

RESTRICTED

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U.S. Dept of Army

TM 11-859

WAR DEPARTMENT

TECHNICAL MANUAL

RADIO SET SCR-593-A

March 2, 1943

WAR DEPARTMENT
Washington, March 2, 1943

This Technical Manual, published by Galvin Mfg. Corp. on orders No. 5515-Chi-42 and 13370-Phila-43, is furnished for the information and guidance of all concerned.

RESTRICTED

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*Doc call
gift
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RADIO SETS SCR-593-A AND SCR-593-C

ANGES }
No. 2 }

WAR DEPARTMENT,
WASHINGTON 25, D. C., 22 April 1944.

TM 11-859, 2 March 1943, is charged as follows:

The classification **RESTRICTED** is removed from this manual, and from Changes No. 1.

3. Description of components.

* * *
l. Radio Receiver BC-728-A.—Radio Receiver BC-728-A * * * front panel. On Radio Set SCR-593-C, produced on Order 31188-Phila-43, an additional 250-ohm tap has been provided on the 8,000-ohm secondary winding of transformer T₃, which will allow the use of a low impedance headset by changing the impedance to which the set is connected. (See fig. 6.1.) A tag has been placed on the exterior of the case of these sets, with the impedance to which the set is connected marked on it. When the impedance is changed by using the 8,000-ohm tap, this nameplate must be reversed. The loudspeaker does not operate when a headset is plugged in.
 * * * * *

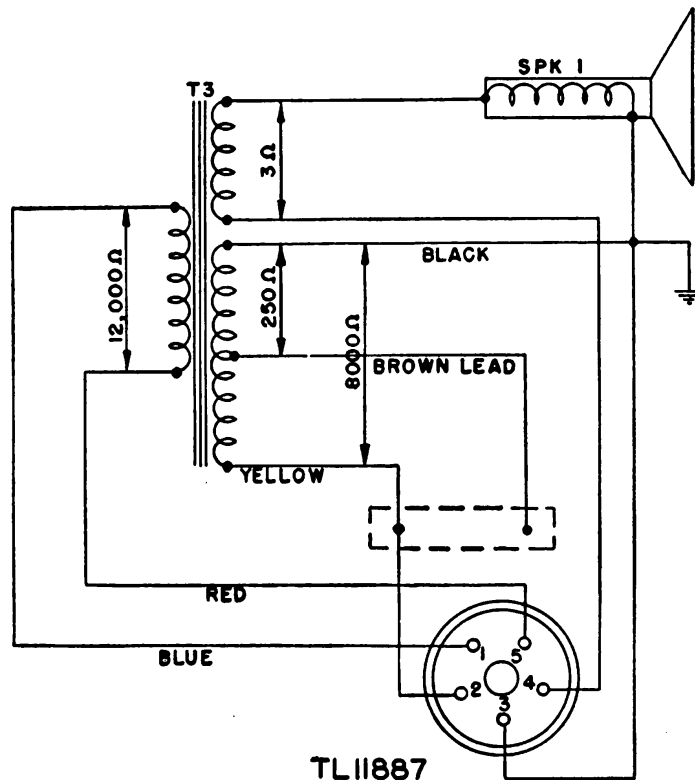


FIGURE 6.1.—Transformer T₃ in Radio Set SCR-593-C, showing 250-ohm audio output tap.

582653°-44

SECTION IV

MAINTENANCE

NOTE (Added).—Unsatisfactory performance of this equipment is to be reported immediately on W. D., A. G. O. Form No. 468. If form is not available, see TM 38-250.

16. Inspection.—When the radio. * * * radio receiver housing.

21.1. (Added.) Replacement of battery vent tube fitting and antenna lead-in bracket.—*a.* In some Radio Sets SCR-593-A and SCR-593-C, two faults may be found: the battery vent fitting shown in figure 11 becomes clogged due to entrapped electrolyte; and the antenna lead-in bracket makes it difficult to attach the lead-in for vehicular use.

b. To correct these faults, a new battery vent tube fitting of Vinylite plastic, with an enlarged hole for attaching the rubber tube or hose, and a new lead-in bracket with two notches, one at the top and one at the front for holding the plug, have been designed. These parts are supplied in a kit which also contains the necessary screws, nuts, and washers for attaching the lead-in bracket.

(1) These kits should be requisitioned as follows:

<i>Stock No.</i>	<i>Name and description</i>
2S593A/K1	Modification kit; for Radio Set SCR-593

(2) Kits are stocked at Chicago Signal Depot and at New Cumberland Army Service Forces Depot, Signal Section.

c. All Radio Sets SCR-593-A and SCR-593-C should be modified by use of this kit when received at fourth and fifth echelon shops. Modification is made as follows:

- (1) Open front of set.
- (2) Swing receiver chassis upward to expose vent tube.
- (3) Remove storage battery.
- (4) Replace vent tube fitting as follows:
 - (a) Drive the old vent tube fitting out of the radio set housing from the outside, using a suitable size driftpin or center punch.
 - (b) Remove old fitting from rubber tube.
 - (c) Insert new Vinylite tube fitting in housing from the inside of the housing.
 - (d) Attach rubber vent tube.
- (5) Replace lead-in bracket as follows:
 - (a) File off the rivet heads on the outside of the old bracket.
 - (b) Drive out the rivets and remove bracket.

(e) Secure new bracket to housing with two 10-32 screws, placing the lockwashers and nuts on inside of case.

d. At the time that modification is made, check the following:

- (1) Examine the rubber vent tube and replace if necessary.
- (2) Make sure the battery vent holes are clear.
- (3) Make sure the battery filler cap is in place.

(4) Always keep the set in a vertical position to prevent spilling of the battery electrolyte.

21.2. (Added.) Securing battery vent tube.—a. Radio Sets SCR-593-A and SCR-593-C have often been damaged because the battery vent tube has become disconnected, allowing acid fumes from the battery to destroy various parts of the sets. To prevent this destruction, a battery vent bracket has been designed to hold the tube in place. (See fig. 19.1). This new part can be ordered through regular channels:

<i>Stock No.</i>	<i>Name and description</i>
2Z1200.7	Bracket; battery vent.

b. All Radio Sets SCR-593-A and SCR-593-C in the field and in depot stock should be equipped with battery vent brackets as soon as possible. The following procedure should be followed by third, fourth, or fifth echelon Signal Corps repair organizations.

- (1) Open case of radio set.
- (2) Remove nuts holding battery retainer bracket.
- (3) Remove battery retainer bracket.

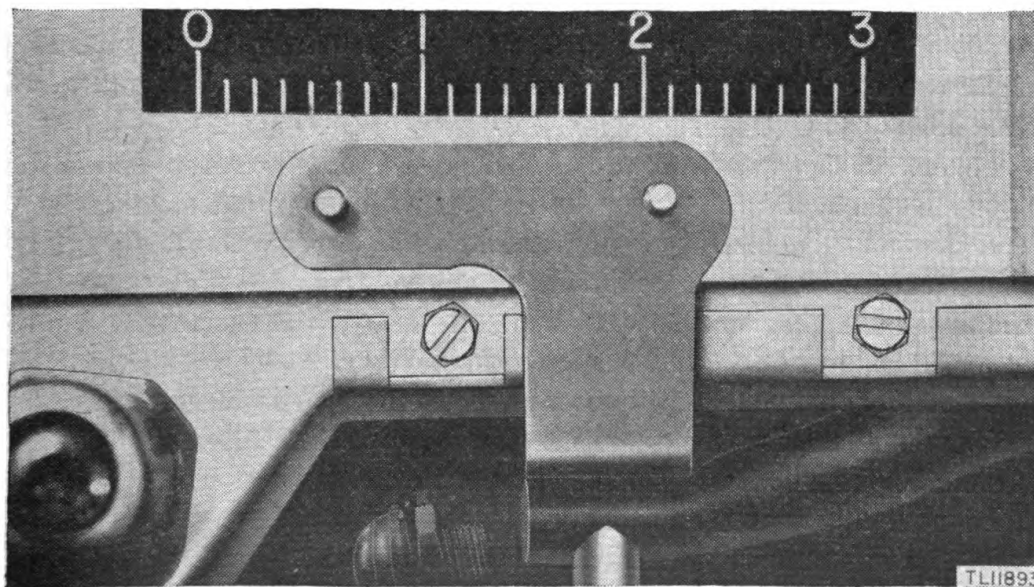


FIGURE 19.1.—Front view of bracket for battery vent tube.

(4) Install the battery vent bracket as shown in figure 19.1, so that the screws for the battery retainer bracket pass through the holes in the vent bracket, and the right angle offset rests on the rubber vent tube.

- (5) Replace battery retainer bracket in its original position.
- (6) Replace and tighten nuts on screws.
- (7) Close case of set.

21.3. (Added.) Removing deposits from indicator of battery BB-54-A.—a. Sludge or sediment in the gravity ball chamber of Battery BB-54-A often causes the gravity ball indicators to stick. A process has been developed using electrolyte (sulfuric acid, 1.285 specific gravity) to remove the deposit from the ball chamber.

b. Qualified personnel repairing Radio Sets SCR-593-A or SCR-593-C will apply the following procedure when it is required.

- (1) Remove the battery from the equipment.
- (2) Charge the battery at a 2- to 3-ampere rate until it is fully charged. (See par. 11a(2).) The battery is fully charged when there is no further increase in voltage over a period of 3 hours, or the battery bubbles freely for at least 2 hours.
- (3) Add enough electrolyte to raise the level of the electrolyte $\frac{3}{8}$ inch above the electrolyte-level line on the sides of the container.
- (4) Disconnect the battery from the charging circuit and replace the filler plug. Holding one finger over the vent opening, shake the battery until the sludge or sediment is dislodged.
- (5) Empty the free electrolyte and refill the battery with electrolyte $\frac{3}{8}$ inch above the electrolyte-level line (see (3) above).
- (6) Repeat the operations described in (4) and (5) above at least three times, or until no signs of sediment or sludge can be seen in the free electrolyte.
- (7) Refill the battery with electrolyte to the electrolyte-level line.
- (8) Replace the filler plug and wipe off any spilled electrolyte.

c. Never add electrolyte of 1.285 specific gravity to Battery BB-54-A, except to remove sediment or sludge from the indicator; and then add only in accordance with the above instructions. At all other times add only pure water to the battery.

Caution: Exercise extreme care in handling the electrolyte. Do not spill it on the body, clothing, or equipment. Remedy for accidental spillage: flush immediately with clear water and wipe dry.

In note appearing on illustration for figure 21, page 45, change "20,000 ohm-per-volt" to read "1,000 ohm-per-volt."

* * * * *

24.1. (Added.) Moistureproofing and fungiproofing.—a. General.—Communication failures commonly occur when Signal Corps equipment is operated in tropical areas where temperature and relative humidity are extremely high. The following problems are typical:

- (1) Resistors and capacitors fail.
- (2) Electrolytic action takes place in coils, chokes, transformer windings, etc., causing eventual break-down.
- (3) Hook-up wire and cable insulation break down. Fungus growth accelerates deterioration.
- (4) Moisture forms electrical leakage paths on terminal and insulating strips, causing flash-overs and cross talk.

(5) Moisture provides leakage paths between battery terminals.

b. Treatment.—A moistureproofing and fungiproofing treatment has been devised which, if properly applied, provides a reasonable degree of protection against fungus growth, insects, corrosion, salt spray, and moisture. The treatment involves the use of a moisture- and fungi-resistant varnish applied by means of a spray gun. A brief description of the method of application follows:

- (1) All repairs and adjustments necessary for the proper operation of the equipment are made.
- (2) Equipment to be processed is thoroughly cleaned of all dirt, dust, rust, fungus, oil, grease, etc.
- (3) Equipment is partially disassembled and certain points, such as relay contacts, open switches, air capacitors, sockets, bearings, etc., are covered with masking tape.
- (4) Equipment is thoroughly dried by heat to expel moisture which the circuit elements have absorbed.
- (5) All circuit elements and all parts of the equipment are sprayed with three coats of moistureproofing and fungiproofing varnish.
- (6) The equipment is given a final operational check. The radio sets receive a 24- to 36-hour aging period, when time permits, before alignment.

c. Step-by-step instructions.—(1) *Disassembly* — (a) Release catch and open cover.

- (b) Remove battery.
- (c) Remove three screws on top plate and remove plate.
- (d) Remove bakelite tuning adjustment controls.
- (e) Remove shield around lower coil forms.
- (f) Remove two knurled nuts holding lead battery cover plate.
- (g) Remove eight screws holding chassis to lower case.
- (h) Remove cable plugs from supply chassis and speaker.

- (i) Remove supply chassis.
- (2) *Masking.*—(a) No masking is required for supply chassis.
- (b) Receiver chassis:
 - 1. *Top.* Mask tuning slug screws and push-button slides.
 - 2. *Bottom.* Remove tubes; mask sockets and openings of permeability tuning coils.
- (3) *Drying.*—Place units in oven and dry for approximately 2 to 3 hours. *Temperature should not exceed 160° F.*
- (4) *Varnishing.*—(a) Upon completion of drying, remove units, and either spray or paint components of supply chassis. *Do not spray receiver chassis; use paint brush for this operation.*
- (b) Apply three coats of varnish altogether.
- (c) When varnish is dry, remove masking tape. (If varnish is sticky, it is not dry.)
- (d) Remove speaker from case and apply varnish to speaker cone.
- (5) Reassemble unit and check operation.
- (6) Mark the unit MFP, and date.
- d. Reference.*—For a full description of the varnish spray method of moistureproofing and fungiproofing, refer to TB SIG 13.

SECTION V

SUPPLEMENTARY DATA

24.2. (Added.) Additional antenna and counterpoise for Radio Sets SCR-593-A and SCR-593-C.—*a. General.*—Radio Sets SCR-593-A and SCR-593-C were designed for extreme portability and flexibility in the field, and therefore the antenna was designed as a simple 7-foot whip antenna. Under normal operating conditions this radio set will give excellent service. Since there are times, however, when additional performance is a necessity, the following methods will increase the reception of these sets.

b. Antenna.—(1) Whenever the receiver is placed below ground level, or is so installed that the greater part of the antenna is not in the clear, it is recommended that the antenna be removed from the case and located as high and as much in the clear as is possible with the issued 55-inch connecting cable.

(2) In some instances the whip antenna may be partially shielded by earth or dense foliage, and therefore cannot be brought up and into the clear by the installation of the connecting cable. In such cases, an additional length antenna—a 20-foot piece of field wire—will render satisfactory results when prepared in the following manner:

(a) Disconnect the regular whip antenna at the antenna lead socket.

(b) Prepare the field wire as for splicing, and then double back on the wire, forming a bare wire tip.

(c) Insert the field wire into the lead socket.

NOTE.—Be careful not to allow the antenna to short out against the case of the receiver.

(3) Raise the end of the wire high and into the clear as much as is practicable. A piece of *dry* wood tied to the free end of the wire, together with the insulation on the wire, will provide sufficient insulation. Taping the free end of the wire with rubber tape will also prove satisfactory. Be sure to keep the antenna free of all obstructions, or little improvement will be noted.

c. Counterpoise.—In some instances the use of the additional antenna may not be feasible. Except where the set is installed in a vehicle, some improvement may be obtained by connecting a simple counterpoise, consisting of from four to eight strands of field wire, 30 to 100 feet long. The counterpoise is placed on the ground, in a star-shaped pattern, and connected to the ground post of the receiver (case).

25. Table of replaceable parts (As changed by C 1).—*a. Radio Receiver BC-728-A.*

Reference number	Signal Corps stock number	Name of part	Description†	Function	Manufacturer's code ‡	Contractor's part and drawing number
* C ₈ ---	* 3DA250-17	* Capacitor	* Fixed, paper; 25 .25 μf, ± 20%, 200 w-v.—Special.	* By-pass, B+	* -----	* 8A31207
*	*	*	*	*	*	*
*	*	*	*	*	*	*

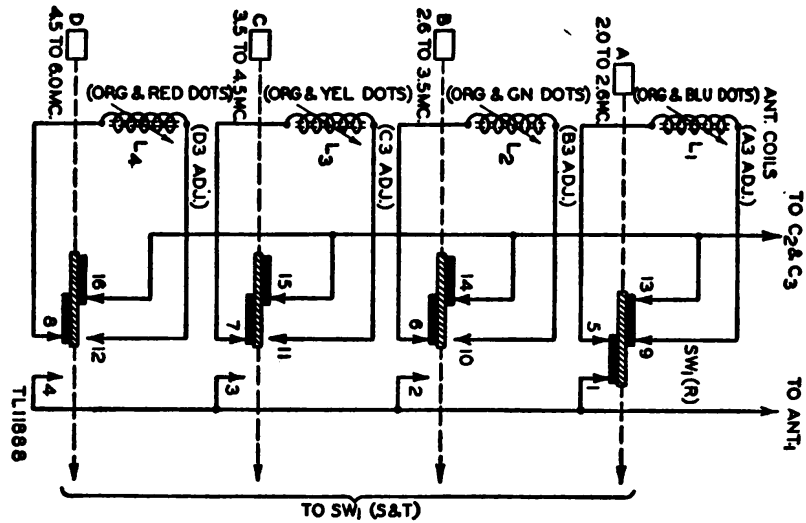


FIGURE 26.—Corrected schematic diagram for switch SW₁ (R). (See fig. 25.)

[A. G. 300.7 (10 Feb 1944).]

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

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The Adjutant General.

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As prescribed in paragraph 9a, FM 21-6; IR 44 (5); IC 44 (5); IC 19 (5); IC 11 (5); IC 5 (5).

IR 44: T/O and E 44-12, AAAW Gp Hq.

IC 44: T/O and E 44-1-35, Hq and Hq Btry AAA Comd HAW; 44-10-1, Hq and Hq Btry AAA Brig; 44-17, AAA Btry (M); 44-26, Hq and Hq Btry AAA Auto Wpns Bn (M); 44-27, AAA Auto Wpns Btry (M); 44-76, Hq and Hq Btry AAA Auto Wpns Bn (SP); 44-77, Btry AAA Auto Wpns Bn (SP); 44-116, Hq Btry AAA Gun Bn (SM); 44-117, AAA Gun Btry (SM); 44-126, Hq and Hq Btry AAA Auto Wpns Bn (SM); 44-127, AAA Auto Wpns Btry (SM); 44-136, Hq and Hq Btry AAA SL Bn; 41-138, AAA SL Btry (SM); 44-226S, Hq and Hq Btry AAA Auto Wpns; 44-227S, AAA Auto Wpns Btry; 44-326, Hq and Hq Btry AA Bln Bn VLA; 44-327, AA Bln Btry VLA.

IC 19: T/O and E 19-97, MP plat Airb Div.

IC 11: T/O and E 11-7, Sig Co Inf Div; 11-107, Sig Dep Co; 11-127, Sig Rep Co; 11-327, Sig Port Serv Co; 11-587, Sig Base Maint Co.

IC 5: T/O and E 5-16, Hq Serv Co Comb Bn; 5-236, Hq Serv Co, Mtn Bn.

For explanation of symbols, see FM 21-6.

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AE), 11-587, 11-592, 11-597 (2).

NG: Same as Active Army except one copy to each unit.

USAR: None.

For explanation of distribution formula, see SR 310-90-1.

TECHNICAL MANUAL

RADIO SETS SCR-593-A AND SCR-593-C

CHANGES
No. 3

DEPARTMENT OF THE ARMY,
WASHINGTON 25, D. C., 14 April 1954

TM 11-859, 2 March 1943, is changed as follows:

In the first line of TM 11-859 C 2, 22 April 1944, the word "charged" is changed to read changed.

12.1. Antijamming

(Added)

Perform the following operations when the desired signal is jammed by an enemy signal:

a. Turn the volume control toward maximum. This may overload the speaker or phones with the jamming signal and allow the desired signal to be read through the jamming signal.

b. Change the orientation of the antenna from vertical to horizontal or vice versa and to various intermediate angles to obtain a better reading of the signal.

c. Change the antenna height, position, and direction. Locate the antenna so that some object such as a truck, tank, jeep, or other vehicle is located between it and the source of the jamming signal. This may reduce or eliminate the jamming signal.

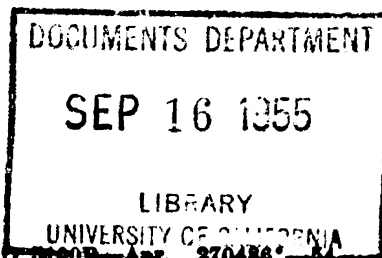
d. If voice signals are jammed, try continuous wave (cw) reception. When changing to cw, change the frequency and the call sign.

e. Change to one of the other three preset channels. Change the call sign for each change in channel.

f. If jamming action makes all types of receiver reception impossible, use some other means of obtaining the message.

g. Continue to operate. This keeps the enemy in uncertainty as to his jamming success and keeps him from moving to another frequency. His equipment then is tied down to what he believes is your active frequency.

[AG 300.7 (26 Mar 54)]



TAGO 0060B - Apr. 270486 - 54

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TECHNICAL MANUAL
No.11-859

WAR DEPARTMENT
Washington, March 2, 1943

RADIO SET SCR-593-A

Prepared under direction of the Chief Signal Officer

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SAFETY NOTICE

WHEN THE HOUSING IS OPENED AND THE CHASSIS IS RAISED ON ITS HINGE, A HIGH VOLTAGE OF 95 VOLTS DIRECT CURRENT IS PRESENT AT SEVERAL POINTS.

DO NOT RAISE THE CHASSIS WHEN THE RADIO RECEIVER IS TURNED ON.

DESTRUCTION OF ABANDONED MATERIEL IN THE COMBAT ZONE

In case it should become necessary to prevent the capture of this equipment, and when ordered to do so, DESTROY IT SO THAT NO PART OF IT CAN BE SALVAGED, RECOGNIZED, OR USED BY THE ENEMY. BURN ALL PAPERS AND BOOKS.

By:

1. Explosives, when provided.
2. Hammers, axes, sledges, or whatever heavy object are readily available.
3. Burning with gasoline, oil, paper, or wood.
4. Grenades and shots from available arms.

PROCEDURE:—

1. Obliterate all identifying marks. Destroy nameplates and circuit labels.
2. Demolish all panels, castings, switch and instrument-boards.
3. Destroy all controls, switches, relays, connecting means and meters.
4. Rip out all wiring in electrical equipment. Smash gas and oil lines and water cooling systems in gas-engine generators, etc.
5. Smash every electrical or mechanical part whether rotating, moving or fixed.
6. Break up all operating instruments such as keys, phones, microphones, etc.
7. Destroy all classes of carrying cases, straps, containers, etc.

DISPOSAL:—

1. Where possible, and time permits, bury all debris or dispose of it in streams or other bodies of water.

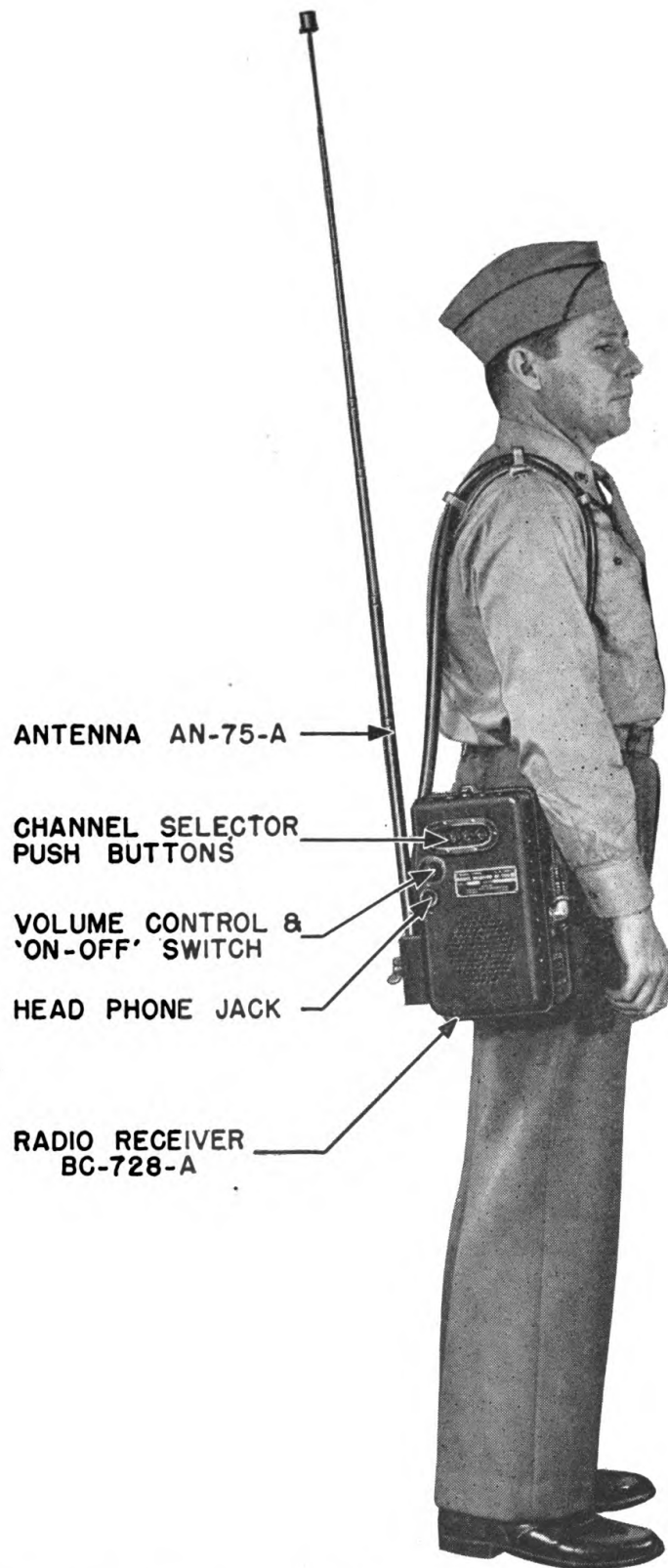


FIGURE 1—RADIO SET SCR-593-A, IN USE

SECTION I

DESCRIPTION

1. GENERAL.—

Radio Set SCR-593-A is a self-contained six tube, push-button radio receiver, designed for portable or vehicular operation. Its power is obtained from a two-volt storage battery. The two-volt storage Battery BB-54-A, a vibrator type plate-supply unit, dry disc rectifier, vacuum tube bias rectifier, and vibrator battery charging unit (used to charge the two-volt storage battery) are contained in the radio receiver housing.

a. The Antenna.—Antenna AN-75-A is used for either portable or vehicular operation. For portable operation, the antenna is clamped to the radio receiver housing, with the antenna lead-in and associated shoulder pad functioning as a sling. For vehicular operation, the antenna is clamped under the hood of the vehicle or to some stationary support located close enough to the radio to permit the lead-in to reach the radio set.

b. The Mounting.—Mounting FT-338-A is used to hold Radio Receiver BC-728-A in position in a vehicle. Because of space limitations in some vehicles, it may be necessary to space the radio set away from the bulkhead so as to allow greater accessibility. An extension bracket is provided for this purpose. The radio set is held in Mounting FT-338-A by means of two cam levers which engage two studs on the radio receiver housing. This type of mounting provides for easy installation or removal of the radio set from the vehicle. A receptacle attached to Mounting FT-338-A is connected to the vehicle ammeter by means of a flexible lead and clip. The four-prong plug on the radio set housing fits into the receptacle on Mounting FT-338-A, and connects with the dry disc storage battery charger. When Radio Receiver BC-728-A is installed on Mounting FT-338-A in a vehicle the two-volt storage battery will be continually charging.

