QSE4 TYPE HANDSETS

DIAL HAND TEST SET

DESCRIPTION, OPERATION AND MAINTENANCE

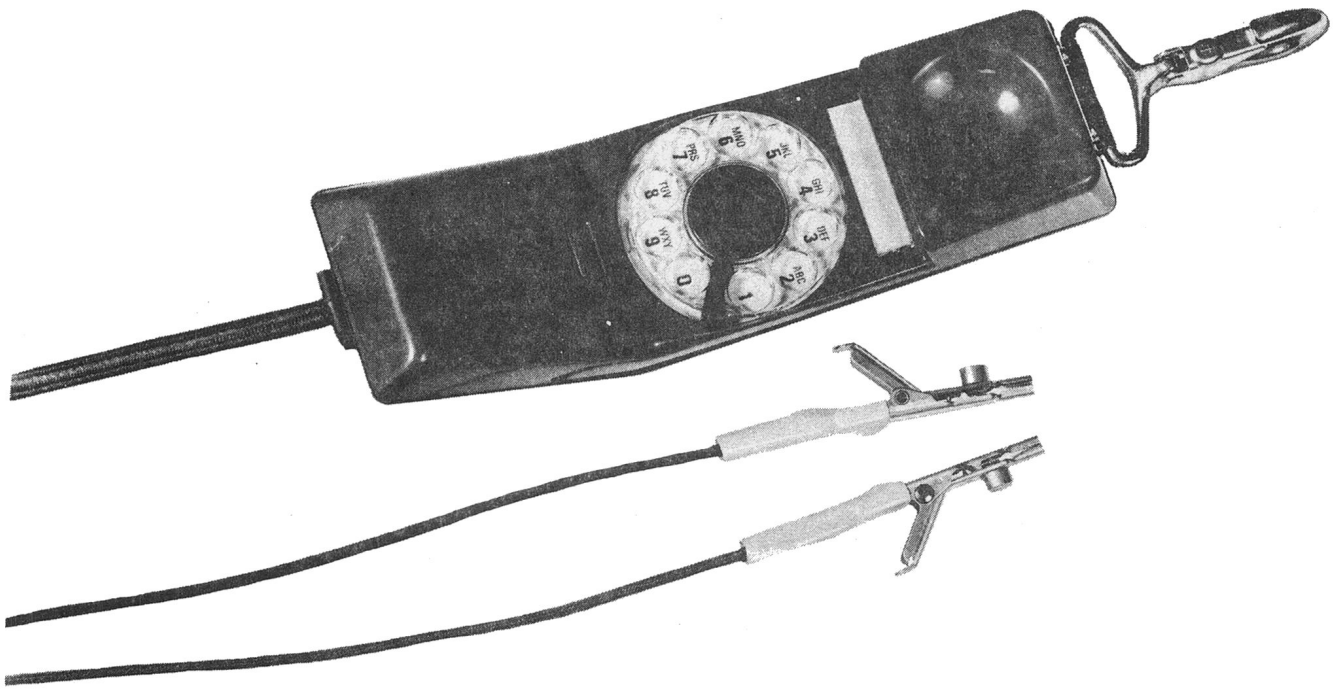

Fig. 1 – QSE4 Type Handset Showing the NSQ4100 L1 Test Clips

1. GENERAL

1.01 This section covers the description, operation, and maintenance of the QSE4 types of handset (dial hand test set Fig. 1).

1.02 The primary application of these handsets is to originate test calls on dial system apparatus to test switching, continuity, and talking features of the subscribers circuit. In the maintenance of equipment they may also be used to locate trouble in the various circuits. The types of equipment with which these handsets are used are shown in Table A.

1.03 These handsets are intended for both indoor and outdoor use, and are available in the standard green (-51) color.

1.04 Each type of handset is provided with a "Monitor-Talk" switch to provide a means of monitoring the line under test to determine if it is in use.

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1.05 The QSE4 type handsets are equipped with a pushbutton switch which, when depressed, will facilitate dialing over very long loops.

2. DESCRIPTION

2.01 The QSE4A1 and QSE4B1 type handsets consist of a plastic handset equipped with an NE-10QA type dial in the center of the housing, an NE-T1 Transmitter Unit, an NE-U1 Receiver Unit, and a cord provided with test clips. (See Fig. 1, and Table A.)

2.02 The QSE4A1 and QSE4B1 handsets differ in their operational features and circuitry, as shown in Table A and Fig. 3 and 4.

2.03 The QSE4A type handsets are for use where data transmission facilities are not provided, and it is only necessary to bridge the line under test with a medium impedance of 1000 ohms in the "Monitor" position, as indicated on the rocker switch when the red face is hidden. In the "Talk" position the red face on the switch is visible and the dc resistance is approximately 130 ohms. The use of the pushbutton is described in 3.01(4).

