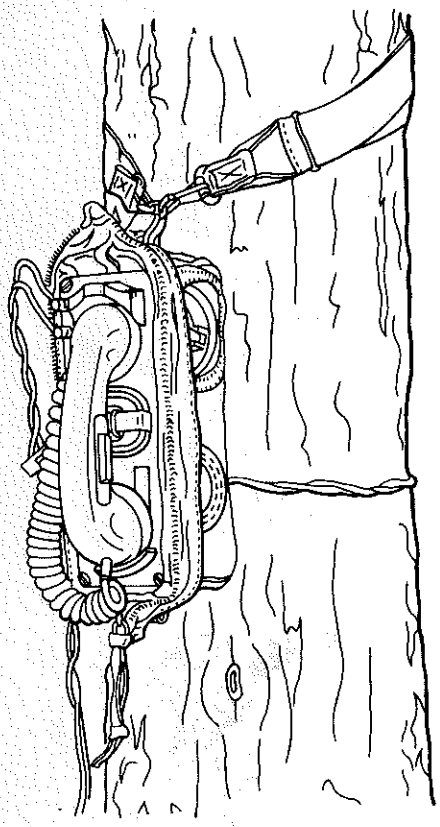
ARMY TM 11-5805-256-13
AIR FORCE TO 31W1-2PT-1041

OPERATOR'S, ORGANIZATIONAL, AND DIRECT SUPPORT MAINTENANCE MANUAL

TELEPHONE SET TA-43/PT (NSN 5805-00-503-2775)



DEPARTMENTS OF THE ARMY AND THE AIR FORCE

2 FEBRUARY 1984

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapors should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

WARNING

Compressed air is dangerous and can cause serious bodily harm. Use protective means or methods to prevent a chip or particle (of whatever size) from being blown into the eyes or unbroken skin of the operator or other personnel. Goggles must be worn at all times while cleaning with compressed air. Compressed air shall not be used for cleaning purposes except where reduced to less than 29 pounds per square inch gage (psig) (200 kilopascals) and then only with effective chip guarding and personnel protective equipment. Do not use compressed air to dry parts when trichlorotrifluoroethane has been used.

Technical Manual
No. 11-5805-256-13
Technical Order
TO 31W1-2PT-1041

DEPARTMENTS OF THE ARMY
AND THE AIR FORCE

Washington, DC, 2 February 1984

Operator's, Organizational, and Direct Support Maintenance Manual

TELEPHONE SET TA-43/PT

(NSN 5805-00-503-2775)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. For Air Force, submit AFTO Form 22 (Technical Order System Publication Improvement Report and Reply) in accordance with paragraph 6-5, section VI, TO 00-5-1. Forward direct to prime ALC/MST. In either case, a reply will be furnished to you.

*This manual supersedes TM 11-337/TO 16-35TA43-5, 16 July 1954, including all changes.

HOW TO USE THIS MANUAL

This manual is designed to help you operate and/or maintain Telephone Set TA-43/PT. The front cover table of contents is provided for quick reference to important information. There is also an index located in the final pages for use in locating specific items of information.

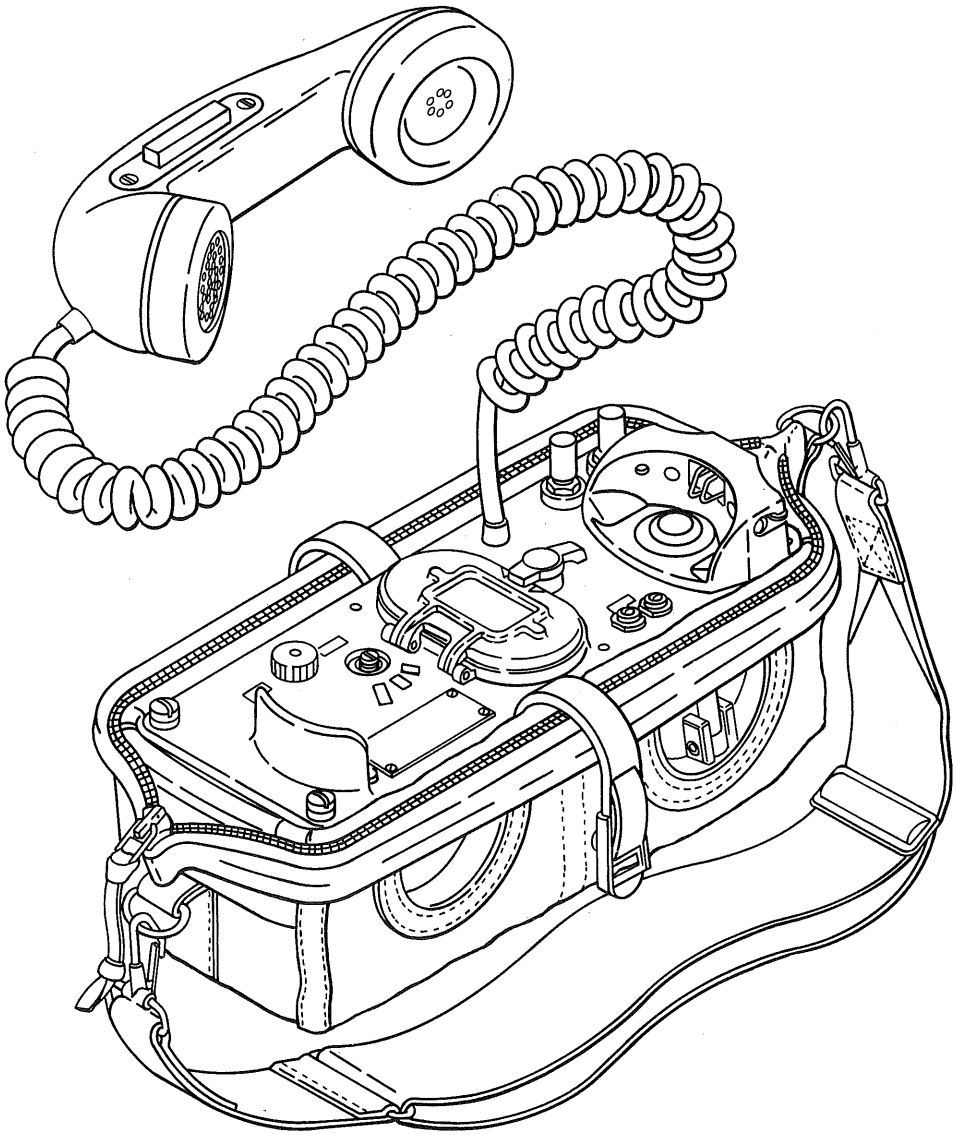
Read all preliminary information found at the beginning of each task. It has important information and safety instructions you must follow before beginning the task.

A warning page is located in the front of this manual. You should learn the warnings before operating or doing maintenance on the equipment.

Paragraphs in this manual are numbered by chapter and order of appearance within a chapter. A subject index appears at the beginning of each chapter listing sections that are included in that chapter. A more specific subject index is located at the beginning of each section to help you find the exact paragraph you're looking for.

Instructions for using troubleshooting tables are located in paragraphs 3-2 and 4-6.

Instructions for performing PMCS are located in paragraphs 2-3 and 4-5.



TELEPHONE SET TA-43/PT

EL8HL002

CHAPTER 1

INTRODUCTION

Section I GENERAL INFORMATION

1-1. SCOPE.

Type of Manual: Operator's, Organizational, and Direct Support Maintenance.

Model Number and Equipment Name: TA-43/PT Telephone Set.

Purpose of Equipment: To provide telephone communications and remote operations of radio sets.

1-2. CONSOLIDATED INDEX OF ARMY PUBLICATIONS AND BLANK FORMS.

Refer to the latest issue of DA PAM 310-1 to determine whether there are new editions, changes or additional publications pertaining to the equipment.

1-3. MAINTENANCE FORMS, RECORDS, AND REPORTS.

REPORTS OF MAINTENANCE AND UNSATISFACTORY EQUIPMENT

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750 as contained in Maintenance Management Update. Air Force personnel will use AFR 66-1 for maintenance reporting and TO 00-35D54 for unsatisfactory equipment reporting.

REPORTS OF PACKAGING AND HANDLING DEFICIENCIES

Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/ NAVMATINST 4355.73A/AFR 400-54/MCO 4430.3F.

DISCREPANCY IN SHIPMENT REPORT (DISREP) SF 361

Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33C/AFR 75-18/MCO P4610.19D/DLAR 4500.15.

1-4. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR).

If your telephone set needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. A reply will be sent to you.

Air Force personnel are encouraged to submit EIR's in accordance with AFR 900-4.

1-5. DESTRUCTION OF ARMY ELECTRONICS MATERIEL TO PREVENT ENEMY USE.

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

1-6. ADMINISTRATIVE STORAGE.

Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage, the PMCS should be performed to ensure operational readiness. Disassembly and repacking of equipment for shipment or limited storage are covered in TM 740-90-1.

1-7. NOMENCLATURE CROSS-REFERENCE LIST.

Common Name	Official Nomenclature
telephone set	Telephone Set TA-43/PT

1-8. LIST OF ABBREVIATIONS.

Abbreviation	Term or Word
cb	Common battery
cbs	Common battery signaling
lb	Local battery
lbt	Local battery talk
Hz	Hertz
μF	microfarad

Section II EQUIPMENT DESCRIPTION AND DATA

1-9. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

CHARACTERISTICS

All-weather operational.
Highly portable.
Rugged.
Can be wall mounted or used as a desk set.
Can be used as station equipment for all manual telephone systems.

CAPABILITIES AND FEATURES

Can be operated at high altitudes.
Can be operated in a wide temperature range.
Can be used to remotely control the operation of distant radio set.

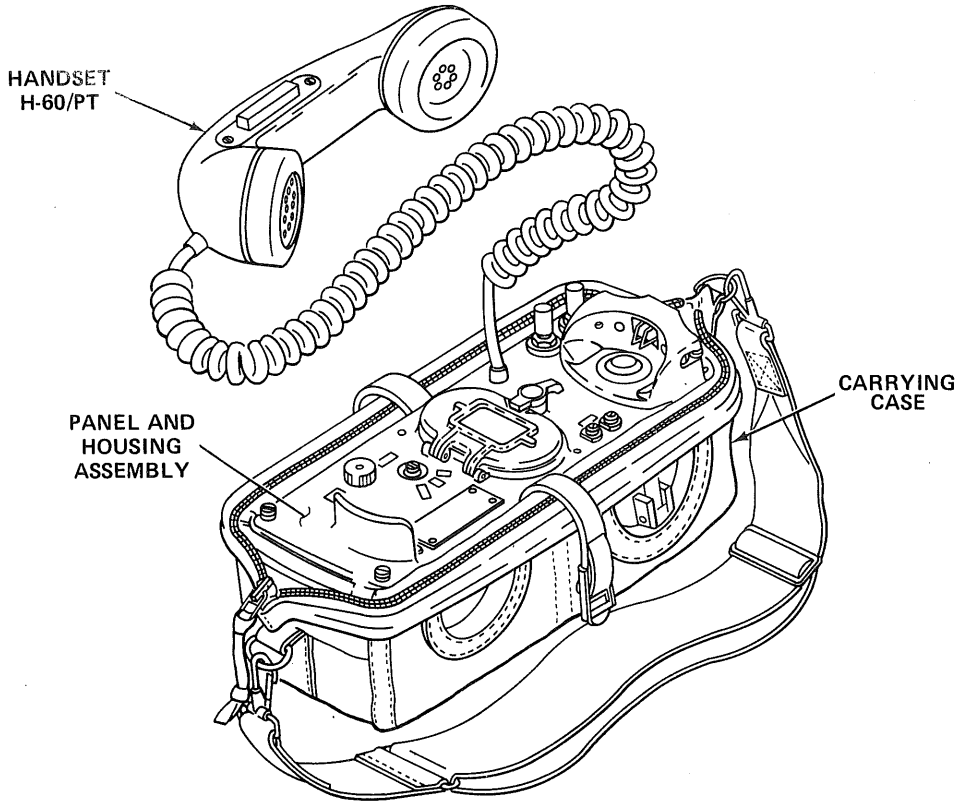
The telephone set is equipped with three types of circuits: common battery (cb), local battery (lb), and common battery signaling (cbs).

CB Circuit. When the telephone set is used in the CB circuit selector switch setting, a transmission battery is provided by the central office for talking and signaling. Batteries will not be required in the telephone set.

LB Circuit. When the telephone set is used in the LB circuit selector switch setting, two BA-30 batteries must be installed in the battery compartment for voice transmission. In the LB circuit selector switch setting, the hand-ringing generator is used for signaling.

CBS Circuit. When the telephone set is used in the CBS circuit selector switch setting, two BA-30 batteries must be installed in the battery compartment for voice transmission. The common battery, provided by the central office, will provide signaling current.

1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.



HANDSET H-60/PT. The handset is made from dull-finished black plastic. The transmitter and receiver elements and the press-to-talk switch are mounted in the handset. The receiver end is shaped to fit under a standard field helmet. The coiled handset cord enters the handset at the transmitter element end and attaches to the transmitter element and the press-to-talk switch. A deicing screen is used to prevent ice from forming on the transmitter in cold weather. The press-to-talk switch can be used to control remotely located radio sets or other equipment.

PANEL AND HOUSING ASSEMBLY. The panel and housing assembly contains the G-42/PT hand-ringing generator, the BZ-23/PT buzzer, and all the circuit components and wiring for the telephone. With the exception of the hand-ringing generator, which mounts in the housing assembly, all the components mount on the underside of the panel assembly. All of the controls necessary to operate the telephone set mount on the upper side of the panel assembly. All the openings in the panel and housing are gasketed to provide a waterproof assembly.

TELEPHONE SET CASE. The telephone set case is used to carry and protect the telephone set while it is being used or transported. It is made of reinforced canvas with a zipper across the top, a carrying strap, and loops for mounting the telephone on a tree or pole.

1-11. EQUIPMENT DATA.

OPERATING CAPABILITIES

Altitude limit	Above 10,000 feet (3048 meters)
Rate of descent	50 feet (15.24 meters) per second from 1500 feet (457.2 meters)
Water protection	Waterproof
Gun blast protection	Can withstand severe acoustic shock
Temperature limits	
Storage (without batteries)	80°F (26.6°C) to +160°F(+71.1°C)
Operation	-40°F (4.4°C) to +131°F(+55°C)
Transmission frequency range	300 Hz to 3200 Hz
Transmission range	
Field wire	
WD-1/TT	
Wet	14 miles (22.5 kilometers)
Dry	22 miles (35.4 kilometers)
WD-14/TT	
Loaded	14 miles (22.5 kilometers)
Nonloaded	22 miles (35.4 kilometers)
4-cable spiral	
CC-358 (loaded)	48 miles (77.3 kilometers)
CC-368 (nonloaded)	27 miles (43.5 kilometers)
CX-1065/G	
Loaded	50 miles (80.5 kilometers)
Nonloaded	29 miles (46.7 kilometers)
5-pair cable CX-162/G (nonloaded)	23 miles (37.0 kilometers)
Lead-covered cable	
19-gage (nonloaded)	30 miles (48.3 kilometers)
22-gage (nonloaded)	20 miles (32.2 kilometers)
24-gage (nonloaded)	15 miles (24.1 kilometers)
Open wire lines	
W-2#14 AWG copper (nonloaded)	230 miles (370.1 kilometers)
W-74#12 AWG copper (nonloaded)	520 miles (836.8 kilometers)

NOTE

The transmission ranges listed above are from station to station. Intermediate switchboards do not increase these limits.

1-11. EQUIPMENT DATA. (CONT)

PHYSICAL CHARACTERISTICS

Handset H-60/PT
- Height ..... 2 inches (5.1 centimeters)
- Width ..... 2 inches (5.1 centimeters)
- Length ..... 7 inches (17.8 centimeters)
- Weight ..... 1.5 pounds (0.68 kilograms)

Panel and housing assembly
- Height ..... 4 inches (10.2 centimeters)
- Width ..... 6 inches (15.2 centimeters)
- Length ..... 10 inches (25.4 centimeters)
- Weight ..... 7 pounds (3.18 kilograms)

Telephone set case
- Height ..... 8.5 inches (21.6 centimeters)
- Width ..... 4 inches (10.2 centimeters)
- Length ..... 11 inches (27.9 centimeters)
- Weight ..... 1 pound (0.45 kilograms)

Section III TECHNICAL PRINCIPLES OF OPERATION

1-12. TELEPHONE RECEIVER ELEMENT TA-235/PT.

The receiver element, installed in the telephone set handset, converts electrical current received over telephone line into audible signal.

RECEIVER CAP. Covers and secures receiver element in the handset.

DOME. (Part of diaphragm assembly.) A dome of lightweight plastic which vibrates to create sound. A small hole at its center provides low frequency cutoff filter characteristic.

MAGNETIC RING. (Part of diaphragm assembly.) A ring of magnetic material attached to outer edge of dome. Magnetic forces drive ring which causes dome to vibrate.

COIL. Receives electrical impulses that vary magnetic influence of magnet on diaphragm assembly.

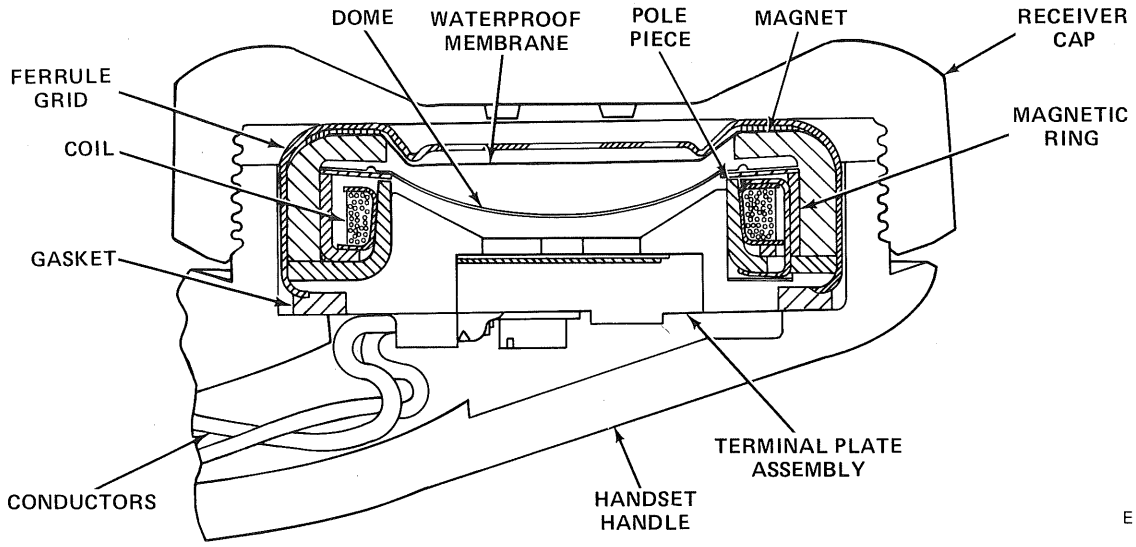
MAGNET/POLE PIECE. Provides magnetic forces required to drive diaphragm assembly.

WATERPROOF MEMBRANE. Seats and protects face of diaphragm assembly.

FERRULE GRID. Holds receiver element together.

GASKET. Seals back of receiver element in handset.

TERMINAL PLATE ASSEMBLY. Supports receiver element components and provides conductor attaching points.



1-13. TELEPHONE TRANSMITTER ELEMENT TA-117/PT.

The transmitter element is installed in the telephone set handset and converts sound into electrical current.

TRANSMITTER CAP. Covers and secures transmitter element in the handset.

DIAPHRAGM WITH ELECTRODE. Vibration of diaphragm controls the frequency of electrical impulses produced.

CARBON CHAMBER. Provides path for electrical current to flow.

WATERPROOF MEMBRANE. Seals and protects face of diaphragm assembly.

GASKET. Provides watertight seal in handset and holds terminal cup.

