

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR AND ORGANIZATIONAL

MAINTENANCE MANUAL

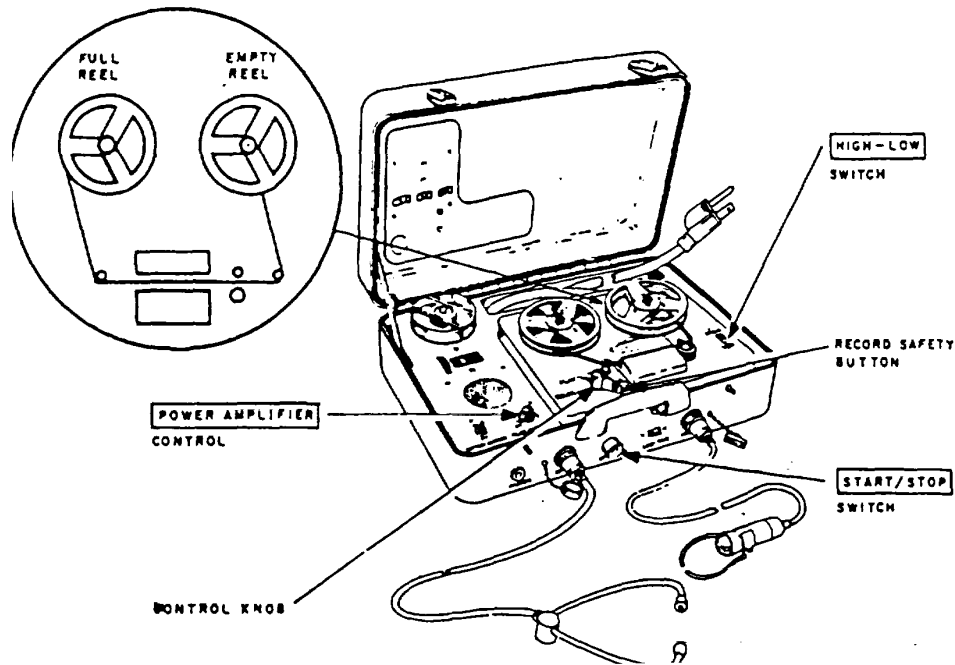
RECORDER-REPRODUCER SET,

SOUND AN/UNH-10

This copy is a reprint which includes current
pages from Changes 1 and 2.

*HEADQUARTERS, DEPARTMENT OF THE ARMY
31 MARCH 1964*

**CONDENSED OPERATING INSTRUCTIONS FOR
RECORDER-REPRODUCER SET, SOUND AN/UNH-IO**



TO OPERATE SET

a. Preliminary steps.

- (1) Attach microphone to MICROPHONE connector.
- (2) Attach headset to INPUT/OUTPUT connector.
- (3) Load full tape reel and empty reel and thread tope as indicated on diagram.

b. Operation.

Note: At any time, in steps (1) and (3) below, the motion of the tape can be started or stopped by pressing the START/STOP switch push-button.

- (1) To record: While pressing record safety button, turn control knob to RECORD; set LIVE-TAPE switch to TAPE; set HIGH-LOW switch to LOW. When recording is completed, turn control knob to OFF.
- (2) To rewind: Turn control knob to REWIND; START/STOP switch must remain in a run sequence. When rewinding is completed, turn control knob to OFF.
- (3) To playback recording: Turn control knob to PLAY; turn POWER AMPLIFIER control clockwise for a comfortable listening level. When playback is completed, turn control knob to OFF.

TO TURN SET OFF AND DISCONTINUE BATTERY USE.

Turn CONTROL KNOB to OFF.

CHANGE }
No. 2 }

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 15 October 1973

**Organizational Maintenance Manual
RECORDER-REPRODUCER SET, SOUND
AN/UNH-10**

TM 11-5874-200-12, 31 March 1964, is changed as follows:

Page 3, paragraph 2. Delete paragraph 2 and substitute:

2. Indexes of Publications

a. *DA Pam 310-4.* Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. *DA Pam 310-7.* Refer to DA Pam 310-7 to determine whether there are modification work orders (MWO's) pertaining to the equipment.

Paragraph 3. Delete paragraph 3 and substitute:

3. Forms and Records

a. *Reports of Maintenance and Unsatisfactory Equipment.* Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 3750.

b. *Report of Packaging and Handling Deficiencies.* Fill out and forward DD Form 6 (Report of Packaging and Handling Deficiencies) as prescribed in AR 700-58 (Army)/NAVSUP PUB 378 (Navy)/AFR 71-4 (Air Force)/and MCO P4030.29 (Marine Corps).

c. *Discrepancy in Shipment Report (DISREP) (SF 361).* Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38 (Army) /NAVSUP PUB 459 (Navy)/AFM 75-34 (Air Force)/and MCO P4610.19 (Marine Corps).

Add paragraph 3.1 after paragraph 3.

3.1. Reporting of Equipment Publication Improvements

The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications) and submitted direct to Commander, US Army Electronics Command, ATTN: AMSEL-MA-C, Fort Monmouth, NJ 07703.

Page 4, paragraph 6. Change title of paragraph 6 to read "Components and Dimensions of Recorder-Reproducer Set, Sound AN/UNH-10."

After paragraph 6 add paragraph 6.1.

6.1. Items Comprising an Operable Recorder-Reproducer Set, Sound AN/UNH-10

FSN	Qty	Nomenclature, part No., and mfr. Code
5835-082-3842		Record-Reproducer Set, Sound AN/ UNH-10 including:
5835-909-7421	1	Cartridge Loop, Tape: 1310CC-15, Cousino
5960-013-7990	1	Headset, Electrical H-224/UNH-10 (Not installed)
5968-082-3843	1	Microphone, Dynamic M-119/UNH-10 (Not installed)
5835-583-1314		Reel Sound Recording, Tape: (Empty) RB-5, 20320 (Mounted in equip)

FSN	Qty	Nomenclature, part No., and Mfr. Code
5835-717-9947		Tape, Sound Recording: W/1,200 ft magnetic tape; 200-12 20320

NOTE

The part number followed is followed by the applicable 5-digit Federal supply code for manufacturer (FSCM) identified in SB 708-42 and used to identify manufacturer, distributor, of Government agency, etc.

After paragraph 6.1 add paragraph 6.2.

6.2. Running Spares

FSN	Qty	Running spare items
3030-911-6683	1	Belt, round (Drive belt) Haskell part #11-235.
3030-910-4486	1	Belt, round (Counter belt), Plastic & Rubber Prod part #568-282.
5920-356-2193	5	Fuse, Cartridge, 0.500 amps, 250 v; MIL type F02A250V1/2A.
5920-284-9494	5	Fuse, Cartridge, 0.750 amp, 250 v; MIL type F02GR750A.
5920-184-2050	3	Fuse, Cartridge, 6.25 amps, 32 v, Bussman part #MDL-6-1-4.
5835-717-9947	1	Tape, sound recording, Minn Mining part #200-12

Page 32, appendix III. Delete appendix III.

By Order of the Secretary of the Army

CREIGHTON W. ABRAMS
General, United States Army
Chief of Staff

Official:

VERNE L BOWERS
Major, General, United States Army
The Adjutant General

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19-97
19-500 AA-AC
20-17
29-134
29-136
31-105
33-500 AA-AC

NG: State AG (3)

USAR: None

For explanation of abbreviations used, see AR 310-50.

CHANGE }
No. 1 }

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 14 July 1966

Organizational Maintenance Manual
RECORDER-REPRODUCER SET, SOUND AN/UNH-10

TM 11-5874-200-12, 31 March 1964, is changed as follows:

Page 3, paragraph 3. Delete subparagraph c and substitute:

c. Reporting of Equipment Manual Improvements. The direct reporting by the individual user of errors, omissions, and recommendations for improving this manual is authorized and encouraged. DA Form 2028 (Recommended Changes to DA Publications) will be used

for reporting these improvement recommendations. This form will be completed using pencil, pen, or typewriter and forwarded direct to Commanding General, U.S. Army Electronics Command, ATTN.: AMSEL-MR- NMP-AD, Fort Monmouth, N.J., 07703.

Page 27. Delete appendix I and substitute:

APPENDIX I

REFERENCES

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 7, 8, and 9), Supply Bulletins Lubrication Orders, and. Modification Work Orders.
SB 11-573	Painting and Preservation Supplies Available for Field Use for Electronic Command Equipment.
SB 38-100	Preservation, Packaging and Packing Materials, Supplies, and Equipment Used by the Army.
TB SIG 364	Field Instructions for Painting and Preserving Electronics Command Equipment.
TM 9-213	Painting Instructions for Field Use.
TM 11-6625-203-12	Operator and Organizational Maintenance, Multimeter AN/URM-105, Including Multimeter ME-77/3.
TM 38-750	Army Equipment Record Procedures.

Page 32. Delete appendix III and substitute:

APPENDIX III

BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

1. General

This appendix list items supplied for initial operation and for running spares. The list includes tools, parts, and material issued as part of the major end item. The list includes all items authorized for basic operator maintenance of the equipment. End items of equipment are issued on the basis of allowances prescribed in equipment authorization tables and other documents that are a basis for requisitioning.

2. Columns

Columns are as follows:

a. Federal Stock Number. This column lists the 11-digit Federal stock number.

b. Designation by Model. Not used.

c. Description. Nomenclature or the standard item name and brief identifying data for each item are listed in this column. When requisitioning, enter the nomenclature and description.

d. Unit of Issue. The unit of issue is each unless otherwise indicated and is the supply term by which the individual item is counted for procurement, storage, requisitioning, allowances, and issue purposes.

e. Expendability. Nonexpendable items are indicated by NX. Expendable items are not annotated.

f. Quantity Authorized. Under "Items Comprising an Operable Equipment", the column lists the quantity of items supplied for the initial operation of the equipment. Under "Running Spare Items" the quantities listed are those issued initially with the equipment as spare parts. The quantities are authorized to be kept on hand by the operator for maintenance of the equipment.

g. Illustration. The "Item No." column lists the reference designations that appear on the part in the equipment. These same designations are also used on any illustrations of the equipment. The numbers in the "Figure No." column refer to the illustrations where the part is shown.

SECTION II. FUNCTIONAL PARTS LIST

FEDERAL STOCK NUMBER	DESIGNATION BY MODEL					DESCRIPTION	UNIT OF ISSUE	EXP	QTY AUTH	ILLUSTRATION	
										FIGURE NO.	ITEM NO
5835-082-3842						RECORDER-REPRODUCER SET, SOUND AN/UNH-10: magnetic; input data; tape type, 1/4 in w; 3.75 in per sec recording speed; response data: 100 to 3750 cps over-all freq range; 100 to 3750 cps uniformly flat within 2 db at 3.75 in per sec 1/2 watt amplifier output; 600 ohms impedance of external output connection; oper power reqt; 115 van, 50/60 cps, single ph; alternate oper power reqt; 12 vdc				1	
						ITEM COMPRISING AN OPERABLE EQUIPMENT					
ORD THRU AGC						RECORDER-REPRODUCER SET SOUND AN/UNH-10 (BASIC UNIT)	NX	1	1		
						TECHNICAL MANUAL TM 11-5874-200-12		1			
						NOTE: For technical manuals the quantity indicates the maximum number of copies authorized for packing (or issue) with the equipment. Where a number of these equipment are concentrated in a small area, the quantity on hand may be reduced to practical levels. Excess publications must be returned to publication supply centers through AG channels.					
5835-909-7421						CARTRIDGE LOOP, TAPE: Cousino part #U-1310CC-15	NX	1	6		H1
5960-013-7990						HEADSET, ELECTRICAL H-224/ UNH-10 (Not installed)	NX	1	1		HT1
5965-082-3843						MICROPHONE DYNAMIC M-119/UNH-10 (Not installed)	NX	1	1		MK1
5835-583-1314						REEL, SOUND RECORD, TAPE: (Empty) Minn Mining part #RB-5 (Mounted in equip)		1	6		
5835-717-9947						TAPE, SOUND RECORDING: W/1, 200 ft magnetic tape; Minn Mining part , #200-12 (not installed)		1	6		
						RUNNING SPARE ITEMS					
3030-911-6663						BELT; ROUND: (Drive belt) Haskell part #11-235		1	7		
3030-910-4486						BELT, ROUND: (Counter belt) Plastic & Rubber Prod part #568-:242		1	7		
5920-356-2193						FUSE, CARTRIDGE: 0.500 amps, 250 v; MIL type F02A250V1/2A		5	3		F4
5920-284-9494						FUSE, CARTRIDGE 0.750 amps, 250 v; MIL typeF02GR750A		5	3		F1, F2
5920-184-2050						FUSE, CARTRIDGE: 6.25 amps, 32 v; Bussman part #MDL-, 6-1-4		3	3		F3
5835-717-9947						TAPE, SOUND RECORDING: Minn Mining part; #200-12		1	6		

By Order of the Secretary of the Army:

HAROLD K. JOHNSON,
General, United States Army
Chief of Staff.

