



SERVICE INSTRUCTIONS

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FIELD REPLACEMENT KIT - for replacing Flame Switch 037406 with External Spark Module Box Assembly

For use on all 10x11 fryers, 14" Front Drain fryers and some smaller fryers equipped with CPU Units

Installation instructions to convert manually-lighted pilot flame fryers using a flame switch (for proof of flame), to electronic spark ignition using a Spark Ignition Module (SIM) and remote sense electrode (for proof of flame).

NOTE: *This procedure applies to fryers where there is not enough space to mount the module in the control panel back, such as 10x11 fryers and some 14" fryers (front drain units, for example).*

NEW FEATURE: the converted fryer will automatically light the pilot runner tube when the fryer is powered on. This function replaces the need to manually light the pilot.

CONVERSION INSTRUCTIONS: The conversion consists of replacing the Pilot Runner Tube assembly underneath the burners, from the constant pilot version, to the spark ignition version. The flame switch on the Control Panel Back assembly is replaced by an electronic spark module which, for some fryers, will be located in a separate Spark Module Box assembly. Refer to the Users Manual for help in identifying and locating various parts and assemblies.

NOTE: After conversion, the "Hold-to-Light" Pilot switch will no longer be used to light the pilot and will not be functional.

ADDITIONAL TOOLS REQUIRED (not supplied in kit):

1. A "pin-extraction" tool, used to remove the pins from the Amp-style "MATE-N-LOK" (white) connector blocks. The pin-extraction tool recommended is TE Connectivity Part Number 1804030.
2. A "pin-insertion" tool used to insert a new pin into the connector blocks. The pin-insertion tool recommended is TE Connectivity Part Number 91002-1.

Read the instructions on these tools in order to properly use them to prevent damage to wires or terminal, AND TO INSURE PROPER INSERTION AND AVOID INTERMITTENT CONNECTIONS.

A. TURN THE FRYER OFF

- TURN OFF ALL GAS VALVES, OR DISCONNECT THE GAS LINE TO THE FRYER.
- UNPLUG THE FRYER FROM THE INCOMING AC POWER SOURCE.

B. Remove Pilot Runner Tube assembly:

1. Remove the two (2) Control Panel Assembly screws and rotate the control panel downward to expose the Control Panel Back assembly.
2. Remove the four (4) Control Panel Back Assembly screws and carefully set the assemblies on a stand or stool at about the same height. **Be careful not to break or kink the capillary tubes from the high limit switch and the thermostat.**
3. Remove the two (2) mounting screws and the heat shield.
4. Remove the two (2) flanged nuts from the manifold bracket screws and remove the burner hold-down bar.
5. Remove the burners and the burner shields.
6. Disconnect the constant pilot tube from the pilot runner tube bracket and from the gas valve. It may be easier to disconnect the constant pilot tube from the gas valve after the pilot runner tube assembly has been completely removed.
7. After removing the constant pilot gas supply tube from the gas valve, insert a small flat blade screwdriver into the constant pilot gas valve adjustment on the gas valve. Turn clockwise (CW) to close the valve. Make sure the valve is closed completely. Check for leak after the fryer has been converted.
8. Loosen the screw and remove the flame switch clip and flame switch sensor from sensor bracket.
9. Disconnect the pilot runner gas supply line(s) from the runner tube (leave connected to gas valve). Be careful not to nick, scratch, or distort the fitting sleeve. If damaged, the fitting will need to be replaced to prevent gas leak.

10. Make note of the air shutter position so when the new assembly is installed the shutters can adjusted to their original position.
11. Loosen the locking nut(s) on the runner pilot orifice holder assembly(s), and remove the holder assembly(s) from the runner pilot tube.
12. Remove the pilot runner tube, including its elbow(s) from the manifold bracket.

C. Install new spark ignition Pilot Runner Tube assembly:

1. Install new pilot runner tube assembly in the same position as the original assembly. See Figure 1.
2. Inspect to insure that the pilot runner tube is secured properly at both ends.
3. Re-install the runner pilot orifice holder assembly(s) making sure to include the air shutter; adjust the air shutter to its original position as noted.
4. Tighten the locking nut(s).
5. Re-attach the gas supply line(s) to the pilot orifice assembly, making sure that the fitting sleeve will make a leak tight seal. If not, replace fitting.
6. Confirm that the spark electrode (right end of pilot tube) has from 1/8" to 3/16" gap to the pilot tube. Bend to position if necessary.
7. For 14" fryers (and larger), make sure the sensor rod on the flame sensor electrode is positioned over the flame ports on the pilot tube from 3/16 to 1/4" above the tube. The rod must be immersed in flame in order to function properly.
8. The wire assemblies will be hooked up later.
9. Re-install the burner shields, burners, burner hold-down bar and hardware, and burner shield and hardware. Be sure not to kink or squash any of the electrode or ground wires while re-installing the hardware.

