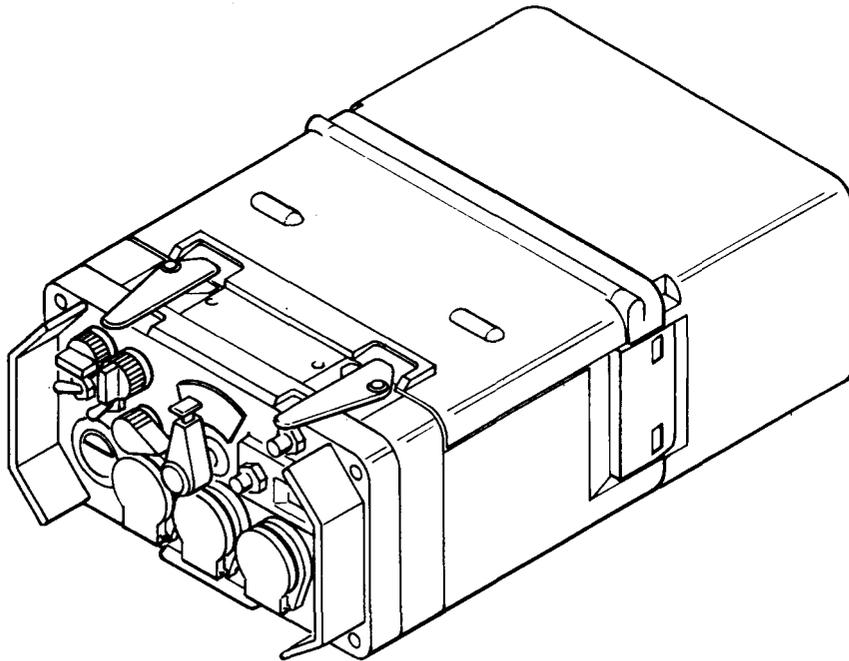


TM 32-5835-001-10

OPERATOR'S MANUAL



RECORDER-REPRODUCER SET, SOUND: AN/UNH-16A

VI (AIRCRAFT) 5835-00-529-6291
V2 (VEHICLE) 5835-00-529-6306
V3 (SHELTER) 5835-00-529-6307

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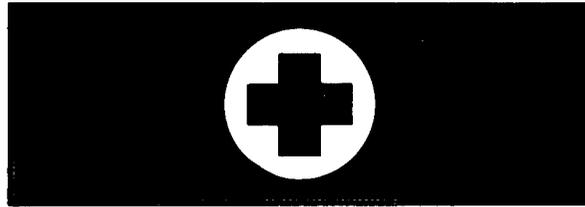
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HEADQUARTERS, DEPARTMENT OF THE ARMY

OCTOBER 1980

WARNING

AR 402909

WARNING

HIGH VOLTAGE

is used in the operation of this equipment.

DEATH ON CONTACT

may result if operating personnel fail to observe safety precautions.

In vehicle (V2) and shelter (V3) installations, the AN/UNH-16A is powered with a hazardous voltage of 117 Vac. In special installations, the AN/UNH-16A is powered with a hazardous voltage of 230 Vat.

This 117 Vac or 230 Vac is present inside the power cable connector, which is connected to POWER connector J2 on the rear of the power suppl. Contact with these voltages inside the power cable connector may result in death.

The operator will not disconnect the power cable connector from POWER connector J2 on the rear of the power supply.

This publication is not available through AG Publications Center. Requisition through Commander, US Army Electronics Materiel Readiness Activity, Vint Hill Farms Station, Warrenton, VA 22186.

Operator's Manual

RECORDER-REPRODUCER SET, SOUND:

AN/UNH-16A

REPORTING OF ERRORS

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 or DA Form 2028 directly to U.S. Army Electronics Materiel Readiness Activity, ATTN: SELEM-ME-E, Vint Hill Farms Station, Warrenton, VA 22186. A reply will be furnished to you.

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*This manual, together with TM 32-5835-001-24&P, 20 July 1980, supersedes TM 32-5835-001-14, 9 August 1974.

CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

1-1. Scope.

a. The purpose of this manual is to tell you how to operate and maintain the Recorder-Reproducer Set, Sound AN/UNH-16A (figure 1-1).

b. In this manual, the Sound Recorder-Reproducer Set AN/UNH-16A is called the recorder set.

c. The recorder set is used for recording and playing back voice from the recorder set's operator or signals from a receiver.

d. The recorder set is used in aircraft, vehicles, and shelters. Table 1-1 lists the equipment used in each version of the recorder set.

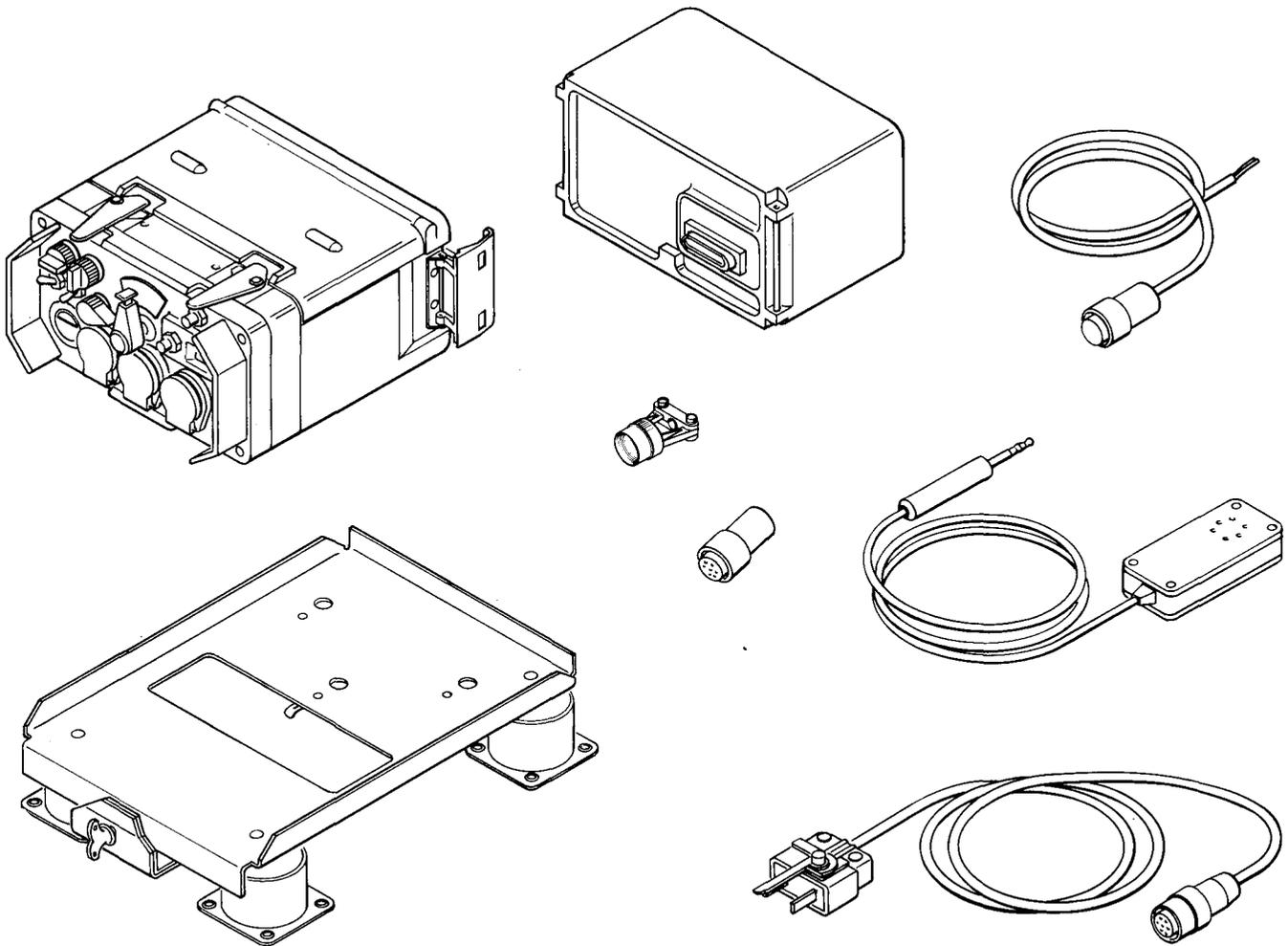


Figure 1-1. Sound Recorder-Reproducer Set AN/UNH-16A

Table 1-1. Recorder Set Versions

Item	Version		
	Aircraft V1	Vehicle V2	Shelter V3
Power Supply PP-6875A/UNH-16A	X	X	X
Shock Mount Base MT-4032/G	X	X	X
117 Vac Cable CX-12896A/UNH-16A		X	X
22 to 30 Vdc Cable CX-12894A/UNH-16A	X		
Connector M81511/06EB01P1	X	X	
Clamp M81511-13-10A1	X	X	
Recorder RD-385A/UNH-16A	X	X	X
Microphone M-104/PNH-4(MODIFIED)	X	X	X

1-2. Maintenance Forms and Records. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, the Army Maintenance Management System (TAMMS).

