Forbes Marshall Control Valve

Description

Forbes Marshall valves are robust, compact, control valves that come with a pneumatically operated, easy field reversible diaphragm actuator and a sturdy, pipeless smart digital positioner. The actuator can be optionally equipped with a fully enclosed emergency hand wheel which is in compliance with general safety precautions.



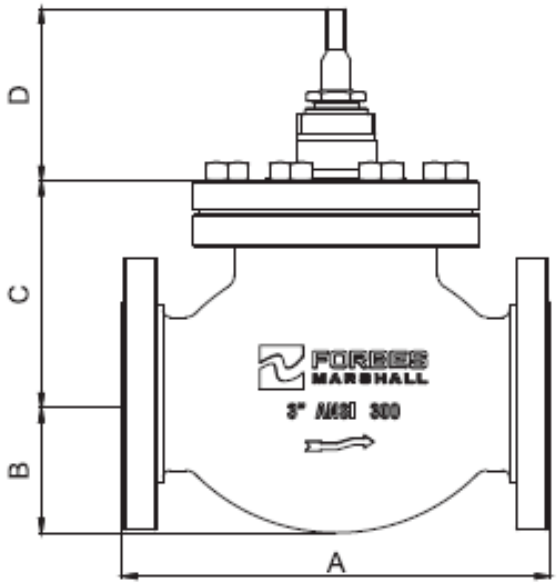
Technical Data

Nominal Size	½" - 16"
Pressure Rating	ANSI 150 - 2500
Characteristics of plug	Standard : equal percentage, linear and on/off Optional : modified linear
Seat leakage	Metal-to-Metal: Leakage Class IV (<0.01%kvs); optional leakage rate class V Leakage Class VI (0 - 180°C) (ANSI 150 and 300 only)
Bellows sealing	SS316 weldless double layer or optional in Haste alloy C / Monel Available for ANSI 150 and ANSI 300, other pressure classes on request
Heating jacket	Connections ½" or 1" ANSI 300 socket screwed or flanged and other on request

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
Bellow sealing	SS316 weld less layer or optional in Hast alloy C / Monel / others
Packing	PTFE V-ring, PTFE Braided, Graphite, Peek (available on request)

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



Dimensions and Weight

Description	DN/inch	15 / ½	25. / 1	40 / 1 ½	50 / 2	65 / 2½	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 - Parabolic PS1

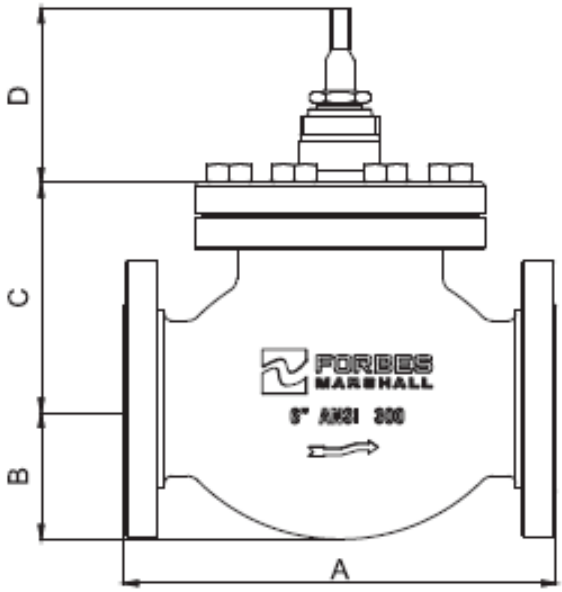
Valve size DN/inch	Max travel mm/inch	Kv	Cv	mm/inch
15 / ½	16 / 0.63	4	4.7	15 / 0.6
		1.6	1.9	10 / 0.4
		0.63	0.73	5 / 0.2
25 / 1		10	11.5	25 / 1
		4	4.7	15 / 0.6
		1.6	1.9	10 / 0.4
40 / 1 ½		25	29	36 / 1.4
		16	19	30 / 1.2
		10	11.5	25 / 1
50 / 2		40	46	46 / 1.8
		25	29	36 / 1.4
		16	19	30 / 1.2

Valve size DN/inch	Max travel mm/inch	Kv	Cv	mm/inch
65 / 2 ½	16 / 0.63	63	73	50 / 2
		40	46	46 / 1.8
		25	29	36 / 1.4
80 / 3	30 / 1.2	100	116	80 / 3
		63	73	50 / 2
		40	46	46 / 1.8
100 / 4		160	186	100 / 4
		100	116	80 / 3
		63	73	50 / 2
		160	185	100 / 4
		100	116	80 / 3
		63	73	50 / 2

