



Multistage Ratio Valve

A Multistage Ratio Valve (MRV) is a pressure reducing valve whose outlet pressure is a fixed ratio of the inlet pressure. Because it has many internal stages it can reduce the pressure over larger ratios than is possible in one or two single-stage valves in series.



GENERAL DESCRIPTION

The heart of the valve is a series of paired poppet-seat sets. Up to eight poppet faces move upwards together on a spindle to open the flow passage, or move downwards together to seal on the mating seat faces.

The valve senses the higher upstream pressure on a fixed area. A piston on the top of the valve senses the downstream pressure and pushes the multi-poppet towards the mating seats. The upward and downward forces balance ensuring that the valve maintains a fixed ratio determined by the geometrical sizes.

On top of the downstream pressure sensing assembly, an adjustable spring arrangement allows a small adjustment range of the ratio.

FEATURES

- Fast reacting, inherently stable with no hunting tendency. Downstream pressure is determined by the upstream pressure and is not dependent on the characteristics of the downstream system.
- Small adjustment of ratio possible with top cap mounted spring adjuster.
- Capable of operating at very high pressure ratios (e.g. 14 or 20). Even higher ratios are possible if used in conjunction with a dissipator.
- Constant ratio with varying flow, resulting in a stable constant downstream pressure for a fixed inlet pressure.
- Cavitation free operation.
- Cast steel valve body rated up to 25MPa.
- Available in sizes from 50 to 300NB with any standard of hubs or flanges fitted.
- Valves are designed to operate on mine water

TECHNICAL SPECIFICATION

Materials of construction

| | |
|--------------------|--|
| Valve body - | Cast steel-ASTM A216 grade WCC (equiv BS 3100 grade A4) |
| Flanges - | Wrought carbon steel--AISI A105 or as specified |
| Hubs - | As per body |
| Seals - | Ultra-high molecular weight polyethylene polymer |
| O-rings Nitrile - | 70 Shore hardness |
| Spindle guides - | Bronze-ASTM B505C83600 (equiv to SABS 200D or BS 1400 LG2) |
| Guide pin etc - | AISI 304 |
| Seats & poppet's - | AISI 431 hardened & ground |

Ratio valves generally require a small flow (a few percent of the maximum flow) to control pressure and are generally not tight shut-off valves. For this reason a pressure relief valve is always required to protect low-pressure piping downstream.

Corrosion protection & finishes

| | |
|---|--------------------------|
| Externally painted | Standard |
| Hot dip galvanized | As requested by customer |
| H/dip galvanized and externally painted | As requested by customer |

The number of stages and ratio are determined for each application.



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