

DEPARTMENT OF THE ARMY TECHNICAL MANUAL
DEPARTMENT OF THE AIR FORCE TECHNICAL ORDER

ORGANIZATIONAL MAINTENANCE MANUAL
RADIO SETS AN/PRC-8, -8A, -9, -9A, -10, -10A, AND -28

Departments of the Army and the Air Force, Washington 25, D. C.

20 October 1961

WARNING

DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT

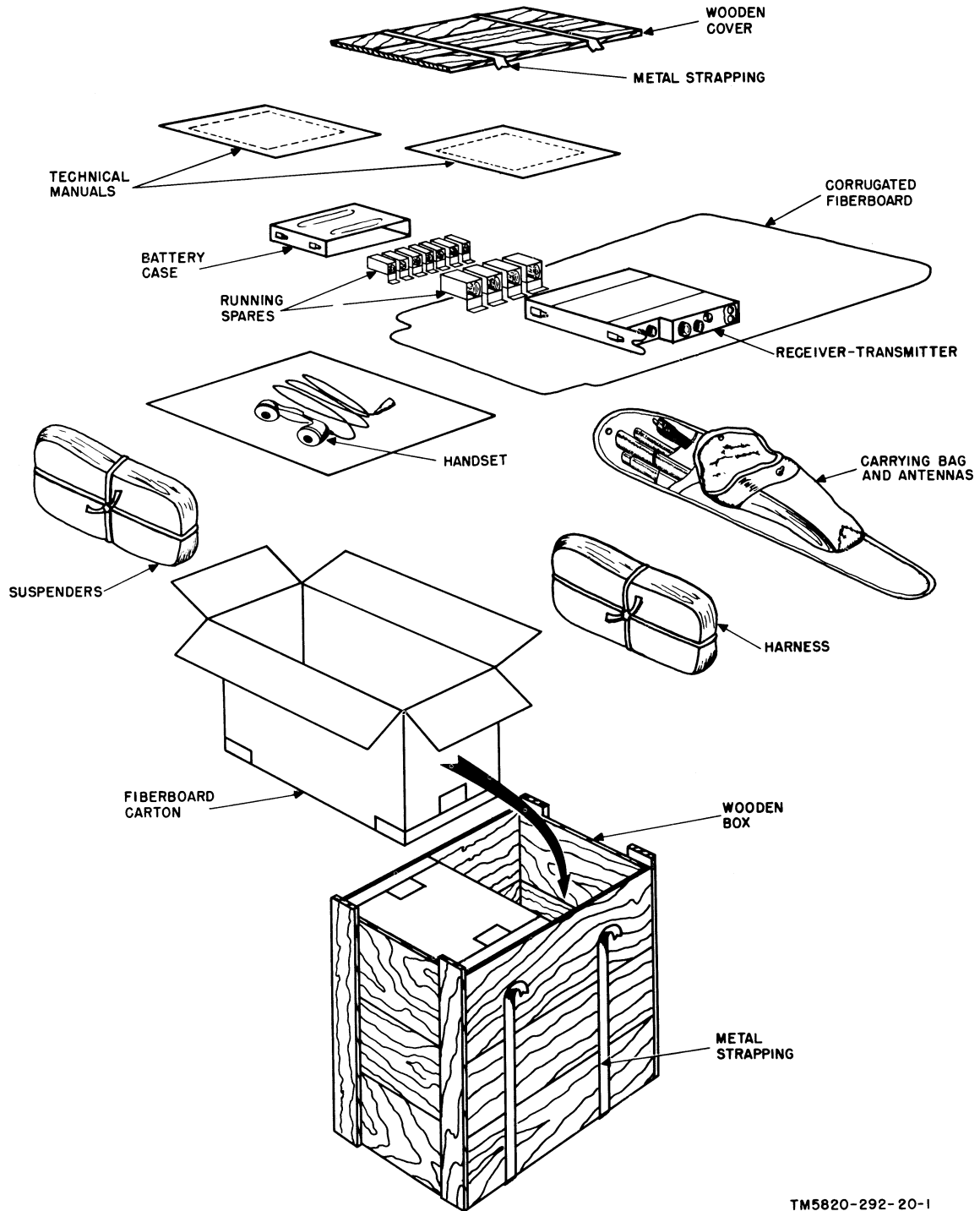
Be careful when replacing tubes or making internal adjustments; the 67.5-volt and 135-volt circuits are shock hazards.

DON'T TAKE CHANCES!

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*This manual together with TM 11-5820-292-10 supersedes TM 11-612, 21 December 1954, including C1, 30 December 1955; C2, 18 September 1856; C3, 20 December 1957; C4, 25 March 1959; and C5, 5 September 1961.

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TM5820-292-20-1

Figure 1. Typical packaging diagram.

CHAPTER 1

INSTALLATION

Section I. SERVICE ON RECEIPT OF EQUIPMENT

1. Scope

a. This manual covers installation and maintenance of the radio set by organizational maintenance personnel. Pack-mounted installation, as performed by the operator, and operating instructions are contained in TM 11-5820-292-10.

b. Organizational installation procedures for the radio set consist of the following:

- (1) Unpacking and checking the equipment (para 3).
- (2) Vehicular installation (para 4).
- (3) Presetting Radio Set AN/PRC-28 (para 5).
- (4) Connection of Antenna Equipment RC-292 (para 6).
- (5) Remote control installation using Control Group AN/GRA-6 (para 7).
- (6) Connections for relay operation (para 8).

c. Forward comments concerning this manual to the Commanding Officer, U. S. Army Signal Materiel Support Agency, ATTN: SIGMS-PA2D, Fort Monmouth, N. J.

Note. For applicable forms and records, refer to paragraph 2, TM 11-5820-292-10.

2. Packaging Data

a. When packed for shipment, the components of the radio set are individually wrapped or tied and placed in a fiberboard carton. Two packed radio sets are shipped in a nailed wooden box. A typical shipping box and its contents are shown in figure 1. The packaging and packing methods may vary, depending on the supply source and the requirements for oversea and domestic shipment.

b. The dimensions of a packed fiberboard carton are 20 inches long, 10-1/2 inches wide, and 7 inches deep; the volume and weight are approximately 0.8 cubic

feet and 35 pounds, respectively. The dimensions of a packed wooden box are 20-1/2 inches long, 15 inches wide, and 11-1/4 inches deep; the volume and weight are approximately 1.7 cubic feet and 75 pounds, respectively.

3. Unpacking and Checking Equipment

Perform all the steps outlined below when unpacking equipment in wooden boxes (fig. 1). When unpacking equipment in cartons only, omit the steps given in a through c below.

a. Cut and fold back the metal strapping.

b. Remove the nails from the top and one side of the wooden box with a nail-puller; remove the top and one side. Do not attempt to pry off the side and top; the equipment may become damaged.

c. Remove the cartons.

d. Open the cartons and remove any excelsior or corrugated paper covering the equipment inside each carton.

e. Remove the equipment from the cartons.

f. Remove the corrugated fiberboard from the receiver-transmitter and battery case and from the handset. Untie the bundled harness and suspenders.

g. Remove the running spares from inside the battery case.

h. Inspect the equipment for damage incurred during shipment. If the equipment has become damaged, refer to paragraph 2 of TM 11-5820-292-10 for applicable forms and records.

i. See that the equipment is complete as listed on the packing slip. If a packing slip is not available, check the equipment against the table of components in TM 11-5820-292-10.

j. Check the cartons for any missing items. If storage space is available, store the packing materials for future use.

Section II. INSTALLATION INSTRUCTIONS

4. Vehicular Installation

Note. Pack-mounted installation and siting procedures are covered in TM 11-5820-292-10.

In a vehicular installation, the receiver-transmitter of the radio set is installed on top of Amplifier-Power Supply AM-598/U or AM-598A/U. The AM-598/U and AM-598A/U can be used only in vehicles with 24-volt storage batteries. Instructions for mounting the AM-598/U and AM-598A/U and for installing the radio set are contained in TM 11-5055 and in the instructions that are supplied with the installation unit. Stock numbers of installation units required for installation of the radio sets in different types of vehicles are listed in SB 11-131.

Note. The AM-598/U is to be used with Radio Sets AN/PRC-8, -9, and -10 only, unless modified in accordance with MWO 11-5055-1. There is no current modification which permits use of either the AM-598/U or the AM-598A/U with Radio Set AN/PRC-28.

a. Antenna Connections. When the radio set is used in an open vehicle, connect the short antenna to the SHORT ANT connector on the receiver-transmitter control panel. The vehicle antenna may be used if greater range is desired. The vehicle antenna *must* be used in a closed vehicle (such as a tank). Connect the vehicle antenna connector to the AUX ANT connector on the radio set.

b. Connections of Audio Accessories. Audio accessories connect to the AUDIO connectors on the vehicular power supply front panel; two may be used at the same time. Appropriate audio accessories are included in the installation unit. The following audio accessories may be used:

- (1) Handset H-33(*)/PT.
- (2) Chest Set Group AN/GSA-6 and Headset-Microphone H-63/U.
- (3) Dynamic Loudspeaker LS-166/U. (Set switch on LS-166/U to VE-HICULAR SET.)
- (4) Microphone M-29/U.
- (5) Headset, Navy Type, CW-49507 with Headset Cord CX-1334/U.

