Heat Pump Water Heater (Generation 2) Troubleshooting

No Power, Display, Fan or Compressor

Indications	**Display**
Nothing happens at all. No compressor motor; no sounds; no display.	There is not a display code for this problem. Remember, the first thing we want to check is for the heater to be "enabled".
Troubleshooting	**Solution**
1. Check for the presence of power. 2. Verify 12 VDC output on the control by checking for the green light in the upper right hand corner of the control board. 3. Verify ECO NET is working by checking for the blinking green light in the upper left hand corner of the control board between the two RJ45 connections.	1. IF the touch screen display (TSD) is on, then enable heater by pressing the STAND BY button. 2. Set mode to Energy Saver and thermostat to 120^0F. 3. Heater may be in 'pre-warm' mode. Verify 240V power at the lower heating element screw terminals.

All current alarms and alarm history can be found by pressing "Service" then pressing "Alarms".

Standby

Enabled

Pre-Warm

Alarms

Control has power

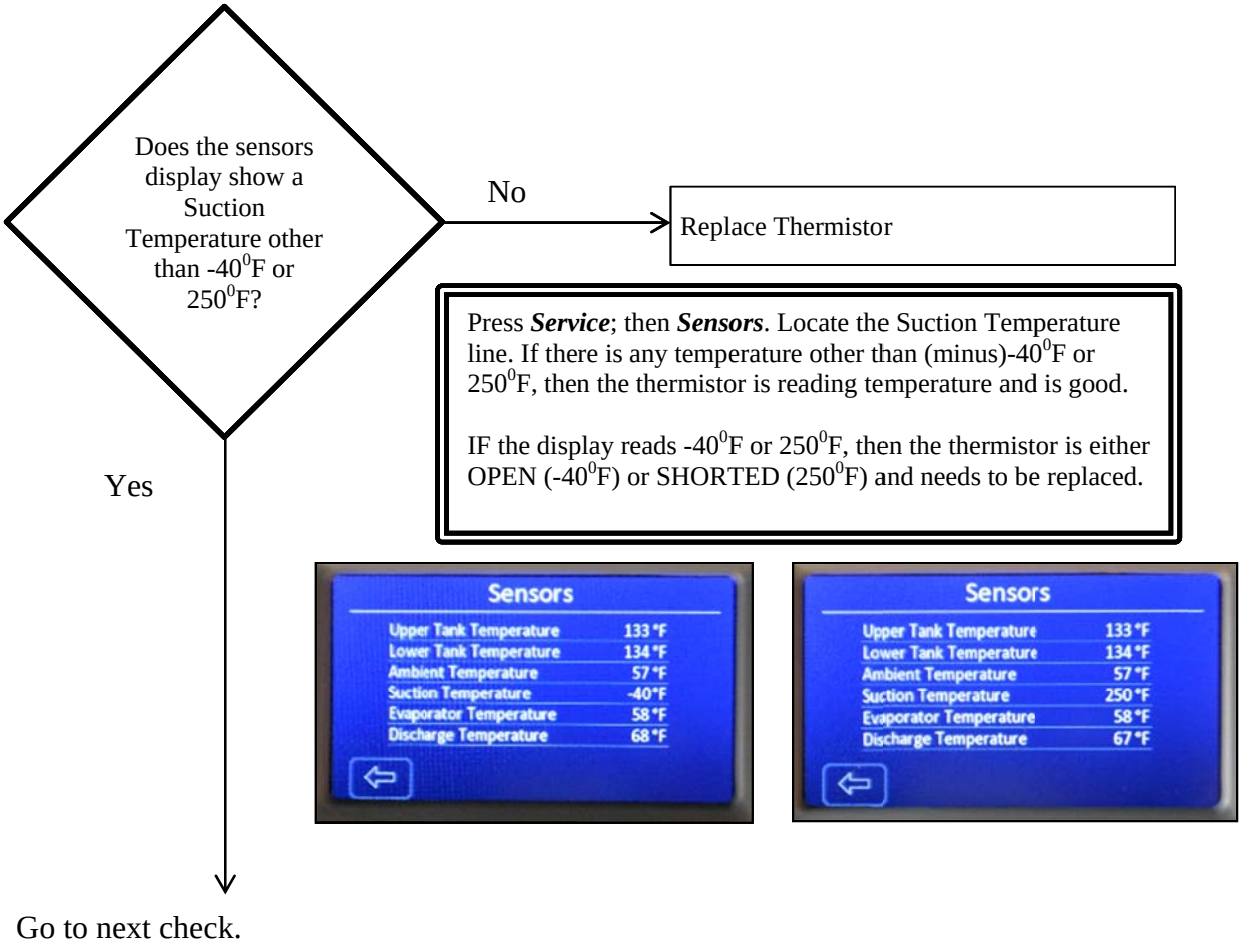
ECONet is working

Remove the TSD cover panel and look at the computer board. The two LED lights below the RJ42 jack indicate the TSD has power and the TSD is communicating with the control board.

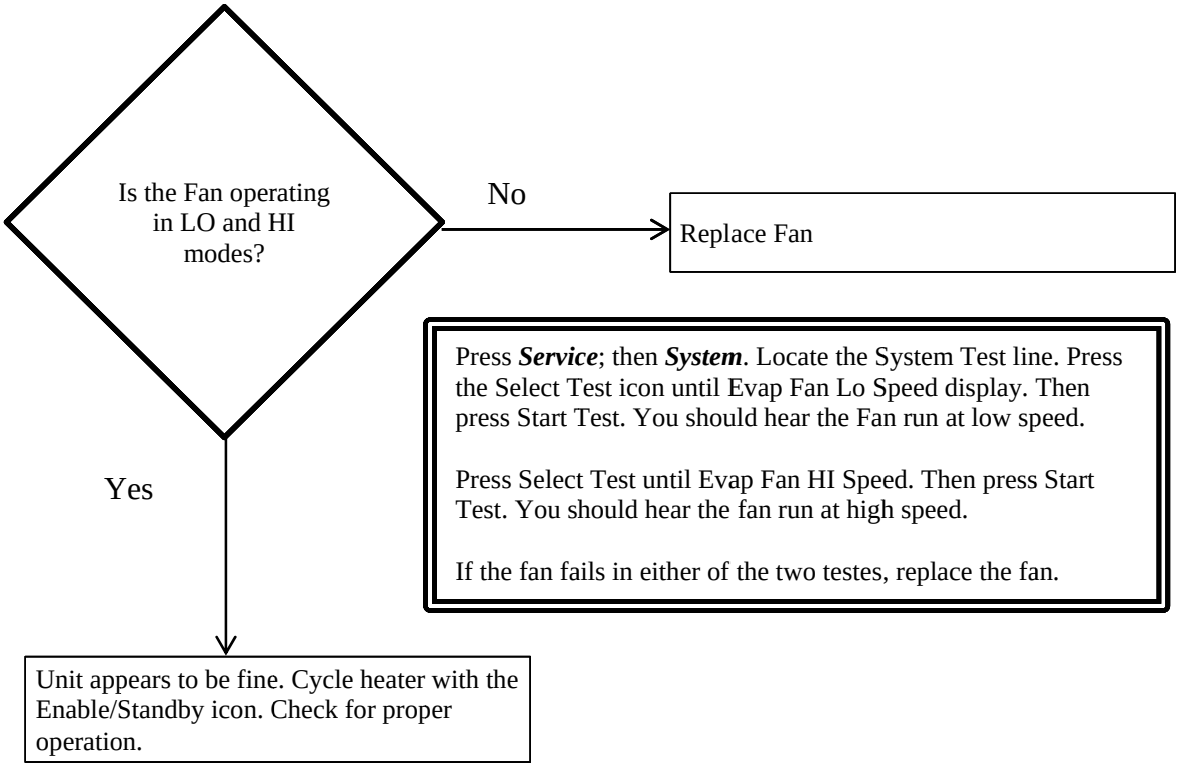
Heat Pump Water Heater (Generation 2) Troubleshooting

