Series 2000 Temperature Regulator

Pressures To 250 PSIG
Temperatures to 406°F

Applications

Direct Acting

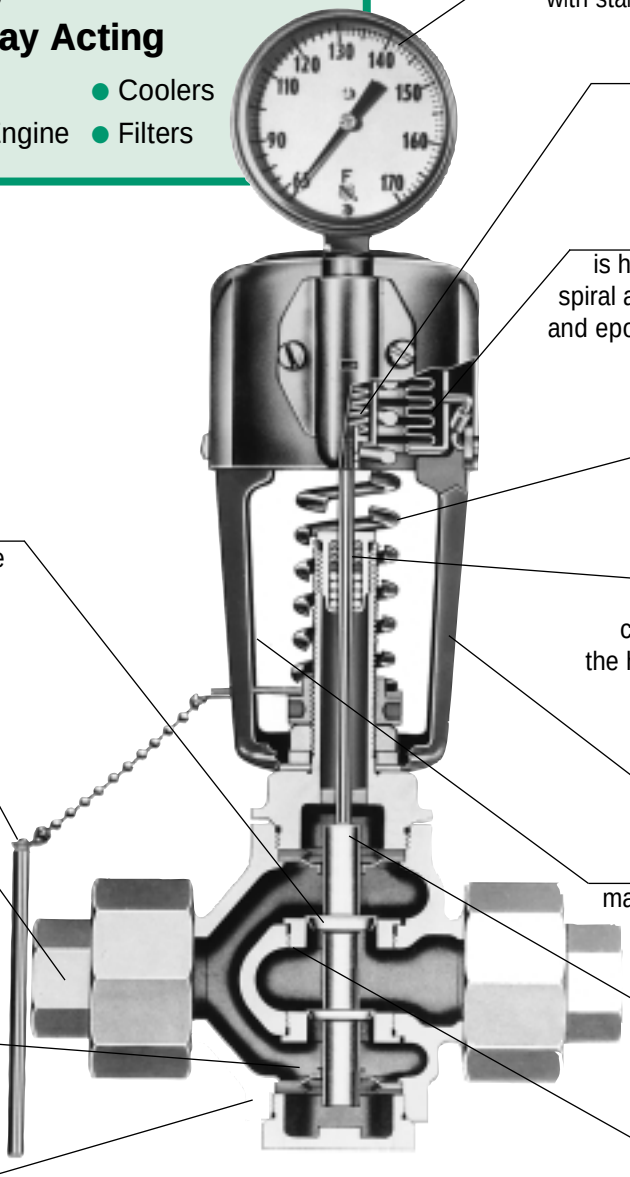
- Bottle Washers
- Steam Tables
- Plating Tanks
- Heating Ducts
- Sterilizers
- Fuel Oil Heaters
- Cooking Vats
- Water Heaters
- Heat Exchangers
- Parts Washers

Reverse Acting

- Induction Furnaces
- Industrial Compressors
- Engine Jacket Cooling
- Cooling Ducts
- Liquid Chillers
- Fuel Oil Heaters

Three Way Acting

- Fire Tube Boilers
- Internal Combustion Engine
- Coolers
- Filters



Positionable Temperature Indicator
(indicating regulators only) may be turned in direction of easiest reading. Highly accurate with stainless steel case and bayonet lock ring.

Overtemperature Protection
prevents damage to regulator from inadvertent overheating.

Thermal System
is heavy duty bronze bellows with bronze spiral armored copper capillary, copper bulb and epoxy coated bellows housing.Other line and bulb materials available.

Extra Long Adjustment Spring
permits adjustment over a wide range of temperatures.

Packing Assembly
with spring loaded self adjusting chevron type teflon packing eliminates the human factor of improper adjustment.

Epoxy Coated Compact Single Piece Channel Frame
permits installation in tight locations.

Full Scale Adjustment
makes repeat settings easy and accurate.

Double Guided Stainless Steel Monolithic Disc Assembly
maintains proper alignment of all moving parts.

