

Self-Actuated Temperature Regulator RT-1001-BI Series

FEATURES:

1. Two-ply, seamless Robertshaw bellows used for long life
2. Over-temperature protection is standard feature.
3. Chevron "Lifetime" stem packing made of Teflon* or EPT Rubber U-Cup for water service.
4. Quick-detach valve stem construction permits easy valve change.
5. Sturdy construction with cast iron frame.
6. Variety of sensing bulb forms and materials available.
7. Valves in wide range of sizes, action, styles, materials, etc. for many services. (see back)
8. Capillary selection (see back)
9. Setpoint Adjustment Wheel
10. All components manufactured by a single source.

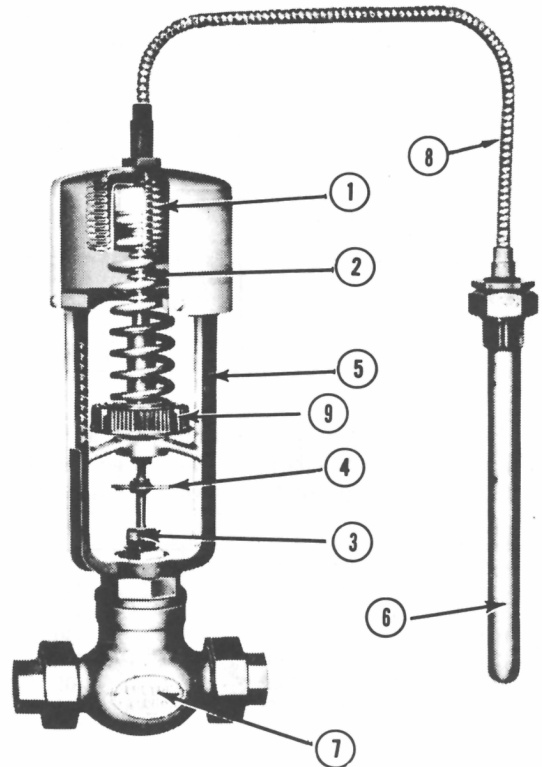
GENERAL

Without need for external power, Robertshaw Self-Actuated Temperature Regulators (SATR) offer final control of the temperature of a liquid, an air space or flow, or gas flow for domestic, equipment, process, space, etc. on heating or cooling service.

The SATR sensing bulb is installed in the medium being controlled while the SATR valve is located on the supply line of the medium used as the heating (steam, hot water) or cooling (water, ethylene glycol, brine) agent. The SATR regulates the heating or cooling medium flow to maintain the desired temperature at the sensing bulb location. Robertshaw SATR are usually cataloged to detail the two-way direct acting (close on temperature rise) type valves for heating service. Two-way reverse-acting (open on temperature rise) and three-way valves are equally available for cooling service.

The Robertshaw SATR series offers a selection of: **Throttling bands, Temperature Indication, Fail-safe** to prevent overheating, Manual Positioning in addition to automatic control, **Corrosive atmosphere resistant type, Small overall size** and **instantaneous heat exchanger service.**

Most cataloged Robertshaw SATR specifications are starting points from which many alternates to cataloged capillary, sensing bulb, separable well and valve may be FURNISHED TO MEET YOUR SPECIFIC application's needs.



Sizes 1/4" through 4"

SMALL BULB SIZE - WIDE THROTTLING BAND

HOW TO ORDER:

1. Quantity
2. Size
3. Series Number
4. Setpoint and/or setpoint range
5. Capillary specs
6. Sensing bulb specs
7. Valve type, action, ends, etc.
8. Other Features
9. Shipping - Invoice instructions

RT-1001-BI SERIES

The RT-1001-BI series features a wide throttling band a small bulb size. It is particularly suited for applications where the heating surface is large while the storage capacity

of the heated medium is small; such as a heat exchanger. It is designed for lower pressure drops when an unbalanced valve design is selected.

For cataloging and pricing purposes, the RT-1001-B1 series is detailed with direct acting valves for heating service, 8 ft. capillary (copper tube/ brass armor), 12B type (threaded bushing) copper sensing bulb and cast iron frame. Other non-listed parts are made of nonferrous materials. Alternate specifications are available.

