



Midco Economite Burner Troubleshooting Quick Guide

EC200 & EC300

NOTE: This Quick Guide is not intended for "do it yourself" attempts to remedy the burner operable, but to be used by a HVAC Burner professional as a starting point. However, after reading this guide, you may be able to evaluate what the issue may be, and there may be simple steps to take to get your burner running again.

First Observation: Is the Controller giving you an error code, such as ORAL?, If so, you probably don't have a burner issue, may be a wiring issue to the thermoprobe. Has the thermoprobe connected been bumped or jarred lately?

RESOURCES:

-Midco Trouble Chart, see page 14 of the Midco Economite Manual

<http://www.midcointernational.com/pdf/8471-38.pdf>

-Fenwal Controller 35-615926-203 Manual

https://s3.amazonaws.com/s3.supplyhouse.com/product_files/Fenwal-35-615926-203-Product-Overview.pdf

-Fenwal Controller 35-615926-203 Data Sheet & Wiring Diagram

https://kidde-fenwal.com/Media/Data%20Sheets/DS_35-61-EN_F-35-61.pdf

TECHNICAL SUPPORT CONTACTS:

Midco International: Main 773-604-8700, or Neil Boettjer, 866-705-0514 Ext 245,
neilb@midcointernational.com

Fenwal Controls: Bill Sager, Office Direct 508-231-2777, Cell **508-308-2442**

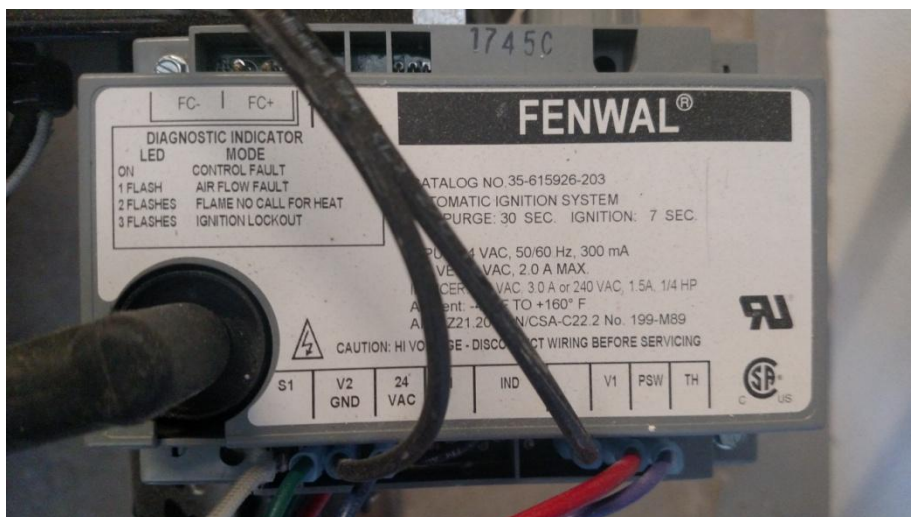
bill.sager@fs.utc.com, TECH SUPPORT HOTLINE: **866-287-2531**
Model Information: 35-615926-203 24v w/30 sec. Prepurge (7sec.TFI)

TROUBLESHOOTING

FIRST things FIRST: Confirm that the main manual shut off valve and manual gas cock know are in the ON position. Check that your thermostat is calling/set for heat. all good? If not, continue below.

BIG INITIAL QUESTION: Did the burner get wet? You may have a bad controller due to the excessive moisture, spray from hose down.

Also, if the burner has been in service for a year or more, because the brewery is a wet environment, the contacts in the controller may have become corroded/rusted over time, and the controller may need to be replaced. See Link at bottom of this document for a resource to purchase a replacement controller.



Understanding the SEQUENCE OF OPERATION, upon call for heat

1. Control receives the call for heat (power).
2. The processor goes through a diagnostic check.
3. The control then checks that there is no flame and looks for the Pressure Switch (airflow switch) to be off. If at this point the switch is ON, then the switch is stuck or the blower is on and it shouldn't be. Either is a fault condition.
4. If the PSW is OFF, the blower relay is actuated to start the blower and the control looks for the PSW to turn ON.
5. Once the PSW is ON, the pre-purge time is started. Your pre-purge is 30-seconds.
6. After pre-purge, the relay is actuated to turn on the gas valve and sparking begins.
7. When flame is sensed, the sparking turns off.
 - a. If flame is not sensed, the control goes into lock-out.
8. Once running, if flame is lost the control will start sparking and leave the gas valve on.
9. Return to step 7.
10. If the control goes into lock-out, the power to the control must be cycled to restart the control.

FAULT CODES

With a fault code, the burner is usually locked out for a time period (the red light is on), such as 20 minutes. There is a way to get around this wait time:

- 1. Turn off the power to the device.**
- 2. Remove the Purple wire in the TH slot.**
- 3. Wait 1 min for any residual power still in the control board to dissipate.**
 - 1. or with the purple cord unplugged,**
 - 2. turn power on the device to instantly drain residual power,**
 - 3. turn off power to the device**

4. Plug the Purple TH wire back in
5. Turn on the power to the device.



1.

