Instructions for Knopp K-60 Voltage Tester (A CAT III Instrument)

Your new Knopp Voltage Tester is a quality instrument, carefully made and inspected, and guaranteed as to material and workmanship. It is a rugged and reliable tool. Handled with reasonable care and used within its duty-cycle and voltage rating, the Knopp K-60 Voltage Tester should give many years of dependable service.

This tester is of the solenoid type and is for use on power circuits, either AC (25-60 Hz) or DC and for voltages between 100 and 600 volts, indicating approximate voltage values. The tester is intended only for intermittent use (see caution note below). The K-60 uses a neon lamp for polarity indication and other functions.

CAUTION: If the K-60 is used in a manner not specified by Knopp Inc., the protection provided by the K-60 may be impaired.
CAUTION: Voltage testers should be connected only long enough to get a reading, a second or two usually being sufficient. Extended connection will temporarily lower the reading on the voltage scale and, more importantly, can overheat and damage the instrument. **Maximum duty-cycle is voltage dependent.**

120 vac	1 minute ON - 1 minute OFF
240 vac	1 minute ON - 2 minutes OFF
600 vac	10 seconds ON - 5 minutes OFF
any vdc	10 seconds ON - 5 minutes OFF

WARNING: Voltages within the range of this tester are dangerous. To be sure of proper operation apply the voltage tester to a live circuit of a known voltage periodically. This should be done particularly before extended or critical use on higher voltage circuits.
CAUTION: The lead wires may break due to repeated flexing or accident. **THE TESTER SHOULD ALWAYS BE TESTED ON A KNOWN LIVE CIRCUIT BEFORE USE.** Failure to test can lead to serious injury or death. Do not use if the tester housing is not intact, or if the lead wires are split, frayed or cut.

Detecting and Measuring the Voltage

When the tester prods are applied to the circuit and voltage is present, the indicator moves, and the lamp lights. During a make and break operation of the circuit using a prod, a clicking sound is produced. In addition, the instrument hums and vibrates, except on "pure" DC. The amount of the voltage is indicated by the position the indicator reaches on one of the two scales - the left for direct current, the right for alternating current. To ensure the safety of the user, if the indicator moves, or the neon lamp lights, it should be assumed that a circuit is live, even if the other does not operate.

Distinguishing Between AC and DC

ALTERNATING CURRENTS: When applied to AC the instrument vibrates and hums, and at the same time both electrodes of the neon lamp glow. The glowing of **both** electrodes, not just one, proves the presence of AC. Use the AC (right) voltage scale.
DIRECT CURRENT: When applied to any type of DC regardless of its source, only one electrode of the neon lamp glows, proving the presence of DC, either pure or pulsating. Use the DC (left) voltage scale. Pulsating DC causes the tester to hum, but the instrument is silent on pure DC.

This product is warranted against defects in materials or workmanship for a period of 18 months from the date of its first sale at retail. The sole liability of the manufacturer for any defect shall be, at the option of the manufacturer, repair or replacement of any product found to be defective. In no event shall the manufacturer be liable to any person for incidental or consequential damages such as, but not limited to, loss of profits or loss of use.

Determining DC Polarity

On DC, only one electrode glows. The polarity of the red prod is positive or negative depending on whether the glowing electrode is above the + sign or the - sign on the polarity plate. When considerable polarity checking is done, it is recommended that a practice be made of mounting the red prod in the prod socket. In this way, the polarity indicated by the neon lamp will always be the polarity of the mounted prod, the red one.