Valve size, Inches	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
Valve type, Direct acting (closes with rising temperature at bulb)	Single-Seated			Single-Seated, Balanced				Double Seated, Semi-Balanced			
	A	A	A	MA	MA	MA	MA	MA	FA	FA	FA
End Connections	1/2" Screwed Unions			Screwed Unions				Flanged (125 lbs. ANSI)			
Valve trim (poppets and seats), material	S. S.	S. S.	S. S.	S. S.	S. S.	S. S.	S. S.	S. S.	S. S.	S. S.	S. S.
Valve stem (highly finished), material	S. S.	S. S.	S. S.	S. S.	S. S.	S. S.	S. S.	S. S.	S. S.	S. S.	S. S.
Stem packing (spring loaded chevrons)	Teflon	Teflon	Teflon	Teflon	Teflon	Teflon	Teflon	Teflon	Teflon	Teflon	Teflon
Valve body material	Bronze	Bronze	Bronze	Bronze	Bronze	Bronze	Bronze	Cast Iron	Cast Iron	Cast Iron	Cast Iron
Body rating, pounds he	250	250	250	250	250	250	250	100	125	125	125
Pressure drop limit, psi (For higher pressures, consult our representative)	125	115	65	250	250	250	250	125	25	20	15
Approx. Full open Cv	1.0	1.6	2.1	9.5	13.0	18.6	25.0	45.0	82.5	130.0	226.0

The RT-1001-B1 series is available with any of the temperature ranges listed below. The range should be selected so that the setpoint falls within the upper third of the range span.

-20 - +350 F.	115° - 180° F. 125° - 190° F.	205° - 265° F. 235° - 295° F.
15° - 70° F.	135° - 200° F.	255° - 315° F.
40° - 100° F.		270° - 330° F.
60° - 120° F.	165° - 230° F.	295° - 360° F.
85° - 145° F.	175° - 230° F. 200° - 255° F.	320° - 405° F. 390° - 480° F.

Alternates include:

Temperature indication: on special order under RT-1001-CI Series.

Capillary:

Length 1 ft. up to 50 ft. or more.
Materials Copper or 304 stainless steel tube; plain or with Plastisol sheathing; and SS tube with SS armor.

Sensing Bulbs:

Type 12 BP 316 stainless steel
Type 12B or 12BP with dead extension
Type 54 copper, externally finned, plain (A), bushed (J) or flanged (K)
Type 6- Plain for open vessels.
 Materials: Copper and 304 SS with or without Plastisol sheathing

Separable Wells: (For sensing bulb protection or ease of removal)

Material..... 316 SS
Type GA or GA with Lagging Extension
 (Mounting thread one size larger than bulb size)
Type GB (Mounting thread same as bulb size)

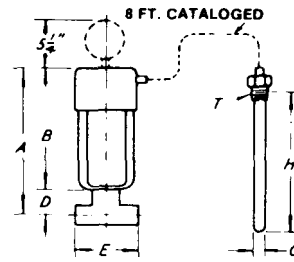
Valves: Types A, MA, FA, WA, WD as illustrated.

Note 1 - IMPORTANT - If valve seat leakage can cause a problem or a hazard, the following should be taken into account, Maximum leakage of new valves: single-seated (types A, C, WA, WD) - 0.05% of full open valve capacity; single-seated balanced (type MA or MAS) - 0.01%; double-seated (types FA, etc.) -0.5%. This leakage will usually increase somewhat as the valve seats wear in service.

Note 2 - IMPORTANT - Damage to or failure of the thermal element with loss of charge will ordinarily result in the regulator going to the "cold" position. The valve stem moves "up" (toward the bellows - thus a "direct-acting" valve will fully open, a "reverse-acting" valve will close, and a 3-way valve will open the bottom port.

Valve Sizing is critical to control and life of regulator. Use Robertshaw's "FLO-RULE" Valve Sizing Slide Rule and valve Cv chart or contact our representative or factory.

RT-1001-BI Series
Dimensions, Shipping Weights and Sensing Bulb Sizes



Valve Size, Inches	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
Direct-Acting Valve, Type	A	A	A	MA	MA	MA	MA	MA	FA	FA	FA
Shipping wt., Lbs.	26	26	27	29	32	37	43	77	97	122	152
A	13-7/16	13-7/16	13-7/16	15-5/16	15-5/16	15-11/2	16	16-3/16	16-5/8	16-5/8	17-11/16
B	11-7/8	11-7/8	11-7/8	11-7/8	11-7/8	11-7/8	11-7/8	11-7/8	11-7/8	11-7/8	11-7/8
D	1-9/16	1-9/16	1-9/16	3-7/16	3-7/16	3-5/8	4-1/8	4-15/16	4-3/4	4-3/4	5-13/16
E	4-3/4	4-3/4	4-3/4	6-15/16	7-1/8	7-1/2	8-1/2	7	7-3/4	8-5/8	10-1/4

Standard bulb for temperature ranges beginning at 120°F. or above.

