



Cert. No. LRQ 0963008

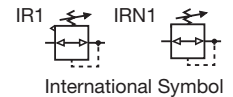
ISO 9001

spirax
sarco

IR1 and IRN1
Spirax-Monnier

International Compressed Air Regulators

TI-P058-01
CH Issue 4



Description

The IR1 and IRN1 Spirax-Monnier international compressed air regulators provide accurate pressure control for general purpose pneumatic systems.

Principal features:

- Good flow characteristics.
- Good regulation characteristics.
- Fast response.
- Dead tight shut-off on no-flow.
- For line, bracket or panel mounting.
- Internal and external high quality black epoxy finish.

Available types:

IR1 Self-relieving

IRN1 Non-relieving

Optional extras

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

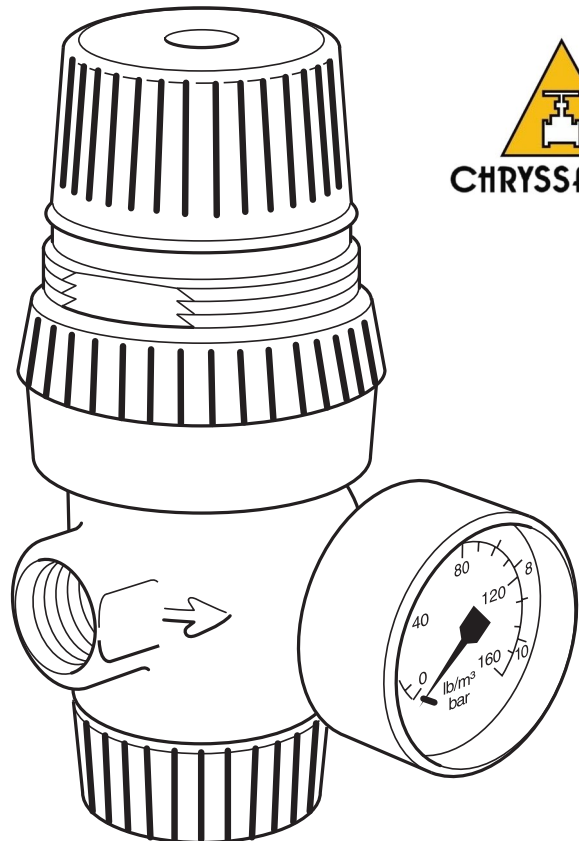
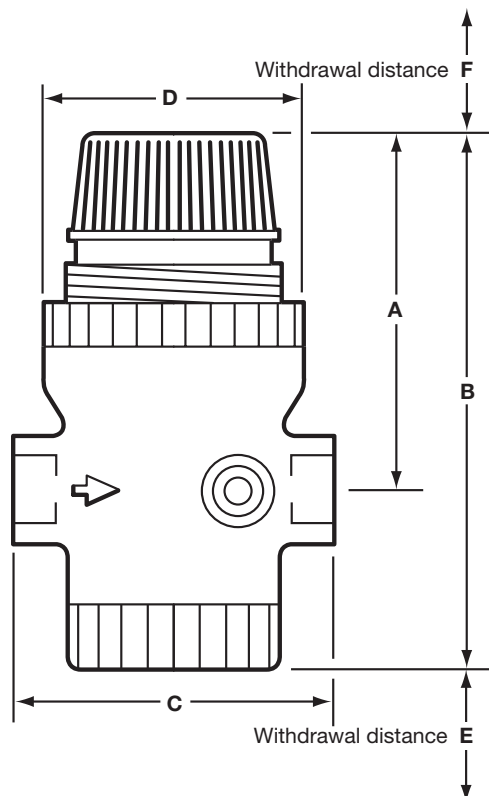
- Tamper-proof cap.
- Type 21 mounting bracket.
- Mounting ring - Aluminium.
- Pressure gauges.

Sizes and pipe connections

1/2" screwed BSP (BS 21-Rp) supplied with 1/4" and 3/8" BSP reducing bushes (1 x pair per size).

