



# TSSHHC-1LV

## MAXIMUM COMFORT AND CONTROL IN HEATING

This sheet covers installation of Astro\*stat models for heating, cooling, and combination heating-cooling. Different sheets are provided with heating models for millivolts only, and for SPDT models for use with 3-wire motorized zone controls.

All thermostats are heat-anticipated to provide greater room comfort. Operated by a sensitive spiral bimetal, these thermostats are available with either sealed mercury contacts or with snap action contacts. Types with snap-action contacts come equipped with plastic dust cover.

Both horizontal and vertical-mounted models are available.

A special adaptor plate (61-1569) is available for mounting thermostat to wall or switch box where extra size 'is needed to cover box, wall damage, or old thermostat mounting.

### For Heating:

**Type 1C30**-Vertical model, with snap-action contacts.

**Type 1D30**-Horizontal model, with snap-action contacts.

**Type 1E30**-Vertical model, with sealed mercury contacts.

**Type 1F30**-Horizontal model, with sealed mercury contacts.

These heating thermostats are available with adjustable.

### For Cooling:

**Type 1C31** -Vertical model, with snap-action contacts

**Type 1D31** - Horizontal model, with snap-action contacts.

**Type 1E31** -Vertical model, with sealed-mercury contacts.

**Type 1F31** - Horizontal model, with sealed mercury contacts.

These cooling thermostats are heat-anticipated by means of a fixed non-removable heater.

### For Heating-Cooling:

**Type 1C36**-Vertical model, with snap-action contacts.

**Type 1D36** - Horizontal model, with snap-action contacts.

**Type 1E36**-Vertical model, with sealed mercury contacts.

**Type 1F36** - Horizontal model, with sealed mercury contacts.

These combination heating-cooling thermostats have SPDT switch action for operating both the heating and cooling systems. All models are heat-anticipated. The heating side has an adjustable heater; the cooling side has fixed non-removable heater.

### Some Models are equipped with these Special Features:

**-Dial Off Position** -Whenever adjustment lever is moved to the lowest dial setting, a built-in switch within the thermostat opens a set of contacts to break the thermostat circuit.

**-Dial Lock Feature** - A tamperproof screw (wrench furnished) permits the temperature adjustment lever to be locked at any desired setting.

## SELECTING LOCATION

The proper location of the room thermostat is most important to insure that it will provide a comfortable home temperature. Observe the following general rules when selecting a location:

1. Locate it about 5 ft. above the floor.
2. Install it on a partitioning wall, not on an outside wall.
3. Never expose it to direct light from lamps, sun, fireplaces, etc.
4. Avoid locations close to doors that lead outside, windows, or adjoining outside walls.
5. Avoid locations close to radiators, warm air registers, or in the direct path of heat from them.
6. Make sure there are no pipes or duct work in that part of the wall chosen for the thermostat location.
7. Never locate it in a room that is warmer or cooler than the rest of the home, such as kitchen or hallway.
8. The living or dining room is normally a good location, provided there is no cooking range or refrigerator on opposite side of wall.

## ROUTING WIRES TO LOCATION

1. Before drilling hole in wall at selected location, take up quarter round and drill a small guide hole for sighting. From basement, drill 3/4" hole in partition floor next to guide hole. (On basementless houses, drill 1/2" hole through ceiling above partition.)
2. Probe for obstructions in the partition. Then drill 1/2" hole through wall at selected location.
3. Through this hole in wall drop a light chain, or 6" chain attached to a strong cord, and snag cord with hooked wire from basement. (On basementless houses, drop cord from ceiling and snag it at the thermostat location.)
4. Attach thermostat cable to cord and pull cable through hole in wall so that 6" of cable protrudes.

## MOUNTING AND WIRING THERMOSTAT

These thermostats are available with or without wall mounting plate.

