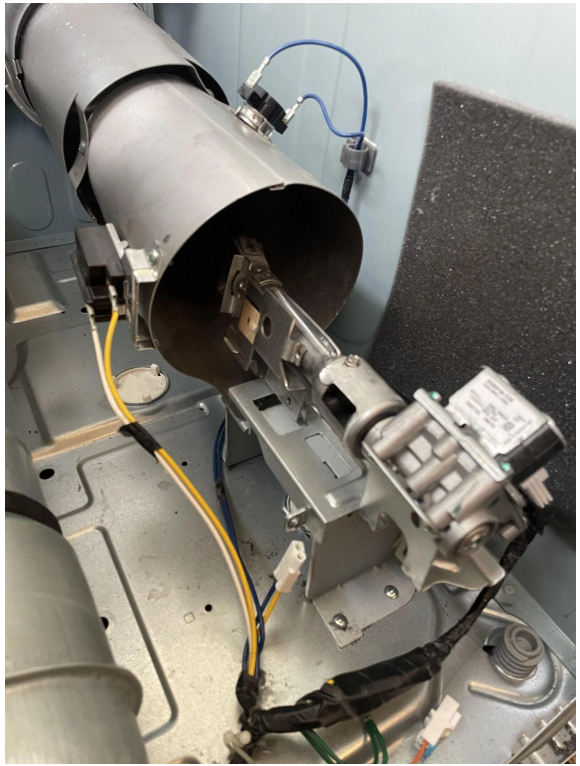
GAS DRYER HEATING ELECTRICITY

Content

- Gas electricity.
- Gas heating components.
- Theory of operation.



Brief prelude to the content below.

Flame Sensor

- Bi-metal switch.
- Shunt.
- Opens when heated.
- Closes when cooled.

Gas Valve and Coils

- Allows gas in.
- Regulates gas pressure.

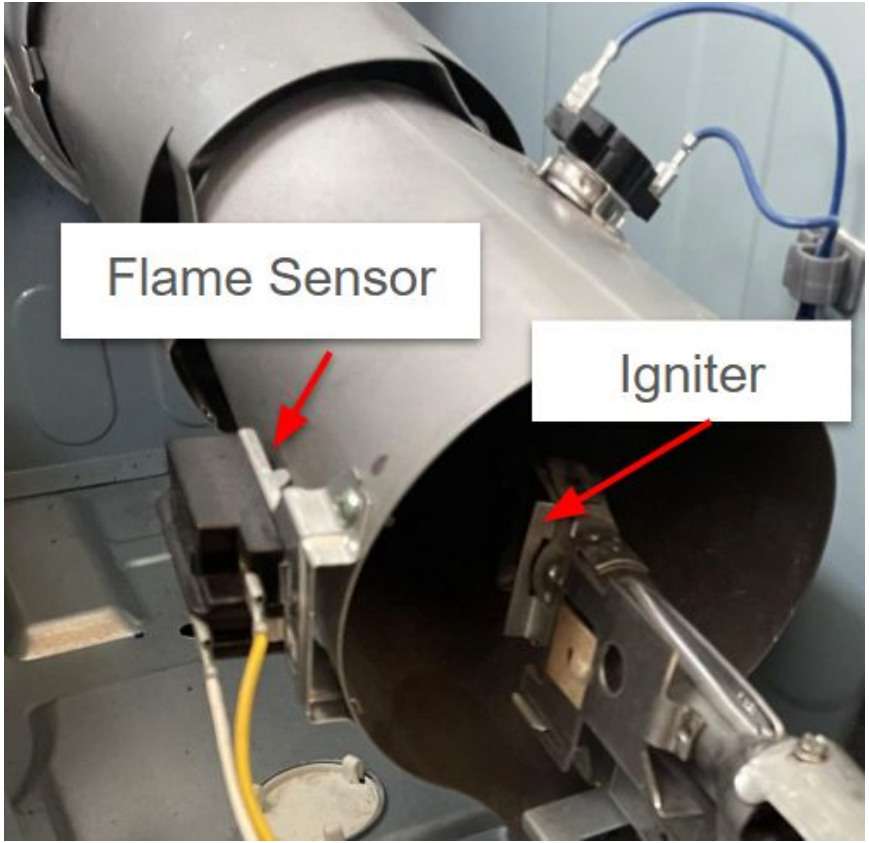
Igniter

- Glows red hot when energized.
- Heats the flame sensor.
- Ignites the gas.

