				
FZB 039 FZP 039 - 136 FZH 010 - 011 - 039 With bypass valve	DVX50xP01 DVY50xP01	DEX50xA50P01	DLX50xA51P01 DLX50xA52P01 DLY50xA50P01	
FZB 039 FZP 039 - 136 FZH 010 - 011 - 039 Without bypass valve	DVX70xP01 DVY70xP01	DEX70xA50P01	DLX70xA51P01 DLX70xA52P01 DLY70xA50P01	

VEA - VEB



Available connections:
R 1/4" EN 10226 (VEA21AA50P01)
R 1/8" EN 10226 (VEB21AA50P01)

Electrical Vacuum Indicator


Materials:

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

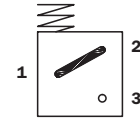
Technical data:

- Indicator type: Electrical vacuum indicator
- Setting pressure: -0,21 bar ±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

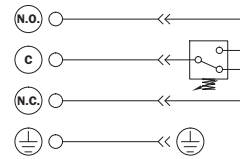
Electrical data:

- 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

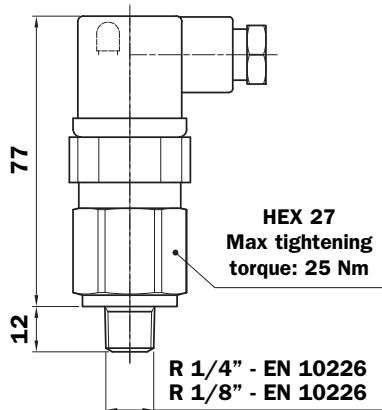
HYDRAULIC SYMBOL



ELECTRICAL SYMBOL



VLA - VLB



Available connections:
R 1/4" EN 10226 (VLA21AAxxP01)
R 1/8" EN 10226 (VLB21AAxxP01)

Electrical/Visual Vacuum Indicator

Materials:

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

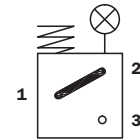
Technical data:

- Indicator type: Electrical/Visual vacuum indicator
- Setting pressure: -0,21 bar ±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

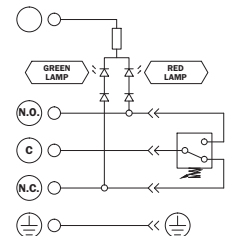
Electrical data:

- Resistive load: 51: 0,8 A / 24 Vdc
52: 0,2 A / 115 Vdc
53: 4 A / 230 Vdc
- Electrical connections: 51 - EN 175301-803 (24 Vdc lamps)
52 - EN 175301-803 (110 Vdc lamps)
53 - EN 175301-803 (230 VAc lamps)
- Protection degree: IP 65 in according to EN 60529

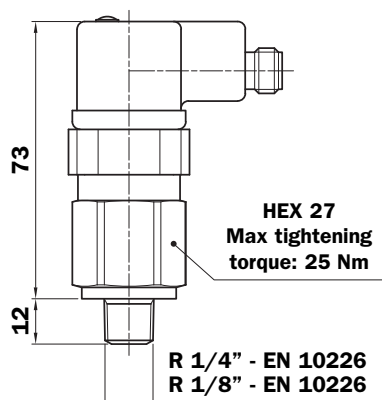
HYDRAULIC SYMBOL



ELECTRICAL SYMBOL



VLA - VLB



Available connections:
R 1/4" EN 10226 (VLA21AA71P01)
R 1/8" EN 10226 (VLB21AA71P01)

Electrical/Visual Vacuum Indicator

Materials:

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

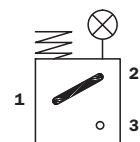
Technical data:

- Indicator type: Electrical/Visual vacuum indicator
- Setting pressure: -0,21 bar ±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

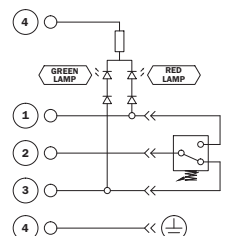
Electrical data:

- Resistive load: 0,4 A / 24 Vdc
- Electrical connections: 71 - M12 IEC 61076-2-101 (24 Vdc lamps)
- Protection degree: IP 65 in according to EN 60529

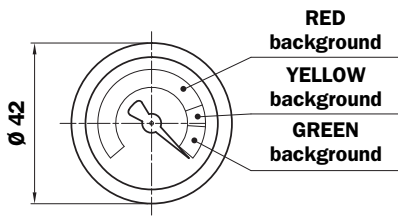
HYDRAULIC SYMBOL



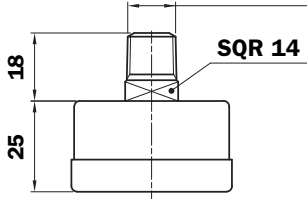
ELECTRICAL SYMBOL



VVA - VVB



R 1/4" - EN 10226
R 1/8" - EN 10226



Available connections:
R 1/4" EN 10226 (VVA16P01)
R 1/8" EN 10226 (VVB16P01)

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



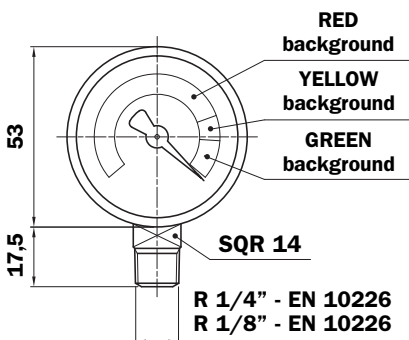
GRADUATED DISPLAY

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

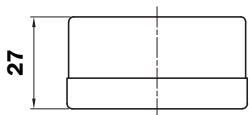
YELLOW BACKGROUND
(from -12 to -18 cmHg)
Warning

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

VVR - VVS



R 1/4" - EN 10226
R 1/8" - EN 10226



Available connections:
R 1/4" EN 10226 (VVR16P01)
R 1/8" EN 10226 (VVS16P01)

Radial 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: Radial 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

REDBACKGROUND
(from -18 to -76 cmHg)
Bypass

Ordering information VE - VL - VV

Series	1	2	3	4	5	6	7
VE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Example:	VE	A	21	A	A	50	P01

Series	1	2	3	4	5	6	7
VL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Example:	VL	A	21	A	A	52	P01

Series	1	2	3	7
VV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Example:	VV	A	16	P01

1 - Series

<input type="checkbox"/> VE	Electrical indicator
<input type="checkbox"/> VL	Electrical/Visual indicator
<input type="checkbox"/> VV	Visual indicator

2 - Type

VE - VL series

<input type="checkbox"/> A	R 1/4" EN 10226 connection
<input type="checkbox"/> B	R 1/8" EN 10226 connection

VV series

<input type="checkbox"/> A	Axial vacuumeter R 1/4" EN 10226 connection
<input type="checkbox"/> B	Axial vacuumeter R 1/8" EN 10226 connection
<input type="checkbox"/> R	Radial vacuumeter R 1/4" EN 10226 connection
<input type="checkbox"/> S	Radial vacuumeter R 1/8" EN 10226 connection