Instructions for mounting and wiring either type are given below:

**NOTE: When using horizontal models of these thermostats with the appropriate White-Rodgers Sub-Bases, disregard these instructions and refer to those on the shoot packed with the Sub-Base.**

### WITH WALL MOUNTING PLATE

1. Pull thermostat wires through large opening in center of wall mounting plate and fasten wires beneath proper terminal screws as follows:

**Heating Models** - Connect to 4 and 5.

**Cooling Models** - Connect to 5 and 6.

**Heating-Cooling Models** - Connect as shown in Fig. 3 below.

2. Push excess wire into wall or switch box and plug up hole to prevent drafts from affecting thermostat operation.
3. Thermostat must be level to assure optimum performance. Place level on top of wall mounting plate and mark hole locations for mounting screws. Attach plate loosely to wall with the two screws provided. Again place level on top of plate to be sure it is level, then tighten mounting screws.

4. Remove cover from thermostat by pulling outward. **Remove and discard pad** (shipping protection for switch). Place thermostat base onto wall mounting plate and securely tighten all three screws (four for heating-cooling models). Then snap on thermostat cover.

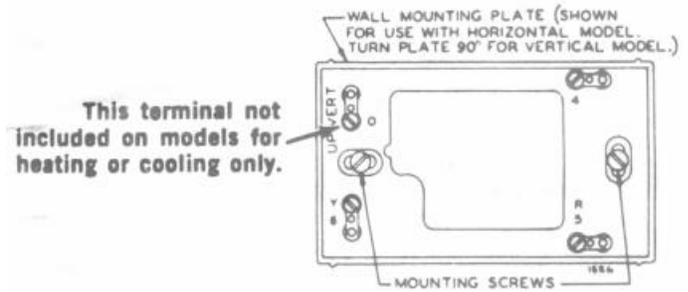


Fig. 1 — Wall Mounting Plate

### WITHOUT WALL MOUNTING PLATE

1. Remove cover from thermostat by pulling outward. **Remove and discard pad** (shipping protection for switch). Pull thermostat wires through small holes beside terminal screws on thermostat base and connect wires to proper terminal screws as follows:

**Heating Models** - Only two terminal screws are provided. Screws are located at bottom of thermostat base on vertical models, or at right hand side on horizontal models.

**Cooling Models** - Only two terminal screws are provided. Screws are located at bottom of thermostat base on horizontal models, or at left hand side on vertical models.

**Heating-Cooling Models** - Connect as shown in Fig. 3 below.

2. **The thermostat must be level to assure optimum performance.** Place level on top of thermostat base and mark hole locations for mounting screws. Push excess wire into wall or switch box and **plug up hole to prevent drafts from affecting thermostat operation.** Then attach thermostat base loosely to wall with the two screws provided.
3. Again place level on top of thermostat base to be sure it is level. Then tighten mounting screws securely and snap on thermostat cover.

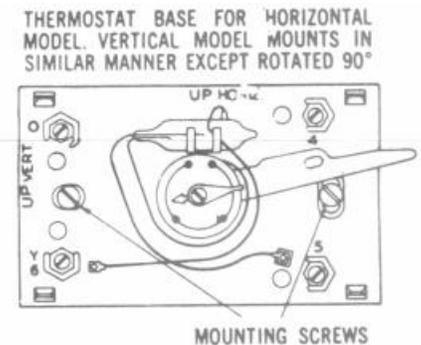


Fig. 2 — Thermostat Base

On models without wall mounting plate, connect thermostat wires to corresponding terminals on thermostat base.

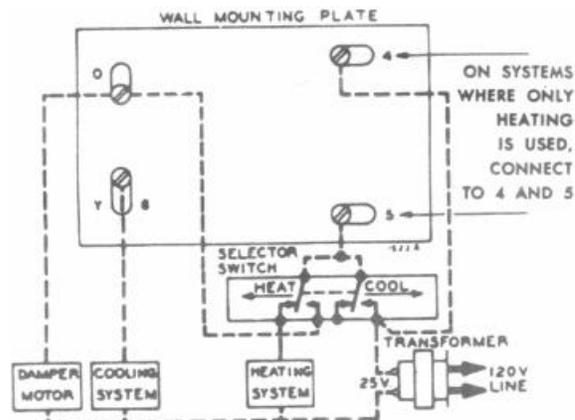


Fig. 3-Wiring Diagram for Heating-Cooling Models (Without use of Sub-Base)

## HEATING ANTICIPATION

Heating thermostats, and the heating side of heating-cooling models, are heat-anticipated to assure a uniform home temperature.

