



by  HITER

85 Series 2 Way Control Valves

Description

The 85 Series is a 2-way control valve, with globe body built to provide fine control and easy adjustment in a compact design. Available in a wide variety of body ratings, sizes and materials, it is designed to efficiently control a wide range of fluids in numerous types of processes and industrial facilities. 85 Series are available in diameters from ½" to 8" and pressure classes up to ASME 16.34 CL 600, adaptable to many applications due to the clamp in place seat technology.

Applications

Oil & Gas Processes; Offshore Platforms; Refineries; Gas Storage and Transportation; Chemical Industry; Sugar and Ethanol; Power Generation, Pulp & Paper and any applications which requires a good control in low to medium pressure ranges.

Designed and manufactured in accordance to the requirements of the European Pressure Equipment Directive 2014/68/EU and carries the  mark when so required and applicable.



Series 85 Available Versions

ASME B16.34 150, 300 or 600 Classes Sizes 1" to 8"		
Model Type	85-51	Balanced plug, cage guided trim suitable for medium and large pressure drops. Standard seat leakage in accordance with ANSI FCI 70.2 is Class IV. Class V available upon request.
	85-61	Balanced plug, cage guided trim with resilient seat. Suitable for applications that require low seat leakage. Standard seat leakage in accordance with ANSI FCI 70.2 is Class VI.
	85-70	Unbalanced plug, cage guided trim suitable for low and medium pressure drops. Standard seat leakage in accordance with ANSI FCI 70 is Class IV. Class V available upon request.
	85-71	Balanced plug, cage guided trim, with double metal seat, suitable for high temperatures and large pressure drops. Standard seat leakage in accordance with ANSI FCI 70-2 is Class IV. Class V available upon request.
ASME B16.34 150, 300 or 600 Classes Sizes 1½" to 4"		
Model Type	85-58	Unbalanced top-guided plug, metal seat suitable for low and medium pressure drops. Standard seat leakage in accordance with ANSI FCI 70.2 is Class IV. Class V is available upon request.
	85-68	Unbalanced top-guided plug with resilient seat. Suitable for applications that require low seat leakage. Standard seat leakage in accordance with ANSI FCI 70.2 is Class VI.
ASME B16.34 150, 300 or 600 Classes Sizes ½" to 2"		
Model Type	85-52	Unbalanced top-guided micro-flow plug, metal seat suitable for low flow rates. Standard seat leakage in accordance with ANSI FCI 70.2 is Class IV. Class V available upon request.
	85-62	Unbalanced top-guided micro-flow plug with resilient seat. Suitable for applications that require low seat leakage. Standard seat leakage in accordance with ANSI FCI 70.2 is Class VI.

Technical Specifications

		Type	Pressure Class	Design Standards	Face to Face Standards	Available Size
Connections	RF	Raised Faced	1500 to 600	ASME B16.5	ISA S75.08.01	½" to 8"
	RC	NPT Threaded	1500 to 600	ASME B1.20.1	ISA S75.08.03	½" to 2"
	SW	Socket-Welding	1500 to 600	ASME B16.11	ISA S75.08.03	½" to 2"
	BW	Butt welding	1500 to 600	ASME B16.25	ISA S75.08.05	3" to 8"
Body Material		Material		Range Temperature ⁽²⁾		
		Carbon Steel ASTM A216 WCB		-20 °F to 800 °F (-29 °C to 427 °C)		
		Cr-Mo Alloy Steel ASTM A217 WC9		-20 °F to 1100 °F (-29 °C to 595 °C) ⁽²⁾		
		Stainless Steel ASTM A351 CF8M		-20 °F to 1000°F (-29 °C to 538 °C) ⁽²⁾		