3 - Setting pressure

VEA - VLA series

<input type="checkbox"/> 21	-0,21 bar
------------------------------------	-----------

VVA - VVR series

<input type="checkbox"/> 16	-0,16 bar
------------------------------------	-----------

4 - Seals (excluded for VV)

<input type="checkbox"/> A	NBR
<input type="checkbox"/>	On request

5 - Thermostat (excluded for VV)

<input type="checkbox"/> A	Without thermostat
-----------------------------------	--------------------

6 - Electrical connection (excluded for VV)

VEA series

<input type="checkbox"/> 50	EN 175301-803 connector
------------------------------------	-------------------------

VLA series

<input type="checkbox"/> 51	EN 175301-803 clear connector with 24 V lamps
<input type="checkbox"/> 52	EN 175301-803 clear connector with 110 V lamps
<input type="checkbox"/> 53	EN 175301-803 clear connector with 230 V lamps
<input type="checkbox"/> 71	M12 IEC 61076-2-101 clear connector with 24 V lamps

7 - Option

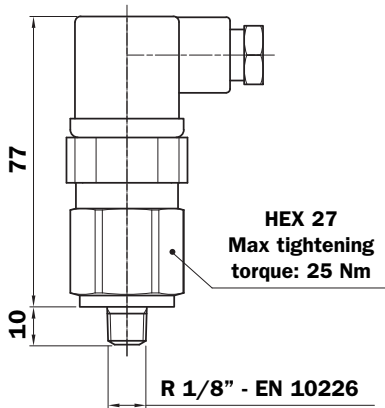
<input type="checkbox"/> P01	MP Filtri standard
<input type="checkbox"/> Pxx	Customer request

Findynamica
drive and control products

MP Filtri - The filter functions as described in this bulletin are valid exclusively for original MP Filtri filter elements and replacement parts. All rights reserved

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BEA



Available setting:
1,5 bar $\pm 10\%$ (BEA15HA50P01)
2 bar $\pm 10\%$ (BEA20HA50P01)

Electrical Pressure Indicator


Materials:

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

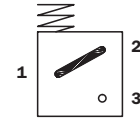
Technical data:

- 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

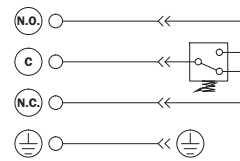
Electrical data:

- 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 IIC Tx °C X

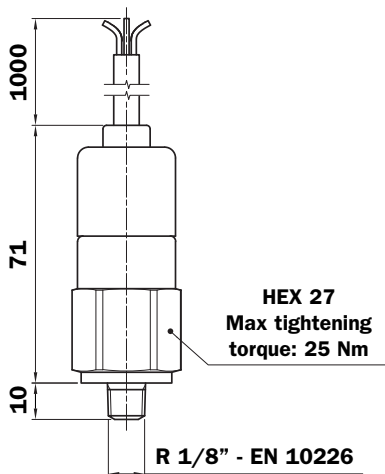
HYDRAULIC SYMBOL



ELECTRICAL SYMBOL



BEM



Available setting:
1,5 bar $\pm 10\%$ (BEM15HA50P01)
2 bar $\pm 10\%$ (BEM20HA50P01)

Electrical Pressure Indicator

Materials:

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

Technical data:

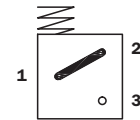
- Indicator type: Electrical pressure indicator
- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids
HFA, HFB, HFC fluids in according to ISO 2943

Electrical data:

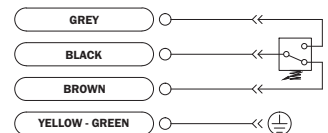
- Resistive load: 5 A / 14 VDC
4 A / 30 VDC
5 A / 125 VAC
5 A / 250 VAC
- Electrical connections: 50 - EN 175301-803
- Protection degree: IP 67 in according to EN 60529

On request this indicator can be provided with main connectors in use for wirings.

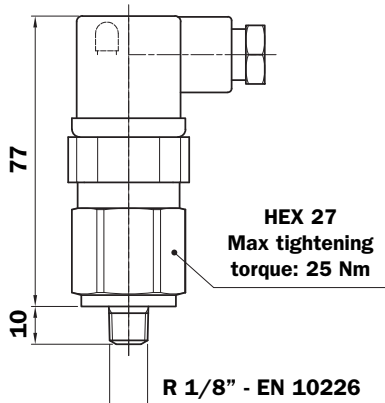
HYDRAULIC SYMBOL



ELECTRICAL SYMBOL



BLA



Available setting:
1,5 bar $\pm 10\%$ (BLA15HAxxP01)
2 bar $\pm 10\%$ (BLA20HAxxP01)

Electrical/Visual Pressure Indicator

Materials:

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

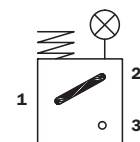
Technical data:

- Indicator type: Electrical/Visual 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

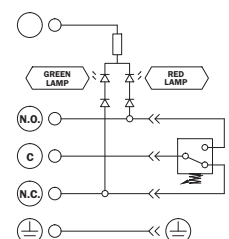
Electrical data:

- Resistive load: 51: 0,8 A / 24 VDC
52: 0,2 A / 115 VDC
53: 4 A / 230 VDC
- Electrical connections: 51 - EN 175301-803 (24 VDC lamps)
52 - EN 175301-803 (110 VDC lamps)
53 - EN 175301-803 (230 VAC lamps)
- Protection degree: IP 65 in according to EN 60529

HYDRAULIC SYMBOL

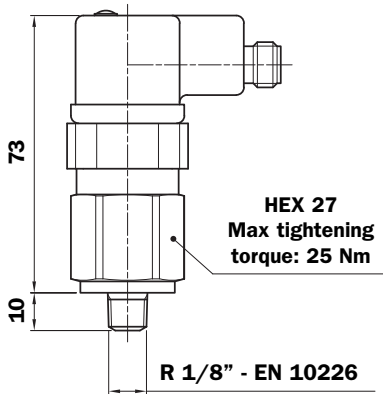


ELECTRICAL SYMBOL



BAROMETRIC INDICATORS

BLA



Available setting:
1,5 bar $\pm 10\%$ (BLA15HA71P01)
2 bar $\pm 10\%$ (BLA20HA71P01)

Electrical/Visual Pressure Indicator

Materials:

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

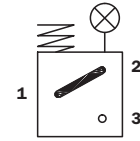
Technical data:

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

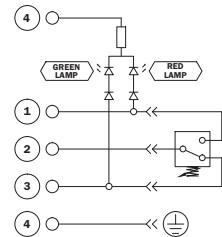
Electrical data:

- Resistive load: 0,4 A / 24 VDC
- Electrical connections: 71 - M12 IEC 61076-2-101 (24 VDC lamps)
- Protection degree: IP 65 in according to EN 60529

