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ECHNICAL MANUAL

TM 11-862

RADIO SET SCR-504-A

(Direction Finding)

WAR DEPARTMENT 5 OCTOBER 1943

WAR DEPARTMENT TECHNICAL MANUAL

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WAR DEPARTMENT,
WASHINGTON 25, D. C., 5 OCTOBER, 1943

TM 11-862, Technical Manual for Radio Set SCR-504-A (Direction Finding), is published for the information and guidance of all concerned.

[A. G. 300.7 (25 September 1943).]
BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

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

DISTRIBUTION:
IC 11 (5)
(For explanation of symbols see FM 21-6.)

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LIST OF ILLUSTRATIONS

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DESTRUCTION NOTICE

WHY— To prevent the enemy from using or salvaging this equipment for his benefit.

WHEN—When ordered by your commander or when you are in immediate danger of capture.

HOW— 1. Smash—Use sledges, axes, hand-axes, pick-axes, hammers, crowbars, heavy tools, etc.

2. Cut—Use axes, hand-axes, machete, etc.

3. Burn—Use gasoline, kerosene, flame-throwers, incendiary grenades, etc.

4. Explosives—Use firearms, grenades, TNT, etc.

5. Disposal—Bury in slit-trenches, fox-holes, other holes. Throw in streams. Scatter.

USE ANYTHING IMMEDIATELY AVAILABLE FOR DESTRUCTION OF THIS EQUIPMENT

WHAT—1. Smash—Tubes, meters, controls, switches, batteries, rectifier, sockets, chest, syringe, panels, capacitors, resistors, headsets, and vibrator.

2. Cut—Cords and wiring.

3. Bend and/or break—Loop, sensing antenna, cabinet, and panels.

4. Burn—Sockets, wiring, cords, capacitors, resistors, transformers, wiring diagram, manual, suitcase, chest, and coils.

5. Bury or scatter—All remaining parts.

DESTROY EVERYTHING

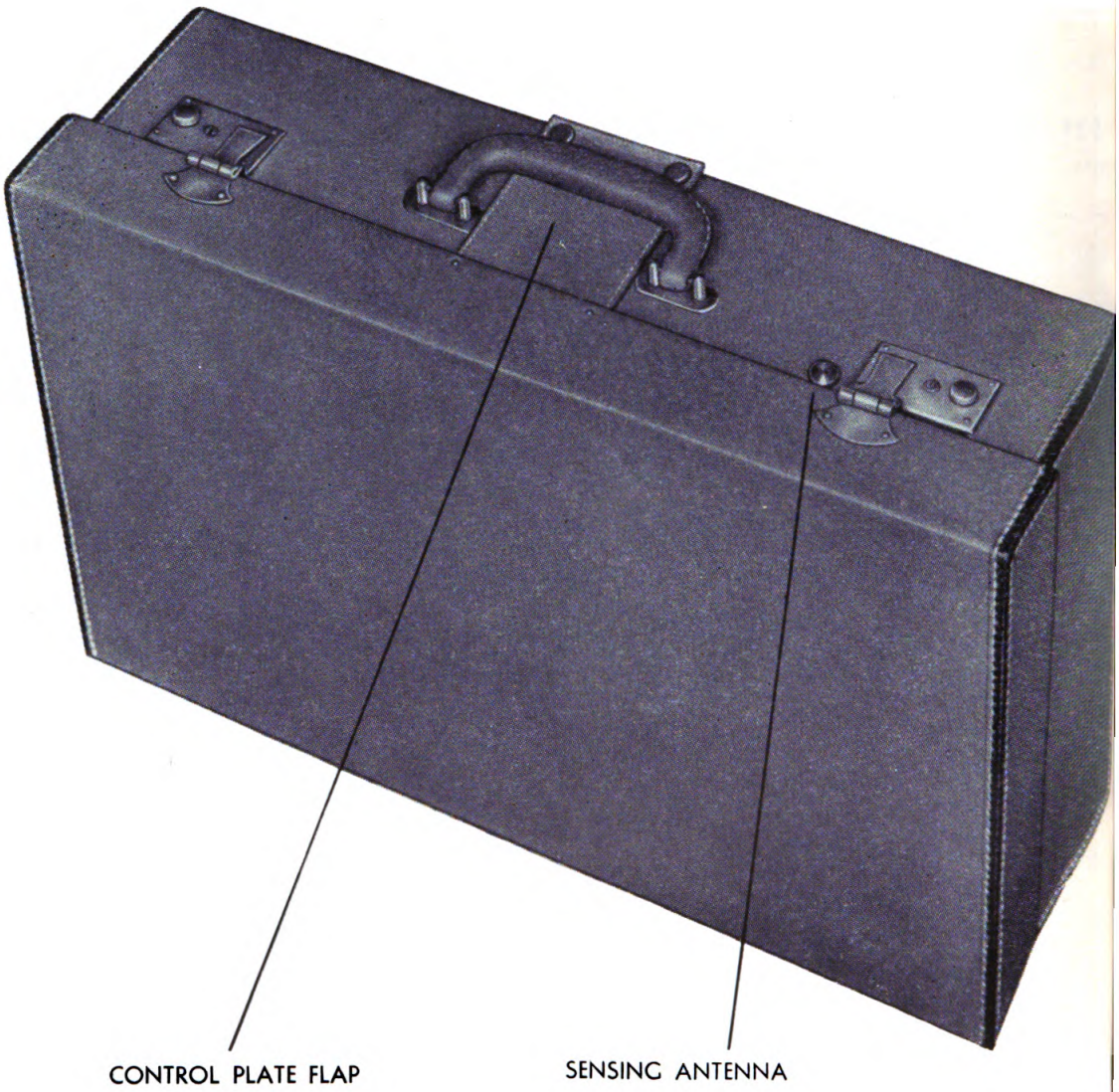


Figure 1. Radio Receiver BC-792-A, Outside View

SECTION I

DESCRIPTION

1. General.—Radio Set SCR-504-A is a portable radio direction finder (d/f) which has a portable Battery Charger PE-128-A and a Case CS-96-A for carrying the PE-128-A and spare parts. The direction finding receiver is called Radio Receiver BC-792-A and it is quite different from anything you've had yet. But it's not entirely unlike the little portable you used to take with you to the football game or on a picnic. Remember how you used to have to turn the little portable in a certain direction to get the best pickup from a given radio station? It's the same with the BC-792-A. The only difference is that with the portable, entertainment was the main thing and you turned your set in such a direction as to get the best results. With the BC-792-A, the entertainment you get is only incidental. It's the way Radio Receiver BC-792-A points that counts, because that tells you the direction of the friendly or enemy transmitter.

In figure 1 you see Radio Receiver BC-792-A as it looks to the ordinary person—just another pigskin suitcase. In figure 2 you see the suitcase open showing the radio set, while in figure 14 you see "yourself " carrying the receiver and operating it as you walk. It's true—you can "direction find"—d/f—as you walk along, or you can set Radio Receiver BC-792-A on the ground, or on a tree stump, and d/f from there.

2. Power Supply.—

a. For Radio Receiver BC-792-A:

1 Battery BB-51	6 volts	.1 amperes
2 Batteries BB-52	72 volts (total)	.017 amperes

(The above batteries when new or freshly charged will operate the receiver for 3 to 4 hours.)

b. For Battery Charger PE-128-A:

Vehicular Battery	6 volts	1.2 amperes
or		
Vehicular Battery	12 volts	.6 amperes

3. RADIO SET SCR-504-A, Components with Weights and Dimensions.

(*See figures 2, 3, 4 and 6*)

Quantity	Stock Number	Name of Part	DIMENSIONS (INCHES)					Unit Weight (In Lbs.)
			Height	Width	Depth	Length	Diam.	
1	2C4792 ( )	Radio Receiver BC-792-A Including the following: 1 Set of Tubes consisting of:	15⅛	21⅝	6⅞	....	....	25.6
	2C4792 ( )T1	1 1LB4 1 1LH4/VT-177 1 1LC6/VT-178 5 1LN5/VT-179						
	3A351 3A52A	*1 Battery BB-51 *2 Battery BB-52						
		1 Headset HS-34-A (In lid pocket) 2 Ear Inserts (In lid pocket)						
1		Technical Manual (In receiver carton)	8½	5½	....	....	....	.5
1	3H771-96 ( )	Case CS-96-A For the following components:	12¾	25	12¾	....	....	30. (empty)
1	3H228 ( )	Battery Charger PE-128-A Including the following:	9¾	12	8	....	....	16.7
	3E1658 ( )	1 Cord CD-658-A (Attached)	....	....	....	85	....	.56
		1 6 V. Synchronous Vibrator	....	....	....	3⅜	1½	.28
1 (spare)	2B834 ( )	Headset HS-34-A Including the following:	....	....	....	....	....	.04
		1 Receiver R-27-A	....	....	....	....	¾	.....
		1 Cord CD-655-A	....	....	....	48	....	.....
4 (spares)	2B1300	Ear Insert	....	....	....	....	....	.01
2 (spares)		Tube Kit	3	4	....	5⅝	....	.75
1		Technical Manual	8½	5½	....	....	....	.5

*2 (spares)	3A351	Battery BB-51	31/32	1 5/16	....	4 3/16	....	.27
*4 (spares)	3A52A	Battery BB-52	1 1/16	1 7/16	....	4 3/16	....	.3
2 {1 for use 1 spare	3B4150	Hypodermic Syringe	....	....	....	4	7/8	.06
6 {1 for use 5 spares	3B4150/1	Hypodermic Needle	....	....	....	2 1/8	....	.02
1		16 oz. Acid Bottle	6 1/4	....	....	....	3 1/4	.81
5 {1 for use 4 spares		Rubber Stopper	....	....	....	....	....	.01
12		Blotter	3/8	4	....	9 1/2	....	.23
		Shipping Weights and Dimensions						
1		Radio Receiver BC-792-A, packed in carton	....	....	....	....	....	29.7
1		Case CS-96-A with contents, packed in carton	....	....	....	....	....	59.
		Radio Receiver BC-792-A and Case CS-96-A packed in domestic shipping crate	28	26	19	....	....	137.

*NOTE—On the initial shipment to the using arm, batteries and battery acid are shipped in a crate separate from the rest of Radio Set SCR-504-A.

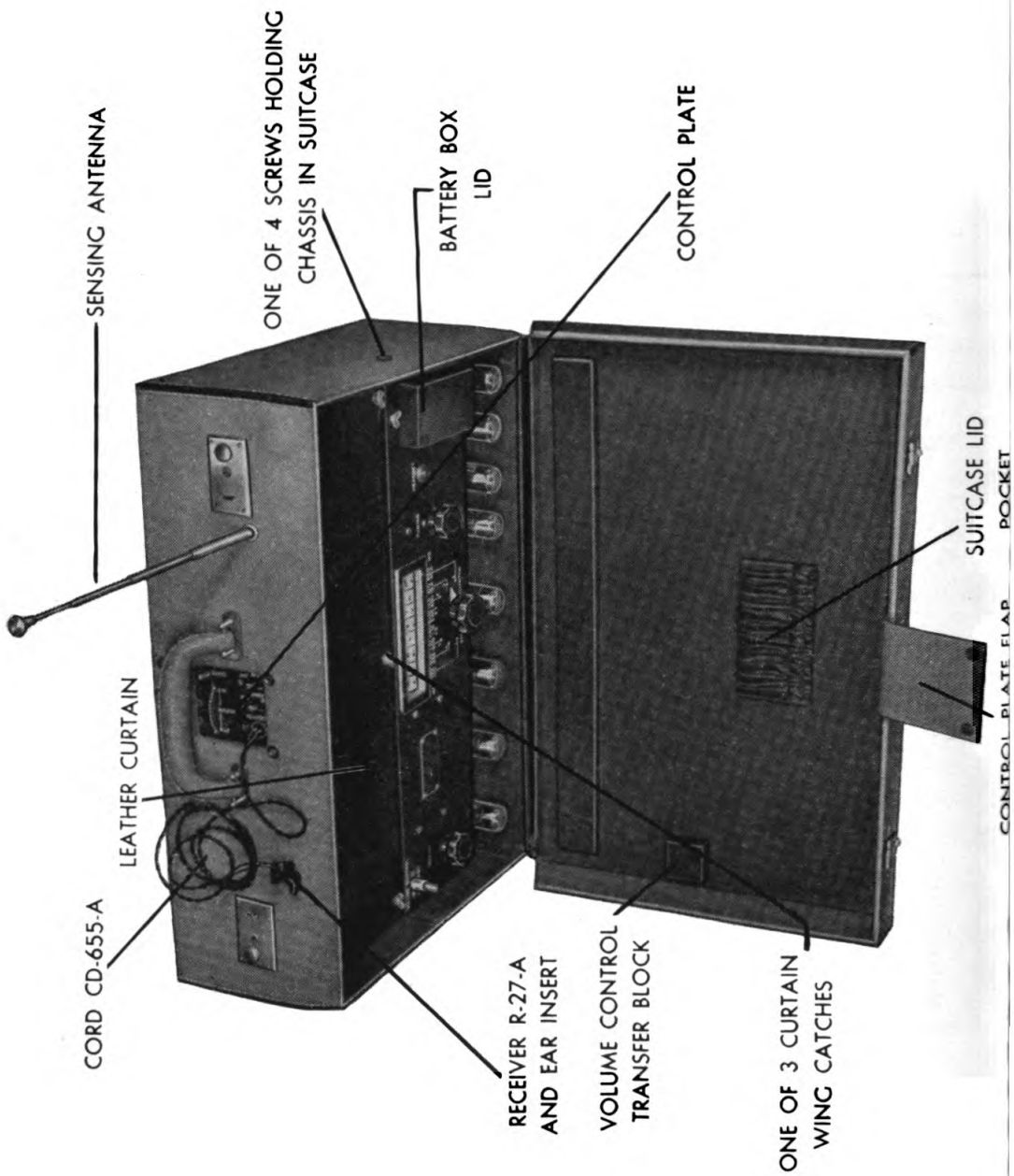


Figure 2. Radio Receiver BC-792-A, with the Suitcase Open Showing Contents, and the Sense Antenna up

4. Radio Receiver BC-792-A (figures 1, 2)—Radio Receiver BC-792-A, housed in a suitcase, is an 8-tube superheterodyne covering a frequency range of from 100 kc to 65 mc. in eight bands. It is designed to receive either continuous-wave or amplitude-modulated signals. A complete set of tubes is installed in Radio Receiver BC-792-A when it reaches you. The tuning dial is calibrated in megacycles. Power supply for Radio Receiver BC-792-A is a set of miniature storage batteries (one 6-volt and two 36-volt) which are housed in an easily-accessible compartment on the receiver panel. The panel VOLUME control is used when the suitcase lid is open; when the lid is closed the VOLUME control on the plate under the carrying handle is used (figure 11). These two controls are electrically independent—the VOLUME CONTROL TRANSFER disengages the inside control and engages the outside control when the lid of the suitcase is closed.