Caution: When Power Cable CX-2031/U or CX-2031A/U is to re-

main disconnected from the AM-598/U or the AM-598A/U for more than a few hours, tape the CX-2031/U or CX-2031A/U connector with Electrical Insulation Tape TL-599/U. Secure the CX-2031/U or CX-2031A/U to a side of the vehicle to prevent possible damage to it by personnel who use or maintain the vehicle.

5. Presetting Procedure for Radio Set AN/PRC-28 (fig. 11 and 12)

Note. Procedures for calibration and for presetting (tuning) an operating frequency on all other models are contained in TM 11-5820-292-10.

Perform the following steps to preset a desired operating frequency:

a. Release the clamps which secure the receiver-transmitter to the receiver-transmitter case. Pull the receiver-transmitter straight out of its case.

b. Remove crystal Y2 (para 18) and replace it with the crystal for the desired channel.

c. Replace the receiver-transmitter in its case. The rear plug should seat smoothly in the connector at the base of the case.

d. Secure the clamps on the sides of the receiver-transmitter, and attach a handset to the AUDIO connector.

e. Remove the protective caps covering the TUNING and DIAL LOCK controls.

Note. In Radio Set AN/PRC-28, the TUNING and DIAL LOCK controls are screwdriver adjustments.

f. Unlock the TUNING control by turning the DIAL LOCK screw to the left.

g. Turn the TUNING control screw until the dial pointer indicates the desired channel frequency.

h. Turn the POWER switch and hold it at CAL & DIAL LITE.

i. Vary the TUNING control screw about the desired dial setting (*g* above) until a zero beat is obtained in the handset.

j. Turn the POWER switch to OFF.

k. Lock the TUNING control by turning the DIAL LOCK screw to the right.

1. Replace the TUNING and DIAL LOCK protective caps.

6. Connection of Antenna Equipment RC-292

a. Erect Antenna Equipment RC-292 as

described in TM 11-5020. Use the following chart to determine the correct number of ground plane and vertical antenna elements required for operation with a particular radio set.

Radio Set	Frequency range (mc)	Total number of vertical antenna sections required	Types of vertical antenna sections				Total number of ground plane sections required	Types of ground plane sections per element (3 elements)			
			AB-21/GR	AB-22/GR	AB-23/GR	AB-24/GR		AB-21/GR	AB-22/GR	AB-23/GR	AB-24/GR
AN/PRC-8, and -8A ...	20 to 27.9	6	3	1	1	1	18	3	1	1	1
AN/PRC-9 and -9A	27 to 38.9	4	1	1	1	1	15	2	1	1	1
AN/PRC-10 and -10A ..	38 to 54.9	3	1	1	1	0	12	1	1	1	1

Note. Use the antenna combination suggested for the AN/PRC-9 and -9A for the AN/PRC 28.

b. Connect one end of Connector Adapter UG-255/U to Connector PL-259-A on Cord CG-107/U. Connect the other end of Connector Adapter UG-255/U to the AUX ANT connector on the radio set. The radio set is now ready for operation.

GRC and the L1 and L2 binding posts of the C-433/GRC (fig. 3).

d. Connect handsets to the AUDIO connectors of the C-434/GRC and the C-433/GRC.

e. To check the installation, refer to the remote control operating procedure in TM 11-5820-292-10. For additional details on remote control operation using Control Group AN/GRA-6, refer to TM 11-5038.

7. Remote Control Installation Using Control Group AN/GRA-6

(fig. 2 and 3)

a. Select an effective transmitting and receiving site for the radio set. Spread the runners at the bottom of the radio set to obtain a secure footing. (For siting instructions, refer to TM 11-5820-292-10).

Note. Before proceeding with the installation, be sure that the required batteries have been inserted in Local Control C-434/GRC and in Remote Control C-433/GRC. Refer to TM 11-5038 for details on battery installation.

b. Connect the SET 1 cable (one of two cables in the rear compartment) of Local Control C-434/GRC (fig. 2) to the AUDIO connector on the radio set. For remote vehicular operation, connect the SET 1 cable to either of the two AUDIO connectors on Amplifier-Power Supply AM-598/U or AM-598A/U (TM 11-5055). For remote control of two radio sets, connect the SET 2 cable to the second radio set.

c. Connect the telephone wire between the L1 and L2 binding posts on the C-434/

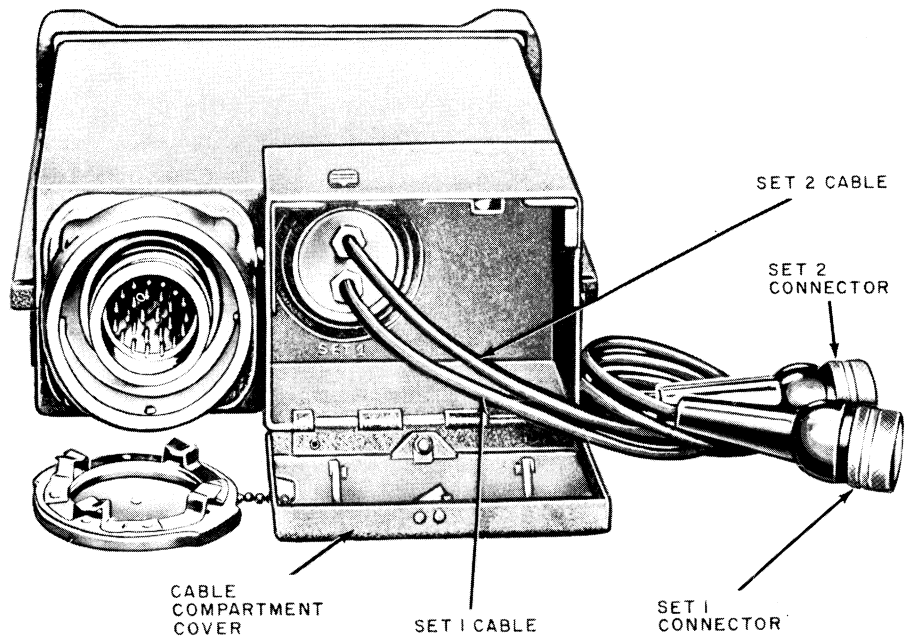
8. Connections for Relay Operation

A relay station consists of two radio sets connected by Electrical Special Purpose Cable Assembly CX-1961/U (fig. 4). (The CX-1961/U is not supplied with the radio set and must be ordered separately.) The relay station operates unattended and passes signals in both directions (refer to TM 11-5820-292-10). Sets 1 and 2 are tuned to one frequency and sets 3 and 4 are tuned to a second frequency.

a. Connect the CX-1961/U between the AUDIO connectors of the two unattended radio sets. Use Receptacle Connectors U-126/U of the CX-1961/U.

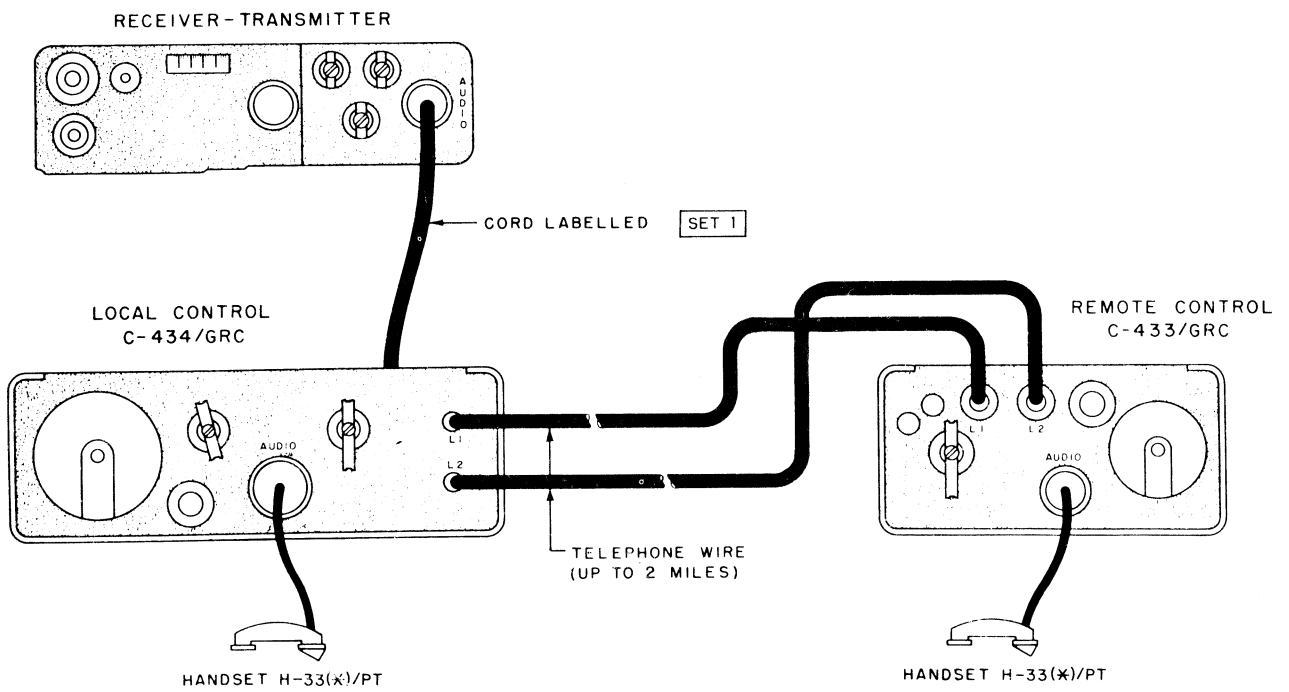
b. Connect handsets to Receptacle Connectors U-79/U of the CX-1961/U.

c. Adjust and operate the equipment as described in TM 11-5820-292-10 for relay operation.



