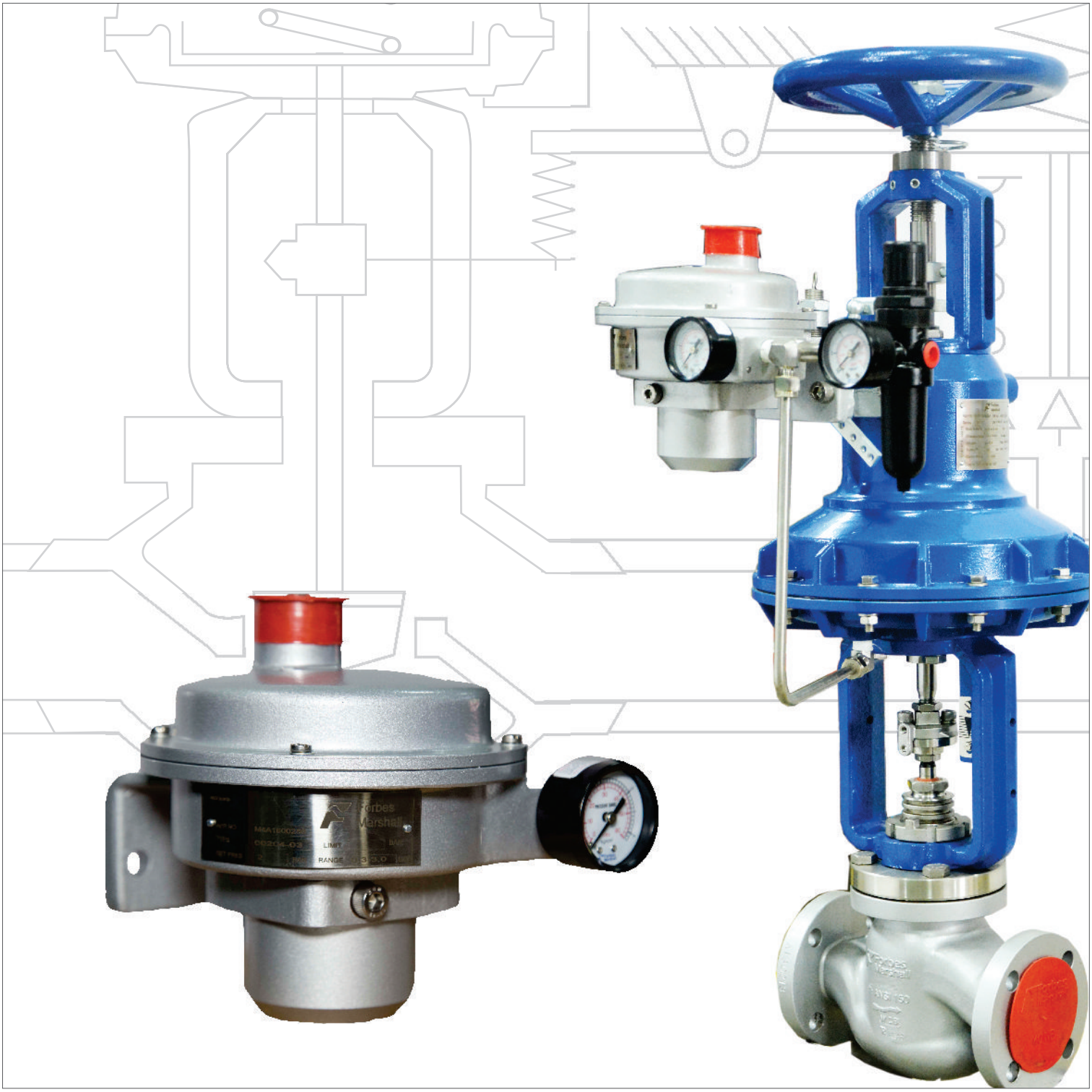
# FM Control Valve with Pressure Regulator