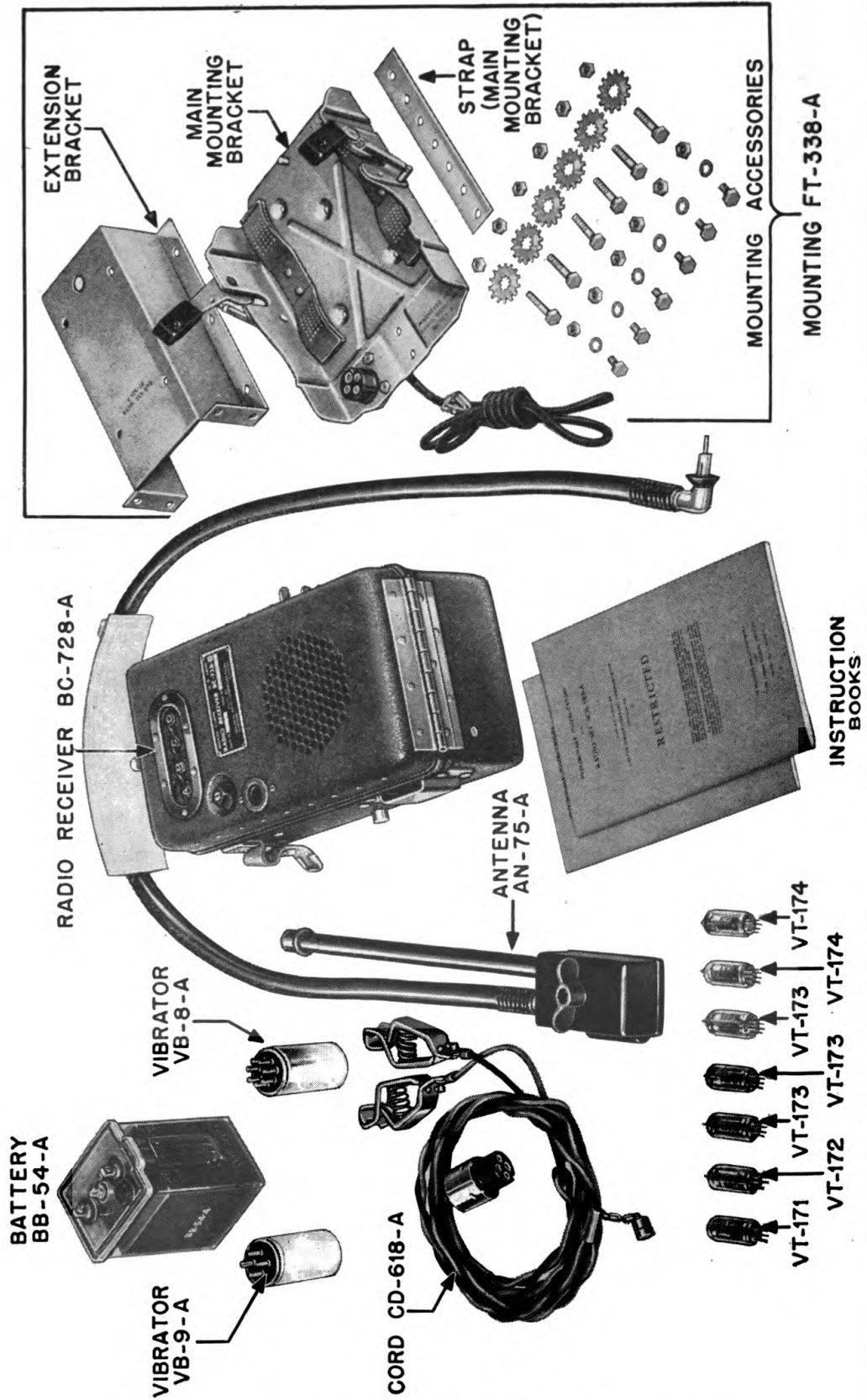


FIGURE 2—RADIO SET SCR-593-A, COMPONENTS

c. Speaker and Headphones.—An internal permanent magnet type dynamic speaker is mounted in the housing of Radio Receiver BC-728-A. A jack for a high impedance headset is provided on the front panel. Plug PL-55 is to be used with the headset.

The switch and volume control is combined and controlled by one knob.

d. Type of Signals Received.—Radio Set SCR-593-A receives voice amplitude-modulated signals, commonly abbreviated as Voice or Phone signals.

2. FREQUENCY COVERAGE.—

Radio Receiver BC-728-A has a frequency range of 2 to 6 megacycles, in four adjustable steps (A, B, C, and D) selected by means of push-buttons. (See Figure 3.) Button A has a range of from 2.0 megacycles to 2.6 megacycles; button B a range of from 2.6 megacycles to 3.5 megacycles; button C a range of from 3.5 megacycles to 4.5 megacycles, and button D, a range of from 4.5 megacycles to 6.0 megacycles.

3. WEIGHTS.—

The weight of Radio Set SCR-593-A for portable operation is 23.75 pounds. The weight of the radio set and associated equipment for vehicular operation is 29.52 pounds. The total weight of Radio Set SCR-593-A, including spare parts, is 36.76 pounds.

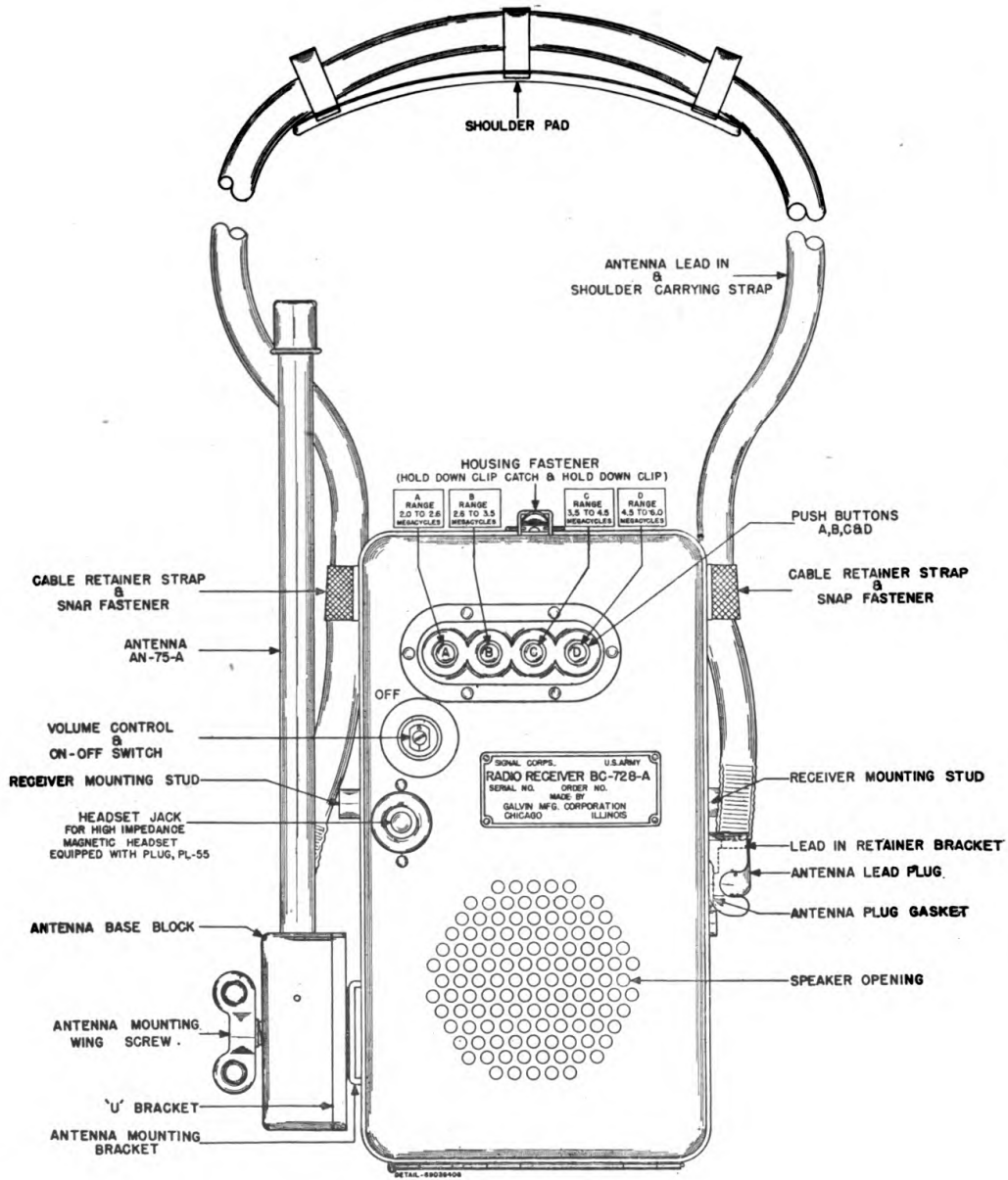


FIGURE 3—RADIO RECEIVER BC-728-A, FRONT VIEW

4. RADIO SET SCR-593-A,—COMPONENT PARTS, WEIGHTS AND DIMENSIONS.

Quantity	Name of Part	DIMENSIONS (Inches)						Unit Weight in Lbs.
		Height	Width	Depth	Length	Diam.		
1	Antenna AN-75-A.....	Extended-84" Collapsed-12"	....	....	Cable 55	....	4.00
1	Battery BB-54-A.....	5 ¹⁷ / ₃₂	3 ²⁷ / ₃₂	3	....	....	4.75
2	Technical Manual TM 11-859.....	8 ¹ / ₂	5 ¹ / ₂	....	....	....
1	Cord CD-618-A.....	....	....	....	8 ¹ / ₃ ft.	....	.84
2	Mounting FT-338-A	....	....	....	....	....	5.77
	Consisting of:						(Total)	
	Main Mounting Bracket.....	9 ⁵ / ₈	8 ³ / ₈	6 ¹ / ₄ max.	....	....	3.00
	Extension Bracket.....	8 ¹ / ₂	5 ³ / ₈	2 ⁹ / ₁₆	....	....	2.25
	Strap, Main Mounting Bracket...	1	7	³ / ₃₂ thick	0.17	
	Mounting Accessories (Bolts, Lockwashers & Nuts.....)	0.35	

TM 11-859

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4. RADIO SET SCR-593-A,—COMPONENT PARTS, WEIGHTS AND DIMENSIONS.—(Cont.)

1	Radio Receiver BC-728-A..... (With Tubes and Vibrators only)	11 ¹ / ₁₆	8 ³ / ₈	5 ⁵ / ₈	15.00
2 { 1 Installed 1 Spare	Radio Tube VT-171 (RMA Type IR5)	....	....	....	....	....	.017
2 { 1 Installed 1 Spare	Radio Tube VT-172 (RMA Type 1S5)	....	....	....	....	....	.017
6 { 3 Installed 3 Spare	Radio Tube VT-173 (RMA Type 1T4)	....	....	....	....	....	.017
4 { 2 Installed 2 Spare	Radio Tube VT-174 (RMA Type 3S4)	....	....	....	....	....	.017
2 { 1 Installed 1 Spare	Vibrator VB-8-A.....	3 ³ / ₈	....	....	....	1 ¹ / ₂	.26
2 { 1 Installed 1 Spare	Vibrator VB-9-A.....	3 ³ / ₈	....	....	....	1 ¹ / ₂	.26

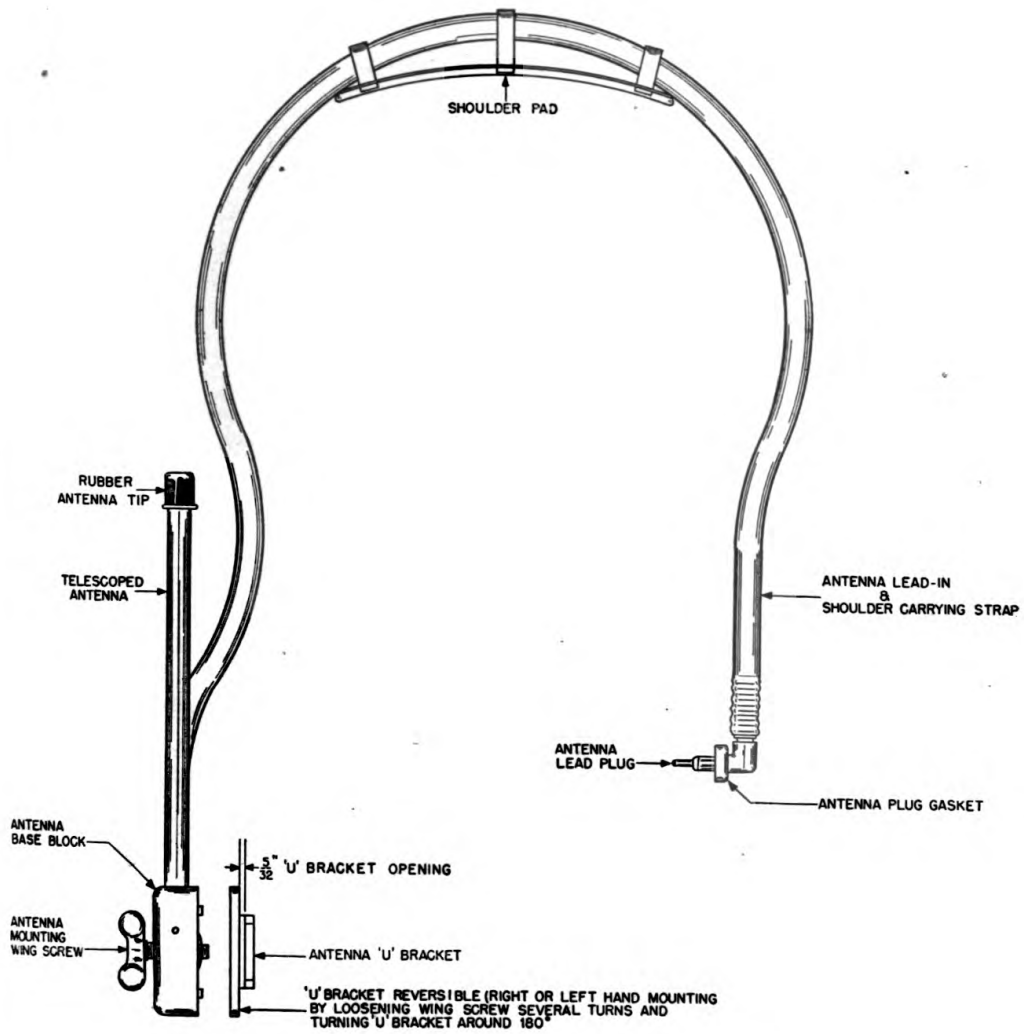


FIGURE 4—ANTENNA AN-75-A, DETAIL

5. POWER REQUIREMENTS.—*a. Receiver*

Battery BB-54-A	2 volts	1.85 amperes
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b. Battery Charger

Vehicular Battery	6 volts	1.1 amperes
-------------------	---------	-------------

or

Vehicular Battery	12 volts	.85 amperes
-------------------	----------	-------------

6. DESCRIPTION OF COMPONENTS.—

a. Antenna AN-75-A.—Antenna AN-75-A contains nine sections which extend to a height of seven feet. A lead-in attached to the antenna base also has attached to it a U-shaped bracket with a locking wing screw for holding the antenna to the radio receiver housing or to a vehicle. The antenna may be mounted on either the right or left hand side of the vehicle. The base of the antenna is so constructed that the “U” bracket may be rotated 180 degrees by loosening the wing screw, thus providing for either right or left hand mounting. (See Figure 4.) The lead-in is threaded through a leather shoulder pad for carrying Radio Receiver BC-728-A.

b. Battery BB-54-A.—The battery is a single two-volt lead cell, contained in a spill-proof plastic case. Despite its spill-proof feature, however, the battery should always be mounted or carried in a vertical position. The degree of battery charge can be determined by observing the charge indicator balls, visible through the window in the side of the housing. If the battery is fully charged, the three indicator balls will be floating at the surface of the liquid in the battery. When the battery discharges, these indicator balls will sink in the following order:

- (1) Green ball sinks when approximately 10% of the battery capacity has been discharged.
- (2) White ball sinks when 50% capacity has been discharged.
- (3) Red ball sinks when battery is 90% discharged.

On charge, the balls rise or float in the reverse sequence. The charge is completed when all three balls are floating. (See Figure 7.)

Fumes emitted from the battery during charging periods are carried to the outside of the radio receiver housing by means of a vent hose which is attached to the battery air vent.

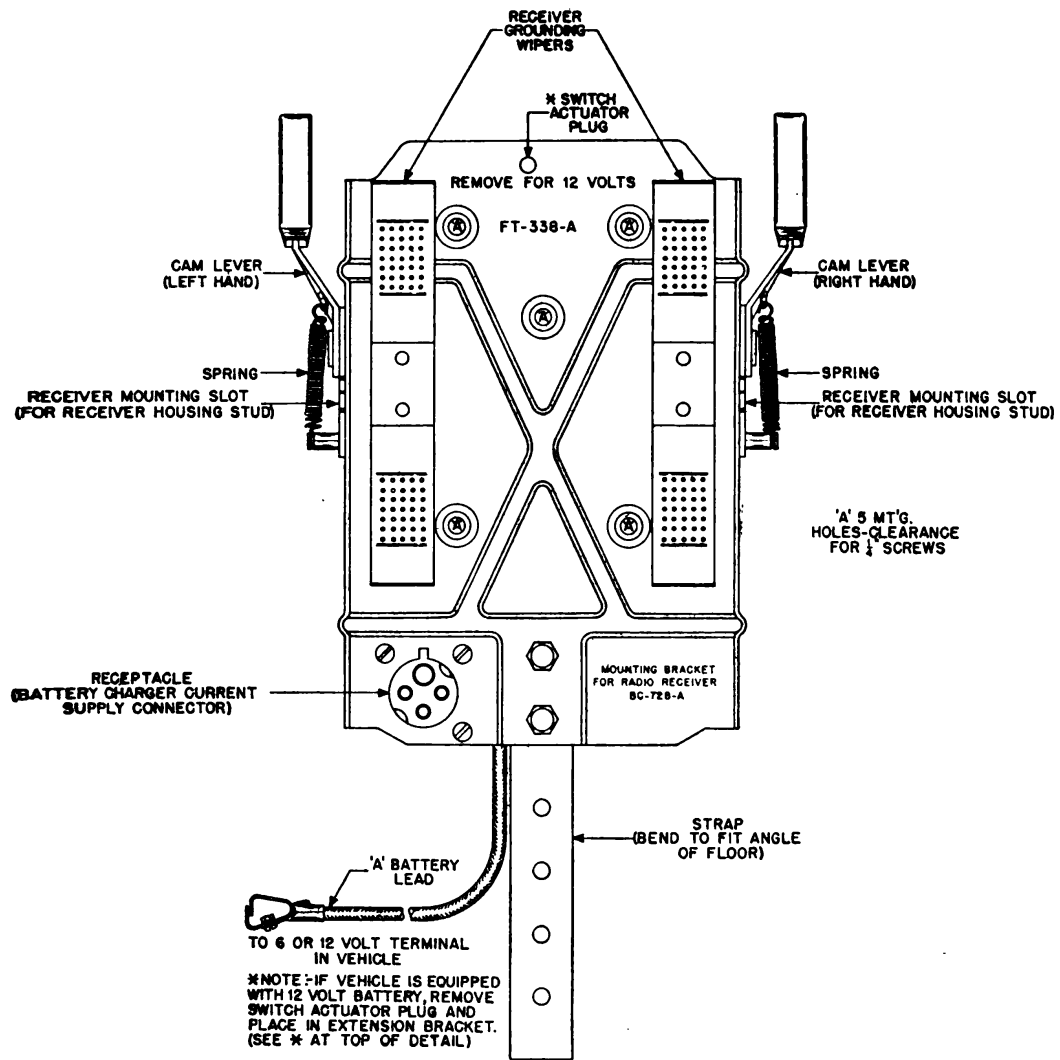


FIGURE 5—MAIN MOUNTING BRACKET FT-338-A, FRONT VIEW

CAUTION: Be sure that the air vent hose is attached to the battery air vent before closing the cover; otherwise, sulphuric acid fumes may penetrate into the radio parts and produce harmful results.

c. Mounting FT-338-A.—This mounting consists of a main mounting bracket, an extension or auxiliary bracket, a strap to provide additional support, and all necessary hardware.

(1) The main mounting may be bolted to the instrument panel, to the bulkhead of a vehicle, or to some other suitable support. (See Figure 9.)

(2) The extension bracket is provided for installations where there is insufficient clearance in a vehicle, or where it is desired to space Radio Receiver BC-728-A away from the bulkhead. This auxiliary mounting may be placed sideways or on end, depending upon which position is more adaptable to the particular installation. (See Figure 9.)

(3) A strap is used to provide additional support where it may be required. Figure 9 illustrates the method of using the strap.

d. Radio Receiver BC-728-A.—Radio Receiver BC-728-A is a six-tube superheterodyne, having an r-f stage and a single output tube coupled to a permanent magnet dynamic speaker. A separate oscillator tube is used. The antenna stage is of the Hazeltine type. Inductive tuning of the antenna, r-f, and oscillator stages is accomplished by means of an adjustable iron core in each coil. A high impedance headset, using Plug PL-55, may be used by plugging it into the jack on the front panel. The loudspeaker does not operate when the headset is plugged in.

(1) The radio receiver is housed in a metal case which also contains the loudspeaker, plate supply and battery charger, and the storage battery. The case, consisting of two pieces which are hinged and held together by the housing fastener, is water-proofed by rubber gaskets to seal it against moisture when operating the radio set in the rain.

(2) The battery charger consists of a vibrator, power transformer, dry disc rectifier, and operates from a vehicular storage battery of six or twelve volts.

Suitable filters for the elimination of hash in the receiver are included in the circuit.

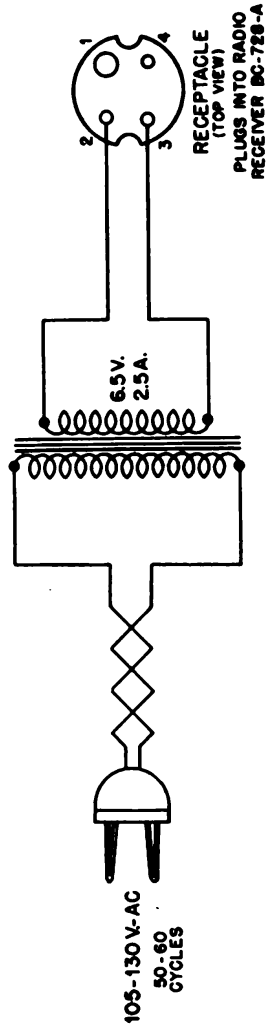


FIGURE 6—A-C CHARGER, SCHEMATIC DIAGRAM

(3) The plate supply is a vibrator type, utilizing a synchronous vibrator and a Tube VT-174, as an output tube bias rectifier. The circuit diagram of the plate supply is shown in Figure 25. Power is furnished to the plate supply by the two volt storage battery. The plate supply delivers 18 milliamperes at 95 volts.

(4) The output tube bias supply utilizes a type Tube VT-174 and operates from a separate winding on the power transformer. It delivers approximately 9 volts of bias to the receiver audio output amplifier. The circuit diagram is shown in Figure 25.

e. Cord CD-618-A.—This is a two-conductor cable used to connect the battery charger circuit to a six or twelve volt vehicular battery, for the purpose of charging Battery BB-54-A when the radio set is in portable operation, or not installed in a vehicle. The cord is equipped with a pair of battery clips on one end and a four-prong receptacle on the other. So that the two volt battery may be charged from either a six or twelve volt vehicular battery, a plug is provided, and attached to Cord CD-618-A by means of a chain, for actuating the six-twelve volt battery charger change-over switch. (See Figure 11.) This figure also shows Radio Receiver BC-728-A connected to a six volt vehicular battery with the switch actuator plug in position. The plug is not inserted when a twelve volt vehicular battery is used.

NOTE: *The two volt battery may also be charged from a 105-130 volt a-c line as described in Paragraph 15b. (See Figure 6).*

f. Vibrator VB-8-A.—This is a two volt, synchronous, seven-prong vibrator, used in the plate supply.

g. Vibrator VB-9-A.—This is a ten volt, non-synchronous, four-prong vibrator, used in the battery charging circuit.

SECTION II—EMPLOYMENT

7. INITIAL PROCEDURE.—

Unpack the equipment carefully, to prevent loss or damage. Check against the Component Parts List in Paragraph 4.

8. INSTALLATION.—

Radio Set SCR-593-A is shipped from the manufacturer with all tubes in position, and with Vibrators VB-8-A and VB-9-A plugged into their respective sockets. The two volt storage battery is shipped dry charged, with the electrolyte in a separate glass container. The battery and electrolyte are packed in one carton. Complete instructions for placing the battery in service are attached to the battery. Instructions will also be found in Paragraph 11.