G	3/4	3/4	3/4	3/4	3/4	1	1	1	1	1	1
H	10	10	10	10	10	11	11	11	11	11	11
T*	3/4	3/4	3/4	3/4	3/4	1	1	1	1	1	1

****Standard bulb for temperature ranges beginning below 120° F.**

G	1	1	1	1	1	1	1	1	1	1	1
H	14	14	14	14	14	18	18	18	18	18	18
T*	1	1	1	1	1	1	1	1	1	1	1

* Standard Standard pipe thread.

** Bulb sizes for ranges beginning below 120° F. are necessary to provide "cross ambient" charge. This assures operation with ambient temperatures either above or below the control setting. Under some conditions, smaller bulbs may be used with lower ranges. If the larger bulb cannot be used, consult the factory or nearest representative.

SATR Valves for RT-1001-BI Series
(See Valve Spec Sheet for full details)

Two Way			Three Way	
<p>Style A, Union Ends. Single Seated Unbalanced Direct & Rev. Acting Sizes 1/4" - 1 1/2" Bronze SS Trim</p>	<p>Style MA Single Seated Fully Balanced Direct Acting only Sizes 3/4" - 1 1/2" Union Ends Bronze or Steel body Size 2" Flanged Bronze, C.I. or Steel body SS Trim</p>	<p>Style FA Double Seated Semi-Balanced Rev. Acting: 3/4" - 1 1/2" Bz unions, Bz body; Trim Bz or Monel 2" - 4" CI or Bz Flgd; Trim Bz, SS or Monel Dir. Acting: 2 1/2" - 4" CI or Bz Flgd; Trim Bz or SS</p>	<p>Style WA, Union Ends Unbalanced Sizes 1/2" - 1 1/2" Bronze Body SS Trim</p>	<p>Style WD Balanced Sizes 2" - 2 1/2" Bronze Body, Flgd Bronze Trim</p>

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Self -Actuated Temperature Regulator RT-1001-P, Q, R, S Quick Ship

Features

1. Short lead time, quick delivery.
2. Two-ply, seamless Robertshaw bellows used for long life.
3. Over-temperature protection is standard feature.
4. Chevron "Lifetime" stem packing made of Teflon* or EPT Rubber U-Cup for water service.
5. Quick-detach valve stem construction permits easy valve change.
6. Sturdy construction with cast iron frame.
7. Capillary selection (see back).
8. Setpoint Adjustment Wheel.
9. All components manufactured by a single source.

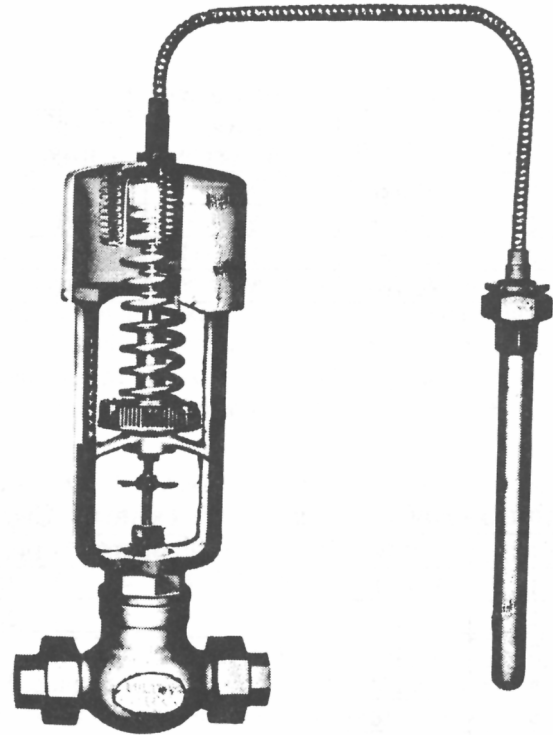
General

Without need for external power, Robertshaw Self-actuated Temperature Regulators (SATR) offer final control of the temperature of a liquid, an air space or flow, or gas flow for domestic, equipment, process, space, etc. on heating service.

