Frymaster®
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DEAN

Service Bulletin

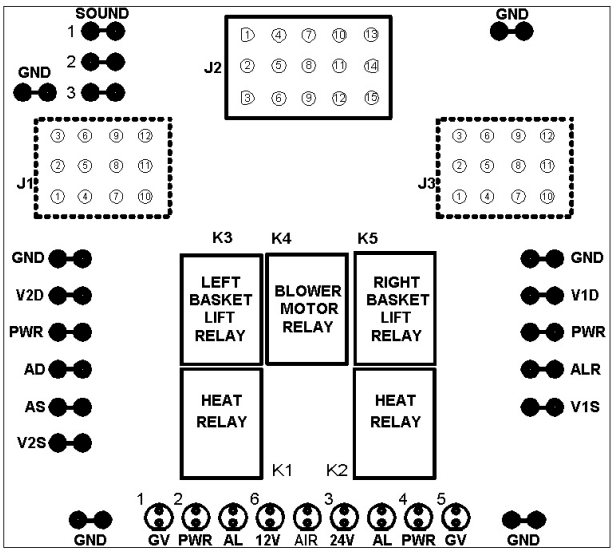
Bulletin: ABD-70-99 **Page 1 of 7** **Date: 12/27/99**

SUBJECT: Intermittent Alarm

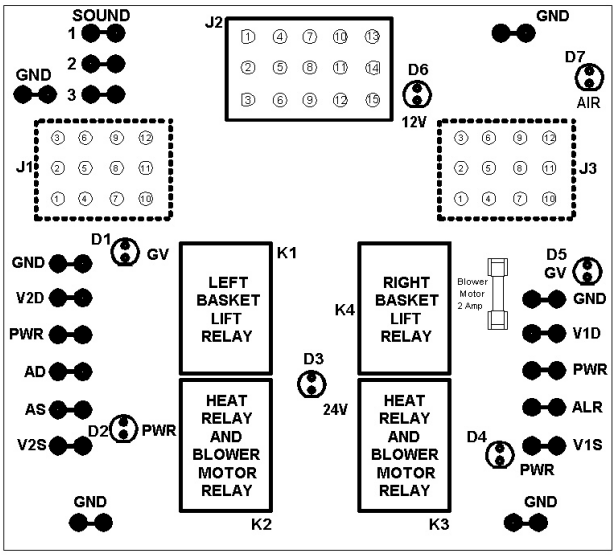
This bulletin is a reissue of Bulletin ABCD-24-94. Bulletin ABCD-24-94 should be removed from your active file and discarded.

Any intermittent problem can be difficult to troubleshoot. This is especially true of an intermittent alarm on high-efficiency gas fryers.

The attached Troubleshooting Procedure has been tested by several service representatives and proven to be effective. The process is especially helpful for full-vat fryers.



EARLIER DESIGN INTERFACE BOARD P/N 806-3398



LATER DESIGN INTERFACE BOARD P/N 806-3398

H.E. INTERFACE BOARDS

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HIGH-EFFICIENCY INTERMITTENT ALARM

TROUBLESHOOTING PROCEDURE

This procedure is designed to minimize the expense, number of service calls, and irritation that occurs when ignition failure, help, or trouble light is reported by the customer but cannot be duplicated by the technician.

Please follow the steps in order.

1. Get as much information as possible from the customer when the request for service is received. Let intermittent help, ignition failure or trouble light be the key words that alert you to get additional information. Ask the questions below. If the person calling you has little or no information, ask who knows about the failures. If necessary, call back to talk with that person.

   a. When does the problem occur (when fryer is first turned on, after filtration, during heavy usage, etc.)?

   b. Will the fryer operate despite the alarm? If yes, this suggests a faulty alarm circuit.

   c. Will the fryer operate if you turn it off and start it again immediately? If yes, this eliminates the hi-limit.

   d. Will the fryer consistently restart only if you turn it off, wait 30 minutes and start it again? If yes, this suggests the hi-limit is opening.

   e. Get fryer history. What parts were changed and when?

   f. How frequently does the problem occur (hourly, daily, weekly, monthly)? If the problem occurs several times per day, schedule a service call. If the problem does not occur several times per day, and if it is a full vat, suggest to the customer that you fax or mail them a procedure (see attached) for isolation of the problem prior to your service call.