2.04 The QSE4B handsets are designed for use in areas where local plant involves data circuits, and it is essential to monitor lines before test with a high impedance (100 000 Ω) bridging the line. This high impedance is inserted by a rocker switch (Monitor – Talk) which must be in the "Monitor" position when connecting to the line to ensure that data transmission already underway will not be disrupted. After ensuring that the line is not in use, the rocker switch may then be moved to the "Talk" position. Use of the rocker switch is detailed in 3.01.

2.05 If required, the handset may be converted from a QSE4A to a QSE4B type handset or vice-versa as described in Section 100-1211-820.

TABLE A
QSE4 TYPE HANDSET CODE IDENTIFICATION

Handset Code	Identification Dial Center Insert	Features	Primary Application	Cord Code	Cord Termination	Printed Circuit Board (PC2) Code
QSE4A1	Red	Medium Impedance Monitor	Outside Plant	NE-W2QK	Test Clips NSQ4100-L1	P0500417
(▲) QSE4B1	Yellow	High Impedance Data Manual Return-to-Monitor				
QSE4A2	Red	Medium Impedance Monitor	General Use	NE-H2QB	See Note 1 NE-346A Plug	P0500416
(▲) QSE4B2	Yellow	High Impedance Data Manual Return-to-Monitor				

Note 1 QSE4-2 type handsets provide an arrangement whereby a basic coded handset can be adapted, by means of plug-in cords, to all Central Office tests requiring the use of a handset.

(▲) Bell Canada Standard

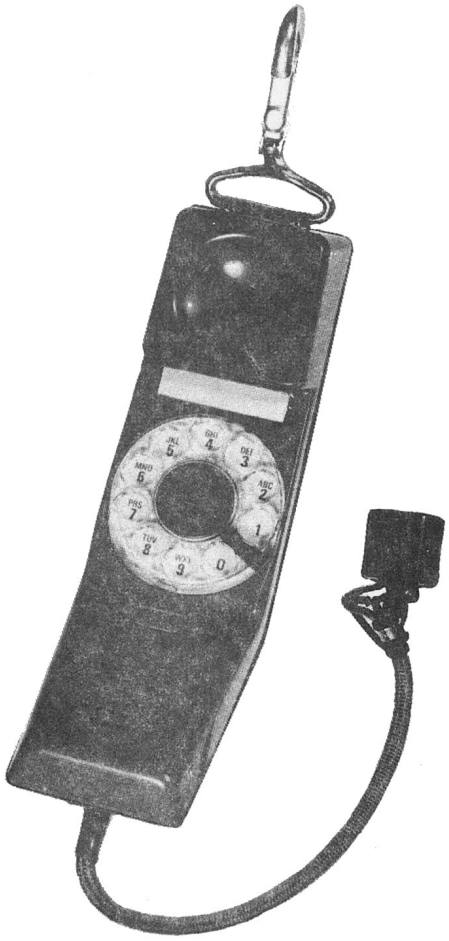

Fig. 2 – QSE4B2 Handset Using the NE-346A Plug

2.06 The QSE4A and QSE4B2 handsets are the same as the QSE4A1 and QSE4B2 types respectively, except that they use an NE-H2QB cord equipped with an NE-346A plug. This plug-ended cord provides an arrangement whereby a basic coded handset can be adapted, by means of plug-in cords, to all Central Office tests requiring the use of a handset (Fig. 5).

2.07 Fig. 5 shows the schematic diagrams of the accessory cords available for use with the QSE4A2 and QSE4B2 type handsets.

2.08 All handsets are equipped with a snap-hook to allow the handset to be carried on a tool belt. The hook is positioned in such a manner as to allow the handset to hang and follow the contour of the body, thus affording protection to the face of the handset as shown in Fig. 6.

2.09 When the handset is not in use, the cord should be wrapped as shown in Fig. 7.

3. OPERATIONAL PROCEDURE

3.01 QSE4A Type Handsets:

(1) Make certain that the test clips make electrical contact with only one circuit at a time.

(2) To bridge the line under test, the rocker switch should be in the "Monitor" position, which is indicated by the red face of the switch being hidden. In this mode, the handset has an impedance of approximately 1000 ohms.

(3) If talking is necessary, the rocker switch must be placed in the "Talk" position, which is indicated by the red face of the switch being visible, to establish the talking circuit.

(4) Dialing can be accomplished in the normal manner, (switch in "Talk" position) however, since the handset resistance is slightly higher than the resistance of an NE-500 type Telephone Set, difficulty could be encountered when dialing over a very long line.

(5) If dialing difficulty is experienced, it can be overcome by keeping the pushbutton depressed while dialing. This procedure allows the handset to operate on any line which permits operation of an NE-500 type telephone set.

(6) Checking for the presence of 48 volts on the line should be done with the rocker switch in the "Talk" position. Clicks will be produced in the receiver each time 48 volts is present on the test clips.

