BOTTER Designs

SEW®

HIGH VOLTAGE DETECTORS

APPLICATION NOTE 20

by Jacques Botte V2.00

WHY, WHERE AND HOW TO USE THEM

High Voltage Detectors are mostly used where personnel need to be informed of the presence of High Voltage in their proximity or on equipment near where work is going to be performed on. High Voltage Detectors can be of different types: **Proximity Detectors** (detect voltage as you approach the source) and **Contact Detector** (only indicate when you make one or two contacts with the source). In all cases, **High Voltage Detectors are only used to positively identify High Voltage presence, but not their exact amplitude. High Voltage Detectors are not to be used to confirm the absence of High Voltage**.

275HP

A Proximity Detector is used to Warn the user of potentially deadly situation and, possibly prevent serious Accident.

NYLON

WATER RESISTANT

The **275HP is a *Portable*** and **Battery Operated** **High Voltage Proximity Detector** which detects the proximity of electromagnetic fields created by AC signals.

If you are very close to the source of an electromagnetic field, that field is bigger than if you were at a distance from the source.

As you go further away from that source, the field progressively weakens.

Some source are higher than others. That's why the 275HP has different settings. When checking a high source, the 275HP can be set to a higher setting (if it was left on a lower setting, the voltage could be detected from further away of that source).

The 275HP has a light and a buzzer which indicates the presence of voltage within proximity.

Briefly, How does it work?

The 275HP has a sensor which sense the voltage. When voltage is detected within proximity, the 275HP sounds and light an alarm.

It has an attenuator rotary switch which draw more or less current from that field. (The lower the current, the more sensitive it is). When on a higher setting, the 275HP needs more volts per meter (V/M) to trigger the voltage proximity alarm circuitry. So, turning the rotary switch clockwise means that more V/M is required to trigger the 275HP, and vice versa. The rotary switch is clearly marked with the system voltage settings.

Why use the 275HP

The 275HP is used to detect the proximity of High Voltage AC, without touching the conductors. This is a safe and quick method to determine if High Voltage is present on Cables or equipment before proceeding with any work **around** such equipment. This does not replace the contact test which guarantee that a system is or isn't live.

Where to use the 275HP

The 275HP is used where personnel must be protected from high voltage or know the presence of high voltage. This is used before and during proceeding with any work around suspected High Voltage cables or equipment.

How to use the 275HP

The 275HP is utilized, the following way:

First the 275HP's function switch is turned on the "TEST" position, that will test the entire circuitry, from the sensor, to the buzzer and the light

indicators (refer to user's manual for more details). Once this has been done, turn the rotary switch to 240Vac, then rub the dome of the 275HP on your clothes. That should trigger the sensor and sound. Now, you can select the voltage you want to detect.

Comments

The 275HP can be proved before and after it's test. This does not replace the use of Phase comparators, or the proper checking with contact measuring equipment. If work needs to be done on the equipment where the voltage was detected, **always ensure with a contact measuring device about that voltage**.
Please note that the 275HP must be used in conjunction with an insulated stick when checking in the proximity of voltages higher than 240Vac.

285HD

Permanently mounted High Voltage Detector Detects electric field In non-shielded Cables and conductors. Requires no Batteries. Shows "LIVE" on large And clear LCD.

The **285HD is a *Permanently Mounted*** High Voltage **Detector.** It **does not use batteries.**
The electrical field around a High Voltage cable gives enough energy to the 285HD to detect if high voltage is present and to power it's internal circuitry which will activate the warning LCD.

Briefly, How does it work?

The 285HD collects the electric field around the cable on which it is mounted to supply it's internal circuitry and drive the flashing Red LCD. Because of it's exceptionally low power consumption, it does not require batteries. Once enough power is collected from the electrical field, the LCD flashes "LIVE"- "blank". The level at which the LCD start flashing is the trigger level of the 285HD.

Why use the 285HD?

The 285HD is used to detect the presence of High Voltage AC on Cables or equipment/conductors. It's fixed permanently so that a report on the status on input or output of the equipment is visual and instantaneous.
There is no need to prepare bulky and expensive equipment when just a quick check is needed, for example when you just need to know if a system is "ON", or a phase is energyzed.

Where to use it?