   The customer isolation procedure accomplishes two things:

      i. It lets the customer know that this is difficult to troubleshoot.

      ii. It isolates the problem to one side of a full vat.

Explain that it is expensive and non-productive to have a technician standing around waiting for a failure. Let the customer decide!

When the technician goes to the restaurant, there should be a two-step approach:

i. Try to duplicate the trouble and correct it (use the Procedure to Assist Customer to Isolate Intermittent Alarm worksheet).

ii. If you can't duplicate the trouble, make adjustments to air, gas, and electrical systems to optimize fryer operation.

Note: For fryers with built-in filtration, check drain valve switch actuation. This is most common cause of alarm.

2. If the customer has completed the Procedure to Assist Customer to Isolate Intermittent Alarm, it is not necessary for the technician to complete steps 3-10. The technician should read steps 3-10 to understand how to diagnose a full-vat alarm from the procedure.

3. Open the control panel. Find LEDs 4, 2, and 5 on the interface board. Put the control panel back in place, but do not replace screws at this time.

4. Use the fryer as needed to fry food.

5. When alarm occurs, drop the control panel down. Turn the fryer off. Wait five (5) seconds then turn the fryer on. Look through both burner viewports. If one side does not light, that is the defective side. Check the following components of that side: ignitor, ignition cable, and ignition module. If both sides burn, observe LEDs 4, 2, and 5 while watching for alarm. If alarm does not occur, repeat step 4.

6. All three LEDs (4,2,and 5) should come on at least momentarily.

7. If LED 4 did not come on, measure voltage across the coil of heat relay K3 on the interface board. If 12 VDC is measured, check K3 heat relay contacts and output of the 24-volt transformer. If 12 VDC is not measured across K3 coil (and power indicator light is on or computer display is lit), check the temperature probe circuit and the computer or controller.

8. If LED 4 is on and LEDs 2 and 5 do not come on (no indication), turn off the fryer and check the fuse in the right ignition module. If fuse is good, replace the right ignition module.

9. If LED 2 is on and LED 5 does not come on (no indication), turn off the fryer and check the fuse in the left ignition module. If the fuse is good, replace the left ignition module.

10. During step 5 if LEDs 2 and 5 came on for a few seconds and both went out at the same time, the trouble is in the right side of the fryer. If LED 5 went out, followed a few seconds later by LED 2, the problem is in the left side of the fryer.

11. Reverse the flame sensor wires at the ignitors. Add a length of wire if necessary,

12. Repeat steps 4 and 5. If the sequence in step 10 changed, the trouble is in the flame sensor circuit (left or right side as established in step 10), check for:

    a. Flame sensor rod not positioned in burner flame.

    b. Cracked, broken or dirty ignitor.

If the sequence in step 10 did not change, the probable trouble is intermittent ignition module (left or right side as established in step 10), or defective flame sensor wire or terminal.

Note: Connect flame sensor wires back to their original positions.

This completes the troubleshooting approach of duplicating the trouble, finding the cause, and correcting it.

NOTE: The following procedures apply to full- and split-vat fryers.

If the trouble could not be duplicated, optimize fryer operation per the following procedures:

1. Measure gas pressure and adjust as required. Turn everything on and look for pressure drops. Do not proceed until gas pressure is correct and steady.

2. Check airflow for the following:

    a. Clogged or dirty blower wheel.

    b. Blower motor is slow to come up to speed.

    c. Plenum gaskets incorrectly installed (use inspection mirror).

    d. Plenum gates closed (they should be fully open and locked down).

    e. Flue restrictors in place (they should be removed).

    f. Negative air in the restaurant. To test, slightly open a door or window. If air comes in, there is negative air balance. Velocity of air is an indication of how negative.

g. Measure hood air flow (CFM). Too much airflow or too little can cause an alarm.

h. Connect a DC microammeter to each flame sensor and monitor current. Adjust blower air adjustment plate for orange/red glow on burners. If microamps are low or drop off as the fryer heats up, adjust the position of the ignitor/flame sensor for maximum steady microamps.

3. Look for signs of overheating such as:

   a. Discolored or melted ignition modules.

   b. Interface board darkened and discolored.

   c. Front of fryer feels hot.

