XIII. Troubleshooting

WARNING

TURN OFF POWER TO BOILER BEFORE REPLACING FUSES OR WORKING ON WIRING.

A. Troubleshooting problems where no error code is displayed:

Table 13.1: No Error Code Displayed

CONDITION	POSSIBLE CAUSES
Display Blank, Fan off, LWCO lights off	• No 120VAC Power at boiler. Check breaker and wiring between breaker panel and boiler
Display Panel Blank, Fan running	• Loose 120VAC connection wiring between boiler J-Box and MCBA • Blown “F1” fuse in MCBA (see Figure 13.2 for location). Replace with 5A fuse provided
Display reads “U.125” continuously, Fan running	• Defective AT250 transformer • Blown “F3” fuse in MCBA (see Figure 13.2 for location). Replace with 4A slow-blow fuse provided
Boiler not responding to call for heat, Status code on display =”0” (see Figure 11.1)	• Boiler is not seeing call for heat. Check thermostat or zone wiring for loose connection, miswiring, or defective thermostat/zone control.
Boiler fires, but display panel is blank	• Loose ribbon cable • Defective display

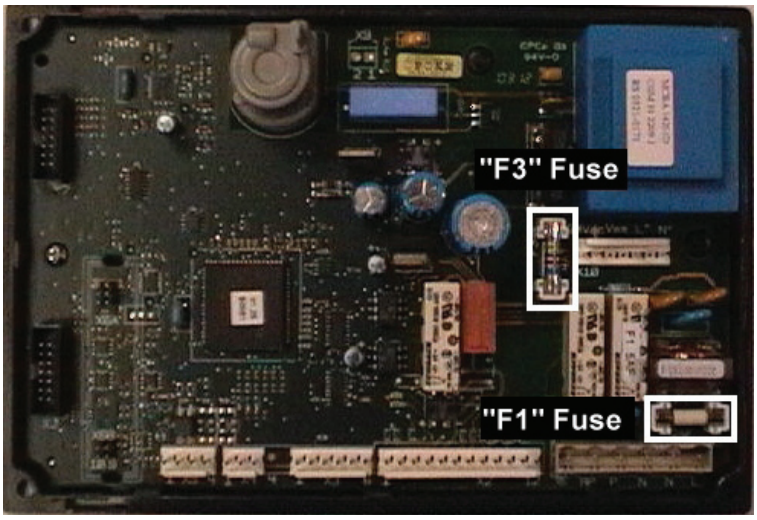

Figure 13.2: MBCA Fuse Location

B. Trouble shooting problems where a soft lockout code is displayed. When a soft lockout occurs, the boiler will shut down and the display will alternate between the number “9” and the letter “b” followed by a two digit service code. The boiler will automatically restart once the condition that caused the lockout is corrected.

Table 13.3: Soft Lockout Codes Displayed

CODE	CONDITION	POSSIBLE CAUSES
b 08	Pressure switch circuit open	• Blockage in intake or vent system. • Vent and/or intake system not constructed in accordance with Part VI. • Blocked or leaking pressure switch tubing • Heat exchanger or burner blockage • Terminals exposed to high winds • Blockage in condensate trap above vent.
b 18	MCBA supply sensor detected temperatures in excess of 200°F	• Heating load at time of error was far below the minimum firing rate of the boiler • Defective primary pump or no flow in primary loop (Piping Method 1) • Control system miswired so that boiler operation is permitted when no zones are calling
b 19	MCBA return sensor detected temperatures in excess of 200°F	• See possible causes for “b18” • Flow through boiler reversed • Sensor wiring reversed
b 24	MCBA is reading a return sensor temperature higher than the supply sensor temperature. Condition must be present for at least 75s for this error code to appear.	• Flow through boiler reversed. Verify correct piping and pump orientation. • No boiler water flow. Verify that system is purged of air and that appropriate valves are open. • Sensor wiring reversed. • Supply or return sensor defective.
b 25	Supply water temperature has risen too quickly	• See possible causes for “b18” • Inadequate boiler water flow. Verify that pump is operating and that pump and piping are sized per Part VIII of this manual
b 26	Boiler safety limit, or external limit wired across terminals 3&4, is open.	• See possible causes for “b18” • Defective supply sensor.
b 30	Temperature rise between supply and return is too high.	• Inadequate boiler water flow. Verify that pump is operating and that pump and piping are sized per Part VIII of this manual
b 61	Pressure switch circuit closed with fan off	• Blockage in pressure switch hose • Pressure switch wires shorted together • Defective pressure switch • Loose or miswired fan speed harness (if “b61” error code is observed while fan is running)
b 65	Fan is not achieving set point speed	• Loose or incorrect fan speed control connection • Defective fan

