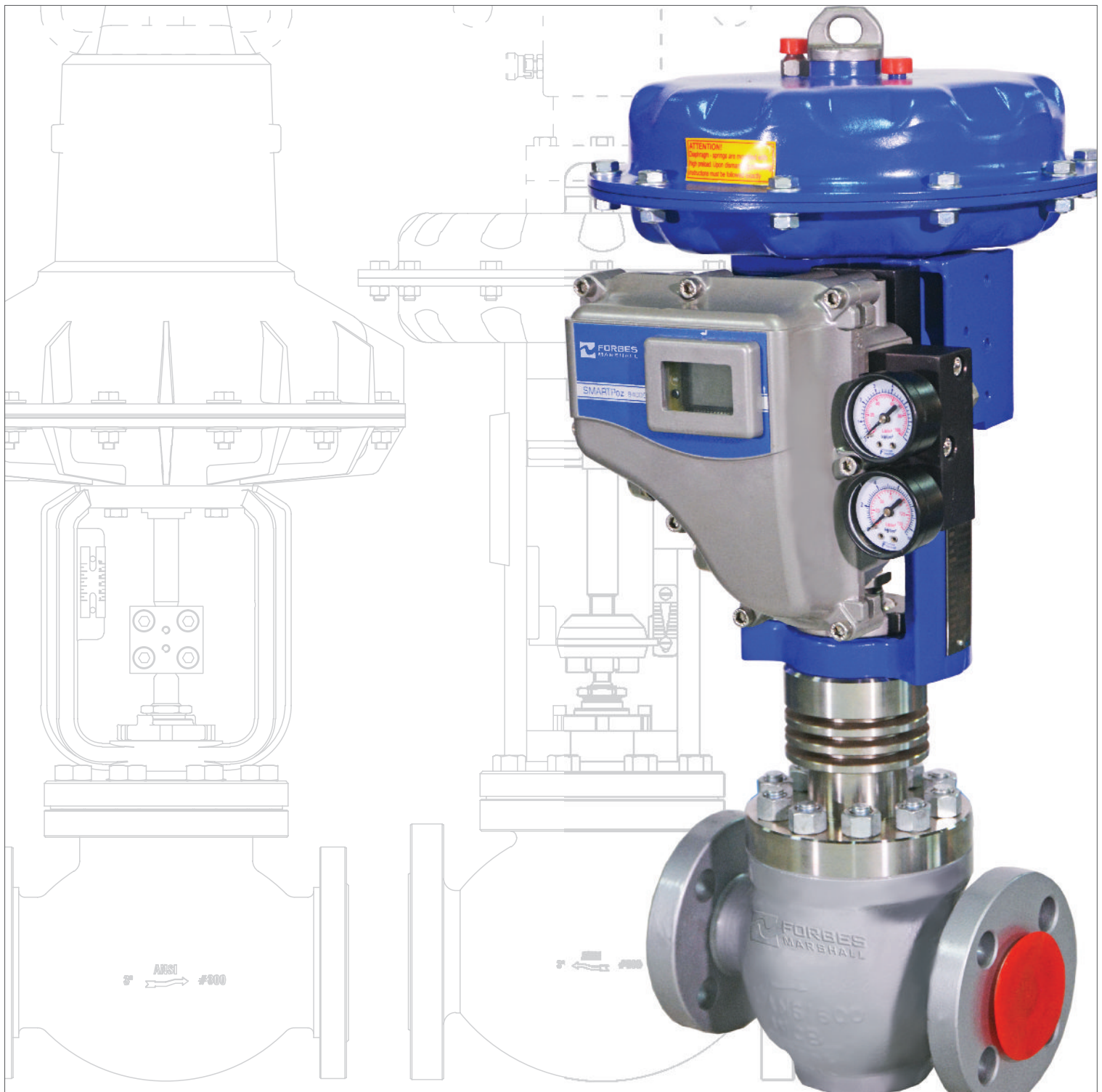


# Forbes Marshall Control Valve

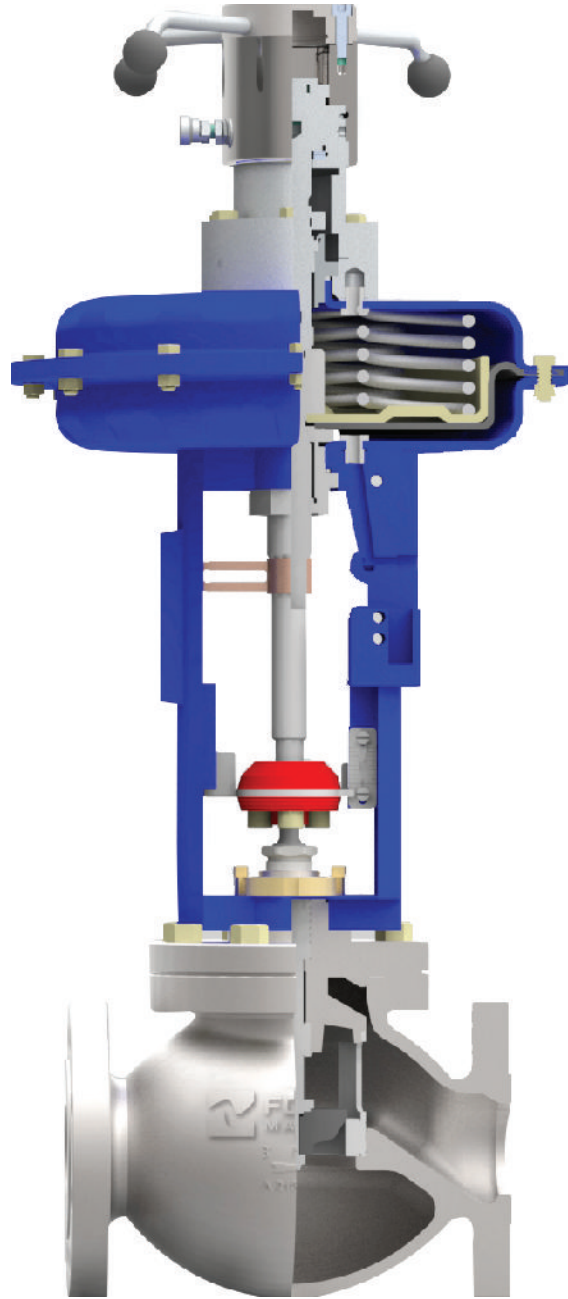
Operational Economy with Optimum Control



