



## Self-Actuated Temperature Regulator RT-1011-B1 Series

All Stainless Steel Upperworks for  
 use in corrosive atmospheres

### FEATURES

- Large stainless steel bellows used for long life, extra power and corrosion resistance.
- From the bulb head through the regulator frame, all parts exposed to the atmosphere are made of 18-8 stainless steel.
- Over-temperature protection is standard feature.
- Chevron "Lifetime" stem packing made of Teflon\* or EPT Rubber U-Cup for water service.
- Quick-detach valve stem construction permits easy valve change.
- Sturdy construction with stainless steel frame.
- Variety of sensing bulb forms and materials (See inside pages).
- Valves in wide range of sizes, actions, styles, materials, etc. for many types of service. (See inside pages).
- Capillary selection (See inside pages).
- All components from a single source.

\* Registered Trademark 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.



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-1011-BI SERIES

The RT-1011-B1 series is an extension of the workhorse RT-1003-D1 series. It is the design result of trying to make the non-indicating RT-1003-D1 series with all exposed parts of the upperworks in 18-8 SS. This series extends the service life of SATR units installed where the bellows and other relatively thin parts are subjected to corrosive attack from fumes, vapors, etc. from plating or process vats, tanks, etc.

The RT-1011-B1 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.

10°F - 55°F	115°F - 175°F	225°F - 280°F
30°F - 80°F	155°F - 210°F	245°F - 300°F
50°F - 105°F	165°F - 215°F	265°F - 315°F
75°F - 130°F	190°F - 240°F	
105°F - 165°F	200°F - 250°F	

## ALTERNATES INCLUDE

### Capillary:

**Length** ..... 1 ft. to 50 ft. or more

**Material** ..... 304 stainless steel tube (standard)  
or 304 stainless steel tube with SS braid.

### Sensing Bulbs:

**Type 12BP** ..... 316 stainless steel (standard)

**Type 12B** ..... Copper

**Type 12B or 12BP** ..... with "dead extension"

**Type 54** ..... Copper, externally finned,  
Plain (54A),  
Bushed (54J),  
Flanged (54K)

**Type 6** ..... Plain for open vessels,  
316 SS with 304 SS tube and no braid (6AP),  
Copper with 304 SS tube and no armor (6A)

### 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, CSS, FA, MA, MAS, WA, WCSS, WD  
as illustrated.

For cataloging and pricing purposes, the RT-1011-B1 series is detailed with direct-acting valves for heating service, 8 ft. plain 304 stainless steel tube capillary, 12BP type (threaded bushing) in stainless steel with stainless steel sensing bulb, cast stainless steel frame and non-listed parts in stainless steel. Alternate specifications are available.

## 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 can frequently be satisfied by a smaller sized 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, CSS, WA, WCSS - 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; single seated Type WD - 1% of full open valve capacity. This leakage will usually increase somewhat as the valve seats wear in service.

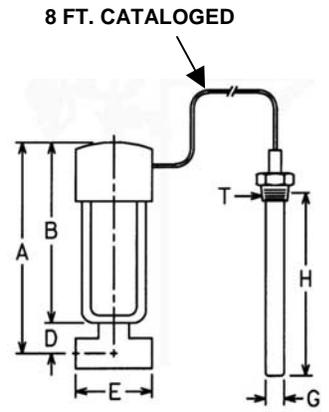
**NOTE 2 - IMPORTANT** - Damage to or failure of the thermal element with loss of charge will ordinarily result in the regulator going to the "cold" position. The valve stem moves "up" (toward the bellows) - thus a "direct-acting" valve will fully open, a "reverse-acting" valve will close, and a 3-way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

Valve 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-actuated			
	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	225	225	225	250	250	250	250	175	175	175	175	
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	26.0	47.8	82.5	130.0	226.0	

**DIMENSIONS, SHIPPING WEIGHTS AND SENSING BULB SIZES**

**Dimensions**

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	18-1/4	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
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-1011-B1	28	28	29	30	34	40	45	80	100	125	155

**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

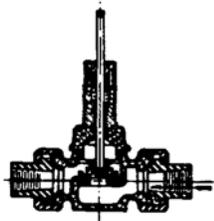
**\*\*Standard bulb for temperature ranges beginning below 120°F.**

G	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
H	20	20	20	20	24	24	24	24	20	24	24
T*	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2

