

CS 80

Self-Operated Temperature Regulators

The CS80 Series is completely self-operated and requires no external power source or other expensive instrumentation to operate the valve.

The operation of the CS80 is fairly simple. A pre-measured amount of liquid fill is drawn into the thermal system filling the upper diaphragm chamber, the capillary tube, and most of the bulb. As the controlled temperature increases, the volatile liquid fill in the sensing bulb begins to vaporize and creates pressure on the sealed system. This pressure drives the valve stem, closing direct acting valves, or opening reverse acting valves.

Because of the shorter stroke length of the sliding gate seats, the CS80 is able to utilize a sealed actuator with a stainless steel diaphragm, and does not require a bellows to operate. To seal the actuator, the upper and lower casings and diaphragm are heli-arc welded around the circumference to create a solid bond. This seal eliminates the need for any type of gasket. All sealing surfaces on the CS80 are metal to metal.

Accurate temperature control begins with a reliable actuator.

A temperature regulator is only as good as its actuator and a great deal of research has gone into the development of CSSC's stainless steel SWA actuator. That is why the SWA, combined with CSSC's sliding gate regulator design, provides the finest temperature control available in a self-operated design. Among the features of the SWA actuator:

- **Heliarc welded construction:** the upper and lower casings, and diaphragm, are heliarc welded around the circumference to fuse a solid bond and eliminate the need for a gasket, a common source for leakage.
- **Stainless Steel diaphragm:** pre-formed from AISI 347 SST to eliminate rupturing caused by metal fatigue brought about by constant stress, the most common failure in bellows actuators.
- **Sensitive control:** because of the stroke length, the span of an SWA is about 1/3 that of a typical bellows actuator.



- **Simple replacement:** attached to the yoke by just four screws, the actuator can be replaced in less than five minutes. Control ranges can be changed with the valve in line by simply replacing the actuator.
- **Liquid/vapor thermal system:** to obtain the force needed to position the valve seats, CSSC uses a liquid/vapor thermal system that is capable of delivering far more operating power than the simple liquid expansion systems used on other temperature regulators. As the sensed temperature increases, the liquid fill in the bulb begins to vaporize and creates pressure within the sealed system. This pressure, exerted on the diaphragm, drives the valve stem to modulate the valve seats to the proper position.

FEATURES

- High rangeability — controls flows from 5% to 100% of rated capacity
- Sliding gate seats provide —
 - Straight-through flow for reduced turbulence and quiet operation
 - Short stroke for fast response and accurate temperature control
 - Easily interchangeable Cv's
 - Tight shutoff due to overlap of seat closure area
- Available with capillaries up to 100 feet in length

Central Station Steam Company - Cadillac Meters

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SPECIFICATIONS

Line Sizes: 1/2" (DN15) through 2" (DN50)

End Connections

- Threaded — FNPT, BSPT, BSPP
- ANSI Flanges — 150#, 300#
- DIN Flanges — PN10/16, PN25/40

Body Materials

- Ductile Iron
- Bronze
- Carbon Steel
- Stainless Steel

Trim Materials

- 303 SS for DI, BRZ & CS body valves
- 316SS for SS body valves

Seat Materials

- Jorcote on SST — Standard
- Jorcote/Jordanic on SST — For severe service
- Chrome Plated SST — Optional

Yoke Material: Cast Iron

Stem Packing Materials

- Spring-loaded Teflon (to 450°F max/232°C max)
- braided (above 500°F/260°C up to 650°F/343°C)

Service: steam, water, oil, gas, air and chemicals

Shutoff: ANSI Class IV

Action

- Direct (increase in temperature closes valve)
- Reverse (increase in temperature opens valve)

Body Rating (Max):

- Ductile Iron: 988 psi @ 100°F; 988 psi @ 450°F (68,1 bar @ 37,8°C; 68,8 bar @ 232,2°C)
- Carbon Steel: 1480 psi @ 100°F; 1235 psi @ 450°F (102,0 bar @ 37,8°C; 85,2 bar @ 232,2°C)
- Stainless Steel: 1480 psi @ 100°F; 990 psi @ 450°F (102,0 bar @ 37,8°C; 68,3 bar @ 232,2°C)
- Bronze: 500 psi @ 100°F; 350 psi @ 450°F (34,5 bar @ 37,8°C; 24,1 bar @ 232,2°C)
- -20°F (-28,9°C) temperature limit on all materials
- For other temperatures, consult factory

Overheat Protection: 100°F (56°C) above top of control range

Cv Values & Maximum Differential Pressure

Size		Flow Coef.		Seat Material	Max ΔP	
Inches	DN	Cv	Kv		PSI	BAR
1/2" or 3/4"	15 or 20	2.5 or 4.4	2,15 or 3,78	SST	125	8,62
				Jorcote	300	20,68
1" or 1-1/4"	25 or 32	6.4 or 9.5	5,50 or 8,17	SST	125	8,62
				Jorcote	250	17,24
1-1/2"	40	15	12,9	SST	75	5,17
				Jorcote	175	12,07
2"	50	25 or 30	21,5 or 25,8	SST	75	5,17
				Jorcote	175	12,07

Low Flow Cv's Available

Reduced Cv's can be used in a valve of any size so long as the required Cv is a smaller value than the standard for that particular size. In addition, the following Cv values can be provided:

1.6 (1,4)	0.84 (0,72)	0.42 (0,36)	0.21 (0,18)	0.08 (0,07)	0.04 (0,03)
0.02 (0,017)	0.008 (0,007)	0.004 (0,003)	0.002 (0,0017)	0.0008 (0,0007) (N/A in 316SS)	

Available Temperature Control Ranges & Spans

Range °F (°C)	Thermal Fill	Temperature span from closed to open °F (°C) with standard spring **		
		1/4" - 3/4"	1" - 1-1/4"	1-1/2" - 2"
-20 to 20 (-29 to -7)	Freon 22	8 (4)	12 (7)	16 (9)
10 to 55 (-12 to 13)	Freon R134A	9 (5)	14 (8)	17 (9)
35 to 90 (2 to 32)	Iso Butane	11 (6)	15 (8)	18 (10)
55 to 115 (13 to 46)	N-Butane	11 (6)	15 (8)	18 (10)
80 to 140 (27 to 60)	Ethyl Chloride	11 (6)	15 (8)	18 (10)
110 to 165 (43 to 74)	Freon R123	15 (8)	22 (12)	26 (14)
120 to 185 (49 to 85)	Ethyl Ether	15 (8)	22 (12)	26 (14)
160 to 225 (71 to 107)	Acetone	15 (8)	22 (12)	26 (14)
205 to 260 (96 to 127)	Isopropyl Alcohol	9 (5)	14 (8)	17 (9)
230 to 290 (110 to 143)	N-Propyl Alcohol	11 (6)	15 (8)	18 (10)
265 to 325 (129 to 163)	N-Butyl Alcohol	11 (6)	15 (8)	18 (10)
315 to 400+ (157 to 204)	M-Xylene	12 (7)	19 (11)	21 (12)
380 to 450+ (193 to 232)	P-Cymene	12 (7)	19 (11)	21 (12)

** Lower spans and ranges available with optional light spring

* Requires 1" x 14" bulb

THERMAL SYSTEM SPECIFICATIONS

Actuator: Type SWA

Capillary Material

- Standard — Copper
- Optional — SST

Armor/Bulb Material

- Standard — SST with copper bulb
- Optional — SST with SST bulb; Teflon with Teflon/SST bulb

Capillary/Armor Length

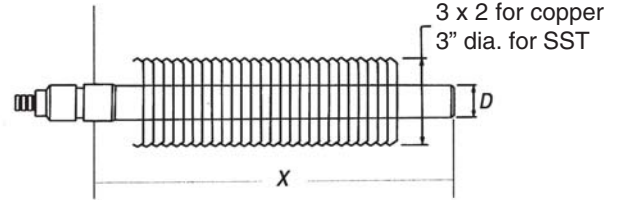
- Standard — 8 feet
- Optional — lengths to 100 feet

Standard Bulb Dimensions

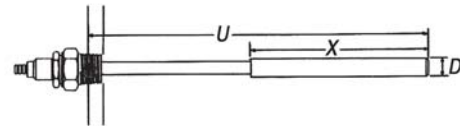
Bulb Type	Nominal Bulb Size (Diameter x Length) for ranges beginning...	
	101°F (38,3°C) or above	100°F (37,7°C) or below
A & B	1" x 12" (standard) (2,5cm x 30,5cm)	1" x 14" (standard) (2,5cm x 35,6cm)
	3/4" x 23" (optional) (1,9cm x 58,4cm)	3/4" x 27" (optional) (1,9cm x 68,6cm)
C	1" x 12" (SST only) (2,5cm x 30,5cm)	1" x 14" (SST only) (2,5cm x 35,6cm)
	1-1/8" x 14" (CU only) (2,9cm x 35,6cm)	1-1/8" x 14" (CU only) (2,9cm x 35,6cm)
D, E & F	1" x 12" (2,5cm x 30,5cm)	1" x 14" (2,5cm x 35,6cm)

TYPES OF BULBS

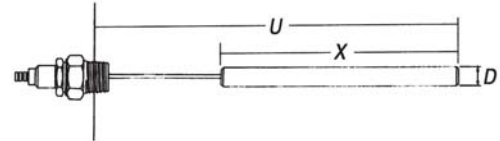
- Type C: *Finned Bulb*



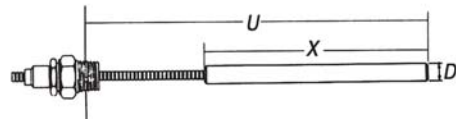
- Type D: *Bulb with Rigid "Dead" Extension*



- Type E: *Bulb with Pressure-tight Extension (well required for support when mounted horizontally)*

