

SERIES **MSH**

SPIN-ON FILTER - LOW PRESSURE LINE



LEHENGOTAK, S. A.



MPFILTRI®
filtri per oleodinamica



Maximum working pressure 500 psi

Flow rate to 80 GPM

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.

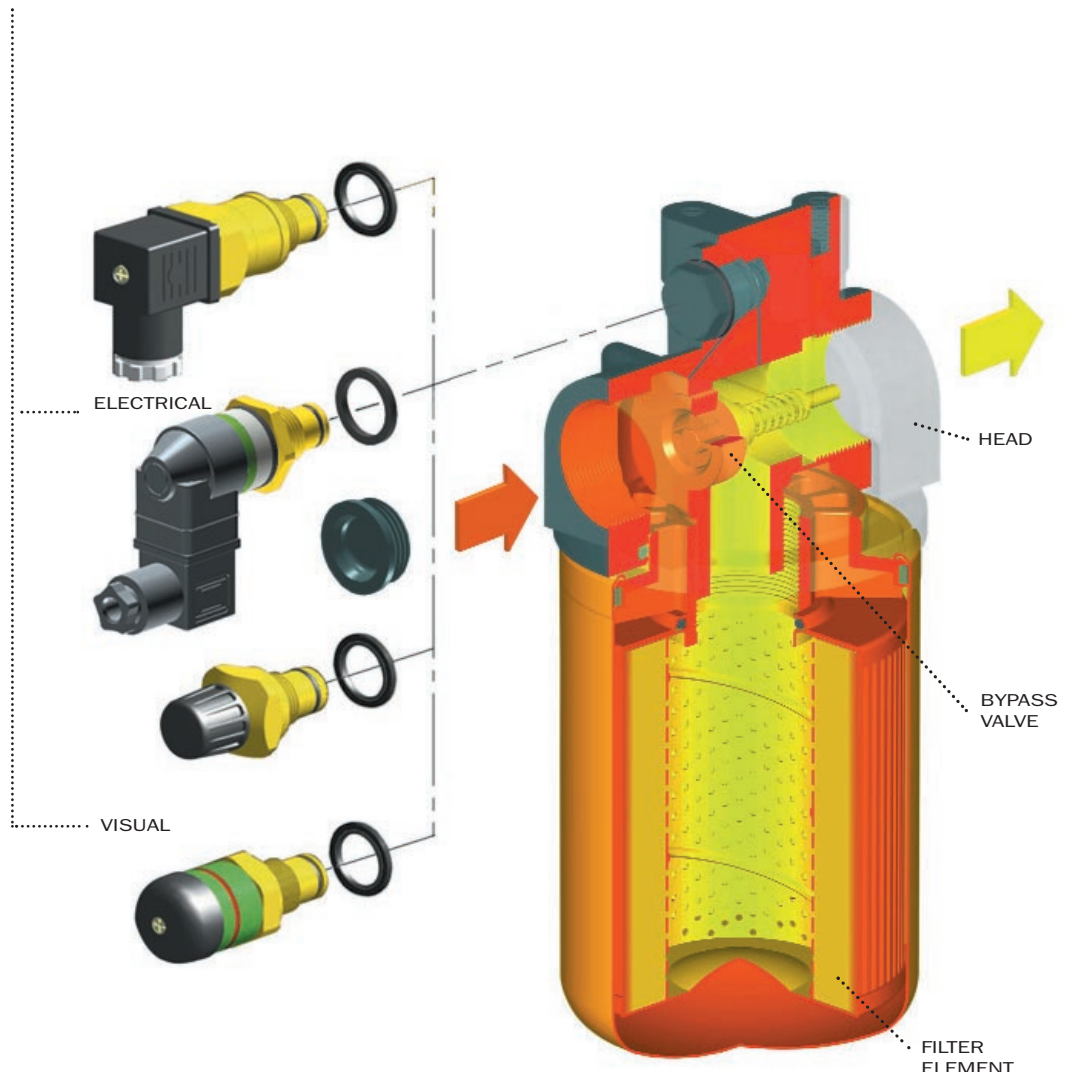
The **MSH** series is particularly suitable for use on supercharging or auxiliary, low-pressure lines. Ideally suited for use in a servo-assisted hydrostatic transmission where the servo line requires high-performance filtration at medium working pressures.