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 / ½	20 / 0.78	20 / 0.78	1.25	1.5	1.25	1.5	4.1	4.7	2.6	3
25. / 1			2.5	2.9	2.5	2.9				
25. / 1		25. / 1	4	4.6	4	4.6	6.1	7	3.2	3.7
40 / 1 ½			6.3	7.3	6.3	7.3				
40 / 1 ½		36 / 1.41	10	11.6	10	11.6	10.6	12.3	5.4	6.2
50 / 2			16	18.5	16	18.5				
65 / 2 ½										
50 / 2		46 / 1.81	25	28.9	25	28.9	12.2	14.1	6.4	7.4
65 / 2 ½		50 / 2	40	46.2	25	28.9	15	18	7	8
80 / 3	30 / 1.2	50 / 2	40	46.2	25	28.9	23.5	27.2	12.1	14
80 / 3		80 / 3	100	115.6	25	28.9	35.3	40.8	18.2	21
100 / 4			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)



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 /1 8.6	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 - Parabolic PS1

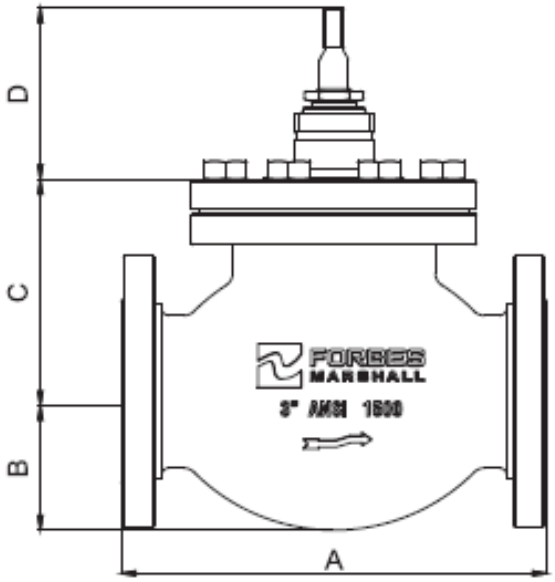
Valve size DN/inch	Max travel mm/inch	Kv	Cv	Seat Dia mm/ Inch
150 / 6	60 / 2.4	380	445	143 / 5.6
		260	304	113 / 4.5
		150	176	90 / 3.5
200 / 8		650	761	172 / 6.7
		380	445	143 / 5.6
		260	304	113 / 4.4
250 / 10	100 / 3.9	900	1053	220 / 8.6
		650	761	172 / 6.7
		380	445	143 / 5.6

Valve size DN/inch	Max travel mm/inch	Kv	Cv	Seat Dia mm/ inch
300 / 12	100 / 3.9	1300	1521	282 / 11.1
		900	1053	220 / 8.6
		650	761	172 / 6.7
350 / 14		1800	2106	313 / 12.3
		1300	1521	282 / 11.1
		900	1053	220 / 8.6
400 / 16	120 / 4.7	2500	2925	400 / 15.7
		1800	2106	313 / 12.3
		1300	1521	282 / 11.1

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
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	125	144.5	171	197.6	88	101.7
			260	300.5	150	173.4				
			170	196.5	210	242.7				
200 / 8		172 / 6.7	450	520.2	150	173.4	209	241.6	107	123.7
			380	439.3	210	242.7				
			260	300.5	260	300.5				
250 / 10	100 / 3.9	143 / 5.6	380	439.3	320	369.9	270	312.1	140	161.8
250 / 10 300 / 12		172 / 6.7	650	751.4	380	439.3	395	456.6	203	234.6
		220 / 8.6	900	1040.4	320	369.9	476	550.3	245	283.3
			650	751.4	380	439.3				
			380	439.3	520	601.1				
350 / 14		220 / 8.6	900	1040.4	520	601.1	476	550.3	245	283.3
300 / 12 350 / 14		282 / 11.1	1300	1502.8	380	439.3	687	794.2	353	408
			900	1040.4	520	601.1				
			650	751.4	720	832.3				
350 / 14		313 / 12.3	1800	2080.8	520	601.1	700	810	370	428
			1300	1502.8	720	832.3				
			900	1040.4	850	982.6				
400 / 16	120 / 4.7	282 / 11.1	1400	1618.4	750	867	720	833	380	440
		313 / 12.3	1800	2080.8	900	1040.4	750	867	410	474
		400 / 15.7	2500	2890	750	867	1180	1364	507	586
			1800	2080.8	900	1040.4				
			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