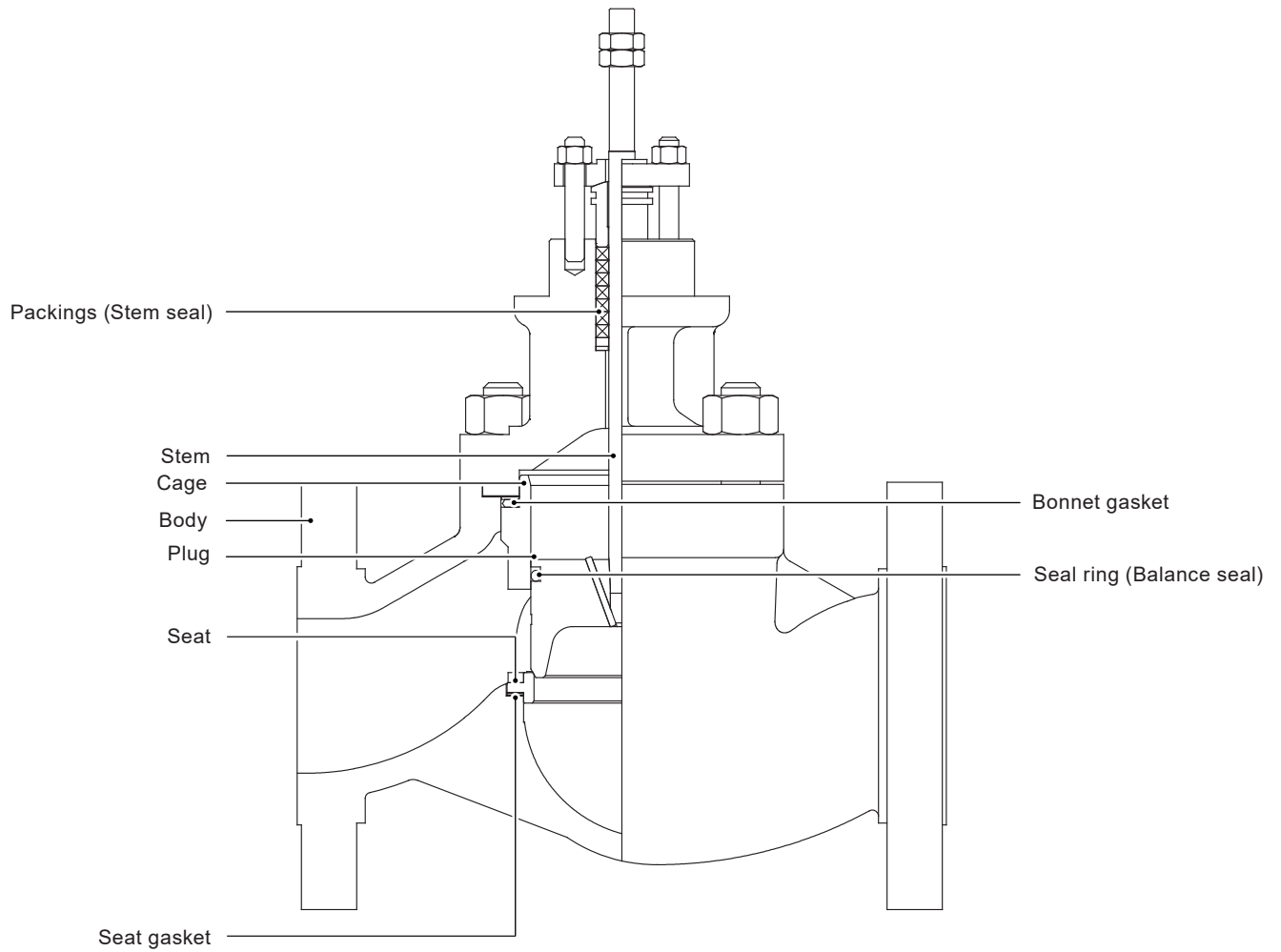
⁽¹⁾ Different materials are available upon request including; Duplex SST, Nickel Alloys, Titanium Alloys

