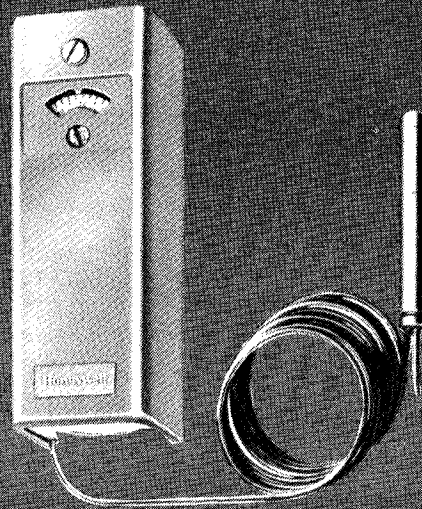


# Honeywell

## AMBISTAT TEMPERATURE CONTROLLERS

THESE REMOTE BULB CONTROLLERS PROVIDE CONTROL OF TEMPERATURE IN REFRIGERATED MILK TANKS, CROP DRYING, TOBACCO CURING, BEVERAGE DISPENSERS, ICE CUBE MACHINES, DISHWASHERS AND SIMILAR AGRICULTURAL AND INDUSTRIAL APPLICATIONS.

- Ambient temperature compensated.
- Enclosed snap switches available with spst or spdt action.
- Models available with contacts that make or break on temperature rise.
- Screwdriver adjustment for temperature setting; external knob optional.
- Set point visible on front of case.



## T4031C,E,F T6031C,D

# SPECIFICATIONS

MODELS: (also refer to Table 1).

T4031C,E,F—ambient compensated; opens on temperature rise.

T4031F—ambient compensated; closes on temperature rise.

T6031C,D—ambient compensated; spdt; opens R-B and closes R-W on temperature rise.

TABLE 1—T4031, T6031 STANDARD MODELS

MODEL	CONTROL RANGE		MID-SCALE DIFFERENTIAL		CAPILLARY LENGTH		SWITCH ACTION
	F	C	F	C	ft	m	
T4031Ca	40 to 180	4 to 82	5	2.8	5-1/2,8	1.7,2.4	Spst-breaks on Temperature rise.
T4031E	40 to 180	4 to 82	2	1.1	5-1/2	1.7	Spst-breaks on Temperature rise.
T4031F	40 to 180	4 to 82	5	2.8	5-1/2	1.7	Spst-makes on Temperature rise.
T6031C	0 to 70	-18 to 21	2	1.1	5-1/2	1.7	Spdt
	40 to 180	4 to 82	2	1.1	5-1/2	1.7	
T6031D	0 to 70	-18 to 21	5	2.8	5-1/2	1.7	Spdt
	30 to 270	-1 to 132	5	2.8	5-1/2	1.7	
	40 to 180	4 to 82	5	2.8	5-1/2	1.7	
					7-1/2 <sup>b</sup>	2.3	

<sup>a</sup>Armored capillary—no bulb.

<sup>b</sup>Includes 4 ft averaging element.

RATING IN AMPERES: Models with 5 F Differential.

	120 Vac	240 Vac
Full Load	8.0	5.1
Locked Rotor	48.0	30.6
Inductive Current	0.25 A at 1/4 to 12 Vdc	

Models with 2 F Differential—120 VA at 120/240 V.

DIMENSIONS:

Case—5-5/8 in. high, 2 in. wide, 2-1/8 in. deep.

Bulb—2-7/8 in. long, 3/8 in. diameter.

Models available with more sensitive bulb (30 in. long, 1/4 in. diameter) providing a narrower differential.

Model also available with 8 ft by 3/32 averaging bulb.

*(continued on page 3)*

## ORDERING INFORMATION

WHEN PURCHASING REPLACEMENT AND MODERNIZATION PRODUCTS FROM YOUR TRADELINE WHOLESALER OR YOUR DISTRIBUTOR, REFER TO THE TRADELINE CATALOG OR PRICE SHEETS FOR COMPLETE ORDERING NUMBER, OR SPECIFY—

1. Order number.
2. Temperature range.
3. Differential.
4. Type of boiler fitting and pipe size.
5. Special feature, if desired.

IF YOU HAVE ADDITIONAL QUESTIONS, NEED FURTHER INFORMATION, OR WOULD LIKE TO COMMENT ON OUR PRODUCTS OR SERVICES, PLEASE WRITE OR PHONE:

1. YOUR LOCAL HONEYWELL RESIDENTIAL DIVISION SALES OFFICE (CHECK WHITE PAGES OF PHONE DIRECTORY).
2. RESIDENTIAL DIVISION CUSTOMER SERVICE  
HONEYWELL INC., 1885 DOUGLAS DRIVE NORTH  
MINNEAPOLIS, MINNESOTA 55422 (612)542-7500

(IN CANADA—HONEYWELL LIMITED/HONEYWELL LIMITEE, 740 ELLESMERE ROAD, SCARBOROUGH, ONTARIO M1P 2V9) INTERNATIONAL SALES AND SERVICE OFFICES IN ALL PRINCIPAL CITIES OF THE WORLD.

