

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

TM 11-5055

DEPARTMENT OF THE AIR FORCE TECHNICAL ORDER

TO 16-35AM598-5

AMPLIFIER-POWER
SUPPLY AM-598/U



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DEPARTMENTS OF THE ARMY AND THE AIR FORCE

MAY 1954

WARNING

HIGH VOLTAGE

is used in the operation
of this equipment

DEATH ON CONTACT

may result if personnel fail
to observe safety precautions

TM 11-5055/TO 16-35AM598-5

TECHNICAL MANUAL
No. 11-5055
TECHNICAL ORDER
No. 16-35AM598-5

DEPARTMENTS OF THE ARMY AND
THE AIR FORCE
WASHINGTON 25, D. C., 7 May 1954

AMPLIFIER-POWER SUPPLY AM-598/U

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ARTIFICIAL RESPIRATION

GENERAL PRINCIPLES

1. Seconds count! Begin at once! Don't take time to move the victim unless you must. Don't loosen clothes, apply stimulants or try to warm the victim. Start resuscitation! Get air in the lungs! You may save a life!
2. Place the victim's body in a prone position, so that any fluids will drain from the respiratory passages. The head should be extended and turned sideward *never flexed forward*; the chin shouldn't sag, since obstruction of the respiratory passages may occur.
3. Remove any froth or debris from the mouth with your fingers. Draw the victim's tongue forward.
4. Begin artificial respiration. Continue it rhythmically and without any interruption until natural breathing starts or the victim is pronounced dead. Try to keep the rhythm smooth. Split-second timing is not absolutely essential.
5. When the victim starts breathing, or when additional help is available loosen the clothing; remove it, if it's wet; keep the victim warm. Shock should receive adequate attention. Don't interrupt the rhythmical artificial technique for these measures. Do them only when you have help or when natural breathing has started.
6. When the victim is breathing, adjust your timing to assist him. Don't fight his efforts to breathe. Synchronize your efforts with his. After resuscitation, keep him lying down until seen by a physician or until recovery seems certain.
7. Don't wait for mechanical resuscitation! If an approved model is available, use it, but, since mechanical resuscitators are only slightly more effective than properly performed "push-pull" manual technique, never delay manual resuscitation for it.

BACK-PRESSURE ARM LIFT METHOD

1. *Position of Victim.* Place the victim in the prone (face-down) position. Bend his elbows; place one hand upon the other. Turn his face to one side, placing his cheek upon his hands.
2. *Position of Operator.* Kneel on your left or right knee, at the victim's head, facing him. Your knee

should be at the side of the victim's head close to his forearm, your foot should be near his elbow. Kneel on both knees if you find it more comfortable, with one knee on each side of the head. Place your hands on the flat of the victim's back so that their heels are just below the lower tip of his shoulder blades. With the tip of your thumbs touching spread your fingers downward and outward. (See A)

3. *Compression Phase.* Rock forward until your arms are approximately vertical and allow the weight of the upper part of your body to exert a slow, steady, even, downward pressure upon your hands. This forces air out of the lungs. Keep your elbows straight and press almost directly downward on the back. (See B)

4. *Expansion Phase.* Release the pressure, avoid any finish thrust, and commence to rock backward slowly. Place your arms upon the victim's arms just above the elbows, and draw his arms upward and toward you. Apply just enough lift to feel resistance and tension at the victim's shoulders.

Don't bend your elbows. As you rock backward, the victim's arms will be drawn toward you. (The arm lift expands the chest by pulling on the chest muscles, arching the back and relieving the weight on the chest.) Drop the arms gently to the ground or floor. This completes the cycle. (See C and D). Now, repeat the cycle.

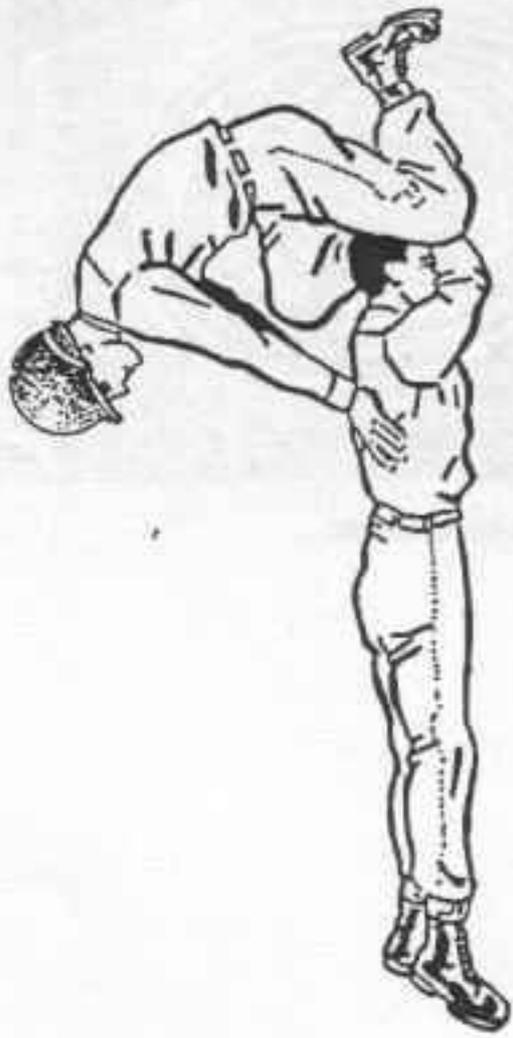
5. *Cycle Timing and Rhythm.* Repeat the cycle 10 to 12 times per minute. Use a steady uniform rate of Press, Release, Lift, Release. Longer counts of about equal length should be given to the "Press" and "Lift" steps of the compression and expansion phases. Make the "Release" periods of minimum duration.

6. *Changing Position or Operator.*

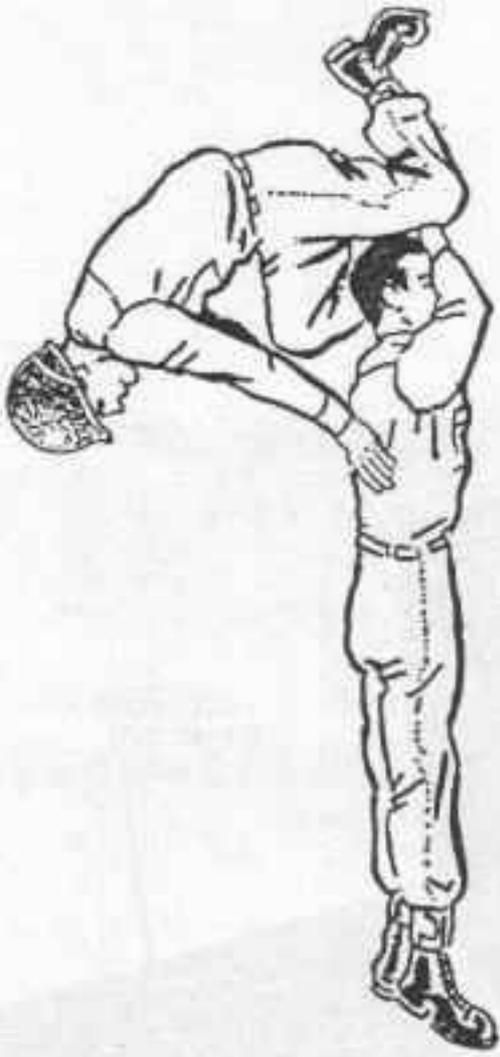
(a) Remember that you can use either or both knees or can shift knees during the procedure, provided you don't break the rhythm. Observe how you rock forward with the back-pressure and backward with the arm-lift. The rocking motion helps to sustain the rhythm and adds to the ease of operation.

(b) If you tire and another person is available, you can "take turns." Be careful not to break the rhythm in changing. Move to one side and let your replacement come in from the other side. Your replacement begins the "Press-Release" after one of the "Lift-Release" phases, as you move away.

TM AR-3



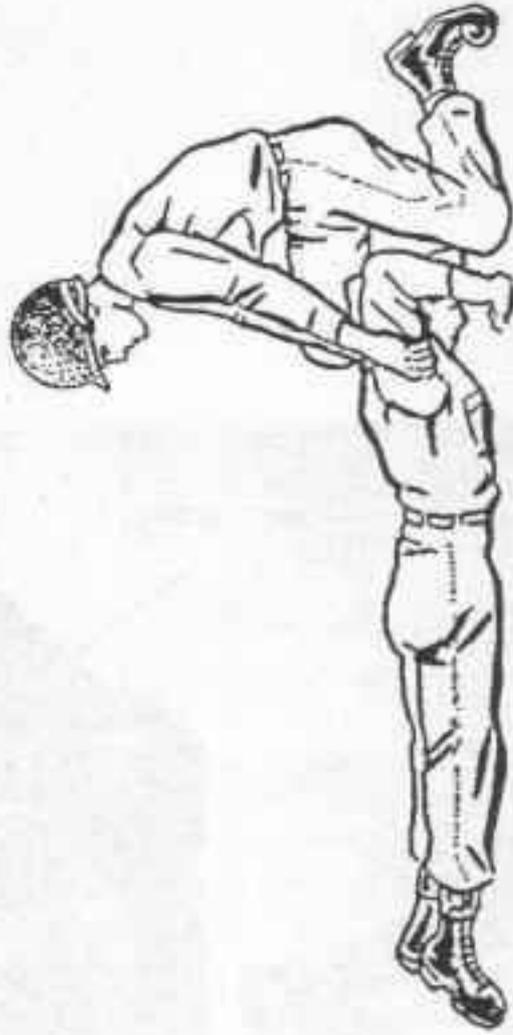
A Position of operator and victim



B Compression phase



C Expansion phase (arm lift)



D Expansion phase (arm release)

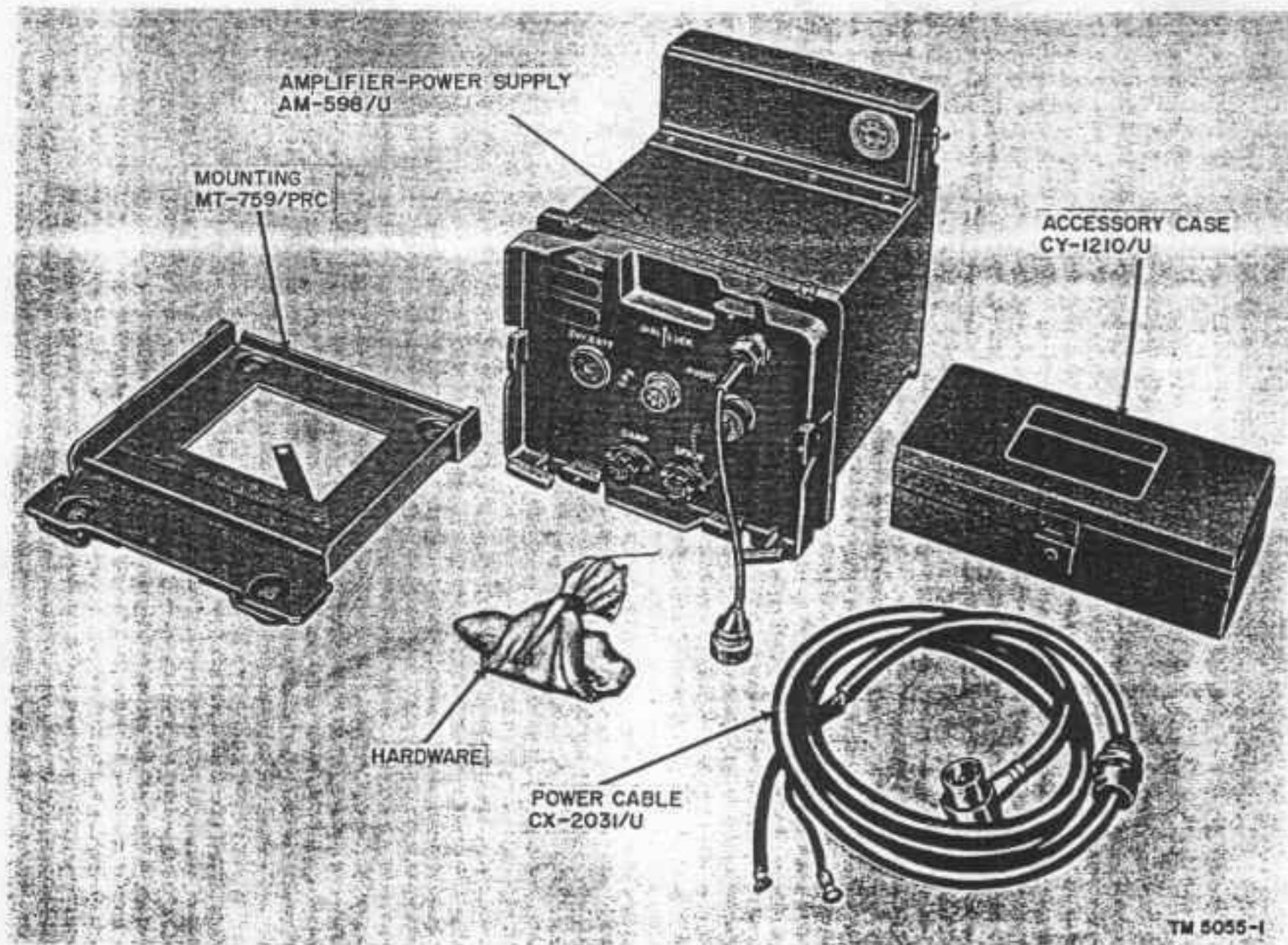


Figure 1. Amplifier-power supply AM-598/U with components.

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1. Scope

a. This manual contains information covering the installation, operation, maintenance, and repair of Amplifier-Power Supply AM-598/U (fig. 1), and an appendix covering a list of references.

b. Throughout the manual, the words *radio set* refer to Radio Sets AN/PRC-8, -9, and -10, with which the amplifier power supply is designed to be used. The major components of Radio Sets

AN/PRC-8, -9, and -10 include Radio Receiver-Transmitters RT-174/PRC-8, RT-175/PRC-9, and RT-176/PRC-10, respectively.

2. Forms and Records

Forms for reporting unsatisfactory conditions of Army materiel and equipment and in performing preventive maintenance are listed in the appendix.

Section II. DESCRIPTION AND DATA

3. Purpose and Use

Amplifier-Power Supply AM-598/U (fig. 1) is a vibrator-type regulated power supply and audio amplifier that adapts Radio Sets AN/PRC-8, -9, and -10 for vehicular use. Detailed information on the radio sets is published in TM 11-612 and TM 11-4065. The power supply operates from a 24-volt direct-current (dc) source and replaces Battery BA-279/U in vehicular installations. The unit supplies the complete power requirements of the radio set, and, in addition, the audio amplifier which it contains facilitates the use of a headset or loudspeaker.

4. System Application

(fig. 2)

a. Figure 2 is a simplified block diagram of a system in which the amplifier power supply is used to provide the necessary operating potentials and audio amplification for Radio Set AN/PRC-8, -9, or -10.

b. Application of battery power to the amplifier power supply is controlled by the POWER switch in the radio set. When this switch is in the ON position, plate, screen, filament, and bias voltages for the radio set receiver are present at the amplifier power supply output receptacle, and

plate voltage is available internally for the audio amplifier. When the POWER switch is in the REMOTE position, battery power to the amplifier power supply is controlled from Control Group AN/GRA-6 (not supplied), which may be connected to an AUDIO receptacle on the amplifier power supply panel.

c. When the power supply is turned on, plate and filament voltages for the transmitter are controlled by the push-to-talk button of the handset connected at either of the power supply AUDIO receptacles, or by the button of the handset used with Control Group AN/GRA-6. Depressing the button energizes a receive-transmit relay in the power supply that opens the audio-amplifier circuit and energizes the receive-transmit relay in the radio set through an interconnecting cord between the two units. When the button is released, the transmitter is de-energized and the receiver is energized. The receiver output is present at the same audio accessory, if it is a headset or chest set. In addition, releasing the push-to-talk button closes the audio-amplifier circuit, the output of which is available for a loudspeaker at the amplifier power supply AUDIO receptacle not used by the transmitting audio accessory.

d. The radio set VOL and SQUELCH controls are adjusted at the radio set (see TM 11-4065).

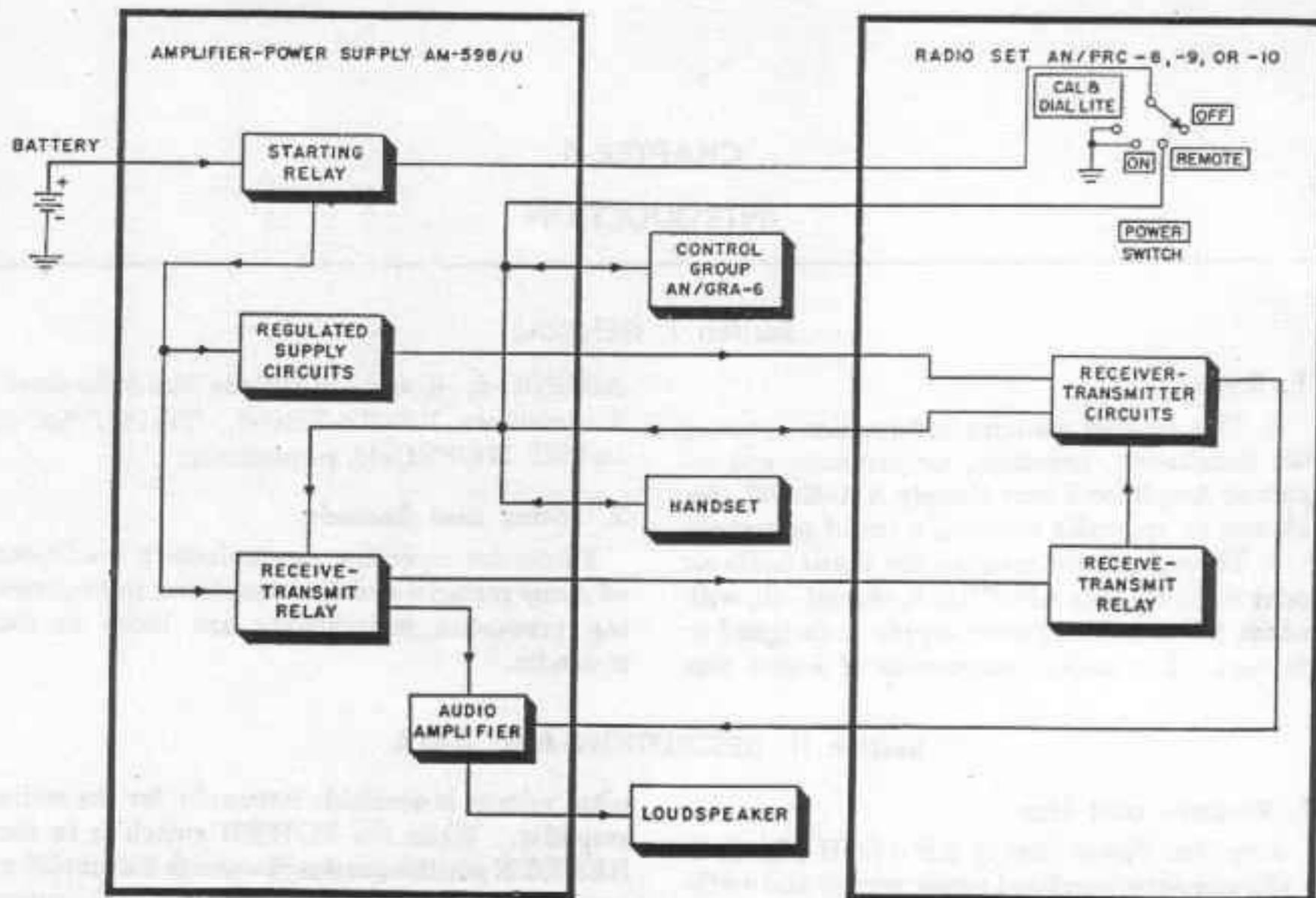


Figure 2. Amplifier-power supply AM-598/U, system application.

TM 5055-2

5. Technical Characteristics

Number of tubes..... 6.
 Rated input..... 24 volts dc.
 Battery current drain:
 Receiver operation..... at 30 volts (max), 2.7 amperes.
 Transmitter operation..... at 30 volts (max), 3.1 amperes.

Radio set plate, screen filament, and bias power drains (all voltages nominal):

Type of operation	B2 (+130 volts)	B1 (+53 volts)	A1 (+1.35 volts)	A2 (-1.35 volts)	C (-5.7 volts)
	Milli- amperes	Milli- amperes	Milli- amperes	Milli- amperes	Milli- amperes
Receive normal.....	0	16.1	610	0	.05
Receive squelch.....	0	19.0	665	0	.05
Receive calibrate.....	1.4	16.6	610	230	.05
Receive squelch cal- ibrate.....	1.4	19.6	665	230	.05
Transmit normal.....	45.0	9.1	411	0	385
Transmit squelch.....	46.5	12.1	465	0	385

Weight..... 34 lb, including mounting base.
 Adaptability to service conditions:
 Shocks and vibration.. Will stand shocks, strains, and vibration in a vehicle operating over rough terrain.
 Weather and climate.. Immersionproofed and fungi-proofed.

6. Packaging Data

a. When packaged for export shipment, Amplifier-Power Supply AM-598/U including Mounting MT-759/PRC, Electrical Special Purpose Cable Assembly CX-2031/U, and Accessories Case CY-1210/U are placed in a moisture-vaporproof, corrugated container that is packed in a single wooden export crate. Exploded views of the components packed for both export and domestic shipments are shown in figure 14. For domestic shipment, packaging stops at the corrugated container. The size, weight, and volume of each type of shipping container are indicated in the following chart:

Note. Items may be packaged in a manner different from that shown, depending on supply channel.

Type container	Height (in.)	Width (in.)	Depth (in.)	Volume (cu ft)	Unit weight (lb)
Wooden crate.....	16	14	20½	2.6	60
Corrugated container	13¾	11¾	16¾	1.5	45

b. The following chart lists the contents of the shipping container. See the packing list attached to the container for exact contents.

Contents	Notes
1 Amplifier-Power Supply AM-598/U.	Includes Mounting MT-759/PRC and hardware for bolting unit to vehicle mounting surface. Includes stuffing gland for attaching cable to vehicle junction box.
1 Accessories Case CY-1210/U.	
1 Electrical Special Purpose Cable Assembly CX-2031/U.	

7. Table of Components

Component	Reqd No.	Height (in.)	Depth (in.)	Length (in.)	Volume (cu ft)	Unit wt (lb)
Amplifier-Power Supply AM-598/U with Mounting MT-759/PRC.....	1	12¾	10¾	13	.95	34
Electrical Special Purpose Cable Assembly CX-2031/U.....	1			98¾		2
Set of mounting hardware.....	1		5	4		¾
Consisting of:						
1 Bag, containing:						
5 screws, ¼-28 x 2" slot hexagonal head.						
5 screws, ¼-28 x 1½" slot hexagonal head.						
5 washers, ¼.						
5 lockwashers, ¼, shakeproof.						
5 nuts, ¼-28.						
Case of running spares, Accessories Case CY-1210/U.....	1	2¾	4¾	5¾	.06	2½
TM 11-5055 or instruction book.....	2	11	8¾			
Total.....					1.01	38¾

Note. This list is for general information only. See the appropriate supply publications for information pertaining to requisitioning of spare parts.

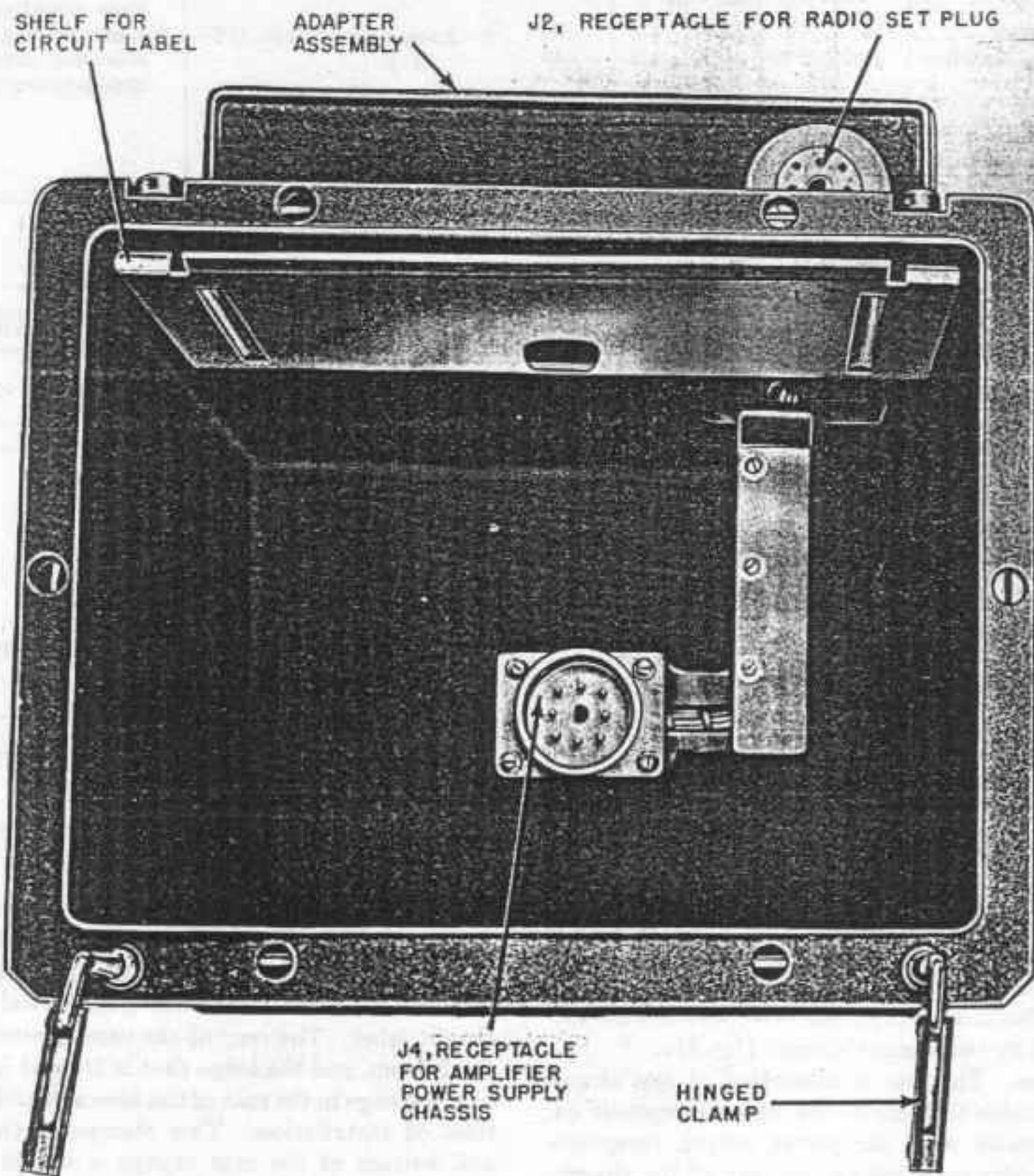
8. Description

a. *General.* The AM-598/U consists of a single panel-chassis assembly inclosed in a case. At the time of installation, the case is secured to a mounting base by two hinged clamps (fig. 3).

b. *Case.* The case is fabricated of cast aluminum. Inside the rear of the case is receptacle J4, which mates with the power output receptacle permanently mounted on the rear of the chassis. A short seven-wire cable connects the case receptacle (J4) to receptacle J2, which is mounted on an adapter assembly. The assembly is bolted to the top of the case. The cable is inclosed in a trough protected by a metal plate. The receptacle on the adapter assembly mates with the power plug on the rear of the radio set. Two catch retainers (fig. 4), one on each side of the adapter assembly, receive two spring clamps on the radio

set so that the latter may be mounted securely. A shelf, held in grooves under the top of the case, is provided for the circuit label. A hole in the rear of the shelf facilitates withdrawal of the circuit label. The rear of the case is extended at the bottom, and the ledge that is formed is placed over a wedge in the rear of the base assembly at the time of installation. Two clamps at the front and bottom of the case engage a wedge on the front of the base assembly when tightened. The handles of the clamps are hinged to permit removal of the chassis and panel assembly from the case.

c. *Mounting MT-759/PRC.* Mounting MT-759/PRC consists of four shock mounts set in a steel frame (fig. 5). The frame has a rectangular window cut in it so that the grounding strap affixed at one end of the under side of the frame



TM 5055-4

Figure 3. Amplifier-power supply AM-598/U, case, front view.

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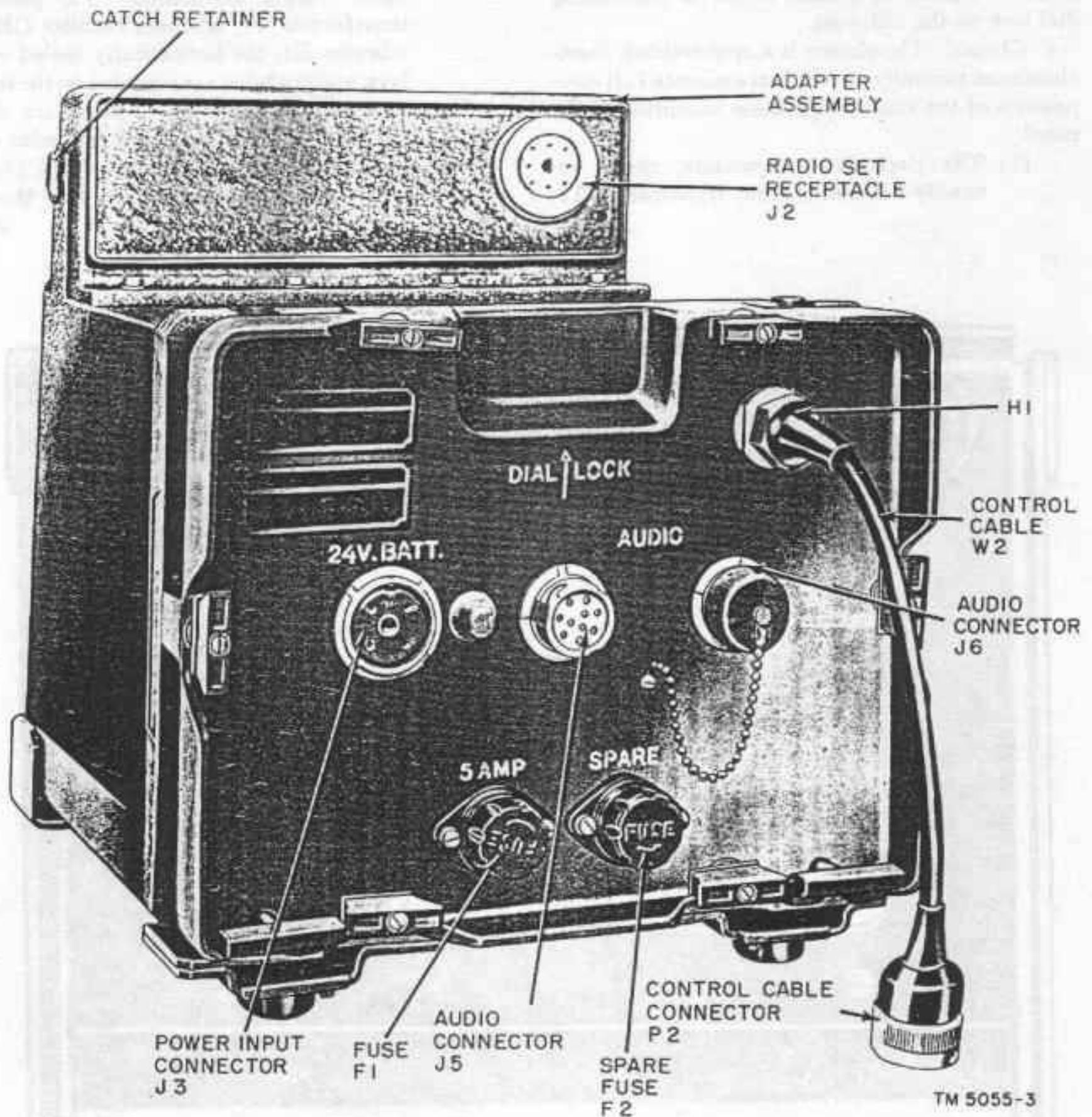


Figure 4. Amplifier-power supply AM-598/U, front oblique view.

may be reached. The grounding strap may be bolted through one of two holes in the frame, depending on the accessibility of the ground connection in the vehicle. The strap may be bent and oriented in a manner suitable for the installation. The assembly is fabricated so that wedges at the front and rear hold the case firmly.

d. *Panel.* The cast-aluminum panel is secured permanently to the chassis by eight machine screws. When it is fastened to the case by six

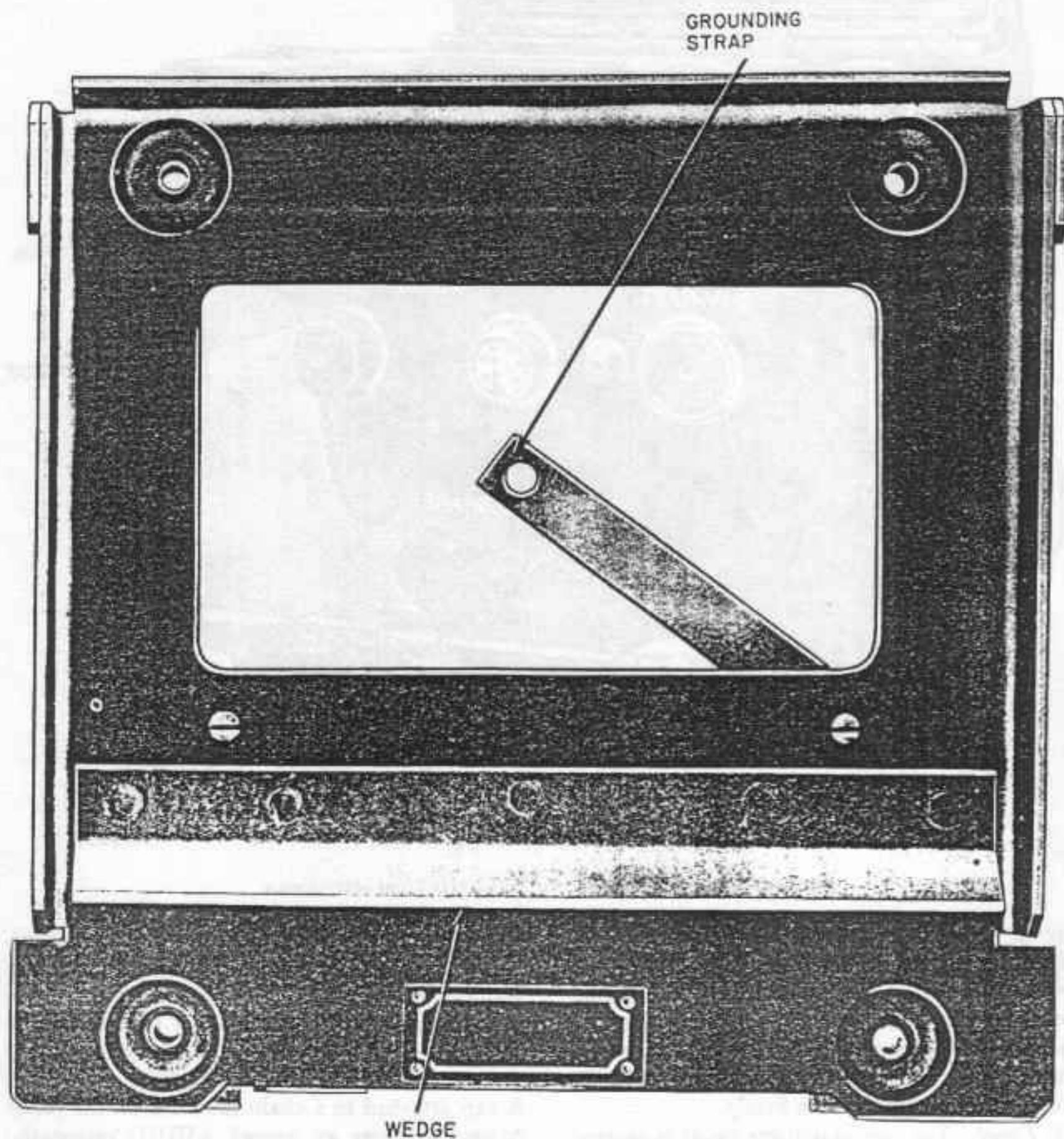
Dzus fasteners, a watertight inclosure is formed. The active fuse and holder, a spare fuseholder, a stuffing gland that holds the power supply radio set interconnecting cord, and all the receptacles for cable connectors except the power output receptacle are mounted on the front of the panel. A cap attached to a chain mounted on the panel is used to cover an unused AUDIO receptacle. The panel is recessed to prevent damage to the controls in case of impact, and a portion of it is

recessed further to permit access to the tuning dial lock on the radio set.

e. Chassis. The chassis is a spot-welded, sheet-aluminum assembly on which are mounted all components of the unit except those mounted on the panel.

