

Self-Actuated Temperature Regulator RT-1009 Series

FEATURES

1. Large two-ply, seamless Robertshaw bellows used for long life and extra power.
2. Valve can alternately be manually positioned or thermostatically operated.
3. Over-temperature protection is standard feature.
4. Chevron "Lifetime" stem packing made of Teflon* or ETP Rubber U-Cup for water service.
5. Quick-detach valve stem construction permits easy valve change.
6. Sturdy construction with cast iron frame.
7. High quality indicating thermometer on regulators RT-1009-B1 and RT-1009-C1
8. Variety of sensing bulb forms and materials. (See inside pages).
9. Valves in wide range of sizes, actions, styles, materials, etc. for many types of service. (See inside pages).
10. Capillary selection (See inside pages).
11. Setpoint adjustment wheel.
12. All components from a single source.

*Registered Tradename of DuPont Company.

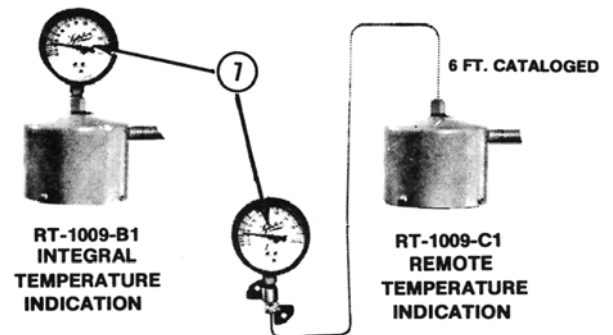
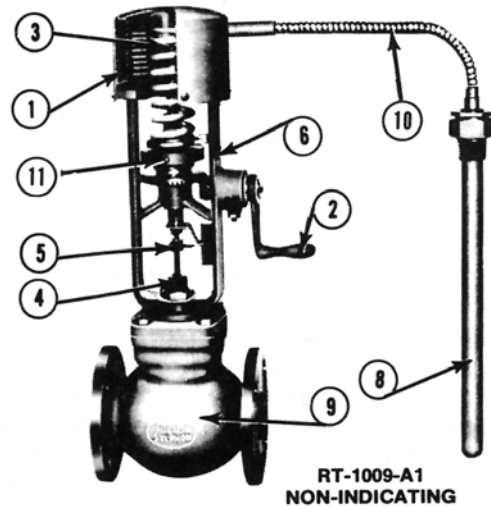
GENERAL

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 cataloged 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.



With Manual Override
Sizes 1/4" - 4"

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 & invoicing instructions

RT-1009 SERIES

The RT-1009 series is an extension of the RT-1003 series. It is a workhorse design suitable for most applications as is the RT-1003 series. It is especially designed for those applications where a fully opened or a fully closed valve (or full by-pass or cooling flow) is desirable regardless of the setpoint or the temperature at the sensing bulb. The RT-1009 series stem can be manually cranked up or down to obtain the desired valve position on either a two-way or three-way valve. When automatic (thermostatic) control, at the previous setpoint setting is again desired, the stem can be cranked back to where the stem pointer indicates "THERMOSTATIC." The RT-1009 series has a handwheel for setpoint adjustment that is completely independent of the manual override crank.

VALVE SIZING

Valve sizing is critical to control and life of regulator. Use Robertshaw's "FLO-RULE" valve sizing slide rule and
(Continued next column)

valve Cv chart or contact our representative or factory. The application requirement can frequently be satisfied by one or two sizes smaller valve than the supply pipeline size.

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, 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 "directacting" valve will fully open, a "reverse-acting" valve will close, and a 3-way valve will open the bottom port.