# Forbes Marshall Control Valve

The Forbes Marshall (FM) Control Valve provides excellent performance on steam, liquid and gas applications. It is simple and easy to assemble and can be maintained without any special tool. It is lightweight, compact and robust in design and can be mounted with field reversible FM pneumatic diaphragm actuators or any other actuator on request. It can also be fitted with FM pneumatic, electro-pneumatic, smart positioners as well as any universal accessories.

In compliance with general safety precautions, an emergency hand wheel can also be provided with the FM actuator, upon request.



## FM Control Valve - General Information

Nominal size	½" - 16"
Pressure rating	ANSI 150 - 2500
Rangeability	1:40
End connections	Flanged (RF / RTJ), butt weld, socket weld
Seat leakage class	Available in class IV, V and VI
Bellow sealing	Available for ANSI 150 - 300
Double guided trim	Integrated double guiding available in 1 ½" - 16"
Heating jacket	Available on request
Pressure balance	Available in sizes 3" and upwards
Actuator	Single spring (SSP Series), Multi-spring (MSP Series)
Actuator action	Air to open, Air to close

## Features

### Tubeless Positioner with MSP Actuator



The FM Multi-Spring Actuator (MSP Series) has an internal integrated path for passage of instrument air through yoke to the actuator housing.

This technology eliminates the need of any additional tubing for mounting the positioner on the yoke.

This feature also eliminates extra impulse tube leakages, damage during transit and allows high operational reliability, precision and serviceability.

### Modular Design



Our Control Valve has a modular construction with a well-defined list of components (Refer above figure).

It has been engineered to minimize the number of spares and special tools necessary for maintenance, making on-site servicing easy and fast.

### Quick Change Trim with reversible seat

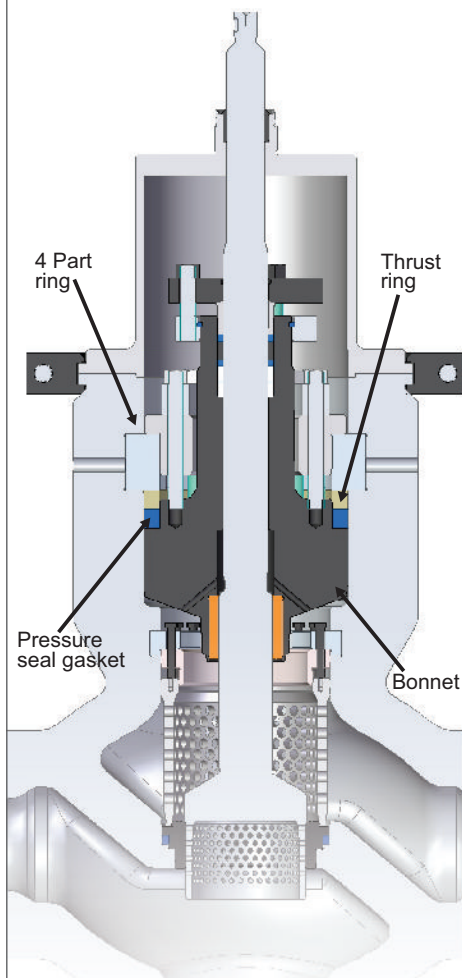


This unique design enables assembly and disassembly in the shortest possible time, thus reducing downtime during maintenance.

The complete trim assembly can be removed from the valve body for inspection by loosening the bonnet bolts and reassembled again on tightening. Seat is threadless which has an additional advantage of no body seat leakage (ensured by the stationary gasket below seat and is easily reversible at site, resulting in doubling the seat life during operation.

## Types of Bonnet

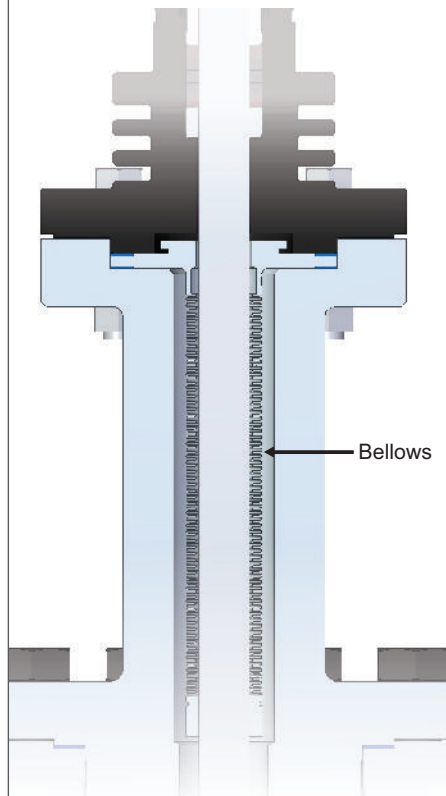
### Pressure Seal Bonnet



F1400 model (Pressure Seal Bonnet) is used for very high pressure applications.