Stand alone pressure control system



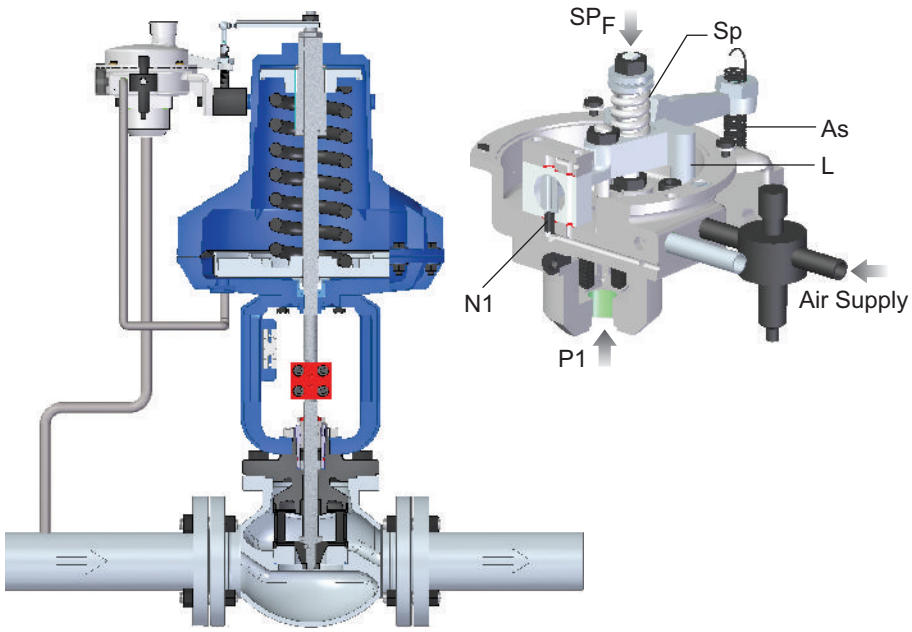
FORBES MARSHALL

# Forbes Marshall Control Valve with Pressure Regulator

Our pressure regulating system comprises of a pressure sensing chamber and a pneumatic proportional controller duly mounted on the control valve actuator itself. This arrangement comes with a locally adjustable setpoint, inbuilt supply air restrictor and output damping throttle. Action reversal is possible without any additional components.

FM Control valve with pressure regulator senses upstream or downstream pressure. It control pressure without having the need for elaborate pressure control loop consisting of positioner, I2P converter, Pressure/Position transmitter and sensors and this can be used for different applications like steam, oil and gas. In conventional pressure control system positioner is required with control valve; this unit eliminates positioner and thereby saving extra expenditure on control instruments, cables, tray and there is no supervision required. It is mostly preferred for critical applications like pressure control where multiple level of redundancy is required.

This system offers the advantage of steady inlet and outlet pressure control throughout the entire operational range. FM pneumatic actuators are field reversible and enables the choice of safety function for control valve both option of spring to open or spring to close are available.




**Pressure regulator mounted on the FM Control Valve is extensively used for upstream and downstream, pressure control applications.**

## Applications

- Pressure controller for steam atomizing, overflow controller for fuel oil.
- Industrial power stations.
- For rolling mill stations as bearing pressure controller.

## Mounting

The pressure regulator is simple pressure controller for direct mounting on control valve and direct impulse connection for varying pressure and can be used for control of pressure for both upstream and downstream application.

## Operation

Pressure Control Regulator

Pressure to be controlled ‘P1’ which is acting on the bellow is compared to a set point spring ‘Sp’. Any change in P1 alters the pressure in bellow chamber which moves the lever ‘L’ upwards. Nozzle ‘N1’ is further opened, which will decrease air pressure ‘P’ in diaphragm chamber, actuator spring closes the control valve and pressure of the medium reaches to its set point.

Any alterations in lift is fed back to the controller via the adjustable spring ‘S’. Pressure regulator is field reversible as per required applications.

**Features**

- Saves installation cost : regulator comes pre-assembled on the valve
- Saves loop cost: eliminates the need of separate sensor, transmitter, I/P, controller and positioner
- Negligible maintenance
- Maximum air supply pressure is 3 bar g (43 psig)
- Minimum recommended distance of sensing point is 1.5 mtrs (5 feet)
- High rangeability upto 40:1
- Versatile range of set pressures from 0.15 to 80 bar g (2.2 to 1160 psig)
- Suitable for use with all characteristics of FM control valve.
- Emergency handwheel for manual operation.
- Can be mounted in any orientation on the pipeline.