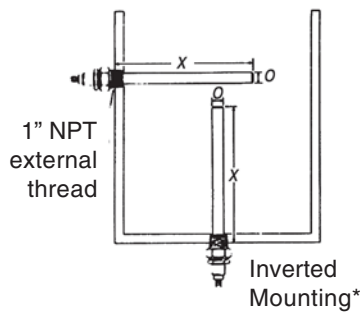


- Type F: *Bulb Extension with Adjustable Union*

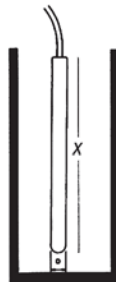


TYPES OF BULBS

- Type A: *Standard Bulb*
- Type B: *Plain Bulb*

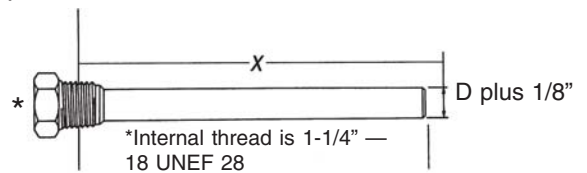


* must be specified on order

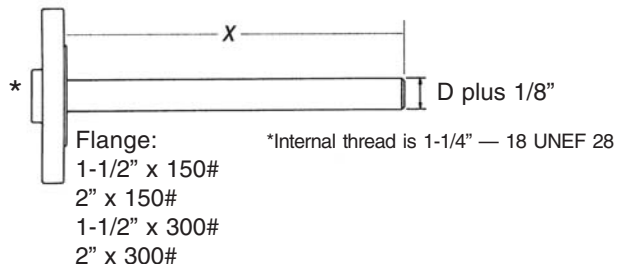


TYPES OF THERMAL WELLS

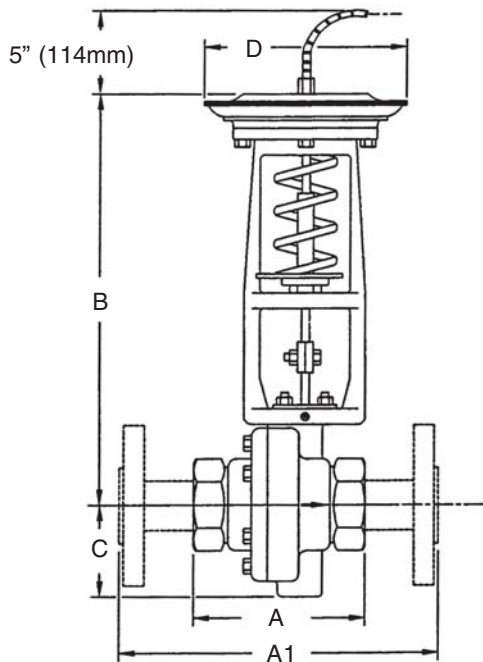
- Type A: *standard threaded connection*



- Type B: *optional flanged connection*



DIMENSIONS



■ CS 80 Threaded Ends

Flanged Ends: CS80							
Size	ANSI Flange	Dimensions — Inches				Weight — Lbs	
		A1	B	C	D	DI/BRZ	CS/SS
1/2"	150#	7.25	12.00	2.81	7.00	21	23
	300#	7.50	12.00	2.81	7.00	22	24
3/4"	150#	7.25	12.00	2.81	7.00	22	25
	300#	7.62	12.00	2.81	7.00	23	28
1"	150#	7.25	12.25	2.62	7.00	24	28
	300#	7.75	12.25	2.62	7.00	25	30
1-1/4"	150#	7.87	12.25	2.62	7.00	25	—
	300#	8.37	12.25	2.62	7.00	26	—
1-1/2"	150#	8.75	12.75	2.75	7.00	27	32
	300#	9.25	12.75	2.75	7.00	30	38
2"	150#	10.00	12.81	3.00	7.00	29	38
	300#	10.50	12.81	3.00	7.00	31	42

■ CS 80 Threaded Ends, Metric

Flanged Ends: CS80, DIN							
Size (DN)	Flange (PN)	Dimensions — mm				Weight — Kg	
		A1	B	C	D	DI/BRZ	CS/SS
15	10/16	130	305	55	178	9,5	10,4
	25/40	130	305	55	178	10	10,9
20	10/16	150	305	55	178	10	11,3
	25/40	150	305	55	178	10,4	12,7
25	10/16	160	311	67	178	10,9	12,7
	25/40	160	311	67	178	11,3	13,6
32	10/16	180	311	67	178	11,3	—
	25/40	180	311	67	178	11,8	—
40	10/16	200	324	70	178	12,2	14,5
	25/40	200	324	70	178	13,6	17,2
50	10/16	230	325	76	178	13,2	17,2
	25/40	230	325	76	78	14,1	19,1

■ CS 80 Threaded Ends

Threaded Ends: CS80						
Size	Material	Dimensions — Inches				Weight — lbs
		A	B	C	D	
1/2" & 3/4"	DI/BRZ	3.62	12.00	2.18	7.00	20
	CS/SS	3.65	12.00	2.18	7.00	21
1"	DI/BRZ	4.12	12.25	2.62	7.00	22
	CS/SS	4.12	12.25	2.62	7.00	23
1-1/4"	DI/BRZ	4.12	12.25	2.62	7.00	22
1-1/2"	DI/BRZ	4.50	12.75	2.75	7.00	24
	CS/SS	4.65	12.75	2.75	7.00	25
2"	DI/BRZ	4.50	12.81	3.00	7.00	24
	CS/SS	5.50	12.81	3.00	7.00	27