The SATR sensing bulb is installed in the medium being controlled while the SATR valve is located on the supply line of the medium used as the heating (steam, hot water) or cooling (water, ethylene glycol, brine) agent. The SATR regulates the heating or cooling medium flow to maintain the desired temperature at the sensing bulb location. RT-1001-P, Q, R, S, SATR are cataloged to detail the two-way direct acting (close on temperature rise) type valves for heating service with reverse acting available.

For service or features not found in RT-1001 specifications, the cataloged Robertshaw SATR series offer a selection of **Throttling bands, Temperature Indication, Fail-safe** to prevent overheating, **Manual Positioning** in addition to automatic control, **Corrosive atmosphere resistant type, Small overall size, and instantaneous heat exchanger service.**

Most cataloged Robertshaw SATR specifications are starting points from which many alternates to cataloged capillary, sensing bulb, separable well and valve may be FURNISHED TO MEET YOUR SPECIFIC application's needs.



Sizes 1/2" through 2"
Small Bulb Size - Wide Throttling Band

RT-1001 P, Q, R, S

The RT-1001 series regulators feature a wide throttling band with a small bulb size. This is a general purpose style sized for both small & large capacity systems.

For cataloging and pricing purposes, the RT-1001 series is detailed with direct acting valves for heating service, capillary (copper tube/brass armor), 12B type (threaded bushing) copper sensing bulb and cast iron frame. Other non-listed parts are made of nonferrous

**RT-1001 P, Q, R, S "Quick Ship"
Temperature Regulator Series
(Replaces I-6001)**

Ordering Information and Model Number Coding

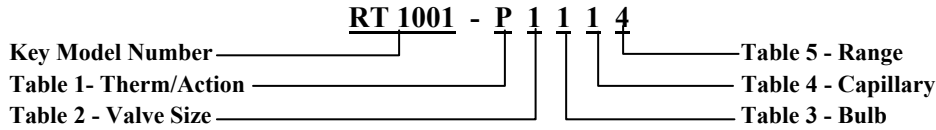


Table 1- Action/Indication

DESIGN.	ACTION	TEMP. INDICATION	PRICE ADDER
P	Direct	No	N/C
Q	Direct	Yes	\$96.00
R	Reverse	No	N/C
S	Reverse	Yes	\$96.00

Table 2 – Key Model Number

DESIGN	SIZE
1	1/2"
2	3/4"
3	1"
4	1 1/4"
5	1 1/2"
6	2"

Table 3 - Bulb

DESIGN	SIZE
1	3/4 x 10"
2	1 x 11"
3	1 x 14"
4	1 x 18"
5	1 1/4 x 18"
6	1 1/4 x 20"
7	1 1/4 x 24"

Table 4 - Capillar

DESIGN.	LENGTH
1	10 ft.
2	20 ft.

Table 5 - Range

DESIGN	TEMP. °F
1*	60 -120°F
2*	85 -145°F
3*	115 -180°F
4	165 - 230°F
5	200 - 255°F
6	135 - 200°F

* When using cross-ambient charge (table 5 design. 1, 2, or 3) 1/2", 3/4", and 1" valves must use a 1 x 14", or a 1 x 18" bulb (table 3 design. 3 & 4) 1 1/4", 1 1/2", and 2" valves must use a 1 x 18" bulb (table 3 design. 4) or larger.

Valve size Inches	1/2	3/4	1	1 1/4	1 1/2	2
Valve type, Direct acting (closes with rising temperature at bulb)	Single-Seated	Single-Seated, Balanced				
	A	MA	MA	MA	MA	MA
End Connections	Screwed Brass Unions					Flanged (125 lbs. ANSI)
Valve trim is and seats material	S.S.	S.S.	S.S.	S.S.	S.S.	S.S.
Valve stem hi hl finished material	S.S.	S.S.	S.S.	S.S.	S.S.	S.S.
Stem ackin (spring loaded chevrons)	Teflon	Teflon	Teflon	Teflon	Teflon	Teflon
Valve bed material	Bronze	Bronze	Bronze	Bronze	Bronze	Cast Iron
Body rating, pounds	250	250	250	250	250	100
Pressue drop limit, psi (For higher pressures consult our representative)	65	250	250	250	250	125
Approx. Full open Cv	2.1	9.5	13.0	18.6	25.0	45.0

The RT-1001 P, Q, R, S series is available with any of the temperature ranges listed below. The range should be selected so that the setpoint falls within the upper third of the range span.