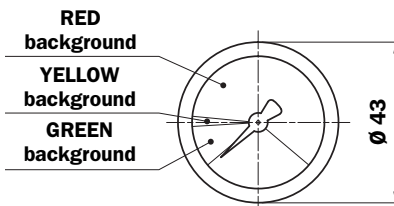
HYDRAULIC SYMBOL



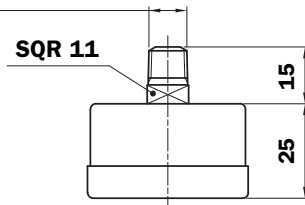
ELECTRICAL SYMBOL



BVA



R 1/8" - EN 10226



Available setting:
1,4 bar $\pm 10\%$ (BVA14P01)
2,5 bar $\pm 10\%$ (BVA25P01)

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 $+60^{\circ}\text{C}$
- 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

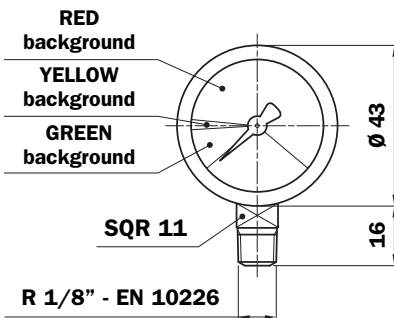


GRADUATED DISPLAY

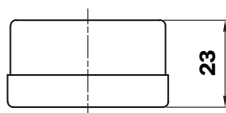
BVA14P01
GREEN BACKGROUND (from 0 to 1,4 bar)
Clean filter element
YELLOW BACKGROUND (from 1,4 to 1,7 bar)
Warning
RED BACKGROUND (from 1,7 to 10 bar)
Bypass

BVA25P01
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

BVR



R 1/8" - EN 10226



Available setting:
1,4 bar $\pm 10\%$ (BVR14P01)
2,5 bar $\pm 10\%$ (BVR25P01)

Radial 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: Radial pressure gauge
- Max working pressure: Static: 7 bar
Fluctuating: 6 bar
Short time: 10 bar
- Working temperature: From -40°C to $+60^{\circ}\text{C}$
- 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

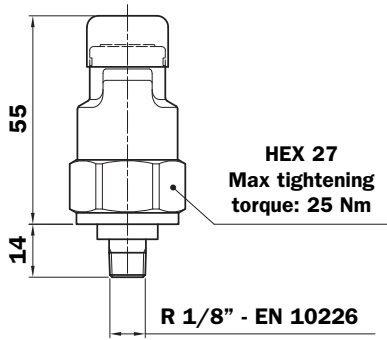


GRADUATED DISPLAY

BVR14P01
GREEN BACKGROUND (from 0 to 1,4 bar)
Clean filter element
YELLOW BACKGROUND (from 1,4 to 1,7 bar)
Warning
RED BACKGROUND (from 1,7 to 10 bar)
Bypass

BVR25P01
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

BVP - BVQ



Available setting:
 1,5 bar $\pm 10\%$ (BVP15AP01 - BVQ15AP01)
 2 bar $\pm 10\%$ (BVP20AP01 - BVQ20AP01)

Visual Pressure Indicator

Materials:

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

Technical data:

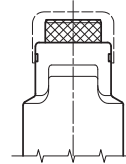
- Indicator type: Visual pressure indicator
- Reset: BVP - Automatic reset
BVQ - Manual reset
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids
HFA, HFB, HFC fluids in according to ISO 2943
- Protection degree: IP 45 in according to EN 60529

HYDRAULIC SYMBOL

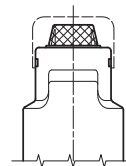


SIGNALS

GREEN BUTTON: INLET PRESSURE



RED BUTTON: CLOGGED FILTER ELEMENT



Ordering information BE - BL - BV

Series	1	2	3	4	5	6	7
BE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Example:	BE	A	20	H	A	50	P01

Series	1	2	3	4	5	6	7
BL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Example:	BL	A	20	H	A	52	P01

Series	1	2	3	4	7
BV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Example:	BV	P	20	H	P01

Series	1	2	3	7
BV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Example:	BV	A	14	P01

1 - Series

<input type="checkbox"/> BE	Electrical indicator
<input type="checkbox"/> BL	Electrical/Visual indicator
<input type="checkbox"/> BV	Visual indicator

2 - Type

BE series

<input type="checkbox"/> A	Standard type
<input type="checkbox"/> M	With wired connector

BL series

<input type="checkbox"/> A	Standard type
-----------------------------------	---------------

BV series

<input type="checkbox"/> A	Axial manometer
<input type="checkbox"/> R	Radial manometer
<input type="checkbox"/> P	Visual pressure indicator - Automatic reset
<input type="checkbox"/> Q	Visual pressure indicator - Manual reset

3 - Setting pressure

BEA - BEM - BLA - BVP series

<input type="checkbox"/> 15	1,5 bar
<input type="checkbox"/> 20	2 bar

BVA - BVR series

<input type="checkbox"/> 14	1,4 bar
<input type="checkbox"/> 25	2,5 bar

4 - Seals (excluded for BVA - BVR)

<input type="checkbox"/> H	HNBR
<input type="checkbox"/>	On request

5 - Thermostat (excluded for BV)

<input type="checkbox"/> A	Without thermostat
-----------------------------------	--------------------

6 - Electrical connection (excluded for BV)

BEA series

<input type="checkbox"/> 50	EN 175301-803 connector
------------------------------------	-------------------------

BEM series

<input type="checkbox"/> 41	Four core cable
<input type="checkbox"/>	On request

BLA series

<input type="checkbox"/> 51	EN 175301-803 clear connector with 24 V lamps
<input type="checkbox"/> 52	EN 175301-803 clear connector with 110 V lamps
<input type="checkbox"/> 53	EN 175301-803 clear connector with 230 V lamps
<input type="checkbox"/> 71	M12 IEC 61076-2-101 clear connector with 24 V lamps

7 - Option

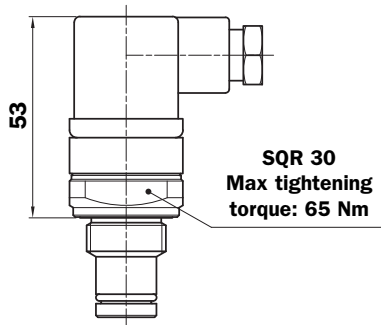
<input type="checkbox"/> P01	MP Filtri standard
<input type="checkbox"/> Pxx	Customer request

F indynamica
drive and control products

MP Filtri - The filter functions as described in this bulletin are valid exclusively for original MP Filtri filter elements and replacement parts. All rights reserved

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DEA



Available setting:
 1,2 bar ±10% (DEA12xA50P01)
 2 bar ±10% (DEA20xA50P01)
 5 bar ±10% (DEA50xA50P01)
 7 bar ±10% (DEA70xA50P01)
 9,5 bar ±10% (DEA95xA50P01)

Electrical Differential Indicator

Materials:

