

## LINEMAN'S TESTING LABORATORIES' POTENTIAL INDICATOR

### General

The need for more reliable indication of line potential for higher voltages lead to the development of portable potential test indicators which employ special resistor units and a small neon lamp. Within their specified voltage range, the indicator will prove potential of line, fuses or other electrical apparatus. The indicators are made in the following ratings: 7kV, 15 kV, and 30 kV line-to-ground. The LTL potential indicating device is not recommended for DC use.

### Testing

Each indicator has successfully passed the following tests:

|              |       |         |       |
|--------------|-------|---------|-------|
| Rate Voltage | 7 kV  | 15 kV   | 30 kV |
| Test Voltage | 12 kV | 25.5 kV | 51 kV |

Testing is conducted for 1 minute, and leakage current is measured. The marking labels show the rated maximum detection voltage in AC. The following are the threshold values for the LTL Potential Indicator:

| Operating Range | Threshold Voltage         |
|-----------------|---------------------------|
| 110V - 7kV      | $16.5V \leq U_t \leq 44V$ |
| 110V - 15kV     | $16.5V \leq U_t \leq 44V$ |
| 110V - 30kV     | $16.5V \leq U_t \leq 44V$ |

Threshold voltage is the minimum voltage that the indicator will begin to function.

### Method of Use to Detect the Presence of Voltage

When the handle of the indicator is grasped in the hand and the probe tip applied to a live circuit within the specified voltage range, the neon lamp will flash or glow. The indicator has a ground screw on the handle end, and this should be utilized. Wear insulating rubber gloves and other required safety equipment as per government requirements or internal policy.

For use, the procedure shall be as follows:

1. The indicator shall always be checked by testing for the presence of voltage on a known operating voltage. The lamp should glow normally. The purpose of this test is to ensure the indicator is working. Attach a ground wire to a ground source when checking for the presence of voltage. Wear appropriate PPE utilizing proper work methods.
  - i. To connect the unit to ground, attach a ground lead to the ground screw and the other end to a known ground source.

2. If test #1 gives a normal indication, then the test point of the indicator may be placed on the conductor under test. Attach a ground wire to a ground source when checking for the presence of voltage. Wear appropriate PPE utilizing proper work methods.
  - i. To connect the unit to ground, attach a ground lead to the ground screw and the other end to a known ground source.  
If the lamp does not light, the apparatus may be considered free of potential greater than 115 volts, but only after test #3 has been conducted to re-verify the indicator.
3. Re-test the instrument as in test #1. If the lamp glows, the indicator is in good condition and its indication in test #2 may be utilized.

If no appropriate voltage source is available, the tests in # 1 and #3 may be made on a portable test source available though LTL or a 115 volt receptacle. Low voltages will cause a delay in the lamp glowing as the units are designed for sensing higher AC voltages. This will also be true if using DC voltage for your test source.

## PRECAUTIONS

- 1 All appropriate safety equipment for high voltage work should be utilized whenever the indicator is used. Approved work and safety practices established by the safety officials of the utility or work place should be followed at all times.
- 2 When using the indicator, the hand should be kept on the metal portion of the handle, as described in **Method of Use**.
- 3 Care should be taken to prevent the upper part of the indicator from coming close to, or in contact with, neighboring live conductors.
- 4 The lamp indication should be verified. If no lamp light is detected, it should be closely checked, ensuring the probe tip is making good contact with the conductor under test. This is particularly important when the indicator is used at the lower end of its voltage range. A lapse of time should be allowed (10 to 15 seconds) for the lamp to indicate.
- 5 When contacting corroded terminals or lacquered surfaces, the probe tip should be pressed firmly or scraped across the surface to break the insulating film.
- 6 All parts of the indicators should be kept clean and dry. Sturdy carrying cases are provided and should be used to protect the instruments from the weather and/or from being damaged otherwise.
- 7 An indication that a piece of apparatus is free of potential should never be considered justification for the omission of grounding where such is required by the Safety Rules and Standard Protection Code.

## Possible Defects

If, for any reason, an indicator fails to function properly, or if a breakage of any part should occur, the device should be forwarded to Lineman's Testing Laboratories for necessary repairs or testing.

## Periodic Test of Potential Indicators

The wide margin of safety provided in the potential indicators is expected to endure for all normal use. However, it is recommended that each unit be re-tested every year by Lineman's Testing Laboratories.

## Transporting & Storing the Unit

The unit shall always be transported in a case to protect the integrity of the tube and avoid getting wet. Storage of the unit shall also ensure protection from moisture and impact damage. After each use, wipe the unit with a clean rag to remove any contaminants. Alcohol may be used to ease the removal of grease and oils. NO components of this potential indicator can be replaced by the end user.