Note: Controllers are more sensitive to high temperature than computers.

If there is evidence of overheating:

   a. Attempt to create alarm by pressing on the interface board with a pencil.

   b. Examine the connector on the back of the interface board for signs of loose pins or poor connections.

Note: Overheating causes include:

   a. Dirty or blocked openings in the back of the fryer (McDonald's).

   b. Low hood air draw.

   c. Negative air balance.

   d. Missing standoff (McDonald's).

   e. Damaged burner seals.

4. Check the flame sensor wire connections for loose terminals or loose connections.

5. Visually inspect the ignition cables for cracks, cuts, or insulation breakdown.

6. Examine the contacts on the heat relay. If there is evidence of damage, replace the heat relay.

Terminate the service call.

PROCEDURE FOR SECOND SERVICE CALL (IF NECESSARY)

Swap complete control boxes with another vat (if there is one). Ask the customer to use both vats and let you know if the trouble stayed with the vat or followed the control box.

Terminate the service call.

PROCEDURE FOR THIRD SERVICE CALL (IF NECESSARY)

Swapping control boxes should isolate the problem. If not, arrange a time with the customer to perform a *Full Usage Stress Test* on the fryer. Ask the customer to empty the vat prior to your arrival.

1. Connect a gas pressure gauge (do not use a water column manometer because it reacts too slowly) to monitor gas pressure.

2. Connect DC microampmeter to measure flame sensor current.

3. Connect an AC voltmeter across the coil of the gas valve to monitor coil voltage.

4. Fill the vat with clean water, turn on the fryer, program for a temperature above 212° F, and start the fryer.

5. Monitor gas pressure, flame sensor current, and voltage to gas valve.

   If the microamps decrease during heavy usage, this indicates the flame sensors are not correctly located, or blower air is incorrectly adjusted.

   If the gas pressure drops (with 24 volts applied), the gas valve is defective.

   If the proper microamps are present, and the 24 volts drop out, the hi-limit, one of the ignition modules, the 24-volt transformer, or the wiring between these four components is defective.

6. If the fryer has operated for an hour and the problem has not occurred, turn the fryer off and immediately turn it back on. If there is no gas pressure with 24 volts applied, the gas valve is defective.

IF AT ANYTIME DURING THESE PROCEDURES YOU ARE UNSURE ABOUT THE PROCEDURE OR THE RESULTS, CALL FRYMASTER TECHNICAL SERVICE AT 1-800-551-8633.

PROCEDURE TO ASSIST CUSTOMER TO ISOLATE INTERMITTENT ALARM

Intermittent failures are difficult to troubleshoot. This is especially true of intermittent alarm (intermittent help, ignition failure or trouble light) on the Frymaster high-efficiency full vat gas fryers. The following procedure is designed to help you isolate the problem prior to the arrival of the service technician. This can save time, money, and interference with food preparation.

NOTE: For fryers with built-in filtration, check to make sure the drain valve switch is closed. This is the most common cause of alarm.

1. Loosen the screws in top corners of the control panel. The control is hinged at the bottom and will swing open from the top.

2. On the interface board behind the control panel, locate LEDs (Lights) 4,2, and 5.

3. Put the control panel back in place.

4. Use the fryer as needed to fry food.

5. When alarm occurs, drop control panel down, turn fryer off. Wait 5 seconds then turn fryer on, observe LEDs 4,2, and 5 while watching for alarm (trouble light or ignition failure). If alarm does not occur, repeat step 4.

6. Do all 3 LEDs come on, at least momentarily? Circle “On” or “Off” for each.

   LED 4 – On-Off ***LED 2 – On-Off*** ***LED 5 – On-Off***

7. If LED 4 did not come on, discontinue testing and call the service center.

8. If LEDs 2 and 5 do not come on, turn off the fryer and check the fuse in the right ignition module.

9. If LED 2 is on and LED 5 does not come on, turn off the fryer and check the fuse in the left ignition module.

10. During step 5, if LEDs 2 and 5 come on for a few seconds, what occurs (circle one):

    LEDs 5 and 2 go out at the same time,

    or

    LED 5 goes out followed by LED 2 a few seconds later.

11. Call for service and report the results of the completed procedure to the technician.