HITER

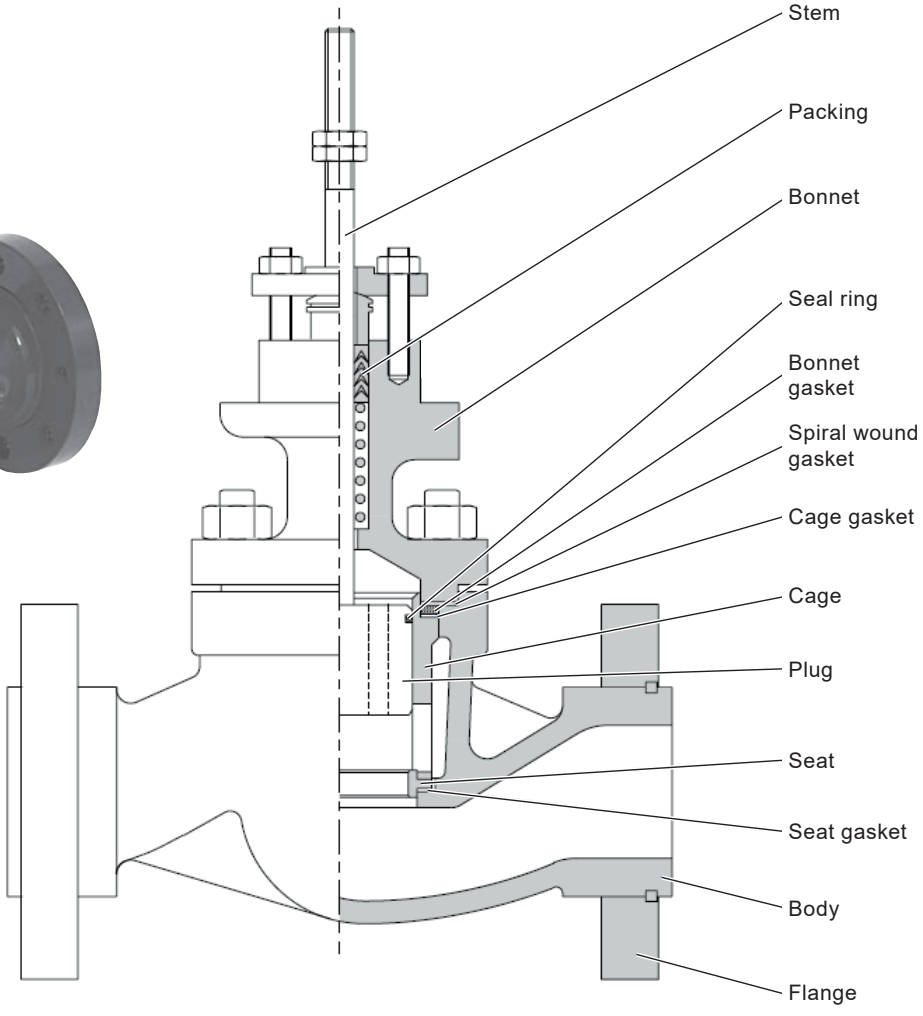
85 Series control valve

Description

The 85 Series check valve, which is considered a high-quality valve, provides excellent sensibility, fine control and easy adjustment, with very reduced weight and size.

Due to the component responsibility for an adequate valve performance, for maintenance use only original parts supplied by HITER.

Main parts identification



Technical specifications

Characteristic	Globe control valve with loose or cast integral to the body flanges	
Available types	**85-01 and 85-51**	With balanced plug, cage guided and seal ring between plug and cage. Suitable for high pressure drop applications and where shut-off is not critical.
	85-11 and 85-61	With balanced plug, cage guided seal ring between plug and cage and soft seat. Suitable for applications tha require tight shut-off.
	85-20 and 85-70	With unbalanced plug, cage guided. Suitable for flow pressure drop applications that require a good shut-off.
	85-21 and 85-71	With balanced plug, cage guided and metal seat with between plug and cage. Suitable for high pressure drop and high temperature appplications, where shut-off is not critical.
	85-02 and 85-52	With low contour and 'V' plug, top guided. Suitable for high pressure drop applications, low flow, high temperature and that require and good shut-off.
	85-12 and 85-62	With low flow contour and 'V' plug, top guided and soft seat. Suitable for low flow applications that require tight shut-off.
	85-08 and 85-58	With contour plug, top guided. Suitable for low flow applications that require tight shut-off.
	85-18 and 85-68	With contour plug, top guided and soft seat. Suitable applications that require tight shut-off.
	85-80 and 85-88	With two stage plug, cage guided. Suitable for high pressure drop and high temperature applications that require a good shut-off
Sizes	0.5" through to 8"	
End connections	**FR**	Raised face. Sizes 0.5" through to 8"
	RC	Threaded. Sizes 0.5" through to 2"
	SW	Socket welding. Sizes 0.5" through to 2"
	BW	Butt welding. Sizes 3" through to 8"
Pressure/ temperature ratings	ASME B16.34 Class 150, 300 or 600	

