

# MPF SERIES

## RETURN FILTER



**MPFILTRI**  
filtri per oleodinamica



Maximum working pressure 45 PSI

Flow rates to 210 G.P.M.

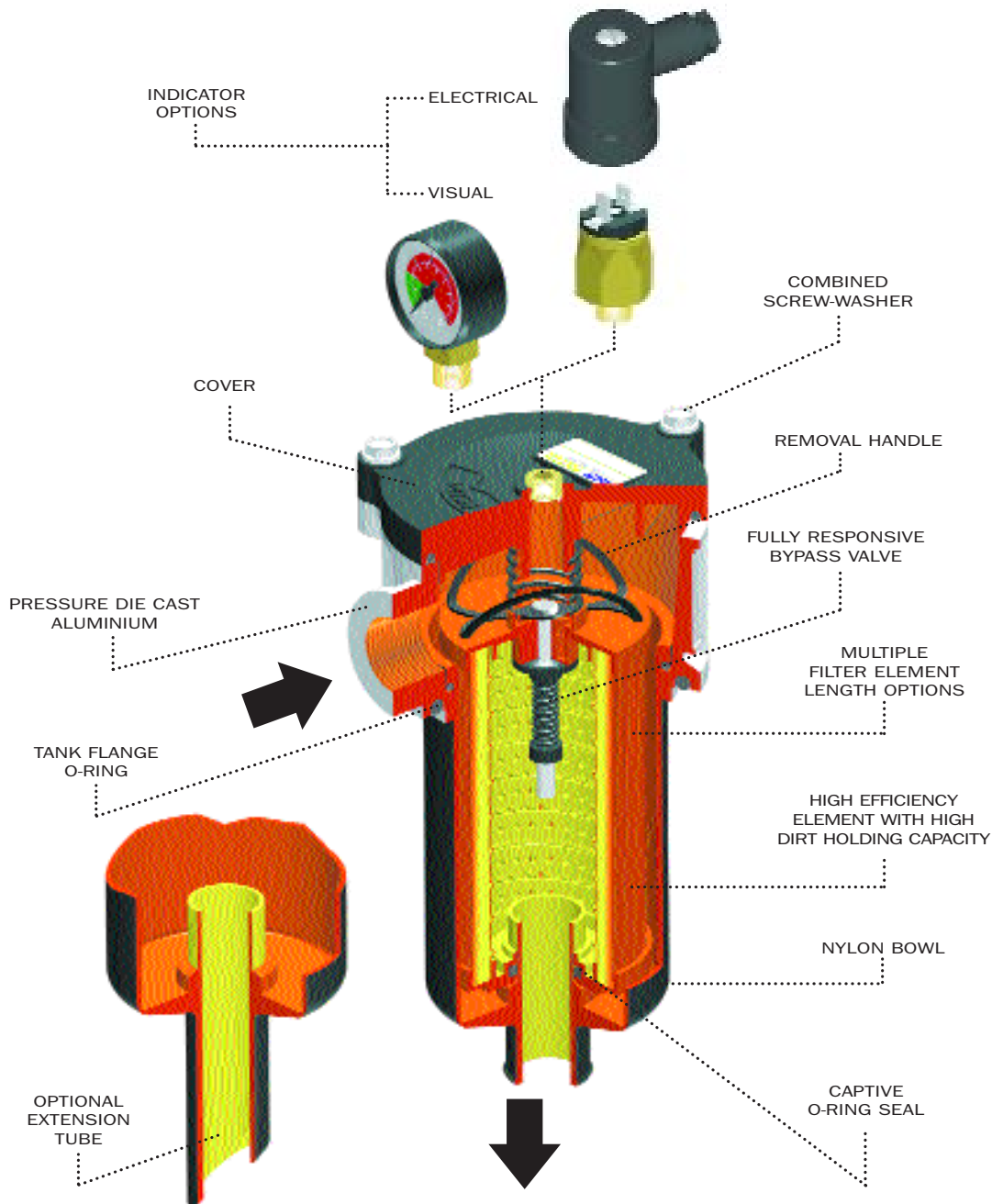
# Description

# MPF

**MPF** series filters are designed for return lines, and are installed semi-immersed in a reservoir. Continued Research & Development on both the filter bodies and the filter elements has resulted in a product line with excellent pressure drop characteristics combined with a high filtration efficiency. The high flow rate bypass valves are a standard feature with this range of product.

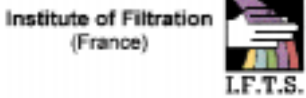
**MPF** filters within this range are suitable for flow rates up to 210 G.P.M.