■ CS 80 Threaded Ends, Metric

Threaded Ends: CS80, DIN						
Size (DN)	Material	Dimensions — mm				Weight — kg
		A	B	C	D	
15 & 20	DI/BRZ	92	305	55	178	9,1
	CS/SS	93	305	55	178	9,5
25	DI/BRZ	105	311	67	178	10,0
	CS/SS	105	311	67	178	10,4
32	DI/BRZ	105	311	67	178	10,0
40	DI/BRZ	114	324	70	178	10,9
	CS/SS	118	324	70	178	11,3
50	DI/BRZ	114	325	76	178	10,9
	CS/SS	140	325	76	178	12,2

ORDER SCHEMATIC

1	2	3	4	5	6	7	8	9	10	11

1	Model	
80	Standard	
80T	with Thermometer	

2	Size		
		Inches	DN
	050	1/2"	DN15
	075	3/4"	DN20
	100	1"	DN25
	125	1-1/4"	DN32
	150	1-1/2"	DN40
	200	2"	DN50

3	Body Material	
DI	Ductile Iron	
BR	Bronze	
CS	Carbon Steel	
S6	Stainless Steel	

4	End Connections			
	PT	NPT	I7	PN10 DIN IFE
	BT	BSPT	F7	PN10 FE (exc. IFE)
	BP	BSPP	I6	PN16 DIN IFE
	SW	FSW	F6	PN16 FE (exc. IFE)
	F1	125# FE	I8	PN25 DIN IFE
	I5	150# IFE	F8	PN25 FE (exc. IFE)
	F5	150# FE (exc. IFE)	I4	PN40 DIN IFE
	F2	250# FE	F4	PN40 FE (exc. IFE)
	I3	300# IFE	ZZ	Non-Standard)
	F3	300# FE (exc. IFE)		

5	Trim	
T3	303SS / Teflon Packing	
T6	316SS / Teflon Packing	
TM	Monel / Teflon Packing	
TA	Alloy 20 / Teflon Packing	
TH	Hastelloy C / Teflon Packing	
I3	303SS / 287-I Packing	
I6	316SS / 287-I Packing	
IM	Monel / 287-I Packing	
IA	Alloy 20 / 287-I Packing	
IH	Hastelloy C / 287-I Packing	
ZZ	Non-Standard	

6	Seats			
	Material		Cv	
	A	303SST	Y	0.0008
	B	316SST	E	0.0002
	Q	303 / Teflon	F	0.004
	R	316 / Teflon	G	0.008
	S	Monel / Teflon	H	0.02
	T	Alloy 20 / Teflon	I	0.04
	U	HastelloyC Teflon	J	0.08
	V	303SS / Jorcote	1	0.21
	W	316SS / Jorcote	2	0.42
	X	303SS/Jorcote/Jordanic	3	0.84
	Y	316SS/Jorcote/Jordanic	4	1.6
	1	303SST w/std. WH	5	2.5
	2	316SST w/std. W.H.	6	4.4
			7	6.4
			8	9.5
			9	15
			A	25
			B	30
	ZZ	Non-Standard		

7		Cv	Kv
	1	0.21	0,18
	2	0.42	0,36
	3	0.84	0,72
	4	1.6	1,38
	5	2.5	2,15
	6	4.4	3,78
	7	6.4	5,50
	8	9.5	8,17
	9	15.0	12,9
	A	25.0	21,5
	B	30.0	25,8

ORDER SCHEMATIC (CONTINUED FROM PAGE 5)

8	Range			
	Standard Spring °F		Standard Spring °C	
	06	-20 ~ 20*	A6	-29 ~ -7
12	10 ~ 55	B2	-12 ~ 10	
19	35 ~ 90	B9	2 ~ 32	
27	55 ~ 115	C7	13 ~ 46	
35	80 ~ 140	D5	27 ~ 60	
42	110 ~ 165	E2	43 ~ 74	
49	120 ~ 185	E9	49 ~ 85	
58	160 ~ 225	F8	71 ~ 107	
66	205 ~ 260	G6	96 ~ 127	
72	230 ~ 290	H2	110 ~ 143	
81	265 ~ 325	J1	129 ~ 163	
88	315 ~ 400	J8	157 ~ 204	
93	380 ~ 450	K3	193 ~ 232	
Light Spring °F		Light Spring °C		
05	-25 ~ -5*	A5	-32 ~ -21	
11	5 ~ 35	B1	-15 ~ 2	
17	30 ~ 70	B7	-1 ~ 21	
24	50 ~ 90	C4	10 ~ 32	
32	75 ~ 115	D2	24 ~ 46	
41	105 ~ 140	E1	41 ~ 60	
46	115 ~ 160	E6	46 ~ 71	
56	155 ~ 200	F6	68 ~ 93	
64	195 ~ 235	G4	91 ~ 113	
71	225 ~ 270	H1	107 ~ 132	
79	260 ~ 300	H9	127 ~ 149	
86	310 ~ 370	J6	154 ~ 188	
92	375 ~ 440	K2	191 ~ 227	

9	Thermowell			
	Type, Fitting & Material		Size: for Bulb Dia. x Length	
A	Type A, 1" NPT, Cu	A	1" x 12" (24,5mm x 304,8mm)	
B	Type A, 1" NPT, SST	B	1" x 14" (24,5mm x 355,6mm)	
E	Type B, 1-1/2" x 150#, SST			
F	Type B, 1-1/2" x 300#, SST			
G	Type B, 2" x 150#, SST			
H	Type B, 2" x 300#, SST			
Tank Fitting Only				
11	1" NPT Brass for 1" Bulb			
12	1" NPT SST for 1" Bulb			
NN	None			