Error A101 Suction Temperature Thermistor Failure

Indications	**Display**
Compressor Shutdown – Low Suction Temperature. The control shuts compressor off if Suction Temperature is less than 37^0F for three minutes. This prevents compressor line freeze up. The compressor remains locked out for the remainder of the heat demand. This is usually caused by a lack of unconditioned air moving thru the evaporator.	**A101 Suction Temperature Thermistor Failure** 
Troubleshooting	**Solutions**
1. Filter screen on top of water heater is dirty. 2. Unit is installed with less than 1000 ft^3 of air space. 3. Thermistor damaged. 4. Fan Damaged.	1. Clean filter screen on top of water heater. 2. Increase available unconditioned air to heater. 3. Measure thermistor resistance. 4. Conduct Fan Test on control board



Heat Pump Water Heater (Generation 2)
Troubleshooting

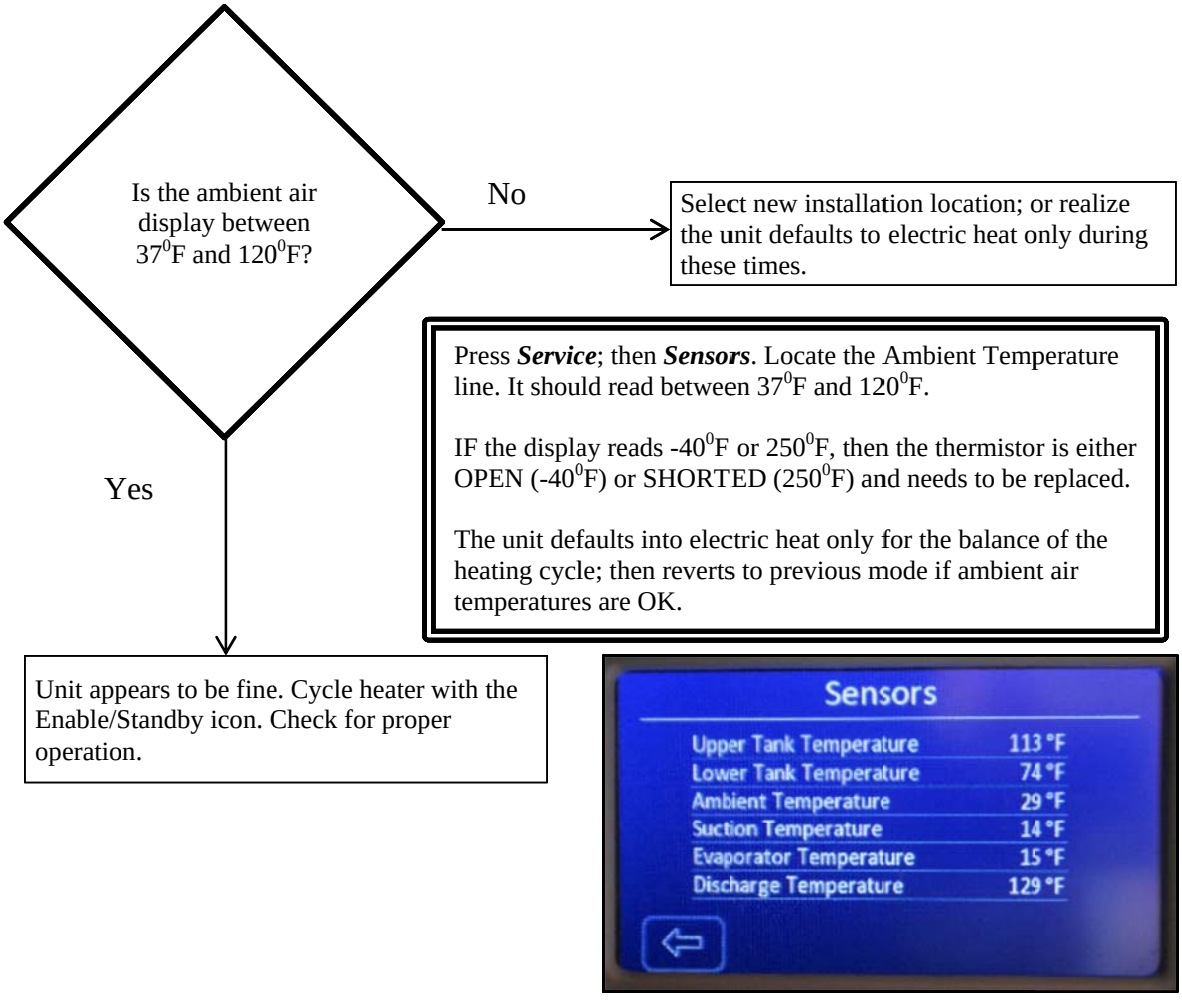


Press the Left Arrow Icon  until you return to the home screen.

Heat Pump Water Heater (Generation 2) Troubleshooting

Error A102 Ambient Temperature Thermistor Failure

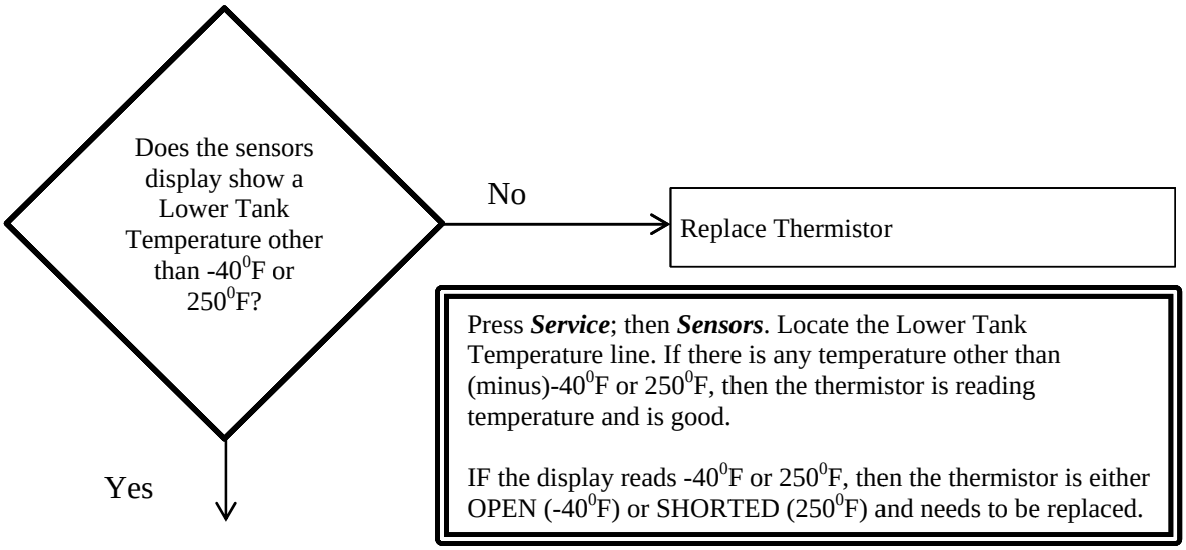
Indications	**Display**
Compressor Shutdown – Low/High Ambient Temperature. The control shuts compressor off if Ambient Temperature is less than 37^0F or greater than 120^0F. The compressor remains locked out for the remainder of the heat demand. To protect the compressor and heat pump functions, the unit will not operate in heat pump mode below or above these temperatures.	**A102 Ambient Temperature Thermistor Failure** 
Troubleshooting	**Solution**
1. Ambient air temperature is too cold to effectively use the heat pump. 2. Ambient air temperature is too hot to effectively use the heat pump. 3. Thermistor damaged.	1. This is an installation location issue. Unheated basements and garages will likely cause this issue; as will attics in the summertime. 2. Measure thermistor resistance. 3. Defaults to Electric Heat Only until temperature is greater than 37^0F and less than 120^0F.

