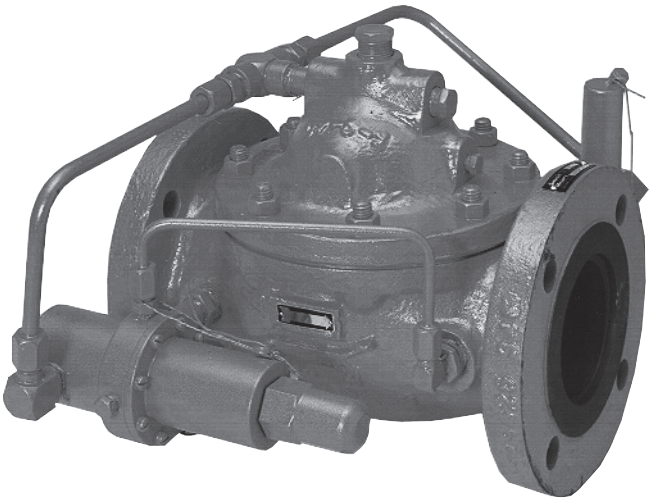
Pressure-Limiting Valve 200-64A

Bulletin SS03016 Issue/Rev. 0.1 (5/13)

The **Smith Meter® Model 200-64A Valve** is a hydraulically-operated, diaphragm-actuated, globe-pattern, automatic pressure reducing control valve. It is designed to provide a steady downstream pressure, regardless of fluctuations in the system upstream pressures.



Features

- **Field-adjustable –** adaptable to customer requirements.
- **Automatic operation –** for worry-free service.
- **Simple construction –** reduces maintenance downtime.
- **Versatile –** suitable for horizontal or vertical applications and may be combined with other Smith Meter® pilots to provide multiple control functions.

Principle of Operation

The Smith Meter® Model 200-64A regulates system pressure by sensing the downstream pressure at the outlet side of the valve with an integral sense line.

With the system discharge or loading valve closed, the pressure throughout the 200-64A pilot loop is balanced and the main valve is held closed by the spring in its cover chamber. The 64A Pressure Control Pilot, located in the upstream side of the pilot loop, is held closed by the spring in its cover chamber, blocking the flow path through the loop from the upstream side of the valve to the main valve cover chamber.

As flow through the system begins, upstream pressure builds up beneath the main valve diaphragm, eventually overcoming the spring pressure holding the valve closed. The main valve will open when the differential pressure across the diaphragm exceeds three to five psi. The main valve opening speed is controlled by the needle valve installed in the downstream side of the pilot loop. The 64A pilot remains closed as a result of the combined force of the upstream system pressure and the pilot spring (see Figure 1).

The 64A pilot continuously monitors the pressure downstream of the valve by means of the sense line integrated into the pilot loop. As the downstream pressure increases, pressure increases beneath the pilot diaphragm. As that pressure approaches the predetermined pressure setting of the 64A, the force of the spring holding the pilot closed is overcome, and the pilot is allowed to partially open. This action permits product to bleed through the pilot seat orifice into the main valve cover chamber, increasing the pressure in the chamber and partially closing or “throttling” the valve (see Figure 2).

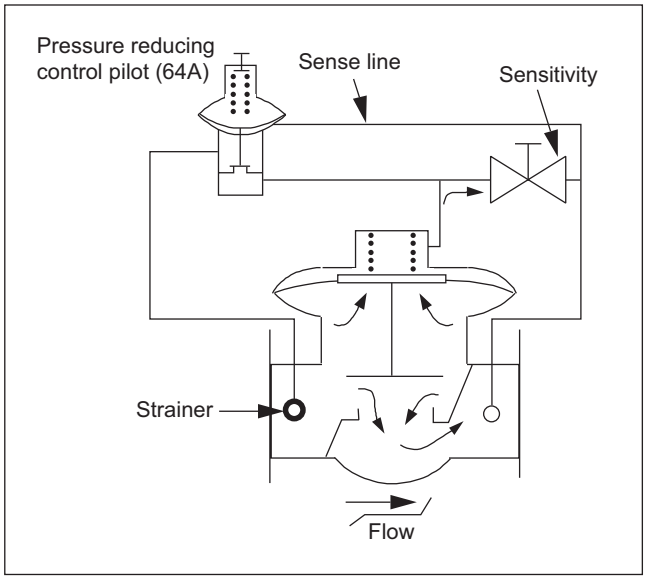


Figure 1 – Model 200-64A (Full Open)

The partial closing of the 200-64A valve limits product flow through the valve and reduces the downstream system pressure. An excessive reduction in downstream pressure due to changes in the demands of the system will automatically be sensed by the 64A pilot and it will, in turn, allow an increase in product flow by closing or partially closing the flow path feeding the main valve cover chamber permitting the main valve to operate sufficiently to satisfy those demands.