Official

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

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 USACDCQMA (1)
 US4CDCTA (1)
 USACDCADA (1)
 USACDCARMA (1)
 USACDCAVNA (1)
 USACDCARTYA (1)
 USACDCSWA (1)
 USACDCCEA. Ft Huachuca) (1)
 USACDCEC (10)
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 USATC (2)
 USMA (2)
 Svc Colleges (2)
 Br Svc Sch-(2)
 USASPTCP (17)
 WRAMC (1)
 Instl (2) except
 Ft Monmouth (70)
 Ft.Gordon (10)
 Ft Knox (12)

Ft Hancock (9)
 Ft Huachuca (10)
 Ft Carson (25)
 Army Pic Cen (2)
 Army Dep (2) except
 SAAD (30)
 TOAD (14)
 FTWOAD (10)
 LEAD (7)
 SHAD (3)
 NAAD (5)
 SVAD (5)
 CHAD (3)
 ATAD (10)
 LBAD (14)
 Gen Dep (2)
 Sig Sec, Gen Dep (5)
 Sig Dep (12) .
 Sig FLDMS (2)
 AMS (1)
 USACCREL (2)
 USAERDAA (2)
 USARERDAW (13)
 Units org under fol TOE: 2 Ea:
 1-307
 11-57
 11-97
 11-98
 11-117
 11-127
 11-155
 11-157
 11-158
 11-500(AA-AC)
 11-587
 11-592
 11-597
 19-97
 19-500(AA-AE)
 20-17
 31-105
 33-56
 33-500(AA-AC)
 51-1

NG: State AG (3).
 USAR: None.

For explanation of abbreviations used, see AR 320-50.

WARNING

Be careful when working on the 115-volt ac line connections. Serious injury or death may result from contact with these terminals.

DON'T TAKE CHANCE

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RECORDER-REPRODUCER SET, -SOUND AN/UNH-10

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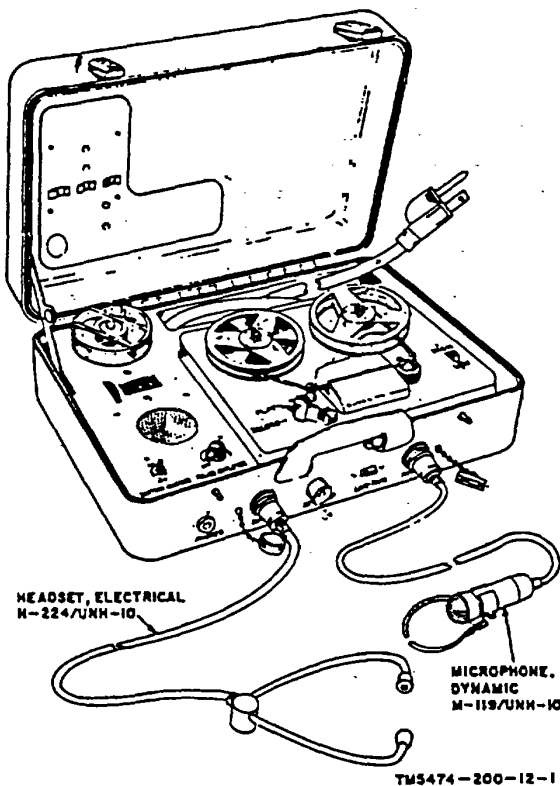


Figure 1. Recorder-Reproducer Set, Sound AN/UNH-10 less technical manuals.

CHAPTER 1 INTRODUCTION

Section I. GENERAL

1. Scope

a. This manual describes Recorder-Producer Set, Sound AN/MN-10 (fig. 1) and covers its installation, operation, and operator's and organizational maintenance. It includes operation under usual and unusual conditions, cleaning, instructions for performing preventive and periodic maintenance services and repair functions to be accomplished by the organizational repairman.

b. This manual contain the maintenance allocation chart and basic issue items list.

2. Index of Publications

Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment. Department of the Army Pamphlet No. 310-4 is an index of current technical manuals, technical bulletins; supply manuals (types 4, 6, 7, 8, and 9), supply bulletins, lubrication orders, and modification work orders that are available through publications supply channels. The index list the individual parts (-10, -20, -35P, etc) and the latest changes to and revisions of each equipment publication.

3. Forms and Records

a. *Reports of Maintenance and Unsatisfactory Equipment Use* equipment forms and records in accordance with instructions in TM 38-750.

b. *Report of Damaged or Improper Shipment*. Fill out and forward DD Form 6 (Report of Damaged or improper Shipment) as prescribed in AR 700-58 (Army), NAV-SANDA publication 378 (Navy), and AFR 71-4 (Air Force).

c. *Reporting Equipment Manual Improvements*. The direct reporting, by the individual user of errors, omissions, and recommendations for improving this equipment is authorized and encouraged. DA Form 2028 will be used for reporting these improvements. This form may be used by using pencil, pen, or typewriter. DA Form 2028 will be completed in triplicate and forwarded by the individual using the manual. The original and one copy will be forwarded direct to: Commanding Officer, U. S. Army Electronics Materiel Support Agency, ATTN.: SELMS-MP, Fort Monmouth, New Jersey 07703. One information copy will be furnished to the individual's immediate supervisor officer, noncommissioned, officer, supervisor, etc).

Section II. DESCRIPTION AND DATA

4. Purpose and Use

a. Recorder-Reproducer Set, Sound AN/UNH-10 is a portable, battery-operated, magnetic tape recorder-reproducer, to be used in the field or any area. The batteries are nickel cadium type-and are charged by an internal battery charger when connected to a 115-volt alternating current (ac), 60-cycle power source.

b. Two tracks can be recorded on each tape. The second track is made available by inverting the tape, thereby doubling the use of each tape.

c. Provisions are available so that a microphone input signal can be monitored by means of listening to a headset. Provisions are also available so that a tape signal being generated by a microphone

or external equipment can be monitored by means of listening to a headset or a loudspeaker.

d. cartridge tape loop can be used to provide a continuous, repetition of a 15-minute tape recording once it is set in motion.

e. This equipment is designed for operation in all types of Army vehicles, tanks, ships, and aircraft. The equipment weighs 21 pound. Figure 1 shows the equipment ready for use.

5. Technical Characteristics

- Number of tubes 1.
- Number of transistors 15.
- Number of diodes 4
- Number of thermistors 1
- Frequency response ±2 db, 100 to 3,750 cps.
- Recording medium 1/4 inch magnetic tape mounted on 5-inch diameter reels.
- Recording medium tracks 2 on each tape.
- Recording or playing time per reel 1 hour.
- Tape speeds (play back and recording) 3-3/4 inches per second.
- Line voltage input requirements 115 volts (±5 volts), 50 to 60 cps.
- Line power consumption 10 watts.
- Battery charger power output 360 milliamperes, constant current
- PHONES jack input impedance 8 ohms.

- INPUT/OUTPUT connector input impedance 600 ohms minimum.
- Signal input to INPUT/OUTPUT connector 0 dbm maximum (.78 volts).

MICROPHONE

- connector input impedance 50 ohms.
- Battery, BB-412/U cells:
 - Cells per battery 8
 - Type Rechargeable, sealed nickel caladium.
 - Voltage Approximately 11.5 volts.
 - Capacity 4 ampere hours.
- MICROPHONE, Dynamic M-119/UNH-10:
 - Impedance 50 ohms.
 - Frequency range 60 to 18, 000 cps.
 - Sensitivity -57 db ref 1 mv per 10 dynes/cm².

Headset. Electrical

- H-224/UNH-10:
 - Impedance 2, 000 ohms.
 - Frequency range 50 to 6, 500 cps.
 - Sensitivity 88 db above .0002 dynes/cm² for 10mw input.

Temperature range

- for normal operation:
 - High 120°F (48.9°C)
 - Low 0°F (-17.8°C)

6. Components of Recorder-reproducer Set, Sound AN/UNH-10

Quantity	Item	Dimensions (in.)			Unit
		Height	Depth	Width	Weight
1	Recorder-Reproducer Set; Sound AN/UNH-10	13.25	6.33	18.00	(lb) 21
1	Microphone, Dynamic M-119/UNH-10				
1	Headset, Electrical H-224/UNH-10				
2	Reel, 5 in., with 1, 200 ft magnetic recording tape.				

Quantity	Item	Dimensions			Unit Weight (lb)
		Height	Depth	Width	
1	Reel, 5 in., empty Cartridge loop, U-1310CC-1J TM 11-5874-200-12 No running spares authorized				
1					
2					

7. Description of Recorder-Reproducer Set, Sound A/UNH-10 (fig. 1)

a. Recorder-Reproducer Set, Sound AN/ UN-10 is completely self-contained in a carrying case. The case cover, when open, exposes the majority of operational controls and tape reels mounted on the main panel. The case cover provides storage room for microphone, Dynamic M-119/UNH-10 and Headset, Electrical H-224/UNH-10. A recessed storage space behind the tape reels provides room for the an ac power cord. All connectors for the H-224/UNH-10, the_M-119/UNH-10, the auxiliary headset or external line signal equipment are located on the carrying handle edge of the case. Covers are provided for the external threaded connectors. Also adjacent to the carrying handle is the motor stop and start switch, which is operable when power is turned on.

b. Contained in the case and mounted to the underside of the main panel are a tape reel motor, transistorized amplifier circuitry, and a mechanical counter used for identifying locations on the tape.

Beneath the main panel and mounted to the case are the batteries, battery charger and fuse blocks.

c. Microphone, Dynamic M-119/UNH-10 is a nondirectional lapel type microphone connected to a 6 foot rubber-covered cable. The other end of the cable is terminated with an Amphenol 91MC-3M connector.

d. Headset, Electrical H-224/UNH-10 is made up of a headpiece connected to a 5 foot plastic-covered cable by a two-pin connector. The other end of the cable is terminated with an Amphenol 91MC-4M connector. The headpiece consists of stethoscope, adjustable metal tubing with two plastic earpieces attached.

CHAPTER 2
INSTALLATION

8. Unpacking
(fig. 2)

a. Packaging Data When packed for shipment, Recorder-Reproducer Set Sound AN/U-10 is wrapped in heavy paper and paper cushion and placed in an individual moistureproof carton. The carton is surrounded with shock-resistant liners and placed in a wooden box. The wooden box is 26-1/2 by 23 by 14-1/2 inches. It has a volume of 5.1 cubic feet and weighs 31 pounds.

b. Removing Contents. Perform the steps outlined below when unpacking an equipment.

