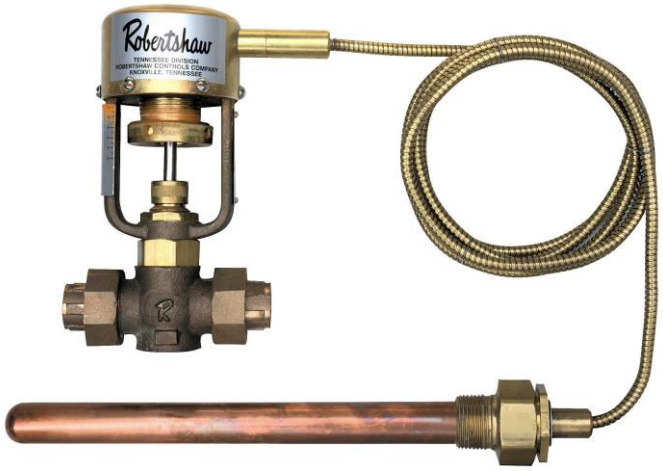
Self-Actuated
Temperature Regulator
RT-921 Series

FEATURES

1. **Two-ply bellows used for closer control and extended life.**
2. **Setpoint adjustment wheel.**
3. **Chevron "Lifetime" stem packing made of Teflon* or EPT rubber U-cup for water service.**
4. **Sturdy construction with bronze frame.**
5. **Variety of sensing bulb forms and materials. (See inside).**
6. **Valves in range of sizes, actions, styles, materials, etc. for many services. (See inside).**
7. **Capillary selection of materials and lengths. (See inside).**
8. **RT-921-A1 non-indicating unit shown. RT-921-B1 offers integral temperature indication.**

*Registered trade name of DuPont Co.



(RT-921-A1 Illustrated)
Small Overall Size
Wide Throttling Band

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 SATRs 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.

Robertshaw SATR series offers a selection of: Throttling bands, Temperature Indication, Fail-safe, 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.

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 and invoicing instructions

RT-921 SERIES

The RT-921 series offers both non-indicating and integral temperature indication control of liquid, air or gas with steam or water as the heating source. The design is very compact while offering sensitive control where smaller valve sizes are involved. The series offers many alternate specifications to match application needs. It is frequently used for temperature control on "Original Equipment" applications.

For cataloging and pricing purposes, the RT-921-Al and RT-921-BI series are detailed with direct acting valves for heating service, 8 ft. capillary (copper tube with brass armor), type 12B (threaded bushing) copper sensing bulb, bronze frame and other non-listed parts of non-ferrous metals. Alternate specifications are available.

Valve sizes, Inches	**1/4**	**3/8**	**1/2**	**3/4**	**1**
Valve Type, Direct acting (closes with rising temperature at bulb)	Single-seated Unbalanced			Single-seated Balanced	
	A	A	A	MA	MA
End Connections	1/2" screwed unions			Screwed unions	
Valve trim (poppet & seats), material	SS	SS	SS	SS	SS
Valve stem (highly finished), material	SS	SS	SS	SS	SS
Stem packing (spring loaded chevrons)	Teflon	Teflon	Teflon	Teflon	Teflon
Valve Body, material	Bronze	Bronze	Bronze	Bronze	Bronze
Body rating, pounds	225	225	225	250	250
Pressure drop limit, psi (For higher pressures, consult our representative)	125	115	60	250	250
Full open Cv	1.0	1.6	2.1	9.8	12.8

The RT-921-Al and RT-921-B1 series are available with any of the setpoint ranges listed below. The range should be selected so that the setpoint falls within the upper third of the range span.

Setpoint Adj. Range	**Matching Setpoint Temperature Indication**	**Setpoint Adj. Range**	**Matching Setpoint Temperature Indication**
10° to 55° F	-60° to 80° F	160° to 210° F	80° to 245° F
35° to 80° F	-10° to 110° F	170° to 215° F	100° to 240° F
55° to 105° F	-10° to 130° F	195° to 240° F	130° to 265° F
70° to 120° F	10° to 160° F	205° to 250° F	130° to 280° F
80° to 130° F	20° to 185° F	230° to 280° F	160° to 310° F
110° to 165° F	30° to 195° F	250° to 300° F	170° to 330° F
120° to 175° F	40° to 205° F		

ALTERNATE SPECIFICATIONS:

Capillary:

Length .....1 ft. to 50 ft. or more.
Materials .....Copper tube with brass armor (standard) or 304 stainless steel tube with or w/o SS braid.

