Honeywell

TRADELINE®

T874A-F Multistage Thermostats/Q674A-E,G Subbases

Installation Instructions for the Trained Service Technician.

Application

The T874A-F Thermostats provide 24 to 30 Vac control for heating and/or cooling systems as listed in Table 1.

TABLE 1—THERMOSTAT HEATING AND/OR COOLING STAGES.

T874	A	B	C	D	E	F
Heating Stages	1	1	2	2	—	2
Cooling Stages	1	2	1	2	2	—

The Q674A-E,G Subbases provide wiring terminals, system and fan switching, and mounting bases for T874 Thermostats as listed in Table 2.

TABLE 2—SUBBASE SWITCHING POSITIONS.

Q674 Model	Switch Positions	
	System	Fan
A	Heat-Auto-Cool	Auto-On
B	Heat-Off-Cool	Auto-On
C	Off-Auto	Auto-On
D	None	None
E	Off-Heat-Auto-Cool	Auto-On
G	Off-Auto	None

Operation

On a 2-heat thermostat, the two stages of heat *make* sequentially as the temperature drops. *Make* refers to the mercury switch initiating a call for heat or cool.

There are about 2° F [1° C] between stages so that the second stage makes only when the first stage cannot handle the load. This is the *interstage differential*.

Recycling Notice

This control contains mercury in a sealed tube. Do *not* place control in the trash at the end of its useful life.

If this control is replacing a control that contains mercury in a sealed tube, do *not* place your old control in the trash.

Contact your local waste management authority for instructions regarding recycling and the proper disposal of this control, or of an old control containing mercury in a sealed tube.

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

1. Disconnect power supply to prevent electrical shock or equipment damage.
2. To prevent interference with the thermostat linkage, keep wire length to a minimum and run wires close as possible to the subbase.
3. Do not overtighten thermostat captive mounting screws because damage to subbase threads can result.
4. Do not short across coil terminals on heating relay or gas control. This can burn out the thermostat heat anticipator.

IMPORTANT: *Thermostats are calibrated at the factory by using subbases mounted at true level. Inaccurate subbase leveling will cause thermostat control deviation.*

LOCATION

Locate the subbase about 5 ft [1.5m] above the floor in an area with good air circulation at average temperature.

Do not mount the subbase where the thermostat may be affected by:

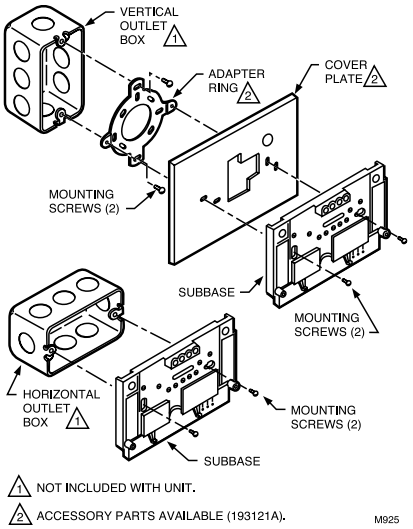
- — drafts or dead spots behind doors and in corners.
- — hot or cold air from ducts.
- — radiant heat from sun, appliances or fireplace.
- — concealed pipes and chimneys.
- — unheated (uncooled) areas such as an outside wall behind the thermostat.

MOUNTING THE SUBBASE

The thermostat subbase can be mounted on a vertical outlet box, horizontal outlet box or directly on the wall.

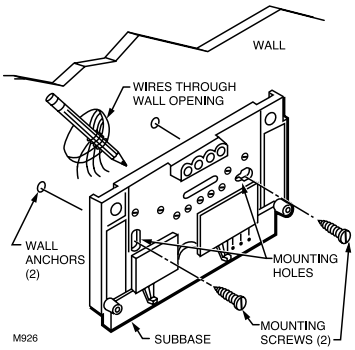
1. If you must mount the subbase on a vertical outlet box, order Honeywell 193121A Adapter Assembly (Fig. 1). The assembly includes an adapter ring, two screws and a cover plate to cover marks on the wall. Install the ring and cover plate on the vertical outlet box.

Fig. 1—Installation of subbase on outlet box.



For a wall installation, hold subbase in position and mark holes for anchors. See Fig. 2. Obtain wall anchors locally. Take care that the wires do not fall back into the wall opening. Set aside subbase. Drill two 3/16 in. [4.8 mm] holes and gently tap anchors into the holes until flush with the wall.

Fig. 2—Installation of subbase on wall.



2. Pull electrical wires through the cover plate (if used) and subbase cable opening (Fig. 3). See Wiring the Subbase section before pulling any wires.