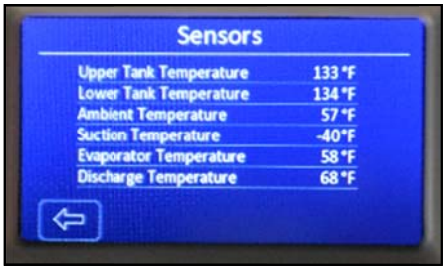


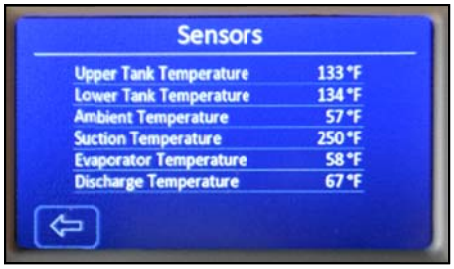
Heat Pump Water Heater (Generation 2) Troubleshooting

Error A103 Lower Heater Temp Thermistor Failure

Indications	Display
This thermistor is monitoring the lower tank temperature. Sensing range of 32° to 210°F with +/- 2.0°F accuracy.	**A103 Lower Heater Temp Thermistor Failure** 
Troubleshooting	**Solution**



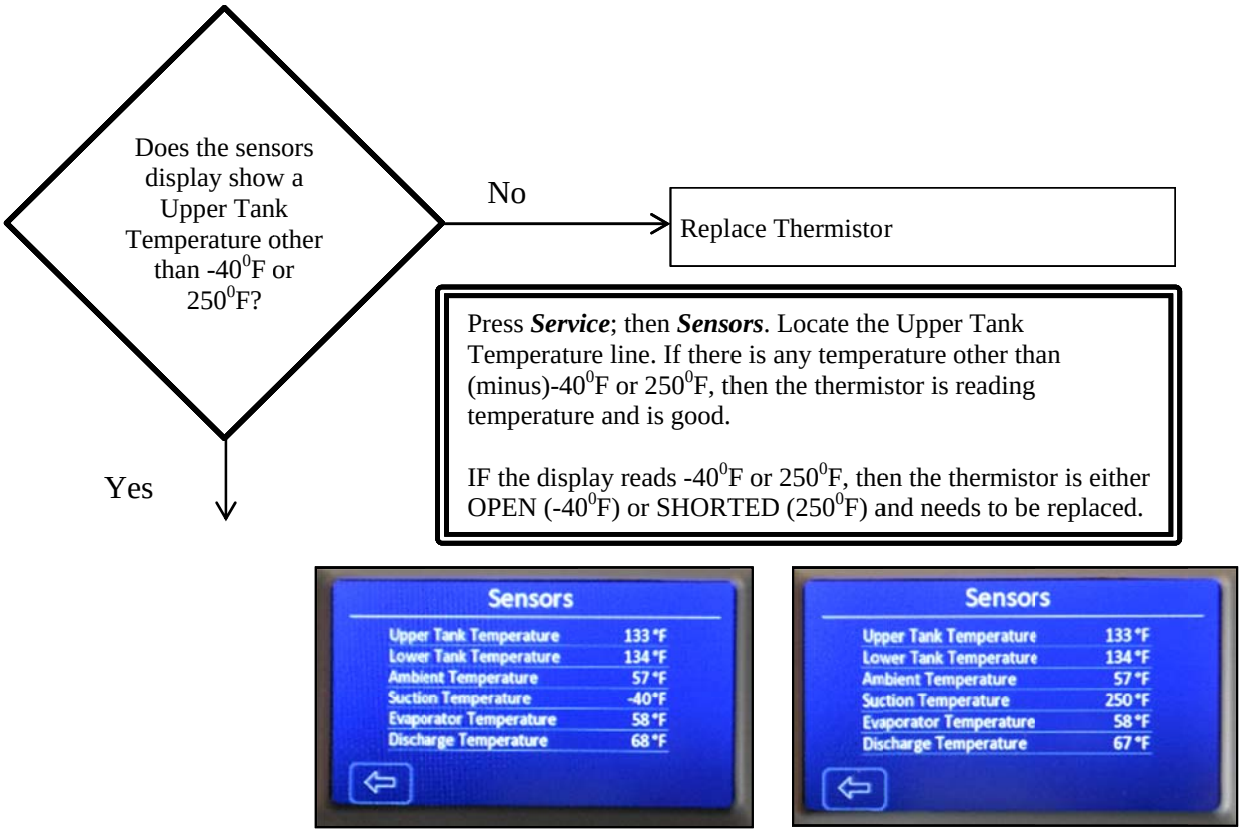




Heat Pump Water Heater (Generation 2) Troubleshooting

Error A104 Upper Heater Temp Thermistor Failure

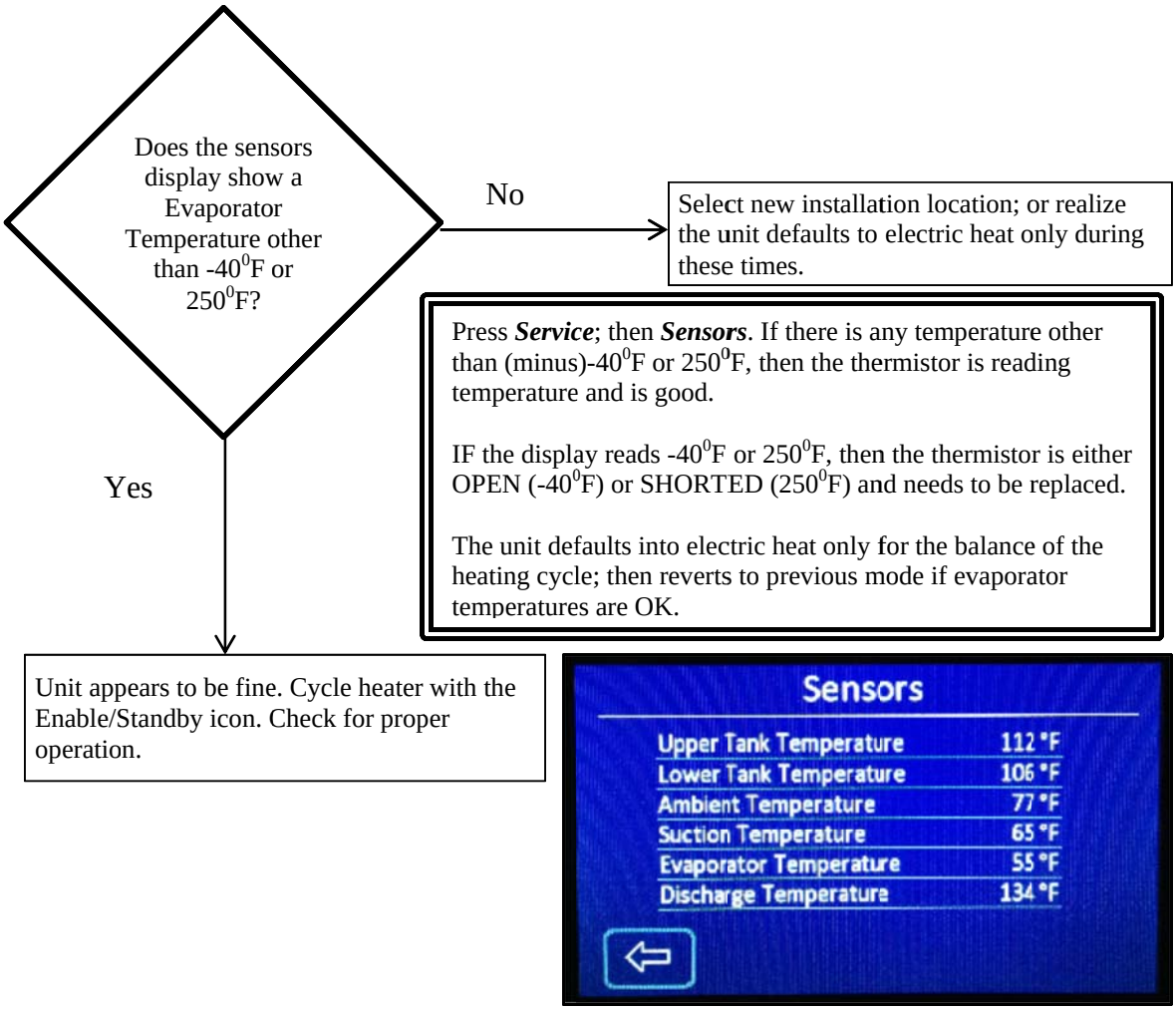
Indications	**Display**
This thermistor is monitoring the upper tank temperature. Sensing range of 32° to 210°F with +/- 2.0°F accuracy.	**A104 Upper Heater Temp Thermistor Failure** 
Troubleshooting	**Solutions**