Dimensions / weight (approximate) in mm and kg

A	B	C	D	E	F	Weight
82	115	69	56	18	30	0.45



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 0.2 - 3.5 bar g

Optional spring 0.5 - 10 bar g

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

Operating spring limits

Maximum working pressure 20 bar g

Maximum working temperature 70°C

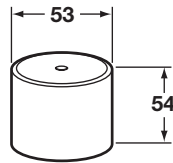
Materials

No.	Part	Material
1	Body	Zinc alloy - epoxy coated
2	Valve	Brass, rubber faced
3	Diaphragm	Reinforced nitrile rubber

Optional extras

Tamper-proof cap

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



Dimensions (approximate) in mm

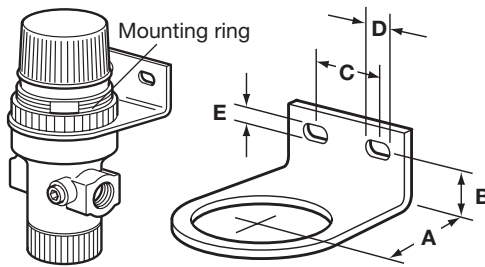
Type 21 mounting bracket

A zinc plated mild steel bracket can be attached to the regulator, using the plastic mounting ring supplied with the regulator. **Please note:** An aluminium mounting ring can be supplied, at extra cost, and must be specified at the time of order placement.

Dimensions (approximate) in millimetres

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.



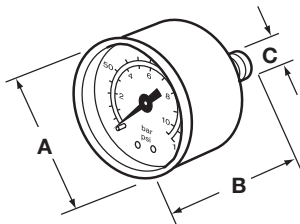
Pressure gauges

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 (50 mm size only)

Dimensions (approximate) in millimetres

Size	A	B	C	Size	A	B	C
40 mm	40	47	R1/8"	50 mm	49	45	R1/8"



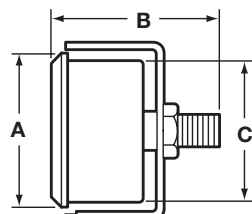
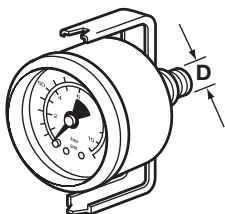
Pressure gauges for panel mounting

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

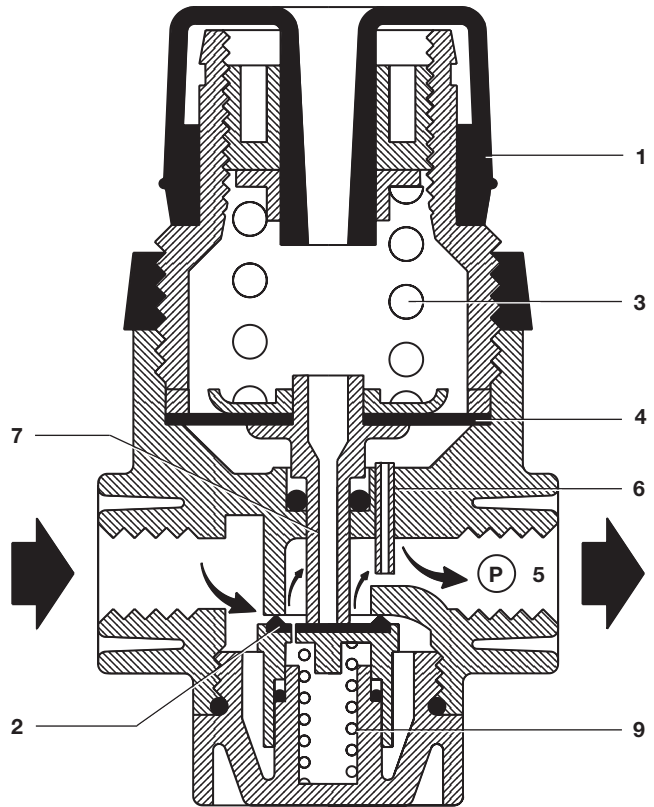
Pressure ranges	0 to 2 bar	0 to 30 psi
	0 to 7 bar	0 to 100 psi

Dimensions (approximate) in millimetres

A	B	C	D
53	56	48	R1/8"



How do they work



With adjustment knob (1) rotated fully anticlockwise, the valve return spring (9) will keep the main valve (2) shut. Clockwise rotation of the adjustment knob will compress the main pressure control spring (3), deflect the diaphragm (4) downwards, opening the main valve (2). As air flows to the downstream (5) side of the regulator, the secondary pressure increases. The secondary pressure is sensed by the aspirator (6) and transmitted to 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 the secondary pressure will cause the main valve to open sufficiently to meet the air flow requirements and accurately maintain the set secondary pressure.

On self-relieving models any appreciable rise in the secondary pressure from its set value will cause the diaphragm and the pushrod (7) to lift. This will allow air to escape through the centre of the pushrod to atmosphere. When excess pressure has been vented the orifice in the pushrod will reseat on the main valve.