1-3. Reporting Equipment Improvement Recommendations (EIR). EIR's can and must be submitted by anyone who is aware of an unsatisfactory condition with

the equipment design or use. It is not necessary to show a new design or list a better way to perform a procedure, just simply tell why the design is unfavorable or why a procedure is difficult. EIR'S may be submitted on SF 368 in accordance with TM 38-750. Mail directly to U.S. Army Electronics Materiel Readiness Activity, ATTN: SELEM-ME-I, Vint Hill Farms Station, Warrenton, VA 22186. A reply will be furnished to you.

1-4. Reference Information List.

A. NOMENCLATURE CROSS REFERENCE LIST

<u>Common Name</u>	<u>Official Nomenclature</u>
Recorder Set	Recorder-Reproducer Set, Sound AN/UNH-16A
Recorder	Recorder-Reproducer, Sound RD-385A/UNH-16A Recorder-Reproducer, Sound RD-385/UNH-16A
Cassette	Tape Cartridge C-60
Power Supply	Power Supply PP-6875A/UNH-16A
Microphone	Magnetic Microphone M-104/PNH-4 (MODIFIED)
Base	Shock Mount Base MT-4032/G
117 Vac Cable	Power Input Cable, 117 Vac CX-12896A/UNH-16A
22 to 30 Vdc Cable	Power Input Cable, 22 to 30 Vdc CX-12894A/UNH-16A
Headset	Headset H-216/U (MODIFIED)

B. LIST OF ABBREVIATIONS

Hz	Hertz (one cycle per second)
Vac	Volts, alternating current
Vdc	Volts, direct current

Section II. EQUIPMENT DESCRIPTION

1-5. Purpose.

a. The recorder set is a small, portable tape recorder used to record and play back voice and radio signals.

b. The operator can listen to the recorded material by using a headset.

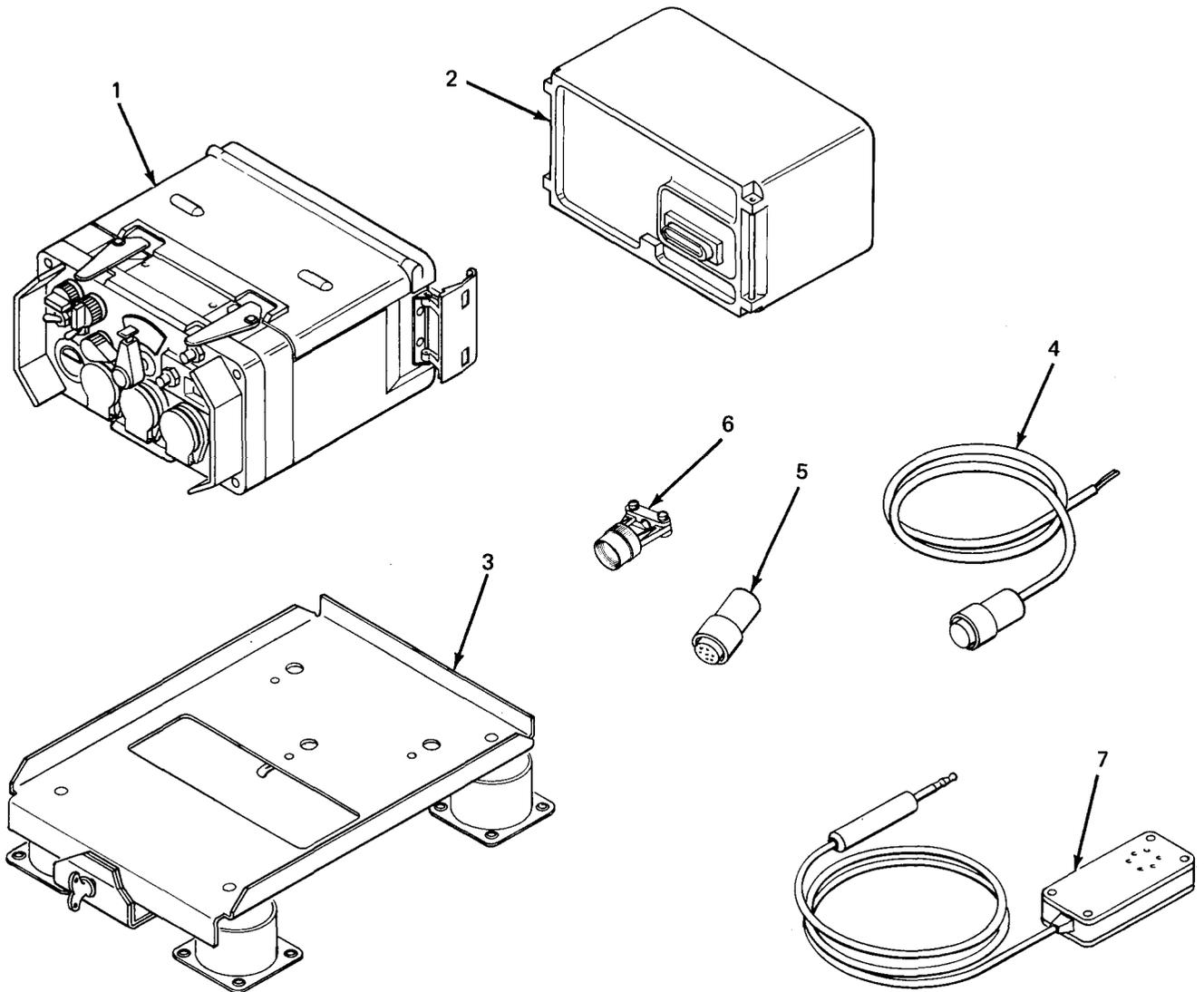
c. The recorder set can be used in aircraft, vehicles, and shelters. Power from the aircraft, vehicle, or shelter is converted for recorder set use by a detachable power supply.

d. A battery box is available to power the recorder set. The battery box uses eight batteries.

e. The recorder set has input jacks on the front panel for radio receiver signals and for a microphone. An output jack for a headset is also provided.

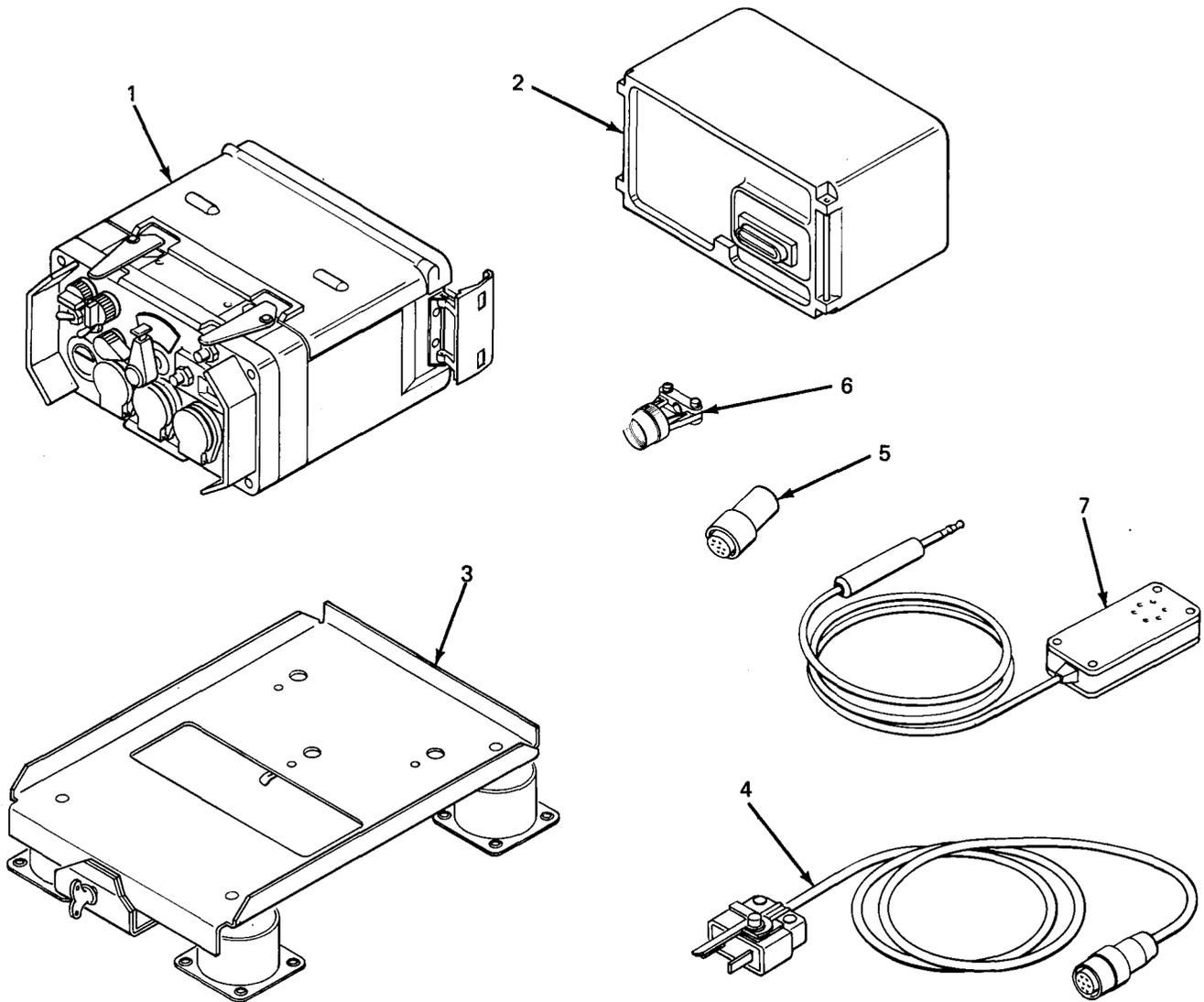
f. A removable tape cassette provides two recording tracks in forward and reverse directions. Each direction provides one hour of recording for two hours total recording time.