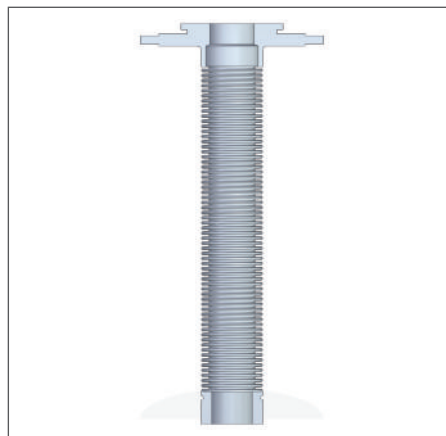
In this design the bonnet takes the bolt load and seals against the pressure seal gasket. This results in increased body-bonnet sealing for increased inlet pressures, thereby arresting leakage through body-bonnet joint.

### Bellow Seal



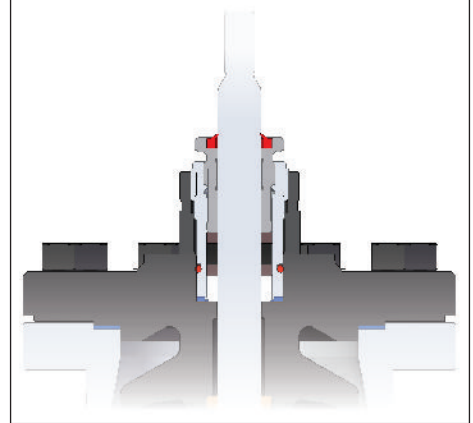
Hermetically-sealed bellows are recommended for process fluids where no gland leakage can be tolerated. These are most commonly used for toxic, flammable and hazardous media.

For safety reasons, the bellow seal construction includes a standard gland seal as a back-up in case of a bellow failure.



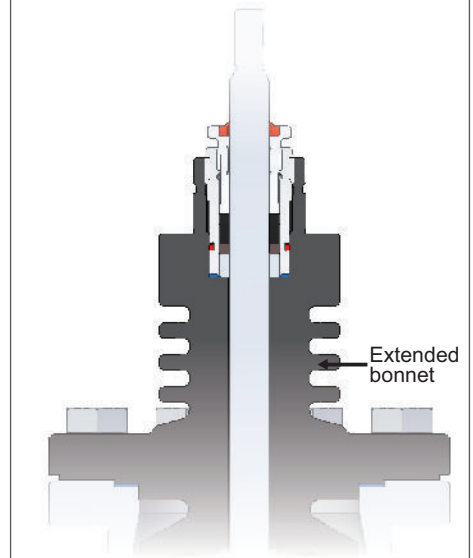
FM Bellows avoid intermittent circumferential welds. A single longitudinal weld is provided throughout the entire length of the bellows.

### Standard Bonnet



As a standard offering, FM bonnets are of stainless steel construction even with carbon steel body for upto 2 inch size, to avoid galvanic corrosion between the stuffing box and graphite packing.

### Extended Bonnet



When temperature exceeds 300° C (572°F) an extended bonnet is recommended to protect the packing from excessive heat, thus keeping the gland packing lubricated and aiding the optimal functioning of valve.

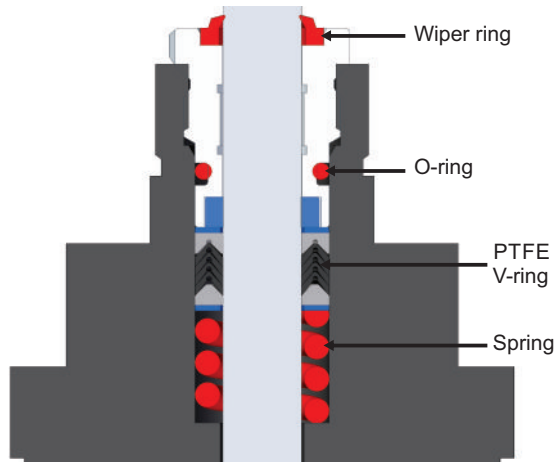
Extended bonnet also protects other accessories like actuator, positioner etc for overheating.

Above is also applicable for extreme cold conditions.



## Gland Packing and Trim Styles

### Spring Energized Stem Sealing

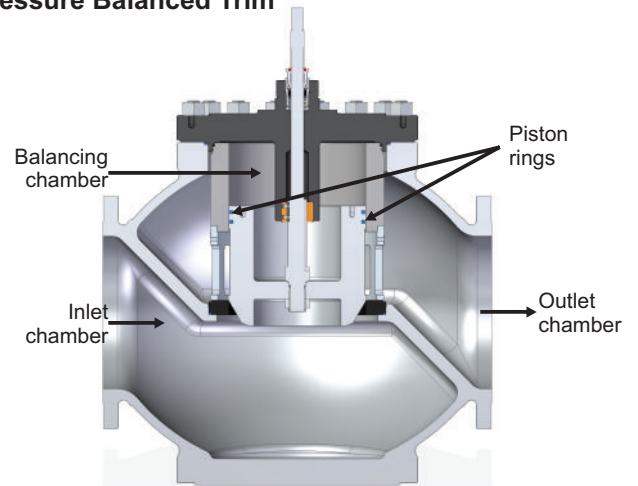


The micro-sealing element and wiper ring with PTFE V-ring is included in the new standard spring energized gland seal configuration of the FM Control Valve. The packing set has a dual function – that of primary sealing and also as a wiper.

The PTFE V-ring packing set is pre-loaded with a stainless steel spring and pressed against the valve stem and bonnet insert. Even under varying operating conditions, sealing performance is extremely reliable with extended life.

This also provides minimized static and sliding friction force in comparison to conventional stuffing box packing.