⁽²⁾ Class 150 flanged end valve limited to 1000 °F (538 °C)

Technical Specifications

		Model Reference		Temperature Range	
Bonnet Types	CE1	Standard Bonnet		Standard bonnet for use with temperatures up to 662 °F (350 °C)	
	CE3	Extended Bonnet		Extended bonnet for use with temperatures up to 1100 °F (595 °C)	
	CE4	Bellows Seal Bonnet		Extended with bellows for use with corrosive or dangerous fluids. For use with temperatures up to 662 °F (350 °C)	
Stem Seal Materials (Packing)		Braided PTFE		Graphite	
		CE1 Bonnet -22 °F to 450 °F (-30 °C to 232 °C)	CE3 / CE4 Bonnet -150 °F to 572 °F (-101 °C to 300 °C)	CE1 Bonnet -22 °F to 662 °F (-30 °C to 350 °C)	CE3 / CE4 Bonnet -94 °F to 1100 °F (-70 °C to 595 °C)
Gasket Material Combinations		Gasket Material Options		Minimum Temperature	Maximum Temperature
		PTFE + 316L SST filled with PTFE		-328 °F (-200 °C)	450 °F (232 °C)
		316L SST with Graphite + 316 SST		-4 °F (-20 °C)	1100 °F (593 °C)
Seal Ring Materials		Material		Temperature Limit	
		Nitrile Rubber		248 °F (120 °C)	
		EPDM Rubber		248 °F (120 °C)	
		Neoprene		302 °F (150 °C)	
		PTFE		392 °F (200 °C)	
		Viton Rubber		399 °F (204 °C)	
		PTFE w/ Graphite		446 °F (230 °C)	
		SHT		482 °F (250 °C)	
		CHEMRAZ		500 °F (260 °C)	
		KALREZ		527 °F (275 °C)	
Graphite		1202 °F (650 °C)			
Body to Bonnet Bolting		Material		Temperature Limit	
Stud material		ASTM A193 Gr. B7		-20 °F to 800 °F (-29 °C to 427 °C)	
		ASTM A193 Gr. B8M		-425 °F to 800 °F (-254 °C to 427 °C)	
		ASTM A193 Gr. B16		802 °F to 1100 °F (428 °C to 593 °C)	
Nut material		ASTM A194 Gr. 2H		-20 °F to 800 °F (-29 °C to 427 °C)	
		ASTM A194 Gr. 8M		-425 °F to 800 °F (-254 °C to 427 °C)	
		ASTM A194 Gr. 7		800 °F to 1100 °F (428 °C to 593 °C)	