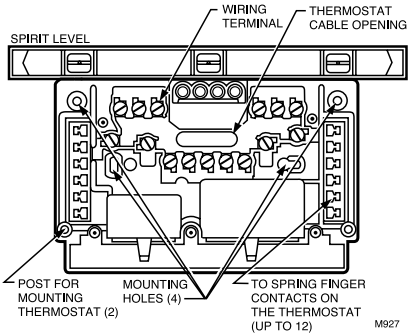
IMPORTANT: *Use 18 gauge, color-coded thermostat cable for proper wiring.*

3. Secure the cover plate (if used) and subbase with the screws provided. Do not fully tighten the subbase screws.

4. Level the subbase using a spirit level, as shown in Fig. 3, and firmly tighten subbase mounting screws. The subbase mounting holes provide for minor out-of-level adjustments.

IMPORTANT: *An incorrectly leveled subbase will cause the temperature control to deviate from setpoint.*

Fig. 3—Subbase components and leveling procedure.

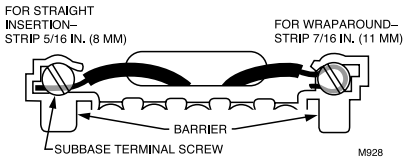


WIRING THE SUBBASE

All wiring must comply with local electrical codes and ordinances. Follow equipment manufacturer wiring instructions when available. To wire subbase, proceed as follows:

1. Connect the system wires to the subbase as shown in Figs. 8 through 16. A letter code is located near each terminal for identification. The terminal barrier permits straight or conventional wraparound wiring connections. See Fig. 4.

Fig. 4—Wiring connections.



2. Your Q674 Subbase can require one or more jumpers that may or may not be factory supplied. Refer to the wiring diagrams for specific terminals to be jumpered. See Table 3 for proper application.

⚠ CAUTION

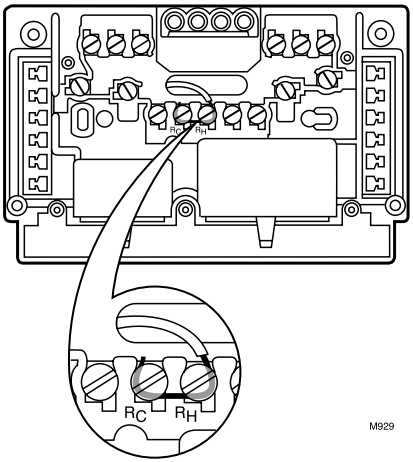
Never install more than one wire per terminal unless factory supplied jumper with spade terminal is used. See Fig. 7.

TABLE 3—JUMPER APPLICATIONS.

If your subbase has:	Application	Use Fig.
RC, RH terminals	single transformer system	5
adjacent terminals	special system operation or LED indication	6
nonadjacent terminals		7

3. Firmly tighten each terminal screw.
4. Fit wires as close as possible to the subbase. Push excess wire back into the hole.
5. Plug hole with nonflammable insulation to prevent drafts from affecting the thermostat.

Fig. 5—Jumper RC and RH for single transformer system. Strip wire 3/4 in. [19 mm].



NOTE: Only the T874D Thermostat is shown with the subbases. This thermostat/subbase provides 2-stage heating and 2-stage cooling connections. If using another model, see Fig. 16 and Table 4.

TABLE 4—THERMOSTAT BULB CONFIGURATOIN.

Model No.	Heating Bulbs	Cooling Bulbs
T874A	H1	C1
T874B	H1	C1,C2
T874C	H1, H2	C1
T874D	H1, H2	C1, C2
T874E		C1, C2
T874F	H1, H2	

Fig. 6—Jumper adjacent terminals for special system hookup. Strip wire 3/4 in. [19 mm].

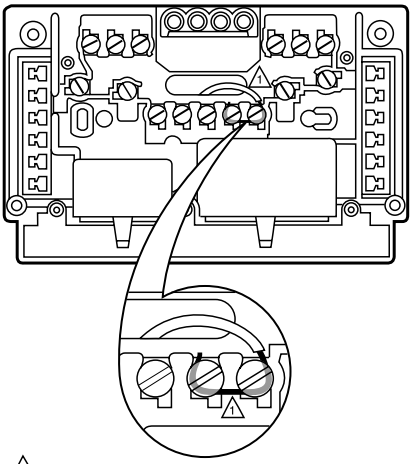


Fig. 7—For nonadjacent terminals, use jumper supplied with subbase.

