

## SUPER TRADELINE

# T874 Multistage Thermostat and Q674 Subbase

## Application

The T874D Thermostat and Q674E Subbase provide 24 to 30 Vac control of standard 2 stage heating and 2 stage cooling systems.

The Y594D includes the TG504 Thermostat Guard, field-adjustable range stops and field-adjustable locking levers.

## Operation

The 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*.

## Installation

### WHEN INSTALLING THIS PRODUCT...

1. Read these instructions carefully. Failure to follow them could 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 as 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 relay. This can burn out the thermostat heat anticipator.

**IMPORTANT:** An incorrectly leveled subbase will cause the temperature control to deviate from setpoint. It is not a calibration problem.

### LOCATION

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

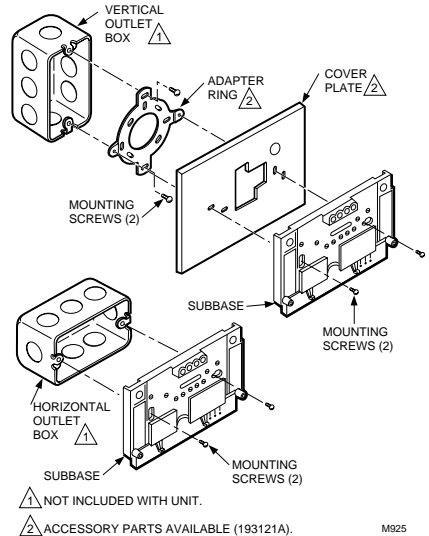
- Do not install thermostat where it may be affected by:
- drafts, or dead spots behind doors and in corners.
  - hot or cold air from ducts.
  - radiant heat from sun or appliances.
  - concealed pipes and chimneys.
  - unheated (uncooled) areas behind the thermostat, such as an outside wall.

### MOUNT 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 part no. 193121A Adapter Assembly. See Fig. 1. The assembly includes an adapter ring, two screws and a cover plate to conceal any holes or blemishes on the wall. Install the ring and cover plate on the vertical outlet box.

Fig. 1—Installation of Q674 Subbase on outlet box.



For a wall installation, hold subbase in position and mark holes for anchors. See Fig. 2. Wall anchors must be obtained from local hardware store. Be careful that the wires do not fall back into the wall opening. Set aside subbase. Drill four 3/16 in. [4.6 mm] holes and gently tap anchors into the holes until flush with the wall.

2. Pull electrical wires through the cover plate (if used) and subbase cable opening. See Fig. 3.

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, see 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. It is not a calibration problem.

Fig. 2—Installation of Q674 Subbase on wall.

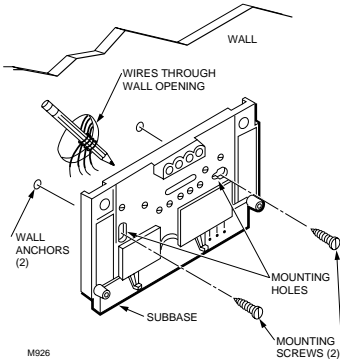
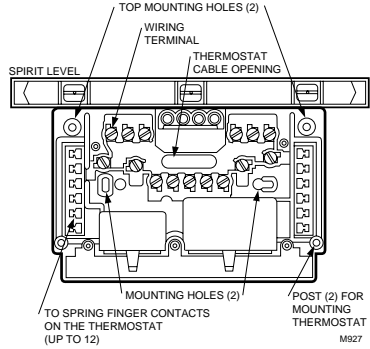


Fig. 3—Subbase components and leveling procedure.



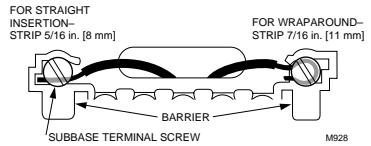
for identification. The terminal barrier permits straight or conventional wraparound wiring connection. See Fig. 4.

2. Firmly tighten each terminal screw.

3. Fit wires as close as possible to the subbase. Push excess wire back into hole.

4. Plug hole with nonflammable insulation to prevent drafts from affecting the thermostat.

Fig. 4—Barrier configuration.