- (1) The electrolytic capacitors, choke assembly L2, audio input transformer T3,

audio output transformer T2, power transformer T1, selenium rectifier CR2, vibrator E1, the hermetically sealed relays, and the tubes are mounted on the top of the chassis (fig. 6). Two of the capacitors, C6 and C7, are not grounded at their negative terminals; therefore, phenolic tubes have been placed over them



TM 5055-5

Figure 5. Mounting MT-759/PRC, top view.

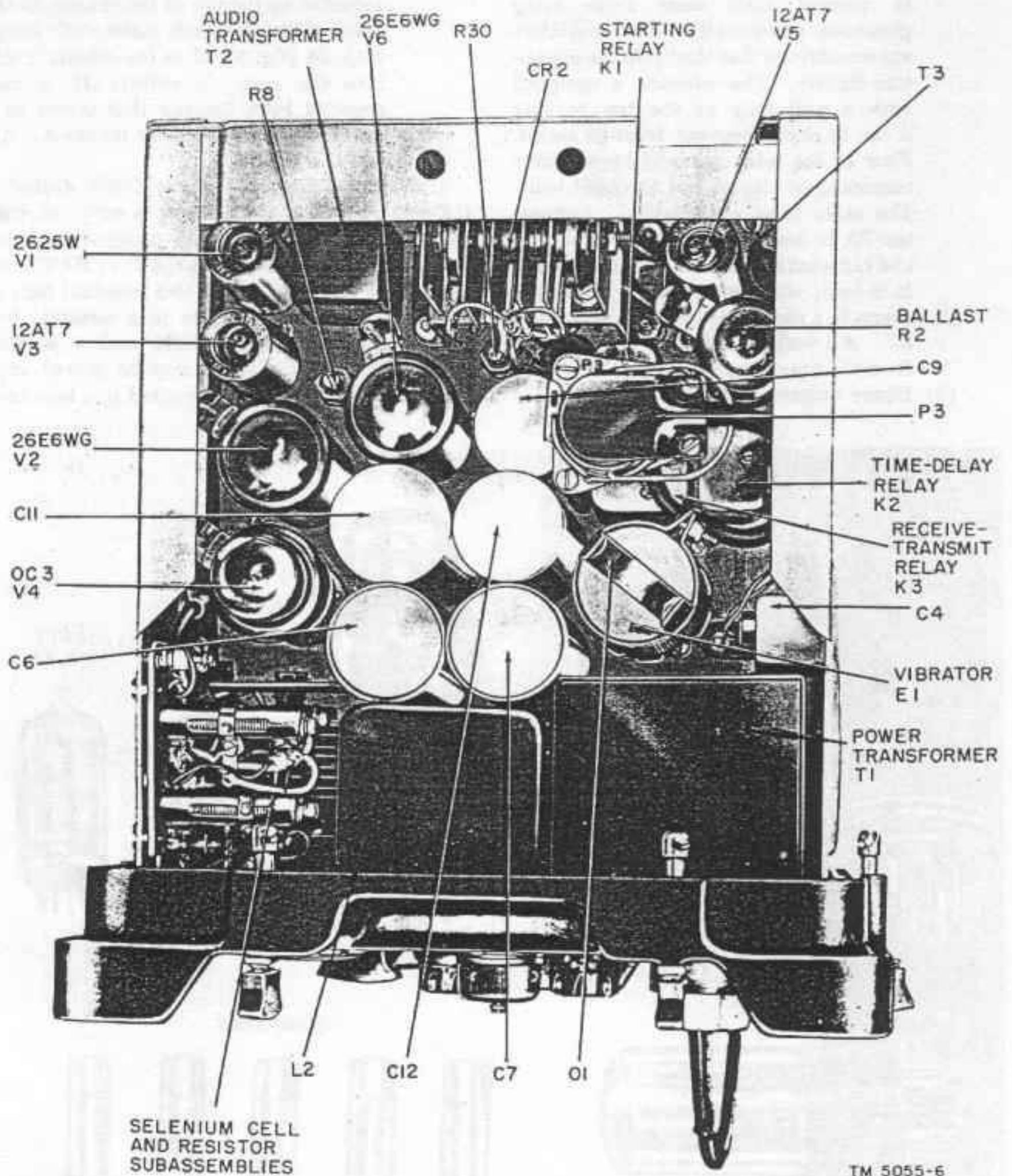


Figure 6. Amplifier-power supply AM-598/U, chassis, top view.

TM 5055-6

to prevent their cases from being grounded accidentally. The insulators are eccentric so that they grip the capacitors tightly. The vibrator is equipped with a pull ring at the top so that it can be easily removed from its socket. Four of the tubes are held by retainers consisting of clamps and threaded bolts. The other tubes are shielded. Connector P3 is used when the power supply and radio set are serviced simultaneously. It is held, when not in use, by a spring clamp in a receptacle located above relay K3. All variable resistors are adjusted from the top of the chassis.

(2) Power output receptacle J1 (fig. 34) is

mounted on the top of the chassis, in the rear. This receptacle mates with receptacle J4 (fig. 3) when the chassis is slid into the case. Receptacle J1 is surrounded by a housing that serves as a mounting for the rectifier for the A1, A2, and C supplies.

f. *Electrical Special Purpose Cable Assembly CX-2031/U.* The power cable is supplied with the equipment. There is a four-pronged connector at one end which mates with the 24V. BATT. receptacle on the front panel, two terminal lugs at the other end for connection to a terminal box (not supplied) in the vehicle, and a stuffing gland. The stuffing gland may be moved anywhere along the cable and mounted in a knockout

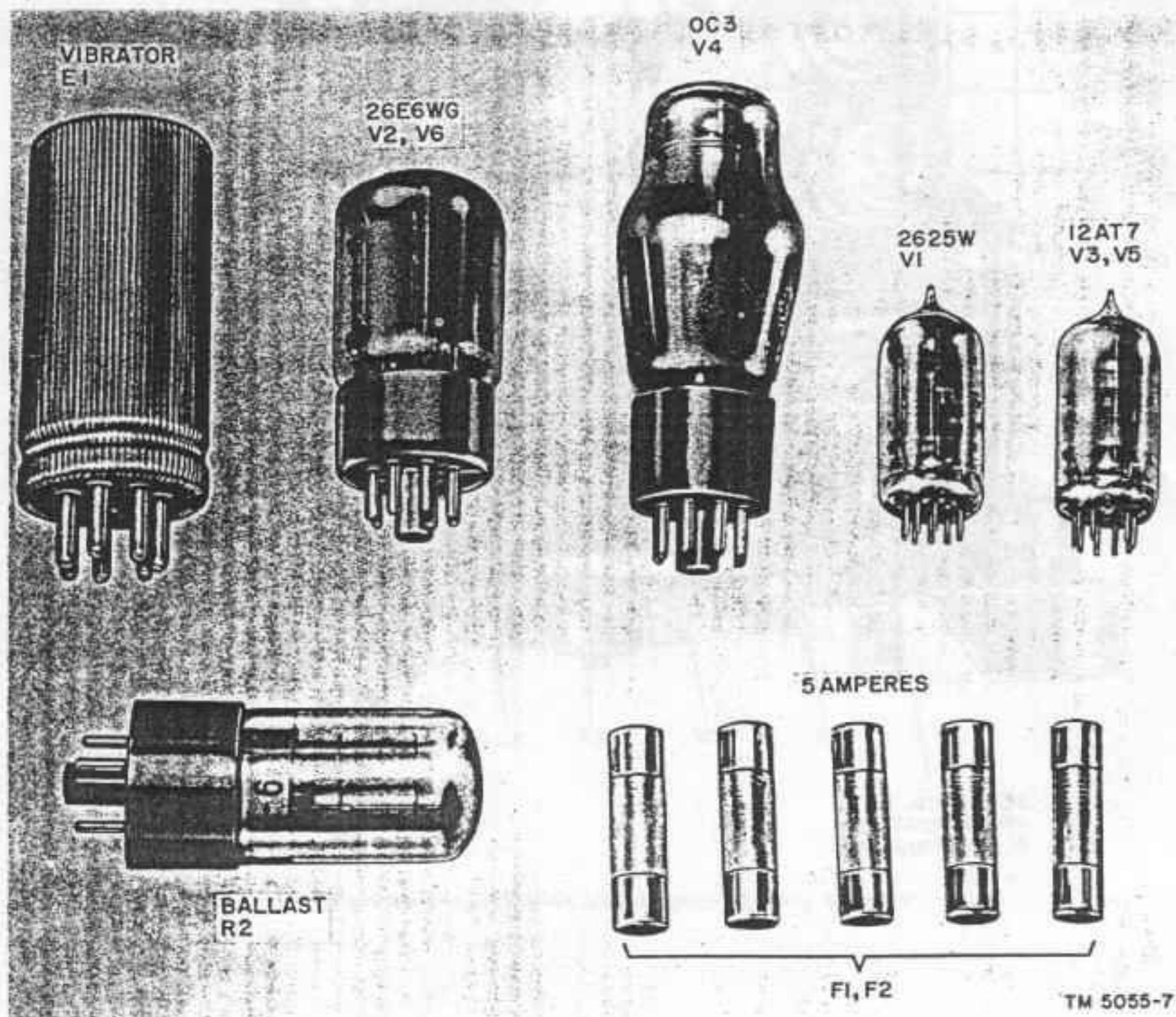


Figure 7. Running spares.

hole on the vehicle terminal box to hold the cable securely in place.

9. Running Spares

Running spares for normally expendable items such as tubes, fuses, and vibrator are provided with each unit. The spares are contained in a spare parts box, Accessories Case CY-1210/U, and are illustrated in figure 7. The spares are listed below:

Parts	Number supplied
Vibrator, 24-volt (E1).....	1
Tube type 26E6WG (V2, V6).....	1
Tube type OC3 (V4).....	1
Tube type 28Z5W (V1).....	1
Tube type 12AT7 (V3, V5).....	1
Ballast tube (R2).....	1
Fuse, cartridge, 5 amperes (F1, F2).....	5

Note. This list is for general information only. See the appropriate supply publications for information pertaining to requisitioning of new parts.

10. Additional Equipment Required

a. Amplifier-Power Supply AM-598/U re-

quires a 24-volt storage battery and a suitable load for operation. Radio Set AN/PRC-8, -9, or -10 normally constitutes the load for the amplifier power supply.

b. To install and operate the amplifier power supply, an installation unit also is required. The equipment can be installed only in vehicles with 24-volt batteries. The type of vehicle determines what installation unit is supplied (or must be requisitioned), since such items as audio accessories, cables, terminal boxes, and mounting hardware vary with the type of vehicle.

c. The chart below lists the vehicles in which the amplifier power supply and radio set may be installed, along with the stock numbers for requisitioning the necessary components. The stock numbers for the installation items required for the particular vehicles are listed under installation unit. The stock numbers for Radio Set AN/PRC-8, -9, or -10 are listed in the basic unit column. In the complete equipment column are listed the stock numbers covering the items in the basic unit and installation unit columns, plus Amplifier-Power Supply AM-598/U. Complete stock-number lists are published in SB 11-131.

Vehicle (truck)	AN/PRC	Complete equipment	Basic unit	Installation unit
¼ ton, 4 x 4 utility, M38.....	-8	2S3503-8-V76	2S3503-8	2S3503-8-V76/50
	-9	2S3503-9-V76	2S3503-9	
	-10	2S3503-10-V76	2S3503-10	
¾ ton 4 x 4, cargo, M42, or ¼ ton, 4 x 4, utility, M37..	-8	2S3503-8-V74	2S3503-8	S3503-8-V74/50
	-9	2S3503-9-V74	2S3503-9	
	-10	2S3503-10-V74	2S3503-10	
2½ ton, 6 x 6, cargo, M34, M35, and M36.....	-8	2S3503-8-V56	2S3503-8	2S3503-8-V56/50
	-9	2S3503-9-V56	2S3503-9	
	-10	2S3503-10-V56	2S3503-10	
2½ ton, 6 x 6, repair.....	-8	2S3503-8-V111	2S3503-8	2S3503-8-V111/5
	-9	2S3503-9-V111	2S3503-9	
	-10	2S3503-10-V111	2S3503-10	

d. The complete contents of the installation unit are not listed in this manual, but the audio accessories (any of which may be supplied, depending on the particular vehicular requirements) are described in paragraph 11.

e. For information on Control Group AN/GRA-6 and on the special relay cable that may be connected at the amplifier power supply, refer to TM 11-4065, TM 11-612, and TM 11-5038.

11. Audio Accessories

a. *General.* Audio accessories for use with the

amplifier power supply are supplied in the installation units. They vary in type and number according to the type of vehicular installation. Some or all of the following items may be supplied:

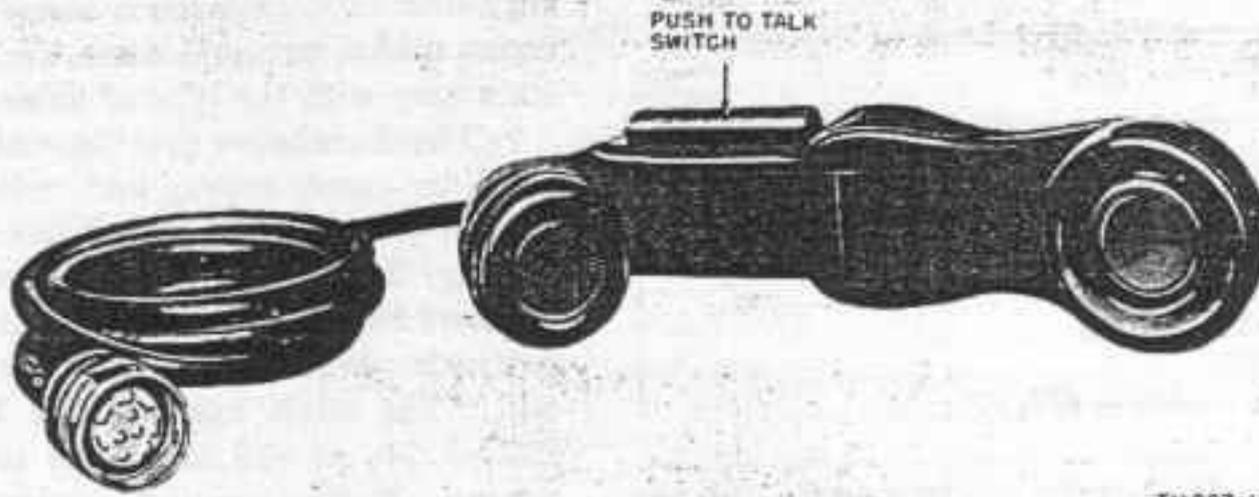
- (1) Handset H-33/PT.
- (2) Chest Set Group AN/GSA-6 and Headset-Microphone H-63/U.
- (3) Microphone M-29/U.
- (4) Dynamic Loudspeaker LS-166/U.
- (5) Headset Navy Type CW-49507 and Headset Cord CX-1334/U.

Note. The above listed audio accessories can be connected only to the 10-pin AUDIO receptacle J5 or J6 on the amplifier power supply panel.

b. *Handset H-33/PT.* Handset H-33/PT (fig. 8) is a combination microphone and receiver with a push-to-talk switch and a connecting cord. Microphone impedance is 40 ohms; receiver im-

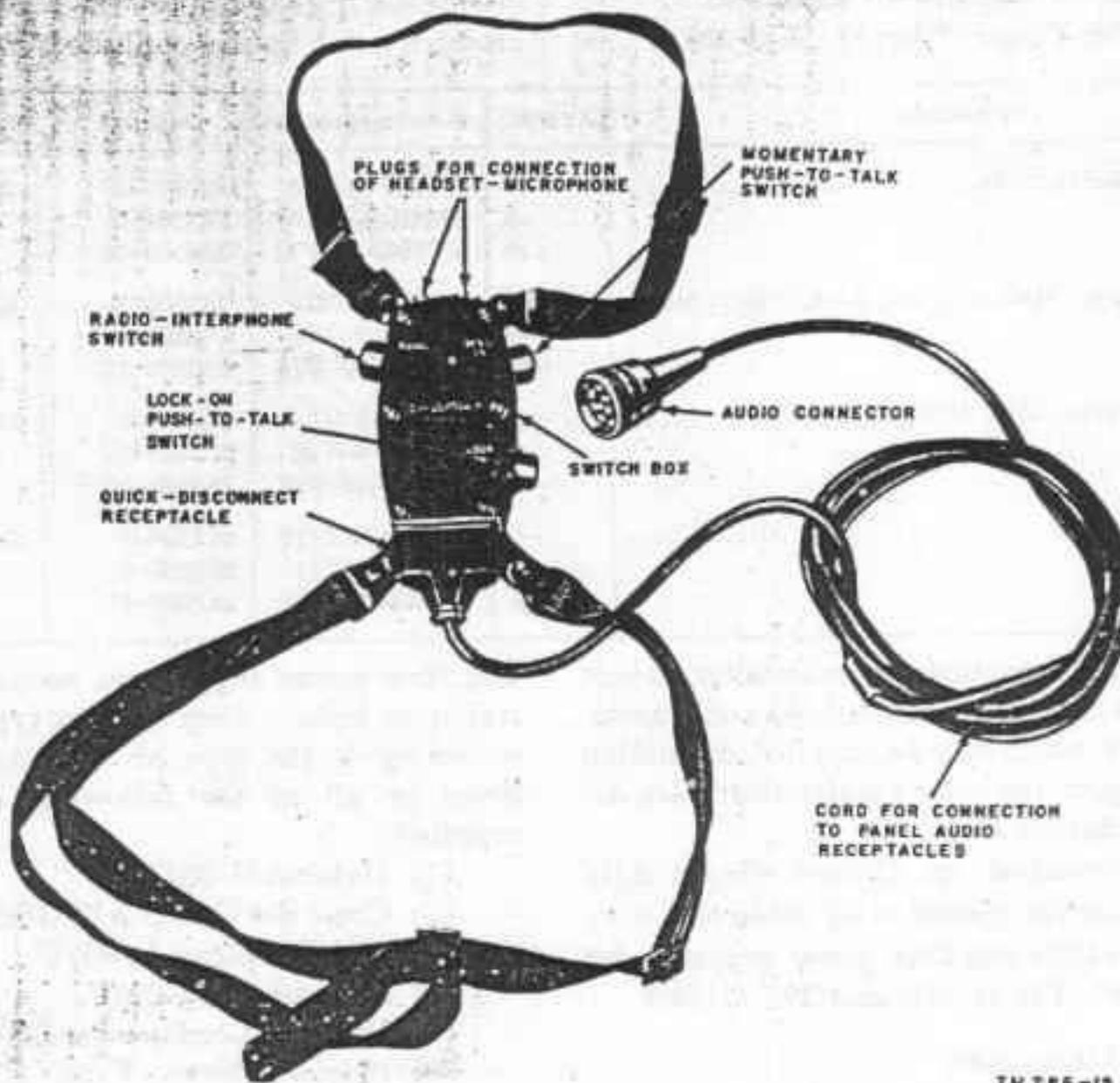
pedance is 300 ohms. The push-to-talk button is a nonlocking double-pole, single-throw switch. The cord is 5 feet long and is terminated in a 10-pin audio plug which will mate with either of the AUDIO receptacles on the amplifier power supply panel.

c. *Chest Set Group AN/GSA-6.* Chest Set Group AN/GSA-6 (fig. 9) is used in conjunction



TM 267-16

Figure 8. Handset H-33/PT.

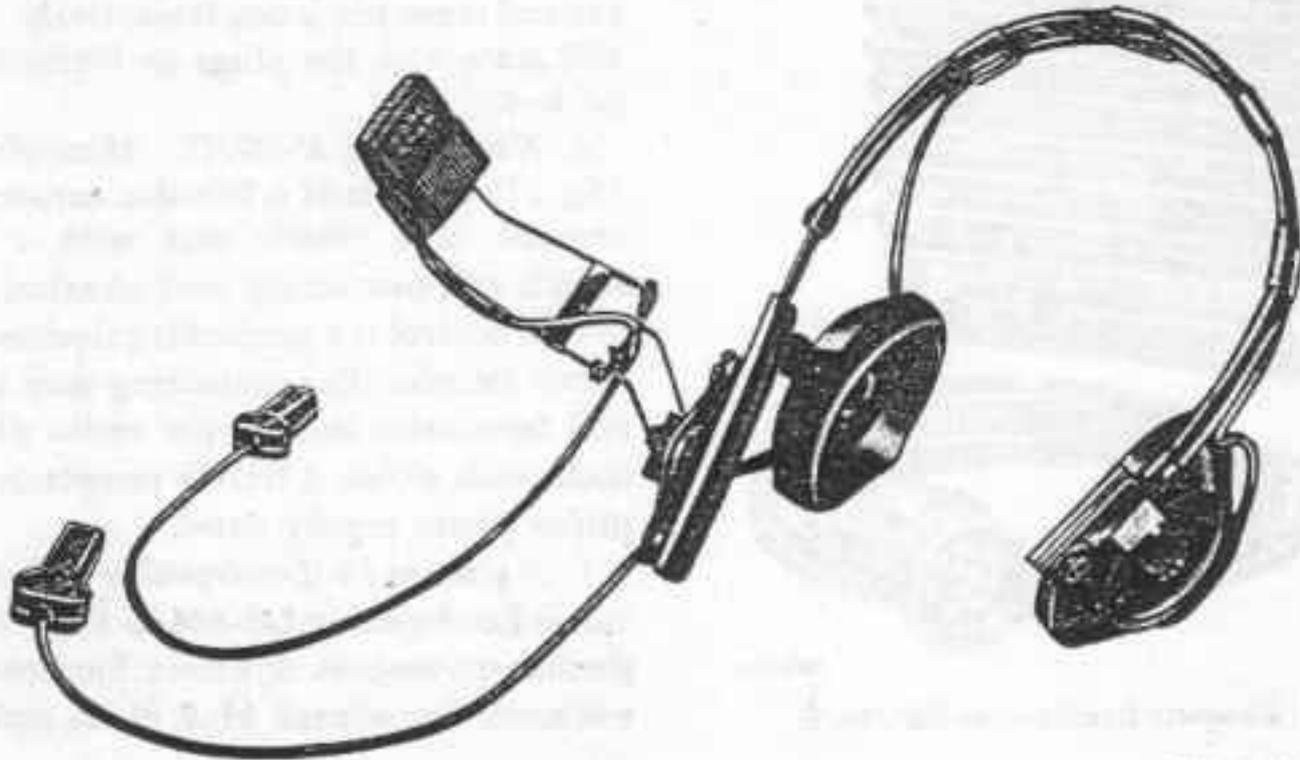


TM 265-19

Figure 9. Chest set group AN/GSA-6.

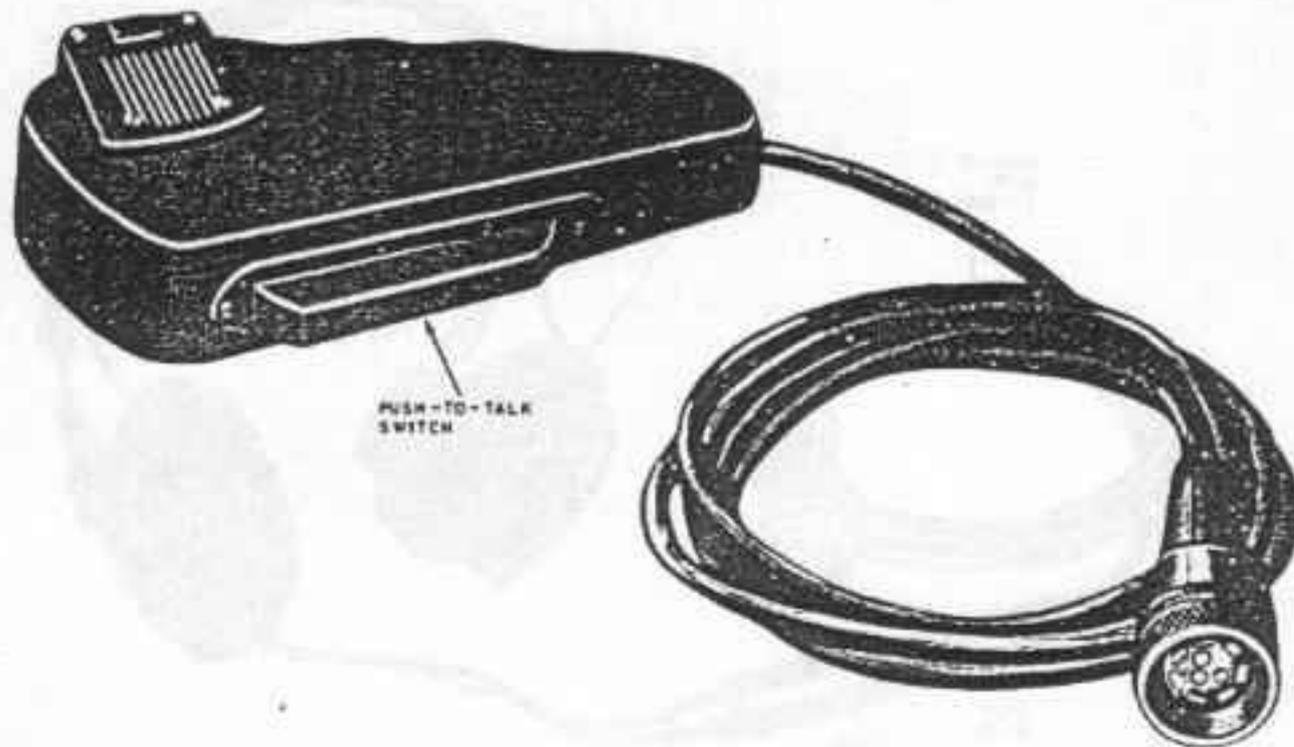
with Headset-Microphone H-63/U (d below). The chest set group consists of a chest-mounting switchbox and a 5-foot cord that terminates in an 8-contact receptacle and a 10-pin audio plug. The receptacle mates with the plug on one end of the switchbox and provides a quick-disconnect feature for the chest set. The audio plug will mate with either of the 10-pin AUDIO receptacles on the amplifier power supply panel. Two plugs

provided on the switchbox will mate with the jacks on Headset-Microphone H-63/U. Two push-to-talk buttons are provided on one side of the switchbox; a push-button RADIO switch is provided on the other side of the box. The push-to-talk buttons are electrically identical, but one provides momentary contact and the other locks in position. The LOCK-ON button may be disabled by internal adjustment (fig. 18). The



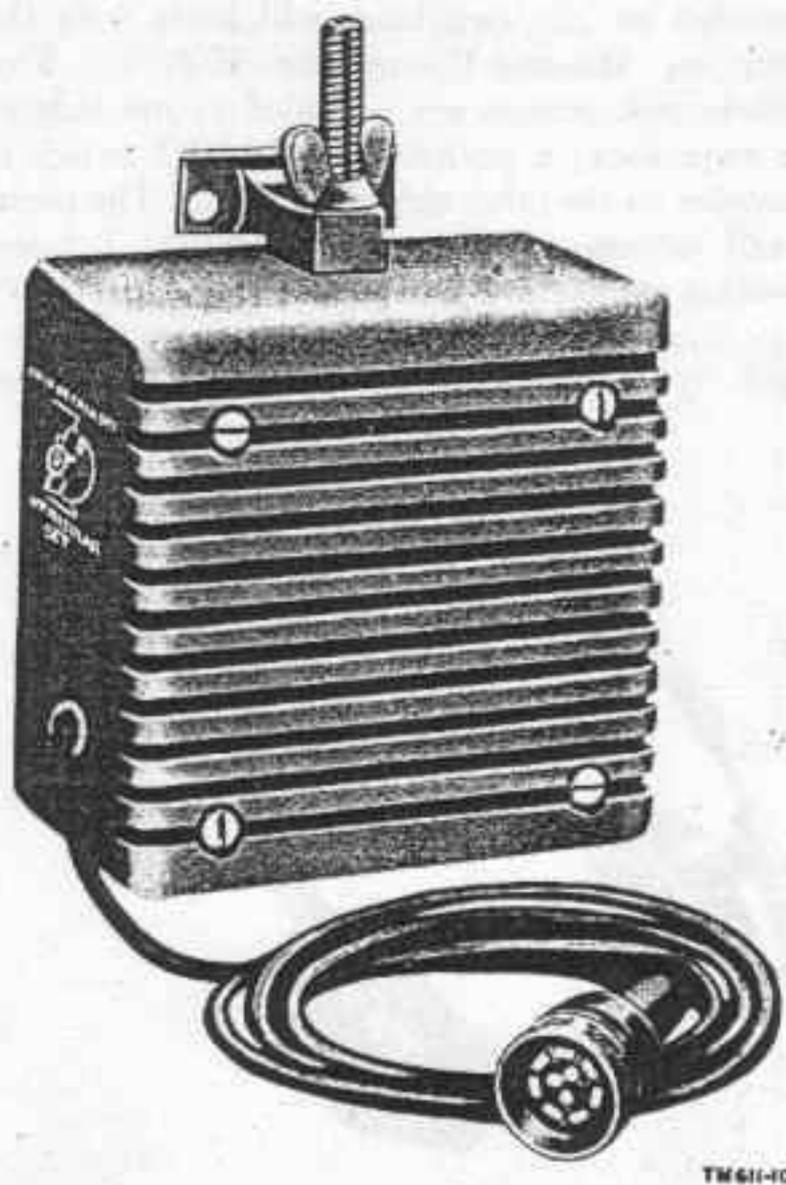
TM 284-70

Figure 10. Headset-microphone H-63/U.



TM 286-8

Figure 11. Microphone M-29/U.



TM 611-10

Figure 12. Dynamic Loudspeaker LS-166/U.

RADIO switch is a momentary-type switch normally in the open position. The switch may be locked in either the RADIO or INT position by internal adjustment (fig. 18).

d. *Headset-Microphone H-63/U*. Headset-Microphone H-63/U (fig. 10) consists of two series-connected, 300-ohm receivers and a 100-ohm microphone. The microphone is mounted on an adjustable boom attached to the receiver head band. A 14-inch conductor extends from both the microphone and headset; they are terminated in two-pin and three-pin jacks, respectively. These jacks will mate with the plugs on Switchbox SA-142/GSA-6.

e. *Microphone M-29/U*. Microphone M-29/U (fig. 11) consists of a 100-ohm carbon microphone element in a plastic case with a push-to-talk switch and connecting cord attached. The push-to-talk control is a nonlocking double-pole, single-throw switch. The connecting cord is 5 feet long and terminates in a 10-pin audio plug that will mate with either AUDIO receptacle on the amplifier power supply panel.

f. *Dynamic Loudspeaker LS-166/U*. Dynamic Loudspeaker LS-166/U (fig. 12) is a 4-inch, permanent-magnet dynamic loudspeaker with a voice-coil impedance of 8 ohms and includes a



TM 642-27

Figure 13. Headset navy type CW-49507 and headset cord CX-1334/U.

matching transformer to provide a 600-ohm input impedance. A 5-ft cord, terminated in a 10-pin audio plug, is provided for connecting the speaker to either AUDIO receptacle on the amplifier power supply panel. When the radio set is used with the amplifier power supply, the two-position rotary switch on the side of the loudspeaker is set to **VEHICULAR SET** so that the speaker is connected to the output of the audio amplifier contained in the amplifier power supply. A universal-type clamp is provided on the speaker case for mounting purposes.

g. Headset Navy Type CW-49507 and Headset Cord CX-1334/U. Headset Navy Type CW-49507 (fig. 13) consists of two series-connected, 300-ohm receivers. A 14-inch cord is connected to the receivers and is terminated in a Plug PL-54. The plug will mate with Jack JK-26 on one end of Headset Cord CX-1334/U. Headset Cord CX-1334/U is 5 feet long. It is terminated in a 10-pin audio plug that serves to connect the headset to either AUDIO receptacle on the amplifier power supply panel.

CHAPTER 2

OPERATING INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

12. Uncrating, Unpacking, and Checking New Equipment

Note. For used or reconditioned equipment, refer to paragraph 16.

a. General. Equipment may be shipped in oversea packing cases or in domestic packing cases. When new equipment is received, select a location where the equipment may be unpacked without exposure to the elements, and which is convenient to the permanent or semipermanent installation of the equipment. The instructions in *b* below apply to equipment shipped in export packing cases, and the instructions in *d* below apply to equipment in domestic packing cases.