Finding Grounded Side of Line or Apparatus,

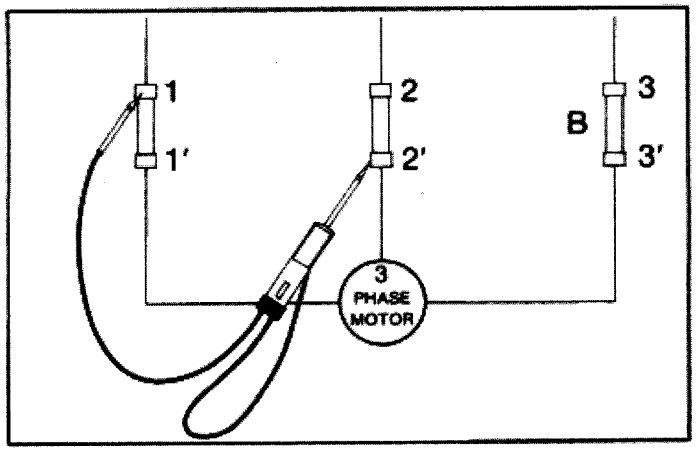
Touch one test prod to normal ground such as a conduit, motor frame, etc. Touch other prod to each of the terminal connections. No scale indication shows grounded side.

Locating Trouble In Polyphase Motor Circuit

If a polyphase motor is running badly, the cause may be an open circuit on one phase, possibly a blown fuse. In checking for a blown fuse, make use of the fact that the voltage on the motor side of a blown fuse is lower than the line voltage. To find any difference, first determine the voltage between line terminals 1 and 2, and then compare it to the voltage between points 1 and 2'. If no difference is detected between the voltage 1-2 and 1-2', check other fuses in the same manner. Fuse B in the diagram would be revealed as blown, if there were a difference in voltage between 1-3 and 1-3'.

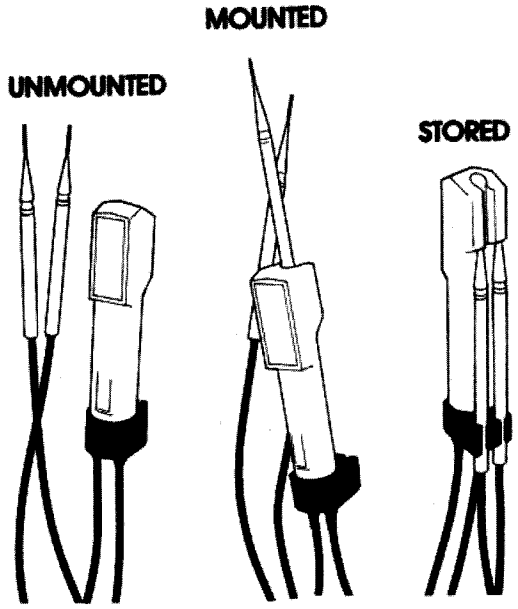
Explanation: The voltage on the motor side of the blown fuse is the back emf generated by the motor. The difference between it and the line voltage is frequently small, but detectable.

Note: Moving the instrument from point to point rather than moving the free prod is usually found to be more convenient as it makes it possible to keep your eye on the instrument.



Use and Storage of Prods

Prods may be used unmounted for greater flexibility or mounted for convenience. Using the tester with the prod mounted is recommended for most applications, as this contributes considerably to the ease and safety of testing. To store prods: 1. insert prod tips into prod covers and; 2. snap handles into rubber clamps. To remove prods: 1. pivot handles out of the clamps and; 2. draw the prod tips out of their covers.



Maintenance of Prod Tips

The prod tips are of hard stainless steel and are extra durable for the rugged service for which they are intended. However, should they be dulled or deformed by burning or some other cause, they can be sharpened and will not rust. Keeping the tips in good trim is recommended as an aid to testing and storing.

Replacement Lead Assembly Sets are available. Each set consists of a pair of leads with handles and prod tips (one red and one black) plus two lead anchors for securing leads in tester housing. Order by specifying Catalog number 14475.

Environmental Specifications

Operating Temperature:	-10 °C to 50 °C
Storage Temperature:	30 °C to 60 °C
Humidity (without condensation):	0% to 80% -0 °C to 30 °C
	0% to 75% -30 °C to 40 °C
	0% to 45% -40 °C to 50 °C
Operating Altitude:	3000m

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