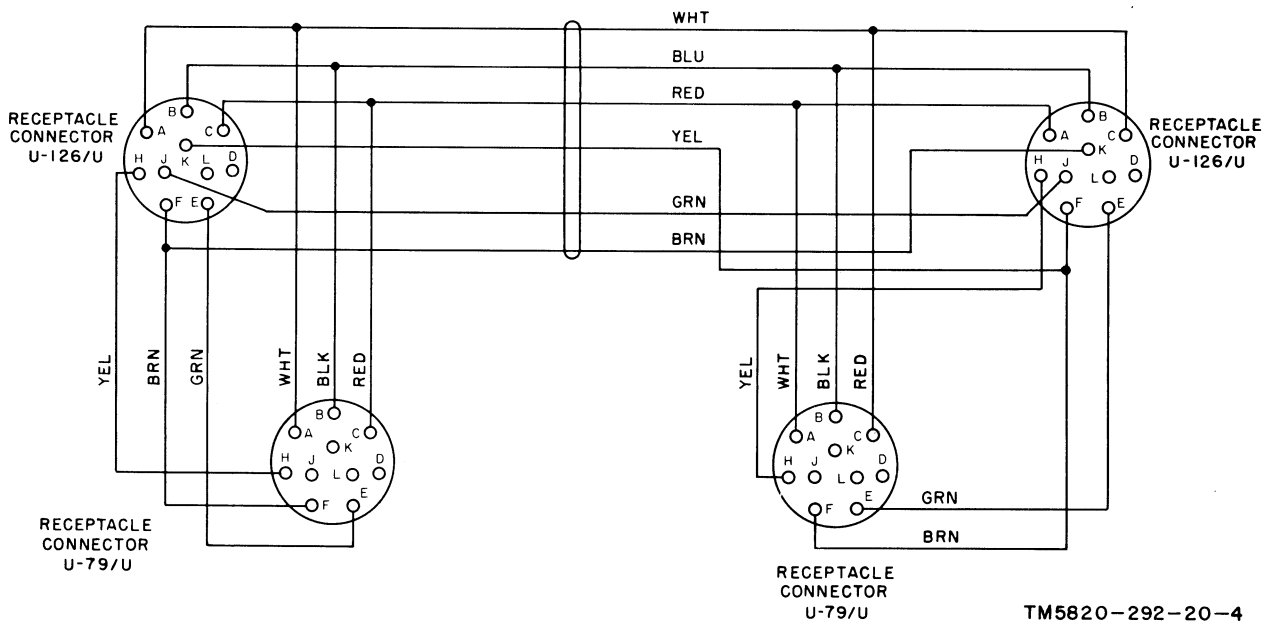
TM5820-292-20-2

Figure 2. Local Control C-434/GRC, rear view.



TM5820-292-20-3

Figure 3. Control Group AN/GRA-6, connection diagram.



TM5820-292-20-4

Figure 4. Electrical Special Purpose Cable Assembly CX-1961/U, wiring diagram.

CHAPTER 2

MAINTENANCE INSTRUCTIONS

Section I. MAINTENANCE

9. Organizational Maintenance Duties

Following is a list of organizational maintenance duties performed on the radio set.

- a. Preventive maintenance (para 11).
- b. Visual inspection (para 13).
- c. Troubleshooting, using equipment performance checklist (para 14).
- d. Removal and replacement (para 16 through 19).

10. Tools, Materials, and Test Equipment Required

- a. *Tools.* Tool Equipment TK-115/U.
- b. *Materials.*
 - (1) Dry lint-free cloth.
 - (2) Dry soft small brush.
 - (3) Cleaning Compound (Federal stock No. 7930-395-9542).
 - (4) Sandpaper, No. 000.
- c. *Test Equipment.*
 - (1) Multimeter AN/URM-105.
 - (2) Electron Tube Test Set TV-7/U.

11. Preventive Maintenance

a. *DA Form 11-238.* DA Form 11-238 (fig. 5 and 6) is a preventive maintenance checklist to be used by organizational maintenance personnel. Items not applicable to the equipment are lined out. References in the ITEM blocks in the figures are to *b* below, which contains additional maintenance information pertinent to the particular item. Additional preventive maintenance information concerning items 1 through 12 on DA Form 11-238 will be found in the preventive maintenance portion of TM 11-5820-292-10. Follow the instructions given on the form.

b. *Items.* The information in this subparagraph is supplementary to DA Form 11-238. The item numbers correspond to the ITEM numbers on the form.

Item	Maintenance procedures
5	Tighten screws, bolts, and nuts carefully. Fittings tightened beyond the pressure for which they were designed will become damaged or broken.
7	Cover any cuts in the insulation with rubber tape and then with fabric tape. Replace or repair all broken cords and cables.
8	Check action of spring in base section of long antenna. If spring is <i>frozen</i> by corrosion, use cleaning compound to free it.
19	When cleaning electrical contacts, use a cloth or brush moistened with cleaning compound. When the contacts are clean, wipe them dry with a dry lint-free cloth.

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

12. Lubrication

a. The tuning drive assembly is the only lubricated assembly in the radio set. With normal care and use, it is expected that the assembly will never require additional lubrication (after leaving the factory) for the life of the radio set.

b. If the chassis is exposed to moisture and dirt and there is corrosion and dirt on the gears of the tuning drive assembly, turn the radio set in to a higher echelon for cleaning and lubrication. Lubrication should be requested only when absolutely necessary because of the lengthy disassembly procedure required for lubrication of the tuning drive assembly.

MAINTENANCE CHECK LIST FOR SIGNAL EQUIPMENT
 SOUND EQUIPMENT, RADIO, DIRECTION FINDING
 RADAR, CARRIER, RADIOSONDE AND TELEVISION
 (AR 750-625)

EQUIPMENT NOMENCLATURE
Radio Set, AN/PRC-10

EQUIPMENT SERIAL NUMBER
2306

INSTRUCTIONS

This form may be used for a period of one month by using the correct dates and weeks of the month. It is to be used as a Preventive Maintenance check list for Signal equipment in actual use, or for a check on equipment prior to issue.

- For detailed Preventive Maintenance instructions see:
 - The Technical Manual (in TM 11 series) for the equipment. (See DA Pamphlet Number 310-4)
 - The Supply Bulletin (SB 11-100 series) for the equipment. (See DA Pamphlet Number 310-4)
 - The Department of the Army Lubrication Order. (See DA Pamphlet Number 310-4)
- The following action will be taken by either the Communications Officer/Chief for 1st echelon, or the Inspector for higher echelon:
 - Enter Equipment Nomenclature and Serial Number.
 - Strike out items that do not apply to the equipment.
- Operator/Inspector will enter in the columns entitled **CONDITION**, on the proper line, a notation regarding the condition, using symbols specified under **LEGEND**.
- After operator completes each daily inspection he will initial over the appropriate dates under "Daily Condition for Month", then return form to his supervisor.

TYPE OF INSPECTION

OPERATOR	2/ECH-ELON	DATE	SIGNATURE
	✓	27 Aug. '61	<i>Paul Fredeticka</i>

ADDITIONAL ITEMS FOR 2D AND 3D ECHELON INSPECTIONS	CONDITION
26. INSPECT ANTENNA FOR ECCENTRICITIES, CORROSION, LOOSE FIT, DAMAGED INSULATORS AND CONNECTIONS	✓
27. CHECK FOR NORMAL OPERATION.	✓
28. BEFORE SHIPPING OR STORING, REMOVE BATTERIES	✓

IF DEFICIENCIES NOTED ARE NOT CORRECTED DURING THE INSPECTION, INDICATE ACTION TAKEN FOR CORRECTION.

FOLD

Figure 5. DA Form 11-238, pages 1 and 4.

DA FORM 11-238
1 MAY 57

REPLACES DA FORMS 11-238, 1 NOV 55; 11-239, 11-244, 11-245, 11-248, 11-249, 11-250, AND 11-251; WHICH ARE OBSOLETE.