- (1) Cut and fold back the metal straps.
- (2) Remove the nails from the top and one side of the box with a nail-puller. Remove the top and one side. Do not attempt to pry them off because the equipment may become damaged.
- (3) Remove the technical manuals and the top layer of shock resistant liner.
- (4) Open the exposed top of the cardboard carton.
- (5) Remove the wrapped unit.
- (6) Remove the inner carton barrier (paper cushion).
- (7) Remove the paper wrapping from the set.

9. Checking Unpacked Equipment

a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on DD Form 6 (para 3).

b. See that the equipment is complete as listed on the packing slip. If a packing slip is not available, check the equipment against the basic issue items list (appx III). Report all discrepancies in accordance with TM 38-750. Shortage of a minor assembly or part which does not affect proper functioning of the equipment should not prevent use of the equipment

c. Before using the AN/UNH-10, see that the batteries are charged to proper voltage (para 34)

10. Installation of Tube and Fuses
(fig. 3)

All units are shipped with the regulator tube and fuses installed. Information covering the checking and replacement of the regulator tube is covered in paragraph 40. Information covering fuse replacement is covered in paragraph 41. Regulator tube and fuse locators are shown in the chart below.

Reference designation	Fuse rating		Type
	amperes	volts	
F1, F2	3/4	250	3AG
F3	6-1/4 (Slo-Blo)	32	3AG
F4	1/2	250	3AG

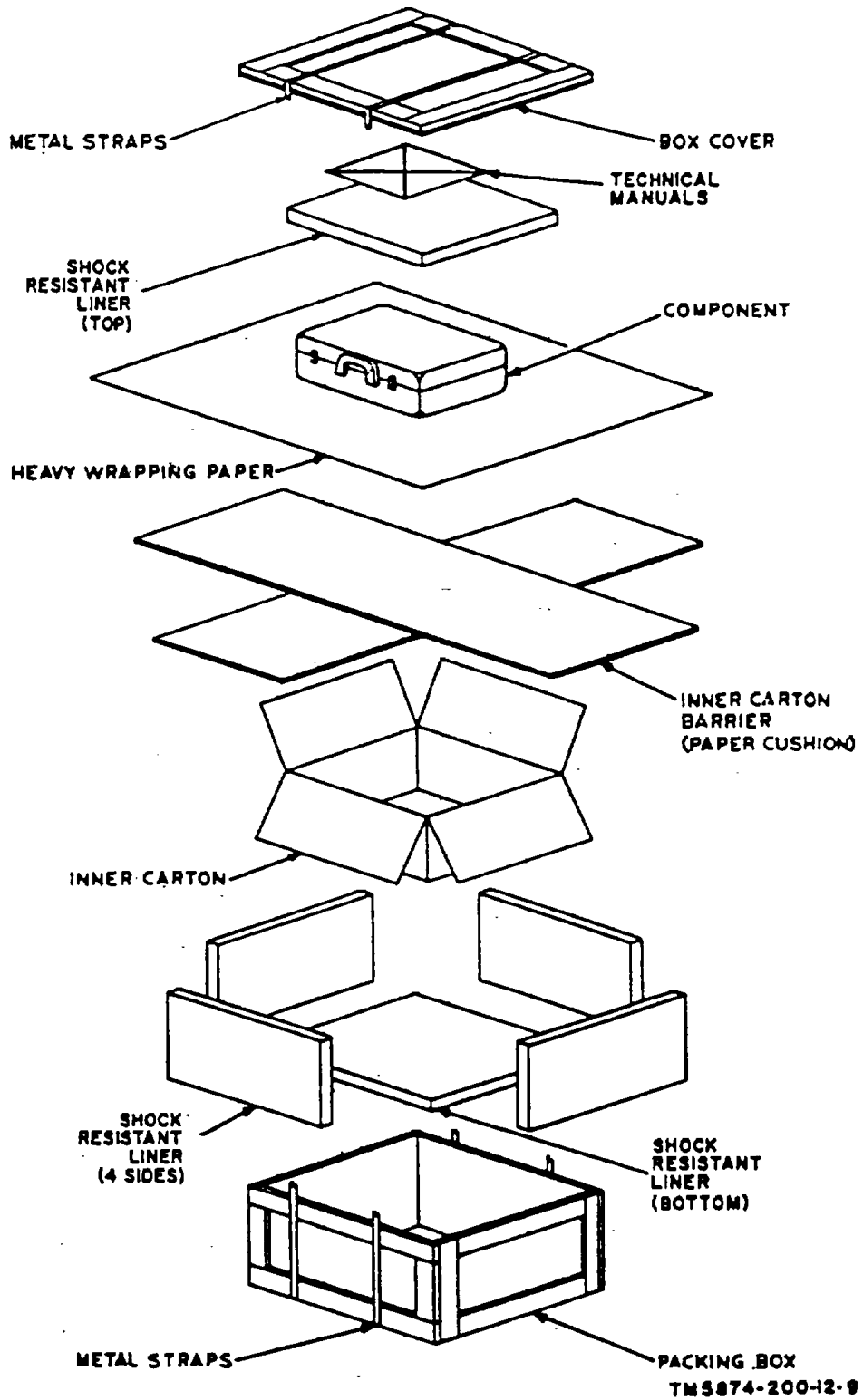
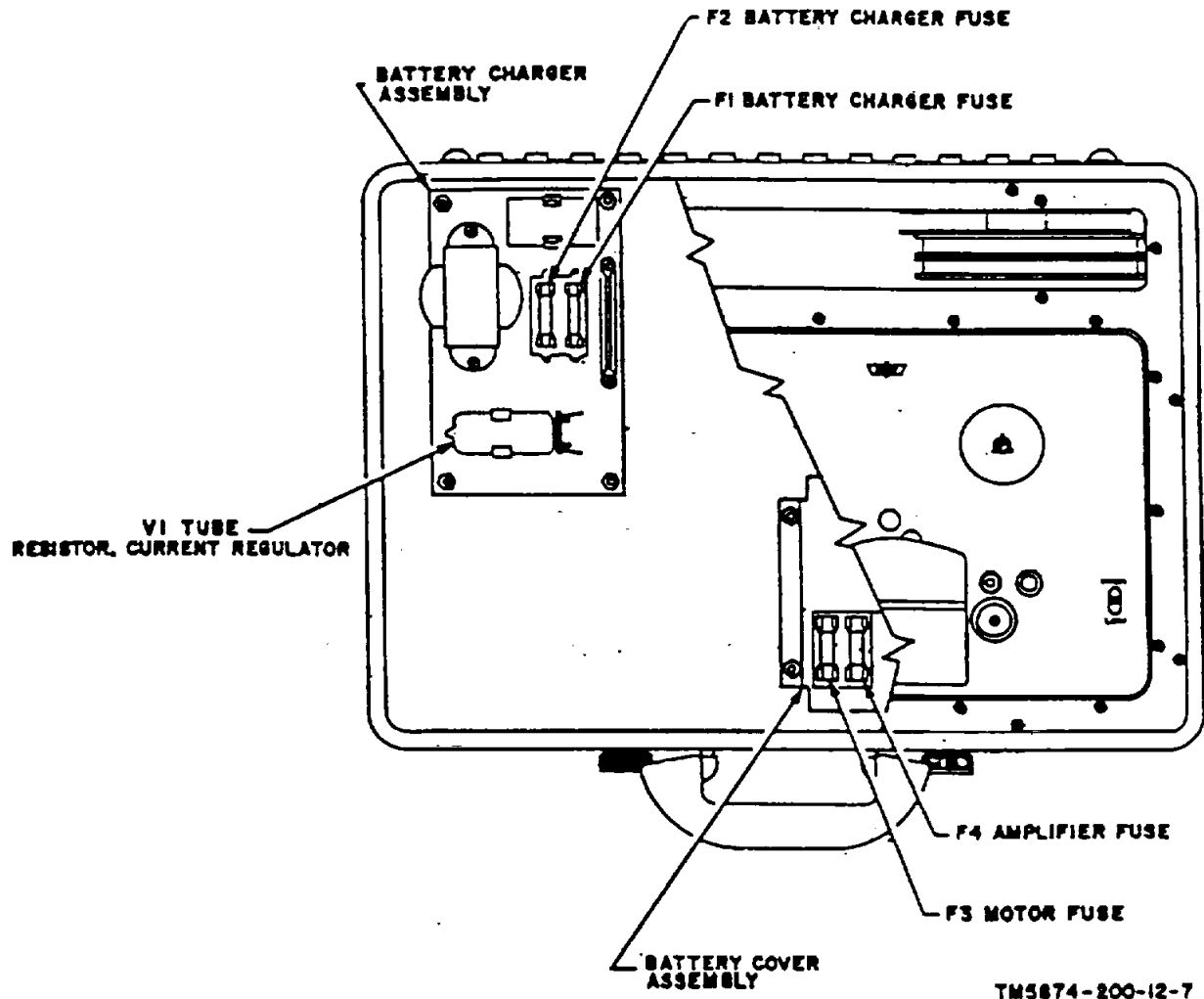


Figure 2. Typical packaging.



TM5874-200-12-7

Figure 3. Tube and fuse locations

CHAPTER 3

OPERATING INSTRUCTIONS

Section I. OPERATOR'S CONTROLS AND INDICATORS

11. **Damage from Improper Control Settings**

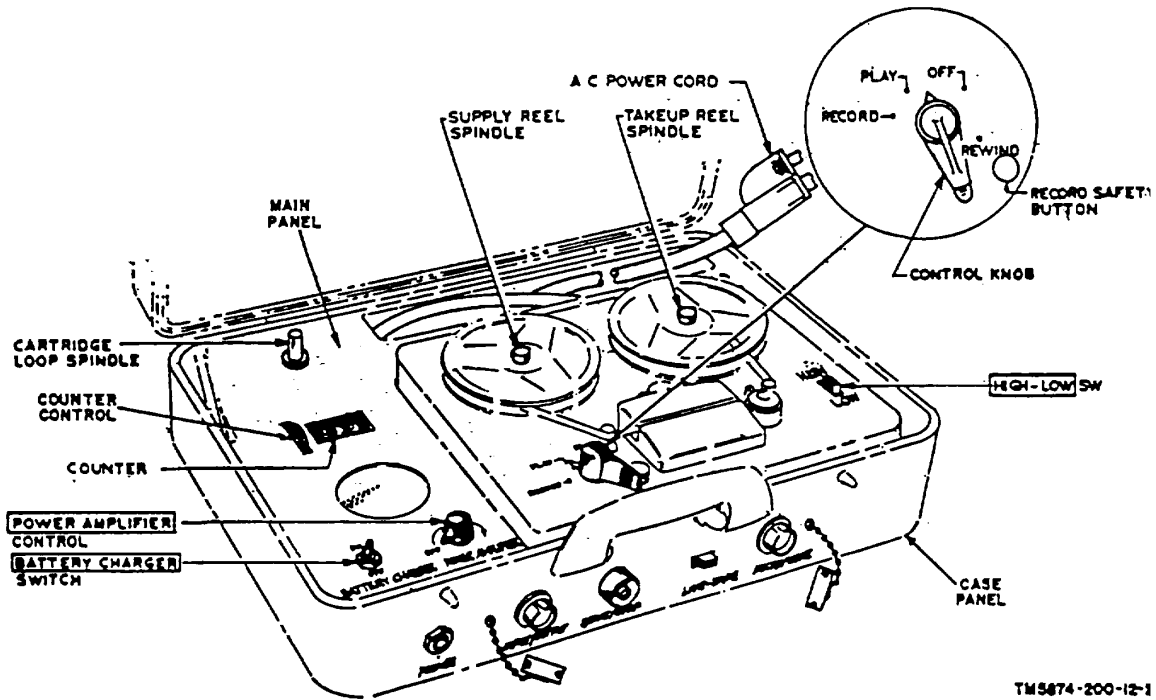
The equipment should not be left for extended periods with the control knob in any position except OFF when the tape is stopped. The control knob in any other position will maintain pressure on the pinch-wheel, may

cause flat spots on the rubber wheel of the pinchwheel, and will discharge the batteries, which could result in operational failure.