Heat Pump Water Heater (Generation 2) Troubleshooting

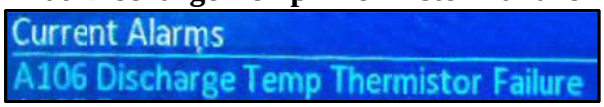
Error A105 Evaporator Temp Thermistor Failure

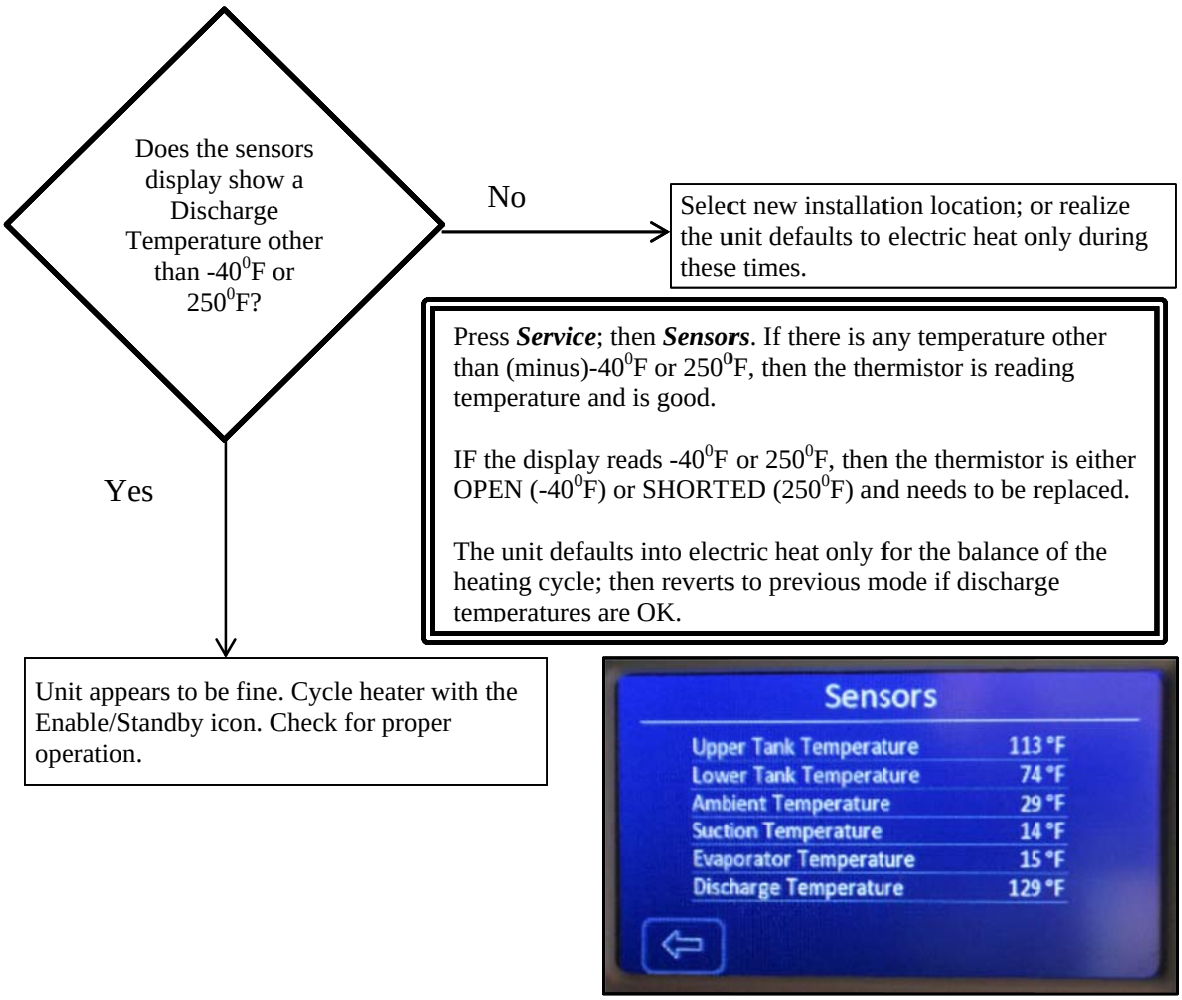
Indications	Display
Compressor Shutdown – Low/High Evaporator Temperature. The control shuts compressor off if Evaporator Temperature is less than 35^0F or greater than 120^0F. The compressor remains locked out for the remainder of the heat demand. To protect the compressor and heat pump functions, the unit will not operate in heat pump mode below or above these temperatures.	**A105 Evaporator Temp Thermistor Failure** 
Troubleshooting	**Solutions**



Heat Pump Water Heater (Generation 2) Troubleshooting

Error A106 Discharge Temp Thermistor Failure

Indications	**Display**
The control shuts compressor off if discharge temperature is above 235^{0}F. The compressor is allowed to run again after the anti-short cycle timer has expired provided the compressor has shut down less than 3 times during this demand cycle for heat.	**A106 Discharge Temp Thermistor Failure** 
Troubleshooting	**Solutions**

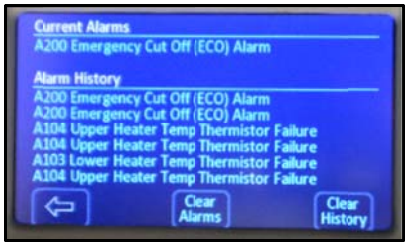


Heat Pump Water Heater (Generation 2) Troubleshooting

Error A200 Emergency Cut Off (ECO) Alarm

Indications	Display
If the emergency cut-out switch is detected by the control, the control will de-energize both compressor and electric heat element output relays. The switch itself will shut down electric and compressor heat as well.	**A200 Emergency Cut Off (ECO) Alarm** Current Alarms A200 Emergency Cut Off (ECO) Alarm
Troubleshooting	**Solutions**
This alarm indicated the mechanical ECO above the upper heating element has tripped. It sensed the water temperature, thru the tank steel, to be above 165^0F. Before resetting the ECO, check both the upper and lower heating elements for a grounded element.	Replace heating element if grounded. Press RED reset button on the ECO

From the Home screen, press Service, then Alarms.