LEGEND for marking conditions: Satisfactory, Y. Adjustment, Repair or Replacement required, X. Defect corrected, (X).		DAILY CONDITION FOR MONTH OF August 1961															
		DAILY ITEM															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
NO.	DAILY ITEM																
1.	COMPLETENESS AND GENERAL CONDITION OF EQUIPMENT. (Transmitter, receiver, carrying cases, wire, cables, microphone, tubes, spare parts, technical manual).																
2.	CLEAN DIRT AND MOISTURE FROM ANTENNA, MICROPHONE HEADSET, HEADSETS, PLUGS, COMPONENT PANEL.																
3.	INSPECT CONTROLS FOR NORMAL OPERATION. TAP CONTROLS LIGHTLY FOR EVIDENCE OF CUT-OUT FROM LOOSE CONTACTS.																
4.	CHECK FOR UNUSUAL OPERATION OF EQUIPMENT. BE ALERT FOR UNUSUAL OPERATION OR CONDITION.																
WEEKLY																	
		1ST	2D	3D	4TH	5TH										2D ECH	
5.	CLEAN AND TIGHTEN EXTERIORS OF CASES, RACKS, MOUNTS, TRANSMISSION LINES. PARA 11b																✓
6.	INSPECT CASES, MOUNTS, ANTENNA TOWERS AND EXPOSED METAL SURFACES FOR RUST, CORROSION.																✓
7.	INSPECT CORDS, CABLE, WIRE, SMOKE MOUNTS FOR CUTS, KINKS, BREAKS, FRAYING, UNDUCE STRAIN. PARA 11b																✓
8.	CHECK ANTENNA GUY WIRES FOR PROPER TENSION OR DAMAGE. PARA 11b																✓
9.	INSPECT CANVAS AND LEATHER ITEMS FOR MILDEW, TEARS, FRAYING.																✓
10.	INSPECT ACCESSIBLE ITEMS FOR LOOSENESS: SWITCHES, KNOBS, JACKET CONNECTORS, RELAYS, TRANSFORMERS, MOTORS, PILOT LIGHTS, SHOWERS, ETC.																✓
11.	CLEAN AND/OR INSPECT AIR FILTERS, BRASS NAME PLATES, DIAL AIR-WEAR WINDOW.																✓
12.	INSPECT STORAGE BATTERIES FOR DIRT, LOOSE TERMINALS, SHORT-CIRCUIT, DAMAGED CASES/INSPECT STORAGE BATTERIES FOR LEAKAGE.																✓
ADDITIONAL ITEMS FOR 2D AND 3D ECHELON INSPECTIONS																	
13.	INSPECT SHELTERS AND COVERS FOR ADEQUACY OF WEATHER-PROOFING, TEARS, FRAYING.																✓
14.	INSPECT SHELTERS AND COVERS FOR WEATHER-PROOFING, TEARS, FRAYING. DAMAGED GASKETS, GASKETS, GASKETS, GASKETS, GASKETS.																
ADDITIONAL ITEMS FOR 2D AND 3D ECHELON INSPECTIONS																	
15.	INSPECT SEATING OF READILY ACCESSIBLE PLUCK-OUT ITEMS: TUBES, LAMPS, MICROSERVICES, CONNECTORS, WIRE, PLUGS, ETC.																✓
16.	INSPECT RELAYS AND CIRCUIT BREAKERS FOR LOOSE MOUNTINGS AND CONTACTS. INSPECTION OF CONTACTS AND PROPER SPRING TENSION.																
17.	INSPECT VARIABLE CAPACITORS FOR DIRT, MISALIGNMENT OF PLATES, LOOSE MOUNTINGS, MOISTURE.																✓
18.	INSPECT RESISTORS, BUSHINGS AND INSULATORS FOR CRACKS, CHIPPING, BLISTERING, MOISTURE, DISCOLORATION.																✓
19.	CLEAN AND TIGHTEN SWITCHES, TERMINAL BLOCKS, BLOWERS, RELAY CASES AND INTERIORS OF CHASSIS AND CABINETS NOT READILY ACCESSIBLE. PARA 11b																✓
20.	INSPECT TERMINAL BLOCKS FOR LOOSE CONNECTIONS, CRACKS AND BREAKS.																✓
21.	INSPECT TERMINALS OF LARGE FIXED CAPACITORS AND RESISTORS FOR DIRT, CORROSION, LOOSE CONTACTS.																✓
22.	INSPECT TRANSFORMERS, CHOKES, POTENTIOMETERS AND RHEOSTATS FOR OVERHEATING AND OIL LEAKAGE.																✓
23.	INSPECT GENERATORS, AMPLIFIERS, DYMA MOTORS FOR BRUSH WEAR, SPRING TENSION. AMPLIFIERS, MOTORS, GENERATORS.																
24.	INSPECT CATHODE RAY TUBES FOR BURNOUT, GREEN SPOTS.																
25.	INSPECT WATERPROOF GASKETS FOR LEAKS, WORN OR LOOSE PARTS.																✓

CONTINUED ON PAGE 4

Figure 6. DA Form 11-238, pages 2 and 3.

Section II. TROUBLESHOOTING

13. Visual Inspection

a. Before operating the equipment for troubleshooting purposes, inspect it for visible defects. Failure of the equipment to operate properly may be caused by one or more of the following defects.

- (1) Loose connectors on the control panel or loose battery plug.
- (2) Cracked tube envelope.
- (3) Burned or sticking relay contacts.
- (4) Blistered or discolored resistors.

b. When the equipment fails to operate properly, a visual inspection of the equipment for the above possible defects will save repair time and may also avoid further damage of the equipment.

14. Equipment Performance Checklist

a. *General.* The equipment performance checklist is a procedure organized to provide the organizational repairman with a systematic check of equipment performance. The *Action* column lists the switch and control settings to be made on the com-

ponent listed in the *Unit* column for each step. The *Normal indication* column lists the normal visible and audible signs that the repairman should expect during each step. When abnormal indications are noted, the repairman should perform the recommended corrective measures listed in the *Corrective measures* column. The *Corrective measures* column lists only those corrective measures that the organizational repairman can perform without turning the equipment in for higher echelon repair. When using the checklist, start at the beginning and follow each step in order. Refer to paragraph 16 for pluck-out item removal and replacement procedures. Refer to paragraph 19 for tube removal and replacement procedures. Refer to figures 7 through 12 for component location. If higher echelon repair is required, note on the repair tag how the equipment performed and what corrective measures were taken.

b. *Checklist.* Follow the steps as outlined in the checklist.

P R E P A R A T O R Y	Step	Unit	Action	Normal indication	Corrective measures
	1	Battery BA-279/U ..	Install in battery case (refer to TM 11-5820-292-10).		
	2	Short antenna	Install in SHORT ANT connector.		
	3	Handset	Connect to AUDIO connector.		
	4	SQUELCH control ..	Turn to OFF.		
	5	VOL control	Turn to 10.		
E Q U I P P E R F O R M A N C E	6	POWER switch	Turn to and hold at CAL & DIAL LITE.	Dial light lights	Check seating of battery plug. Check battery by substitution. Replace lamp E8 (para 17). Check relay K2 for sticking (if relay is not sealed type). Remove tube V11. If rushing noise is heard, replace V11. Check tubes V4 through V7. Check all pluck-out items by substitution (para 16).
	7	DIAL LOCK ^a	Turn fully to the left ...	TUNING control unlocked.	

	Step	Unit	Action	Normal indication	Corrective measures
E Q U I P P E R F O R M A N C E	8	TUNING control ^a ...	Turn through tuning range of dial while holding POWER switch at CAL & DIAL LITE.	Whistle heard in handset receiver at all calibration points. (For calibration points, refer to TM 11-5820-292-10; the AN/PRC-28 is not calibrated.)	Check tubes V8, V9, and V10. (There is no V10 in A models.)
	9	POWER switch	Release to ON	DIAL LITE out. Rushing noise is heard in handset receiver.	
	10	TUNING control ^a ...	Turn TUNING control to tune in a radio set that is transmitting.	Voice signals are heard.	Check for broken lead to SHORT ANT connector.
	11	SQUELCH control ..	With no signal being received, turn control to point where noise just disappears.	No noise in handset receiver when no signal is being received.	Check tube V11. Check for broken lead to terminals on SQUELCH control.
	12	Handset push-to-talk switch.	Press switch and talk into handset microphone.	Rushing noise stops. Signal is picked up by another radio set tuned to the same frequency.	Check handset by substitution. Check tubes V1, V2, and V3 (unlettered models). Check tubes V2 and V3 and pluck-out item U301 (A models and AN/PRC-28). Check relay K1 for sticking (if relay is not sealed type).
S T O P	13	POWER switch	Turn to OFF	Power is turned off ...	Disconnect and remove battery from battery case.

^aDoes not apply to Radio Set AN/PRC-28.

15. Internal Differences in Models

The chart below covers internal differences in models that concern organi-

zational maintenance personnel. Refer to the differences in models paragraph in TM 11-5820-292-10 for external differences.