### HEAT ANTICIPATION:

Adjustable Heater (Fig. 4):

Set heater indicator to match the current rating of the primary control (see table below). Heater may be adjusted for current ratings from .15 to 1.0 Amp.

**WARNING: The Adjustable Heater (Heat Anticipator) WILL BURN OUT if 25v are applied directly to thermostat by shorting out the gas valve or primary control during testing or by incorrect wiring.**

### HEATER ADJUSTMENT

If adjustable heater has been set to match the current rating of primary control and burner cycles are still too long or short, proceed as follows:

1. Burner cycles too long - Set adjustable heater to slightly lower dial setting (1/2 division) or replace fixed heater with one having the next lower Amp. rating.
2. Burner cycles too short - Set adjustable heater to slightly higher dial setting (1/2 division) or replace fixed heater with one having the next higher Amp. rating.

NOTE: If above adjustment or replacement does not correct situation, check for improper adjustment or performance of other controls, or improper balancing of system.

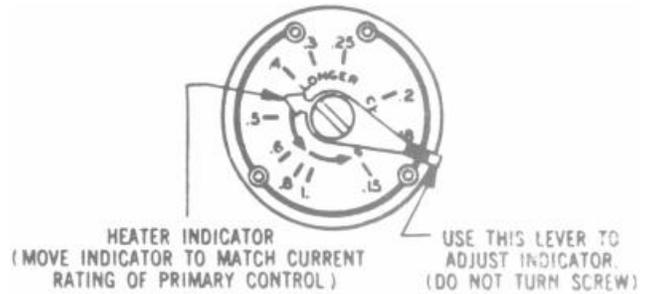


Fig. 4 — Adjustable Heater

### PRIMARY CONTROL CURRENT RATINGS

White-Rodgers Primary Control	Type Numbers	Current Rating of Primary Control
Silent Knight Gas Valves	Series 25GOO	.58A
Solenoid Gas Valves	2504, 2509, 25C46, 25D46	.4A
Diaphragm Gas Valves	Series 2600, 26A00	.4A
Gas Manifold Combination Valves	3601, 3602, 3698	.4A
	3661, 3662, 3665, 3666	.23A
Oil Burner Controls	610,611,640,663,668, 669	.4A
Relays	Types 805, 809, 829, BA29	.4A
	867,868	.25A
Relay Hot Water Controls	Series 840 for use with line voltage primary controls	.4A
	Series 940 for use with low voltage gas valves	* *
	Series 8B00, 8C00, 8D00, 8F00	.25A
Kwik-Sensor Combination	692, 693, 6C92, 6C93	.4A
Level-Temp Operator	Series 24A00	.2A

\*On Silent Knight Gas Valves with Step-Flow, heat-anticipation to be .75A

\*\*Heat-Anticipation is .1A plus the gas valve current.

## COOLING ANTICIPATION

Cooling thermostats, and the cooling side of heating-cooling models, are equipped with a fixed non-removable heater to assure uniform room temperature. For use on 0 to 1.5 Amp., this type of non-removable heater is located on the back side of the thermostat base.

## CALIBRATION ADJUSTMENT

These thermostats have been carefully adjusted at the factory and should not require re-calibration.

