

## MPC2 Spirax-Monnier High Efficiency Compressed Air Filter / Regulator Installation and Maintenance Instructions

### What is the MPC2 used for?

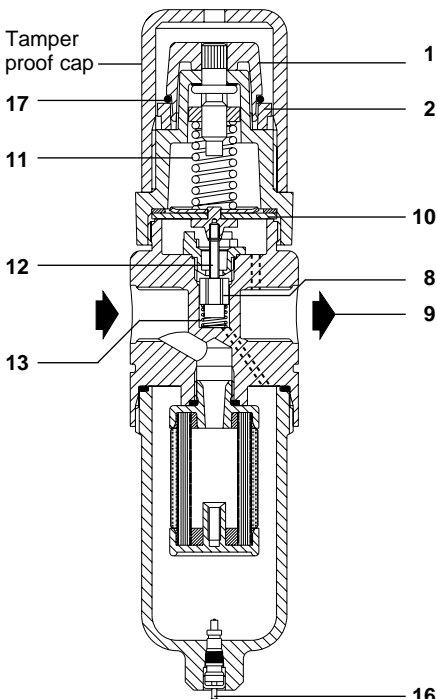
The MPC2 is used to provide very high quality compressed air.

There are an ever increasing number of 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.

### How efficient is the MPC2?

**Spirax-Monnier coalescing filters when tested to BS 3928 or the D.O.P. test, are more than 99.999% efficient.**

In the sodium flame test (BS 3928) the element is challenged by a cloud of salt particles of mass mean diameter of 0.6 micron. In the American D.O.P. test, a cloud of droplets of mass mean diameter 0.3 micron is used.



### How does the MPC2 work?

These units filter out solid contaminants and remove oil and water liquids and aerosols, by coalescing.

Contaminated air flows to the inside of the filter cartridge. The cartridge contains a labyrinth of micro fibres which will trap solid particles down to sub micron size. Fine liquid mist and aerosols on their journey through the depth of the element, will strike one or other of the fibres and will be retained on them by inter-molecular forces.

As the droplets migrate through the element due to the air flow, they will join (coalesce) with others, growing in size. A specially designed porous plastic sock forms the outer layer of the filter cartridge. This encourages further coalescing, so that the droplet mass is sufficient to allow it to gravitate to the sump of the filter from which they can be drained manually. The porous plastic sock also reduces the possibility of re-entrainment.

With the adjustment knob (1) rotated fully anticlockwise, the valve return spring (13) will keep the main valve (8) shut. Clockwise rotation of the adjustment knob will compress the main control spring (11), deflect the diaphragm assembly downwards (10), opening the main valve (8). As air flows to the downstream (9) side of the filter/regulator, the secondary pressure increases. The secondary pressure is sensed on the underside of the diaphragm. As the controlled pressure varies, so does the force on the underside of the diaphragm. When this force (proportional to the secondary pressure) equals the compression in the main control spring, the main valve will shut. Any fall in secondary pressure will cause the main valve to open sufficiently to meet the air flow requirements and maintain the set secondary pressure.

Any appreciable rise in the secondary pressure from its set value will cause the diaphragm and the push rod (12) to lift. This will allow air to escape through the centre of the push rod to atmosphere. When excess pressure has vented, the orifice in the push rod will reseal on the main valve.

Ensure that the bowl is regularly drained by means of the quick action drain valve (16).

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## General safety, installation and maintenance guidelines

### WARNING

As with all pressurised systems, do not attempt any installation or maintenance function if there is any pressure in the product or connected system.

### Spirax-Monnier

Spirax-Monnier compressed air products are of well proven and simple design, with high natural levels of designed safety built-in. However, used or installed incorrectly, their performance and that of the system they are protecting or controlling, may suffer. The information given in this document indicates the product limiting conditions, maintenance and installation requirements and any specific component disposal needs (see Table opposite).

### Note

Customers are reminded that under UK and EC Health, Safety and Environmental Law, when returning products to Spirax Sarco they must provide information on any hazards and the precautions to be taken due to contamination residues or mechanical damage which may present a health, safety or environmental risk. This information must be provided in writing including Health and Safety data sheets relating to any substances identified as hazardous.

### Installation and operation

1. Filters, filter/regulators, lubricators, flowmeters, separators and drain traps should be fitted in horizontal pipelines, with the bowls vertically downwards.
2. Regulators and ball valves can be installed in any position.
3. On pressure regulators and combined filter/regulators, a pressure gauge can be connected to one of the 1/8" ports. The gauge should be selected to cover the maximum pressure range of the main control spring. The gauge will indicate the downstream or controlled pressure.
4. Ensure that the control spring range for regulators and filter/regulators fully meets the pressure requirements of the system.
5. There are maximum operating pressures, and maximum operating and environmental temperatures for each product. These are shown in the Table opposite.
6. Adequate space should be provided around any product to allow easy access for routine servicing requirements.
7. Products fitted with a bowl (polycarbonate or metal ) should be adequately drained - manually or automatically - to reduce the potentially harmful effects of water carryover.
8. **WARNING** Polycarbonate bowls and sight domes, and sight levels fitted to metal bowls, may be attacked by phosphate ester based fluids, solvents, chemical cleaners, carbon tetrachloride, etc. These and other similar substances should never be allowed to come into contact with these product components. Certain compressor lubricating oils also contain additives harmful to these components. Where there is any doubt, we recommend, in the interests of safety, that bowl guards or metal bowls are fitted.
9. Local regulations may restrict the use of this product below the conditions quoted.
10. For more detailed information on any individual product, please ask for the appropriate Technical Information Sheet listed in the Table opposite.