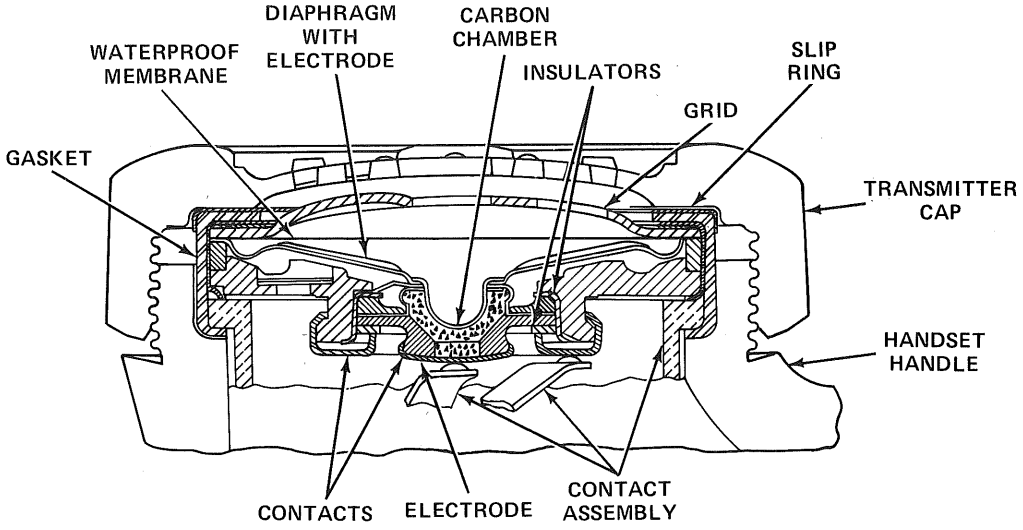
SLIPRING. Provides slipping surface when installing the transmitter cap.

INSULATORS. Provide insulation between the two contact points.

GRID. Allows sound to pass through to diaphragm and protects diaphragm.

CONTACTS. Points on transmitter element that electrical current passes through.

CONTACT ASSEMBLY. A plastic cup behind transmitter that provides terminal contacts and acoustically isolates transmitter and receiver elements.



1-14. BUZZER ASSEMBLY BZ-23/PT.

The buzzer assembly provides the acoustic signal that indicates an incoming call.

TERMINALS. Points to which electrical wires are attached to provide current to coil.

COIL. When energized, provides electromagnetic force required to operate armature.

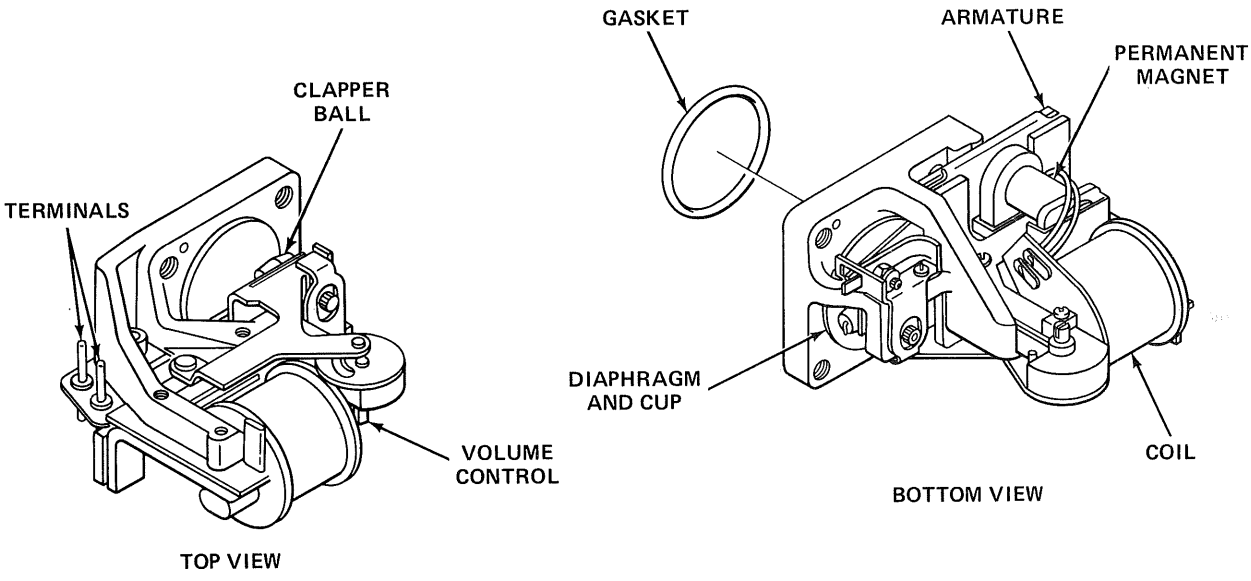
ARMATURE. An oscillating bar, operating at a nominal frequency of 20 Hz, to which is attached a stiff wire support with a clapper ball on its end.

DIAPHRAGM AND CUP. Clapper ball strikes diaphragm producing a high-pitched signal.

VOLUME CONTROL. Controls sound signal from high pitch to low buzz. Signal cannot be turned off entirely.

PERMANENT MAGNET. Assists coil in the operation of armature.

GASKET. Provides a watertight seal between diaphragm face and case assembly.



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1-15. HAND-RINGING GENERATOR G-42/PT.

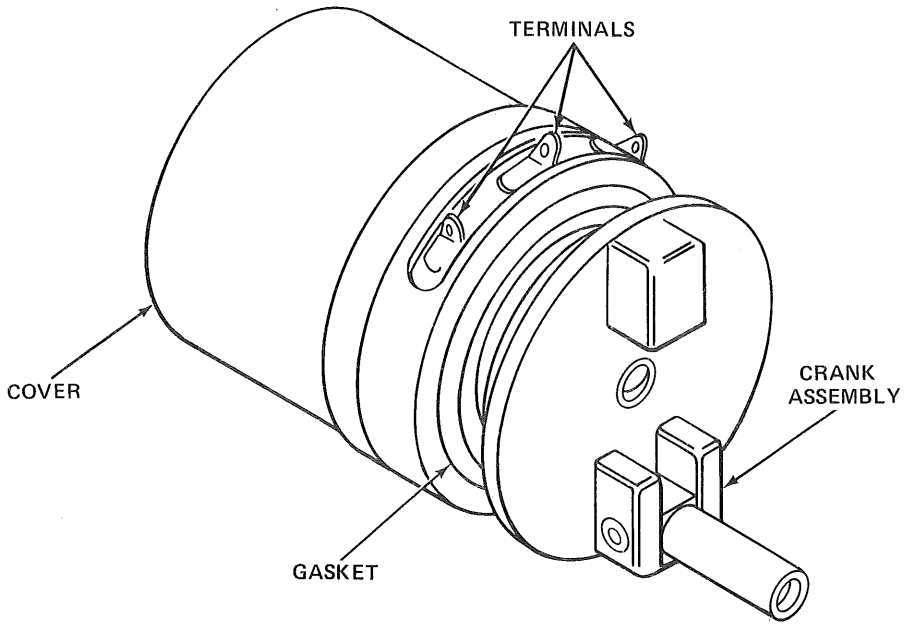
The hand-ringing generator provides signal current to the switchboard or receiving unit. At a crank speed of 200 rpm, generator output voltage is approximately 100 volts at 20 Hz.

CRANK ASSEMBLY. Provides the means to turn generator rotor. When crank handle is turned at 200 rpm, rotor turns at 1200 rpm, through a 6 to 1 gear reduction train.

GASKET. Provides a watertight seal with case assembly.

TERMINALS. Points to which electrical wires are attached to provide generator output voltage to the line.

COVER. Provides protection for internal components of generator.



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1-16. IMPEDANCE-MATCHING NETWORK CU-350/PT.

The impedance-matching network houses the telephone circuit components sealed hermetically in a common metal container.

CAN ASSEMBLY. Houses impedance-matching network components.

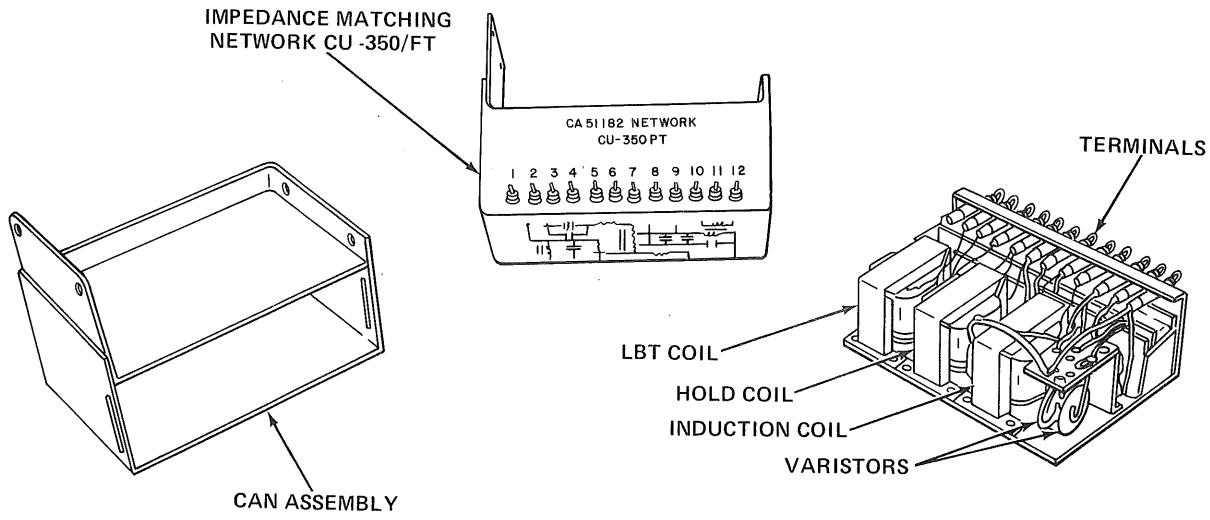
TERMINALS. Attaching points for telephone's electrical circuit wiring.

LBT COIL. Local battery talk coil keeps voice current out of battery in lb and cbs circuits.

HOLD COIL. Signals cb switchboard on cbs circuit.

INDUCTION COIL. Contains impedance-matching circuits.

VARISTORS. Resistors whose resistance is dependent upon applied voltage.



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1-17. CIRCUIT ANALYSIS.

SIGNALING, INCOMING

Incoming 20-Hz ringing current from a distant source operates the buzzer in the telephone set over the following path. (See schematic diagram, para 5-7.)

1. From binding post LINE 1, through contacts 3 and 2 on centrifugal switch of hand-ringing generator, to buzzer.

2. From buzzer to terminal 1 of impedance-matching network.

3. From terminal 1 to capacitor P1, through terminal 5 to binding post LINE 2.

This operates the buzzer, signaling the telephone user.

SIGNALING LOCAL BATTERY SWITCHBOARD

When operating in the lb circuit, crank the hand-ringing generator before lifting the handset. This will operate the centrifugal switch connecting the generator's 20-Hz ringing current to the line over the following path. (See schematic diagram, para 5-7.)

1. From terminal 1 on generator to binding post LINE 2.

2. From binding post LINE 2, through line and switchboard being signaled, and back to binding post LINE 1.

3. From binding post LINE 1, to terminal 3 on generator, through centrifugal switch, and back to generator.

This completes the circuit to the local battery switchboard or the signaling device in the distant telephone set.

SIGNALING COMMON BATTERY SWITCHBOARD

When operating in the cb circuit, lifting the handset from its bracket and releasing the line switch will complete the circuit to the common battery switchboard. Current flows through the circuit closed by the line switch over the following path. (See schematic diagram, para 5-7.) chapter 5.)

1. From switchboard battery to binding post LINE 1.

2. From binding post LINE 1, through contacts 5 and 6 of line switch, to terminal 8 on impedance-matching network.

3. From terminal 8, through winding A of induction coil, to terminal 10 of impedance-matching network.

4. From terminal 10, through transmitter element, back to terminal 11 of impedance-matching network.

1-17. CIRCUIT ANALYSIS. (CONT)

5. From terminal 11, through resistor L, out through terminal 6, to contact 3 of S1 (selector switch) rear.

6. Out of contact 1 of S1 (selector switch) front, through binding post LINE 2, to ground at switchboard.

This causes the lamp at the switchboard to light, signaling the operator.

COMMON BATTERY SIGNALING

When operating in the cbs circuit, lifting the handset from its bracket and releasing the line switch will complete the circuit to the common battery switchboard. Current flows through the circuit closed by the line switch over the following path. (See schematic diagram, para 5-7.)

1. From switchboard battery to binding post LINE 1.

2. From binding post LINE 1, through contacts 5 and 6 of line switch, to terminal 8 of impedance-matching network.

3. From terminal 8, through winding A of induction coil, to terminal 10 of impedance-matching network.

4. From terminal 10, through contacts 9 and 11 of S1 (selector switch) rear, to terminal 4 of impedance-matching network.

5. From terminal 4, through holding coil J, through terminal 5 of impedance-matching network, to binding post LINE 2, to ground at switchboard.

Holding coil J provides a medium resistance path for signaling the operator at the switchboard and prevents shunting voice current by a high impedance to voice frequency ac.

COMMON BATTERY CIRCUIT TRANSMITTING

When operating in the cb circuit, direct current is supplied to the transmitter in the telephone set from the common battery switchboard. Current flows over the same circuit described in the incoming signaling section of this paragraph. (See schematic diagram, para 5-7.)

1. Incoming current is changed to voice current by the action of the transmitter.

2. Resistor G and varistor CR1 protect transmitter against high voltage and limit current to obtain the same transmission level when the set is changed from lb to cb.

3. Capacitor K provides a low impedance shunt for radio frequency signals, thereby eliminating them from the transmitter circuit of the telephone set.

1-17. CIRCUIT ANALYSIS. (CONT)

LOCAL BATTERY CIRCUIT TRANSMITTING

When operating in the lb circuit, current is supplied to the transmitter over the following path. (See schematic diagram, para 5-7.)

1. From negative battery terminal, through contacts 3 and 4 of line switch, to terminal 2 of impedance-matching network.

2. From terminal 2, through coil E (lbt), out terminal 3 of impedance-matching network, to contact 10 of S1 (selector switch) front.

3. From contact 10, through contact 9 of S1 (selector switch) rear, through transmitter element and press-to-talk switch, to positive battery terminal.

VOICE CURRENT

Coil E (LBT) has low dc resistance and high impedance to voice frequency. This allows dc to be supplied to the transmitter and prevents shunting voice currents through the battery. The voice current path is as follows. (See schematic diagram, para 5-7.)

1. From one side of transmitter element, through contacts 4 and 3 of S1 (selector switch) rear, to terminal 6 of impedance-matching network.

2. From terminal 6, through capacitor M, through resistor N, to terminal 5 of impedance-matching network.

3. From terminal 5, to binding post LINE 2, through distant telephone set, and back to binding post LINE 1.

4. From binding post LINE 1, through contacts 5 and 6 of line switch, to terminal 8 on impedance-matching network.

5. From terminal 8, through winding A, through terminal 10 of impedance-matching network, to transmitter to complete the circuit.

COMMON BATTERY SIGNALING CIRCUIT

The circuit for battery feed and transmitting is the same as local battery circuit transmitting. (See schematic diagram, para 5-7.)

1-17. CIRCUIT ANALYSIS. (CONT)

RECEIVING CIRCUIT

The receiving circuit in the telephone set is the same for all selector switch circuit settings. Current path is as follows. (See schematic diagram, para 5-7.)

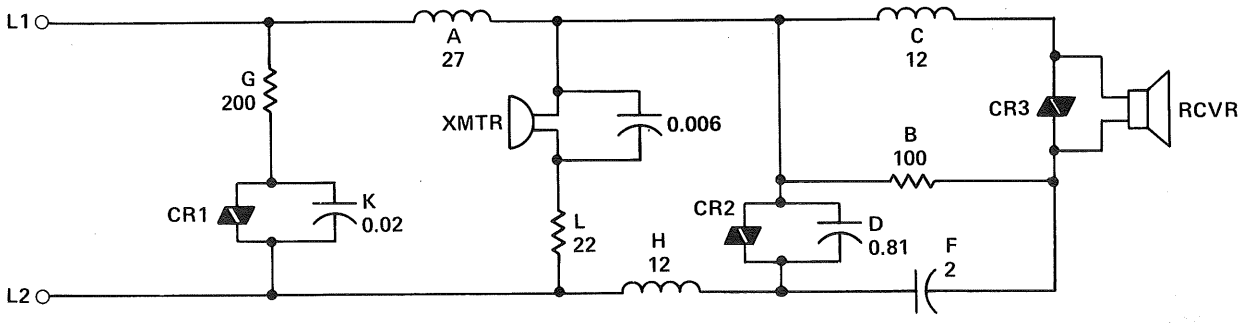
1. From one side of receiver element through terminal 9 of impedance-matching network.
2. From terminal 9, through winding C of induction coil, through resistor 8, to terminal 7 on impedance-matching network.
3. From terminal 7 to other side of receiver element.

The circuit is coupled electrically through windings A and H of induction coil.

ANTISIDETONE CIRCUIT

The three basic antisidetone transmission circuits function identically, except for the transmitter battery supply and the method of operating supervisory signals. The line switch disconnects the transmission circuits when the telephone set is not in use. The high ac impedance of the buzzer circuit minimizes transmission loss when the set is used.

The current flow through the antisidetone circuit follows the following path with circuit selector switch in the CB position. (See schematic diagram, para 5-7.)



A. COMMON BATTERY CIRCUIT

NOTE:
RESISTORS AND COIL WINDINGS ARE IN OHMS, CAPACITORS ARE IN μF.

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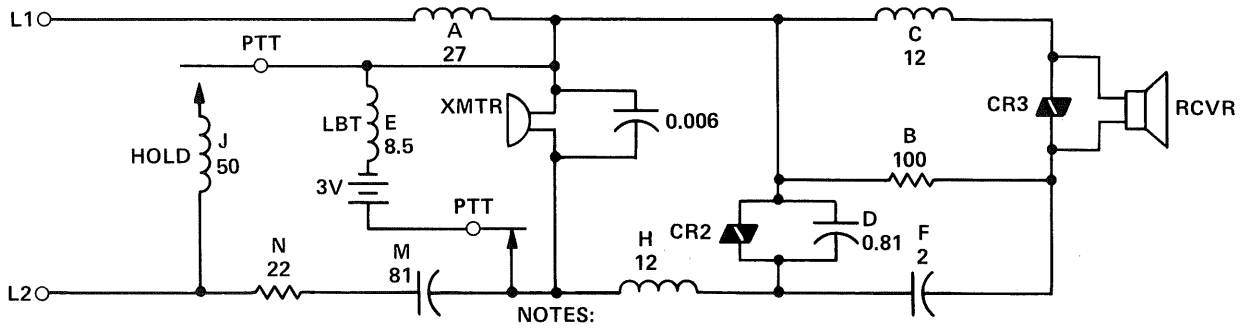
1. From one side of transmitter, through terminal 10 of impedance-matching network, to capacitor D.
2. From capacitor D, through winding H of induction coil, through resistor L, to terminal 11 of impedance-matching network.
3. From terminal 11, back to transmitter element.

1-17. CIRCUIT ANALYSIS. (CONT)

ANTISIDETONE CIRCUIT (CONT)



NOTES:
1. PTT IS THE HANDSET PRESS-TO-TALK SWITCH.
2. RESISTORS AND COIL WINDINGS ARE IN OHMS. CAPACITORS ARE IN μF.

B. LOCAL BATTERY CIRCUIT

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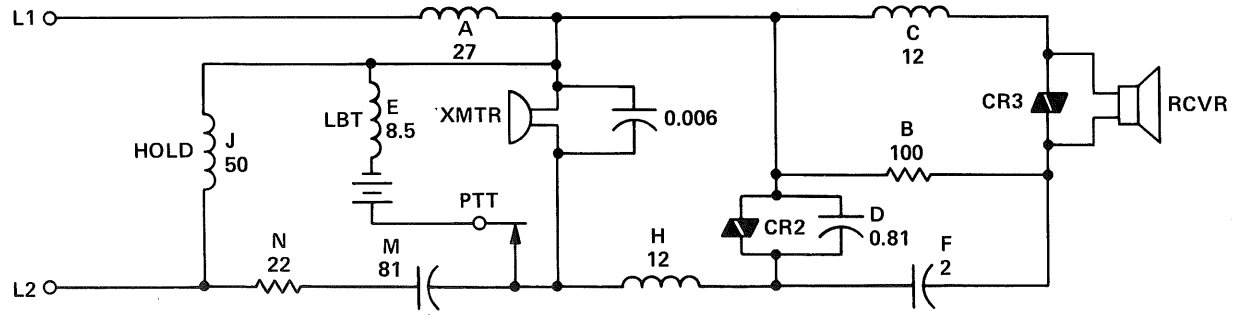
Current flow is the same in LB or CBS selector switch setting as it is in CB setting, except from winding H of the induction coil. From this point, current flow is as follows.