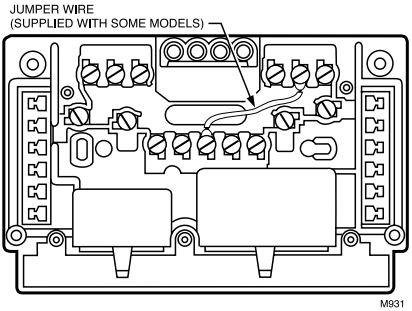


Fig. 8—T874A-D/Q674A in standard heating/cooling system.

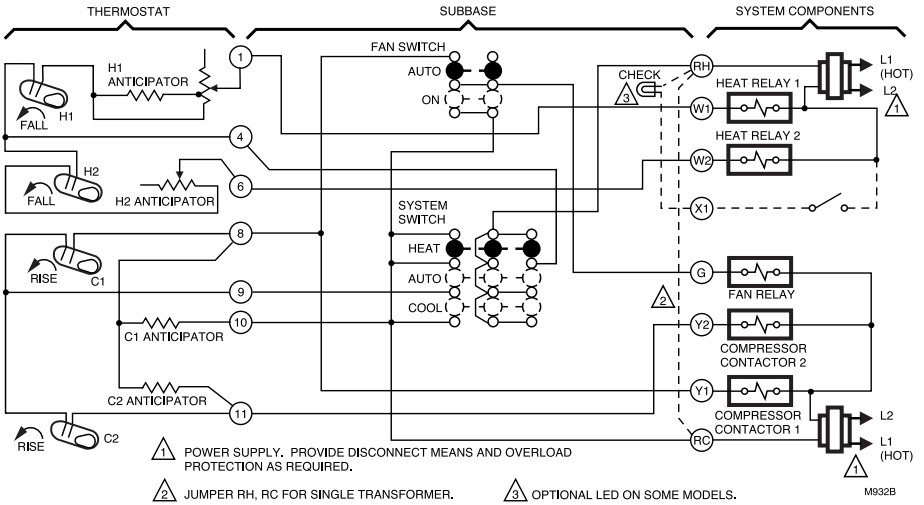


Fig. 9—T874C,D/Q674B in standard heating/cooling system with separate transformers for heating and cooling.

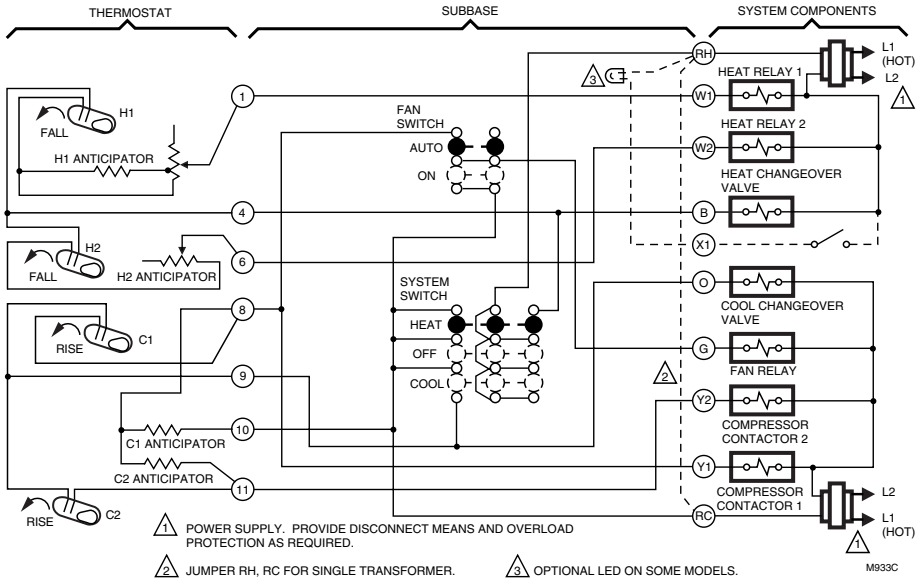


Fig. 10—T874D/Q674B in standard heating/cooling system with single transformer for heating and cooling. Exact replacement for York model no. 2TB04700324.

