



Field Service Bulletin

Electric Thermostat (Apcom) Test Procedure Model(s) Affected: All Residential Electric Units

ELECTRIC WATER HEATER THERMOSTAT (APCOM) TEST PROCEDURES

High Limit Test

- a) Depress the high limit "Reset" red button (with power on). If button snaps back out, the temperature of the water is higher than the cut out setting of the limit switch. Allow water temperature to drop. The limit can be reset at 120°F or below.
- b) Set a voltmeter to the 300 volts scale. Place test probes on terminals 1L and 3L (see diagram) of the high limit portion of the thermostat. The meter reading should be the input voltage of the heater (see rating plate of the water heater). If not correct voltage, check for loose connections and blown fuse or tripped circuit breaker.
- c) To verify that the high limit switch is closed, place test probes onto terminals 2L and 4L (see diagram). The meter reading should be the same as the input voltage of the heater. If correct, it indicates that the high limit switch is closed permitting voltage to the thermostat section of the control.
- d) If specified voltage is not indicated, and water temperature is 120°F or lower, the switch is defective and must be replaced. If functioning properly, proceed to Upper Thermostat Test.

Upper Thermostat Test

- a) Be certain that the heating elements are functioning properly. See separate bulletin on this subject.
- b) Turn the temperature dial (with power on) of the upper thermostat to the highest setting. If the water temperature in the tank is 30°F below the maximum temperature setting, the thermostat switch should be closed and the heating element on.
- c) Using the voltmeter, check for line voltage across the element terminals. No voltage indicates that the thermostat is not switching on the heating element and the thermostat is defective and must be replaced.

Lower Thermostat Test

- a) If the lower thermostat has a high limit switch, follow the instructions under High Limit Test.
- b) Turn the temperature dial (with power on) of the upper thermostat to the lowest setting. Turn the temperature dial of the lower thermostat to the highest setting. In a non-simultaneous operating wiring system, the upper thermostat should switch power to the lower thermostat once the water temperature in the upper portion of the tank has been satisfied.
- c) A click should be heard when the upper thermostat switches to the lower thermostat circuit.
- d) Check for line voltage across the element terminals. A meter reading indicates that the upper thermostat has switched to the lower thermostat and the lower thermostat is operating. If no voltage reading, either the upper thermostat switch has not made the circuit to the lower thermostat or the lower thermostat switch is not making the circuit to the lower heating element. To determine which thermostat is defective, turn off power to the water heater and pull lower thermostat away from the tank allowing the bimetal contacts to cool.
- e) Reconnect any wires that may have been removed in step "d." Turn power on.
- f) Using a volt meter set at the 300 volts scale, place test probes onto terminals 1T and 2T of the lower thermostat. If the meter reading shows the input voltage to the water heater, the lower thermostat is defective and must be replaced. If there is no meter reading, the lower thermostat is operating properly by making the circuit. In this case, the upper thermostat is defective and must be replaced.

Temperature Settings

- a) Thermostats pre-set by the manufacturer at 120°F.

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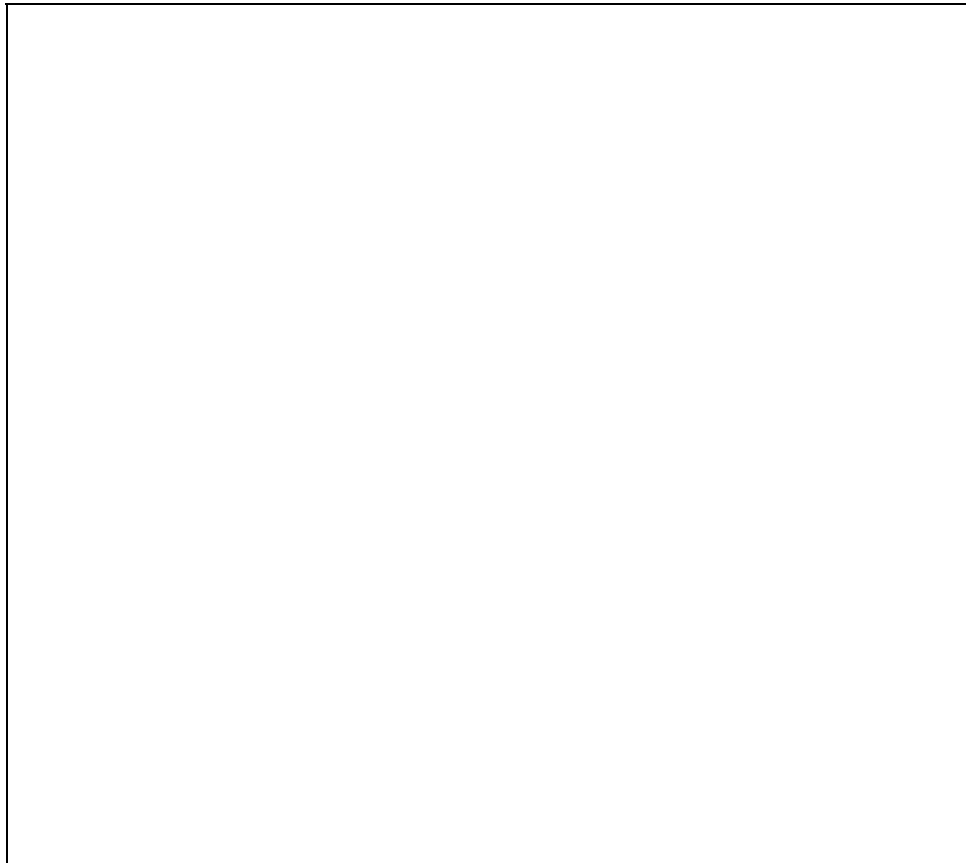
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- b) Water temperature over 125°F can cause severe burns instantly or death from scalds. Children, disabled and elderly are at highest risk of being scalded.
- c) Feel water before bathing or showering. Install temperature limiting valves as a precaution.
- d) Some states may have laws pertaining to maximum settings. Check with authorities if necessary.



CAUTION: Hotter water increases the risk of scald injury.

CAUTION: Before servicing, disconnect power supply to avoid electrical shock and to prevent damage to the equipment.

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