C. Trouble shooting problems where a hard lockout code is displayed. When a hard lockout occurs, the boiler will shut down and the display will flash the letter "E" followed by a two digit service code. Once the condition that caused the lockout is corrected, the boiler will need to be manually reset using the RESET button on the display.

Table 13.4: Hard Lockout Codes Displayed

CODE	CONDITION	POSSIBLE CAUSES
E 00	A flame signal was present when there should be no flame.	• Defective gas valve - make sure inlet pressure is below maximum on rating plate before replacing valve.
E 02	Flame failure after 5 tries to restart	• No gas pressure • Gas pressure under minimum value shown on rating plate • Gas line not completely purged of air • Defective Electrode • Loose burner ground connection • Defective Ignition Cable • Defective gas valve (check for 24 VDC at harness during trial for ignition before replacing valve) • Air-fuel mixture out of adjustment - consult factory
E 03	Gas valve error	• Loose or defective gas valve harness. Check electrical connections. • Defective gas valve (check for 24 VDC at harness during trial for ignition before replacing valve)
E 04	Power failure occurred after lockout	• Some other error on this list occurred and power to the boiler was then interrupted. Reset control and see if hard lockout reoccurs.
E 05 E 06 E 07 E 11	Internal control failure	• Reset the control. If problem reoccurs, replace the MCBA.
E 12	Low water cut-off circuit open	• If yellow light on LWCO is on, system is low on water • If neither yellow nor green light is on, check LWCO harness and check for 24VAC across AT140 transformer
E 13 E 14 E 15 E 16 E 17	Internal control failure	• Reset the control. If problem reoccurs, replace the MCBA.
E 18	MCBA supply sensor detected temperatures in excess of 200°F for an extended period of time	• See possible causes for "b18" error. Also, check safety limit for proper operation.
E 19	MCBA return sensor detected temperatures in excess of 200°F for an extended period of time	• See possible causes for "b19" error.
E 28	Blower is not running when it should or fan speed signal not being detected by MCBA	• Loose connection in 120 VAC fan wiring • Loose or miswired fan speed harness • Defective fan
E 29	Blower fan speed has not returned to zero rpm	• Miswired fan speed harness • Defective fan
E 31	Shorted supply temperature sensor	• Shorted or miswired supply sensor wiring • Defective supply sensor
E 32	Shorted return temperature sensor	• Shorted or miswired return sensor wiring • Defective return sensor
E 35	Flue gas temperature sensor short circuit	• Shorted or miswired flue temp sensor wiring • Defective flue temp sensor
E 36	Supply water temperature sensor circuit open	• Loose or miswired supply sensor wiring • Defective supply sensor
E 37	Return water temperature sensor circuit open	• Loose or miswired return sensor wiring • Defective return sensor
E 40	Flue gas temperature sensor circuit open	• Loose or miswired flue temp sensor wiring • Defective flue temp sensor
E 44	Internal control failure	• Reset the control. If problem reoccurs, replace the MCBA.
E 52	Flue gas temperature over 230°F	• Heat exchanger needs to be cleaned • Boiler over-fired • Air-fuel mixture out of adjustment - consult factory
E 60	Internal control failure	• Reset the control. If problem reoccurs, replace the MCBA.