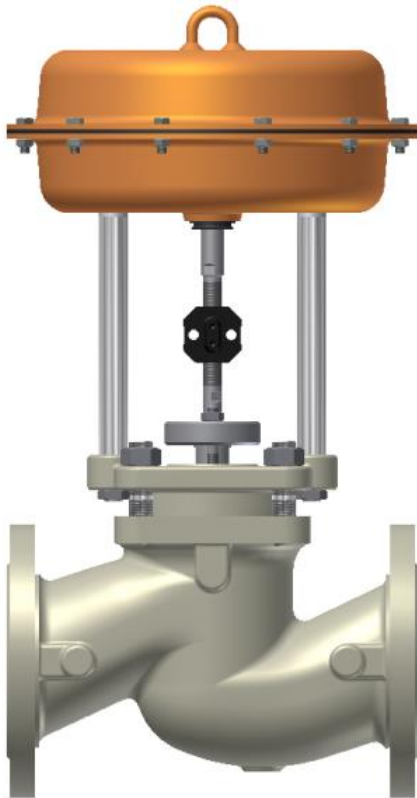


Series 2000

Top Guided Control Valve



Series 2000 Control Valve

Series 2000 process Control Valves. Sturdy design with special service trims available for:

- Cavitation Control
- Noise Reduction

Top entry construction for ease of inline maintenance.

Valve bodies with flange and face to face dimensions to both European and ASME standards.

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Features

- Compact
- Ease maintenance
- Full range trims
- EN and ASME valve bodies
- Various actuation
- Proven design
- Fully interchangeable bonnets and trims.



Specifications Series 2000 Control Valves

Style	Top Entry Single Seated Straight Through Globe Valve							
Sizes	DN	15	25	40	50	80	100	150
	Inch	1/2	1	1 1/2	2	3	4	6
Pressure Ratings	PN 40 to EN 1092 ANSI 150 / 300 to ASME B16/34							
End Connections	Screwed	NPT, BSP for 1/2, 1, 1 1/2 Inch only						
	Flanged	RF, RTJ						
	Welded Ends	Socket Weld, Butt Weld						
Bonnet and Packing	Bonnet Type	Packing Type	Process Temperature in Degrees Celsius					
			Standard	PTFE V-Ring	-10 +220			
		PTFE Silk	-10 +220					
		Graphite	-200 +530					
	Extension	PTFE V-Ring	-60 +350					
		PTFE Silk	-10 +280					
		Graphite	-200 +530					
	Bellows Seal	Same as Extension Bonnet						
	Cryogenic	PTFE V-Ring	-200 +0					
		PTFE Silk	-200 +0					
Flow Direction	Liquids	Standard Proces	FTO					
		NRE 2	FTO / FTC					
		Cavitation Control	FTC					
		Flashing Proces	FTC					
	Gas / Steam	Standard Proces	FTO					
		Low Noise	FTO					
Characteristics	Equal Percentage	=%						
	Linear	Lin						
	Quick Opening	QO						
Rangeability	50 : 1							
Leakage rates	Trim Form (Valve Size in DN)							
<i>to EN IEC 60534-4 ANSI / FCI 70-2</i>	Class	Approx % of Cv	Standard	Low Flow	Pressure Balanced	Soft Seat		
	I	-	15 - 150	15 - 25	100 - 150	15 - 150		
	II	0,5	15 - 150	15 - 25	100 - 150	15 - 150		
	III	0,1	15 - 150	15 - 25	100 - 150	15 - 150		
	IV	0,01	15 - 150	15 - 25	100 - 150	15 - 150		
	V	0,001	15 - 50	15 - 25	-	15 - 150		
	VI	0,0001	-	-	-	15* - 150		
* including Low Flow 15 - 25								
Trim Types	Single Seat	Standard	Plug, Metal and Soft Seat					
	=%, Lin, QO	Pressure Balanced	Plug, Metal and Soft Seat, Metal and Soft Seal Ring					
	Low Noise	Standard	Plug, Metal and Soft Seat					
	=%, Lin, QO	Pressure Balanced	Plug, Metal and Soft Seat, Metal and Soft Seal Ring					
	Cavitation Control	Standard	Plug, Metal Seat or Cage					
	=%, Lin, QO	Pressure Balanced	Plug, Metal Seat or Cage, Metal and Soft Seal Ring					
	Low Noise	NRE - 1	Standard Plug with Baffle Cage					
		NRE - 2	Multi Hole Plug / Cage					
		NRE - 21	Combination of NRE - 1 with NRE - 2					
	Cavitation Control	Multi Hole Plug / Cage with double drilled Holes						



