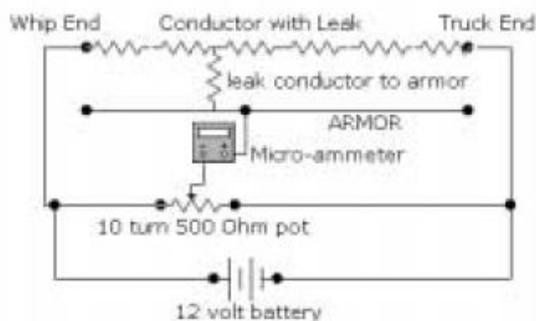


## Locating Electrical Leaks (Part Two): Leak Locator Bridge

The most common locations of cable electrical leaks are:

1. Within 1000 feet of the whip end due to physical damage.
2. A drum crush, two or three layers down on the drum.
3. Failure at the "dog knot" where the drum end of cable passes through the flange.
4. Damage on the bed layer due to installation problems.

The simple leak locator bridge is one of the fastest methods of locating the approximate location of a leak. This is important as it will quickly indicate whether the leak can be cut off the whip end or the cable will need to be strung up and pulled down to a location on the drum. The simple leak bridge circuit, shown below, can locate leaks within about +/- 200 feet if the leak is less than 10,000 Ohms. More sophisticated leak bridges can locate a leak as high as 1 Meg-Ohm to an accuracy of +/- 50 feet.



Remember before any type of leak location procedure is started be sure that both ends of the cable are completely free and clean. When the Micro-ammeter reads zero, the percentage indicated on the potentiometer will be the same as the percentage of the cable length to the leak. Just how this works can be further understood by referring to the set up and operation of a prototype leak locator instrument.

The leak bridge shown here is available from CSR in Rosenberg, Texas. Web site: [www.csrusa.net](http://www.csrusa.net)

### Operating Instructions Leak Locator Bridge



#### Setup:

- Check that both ends of the cable are free, clean and NOT connected to anything.
- Turn power switch OFF.
- Check and adjust the ZERO on the meter with the small screw on the meter face.
- Plug one test lead into the RED "WHIP" socket and clip this lead to the WHIP end of the cable.

- Plug one test lead into the BLACK "TRUCK" socket and clip this lead to the TRUCK end of the cable,
- Plug one test lead into the GREEN "ARMOR" socket and clip this lead to the cable ARMOR.
- Rotate knob "A" to read 50.
- Connect the AC power cord and turn power ON.

#### Operation:

- With the power on, the meter needle should deflect off of zero.
- If a very small or no deflection occurs, starting with button "1" hold down and observe the deflection of the meter.
- If the meter deflects to the left, WHIP, rotate knob "A" counter clockwise, until the meter reads zero.
- If the meter deflects to the right, TRUCK, rotate knob "A" clockwise, until the meter reads zero.
- Hold down button "2" until the meter again reads zero.
- Repeat this with button "3" held down.
- Record the final dial reading, 0.252 in the example shown below.



#### Leak Location

Multiply the dial reading, 0.252 by the length of the cable. For example with a cable length of 20,000 feet, the leak is located at:

$$0.252 \times 20000 = 5040 \text{ feet from WHIP end}$$

#### Accuracy

- This type of instrument will only locate a leak to within +/- 200 feet.
- For maximum accuracy:
  1. Burn out the leak to the lowest resistance possible
  2. Be sure all test leads fit firmly in sockets
  3. The lengths of the WHIP & TRUCK test leads must be equal.
  4. The test leads should be as short as possible
- Check for a "wet leak". This is done by measuring the resistance of the leak with an Ohm meter and then reversing the leads of the Ohm meter and see if the leak resistance is the same. If the leak resistance is the same you are ok. If there is a significant difference between the two readings, you need to dry out the leak with a "burn out box".