



HOW TO SOLVE WATER HEATER PROBLEMS

Always turn electrical power off before attempting to repair, replace or disconnect any electrical equipment.

The most severe problem you can encounter with a water heater is for it to begin leaking. You should determine where the leak originates, for if it is from around an element or pipe fitting it can normally be repaired quite easily. If, however, the tank has rusted through and is leaking, it is replacement time.

The most common electrical problem found in a water heater is caused by a burned out element. If you still have hot water, but maybe only about a shower's worth, the culprit is probably a bad lower element. Many people will just live with this condition instead of repairing the water heater, but pay for it in inconvenience and an increased power bill.

In high-recovery water heaters with two elements over 2500 watts each, the top thermostat controls the complete heating function by not allowing the bottom thermostat and element to come on while the top element is in operation. Therefore, if the top element should fail, the top thermostat would never be satisfied and therefore no hot water is produced. Often, at the time of installation, an air pocket builds up in the top of the tank because a hot water tap was not open while the heater was being filled. This air pocket causes the top element to become non-submerged and burn out when the power is turned on. Because the cause of the burn-out is so evident, the element will not be covered by the manufacturer's warranty.

A bad thermostat usually results in total loss of hot water. When a thermostat fails to shut off, the tank will overheat and cause the relief valve to open and/or the high temperature safety switch to cut off power to the water heater.

A tripped breaker or blown fuse will result in total loss of hot water and is always the first thing to check. If, for any reason the tank gets too hot, the high temperature safety switch will shut off all power to the water heater. You must then firmly push the red button on the top thermostat to reset it. If the condition recurs, it usually is caused by a sticking thermostat. Check the thermostat setting and the temperature of

the water from a hot water tap. If it doesn't appear exceptionally hot, it may be that the temperature safety switch is weak and needs replacement. If the water is exceptionally hot, it is best to replace the thermostats. If the temperature/pressure relief valve opens, it would indicate that the water is too hot or the pressure too high. A temperature/pressure relief valve can go bad but seldom does. Check the water pressure and temperature before you decide to replace it. If the pressure is over 80 P.S.I., a pressure-reducing valve should be installed in the incoming service line.

All tests are to be made from the point indicated to ground (ground being the tank or element bolt at the water heater) or the ground buss at the service panel. This assures that the highest voltage checked will be 120 volts.

There are three checks that should be made prior to testing the water heater:

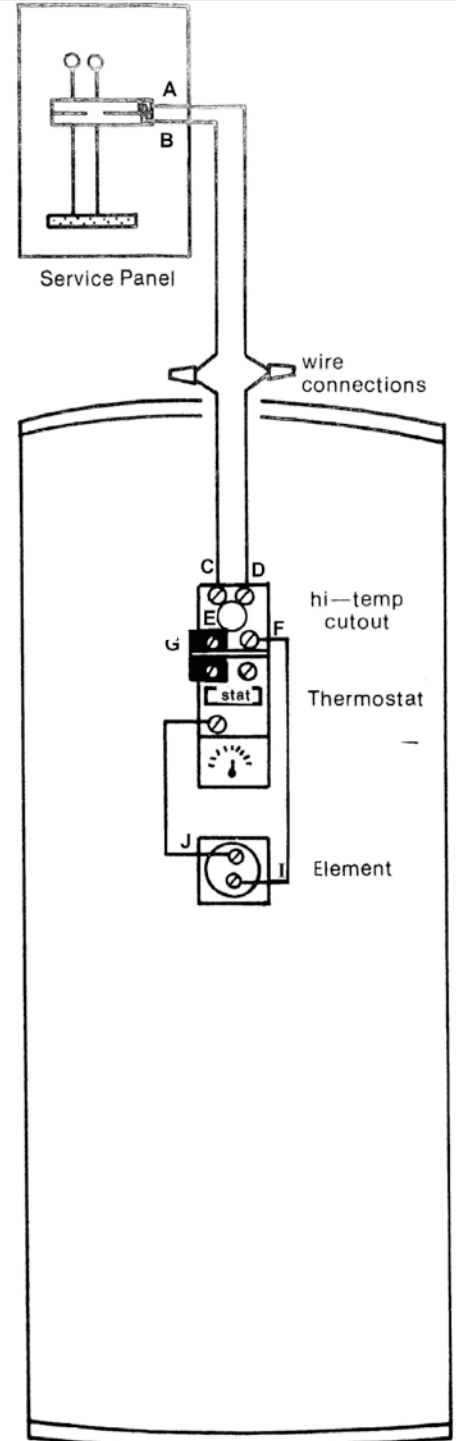
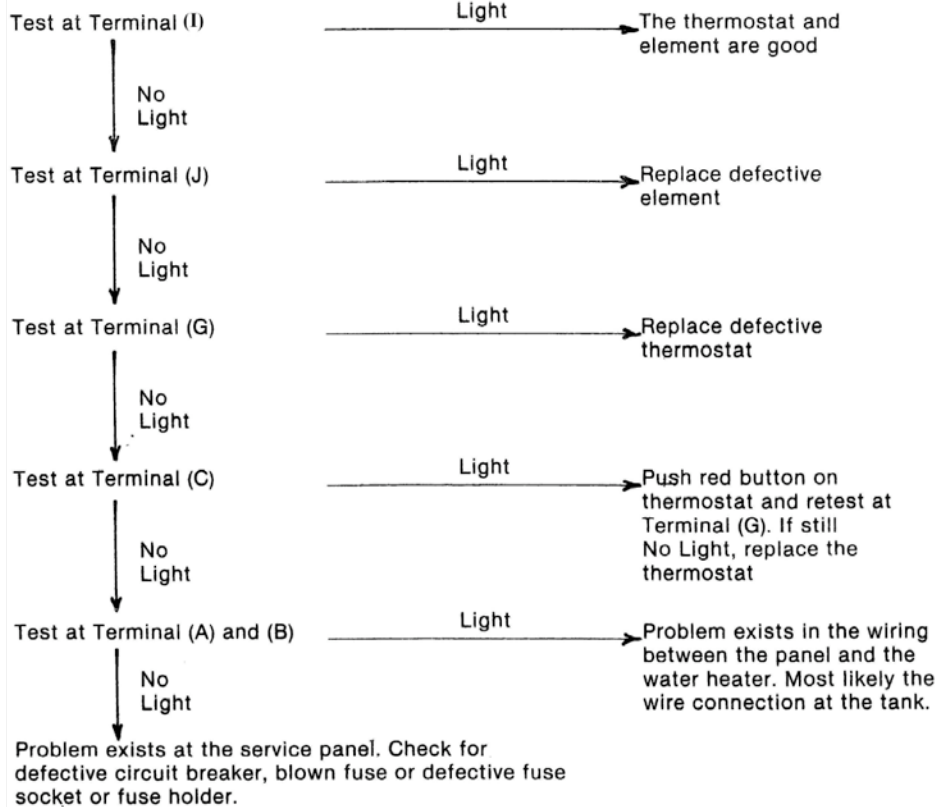
1. Check for a blown fuse or a tripped circuit breaker.
2. Turn off electrical power to the water heater. Remove the inspection covers covering the thermostats and elements and check for loose connections.
3. Firmly press the red button on the top of the thermostat in. If a loud click occurs, turn electrical power on and wait a while for the water heater to begin heating water. If this solves the problem, but after a while the thermal safety switch trips and loss of hot water recurs, check for sticking thermostats or a weak thermal safety switch. Replace if needed.

Sometimes, a decrease in available hot water is not caused by an electrical problem. Colder weather, along with uninsulated pipes, can contribute to a decrease in the quantity of hot water that is available. Also, although not as common as electrical failure, the plastic dip tube which carries the cold water to the bottom of the tank breaks and allows cold water to mix with the hot water at the top of the tank as it is being drawn off. A check for a broken dip tube would be made only after all other possible problems have been eliminated.



TEST PROCEDURES FOR SINGLE ELEMENT 120 OR 240 VOLT WATER HEATERS

Step 1: Remove the wire from Terminal (I) and leave it disconnected for the entire test.