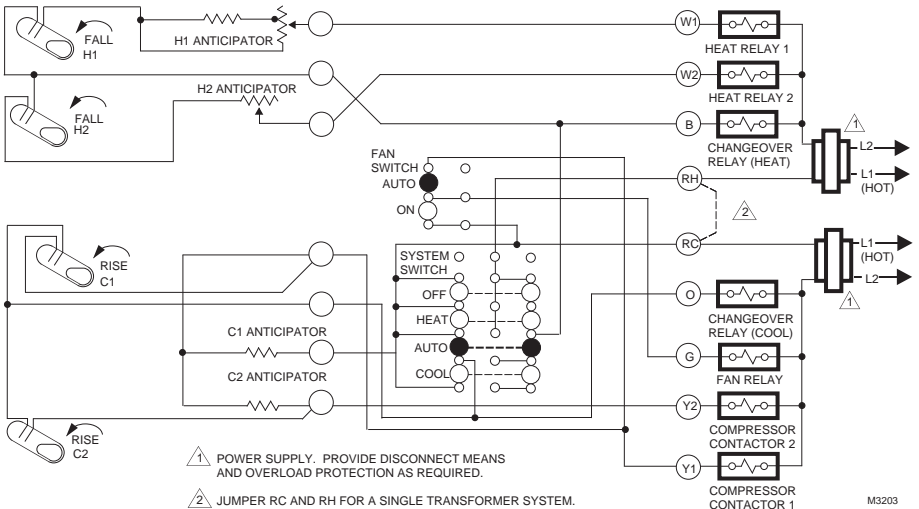


## WIRING THE SUBBASE

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. 5 through 8. A letter code is located near each terminal

Fig. 5—Schematic and hookup for T874D Thermostat with Q674E Subbase.



## TEMPERATURE LEVER STOPS

The T874D has factory-installed temperature lever locking screws and stop brackets. See Figs. 6 and 7. These should be used only if the HEAT and COOL temperature setpoint lever ranges are to be restricted.

Fig. 6—Location of locking lever screws.

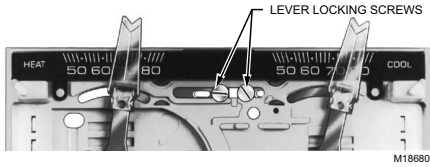
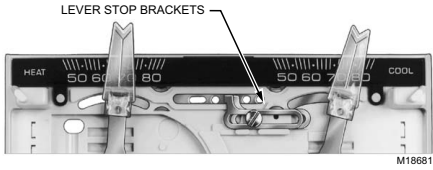


Fig. 7—Location of lever stop brackets.



## 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 point. *Do not use* standard screws that provide metal-to-metal contact with the lever brackets.

To install:

1. Refer to Fig. 8 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

The stop brackets should be installed only if there is a need to restrict the adjustable range of the heating and cooling temperature setpoint levers. See Fig. 6.

To install:

1. Turn over the T874 Thermostat to the back side. Locate the hole in the plastic base for the brass insert. See Fig. 9.
2. Push brass insert into the hole with your finger.
3. Turn to front side 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. 8.
5. Insert the mounting screws 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 to slide the stop brackets for adjustment.
7. Move the HEAT and COOL setpoint 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.

Fig. 8—Installing locking lever screws and stop brackets.

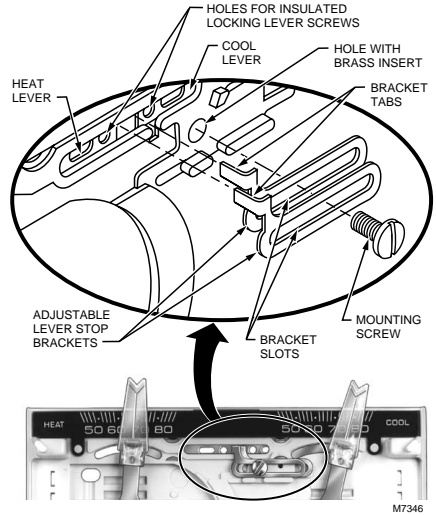
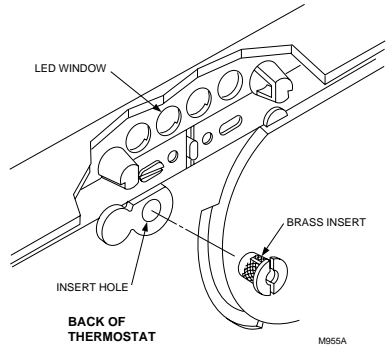


Fig. 9—Installing brass insert.



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.

## MOUNT THERMOSTAT

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

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

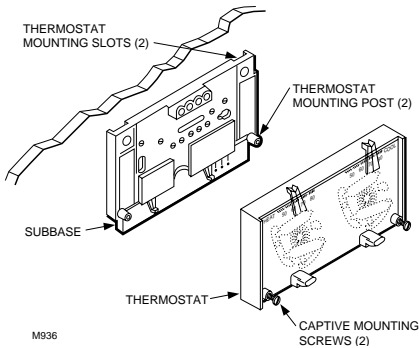
2. Carefully remove and discard the polystyrene packing insert that protects the mercury switches during shipment.