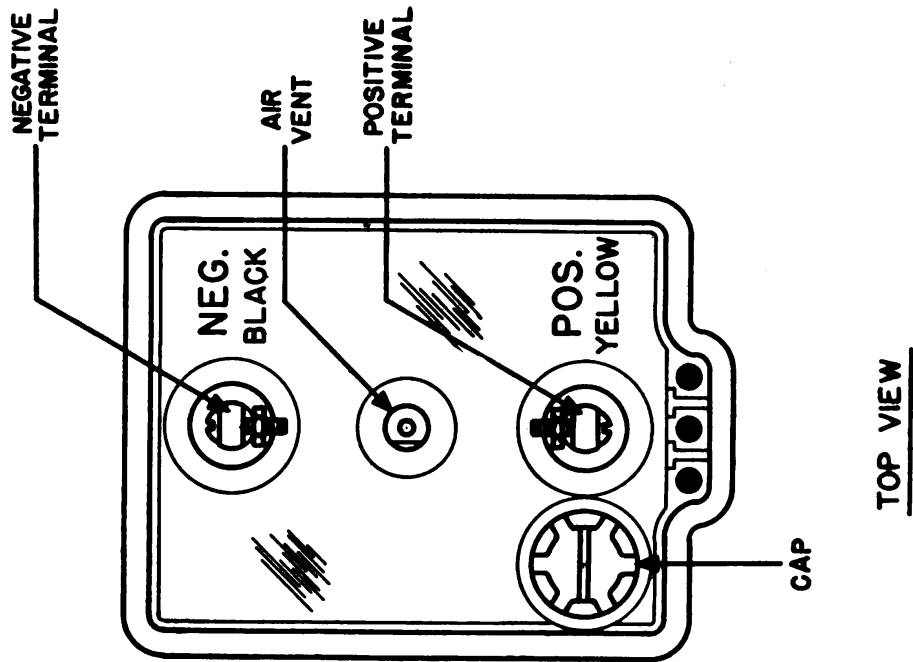
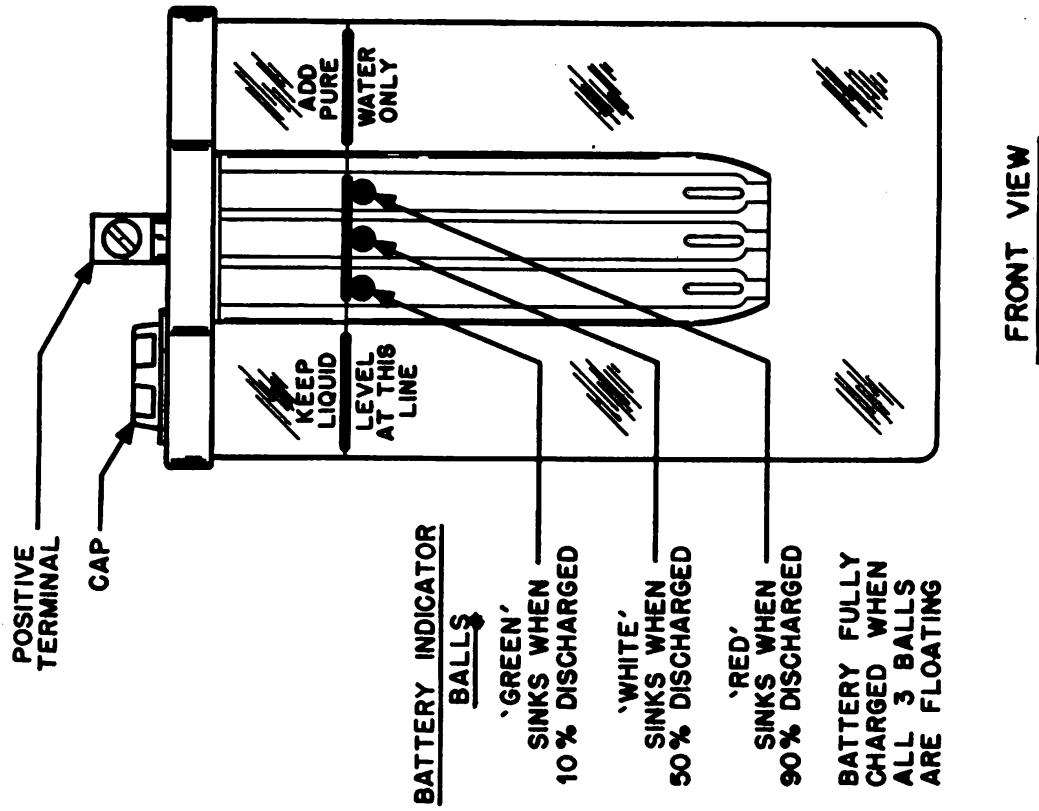


FIGURE 7—BATTERY BB-54-A, DETAIL

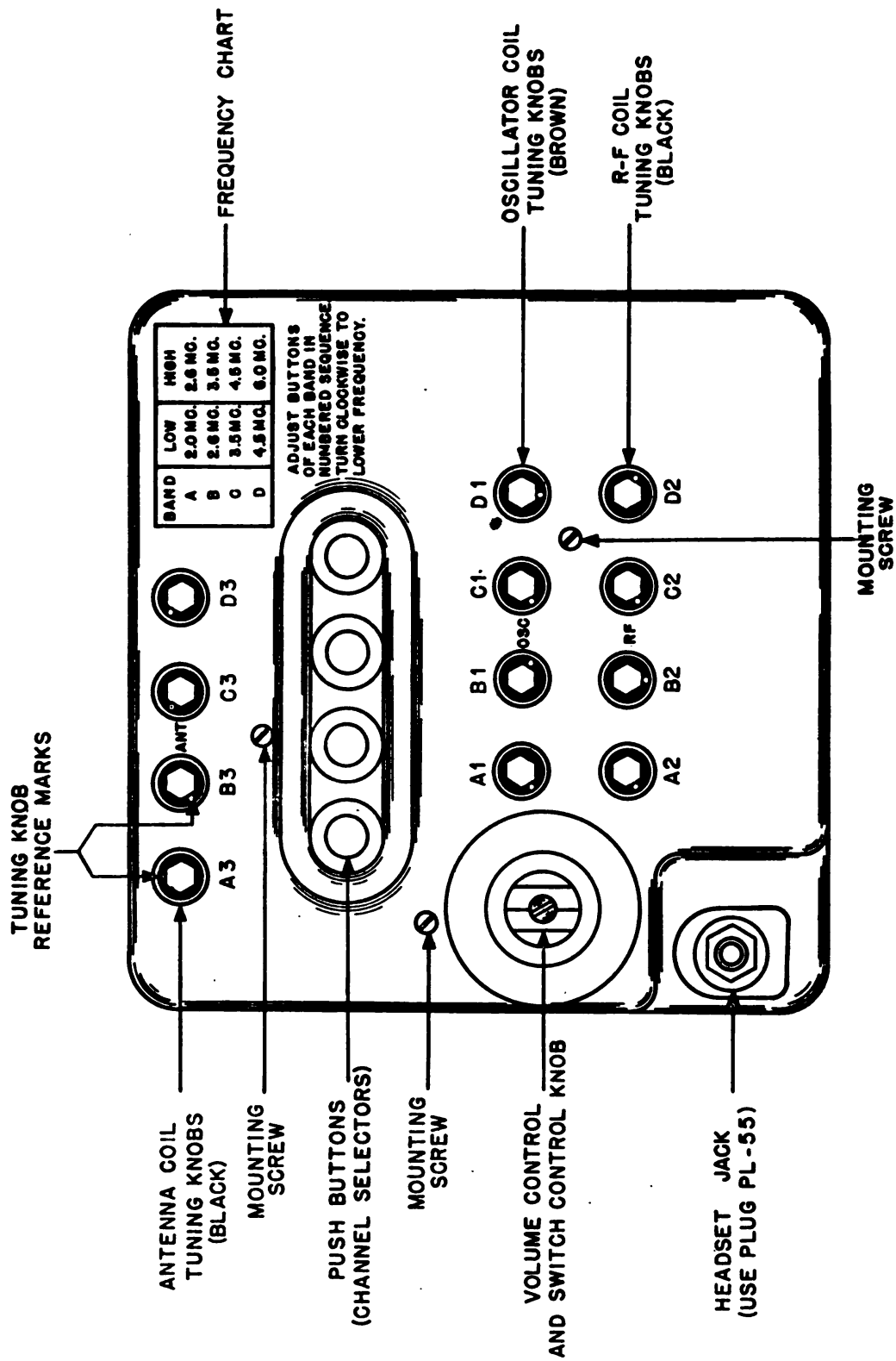


FIGURE 8—RADIO RECEIVER BC-728-A, FRONT PLATE DETAIL

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After placing the battery in service, as outlined in the instructions, open the radio set housing by releasing the housing fasteners. Lift the chassis up on its hinges. Remove the retainer plate by unscrewing the two knurled nuts and one screw, and snapping the plate out of locked position.

Place Radio Receiver BC-728-A on its right side.

Connect the positive (+) battery lead to the positive terminal of the battery. **THE POSITIVE (+) LEAD IS CODED YELLOW.** (NOTE: *First connect the positive (+) lead to the battery, to prevent accidental shorting of the battery with the screwdriver while connecting the battery leads*). Insert lead lug between the terminal nut and the battery post, from the side away from filler cap.

Connect the negative (-) battery lead to the negative terminal of the battery. The lead lug is inserted between the terminal nut and the battery post, from the side of the lug away from filler cap.

Push the top end of the battery partly into the battery compartment.

Connect the rubber vent hose to the battery air vent. Push hole near the end of the vent hose over the battery air vent. Work the vent hose onto the battery air vent with the fingers, until it is fully seated.

Make sure the battery filler cap is screwed in tightly.

Push the battery all the way into the battery compartment, making sure that the battery leads do not slide under the battery. If this precaution is not taken the battery will not fit properly into its compartment.

Install the battery retainer plate to keep the battery in position. This plate has a tongue which fits into the slot of a bracket located on the power supply, and a screw holds it to the side of the housing. Before tightening the screw, press down on the battery retainer plate, until the antenna receptacle fits into the antenna-receptacle-opening in the side of the housing. Two thumb nuts, located at the top of the battery retainer plate, hold and ground it firmly to the power supply.

Leave the housing open, and clamp Antenna AN-75-A to the side of the housing of Radio Receiver BC-728-A. Plug the lead-in into the antenna receptacle. (See Figures 1 and 12.)

9. PRESETTING FREQUENCY.—

There are twelve tuning adjustment knobs, numbered from A1 to D3, for setting the push-buttons. (See Figure 8.) Each of the four push-button selected channels (A, B, C, and D) has three adjustments (Ant 3, R-F 2, and Osc 1). The A channel can be preset to any frequency in the band from 2.0 megacycles to 2.6 megacycles; the B channel from 2.6 megacycles to 3.5 megacycles; the C channel from 3.5 megacycles to 4.5 megacycles, and the D channel from 4.5 megacycles to 6.0 megacycles.

The channel selector push-buttons may be set up by tuning to a phone transmitting station, or by use of an accurately calibrated signal generator.

a. Setting up Push-Buttons with Transmitter on the Air.—Turn the radio set on, with the volume control turned all the way on (clockwise).

Determine the frequency of the transmitting station. Determine the band in which this frequency lies. The frequency chart on the receiver panel contains this data. Push the proper channel-selector button for this band. Turn the number one tuning adjustment knob for this band (A1, B1, C1, or D1). (See Figure 8). Clockwise rotation of the knob *lowers* the frequency; counter-clockwise rotation *raises* the frequency. Turning any one of the three tuning knobs of the band that you are setting will decrease the sensitivity. This will be noticeable by a decrease in noise level. Rotate the number one knob first, the number two knob second, and the number three knob third. (For example:—A1, A2, A3). As soon as you notice a decrease in noise level, immediately adjust the number two and three knobs approximately the same number of turns that you have rotated knob number one. Stop at the point of highest noise level. This will keep the sensitivity high enough so that the station will be heard when the frequency is reached. If the station is not heard, rotate knob one still further, keeping knobs two and three in step. When the transmitting station is heard, turn the three knobs in numerical sequence, to the point where reception is loudest.

VERY CAREFULLY GO OVER THESE THREE ADJUSTMENTS SEVERAL TIMES, ALWAYS TUNING FOR GREATEST VOLUME AND CLEAREST RECEPTION.

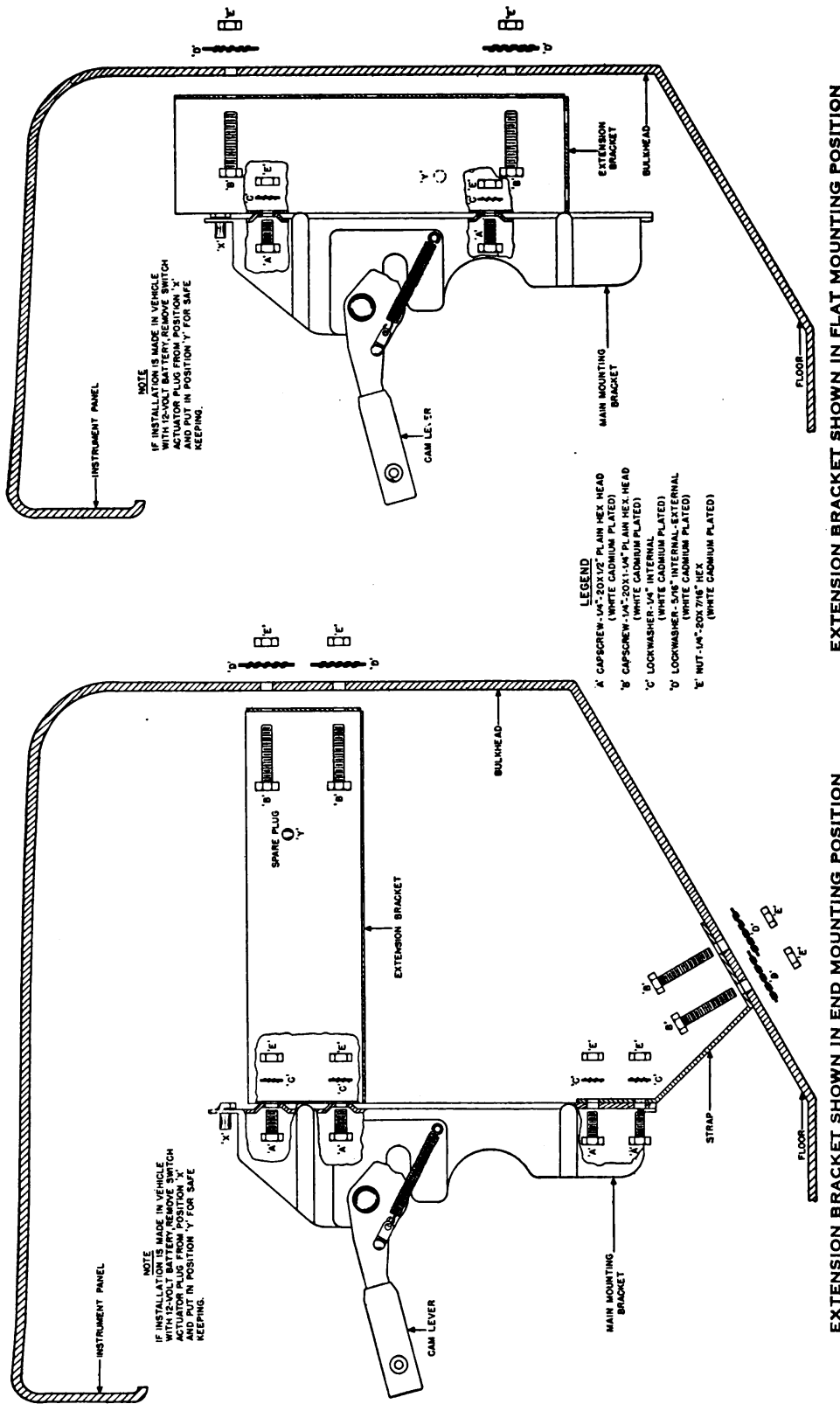


FIGURE 9—MOUNTING FT-338-A, INSTALLATION DETAIL

If more than one channel is to be preset, press the channel selector button for the desired band and repeat the preceding adjustments on the three tuning knobs for this band. Use the signal from a phone transmitter operating on the frequency to which the receiver is to be adjusted.

b. Setting up Push-Buttons with Signal Generator.—Disconnect Antenna AN-75-A from Radio Receiver BC-728-A. Connect the output of the signal generator to the antenna receptacle of the radio set, using a 100 $\mu\mu\text{f}$ capacitor in series with the lead. Connect the ground lead of the signal generator to the radio receiver housing. Connect an output meter across the voice coil terminals of the loud-speaker. Use the 1½-volt scale. Turn the radio set on, with the volume turned all the way up (clockwise). Set the signal generator to the exact frequency of the station you want to hear in any one of the four channels. Push the channel selector button (A, B, C, or D) for this band. The output from the signal generator must be modulated. Set the signal generator output for 1000 to 1500 microvolts.

Adjust the three tuning adjustment knobs in the manner described in Paragraph 9*a.*, except to tune for the highest reading on the output meter rather than for greatest volume.

10. VEHICULAR INSTALLATION.—

a. Mounting FT-338-A.—Select a location in the vehicle where the radio set will be accessible, and where it is close enough to the antenna to permit the lead-in to reach. The location chosen should permit an all-around clearance of at least one inch between the radio set and the vehicle. A clearance of less than one inch may cause the set to strike surrounding objects while driving over rough terrain, and cause noise. Two methods of mounting Radio Receiver BC-728-A are shown in Figure 9.

When Radio Set SCR-593-A is mounted on the instrument panel, use only the main mounting bracket. When mounted on the bulkhead, the extension bracket is required to space the main mounting bracket away from the bulkhead. The extension bracket may be mounted sideways, or on end, as shown in Figure 9.

Figure 9 also illustrates the method of bolting the main bracket to the extension bracket, and shows how the strap is bolted to the main bracket. Bend the strap to fit the contour of the floor board or support to which it is mounted.



FIGURE 10—RADIO RECEIVER BC-728-A, SHOWN IN MAIN MOUNTING BRACKET OF MOUNTING FT-338-A

Use the main mounting or the extension bracket as a template for drilling mounting holes in the vehicle.

When Mounting FT-338-A is installed in a vehicle using a twelve volt battery, remove the switch actuator plug from the mounting and place it in the hole provided for it on the extension bracket, for safe keeping.

(1) *Instrument Panel Mounting.*—Bolt the main mounting bracket to the instrument panel, using the bolts, lockwashers and nuts provided. (See Figure 9.)

(2) *Bulkhead Mounting.*—Bolt the main mounting to the extension bracket, using the bolts, lockwashers and nuts provided for this purpose. Mount the assembly on the bulkhead and bolt it securely. (See Figure 9.)

Connect the main bracket battery lead to the ammeter or other suitable switch terminal. A clip is provided on the end of the lead for this purpose. Tools are not required; simply compress the clip and slip the slot over the terminal to which connection is to be made.

b. Antenna.—Clamp Antenna AN-75-A under the hood of the vehicle or to some support close enough to the radio to permit the antenna lead-in reaching the radio set. (See Figure 4.) Tighten the thumb screw. The “U” bracket on the base of the antenna is reversible, so that the antenna may be mounted on either the right or left hand side of the vehicle. To reverse the “U” bracket, loosen the large thumb screw and turn the “U” bracket around 180 degrees.

After mounting the antenna, plug the lead-in into its receptacle on the radio set housing.

Place Radio Receiver BC-728-A in the main mounting, being careful to line the plug on the radio set squarely with the receptacle on the mounting. Draw the two cam levers down over the two studs mounted on the housing.

c. Portable.—Clamp Antenna AN-75-A to the housing of Radio Receiver BC-728-A, as shown in Figure 3. Tighten the wing screw. Insert the antenna plug into its receptacle. Be sure that the lead-in retainer bracket holds the plug securely in position. Place the antenna lead-in under the two cable-retainer straps on the side of the radio set housing, and push the stops down over the snap fasteners to hold the antenna lead-in firmly in position. In this manner, the antenna lead-in functions as a carrying strap.

* IF A 12-VOLT VEHICULAR BATTERY IS TO BE USED, DO NOT PLUG IN 'SWITCH ACTUATING PLUG' AS SHOWN. WITH 'SWITCH ACTUATING PLUG' OUT, UNIT IS AUTOMATICALLY SET FOR 12-VOLT VEHICULAR BATTERY.

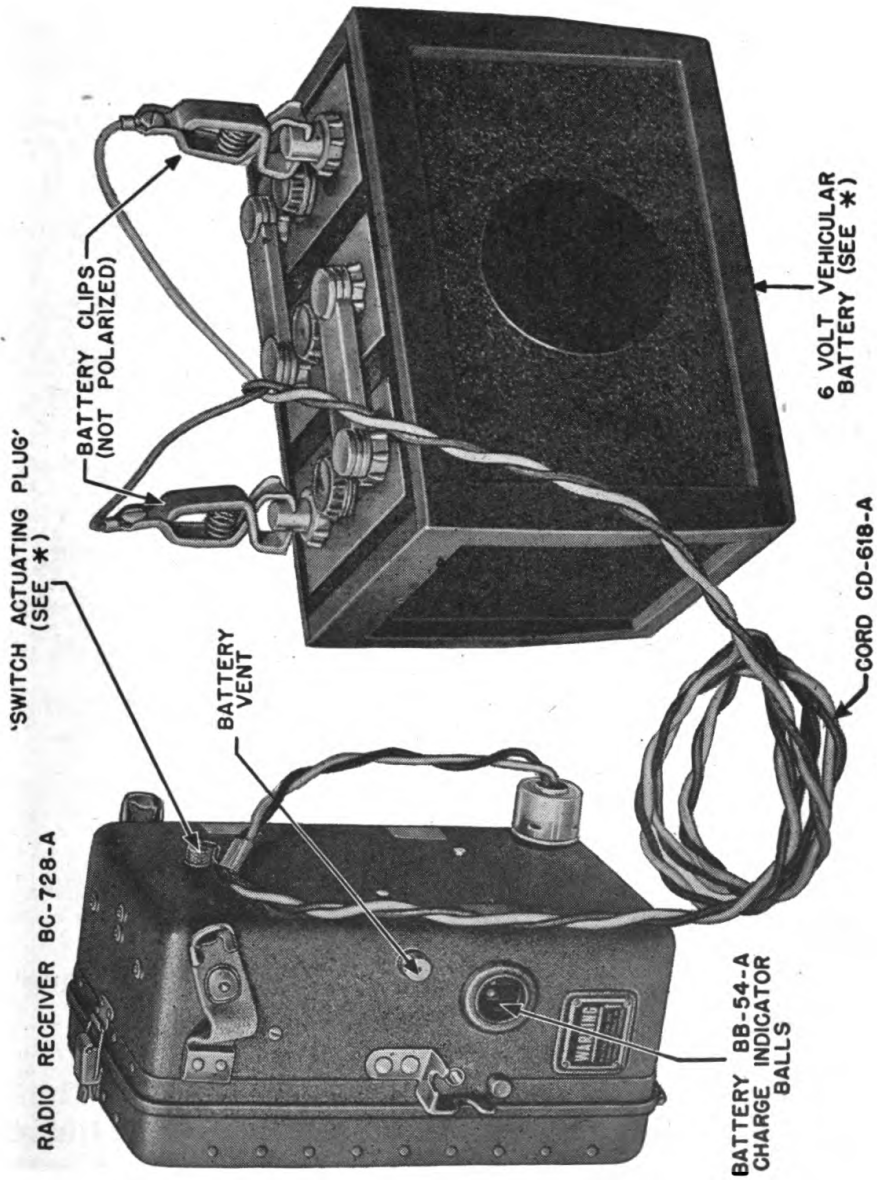


FIGURE 11—METHOD OF CHARGING RECEIVER BATTERY BB-54-A, USING CORD CD-618-A, AND EXTERNAL 6 VOLT VEHICULAR BATTERY

11. PREPARATION FOR USE.—

Before attempting to place the set in operation, check the following items to avoid any possibility of inoperation, or damage to the equipment.

a. See that the electrolyte has been added to Battery BB-54-A, as outlined in instructions which accompany the battery. These instructions are also outlined below.

(1) *How to fill Battery BB-54-A with electrolyte.*

Remove filler cap from the battery.

Insert funnel in filler cap opening in battery.

Using funnel, pour electrolyte *slowly* into battery. Fill until level of electrolyte is approximately $\frac{1}{4}$ inch above the liquid level line on the side of the battery.

Remove funnel.

Replace filler cap on battery and tighten securely.

Allow the battery to stand at least 3 hours, and not longer than 16 hours before charging.

If the electrolyte is then below the level line, add more electrolyte until the level is again at the level line.

(2) *Charging the battery.*

Charge the battery at $2\frac{1}{2}$ amperes for 20 hours. (See Paragraph 15*b.*)

All gravity indicator balls should then be floating at the level line when the battery is fully charged.

CAUTION: While the battery is charging, the electrolyte level will rise. At no time must this level be higher than $\frac{1}{4}$ " above the "level line." Otherwise electrolyte will be forced out the vent tube.

If the liquid is below the level line, add pure water and charge at one ampere until the green ball rises.

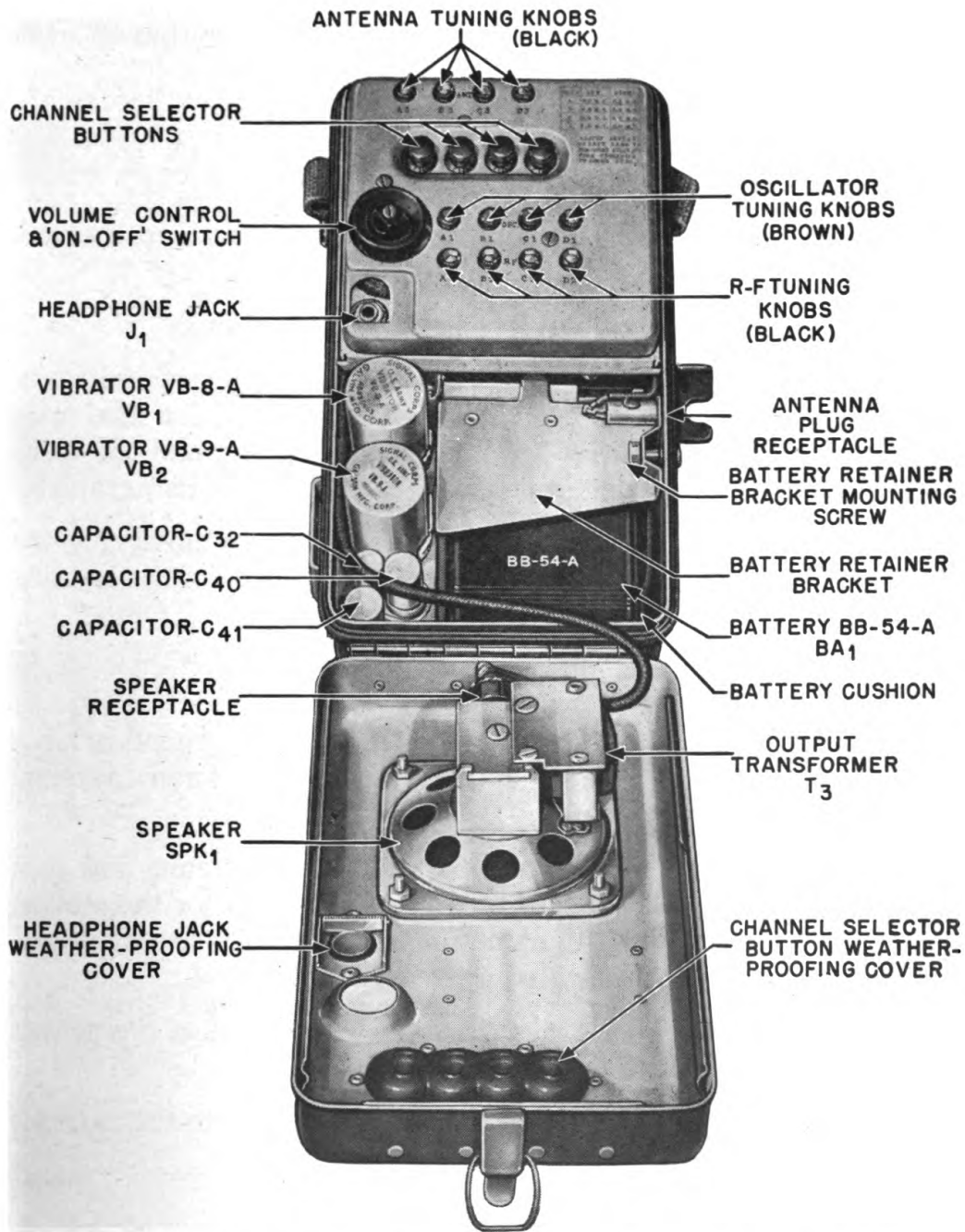


FIGURE 12—RADIO RECEIVER BC-728-A, INTERIOR VIEW

(3) *Emergency Installations.*

In emergencies when the battery must be used immediately, it may be placed in service after completing instructions given under Paragraph 11 *a.* (1), providing it will be fully charged within 48 hours after filling.

(4) *Maintenance.*

Keep liquid up to level line by adding pure water.

Recharge as soon as possible after discharge, to prevent damage to the plates.

When not in use, recharge when the white ball sinks.

b. Check to determine that the cable leads are properly connected to the two volt storage battery. The yellow coded lead must be connected to the positive terminal of the battery, and the black coded lead to the negative terminal of the battery. (See Paragraph 8.)

c. Check the condition of Battery BB-54-A, by observing the colored floats visible through the opening in the side of the housing of Radio Receiver BC-728-A. (See Paragraph 6 *b.*)

12. PORTABLE OPERATION.—

Place the radio set in an upright position, on the ground or on a stationary support, or carry it with the carrying strap (antenna lead-in) slung over the shoulder, as shown in Figure 1.

To place the radio set in operation, extend the antenna and turn the volume control *on* (clockwise). Push the button for the station you want to hear. When the transmitting station is heard, adjust the volume control to the level of greatest clarity.

To change preset frequencies (channels) merely push the proper button (A, B, C, D).

To turn the radio set off, turn the volume control to the extreme left (counter-clockwise) until the switch clicks.

13. VEHICULAR OPERATION.—

In vehicular service, the instrument is operated in the manner described under Portable Operation, except that the vehicular battery operates the battery charger in the radio set, thereby charging the two volt battery.