Headset HS-34-A, provided with Radio Receiver BC-792-A, is connected to the HEADSET jacks on the control plate (figure 11). This headset, of the hearing-aid type, uses ear inserts, one to fit each ear. A panel HEADSET jack (figure 10) is provided for connecting conventional headset by means of standard Plug PL-55.

The antenna stage of the receiver uses a single turn loop as a directional pickup and a collapsible rod antenna as a non-directional pickup. Connection of the rod antenna to the antenna stage is made by pushing the SENSE button on the control plate (figure 11). When the rod antenna and the loop antenna are connected they form the "sensing" device which tells you the direction of the transmitter.

5. Battery Charger PE-128-A (figure 3).—Battery Charger PE-128-A is designed to operate from either a 6-volt or a 12-volt vehicular storage battery. Connections to the supply battery are made by using Cord CD-658-A, which is stored in a compartment inside the rear door. Identification tags on Cord CD-658-A indicate the voltage and polarity for connecting it to the supply battery. The SUPPLY switch on the panel has two functions: *a.* by moving the key to the top or bottom positions, the charging current is turned on; by moving the key to the middle OFF position the charger is turned off. There is a position-locking mechanism on the switch to prevent its being jarred to the OFF position. Opening the cover at the top of the charger exposes the receptacles for the miniature storage batteries. One set (one BB-51 and two BB-52's) of these

Figure 3. Battery Charger PE-128-A, Front View, Top Closed

atteries is charged at a time. Meters on the panel indicate the charg-ıg currents and voltages of each battery as the METER RANGE witch is turned. The A-CURRENT and B-CURRENT controls on the anel adjust the charging rates. Condition of the batteries may be hecked by pushing the BATTERY LOAD TEST button. The charger ; protected from damage by fuses in the main circuits. Each of the ıree fuse blocks contains one active (connected in series with the ircuit) and one spare fuse. To inspect and replace fuses, open the ear door (figure 23).

6. Case CS-96-A (figures 4, 6).—Case CS-96-A is a plywood ase which houses Battery Charger PE-128-A and accessories. The ase has metal-reinforced corners. The rubber strip on which the inged lid rests forms a water-tight seal when the draw bolts are osed. A hinge hasp suitable for padlocking is provided.

The interior of the case is divided into compartments for the ontents. A removable tray in the upper right-hand side of the case figure 4) is designed for the six miniature storage batteries. The nallest compartment in the tray is for the hypodermic syringe hen it is not packed away in its transit compartment, below the ay. The tray and the compartments below it are coated with an cid-resisting enamel. On the under side of the lid is a list of con-nts, together with a chart showing how the contents are placed in e case (figure 5). These accessories and spares are in Case CS-96-A:

a. Headset HS-34-A.—This headset consists of Cord CD-655-A ıd Receiver R-27-A. The cord is long enough to put through the coat eeve of the operator, and provide sufficient slack at head and hand allow for easy manipulation. The two conductors are tied together ther close to the tips so they may be easily inserted into the head-t jacks. Receiver R-27-A is of the hearing-aid type, and is provided ith a projection to which you snap the ear insert described below.

b. Ear Insert.—Made of black, hard rubber shaped to fit the r, ear inserts are supplied in two types—one for the left ear and one r the right. You attach the insert to Receiver R-27-A by fitting the ojection on the receiver to the larger hole on one side of the ear-sert, then snap them together with a little finger pressure.

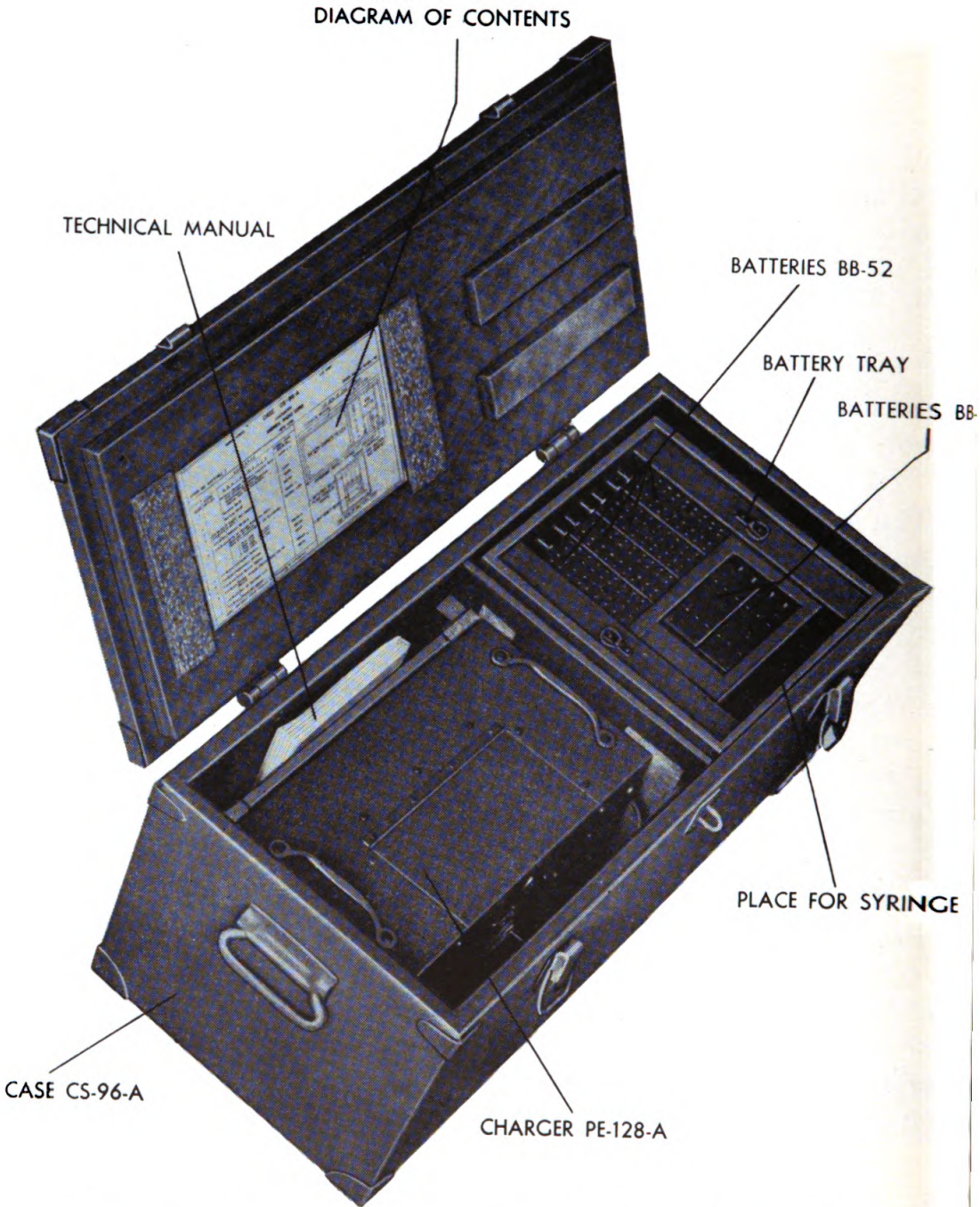


Figure 4. Case CS-96-A, Front View, Lid Open Showing Contents

c. Tube Kit.—Each tube kit contains a complete set of tubes for Radio Receiver BC-792-A, consisting of the following:

1 1LB4
1 1LH4/VT-177
1 1LC6/VT-178
5 1LN5/VT-179

d. Battery BB-51.—Used as the "A" battery for Radio Receiver BC-792-A, Battery BB-51 is a miniature storage battery which furnishes 6 volts. It is packed in a state of "dry charge" and you must fill it with acid before using (see paragraph *8b* for details).

e. Battery BB-52.—This miniature storage battery furnishes 36 volts. Two are connected in series and comprise the "B" supply for Radio Receiver BC-792-A. Battery BB-52 also is packed in a state of "dry charge" and must be filled with acid before using (see paragraph *8c* for details).

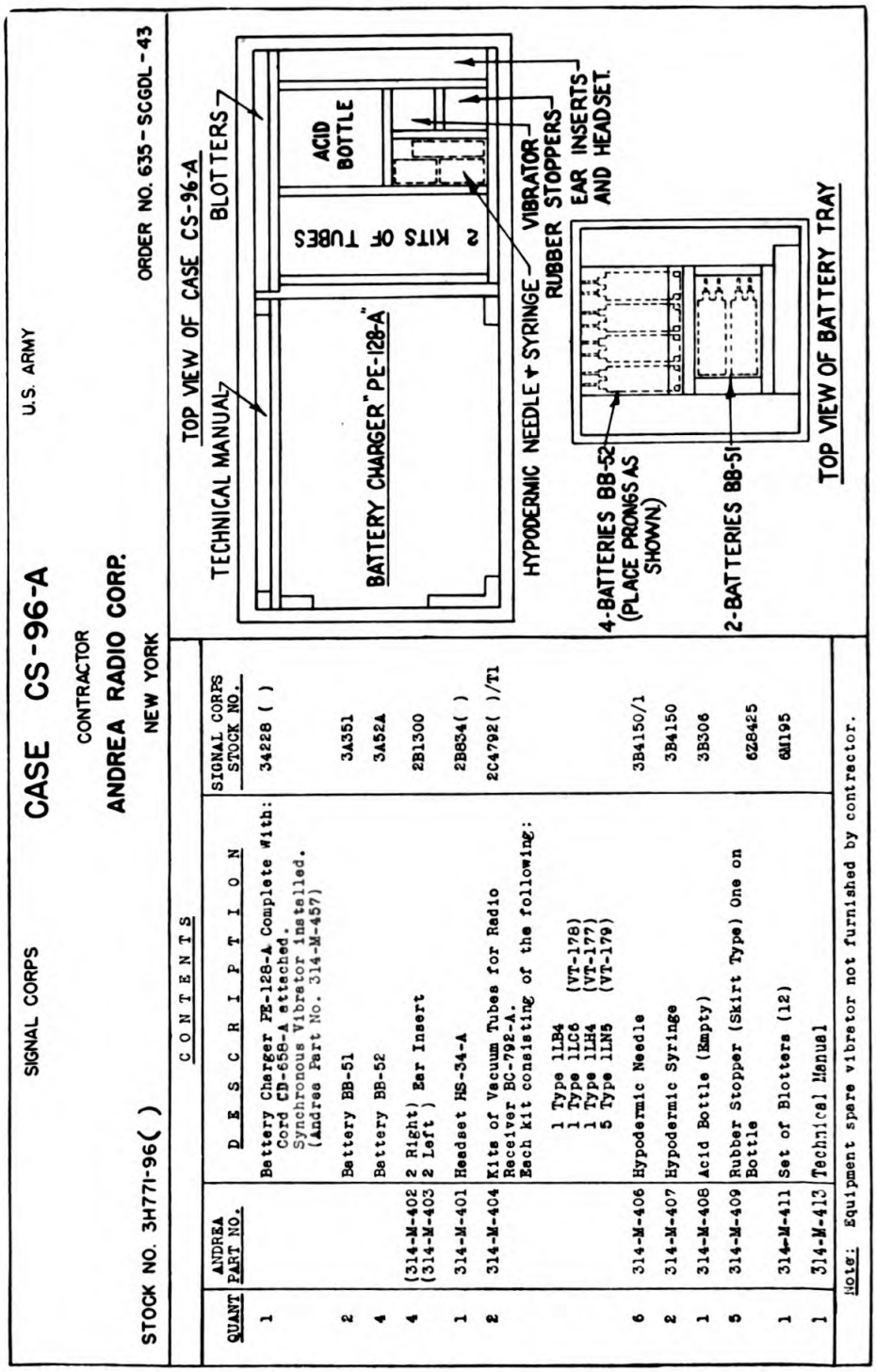
f. Hypodermic Syringe.—You use the hypodermic syringe for filling the batteries. It consists of two glass parts: a plunger and a barrel, graduated to 5cc. The scale in cubic centimeters (abbreviated: cc) on the graduated barrel indicates the amount of acid you draw into the syringe. For use and care of the syringe see paragraphs *8a, b, c, d.*

g. Hypodermic Needle.—The hypodermic needle is made of rustless steel and fits on the small end of the barrel of the syringe. Together the needle and syringe are used for filling the miniature batteries.

h. Acid Bottle.—The 16-oz. bottle, packed empty, is large enough to hold a supply of acid to fill and replenish several sets of batteries.

i. Rubber Stopper.—The rubber stopper serves the two-fold purpose of (1) closing the bottle and (2) allowing the hypodermic syringe to be filled when the bottle is nearly empty. Pierce the center of the stopper with the needle and the bottle may then be placed on its side (or even upside down), if necessary, to submerge the end of the needle.

j. Blotters.—Blotters are used for removing excess acid from the miniature batteries while they are charging or being filled. See paragraph *8e* for instructions on how to blot the batteries without short-circuiting the cells.