#### OPTIONAL FEATURES:

External adjustment knob.

#### ACCESSORIES:

Q615A—splash-proof enclosure.

Compression Fittings (brass, 1-1/2 in. insulation):

104484A—Capillary, 1/2 NPT.

104484B—Capillary, 3/4 NPT.

104486B—Bulb, 1/2 NPT.

Well Assemblies for 3/8 x 3 in. [10 x 76 mm] bulb:

INSULATION THK. (in. [mm])	COPPER		STAINLESS STEEL	
	1/2 NPT	3/4 NPT	1/2 NPT	3/4 NPT
1-1/2 [38]	121371A	121371B	121371E	121371F
3 [76]	121371L	121371M	—	—

## INSTALLATION

#### WHEN INSTALLING THIS PRODUCT . . .

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.

2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.

3. Installer must be a trained, experienced service technician.

4. After installation is complete, check out product operation as provided in these instructions.

### CAUTION

Disconnect power supply before connecting wiring to prevent electrical shock and equipment damage.

The Ambistat controller may be mounted either vertically or horizontally on a wall or panel, or directly on a tank or vessel. The remote bulb may be installed in any position in the tank or vessel.

You may install the Ambistat controller with the case and bulb as far apart as the tubing will permit. The vertical distance and temperature difference between the bulb and case are not critical.

#### LOCATION

1. Do not locate the bulb near a hot or cold inlet. Place the bulb where it will be exposed to the average temperature of the medium under control.

2. The bulb should be firmly supported or shielded by a protecting well when immersed in a liquid in motion.

3. Do not uncoil more tubing than required. Avoid bending the tubing sharply; this can cause kinking.

4. If tubing is subjected to vibration, protect it against wearing where it comes in contact with another surface.

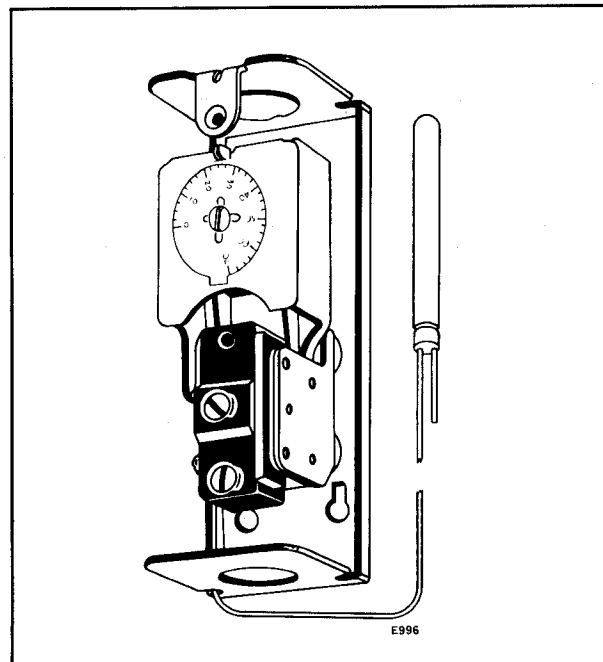


FIG. 1—INTERNAL VIEW OF T4031.

#### MOUNTING

##### To Mount the Case:

1. Remove cover by loosening captive mounting screw above dial on front of Ambistat controller.
2. Fasten case to a convenient wall or panel using the four mounting holes in the back of the case.
3. If desirable, bend the tubing to run through any of the other three corner notches in case. Be careful not to bend tubing sharply or kink it. Any excess tubing should be left coiled near the case.
4. Replace the cover.

##### To Install Remote Bulb Using Immersion Well Boiler Fitting.

1. Screw the well into boiler or pipe tapping.
2. Slide bulb to within approximately 1/2 in. of bottom of well.
3. Place spring slip on tubing with legs of clip toward well and straddling tubing.
4. Push tubing and spring clip into well until clip seats against boiler fitting.
5. Push tubing until bulb bottoms in well.
6. Refill the system.