### Pressure Balanced Trim

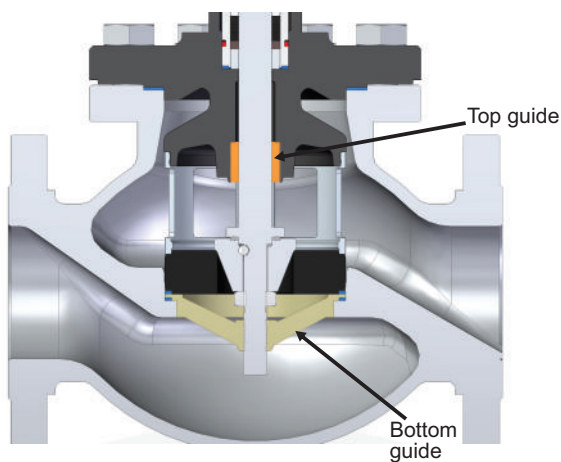


A Pressure Balance Plug is used to minimize actuator thrust force in the event of higher inlet pressure and/or larger seat diameter which results in optimised performance.

Dynamic sealing (piston rings) is provided in plug which is guided inside the sleeve to isolate the two chambers. Sealing can be of metal or elastomer depending on temperature of the media and application.

The characterised balanced hole in the plug helps in equalising the fluid pressure both above and below the plug, thereby reducing the actuator thrust force.

### Double Guiding

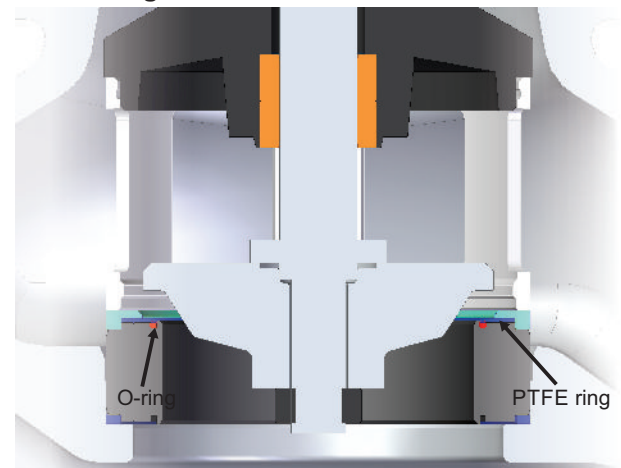


Double guiding is recommended for high pressure drop application where enhanced level of vibration and noise are expected to be generated.

The above figure depicts Top and Bottom guiding with metal seated quick change trim.

Easily replaceable bottom guide located below seat ring.

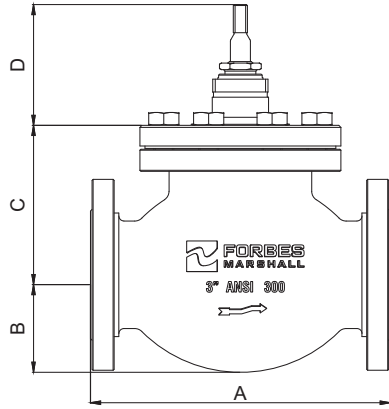
### Soft Seating



PTFE Soft seating is provided with an additional flexible elastomer O-ring.

In case of any plastic deformation of PTFE disc (when the plug reaches its final closed position) leakage is eliminated by an additional metal to metal sealing of plug and seat ring thus gives better leakage class.

**Series F1100 (1/2" - 4", ANSI 150 - 300)**



**Standard Kv/Cv - Parabolic PS1**

Valve Size DN/ inch	Max travel mm/ inch	Kv	Cv	Seat Dia mm/ inch
15 / 1/2	16 / 0.63	4	4.7	15 / 0.6
		1.6	1.9	10 / 0.4
		0.63	0.73	5 / 0.2
25 / 1		10	11.5	25 / 1
		4	4.7	15 / 0.6
		1.6	1.9	10 / 0.4
40 / 1 1/2		25	29	36 / 1.4
		16	19	30 / 1.2
		10	11.5	25 / 1
50 / 2		40	46	46 / 1.8
	25	29	36 / 1.4	
	16	19	30 / 1.2	
65 / 2 1/2	63	73	50 / 2	
	40	46	46 / 1.8	
	25	29	36 / 1.4	
80 / 3	100	116	80 / 3	
	63	73	50 / 2	
	40	46	46 / 1.8	
100 / 4	30 / 1.2	160	186	100 / 4
		100	116	80 / 3
		63	73	50 / 2
		160	185	100 / 4
		100	116	80 / 3
		63	73	50 / 2

**Dimensions and Weight**

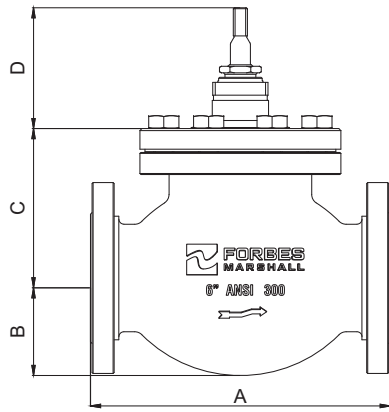
Description	DN/inch	15 / 1/2	25 / 1	40 / 1 1/2	50 / 2	65 / 2 1/2	80 / 3	100 / 4	
	mm / inch								
#150	A	178 / 7	184 / 7.2	222 / 8.7	254 / 10	276 / 10.8	298 / 11.7	352 / 13.8	
#300		190 / 7.5	197 / 7.7	235 / 9.2	267 / 10.5	292 / 11.5	317 / 12.5	368 / 14.5	
	B	48 / 1.9	62 / 2.4	78 / 3	83 / 3.3	90 / 3.5	106 / 4.2	136 / 5.4	
Standard	C	114 / 4.5		105 / 4.1		156 / 6.2	181 / 7.1		
Extended		170 / 6.7		167 / 6.5		248 / 9.7	267 / 10.5		
Bellow Seal		228 / 8.9		233 / 9.2		365 / 14.4	389 / 15.3		
Pressure Balance Std		NA					196 / 7.7	221 / 8.7	
Pressure Balance Ext							261 / 10.2	286 / 11.3	
		D	104 / 4				112 / 4.4		
Weight * Kg/ Lbs		10 / 22	13 / 29	22.5 / 50	26 / 57	40 / 88	60 / 132	86 / 190	