**MPF** series are specifically designed for use in mobile applications, agricultural machinery and power units.



**New**

absolute filter elements  
independently tested  
in the following Institutes:



## Filter element:

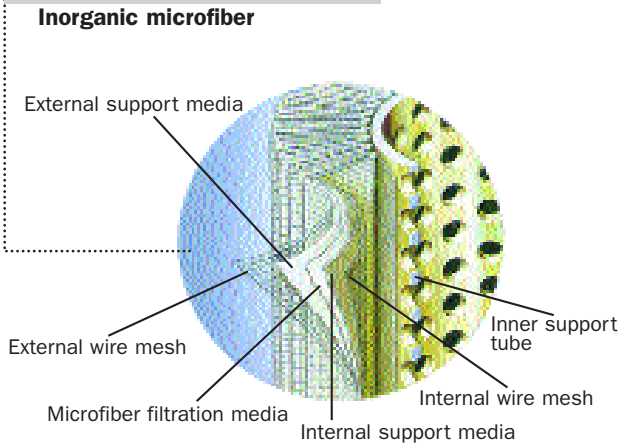
### Materials

**End caps:**  
Nylon

**Support tube:**  
Galvanized steel

**Support frames:**  
Galvanized steel with an epoxy coating

### A Series



### 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 4572 - Multi-pass method for evaluating filtration performance.

### Element material Absolute filtration

## A Series

Inorganic microfiber with acrylic support

### Contamination retention

as per ISO 4572: Multi-pass test.

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

Filter elements	Dimensions for $\beta$ ( $\mu\text{m}$ ) values				Filtration ratios			$\Delta P$ (psi)
	$\beta \geq 2$ (50%)	$\beta \geq 20$ (95%)	$\beta \geq 75$ (98,7%)	$\beta \geq 200$ (99,5%)	$\beta_2$	$\beta_{10}$	$\beta_{20}$	
A03	-	2	2,4	3	20	> 10.000	> 10.000	100
A06	-	3	4,6	6	8	> 2.000	> 10.000	100
A10	3	6	7,8	10	1,5	$\geq 200$	> 10.000	100
A25	13	19	22	25	-	> 1,5	> 35	100

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

### Filtering area Filter elements "H"collapse $\Delta P = 145 \text{ PSI}$

Type MF	030-1	100-1	100-2	100-3	180-1	180-2	400-1	400-2	400-3	750-1
A03/A06	52	97	155	268	666	1162	735	1075	1358	1767
A10/A25	52	97	155	268	666	1162	735	1075	1358	1767

Values in sq in

### 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 "N"collapse pressure $\Delta P = 45 \text{ PSI}$

Type MF	030-1	100-1	100-2	100-3	180-1	180-2	400-1	400-2	400-3	750-1
P10/P25	63	158	258	294	620	1240	695	1015	1284	2085
M25	45	71,3	113	194	310	698	374	545	689	1124
M60	45	71,3	113	194	310	698	310	465	595	969
M90	45	71,3	113	194	310	698	310	465	595	853

Values in sq in

## Filter body:

### Materials

#### Head

Pressure die cast aluminium

#### Cover

MPF 030-100 Nylon  
MPF 180-750 Aluminium

#### Bowl

Nylon

#### Seals

A Series: Nitrile (Buna-N)  
V Series: Viton

#### Bypass valve

Nylon

#### Indicator

Brass

### Working

#### temperature

From -13° F to +230°F  
For temperatures outside this range, please consult our Sales and Network Organization

### Pressure filter body

Maximum working pressure up to 45psi  
Test pressure: 72,5 psi  
Minimum burst pressure: 145 psi

Fatigue test: a filter body subjected to pressure impulses from 0 to 45 psi will withstand 1.000.000 cycles

### Collapse pressure filter elements

N Series **45 psi**  
H Series **145 psi**

### Bypass valve

#### Calibration pressure

Bypass valve, differential opening pressure:

**B: 25 psi ± 10%**

### Compatibility with fluids

#### 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)

**Ask for anodised version**

#### Filter elements

As per ISO 2943; suitable for mineral oils (types HH-HL-HM-HR-HV-HG as per ISO 6743/4) 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 and Network Organization.

#### 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)

### Types of indicators

Operation:  
All styles set to indicate an element change at:

15 psi ± 10%

### Visual indicator

#### VR Series

Color coded pressure gauge scale 0 – 30 psi

### Electrical indicator

#### ER Series:

Pressure switch with N.O. contacts

#### EC Series:

Pressure switch with N.C. contacts

#### Operational information:

Max voltage: 48 Vac 50÷60 Hz

Max current: 0.5 A resistive, 0.2 A inductive.