Sensing Bulbs:

Type 12B ..... Copper (standard)
Type 12BP..... 316 stainless steel
Type 12B or 12BP .....with "dead extension"
Type 54 .....Copper, externally finned, plain (54A), bushed (54J) or flanged (54K).
Type 6 ..... Plain for open vessels, Copper with copper tube and brass armor (6A), or 316 SS with 304 SS tube and no braid (6AP).

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 size as bulb size.

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

VALVE SIZING

Valve sizing is critical to control and life of regulator. Use Robertshaw's "Flo-Rule" valve sizing slide rule and Cv chart or contact our representative or factory.

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 - 0.05% of full open valve capacity; single-seated balanced Types MA, MAS - 0.01% of full open valve capacity; double-seated Type FA - 0.5% of full open valve capacity. 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" - thus a "direct-acting" valve will fully open, a "reverse-acting" valve will close, and a three-way valve will fully open the "bottom" port. The normal result in event of loss of thermal charge is overheating.

Dimensions, Shipping Weights and Sensing Bulb Sizes

Valve Size, Inches	1/4	3/8	1/2	3/4	1
Direct-acting Valve, Type	A	A	A	MA	MA
Shipping Wt. Lbs.	27	27	27	29	32
A	7-31/32	7-31/32	7-31/32	8-27/32	8-27/32
B	5-13/32	5-13/32	5-13/32	5-13/32	5-13/32
D	1-9/16	1-9/16	1-9/16	3-7/16	3-7/16
E	4-3/4	4-3/4	4-3/4	6-15/16	7-1/8

Cataloged bulb for temperature ranges starting above 160° F.

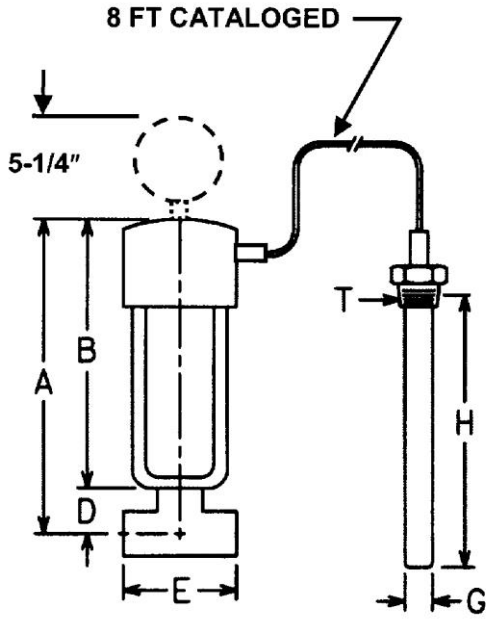
G	1	1	1	1	1
H	11	11	11	11	11
T*	1	11	11	1	11

**Cataloged bulb for temperature ranges starting below 160° F.

G	1	1	1	1	1
H	11	11	11	11	14
T•	1	1	1	1	1

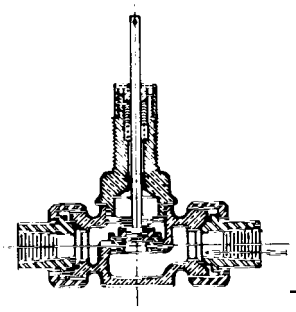
* Standard pipe thread.

** Bulb sizes for ranges beginning below 160° 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.

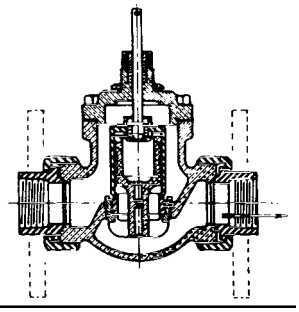


SATR Valves for RT-921-A1, RT-921-B1 Series
(See Valve Spec Sheet for full details)

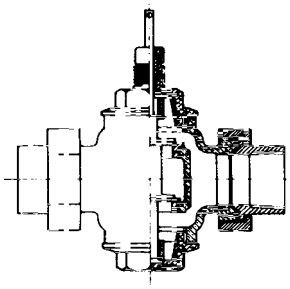
TWO WAY VALVES



Style A
Single Seated
Unbalanced
Direct & Reverse Acting
Sizes 1/4" - 1"
Union Ends
Bronze w/SS trim

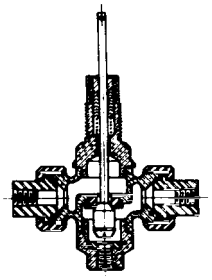


Style MA & MAS
Single Seated, Fully Balanced
Direct Acting only
SS Trim
MA Sizes 3/4" - 1"
Union Ends, Bronze Body
MAS Sizes 3/4″ - 1″
Threaded Ends, Steel Body
MAS Size 1″
Flanged, Steel Body