- Body: Brass
- Internal parts: Brass - Nylon
- Seals: HNBR - FPM

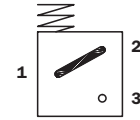
Technical data:

- Indicator type: Electrical differential indicator
- 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 fluids in according to ISO 2943

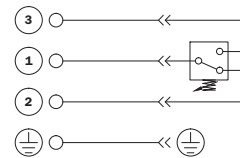
Electrical data:

- Resistive load: 0,2 A / 115 Vdc
- Electrical connections: 50 - EN 175301-803
- Protection degree: IP 66 in according to EN 60529
IP 69K in according to ISO 20653

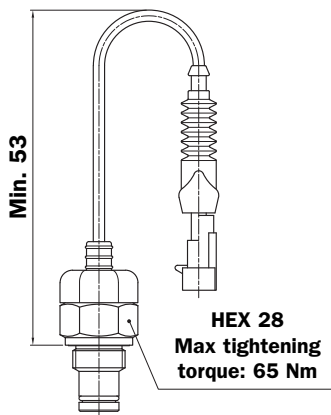
HYDRAULIC SYMBOL



ELECTRICAL SYMBOL



DEM



Available setting:
 1,2 bar ±10% (DEM12xx10P01)
 2 bar ±10% (DEM20xx10P01)
 5 bar ±10% (DEM50xx10P01)
 7 bar ±10% (DEM70xx10P01)
 9,5 bar ±10% (DEM95xx10P01)

Electrical Differential Indicator

Materials:

- Body: Brass
- Internal parts: Brass - Nylon
- Seals: HNBR - FPM

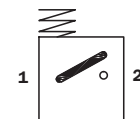
Technical data:

- Indicator type: Electrical differential indicator
- 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 fluids in according to ISO 2943

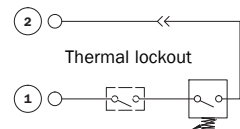
Electrical data:

- Resistive load: 0,2 A / 115 Vdc
- Electrical connections: 10 - AMP Superseal series 1,5
- Switching type: Normally open contacts (N.C. on request)
- Thermal lockout: Normally open up to 30 °C (F option)
- Protection degree: IP 66 in according to EN 60529

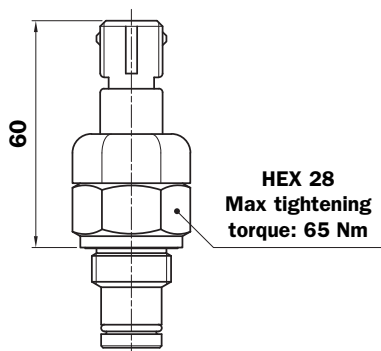
HYDRAULIC SYMBOL



ELECTRICAL SYMBOL



DEM



Available setting:
 1,2 bar ±10% (DEM12xx20P01)
 2 bar ±10% (DEM20xx20P01)
 5 bar ±10% (DEM50xx20P01)
 7 bar ±10% (DEM70xx20P01)
 9,5 bar ±10% (DEM95xx20P01)

Electrical Differential Indicator

Materials:

- Body: Brass
- Internal parts: Brass - Nylon
- Seals: HNBR - FPM

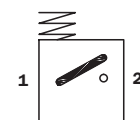
Technical data:

- Indicator type: Electrical differential indicator
- 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 fluids in according to ISO 2943

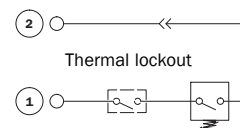
Electrical data:

- Resistive load: 0,2 A / 115 Vdc
- Electrical connections: 20 - AMP Time junior
- Switching type: Normally open contacts (N.C. on request)
- Thermal lockout: Normally open up to 30 °C (F option)
- Protection degree: IP 66 in according to EN 60529

HYDRAULIC SYMBOL

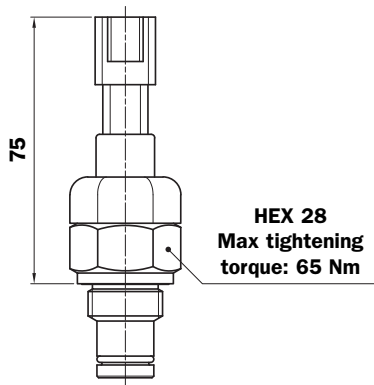


ELECTRICAL SYMBOL



DIFFERENTIAL INDICATORS

DEM



Available setting:
 1,2 bar ±10% (DEM12xx30P01)
 2 bar ±10% (DEM20xx30P01)
 5 bar ±10% (DEM50xx30P01)
 7 bar ±10% (DEM70xx30P01)
 9,5 bar ±10% (DEM95xx30P01)

Electrical Differential Indicator

Materials:

- Body: Brass
- Internal parts: Brass - Nylon
- Seals: HNBR - FPM

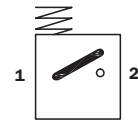
Technical data:

- Indicator type: Electrical differential indicator
- 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 fluids in according to ISO 2943

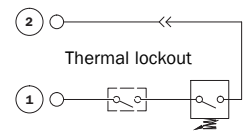
Electrical data:

- Resistive load: 0,2 A / 115 Vdc
- Electrical connections: 30 - Deutsch DT-04-2-P
- Switching type: Normally open contacts (N.C. on request)
- Thermal lockout: Normally open up to 30 °C (F option)
- Protection degree: IP 66 in according to EN 60529

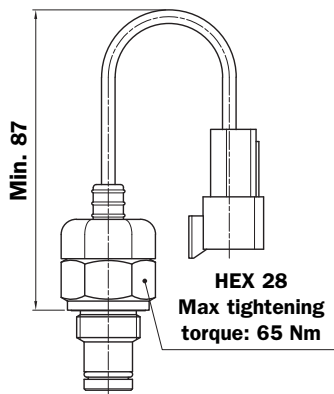
HYDRAULIC SYMBOL



ELECTRICAL SYMBOL



DEM



Available setting:
 1,2 bar ±10% (DEM12xx35P01)
 2 bar ±10% (DEM20xx35P01)
 5 bar ±10% (DEM50xx35P01)
 7 bar ±10% (DEM70xx35P01)
 9,5 bar ±10% (DEM95xx35P01)

Electrical Differential Indicator

Materials:

- Body: Brass
- Internal parts: Brass - Nylon
- Seals: HNBR - FPM

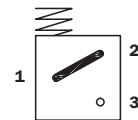
Technical data:

- Indicator type: Electrical differential indicator
- 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 fluids in according to ISO 2943

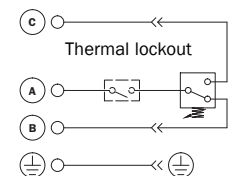
Electrical data:

- Resistive load: 0,2 A / 115 Vdc
- Electrical connections: 35 - Deutsch DT-04-3-P
- Switching type: SPDT contact
- Thermal lockout: Normally open up to 30 °C (F option)
- Protection degree: IP 66 in according to EN 60529

