



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 16.34 600#, 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 CE mark when so required and applicable.

Series 85 Available Versions

ASME B16.34 150, 300 or 600 Classes Sizes 1" to 8"

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 1.1/2" to 4"

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 1/2" to 2"

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	Buttweiding	1500# to 600#	ASME B16.25	ISA S75.08.05	3" to 8"

	Material	Range Temperature ⁽²⁾
Body Material	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)

	Model Reference	Temperatura 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	CE3 / CE4 Bonnet	CE1 Bonnet	CE3 / CE4 Bonnet
	-22°F to 450°F (-30°C to 232°C)	-150°F to 572°F (-101°C to 300°C)	-22°F to 662°F (-30°C to 350°C)	-94°F to 1100°F (-70°C to 595°C)

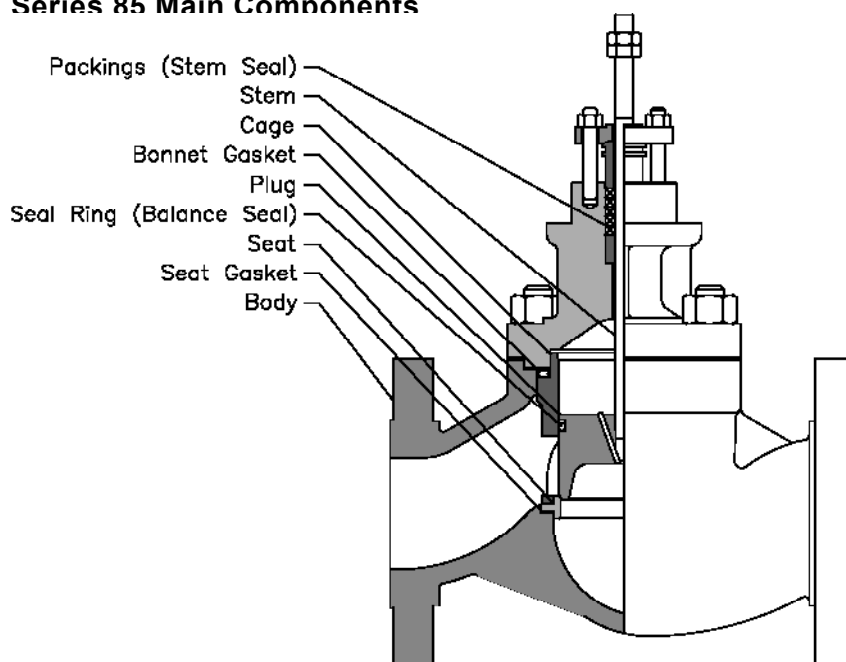
	Gasket Material Options	Min. Temperature	Max. Temperature
Gasket Material Combinations	PTFE + 316L SST filled with PTFE	-328°F (-200°C)	450°F (232°C)
	316L SST with Graphite + 316 SST	-4°F (-20°C)	1100°F (593°C)

Technical Specifications

	Material	Temperature Limit
Seal Ring Materials	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

Type	Plug/Seat		Cage	Seal Ring	Max. ΔP.	Temperature Range
	85-51	316SST		17-4PH SST Hardened	See Seal Ring Table Above	300 psi (20 bar)
ASME B16.34 CL 150 to 600	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)
Type	Plug	Seat	Cage	Seal Ring	Max. ΔP.	Temperature Range
85-61						
ASME B16.34 CL 150 to 600	316SST	316SST w/ PTFE	17-4PH SST Hardened	See Seal Ring Table Above	300 psi (20 bar)	-128°F to 392°F (-89°C to 200°C)
Type	Plug/Seat		Cage	Seal Ring	Max. ΔP.	Temperature Range
85-70	316SST		17-4PH SST Hardened		300 psi (20 bar)	-150°F to 600°F (-101°C to 316°C)
ASME B16.34 CL 150 to 600	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)
Type	Plug/Seat		Cage	Seal Ring	Max. ΔP.	Temperature Range
85-71	17-4PH SST Hardened		17-4PH SST Hardened		1500 psi (103 bar)	-20°F to 788°F (-29°C to 420°C)
ASME B16.34 CL 150 to 600	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)
Type	Plug/Seat		Cage	Seal Ring	Max. ΔP.	Temperature Range
85-52 and 85-58	316SST		17-4PH SST Hardened		300 psi (20 bar)	-150°F to 600°F (-101°C to 316°C)
ASME B16.34 CL 150 to 600	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)
Type	Plug	Seat	Cage	Seal Ring	Max. ΔP.	Temperature Range
85-62 and 85-68						
ASME B16.34 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 (C _v)											
	Size	LV	PV	MV	1R	2R	3R	4R	1K	2K	3K
Model Types 85-51 85-61 85-70 85-71	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 (C _v)							
Model Types	Size			Orifice Code	LC	PC	MV
	85-52 85-62	1/2"	3/4"	1" 1 1/2" 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
M8					10,6	10,6	8
M9	13	13	10				

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

	Flow Capacity (C _v)		
	Size	LC	PC
Model Types 85-58 85-68	1 1/2"	17 - 23	17 - 23
	2"	16 - 41	15 - 41
	3"	44 - 115	20 - 115
	4"	44 - 195	73 - 195