Caution: Be careful in uncrating, unpacking, and handling the equipment; it is easily damaged.

b. Step-by-Step Instructions for Uncrating and Unpacking Export Shipments (fig. 14).

- (1) Cut and fold back the steel straps.
- (2) Remove all the nails with a nail puller. Remove the top of the packing case. Do not attempt to pry off the sides; the equipment may be damaged.
- (3) Open the moistureproof barrier. Open the corrugated carton and remove the desiccant and fiberboard supports.
- (4) Remove the equipment from its inner case.
- (5) Inspect the equipment for damage incurred in shipment.

c. Opening Fiberboard Carton and Waterproof Barrier. No special instructions are needed for opening the waterproof paper barrier and removing the equipment from the fiberboard carton.

d. Unpacking Domestic Packing Cases. Radio power equipment may be received in domestic packing cases. The instructions given in *b* above apply also to unpacking domestic shipments. Cut the metal bands. Open the cartons that protect the equipment and remove the components; if

heavy wrapping paper has been used, remove it carefully.

e. Checking. Check the contents against the master packing slip.

Note. Save the original packing cases and containers from both export and domestic shipments. They can be used again when the equipment is repacked for storage or shipment.

13. Installation of Equipment

The installation instructions included in this paragraph are generalized so as to make them applicable to any installation. The variety of vehicles in which the amplifier power supply may be installed limits the amount of detail that can be given for exact location of the unit, routing of the power cable, etc. Data on mounting the radio set on the amplifier-power supply and interconnection between units are included. For specific details pertinent to particular vehicles, refer to the installation instructions supplied with the installation units for the vehicles. Each of the installation units listed in paragraph 10 contains instructions adapted to the particular vehicle for which the unit is intended.

a. Mounting MT-759/PRC.

- (1) Before Mounting MT-759/PRC is installed, it must first be separated from the power supply case. Loosen each of the two hinged clamps at the bottom of the case until the taper pin at the other end of the clamp comes free of the wedge on the mounting. Do not loosen the six Dzus fasteners on the panel. Lift the case from the mounting.
- (2) Locate the mounting in the vehicle in accordance with the instructions supplied with the installation unit. If the grounding spring attached to the mounting through one of the two bolt holes does not reach a suitable ground connection

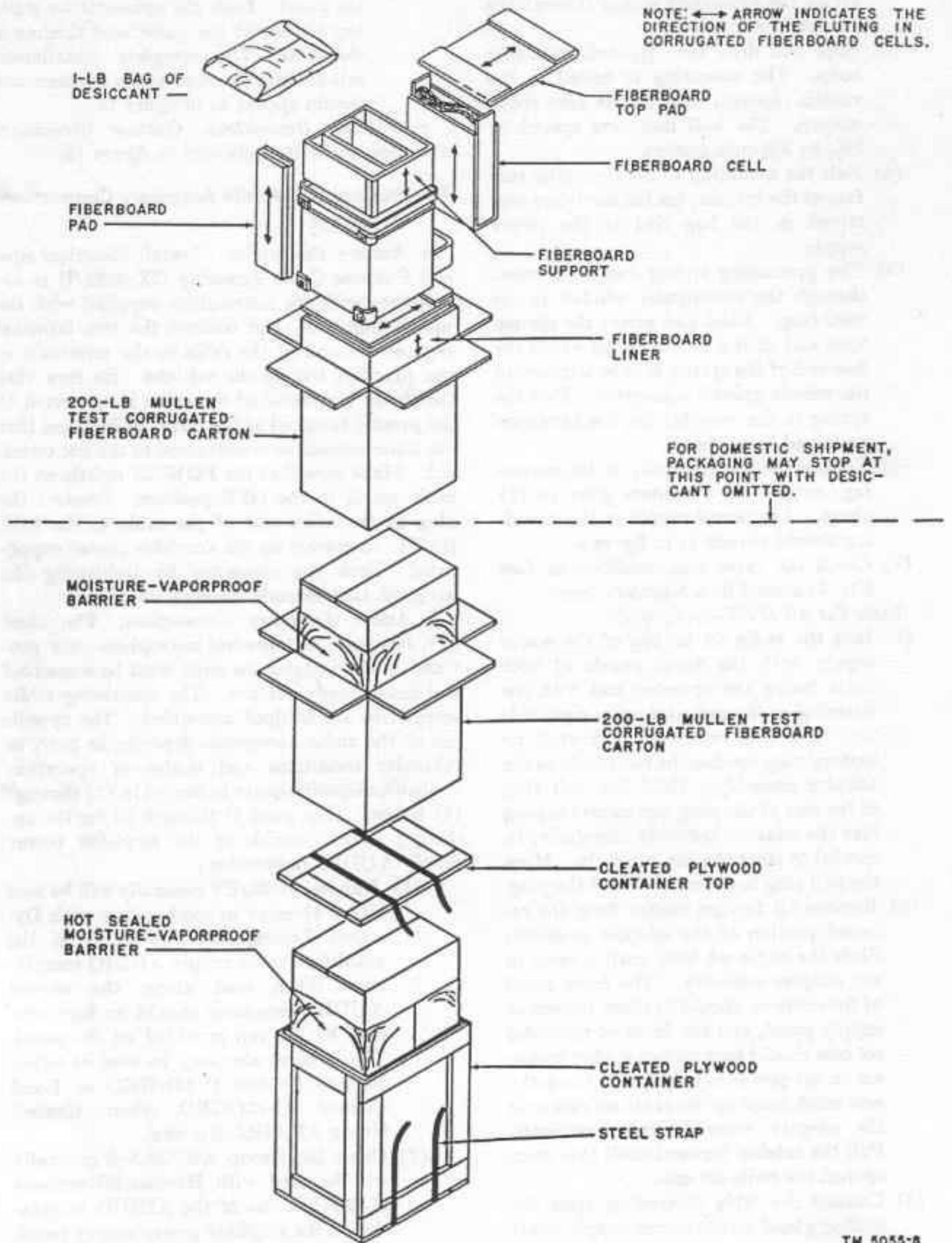


Figure 14. Packaging diagram.

TM 5055-8

on the vehicle, remove the hardware and attach the grounding spring through the alternate bolt hole.

- (3) Spot and drill four $\frac{5}{16}$ -inch mounting holes. The mounting is bolted to the vehicle through each of the four shock mounts. The bolt holes are spaced on $7\frac{1}{8}$ by $8\frac{1}{2}$ -inch centers.
- (4) Bolt the mounting to the mounting surface of the vehicle; use the hardware contained in the bag tied to the power supply.
- (5) The grounding spring can be reached through the rectangular window in the mounting. Bend and orient the spring. Spot and drill a hole through which the free end of the spring is to be attached to the vehicle ground connection. Bolt the spring to the vehicle; use the hardware contained in the bag.
- (6) Replace the power supply on the mounting; reverse the procedure given in (1) above. The power supply on the mounting should appear as in figure 4.
- (7) Check the value and condition of fuse F1. It should be a 5-ampere fuse.

b. Radio Set AN/PRC-8, -9, or -10.

- (1) Rest the radio set on top of the power supply with the front panels of both units facing the operator and with the lettering on the radio set panel right side up. Slide the radio set back until its battery plug reaches the receptacle on the adapter assembly. Hold the pull ring to the rear of the plug and insert the plug into the adapter assembly receptacle; be careful to start the key properly. Move the pull ring to the cable side of the plug.
- (2) Remove all foreign matter from the recessed portion of the adapter assembly. Slide the radio set back until it seats in the adapter assembly. The front panel of the radio set should be above the power supply panel, and the front of the radio set case should seat on two rubber bumpers on the power supply case. Hook the rear catch loops on the radio set case over the adapter assembly catch retainers. Pull the catches forward until they snap against the radio set case.
- (3) Connect the cable protruding from the stuffing gland on the power supply panel

to the AUDIO receptacle on the radio set panel. Lock the connector by pushing it toward the panel and turning it clockwise. The complete installation, minus battery and audio connections, should appear as in figure 15.

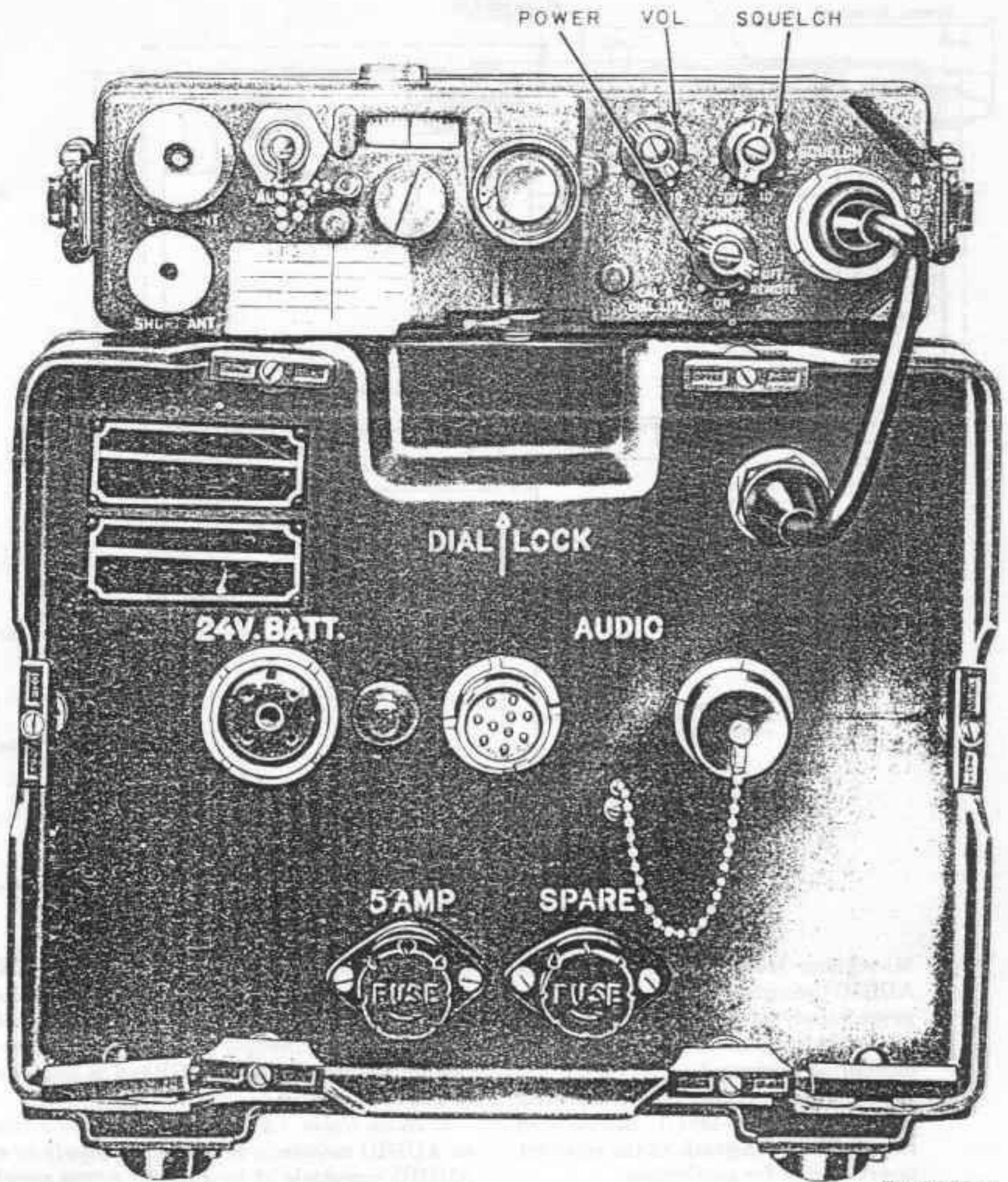
c. Outline Dimensions. Outline dimensions and clearances are indicated in figure 16.

14. Battery and Audio Accessory Connections (fig. 17)

a. Battery Connection. Install Electrical Special Purpose Cable Assembly CX-2031/U in accordance with the instructions supplied with the installation unit, and connect the two terminal lugs at one end of the cable to the terminals in the junction box of the vehicles. Be sure that the shield conductor of the cable is connected to the ground terminal of the terminal box, and that the inner conductor is connected to the hot terminal. Make sure that the POWER switch on the radio set is in the OFF position. Connect the plug at the other end of the cable to the 24V. BATT. receptacle on the amplifier power supply panel. Lock the connector by tightening the wingbolt that extends through its center.

b. Audio Accessory Connections. The chest sets, headsets, and headset-microphone sets provided in the installation units must be assembled and made ready for use. The remaining audio accessories are shipped assembled. The specific use of the audio accessories depends, in part, on vehicular conditions and modes of operation. Probable dispositions are indicated in (1) through (4) below. (See pars. 17 through 20 for the operating modes possible at the amplifier power supply AUDIO receptacles.)

- (1) Handset H-33/PT generally will be used either alone or in combination with Dynamic Loudspeaker LS-166/U at the amplifier power supply AUDIO receptacles. When used alone, the unused AUDIO receptacle should be kept covered by the cap provided on the panel. The handset also may be used at either Remote Control C-433/GRC or Local Control C-434/GRC when Control Group AN/GRA-6 is used.
- (2) Chest Set Group AN/GSA-6 generally will be used with Headset-Microphone H-63/U at one of the AUDIO receptacles on the amplifier power supply panel.



TM 5055-9

Figure 1. Amplifier and audio section of AN PR-8, -9, or -10, installed.

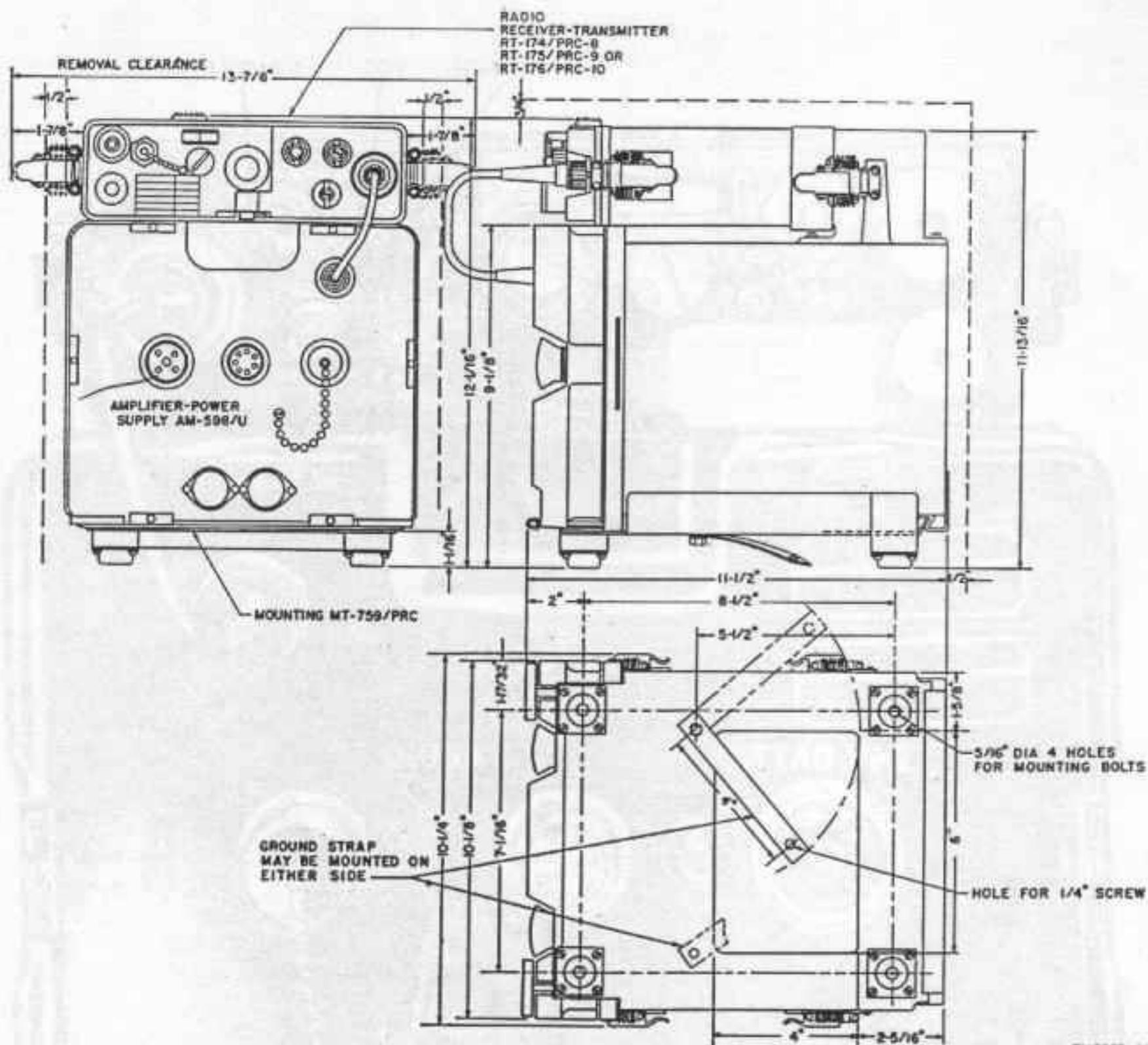


Figure 16. Amplifier-power supply AM-598/U, outline drawing.

TM 11-5035-26

- (3) Microphone M-29/U can be used at an AUDIO receptacle on the amplifier power supply panel. (A separate headset or loudspeaker will be required for monitoring purposes.)
- (4) Headset Navy Type CW-49507 with Headset Cord CX-1334/U can be used at an AUDIO receptacle of the amplifier power supply for monitoring.

15. Auxiliary Connections

a. *Control Group AN/GRA-6.* For remote control of the radio set, a cable from Control

Group AN/GRA-6 is connected to either AUDIO receptacle on the amplifier power supply panel. Control Group AN/GRA-6 is not supplied with Amplifier-Power Supply AM-598/U. Information on Control Group AN/GRA-6 is published in TM 11-5038.

b. *Relay Cable.* A relay cable connected from an AUDIO receptacle of one power supply to an AUDIO receptacle of an adjacent power supply will permit the corresponding radio sets to operate as an unattended relay station. The relay cable is not supplied with Amplifier-Power Supply AM-598/U. Refer to TM 11-612 and TM 11-4065.

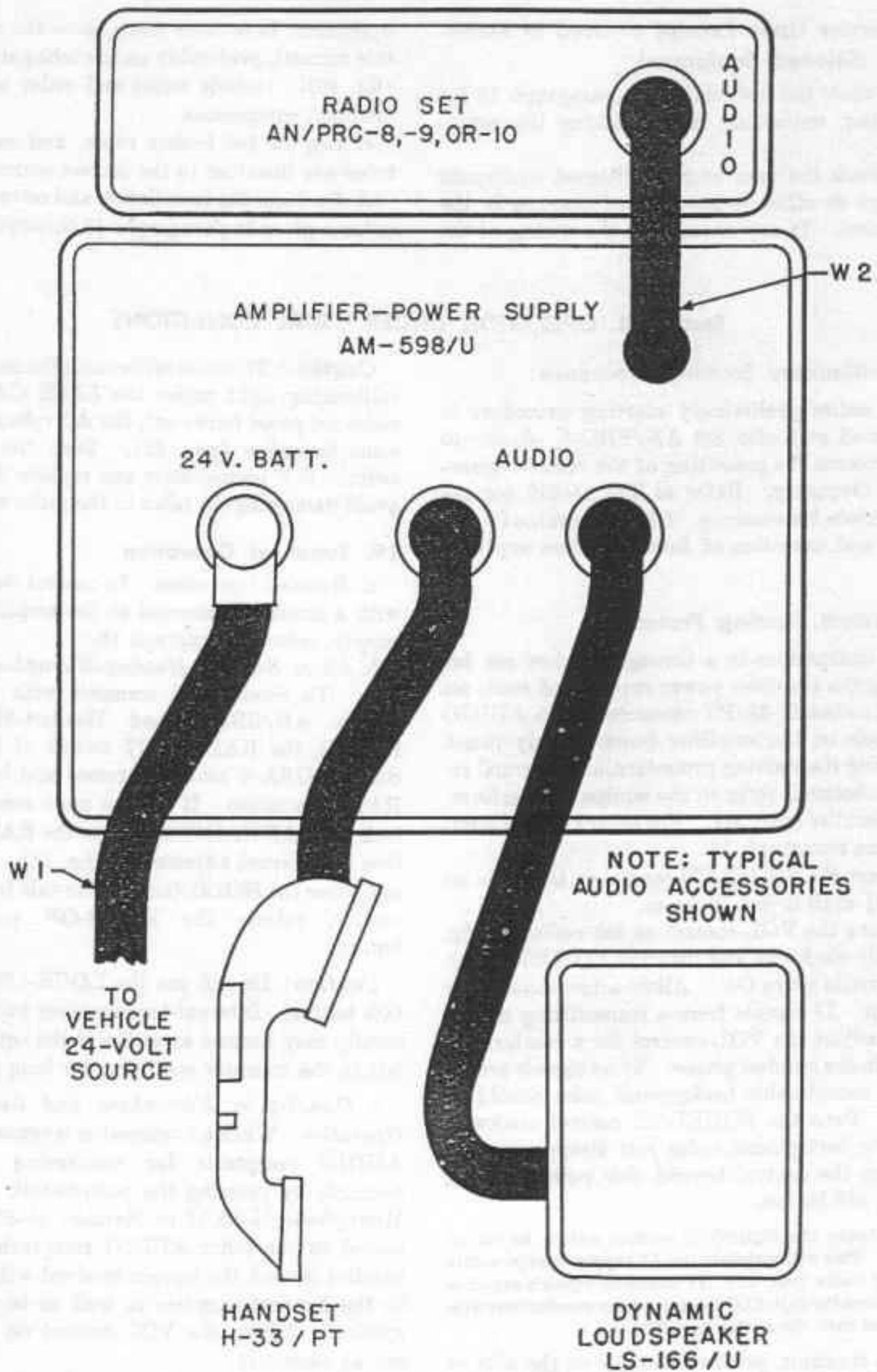


Figure 17. Accessory connections to amplifier-power supply AM-598/U.

TM 5055-10

16. Service Upon Receipt of Used or Reconditioned Equipment

a. Follow the instructions in paragraph 12 for uncrating, unpacking, and checking the equipment.

b. Check the used or reconditioned equipment for tags or other indications of changes in the equipment. If any changes in the wiring of the

equipment have been made, note the changes in this manual, preferably on the schematic diagram (fig. 40). Include serial and order numbers of modified equipments.

c. Inspect for broken tubes, and see that the tubes are installed in the correct sockets (fig. 6).

d. Perform the installation and connection procedures given in paragraphs 13 through 15.

Section II. OPERATION UNDER USUAL CONDITIONS

17. Preliminary Starting Procedure

The entire preliminary starting procedure is performed at Radio Set AN/PRC-8, -9, or -10 and concerns the presetting of the receiver-transmitter frequency. Refer to TM 11-612 for the appropriate instructions. Check the value (5-amperes) and condition of fuse F1 before applying power.

18. System Starting Procedure

The instructions in *a* through *c* below are for starting the amplifier power supply and radio set with Handset H-33/PT connected at an AUDIO receptacle on the amplifier power supply panel. If, during the starting procedure, an abnormal result is obtained, refer to the equipment performance checklist (par. 38). For other types of operation, see paragraph 19.

a. Turn the SQUELCH control on the radio set (fig. 15) until it just clicks on.

b. Turn the VOL control on the radio set (fig. 15) fully clockwise and turn the POWER switch on the radio set to ON. Allow a few seconds for warmup. If signals from a transmitting set are heard, adjust the VOL control for a comfortable signal in the handset phone. If no signals are received, considerable background noise should be heard. Turn the SQUELCH control clockwise until the background noise just disappears. Do not turn the control beyond this point or weak signals will be lost.

Note. Leave the SQUELCH control switch in the on position. This will maintain the A1 supply voltage within the rated limits (par. 42). If minimum squelch action is desired, turn the SQUELCH control fully counterclockwise but do not turn the switch to OFF.

c. To transmit, press the button on the side of the handset and talk into the microphone of the handset.

Caution: If, while calibrating the radio set, the calibrating light under the LITE CAP on the radio set panel burns out, the A2 voltage may become excessive (par. 42). Turn the POWER switch OFF immediately and replace the light to avoid damaging the tubes in the radio set.

19. Types of Operation

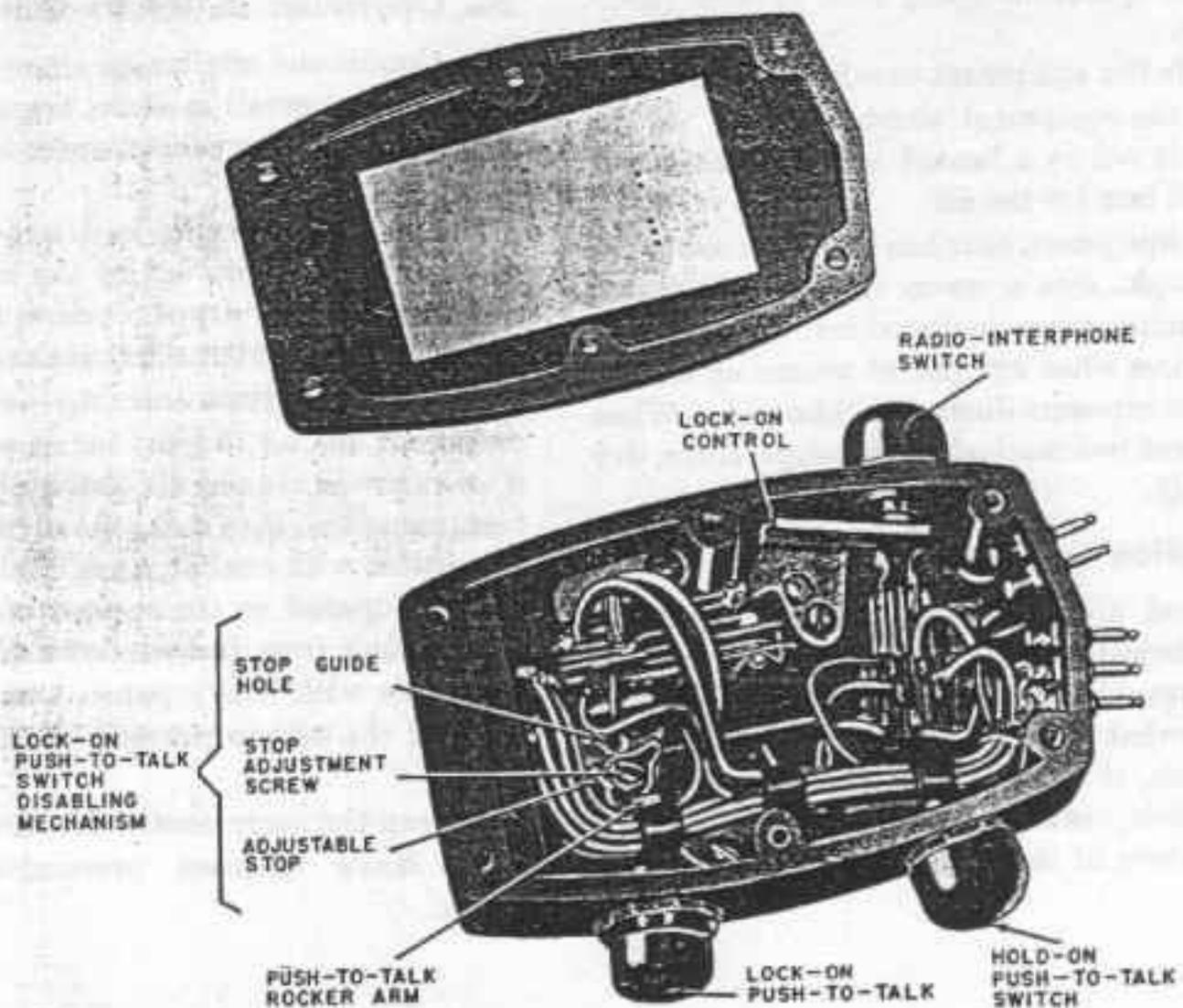
a. *Handset Operation.* To control the radio set with a handset connected at the amplifier power supply, refer to paragraph 18.

b. *Chest Set and Headset-Microphone Operation.* To receive and transmit with Chest Set Group AN/GSA-6 and Headset-Microphone H-63/U, the RADIO-INT switch of Switchbox SA-142/GSA-6 must be pressed and held in the RADIO position. It may be more convenient to lock the RADIO-INT switch in the RADIO position by internal adjustment (fig. 18). To transmit, press the HOLD-ON push-to-talk button. To receive, release the HOLD-ON push-to-talk button.

Caution: Do not use the LOCK-ON push-to-talk button. Internal temperatures in the power supply may become excessive if the equipment is left in the transmit condition for long periods.

c. *Handset or Microphone and Loudspeaker Operation.* When a loudspeaker is connected to an AUDIO receptacle for monitoring purposes, transmit by pressing the push-to-talk button of Microphone M-29/U or Handset H-33/PT connected to the other AUDIO receptacle. If the handset is used, the signals received will be heard in the handset earpiece as well as in the loudspeaker. Adjust the VOL control on the radio set, as necessary.

d. *Microphone and Headset Operation.* Operate Microphone M-29/U and Headset Navy Type



TM 206-14

Figure 18. Switchbox SA-142/GSA-6, internal view.

CW-49507 as described in *c* above. The headset and microphone in combination serve the same purpose as the handset or chest set used alone.

e. Remote Operation. Connect Control Group AN/GRA-6 to one of the AUDIO receptacles on the amplifier power supply panel. When Control Group AN/GRA-6 is installed properly, a handset may be used at the panel of Local Control C-434/GRC and at the panel of Remote Control C-433/GRC to control the radio set. When the POWER switch on the radio set is in the REMOTE position, the application of battery power to the amplifier power supply also may be remotely con-

trolled. For further information, refer to TM 11-612 and TM 11-4065.

f. Relay Operation. Two adjacent radio sets installed in a vehicle may be used as an unattended relay station. The relay cable is connected from an AUDIO receptacle on one power supply to an AUDIO receptacle on the adjacent power supply. For radio set control settings, see TM 11-612 and TM 11-4065.

20. Stopping Procedure

To shut down the power supply, turn the POWER switch on the radio set to OFF.

Section III. OPERATION UNDER UNUSUAL CONDITIONS

21. General

The operation of Amplifier-Power Supply AM-598/U may be difficult in regions where climatic conditions are extreme. Paragraphs 22 through 24 give instructions for minimizing the effect of unusual operating conditions. Refer to TM 11-

612 for information regarding operation of the radio set under unusual conditions.

22. Operation in Arctic Climates

Subzero temperatures and climatic conditions associated with cold weather affect the efficient operation of the equipment. Instructions and pre-

cautions for operation under such adverse conditions follow:

- a. Handle the equipment carefully.
- b. Keep the equipment warm and dry. If the equipment is not in a heated inclosure, construct an insulated box for the set.
- c. When equipment that has been exposed to the cold is brought into a warm room, it will sweat until it reaches room temperature. This condition also arises when equipment warms up during the day after exposure during a cold night. When the equipment has reached room temperature, dry it thoroughly.

23. Operation in Tropical Climates

In tropical climates, high relative humidity causes condensation of moisture on the equipment whenever the temperature of the air becomes higher than that of the equipment. To minimize this condition, if the equipment is mounted in an inclosed vehicle, use any convenient method to keep the temperature of the equipment just above that of the air.

24. Operation in Desert Climates

- a. Conditions similar to those in tropical climates often prevail in desert areas. Use the same measures to insure proper operation of the equipment.
- b. The main difficulty in desert areas is keeping sand, dust, and dirt out of the equipment. The case of the power supply is dustproof and should not be removed unless adequate shelter is available to prevent dust from entering the equipment. A dustproof shelter is ideal but is seldom available since it would require air conditioning. The next best precaution is to make the shelter as dustproof as possible with available materials when the case must be opened or the equipment stored. Hang wet sacking over the windows and doors, cover the inside with heavy paper, and secure the side walls of the tent to prevent their flapping in the wind.
- c. Keep the equipment as free from dust as possible. Make frequent preventive maintenance checks.

CHAPTER 3

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. ORGANIZATIONAL TOOLS AND EQUIPMENT

25. Tools and Materials Required for Amplifier-Power Supply AM-598/U

Tools and materials required for the amplifier-power supply are listed in *a* and *b* below. The tools and materials contained in Tool Equipment TE-41 are listed in Department of the Army Supply Manual SIG 6 TE-41.

a. Tools. The tools used with this equipment are contained in Tool Equipment TE-41.

b. Materials.

Cheesecloth, bleached, lint-free¹

Carbon tetrachloride¹

Solvent, dry-cleaning (SD) (Fed spec No. P-S-661a)

Paper, sand, flint No. 0000¹

26. Special Tools Issued for Amplifier-Power Supply AM-598/U

No special tools are issued for the amplifier power supply.

Section II. PREVENTIVE MAINTENANCE SERVICE

27. Definition of Preventive Maintenance

Preventive maintenance is work performed on equipment (usually when the equipment is not in use) to keep it in good working order so that breakdowns and needless interruptions in service will be kept to a minimum. Preventive maintenance differs from troubleshooting and repair since its object is to prevent certain troubles from occurring. See AR 750-5.

28. General Preventive Maintenance Techniques

a. Use No. 0000 sandpaper to remove corrosion.

b. Use a clean, dry, lint-free cloth or a dry brush for cleaning.

(1) If necessary, except for electrical contacts, moisten the cloth or brush with solvent (SD); then wipe the parts dry with a cloth.

(2) Clean electrical contacts with a cloth moistened with carbon tetrachloride; then wipe with a dry cloth. Do not allow carbon tetrachloride to wet polyvinyl insulation; it is a solvent for this resin.

Caution: Repeated contact of carbon tetrachloride with the skin or prolonged breathing of the fumes is dangerous. Make sure adequate ventilation is provided.

c. If available, dry compressed air may be used at a line pressure not exceeding 30 pounds per square inch (psi) to remove dust from inaccessible places; be careful, however, or mechanical damage from the air blast may result.

d. For further information on preventive maintenance techniques, refer to TB SIG 178.

29. Use of Preventive Maintenance Forms (fig. 19)

The information in paragraph 30 is presented as a guide to the individual making an inspection of Amplifier-Power Supply AM-598/U in accordance with instructions on DA Form 11-239. The decision as to which items on the form are applicable to this equipment is a tactical decision to be made in the case of first echelon maintenance by the communication officer/chief or his designated representative, and in the case of second and third echelon maintenance, by the individual making

¹ Part of Tool Equipment TE-41.

the inspection. Instructions for the use of the form appear on the reverse side of the form.