# Selection & installation information

## Filter elements types

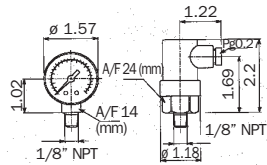
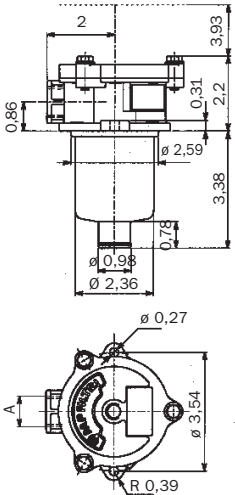
**A Series**  
 Absolute inorganic microfiber filtration media, available in 3, 6, 10 and 25 micron  
 Example - **A03, A06, A10** or **A25**

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

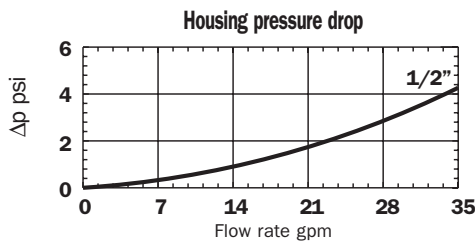
**M Series**  
 Metal mesh media, available in 25, 60, and 90 micron.  
 Example - **M25, M60** or **M90**.

**Please refer to individual pressure drop curves to obtain filter element 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 5.8 psi



## MPF 030



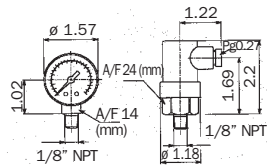
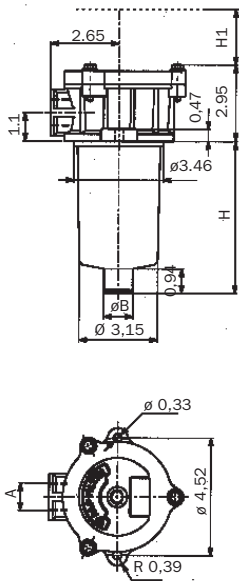
### Thread connections

## MPF SERIES 030 SIZE

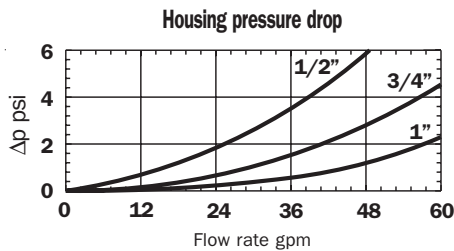
Filter assembly	Flow rate gpm 8	Bowl length	Port size BSP/NPT/SAE	Weight lb **
A03	2,1	1	1/2"	1.1
A06	3,1			
A10	5,5			
A25	7,9			
P10	7,9			

\* Flow rates suitable for 150 SUS fluid  
 \*\* Weight including filter element

Type	A
G1	1/2" BSP
G4	1/2" NPT
G7	SAE 8 - 3/4" - 16 UNF



## MPF 100



### Thread connections

## MPF SERIES 100 SIZE

Filter assembly	Flow rate gpm *	Bowl length	Port size BSP/NPT/SAE	Weight lb **
A03	6,6	1	1/2"	2,2
A06	7,9			
A10	9,2			
A25	17,2			
P10	13,2		3/4"	
A03	8,5	2	3/4"	2,6
A06	10			
A10	11,8			
A25	33			
P10	26,4		1"	
A03	11,8	3	3/4"	3,3
A06	14,5			
A10	18,5			
A25	39,6			
P10	33		1"	

\* Flow rates suitable for 150 SUS fluid  
 \*\* Weight including filter element

Type	A
G1	1/2" BSP
G2	3/4" BSP
G3	1" BSP
G4	1/2" NPT
G5	3/4" NPT
G6	1" NPT
G7	SAE 8 - 3/4" - 16 UNF
G8	SAE 12 - 1 1/16" - 12 UN
G9	SAE 16 - 1 5/16" - 12 UN

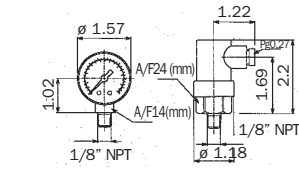
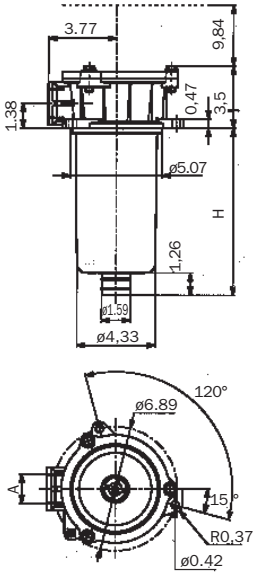
### Lengths

Type	H	H1	ø B
1	3,9	4,7	1,1
2	5,9	6,7	1,1
3	8,8	9,8	1,7

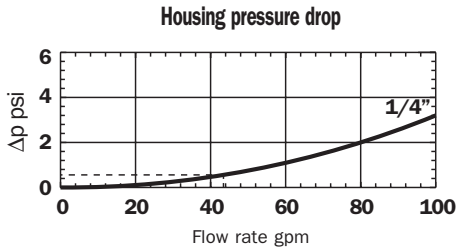
# Selection & installation information

Please refer to individual pressure drop curves to obtain filter element 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 5.8 psi



