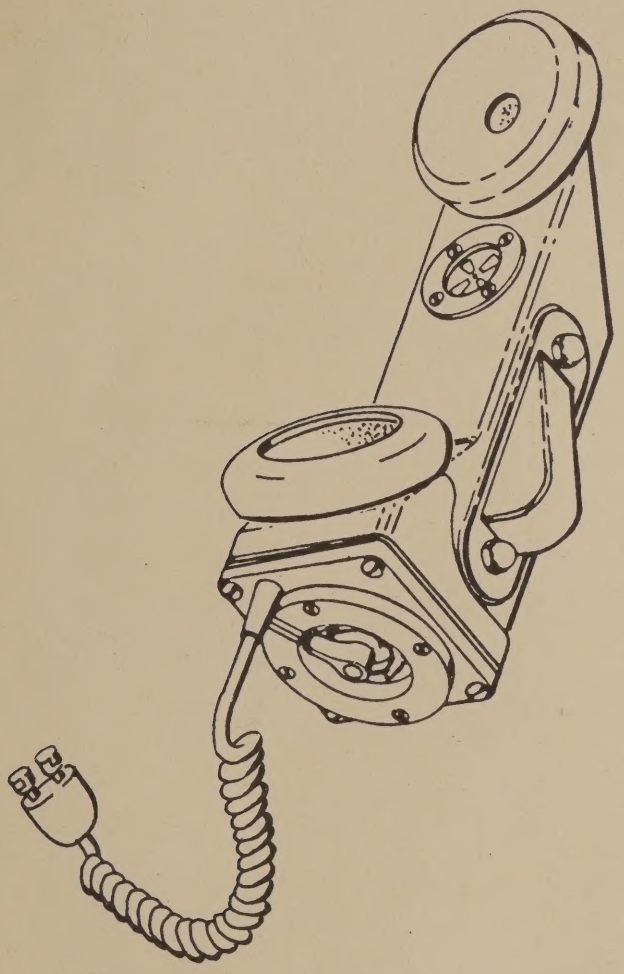
TECHNICAL MANUAL

OPERATOR'S, UNIT AND INTERMEDIATE
DIRECT SUPPORT MAINTENANCE MANUAL



INTRODUCTION PAGE 1-1

OPERATING INSTRUCTIONS PAGE 2-1

OPERATOR MAINTENANCE PAGE 3-1

UNIT MAINTENANCE PAGE 4-1

INTERMEDIATE DIRECT SUPPORT MAINTENANCE PAGE 5-1

REFERENCES PAGE A-1

MAINTENANCE ALLOCATION CHART PAGE B-1

EXPENDABLE SUPPLIES AND MATERIALS PAGE E-1

TELEPHONE SET TA-1/PT (NSN 5805-00-521-1320)

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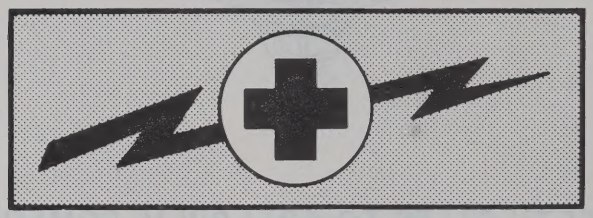
HEADQUARTERS, DEPARTMENT OF THE ARMY
15 SEPTEMBER 1987



5 SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

1. DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL
2. IF POSSIBLE, TURN OFF THE ELECTRICAL POWER
3. IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH OR LIFT THE PERSON TO SAFETY USING A DRY WOODEN POLE OR A DRY ROPE OR SOME OTHER INSULATING MATERIAL
4. SEND FOR HELP AS SOON AS POSSIBLE
5. AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL RESUSCITATION

WARNING



WARNING

HIGH VOLTAGE

IS USED IN THE OPERATION OF THIS EQUIPMENT

DEATH ON CONTACT

MAY RESULT IF PERSONNEL FAIL TO OBSERVE SAFETY PRECAUTIONS

Never work on electronic equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who is competent in administering first aid. When the technicians are aided by the operators, they must be warned about dangerous areas.

Whenever possible, the power supply to the equipment must be shut off before beginning work on the equipment. Take particular care to ground every capacitor likely to hold a dangerous potential. When working inside the equipment, after the power has been turned off, always ground every part before touching it.

Be careful not to contact high-voltage connections or 115 volt ac input connections when installing or operating this equipment.

Whenever the nature of the operation permits, keep one hand away from the equipment to reduce hazard of current flowing through the body.

WARNING

Do not be misled by the term "low voltage." Potentials as low as 50 volts may cause death under adverse conditions.

For Artificial Respiration, refer to FM 21-11.

WARNING

- Do not attempt to make internal connections or adjustments unless another person, capable of performing first aid, is present.
- Before removing any components, be certain there is no power connected to binding posts. Injury could result.
- Exercise extreme care when cutting metal or plastic straps from shipping containers. Straps may whip when cut. Injury may result. Do not carry cases by straps.
- Wires may be live. Injury may result. Exercise extreme caution when handling electrical devices.
- Do not lay, place, or throw field wire on or near power lines or transformers. Dangerous high voltages exist at these structures. Severe shock or death may result from contact between field wire and power lines. Follow the five emergency steps for electric shock. Be careful when using TA-1/PT during storms. Lightning poses a shock hazard.
- Adequate ventilation should be provided while using TRICHLOROTRIFLUORO-ETHANE. Prolonged breathing of vapor 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. Do not use compressed air to dry parts when TRICHLOROTRIFLUOROETHANE has been used.

Technical Manual

No. 11-5805-243-13

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 15 September 1987

OPERATOR'S, UNIT AND INTERMEDIATE DIRECT SUPPORT MAINTENANCE MANUAL FOR

TELEPHONE SET TA-1/PT (NSN 5805-00-521-1320)

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: AMSEL-ME-MP, Fort Monmouth, New Jersey 07703-5000. In either case, a reply will be furnished direct to you.

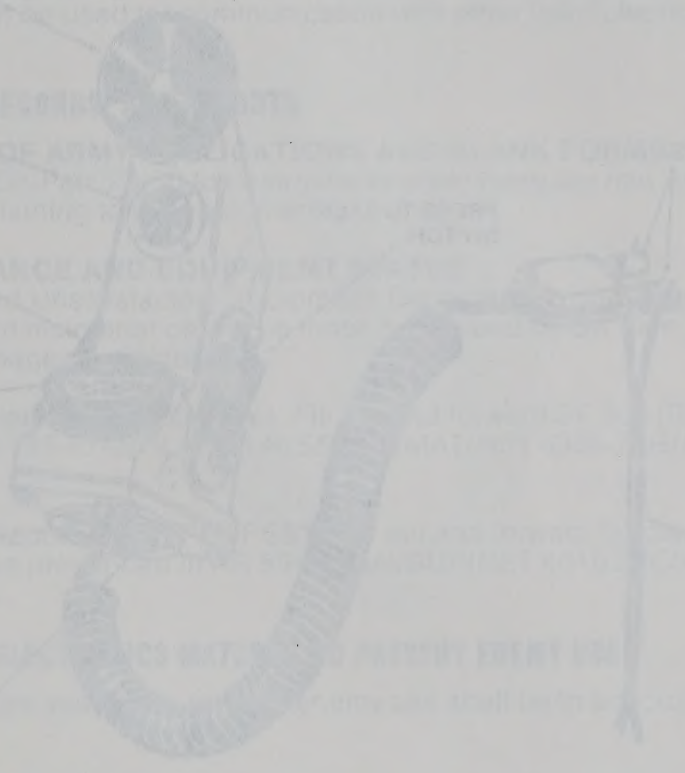
TABLE OF CONTENTS

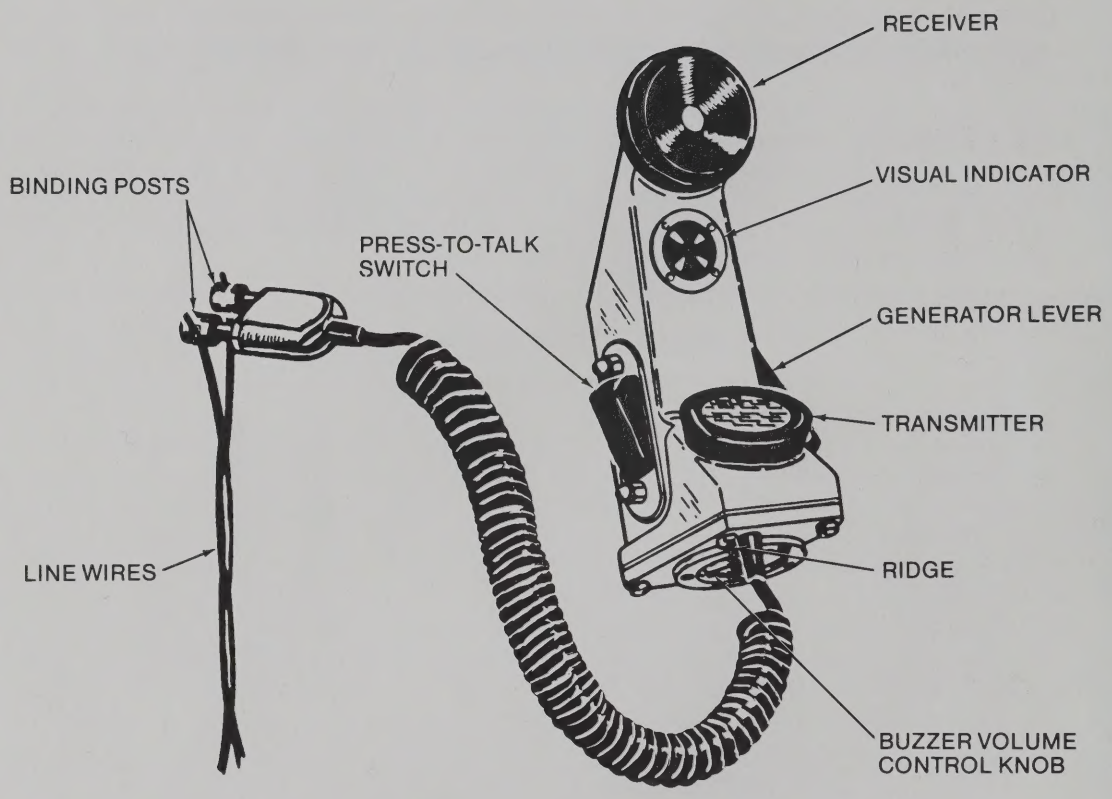
		Page
CHAPTER 1	INTRODUCTION	1-1
Section I	General Information	1-1
II	Equipment Description and Data	1-2
III	Principles of Operation	1-5
CHAPTER 2	OPERATING INSTRUCTIONS	2-1
Section I	Description and Use of Operator's Controls and Indicators	2-1
II	Operator Preventive Maintenance Checks and Services (PMCS)	2-2
III	Operation Under Usual Conditions	2-5
IV	Operation Under Unusual Conditions	2-8
CHAPTER 3	OPERATOR MAINTENANCE	3-1
CHAPTER 4	UNIT MAINTENANCE	4-1
Section I	Introduction	4-1
II	Service Upon Receipt	4-1
III	Unit Preventive Maintenance Checks and Services (PMCS)	4-4
IV	Troubleshooting	4-5
V	Unit Maintenance Procedures	4-5
VI	Preparation for Storage or Shipment	4-9
CHAPTER 5	INTERMEDIATE DIRECT SUPPORT MAINTENANCE	5-1
Section I	Introduction	5-1
II	Schematic Diagram Analysis	5-2
III	Repair Parts, Tools, and Test Equipment	5-4
IV	Troubleshooting	5-4
V	Intermediate Direct Support Maintenance Procedures	5-8

*This manual supersedes TM 11-5805-243-12, 14 September 1959, and TM 11-5805-243-35, 9 October 1959, including all changes.

TABLE OF CONTENTS - Continued

APPENDIX A	REFERENCES	A-1
B	MAINTENANCE ALLOCATION CHART	B-1
C	COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS	C-1
D	ADDITIONAL AUTHORIZATION LIST (Not applicable)	
E	EXPENDABLE SUPPLIES AND MATERIALS LIST	E-1
INDEX		




RECEIVER
VISUAL INDICATOR
BINDING POSTS
PRESS-TO-TALK SWITCH
GENERATOR LEVER
TRANSMITTER
LINE WIRES
RIDGE
BUZZER VOLUME CONTROL KNOB

CHAPTER 1
INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE

- **TYPE OF MANUAL**
  This manual is an Operator's, Unit and Intermediate Direct Support Maintenance level document describing Telephone Set TA-1/PT.

- **PURPOSE OF EQUIPMENT**
  Telephone Set TA-1/PT is a lightweight, sound-powered field telephone for use with a field wire network in forward areas. It can be used for communication with other field telephones or with a local, battery switchboard.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS

- **CONSOLIDATED INDEX OF ARMY PUBLICATIONS AND BLANK FORMS**
  Refer to the latest issue of DA Pam 25-30 to determine whether there are new editions, changes or additional publications pertaining to the equipment.

- **REPORTS OF MAINTENANCE AND EQUIPMENT STATUS**
  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.

  Report 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 4355.73B/AFR 400-54/MCO 4430.3H.

  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.

1-3. 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.

1-4. PREPARATION FOR STORAGE OR SHIPMENT

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 assure operational readiness. Disassembly and repacking of equipment for shipment or limited storage are **covered in paragraphs 4-16 through 4-19.**

1-5. OFFICIAL NOMENCLATURE, NAMES, AND DESIGNATIONS

- **NOMENCLATURE CROSS-REFERENCE LIST**
  This listing includes nomenclature cross-references used in this manual.

Common Name	Official Nomenclature
Telephone set	Telephone Set TA-1/PT
Receiver element	Earphone Element TA-118/PT
Transmitter element	Microphone Element TA-121/PT
Case	Telephone set case

1-6. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS [EIRs]

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 the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-PA-MA-D, Fort Monmouth, New Jersey 07703-5000. We'll send you a reply.

Section II. EQUIPMENT DESCRIPTION AND DATA

1-7. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

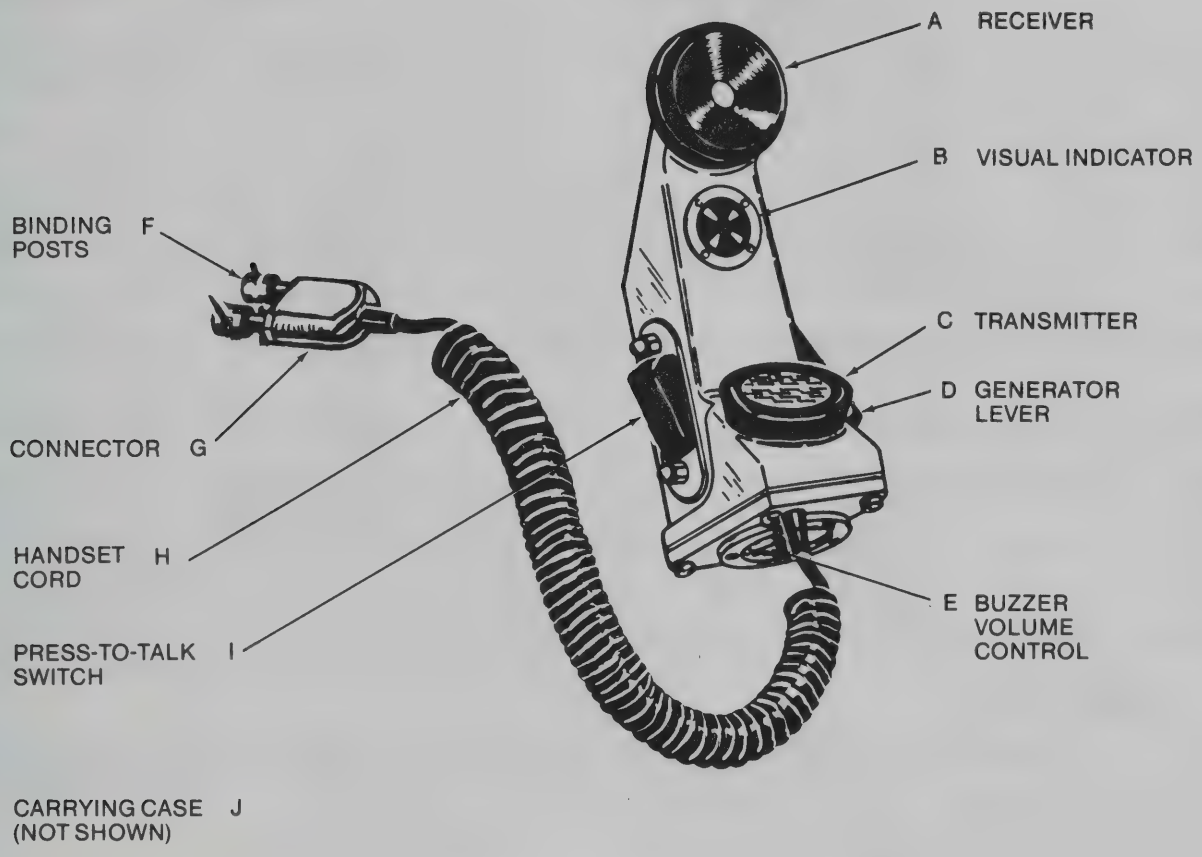
CHARACTERISTICS

- Portable
- Lightweight

CAPABILITIES AND FEATURES

- Sound-powered
- Buzzer volume control
- Visual indicator for silent call signal

1-8. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS



A RECEIVER. Provides earpiece for in-coming calls.
B VISUAL INDICATOR. Indicates present of in-coming calls.
C TRANSMITTER. Provides mouthpiece for out-going calls.
D GENERATOR LEVER. Signals distant party of intent-to-transmit.
E BUZZER VOLUME CONTROL. Adjusts volume of in-coming call, audible signal.
F BINDING POSTS. Provide manual, press-to-open, release-to-close field wire connection.
G CONNECTOR. Contains binding posts and retains handset cord.
H HANDSET CORD. Provides flexible contact between handset and field wire.
I PRESS-TO-TALK SWITCH. Opens transmission circuit.
J CARRYING CASE. Provides waterproof transport protection for handset.

1-9. DIFFERENCES BETWEEN MODELS

Item	Order No. 24977-Phila-55	38695-Phila-56	21101-Phila-57	19629-Phila-58
Case	Rubberized, with zipper-closing (serial numbers 1 through 9300). Plastic, with hinged cover (serial numbers 9301 and higher).	Plastic, with hinged cover.	Plastic, with hinged cover.	Plastic, with hinged cover.
Telephone transmitter cap	Metal	Metal	Metal	Plastic
Telephone transmitter cushion (rubber)	Used	Used	Used	Not used
Telephone receiver cap	Metal	Metal	Metal	Plastic
Telephone receiver cushion (rubber)	Used	Used	Used	Not used
Press-to-talk switch contact assembly	Held together with more than one screw.	Held together with more than one screw.	Held together with more than one screw.	Held together with only one screw.
Binding Post Lockpost	Lockwashers provided.	Lockwashers provided.	Lockwashers provided.	Lockwashers not provided.
Generator Lever Assembly	Lockwashers not provided (S/N 1 through 5009).	Lockwashers provided.	Lockwashers provided.	Lockwashers provided.
Generator Contact Assembly	Held together with more than one screw.	Held together with more than one screw.	Held together with more than one screw.	Held together with only one screw.
Capacitor C1 connection	Connected between transmitter element MK1 and receiver element RE1 (S/N 1 through 209).	Connected between transmitter element MK1 and buzzer DS1.	Connected between transmitter element MK1 and buzzer DS1.	Connected between transmitter element MK1 and buzzer DS1.
Wiring	Wired according to note 2, para. 5-47.	Wired as shown (para. 5-47).	Wired as shown (para. 5-47).	Wired as shown (para. 5-47).

1-10. EQUIPMENT DATA

- VOICE TRANSMISSION RANGE ..... 4 miles using field wire WD-1/TT (approximate)
- SIGNAL RANGE ..... 4 miles using field wire WD-1/TT (approximate)
- FREQUENCY RANGE ..... 300 to 4000 Hz
- SIGNAL VOLTAGE ..... 65 to 80 Vac at 20 Hz
- OPERATING TEMPERATURE ..... −40 to +131°F

Quantity	Item	Dimensions (in.) Height	Depth	Width	Unit weight
1	Handset, including 1 Earphone Element TA-118/PT 1 Microphone Element TA-121/PT	9 (less cord)	4	3 1/4	2 3/4 lb
1	Telephone set case (rubberized) with carrying strap (Order no. 24977-Phila-55, Serial nos. 1 through 9300)	10	4 1/4	3 1/2	14 oz.
1	Telephone set case (plastic) with carrying strap (Order no. 24977-Phila-55, Serial nos. 9301 and higher, Order nos. 38695-Phila-56 and 21101-Phila-57)	9 5/8	3 9/16	5 1/8	11 1/2 oz
1	Telephone set case (plastic) with carrying strap (Order no. 19629-Phila-58)	10	4 1/4	3 1/2	9 oz.