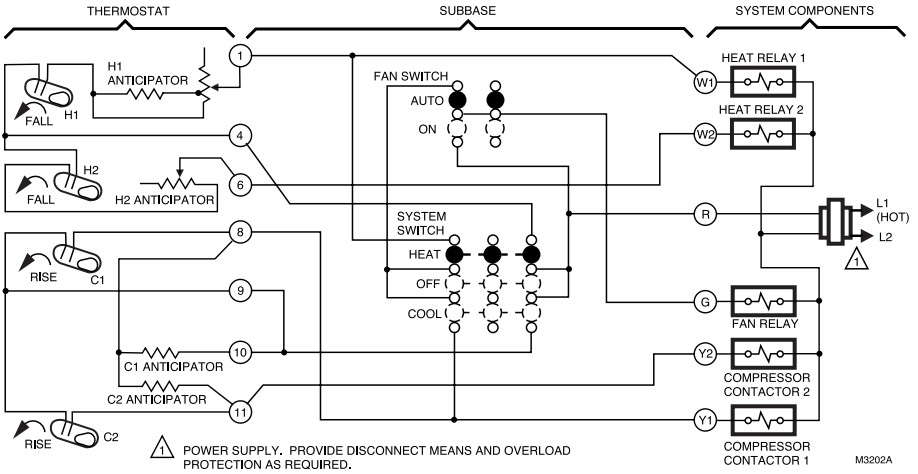


Fig. 11—T874D,E,F/Q674C in standard heating/cooling system.

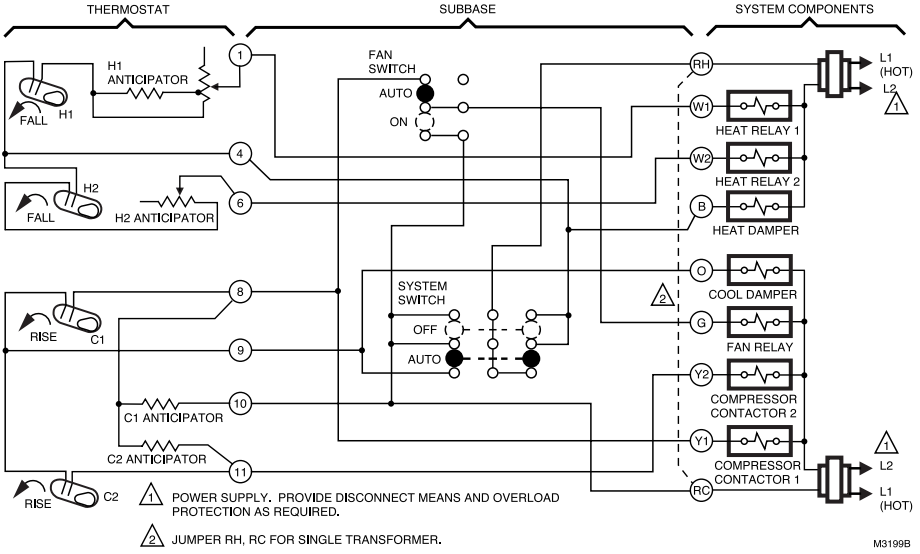


Fig. 12—T874A,D,F/Q674D in standard heating/cooling system.

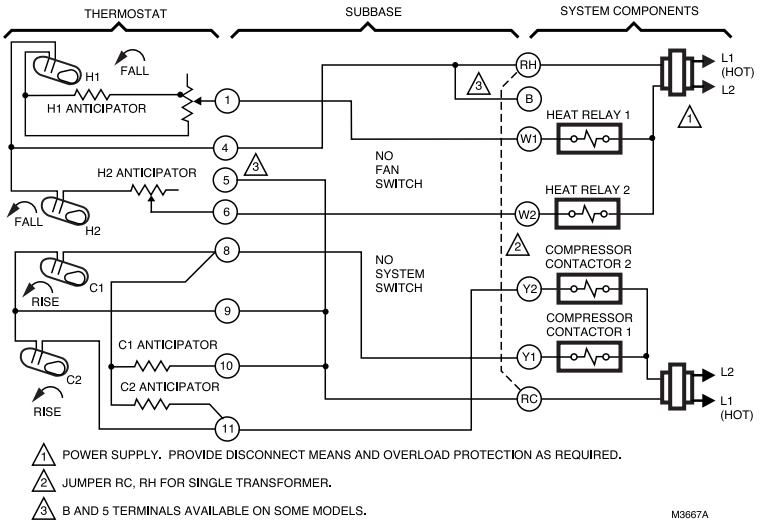


Fig. 13—T874D/Q674E in standard heating/cooling system.