Body – Bolting – Temperature Standards

EN Grades

Body / Bonnet Material	Description	Standard Norm for Body / Bonnet Material	Temperature Range	Bolting Material	Standard Norm for Bolting Material
1.0619 ¹	Carbon Steel	EN 10213	-10 + 450 °C	1.7218	EN 10269
1.4581 ²	Stainless Steel	EN 10213	-100 + 450 °C	1.4571	EN 10272
1.7357 ³	High Temperature Steel	EN 10213	-10 + 530 °C	1.7709	EN 10269
1.1131 ⁴	Low Temperature Steel	EN 10213	-40 + 450 °C	1.7218	EN 10269
1.4469 ⁵	Duplex (Oil & Gas)	EN 10213	-70 + 450 °C	1.4980	EN 10269
1.4536	Duplex (Chemical)	SEW 410-7	-45 + 450 °C	1.4980	EN 10269

Notes:

- 1 For Sizes up to and including 2 Inch, Bonnet Material is 1.5638 to EN 10213
- 2 For Sizes up to and including 2 Inch, Bonnet Material is 1.4571 to EN 10272
- 3 For Sizes up to and including 2 Inch, Bonnet Material is 1.7335 to EN 10273
- 4 For Sizes up to and including 2 Inch, Bonnet Material is 1.5638 to EN 10213
- 5 For Sizes up to and including 2 Inch, Bonnet Material is 1.4462 to EN 10272

ASTM Grades

Body / Bonnet Material	Grade	Description	Temperature Range	Bolting Material	Grade
SA-352 ⁶	LCC	Low Temperature Carbon Steel	-46 + 345 °C	SA-320	L7
SA-216 ⁷	WCB	Carbon Steel	-29 + 425 °C	SA-193	B7
SA-182 ⁸	F51	Duplex	-70 + 315 °C	SA-453	660
SA-351 ⁹	CF8M	Stainless Steel	-200 + 540 °C	SA-193	B8
SA-217 ¹⁰	WC6	High Temperature Steel	-29 + 595 °C	SA-193	B7

Notes:

- 6 For Sizes up to and including 2 Inch, Bonnet Material is SA 350 Gr. LF2
- 7 For Sizes up to and including 2 Inch, Bonnet Material is SA 105
- 8 For Sizes up to and including 2 Inch, Bonnet Material is SA 479 Gr. S31803
- 9 For Sizes up to and including 2 Inch, Bonnet Material is SA 182 Gr. F316H
- 10 For Sizes up to and including 2 Inch, Bonnet Material is SA 739 Gr. B11

Flow Co-efficients Control Valves

z-Values¹¹

Type	Trim	Flow Direction	Rates Cv 0,001-1,0	Rates Cv 1,0-4,0	Rates Cv 6,3 - 40	Rates Cv 56 - 160	Rates Cv > 200	Kc	FI	XT
2000	Parabolic	Open ¹²	0,7	0,6	0,4	0,35	-	0,68	0,9	0,72
	Plug	Close	0,5	0,45	0,25	0,2	-	0,58	0,78	0,54
9000	V-Port	Open	-	-	0,35	0,3	0,25	0,65	0,9	0,72
	Plug	Close	-	-	0,35	0,3	0,25	0,65	0,86	0,66
800	Cage	Open	-	0,45	0,4	0,35	0,3	0,7	0,9	0,72
	Ports	Close	-	0,45	0,4	0,35	0,3	0,72	0,88	0,72
800-30	Cage	Open	-	0,5	0,45	0,45	0,4	0,7	0,95	0,72
	Holes	Close	-	0,5	0,45	0,45	0,4	0,72	0,95	0,75
	Cav. Contr.	Close	-	-	0,6	0,6	0,55	0,9	0,95	0,8
2003 / 13	V-Port	Mix	-	-	0,35	0,3	0,25	0,65	0,86	0,62
9003 / 13	Plug	Divert	-	-	0,35	0,3	0,25	0,65	0,86	0,66