NOTE:
RESISTORS AND COIL WINDINGS ARE IN OHMS. CAPACITORS ARE IN μF.

C. LOCAL BATTERY TALK, COMMON BATTERY SIGNALING CIRCUIT

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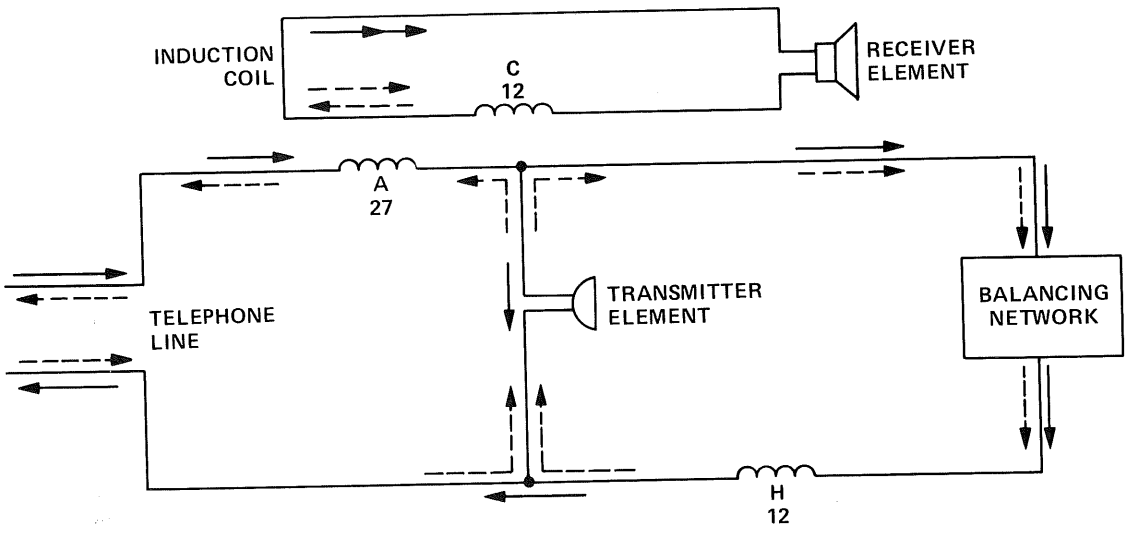
1. From winding H of induction coil through terminal 6 of impedance-matching network.
2. From terminal 6, through contacts 3 and 4 of S1 (selector switch) rear, to transmitter element.

Incoming voice current (solid arrows), through windings A and H of the induction coil, induces current flow through winding C of the induction coil. Locally transmitted voice current (dotted arrows) is induced from winding A in one direction and from winding H in the opposite direction, with a tendency to cancel induced current in winding C. (See the following schematic diagram of the antisidetone circuit.)

1-17 CIRCUIT ANALYSIS. (CONT)



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IMPEDANCE-MATCHING NETWORK

The basic element of the impedance-matching network is the induction coil with three windings on a laminated magnetic core. One winding matches the transmitter impedance, the second matches the receiver impedance, and the third matches the line impedance. Together, they form the antisidetone circuit. (See functional diagram above.)

Transmitter voice current flow is as follows:

1. From one side of transmitter element, to terminal 10 through coils A and H in opposite directions.
2. From coil A, current flows through binding post LINE 1 to switchboard, and back to transmitter element through binding post LINE 2.
3. At the same time, current flows from coil H, through balancing network, and back to transmitter element through terminal 11.

No current is produced in coil C, therefore, no current flows through the receiver.

1-17. **CIRCUIT ANALYSIS.** (CONT)

IMPEDANCE-MATCHING NETWORK (CONT)

Incoming voice current flow is as follows:

1. From telephone line binding post 1 through coils A and H.

2. From coil A, current flows out terminal 10 to transmitter element and to coil H through balancing network, back over telephone line to sending unit through binding post 2.

Since current is sent through coils A and H in the same direction, current is induced in coil C. Maximum current flows through the receiver element.

The balancing network consists of the following. (See schematic diagram, para 5-7.)

1. A 2-μF capacitor
2. A 100-ohm resistor
3. Varistor CR2 (receiver circuit equalizer)

This circuit maintains the impedance characteristics of the matching network and, therefore, the sidetone balance, over a wide frequency range. For local battery service the telephone circuit is not changed except as required to provide battery current for the transmitter element.

LOCAL BATTERY TALK (LBT) COIL

The lbt coil is a high-impedance coil with 8.5 ohms dc resistance. It is placed in series with the local battery and prevents voice current flow to the batteries. This reduces the voice frequency power loss. (See schematic diagram, para 5-7.)

HOLD COIL

The hold coil is a high-ac impedance coil with 50 ohms dc resistance. It provides a dc signaling path when the circuit selector switch is set at CBS.

VARISTORS CR1 AND CR2

Varistors CR1 and CR2 control transmission characteristics of the cb circuit. Varistors have high dc resistance when low voltage is applied across them. Resistance decreases as voltage across them increases. The functions of CR1 and CR2 are described below. (See schematic diagram, para 5-7.)

Varistor CR1 and a 200-ohm resistor shunt the telephone set. On short loops, relatively high dc voltage is available to the telephone set and transmitter element. This causes transmission level to increase considerably. However, the varistor circuit limits the voltage across the set, resulting in a small increase in transmission level.

1-17. CIRCUIT ANALYSIS (CONT)

VARISTORS CR1 AND CR2 (CONT)

On long loops, terminal voltage is less, and the shunting effect of the varistor decreases. Transmitter current provided results in a normal transmitter level. On very long loops, the varistor has no control on the transmission level. The 0.02-μF capacitor shunts varistor CR1 reducing the effects of radio frequency currents. Varistor CR1 is used in the cb circuit only.

Varistor CR2 shunts both the transmitter and receiver elements and affects their transmission level.

When transmitter terminal voltage is high, varistor CR2 resistance decreases, causing coil winding H to shunt the transmitter circuit and the 2-μF capacitor to shunt the receiver circuit.

When transmitter terminal voltage is low, varistor CR2 has little effect on transmission. Varistor CR2 is not removed during circuit changes. Its effect is negligible in the lb and cbs circuits. The .81-μf capacitor shunts varistor CR2 to reduce the effect of radio frequency currents.

1-μF CAPACITOR

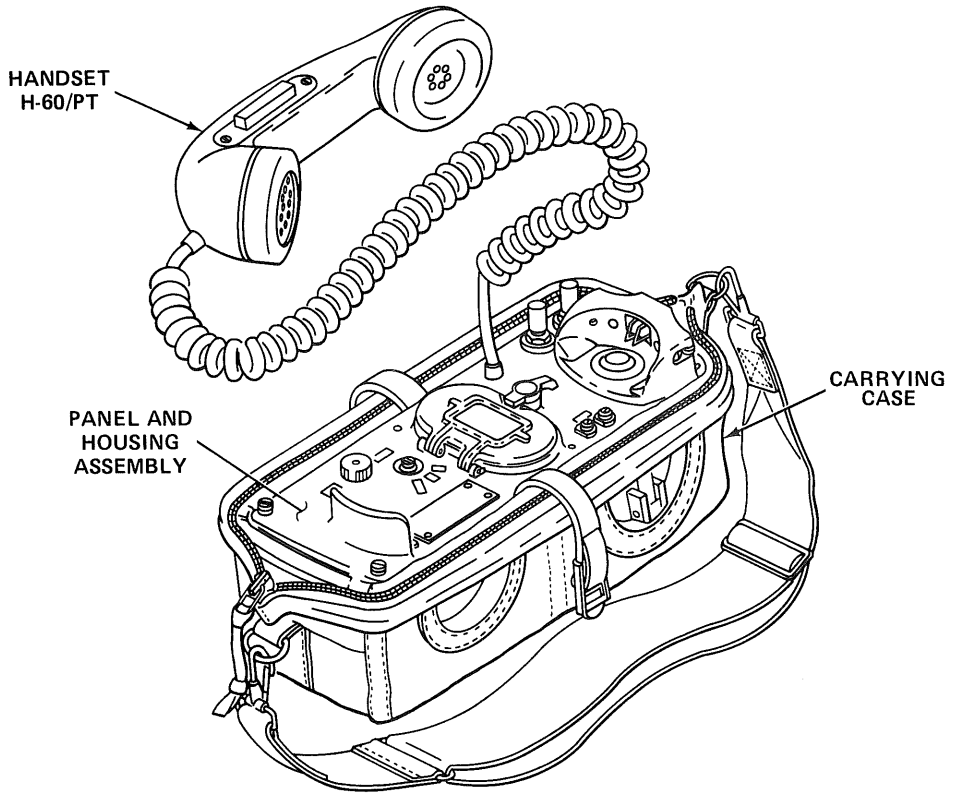
The 1-μF capacitor is installed in series with buzzer windings and prevents dc line current from going through the buzzer circuit. It forms a series-resonant circuit at 20 Hz, providing a low impedance path for the signaling current.

CHAPTER 2

OPERATING INSTRUCTIONS

Section I DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

2-1. PANEL AND HOUSING ASSEMBLY.



The various controls for the operation of the telephone set are described, and illustrated in this section.

CIRCUIT SELECTOR SWITCH. The circuit selector switch is placed in the position necessary to conform to system application. See paragraph 1-10 for a description of the CB, LB, and CBS circuits.

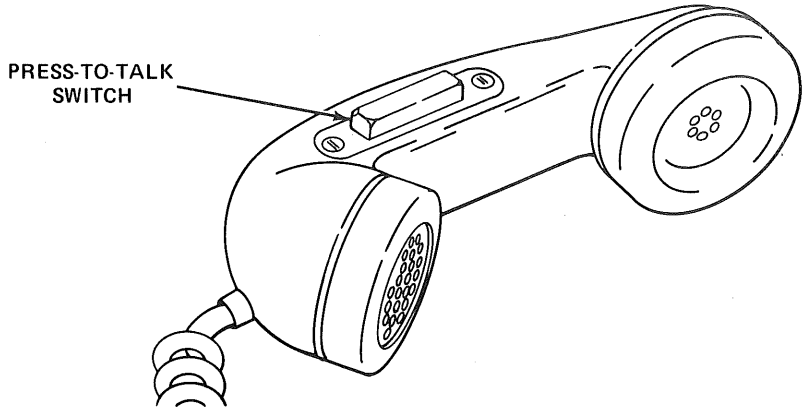
2-1. PANEL AND HOUSING ASSEMBLY. (CONT)

BUZZER VOLUME CONTROL KNOB. The buzzer volume control knob is used to increase or decrease buzzer volume from a loud signal to a low buzz. The buzzer cannot be turned off entirely.

LINE SWITCH. The line switch is activated by the handset. When the handset is removed from its holder, the line switch is placed in the normal position and connects the telephone set to the line. When the handset is placed in its holder, the line switch is depressed. This disconnects the telephone from the line.

BATTERY TERMINALS. The battery terminals are located in the panel next to the battery compartment. External battery lines attach to these terminals to provide current for operation in the lb and cbs circuit conditions.

2-2. HANDSET H-60/PT.



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PRESS-TO-TALK SWITCH. The press-to-talk switch, installed in the handset, is used when the circuit selector switch is in the LB or CBS position. When depressed, the switch closes a circuit through the transmitter and batteries that provides transmission current.

Section II OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES

2-3. GENERAL.

NOTE

Refer to TM 750-244-2 for the proper procedure for the destruction of this equipment to prevent enemy use.

2-3. GENERAL. (CONT)

Operator preventive maintenance is the systematic care, servicing, and inspection of equipment to prevent the occurrence of trouble, to reduce downtime, and to maintain the equipment in a serviceable condition. To be sure your telephone set is always ready for your mission, you must do scheduled preventive maintenance checks and services (PMCS).

Before Operation. Always keep in mind the warnings and cautions. Perform your (B) PMCS to be sure your equipment is ready to go.

During Operation. Always keep in mind the warnings and cautions. Perform your (D) PMCS to spot small troubles before they become big troubles.

Weekly and Monthly. Always keep in mind the warnings and cautions. Weekly (W) and Monthly (M) PMCS are important checks to keep serious problems from suddenly happening.

If your equipment fails to operate, troubleshoot using troubleshooting table in chapter 3. Deficiencies that cannot be corrected must be reported to higher category maintenance personnel. Records and reports of PMCS must be made in accordance with TM 38-750. Air Force personnel will use AFR 66-1 and TO 00-35D54.

When an item of equipment is reinstalled after removal for any reason, perform the necessary (B) PMCS to be sure the item meets the readiness reporting criteria.

Use the Item No. column in the PMCS table to get the number to be used in the TM Item No. column on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) when you fill out the form.

Routine checks like cleaning, lubricating, dusting, washing, checking for frayed cables, stowing items not in use, covering unused receptacles, and checking for loose nuts and bolts, and completeness, are not listed as PMCS checks. They are things that you should do anytime you see they must be done. If you find a routine check like one of those listed in your PMCS it is because other operators reported problems with this item.

NOTE

When you are doing any PMCS or routine check, keep in mind the warnings and cautions.

2-3. GENERAL. (CONT)

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapors should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

Compressed air is dangerous and can cause serious bodily harm. Use protective means or methods to prevent a chip or particle (of whatever size) from being blown into the eyes or unbroken skin of the operator or other personnel. Goggles must be worn at all times while cleaning with compressed air. Compressed air shall not be used for cleaning purposes except where reduced to less than 29 pounds per square inch gage (psig) (200 kilopascals) and then only with effective chip guarding and personnel protective equipment. Do not use compressed air to dry parts when trichlorotrifluoroethane has been used.

NOTE

The Procedure column in your PMCS chart instructs how to perform the required checks and services. Carefully follow these instructions and, if tools are needed or the chart so instructs, get organizational maintenance to do the necessary work.

Equipment Is Not Ready/Available If column lists those faults that would classify the equipment not ready/available to perform a mission.

Perform (W) as well as (B) operation PMCS if:

1. You are the assigned operator and have not operated the item since the last weekly.
2. You are operating the item for the first time.

NOTE

The checks in the interval column are to be performed in the order listed.

OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-BEFORE OPERATION D-DURING W-WEEKLY M-MONTHLY

ITEM NO.	INTERVAL B	D	W	M	ITEM TO BE INSPECTED PROCEDURES:	EQUIPMENT IS NOT READY/AVAILABLE IF:
1	•				HAND-RINGING GENERATOR. Check that generator cranks smoothly and easily.	Generator is hard to turn.
2	•				BUZZER. Check that buzzer works by requesting a ring back from the operator.	Buzzer is not working.
3				•	MODIFICATION WORK ORDERS (MWO's). Check the latest issue of DA PAM 310-1 to determine whether URGENT MWO's are published for your equipment and insure that they have been or will be applied.	URGENT MWO's not applied.

NOTE

Perform the following check if the telephone set is being operated on an lb or cbs circuit.

4		•			BATTERY. Check for weak transmission. Replace batteries if weak. See paragraph 3-3.	

NOTE

Perform the following check if the telephone set is being used on an lb circuit.

5				•	BATTERY COMPARTMENT. Check for contamination, corrosion, and leaking batteries.	Contaminated, corroded, or if batteries are leaking.

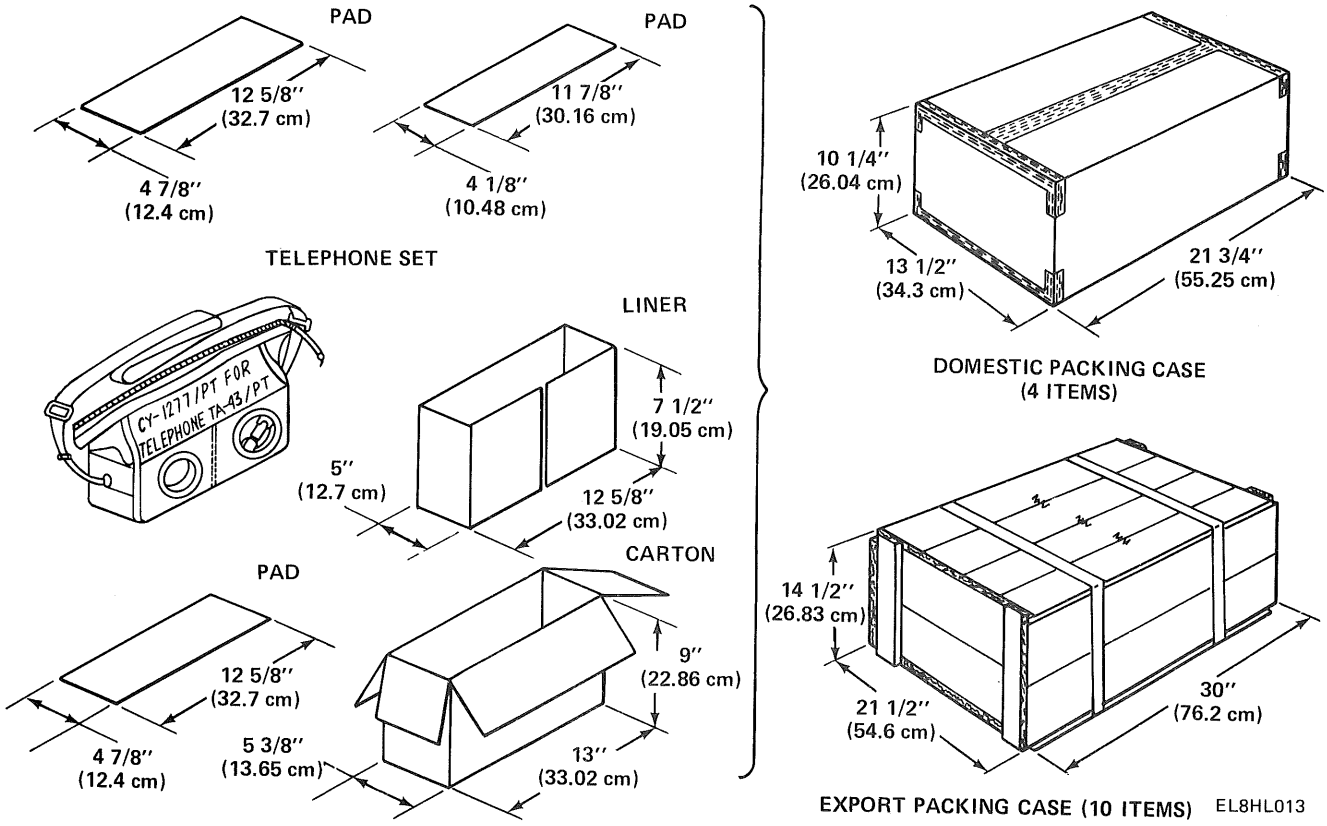
NOTE

Do the following check before each deployment to a mission location. This will permit any existing problems to be corrected before the mission starts. The check need not be done again until redeployment.

6	•				OPERATIONAL CHECK. Perform an operational check as described in paragraph 2-5.	Telephone set fails to function.

Section III OPERATION UNDER USUAL CONDITIONS

2-4. UNPACKING.



