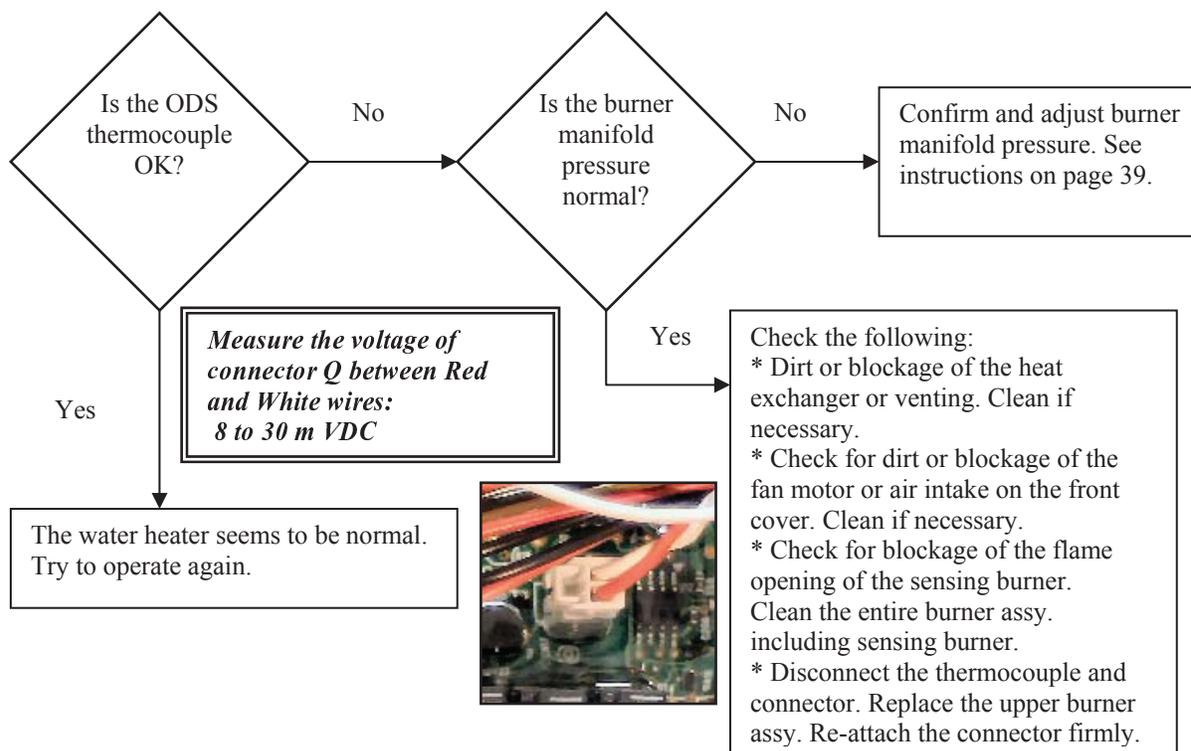## Error Code 13

Explanation: Oxygen Depletion Sensor activated. The unit was not able to resolve an imperfect combustion issue. At a minimum check the following in all cases:

1. Check for lack of fresh combustion air such as in a tight closet.
2. Check maintenance history to see if this is the first incidence of failure with this code.

Is the ODS thermocouple OK? — No → Is the burner manifold pressure normal? — No → Confirm and adjust burner manifold pressure. See instructions on page 39.

Measure the voltage of connector Q between Red and White wires: 8 to 30 m VDC

Yes

Yes → Check the following:
* Dirt or blockage of the heat exchanger or venting. Clean if necessary.
* Check for dirt or blockage of the fan motor or air intake on the front cover. Clean if necessary.
* Check for blockage of the flame opening of the sensing burner. Clean the entire burner assy. including sensing burner.
* Disconnect the thermocouple and connector. Replace the upper burner assy. Re-attach the connector firmly.

The water heater seems to be normal. Try to operate again.

If you get error code 13 and you can not seem to locate the problem, then try this to check for a potential missing sensor damper:

1. Check the wire from the ODS to PCB. A disconnected or loose wire will also show Ø (zero) voltage in maintenance mode.
2. Recycle unit to main burner.
3. Run the unit for at least 3 minutes in main burner mode
4. Did the unit:
   a. Shut down at exactly 2.5 minutes?
   b. Never go to EC '05' to try and fix the problem? (ODS generated too low voltage against minimum required voltage from ODS. The board never "senses" it is in an ODS failure and never tries to correct itself with the '05' code.)
5. If so:
   a. Recycle power and go to maintenance mode.
   b. Go to cell ØA.
   c. Verify Ø voltage present (that is the correct reading) when main burner is off.
   d. Press the ON/OFF button to go to main burner. Turn on a water faucet.
   e. Run the unit for at least 3 minutes and watch the display cell ØA.
   f. If you get between8 mv and 30 mv, then the ODS and burner are probably OK.

g. If within 3 minutes, you get any reading, and then the reading drops below 8 mv, and then goes to Ø, then we have a problem with the ODS, a missing sensor damper or the burner itself.   Replace the burner assembly.

What is the big different between normal error code 13 and no SD (Sensor Damper)? Normally error code 13 is just low voltage or frequency; it means the ODS is still sensing a burner flame. But if the SD is missing, there is no fire on ODS from the beginning of the main burner operation.

Does ODS still generate voltage because main burner ON? Yes, but the voltage is much lower than the PCB requires. You can verify this at cell ØA in maintenance mode.