Section III. PRINCIPLES OF OPERATION

1-11. OPERATING PRINCIPLES

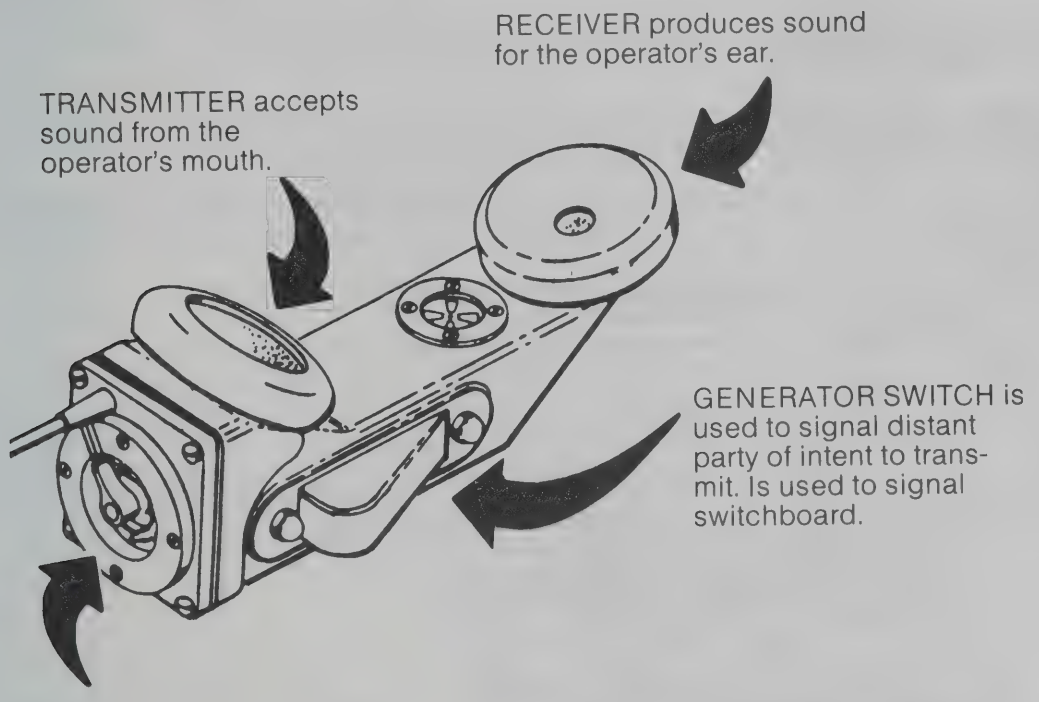
- The TA-1/PT Telephone Set must be removed from its carrying case and connected to a field wire network to be operable.
- Connection is simplified through the use of dual binding posts.
- To transmit a call, a press-to-activate switch is repeatedly pressed to generate a signal of intent to communicate with a distant party.
- The distant party acknowledges verbally.
- To transmit a message, a press-to-talk switch is pressed.
- The telephone is then used as a conventional phone would be used with the exception of the need to release the press-to-talk switch to permit the incoming message to be heard.
- Communication continues through the alternate pressing and releasing of the press-to-talk switch to speak or listen.
- To receive a call, a preset buzzer will sound and/or a visual indicator will show white on black.
- This signal is acknowledged verbally after pressing the press-to-talk switch.
- Communication continues through the alternate pressing and releasing of the press-to-talk switch to speak or listen.
- When use is temporarily discontinued, the telephone set is placed in a ready condition by resetting the visual indicator and the buzzer volume.
- To disconnect for transport, the field wire is removed from the binding posts, the telephone set placed into its carrying case, and the case secured against the weather through the use of a zipper or latch.

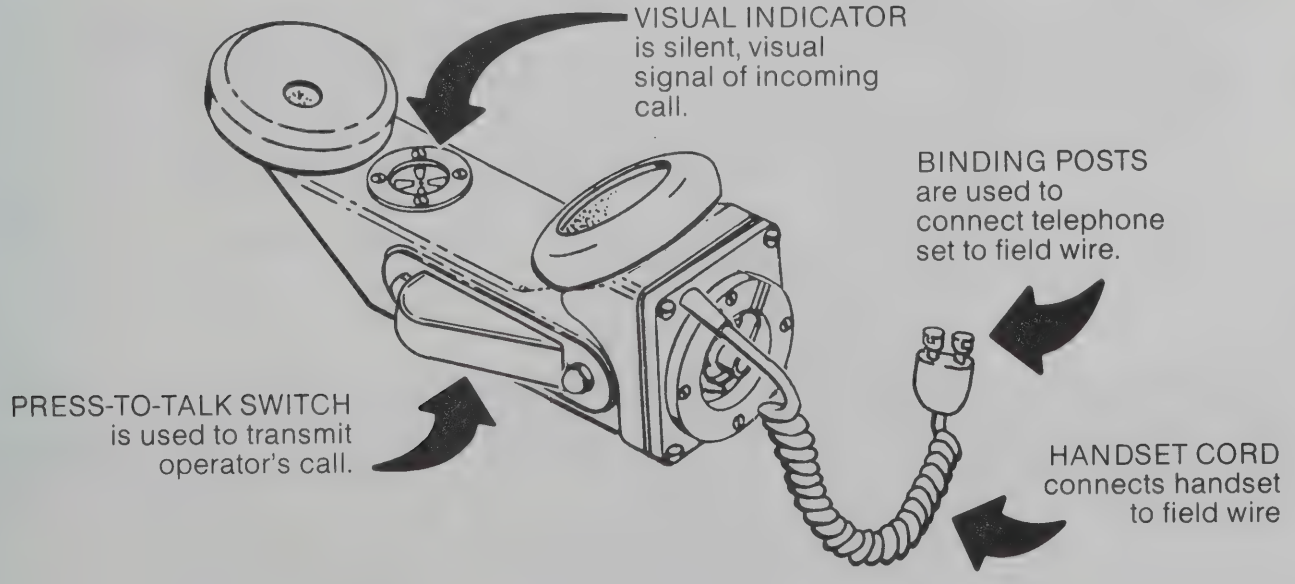
CHAPTER 2
OPERATING INSTRUCTIONS

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

2-1. GENERAL

Telephone Set TA-1/PT is a field communication device utilizing conventional phone principles of transmitting and receiving, except for the addition of specialized function switches, indicators, and controls.





Section II. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES

2-2. GENERAL

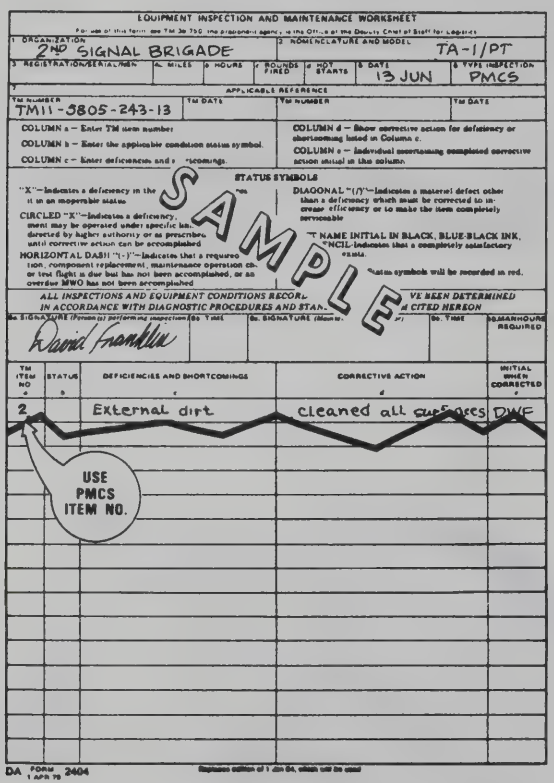
- Operator preventive maintenance is the systematic care, servicing and inspection of equipment to prevent the occurrence of trouble, to reduce downtime, and to maintain equipment in serviceable condition. To be sure that your Telephone Set is always ready for your mission, you must do scheduled preventive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

A BEFORE OPERATION, perform your B PMCS to be sure that your equipment is ready to go.

B DURING OPERATION, perform your D PMCS. This should help you to spot small troubles before they become big problems.

C 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.

D 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.


EQUIPMENT INSPECTION AND MAINTENANCE WORKSHEET

1 ORGANIZATION: 2ND SIGNAL BRIGADE
2 NOMENCLATURE AND MODEL: TA-1/PT
5 DATE: 13 JUN
6 TYPE INSPECTION: PMCS
APPLICABLE REFERENCE
TM NUMBER: TM11-5805-243-13

SAMPLE

TM ITEM NO	STATUS	DEFICIENCIES AND SHORTCOMINGS	CORRECTIVE ACTION	INITIAL WHEN CORRECTED
2		External dirt	cleaned all surfaces	DWF

USE PMCS ITEM NO.

DA FORM 2404

- Routine checks like stowing items not in use, and checking for loose nuts and bolts are not listed as PMCS checks. They are things that you should do any time 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.

2-2. GENERAL – Continued

NOTE

- The PROCEDURES column in your PMCS charts instruct how to perform the required checks and services. Carefully follow these instructions.
- If your equipment must be in operation all the time, check those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.
- When you are doing any PMCS or routine checks, keep in mind the warnings and cautions.
- PMCS deficiencies that cannot be corrected must be reported to higher level maintenance level personnel. Records and reports of preventive maintenance must be made in accordance with procedures given in DA Pam 738-750.

Table 2-1. Operator Preventive Maintenance Checks and Services Chart

B – Before D – During

Item No.	Interval B	Interval D	Item to be Inspected	Procedures – Check for and have repaired or adjusted as necessary	Equipment is Not Ready/Available If:
1	*		Telephone Set TA-1/PT	Inspect Telephone Set for completeness and satisfactory condition. Perform functional test.	Any functional items are missing or in disrepair. Any component is inoperable.

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor 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. Do not use compressed air to dry parts when TRICHLOROTRIFLUOROETHANE has been used.

2	•		External surfaces	Remove dirt and moisture from housing, handset, cord, or connector. Inspect painted surfaces for bare spots, rust, or corrosion. Inspect surfaces for cuts or cracks. Use cleaning compound, item 1, App. E.	Surfaces have excessive dirt, any corrosion, or damage.
3	•		Handset cord	Inspect cord for breaks, cuts or deterioration. Inspect for inoperative binding posts, broken connector, or handset connection.	Handset cord is missing or in disrepair.

2-2. GENERAL – Continued

Table 2-1. Operator Preventive Maintenance Checks and Services Chart – Continued

B – Before D – During

Item No.	Interval B	Interval D	Item to be Inspected	Procedures – Check for and have repaired or adjusted as necessary	Equipment is Not Ready/Available If:
4	•		Press-to-talk switch	Inspect switch for binding or faulty action.	Switch is inoperative.
		•		Operate switch to engage or disengage remote party.	Switch malfunctions.
5	•		Generator switch	Inspect switch for binding or faulty action.	Switch is inoperative.
		•		Operate switch to signal remote party or switchboard.	Switch malfunctions.
6	•		Buzzer volume control	Inspect control for binding or faulty action.	Control is inoperable.
		•		Adjust volume from OFF to full volume. Volume should change.	Buzzer volume cannot be controlled.
7		•	Visual indicator	Visually confirm white areas during call signal generation.	Visual indicator does not show white when call signal exists.
				Reset visual indicator by pressing press-to-talk switch after call.	Visual indicator does not reset.
8		•	Transmitter	Ask remote party to qualify reception.	Transmitter malfunctions.
9		•	Receiver	Evaluate quality of reception.	Receiver malfunctions.
10	•		Carrying case	Inspect hinges and other hardware for functional quality. Confirm case seal is intact.	Carrying case will not protect handset and related components.

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

Section III. OPERATION UNDER USUAL CONDITIONS

2-3. GENERAL

Telephone Set TA-1/PT is a hand-held communications device requiring various combinations of manual functions to operate. It is not an independent device and requires initial connection to a field wire system.

2-4. CONNECTING TELEPHONE SET TO FIELD WIRE SYSTEM

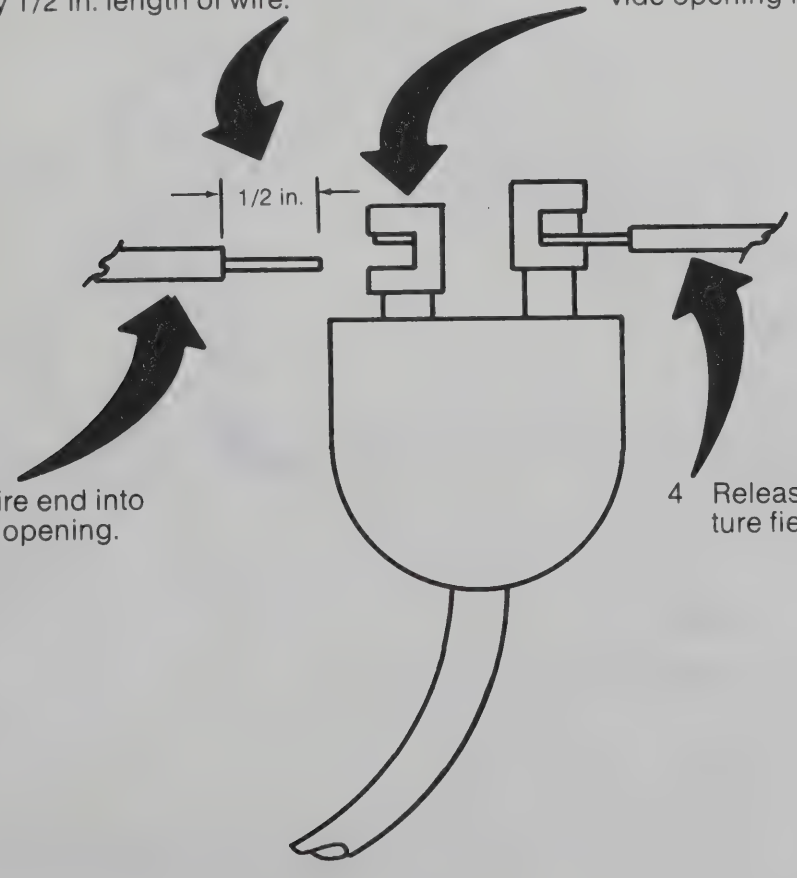
Connecting Telephone Set TA-1/PT to field wire WD-1/TT requires you to connect wire ends to the dual binding posts.

WARNING

- Wires may be live. Injury may result. Exercise extreme caution when handling electrical devices.
- Do not lay, place, or throw field wire on or near power lines or transformers. Dangerous high voltages exist at these structures. Severe shock or death may result from contact between field wire and power lines. Follow the five emergency steps for electric shock. Be careful when using TA-1/PT during storms. Lightning poses a shock hazard.

1 Strip field wire insulation to bare approximately 1/2 in. length of wire.

2 Press down on binding post to provide opening for field wire end.

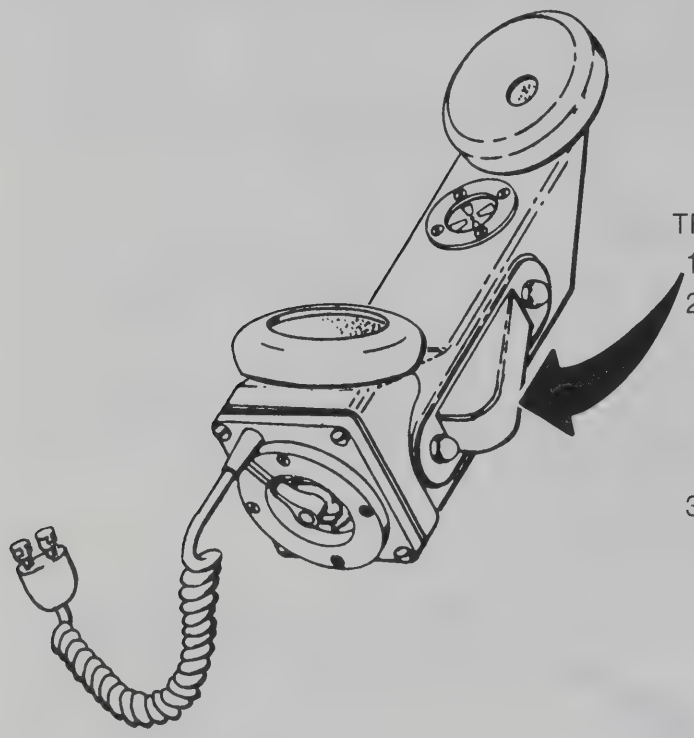


3 Insert field wire end into binding post opening.

4 Release binding post to capture field wire end.

2-5. TRANSMITTING AND RECEIVING CALLS

Transmitting and receiving requires the use of finger activated switches. The telephone set should be held like a conventional phone, in either hand.



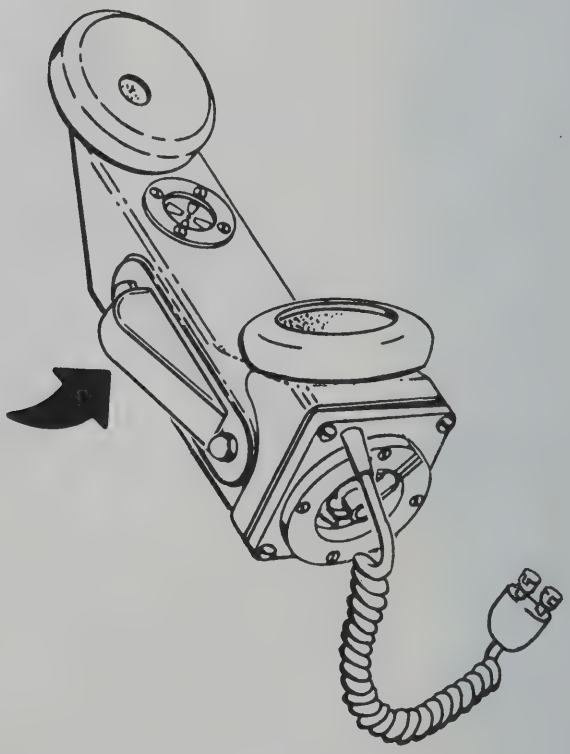
TRANSMIT CALLS:

1 Press generator lever rapidly and release.
2 Listen for distant party.

NOTE

Be certain press-to-talk switch is not depressed when listening.

3 When ready to talk, press press-to-talk switch firmly and speak directly into transmitter.



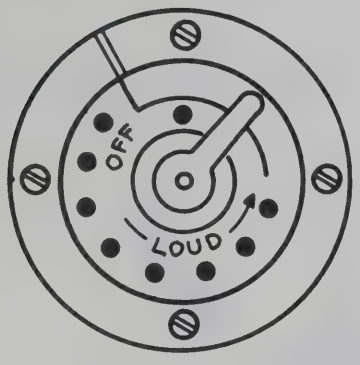
RECEIVE CALLS:

1 When buzzer sounds, or when visual indicator shows white markings, press press-to-talk switch and answer calling party.
2 Release press-to-talk switch to listen to distant party.

NOTE

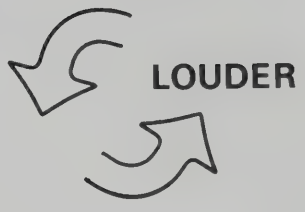
To reset visual indicator, press press-to-talk switch.

2-6. ADJUSTING BUZZER VOLUME



The buzzer volume control is located on the handset cord end of the telephone set.

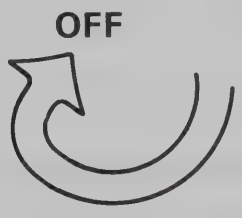
A direction arrow indicates volume increase, and the off position is indicated by the word OFF.



Turn the buzzer volume control counterclockwise to make the buzzer louder.



Turn the buzzer volume control clockwise to make the buzzer softer.



Turn the buzzer volume control clockwise until it stops to prevent any buzzer sound.

NOTE

Be certain to set buzzer volume control to desired setting after each call is transmitted or received.

2-7. RESETTING VISUAL INDICATOR

To reset visual indicator press press-to-talk switch. Visual indicator should not show white portions when reset.



Section IV. OPERATION UNDER UNUSUAL CONDITIONS

2-8. EMERGENCY OPERATION

If the telephone set is not operating properly and an emergency arises before repairs can be made, follow the procedures below.

- If the transmitter is out of order, speak directly into the receiver. Do *not* press the press-to-talk switch. Listen at the receiver in the normal manner.
- If the receiver is out of order, speak into the transmitter in the normal manner. Listen at the transmitter and keep the press-to-talk switch depressed while listening as well as transmitting.

2-9. OPERATING IN COLD CLIMATES

Extreme cold reduces the transmission efficiency of the handset. Protect the handset from extreme cold as much as possible.

- The headset cord, the rubber covers on the generator lever and on the press-to-talk switch, and the rubberized case (when used) will become stiff in extreme cold; handle the telephone set carefully to prevent these items from cracking or breaking.
- If the moisture-preventing diaphragms are not in place on the transmitter or receiver, or if they are damaged, remove any moisture or ice from the affected part and cover the transmitter or receiver with a clean cloth.

2-10. OPERATING IN HOT, DRY CLIMATES

- Protect the telephone set from dust, dirt, and direct sunlight.
- Keep the case closed to keep dust and dirt out of the equipment.

2-11. OPERATING IN WARM, DAMP CLIMATES

- Keep all exterior parts of the telephone set free from moisture and fungus. Clean with a lint-free cloth.
- If the moisture-preventing diaphragms are not in place on the transmitter or receiver, or if they are damaged, remove any accumulated moisture or material and cover the transmitter or receiver with a clean cloth.