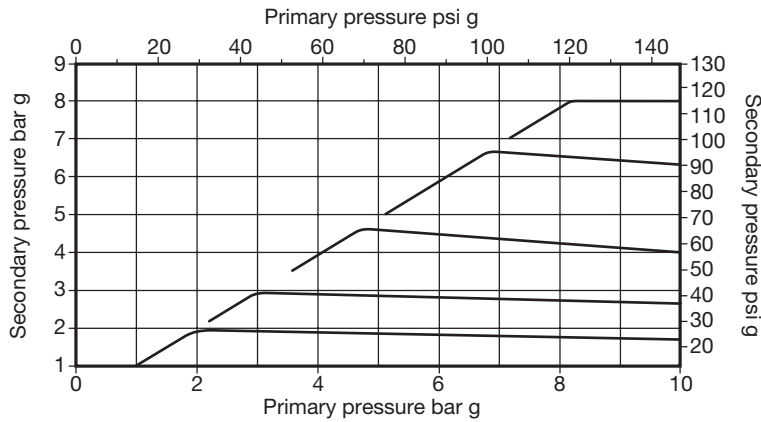


Capacities

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

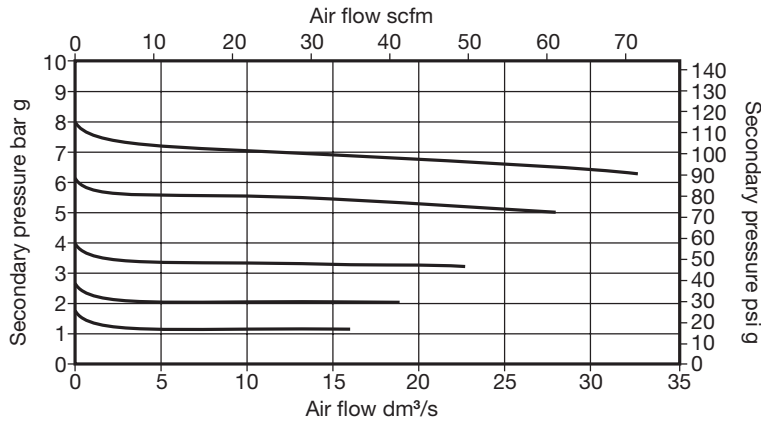
Performance selection (with primary pressure 10 bar)

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.

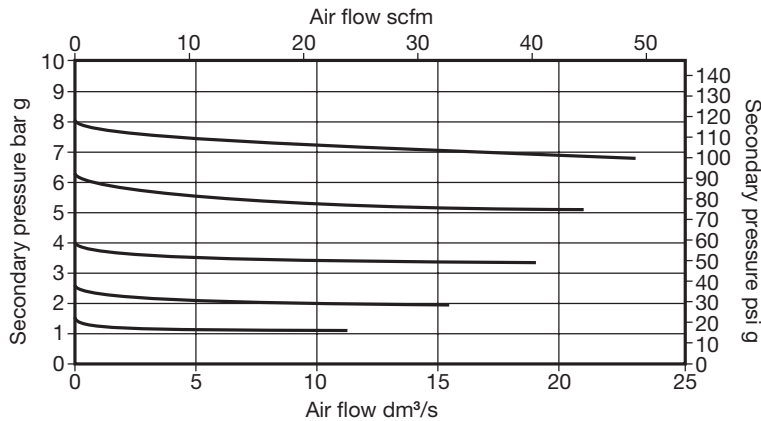


Regulation

**Standard
1/2" connection**



**With 1/4" and
3/8" reducing bushes fitted**



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-P058-05) supplied with the product.

Installation note:

Fit into a horizontal pipeline with the air flow in the direction of the arrow, and bowl vertically downwards. A Spirax-Monnier MF2 filter should be fitted upstream to prevent any contaminants reaching the regulator it is recommended that a pressure gauge is fitted to one of the ports to display the secondary pressure. The port (s) not in use should be blanked off with the plugs supplied - see (P) on the spares drawing on page 4.

How to order

Example: 1 off Spirax-Monnier 1/2" screwed BSP IR1 self-relieving international compressed air regulator having a 0.5 to 10 bar spring assembly. Accessories must be specified separately.

Note: The regulator will be supplied with a 0.5 to 10 bar spring assembly as standard. A 0.2 to 3.5 bar spring and/or non-relieving assembly must be specified.

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)	O, E, F
Valve and diaphragm assembly	G, H, J, K, L, M, N

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 g) for a 1/2" IR1 Spirax-Monnier international compressed air regulator.