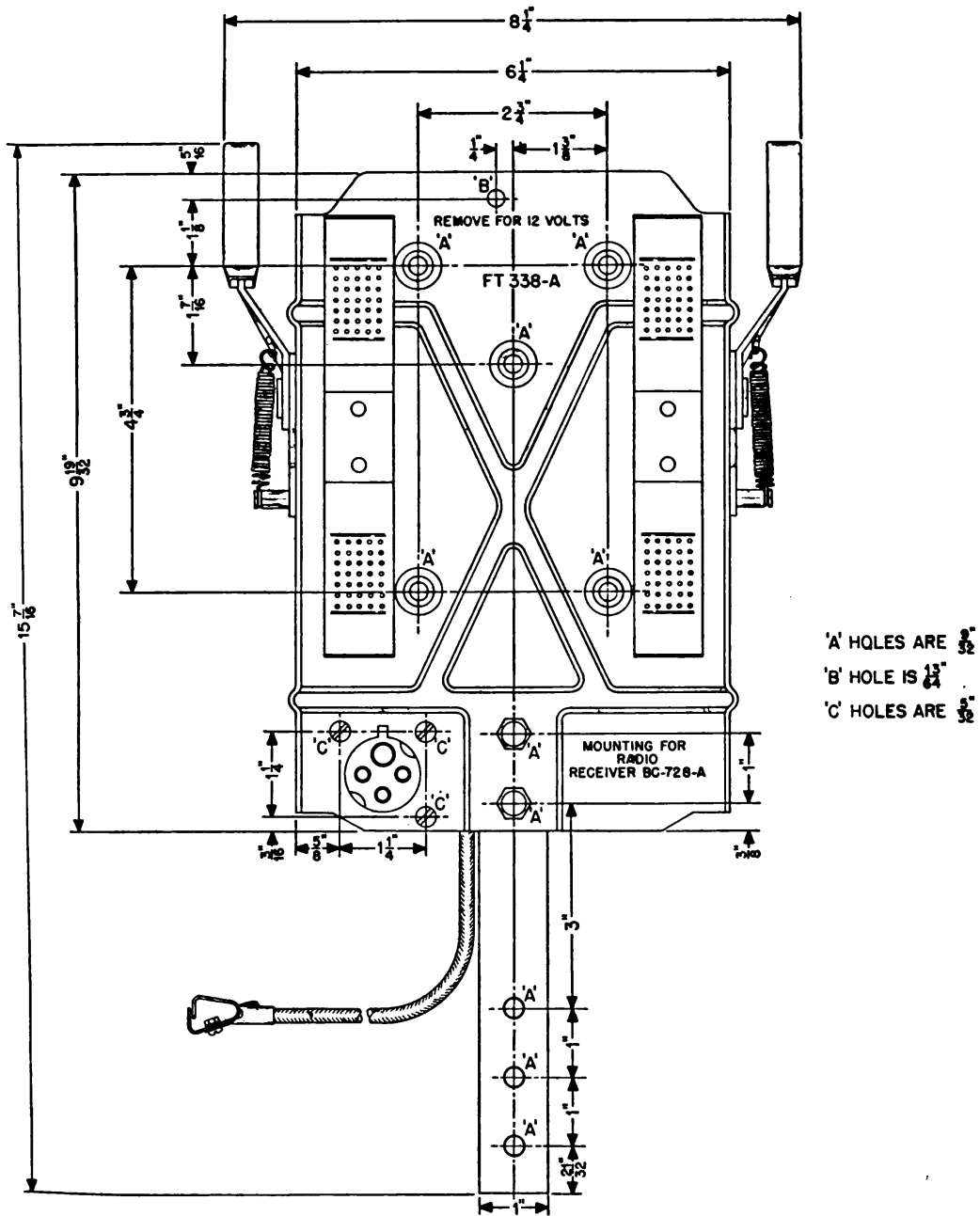


FIGURE 13—FT-338-A, OUTLINE DIMENSIONAL AND MOUNTING HOLE LOCATION DETAIL

CAUTION: Do not permit the radio set to be left in a vehicle for a period of more than 3 or 4 days without being used, as the two volt cell will be overcharged. When it is necessary to leave the radio set in a vehicle for a longer period of time, remove it from the main mounting bracket, so that Battery BB-54-A will not be overcharged, or remove the lead from the ammeter.

NOTE: Unless this is done, the two volt battery will not only be overcharged, but the vehicle battery will be discharged. Overcharging the two volt battery will not result in serious injury, but will cause it to gas considerably, and require the addition of pure water at more frequent intervals.



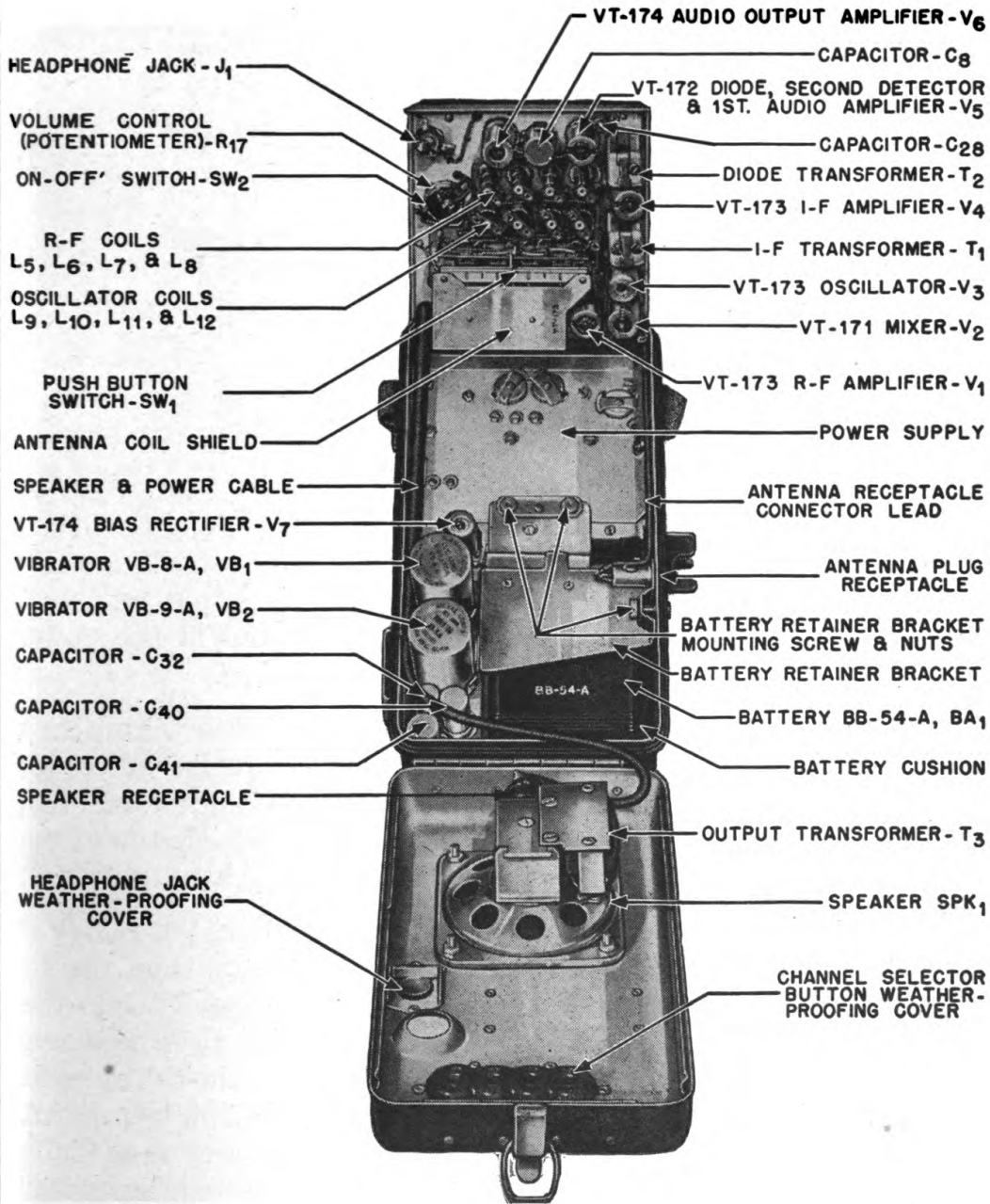


FIGURE 14—RADIO RECEIVER BC-728-A, INTERIOR VIEW SHOWING CHASSIS RAISED ON HINGE

SECTION III—FUNCTIONING OF PARTS

14. RECEIVER.—

The receiver is a superheterodyne type designed for reception of amplitude modulated voice signals. It receives signals in the frequency range of from two to six megacycles.

a. Tuning is accomplished by means of four push buttons, each being adjustable. See Paragraph 2 for frequency range of each button.

The tube complement of the receiver consists of the following: One r-f amplifier, Tube VT-173; a mixer, Tube VT-171; one oscillator, Tube VT-173; one i-f amplifier, Tube VT-173; one second detector and first audio amplifier, Tube VT-172; and one output amplifier, Tube VT-174. An additional Tube VT-174 is used in the power supply as a bias rectifier.

When the receiver is in operation, a signal picked up by the antenna is transferred through one of the antenna coils (L_1 and L_4) and coupling capacitor (C_3) to the control grid of the r-f amplifier tube (V_1). The r-f signal is amplified here and transferred through one of the r-f coils and coupling capacitor (C_9) to the control grid of tube (V_2).

The oscillator stage is a Colpitts type using Tube VT-173 (V_3) which generates a signal 455 kc higher in frequency than the r-f signal picked up by the antenna. This signal is also fed into the mixer tube where a resulting beat frequency of 455 kc is produced and transferred through the i-f transformer (T_1) to the control grid of the i-f amplifier tube (V_4). The signal is amplified and transferred through the diode transformer (T_2) into the diode section of Tube VT-172 (V_5). This section of the tube rectifies the r-f frequencies and produces an audio frequency. The audio frequencies are then amplified in the pentode section of the same Tube VT-172 (V_5) and transferred through coupling capacitor (C_{27}) to the control grid of the output amplifier Tube VT-174 (V_6). The signal is amplified and transferred through the output transformer (T_3) to the speaker (SPK₁). (See Figure 25).

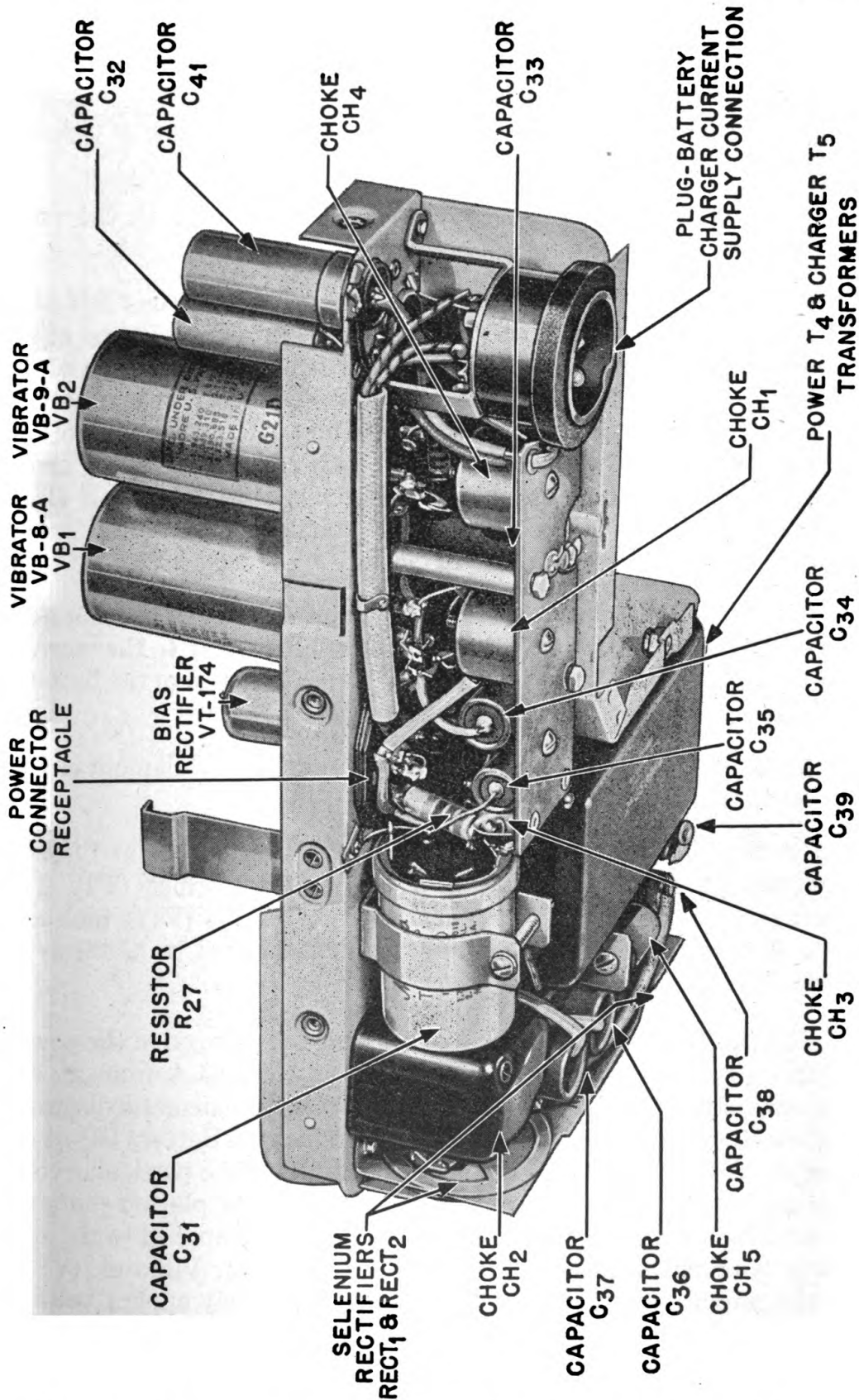


FIGURE 15—RADIO RECEIVER BC-728-A, POWER SUPPLY UNIT

15. POWER SUPPLY.—

a. The power supply provides Radio Receiver BC-728-A with correct operating voltages, its source of power being a two volt storage Battery BB-54-A.

The power supply ON-OFF switch is combined with the radio receiver volume control.

Vibrator (VB₁) alternately applies voltage from Battery BB-54-A to first one side and then to the other of the primary winding of the power transformer (T₄). The a-c voltage from the secondary of the power transformer (T₄) is applied to a second set of contacts in vibrator (VB₁) which rectifies the a-c voltage. This rectified voltage is then applied to the filter circuit which consists of: filter choke (CH₃), resistor (R₂₇) and electrolytic capacitors (C₃₆ and C₃₇), thereby furnishing a smooth d-c high voltage for plate and screen circuits of Radio Receiver BC-728-A.

A suitable audio filter choke (CH₁) to prevent vibrator hash from feeding back into Battery BB-54-A, and subsequently to the receiver tubes, is connected in series with the positive (+) lead of the battery. Capacitor (C₃₁) also forms a part of this filter.

A suitable R-F filter choke (CH₂) connected in the filament circuit is used for the same purpose.

Correct bias voltage for the audio output tube is obtained from a low voltage secondary winding of power transformer (T₄). The voltage from this winding is applied to Tube VT-174 (V₇) which acts as a half wave rectifier. The bias circuit is filtered by electrolytic capacitor (C₃₈).

b. *Battery Charging Circuit.*—A circuit is employed in the power supply for the purpose of charging Battery BB-54-A from an external vehicular battery of 6 or 12 volts. Refer to schematic diagram, Figure 16, for plug connections used when charging Battery BB-54-A. Switch (SW₄) must be in the proper position for the particular voltage used in charging. This switch is actuated by the plug on charging Cord CD-618-A. The voltage used for charging is applied to the primary winding of the charging transformer (T₅). Vibrator (VB₂) in the primary circuit of the transformer alternately applies voltage first to one side and then to the other of the primary winding, producing an a-c voltage in the secondary winding of the same trans-

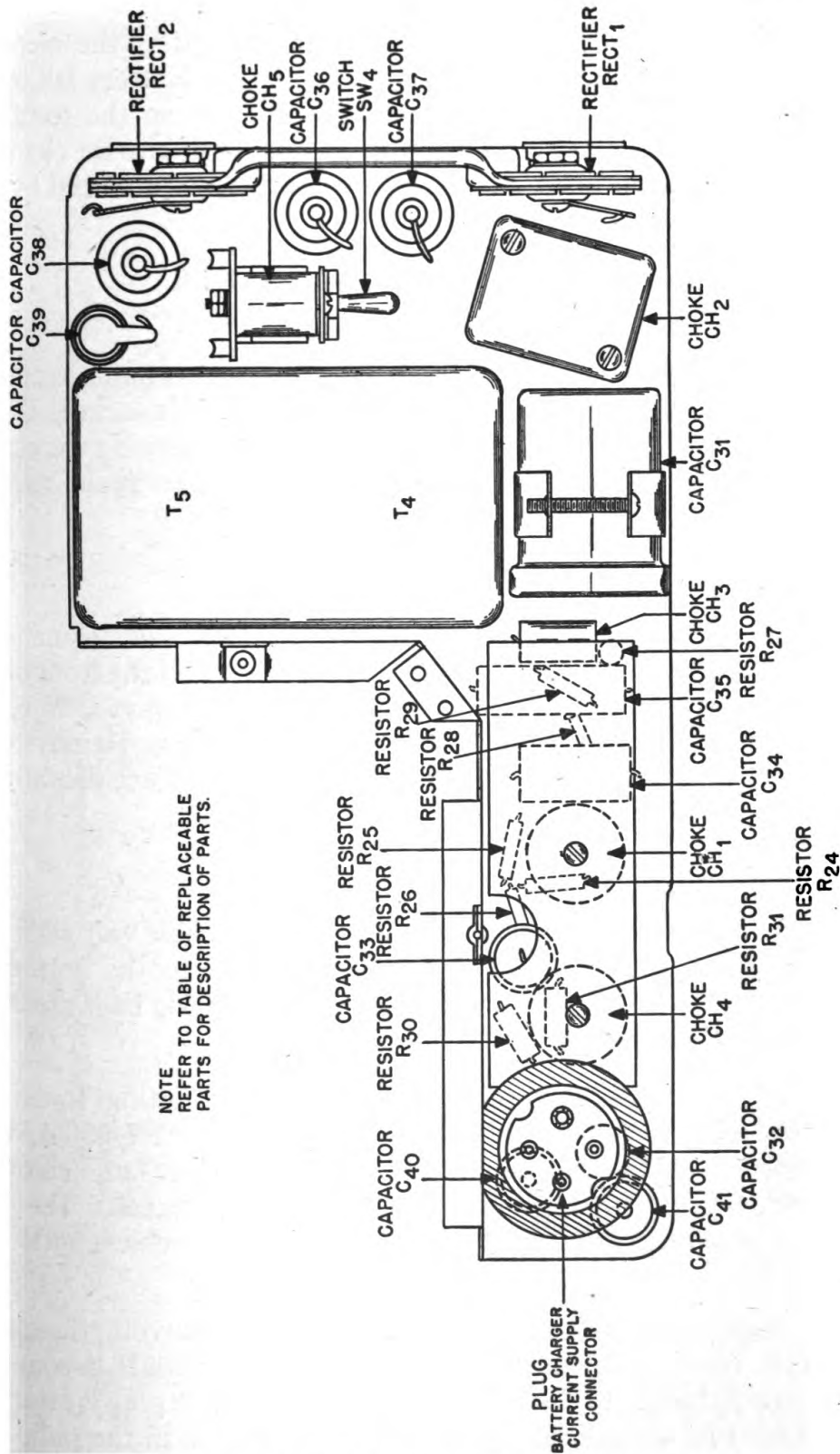


FIGURE 16—RADIO RECEIVER BC-728-A, POWER SUPPLY—BOTTOM VIEW—SHOWING MAJOR PARTS

former. (See Figure 25.) This a-c voltage is rectified by the selenium discs in the secondary circuit and then applied to Battery BB-54-A. Filter choke (CH₅) filters the rectified voltage from the rectifiers. Filter choke (CH₄) prevents hash from feeding back into the charging battery. Capacitors (C₄₀ and C₄₁) by-pass any r-f produced by the vibrator (VB₂).

SECTION IV—MAINTENANCE

16. INSPECTION.—

When the radio set fails to operate, make an examination to determine that tubes and vibrators are in their respective sockets. Check the condition of the two volt storage battery by observing the charge indicator balls visible through the window in the radio receiver housing.

17. BATTERY CARE.—

Add pure water at sufficiently frequent intervals to maintain the level of electrolyte at the indicator line molded on the front of the battery case. *Do not overfill. Overfilling will nullify the non-spill feature and result in electrolyte spurting out through the vent tube.* Remove with an absorbent tissue or cloth, any water that might accidentally be spilled when filling.

18. BATTERY CHARGING.—

The battery may be charged from a six or twelve volt vehicular battery when the white indicator ball has sunk to the bottom of the channel. Stop the charge when all three indicating balls are floating. (See Paragraph 6 *b*.)

a. Battery BB-54-A may be charged by mounting Radio Set SCR-593-A in a vehicle equipped with Mounting FT-338-A. (See Paragraph 10.) Check the vehicle storage battery to determine whether it is six-volt (three cell) or twelve volt (six cell). The plug must be in position on Mounting FT-338-A if the vehicle battery is six volts.

b. Battery BB-54-A may be charged from a six-volt (three-cell) or twelve volt (six cell) vehicle battery, and Cord CD-618-A connects the battery charger to the battery. (See Figure 11.) A plug is attached to the cord for actuating the six-twelve volt switch in the radio set. Figure 11 shows the plug in position when charging from a six volt battery.

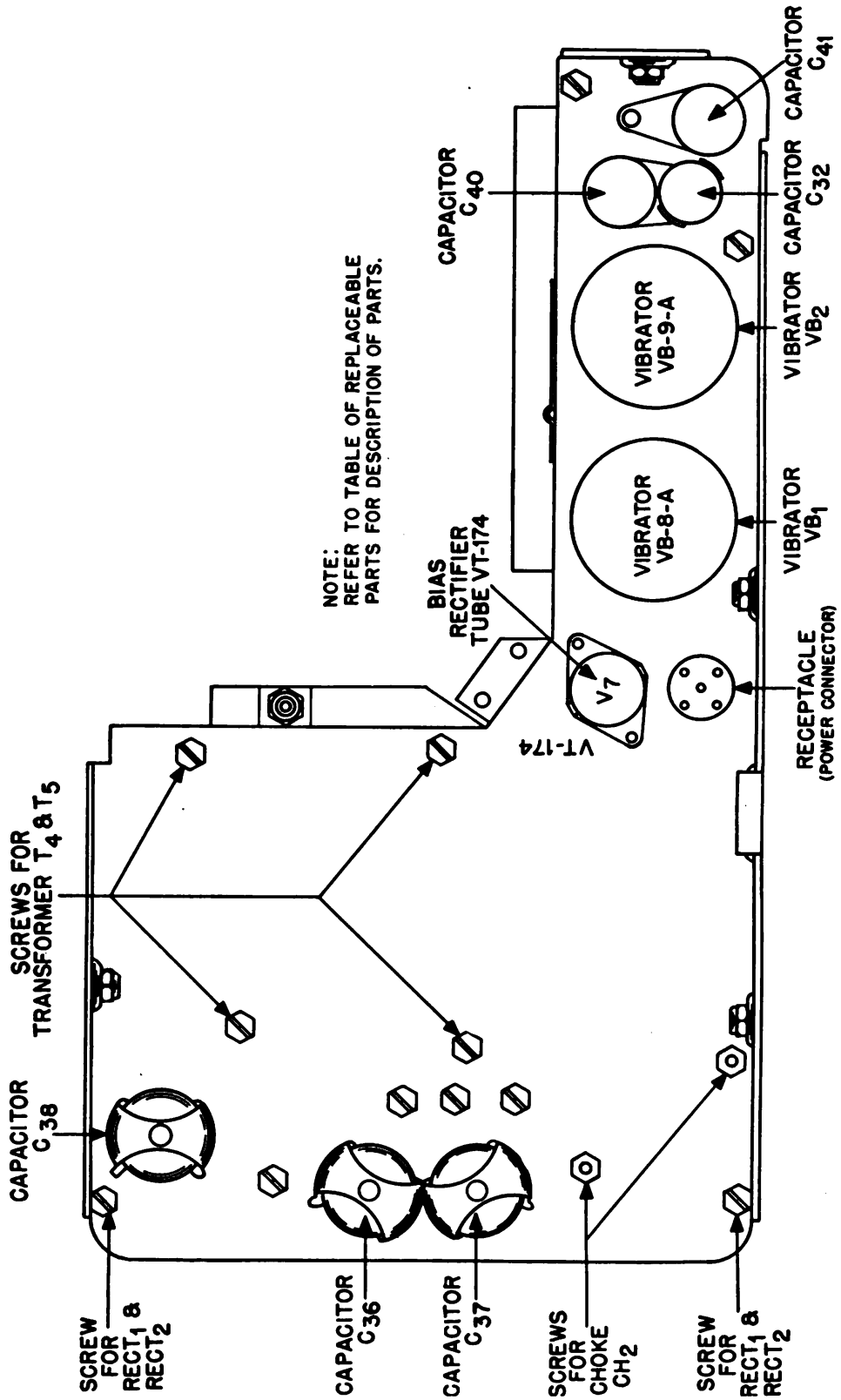


FIGURE 17—RADIO RECEIVER BC-728-A, POWER SUPPLY—TOP VIEW—SHOWING MAJOR PARTS

Insert the plug in the housing and turn to lock-in position. The plug is not used with a twelve volt (six-cell) battery.

c. Battery BB-54-A may be charged from a 105-130 volt a-c source by the use of a step-down transformer, as shown in Figure 6. The secondary leads from this transformer are connected to terminals two and three on the battery-charger current-supply connector. The output from this transformer must be 6.5 volts at 2.5 amperes, and must have good regulation.

19. TUBE REPLACEMENT.—

Locate the defective tube. This is done most conveniently by replacing the tubes one at a time with tubes known to be good. Be sure the proper type of tube is used for replacement. Check this by comparing the type number of the tube with the number stamped on the edge of the chassis base along side the tube socket. One socket has the type number stamped on the coil shield directly above and to one side of the socket. (See Figure 18.)

CAUTION: Always be sure to place the tube shield over the replacement tube. The shield has a bayonet type lock. There is one tube mounted on the power supply unit.

20. VIBRATOR REPLACEMENT.—

Vibrators VB-8-A and VB-9-A have a normal life and are subject to replacement from time to time. Being of the plug-in type, vibrator replacement presents no problem. Vibrator VB-8-A (two volt for power supply) has seven prongs, and Vibrator VB-9-A (six volt for battery charger) has four prongs, thus eliminating any possibility of plugging them into the wrong receptacles.

21. REPLACEMENT OF VARIOUS PARTS.—

To replace any parts, it will be necessary to open the housing and remove the front plate cover. Remove the three mounting screws (See Figure 8) and cover is easily lifted.