1-6. Location and Description of Major Components. Figures 1-2 through 1-4 give the location and description of major components of each recorder set version.



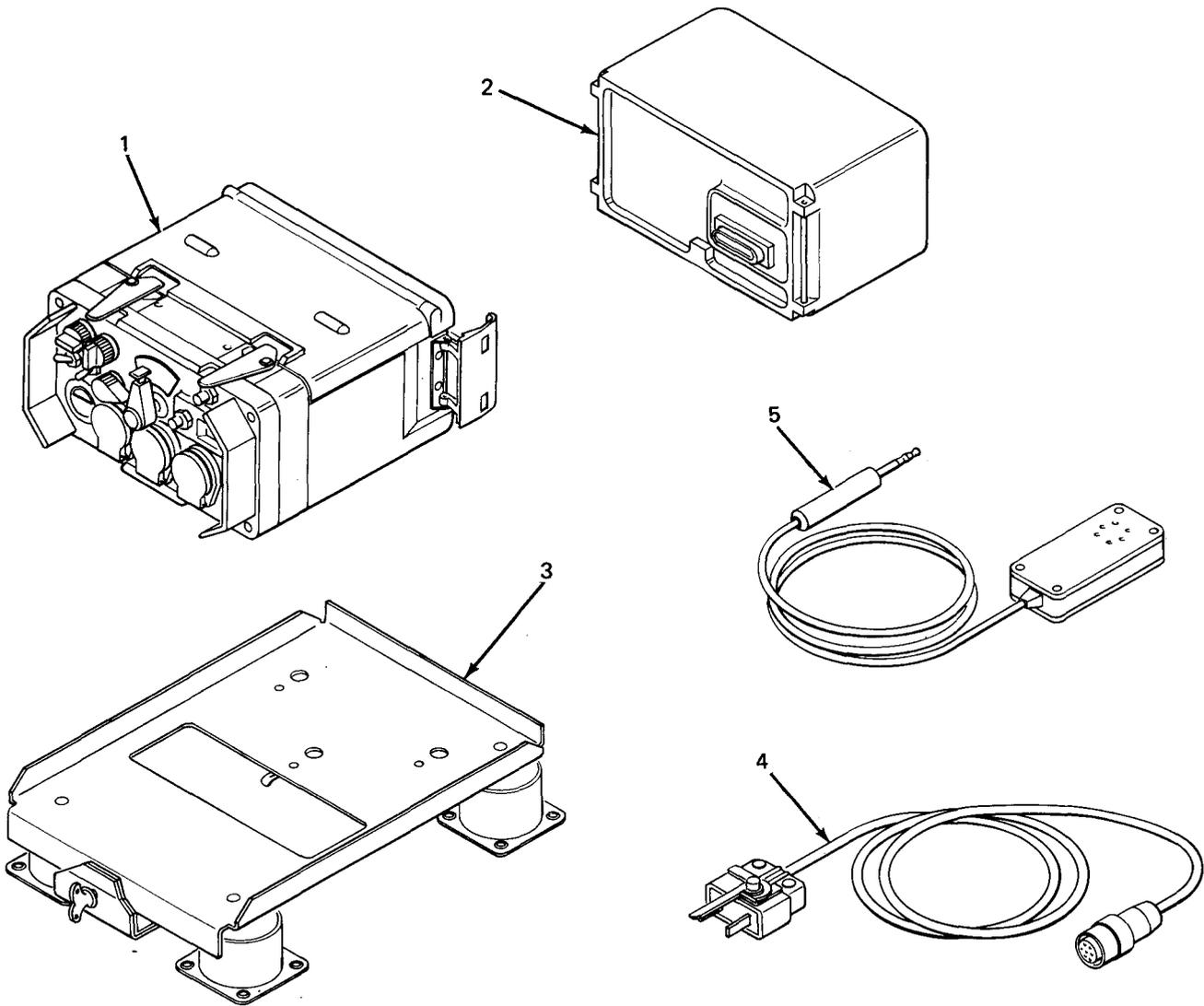
1. RECORDER. Records and plays back voice and radio signals. Has jacks for signal input and a jack for listening to recorded material using a headset.
2. POWER SUPPLY. When attached to the recorder, supplies necessary operating voltages. Has input/output connector for special remote operation.
3. BASE. Used to mount the recorder set.
4. 22 TO 30 VDC CABLE. Applies 22 to 30 Vdc to the power supply.
5. CONNECTOR. Used when recorder set is operated in a remote condition.
6. CLAMP. Used with connector (5).
7. MICROPHONE. Used for voice recording.

Figure 1-2. Recorder Set for Aircraft (V1)



1. RECORDER. Records and plays back voice and radio signals. Has jacks for signal input and a jack for listening to recorded material using a headset.
2. POWER SUPPLY. When attached to the recorder, supplies necessary operating voltages. Has input/output connector for special remote operation.
3. BASE. Used to mount the recorder set.
4. 117 VAC CABLE. Applies 117 Vac, 47.5 to 420 Hz to the power supply.
5. CONNECTOR. Used when recorder set is operated in a remote condition.
6. CLAMP. Used with connector (5).
7. MICROPHONE. Used for voice recording.

Figure 1-3. Recorder Set for Vehicles (V2)



1. RECORDER. Records and plays back voice and radio signals. Has jacks for signal input and a jack for listening to recorded material using a headset.
2. POWER SUPPLY. When attached to the recorder, supplies necessary operating voltages. Has input/output connector for special remote operation.
3. BASE. Used to mount the recorder set.
4. 117 VAC CABLE. Applies 117 Vat, 47.5 to 420 Hz to the power supply.
5. MICROPHONE. Used for voice recording.

Figure 1-4. Recorder Set for Shelters (V3)

1-7. Differences Between Models. A Sound Recorder-Reproducer RD-385/UNH-16A may be supplied with any of the recorder set versions instead of

Sound Recorder-Reproducer RD-385A/UNH-16A. See figure 1-5. For the operator there are no differences between these two recorders.

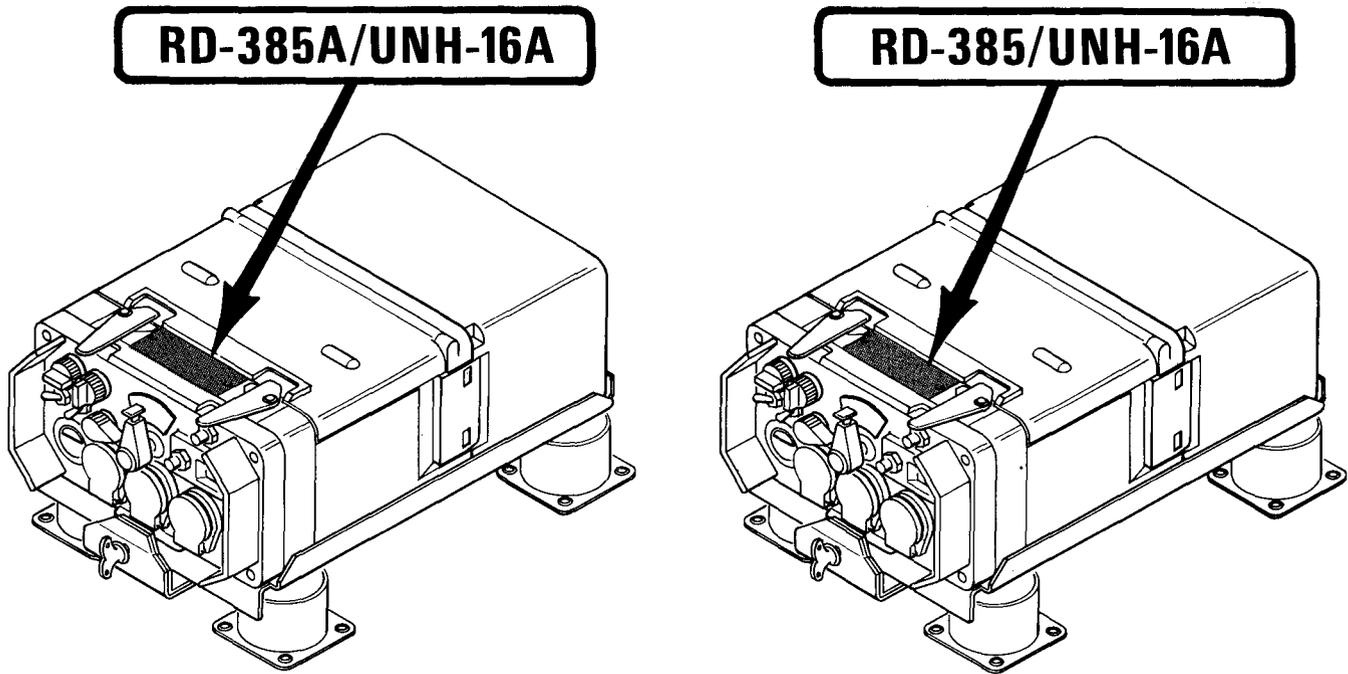


Figure 1-5. Differences Between Models

1-8. Performance Data. Performance data for the recorder set is given in table 1-2.