**Technical Information**

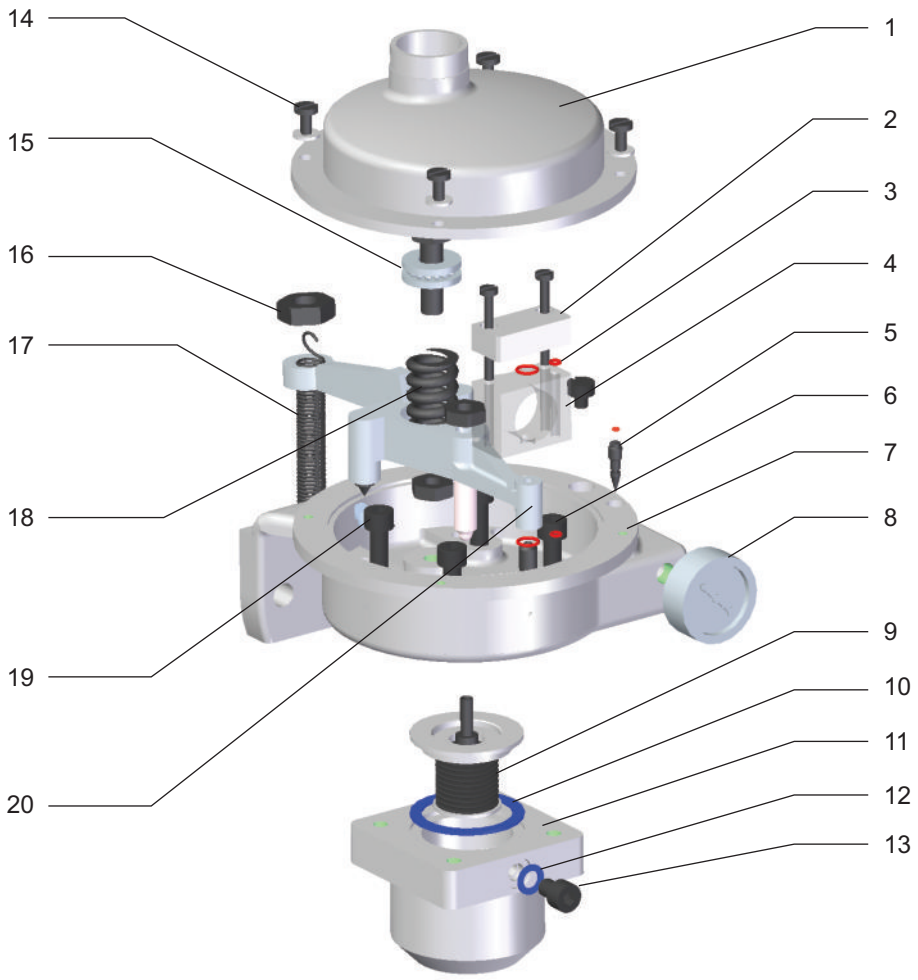
| | | |
|---|---|---|
| Bellows | : | Stainless Steel |
| Feedback Spring | : | Stainless Steel |
| Housing | : | Aluminum |
| Pressure Chamber | : | Carbon Steel |
| Supply Air Pressure | : | 1.2 to 3 bar (17.4 to 43.5 psi) |
| Sensitivity | : | < 0.02% of Set Pressure |
| Hysterisis | : | <1% of Set Pressure |
| Air Consumption | : | 0.3 $Nm^3$ / hr (10.6 Scfh) |
| Design standard | : | ANSI B16.34 |
| F/F Distance | : | ANSI B16.10 |
| Leakage Class | : | ANSI B16.104 FCI70.2 |

**Notes**

- For control valve dimensions and Kv (Cv) values refer FM control valve catalog.
- For use with Forbes Marshall SSP series actuators only.

| Sr. No. | Measuring Ranges (bar g) | Type Bellows | Proportional Band | Bellows Dia (mm) |
|---|---|---|---|---|
| 1 | 0.15 to 0.9 bar (2.2 to 13 psig) | 00203-03 | 0.1 to 0.15 | 50 (2 inch) |
| 2 | 0.6 to 3 bar (8.7 to 43.5 psig) | 00204-03 | 0.15 to 0.25 | 50 (2 inch) |
| 3 | 0.6 to 3 bar (8.7 to 43.5 psig) | 00203-05 | 0.5 to 0.6 | 28 (1.1 inch) |
| 4 | 2 to 9 bar (29 to 130.5 psig) | 00204-05 | 0.6 to 0.8 | 28 (1.1 inch) |
| 5 | 5 to 15 bar (72.5 to 217.5 psig) | 00205-05 | 1.1 to 1.4 | 28 (1.1 inch) |
| 6 | 8 to 35 bar (116 to 507.6 psig) | 00204-08 | 5 to 6.5 | 15 (0.5 inch) |
| 7 | 20 to 60 bar (290 to 870 psig) | 00205-08 | 7 to 8.5 | 15 (0.5 inch) |
| 8 | 40 to 80 bar (580 to 1160 psig) | 00206-08 | 8.5 to 10 | 15 (0.5 inch) |

## Exploded View




## Part List and Spares

| | Sr. No. | Part Name |
|---|---|---|
| | 1 | Cover |
| * | 2 | Traverse Head |
| * | 3 | O Ring |
| * | 4 | Traverse |
| * | 5 | Damping Throttle |
| * | 6 | O Ring |
| | 7 | Housing |
| | 8 | Pressure Gauge |
| * | 9 | Impulse Bellow |
| * | 10 | Gasket |

| | Sr. No. | Part Name |
|---|---|---|
| * | 11 | Impulse Chamber |
| * | 12 | O Ring |
| * | 13 | Air Venting Screw |
| | 14 | Cyl. Screw |
| * | 15 | Ball Bearing |
| | 16 | Nut |
| * | 17 | Feed Back Spring |
| * | 18 | Set Point Spring |
| | 19 | Cyl. Screw |
| * | 20 | Flapper Lever |

* Available As Spare

FORBES MARSHALL

Forbes Marshall
Krohne Marshall
Forbes Marshall Arca
Codel International
Forbes Solar
Forbes Vyncke
Forbes Marshall Steam Systems

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