Configuration

Igniter: Sits inside the heater housing at the end of the burner tube.

Flame Sensor: Sits on the side of the heater housing and monitors the heat output of either the flame or the igniter.

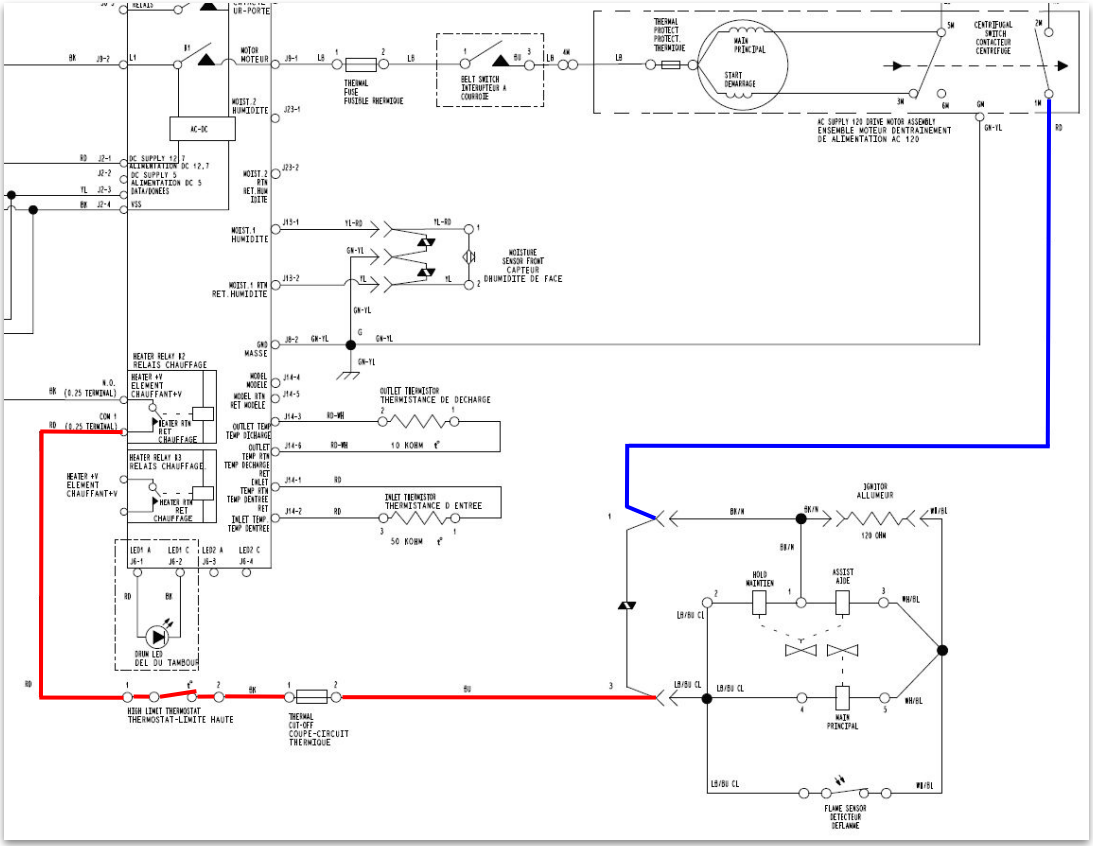


Electricity

Control system sends 120 VAC to the igniter circuit.

Centrifugal switch on the motor supplies Neutral to the heating circuit only when the motor is running.

MOV present for surge protection.