30. Performing Preventive Maintenance

The following preventive maintenance operations should be performed at the intervals indicated, unless these intervals are reduced by the local commander.

Caution: Screws, bolts, and nuts should not be tightened carelessly. Fittings tightened beyond the pressure for which they are designed will be damaged or broken.

a. Check for completeness and satisfactory condition of the components of the power supply. The components of the power supply are listed in paragraph 7 and are illustrated in figure 1.

b. Check the suitability of the location and installation for normal operation. Refer to paragraph 13 and to the instructions supplied with the installation unit.

c. Clean dirt and moisture from the front panel, AUDIO receptacles J5 and J6, stuffing gland H1, and any audio accessories used with the equipment.

d. Inspect the seating of fuse F1, the battery cable connector on the front panel of the equipment, the vibrator and the tubes on the chassis of the equipment, and the connector at the radio set side of interconnecting cord W2.

e. Check for normal operation (pars. 17 through 20).

Caution: Disconnect all power before performing the following operations. Upon completion, reconnect power and check for satisfactory operation.

f. Clean and tighten the bolts through the shelf, the case, and the shock mounts of the base assembly.

g. Inspect the case, shelf, panel fasteners, case clamps, and base assembly for rust, corrosion, and moisture.

h. Inspect power cable W1, interconnecting cable W2, test cable W3, and the shock mounts for cuts, breaks, fraying, deterioration, kinks, and strain (figs. 28 and 29).

i. Inspect the manual for tears and mildew.

j. Inspect for looseness in receptacles J3, J5, and J6 on the front panel, connector J4 at the inside rear of the case, receptacle J1 at the rear of the chassis, and receptacle J2 on the adapter assembly; also check all the components bolted to the chassis.

k. Inspect the 24-volt storage battery for dirt, loose terminals, electrolyte level, specific gravity, and damaged case.

l. Inspect the shelter for adequacy of weatherproofing.

m. Inspect the electron tubes for loose envelopes, cracked sockets, and insufficient socket spring tension; clean off the dust and dirt carefully; check the condition of V1, V2, V3, V4, V5, and V6.

n. Inspect all the capacitors for leaks, bulges, and discoloration. Remove the phenolic tubes from C6 and C7; check for fungus.

o. Inspect hermetically sealed relays K1, K2, and K3 for loose mountings.

p. Inspect all the resistors, bushings, and insulators for cracks, chipping, blistering, discoloration, and moisture.

q. Inspect the terminals of large capacitors and resistors for corrosion, dirt, and loose contacts.

r. Clean and tighten the terminal blocks and relay cases; remove the plate covering the choke and capacitor assembly beneath the vibrator, and clean the housing carefully.

s. Inspect the terminal blocks for loose connections, cracks, and breaks.

t. Clean and tighten the connections and mountings for transformers T1, T2, and T3, choke assemblies L1 and L2, and adjustable resistors R23, R24, and R25. Do not disturb the settings.

u. Inspect transformers T1, T2, and T3, and chokes L1 and L2 for overheating and oil leakage; inspect adjustable resistors R23, R24, and R25 for overheating.

v. Inspect the waterproof gasket behind front panel, for leaking, and for worn or loose parts.

w. Check the adequacy of moisture and fungi-proofing treatment (par. 32b).

x. If deficiencies noted are not corrected during inspection, indicate what action was taken.

Section III. LUBRICATION AND WEATHERPROOFING

31. Lubrication

Lubrication is not required for Amplifier-Power Supply AM-598/U.

32. Weatherproofing

a. *General.* Signal Corps equipment, when operated under the severe climatic conditions that

SECOND AND THIRD ECHELON MAINTENANCE CHECK LIST FOR SIGNAL CORPS EQUIPMENT RADIO COMMUNICATION, DIRECTION FINDING, CARRIER, RADAR			
EQUIPMENT NOMENCLATURE		EQUIPMENT SERIAL NO.	
INSTRUCTIONS: See other side			
LEGEND FOR MARKING CONDITIONS: ✓ Satisfactory; X Adjustment, repair or replacement required; ⊕ Defect corrected; NOTE: Strike out items not applicable.			
NO.	ITEM	UNIT- CLASS.	ITEM
1	COMPLETENESS AND GENERAL CONDITION OF EQUIPMENT (transmitter, transmitter, carrying case, wire and cable, microphone, tubes, spare parts, technical manuals and accessories). PAR. 300	19	ELECTRON TUBES - INSPECT FOR LOOSE ENVELOPES, CAP CONNECTIONS, CRACKED SOCKETS; INSUFFICIENT SOCKET SPRING TENSION; CLEAN DUST AND DIRT CAREFULLY; CHECK EMISSION OF RECEIVING TYPE TUBES. PAR. 300M
2	LOCATION AND INSTALLATION SUITABLE FOR NORMAL OPERATION. PAR. 300	20	INSPECT FILM CUT-OUTS FOR LOOSE PARTS, DIRT, MISALIGNMENT AND CORROSION.
3	CLEAN DIRT AND MOISTURE FROM ANTENNA, MICROPHONE, HEADSETS, CHECKS, KEYS, JACKS, PLUGS, TELEPHONES, CARRYING BAGS, COMPONENT PANELS. PAR. 300	21	INSPECT FIXED CAPACITORS FOR LEAKS, BUBBLES, AND DISCOLORATION. PAR. 300
4	INSPECT SEATING OF READILY ACCESSIBLE "PUSH-OUT" ITEMS: TUBES, LAMPS, CRYSTALS, FUSES, CONNECTORS, VIBRATORS, FLUID-OR COILS AND RESISTORS. PAR. 300	22	INSPECT RELAY AND CIRCUIT BREAKER ASSEMBLIES FOR LOOSE MOUNTINGS; BURNER, PITTED, CORRODED CONTACTS; MISALIGNMENT OF CONTACTS AND SPRINGS; INSUFFICIENT SPRING TENSION; BINDING OF PLUNGERS AND MOVING PARTS. PAR. 300
5	INSPECT CONTROLS FOR BINDING, SCRAPING, EXCESSIVE LOOSENESS, WORK OR CHIPPED GEARS, MISALIGNMENT, POSITIVE ACTION.	23	INSPECT VARIABLE CAPACITORS FOR DIRT, MOISTURE, MISALIGNMENT OF PLATES, AND LOOSE MOUNTINGS.
6	CHECK FOR NORMAL OPERATION. PAR. 300	24	INSPECT RESISTORS, SUSPENSORS, AND INSULATORS, FOR CRACKS, CHIPPING, FLAKING, DISCOLORATION AND MOISTURE. PAR. 300
7	CLEAN AND TIGHTEN EXTERIOR OF COMPONENTS AND CASES, RACK MOUNTS, SHOCK MOUNTS, ANTENNA MOUNTS, COAXIAL TRANSMISSION LINES, WAVE GUIDES, AND CABLE CONNECTIONS. PAR. 300	25	INSPECT TERMINALS OF LARGE FIXED CAPACITORS AND RESISTORS FOR CORROSION, DIRT AND LOOSE CONTACTS. PAR. 300
8	INSPECT CASES, MOUNTINGS, ANTENNAS, TOWERS, AND EXPOSED METAL SURFACES, FOR RUST, CORROSION, AND MOISTURE. PAR. 300	26	CLEAN AND TIGHTEN SWITCHES, TERMINAL BLOCKS, SLIDERS, RELAY CASES, AND INTERIORS OF CHASSIS AND CABINETS NOT READILY ACCESSIBLE. PAR. 300
9	INSPECT CIMS, CABLE, WIRE, AND SHOCK MOUNTS FOR CUTS, BREAKS, FRAYING, DETERIORATION, KINKS, AND STRAITS. PAR. 300	27	INSPECT TERMINAL BLOCKS FOR LOOSE CONNECTIONS, CRACKS AND BREAKS. PAR. 300
10	INSPECT ANTENNA FOR ECCENTRICITIES, CORROSION, LOOSE FIT, DAMAGED INSULATORS AND REFLECTORS.	28	CHECK SETTINGS OF ADJUSTABLE RELAYS.
11	INSPECT CARRYING ITEMS, LEATHER, AND CASING FOR WILDER, TEARS, AND FRAYING. PAR. 300	29	LUBRICATE EQUIPMENT IN ACCORDANCE WITH APPLICABLE DEPARTMENT OF THE ARMY LUBRICATION ORDER.
12	INSPECT FOR LOOSENESS OF ACCESSIBLE ITEMS: SWITCHES, SHOCKS, JACKS, CONNECTORS, ELECTRICAL TRANSFORMERS, POWERSTATS, RELAYS, SOLARIS, MOTORS, SLIDERS, CAPACITORS, GENERATORS, AND FLUOR LIGHT ASSEMBLIES. PAR. 300	30	INSPECT GENERATORS, AMPLIFIERS, SYNCHRONIZERS, FOR BRUSH WEAR, SPRING TENSION, ARCING, AND FITTING OF CONTACTS.
13	INSPECT STORAGE BATTERIES FOR DIRT, LOOSE TERMINALS, ELECTROLYTE LEVEL AND SPECIFIC GRAVITY, AND DAMAGED CASES. PAR. 300	31	CLEAN AND TIGHTEN CONNECTIONS AND MOUNTINGS FOR TRANSFORMERS, CHOKES, POTENTIOMETERS, AND RHEOSTATS. PAR. 300
14	CLEAN AIR FILTERS, BRASS NAME PLATES, DIAL AND METER WINDOWS, JEWEL ASSEMBLIES.	32	INSPECT TRANSFORMERS, CHOKES, POTENTIOMETERS, AND RHEOSTATS FOR OVERHEATING AND OIL-LEAKAGE. PAR. 300
15	INSPECT METERS FOR DAMAGED GLASS AND CASES.	33	BEFORE SHIPPING OR STORING - REMOVE BATTERIES.
16	INSPECT SHELTERS AND COVERS FOR ADEQUACY OF WEATHERPROOFING. PAR. 300	34	INSPECT CATHODE RAY TUBES FOR DIRT SCREEN SHOTS.
17	CHECK ANTENNA SUPPORT WIRING FOR TIGHTNESS AND PROPER TENSION.	35	INSPECT BATTERIES FOR SHORTS AND DEAD CELLS.
18	CHECK TERMINAL BOX COVERS FOR CRACKS, LEAKS, DAMAGED BASKETS, DIRT AND GREASE.	36	INSPECT FOR LEAKING WATERPROOF BASKETS, WORK OR LOOSE PARTS, MOISTURE AND FUNGUS. PAR. 300
19	IF DEFICIENCIES NOTED ARE NOT CORRECTED DURING INSPECTION, INDICATE ACTION TAKEN FOR CORRECTION. PAR. 300		

DA FORM 11-239
2 947 32

REPLACES DA FORM 919, 1 DEC 55, WHICH IS OBSOLETE.

4-10-56-1

TM 5055-28

Figure 19. DA Form 11-239.

prevail in tropical, arctic, and desert regions, requires special treatment and maintenance. Fungus growth, insects, dust, corrosion, salt spray, excessive moisture and extreme temperatures are harmful to most materials.

b. Tropical Maintenance. A special moisture-proofing and fungiproofing treatment has been devised that, if properly applied, provides a reasonable degree of protection. This treatment is explained fully in TB SIG 13 and TB SIG 72.

c. Winter Maintenance. Special precautions necessary to prevent poor performance or total operational failure of equipment in extremely low temperatures are explained fully in TB SIG 66 and TB SIG 219.

d. Desert Maintenance. Special precautions necessary to prevent equipment failure in areas subject to extremely high temperatures, low humidity, and excessive sand and dust are explained fully in TB SIG 75.

33. Rustproofing and Painting

a. When the finish on the case has been badly scarred or damaged, rust and corrosion can be prevented by touching up bared surfaces. Use No. 00 or No. 000 sandpaper to clean the surface down to the bare metal; obtain a bright smooth finish and then apply the paint.

Caution: Do not use steel wool. Minute particles frequently enter the case and cause harmful internal shorting or grounding of circuits.

b. When a touchup job is necessary, apply paint with a small brush. Remove rust from the case by cleaning corroded metal with solvent (SD). In severe cases, it may be necessary to use solvent (SD) to soften the rust and sandpaper to complete the preparation for painting. Use paint that is authorized and consistent with existing regulations. Refer to TM 9-2851.

Section IV. TROUBLESHOOTING AT ORGANIZATIONAL MAINTENANCE LEVEL

34. Scope

a. The troubleshooting and repair work that can be performed at the organizational maintenance level (operators and repairmen) is necessarily limited in scope by the tools, test equipment, and replaceable parts issued, and by the existing tactical situation. Troubleshooting is based on the performance of the equipment and the use of the senses in determining such troubles as burned-out tubes and cracked insulators.

b. Paragraphs 35 through 38 help in localizing the fault to the defective stage or item, such as a tube or fuse.

35. Visual Inspection

a. Failure of this equipment to operate properly usually will be caused by one or more of the following faults:

- (1) Improperly connected battery cable W1.
- (2) Worn, broken, or disconnected interconnecting cord W2.
- (3) Burned-out fuse F1.
- (4) Relay contacts burned because of overloads.
- (5) Wires broken because of excessive vibration.
- (6) Defective tubes (including ballast R2).
- (7) Faulty vibrator E1.

Note. A pull ring is located on top of the vibrator. To remove the vibrator, pull the ring in an upward direction. Do not jiggle the vibrator in its socket. If it is necessary to replace the vibrator, remove the pull ring from the defective vibrator and screw it onto the replacement as shown in figure 6. Failure to position the pull ring properly will cause interference with surrounding components and will prevent the vibrator from seating properly. The vibrator has a red arrow on its side, which points between the two large pins, and is used as a guide in placing the vibrator properly in its socket.

b. When a failure is encountered and the cause is not immediately apparent, check the above items before starting a detailed examination of the component parts of the system. If possible, obtain information from the operator of the equipment regarding its performance at the time the trouble occurred.

36. System Sectionalization of Trouble to a Component

System sectionalization means determining whether the trouble is in the radio set (transmitter, receiver, and antenna), vehicular battery and leads, or in the amplifier power supply. Make the following checks, transmitting by means of a handset or chest set connected at one of the amplifier power supply AUDIO receptacles, and moni-

toring the receiver output with a loudspeaker connected at the other AUDIO receptacle.

a. Operate the radio set over its entire tuning range and observe its performance. See the equipment performance checklist (par. 38) and TM 11-612 for normal test indications.

b. If the entire radio set is dead, the trouble is probably in the amplifier power supply or in the connections between the components. Check fuse F1; if the fuse is good, try replacing the amplifier power supply with one known to be good.

c. If received signals can be heard in the loudspeaker, but the radio set does not transmit, the trouble may be in the receive-transmit relay of the amplifier power supply. Check the handset or chest set. If these are good and the same condition exists when the amplifier power supply is replaced by one known to be good, the trouble is in the radio set receive-transmit relay or transmitter.

d. If the radio set transmits, but no received signals can be heard in either the handset, chest set, or loudspeaker, the trouble is probably in the radio set receiver.

e. If the radio set exhibits unsatisfactory performance, such as weak transmission or weak or noisy reception, replace it with a good radio set. If the trouble disappears, the replaced radio set is defective. If the trouble persists, the trouble is in the amplifier power supply or is caused by external conditions.

f. By the use of procedures similar to the simple checks given above, the trouble can be isolated to a particular component.

37. Troubleshooting by Using Equipment Performance Checklist

a. *General.* The equipment performance checklist (par. 38) will help the operator locate

trouble in the equipment. The list gives the items to be checked, the conditions under which the item is checked, the normal indications and tolerances of correct operation, and the corrective measures the operator can take. *To use this list, follow the items in numerical sequence.*

b. *Action or Condition.* For some items, the information given in the action or condition column consists of various switch and control settings under which the item is to be checked. For other items it represents an action that must be taken to check the normal indication given in the *Normal indications* column.

c. *Normal Indications.* The normal indications listed include the visible and audible signs that the operator should perceive when he checks the items. If the indications are not normal, the operator should apply the recommended corrective measures.

d. *Corrective Measures.* The corrective measures listed are those the operator can make without returning the equipment for repairs. Trouble that cannot be corrected during operation should be referred to an experienced repairman for troubleshooting. If the set is completely inoperative or if the recommended corrective measures do not yield results, troubleshooting is necessary. However, if the tactical situation requires that communication be maintained and if the equipment is not completely inoperative, the operator must maintain the equipment in operation as long as possible.

38. Equipment Performance Checklist

To start and utilize the amplifier power supply, controls on the radio set panel must be adjusted. For a description of the radio set controls and operating procedure, see TM 11-612.

	Item No.	Item	Action or condition	Normal indications	Corrective measures
PREPARATORY	1	Radio Set AN/PRC-8, -9, or -10.	Install on amplifier power supply. Connect power supply to 24-volt battery.		
	2	Handset.....	Plug into AUDIO receptacle J5 or J6.		
	3	Loudspeaker.....	Plug into AUDIO receptacle J5 or J6.		
	4	Radio set SQUELCH control.	Turn clockwise until it clicks on.		
	5	Radio set VOL control...	Set to 10.		
START	6	Radio set POWER switch.	Hold at CAL & DIAL LITE.	Radio set dial light lights. Vibrator hum heard...	Replace lamp bulb immediately if burned out. Check cables. Replace fuse F1 in power supply. Replace vibrator.
EQUIPMENT PERFORMANCE	7	Radio set POWER switch.	Set to ON.....	Radio set dial light out. Rushing noise heard in handset and loudspeaker.	If no noise is heard in handset or loudspeaker, replace audio amplifier tube V5. If no noise is heard in handset or loudspeaker, replace all tubes in power supply. Check radio set (TM 11-4065).
			Tune in other equipment that is transmitting.	Voice signals heard in handset and loudspeaker.	Replace radio set with one known to be good. Check battery voltage if possible. Voltage should be between 22 and 30 volts. Replace battery.
			Press push-to-talk button on handset and talk into microphone.	Voice signals heard in other receiving equipment. Handset receiver and loudspeaker both silenced.	Replace all tubes in power supply. Check radio set (TM 11-4065). Replace radio set with one known to be good. Check handset and cables. Check radio set (TM 11-4065).
STOP	8	Radio set POWER switch.	Turn to OFF.....	Amplifier power supply dead.	If still on, check radio set POWER switch (ch. 5).

CHAPTER 4

THEORY OF AMPLIFIER-POWER SUPPLY AM-598/U

39. Block Diagram

(fig. 20)

a. Figure 20 is a functional block diagram of Amplifier-Power Supply AM-598/U. It shows that five regulated voltage supplies (B1, B2, A1, A2, and C) and one audio amplifier stage are powered from the common storage battery input terminals through a single vibrator power supply. The +63-volt B1, +130-volt B2, +1.35-volt A1, -1.35-volt A2, and -5.7-volt C circuits supply the voltages required to operate Radio set AN/PRC-8, -9, or -10. These circuits perform functions for the radio set identical to those performed by Battery BA-279/U (TM 11-4065), and their outputs are brought to an eight-prong receptacle on the adapter assembly, that is a duplicate of the Battery BA-279/U output connector. For convenience, the A2 supply, used for the filaments of two calibrating oscillator tubes in the radio set, is taken from a tap on the C supply in Amplifier-Power Supply AM-598/U. It is therefore negative with respect to ground, whereas, in the battery pack, the A2 supply is positive with respect to ground. Circuit operation, however, is not affected.

b. The vibrator power supply circuit includes vibrator E1, a time-delay network which consists of relay K2 and associated components, power transformer T1, hash filters, and a suitable buffer capacitor. The time-delay network prevents full battery power from being applied to the primary of T1 until the vibrator reed reaches full amplitude and correct frequency.

c. The +130-volt B2 regulated supply includes a secondary of power transformer T1, rectifier V1, regulator V2, voltage reference tube V4, and one-half of control tube V3. The +130-volt output is brought to pin D of receptacle J2 on the adapter assembly.

d. The +63-volt B1 regulated supply has in common with the B2 supply the secondary of T1,

rectifier V1, and voltage reference tube V4. It has its own regulator tube V6, and uses the other half of control tube V3. The +63-volt output is brought to pin E of receptacle J2 on the adapter assembly.

e. The +1.35-volt A1, -1.35-volt A2, and -5.7-volt C regulated supplies have in common an additional secondary of T1, selenium cell rectifier CR2, and suitable bleeder resistors and filters. The +1.35-, -1.35-, and -5.7-volt outputs are brought to pins A, B, and H, respectively, of receptacle J2 on the adapter assembly.

f. Audio amplifier V5 receives its plate potential from the unregulated output of rectifier V1. When it is made operative (*g* below), V5 amplifies the radio receiver output for loudspeaker operation. The amplifier output is fed to pins A, L, and B (ground) of AUDIO receptacles J5 and J6, where a headset or the receiver portion of a handset or chest set may be connected. When a loudspeaker is used, the audio amplifier output for the loudspeaker is brought to pins L of J5 and J6.

g. All the regulated power supply circuits are energized when starting relay K1 is energized through the POWER switch in the radio set. Distribution of power from the regulated supplies to the radio receiver-transmitter is determined by the position of the receive-transmit relay in the radio set (TM 11-4065). This relay is controlled by receive-transmit relay K3 in the power supply through pin F of connector P2 and interconnecting cord W2. K3 is energized when the button of the audio accessory connected at J5 or J6 on the power supply panel is pushed. Releasing the button de-energizes K3 and also the radio set receive-transmit relay. This puts the radio set in the receive position and also makes audio amplifier V5 operative.

h. When Amplifier-Power Supply AM-598/U is used with the radio set, all audio accessories, remote control units, or relay cables (TM 11-4065)

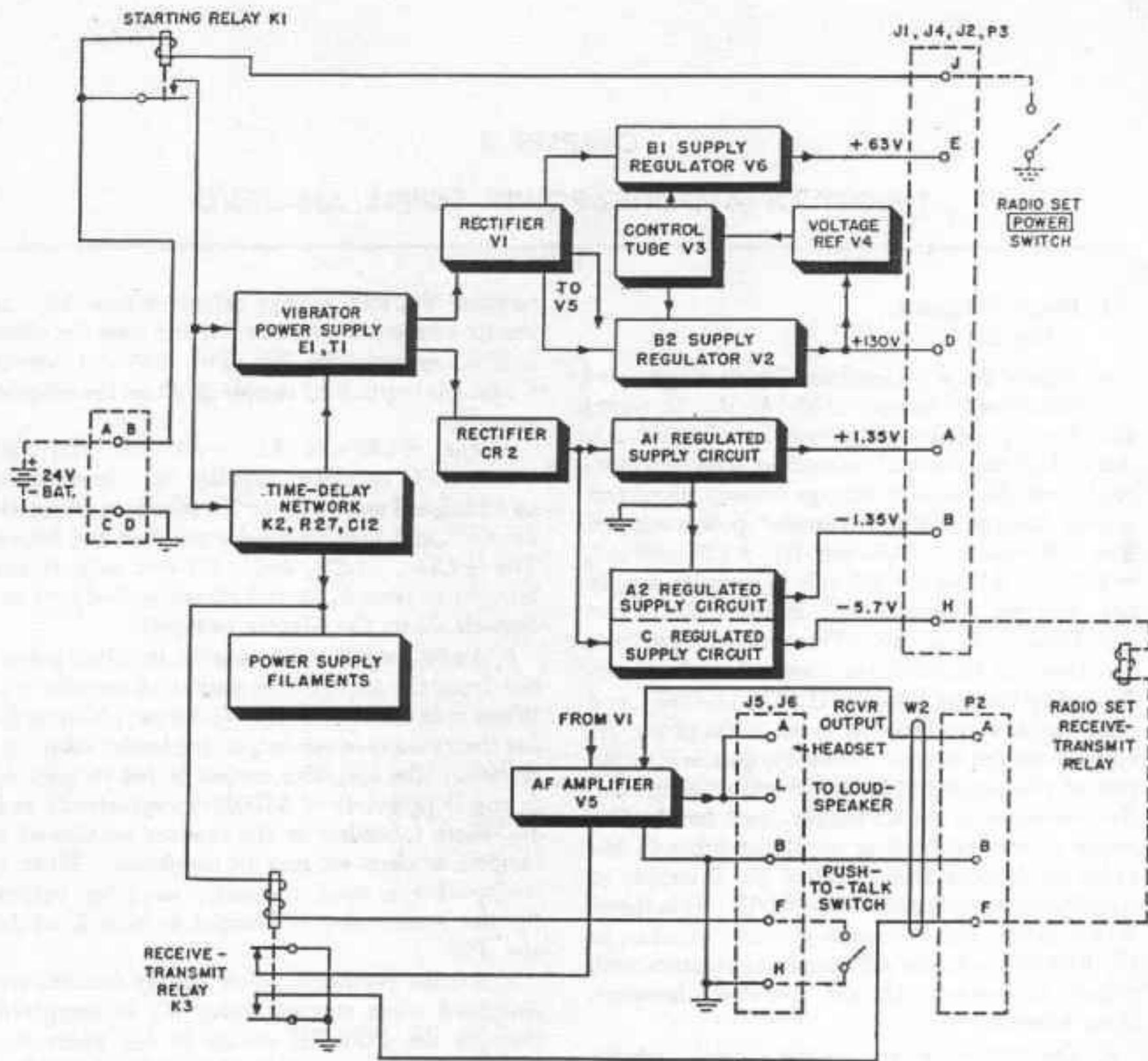


Figure 20. Amplifier-power supply AM-598-U, functional block diagram.

TM 5035-II

are connected at AUDIO receptacles J5 or J6 on the power supply panel. For simplicity only the connections for the loudspeaker, headset, and for two contacts of the push-to-talk button are shown on the functional diagram. Handset, microphone, headset, remote control, and relay cable circuits are discussed in subsequent paragraphs.

40. Input Power Circuits (fig. 21)

a. Input power for Amplifier-Power Supply AM-598/U is obtained from the vehicle's 24-volt battery. As shown in figure 21, the battery cable

is connected through a four-prong connector to receptacle J3, located on the front panel of the equipment. Terminals A and B are tied together as are terminals C and D, to increase the current-carrying capacity of the connector. Terminals C and D in the negative side of the line then are grounded.

b. With the radio set plugged into J2 on the adapter assembly of the amplifier power supply (fig. 3), and with P2 on interconnecting cord W2 connected to the AUDIO receptacle on the radio set (fig. 15), the amplifier power supply can be turned on as described in *c* below. No on-off

switch is provided on the amplifier power supply panel.

c. Amplifier-Power Supply AM-598/U is turned on by energizing starting relay K1 (fig. 21). With POWER switch S1 (on the radio set) in the ON or CAL & DIAL LITE position, current flows from the battery through terminals A and B on 24V. BATT, receptacle J3; fuse F1; the coil of K1; terminal J on J1, J4, and J2; through the POWER switch in the radio set and back through terminal C on J2 and J1, J4, to ground. With the POWER switch set to REMOTE, the coil circuit is completed through terminal J on P2 through interconnecting cord W2, to J on receptacle J5 or J6, to ground through Control Group AN/GRA-6 (par. 15) which may be connected to either J5 or J6. Capacitor C8, which is across the 24-volt line, acts as a radio-frequency (rf) noise suppressor.

d. When starting relay K1 is energized, contacts 2 and 3 close, contacts 5 and 6 open, and the following occurs—

- (1) Power is supplied to the filaments of tubes V1, V2, V6, V3, and V5 through R12. The filaments of V1, V2, and V6 require 26.5 volts each and they are connected across the line through R12. The filaments of V3 and V5 require 12.6 volts each and they are connected in series through compensating resistor R18 and resistor R12, across the line.
- (2) Power is supplied, through R12, for receive-transmit relay K3. Relay K3 is controlled by the push-to-talk button of an audio accessory or control unit plugged into AUDIO receptacle J5 or J6 and is discussed more fully in paragraph 44.
- (3) Power is supplied to the coil of separate drive vibrator E1 through L1A and R35 in parallel, and through the normally closed contacts of the vibrator reed to ground. The magnetic field set up around the coil pulls the reed so that it makes contact with terminals 1 and 2, while at the same time opening the vibrator coil circuit. The reed is spring-loaded and springs back to make contact with terminals 5 and 6, while at the same time again completing the vibrator coil circuit. When this happens, a new cycle begins. The vibrator reed oscillates in this man-

ner at a frequency of 115 cycles per second (cps).

Note. The alternate vibrator shown in figure 21 is interchangeable with the vibrator normally supplied with the equipment.

- (4) Power is supplied through R12 and pins 7 and 3 of V4 to the center-tapped primary of power transformer T1. When the vibrator reed is contacting terminals 1 and 2, current flows through the upper half of the primary winding of the transformer; when the reed contacts terminals 5 and 6, current flows through the lower half of the primary winding of the transformer. These pulsating currents energize the primary winding of T1 which in turn induces an alternating-current (ac) voltage in the secondary. The jumper between pins 7 and 3 inside V4 is provided to function as an interlock. V4 is a voltage reference tube for the B1 and B2 regulated supplies. Damage to the radio set would result if the B1 and B2 voltages were not closely regulated. If V4 is removed from its socket or left out, the circuit to T1 would be broken at pins 7 and 3 at the socket of V4, thereby cutting off power to the radio set. Electrically, the function of the jumper is independent of the regulator action of V4.
- (5) Resistor R12 drops a portion of the battery voltage, so that full power is not supplied to the transformer primary until the vibrator reed oscillations reach full amplitude and correct frequency. This minimizes arcing at the vibrator contacts. Filter chokes L1A, L1B, and L1C, and filter capacitors C1, C2, C3, C16, C17, and C18 are included to eliminate vibrator hash. Resistors R35, R36, and R37 damp the surges of current through the filter chokes that occur when the vibrator contacts open; these surges otherwise would cause arcing. The choke, capacitor, and resistor assembly is shielded in a metal box beneath the vibrator. Rf choke coils L3, L4, and L5 are mounted outside the vibrator box to prevent the high-frequency noise, generated by the vibrator, from appearing at the transformer terminals and at the battery input termi-

nals. The impedance of coils L3, L4, and L5 is high enough throughout the operating range of the equipment to prevent the noise generated by the vibrator from interfering with communication.

- (6) Power is supplied to the coil of relay K2 through resistor R27. Capacitor C12, connected in parallel with the coil of K2, absorbs some of the current in order to charge up, and it is not until it is charged fully that the relay coil will carry sufficient current for relay K2 to close. The resulting time delay is approximately one-third of a second. When paralleled contacts 3 and 4 and 2 and 5 of K2 close, they short out R12 through closed contacts 2 and 3 of relay K1, and enough time has elapsed to permit the vibrator reed oscillations to reach full amplitude and correct frequency. Full battery voltage is then applied to the primary of T1 and to the tube filaments. Buffer capacitor C4 absorbs the surges that occur when the current in each half of the primary is interrupted. This capacitor prevents the rapidly collapsing magnetic fields and resultant high voltages caused by opening the vibrator contacts from arcing across the contacts. For simplicity, the two sets of contacts of relay K2 are shown as one pair in figure 21.
- (7) When the equipment is turned off, the coil of starting relay K1 is de-energized, and contacts 2 and 3 of K1 open; but the set is kept in operation because of the closed contacts 3 and 5 of K2. The operation of the set does not stop until contacts 5 and 6 of K1 close, which occurs a fraction of a second after the opening of contacts 2 and 3 of K1. When contacts 5 and 6 of K1 close, C12 discharges through R28 to ground. R28 limits the discharge current of C12 to a safe value for the points of relay K1. The coil of K2 is de-energized when C12 is discharged, and this allows contacts 3 and 5 of K2 to open. This not only turns off the set but opens the short circuit across R12, and makes the equipment ready for a new starting cycle.

