

spirax

sarco

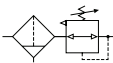
MP2M and MPN2M

Monnier Miniature

Compressed Air Filter/Regulators

TI-P504-05

CH Issue 2



International Symbol

Description

The Monnier miniature compressed air filter /regulators provide high quality compressed air, with accurate pressure control, for general purpose pneumatic systems where space is restricted and flowrates are low.

Principal features:

- Compact combined miniature filter /regulator.
- Long life 5 µm element.
- Improved moisture separation with multi-bladed whirl disc.
- Fast response.
- Polycarbonate bowl.
- For line, bracket or panel mounting.
- Good flow and regulation characteristics.
- External black anodised finish.

Available types:

MP2M	Self-relieving
MPN2M	Non-relieving

Optional extras

For further technical information regarding the following options, see page 2:

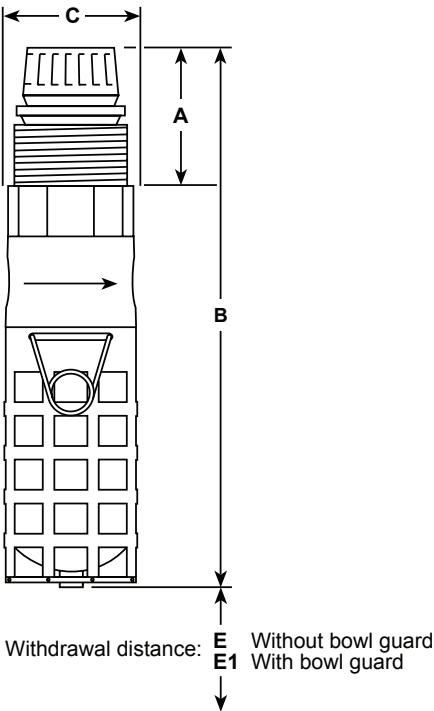
- Airset kit.
- Easy fit stainless steel bowl guard.

Sizes and pipe connections

1/4" screwed BSP (BS 21-Rp)

Dimensions / weight (approximate) in mm and kg

A	B	C	E	E1	Weight
67	156	38	25	45	0.2



MP2M shown with optional pressure gauge

Spring range (operating pressure range)

All regulators can be adjusted to zero pressure, or up to the figures shown. The operating range is marked on the unit.

Standard spring	0.7 - 9.0 bar g
Optional spring	0.2 - 2.0 bar g
	0.3 - 4.0 bar g

Note: The MP2M will be supplied with the standard spring unless an alternative option has been specified when placing an order.

Operating limits

Maximum working pressure	10 bar g
Maximum working temperature	50°C

Materials

Part	Material
Body	Aluminium and polycarbonate
Valve	Nitrile rubber
Bowl	Polycarbonate
Element (5 µm)	Sintered polypropylene
Bowl guard (optional extra)	Stainless steel

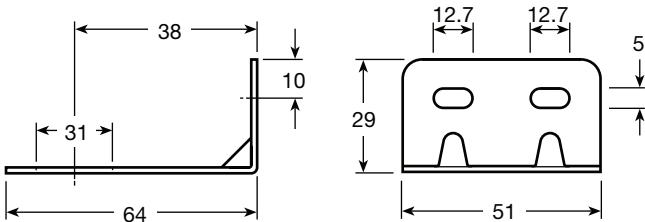
Optional extras

Airsets - The MP2M, MPN2M regulators are also available as airsets consisting of Type 8 bracket, mounting ring and pressure gauge (see options below).

Type 8 mounting bracket and mounting ring

The filter/regulator can be mounted using a zinc plated mild steel bracket and aluminium mounting ring (not shown). Both items must be specified when placing an order.

Dimensions (approximate) in millimetres

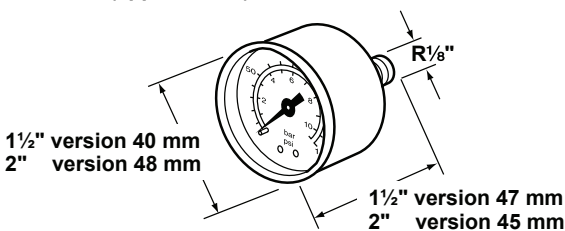


Pressure gauge

Available in two sizes, with 4 pressure ranges. The face is marked in both bar and psi. Please state, size and pressure range when placing an order.

Pressure ranges	0 to 2 bar	0 to 30 psi
	0 to 7 bar	0 to 100 psi
	0 to 11 bar	0 to 160 psi
	0 to 21 bar	0 to 300 psi (2" size only)

Dimensions (approximate) in millimetres



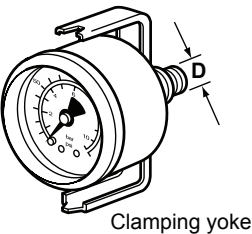
Pressure gauges for panel mounting

With chromium plated bezel available in two ranges, the face being marked in bar and psi as follows:-

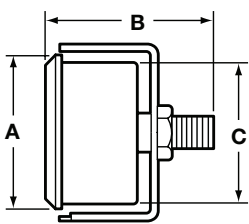
Pressure ranges	0 to 2 bar	0 to 30 psi
	0 to 7 bar	0 to 100 psi