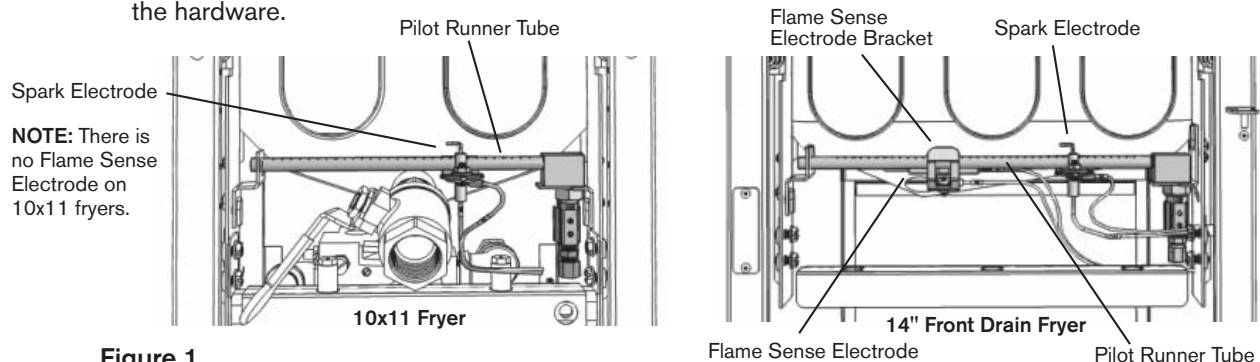


Figure 1

Install new Pilot Runner Tube Assembly

New spark ignition pilot runner tube mounting detail for a 10x11(left) and a 14" fryer (right).

D. Remove the original flame switch, hardware, and wires:

Wire call-outs in the text below are formatted as wire # (wire color). For example 13 (WH) indicates wire #13, a WHITE wire.

1. Refer to the components inside the Control Panel Back assembly.
2. Remove all wires connected to the old flame switch (check appropriate wiring diagram, located in the fryer's Manual (fryer Manuals can be viewed/printed from our website, keatingofchicago.com). From the high limit switch, these wires will typically be numbered 12 (YL) on BB fryers, or 16 (YL) on TS fryers and connected wire 3 (YL) to one terminal on the Flame Switch. From the other terminal of the Flame Switch, these wires will be 5 (OR) (only wire on BB units) and connected wire 17 (OR), on TS units, from the other terminal. Remove all of these wires completely, at both ends. It will be necessary to use a "pin-extraction" tool to remove wire/terminals from the Quick Connect connectors (see above "Additional Tools Required"). In the wiring diagrams at the end of these instructions, wires **removed** are indicated by heavy dashed lines; wires **added**, by heavy solid lines.
3. Remove old flame switch and bracket located inside the control panel back. The flame switch will no longer be used and can be discarded. **NOTE: THE FLAME SWITCH CONTAINS MERCURY!** It must be disposed of properly in order to comply with local, state, or federal laws.
4. Remove wire 4 (BU) between the 4-position "gas valve" connector and Control Panel insert connector (on all units). Use the pin extraction tool.
5. Remove the white wire from position 2 on the 4-position "gas valve" connector and all its connected wires. On BB front drain units, these will be 10 (WH) only; BB rear drain units, 18 (WH), 10 (WH) to FM switch; on TS front drain units, 14 (WH) and 13 (WH) from relay and FM switch; and on TS rear drain, 23 (WH) to relay, 14 (WH) from relay to relay, and 13 (WH) from relay to FM switch.

