Clogging Indicators



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

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

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

MP Filtri can supply indicators of the following designs:
- Vacuum switches and gauges
- Pressure switches and gauges
- Differential pressure indicators

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

Introduction



Clogging indicators are devices that check the life time of the filter elements.
They measure the pressure drop through the filter element directly connected to the filter housing.
These devices trip when the clogging of the filter element causes a pressure drop increasing across the filter element.
Filter elements are efficient only if their Dirt Holding Capacity is fully exploited.
This is achieved by using filter housings equipped with clogging indicators.
The indicator is set to alarm before the element becomes fully clogged.

MP Filtri can supply indicators of the following designs:

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- Pressure switches and gauges
- Differential pressure indicators

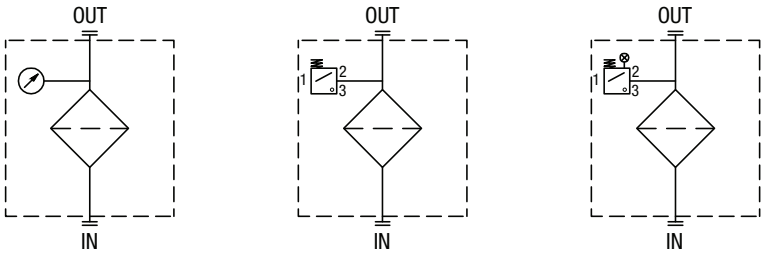
These type of devices can be provided with a visual, electrical or both signals.
The electronic differential pressure clogging indicator is also available.
It provides both analogical 4-20 mA ouput and digital warning (75% of clogging) and alarm (clogging) outputs.

Clogging indicators

Suitable indicator types

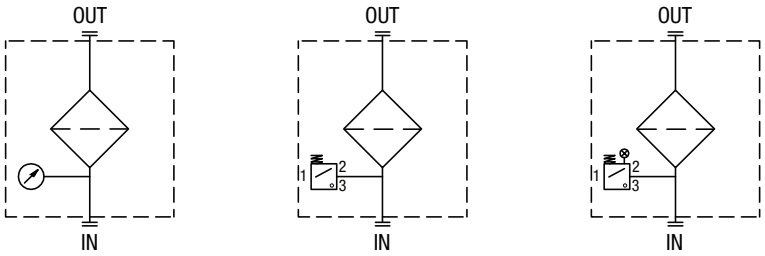
VACUUM INDICATORS

Vacuum indicators are used on the Suction line to check the efficency 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.



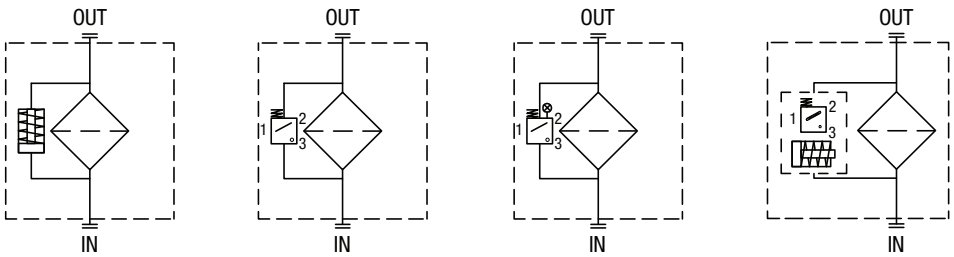
BAROMETRIC INDICATORS

Pressure indicators are used on the Return line to check the efficency 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 efficency 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.

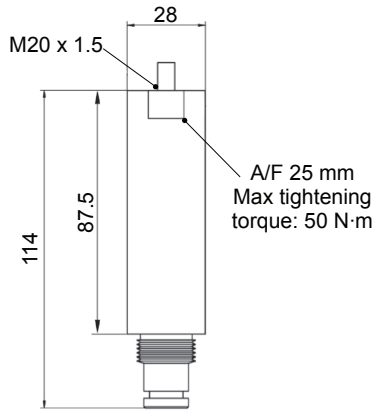


Dimensions

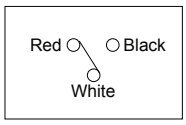
DEH*48

Hazardous Area
Electronic Differential Indicator

Settings	Ordering code
5 bar ±10%	DE H 50 x A 48 P01
7 bar ±10%	DE H 70 x A 48 P01



Connection diagram



- Certification / Approvals: ATEX, IECEx, TRCU, INMETRO
- Certification included as standard