CHAPTER 3
OPERATOR MAINTENANCE

The only maintenance functions required at the operator maintenance level include cleaning and operator preventive maintenance checks and services (chapter 2).

Troubleshooting procedures are not required at the operator's maintenance level and are restricted to preventive maintenance checks and services. All repairs should be recorded on DA Form 2404 and all deficiencies not able to be corrected, reported to higher maintenance level personnel. Records and reports of preventive maintenance must be made in accordance with procedures given in DA Pam 738-750.

CHAPTER 4
UNIT MAINTENANCE

Section I. INTRODUCTION

4-1. GENERAL

Unit maintenance procedures direct limited repairs, provide quarterly unit preventive maintenance checks and services, and accomplish initial service upon receipt.

Unit maintenance repair procedures are restricted to operational testing, internal examination, replacement of receiver and transmitter external components, and cleaning.

4-2. COMMON TOOLS AND EQUIPMENT

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

Section II. SERVICE UPON RECEIPT

4-3. GENERAL

Service upon receipt requires unpacking, inventory of components, condition checks, and set-up of newly delivered telephone sets.

Packaging is of two types, domestic and export. Domestic packaging is designed for limited transport and handling. Export packaging is designed for shipping greater distances under harsher conditions.

4-4. PACKAGING DATA

Individual data pertains to both domestic and export packaging. Individual parameters are as follows:

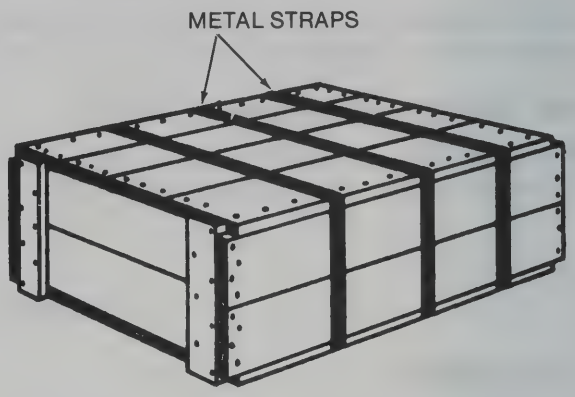
Packing method	Sets per box	Height (in.)	Width (in.)	Depth (in.)	Volume (cu ft)	Weight (lb)
Domestic	12	11	18	15 3/4	1.81	55.2
Export	36	15 3/4	33	18	5.42	194.5

4-5. UNPACKING TELEPHONE SETS PACKED FOR EXPORT SHIPMENT

Export packing is comprised of individual telephone sets within corrugated paper packed within individual cartons numbering 36 per packaging case. The packaging case will be nailed wood strapped by metal or plastic.

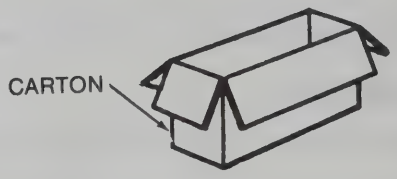
WARNING

- Exercise extreme care when cutting metal or plastic straps from shipping containers. Straps may whip when cut. Injury may result.
- Do not carry case by straps.



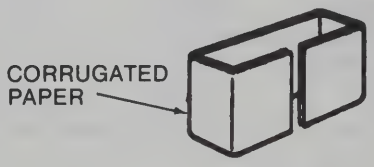
EXPORT PACKING CASE (36 SETS)

- Cut and remove straps.
- Remove the nails from the export packing case cover and remove the cover.
- Cut or tear open the waterproof liner.
- Remove the cartons that contain the individual telephone set.



INDIVIDUAL PACKING

- Open an individual carton by cutting or tearing the sealing tape, and remove the telephone set and the technical manual from the carton.
- Open the case and remove the handset in corrugated paper.





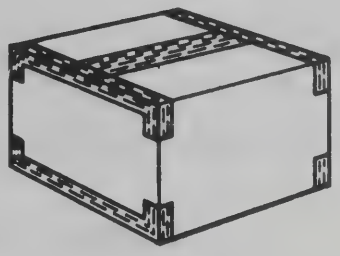
- Remove telephone set.

4-6. UNPACKING TELEPHONE SETS PACKED FOR DOMESTIC SHIPMENT

Domestic packing is comprised of individual telephone sets within corrugated paper, packed within individual cartons **numbering 12 per domestic case.**

Removal steps are identical to the export shipping shown in paragraph 4-5, except for the replacement of a domestic packing case for the heavy-duty export case.

- Cut or tear the sealing tape on the domestic packing case, and open the top flaps.
- Remove the cartons that contain the individual telephone sets.
- Complete the unpacking as indicated in paragraph 4-4.



DOMESTIC PACKING CASE
(12 SETS)

4-7. CHECKING UNPACKED EQUIPMENT

Check the equipment against the packing list. If equipment has been damaged or any shipping discrepancies are detected, fill out forms designated in paragraph 1-2.

When a telephone set is removed from its carton, perform the following checks:

- Check the condition of the case and carrying strap. If a rubberized case is provided, check for proper functioning of the slide fastener. If a plastic case is provided, check for proper operation of the latch and seating of the cover.
- Check the condition of the handset cord; remove any kinks found in the cord. Check the binding posts for proper spring action.
- Check the rubber covers on the generator lever, the press-to-talk switch, and the binding posts for signs of deterioration.
- Check the press-to-talk switch and the generator lever for proper action by pressing in and releasing them. They should spring out quickly when released.
- Check the buzzer volume control knob for ease of rotation.
- Check the belt clip for firm spring pressure against the back of the handset.

If the TA-1/PT has been used or reconditioned, check to see whether it has been changed by a modification work order (MWO). If modified, the MWO number will appear near the nomenclature plate. Using this number and referring to paragraph 1-2, obtain a copy of the published MWO to determine what the modification consisted of.

4-8. PREINSTALLATION CHECK

- Press press-to-talk switch to reset visual indicator (no white showing).
- Rotate buzzer volume control to acceptable level.

4-9. INSTALLATION

Installing the TA-1/PT Telephone Set is described in chapter 2, section III, Operating Under Usual Conditions. The telephone set is installed for the first time at the time of initial operation. Subsequent usage does not require reinstallation unless telephone set is disconnected at redeployment.

Section III. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES

4-10. GENERAL

Unit preventive maintenance checks and services take place on a quarterly basis. Subsequent repairs are restricted to external components. General preventive maintenance checks and services information is provided in paragraph 2-2.

Use the ITEM NO. column in the PMCS (table 4-1) to get the number to be used in the TM ITEM NO. column in DA Form 2404 (Equipment Inspection and Maintenance Worksheet) when you fill out the form. Deficiencies not able to be corrected should be reported to higher maintenance level personnel.

Operator's PMCS procedures must be performed before the unit PMCS procedures are performed.

Table 4-1. Unit Preventive Maintenance Checks and Services Chart

B – Before D – During

Item No.	Interval B	Interval D	Item to be Inspected	Procedures – Check for and have repaired or adjusted as necessary	Equipment is Not Ready/Available If:
1	•		Telephone Set TA-1/PT	Perform all procedures presented in table 2-1, Operator's PMCS Chart.	Table 2-1, Equipment is Not Ready/Available If: column parameters are not met.
2	•		Internal components	Check wiring for abrasion, proper placement, broken or loose connections.	Wiring is incomplete.
				Inspect and tighten loose assembly and mounting screws. Calls for chassis removal (para. 4-14).	Screws are loose.

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor 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. Do not use compressed air to dry parts when TRICHLOROTRIFLUOROETHANE has been used.

CAUTION

Do not allow any cleaning solvent to touch internal electrical wiring or components.

3	•		Internal surfaces	Internal surfaces are covered with dirt, moisture, fungus, or corrosion. Clean and remove. Use cleaning compound, item 1, App. E.	Internal surfaces are excessively covered by substances.
4	•		Gasket	Inspect gasket for wear or damage.	Gasket is damaged or worn excessively.

4-10. GENERAL – Continued

Table 4-1. Unit Preventive Maintenance Checks and Services Chart – Continued

B – Before D – During

Item No.	Interval B	Interval D	Item to be Inspect	Procedures – Check for and have repaired or adjusted as necessary	Equipment is Not Ready/Available If:
5	•		Receiver and transmitter housings	Inspect moisture preventing diaphragms for breaks, tears, and deterioration. Check caps for cross-threading and looseness. Inspect cushions (if provided) for tears, breaks, or deterioration. Replace diaphragms if faulty (para 4-15).	Diaphragms, cushions or caps are faulty.
6	•		Modification Work Orders	Check the equipment to determine that all URGENT MWO's have been applied and that all ROUTINE MWO's have been scheduled.	MWO's have not been applied or scheduled.
7		•	Telephone Set TA-1/PT	Perform functional check.	Any component is inoperable.
8	•		Technical publication	Manual must be complete and in usable condition. All changes must be current.	Technical manual is unusable or out of date.
9	•		Receiver cap gasket	Check if cork gasket exists between moisture preventing diaphragms and receiver element. If so, change to new one. Check if receiver cap is of raised surface type. If so, add cork gasket (para 4-15).	Receiver cap reduces receiver element sensitivity.

Section IV. TROUBLESHOOTING

Troubleshooting of the TA-1/PT Telephone Set **is assigned to the Intermediate Direct Support Maintenance level only.**

Section V. UNIT MAINTENANCE PROCEDURES

4-11. GENERAL

Telephone Set TA-1/PT unit maintenance instructions include external part replacement for receiver and transmitter assemblies. Internal repairs include tightening of attaching hardware and detection of wiring deficiencies to be repaired at the Intermediate Direct Support Maintenance level.

4-12. DIFFERENCES OF EQUIPMENT

Unit maintenance instructions for the TA-1/PT Telephone Set include replacement of transmitter and receiver cushions, transmitter and receiver caps, and two moisture-preventing diaphragms. The differences are as follows:

Item	Exception
Transmitter cushion	E30 (not provided on Order No. 19629-Phila-58)
Receiver cushion	E8 (not provided on Order No. 19629-Phila-58)
Transmitter cap	010 (or 077 provided on Order No. 19629-Phila-58)
Receiver cap	09 (or 076 provided on Order No. 19629-Phila-58)
Moisture-preventing diaphragm on transmitter	DP2 (no exception)
Moisture-preventing diaphragm on receiver	DP3 (no exception)

4-13. HOW TO USE REMOVE AND REPLACE PROCEDURES

WARNING

Before removing any components, be certain there is no power connected to binding posts. Injury could result.

- Removal steps are first, followed by replacement steps. Numbers are listed in consecutive order before each written step. Numbers on the supporting artwork match the written step and call for that area of the assembly to be removed or replaced. Numbers that indicate removal may also be coupled with a number indicating replacement. Some numbers before a written step may not be found on the art; this means the task needs no reference, or the written step will carry a reference in parentheses indicating another area in the manual.

- Written steps should be read consecutively to properly understand task. Numbers on artwork are for reference only. Notes will be found within written tasks and also within the artwork. Cautions will be within written steps only. Various graphic indicators have been added to artwork to visually assist you.

4-14. CHASSIS REMOVAL

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor 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. Do not use compressed air to dry parts when TRICHLOROTRIFLUOROETHANE has been used.

Chassis removal at the Unit Maintenance level is for inspection, cleaning, and tightening of loose hardware. Refer to table 4-1, Unit Preventive Maintenance Checks and Services Chart.

• REMOVAL

1 **Remove 4 screws and lockwashers.**

2 Press generator switch to permit internal arm to clear housing when chassis is withdrawn.

CAUTION

Do not bend receiver contact prongs when withdrawing chassis.

3 Withdraw chassis from housing.

4 Determine receiver contact prongs are not bent. (This will inhibit reassembly.)

5 Remove gasket.

6 Perform PMCS tasks (table 4-1).

• REPLACEMENT

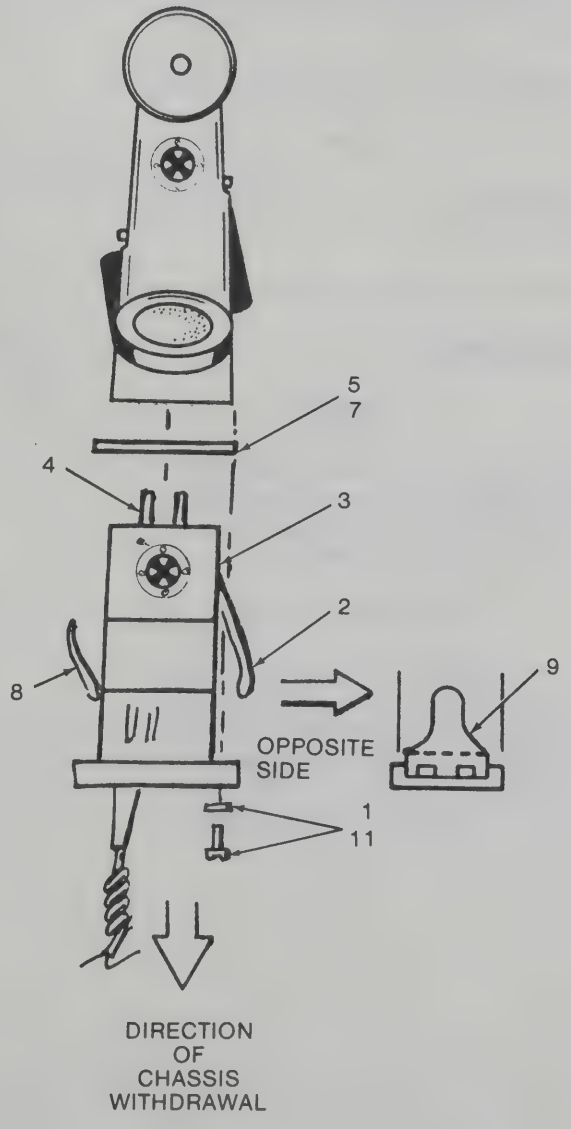
7 Place gasket in housing.

8 Press press-to-talk switch internal arm to permit it to clear housing when chassis is inserted.

9 Pull belt clip end out slightly to clear housing before inserting chassis.

10 Insert chassis into housing.

11 **Secure chassis to housing by attaching 4 screws and lockwashers.**



4-15. REPLACEMENT OF MOISTURE-PREVENTIVE DIAPHRAGMS AND CAPS

• REMOVAL

1 Grasp handset and hold with receiver and transmitter pieces facing upward.

2 Place two fingers at the rear edge of receiver cushion and pull away from handset.

NOTE

Order No. 19629-Phila-58 telephone sets will not have cushions.

3 Unscrew receiver cap.

CAUTION

Do not turn handset over or receiver element will fall out. Damage will result.

4 Remove receiver cap from handset.

NOTE

Diaphragm has been removed with cap.

5 Remove diaphragm from receiver cap.

• REPLACEMENT

CAUTION

Be certain diaphragm attached gasket faces receiver element or seal will not be complete. Moisture damage may result.

– MODIFICATION –

If the receiver cap is of the raised inside surface type, insert a cork gasket (the same thickness as diaphragm gasket) between the diaphragm and the receiver element. If gasket is already present, replace with a new one.

6 Install diaphragm in cap.

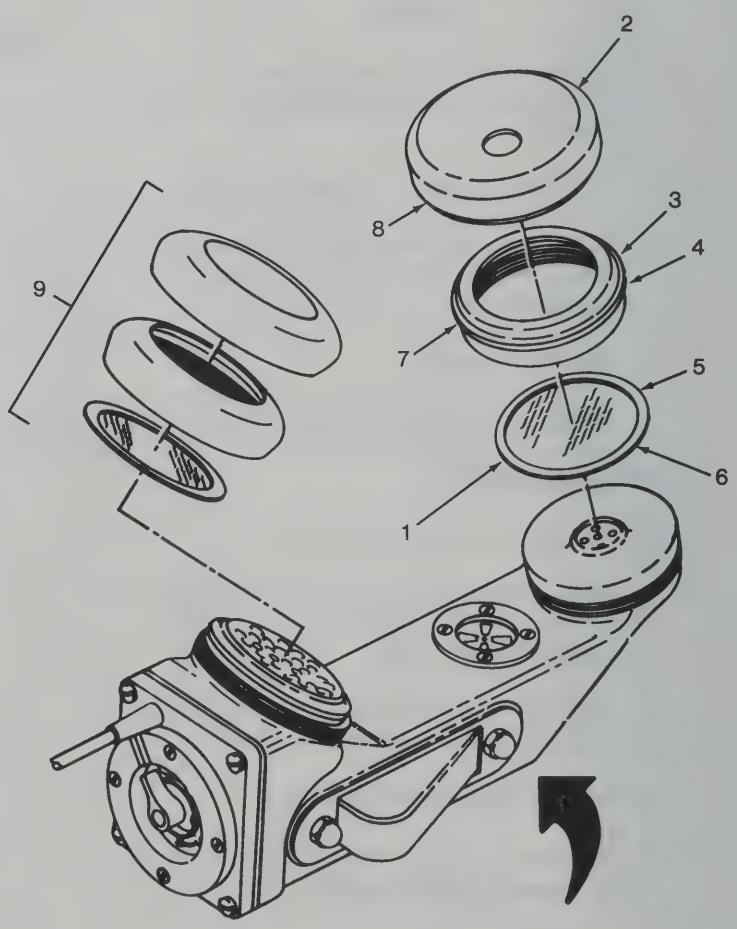
CAUTION

- If telephone set has been fitted with cork gasket, receiver cap will not seat to previous depth. Do not force.
- Exercise care when screwing receiver cap onto handset. Cross-threading can cause damage.

7 Screw receiver cap onto handset.

8 Cover receiver cap with cushion (if applicable).

9 Apply the same procedures for remove and replace of transmitter cushion, cap, and diaphragm.



NOTE
WORK WITH HANDSET FACING UPWARD AS SHOWN.

Section VI. PREPARATION FOR STORAGE OR SHIPMENT

4-16. MATERIALS REQUIRED

The precise types of materials used to package the TA-1/PT Telephone Set depends upon specific requirements. For normal shipping and storage the following materials are required. Quantities are estimated for packaging **and packing 12 telephone sets:**

Material	Quantity
Corrugated paper	42 sq ft
Gummed paper tape	6 ft
Water-resistant, pressure-sensitive tape	19 ft

4-17. PACKAGING FOR STORAGE OR SHIPMENT

Package the telephone set as follows:

- Place handset within case, lay handset cord alongside, and secure case with latch or zipper.
- Wrap each telephone set with corrugated paper.
- Secure wrapping with gummed paper tape.
- Place wrapped telephone set and **packaged technical manual into carton**
- Seal carton with sealing tape.

Package the Technical Manual as follows:

- Place manual within a close-fitting waterproof bag.
- Seal bag with water-resistant, pressure-sensitive tape.

4-18. DOMESTIC PACKING

Pack 12 telephone set cartons as follows:

- Place cartons into domestic packing case.
- Seal packing case seams with water-resistant, pressure-sensitive tape.

4-19. EXPORT PACKING

Export packing requires the same packaging materials shown in paragraph 4-16. An additional quantity is required for the export shipping case carton capacity of 36 telephone sets. Export packing also calls for a nailed wood case and strapping for intertheater shipment.

CHAPTER 5
INTERMEDIATE DIRECT SUPPORT MAINTENANCE

Section I. INTRODUCTION

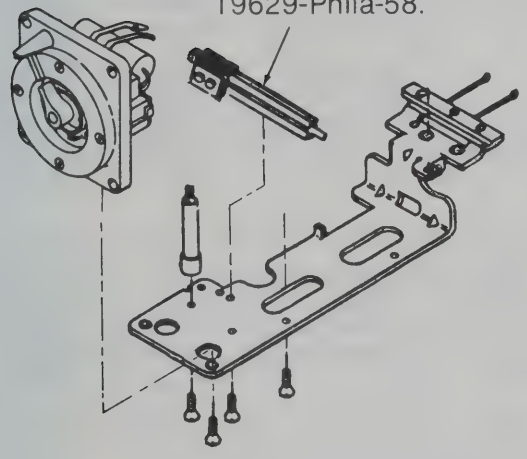
5-1. GENERAL

All troubleshooting and repair is assigned to the Intermediate Direct Support Maintenance level. This maintenance level is the highest approved for the TA-1/PT Telephone Set.