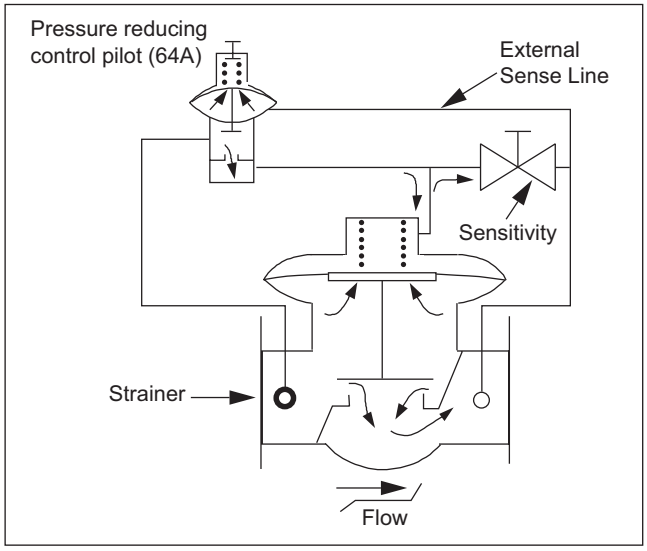


Figure 2 – Model 200-64A (Throttling)

Applications

The Smith Meter® Model 200-64A is a modulating control valve that can be used in most non-dead-end service system designs where protection of downstream equipment from excessive pump pressure is required.

The control range of the Model 200-64A is advantageous for installations where pressure loss is a primary concern since it creates a low pressure drop while in the modulating mode. This is a result of the sensitivity (closing speed) needle valve being installed in the downstream side of the 200-64A pilot loop.

The control range of the Model 200-64A is limited to flow rates above 5% of the nominal maximum flow.

Additional control functions can be added to the 200-64A pressure-reducing control valve. Included are solenoid block (Model 30A), maximum rate-of-flow control (Model 40A), back-pressure control (Model 60A) and check and thermal relief (Model 80B/07).

Specifications

Nominal Flow Ratings

	Flow		
Size	**USGPM**	**L/min**	**Cv+**
2"	130	492	50
3"	420	1,600	133
4"	600	2,250	204
6"	1,000	3,750	436

\+ *Pressure Drop: DP (psi) = Sp. Gr.* $\left(\frac{Q(USGPM)}{Cv}\right)^2$

Maximum Product Viscosity

200 SSU (40 mPa•s). Above 200 SSU, consult factory.
1 mPa•s = 1 cP.

Pressure Rating

Class 150 ANSI, 285 psi (19.6 bar).
Class 300 ANSI, 300 psi (20.7 bar).
At 100°F (37.8°C), derated per ASME B16.5.

Materials Of Construction

Component	Body	Internals	Seals
Model 200	Carbon Steel	Stainless Steel, Carbon Steel, Ductile Iron	Buna-N or Viton
09SC Strainer	Carbon Steel	304 Stainless Steel	–
13 Needle Valve	Carbon Steel	Carbon Steel	Viton O-ring w/PTFE[1] Backup
64A	Carbon Steel	300 Stainless Steel, Carbon Steel	VitoN (Std.), Buna

Temperature Range

Seal Material		Temperature Range
Diaphragm Valves	**Pilots**	
Buna-N +	Viton +	0°F to 160°F
Viton	Viton +	10°F to 350°F

\+ *Standard; for other elastomers, consult factory.*

Weight

Model	Size	Weight – lb (kg)
200-64A	2" 3" 4" 6"	48 (22) 85 (39) 138 (63) 260 (118)

1 Polytetrafluoroethylene (PTFE).

Ordering Information

Operating Conditions	Liquid – name and sp. gr., or API gravity, temperature range*, viscosity range*, maximum working pressure, and pressure settings.
Seals	Buna-N, Viton

** Minimum, normal, and maximum.*

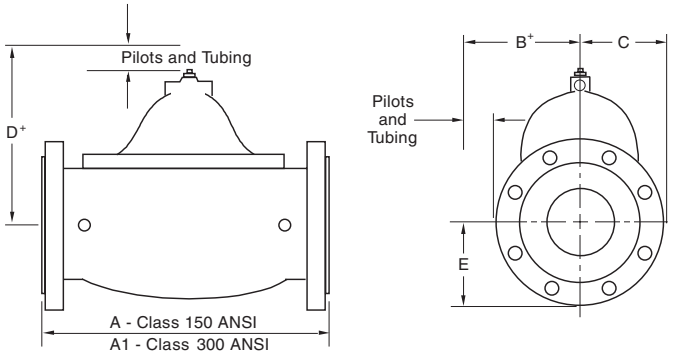
Dimensions

Inches (mm)

Model	Size	A Class 150	A1 Class 300	B+	C	D+	E
200-64A	2"	8.0 (203)	8.5 (216)	8.0 (203)	4.0 (102)	7.5 (140)	3.0 (76)
	3"	11.0 (279)	11.8 (299)	9.5 (241)	4.0 (102)	9.5 (241)	4.1 (105)
	4"	13.5 (343)	14.2 (362)	9.5 (241)	4.9 (124)	9.5 (241)	4.5 (114)
	6"	17.0 (432)	17.9 (454)	11.0 (279)	6.6 (168)	12.5 (318)	5.5 (140)

Note: *Dimensions – Inches to the nearest tenth (millimetres to the nearest whole mm), each independently dimensioned from respective engineering drawings.*

+ Pilots and tubing will be within these dimensions.



Revisions included in SS03016 issue/rev. 0.1 (5/13):
Limited status removed.
Page 2: Specifications: 8" removed from Nominal Flow Ratings. Weight: 8" removed.
Page 3: 8" removed from Dimensions.
Editorial Change: 11/13: Elastomer reference was changed to PTFE.
March 2019 – Updated branding and contact information.

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