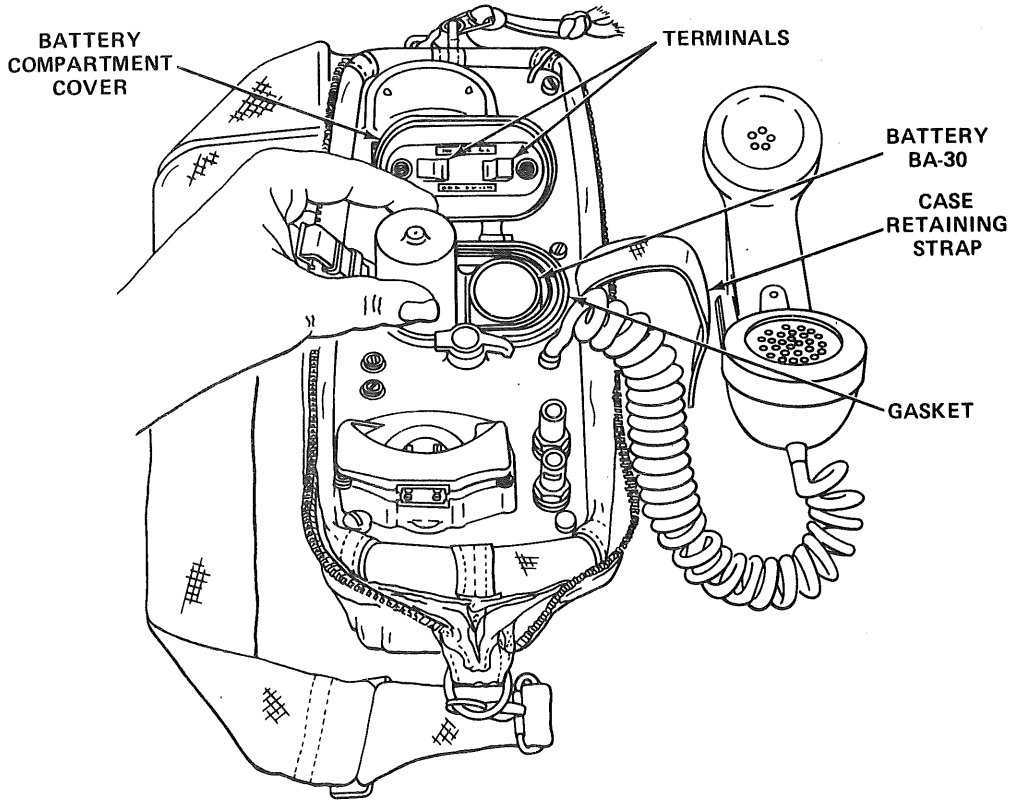
Unpack export-packaged telephone sets as described in 1 through 7 below.

TOOLS: Nail puller
Strap cutter, steel

1. Using strap cutters, remove metal straps.
2. Using nail pullers, remove nails securing top of wood case.
3. Open waterproof liner inside wood box.
4. Remove individually packed telephone sets.
5. Cut sealing tape and open top flaps of corrugated fiberboard carton.
6. Remove pads from top of telephone set.
7. Remove telephone set from carton and check it as described in paragraph 2-5.

Unpack domestic-packaged telephone sets by cutting sealing tape and opening top of packing box. Continue unpacking as described in 4 through 7 above.

2-5. CHECKING UNPACKED EQUIPMENT.



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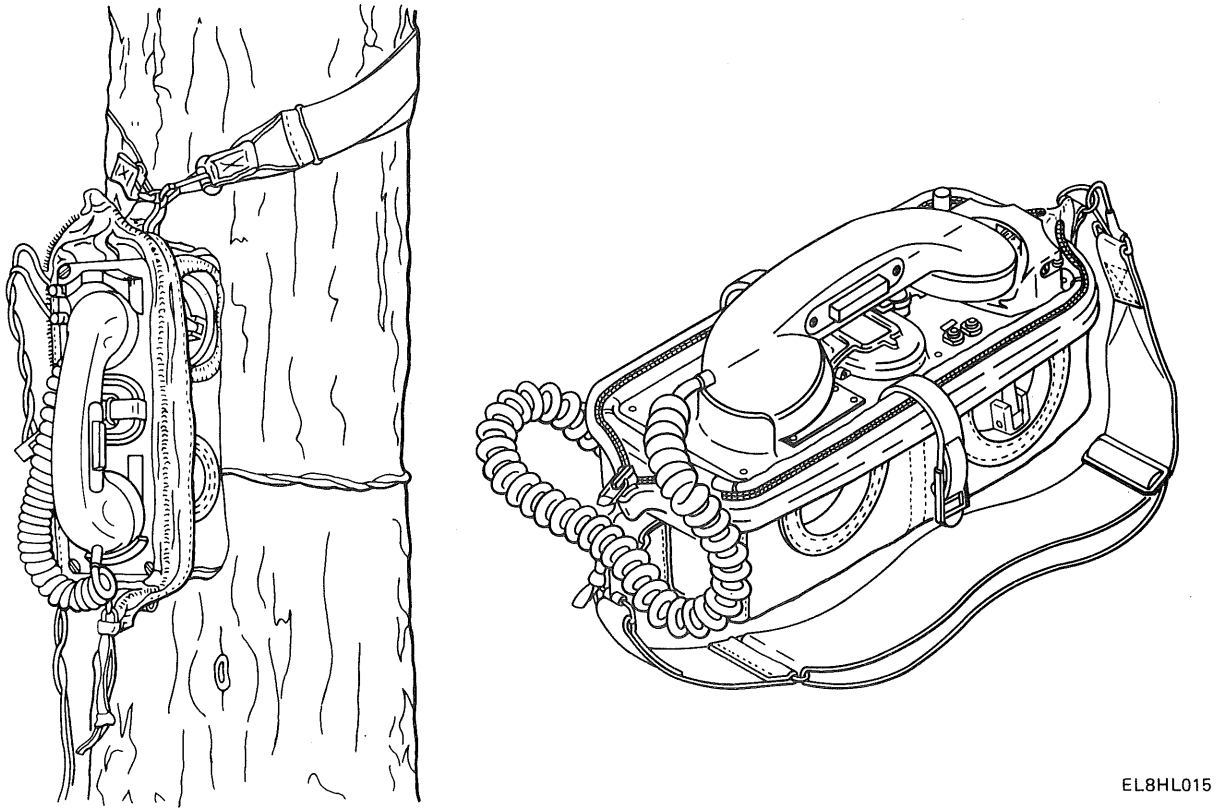
1. Open zipper on carrying case and fold top down around housing without blocking generator and buzzer openings.
2. Remove handset from its packing.
3. Install two BA-30 batteries.
   a. Unbuckle retaining strap that secures carrying case to telephone set.
   b. Unlatch and open battery compartment cover.
   c. Insert two BA-30 batteries in battery compartment, one with its center terminal up and the other with its center terminal down.
   d. Close and latch battery compartment cover and refasten retaining strap.
4. Check common battery (cb) circuit.
   a. Place circuit selector switch in CB position.
   b. Place receiver to your ear and listen while turning hand-ringing generator at low speed. A series of clicks should be heard.
   c. Turn hand-ringing generator at high speed and blow or speak into transmitter. Receiver sidetone should be heard.
   d. Operate line switch while doing step 3. Sidetone will stop and turning force required to turn hand-ringing generator will be reduced.

2-5. CHECKING UNPACKED EQUIPMENT. (CONT)

5. Check local battery (lb) circuit.
   a. Place circuit selector switch in LB position.
   b. Depress press-to-talk switch in handset. While turning hand-ringing generator at normal cranking speed, blow or speak into transmitter. Receiver sidetone should be heard.
   c. Releasing press-to-talk switch will stop sidetone and reduce turning force required to turn hand-ringing generator.
6. Check common battery signaling (cbs) circuit.
   a. Place circuit selector switch in CBS position.
   b. Depress press-to-talk switch in handset. While turning hand-ringing generator at normal cranking speed, blow or speak into transmitter. Receiver sidetone should be heard.
   c. Release press-to-talk switch. Operation of hand-ringing generator should not be affected.
   d. Depress line switch while turning hand-ringing generator. The force required to turn hand-ringing generator should be reduced.
7. Check buzzer operation.
   a. Place handset in its retaining brackets.
   b. Using line wire connect line terminals of unit being tested, to corresponding line terminals of another telephone set.
   c. Turn hand-ringing generator of second telephone set. Buzzer on telephone set being tested should operate.
   d. While turning hand-ringing generator of second telephone set, vary the volume on unit being tested with volume control knob. Volume should vary from a low buzz to a loud signal.

2-6. SITING.



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2-6. SITING. (CONT)

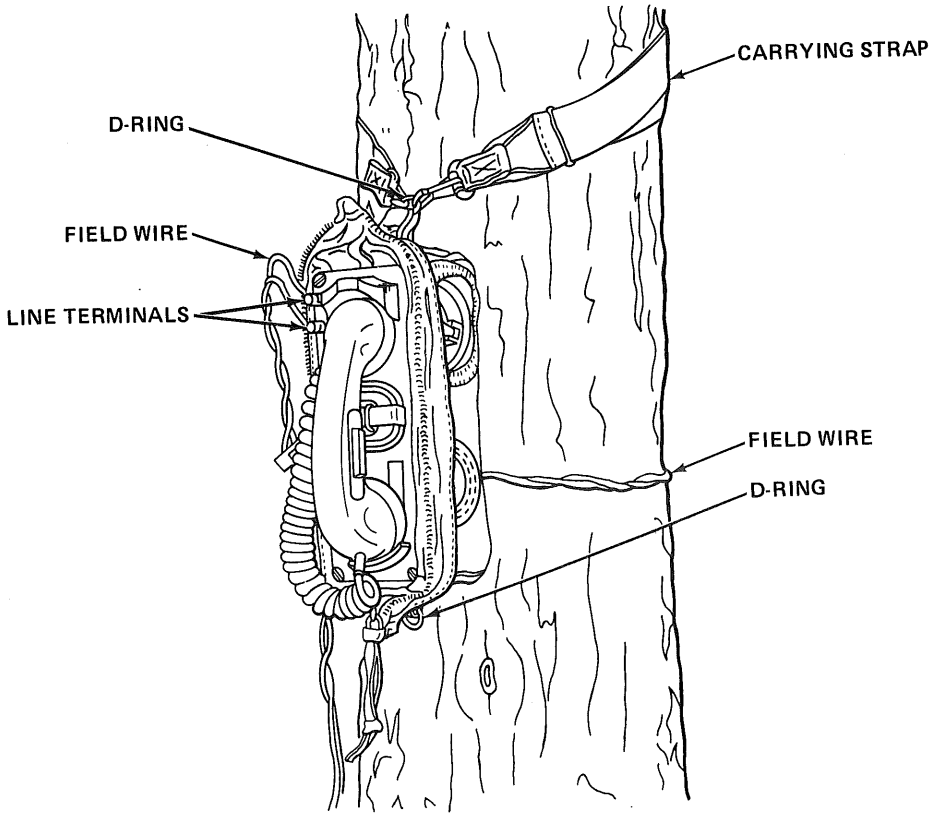
The telephone set may be used as a desk set or may be mounted on a wall, post, tree, or any place that offers protection from the weather. Its location is determined by the tactical use of the equipment at any time. When used as a desk set, the telephone set should be placed flat with the panel on top. This will assure proper operation of the line switch. When mounted on a post or tree, the line terminals must be at the top so the handset brackets will support the handset.

2-7. INSTALLATION INSTRUCTIONS.

INSTALLATION ON A TREE, POST, OR VERTICAL SUPPORT

TOOLS: Wire cutters

MATERIALS/PARTS: Field wire

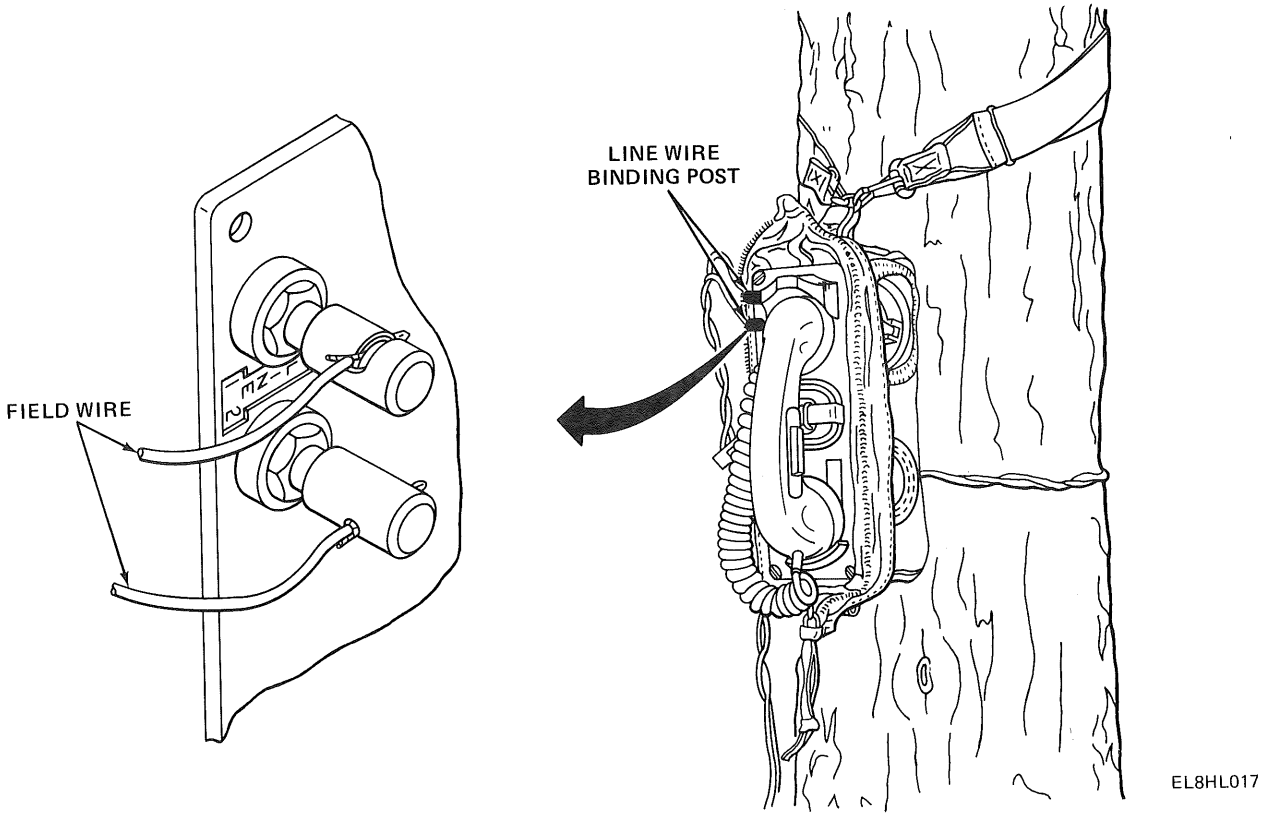


1. Disengage carrying strap from D-ring opposite line terminals.
2. Adjust carrying strap length to fit around support.
3. Place telephone set against support. Wrap carrying strap around support and secure it to top D-ring of carrying case.
4. Using wire cutters, cut a length of field wire long enough to go around support.
5. Insert field wire through lower loop on back of carrying case and tie it securely around support.

2-8. INSTALLATION OF INCOMING FIELD WIRE.

TOOLS: Wire strippers

MATERIALS/PARTS: Field wire



1. Using wire strippers, remove 1 inch of insulation from end of each wire.
2. Bend one-half inch of both exposed wires back to double the exposed ends.
3. Press down on line wire binding post marked LINE 1, and insert exposed doubled end of one wire into slot.
4. Release binding post. Make sure field wire is secured.
5. Repeat steps 3 and 4 to connect second wire to binding post marked LINE 2.

CIRCUIT SELECTOR SWITCH SETTING

Using the circuit selector switch, make the proper circuit selection.

If used in LB or CBS position, insert two BA-30 batteries in battery compartment; one with its center terminal up and the other with its center terminal down.

2-9. OPERATING PROCEDURES.

NOTE

The operation of the telephone set differs with each setting of the circuit selector switch. You should become familiar with the operating procedure for each circuit selection.

COMMON BATTERY (CB) CIRCUIT OPERATION

NOTE

It will not be necessary to operate the hand-ringing generator to signal the operator or for ringing off.

1. Remove handset from its retaining brackets.
2. Wait for switchboard operator to answer; then tell operator who you are calling. Operator will then make your connection.
3. After completing your call, return handset to its retaining brackets. This depresses the line switch and removes your telephone from the line.

LOCAL BATTERY (LB) CIRCUIT OPERATION

1. Operate hand-ringing generator rapidly for several turns.
2. Remove handset from its retaining brackets and listen for the called party to answer.
3. Depress press-to-talk switch and proceed with your message.

NOTE

The press-to-talk switch may be depressed throughout your call, but it is not necessary when listening. Releasing the press-to-talk switch when listening will extend the life of the batteries.

COMMON BATTERY SIGNALING (CBS) CIRCUIT OPERATION

1. Remove handset from its retaining brackets.
2. Wait for switchboard operator to answer; then tell operator who you are calling. Operator will then make your connection.
3. Depress press-to-talk switch and proceed with your message.

NOTE

The press-to-talk switch may be depressed throughout your call, but it is not necessary when listening. Releasing the press-to-talk switch when listening will extend the life of the batteries.

INCOMING CALLS

Answer incoming calls the same way for each type of service. Ringing current from a switchboard or another station will operate the buzzer. To answer a call, remove handset from its retaining brackets and complete the call.

2-9. OPERATING PROCEDURES. (CONT)

DISCONNECT PROCEDURE

When the telephone set is used in lb service, the user must ring off after completing the call. To ring off, place handset in its retaining brackets to operate the line switch and turn hand-ringing generator.

Always replace handset in its retaining brackets at the end of your call, so that line switch is depressed. This will remove the telephone circuit from the line. Only the buzzer will remain on the line awaiting the next incoming call.

If the line switch is not depressed by the handset, the buzzer may not operate on the next incoming call.

OPERATION OF RADIO REMOTE CONTROL EQUIPMENT

The lb circuit can be used to control the operation of a radio set connected by wire to the telephone set. A dc telephone line, supplied from an auxiliary source, operates a relay at the radio set. The relay switches the radio set from a talking (transmitting) to a listening (receiving) condition, corresponding to the operation of the press-to-talk switch.

Section IV OPERATION UNDER UNUSUAL CONDITIONS

NOTE

Operation of the telephone set may be difficult in regions where extreme cold, heat, humidity, moisture, sand, and any other unusual conditions prevail. Paragraphs 2-10 through 2-16 provide instructions for minimizing the effects of these conditions.

2-10. OPERATION IN ARCTIC CLIMATES.

Operating efficiency of the telephone set is affected by subzero temperatures and climatic conditions associated with cold weather. Follow the instructions and precautions listed below to minimize the effects of operating in arctic climates.

1. Handle the equipment carefully.
2. Keep the equipment warm and dry, if possible, and in a shelter.
3. Install a deicing screen on the transmitter end of the handset. Avoid distorting the membrane when pushing the screen into the groove provided. If deicing screens are not available, use a handkerchief or a clean cloth to cover the transmitter, after first removing any ice or other foreign substance.
4. Do not overextend or excessively bend the handset cord. At temperatures below 40°F (4.4°C) the handset core and other rubber parts become stiff, brittle, and hard to handle. Cracking or other damage can occur.
5. Keep replacement or substitute batteries warm. Place them in one of the operator's inside pockets. If batteries fail at low temperatures, replace them with batteries with screw-type terminals connected to the external battery connections.

2-11. OPERATION IN TROPICAL CLIMATES.

The high relative humidity in a tropical climate causes condensation on the equipment whenever the temperature of the equipment is lower than that of the surrounding air. Minimize the effects of this condition as much as possible by removing condensation with a clean cloth.

2-12. OPERATION IN DESERT CLIMATES.

Follow the precautions listed below when operating the telephone set in desert climates.

1. Keep the telephone set as free from dust, dirt, sand, and grit as possible.
2. Keep the carrying case zipper closed when telephone set is not in use.
3. Do not secure incoming lines to the wall of a tent. Desert areas are subject to sudden wind squalls that can loosen or break line connections.
4. Check battery compartment often for contamination. Remove contaminants and prevent build-up.

2-13. OPERATION AT HIGH ALTITUDES.

Waterproof air valves provide pressure equalization for all critical components of the telephone set. Transmission characteristics of the transmitter and receiver elements may change appreciably at high altitudes, but will still be intelligible.

2-14. OPERATION IN NOISY AREAS.

Operating the telephone set in noisy areas can produce sidetone that can make hearing difficult. When transmitting, speak directly into the transmitter in a loud clear voice. To reduce or eliminate sidetone in the receiver, do the following.

1. For cb circuit, cover the transmitter while listening.
2. For lb and cbs circuits, release press-to-talk switch or cover the transmitter when listening.

Doing this will make the incoming message easier to hear.

2-15. OPERATION ON LONG TELEPHONE LOOPS.

Better transmission is obtained over a long loop with an lb or cbs circuit. When the telephone set is used on a long loop, cb circuit transmission may be noticeably affected. Change the circuit selector switch to CBS and install two BA-30 batteries in the battery compartment.

2-16. EMERGENCY OPERATION (SOUND POWER).

If your batteries fail, and replacement batteries are not available, emergency transmission can be obtained over distances of less than 4 miles by using the receiver element as a sound-powered transmitter element. Use the following procedure for this operation:

1. Signal by turning hand-ringing generator.
2. Remove handset from its retaining brackets and listen for operator or called station to answer.
3. Speak directly into receiver; then listen while called station is transmitting.