12. **Operating Controls, Jack, Connectors, and Indicators**
(fig. 4 and 5)

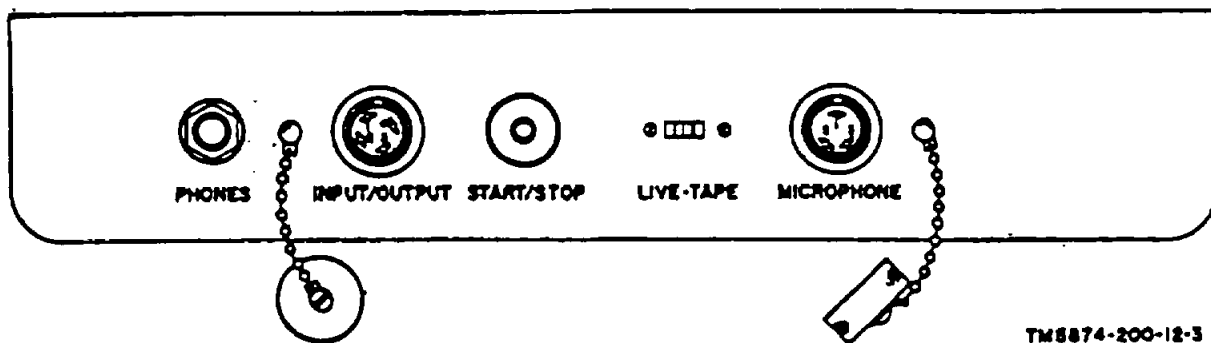
Control, jack, connector or indicators	Function															
LIVE-TAPE switch-----	<table border="0"> <tr> <td style="text-align: right;"><i>Sw pos</i></td> <td style="text-align: right;"><i>Action</i></td> <td></td> </tr> <tr> <td style="text-align: right;">Live</td> <td></td> <td>With headset connected to INPUT/OUTPUT connector, enables monitoring an input microphone signal. Enables recording an external signal connected to the INPUT/OUTPUT connector.</td> </tr> <tr> <td style="text-align: right;">TAPE</td> <td></td> <td>During microphone or playback operation switch position permits listening to tape signal by use of a headset connected to INPUT/OUTPUT connector and by use of loudspeaker or an auxiliary headset connected to the PHONES jack.</td> </tr> </table>	<i>Sw pos</i>	<i>Action</i>		Live		With headset connected to INPUT/OUTPUT connector, enables monitoring an input microphone signal. Enables recording an external signal connected to the INPUT/OUTPUT connector.	TAPE		During microphone or playback operation switch position permits listening to tape signal by use of a headset connected to INPUT/OUTPUT connector and by use of loudspeaker or an auxiliary headset connected to the PHONES jack.						
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Record safety button----- Control Knob -----	<p>When pressed, enables turning of control knob RECORD position.</p> <table border="0"> <tr> <td style="text-align: right;"><i>Sw Pos</i></td> <td style="text-align: right;"><i>Action</i></td> <td></td> </tr> <tr> <td style="text-align: right;">RECORD</td> <td></td> <td>Turns power on and enables recording operation</td> </tr> <tr> <td style="text-align: right;">PLAY</td> <td></td> <td>Turns power on and enables playback operation</td> </tr> <tr> <td style="text-align: right;">REWIND</td> <td></td> <td>Turns power on and enables rewind operation.</td> </tr> <tr> <td style="text-align: right;">OFF</td> <td></td> <td>Turns power off and moves pinchwheel away from capstan.</td> </tr> </table>	<i>Sw Pos</i>	<i>Action</i>		RECORD		Turns power on and enables recording operation	PLAY		Turns power on and enables playback operation	REWIND		Turns power on and enables rewind operation.	OFF		Turns power off and moves pinchwheel away from capstan.
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RECORD		Turns power on and enables recording operation														
PLAY		Turns power on and enables playback operation														
REWIND		Turns power on and enables rewind operation.														
OFF		Turns power off and moves pinchwheel away from capstan.														
HIGH-LOW SWITCH-----	<table border="0"> <tr> <td style="text-align: right;"><i>sw pos</i></td> <td style="text-align: right;"><i>Action</i></td> <td></td> </tr> <tr> <td style="text-align: right;">HIGH</td> <td></td> <td>Increases pickup sensitivity when recording with microphone. Used for background sound pickup.</td> </tr> <tr> <td style="text-align: right;">LOW</td> <td></td> <td>Decreases pickup sensitivity when recording with microphone. Used when speaking directly into microphone.</td> </tr> </table>	<i>sw pos</i>	<i>Action</i>		HIGH		Increases pickup sensitivity when recording with microphone. Used for background sound pickup.	LOW		Decreases pickup sensitivity when recording with microphone. Used when speaking directly into microphone.						
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HIGH		Increases pickup sensitivity when recording with microphone. Used for background sound pickup.														
LOW		Decreases pickup sensitivity when recording with microphone. Used when speaking directly into microphone.														
START/STOP push-button switch----	<p>When pressed, stops or starts tape motion when the control knob is away from OFF position.</p>															
BATTERY CHARGER ON-OFF Switch -----	<table border="0"> <tr> <td style="text-align: right;"><i>Sw pos</i></td> <td style="text-align: right;"><i>Action</i></td> <td></td> </tr> <tr> <td style="text-align: right;">ON</td> <td></td> <td>Turns line power on to battery charger</td> </tr> <tr> <td style="text-align: right;">OFF</td> <td></td> <td>Turns line power off to battery charger.</td> </tr> </table>	<i>Sw pos</i>	<i>Action</i>		ON		Turns line power on to battery charger	OFF		Turns line power off to battery charger.						
<i>Sw pos</i>	<i>Action</i>															
ON		Turns line power on to battery charger														
OFF		Turns line power off to battery charger.														
POWER AMPLIFIER control -----	<p>When turned away from the OFF position, tape output signal is conducted to the loudspeaker and the PHONES jack. The setting of the control determines the signal level.</p>															
PHONES jack -----	<p>Enables user to listen to recorded signal through an auxiliary headset. connecting the auxiliary headset disconnects the loudspeaker.</p>															
Ac power cord -----	<p>Enables battery charging when connected to a 115-volt ac power source.</p>															

Control, jack, connector, or indicator	Function
INPUT/OUTPUT connector -----	Used to connect an external input signal for recording or to connect an H-224/UNH-10 for microphone monitoring.
MICROPHONE -----	Used to connect an M-119/UNH-10 for recording.
Counter-----	Used to identify locations of recorded portions of tapes
Counter control-----	Used to turn counter to zero setting.



TM 5874-200-12-1

Figure 4. Recorder-Reproucer Set, Sound AN/UNH-10, controls and indicator, main panel.



TM 5874-200-12-3

Figure 5. Recorder-Reproucer Set, Sound AN/UNH-10, connectors, jack, and controls, case panel.

Section II. OPERATION UNDER USUAL CONDITIONS

13. Types of Operation

a. The various types of operation include recording by use of a microphone or an external line input signal. The recording operation requires the use of tape reel loading procedures and stopping procedures and may also require the use of rewind and erase procedures. Playback operation requires the use of playback and stopping procedures and may also require the use of rewind and erase procedures. The various types of operation can also be performed during the battery recharging operation (para 34).

b. To operate the equipment for any particular type of operation, perform the following applicable procedures:

- (1) Loading supply and take-up reels , (para 14).
- (2) Loading cartridge loop(para 15).
- (3) Recording procedures (para 16).
- (4) Rewind procedures (Para 17)
- (5) Erase procedures (para 18).
- (6) Playback procedures (para 19).
- (7) Stopping procedures (para 20).

Note. Continuous operation in excess of 4 hours can be expected when the AN/UNH-10 batteries are fully charged.

14. Loading Supply and Take-up Reels

(fig. 6)

- a. Place the control knob in the OFF position.
- b. Place the filled supply reel on the left spindle (A, fig. 6) with the tape leading from the bottom of the reel when the reel is rotated counterclockwise.
- c. Rotate the reel slightly in either direction until the small spindle fins fit into the slots on the underside of the reel. Lift the three-fin reel lock that is mounted on the top of the spindle and turn it an eighth of a turn to lock the reel on the spindle.
- d. Thread the tape around the left tape guidepost and through the slot in the head cover, insuring that the oxide (dull) side is facing the rear. Lead the tape between the pinchwheel and capstan.
- e. Lead the tape around the right tape guide post and onto the right side of the empty take-up reel. The take-up reel will turn counterclockwise.

f. Secure the end of the tape in the slot at the top of the take-up reel and rotate the reel two or three turns to insure that the tape is firmly secured to the reel.

g. Rotate the reel slightly in either direction until the small spindle fins fit into the slots on the underside of the reel. Lift the three-fin reel lock that is mounted on the top of the spindle and turn it an eighth of a turn to lock the reel on the spindle.

h. When using a tape, both the upper and lower halves of the width of the tape may be used for recording or reproducing. Following a recording procedure, remove the completed tape take-up reel after first releasing the three-fin reel lock. Remove the empty supply reel after first releasing the three-fin reel lock, and place it on the take-up reel spindle. Invert the filled take-up reel and place it on the supply reel spine. Recording may now be made on the opposite half width of the tape, thus doubling the effective length of the tape.

15. Loading Cartridge Loop

(fig. 6)

- a. Verify that the control knob is in the OFF position.
- b. Place the cartridge loop (B, fig. 6) over the cartridge loop spindle with the loose tape loop toward the head cover. The payoff side of the cartridge loop tape will be toward the front of the recorder.
- c. Thread the tape around the left tape guide post, through the slot in the head cover, and between the pinchwheel and capstan.
- d. Place the tape around the right tape guide post, around empty take-up reel, and directly back to the cartridge.
- e. Place the empty take-up reel on the take-up reel spindle.
- f. Rotate the reel slightly in either direction until the small spindle fins fit into the slots on the underside of the reel. Lift the three-fin reel lock that is mounted on the top of the spindle and turn it an eighth of a turn to lock the reel on the spindle.

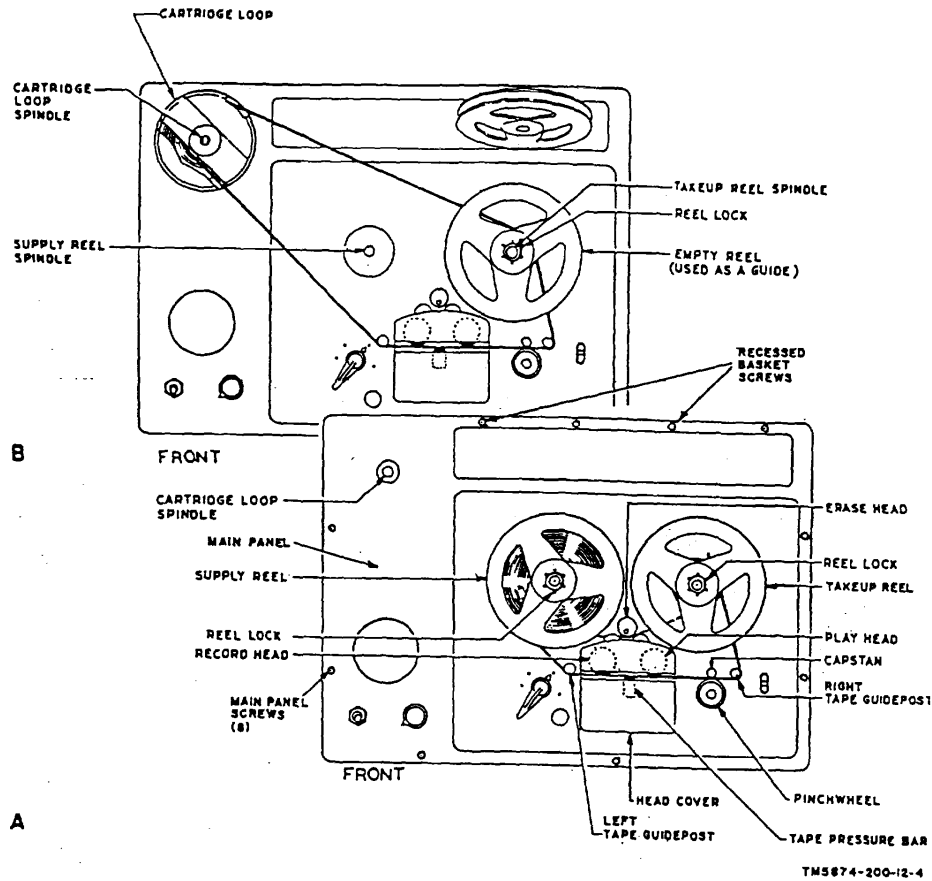


Figure 6. Loading reels.