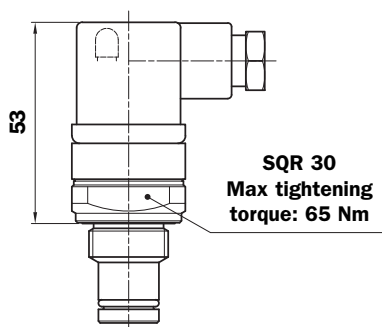
HYDRAULIC SYMBOL



ELECTRICAL SYMBOL



DLA



Available setting:
 1,2 bar ±10% (DLA12xAxxP01)
 2 bar ±10% (DLA20xAxxP01)
 5 bar ±10% (DLA50xAxxP01)
 7 bar ±10% (DLA70xAxxP01)
 9,5 bar ±10% (DLA95xAxxP01)

Electrical/Visual Differential Indicator

Materials:

- Body: Brass
- Internal parts: Brass - Nylon
- Seals: HNBR - FPM

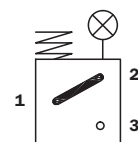
Technical data:

- Indicator type: Electrical/Visual differential indicator
- 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 fluids in according to ISO 2943

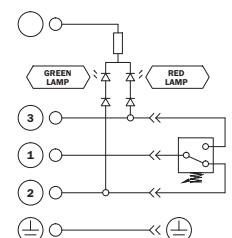
Electrical data:

- Resistive load: 51: 0,8 A / 24 Vdc
52: 0,2 A / 115 Vdc
- Electrical connections: 51 - EN 175301-803 (24 Vdc lamps)
52 - EN 175301-803 (110 Vdc lamps)
- Protection degree: IP 66 in according to EN 60529
IP 69K in according to ISO 20653

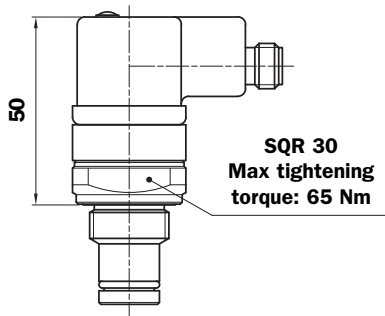
HYDRAULIC SYMBOL



ELECTRICAL SYMBOL



DLA



Available setting:
 1,2 bar ±10% (DLA12xA71P01)
 2 bar ±10% (DLA20xA71P01)
 5 bar ±10% (DLA50xA71P01)
 7 bar ±10% (DLA70xA71P01)
 9,5 bar ±10% (DLA95xA71P01)

Electrical/Visual Differential Indicator

Materials:

- Body: Brass
- Internal parts: Brass - Nylon
- Seals: HNBR - FPM

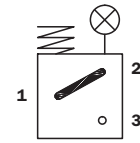
Technical data:

- Indicator type: Electrical/Visual differential indicator
- 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 fluids in according to ISO 2943

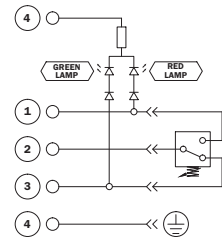
Electrical data:

- Resistive load: 0,4 A / 24 Vdc
- Electrical connections: 71 - M12 IEC 61076-2-101 (24 Vdc lamps)
IP 65 in according to EN 60529
- Protection degree: IP 69K in according to ISO 20653

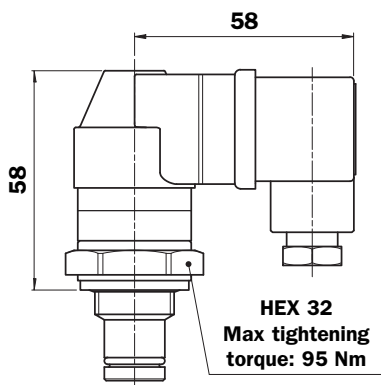
HYDRAULIC SYMBOL



ELECTRICAL SYMBOL



DLE



Available setting:
 1,2 bar ±10% (DLE12VA50P01)
 2 bar ±10% (DLE20VA50P01)
 5 bar ±10% (DLE50VA50P01)
 7 bar ±10% (DLE70VA50P01)
 9,5 bar ±10% (DLE95VA50P01)

Electrical/Visual Differential Indicator

Materials:

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

Technical data:

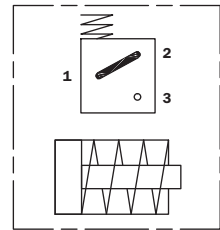
- Indicator type: Electrical/Visual differential indicator
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids
HFA, HFB, HFC fluids in according to ISO 2943

Electrical data:

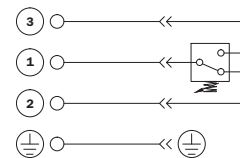
- Resistive load: 5 A / 250 VAC
- Electrical connections: 50 - EN 175301-803
- Protection degree: IP 65 in according to EN 60529

Available the connector with lamps

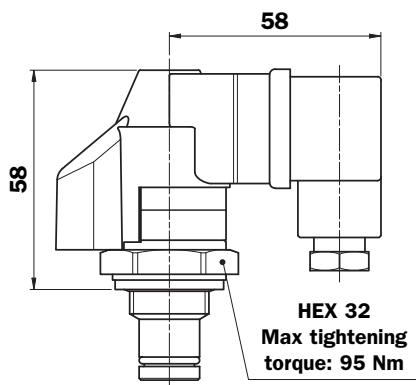
HYDRAULIC SYMBOL



ELECTRICAL SYMBOL



DLE



Available setting:
 1,2 bar ±10% (DLE12VF50P01)
 2 bar ±10% (DLE20VF50P01)
 5 bar ±10% (DLE50VF50P01)
 7 bar ±10% (DLE70VF50P01)
 9,5 bar ±10% (DLE95VF50P01)

Electrical/Visual Differential Indicator

Materials:

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

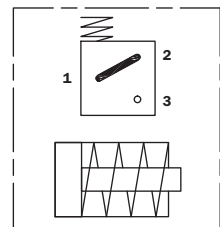
Technical data:

- Indicator type: Electrical/Visual differential indicator
- 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 fluids in according to ISO 2943

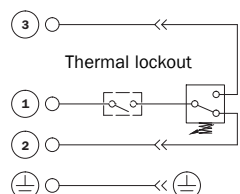
Electrical data:

- Resistive load: 5 A / 250 VAC
- Thermal lockout setting: +30 °C
- Electrical connections: 50 - EN 175301-803
- Protection degree: IP 65 in according to EN 60529

HYDRAULIC SYMBOL

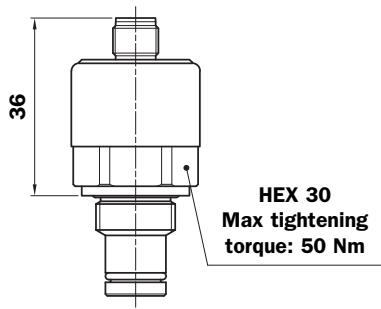


ELECTRICAL SYMBOL



DIFFERENTIAL INDICATORS

DTA



Available setting:
 1,2 bar ±10% (DTA12xF70P01)
 2 bar ±10% (DTA20xF70P01)
 5 bar ±10% (DTA50xF70P01)
 7 bar ±10% (DTA70xF70P01)
 9,5 bar ±10% (DTA95xF70P01)