Flow Characteristic LC - Linear
PC - Equal Percentage

Seat Leakage Class

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

Special Trims

Noise Control (R)



1R - 1 STAGE



2R - 2 STAGES



3R - 3 STAGES

Cavitation Control (K)



1K - 1 STAGE

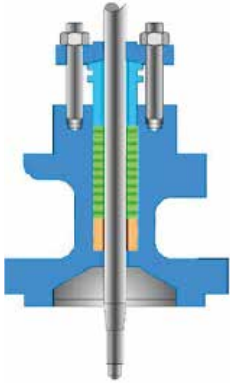


2K - 2 STAGE

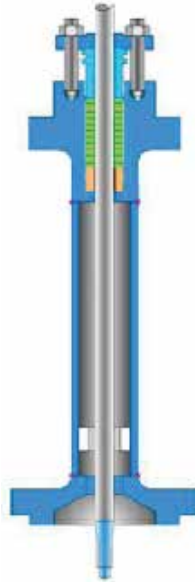


3K - 3 STAGE

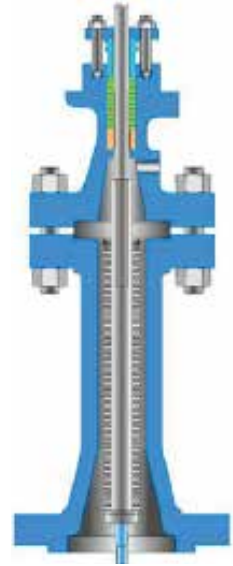
Bonnet Types



CE1 STANDARD



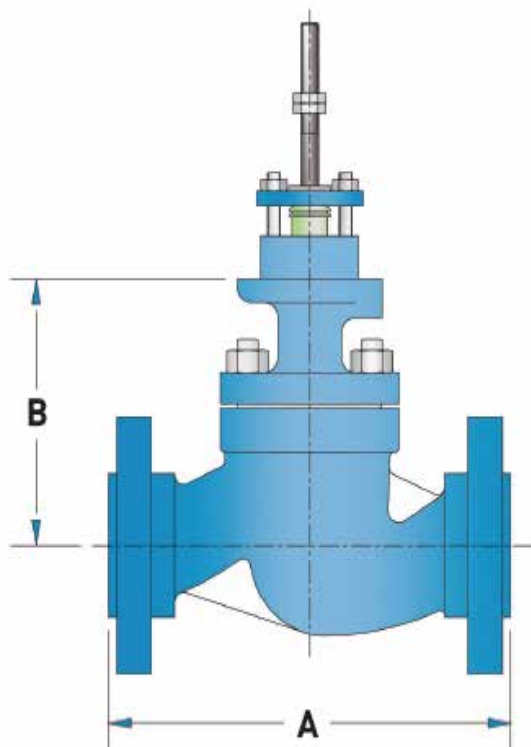
CE3 EXTENDED



CE4 EXTENDED WITH BELLOWS

Sizes and Weights

Valve Size	ASME Class 150/300 Standard Bonnet CE1* lb (kg)		ASME Class 600 Standard Bonnet CE1* lb (kg)	
	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 (21)	265 (120)
8"	661 (300)	617 (280)	772 (350)	727 (330)



Dimensions

Valve Size	A - FLANGED BODY in (mm)			B in (mm)		
	ANSI/ISA-75.08.01			BONNET TYPE		
	150 Class	300 Class	600 Class	CE1	CE3	CE4
1/2"	7.25" (184)	7.50" (190)	8" (203)	5.35" (136)	9.13" (232)	14.17 (360)
3/4"	7.25" (184)	7.62" (194)	8.12" (206)	5.35" (136)	9.13" (232)	14.17 (360)
1"	7.25" (184)	7.75" (197)	8.25" (210)	5.35" (136)	9.13" (232)	12.13 (308)
1 1/2"	8.75" (222)	9.25" (235)	9.88" (251)	5.87" (149)	11.89" (302)	12.20" (310)
2"	10" (254)	10.50" (267)	11.25" (286)	6.73" (171)	18.86" (479)	17.72" (450)
3"	11.75" (298)	12.50" (318)	13.25" (337)	7.80" (198)	19.92" (506)	21.46" (545)
4"	13.88" (352)	14.50" (368)	15.50" (394)	8.58" (218)	20.67" (525)	28" (712)
6"	17.75" (451)	18.62" (473)	20.00" (508)	13.15" (334)	23.27" (591)	32.87" (835)
8"	21.38" (543)	22.38" (568)	24.00" (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", 1 ½", 2", 3", 4", 6", 8"	4"
Class	150, 300 and 600	150
Body Material	WCB - Carbon Steel ASTM A216 WCB WC9 - Alloy Steel Cr-Mo-V ASTM A217 WC9 CF8M - Stainless Steel ASTM A351 CF8M	WCB
Trim Materials	316 stainless steel 17-4PH stainless steel hardened 410 stainless steel hardened 316 stainless steel with Stellite coating	316
Bonnet Type	CE1 CE3 CE4	CE1
Stem Seal Material	Braided PTFE Graphite	Graphite

Order Example

85	51	4"	150#	WCB	316	CE1	Graphite
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