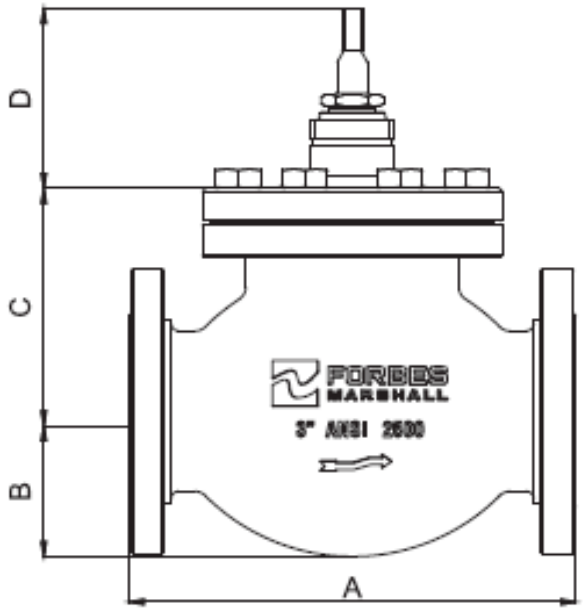
Valve size DN/inch	Max travel mm/inch	Kv	Cv	Seat Dia mm/ Inch
25 / 1	20 / 0.78	11	12,9	24 / 0,95
		7	8,2	19 / 0,74
		4	4,7	16 / 0,62
40 / 1½		26	30,4	37 / 1,45
		18	21,1	32 / 1,3
		11	12,9	24 / 0,94
50 / 2	30 / 1.2	43	46	48 / 1,9
		26	29	37 / 1,45
		18	19	32 / 1,3
80 / 3		100	117	73 / 2.8
		68	80	62 / 2.5
		43	50	48 / 1.9

Valve size DN/inch	Max travel mm/inch	Kv	Cv	Seat Dia mm/ inch
100 / 4	30 / 1.2	150	176	90 / 3,5
		100	117	73 / 2,8
		68	80	62 / 2,5
150 / 6	60 / 2.4	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	Lift	Seat Dia	Linear (PR1)		Equal % (PR1)		Linear (PR2)		Linear (PR3)	
DN/inch	mm/inch		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		27	31.2	21	24.3	17.9	20.7	9.7	11.2
		48 / 1.8	43	49,7	35	40,5	23,5	27,2	12,1	13,9
80 / 3			55	63,5	38	43,9	23,5	27,2	12,1	13,9
80 / 3 100 / 4		62 / 2.4	60	69.4	43	49.7	30.6	35.4	15.7	18.1
		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	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

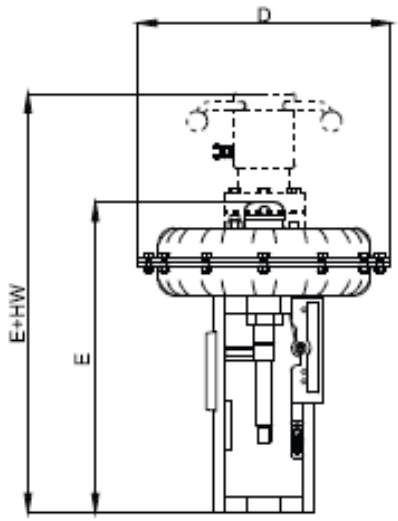
Valve size DN/inch	Max travel mm/inch	Kv	Cv	Seat Dia mm/ inch
25./ 1	20	7	8	19/0.75
		11	12.7	24/0.95
50 / 2	30	18	20.8	32/1.3
		26	30	37/1.5
80 / 3	45	35	40.5	45/1.7
		60	69.4	60/2.4
		85	98.3	75/2.9

Valve size DN/inch	Max travel mm/inch	Kv	Cv	Seat Dia mm/ inch
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	Lift	Seat Dia	Linear (PR1)		Equal % (PR1)		Linear (PR2)	
DN/inch	mm/inch		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

Multi Spring Actuator (MSP Series)

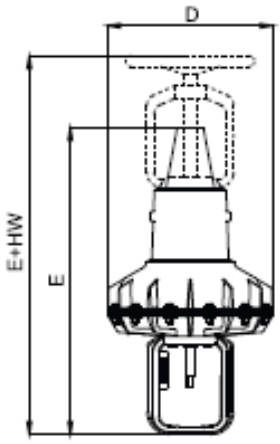


Dimensions and Weight

Actuator Mode	Stroke	E	E+HW	D	Weight
	mm/inch				kgs/lbs
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

Note: For more details please refer Actuator catalogue

Single Spring Actuator (SSP Series)



Dimensions and Weight

Actuator Mode	Stroke	E	E+HW	D	Weight
	mm/inch				kgs/lbs
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-1	60/2.4	1006/39.6	1323/52.0	530/20.8	105 / 231
	100/4				

Selection and Codification Guide for Control Valves

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 320cm² / 49.6 inch²
MSP-2	Actuator diaphragm surface 720cm² / 111.6 inch²

Model	Single Spring (SSP Series)
SSP-1	Actuator diaphragm surface 320cm² / 49.6 Inch²
SSP-2	Actuator diaphragm surface 720cm² / 111.6 inch²
SSP-3	Actuator diaphragm surface 1440cm² / 223.2 inch²

Model de-codification				
F1200	110	PR1	EP	MSP-2
6" - 16" (ANSI 150 - 300)	Ext. bonnet	Perforated single stage pressure reduction	Trim characteristics (equal percentage)	Actuator