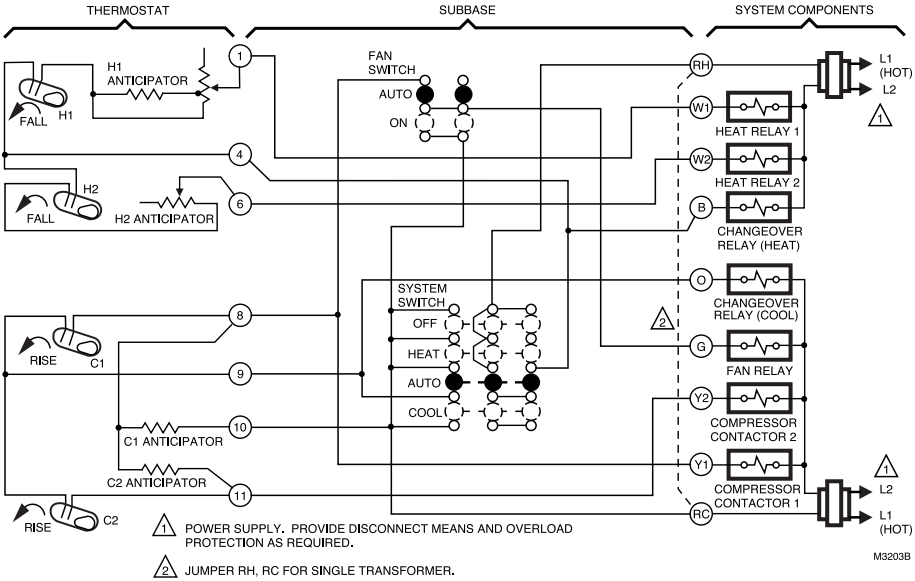


Fig. 14—T874A-F/Q674G in standard heating/cooling system.

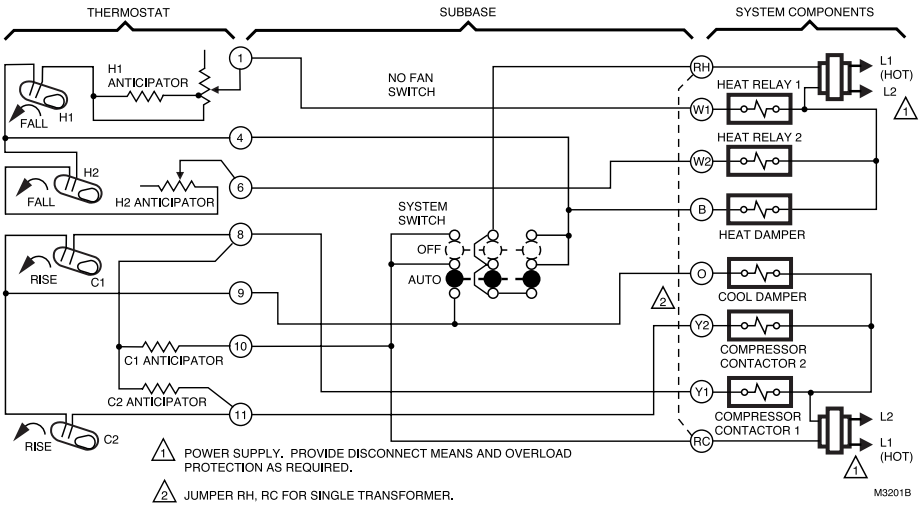


Fig. 15—T874C/Q674B in standard application.

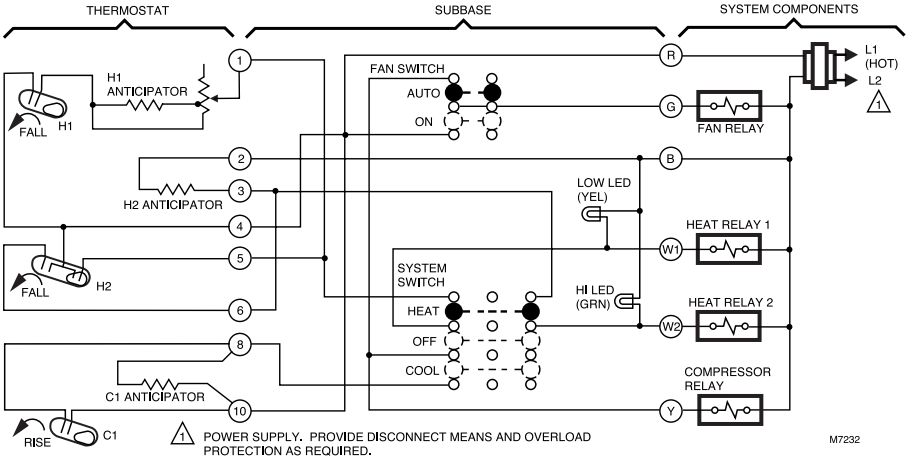
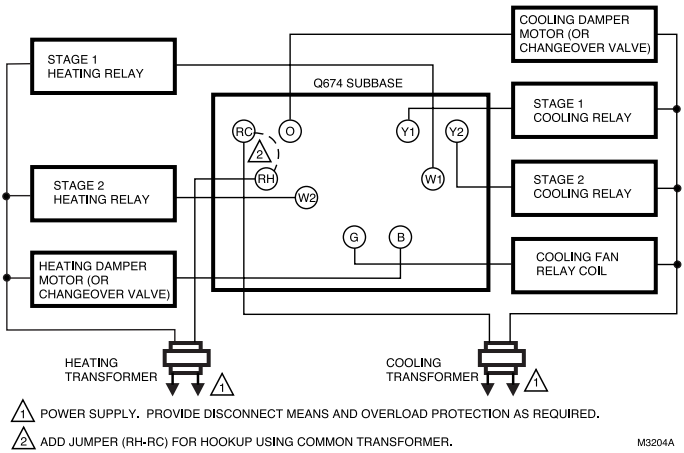