\* Standard pipe thread

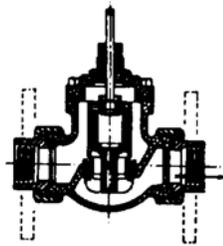
\*\* Bulb sizes for ranges beginning below 120°F are necessary to provide "cross ambient" charge. This assures operation with ambient temperatures either above or below the control setting. Under some conditions, smaller bulbs may be used with lower ranges. If the larger bulb cannot be used, consult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

**SATR Valves for RT-1011-BI Series (See Valve Spec Sheet for details)**

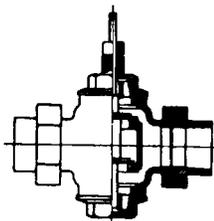


**Two Way**

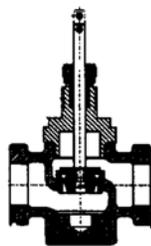
**Style A**  
 Union Ends  
 Single Seated, Unbalanced  
 Bronze Body, SS Trim  
 Direct Acting  
 Sizes 1/4" – 1"  
 Reverse Acting  
 Sizes 1/4" – 1-1/2"



**Style MA & MAS**  
 Single Seated, Fully Balanced  
 Direct Acting Only  
 SS Trim  
 MA Sizes 3/4" – 1-1/2"  
 Union Ends, Bronze Body  
 MA Size 2", Flanged  
 Bronze or Cast Iron Body  
 MAS Sizes 1" – 2"  
 Flanged, Steel Body  
 MAS Sizes 3/4" – 1-1/2"  
 Threaded Ends, Steel Body

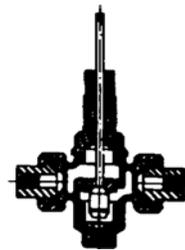


**Style FA**  
 Double Seated, Semi-Balanced  
 Reverse Acting: 3/4" – 1-1/2"  
 Bronze Unions, Bronze Body  
 Bronze or Monel Trim  
 Reverse Acting: 2", Flanged  
 Bronze, body, Bronze or Monel Trim  
 Reverse Acting: 2", Flanged  
 Cast Iron Body, Bronze or SS Trim  
 Reverse Acting: 2-1/2" – 4", Flanged  
 Bronze Body, Monel Trim  
 Reverse Acting: 2-1/2" – 4", Flanged  
 Cast Iron Body, SS Trim  
 Direct Acting: 2-1/2" – 4", Flanged  
 Cast iron Body, SS trim

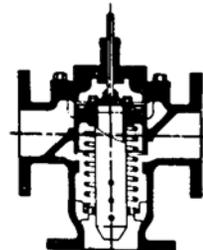


**Style CSS**  
 Single Seated, Unbalanced  
 Teflon Seal  
 Stainless Steel Body & Trim  
 Sizes 1/2", 3/4", 1"  
 Direct & Reverse Acting  
 Threaded Ends

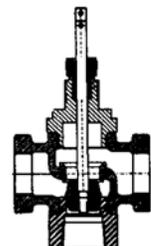
**Three Way**



**Style WA**  
 Single Seated, Unbalanced  
 Union Ends (2)  
 Threaded End (Bottom)  
 Sizes 1/2" – 1-1/2"  
 Bronze Body  
 SS Trim



**Style WD**  
 Single Seated, Balanced  
 Sizes 2" – 2-1/2"  
 Flanged  
 Bronze Body & Trim



**Style WCSS**  
 Single Seated, Unbalanced  
 Stainless Steel Body & Trim  
 Sizes 1/2", 3/4", 1"  
 Threaded Ends

NOTE: Bronze valves subjected to corrosive atmospheric attack quickly form a protective shell which prevents any further deterioration. Stainless steel valve is only needed when medium passing through the valve is corrosive.



### **U.S.A. & Canada**

**Robertshaw Industrial Products**

**1602 Mustang Drive**

**Maryville, Tennessee 37801**

**Phone: (865) 981-3100 Fax: (865) 981-3168**

**<http://www.robertshawindustrial.com>**

### **Exports**

**Invensys Appliance Controls**

**1701 Byrd Avenue**

**P.O. Box 26544**

**Richmond, Virginia 23261-6544**

**Phone: (804) 756-6500 Fax: (804) 756-6561**

**invensys®**

**Q-4106 (11/04)**

**Printed in U.S.A.**