Table 1-2. Performance Data

Item	Specification
<u>RECORDER</u>	
Input Power Connector	10.4 to 12.4 Vdc
RCVR (receiver)	A3J3
MIC (microphone)	A3J4
HD PHONE (headset)	A3J5
Tape Speed	15/16 IPS $\pm 5\%$
Recording Time	1 hr. min. (one direction) using C-60 cassette.

Table 1-2. Performance Data - Continued

Item	Specification
Cassette	Norelco C-60 cassette containing 300 ft of 0.15 in. wide tape or 3M-271 manufactured by Minnesota Mining and Manufacturing Co., Minneapolis, Minnesota (or equivalent).
Controls	All operating controls and indicators are on the front panel.
<u>POWER SUPPLY</u>	
Input Voltages	10 to 12 Vdc 22 to 30 Vdc 103.4 to 126.5 Vat, 47.5 to 420 Hz 207 to 253 Vat, 47.5 to 420 Hz
Output Voltage	10.4 to 12.4 Vdc
Connectors	
INPUT-OUTPUT SIGNAL	2J1
POWER	2J2
Interconnect	2P1
<u>BATTERY BOX</u>	
Batteries	8 ea, 1.2 to 1.5 Vdc at -10°F(-23°C) to +120°F (+49°C)
Connector, Interconnect	P1

CHAPTER 2

OPERATING INSTRUCTIONS

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

2-1. Controls, Indicators, and Receptacles. Table 2-1 lists the controls, indicators, and receptacles used by the operator. The key numbers in the table refer to the key numbers on figure 2-1.

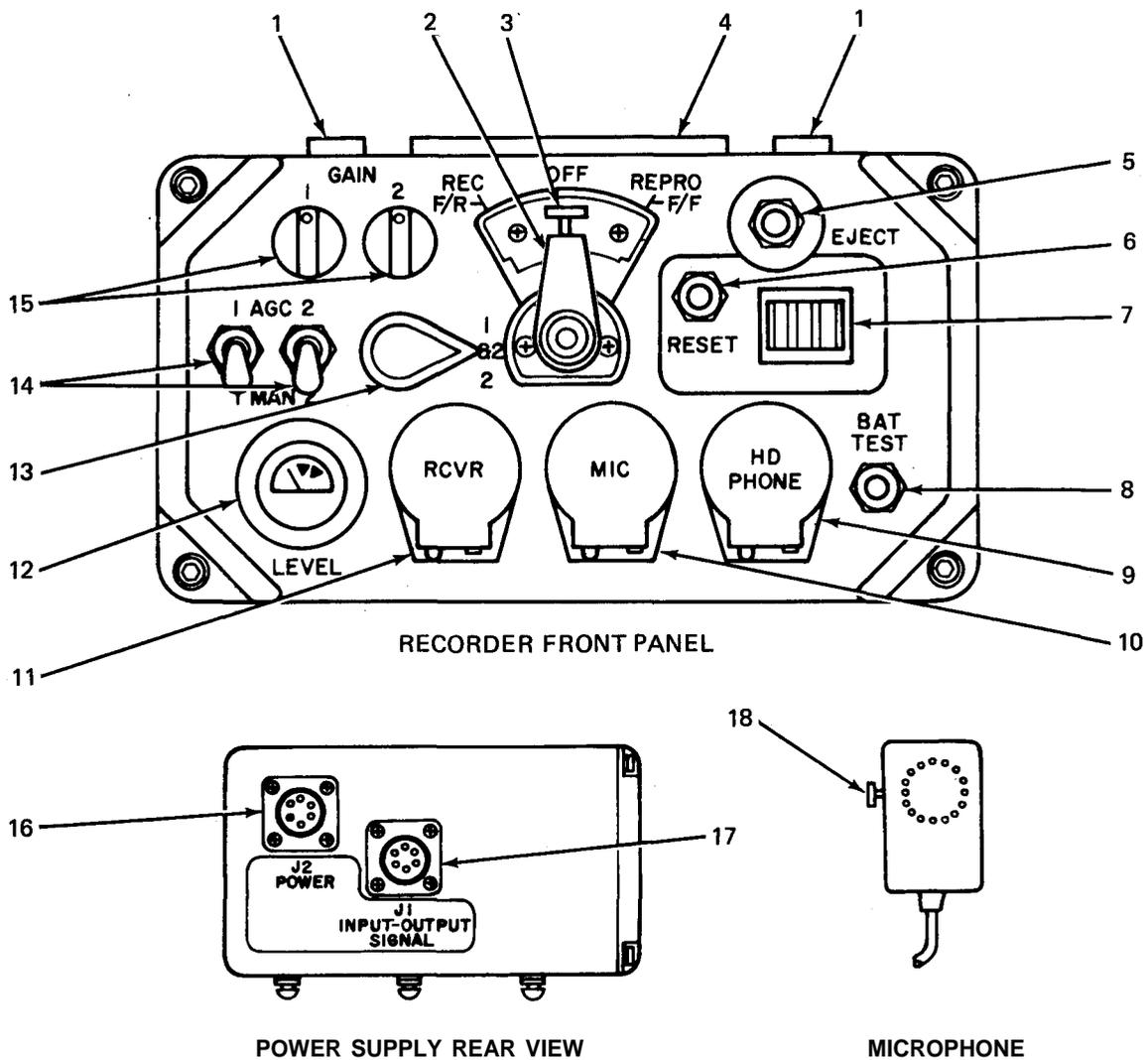


Figure 2-1. Controls, Indicators, and Receptacles

Table 2-1. Controls, Indicators, and Receptacles (ref. fig. 2-1)

Key	Control or Indicator	Function
1	Door latches	Secure cassette loading door.
2	Mode selector	<p>Selects operating modes. Returning selector to OFF from any mode disables all functions and disconnects power source.</p> <p>REC (record) mode: Records input signal or voice. To select REC, push mode selector in toward panel, depress latch (3), and turn mode selector counterclockwise to the REC position. Mode selector stays in REC position until latch (3) is depressed and mode selector is returned to OFF.</p> <p>REPRO (reproduce) mode: Plays back information recorded on cassette. To select REPRO, push mode selector in toward panel, depress latch (3) and turn mode selector clockwise to the REPRO position. Mode selector stays in REPRO position until latch (3) is depressed and mode selector is returned to OFF.</p> <p>F/F (fast forward) mode: Drives the tape rapidly in the forward direction. To select F/F, turn mode selector clockwise from OFF to F/F and hold. When released, mode selector returns to OFF.</p> <p>F/R (fast reverse) mode: Drives the tape rapidly in the reverse direction. To select F/R, turn mode selector counterclockwise from OFF to F/R and hold. When released, mode selector returns to OFF.</p>
3	Latch	Locks mode selector in REC and REPRO positions. See Key no. 2.
4	Cassette loading door	Provides access to tape cassette for insertion and removal. Cassette loading door is secured by door latches.
5	EJECT button	Unseats cassette for easy removal from recorder set. Mode selector must be OFF and cassette loading door must be open before depressing EJECT button to unseat cassette.
6	RESET button	Resets tape index counter (7) to 000 when depressed.
7	Tape index counter	Shows relative amount of tape used by means of a 3-digit (999) counter. Can be reset by depressing RESET button.

Table 2-1. Controls, Indicators, and Receptacles (ref. fig. 2-1) - Continued

Key	Control or Indicator	Function
8	BAT TEST button	When depressed, enables LEVEL meter (12) to show battery condition or power supply input voltage to recorder.
9	HD PHONE jack	Output connector for headset. Covered by a spring-loaded cap.
10	MIC jack	Input connector for microphone. Covered by a spring-loaded cap.
11	RCVR jack	Input connector for radio receiver signal cable. Covered by a spring-loaded cap.
12	LEVEL meter	Shows that input signal level is good (red scale) when mode selector is set to REPRO. When BAT TEST button is depressed, shows battery or power supply voltage level (green scale).
13	Channel selector	Connects selected tape channel (1, 2, or 1 & 2) to HD PHONE jack when mode selector is in REPRO. Allows input level of selected channel (1, 2, or 1 & 2) to be shown on LEVEL meter when mode selector is set to REC.
14	AGC/MAN 1 and 2 switches	When set to AGC position, selects automatic gain control of record/ reproduce levels for selected channel (1 or 2). When set to MAN position, allows manual gain control of record/reproduce levels for selected channel (1 or 2).
15	GAIN 1 and 2 controls	Adjust record/reproduce levels for selected channel (1 or 2) when AGC/MAN switch is in MAN position.
16	J2 POWER connector	Connection for power input cable.
17	J1 INPUT-OUTPUT SIGNAL connector	Connection for signal cable.
18	Push-to-talk button	Activates microphone for recording operator's voice.

Section II. PREVENTIVE MAINTENANCE CHECKS
AND SERVICES (PMCS)

2-2. General. To be sure that your recorder set is always ready for your mission, you must do scheduled PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) as listed in table 2-2.