Item	Radio Sets AN/PRC-8A, -9A, -10A, and -28	Radio Sets AN/PRC-8, -9, and -10
1	Four IF Amplifiers AM-427A/U (U101 through U104). Each AM-427A/U is coded yellow. IF Amplifier AM-427A/U is interchangeable with IF Amplifier AM-427/U.	Five IF Amplifiers AM-427/U (U101 through U105). Each AM-427/U is coded red.
2	One Discriminator Transformer TF-204/U (T201), coded blue. It is not interchangeable with Discriminator Transformer TF-132/U. (See note.)	One Discriminator Transformer TF-132/U (T201), coded yellow.
3	One Pulse-Sweep Generator O-325/U (U301), coded red.	No pulse-sweep generator used.
4	One calibration oscillator V9, type 6286 tube.	Two calibration oscillators V9 and V10. Tube V9 is a type 5676 tube; tube V10 is a type 5678 tube.
5	No afc driver used.	One afc driver V1, type 5672 tube.
6	Modulator V2 and receiver-oscillator V8 are type 6286 tubes.	Modulator V2 is a type 5676 tube, and receiver-oscillator V8 is a type 1A4 tube. In some early models, V8 is a type 5676 tube.

Note. Radio Set AN/PRC-28 uses a different discriminator transformer, coded dark-green, (Signal Corps stock No. 2Z9643.549) that is not interchangeable with any other.

16. Removal and Replacement of Pluck-out Items

Note. Unlettered models are shown on figure 7, A models on figure 9, and the AN/PRC-28 on figure 11.

a. General. The removal and replacement procedures for the six pluck-out items in the receiver-transmitter are the same for all models of the radio set. Items 1, 2, and 3 of the list in paragraph 15 are the pluck-out items contained in the different models.

b. Removal. Release the clamps which secure the receiver-transmitter to the receiver-transmitter case and pull the receiver-transmitter straight out of its case.

- (1) Remove the four screws that hold the clamp plate in place on the back of the main chassis and remove the clamp plate.
- (2) Remove a plug-in unit by pulling it straight out.

c. Replacement.

- (1) Align the pins (base of the plug-in unit) with the holes in the socket, and push the plug-in unit firmly but gently into place.

Caution: Be sure the plug-in units are placed in their correct sockets by associating the color markings on the plug-in units and on the chassis.

- (2) Replace the clamp plate and the four screws that hold it in place.

17. Removal and Replacement of Dial Lamp

Note. Unlettered model is shown on figure 8, A model on figure 10 and the AN/PRC-28 on figure 12.

a. Removal.

- (1) Unscrew the LITE CAP on the control panel.
- (2) Hold a hand over the opening for the dial lamp, turn the receiver-transmitter so that the control panel faces down, and shake slightly until the dial lamp drops out.

b. Replacement.

- (1) Hold the receiver-transmitter with the control panel face up, and drop a dial lamp into the opening, bulb first.

- (2) Replace the LITE CAP.

18. Removal and Replacement of Crystals

a. Removal. Release the clamps which secure the receiver-transmitter to its case and pull the receiver-transmitter straight out.

- (1) *Crystals Y1 and Y2 (unlettered models)* (fig. 8). Push back the spring clamp and lift the crystal straight out of its socket.
- (2) *Crystal Y1 (A models)* (fig. 10). Remove the two screws that secure the tube clamp and remove the tube clamp. Lift the crystal straight out of its socket.
- (3) *Crystals Y1 and Y2 (AN/PRC-28)*.
 - (a) *Crystal Y1* (fig. 12). Remove as instructed in (2) above.
 - (b) *Crystal Y2* (fig. 11). Lift the crystal straight out of its socket.

b. Replacement.

- (1) *Crystals Y1 and Y2 (unlettered models)* (fig. 8). Push the spring clamp to the side and insert the crystal in the socket. Push the spring clamp over the crystal to keep it securely in place.
- (2) *Crystal Y1 (A models)* (fig. 10). Insert the crystal in its socket. Replace the tube clamp and replace and tighten the two screws which secure the tube clamp.
- (3) *Crystals Y1 and Y2 (AN/PRC-28)*.
 - (a) *Crystal Y1* (fig. 12). Replace as instructed in (2) above.
 - (b) *Crystal Y2* (fig. 11). Insert the crystal in its socket.

19. Removal and Replacement of Tubes

Note. The tubes inside the pluck-out items (para 16) are not directly accessible; the pluck-out items are hermetically sealed.

Release the clamps that secure the receiver-transmitter to its case and pull the receiver-transmitter straight out. When replacing a subminiature tube, cut the leads of the new tube to proper size; use the original tube as a reference.

a. Tubes V7, V9, V10, and V11 (Unlettered Models); Tubes V2, V7, V9 and V11 (A Models and AN/PRC-28).

Note. Unlettered models are shown on figure 8, A models on figure 10, and the AN/PRC-28 on figure 12.

(1) *Removal.*

- (a) Unfasten the two screws that secure the tube clamp and remove the tube clamp.
- (b) Remove each tube by pulling it straight up.

(2) *Replacement.*

- (a) When replacing these tubes, be sure that the red mark on the tube is aligned with the mark on the tube socket.
- (b) After all the tubes are in place, replace the tube clamp and replace and tighten the two screws which secure the tube clamp.

b. Tubes V1, V2, V4, V5, V6, and V8 (Unlettered Models); Tubes V4, V5, V6, and V8 (A Models and AN/PRC-28).

Note. Unlettered models are shown on figure 7, A models on figure 9, and the AN/PRC-28 on figure 11.

(1) *Removal.*

- (a) Remove the two screws that secure the tube shield, and remove the tube shield.
- (b) Loosen but do not remove the two screws that secure the tube clamp, and remove the tube clamp by sliding it away from the tubes.
- (c) Remove each tube by pulling it straight out of its socket.

(2) *Replacement.*

- (a) When replacing each tube, be sure that the red mark on the tube corresponds to the red mark on the tube socket.
- (b) When replacing V2 in its tube socket (unlettered models), insert the pin nearest to the red mark on the tube into the second hole from the red mark on the tube socket.
- (c) Before installing a new V6 tube (all models) or V8 tube (unlettered models only), break the electrical connection between the external tube coating and pin 3 of the tube. (Use Multimeter AN/

URM-105 to check for an infinity resistance indication between pin 3 and the tube coating before installing the tube.)

- (d) When replacing V8 (lettered models), remove the insulating sleeve from the old tube and place it over the new tube. If the old tube does not have an insulating sleeve, obtain the required size of spaghetti insulation and slip it over the tube. This is required to insulate the metallic coating of this tube from the tube shield.
- (e) Replace the tube clamp and tighten the two holding screws.
- (f) Replace the tube shield and tighten the two holding screws.

c. Tube V3 (Unlettered Models, A Models, and AN/PRC-28).

Note. Unlettered models are shown on figure 8, A models on figure 10, and the AN/PRC-28 on figure 12.

(1) *Removal.*

- (a) Remove the shield over tube V3 by removing the three screws that secure the shield to the chassis. Remove the aligning tool to gain access to the two screws directly below it; the third screw is at the tube socket.
- (b) Pull the tube straight out from the socket.

Caution: Do not rock or twist the tube; it may become damaged.

(2) *Replacement.*

- (a) Replace tube V3 by aligning the base pins with the holes in the socket and pushing the tube firmly but gently into the socket until it is positively seated.
- (b) Replace the shield and secure it with the three fastening screws.
- (c) Clamp the aligning tool back in place.

Caution: When the shield is replaced, be sure that there is enough clearance between the shield and the exposed terminals directly below it. If the clearance is small, remove the shield and bend the supporting bracket so that the shield is lifted outward