## MPF 180



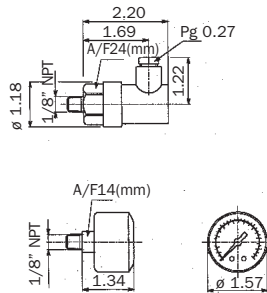
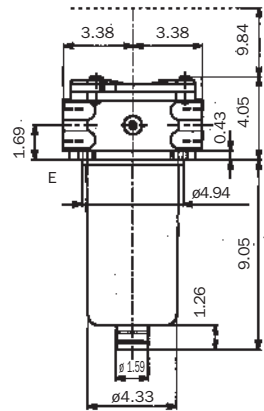
### Thread connections

## MPF SERIES 180 SIZE

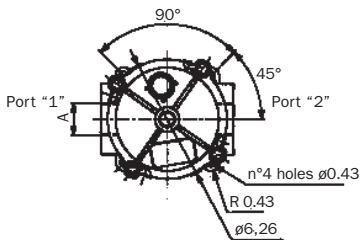
Filter assembly	Flow rate gpm *	Bowl length	Port size BSP/NPT/SAE	Length H	Weight lb**
A03	30.4	1	1 1/4"	9,1	4,8
A06	37				
A10	48,8				
A25	79.2				
P10	60.8	2	1 1/4"	17,7	7,9
A03	52.8				
A06	66				
A10	79.3				
A25	92.5				
P10	79.3				

\* Flow rates suitable for 150 SUS fluid  
\*\* Weight including filter element

Type	A
G1	1 1/4" BSP
G4	1 1/4" NPT
G7	SAE 20 - 1 5/8" - 12 UN



## MPF 184



### Thread connections

## MPF SERIES 184 SIZE

Filter assembly	Flow rate gpm *	Bowl length	Port size BSP/NPT/SAE	Length H	Weight lb**
A03	30.4	1	1 1/4"	9,1	5,5
A06	37				
A10	48,8				
A25	79.2				
P10	60.8	2	1 1/4"	17,7	8,6
A03	52.8				
A06	66				
A10	79.3				
A25	92.5				
P10	79.3				

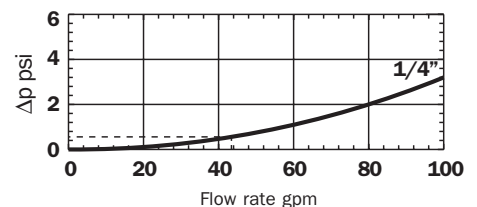
\* Flow rates suitable for 150 SUS fluid  
\*\* Weight including filter element

Type	A	E
G1	1 1/4" BSP	1/8" BSP
G2	2 Ports 1 1/4" BSP	1/8" BSP
G4	1 1/4" NPT	1/8" NPT
G5	2 Ports 1 1/4" NPT	1/8" NPT
G7	SAE 20 - 1 5/8" - 12 UN	1/8" NPT
G8	2 Ports SAE 20 - 1 5/8" - 12 UN	1/8" NPT

### Flange connections

Type	A	B	C	D	E
F1	1 1/2" SAE 3000 PSI/M	2,75	1,406	M12	1/8" BSP
F2	1 1/2" SAE 3000 PSI/UNC	2,75	1,406	1/2" UNC	1/8" NPT
F3	2 Ports 1 1/2" SAE 3000 PSI/M	2,75	1,406	M12	1/8" BSP
F4	2 Ports 1 1/2" SAE 3000 PSI/UNC	2,75	1,406	1/2" UNC	1/8" NPT

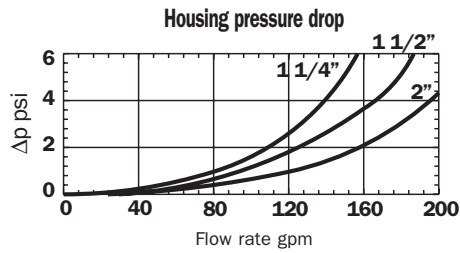
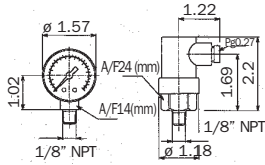
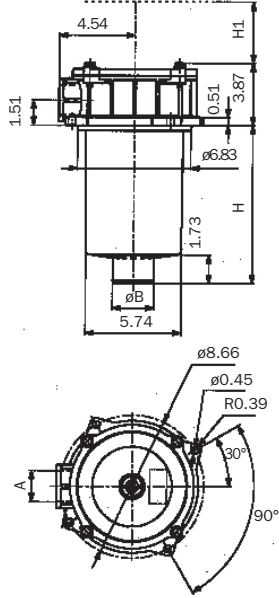
### Housing pressure drop



# Selection & installation information

Please refer to individual pressure drop curves to obtain filter element 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 5.8 psi



## MPF 400

### MPF SERIES 400 SIZE

Filter assembly	Flow rate gpm *	Bowl length	Port size BSP/NPT/SAE	Weight lb **
A03	31,7	1	1 1/4"	6,6
A06	39,6			
A10	45			
A25	79,2			
P10	59,4	2	1 1/2"	7,7
A03	40,9			
A06	52,8			
A10	63,4			
A25	120	3	2"	8,1
P10	90			
A03	52,8			
A06	63,4			
A10	79,2	2"	2"	8,1
A25	132			
P10	105,6			