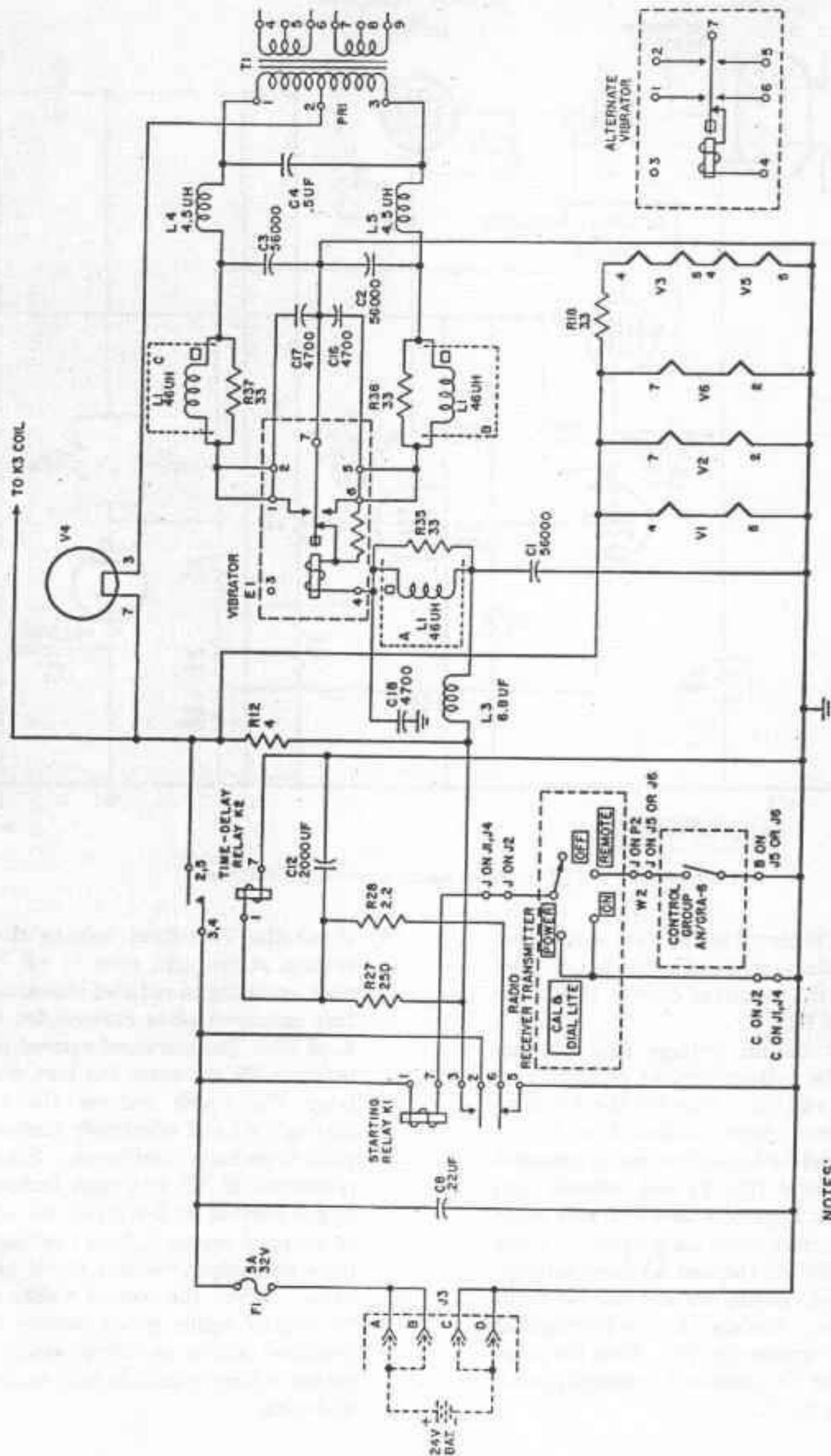
41. B1 and B2 Regulated Supplies

(fig. 22)

Voltage regulation is provided so that the B1 and B2 supplies will maintain constant voltage outputs under conditions of varying input voltage and varying output load currents. Circuit action is such that any change in input voltage or output load current, that would tend to change the output voltage, is offset by a change in the dc resistance of a series regulator tube to maintain the output voltage essentially constant. The nominal B2 and B1 voltages are +130 and +63 volts, respectively, with 28-volt primary input. The permissible range of voltage variations is given in paragraph 64. Adjustment procedures are given in paragraph 60.

a. B2 Regulated Supply. The voltage appearing across the center-tapped secondary of T1 (terminals 4, 5, and 6) is rectified by full-wave rectifier V1, which uses a 26Z5W tube, and is filtered by the capacitor input filter consisting of C9A and L2B. C5 is a buffer capacitor, and R16 is an oscillation damping resistor. V2 acts as a variable resistance in series with the load. Its purpose is to vary the voltage drop from plate to cathode so that the load voltage remains essentially constant at +130 volts regardless of changes in either the battery voltage or in the load current drawn from the supply. The plate of V2 (pin 3) is connected to the cathodes of rectifier V1 (pins 3 and 8) through filter choke L2B. Damping resistor R15 prevents V2 from oscillating with choke L2B. Voltage for the screen (pin 4) is provided through series-dropping resistor R22. The B2 supply is regulated by controlling the grid bias of V2 and thereby its plate-to-cathode resistance. This is accomplished as follows—

- (1) The V2 output voltage (from pin 8 to ground) appears across the network consisting of R7, R32, and V4. V4 is an OC3 neon-glow voltage regulator tube. It has the property of maintaining a constant voltage drop across its terminals over a wide range of currents through it. Therefore the internal resistance of the tube varies inversely as the current flowing through the tube. Thus, a current change through V4 appears as a voltage change across R7 and R32, while the drop across V4 remains fixed at 105 volts. A voltage divider consisting of R17, R10,



- NOTES:
1. UNLESS OTHERWISE SHOWN, RESISTORS ARE IN OHMS, CAPACITORS ARE IN UUF.
 2. SOME EQUIPMENTS DO NOT HAVE L3, L4, L5, L6, AND C18.

Figure 21. Input power circuits, schematic diagram.

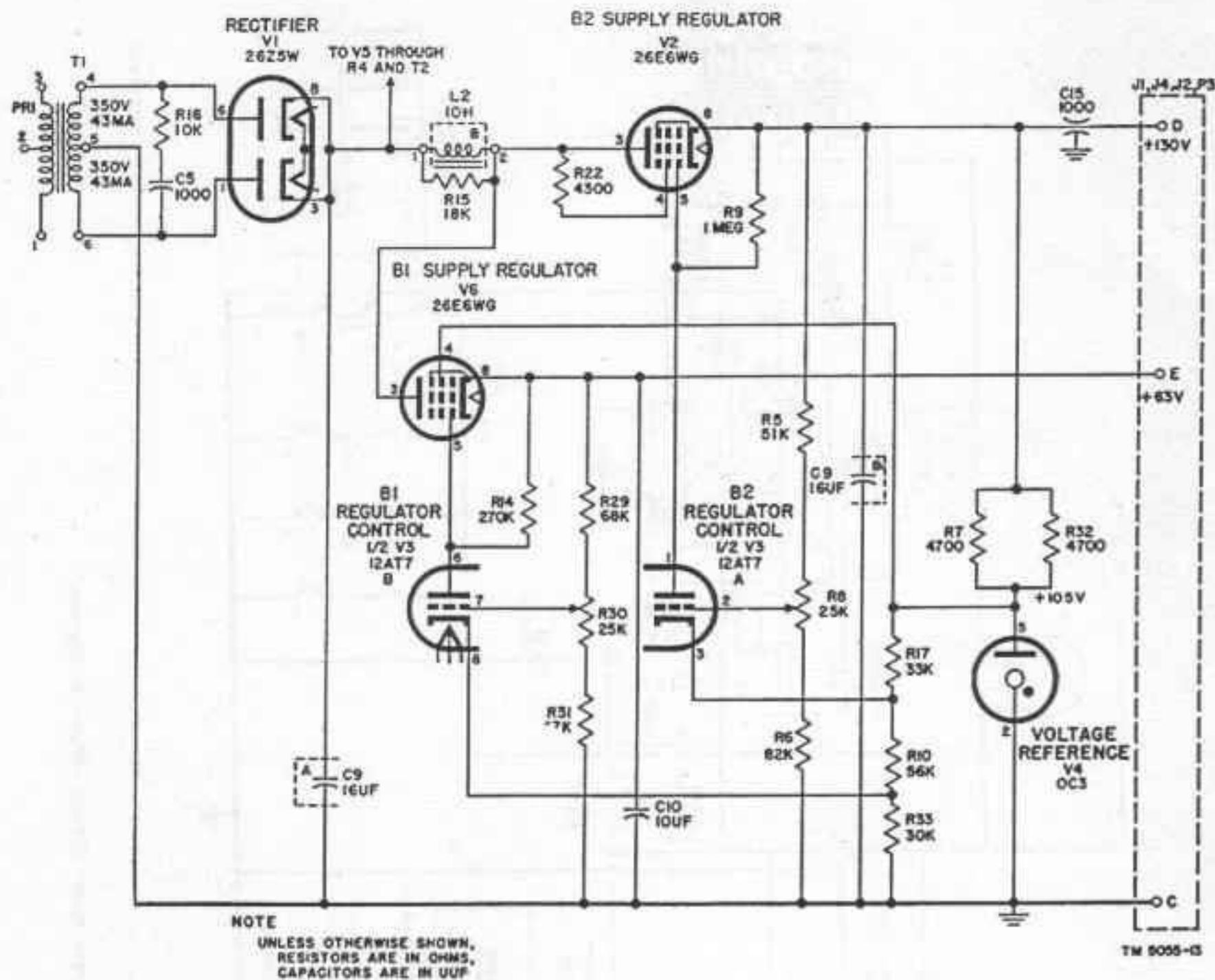


Figure 22. B1 and B2 regulated supplies, schematic diagram.

- and R33 is placed across V4 and is tapped to provide a constant cathode potential for the B2 regulator control tube (section A of V3).
- (2) The V2 output voltage also appears across the voltage divider consisting of R5, R8, and R6. Bias for the B2 regulator control tube (section A of V3) is established by the difference in potential between grid (pin 2) and cathode (pin 3), and is approximately -1 volt when potentiometer R8 is set properly. Plate current for V3 (section A) flows through plate load resistor R9 and the B2 regulator tube. Resistor R9 also functions as the grid resistor for V2. Thus the plate current of V3 (section A) determines the grid bias for V2.

- (3) When the V2 output voltage rises, the voltage at the grid (pin 2) of V3 also rises, resulting in reduced bias and therefore increased plate current for section A of V3. The increased current flowing through R9 increases the bias on regulator V2, which reduces the current through V2 and effectively increases its plate-to-cathode resistance. Since the resistance of V2 has been increased, a larger portion of the input voltage will be dropped across it, thus tending to restore the output voltage to its original value. When the output voltage falls, the control action is the reverse of that described above, resulting again in an output voltage which is held to its original value.

(4) Potentiometer R8 in the B2 regulator control tube input circuit is adjusted to maintain the load voltage at +125 volts when the battery voltage is 24 volts and the radio set is in transmit-squelch operation (par. 60). This adjustment insures that the B2 load voltage will be sufficient for proper operation of the radio set transmitter when the vehicle battery is not being charged. Under these conditions the B2 load voltage for receive-squelch-calibrate operation will be approximately +128 volts. This adjustment also allows for a rise in the B2 load voltage when the vehicle battery is being charged so that the final stage in the radio set transmitter is not overloaded. The B2 supply, filtered by capacitor C9B, is available for the radio set at pin D of J2. Feedthrough capacitor C15 eliminates any rf that may be fed back from the radio set transmitter. The range of voltages to be expected at pin D of J2 is given in paragraph 64.

b. B1 Regulated Supply. The B1 regulated supply uses a separate 26E6WG tube (V6) as a regulator tube, and a separate section of the 12AT7 (V3) as a regulator control tube. Regulation of the B1 supply is similar to that of the B2 supply. Another tap on the voltage divider across V4 provides a constant potential for the cathode of the B1 regulator control tube. Grid voltage for the control tube is obtained from the voltage divider consisting of R29, R30, and R31, across the B1 output (pin 8 of V6 to ground). Plate voltage for V6 is obtained from the filtered output of rectifier V1, and screen voltage is taken from the anode of V4. Grid bias for regulator V6 is developed across R14, its magnitude depending on the amount of plate current drawn by the B1 regulator control tube, section B of V3. Potentiometer R30 is adjusted to maintain the B1 load voltage at exactly +63 volts for a battery voltage of 24 volts and the radio set in transmit-squelch operation (par. 60). Unlike the B2 supply, the effect of changing load conditions on the B1 supply is negligible. It is therefore possible to adjust the B1 voltage to its nominal value of +63 volts at 24 volts input. The B1 supply, filtered by capacitor C10, is available for the radio set at pin E of receptacle J2. The range

of voltages to be expected at that pin is given in paragraph 64.

42. A1, A2, and C Regulated Supplies (fig. 23)

a. In regulating the A1, A2, and C supplies, advantage is taken of the properties of ballast tubes and selenium cell voltage regulators. The voltage appearing across a center-tapped secondary of T1 (terminals 7, 8, and 9) is rectified by selenium rectifier CR2 and filtered by the capacitor-input filter consisting of C6, L2A, and C7. Dc flows through ballast tube R2 and filter choke L2A, which are in series with all three loads. Across the loads are the voltage divider and bleeder consisting of selenium cell stack CR1 and its associated network, and resistors R20 and R21. Stack CR1 shunts the A1 supply, and R20 and R21 in series shunt the C supply. Filtering for the A1 supply is provided by capacitor C11 across CR1. The C supply is tapped between R20 and R21 for the A2 supply voltage. The required positive and negative voltages are obtained by grounding the voltage divider at the bottom of CR1.

b. Ballast tube R2 maintains a constant current for the A1, A2, and C loads in spite of large changes in input voltage. The ballast tube consists of an iron wire inclosed in a hydrogen-filled envelope. If an increased input voltage tends to drive a larger current through the wire, the wire becomes heated and increases its resistance, thus reducing the current in the line. If the input voltage decreases, the resistance of the wire decreases and the current increases to its specified value.

c. Although ballast tube R2 regulates the A1, A2, and C supply load current despite large changes in input voltage, it does not compensate for changes in the load itself. For example, if the A1 load should decrease suddenly as a result of a radio set tube filament burning out, the load current requirement for the remaining filaments would decrease, but less current in the line would result in a decreased resistance for R2 and consequently an increase in output voltage, thereby endangering the remaining filaments across the A1 supply. Selenium cell stack CR1, acting as a non-linear resistance across the A1 load, provides regulation of the A1 supply despite changes in the load. The stack is constructed of special selenium cells that are not normally used in standard se-

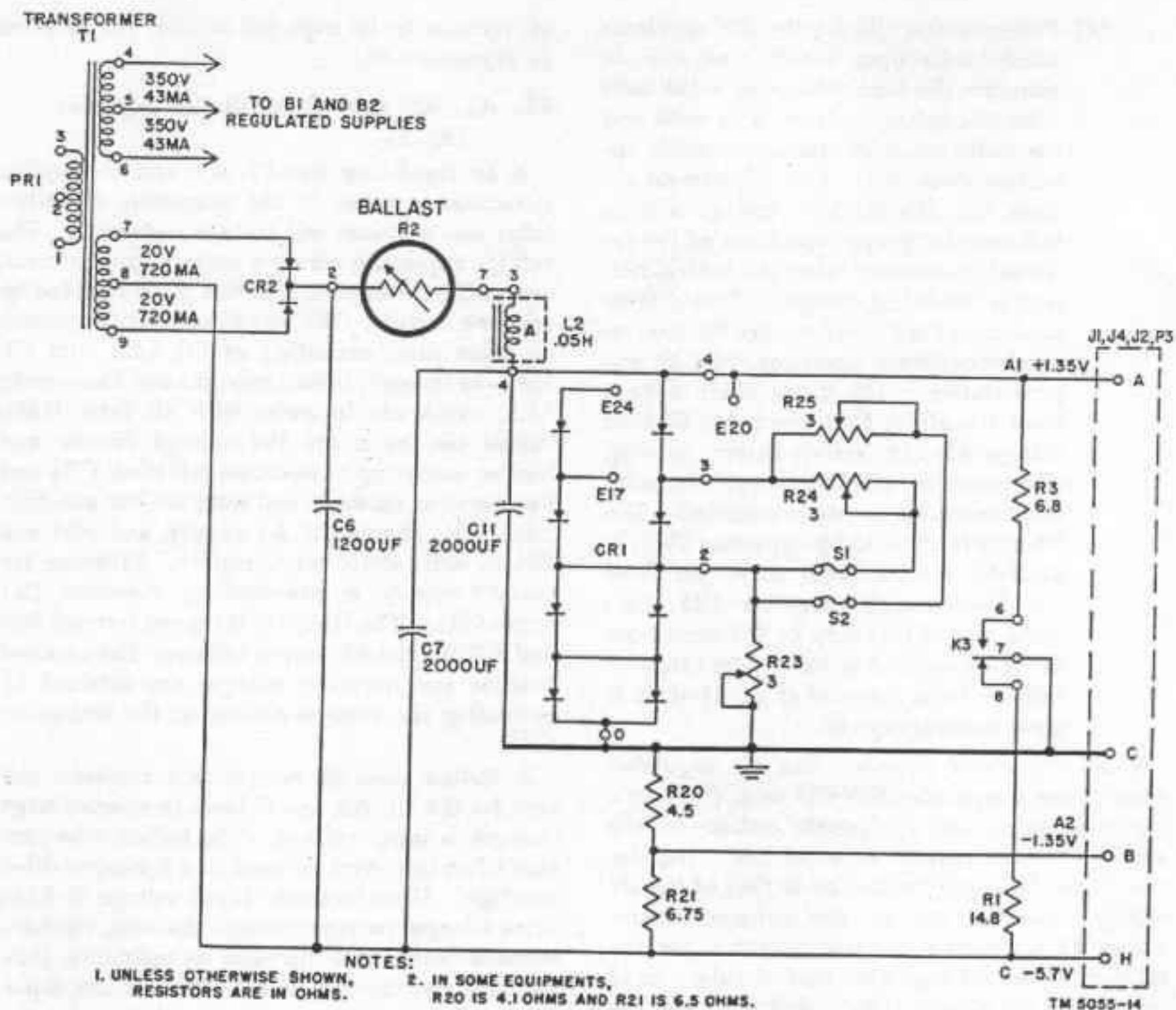


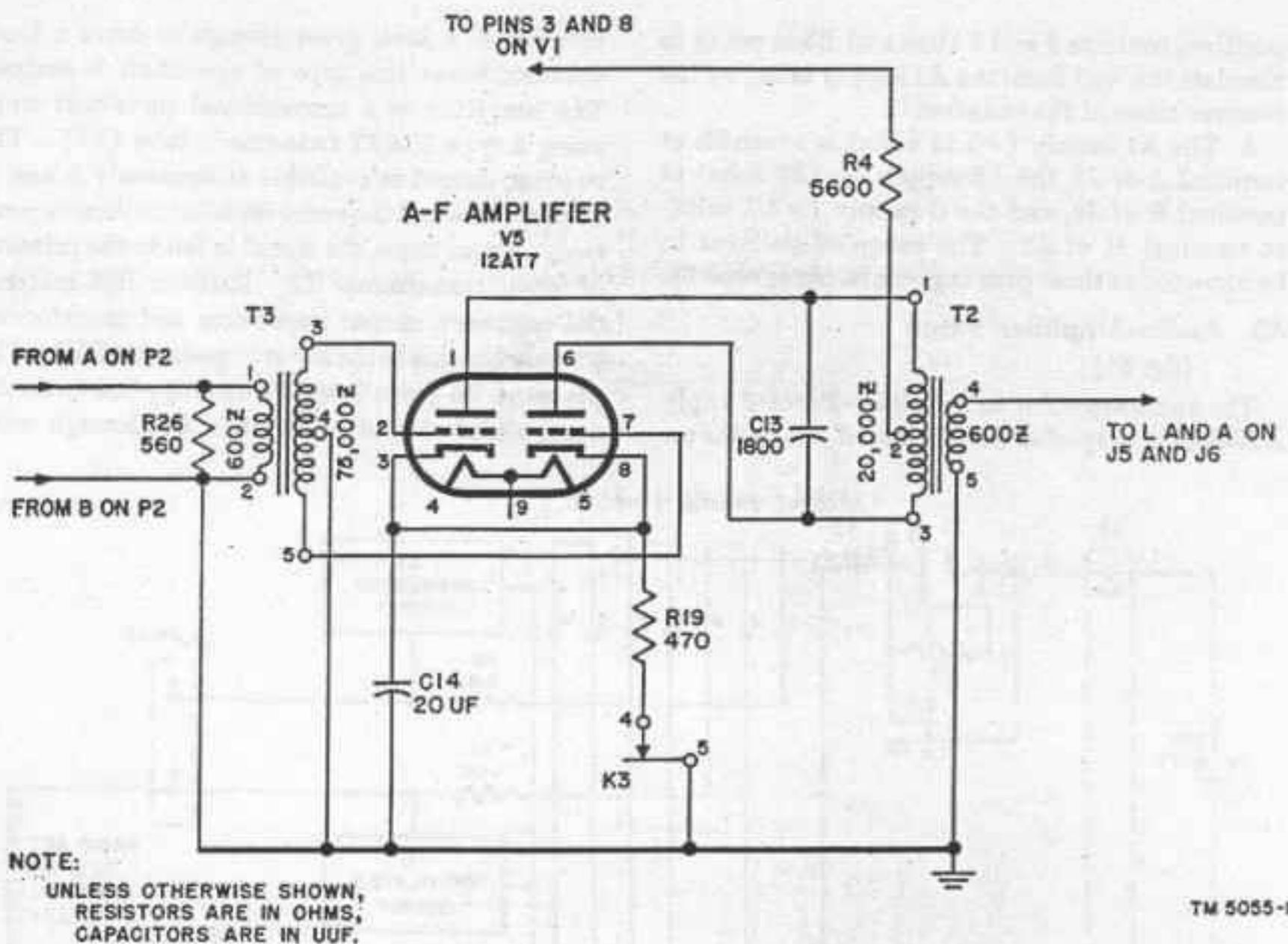
Figure 25. A1, A2, and C supplies, schematic diagram.

lenium rectifiers, such as CR2. Throughout the range of low voltages, current changes in the forward direction through the cells obey Ohm's law approximately. Above a specific voltage determined by the design of the cells however, small increases in voltage cause great increases in current.

d. A decrease in the A1 load tends to draw less current through R2, and the voltage across the A1 load and CR1 in parallel tends to rise. As the voltage approaches +1.5 volts, CR1 begins to conduct heavily (that is, its resistance decreases sharply) and the voltage is prevented from rising further. Conversely, an increase in the A1 load tends to draw more current through R2, and the voltage across the A1 load and CR1 in parallel decreases. When the voltage approaches +1.2 volts,

the resistance of CR1 is very high and its voltage dropping action is reduced. In this manner, the A1 output voltage remains within safe limits despite load changes.

e. Since the resistive characteristics of selenium cells vary considerably with their operating temperature, the network consisting of compensating resistors R23, R24, and R25, and thermoswitches S1 and S2 is placed across CR1. This network maintains the A1 supply between +1.2 and +1.5 volts over an ambient temperature range of -40°C . to $+80^{\circ}\text{C}$., with the radio set in either receive-squelch-calibrate or transmit-squelch operation, and with the input voltage at 24 volts dc. The correct operating range is determined by the adjustment of resistors R23, R24, R25 (par. 61). Both thermoswitches have normally closed con-



TM 5055-15

Figure 24. A1 amplifier stage, schematic diagram.

tacts. Assuming an ambient temperature of 80° C. the A1 voltage is +1.25 volts and both S1 and S2 are actuated (the contacts of each switch open). Thus, of the three compensating resistors, only R23 is across the selenium cell regulator (terminals 0 and 2). If the ambient temperature falls to 54° C. the A1 voltage rises to +1.34 volts at which time S1 is actuated (its contacts close) and R24 is placed across an additional section of the regulator (terminals 2 and 3, fig. 40). When S1 closes the A1 voltage drops from +1.34 volts to +1.29 volts and then rises with decreasing temperature to +1.39 volts. If the temperature falls to 10° C., S2 is actuated (its contacts close) and R25 is connected across R24. When S2 closes the A1 voltage drops from +1.39 volts to +1.33 volts, thereafter rising with decreasing temperature until at -40° C., the A1 voltage is +1.45 volts. For rising ambient temperature, the action of the thermostats is similar but reversed.

f. In addition to the adjustment of the A1 voltage provided by variable resistors R23, R24, and

R25, provision also is made for connecting additional sections of CR1 into the circuit when the aging of CR1 or rectifier CR2 makes this necessary (par. 61).

Note. Although CR1 and its associated network helps regulate the A1 supply despite load changes, it is desirable to keep the A1 load at its rated value. For this reason, the filaments of the squelch tube in the radio set should be left across the supply (that is, the SQUELCH control switch should be left on during operation of the radio set). Similarly, the A2 supply should have its rated load across it when the receiver is calibrated; this includes the calibrating light on the radio set, which should be replaced if it burns out.

g. Resistor R3, across the A1 load, and resistor R1, across the C load, are cut in and out of the circuit by receive-transmit relay K3. Relay K3 is controlled by the push-to-talk button of an audio accessory (par. 44). When K3 is in the receive position (de-energized), contacts 7 and 8 are closed and R1 is cut in to simulate the load from the C supply taken by the transmitter power amplifier tube in the radio set. When K3 is in the transmit

position, contacts 6 and 7 close and R3 is cut in to simulate the load from the A1 supply taken by the receiver tubes of the radio set.

λ. The A1 supply (+1.35 volts) is available at terminal A of J2, the A2 supply (-1.35 volts) at terminal B of J2, and the C supply (-5.7 volts) at terminal H of J2. The range of voltages to be expected at these pins is given in paragraph 64.

43. Audio-Amplifier Stage

(fig. 24)

The audio amplifier in Amplifier-Power Supply AM-598/U amplifies the output of the radio set

receiver to a level great enough to drive a loudspeaker, when this type of operation is desired. The amplifier is a conventional push-pull stage using a type 12AT7 twin-triode tube (V5). The receiver output is available at terminals A and B of plug P2 when the radio set is in the receive position. From there, the signal is fed to the primary of input transformer T3. Resistor R26 matches the receiver's output impedance and transformer T3 matches this to the input impedance of V5. The plates of V5 (pins 1 and 6) are supplied from the unregulated output of rectifier V1 through volt-

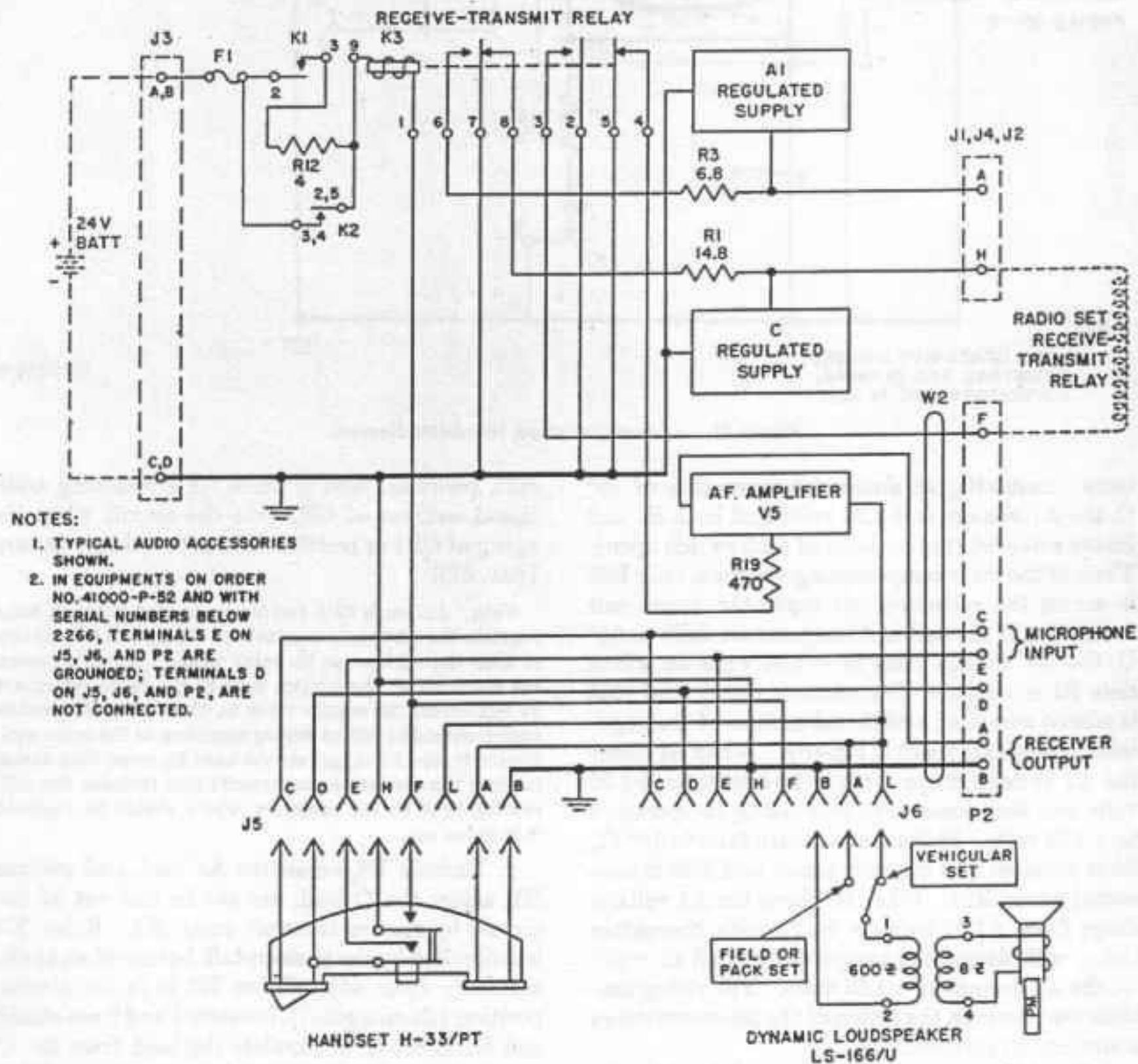


Figure 25. Receive-transmit relay, schematic diagram.

age-dropping resistor R4. The cathodes of V5 (pins 3 and 8) are connected through a common cathode resistor, R19, and through contacts 4 and 5 of receive-transmit relay K3 (par. 44) to ground. Capacitor C14 grounds the cathodes for audio frequency (af). When the radio set is transmitting, contacts 4 and 5 are open, making audio amplifier V5 inoperative. Capacitor C13 cuts out the high audio frequencies which are unnecessary for intelligible voice reception. Transformer T2 matches the plate-to-plate output impedance of V5 to the 600-ohm input impedance of the loudspeaker.

The output of the stage is connected to terminals L and A of J5 and J6 and is available for loudspeaker, headset, or handset operation (fig. 25).

44. Control of Radio Set With Microphone M-29/U, Chest Set Group AN/GSA-6, or Handset H-33/PT, and Dynamic Loudspeaker LS-166/U (fig. 25)

a. When Radio Set AN/PRC-8, -9, or -10 is powered by Amplifier-Power Supply AM-598/U,

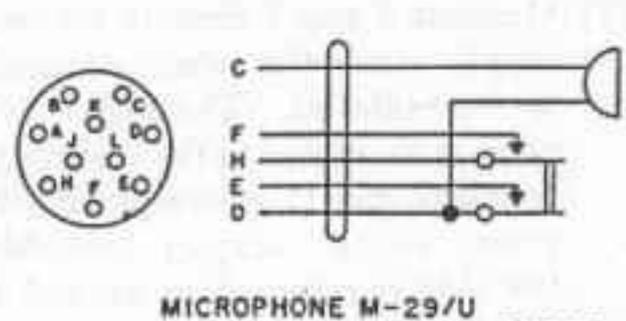
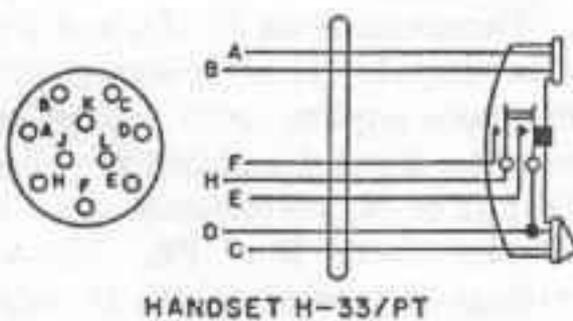
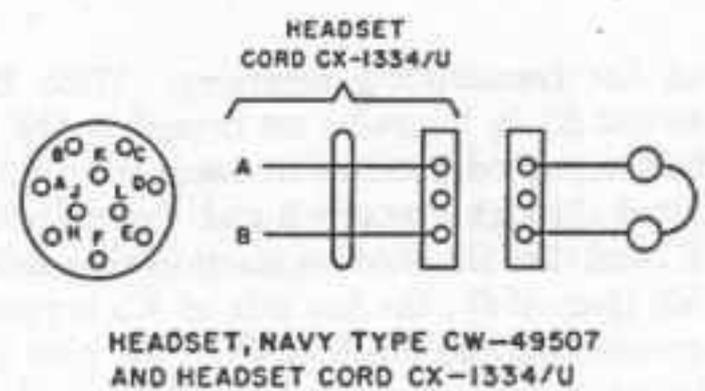
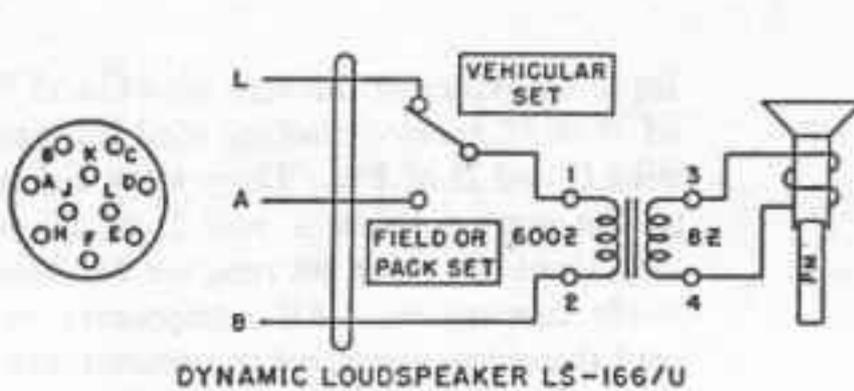
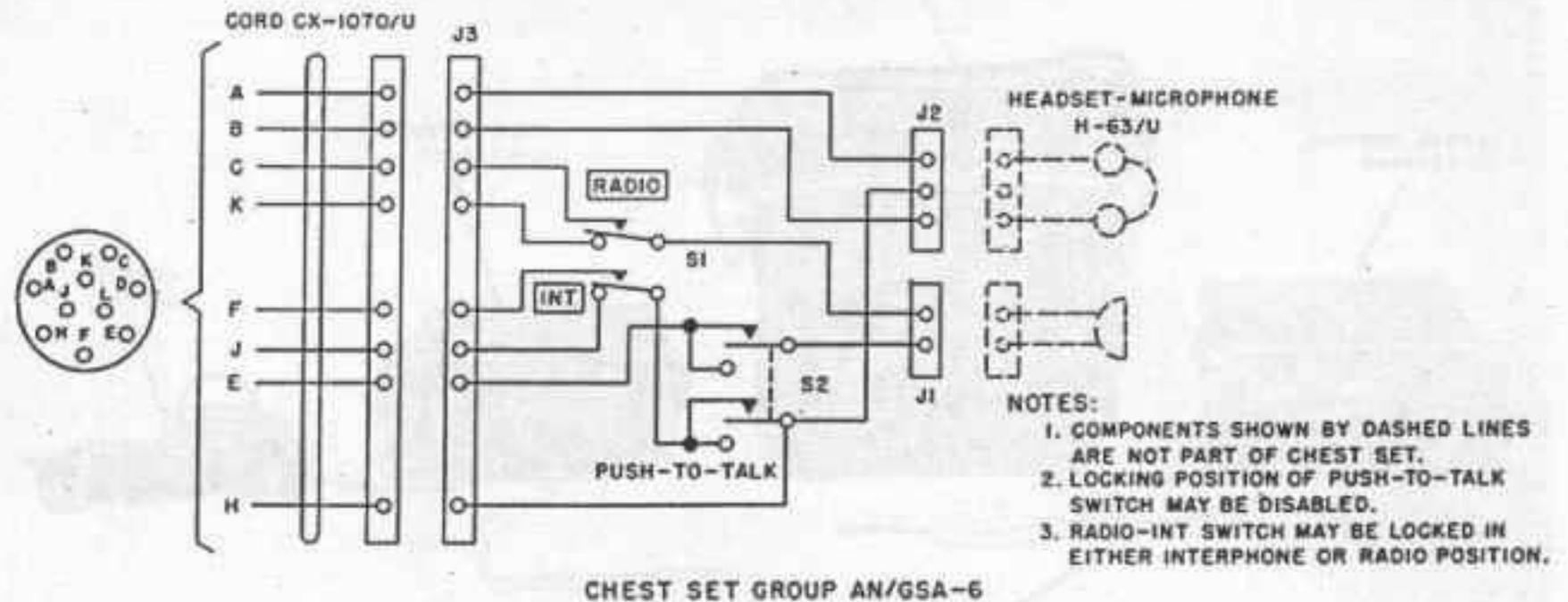


Figure 26. Audio accessories, schematic diagram.