Electronic Differential Indicator

Materials:

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

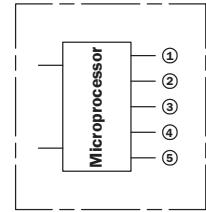
Technical data:

- Indicator type: Electronic differential indicator
- 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 fluids in according to ISO 2943

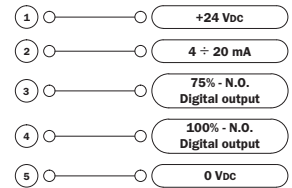
Electrical data:

- Power supply: 24 VDC
- Analogue output: From 4 to 20 mA
- Thermal lockout: 30 °C (all output signals stalled up to 30 °C)
- Protection degree: IP 67 in according to EN 60529

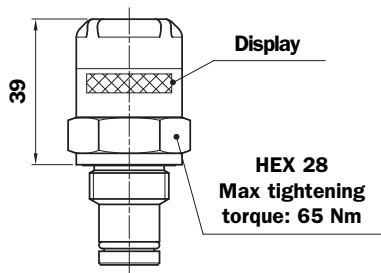
HYDRAULIC SYMBOL



ELECTRICAL SYMBOL



DVA



Available setting:
 1,2 bar ±10% (DVA12xP01)
 2 bar ±10% (DVA20xP01)
 5 bar ±10% (DVA50xP01)
 7 bar ±10% (DVA70xP01)
 9,5 bar ±10% (DVA95xP01)

Visual Differential Indicator

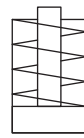
Materials:

- Body: Brass
- Internal parts: Brass - Nylon
- Seals: HNBR - FPM

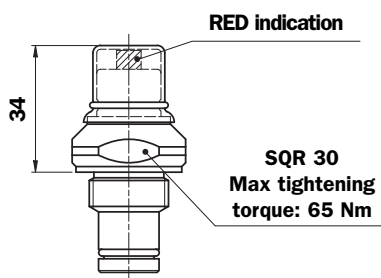
Technical data:

- Indicator type: Visual differential indicator
- Reset: Automatic 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 fluids in according to ISO 2943

HYDRAULIC SYMBOL



DVM



Available setting:
 1,2 bar ±10% (DVM12xP01)
 2 bar ±10% (DVM20xP01)
 5 bar ±10% (DVM50xP01)
 7 bar ±10% (DVM70xP01)
 9,5 bar ±10% (DVM95xP01)

Visual Differential Indicator

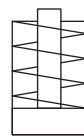
Materials:

- Body: Brass
- Internal parts: Brass - Nylon
- Seals: HNBR - FPM

Technical data:

- Indicator type: Visual differential indicator
- 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 fluids in according to ISO 2943

HYDRAULIC SYMBOL



Series	1	2	3	4	5	6	7
DE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Example: DE A 20 H A 50 P01

Series	1	2	3	4	5	6	7
DL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Example: DL A 20 H A 52 P01

Series	1	2	3	4	5	6	7
DT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Example: DT A 20 H F 70 P01

Series	1	2	3	4	7
DV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Example: DV A 20 H P01

1 - Series

DE	Electrical indicator
DL	Electrical/Visual indicator
DT	Electronic indicator
DV	Visual indicator

2 - Type

DE series

A	Standard type
M	With wired connector

DL series

A	Standard type
E	Standard type for High power supply

DT series

A	Standard type
----------	---------------

DV series

A	Automatic reset
M	Manual reset

3 - Setting pressure

12	1,5 bar
20	2 bar
50	5 bar
70	7 bar
95	9,5 bar

4 - Seals

H	HNBR
<input type="checkbox"/>	On request

5 - Thermostat (excluded for DV)

A	Without thermostat
F	With thermostat (Normally open up to 30°C) Option available only for DEM-DTA series

6 - Electrical connection (excluded for BV)

DEA - DLE series

50	EN 175301-803 connector
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DEM series

10	AMP Superseal series 1,5 (Normally open contacts)
20	AMP Timer Junior (Normally open contacts)
30	Deutsch DT-04-2-P (Normally open contacts)
35	Deutsch DT-04-3-P (Change over contacts)
<input type="checkbox"/>	On request

DLA series

51	EN 175301-803 clear connector with 24 V lamps
52	EN 175301-803 clear connector with 110 V lamps
71	M12 IEC 61076-2-101 clear connector with 24 V lamps

DTA series

70	M12 IEC 61076-2-101 connector
-----------	-------------------------------

7 - Option

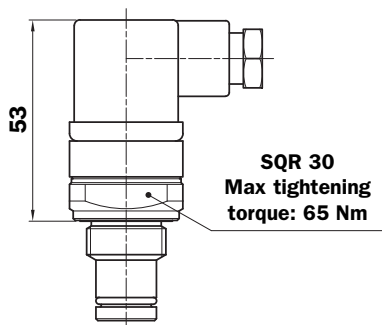
P01	MP Filtri standard
Pxx	Customer request

MP Filtri - The filter functions as described in this bulletin are valid exclusively for original MP Filtri filter elements and replacement parts. All rights reserved

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STAINLESS STEEL DIFFERENTIAL INDICATORS

DEX



Available setting:
 1,2 bar ±10% (DEX12xA50P01)
 2 bar ±10% (DEX20xA50P01)
 5 bar ±10% (DEX50xA50P01)
 7 bar ±10% (DEX70xA50P01)
 9,5 bar ±10% (DEX95xA50P01)

Electrical Differential Indicator

Materials:

- Body: AISI 316L
- Internal parts: AISI 316L - Nylon
- Seals: HNBR - MFQ

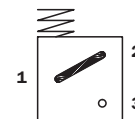
Technical data:

- Indicator type: Electrical differential indicator
- 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 fluids in according to ISO 2943

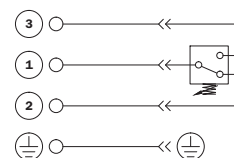
Electrical data:

- Resistive load: 0,2 A / 115 Vdc
- Electrical connections: 50 - EN 175301-803
- Protection degree: IP 66 in according to EN 60529
IP 69K in according to ISO 20653

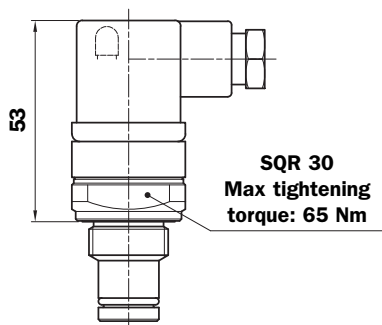
HYDRAULIC SYMBOL



ELECTRICAL SYMBOL



DLX



Available setting:
 1,2 bar ±10% (DLX12xAxxP01)
 2 bar ±10% (DLX20xAxxP01)
 5 bar ±10% (DLX50xAxxP01)
 7 bar ±10% (DLX70xAxxP01)
 9,5 bar ±10% (DLX95xAxxP01)