\* Flow rates suitable for 150 SUS fluid

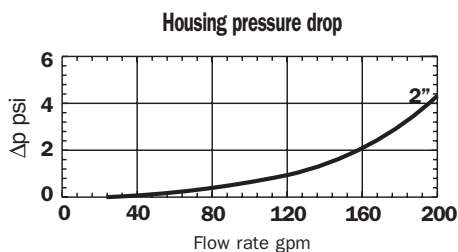
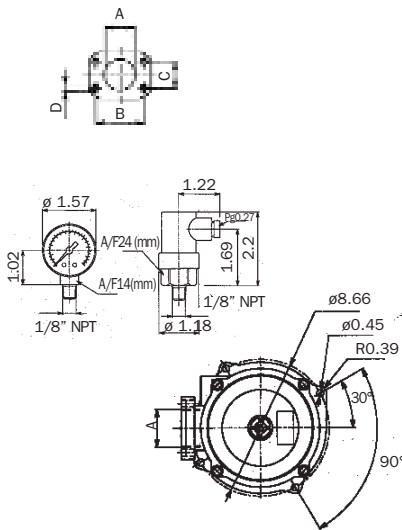
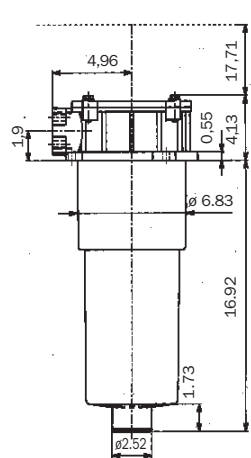
\*\* Weight including filter element

### Lengths

Type	H	H1	ø B
1	7	7,87	2
2	9,37	9,84	2,52
3	11,33	12,2	2,52

### Thread connections

Type	A
G1	1 1/4" BSP
G2	1 1/2" BSP
G3	2" BSP
G4	1 1/4" NPT
G5	1 1/2" NPT
G6	2" NPT
G7	SAE 20 - 1 5/8" - 12 UN
G8	SAE 24 - 1 7/8" - 12 UN
G9	SAE 32 - 2 1/2" - 12 UN



## MPF 750

### MPF SERIES 750 SIZE

Filter assembly	Flow rate gpm *	Bowl length	Port size BSP/NPT/SAE	Weight lb **
A03	66	1	2"	15.4
A06	76,6			
A10	99			
A25	165			
P10	127			

\* Flow rates suitable for 150 SUS fluid

\*\* Weight including filter element

### Thread connections

Type	A
G1	2" BSP
G4	2" NPT
G7	SAE 32 - 2 1/2" - 12 UN

### Flange connections

Type	A	B	C	D
F1	2" SAE 3000 PSI/M	3.061	1.688	M12
F2	2" SAE 3000 PSI/UNC	3.061	1.688	1/2" UNC

## 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

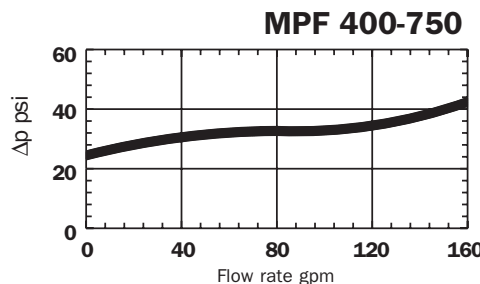
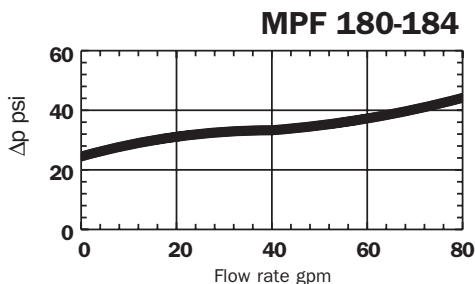
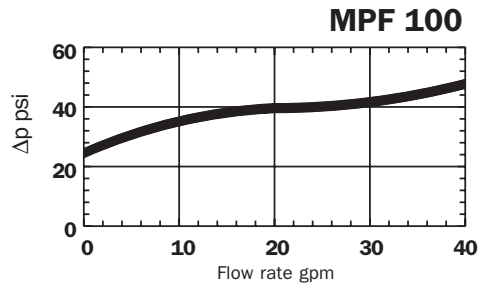
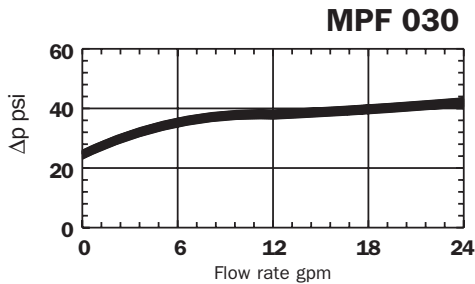
- Customer requires a 43 gpm filter assembly
- Mineral oil fluid: 317 SUS at 104°F
- A25 - 25 micron absolute filtration