Dimensions (approximate) in millimetres

A	B	C	D
53	56	48	R1/8

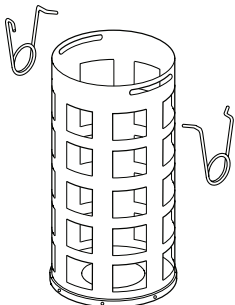


Clamping yoke



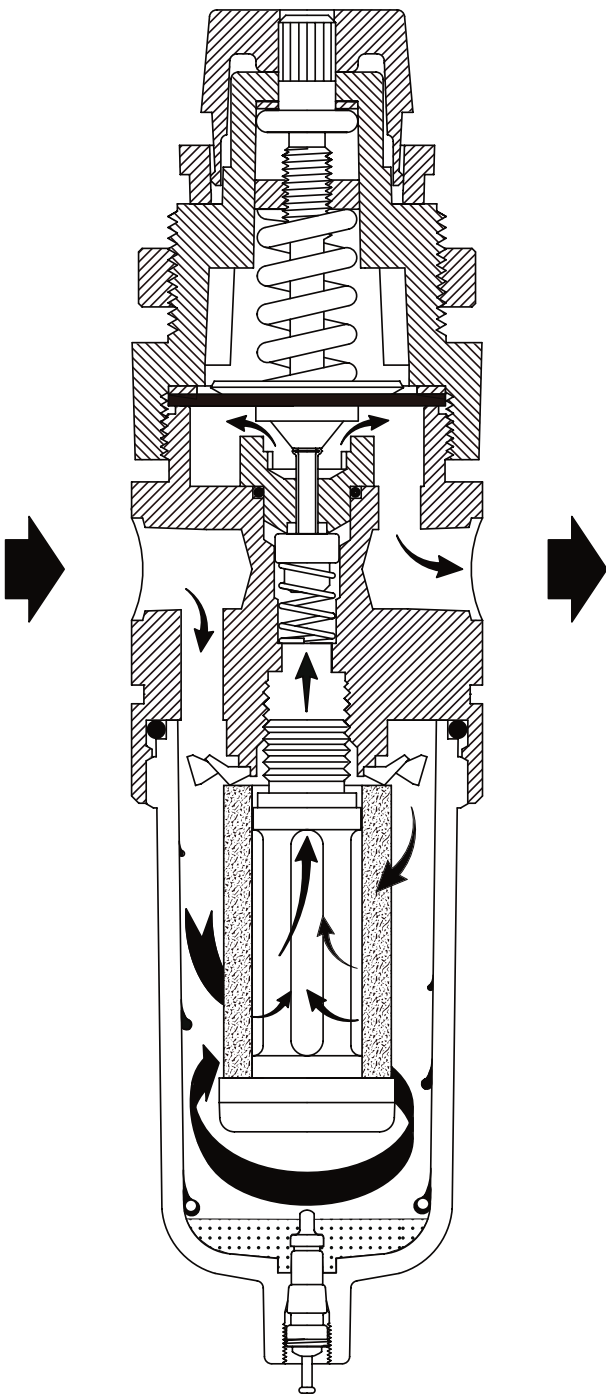
Bowl guard

In the interest of safety Spirax Sarco recommend that a bowl guard should be fitted. See the 'Warning' under 'Safety information, installation and maintenance'.



Principle of operation

With system pressure on, the regulator poppet valve assembly is in the closed position when the adjusting knob is turned fully counter clockwise (no spring load). By turning the adjusting knob clockwise, the diaphragm/piston moves downward allowing filtered air to flow in through the orifice created between the poppet assembly and seat. The control diaphragm/piston offsetting the load spring senses pressure downstream. Increasing downstream pressure causes the poppet assembly to move upward until the load of the spring and diaphragm/piston are balanced. The outlet pressure has now been reduced. If a valve is opened downstream, the increased demand for pressure creates a reduced pressure under the control diaphragm/piston. The poppet assembly moves downward due to the load of the control spring opening the seat area and air is allowed to meet the downstream pressure demand. Thus, the area of the opening meters the downstream flow.

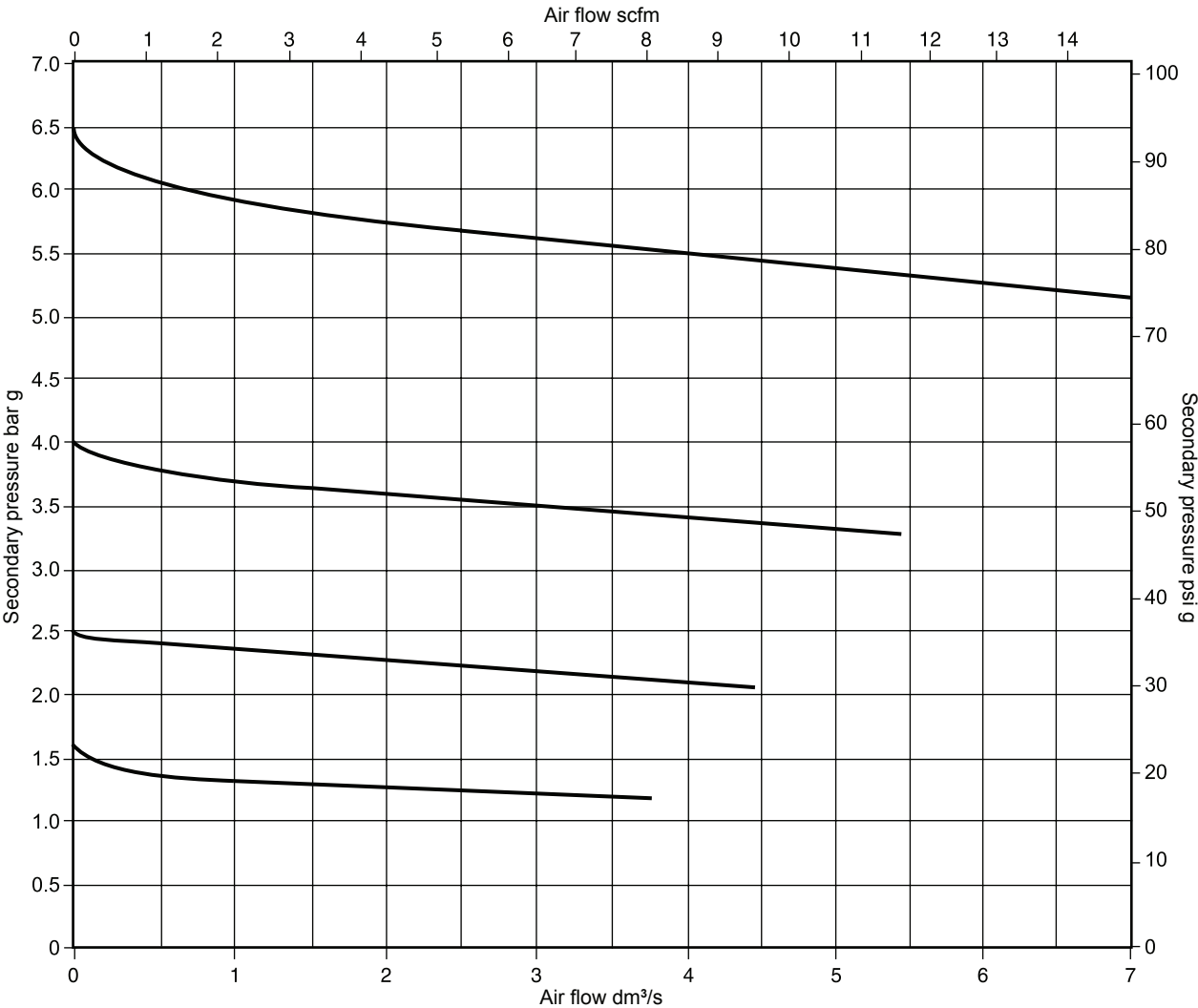


Capacities

The full lift capacities for safety valve sizing purposes is 0.21 K_{VS}.

Performance selection (with primary pressure 10 bar)

For any specified primary filtration pressure, there is a maximum recommended air flowrate. Keeping within this, will ensure that the element performance maintains the stated high efficiency levels.



The graph utilises some typical values for secondary flow/pressure to demonstrate droop

$$\text{Droop} = \frac{\text{Pressure droop}}{\text{Set point}} @ \text{Relevant flowrate}$$

Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P504-06) supplied with the product.

Warning

Polycarbonate bowls are attacked by phosphate ester fluids, solvents, paint thinners and carbon tetrachloride. These and similar substances should never be allowed to come into contact with the bowl. Certain compressor lubricating oils also contains additives harmful to polycarbonate and, where there is any doubt we recommend, in the interests of safety, that a bowl guard be fitted.

Installation note:

Fit in a horizontal pipe, with the bowl vertically downwards, as close as possible to the equipment it is serving. Connect the unit so that the air flow is in the direction shown by the arrow cast on the body. A pressure guage fitted to one of the ports is recommended (to show the secondary pressure). The port(s) not in use should be blanked off with the plugs supplied.

Panel mounting:

The panel must not exceed 8 mm thick. The required hole is 31 mm diameter.

How to order

Please state quantity, size and type and any options which are required. Unless otherwise stated, the filter/regulator will be supplied with the 0.7 - 9.0 bar g control spring and a polycarbonate bowl with drain.