Electricity - Working Circuit

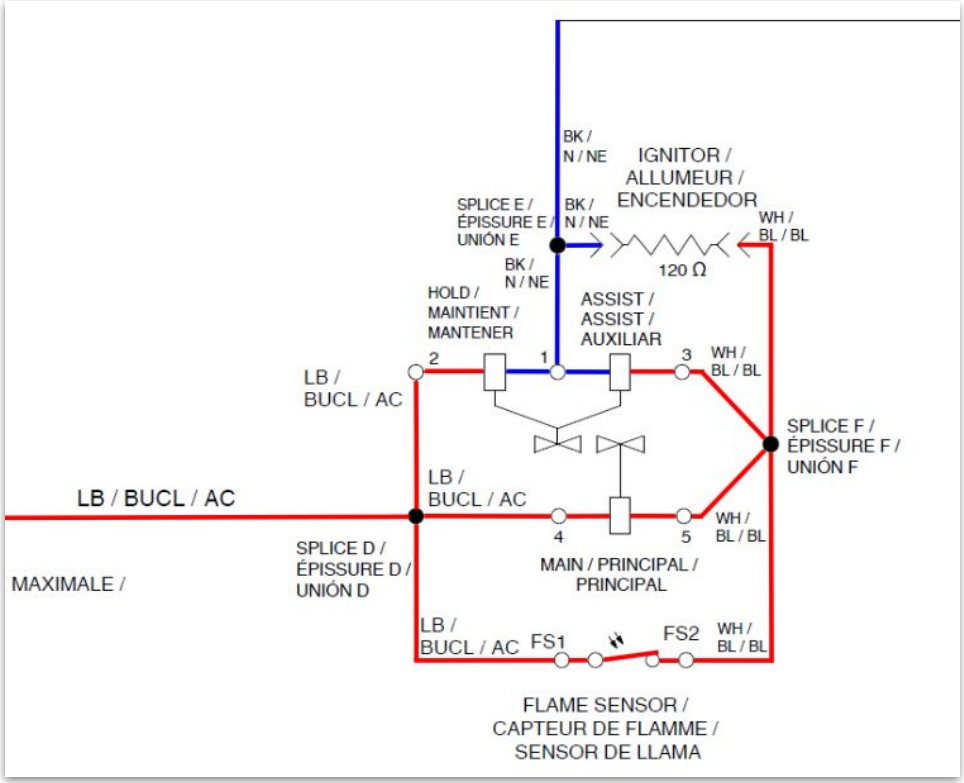
Flame sensor is in <u>closed</u> position.

- Shunt

<u>Hold</u> and <u>Assist coils</u> are energized.

<u>Main coil</u> does NOT have neutral to it, so it is not energized.

Stays this way until the igniter heats up the flame sensor and opens it.

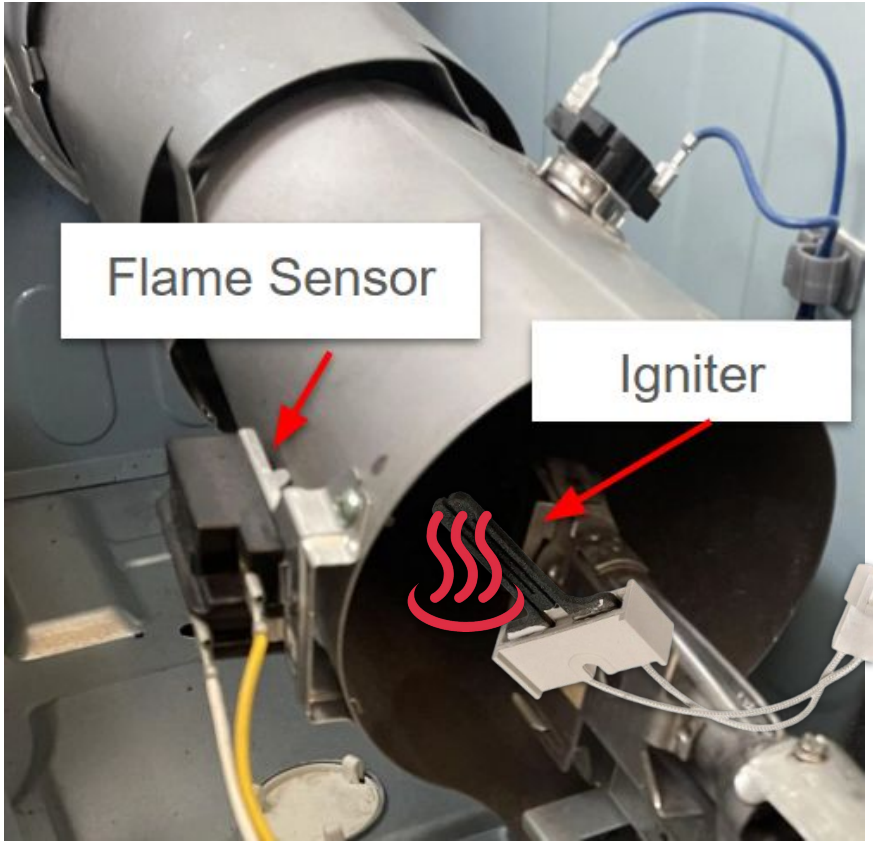


Igniter and Flame Sensor

Flame sensor is a bi-metal.