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and when cable W2 terminating in plug P2 is connected from the power supply to the radio set, the operator may transmit by means of a microphone, chest set, or handset plugged into one of the amplifier power supply panel AUDIO receptacles and monitor the radio set receiver output with a loudspeaker plugged into the other AUDIO receptacle. The two AUDIO receptacles, J5 and J6, are identical electrically. Switching to transmission is accomplished by pressing the push-to-talk button

radio set receive-transmit relay energizes the modulator, automatic frequency control (afc), and power amplifier circuits of the transmitter, while de-energizing the first rf, all intermediate-frequency (if), and audio stages of the receiver. On equipments with serial numbers below 2266, procured on Order No. 41000-P-52, speaking into the microphone applies voltage to the transmitter audio

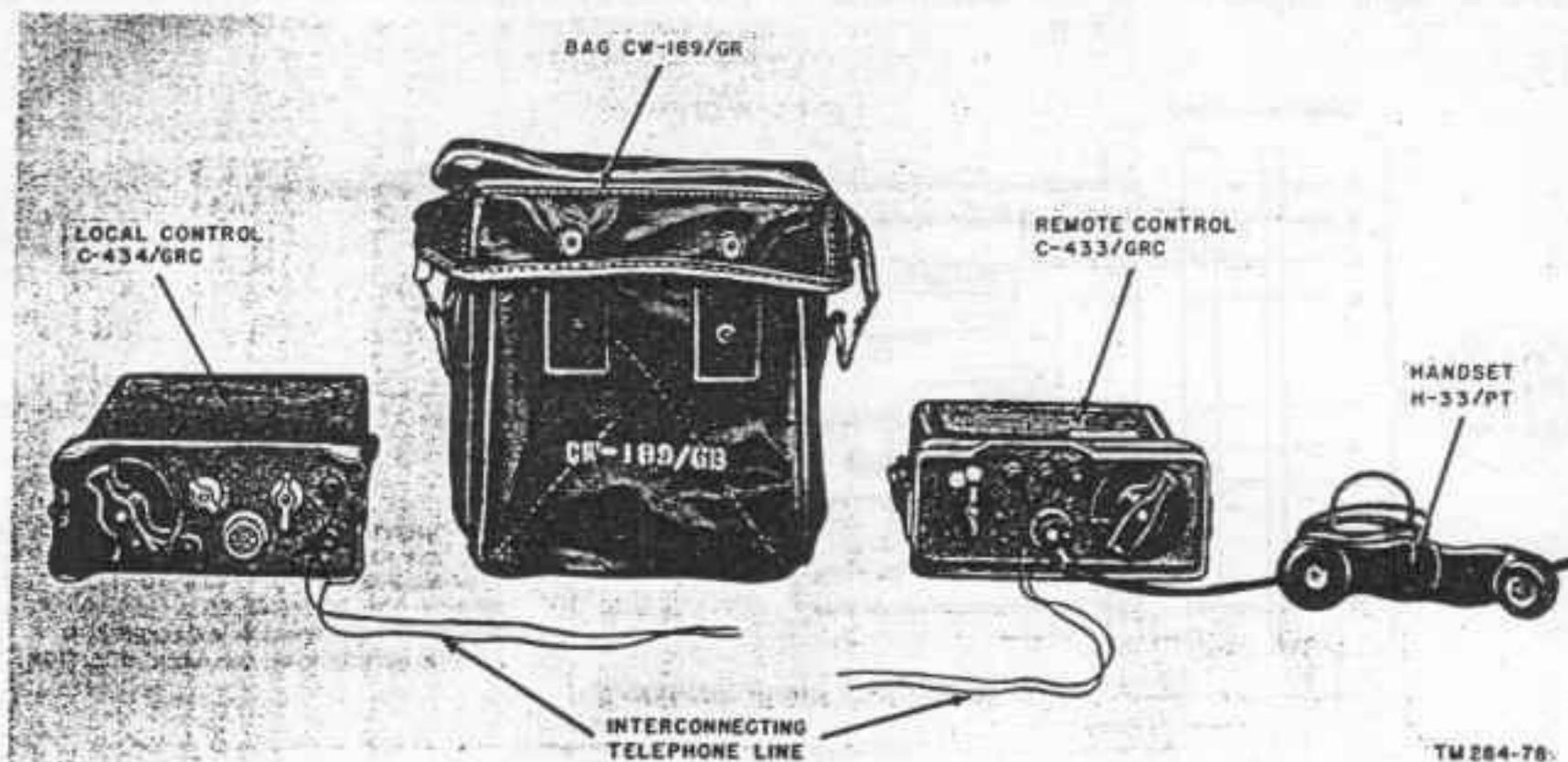


Figure 27. Control group AN/GRA-6.

on the transmitting accessory. With POWER switch S1 in the radio set turned to ON and the button pushed, receiver-transmit relay K3 is energized through contacts 2 and 3 of starting relay K1 and then the closed contacts of time-delay relay K2 (par. 40d); the low side of K3 is returned to ground through pin F of J5 or J6, pins F and H in the transmitting accessory, and pin H of J5 or J6. Energizing K3 causes the following to take place—

- (1) Contacts 2 and 3 close to connect the C supply across the receive-transmit relay in the radio set. The high side of this relay is connected to the C supply output terminal, pin H of receptacle J2 on the power supply adapter assembly. The low side is returned to ground through pin F of plug P2, interconnecting cord W2, and contacts 2 and 3 of K3. The

input transformer through pins C and E of J5 or J6, interconnecting cord W2, and pins C and E of P2. There is no signal at the output (pins A and L of J5 or J6), since the radio set receiver has been made inoperative. All equipments except the above are wired to accommodate the modified Radio Set AN/PRC-8, -9, or -10. Terminals E on J5, J6, and P2, are not grounded but remain interconnected. Terminals D on J5, J6, and P2 are interconnected. Thus, speaking into the microphone applies audio voltage to the transmitter input circuit through pins C and D of J5 or J6, interconnecting cord W2, and pins C and D of P2. Microphone voltage is present at pin D only when the radio set is in the transmit position. Only the power supplies that are

wired to accommodate the modified radio sets will also accommodate the unmodified sets.

- (2) Contacts 4 and 5 of K3 open to break the cathode circuit of audio amplifier V5 (par. 43). Since the radio set receiver is inoperative already, the audio amplifier is de-energized only to conserve power.
- (3) Contacts 6 and 7 close to place resistor R3 across the A1 supply (par. 42). R3 simulates the load taken from the A1 sup-

ply by the now inoperative receiver tubes of the radio set.

b. The radio set is put in the receive position by releasing the push-to-talk button. This also opens the microphone circuit. Receive-transmit relay K3 is de-energized and the following takes place—

- (1) Contacts 2 and 3 open and the receive-transmit relay in the radio set is de-energized. Power is removed from the modulator, afc, and power amplifier stages

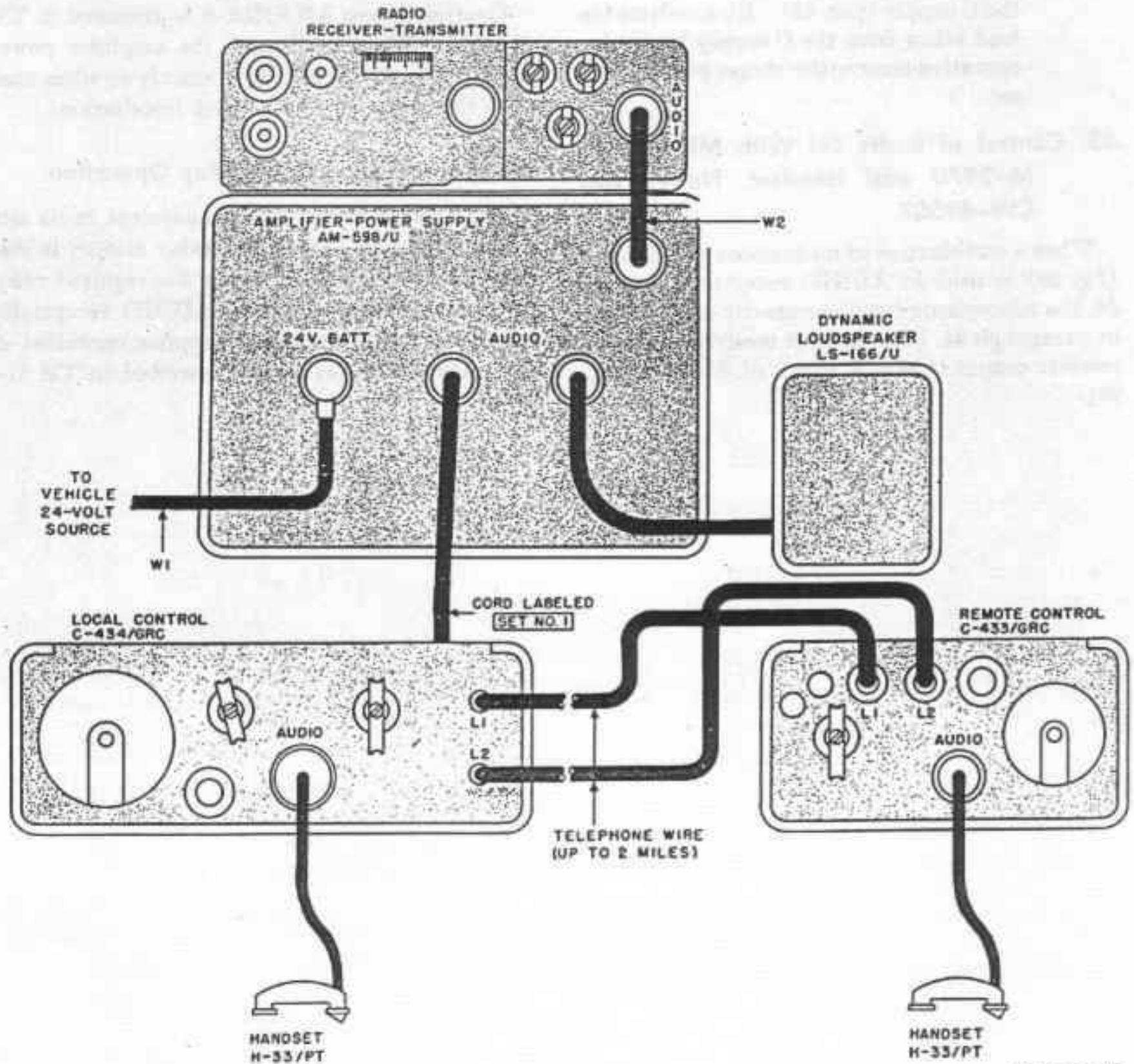


Figure 28. Control group AN/GRA-6, connections.

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in the transmitter and supplied to the first rf, all if, and audio stages in the receiver. The receiver output signal now is available through interconnecting cord W2 for audio amplifier V5.

- (2) Contacts 4 and 5 close the cathode circuit of audio amplifier V5 which now can be used to amplify the receiver output for loudspeaker operation (par. 43). If a handset or chest set is used with the loudspeaker, signals will be heard in the receiver portions of these accessories as well as in the loudspeaker.
- (3) Contacts 7 and 8 close to place R1 across the C supply (par. 42). R1 simulates the load taken from the C supply by the in-operative transmitter stages of the radio set.

45. Control of Radio Set With Microphone M-29/U and Headset, Navy Type CW-49507

When a combination of microphone and headset (fig. 26) is used in AUDIO receptacles J5 and J6, the microphone functions exactly as described in paragraph 44. The headset receives amplified receiver output at pins A and B of J5 or J6 (fig. 25).

46. Control of Radio Set With Handset H-33/PT or Chest Set Group AN/GSA-6 (fig. 26)

Handset H-33/PT or Chest Set Group AN/GSA-6 (used with Headset-Microphone H-63/U) combines the functions of the microphone and headset and is used in only one of the AUDIO receptacles.

47. Control of Radio Set With Control Group AN/GRA-6 (fig. 27)

Control Group AN/GRA-6 is discussed in TM 11-4065. When used with the amplifier power supply (fig. 28), it functions exactly as when used with the radio set field or pack installation.

48. Control Circuit for Relay Operation

The control circuit for two adjacent radio sets operating as an unattended relay station is discussed in TM 11-4065. When the required relay cable is connected between AUDIO receptacles of adjacent amplifier power supplies, operation of the relay station will be as described in TM 11-4065.



CHAPTER 5

FIELD MAINTENANCE INSTRUCTIONS

Section I. TROUBLESHOOTING AT FIELD MAINTENANCE LEVEL

Note. This chapter contains information for field maintenance. The amount of repair that can be performed by units having field maintenance responsibility is limited only by the tools and test equipment available, and by the skill of the repairman.

Warning: The B voltages present in the amplifier power supply are high enough to produce shock, and under certain conditions may be dangerous to life. When working on the equipment with voltages present, it is good practice to first place the equipment on an insulating surface, particularly if the skin is wet or damp from perspiration or water. Disconnect Electrical Special Purpose Cable Assembly CX-2031/U from the 24V. BATT. receptacle on the front panel before making repairs.

The failure of selenium rectifiers can result in the liberation of poisonous fumes and the deposit of poisonous selenium compounds. If a rectifier burns out or arcs over, the odor is strong. Provide adequate ventilation immediately. *Avoid inhaling the fumes and do not handle the damaged rectifier until it has cooled.*

49. Troubleshooting Procedures

a. General. The first step in servicing a defective amplifier power supply is to sectionalize the fault, which means tracing the fault to the circuit responsible for the abnormal operation of the equipment. The second step is to localize the fault, which means tracing the fault to the defective part responsible for the abnormal condition. Some faults, such as burned-out resistors and shorted transformers often can be located by sight, smell, or hearing. The majority of faults, however, must be localized by *checking voltages and resistances.*

b. System Sectionalization. System sectionalization is discussed in paragraph 36.

c. Component Sectionalization and Localization. The tests listed below aid in isolating the source of trouble. To be effective the procedure should be followed in the order given. Remember that servicing procedure should cause no further damage to the amplifier power supply. First, the trouble should be localized to a single stage or circuit. Then the trouble may be isolated within that stage or circuit by appropriate voltage, resistance, and continuity measurements. The service procedure is summarized as follows—

- (1) *Visual inspection.* The purpose of visual inspection (par. 35) is to locate any visible trouble. Through this inspection alone, the repairman frequently may discover the trouble or determine the circuit in which the trouble exists. This inspection is valuable in avoiding additional damage to the amplifier power supply which might occur through improper servicing methods, and in forestalling future failures.
- (2) *Resistance and voltage measurements.* These measurements (par. 54) prevent further damage to the amplifier power supply from possible short circuits and help in isolating the particular part at fault.
- (3) *Operational test.* The operational test (par. 55) is important because it frequently indicates the general location of trouble. In many instances, the information gained will reveal the exact nature of the fault. To utilize this information fully, all symptoms must be interpreted in relation to one another.
- (4) *Troubleshooting chart.* The troubles

listed on the trouble-shooting chart (par. 56) will aid greatly in sectionalizing and localizing trouble.

- (5) *Intermittent faults.* In all these tests, the possibility of intermittents should not be overlooked. If present, this type of trouble often may be made to appear by tapping or jarring the set. It is possible that the trouble is not in the amplifier power supply itself but in the installation. Test the installation, if possible.

50. Troubleshooting Data

The figure references listed below will aid in the rapid location of faults.

Fig.	Description
6	Amplifier-Power Supply AM-598/U chassis, top view.
29	Amplifier-Power Supply AM-598/U and Radio Set AN/PRC-8, -9, or -10, in servicing position.
32	Tube socket and connector voltage and resistance diagram.
33	Amplifier-Power Supply AM-598/U chassis, bottom view.
34	Amplifier-Power Supply AM-598/U chassis, rear view.
35	Selenium cell regulator CR1 and resistor sub-assembly.
40	Amplifier-Power Supply AM-598/U, schematic diagram.

51. Test Equipment Required for Troubleshooting

The test equipment required for troubleshooting is listed below. The associated technical manuals are also listed.

Test equipment	Publication
Multimeter TS-352/U, or an equivalent.	TM 11-5527
Tube Tester I-177 or I-177-A or an equivalent.	TM 11-2627
Tube Socket Adapter Kit MX-949/U	TB 11-2627-2
Audio Oscillator TS-382A/U	TM 11-2684A
Tool Equipment TE-113.	
Test Set I-49	TM 11-2019

52. General Precautions

Whenever the amplifier power supply is serviced, observe the following precautions—

- a. Be careful when the chassis is serviced outside of the case; a high voltage is exposed at a

secondary of power transformer T1.

b. Careless replacement of parts often makes new faults inevitable. Note the following points:

- (1) Before a part is unsoldered, note the position of the leads. If the part, such as a transformer, has a number of connections, tag each of the leads to it.
- (2) Be careful not to damage other leads by pulling or pushing them out of the way.
- (3) Do not allow drops of solder to fall into the set, since they may cause short circuits.
- (4) A carelessly soldered connection may create a new fault. It is very important to make well-soldered joints, since a poorly soldered joint is one of the most difficult faults to find.

53. Servicing Amplifier-Power Supply AM-598/U and Radio Set AN/PRC-8, -9, or -10 Simultaneously

The amplifier power supply and radio set may be serviced simultaneously with the use of auxiliary cable W3. The terminating connector (P3) of W3 is mounted in a receptacle on top of the power supply chassis when not in use. Remove both the radio set and the power supply from their cases, and connect P3 of the power supply to the power plug on the radio set. Connect P2 to the radio set AUDIO receptacle. The two units, ready for servicing, are shown in figure 29.

Caution: Do not apply power to the amplifier power supply in any manner unless its output is connected to the radio set or to a dummy load (par. 55). If the regulated power supplies are unloaded, the voltage outputs will be abnormally high, resulting in damage to the equipment.

54. Checking Power Supply Circuits for Shorts

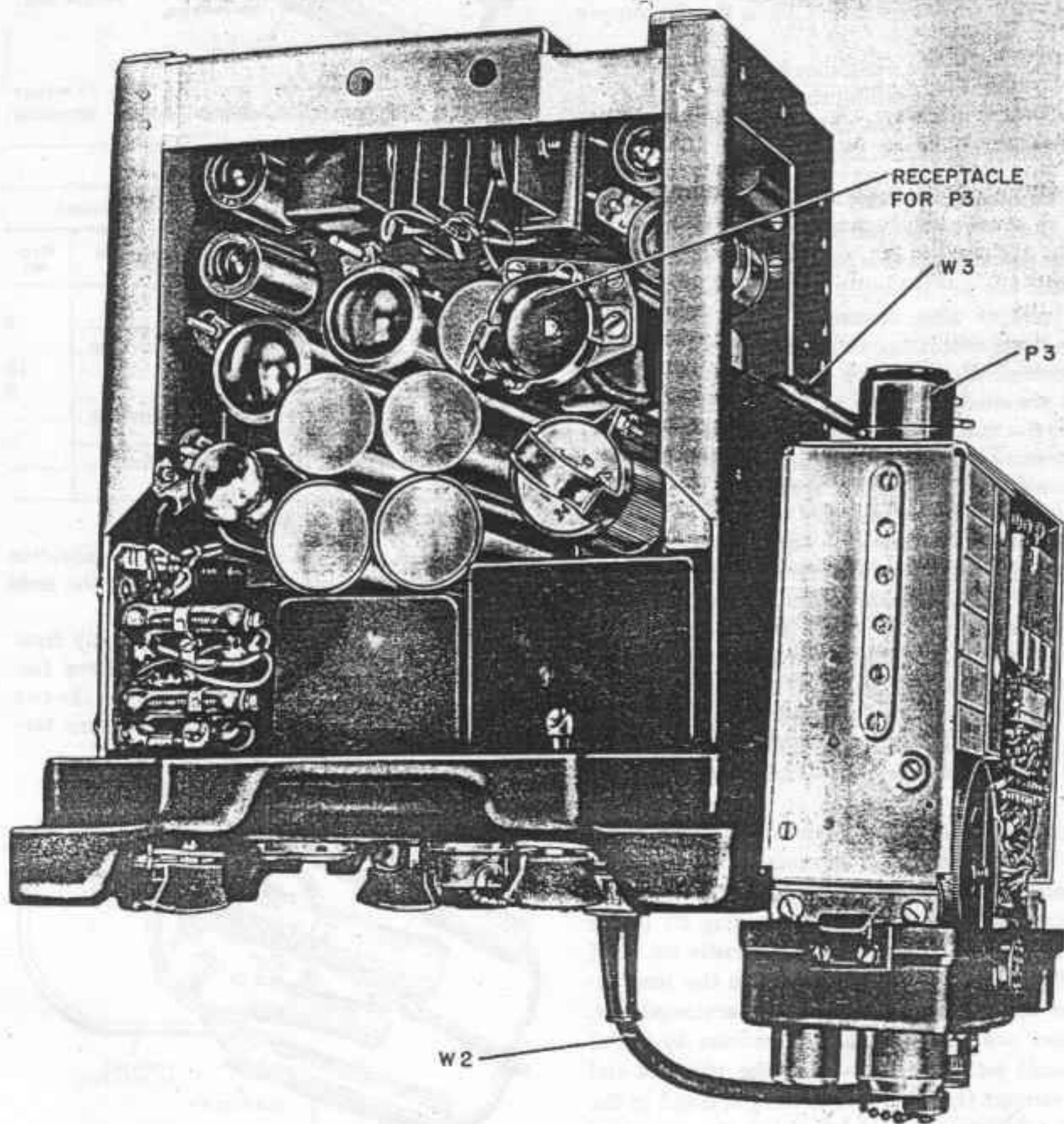
Trouble within the amplifier power supply often may be detected by checking the resistance of the B1, B2, A1, A2, and C supply circuits before applying power to the equipment. Make the following checks before attempting to put the power supply in operation. Disconnect plug P2 from the radio set AUDIO receptacle, and remove the radio set from the amplifier power supply adapter assembly. Disconnect plug P1 from the amplifier power supply 24V. BATT. receptacle. Use multimeter TS-352/U or an equivalent (sensitivity 20,000 ohms per volt dc, 1,000 ohms per volt ac) for the following tests:

a. With no external connections to the amplifier power supply, check the resistance from pins A and B to ground (pins C and D) of receptacle J3. The resistance should be infinity (open circuit). If an abnormal reading is obtained check for shorted capacitor C8, or for a short at fuse F1 or relay K1.

b. With no external connections to the amplifier

power supply, check resistances at pins on receptacle J2 on the adapter assembly.

- (1) Check the resistance between pins A and C (ground). The reading should be 6 ohms. It may be necessary to reverse the ohmmeter leads to obtain this reading. If the resistance is much less than 6 ohms, check for shorted capacitor C11 in the A1 supply circuit.



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Figure 29. Amplifier-power supply AM-598/U and radio set AN/PRC-8, -9, -10, in servicing position.

- (2) Check the resistance between pins B and C. The reading should be 3.5 ohms.
- (3) Check the resistance between pins D and C. The reading should be about 62K ohms. If the reading is much less, check for shorted capacitor C9B or C15 in the B2 supply circuit.
- (4) Check the resistance between pins E and C. The reading should be about 132K ohms. If it is much less, check for shorted capacitor C10 in the B1 supply circuit.
- (5) Check the resistance between pins H and C. The reading should be 5.6 ohms. If it is much less, check for a short at pin H on J1, J2, J4, and P3.

55. Operational Tests and Procedures

a. General. The purpose of the operational checks described in this paragraph is to determine whether the power supply delivers the proper output voltages when connected to the radio set or when loads simulating actual operating conditions are connected across the output terminals. The tests are made for two of the conditions under which the unit may be operated, namely, for radio set receive-squelch-calibrate operation and for radio set transmit-squelch operation. Only these two tests should be necessary to check the power supply outputs; incorrect voltage readings for a radio set operating under other conditions (par. 5) point to trouble in the radio set itself. Based upon the results of these measurements, the trouble in the amplifier power supply may be sectionalized directly to one of the circuits. Refer to the troubleshooting chart (par. 56) to trace the fault to a specific part within the particular circuit. Use Multimeter TS-352/U, or an equivalent.

b. Dummy Loads. If a radio set is not available, load resistors must be mounted on a dummy connector that will mate with plug P3 of cable W3. Use a connector similar to battery plug P1 (stock No. 2Z7250-79) at the rear of the radio set (TM 11-612). The following chart lists the load resistors required to perform each operational test. Connect one end of each load resistor to pin C (ground) on the dummy connector (figs. 30 and 31); connect the other end to the pin listed in the chart. Resistors should be within 10 percent of their rated value.

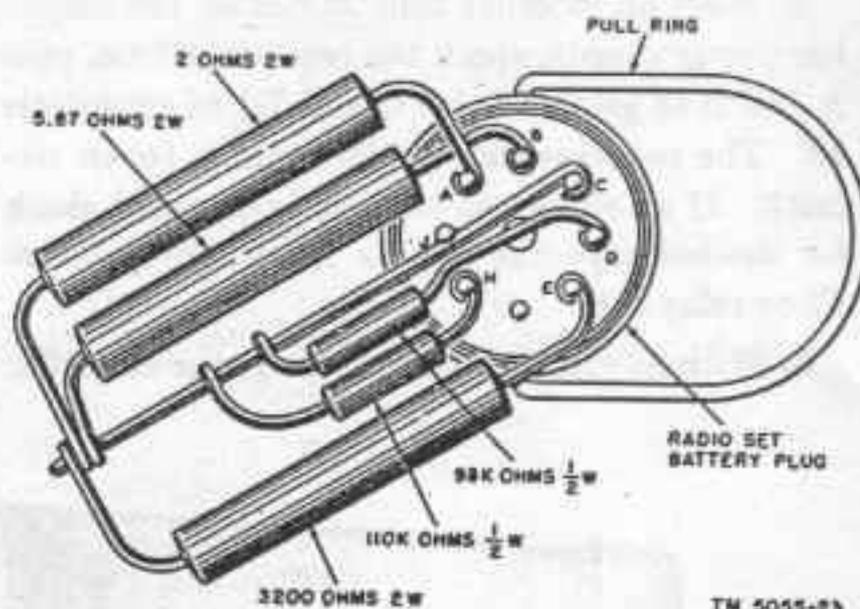


Figure 30. Receive-squelch-calibrate dummy connector.

Dummy connections (to pin C)	Operational test			
	Receive-squelch-calibrate		Transmit-squelch	
	Load resistance (ohms)	Wattage	Load resistance (ohms)	Wattage
A	2	2	2.9	2
B	5.87	2	No connection	
D	93K	$\frac{1}{2}$	2,800	10
E	3,200	2	5,210	2
F	No connection		No connection	
H	110K	$\frac{1}{2}$	14.8	5
J	Short circuit		Short circuit	

c. Operational Test Procedure.

- (1) If a radio set is not available, fabricate a dummy connector for each of the tests described above.
- (2) Remove the panel-chassis assembly from the case by loosening the six Dzus fasteners. Loosen and swing down the two hinged clamps, and pull the chassis forward out of the case.

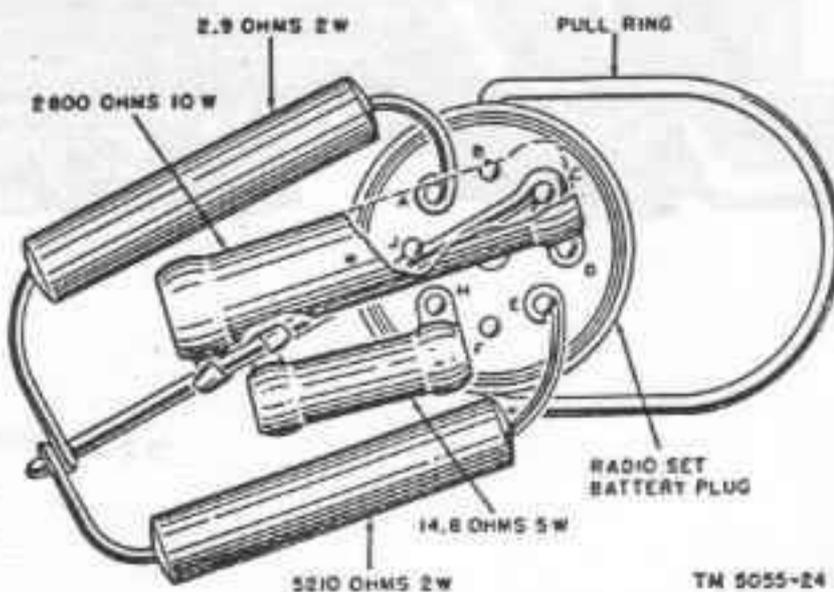


Figure 31. Transmit-squelch dummy connector.

- (3) Open the spring clamp that retains connector P3 in the receptacle on top of the chassis. Remove P3 from its receptacle.
- (4) Connect the radio set or dummy connector fabricated for the receive-squelch-calibrate condition to plug P3 of cable W3. Plug P2 of cable W2 may be left disconnected. With the power cable connected to the 24V. BATT. receptacle, and the radio set or dummy connector in place, measure voltages from the pins of J1 to ground for receive-squelch-calibrate operation. The location of the pins of J1 is noted in figure 32. The correct voltage readings are listed below for a battery voltage of 28 volts. Slightly different readings will be obtained if the battery voltage is not exactly 28 volts. If abnormal readings are obtained, refer to the troubleshooting chart (par. 56).

Pin on J1 (to ground)	Voltage readings (for 28-volt battery) (volts)
A.....	1.35
B.....	-1.35
D.....	130
E.....	63
H.....	-5.7

- (5) If the readings check correctly, remove the dummy connector from P3 (if a dummy is being used) and insert the dummy connector fabricated for the transmit-squelch condition. If a radio set is being used, leave P3 connected and proceed as follows: Energize the receive-transmit relay in the amplifier power supply by connecting a handset to one of the AUDIO receptacles and by pressing the push-to-talk button. Measure the voltages at J1 for transmit-squelch operation. The voltage readings should be the same as those listed in (4) above. If abnormal readings are obtained, refer to the troubleshooting chart (par. 56).
- (6) To check the contacts of relay K3 that control the receive-transmit relay in the

radio set, follow the same procedure as in (5) above. While pressing the push-to-talk button, measure the resistance from pin F of P2 to ground. The resistance should be zero ohms (continuity). When the push-to-talk button is released, the resistance should be infinity (open circuit).

56. Troubleshooting Chart

a. The troubleshooting chart below is supplied as an aid in locating trouble in the amplifier power supply. This chart lists the symptoms that the repairman observes, either visually or audibly, while making a few simple tests. The chart also indicates how to localize trouble quickly to the particular power supply circuits or to the audio amplifier stage. Once the trouble has been localized to a stage or circuit, a tube check and voltage and resistance measurements of this stage or circuit ordinarily should be sufficient to isolate the defective part. Normal voltage and resistance measurements are given in figure 32.

b. To use the following chart, connect the radio set and the amplifier power supply for servicing as shown in figure 29. Connect the power cable to the 24V. BATT. receptacle on the amplifier power supply panel. Connect a handset or a chest set to one AUDIO receptacle and a loudspeaker to the other AUDIO receptacle. Since the condition of the radio set has a direct bearing on the performance of the amplifier power supply, it is best to use a radio set known to be good. If one is not available, information from TM 11-4065 will be needed to supplement this chart. Dummy loads may be used for checking power supply circuits and receive-transmit relay K3 in the absence of a good radio set (par. 55), but these will not indicate trouble in the audio amplifier. If trouble in the audio amplifier stage is suspected under dummy load conditions, use Audio Oscillator TS-382A/U (or an equivalent) connected between pins A and B (ground) of connector P2, and check for audible output at the loudspeaker or the headset, connected to J5 or J6. Before making the checks listed in the correction column of the troubleshooting chart, disconnect all cables to the amplifier power supply.

Symptom	Probable trouble	Correction
1. No B1, B2, A1, A2, or C voltage; tube filaments do not light.	Blown fuse F1.....	Replace fuse F1.
	Defective wiring or cables.....	Check wiring for continuity from pin J on J2 and P3 to pin 7 on relay K1; check pin C on J2 and P3 for continuity to ground.
	Defective relay K1.....	Check relay K1 for open coil, defective points; replace if necessary. Check radio set (TM 11-4065).
2. Fuse F1 blows when radio set POWER switch is turned to ON or CAL & DIAL LITE.	Short circuit in B1 or B2 supply.....	Check capacitors C9A, C9B, C10, and C15 for shorts.
	Shorted C8.....	Check capacitor C8 for short.
	Vibrator E1 defective.....	Check capacitor C4. Replace vibrator.
	Short circuit at input.....	Check capacitors C1, C2, C3, C16, C17, and C18 for shorts.
	Connection to C12 open..... Insufficient time relay.....	Repair wiring. Voltage should be present across R12 for one-half second. If not, K2 contacts are warped; replace K2.
3. No A1 voltage, and voltage across R2 (pins 2 and 7) higher than 8.7 volts.	R12 open.....	Check resistor R12. Check radio set (TM 11-4065).
	Short circuit in A1 supply.....	Check capacitor C11 for short. Check connectors J1, J2, J4, and P3 for short to ground at pin A. Check radio set (TM 11-4065).
4. No C or A2 voltage; voltage across R2 (pins 2 and 7) and A1 voltage higher than normal. R2 glows brighter than normal.	Short circuit in C supply.....	Check connectors J1, J2, J4, and P3 for short to ground at pin H. Check transformer T1 for short to ground at terminal 8. Check for grounded capacitors C6 and C7. Check radio set (TM 11-4065).
	Short circuit in A2 supply.....	Check connectors J1, J2, J4, and P3 for short to ground at pin B. Check radio set (TM 11-4065).
5. No A2 voltage; low C voltage; voltage across R2 higher than normal.	Short circuit in A2 supply.....	Check capacitor C7 for short. Replace R2.
	R2 burned out.....	Replace CR2. Check transformer T1 for open at terminal 8.
6. No A1, A2, or C voltage.....	Defective CR2.....	Replace CR2.
	Defective T1.....	Check transformer T1 for open at terminal 8.
7. No B1, B2, A1, A2, or C voltage; tube filaments light up.	V4 loose in socket or removed from socket.....	Seat V4 firmly in socket.
	Defective T1.....	Check transformer T1 for open primary.
8. B1 and B2 voltages too high.....	V3 or V5 burned out.....	Replace V3 or V5 immediately.
	V4 defective.....	Replace V4 immediately.
9. B1 and B2 voltages too low.....	V1 defective.....	Replace V1.
	Defective T1.....	Check transformer T1 high voltage secondary for shorted turns.
	V3 shorted.....	Replace V3.
	Open C9A, C9B, or C10.....	Shunt C9A, C9B, and C10 with capacitors known to be good. Replace where necessary.
	Low battery voltage.....	Check battery.
10. B1, B2, A1, A2 and C voltages too low.	Defective vibrator.....	Check capacitor C4; replace vibrator.
	C12 shorted.....	Check capacitor C12 for short.
	Defective relay K2.....	Check for voltage across R12; if any, repair wiring to the coil of K2, or replace K2.
	Defective switch S1 or S2.....	Check switches S1 and S2; replace if necessary.
11. A1 voltage too high at extremely low temperatures.	Defective switch S1 or S2.....	Check switches S1 and S2; replace if necessary.