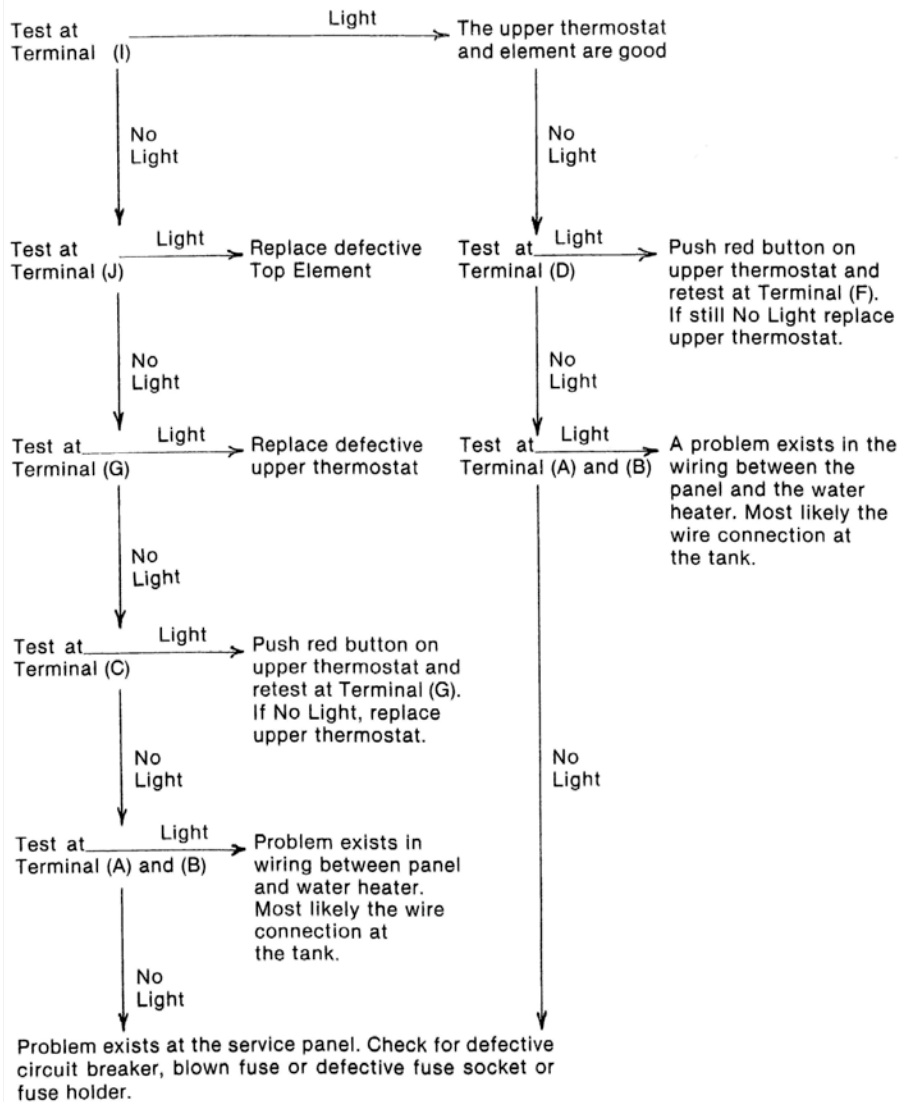




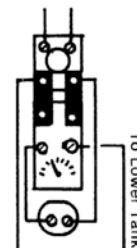
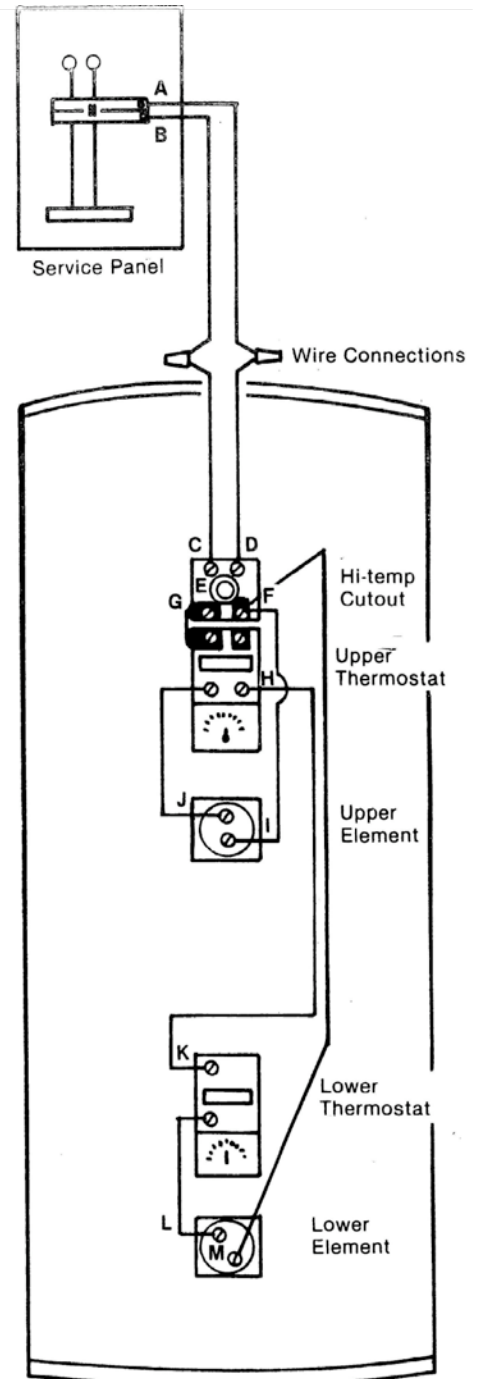
TESTING PROCEDURE FOR DOUBLE ELEMENT 240-VOLT FAST RECOVERY WATER HEATER

TEST #1 - COMPLETE LOSS OF HOT WATER

Disconnect the wire from Terminal (I) and leave it disconnected for the entire test. With a screwdriver, turn the temperature dial setting on the upper thermostat to its highest setting. Be sure to reset the dial to the desired temperature once repairs have been completed.