10	Thermowell System			
		Bulb Refer to the standard bulb dimensions chart for metrics	Cap/Arm ft (m)	Actuator
	N1N1Q	1"X12"	8 (2,4)	SWA
	N2N1Q	1"X14"	8 (2,4)	
	A1A2A	1"X12"	10 (3,1)	
	A2A2A	1"X14"	10 (3,1)	
	A1A4A	1"X12"	15 (4,6)	
	A2A4A	1"X14"	15 (4,6)	
	A2A1R	1"X14"	8 (2,4)	Reinforced SWA
	A2A2R		10 (3,1)	
	A2A3R		12 (3,7)	
	A2A4R		15 (4,6)	
	A2A5R		20 (6,1)	
	Q1N1Q	1"X12"	8 (2,4)	SWA
	Q2N1Q	1"X14"	8 (2,4)	
	G1B2A	1"X12"	10 (3,1)	
	G2B2A	1"X14"	10 (3,1)	
	G1B3A	1"X12"	12 (3,7)	
	G2B3A	1"X14"	12 (3,7)	
	G1B4A	1"X12"	15 (4,6)	
	G2B4A	1"X14"	15 (4,6)	
	G1B5A	1"X12"	20 (6,1)	
	G2B5A	1"X14"	20 (6,1)	
	G2B1R	1"X14"	8 (2,4)	Reinforced SWA
	G2B2R		10 (3,1)	
	G2B3R		12 (3,7)	
	G2B4R		15 (4,6)	
	G2B5R		20 (6,1)	
	H1B1A	1"x12"	8 (2,4)	SWA
	H2B1A	1"x14"	8 (2,4)	
	H1B2A	1"x12"	10 (3,1)	
	H2B2A	1"x14"	10 (3,1)	
	H1B3A	1"x12"	12 (3,7)	
	H2B3A	1"x14"	12 (3,7)	
	H1B4A	1"x12"	15 (4,6)	
	H2B4A	1"x14"	15 (4,6)	
	H1B5A	1"x12"	20 (6,1)	
	H2B5A	1"x14"	20 (6,1)	
	H2B1R	1"x14"	8 (2,4)	Reinforced SWA
	H2B2R		10 (3,1)	
	H2B3R		12 (3,7)	
	H2B4R		15 (4,6)	
	H2B5R		20 (6,1)	
	J3T1A	1"x17"	8 (2,4)	SWA
	J3T4A		10 (3,1)	
	J3T5A		12 (3,7)	

11	Action	
D	Direct	
R	Reverse	

CS 801/802

Self-Operated Temperature Regulators

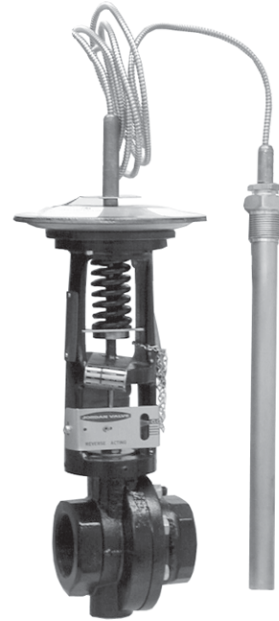
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The CS 801/802 Series is the high-flow and super-high flow versions of our CS 80 Series temperature regulator.

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- **Stainless Steel diaphragm:** pre-formed from AISI 347 SST to eliminate rupturing caused by metal fatigue brought about by constant stress, the most common failure in bellows actuators.
- **Sensitive control:** because of the stroke length, the span of an SWA is about 1/3 that of a typical bellows actuator.
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 - Straight-through flow for reduced turbulence and quiet operation
 - Short stroke for fast response and accurate temperature control
 - Easily interchangeable Cv's
 - Tight shutoff due to overlap of seat closure area
- Available with capillaries up to 100 feet (30m) in length

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- Bronze
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Trim Materials

- 303 SS for DI, BRZ & CS body valves
- 316SS for SS body valves

Seat Materials

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- Jorcote/Jordanic on SST — For severe service
- Chrome Plated SST — Optional

Yoke Material: Cast Iron

Stem Packing Materials

- Spring-loaded Teflon (to 450°F max/232°C max)
- braided (above 500°F/260°C up to 650°F/343°C)

Service: steam, water, oil, gas, air and chemicals

Shutoff: ANSI Class IV

Action

- Direct (increase in temperature closes valve)
- Reverse (increase in temperature opens valve)

Body Rating (Max):

- Ductile Iron: 988 psi @ 100°F; 988 psi @ 450°F (68,1 bar @ 37,8°C; 68,8 bar @ 232,2°C)
- Carbon Steel: 1480 psi @ 100°F; 1235 psi @ 450°F (102,0 bar @ 37,8°C; 85,2 bar @ 232,2°C)
- Stainless Steel: 1480 psi @ 100°F; 990 psi @ 450°F (102,0 bar @ 37,8°C; 68,3 bar @ 232,2°C)
- Bronze: 500 psi @ 100°F; 350 psi @ 450°F (34,5 bar @ 37,8°C; 24,1 bar @ 232,2°C)
- -20°F (-28,9°C) temperature limit on all materials
- For other temperatures, consult factory