### Selection :

- **Housing pressure drop** - MPF 180 - 184 with 43 gpm  $\Delta p = 0.6$  psi (see curve on page 6)
- **Filter element pressure drop** (brochure viscosity) - MF 180.1.A25HB with 43 gpm  $\Delta p = 1.95$  psi (see curve on page 9)
- **Filter element pressure drop** (working viscosity) - With 317 SUS  $\Delta p_1 = 1.95 \times (317/140) = 4.4$  psi
- **Filter assembly pressure drop**  $\Delta p_{\text{Total}} = \Delta p_{\text{Housing}} + \Delta p_1 \text{ Filter element} = 0.6 + 4.4 = 5 \text{ psi}^*$  { 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  $\Delta p$  varies proportionally to the density.

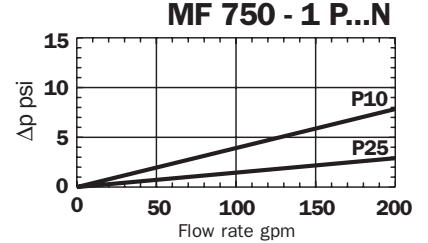
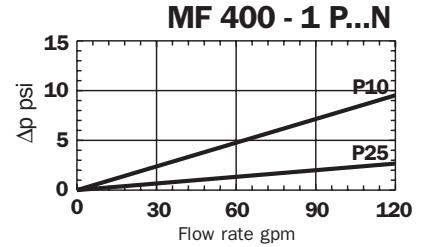
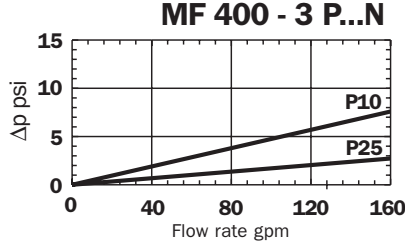
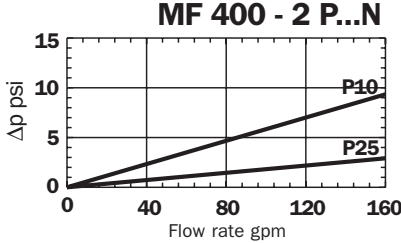
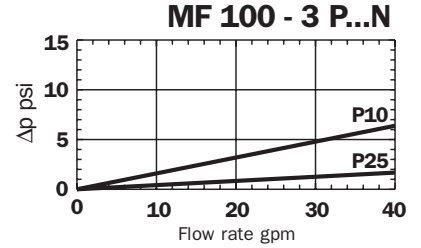
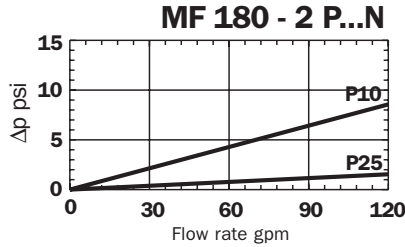
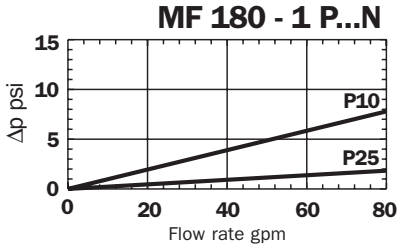
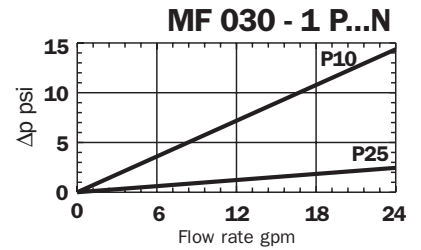
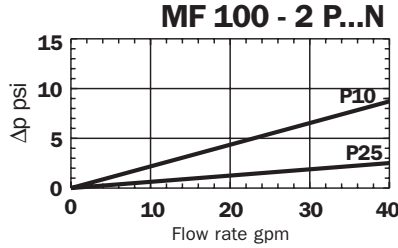
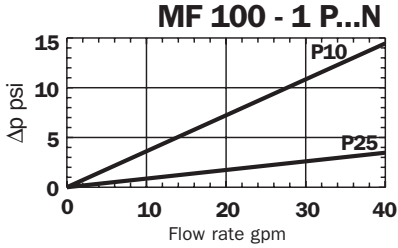