\*Weight of valve with standard bonnet

**Standard Kv/Cv - Perforated PR1, PR2, PR3**

Valve Size	Lift	Seat Dia	Linear (PR1)		Equal % (PR1)		Linear (PR2)		Linear (PR3)	
DN/inch	mm/inch		Kv	Cv	Kv	Cv	Kv	Cv	Kv	Cv
15 / 1/2 25 / 1	20 / 0.78	20 / 0.78	1.25	1.5	1.25	1.5	4.1	4.7	2.6	3.0
			2.5	2.9	2.5	2.9				
25 / 1 40 / 1 1/2		25 / 1	4	4.6	4	4.6	6.1	7.0	3.2	3.7
			6.3	7.3	6.3	7.3				
40 / 1 1/2 50 / 2 65 / 2 1/2		36 / 1.41	10	11.6	10	11.6	10.6	12.3	5.4	6.2
			16	18.5	16	18.5				
50 / 2 65 / 2 1/2		46 / 1.81	25	28.9	25	28.9	12.2	14.1	6.4	7.4
		50 / 2	40	46.2	25	28.9	15.0	18.0	7.0	8.0
80 / 3		50 / 2	40	46.2	25	28.9	23.5	27.2	12.1	14.0
80 / 3 100 / 4		80 / 3	100	115.6	25	28.9	35.3	40.8	18.2	21.0
	63		72.8	40	46.2					
	40		46.3	55	63.6					
100 / 4	100 / 4	120	138.7	40	46.2	47.1	54.5	24.2	27.9	
		100	115.6	55	63.6					
		63	72.8	63	72.8					

**Series F1200 (6" - 16", ANSI 150 - 300)**



**Standard Kv/Cv - Parabolic PS1**

Valve Size DN/ inch	Max travel mm/ inch	Kv	Cv	Seat Dia mm / inch
150 / 6	60 / 2.4	380	445	143 / 5.6
		260	304	113 / 4.5
		150	176	90 / 3.5
200 / 8		650	761	172 / 6.7
		380	445	143 / 5.6
		260	304	113 / 4.4
250 / 10	100 / 3.9	900	1053	220 / 8.6
		650	761	172 / 6.7
		380	445	143 / 5.6
300 / 12		1300	1521	282 / 11.1
		900	1053	220 / 8.6
		650	761	172 / 6.7
350 / 14	120 / 4.7	1800	2106	313 / 12.3
		1300	1521	282 / 11.1
		900	1053	220 / 8.6
400 / 16		2500	2925	400 / 15.7
		1800	2106	313 / 12.3
		1300	1521	282 / 11.1

**Dimensions and Weight**

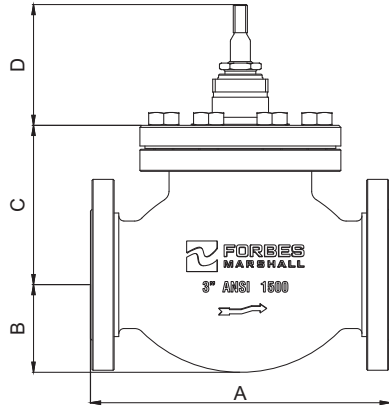
Description	DN/inch	150 / 6	200 / 8	250 / 10	300 / 12	350 / 14	400 / 16
	mm / inch						
#150	A	450.8 / 17.7	542.9 / 21.4	673.1 / 26.5	736.6 / 29	889 / 35	1016 / 40
#300		472.9 / 18.6	568.3 / 22.4	708 / 27.8	774.7 / 30.5	927.1 / 36.5	1057.3 / 41.6
	B	189 / 7.4	239 / 9.4	305 / 12	335 / 13.2	395 / 15.5	443 / 17.4
Standard / Pressure Bal.	C	260 / 10.2	295 / 11.6	360 / 14.2	395 / 15.5	465 / 18.3	520 / 20.4
Extended / Pressure Bal.		355 / 13.9	410 / 16.1	510 / 20	545 / 21.5	615 / 24.2	670 / 26.4
Bellow Seal		575 / 22.6	605 / 23.8	850 / 33.5	850 / 33.5	880 / 34.6	
	D	134 / 5.3		228 / 9			208 / 8.2
Weight * Kg/ Lbs		130 / 287	185 / 407	255 / 562	555 / 1123	645 / 1422	1295 / 2855

\*Weight of valve with standard bonnet

**Standard Kv/Cv - Perforated PR1, PR2, PR3**

Valve Size	Lift	Seat Dia	Linear (PR1)		Equal % (PR1)		Linear (PR2)		Linear (PR3)			
DN/inch	mm / inch		Kv	Cv	Kv	Cv	Kv	Cv	Kv	Cv		
150 / 6	60 / 2.4	90 / 3.5	170	196.5	125	144.5	103	119	53	61.3		
		113 / 4.4	260	300.5	150	173.4	132	152.6	67	77.5		
150 / 6 200 / 8		143 / 5.6	380	439.3	125	144.5	171	197.6	88	101.7		
		260	300.5	150	173.4							
200 / 8		100 / 3.9	170	196.5	210	242.7	209	241.6	107	123.7		
			450	520.2	150	173.4						
	172 / 6.7		380	439.3	210	242.7						
250 / 10	120 / 4.7		260	300.5	260	300.5	270	312.1	140	161.8		
			143 / 5.6	380	439.3	320					369.9	
250 / 10 300 / 12			100 / 3.9	172 / 6.7	650	751.4	380	439.3	395	456.6	203	234.6
		900		1040.4	320	369.9						
350 / 14		120 / 4.7		220 / 8.6	650	751.4	380	439.3	476	550.3	245	283.3
				380	439.3	520	601.1					
350 / 14	100 / 3.9			220 / 8.6	900	1040.4	520	601.1	476	550.3	245	283.3
				1300	1502.8	380	439.3					
300 / 12 350 / 14			120 / 4.7	282 / 11.1	900	1040.4	520	601.1	687	794.2	353	408
				650	751.4	720	832.3					
350 / 14		100 / 3.9		313 / 12.3	1800	2080.8	520	601.1	700	810	370	428
				1300	1502.8	720	832.3					
400 / 16	120 / 4.7			900	1040.4	850	982.6	1180	1364	507	586	
				282 / 11.1	1400	1618.4	750					867
400 / 16			100 / 3.9	313 / 12.3	1800	2080.8	900	1040.4	750	867	410	474
				2500	2890	750	867					
400 / 16		120 / 4.7		400 / 15.7	1800	2080.8	900	1040.4	1180	1364	507	586
				1400	1618.4	1250	1445					