Overheat Protection: 100°F (56°C) above top of control range

Cv Values & Maximum Differential Pressure

•CS 801

Size		Flow Coef.		Seat Material	Max ΔP	
Inches	DN	Cv	Kv		PSI	BAR
1/2" & 3/4"	15 & 20	6.4	5,50	SST	75	5,17
				Jorcote	200	13,79
1/2"	15	7.0	6,02	SST	75	5,17
				Jorcote	200	13,79
3/4"	20	9.5	8,17	SST	75	5,17
				Jorcote	200	13,79
1" & 1-1/4"	25 & 32	15	12,90	SST	75	5,17
				Jorcote	175	12,07
1"	25	18	15,48	SST	75	5,17
				Jorcote	175	12,07
1-1/4"	32	25	21,50	SST	75	5,17
				Jorcote	175	12,07
1-1/2" & 2"	40 & 50	30	25,80	SST	75	5,17
				Jorcote	175	12,07
1-1/2"	40	45	38,70	SST	75	5,17
				Jorcote	175	12,07
2"	50	50	43,00	SST	75	5,17
				Jorcote	175	12,07

•CS 802

Size		Flow Coef.		Seat Material	Max ΔP	
Inches	DN	Cv	Kv		PSI	BAR
1-1/2"	40	65	55,9	SST	75	5,17
				Jorcote	100	6,89
2"	50	70	60,2	SST	75	5,17
				Jorcote	100	6,89

Available Temperature Control Ranges & Spans

Range °F (°C)	Thermal Fill	Temperature span from closed to open °F (°C) w/ standard spring **	
		1/2" - 3/4" (DN15-20)	1" - 2" (DN25-32)
-10 to 20 (-23 to -7)	Freon 22	18 (10)	30 (17)
20 to 55 (-7 to 13)	Freon R134A	20 (11)	32 (18)
45 to 90 (7 to 32)	Iso Butane	21 (12)	33 (18)
65 to 115 (18 to 46)	N-Butane	21 (12)	33 (18)
90 to 140 (32 to 60)	Ethyl Chloride	21 (12)	33 (18)
120 to 165 (49 to 74)	Freon R123	31 (17)	38 (21)
130 to 185 (54 to 85)	Ethyl Ether	31 (17)	38 (21)
170 to 225 (77 to 107)	Acetone	31 (17)	38 (21)
215 to 260 (102 to 127)	Isopropyl Alcohol	20 (11)	32 (18)
240 to 290 (116 to 143)	N-Propyl Alcohol	21 (12)	33 (18)
275 to 325 (135 to 163)	N-Butyl Alcohol	21 (12)	33 (18)
325 to 400 (163 to 204)	Xylene	25 (14)	50 (28)
390 to 450+ (199 to 232)	P-Cymene	25 (14)	50 (28)

** Lower spans and ranges available with optional light spring

* Requires 1" x 17" bulb

THERMAL SYSTEM SPECIFICATIONS

Actuator: Type SWA

Capillary Material

- Standard — Copper
- Optional — SST

Armor/Bulb Material

- Standard — SST with copper bulb
- Optional — SST with SST bulb; Teflon with Teflon/SST bulb

Capillary/Armor Length

- Standard — 8 feet (2,4 meters)
- Optional — Lengths to 100 feet (30,5 meters)

Standard Bulb Dimensions

Bulb Type	Nominal Bulb Size (Dia. x Length) for ranges beginning...	
	101°F (38,3°C) or above	100°F (37,7°C) or below
A & B	1" x 14" (std.) (2,5cm x 35,6cm)	1" x 17" (Std.) (2,5cm x 43,2cm)
	3/4" x 27" (optional) (1,9cm x 68,6cm)	3/4" x 33" (optional) (1,9cm x 83,8cm)
C	1" x 14" (SST only.) (2,5cm x 35,6cm)	1" x 17" (SST only) (2,5cm x 43,2cm)
	1-1/8" x 14" (CU only.) (2,9cm x 35,6cm)	1-1/8" x 14" (CU only.) (2,9cm x 35,6cm)
D, E & F	1" x 14" (std.) (2,5cm x 35,6cm)	1" x 17" (Std.) (2,5cm x 43,2cm)

Types of Bulbs

- Type A: Standard Bulb
- Type B: Plain Bulb
- Type C: Finned Bulb
- Type D: Bulb with Rigid "Dead" Extension
- Type E: Bulb with Pressure-tight Extension (*well required for support when mounted horizontally*)
- Type F: Bulb Extension with Adjustable Union