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

Protection class EX ia IIC T4/T6: Intrinsically safe

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

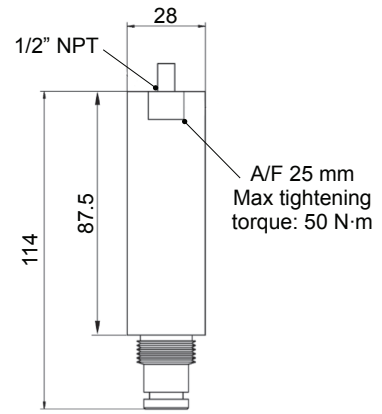
Technical data
- Max working pressure: 420 bar
- Working temperature: From -60 °C to +125 °C
- Connection type: M20 x 1.5 - 3 core polyrad cable supplied with 5 metres
- Contact type: SPCO/SPDT (Hermetically sealed - volt free contacts)
- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP 66/67/68 according to EN 60529

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

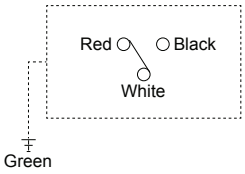
DEH*49

Hazardous Area
Electronic Differential Indicator

Settings	Ordering code
5 bar ±10%	DE H 50 x A 49 P01
7 bar ±10%	DE H 70 x A 49 P01



Connection diagram



- Certification / Approvals: ATEX, IECEx, TRCU, INMETRO, UL/CSA Class I Division 1 Groups A-D, UL/CSA Class II Division 1 Groups E-G
- Certification included as standard

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

Protection class Ex d IIC T4/T6: Flameproof

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

Technical data
- Max working pressure: 420 bar
- Working temperature: From -60 °C to +120 °C : ATEX, IECEx, TRCU, INMETRO
  From -60 °C to +105 °C : UL/CSA
- Connection type: 1/2" NPT - 3 core polyrad cable supplied with 5 metres
- Contact type: SPCO/SPDT (Hermetically sealed - volt free contacts)
- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP 66/67/68 according to EN 60529

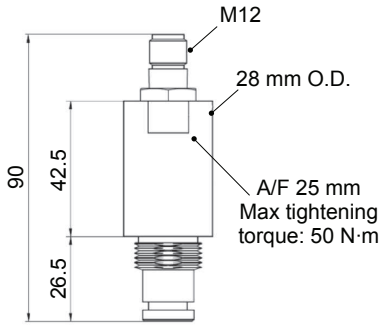
Electrical data
- Current Ratings: 24v DC 830mA - 110v AC 180mA
- Electrical Ratings:

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

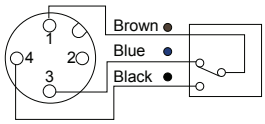
DEH*70

Hazardous Area
Electronic Differential Indicator

Settings	Ordering code
5 bar ±10%	DE H 50 x A 70 P01
7 bar ±10%	DE H 70 x A 70 P01



Connection diagram



- Certification / Approvals: ATEX, IECEx, TRCU, INMETRO
- Certification included as standard

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

Protection class EX ia IIC T6: Intrinsically safe

Temperature class T6 (85 °C)

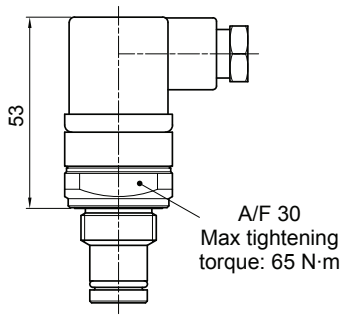
Technical data
- Max working pressure: 420 bar
- Working temperature: From -20 °C to +80 °C
- Connection type: 4 pole male M12 connector - plastic
- Contact type: SPCO/SPDT (Hermetically sealed - volt free contacts)
- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP 66/67 according to EN 60529

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

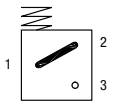
DEX*50

Electrical Differential Indicator

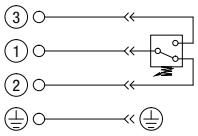
Settings	Ordering code
5 bar ±10%	DE X 50 x A 50 P01
7 bar ±10%	DE X 70 x A 50 P01
9.5 bar ±10%	DE X 95 x A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: AISI 316L
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - MFQ

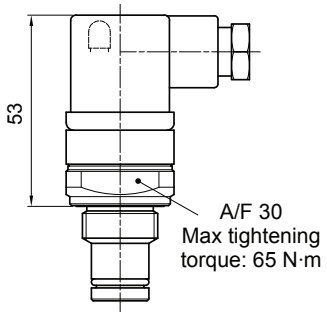
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653

