

# Robertshaw

**INDUSTRIAL PRODUCTS DIVISION**

## Connecting Capillary, Sensing Bulbs, Separate Wells

For Robertshaw Self-Actuated Temperature Regulators

As cataloged, Robertshaw's RT-1001 through RT-1010 Series Temperature Regulators are supplied with 8 feet of copper connecting capillary tube with brass armor and type 12B copper sensing bulb fitted with a threaded brass bushing. The RT-1011 Series is supplied with 8 feet of stainless steel tubing. The sensing bulb size for a given combination of regulator series, valve type and size and setpoint adjustment range is detailed on the individual temperature regulator product specification sheets.

On special orders, at extra cost, variations in capillary tube length and/or material and in sensing type and/or material are available as indicated in the following paragraphs.

Separable wells are available.

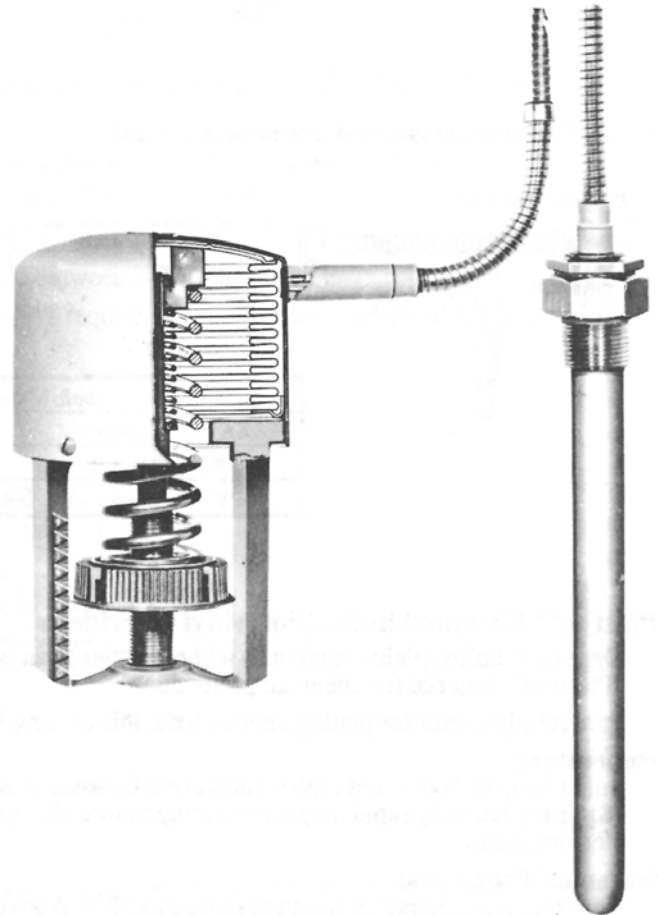
### CONNECTING CAPILLARY TUBE

#### Length

The cataloged capillary tube length is 8 feet. Other lengths from one foot to approximately 50 feet can be supplied.

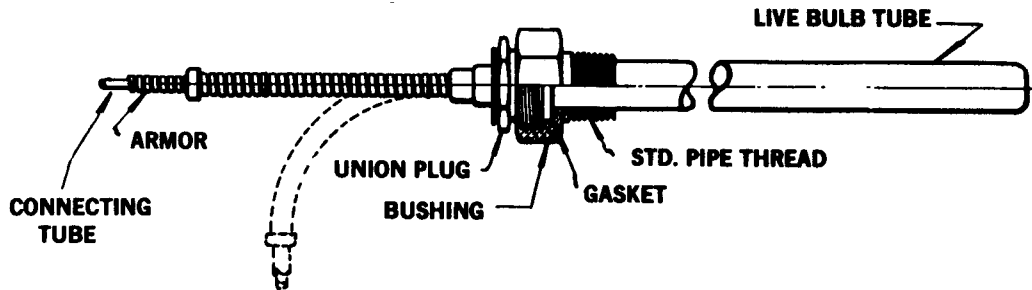
#### Material

The cataloged capillary tube and armor materials are copper / brass except for RT-1011 Series on which type 304 stainless steel is cataloged material. Alternates include: 304 stainless steel with or without stainless steel armor with a type 12B copper bulb; copper with Plastisol sheath with a type 12B copper or 12BP stainless steel bulb.



### SENSING BULB TYPES

Type 12 - (with pressure fitting with threaded bushing)

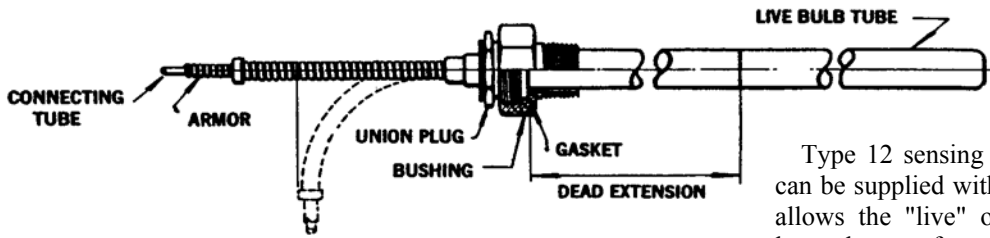


Designation	Bulb Material	Bushing Material	Standard Capillary	Diameters Available
12B	Copper	Brass	Copper tube, Brass Armor	3/4", 1", 1 1/4", 1 1/2"
12BP	316 S.S.	316 S.S.	304 S.S. tube, no armor*	3/4", 1", 1 1/4", 1 1/2"
Hy-Speed	Copper	Brass	Copper tube, Brass armor	1", 1 1/4"

\*Can be supplied with braided stainless steel armor.