Electrical/Visual Differential Indicator

Materials:

- Body: AISI 316L
- Internal parts: AISI 316L - Nylon
- Seals: HNBR - MFQ

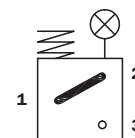
Technical data:

- Indicator type: Electrical differential indicator
- 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 fluids in according to ISO 2943

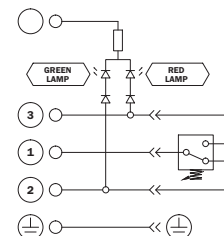
Electrical data:

- Resistive load: 51: 0,8 A / 24 VDC
52: 0,2 A / 115 VDC
- Electrical connections: 51 - EN 175301-803 (24 VDC lamps)
52 - EN 175301-803 (110 VDC lamps)
- Protection degree: IP 66 in according to EN 60529
IP 69K in according to ISO 20653

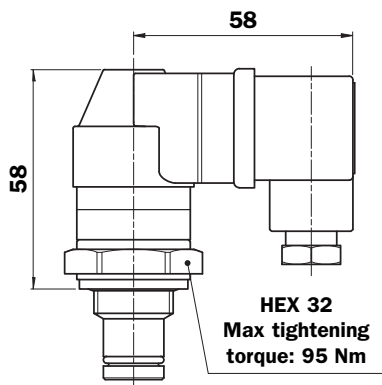
HYDRAULIC SYMBOL



ELECTRICAL SYMBOL



DLY



Available setting:
 1,2 bar ±10% (DLY12VA50P01)
 2 bar ±10% (DLY20VA50P01)
 5 bar ±10% (DLY50VA50P01)
 7 bar ±10% (DLY70VA50P01)
 9,5 bar ±10% (DLY95VA50P01)

Electrical/Visual Differential Indicator

Materials:

- Body: AISI 316L
- Internal parts: AISI 316L - Nylon
- Seals: FPM

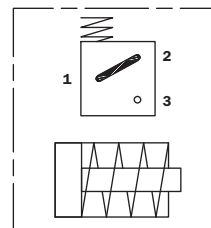
Technical data:

- Indicator type: Electrical/Visual differential indicator
- 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 fluids in according to ISO 2943

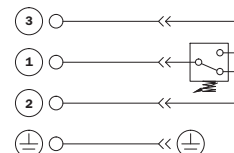
Electrical data:

- Resistive load: 5 A / 250 VAC
- Electrical connections: 50 - EN 175301-803
- Protection degree: IP 65 in according to EN 60529

HYDRAULIC SYMBOL

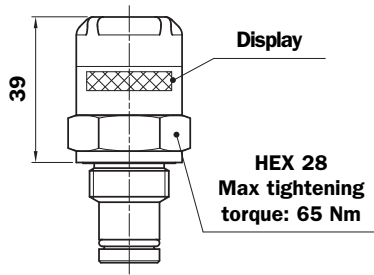


ELECTRICAL SYMBOL



STAINLESS STEEL DIFFERENTIAL INDICATORS

DVX



Available setting:
 1,2 bar $\pm 10\%$ (DVX12xP01)
 2 bar $\pm 10\%$ (DVX20xP01)
 5 bar $\pm 10\%$ (DVX50xP01)
 7 bar $\pm 10\%$ (DVX70xP01)
 9,5 bar $\pm 10\%$ (DVX95xP01)

Visual Differential Indicator

Materials:

- Body: AISI 316L
- Internal parts: AISI 316L - Nylon
- Seals: HNBR - MFQ

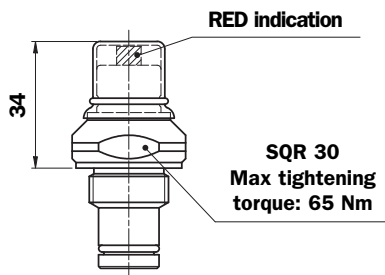
Technical data:

- Indicator type: Visual differential indicator with automatic reset
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25°C to $+110^{\circ}\text{C}$
- Compatibility with fluids: Mineral oils, Synthetic fluids
HFA, HFB, HFC fluids in according to ISO 2943

HYDRAULIC SYMBOL



DVY



Available setting:
 1,2 bar $\pm 10\%$ (DVY12xP01)
 2 bar $\pm 10\%$ (DVY20xP01)
 5 bar $\pm 10\%$ (DVY50xP01)
 7 bar $\pm 10\%$ (DVY70xP01)
 9,5 bar $\pm 10\%$ (DVY95xP01)

Visual Differential Indicator

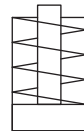
Materials:

- Body: AISI 316L
- Internal parts: AISI 316L - Aluminium
- Seals: HNBR - MFQ

Technical data:

- Indicator type: Visual differential indicator
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25°C to $+110^{\circ}\text{C}$
- Compatibility with fluids: Mineral oils, Synthetic fluids
HFA, HFB, HFC fluids in according to ISO 2943

HYDRAULIC SYMBOL



Ordering information DE - DL - DV

Series

DE

	1	2	3	4	5	6	7
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Example:

DE X 20 H A 50 P01

Series

DL

	1	2	3	4	5	6	7
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Example:

DL X 20 H A 52 P01

Series

DV

	1	2	3	4	7
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Example:

DV X 20 H P01

1 - Series

DE	Electrical indicator
DL	Electrical/Visual indicator
DV	Visual indicator

2 - Type

X	Standard type
Y	Optional type

3 - Setting pressure

12	1,5 bar
20	2 bar
50	5 bar
70	7 bar
95	9,5 bar

4 - Seals

H	HNBR
F	MFQ
<input type="checkbox"/>	On request

5 - Thermostat (excluded for DV)

A	Without thermostat
----------	--------------------

6 - Electrical connection (excluded for DV)

DEX series

50	EN 175301-803 connector
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DLA series

51	EN 175301-803 clear connector with 24 V lamps
52	EN 175301-803 clear connector with 110 V lamps
71	M12 IEC 61076-2-101 clear connector with 24 V lamps

7 - Option

P01	MP Filtri standard
Pxx	Customer request

indynamica
drive and control products

MP Filtri - The filter functions as described in this bulletin are valid exclusively for original MP Filtri filter elements and replacement parts. All rights reserved

The data in this publication are purely guideline. MP Filtri reserves the right to make changes to the models described herein at any time it deems fit in relation to technical or commercial requirements. The colours of the products shown on the cover are purely guideline. Copyright. All rights reserved.