Electrical data
- Electrical connection: EN 175301-803
- Resistive load: 0.2 A / 115 Vdc

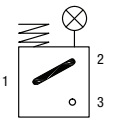
DLX*51 - DLX*52

Electrical/Visual Differential Indicator

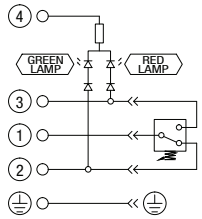
Settings	Ordering code
5 bar ±10%	DL X 50 x A x x P01
7 bar ±10%	DL X 70 x A x x P01
9.5 bar ±10%	DL X 95 x A x x P01



Hydraulic symbol



Electrical symbol



Materials
- Body: AISI 316L
- Base: Transparent Nylon
- Contacts: Silver
- Seal: HNBR - MFQ

Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653

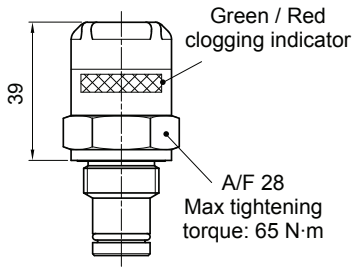
Electrical data

- Electrical connection:	EN 175301-803	
- Type	51	52
- Lamps	24 Vdc	110 Vdc
- Resistive load:	1 A / 24 Vdc	1 A / 110 Vdc

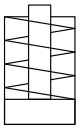
DVX

Visual Differential Indicator

Settings	Ordering code
5 bar ±10%	DV X 50 x P01
7 bar ±10%	DV X 70 x P01
9.5 bar ±10%	DV X 95 x P01



Hydraulic symbol



Materials
- Body: AISI 316L
- Internal parts: AISI 316L - Nylon
- Contacts: Silver
- Seal: HNBR - MFQ

Technical data
- 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 according to ISO 2943
- Degree protection: IP65 according to EN 60529

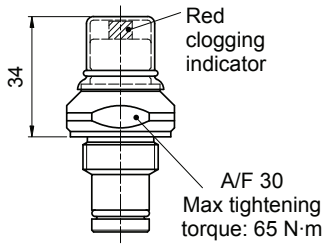
STAINLESS STEEL DIFFERENTIAL INDICATORS

Dimensions

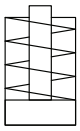
DVY

Visual Differential Indicator

Settings	Ordering code
5 bar ±10%	DV Y 50 x P01
7 bar ±10%	DV Y 70 x P01
9.5 bar ±10%	DV Y 95 x P01



Hydraulic symbol



Materials

- Body: AISI 316L
- Internal parts: AISI 316L - Nylon
- Contacts: Silver
- Seal: HNBR - MFQ

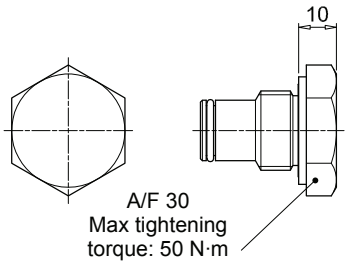
Technical data

- Reset: Manual reset
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

X2

Indicator plug

Seal	Ordering code
HNBR	X2 H
MFQ	X2 F



Materials

- Body: AISI 316L
- Seal: HNBR / MFQ

DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATORS

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

Series

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

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

Pressure setting

50 5 bar
70 7 bar
95 9.5 bar

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

Thermostat

A Without

Electrical connections	DEH	DEX	DLX	DV
48 Connection M20	•			
49 Connection 1/2" NPT	•			
50 Connection EN 175301-803		•		
51 Connection EN 175301-803, transparent base with lamps 24 Vdc			•	
52 Connection EN 175301-803, transparent base with lamps 110 Vdc			•	
70 Connection IEC 61076-2-101 D (M12)	•			