The 285HD is used where personnel must be protected from high voltage or know the presence of high voltage on cables. It is used on the primaries and secondaries of transformers, on the input and output of High Voltage Contactors or fuses. This simple device is **utilized to give the "LIVE" status of the equipment** but can't be utilized to check a non live status.
Personnel without the contact measuring equipment can report "LIVE" status. This is a **quick fault finding device** which save valuable time during an emergency fault condition. Just by **visually checking** the 285HD, you **can quickly** see which cables or circuits are positively identified as "**LIVE**". **And fault-finding is much quicker, thus saving valuable and expensive down time.**

How is it used?

The 275HD is utilized the following way: It is inserted (clipped) on the non shielded High Voltage cable (or other conductor), then tied up (secured) with two cable ties. Nothing else must be done to install and use this device. It's always ready to be visualized.

Comments

This unit does not have a proving facility while installed, so when showing that a cable is not live, other measuring equipment must be used to confirm that status before proceeding further. When the 285HD does not indicate "LIVE", that must be regarded as "we don't actually know.
This simple device is **utilized to give the "LIVE" status of a cable** but can't be utilized to check a non live status. The non indication must be disregarded.

276HD

The 276HD from SEW is a AC CONTACT HIGH VOLTAGE DETECTOR. The conductor must be touched by the probe to detect voltage presence. This "state of the art" contact detector only uses three little batteries. It has MULTIPLES TELESCOPICALLY ARRANGED, FIBER GLASS HIGH VOLTAGE GRADE, INSULATING ELEMENTS (they slide into each other) to insulate the user from the High Voltage (touched by the probe) and to increase the safety distance between the probe and the Hand Grip. When using the 276HD, it is recommended to retract all the insulating elements to increase the safety distance to It's maximum (1000mm or 1

meter). The user's must hold the detector by it's "HAND GRIP" type handle .
The DETECTING HEAD is water resistant and is assembled to stop dust, water and other contamination to enter. It's not just lightweight (120Gr) but it's also compact. It can be stored in a tool box as it only measure 354mm (Length) when stored.
A Proving "TEST" button situated on the detecting head serves as a complete system check. It verify the proper working of the Detection, Buzzer and Light Indicator, ensuring perfect functioning of this Contact High Voltage Detector before using it.

High Voltage AC from 3.3kV, 6.6kV to 24kV can be detected into Insulated Wires (depend of material) without insulating electrical contact. having to do an

Low Voltage AC from 80 to 600V can be detected by contact with the probe.

The probe is shaped in such a way that it can even fit in most of the domestic sockets outlets.

Once voltage has been detected, the High Bright red light indication is flashing intermittently to attract the attention of the user in noisy environment.

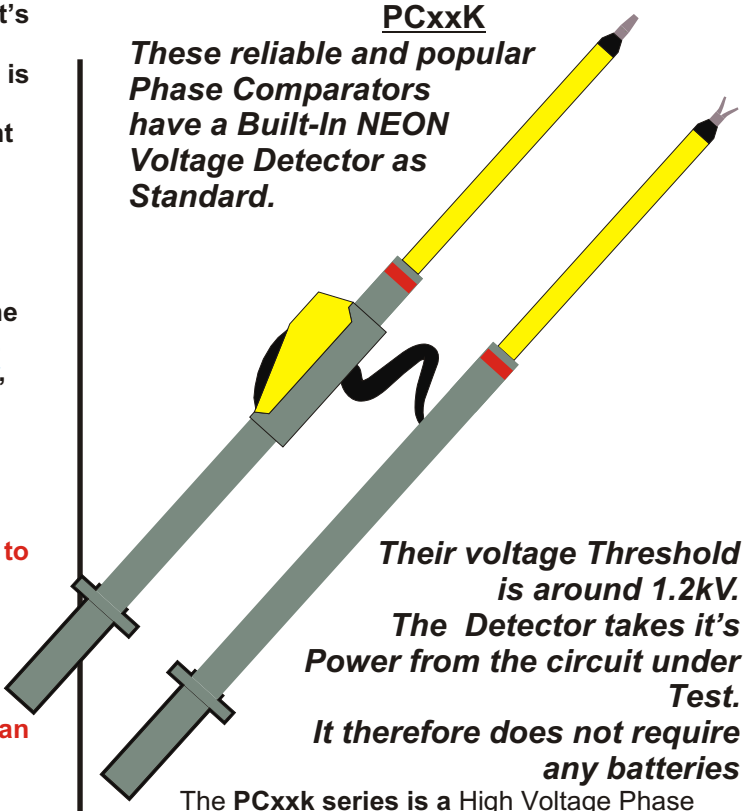
The Sound indication also buzz Intermittently as will do any sound Warning indicator

The 276HD has been tested and Passed the requirements of CE mark and bear this CE symbols on it's detecting Head.