Coil tuning knobs are held in place by the cover and should be removed until the cover is replaced. It may also be necessary to remove the power supply chassis from the housing to replace or check various component parts. First remove Battery BB-54-A. Remove the 10 screws on the outside of the housing, on the ends,

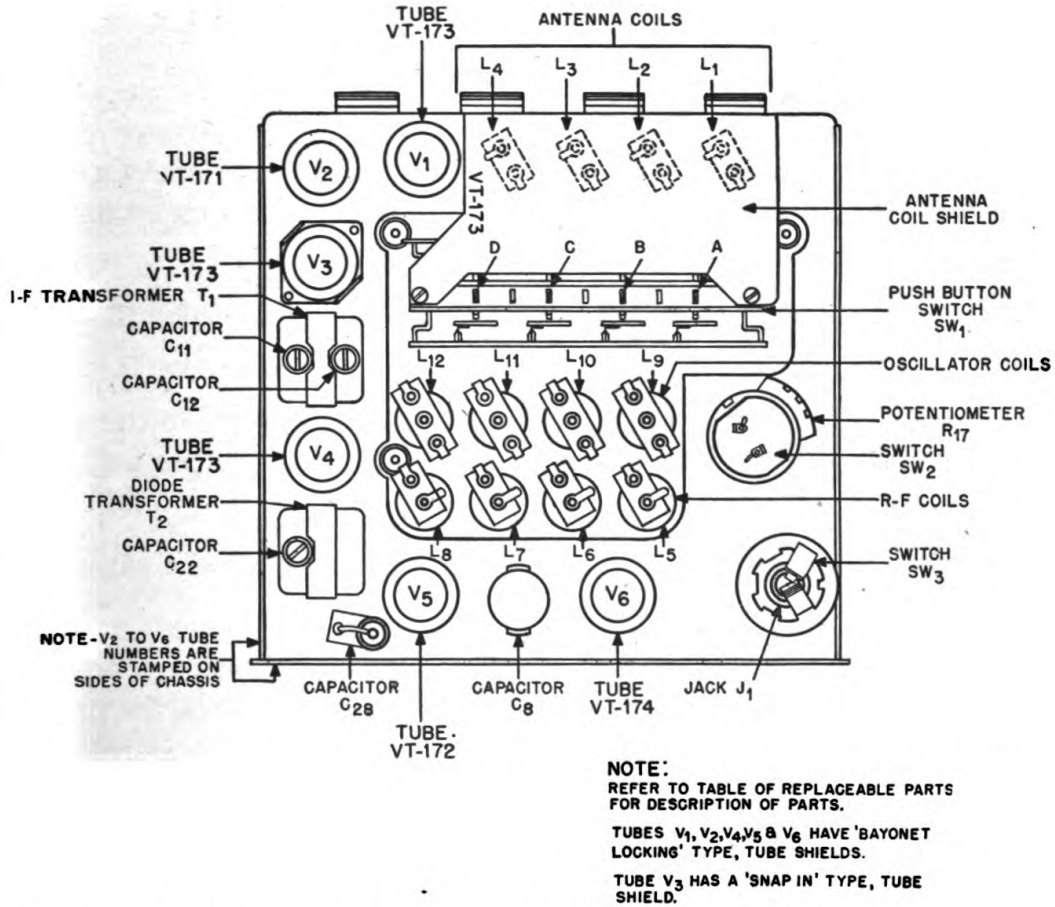


FIGURE 18—RADIO RECEIVER BC-728-A, CHASSIS—TOP VIEW—SHOWING MAJOR PARTS

sides and bottom. Then lift out the power supply chassis. *The battery cushion remains in the housing. Be careful when removing chassis.* Note: The power chassis fits very tightly into the housing, and some force will be required to remove it.

a. Tuning Assembly.—Remove the tuning assembly from the radio receiver by removing the three mounting studs holding it to the chassis. (See Figure 19.) Unsolder the leads connecting it to other parts, and lift the tuning assembly from the chassis.

b. Antenna, R-F and Oscillator Coils.—Note: When any one of these coils is replaced the set will not be stable until after a short period of operation. In order to insure stability for immediate operation, replace the complete tuning assembly.

To replace a coil, remove the tuning assembly from the chassis as given in *a* of this paragraph.

Unsolder the leads from the coil to be replaced. Remove the screw from the coil-tuning screw and coil-bushing to remove the coil from the tuning assembly bracket.

Be sure the new coil used is the same type coil of the same frequency as the one that was removed.

Replace the nut on the coil-tuning screw and coil-bushing to hold it on the tuning assembly bracket, and solder coil leads to the proper terminals.

c. Capacitors.—The metal encased capacitors are replaced by drilling a hole in the capacitor bracket rivet and punching it out, then unsoldering the capacitor leads. It will be necessary to remove the tuning assembly to replace some capacitors. Refer to *a* of this paragraph for instructions for removing the tuning assembly.

d. Diode and I-F Coils.—Remove the screw from the mounting strap holding the coil. The screw will be found on the bottom side of the receiver chassis. Remove the small “U” bracket screw. Unsolder the coil leads, and the coils and shields can be removed. Place the new coil in position with the strap holding it to the base. Put the “U” bracket in position over the strap, then place the screw through the hole in the strap and “U” bracket. Tighten securely. Connect the coil leads to the proper terminals and solder.

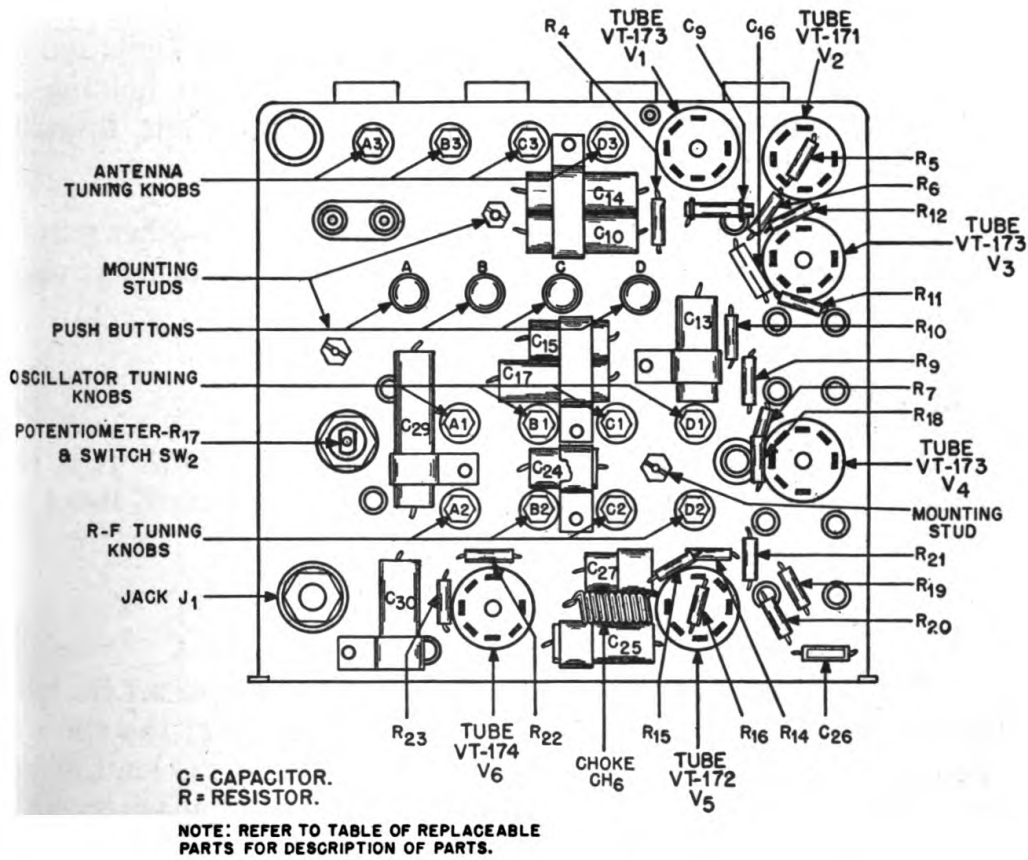


FIGURE 19—RADIO RECEIVER BC-728-A, CHASSIS—
BOTTOM VIEW—SHOWING MAJOR PARTS

e. Transformer and Choke.—Unsolder the leads from the part to be replaced and remove the mounting screws holding the part to chassis. See Figure 18 for location of mounting screws. To replace the part, replace the mounting screws and solder the leads to their proper terminals.

f. Speaker.—To replace the speaker merely remove the speaker-cable plug and the four mounting screws holding the speaker to the housing.

g. Volume Control.—Remove the volume control knob and the rubber gasket on the control shaft. Remove the nut holding the volume control to the chassis and unsolder the leads from the volume control.

h. Miscellaneous Parts.—The replacement of any other parts of Radio Receiver BC-728-A will not present any problem, as visual examination will indicate.

22. DISTORTION.—

This condition may be caused by a defective tube. It is also possible that the push-buttons may be improperly tuned. Reset the push-buttons as instructed in Paragraph 9.

23. I. F. ALIGNMENT.—

To align the i-f amplifier and diode detector stages, set the radio receiver up for portable operation, but do not connect the antenna. Set up a signal generator and accurately tune it to 455 kc. Connect the output of the signal generator through a .1 μ f capacitor to the antenna receptacle of the radio, making certain to connect the ground lead of the signal generator to the housing of the radio set. Feed a modulated signal of at least 50,000 microvolts into the radio receiver. Turn the volume control fully clockwise. Connect an output meter to the voice coil leads of the loudspeaker. Press one of the channel selector buttons.

Tune capacitor C₂₂ for the greatest reading on the output meter. See Figure 18 for trimmer location. Tune trimmers C₁₁ and C₁₂ likewise. Go over the three adjustments very carefully a second and third time, tuning for the greatest reading on the output meter. The signal generator output should be reduced to give an audio output of not more than .4 volts as the adjustments proceed.

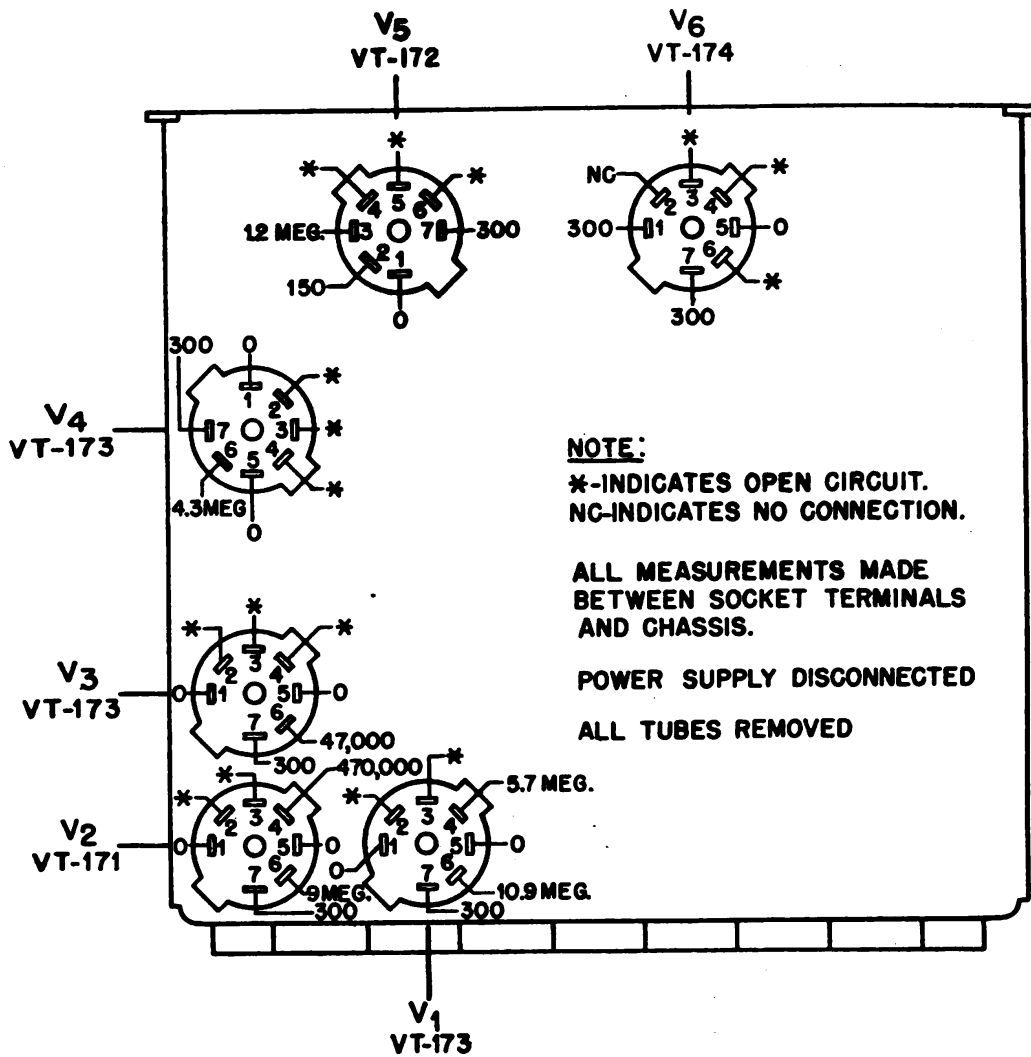


FIGURE 20—RADIO RECEIVER BC-728-A, SOCKET TERMINAL RESISTANCE VALUES

24. NORMAL POINT TO POINT RESISTANCE VALUES.—

a. Normal resistance values obtained by point to point measurements on Radio Receiver BC-728-A in a satisfactory condition are indicated in the following charts. Use of this data in connection with similar measurements on faulty equipment, combined with a logical circuit analysis, will frequently disclose the source of trouble in an improper operating or dead receiver. Take the readings under the following conditions, and these must be reproduced exactly if comparison measurements on a faulty unit are to be effected. See Figure 20 for socket terminal resistance values.

(1) *Remove all tubes and vibrators.*—Besides producing erroneous readings, tube filaments can be burned out by the high ohmmeter current used in some ohmmeters.

(2) Remove cover from receiver chassis to make socket terminals accessible.

(3) Disconnect the speaker-connector plug from the speaker-connector receptacle.

(4) Turn switch to "OFF" position and remove power plug connector from power supply receptacle. Disconnect battery leads from Battery BB-54-A.

(5) Make certain that the headset plug is not inserted in the jack.

(6) All readings can be taken on the voltohmmeter unit of Signal Corps Test Set I-56-(*). The meter scale used should be the one giving the greatest usable deflection.

b. Battery Charger Current Supply Connector Plug. (See Figure 25).

<i>Pin No.</i>	<i>Resistance to chassis</i>
1	110 ohms
2	Open Circuit
3	850 ohms (reverse ohmmeter leads if reading is wrong)
4	0 ohms

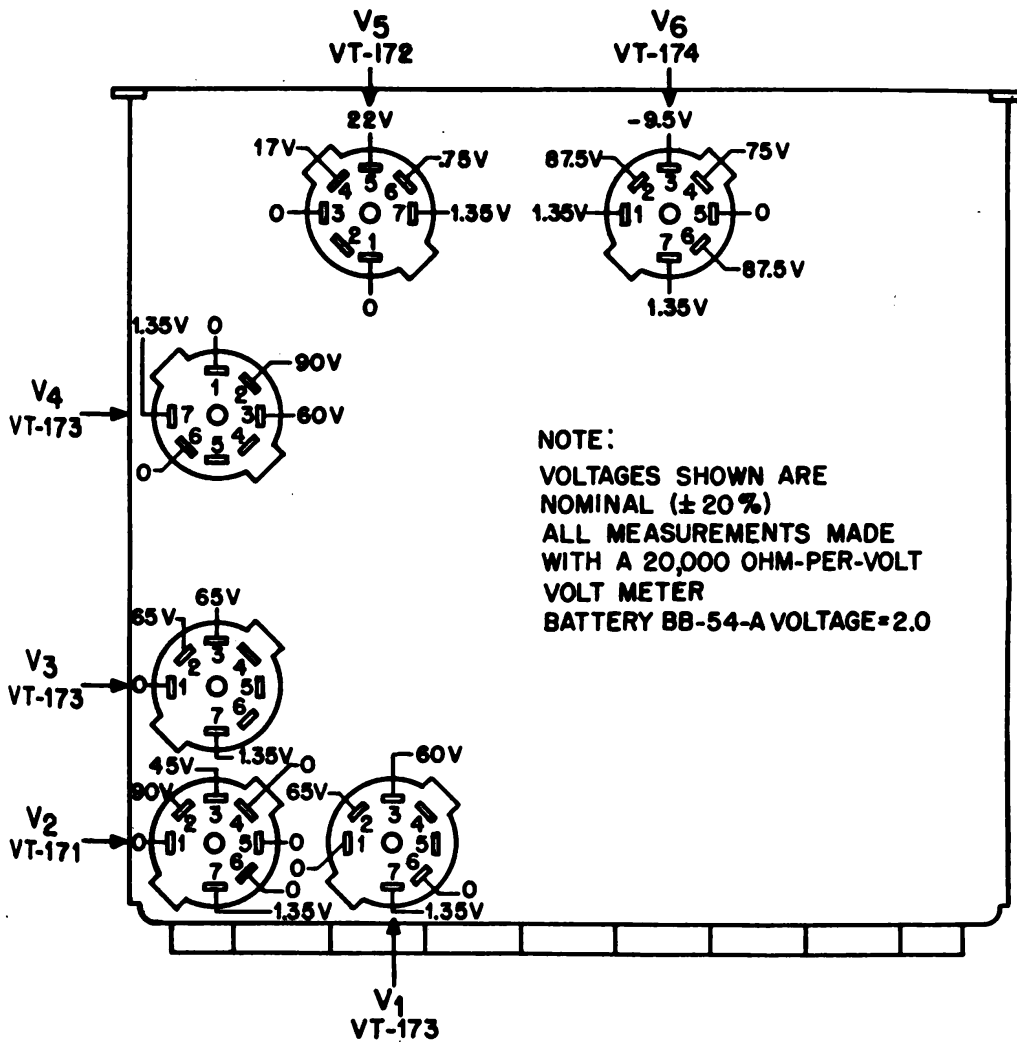


FIGURE 21—RADIO RECEIVER BC-728-A, TUBE SOCKET VOLTAGE DIAGRAM

c. Power Connector Receptacle.

<i>Pin No.</i>	<i>Resistance to chassis</i>
1	Open Circuit
2	50 ohms
3	8200 ohms (reverse ohmmeter leads if reading is wrong)
4	* (approximately 8,000 ohms to open circuit)
5	50 ohms

*This reading will vary greatly due to leakage of electrolytic capacitor (C₃₇.)

d. Power Plug Connector.

<i>Pin No.</i>	<i>Resistance to chassis</i>
1	Open Circuit
2	Open Circuit
3	Open Circuit
4	Open Circuit
5	300 ohms

Measurement between pin 1 and 2 should read open circuit with SW₂ (on volume control) at OFF position and 0 ohms at ON position.

e. Speaker Connector Receptacle.

<i>Pin No.</i>	<i>Resistance to chassis</i>
1	Open Circuit
2	Open Circuit
3	0 ohms
4	0 ohms
5	Open Circuit

f. Speaker Connector Plug (mounted on speaker).

<i>Reading between</i>	<i>Resistance</i>
Pin 1 and pin 5	750 ohms
Pin 2 and pin 3	750 ohms
Pin 3 and pin 4	3 ohms
Pin 2 and pin 4	750 ohms
Pin 3 and chassis	0 ohms

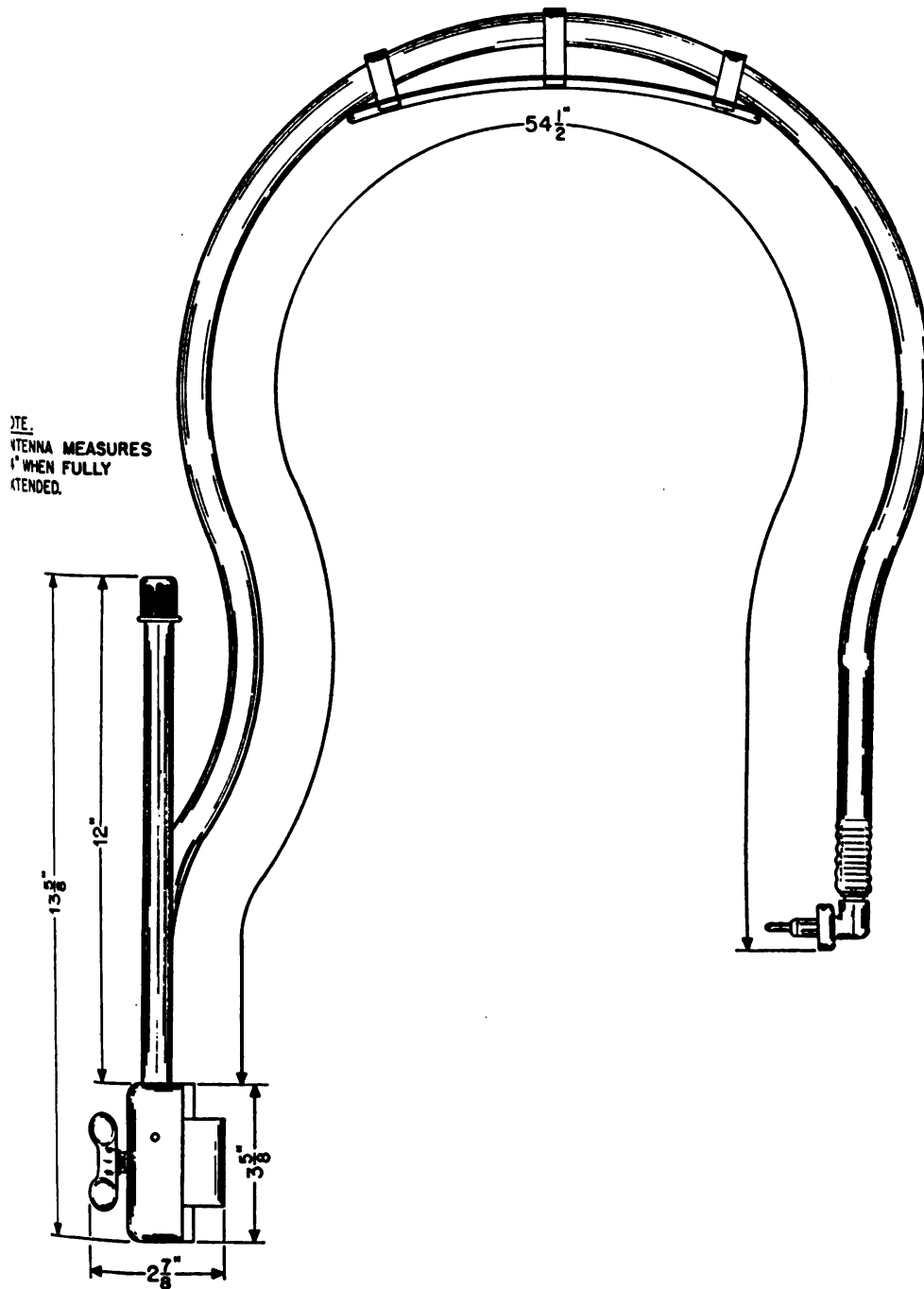
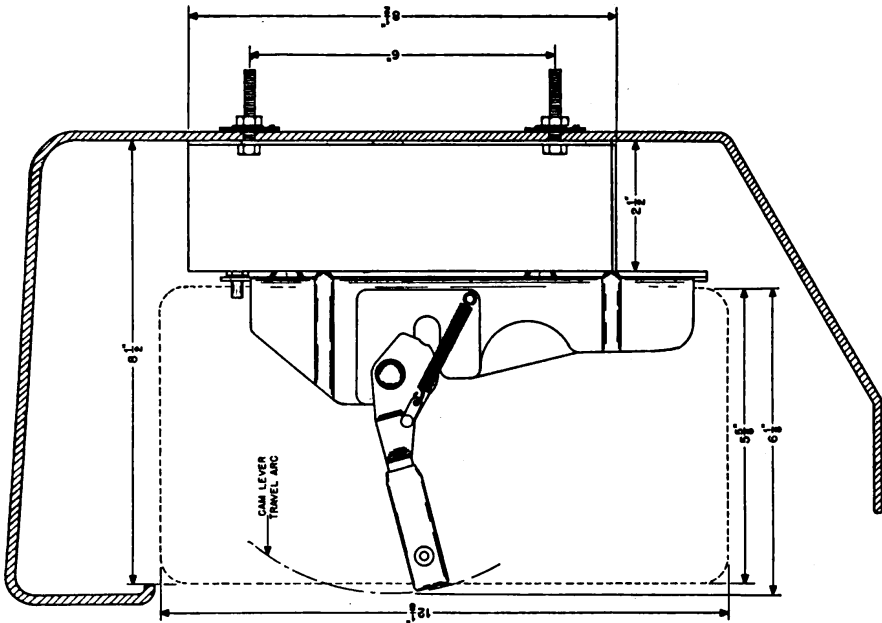


FIGURE 22—ANTENNA AN-75-A, OUTLINE DIMENSIONAL DETAIL

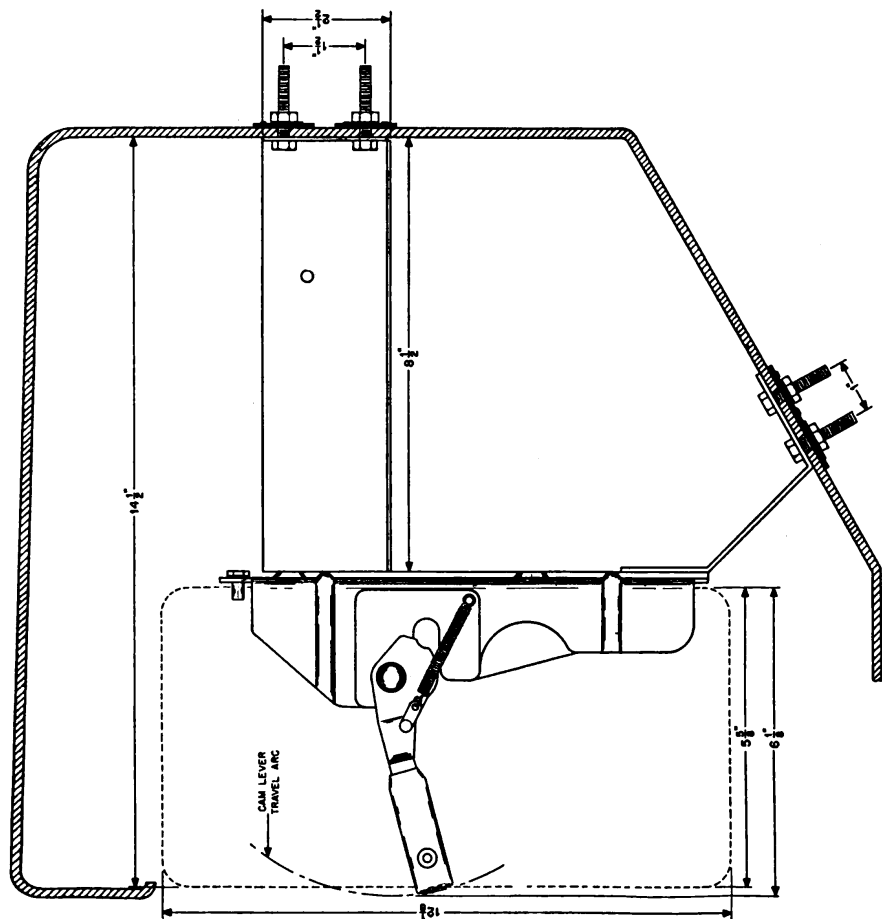
g. Normal Choke, Coil and Transformer D-C Resistance Values.