When the igniter is energized, it glows red hot and radiates heat.

When hot enough to achieve ignition, the bi-metal strips in the flame sensor open.



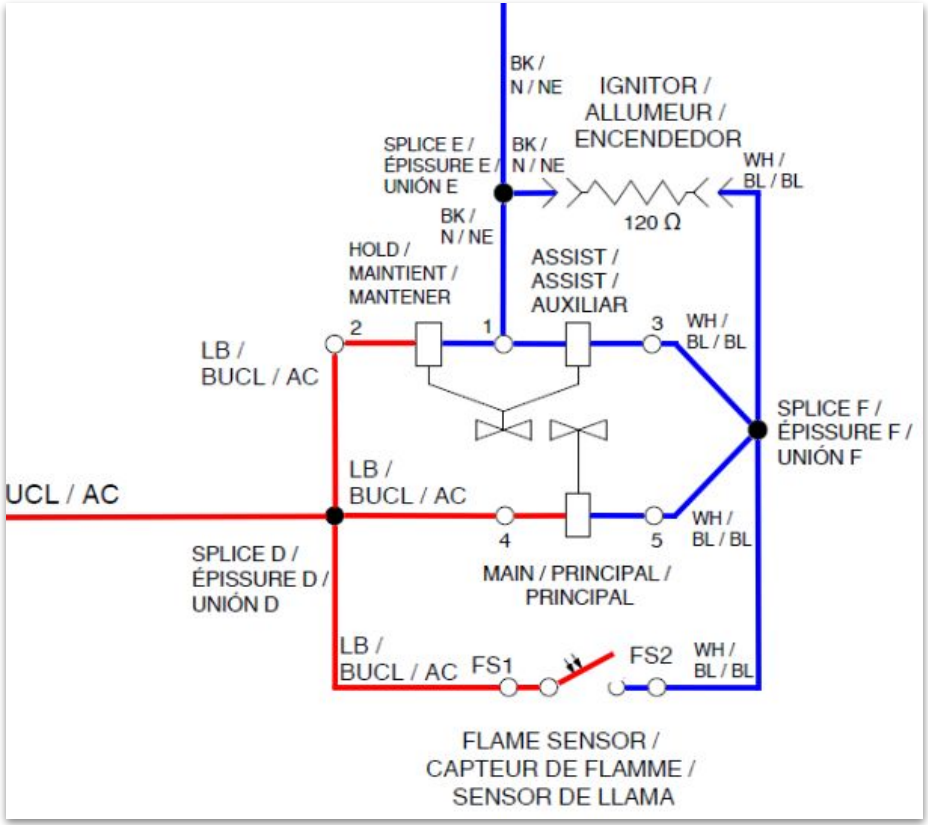
Igniter and Flame Sensor

When the flame sensor opens, voltage is then routed through the main coil.

Main coil now has Line and Neutral.

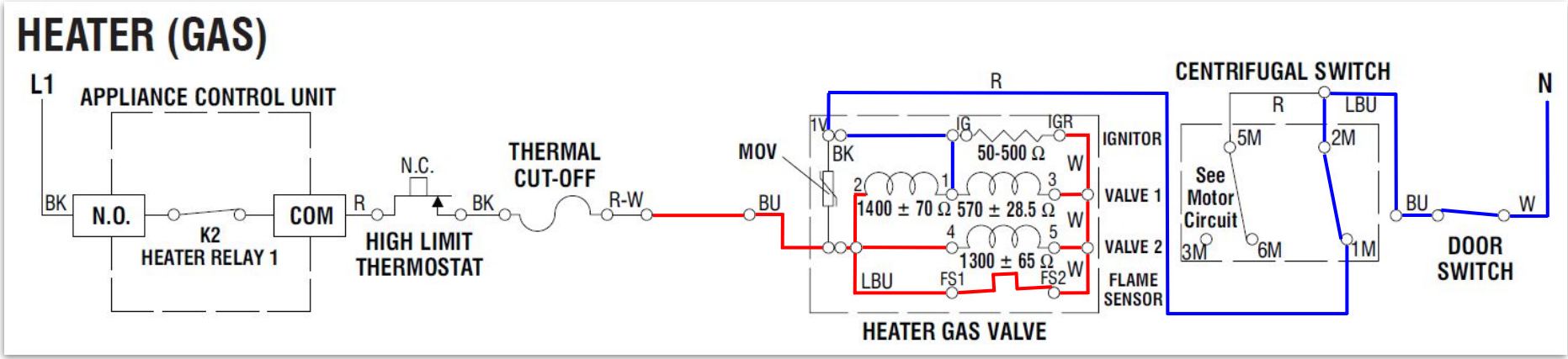
The gas starts flowing. Ignition is achieved.