Body materials
Other materials are available on application

Material	Temperature range [1]
Carbon steel (WCB)	-29 °C to 425 °C
Cr-Mo steel (C5)	-29 °C to 650 °C [2]
304 stainless steel (CF8)	-253 °C to 816 °C [2]
316 stainless steel (CF8M)	-253 °C to 816 °C [2]

[1] Do not exceed the maximum pressure and temperature for the class rating of the valve.
[2] ASME Class 150 over 538 °C for welding end valves only.

Flange materials	Carbon steel or same as body material	
Bonnet types	**CE1**	Standard
	CE2	Extended for very high or very low temperature
	CE3	Extended with bellows seal

Trim materials

85-01 and 85-51 types

Other materials are available on application

Plug	Seat	Cage	Seal ring	Max ΔP (bar)	Temperature range
304 stainless steel		410 stainless steel hardened	EPDM	21	-29 °C to 120 °C
316 stainless steel					
304 stainless steel		17.4 PH stainless steel hardened	EPDM	21	-29 °C to 120 °C
316 stainless steel					
410 stainless steel hardened		410 stainless steel hardened	EPDM	103.4	-29 °C to 120 °C
410 stainless steel hardened			Graphite	103.4	-29 °C to 420 °C
304 stainless steel with stellite hard faced seat and guide	304 stainless steel with stellite hard faced seat and bore	CR-Mo alloy steel nitrided	Graphite	103.4	421 °C to 566 °C
316 stainless steel with stellite hard faced seat and guide	316 stainless steel with stellite hard faced seat and bore				

Trim materials

85-11 and 85-61 types

Other materials are available on application

Plug	Seat	Cage	Seal ring	Max ΔP (bar)	Temperature range
304 stainless steel	304 stainless steel with PTFE	410 stainless steel hardened	EPDM	21	-29 °C to 120 °C
316 stainless steel	316 stainless steel with PTFE		VITON		-25 °C to 200 °C
304 stainless steel	304 stainless steel with PTFE	17.4 PH stainless steel hardened	EPDM	21	-29 °C to 120 °C
316 stainless steel	316 stainless steel with PTFE		VITON		-25 °C to 200 °C

Technical specifications (continued)

Trim materials

85-20 and 85-70 85-21 and 85-71 85-80 and 85-88 types

Other materials are available on application

Plug	Seat	Cage	Max ΔP (bar)	Temperature range
304 stainless steel		410 stainless steel hardened	21	-29 °C to 316 °C
316 stainless steel				
304 stainless steel		17.4 PH stainless steel hardened	21	-101 °C to 316 °C
316 stainless steel				
410 stainless steel hardened		410 stainless steel hardened	103.4	-29 °C to 420 °C
410 stainless steel hardened		17.4 PH stainless steel hardened	103.4	
304 stainless steel with stellite hard faced seat and guide	304 stainless steel with stellite hard faced seat and bore	CR-Mo alloy steel nitrided	103.4	421 °C to 566 °C
316 stainless steel with stellite hard faced seat and guide	316 stainless steel with stellite hard faced seat and bore			

