HONEYWELL **TRADELINE** CONTROLS

T991A REMOTE BULB TEMPERATURE CONTROLLER

APPLICATION

The T991A Remote Bulb Temperature Controller is used to sense water and air temperatures, and provides proportional control of a Series 90 (Modutrol*) motor. Typically, Series 90 motors are used with linkages to operate valves or dampers in air conditioning systems.

The T991A can be used to replace the controllers listed below:

Honeywell	Remarks
T915A	T991A temperature settings same as T915A.
T915C	See Table 1 for corresponding T991A temperature settings.

INSTALLATION

NOTE: Installation and service should be made only by a qualified service man. Follow instructions furnished by heating or cooling system manufacturer, if available.

LOCATION:

The T991A may be mounted in any convenient position on a flat surface where the ambient temperature does not exceed 125 F. When mounting on a hot or cold surface, mount the case on a wood board or other insulating material. The 5-foot capillary tube provides for remote mounting.

Proceed to the FOR NEW INSTALLATION section or FOR REPLACEMENT section.

FOR NEW INSTALLATION:

MOUNT THE CONTROLLER CASE—

1. Remove cover. Using the case as a template, mark three screw hole locations on mounting surface, then punch or drill holes.
2. Fasten T991A securely to mounting surface with the mounting screws furnished.

TO INSTALL SENSING BULB IN AIR DUCT:

Locate the sensing bulb where duct air of average temperature can circulate freely around it. Avoid mounting the bulb close to hot pipes, cooling coils, and other places where air temperatures are not representative.

To support the bulb in the duct, use Bulb Holder No. 107324A (supplied).

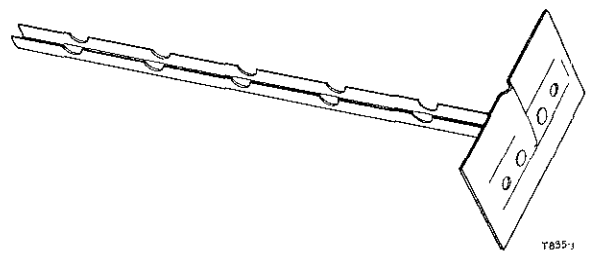

Fig. 1—Bulb Holder.

1. Drill a 3/4-inch hole in the duct wall to admit the sensing bulb and the holder.
2. Using the holder as a template, mark and drill holes for bulb holder mounting screws (see Fig. 4).
3. Break off bulb holder to desired length, as shown in Fig. 2. NOTE: Holder should be long enough to hold sensing bulb in freely circulating air, away from duct wall. Neatly coil any excess capillary tubing at controller case or at bulb holder.

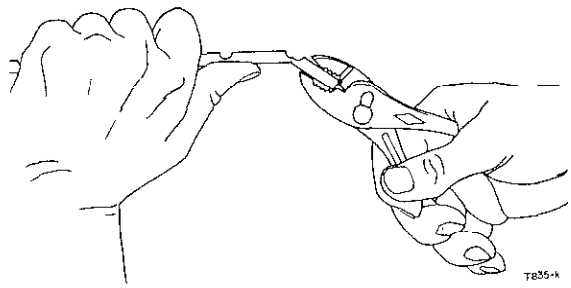

Fig. 2—Shortening the bulb holder.

4. Place capillary tubing in bulb holder channel, and pinch top edges of holder together at each segment:

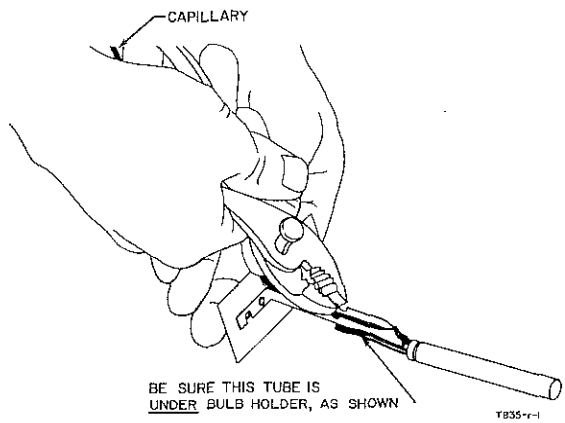

Fig. 3—Securing the bulb to the holder.