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 spot small troubles before they become big problems.

c. **AFTER OPERATION**, perform your "A" PMCS. This should help you keep your equipment in top shape.

d. **WEEKLY AND MONTHLY**, perform your "W" and "M" PMCS. These are important checks you make to keep serious problems from suddenly happening.

e. **ROUTINE CHECKS** like: CLEANING, DUSTING, WASHING, CHECKING FOR FRAYED CABLES, STOWING ITEMS NOT IN USE, COVERING UNUSED RECEPTACLES AND CHECKING FOR LOOSE NUTS AND BOLTS are not listed as PMCS checks. **Do these things whenever required.**

f. If you find a routine check like one of those above is listed in your PMCS, it was listed because other operators reported problems with this item.

g. If your equipment fails to operate, troubleshoot in accordance with paragraph 3-1. Report any deficiencies using the proper forms, see TM 38-750.

NOTE

When you are doing any PMCS or other check, remember the warnings and cautions.

NOTE

The PROCEDURES column in your PMCS Chart instructs you to "CHECK FOR AND HAVE REPAIRED OR ADJUSTED AS NECESSARY". Carefully follow these instructions and, when necessary, get organizational maintenance to do the necessary work.

NOTE

If your equipment must be in operation all the time, check and service those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

NOTE

Use the ITEM NO. column in your PMCS table to get the numbers for the TM ITEM NO. column on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) when you fill out the form.

2-3. PMCS Procedures. Table 2-2 gives recorder set PMCS.

Table 2-2. PMCS Procedures

NOTE : Within designated interval, these checks are to be

B - Before A - After M - Monthly
 D - During W - Weekly C - Combat Operability Check

Item No	Interval					c	Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary	Equipment will be reported Not Ready (Red) if:
	B	D	A	W	M				
1	●			●			Recorder set external surfaces Inspect external surfaces for damage, dust, dirt, grease, and fungus. a. Remove dust and loose dirt with a clean soft cloth. b. Remove grease, fungus, and ground-in dirt from the outer case; use a cloth dampened (not wet) with cleaning compound. CAUTION Do not press on meter or counter faces when cleaning, the faces are easily damaged. c. Clean the front panel, meter and counter faces, and control knobs using a soft clean cloth. If dirt is difficult to remove, dampen the cloth with water. Mild soap may also be used for cleaning.	Damage affects performance.	
2	●			●			Microphone and headset Check for damage, dirt, fungus, and corrosion. a. Clean microphone and headset with a soft brush. b. Use a cloth dampened with cleaning compound to remove any grease, fungus, or ground-in-dirt.	Damage affects performance	
3	●						External connectors check for tightness.	Connectors cannot be tightened.	
4	●						Power test push mode selector in, press latch, and set it to REPRO. Press BAT TEST button. LEVEL meter must read in green area.	LEVEL meter does not read in green area.	
5		●					Controls and indicators Check for proper operation.	Abnormal operation is observed.	
6			●				Cassette loading door Ensure caesette is removed from recorder. Secure cassette loading door with latches.		
7				●			Audio head and erase head Clean both heads using a lint-free cotton swab moistened (not saturated) with Xylene (FED-SPEC-TT-X-916B) .		

Table 2-2. PMCS Procedures - Continued

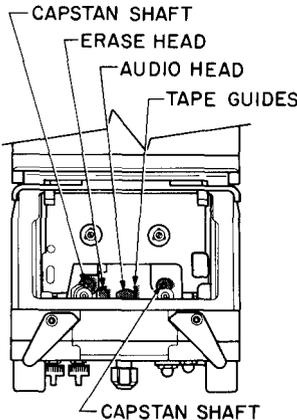
Item No.	Interval					C	Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary	Equipment will be reported Not Ready (Red) if:
	B	D	A	W	M				
7 cont- inued								<p>a. Remove cassette from re-corder.</p> <p>b. Clean both heads by using a side-to-side motion. At the time the heads are cleaned, capstan shafts and tape guides should also be inspected and cleaned as necessary, using the same method. See figure.</p> 	
8				•		Record and reproduce functions	<p>Check for proper working of record and reproduce functions:</p> <p>a. Insert a clean tape into re-corder.</p> <p>b. Record a short period (1 min.) of voice and receiver signals (if available).</p> <p>c. Play back the recorded material while listening through headset. Listen for recording faults such as:</p> <ol style="list-style-type: none"> 1. No recording 2. Variation in tape speed 3. Excessive noise 4. Intermittent operation. 	Recorder set has record or reproduce faults.	
9				•		<p>Battery box compartment (Skip this item if battery box is not used.)</p> <p>NOTE Battery box is identified by wing screw on left side.</p>	<p>Check battery compartment for dirt, corrosion, or other foreign matter. If batteries are to be replaced, do it during this PMCS.</p> <p>a. Remove battery box by lifting latches and separating it from recorder.</p> <p>b. Loosen wing screw located on battery box access cover.</p>	Replacement of batteries does not make LEVEL meter read in green area	

Table 2-2. PMCS Procedures - Continued

Item No.	Interval					C	Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary	Equipment will be reported Not Ready (Red) if:
	B	D	A	W	M				
9 cont- inued								<p>c. Remove access cover.</p> <p>d. Remove and discard batteries if LEVEL meter did not read in green area in PMCS Item 4.</p> <p>e. Check battery compartment to be sure it is free of corrosion, dirt, or other foreign matter.</p> <p>f. If necessary, clean battery compartment using cleaning compound (6850-00-597-9765) with cheese cloth (6510-00-303-8250) and cotton swabs. Wipe battery compartment dry.</p> <p>g. Install eight batteries (new if required) by stacking them two deep while observing polarity markings on bottom of battery compartment. See figure.</p> <p>h. Set access cover on battery box making sure that alignment pins are properly seated in mating holes.</p> <p>i. Secure access cover by tighten in g wing screw.</p> <p>j. Attach battery box to recorder and secure latches.</p> <p>k. Recheck battery voltage (PMCS Item 4).</p>	
10						•	Mounting	<p>Check that mounting is secure and that slide latches on underside of base are locked into position.</p>	<p>Mounting is loose or slide latches cannot be locked into position.</p>

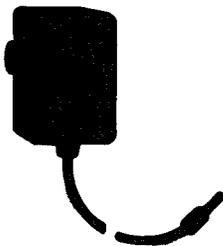
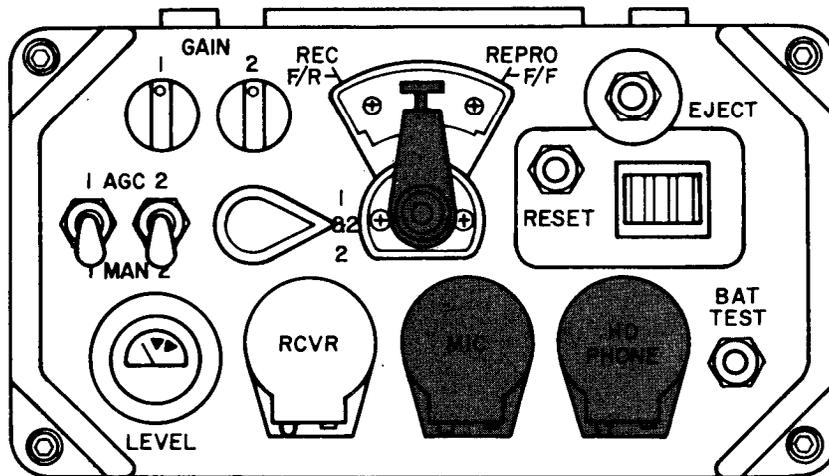
Section III. OPERATION UNDER USUAL CONDITIONS

NOTE

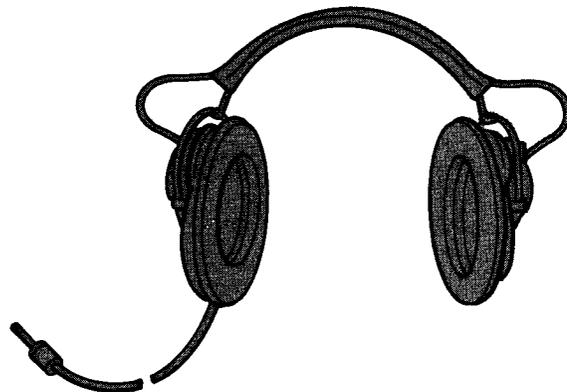
The recorder set is installed by organizational maintenance personnel. The procedures given here are for recording using the microphone on channel 2 and for recording receiver signals on channel 1. If other channel assignments are made, the procedures must be adjusted accordingly.

2-4. Assembly and Preparation for Use. Before using the recorder set, do the following:

- a. Make sure mode selector is set to OFF.
- b. Hook-up microphone and headset:
 1. Open cover over MIC jack and insert microphone plug.
 2. Open cover over HD PHONE jack and insert headset plug.