All it take to power it, is three little watch type alkaline batteries. Two screws are used to close the battery compartment

PCxxK

These reliable and popular Phase Comparators have a Built-In NEON Voltage Detector as Standard.



Their voltage Threshold is around 1.2kV. The Detector takes it's Power from the circuit under Test. It therefore does not require any batteries

The **PCxxk series is a** High Voltage Phase Comparators with a build-in Voltage Detector. The voltage detector is a **"NEON" detector and indicator.** Unlike the two preceeding devices, **the Psxxk are DOUBLE POLES contact voltage detectors.** That mean that **electrical and physical contact with the voltages to be detected needs to be done for the neon to perform.** This instrument can be proved before and after it's use.

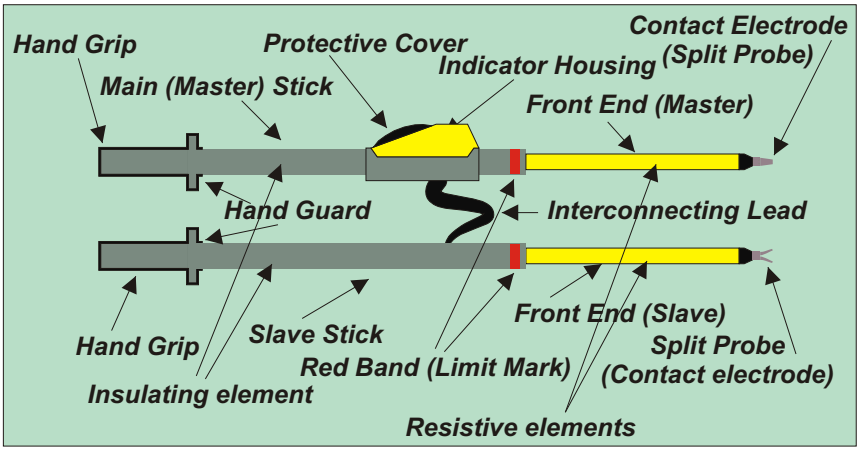
Why is it used.

The PCxxk is not just a Phase Comparator with analog movement indication. The PCxxk has a independant "NEON INDICATOR".
The PCxxK is used to detect the presence of High Voltage AC on Cables or equipment. It is used to verify the presence of voltage by contact and by taking current from the source. Electrical field has no effect on the measuring circuit and therefore error due to mixed electrical field is eliminated (see limitation of proximity detectors - user's manual of 275HP). Electrical Contact must be done before current will pass to the Neon.

Where to use it ?

The PCxxK is used where personnel and equipment must know the presence or absence of high voltage.
The user's manual explains how to use the Pcxxk. It must be proved before and after testing.

For Further Sales & Marketing Information, please contact: sales@sew.com.tw



Scales (samples)

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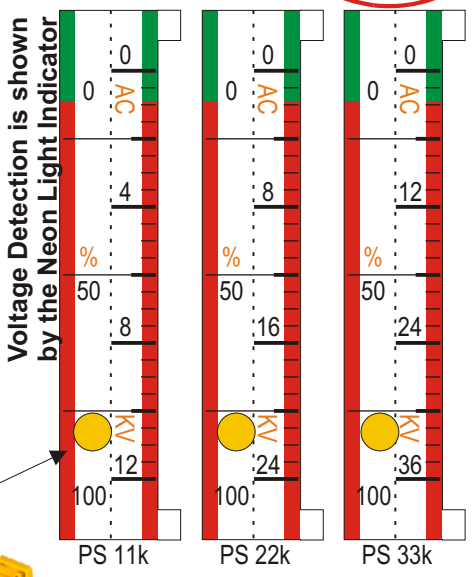

Pcxxk are certainly the safest way to check for voltage and to detect voltage presence. Despite their slightly more expensive construction, PCxxk will not be affected by electrical field and other voltage proximity. The current drawn from the source is the current which will be used to indicate the voltage presence on the indicator. Ensure that your equipment is tested and certified regularly.

SEW® STANDARD

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