

# ALARM LOOP VERIFIER / TONE GENERATOR

## PE620

CONTENTS	PAGE
1. GENERAL DESCRIPTION .....	1
2. OPERATION .....	2
A. BATTERY TEST .....	2
B. SENDING TONE TO IDENTIFY WIRES .....	2
C. TESTING SWITCHES USING THE TONE FUNCTION .....	2
D. TESTING SWITCHES USING THE CONTINUITY DISCONTINUITY FUNCTION .....	2
3. MAINTENANCE .....	3

### 1. GENERAL DESCRIPTION

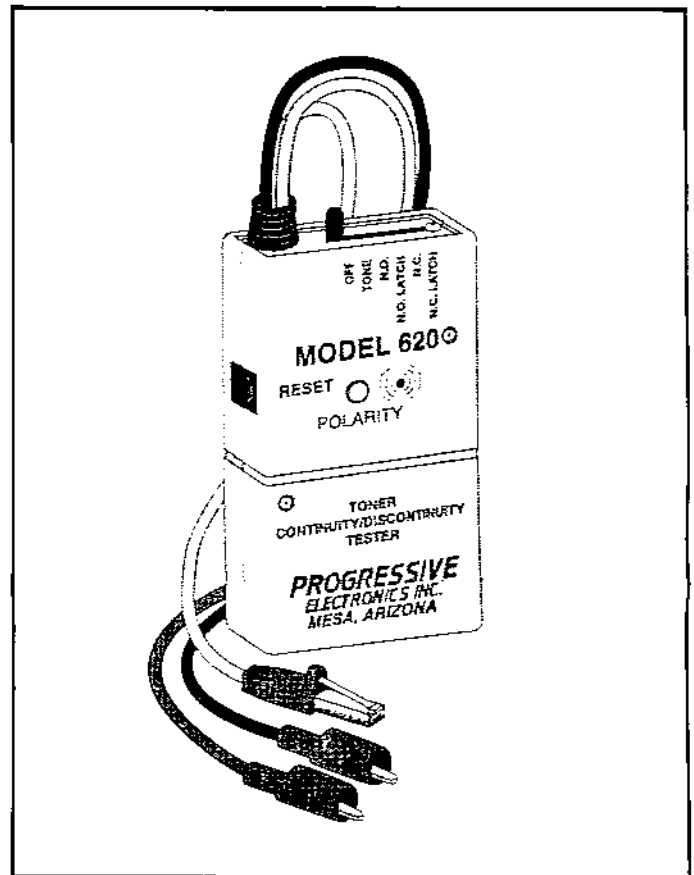
The Model 620 is a hand held combination tone generator and continuity discontinuity tester designed for use by security and alarm installation and service technicians.

The Model 620 is constructed of high impact ABS plastic, measures 4"x2¼"x7 8" and weighs 5.5 oz. with standard 9-volt battery (not included). The unit is equipped with red and black test leads with alligator clips and protective boots in addition to the RJ-11 modular plug for toning telephone circuits. A six-position slide switch and recessed "RESET" button control operations. A high output speaker indicates results in the continuity discontinuity test functions.

The Model 620 is equipped with a magnetic backing for easy mounting to the control panel door or cabinet.

The "TONE" position is used to send tone over wire pairs or single conductors and to test alarm switches.

The "N.O." position is used to test Normally Open alarm switches for continuity.



The "N.O. LATCH" position is used to test Normally Open alarm switches for continuity with the Captive feature.

The "N.C." position is used to test Normally Closed alarm switches for discontinuity.

The "N.C. LATCH" position is used to test Normally Closed alarm switches for discontinuity with the Captive feature.

The "RESET" button is used in conjunction with the "N.O. LATCH" and "N.C. LATCH" testing features.

## 2. OPERATION

### A. BATTERY TEST

Short the RED and BLACK test leads together and move the slide switch to the "N.O." position. A loud audible signal indicates sufficient battery power. A weak or erratic signal indicates the need to replace battery (see section, 3).