## Maximum pressures / temperatures

Filters	Polycarbonate bowl		Metal bowl		Metal bowl with sight level		* Disposal	Technical Information Sheet
	bar	°C	bar	°C	bar	°C	Class	TI-
MF2	10	50	17	80	-	-	1 and 3	P050-05
IF2/D/A	10	50	17	80	17	70	1 and 2	P500-01
IC3/4/DA	10	50	17	80	17	70	1 and 2	P501-01
IXI	10	50	17	70	17	70	1 and 2	P057-01
SF3/A	-	-	17	80	17	70	1 and 3	P050-03

### Regulators

MR1/2/3	21 bar @ 70°C : Control ranges : 0.2 - 2, 0.3 - 4, 0.7 - 9 bar	1 and 3	P051-01
IRI	20 bar @ 70°C : Control ranges : 0.2 - 3.5, 0.5 - 10 bar	1 and 2	P058-01
SR2	21 bar @ 70°C : Control ranges : 1.3 - 17.0 bar	1 and 3	P570-01
SR3	21 bar @ 70°C : Control ranges : 0.2 - 4, 0.3 - 9 bar	1 and 3	P570-03

### Filter regulators

IP2/A/D	10	50	17	80	17	70	1 and 2	P510-01
	Ranges : 0.2 - 3.5, 0.5 - 10 bar							
MP2	10	50	17	80	-	-	1 and 3	P054-01
	Ranges : 0.2 - 2.0, 0.3 - 4.0, 0.7 - 9.0 bar							
MPC2	10	50	17	80	-	-	1 and 3	P054-04
	Ranges : 0.2 - 2.0, 0.3 - 4.0, 0.7 - 9.0 bar							

### Lubricators

ML3	10	50	17	80	-	-	1 and 3	P052-07
IL1	10	50	17	80	17	70	1 and 2	P059-01
SL3	-	-	17	80	17	70	1 and 3	P052-04

### Other products

IFM2	10	50	-	-	-	-	1 and 2	P580-01
S.M.S.	-	-	17	70	-	-	1 and 3	P050-17
All ball valves	All to 15 bar and 45°C (see performance graph on TI for full details)						1 and 4	P560-01
Dri-line	-	-	16	80	-	-	1 and 3	P050-07

#### \* Disposal classes

1. Some plastic and/or rubber components
2. Main body zinc - epoxy coated
3. Main body aluminium - epoxy coated
4. Brass and steel
5. Electronic components

## Important installation notes:

1. Coalescing filters should be installed as close as possible to the equipment they are protecting.
2. Do not exceed the maximum flowrate (for any given pressure) as shown on the graph (see TI-P054-05) or there is every chance that some of the coalesced liquids will be re-entrained and carried on downstream.
3. Do not overload the filter cartridge or there will be a reduction in its efficiency and/or life. On heavily contaminated systems, it is advisable to fit a conventional pneumatic filter (International or Miniature) immediately in front of the coalescing filter for maximum efficiency and life.

## Commissioning

### How to adjust the MPC2:

If a locking seal (17) is fitted, remove it to readjust the pressure as required. Lift the locking ring (2). Turn the adjustment knob (1) clockwise to increase the pressure. Depress the locking ring to lock.

**Note:** A metal tamper proof cap may be fitted over the adjustment housing. It is recommended that all adjustments are made under flow conditions. There will be a slight increase in set pressure when flow stops.

## Spare parts

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

### Available spares

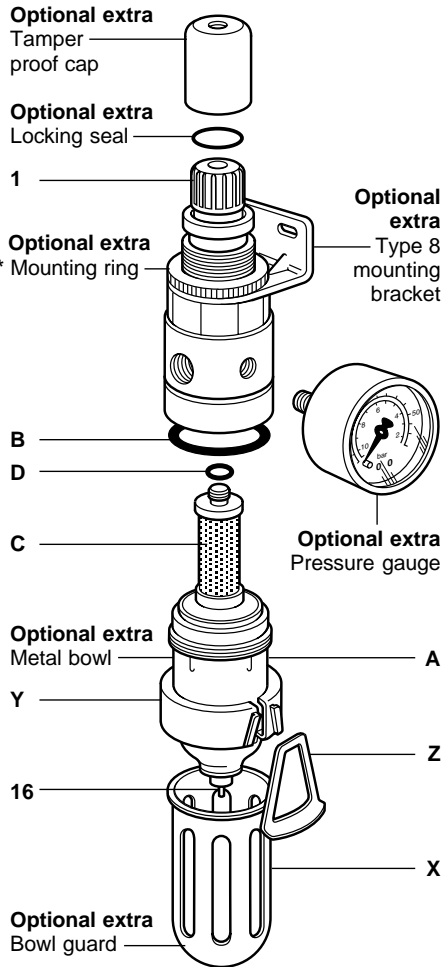
Polycarbonate bowl / metal bowl / drain assembly (specify with or without drain)	A, B
Element and 'O' ring set	B, C, D
* Bowl guard assembly	X, Y, Z

\* **Note:** In the interest of safety Spirax Sarco recommend that a bowl guard (an optional extra) should be fitted. See point 8 of 'Installation and operation'.

### How to order spares

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

**Example:** 1 off Element and 'O' ring set for 1/4" Spirax-Monnier MPC2 high filter compressed air filter/regulator.



For more detailed information regarding optional extras see TI-P054-05.

## How to service the filter

Shut off the main air supply. Remove the bowl guard if fitted. Release the pressure by turning the main control knob (1) fully anticlockwise, and depressing the drain valve (16). Remove the bowl and unscrew the element assembly. Clean the bowl using soap and water and dry with a clean lint free cloth. Reassemble in reverse order, ensuring that the element 'O' ring is fitted. The bowl should be firmly hand tightened.