Fig. 16—Typical Q674 terminal designations. The thermostat and subbase used determines the number of system components controlled.



TEMPERATURE LEVER STOPS

Some thermostats have factory-installed temperature lever locking screws (Fig. 17) and/or stop brackets (Fig. 18). Use these only if the HEAT and COOL temperature set point lever ranges are to be restricted. If the components are factory-installed, see the specific section below for the adjustment procedure.

If a temperature range restriction is required and the locking components are not factory-installed, it is necessary to order a 4074ECK Envelope Assembly. This envelope includes two stop brackets, one brass insert and one bracket mounting screw for restricting the adjustable range of the HEAT and COOL set point levers. Also, the envelope includes two screws with plastic insulated heads for locking the set point control levers in position. If the components are to be used, see the specific section below for the installation procedure.

Fig. 17—Location of lever locking screws.

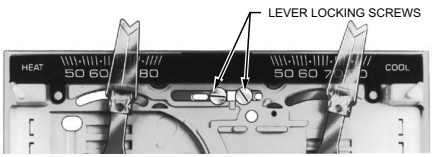
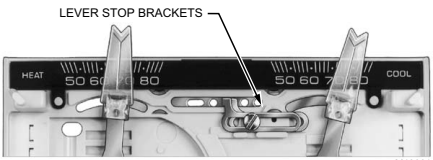


Fig. 18—Location of lever stop brackets.



INSTALL AND ADJUST LOCKING LEVER SCREWS

The two screws with insulated heads should be used only if the HEAT and COOL levers are to be locked in place at a specific temperature control point. *Do not use* standard screws that provide metal-to-metal contact with the lever brackets.

To install:

1. Refer to Fig. 20 for screw hole locations.
2. Install the two screws with insulated heads in the indicated holes. Do not overtighten screws.
3. Set the HEAT lever and the COOL lever at desired temperature control points.
4. Firmly tighten both screws.

INSTALL AND ADJUST STOP BRACKETS

Install the stop brackets only if there is a need to restrict the adjustable range of the heating and cooling temperature set point levers.

To install:

1. Turn to the back of the T874 Thermostat. Locate the hole for the brass insert in the plastic base below the LED window. See Fig. 19.
2. Push the brass insert into the hole with your finger.
3. Turn to the front of the T874 Thermostat.
4. Place the two stop brackets in position with the tabs in the slot between the HEAT and COOL levers. See Fig. 20.
5. Insert the mounting screw into the two slots in the stop brackets and attach to the brass insert. Tighten the screw to pull the brass insert into the back of the thermostat.
6. Loosen the mounting screw enough so the stop brackets can slide for adjustment.
7. Move the HEAT and COOL set point levers to the maximum temperature that is desired.
8. Slide the stop brackets until one rests against the HEAT lever and the other against the COOL lever.

9. Firmly tighten the mounting screw.

10. If the HEAT and COOL levers are to be locked in place at a specific temperature, use the two insulated head screws supplied instead of the two adjustable lever stop brackets.

⚠ CAUTION

Do not use standard screws that provide metal-to-metal contact with the stop brackets. Short circuit and potential equipment damage may result.

Fig. 19—Installing brass insert.