QUANT	ANDREA PART NO.	DESCRIPTION	SIGNAL CORPS STOCK NO.
1		Battery Charger PE-128-A Complete With: Cord CD-658-A attached. Synchronous Vibrator Installed. (Andrea Part No. 314-M-457)	34228 ( )
2		Battery BB-51	3A351
4		Battery BB-52	3A52A
4	(314-M-402 2 Right) (314-M-403 2 Left)	Ear Insert	2B1300
1	314-M-401	Headset HS-34-A	2B834( )
2	314-M-404	Kits of Vacuum Tubes for Radio Receiver BC-792-A. Each kit consisting of the following:	2C4792( )/T1
		1 Type 1LB4 (VT-178)	
		1 Type 1LC6 (VT-177)	
		1 Type 1LH4 (VT-179)	
		5 Type 1LN5	
6	314-M-406	Hypodermic Needle	3B4150/1
2	314-M-407	Hypodermic Syringe	3B4150
1	314-M-408	Acid Bottle (Empty)	3B306
5	314-M-409	Rubber Stopper (Skirt Type) One on Bottle	6Z8425
1	314-M-411	Set of Blotters (12)	6M195
1	314-M-413	Technical Manual	

Note: Equipment spare vibrator not furnished by contractor.

Figure 5. Diagram of Contents of Case CS-96-A

SECTION II

INSTALLATION AND OPERATION

7. Unpacking.— To unpack Radio Set SCR-504-A you set the packing case on its bottom in a place where you have plenty of elbow room to work. After removing the boards on top, using a nail puller to pry them loose, you will find two cartons. Remove the BC-792-A carton first by pulling it straight up. Then remove the other.

a. Set the BC-792-A carton on its bottom. Use a knife to slit the paper seal holding the flaps on the top. Then remove the folded cardboard "accordion" in the top of the box. Now grasp the handle of the suitcase with one hand, hold the box down with the other, and pull the suitcase straight up and out of the box. This suitcase contains Radio Receiver BC-792-A.

b. Open the other carton and remove Case CS-96-A. Set the wood case on its bottom and open the three latches holding the cover. Swing back the lid. The metal box is Battery Charger PE-128-A. Grasp the handles and pull it straight up. Remove the battery tray in order to get at the acid bottle and other items required to fill the batteries.

(1) Remove one set of batteries from the tray. A set of batteries contains: one "A" battery and two "B" batteries, labeled BB-51 and BB-52, respectively. The "A" Batteries (BB-51) have six pin holes on top while the "B" Batteries (BB-52) have a large number of pin holes on top.

(2) Remove the acid bottle and fill it with sulfuric acid (1.280 specific gravity) from the container which is shipped with the batteries. If this container is missing or broken, have the acid bottle filled at your supply base using acid for vehicular batteries. **Caution: Sulfuric acid is very corrosive to metal and destructive to fabrics. Don't let it get on equipment or clothing. Be careful.**

8. Filling the Batteries.—Miniature storage batteries BB-51 and BB-52 (figure 7) are charged, but dry, and before they can be used for generating current their cells must be filled with sulfuric acid. Before filling the hypodermic syringe with acid to put in the cells, however, the empty syringe should be used to pierce the seals inside the cell holes of each battery (6 for BB-51, 36 for BB-52). Push the needle into the cell hole as far as it will go with a light finger-pressure.

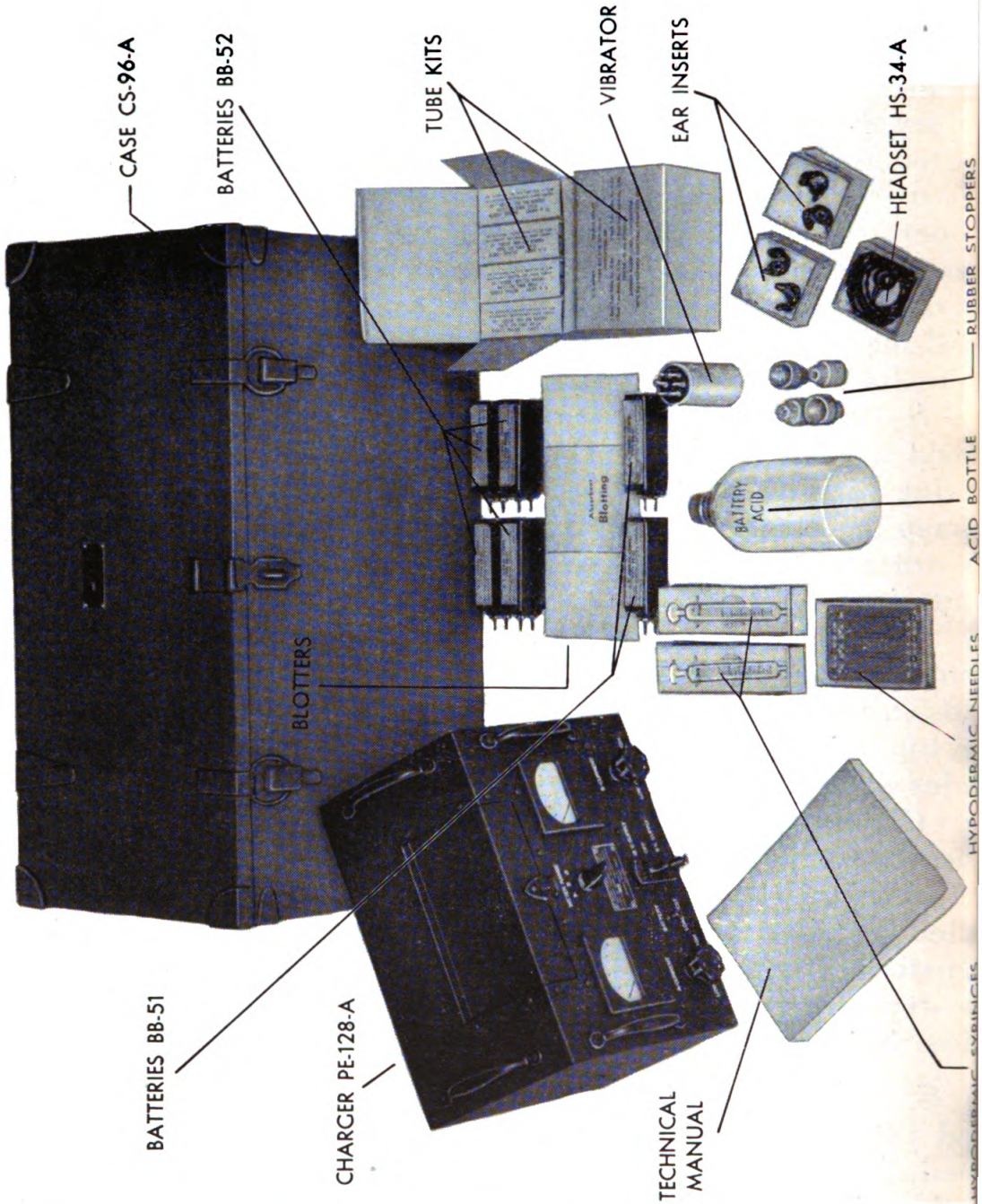


Figure 6. Case CS-96-A and Contents

a. To Fill Hypodermic Syringe:

(1) Push plunger completely into barrel.

(2) Push needle through center of rubber stopper of acid bottle until point of needle is immersed in acid. If needle does not reach acid, lay bottle on its side or turn it upside down (figure 8a).

(3) Slowly pull out plunger—acid will be drawn into barrel through needle.

(4) When acid reaches 5 cc level, stop pulling plunger and withdraw needle from stopper.

b. To Fill Battery BB-51:

(1) Insert needle into either of the previously-punctured holes numbered 1 of cell #1 (figure 7).

(2) Slowly force the acid out of the syringe by pushing the plunger with the thumb.

(3) Approximately 6 cc of sulfuric acid are needed to fill each cell in the BB-51.

(a) If the air can't get out of the battery fast enough a small pool of acid will form around the hole being filled, even before the cell is full. Just wait a minute, it will soak in.

(b) When the cell is filled, air bubbles stop coming out and both holes of the cell show liquid at rest.

(c) If acid soaks into one cell slowly and tends to run over, go to the next cell and give the other cell time to settle down.

(4) **DON'TS**

(a) Don't let the acid cover the top of the battery from one hole to the next because this shorts the cells, wastes the current, and will eventually cause the battery to burn up.

(b) Don't rush the job. Be patient. Rapping the battery *gently* on a hard surface with an up-and-down motion helps the acid to settle down faster. *Gently* tapping it with the finger also helps. Slowly moving the hypodermic needle up and down will help, too, but if you do this, be careful you don't break the needle or injure the battery.

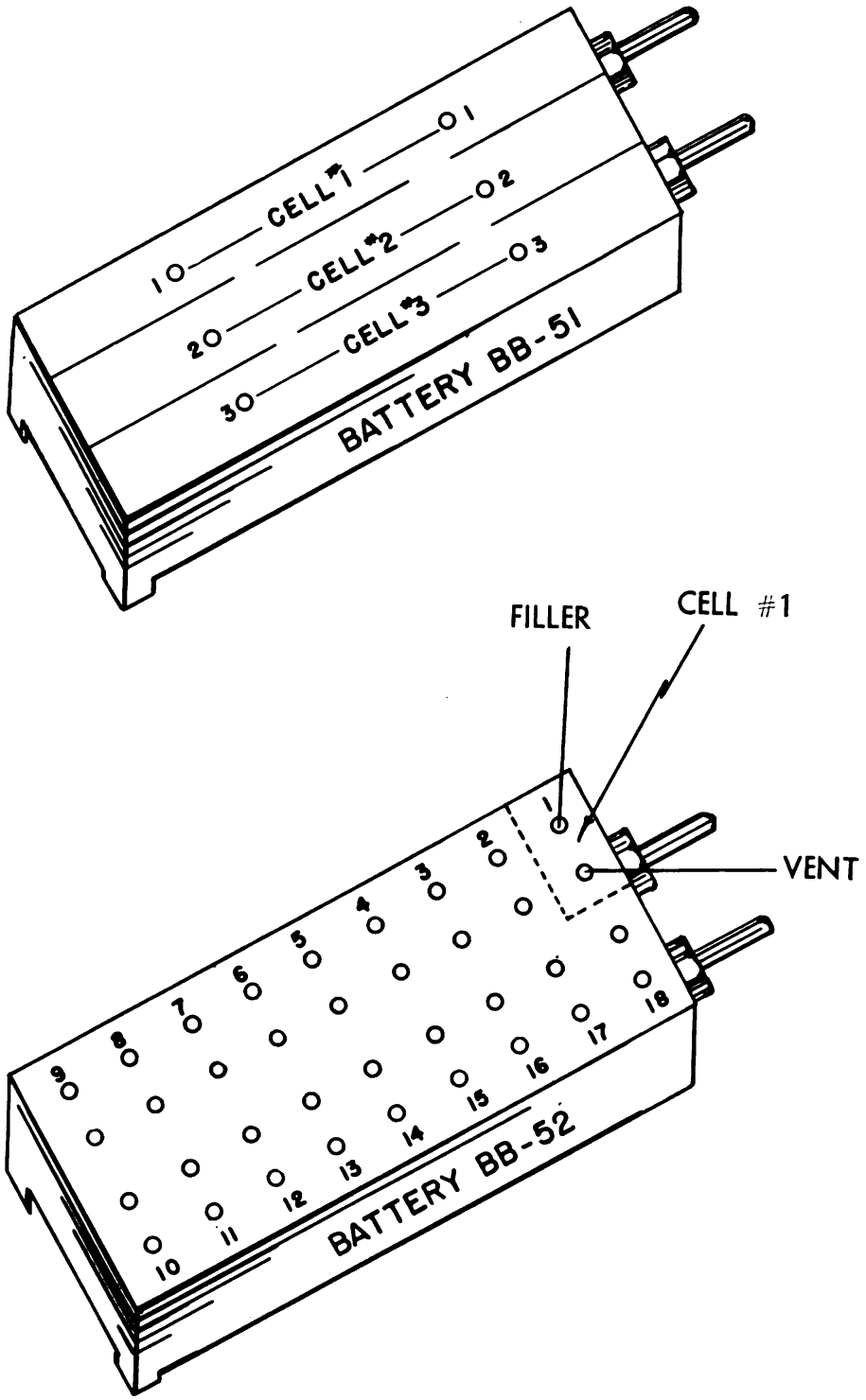


Figure 7. Miniature Storage Batteries BB-51 and BB-52

c. To Fill Batteries BB-52:

(1) Insert needle into previously-punctured cell #1 using the hole of the cell nearest the edge of the battery (the two lines of holes toward the center of the battery are vent holes). About 1 cc. of acid is needed to fill each cell. (See figure 8b.)

(2) Next fill cell #3 and continue filling the cells in this order, i.e., #3, #5, #7, etc. It is better to give each of these cells a small "shot" at a time and not try to fill each completely, at once.

(3) When all the odd-numbered cells (#1, #3, #5, #7, etc.) are filled, blot up the extra acid and fill cells #2, #4, #6, etc. See paragraph *8e* for tips on the safe way to blot up the acid.

(4) After blotting up any excess acid on the top of the battery, put it aside to await test.

(5) **DON'TS**

(a) Don't let puddles of acid run over the top of the battery from one cell to another because this shorts the cells, wastes the current, and burns up the battery.

(b) Don't rush the job. Be patient. Rapping the battery *gently* on a hard surface with an up-and-down motion helps the acid to settle down faster. *Gently* tapping it with the finger also helps. Slowly moving the hypodermic needle up and down will help too; but if you do this, be careful not to break the needle or injure the battery.

(6) Fill the other BB-52 by the same method.

d. Immediately after finishing with the syringe and needle, wash them thoroughly with clean water. Fill the syringe several times and squirt the water through the needle. Remove the needle from the syringe and let the parts dry.

e. Blotting.—The correct way to "blot" the excess acid from the batteries is to tear a small piece from one of the blotters and use the edge of the blotter, not the flat surface. Then maneuver the piece of blotter, edge up, from hole to hole, being careful not to connect two holes with the blotter (figure 16). The blotter soaked with acid is a good conductor and will short-circuit the cells if you aren't careful.

