

# Installation, Operating and Service Instructions for

# ALTA

Model: ALTAC-136

- Combi Boiler/Water Heater
- Condensing
- Direct Vent
- Gas Fired

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## Appendix

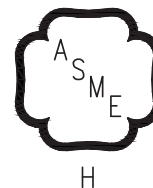
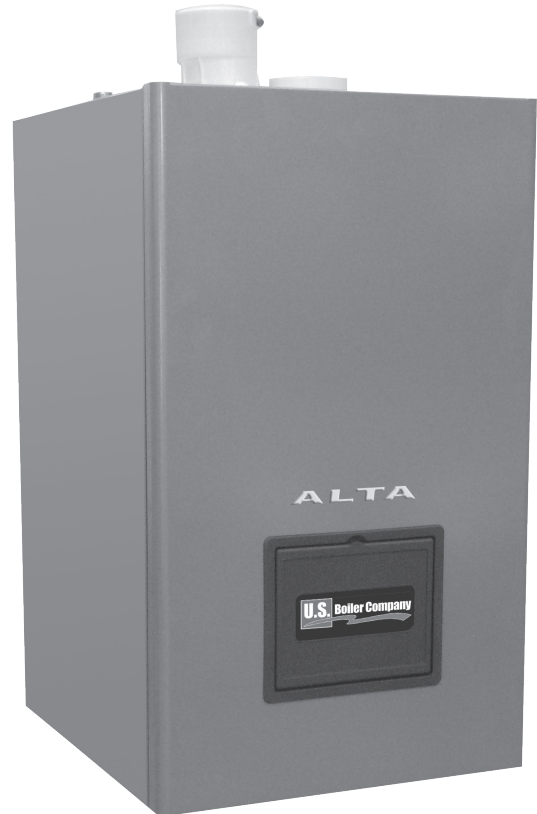
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## TO THE INSTALLER:

Affix these instructions adjacent to boiler.  
Provide model number and serial number when seeking information and support.

## TO THE HOMEOWNER:

Retain these instructions for future reference.  
Contact heating installer or technician for all issues and support.



## WARNING

This boiler must only be installed, serviced, or repaired by a qualified heating installer or service technician. Improper installation, adjustment, alteration, service or maintenance can cause severe personal injury, death, or substantial property damage. For assistance or additional information, consult a qualified installer, service agency, or the gas supplier. Read these instruction carefully before installing.












# 19 Troubleshooting

## WARNING

**Electrical Shock Hazard.** Turn off power to boiler before working on wiring.

### A. Troubleshooting with No Active Fault Code Displayed

**Table 19-1: Troubleshooting with No Active Fault Code**

Indication	Possible Causes	Corrective Action
Display Completely Dark And Fan Off	No 120VAC supplied to boiler.	Check breaker and wiring between breaker panel and boiler.
Display Completely Dark, Fan Running	Blown T1.0A Fuses (supplies power to control).	Check T1.0A Fuse, replace with a 1 Amp, 250V, Slow Blow, 5x20mm if necessary.
	Loose low voltage blower wiring.	Check low voltage blower wiring connections.
	Control damaged.	Replace control.
Boiler Not Responding To Call For  Heat, Icon Is Off	 Boiler On/Off Switch is "Off", (Status  ).	Switch Quick Menu Item  , Boiler On/Off Switch, "On".
	Remote thermostat is satisfied, loose thermostat wiring.	Check remote thermostat setting and wiring.
	Blown T0.5A Fuse (supplies power to thermostats).	Check T0.5A Fuse, replace with a 0.5 Amp, 250V, Slow Blow, 5x20mm if necessary.
Boiler Not Responding to Call For  Heat, Icon is On	Boiler is in standby, (Status  , temperature is above setpoint.	Check temperature setpoint setting.
	Faucet icon is on	Servicing DHW demand.
	Boiler is in Warm Weather Shutdown, (Status  ).	Feature not available with local user display.
No Central Heat, Boiler Runs	3-way valve defective.	Check 3-way valve, replace if necessary.
	3-way valve wiring defective.	Check wiring to 3-way valve.
	Recirculation piping problem.	Recirculation sensor does not detect flow. Check piping. See Figure 11-3.
Boiler Running But System Or Auxiliary Pump Not Running	Pump setting is incorrect.	Switch  Menu Item  , System Pump Selection. Refer to Table 16-15.
	Loose wiring to pump	Check pump wiring.
	Pump damaged.	Replace pump.
Water At Shower Or Faucet Is Cold	Draw rate exceeds combi's rated capacity.	Verify draw rate and temperature rise are both at or below ratings shown in Table 3-1.
	3-way valve defective.	Check 3-way valve can respond to CH and DHW demands and has desired effect on water flow, replace if necessary.
	3-way valve wiring defective.	Check 3-way valve wiring.
	Tempering valve defective.	Check tempering valve (field supplied) by adjusting valve and observing output, replace if necessary.
	Tempering valve adjustment required.	Check setting on tempering valve (field supplied).
	Control DHW setpoint too low.	Press + / - Display buttons to adjust DHW setpoint.
	Defective DHW Flow Sensor	Check DHW Flow Sensor is functioning properly.
Plate heat exchanger dirty.	Check plate heat exchanger performance and back flush if necessary. Replace if back flushing does not improve performance.	