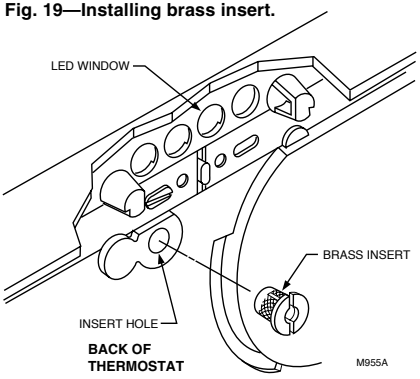
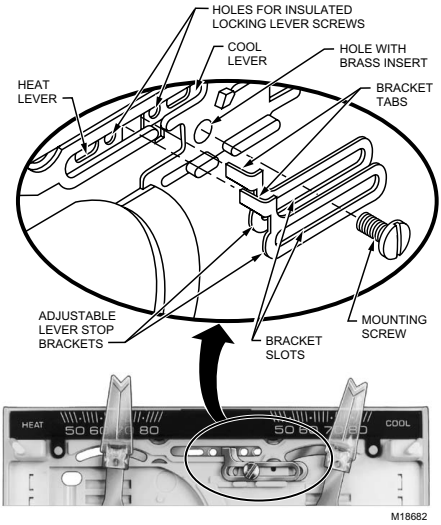


Fig. 20—Installing stop brackets.



MOUNTING THE THERMOSTAT

1. Remove the thermostat cover by pulling the bottom edge of the cover upward until it snaps free of the cover clip.

NOTE: The cover is hinged at the top and must be removed by pulling up at the bottom.

2. Carefully remove and discard the polystyrene packing insert that protects the mercury switches during shipment.

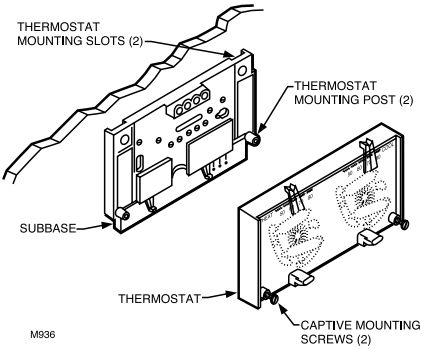
3. Turn over the thermostat base and note the spring fingers that engage the subbase contacts. Make sure the spring fingers are NOT bent flat, preventing proper electrical contact with the subbase.

4. Set the adjustable heat anticipator indicators to the respective current setting for each stage. See Setting the Heat Anticipator section.

5. Note the two tabs on the top inside edge of the thermostat base. The tabs fit into corresponding slots on top of the subbase. Mount the thermostat on the subbase.

6. Align the two captive mounting screws in the thermostat base with the posts on the subbase. See Fig. 21. Tighten both screws. *Do not overtighten screws* or damage to subbase posts can result.

Fig. 21—Mounting thermostat on subbase.



Settings

SETTING THE HEAT ANTICIPATOR

Move the indicator to match the current rating of the primary contro. See Fig. 22. When using the T874 Thermostat with two stages of heating, set each heat anticipator to match its respective primary control current draw. If you cannot find the current rating on the primary control, or if further adjustment is necessary, see NOTE and use the following procedure to determine the current draw of each stage.

The current draw must be measured with the thermostat removed from the subbase and the power on to the heating system.

1. Connect an ac ammeter of appropriate range between the heating terminals of the subbase:

Stage 1: between W1 and RH or R.

Stage 2: between W2 and RH or R.

2. Move the system switch to AUTO or HEAT (if used).

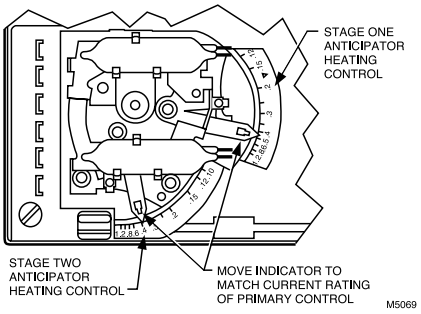
3. After one minute, read the ammeter and record the reading:

Stage 1: _____ amperes.

Stage 2: _____ amperes.

NOTE: If equipment cycles too fast, set the indicator to a higher current rating, not more than one-half division at a time, and recheck cycle rate. Most conventional 2-stage heating equipment is designed to operate at three cycles per hour per stage, and 1-stage heating equipment at six cycles per hour, at 50 percent load condition. When using the T874 Thermostat in heat pump systems, set the heat anticipator at 140 percent of the actual primary control current draw to reduce the cycling rate.

Fig. 22—Adjustable heat anticipator scales.



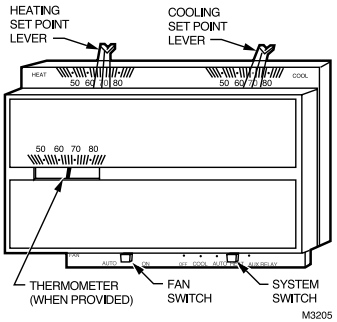
Most heat pump systems should cycle 2-1/2 to 3 times per hour.

