Thermal Fuse / Overheat Switch:
Set your meter to the hertz scale. Reading across the white and black wires at terminals 2 and 3.

NOTE: The grey wire listed above turns to black at B connector on the PCB, the orange wire turns to red.

Appliance Operating Pressures

<table>
<thead>
<tr>
<th>Wire color</th>
<th>Voltage</th>
<th>Resistance</th>
<th>Connector #</th>
<th>Pin #'s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red - Red</td>
<td>11 ~ 13 VDC</td>
<td>5.5 ~ 6.2 K ohms</td>
<td>F2</td>
<td>1 - 3</td>
</tr>
<tr>
<td>White - Black</td>
<td>5 ~ 10 VDC</td>
<td>9.2 ~ 9.4 K ohms</td>
<td>E1</td>
<td>2 - 4</td>
</tr>
<tr>
<td>Yellow - Black</td>
<td>4 ~ 7 VDC</td>
<td>1 ~ 1.4 Mega ohms</td>
<td>F2</td>
<td>2 - 3</td>
</tr>
<tr>
<td>Black - Red</td>
<td>11 ~ 13 VDC</td>
<td>5.5 ~ 6.2 K ohms</td>
<td>F2</td>
<td>1 - 3</td>
</tr>
<tr>
<td>Red - Blue</td>
<td>11 ~ 13 VDC</td>
<td>22 ~ 28 ohms</td>
<td>F7</td>
<td>9 - 10</td>
</tr>
<tr>
<td>Wire color</td>
<td>Voltage</td>
<td>Resistance</td>
<td>Connector #</td>
<td>Pin #'s</td>
</tr>
<tr>
<td>------------</td>
<td>---------</td>
<td>------------</td>
<td>-------------</td>
<td>--------</td>
</tr>
<tr>
<td>Pink - White</td>
<td>N / A</td>
<td>See example above</td>
<td>F4</td>
<td>3 - 11</td>
</tr>
<tr>
<td>White - White</td>
<td>N / A</td>
<td>See example above</td>
<td>F5</td>
<td>3 - 4</td>
</tr>
<tr>
<td>Wire color</td>
<td>Voltage</td>
<td>Resistance</td>
<td>Connector #</td>
<td>Pin #'s</td>
</tr>
<tr>
<td>------------</td>
<td>---------</td>
<td>------------</td>
<td>-------------</td>
<td>--------</td>
</tr>
<tr>
<td>Black - Brown</td>
<td>11 ~ 13 VDC</td>
<td>36.8 ~ 44.8 ohms</td>
<td>H8</td>
<td>3 - 6</td>
</tr>
</tbody>
</table>

Remote Controller
High Altitude

- On - 2001-5200ft
- Off - 5201-7800ft

Table 1

<table>
<thead>
<tr>
<th>Level</th>
<th>Pinout</th>
<th>Table 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Remote Controls:
Using a voltage meter set on the 200 ohm scale, you should have a resistance reading of 123 ~ 176 ohms.

Intake Air Thermistor (Indoor model ONLY)
This unit has an inline (3) amp glass fuse. Remove the fuse and check continuity through it. If the fuse is not functional through the fuse, it is good. If you can not replace it, try a fuse from the nearest Service Center vendor.

Appliance Safety

- Disconnect EZConnect or MSA controls to isolate the problem.
- Check igniter wiring harness for damage.
- Check gas solenoid valves for open or short circuits.
- Remove burner plate and inspect burner surface for combustion or debris.

Flame Failure

- Check all vent components for proper connections.
- Check venting material was installed.
- Ensure gas type and pressure is correct.
- Ensure gas type of unit and ensure it matches gas type being used.

Flame Sensing Device Fault

- Ensure flame rod to touching flame when unit turns on.
- Check all wiring to flame rod.
- Check gas type and pressure is correct.
- Check wiring harness to motor for damaged and/or loose connections.
- Replace burner for damaged and/or loose connections.
- Replace heat exchanger.
- Replace sensor.

Water Flow Sraey Fault (does not stop flow properly)
- Check wiring harness to motor for damaged and/or loose connections.
- Replace heat exchanger.
- Replace sensor.

SCALP BUILDING IN HEAT EXCHANGER (when checking flame sensor code "HS" is substituted for "LC" when troubleshooting)
- Check heat exchanger for proper connections.
- Check wiring harness to motor for damaged and/or loose connections.
- Replace heat exchanger.

BYPASS SERVO MODEL ONLY

- Check all vent components for proper connections.
- Check venting material was installed.
- Ensure gas type and pressure is correct.
- Check the heat exchanger for proper connections.
- Ensure gas type of unit and ensure it matches gas type being used.

15. Over Temperature Warning
- Check for water flow in air flow around unit and vent terminal.
- Check for foreign materials in combustion chamber and/or vent piping.
- Check for clogged heat exchanger.

16. Gas Water Temperature Sensor Fault
- Check and verify for damage.
- Measure resistance of sensor.
- Clean service of scale build up.
- Replace sensor.

17. Heat Exchanger Outgoing Temperature Sensor Fault
- Check for(builder) for damage.
- Measure resistance of sensor.
- Clean service of scale build up.
- Replace sensor.

18. Modulating Valve Signal Abnormal
- Check modulating gas solenoid valve wiring harness for loose or damaged.
- Measure resistance of valve coil.

19. Component Fan Failure
- Check wiring harness to motor for damaged and/or loose connections.
- Measure resistance of motor winding.

20. Water Flow Sensor Fault
- Check wiring harness to all sensors for damage and/or loose connections.
- Measure resistance of each solenoid valve.

21. Flame Sensing Device Fault
- Ensure flame rod to touching flame when unit turns on.
- Check all wiring to flame rod.
- Check gas type and pressure is correct.
- Check wiring harness to motor for damaged and/or loose connections.
- Replace heat exchanger.
- Replace sensor.

22. BY-PASS FLAME FAILURE
- Ensure proper venting material was installed.
- Ensure gas type and pressure is correct.
- Ensure gas type of unit and ensure it matches gas type being used.

23. No Ignition
- Check the gas is turned on at the water heater gas meter or cylinder.
- Ensure gas type and pressure is correct.
- Ensure gas type of unit and ensure it matches gas type being used.
- Check for low water flow in a circulating system causing short-cycling.
- Check for bleed over. Isolate the circulating system if reverse.
- Replace sensor.

24. Heat Exchanger Over Temperature Warning
- Measure the water temperature of unit.
- Check for water flow in air flow around unit and vent terminal.
- Check for clogged heat exchanger.

25. Gas Water Temperature Sensor Fault
- Check and verify for damage.
- Measure resistance of sensor.
- Clean service of scale build up.
- Replace sensor.