**Series F1300 (1" - 8", ANSI 600 - 1500)**



**Dimensions and Weight**

Description	DN/inch	25 / 1	40 / 1½	50 / 2	80 / 3	100 / 4	150 / 6	200 / 8
	mm / inch							
#600	A	216 / 8.5	241 / 9.5	292 / 11.5	356 / 14	432 / 17	559 / 22	660 / 26
#900		254 / 10	305 / 12	368 / 14.5	381 / 15	457 / 18	610 / 24	737 / 29
#1500		254 / 10	305 / 12	368 / 14.5	470 / 18.5	576 / 22.6	705 / 27.7	832 / 32.7
	B	70 / 2.8	105 / 4.1	115 / 4.5	155 / 6.1	180 / 7	230 / 9	275 / 10.8
Standard	C	135 / 5.3	160 / 6.3	190 / 7.5	220 / 8.6	250 / 10	342 / 13.5	357 / 14
Extended		170 / 6.7	240 / 9.5	243 / 9.5	300 / 11.8	332 / 13	402 / 15.8	447 / 17.5
Bellow Seal		On Request						
	D	104 / 4		112 / 4.4		134 / 5.3		
Weight * Kg / Lbs		20 / 44	30 / 66	62 / 136	90 / 198	125 / 275.5	235 / 518	545 / 1201

\*Weight of valve with standard bonnet

**Standard Kv/Cv - Parabolic PS1**

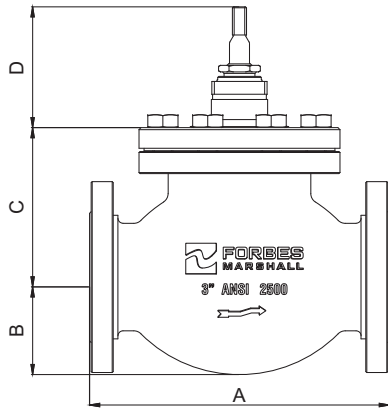
Valve Size DN/ inch	Max travel mm/ inch	Kv	Cv	Seat Dia mm/ inch
25 / 1	20 / 0.78	11	12.9	24 / 0.95
		7	8.2	19 / 0.74
		4	4.7	16 / 0.62
40 / 1½		26	30.4	37 / 1.45
		18	21.1	32 / 1.3
		11	12.9	24 / 0.94
50 / 2	30 / 1.2	43	46	48 / 1.9
		26	29	37 / 1.45
		18	19	32 / 1.3
80 / 3		100	117	73 / 2.8
		68	80	62 / 2.5
		43	50	48 / 1.9
100 / 4	60 / 2.4	150	176	90 / 3.5
		100	117	73 / 2.8
		68	80	62 / 2.5
150 / 6		380	445	143 / 5.6
		260	304	113 / 4.5
		150	176	90 / 3.5
200 / 8	650	751.4	172 / 6.8	
	380	439.3	143 / 5.6	
	260	300.5	113 / 4.5	

**Standard Kv/Cv - Perforated PR1, PR2, PR3**

Valve Size DN/inch	Lift mm / inch	Seat Dia mm / inch	Linear (PR1)		Equal % (PR1)		Linear (PR2)		Linear (PR3)		
			Kv	Cv	Kv	Cv	Kv	Cv	Kv	Cv	
25 / 1	20 / 0.78	19 / 0.7	4	4.6	4	4.6	4.1	4.7	2.6	3	
			10	11.6	7	8	6.1	7	3.2	3.7	
40 / 1½		37 / 1.4	18	20.8	11	12.7	10.6	12.3	5.4	6.2	
			27	31.2	16	18.5					
50 / 2		30 / 1.1	48 / 1.8	27	31.2	21	24.3	17.9	20.7	9.7	11.2
43				49.7	35	40.5	23.5	27.2	12.1	13.9	
80 / 3	62 / 2.4		55	63.5	38	43.9	23.5	27.2	12.1	13.9	
80 / 3 100 / 4			60	69.4	43	49.7	30.6	35.4	15.7	18.1	
100 / 4	73 / 2.7		80	92.5	55	63.5	35.3	40.8	18.2	21	
100 / 4	90 / 3.5		110	127.2	68	78.6	47.1	54.4	24.2	27.9	
150 / 6	60 / 2.4	90 / 3.5	170	196.5	125	144.5	103	119	53	61.3	
150 / 6 200 / 8		113 / 4.4	260	300.5	150	173.4	132	152.6	67	77.5	
		143 / 5.6	380	439.3	210	242.7	171	197.7	88	101.7	
200 / 8		172 / 6.7	450	520.2	260	300.5	209	241.6	107	123.7	