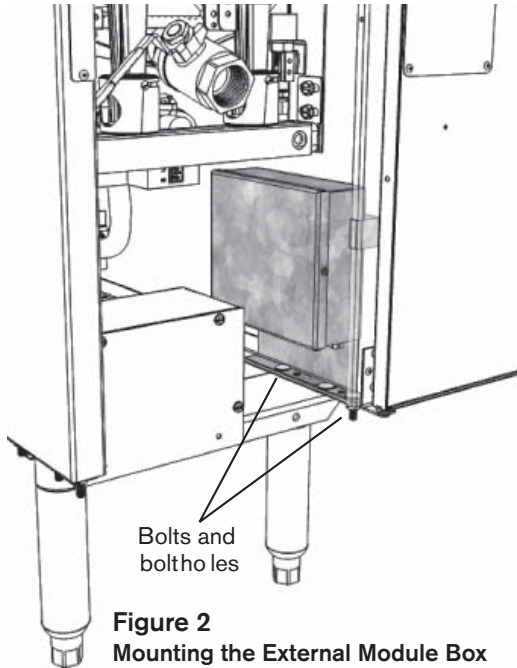


Figure 2
Mounting the External Module Box
 Use the 2 existing bolts and bolt holes in panel to fasten module box to fryer.

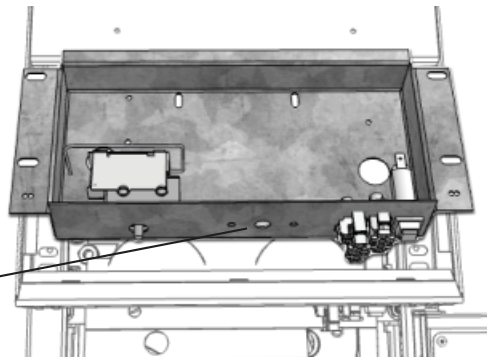
E. Install new External Spark Module Box assembly:

1. Open the fryer door. On drop-in units, remove the front plate panel - (4) screws securing it to the side panels.
2. Remove (2) screws from the front panel of the Power Supply Box located on the leg channel or brace. Either remove the Box from the channel entirely (be careful not to damage the power cord or wire connector) or slide it to the left to provide room for installing the External Spark Module box.
3. On the lower right side of the fryer, locate where the leg channel or brace is attached to the side panel. Note the series of screws or bolts that hold the leg channel to the cabinet panel and the panel stiffener (there is no stiffener on drop-in models). The 061446 External Spark Module assembly has mating holes in its lower flange. The two square holes will line up with the carriage bolts on standard fryer panels, while the two round holes line up with the screws found on drop-in units. See Figure 2.
4. With the spark module assembly aligned so that its cover faces the interior of the fryer, temporarily slide the assembly as far forward towards the fryer front until the bracket "U" shape is nestled into the side panel channel. The bolt or screw holes should line up with two screws or bolts.
5. Remove these screws or bolts, set the spark module assembly in place and re-install the screws or bolts and tighten accordingly.

F. Drill hole in control panel back:

1. On front drain type fryers, the control panel back will be "shallow", about 1-3/8" deep. On these fryers, locate the 0.406" diameter hole previously used to exit the flame switch tube and sensor. Ream or bore out this hole to 0.50" (use a reaming or variable-diameter drill bit since a 1/2" drill bit will likely "catch" on the large .406" hole and make drilling difficult). Grind off burrs in the hole and clean drilling debris from the panel back. See Figure 3.
2. Insert the 1/2" black plastic bushing (from the outside into the panel back) into the hole.

Figure 3
 Control Panel Back (extended up and out from the fryer).
 Drill existing hole to 1/2" diameter in the control panel back.



G. Assemble the wire harness to match the fryer being converted:

1. A basic wire harness has been constructed and supplied with the conversion kit. See Fig. 4 a. This assembly, as is, is compatible with BB Front Drain fryers. Simply install it according to the wiring diagrams at the end of this document.
2. For other models, the basic wire harness must be reconstructed. See Fig. 4 b, c, or d and match to the model being converted. When converting TS fryers, use wire 3 (YL). Install this wire on to the tab of the piggyback connector on the end of wire U80 (YL) - remove the protective heat shrink tubing on the piggyback connector first.
3. Then refer to the wire diagrams at the end for hooking up the wires.
4. After the correct wire harness has been constructed, connect the 4-position plug end of the harness to the connector in the External Module Box.

- Route the harness wires up along the right side of the fryer, keeping the harness free from being pinched by the door, and free from interference with other assemblies. Do not install permanently yet until all the connections are made in the control panel back.
- Insert the free end of the harness through the hole in the control panel back, use the wire nut to connect the remaining loose wires, typically 93, 94, 85 and/or 92. Use the wire diagrams at the end of these instructions to view where the connections are made.
- Route the wire harness carefully and install the supplied tie-wrap hardware to secure the harness to the panel side and other panels for support.