INDICATORS

New

absolute filter elements
independently tested
in the following Institutes:

Institute of Filtration
(France)



Filter element:

Materials

End caps:

Galvanized steel
Nylon (MSH 050/070)

Support tube:

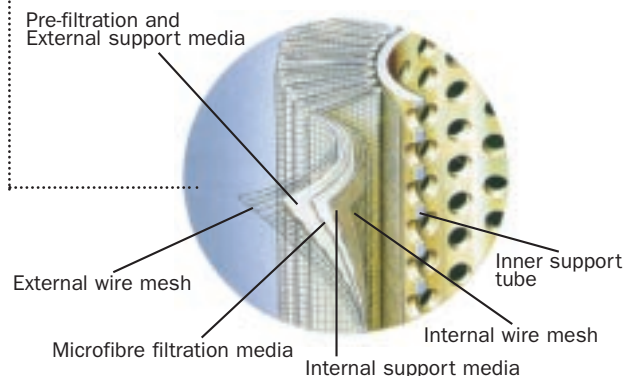
Galvanized steel

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.

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

Values in in^2

Filtering area Filter elements

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 in^2

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

Pressure differential indicator option

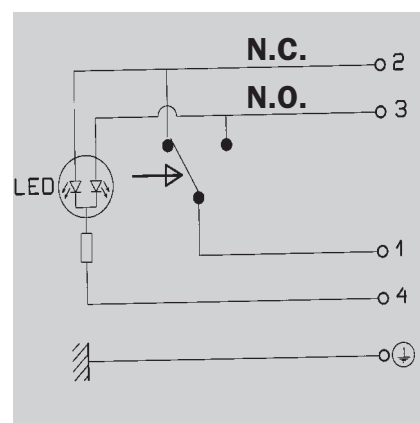
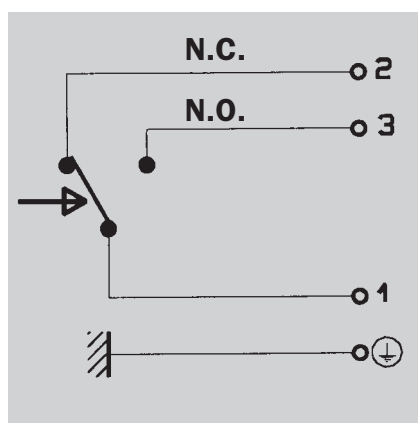
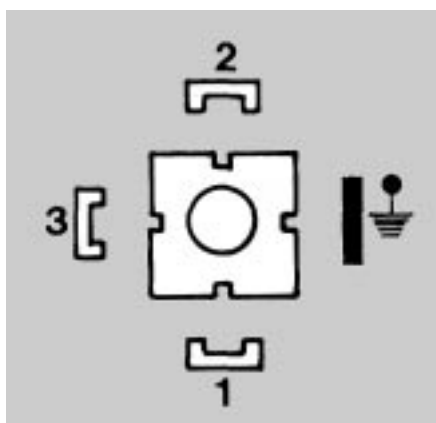
K - E - N Series

Supply voltage (50/60 Hz)	Resistive load	Inductive load
(V)	(A)	(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