Setpoint Adjustment Range	Matching Setpoint Temperature Indicator
60 - 120°F	-10 - 130°F
85 - 145°F	10 - 160°F
115 - 180°F	30 - 195°F
135 - 200°F	50 - 210°F
165 - 230°F	80 - 245°F
200 - 255°F	130 - 265°F

Separable Wells:

(For sensing bulb protection or ease of removal)

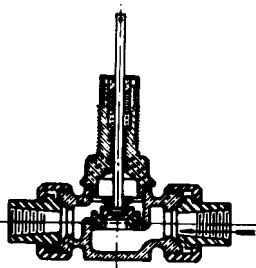
Material 316 S.S.

Type GA (Mounting thread one size larger than bulb size)

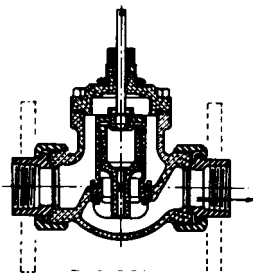
Valves: Types A and MA, as illustrated.

RT-1001 Valves (See Valve Spec Sheet for full details)

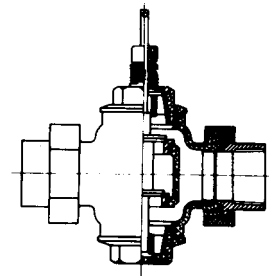
Two Way



Style A. Union Ends.
Single-Seated
Unbalanced
Direct & Rev. Acting
Sizes 1/2"
Bronze
S.S. Trim



Style MA
Single-Seated
Fully Balanced
Direct Acting only
Sizes 3/4" - 1 1/2"
Baize, 2" Cast Iron
S.S. Trim



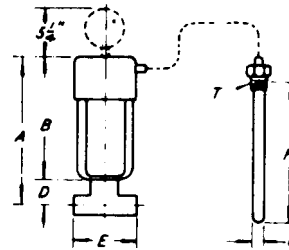
Style FA
Double Seated
Semi-balanced
Rev. Acting: 3/4" - 1 1/2"
Bz unions; Bz body;
Trim Bz 2" CI Flgd;
Trim SS

Valve Sizing is critical to control and life of regulator. Use Robertshaw's "FLO-RULE" Valve Sizing Slide Rule and valve Cv chart or contact our representative or factory.

Note 1 - IMPORTANT - If valve seat leakage can cause a problem or hazard, the following should be taken into account, Maximum leakage of new valves: single-seated (type A) - 0.05% of full open valve capacity; single-seated balanced (type MA) - 0.01 %; This leakage will usually increase somewhat as the valve seats wear in service.

Note 2 - IMPORTANT - Damage to or failure of the thermal element with loss of charge will ordinarily result in the regulator going to the "cold bulb" position. The "direct-acting" valve will fully open.

CAUTION:
On heating service, this will result in full heat applied to process. If this constitutes a dangerous situation, safety precautions should be implemented.



RT-1001 P, Q, R, S
Dimensions, Shipping Weights and Sensing Bulb Sizes

Valve Size Inches	1/2	3/4	1	1 1/4	1 1/2	2
Direct-Acting Valve, Type	A	MA	MA	MA	MA	MA
Shi in Wt., Lbs.	27	29	32	37	43	77
A	13 7/16	15 5/16	15 5/16	15 1/2	16	16 3/16
B	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8	11 7/8
D	1 9/16	3 7/16	3 7/16	3 5/8	4 1/8	4 15/16
E	4 3/4	6 15/16	7 1/8	7 1/2	8 1/2	7
Standard bulb for temperature ranges beginning at 120°F or above.						
G	3/4	3/4	3/4	1	1	1
H	10	10	10	11	11	11
T*	3/4	3/4	3/4	1	1	1
**Standard bulb for temperature ranges beginning below 120°F.						
G	1	1	1	1	1	1
H	14	14	14	18	18	18
T*	1	1	1	1	1	1

*Standard pipe thread.

**Bulb sizes for ranges beginning below 120°F are necessary to provide "cross ambient" charge. This assures operation with ambient temperatures either above or below the control setting.

NOTE:

Special consideration has been given for field replacements of RT 1003 Series to accommodate applications where larger bulbs have been used. (Rule: May substitute larger bulb, but only under some conditions may smaller bulbs be substituted).

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