Style FA
Double Seated
Semi-balanced
Reverse Acting only
Sizes 3/4" - 1", Union Ends
Bronze body
Bronze or Monel trim
Size 2", Flanged
Bronze or Cast Iron body
Bronze, SS or Monel trim

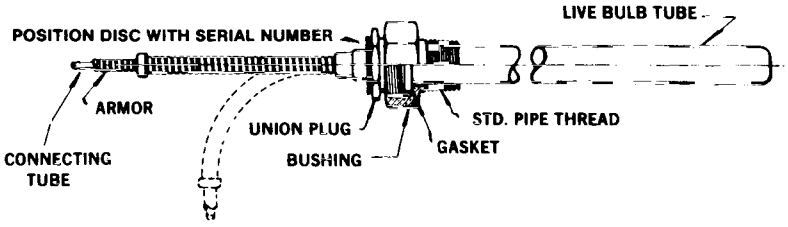
THREE WAY VALVE



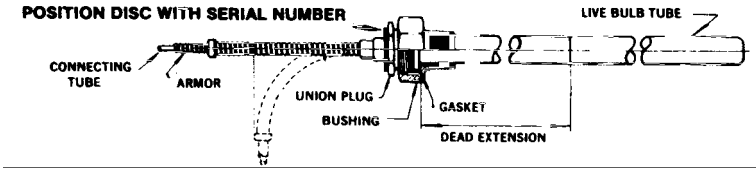
Style WA
Unbalanced
Sizes 1/2" - 1"
Union Ends
Bronze body
SS trim

SENSING BULB TYPES

Type 12 - (with pressure fitting
with threaded bushing)

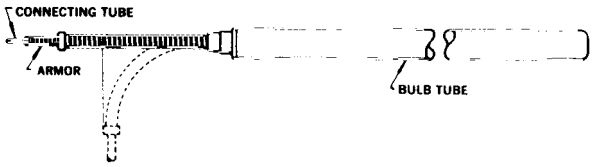


Type 12 (Continued)
- (with threaded bushing and "Dead Extension")

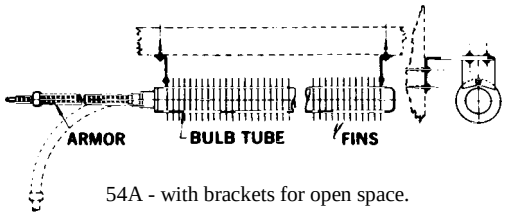


Bulb Material – Copper / Brass
Standard Capillary - Copper tube with brass armor.
Diameters Available – 1", 1-1/4" (See note *)

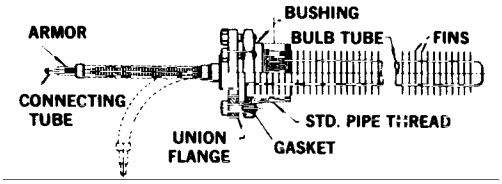
Type 6 - For non-pressurized containers (plain)



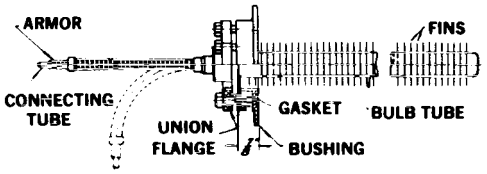
Type 54 - Externally finned for Air or Gases (315° F. Max.)



54A - with brackets for open space.



54J - with pressure fitting (threaded bushing)**

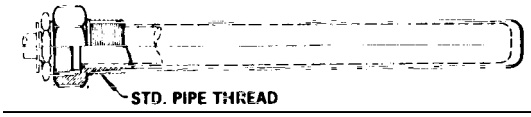


54K - with pressure fitting (flanged)***

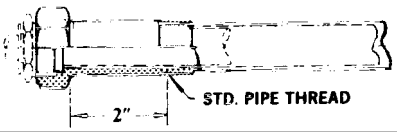
* Fin O.D. for 1" diameter bulb is 1-3/4"; 2-1/4" for 1-1/4" diameter bulb. Lengths are: 14" for 1" diameter bulb; 16" or 24" for 1-1/4" diameter bulb.
** 2" NPT for 1" diameter bulb; 2-1/2" NPT for 1-1/4" diameter bulb.
*** Flange for 1" diameter bulb is 4-3/8 O.D. with 3-3/4" B.C.; for 1-1/4" diameter bulb flange is 4-7/8" O.D. with 4-1/4" B.C.

SEPARABLE WELLS - For use with Type 12 bulbs up to 30" long.
Material – Stainless steel

Type GA



Type GA with 2" Lagging Extension'



Type GB



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