

Aprilaire® Model SK3 Installation Instructions

READ COMPLETE SAFETY & INSTALLATION INSTRUCTIONS BEFORE STARTING

WARNING

- 120 volts may cause serious injury from electrical shock. Disconnect electrical power to the furnace & air conditioner before starting installation. This thermostat is not a 120 volt (line voltage) device.
- Improper installation may cause serious injury from electrical shock. This product must be installed by a qualified heating & air conditioning contractor in accordance with NEC Standards and applicable local and state codes.
- Mercury is toxic and may be hazardous to health. Any replaced thermostats containing mercury must be disposed of properly. Contact local authorities for disposal information.

1. SELECT THE THERMOSTAT LOCATION

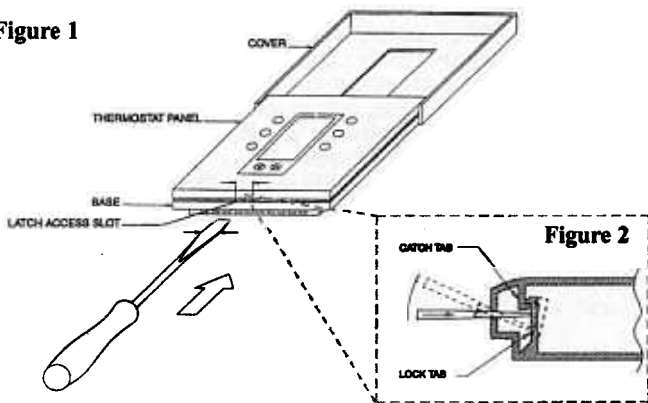
To ensure accurate temperature control, mount the thermostat on an inside wall in a frequently occupied space that best represents the building temperature. Mount the thermostat at least 18" from any outside wall and approximately 5 ft. above the floor.

DO NOT locate the thermostat:

- behind doors, in corners or other dead air spaces
- in direct sunlight or near lamps, appliances or other sources of radiant heat
- on an outside wall or a wall exposed to an unconditioned space (e.g., garage, etc.)
- in the flow path of a supply register, in stairways or near outside doors
- on a wall where concealed pipes and/or ductwork will affect the thermostat
- near sources of electrical interference such as arcing relay contacts

2. UNLATCH THE THERMOSTAT PANEL FROM THE BASE

Figure 1



- With the cover open use a flat head screwdriver narrower than the latch access slot (see Figure 1).
- Push the screwdriver into the opening until the lock tab disengages from the catch tab (you should feel or hear a click - see Figure 2).
- Pry up on the handle of the screwdriver to separate the thermostat panel from the base (see Figure 2).
- After the latch releases, grip the thermostat panel at the bottom corners and swing it up and away from the base to completely separate (see Figure 3).
- Set aside the thermostat panel and cover to avoid damage during the remainder of the installation.

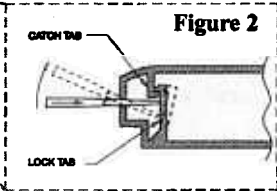


Figure 3

3. MOUNT THE BASE TO THE WALL

- Place the base over the wire hole opening in the wall; level the base and mark the mounting locations (leveling is required for appearance only - see Figure 4).

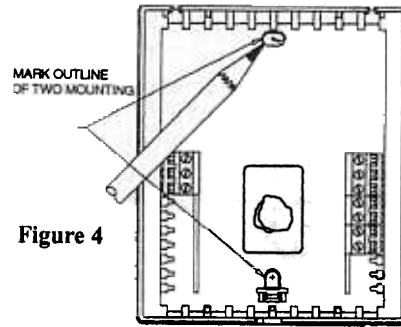


Figure 4

- If using supplied wall anchors, drill a 3/16" hole in the center of the marked locations and tap in the wall anchors. If using supplied screws only, drill a

3/32" hole in the center of the marked locations.

- Fasten the base to the wall with the supplied screws.

4. WIRE THE THERMOSTAT AND SET DIP SWITCHES

- Set the DIP switches located on the thermostat circuit board according to the application needs. Figure 11 on the back of this sheet defines all the DIP switches.
- Strip 1/4" of insulation from each wire to be used.
- Secure wires into the terminals on the base according to the appropriate wiring diagram shown on the back (see Figures 8-10). Use color coding practices (e.g., white wire to W terminal) whenever possible.
- Check each wire to ensure it is securely fastened, not broken, and no exposed wires are touching.

5. REASSEMBLE THE THERMOSTAT

CAUTION: Ensure that the blue temperature sensor does not contact the thermostat base. The sensor can be damaged if contact is made.