	<i>Description</i>	<i>D-C Resistance</i>
CH ₁	Hash Filter Choke	2.5 ohms
CH ₂	Filter Choke	1.7 ohms
CH ₃	R-F Choke	22 ohms
CH ₄	Hash Filter Choke	0 ohms
CH ₅	Charging Coil Choke	0 ohms
CH ₆	Hash Filter Choke	0 ohms
L ₁	Antenna Coil ("A" Band)	5 ohms
L ₂	Antenna Coil ("B" Band)	4 ohms
L ₃	Antenna Coil ("C" Band)	3.5 ohms
L ₄	Antenna Coil ("D" Band)	3 ohms
L ₅	R-F Coil ("A" Band)	*3 ohms
L ₆	R-F Coil ("B" Band)—	*3 ohms
L ₇	R-F Coil ("C" Band)	*3 ohms
L ₈	R-F Coil ("D" Band)	*3 ohms
L ₉	Oscillator Coil ("A" Band)	6 ohms
L ₁₀	Oscillator Coil ("B" Band)	5 ohms
L ₁₁	Oscillator Coil ("C" Band)	4 ohms
L ₁₂	Oscillator Coil ("D" Band)	3 ohms
T ₁	I-F Transformer	Pri. 15 ohms Sec. 15 ohms
T ₂	Diode Transformer	Pri. 20 ohms Sec. 1.5 meg.
T ₃	Output Transformer	Pri. 12,000 ohms 1 Sec. 3 ohms 2 Sec. 8,000 ohms
T ₄	Power Transformer	Pri. (Blk and Blue leads) 0 ohms Sec. (Grn and Yel leads) 15 ohms Sec. (Brn and Wht leads) 900 ohms
T ₅	Charger Transformer	Pri. (Org and Blk leads) 2 ohms Sec. (Blue leads) 0 ohms Sec. (Red leads) 550 ohms

*Using the proper push-button for the respective band.



EXTENSION BRACKET SHOWN IN FLAT MOUNTING POSITION



EXTENSION BRACKET SHOWN IN END MOUNTING POSITION

FIGURE 23—MOUNTING FT-338-A, DIMENSIONAL DETAIL

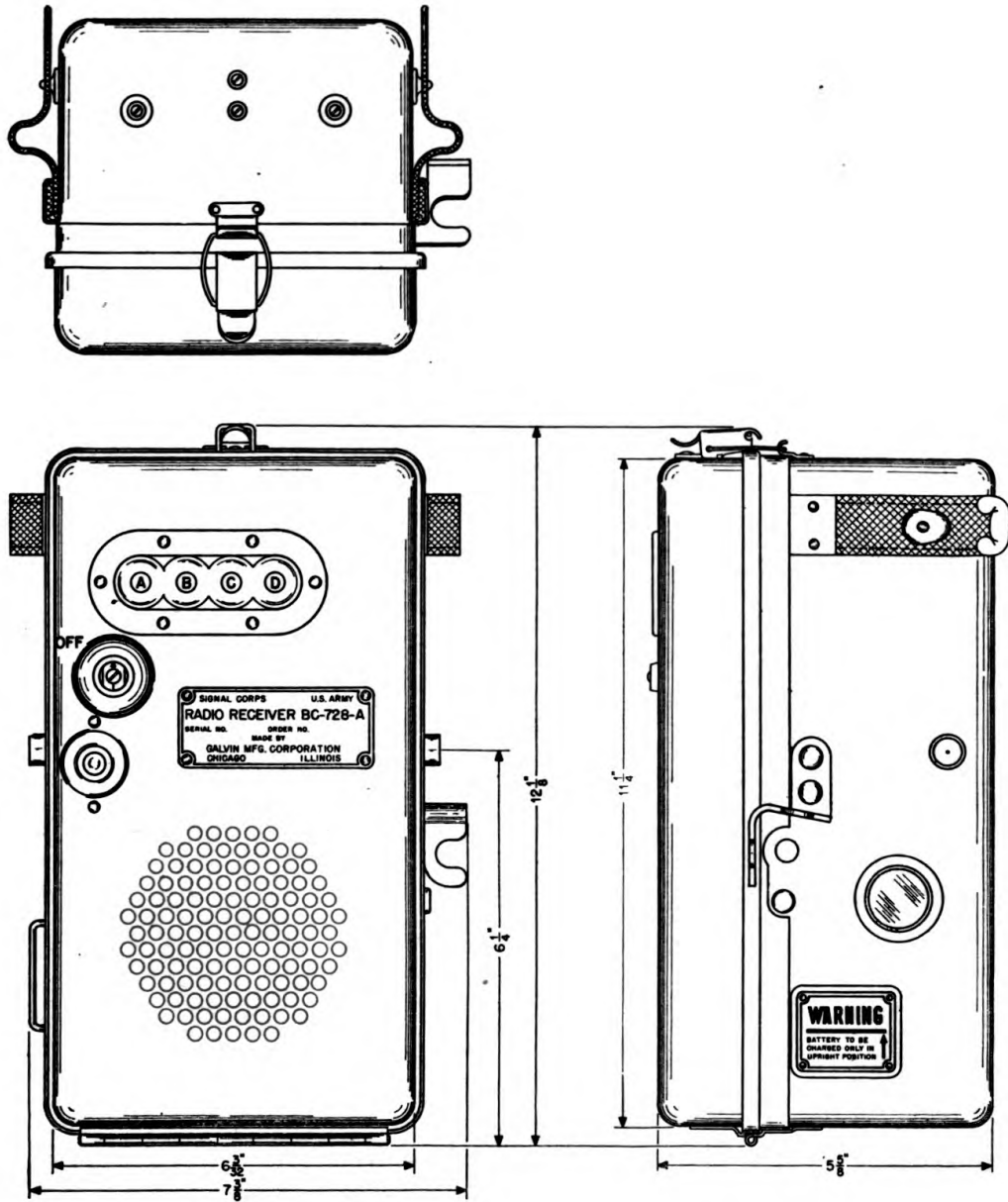


FIGURE 24—RADIO RECEIVER BC-728-A, OUTLINE DIMENSIONAL DETAIL

SECTION V

**TABLE OF
REPLACEABLE PARTS**

25. TABLE OF REPLACEABLE PARTS,—a. Radio Receiver BC-728-A.

Ref. No.	Signal Corps Stock No.	Name of Part	Description†	Function	Mfr. Code ††	Contractor's Part and Drawing No.
AN 1	2A275-75A	Antenna AN-75-A	9 section telescopic type. Extends to 7 feet. Collapses to 12 inches. Mounts with attached clamp and wing screw. —Special	Antenna		1X38080 (No Drawing)
BA 1	3B54A	Battery BB-54-A	Single cell, 2-volt nominal output. Transparent acid-proof plastic case. Screw terminals. —Type 27-2	Receiver power supply	2	48B36953
CD 1	3E1618A	Cord CD-618-A	8-foot cable (one conductor black, other yellow) with 2 large battery clips on one end and a 4-prong female cable receptacle on other. —Special	Charging cord		1X38101 (No Drawing)
C 1		Capacitor	Fixed, ceramic; 50 $\mu\mu\text{f}$, $\pm 2\%$ —Special	Loading Antenna		21A38399
C 2	3D9070-4	Capacitor	Fixed, ceramic; 70 $\mu\mu\text{f}$, $\pm 2\%$. Negative temperature coefficient—.0002 $\mu\mu\text{f}/\mu\mu\text{f}/^\circ\text{C}$. —Type #C	Compensator, Antenna coil	6	21A38347
C 3	3D9100-57	Capacitor	Fixed, ceramic; 100 $\mu\mu\text{f}$, $\pm 5\%$. Negative temperature coefficient—0. —Type #C	Coupling, V 1 grid to antenna coil	6	21A38227

C ₄	3DA10-102	Capacitor	Fixed, paper; .01 μf , $\pm 10\%$, 100 w-v. (Bakelite encased). —Special	By-pass, AVC		8A28550
C ₅	3D9080-1	Capacitor	Fixed, ceramic; 80 μf , $\pm 2\%$. Negative temperature coefficient—0. Type #C	Padding L ₆	6	21A38228
C ₆	3D9120-2	Capacitor	Fixed, ceramic; 120 μf , $\pm 2\%$. Negative temperature coefficient—0. —Type #C	Padding L ₅	6	21A38226
C ₇	3D9070-4	Capacitor	Fixed, ceramic; 70 μf , $\pm 2\%$. Negative temperature coefficient—.0002 $\mu\text{f}/\mu\text{f}/^\circ\text{C}$. —Type #C	Compensator, r-f coil	6	21A38347
C ₈	3DA250-17	Capacitor	Fixed, paper; 25 μf , $\pm 20\%$, 200 w-v. —Special	By-pass, B+		8A31207
C ₉	3D9120-2	Capacitor	Fixed, ceramic; 120 μf , $\pm 2\%$. Negative temperature coefficient—0. —Type #C	Coupling, V ₁ to V ₂	6	21A38226
C ₁₀	3DA20-22	Capacitor	Fixed, paper; .02 μf , $\pm 20\%$, 100 w-v.—shielded. (In same mounting bracket as C ₁₄). —Special	By-pass, V ₂ screen grid		8A36854

†The word "Special" indicates part made for, or by the Contractor.
 ††Numerical indicates manufacturer. See page 79 for manufacturer's name and address.

25. TABLE OF REPLACEABLE PARTS,—a. Radio Receiver BC-728-A.—(Cont.)

TM 11-859
 25

Ref. No.	Signal Corps Stock No.	Name of Part	Description†	Function	Mfr. Code ††	Contractor's Part and Drawing No.
C 11	3D9051V	Capacitor	Variable, mica; 51 μf nominal. (On same base as C ₁₂). —Special	Tuning, T ₁ primary		20A27340
C 12	3D9051V	Capacitor	Variable, mica; 51 μf nominal. (On same base as C ₁₁). —Special	Tuning, T ₁ secondary		20A27340
C 13	3DA50-31	Capacitor	Fixed, paper; .05 μf , $\pm 20\%$, 100 w-v.—shielded —Special	By-pass, AVC		8A36856
C 14	3DA20-22	Capacitor	Fixed, paper; .02 μf , $\pm 20\%$, 100 w-v.—shielded. (In same mounting bracket as C ₁₀). —Special	By-pass, V ₁ & V ₄ screen grid		8A36854
C 15	3DA6-27	Capacitor	Fixed, paper; .006 μf , $\pm 20\%$, 100 w-v.—shielded. (In same mounting bracket as C ₁₇). —Special	By-pass, AVC		8A36860
C 16	3D9500-46	Capacitor	Fixed, mica; 500 μf , +14% —6%, 400 w-v. —Type 1468X	Coupling, V ₂ injector grid to oscillator	4	21B6612
C 17	3DA20-40	Capacitor	Fixed, paper; .02 μf , $\pm 20\%$, 200 w-v.—shielded. (In same mounting bracket as C ₁₅). —Special	By-pass, B+		8A36860

C 18	3D9120-2	Capacitor	Fixed, ceramic; 120 μmf , $\pm 2\%$. Negative temperature coefficient—0. —Type #C	Coupling, V ₃ control grid	6	21A38226
C 19	3D9075-7	Capacitor	Fixed, ceramic; 75 μmf , $\pm 2\%$. Negative temperature coefficient—.00003 $\mu\text{mf}/\mu\text{mf}/^\circ\text{C}$. —Type D-75	Voltage divider V ₃	8	21A38266
C 20	3D9100-83	Capacitor	Fixed, ceramic; 100 μmf , $\pm 2\%$. Negative temperature coefficient—.00003 $\mu\text{mf}/\mu\text{mf}/^\circ\text{C}$. —Type D-100	Voltage divider V ₃	8	21A38262
C 21	3D9050-63 3D9050-64 3D9050-65	Capacitor	Fixed, ceramic; 50 μmf , $\pm 2\%$. Negative temperature coefficient; a .0001 $\mu\text{mf}/\mu\text{mf}/^\circ\text{C}$. —Type F-50 or b .00012 $\mu\text{mf}/\mu\text{mf}/^\circ\text{C}$. —Type G-50 or c .00015 $\mu\text{mf}/\mu\text{mf}/^\circ\text{C}$. —Type H-50	Compensator, oscillator	8 8 8	21A38398 21A38397 21A38399
C 22	3D9028V	Capacitor	Variable, mica; 28 μmf nominal. (On same base as C ₂₃). —Special	Tuning, T ₂ secondary		20A28609
C 23	3D9070-5	Capacitor	Fixed, mica; 70-70 μmf (On same base as C ₂₂ —red screw). —Special	Filter, detector		20A28609

†The word "Special" indicates part made for, or by the Contractor.
‡†Numerical indicates manufacturer. See page 79 for manufacturer's name and address.

25. TABLE OF REPLACEMENT PARTS,—a. Radio Receiver BC-728-A.—(Cont.)

Ref. No.	Signal Corps Stock No.	Name of Part	Description†	Function	Mfr. Code ††	Contractor's Part and Drawing No.
C 24	3D9600-7	Capacitor	Fixed, paper; .006 μ f, \pm 20%, 100 w-v.—shielded.	Audio coupling, V ₅ control grid		8A36852
C 25	3DA20-23	Capacitor	Fixed, paper; .02 μ f, \pm 20%, 100 w-v.—shielded.	By-pass, V ₅ screen grid		8A38386
C 26	3D9100-58	Capacitor	Fixed, mica; 100 μ f, \pm 10%, 400 w-v.—Type QM	By-pass, V ₅ r-f plate	9	21B6631
C 27	3DA6-28	Capacitor	Fixed, paper; .006 μ f, \pm 20%, 100 w-v.—shielded.	Audio coupling V ₅ to V ₆		8A36852
C 28	3DA20-24	Capacitor	Fixed, paper; .02 μ f, \pm 20%, 100 w-v.—shielded.	Filter, V ₅ B+		8A38387
C 29	3DA100-82	Capacitor	Fixed, paper; .1 μ f, \pm 20%, 100 w-v.—shielded.	By-pass, V ₆ screen grid		8A36858
C 30	3DA4-17	Capacitor	Fixed, paper; .004 μ f, \pm 20%, 200 w-v.—shielded.	Pad, audio output		8A36853
C 31	3DB3000	Capacitor	Electrolytic; 3000 μ f, 3 w-v.—Special	Filter, filament supply		23A38180
C 32	3DA100-81	Capacitor	Fixed, paper; .1 μ f, \pm 20%, 100 w-v.—shielded.	By-pass		8A38395

C 33	3DA350-4	Capacitor	Fixed, paper; .35 μ f, +20% -5%; 100 w-v.—shielded. —Special	By-pass	8A38031
C 34	3DA10-101	Capacitor	Fixed, paper; .01 μ f, \pm 10%, 1200 w-v.—shielded. (In same clamp as C 35). —Special	Buffer	8A38099
C 35	3DA50-30	Capacitor	Fixed, paper; .05 μ f, \pm 20%, 200 w-v.—shielded. (In same clamp as C 34). —Special	By-pass	8A38099
C 36	3DB30-3	Capacitor	Electrolytic; 30 μ f, 150 w-v. —Special	Filter	23A38026
C 37	3DB30-3	Capacitor	Electrolytic; 30 μ f, 150 w-v. —Special	Filter	23A38026
C 38	3DB300	Capacitor	Electrolytic; 300 μ f, 15 w-v. —Special	Filter	23A38028
C 39	3DA70-3	Capacitor	Fixed, paper; .07 μ f, \pm 10%, 800 w-v.—shielded. —Special	Buffer	8A38098
C 40	3DA500-41	Capacitor	Fixed, paper; .5 μ f, +20% -5%; 100 w-v.—shielded. —Special	By-pass	8A38030
C 41	3DA500-41	Capacitor	Fixed, paper; .5 μ f, +20% -5%; 100 w-v.—shielded. —Special	By-pass	8A38030

†The word "Special" indicates part made for, or by the Contractor.

‡†Numerical indicates manufacturer. See page 79 for manufacturer's name and address.

25. TABLE OF REPLACEABLE PARTS,—a. Radio Receiver BC-728-A.—(Cont.)

Ref. No.	Signal Corps Stock No.	Name of Part	Description†	Function	Mfr. Code ††	Contractor's Part and Drawing No.
CH 1	3C362-7	Choke, Hash Filter	35 turns #16 enameled copper wire. Wax treated. Paper covered. Inductance—12.2 μ h at 1000 cycles.—Special	Hash choke		24A38010
CH 2	3C362-8	Choke, Filter	.02 henries d-c resistance; 1.7 ohms. Shielded.—Special	Receiver filament Filter choke		25B38029
CH 3	3C362-9	Choke, R-F	4 pie; 100 turns #38 single silk enameled wire per pie. D-C resistance—22 ohms. Bakelite cover.—Special	Hash choke		24A28595
CH 4	3C362-10	Choke, Hash	35 turns #16 enameled copper wire. Paper covered. Wax treated. Inductance—12.2 μ h at 1000 cycles.—Special	Hash choke		24A31248
CH 5	3C362-11	Choke, Charging Coil	120 turns #22 double enameled wire. Paper covering. Wax dipped. Inductance—30 μ h at 1000 cycles.—Special	Hash choke		24A38270
CH 6	3C362-15	Choke, Hash	10 turns #22 solid insulated wire. Wound on $\frac{1}{4}$ " form.—Special	Hash choke		24X38522 (No Drawing)

J ₁	2Z5598	Jack, Headset	2 contact with single pole—single throw switch (SW 3). For Plug PL-55. —Special	Headset connect- or and speaker- headset change- over switch	Part of 40A38192
L ₁	3C625-12	Coil, Antenna	Orange & blue dot coding. 130 turns #36 single celanese enameled wire on 5/16" diameter form. Iron core tuned. Frequency range—2.0 to 2.6 megacycles. —Special	Antenna coil— "A" channel	24B38450
L ₂	3C625-13	Coil, Antenna	Orange & green dot coding. 100 turns #36 single celanese enameled wire on 5/16" diameter form. Iron core tuned. Frequency range 2.6 to 3.5 megacycles. —Special	Antenna coil— "B" channel	24K38451 *(24B38450)
L ₃	3C625-14	Coil, Antenna	Orange & yellow dot coding. 80 turns #36 single celanese enameled wire on 5/16" diameter form. Iron core tuned. Frequency range—3.5 to 4.5 megacycles. —Special	Antenna coil— "C" channel	24K38452 *(24B38450)
L ₄	3C625-15	Coil, Antenna	Orange & red dot coding. 61 turns #36 single celanese enameled wire on 5/16" diameter form. Iron core tuned. Frequency range 4.5 to 6.0 megacycles. —Special	Antenna coil— "D" channel	24K38453 *(24B38450)

†The word "Special" indicates part made for, or by the Contractor.
‡Numeral indicates manufacturer. See page 79 for manufacturer's name and address.
*Indicates Contractor's drawing number on which this part will be found.

25. TABLE OF REPLACEABLE PARTS,—a. Radio Receiver BC-728-A.—(Cont.)

Ref. No.	Signal Corps Stock No.	Name of Part	Description†	Function	Mfr. Code ††	Contractor's Part and Drawing No.
L 5	3C625-3	Coil, R-F	White and blue dot coding. 65 turns #36 plain enameled wire on $\frac{5}{16}$ " diameter form. Iron core tuned. Frequency range 2.0 to 2.6 megacycles.	R-F coil, "A" channel		24B38458
L 6	3C625-4	Coil, R-F	White and green dot coding. 54 turns #36 plain enameled wire on $\frac{5}{16}$ " diameter form. Iron core tuned. Frequency range 2.6 to 3.5 megacycles.—Special	R-F coil, "B" channel		24K38459 *(24B38458)
L 7	3C625-5	Coil, R-F	White and yellow dot coding. 61 turns #36 plain enameled wire on $\frac{5}{16}$ " diameter form. Iron core tuned. Frequency range 3.5 to 4.5 megacycles.—Special	R-F coil, "C" channel		24K38460 *(24B38458)
L 8	3C625-6	Coil, R-F	White and red dot coding. 49 turns #36 plain enameled wire on $\frac{5}{16}$ " diameter form. Iron core tuned. Frequency range 4.5 to 6.0 megacycles.—Special	R-F coil, "D" channel		24K38461 *(24B38458)

L 9	3C625-7	Coil,	Blue dot coding. 93 turns #38 plain enameled wire on $\frac{5}{16}$ " diameter form. Iron core tuned. Frequency range—2.0 (+455 Kc) to 2.6 (+455 Kc) megacycles. —Special	Oscillator coil, "A" channel	24B38454
L 10	3C625-8	Coil, Oscillator	Green dot coding. 74 turns #38 plain enameled wire on $\frac{5}{16}$ " diameter form. Iron core tuned. Frequency range—2.6 (+455 Kc) to 3.5 (+455 Kc) megacycles. —Special	Oscillator coil, "B" channel	24B38455 *(24B38454)
L 11	3C625-9	Coil, Oscillator	Yellow dot coding. 58 turns #38 plain enameled wire on $\frac{5}{16}$ " diameter form. Iron core tuned. Frequency range—3.5 (+455 Kc) to 4.5 (+455 Kc) megacycles. —Special	Oscillator coil, "C" channel	24K38456 *(24B38454)
L 12	3C625-10	Coil, Oscillator	Red dot coding. 46 turns #36 plain enameled wire on $\frac{5}{16}$ " diameter form. Iron core tuned. Frequency range 4.5 (+455 Kc) to 6.0 (+455 Kc) megacycles. —Special	Oscillator coil, "D" channel	24K38457 *(24B38454)
R 1	3Z6803-A3-1	Resistor	Fixed, carbon; 3.3 megohm, = 10%, $\frac{1}{3}$ watt, insulated. —Type EB INS	V ₁ , grid return	6B6364

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 ‡Numeral indicates manufacturer. See page 79 for manufacturer's name and address.
 *Indicates Contractor's drawing number on which part will be found.

25. TABLE OF REPLACEABLE PARTS,—a. Radio Receiver BC-728-A.—(Cont.)

Ref. No.	Signal Corps Stock No.	Name of Part	Description†	Function	Mfr. Code ††	Contractor's Part and Drawing No.
R ₂	3Z6803-A3-1	Resistor	Fixed, carbon; 3.3 megohm, ± 10%, 1/8 watt, insulated. —Type EB INS	Filter, AVC	14	6B6364
R ₃		Resistor	Fixed, carbon; 10,000 ohms, ± 10%, 1/8 watt, insulated. —Type EB INS	B + isolation	14	6B6401
R ₄	3Z6803-A3-1	Resistor	Fixed, carbon; 3.3 megohm, ± 10%, 1/8 watt, insulated. —Type EB INS	V ₂ , control grid return	14	6B6364
R ₅	3Z6747-6	Resistor	Fixed, carbon; 470,000 ohms, ± 10%, 1/8 watt, insulated. —Type EB INS	V ₃ , injector grid return	14	6B6338
R ₆	3Z6647-5	Resistor	Fixed, carbon; 47,000 ohms, ± 10%, 1/8 watt, insulated. —Type EB INS	Voltage dropping, V ₂ screen grid	14	6B6323
R ₇	3Z6615-26	Resistor	Fixed, carbon; 15,000 ohms, ± 10%, 1/8 watt, insulated. —Type EB INS	Voltage dropping, V ₁ and V ₄ screen grid	14	6B6422
R ₈	3Z6801-23	Resistor	Fixed, carbon; 1 megohm, ± 10%, 1/5 watt, not insulated. —Special	Loading, T ₁ secondary		6B5564

R ₉	3Z6803- A3-1	Resistor	Fixed, carbon; 3.3 megohm, $\pm 10\%$, $\frac{1}{8}$ watt, insulated. —Type EB INS	Filter, AVC	14	6B6364
R ₁₀	3Z6804- A7-1	Resistor	Fixed, carbon; 4.7 megohm, $\pm 10\%$, $\frac{1}{8}$ watt, insulated. —Type EB INS	Filter, AVC	14	6B6391
R ₁₁	3Z6612-8	Resistor	Fixed, carbon; 12,000 ohms, $\pm 10\%$, $\frac{1}{8}$ watt, insulated. Type EB INS —	B+ dropping, V ₃ plate	14	6B5601
R ₁₂	3Z6647-5	Resistor	Fixed, carbon; 47,000 ohms, $\pm 10\%$, $\frac{1}{8}$ watt, insulated. —Type EB INS	Bias, V ₃ control grid	14	6B6323
R ₁₃	3Z6722-4	Resistor	Fixed, carbon; 220,000 ohms, $\pm 10\%$, $\frac{1}{8}$ watt, not insulated. —Special	Filter, detector		6B5571
R ₁₄	3Z6015-11	Resistor	Fixed, carbon; 150 ohms, $\pm 10\%$, $\frac{1}{8}$ watt, insulated. —Type EB INS	Voltage divider	14	6B6395
R ₁₅	3Z6015-11	Resistor	Fixed, carbon; 150 ohms, $\pm 10\%$, $\frac{1}{8}$ watt, insulated. —Type EB INS	Voltage divider	14	6B6395
R ₁₆	3Z6810-6	Resistor	Fixed, carbon; 10 megohms, $\pm 10\%$, $\frac{1}{8}$ watt, insulated. —Type EB INS	Grid return, V ₅	14	6B5572

25. TABLE OF REPLACEABLE PARTS,—a. Radio Receiver BC-728-A.—(Cont.)

Ref. No.	Signal Corps Stock No.	Name of Part	Description†	Function	Mfr. Code ††	Contractor's Part and Drawing No.
R 17	2C4728A/P1	Potentiometer	Variable, carbon; 1 megohm, $\pm 20\%$, Taper "A". (Includes SW ² on back). —Special	Volume control		18A36929
R 18	3Z6056-2	Resistor	Fixed, carbon; 560 ohms, $\pm 10\%$, $\frac{1}{8}$ watt, insulated. —Type EB INS	B + isolating	14	6B6279
R 19	3Z6805A6-1	Resistor	Fixed, carbon; 5.6 megohms, $\pm 10\%$, $\frac{1}{8}$ watt, insulated. —Type EB INS	Voltage dropping, V ₅ screen grid	14	6B5600
R 20	3Z6801-23	Resistor	Fixed, carbon; 1 megohm, $\pm 10\%$, $\frac{1}{8}$ watt, insulated. —Type EB INS	Plate resistor, V ₆	14	6B6337
R 21	3Z6733-2	Resistor	Fixed, carbon; 330,000 ohms, $\pm 10\%$, $\frac{1}{8}$ watt, insulated. —Type EB INS	B + filter, V ₅ plate	14	6B6366
R 22	3Z6803A3-1	Resistor	Fixed, carbon; 3.3 megohm, $\pm 10\%$, $\frac{1}{8}$ watt, insulated. —Type EB INS	Grid return, V ₆	14	6B6364
R 23	3Z6582-1	Resistor	Fixed, carbon; 8200 ohms, $\pm 10\%$, $\frac{1}{8}$ watt, insulated —Type EB INS	Voltage dropping, V ₆ screen grid	14	6B6354

R 24	3Z6015-11	Resistor	Fixed, carbon; 150 ohms, $\pm 10\%$, $\frac{1}{8}$ watt, insulated. —Type EB INS	Voltage dropping	14	6B6405
R 25	3Z6010-36	Resistor	Fixed, carbon; 100 ohms, $\pm 10\%$, $\frac{1}{8}$ watt, insulated. —Type EB INS	Buffer, T ₄ primary	14	6B6405
R 26	3Z6010-36	Resistor	Fixed, carbon; 100 ohms, $\pm 10\%$, $\frac{1}{8}$ watt, insulated. —Type EB INS	Buffer, T ₄ primary	14	6B6405
R 27	3Z6027-2	Resistor	Fixed, carbon; 270 ohms, $\pm 10\%$, 1 watt, insulated —Type 518 INS	B + filter	17	6B6336
R 28	3Z5998-1	Resistor	Fixed, carbon; 8.2 ohms, $\pm 10\%$, $\frac{1}{2}$ watt, insulated —Type 504 INS	Filament volt- age dropping, V ₇	17	6B5599
R 29	3Z6582-1	Resistor	Fixed, carbon; 8200 ohms, $\pm 10\%$, $\frac{1}{3}$ watt, insulated. —Type EB INS	Bias voltage resistor	17	6B6354
R 30	3Z6022-8	Resistor	Fixed, carbon; 220 ohms, $\pm 10\%$, 1 watt, insulated. —Type 518 INS	Buffer, T ₅ primary	17	6B6389

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25. TABLE OF REPLACEABLE PARTS,—a. Radio Receiver BC-728-A.—(Cont.)