### B. SENDING TONE FOR IDENTIFYING WIRES

The "TONE" function is used to induce a tone on a wire pair or single conductor to identify the subject conductor(s) at remote locations or within cable bundles.

**NOTE:** All tone operations require the use of an inductive amplifier (probe) to locate the subject wire pair or conductor. The Model 620 is designed to work with ANY inductive amplifier including Progressive Electronics' Model 200B, 200EP and 200FP.

Disconnect the loop pair from control panel and connect the test leads to the loop pair. (For single conductors or to improve transmission of tone, connect the RED lead to the subject wire and the BLACK lead to earth or an independent equipment ground.) Tone can also be applied to a standard telephone jack using the RJ-11 modular test lead.

Move the slide switch to the "TONE" position and listen for a soft tone from the Model 620's internal speaker to confirm proper switch setting and tone function.

At the point where the identification is to be made, activate the probe and touch the tip to the insulation of the suspect conductor(s). Reception of tone will be strongest on the subject conductor(s). Normally Closed switches must be opened to perform this function.

### C. TESTING SWITCHES USING THE TONE FUNCTION

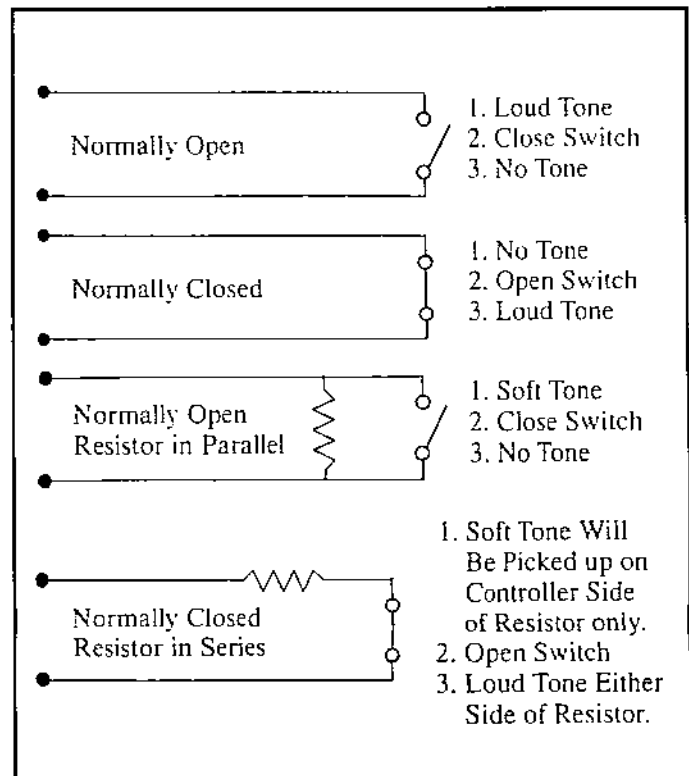
The Model 620 can be used in conjunction with an inductive amplifier (probe) to test the operation of alarm switches. Progressive Electronics' Models 200B, 200EP and 200FP are ideally suited for this application.

Disconnect the loop pair from the control panel. Connect the RED and BLACK test leads to the loop pair. Move the slide switch to the "TONE" position and listen for a soft tone from

the Model 620's internal speaker to confirm proper switch setting and tone function.

Move to the switch under test and activate the probe. Scan the switch with the probe tip noting the presence and level of tone.

The following diagrams note the tone characteristics for specific switch conditions:



### D. TESTING SWITCHES USING THE CONTINUITY/DISCONTINUITY FUNCTION

Testing alarm switches for continuity/discontinuity with the Model 620 is achieved using the RED and BLACK test leads connected to the loop pair. No other test equipment is required to perform this operation. With its magnetic back plate, the Model 620 can be mounted to the control panel door or cabinet.

#### To test a Normally Open switch:

##### Method 1:

Attach the RED and BLACK test leads to the loop pair that has been disconnected from the control panel.

Move the slide switch to the "N.O." position. If the alarm switch is in the normally open condition, no signal will be heard.