For cataloging and pricing purposes, regulators RT-1009-A1, B1, C1 are detailed with direct-acting valves for heating service, 8 ft. capillary (copper tube/ brass armor), 12B type (threaded bushing) copper sensing bulb,

brass frame and other non-listed parts of non-ferrous metals. 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	250	250	250	250	250	250	250	100	100	100	100
Pressure drop limit, psi (For higher pressures, consult our representative)	125	125	125	250	250	250	250	100	65	55	40
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

Adjustable Ranges:

The RT-1009 series is available with any of the 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 Indication
-30° - + 5° F.	Not Available
5° - 35° F.	-60° - + 80° F.
25° - 65° F.	-40° - +110° F.
45° - 85° F.	-10° - +130° F.
70° - 110° F.	10° - 160° F.
100° - 145° F.	30° - 195° F.
110° - 155° F.	40° - 205° F.
120° - 160° F.	50° - 210° F.
150° - 190° F.	80° - 245° F.
160° - 200° F.	100° - 240° F.
185° - 225° F.	130° - 265° F.
195° - 230° F.	130° - 280° F.
220° - 260° F.	160° - 310° F.
240° - 280° F.	170° - 330° F.
255° - 295° F.	180° - 350° F.
280° - 325° F.	210° - 375° F.
300° - 360° F.	220° - 420° F.
370° - 430° F.	280° - 505° F.

ALTERNATES INCLUDE

Capillary:

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

Sensing Bulbs:

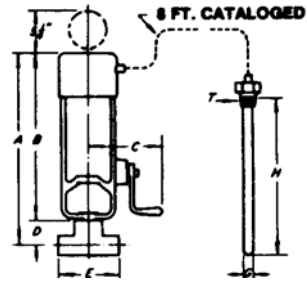
Type 12BP 316 stainless steel
Type 12B or 12BP with "dead extension"
Type 54 Copper, externally finned
 (A) Plain
 (J) Bushed
 (K) Flanged

Type 6 Plain for open vessels Copper or 304 SS plain or with Plastisol sheathing

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

Materials Copper, 316 SS
Type GA or GA with lagging extension (Mounting thread one size larger than bulb size)
Type GB (Mounting thread same size as bulb size)

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



**RT-1009 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
A	15-1/16	15-1/16	15-1/16	16-15/16	16-15/16	17-1/8	17-5/8	18-7/16	18-1/4	18-9/16	19-5/16
B	13-1/2	13-1/2	13-1/2	13-1/2	13-1/2	13-1/2	13-1/2	13-1/2	13-1/2	13-1/2	13-1/2
C	6-1/8	6-1/8	6-1/8	6-1/8	6-1/8	6-1/8	6-1/8	6-1/8	6-1/8	6-1/8	6-1/8
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

Regulator No.	Shipping Weight, Lbs.										
RT-1009-A1,B1,C1	33	33	35	37	40	45	50	85	105	130	160

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

G	1	1	1	1	1	1	1	1	1	1	1
H	11	11	11	11	14	14	18	18	14	18	18
T*	1	1	1	1	1	1	1	1	1	1	1

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

G	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
H	18	18	18	18	20	20	24	24	20	24	24
T*	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4

* 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-1009 SERIES
(See Valve spec sheet for full details)**

Two Way

Two Way

Two Way

Three Way

Three Way

Style A
Single Seated
Unbalanced
Direct & Reverse Acting
Sizes 1/4" - 1 1/2"
Union Ends
Bronze Body
SS Trim

Style MA
Single Seated
Fully Balanced
Direct Acting only
Sizes 3/4" - 1 1/2"
Bronze Body
Union Ends
Steel Body
Screwed Ends
Size 2"
Bronze, Cast Iron or
Steel Body, Flanged
SS Trim

Style FA
Double Seated, Semi-Balanced
Reverse Acting
Sizes 3/4" - 1 1/2", Union Ends
Bronze Body
Bronze or Monel Trim
Size 2", Flanged
Bronze Body
Bronze or Monel Trim
Cast Iron Body
Bronze or SS Trim
Direct Acting, Sizes 2 1/2" - 4"
Cast Iron Body, Flanged
SS Trim

Style WA
Unbalanced
Sizes 1/2" - 1 1/2"
Union Ends
Bottom Port Female NPT
Bronze Body
SS Trim

Style WD
Balanced
Sizes 2" - 2 1/2"
Flanged
Bronze Body
Bronze Trim

Robertshaw

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