3. Turn over 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. 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.

5. Align the two captive mounting screws in the thermostat base with the posts on the subbase. See Fig. 10. Tighten both screws. *Do not overtighten screws* or damage to subbase posts can result.

Fig. 10—Mounting thermostat on subbase.



## INSTALL OR REMOVE TG504A KEY LOCK COVER

To install the TG504A:

—hang the upper edge of the cover on the thermostat subbase.

—swing cover downward.

Spring-loaded locking mechanism will automatically engage mounting posts and secure cover in final position without use of key provided.

To remove the TG504A:

—insert the key provided.

—rotate the key clockwise until locking mechanism releases from thermostat posts.

—swing cover upward and off.

## Settings

### SET THE HEAT ANTICIPATOR

Move the indicator to match the current rating of the primary control. See Fig. 11. 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 below and use the following procedure to determine the current draw of each stage.

The current draw of each heating stage must be measured with the thermostat removed 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  $W_1$  and  $R_{1R}$ ;

Stage 2—between  $W_2$  and  $R_{2R}$ .

2. Move the system switch to HEAT or AUTO.

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

Stage 1—\_\_\_\_\_ amperes.

Stage 2—\_\_\_\_\_ amperes.

4. After mounting the thermostat, set the adjustable heat anticipator to match the readings measured in Step 3.

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 two-stage heating equipment is designed to operate at three cycles per hour per stage and one-stage heating equipment at six cycles per hour, at 50 percent load condition.

### TEMPERATURE SETTING

Move the heating and cooling setpoint levers to the desired comfort positions. See Fig. 12. One lever controls all stages of heating, and the other lever controls all stages of cooling. The minimum differential between heating and cooling setpoint is 3° F [1.7° C], which means the setting levers are designed so they cannot be set closer together than 3° F [1.7° C].

Fig. 11—Adjustable heat anticipator scales.

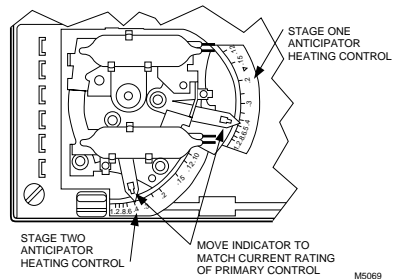
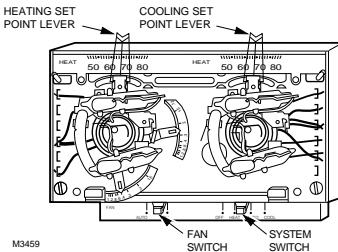


Fig. 12—Location of external components.



### SUBBASE SETTING

The subbase switching positions control the system operation as follows (see Fig. 12):

**SYSTEM SWITCH** (some subbase 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, the cooling fan is also off.

**HEAT**—heating system is automatically controlled by the thermostat. Cooling system is off.

**AUTO**—thermostat automatically changes between heating and cooling system operation, depending on the indoor temperature.

**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 Q674 to HEAT or AUTO, and the fan switch to AUTO. Move the heating setpoint lever on the T874 about 10° F [6° C] above room temperature. Heating equipment should start and the fan should run. Move the heating lever about 10° F [6° C] below room temperature. The heating equipment and fan should shut off.

**NOTE:** In heat pump applications, a minimum off-timer provides a five-minute time delay before starting compressor when the thermostat last turned off the compressor, or when the system first received power. This delay prevents compressor short cycling.

### COOLING



## CAUTION

If outside air or heat exchange medium (water) is below 50° F [10° C], do not operate cooling.

Move the system switch on the Q674 to COOL or AUTO, and the fan switch to AUTO. Move the cooling setpoint lever on the T874 about 10° F [6° C] below room temperature. The cooling equipment should start (see Note). Move the cool lever about 10° F [6° C] above room temperature. The cooling equipment and fan should shut off.

**NOTE:** If using a Control Module Mark IV, there are time delays built-in. Check your Mark IV instructions for specifics.

### 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 this position, fan operation is controlled by the heating or cooling system control circuit.

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To install the TG504A:

- hang the upper edge of the cover on the thermostat subbase.
- swing cover downward.

Spring-loaded locking mechanism will automatically engage mounting posts and secure cover in final position without use of key provided.

To remove the TG504A:

- insert the key provided.
- rotate the key clockwise until locking mechanism releases from thermostat posts.
- swing cover upward and off.

## Calibration

### THERMOSTAT

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

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