Example:

1 off MP2M Monnier self-relieving miniature compressed air filter/regulator having a 0.2 - 2.0 bar g control spring and ¼" BSP connections.
1 off Bowl guard.

Spare parts

The spare parts available are detailed below. No other parts are supplied as spares.

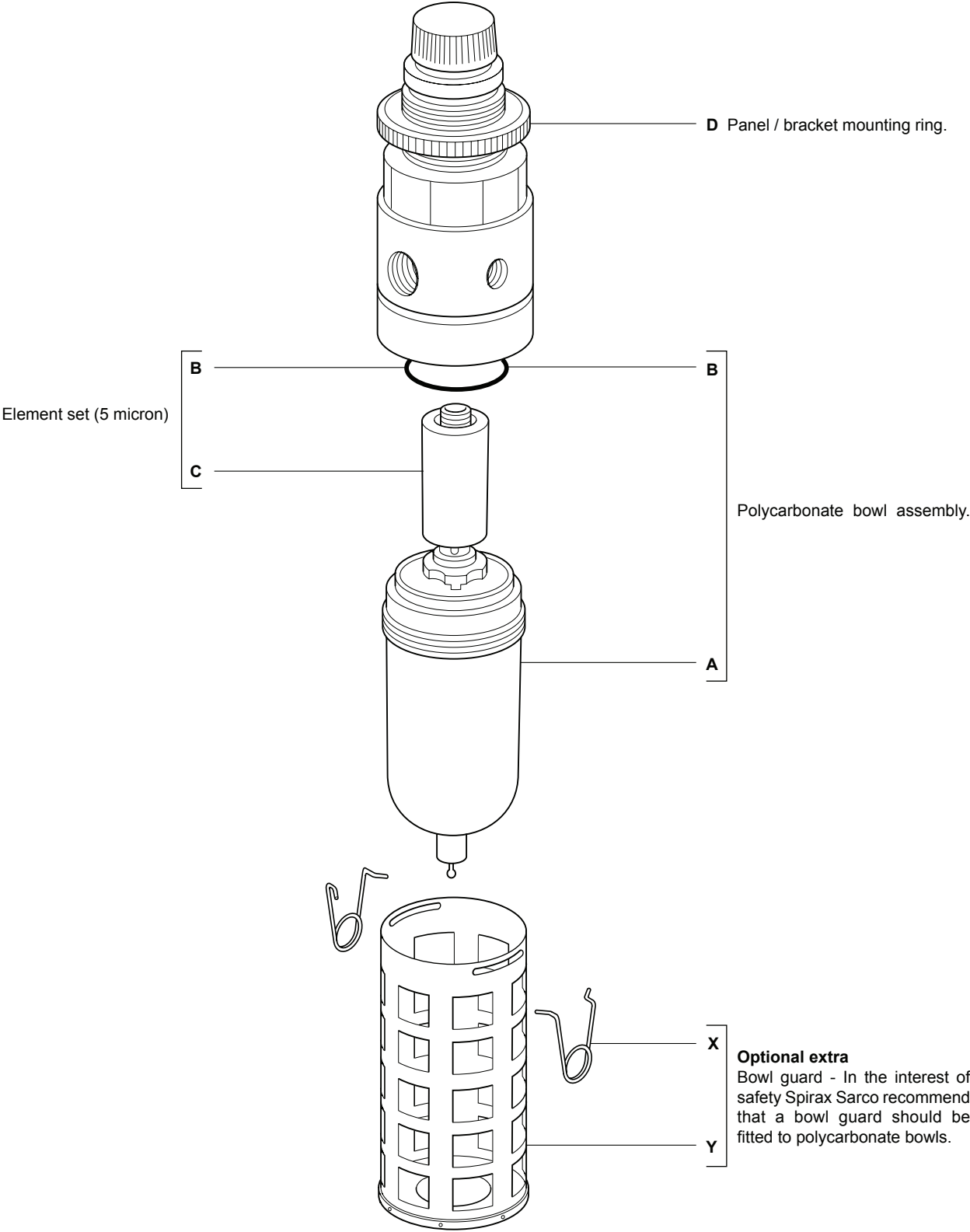
Available spares

Polycarbonate bowl assembly	A, B
Element set 5 micron (packet of 3)	B, C
Stainless steel bowl guard and 2 off spring clips (optional extra)	X, Y
Panel/bracket mounting ring	D

How to order spares

Always order spares by using the description given in the column headed 'Available spares' and state the size and type of unit.

Example: 1 - Element set (5 micron) for a 1/4" Monnier MP2M self-relieving miniature compressed air filter / regulator.



TI-P504-07

CH Issue 2

spirax

sarco

MPC1M, MPC2M and MPC2AM

Monnier

High Efficiency Compressed Air Filter/Regulators

Descriptions

The MPC_M Monnier range of (self-relieving) high efficiency oil removing filter/regulators provide very high quality compressed air, with accurate pressure control, for pneumatic actuators and general purpose systems.

Principal features:

- Compact miniature oil removing filter/regulator.
- Self-relieving.
- High efficiency - Exceeding 99.95% against D.O.P. tests.
- Efficiency testing carried out in accordance with ISO 12500 at 51 mg/m³ (40 ppm) inlet concentration.
- Oil carryover less than 0.0255 mg/m³ (0.02 ppm).
- 100% water removal at line temperature.
- Polycarbonate bowl.
- External black anodised finish.
- Particle efficiency: 99.96%
- Inlet dry pressure drop: 1.5 psi d.

Available types supplied as standard

MPC1M	ATEX compatible. Metal bowl with manual drain and tamper-proof cap.
MPC2M	Polycarbonate bowl with manual drain.
MPC2AM	Metal bowl with autodrain.

Applications

The MPC_M is used to provide very high quality compressed air. There are many applications where compressed air of a particularly high quality is required. Typical examples include air bearings on machine tools, air gauging equipment, instrument air supplies, fluidic systems, breathing air, pneumatic positioners, etc.

The MPC1M compressed air filter / regulator is ATEX compatible -

Directive 94/9/EC (ATEX95) Declaration

The MPC1M is intended for use in potentially explosive environments as defined by Equipment Group II Category 2.

- We have determined the MPC1M is a 'simple' mechanical product. It is therefore not covered by the scope of the ATEX directive and consequently does not need to carry any marking.

As part of our conformity assesment, an ignition hazard analysis to EN 13463-1 was conducted with the following outcome:

- We have determined the MPC1M does not have its own effective sources of ignition - even in the event of rare failures.

Note: As defined by the European ATEX Standing Committee... "Electrostatic charges caused by the flow-through of a medium are not considered as "own" ignition source in the sense of Directive 94/9/EC."

The MPC1M may be used in a potentially explosive environment, as defined by Equipment Group II Category 2, when used in accordance with its Installation and Maintenance Instructions (IM-P504-08).

Sizes and pipe connections

¼" screwed BSP (BS 21-Rp, ISO 7).

Spring range (operating pressure range)

All regulators can be adjusted to zero pressure, or above the figures shown. The operating range is marked on the unit.

Standard spring	0.7 - 9.0 bar g
	0.2 - 2.0 bar g
Optional spring	0.3 - 4.0 bar g

Note: The MPC_M will be supplied with the standard spring unless an alternative option has been specified when placing an order.