Series 85 Main Components



Trim Materials

	Plug/seat		Cage	Seal ring	Max. ΔP.	Temperature range
Type 85-51 ASME CL 150 to 600	316SST		17-4PH SST Hardened	See Seal Ring Table on previous page	300 psi (20 bar)	-150 °F to 600 °F (-101 °C to 316 °C)
	410SST Hardened		410SST Hardened		1500 psi (103 bar)	-20 °F to 788 °F (-29 °C to 420 °C)
	316SST Stellite Coated		Nitrided Cr-Mo Alloy steel		1500 psi (103 bar)	790 °F to 1050 °F (421 °C to 566 °C)
	Plug/seat	Seat	Cage	Seal ring	Max. ΔP.	Temperature range
Type 85-61 ASME CL 150 to 600	316SST	316SST w/PTFE	17-4PH SST Hardened	See Seal Ring Table on previous page	300 psi (20 bar)	-128 °F to 392 °F (-89 °C to 200 °C)
	Plug/seat		Cage	Seal ring	Max. ΔP.	Temperature range
Type 85-70 ASME CL 150 to 600	316SST		17-4PH SST Hardened		300 psi (20 bar)	-150 °F to 600 °F (-101 °C to 316 °C)
	410SST Hardened		410SST Hardened		1500 psi (103 bar)	-20 °F to 788 °F (-29 °C to 420 °C)
	316SST Stellite Coated		Nitrided Cr-Mo Alloy steel		1500 psi (103 bar)	-20 °F to 788 °F (-29 °C to 420 °C)
	Plug/seat		Cage	Seal ring	Max. ΔP.	Temperature range
Type 85-71 ASME CL 150 to 600	17-4PH SST Hardened		17-4PH SST Hardened		1500 psi (103 bar)	-20 °F to 788 °F (-29 °C to 420 °C)
	410SST Hardened		410SST Hardened		1500 psi (103 bar)	-20 °F to 788 °F (-29 °C to 420 °C)
	316SST Stellite Coated		Nitrided Cr-Mo Alloy Steel Stellite Coated		1500 psi (103 bar)	790 °F to 1050 °F (421 °C to 566 °C)
	Plug/seat		Cage	Seal ring	Max. ΔP.	Temperature range
Type 85-52 and 85-58 ASME CL 150 to 600	316SST		17-4PH SST Hardened		300 psi (20 bar)	-150 °F to 600 °F (-101 °C to 316 °C)
	316SST Stellite Coated		316SST Stellite Coated		1500 psi (103 bar)	99°F to 1100°F (-73°C to 593°C)
	410SST Hardened		410SST Hardened		1500 psi (103 bar)	20 °F to 788 °F (-29 °C to 420 °C)
	Plug/seat	Seat	Cage	Seal ring	Max. ΔP.	Temperature range
Type 85-62 and 85-68 ASME CL 150 to 600	316SST	316SST w/ PTFE	17-4PH SST Hardened		300 psi (20 bar)	-128 °F to 392 °F (-89 °C to 200 °C)

Flow Coefficients

Flow Capacity (Cv)											
Model Types 85-51 85-61 85-70 85-71	Size	LV	PV	MV	1R	2R	3R	4R	1K	2K	3K
	1"	19	17	11	4,5 - 18				12,2	2 - 6	
	1½"	23 - 38	22 - 34	12 - 20	4,5 - 33	5 - 25			12,4 - 19,4	2 - 10	3,7 - 7
	2"	30 - 63	26 - 52	12 - 40	4,5 - 63	13 - 50	10 - 26		14 - 36,1	2 - 23,5	2 - 16
	3"	88 - 130	57 - 118	32 - 120	30 - 125	50 - 85	8 - 57	10 - 32	15 - 78	17 - 45,1	1 - 35
	4"	87 - 215	95 - 200	20 - 220	25 - 190	65 - 143	40 - 125	14 - 72	53 - 146,3	53,5 - 80	37,4 - 56
	6"	155 - 410	140 - 390	64 - 400	104 - 380	85 - 330	96 - 290	72 - 165	51 - 310	69,1 - 138,2	48 - 71
	8"	100 - 870	210 - 820	118 - 820	190 - 665	186 - 415	125 - 365	94 - 212	104,7 - 315	105 - 210	68 - 130

Subtitle: LV - Linear PV - Equal percentage MV - Modified parabolic
1R, 2R, 3R, 4R - Low noise 1, 2, 3 and 4 stages respectively
1K, 2K, 3K - Anti-cavitation 1,2 and 3 stages respectively.

Flow Capacity (Cv)							
Model Types 85-52 85-62		Size		Orifice Code	LC	PC	MV
	½"	¾"	1" 1½" 2'	M09		0,16	
				M10		0,25	
				M11	0.5	0,5	
				M2			0,4
				M3	0,85	0,85	0,85
				M4	2	2	2
				M5	3.4	3.4	3.4
				M6	5.5	5.5	5.5
				M7	7.5	7.5	7.5
					10.6	10.6	10.6
					13	13	13