Symptom	Probable trouble	Correction
12. A1, A2, and C voltages too low under high ambient temperature conditions.	Aged selenium rectifier CR2...	Replace rectifier CR2.
13. Power supply cannot be turned off.....	Shorted radio set POWER switch. Coil of relay K1 grounded....	Check radio set (TM 11-4065). Check connectors J1, J2, J4, and P3 for short to ground at pin J. Check relay K; replace if necessary.
	Capacitor C12 not discharging through normally closed contacts of K1. Normally open contacts of relay K2 not opening.	Check R28 for open circuit. Replace relay K1 if contacts are not shorting out C12. Check resistor R12, which should be 4 ohms if contacts of relay K2 open. Replace relay K2 if contacts do not open.
14. No rushing noise heard in headset or loudspeaker when radio set POWER switch is turned to ON or CAL & DIAL LITE.	V5 defective..... Defective relay K3.....	Replace V5. Check points 4 to 5 of relay K3 for continuity; replace relay if necessary.
15. Radio set receives, but does not transmit; radio set known to be good.	C13 shorted..... Defective relay K3.....	Check capacitor C13 for short. Perform operational test (par. 55c(6)); replace relay K3 if necessary.

57. Resistance Charts

a. Dc Resistances of Transformers and Coils.
The measurable dc resistances of the transformer windings and the coils in the amplifier power supply are listed below:

Transformer or coil	Terminals	Ohms
T1.....	1-3	.83
	4-6	250
	7-9	1.4
T2.....	1-3	840
	4-5	38
T3.....	1-2	75
	3-5	2,000
L2.....	1-2	210
	3-4	1.25

b. Dc Resistance of Vibrators.

(1) Oak vibrator.

Pins	Ohms
1 and 7.....	Infinity (open circuit).
2 and 7.....	Infinity.
3 and 7.....	Infinity.
4 and 7.....	140 ± 15.
5 and 7.....	Infinity.
6 and 7.....	Infinity.

(2) Mallory vibrator.

Pins	Ohms
1 and 7.....	Infinity (open circuit).
2 and 7.....	Infinity.
3 and 7.....	Infinity.
4 and 7.....	120 ± 10.
5 and 7.....	270 ± 27.
6 and 7.....	270 ± 27.

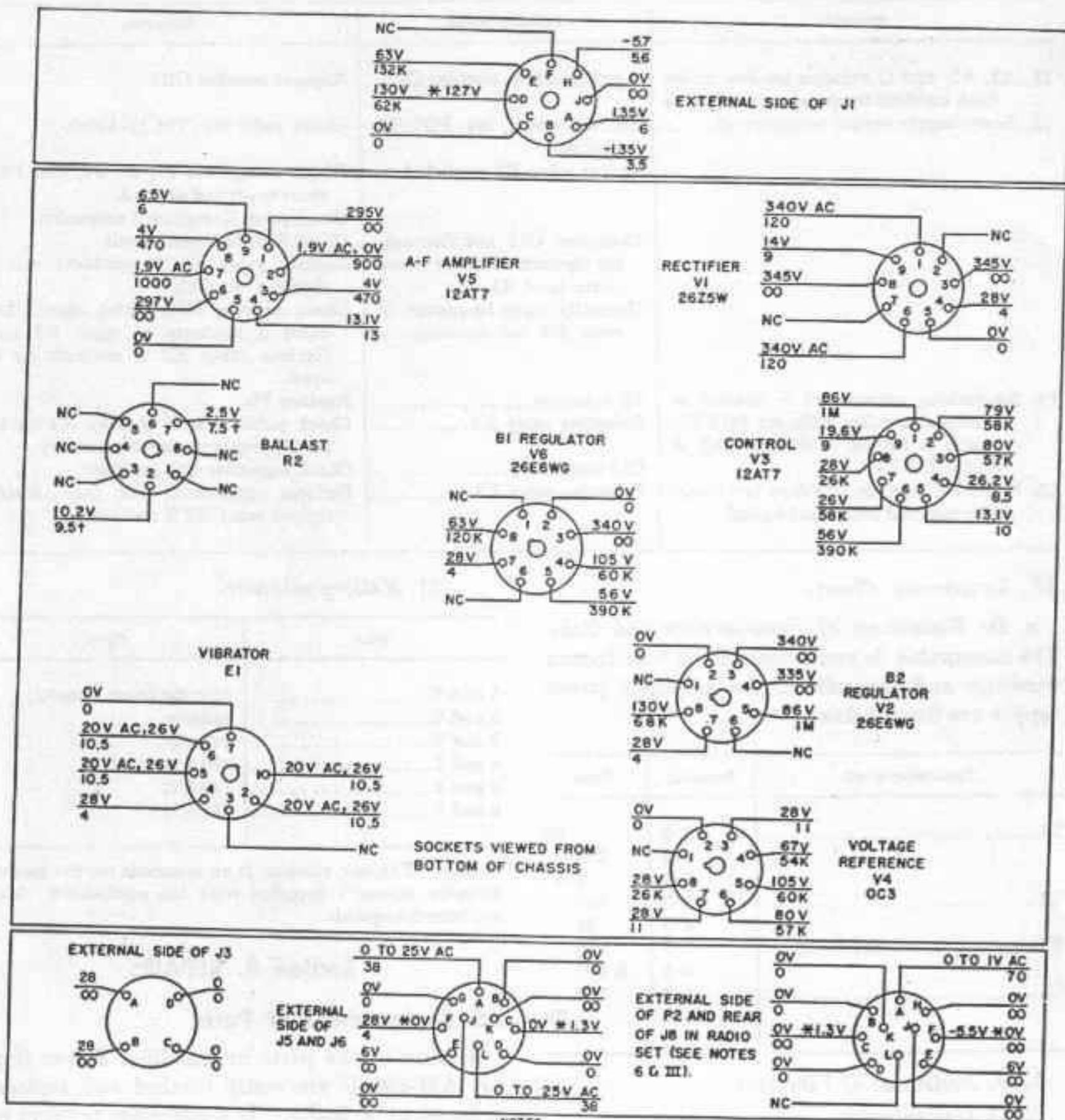
Note. The oak vibrator is an alternate for the mallory vibrator normally supplied with the equipment. They are interchangeable.

Section II. REPAIRS

58. Replacement of Parts

a. Most of the parts in Amplifier Power Supply AM-598/U are easily reached and replaced if found to be faulty. If a connector requires replacement, carefully mark the wires connected to it with tags or other devices to avoid misconnection when the new connector is installed. Follow this practice whenever replacement requires the disconnection of numerous wires.

b. If the vibrator requires replacement, the pull ring on the defective vibrator must be removed and attached to the new vibrator as described in paragraph 35.



NOTES

- 1 ALL VOLTAGES MEASURED WITH RADIO SET OUT OF CASE, CONNECTED THROUGH CABLES W3 AND W2, WITH POWER SWITCH ON, IN RECEIVE-SQUELCH-CALIBRATE OPERATION AND WITH HANDSET H-33/PT CONNECTED TO J5 OR J6.
- 2 INPUT VOLTAGE IS 28VOLTS DC.
- 3 ALL VOLTAGES ARE DC POSITIVE WITH RESPECT TO GROUND, EXCEPT AS OTHERWISE NOTED
- 4 VALUES BELOW LINE ARE RESISTANCE MEASUREMENTS MADE WITH POWER SUPPLY DISCONNECTED FROM POWER SOURCE, RADIO SET, AND HANDSET.

- 5 USE MULTIMETER WITH SENSITIVITY OF 20,000 OHMS-PER-VOLT DC, 1000 OHMS-PER-VOLT AC.
- 6 P2 VOLTAGE MEASUREMENTS MADE AT REAR OF RADIO SET AUDIO CONNECTOR J8
- 7 J4, J2, AND P3 READINGS ARE THE SAME AS FOR J1.
- 8 NC INDICATES NO CONNECTIONS.
- 9 OO INDICATES INFINITY (OPEN CIRCUIT).
- 10 † INDICATES FORWARD RESISTANCE. REVERSE OHMMETER LEADS IF NECESSARY.
- 11 * INDICATES VOLTAGE READINGS FOR

TRANSMIT OPERATION (PRESS PUSH-TO-TALK BUTTON ON HANDSET).

- 12 IF A RADIO SET IS NOT AVAILABLE:
 - I SUBSTITUTE RECEIVE-SQUELCH-CALIBRATE DUMMY AT END OF CABLE W3 AND PROCEED AS IN 2 THROUGH 10 ABOVE.
 - II SUBSTITUTE TRANSMIT-SQUELCH DUMMY AT END OF CABLE W3, PRESS PUSH-TO-TALK BUTTON ON HANDSET AND PROCEED AS IN 11 ABOVE.
 - III WHEN USING DUMMY LOADS THERE ARE NO VOLTAGES PRESENT AT PINS OF P2.

- 13 IN EQUIPMENTS ON ORDER NO.41000-P-52 AND WITH SERIAL NUMBERS BELOW 2266, THE VOLTAGE AND RESISTANCE READING AT PIN E OF J5, J6, P2 AND J8 IS ZERO; THERE IS NO CONNECTION AT PIN O OF J5, J6, P2 AND J8

TM 5055-16

Figure 32. Tube socket and connector voltage and resistance diagram.

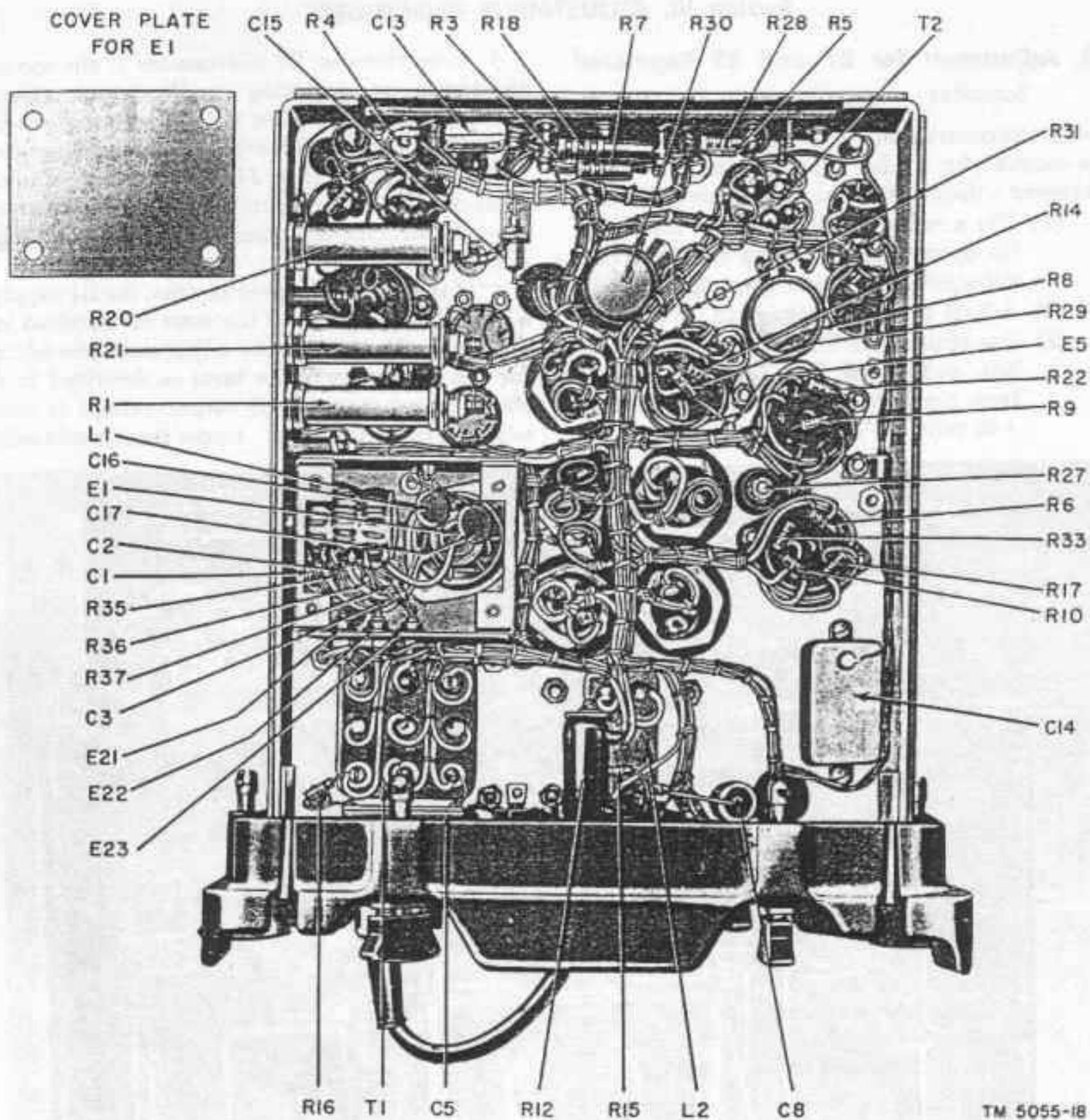


Figure 33. Amplifier-power supply AM-598/U chassis, bottom view.

c. Do not attempt to repair any of the relays in Amplifier-Power Supply AM-598/U; they are hermetically sealed. If a relay is found to be defective, it must be replaced.

59. Refinishing

Information on touching up bared surfaces is given in paragraph 33. Instructions for refinishing badly marred panels on exterior cabinets are given in TM 9-2851.

Section III. ADJUSTMENT PROCEDURES

60. Adjustment for B1 and B2 Regulated Supplies

a. Potentiometer R30 is accessible at the top of the chassis (fig. 6) for adjusting the B1 output whenever a major overhaul makes this necessary.

- (1) Use a radio set or dummy connector in the operational test setup for the transmit-squelch condition (par. 55).
- (2) Adjust the input voltage to 24 volts.
- (3) Use Multimeter TS-352/U or an equivalent, and adjust R30 until the voltage from pin E to pin C (ground) of J1 is +63 volts.

b. Potentiometer R8 is accessible at the top of the chassis for adjusting the B2 output voltage when necessary. Follow the procedure given in *a* above, but adjust R8 until the voltage from pin D to pin C (ground) on J1 is +125 volts. Under these conditions the B2 output voltage for receive-squelch-calibrate operation will be approximately +128 volts.

c. If the input voltage is 28 volts, the B1 supply adjustment procedure is the same as described in *a*(2) and (3) above. The adjustment procedure for the B2 supply is the same as described in *b* above except that the B2 output voltage is now adjusted for +127 volts. Under these conditions,

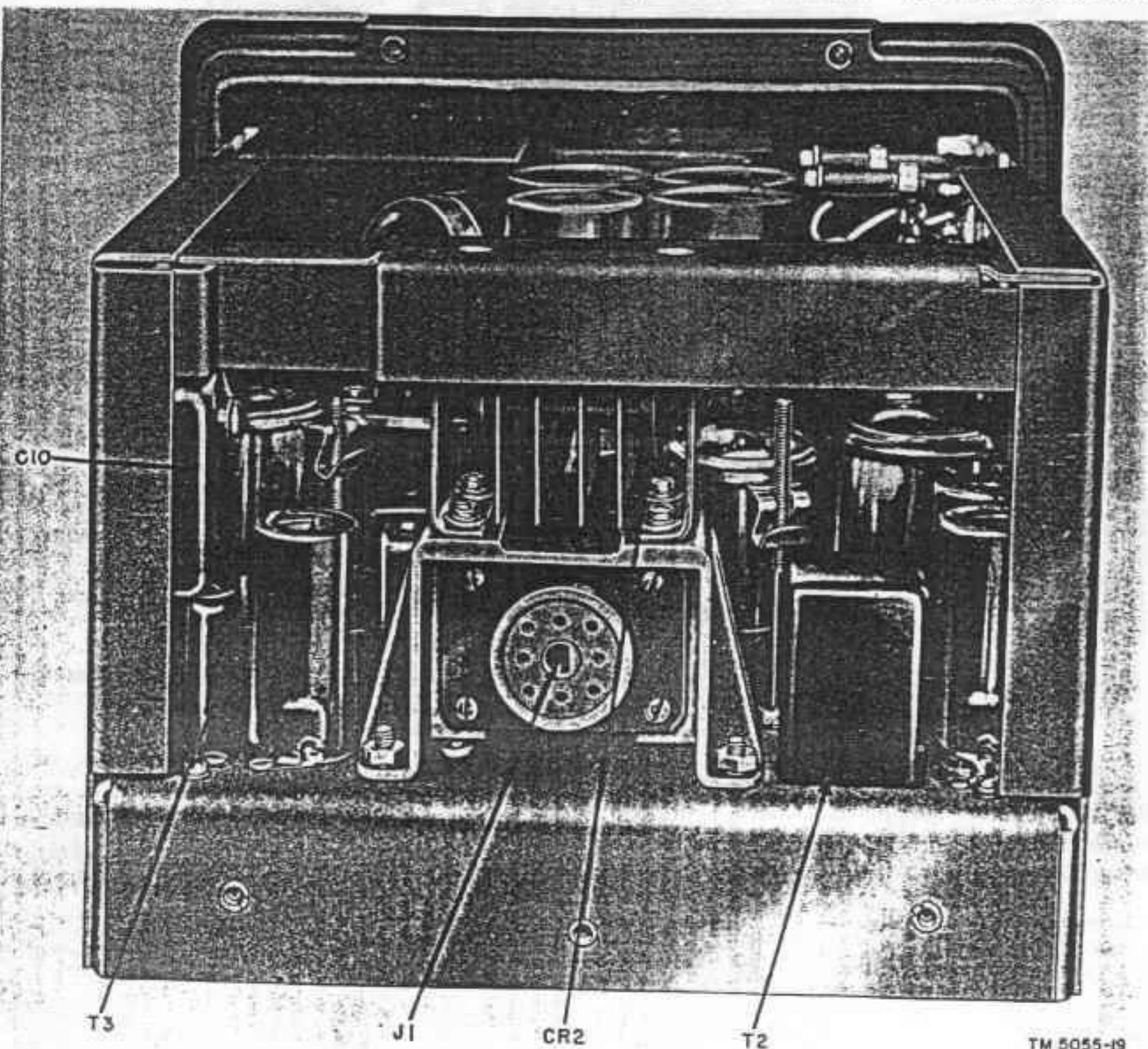
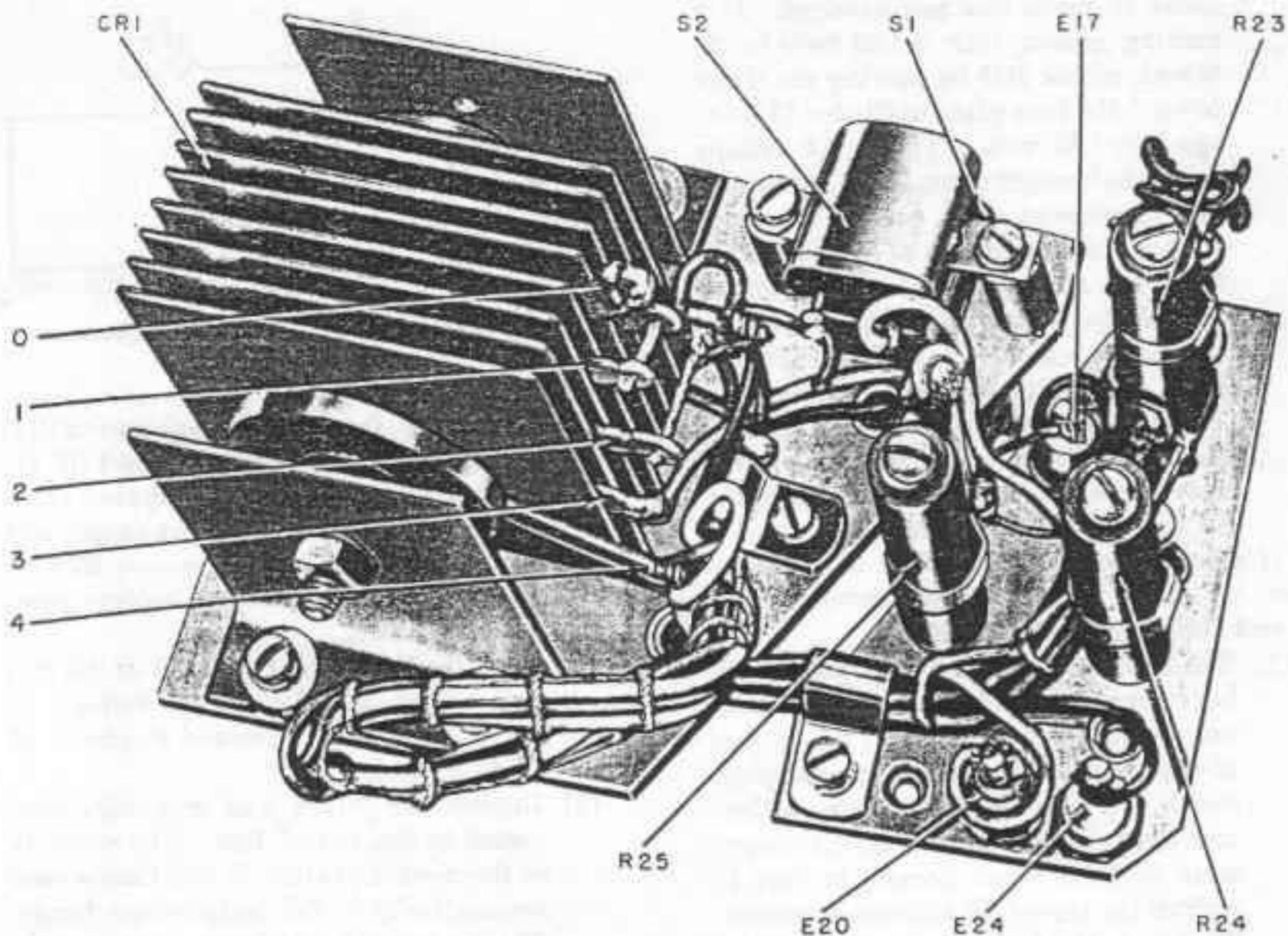


Figure 34. Amplifier-power supply AM-598/U chassis, rear view.



TM 5055-20

Figure 35. Selenium cell regulator CR1 and resistor subassemblies.

the B2 output voltage for receive-squelch-calibrate operation will be approximately +130 volts.

61. Adjustment for A1 Regulated Supply and CR1 Aging Adjustment

a. Adjust the A1 supply voltage as soon as possible after replacement of defective ballast tube R2, power transformer T1, rectifier CR2, or regulator CR1. Adjustment also is required if the output voltage rises because of the aging of selenium cell regulator CR1, or if the output voltage falls because of the aging of rectifier CR2. If regulator CR1 is totally defective and must be replaced, refer to *b* below for subsequent adjustments. If adjustments are required for any other reason, proceed as follows:

- (1) Remove the chassis from its case and allow it to remain deenergized for several hours at room temperature (25° to 30° C.). In this temperature range, the con-

tacts of thermostatic switch S1 should be closed and the contacts of thermostatic switch S2 should be open.

- (2) Connect a radio set or either of the two dummy loads to P3 and apply 24 volts dc to the equipment from a storage battery. Allow 2 minutes for warmup.
- (3) With Multimeter TS-352/U, measure the output voltage of rectifier CR2 across the terminals of C6. A reading of 14 volts dc should be obtained. If the voltage is much lower, vibrator E1, power transformer T1, capacitor C6, or rectifier CR2 is defective and these components should be replaced as necessary.
- (4) Measure the A1 voltage from pin A of receptacle J1 to ground (pin C). For temperatures between 25° and 30° C., the A1 voltage should be +1.30 volts dc. Use the 2.5-volt dc range of the multi-

meter to make this measurement. If a reading greater than +1.39 volts is obtained, adjust R23 by moving the slider toward the base plate until the A1 voltage is +1.39 volts. If the A1 voltage cannot be brought down to +1.39 volts by this adjustment alone, connect a jumper from E17 to the bottom of R25 (terminal 3, fig. 40) and again adjust R23. If the A1 voltage is still too high, connect an additional jumper from E20 to E24 and again adjust R23 until the A1 voltage is +1.39 volts. If the A1 voltage reading obtained initially is too low, reverse the above procedure and adjust R23 until the A1 voltage is +1.39 volts.

b. If selenium cell regulator CR1 has been replaced, all three compensating resistors (R23, R24, and R25) must be readjusted.

(1) The following parts and equipment will be required to perform these adjustments: one 8-ohm 20-watt resistor, one 6-ohm 25-watt adjustable resistor, an octal plug, and a 0-1 ampere dc ammeter. Connect these components in a series arrangement to form a test circuit; be sure to include the arm of the adjustable resistor. Terminate the test circuit at pins 2 and 7 of the octal plug (refer to fig. 36).

Note. The procedure following should be performed within 15 minutes after energizing the equipment so that the ambient temperature does not rise above 30° C. during adjustments.

(2) Remove ballast tube R2 from its socket and replace it with the test circuit fabricated as described in (1) above. Energize the equipment as in a above and allow 2 minutes for warmup. Set the adjustable resistor for a reading of 900 ma on the dc ammeter.

(3) Remove the yellow lead connected to the

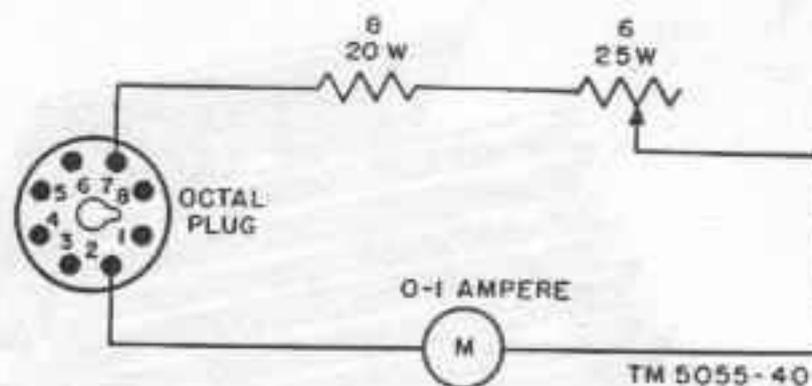


Figure 36. Selenium cell regulator CR1, adjustment setup.

top of R24 (from thermostatic switch S1). For temperatures between 25° and 30° C., the contacts of S2 will have opened automatically in this temperature range, and there will be no voltage across R24 or R25. There will be a small voltage present across R23.

- (4) Keep the line current constant at 900 ma, and adjust R23 for an A1 voltage of +1.47 volts dc as measured at pin A of J1 to ground.
- (5) Replace the yellow lead originally connected to the top of R24. The contacts of thermostatic switch S1 will have closed automatically in this temperature range. There now will be a voltage present across R24. Keep the line current constant at 900 ma, and adjust R24 for an A1 voltage of +1.41 volts.
- (6) Connect a jumper across S2 so that R24 and R25 are connected effectively in parallel. Keep the line current constant at 900 ma, and adjust R25 for an A1 voltage of +1.33 volts.
- (7) Remove the jumper across thermostatic switch S2 and replace the test circuit with ballast tube R2. Readjust R23 for an A1 voltage of +1.39 volts. This completes the adjustment for the A1 supply.

Section IV. FINAL TESTING

62. Purpose

Information in this section should be used to determine the quality of a repaired amplifier power supply. The minimum test requirements

in paragraphs 64 through 67 may be performed by maintenance personnel with adequate test equipment and the necessary skills. Repaired equipment meeting these requirements will furnish uniformly satisfactory operation.

63. Testing Equipment Required for Final Testing

The instruments required for testing the repaired equipment are listed in paragraph 51. Additional parts and equipment required are listed below.

- a. *Load Impedance.* 600-ohm, 2-watt resistor.
- b. *Discharge Resistor.* 5,000-ohm, 1/2-watt resistor.
- c. *Dc Blocking Capacitor.* 2-microfarad (μ f), 600 direct current working voltage (vdcw) capacitor.
- d. *Distortion Meter.* Sound Analyzer TS-615/U.

64. Power Supply Output Voltage Measurements

a. *Output Voltage.* Perform the operational tests described in paragraph 55. Use a radio set or simulate receive-squelch-calibrate conditions and transmit-squelch conditions with the corresponding dummy connectors. If the required readings are obtained (par. 55), perform the test described below.

b. *Voltage Regulation.* Connect the radio set or the receive-squelch-calibrate dummy connector to plug P3 of cable W3. Plug P2 of cable W2 may be left disconnected. Vary the input voltage to the amplifier power supply from a minimum of 22 volts to a maximum of 30 volts. The output voltages measured from the pins of J1 to ground (pin C of J1) should be within the limits of the values listed below. If adjustment of the B1 or B2 supplies is required, see paragraph 60. If adjustment of the A1 supply is required, see paragraph 61.

Supply	Pin on J1	Output voltage	
		22 volts input (volts)	30 volts input (volts)
B2.....	D	117	137
B1.....	E	55	65
A1.....	A	1.2	1.5
A2.....	B	-1.2	-1.5
C.....	H	-5.0	-6.0

65. Ac Ripple Voltage Measurements (fig. 37)

Connect the radio set or the receive-squelch-calibrate dummy in the operational test setup given in paragraph 55. Substitute an ac vacuum tube voltmeter (Multimeter ME-6A/U or an equivalent) for the dc voltmeter. Shunt the meter with a 5,000-ohm 1/2-watt resistor and insert a 2- μ f, 600 vdcw capacitor in series with the ungrounded meter lead. Make connection to the pins of J1. Maximum permissible ripple voltages are listed in the chart below. All voltages are measured to ground (pin C of J1).

Supply	Pin on J1	Ripple voltage (rms volts)
B2.....	D	.10
B1.....	E	.02
A1.....	A	.005
A2.....	B	.005
C.....	H	.005

66. Audio Amplifier Tests

a. *Audio Power Output.* The maximum output of the audio amplifier contained in the power supply should be not less than 250 milliwatts (mw) with a 2-mw input signal at 1,000 cps. To check this, use the following procedure:

- (1) Connect the radio set or the receive-squelch-calibrate dummy to plug P3 of cable W3.
- (2) Connect a 600-ohm 2-watt load resistor across pins L and B of AUDIO receptacle J5 or J6 and connect an ac voltmeter (Multimeter ME-6A/U or equivalent) across the resistor. Use the 0- to 100-volt scale on the meter.
- (3) Inject a 1,000-cps signal from the audio oscillator into terminals A and B of connector P2. Adjust the input signal level until the output meter reads 250 mw (12.2 volts).
- (4) Check that the input signal does not exceed 2 mw (1.1 volts).

b. *Audio Response.* Use the test connections given in a above, and check the overall response

of the audio amplifier by measuring its output throughout the range of audio frequencies listed below. The overall response should be within the following limits:

Audio frequency (cps)	Response (2 mw input)	Volts ac
1,000 (reference).	0 db equals 250 mw.....	12.2.
150.....	+ .5 db and -1.5 db.....	12.9 and 10.3.
400.....	+1.0 db and +.5 db.....	13.7 and 11.5.
2,500.....	0 db and -2 db.....	12.2 and 9.7.
5,000.....	0 db and -3 db.....	12.2 and 8.6.

c. Audio Distortion. Adjust the input signal to the audio amplifier to obtain 250 mw output at frequencies of 150, 400, 1,000, 2,500, and 5,000 cps. With a distortion meter, check to see that the harmonic distortion does not exceed 7 percent at any of these frequencies.

67. Signal-Plus-Noise to Noise Ratio

When Radio Set AN/PRC-8, -9, or -10 is operated from the amplifier power supply, the signal-plus-noise to noise ratio of the radio set should be no less than when it is operated from Battery BA-279/U. With the radio set operated from the amplifier power supply, perform the test given in paragraph 97 of TM 11-4065. Use the same standard test conditions given in paragraph 96 of TM 11-4065, with the exception that the 600-ohm load impedance is connected from pin L to pin B of AUDIO receptacle J5 or J6 on the amplifier power supply.

ELECTRONIC MULTIMETER ME-6A/U

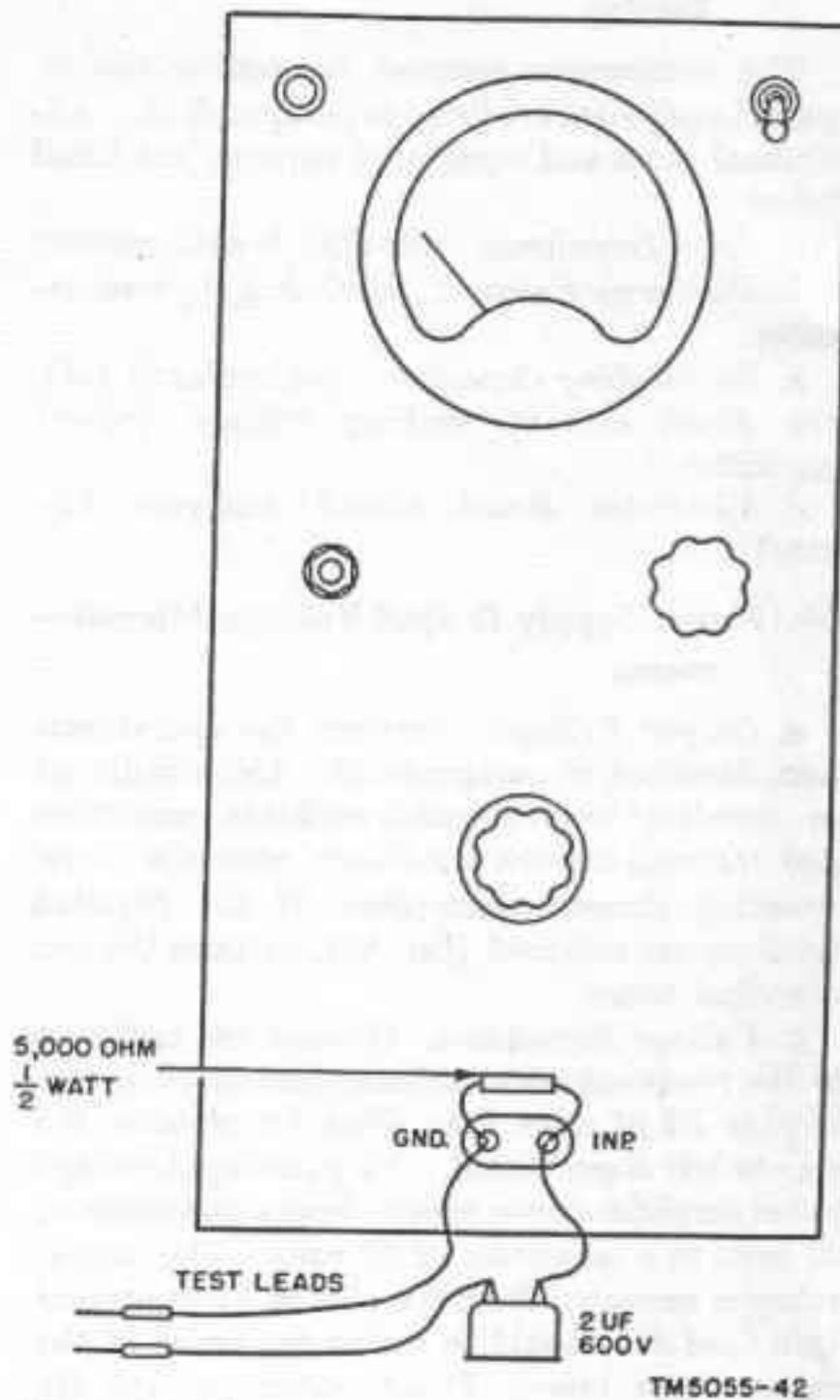


Figure 57. Meter arrangement for ac ripple voltage measurement.