Operating limits

Maximum pressure/temperature	Polycarbonate bowl	10 bar g @ 50°C
	Metal bowl	17 bar g @ 80°C



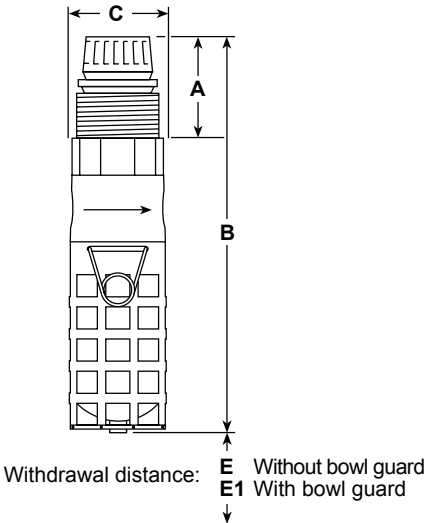
MPC2M shown with optional pressure gauge.

Materials

Part	Material
Body	Aluminium - anodised
Bowl	Polycarbonate or aluminium alloy
Bonnet assembly	Aluminium
Filter element	Microfibre / stainless steel
Valve	Nitrile

Dimensions (approximate) in mm and kg

Unit	Size	A	B	C	E	E1	Weight
MPC1M	¼"	75	167	38	25	-	0.2
MPC2M	¼"	67	156	38	25	45	0.2
MPC2AM	¼"	75	167	38	25	-	0.2



Optional extras

Airsets

The MPC2M, MP2AM filter / regulators are also available as airsets, consisting of Type 8 or FK21 bracket, mounting ring and pressure gauge (see the 'MPC_M optional extras' table below).

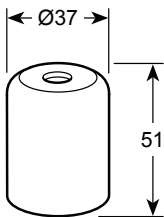
MPC optional extras - Selection table

S = Supplied as standard OE = optional extra = not available

Feature		MPC1M	MPC2M	MPC2AM
Polycarbonate bowl	Without drain		OE	
	With manual drain		S	
Bowl guard			OE	
Metal bowl (no sight glass)	With manual drain	S	OE	
	With autodrain			S
Tamper-proof cap	With locking seal	S	OE	OE
Pressure gauge	50 mm Ø		OE	OE
	40 mm Ø	S	OE	OE
Type 8 mounting bracket			OE	OE
FK21 fixing kit		S	OE	OE
Aluminium mounting ring		S	OE	OE

Note: A tamper-proof cap with locking seal is recommended as an optional extra for MPC2M and MPC2AM airsets.

Tamper-proof cap
(Standard on MPC1M)

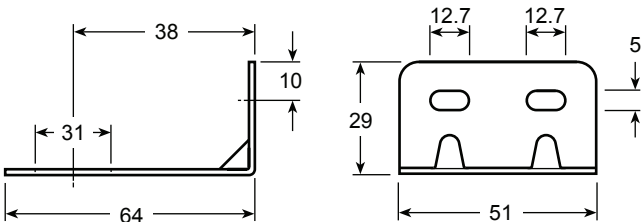


Dimensions
(approximate) in millimetres

Type 8 mounting bracket and mounting ring
For general installation.

The filter/regulator can be mounted using this zinc plated mild steel bracket and aluminium mounting ring. Both items must be specified when placing an order.

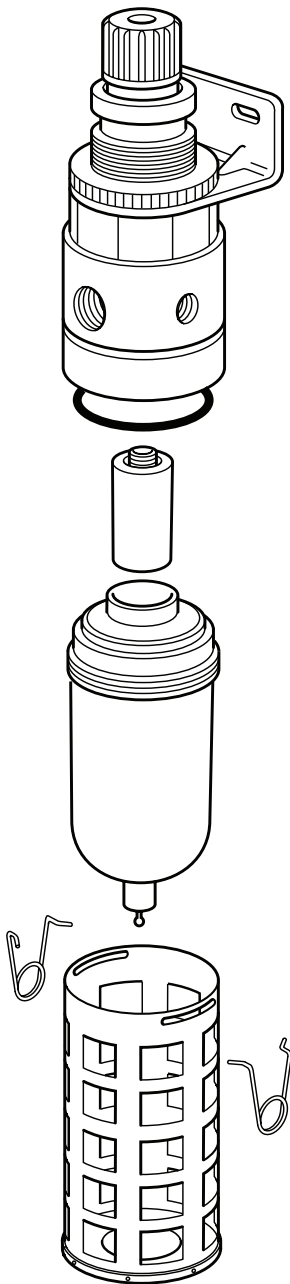
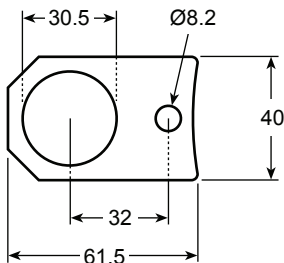
Dimensions (approximate) in millimetres



FK21 fixing kit

The FK21 fixing kit is required to mount the MPC_M onto the Spirax Sarco range of PN pneumatic actuators. The aluminium mounting ring must also be specified.

Dimensions (approximate) in millimetres

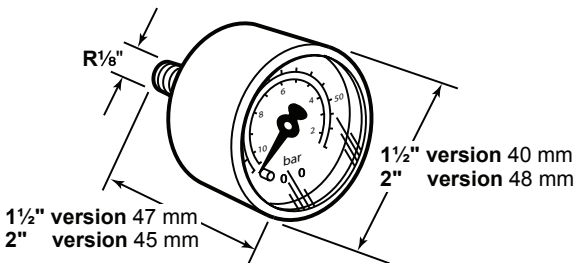


Optional pressure gauge (Not for MPC2AM)

Available in two sizes (1½" and 2"), with 3 pressure ranges. The face is marked in both bar and psi. Please state, size and pressure range when placing an order.

Pressure ranges	0 to 2 bar	0 to 30 psi
	0 to 7 bar	0 to 100 psi
	0 to 11 bar	0 to 160 psi

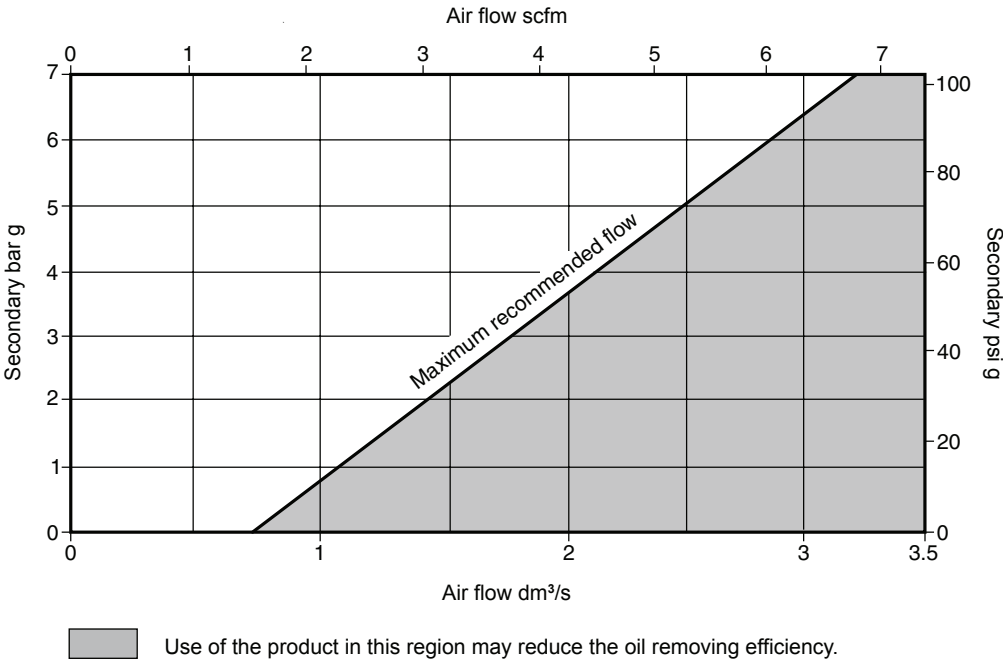
Dimensions (approximate) in millimetres



Performance selection (with primary pressure 10 bar)

For any specified primary filtration pressure, there is a maximum recommended air flowrate. Keeping within this, will ensure that the element performance maintains the stated high efficiency levels, particularly for the removal of oli and water contaminants.