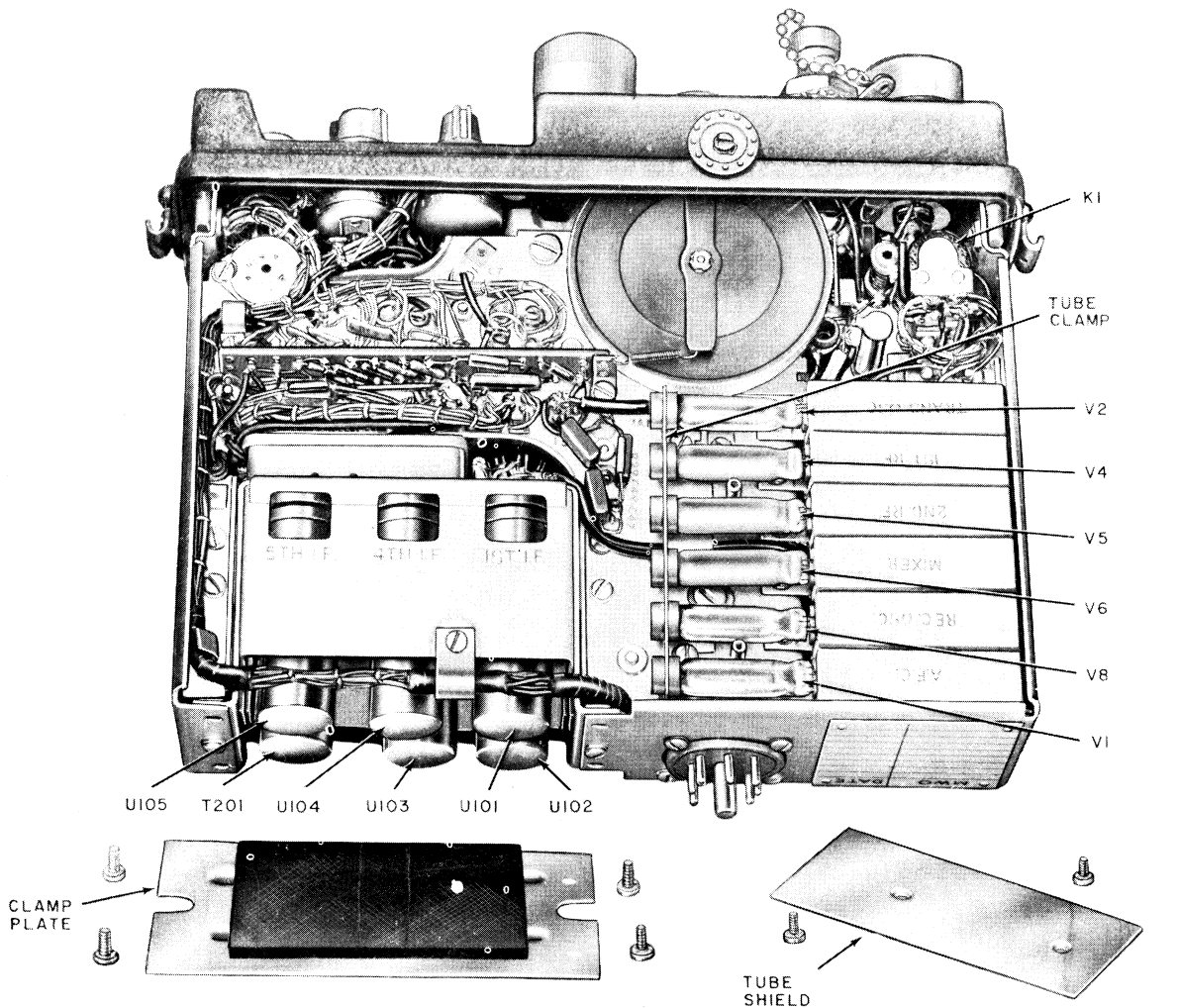
and away from the exposed terminals. A malfunction or component damage may result if the shield touches the exposed terminals.

20. Tube Testing Techniques

When trouble occurs, check all cables, cords, connections, and the battery before removing any tubes. If a tube failure is suspected, use the procedure given in *a* or *b* below to check the tubes. When substituting a subminiature tube (*b* below), cut the leads of the new tube to proper size, using the original tube as a reference.

Caution: Do not rock or rotate a tube when removing it from a socket; pull it straight out. Rocking or rotating a tube tends to break the wire lead weld in the glass base and causes intermittent operation of the tube.

a. Use of Tube Tester. Remove and test one tube at a time. Discard a tube only if its defect is obvious or if the tube tester shows it to be defective. Do not discard a tube that tests at or near its minimum test limit on the tube tester. Put back the original tube, or insert a new one if required, before testing the next one.



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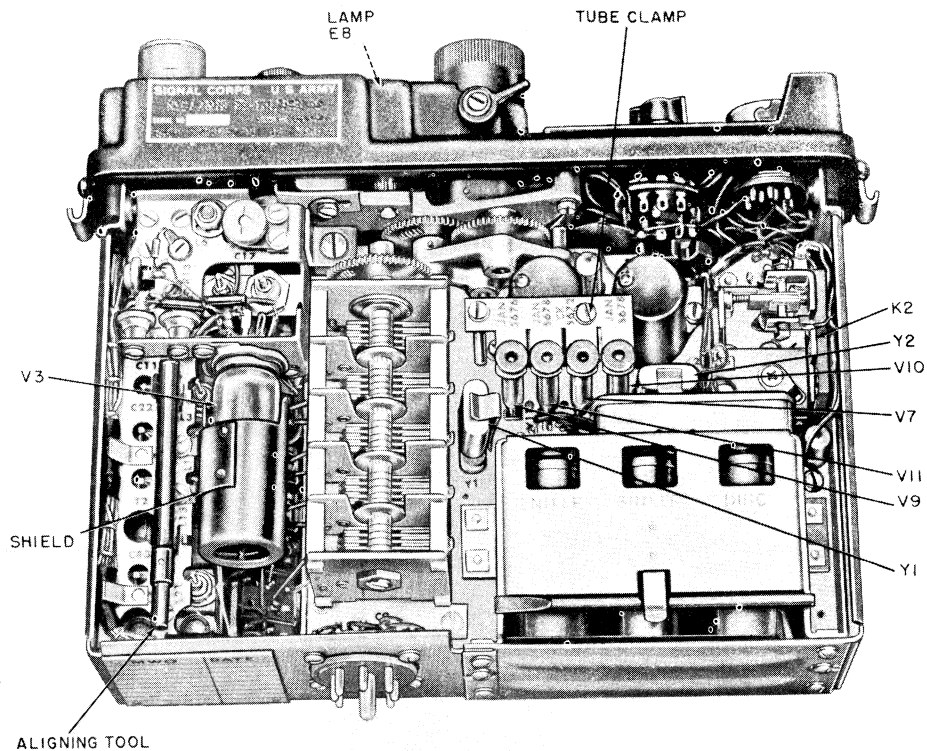
Figure 7. Receiver-transmitter, top view (unlettered models).

Caution: When testing a subminiature tube, align the red mark on the tube with the red mark on the tube tester subminiature socket to avoid burning out the tube filaments.

b. Tube Substitution Method. Replace a suspected tube with a known good tube. If the equipment remains inoperative, remove the replacement tube and put back

the original tube. Repeat this procedure with each suspected tube until the defective tube is located.

Caution: When replacing a subminiature tube, the edge of the tube with the red mark is placed next to the red mark on the chassis or the red mark on the tube socket. Be sure that the tube pins are straight to avoid breakage.



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Figure 8. Receiver-transmitter, bottom view (unlettered models).