The tape is now usable for operation. At the motor speed of the AN/UNH-10, the tape can be in motion for 15 minutes before the initial starting point of the tape reaches a repeat point.

16. Recording Procedures

Note. To erase tape information, follow procedures in paragraph 18. Recording over previously recorded tape information will produce unintelligible results.

a. Microphone Recording.

- (1) Follow the procedures in paragraph 14 to load take-up and supply reels.
- (2) Connect the M-119/UNH-10 to the MICROPHONE connector (fig.1).
- (3) Connect the H-224/UNH-10 to the INPUT/OUTPUT connector.
- (4) While pressing the record safety button (fig. 4), turn the control knob to the RECORD position.
- (5) Set the HIGH-LOW switch to the LOW position for speaking directly into the microphone.
- (6) Make operator's equipment test of microphone signal as follows:
 - (a) Set the LIVE-TAPE switch to the LIVE position.

- (b) Make a voice check by speaking into the microphone. The voice should be heard clearly through the headset
- (7) Press the START/STOP push-button switch to start the tape reels rotating for recording. The rotation of the tape reels can be stopped or started at any time during recording procedures by pressing the START/STOP push-button switch.
- (8) Make operator's equipment test of tape recording signal as follows:
 - (a) Set the LIVE-TAPE switch to the TAPE position.
 - (b) While the tape reels are turning, make a voice check by speaking into the microphone. The voice should be heard clearly through the headset approximately one-half second after speaking.

Note. If the test results of (6) and (8) above are favorable, the equipment considered in good operating condition and recording can be continued.
- (9) Monitor as follows:
 - (a) The test procedures in (6) and (8) above can be used as monitoring procedures throughout the recording of the tape. It is preferred to leave the LIVE-TAPE switch in the TAPE position (8) (b) above) so that periodic checks can be made of the tape-recorded material.
 - (b) While recording, monitoring of the signal being tape can also be done by turning the POWER AMPLIFIER control clockwise to a setting which-produce a comfortable listening level signal from the loudspeaker. When using the loudspeaker to monitor, be aware that feedback from the loudspeaker to the microphone will occur if the two items are too close together. The same monitoring can be done by use of an auxiliary headset connected to the PHONES Jack, The signal level to the auxiliary headset is also controlled by the POWER AMPLIFIER controls.
- (10) Upon completion of recording a tape, turn control knob to OFF.
- (11) To make the tape available for playback procedures, follow rewind procedures (para 17).

Note. Rewind procedures (para 17) and erase procedures (para 18) can be performed at any time. during a recording by first turning the control knob to OFF position and then following the procedure in the applicable paragraph

b. Line Input Signal Recording.

 - (1) Follow the procedures in paragraph 14 to load take-up and supply reels.
 - (2) Connect line input signal, approximately 0 dbm level (.78 volts), to INPUT/OUTPUT connector.
 - (3) At the same time, press the record safety button and turn the control knob to the RECORD position.
 - (4) If connected, remove the M-119/UNH-10 from MICROPHONE connector to prevent microphone signals from being imposed on tape.
 - (5) Place HIGH-LOW switch in LOW position.
 - (6) Place LIVE-TAPE switch in LIVE position.
 - (7) Press the START/STOP push-button switch to start recording. The rotation of the tape reels, can be stopped or started at anytime during recording procedures by pressing the START/STOP push-button switch.
 - (8) Monitoring of the signal being taped can be done by turning the POWER AMPLIFIER control clockwise to a setting that produces a comfortable listening level signal from the loudspeaker. The same monitoring can be done by use of an auxiliary headset connected to the PHONES Jack. The signal level to the auxiliary headset is also controlled by the POWER AMPLIFIER control.
 - (9) Upon completion of recording a tape, turn the control knob to OFF.
 - (10) To make tape available for play-back procedures, follow rewind procedures (para 17).

Note. Rewind procedures (para 17) and erase procedures (para18) can b per-

formed at any time during a recording by first turning the control knob to OFF position and then following the procedures in the applicable paragraph.

c. Recording Combination Microphone and Line, Input Signals.

- (1) Follow procedures in paragraph 14 to load take-up and supply reels.
- (2) Connect the M-119/UNH-10 for the MICROPHONE connector (fig. 5).
- (3) Set the HIGH-LOW switch to LOW position for speaking directly into microphone.
- (4) Set the LIVE-TAPE switch to LIVE.
- (5) Connect the external line input signal, approximately 0 dbm level (.78 volts), to INPUT/OUTPUT connector.
- (6) While pressing the record safety button, turn the control knob to RECORD.
- (7) Press the START/STOP push-button switch to start the reels rotating for recording. The rotation of the tape reels can be stopped or started anytime during recording procedures by pressing the START/STOP push-button switch.

Note The tape is now recording both the input line signal and whatever microphone signal is generated, The operator determines the desired recording.

- (8) Under the above conditions ((1) through (7)), only the microphone input and line input signals can be monitored while recording. Turn the POWER AMPLIFIER control clockwise to a setting that produces a comfortable listening level from the loudspeaker. The same monitoring can be done by connecting an and auxiliary headset to the PHONES jack. The signal level to the auxiliary headset is also controlled by the POWER AMPLIFIER control.
- (9) Upon completion of Recording tape, turn the control knob to OFF.
- (10) To make tape available for play-back operation, follow the rewind procedures (para 17).

17. Rewind Procedures

- a. With the START/STOP push-button switch in a run sequence position, set the control knob to REWIND.

Caution: Do not top the rewind action with the START/STOP push-button switch. Damage to the tape is

possible.

- b. Turn the control knob to OFF position to knob rewind action.

18. Erase Procedures

Note - Use of this procedure erases the entire width of tape (para-14A).

Erasing can be done while the tape running in either direction.

- a. Set the control knob to OFF when the tape is positioned to a pot at the erase head) where erasing is to begin. Use the rewind procedures (para 17) if necessary.
- b. Remove the tape from the head cover slot (A, fig. 6) and left and right tape guide posts.
- c. Thread the tape between the erase head and the head cover; insure that the top position is such that the oxide (dull) side is toward the erase head.
- d. Run the tape in the desired direction to erase by setting the control knob on either the desired PLAY or REWIND position and insuring that the START/STOPS push-button switch is in a run sequence.
- e. When the desired tape area is erased, turn the control knob to the OFF position and resume desired operation.

19. Playback Procedures

Note. Upon completion of recording a tape, rewind the tape, (para 17) before following the procedures below.

- a. Place the LIVE-TAPE switch to the TAPE position.
- b. Turn the control knob to PLAY position.
- c. Press the START/STOP push-button switch to start tape rotation action. The playback procedure can be stopped or started at any time by pressing the START/STOP push-button switch.
- d. If an auxiliary headset is connected to the PHONES Jack or the loudspeaker is being used- to listen to the playback turn the POWER AMPLIFIER control clock-wise to a setting which produces a desired output sound level.

e. The playback of the tape can also be heard from the H-224/UNH-10 when connected to the INPUT/OUTPUT connector.

f. At the completion of playback of the tape, turn the control knob to OFF.

g. To playback the tape again, follow the rewind procedure (para 17).

20. Stopping Procedures

The only time battery power is discontinued to the operational circuits is when the control knob is set to the OFF position (para 11). Whenever operation is discontinued for any extended period of time, or before storage of the equipment for any length of time, set the control knob to the OFF position. During any operation, when the control knob is away from the OFF position, the reel rotation action can be stopped and started by pressing the START/STOP push-button switch.

Section II. OPERATION UNDER UNUSUAL CONDITIONS

21. Operation Of Low and High Temperatures

Normal operation can be expected within a temperature range 0° F to 120° F (-17.8° C to 48.9° C). Usable operation can be expected in temperatures that extend to -10° (-2.3° C) and 140° F (0° C) with the following operational deviations:

a. *Low Temperatures.* Motor speed will become irregular and recording and reproduction levels will change.

b. *High Temperatures.* Recording and reproducing levels will change.

22. Operation Under Tropical Conditions

When operated in tropical climates, the AN/UNH-10

may be operated in swampy areas where extreme moisture conditions exist. The high relative humidity causes condensation on the equipment whenever the temperature of the equipment becomes lower than that of the air. Keep the equipment dry.

23. Operation in Desert Climates

When operated in desert climates, large amounts of sand may enter the parts of the AN/UNH-10. In particular, dust entering the loudspeaker enclosure will cause trouble. Keep the camera closed when the equipment is not in use.

**CHAPTER 4
MAINTENANCE INSTRUCTIONS**

Section I. OPERATOR'S MAINTENANCE

24. Scope of Operator's Maintenance

The maintenance duties assigned to the operator of Recorder-Reproducer Set, Sound AN/UNH-10 consist of daily preventive maintenance checks and services (para 2) and troubleshooting and tape splicing (para 27). Operator's duties assigned do not require tools or test equipment.

25. Operator's Preventive Maintenance

Operators preventive maintenance is the inspecting and operational testing to assure that the equipment is serviceable. The preventive maintenance checks and services chart (para 26) outlines function to be performed

daily. These checks and services are to assure that Army electronic equipment is in a combat serviceable condition; that is, in good general (physical) condition and good operating condition. To assist operators in assuring combat serviceability, the charts indicate what to check how to check, and the normal conditions; the *References* column lists the paragraph that contains trouble-shooting information. The defect cannot be remedied by the operator higher echelon maintenance or repair is required. Records and reports of these checks and services must be made in accordance with requirements set forth in TM 38-750.

26. Daily Preventive maintenance Checks

Sequence No.	Item	Procedure	References
1	Exterior surfaces, headset, and microphone	Check to see that no obvious damage exists and that reels and tapes are present	Para 27.
2	AN/UNH-10 operation	a. Load supply and take-up reels (para 14). b. Make microphone recording (para. 16).	

27. Operator's Troubleshooting and Tape Splicing

a. Operator's Troubleshooting. When the equipment fails to perform properly, check the items below. If the checks listed do not reveal the trouble, higher echelon maintenance is required.

- (1) Check the setting of controls on the AN/UNH-10.
- (2) Check to see that the M-119/UHN-10, M-224/UNE-10, or external line signal equipment (if used, is properly connected.
- (3) Check the control settings of external equipment, if external equipment is used.
- (4) Check the tape to insure that the oxide

(dull) side is facing toward. the erase head.

b. Tape Splicing. If the recording tape should break or tear, repair it as follows:

- (1) If no tape splicer is available, place the broken ends together, overlapping them by about one-eighth of an inch, and cut them at an angle of 45°.
- (2) Butt the two cleanly cut ends together, and fasten them with a 3/4-inch length of splicing tape placed across the back (glossy side) of the recording tape parallel to the cut.