CHAPTER 3

OPERATOR MAINTENANCE

Section I LUBRICATION INSTRUCTIONS

3-1. GENERAL.

All moving parts of the telephone set have been lubricated by the manufacturer. No further lubrication is required.

Section II OPERATOR TROUBLESHOOTING

3-2. GENERAL.

The troubleshooting table lists the common malfunctions which you may find during the operation or maintenance of the telephone set or its components. You should perform the tests/inspections and corrective actions in the order given.

This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed, or is not corrected by listed corrective actions, notify your supervisor.

SYMPTOM INDEX

OPERATOR TROUBLESHOOTING

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. Cannot transmit or receive.		
	Check line terminals for good connections.	
		Clean and reconnect field wire to line terminals. See paragraph 2-8.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION

2. Cannot transmit in lb or cbs circuit selection.

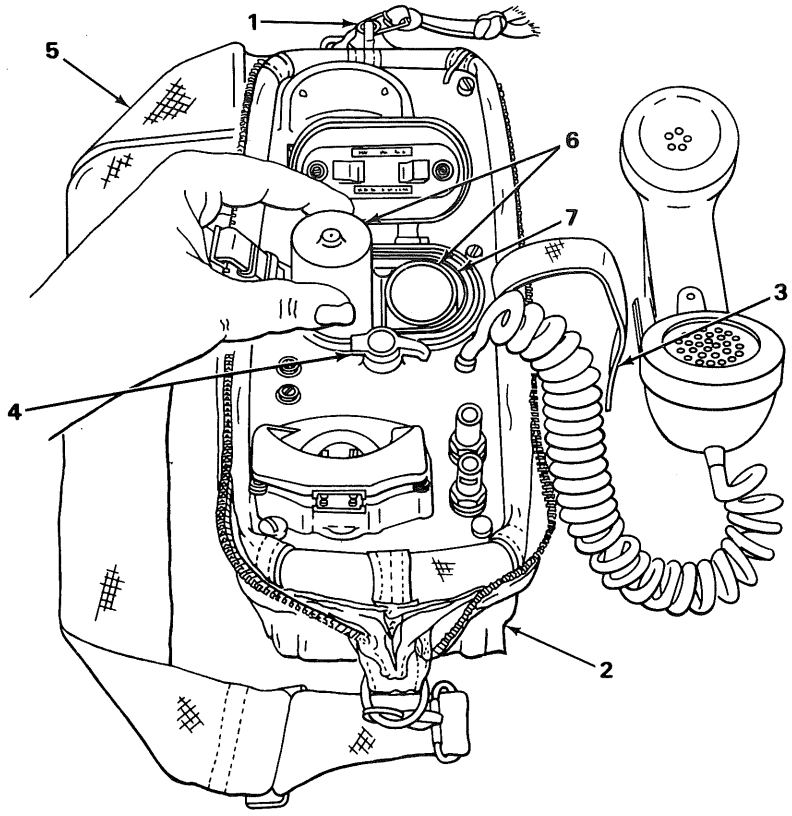
Check for bad batteries or improper installation.

Replace bad batteries (para 3-3). Install with one center terminal up and the other center terminal down.

Section III OPERATOR MAINTENANCE PROCEDURES

3-3. BATTERY REPLACEMENT.

MATERIALS/PARTS: BA-30 batteries (two required)



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3-3. BATTERY REPLACEMENT. (CONT)

REMOVAL

1. Open zipper (1) on carrying case (2).
2. Loosen or release retaining strap (3).
3. Turn latch (4) to open battery cover (5).
4. Remove batteries (6) from battery compartment (7).

INSTALLATION

1. Place batteries (6) in battery compartment (7). Insert one battery with its center terminal up and other battery with its center terminal down.
2. Close battery cover (5) and secure it by turning latch (4).
3. Refasten retaining strap (3).
4. Close zipper (1) on carrying case (2).

3-4. CLEANING.

Your telephone set should be clean and free of all dirt, dust, grease, and fungus. Clean the handset, cord, panel and housing assembly, and carrying case.

Remove dust and loose dirt with a soft cloth.

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapors should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

Compressed air is dangerous and can cause serious bodily harm. Use protective means or methods to prevent a chip or particle (of whatever size) from being blown into the eyes or unbroken skin of the operator or other personnel. Goggles must be worn at all times while cleaning with compressed air. Compressed air shall not be used for cleaning purposes except where reduced to less than 29 pounds per square inch gage (psig) (200 kilopascals) and then only with effective chip guarding and personnel protective equipment. Do not use compressed air to dry parts when trichlorotrifluoroethane has been used.

Remove grease, fungus, and ground-in dirt using a cloth dampened with trichlorotrifluoroethane (item 2, appx E).

CHAPTER 4

ORGANIZATIONAL MAINTENANCE

Section I REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

4-1. COMMON TOOLS AND EQUIPMENT.

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

4-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

No special tools or test, measurement, and diagnostic equipment (TMDE) are required to maintain the telephone set.

4-3. REPAIR PARTS.

Repair parts are listed and illustrated in TM 11-5805-256-23P.

Section II SERVICE UPON RECEIPT

4-4. SERVICE UPON RECEIPT OF USED OR RECONDITIONED EQUIPMENT.

UNPACKING

Unpack the telephone set as described in paragraph 2-4.

OPERATIONAL CHECK

Perform an operational check as described in paragraph 2-5.

Section III ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

4-5. GENERAL.

There are no scheduled organizational preventive maintenance checks and services on the telephone set. The operator will perform general maintenance and scheduled PMCS. When a problem develops that is beyond the capabilities of the operator, the operator will advise organizational maintenance on DA Form 2404 and request assistance.

Section IV ORGANIZATIONAL TROUBLESHOOTING

4-6. GENERAL.

Replacement and repair of components and parts for the telephone set are authorized for the various levels of maintenance as indicated in the maintenance allocation chart in appendix B. Troubleshooting information in the troubleshooting table is based on symptoms that would be obtained while performing the operator PMCS. When a malfunction occurs, locate it in the symptom index and perform the tests/inspections and corrective actions in the order given in the trouble-shooting table.

This manual cannot list all the malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

SYMPTOM INDEX

ORGANIZATIONAL TROUBLESHOOTING

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION

1. Cannot transmit or receive.

	Step 1.	Check line terminals for good connections.
		Clean and reconnect field wire to line terminals. See paragraph 2-8.
	Step 2.	Check for bad or damaged line terminals.
		Repair or replace line terminals. See paragraph 4-13.

ORGANIZATIONAL TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION

2. Cannot transmit or receive in lb or cbs circuit.

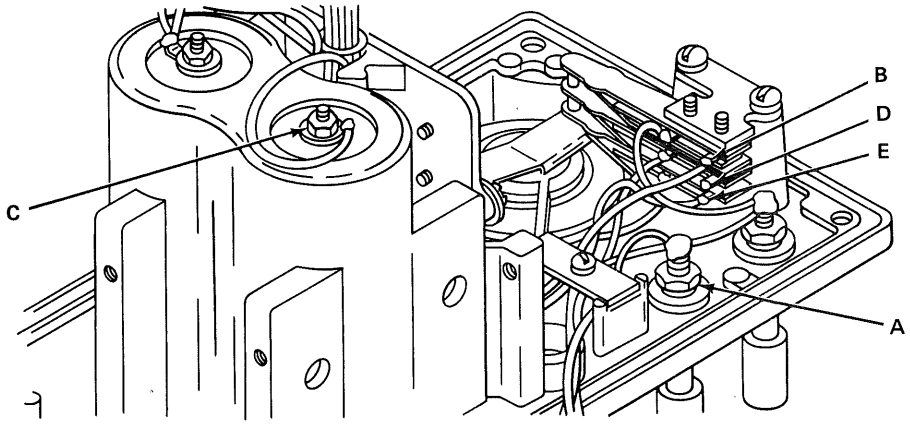
Step 1. Perform circuit test as described in paragraph 2-5.

Isolate faulty circuit components as described in steps 2 through 9.

Step 2. Perform hand-ringing generator output test. Attach multimeter set for ac voltage reading, to binding post LINE 1 and LINE 2. Crank generator and read output. Reading should be 100 vac.

Replace faulty hand-ringing generator. See paragraph 4-9.

Step 3. Check for bad line switch. Remove panel from housing assembly as described in paragraph 4-8. Perform continuity check across line switch between points A and B, C and D, and C and E. There should be continuity between A and B, C and D, and C and E.



A AND B
C AND D
C AND E

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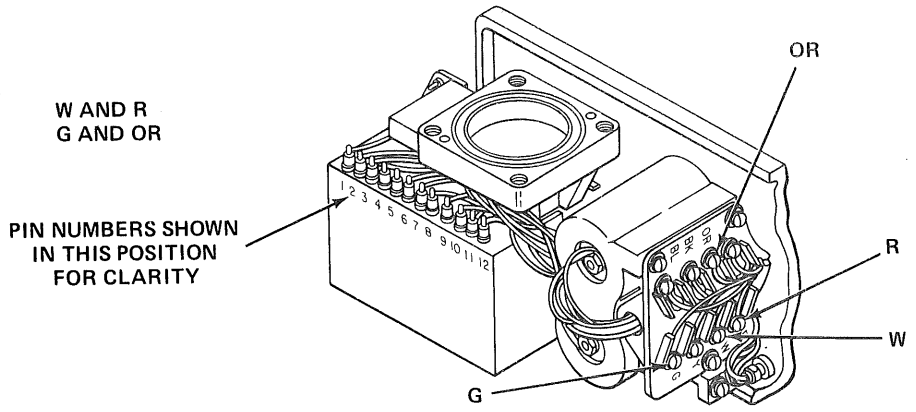
Repair or replace line switch if no continuity exists. See paragraph 4-10.

ORGANIZATIONAL TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION

2. Cannot transmit or receive in lb or cbs circuit. (CONT)

Step 4. Check press-to-talk switch. Place circuit selector switch in LB position. Check for continuity between points W and R, and G and OR. No continuity should exist. Repeat continuity check with press-to-talk switch depressed. Continuity should exist.



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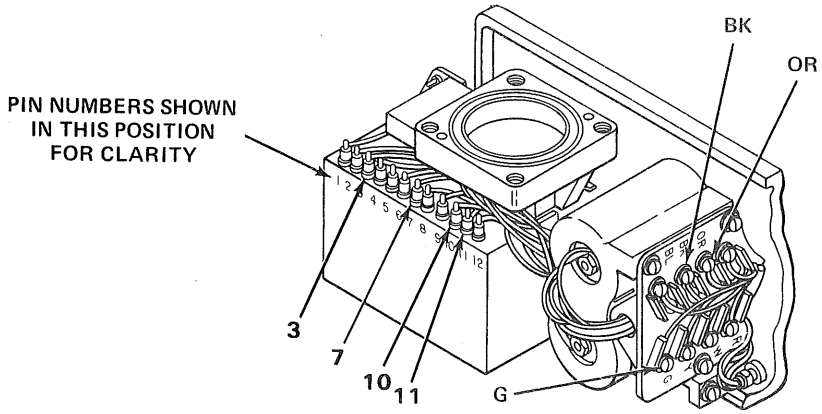
Replace bad handset. See paragraph 4-16.

Step 5. Check for bad circuit selector switch. Place circuit selector switch in LB position. Check for continuity between points listed below.



7 AND 11
7 AND 10
7 AND 3
7 AND BK
7 AND OR

EL8HL021

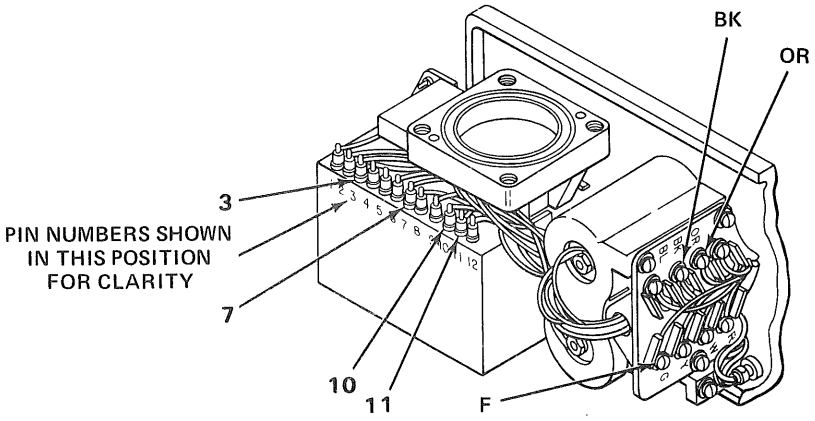
Repair or replace circuit selector switch if no continuity exists between any two points listed. See paragraph 4-11.

Step 6. Check for bad circuit selector switch. Place circuit selector switch in CBS position. Check for continuity between points listed below.

ORGANIZATIONAL TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

2. Cannot transmit or receive in lb or cbs circuit. (CONT)

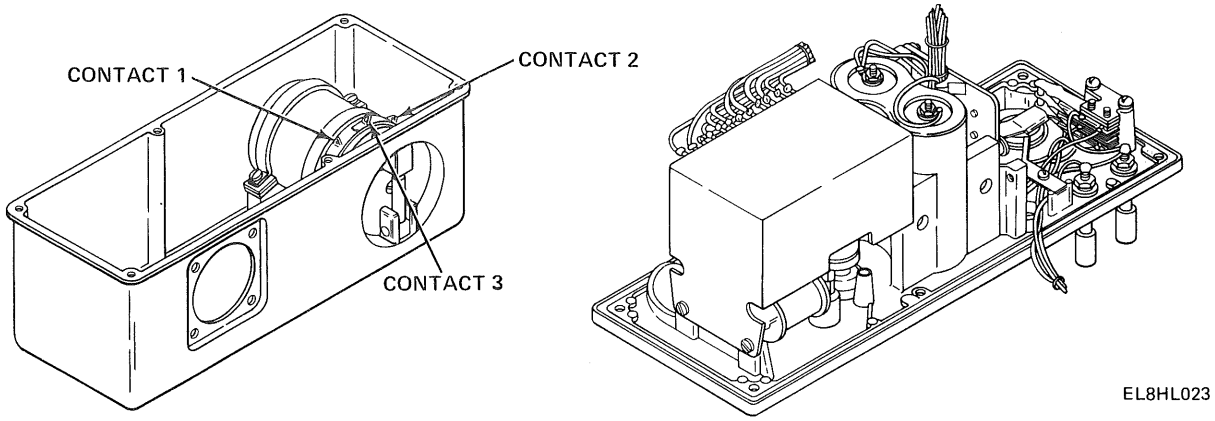


Replace bad circuit selector switch. See paragraph 4-11.

NOTE

Be sure line switch is depressed.

Step 7. Check buzzer assembly for proper operation. Connect a jumper across contacts 2 and 3 of hand-ringing generator, and crank generator. Buzzer should operate.



Replace bad buzzer. See paragraph 4-15.

Step 8. Check continuity of electrical cord assembly between terminal board and handset transmitter end.

Replace bad handset. See paragraph 4-16.

3. Cannot transmit or receive in cb circuit.

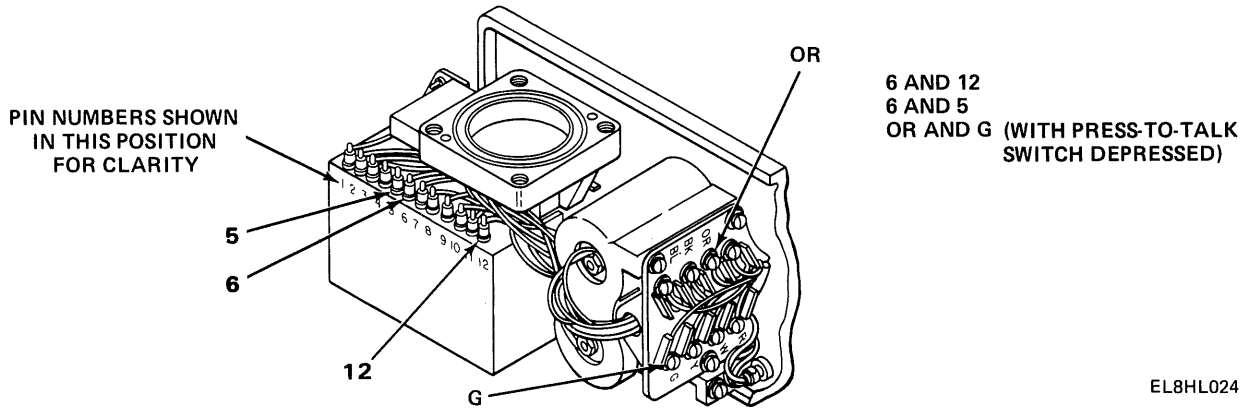
Step 1. Check for defective line switch as described in malfunction 2, step 3.

ORGANIZATIONAL TROUBLESHOOTING (CONT)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

3. Cannot transmit or receive in cb circuit. (CONT)

Step 2. Check circuit selector switch. Place circuit selector switch in CB position. Check for continuity between points listed below.



Replace circuit selector switch. See paragraph 4-11.

Step 3. Check for bad receiver. Perform circuit tests described in paragraph 2-5.

Replace bad handset. See paragraph 4-16.

Section V ORGANIZATIONAL MAINTENANCE PROCEDURES

4-7. GENERAL.

This section provides instructions for organizational maintenance of the telephone set. The following initial setup information applies to all procedures:

Resources required are not listed unless they apply to the procedure.

Personnel are listed only if the task requires more than one technician. If personnel required is not listed, one technician can do the task.

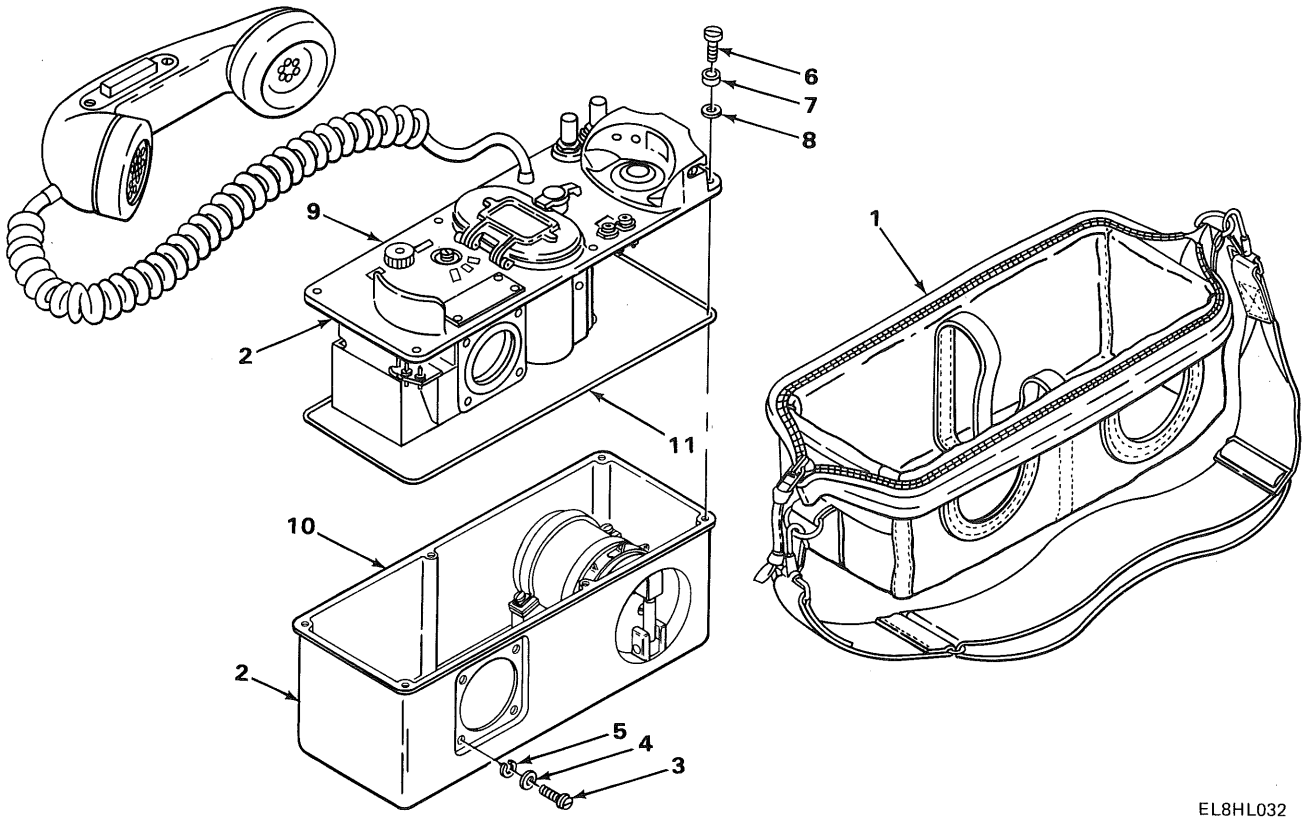
The normal standard equipment condition to start a maintenance task is power off. Equipment condition is not listed unless some other condition is required.