Stainless Steel Seat Rings
are threaded and bonded to eliminate any possibility of leakage through seat ring threads.

Stainless Steel Disc
is self aligning to assure accurate seating, long wear and tight closure.

Adjusting Key
is conveniently located and always there when settings have to be changed.

Galvanized Iron Union Ends
for sturdiness and ease of installation.

Full Ported and Full Flow Bronze Valve Body
provides maximum capacity for each valve size.

Heavy Section Valve Body
is tough, solid, durable and will withstand severe piping strains for pressures to 250 psig at 406°F.

SERIES 2000
TEMPERATURE REGULATOR

SIZES 1/2" – 2"
CONTROLS -25 to 400°F

SERIES 2000 TEMPERATURE REGULATOR

- **Self-actuated**
- **Two and Three Way Valve Bodies**
- **Single or Double Seat**
- **Overtemperature Protection**
- **Spring Loaded Teflon Chevron Type Packing Assembly**
- **Double Guided Stainless Steel Monolithic Disc Assembly**
- **Stainless Steel Seat Rings and Disc**
- **Adjusting Key Attached**
- **Galvanized Iron Union Ends**
- **Full Ported and Full Flow Bronze Body**
- **Copper Bulb with 8' Armored Capillary**

Application Data

DIRECT ACTING
- Bottle Washing Machinery
- Steam Tables
- Plating Tanks
- Heating Ducts
- Fuel Oil Heaters
- Cooking Vats
- Water Heaters
- Heat Exchangers
- Parts Washer

THREE-WAY MIXING
- Fire Tube Boiler
- Internal Combustion Engine

REVERSE ACTING
- Induction Furnaces
- Industrial Compressors
- Cold Storage Boxes
- Cooling Ducts
- Engine Jacket Cooling
- Liquid Chillers

GAS SERVICE
- Oil Treaters
- Line Heaters
- Separators
- Glycol Dehydrators
- Storage Tanks

Valve Ratings

Valve Ends ASME/ANSI	Pressure PSIG (bar)	Temperature °F (°C)
Class 250 NPT	250 (17.2)	400 (204)

Canadian Registration # OC 0591.9C

Models

- Type 2010 — Single Seat, Direct Acting
- Type 2020 — Single Seat, Reverse Acting
- Type 2030 — Double Seat, Direct Acting
- Type 2040 — Double Seat, Reverse Acting
- Type 2050 — Three-way Mixing and Diverting
- Type 2060 — Gas Service-15 psig maximum. If pressure exceeds 15 psi, a pressure reducing regulator should be used ahead of the temperature regulator.

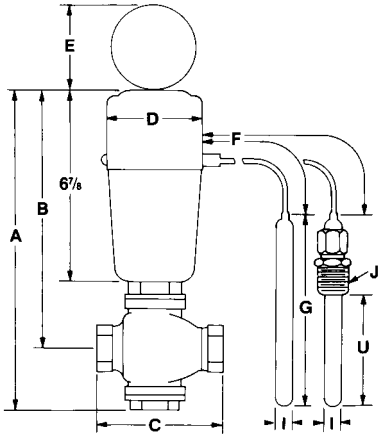
Options

- Dial Temperature Gage (Indicating)
- Stainless Steel Bulb
- Stainless Steel Armored Capillary
- Capillary lengths greater than 8'
- Extra Large Bulb
- Union Bushings & Wells