CHAPTER 6

SHIPMENT AND LIMITED STORAGE AND DEMOLITION TO PREVENT ENEMY USE

Section I. SHIPMENT AND LIMITED STORAGE

68. Disassembly

The following instructions are recommended as a guide for preparing the amplifier power supply for transportation and storage.

a. Disconnection of Cables.

- (1) Disconnect interconnecting cable connector P2 from the radio set AUDIO receptacle.
- (2) Disconnect power cable W1 from the amplifier power supply and vehicle terminal box.
- (3) Disconnect any audio accessories that are connected to the amplifier power supply AUDIO receptacles.

b. Removal of Unit.

- (1) To remove the case from the mounting base, unscrew the hinged clamps located at the lower corners of the case. Swing the clamps down to clear the panel and lift the case from the mounting.

- (2) To remove the mounting base from the vehicle, unscrew the grounding spring (at the center of the mounting) from the vehicle, remove the bolts in the shock mounts, and lift the base.

69. Repacking for Shipment or Limited Storage

a. The exact procedure in repacking for shipment or limited storage depends on the material available and the conditions under which the equipment is to be shipped or stored. Refer to paragraph 12 and reverse the instructions given in that paragraph.

b. Whenever practicable, place a dehydrating agent such as silica gel inside the carton. Protect the carton with a waterproof sealing compound or tape. Pack the protected carton in a padded wooden box, providing at least 3 inches of excelsior padding or some similar material between the paper barrier and the packing case.

Section II. DEMOLITION OF MATERIEL TO PREVENT ENEMY USE

70. General

The demolition procedures in paragraph 71 will be used to prevent the enemy from using or salvaging this equipment. Demolition of the equipment will be accomplished *only* upon order of the commander.

71. Methods of Destruction

a. Smash. Smash the tubes, coils, switches, capacitors, transformers, vibrator, rectifiers, resistors, and relays; use sledges, axes, handaxes, pickaxes, crowbars, or heavy tools.

b. Cut. Cut cables and wiring; use axes, handaxes, or machetes.

c. Burn. Burn cables, resistors, capacitors, coils, wiring, and technical manuals; use gasoline, kerosene, oil, flame throwers, or incendiary grenades.

d. Bend. Bend panel, case, and chassis.

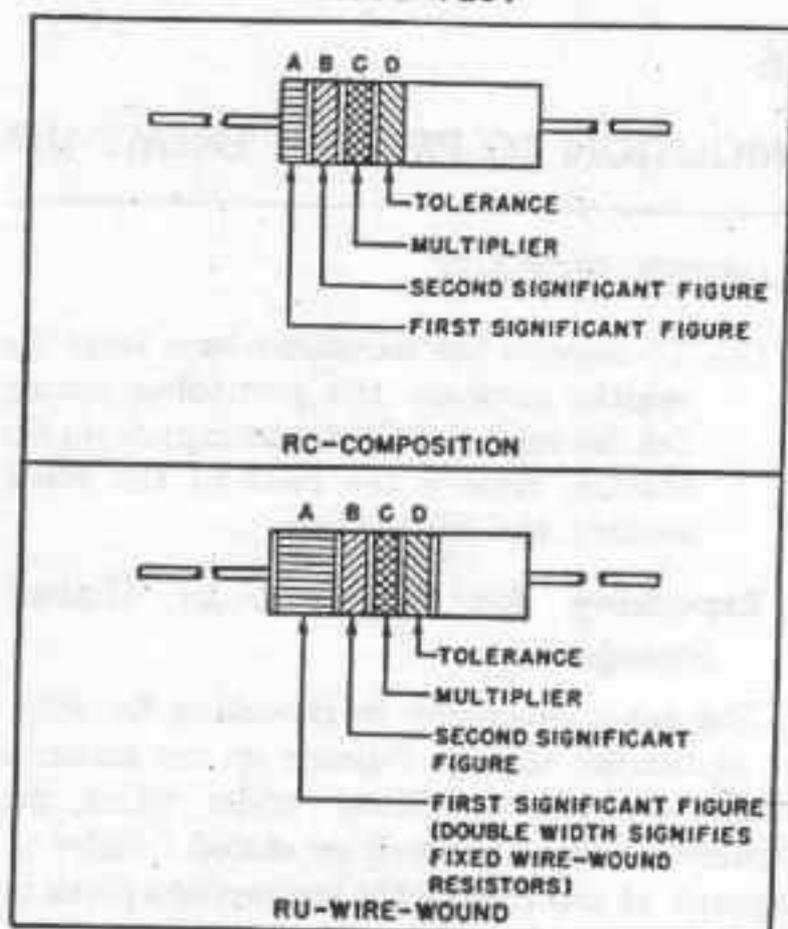
e. Explode. If explosives are necessary, use firearms, grenades, or TNT.

f. Dispose. Bury or scatter the destroyed parts in slit trenches, fox holes or other holes, or throw them into streams.

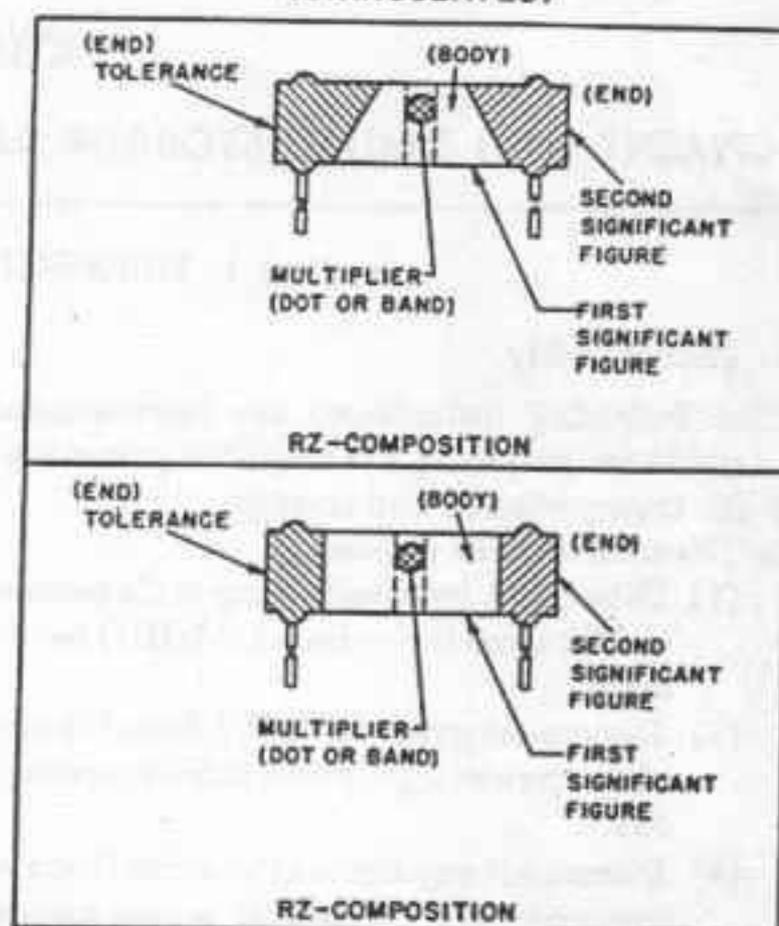
g. Destroy. Destroy everything.

RESISTOR COLOR CODE MARKING (MIL-STD RESISTORS)

AXIAL-LEAD RESISTORS (INSULATED)



RADIAL-LEAD RESISTORS (UNINSULATED)



RESISTOR COLOR CODE

BAND A OR BODY*		BAND B OR END*		BAND C OR DOT OR BAND*		BAND D OR END*	
COLOR	FIRST SIGNIFICANT FIGURE	COLOR	SECOND SIGNIFICANT FIGURE	COLOR	MULTIPLIER	COLOR	RESISTANCE TOLERANCE (PERCENT)
BLACK	0	BLACK	0	BLACK	1	BODY	± 20
BROWN	1	BROWN	1	BROWN	10	SILVER	± 10
RED	2	RED	2	RED	100	GOLD	± 5
ORANGE	3	ORANGE	3	ORANGE	1,000		
YELLOW	4	YELLOW	4	YELLOW	10,000		
GREEN	5	GREEN	5	GREEN	100,000		
BLUE	6	BLUE	6	BLUE	1,000,000		
PURPLE (VIOLET)	7	PURPLE (VIOLET)	7				
GRAY	8	GRAY	8	GOLD	0.1		
WHITE	9	WHITE	9	SILVER	0.01		

* FOR WIRE-WOUND-TYPE RESISTORS, BAND A SHALL BE DOUBLE-WIDTH. WHEN BODY COLOR IS THE SAME AS THE DOT (OR BAND) OR END COLOR, THE COLORS ARE DIFFERENTIATED BY SHADE, GLOSS, OR OTHER MEANS.

EXAMPLES (BAND MARKING):

10 OHMS ± 20 PERCENT; BROWN BAND A; BLACK BAND B; BLACK BAND C; NO BAND D.
4.7 OHMS ± 5 PERCENT; YELLOW BAND A; PURPLE BAND B; GOLD BAND C; GOLD BAND D.

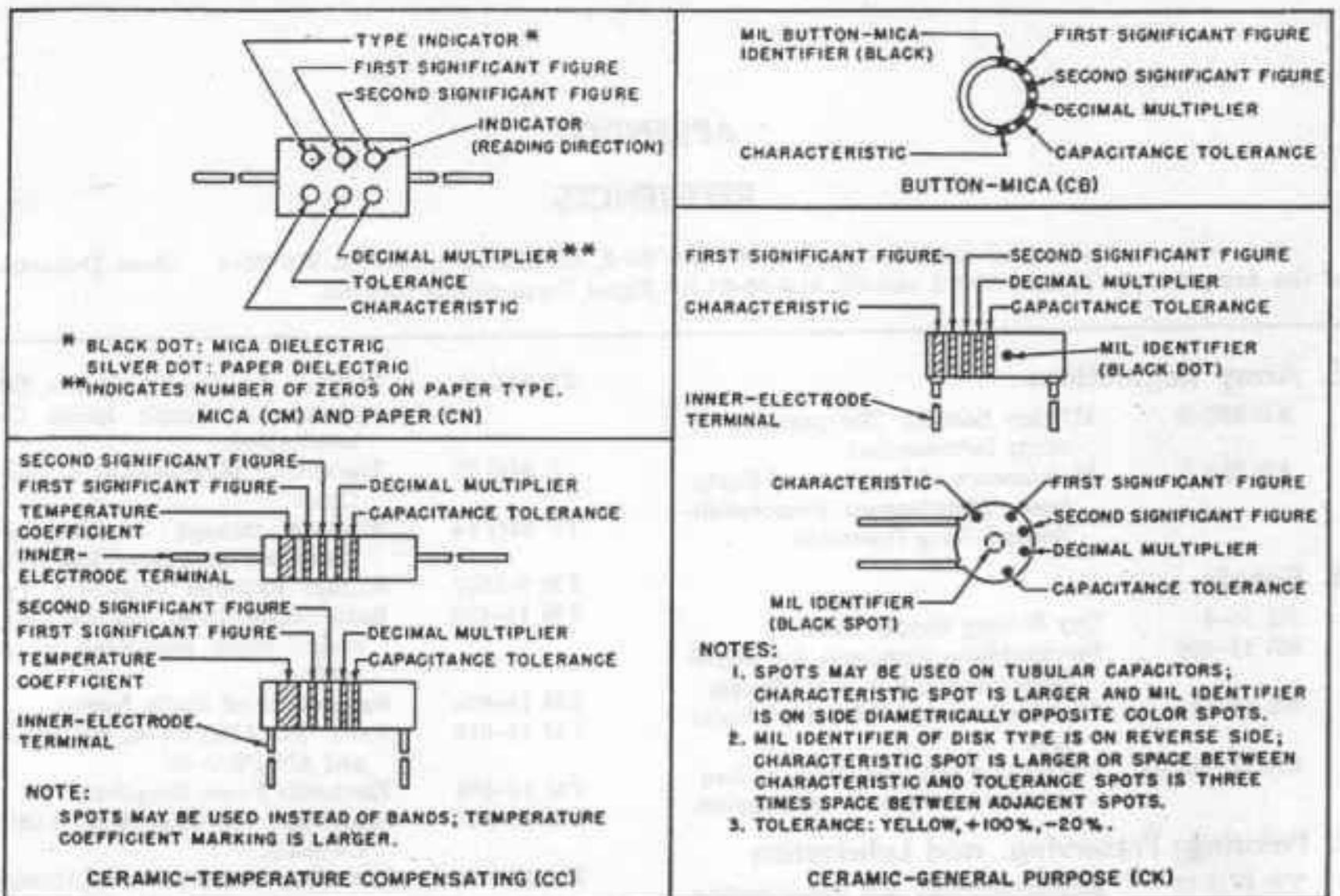
EXAMPLES (BODY MARKING):

10 OHMS ± 20 PERCENT; BROWN BODY; BLACK END; BLACK DOT OR BAND; BODY COLOR ON TOLERANCE END.
3,000 OHMS ± 10 PERCENT; ORANGE BODY; BLACK END; RED DOT OR BAND; SILVER END.

STD-R1

Figure 38. Resistor color codes.

CAPACITOR COLOR CODE MARKING (MIL-STD CAPACITORS)



CAPACITOR COLOR CODE

COLOR	SIG FIG.	MULTIPLIER		CHARACTERISTIC ¹				TOLERANCE ²				TEMPERATURE COEFFICIENT (UUF/UF/°C)	
		DECIMAL	NUMBER OF ZEROS	CM	CN	CB	CK	CM	CN	CB	CC		CC
											OVER 10UUF	10UUF OR LESS	
BLACK	0	1	NONE		A			20	20	20	20	E	ZERO
BROWN	1	10	1	B	E	B	W					I	-30
RED	2	100	2	C	H		X	2		2	2		-80
ORANGE	3	1,000	3	D	J	D			30				-150
YELLOW	4	10,000	4	E	P								-220
GREEN	5		5	F	R						5	0.5	-330
BLUE	6		6		S								-470
PURPLE (VIOLET)	7		7		T	W							-750
GRAY	8		8			X						0.25	+30
WHITE	9		9								10	1	-330 (±500) ³
GOLD		0.1						5		5			+100
SILVER		0.01						10	10	10			

1. LETTERS ARE IN TYPE DESIGNATIONS GIVEN IN MIL-C SPECIFICATIONS.
 2. IN PERCENT, EXCEPT IN UUF FOR CC-TYPE CAPACITORS OF 10 UUF OR LESS.
 3. INTENDED FOR USE IN CIRCUITS NOT REQUIRING COMPENSATION.

STD-C1

Figure 39. Capacitor color codes.

APPENDIX

REFERENCES

Note.—For availability of items listed, check SR 310-20-3, SR 310-20-4, and SR 310-20-5. Check Department of the Army Supply Manual SIG 1 and SR 310-20-21 for Signal Corps supply manuals.

1. Army Regulations		TB SIG 4	Methods for Improving the Effectiveness of Jungle Radio Communication.
AR 380-5	Military Security (Safeguarding Security Information).	TB SIG 25	Preventive Maintenance of Power Cords.
AR 750-5	Maintenance of Supplies and Equipment, Maintenance Responsibilities and Shop Operation.	TB SIG 54	Working through Jamming with Frequency-Modulated Radio Sets.
2. Supply		TM 9-2857	Storage Batteries Lead-Acid Type.
SB 11-6	Dry Battery Supply Data.	TM 11-430	Batteries for Signal Communication, except those pertaining to Aircraft.
SB 11-100	Serviceability Standards for Signal Equipment in Hands of Troops.	TM 11-483	Suppression of Radio Noises.
SB 11-131	Distribution of Vehicular Radio Sets.	TM 11-612	Radio Sets AN/PRC-8, AN/PRC-9, and AN/PRC-10.
SR 725-405-5	Preparation and Submission of Requisitions for Signal Corps Supplies.	TM 11-663	Electronic Power Supplies.
3. Painting, Preserving, and Lubrication		TM 11-661	Electrical Fundamentals (Direct Current).
TB SIG 13	Moistureproofing and Fungiproofing Signal Corps Equipment.	TM 11-681	Electrical Fundamentals (Alternating Current).
TM 9-2851	Painting Instructions for Field Use.	TM 11-2709	Installation of Radio Equipment in Truck, 2½ Ton, 6 x 6 Cargo.
4. Camouflage, Decontamination, and Demolition		TM 11-2715	Installation of Radio Equipment in Truck, ¼ Ton, 4 x 4.
FM 5-20	Camouflage, Basic Principles.	TM 11-4000	Trouble Shooting and Repair of Radio Equipment.
FM 5-25	Explosives and Demolitions.	TM 11-4065	Radio Sets AN/PRC-8, AN/PRC-9, and AN/PRC-10; Field Maintenance.
TM 3-220	Decontamination.	SIG 6 TE-41	Tool Equipment TE-41.
5. Other Publications		TB SIG 66	Winter Maintenance of Signal Equipment.
FM 24-18	Field Radio Techniques.	TB SIG 72	Tropical Maintenance of Ground Signal Equipment.
FM 72-20	Jungle Warfare.	TB SIG 75	Desert Maintenance of Ground Signal Equipment.
SR 310-20-3	Index of Training Publications.	TB SIG 178	Preventive Maintenance Guide for Radio Communication Equipment.
SR 310-20-4	Index of Technical Manuals, Technical Regulations, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders.	TB SIG 219	Operation of Signal Equipment at Low Temperatures.
SR 310-20-5	Index of Administrative Publications.	6. Auxiliary Equipment and Test Equipment	
SR 700-45-5	Unsatisfactory Equipment Report (Reports Control Symbol CSGLD-247 (R1)).	TB 11-2627-2	Tube Test Data Cards for use with Tube Testers I-177, I-177-A, I-177-B and with Tube Socket Adapter Kit MX-949/U.
AFR 65-26		TM 11-2019	Test Set I-49 and Resistance Bridges ZM-4A/U and ZM-4B/U.
SR 745-45-5	Report of Damaged or Improper Shipment (Reports Control Symbols CSGLD-66 (Army), BU-4600-6 (Navy), and AF-39 (Air Force)).		
Navy Shipping Guide, Article 1850-4			
AFR 71-4			

TM 11-2627 Tube Testers I-177 and I-177A.
TM 11-2684A Audio Oscillator TS-382A/U.
TM 11-5527 Multimeter TS-352/U.
TM 11-5038 Control Group AN/GRA-6

7. Forms

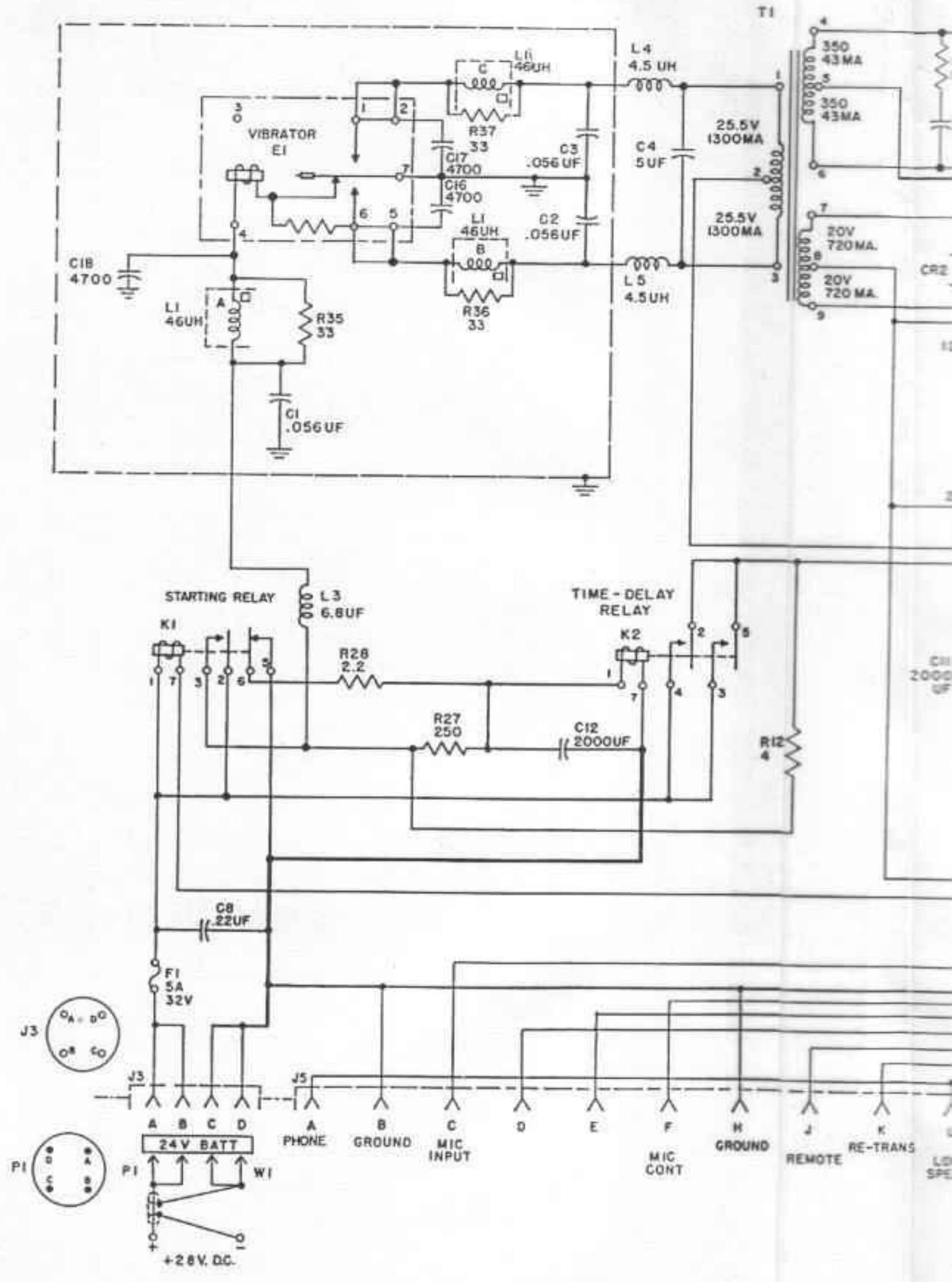
a. DD Form 6, Report of Damaged or Improper Shipment, will be filled out and forwarded as prescribed in SR 745-45-5 (Army), Navy Shipping Guide, Article 1850-4, and AFR 71-4 (Air Force).

b. DA Form 468, Unsatisfactory Equipment Report, will be filled out and forwarded to the Office of the Chief Signal Officer as prescribed in SR 700-45-5.

c. DD Form 535, Unsatisfactory Report, will be filled out and forwarded to Commanding General, Air Materiel Command, Wright-Patterson Air Force Base, Dayton, Ohio, as prescribed in SR 700-45-5 and AFR 65-26.

d. DA Form 11-239, Second and Third Echelon Maintenance Check List for Signal Corps Equipment (Radio Communication, Direction Finding, Carrier, Radar), will be prepared in accordance with instructions on the back of the form (fig. 19).

e. Use other forms and records as authorized.



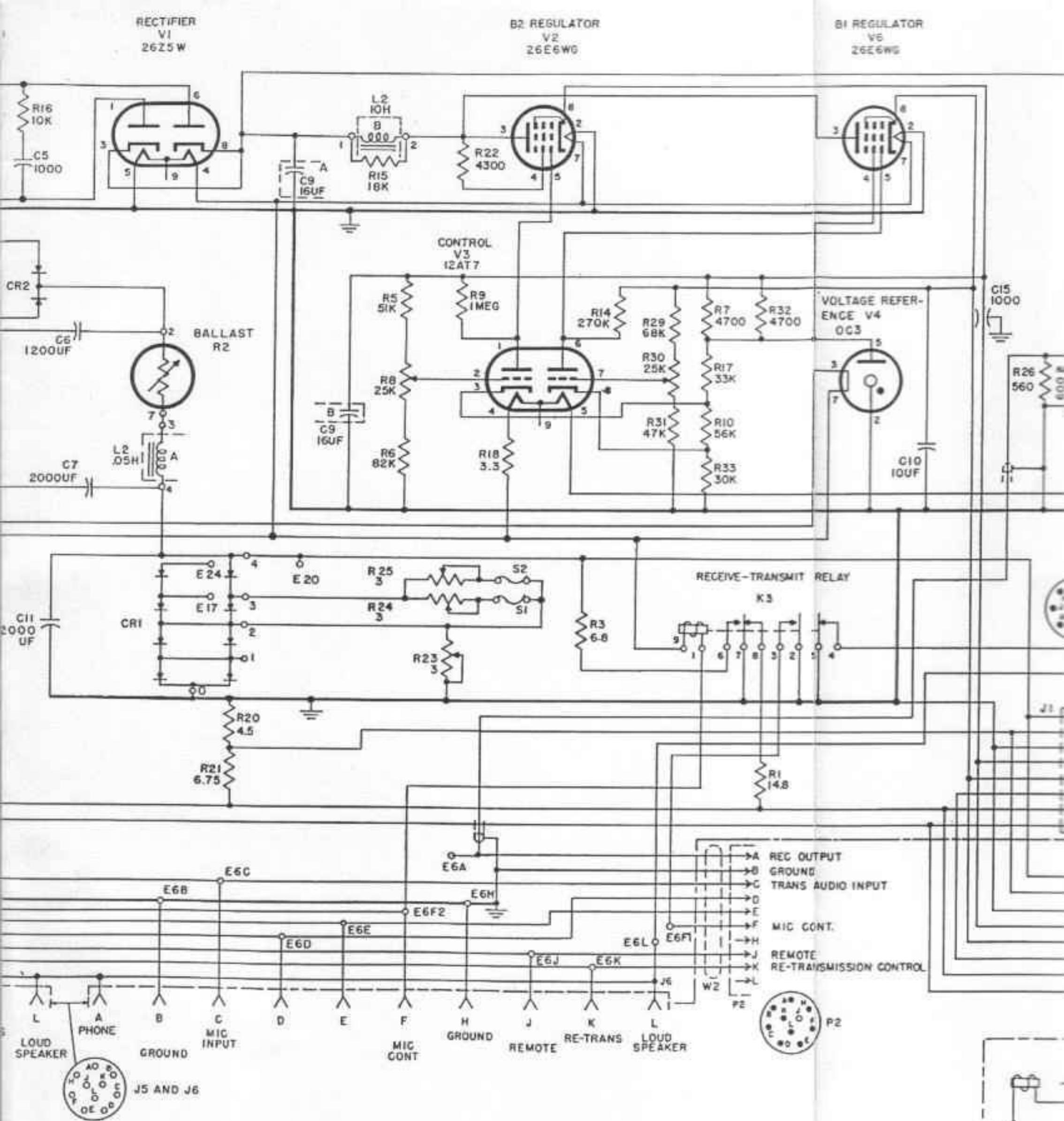
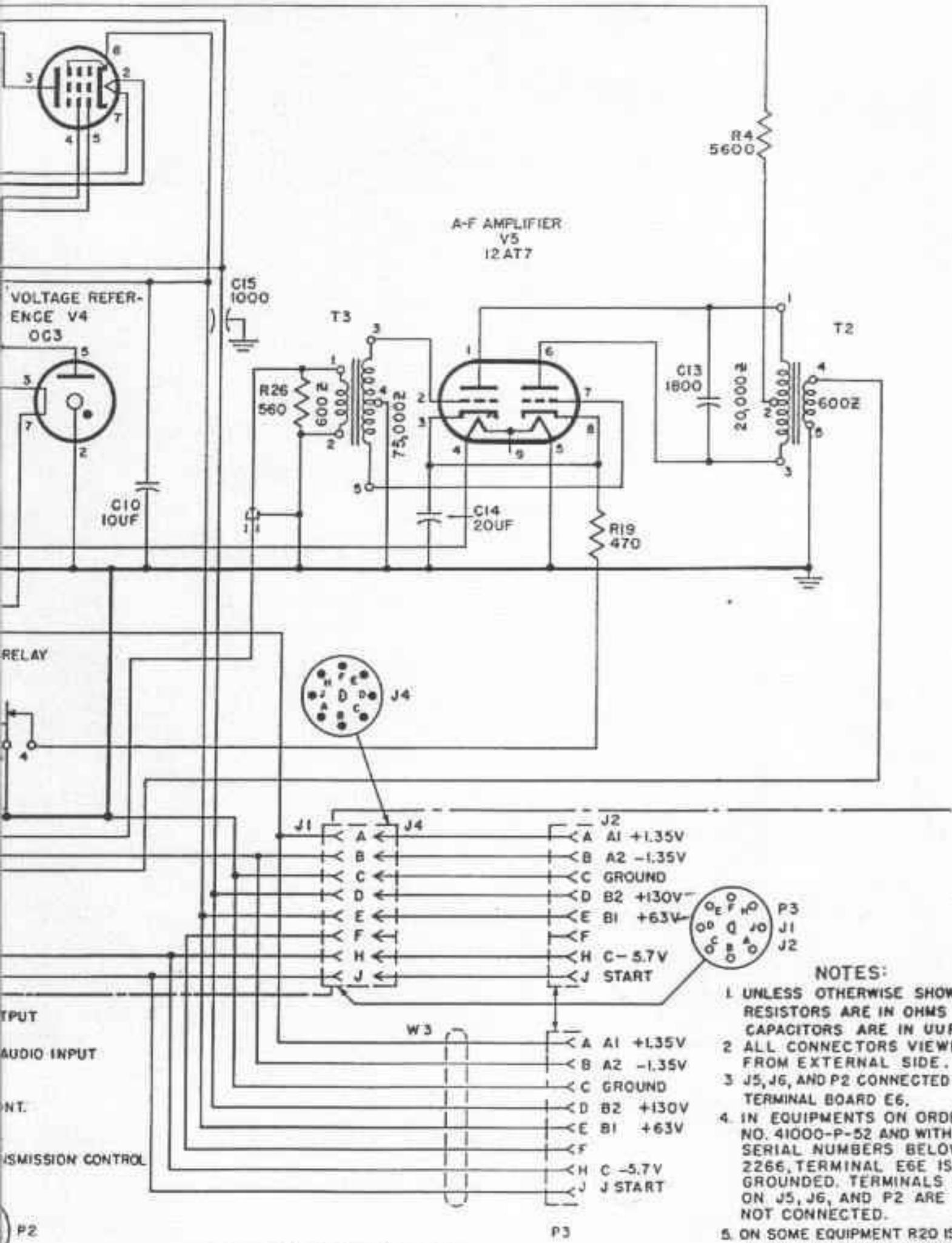


Figure 40. Amplifier-power supply AM-598/U, schematic diagram.

BI REGULATOR
V5
26E6WG



R4
5600

A-F AMPLIFIER
V5
12AT7

VOLTAGE REFER-
ENCE V4
OC3

C15
1000

T3

T2

R26
560

C13
1800

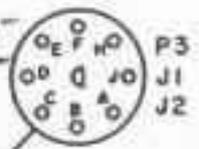
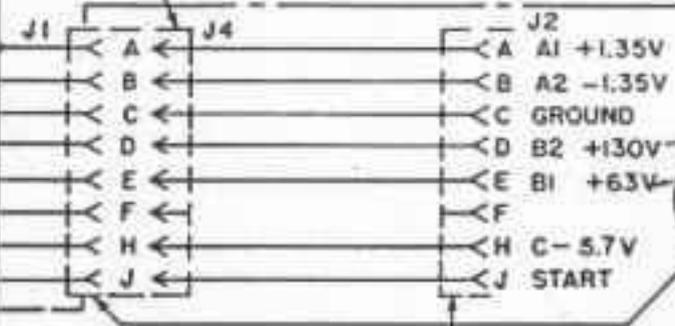
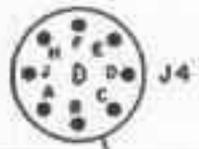
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C10
10UF

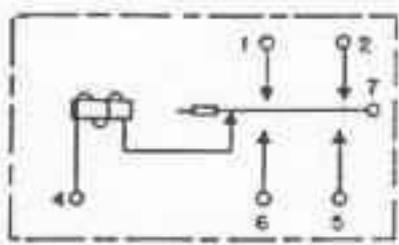
C14
20UF

R19
470



NOTES:

- 1 UNLESS OTHERWISE SHOWN RESISTORS ARE IN OHMS CAPACITORS ARE IN UUF.
- 2 ALL CONNECTORS VIEWED FROM EXTERNAL SIDE.
- 3 J5, J6, AND P2 CONNECTED TO TERMINAL BOARD E6.
- 4 IN EQUIPMENTS ON ORDER NO. 41000-P-52 AND WITH SERIAL NUMBERS BELOW 2266, TERMINAL E6E IS GROUNDED. TERMINALS D ON J5, J6, AND P2 ARE NOT CONNECTED.
- 5 ON SOME EQUIPMENT R20 IS 4.1 OHMS AND R21 IS 6.5 OHMS.
- 6 SOME EQUIPMENTS DO NOT HAVE L3, L4, L5, AND C18.



ALTERNATE VIBRATOR

TM 5055-21

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