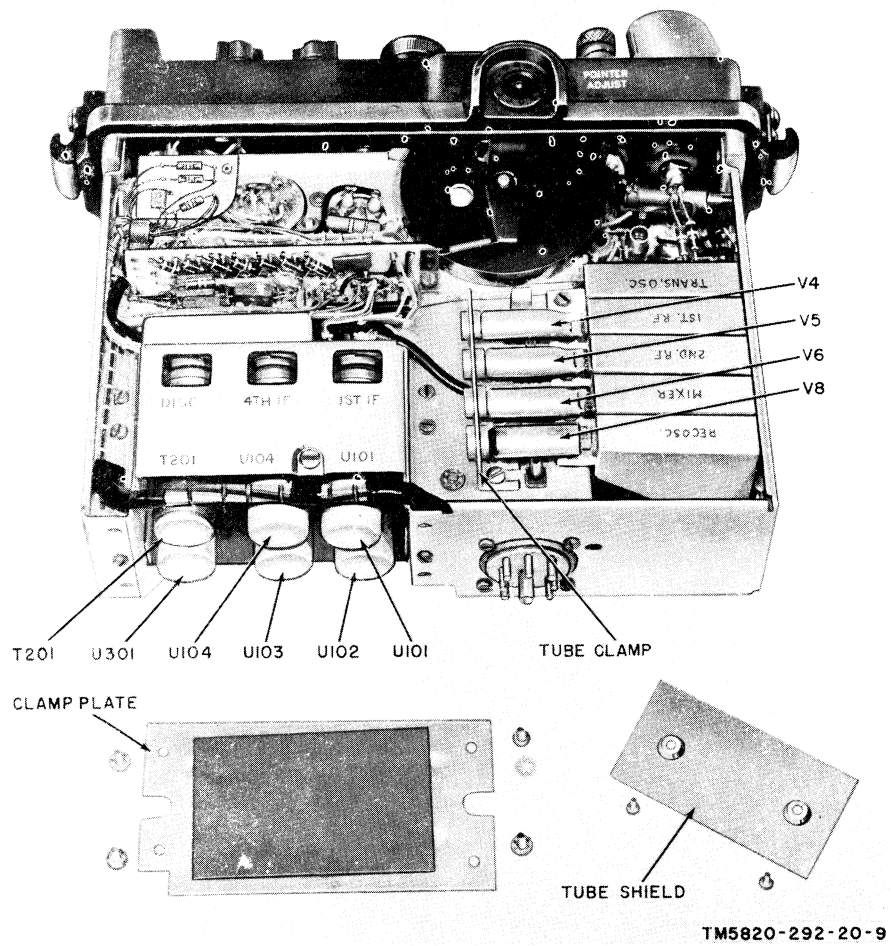
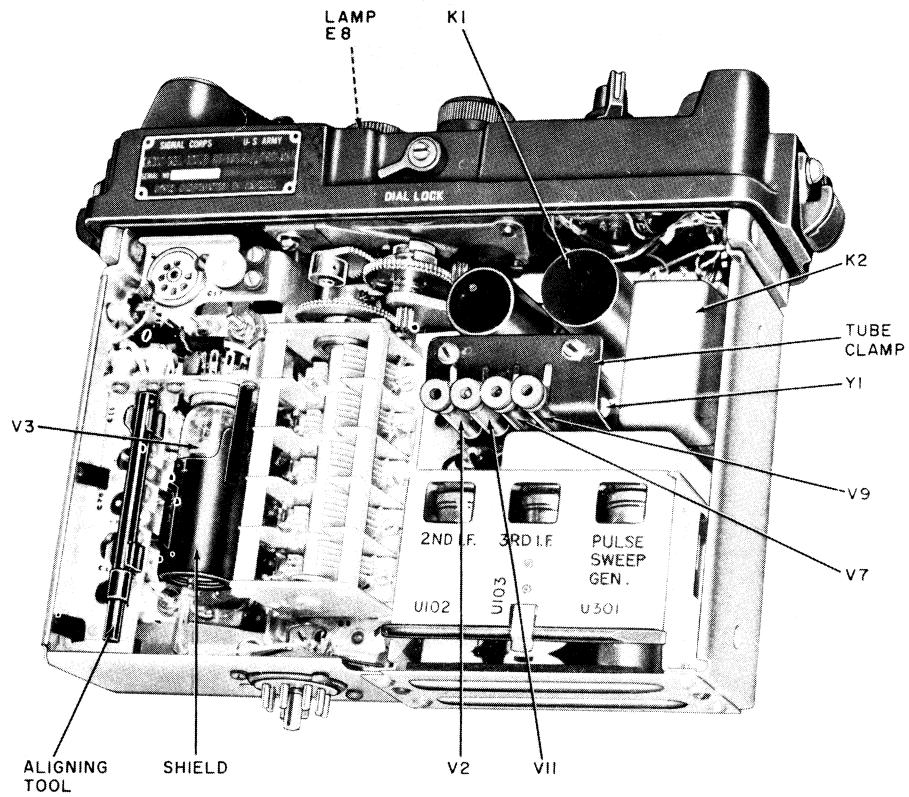
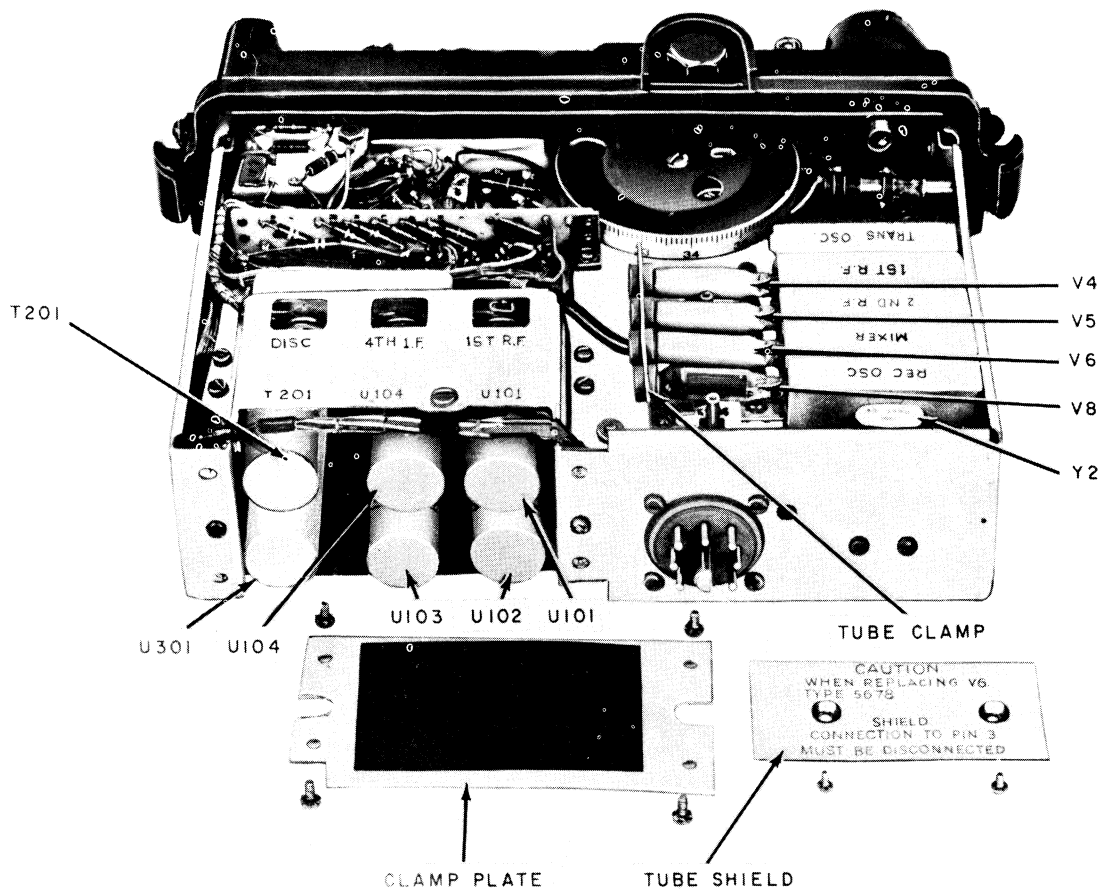


Figure 9. Receiver-transmitter, top view (A models).



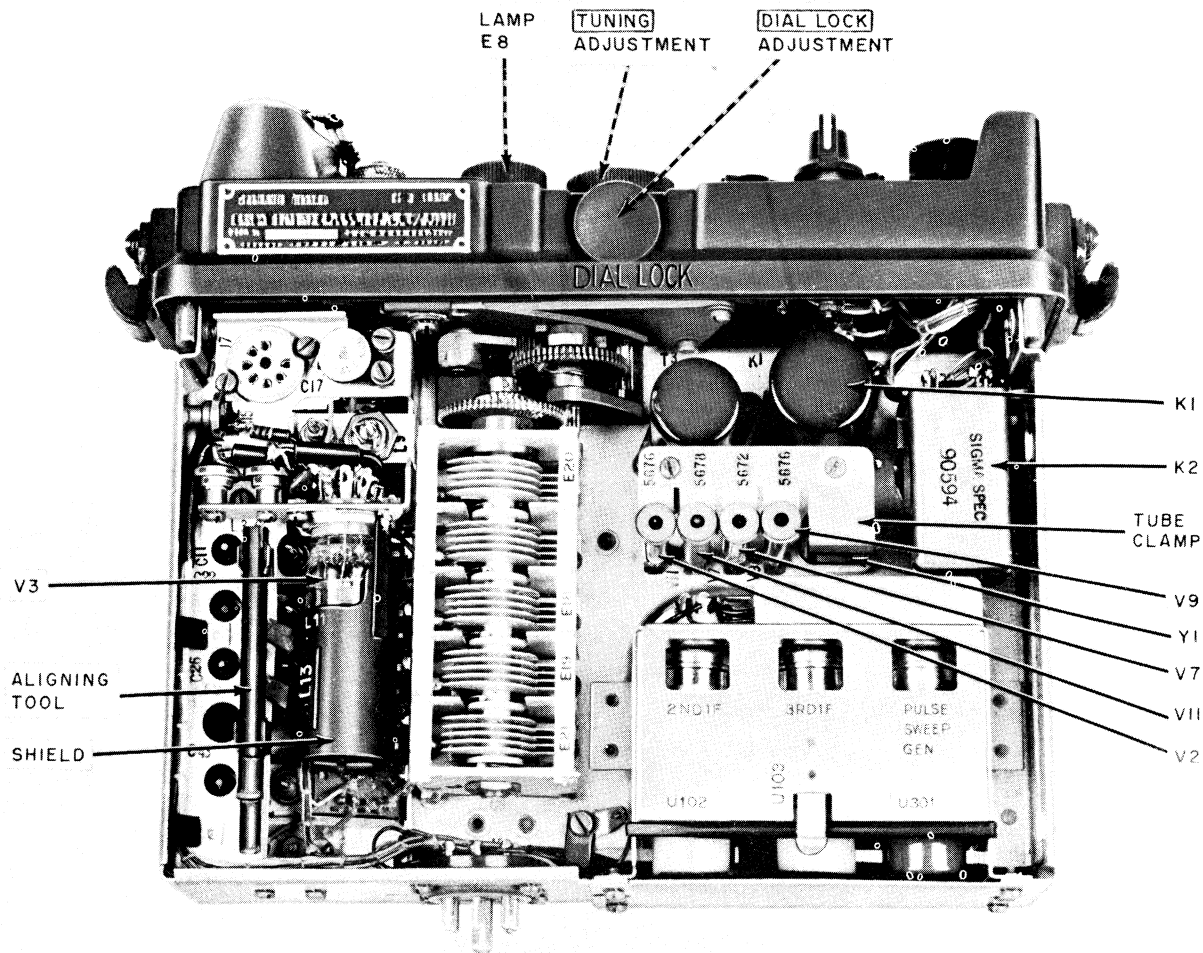
TM5820-292-20-10

Figure 10. Receiver-transmitter, bottom view (A models).



TM5820-292-20-11

Figure 11. Receiver-transmitter, top view (AN/PRC-28).



TM5820-292-20-12

Figure 12. Receiver-transmitter, bottom view (AN/PRC-28).