Note the following when replacing parts.

1. Note the position of leads being unsoldered. If a part has many leads, tag each lead to aid in replacement.
2. Do not push or pull leads excessively. Insulation deteriorates with age.
3. Use care when soldering. A poor connection will cause a hard-to-find fault, and drops of solder may cause short circuits.

4-8. PANEL AND HOUSING ASSEMBLY DISASSEMBLY AND ASSEMBLY.

TOOLS: Flat-tip screwdriver



EL8HL032

DISASSEMBLY

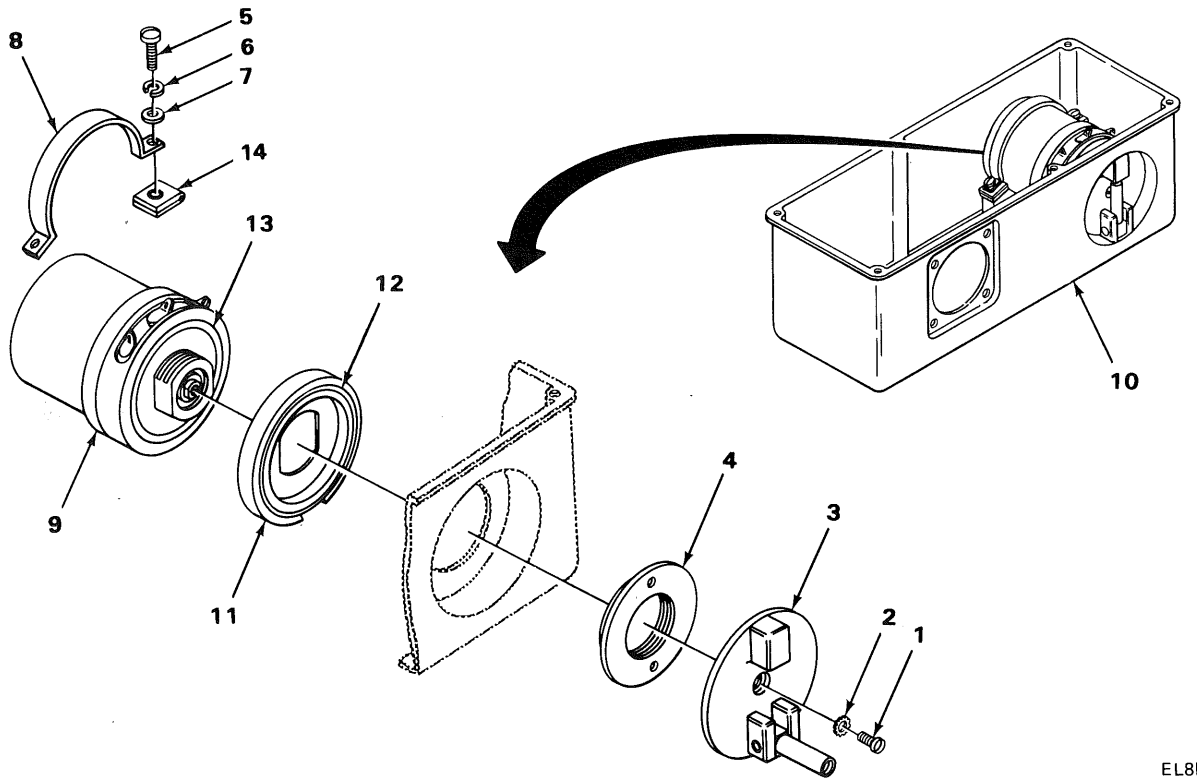
1. Open zipper on carrying case (1) and fold edge over telephone set (2).
2. Lift telephone set (2) out of carrying case (1).
3. Remove four screws (3) with washers (4) and lockwashers (5).
4. Remove six screws (6) with washers (7) and packings (8).
5. Lift panel assembly (9) off housing (10).

ASSEMBLY

1. Be sure packing (11) is in groove of panel (9).
2. Place panel (9) on housing (10).
3. Install four screws (3) with washers (4) and lockwashers (5). Do not tighten.
4. Install six screws (6) with washers (7) and packings (8).
5. Using a flat-tip screwdriver, tighten six screws (6) and four screws (3).
6. Insert telephone set (2) into carrying case (1).

4-9. HAND-RINGING GENERATOR AND SPACER AND AIR VALVE ASSEMBLY REPLACEMENT.

TOOLS: Flat-tip screwdriver
Tool Equipment TE-11/B
MATERIALS/PARTS Generator G-42/PT
PRELIMINARY PROCEDURE: Remove panel from housing assembly. See paragraph 4-8.



EL8HL037

REMOVAL

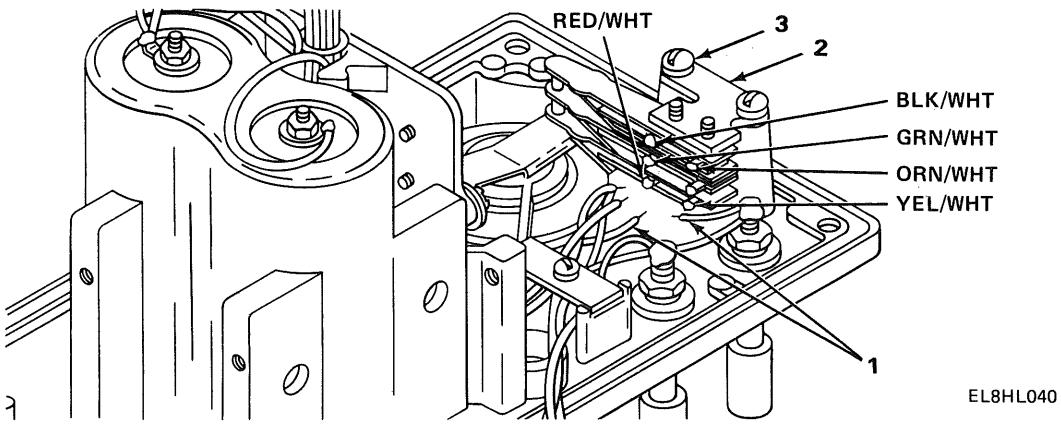
1. Using flat-tip screwdriver, remove screw (1) and lockwasher (2). Remove handcrank (3).
2. Using spanner wrench, remove nut (4).
3. Using flat-tip screwdriver, remove two screws (5), lockwashers (6), and flat washers (7). Remove strap (8).
4. Remove generator (9) from housing (10). Separate spacer and air valve assembly (11) from generator (9).
5. Remove packings (12) and (13) and bushing (14).

INSTALLATION

1. Install packings (12) and (13) and bushing (14).
2. Place spacer and valve assembly (11) on generator (9) and install in housing (10). Install nut (4).
3. Using spanner wrench, tighten nut (4).
4. Place handcrank (3) on generator (9). Install lockwasher (2) and screw (1).
5. Using flat-tip screwdriver, tighten screw (1).
6. Place strap (8) over generator (9). Install flat washers (7), lockwashers (6), and screws (5).
7. Using flat-tip screwdriver, tighten screws (5).

4-10. LINE SWITCH REPLACEMENT.

TOOLS: Flat-tip screwdriver
Soldering iron
MATERIALS/PARTS: Line switch
Solder (item 1, appx E)
PRELIMINARY PROCEDURE: Remove panel from housing. See paragraph 4-8.



REMOVAL

1. Using soldering iron, unsolder five wires (1) from line switch (2).
2. Using flat-tip screwdriver, remove screws (3). Remove line switch (2).

INSTALLATION

1. Install line switch (2) and screws (3).
2. Using flat-tip screwdriver, tighten screws (3).
3. Using soldering iron, solder five wires (1) as follows:

NOTE

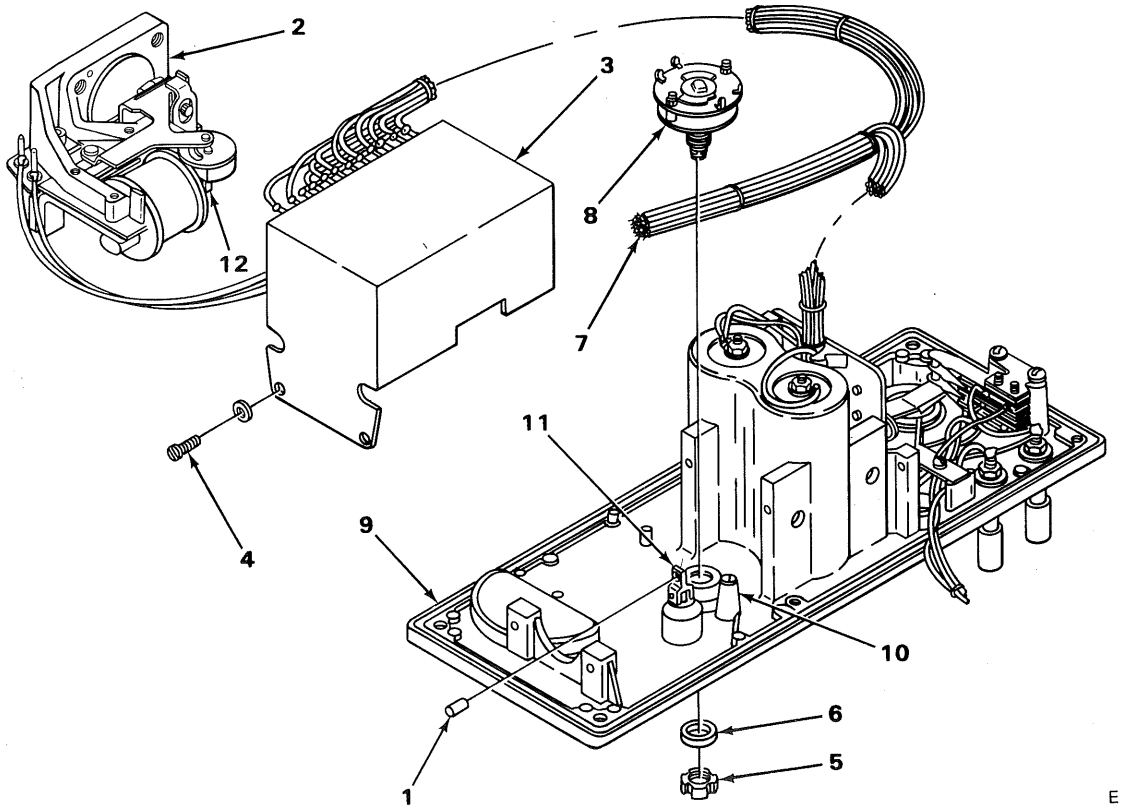
See illustration above for terminal identification.

Wire Color	Terminal
Red and white	RED/WHT
Green and white	GRN/WHT
Black and white	BLK/WHT
Yellow and white	YEL/WHT
Orange and white	ORN/WHT

FOLLOW-ON MAINTENANCE: Install panel on housing assembly. See paragraph 4-8.

4-11. CIRCUIT SELECTOR SWITCH REPLACEMENT.

TOOLS: Flat-tip screwdriver
Tool Equipment TE-11/B
MATERIALS/PARTS: Circuit selector switch
Cotter pin
PRELIMINARY PROCEDURE: Remove panel from housing assembly. See paragraph 4-8.

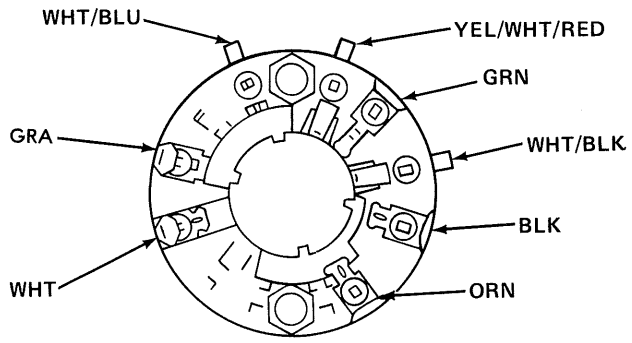


EL8HL038

REMOVAL

1. Using diagonal cutting pliers, remove pin (1).
2. Slide buzzer assembly (2) out from under impedance-matching network (3).
3. Using flat-tip screwdriver, remove four screws (4).
4. Using slotted wrench, remove nut (5) and washer (6).
5. Using soldering iron, unsolder wires (7).
6. Remove circuit selector switch (8).

4-11. CIRCUIT SELECTOR SWITCH REPLACEMENT. (CONT)



EL8HL039

INSTALLATION

1. Using soldering iron, solder wires (7) to circuit selector switch (8) as follows:

NOTE

See illustration above for terminal identification.

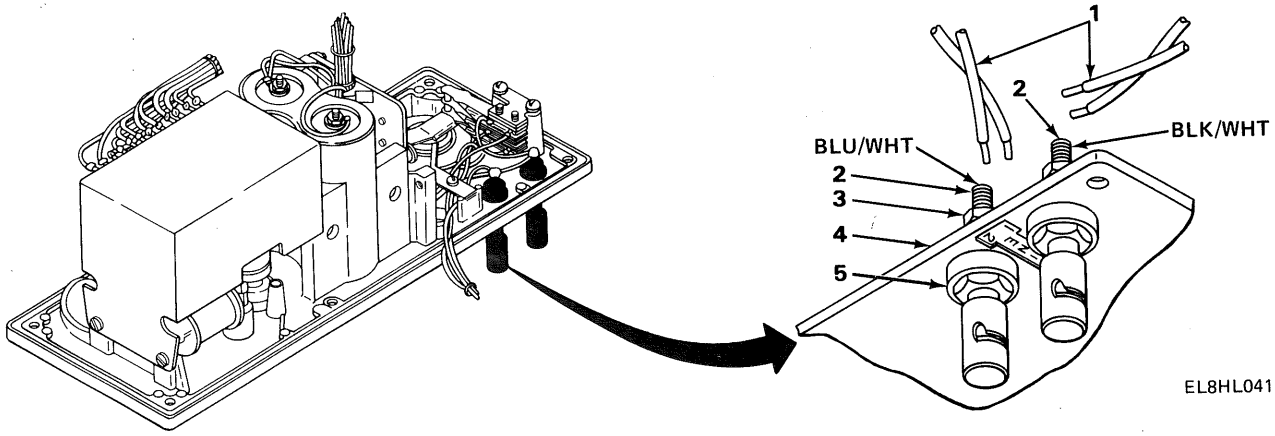
Wire Color	Terminal
Orange	ORN
Black	BLK
White and black	WHT/BLK
Green	GRN
Yellow, white, and red	YEL/WHT/RED
White and blue	WHT/BLU
Gray	GRA
White	WHT

2. Install new selector switch (8) in panel (9). Position selector switch (8) with its keying tang in receptacle (10).
3. Install washer (6) and nut (5). Using slotted wrench, tighten nut (5).
4. Place impedance-matching network (3) on panel (9) and install screws (4). Using flat-tip screwdriver, tighten screws (4).
5. Slide buzzer (2) under network (3), alining volume control shaft (11) in slot of volume control (12) on buzzer (2).

FOLLOW-ON MAINTENANCE: Install panel on housing assembly. See paragraph 4-8.

4-12. BINDING POST REPLACEMENT.

TOOLS: Soldering iron
Wrench, 3/8-inch open end (two required)
MATERIALS/PARTS: Binding post
Solder (item 1, appx E)
PRELIMINARY PROCEDURE: Remove panel from housing. See paragraph 4-8.



REMOVAL

1. Using soldering iron, unsolder four wires (1) from binding posts (2).
2. Using two 3/8-inch open end wrenches, remove two nuts (3).
3. Push binding post (2) through panel (4).
4. Remove bushing (5).

INSTALLATION

1. Aline key in bushing (5) with slot in panel (4) and install bushing.
2. Install binding posts (2). Using two 3/8-inch open end wrenches, tighten nuts (3).
3. Using soldering iron, solder four wires (1) as follows:

NOTE

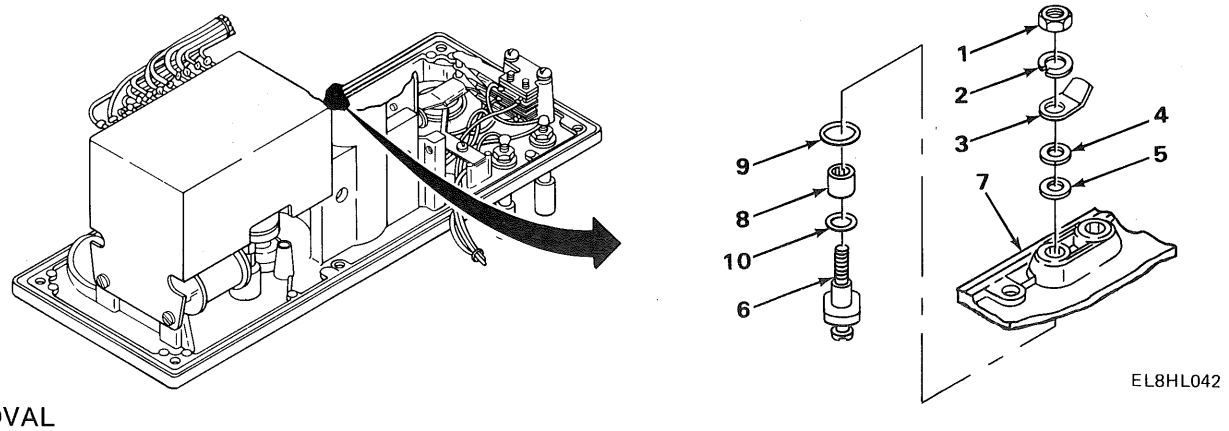
See illustration above for terminal identification.

Wire Color	Terminal
Black and white	BLK/WHT
Blue and white	BLU/WHT

FOLLOW-ON MAINTENANCE: Install panel on housing assembly. See paragraph 4-8.

4-13. BATTERY TERMINALS (EXTERNAL) REPLACEMENT.

TOOLS: Wrench, 3/8-inch
MATERIALS/PARTS: Battery terminals
PRELIMINARY PROCEDURE: Remove panel from housing. See paragraph 4-8.



REMOVAL

1. Using 3/8-inch wrench, remove nuts (1).
2. Remove lockwashers (2), terminals (3), flat washers (4), and insulator washers (5).
3. Push battery terminals (6) out of panel (7).
4. Remove insulators (8) from panel (7).
5. Remove washers (9) and packings (10) from terminals (6).

INSTALLATION

1. Install insulators (8) in panel (7).

NOTE

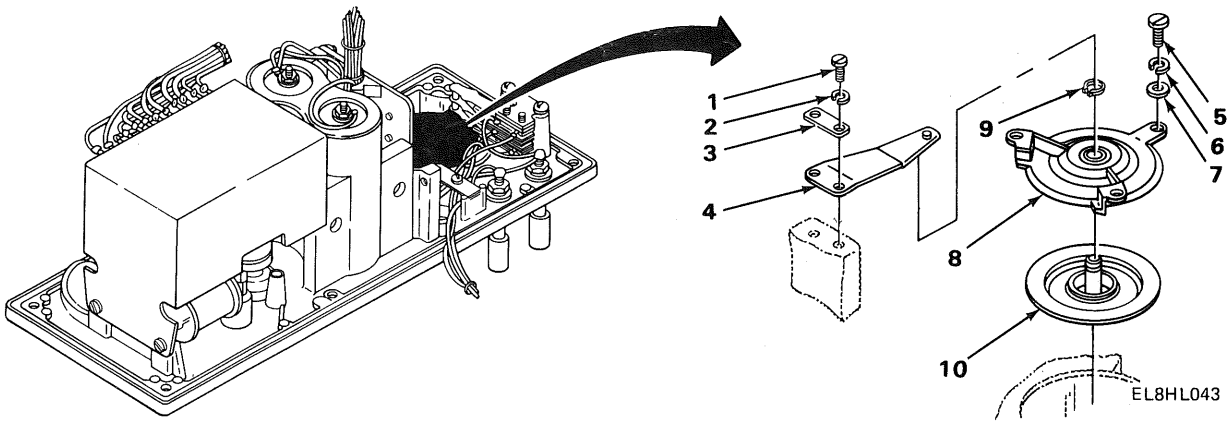
Battery terminals (6) are keyed to panel (7).