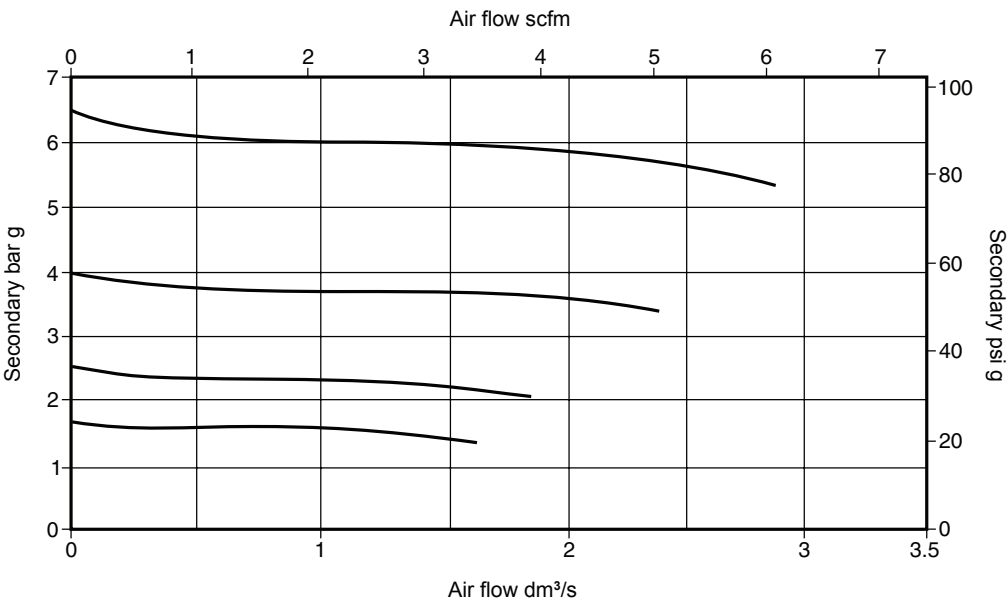
Maximum secondary flow at peak performance



5.4

7

Droop characteristics



Graph utilises some typical values for secondary flow / pressure to demonstrate droop

$$\text{Droop} = \frac{\text{Pressure droop}}{\text{Set point}} @ \text{Relevant flowrate}$$

Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P504-08) supplied with the product.

How to order

Please state quantity, size and type and any options which are required. Unless otherwise stated, the filter/regulator will be supplied with the 0.7 - 9.0 bar g control spring and a polycarbonate bowl with drain.

Example:

- 1 off ¼" MPC2M Monnier high efficiency compressed air filter/regulator having a 0.3 - 4.0 bar g control spring.
- 1 off Airset kit for fitting an MPC2M onto a Spirax Sarco PN pneumatic actuator.

Spare parts

The spare parts available are detailed below. No other parts are supplied as spares.

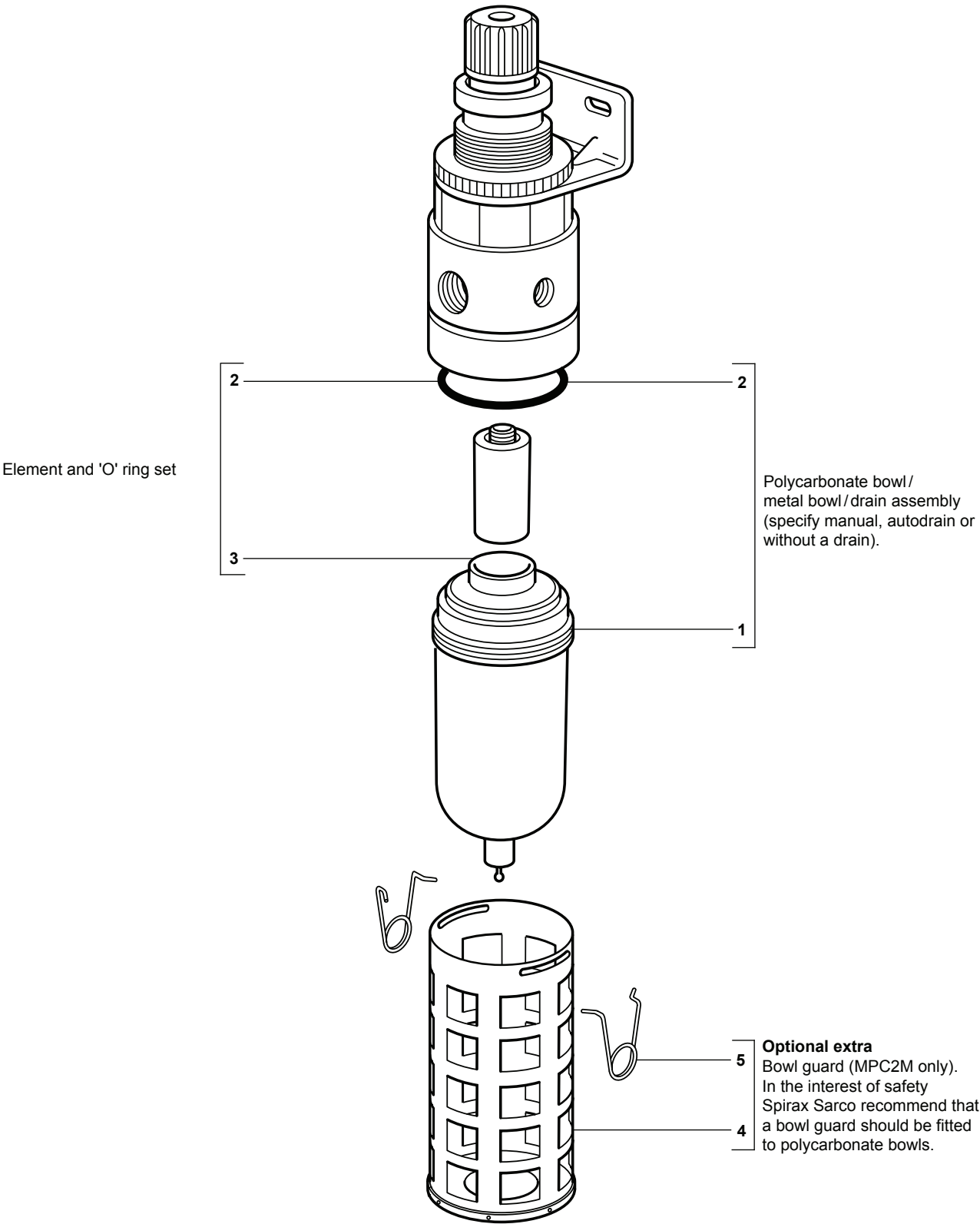
Available spares

Polycarbonate bowl / metal bowl / drain assembly (specify with or without drain)	1, 2
Element and 'O' ring set	2, 3
Bowl guard assembly (optional extra)	4, 5

How to order spares

Always order spares by using the description given in the column headed 'Available spares' and state the size and type of unit.