- Push each wire flush against the base to ensure proper fit with the thermostat panel.
- Seal the wall opening with putty or caulk to prevent drafts from affecting the accuracy of the thermostat.
- Place the cover on the base and swing fully open. Cover will stay in place.
- Install the clear plastic thermostat latch if desired (see Figure 5). The latch does not lock the cover; it is intended

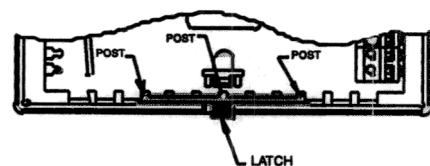


Figure 5

to discourage people from accessing the thermostat controls. Place the latch between the posts on the bottom of the base. The tab in the middle of the latch should rest in the base groove and point down.

- Align the hinge tabs on the base and thermostat panel. Swing the panel to the base and snap in place at bottom of thermostat panel (see Figure 6).



Figure 6

SK3 SPECIFICATIONS

Rated Voltage	20-30 VAC (24 VAC nominal)
Rated Current	0.08 - 1.5 Amps continuous per output (surges to 4 Amps max)
Control Range	Heating: 38° to 88°F in 1°F increments Cooling: 60° to 108°F in 1°F increments
Measurement Range.....	28° to 124°F
Control Accuracy	±1°F at 68°F
Minimum Deadband	2°F (between heating and cooling)
Anticipator	Automatic, non adjustable

CAUTION: Do not touch blue temperature sensor on the bottom right corner of the thermostat. The sensor can be damaged if handled improperly.

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Figure 8 - SINGLE TRANSFORMER HEATING AND COOLING SYSTEM

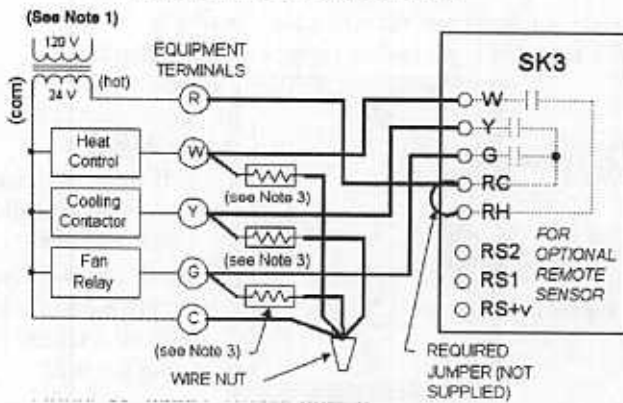


Figure 9 - TWO TRANSFORMER HEATING AND COOLING

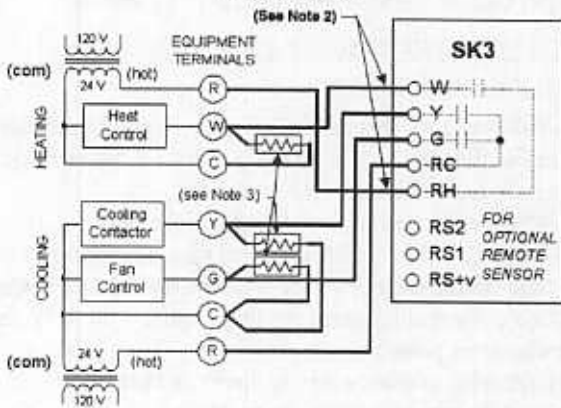
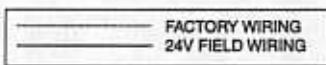
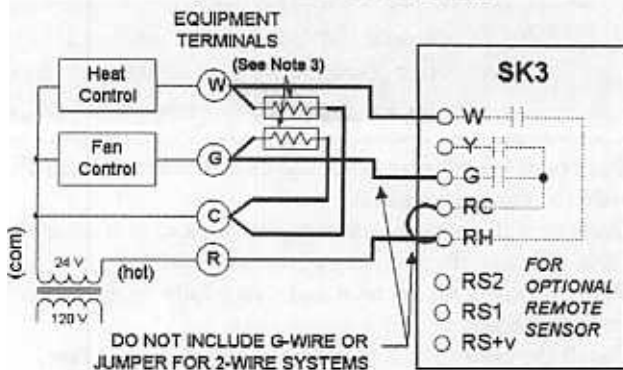


Figure 10 - HEAT ONLY SYSTEMS



NOTES:

- If the red LED on top of the thermostat lights when power is applied, the load side (24V) transformer voltage is too high (over 30V) and the transformer must be replaced.
- If the red LED on top of the thermostat lights, the two transformers may be out of phase. Move the RH wire to the W terminal and the W wire to the RH terminal. If the LED is still on after switching wires, it is likely that the load side (24V) voltage of one of the transformers is too high.
- 300 Ohm, 5W load resistor supplied with the thermostat. Measure the A/C current to each of the equipment terminals (see Figure 15). Any terminal whose current reading does not exceed 80 mA (0.080 amps) must have a load resistor installed in order to ensure that the thermostat will function properly. Install load resistors at the equipment. Load resistors become hot during equipment operation. Do not let resistors touch each other or any other components or wiring.

