

Neon Transformer Installation Guide

⚠ DANGER! HIGH VOLTAGE



- ◆ Remove primary power before servicing the sign or transformer in any way.
- ◆ Secondary-Circuit Ground-Fault Protected (SCGFP) transformers will NOT provide protection against electrical shock. Potentially hazardous high voltage can be present.
- ◆ Service and/or installation should only be performed by qualified personnel.
- ◆ Do not assume power is removed from transformer if ground fault trip occurs (the transformer will automatically make 3 attempts within approximately 10 seconds to reset.)
- ◆ Installation must be in total compliance with the National Electrical Code[®], the requirements of Underwriters Laboratories and applicable local codes.
- ◆ Failure to properly ground this transformer may result in the transformer case and any metal connected to it (enclosure, conduit, sign frame, etc.) to become electrified if a secondary ground fault exists.

This Neon Transformer is Outdoor Type 4 Non-Weatherproof Suitable for Use Only in Dry & Damp Locations

INSTALLING the France P5KA2NG-2E Series Neon Transformers (see installation diagrams on reverse):

1. Securely mount the transformer.
 2. Remove transformer cover.
 3. Remove selected conduit knockouts from transformer's primary and secondary wiring compartments. Connect conduit to each wiring compartment knockout location, (A separate conduit is required for each high voltage GTO wire).
 4. Run the service through conduit connected to primary wiring compartment.
 5. Connect the line or "hot" (black - 120 volt or red - 277 volt) and neutral (white) service wires to the corresponding transformer wires.
 6. Connect the service grounding (green or bare) wire to the identified "Service Ground" terminal.
- NOTE: Improper grounding can result in electrifying all metal connected to the transformer during a secondary ground fault condition.**
7. From each first neon tubing electrode, run a GTO wire through its own conduit, raceway, sign body, etc., into the secondary wiring compartment. (These wires should be kept as short as possible, but may not exceed 20 feet). Connect each GTO wire to its respective transformer secondary high voltage bushing.
 8. Securely tighten the bakelite knobs (15 in-lbs. Minimum. GTO wire should not be stripped more than 1/4 inch from studs).
 9. Replace transformer cover.

TROUBLESHOOTING a tripped P5KA2NG-2E Series Transformer:

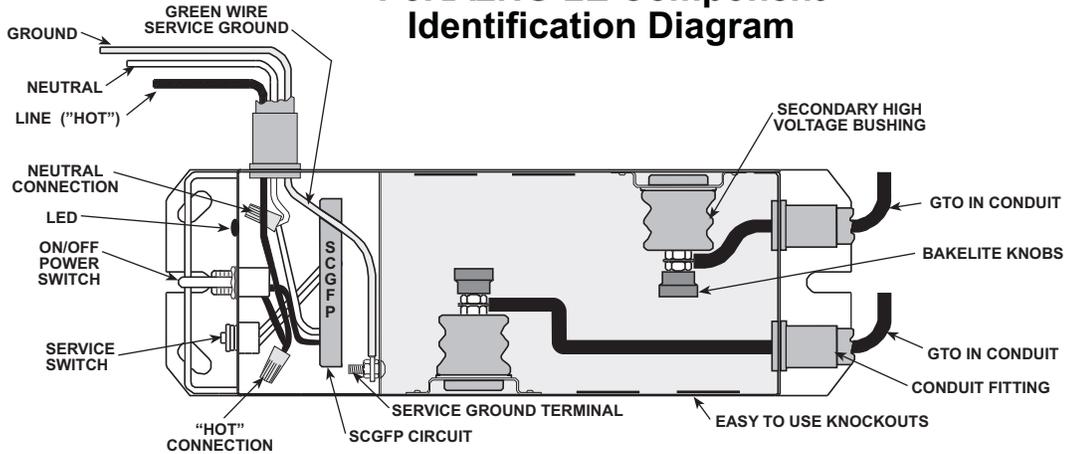
⚠ DANGER! HIGH VOLTAGE - Assure transformer is properly grounded before troubleshooting. (See NOTE above)

Service Switch does not operate without proper grounding of transformer.

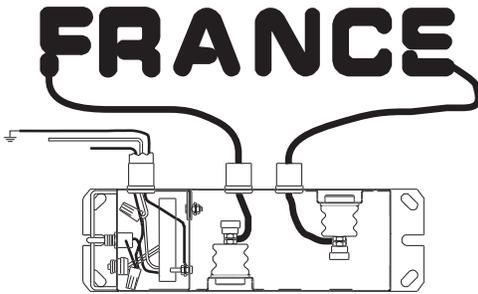
DIAGNOSTIC LED OPERATION	
LED Fault Code	Indicates
Steady ON	Operating normally
Continuous Flashing	In Service Mode
1 - Flash	15 second Diagnostic & Auto Reset Mode
2 - Flash	Secondary Ground Fault with service ground connected
3 - Flash	Secondary Ground Fault when service ground not connected
4 - Flash	Input Voltage exceeds 120% of rated
5 - Flash	Line & Neutral reversed on input connections