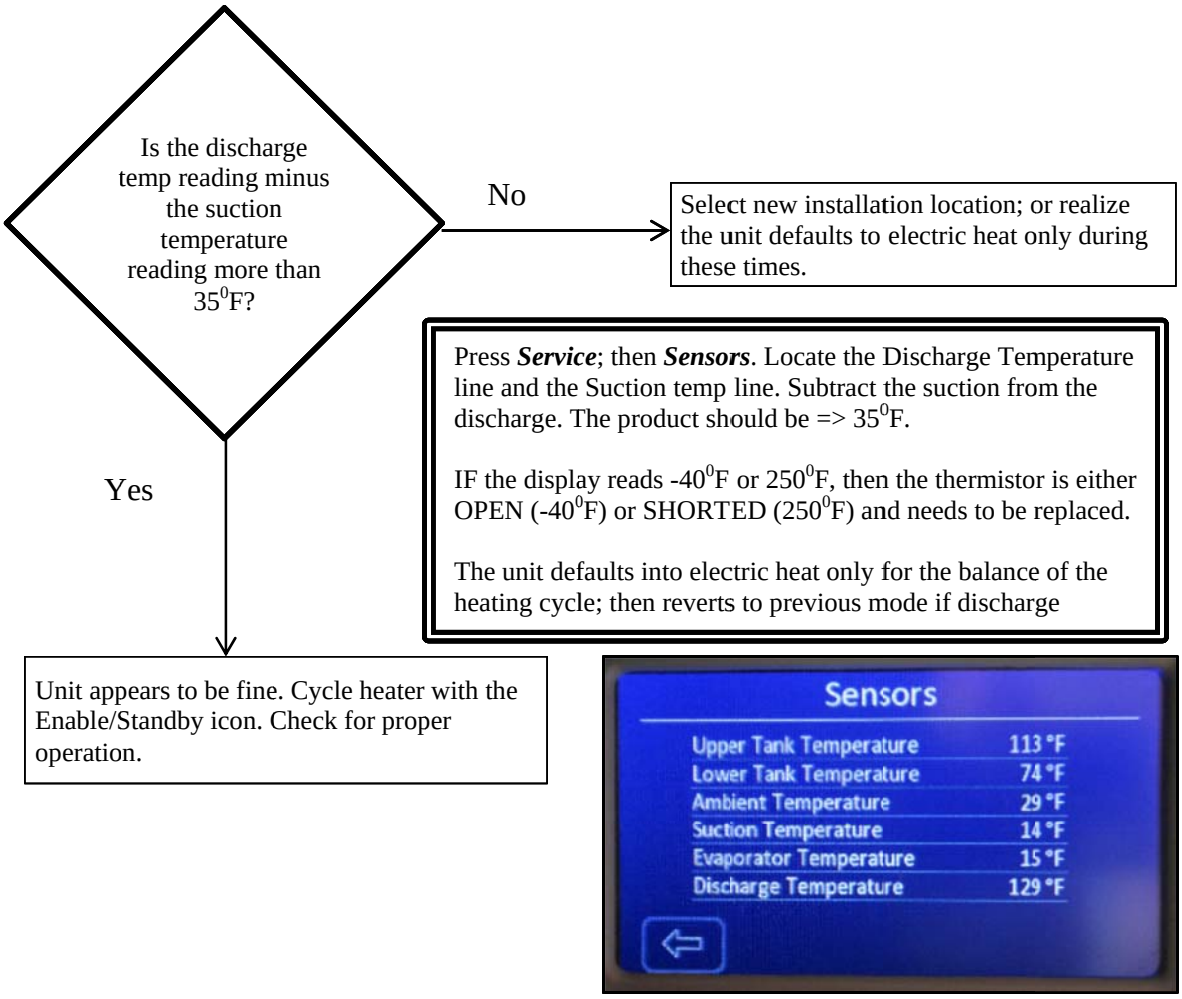


To check for a grounded element, turn power off to Hybrid unit. Disconnect both wires on the heating element. Measure resistance from one of the two screws to the grounded tank. The circuit should be open (no resistance). If there is, replace heating element.

Heat Pump Water Heater (Generation 2)
Troubleshooting

Error A004 Comp. Shutdown: Discharge-Suction Trip

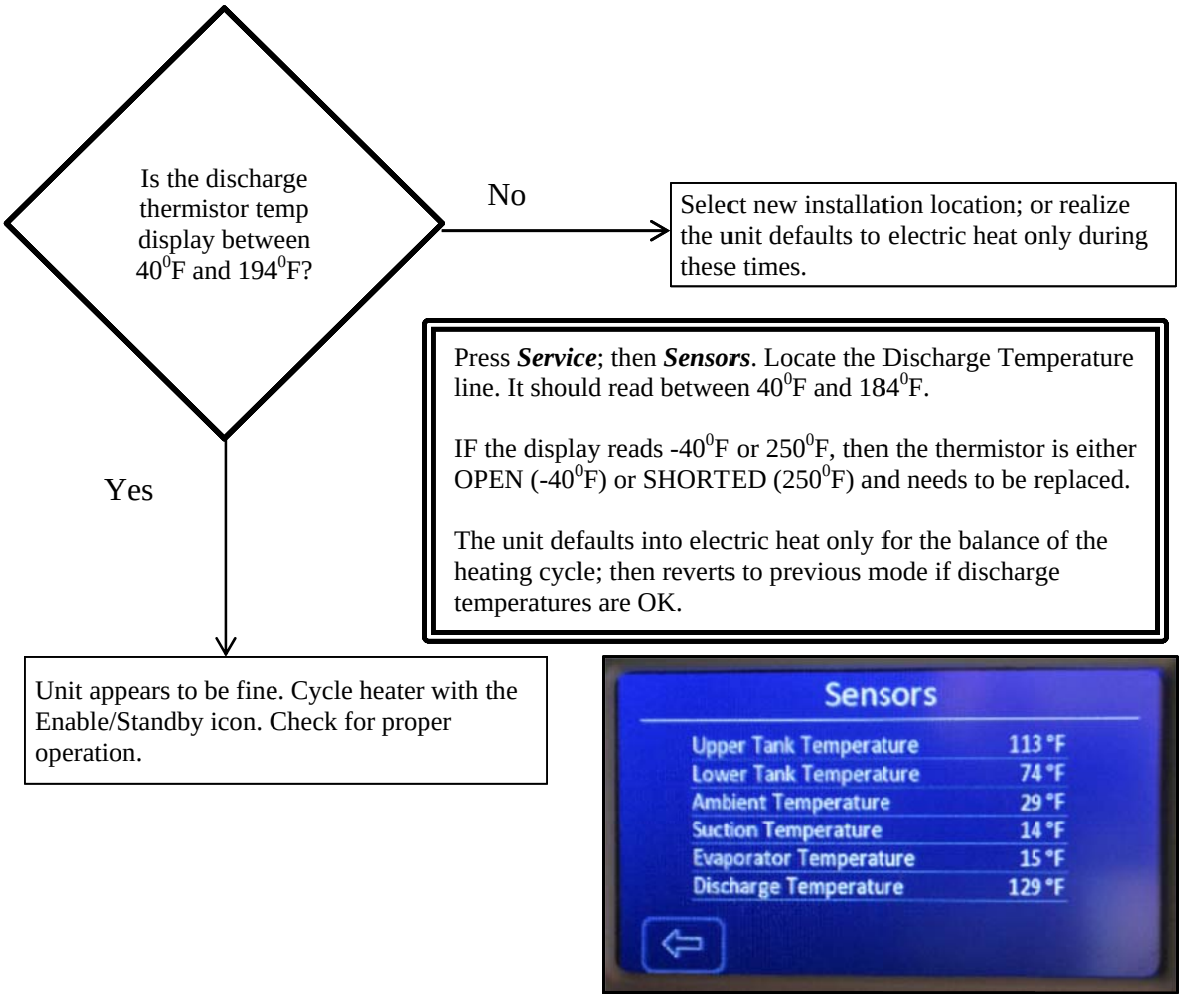
Indications	**Display**
If compressor has run at least 3 minutes, and (Discharge Temp - Suction Temp) < 35 F, the control will lock the compressor out for the remainder of the heat demand.	**A004 Comp. Shutdown: Discharge-Suction Trip**
Troubleshooting	**Solutions**