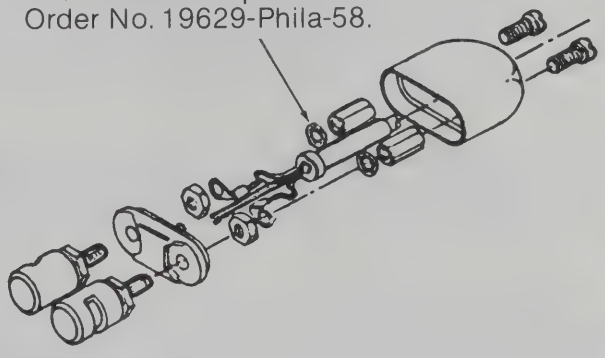
5-2. INTERNAL VARIATIONS

There are internal differences which characterize different models. These differences are as follows:

1 Press-to-talk switch contact assembly is held together with one screw on Order No. 19629-Phila-58.

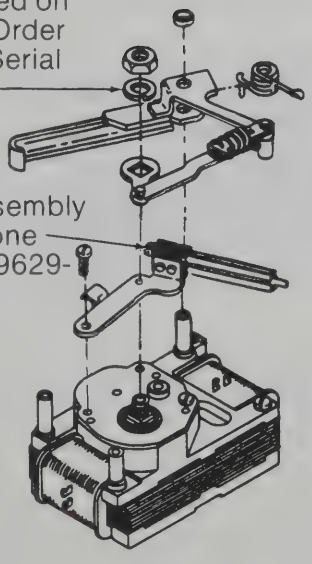


2 Lockwasher not provided on Order No. 19629-Phila-58.

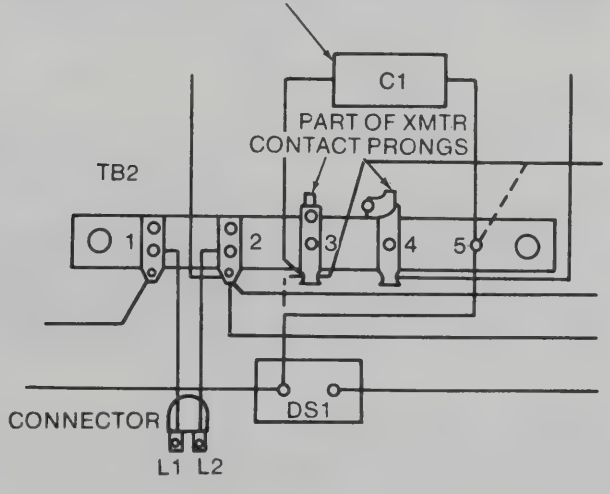


3 Lockwasher is not used on equipments bearing Order No. 24977-Phila-55, Serial No. 1 through 5009.

4 Generator contact assembly is held together with one screw on Order No. 19629-Phila-58.



5 24977-Phila-55 (Serial No. 1 through 209). Capacitor C1 is connected between transmitter element MK1 and receiver element RE1. On all other equipments, capacitor C1 is connected between transmitter element MK1 and buzzer DS1.

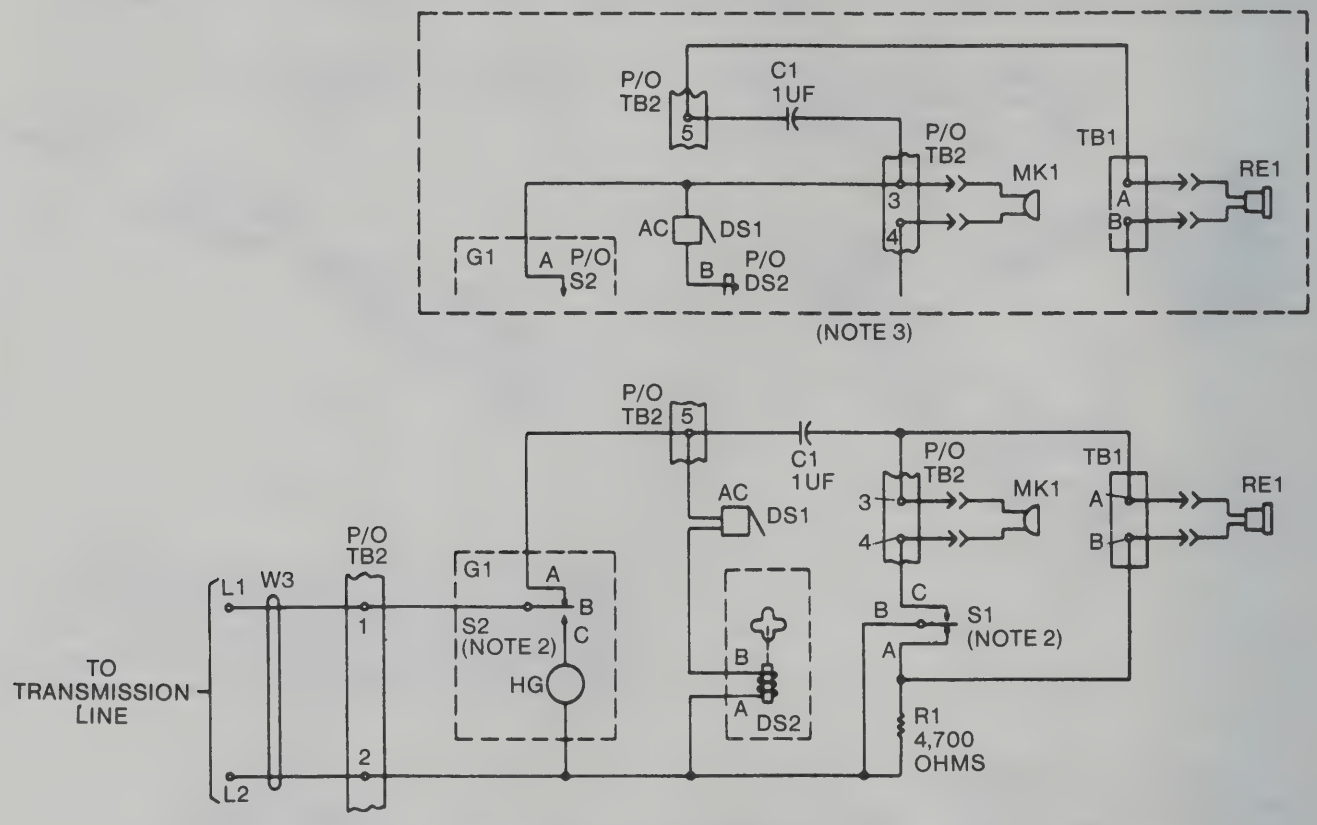


6 On equipments bearing Order No. 24977-Phila-55, Serial Nos. 1 through 209, wires are connected as shown by dashed lines.

Section II. SCHEMATIC DIAGRAM ANALYSIS

5-3. GENERAL

Schematic diagram analysis is provided to better acquaint you with Telephone Set TA-1/PT operating theory. The schematic diagram is shown below.



NOTE

1. TERMINAL LETTER OR NUMBER DESIGNATIONS ARE ASSIGNED ARBITRARILY FOR REFERENCE PURPOSES.
2. GENERATOR SWITCH S2 AND PRESS-TO-TALK SWITCH S1 SHOWN IN NONOPERATED POSITION.
3. CAPACITOR C1 IS CONNECTED AS SHOWN ON EQUIPMENTS BEARING ORDER NO. 24977-PHILA-55. SERIAL NOS. 1 THROUGH 209.

5-4. OUTGOING SIGNAL

- When the generator lever is depressed, its initial motion actuates generator switch S2. The switch opens the circuit between line terminal L1 and buzzer DS1, the transmitting and the receiving circuits, and closes the circuit between line terminal L1 and genertor G1. As the generator lever moves downward, it rotates the hand-generator rotor. This rotation generates 20 Hz ac at 65 to 80 volts, which is impressed across line terminals L1 and L2.

- When the generator lever is released, the lever, which is spring-loaded, springs back freely without turning the generator rotor. As the generator lever returns to its normal position, the spring contacts of the generator switch open the circuit between line terminal L1 and generator G1, and close the circuit between line terminal L1 and buzzer DS1, the transmitting, and the receiving circuits.

5-5. INCOMING SIGNAL

- The incoming ac signaling current from the distant telephone or switchboard, passes through the normally closed contacts (A and B) of generator switch S2, and flows through buzzer DS1 and visual indicator DS2. The incoming signaling current is blocked from the receiving and transmitting circuits by capacitor C1, which offers high impedance to 20 Hz current, and low impedance to voice-frequency currents.

- As the 20 Hz signaling current passes through the coil of buzzer DS1, the armature of the buzzer is alternately magnetized. As the armature is magnetized in opposite directions, it vibrates between the poles of a permanent magnet and strikes against the buzzer diaphragm, producing the signaling sound.

- The buzzer volume is mechanically controlled by a screw attached to the buzzer volume control knob. The screw moves in or out to vary the distance through which the buzzer armature can vibrate. This action varies the force with which the armature strikes the diaphragm, and thereby determines the loudness of the buzzer sound. When the buzzer volume control knob is in the OFF position, the armature is clamped tight, so that it cannot vibrate; therefore, no sound can be produced.

- As the signaling current passes through the coil of visual indicator DS2, a magnetic field is produced. The magnetic field rotates the armature to a position where its markings can be seen through openings in the top of the visual indicator. The armature is held in the operated position by a small permanent magnet attached to an arm that is linked to the press-to-talk switch. When the press-to-talk switch is pressed, the arm and its permanent magnet are moved away from the armature. The armature, which is spring-loaded, rotates back to the nonoperated position.

5-6. VOICE TRANSMISSION

- When press-to-talk switch S1 is depressed, contacts B and C connect to complete the transmitting circuit. Contacts B and A open to insert limiting resistor R1 in series with the receiver element.

- When voice sound waves strike the diaphragm in transmitter element MK1, the armature is actuated in the transmitter element. An alternating current, at the same frequency as that of the voice sound waves, is generated. Most of the generated current is transmitted over the transmission line through contacts BC of switch S1 and contacts BA of switch S2. A small portion of the generated current (limited by resistor R1) passes through the receiver element to produce a small amount of *sidetone* during voice transmission, so that the telephone set will not sound dead. Capacitor C1 has a low impedance to voice frequencies.

- The transmitter current is prevented from passing through the buzzer and visual indicator circuit by the inductance of the windings of the buzzer and the visual indicator, which offer a high impedance to voice frequencies.

5-7. VOICE RECEPTION

- The incoming voice signal passes through the normally closed contacts (A and B) of generator switch S2, through capacitor C1, receiver element RE1, and through the normally closed contacts (B and A) of press-to-talk switch S1.

- As the incoming voice signal passes through the receiver element, it actuates the receiver armature and, in turn, causes the receiver diaphragm to vibrate, thereby reproducing the voice of the distant party.

Section III. REPAIR PARTS, TOOLS, AND TEST EQUIPMENT

5-8. REPAIR PARTS

Repair parts will not be procured. Repair by Controlled Exchange is authorized. If Telephone Set TA-1/PT cannot be repaired through Controlled Exchange of major components and modules between like failed end items, then the complete end item should be ordered.

5-9. TOOLS

The following tool kits should be used:

Nomenclature	NSN
Electronic Equipment Tool Kit, TK-101/G	5180-00-064-5178
Electronic Equipment Tool Kit, TK-105/G	5180-00-610-8177

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

5-10. TEST EQUIPMENT

The following test equipment should be used:

Nomenclature	NSN
Telephone Test Set, AN/PTM-6	6625-00-229-1048
Multimeter, TS-352B/U	6625-00-553-0142
Digital Multimeter, AN/PSM-45 (When issued, replaces Multimeter, TS-352B/U)	6625-01-139-2512

Section IV. TROUBLESHOOTING

5-11. USE OF TROUBLESHOOTING TABLE

Table 5-1 contains troubleshooting information useful to maintenance technicians in diagnosing and correcting malfunctions or unsatisfactory operation of the TA-1/PT.

- The troubleshooting table lists the common malfunction symptoms and unsatisfactory performance characteristics technicians are most likely to encounter; test and inspection steps to be followed to determine the cause, and the corrective action(s) that should be performed for each possible cause listed.

- The technician should first find the malfunction symptom or unsatisfactory performance characteristic in the table which most closely describes the immediate situation; then perform the test and inspections, and corrective action steps in the order in which they are listed.

- This manual cannot list all possible situations which may be encountered, nor can it list all test and inspection, and corrective action steps which may be taken.

5-11. USE OF TROUBLESHOOTING TABLE – Continued

Table 5-1. Troubleshooting

Malfunction	Probable cause	Corrective action
Binding post will not hold line wire firmly.	Defective binding post.	Replace binding post (para 5-17).
Buzzer volume control knob does not move freely.	Defective buzzer volume control.	Replace buzzer volume control (para 5-22).
	Defective buzzer.	Replace buzzer (para 5-23).
Cannot signal distant party.	Defective generator switch contact assembly.	Clean contact assembly, and burnish contacts, if necessary.
		Adjust generator switch contact springs (para 5-33).
		Replace generator switch contact assembly (para 5-30).
	Defective generator.	Check resistance (para 5-12). Replace generator (para 5-28) if necessary.
	Defective generator lever.	Replace lever (para 5-29).
Generator lever will not return to normal position when released.	Defective generator lever.	Replace lever (para 5-29).
Buzzer will not sound.	Buzzer out of adjustment.	Adjust buzzer (para 5-34).
	Defective buzzer diaphragm.	Replace buzzer diaphragm (para 5-23).
	Defective buzzer.	Check resistance (para 5-12). Replace buzzer (para 5-23) if necessary.
Visual indicator will not operate.	Defective visual indicator.	Check resistance (para 5-12). Replace visual indicator (para 5-26) if necessary.
Moisture-preventing diaphragms do not eliminate receiver or transmitter moisture.	Defective moisture-preventing diaphragms.	Replace receiver or transmitter moisture-preventing diaphragms (para 4-15).
Visual indicator will not stay in operated position.	Defective visual indicator mechanism.	Replace visual indicator mechanism (para 5-26).
Visual indicator will not return to nonoperated position when press-to-talk switch is pressed.	Defective visual indicator mechanism.	Replace lever assembly (para 5-27).
	Defective visual indicator mechanism (para. 5-26).	Replace lever assembly (para 5-27).
Incoming 20 Hz signal heard loudly in receiver, visual indicator and buzzer do not operate.	Capacitor C1 shorted.	Check resistance (para 5-12). Replace capacitor (para 5-20).
Cannot hear sidetone in receiver when talking to distant party.	Resistor R1 open.	Check resistance (para 5-12). Replace resistor (para 5-21).

5-11. USE OF TROUBLESHOOTING TABLE – Continued

Table 5-1. Troubleshooting – Continued

Malfunction	Probable cause	Corrective action
Cannot talk to distant party.	Defective transmitter element.	Check resistance (para 5-12). Replace transmitter element (para 5-15) if necessary.
	Defective press-to-talk switch contact assembly.	Clean contact assembly, and burnish contacts, if necessary. Adjust contact springs (para 5-32). Replace contact assembly (para 5-25).
	Defective press-to-talk lever assembly.	Replace lever assembly (para 5-27).
Press-to-talk switch will not return to listen position when released.	Defective press-to-talk lever assembly.	Replace lever assembly (para 5-27).
Cannot hear distant party.	Defective receiver element.	Check resistance (para 5-12). Replace receiver element (para 5-16) if necessary.
	Defective press-to-talk switch contact assembly.	Clean contact assembly, and burnish contacts, if necessary. Adjust contact springs (para 5-32). Replace contact assembly (para 5-25).
	Defective press-to-talk lever assembly.	Replace lever assembly (para 5-27).
	Capacitor C1 open.	Check capacitor C1. Replace capacitor (para 5-20) if necessary.
Cannot send or receive 20 Hz signaling. Cannot send or receive voice.	Defective handset cord.	Check continuity. Replace handset cord (para 5-18) if necessary.
	Loose connection of handset cord.	Remove the cover from the connector (para 5-18) and check to see that the terminal lugs are properly secured. Replace connector cover. Remove the chassis (para 4-14) from the handset housing and check to see that the handset cord terminal lugs are properly secured to the terminal board. Install the chassis (para 4-14) in the handset housing.
	Defective generator switch contact assembly.	Clean contact assembly, and burnish contacts if necessary. Adjust contact springs (para 5-33).
	Defective terminal board.	Replace terminal board TB2 (para 5-19).
	Defective press-to-talk switch contact assembly.	Replace contact assembly (para 5-25).

5-11. TROUBLESHOOTING – Continued

Table 5-1. Troubleshooting – Continued

Malfunction	Probable cause	Corrective action
Buzzer volume control will not vary buzzer volume from no sound to loud sound. Fails receiving efficiency test (para 5-41).	Buzzer out of adjustment. Defective buzzer volume control. Receiver cap may be of the type having a raised inside surface which may bear against the receiver element causing reduced sensitivity.	Adjust buzzer (para 5-34). Replace buzzer volume control (para 5-22). Remove the receiver cap and examine the inside surface. If it is of the type described, install a cork gasket (thickness about the same as the gasket on the moisture preventing diaphragm) next to the receiver element to **act as a spacer. Reinstall the receiver cap with diaphragm. Retest. If unit still fails test, replace cap (para 4-15).**

5-12. RESISTANCE MEASUREMENT

Use multimeter to check for shorts or opens. Dc resistances of the telephone set are as follows:

WARNING

Do not attempt to make internal connections or adjustments unless another person, capable of performing first aid, is present.

Measure point	Resistance (ohms)
Between line terminals L1 and L2 (chassis removed from housing)	1,520
Between line terminals L1 and L2 (generator lever fully depressed *before* applying test leads).	1,850
Across receiver element RE1 (removed from housing)	65 (click is heard)
Across transmitter element MK1 (removed from housing)	60 (click is heard)
Between terminals A and B of visual indicator coil DS2	720
Across buzzer DS1	800
Between terminals A and B of each generator coil	940 each
Between terminal A of visual indicator coil DS2 and receiver contact prong B (press-to-talk switch depressed)	4,700

Section V. INTERMEDIATE DIRECT SUPPORT MAINTENANCE PROCEDURES

5-13. HOW TO USE THIS SECTION

- Removal steps are first, followed by replacement steps. Numbers in circles are listed in consecutive order before each written step. Numbers in circles on the supporting artwork match the written step and call for that area of the assembly to be removed or replaced. Numbers in circles that indicate removal may also be coupled with a number indicating replacement. Some numbers in circles before a written step may not be found on the art. This means the task needs no reference, or the written step will carry a reference in parentheses indicting another area in the manual.

- Written steps should be read consecutively to properly understand task. Circled numbers on artwork are for reference only. Notes will be found within written tasks and also within the artwork. Cautions will be within written steps only. Various graphic indicators have been added to artwork to visually assist you.

WARNING

- Before removing any components, be certain there is no power connected to binding posts. Injury could result.

- Adequate ventilation should be provided while using TRICHLOROTRIFLUORO-ETHANE. Prolonged breathing of vapor 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 take internally, consult a physician immediately. Do not use compressed air to dry parts when TRICHLOROTRIFLUOROETHANE has been used.

5-14. REPLACEMENT PROCEDURES

Replacement procedures show remove and replace steps supported by illustrations. All primary remove-and-replace procedures are shown in this section except for chassis removal, paragraph 4-14, and moisture-preventing diaphragms, paragraph 4-15, accomplished at the Unit Maintenance level.

5-15. REPLACEMENT OF TRANSMITTER ELEMENT

• REMOVAL

CAUTION

The transmitter cushion (if provided), the transmitter cap and the moisture-preventing diaphragm will separate from the handset as a single unit. Remove the transmitter cap carefully so that the remaining parts do not fall out.

1 Hold the handset in one hand and unscrew the transmitter cap.

2 Remove the transmitter resonator and the transmitter resonator support.

3 Remove the transmitter element.

4 Remove the gasket from the transmitter element.

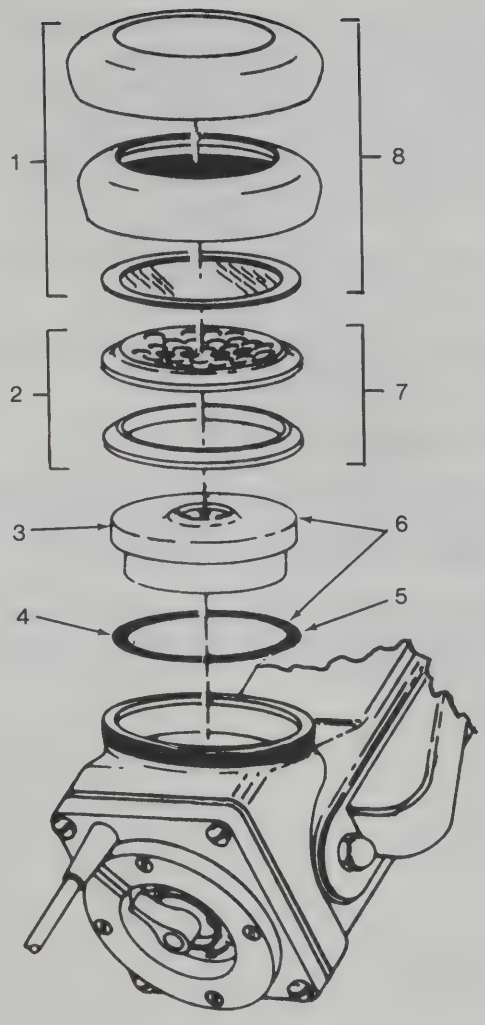
• REPLACEMENT

5 Place the gasket on the replacement transmitter element.

6 Hold the handset in one hand and replace the transmitter element and the gasket.

7 Replace the transmitter resonator support and the transmitter resonator.

8 Position the transmitter cap over the parts already in place, and screw the transmitter cap to the handset.



5-16. REPLACEMENT OF RECEIVER ELEMENT

• REMOVAL

CAUTION

The receiver cushion (if provided), the receiver cap and the moisture-preventing diaphragm will separate from the handset as a single unit. Remove the receiver cap carefully so that receiver element and the gasket do not fall out.

