

## STB ELECTRICAL TEST EQUIPMENT, INC.

1666 Auburn Ravine Road  
Auburn, CA 95603

530-823-5111  
Fax: 530-823-2971

### GROUND FAULT DETECTOR INSTRUCTIONS 1-50 Amps & 1-20 Amps/Short

#### DESCRIPTION:

The STB Current Leakage Detector presents a great concept in preventative maintenance. As insulation ages, its insulating properties often deteriorate. Humidity and foreign matter aid in this deterioration. The STB current leakage detector will indicate ground faults and electrical leakage while the equipment is in operation. This saves considerable time in making leakage readings, as well as saving operating time. Electrical motor magnetic forces and the accompanying mechanical stress on the windings often contribute to higher leakage under operating conditions. In addition to the magnetic stress, there are rotational forces on the windings that may induce higher leakage currents.

Circuit breakers and fixed current monitors are designed to open the circuit or warn of ground faults as they occur. They react to failures in the circuit, but do not indicate their causes. The current leakage detector is designed to isolate these impending failures before they become serious enough to cause a fire or a costly shutdown.

#### APPLICATIONS:

##### How the Detector Measures Current Leakage

The detector measures the leakage current that is shunted to ground caused by an insulation fault. It enables the operator to locate failures quickly when, or even before, they occur, without shutting down equipment or spending hours troubleshooting.

The detector is a clamp-on current transformer that is sensitive to AC currents passing through it. When a generator supplies an AC load through a pair of wires in an insulated cable, the current going out on one wire is equal to the current coming back on its return. The sum equals zero. A ground fault changes this equality, and the current leakage detector detects it, measures it, and indicates the severity of the fault causing the unbalance. It can only give a reading other than zero if it does not enclose the ground conductor, as shown in Figure #1. It makes no difference whether the circuit is single- or three-phase, three- or four-wire, balanced or unbalanced. The detector "sees" the leakage current to ground.

Figure #2 is a schematic of a single-phase installation consisting of a motor and an oven, both grounded. The numbers indicate the amplitudes of the currents in the conductors. The installation has no faults. If the detector is clamped around the cables at points A, B, C, or D, the reading will be zero. Figure #3 represents the same installation, but there is a fault in the motor. At point A the reading is 1 amp (the difference between 16 amps and 15 amps), indicating that there is a fault downstream. At points B and D the reading is 1 amp, indicating that the fault is in the motor. If the leakage current increases, the circuit breaker will trip. The motor must be disconnected immediately and repaired.

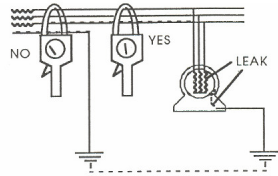


FIG. 1

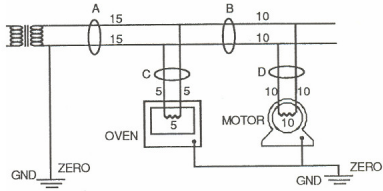


FIG. 2

