

Self-Actuated Temperature Regulator RT-1003 Series

FEATURES

1. Large two-ply, seamless Robertshaw bellows used for long life and extra power.
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. High quality indicating thermometer on regulators RT-1003-E1 and RT-1003-F1.
7. Variety of Sensing Bulb forms and materials. (see back)
8. Valves in wide range of sizes, actions, styles, materials, etc. for many services. (see back).
9. Capillary Selection. (see back).
10. Setpoint adjustment wheel.
11. All components manufactured by a single source.
 *Registered tradename of Dupont Company.

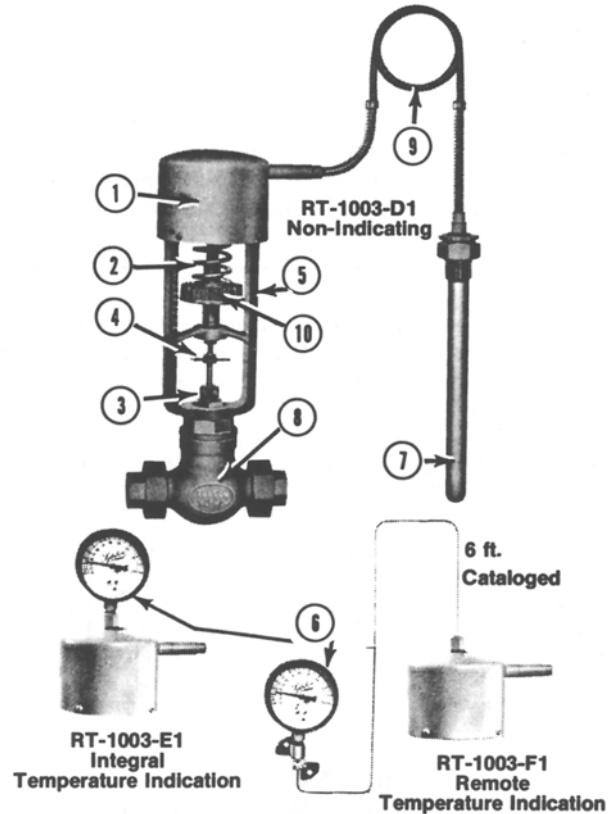
GENERAL

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 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"
 Medium 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

The RT-1003 Series

The RT-1003 series is a versatile design (the workhorse of the line) suitable for most SATR applications. It has more power and greater sensitivity than the RT-1001-BI series but less than the RT-1004-A1 series. It offers intergral or remote temperature indication whereas the other two series are cataloged as non-indicating. Related designs are the RT-1009-A1, B1, C1 for manual positioning in addition to automatic control; and RT-1011-BI for corrosive atmosphere service.

VALVE SIZING

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. 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 "direct-acting" 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, the RT-1003-D 1, E1, F1 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 non-ferrous 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" Sc. Brass Unions			Screwed Brass 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 stab (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 Emit, 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-1003 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
10° - 55° F.	-60° - + 80° F.
30° - 80° F.	40° - +1 10° F.
50° - 105° F.	-10° - +130° F.
75° - 130° F.	10° - 160° F.
105° - 165° F.	30° - 195° F.
115° - 175° F.	40° - 205° F.
125° - 180° F.	50° - 210° F.
155° - 210° F.	80° - 245° F.
165° - 215° F.	100° - 240° F.
190° - 240° F.	130° - 265° F.
200° - 250° F.	130° - 280° F.
225° - 280° F.	160° - 310° F.
245° - 300° F.	170° - 330° F.
265° - 315° F.	180° - 350° F.
290° - 345° F.	210° - 375° F.
310° - 385° F.	220° - 420° F.
380° - 455° 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):

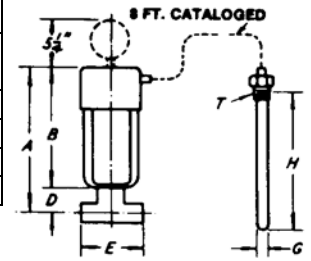
Materials Copper, 316 SS
Type GA or GA with lagging extension (mounting thread one size larger than bulb size)

Type GB (mounting thread same size as bulb size)

Valves: Types FA, WA, WD as illustrated.

RT-1003 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	13 7/16	13 7/16	13 7/16	15 5/16	15 5/16	15 1/2	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



Regulator No.	Shipping Weight, Lbs.										
RT-1003-D1	27	27	27	29	32	37	43	68	68	75	104
RT-1003-E1 F1	29	29	29	31	34	39	45	70	70	77	106

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.**

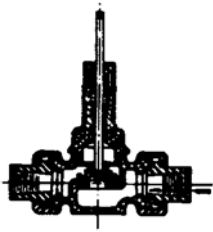
G	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
H	18	18	18	18	20	20	24	24	20	24	24
T*	11/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4

* Standard pipe thread

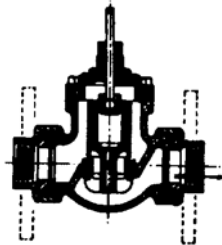
** Bulb sizes for ranges beginning below 120°F are necessary to provide "cross ambient" charge. This assures operation with ambient temperatures either above or below the control setting. Under some conditions, smaller bulbs may be used with lower ranges. If the larger bulb cannot be used, consult the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

SATR Valves for RT-1003 series (See Valve Spec Sheet for details)

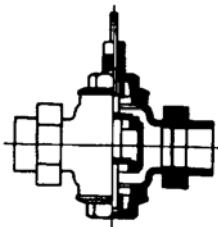
Two Way



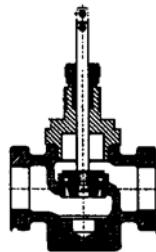
Style A, Union Ends
Single Seated
Unbalanced
Direct & Rev. Acting
Sizes 1/4" - 1 1/2"
Bronze
SS Trim



Style MA,
Single Seated
Fully Balanced
Direct Acting Only
Sizes 3/4" - 1 1/2" Bronze or
Steel, 2" Bronze, Cast Iron
SS Trim



Style FA, Double Seated
Semi-Balanced Rev. Acting
Sizes 3/4" - 1 1/2" Bz body;
Bz unions, 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

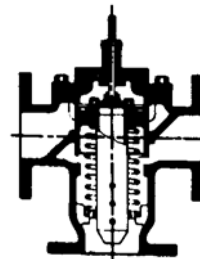


Style CSS
Single Seated
Teflon Seal
Stainless Steel
Body & Trim 1/2" 3/4" 1"
Direct & Rev. Acting
Scr. Ends

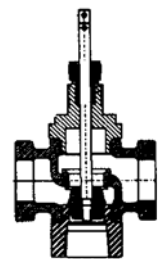
Three Way



Style WA, Union Ends
Bottom port female NPT
Unbalanced
Sizes 1/2" - 1 1/2"
Bronze Body
SS Trim



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



Style WCSS
Single Seated
Stainless Steel
Body & Trim 1/2," 3/4" 1"
Scr. Ends

Robertshaw

U.S.A. and CANADA

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