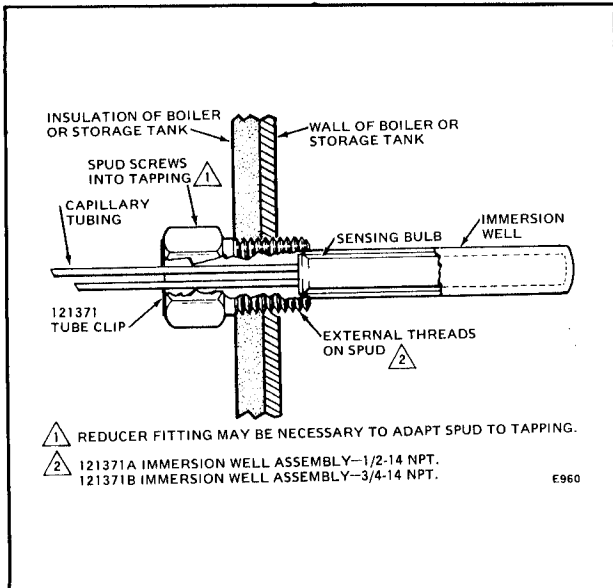


FIG. 2—IMMERSION WELL BOILER FITTING.

**To Install Remote Bulb Using Tubing Compression Boiler Fitting, 104484A (1/2 NPT) or 104484B (3/4 NPT):**

1. Screw boiler fitting into boiler or pipe tapping.
2. Place packing nut on tubing.
3. Slide bulb completely through boiler fitting.

4. Place composition disc and four slotted brass washers on tubing in the order shown in Fig. 3. Turn brass washers so that slots are at 180 degrees to each other.

5. Insert seal assembly in boiler fitting and tighten packing nut.

6. Refill the system.

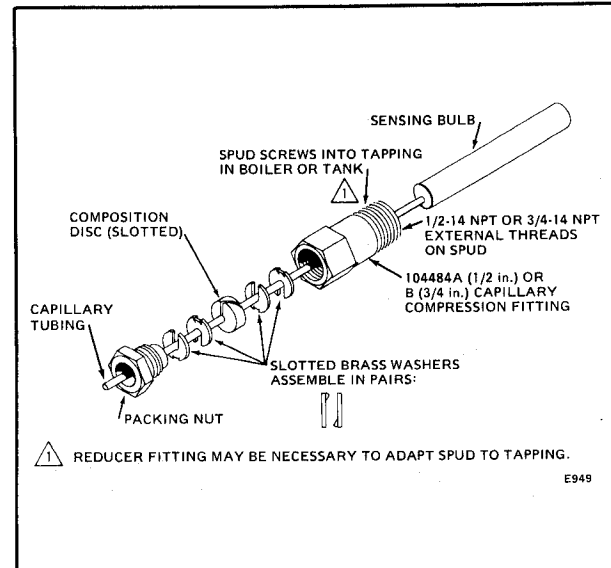


FIG. 3—TUBING COMPRESSION BOILER FITTING.

## WIRING

Disconnect power supply. Provide disconnect means and overload protection as required.

All wiring must agree with all applicable electrical codes, ordinances, and regulations.

All installations should provide sufficient flexibility to allow for future servicing of the control.

Figures 4, 5 show typical wiring connections for various systems. Remember that when the Ambistat controller is used as a direct controller of a device, the load must not exceed the current rating of the Ambistat controller snap switch.

Wiring for a space where a single Ambistat controller will control both heating and a cooling device should include a switch in the circuit to separate heating and cooling functions. Failure to separate the two circuits will cause rapid cycling between heating and cooling operation when the dial temperature setting is reached, thus impairing control efficiency. Figure 5 is a suggested circuit using a double-pole, double-throw (dpdt) switch (Part No. 20348 or equivalent).

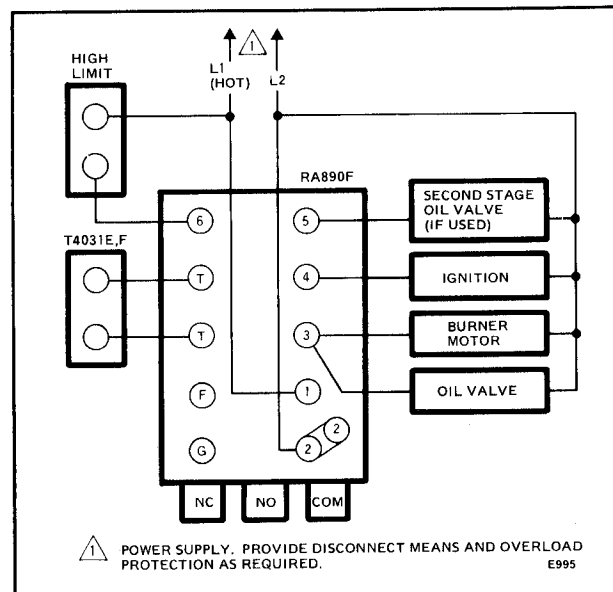


FIG. 4—TYPICAL CONNECTIONS FOR HEATING APPLICATIONS SUCH AS CROP DRYING, TOBACCO CURING, ETC.

