

Servicing Ventex Magnetic GFI Transformers

Use Tri-LED™ Sensor Lamp Color Codes to Diagnose Primary Wiring Problems and Secondary Ground Fault Problems



GREEN — Power On / Normal SGFP Mode
(Blinking Green) - 4x = Ungrounded
3x = Reversed Polarity

RED — SGFP Trip to Off

AMBER — Test Mode For 29 Minutes
(Blinking Amber) - 4x = Ungrounded
3x = Reversed Polarity

Press **red** button once to enter Test Mode. Press again to return to Normal SGFP Mode.

Note: Neutral to ground volts (above 25) may cause green LED to blink 4X. Check voltage as well as ground connection. Check GTO wire and connections. Consult the Service Checklist at ventextech.com.

FOR NEON SERVICE PROFESSIONALS ONLY!

Follow this procedure for diagnosing UNT Service Pro transformers; please refer to the reference label for the color codes on the diagnostic Tri-LED sensor light.

Note: these instructions are for testing the Ventex Magnetic Transformer and finding GFI faults in the neon sign (if the sign is not lit and the Tri-LED lamp is off or red).

Step One: Turn primary power off. Disconnect both secondary leads. Turn primary power back on.

- a. Check primary power – Line to Neutral and Line to Ground should be 120v +/- 10%. N to G should be less than 3 VAC or it will interfere with GFI operation. Have an electrician fix the primary power if it falls outside of this range.
- b. Note the color of LED diagnostic lamp immediately after primary power is applied. The LED diagnostic light should turn on green and stay green without flashing. If it is flashing green refer to the label and fix the ungrounded or reversed polarity problem, before continuing service.
- c. If the Tri-LED light does not light the transformer is bad; if it turns on amber the transformer is bad; if it turns on red AND there is nothing attached to or touching the mid-point return lug, the transformer is bad (*). Replace the transformer if necessary.
- d. With the Tri-LED showing a steady green use GTO 15 to arc test between secondaries. Next, by pressing the red button once - putting the transformer in GFI bypass (overriding the GFI circuit for 29 minutes) each secondary can be arc tested to the case or to the service ground. If arc tests are good, proceed to step two. If the transformer does not pass the arc test the transformer is bad; replace the transformer.

Step Two: At this point we know the transformer is good (arc tested good and solid green Tri-LED) and we can move on to finding the fault in the sign that is causing it to trip off. If the transformer is sized correctly to the neon load we can test each side of the sign individually to help locate our grounding problem because (approximately) each half of the transformer runs half the sign (even though it is connected in series).

- a. Now we test each side of the sign: with the power off attach one of the pieces of GTO and insulate the other; turn the power on and note the color of the Tri-LED. Turn the power off, attach the second GTO lead and remove the first GTO lead and insulate it. Turn the power back on and note the color of the Tri-LED again.
- b. You should now have one of several options based on the test results:
 1. One side provided a red LED and the other side ran green. The grounding problem is in the red side. Because the energy is greatest at the transformer secondary terminal and decreases as you approach the center of the sign the problem is most likely to be in the first GTO out of the transformer and gets progressively less likely as you go towards the center of the sign. With this knowledge, carefully using the bypass function on the transformer (amber light lit) you likely can find the ground fault.
 2. Both sides turned on the red diagnostic light. This either means that the grounding problem is toward the middle of the sign or there are problems in both “halves” of the sign. Now you must split the sign in half by disconnecting the GTO between two of the center sections of neon. Repeat Step Two, a) to determine which half the sign is tripping off the transformer. In the very unlikely event that there are grounding problems on both halves of the sign, continue to disconnect sections and by process of elimination discover where the ground fault is.
 3. If both sides turned on green (and the transformer had output as tested in Step One, then there is an open circuit (dead or broken tube, bad housing, disconnected GTO) and the sign simply is not lighting. Use a neon tube tester to test the individual tubes.

**NOTE: If the sign is wired using the mid-point ground method, for testing purposes here, disconnect both pieces of GTO from the mid-point return lug and wire the GTO together (insulating it for the test) and reattach to the mid-point return lug after diagnosing the grounding problem.*

For further help please call our technical support line at 803-413-4068.



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