Figure 11 - SK3 DIP SWITCHES (FACTORY SETTINGS SHOWN)



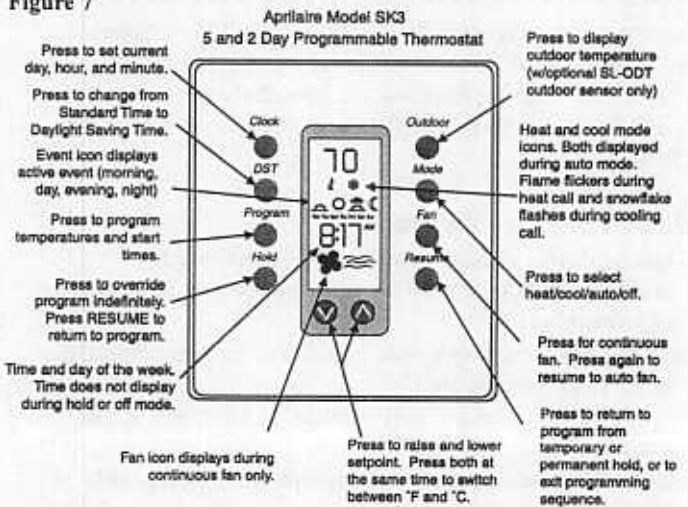
6. THERMOSTAT CHECK OUT PROCEDURE
(Refer to Figure 7 for additional details)

- Turn on system power. There is a two minute delay before the heating or cooling equipment can come on, unless the setpoint is changed to intentionally do so. Return to the thermostat and press the MODE button until OFF is displayed. If the thermostat does not respond to the buttons, refer to DIP switch #2 to ensure the keypad is not locked. The display will show the room temperature, the moon representing the night mode, and OFF.

CAUTION: Do not operate the air conditioner at low outdoor temperatures. Damage to the equipment can result. Consult manufacturer recommendations.

- Press the FAN button. The fan icon will appear on the display and the system blower should be on. Turn off by pressing FAN again.
- Press the MODE button until HEAT shows on the display. Use the increase button to raise the setpoint 5°F above the room temperature. After approximately 5 seconds, terminal W will energize, the heating equipment should come on and the flame (heat icon) will flicker. The fan terminal (G) may also be energized depending on the position of DIP switch #3. Press the MODE button until

Figure 7



OFF shows on display; the W and G terminal will de-energize in approximately 5 seconds.

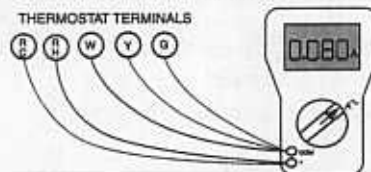
NOTE: You must switch the mode to turn off equipment terminals before the minimum on time expires (see DIP switch #1).

- Wait 2 minutes before testing cooling equipment. Press the MODE button until COOL shows on the display. Use the decrease button to lower the setpoint 5°F below the room temperature. After approximately 5 seconds, terminals Y and G will energize, the air conditioner and fan should be on, and a blinking snowflake (cool icon) will appear on the display. Press the MODE button until OFF shows on the display; the Y and G terminals will de-energize in approximately 5 seconds. **NOTE:** You must switch the mode to turn off equipment terminals before the minimum on time expires (see DIP switch #1).
- If an outdoor sensor is being used press the OUTDOOR button and check the displayed temperature.
- Set the clock and program the thermostat if desired by the homeowner (see Owner's Manual).

Figure 12 - CHECK FOR LOAD RESISTOR REQUIREMENT

PROCEDURE TO MEASURE TERMINAL AMPS
(NOTE: THIS PROCEDURE WILL TURN ON THE EQUIPMENT. TURN OFF/REMOVE FUSE TO THE CONDENSING UNIT BEFORE TAKING MEASUREMENTS TO AVOID COLD/SHORT STARTS)

- INSTALL AND WIRE THERMOSTAT BASE SHOWN IN STEP 3, STEP 4 AND FIGURES 11 THRU 13. DO NOT REASSEMBLE THERMOSTAT YET, BUT TURN THE SYSTEM POWER ON.
- USE AN AMP METER TO COMPLETE A CIRCUIT FROM THE RH OR RC TERMINAL TO EACH OF THE EQUIPMENT TERMINALS (RH TO W, RC TO G AND RC TO Y) OF THE THERMOSTAT BASE SHOWN.
- ANY TERMINAL WHOSE CURRENT READING DOES NOT EXCEED 80 mA (0.080A) WILL REQUIRE A LOAD RESISTOR AT THE EQUIPMENT.



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