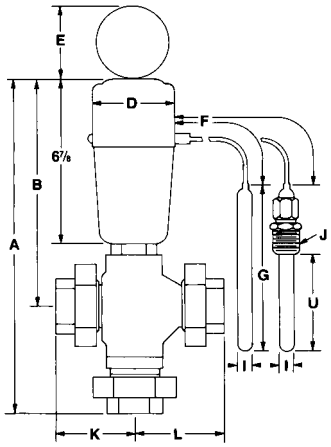
SERIES 2000
TEMPERATURE REGULATOR

SPECIFICATION

The valve shall be self-operated, requiring no external energy source. It shall have single or double stainless steel seats with double guided monolithic disc assembly for proper alignment. The valve shall be direct acting (heating) or reverse acting (cooling) and have two way or three way operation. The packing assembly shall be spring loaded, self adjusting with chevron type teflon packing. The thermal system line and bulb assembly shall be partially filled with a liquid/gas combination and in a range selected for fast response. The valve rating shall be 250 PSIG at 400°F. Body materials shall be bronze.
MODEL 2060 FOR GAS SERVICE ONLY: The valve shall be self-operated, requiring no external energy source and designed to control process temperature by regulating gas flow. It shall be normally open and close with increased temperature. "Bubble tight" dead end shutoff shall be provided by Buna-N vulcanized to disc backing. The packing assembly shall be spring loaded, self adjusting with chevron type teflon packing. The thermal system line and bulb assembly shall be partially filled with a liquid/gas combination and in a range selected for fast response. The valve rating shall be 15 PSIG. Body materials shall be nodular iron.



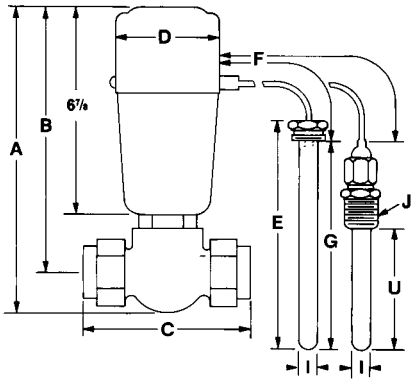
TYPE 2010-2040 DIRECT & REVERSE ACTING



TYPE 2050 THREE WAY

MATERIALS OF CONSTRUCTION

ITEM	TYPE 2010-2050	TYPE 2060
Body	Bronze ASTM B62 C83600	Ductile Iron ASTM A536 65-45-12
Trim	Stainless Steel	Buna-N
Packing	Teflon	Buna-N
Unions	Iron	Iron
Yoke	Steel	Steel
Cap	Aluminum	Aluminum
Bellows	Bronze	Bronze
Spring	Steel	Steel
Capillary	Copper	Copper
Bulb	Copper	Copper
Armor	Bronze	—
Stem	304 Stainless Steel	304 Stainless Steel
Disc	304 Stainless Steel	Buna-N
Seat	303 Stainless Steel	—



TYPE 2060 GAS SERVICE

TYPE 2010-2040 DIRECT & REVERSE ACTING
DIMENSIONS inches (mm) **AND WEIGHTS** pounds (kg)

Size	Type No.	Dimensions A	B	C	D	E	F†	Shipping Weight (Approx.)
½"(A, B, C, D, E) ½, ¾	2010 2020	9¾ (248)	8½ (216)	5½ (140)	3½ (89)	2 13/16 (71)	8 Ft.	10 (4.5)
½" ¾"	2030 2040	12 7/16 (316)	9¾ (248)	7 3/16 (182)	3½ (89)	2 13/16 (71)	8 Ft.	13 (5.9)
1"	2010 2020 2030 2040	12 7/16 (316)	9¾ (248)	7 3/16 (182)	3½ (89)	2 13/16 (71)	8 Ft.	13 (5.9)
1¼" 1½" 2"		12⅞ (327)	9 31/32 (253)	8 15/16 (227)	3½ (89)	2 13/16 (71)	8 Ft.	20 (9.1) 25 (11) 30 (14)

TYPE 2060 GAS SERVICE DIMENSIONS
inches (mm) **AND WEIGHTS** pounds (kg)

Size	Dimensions A	B	C	D	F†	Shipping Weight (Approx.)
½" ¾" 1"	9¾ (248)	8½ (216)	5⅝ (143)	3½ (89)	10 Ft. (3 m.)	8 (3.6)

F†See following pages for standard lengths, ranges, bulb sizes and maximum line lengths.

