Control Valves



— in line alve co ltd —

Introduction

Globe and Angle Body Control Valves

In Line Valve provides Solutions to Flow Control

In Line Valve Globe Control Valves use the variable area generated between the plug and seat to control fluid flow.

With a comprehensive range of options for actuation and control these valves ae utilised in many applications for both pressure and flow control.

Designed in accordance with ANSI B16-34. Most are single seated, (Pressure balanced/ unbalanced) and are preferred for tight shut – off, positioning accuracy, high rangeablity and simplified maintenance.

In Line Valve globe control valves satisfy the majority of control applications throughout the process and power industries. finding applications in Air, Steam, Water, Gas, Chemical and hydrocarbon Services.



2" Control Valve with Direct acting actuator, positioner and airset

- in line Δ alve co Itd -





Control Valve with Direct acting actuator

Control Valve with Reverse acting actuator



Specifications

Valve Sizes	:	15 to 450 mm (1/2" to 18")			
Rating	:	ANSI 150 to 2500 and Equivalents to BS10, DIN, IS, JIS, etc.			
Connections	:	Flanged, Screwed, Butt Weld, Socket weld.			
Body Materials	:	Carbon Steels, Stainless Steel, Duplex Stainless Stee Monel, Alloy20, Hastelloy B/C, PP, Teflon etc.			
Bonnet Types	:	Standard upto -20 °C to 225 °C Normalizing (Finned) between 225 °C to 500 °C Extended cold service -20 °C to -200 °C Extended Bellowseal.			
Trim Forms	: : : :	Top Guided Contoured. Splined Micro Flow. V-Ported (Balanced / Unbalanced) Low Noise (LN) Multistage concentric cage Multistage disc stack trim			
Trim Materials	:	Stainless Steel, Alloy20, Monel, Hastelloy B/C, Stellite (Alloy 6).			
Flow Characteristic	s:	Equal Percentage, Linear and Quick Opening			
Seat Leakage	:	Class III, IV, V and VI (as per ANSI 16.104) Metal to Metal Seating Class IV Metal to Soft Seating - Bubble tight (Zero Leakage.)			
Gland Packing	:	Grafoil / PTFE V Rings			
Actuator Types :		Pneumatic Diaphragm or Piston, Hydraulic, Electrohydraulic Electric Manual Handwheel			
Actuator Forms	:	Direct / Reverse Acting			
Diaphragm Material:		Nitrile / Neoprene			
Spring Range	:	3-15 PSIG (0.2 - 1.0 Kg/cm ² g) 6-30 PSIG (0.4 - 2.0 Kg/cm ² g)			
Air Supply	:	20-35 PSIG (1.4 - 2.5 Kg/cm ² g)			
Air Connection	:	1/4", 3/8", 1/2" NPT			
Options	:	Top or Side Mounted Handwheel,			
Accessories	:	Valve Positioner, I/P Converter,Airset, Solenoid Valve,Air Lock, Volume Booster, Limit Switches,Proximity Switches. Removeable Blind Heads, Steam Jacketing,etc.			

- in line alve co ltd -

Design features

Design features

- >> High flow capacity and rangeability.
- >> Large variety of trim design.
- >> Top opening for easy trim inspection without disturbing insulation or piping connections.
- >> Positive guiding for correct trim alignment under all operating conditions.
- >> Tight closing for reliable control even when changes in pressure / temperature are sudden and extreme.
- >> Bolts located outside of the piping stress area to eliminate gasket crush reducing downtime.
- >> Wide selection of actuators and positioners to meet most system requirement.
- >> Rigorously proven on-site performance.

Quality and performance

- >> Produced with Quality Systems accredited to ISO 9001
- >> Full material certification available for all major component parts.
- >> Full guarantee on design and performance.
- >> All testing performed to the requirements of ANSI B16.34





Multistage Trims

Severe service flow control may require for pressure to be dropped over a number of stages thereby dissipating energy, controlling noise generation or eliminating cavitation.

In Line Valve provide control valves and chokes that use either 'disc stack' type trims such as this model ED trim, or 'concentric cage' type trims such as this model LN trim.

LN trims are available with 1, 2 or 3 stages of pressure reduction via multiple channels and flow cages.

ED trims are generally used in applications requiring large numbers of pressure reduction stages such as water dumping and high pressure gas blowdown.







Trims

Contoured trim (Metal to Metal or Soft Seated)

The contoured design is the standard trim option available, suitable for modulating or on/off applications, satisfying a large percentage of process control requirements







V Ported Trim - Metal to Metal Seat

Like contoured trim, V-ported cage trim is also a standard trim option available for modulating or on/off applications, and satisfying a large percenteage of process control requirements.