Notes:

- 11 Apply for 75% of Valve Opening
- 12 Preferred Flow Direction



Flow Co-efficients Series 2000

Cv Standard Trims		Valve Size	Inch	½	1	1½	2	3	4	6	
			mm	15	25	40	50	80	100	150	
Seat Diameter in mm	Full			16	22	35	43	70	88	140	
	1st Reduction			-	16	28	35	56	70	140	
	2nd Reduction			-	16	22	28	56	56	88	
Characteristics	Trim Size		Cv values								
	Linear	Full		4.7	12	29	47	117	190	420	
		1st Reduction			-	7.4	19	29	74	117	290
		2nd Reduction			-	4.7	12	19	47	74	190
	Equal Percentage	Full		4.7	12	29	47	117	190	370	
		1st Reduction			-	7.4	19	29	74	117	290
		2nd Reduction			-	4.7	12	19	47	74	190
	Quick Opening	Full		5	14	36	54	130	200	420	

Cv Low Flow Trims		Valve Size	Inch	½	1
			mm	15	25
Seat Diameter in mm	Full			10	10
	1st Reduction			5	5
	2nd Reduction			3	3
Characteristics	Trim Size		Cv values		
	Linear	Full		1.17, 1.9, 2.9	
		1st Reduction		0.29, 0.47, 0.74	
		2nd Reduction		0.01, 0.019, 0.029, 0.047, 0.074, 0.117, 0.19	
	Equal Percentage	Full		1.17, 1.9, 2.9	
		1st Reduction		0.29, 0.47, 0.74	

Cv Low Noise Trims		Valve Size	Inch	½	1	1½	2	3	4	6	
			mm	15	25	40	50	80	100	150	
Seat Diameter in mm		Same as for Standard Trims									
Characteristics	Trim Size		Cv values								
	NRE - 1	Linear	Full		-	10.5	24	34	80	110	315
			1st Reduction		-	7.3	17	25	61	88	250
			2nd Reduction		-	4.6	11	17	43	65	174
		Equal Percentage	Full		-	10.5	24	34	80	110	295
			1st Reduction		-	7.3	17	25	61	88	250
			2nd Reduction		-	4.6	11	17	43	65	147
	NRE - 2	Linear	Full		-	6.5	14.6	23	47	74	260
			1st Reduction		-	-	9.4	14.6	37	47	117
			2nd Reduction		-	-	6.5	9.4	-	37	-
		Equal Percentage	Full		-	6.5	14.6	19	47	74	190
			1st Reduction		-	-	9.4	14.6	37	47	117
			2nd Reduction		-	-	6.5	9.4	-	37	-
	NRE - 21	Linear	Full		-	6.3	14	21	44	72	190
			1st Reduction		-	-	9.4	14.6	37	47	105
			2nd Reduction		-	-	6.5	9.4	-	37	-
		Equal Percentage	Full		-	6.3	14	18	44	72	146
			1st Reduction		-	-	9.4	14.6	37	47	93
			2nd Reduction		-	-	6.5	9.4	-	37	-
	NRE-21	Linear		0.12, 0.29, 0.74, 1.2, 2.4	Available for 1/2 and 1 Inch Valve Size Only						
	Low Flow	Equal Percentage		0.29, 0.74, 1.2, 2.4							