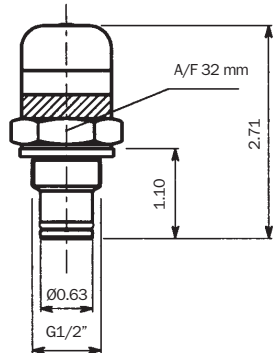
CONNECTOR DIN 43650

ELECTRICAL CONNECTION E - N SERIES

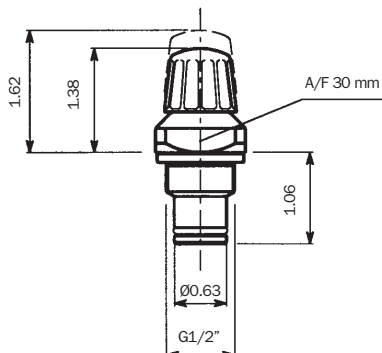
ELECTRICAL CONNECTION K SERIES



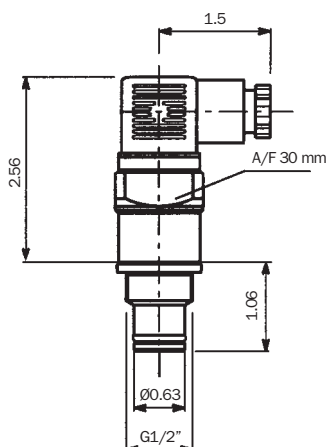
Visual V series



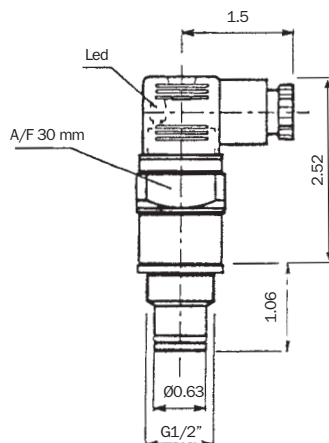
Visual Z series



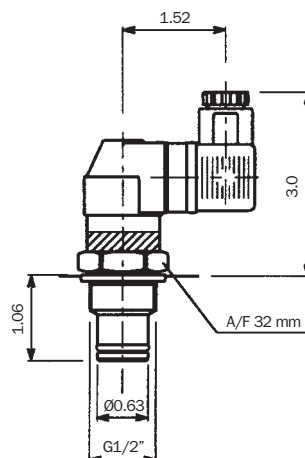
Electrical N series



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)		$B x \geq 200$	
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

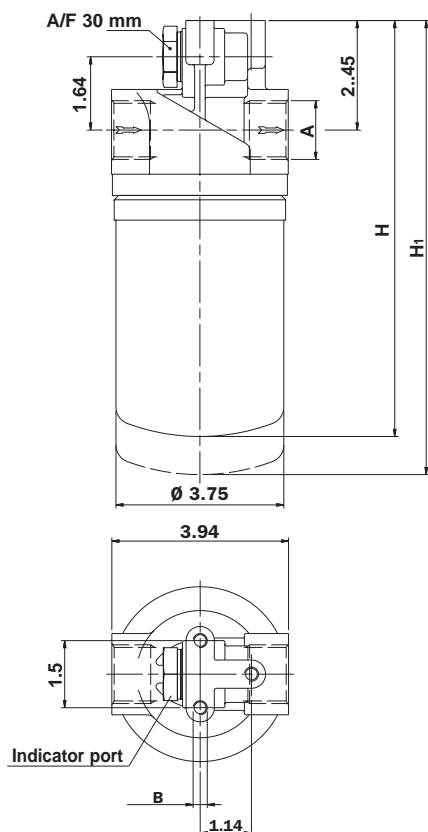
Nominal cellulose impregnated paper media, available in 10 and 25 micron.
Example - **P10** or **P25**

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

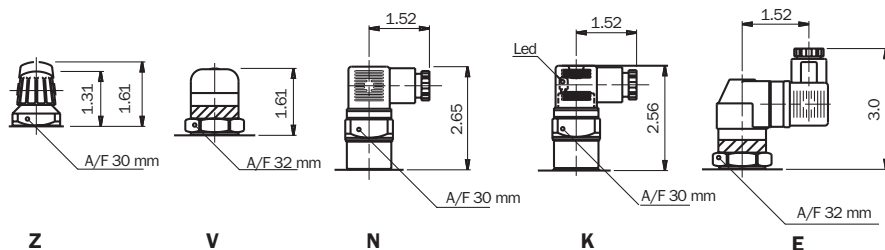
The following filter sizing recommendations are based using a mineral oil fluid at 150 SUS with a maximum total filter assembly (housing and filter element) pressure drop of 30% of the filter condition indicator (9 psi).