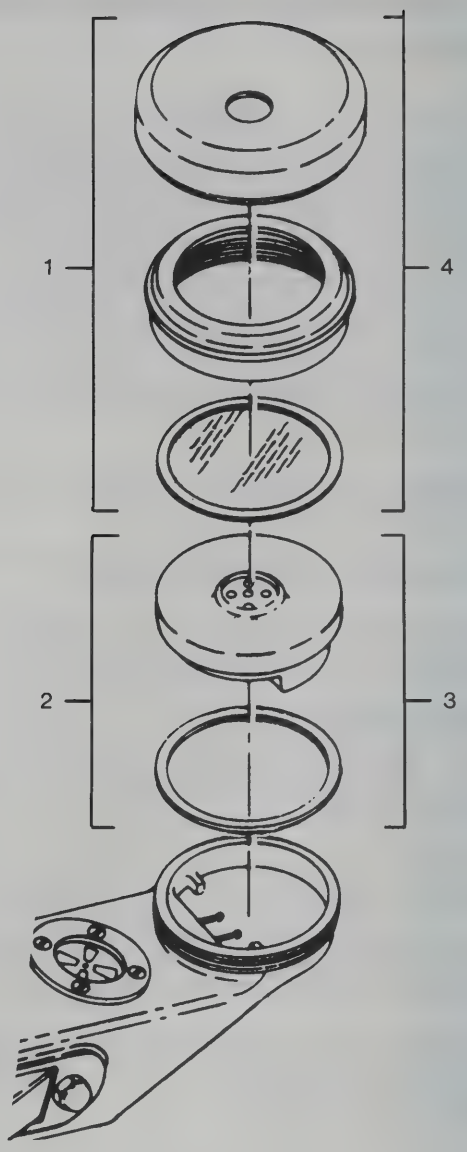
1 Hold the handset in one hand and unscrew the receiver cap.

2 Remove the receiver element and the gasket from the handset.

• REPLACEMENT

3 Lay the handset on a level surface. Replace the gasket and place the replacement receiver element in the handset.

4 Position the receiver cap over the parts already in place, and screw the receiver cap to the handset.



5-17. REPLACEMENT OF BINDING POSTS

• REMOVAL

1 Remove the two screws from the connector cover.

2 Slide the connector cover along the handset cord far enough to expose the mounting plate.

3 Remove the mounting posts and the lock-washers (not provided on Order No. 19629-Phila-58).

4 Remove the terminal lugs from the threaded studs of the binding posts.

5 Remove the hexagonal nuts and the binding posts from the binding post board.

• REPLACEMENT

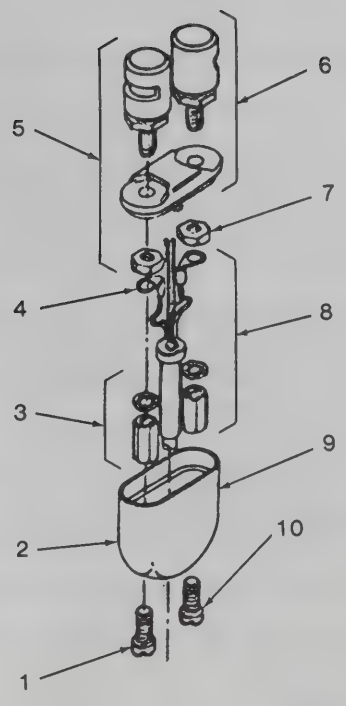
6 Replace the binding posts on the binding post board with the slots in the binding posts outward.

7 Replace the hexagonal nuts on the threaded studs of the binding posts.

8 Place the terminal lugs on the threaded studs of the binding posts, and replace the lock-washers (not provided on Order No. 19629-Phila-58) and the mounting posts.

9 Slide the connector cover onto the rubber sleeve and pull the rubber sleeve outward until its flange rests against the inside of the connector cover; set the cover against the binding post board ensuring the tie-cord does not stick out between the connector cover and the binding post board.

10 Replace the two screws.



5-18. REPLACEMENT OF HANDSET CORD

• REMOVAL

1 Remove the two screws from the connector cover.

2 Slide the connector cover along the handset cord far enough to expose the mounting posts.

3 Remove the mounting posts and the lockwashers (not provided on Order No. 19629-Phila-58).

4 Remove the terminal lugs from the threaded studs of the binding posts.

5 Untie the tie-cords from the binding post board.

6 Pull the disconnected end of the handset cord through the rubber sleeve and remove the cord and the sleeve from the connector cover.

7 Remove the chassis (para 4-14) from the handset housing.

8 Loosen the capacitor clamp nut (not shown) and rotate the capacitor and clamp to gain access to the terminal board.

9 Disconnect the two handset cord terminal lugs from the terminal board.

10 Untie the tie-cords from the stud on the terminal board.

11 Pull the end of the handset cord through the rubber sleeve.

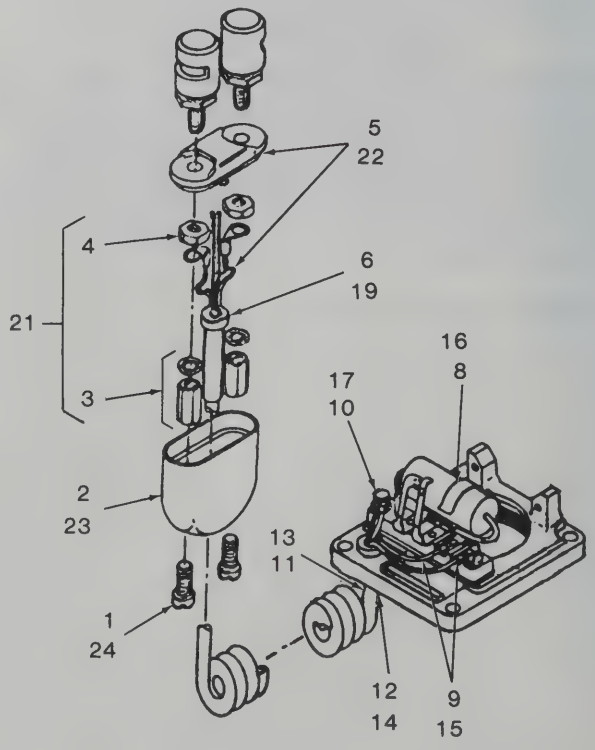
12 Push the rubber sleeve up through the hole in the chassis base.

• REPLACEMENT

13 Insert the end of the handset cord that has the small terminal lugs through the hole in the bottom of the chassis base and then through the rubber sleeve.

14 Pull the rubber sleeve outward through the hole in the bottom of the chassis until the flange on the sleeve rests firmly against the inside of the bottom of the chassis base.

15 Reconnect the two handset cord terminal lugs to the terminal board.



5-18. REPLACEMENT OF HANDSET CORD – Continued

• REPLACEMENT - Continued

16 Switch the capacitor and the clamp down until they are parallel with the terminal board, and tighten the capacitor clamp nut.

17 Tie the two tie-cords to the tie-cord stud on one end of the terminal board so there will be no tension on the handset cord leads.

18 Replace the chassis (para 4-14) in the handset housing.

19 Insert the other end of the handset cord through the center hole in the connector cover and then through the rubber sleeve.

20 Bend the two terminal lugs into right angles.

21 Place the two terminal lugs on the threaded studs of the binding posts and replace the lockwashers (not provided on Order No. 19629-Phila-58) and the mounting posts.

22 Tie the tie-cords to the binding post board so there will be no tension on the handset cord leads.

23 Slide the connector cover onto the rubber sleeve and pull the rubber sleeve outward until its flange rests against the inside of the connector cover; set the cover against the binding post board ensuring the tie-cord does not stick out between the connector cover and the binding post board.

24 Replace the two screws.

5-19. REPLACEMENT OF TERMINAL BOARD

• REMOVAL

1 Remove the chassis (para 4-14) from the handset housing.

2 Untie the tie-cords from the tie-cord stud.

3 Unsolder the bare capacitor lead from the stud on the terminal board.

4 Loosen the capacitor clamp nut and rotate the capacitor and the clamp to gain access to the terminal board.

5 Tag the transmitter contact to which the other capacitor lead is soldered and unsolder the lead.

6 Remove the capacitor clamp nut, the clamp, and the capacitor.

7 Disconnect the handset cord terminal lugs from the terminal board.

8 Tag each lead connected to the terminal board and unsolder the leads.

9 Unscrew the tie-cord stud and the screw that secures the terminal board to the chassis base.

10 Remove the terminal board from the chassis base.

• REPLACEMENT

11 Secure the replacement terminal board to the chassis base. The tie-cord stud secures the side of the terminal board nearest the rubber sleeve.

12 Resolder the leads to the terminal board.

13 Reconnect the handset cord terminal lugs to the terminal board.

14 Replace the capacitor, the capacitor clamp, and the capacitor clamp nut.

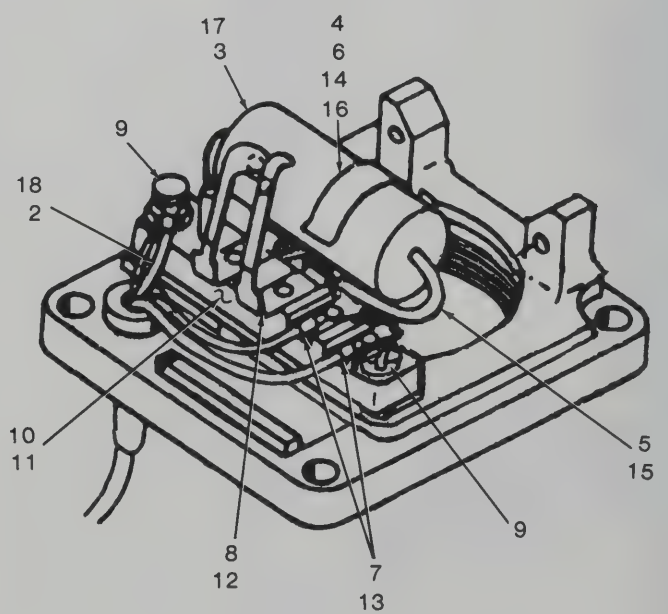
15 Solder the insulated capacitor lead to the transmitter contact.

16 Swing the capacitor and the clamp down until they are parallel with the terminal board, and tighten the capacitor clamp nut.

17 Resolder the base capacitor lead to the stud on the terminal board.

18 Tie the tie-cords to the tie-cord stud so there will be no tension on the handset cord leads.

19 Replace the chassis (para 4-14) in the handset housing.



5-20. REPLACEMENT OF CAPACITOR C1

• REMOVAL

1 Remove the chassis (para 4-14) from the handset housing.

2 Unsolder the bare capacitor lead from the stud on the terminal board.

3 Loosen the capacitor clamp nut (not shown) and rotate the capacitor and the clamp to gain access to the terminal board.

4 Tag the transmitter contact to which the other capacitor lead is soldered and unsolder the lead.

5 Remove the capacitor from the capacitor clamp.

• REPLACEMENT

6 Cut the leads on the new capacitor to the same length as the leads on the capacitor that was removed.

7 Place a piece of insulating tubing on the long capacitor lead.

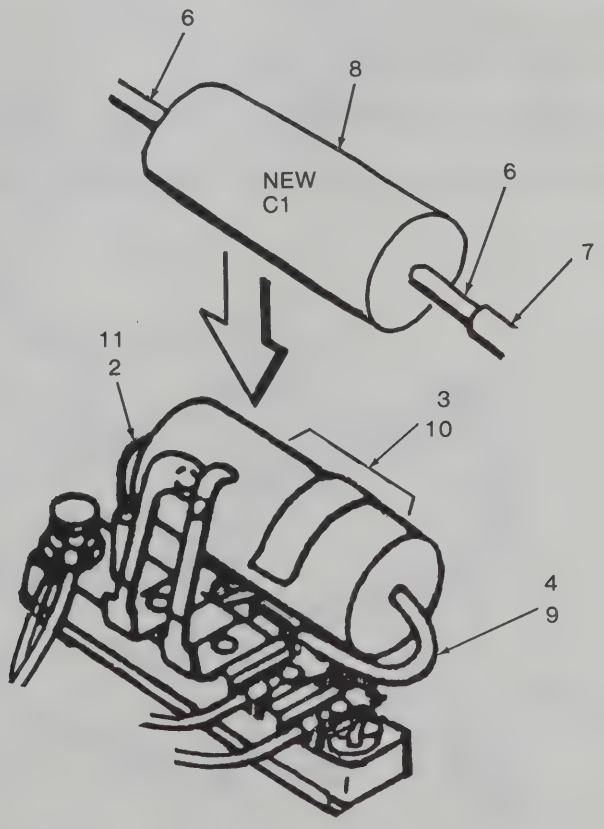
8 Place the new capacitor in the capacitor clamp.

9 Solder the insulated capacitor lead to the tagged transmitter contact.

10 Rotate the capacitor and the capacitor clamp until they are parallel to the terminal board and tighten the capacitor clamp nut.

11 Solder the bare capacitor lead to the stud on the terminal board.

12 Replace the chassis (para 4-14) in the handset housing.



5-21. REPLACEMENT OF RESISTOR R1

• REMOVAL

1 Remove the chassis (para 4-14) from the handset housing.

2 Tag the receiver contact prong to which a resistor lead is soldered. Unsolder the lead.

3 Loosen the screw.

4 Move the magnet pole piece away from the core of the visual indicator coil. Carefully move the visual indicator coil to gain access to the coil terminals.

5 Tag the lead that connects to the same terminal of the visual indicator coil as the resistor. Unsolder resistor lead.

• REPLACEMENT

6 Cut the leads of the new resistor to the same length as the leads of the resistor that was removed.

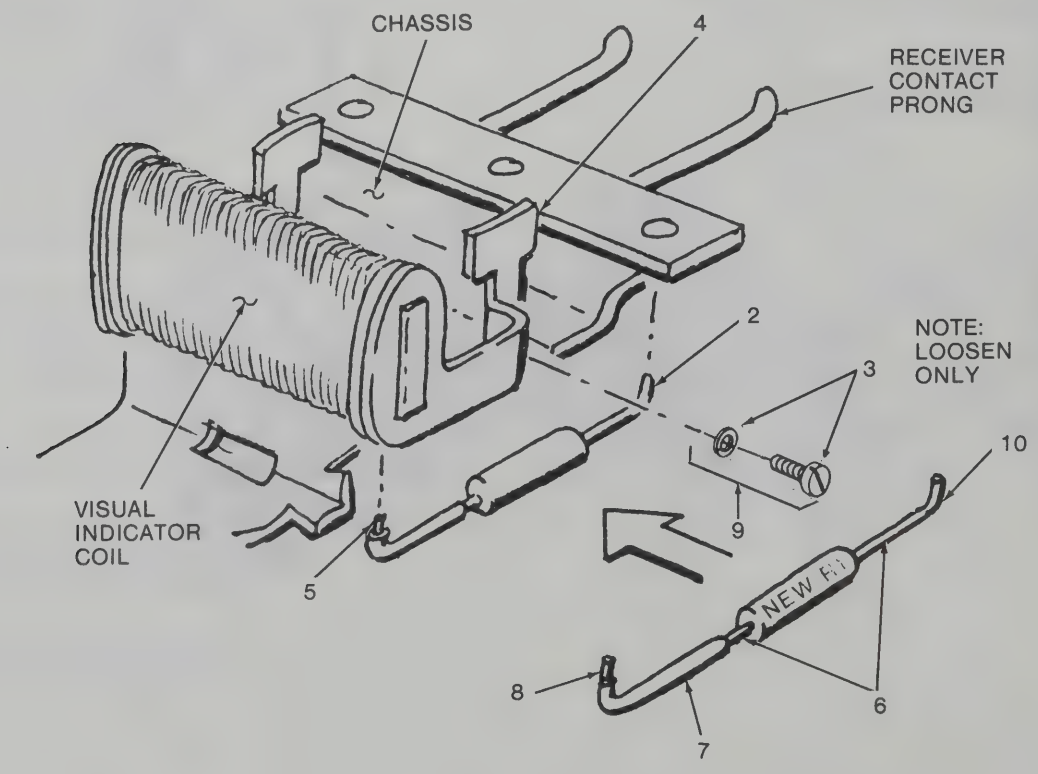
7 Place a piece of insulating tubing on the long resistor lead.

8 Solder the insulated resistor lead to the terminal on the visual indicator coil that is indicated by the tagged lead.

9 Place the ends of the core of the visual indicator coil in the slots in the magnet pole pieces and tighten the loosened screw.

10 Solder the other resistor lead to the receiver contact prong that is indicated by the tag.

11 Replace the chassis (para 4-14) in the handset housing.



5-22. REPLACEMENT OF BUZZER VOLUME CONTROL

• REMOVAL

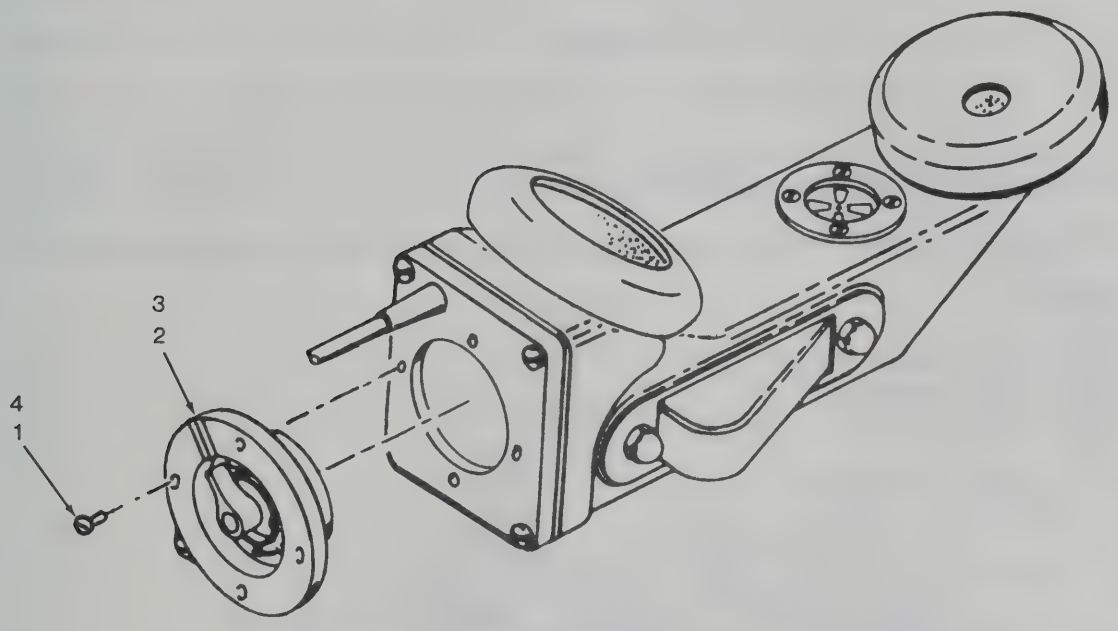
1 Remove the four screws that secure the buzzer volume control to the chassis base.

2 Remove the buzzer volume control from the chassis base.

• REPLACEMENT

3 Position the buzzer volume control on the chassis base.

4 Replace and secure the four screws.



5-23. REPLACEMENT OF BUZZER AND HANDSET BUZZER DIAPHRAGM

• REMOVAL

1 Remove the chassis (para 4-14) from the handset housing.

2 Remove one screw and lockwasher from the belt clip. Loosen the other screw and rotate the belt clip to gain access to the rear of the chassis.

3 Remove the two screws that secure the chassis base to the handset chassis mounting plate.

4 Move the chassis base to gain access to the terminals on the buzzer coil.

5 Tag and unsolder the wires connected to the buzzer coil terminals.

6 Remove the buzzer volume control by removing four screws.

CAUTION

Be careful not to bend the receiver and transmitter contacts.

7 Set a small punch against either of the two blind holes on the top surface of the externally threaded ring and drive the ring counterclockwise. Remove the ring from the chassis base.

8 Remove the gasket retainer, gasket, handset buzzer diaphragm, spacing ring, and buzzer.

• REPLACEMENT

9 Replace the buzzer, spacing ring, handset buzzer diaphragm, gasket, and the gasket retainer.

10 Replace and tighten the externally threaded ring.

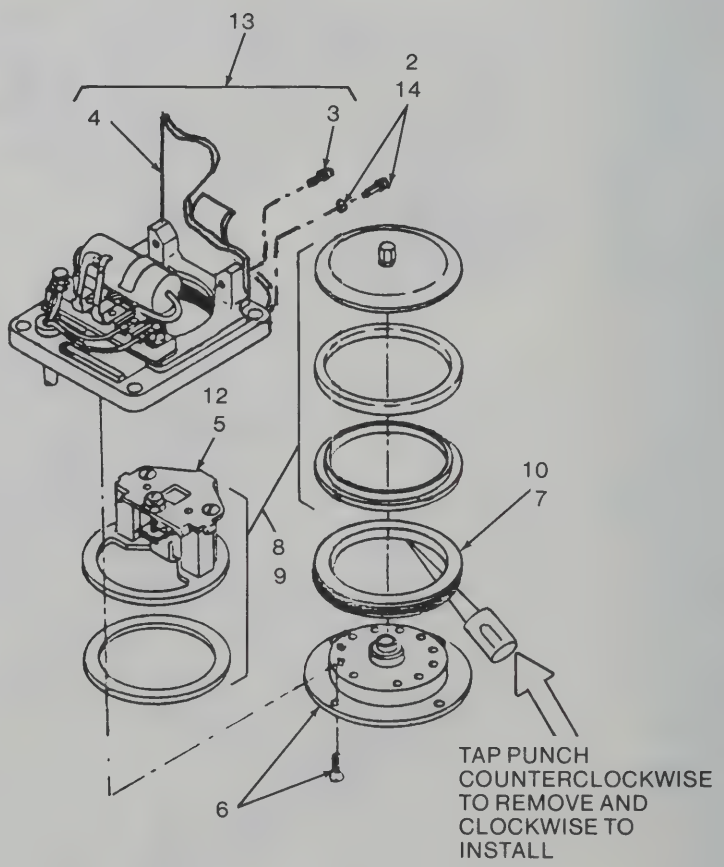
11 Replace the buzzer volume control.