Plug Options: Balanced plug with carbon or glass filled teflon seal ring. Unbalanced plug.

Low Noise Trim (Metal to Metal)

The low noise trim "LN" designs has been developed for high pressure drop applications to prevent the on set of cavitations and reduce the noise level generated as a result of both liquid and gas / vapour flow.

Plug Options

Balanced plug with carbon or glass filled teflon seal ring. or Unbalanced plug.



LN2 -Double stage Low Noise



LN3 - Triple stage Low Noise

LN4 - Four stage Low Noise

Micro Spline Trim

(Metal to Metal or Soft Seated)

This trim has very high rangeablity, designed to provide control of minute flow rates. Recommended for linear flow characteristics







LN1 -Single stage Low Noise

Application limits of series 110 control valves

Turndown ratios for series 110 control valves

Trim	Size	Standard Rangeability		
		Contoured	Low Noise Range	
inch	mm			
1/2 and 3/4	15 and 20	40:1	35:1	
1 to 3	25 to 80	55:1	50:1	
4 to 18	100 to 450	70:1	70:1	
Microspline trims		Up to 400:1		

Maximum valve body velocity for liquid flows

Valve	e Size	Valve Body Material		
		Carbon Steel	Alloy Steel	
inch	mm	m/sec	m/sec	
1/2 to 2	15 and 20	12.5	14.0	
3 to 6	25 to 80	10.4	10.4	
8 to 14	100 to 450	8.0	8.0	
16 and 18	400 and 450	7.0	7.0	

Maximum valve body velocity for gas / vapour flows

Valve Size		Maximum Inlet Velocity	Maximum Outlet Velocity	Maximum Outlet Mach No. for Predicted Noise Level		
inch	mm	m/sec	m/sec	>95 dBA	<95 dBA	<85 dBA
1/2 to 2	15 to 50	105	253	0.65	0.5	0.3
3 and 4	80 and 100	90	253	0.65	0.5	0.3
6 and 8	150 and 200	85	253	0.65	0.5	0.3
10 to 14	250 to 350	68	253	0.65	0.5	0.3
16 and 18	400 and 450	60	253	0.65	0.5	0.3
LN- all ratings 1 to 18	15 to 450	144	253	0.65	0.5	0.3



LN1 Trims are typically supplied with linear or equal percent flow profile





Trim sizing - series 110 control valves

Valve	e Size	Trim	Size	Contoured	1 & V Port	Low Noise
inch	mm	inch	mm	eq % & linear	quick opening	eq % & linear
1-1/2	40	1-1/2 1-1/4 1	40 32 25	30 20 13	35 20 13	25 15 8
2	50	2 1-3/4 1-1/2	50 45 40	50 - 30	55 - 35	45 35 25
2-1/2	65	2-1/2 2 1-3/4	65 50 40	90 50 -	95 55 -	55 45 35
3	80	3 2-1/2 2	80 65 50	118 90 50	125 95 55	95 55 45
4	100	4 3-1/2 3	100 90 80	220 - 118	225 - 125	180 130 95
6	150	6 5 4	150 125 100	450 320 220	470 335 225	350 250 180
8	200	8 7 6	200 175 150	625 - 450	700 - 470	550 470 350
10	250	10 9 8	250 225 200	925 - 625	930 - 550	800 675 550
12	300	12 11 10	300 275 250	1350 - 925	1420 - 990	1150 1020 800
14	350	14 13	350 325	1900 1400	2250 1650	1650 1550
16	400	16 15	400 380	2400 1850	3000 2250	2100 2000
18	450	18 16	450 400	3100 2400	3700 3000	2900 2100

Actuation





Diaphragm Actuator Direct - Acting

Diaphragm Actuator Reverse - Acting

With top mount handwheel Direct - Acting

ΦC



eve.

With top mount handwheel Reverse - Acting



With side mount handwheel Direct - Acting



With side mount handwheel Reverse - Acting

Standard actuation is by means of pneumatic diaphragm actuators valves also supplied with electric, hydraulic, electrohydraulic and manual actuation



Other actuation and controls options include electric, hydraulic and self contained electrohydraulic actuators.



Contact your local In Line Valve representative for information on other products





In Line Valve Company Ltd Reading RG7 6RF UK

Tel. +44 1635 863491 Fax +44 1635 871528 sales@inlinevalve.co.uk In Line Valve Sdn Bhd Kuala Lumpur Malaysia

sales@in-linevalve.com

Further information is available at <u>www.inlinevalve.co.uk</u>