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		

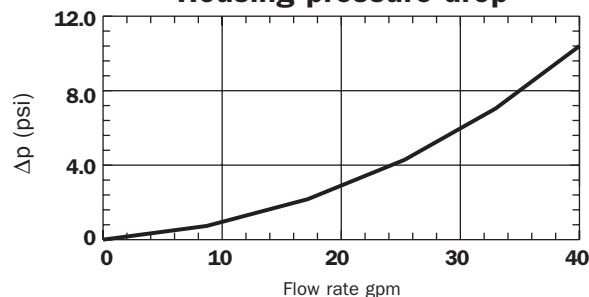
* Flow rates with 150 SUS fluid viscosity

** 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

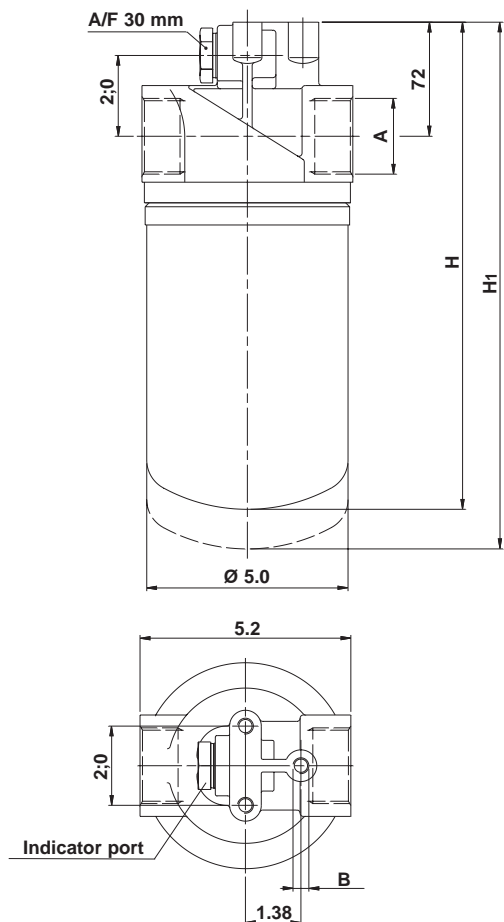


Selection & installation information

Filter elements types

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

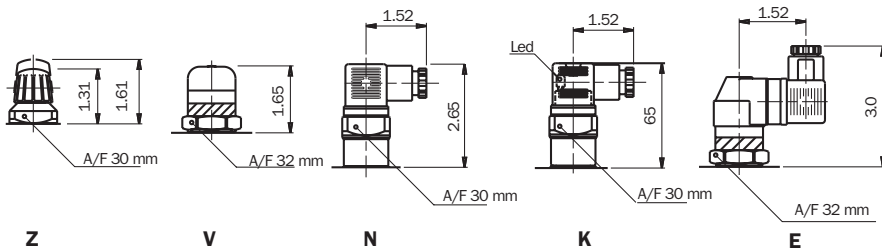
The following filter sizing recommendations are based using a mineral oil fluid at 150 SUS with a maximum total filter assembly (housing and filter element) pressure drop of 30% of the filter condition indicator (9 psi).