**Series F1400 (1" - 10", ANSI 2500)**



**Dimensions and Weight**

Description	DN/inch	25 / 1	50 / 2	80 / 3	100 / 4	150 / 6	200 / 8	250 / 10
	mm/inch							
#2500	A	216 / 8.5	280 / 11	578 / 22.7	673 / 26.5	914 / 35.9	1040 / 41	1100 / 43.3
	B	76.5 / 3	110 / 4.3	205 / 8	260 / 10.2	330 / 13	325 / 12.8	400 / 15.7
Standard Bonnet	C	260 / 10.3	340 / 13.3	588 / 23.2	713 / 28	NA		
Pressure Seal Bonnet		NA				928 / 36.5	1100 / 43.3	1155 / 45.5
	D	108 / 4.3	122 / 4.8	158 / 6.2	165 / 6.5	226 / 8.9	204 / 8	227 / 8.9
Weight Kg/Lbs		60 / 132.2	110 / 242.5	425 / 937	710 / 1566	1350 / 2977	1880 / 4145	2538 / 5596

\*Weight of valve with standard bonnet

**Standard Kv/Cv - Parabolic PS1**

Valve Size DN/inch	Max travel mm/inch	Kv	Cv	Seat Dia mm/inch
25 / 1	20	7	8	19/0.75
		11	12.7	24/0.95
50 / 2	30	18	20.8	32/1.3
		26	30	37/1.5
80 / 3	45	35	40.5	45/1.7
		60	69.4	60/2.4
		85	98.3	75/2.9
100 / 4	45	90	104	75/2.9
		160	184.9	90/3.5
		230	265.8	130/5.2
150 / 6	60	130	150.3	90/3.5
		280	323.7	120/4.7
		400	462.4	160/6.3

**Standard Kv/Cv - Perforated PR1, PR2, PR3**

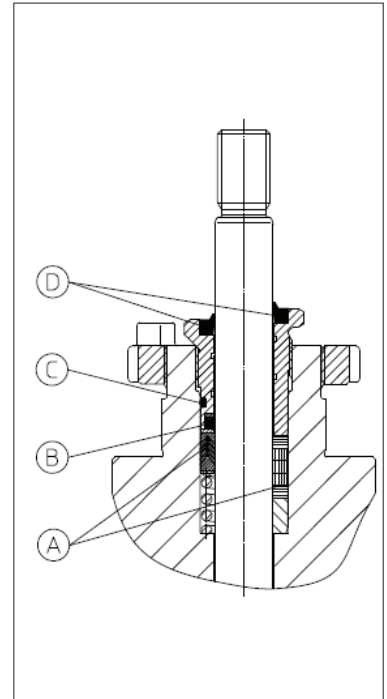
Valve Size DN/NPS	Lift mm/inch	Seat Dia	Linear (PR1)		Equal % (PR1)		Linear (PR2)	
			Kv	Cv	Kv	Cv	Kv	Cv
25 / 1	20 / 0.78	19	4.5	5.2	3.9	4.5	4.1	4.7
		24	6.7	7.7	5.5	6.4	6.1	7
50 / 2	30 / 1.2	32	15	17.4	15	17.4	13.8	15.9
		37	20	23.2	17.8	20.5	17.9	20.7
80 / 3	45 / 1.7	45	35	40.5	35	40.5	15	17.4
		60	60	69.4	40	46.3	25	28.9
		75	90	104	50	57.8	35	40.5
100 / 4	45 / 1.7	75	90	104	55	63.5	40	46.3
		90	160	185	65	75.1	70	80.9
		130	200	231.2	85	98.3	100	115.6
150 / 6	60 / 2.4	90	130	150.3	95	109.8	60	69.4
		120	280	323.7	125	144.5	125	144.5
		160	400	462.4	170	196.5	170	196.5
200 / 8	100 / 3.9	190	600	693.5	420	485.2	209	241.6
250 / 10	120 / 4.7	220	830	959.5	660	763	476	551

## Material of construction

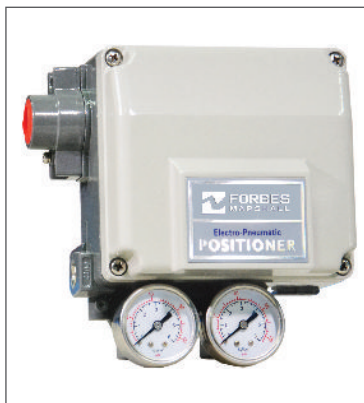
Body / Bonnet	A216 WCB, A217 WC6, A217 WC9, A351 CF8, A351 CF8M, A352 LCB Other ferrous / non-ferrous materials available on request.
Trim	A276 SS316. Other materials available as per application.
Bellows sealing	SS316 weld less layer or optional in Hast alloy C / Monel / others
Packing	PTFE V-Ring, PTFE Braided, Graphite, Peek (available on request)

## Temperature Range for Stem Sealing

Seal Type	Seal (Pos A)	Proile Ring (Pos B)	'O' Ring (Pos C)	Wiper Seal (Pos D)	Fluid Temperature	Bonnet Type	Comments
Maintenance Free Double Seal	PTFE V-ring	EPDM	EPDM	EPDM	-29°C to 180°C -20.2°F to 356°F	Standard	Preloaded with Stainless Spring
Maintenance Free Double Seal	PTFE V-ring	VITON	VITON	VITON	-29°C to 200°C -20.2°F to 392°F	Standard	Preloaded with Stainless Spring
Adjustable	Reinforced graphite	-	-	VITON	-29°C to 400°C -20.2°F to 752°F	Standard/ Extended	Adjustable
Adjustable	Pure Graphite	-	-	VITON	-29°C to 530°C -20.2°F to 986°F	Standard/ Extended	Adjustable