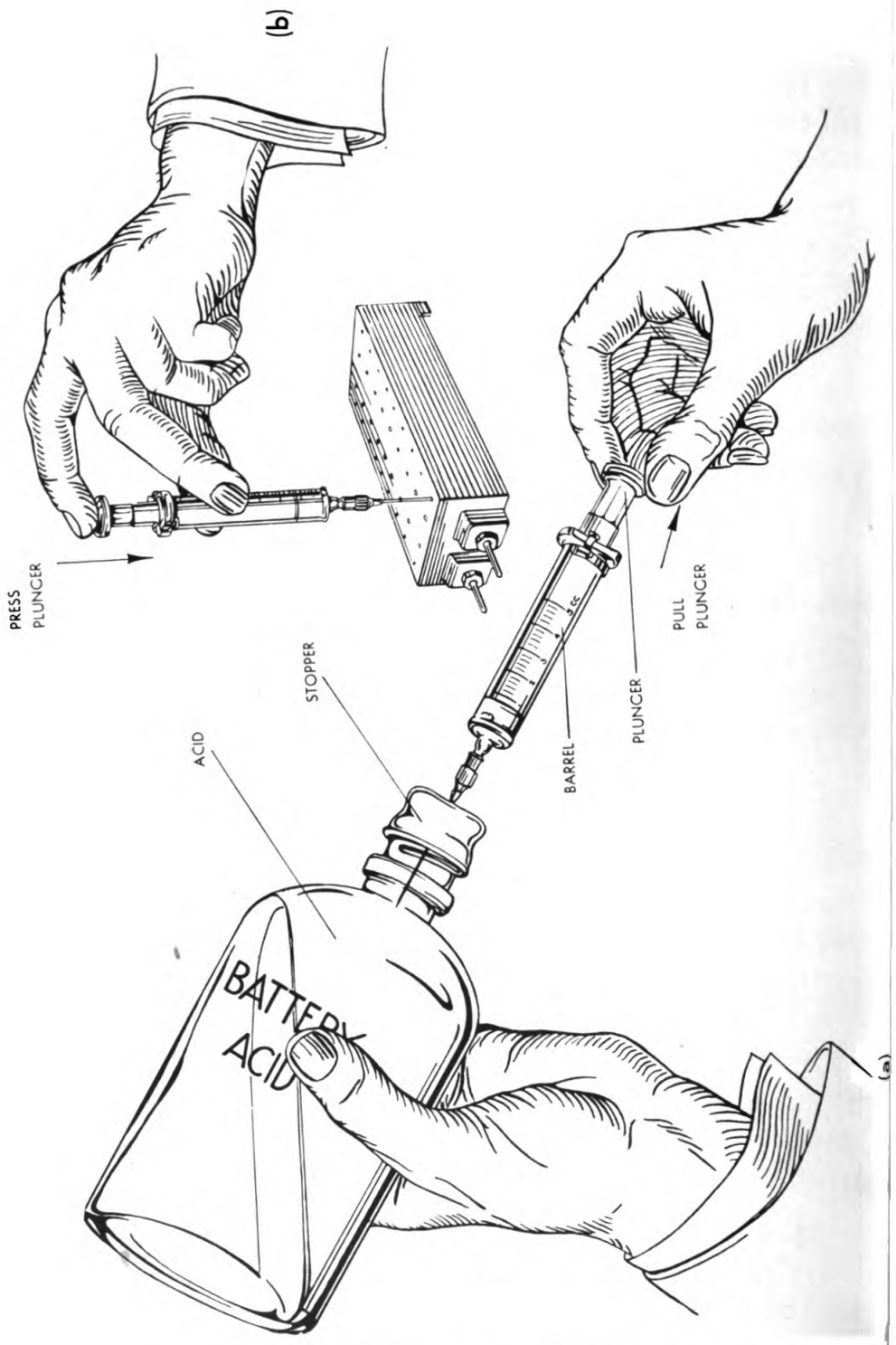


Figure 8. Filling the Syringe and Batteries

9. Testing the Batteries.—The BB-51 and BB-52 when filled for the first time do not require charging. Before they are put into Radio Receiver BC-792-A for use, however, they should be checked by measuring their terminal voltage under load. This you can do on the charger:

a. Open the latch on the front panel over the METER RANGE and raise the battery compartment lid (figures 3, 9).

b. Plug in the BB-51 as indicated by the markings next to the jacks.

c. Throw METER RANGE to position marked "A".

(1) Read voltage on red-marked "A" scale of meter labeled VOLTS. It should show at least 6 volts and may be as high as 6.5 volts.

(2) Now push button marked BATTERY LOAD TEST, and read the volts again. It, too, should show at least 6 volts and may be slightly higher. If the BATTERY LOAD TEST voltage is less than 6 volts, you have not filled one or more of the cells completely, or else the battery isn't fully charged. First check the cells by adding more acid where needed; then if necessary, recharge (see paragraph 17).

The difference between the readings obtained in (1) and (2) is:

(1) Shows the voltage when the battery has no load on it, i.e., no current is being drawn from the battery.

(2) Shows the voltage when the battery is connected to a load equal to that provided by Radio Receiver BC-792-A.

d. Plug in both BB-52 batteries in the jacks marked for these batteries. (All three batteries may be plugged in at the same time.)

e. Throw METER RANGE to first position marked "B".

(1) Read voltage on black-marked "B" scale of meter labeled VOLTS. It should show at least 36 volts and may be as high as 40 volts. If no voltage is measured, or the value is extremely low, one or more of the cells probably is not filled with acid, or else the battery isn't fully charged. Check up before going any further.

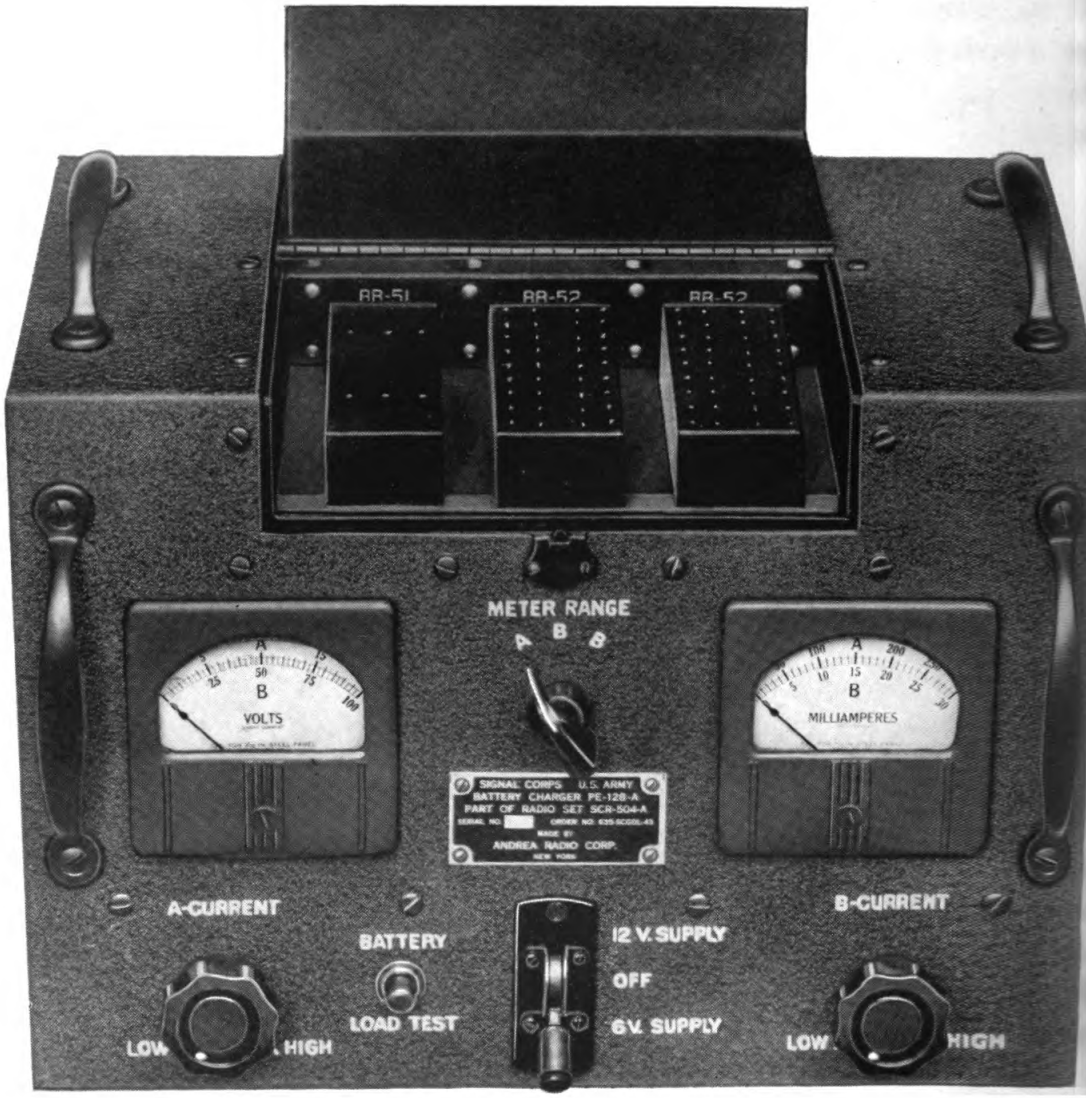


Figure 9. Battery Charger PE-128-A, Front View, Top Open, Batteries in Place

f. Throw METER RANGE to the other "B" position and read voltage again for the second BB-52.

g. If both batteries have measured at least 36 volts each, proceed with the load test for the "B" batteries. CAUTION: BOTH BB-52 BATTERIES MUST BE PLUGGED IN WHEN THE LOAD TEST IS MADE. Since these batteries are connected in series, the load is not applied if only one is plugged in. If only one is plugged in, all that registers is the no-load voltage, which does not mean much. You make the load test as follows:

(1) Throw METER RANGE to first B position.
(2) Push BATTERY LOAD TEST button and read voltmeter.
(3) Throw METER RANGE to other B position.
(4) Push BATTERY LOAD TEST button and read voltmeter again.
(5) Both batteries should measure at least 36 volts under load.

h. If either battery load voltage is less than 36 volts, one or more of the cells has insufficient acid or the battery isn't fully charged. Check cells by adding acid as needed and repeat load voltage test. If necessary, recharge the batteries (see paragraph 17).

10. Preparing Radio Receiver BC-792-A for Use (figure 2).—To make Radio Receiver BC-792-A work do the following:

a. Place the suitcase, handle up, with the lid next to you. Unlock the two latches with key you find tied to handle (don't leave keys here—they'll get lost), and push the brass buttons toward ends of the suitcase. (Don't leave your knuckles in the path of the latch as the snap spring opens the latches with considerable force.) Unfasten leather flap under suitcase handle by pulling snap buttons, and open lid of suitcase.

b. Turn wing fastener at top of battery compartment door at right side of panel and open battery compartment door. Push BB-51 and two BB-52 batteries into compartments indicated by the markings (figure 10). Make sure to push them in as far as they'll go. Close and fasten battery compartment door.

c. Remove Headset HS-34-A from the small pocket on the suitcase cover and plug the tips of its Cord CD-655-A into the tip jacks marked HEADSET on the control plate under the suitcase handle.

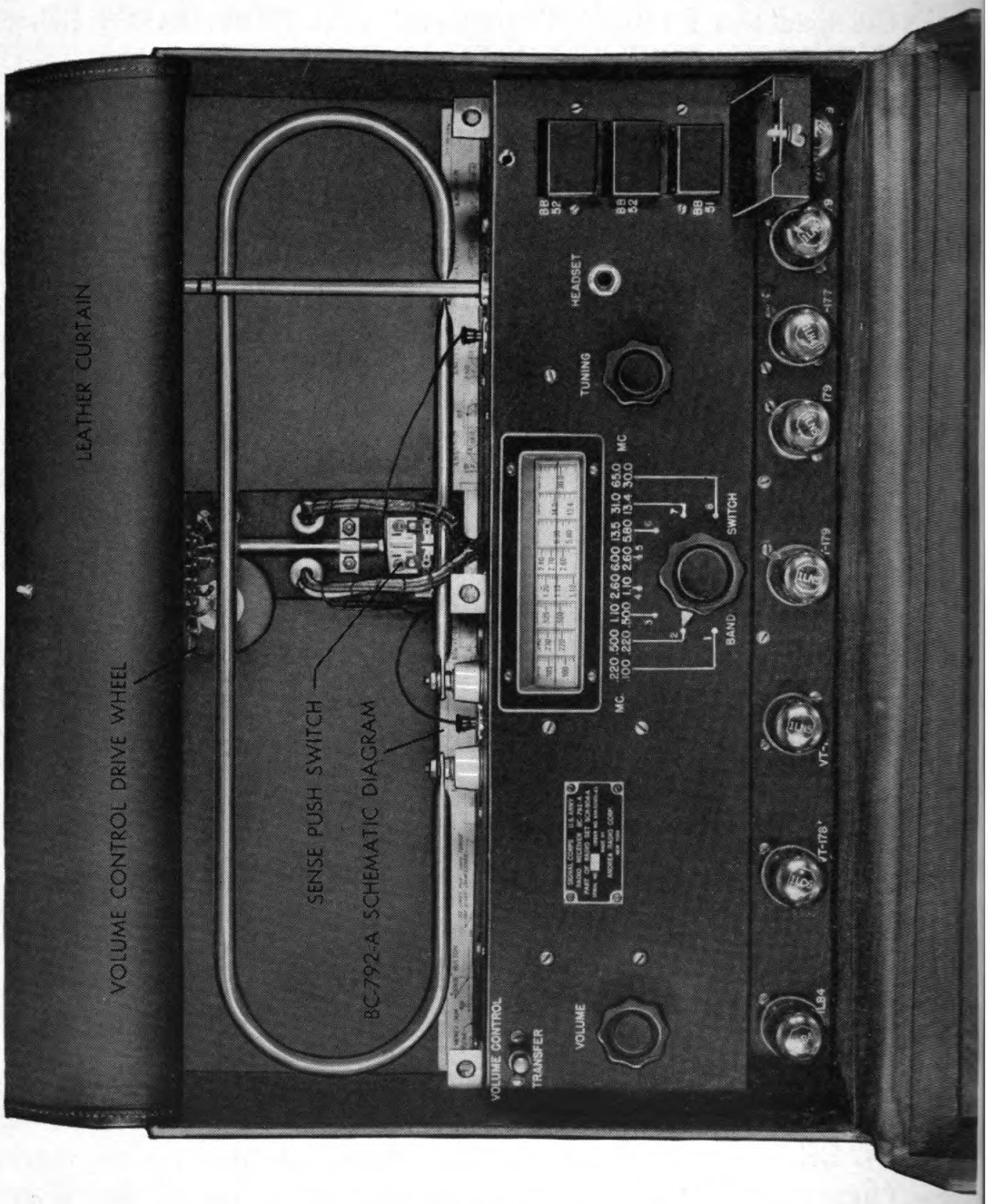


Figure 10. Radio Receiver BC-792-A, Suitcase Open, Curtain Up, Showing Loop Antenna, Battery Box Open Showing Batteries

d. Pull out the collapsible rod antenna as far as it will go by grasping the small brass button on the top of the suitcase near the right-hand latch. When the antenna is completely extended, five sections are visible.

e. The receiver is now ready for operation.