5. Insert bulb and holder into controlled area through hole prepared in Step 1.

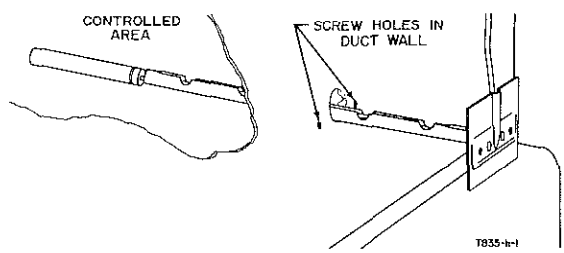

Fig. 4—Insertion into duct.

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6. Fasten bulb holder to duct wall with screws furnished.

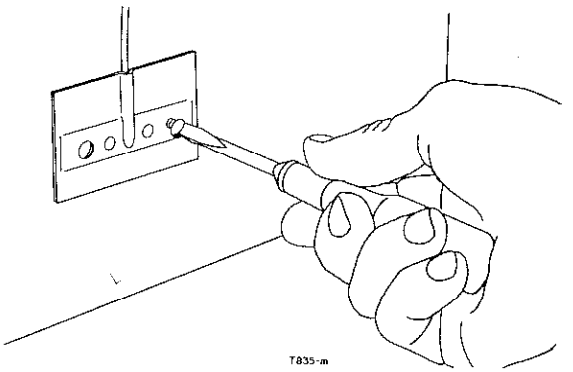

Fig. 5—Fastening bulb holder to duct wall.

TO INSTALL SENSING BULB IN TANKS OR BOILERS—

The T991A sensing bulb may be inserted directly into a tank or boiler tapping by using a No. 7617M (1/2-inch NPT) or 7617P (3/4-inch NPT) Compression Fitting (order separately); or the element may be inserted into a No. 112622AA (1/2-inch NPT) or 112630AA (3/4-inch NPT) Immersion Well (order separately) which is screwed into the tank or boiler.

Installing Compression Fitting (not furnished)—

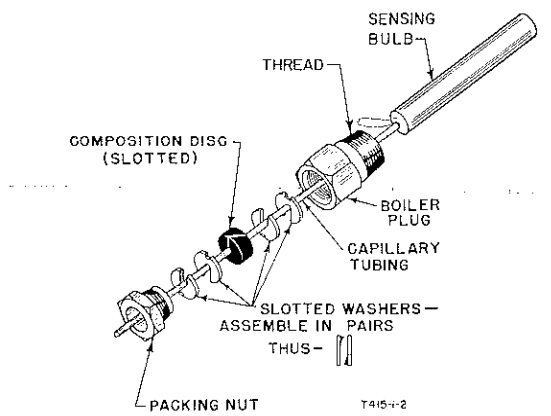

Fig. 6—Exploded view of compression fitting.

1. Drain system. Screw boiler plug into properly sized and threaded boiler or pipe tapping.
2. Place packing nut on T991A capillary tube.
3. Slide sensing bulb completely through boiler plug.
4. Place composition disc and the 4 slotted brass washers on tubing in the order shown in Fig. 6.
5. Slide the assembly into the boiler plug, and tighten the packing nut.
6. Refill the system and check for leaks. Neatly coil excess capillary tubing at T991A case.

Installing Immersion Well (not furnished)—

1. Drain system. Screw the well into properly sized and threaded boiler tapping or pipe fitting.
2. Refill the system and check for leaks.
3. Insert sensing bulb into well until it bottoms.
4. Fit bulb retaining clamp over immersion well flange and capillary tubing, and tighten screw, as shown in Fig. 7.

Neatly coil excess capillary tubing at T991A case.