Example: 1 - Element and 'O' ring set for a ¼" MPC2M Monnier high efficiency compressed air filter / regulator.



spirax

sarco

IP2M, IP2AM and IP2DM

Monnier

International Compressed Air Filter/Regulators

TI-P504-17

CH Issue 2

Description

The IP_M range of Monnier international compressed air filter/regulators provide high quality compressed air with accurate pressure control for general purpose pneumatic systems.

Principal features:

- Internal and external black anodised finish.
- Compact combined filter/regulator.
- Shrouded whirl disc for efficient separation.
- Option of sight level on metal bowled units.
- 5 micron large surface area element.
- Good flow and regulation characteristics.
- For line, bracket or panel mounting.
- Easy fit stainless steel bowl guard available.

Available types:

IP2AM	Having a pilot operated automatic drain.
IP2DM	Having a semi-auto dump valve.
IP2M	Having a manual drain (metal bowl only).

Note: The IP2_M Monnier range are supplied self-relieving as standard (the non-relieving version is available on request).

Optional extras

For further technical information regarding the following options see page 2:

- Tamper-proof cap.
- Type 21 mounting bracket.
- Pressure gauges.
- Discharge tube adaptor - IP2AM only.
- Metal bowl.
- Bowl guard.

Sizes and pipe connections

1/4", 3/8" and 1/2" screwed BSP (BS 21-Rp).

Spring range (operating pressure range)

All regulators can be adjusted to zero pressure, or above the figures shown. The operating range is marked on the unit.

Standard spring	0.5 - 10 bar g
Optional spring	0.2 - 3.5 bar g

Note: The IP2_M Monnier range will be supplied with the standard spring unless an alternative option has been specified when placing an order.

Operating limits

Maximum working pressure	Polycarbonate bowl	10 bar g
	Metal bowl	17 bar g
Maximum working temperature	Polycarbonate bowl	50°C
	Metal bowl	80°C
	Metal bowl with sight level	70°C

Materials

No.	Part	Material
1	Body	Machined aluminium (anodised)
2	Valve	Brass rubber faced
3	Bowl	Polycarbonate or aluminium (anodised)
4	Element (5 µm)	Melamine impregnated cellulose
5	Diaphragm	Reinforced nitrile rubber



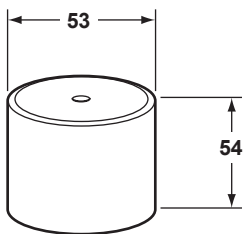
5.4

9

Optional extras

Tamper-proof cap
An aluminium tamper-proof cap can be fitted to prevent unauthorised pressure adjustment.

Dimensions (approximate) in mm

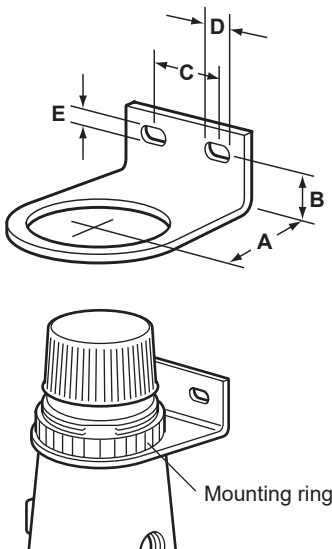


Type 21 mounting bracket
A plated mild steel bracket which can be attached to the filter/regulator by the plastic mounting ring supplied.
Note: An aluminium mounting ring can be supplied at extra cost, and must be specified, if required, on order placement.

Dimensions (approximate) in mm

A	B	C	D	E
44	19	32	12	6

If the regulator is to be panel mounted a hole is required in the panel 48 mm diameter, and the panel thickness must not exceed 8 mm.

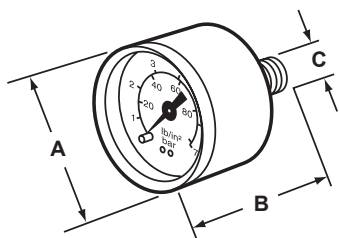


Pressure gauge
Available in two sizes, with 4 pressure ranges. The face is marked in both bar and psi. Please state, size and pressure range when placing an order.

Pressure ranges	0 to 2 bar	0 to 30 psi
	0 to 7 bar	0 to 100 psi
	0 to 11 bar	0 to 160 psi
	0 to 20 bar	0 to 300 psi (2" size only)

Dimensions (approximate) in mm

Size	A	B	C
1½"	40	47	R½"
2"	49	45	R½"

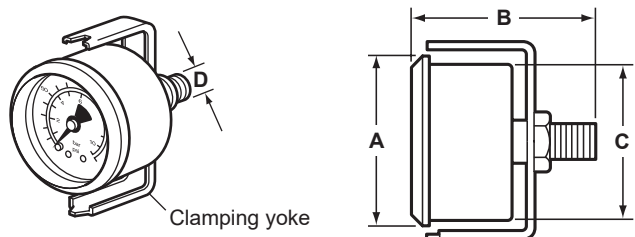


Pressure gauges for panel mounting
With chromium plated bezel available in two ranges, the face being marked in bar and psi as follows:-

Pressure ranges	0 to 2 bar	0 to 30 psi
	0 to 11 bar	0 to 160 psi

Dimensions (approximate) in mm

A	B	C	D
53	56	48	R½"



Discharge tube adaptor IP2AM only
An adaptor can be supplied for the auto-drain on the IP2AM models, to accept 8 mm O/D copper or plastic tube.



Metal bowl
with sight level



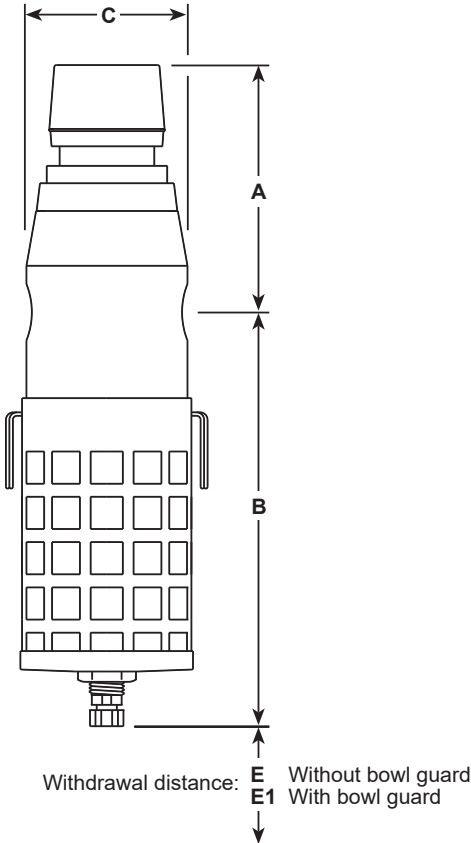
Bowl guard
In the interest of safety Spirax Sarco recommend that a bowl guard should be fitted to polycarbonate bowls - see the 'Warning' under 'Safety information, installation and maintenance' page 5.