11. Tuning in Radio Receiver BC-792-A.—

a. Throw to ON, POWER switch which is mounted on control plate shown in figure 11.

b. Select frequency band by turning BAND SWITCH knob, front of receiver panel (figure 10).

c. Insert the earphone in the right ear (figure 12) as follows:

(1) Hold the earphone with the thumb and index finger so that the "wing" on the eartip is at your index finger tip pointing away from you, as shown in figure 12.

(2) Without changing your hold on the earphone, catch the "wing" in the front rim of your ear.

(3) Slide the wing down the rim and at the same time gently press the "horn" projection into your ear.

(4) Lead Cord CD-655-A from the phone around your ear, between it and your head. Normally Cord CD-655-A will tuck in under your shirt collar (figure 12), run along your arm under your shirt sleeve, out at the wrist and into the tip jacks marked HEADSET on the control plate under the suitcase handle. Of course if you aren't on a "snooping job" no need exists for concealing the headset in this manner and you can operate with any low-impedance headset plugged into JK-34-A on the front panel at the place marked HEADSET.

d. Turn VOLUME knob clockwise until you hear some noise in the headset .

e. Tune in the desired signal with TUNING control. The signal frequency is indicated in megacycles on the drum dial above the BAND SWITCH markings (figure 10).

f. You are now ready to locate the position of the transmitter from which the signal comes.

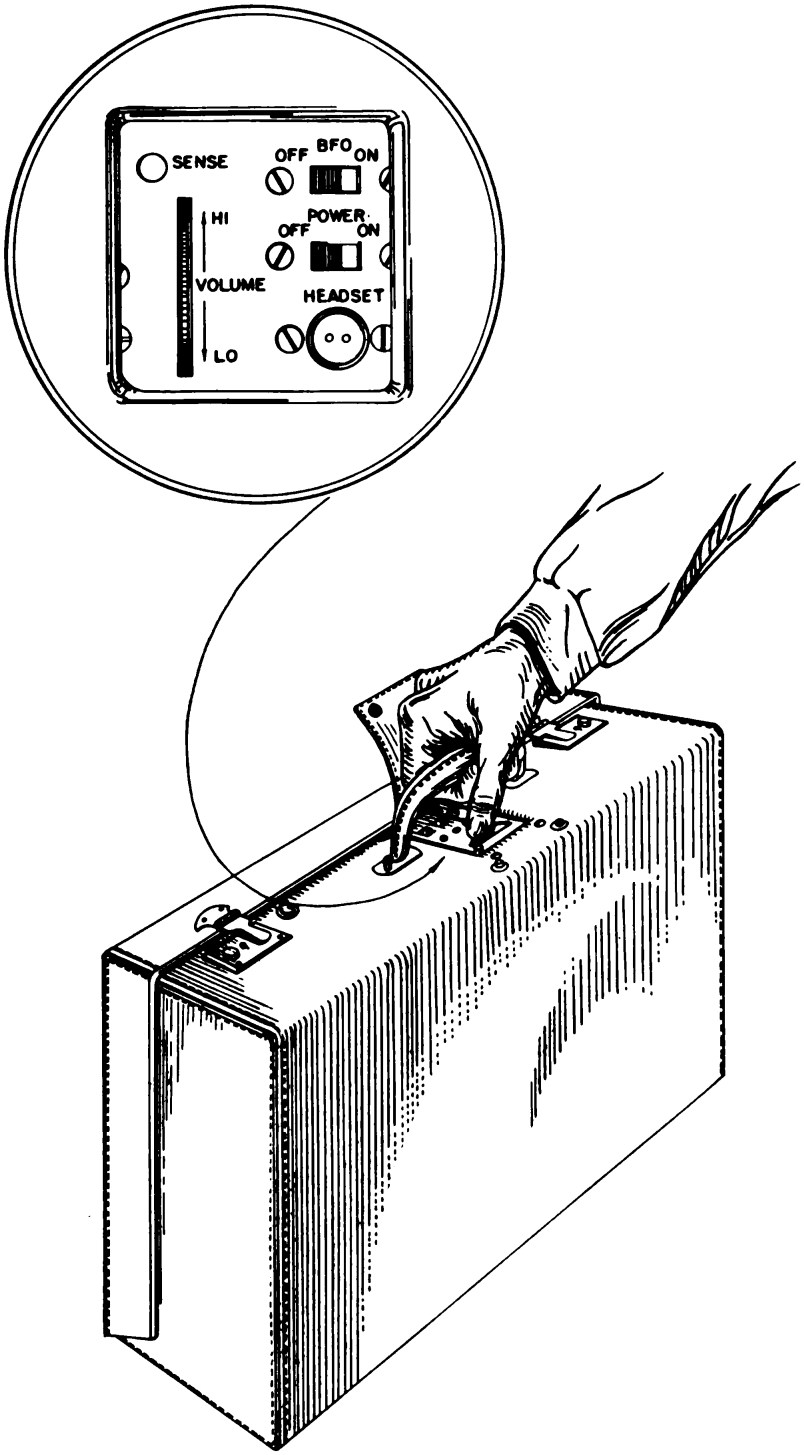


Figure 11. Top of Suitcase with the Flap Up Showing the Control Plate

12. Finding the Path of Signal for all Bands.—

a. Turn rim of VOLUME control on control plate under handle o LO positon.

b. Close lid of suitcase making sure you snap both latches and eave leather flap open—don't tuck it under the handle (see figure 11).

c. Turn VOLUME control towards "HI" until you get a comfortable signal in your ear.

d. Hold the suitcase by the handle at your right side in normal fashion and slowly turn on the spot where you are standing. As you turn slowly through a complete circle you hear the signal volume changing.

e. In the circle you make, as you turn with the suitcase, there will be two positions in which the signal is weakest. These positions are called the "nulls". (Figures 13, 14, 18.)

(1) Each of these "null" (weak signal) positions of the suitcase indicates that the suitcase is broadside to the path of the signal. But you can't tell yet whether the signal's coming or going along this path—that is, whether the transmitter is at "Punch" or "Judy", as shown in figure 13.

(2) If the signal gets too weak for you to find the exact positions where the signal is weakest, turn up the VOLUME control.

13. Finding the Direction of Signal or "Sensing" for Bands 1 to 6.—

a. Set the VOLUME control so that reception in the positions where the signal is loudest does not overload the receiver. The receiver is overloaded when the signal sounds mushy or distorted.

b. Hold the suitcase at your right side WITH THE SENSE ANTENNA END FORWARD. Put your thumb on the SENSE button and push it down several times as you slowly turn in a complete circle on one spot. Each time you push down the button, make a mental note of what happens to the signal; that is, does it get louder or weaker. Keep on turning in the circle until you know in which positions of the suitcase the signal gets louder or weaker when you push the SENSE button. For the suitcase positions in which the

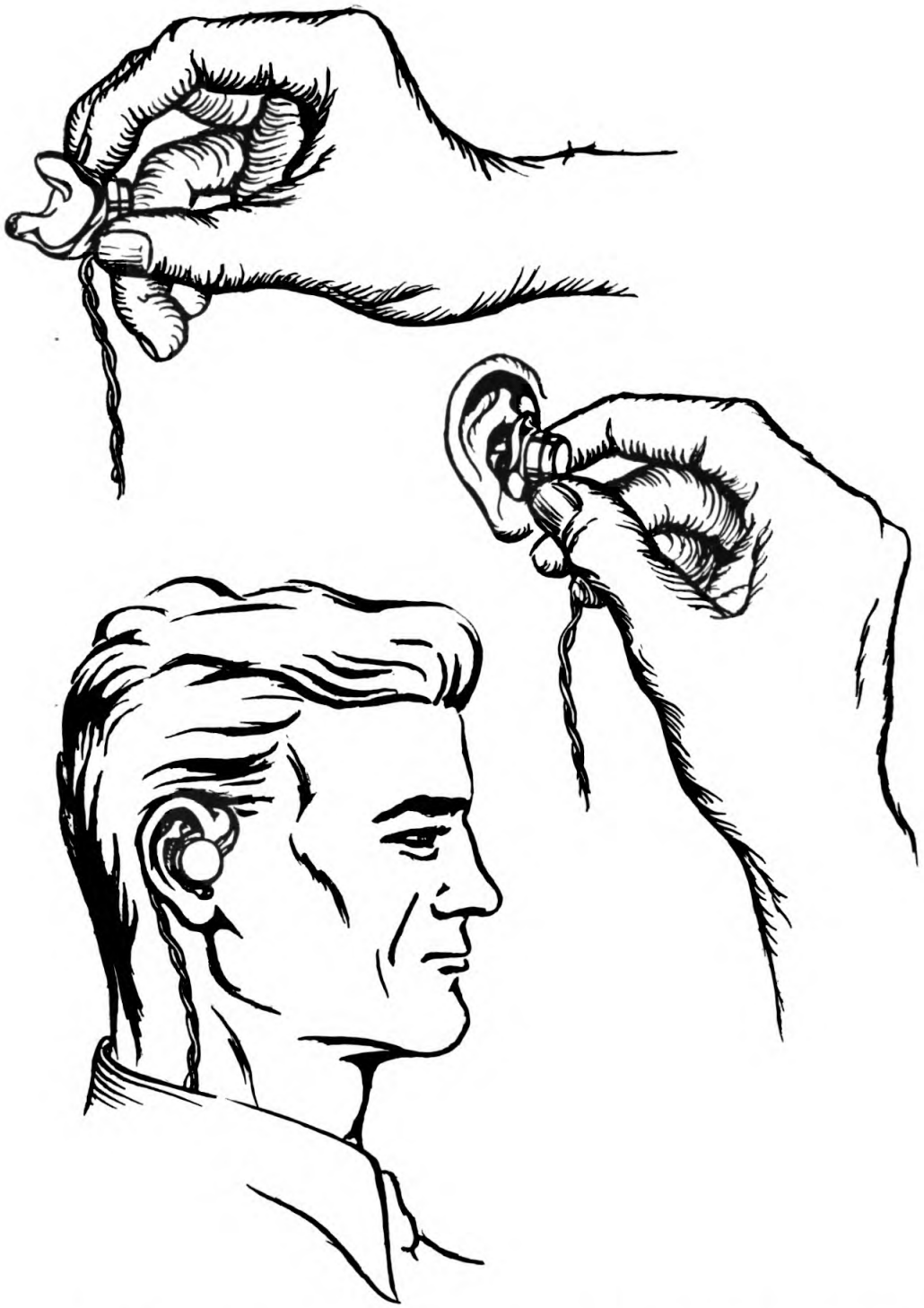


Figure 12. Three Steps for Inserting Ear-piece of Headset HS-34-A in the Ear

ignal gets louder, you are facing in the general direction *toward* he transmitter. For the positions in which the signal gets weaker, 'ou are facing in the general direction *away* from the transmitter. Since you know both the general direction *toward* the transmitter nd the exact *path of the signal* (from paragraph 12), you now can ombine this information to get the exact direction of the transmitter.

Suppose you happened to pick a spot for the receiver between wo transmitters: "Punch" and "Judy", as shown in figure 13. The 'null" positions of the suitcase for a signal coming from either ransmitter would be at 3 and 7, thereby leaving you in doubt from vhich the signal comes. However, when you make the "Sensing)bservations" (figure 13) for "Punch" you find them to be different 'rom those for "Judy". For example, if "Punch" is radiating, the ignal gets weaker when SENSE is pushed as you turn through posiions *4*, *5* and *6;* whereas if "Judy" is radiating the signal gets veaker when SENSE is pushed as you turn through positions *8*, *1* nd *2*. Note that in both cases the sense antenna end (indicated by he black dot in figure 13) of the suitcase, points *away* from the adiating transmitter concerned.

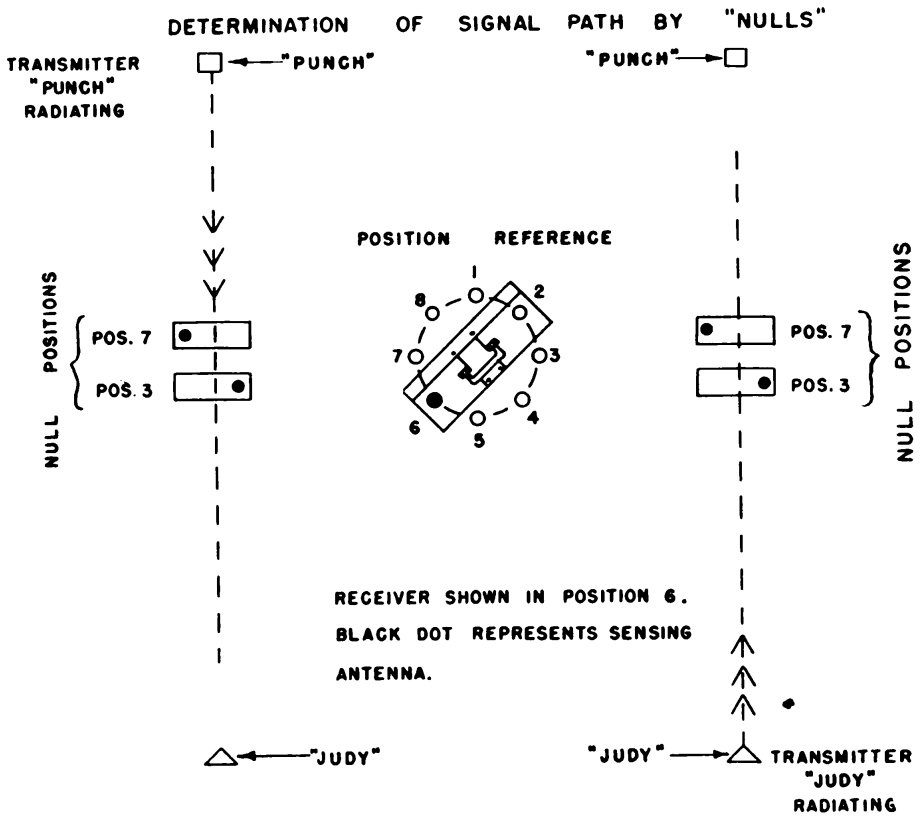
The positions of the suitcase relative to the transmitter are corectly shown in figure 15. Use the sense antenna as a marker.

c. Check the exact path of the signal again by observing the roadside position for the weakest signal *without* pushing the SENSE utton. *Never take a bearing on Sense.* The Sense null position is ften off by 15 or 20 degrees. Use the Sense only to "resolve the 180 egree ambiguity". This latter is a technical term which means to ind out whether you're "coming or going."

