



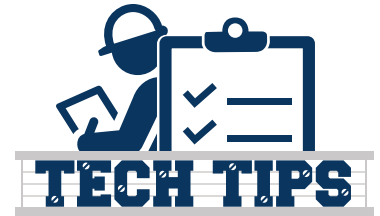
WE MAKE IT EASY™

IGNITORS

Ignitors - 1/3 of Combustion

The combustion process consists of three factors: fuel, air and an ignition source. If one of these three items are not met during an attempt for ignition, you won't have combustion!

Today, we're going to focus on current residential hot surface ignitors - how they've changed, how to test and other tips including how to tell them apart.



120v Silicon Nitride (SiNi)

Our most current ignitor is the silicon nitride 120v. These made a debut a few years back. You've probably noticed when replacing a board on an older legacy unit that the furnace IFC (board) superseded to a board and ignitor kit. The 120v SiNi ignitor is now used on the current S-Series furnace platform and is the replacement ignitor on most all 40" legacy furnaces in form of a KIT.

Specs:

37-70 ohms at room temperature

120v AC power

Shorter and "stubbier" than the 80v SiNi.

Common Part # is **IGN00152**

No voltage changes or learning routines.

More robust with environmental factors:



80v Silicon Nitride (SiNi)

These ignitors were around for quite some time in the legacy 40" furnace platform. There is more to them than our newest 120v SiNi. There is a learning routine in the IFC. There is also a Triac on the IFC that cuts the voltage to the ignitor via the learning routine. These are almost a faint memory as the superseded boards, and newer equipment is utilizing the 120v SiNi.

Specs:

11-17 ohms at room temperature

Ranging voltage

Longer and thinner than the 120v SiNi.

Common Part # is **IGN00145**

Voltage changes and learning routines.

Environmental factors have more of an impact (dirt/dust, moisture, electrical brownouts).



Where Do You Start with Troubleshooting?

- **Follow the heating sequence of operations – provide a “heat call.”**
 - Call for heat
 - Safety circuit is closed
 - Inducer is energized
 - Pressure switches close
 - Ignitor energizes
 - Gas valve opens
 - Flame proves
 - Blower energizes
- **If the ignitor does not glow, you’ll see the gas valve energize, then de-energize and the sequence of operations will be interrupted.**
 - This would be followed by a failure to ignite related fault and eventually a furnace lockout scenario.
- **Do you have a proper OHM value for the ignitor?**
 - Ohm the ignitor
 - 120v SiNi = 37-70 ohms @ room temperature
 - 80v SiNi = 11-17 ohms @ room temperature
 - If your ohm values are off, replace ignitor.
- **Start the heating sequence over.**
 - Have your meter ready to see if you get a voltage value. You must have a good ignitor, plugged in for a proper voltage reading.
 - 120v SiNi = 120VAC
 - 80v SiNi = ranging voltage between 60-100VAC pulsing and never a solid voltage ranging over 100VAC.
- **If you don’t have voltage, you may have an IFC issue.**
 - Isolate thermostat wires and jump “R to W” to retest heating sequence of operations.
 - If you still don’t receive voltage and no other faults are indicated by the IFC, you’re more than likely looking at a board/kit replacement.

Advanced Troubleshooting Tips:

- **If the Triac fails on an 80v SiNi IFC, you will receive 120VAC to the ignitor when the ignitor relay is energized. If this were to happen and you have an 80v ignitor in place, the ignitor will fail within a few weeks.**
 - The replacement board will more than likely come with a kit that includes a new 120v SiNi ignitor.
- **If there is a 120v SiNi / IFC kit installed and the ignitor fails, you need to be aware that you must order the 120v ignitor. If you use the serial number to order the ignitor, the system will show an 80v as it was in the original build sheet.**
 - You can look at the board and hopefully “120v Ignitor” is labeled on a white sticker.
 - If there is no label indicating what ignitor the board uses, call our Parts Counter with the board part number to confirm.



- **Grounding/neutral issues**

- **The 40" (legacy furnace) and 34" (S-Series Furnace) both have an "Ignitor Relay Fault."**

- This can cause confusion when troubleshooting the ignitor circuit at times.**

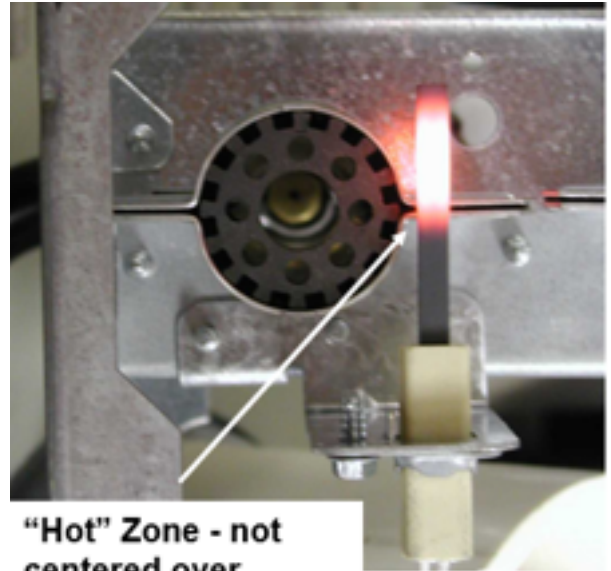
- A BAD neutral or ground can cause this fault to trigger and has nothing to do with the ignitor. The fault is triggered because there is transient voltage on the cabinet of the furnace and the relay circuit picking that voltage up.

- **You can confirm by reading voltage between ground and neutral or ground and neutral to the common of the IFC. If you are picking up voltage, you have a bad neutral or ground. You should read 0VAC.**

- **Poor ignitor position**

- **If your ignitor is too far off to the side (bent bracket) you may not have the ignitor close enough to the fuel source. You should have the "hot" zone centered over the crossover.**

Ignitors don't need to be difficult, but we must be aware of the changes and troubleshooting techniques. Furnace service literature does have flow charts that should help.



"Hot" Zone - not centered over crossover