2. Install packings (10) and washers (9) on terminals (6).
3. Push battery terminals (6) into panel (7).
4. Install insulator washers (5), flat washers (4), terminals (3), and lockwashers (2).
5. Using 3/8-inch wrench, install nuts (1).

FOLLOW-ON MAINTENANCE: Install panel on housing assembly. See paragraph 4-8.

4-14. PLUNGER ASSEMBLY (SWITCH BUTTON) REPLACEMENT.

TOOLS: Flat-tip screwdrivers
MATERIALS/PARTS: Plunger assembly
PRELIMINARY PROCEDURE: Remove panel from housing. See paragraph 4-8.



REMOVAL

1. Using flat-tip screwdriver, remove screws (1), lockwashers (2), plate (3), and flat spring (4).
2. Using flat-tip screwdriver, remove screws (5), lockwashers (6), and flat washers (7).
3. Remove switch button cap (8) from panel.
4. Remove lockring (9). Separate diaphragm (10) from cap (8).

INSTALLATION

1. Insert shaft of diaphragm (10) through switch button cap (8). Install lockring (9).
2. Install switch button cap (8), flat washers (7), lockwashers (6), and screws (5) on panel.
3. Using flat-tip screwdriver, tighten screws (5).
4. Install flat spring (4), plate (3), lockwashers (2), and screws (1).
5. Using flat-tip screwdriver, tighten screws (1).

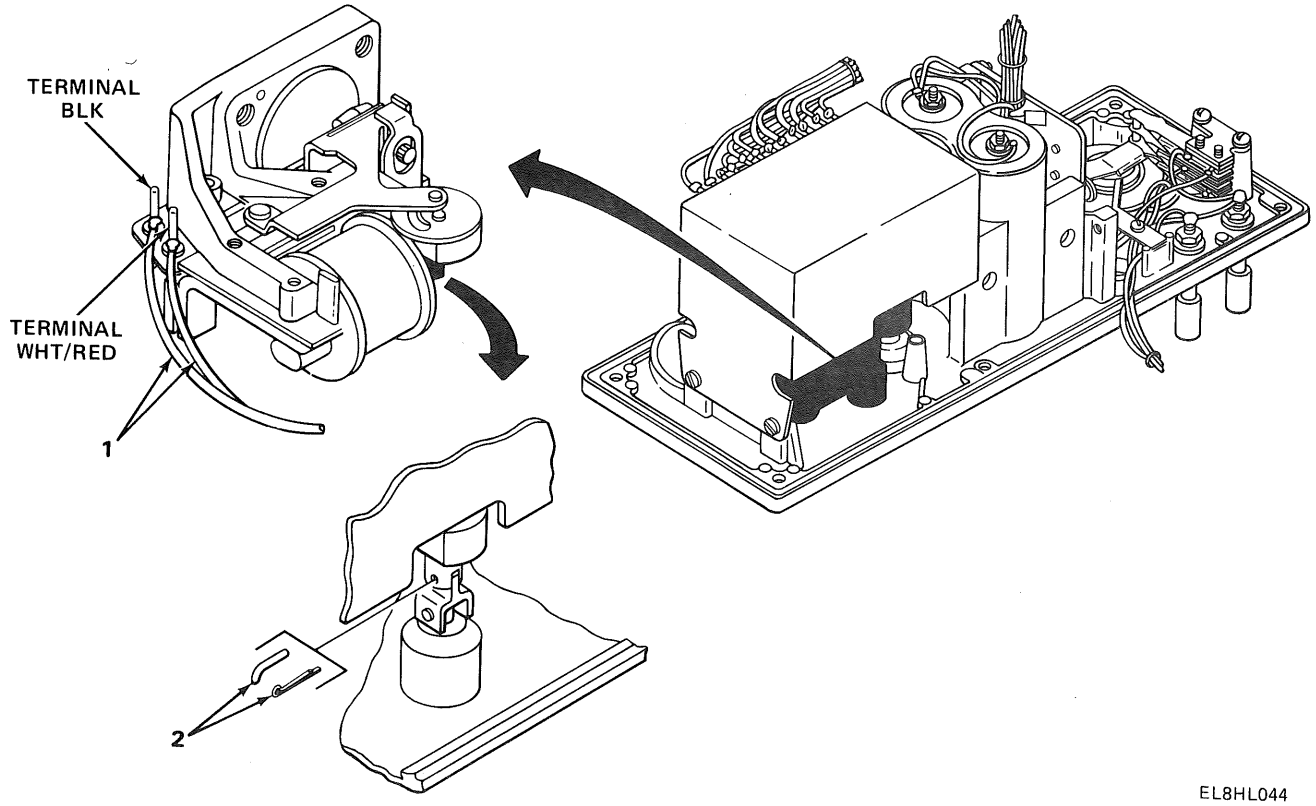
FOLLOW-ON MAINTENANCE: Install panel on housing. See paragraph 4-8.

4-15. BUZZER ASSEMBLY REPLACEMENT.

TOOLS: Soldering iron
Diagonal cutting pliers

MATERIALS/PARTS: Buzzer Assembly BZ-23/PT
Cotter pin, MS9245-25

PRELIMINARY PROCEDURE: Remove panel from housing. See paragraph 4-8.



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REMOVAL

1. Using soldering iron, unsolder two wires (1).
2. Using diagonal cutting pliers, cut off end of coupling pin (2) and remove pin. Remove buzzer (3).

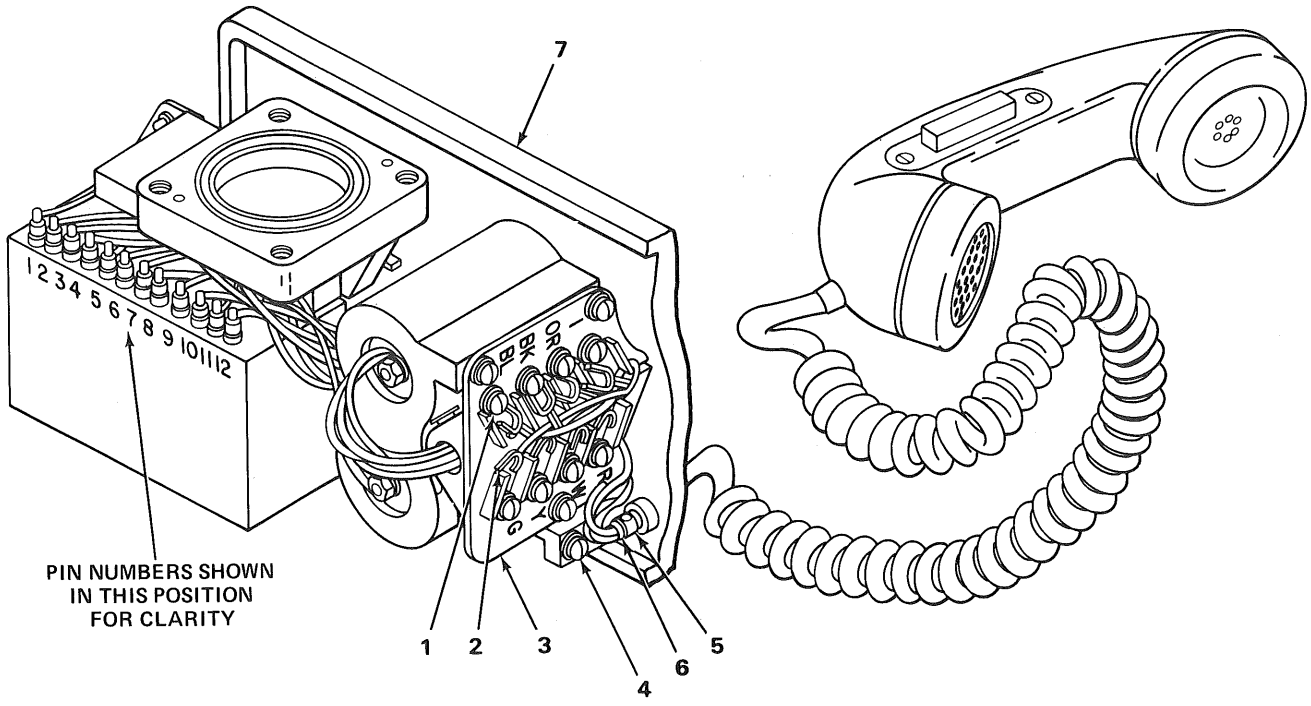
INSTALLATION

1. Install buzzer (3). Using diagonal cutting pliers, install cotter pin in place of coupling pin (2).
2. Using soldering iron, solder two wires (1) as shown in illustration above. Solder black wire to BLK terminal and white and red wire to WHT/RED terminal.

FOLLOW-ON MAINTENANCE: Install panel on housing. See paragraph 4-8.

4-16. HANDSET ASSEMBLY REPLACEMENT.

TOOLS: Flat-tip screwdriver
MATERIALS/PARTS: Electrical Cord Assembly CX-2151/U
PRELIMINARY PROCEDURE: Remove panel from housing. See paragraph 4-8.



EL8HL060

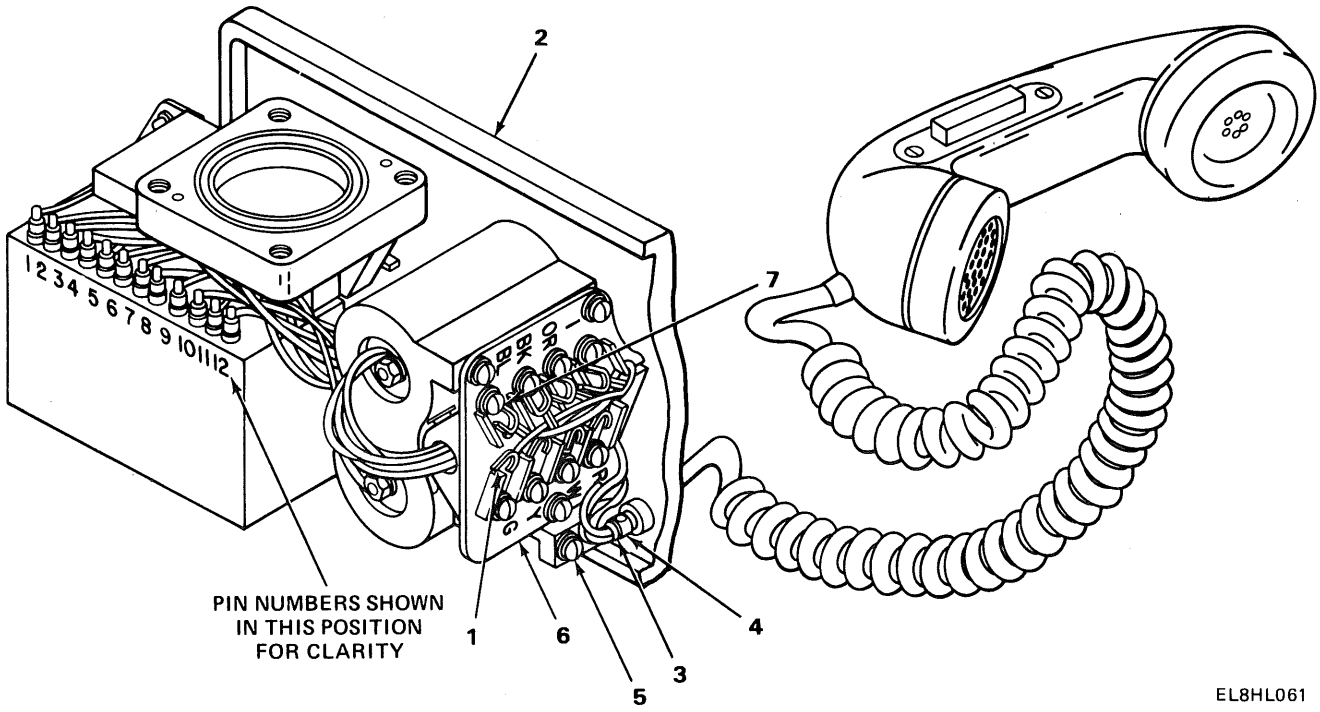
REMOVAL

NOTE

Removal of red and white color-coded wires is for convenience only. They are not part of the electrical cord assembly.

1. Using flat-tip screwdriver, loosen eight screws (1).
2. Remove eight wires (2) from under screws (1).
3. Work eight wires (2) out through slot on bottom of terminal board (3).
4. Using flat-tip screwdriver, loosen screw (4).
5. Unhook stay hook (5) from under screw (4).
6. Work electrical cord grommet (6) out of panel assembly (7) by carefully pulling and twisting.

4-16. HANDSET ASSEMBLY REPLACEMENT. (CONT)



INSTALLATION

1. Insert wires (1) through hole in panel (2) and work grommet (3) into panel (2) by carefully pushing and twisting.
2. Hook stay hook (4) under screw (5). Using flat-tip screwdriver, tighten screw (5).
3. Work eight wires (1) through slot in bottom of terminal board (6).
4. Install eight wires (1) under screws (7) as follows:

Wire Color	Terminal
Green	G
Blue	BL
Yellow	Y
Black	BK
White	W
Orange	OR
Red	R
Red and White	I

5. Using flat-tip screwdriver, tighten screws (7).

CHAPTER 5

DIRECT SUPPORT MAINTENANCE

Section I REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

5-1. COMMON TOOLS AND EQUIPMENT.

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

5-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

Refer to appendix B for a list of special tools and test equipment required to troubleshoot and repair the telephone set.

5-3. REPAIR PARTS.

Repair parts are listed and illustrated in TM 11-5805-256-23P.

Section II DIRECT SUPPORT TROUBLESHOOTING

5-4. GENERAL.

Replacement and repair of components and parts for the telephone set are authorized for the various levels of maintenance as indicated in the maintenance allocation chart in appendix B. Troubleshooting information in the troubleshooting table is based on symptoms that would be obtained while performing the operator PMCS. When a malfunction occurs, locate it in the symptom index and perform the tests/inspections and corrective actions in the order given in the trouble-shooting table.

This manual cannot list all the malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

SYMPTOM INDEX

DIRECT SUPPORT TROUBLESHOOTING

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. Cannot transmit or receive in lb or cbs circuit.

Using Test Set AN/PTM-6, check impedance-matching network for proper reactance between terminals listed below.

Terminal No.	Component	Reactance
1-5	Ringer blocking capacitor	1 μF
2-3	Lbt coil	8.5 ohms
4-5	Hold coil	50 ohms
5-6	Capacitor M and resistor N	.81 μF in series with 22 ohms
6-11	Resistor L	22 ohms
6-10	Winding H of induction coil and varistor CR2	Coil, 12 ohms; plus varistor, 80 ohms, at 1 ampere
6-7	Winding H of induction coil and capacitor F	Coil, 12 ohms in series with capacitor 2 μF
7-8	Winding A of induction coil and resistor B	Coil, 27 ohms; plus resistor, 100 ohms
7-9	Winding C of induction coil and resistor B	Coil, 12 ohms; plus resistor, 100 ohms
7-10	Resistor B	100 ohms
8-9	Windings A and C of induction coil	39 ohms
8-10	Winding A of induction coil	27 ohms
8-12	Resistor G in series with varistor CR1	Resistor G, 200 ohms; plus varistor CR1, 220 ohms, at 1 ampere

Replace impedance-matching network if reactance is not as shown above. See paragraph 4-22.

2. Cannot transmit or receive in cb circuit.

Check for bad impedance-matching network as described above.

Replace bad impedance-matching network. See paragraph 5-6.

Section III DIRECT SUPPORT MAINTENANCE PROCEDURES

5-5. GENERAL.

This section provides instructions for direct support maintenance of the telephone set. The following initial setup information applies to all procedures.

Resources required are not listed unless they apply to the procedure.

Personnel are listed only if the task requires more than one technician. If personnel required is not listed, one technician can do the task.

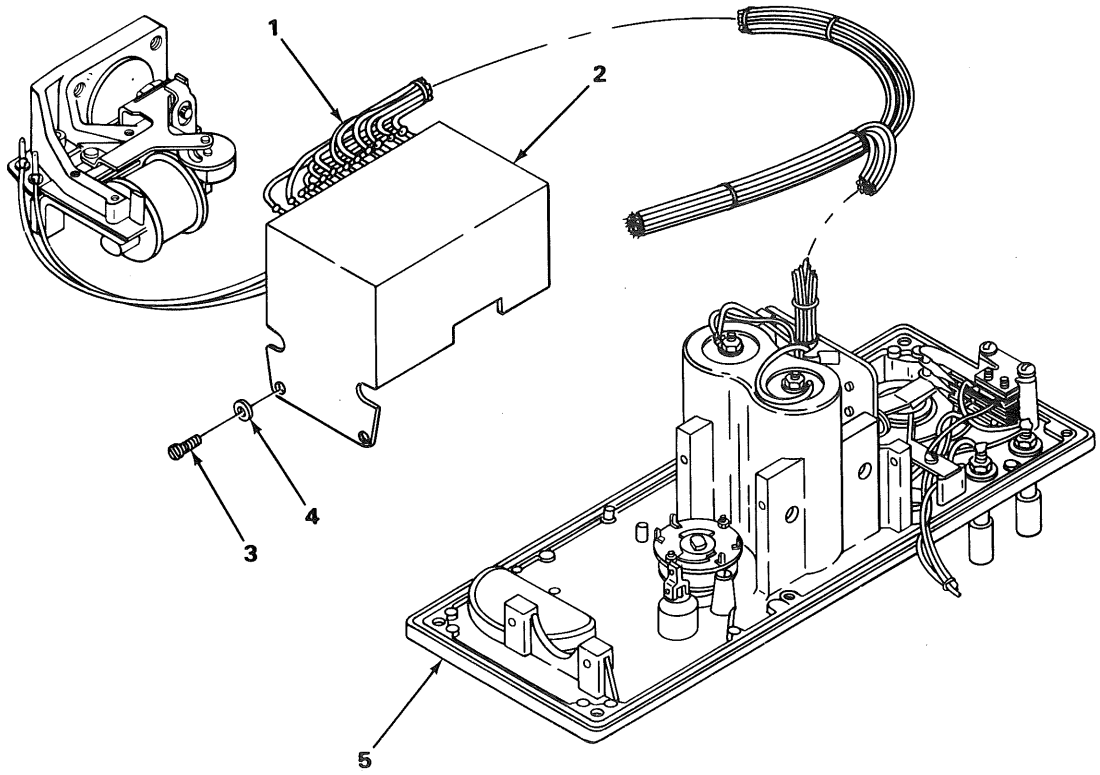
The normal standard equipment condition to start a maintenance task is power off. Equipment condition is not listed unless some other condition is required.

Note the following when replacing parts.

1. Note the position of the leads being unsoldered. If a part has many leads, tag each lead to aid in replacement.
2. Do not push or pull leads excessively. Insulation deteriorates with age.
3. Use care when soldering. A poor connection will cause a hard-to-find fault, and drops of solder may cause short circuits.

5-6. IMPEDANCE-MATCHING NETWORK REPLACEMENT.

TOOLS: Tool Equipment TE-11/B
MATERIALS/PARTS: Impedance-Matching Network CU-350/PT
Solder (item 1, appx E)
PRELIMINARY PROCEDURE: Remove buzzer assembly. See paragraph 4-15.



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REMOVAL

1. Using soldering iron, unsolder wires (1) from 12 terminals of impedance-matching network (2).
2. Using flat-tip screwdriver, remove four screws (3) and lockwashers (4). Remove impedance-matching network (2) from panel (5).

INSTALLATION

1. Position impedance-matching network (2) on panel (5).
2. Using flat-tip screwdriver, install screws (3) and lockwashers (4).

5-6. IMPEDANCE-MATCHING NETWORK REPLACEMENT. (CONT)

3. Using soldering iron, solder wires (1) onto 12 terminals of impedance-matching network as follows:

Wire Color	Terminal
Black (from buzzer)	1
White and yellow	2
White and black	3
Green	4
White and blue	5
Gray	6
Blue	7
White and orange	8
Yellow	9
Black (from circuit selector switch)	10
White	11
White, red and yellow	12

FOLLOW-ON MAINTENANCE: Install buzzer assembly. See paragraph 4-15.