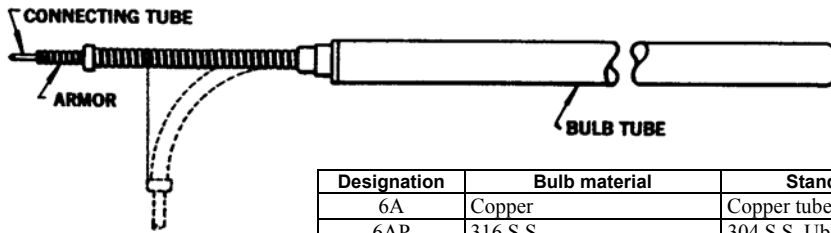
Type 12 (Continued)

- (with threaded bushing and "Dead Extension")



Type 12 sensing bulbs in copper and 316 stainless steel can be supplied with a rigid "dead extension" feature which allows the "live" or "sensing" portion of the bulb to be located away from the pressure fitting and the containing wall. The length of the "dead extension" can vary from two inches to several feet.

Type 6 - For non-pressurized containers (plain)



Designation	Bulb material	Standard Gills	Diameters Available
6A	Copper	Copper tube, Brass armor	3/4", 1", 1 1/4", 1 1/2"
6AP	316 S.S.	304 S.S. Ube, No armor	3/4", 1", 1 1/4", 1 1/2"
6PV	Copper with Plastisol sheath	Copper tube with Plastisol sheath	3/4", 1", 1 1/4"

"Plastisol" Sheathed Bulbs (Polyvinyl Chloride)

Type 6PV bulbs (plain round bulb without fitting) can be supplied with the bulb and the tubing covered with a heavy "Plastisol" material for chemical protection.

Particularly useful for plating applications, this coating has the following characteristics:

**Temperature:** Suitable up to 160°F and higher for some solutions. (Plastisol is a thermal insulator, so it should not be used in applications requiring extremely rapid response to temperature changes. It is satisfactory for control of the temperature of plating and cleaning tanks.)

**Mechanical Properties:** Very tough and abrasion resistant through 150°F. Above this temperature the coating is softened progressively. Avoid mechanical loadings at elevated temperatures that might cause excessive distortion to coating. Originally developed as coating for plating racks.

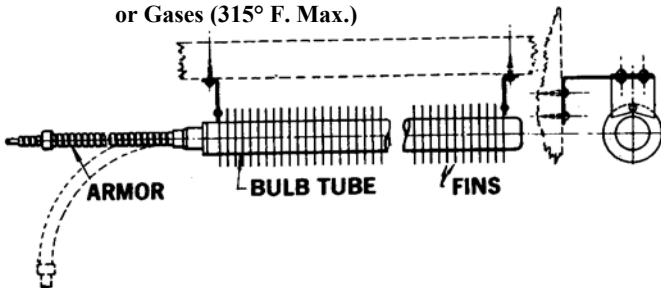
**Chemical Properties:** Withstands action of all metal plating and cleaning solutions except nitric acid over 40%, and also solvents such as acetone, organic esters, etc. Information for specific applications on request.

**Electrical Properties:** Excellent electrical insulator.

**Color:** Black

NOTE: Bulbs with removable bushings, such as type 12B cannot be supplied with "Plastisol"; however, it is possible to supply the tubing only with "Plastisol" on a bushed or flanged bulb.

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

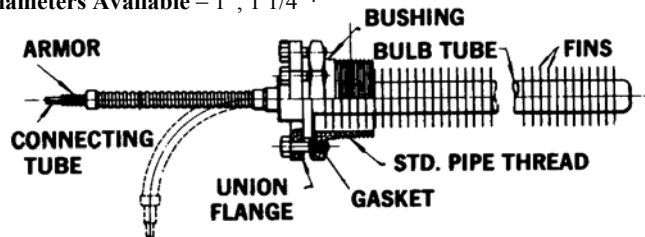


54A - with brackets for open space.

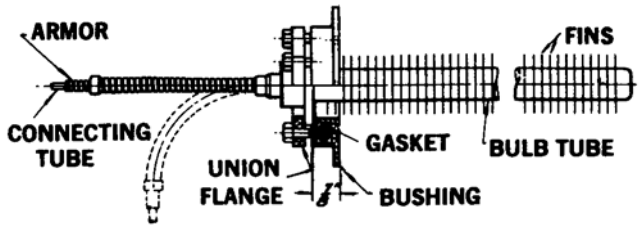
Bulb Material - Copper/ Brass

Standard Capillary - Copper tube with brass armor.