Dimensions/weights (approximate) in mm and kg

Polycarbonate bowl

Unit	A	B	C	E	E1	Weights	
						IP_M	IP_M + bowl guard
IP2AM	95	165	64	39	82	0.730	0.808
IP2DM	95	165	64	39	79	0.730	0.808

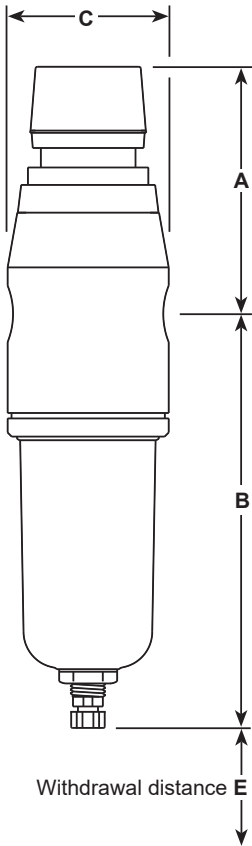


5.4

11

Metal bowl

Unit	A	B	C	E	Weight
IP2M	82	143	76	39	0.913
IP2AM	82	152	76	39	0.913
IP2DM	82	145	76	39	0.913

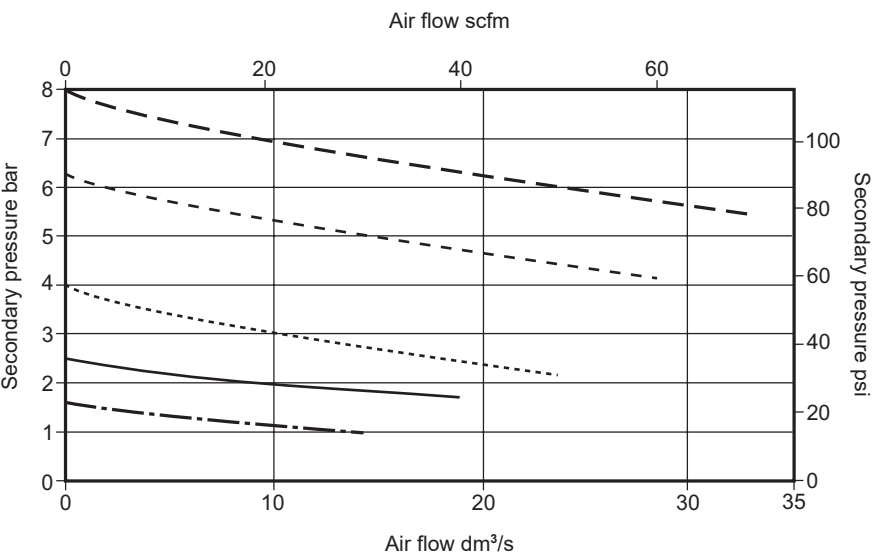


Compressed air products
Filter/regulators

Capacities
With primary pressure 10 bar and 5 µm element

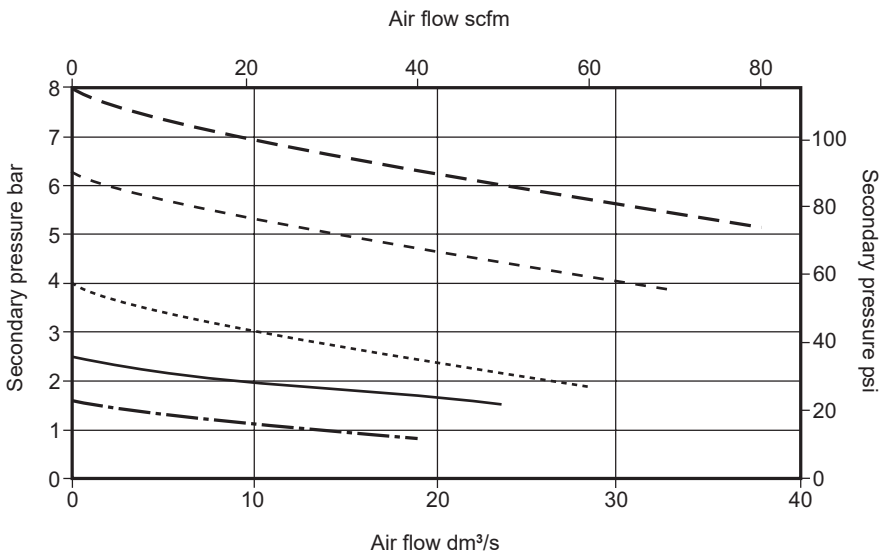
1/4"

- 1.6 bar g (23 psi g)
- 2.5 bar g (36 psi g)
- 4.0 bar g (58 psi g)
- 6.3 bar g (91 psi g)
- 8.0 bar g (116 psi g)



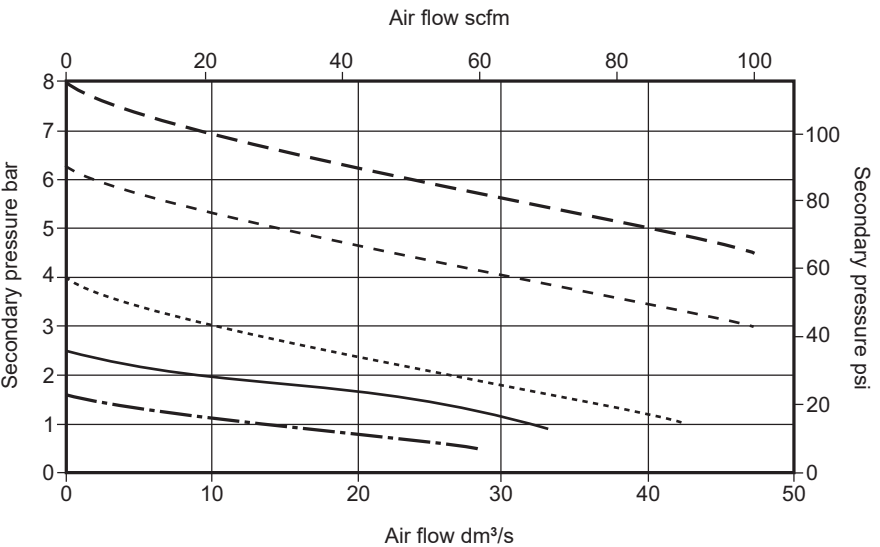
3/8"

- 1.6 bar g (23 psi g)
- 2.5 bar g (36 psi g)
- 4.0 bar g (58 psi g)
- 6.3 bar g (91 psi g)
- 8.0 bar g (116 psi g)



1/2"

- 1.6 bar g (23 psi g)
- 2.5 bar g (36 psi g)
- 4.0 bar g (58 psi g)
- 6.3 bar g (91 psi g)
- 8.0 bar g (116 psi g)



Principle of operation

With system pressure on, the regulator poppet valve assembly is in the closed position when the adjusting knob is turned fully counter clockwise (no spring load). By turning the adjusting knob clockwise, the diaphragm/piston moves downward allowing filtered air to flow in through the orifice created between the poppet assembly and seat.