Valve Factors		Trim Style	Standard		NRE - 1		NRE - 2		NRE - 21
Fl and Xt	Flow Direction		FTO	FTC	FTO	FTO	FTC	FTO	
Fl	Full Trim		0.9	0.75	0.9	0.95	0.95	0.98	
	Reduced Trim		0.92	0.8	0.92	0.95	0.95	0.98	
Xt	Full Trim		0.72	0.55	0.72	0.74	0.75	0.75	
	Reduced Trim		0.72	0.55	0.72	0.74	0.75	0.75	



Dimensions and shipping weights

Dimensions	Valve	Actuator size	A	C (dia)	D	H1	H2	L ¹	X
Millimetres	Size mm		PN 16 PN 25 PN 40	Metric thread	(dia)	Std Bon- net	Ext Bon- net		Clear- Ance to Remove Act.
	25		160	M12 x 1	47,6	112	385	117	35
	40		200	M12 x 1	47,6	112	385	117	35
	50		230	M12 x 1	47,6	112	385	117	35
	65		290	M12 x 1 ⁴⁾	47,6	153	516	117	35
	80		310	M16 x 1,5	47,6	148	497	134	35
	100		350	M16 x 1,5	47,6	148	497	134	35
	150	2112/2112T	480	M20 x 1,5		296	690	132,5	35
	150	2016/2016T	480	M20 x 1,5		280	673,5	149	80

Dimensions	Valve	Actuator size	A	A	C (dia)	D	H1	H2	L ¹	X
Millimetres	Size Inch		ANSI 300RF	ANSI 300RTJ	Metric thread	(dia)	Std Bon- net	Ext Bon- net		Clear- Ance to Remove Act.
	1		197	210	M12 x 1	47,6	112	385	117	35
	1 ½		235	251	M12 x 1	47,6	112	385	117	35
	2		267	286	M12 x 1	47,6	112	385	117	35
	3		318	337	M16 x 1,5	47,6	148	497	134	35
	4		368	384	M16 x 1,5	47,6	148	497	134	35
	6	2112/2112T	473	489	M20 x 1,5		296	690	132,5	35
	6	2016/2016T	473	489	M20 x 1,5		280	673,5	149	80

Shipping Weights ²	Valve Size		Standard bonnet		Extension bonnet	
	mm	inch	kg		kg	
	15	½	7		13	
	25	1	9		15	
	40	1 ½	13		20	
	50	2	16		23	
	80	3	29		39	
	100	4	39		56	
	150	6	78		115	

Notes:

- 1 Valve open (full travel)
- 2 Body assembly only

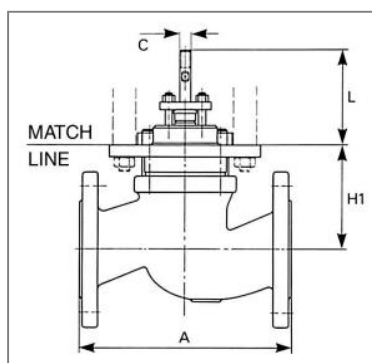


Fig. 1: Valve with standard bonnet

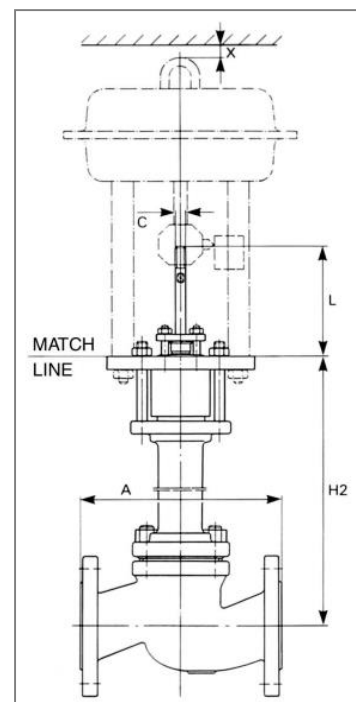


Fig. 2: Valve bellow seal bonnet or with plain extension bonnet



Valves according:

- CE
- ATEX
- PED
- EN / NEN / ANSI / ASME



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