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

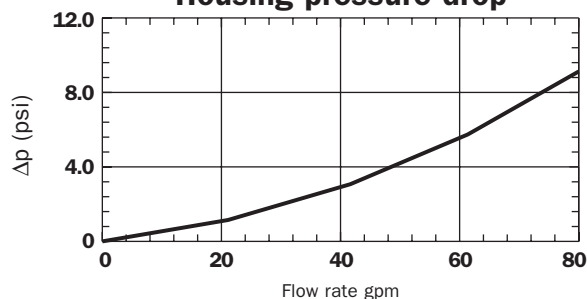
Filter assembly	Flow rate gpm *	Port size BSP/NPT/SAE	Weight kg **
A03	40	SEE TABLE BELOW	8.4
A06	43		
A10	47		
A25	60		
P10	70		
M60	73		

* 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

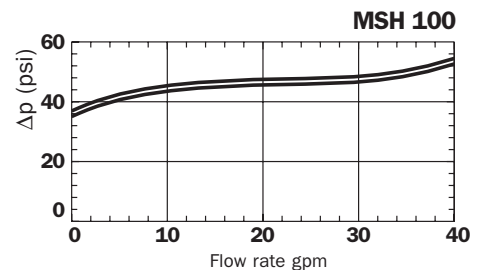
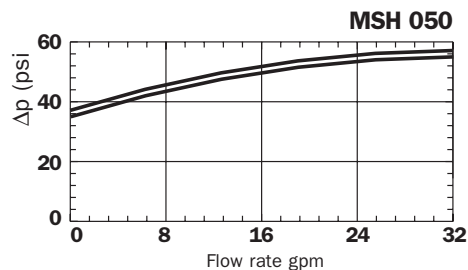
Selection :

- **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** $\Delta p_{\text{Total}} = \Delta p_{\text{Housing}} + \Delta p_1 \text{ Filter element} = 3.9 + 4.0 = 7.9 \text{ psi}^*$ { 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.

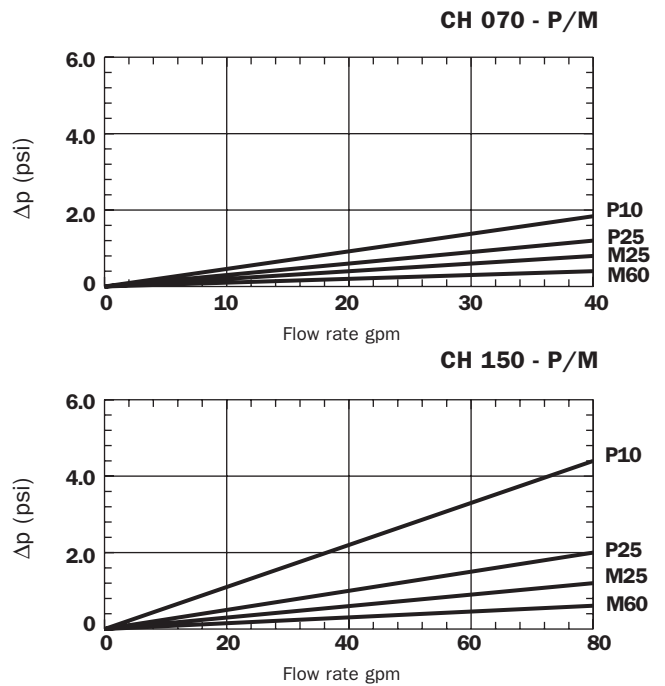
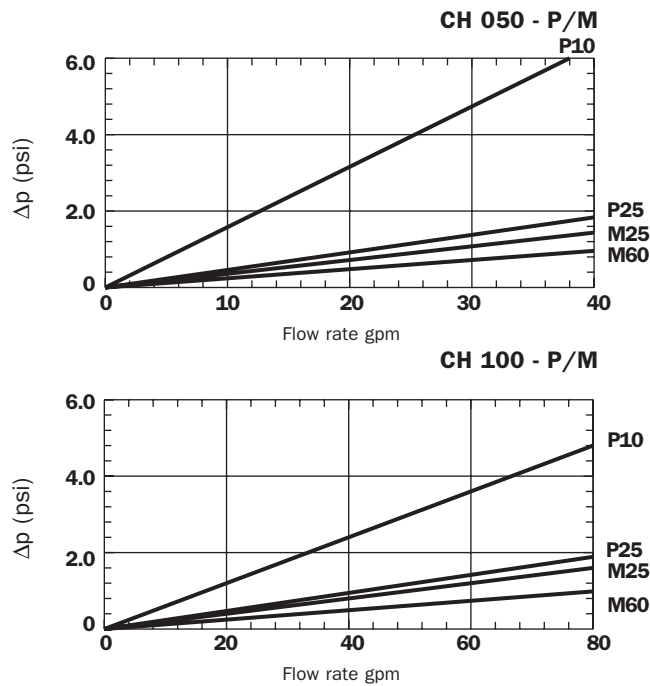
The Δp varies proportionally to the density.