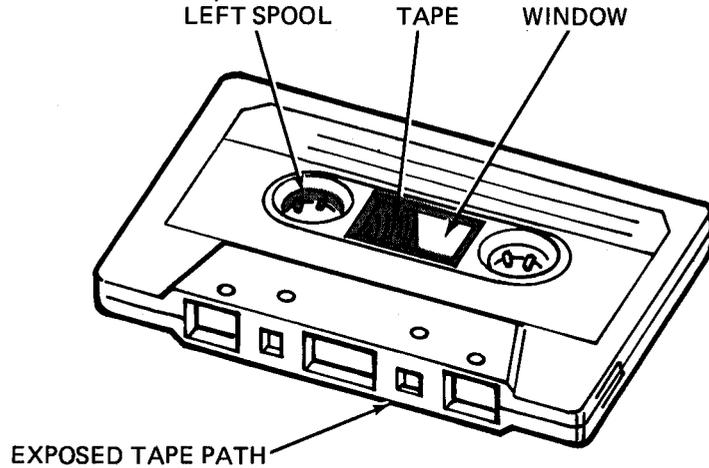
MICROPHONE



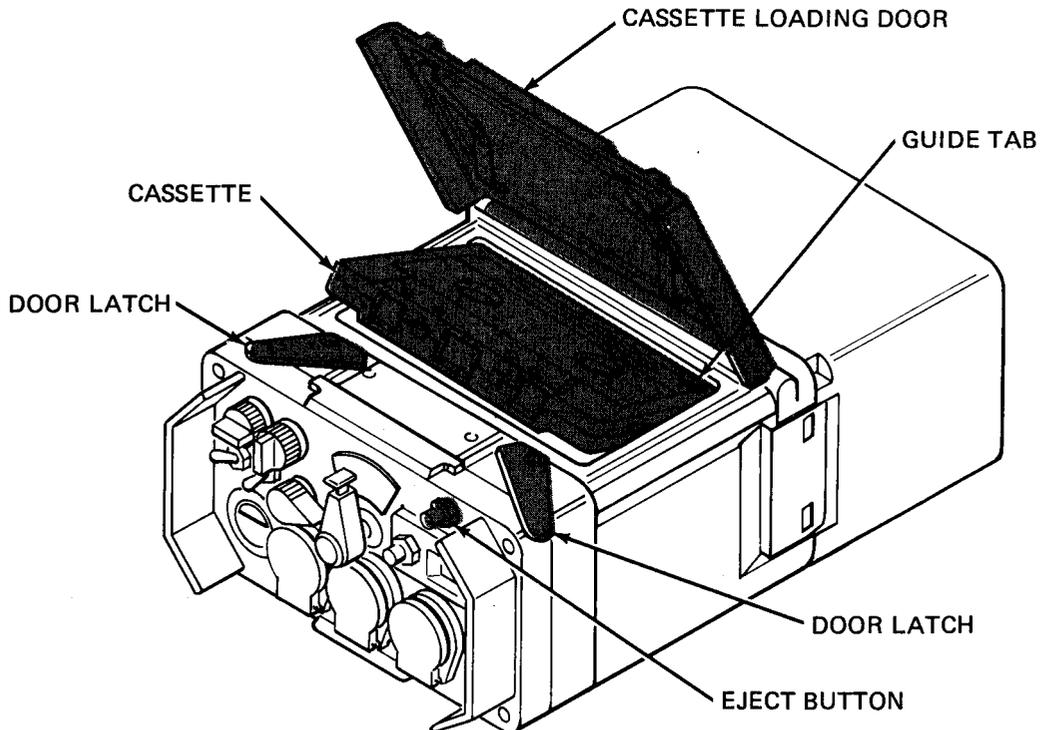
HEADSET

c. Put in a new cassette:

1. Release door latches and open cassette loading door.
2. If a cassette is in the recorder, press EJECT button and remove cassette.
3. Inspect window in new cassette to determine which spool the tape is wound onto. Orient cassette so that tape is wound on left spool.

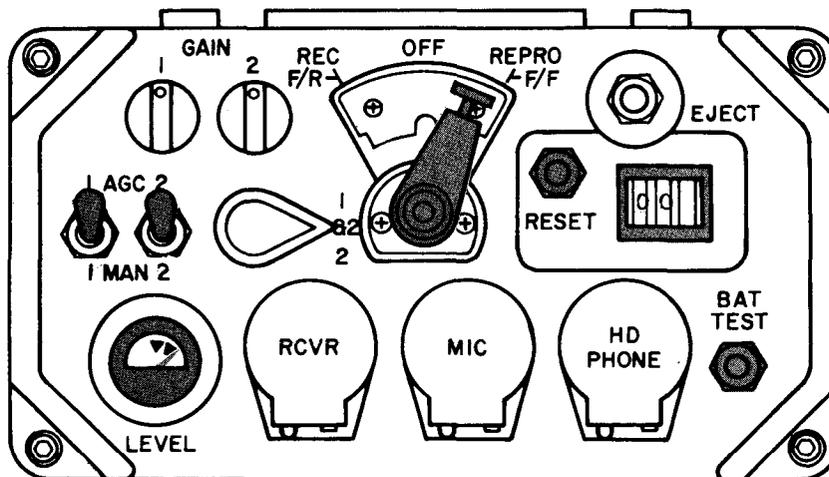


4. Insert cassette making sure that back of cassette goes under small metal tab which acts as a guide.
5. Close cassette loading door and secure door latches.



2-5. Initial Adjustments. Do these checks to make sure the recorder set is ready to be used:

- a. Push mode selector in, press latch, and set it to REPRO. Press BAT TEST button. LEVEL meter must read in green area. If indication is low and battery box is used, replace batteries. Press latch and set mode selector to OFF.
- b. Set tape index counter to 000 by pressing RESET button.
- c. Set both AGC/MAN switches to AGC.



2-6. Operating Procedure.

- a. To record.

NOTE

Use steps 1 to 6 for recording from microphone on channel 2.

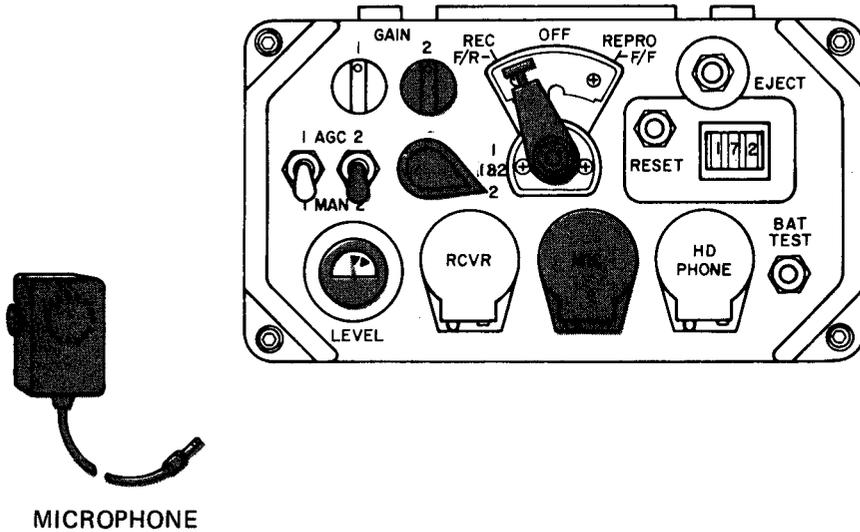
1. Push mode selector in, press latch, and set it to REC.
2. Set channel selector to 2.
3. Hold microphone about 6 inches from your mouth. Press button on microphone and speak clearly.

Check that LEVEL meter reads in red area while you are speaking.

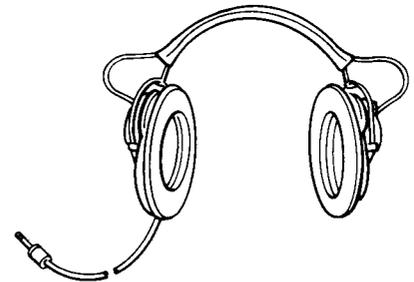
4. If LEVEL meter does not read in red area, set AGC/MAN 2 switch to MAN. Adjust GAIN 2 control until LEVEL meter reads in red area while speaking.
5. To record voice on channel 2, press the microphone button and speak into the microphone. The recorder is now recording signals from the microphone.

NOTE

This voice signal cannot be monitored by using the head set.



MICROPHONE



HEADSET

6. Press latch and set mode selector to OFF.

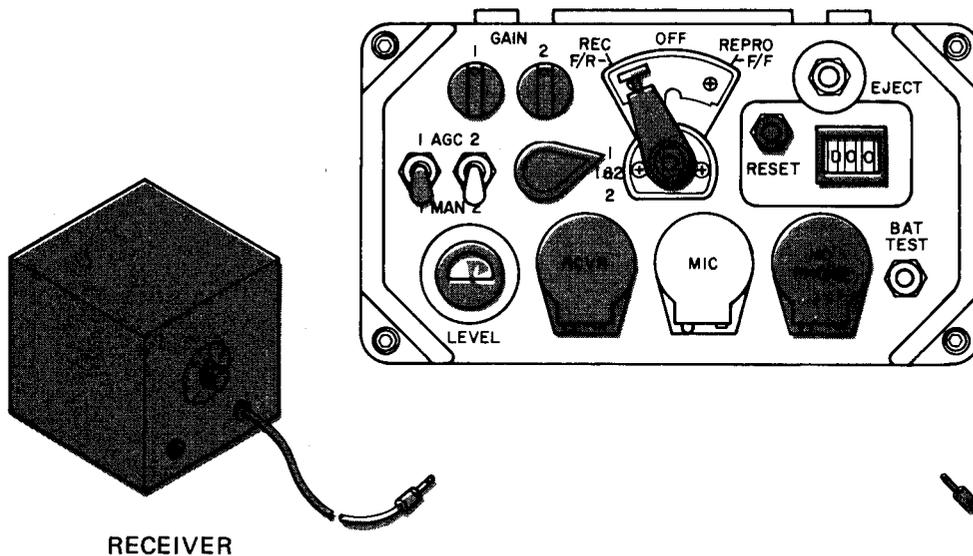
NOTE

Use steps 7 to 13 for recording from receiver on channel 1.