# 19 Troubleshooting *(continued)*

**Table 19-1: Troubleshooting with No Active Fault Code (continued)**

Indication	Possible Causes	Corrective Action
<b>Water Hammer</b>	Low Water flow through plate heat exchanger.	Remove and inspect plate heat exchanger, flush heat exchanger if required.
	Air in system piping.	Cycle power to boiler to initiate an air elimination cycle to help remove air from boiler water.
	Low system water pressure.	Check boiler water pressure, adjust feedwater as required.
<b>Rough ignitions</b>	Gas pressure problem.	Refer to Table 3-4 for required pressure range.
	Dirty/damaged burner.	Refer to Section 18 Service and maintenance for proper procedure to check burner. Replace if necessary.
	Dirty/damaged ignitor/flame sensor	Refer to Section 18 Service and Maintenance for proper procedure to check ignitor/flame sensor. <ul style="list-style-type: none"> <li>• Check spark gap and ignitor/flame sensor distance to burner. Replace if necessary.</li> </ul>
<b>Relief Valve Opening</b>	System pressure exceeds relief valve setting.	Lower system pressure below rating of supplied safety relief valve.
		Replace standard safety relief valve with higher rated valve up to the maximum pressure of the heat exchanger. (50 psi)
		Improperly sized expansion tank.

In the event of high CO (exceeding 200 ppm) follow below steps in specified order:



1. Confirm fuel settings (see Section 15 Start-up and Checkout)
  - A. Gas valve setting (1) for Natural Gas (2) for LP
  - B. Control fuel gas selection [A05] (0) for Natural (1) for LP
2. Perform manual calibration 5 times per Table 16-11 [A08].
3. Follow instructions in Section 18 Service and Maintenance to
  - A. Check burner for damage or deterioration
  - B. Check ignitor flame sensor distance to burner per Figure 18-3.
4. Consult manufacturer

# 19 Troubleshooting *(continued)*

## B. Troubleshooting with Status Numbers

In Operating Mode, use arrow keys ("↑" or "↓") to reach "5LR". Display will then alternate between "5LR" and number shown below.

**Table 19-2: Status Number Explanation**

Display	Description	Explanation
0	Self Check	When first powered up control performs an internal check that takes approximately 10 seconds.
1	Standby	No burner demand is present. This could be because there is no call for heat or because temperature has exceeded set point plus differential. If there is heating demand, pump(s) will run in standby.
2	Waiting For Air Pressure Switch To Close	When a burner demand appears, blower starts and waits for the air pressure switch to close, proving air flow.
3	Prepurge	Once air flow is proven, blower runs for a defined period of time (less than 10s) before attempting burner ignition.
4	Burner Ignition	System is lighting burner and allowing flame to stabilize after ignition.
5	Calibration	Control system checks to confirm it is properly controlling air fuel ratio. This happens when boiler is initially powered up and periodically thereafter. When calibration is required, system checks flame ionization at both intermediate input and at low fire. This calibration process takes approximately 1 minute and is normally done during a CH demand.
6	Low Fire Hold	Burner is being driven to low fire immediately following ignition for a short period of time to minimize likelihood of temperature overshoot if heating load is too small.
7	Rate Limit	Firing rate is being limited due to an abnormal condition, such as: <ul style="list-style-type: none"> <li>• High Supply water temperature,</li> <li>• High Differential Water temperature,</li> <li>• High Flue Gas temperature,</li> <li>• Raised minimum modulation due to loss of flame during run H24.</li> </ul>
8	Run (Modulate)	Burner is on and is being allowed to freely modulate to match the heating load.
9	Postpurge	Blower runs for a defined period after burner shutdown to clear combustion products from boiler and vent system.
10	Pump Air Elimination	When the boiler is first powered up, boiler pump and 3-way valve are cycled for 2 minutes to remove air from boiler. Pump air elimination also occurs after there has been an over temperature Hold. This process may be interrupted by pressing:  <b>reset</b> button.
11	Standby Delay	Boiler is in Hold status and boiler is not running and hold code is stored in history b menu. Boiler will automatically restart once condition that caused Hold is corrected. Refer to Figure 19-5 for hold code name, possible causes and corrective action.
12	Lockout	When lockout occurs, boiler will shut down and event is stored in history, b, menu. Once condition that caused the lockout is corrected, boiler remains shut down until a reset has been performed by pressing:  <b>reset</b> button. Refer to Figure 19-5 for lockout code name, possible causes and corrective action.
13	Boiler On/Off Switch (AOI)	Burner and pumps have been switched off by parameter, control is disabled via Quick Menu item AOI.
14	Warm Weather Shutdown	When Warm Weather Shutdown is enabled, boiler and pumps are prevented from responding to a CH demand. Boiler and pumps are free to respond to a DHW demand. Feature not available with local user display