Trim materials

85-02 and 85-52 85-08 and 85-58 types

Other materials are available on application

Plug	Seat	Guide bushing	Max ΔP (bar)	Temperature range
304 stainless steel		410 stainless steel hardened	21	-29 °C to 316 °C
316 stainless steel				
304 stainless steel		17.4 PH stainless steel hardened	21	-101 °C to 316 °C
316 stainless steel				
304 stainless steel with stellite hard faced seat		410 stainless steel hardened	100	-29 °C to 150 °C
316 stainless steel with stellite hard faced seat				
304 stainless steel with stellite hard faced seat and contour	304 stainless steel with stellite hard faced seat and bore		90	150 °C to 316 °C
316 stainless steelwith stellite hard faced seat and contour	316 stainless steelwith stellite hard faced seat and bore			
304 stainless steel with stellite hard faced seat, contour and guide	304 stainless steel with stellite hard faced seat and bore	304 stainless steel with stellite lands	103.4	-29 °C to 566 °C
316 stainless steelwith stellite hard faced seat, contour and guide	316 stainless steel with stellite hard faced seat and bore	316 stainless steel with stellite lands		
410 stainless steel hardened		410 stainless steel hardened	430.9	-29 °C to 420 °C

Trim materials

85-12 and 85-62 85-18 and 85-68 types

Other materials are available on application

Plug	Seat	Guide bushing	Max ΔP (bar)	Temperature range
304 stainless steel	304 stainless steel with PTFE	410 stainless steel hardened	21	-29 °C to 200 °C
316 stainless steel	316 stainless steel with PTFE			
304 stainless steel	304 stainless steel with PTFE	17.4 PH stainless steel hardened	21	-89 °C to 200 °C
316 stainless steel	316 stainless steel with PTFE			

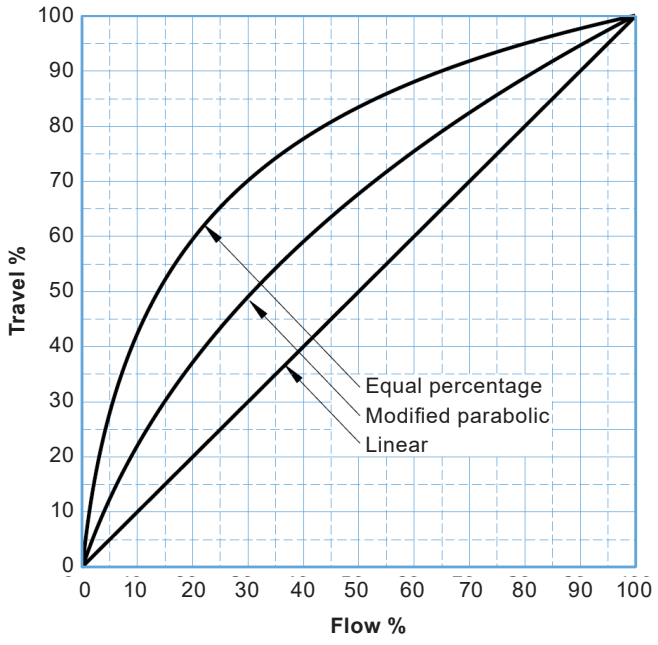
Packing materials

Material	Temperature range	
	Standard bonnet	Extended bonnet
PTFE 'V' rings	-30 °C to 232 °C	-101 °C to 427 °C
Braided PTFE	-30 °C to 232 °C	-101 °C to 427 °C
Graphite	-30 °C to 370 °C	-70 °C to 566 °C

Gasket materials

Seat bonnet and cage gasket	Spiral-wound gasket	Temperature limit
Sythentic fibres with NBR rubber (non asbestos)	304 stainless steel and synthentic fibres with NBR rubber (non asbestos)	175 °C
Carbon fibres with NBR rubber (non asbestos)	304 stainless steel and carbon and graphite fibres with NBR rubber (non asbestos)	210 °C
PTFE	304 stainless steel and PTFE	232 °C
Expanded graphite laminate with stainless steel insert	Inconel and expanded graphite	593 °C

Flow characteristics



Technical specifications (continued)

Flow coefficient - C_v

85-01 and 85-51
85-11 and 85-61
85-20 and 85-70
85-21 and 85-71

Body size	Flow characteristic									
	LV	PV	MV	1R	2R	3R	4R	1K	2K	3K
1"	19	17	11	18	-	-	-	11	4-6	-
1.5"	38-23	34-22	20-12	18-33	13-25	-	-	12-20	5-10	3-7
2"	63-30	52-26	40-12	22-63	17-50	10-26	-	14-35	8-23	2-16
3"	130-88	118-57	120-32	38-125	50-85	20-57	24-32	20-90	27-45	21-35
4"	215-105	200-95	150-20	52-190	65-143	57-125	14-72	52-170	53-80	37-56
5"	410-155	390-140	310-64	350-104	242-85	212-96	120-72	176-51	138-69	95-48
6"	870-260	820-210	820-118	665-400	415-186	365-125	212-94	215-104	210-105	130-68