Move to the location of the alarm switch and close the switch. The tester will produce a distinct audible signal. The Model 620 will continue sounding until the switch is returned to its normally open position.

Method 2:

Attach the RED and BLACK test leads to the loop pair that has been disconnected from the control panel.

Move the slide switch to the "N.O. LATCH" position. If the alarm switch is in the normally open condition, no signal will be heard.

Move to the location of the alarm switch and close the switch. The tester will produce a distinct audible signal that will continue to sound even after the switch is returned to its normally open position. In the "latching" mode, the captured occurrence will continue to sound until the "RESET" button on the Model 620 is depressed.

NOTE: The Model 620 will not detect a switch closing in a normally open switch with a resistor in parallel. Testing a normally open circuit with a resistor in parallel is possible using the tone feature (see Section 2.C).

**To test a Normally Closed switch:**  
(with or without resistors in series)

Method 1:

Attach the RED and BLACK test leads to the loop pair that has been disconnected from the control panel.

Move the slide switch to the "N.C." position. If the alarm switch is in the normally closed condition, no signal will be heard.

Move to the location of the alarm switch and open the switch. The tester will produce a distinct audible signal. The Model 620 will continue sounding until the switch is returned to its normally closed position.

Method 2:

Attach the RED and BLACK test leads to the loop pair that has been disconnected from the control panel.

Move the slide switch to the "N.C. LATCH" position. If the alarm switch is in the normally closed condition, no signal will be heard.

Move to the location of the alarm switch and open the switch. The tester will produce a distinct audible signal that will continue to sound even after the switch is returned to its normally closed position. In the "latching" mode, the captured occurrence will continue to sound until the "RESET" button on the Model 620 is depressed.

**APPLICATIONS NOTE:** High resistance intermittent faults, commonly known as "high swingers," are often difficult to locate and result in numerous call backs for service technicians. Poor quality mechanical connections and damaged conductors can be identified by using Model 620 to check continuity; discontinuity in the "Latching" mode (see section D). Moving along the circuit path while agitating the conductors and alarm contacts will often cause a weakened circuit to fail. The Model 620 will audibly capture that occurrence ( $> 100\mu s$ ) and identify the general area of the failure. Examples of this process would include: shaking closed doors, pounding on walls where cable drops have been installed, carefully tapping window glass, etc. As a technician becomes more familiar with the Model 620, "high swingers" will become easier to locate using this process.

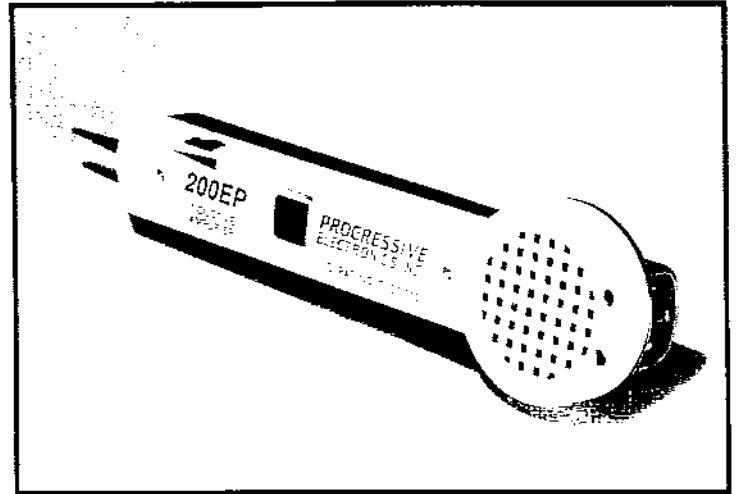
NOTE: The Model 620 is designed to withstand accidental connection to energized circuits (up to 120 volts AC or DC). When a connection is made to these energized circuits, a distinct "buzz" will be produced by the Model 620's internal speaker. **DO NOT ATTEMPT TO PERFORM TONE OR TEST FUNCTIONS ON AN ENERGIZED CIRCUIT.**