## 19 Troubleshooting *(continued)*

### C. Troubleshooting with Diagnostic Codes

In Diagnostic and Quick Menu Mode, use the arrow keys ("↑" or "↓") to reach "c" menu and press "enter" button to view diagnostic codes.

**Table 19-3: Diagnostic Menu**


Display	Name	Description
c 01	Active Detailed Fault Code	Control has an extensive fault code system with corrective actions defined. If a fault code exists, it should be first place to look for diagnosing a problem. Refer to Table 19-6 for detailed code condition description.
c 02	Demand Source 1 Standby 2 Central Heat 1 3 Central Heat 2 4 Domestic Hot Water 5 Sequencer Control 6 CH Frost Protection 7 DHW Frost Protection 8 Boiler On/Off Switch 9 Warm Weather Shutdown	Reason or cause of boiler demand is displayed with conditions that can prevent a boiler start.
c 03	Fan Speed Demanded (RPM x 100)	Control output to blower. 136 combi has following RPM: Maximum DHW Modulation = 7200 RPM Maximum CH Modulation = 5816 RPM Minimum Modulation = 1016 RPM
c 04	Fan Speed Feedback (RPM x 100)	Should remain close to Fan Speed Demanded. Large differences may mean there is a problem with blower.
c 05	3-way Valve Status (0) DHW, (1) CH	3-way valve and pump status indicate controller 120 VAC output status.
c 06	System Pump On/Off Status	
c 07	Boiler Pump On/Off Status	
c 08	Auxiliary Pump On/Off Status	
c 09	Flame Signal	Flame signal strength displayed in internal calibrated units.
c 10	Safety Software Revision	Safety software loaded on control.
c 11	Application Software Revision	Application software loaded on control.
c 12	Parameter Revision	Indicates factory default parameter setting loaded onto the control.
c 13	Boiler Size Status: (1) 136 combi	Read from safety software boiler type status. Must be confirmed after a control board replacement.

# 19 Troubleshooting *(continued)*

D. Troubleshooting with Active Fault Code.

Control uses following codes to describe abnormal operation:

**Table 19-4: Lockout/Hold/Warning Symbol Description**

Code	Type	Boiler Status	Description
E	Lockout	Shutdown	When a lockout occurs, boiler will shut down and event is stored in history, <b>b</b> , menu. Once condition that caused lockout is corrected, boiler remains shut down until a reset has been performed by pressing  <b>reset</b> button.
H	Hold	Shutdown	When a Hold occurs, boiler will shut down. Event is stored in history, <b>b</b> , menu. Boiler will automatically restart once condition that caused hold is corrected.
	Warning	Free to operate	When a Warning occurs, an abnormal condition has affected boiler operation and event is stored in history, <b>b</b> , menu. Boiler continues to operate.

**Table 19-5: Active Fault Code and Corrective Actions**

Code	Name	Possible Causes	Corrective Action
H01	Anti-Short Cycle	[ 1.0] Anti-short cycle boiler start delay, while thermostat demand present, boiler has cycled off and restart is delayed.	Boiler will restart after minimum off time of 1 minute.
		[ 1.1] Urgent calibration cooling delay boiler start delay, urgent calibration is present, waiting for supply temperature to decrease.	Boiler will start after supply temperature drops below 95°F (35°C). Low supply temperature helps to ensure a successful calibration.
		[ 1.2] Flow switch closed delay boiler start delay, flow switch is closed, waiting for flow switch to open.	Boiler pump will start after flow switch open state is proven. Maximum waiting time is 30s, otherwise E5.4 is set.
H02	Safety Limit Open	External limit.	If water temperature too high see H04/E04 for corrective action. <ul style="list-style-type: none"> <li>• Check external limit setting, verify limit setting.</li> <li>• Check external limit wiring.</li> <li>• If external limit is not used, check jumper is installed according to wiring diagram.</li> </ul>
		Optional (LWCO)	Check LWCO indications, if yellow light "On": <ul style="list-style-type: none"> <li>- Verify that system is full of water and all air has been properly purged from system.</li> <li>- Check automatic air vent is unobstructed and properly functioning, a blocked air vent can result in low water condition.</li> </ul> If yellow and green light "Off", check LWCO wiring harness.
			If LWCO is not used, check jumper is installed according to wiring diagram.
		Thermal Fuse.	Check thermal fuse for continuity. If "open" consult manufacturer.
	Loose wire.	Check limit string wiring.	