Subtitle: LC - Linear
PC - Equal Percentage
MV - Modified Parabolic

Flow Capacity (Cv)			
Model Types 85-58 85-68	Size	LC	PC
	1½"	17 - 23	17 - 23
	2"	16 - 41	15 - 41
	3"	44 - 115	20 - 115
	4"	44 - 195	73 - 195

Subtitle: LC - Linear
PC - Equal Percentage

Seat Leakage Class

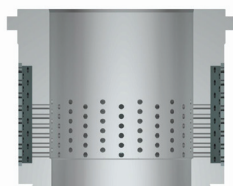
Leakage Class ANSI FCI 70-2	Leakage Class	Valve Type	Note
	IV or V	85-51	With elastomer seal ring
		85-52	Metal seat
		85-71	
		85-58	Metal seat
	VI	85-61	PTFE seat
		85-62	
		85-68	

Special Trims

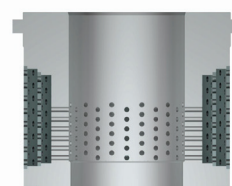
Noise Control (R)



R - 1 STAGE

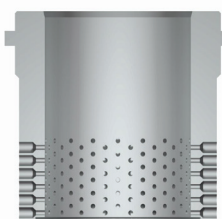


2R - 2 STAGES

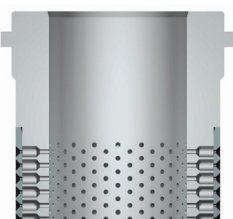


3R - 3 STAGES

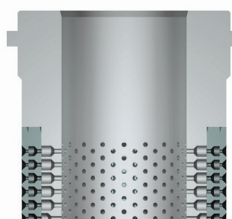
Cavitation Control (K)



1K - 1 STAGE

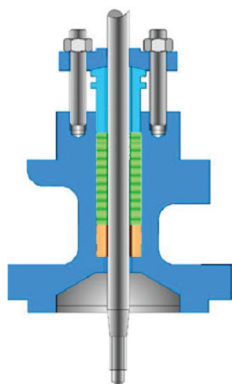


2K - 2 STAGE

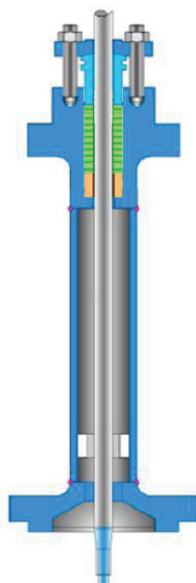


3K - 3 STAGE

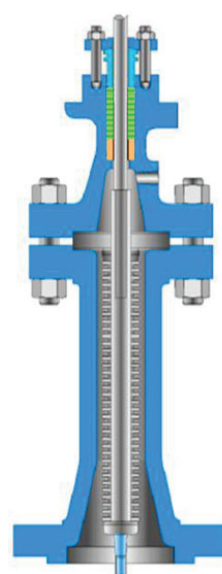
Bonnet Types



CE1 STANDARD



CE3 EXTENDED

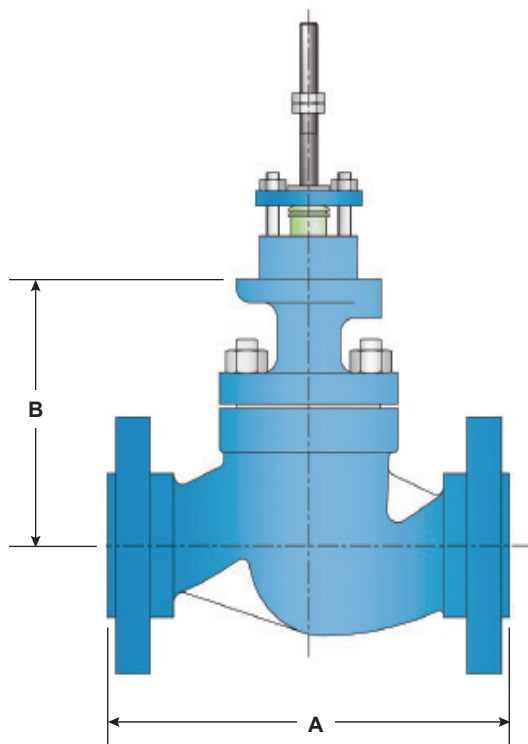


CE4 EXTENDED WITH BELLOWS

Sizes and Weights (approximate) in pounds and (kg)