## Positioner\*



### Smart Positioner

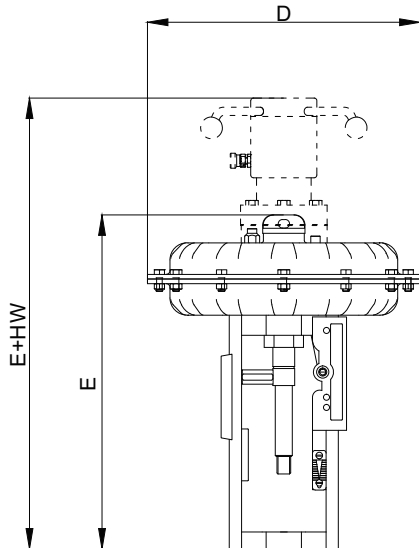
Model	Sensor	Communication
8400 SHN	Hall	4-20 mA
8400 SHH	Hall	HART
8400 SPN	Potentiometric	4-20 mA
8400 SPH	Potentiometric	HART

### Electro-Pneumatic Positioner Model - 830

### Pneumatic Positioner Model - 820

\*For more details please refer Positioner catalogue

### Multi Spring Actuator (MSP Series)



#### Dimensions and Weight

Actuator Model	Stroke	E	E+HW	D	Weight
					kgs/lbs
					mm/inch
MSP-1	20/0.8	346/13.6	493/19.4	270/10.6	14 / 31
	30/1.2				16 / 35
MSP-2	30/1.2	489/19.3	651/25.6	400/15.7	42 / 92
	60/2.4	625/24.6	888/34.9	400/15.7	47 / 103



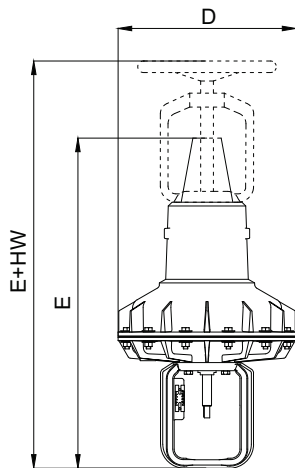
Integrated duct is provided in yoke (actuator support), which eliminates tubing and reduces instrument air leaks

Cold-pressed mild steel construction

Field reversible without disassembly

Hand-wheel available on request

### Single Spring Actuator (SSP Series)



#### Dimensions and Weight

Actuator Model	Stroke	E	E+HW	D	Weight
					kgs/lbs
					mm/inch
SSP-1	20/0.8	495/19.5	630/24.8	270/10.6	90 / 42
	30/1.2	505/19.9	640/25.2	392/15.4	
SSP-2	30/1.2	723/28.5	920/36.2	392/15.4	49 / 108
	60/2.4	753/29.6	950/37.4	530/20.8	
SSP-3	60/2.4	1006/39.6	1323/52.0	530/20.8	105 / 231
	100/4				



Actuator housing is made of cast aluminum and is light weight and corrosion resistant

Also available with high thrust force of reinforced spring

Field reversible without disassembly

Hand-wheel available on request

Note: For more details please refer Actuator catalogue

## Selection and Codification Guide for Control Valve

### Valve series and size / pressure class

Model	Description
F1100	1/2" - 4" ANSI 150 - 300
F1200	6" - 16" ANSI 150 - 300
F1300	1" - 8" ANSI 600 - 1500
F1400	1" - 10" ANSI 2500

Series	Description
100	Control Valve (std. bonnet)
106	Control Valve Soft Seating (std. bonnet)
110	Control Valve (ext. bonnet)
120	Control Valve Pressure Balance (std. bonnet)
130	Control Valve Pressure Balance (ext. bonnet)
135	Control Valve Pressure Balance (leakage class V)
140	Control Valve Bellow Sealing
146	Control Valve Soft Seating (bellow sealing)
160	Control Valve Pressure Balance (bellow sealing)

### Trim Design

Type	Description
PS1	Parabolic Single Stage Pressure Reduction
PS3	Parabolic Three Stage Pressure Reduction
PR1	Perforated Single Stage Pressure Reduction
PR2	Perforated Two Stage Pressure Reduction
PR3	Perforated Three Stage Pressure Reduction

### Trim Characteristics

L	Linear
EP	Equal Percentage

### Actuator

Model	Multi Spring (MSP Series)
MSP-1	Actuator diaphragm surface 320cm <sup>2</sup> / 49.6 inch <sup>2</sup>
MSP-2	Actuator diaphragm surface 720cm <sup>2</sup> / 111.6 inch <sup>2</sup>

Model	Single Spring (SSP Series)
SSP-1	Actuator diaphragm surface 320cm <sup>2</sup> / 49.6 inch <sup>2</sup>
SSP-2	Actuator diaphragm surface 720cm <sup>2</sup> / 111.6 inch <sup>2</sup>
SSP-3	Actuator diaphragm surface 1440cm <sup>2</sup> / 223.2 inch <sup>2</sup>

Model de-codification		Ordering Code:- F1200-110-PR1-EP-MSP-2		
<b>F1200</b>	<b>110</b>	<b>PR1</b>	<b>EP</b>	<b>MSP-2</b>
6" - 16" (ANSI 150 - 300)	Ext. bonnet	Perforated Single Stage Pressure Reduction	Trim Characteristics (Equal Percentage)	Actuator



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

480, California Avenue,  
Suite 102, P.O. Box 60670  
Palo Alto CA 94306  
California, USA  
Tel: +1 650 327 4227/ +1 650 321 4224  
Fax: +1 650 327 4127/ +1 650 321 4454

Email : fm.usa@forbesmarshall.com, ccmidc@forbesmarshall.com

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Forbes Marshall Canada Inc.  
2425 Matheson Blvd East, 8th Floor  
Mississauga, ON L4W 5K4  
Tel: +1 905 361 2880  
Fax: +1 905 361 6401

A-34/35, MIDC H Block  
Pimpri, Pune - 411 018. INDIA.  
Tel : 91(0)20-27442020, 39851199  
Fax : 91(0)20-27442040

CIN No.: U28996PN1985PTC037806  
www.forbesmarshall.com