(3) Trim the edges of the recording tape so that it is slightly narrower the splice to prevent

Interference when the tape moves past the head assembly and capstan.

(4) Press the edges of the splicing tape firmly to the recording tape.

Section II. ORGANIZATIONAL MAINTENANCE

28. Scope of Organizational Maintenance

The maintenance duties assigned to the organizational maintenance repairman of Recorder-Reproducer Set, Sound AN/UNH-10 are listed below together with references to the paragraphs covering the specific maintenance functions.,

- a. Daily preventive maintenance checks and services (para 32).
- b. Weekly preventive maintenance checks and services (para 33).
- c. Recharging and testing batteries
- d. Cleaning -(para 35).
- e. Touchup painting (para 36).
- f. Organizational troubleshooting (para 37 and 38).
- g. Removal and replacement of main panel (para 39).
- h. Checking and replacement of regulator tube (para 40).
- i. Replacement of fuses -(para 41).
- j. Replacement of drive and counter-drive belts (para 42).
- k. Cleaning all heads and demagnetizing play and record heads (para 43).
- l. Quarterly preventive maintenance checks and services (para 44).

29. Tools, Materials, and Test Equipment Required

A list of parts authorized for second echelon maintenance appears in TM 11-5784-200-20P. The tools, materials, and test equipment required for organizational maintenance are listed below.

- a. Tools.
 - (1) Tool Kit Radio Repair TK-11/G.
 - (2) Demagnetizer, head.
- b. Materials.
 - (1) Cleaning Compound (FSN 7930-395-9542).
 - (2) Alcohol.

(3) Cleaning cloth.

c. Test Equipment. The only test equipment required is Multimeter AN/UILR1-105.

30. Organizational Preventive Maintenance

a. Organizational preventive maintenance is the systematic care, inspection, and servicing of equipment to maintain its serviceable condition, prevent breakdowns, and assure maximum operational capability. Preventive maintenance is the responsibility of all echelons concerned with the equipment and includes the inspection, testing, and repair or replacement of parts or assemblies that inspection and tests indicate would probably fail before the next scheduled periodic service. Preventive maintenance checks and services of the AN/UNH-10 at the second echelon level are made at daily, weekly, and quarterly intervals, unless otherwise directed by the commanding officer. To assist the organizational repairman in maintaining combat serviceability, the charts indicate what to check, how to check, and the normal conditions. The *References* column lists the paragraphs or manuals that contain trouble-shooting information or repair or replacement procedures.

b. Maintenance forms and records to be used and maintained on this equipment are specified in TM 38-750.

31. Organizational Preventive Maintenance Checks and Services Periods

Organizational preventive maintenance checks and services of Recorder-Reproducer Set, Sound AN/UNH-10 are required daily, weekly, and quarterly.

a. Paragraph 32 specifies the checks and

services that must be accomplished daily or at least once each week if the equipment is maintained in standby condition.

b. Paragraph 33 specifies additional checks and services that must be performed once each week.

c. Paragraph 4 specifies checks and services that must be performed once every 3 months.

32. Daily Organizational Preventive Maintenance Checks and Services Chart

Sequence No.	Item	Procedure	References
1	Completeness -----	See that the equipment is complete (appx III).	
2	Hardware and controls --	During cleaning operations (item 3), inspect for damaged, missing, or loose hardware, controls, and tape reels.	
3	Cleanliness-----	Remove dirt, grease, moisture, fungus, and oil from erase, record, and play heads (par 43), and exterior surfaces of case, main panel, headset, -microphone, cords, tape reels, connectors, jacks, mechanical controls, and knobs (para 35).	
4	Operation -----	Check for normal operation (items 5 through 23) and complete functional response of the equipment. Be alert for unusual performance, response, or condition.	
5	Batteries -----	Follow battery testing and recharging procedure (Para 34).	
6	Supply and take-up reels -----	Load supply and take-up reels (para 14a through g).	
7	Counter control-----	Turn until counter registers all zeros.	
8	MICROPHONE connector	Connect the M-119/UNH to the MICROPHONE connector.	
9	INPUT/OUTPUT connector -----	Connect the H-224/UNH-10 to the INPUT/OUTPUT CONNECTOR	
10	Control knob and record safety button -----	While pressing the record safety button, turn the control knob to RECORD position.	
11	HIGH-LOW switch-----	Set to LOW.	
12	LIVE-TAPE switch-----	Set to LIVE.	
13	M4-119/ UNH-10 and H-224/ UNH-10. -----	Speak into microphone and note that the voice is heard clearly in headset	Para 38.
14	START/STOP push-button switch-----	a. Press push-button switch and note that as reels rotate, the tape unwinds from the supply reel and winds on the take-up reel. Note that counter registers numbers sequentially. b Press push-button switch and note that tape motion stops. c Press push-button s witch and note that tape motion resumes as a above.	Para 38.
15	LIVE-TAPE switch	Set to TAPE.	
16	Microphone and headset	Speak into microphone and note that voice is heard clearly in headset with an approximate half-second time delay. Continue to record the voice for several minutes.	Para 38.

Sequence No.	Item	Procedure	References
17	Control knob -----	<ul style="list-style-type: none"> a. Turn to OFF. Note that reels stop rotating. No numerical value indicated on counter. b. Turn to REWIND. Note that tape is unwinding from take-up reel and winding on supply reel. Also note that the counter is registering sequential numbering in reverse. c. Turn to OFF when counter indicates zero setting. Note that reels stop rotating and position of tape is approximately equal to that as at the end of sequence number 7. d. Turn to PLAY. Note that reels rotate as the tape unwinds from the supply reel and winds on the take-up reel. 	
18	POWER AMPLIFIER control	Turn away from OFF. Note that tape recording output is heard from loud-speaker. Note that loudspeaker output varies in volume as the control setting is changed. Also note that counter is registering numbers sequentially.	
19	PHONES jack -----	<ul style="list-style-type: none"> a. Connect auxiliary headset to jack. Note that loudspeaker output is discontinued and tape recording output is heard from the auxiliary headset. b. Disconnect auxiliary headset from PHONES Jacks; Note that loudspeaker output resumes. 	
20	POWER AMPLIFIER control	Turn to OFF. Loudspeaker output discontinues.	
21	Control knob -----	<ul style="list-style-type: none"> a. Turn to OFF. Remove the tape from the head cover slot and left and right tape guide posts and thread the tape between the erase head and head cover, insuring that the tape position is such that the oxide (dull) side is toward the erase head. b. Turn to REWIND. Note that tape rewinds the supply reel. c. Turn to OFF when counter indicates zero setting...Remove tape threading from between head cover and erase head and rethread the tape around the outside of the left tape guide post, the head cover slot, between the capstan and pinchwheel, and around the outside of the right tape guide post. 	
22	POWER AMPLIFIER control	<p>Caution: Do not turn POWER AMPLIFIER control beyond its natural mechanical limit.</p> <p>Turn away from OFF and to its extreme clockwise position.</p>	
23	Control knob -----	<ul style="list-style-type: none"> a. Turn to PLAY. Note that the recording has been erased from the tape and no voice is heard from the loudspeaker. b. Turn to OFF. 	Para 38.

33. Weekly Preventive Maintenance Checks and Services Chart

Sequence No.	Item	Procedure	References
1	External surfaces.....	Inspect all exposed surfaces for chips, cracks, rust, and corrosion. Remove rust and corrosion, and spot-paint bare spots that are ordinarily covered	Para 36.
2	Cables and cords.....	Check cables and cords for frays, loose connections, deterioration, and breaks.	
3	Operating controls	Inspect all operating controls for binding, scraping, and excessive looseness.	
4	Regulator tube.....	Check for operative regulator tube	para 40.
5	Hardware.....	Tighten all loose screws, bolts, and fasteners	
6	Play and record heads.....	Demagnetize play and record heads	Para 43.

34. Testing and Recharging Batteries

a. *General.* The following information is applicable concerning testing and recharging batteries.

- (1) All operations (para 13) may be conducted for a limited time while batteries are recharging, if the battery voltage is at a usable level (greater than 9.5 volts).
- (2) When the batteries are fully charged, - the AN/UN-10 can be operated continuously in excess of 6 hours during recharging action.

b. *Procedures.* Apply the procedures below at the completion of the day's operation of the AN/UNI-10 when the AN/UNH-10 is being operated daily, or before use when the AN/UNH-10 has been stored or not operated for more than a day.

- (1) Set the LIVETAPE switch to the TAPE position.
- (2) Turn the control knob to PLAY (START/STOP switch must be in a run sequence).
- (3) With Multimeter AN/RM-105 adjusted for measuring dc volts, apply the AN/URM-105 positive test lead to pin 1 of the INPUT/OUTPUT connector, and the negative test lead to pin 4 of the connector. Note the AN/URM-105 meter reading and follow the applicable instruction in either (a) or (b) below.

(a) If the meter indications is 11 volts or greater, battery recharging is not necessary; the batteries are usable for daily operation. Fully charged batteries will indicate approximately 11.5 volts. Disconnect the AN/URM--105 test leads and turn the AN/UNH-/10 control knob to OFF. Complete items 6 trough 23 in the daily organizational preventive maintenance checks and services chart (para 32).

(b). If the meter indication is less than 11 volts, recharging is necessary to obtain expected daily maximum time operation of 4 hours. Note the voltage reading and continue with subsequent steps.

Note: The lowest usable voltage or operational testing of the AN/UNH-10 operation is 9.5 volts.

- (4) Disconnect the AN/URM-105 test leads from the AN/UNH-10.
- (5) Set the AN/UNH-10 control knob to OFF if no operation is intended during recharging time.
- (6) Remove the ac power cord from the recessed storage compartment and connect it to a 115-volt, 50-to 60-cycle ac power source.
- (7) Set BATTERY CHARGER ON-OFF switch to ON to begin recharging action. (Completely discharged

batteries will take approximately 16 hours to fully recharge.)

- (8) During recharging action, follow the procedure in (a) or (b) below.
 - (a) If the voltage of the batteries ((3) above) measured greater than 9.5 volts, complete items 6 through 23 in the daily organizational preventive maintenance checks and services chart (para 32) and then follow the procedures in (9) through (12) below.
 - (b) If the voltage of the batteries ((3) above) measured less than 9.5 volts, every two hours disconnect the ac power cord and repeat the procedures beginning with (1) above. Each measurement should show a pronounced increase in battery voltage.
- (9) When the AN/UNH-10 is being used daily, the recharging action may be continued until the next day's operation.

Note: Excessive recharging time will not damage the AN/UNH-10.
- (10) Upon completion of recharging action, disconnect the ac power cord and replace the cord in the recessed storage compartment.
- (11) Set BATTERY CHARGER ON-OFF switch to OFF.
- (12) Make voltage measurement ((1), (2), and (3) above) to insure that the batteries are serviceable for operation.

35. Cleaning

Inspect the exteriors of the AN/UNH- 10, M-119/UNH-10, H-224/UNH-10, and tape reels. The exterior surfaces should be clean and free of moisture, dust, dirt, grease, and fungus.

a. Remove dust and loose dirt with a clean soft cloth.

Warning: Cleaning compound is flammable and its fumes are toxic. Provide adequate ventilation. Do not use near a

b. Remove grease, fungus, and ground-in dirt from the case; use a cloth dampen (not wet) with cleaning compound.

c. Remove dust or dirt from plug and jacks with a brush.

d. Clean the main panel and control knobs; use a soft clean cloth. If dirt is difficult to remove, dampen the cloth with water; mild soap may be used for more effective cleaning.

36. Touchup Painting Instructions

Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats of paint on the bare metal to protect it from further corrosion. Refer to the applicable cleaning and refinishing practices specified in TM 9-213.