## Filter elements - N - $\Delta P$ 45 psi

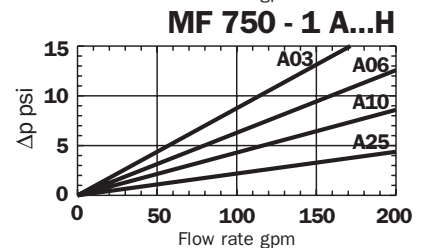
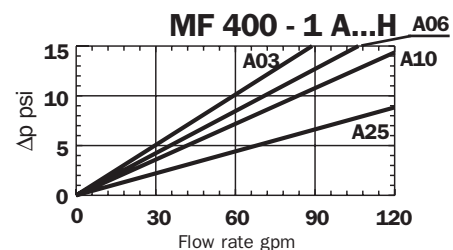
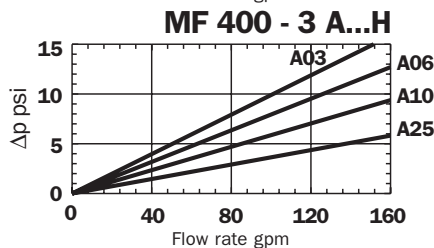
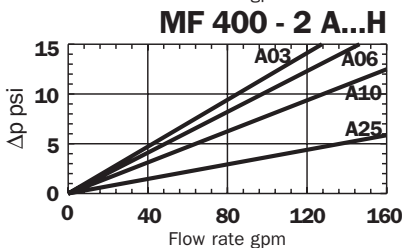
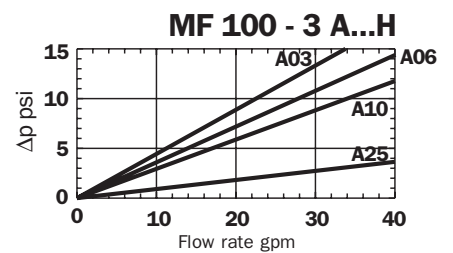
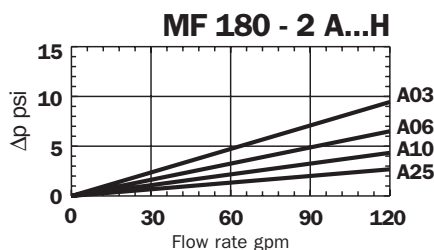
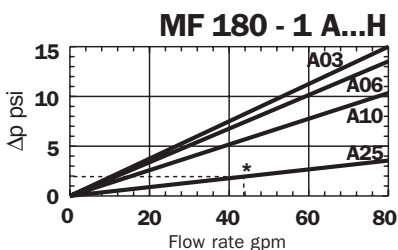
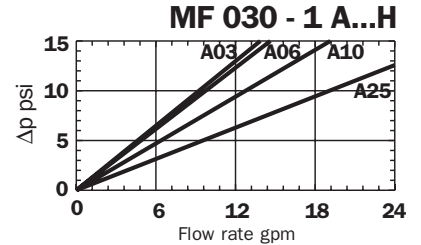
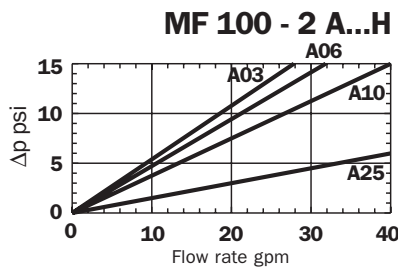
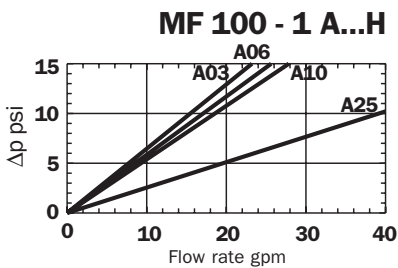
The curves were obtained using a mineral oil with a kinematic viscosity 150 SUS.  
The  $\Delta p$  varies proportionally to the fluid kinematic viscosity.

For the metal mesh filter elements curves (M series),  
please consult our Sales and Network Organization



## Filter elements - H - $\Delta P$ 145 psi

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

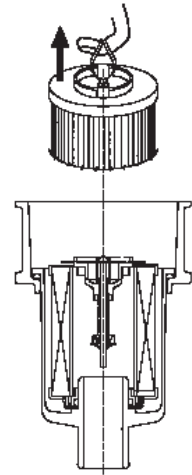


\* Example: See page 8

## Filter element replacement

The filter element has a handle on the top allowing easy removal from the bowl.

The helical spring is utilized to secure the filter element in its location.



## Special application filters on request

### Extension tube option

#### HOW TO SPECIFY AN EXTENDED IN AN ASSEMBLY PART NUMBER

- Determine the "H" dimension in millimeters or inches (including the tube) you will require
- Divide this number by 10 and add the answer after a slash (/) at the end of the assembly part number.

**NOTE:** The "H" dimension can only be specified in multiples of 10 millimeters and it is subject to the minimum lengths listed below.

**Example:** For a MPF1001AG4A10HBT filter assembly with an "H" dimension of 200 millimeters the final part number would look like this: MPF1001AG4A10HBT/20

### Filler plug:

Please note, when the T5 option is required, fill the ordering code with H instead of G option (see the example below)  
Indicator option is not available when the filler plug is fitted (except for MPF 184).