Thermal Wells

- Type A: Standard Threaded Connection
- Type B: Optional Flanged Connection

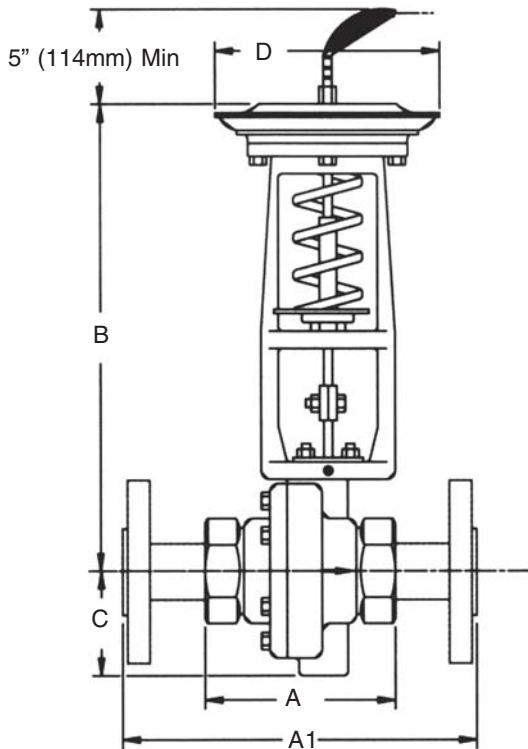
DIMENSIONS

■ CS 801/802 Threaded Ends

Threaded Ends:						
Size	Material	Dimensions — Inches				Weight — lbs
		A	B	C	D	
1/2" & 3/4"	DI/BRZ	3.62	12.00	2.18	7.00	20
	CS/SS	3.65	12.00	2.18	7.00	21
1"	DI/BRZ	4.12	12.25	2.62	7.00	22
	CS/SS	4.12	12.25	2.62	7.00	23
1-1/4"	DI/BRZ	4.12	12.25	2.62	7.00	22
1-1/2"	DI/BRZ	4.50	12.81	3.00	7.00	24
	CS/SS	5.50	12.81	3.00	7.00	27
2"	DI/BRZ	4.50	12.81	3.00	7.00	24
	CS/SS	5.50	12.81	3.00	7.00	27

■ CS 801/802 Threaded Ends, Metric

Threaded Ends: DIN						
Size (DN)	Material	Dimensions — mm				Weight — kg
		A	B	C	D	
15 & 20	DI/BRZ	92	305	55	178	9,1
	CS/SS	93	305	55	178	9,5
25	DI/BRZ	105	311	67	178	10,0
	CS/SS	105	311	67	178	10,4
32	DI/BRZ	105	311	67	178	10,0
40	DI/BRZ	114	325	76	178	10,9
	CS/SS	140	325	76	178	12,2
50	DI/BRZ	114	325	76	178	10,9
	CS/SS	140	325	76	178	12,2



DIMENSIONS

■ CS 801/802 Flanged Ends

■ CS 801/802 Flanged Ends, Metric

Flanged Ends:							
Size	ANSI Flange	Dimensions — Inches				Weight — Lbs	
		A1	B	C	D	DI/BRZ	CS/SS
1/2"	150#	7.25	12.00	2.18	7.00	21	23
	300#	7.50	12.00	2.18	7.00	22	24
3/4"	150#	7.25	12.00	2.18	7.00	22	25
	300#	7.62	12.00	2.18	7.00	23	28
1"	150#	7.25	12.25	2.62	7.00	24	28
	300#	7.75	12.25	2.62	7.00	25	30
1-1/4"	150#	7.87	12.25	2.62	7.00	25	—
	300#	8.37	12.25	2.62	7.00	26	—
1-1/2"	150#	8.75	12.75	3.00	7.00	29	38
	300#	9.25	12.75	3.00	7.00	31	42
2"	150#	10.00	12.81	3.00	7.00	29	38
	300#	10.50	12.81	3.00	7.00	31	42

Flanged Ends: DIN							
Size (DN)	Flange (PN)	Dimensions — mm				Weight — Kg	
		A1	B	C	D	DI/BRZ	CS/SS
15	10/16	130	305	55	178	9,5	10,4
	25/40	130	305	55	178	10	10,9
20	10/16	150	305	55	178	10	11,3
	25/40	150	305	55	178	10,4	12,7
25	10/16	160	311	67	178	10,9	12,7
	25/40	160	311	67	178	11,3	13,6
32	10/16	180	311	67	178	11,3	—
	25/40	180	311	67	178	11,8	—
40	10/16	200	324	76	178	12,2	17,2
	25/40	200	324	76	178	13,6	19,1
50	10/16	230	325	76	178	13,2	17,2
	25/40	230	325	76	178	14,1	19,1

ORDER SCHEMATIC

To specify a CS801/802 Series Temperature Regulator, build a model number by making a selection from each category in the product Designator Coding System below.

1	—	2	—	3	/	4	5	6	7	8	9	10	11	12

1	Model	
	801	High-Flow
	801T	High-Flow with Temperature Gauge
	802	Super High-Flow
	802T	Super High-Flow with Temperature Gauge

2	Size	
	Inches	DN
	050	1/2"
	075	3/4"
	100	1"
	125	1-1/4"
	150	1-1/2"
	200	2"

3	Body Material	
	DI	Ductile Iron
	BR	Bronze
	CS	Carbon Steel (WCB)
	S6	Stainless Steel (CF8M)

4	End Connections	
	PT	NPT
	BT	BSPT
	BP	BSPP
	SW	FSW
	F1	125# IFE
	I5	150# IFE
	F5	150# FE (exc. IFE)
	F2	150# FE
	I3	300# IFE
	F3	300# FE (exc. IFE)
	I7	PN10 DIN IFE
	F7	PN 10 FE (exc. IFE)
	I6	PN 16 DIN IFE
	F6	PN 16 FE (exc. IFE)
	I8	PN 25 FE DIN IFE
	F8	PN 25 FE (exc. IFE)
	I4	PN 40 DIN IFE
	F4	PN 40 FE (exc. IFE)
	ZZ	Non-Standard