37. Organizational Troubleshooting

Troubleshooting of this equipment is based on the operational check contained in the daily organizational preventive maintenance checks and services chart. To troubleshoot the equipment, perform all functions starting with item 4 in the daily organizational preventive maintenance checks and services chart (para 32) and proceed through the items until an abnormal condition or result is observed. When an abnormal condition or result is observed, note the item number and turn to the corresponding item number in the troubleshooting chart (para 38). Perform the checks and corrective measures indicated in the troubleshooting chart. If the corrective measures indicated do not result in correction of the trouble, higher echelon maintenance is required. Paragraphs 39 through 43 contain additional information and step-by-step instructions for performing equipment tests and adjustments to be used during the troubleshooting procedure.

38. Organizational Troubleshooting Chart

Item No.	Trouble symptom	Probable trouble	Checks and corrective measures
5	Batteries do not respond to charging action Voltage level remains constant.	a. Defective fuse F1 and/or F2. b. Defective regulator tube	a. Check fuses and replace as necessary (para 41). b. Check regulator tube (para 40).
13	Voice Is not heard In headset.	a. Defective fuse F4 ----- b. Defective headset----- c. Defective microphone	a. Check fuse and replace if necessary (para 41).- b. Alternately replace cable section and headpiece. c. Replace microphone
14	a. Reels do not rotate b Rotations of reels are not constant c Counter does not register or registers erratically	a. Defective fuse 3 ----- b. Defective drive belt--- c. Defective counter drive belt.	a. Check fuse and replace if necessary (para 41). b. Clean drive belt or replace if necessary para 42). c, Clean counter drive belt or replace if necessary (para 42).
16	Signal heard is not clear, is noisy, or is not heard at all.	Dirty or magnetized play and record heads	Clean play and record heads and if necessary, demagnetize (para 43).
23	Signal is heard -----	Dirty erase head-----	Clean erase head (para 43).

39. Removal and Replacement of Main Panel

a. Removal.

Warning: Before removal of the main panel, be sure the ac power cord is not connected to an ac power source.

Caution: Before removal of main panel, turn control knob to OFF.

- (1) Use a screwdriver to loosen the eight quick release screws (A, fig. 6) around the edge of the main panel. Note that two of the screws in the recessed storage area which secure the metal basket are not to be removed.
- (2) Lift the main panel 3 to 4 inches above the top of the case level and check to be sure that all connecting cables between the case and the main panel are clear.
- (3) Invert the main panel while moving it toward the front of the case and rest the main panel in the area in front of the case.

b. Replacement.

Warning: Before replacement of the main panel, be sure the ac power cord is not connected to an ac power source.

Caution: Before replacement of main panel, turn control knob to OFF.

- (1) Invert the main panel while moving 22 it to a

position 3 to 4 inches above the top of the case level.

- (2) Be sure that connecting cables fall into place under the in panel and are free of moving parts and are not pinched between the main panel and the case.

Caution: Do not drop or force the main panel the case.

- (3) Gently lower the main panel until it rests in the correct position in the case.
- (4) Use a screwdriver and fasten the eight quick-release studs around the edge of the main panel.

40. Checking and Replacement of Regulator Tube

- a. Remove the main panel (para 39).
- b. Identify regulator tube location (para 39).
- c. Place the BATTERY CHARGER ON- OFF switch to the ON position.

Warning: When the internal parts are exposed, do not touch any portion of the AN/UNH-10 while the ac power cord is connected to an ac power source.-

- d. Connect the ac power cord to a 115- volt ac power source.
- e. Observe the regulator tube. If the

tube filament shows even the slightest glow, the regulator tube is not defective. If no filament glow is seen, the regulator tube is defective and request replacement.

f. Disconnect the ac power cord from the ac power source.

g. Remove the 2-pin connector from the pins of the regulator tube and pull the regulator tube from its spring clipholder.

h. Insert the new regulator tube in the spring clipholder and attach the 2-pin connector to the pins of the regulator tube.

Warning: When the internal parts are exposed, do not touch any portion of the AN/UNH-10 while the ac power cord is connected to an ac power source.

i. Connect the ac power cord to a 115- volt ac power source.

j. Observe the new regulator tube. in the tube filament shows even the slightest glow, the regulator tube is operating properly.

k. Disconnect the ac power cord from the ac power source.

l. Place the BATTERY CHARGER ON-OFF switch to the OFF position.

m. Replace the main panel (para 39b).

41. Replacement of Fuses

Caution: Do not use a fuse rated above the specified value-(para 10). Damage to the equipment may result.

a. Remove the main panel -(para 39a).

b. Remove the defective fuse (fig. 3).

c. Insert the new fuse into fuseholder.

d. Replace the main panel (para 39b).

42. Replacement of Drive and Counter-drive Belts

a. Remove the main panel (para 39a).

b. Remove the defective belt (fig. 7); the belt slips easily from the wheels.

c. Replace the new belt on the wheels and wipe any contaminants from the belt that could cause slippage.

d. Replace the main panel (para 39b).

43. Cleaning All Heads and Demagnetizing Play and Record Heads

a. Cleaning Erase, Record, and Play Heads.

(1) Firmly lift the head cover away from the main panel. The head cover is a snap-on type.

(2) Brush the heads (fig. 6) lightly with a cotton swab that has been dipped in alcohol.

(3) Position the three male snap connectors of the head cover into the snap connector slots on the panel and then firmly press the head cover into a locked position.

Caution. Keep the head demagnetizer away from the erase head. The erase head is a permanent magnet and the head demagnetizer could damage the erasing ability of the erase head.

b. Demagnetizing Play and Record Heads.

Magnetization of the record and play heads during normal use of the AN/ UNH-10 is common. Magnetized heads cause noise level (reduction in signal-to-noise ratio) and harmonic distortion. The head demagnetizer removes residual permanent magnetism from the heads. The demagnetizer is an alternating current electromagnet with an extended polepiece. When energized, contact of the demagnetizer polepiece with the polepieces of the record or play head causes the head to become saturated by alternating magnetic field. Gradual removal of the head from this saturating field neutralizes any residual permanent magnetism in the record or play head. Demagnetize the play and record heads as follows:

(1) Lift the head cover to expose the play and record heads (fig. 6).

(2) Connect the head demagnetizer line cord into a power source.

Caution: Do not press hard or scrape against the poles of the record or play head. To avoid scratching or scoring the poles of the record or play head, place a piece of thin pressure-sensitive tape on the polepiece of the demagnetizer.

(3) Place the polished flat surface of the demagnetizer polepiece on the poles of the record head so that both poles of the record head are contacted at once by the demagnetizer polepiece. The polepieces of

the record head are located on the tape side of the head.

- (4) Hold the demagnetizer as instructed in (3) above for a few seconds.

Caution: Do not disconnect current from the demagnetizer while it is in the vicinity of the record head and do not remove it quickly once it is placed in the vicinity of the head.

- (5) Slowly remove the demagnetizer from the area of the record head.
- (6) Repeat the procedures in (2) through (5) above for the play head.

- (7) Position the three male snap connectors of the head cover into the snap connector slots on the main panel and firmly press the head cover down into a locked position.

44. Quarterly Preventive Maintenance Checks and Services Chart

Report all deficiencies or shortcomings in accordance with the requirements of TM 38-750.

Sequence No.	Item	Procedure	References
1	Publications	See that all publications are complete, serviceable, and current.	DA Pam 310-4
2	Modifications	Check DA Pam 310-4 to determine if new applicable MWO's have been published. ALL URGENT MWO's must be applied immediately. All ROUTINE MWO's must be scheduled.	TM 38-750 and DA Pam 310-4.
3	Lubrication	Return to fourth echelon for quarterly lubrication.	
4	Spare Part	Check all organizational spare parts for general condition and method of storage. There should be no evidence of overstock, and all shortages must be on a valid requisitions	TM 11-5874-200-20P.

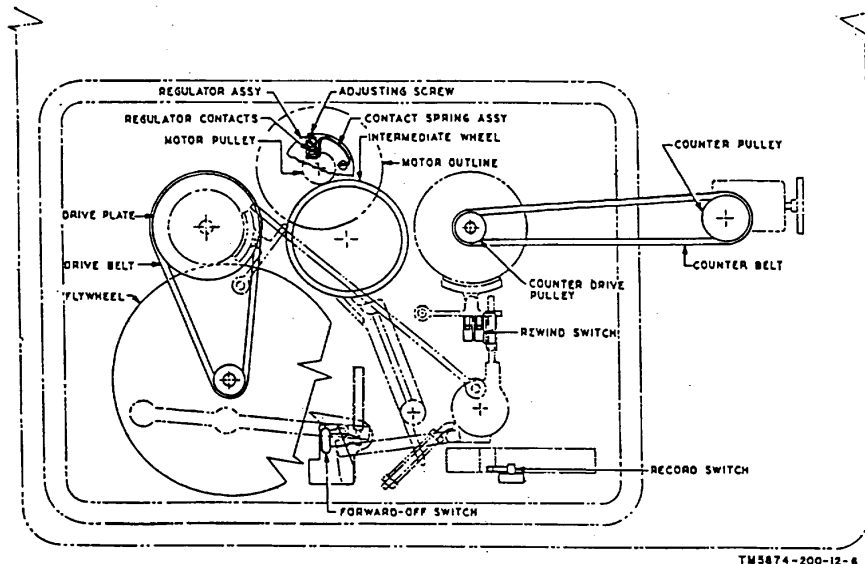


Figure 7. Drive and counter drive belts location diagram.

CHAPTER 5

SHIPMENT AND LIMITED STORAGE AND DEMOLITION

TO PREVENT ENEMY USE

Section I. SHIPMENT AND LIMITED STORAGE

45. Disassembly of Equipment

Disassemble Recorder-Reproducer Set, Sound AN/UNH-10 as follows:

- a. Turn the control knob to OFF.
- b. Place the ac power cord into the recessed storage compartment.
- c. Secure the tape reels on the spindles, using the three-fin reel locks.
- d. Secure the H-224/UNH-10 and M-119/UNH-10 on the inside of the case cover.
- e. Close the case cover and secure with the snap latches.
- f. Screw covers on external connectors.

46. Protecting Transported Equipment

- a. Equipment that is to be removed from service for periods exceeding approximately 2 weeks, or equipment that is to be shipped for use by other personnel or activities, is normally repackaged by second echelon personnel (para 47).
- b. If the equipment is to be transported over short distances under control of the using unit for re-use, no special precautions need be taken. The carrying case of the AN/UNH-10 is designed for ease of transportation and for maximum protection of the equipment.

47. Repackaging for Shipment or Limited Storage

The exact procedure for repackaging depends on the material available and the conditions under which the equipment is to be shipped or stored. Adapt the procedures outlined below whenever possible. The information concerning the original packaging (para 8) will also be helpful.

a. Material Requirements. The following materials are required for packaging the AN/UNH-10. For stock numbers of materials consult SB 38-100.

Material	Quantity
Pressure-sensitive---- tape.	22 ft
Corrugated cardboard	24 sq ft
Wooden box -----	1,26-1/2 in. x 23 in. x 14-1/2 in.
Steel strapping -----	160 in. x 5/8 in.

b. Packaging.

- (1) The AN/UNH-10 should be disassembled and prepared for shipment as outlined in paragraph 45. Cushion the AN/UNH-10 on all surfaces with pads of filler material. Place the cushioned set within a wrap of corrugated cardboard. Secure the wrap with gummed tape.
- (2) Pack the complete packaged AN/UNH-10 in a nailed wooden box and secure with steel strapping.

Section II. DEMOLITION OF MATERIEL TO PREVENT ENEMY USE

48. Authority for Demolition

Demolition of the equipment will be accomplished only upon order of the commander. The destruction outlined in paragraph 49 will be used to prevent further use of the equipment.