Heat Pump Water Heater (Generation 2) Troubleshooting

Error A005 Compressor Shutdown: Discharge Temp High

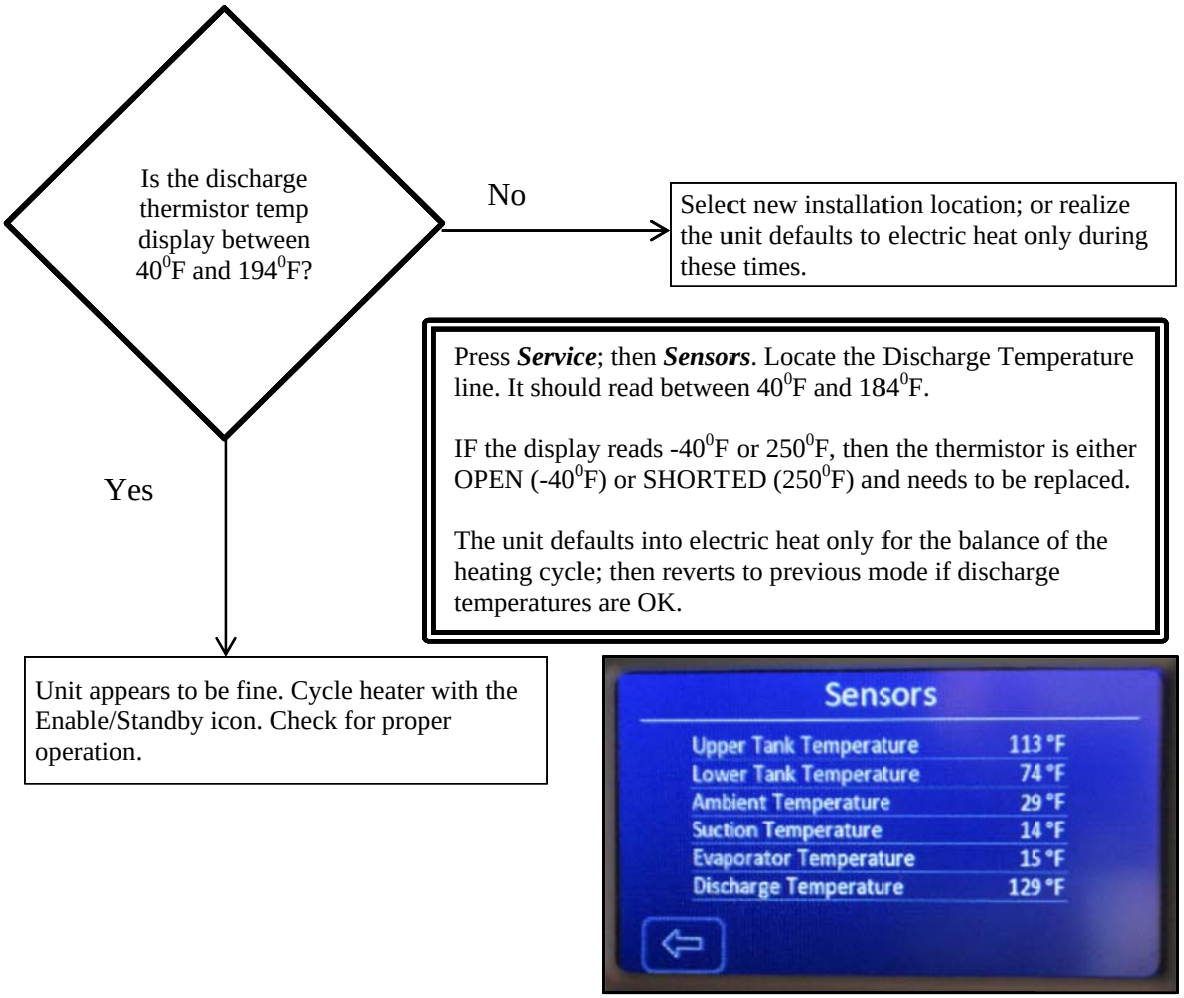
Indications	**Display**
The control shuts compressor off if discharge temperature is above 195dF. The compressor is allowed to run again after the anti-short cycle timer has expired provided the compressor has shut down less than 3 times during this demand cycle for heat.	**A005 Compressor Shutdown: Discharge Temp High**
Troubleshooting	**Solutions**



Heat Pump Water Heater (Generation 2)
Troubleshooting

Error T005 Compressor Shutdown: Discharge Temp High

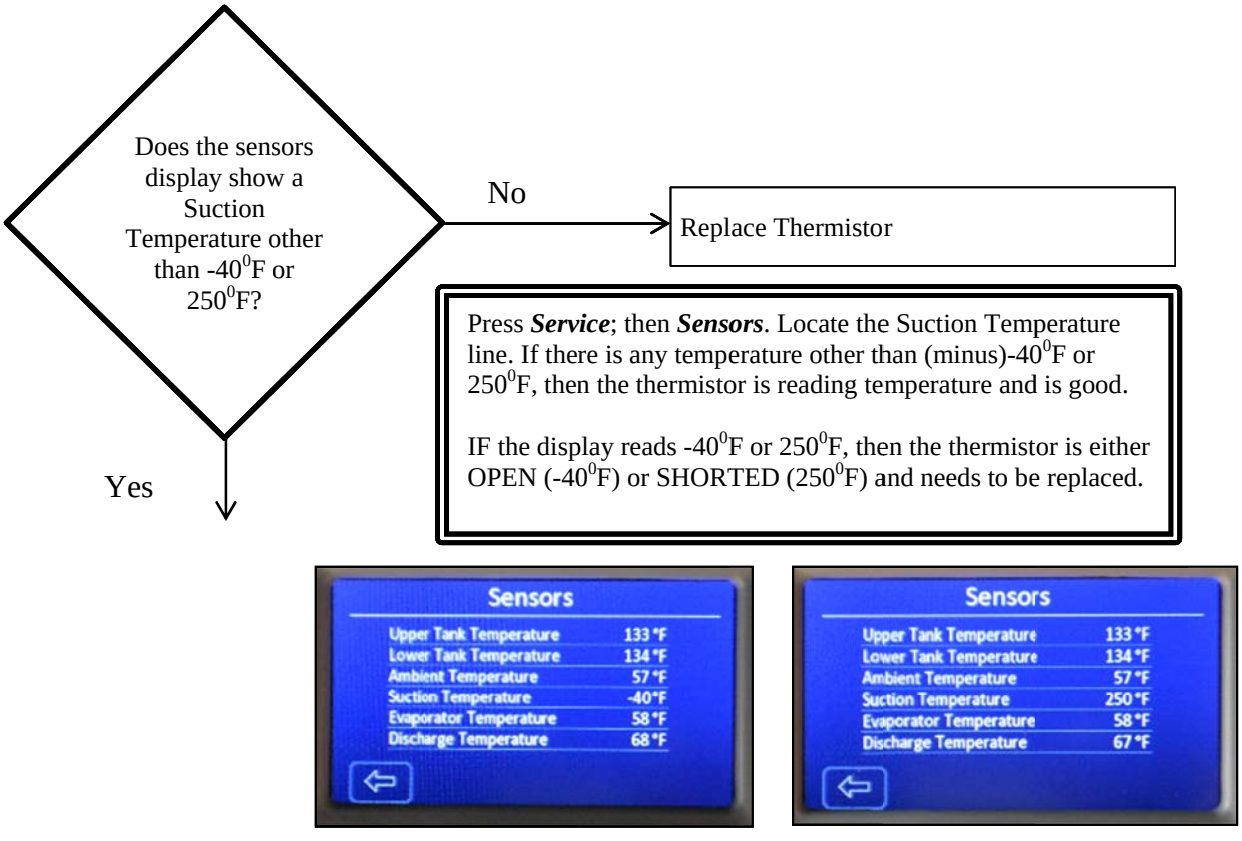
Indications	Display
The control shuts compressor off if discharge temperature is above 195dF. The compressor is allowed to run again after the anti-short cycle timer has expired provided the compressor has shut down less than 3 times during this demand cycle for heat.	**T005 Compressor Shutdown: Discharge Temp High**
Troubleshooting	**Solutions**
1. This is a temporary alarm. After the 5 minutes anti-short cycle timer expires, the heater makes another attempt for compressor. 2. If the temporary alarm, T005, occurs three times in one demand for heat cycle, the unit fault to A005.	Press Clear Alarms to bypass T005 code. Unit goes into anti-short cycle for 5 minutes; then makes compressor attempt. See A005 above