Note: Bands 7 and 8 are not provided with sensing circuits.

14. Beat-Frequency Oscillator (BFO).—*a.* In case the sigal of a transmitter you want to locate is using voice, tone, or telegraph nodulation only intermittently or not at all, you can make an audible vhistle or beat by using the beat-frequency oscillator.

b. Throw the BFO switch on control plate under suitcase handle o ON (figure 11).



SENSING OBSERVATIONS

SIGNAL FROM 'PUNCH' WHEN **SENSE** IS PUSHED	SIGNAL FROM 'JUDY' WHEN **SENSE** IS PUSHED
Position 1 Signal Gets Louder	Position 1 Signal Gets Weaker
Position 2 Signal Gets Louder	Position 2 Signal Gets Weaker
Position 3 Signal Gets Louder	Position 3 Signal Gets Louder
Position 4 Signal Gets Weaker	Position 4 Signal Gets Louder
Position 5 Signal Gets Weaker	Position 5 Signal Gets Louder
Position 6 Signal Gets Weaker	Position 6 Signal Gets Louder
Position 7 Signal Gets Louder	Position 7 Signal Gets Louder
Position 8 Signal Gets Louder	Position 8 Signal Gets Weaker

Figure 13. Determination of the Direction From Which the Received Signal Comes

c. Retune the receiver slightly with TUNING knob if you want to change the pitch to a higher or lower note. If the noise is loud and the signal is weak, raising the pitch helps to cut through the noise.

d. Very weak signals can often be picked up if the b-f oscillator is turned on when "hunting" for signals which might otherwise be passed over if TUNING knob is turned too fast.

e. A lot can be gained from using the b-f oscillator. Get acquainted with it and see what it does for you.

15. Technique for Direction-Finding Under Difficult Conditions.—*a. Location.*—There are certain difficult locations which you must learn to recognize by what you see and by how the direction finder works.

(1) When you're inside or even near buildings having metal beams or roofs you can't rely on the indications of direction you get from the direction finder. The same is true if you are near metal bridges, fences, or transmission lines for power, telegraph, etc. You'll find by experience how these structures give you a "wrong steer" when you're near them. So stay on "the beam" you found before approaching them and after getting away you can get back on "the beam" again with confidence.

(2) If the terrain is very rough and cut up with ravines, always put more trust in the bearings you take along the flat sections or at least the more elevated spots.

The effect of these difficult locations on the direction finder is varied. Sometimes the "nulls" will not be sharp, which of course will be noticed. What is worse, sometimes the "nulls" occur in the wrong direction. This is bad because you won't know the "null" is in the wrong direction unless you have a previous bearing to go by. Various effects on the sensing performance are also possible when you are in these difficult locations, such as insufficient change in signal or even a misleading change. **The safe guide is to take bearings often. The average probably will be right. Get to know your set like you do your watch.**

b. Weak Signals.—There will be times when you are in a location that has none of the obstacles described above, yet the

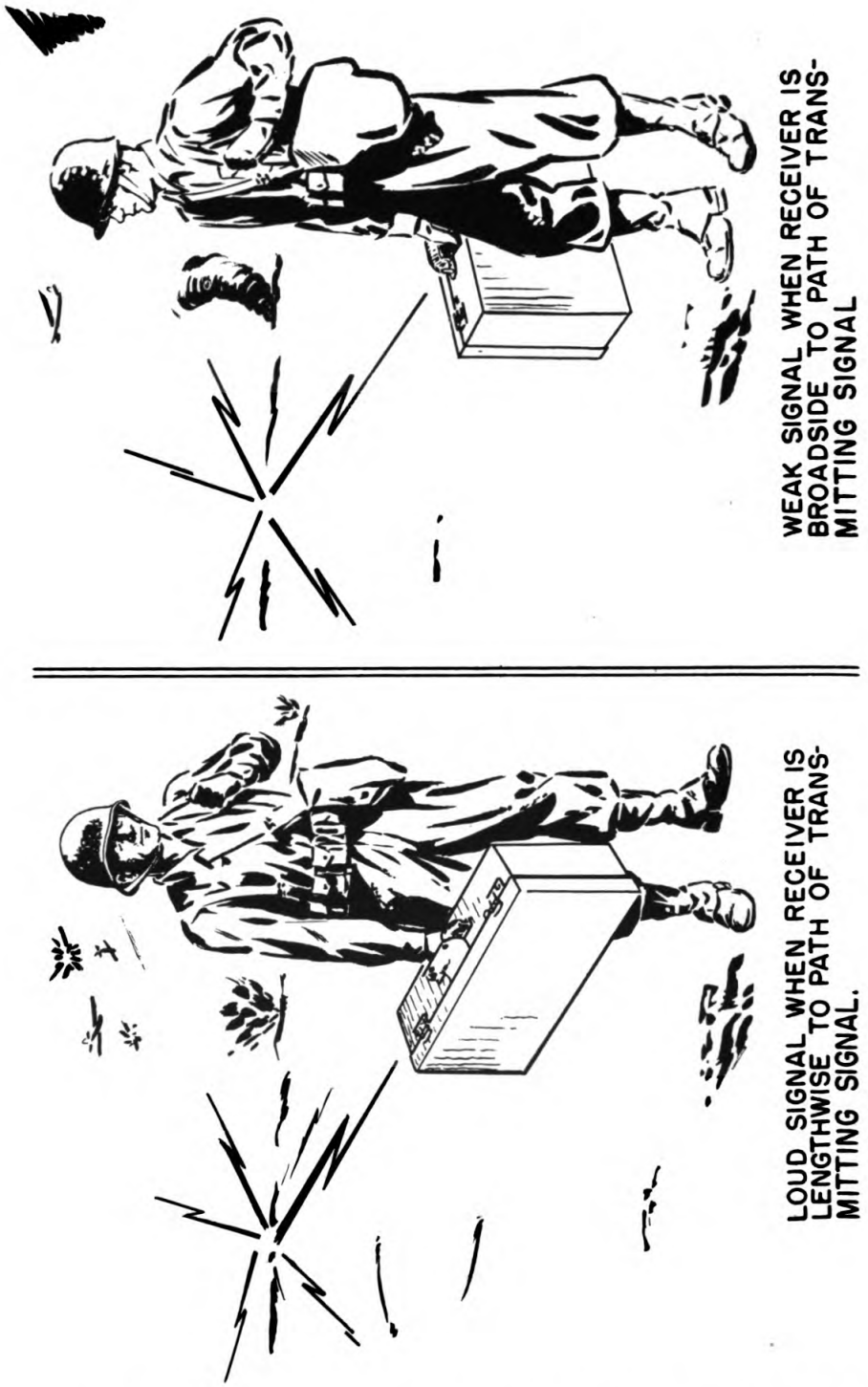


Figure 14. Null and Maximum Positions of Radio Receiver BC-792-A With Respect to a Transmitter

signal you are trying to locate may be weak and almost drowned out by noise. There are several ways to help yourself get a bearing under this condition.

(1) Reduce the VOLUME to that point at which you can hear the signal most clearly over the noise.

(2) Use the changes in noise loudness as you rotate the receiver the same way as you normally use the signal.

(3) Use the BFO as explained in paragraph 14. You now make use of the changes in "whistle" loudness as you rotate the receiver.

c. "Night Effect".—In frequency bands 4 to 8 you are sometimes going to be up against what is broadly known as "Night Effect." During sunrise and sunset periods the radio waves behave differently. Sometimes they go completely "haywire" and this effect will be particularly troublesome if you are many miles away from the station. One of the earmarks of "Night Effect" is fading of the signal—that is, the signal goes up and down in volume even though you are not moving the receiver nor any controls. Unfortunately there is nothing you can do about "Night Effect" except to be on your guard not to be fooled by wrong bearings. Remember also that sometimes "Night Effect" will not be accompanied by fading but may cause broad nulls which will give false bearings. The only remedy is to know your set so well you can tell when it's "lying" to you. Use your set often; get thoroughly acquainted with it. Then, unless you get mixed up in a barbed wire entanglement, hide yourself under a railroad bridge, walk up the middle of a river, get inside a tank, or land in some other poor situation, the BC-792-A probably will tell you the truth in broad daylight or in the deep darkness of night. It's only when day is changing to night and night is changing to day that you get into real trouble.

16. Symptoms of Run-Down Batteries.—As the "A" (BB-51) and "B" batteries (BB-52) in the receiver approach the end of their charge you will notice a decrease in sensitivity by:

a. Having continually to increase VOLUME.

b. The falling off of noise at full VOLUME.

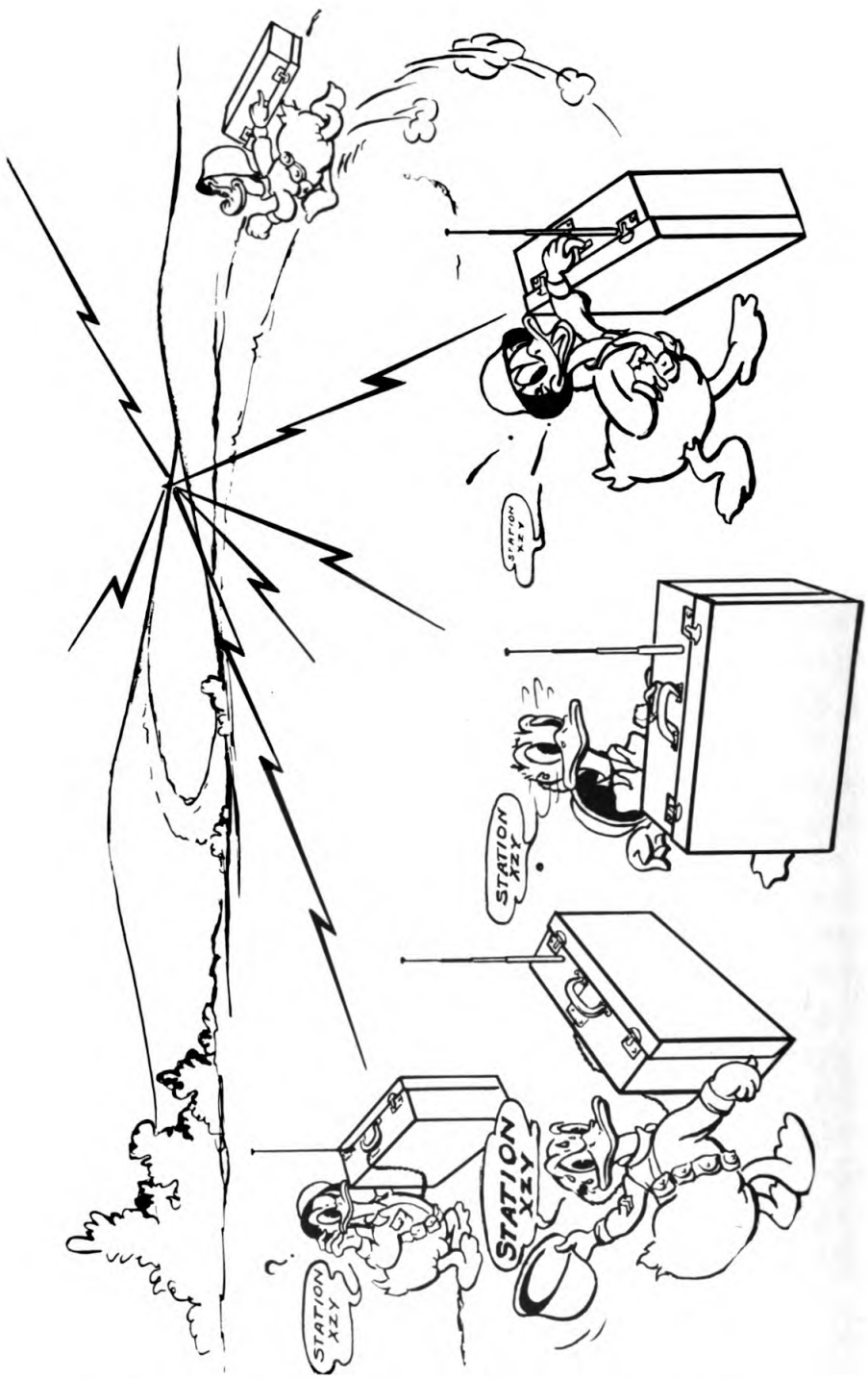


Figure 15. Sensing Positions of Radio Receiver BC-792-A With Respect to a Transmitter, "Donald Duck Finds the Sense"

This period of "dying" does not last more than 5 to 15 minutes and "sudden death" follows. There is no doubt about this, the set stops completely. Then:

Throw POWER switch to OFF to prevent further drain on the batteries until they are removed for charging.

17. Operation of Battery Charger PE-128-A (figure 9).—To operate Battery Charger PE-128-A a vehicular storage battery of either 6 or 12 volts is needed for a supply. If no separate battery is available, connection may be made to one installed in a vehicle (see figure 17). If this is necessary, remember that the terminal voltage of the vehicular battery rises considerably when the motor is running and, consequently, you must readjust the A-CURRENT and B-CURRENT controls to restore the currents to the proper values.

a. To use the Battery Charger PE-128-A, do the following:

(1) Throw SUPPLY switch to OFF.

(2) Turn A-CURRENT and B-CURRENT controls to LOW.