49. Methods of Destruction

Use any of the following methods to destroy the equipment.

- a. Smash the loudspeaker grille and cone, batteries, printed circuit boards, chassis, transformer, and motor. Use

sledges, axes, handaxes, pickaxes, hammers, or crowbars.

Warning: Be extremely careful with explosives and incendiary devices. Use these items only when the need is urgent.

b. Burn. Burn technical manuals and remainder of case contents; use gasoline, kerosene, oil, flamethrowers,

or incendiary grenades.

c. Bend. Bend control panel and carrying case.

d. Dispose. Bury or scatter the destroyed part in slit trenches or foxholes, or throw them into streams.

APPENDIX I

REFERENCES

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (Types 4, 6, 7, 8, and 9), Supply Bulletin, Lubrication Orders, and Modification Work Orders.
SB 38-100	Preservation, Packaging and Pacing Materials, Supplies, and Equipment Used by the Army.
TM 9-213	Painting Instructions for Field Use.
TM 11-6625-203-12	Operator and Organizational Maintenance, Multimeter AN/URM-105, Including Multimeter ME-77/U.
TM 38-750	The Army Equipment Record System and Procedures.
TM 11-5874-200-20	Organizational Maintenance-Repair Parts and Special tool Lists, - Recorder-Reproducer Set, Sound AN/UNH-10

APPENDIX II

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

1. General

a. This appendix assigns maintenance functions to be performed on components, assemblies, and subassemblies by the lowest appropriate maintenance echelon.

b. Columns in the maintenance allocation chart are as follows:

(1) *Part or component.* This column shows only the nomenclature or standard item name. Additional descriptive data are included only where clarification is necessary to identify the component. Components, assemblies, and subassemblies are listed in top-down order. That is, the assemblies which are part of a component are listed immediately below that component, and the subassemblies which are part of an assembly are listed immediately below that assembly. Each generation breakdown (components, assemblies, or subassemblies) is listed in disassembly order or alphabetical order.

(2) *Maintenance function.* This column indicates the various maintenance functions allocated to the echelons.

(a) *Service.* To clean, to preserve, and to replenish lubricants.

(b) *Adjust.* To regulate periodically to prevent malfunction.

(c) *Inspect.* To verify serviceability and to detect incipient electrical or mechanical failure by scrutiny.

(d) *Test.* To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gages, meters, etc.

(e) *Replace.* To substitute serviceable components, assemblies, or subassemblies,

for unserviceable components, assemblies, or subassemblies.

(f) *Repair.* To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This function includes but is not limited to welding, grinding, riveting, straightening, and replacement of parts other than the trial and error replacement of running spare type items such as fuses, lamps, or electron tubes.

(g) *Align.* To adjust two or more components of an electrical system so that their functions are properly synchronized.

(h) *Calibrate.* To determine, check, or rectify the graduation of an instrument, weapon, or weapons system, or components of a weapons system.

(i) *Overhaul.* To restore an item to completely serviceable condition as prescribed by serviceability standards developed and published by heads of technical services. This is accomplished through employment of the technique of "Inspect and Repair Only as Necessary" (IROAN). Maximum utilization of diagnostic and test equipment is combined with minimum disassembly of the item during the overhaul process.

(j) *Rebuild.* To restore an item to a standard as near as possible to original or new condition in appearance, performance, and life expectancy. This is accomplished through the maintenance technique of complete disassembly of the item, inspection of all parts or components, repair or

replacement of worn or unserviceable elements using original manufacturing tolerances and/or specifications and subsequent reassemble of the item.

- (3) *1st, 2d, 3d, 4th, 5th echelons.* The symbol X indicates the echelon responsible for performing that particular maintenance operation, but does not necessarily indicate that repair parts will be stocked at that level. Echelons higher than the echelon marked by X are authorized to perform the indicated operation.
- (4) *Tools required* This column indicates codes assigned to each individual tool equipment, test equipment, and maintenance equipment referenced. The grouping of codes in this column of the maintenance allocation chart indicates the tool, test, and maintenance equipment required to perform the maintenance function.
- (5) *Remarks.* Entries in this column will be utilized when necessary to clarify any of the data cited in the preceding column.

c. Columns in the allocation of tools for maintenance functions are as follows:

- (1) *Tools required for maintenance functions.* This column lists tools, test, and maintenance equipment required to perform the maintenance functions.
- (2) *1st 2d 3d 4th, 5th echelon.* The dagger (†) symbol indicates the echelons normally allocated the facility.
- (3) *Tool code.* This column lists the tool code assigned.

2. Maintenance by Using Organizations

When this equipment is used by signal services organizations organic to theater headquarters or communication zones to provide theater communications, those maintenance functions allocated up to and including fourth echelon are authorized to the organization operating this equipment.

Section II. MAINTENANCE ALLOCATION CHART

PART OR COMPONENT	MAINTENANCE FUNCTION	ECHELON					TOOLS REQUIRED	REMARKS	
		1	2	3	4	5			
RECORDER-REPRODUCER SET, SOUND AN/UNH-10	service		X				3,12 11	PREVENTIVE MAINTENANCE	
	adjust				X		1,6,9,11	ALL ADJUSTMENTS	
	inspect	X						EXTERIOR & ACCESSORIES	
	test		X	X				12	BY MONITORING
						x		5,12 1,2,36,7,9,10,11,13	BATTERY VOLTAGE
	repair						X	1,2,3,4,6,7,8,9,10,11	ALL TESTS EXCEPT FLUTTER-WOW & SIGNAL TO NOISE RATIO
				X				13	ALL TESTS.
align					X		12	REPLACE FUSES, TUBE & ACCESSORIES.	
overhaul					X		11	RECORD & PLAY HEADS	
BATTERY CHANGE BC-90	test		X				5,12	VOLTAGE OUTPUT	
	repair				x		1,6,11	CURRENT OUTPUT	
HEADSET H-244 UNH-10	service		X				11		
	inspect	X							
	test	X						OPERATIONAL	
	replace		X						
MICROPHONE H-119/UNH-10	repair		X					REPLACE ASSEMBLIES ONLY	
	service		X				12		
	inspect	X							
	test	X						OPERATIONAL	
	replace		X						

Section III. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS

TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	ECHELON					TOOLS CODE	REMARKS
	1	2	3	4	5		
AN/UNH-10 (continued)							
AMMETER ME-65/u				☒	☒	1	
AUDIO OSCILLATOR TS-382/u				☒	☒	2	
DEMAGNETIZER, HEAD FSN 5950-446-4985		☒		☒	☒	3	
MULTIMETER AN/URM-105		☒				5	
MULTIMETER TS-352/U				☒	☒		
OSCILLOSCOPE AN/USM-89				☒	☒	7	
SPECTRUM ANALYZER TS-723/U				☒	☒	8	
STROBOSCOPE IS-805/u				☒	☒	9	
TAPE, ALIGNMENT 3-3/4 IPS				☒	☒	10	
TOOL KIT TK-87/G				☒	☒	11	
TOOL KIT TK-115/G		☒				12	
ATTENUATE TS-402A/U				☒	☒	13	

APPENDIX III

BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

1. General

This appendix lists items supplied for initial operation. No running spares are authorized. The list includes items issued as part of the major end item. End items of equipment are issued on the basis of allowances prescribed in equipment authorization tables and other documents that are a basis for requisitioning.

2. Columns

a. Federal Stock Number. This column lists the 11-digit Federal stock number.

b. Description- Nomenclature or the standard item name and brief identifying data for each item are listed in this column. When requisitioning, enter the nomenclature and description.

c. Expendability. Nonexpendable items are indicated by NX. Expendable items are not annotated.

d. Quantity Authorized Under "Items Comprising an Operable Equipment," the column lists the quantity of items supplied for the initial operation of the equipment.

e. Illustration. The "Figure No." column lists the figures in which the items are illustrated. The "item No." column is not used.

Section II. FUNCTIONAL PARTS LIST

(2) Federal stock No.	(4) Description	(6) Expendability	(7) Quantity authorized	(8) (9) Illustrations	
				Figure No.	Item No.
5835-082-3842	Recorder-Reproducer Set, Sound AN/ UNH-10 ----- ITEMS COMPRISING AN OPERABLE EQUIPMENT	NX			
5935-082-3843	Microphone, Dynamic M-119/UNH-10	NX	1	1	
5935-013-7990	Headset, Electrical H-224/UNH-10	NX	1	1	
	Reel, 5 in., width 1,200 ft magnetic recording tape -----				
	Reel, 5 in., empty -----		1	6	
	Cartridge loop, U-131 OCC-1J ---		1	6	
	Technical Manual TM 11-5874-200-12		2	6	
	No running spares authorized ----				

By Order of Secretary of the Army:

EARLE G. WHEELER,
General, United States Army,
Chief of Staff

Official:

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

Distribution:

Active Army:

USASA (2)	Ft Hancock (4)
CNGB (1)	Ft Gordon (5)
C/COMMEL (7)	WSMR (5)
CofT (1)	Ft Huachuca (10)
CofEngr (1)	Ft Leavenworth (5)
TSC (1)	Ft Lee (5)
CofSptS (1)	Cp Leroy Johnson (5)
USCONARC (5)	USA Elct Mat Agcy (9)
USAMC (5)	USA Pic Cen (2)
USAMICOM (4)	USA Mbl Equip Cen (1)
USAECOM (7)	AMS'(1)
ARADCOM (2)	USASA Fim First Fld Sta (5)
ARADCOM Rgn (2)	Chicago Proc Dist(1)
OS Maj Comd (3) except	Sig Fld maint Shops (3)
USARSOUTHCOM (5)	WRAMC (1)
USARJ (5) -	VFGH (5)
OS Base Comd (2)	WBGH (5)
LOGCOMD (2)	BAMC (5)
USASMCOM (2)	USACECDA Monmouth Ofc (1)
USAECDA (1)	Svc Colleges (5)
USACBRCA (1)	BDr SMC Sch (2) except
USACECDA (1)	USAARMS (5)
USAMSCDA (1)	USAADS (5)
USAOCA (1)	USAIS (5)
USAQMCDA (2)	USAAVNS (5)
USATCDA (6)	USMA (5)
USAADCDA (6)	USAPA (5)
USAARMCA (7)	GENDEP (2)
USAAVNCA (1)	Sig Sec, GENDEP (5)
USAARTYCA (3)	Sig Dep (OS) (12)
USAAESWBD (5)	Army Dep (2) except
USASCC (4)	Lexington (12)
MDW (1)	Sacramento (28)
Armies (2) except	Tobyhanna (12)
EUSA (5)	Fort Worth (8)
Corps (2)	Letterkenny (5)
USA Corps (3)	Sharpe (3)
USASTC (3)	Navajo (5)
USATC, AD (2)	Savanna (5)
USATC, Inf (2)	Atlanta (8)
USATC, Armor (2)	New Cumberland (8)
USATC, Engr (2)	Utah (8)
Instl (2) except	USA Elct RD Agcy, White Sands (13)

USAERDL Trp Comd (10)
Army Tml (1) except
Oakland (5)
USA Tml Comd (1)
POE (1)
USAERDL (2)
USA Cold Rgn RE Lab (2)
KMAG (5)

Units ord under fol TOE (2 copies each UNOINDC):

6-302	17-2
7	17-42
7-42	17-62
7-62	19-252
10-22	19-256
11-16	19-316
11-57	29-1
11-97	29-2
11-98	29-11
11-117	29-21
11-155	29-51
11-157	29-52
11-500 (Tms AA-AE) (4)	29-56
11 557	30-600 (Tms AA-AC)
11-587	33-600 (Tms AA-AC)
11-592	37
11-597	37-42
12-32	45-500
12-37	51-1
12-107	52-1
12-157	57
17	57-6

NG: State AG(3).

USAR: None.

For explanation of abbreviations used see AR 320-50.

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