

## Service Bulletin G3-33

Models: 715ES, C800ES, C920ES, C920ESC, 2400ES, 2700ES, Evolution 500, Integra 500

# EA Error Code Troubleshooting



# BOSCH



**WARNING:** This bulletin includes troubleshooting that should **ONLY** be performed by a qualified professional.

### Introduction

#### EA Error code explanation:

The unit could not establish a burner flame signal at start up. Typically, the unit will make several attempts to establish a flame before it locks out on an EA error code.

#### Tools needed:

- ▶ Phillips head screwdriver
- ▶ Manometer
- ▶ Digital Multi-meter

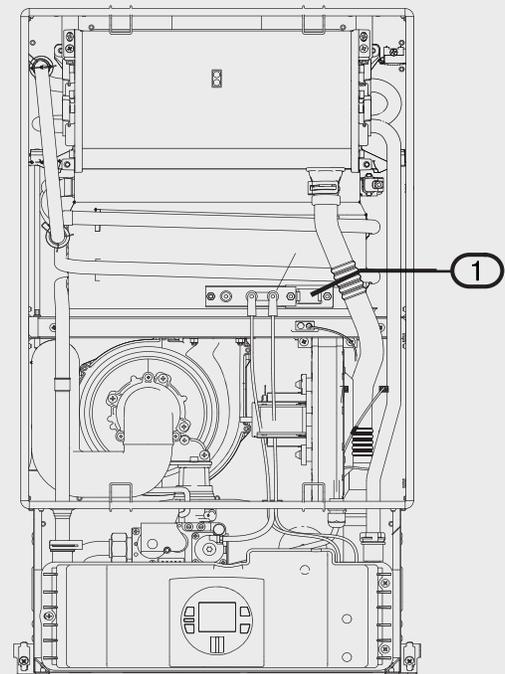
#### Preparation

Remove cover from heater (see Section 2.2 in Installation Manual).

#### Troubleshooting

1. Check for spark and flame through heat exchanger site window (Figure 1, pos. 1) with water flowing. Ignition electrodes are located on inner left side of site window. Record observations (e.g. Does heater spark several times and lock out? Does it immediately go to the error code?).
2. Check for correct gas type on label on right side of heater cover. The heater's gas type can also be confirmed using the control board diagnostics feature (see installation manual). If gas type is incorrect, heater will not operate correctly.
3. Make sure the unit plugged into a clean power supply (e.g. dedicated socket on a dedicated breaker with no extension cords, or surge protectors).
4. Check ground quality on electrical receptacle where appliance is plugged in.
5. Is the unit installed above 2000 ft elevation? If so, was the unit calibrated for the elevation? If not, follow the instructions in the manual for installations at higher elevations.
6. Make sure there are no blockages in the combustion air or exhaust vent piping. If the unit is drawing combustion air from inside the building, make sure it has 50 cubic feet per 1000 BTU per hour available. For example, a 175 kBTU heater requires 8750 cubic feet of air ( $175000 \text{ BTU} / 50 \text{ ft}^3 = 8750 \text{ ft}^3$ ).

Figure 1



C 920 ES/ESC shown - heater design may vary slightly depending on model

7. Check that the P1 and P2 fan speeds are set to the correct levels in accordance with the vents lengths and altitude. Please consult the Installation Manual for more information.



**WARNING: Steps 8 - 17 include troubleshooting that should ONLY be performed by a qualified professional.**

8. Measure gas pressure under full load with manometer. See Bulletin *Measuring Gas Pressure* or Installation Manual for details. Have gas technician call Bosch Technical Support from heater to report readings. Record gas pressure readings below:

- a) Static: \_\_\_\_"WC
- b) Tankless Maximum Power: \_\_\_\_"WC
- c) House Full Load: \_\_\_\_"WC

If Full Load or Maximum Power gas pressure is below 3.5" WC (NG) or 8.0" WC (LP), address gas line size or regulated system pressure to correct.

9. Make sure there is no air in the gas line. Although more frequent in new installs, this can happen if work is done on the gas line or after a fuel delivery. If you suspect this, contact a certified gas technician in your area.
10. Is the unit making any odd grunting or whistling noises? If so, it may be an indication the fuel/air mixture is incorrect. Fuel/air mixture can only be adjusted with the use of a combustion gas analyzer. See Bulletin *Measuring & Adjusting CO<sub>2</sub>* for adjusting CO<sub>2</sub>.
11. If there is no evidence of a heat exchanger leak, inspect for signs of condensation:
- a) Remove the gas valve inspection cover and inspect the area for any signs of moisture or debris. Make sure the cork gasket is not damaged and replace it if it shows any signs of damage. Moisture or rust spots indicate a long term condensation issue that may be causing the error codes.
  - b) Remove the plastic air supply duct and inspect the fan for signs of moisture.
  - c) Remove the heat exchanger site window and using a flashlight, look for any signs of moisture and debris in the heat exchanger chamber.
  - d) Look for any signs that the ceramat burner may be damaged. Ceramat material that sits above the level of the tray may indicate damage.



**Signs of moisture or damage to the ceramat burner may require the removal of the heat exchanger for further inspection and investigation of a potential water leak.**

12. Inspect ignition wires and flame sensor wire.

13. Inspect and clean electrodes and flame rod, see Bulletin *Cleaning & Replacing Ignition Group*. Verify spacing between electrodes is no greater than 5.5mm or ¼". Inspect the ceramic insulation on electrodes for cracks. Replace electrodes if damage is present.
14. Measure the voltage to the gas valve on the left hand pair of wires and the right hand pair of wires. Normally, you will find 24VDC when the unit is running or trying to fire.
15. Measure the resistance of each coil on the gas valve. You should see 80 Ω on the left pair of pins and 160 Ω on the right pair of pins.
16. Inspect the wiring harness for defects. Reseat the harness connections on the control board.
- Check for continuity between ground on the control and the heater chassis.



**If following the procedures did not resolve the problem, report the troubleshooting results to Bosch Technical Support. Performing the troubleshooting prior to calling will speed your call and assist in determining the cause and solution to the problem.**



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