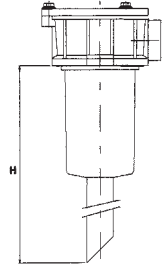
#### Ordering code:

(See page 11) T5

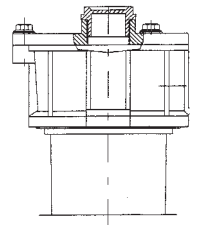
Example: MPF 030 1 A H1 A10 NB/T5

### Minimum Lengths

MPF030-1	200mm / 7.87 in
MPF100-1	200mm / 7.87 in
MPF100-2	250mm / 9.84 in
MPF100-3	330mm / 12.99 in
MPF180/184	340mm / 13.38 in
MPF400-1	280mm / 11.02 in
MPF400-2	340mm / 13.38 in
MPF400-3	390mm / 15.35 in
MPF750-1	530mm / 20.86 in

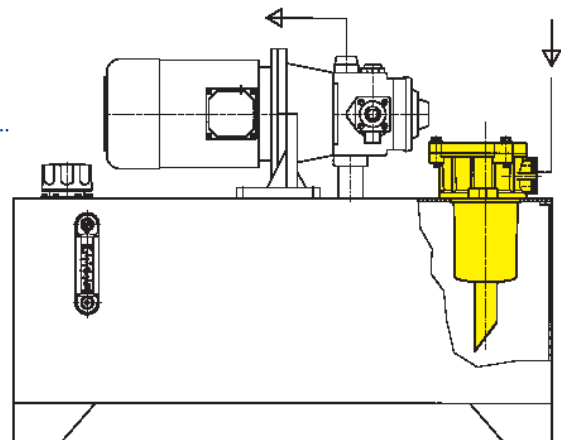


Filler plug	Thread	Wrench A/F (mm)
MPF 030-1	M33x1.5	34
MPF 100-1	M33x1.5	34
MPF 100-2	M33x1.5	34
MPF 100-3	M33x1.5	34
MPF 180-1	M33x1.5	34
MPF 180-2	M33x1.5	34
MPF 184-1	SAE 12	27
MPF 184-2	SAE 12	27
MPF 400-1	M33x1.5	34
MPF 400-2	M33x1.5	34
MPF 400-3	M33x1.5	34
MPF 750-1	M33x1.5	34



## Applications

### Example of application



# Ordering information

**MPF**

**/XX**

## Nominal sizes

030  
100  
180  
184 (use MF 180 filter element code)  
400  
750

## Bowl lengths

MPF 030 = 1  
MPF 100 = 1,2,3  
MPF 180-184 = 1-2  
MPF 400 = 1,2,3  
MPF 750 = 1

## Seals

A Nitrile (Buna-N)  
V Viton

## Ports option

Type	MPF 030	MPF 100	MPF 180	MPF 184	MPF 400	MPF 750
G1	1/2" BSP	1/2" BSP	1 1/4" BSP	1 1/4" BSP	1 1/4" BSP	2" BSP
G2	-	3/4" BSP	-	2 Ports 1 1/4" BSP	1 1/2" BSP	-
G3	-	1" BSP	-	-	2" BSP	-
G4	1/2" NPT	1/2" NPT	1 1/4" NPT	1 1/4" NPT	1 1/4" NPT	2" NPT
G5	-	3/4" NPT	-	2 Ports 1 1/4" NPT	1 1/2" NPT	-
G6	-	1" NPT	-	-	2" NPT	-
G7	SAE 8	SAE 8	SAE 20	SAE 20	SAE 20	SAE 32
G8	-	SAE 12	-	2 Ports SAE 20	SAE 24	-
G9	-	SAE 16	-	-	SAE 32	-
F1	-	-	-	1 1/2" SAE 3000 PSI/M	-	2 SAE 3000 PSI/M
F2	-	-	-	1 1/2" SAE 3000 PSI/UNC	-	2 SAE 3000 PSI/UNC
F3	-	-	-	2x1 1/2" SAE 3000 PSI/M	-	-
F4	-	-	-	2x1 1/2" SAE 3000 PSI/UNC	-	-

## Filter condition indicator

T With plug (std)  
VR Visual  
ER Electrical: N.O. contacts  
EC Electrical: N.C. contacts  
T5 Filler plug (see page 10)  
XX Extension tube (see page 10)

## Bypass valve

B Bypass 25 psi

## Seals (Filter elements)

B Nitrile (Buna - N)  
V Viton

## Collapse pressure series

N 45 psi (P/M series)  
H 145 psi (A series, only)

## Filter elements N series

P10 Resin-impregnated paper Bx ≥ 2  
P25  
M25 Square wire mesh  
M60  
M90

## Filter elements H series

A03  
A06  
A10  
A25  
Inorganic microfibre Bx ≥ 200

**MF**

# Replacement element

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

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