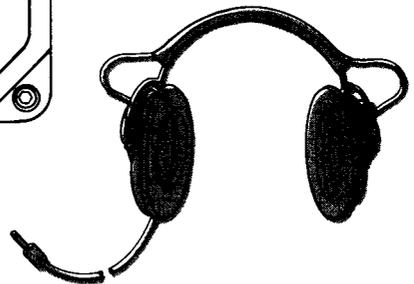
7. Disconnect microphone from MIC jack and connect a receiver to the RCVR jack.
8. Set channel selector to 1.
9. Push mode selector in, press latch, and set it to REC.

10. Listen to headset for a good signal from receiver.

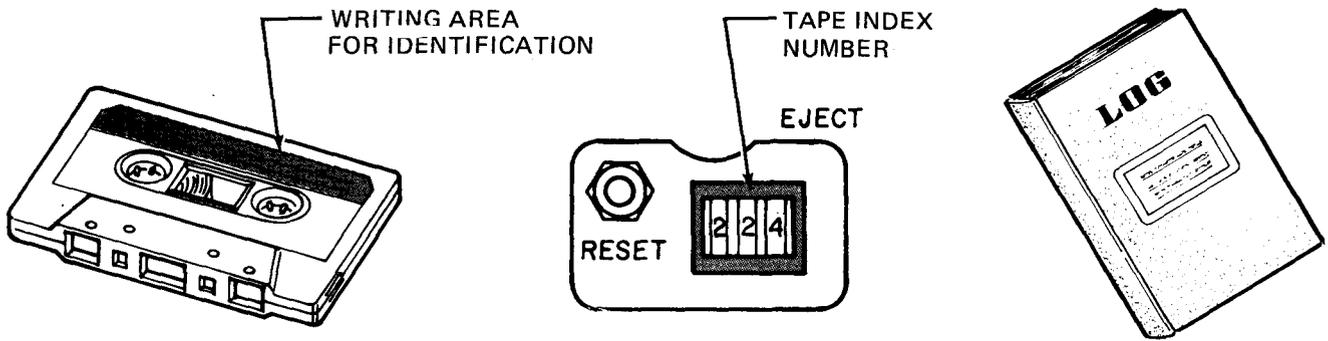
11. Check that LEVEL meter reads in red area.
12. If LEVEL meter does not read in red area, set AGC/MAN 1 switch to MAN. Adjust GAIN 1 control until LEVEL meter reads in red area.
13. The recorder is now recording signals from the receiver. These signals can be monitored by using the headset.



RECEIVER



HEADSET



14. Use the tape index counter to note location of signals of interest.

NOTE

It is helpful to keep a log book to list the tape index number of signals of interest. Also note the cassette side (1 or 2) recorded on, and the cassette number or other identifier. Cassettes have an area to write on for identification.

15. At the end of a cassette, the tape stops and a tone is heard in the headset. Press latch and set mode selector to OFF.

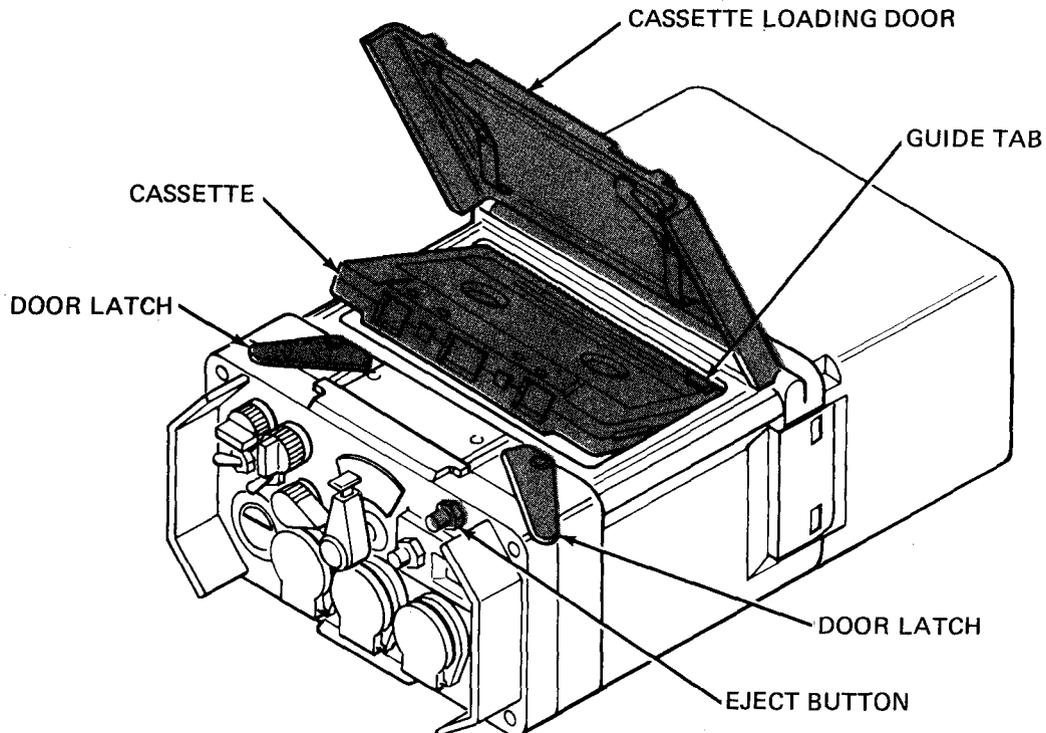
16. Press RESET button to set tape index counter to 000.

17. Release door latches and open cassette loading door.

18. Press EJECT button and remove cassette.

19. Turn cassette over and insert it back into recorder.

20. Close cassette loading door and secure door latches. You can now record on the second side of the tape. Each side of a C-60 cassette records for one hour.

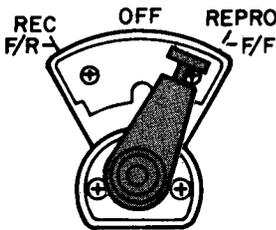


b. To playback recorded material.

1. Set mode selector to F/R and hold until tape index counter stops. Your cassette should be at beginning of tape. Press RESET button to set tape index counter to 000. You may now play the cassette from the beginning or find your place of interest on the cassette by looking at the tape index counter and setting the mode selector to F/F.
2. Use channel selector switch to select channel you want to hear. You can select channel 1, channel 2, or both channels.



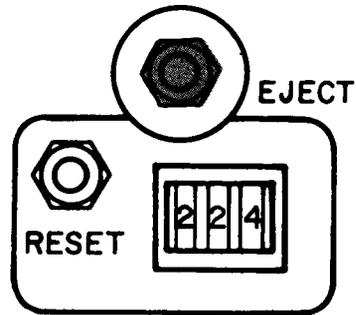
3. Push mode selector in, press latch, and set it to REPRO.



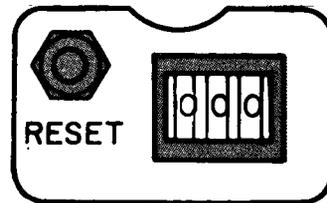
4. The recorder is now playing back recorded material. Use the headset for listening.



5. To stop playback, press latch and set mode selector to OFF.
6. At the end of a cassette, the tape stops and a tone is heard in the headset. Press latch and set mode selector to OFF.
7. To playback recorded material from the second side of the tape, release door latches and open cassette loading door. Press EJECT button and remove cassette.

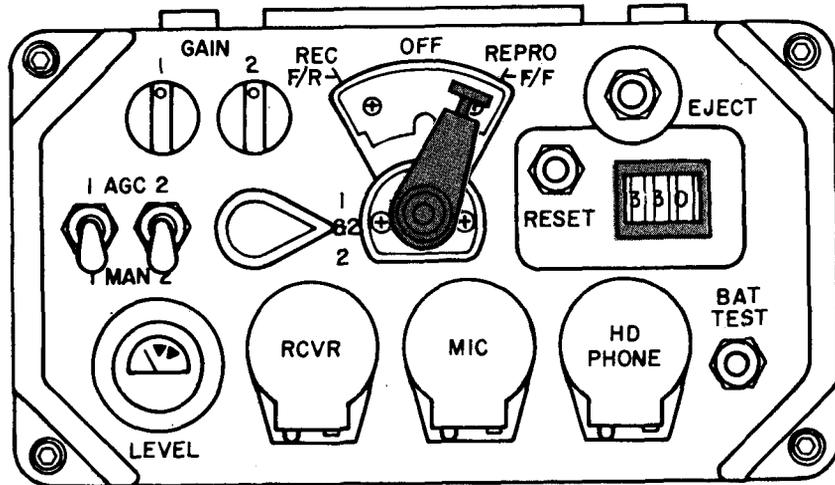


8. Turn cassette over and insert it back into recorder.
9. Close cassette loading door and secure latches.
10. Press RESET button to set tape index counter to 000.
11. Check your log book for location of signals of interest.