VACUUM INDICATORS

Old code	New code
E0	VED20AA50P01
E0P01	VEB21AA50P01
E1	VEC20AA50P01
E1P01	VEA21AA50P01
E1P02	VEA21AA05P01
-	-
-	VVS16P01
VP01	VVR16P01
VOP01	VVA16P01
VSP01	WVB16P01

BAROMETRIC INDICATORS

Old code	New code	Old code	New code
FE08H1AP01	BEA08HA50P01	VP15AMP01	BVQ15HP01
FE08H1BP01	BLA08HA51P01	VP20AAP01	BVP20HP01
FE15H1AP01	BEA15HA50P01	VP20AMP01	BVQ20HP01
FE15H1BP01	BLA15HA51P01	-	-
FE15H1DP01	BLA15HA53P01	VRP01	BVA14P01
FE15H1EP01	BEM15HA41P01	VR25P01	BVA25P01
FE20H1AP01	BEA20HA50P01	V1P01	BVR14P01
FE20H1BP01	BLA20HA51P01	-	BVR25P01
FE20H1CP01	BLA20HA52P01		
FE20H1DP01	BLA20HA53P01		
FE20H1EP01	BEM20HA41P01		
FE25H1AP01	BEA25HA50P01		
FE25H1BP01	BLA25HA51P01		
VP15AAP01	BVP15HP01		

STAINLESS STEEL DIFFERENTIAL INDICATORS

Old code	New code	Old code	New code
1EX	DLY12HA50P01 - DLY12VA50P01	VB6FP01	DVY20FP01
E6X	DLY20HA50P01 - DLY20VA50P01	VB6HP01	DVY20HP01
E6XE	DLY20EA50P01	VB7FP01	DVY50FP01
E7X	DLY50HA50P01 - DLY50VA50P01	VB7HP01	DVY50HP01
E8X	DLY70HA50P01 - DLY70VA50P01	VB7VP01	DVY50VP01
-	-	VB8EP01	DVY70EP01
K7X1HP01	DLX50HA51P01	VB8FP01	DVY70FP01
K8X1HP01	DLX70HA51P01	VB8HP01	DVY70HP01
-	-	-	-
N7X	DEX50HA50P01	1VX	DVX12HP01 - DVX12VP01
N7XEP01	DEX50EA50P01	V6X	DVX20HP01 - DVX20VP01
N8X	DEX70HA50P01	V7X	DVX50HP01 - DVX50VP01
N8XEP01	DEX70EA50P01	V7XE	DVX50EP01
		V8X	DVX70HP01 - DVX70VP01
		V8XE	DVX70EP01

Comparative table OLD - NEW code

DIFFERENTIAL INDICATORS

Old code	New code	Old code	New code
1E	DLE12HA50P01 - DLE12VA50P01	NM6HA11P01	DEM20HA10P01
E6	DLE20HA50P01 - DLE20VA50P01	NM6HA31P01	DEM20HA30P01
E6E	DLE20EA50P01	NM6HA36P01	DEM20HA31P01
E6H	DLE20HA50P01	NM7HA11P01	DEM50HA10P01
E7	DLE50HA50P01 - DLE50VA50P01	NM7HA21P01	DEM50HA20P01
E7E	DLE50EA50P01	NM7HA31P01	DEM50HA30P01
E7H	DLE50HA50P01	NM7HA32P01	DEM50HA35P01
E8	DLE70HA50P01 - DLE70VA50P01	NM7HC32P01	DEM50HF35P01
E8E	DLE70EA50P01	NM7VA11P01	DEM50VA10P01
E8H	DLE70HA50P01	NM7VC11P01	DEM50VF10P01
E9	DLE95HA50P01 - DLE95VA50P01	NM8HA11P01	DEM70HA10P01
E9E	DLE95EA50P01	NM8HA31P01	DEM70HA30P01
E9H	DLE95HA50P01	NM8HA36P01	DEM70HA32P01
-	-	-	-
J1	DLE12HF50P01 - DLE12VF50P01	NR2HP01	DEA12HA50P01
J6	DLE20HF50P01 - DLE20VF50P01	NR2VP01	DEA12VA50P01
J7	DLE50HF50P01 - DLE50VF50P01	NR6EP01	DEA20EA50P01
J8	DLE70HF50P01 - DLE70VF50P01	NR6HP01	DEA20HA50P01
J9	DLE95HF50P01 - DLE95VF50P01	NR6VP01	DEA20VA50P01
-	-	NR7HP01	DEA50HA50P01
KR21HP01	DLA12HA51P01	NR7VP01	DEA50VA50P01
KR21VP01	DLA12VA51P01	NR8EP01	DEA70EA50P01
KR31HP01	DLA30HA51P01	NR8HP01	DEA70HA50P01
KR61HP01	DLA20HA51P01	NR8VP01	DEA70VA50P01
KR61VP01	DLA20VA51P01	NR9HP01	DEA95HA50P01
KR62HP01	DLA20HA52P01	NR9VP01	DEA95VA50P01
KR62VP01	DLA20VA52P01	-	-
KR71HP01	DLA50HA51P01	U3HP01	DVM30HP01
KR71VP01	DLA50VA51P01	U6HP01	DVM20HP01
KR72HP01	DLA50HA52P01	U6VP01	DVM20VP01
KR72VP01	DLA50VA52P01	U7HP01	DVM50HP01
KR81HP01	DLA70HA51P01	U7VP01	DVM50VP01
KR81VP01	DLA70VA51P01	U8VP01	DVM70VP01
KR82HP01	DLA70HA52P01	-	-
KR91HP01	DLA95HA51P01	1V	DVA12HP01 - DVA12VP01
-	-	V6	DVA20HP01 - DVA20VP01
NE2HTP01	DTA12HF70P01	V6E	DVA20EP01
NE2VSP01	DTA12VF70P01	V6H	DVA20HP01
NE6HSP01	DTA20HF70P01	V7	DVA50HP01 - DVA50VP01
NE6HTP01	DTA20HF70P01	V7E	DVA50EP01
NE6VSP01	DTA20VF70P01	V7H	DVA50HP01
NE6VTP01	DTA20VF70P01	V8	DVA70HP01 - DVA70VP01
NE7HSP01	DTA50HF70P01	V8E	DVA70EP01
NE7HTP01	DTA50HF70P01	V9	DVA95HP01 - DVA95VP01
NE7VSP01	DTA50VF70P01	V9E	DVA95EP01
NE7VTP01	DTA50VF70P01	-	-
NE8HSP01	DTA70HF70P01	Z2HP01	DVM12HP01
NE8HTP01	DTA70HF70P01	Z2VP01	DVM12VP01
NE8VSP01	DTA70VF70P01	Z6EP01	DVM20EP01
NE8VTP01	DTA70VF70P01	Z6HP01	DVM20HP01
NE9VTP01	DTA95VF70P01	Z6VP01	DVM20VP01
-	-	Z7HP01	DVM50HP01
NE9VTP01	DTA95VF70P01	Z7VP01	DVM50VP01
-	-	Z7XHP01	DVY70HP01
-	-	Z8EP01	DVM70EP01
-	-	Z8HP01	DVM70HP01
-	-	Z8VP01	DVM70VP01
-	-	Z9HP01	DVM95HP01