Ref. No.	Signal Corps Stock No.	Name of Part	Description†	Function	Mfr. Code ††	Contractor's Part and Drawing No.
R 31	3Z6022-8	Resistor	Fixed, carbon; 220 ohms, ±10%, 1 watt, insulated. —Type 518 INS	Buffer, T ₅ primary	17	6B6389
RECT ₁	2Z7521	Rectifier, Selenium	2.2 volts at 1.5-ampere output with 6.5 volts RMS input to rectifiers RECT ₁ & 2. (On same bracket as RECT ₂ .) —Special	Battery charger rectifier		Part of 48B38174
RECT ₂	2Z7521	Rectifier,	(See RECT ₁ above). —Special	Battery charger rectifier		Part of 48B38174
SPK ₁	2C4728A/S5	Speaker	4" permanent magnet type. Includes output transformer (T ₃) and 5-prong connector plug. —Special	Reproducer		50B38146 or 50B38462
SW ₁	2C4728A/S3	Switch, Push Button	4 push-button, multi-contact type. —Special	Channel selector		40B36722
SW ₂	3Z9848.4	Switch	Single pole—single throw. (Located on back of potentiometer R ₁₇ .) —Special	Power "ON-OFF"		Part of 18A36929

SW 3	3Z9848.5	Switch	Single pole—single throw. Part of Jack J, Operated by headset plug. —Special	Speaker-headset change-over.	Part of 40A38192
SW 4	3Z9856.3	Switch, Voltage change-over	Double pole—double throw. Self return type. —Type #8831K2	Battery charger voltage change-over	40A36896
T 1	2Z9978	Transformer, I-F and Shield	Iron core transformer, tuned by variable mica trimmers. Includes C ₁₁ , C ₁₂ , and R ₈ . Shielded. —Special	Coupling, V ₂ to V ₄	1B38087
T 2	2Z9978-1	Transformer, Diode & Shield	Iron core transformer, tuned by variable mica trimmer. Includes C ₂₂ , C ₂₃ , and R ₁₃ . Shielded. —Special	Coupling, V ₄ to V ₅	1B38088
T 3	2Z9977	Transformer, Output	On speaker SPK 1. Impedances—primary: 12,000 ohms; secondaries: 3 and 8,000 ohms. —Special	Output transformer with secondaries for headset & loudspeaker	25B38189
T 4	2Z9979	Transformer, Power	In same can as T ₅ . Consists of 3 windings: 1 low voltage center-tapped primary, 1 low voltage secondary (bias rectifier filament) and 1 high voltage center-tapped secondary. —Special	B+ and bias supply transformer	Part of 25B36964

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25. TABLE OF REPLACEABLE PARTS,—a. Radio Receiver BC-728-A.—(Cont.)

Ref. No.	Signal Corps Stock No.	Name of Part	Description †	Function	Mfr. Code ††	Contractor's Part and Drawing No.
T 5	2Z9979-1	Transformer, Charger	In same can as T 4. Consists of 3 windings: 1 multi-tapped primary, 1 buffer secondary winding, and 1 low-voltage center-tapped secondary.—Special	Battery charger transformer		Part of 25B36964
V 1	2T173	Radio Tube VT-173	RMA type 1T4	R-F amplifier	21	
V 2	2T171	Radio Tube VT-171	RMA type 1R5	Mixer	21	
V 3	2T173	Radio Tube VT-173	RMA type 1T4	Oscillator	21	
V 4	2T173	Radio Tube VT-173	RMA type 1T4	I-F amplifier	21	
V 5	2T172	Radio Tube VT-172	RMA type 1S5	Diode, second detector, and triode 1st audio amplifier	21	
V 6	2T174	Radio Tube VT-174	RMA type 3S4	Audio output	21	

V ₇	2T174	Radio Tube VT-174	RMA type 3S4	Bias rectifier	21
VB ₁	3H6708A	Vibrator, VB-8-A	7-prong, synchronous type. 2-volt driving coil. —Special	Power transformer primary current interrupter and B rectifier	48B36963 or 48K38326
VB ₂	3H6709A	Vibrator, VB-9-A	4-prong, non-synchronous type. Driving coil designed to operate over 5- to 15-volt range. —Special	Charger transformer primary current interrupter	48B36962 or 48K38268

25. TABLE OF REPLACEABLE PARTS, — *b. Chassis*

2Z1580	Assembly, Power and Speaker Cable	Complete. 30" of 10 conductor cable with receptacle. —Special	Power and speaker cable leads	1X38302
2C4728A/ P3	Assembly, Push Button	3 5/8" x 3 5/16" complete with fixed ceramic capacitors. —Special	Push Button band switch	1X36827
2C4728A/ T3	Assembly, Tube Shield & Spring	Metal; 1 1/16" high, 3/4" diameter, compression spring in top. Bayonet locking type. —Special	Tube shield for V ₁ , V ₂ , V ₄ , V ₅ & V ₆	1X36828
2C4728A/ T4	Assembly, Tuning Unit (Complete)	Complete tuning units for 4 bands. —Special	Frequency tuning assembly	1X36826

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††Nu... r's name and address. See page 79 for ...

25. TABLE OF REPLACEABLE PARTS,—a. Radio Receiver BC-728-A.

Ref. No.	Signal Corps Stock No.	Name of Part	Description †	Function	Mfr. Code ††	Contractor's Part and Drawing No.
AN 1	2A275-75A	Antenna AN-75-A	9 section telescopic type. Extends to 7 feet. Collapses to 12 inches. Mounts with attached clamp and wing screw. —Special	Antenna		1X38080 (No Drawing)
BA 1	3B54A	Battery BB-54-A	Single cell, 2-volt nominal output. Transparent acid-proof plastic case. Screw terminals. —Type 27-2	Receiver power supply	2	48B36953
CD 1	3E1618A	Cord CD-618-A	8-foot cable (one conductor black, other yellow) with 2 large battery clips on one end and a 4-prong female cable receptacle on other. —Special	Charging cord		1X38101 (No Drawing)
C 1		Capacitor	Fixed, ceramic; 50 μmf , $\pm 2\%$ —Special	Loading Antenna		21A38399
C 2	3D9070-4	Capacitor	Fixed, ceramic; 70 μmf , $\pm 2\%$. Negative temperature coefficient—.0002 $\mu\text{mf}/\mu\text{mf}/^\circ\text{C}$. —Type #C	Compensator, Antenna coil	6	21A38347
C 3	3D9100-57	Capacitor	Fixed, ceramic; 100 μmf , $\pm 5\%$. Negative temperature coefficient—0. —Type #C	Coupling, V ₁ grid to antenna coil	6	21A38227

C ₄	3DA10-102	Capacitor	Fixed, paper; .01 μf , $\pm 10\%$, 100 w-v. (Bakelite encased). —Special	By-pass, AVC	8A28550
C ₅	3D9080-1	Capacitor	Fixed, ceramic; 80 μf , $\pm 2\%$. Negative temperature coefficient—0. Type #C	Padding L ₆	21A38228
C ₆	3D9120-2	Capacitor	Fixed, ceramic; 120 μf , $\pm 2\%$. Negative temperature coefficient—0. Type #C	Padding L ₅	21A38226
C ₇	3D9070-4	Capacitor	Fixed, ceramic; 70 μf , $\pm 2\%$. Negative temperature coefficient—.0002 $\mu\text{f}/\mu\text{f}/^\circ\text{C}$. —Type #C	Compensator, r-f coil	21A38347
C ₈	3DA250-17	Capacitor	Fixed, paper; 25 μf , $\pm 20\%$, 200 w-v. —Special	By-pass, B+	8A31207
C ₉	3D9120-2	Capacitor	Fixed, ceramic; 120 μf , $\pm 2\%$. Negative temperature coefficient—0. Type #C	Coupling, V ₁ to V ₂	21A38226
C ₁₀	3DA20-22	Capacitor	Fixed, paper; .02 μf , $\pm 20\%$, 100 w-v.—shielded. (In same mounting bracket as C ₁₄). —Special	By-pass, V ₂ screen grid	8A36854

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25. TABLE OF REPLACEABLE PARTS,—a. Radio Receiver BC-728-A.—(Cont.)

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Ref. No.	Signal Corps Stock No.	Name of Part	Description†	Function	Mfr. Code ††	Contractor's Part and Drawing No.
C 11	3D9051V	Capacitor	Variable, mica; 51 μf nominal. (On same base as C ₁₂). —Special	Tuning, T ₁ primary		20A27340
C 12	3D9051V	Capacitor	Variable, mica; 51 μf nominal. (On same base as C ₁₁). —Special	Tuning, T ₁ secondary		20A27340
C 13	3DA50-31	Capacitor	Fixed, paper; .05 μf , $\pm 20\%$, 100 w-v.—shielded	By-pass, AVC		8A36856
C 14	3DA20-22	Capacitor	Fixed, paper; .02 μf , $\pm 20\%$, 100 w-v.—shielded. (In same mounting bracket as C ₁₀). —Special	By-pass, V ₁ & V ₄ screen grid		8A36854
C 15	3DA6-27	Capacitor	Fixed, paper; .006 μf , $\pm 20\%$, 100 w-v.—shielded. (In same mounting bracket as C ₁₇). —Special	By-pass, AVC		8A36860
C 16	3D9500-46	Capacitor	Fixed, mica; 500 μf , +14% -6%, 400 w-v. —Type 1468X	Coupling, V ₂ injector grid to oscillator	4	21B6612
C 17	3DA20-40	Capacitor	Fixed, paper; .02 μf , $\pm 20\%$, 200 w-v.—shielded. (In same mounting bracket as C ₁₅). —Special	By-pass, B+		8A36860

C 18	3D9120-2	Capacitor	Fixed, ceramic; 120 $\mu\mu\text{f}$, $\pm 2\%$. Negative temperature coefficient—0. —Type #C	Coupling, V_3 control grid	6	21A38226
C 19	3D9075-7	Capacitor	Fixed, ceramic; 75 $\mu\mu\text{f}$, $\pm 2\%$. Negative temperature coefficient—.00003 $\mu\mu\text{f}/\mu\mu\text{f}/^\circ\text{C}$. —Type D-75	Voltage divider V_3	8	21A38266
C 20	3D9100-83	Capacitor	Fixed, ceramic; 100 $\mu\mu\text{f}$, $\pm 2\%$. Negative temperature coefficient—.00003 $\mu\mu\text{f}/\mu\mu\text{f}/^\circ\text{C}$. —Type D-100	Voltage divider V_3	8	21A38262
C 21	3D9050-63 3D9050-64 3D9050-65	Capacitor	Fixed, ceramic; 50 $\mu\mu\text{f}$, $\pm 2\%$. Negative temperature coefficient; a .0001 $\mu\mu\text{f}/\mu\mu\text{f}/^\circ\text{C}$. —Type F-50 or b .00012 $\mu\mu\text{f}/\mu\mu\text{f}/^\circ\text{C}$. —Type G-50 or c .00015 $\mu\mu\text{f}/\mu\mu\text{f}/^\circ\text{C}$. —Type H-50	Compensator, oscillator	8 8 8	21A38398 21A38397 21A38399
C 22	3D9028V	Capacitor	Variable, mica; 28 $\mu\mu\text{f}$ nominal. (On same base as C 23). —Special	Tuning, T_2 secondary		20A28609
C 23	3D9070-5	Capacitor	Fixed, mica; 70-70 $\mu\mu\text{f}$ (On same base as C 22—red screw). —Special	Filter, detector		20A28609

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25. TABLE OF REPLACEABLE PARTS,—a. Radio Receiver BC-728-A.—(Cont.)

Ref. No.	Signal Corps Stock No.	Name of Part	Description†	Function	Mfr. Code ††	Contractor's Part and Drawing No.
C 24	3D9600-7	Capacitor	Fixed, paper; .006 μ f, \pm 20%, 100 w-v.—shielded.	Audio coupling, V ₅ control grid		8A36852
C 25	3DA20-23	Capacitor	Fixed, paper; .02 μ f, \pm 20%, 100 w-v.—shielded.	By-pass, V ₅ screen grid		8A38386
C 26	3D9100-58	Capacitor	Fixed, mica; 100 μ f, \pm 10%, 400 w-v.—Type QM	By-pass, V ₅ r-f plate	9	21B6631
C 27	3DA6-28	Capacitor	Fixed, paper; .006 μ f, \pm 20%, 100 w-v.—shielded.	Audio coupling V ₅ to V ₆		8A36852
C 28	3DA20-24	Capacitor	Fixed, paper; .02 μ f, \pm 20%, 100 w-v.—shielded.	Filter, V ₅ B+		8A38387
C 29	3DA100-82	Capacitor	Fixed, paper; .1 μ f, \pm 20%, 100 w-v.—shielded.	By-pass, V ₆ screen grid		8A36858
C 30	3DA4-17	Capacitor	Fixed, paper; .004 μ f, \pm 20%, 200 w-v.—shielded.	Pad, audio output		8A36853
C 31	3DB3000	Capacitor	Electrolytic; 3000 μ f, 3 w-v.—Special	Filter, filament supply		23A38180
C 32	3DA100-81	Capacitor	Fixed, paper; .1 μ f, \pm 20%, 100 w-v.—shielded.	By-pass		8A38395

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C 33	3DA350-4	Capacitor	Fixed, paper; .35 μ f, +20% -5%, 100 w-v.—shielded. —Special	By-pass	8A38031
C 34	3DA10-101	Capacitor	Fixed, paper; .01 μ f, \pm 10%, 1200 w-v.—shielded. (In same clamp as C 35). —Special	Buffer	8A38099
C 35	3DA50-30	Capacitor	Fixed, paper; .05 μ f, \pm 20%, 200 w-v.—shielded. (In same clamp as C 34). —Special	By-pass	8A38099
C 36	3DB30-3	Capacitor	Electrolytic; 30 μ f, 150 w-v. —Special	Filter	23A38026
C 37	3DB30-3	Capacitor	Electrolytic; 30 μ f, 150 w-v. —Special	Filter	23A38026
C 38	3DB300	Capacitor	Electrolytic; 300 μ f, 15 w-v. —Special	Filter	23A38028
C 39	3DA70-3	Capacitor	Fixed, paper; .07 μ f, \pm 10%, 800 w-v.—shielded. —Special	Buffer	8A38098
C 40	3DA500-41	Capacitor	Fixed, paper; .5 μ f, +20% -5%, 100 w-v.—shielded. —Special	By-pass	8A38030
C 41	3DA500-41	Capacitor	Fixed, paper; .5 μ f, +20% -5%, 100 w-v.—shielded. —Special	By-pass	8A38030

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25. TABLE OF REPLACEABLE PARTS,—a. Radio Receiver BC-728-A.—(Cont.)

Ref. No.	Signal Corps Stock No.	Name of Part	Description†	Function	Mfr. Code ††	Contractor's Part and Drawing No.
CH ₁	3C362-7	Choke, Hash Filter	35 turns #16 enameled copper wire. Wax treated. Paper covered. Inductance—12.2 μ h at 1000 cycles.—Special	Hash choke		24A38010
CH ₂	3C362-8	Choke, Filter	.02 henries d-c resistance; 1.7 ohms. Shielded.—Special	Receiver filament Filter choke		25B38029
CH ₃	3C362-9	Choke, R-F	4 pie; 100 turns #38 single silk enameled wire per pie. D-C resistance—22 ohms. Bakelite cover.—Special	Hash choke		24A28595
CH ₄	3C362-10	Choke, Hash	35 turns #16 enameled copper wire. Paper covered. Wax treated. Inductance—12.2 μ h at 1000 cycles.—Special	Hash choke		24A31248
CH ₅	3C362-11	Choke, Charging Coil	120 turns #22 double enameled wire. Paper covering. Wax dipped. Inductance—30 μ h at 1000 cycles.—Special	Hash choke		24A38270
CH ₆	3C362-15	Choke, Hash	10 turns #22 solid insulated wire. Wound on $\frac{1}{4}$ " form.—Special	Hash choke		24X38522 (No Drawing)

J ₁	2Z5598	Jack, Headset	2 contact with single pole—single throw switch (SW ₃). For Plug PL-55. —Special	Headset connect- or and speaker- headset change- over switch	Part of 40A38192
L ₁	3C625-12	Coil, Antenna	Orange & blue dot coding. 130 turns #36 single celanese enameled wire on $\frac{5}{16}$ " diameter form. Iron core tuned. Frequency range—2.0 to 2.6 megacycles. —Special	Antenna coil— "A" channel	24B38450
L ₂	3C625-13	Coil, Antenna	Orange & green dot coding. 100 turns #36 single celanese enameled wire on $\frac{5}{16}$ " diameter form. Iron core tuned. Frequency range 2.6 to 3.5 megacycles. —Special	Antenna coil— "B" channel	24K38451 *(24B38450)
L ₃	3C625-14	Coil, Antenna	Orange & yellow dot coding. 80 turns #36 single celanese enameled wire on $\frac{5}{16}$ " diameter form. Iron core tuned. Frequency range—3.5 to 4.5 megacycles. —Special	Antenna coil— "C" channel	24K38452 *(24B38450)
L ₄	3C625-15	Coil, Antenna	Orange & red dot coding. 61 turns #36 single celanese enameled wire on $\frac{5}{16}$ " diameter form. Iron core tuned. Frequency range 4.5 to 6.0 megacycles. —Special	Antenna coil— "D" channel	24K38453 *(24B38450)

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 §Indicates Contractor's drawing number on which part is made.

25. TABLE OF REPLACEABLE PARTS,—a. Radio Receiver BC-728-A.—(Cont.)

Ref. No.	Signal Corps Stock No.	Name of Part	Description†	Function	Mfr. Code ††	Contractor's Part and Drawing No.
L 5	3C625-3	Coil, R-F	White and blue dot coding. 65 turns #36 plain enameled wire on $\frac{5}{16}$ " diameter form. Iron core tuned. Frequency range 2.0 to 2.6 megacycles.	R-F coil, "A" channel		24B38458
L 6	3C625-4	Coil, R-F	White and green dot coding. 54 turns #36 plain enameled wire on $\frac{5}{16}$ " diameter form. Iron core tuned. Frequency range 2.6 to 3.5 megacycles.—Special	R-F coil, "B" channel		24K38459 *(24B38458)
L 7	3C625-5	Coil, R-F	White and yellow dot coding. 61 turns #36 plain enameled wire on $\frac{5}{16}$ " diameter form. Iron core tuned. Frequency range 3.5 to 4.5 megacycles.—Special	R-F coil, "C" channel		24K38460 *(24B38458)
L 8	3C625-6	Coil, R-F	White and red dot coding. 49 turns #36 plain enameled wire on $\frac{5}{16}$ " diameter form. Iron core tuned. Frequency range 4.5 to 6.0 megacycles.—Special	R-F coil, "D" channel		24K38461 *(24B38458)

L 9	3C625-7	Coil,	Blue dot coding. 93 turns #38 plain enameled wire on $\frac{5}{16}$ " diameter form. Iron core tuned. Frequency range—2.0 (+455 Kc) to 2.6 (+455 Kc) megacycles. —Special	Oscillator coil, "A" channel	24B38454
L 10	3C625-8	Coil, Oscillator	Green dot coding. 74 turns #38 plain enameled wire on $\frac{5}{16}$ " diameter form. Iron core tuned. Frequency range—2.6 (+455 Kc) to 3.5 (+455 Kc) megacycles. —Special	Oscillator coil, "B" channel	24B38455 *(24B38454)
L 11	3C625-9	Coil, Oscillator	Yellow dot coding. 58 turns #38 plain enameled wire on $\frac{5}{16}$ " diameter form. Iron core tuned. Frequency range—3.5 (+455 Kc) to 4.5 (+455 Kc) megacycles. —Special	Oscillator coil, "C" channel	24K38456 *(24B38454)
L 12	3C625-10	Coil, Oscillator	Red dot coding. 46 turns #36 plain enameled wire on $\frac{5}{16}$ " diameter form. Iron core tuned. Frequency range 4.5 (+455 Kc) to 6.0 (+455 Kc) megacycles. —Special	Oscillator coil, "D" channel	24K38457 *(24B38454)
R 1	3Z6803-A3-1	Resistor	Fixed, carbon; 3.3 megohm, $\pm 10\%$, $\frac{1}{8}$ watt, insulated. —Type EB INS	V ₁ , grid return	6B6364

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 ‡Numerical indicates manufacturer. See page 79 for manufacturer's name and address.
 *Indicates Contractor's drawing number on which part is based.

TABLE OF REPLACEMENT PARTS, —a. Radio Receiver BC-728-A.—(Cont.)

Ref. No.	Signal Corps Stock No.	Name of Part	Description†	Function	Mfr. Code ††	Contractor's Part and Drawing No.
R ₂	3Z6803-A3-1	Resistor	Fixed, carbon; 3.3 megohm, ± 10%, 1/8 watt, insulated. —Type EB INS	Filter, AVC	14	6B6364
R ₃		Resistor	Fixed, carbon; 10,000 ohms, ± 10%, 1/8 watt, insulated. —Type EB INS	B + isolation	14	6B6401
R ₄	3Z6803-A3-1	Resistor	Fixed, carbon; 3.3 megohm, ± 10%, 1/8 watt, insulated. —Type EB INS	V ₂ , control grid return	14	6B6364
R ₅	3Z6747-6	Resistor	Fixed, carbon; 470,000 ohms, ± 10%, 1/8 watt, insulated. —Type EB INS	V ₃ , injector grid return	14	6B6338
R ₆	3Z6647-5	Resistor	Fixed, carbon; 47,000 ohms, ± 10%, 1/8 watt, insulated. —Type EB INS	Voltage dropping, V ₂ screen grid	14	6B6323
R ₇	3Z6615-26	Resistor	Fixed, carbon; 15,000 ohms, ± 10%, 1/8 watt, insulated. —Type EB INS	Voltage dropping, V ₁ and V ₄ screen grid	14	6B6422
R ₈	3Z6801-23	Resistor	Fixed, carbon; 1 megohm, ± 10%, 1/5 watt, not insulated. —Special	Loading, T ₁ secondary		6B5564

R ₉	3Z6803-A3-1	Resistor	Fixed, carbon; 3.3 megohm, ±10%, 1/8 watt, insulated. —Type EB INS	Filter, AVC	14	6B6364
R ₁₀	3Z6804-A7-1	Resistor	Fixed, carbon; 4.7 megohm, ±10%, 1/8 watt, insulated. —Type EB INS	Filter, AVC	14	6B6391
R ₁₁	3Z6612-8	Resistor	Fixed, carbon; 12,000 ohms, ±10%, 1/8 watt, insulated. Type EB INS —	B+ drooping, V ₃ plate	14	6B5601
R ₁₂	3Z6647-5	Resistor	Fixed, carbon; 47,000 ohms, ±10%, 1/8 watt, insulated. —Type EB INS	Bias, V ₃ control grid	14	6B6323
R ₁₃	3Z6722-4	Resistor	Fixed, carbon; 220,000 ohms, ±10%, 1/8 watt, not insulated. —Special	Filter, detector		6B5571
R ₁₄	3Z6015-11	Resistor	Fixed, carbon; 150 ohms, ±10%, 1/8 watt, insulated. —Type EB INS	Voltage divider	14	6B6395
R ₁₅	3Z6015-11	Resistor	Fixed, carbon; 150 ohms, ±10%, 1/8 watt, insulated. —Type EB INS	Voltage divider	14	6B6395
R ₁₆	3Z6810-6	Resistor	Fixed, carbon; 10 megohms, ±10%, 1/8 watt, insulated. —Type EB INS	Grid return, V ₅	14	6B5572

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25. TABLE OF REPLACEABLE PARTS,—a. Radio Receiver BC-728-A.—(Cont.)

Ref. No.	Signal Corps Stock No.	Name of Part	Description†	Function	Mfr. Code ††	Contractor's Part and Drawing No.
R 17	2C4728A/P1	Potentiometer	Variable, carbon; 1 megohm, $\pm 20\%$, Taper "A". (Includes SW ² on back). —Special	Volume control		18A36929
R 18	3Z6056-2	Resistor	Fixed, carbon; 560 ohms, $\pm 10\%$, $\frac{1}{3}$ watt, insulated. —Type EB INS	B + isolating	14	6B6279
R 19	3Z6805A6-1	Resistor	Fixed, carbon; 5.6 megohms, $\pm 10\%$, $\frac{1}{3}$ watt, insulated. —Type EB INS	Voltage dropping, V ₅ screen grid	14	6B5600
R 20	3Z6801-23	Resistor	Fixed, carbon; 1 megohm, $\pm 10\%$, $\frac{1}{3}$ watt, insulated. —Type EB INS	Plate resistor, V ₅	14	6B6337
R 21	3Z6733-2	Resistor	Fixed, carbon; 330,000 ohms, $\pm 10\%$, $\frac{1}{3}$ watt, insulated. —Type EB INS	B + filter, V ₅ plate	14	6B6366
R 22	3Z6803A3-1	Resistor	Fixed, carbon; 3.3 megohm, $\pm 10\%$, $\frac{1}{3}$ watt, insulated. —Type EB INS	Grid return, V ₆	14	6B6364
R 23	3Z6582-1	Resistor	Fixed, carbon; 8200 ohms, $\pm 10\%$, $\frac{1}{3}$ watt, insulated —Type EB INS	Voltage dropping, V ₆ screen grid	14	6B6354

R ₂₄	3Z6015-11	Resistor	Fixed, carbon; 150 ohms, $\pm 10\%$, $\frac{1}{8}$ watt, insulated. —Type EB INS	Voltage dropping	14	6B6395
R ₂₅	3Z6010-36	Resistor	Fixed, carbon; 100 ohms, $\pm 10\%$, $\frac{1}{8}$ watt, insulated. —Type EB INS	Buffer, T ₄ primary	14	6B6405
R ₂₆	3Z6010-36	Resistor	Fixed, carbon; 100 ohms, $\pm 10\%$, $\frac{1}{8}$ watt, insulated. —Type EB INS	Buffer, T ₄ primary	14	6B6405
R ₂₇	3Z6027-2	Resistor	Fixed, carbon; 270 ohms, $\pm 10\%$, 1 watt, insulated —Type 518 INS	B + filter	17	6B6336
R ₂₈	3Z5998-1	Resistor	Fixed, carbon; 8.2 ohms, $\pm 10\%$, $\frac{1}{2}$ watt, insulated —Type 504 INS	Filament volt- age dropping, V ₇	17	6B5599
R ₂₉	3Z6582-1	Resistor	Fixed, carbon; 8200 ohms, $\pm 10\%$, $\frac{1}{8}$ watt, insulated. —Type EB INS	Bias voltage resistor	17	6B6354
R ₃₀	3Z6022-8	Resistor	Fixed, carbon; 220 ohms, $\pm 10\%$, 1 watt, insulated. —Type 518 INS	Buffer, T ₅ primary	17	6B6389

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25. TABLE OF REPLACEABLE PARTS,—a. Radio Receiver BC-728-A.—(Cont.)

