**NEON TRANSFORMER**

**NEON TRANSFORMER WITH UL2161 COMPLIANT SERVICE SWITCH**

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 (SGFP circuit is disabled). The tubing should then remain on. The tube may not light if the tube is broken or shorted. The green LED will constantly flash while unit is in service mode. The unit remains in service mode for 10 minutes. After 10 minutes, the unit will return to normal mode. To escape service mode before the 10 minutes has elapsed, depress the service switch an hold for 1 second and release, or turn power off, wait for 3 seconds, then turn power on. The unit will restart in normal mode.

**Specifications:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Items  Models | input | | output | |
| Voltage (V) | Current(A) | Voltage(KV) | Current(mA) |
| T30-150 | 120V AC/60Hz | 3.90 | 15 | 30 |
| T30-120 | 120V AC/60Hz | 3.40 | 12 | 30 |
| T30-090 | 120V AC/60Hz | 2.80 | 9 | 30 |
| T30-075 | 120V AC/60Hz | 2.30 | 7.5 | 30 |

**The loaded lamp (tube) length can be adjusted to the maximum value listed below:**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Items Models | Tube Diameter (mm) | 18 | 15 | 14 | 13 | 12 | 11 | 10 | 9 |
| Gas Pressure (mmHg) | 8 | 9 | 10 | 10 | 11 | 12 | 13 | 15 |
| Tube Type | Maximum Load Length (ft) | | | | | | | |
| T30-150 | Neon | 72 | 60 | 54 | 50 | 45 | 40 | 36 | 32 |
| Mercury | 80 | 72 | 64 | 60 | 54 | 48 | 44 | 39 |
| T30-120 | Neon | 55 | 45 | 42 | 39 | 35 | 32 | 29 | 26 |
| Mercury | 62 | 55 | 50 | 46 | 42 | 38 | 35 | 31 |
| T30-090 | Neon | 40 | 33 | 30 | 29 | 26 | 24 | 21 | 18 |
| Mercury | 45 | 40 | 36 | 33 | 31 | 26 | 25 | 22 |
| T30-075 | Neon | 28 | 26 | 24 | 22 | 21 | 19 | 17 | 15 |
| Mercury | 35 | 31 | 28 | 27 | 25 | 23 | 20 | 18 |

**Remark:**

The maximum length in feet may vary according to output cable length and environment. Deduct one foot from above figures for each pair of electrodes while more than two tubes connected in series. Figures for mercury tubes are based on operation in temperature above 4℃. Deduct 25% value of above if operation below 4℃. Do not operate over the maximum value, otherwise the lifetime and performance of this device may be reduced.

**Neon Transformer Installation Guide**

**DANGER!  HIGH VOLTAGE**

l **Remove primary power before serving the sign or transformer in any way.**

l **Secondary Ground-Fault Protected (SGFP) transformers will NOT provide protection against electrical shock. Potentially hazardous high voltage can be present.**

l **Service and/or installation should only be performed by qualified personnel.**

l **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.)**

l **Installation must be in total compliance with the National Electrical Code, the requirements of Underwriters Laboratories and applicable local codes.**

l **Failure to properly ground this transformer may result in the transformer case and any metal connected to it to become electrified if a secondary ground fault exists. The transformer should have a good ground.**

**A good ground is:**

**a) An approved and properly sized grounding wire that can be traced all the way back to breaker panel.**

**b) Metallic conduit terminated in fittings listed for grounding all the way back to its breaker panel.**

**This Neon Transformer is Outdoor Type 2 Non-Weatherproof**

**INSTALLING the Neon Transformers (see installation diagrams in page 1):**

1. Securely mount the transformer in an approved metallic enclosure.

2. Run the service wires through conduit into approver enclosure.

3. Connect the line service wire to the identified positive terminal. Connect the neutral service wire to the identified negative terminal. Insure the line and neutral service wires are connected properly and are not reversed.

4. Bond the service grounding wire to the sign enclosure per UL48 and the National Electrical Code. Electrically connect another wire to this same service ground connection or to a terminal secured to a grounded part of the sign enclosure. Connect the free end of this wire to the identified service ground (“G”) terminal on the transformer.

5. Improper grounding can result in electrifying all metal connected to the transformer during a secondary ground fault condition.

6. Run GTO wires from the first neon tubing electrodes through separate conduit, raceway, sign body, etc. to each transformer secondary high voltage bushing. (These wires should be kept as short as possible, but may not exceed 20 feet.)

7. Make sure to securely tighten all service and high voltage output terminal nuts.

8. Replace transformer can box cover if applicable.

**Troubleshooting Guide**

The neon transformer has two diagnostic LED(red & green). (see installation diagrams in page 1)

**DIAGNOSTIC LED OPERATION**

|  |  |  |  |
| --- | --- | --- | --- |
| **Green LED** | **Red LED** | **Load tubing** | **Indicates** |
| Steady on | Off | On | Unit is in Normal Operation |
| Continuous Flashing | Off | On | Unit is in Service mode |
| Off | Pulses : 2 | Off | A Secondary Ground Fault exists |
| Off | Pulses : 3 | Off | Unit is not Grounded |
| Off | Pulses : 4 | Off | Input Voltage is out of range(105V-135V) |
| Off | Pulses : 5 | Off | Secondary-Circuit Open  or Overload |

  Insure the line and neutral service wires are connected properly and are not reversed.

  Verify the service grounding wire is actually ground and is properly bonded to the sign enclosure. Verify the transformer’s identified service ground (“G”) terminal is grounded via wire to the sign enclosure.

  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 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 Ground-Fault Protection (SGFP) may be placed in “Service” mode. To activate service mode, momentarily depress the small pushbutton on the transformer. While in service mode, power is applied and the SGFP feature will be disabled for approximately 10 minutes, after which the transformer will return to normal operation. Return to normal operation at any time by removing and reapplying service power or by pressing the service button again.

**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 removing and reapplying supply power.

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