Valve Size	ASME CL 150 & 300		ASME CL 600	
	Standard Bonnet CE1*		Standard Bonnet CE1*	
	FLG	BW/SW/THD	FLG	BW/SW/THD
1/2"	26 (12)	22 (10)	36 (16)	31 (14)
3/4"	36 (16)	26 (12)	37 (17)	31 (14)
1"	36 (16)	26 (12)	37 (17)	31 (14)
1 1/2"	49 (22)	36 (16)	53 (24)	36 (16)
2"	66 (30)	49 (22)	66 (30)	49 (22)
3"	132 (60)	84 (38)	132 (60)	99 (45)
4"	209 (95)	132 (60)	220 (100)	143 (65)
6"	375 (170)	242 (110)	463 (210)	265 (120)
8"	661 (300)	617 (280)	772 (350)	727 (330)

Dimensions (approximate) in inches and (mm)



Valve Size	A - FLANGED BODY			B		
	ANSI/ISA-75.08.01			BONNET TYPE		
	Class 150	Class 300	Class 600	CE1	CE3	CE4
½"	7.25 (184)	7.5 (190)	8 (203)	5.35 (136)	9.13 (232)	14.17 (360)
¾"		7.62 (194)	8.12 (206)			12.13 (308)
1"		7.75 (197)	8.25 (210)			
1½"	8.75 (222)	9.25 (235)	9.88 (251)	5.87 (149)	11.89 (302)	12.2 (310)
2"	10 (254)	10.5 (267)	11.25 (286)	6.73 (171)	18.86 (479)	17.72 (450)
3"	11.75 (298)	12.5 (318)	13.25 (337)	7.8 (198)	19.92 (506)	21.46 (545)
4"	13.88 (352)	14.5 (368)	15.5 (394)	8.58 (218)	20.67 (525)	28 (712)
6"	17.75 (451)	18.62 (473)	20 (508)	13.15 (334)	23.27 (591)	32.87 (835)
8"	21.38 (543)	22.38 (568)	24 (610)	16.54 (420)	28.54 (725)	36.18 (919)

85 Series Pneumatic Actuators

The 85 Series control valves are normally actuated by DC Series spring and diaphragm actuator or PP Series piston actuator, both manufactured by Hiter.

85 series valves can also be supplied with electric or hydraulic actuators.

Please contact Hiter for your specific requirements.



DC Series
Spring Diaphragm Actuator



PP Series
Piston Actuator

Positioners

The 85 Series control valves are available with the complete range of Spirax Sarco positioners. Alternative positioners are also available. Please contact Hiter or Spirax Sarco for your specific requirements.

85 Series Selection Guide

Series	85	85
Types	51, 52, 61, 62, 58, 68, 70, 71	51
Valve Size	½", ¾", 1", 1½", 2", 3", 4", 6", 8"	4"
Class	150, 300 and 600	150
Body Material	WCB - Carbon Steel ASTM A216 WCB	WCB
	WC9 - Alloy Steel Cr-Mo-V ASTM A217 WC9	
	CF8M - Stainless Steel ASTM A351 CF8M	
Trim Materials	316 stainless steel	316
	17-4PH stainless steel hardened 410 stainless steel hardened	
	316 stainless steel with Stellite coating	
Bonnet Type	CE1	CE1
	CE3	
	CE4	
Stem Seal Material	Braided PTFE	Graphite
	Graphite	

Order Example

85	51	4"	150#	WCB	316	CE1	Graphite
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