TYPE 2050 THREE WAY
DIMENSIONS inches (mm) **AND WEIGHTS** pounds (kg)

Size	Dimensions A	B	D	F†	K	L	E	Shipping Weight (Approx.)
½" ¾" 1"	13⅞ (352)	9¾ (248)	3½ (89)	8 Ft.	3 5/16 (84)	3⅝ (92)	2 13/16 (71)	12 (5.5) 12 (5.5) 13 (5.9)
1¼" 1½"	14 21/32 (372)	9 31/32 (253)	3½ (89)	8 Ft.	4⅛ (105)	4 11/16 (119)		27 (12)
2"	14⅞ (378)	9 31/32 (253)	3½ (89)	8 Ft.	4 3/16 (106)	4⅞ (124)		33 (15)

SERIES 2000 TEMPERATURE REGULATOR
SELECTION

DIRECT & REVERSE ACTING & THREE WAY FLOW AND PRESSURE RATINGS psig (bar)

Size	Single Seat				Double Seat				Three Way		
	Type Number		Flow Coefficient C_V	Max. Upstream Pressure	Type Number		Flow Coefficient C_V	Max. Upstream Pressure	Type Number	Flow Coefficient C_V	Max. Difference Between Inlet Pressures*
	Direct	Reverse			Direct	Reverse					
1/2"C	2010	2020	.40	250 (17.2)	NOT AVAILABLE IN DOUBLE SEAT				NOT AVAILABLE IN THREE WAY		
1/2"D			1.00								
1/2"E			1.80								
1/2"A			3.29								
1/2"B			4.29	200 (13.8)							
1/2"T			5.22	140 (9.7)	2030	2040	7.93	250 (17.2)	2050	5.22	140 (9.7)
3/4"T			6.85	90 (6.2)			10.4			6.85	90 (6.2)
1"T			9.15	65 (4.5)			12.9			9.15	65 (4.5)
1 1/4"T			14.3	40 (2.8)			20.6			14.3	40 (2.8)
1 1/2"T			15.1	30 (2.1)			24.8			15.1	30 (2.1)
2"T			17.2	20 (1.4)			33.0			17.2	20 (1.4)

SIZING INFO PAGE 95

How to Select Range & Bulb Size

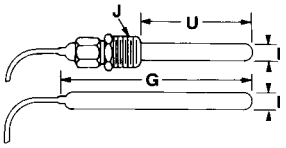
- Select a temperature range with the control point in the upper half of the temperature range.
- Determine line length required (8' is standard).
- Use line length and temperature range to find correct bulb size in chart at right.

EXAMPLE:
Control point: 130°F.
Temperature range: 65/140°F.
Line length: 15'
SOLUTION:
Bulb size: extra large – G = 15 5/8"

RANGES, BULB SIZES & MAXIMUM LINE LENGTHS

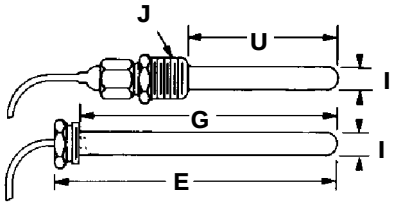
Short Ranges (Gold Spring)		Long Ranges (Silver Spring)		Bulb Size	†Max. Line Length	Maximum Over-Temperature	
°F	°C	°F	°C			°F	°C
-15 to 50	-26 to 10	-15 to 75	-26 to 24	X Large	40 Ft.	450	232
45 to 115	7.2 to 46	45 to 145	7.2 to 63	X Large	40 Ft.	450	232
65 to 140	18 to 60	65 to 170	18 to 77	Large X Large	15 Ft. 40 Ft.	450	232
120 to 200	49 to 93	120 to 230	49 to 110	Small	40 Ft.	300	149
240 to 310	116 to 154	240 to 340	116 to 171	Small	40 Ft.	350	177
280 to 375	138 to 190	280 to 415	138 to 212	Small	40 Ft.	450	232

†Standard line lengths are 25' and 40'.