- ◆ Insure the line and neutral service wires are connected properly and are not reversed. Black or red wires should be "hot", while white wires should be neutral. The transformer will never energize the tubing if the line and neutral wires are reversed. If the supply wires appear to be connected properly, the polarity of the service wires themselves may be reversed (i.e. the black or red wire is actually the neutral and the white wire is actually the hot wire).
- ◆ Verify the service grounding wire is actually ground and is properly connected to the transformer's "SERVICE GROUND" terminal. Verify the transformer's identified service ground terminal is grounded via wire (or via the transformer mounting plate) to the sign enclosure.
- ◆ Make sure the midpoint of the sign is not connected to any ground.
- ◆ Check for excessive leakage currents caused by moisture within or on the sign, tubing installed too close to metal, contaminated insulators or standoffs, or conductive debris such as insects, dirt, etc. between live high voltage sign components and ground.
- ◆ Check for electrical shorts or arcs from live high voltage sign components to ground. To help locate the source of such faults, the Secondary-Circuit Ground-Fault Protection (SCGFP) feature may be temporarily disabled. To activate this Service mode, momentarily depress the small push-button on the end panel of the transformer while service power is applied - the SCGFP feature will be disabled for approximately 29 minutes, after which the transformer will return to normal operation. Return to normal operation at any time by cycling the power switch "OFF" then "ON". The service mode cannot be activated if the transformer is not properly grounded. **Warning: During Service mode, no protection against an abnormal arc-induced electrical fire exists. No protection against electrical shock exists during any operational mode.**
- ◆ After the source of any fault is removed, the transformer can be reset by cycling the power switch "OFF", then "ON".

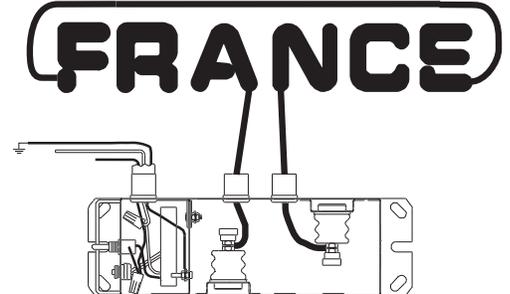
P5KA2NG-2E Component Identification Diagram



Standard Series Wiring Method:
(Please read instructions on reverse)



Virtually-Grounded Series Wiring Method:
(Please read instructions on reverse)



When will a Secondary-Circuit Ground Fault Protection P5KA2NG-2E Series Transformer NOT trip:

- ◆ Ground faults on the primary (line) side of the transformer. **Secondary-Circuit Ground-Fault Protected Transformers will NOT provide protection against electrical shock.**
- ◆ Series arcs in the sign system (arcs associated with defective tubing interconnections or between sign tubing sections).
- ◆ Breaks in the sign tubing, degassed tubing, or opens in the high voltage connections without a corresponding short or arc to ground.
- ◆ Shorts to an ungrounded metal part within or near a sign.

NEON TRANSFORMER WITH UL2161 COMPLIANT SERVICE SWITCH

A push button style service switch is located on the end of the primary wiring compartment. To activate service mode: while the transformer is on, depress and hold the switch for 1 second and release. The tubing will flash on 3 times to indicate the transformer is in service mode (SCGFP circuit is disabled). The tubing should then remain on. The tube may not light if the tube is broken or shorted. The LED will constantly flash while unit is in service mode. The unit remains in service mode for 29 minutes. After 29 minutes, the unit will return to normal mode. To escape service mode before the 29 minutes has elapsed, depress the service switch and hold for 1 second and release, or turn power off, wait 3 seconds, then turn power on. The unit will restart in normal mode.

LUMINOUS TUBE FOOTAGE CHART

TRANSFORMER RATING		Approximate Number of Feet of Tubing Operated ¹																
Secondary Voltage V	Short-Circuit Current mA	Clear or Fluorescent Red Neon (Also Recommended for Neon Fluorescent Gold Tube Size, Millimeters)									Clear or Fluorescent Mercury Filled Tubes All Colors (All Enclosed Applications) ² Tube Size, Millimeters						Secondary Voltage V	
		18	15	14	13	12	11	10	9	18	15	14	13	12	11	10		9
15,000	30 / 60	72	60	54	50	45	40	36	32	80	72	64	60	54	48	44	39	15,000
12,000	30 / 60	55	45	42	39	35	32	29	26	62	55	50	46	42	38	35	31	12,000
10,500	30	48	39	36	34	31	28	25	22	54	48	43	40	37	33	30	27	10,500
9,000	30 / 60	40	33	30	29	26	24	21	18	45	40	36	33	31	26	25	22	9,000
7,500	30 / 60	28	26	24	22	21	19	17	15	35	31	28	27	25	23	20	18	7,500
6,000	30	23	20	19	18	16	15	13	12	26	24	23	21	19	18	16	14	6,000
5,000	30	19	17	16	15	12	11	10	8	23	20	19	16	15	13	12	10	5,000
4,000	30	16	13	12	11	10	9	8	7	19	16	14	13	12	10	9	8	4,000
Recommended Gas Pressure mm/Hg		8	9	10	10	11	12	13	15	8	9	10	10	11	12	13	15	

(1) Based on average grade. (2) All enclosed applications. Exposed and extremely cold climates may require footage be reduced by 10-20%.
NOTE 1: Deduct approximately 1 foot from above figures for each pair of electrodes.
NOTE 2: Recommended gas pressure for 10-ft plus lengths. Increase 10% for tube lengths under 10 ft.