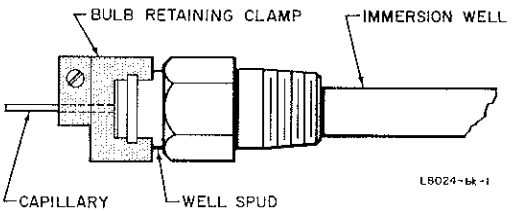

Fig. 7—Immersion well.

FOR REPLACEMENT:

Remove old controller. Mount T991A in same location if this meets the requirements in LOCATION, above.

Use old sensing bulb hole, bulb holder, immersion well, or compression fitting if these are suitable; otherwise, follow applicable instructions for new installation, above.

See Table 1 in SETTINGS AND ADJUSTMENTS.

WIRING

All wiring must comply with local electrical codes. CAUTION: Disconnect power supply.

Two knockouts are provided at top and bottom of case for 1/2-inch conduit. Follow any wiring instructions furnished with heating or cooling system. In replacements, make certain the T991A is wired in the system to operate the same way as old control.

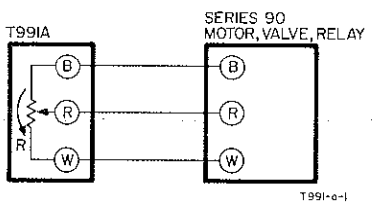

Fig. 8—Typical hookup for T991A.

SETTINGS AND ADJUSTMENTS

Temperature set point—Turn knob on front of case until pointer indicates temperature which is to be maintained in the controlled medium. This is the center point of the proportional range.

Porportional range adjustment—The T991A may be adjusted to vary the temperature range within which proportional action is desired. With cover off, turn adjustment wheel (marked 3, 5, 10, 20, 30) until desired value is aligned with pointer on frame.

EXAMPLE: If the temperature of the controlled medium is to be maintained at 130 F, and proportional action from 125 F to 135 F (a range of 10 degrees) is desired—turn the temperature set point indicator to 130 F and the proportional range adjustment wheel to 10.

WHEN REPLACING A T915A—

Set the T991A temperature set point to same setting as old control (from 55 to 140 F). Set T991A proportional range adjustment wheel to 3.

WHEN REPLACING A T915C—See Table 1.

TABLE 1—TRIAL SETTINGS FOR T991A WHEN REPLACING A T915C

T915C Scale Range	T915C Settings		Corresponding Settings for T991A:	
	Temperature Set Point	Porportional Range	Set T991A at same temperature set point as T915C PLUS—	Set T991A Proportional range at
15 to 90 F	Between 55 and 90 F	Min.	2-1/2 degrees (F)	5
		A	4 degrees (F)	8
		B	7 degrees (F)	14
		C	8 degrees (F)	16
		D	11 degrees (F)	22
		E	13 degrees (F)	26
		F	15 degrees (F)	30
65 to 140 F	Between 115 and 140 F	Min.	1 degree (F)	3
		A	4 degrees (F)	8
		B	6 degrees (F)	12
		C	8 degrees (F)	16
		D	10 degrees (F)	20
		E	12 degrees (F)	24
		F	14 degrees (F)	28
	Between 90 and 115 F	Min.	2-1/2 degrees (F)	5
		A	5 degrees (F)	10
		B	7-1/2 degrees (F)	15
		C	11 degrees (F)	22
		D	13 degrees (F)	26
		E	15 degrees (F)	30
		F	16 degrees (F)	See note[a]
	Between 65 and 90 F	Min.	4 degrees (F)	8
		A	7 degrees (F)	14
		B	10 degrees (F)	20
		C	14 degrees (F)	28
		D	16 degrees (F)	See note[a]
		E	19 degrees (F)	
		F	22 degrees (F)	

[a]The Tradeline T991A proportional range is from 3 to 30 degrees F. If the application exceeds the 30-degree proportional range, then a T915C must be used or a repaired exchange T915C must be ordered.

CHECKOUT

After mounting and wiring have been completed, let the controlled equipment operate until system temperature stabilizes (from 1 to 3 hours). Observe the motor action to see if it stabilizes. If the motor shaft constantly moves back and forth, widen the T991A proportional range (about 5 degrees at a time) until the system is stable.