12 Resolder the wires to the buzzer coil terminals.

13 Position the chassis base against the handset chassis mounting plate and replace the two screws.

14 Secure the belt clip to the chassis base.

15 Replace the chassis (para 4-14) in the handset housing.



5-24. REPLACEMENT OF VISUAL INDICATOR COIL

• REMOVAL

1 Remove the chassis (para 4-14) from the handset housing.

2 Tag the receiver contact prong to which a resistor lead is soldered. Unsolder the lead.

3 Loosen the screw and move the magnet pole piece to free the handset visual indicator coil. Move the visual indicator coil to gain access to its terminals.

4 Tag and unsolder the leads from the handset visual indicator coil.

5 Remove the handset visual indicator coil.

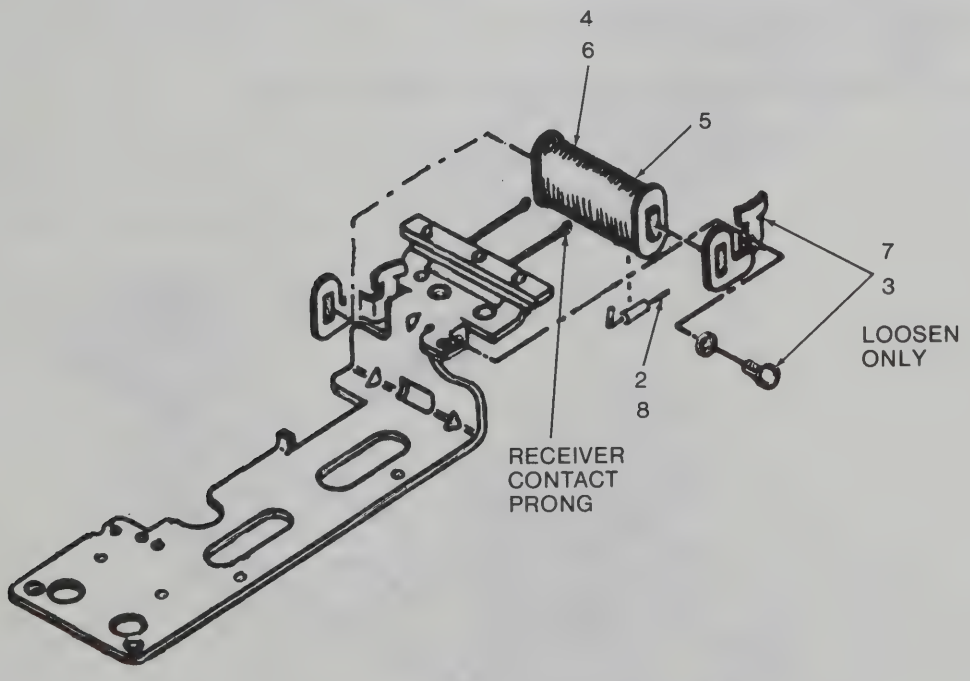
• REPLACEMENT

6 Solder the leads to the replacement handset visual indicator coil terminals.

7 Place the ends of the core of the handset visual indicator coil in the slots in the magnet pole pieces and tighten the loosened screw.

8 Solder the resistor lead to the receiver contact prong from which is was unsoldered.

9 Replace the chassis (para 4-14) in the handset.



5-25. REPLACEMENT OF PRESS-TO-TALK SWITCH CONTACT ASSEMBLY

• REMOVAL

1 Remove the chassis (para 4-14) from the handset housing.

2 Tag and unsolder the leads from the press-to-talk switch contact assembly.

3 Remove one screw and lockwasher from the belt clip. Loosen the other screw and rotate the belt clip to gain access to the two screws that secure the press-to-talk switch contact assembly to the handset chassis mounting plate.

4 Remove the two screws.

NOTE

On Order No. 19629-Phila-58, electrical contact assembly (S1) is held together with one screw instead of two.

5 Press the press-to-talk lever in fully and remove the press-to-talk switch contact assembly from the side of the chassis opposite the press-to-talk lever.

• REPLACEMENT

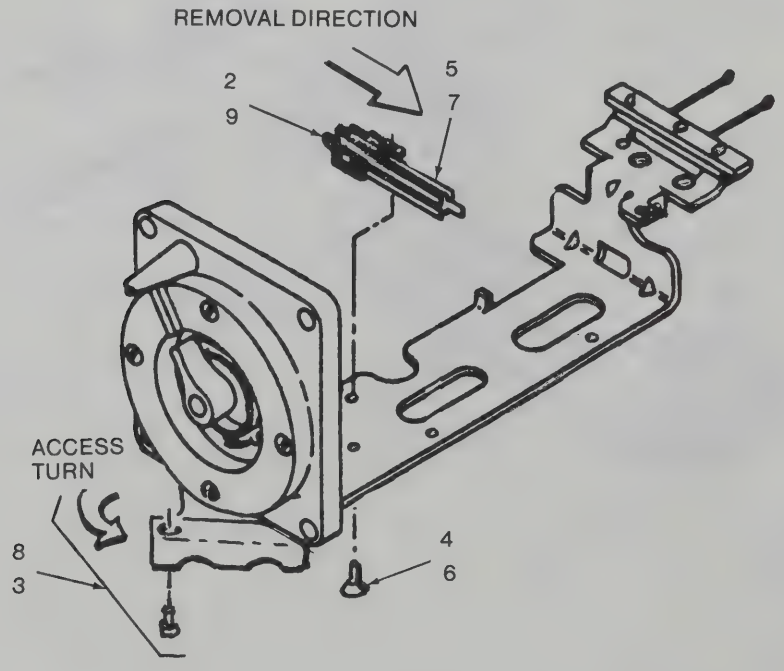
6 Position the press-to-talk switch contact assembly on the handset chassis mounting plate and replace one of the screws.

7 Press the press-to-talk lever in fully, position the press-to-talk switch contact assembly on the handset chassis mounting plate, and replace the other screw.

8 Secure the belt clip to the chassis base.

9 Resolder the leads to the press-to-talk switch contact assembly.

10 Replace the chassis (para 4-14) in the handset housing.



5-26. REPLACEMENT OF VISUAL INDICATOR ASSEMBLY

• REMOVAL

1 Remove the chassis (para 4-14) from the handset housing.

2 Remove the two screws and the lockwashers that secure the visual indicator to the handset chassis mounting plate.

3 Remove the visual indicator from the handset chassis mounting plate.

4 Remove the pin that secures the metal band to the visual indicator. Move the metal band away from the side of the generator.

• REPLACEMENT

5 Replace the metal band on the visual indicator and replace the pin.

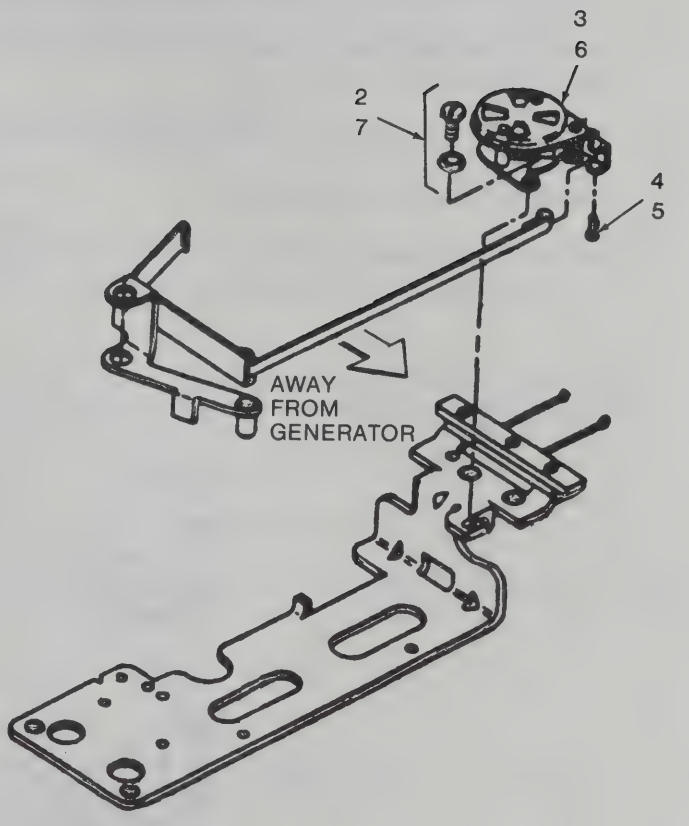
NOTE

Be sure the pin is inserted, so the head of the pin will be next to the handset chassis mounting plate when the visual indicator is replaced.

6 Replace the visual indicator on the handset chassis mounting plate.

7 Replace the two lockwashers and the two screws.

8 Replace the chassis (para 4-14) in the handset housing.



5-27. REPLACEMENT OF PRESS-TO-TALK LEVER ASSEMBLY

- **REMOVAL**

1 Remove the chassis (para 4-14) from the handset housing.

2 Remove the two screws and the lockwashers that secure the visual indicator to the handset chassis mounting plate.

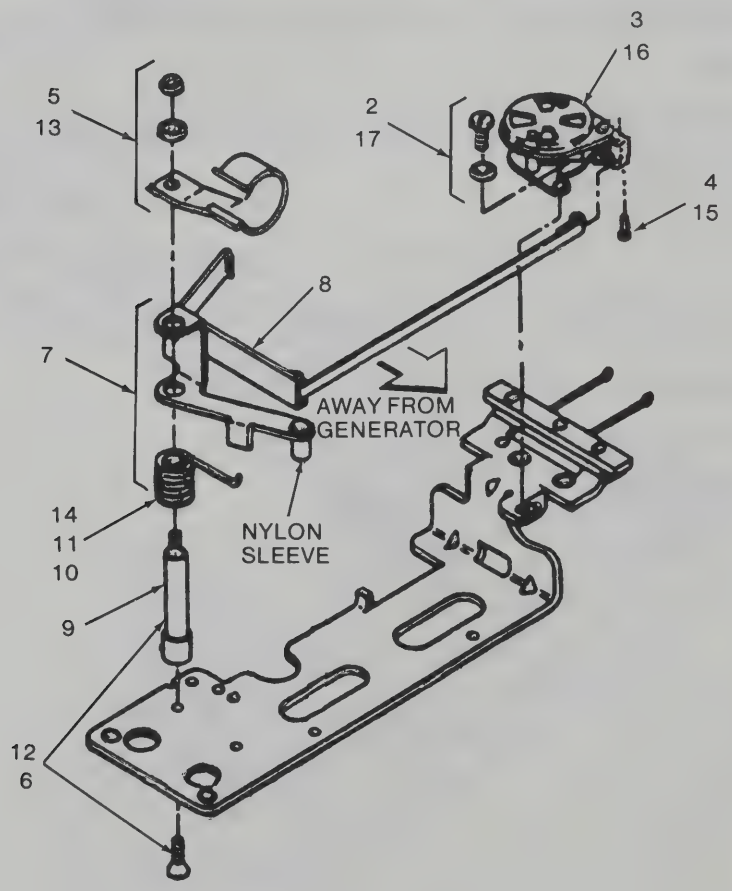
3 Remove the visual indicator from the handset chassis mounting plate.

4 Remove the pin that secures the metal band to the visual indicator. Move the metal band away from the side of the generator.

5 Remove the capacitor clamp nut, the lockwasher, and the capacitor clamp from the stud.

6 Remove the screw and the stud.

7 Remove the press-to-talk lever spring and the press-to-talk lever assembly.



5-27. REPLACEMENT OF PRESS-TO-TALK LEVER ASSEMBLY – Continued

• **REPLACEMENT**

8 Position the press-to-talk lever assembly between the generator and the chassis base.

NOTE

Be sure the wires that are connected to the press-to-talk switch contact assembly and to the generator are between the two arms of the press-to-talk lever assembly, and the nylon sleeve is against the lower side of the center contact spring of the press-to-talk switch contact assembly.

9 Replace the stud in the two holes in the press-to-talk lever assembly.

10 Replace the press-to-talk lever spring on the stud.

NOTE

Do *not* connect the long arm of the spring to the contact actuating arm of the press-to-talk lever assembly.

11 Take approximately one clockwise turn on the short end of the press-to-talk lever spring, and place the looped end of the spring in the spring slot on the handset chassis mounting plate.

12 Position the stud on the handset chassis mounting plate, and replace the screw.

13 Replace the capacitor clamp, the lockwasher, and the capacitor clamp nut.

14 Place the long arm of the press-to-talk lever spring under the contact actuating arm of the press-to-talk lever assembly ensuring contacts are straight and not bent.

15 Replace the metal band on the visual indicator and replace the pin.

NOTE

Be sure the pin is inserted so the head of the pin will be next to the handset chassis mounting plate when the visual indicator is replaced.

16 Replace the visual indicator on the handset chassis mounting plate.

17 Replace the two lockwashers and the two screws.

18 Replace the chassis (para 4-14) in the handset housing.

5-28. REPLACEMENT OF GENERATOR

- **REMOVAL**

1 Remove the chassis (para 4-14) from the handset housing.

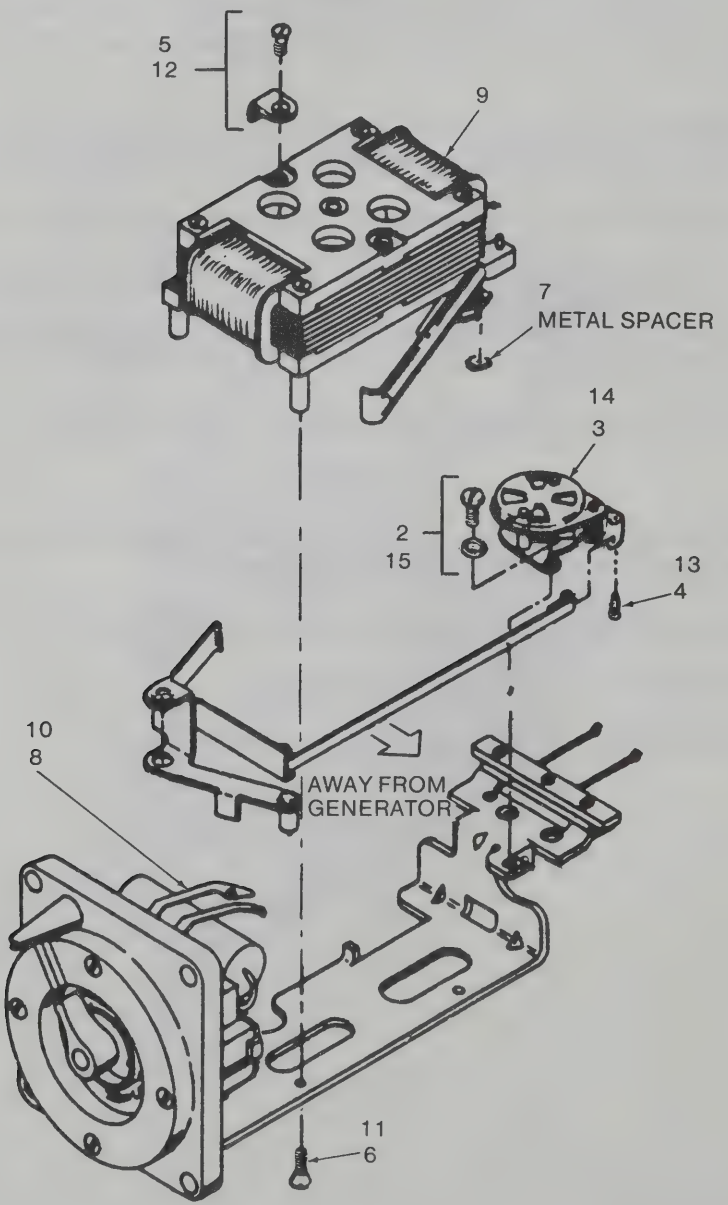
2 Remove the two screws and the lockwashers that secure the visual indicator to the handset chassis mounting plate.

3 Remove the visual indicator from the handset chassis mounting plate.

4 Remove the pin that secures the metal band to the visual indicator. Move the metal band away from the side of the generator.

5 Remove the screw and the cable clamp from the generator.

6 Remove the three screws that hold the generator to the handset chassis mounting plate.



5-28. REPLACEMENT OF GENERATOR – Continued

• REMOVAL - Continued

7 Carefully move the generator away from the handset chassis mounting plate to gain access to the rear of the generator. The metal spacer may fall off the generator lever stud. Do not misplace it.

8 Tag, unsolder, and remove the two leads connected to the generator contact assembly and the lead that connects one of the generator coils to the terminal board.

9 Remove the generator from the handset chassis mounting plate.

• REPLACEMENT

10 Position the generator on the handset chassis mounting plate and resolder the leads previously removed.

11 Replace the three screws that secure the generator to the handset chassis mounting plate. Be sure the metal spacer is in place.

12 Place the clamp over the cabling on the side of the generator, and screw the clamp to the generator.

13 Replace the metal band on the visual indicator and replace the pin.

NOTE

Be sure the pin is inserted so the head of the pin will be next to the handset chassis mounting plate when the visual indicator is replaced.

14 Replace the visual indicator on the handset chassis mounting plate.

15 Replace the two lockwashers and the two screws.

16 Replace the chassis (para 4-14) in the handset housing.

5-29. REPLACEMENT OF GENERATOR LEVER ASSEMBLY

• REMOVAL

1 Remove the chassis (para 4-14) from the handset housing.

2 Remove the generator (para 5-28) from the chassis.

3 Remove the metal spacer from the generator lever stud.

4 Carefully remove the end of the generator spring from the arm of the generator lever.

CAUTION

Use extreme care to prevent damage to the generator contact assembly.

5 Remove the plain hexagonal nut and the lockwasher.

NOTE

The lockwasher is not provided on equipments bearing Order No. 24977-Phila-55, serial numbers 1 through 5009.

6 Carefully remove the generator lever and the generator spring from the generator.

• REPLACEMENT

7 Replace the generator lever and the generator spring on the generator.

8 Replace the short end of the generator spring in the generator spring hole in the generator frame.

NOTE

Be sure the nylon sleeve is against the upper side of the center contact spring of the generator contact assembly.

9 Replace the lockwasher and the plain hexagonal nut.

10 Carefully replace the long end of the generator spring on the arm of the generator lever.

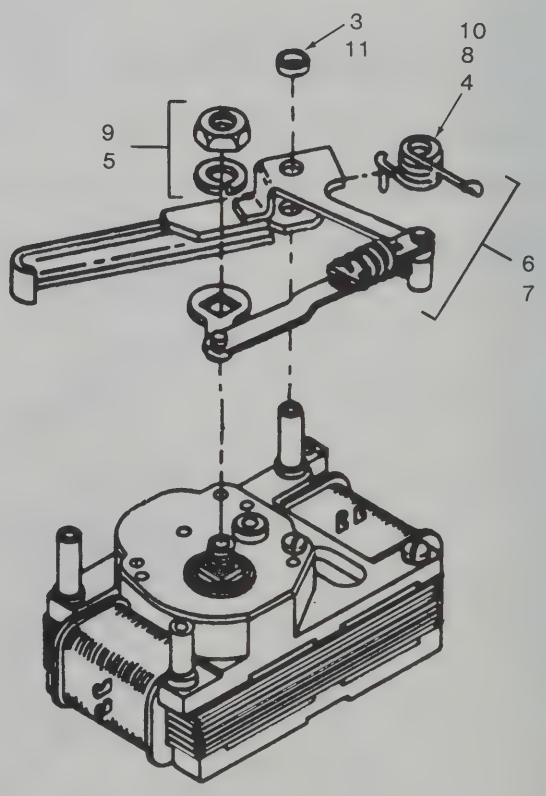
CAUTION

Be careful not to damage the generator contact assembly.

11 Replace the metal spacer on the generator lever stud.

12 Replace the generator (para 5-28) on the chassis.

13 Replace the chassis (para 4-14) in the handset housing.



5-30. REPLACEMENT OF GENERATOR SWITCH CONTACT ASSEMBLY

• REMOVAL

1 Remove the chassis (para 4-14) from the handset housing.

2 Remove the visual indicator from the handset chassis mounting plate (para 5-26).

3 Tag and unsolder the wires connected to the generator contact assembly.

4 Remove the two screws that secure the generator contact assembly to the generator, and remove the generator contact assembly.

NOTE

One screw is used to hold the generator contact assembly together on Order No. 19629-Phila-58.

• REPLACEMENT

5 Replace the generator contact assembly on the generator.

6 Clamp the generator contact wires under the clamp on the generator contact assembly arm, and replace the two screws that secure the generator contact assembly to the generator.