4. Hang the upper edge of the thermostat cover on top of the thermostat base and swing the cover downward until it engages with the cover clip.

TEMPERATURE SETTING

Move the heating and cooling set point levers (Fig. 23) to the desired comfort positions. One lever controls all stages of heating, and another lever controls all stages of cooling. The minimum differential between heating and cooling set point is 3° F [1.7° C].

Fig. 23—Location of external components.



SUBBASE SETTING

The subbase switching positions control the system operation as described below (Fig. 23).

SYSTEM SWITCH (some subbases do not have all of the following functions):

- OFF: Both the heating and cooling systems are off. If the fan switch is in AUTO position, fan is also off.
- AUTO: Thermostat automatically changes between heating and cooling system operation, depending on the indoor temperature.
- HEAT: Heating system is automatically controlled by the thermostat. Cooling system is off.
- COOL: Cooling system is automatically controlled by the thermostat. Heating system is off.

FAN SWITCH

- ON: Fan operates continuously.
- AUTO: Fan operates with cooling equipment as controlled by the thermostat or with the heating equipment as controlled by the plenum switch.

To move the subbase switches to the desired control positions, use thumb and index finger to slide lever. Lever must stop over desired function indicator position for proper circuit operation.

Checkout

HEATING

Move the system switch on the subbase to AUTO or HEAT (if used) and the fan switch to AUTO. Move the heating set point lever on the thermostat about 10° F [6° C] above room temperature. Heating should start and the fan should start after a short delay. Fan starts immediately in heat pump systems. Move the heat lever 10° F [6° C] below room temperature. The heating should shut off; fan should shut off after a short delay. Fan shuts off immediately in heat pump systems.

NOTE: In heat pump applications, time delays are involved before the compressor is activated to prevent short cycling. The delays are provided by a minimum-off timer that prevents the compressor from starting for up to five minutes from when the thermostat last turned off the compressor, or from when the system first received power.

COOLING

Move the system switch on the subbase to AUTO or COOL (if used) and the fan switch to AUTO. Move the cooling set point lever on the thermostat about 10° F [6° C] below room temperature. The cooling and fan should start (see NOTE above). Move the cool lever about 10° F [6° C] above room temperature. The cooling and fan should stop.

FAN

Move the subbase system switch to OFF, and the fan switch to ON. The fan should run continuously. Move the fan switch to AUTO. In the AUTO position, fan operation is controlled by the heating or cooling system control circuit.

Calibration

THERMOSTAT

T874 Thermostats are accurately calibrated at the factory. *They do not have provision for field calibration.*

THERMOMETER

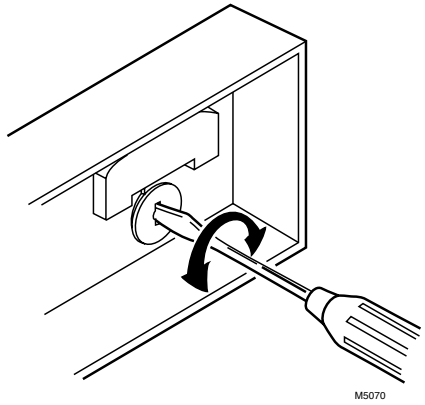
The thermometer in the thermostat has been accurately calibrated at the factory. The thermometer should need adjustment only if it has been dropped or shifted due to mishandling.

If the set point lever and the thermometer reading do not agree, use the following procedure:

1. Remove the thermostat cover by pulling up from the bottom of the cover until it clears the mounting slots.
2. Set the thermostat cover on a table near an accurate thermometer.
3. Allow ten minutes for cover thermometer to sense area temperature; compare the readings. Be careful not to touch the thermometer or breathe on it.
4. If the readings are the same, replace cover and put the system into operation.
5. If the readings are different, insert a small screwdriver in the thermometer slot (Fig. 24) and turn it until the thermometers have the same reading.
6. Replace thermostat cover and put the system into operation.

NOTE: Hand heat will offset the thermometer reading. After making each adjustment, wait ten minutes for the thermometer to stabilize before comparing.

Fig. 24—Thermometer calibration.



Honeywell

Automation and Control Solutions

Honeywell International Inc.
1985 Douglas Drive North
Golden Valley, MN 55422

Honeywell Limited—Honeywell Limitée
35 Dynamic Drive
Scarborough, Ontario M1V 4Z9

Printed in U.S.A. on recycled paper containing at least 10% post-consumer paper fibers.

www.honeywell.com/yourhome