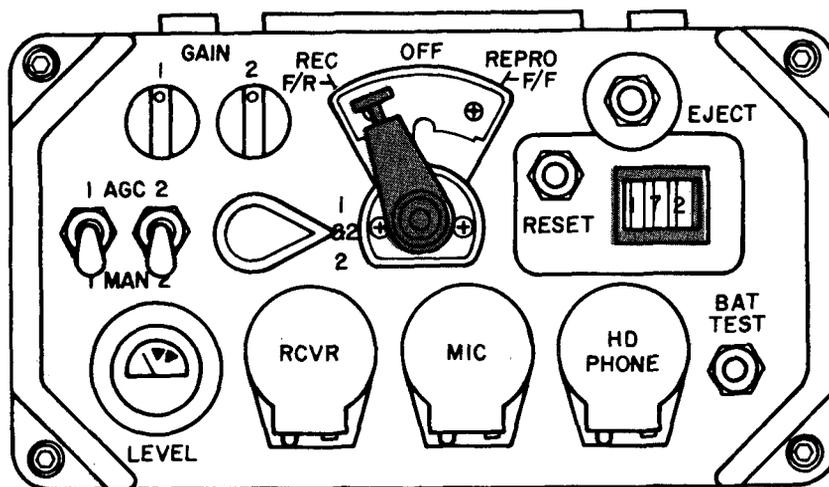
c. Fast Forward (F/F) Operation. To move tape rapidly in the forward direction, set mode selector to F/F and hold. Release mode selector when desired part

of tape is reached. Use tape index counter to find places of interest on the tape. Check your log book.



d. Fast Reverse (F/R) Operation. To move tape rapidly in the reverse direction, set mode selector to F/R and hold. Release mode selector when desired part of

tape is reached. Use tape index counter to find places of interest on the tape. Check your log book.



CHAPTER 3

MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

The operator will not lubricate the recorder set.

Section II. TROUBLESHOOTING PROCEDURES

3-1. General Troubleshooting. Trouble-shooting the recorder set is based on using the PMCS (table 2-2). If a trouble occurs, do the PMCS checks that apply. If the trouble cannot be corrected by using PMCS checks and the trouble-shooting table (table 3-1), ask for organizational maintenance.

3-2. Troubleshooting Table (table 3-1).

a. The table lists the common troubles

you may find during the operation or maintenance of the recorder set or its components. You should perform the tests/inspections and corrective actions in the order listed.

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

Table 3-1. Troubleshooting

Trouble	Probable Cause	Action
1. LEVEL meter does not read.	Defective meter	Ask for organizational maintenance.
2. LEVEL meter does not read in green area when BAT TEST button is pressed.	a. Power Supply b. Battery Box	a. Ask for organizational maintenance. b. Replace batteries (PMCS Item 9).
3. Low output: LEVEL meter does not read in red area or sound is weak in headset.	a. Dirty magnetic heads b. Heads need to be demagnetized.	a. Clean magnetic heads (PMCS Item 7). b. Ask for organizational maintenance.
4. Radio signals from receiver are recorded but voice from microphone is not.	Defective microphone.	Replace microphone.
5. During playback, LEVEL meter reads but nothing is heard in headset.	Defective headset.	Replace headset.
6. Tape jams.	Defective cassette.	Replace cassette.
7. Other troubles.	Not part of operator maintenance.	Ask for organizational maintenance.

APPENDIX A

REFERENCES

A-1. SCOPE

This appendix lists forms and publications which can be used as reference material by the operator.

A-2. FORMS

Recommended Changes to Publications and Blank Forms	DA FORM 2028
Equipment Inspection and Maintenance Worksheet	DA FORM 2404
Maintenance Request	DA FORM 2407
Quality Deficiency Report (Category II)	SF 368

A-3. TECHNICAL MANUALS

Packaging of Materiel- Preservation (Vol I)	TM 38-230-1
Preservation, Packaging, and Packing of Military Supplies and Equipment, Packing (Vol II)	TM 38-230-2
Preparation of Industrial Plant Equipment for Storage or Shipment	TM 38-260
The Army Maintenance Management System (TAMMS)	TM 38-750
Administrative Storage of Equipment	TM 740-90-1

A-4. MISCELLANEOUS PUBLICATIONS

Index of Technical Publications	DA PAM 310-4
US Army Equipment Index of Modification Work Orders	DA PAM 310-7
Recording Techniques and Theory	NASA 5038

APPENDIX B

COMPONENTS OF END ITEM LIST

Section I. INTRODUCTION

B-1. SCOPE

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

B-2. GENERAL

This Components of End Item List is divided into the following sections:

a. Section II. Integral Components of the End Item. These items, when assembled, comprise the recorder set and must accompany it whenever it is transferred or turned in. The illustrations will help you identify these items.

b. Section III. Basic Issue Items (BII) . These are the minimum essential items required to place the recorder set in operation, to operate it, and to perform emergency repairs. They must accompany the recorder set during operation and whenever it is transferred between accountable officers. This manual is your authority to requisition replacement BII.

B-3. EXPLANATION OF COLUMNS.

a. Illustration. This column is divided as follows:

(1) Figure Number. Indicates the figure number of the illustration on which the item is shown.

(2) Item Number. The number used to identify item called out in the illustration.

b. National Stock Number. Indicates the National stock number assigned to the item. This number will be used for requisitioning the item.

c. Part Number. Indicates the primary number used by the manufacturer to identify an item or range of items.

d. Description. Indicates the Federal item name and, if required, a minimum description to identify the item.

e. Location. The physical location of each item listed is given in this column. The lists are designed to inventory all items in one area of the major item before moving on to an adjacent area.

f. Usable on Code. "USABLE ON" codes are included to help you identify which component items are used on the different models.

g. Quantity Required (Qty Reqd). This column lists the quantity of each item required for a complete recorder set.

h. Quantity. This column is left blank for use during an inventory. Under the Rcv'd column, list the quantity you actually receive on your major item. The Date columns are for your use when you inventory the major item at a later date; such as for shipment to another site.

SECTION II INTEGRAL COMPONENTS OF END ITEM

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION			(4) LOCATION	(5) USABLE ON CODE	(6) QTY REQD	(7) QUANTITY	
(A) FIG NO.	(B) ITEM NO.		PART NUMBER		(FSCM)				RCVD	DATE
1-2		5835-00-529-6291	0149-1-4014-2	V1 (Aircraft)	15942		EA			
1-3		5835-00-529-6306	0149-1-4014-3	V2 (Vehicles)	15942		EA			
1-4		5835-00-529-6307	0149-1-4014-4	V3 (Shelters)	15842		EA			

SECTION III BASIC ISSUE ITEMS

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION		(4) LOCATION	(5) USABLE ON CODE	(6) QTY REQD	(7) QUANTITY	
(A) FIG NO.	(B) ITEM NO.							RCVD	DATE
		PART NUMBER	(FSCM)						
		5835-00-484-3728	CASSETTE TAPE BLANK C-60	49675			1		
			TECHNICAL MANUAL						
			TM 32-5835-001-10	15942			1		

APPENDIX C

ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

C-1. SCOPE

This appendix lists additional items you are authorized for the support of the recorder set.

do not have to be turned in with it. These items are authorized to you by appropriate authorization documents.

C-2. GENERAL

This list identifies items that do not have to accompany the recorder set and that

C-3. EXPLANATION OF LISTING.

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items needed to support this equipment.

SECTION II ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION PART NUMBER AND FSCM		(3) UNIT OF MEAS	(4) QTY AUTH
		USABLE ON CODE		
5811-00-160-9057	CY-7293A/UNH-16A 0149-1-4003	15942 BATTERY BOX	EA	1
5811-00-160-9054	CY-7291A/UNH-16A 0149-1-4004	15942 ACCESSORY CARRYING CASE	EA	1
5835-00-007-5251	CY-7292A/UNH-16A 0149-1-4005	15942 RECORDER/REPRODUCER CARRYING CASE	EA	1
	H-216/U (MODIFIED) 0099-1-4244	HEADSET	EA	1
5995-00-009-8742	CX-12895A/UNH-16A 0149-1-2096	15942 12 Vdc SPECIAL CABLE	EA	1
5995-00-097-8488	CX-12893A/UNH-16A 0149-1-2092	15942 230 Vac POWER CABLE	EA	1
6135-00-120-1020	BA-30	80063 BATTERY	EA	8
5835-00-106-0422	C-90	80244 CASSETTE, TAPE 90 MIN	EA	1
5835-00-106-0420	C-30	80244 CASSETTE, TAPE 30 MIN	EA	1
5835-00-249-5115	MT-4032/G 0149-1-4002-2	80058 BASE, MOUNT	EA	1

APPENDIX D

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

D-1. SCOPE

This appendix lists expendable supplies and materials you will need to operate and maintain the recorder set. These items are authorized to you by Common Table of Allowances (CTA) 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

D-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 5, App. D").

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

(enter as applicable)

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

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 part number followed by the Federal Supply Code for Manufacturer (FSCM) in parentheses, if applicable.

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. -each; in. -inch; pr.-pair). 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 NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION PART NO. AND FSCM	(5) UNIT OF MEAS
1	C, O, F, D	6850-00-597-9765	CLEANING COMPOUND	GL.
2	C, O, F, D	8305-00-267-3015	CHEESE CLOTH	A/R
3.	C, O, F, D	6510-00-303-8250	COTTON SWABS	A/R
4	C, O, F, D		XYLENE (FED-SPEC-TT-X-916B)	A/R

By Order of the Secretary of the Army:

Official:

J. C. PENNINGTON
Major General, United States Army
The Adjutant General

E. C. MEYER
General United States Army
Chief of Staff