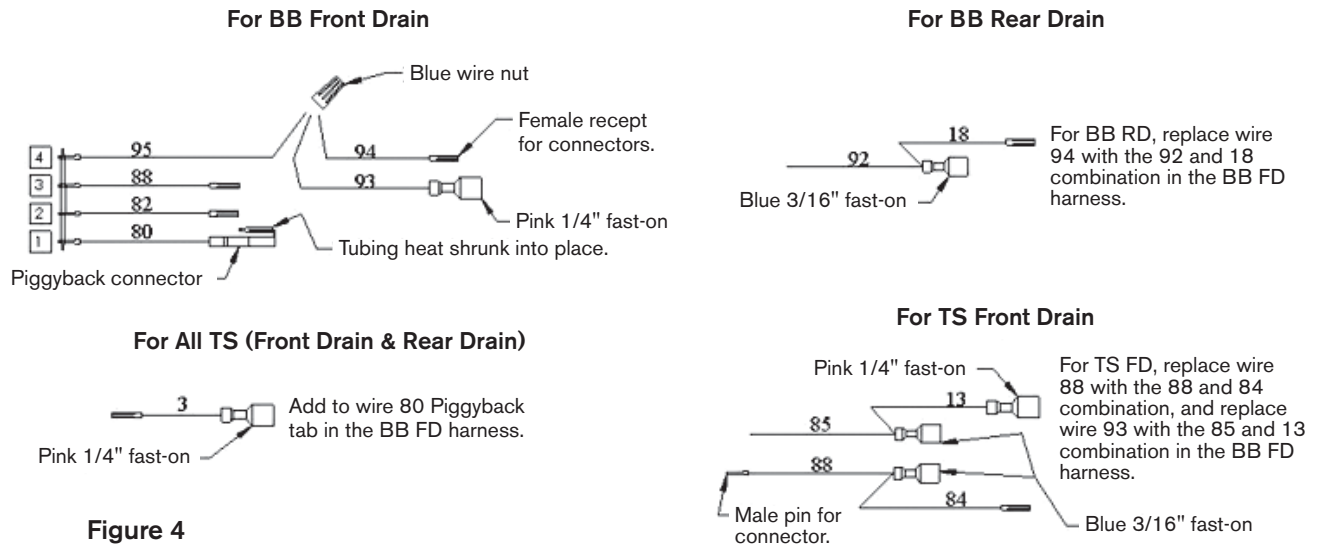


Figure 4
Wire Harness Modifications -
 for different fryer configurations.

H. Complete the installation:

Re-install the control panel back and control panel insert assemblies to the fryer cabinet. Take care to avoid overstressing the capillary tubes on the high limit control and the thermostat. Confirm all hardware has been re-installed into their correct locations.

I. Conversion is complete:

COMPLETELY CHECK ALL INSTALLATION DETAILS - CHECK THAT COMPONENTS HAVE BEEN INSTALLED PROPERLY AND ARE SECURE, CHECK ALL WIRING TO INSURE THAT WIRES HAVE BEEN INSTALLED IN THE PROPER LOCATIONS, AND THAT ALL WIRES DESIGNATED TO BE REMOVED HAVE BEEN REMOVED.

CHECK ALL GAS CONNECTIONS - VALVE, PIPING, CONNECTIONS, ETC. - FOR GAS LEAKS.

REVIEW EACH STEP OF THE ASSEMBLY PROCESS TO INSURE THAT IT HAS BEEN DONE PROPERLY AND SECURELY. OPERATION AND RELIABILITY OF THE FRYER AFTER THE CONVERSION RELIES ON ALL OF THE STEPS BEING FOLLOWED PROPERLY AND COMPLETELY.

IF YOU HAVE ANY QUESTIONS ABOUT ANY OF THE CONVERSION PROCESS STEPS, PLEASE CALL KEATING OF CHICAGO, SERVICE REPRESENTATIVES.