# 19 Troubleshooting *(continued)*

**Table 19-5: Active Fault Code and Corrective Actions (continued)**

Code	Name	Possible Causes	Corrective Action
H04 E04	Supply High Limit	Heating load at time of error below minimum firing rate of boiler	Test individual zones and ensure proper zone sizes.
		Defective system pump or no flow in primary loop.	Check pump operation, replace if necessary.
		Defective boiler pump and boiler loop flow is too low or not consistent.	Check boiler differential temperature (supply-return) at maximum fire. Check piping or replace pump if differential temperature is too high. Verify boiler pump is set to speed 3 (Figure 15-2).
		Incorrect wiring causing boiler operation when no zones are calling.	Check thermostat and zone panel operation to ensure proper boiler interaction, each zone demand should produce expected pump and boiler response, repair wiring or replace panel as necessary.
H05 E05	Low Water Flow	Air in system piping.	Verify system is full of water and all air has been properly purged from system. Cycle power to initiate pump air elimination sequence.
		Blown T5.0A Fuse (supplies power to pumps).	Check T5.0A Fuse, replace with a 5 Amp, 250V, Slow Blow, 5x20mm if necessary.
		Piping problem.	Verify boiler is piped properly into heating system. Refer to Figure 10-2.
		Pump problem.	Verify boiler pump is running and set to speed 3 (Figure 15-2).
		Flow switch defective.	Check boiler flow switch, check switch wiring.
H06 E06	Flue High Limit	Heat exchanger dirty.	<ul style="list-style-type: none"> <li>Inspect heat exchanger. Refer to Section 18 Service and Maintenance for guidance to clean flue side of heat exchanger.</li> <li>Verify vent/air intake pipes are properly installed and unobstructed.</li> </ul>
		Boiler over-fired	Consult manufacturer.
H07	Return Temp Higher Supply	Flow through boiler reversed.	Verify correct piping and pump orientation. Refer to Figure 10-2 in this manual.
		Supply or return sensor defective or not installed properly.	Check supply and return sensors, correct installation or replace if required.
		No boiler water flow.	Verify system is purged of air and that appropriate valves are open. Also verify pump is running and set to speed 3 (Figure 15-2).
H08	Return Sensor Fault	Shorted or miswired return temperature sensor.	<ul style="list-style-type: none"> <li>Check return sensor wiring, correct wiring if necessary.</li> <li>Check return sensor. Refer to Table 19-7. Replace if necessary.</li> </ul>


# 19 Troubleshooting *(continued)*

**Table 19-5: Active Fault Code and Corrective Actions (continued)**

Code	Name	Possible Causes	Corrective Action
H09 E09	Supply Sensor Fault	Shorted or miswired supply temperature sensor.	Check supply sensor wiring, correct wiring if necessary. Measure resistance of each thermistor and compare. Refer to Table 19-7. Replace sensor if necessary.
H10	DHW Sensor Fault	Shorted or miswired DHW temperature sensor.	<ul style="list-style-type: none"> <li>• Check DHW sensor wiring, correct wiring if necessary.</li> <li>• Check DHW sensor. Refer to Table 19-7. Replace if necessary.</li> </ul>
H11 E11	Flue Sensor Fault	Shorted or miswired flue temperature sensor.	<ul style="list-style-type: none"> <li>• Check flue sensor wiring, correct wiring if necessary.</li> <li>• Refer to Table 19-7 Replace sensor if necessary.</li> </ul>
H12	Outdoor Air Sensor Fault	Shortened or miswired outdoor air temperature sensor.	Check outdoor air sensor wiring, correct wiring if necessary. Check outdoor sensor, Refer to Table 19-8.
H13	Header Or Recirculation Sensor Fault	Shorted or miswired header or recirculation temperature sensor.	Check header or recirculation sensor wiring, correct wiring if necessary. Check Header sensor, Refer to Table 19-7.
H14	0-10V/4-20mA Input Fault	Shorted or miswired 0-10Vdc / 4-20mAdc input.	Check 0-10/4-20 input wiring, correct if necessary.
		Analog input parameter setup incorrect.	Check and correct parameter settings (feature not available with local user display).
E15	APS Defective	The air pressure switch is defective, failed to open.	<ul style="list-style-type: none"> <li>• Remove jumper from air proving switch.</li> <li>• Check switch, combine with below connection and wiring. Check switch air tube is connected and unobstructed. Replace if necessary.</li> </ul>
		The blower is running when it should not.	Blower is running before start sequence. This can be caused by a loss of communication between blower and control resulting in blower going to max speed. Possible cause is a defective wiring harness, blower or control.
H16 E16	Low Combustion Air Flow	Defective air proving switch.	Check switch, connection and wiring. Check tube is connected and unobstructed. Replace if necessary.
		Air flow is blocked.	Check vent, air inlet, heat exchanger and burner. Remove obstruction.
		Blower wiring fault.	Check power and speed control wiring to blower.
		Blower Damaged.	Check blower and replace if necessary.