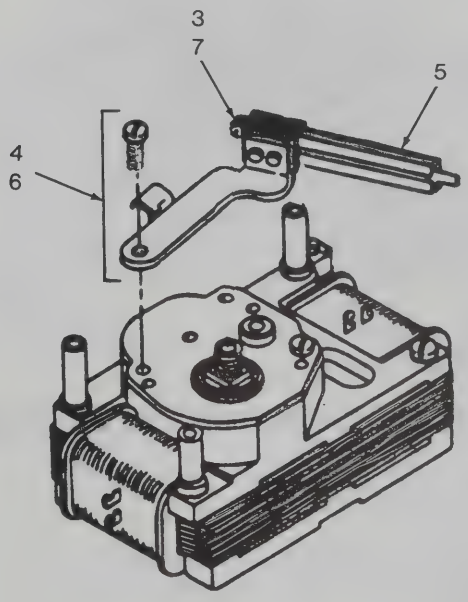
NOTE

Be sure the upper side of the center contact spring of the generator contact assembly is against the nylon sleeve.

7 Resolder the wires to the generator contact assembly.

8 Replace the visual indicator on the handset chassis mounting plate (para 5-26).

9 Replace the chassis (para 4-14) in the handset housing.



5-31. ADJUSTMENT PROCEDURES

Continual use over a long period of time causes some components to require adjustments. The procedures call for no special tools and are accomplished in minimal time. Adjustments are mechanical. Each procedure is shown step by step in the same method accomplished with each replacement procedure. References are made to specific replacement procedures when required.

The handset should be checked for proper generation after any adjustment is completed. Improper operation indicates the need for readjustment.

5-32. PRESS-TO-TALK SWITCH CONTACT SPRING ADJUSTMENT

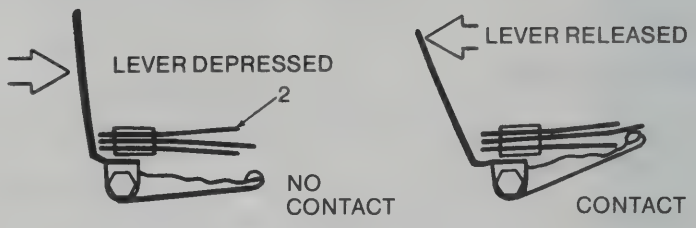
1 Remove the chassis (para 4-14) from the handset housing.

2 Bend the press-to-talk switch contact springs so the contacts will operate as follows:

a. When the press-to-talk lever is depressed, the center contact must break from the upper contact and mate with the lower contact.

b. When the press-to-talk lever is released, the center contact must break from the lower contact and mate with the upper contact.

3 Replace the chassis (para 4-14) in the handset housing.



5-33. GENERATOR SWITCH CONTACT SPRING ADJUSTMENT

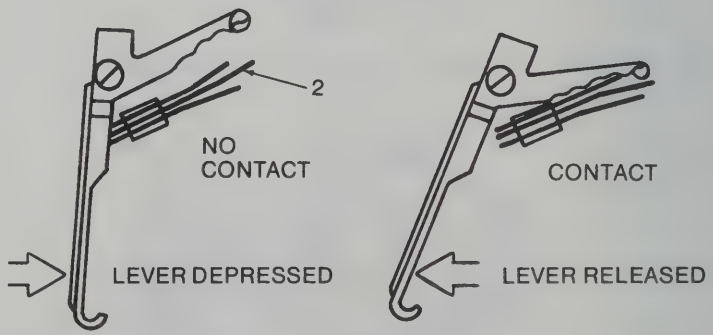
1 Remove the chassis (para 4-14) from the handset housing.

2 Bend the generator switch contact springs so the contacts will operate as follows:

a. When the generator lever is depressed, the center contact must break from the lower contact and mate with the upper contact.

b. When the generator lever is released, the center contact must break from the upper contact and mate with the lower contact.

3 Replace the chassis (para 4-14) in the handset housing.



5-34. BUZZER ADJUSTMENT

1 Remove the chassis (para 4-14) from the handset housing.

2 Remove nut, lockwasher, and capacitor clamp.

3 Loosen the plain hexagonal nut and unscrew the screw until there is a place of about 1/8 inch between the end of the screw and the buzzer armature.

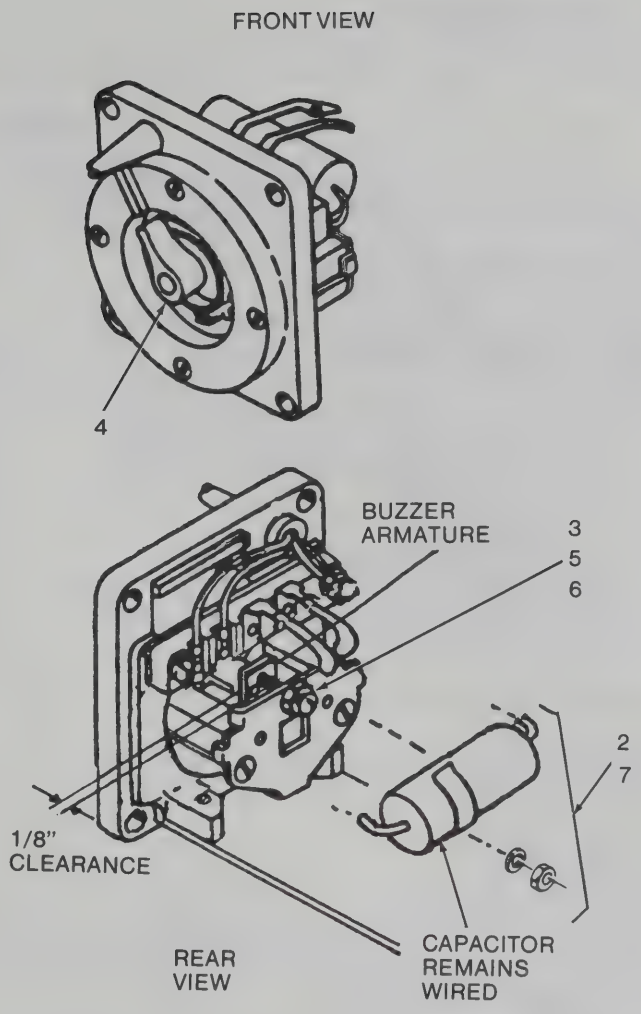
4 Rotate the buzzer volume control knob to the OFF (extreme clockwise) position.

5 Screw the screw down until it prevents the buzzer armature from vibrating.

6 Screw the plain hexagonal nut down until it secures the screw firmly in position.

7 Replace the capacitor clamp, the lockwasher, and the nut.

8 Replace the chassis (para 4-14) in the handset housing.



5-35. FINAL TESTING

These tests are designed to measure the performance of a repaired handset. A handset that meets the minimum standards stated in the tests will furnish satisfactory operation equivalent to that of new equipment.

5-36. TEST EQUIPMENT

Test equipment includes those stated in paragraph 5-10.

WARNING

Do not attempt to make internal connections or adjustments unless another person, capable of performing first aid, is present.

5-37. DETERMINING TERMINAL L1

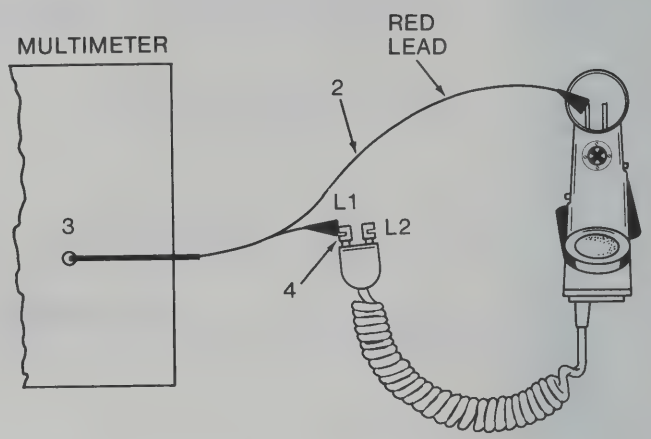
1 Remove the receiver element (para 4-14) from the handset housing.

2 Connect the multimeter between one of the terminal posts on the conector and the receiver contact prong on the left-hand side of the handset housing.

3 Terminal L1 is indicated by a reading of approximately 1,400 ohms on the multimeter. If the multimeter reading is zero, the other terminal on the connector is L1.

4 Mark terminal L1 on the connector.

5 Replace the receiver element (para 4-14) in the handset housing.



5-38. TEST SETUP

- **CONTROL SETTINGS**
  Keys 1 through 8 of the test set must be in the nonoperated (center) position except as indicated for a particular test. All other controls, except as specified in TM 11-2062 or as indicated for a particular test, may be disregarded.

- **CONNECTIONS**
  Connect the handset binding posts to jack L1-L2 on the test set unless otherwise specified; use the test cord.

- **TEST SET WARMUP**
  Turn test set on at least 30 minutes before performing tests.

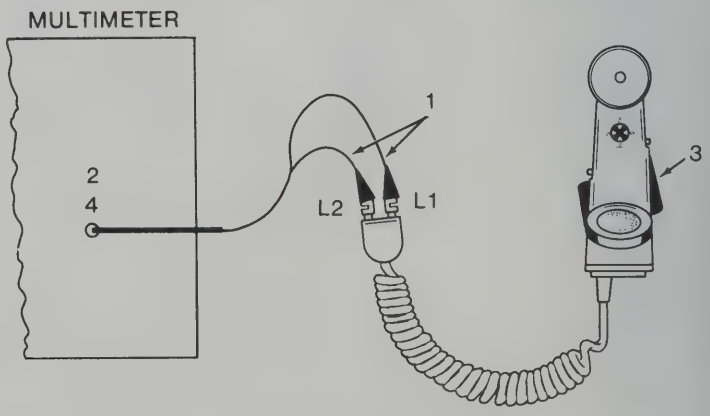
5-39. SIGNAL VOLTAGE TEST

1 Connect the multimeter between terminals L1 and L2 of the telephone set.

2 Set the selector switch on the multimeter to A.C. VOLTS 100.

3 Operate the generator lever several times and observe the indication on the multimeter.

4 A signaling voltage of not less than 65 volts should be indicated on the multimeter.



5-40. TRANSMITTING EFFICIENCY TEST

1 Set control D1 to 3.

2 Set control D3 to 4.

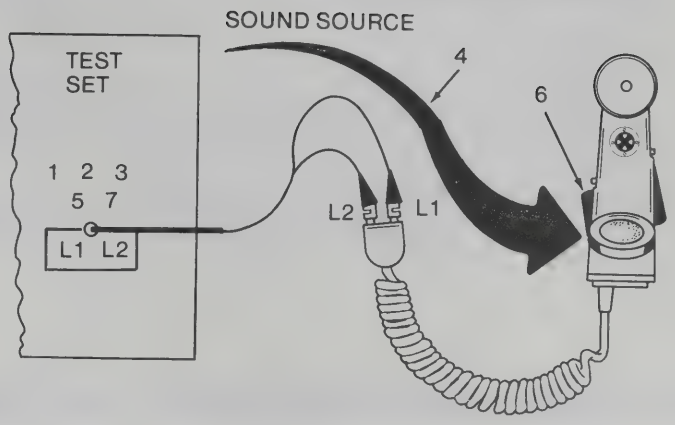
3 Set control D5 to 1.

4 Position the handset so the transmitter is centrally located in front of the sound source on the test set, with the transmitter can flush against the sound source screen.

5 Operate key 8 to TRANS.

6 Depress the press-to-talk switch on the telephone set.

7 Depress key 9 and observe the reading indicated on meter M1. The reading should be to the right of −10 decibels (dB).



5-41. RECEIVING EFFICIENCY TEST

1 Set control D2 to 5.

2 Set control D4 to 5.

3 Set control D5 to 1.

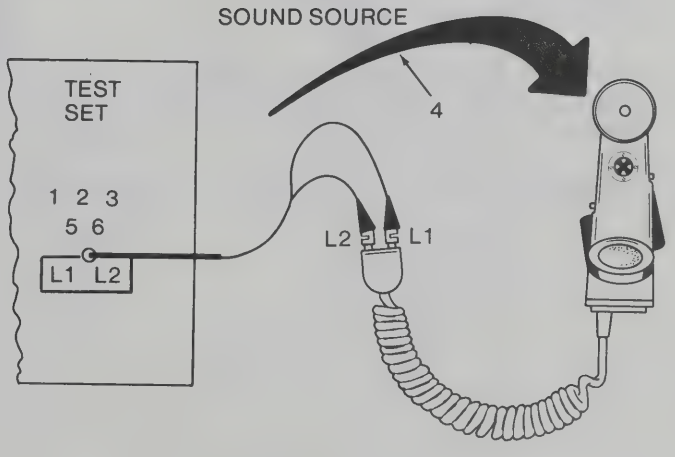
4 Position the handset so the receiver is centrally located in front of the sound source on the test set, with the receiver ear cushion flush against the sound source screen.

5 Operate key 8 to REC.

6 Depress key 9 and observe the reading indicated on meter M1. The reading should be to the right of −7 dB.

NOTE

Receiver cap variations may cause Receiving Efficiency Test failures. Check receiver cap to determine if it is of the raised inside surface type. If confirmed, perform modification shown in paragraph 4-15 and retest.



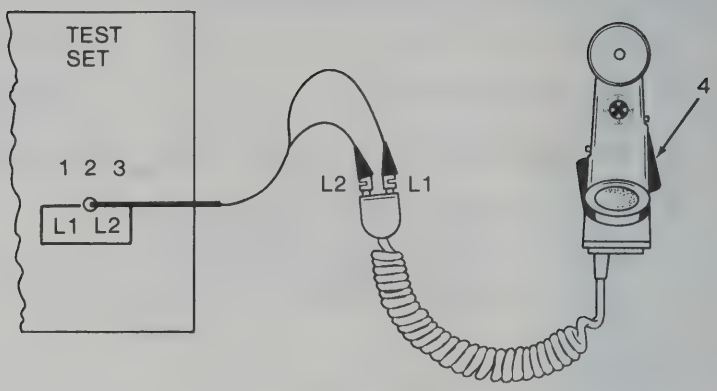
5-42. GENERATOR TEST

1 Set control D5 to 1.

2 Operate key 4 to GEN.

3 Operate key 6 to CKT.

4 Press the generator lever in several times in rapid succession, keeping the generator armature rotating at normal speed, and observe the reading indicated on meter M1. The reading should be to the right of −10 dB.



5-43. BUZZER, BUZZER VOLUME CONTROL, VISUAL INDICATOR TEST

1 Set control D5 to 3.

2 Operate key 4 to RINGER.

3 Operate key 6 to CKT.

• Test the visual indicator and buzzer as follows:

4 Rotate the handset buzzer volume control knob to the LOUD (extreme counterclockwise) position.

5 Momentarily depress the press-to-talk switch, if the visual indicator shows four white markings.

6 Turn the test generator crank at a speed that will produce a reading of 0 dB on meter M1 and listen to the handset buzzer.

7 While the test set generator crank is being turned the handset buzzer should produce a loud continuous buzzing sound and the visual indicator should operate and remain in the operated position until the press-to-talk switch is depressed.

8 Depress the press-to-talk switch. The visual indicator should return to the nonoperated position.

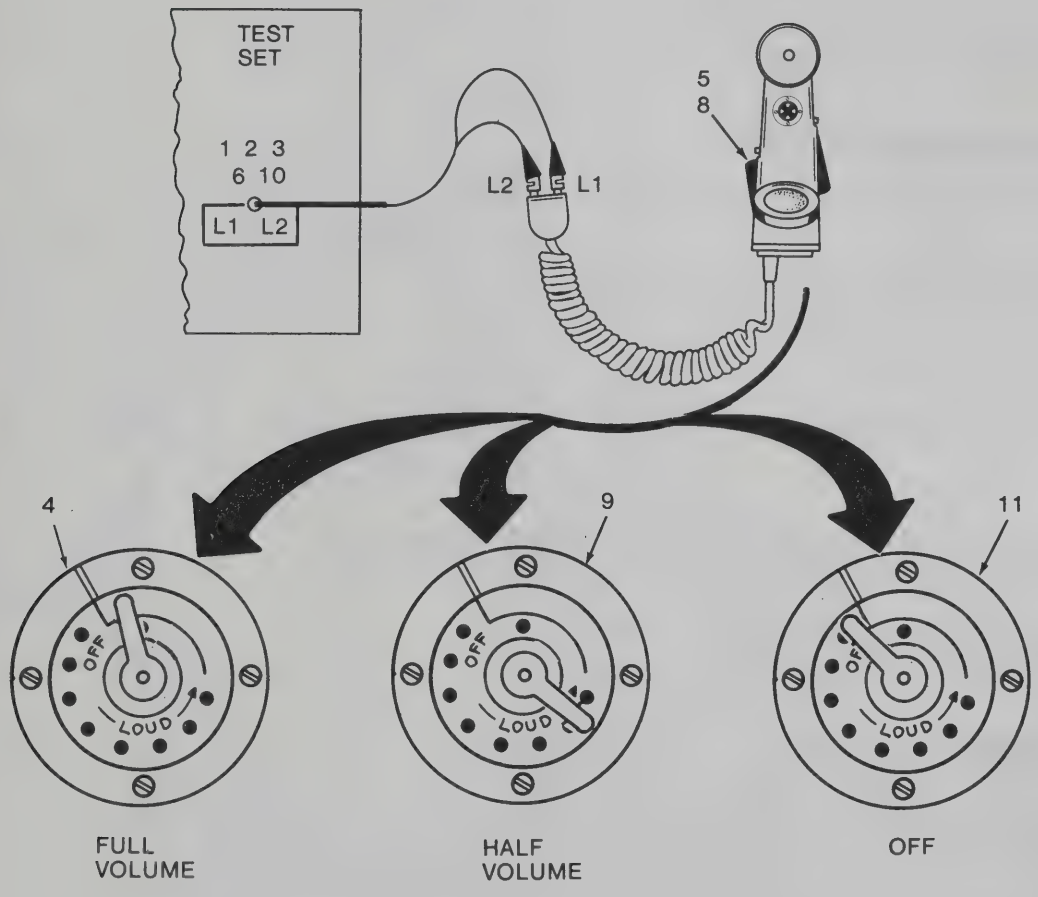
5-43. BUZZER, BUZZER VOLUME CONTROL, VISUAL INDICATOR TEST – Continued

- Test the volume control as follows:

9 Rotate the handset buzzer volume approximately halfway between the LOUD (extreme counter-clockwise) position and the OFF (extreme clockwise) position.

10 Turn the test generator crank at a speed that will produce a reading of 0 dB on meter M1 and listen to the handset buzzer. While the crank is being turned, the handset buzzer should produce a continuous buzzing sound of medium loudness.

11 Rotate the handset buzzer volume control knob to the OFF (extreme clockwise) position. The handset buzzer should produce no sound if the buzzer is properly adjusted (para 5-34).



5-44. CAPACITOR C1 TEST

1 Adjust the capacitor test circuit (TM 11-2062) of the test set.

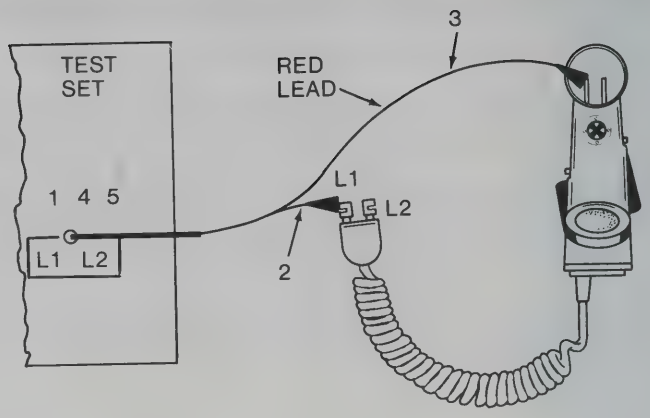
2 Connect the blank lead from the test set to terminal L1 on the telephone set.

3 Remove the receiver element (para 5-16) and connect the red lead from the test set to the left-hand receiver contact prong.

4 Set control D5 to 1.

5 Operate key 6 to COND. Lamp LP2 should flash at 1-second intervals.

6 Install the receiver element (para. 5-16) when the test is completed.



5-45. INSULATION RESISTANCE TEST

1 Clip the black lead from the test set to the handset housing.

2 Connect the red lead from the test set to terminal L2 of the telephone set.

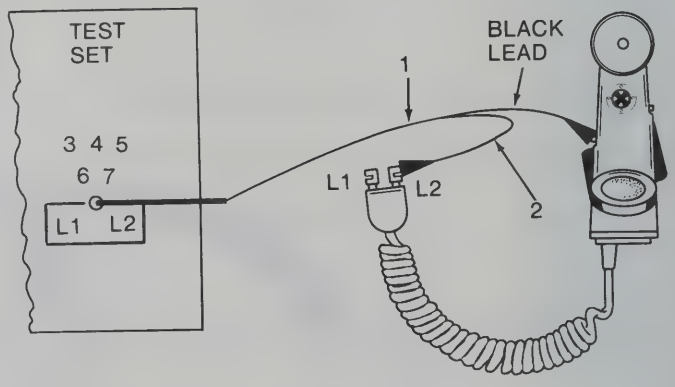
3 Set control D5 to 1.