BULB DIMENSIONS* inches (mm)

Bulb Sizes	G			U	I			J (NPT)
	Copper	Stain. Stl.	Coated		Plain	Union	Well	
Small	13 3/8 (340)	13 1/4 (337)	11 3/8 (289)	10 1/2 (267)	5/8 (16)	5/8 (16)	3/4 (19)	3/4 or 1
Large	15 5/8 (397)	15 1/8 (384)	13 1/4 (337)	12 1/2 (317)	1 (25)	1 (25)	1 1/8 (29)	1
Extra Large	19 (483)	18 5/8 (473)	19 (483)	16 (406)	1 (25)	1 (25)	1 1/8 (29)	1



GAS SERVICE BULB & WELL DIMENSIONS inches (mm)

E	G	I		U	J (NPT)
		Bulb	Well		
8 1/4 (210)	7 3/8 (187)	25/32 (20)	15/16 (24)	7 11/16 (195)	1

SERIES 2000 TEMPERATURE REGULATOR

CODE SELECTION CHART

Model				Orifice Size	Inlet Size	–	Line & Bulb Style	Mat'l	Range ºF
2	0	1	0	T	C	-	G	Q	K
1	2	3	4	5	6		7	8	9

Model -
Position 1, 2, 3 & 4
2010 = Single Seat, Direct Acting
2020 = Single Seat, Reverse Acting
2030 = Double Seat, Direct Acting
2040 = Double Seat, Reverse Acting
2050 = Three Way

Orifice -
Position 5
A
B
C
D
E
T = Standard

Inlet Size -
Position 6
C = 1/2
D = 3/4
E = 1
F = 1¼
G = 1½
H = 2

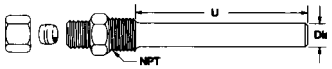
Line & Bulb Style -
Position 7
G = Indicating
N = Non-indicating

Material† -
Position 8
Q = Copper Bz Armor 8'
R = Copper Bz Armor 15'
N = Copper Bz Armor 25'
P = Copper Bz Armor 40'
T = SS Unarmored 8'
V = SS Unarmored 15'
W = SS Unarmored 25'
X = SS Unarmored 40'
Z = Other

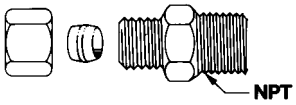
Range ºF -
Position 9
A = 15/50
B = 15/75
C = 45/115
D = 45/145
E = 65/140
F = 65/170
J = 120/200
K = 120/230
L = 240/310
M = 240/340
N = 280/375
P = 280/415
Z = Other

† For SS Armored Thermal Assembly Material, add (-TV) at the end of the code (ex.: 2010TC-NTH-TV)
† Small bulb standard for J-1 range and higher.
Extra large bulb standard for D range and lower.
Large bulb standard for E and F range

THERMOWELL



UNION BUSHINGS



WELLS

Cat. No.	Bulb Size	Material	Inches (mm) Bulb Dia.	NPT	U	Well Dia.
99A	S	Brass	5/8 (16)	3/4 (19)	10 1/2 (267)	3/4 (19)
99B	S	Brass		1 (25)		
99G	S	316 St. St.		3/4 (19)		
99H	S	316 St. St.		1 (25)		
99J	L	Brass	1 (25)	1 (25)	12 1/2 (318)	1 1/8 (29)
99K	X	Brass			16 (406)	
99Q	L	316 St. St.			12 1/2 (318)	
99R	X	316 St. St.			16 (406)	

UNION BUSHINGS

Cat. No.	Bulb Size	Material	Inches (mm) Bulb Dia.	NPT
98A	S	Brass	5/8 (16)	3/4
98B	S	Brass		1
98C	S	St. St.		3/4
98D	S	St. St.		1
98E	L & X	Brass	1 (25)	1
98F	L & X	St. St.		1

Thermowells and union bushings are utilized as separate items and should be specified on separate lines.