(3) Remove Cord CD-658-A from compartment at rear of charger (figure 23).

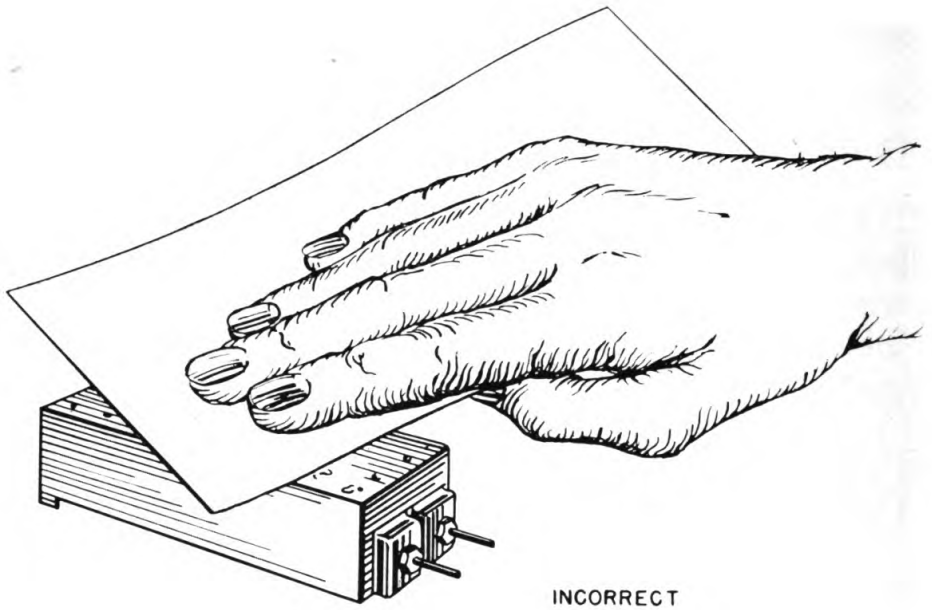
(4) Connect clip marked (—) to negative or minus side of vehicular battery. CAUTION: **If you get these battery connections reversed you probably will blow the primary circuit fuse in the PE-128-A.**

(5) Connect clip on white wire marked + 6 to + 6 volts on the vehicular battery. The red wire is not used unless you connect to a 12-volt battery (figure 17).

(6) If a 12-volt battery is used instead of a 6-volt, connect the red wire marked + 12 to + 12 volts on the vehicular battery. The white wire is then not used.

(7) Plug the BB-51 and the two BB-52 batteries into the proper receptacles of the battery compartment. Leave the lid open.

(8) Throw SUPPLY switch to the position corresponding to the supply voltage you are using. **This is important.**



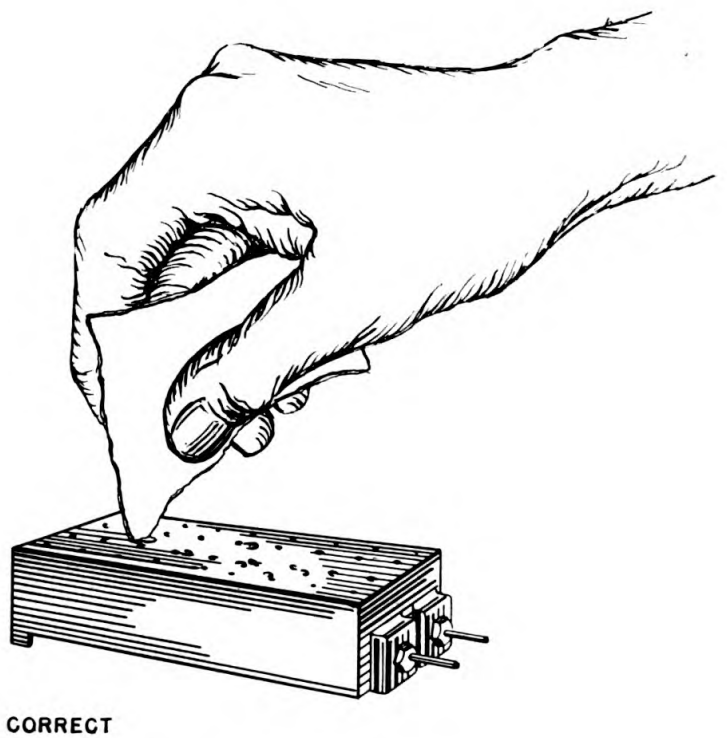


Figure 16. Right and Wrong Way of Blotting Batteries

(9) Throw METER RANGE switch to "A".

(10) Adjust "A" battery (BB-51) current (by turning the A-CURRENT control) to 100 milliamperes, which you read on red scale of meter.

(11) Throw METER RANGE switch to either "B" position.

(12) Adjust "B" battery (BB-52) current (by turning the B-CURRENT knob) to 15 milliamperes, which you read on black scale of the meter.

b. Choice of Charging Rate.—In choosing the charging rate remember that it is better for the batteries if you charge them slowly (low milliamperes). If you have about 8 hours in which to charge them use the slow rate.

(1) *Slow Rate.*—

	BB-51	BB-52
5 Hours at:	100 ma	15 ma
Then about 3 Hours at:	50 ma	8 ma

(2) *Fast Rate.*—

If you can't take 8 hours, use the fast rate:

	BB-51	BB-52
5 to 6 Hours at:	160 ma	20 ma

(3) *Trickle Rate.*—If you're not going to need the batteries for a day or two, use the slowest rate, called "trickle". Also use "trickle" to keep charged batteries from running down when they're standing idle.

	BB-51	BB-52
Continuously at:	30 ma	8 ma

c. Blotting Overflow.—While batteries are charging, acid comes out of the holes. You must continually remove this acid with strips of blotter. (See figure 16.) Don't lay a blotter over the holes because the wet blotter short circuits the cells of the battery. If a high charging rate is used, do not leave the batteries alone very long or the acid will completely cover the top, waste the current, and damage the battery.

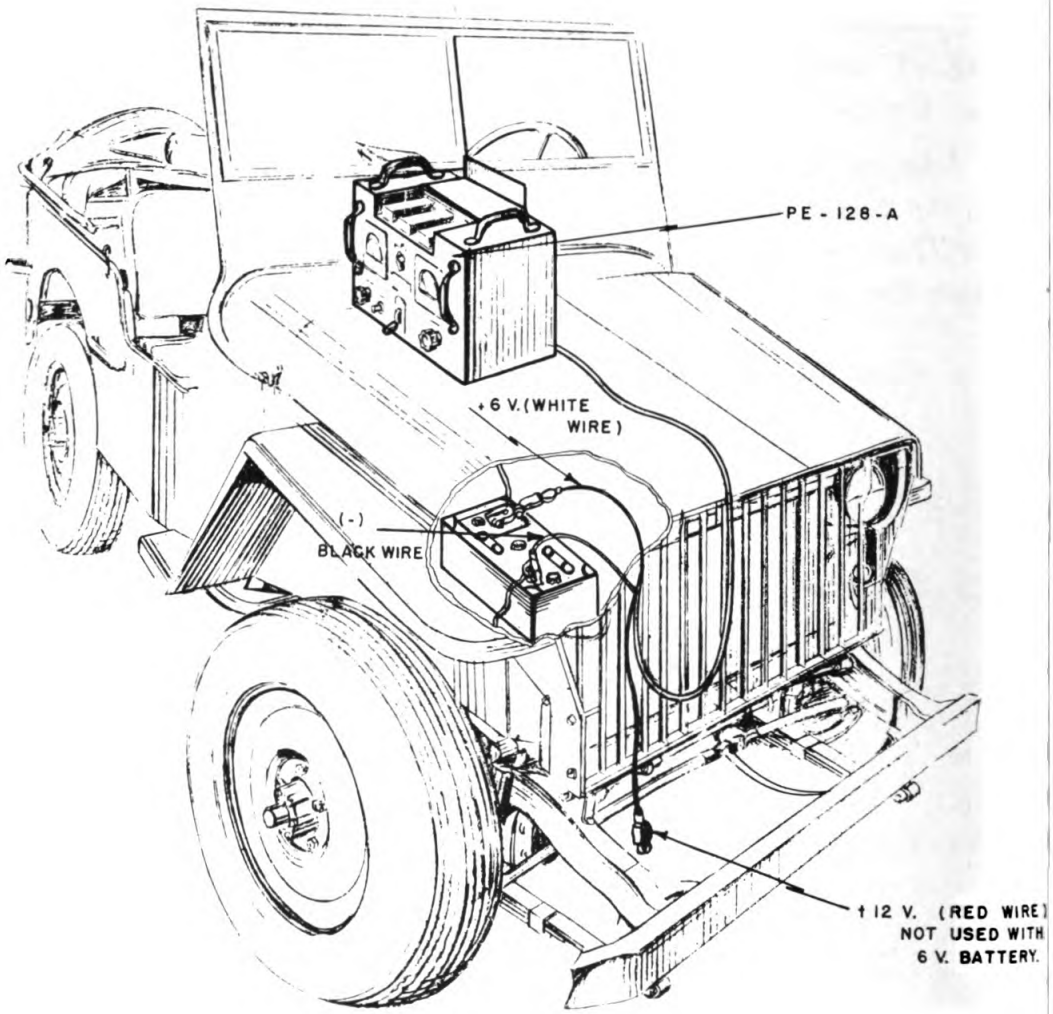


Figure 17. Battery Charger PE-128-A Connected to "Jeep" Battery

Note: Never close the battery compartment lid while charging, unless you want to get blown sky high. (When batteries charge they give off hydrogen which accumulates when lid is closed. The least spark will set it off and you'll suddenly get a face full of acid, get blown off your perch, or both.)

d. Addition of Acid.—Before the charging has progressed very far, most of the cells will overflow. Then you should add acid to any cells that show no signs of overflowing.

e. Testing Batteries.—After you have charged the batteries, make sure they are in good shape by testing them as described in paragraph 9. You don't have to disconnect the charger or turn it off when you make this test, since the BATTERY LOAD TEST switch takes care of this.

f. To get maximum life out of each charge let the batteries sit and bubble several hours after charging, blotting up the acid which bubbles out. Then take your hypodermic syringe and acid bottle, and refill the batteries with acid, letting the batteries stand a few hours, if necessary, before putting them in the BC-792-A. The reason acid bubbles out of the batteries is not that there is too much acid, but that gas gets caught in the tiny cells and blows the liquid out. For maximum life, each cell should be full of acid and the bubbling should have stopped before the battery is put in the BC-792-A. Batteries will stay charged about three days when sitting idle. For maximum life and usefulness batteries should be trickle-charged each night.

g. Care of Batteries.—The following rules should be observed in order to get the maximum service from miniature storage batteries:—

D O N ' T S

(1) DON'T let a dead battery stand without charging.

(2) DON'T let the acid get low.

(3) DON'T let a puddle of acid cover the top of batteries.

(4) DON'T use a high charging rate unless it's absolutely necessary.

(5) DON'T leave the batteries in the sun or in the rain.

(6) DON'T fill batteries until they are actually needed in service. After they are filled they require attention practically every day.

D O ' S

(1) Always put batteries, once they have been filled and when not in service, on "trickle charge" even if they are fully charged at the time.

(2) Keep contact pins clean and shiny.

(3) Always shut off the POWER switch to the receiver when you're not using it. There is no need to keep the set "warmed up".

After you have had 30 to 40 hours of total service from the batteries in the receiver, you'll find the batteries won't charge up any more nor will they last very long in the receiver after charging. This means the batteries are worn out and must be turned in for replacement or thrown away. The life of the battery depends on the care you give it—it may last less than 30 hours or more than 40 hours.

h. Care of Battery Charger PE-128-A.—Always be very careful in connecting Cord CD-658-A to the vehicular battery. Watch the following:

(1) Black lead goes to minus side.

(2) White lead goes to + 6 volts.

(3) Red lead goes to + 12 volts. (**NEVER** *connect white lead to + 12 volts. If you don't watch these connections you will blow the 4-amp primary fuse.*)

ALWAYS turn A and B-CURRENT controls to LOW before turning on the charger. If you don't do this, you'll blow the "A" and "B" fuse. (If any fuses blow, see paragraph 23 on replacement.) Turning the controls to LOW will prevent an excess of charging current when you throw the SUPPLY switch. The safest practice is always to throw the CURRENT control to LOW the moment you are through with the charger. Then it's ready for use the next day.

SECTION III

FUNCTIONING OF PARTS

"There's no very good substitute for knowing how."

18. Radio Receiver BC-792-A.—Radio Receiver BC-792-A is, except for its antenna system, just like any other portable radio receiver which covers the same frequency range. Because of this similarity, functioning of the direction finder will be explained in two parts. Paragraph 18*a* will explain the equipment in terms of an ordinary radio receiver; paragraph 19 will explain the directional characteristics of the receiver's antennas.

a. Receiver Circuits (figure 36).—

(1) The antenna transformers (81-87) of bands 1 to 7, couple the low impedance loop (121) to the signal grid of the R-F tube (118-1). The low-inductance primaries of these transformers are switched by sections F and H of the band switch (132). The primaries of bands 3 to 8 are balanced to ground, to minimize capacitive pick-up by the loop at the higher frequencies. The secondaries of transformers (81-87) of bands 1 to 7 are switched by section G of the band switch (132). The rear of section G shorts the transformer secondary of the band below the one in use. The antenna transformer (88) of band 8 couples the loop directly to the modulator (115). The secondary is switched by section J. The front section (5a) of the gang condenser tunes the antenna circuit of bands 1 to 7. The middle section (5b) of the gang tunes band 8 antenna circuit.

(2) The rod or sensing antenna (120) is coupled to the secondary antenna circuits through one or more of the resistors surrounding switch section E. The "sensing" antenna is used only in bands 1 to 6. Switch section E selects the resistance suitable for each of these bands. The function of the resistance introduced between the sensing antenna and the tuned circuit is to attenuate the sensing voltage without shifting its phase; it also helps "match" the unequal impedances of sensing antenna and secondary circuits. The push switch (130-1) in series with the sensing circuit, grounds the sensing antenna when it is not used. When the switch (130-1) is pushed the ground is disconnected and the sensing circuit is completed. The low

capacitance plug (126-1) and socket (127-1) serve to connect antenna (120) to the switch (130-1). Plug (126-2) and socket (127-2) carry the circuit within the chassis. The ground to within the chassis is made through pin 5 on the plug (124) and contact 5 on the connector (125).