J. Test the fryer:

- Hook up the gas line to the fryer, and turn the gas on (always check for leaks before taking the next step to operate the fryer).
- Make sure the Power switch is in the OFF position, make sure that the thermostat is adjusted of OFF (completely counter-clockwise). Connect the AC line cord.
- Turn the Power switch ON - the Spark Module will cause the spark electrode on the Pilot Runner Tube to begin sparking immediately. If gas is present in the pilot runner tube, it will light automatically. Keep in mind that if the gas line has been disconnected, it may take up to a few minutes for the gas to reach the pilot tube.

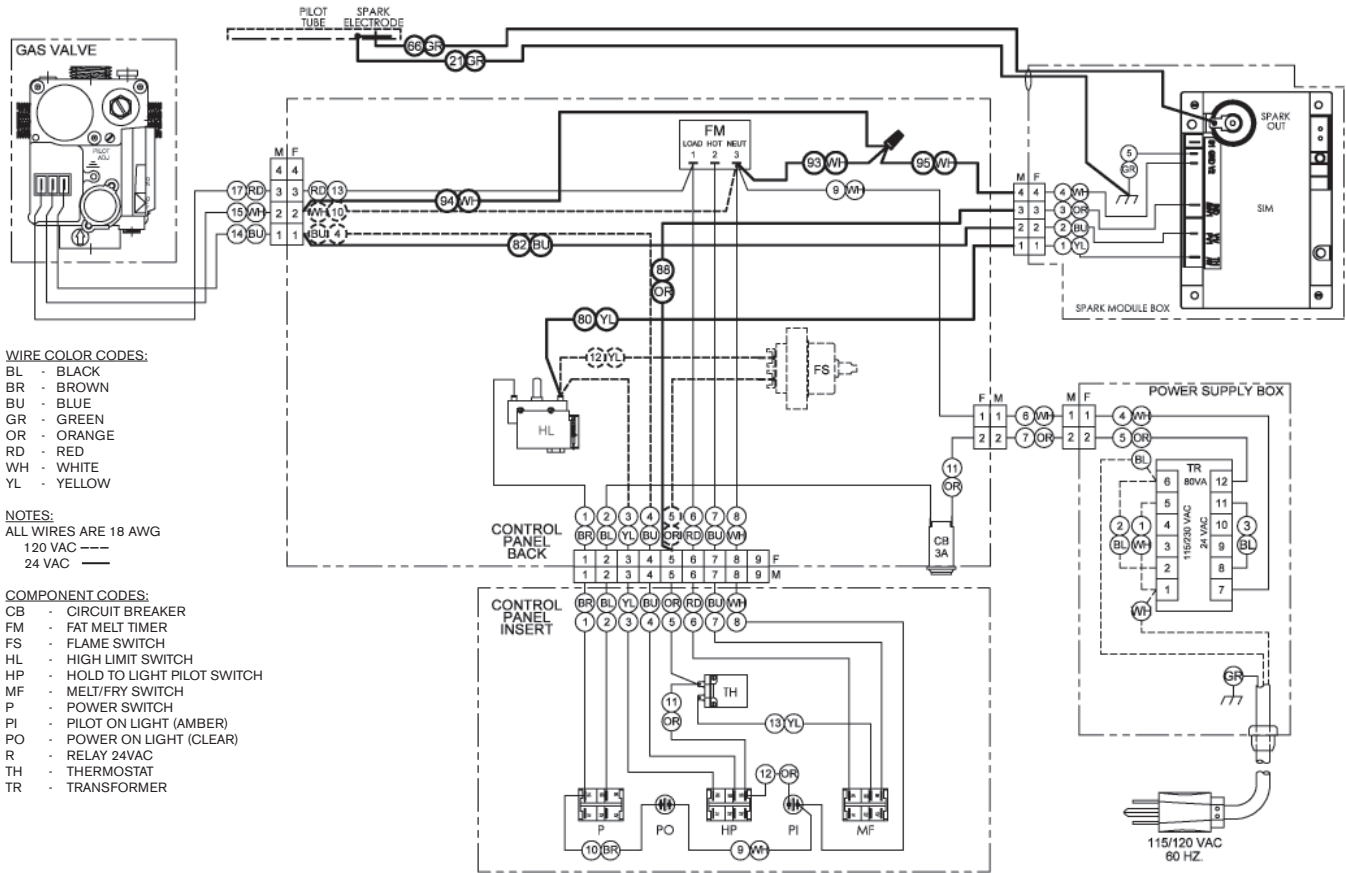
4. The spark module will continue to spark the electrode until pilot tube gas is lit and the sense electrode at the other end of the pilot runner tube is immersed in and detecting flame. (**NOTE:** The “remote” sense feature is not present on 10x11 fryers.) When the sense electrode is immersed in and detecting flame, the spark electrode will stop sparking.
5. Once the pilot tube is lit and sparking ceases, the fryer can be operated in the normal manner. **NOTE:** After conversion, the “Hold-to-Light” Pilot switch will no longer be used to light the pilot and will not be functional.
6. Adjust the thermostat to call for heat. All burners should light in a normal manner and produce flame as they normally would.
7. If the fryer is operating normally, adjust the thermostat to the OFF position and shut the Power switch OFF.
8. Re-assemble the Control Panel Back and Control Panel completely.
9. When re-assembled, test the fryer again before placing back in service.
10. **Affix the supplied lighting instruction label, Part Number 061024, over the original (found on the fryer door).**