LV - Linear
PV - Equal percentage
MV - Modified parabolic

1R, 2R, 3R and 4R - Low noise 1, 2, 3 and 4 stages respectively
1K, 24 and 3K - Anti-cavitation 1, 2 and 3 stages respectively

Flow coefficient - C_v

85-02 and 85-52
85-12 and 85-62

Body size	Orifice code	Stroke	PC	LC	MV [1]
0.5 to 2" [2]	M1	0.75"	-		0.25
	M2		-		0.4
	M3		0.85		
	M4		2		
	M5		3.4		
	M6		5.5		
	M7		7.5		
	M8		10.6		8
	M9		13		10

PC - Equal percentage
LC - Linear
MV - Modified parabolic

[1] Not available for 85-12 and 85-62 types
[2] Size 0.5" only from M1 up to M5 orifice code. Size 0.75" only from M1 to M7 orifice code.

Flow coefficient - C_v

85-08 and 85-58
85-18 and 85-68

Body size	Flow characteristic	
	LC	PC
1.5"	17 - 23	
2"	16 - 41	26 - 41
3"	44 - 115	20 - 115
4"	73 - 195	

LC - Linear
PC - Equal percentage

	Body size	Flow characteristic		
		LV	PV	MV
Flow coefficient - C_v	1.5"	32	34	16
	2"	56	52	26 - 35
85-80 and 85-88	3"	70 - 114	57 - 118	30 - 102
	4"	96 - 195	95 - 200	20 - 136

PC - Equal percentage
LC - Linear
MV - Modified parabolic

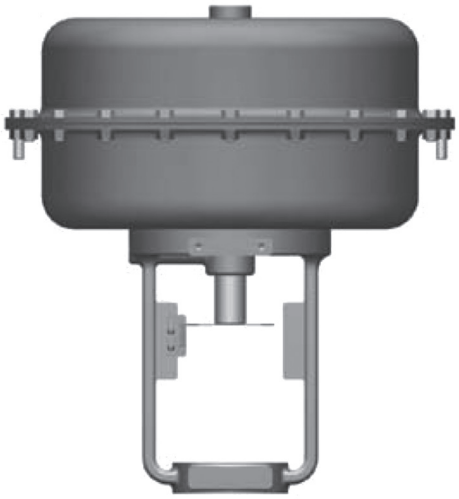
	Valve type	Class	Note
Leakage classes ANSI/FCI 70-02	85-01 and 85-51	IV or V	With seal ring or elastomer
	85-02 and 85-52	IV	Metal seat
	85-08 and 85-58		
	85-21 and 85-71		
	85-11 and 85-61	VI	With PTFE seat
	85-12 and 85-62		
	85-20 and 85-70	IV or V	Metal seat
	85-80 and 85-88		

Face-to-face dimensions	Can be supplied with face-to-face: according to ANSI/ISA-S75.08.08 (85-01 / 85-11 / 85-20 / 85-21 / 85-02 / 85-12 / 85-08 / 85-18 / 85-80 types) or according to ANSI/ISA-S75.08.08 (85-51 / 85-61 / 85-70 / 85-71 / 85-52 / 85-62 / 85-58 / 85-68 / 85-88 types)
Special trims	Low noise cage. Anti-cavitation cage

Actuators

The 85 series control valve is normally operated diaphragm/spring pneumatic actuators (DC series) or by double action or spring return pneumatic piston actuators (PP series). In both cases changing action from direct to reverse, or vice-versa can be done at the field, without parts replacement and further costs.

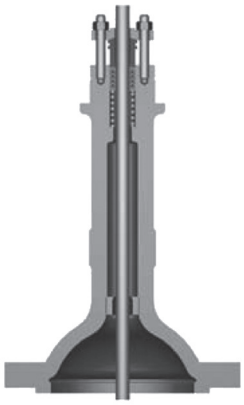
Can also be supplied with electric, hydraulic or electro-hydraulic actuators. Detailed information about actuators are given in specific bulletins.