Option

P01 MP Filtri standard
Pxx Customized

DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATOR PLUG

Configuration example	X2	H

Series

X2 Indicator plug

Seals

H HNBR
F MFQ

CLOGGING INDICATORS

QUICK REFERENCE GUIDE

Filter family	Filter series		Visual indicator	Electrical indicator	Electrical / Visual indicator	Electronic indicator	Hazardous area electronic indicator
SUCTION FILTERS	SF2 250 - 350 SF2 500 - 501 - 503 - 504 - 505 SF2 510 - 535 - 540		VVA16P01 VVR16P01	VEA21AA50P01	VLA21AA51P01 VLA21AA52P01 VLA21AA53P01 VLA21AA71P01		
RETURN FILTERS	MPFX-MPTX-MPF-MPT with bypass 1.75 bar MPH with bypass 1.75 bar		BVA14P01 BVR14P01 BVP20HP01 BVQ20HP01	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01		
	MPFX-MPTX-MPF-MPT with bypass 3 bar MPH with bypass 2.5 bar FRI 255		BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01	BEA20HA50P01 BEM20HA41P01	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01		
	MPLX FRI 025 - 040 - 100 - 250 - 630 - 850		DVA20xP01 DVM20xP01	DEA20xA50P01 DEM20xAxxP01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01	DTA20xF70P01	
RETURN / SUCTION FILTERS	Suction line	MRSX 116 - 165 - 166	VVB16P01 VVS16P01	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01		
	Return line	MRSX 116 - 165 - 166 LMP 124	BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01	BEA25HA50P01 BEM25HA41P01 BET25HF10P01 BET25HF30P01 BET25HF50P01	BLA25HA51P01 BLA25HA52P01 BLA25HA53P01 BLA25HA71P01		
SPIN-ON FILTERS	Suction line	MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350	VVB16P01 VVS16P01	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01		
	Return line	MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350 MST 050 - 070 - 100 - 150	BVA14P01 BVR14P01 BVP20HP01 BVQ20HP01	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01		
	In-line	MPS 051 - 071 - 101 - 151 MPS 301 - 351 MSH 050 - 070 - 100 - 150	DVA12xP01 DVM12xP01	DEA12xA50P01 DEM12xAxxP01	DLA12xA51P01 DLA12xA52P01 DLA12xA71P01 DLE12xA50P01 DLE12xF50P01		
LOW & MEDIUM PRESSURE FILTERS	With bypass valve	LMP 110 - 112 - 116 - 118 - 119 LMP 120 - 122 - 123 LMP 210 - 211 - LDP LMP 400 - 401 - 430 - 431 LMP 900 - 901 LMP 902 - 903 LMP 950 - 951 LMP 952 - 953 - 954 LMD 211 - 400 - 401 - 431 - 951 - LDD	DVA20xP01 DVM20xP01	DEA20xA50P01 DEM20xAxxP01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01	DTA20xF70P01	
	Without bypass valve	LMP 110 - 112 - 116 - 118 - 119 LMP 120 - 122 - 123 LMP 210 - 211 - LDP LMP 400 - 401 - 430 - 431 LMP 900 - 901 LMP 902 - 903 LMP 950 - 951 LMP 952 - 953 - 954 LMD 211 - 400 - 401 - 431 - 951 - LDD	DVA50xP01 DVM50xP01	DEA50xA50P01 DEM50xAxxP01	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01	DTA50xF70P01	
HIGH PRESSURE FILTERS	With bypass valve	FMP 039 - 065 - 135 - 320 FHP 010 - 011 - 065 - 135 - 320 - 500 FMM 050 - 150 FHA 051 FHM 006 - 007 - 010 - 050 - 065 - 135 - 320 - 500 FHB 050 - 135 - 320 FHF 325 FHD 021 - 051 - 326 - 333	DVA50xP01 DVM50xP01	DEA50xA50P01 DEM50xAxxP01	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01	DTA50xF70P01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01
	Without bypass valve	FMP 039 - 065 - 135 - 320 FHP 010 - 011 - 065 - 135 - 320 - 500 FMM 050 - 150 FHA 051 FHM 006 - 007 - 010 - 050 - 065 - 135 - 320 - 500 FHB 050 - 135 - 320 FHF 325 FHD 021 - 051 - 326 - 333	DVA70xP01 DVM70xP01	DEA70xA50P01 DEM70xAxxP01	DLA70xA51P01 DLA70xA52P01 DLA70xA71P01 DLE70xA50P01 DLE70xF50P01	DTA70xF70P01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01
STAINLESS STEEL HIGH PRESSURE FILTERS	With bypass valve	FZH 010 - 011 - 039 FZP 039 - 136 FZX 011 FZB 039 FZM 039 FZD 051	DVX50xP01 DVY50xP01	DEX50xA50P01	DLX50xA51P01 DLX50xA52P01		DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01
	Without bypass valve	FZH 010 - 011 - 039 FZP 039 - 136 FZB 039 FZM 039 FZD 010 - 021 - 051	DVX70xP01 DVY70xP01	DEX70xA50P01	DLX70xA51P01 DLX70xA52P01		DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01

NEW