4 Operate key 5 to BKDN.

5 Operate key 6 to CKT.

6 Turn the test set generator crank at a speed of approximately 200 revolutions per minute.

7 The reading indicated on meter M1 should be to the left of −6 dB.

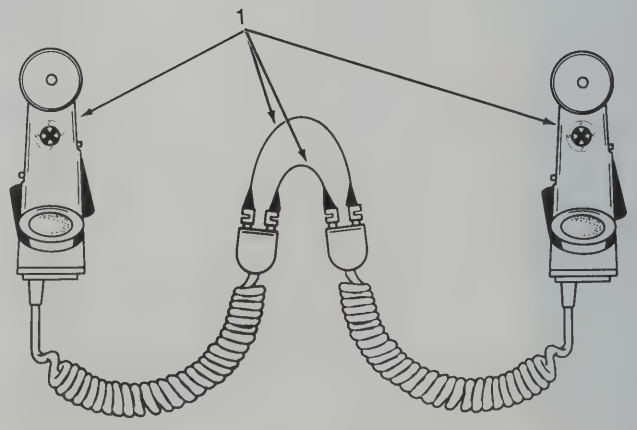


5-46. OPERATIONAL RANGE TEST

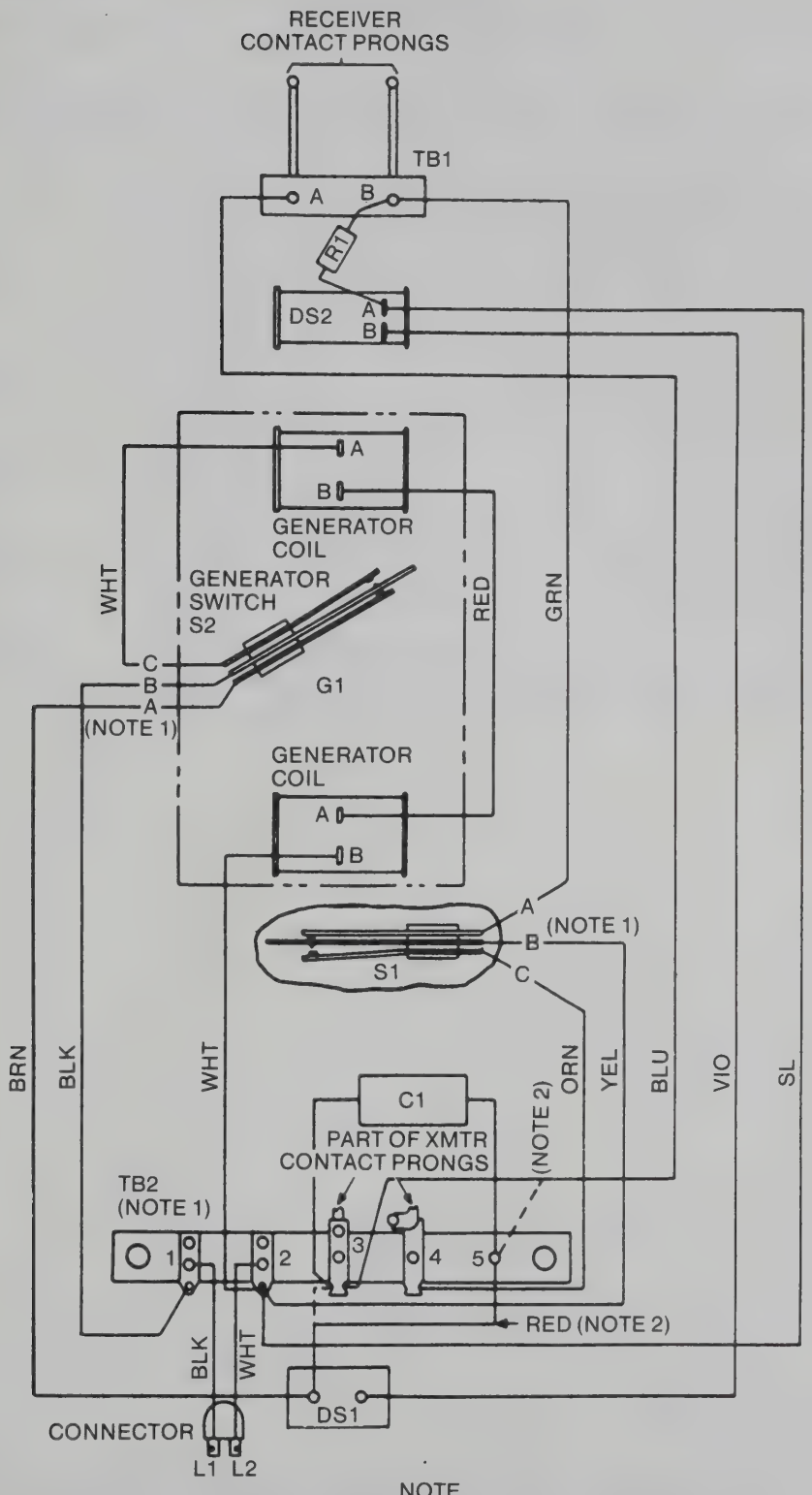
1 Connect two telephone sets (or simulator) to four miles of WD-1/TT wire (or simulation) to perform actual send/receive functions.

2 Perform normal send/receive functions.

3 Received signals should be clear.



5-47. TA-1/PT WIRING DIAGRAM



NOTE

1. TERMINAL LETTER AND NUMBER DESIGNATIONS ARE ASSIGNED ARBITRARILY FOR REFERENCE PURPOSES.
2. ON EQUIPMENTS BEARING ORDER NO. 24977-PHILA-55, SERIAL NUMBERS 1 THROUGH 209, BLUE AND RED WIRES ARE CONNECTED AS SHOWN BY DASHED LINES.

APPENDIX A
REFERENCES

The following publications contain applicable information which is available to the Operator, Unit and Intermediate Direct Support Maintenance Level personnel repairing Telephone Set TA-1/PT.

DA Pam 25-30	Consolidated Index of Army Publications and Blank Forms.
DA Pam 738-750	The Army Maintenance Management System (TAMMS).
SB 11-473	The Deletion of Sound Calibrator TS-550/G from Test Sets I-142, I-142A, I-142B, and Telephone Test Set, AN/PTM-6.
SB 11-573	Painting and Preservation of Supplies Available for Field Use for Electronics Command Equipment.
TM 11-2062	Test Sets I-142, I-142A, I-142B, and Telephone Test Set AN/PTM-6.
TM 11-6625-242-20P	Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart for Test Set, Telephone, AN/PTM-6 (NSN 6625-00-229-1048).
TM 11-6625-242-35P	Field and Depot Maintenance Repair Parts and Special Tools List for Test Set, Telephone, AN/PTM-6 (NSN 6625-00-229-1048).
TM 11-6625-366-10	Operator's Manual for Multimeter TS-352B/U (NSN 6625-00-553-0142).
TM 11-6625-366-15	Operator's, Organizational, Direct Support, General Support and Depot Maintenance Manual: Multimeter, TS-352B/U (NSN 6625-00-553-0142).
TM 11-6625-366-24P	Organizational, Direct Support and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) for Multimeter TS-352B/U (NSN 6625-00-553-0142).

APPENDIX B
MAINTENANCE ALLOCATION

Section I. INTRODUCTION

B-1. GENERAL

This appendix provides a summary of the maintenance operations for the telephone set. It authorizes levels 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 FUNCTION

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, preserve, drain, paint, or to replenish fuel/lubricants/hydraulic fluids or compressed air supplies.

D ADJUST
Maintain within prescribed limits by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

E ALINE
To adjust specified variable elements of an item to about optimum or desired performance.

F CALIBRATE
To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipment used in precision measurement. Consists of the comparison 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, module (component or assembly) in a manner to allow the proper functioning of the equipment/system.

H REPLACE
The act of substituting a serviceable like-type part, subassembly, model (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 a part, subassembly, module/component/assembly, end item or system. This function does not include the trial and error replacement of running spare type items such as fuses, lamps, or electron tubes.

B-2. MAINTENANCE FUNCTION – Continued

J OVERHAUL
That periodic maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (e.g., 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/actions necessary for the restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material 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 FUNCTIONS
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 the purpose of having the group numbers in the MAC and RPSTL coincide.

D COLUMN 4, MAINTENANCE LEVEL
Column 4 specifies, by the listing of a "worktime" 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 level of maintenance. If the number of complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate "worktime" figures will be shown for each level. The number of taskhours specified by the "worktime" 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 – Unit Maintenance
F – Intermediate Direct Support Maintenance
H – Intermediate General Support Maintenance
D – Depot

E COLUMN 5, TOOLS AND EQUIPMENT
Column 5 specified by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

B-4. TOOL AND TEST EQUIPMENT REQUIREMENTS (SECTION III)

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 LEVEL
The codes in this column indicate the maintenance category 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.

SECTION II. MAINTENANCE ALLOCATION CHART FOR

TELEPHONE SET TA-1/PT

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP	(6) REMARKS
			UNIT		INTERMEDIATE		DEPOT		
			C	O	F	H	D		
00	Telephone Set TA-1/PT	Inspect		0.2					
		Test		0.1					A
		Test			0.5			3 and 4	
		Service		0.2					
		Adjust			0.5			1, 2, 3, and 4	
		Replace		0.5					B
		Repair			2.0			1, 2, 3, and 4	C

SECTION III. TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR
TELEPHONE SET TA-1/PT

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	F	Tool Kit, Electronic Equipment TK-101/G	5180-00-064-5178	
2	F	Tool Kit, Electronic Equipment TK-105/G	5180-00-610-8177	
3	F	Multimeter, TS-352B/U	6625-00-553-0142	
4	F	Test Set, Telephone AN/PTM-6	6625-00-229-1048	
5	F	Multimeter, Digital, AN/PSM-45 (When issued replaces item 3)	6625-01-139-2512	

SECTION IV. REMARKS

REFERENCE CODE	REMARKS
A	**Unit test is limited to routine preoperational equipment check.**
B	Send replaced telephone set to Intermediate Direct Support.
C	Repair is limited to replacement of major components and modules through controlled exchange between failed end items at Intermediate Direct Support Maintenance level. NOTE Repair parts will not be procured. Repair will be by controlled exchange at the Intermediate Direct Support Maintenance level. If an end item cannot be repaired through controlled exchange of modules/components between failed end items, the complete end item should be ordered.

APPENDIX C
COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

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 information 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. Illustrations are furnished to assist you in identifying the items.

B SECTION III, BASIC ISSUE ITEMS
These are the minimum essential items required to place the TA-1/PT in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the TA-1/PT during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

C-3. EXPLANATION OF COLUMN

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

A COLUMN (1) - ILLUSTRATION NUMBER (ILLUS NUMBER)
This column indicates the number of the illustration in which the item is shown.

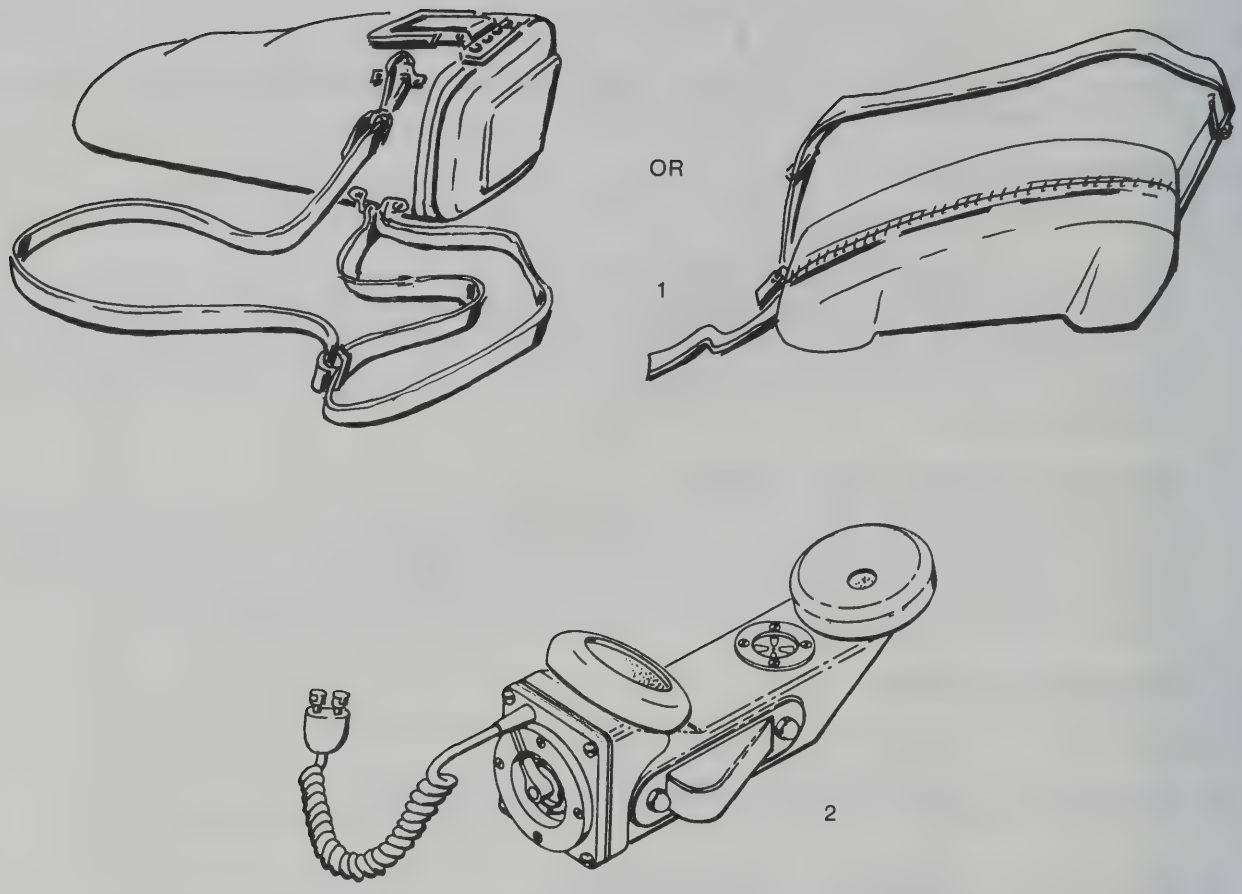
B COLUMN (2) - NATIONAL STOCK NUMBER
Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

C COLUMN (3) - DESCRIPTION
Indicates the Federal item name and, if required, a minimum description ot 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 alphabetical abbreviation (e.g., ea, in., pr).

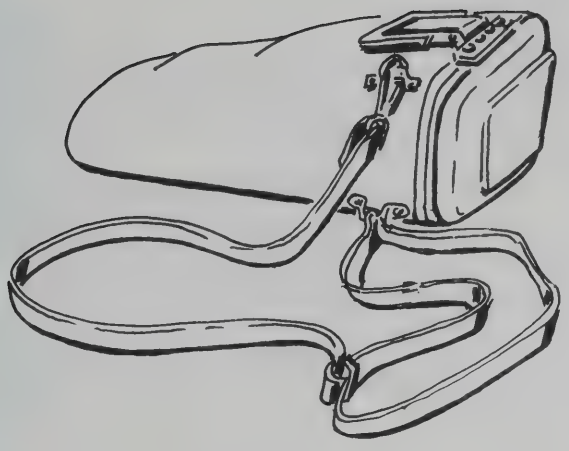
E COLUMN (5) - QUANTITY REQUIRED (QTY RQR)
Indicates the quantity of the item authorized to be used with/on the equipment.

Section II. COMPONENTS OF END ITEM



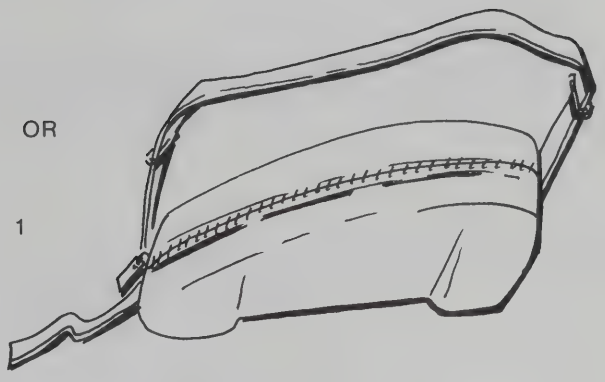
(1) Illus number	(2) National stock number	(3) Description FSCM and part number	Usable On Code	(4) U/M	(5) Qty rqr
1	5805-00-543-1881	Case, Telephone Set		Ea	1
2	5805-00-521-1320	Telephone Set TA-1/PT		Ea	1

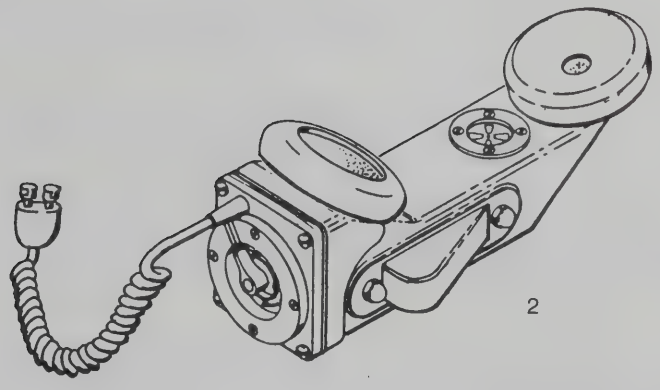
Section III. BASIC ISSUE ITEMS



OR

1





2

(1) Illus number	(2) National stock number	(3) Description FSCM and part number	Usable On Code	(4) U/M	(5) Qty rqr
1	5805-00-543-1881	Case, Telephone Set		Ea	1
2	5805-00-521-1320	Telephone Set TA-1/PT		Ea	1

APPENDIX E
EXPENDABLE SUPPLIES AND MATERIALS

Section I. INTRODUCTION

E-1. SCOPE

This appendix lists expendable supplies and materials you will need to operate and maintain the telephone set. 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, App E").

B COLUMN (2) - LEVEL
This column identifies the lowest level of maintenance that requires the listed item.

C – Operator/Crew
O – Unit Maintenance
F – Intermediate Direct Support Maintenance
H – Intermediate General Support Maintenance
D – Depot

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 followed by the part number.

E COLUMN (5) - UNIT OF MEASURE (U/M)
Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical 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 LIST

(1) Item number	(2) Level	(3) National stock number	(4) Description	(5) U/M
1	O,F	6850-00-105-3084	**Trichlorotrifluoroethane Cleaning Compound O-T-620, Type 1 (81348)**	Qt

INDEX

Subject	Paragraph, Table
A	
Adjusting Buzzer Volume	2-6
Adjustment	
Buzzer	5-34
Generator Switch Contact Spring	5-33
Press-to-Talk Switch Contact Spring	5-32
C	
Checking Unpacked Equipment	4-7
Common Tools and Equipment	4-2
Connecting Telephone Set to Field Wire System	2-4
D	
Description and Use of Operator's Controls and Indicators	2-1
Destruction of Army Electronics Materiel to Prevent Enemy Use	1-3
Differences Between Models	1-9
Differences of Equipment	4-12
E	
Emergency Operation	2-8
Equipment Characteristics, Capabilities and Features	1-7
Equipment Data	1-10
I	
Installation	4-9
Internal Variations	5-2
L	
Location and Description of Major Components	1-8
M	
Maintenance Forms, Records and Reports	1-2
Maintenance Procedures	
Intermediate Direct Support	T5-1
Operator	T2-1
Unit	T4-1
Measurement, Resistance	5-12
O	
Official Nomenclatures, Names and Designations	1-5
Operating	
In Cold Climates	2-9
In Hot, Dry Climates	2-10
In Warm, Damp Climates	2-11
Under Usual Condition	2-3
Operating Principles	1-11
Operator Preventive Maintenance Checks and Services	2-2

INDEX – Continued

Subject	Paragraph, Table
P	
Packaging Data	4-4
Packaging for Storage or Shipment	4-17
Packing	
Domestic	4-18
Export	4-19
Preinstallation Checks	4-8
Preparation for Storage or Shipment	1-4
Materials Required	4-16
R	
Removal, Chassis	4-14
Remove/Replace Procedures, How to Use	4-13
Repair Parts, Tools and Test Equipment	5-8
Replacement Procedures	5-14
Binding Posts	5-17
Buzzer	
Diaphragm	5-23
Volume Control	5-22
Capacitor C1	5-20
Generator	5-28
Lever Assembly	5-29
Switch Contact Assembly	5-30
Handset Cord	5-18
Moisture-Preventing Diaphragms	4-15
Press-to-Talk Switch	
Contact Assembly	5-25
Lever Assembly	5-27
Receiver Element	5-16
Resistor R1	5-21
Terminal Board	5-19
Transmitter Element	5-15
Visual Indicator Assembly	5-26
Coil	5-24
Reporting Equipment Improvement Recommendations	1-6
Resetting Visual Indicator	2-7
S	
Schematic Diagram Analysis	5-3
Scope	1-1
Service Upon Receipt	4-3

INDEX – Continued

Subject	Paragraph, Table
T	
Test Equipment	5-10
Testing, Final	5-35
Buzzer	5-43
Buzzer Volume Control	5-43
Capacitor C1	5-44
Determining Terminal L1	5-37
Generator	5-42
Insulation Resistance	5-45
Operational Range	5-46
Receiving Efficiency	5-41
Setup	5-38
Signal Voltage	5-39
Transmitting Efficiency	5-40
Visual Indicator	5-43
Tools	5-9
Transmitting and Receiving Calls	2-5
U	
Unit Maintenance	4-1
Unit Preventive Maintenance Checks and Services	4-10
Unpacking Telephone Sets	
Packed for Domestic Shipment	4-6
Packed for Export Shipment	4-5
W	
Wiring Diagram	5-47

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