# 19 Troubleshooting *(continued)*

**Table 19-5: Active Fault Code and Corrective Actions (continued)**

Code	Name	Possible Causes	Corrective Action
H17 E17	Invalid Safety Parameters	[ 17.0] Control in program mode.	Control was left in laboratory mode, cycle power.
		[ 17.4] Boiler Type and BCC mismatch.	<p> <b>WARNING</b></p> <p><b>Asphyxiation Hazard.</b> Boiler type is factory set and must match boiler model. Boiler type BCC determines minimum and maximum blower speeds. Incorrect BCC could cause hazardous burner conditions and improper operation resulting in severe personal injury, death or substantial property damage.</p> <p>To verify boiler type BCC is correct, a qualified technician should do the following: Check boiler model and insert correct Boiler Type BCC. Check wiring to Model Key located inside control enclosure.</p>
		[ 17.1, 17.2, 17.3, 17.5, 17.6] Control is defective	Cycle power to control, if problem persists replace control or BCC.
		[ 17.7] Parameter transfer from a new BCC is required or in progress.	Remove and reconnect BCC and cycle power. If problem persists replace control or BCC.
		[ 17.5] Invalid fuel or altitude selection or power is cycled too soon after a fuel selection	Select desired fuel and altitude. Note only 0-2,000 ft. is valid altitude selection. If fuel selection [R05] on local display and power is cycled too fast, select original fuel to clear alarm before reselecting desired fuel.
		[ 17.8] BCC is missing, has incompatible software revision or is damaged.	Remove and reconnect BCC and cycle power. If problem persists replace control or BCC.
E18	Invalid Application Parameters	[ 18.0] Application parameters are not valid.	Normal condition following a parameter download, set Factory Defaults, parameter R 10 . (Table 16-11 Menu R, Quick Menu)
		[ 18.1] Parameter Model Mismatch.	Repeat reset to factory default using parameter R 10. If problem persists replace control.
		[ 18.2] CH Setpoint and Modulation source both selected.	(Feature not available with local user display). Only CH Setpoint or Modulation source may be selected. Select only a single feature. Check Central Heat Modulation Rate Source and Central heat Setpoint Source.
		[ 18.3] Invalid header sensor configuration.	(Feature not available with local user display). Header/recirculation Sensor selection must be set to "Header" when selecting CH modulation sensor selection to "Header".
		[ 18.4] Invalid Stepped modulation parameters (Start Offset-Recycle Limit)<5°F.	(Feature not available with local user display). Check Stepped Modulation Start Offset is 5°F greater than Stepped Modulation Recycle offset. Check Flow and Flue temperature Stepped Modulation Start Offset is 5°F greater than Flow and Flue temperature Stepped Modulation Recycle Offset.
		[ 18.5] Invalid Setpoint interpolation parameters.	(Feature not available with local user display). Check CH 20mA Water Temperature is greater than CH 4 mA Water Temperature.
[ 18.6] Invalid comfort mode configuration.	(Feature not available with local user display). Comfort mode selected and Header/Recirculation Sensor selection is not set to "Recirculation" or Auxiliary thermostat input selection not set to "Recirculation Enable".		