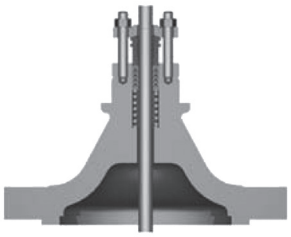
DC series diaphragm/spring actuator

DC series diaphragm/spring actuator

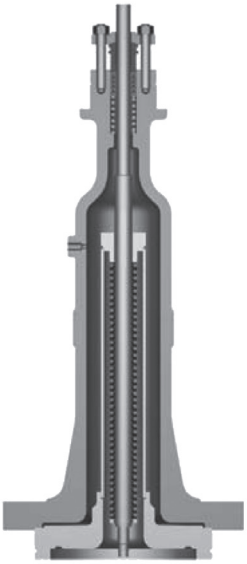
Bonnet types



CE-3 extended



CE-1 standard

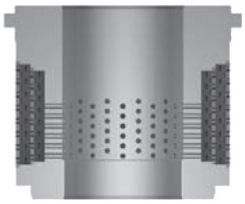


CE-3 extended with bellows

Special trims

1R - 1 stage low noise

2R - 2 stages low noise



3R - 3 stages low noise

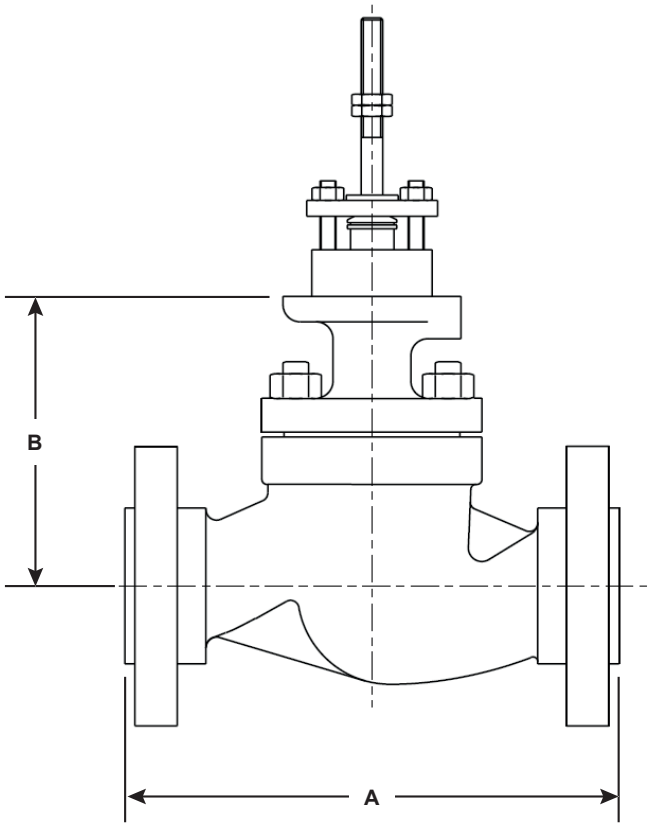
1K - 1 stage anti-cavitation

2K - 2 stages anti-cavitation

3K - 3 stages anti-cavitation

Dimensions (approximate) in inches and mm

Body size	A - Flanged body (mm)					B (mm)		
	ANSI/ISA-S75.08.07		ANSI/ISA-S75.08.01			BONNET TYPE		
	Class 150/300	Class 600	Class 150	Class 300	Class 600	CE1	CE3	CE4
0.5"	216		184	190	203	136	232	360
0.75"	216		187	194	206	136	232	360
1"	216		184	197	210	135	232	308
1.5"	241		222	235	251	149	302	310
2"	292		254	267	286	171	479	450
3"	356		298	317	337	198	506	545
4"	432	-	352	368	394	218	525	712
6"	-	-	450	473	508	334	591	835
8"	-	-	542	568	610	420	725	919



Ordering information

1 Valve size and type
2 End connection style
3 Body material
4 Trim material
5 Bonnet type
6 Packing material
7 Maximum working condition
8 Normal working condition
9 Minimum working condition
10 Shut-off differential pressure
11 Specific gravity
12 Specific heat ratio
13 Critical pressure
14 Critical temperature
15 Viscosity
16 Inlet and outlet pipe diameter and thickness