Auto-drain - IP2AM

The Monnier internal auto-drain is a pilot operated unit. As the water level in the bowl rises, the float (13) lifts, allowing line pressure to act on a piston, which opens the main discharge valve. As the liquid level falls, the float closes and line pressure shuts the main valve. Under zero pressure conditions, the automatic drain will be in the open position, allowing any liquid to drain away.

Automatic dump valve - IP2DM

This is a spring loaded valve which will allow the filter/regulator to automatically drain when the pressure in the bowl drops below 0.06 bar (i.e. when air to the plant is shut off).

The units can also be drained manually by pushing the protruding valve stem sideways or upwards.

Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P504-18) supplied with the product.

Warning:

Polycarbonate bowls and sight levels on metal bowls can be attacked by phosphate ester fluids, solvents, paint thinners and carbon tetrachloride. These and similar substances should never be allowed to come into contact with the bowl. Certain compressor lubricating oils also contain additives harmful to polycarbonate and where there is any doubt we recommend, in the interests of safety that a metal bowl or bowl guard should be fitted.

Installation note:

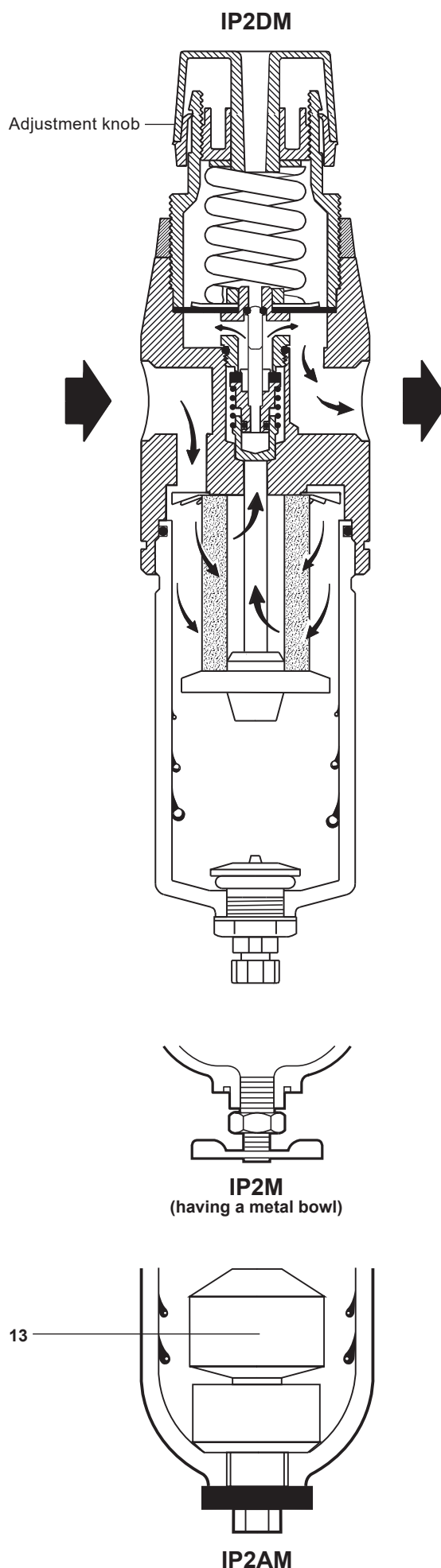
Fit into a horizontal pipeline, with the bowl vertically downwards, as close as possible to the equipment it is serving. Connect the unit so that the air flow is in the direction shown by the arrow cast on the body. A pressure gauge fitted to one of the ports is recommended (to show the secondary pressure). The port(s) not in use should be blanked off with the plugs supplied (P).

How to order

Example: 1 off IP2AM Monnier international compressed air filter /regulator having a female ½" screwed BSP (BS 21 - Rp) connection.

Note 1: Unless otherwise instructed, the filter / regulator will be supplied with a polycarbonate bowl, 0.5 to 10 bar control spring, 5 µm element and polycarbonate bowl as standard. If a metal bowl is required (with or without sight level) it must be clearly specified on the order. The IP2M manual drain is available with metal bowl only.

Note 2: If any optional extras are required, they must be clearly specified on the order.



5.4

13

Compressed air products
Filter/regulators

Spare parts

The spare parts available are detailed below. No other parts are supplied as spares.

Available spares

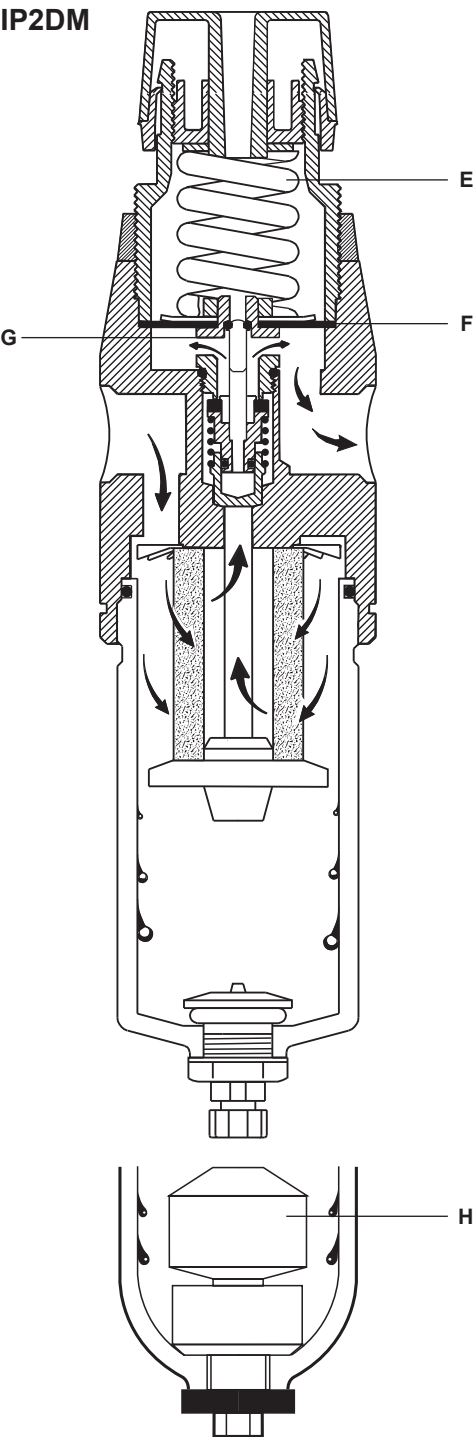
Pressure control spring set - State pressure range	E
Valve and diaphragm assembly	F, G
Polycarbonate bowl assembly including appropriate drain	A, B
Metal bowl (with or without sight level)	B, D
Element set (packet of 3 of each)	B, C, (IP2M, IP2AM and IP2DM only)
Auto-drain (IP2AM only)	H

How to order spares

Always order spares by using the description given in the column headed 'Available spares' and state the size and type of unit.

Example: 1 off Pressure control spring set (0.5 - 10 bar) for a ½" IP2M Monnier international compressed air filter/regulator.

IP2DM



Metal bowl with sight level
for IP2M, IP2AM and IP2DM