SPARK IGNITION MODULE SPECIFICATIONS:

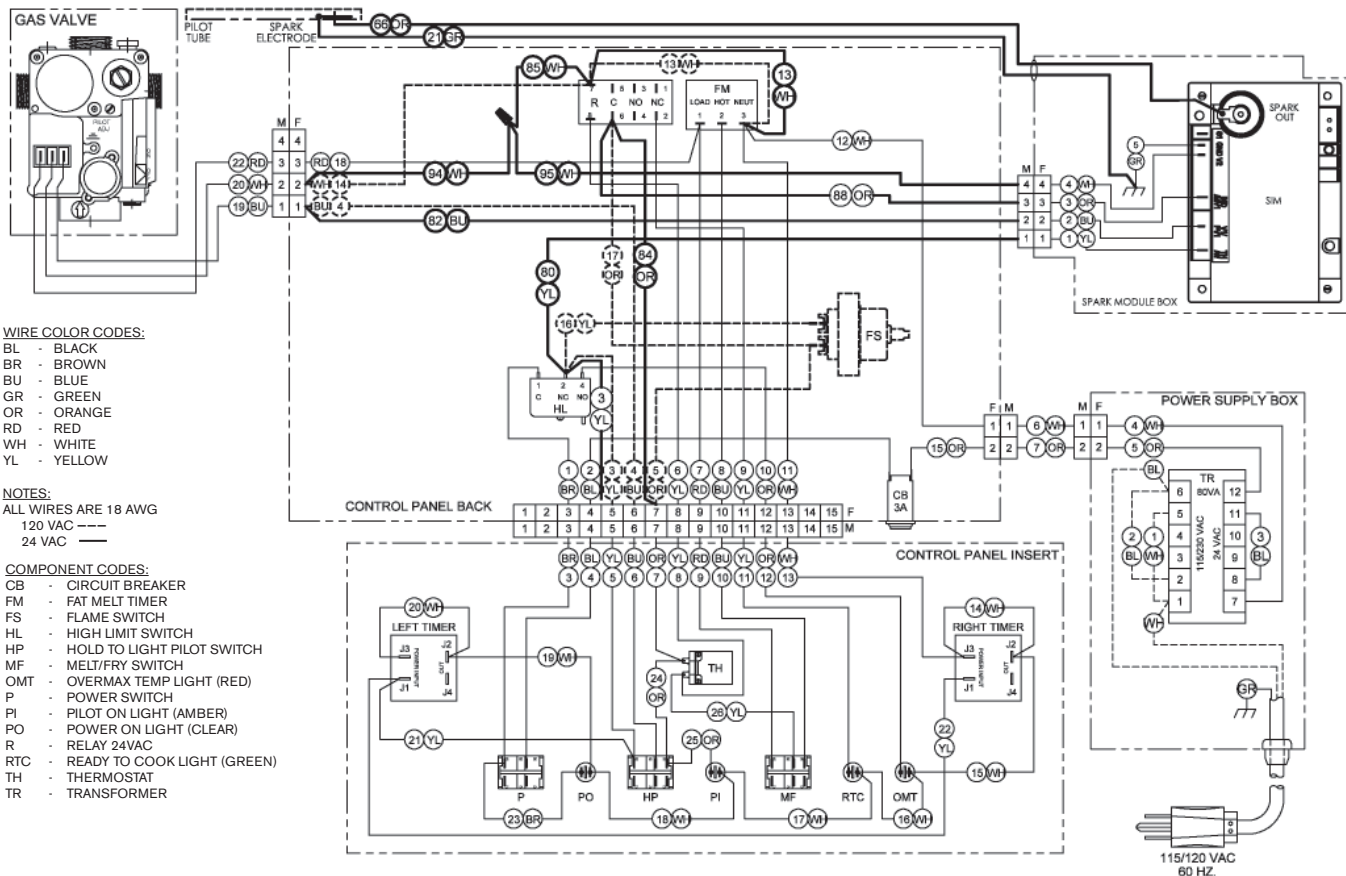
1. Tries for Ignition: 3 Tries, remote sense
2. Trial for Ignition Period: 90 sec.
3. Prepurge Timing: 0 sec.
4. Interpurge Timing: 4 min.
5. Fault Conditions:

LED INDICATION	FAULT MODE
2 Flashes	Pilot without call for heat
3 Flashes	Ignition Lockout
Steady On	Internal Control Fault

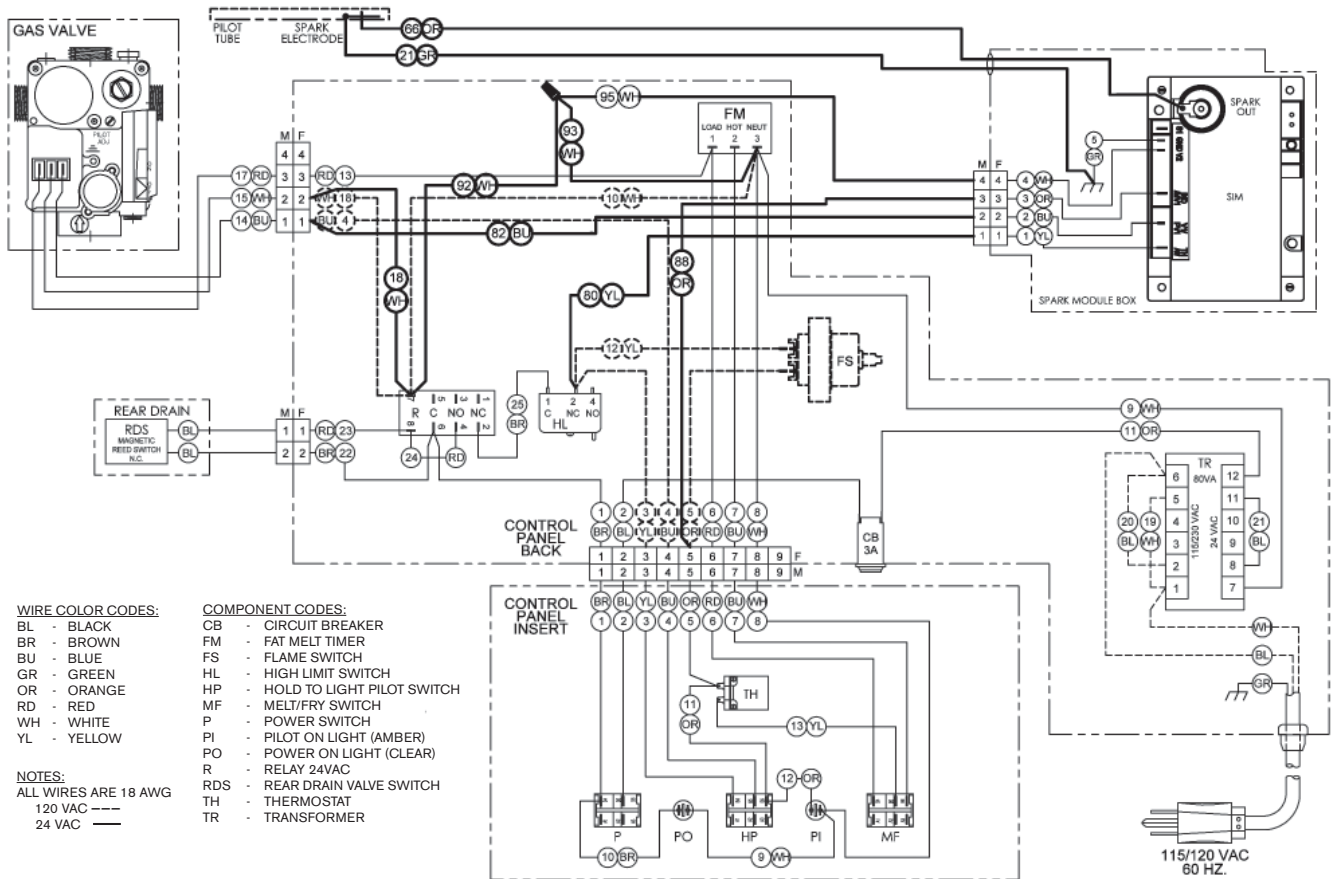