A few degrees difference between the indicator setting of the thermostat and actual room temperature is not considered important. If the disagreement is appreciable, however, first make sure that the thermostat is properly located and leveled. Then, if re-calibration still seems necessary, proceed as follows:

### For Heating and Heating-Cooling Models:

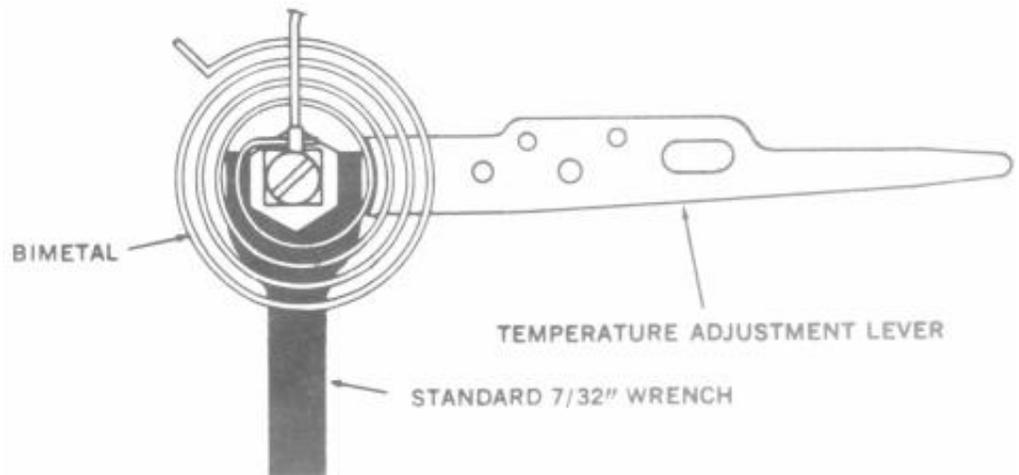
These instructions apply for both heating and heating cooling models, with either sealed mercury or snap action contacts.

1. Move temperature adjustment lever to a setting about 5° **above** room temperature.
2. Remove thermostat cover. Slip standard 7/32" wrench onto hex nut beneath bimetal, and, holding temperature adjustment lever stationary, turn hex nut **clockwise** until mercury shifts to right end of tube (or until movable contact moves off of magnet on snap-action types).
3. Move temperature adjustment lever to lowest setting. (When re-calibrating heating-cooling model during cooling season, place Sub-Base or Selector Switch in "Heat" or "Off" position to prevent operation of cooling system.)
4. Replace thermostat cover. Wait 10 minutes for bimetal temperature to stabilize. Don't stand near thermostat during this period as your breath and body heat will affect temperature of bimetal.
5. Move temperature adjustment lever to correspond to actual room temperature. Then remove thermostat cover.
6. Slip 7/32" wrench onto hex nut, holding temperature adjustment lever stationary, turn hex nut **counterclockwise** until mercury just barely shifts to **left** end of tube (or until movable contact just closes against magnet on snapaction types). Then replace cover and set thermostat to desired temperature. (if Sub-Base or Selector Switch was changed in step 3, return to "Cool" position.)

### For Cooling Models:

These instructions apply for cooling models, with either sealed mercury or snap-action contacts.

1. Move temperature adjustment lever to a setting about 5° **below** room temperature.
2. Remove thermostat cover. Slip standard 7/32" wrench onto hex nut beneath bimetal, and, holding temperature adjustment lever stationary, turn hex nut **counterclockwise** until mercury shifts to **left** end of tube (or until movable contact closes against magnet on snap action types).
3. Remove wire from terminal 5 on thermostat or wall mounting plate (or place Sub-Base in "OFF" position) to take cooling anticipator out of circuit.
4. Replace thermostat cover. Wait 10 minutes for bimetal temperature to stabilize. Don't stand near thermostat during this period, as your breath and body heat will affect temperature of bimetal.
5. Move temperature adjustment lever to correspond to actual room, temperature. Then remove thermostat cover.
6. Slip 7/32" wrench onto hex nut, and, holding temperature adjustment lever stationary, turn hex nut **clockwise** until mercury just barely shifts to **right** end of tube (or until movable contact just moves off of magnet on snap-action types).
7. Replace wire removed in step 3 (or return Sub-Base to "Cool" position). Then replace thermostat cover and set thermostat to desired temperature.



## REPLACING 3-WIRE SERIES 10 THERMOSTATS

Heating models of these thermostats (Types 1C30, 1D30, 1E30, and 1730) may be used to replace 3-wire Series 10 thermostats as shown in the attached diagram.

Set adjustable heater to match the current rating of the primary control.