Ref. No.	Signal Corps Stock No.	Name of Part	Description ‡	Function	Mfr. Code ††	Contractor's Part and Drawing No.
R 31	3Z6022-8	Resistor	Fixed, carbon; 220 ohms, ± 10%, 1 watt, insulated. —Type 518 INS	Buffer, T ₅ primary	17	6B6389
RECT ₁	2Z7521	Rectifier, Selenium	2.2 volts at 1.5-ampere output with 6.5 volts RMS input to rectifiers RECT ₁ & 2. (On same bracket as RECT ₂ .) —Special	Battery charger rectifier		Part of 48B38174
RECT ₂	2Z7521	Rectifier,	(See RECT ₁ above). —Special	Battery charger rectifier		Part of 48B38174
SPK ₁	2C4728A/S ₅	Speaker	4" permanent magnet type. Includes output transformer (T ₃) and 5-prong connector plug. —Special	Reproducer		50B38146 or 50B38462
SW ₁	2C4728A/S ₃	Switch, Push Button	4 push-button, multi-contact type. —Special	Channel selector		40B36722
SW ₂	3Z9848.4	Switch	Single pole—single throw. (Located on back of potentiometer R ₁₇). —Special	Power "ON-OFF"		Part of 18A36929

SW 3	3Z9848.5	Switch	Single pole—single throw. Part of Jack J, Operated by headset plug.—Special	Speaker-headset change-over.	Part of 40A38192
SW 4	3Z9856.3	Switch, Voltage change-over	Double pole—double throw. Self return type. —Type #8831K2	Battery charger voltage change-over	40A36896
T 1	2Z9978	Transformer, I-F and Shield	Iron core transformer, tuned by variable mica trimmers. Includes C ₁₁ , C ₁₂ , and R ₈ . Shielded.—Special	Coupling, V ₂ to V ₄	1B38087
T 2	2Z9978-1	Transformer, Diode & Shield	Iron core transformer, tuned by variable mica trimmer. Includes C ₂₂ , C ₂₃ , and R ₁₃ . Shielded.—Special	Coupling, V ₄ to V ₅	1B38088
T 3	2Z9977	Transformer, Output	On speaker SPK 1. Impedances—primary: 12,000 ohms; secondaries: 3 and 8,000 ohms.—Special	Output transformer with secondaries for headset & loudspeaker	25B38189
T 4	2Z9979	Transformer, Power	In same can as T ₅ . Consists of 3 tapped primary, 1 low voltage center-tapped primary, 1 low voltage secondary (bias rectifier filament) and 1 high voltage center-tapped secondary.—Special	B+ and bias supply transformer	Part of 25B36964

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25. TABLE OF REPLACEABLE PARTS,—a. Radio Receiver BC-728-A.—(Cont.)

Ref. No.	Signal Corps Stock No.	Name of Part	Description†	Function	Mfr. Code ††	Contractor's Part and Drawing No.
T 5	2Z9979-1	Transformer, Charger	In same can as T 4. Consists of 3 windings: 1 multi-tapped primary, 1 buffer secondary winding, and 1 low-voltage center-tapped secondary.—Special	Battery charger transformer		Part of 25B36964
V 1	2T173	Radio Tube VT-173	RMA type 1T4	R-F amplifier	21	
V 2	2T171	Radio Tube VT-171	RMA type 1R5	Mixer	21	
V 3	2T173	Radio Tube VT-173	RMA type 1T4	Oscillator	21	
V 4	2T173	Radio Tube VT-173	RMA type 1T4	I-F amplifier	21	
V 5	2T172	Radio Tube VT-172	RMA type 1S5	Diode, second detector, and triode 1st audio amplifier	21	
V 6	2T174	Radio Tube VT-174	RMA type 3S4	Audio output	21	

V ₇	2T174	Radio Tube VT-174	RMA type 3S4	Bias rectifier	21
VB ₁	3H6708A	Vibrator, VB-8-A	7-prong, synchronous type. 2-volt driving coil. —Special	Power transformer primary current interrupter and B rectifier	48B36963 or 48K38326
VB ₂	3H6709A	Vibrator, VB-9-A	4-prong, non-synchronous type. Driving coil designed to operate over 5- to 15-volt range. —Special	Charger transformer primary current interrupter	48B36962 or 48K38268

25. TABLE OF REPLACEABLE PARTS, —b. Chassis

2Z1580	Assembly, Power and Speaker Cable	Complete. 30" of 10 conductor cable with receptacle. —Special	Power and speaker cable leads	1X38302
2C4728A/ P3	Assembly, Push Button	3 5/8" x 3 5/16" complete with fixed ceramic capacitors. —Special	Push Button band switch	1X36827
2C4728A/ T3	Assembly, Tube Shield & Spring	Metal; 1 1/16" high, 3/4" diameter, compression spring in top. Bayonet locking type. —Special	Tube shield for V ₁ , V ₂ , V ₄ , V ₅ & V ₆	1X36828
2C4728A/ T4	Assembly, Tuning Unit (Complete)	Complete tuning units for 4 bands. —Special	Frequency tuning assembly	1X36826

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25. TABLE OF REPLACEABLE PARTS,—b. Chassis—(Cont.)

Ref. No.	Signal Corps Stock No.	Name of Part	Description†	Function	Mfr. Code ††	Contractor's Part and Drawing No.
	2C4728A/B2	Base, Tube Shield	Metal; .750" outside diameter, $\frac{5}{8}$ " deep.—Special	Base for tube shield		26A36732
	2C4728A/B3	Bracket, Shield	Metal; "L" shaped, $\frac{1}{16}$ " long, $\frac{1}{4}$ " wide.—Special	Part of tuning assembly		7A38421
	2C4728A/C2	Clamp, Strap Retainer	Metal; $\frac{1}{4}$ " wide, $\frac{3}{8}$ " long. "U" shaped.—Special	Clamp for end strap		42A34558
	2Z2635	Clamp, Cable	Metal; $\frac{5}{16}$ " wide, $\frac{3}{16}$ " radii loop.—Special	Holds antenna lead		42A38260
	2Z2723	Clip, Tube Shield Grounding	Metal; $2\frac{5}{16}$ " high; $\frac{7}{8}$ " mounting centers.—Special	Tube shield retainer and grounding clip.		42A38368
	2Z3600-2	Cushion, Socket Mounting	Rubber, .820" outside diameter, $\frac{1}{4}$ " deep.—Special	Rubber cushion mounting for socket		37A36806
	2C4728A/G4	Gasket, Potentiometer Shaft	Rubber; $1\frac{1}{2}$ " deep, $1\frac{1}{2}$ " diameter.—Special	Weatherproofing seal for volume control		32A36805
	3G1350-18	Insulator, Terminal	Ceramic; .400" diameter complete with copper lug.—Special	Part of tuning unit assembly		31A38340

/ CHASSIS / SPECIAL /

		Tuning (Black)	Knob used to tune r-f and antenna coils	36A36793
		Knob, Coil Tuning (Brown)	Knob used to tune osc. coils	36K38598 *(36A36793)
	2Z5829-1	Knob, Potentiometer	Control knob for volume control	36A36879
	2C4728A/P4	Pin, Hinge	Pin for chassis hinge	47A36705
	2C4728A/B4	Push Button and Spring	Part of push button assembly	38A36798
	2C4728A/S8	Shield, Tuning Unit	Shield for tuning unit assembly	26B38074
	2Z28669-2	Socket, Tube	Tube socket	9A36804
	2Z8669-1	Socket, Tube	Tube socket	9B38418

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 *Indicates Contractor's drawing number on which part will be found.

TABLE OF REPLACEABLE PARTS, —d. Chassis—(Cont.)

Ref. No.	Signal Corps Stock No.	Name of Part	Description†	Function	Mfr. Code ††	Contractor's Part and Drawing No.
	2C4728A/S9	Strap, Trans-former Shield Mounting	Metal; .312" wide, 2 ¹ / ₁₆ " long. "U" shaped. —Special	Holds I-F transformer coil secure		42A34556
	2C4728A/S10	Stud, Base Support	Metal; .313" diameter. .250" deep with 6-32 tapped hole through center. —Special	Support for tuning unit base		46A36839
	2C4728A/S11	Stud, Tuning Unit Mounting	Brass; 1 ¹ / ₄ " long, 6-32 tap in center. —Special	For mounting unit		46A36779
	2Z9463	Terminal Strip	2 insulated lugs, center mounting. —Special	Tie point		31A38311
	2C4728A/T5	Tube Shield, and Spring	Metal; 1 ¹ / ₁₆ " high, 3 ³ / ₄ " diameter compression spring in top. Snap-in type. —Special	Tube Shield for V ₃		26A38425

25. TABLE OF REPLACEABLE PARTS, —c. Power Supply Chassis

2C4728A/T6	Assembly, Terminal Board	Bakelite; 4 ¹ / ₂ " x 1 ¹ / ₂ " x ¹ / ₁₆ " thick. With 4 soldering lugs. —Special	Power supply terminal board		1X38492 (No Drawing)
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2C4728A/ P2	Assembly, Plug Base & Bracket	4-prong plug on bracket. Includes molded gasket. —Special	Battery charger power input connector	1X38058 (NoDrawing)
2C4728A/ B5	Bracket, Chassis Stop	Metal; formed, $2\frac{3}{32}$ " x $\frac{3}{4}$ " x .042" thick. —Special	BC-728-A Radio Receiver chassis stop	7A38022
2C4728A/ B6	Bracket, Terminal Board Mounting	Metal; "L" shaped. $\frac{3}{4}$ " x $\frac{3}{8}$ " x .048" thick. One hole tapped for 6-32 screws. —Special	Terminal board mounting	7K38043 *(7A18071)
2Z2626	Clamp, Capacitor	Metal. For $1\frac{3}{8}$ " diameter capacitor. Tapped for 6-32. —Special	Capacitor C ₃₁ mounting	42A38161
2Z2723	Clip, Tube Shield Grounding	Metal. $\frac{25}{32}$ " high. $\frac{1}{5}$ " mounting centers. —Special	Tube shield retainer and grounding clip	42A38368
2Z2722	Clip, Vibrator Grounding	Metal; $1\frac{21}{32}$ " diameter. Mounting centers $1\frac{1}{2}$ ". —Special	Vibrators VB-8-A, VB-9-A retaining & grounding clips	42K36771 *(42A4215)
2Z6821	Cup, Capacitor Mounting	Metal; $\frac{7}{16}$ " high, $\frac{3}{4}$ " inside diameter. .136 hole on top and $\frac{1}{8}$ " slot in side. —Special	Capacitors C ₃₆ and C ₃₇ mounting	26A36903

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 ††Numerical indicates manufacturer. See page 79 for manufacturer's name and address.
 *†-† indicates Contractor's drawing number on v¹ as found.

25. TABLE OF REPLACEABLE PARTS,—c. Power Supply Chassis—(Cont.)

Ref. No.	Signal Corps Stock No.	Name of Part	Description†	Function	Mfr. Code ††	Contractor's Part and Drawing No.
	2Z6821-1	Cup, Capacitor Mounting	Metal; $\frac{7}{16}$ " high, $\frac{5}{16}$ " inside diameter, .136 hole. —Special	Capacitor C 39 mounting		26A38137
	2C4728A/G5	Gasket, Plug Base	Molded sponge rubber, $1\frac{1}{4}$ " inside diameter; $1\frac{3}{4}$ " outside diameter. Flat on one side. —Special	Battery charger plug water-proofing seal		32A36889
	2Z7091	Plate, Battery Retainer	Metal; $3\frac{3}{8}$ " x $1\frac{1}{2}$ " x .024" thick. Two .136 holes and $1\frac{7}{8}$ " x $\frac{5}{8}$ " slot. —Special	Battery retainer plate hold-down		64A36917
	2Z7414	Receptacle, Plug	5-contact; four outside contacts and 1 center contact. Bakelite insulation. Wax impregnated. —Special	Power cable Receptacle		9K38361 *(9A19204)
	2Z8669-3	Socket, Tube	7-prong, miniature. Mica filled bakelite insulation. —Type EXT 6724	Bias rectifier, V7, receptacle	23	9A6794
	2Z8669-4	Socket, Vibrator	7-prong, saddle type. Wax impregnated. —Type #2157	Vibrator VB-8-A receptacle	23	9K6749 *(9A6737)

2Z8669-5	Socket, Vibrator	4-prong, saddle type. Wax impregnated. —Special	Vibrator VB-9-A receptacle	9K6745 *(9A6734)
2C4728A/S12	Stud, Terminal Board Mounting	Metal; 1 3/4" high, 5/16" diameter. Tapped for 6-32 screw. —Special	Terminal board mounting stud	46A36841
2C4728A/T7	Tube Shield, and Spring	Tin plate. 1 1/16" high, 9/64" diameter. Compression spring in top. Snap-in type. —Type #8632	Tube shield for V7	26A38425

25. TABLE OF REPLACEABLE PARTS,—d. Housing.

2C4728A/W5	Assembly, Actuator Stud & Washer	Metal; 1/4" round rod, 1 3/16" long, 1/2" washer. —Special	Part of voltage change-over switch assembly	1X38165
2C4728A/B7	Assembly, Battery Hold-down Bracket	Metal; 3" x 4 1/8" —Special	Bracket to hold battery secure	1X38168
2C4728A/R1	Assembly, Retainer and Nuts	Plastic strip; 1/2". Mounting center for holes 1 1/2". Knurled nuts. —Special	Holds battery bracket secure	1X38484
2Z5650-HP	Assembly, Jack Cover	Metal bracket, 1 1/2" wide, 1 1/2" long, .810 diameter hole, cover 1.03" wide with cap 5/8" diameter. —Special	Weatherproofing cover for head-phone jack	1X38167

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 *Indicates Contractor's drawing number on which part is based.

25. TABLE OF REPLACEABLE PARTS,—d. Housing.—(Cont.)

Ref. No.	Signal Corps Stock No.	Name of Part	Description †	Function	Mfr. Code ††	Contractor's Part and Drawing No.
	2C4728A/B1	Bracket, Antenna Mounting	Metal; 3 ⁵ / ₈ " long, 1 ¹ / ₂ " wide. —Special	Bracket for mounting antenna		7A36820
	2Z1923-2	Catch, Hold-down Clip	Metal. Clip 1 ¹ / ₈ " wide, length over all 1 ⁷ / ₈ ". —Special	Part of catch clip assembly for holding cover down		55A36922
	2Z2727-2	Clip, Hold-down	Metal; 7/8" wide, 2 holes .136" diameter for mounting. —Special	Part of catch clip assembly for holding cover down		55A36919
	2Z3600-1	Cushion, Battery	Sponge rubber; 6 ³ / ₈ " long, 4 ¹ / ₈ " wide, 2 ³ / ₈ " deep. —Special	Cushion around battery		37C36938
	2C4728A/C1j	Cup, Switch Actuating	Metal; .531" diameter, 3/8" deep. —Special	Part of voltage change-over switch assembly		26A36974
	2C4728A/F1	Frame, Push Button	Metal, 1 ¹¹ / ₁₆ " wide, 3 ³ / ₄ " long. —Special	Frame to hold push button gasket		42A36729
	2C4728A/G1	Gasket, Housing	Rubber; 36" long, approximately 1/4" diameter. —Special	Weatherproofing between housing and cover		32A36976

2C4728A/ G2	Gasket, Push Button	Rubber; 1 $\frac{1}{16}$ " wide, 3 $\frac{3}{4}$ " long. —Special	Weatherproofing seal over push- button assembly	32C36899
2C4728A/ G3	Gasket, Win- dow & Bezel Seal	Rubber; 1 $\frac{1}{4}$ " outside diameter, 1 $\frac{1}{16}$ " inside diameter. —Special	Weatherproofing seal	32A34995
2C4728A/ H1	Hinge & Pin, Housing	Metal; 5 $\frac{3}{16}$ " long, 2 $\frac{1}{16}$ " wide. —Special	Hinge and pin for housing and cover	55A36723
2C4728A/ S6	Spring, Switch Actuator	Music wire coil spring. $\frac{3}{8}$ " dia- meter. —Special	Part of voltage change-over switch assembly	41A38143
2Z9048	Strap, Cable Retainer	Woven strap olive drab finish. Ap- proximate length 4". —Special	Strap for holding antenna cable to radio set	42A36810
2C4728A/ S7	Stud, Snap	Metal; 1 $\frac{9}{32}$ " diameter. —Special	Strap retainer	46A36995
2C4728A/ T1	Tube, Battery Vent	Rubber; 2 $\frac{3}{4}$ " long, $\frac{1}{4}$ " diameter. —Special	To allow battery fumes to escape from set	47A36773
2C4728A/ T2	Tube, Vent Extension	Plastic; 1" long, .200" diameter —Special	For allowing battery fumes to escape from set	47A38071

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25. TABLE OF REPLACEABLE PARTS. —d. Housing.—(Cont.)

Ref. No.	Signal Corps Stock No.	Name of Part	Description†	Function	Mfr. Code ††	Contractor's Part and Drawing No.
	2C4728A/ W1	Window, Main Housing	Plastic; 1.250" diameter. —Special	Window for observing battery charge indicators		61A34994
	2C4728A/ W2	Wiper, Spring (Long)	Phosphor Bronze; 5¼" x ¾". —Special	Grounding contact		39A36862
	2C4728A/ W3	Wiper, Spring (Short)	Phosphor Bronze; 4⅞" x ¾". —Special	Grounding contact		39A36864
	2C4728A/ W4	Warning Plate	Plastic; 1⅝" x 1⅙".	Battery charging warning plate		13B36717

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††Numeral indicates manufacturer. See page 79 for manufacturer's name and address.

MANUFACTURERS' ADDRESSES

(Model SCR-593-A)

<i>Mfr. No.</i>	<i>Name</i>	<i>Street Address</i>	<i>City</i>	<i>State</i>
2	Willard Storage Battery	246 W. 136th St.	Cleveland	Ohio
4	Aerovox Mfg. Co.		New Bedford	Mass.
6	Centralab	900 E. Keefe Ave.	Milwaukee	Wisconsin
8	Muter Co.	1255 S. Michigan Ave.	Chicago	Illinois
9	Micamold Corp.	1087 Flushing Ave.	Brooklyn	New York
14	Allen Bradley Co.		Milwaukee	Wisconsin
17	Erie Resistor Corp.	644 W. 12th St.	Erie	Pennsylvania
21	Tung Sol Radio Tube	95 8th Ave.	Newark	New Jersey
22	Cutler-Hammer Co.		Milwaukee	Wisconsin
23	Cinch Mfg. Co.	2339 W. Van Buren St.	Chicago	Illinois

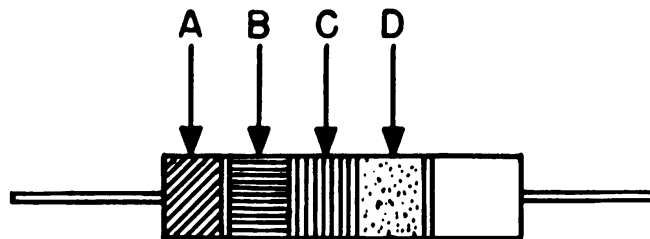
26. RMA COLOR CODE FOR RESISTORS AND CAPACITORS.

<i>Color</i>	<i>Significant Figure</i>	<i>Multiplier</i>	<i>Tolerance</i>	<i>Voltage Rating</i>
Black	0	1		
Brown	1	10	1%	100 Volts
Red	2	100	2%	200 Volts
Orange	3	1,000	3%	300 Volts
Yellow	4	10,000	.....	400 Volts
Green	5	100,000	5%*	500 Volts
Blue	6	1,000,000	10%*	600 Volts
Violet	7	10,000,000	.....	700 Volts
Gray	8	100,000,000	.....	800 Volts
White	9	1,000,000,000	2.5%	.....
Gold	.....	0.1	5%	
Silver	....	0.01	10%	
*No Color	.....	.....	20%	500 Volts

**NOTE: Use of the colors Green and Blue in place of Gold and Silver is optional in order to avoid use of strategic materials and effect of metallic content paints.*

a. *Resistors*,—The nominal resistance value of fixed carbon resistors is indicated in three manners.

The one in most common use for axial lead resistors indicates the value of bands of color as follows:



AXIAL LEAD TYPE

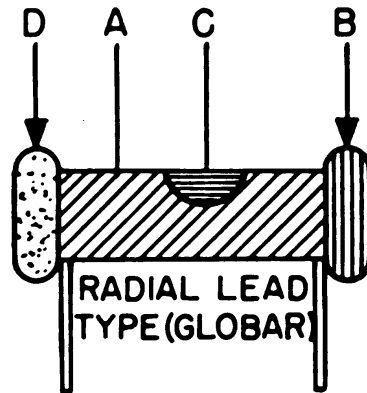
Band A indicates the first significant figure of the resistance of the resistor.

Band B indicates the second significant figure.

Band C indicates the multiplier.

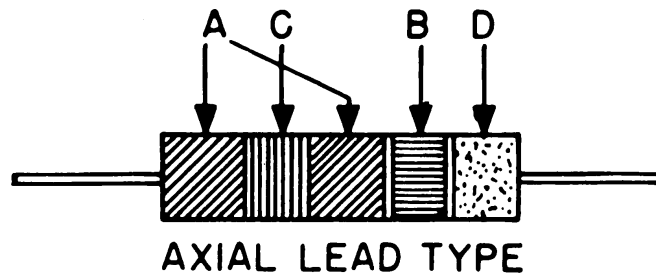
*Band D, if any, indicates the tolerance limits about the nominal resistance value. No tolerance color indicates 20%.

For radial lead resistors (such as Globar) the following system of indicating nominal resistance value is used:



The body (A) of the resistor is colored to represent the first significant figure of the resistance value. One end (B) is colored to represent the second significant value, and a dot (C) of color, located within the body color, indicates the multiplier. *Tolerance is indicated by color (gold or silver) on other end of resistor. No tolerance color indicates 20%.

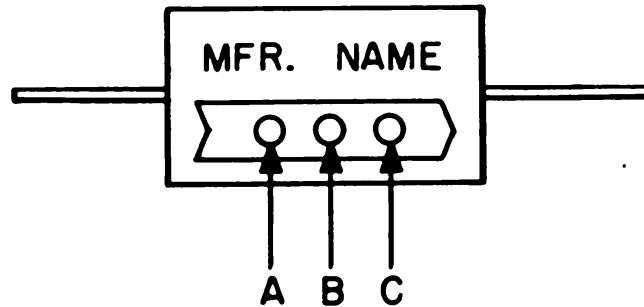
A system, not too commonly used at present, for indicating nominal resistance value of axial lead resistors is as follows:



The body (A) of the resistor is colored to represent the first significant figure of the resistance value. One end (B) is colored to represent the second significant figure and a band, or dot (C) of color, located within the body color, indicates the multiplier. *Band D, if any, indicates tolerance. No tolerance color indicates 30%.

b. Capacitors.—Two systems for color coding small fixed capacitors are in use. The colors employed to designate these significant digits in $\mu\mu\text{f.}$ are listed in the chart above. Note that codes are read from left to right in the position required for reading of words molded in case, or by arrow.

In general, capacitors having a working voltage of 500 volts are coded by means of three dots of color as follows:



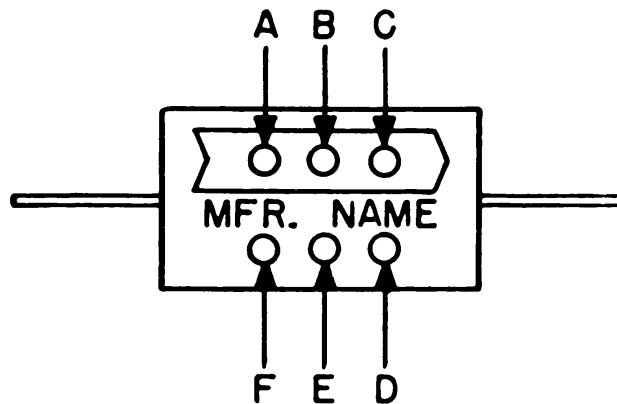
Dot A indicates the first significant figure of the capacitance of the capacitor.

Dot B indicates the second significant figure.

Dot C indicates the multiplier.

An additional dot is sometimes shown when the working voltage is other than 500 volts. This dot indicates the voltage rating of the capacitor.

A second system now coming into common use involves six dots of color as follows:



Dot A indicates the first significant figure of the capacitance of the capacitor.

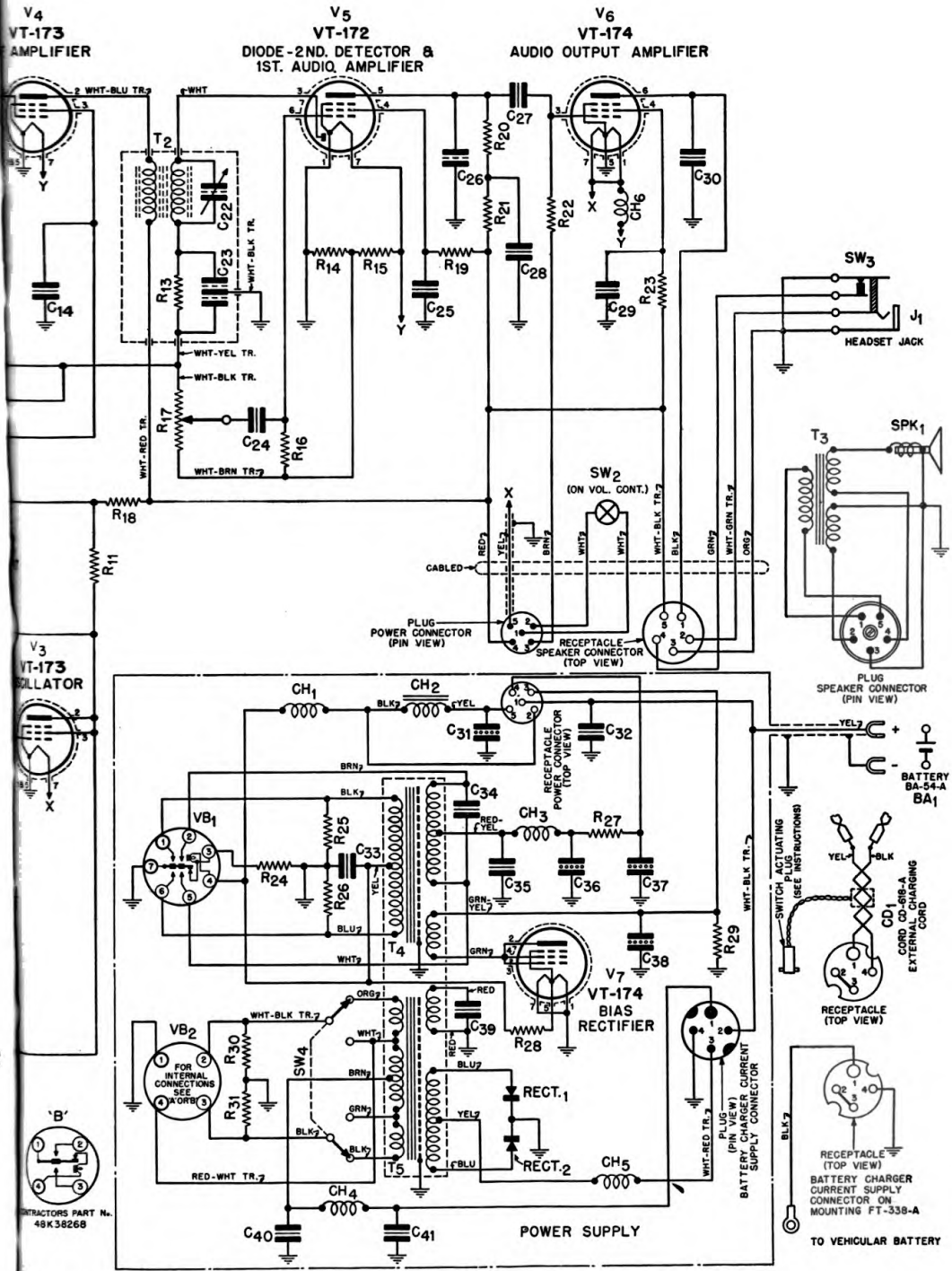
Dot B indicates the second significant figure.

Dot C indicates the third significant figure.

Dot D indicates the multiplier.

*Dot E indicates the tolerance of the nominal capacitance value.

Dot F indicates the voltage rating of the capacitor.



728-A, SCHEMATIC DIAGRAM

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A.G.062.11 (3-3-43)

By Order of the Secretary of War:

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Chief of Staff.

OFFICIAL:

J. A. ULIO,
Major General,
The Adjutant General

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(For explanation of symbols, see FM 21-6)