Diameters Available - 1", 1 1/4"\*



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



\*Fin O.D. for 1" diameter bulb is 1 3/4"; 2 1/4" for 1 1/4" diameter. 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.  
 \*\*\*1" diameter bulb: 4 3/8" O.D. flange with 3 3/4" O.D. flange with 3 3/4" B.C.; 1 1/4" diameter bulb; 4 7/8" O.D. flange with 4 1/4" B.C.

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

**Finned Type Bulbs** (Ref. Product Specification Sheet "Capillary. Bulbs & Wells" and Price List PL 160-7)

In the interest of production standardization, we carry two diameters of 54-A, 54J and 54K finned bulbs in stock.

The 1" x 14" bulb size is used where the catalog calls for standard bulbs 1" x 14" or smaller.

The 1 1/4" x 16" bulb size is used where the catalog specifies 1 1/4" x 16" or shorter.

The 1 1/4" x 24" bulb size is used for any standard cataloged bulb size between 1 1/4" x 16" and 1 1/4" x 24".

Other bulb lengths can be supplied where absolutely necessary, but will require special handling and should be avoided if possible. The maximum finned bulb length is 48".

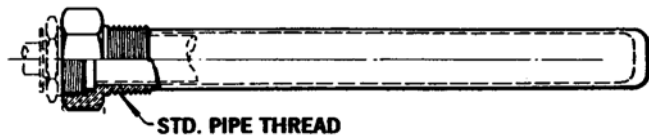
**MOUNTING DIMENSIONS**

Nominal Bulb Diameter	Fin Diameter	54J Male Pipe Thread on Bushing	54K Flan Bushing		54A Dim. P*
			Flange Dia.	Bolt Circle	
1"	1-3/4"	2"	4-3/8"	3-3/4"	2-29/64"
1-1/4"	2-1/4"	2-1/2"	4-7/8"	4-1/4"	2-9/16"

\* Center line of bulb to top of bracket.

**SEPARABLE WELLS - For use with Type 12 bulbs up to 30" long.**

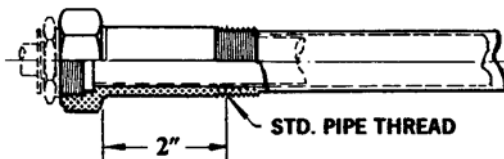
Type GA



Mounting thread is one size larger than nominal bulb diameter. Length is 1/2" longer than bulb length.

Well Material	Used with Bulb Material	Used with Bulb Diameter
316 S.S.	Copper or 316 S.S.	3/4", 1", 1 1/4", 1 1/2"

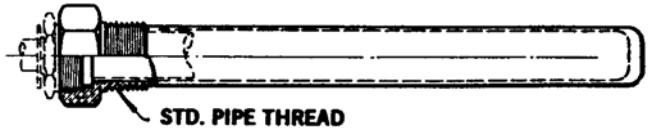
Type GA with 2" Lagging Extension\*



Well Material	Used with Bulb Material	Used with Bulb Diameter
316 S.S.	Copper or 316 S.S.	3/4", 1", 1 1/4"

\*A "dead extension" bulb is a prerequisite.

Type GB



Mounting thread is same size as nominal bulb diameter. Length is 1/2" longer than bulb length.

Well Material	Used with Bulb Material	Used with Bulb Diameter
316 S.S.	Copper or 316 S.S.	3/4", 1", 1 1/4"

**PRESSURE/TEMPERATURE RATINGS**

**Type 12, 6, 54 Sensing Bulbs**

Material	Max. External Pressure - PSI					at °F.
	1/2" O.D.	3/4" O.D.	1" O.D.	1-1/4" O.D.	1-1/2" O.D.	
Copper	400	700	700	600	600	250
	200	200	200	175	175	400
316 Stainless Steel		1100	1500	1200	700	600

Note: There is a relationship between pressure rating and temperature which allows the pressure rating to be increased as the temperature decreases, and vice versa.

**Type GA and GB Separable Wells - 316 Stainless Steel**

EXTERNAL PRESSURE RATING PER ASME BOILER AND PRESSURE VESSEL CODE, SECTION VIII				
SOCKET FOR		MAX. PRESSURE		HYDROSTATIC TEST PRESSURE
BULB DIAMETER	BULB LENGTH	AT 100°F	AT 400°F	
3/4"	UP TO 20"	835 PSIG	800 PSIG	1260 PSIG
1"	UP TO 30"	565 PSIG	500 PSIG	850 PSIG
1 1/4"	UP TO 40"	435 PSIG	390 PSIG	660 PSIG
1 1/2"	UP TO 50"	480 PSIG	425 PSIG	720 PSIG

*Robertshaw*

**U.S.A. and CANADA**  
 Robertshaw Industrial Products Division  
 1602 Mustang Drive  
 Maryville, TN 37801  
 Phone: (865) 981-3100 Fax: (865) 981-3168  
<http://www.robertshawindustrial.com>

**Exports**  
 Invensys Appliance Controls  
 2809 Emerywood Parkway  
 P.O. Box 26544  
 Richmond, Virginia 23261-6544  
 Phone: (804) 756-6500 Fax: (804) 756-6561