Heat Pump Water Heater (Generation 2) Troubleshooting

Error A006 Compressor Shutdown: Suction Temp Low

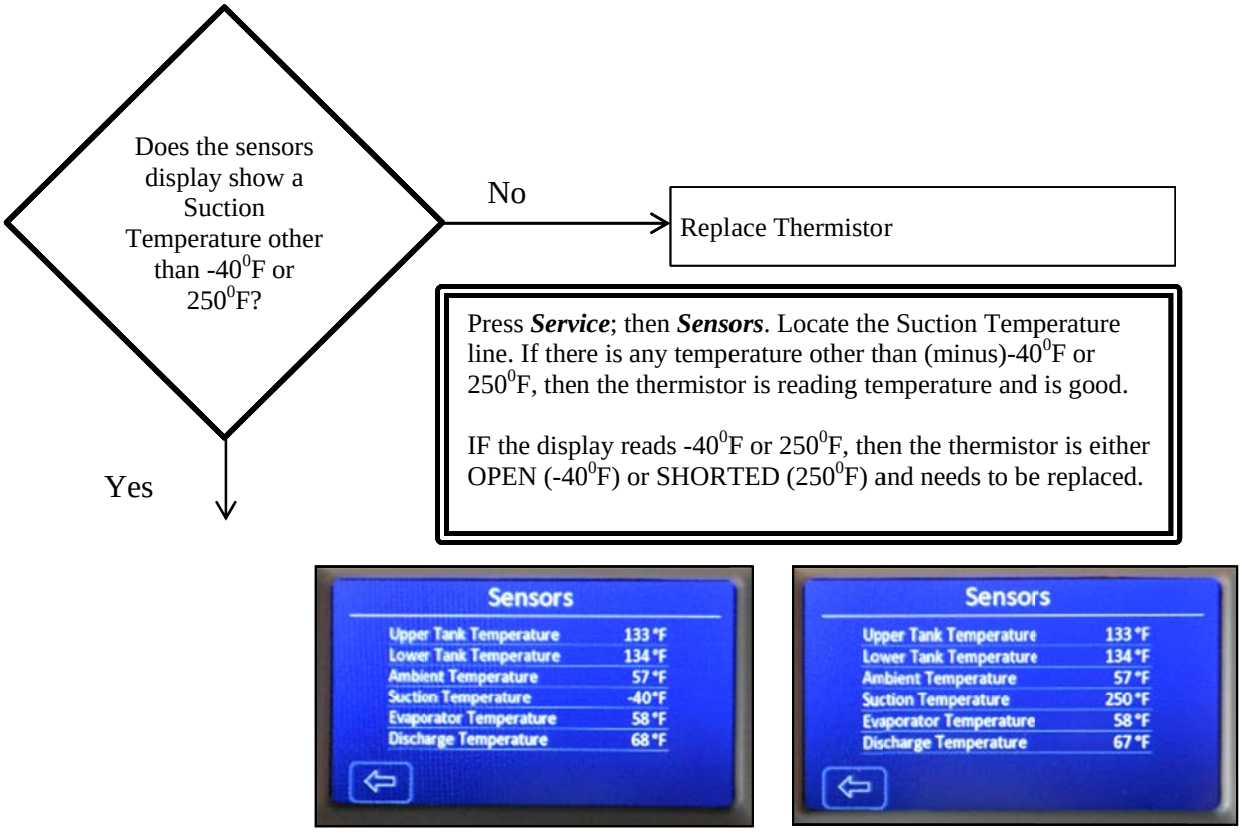
Indications	**Display**
Suction temperature below 37^{0}F for more than 3 minutes. The control ignores suction temperature for the first 90 seconds of each compressor cycle. The control ignores the suction temperature an additional 90 seconds after the evaporator fan speed has stepped up to high because of low suction temperature. The control shuts off the compressor if suction temperature remains below 37F for 120 seconds. The compressor is allowed to run again after the anti-short cycle timer has expired provided the compressor has shut down less than 3 times during this demand cycle for heat.	**A006 Compressor Shutdown: Suction Temp Low**
Troubleshooting	**Solutions**



Heat Pump Water Heater (Generation 2)
Troubleshooting

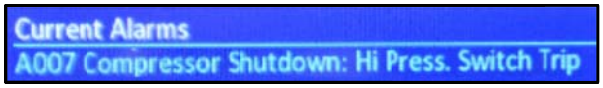
Error T006 Compressor Shutdown: Suction Temp Low

Indications	Display
Suction temperature below 37^{0}F for more than 3 minutes. The control ignores suction temperature for the first 90 seconds of each compressor cycle. The control ignores the suction temperature an additional 90 seconds after the evaporator fan speed has stepped up to high because of low suction temperature. The control shuts off the compressor if suction temperature remains below 37F for 120 seconds. The compressor is allowed to run again after the anti-short cycle timer has expired provided the compressor has shut down less than 3 times during this demand cycle for heat.	**T006 Compressor Shutdown: Suction Temp Low** 
Troubleshooting	**Solutions**
1. This is a temporary alarm. After the 5 minutes anti-short cycle timer expires, the heater makes another attempt for compressor. 2. If the temporary alarm, T005, occurs three times in one demand for heat cycle, the unit fault to A006.	Press Clear Alarms to bypass T005 code. Unit goes into anti-short cycle for 5 minutes; then makes compressor attempt. See A006 above.