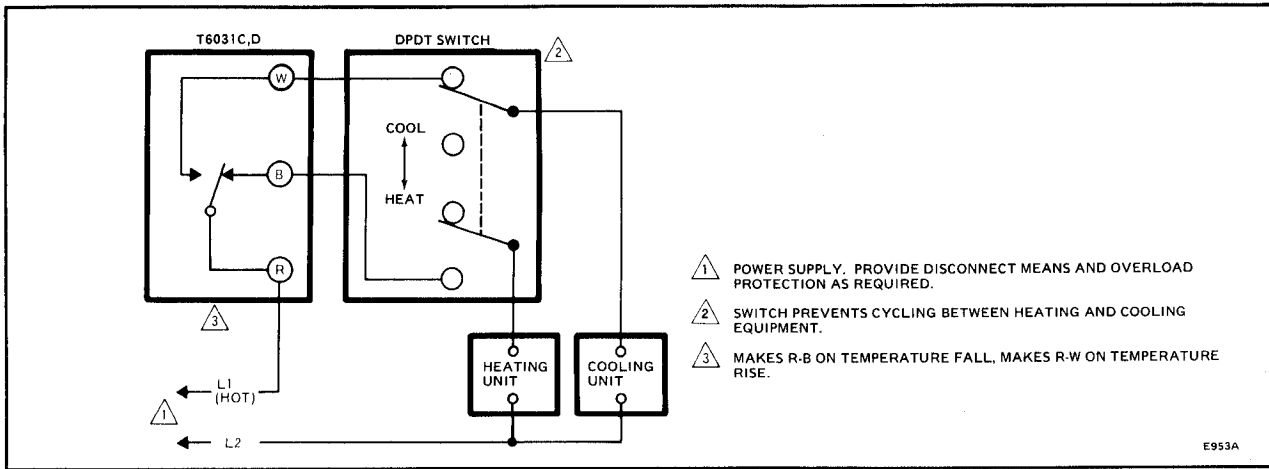


FIG. 5—TYPICAL CONNECTIONS FOR T6031C,D CONTROL OF HEATING AND COOLING CIRCUITS. NOTE THE DPDT SWITCH TO PREVENT CYCLING BETWEEN THE TWO SYSTEMS.

## OPERATION

The T4031H,J thermostats use a liquid-filled sensor bulb connected through a capillary tube to a diaphragm type switch actuator for on-off control of cooling equipment. A temperature change at the sensor bulb produces an internal pressure change at the diaphragm which moves the attached switch actuating linkage. An adjustable spring exerts a force on the diaphragm that balances the internal pressure. The thermostat dial setting adjusts this spring force, which determines the temperature at which the switch is actuated (set point).

In cooling applications, during a temperature rise, the switch turns on cooling equipment when the temperature reaches set point. However, when temperature falls, the switch does not turn off cooling equipment until the temperature is below set point by the amount of the differential. See Fig. 6.

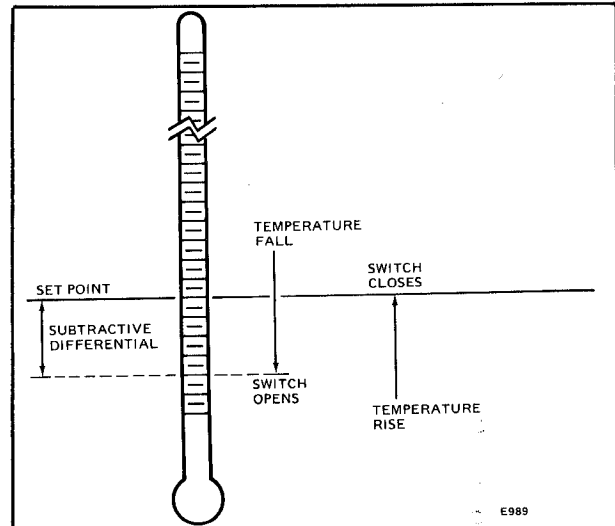


FIG. 6—T4031H,J SWITCHING ACTION IN COOLING APPLICATION.

## CHECKOUT

When installation and wiring are completed, perform the following system check.

1. With power off, check wiring connections.
2. Turn power on and set thermostat dial below ambient temperature (simulates a temperature increase). Cooling equipment should turn on.

3. Set thermostat dial above ambient temperature (simulates a temperature decrease). Cooling equipment should turn off.

4. When a thermometer located in the controlled medium reads the desired temperature, adjust thermostat dial to set point by turning dial until cooling equipment turns off.

If questions arise regarding installation, operation, or checkout of this equipment, contact your distributor or local Honeywell representative.

Dear Customer,

We welcome your comments and suggestions for improving this publication. Your assistance is greatly appreciated and will enable us to provide better technical information for you.

Please send your comments and suggestions to:  
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