5-7. FINAL INSPECTION AND TESTING.

FINAL INSPECTION

Check all assembly and mounting screws for tightness.

Check to see that handset brackets hold handset with telephone set in vertical position.

Check that line switch and press-to-talk switch can be depressed and that they return freely.

Check circuit selector switch for positive detent action in each circuit position, and for ease of operation with a screwdriver.

Check that telephone set is watertight. Water must not enter past gaskets or through waterproof air valves, when submerged in water to a depth of 2 feet (60 centimeters) for 5 minutes.

FINAL TESTING

Final testing is to be performed on all repaired telephone sets, in accordance with the procedure described in this paragraph. Test Set AN/PTM-6, adjusted and maintained in accordance with TM 11-2062, is to be used. All connections are to be made at the line terminal of the telephone set.

Generator Test. Test generator. (Refer to TM 11-2062.) With line switch depressed, turn generator crank at approximately 200 rpm; the deflection of meter M1 should be to the right of 0 db.

Buzzer Test. Test buzzer. (Refer to TM 11-2062.) With line switch depressed, set control D5 to position 1, operate key 4 to RINGER and key 6 to CKT, and turn the test set generator crank at the speed required to produce a sustained audible signal. The deflection of meter M1 should be to the left of 0 db for all positions of the buzzer volume control knob. In LOW volume position, clapper should not strike buzzer diaphragm.

Insulation Resistance. Test insulation resistance. (Refer to TM 11-2062.) The deflection of meter M1 should be to the left of -6 db.

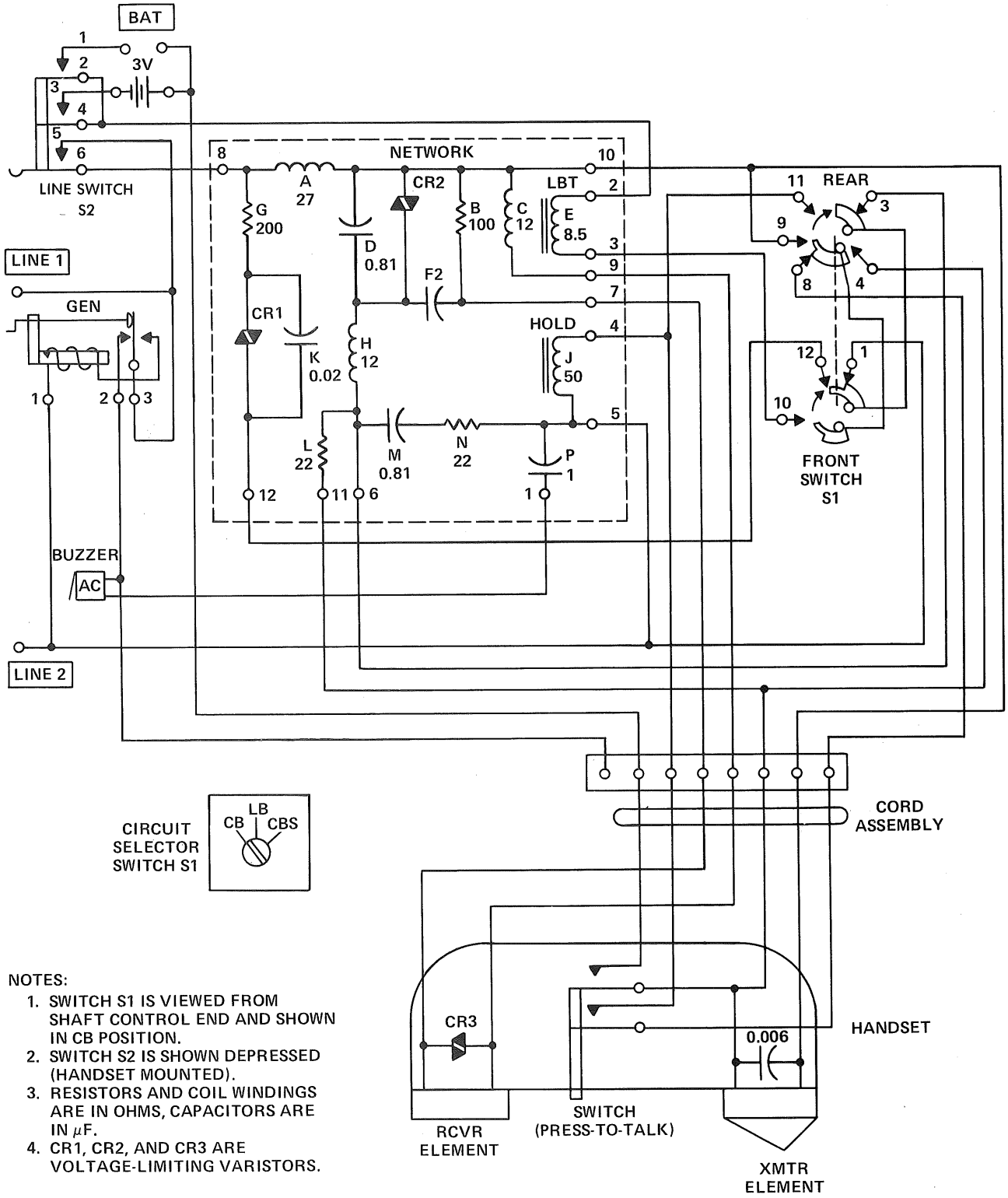
Transmitter Circuit Tests. Connect telephone set LINE terminals to L1-L2 jack on Test Set AN/PTM-6. Set control D1 at 5 and D3 at 2, operate key 8 to TRANS and the equalizer to the OUT position. Precondition and locate the transmitter element (TM 11-2062), then complete the tests for the specified telephone set circuit as follows:

CB Circuit. Operate key 1 and key 2 to STA and depress key 9. The reading of meter M1 should be to the right of -7 db. There should be no output when line switch is depressed.

LB and CBS Circuits. Depress the handset press-to-talk switch, then depress key 9. The reading of meter M1 should be to the right of -2 db. There should be no output when press-to-talk switch is released.

Receiver Circuit Tests. Connect telephone set LINE terminals to LI-L2 jack on Test Set AN/PTM-6. Set control D2 at 3 and D4 at 6, operate key 2 to RCT and key 8 to REC, and equalizer to OUT position. Locate receiver element in accordance with paragraph 24c(1), TM 11-2062. With telephone set adjusted for cb circuit, depress key 9. The reading of meter M1 should be to the right of 0 db.

5-7. FINAL INSPECTION AND TESTING. (CONT)

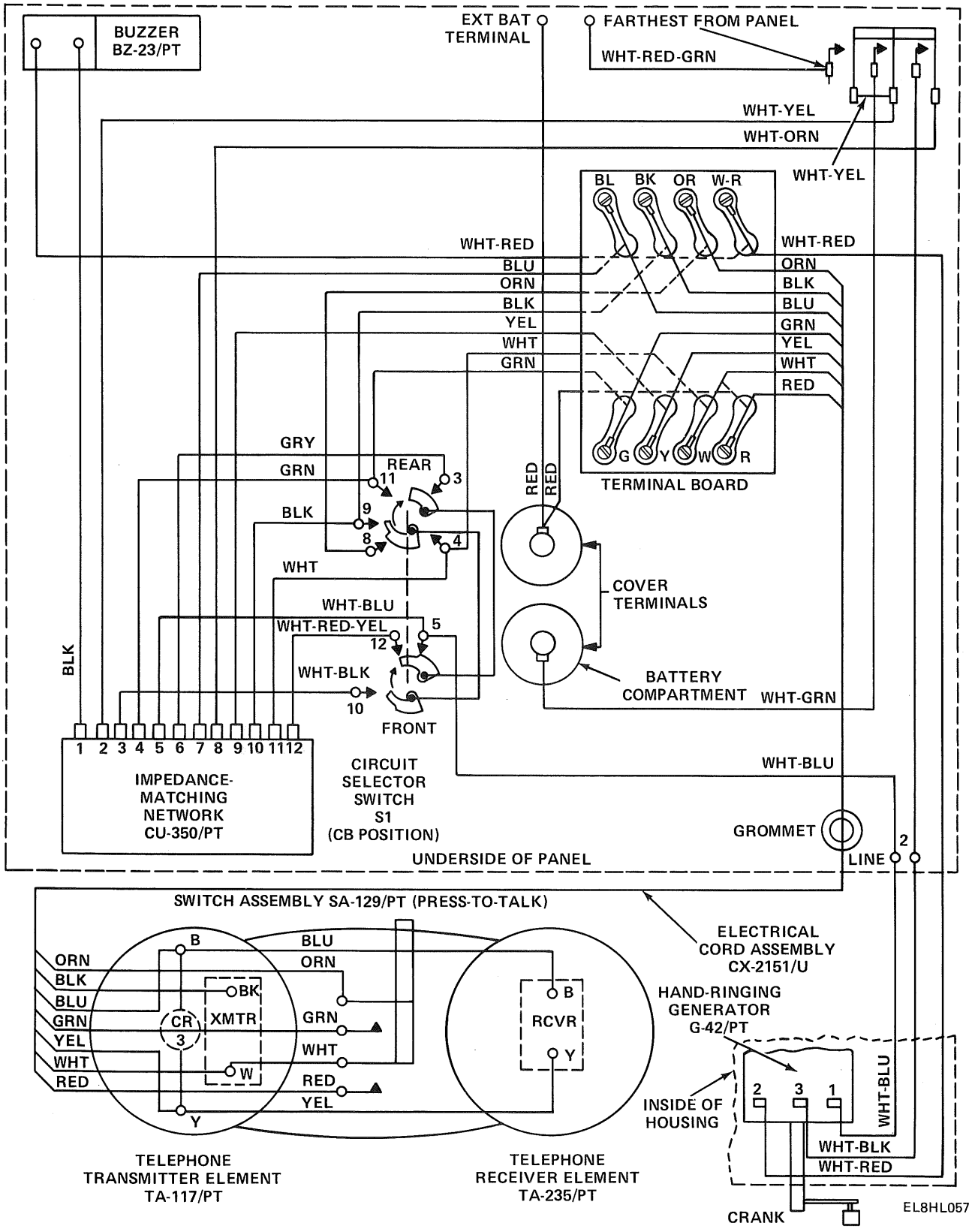


NOTES:

1. SWITCH S1 IS VIEWED FROM SHAFT CONTROL END AND SHOWN IN CB POSITION.
2. SWITCH S2 IS SHOWN DEPRESSED (HANDSET MOUNTED).
3. RESISTORS AND COIL WINDINGS ARE IN OHMS, CAPACITORS ARE IN μF.
4. CR1, CR2, AND CR3 ARE VOLTAGE-LIMITING VARISTORS.

EL8HL056

5-7. FINAL INSPECTION AND TESTING. (CONT)



APPENDIX A

REFERENCES

A-1. SCOPE.

This appendix lists all forms, field manuals, technical manuals, and miscellaneous publications referred to in this manual.

A-2. FORMS.

Technical Order System Publication Improvement Report and Reply	AFTO Form 22
Recommended Changes to Publications and Blank Forms	DA Form 2028
Equipment Inspection and Maintenance Worksheet	DA Form 2404
Discrepancy In Shipment Report (DISREP)	SF-361
Report of Discrepancy (ROD)	SF-364
Quality Deficiency Report	SF-368

A-3. MANUALS.

Maintenance Reporting	AFR 66-1
Reporting of Transportation Discrepancies in Shipment	AR 55-38
Reporting of Item and Packaging Discrepancies	AR 735-11-2
Consolidated Index of Army Publications and Blank Forms	DA PAM 310-1
The Army Maintenance Management System (TAMMS)	DA PAM 738-750
Test Set I-142, I-142A, I-142B and Telephone Test Set AN/PTM-6	TM 11-2062
The Army Maintenance Management System (TAMMS)	TM 38-750
Administrative Storage of Equipment	TM 740-90-1
Procedure for Destruction of Electronics Materiel To Prevent Enemy Use	TM 750-244-2
Organizational and Direct Support Maintenance Repair Parts and Special Tools List: Telephone Set TA-43/PT (NSN 5805-00-503-2775)	TM 11-5805-256-23P
Operator's Manual for Multimeter TS-352B/U (NSN 6625-00-553-0142)	TM 11-6625-366-10
Unsatisfactory Equipment Reporting	TO 00-35D54

APPENDIX B

MAINTENANCE ALLOCATION

Section I INTRODUCTION

B-1. GENERAL.

This appendix provides a summary of maintenance operations for the telephone set. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

B-2. MAINTENANCE FUNCTIONS.

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or compressed air supplies.

d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

e. Aline. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections or adjustments to be made on instruments or test, measurement, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. The act of emplacing, seating, or fixing into position an item, part, or module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

h. Replace. The act of substituting a serviceable like-type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services (inspect, test, service, adjust, aline, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in part, subassembly, module (component or assembly), end item, or system.

B-2. MAINTENANCE FUNCTIONS. (CONT)

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like-new condition.

k. Rebuild. Consists of those services necessary for the restoration of unserviceable equipment to a like-new condition, in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc) considered in classifying Army equipment components.

B-3. COLUMN ENTRIES.

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Function. Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a "work time" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance categories, appropriate "work time" figures will be shown for each category. The number of task-hours specified by the "work time" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 are as follows:

C - Operator/Crew
O - Organizational
F - Direct Support
H - General Support
D - Depot

B-3. COLUMN ENTRIES. (CONT)

e. Column 5, Tools and Equipment. Column 5 specifies by code those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

f. Column 6, Remarks. Column 6 contains an alphabetic code which leads to the remark in section IV, Remarks, which is pertinent to the item opposite the particular code.

B-4. TOOL AND TEST EQUIPMENT REQUIREMENTS.

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Maintenance Category. The codes in this column indicate the maintenance categories allocated the tool or test equipment.

c. Nomenclature. This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d. National/NATO Stock Number. This column lists the National/NATO stock number of the specific tool or test equipment.

e. Tool Number. This column lists the manufacturer's part number of the tool followed by the federal supply code for manufacturers (5-digit) in parentheses.

B-5. REMARKS.

a. Reference Code. This code refers to the appropriate item in section II, column 6.

b. Remarks. This column provides the required explanatory information necessary to clarify items in section II.

Section II MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQPT	(6) REMARKS
00	TELEPHONE SET TA-43/PT	Service	0.1						A
		Inspect	0.1						
		Test		0.5					B
		Replace		0.1					
		Repair		0.5				1,2	
		Repair			0.5			1,2,3	
01	CASE, TELE-PHONE SET SM-D-207804 (PANEL AND HOUSING ASSY)	Inspect	0.1						
		Test	0.2						
		Test		0.2				2,3	
		Replace		0.5				1	
		Repair		0.5				1,2	C
		Repair			0.5			1,2,3	

Section III TOOLS AND TEST EQUIPMENT REQUIREMENTS

TOOLS OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	O,F	TOOL EQUIPMENT TE-11/B		
2	O,F	MULTIMETER TS-352B/U	6625-00-553-0142	
3	O,F	TEST SET, TELEPHONE AN/PTM-6 OR EQUIVALENT	6625-00-229-1048	

Section IV REMARKS

REFERENCE CODE	REMARKS
A	SERVICE INCLUDES REPLACEMENT OF BATTERIES.
B	OPERATIONAL TEST ONLY.
C	REPAIR IS LIMITED TO THE REPLACEMENT OF ALL PARTS EXCEPT THE IMPEDANCE-MATCHING NETWORK, PANEL ASSEMBLY AND WIRING HARNESS.

APPENDIX C

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LIST

Section I INTRODUCTION

C-1. SCOPE.

This appendix lists components of end item and basic issue items for the telephone set to help you inventory items required for safe and efficient operation.

C-2. GENERAL.

The components of end item and basic issue items lists are divided into the following sections:

a. Section II, Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts.

b. Section III, Basic Issue Items. These are the minimum essential items required to place the switchboard in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the telephone set during operation and whenever it is transferred between property accounts. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

C-3. EXPLANATION OF COLUMNS.

The following provides an explanation of columns found in the tabular listings:

a. Column 1, Illustration Number (Illus No.). This column does not apply.

b. Column 2, National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

c. Column 3, Description. Indicates the federal name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number.

d. Column 4, Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character abbreviation (e.g., ea, in., pr).

e. Column 5, Quantity Required (Qty Req'd). Indicates the quantity of the item authorized to be used with/on the equipment.

Section II COMPONENTS OF END ITEM

(1) ILLUS. NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION (FSCM)	USABLE ON CODE	(4) U/M	(5) QTY REQ'D
	5805-00-503-2775	TELEPHONE SET (80058) TA-43/PT		ea	1
		HANDSET		ea	1

Section III BASIC ISSUE ITEMS

(1) ILLUS. NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION (FSCM)	USABLE ON CODE	(4) U/M	(5) QTY REQ'D
	5805-00-752-6166	CASE, CANVAS TELEPHONE (80063) CY-1277/PT		ea	1
		SLING		ea	1
		TM 11-5805-256-13		ea	1

APPENDIX D

ADDITIONAL AUTHORIZATION LIST

Section I INTRODUCTION

D-1. SCOPE.

This appendix lists additional items you are authorized for the support of Telephone Set TA-43/PT.

D-2. GENERAL.

This list identifies items that do not have to accompany the telephone set and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

D-3. EXPLANATION OF LISTING.

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name.

Section II ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION FSCM & PART NUMBER / USABLE ON CODE	(3) U/M	(4) QTY AUTH
6135-00-120-1020	BATTERY 09477 BA-30	ea	2

APPENDIX E

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I INTRODUCTION

E-1. SCOPE.

This appendix lists expendable supplies and materials you will need to operate and maintain Telephone Set TA-43/PT. These items are authorized to you by CTA 50-970, Expendable Items (except medical, class V, repair parts, and heraldic items).

E-2. EXPLANATION OF COLUMNS.

a. Column 1, Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., use cleaning compound, item 1, appendix E.)

b. Column 2, Level. This column identifies the lowest level of maintenance that requires the listed item.

C - Operator/Crew
O - Organizational
F - Direct Support
H - General Support

c. Column 3, National Stock Number. This is the National stock number assigned to the item; use it to request or requisition the item.

d. Column 4, Description. Indicates the federal item name and, if required, a description to identify the item. The last line for each item indicates the federal supply code for manufacturer (FSCM) in parentheses, if applicable.

e. Column 5, Unit of Measurement (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character abbreviation (e.g., ea, in., pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II EXPENDABLE SUPPLIES AND MATERIALS

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION, FSCM	(5) U/M
1	O		SOLDER	rl
2	O	6850-00-984-5853	TRICHLOROTRIFLUORO-ETHANE	gal
3	O		AIRCRAFT AND INSTRUMENT GREASE	lb

GLOSSARY

ACOUSTIC. Sound.

AUDIBLE. Capable of being heard.

IMPEDANCE. Opposition in an electrical circuit.

SHUNT. Divert, change path; a parallel or alternate path in an electrical circuit.

VARISTOR. An electrical resistor whose resistance is dependent upon applied voltage.

INDEX

INDEX (CONT)

INDEX (CONT)

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

THEN. . JOT DOWN THE DOPE ABOUT IT ON THIS FORM, CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL!

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Stateside Army Depot
ATTN: AMSTA-US
Stateside, N.J. 07703

DATE SENT
10 July 1975

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 11-5840-340-12	23 Jan 74	Radar Set AN/PRC-76

BE EXACT. . PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO
2-25	2-28		
3-10	3-3		3-1
5-6	5-8		
		F03	

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

Recommend that the installation antenna alignment procedure be changed throughout to specify a 2° IFF antenna lag rather than 1°.

REASON: Experience has shown that with only a 1° lag, the antenna servo system is too sensitive to wind gusting in excess of 25 knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 2° without degradation of operation.

Item 5, Function column. Change "2 db" to "3db."

REASON: The adjustment procedure for the TRANS POWER FAULT indicator calls for a 3 db (500 watts) adjustment to light the TRANS POWER FAULT indicator.

Add new step f.1 to read, "Replace cover plate removed in step e.1, above."

REASON: To replace the cover plate.

Zone C 3. On J1-2, change "+24 VDC to "+5 VDC."

REASON: This is the output line of the 5 VDC power supply. +24 VDC is the input voltage.

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
SSG I. M. DeSpiritof 999-1776

SIGN HERE
I. M. DeSpiritof

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