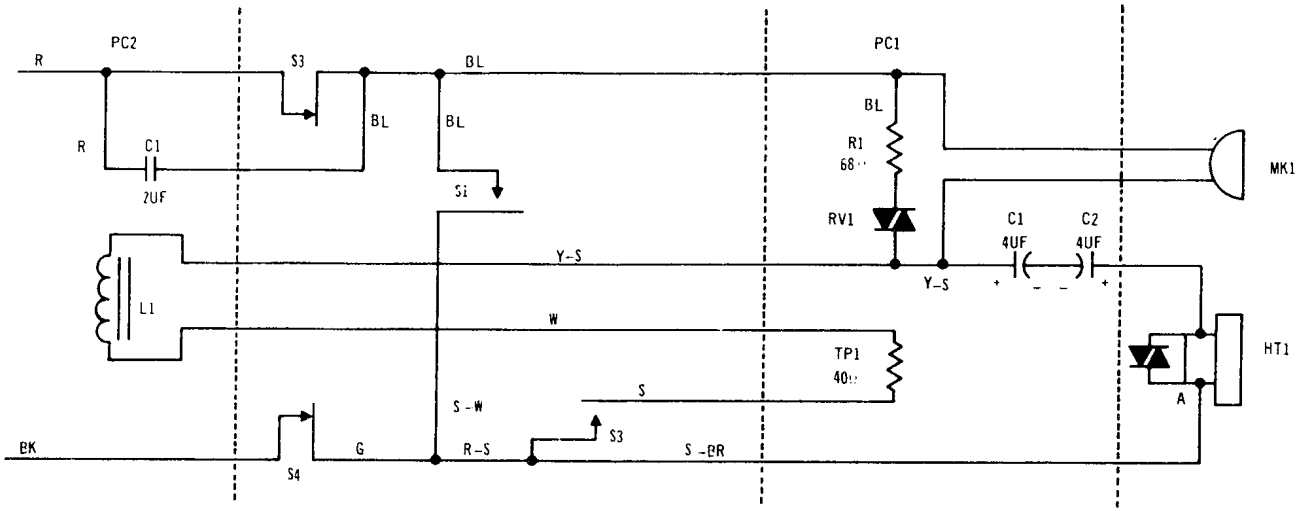

Fig. 3 – QSE4A Handset Schematic

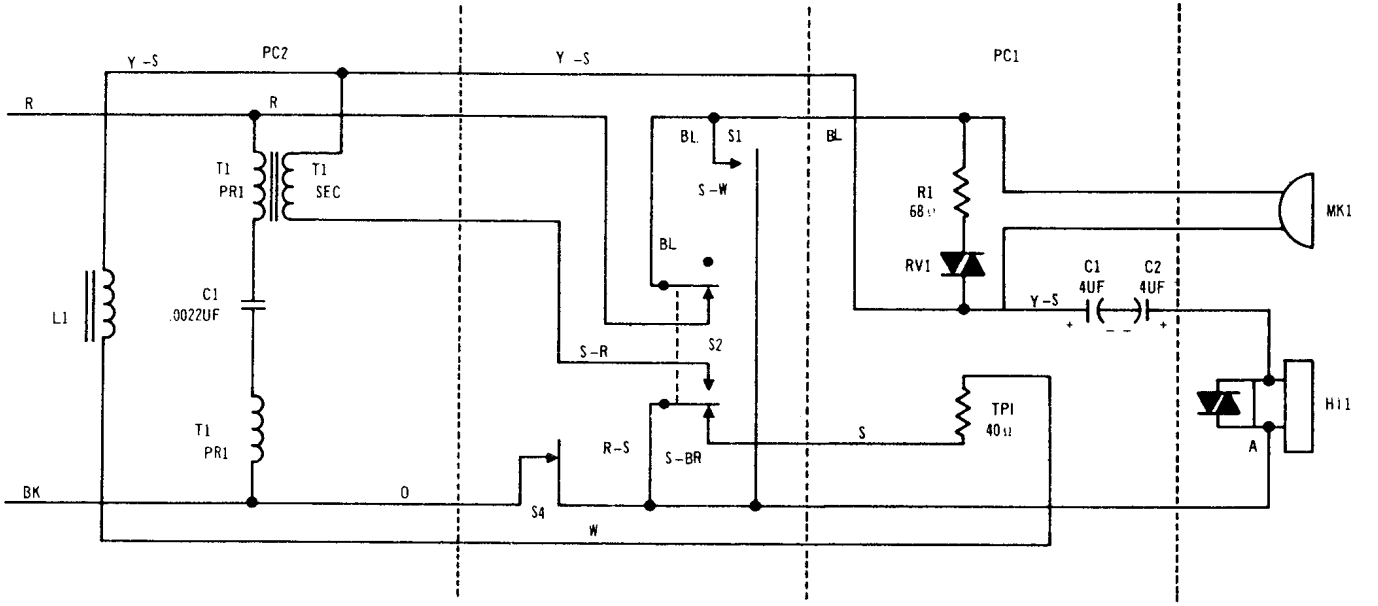

Fig. 4 – QSE4B Handset Schematic

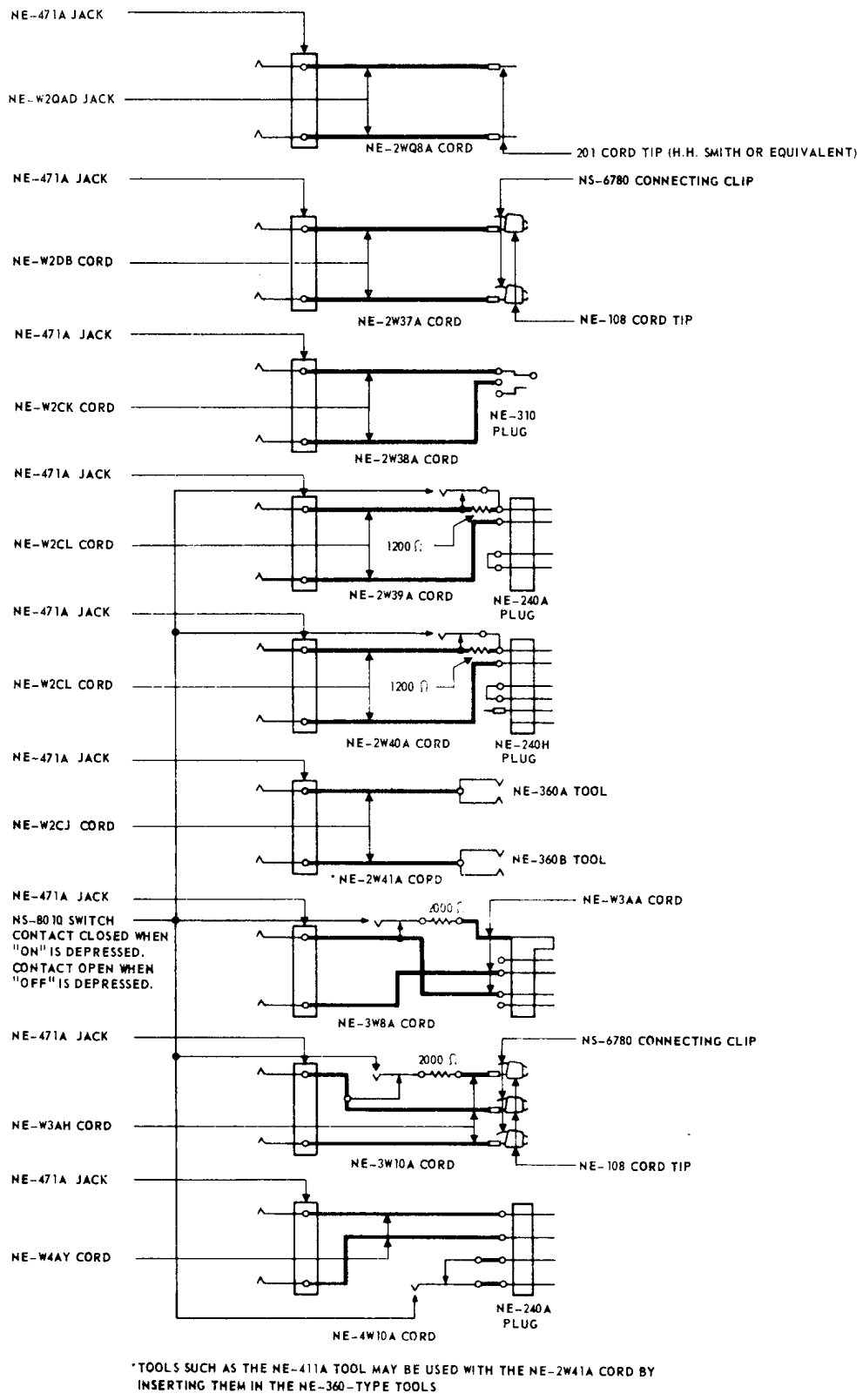

Fig. 5 – Schematics of Accessory Cords for QSE4A2 and QSE4B2 Handsets

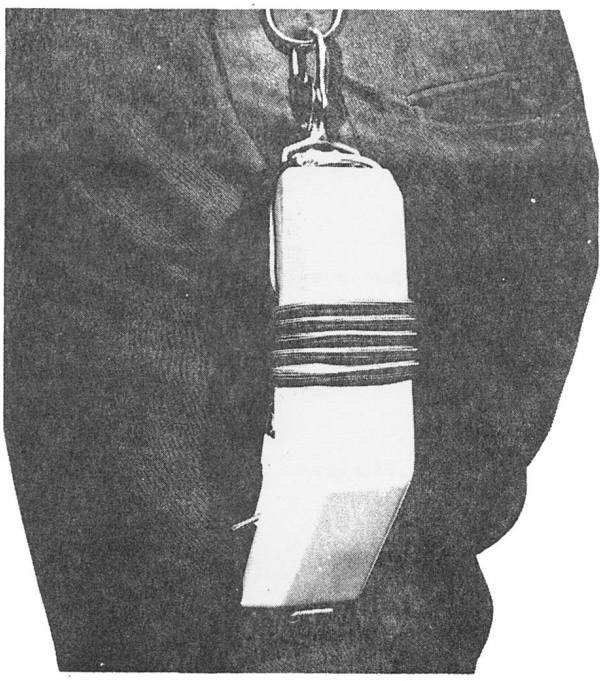

Fig. 6 – Wearing of Handset on Tool Belts

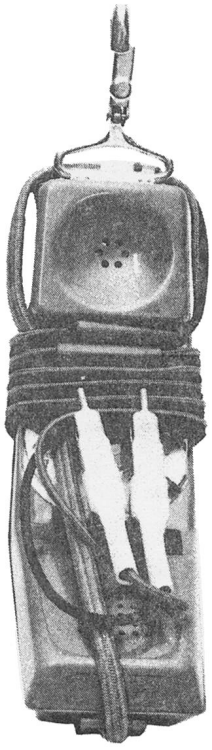

Fig. 7 – Method of Wrapping Cord when Handset is not in Use

3.02 QSE4B Type Handsets: When using the QSE4B type handset, follow the same procedure as detailed in 3.01 for the QSE4A type handset. With the rocker switch in the "Monitor" position, the QSE4B type handset presents an impedance of 100 000 Ω to the line under test. This high impedance ensures that any data being transmitted at the time will not be disrupted.

3.03 The QSE4 type handsets may be provided with either an NE-346A plug (see 2.06, Table A and Fig. 2) or two NSQ4100 L1 test clips (Table A and Fig. 8(a)). The test clips were primarily designed for outside plant use and will clip onto screw terminals, binding posts, wire spring relay terminals as well as connecting blocks, lead and drop wire as shown in Fig. 8(b) through 8(g).

4. MAINTENANCE

4.01 Normal maintenance may involve replacement of the dial, transmitter unit, receiver unit, or the cord.

Note: Dial maintenance consists only of determining if the dial is defective. Do not attempt adjustments of the dial in the field.

4.02 Disassembly of handset (see Fig. 9, 10 and 11).

(a) To remove the plastic card retaining window proceed as follows:

(1) Hold the handset with the dial facing upward.

(2) Insert the NS16750 L3 releasing tool into the small slotted hole at the edge of the card retaining window.

Note: Do not insert tool by more than 1/8 of an inch or difficulty will be encountered, with an underlying screw.

(3) Pry on the releasing tool away from the window enough to bend the window outwards so that it may be grasped with the fingers and removed. (Fig. 9.)