Heat Pump Water Heater (Generation 2)
Troubleshooting

Error A007 Compressor Shutdown: Hi Press. Switch Trip

Indications	Display
The high pressure switch is part of the HPWH system that monitors the R410a refrigerant pressure. The control de-energizes compressor if the high pressure switch is open. The compressor is allowed to run again after the anti-short cycle timer has expired provided compressor has shut down less than 3 times during this demand cycle for heat.	**A007 Compressor Shutdown: Hi Press. Switch Trip** 
Troubleshooting	**Solutions**
In most cases, this alarm is caused the refrigerant has not had time to transfer its heat into the water inside the tank. The returning refrigerant is at a higher temperature than normal and create a higher pressure inside the HPWH system.	Lower tank thermostat to less than 135^0F Move from High Demand Mode to Energy Saver Mode

Heat Pump Water Heater (Generation 2)
Troubleshooting

Error T007 Compressor Shutdown: Hi Press. Switch Trip

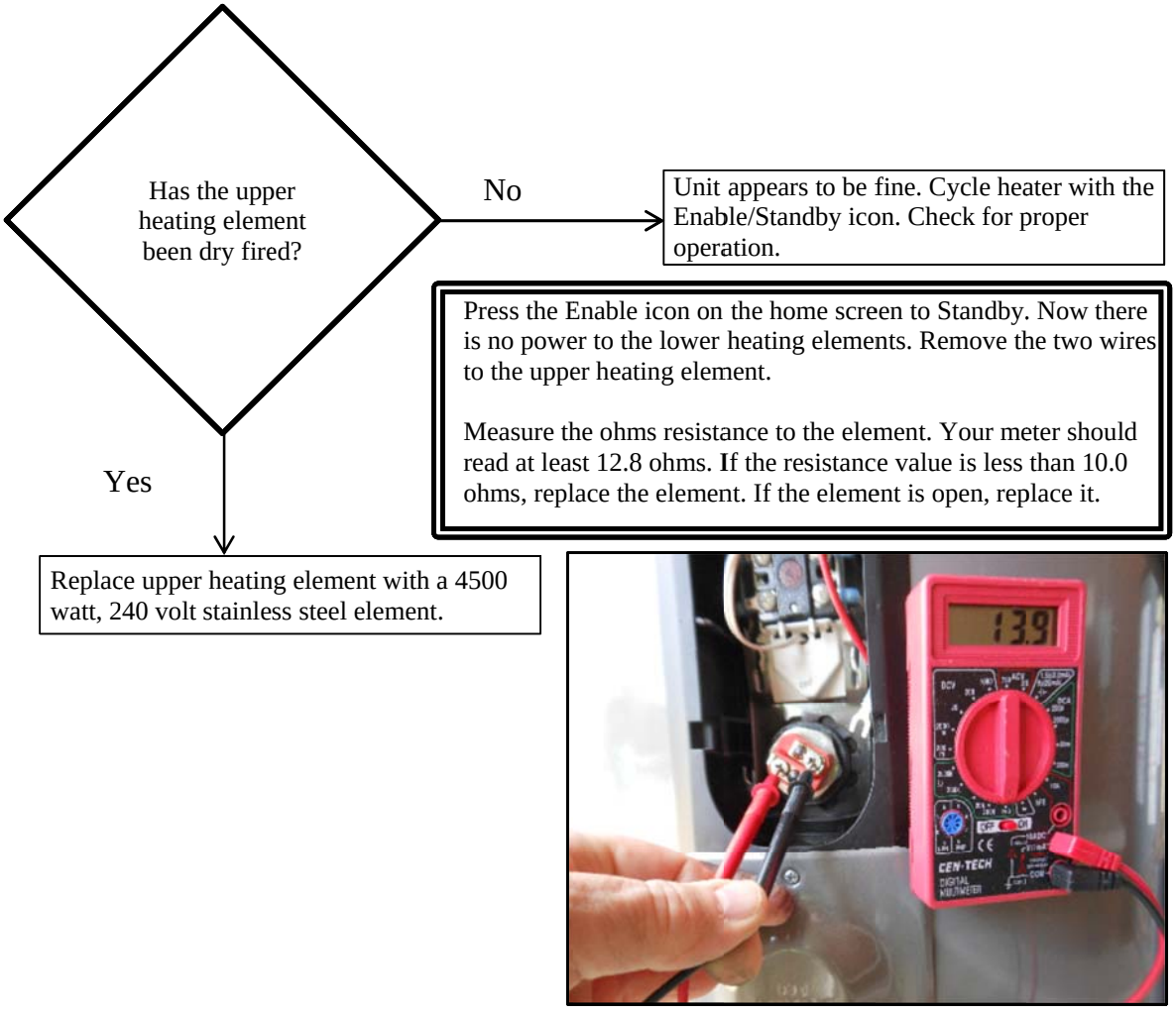
Indications	Display
The high pressure switch is part of the HPWH system that monitors the R410a refrigerant pressure. The control de-energizes compressor if the high pressure switch is open. The compressor is allowed to run again after the anti-short cycle timer has expired provided compressor has shut down less than 3 times during this demand cycle for heat.	**T007 Compressor Shutdown: Hi Press. Switch Trip** 
Troubleshooting	**Solutions**
1. This is a temporary alarm. After the 5 minutes anti-short cycle timer expires, the heater makes another attempt for compressor. 2. If the temporary alarm, T007, occurs three times in one demand for heat cycle, the unit faults to A007.	Press Clear Alarms to bypass T007 code. Unit goes into anti-short cycle for 5 minutes; then makes compressor attempt. See A007 above.

Heat Pump Water Heater (Generation 2) Troubleshooting

Error A008 Detected Dry Fire Condition

Indications	Display
Control senses the conditions are present to dry fire the upper heating element and goes into alarm mode. Control samples upper tank thermistor; .then turns on upper element for 30 seconds; then OFF. If upper tank thermistor temp rises more than 2.5^{O}F in 45 seconds, then control locks out.	**A008 Detected Dry Fire Condition** 

Troubleshooting	Solutions
None. You do need to verify the upper heating element has not been damaged with an OHMS resistance test.	Fill tank and purge all air from the storage area by running a hot water faucet for 60 seconds. This unit has a hot outlet "J" tube. Purging from the T&P valve will not work to void all air from the storage tank.



Heat Pump Water Heater (Generation 2)
Troubleshooting

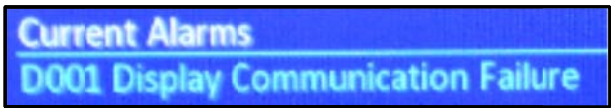
Error A500 Configuration Data Restore Failure

Indications	**Display**
This alarm means that the control board configurations were verified as faulty on a "restore". In general, the control will run on defaults but board replacement may be advised.	**A500 Configuration Data Restore Failure**
Troubleshooting	**Solutions**
None. This is all about software and data configuration. The control knows what it needs to do. Remove the control cover. Check for a blinking communications light between the two RJ45 connections in the upper left hand portion of the control board. Check the TSD board. Look for a blinking communications light directly below the RJ45 connection.	Locate the 'reset' button on the control panel. Press and hold for 3 seconds. Unit should return to normal operations. If not, replace the control.

Control board. Blinking light between the two RJ45 connectors indicate a communications attempt with TSD.

Heat Pump Water Heater (Generation 2)
Troubleshooting

Error D001 Communications Error

Indications	**Display**
The display has lost communications with the control board. This is a hardware or software issue. Most probably it is the communications cable with the RJ25 jacks on both ends that connect the control board to the TSD. This fault is NOT logged in Alarm History.	**D001 Communications Error** 

Troubleshooting	**Solutions**
1. Remove the control cover. Check for a blinking communications light between the two RJ25 connections in the upper left hand portion of the control board. Blinking light between the two RJ25 connectors indicate a communications attempt with TSD 2. Check the TSD board. Look for a blinking communications light directly below the RJ25 connection. Blinking light directly below the RJ25 connection indicates a communications attempt. The second, stead ON, LED light indicates power to the TSD. 3. Check LED3 and LED 4 at the botton of the TSD board. If LED3 is blinking slowly, then the board is normal. IF LED4 is steady ON, the unit has a fault. 4. Gently wiggle the RJ25 connection wires. The problem may be a short or open in the communications cable. 5. Remove and reverse the RJ25. This solution may work or it may not. 6. Press SW1 on the TSD control board to reset the board. 7. If all of the above fail, then replace the communications cable.	1. Locate the ‘reset’ button on the control panel. Press and hold for 3 seconds. Unit should return to normal operations. 2. Replace the communications cable. Control Board:  Touch Screen Display Board