Continued on page 11

ORDER SCHEMATIC (CONTINUED FROM PAGE 10)

5	Trim	
	T3	303SS / Teflon Packing
	T6	316SS / Teflon Packing
	TM	Monel / Teflon Packing
	TA	Alloy 20 / Teflon Packing
	TH	Hastelloy C / Teflon Packing
	I3	303SS / 287-I Packing
	I6	316SS / 287-I Packing
	IM	Monel / 287-I Packing
	IA	Alloy 20 / 287-I Packing
	IH	Hastelloy C / 287-I Packing
	ZZ	Non-Standard

6	Seats			
	Material		Cv	
	A	303SST	K	6.1
	B	316SST	7	6.4
	Q	303 / Teflon	L	7.0
	R	316 / Teflon	M	9.0
	S	Monel / Teflon	8	9.5
	T	Alloy 20 / Teflon	Q	14
	U	HastelloyC Teflon	9	15
	V	303SS / Jorcote	R	18
	W	316SS / Jorcote	T	24
	X	303SS/Jorcote/Jordanic	A	25
	Y	316SS/Jorcote/Jordanic	B	30
	1	303SST w/std. WH	V	35
	2	316SST w/std. W.H.	W	45
			C	50
			Y	65
			E	70
	ZZ	Non-Standard		

7	Range			
	Standard Spring °F		Standard Spring °C	
	08	-10 ~ 20*	AB	-23 ~ 7
	14	20 ~ 55	B4	-7 ~ 13
	23	45 ~ 90	C3	7 ~ 32
	30	65 ~ 115	DD	18 ~ 46
	37	90 ~ 140	D7	32 ~ 60
	47	120 ~ 165	E7	49 ~ 74
	52	130 ~ 185	F2	54 ~ 85
	60	170 ~ 225	GG	77 ~ 107
	68	215 ~ 260	G8	102 ~ 127
	75	240 ~ 290	H5	116 ~ 143
	84	275 ~ 325	J4	135 ~ 163
	90	325 ~ 400	KK	163 ~ 204
	95	390 ~ 450	K5	199 ~ 232
	ZZ	Non-Standard		
	Light Spring °F		Light Spring °C	
	07	-15 ~ -5*	A7	-26 ~ -21
	13	15 ~ 35	B3	-9 ~ 2
	21	40 ~ 70	C1	41 ~ 21
	28	60 ~ 90	C8	16 ~ 32
	36	85 ~ 115	D6	29 ~ 46
	44	115 ~ 140	E4	52 ~ 60
	50	125 ~ 160	FF	46 ~ 71
	56	155 ~ 200	F6	68 ~ 93
	65	205 ~ 235	G5	96 ~ 113
	73	235 ~ 270	H3	113 ~ 132
	83	270 ~ 300	J3	132 ~ 149
	89	320 ~ 370	J9	160 ~ 188
	94	385 ~ 440	K4	196 ~ 227

* Reinforced actuator required

Continued on page 12

ORDER SCHEMATIC (CONTINUED FROM PAGE 11)

8	Thermowell			
	Type, Fitting & Material		Size: for Bulb Dia. x Length	
	A	Type A, 1" NPT, Cu	B	1" x 14" (24,5mm x 355,6mm)
	B	Type A, 1" NPT, SST	C	1" x 17" (24,5mm x 431,8mm)
	E	Type B, 1-1/2" x 150#, SST		
	F	Type B, 1-1/2" x 300#, SST		
	G	Type B, 2" x 150#, SST		
	H	Type B, 2" x 300#, SST		
	NN	None		
	ZZ	Non-Standard		
Tank Fitting Only				
	11	1" NPT Brass for 1" Bulb		
	12	1" NPT SST for 1" Bulb		
	NN	None		
	ZZ	Non-Standard		

10	Capillary/Armor			
	Material		Length	
	A	Cu	1	8' (2,4m)
	B	SST	2	10' (3,0m)
	T	Teflon Coated	3	12' (3,7m)
			4	15' (4,6m)
			5	20' (6,1m)
	ZZ	Non-Standard		

11	Actuator	
	A	Standard
	R	SWA/Reinforced req'd below 0°F (18°C)
	ZZ	Non-Standard

12	Action	
	D	Direct
	R	Reverse

9	Bulb			
	Type & Material		Dia. x Length	
	A	Type A Cu	2	1" x 14" (24,5mm x 355,6mm)
	G	Type A SST	3	1" x 17" (24,5mm x 431,8mm)
	H	Type B SST		
	J	Teflon Coated B		
	ZZ	Non-Standard		
Type C Bulb				
	C9	Type C Cu	1-1/8" x 14" (28,6mm x 355,6mm)	
	C2	Type C SST	1" x 14" (24,5mm x 355,6mm)	
	ZZ	Non-Standard		



Central Station Steam Co.
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