# 19 Troubleshooting *(continued)*

**Table 19-5: Active Fault Code and Corrective Actions (continued)**

Code	Name	Possible Causes	Corrective Action
E18	Invalid Application Parameters	[ 18.7 ] Factory defaults not turned on.	Ensure BCC is installed and select <i>R 10</i> factory Default "On" see Table 16-11.
		[ 18.8 ] Pump mismatch	Boiler pump set to 0 or boiler pump output set to 3 and Aux. pump output is not set to 3.
E19	Gas Valve Or Blower Fault	Air fuel ratio is persistently outside acceptable limit.	Check wiring to gas valve and blower. If wiring is OK, replace blower and retry. If wiring OK, replace gas valve and retry.
H20 E20	Ignitor/flame sensor Or Burner Fault	Dirty/damaged ignitor/flame sensor	<ul style="list-style-type: none"> <li>Refer to Section 18 Service and Maintenance for proper procedure to check ignitor/flame sensor.</li> <li>Check ignitor/flame sensor distance to burner.</li> <li>Replace if necessary.</li> </ul>
		Ignitor/flame sensor wiring issue.	Check the ignitor/flame sensor wiring and earth contacts at burner.
		Dirty/ damaged burner.	<ul style="list-style-type: none"> <li>Refer to Section 18 Service and Maintenance for proper procedure to check burner.</li> <li>Replace burner if necessary.</li> </ul>
H21 E21	Gas Valve Fault	[E2 1.3] Gas valve wiring problem.	Check wiring to gas valve.
		Defective Gas Valve.	If problem persists, replace gas valve. If problem persists, replace control.
H22 E22	No Flame At Ignition	No gas, insufficient gas supply pressure.	Verify no air in gas line. Check gas supply pressure. Check gas pressure down stream of valve.
		Ignition Cable not plugged in.	Connect ignition harness, check cable has continuity.
		Fuel Gas Selection, parameter <i>R05</i> or gas valve position is incorrect.	Check Fuel Gas Selection, parameter <i>R05</i> and fuel gas valve setting. Both selections must be set to the same fuel type. Refer to Figure 15-3.
		Lean ignition mixture	After verifying no air in gas piping, gradually increase (1% at a time) <i>F07</i> until successful ignition.
H23 E23	Flame Out Of Sequence	Blocked Condensate Trap.	Check trap and clean if necessary.
		Ignitor/flame sensor or burner fault.	Check ignitor/flame sensor or burner (i.e. burner can touch ignitor/flame sensor if welding is damaged).
		Ignitor/flame sensor wiring faulty.	Check ignitor/flame sensor wiring.
H24 E24	No Flame After Ignition	Gas supply pressure dropped after gas valve opened.	Check regular gas flow to boiler and verify no air in gas line.
		Wind => raised min. capacity value.	Let the system work with raised min. capacity.
		Ignitor/flame sensor or burner fault.	Check ignitor/flame sensor or burner (e.g. burner can touch ignitor/flame sensor if welding is damaged), replace if necessary.
		Blocked condensate trap.	Check the condensate trap and clean if necessary.
		Fuel Gas Selection, parameter <i>R05</i> or gas valve position is incorrect.	Check Fuel Gas Selection, parameter <i>R05</i> and fuel gas valve setting. Both selections must be set to same fuel type. Refer to Figure 15-3.
		Control damaged.	Replace control if necessary.

## 19 Troubleshooting *(continued)*

**Table 19-5: Active Fault Code and Corrective Actions (continued)**

Code	Name	Possible Causes	Corrective Action
H25 E25	Hardware Fault	Control damaged.	Check control, try cycle power, replace if necessary.
H26	Calibration Fault	Too long running without running at minimum capacity. Adaptation has not been possible.	Cycle power to initiate calibration. After H24 boiler runs at forced raised minimum modulation.
		Too long running without running at calibration capacity approx. 47%. Calibration has not been possible.	Refer to Supply High Limit (Code H04/E04) for corrective actions. Cycle power to initiate a calibration.
H27	120 VAC Supply Fault	120 VAC supply voltage less than 73 VAC.	Check 120 VAC supply, correct issues as required.
H28	24 VAC Supply Fault	Control 24 VAC wrong frequency or high electrical noise.	Check control, replace if necessary.
E29	Excessive Reset Selection	Control  reset button has been selected too often.	To clear, cycle power to control and press  reset button above local display.
H30	Sequencer Fault	[30.0] Duplicate Slave Boiler Addresses.	Ensure each peer-to-peer boiler has a unique slave address between 1 and 8.
		[30.1] Sequencer slave has lost communication with Sequencer Master, master header sensor failure.	Check boiler to boiler connection wiring. Check master is powered and configured. Check header sensor wiring or configuration.
		[30.2] Multiple sequencer masters detected.	Check each boiler Lead Lag Master Enable, parameter L01, setup. Only one boiler may be set as Sequencer Master Enabled.
		[30.3] Modbus setpoint signal	(feature not available with local user display) Check wiring to Energy Management System
		[30.4] Modbus modulation signal	
H31	Variable Speed Pump Fault	Variable Speed Pump feedback fault	Check wiring to Variable Speed Pump. Defective pump electronics or control, replace pump or control if necessary.
H32	Zone Panel Fault	[32.0 to 32.3] Zone Panel Communication Lost	Check wiring between panels and boiler. Check Zone Panel Dip Switch Settings: - Set Master/Slave Dip Switch on zone panel to "master" all others set to "slave". - Set ZC Dip Switch Zone Panel 1 "ZC1" to "ON". Zone Panel 2 "ZC2" to "ON", etc. Cycle Power.
		[32.4] Zone Panel Electronics Failure	Check following: - Wiring Zone Panel main and daughter board. - Power up one panel at a time to isolate problem. - Replace panel if problem persists.
		[32.5] Duplicate Zone Panel	Check the following: - Each ZC Dip Switch set to a unique setting: ZC1, ZC2, ZC3, ZC4 - When multiple switches are set to "ON" the zone is reported as panel 1.