The flame is now what keeps the flame sensor open. (Not like an oven where the igniter stays on all the time.)



Understanding Electricity

The beauty of understanding that a load needs Line and Neutral to operate is that you can look at a diagram, regardless the configuration, and apply these concepts to see how the circuit works.

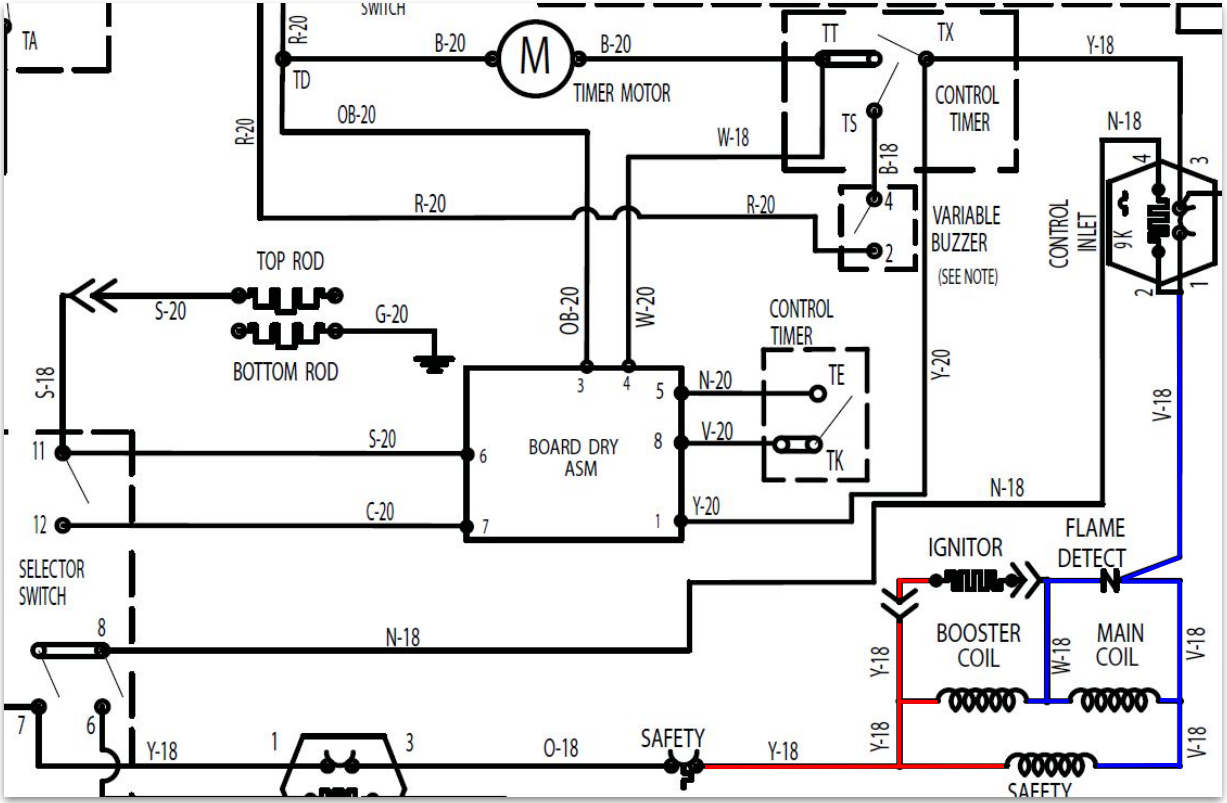


Understanding Electricity

On this GE gas dryer, the flame sensor is on the Neutral side, rather than the Line voltage side.