CHAPTER 3

SHIPMENT AND LIMITED STORAGE

21. Disassembly of Equipment

The disassembly procedure for the equipment consists of removal of the battery and disconnection of minor components from the receiver-transmitter control panel. The procedure is given in TM 11-5820-292-10.

22. Repackaging for Shipment or Limited Storage

The exact procedure for repackaging depends on the materials available and the conditions under which the equipment is to be shipped or stored. Adapt the procedures below whenever possible. The information concerning the original packaging (para 2 and 3) will also be helpful. Use the original packing and packaging materials, if available.

a. Material Requirements. The following materials are required for packaging the radio set. For stock numbers of materials, consult SB 38-100.

Material	Quantity
Wrapping paperboard	11 sq ft
Gummed paper tape	30 ft
Waterproof tape	11 ft
Cotton twine	10 ft
Fiberboard carton	1 ea

b. Packaging. Package the items of the radio set as outlined below:

- (1) Place the technical manuals and the assembled receiver-transmitter and battery case on the carrying harness, and enclose with the narrow straps.

- (2) Cushion the combination ((1) above) with paperboard. Secure the cushioning with gummed paper tape.
- (3) Wrap the package completely with paperboard and secure with waterproof tape.
- (4) Fold the suspenders into a small bundle and tie the bundle with cotton twine.
- (5) Secure the folded long antenna with cotton twine and pack both antennas and Antenna Spring Section AB-129/PR in the carrying bag.
- (6) Wrap the carrying bag and components completely with paperboard and secure the wrap with gummed paper tape.
- (7) Wind the handset cord into a coil small enough to fit between the microphone and receiver of the handset. Tie the coil with cotton twine.
- (8) Wrap the handset with paperboard and secure the wrap with gummed paper tape.

c. Pack the components in a fiberboard carton as follows:

- (1) Place the packaged items (*b* above) in a fiberboard carton that provides adequate clearance for the packed components. Stuff paperboard into open spaces within the packed carton to prevent shifting of components during shipment.
- (2) Secure the packed fiberboard carton with waterproof tape.

APPENDIX I

REFERENCES

The following is a list of applicable references which are available to the organizational repairman of the radio set.

- MWO 11-5055-1 Modification of Amplifier-Power Supply AM-598/U to Permit Operation With All Models of Radio Sets AN/PRC-8(), AN/PRC-9(), and AN/PRC-10().
- SB 11-131 Distribution of Vehicular Radio Sets.
- SB 38-100 Preservation, Packaging, and Packing Material, Supplies, and Equipment Used by the Army.
- SIG 7 & 8 AN/PRC-28 Organizational Maintenance Allowances and Field and Depot Maintenance Stockage Guide for Radio Set AN/PRC-28.
- TM 11-5020 Antenna Equipment RC-292.
- TM 11-5038 Control Group AN/GRA-6.
- TM 11-5055 Amplifier-Power Supplies AM-598/U and AM-598A/U.
- TM 11-5820-292-10 Operator's Manual: Radio Sets AN/PRC-8, -8A, -9, -9A, -10, 10A, and -28.
- TM 11-5820-292-20P Organizational Maintenance Repair Parts and Special Tools List: Radio Sets AN/PRC-8, -8A, -9, -9A, -10, and -10A.

APPENDIX II

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

1. General

a. This appendix assigns maintenance functions and repair operations to be performed 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 part. Components and parts comprising a major end item are listed alphabetically. Assemblies and subassemblies are in alphabetical sequence with their components listed alphabetically immediately below the assembly listing.
- (2) *Maintenance function.* This column indicates the various maintenance functions allocated to the echelon capable of performing the operations.
 - (a) *Service.* To clean, to preserve, and to replenish fuel and 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 assemblies, subassemblies, and parts for unserviceable components.
 - (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, inspecting, cleaning, preserving, adjusting, replacing, welding, riveting, and straightening.

- (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 weapon system.
- (i) *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 reassembly of the item.
- (j) *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.

(3) *1st, 2d, 3d, 4th, 5th echelon.* 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 columns.

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

(1) *Tools required for maintenance functions.* This column lists tool,

test, and maintenance equipment required to perform the maintenance functions.

(2) *1st, 2d, 3d, 4th, 5th echelon.* The dagger (†) symbol indicates the echelons allocated the facility.

(3) *Tool code.* This column lists the tool code assigned.

(4) *Remarks.* Entries in this column are used to clarify data in the other columns.

2. Mounting Hardware

The basic entries of the maintenance allocation chart do not include mounting hardware such as screws, nuts, bolts, washers, brackets, clamps, etc.

3. 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

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH	(4) 2ND ECH	(5) 3RD ECH	(6) 4TH ECH	(7) 5TH ECH	(8) TOOLS REQUIRED	(9) REMARKS
RADIO SETS AN/PRC-8; AN/PRC-8A, AN/PRC-9; AN/PRC-9A AN/PRC-10; AN/PRC-10A	service		X				14	Voltage, continuity and tube checking Sensitivity measurements, signal tracing Same as above plus deviation and power output Same as above but at depot level
	adjust		X				14	
	adjust			X			15	
	inspect	X						
	test		X	X	X	X	3,12 4,5,7,9,12 1,2,4, thru 9,12, 13,16	
	repair				X		1,2,4 thru 11,13 16	
	align			X			4 thru 9,16	
	calibrate			X			2,4 thru 9,16	
	rebuild				X		10,15	
	overhaul				X		10,15	
CASE, CY-744/PRC	replace	X						
	repair		X					
HANDSET H-33/PT, H-33B,C/PT	replace	X						Separate List
RECEIVER-TRANSMITTERS RT-174/PRC-8, RT-174A/PRC-8 RT-175/PRC-9; RT-175A/PRC-9; RT-176/PRC-10 RT-176A/PRC-10	service		X				14	Voltage, continuity and tube checking Sensitivity measurements, signal tracing Same as above plus deviation and power output Same as above but at depot level
	adjust		X	X			14	
	inspect	X					15	
	test		X	X	X	X	3,12 4,5,7,9,12 1,2,4 thru 9,12, 13,16	
	replace					X	1,2,4 thru 11,13, 16	
	repair		X				14	
	align			X			15	
	calibrate			X			4 thru 9,16	
	rebuild				X		2,4 thru 9,16	
	overhaul				X	X	10,15	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
PART OR COMPONENT	MAINTENANCE FUNCTION	1ST ECH	2ND ECH	3RD ECH	4TH ECH	5TH ECH	TOOLS REQUIRED	REMARKS
AN/PRC-8; AN/PRC-8A; AN/PRC-9; AN/PRC-9A; AN/PRC-10			X				14	
AN/PRC-10A (continued)	replace							
AMPLIFIER, IF: AM-427/U	repair							
AMPLIFIER (1st and 2nd RF) SUB-ASSEMBLY	replace		X			X	15	
CONTROL, CONSTANT FREQUENCY	replace						15	
GENERATOR, PULSE-SWEEP 0-325/U	repair		X				15	
MIXER STAGE, FREQUENCY	replace			X			14	
OSCILLATOR RF	repair			X		X	15	
TRANSFORMER-DISCRIMINATOR TF-132/U, TF-204/U	replace		X				15	
	repair						15	
							15	
							15	
							14	

Section III. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH	(3) 2ND ECH	(4) 3RD ECH	(5) 4TH ECH	(6) 5TH ECH	(7) TOOL CODE	(8) REMARKS
AV/PRC-8; AV/PRC-8A; AV/PRC-9; AV/PRC-9A; AV/PRC-10; AV/PRC-10A (continued)							
AUDIO OSCILLATOR TS-382A/U				+	+	1	
METER, MODULATION ME-57/U				+	+	2	In procurement. If not available use Panoramc Indicator IP-173/U
MULTIMETER AV/URM-105		+				3	
MULTIMETER TS-352/U			+	+	+	4	
MULTIMETER, METER ME-267/U			+	+	+	5	
OSCILLOSCOPE OS-87/U			+	+	+	6	
RF SIGNAL GENERATOR SET AV/URM-25			+	+	+	7	
RF WATTMETER AV/URM-43			+	+	+	8	
SIGNAL GENERATOR SG-297()/U			+	+	+	9	In development. Interim item: Signal Generator AV/URM-48
SOLDERING EQUIPMENT, INDUCTION TL-615/U			+	+	+	10	
TEST SET, ELECTRON TUBE TV-2/U					+	11	
TEST SET, ELECTRON TUBE TV-7/U			+	+	+	12	
TEST SET, RADIO AV/URM-113			+	+	+	13	
TOOL KIT TK-115/U			+	+	+	14	
TOOL KIT TK-87/U			+	+	+	15	
VOLTMETER, METER ME-50/U			+	+	+	16	

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Sig Sec, GENDEP (5)	1-57	6-214
Sig Dep (12)	1-107	6-217
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Army Tml (1)	3-510 (AA)	6-315
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7-32	RA-RT) (4)	32-57	57-5
7-37	11-555	39-51	

NG: State AG (3); Units—Same as Active Army except allowance is one copy to each unit.

USAR: None.

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