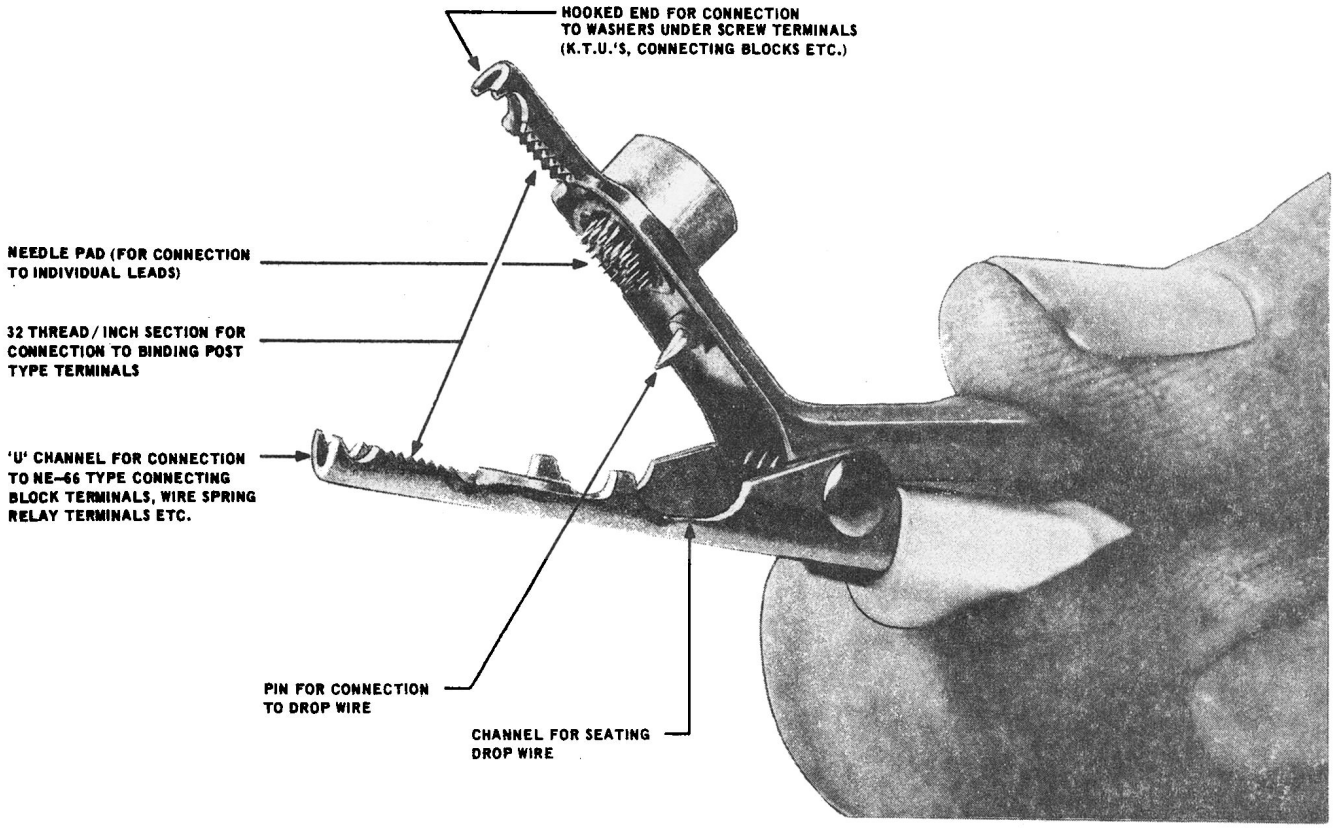

Fig. 8(a) – Parts of NSQ4100 L1 Test Clip

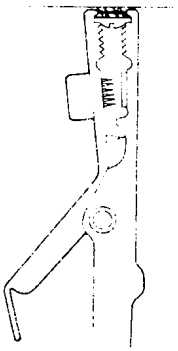

Fig. 8(b) –
Method of Connecting
to Screw Terminal

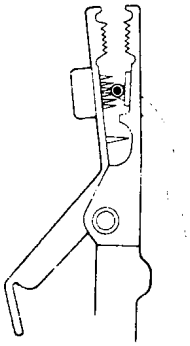

Fig. 8(c)
Method of Connecting
to Individual Leads

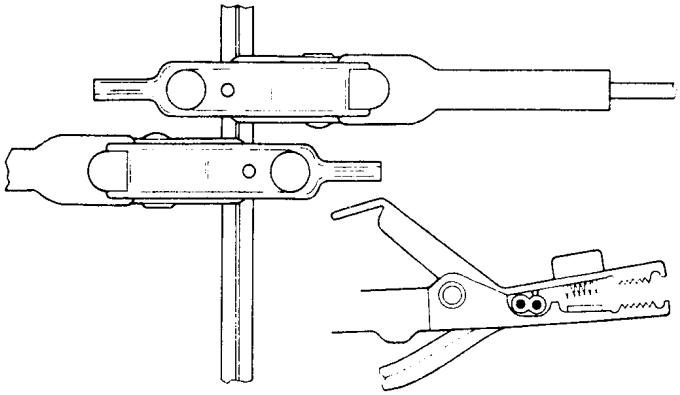

Fig. 8(d)
Method of Connecting to a Drop Wire

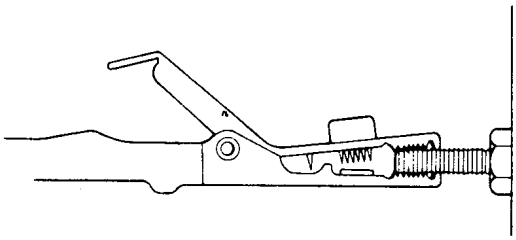

Fig. 8(e) –
Method of Connecting to a Binding
Post Type Threaded Terminal

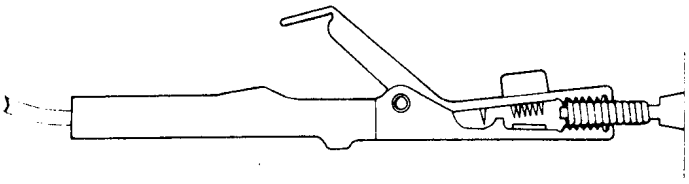

Fig. 8(f) –
Method of Connecting to a Wire Spring
Relay or Wire Wrap Terminal

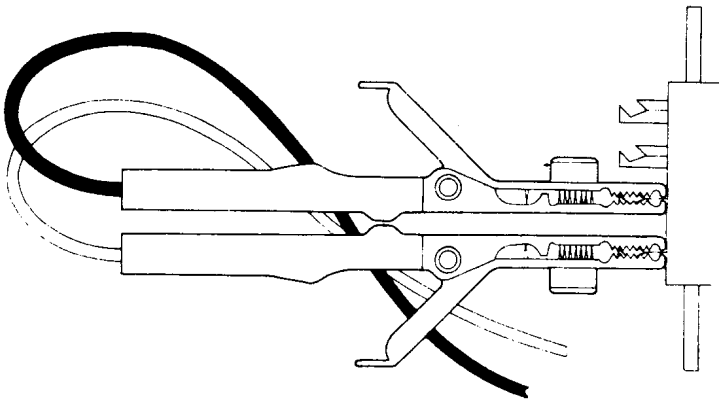

Fig. 8(g) –
Method of Connecting to an NE-66 Type Connecting Block

Fig. 9 – Method of Removing Card Retaining Window

(b) The handset grommet should be removed next as detailed in the following steps.

(1) Turn the handset over so that the dial faces downward.

(2) Push the line cord into the grommet to release the internal pressure of the grommet.

(3) Press the grommet sideways toward the rocker switch and then up in one motion (Fig. 10) to release the grommet from the housing.

(4) If difficulty is experienced, apply a sideways pressure to release one side of the two piece grommet.

(5) Hold the line cord between the third and fourth fingers.

(6) Using 7 inch longnose pliers held in the same hand as the line cord, gently squeeze the grommet and withdraw it from the handset while at the same time pulling on the line cord. (Fig. 11.)

(7) Once the grommet has been withdrawn, two screws are exposed. Loosen these two screws by about three-sixteenths of an inch only, as it is not desirable or necessary to remove them.

(8) Free (do not remove) the two captive screws in the card retainer well.

(9) Loosen the receiver end, then slide the smooth (back) half of the handset housing back to release this section from the slotted screw holes.