Fenwal Controller, 1 flash lockout: airflow fault, Part A (test to verify that the blower interlock air proving switch is not stuck closed).

When 24V is delivered to the Fenwal control at terminal TH, that starts the process. The first thing that the Fenwal control does is flash once. Then the Fenwal control verifies that there is no 24V power at terminal PSW (No power indicates that the blower interlock air proving switch inside the motor is open circuit). If the Fenwal control finds 24V power at terminal PSW, that indicates that the blower interlock air proving switch inside the motor is stuck closed and the Fenwal control will go to a 1 flash air flow fault lockout. This is all done in about 1 second. If everything is working properly, the Fenwal control will then send power to the blower motor.

Fenwal Controller, 1 flash lockout: airflow fault, Part B (test to verify that the blower interlock air proving switch is not stuck open).

When 24V is delivered to the Fenwal control at terminal TH, that starts the process. The first thing that the Fenwal control does is flash once. Then the Fenwal control verifies that there is no 24V power at terminal PSW (No power indicates that the

blower interlock air proving switch inside the motor is open circuit). This is all done in about 1 second. If everything is working properly, the Fenwal control will then send power to the blower motor. The blower motor turns ON, and should then trip the blower interlock air proving switch inside the motor. If the blower interlock air proving switch inside the motor is stuck open, 24V power will not get to terminal PSW and then the Fenwal control will go to a 1 flash air flow fault lockout. If everything is working properly, the Fenwal control will continue to power the blower motor for the 30 second pre-purge period.

If the Fenwal Controller continues to go to a 1 flash lockout, replace the burner blower motor assy once it has been proven that the blower interlock air flow switch is not working properly.

2.

Fenwal Controller, 2 flash lockout: "Flame with no call for heat"

This is a very rare issue. This control will try to relight the burner one time after loss of flame before the control goes into lock-out.

Check to make sure that the gas valve is de-energized and turned to the OFF position.

Check to make sure that the gas valve is shut off completely and there is no gas flowing.

Check to make sure that there is no flame present.

The following have been some known remedies:

NOTE: Cut power at circuit breaker before performing these procedures below:

- Check all connections on the Fenwal Controller
- Check the green ground wire (ground connection must be perfect)
- Locate spark rod, check position/gap and clean (see below description)

3.

Fenwal Controller, 3 flash lockout: ignition lockout

This happens when the Fenwal control does not sense a flame during the 7 second trial for ignition period or the flame sense signal strength is not strong enough.

Many things can cause this, as follows:

Make sure that the spark rod and flame sense rod are clean. If not, use steel wool or sandpaper to clean.

Make sure that the spark rod and flame sense rod are positioned properly, per the Midco Manual, page 9, Figure 8.

Make sure that the ceramic insulators for the spark rod and flame sense rod are not cracked, chipped or broken.

Make sure that the ignition spark is occurring at the tip of the spark rod.

Make sure that the wires and connections for the spark rod and the flame sense rod are tight and proper.

Make sure that the burner is properly earth grounded.

Make sure that the burner is set up properly, see manual, page 7, Table 3.

Make sure that the gas valve is working properly and that gas is flowing to the burner head.

Make sure that the air shutter setting is proper by using a combustion gas analyzer.

The minimum flame sense signal strength is 0.7 DC microamps. When we test fire EC burners at Midco, it is very common to get a flame sense signal ranging from 1.5 to 3 DC microamps. A flame sense signal of 0.7 DC microamps or less will send the Fenwal control to a lockout condition.

To access the spark rod, flame sense rod and the burner head:

Turn the power to the burner OFF.

Turn the gas to the burner OFF.

Where the square blower assy flange mates with the square blast tube flange, uninstall the four bolts. You can then remove the main burner blower assy leaving the blast tube and mounting flange connected to the appliance.

You now have access to the spark rod, flame sense rod and the burner head.

Converting to LP from Natural Gas

For the EC200 and EC300 burners, they can fire on either natural gas or LP gas. The burner set up information is shown on pages 7 – 9 (manual attached).

When firing on LP gas, we suggest to increase the spark gap, on the spark rod, to 3/16".

When firing on LP gas, we suggest to set the combustion air to a minimum of 7% O₂, using a combustion analyzer, as long as the other combustion readings are in line and safe.

Parts, where to get them:

Fenwal Controller 35-615926-203 24v w/30 sec. Prepurge (7sec.TFI)

https://www.supplyhouse.com/Fenwal-35-615926-203-Direct-Spark-Ignition-Control-24v-w-30-sec-Prepurge-7-sec-TFI?gclid=EAlaIQobChMIrajzyM3F3QIVA7jACh106gG6EAAYAiAAEgJuBPD_BwE