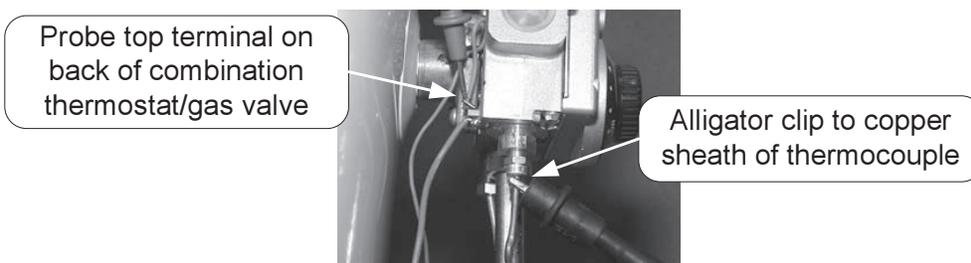




SERVICE PROCEDURE RG-II  
Thermocouple/Thermopile Testing and  
Replacement

**CLOSED CIRCUIT THERMOCOUPLE TESTING (White Rodgers Control)**

- Step 1. Closed circuit testing is the preferred method for testing thermocouple. Following the lighting instruction label on the heater, proceed to light the pilot and allow to operate for three minutes. If the pilot will not stay lit, hold the pilot button (located on the combination thermostat/gas valve) down during this test
- Step 2. Using a multimeter capable of measuring millivolts, connect one lead using an alligator clip to the copper sheath of the thermocouple, use the second lead of the multi meter to probe the top terminal located at the back of the combination thermostat/gas valve.
- Step 3. If meter reads 10 millivolts or higher, the thermocouple is OK. If reading is below 10 millivolts, replace the thermocouple.



**CLOSED CIRCUIT THERMOCOUPLE TESTING (Robertshaw Control)**

- Step 1. Disconnect thermocouple from combination thermostat/gas valve.
- Step 2. Connect a thermocouple adaptor (BWC P/N 239-44642-00, Robertshaw P/N 75036) at the thermocouple location in the combination thermostat/gas valve.



- Step 3. Reconnect thermocouple to adaptor. Make certain all connections are tight (finger tight plus 1/4 turn)

- Step 4. Using a multimeter capable of measuring millivolts, connect one alligator clip to the set screw of the adaptor, and the other alligator clip to copper portion of the thermocouple.



- Step 5. Following the lighting instruction label on the heater, proceed to light the pilot and allow to operate for three minutes. If the pilot will not stay lit, hold the red reset button (located on the combination thermostat/gas valve) down during this test
- Step 6. If meter reads 13 millivolts or higher, the thermocouple is OK. If reading is below 13 millivolts replace the thermocouple.

### OPEN CIRCUIT THERMOCOUPLE TESTING (White Rodgers/Robertshaw Gas Valve)

Step 1. Disconnect thermocouple from combination thermostat/gas valve.

Step 2. Using a multimeter capable of measuring millivolts, connect one alligator clip to the end ball or contact portion of the thermocouple, and the other alligator clip to copper portion of the thermocouple.



Step 3. Following the lighting instruction label on the heater, proceed to light the pilot and allow to operate for three minutes. **It will be necessary to hold the pilot button down continuously throughout this test.** A reading of 20 to 30 millivolts indicates good thermocouple output.

### THERMOCOUPLE REPLACEMENT (White Rodgers/Robertshaw Gas Valve)

Step 1. Turn off gas supply to water heater. Rotate knob of combination thermostat/gas valve to "OFF" position.

For White Rodgers Control, depress knob slightly and rotate clockwise to the "OFF" position.



For Robertshaw Control, rotate knob clockwise to the "OFF" position.



Step 2. Remove outer jacket door.

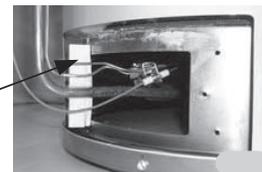
Step 3. Remove right side of inner door per SERVICE PROCEDURE RG-I, steps 3a through 3c.

Step 4. Disconnect thermocouple from combination thermostat/gas valve. Locate other end of thermocouple inside of combustion chamber and remove from pilot bracket. Pull firmly pulling away from the pilot assembly.

Step 5. Install new thermocouple into pilot bracket making certain the thermocouple is fully engaged into the pilot bracket. Position thermocouple against left side inner door flange at its original position. Connect other end of thermocouple to combination thermostat/gas valve (finger tight + 1/4 turn).

Step 6. Inspect inner door gasket per SERVICE PROCEDURE RG-I, Step 4.

Thermocouple position



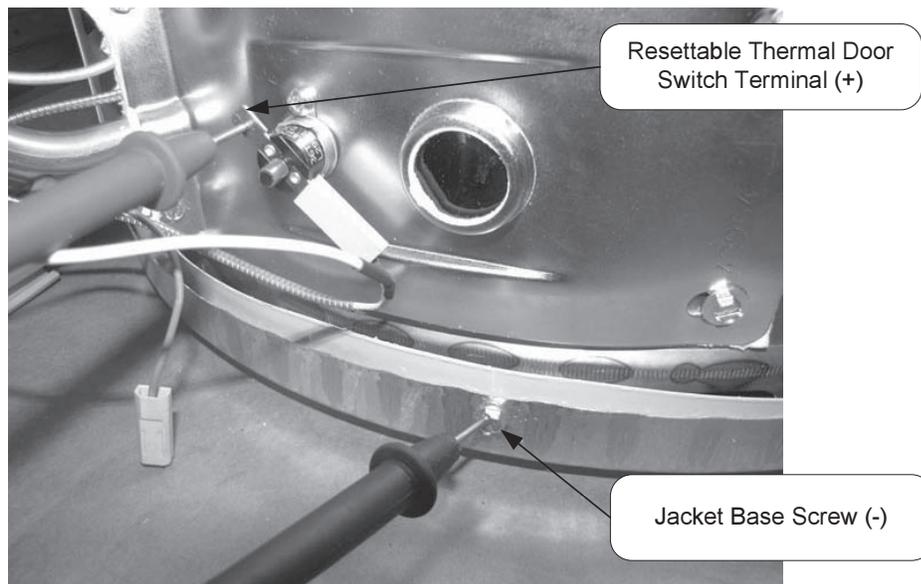
Step 7. Install right side inner door per SERVICE PROCEDURE RG-I, Step 10 through Step 13

Step 8. To resume operation follow the instructions located on the lighting instruction label or the lighting instructions located in the installation and operation manual.

### OPEN CIRCUIT THERMOPILE TESTING (Honeywell Gas Control)

The following test should be performed while the pilot flame is on.

- Step 1. Turn knob to pilot position and depress.
- Step 2. Continue pressing knob and remove red (+) wire from resettable thermal door switch.
- Step 3. Using a multimeter capable of measuring millivolts, connect the positive side of the multimeter to the terminal of the resettable thermal door switch. Connect the negative side of the multimeter to any earth ground location (jacket base, screw, etc.).



Normal thermopile operation will be between 350mV - 850mV. If reading is less than 350mV, replacement of pilot assembly is recommended following SERVICE PROCEDURE RG-III.

- Step 4. If thermopile reading is between 350mV - 850mV, remove multimeter and reconnect red wire to positive (+) terminal of Gas Control.
- Step 5. Release Gas Control knob and turn to desired setting to resume normal operation.