### 3. MAINTENANCE

The only service requirements for the Model 620 will be a periodic 9-volt battery replacement. Remove two screws from the front of the tester, separate case and install one (1) 9-volt NEDA 1604 battery, then reassemble. **DO NOT OVER-TIGHTEN SCREWS.**

## MODEL 200EP INDUCTIVE AMPLIFIER (VOLUME CONTROL)

CONTENTS	PAGE
1. GENERAL .....	1
2. DESCRIPTION .....	1
3. OPERATION .....	2
4. MAINTENANCE .....	2
FIGURE 1 Inductive Amplifier .....	1
FIGURE 2 Tone Source Connection .....	1



### 1. GENERAL

1.01 This section provides information on the Model 200EP Inductive Amplifier, manufactured by Progressive Electronics, Inc. (See Figure 1)

### 2. DESCRIPTION

2.01 The Inductive Amplifier is designed to identify and trace wires or cables within a group without damaging the insulation. The unit is constructed of durable ABS plastic, weighs approximately 5 ounces, measures 8 inches long. Power supply is any 9 volt battery with a life of approximately 100 hours. Optional belt-hung leather carrying case, 200C, available.

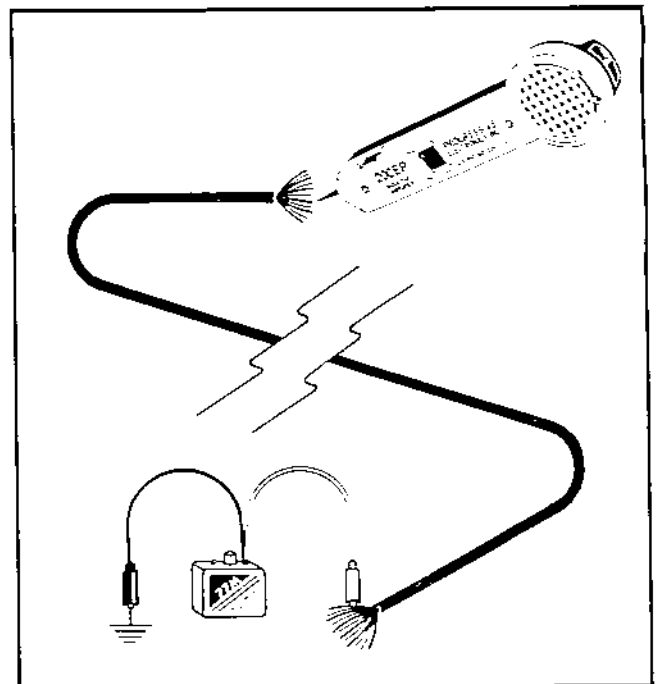


Figure 2. Tone Source Connection.

### 3. OPERATION

#### 3.01 Identification by induction is accomplished by:

- (a) Connecting the tone generator.

**In working cables that are terminated:**

Connect one lead of a PEI tone test set (61, 77A, 77M, 100B, 600LS) to a terminated wire and the other test lead to earth or equipment ground. (See Figure 2)

**In non-working or unterminated cables:**

Connect one test lead of a PEI tone test set (61, 77A, 77M, 100B, 600LS) to an unterminated wire and the other test lead to another unterminated wire.

- (b) To activate the 200EP, depress the square on/off spring-loaded button.
- (c) Once activated, the volume control switch can be adjusted to suit the environment. Reception can be increased to overcome noise (i.e. vehicular traffic, airplanes or engine room), or decreased to reduce interference (i.e. computer data hum, AC buzz).

- (d) The Model 200EP is equipped with recessed ports for connecting a lineman's handset. Attaching the handset automatically activates the amplifier. The handset must be in the TALK position.

- (e) To activate the 200EP without depressing the on/off button, connect a jumper wire to each terminal in the recessed ports.

- (f) Touch the tip of the 200EP to the insulation of each suspect conductor.

- (g) Reception of tone will be loudest on the subject wire. (Reception of the tone may be improved by separating the wires from the group.)

### 4. MAINTENANCE

- 4.01 The 200EP is maintenance free except for battery replacement. Remove the screw from the battery compartment, replace the 9 volt battery and reassemble.