FILTER ELEMENT

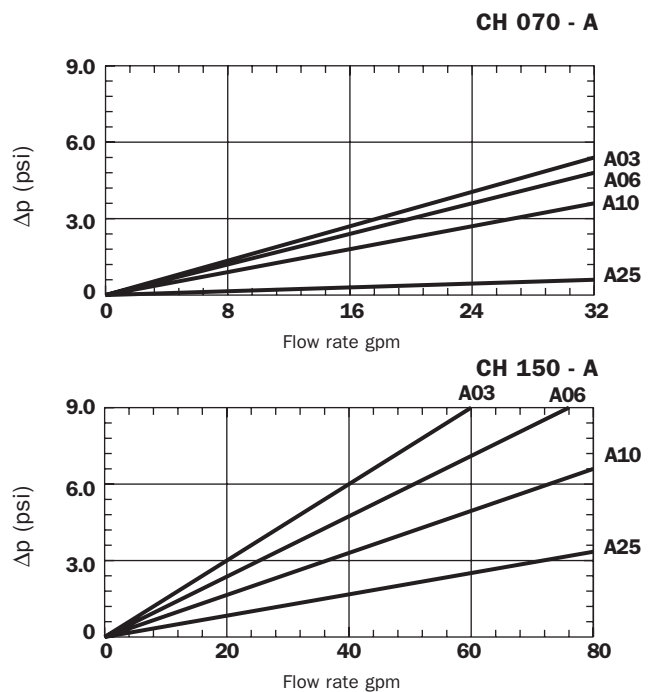
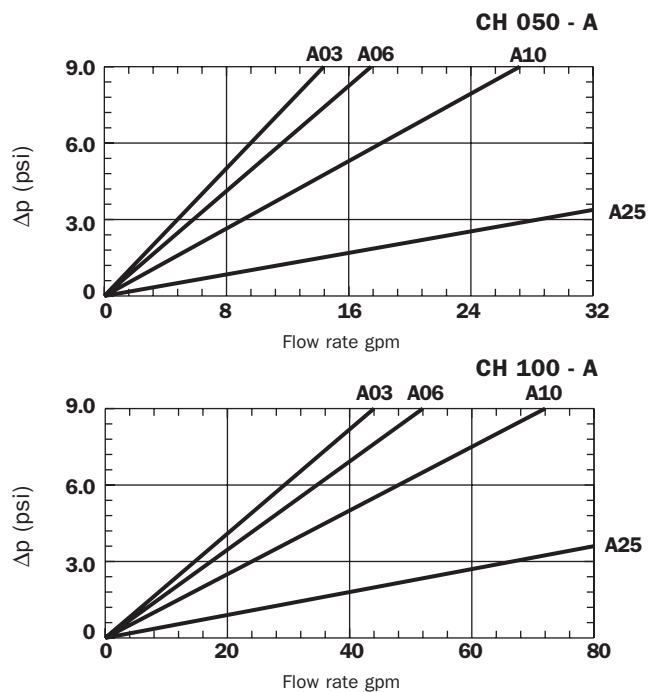
Filter elements - P/M Series

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

Bypass valve

B With bypass 35 psi
S Without bypass

Seals

A Nitrile (Buna - N)
V Viton

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 * $\begin{cases} 1 - 24 \text{ Volt} \\ 2 - 115 \text{ Volt} \\ 3 - 230 \text{ Volt} \end{cases}$

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

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

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

MP Filtri - Filtration products will only be guaranteed if original MP Filtri replacement elements and spares are used

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