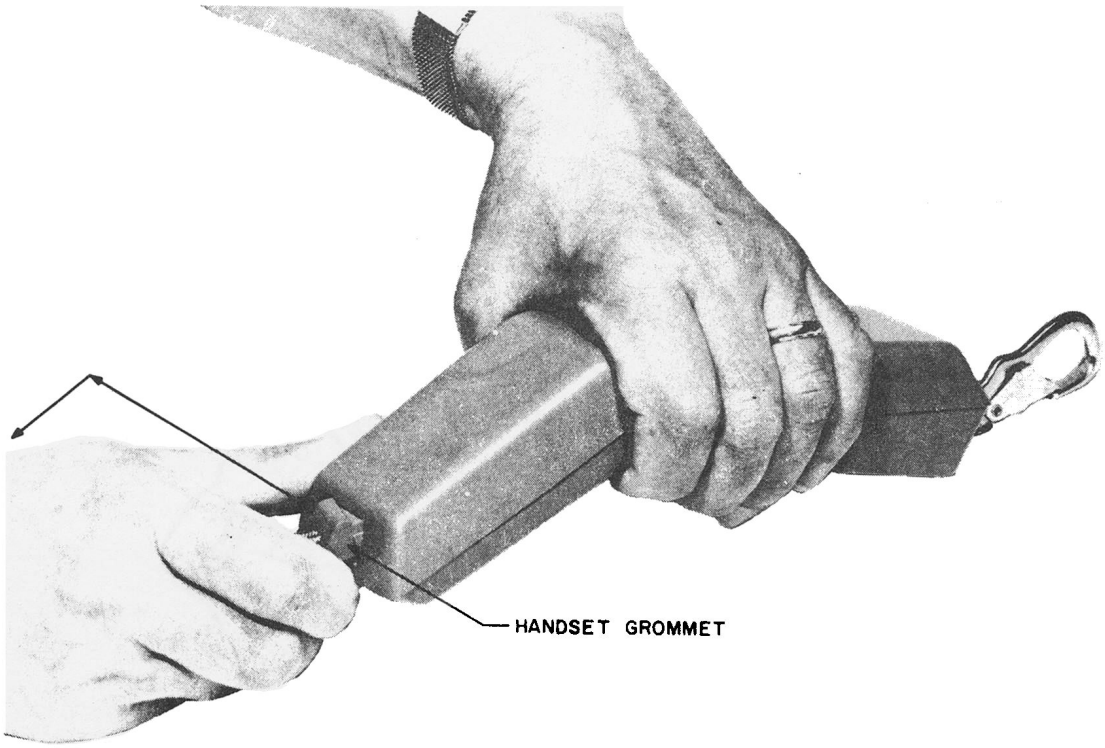

Fig. 10 – Removal of Handset Grommet

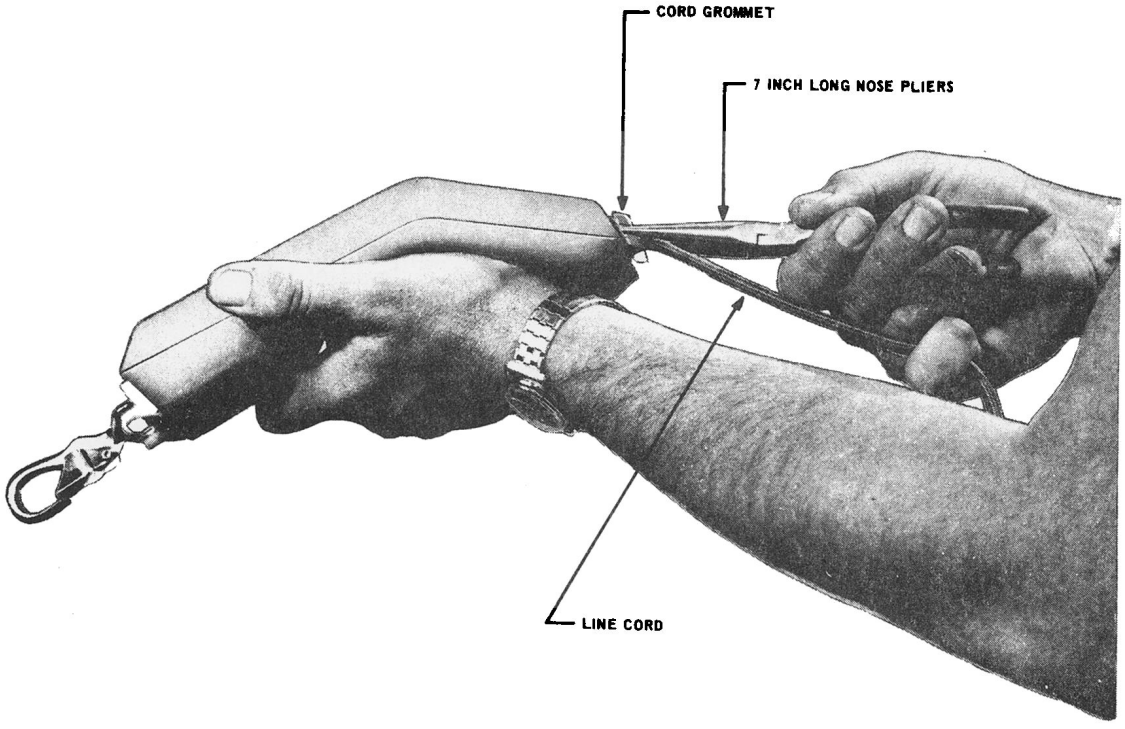

Fig. 11 – Alternative Method of Removing Handset Grommet

4.03 To replace dial:

(1) See 4.02 for instructions on opening the handset.

(2) Remove the dial leads from the terminal.

(3) Remove the four mounting screws and loosen rocker switch.

(4) Replace dial.

(5) See 4.09 for instructions on reassembly of handset.

4.04 To replace transmitter:

(1) See 4.02 for instructions on opening the handset.

(2) Remove the two screws holding the transmitter cup and loosen the rocker switch retainer bracket.

(3) Lift out transmitter cup and replace transmitter.

(4) See 4.09 for instructions on reassembly of handset.

4.05 To replace receiver:

(1) See 4.02 for instructions on opening the handset.

(2) Remove the three screws holding the receiver cup.

(3) Slide the cup along the leads.

(4) Disconnect and replace the receiver units.

(5) See 4.09 for instructions on reassembly of handset.

4.06 ***Fingerwheel:*** Should the fingerwheel require replacement, replace the complete dial as fingerwheel replacement in the field may result in permanent damage to the dial.

4.07 To replace line cord:

(1) See 4.02 for instructions on opening the handset.

(2) Disconnect and replace line cord, ensuring that the cord is properly dressed in the housing.

4.08 To replace hook:

(1) See 4.02 for instructions on opening the handset.

(2) Remove the four screws and remove the two hookplate retainers and the hookstop.

(3) Replace the hook, ensuring that the four mounting screws are properly positioned in the two hookplate retainers and that the hookstop is properly positioned between the hook and the cover.

(4) See 4.09 for instructions on reassembly of handset.

4.09 Reassembly of Handset:

(1) Align the jacketed portion of the handset line cord into the handset so that it will fit into the channel in the transmitter cup.

(2) Slide the two handset sections together so that the two slots at the grommet end slide over the two screws in the instrument section.

(3) Align the two sections of the handset case so that the two screws in the card holder well, will engage the tapped post holes in the back cover.

(4) Tighten the two screws in the grommet cut-out and the two screws in the card holder well.

Caution: Do not use undue force when tightening these screws.

(5) To reinsert line cord grommet:

(a) Carefully pull the cord so that the metal stay band is outside the handset cover assembly.

(b) Place the grommet directly in front of the cord stay band (band between the grommet and the cover assembly).

(c) Push the grommet into place in the handset cover assembly.

(d) Give the line cord a slight pull to ensure that the cord stay band is properly seated in the grommet.

(6) Insert the card and retainer window into the well in the handset.