# 19 Troubleshooting *(continued)*

**Table 19-6: Detailed Fault Code (found on "c" and "b" menus)**

Code	Detailed Code	Type	Condition
H01	H01.0	Warning	Anti-short cycle delay.
	H01.1	Warning	Urgent calibration cooling delay.
	H01.2	Hold	Flow switch closed delay.
H02	H02.0	Hold	Boiler Safety Limit Open.
H04 E04	H04.0	Hold	Supply Temperature is higher than 200°F (93°C) or (when used) preferred supply high limit (minus 10).
	E04.1	Lockout	Supply Temperature is higher than 210°F (99°C) or (when used) preferred supply high limit.
H05 E05	H05.0	Hold	Temperature rise between supply and return greater than 63°F (17°C).
	H05.1	Hold	Boiler water flow switch does not detect water flow. Switch contact is "open" when it should be "closed".
	E05.2	Lockout	Boiler water flow switch does not detect water flow. Switch contact is "open" when it should be "closed" after 5 retries.
	E05.3	Lockout	Temperature rise between supply and return is greater than 63°F (17°C).
	E05.4	Lockout	Boiler water flow switch contact is "closed" when it should be "open".
H06 E06	H06.0	Hold	Flue gas sensor detected temperatures in excess of 194°F (90°C) or when used preferred high limit (minus 10).
	E06.1	Lockout	Flue gas sensor detected temperatures in excess of 204°F (96°C) or when used preferred high limit.
H07 E07	H07.0	Hold	Return temperature higher than supply temperature.
	E07.1	Lockout	Return temperature higher than supply temperature.
H08	H08.0	Hold	Shorted or miswired return temperature sensor.
H09 E09	H09.0	Hold	Shorted or miswired supply temperature sensor.
	E09.1	Lockout	Shorted or miswired supply temperature sensor longer than 10 seconds.
	E09.2	Lockout	Temperature difference between dual elements too high.
H10	H10.0	Warning	Shorted or miswired DHW temperature sensor.
H11	H11.0	Hold	Shorted or miswired Flue temperature sensor.
	E11.1	Lockout	Shorted or miswired Flue temperature sensor longer than 10 seconds.
H12	H12.0	Warning	Shorted or miswired outdoor air temperature sensor.
H13	H13.0	Hold	Shorted or miswired Header temperature sensor.
H14	H14.0	Hold	0-10VDC Input is out of range.
	H14.1	Hold	4-20mAdc Input is out of range.
	H14.2	Hold	Analog Input parameter setup incorrect.
E15	E15.0	Lockout	The Air Pressure Switch detects airflow while fan is not running. Switch contact is "closed" when it should be "open".
H16 E16	E16.0	Lockout	Air proving switch does not detect air flow for more than 51 seconds.
	E16.1	Lockout	Fan standstill not reached.
	H16.2	Hold	Fan speed is not proven during running mode.
	E16.3	Lockout	Fan speed is not proven during prepurge or post purge.