NOTE: Once these tests have been performed and the problem has been located, a test of the lower element and thermostat should be performed to eliminate any further problems. (See Test #2)



NOTE: The diagram at left is of a type that is used as an upper thermostat in some older water heaters. Though some wires have changed points of connection, some study will show that the tests that are listed will point out the defective parts.

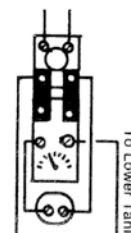
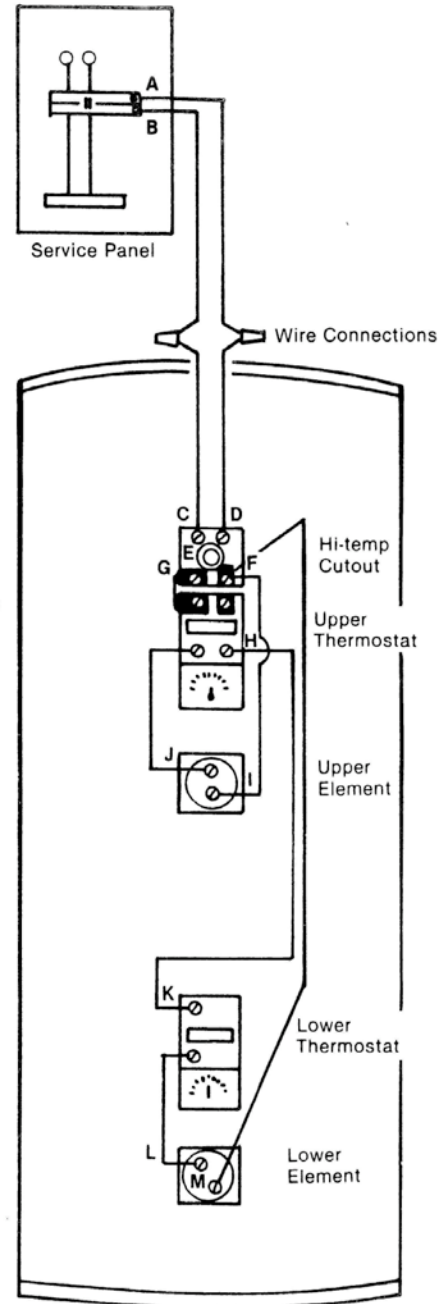
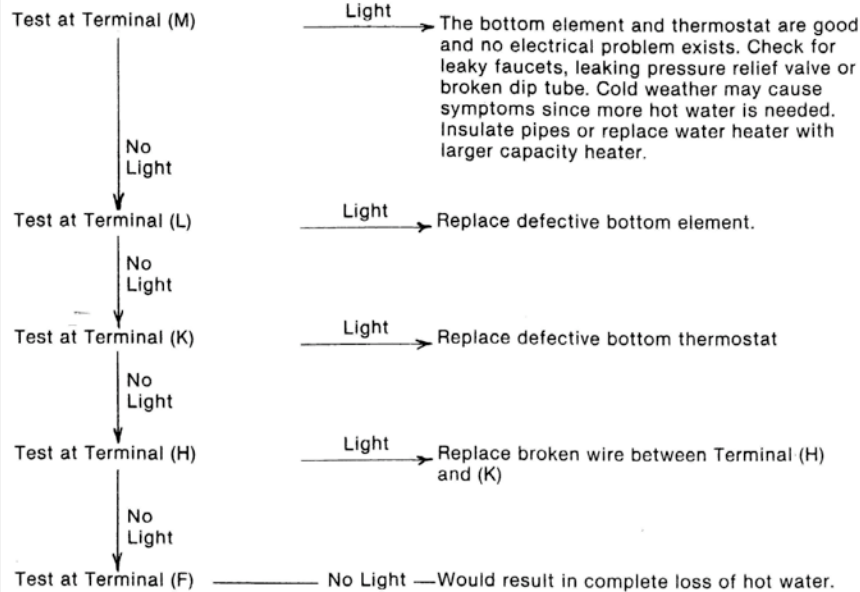


TESTING PROCEDURE FOR DOUBLE ELEMENT 240 VOLT FAST RECOVERY WATER HEATERS

NOTE: The top of the water heater should feel hot to the touch while the bottom of the tank will feel cold or cooler than the top. This check must be performed when hot water has not been in use for some time in order to determine that the problem exists in the lower portion of the water heater.

TEST #2 - DECREASE IN AVAILABLE HOT WATER

Disconnect the wire from Terminal (M) and leave it disconnected for the entire test. With a screwdriver turn the temperature dial setting on the upper thermostat to its lowest setting and the dial on the lower thermostat to its highest setting. Be sure to reset both dials to the desired temperature once repairs have been completed.



NOTE: The diagram at left is of a type that is used as an upper thermostat in some older water heaters. Though some wires have changed points of connection, some study will show that the tests that are listed will point out the defective parts.