Safety and Booster coils are energized.

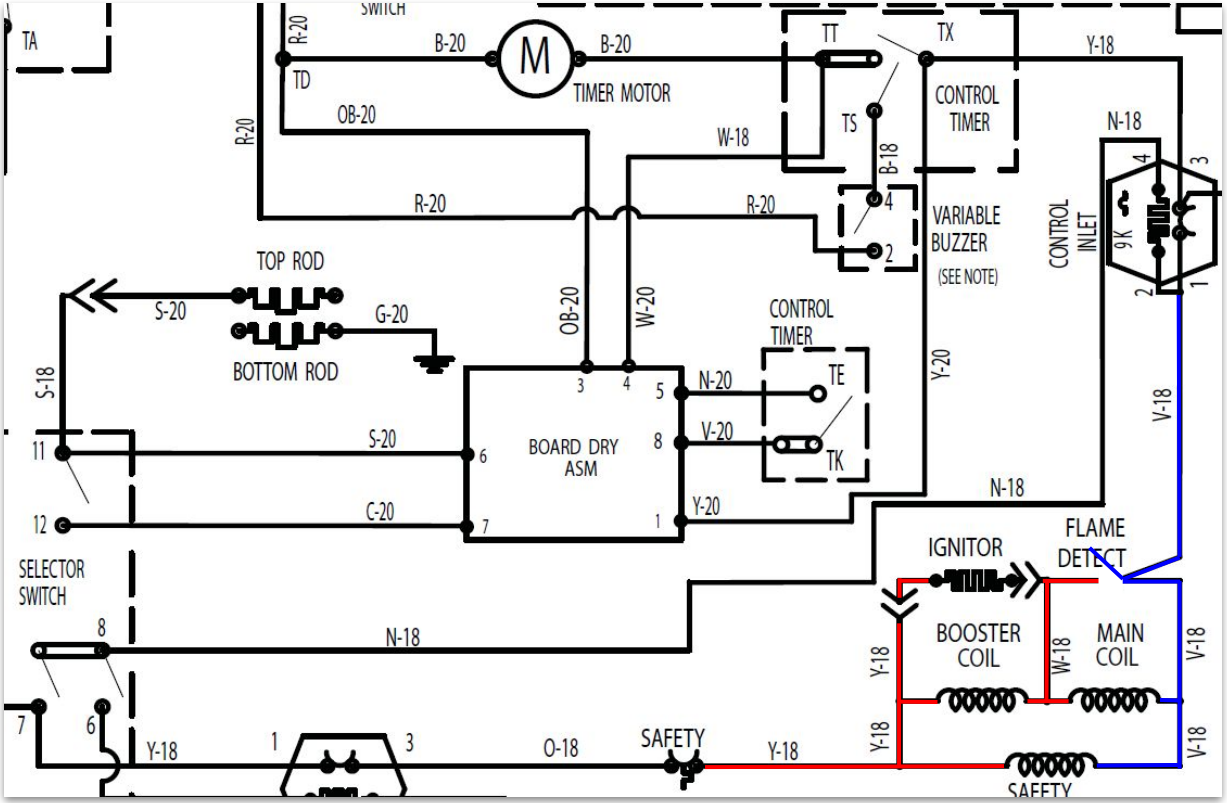
Main coil is not.



Understanding Electricity

When the Flame Sensor is heated up and opens, the voltage would look like this:

Flame sensor opens. Neutral is removed from the igniter. Line voltage is then supplied to the main coil.



Summary

- The flame sensor is there as a safety device. It ensures the main coil is not energized if there is not enough heat present to ignite flame. And if the flame goes out, then it will stop the flow of gas.
- The igniter does not stay on while flame is present. In the training module, we discuss why this happens and how the circuit works more in depth.
- Unlike with HSI ovens where the igniter needs to pull a certain amount of amperage to open the gas valve, the amp draw on a gas dryer igniter is irrelevant. Heat output of the igniter is what opens the flame sensor, not current.
- When you understand how the circuit works, you can then apply your understanding of voltage to determine where the failure is.