# 19 Troubleshooting *(continued)*

**Table 19-6: Detailed Fault Code (found on "c" and "b" menus, continued)**

Code	Detailed Code	Type	Condition
H17 E17	H17.0	Hold	Control in program mode.
	H17.1	Hold	Internal Safety Core error.
	E17.2	Lockout	Parameter CRC error.
	E17.3	Lockout	Parameter CRC error.
	H17.4	Hold	Boiler Type and BCC mismatch.
	H17.5	Hold	Parameter value read from safety core differs from value read in application MCU.
	H17.6	Hold	Safety core refused write of fuel selection parameter.
	H17.7	Hold	Parameter transfer from a new BCC is required or in progress.
	E17.8	Lockout	BCC is missing, has incompatible software revision or is damaged.
H18 E18	E18.0	Lockout	Application parameters are not valid, normal condition following a new parameter download.
	H18.1	Hold	Actual boiler model doesn't match with control detected model during factory reset.
	H18.2	Hold	CH Setpoint and Modulation source both selected.
	H18.3	Warning	Invalid header sensor configuration.
	H18.4	Hold	Invalid Stepped modulation parameters (Start Offset-Recycle Limit)<5°F (?°).
	H18.5	Warning	Invalid Setpoint interpolation parameters.
	H18.6	Hold	Invalid comfort mode configuration.
	E18.7	Lockout	Selected boiler model default parameters not available.
	H18.8	Hold	Boiler pump outlet set to 0 or boiler pump outlet set to 3 and Aux. pump outlet is not set to 3.
E19	E19.0	Lockout	Air/Fuel ratio outside acceptable limit.
H20 E20	H20.0	Warning	Safety core actuators.
	E20.1	Lockout	Calibration low limit.
	E20.2	Lockout	Calibration high limit.
	E20.3	Lockout	Calibration deviation.
	E20.4	Lockout	Ion base value invalid.
H21	H21.0	Hold	Ion control deviation.
	H21.1	Hold	Offset adaption at limit.
	E21.2	Lockout	Ion control deviation.
	E21.3	Lockout	Gas valve current fault.
H22	H22.0	Hold	No flame build up at burner start.
	H22.1	Hold	No flame build up at burner start.
H23	H23.0	Hold	A flame was detected before burner start.
	H23.1	Hold	Gas valve circuit, after burner run, a flame is detected for 15s, although a valve has been switched off.
	H23.2	Hold	Safety core flame amplifier.
	H23.3	Hold	Safety core flame amplifier.
H24	H24.0	Warning	Flame loss in operation.
	H24.1	Hold	Flame loss in stabilization phase.
	H24.2	Hold	Flame signal loss in safety time.
	H24.3	Hold	Flame signal loss in safety time.

# 19 Troubleshooting *(continued)*

**Table 19-6: Detailed Fault Code (found on "c" and "b" menus, continued)**

Code	Detailed Code	Type	Condition
H25	H25.0	Hold	Safety core system error.
	H25.2	Hold	Hardware Fault, Internal Application error.
	H25.3	Hold	Hardware Fault, Internal Safety core error.
	H25.4	Hold	Hardware Fault, Internal Safety core error.
	H25.5	Hold	Hardware Fault, Internal Safety core error.
	H25.6	Hold	Hardware Fault, unknown Error.
H26	H26.0	Hold	Calibration Fault, Offset adaption not executable, Stable adaption conditions could not be reached in a certain time.
	H26.1	Hold	Calibration conditions fault, Conditions for calibration were not reached in a 5 min timeout period, Blocking, Burner stop and restart.
	H26.2	Hold	Calibration Fault, Missing calibration, Calibration not carried out, although required. calibration counter reached zero, check why calibration management did not work.
	H26.3	Hold	Emergency stop, The burner had to be stopped during calibration/adaption either due to high outlet/DHW temperature or a blocking /lockout error.
H27	H27.0	Hold	120 VAC supply voltage less than 73 VAC.
H28	H28.0	Hold	Control 24VAC wrong frequency or high electrical noise.
E29	E29.0	Lockout	Excessive:  <b>reset</b> button selection.
H30	H30.0	Hold	Duplicate Slave Boiler Addresses.
	H30.1	Warning	Sequencer slave has lost communication with Sequencer Master, master header sensor failure.
	H30.2	Hold	Multiple sequencer masters detected.
	H30.3	Warning	No valid modbus setpoint signal.
	H30.4	Warning	No valid modbus modulation signal.
H31	H31.0	Hold	Variable Speed Pump Fault and pump feedback is used to prove boiler water flow.
	H31.1	Warning	Variable Speed Pump Fault and flow switch is used to prove boiler water flow.
H32	H32.0	Warning	Zone Panel 1 Communication Lost.
	H32.1	Warning	Zone Panel 2 Communication Lost.
	H32.2	Warning	Zone Panel 3 Communication Lost.
	H32.3	Warning	Zone Panel 4 Communication Lost.
	H32.4	Warning	Zone Panel Electronics Failure.
	H32.5	Warning	Duplicate Zone Panel.

# 19 Troubleshooting *(continued)*

**Table 19-7: Supply, DHW, Return Header and Flue Temperature Sensor Temperature versus Resistance**

Temperature		Ohms of Resistance
°F	°C	
32	0	32624
50	10	19897
68	20	12493
77	25	10000
86	30	8056
104	40	5324
122	50	3599
140	60	2483
158	70	1748
176	80	1252
194	90	912
212	100	674
230	110	506
248	120	384

**Table 19-8: Outdoor Air Temperature Sensor Temperature versus Resistance**

Outdoor Temperature		Ohms of Resistance
°F	°C	
-20	-28.9	106926
-10	-23.3	80485
0	-17.8	61246
10	-12.2	47092
20	-6.7	36519
30	-1.1	28558
40	4.4	22537
50	10.0	17926
60	15.6	14356
70	21.1	11578
76	24.4	10210
78	25.6	9795
80	26.7	9398
90	32.2	7672
100	37.8	6301
110	43.3	5203
120	48.9	4317