10x11 BB FRONT DRAIN FRYERS



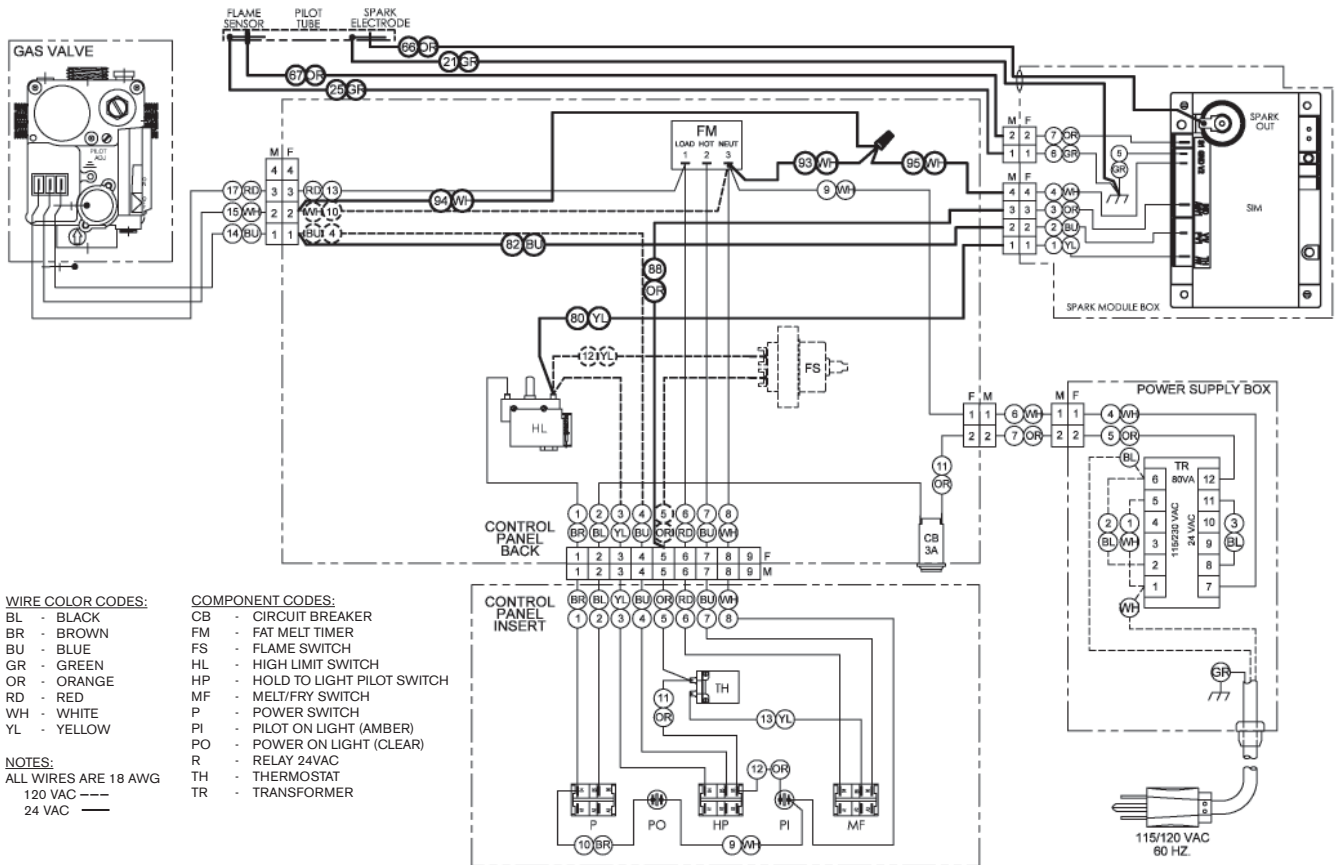
10x11 TS FRONT DRAIN FRYERS



10x11 BB REAR DRAIN FRYERS



BB FRONT DRAIN FRYERS



TS FRONT DRAIN FRYERS