(3) The output of the r-f tube (118-1) is coupled to the modulator (115) through the r-f transformers (89-95) for bands 1 to 7 only, since band 8 uses no r-f amplification. The primaries of these transformers are switched by section I of the band switch (132). These primaries are resonant at a frequency below the respective bands used. In the case of bands 1 and 2 external capacitance is added to effect this resonance. The other primaries are resonated with distributed capacitance. The secondaries are switched by the front of section J of the band switch (132). The rear of section J shorts the transformers secondary of the band below the one in use. All of the r-f transformers are wound to have capacitance coupling aid the inductive coupling. Capacitor (20) serves to increase the distributed-capacitance coupling, particularly at the higher frequencies. The r-f secondary circuits are capacitance coupled to the signal grid of the modulator (115).

(4) The oscillator transformers (96a, b; 97a, b; 98a, b; 99) are used with the separate oscillator tube (116) in a plate-tuned circuit. Feedback in bands 1, 2 and 3 is obtained by returning to the oscillator grid the voltage developed across the series padding capacitors. For example, in band 1, the feedback voltage is obtained from the adjustable series padder (3-1) shunted by the fixed series capacitor (12). At the higher frequencies, bands 4 to 8, this feedback is supplemented by inductive feedback provided by the primaries of transformers 97b, 98a, 98b and 99. Section K of the band switch (132) switches the feedback circuits. The secondaries are switched by the rear of section L. The front of section L shorts the secondaries of the two bands below that in use. The end section (5c) of the gang capacitor tunes the oscillator transformers. In bands 1 and 2, fixed capacitors (11-1) and (11-2) are in shunt with the trimmers (3-2) and (3-4) in order to obtain the required tuning range. In bands 3 to 6 the trimmers: (2-5), (1-12), (1-13) and (1-14) are used to adjust the upper tuning limit of each band. Oscillator transformer (99) is used for both bands 7 and 8. In band 7, the oscilla-

tion frequency is above the signal frequency. In band 8 the second harmonic of the same oscillation frequency is used; but this harmonic is below the signal frequency. The trimmer (1-15) is used to adjust the upper tuning limit of band 7. With this adjusted, the upper tuning limit of band 8 is simultaneously set because of the designed frequency relation. The lower tuning limit of bands 7 and 8 is not adjustable since the series capacitor (18) is fixed. In all bands, the oscillator voltage is coupled from the "tank" circuit to the modulator injection grid, through the capacitor (21-1).

(5) The plate of the modulator (115) connects to switch section D which selects either of two i-f channels depending on the band used. Bands 1, 3, 4 and 5 use the 455-kc i-f channel. Bands 2, 6, 7 and 8 use the 910-kc i-f channel. The higher frequency bands 6, 7 and 8 require the higher i-f in order to provide better image rejection and to keep the tuning control from being excessively critical or "razor sharp". Band 2 includes 455-kc in its tuning range and therefore it must also use the 910-kc channel Transformers: (101) and (103) are in the 455-kc channel. Transformers: (102), (105) and (104) are in the 910-kc channel. Both the primaries and secondaries of the four double-tuned transformers are switched by sections D, B and C, A of the band switch (132). The single-tuned interstage transformer, (105), is not switched. It is tuned to 910 kc by distributed capacitance and the trimmer (1-16). At 455 kc the interstage transformer provides no additional selectivity and only a nominal amplification in conjunction with the first i-f amplifier tube (118-2). The output from either channel is rectified in the diode circuit of the detector (117). A "tweet filter" (53-2) and (23-2), in the diode load circuit removes most of the i-f from the desired audio voltage.

(6) The audio signal is coupled to the grid of the first a-f amplifier grid through the capacitor (27). The output from the audio section of tube (117) is coupled to the output tube (118-4) through the capacitor (28). The output tube, triode connected, is coupled to Headset HS-34-A through the audio transformer (107). The secondary of this transformer is connected to panel Jack JK-34-A and to the HEADSET terminals on the control plate. Connections to the latter are carried through the 4-wire cable and plug arrangement (123), (122).

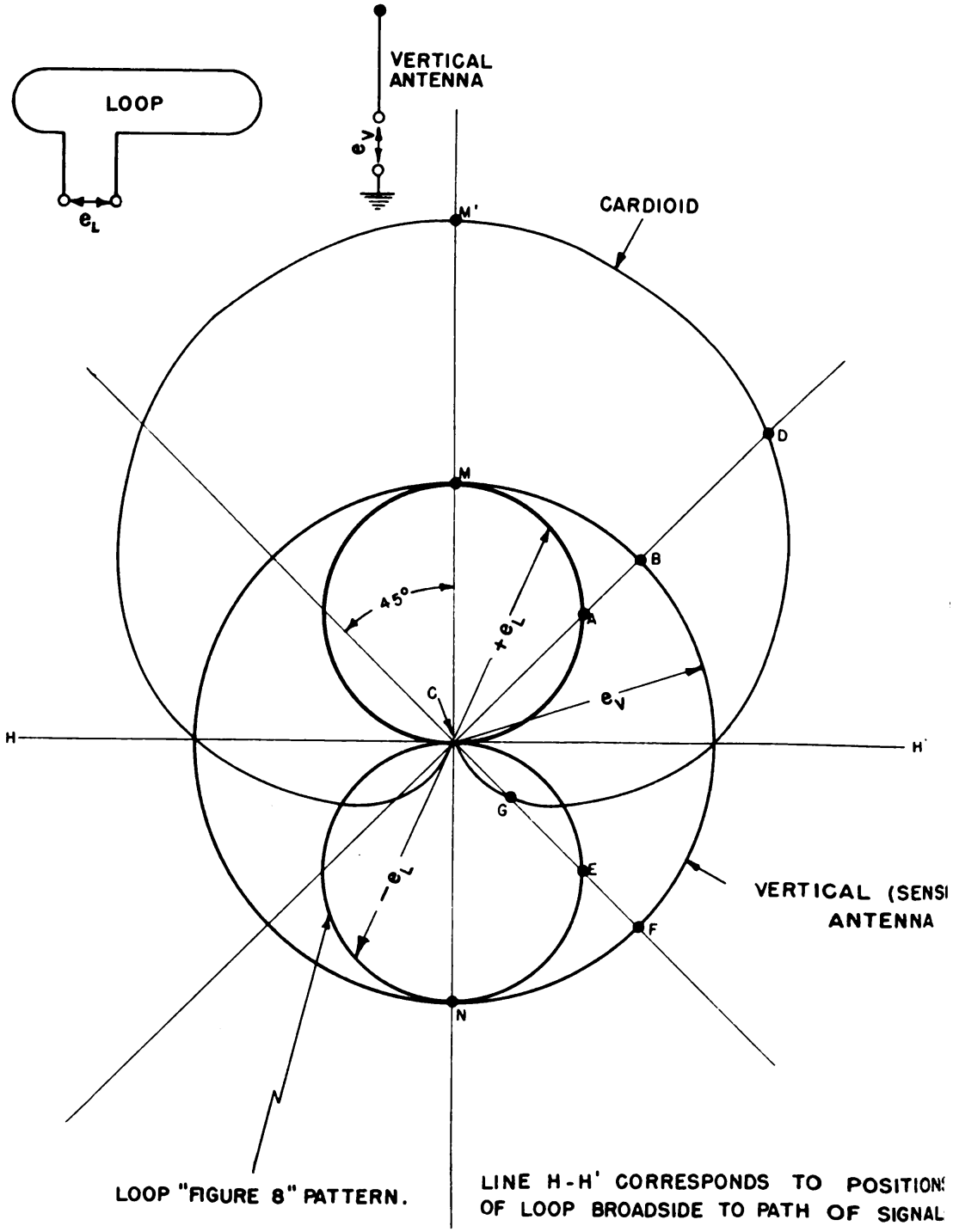


Figure 18. Derivation of Ideal Cardioid From Ideal Antenna Patterns

(7) The beat-frequency oscillator which is used for monitoring unmodulated signals is tuneable to 454 kc by means of trimmer (3-9). The oscillator uses a tube (118-5) in a plate-tuned, inductive feedback circuit. The secondary of the b-f oscillator transformer (106) is shunted with a fixed capacitor (21-3) to provide the proper frequency range. Normally the b-f oscillator is tuned to 454 kc, giving a 1000-cycle beat with the 455 kc i.f. The second harmonic produced by the b-f oscillator is used to beat with the 910 kc i.f. The BFO OFF-ON switch (131-1) in the "B" supply circuit, permits the oscillator to be controlled from the top plate. Coupling from the b-f oscillator to the i-f channels exists through the common supply circuits and by virtue of the strong fields the oscillator produces.

(8) Since this receiver is required to give an auditory indication of changes in signal input, the use of A.V.C., as in conventional receivers, is out. Accordingly a manual volume control system is used. This system not only reduces the audio output, but increases the bias on certain tubes (118-1) and (118-2) so that these are not overloaded by strong signals. Electrically, the panel volume control (69) works the same as the control-plate control (70). The VOLUME CONTROL TRANSFER switch (130-2) connects one or the other in series with the "B" lead. The voltage drop in the control combined with the "A" battery voltage is applied to resistors (59) and (60). The junction of the latter provides a bias voltage suitable for the grid of the r-f tube (118-1). A similar arrangement provides bias for the first i-f tube (118-2), with the exception that only half the volume control voltage-drop is used. Resistors (56-3) (56-4) divide the voltage drop. The other divider (68-1) and (68-2) in the grid return of the first i-f tube (118-2) again reduces the voltage in suitable proportion relative to the potential of the filament.

19. Directional Characteristics of Antennas.—

a. The directional characteristic of a loop antenna is shown in figure 18. This pattern is popularly known as a "figure 8". Under ideal conditions this pattern could be obtained by measuring the voltage at the terminals of a loop at successive angular positions of the loop as is it rotated through 360 degrees in a horizontal plane. The voltages measured are plotted as radial distances from the

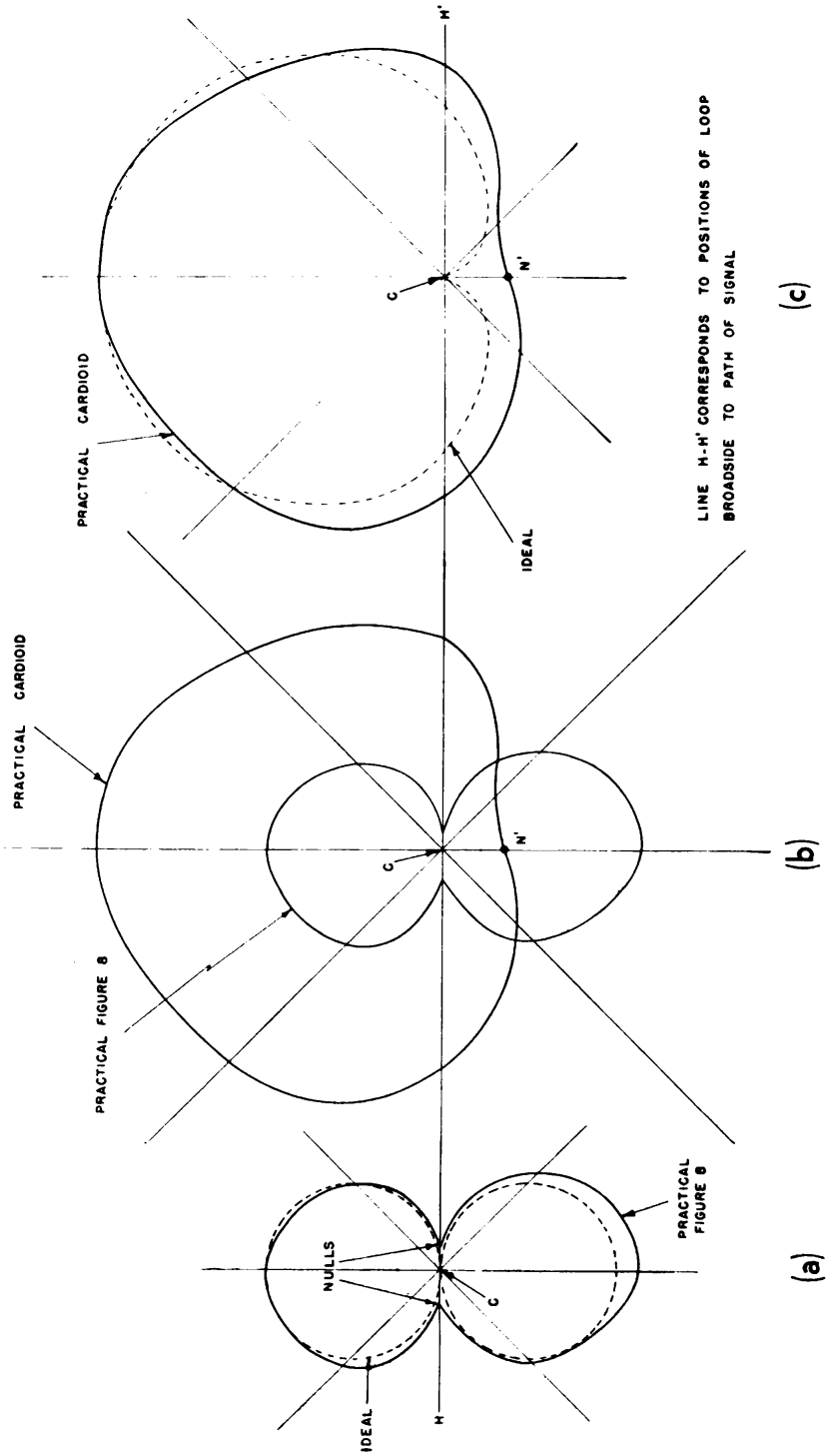


Figure 19. Practical Cardioid and Figure 8 Antenna Patterns

center of the graph at C, figure 18. An examination of the ideal "figure 8" pattern shows that for two positions of the loop the voltage is zero. In these two positions the loop is broadside to the arriving waves. The maximum voltage points on the "figure 8" at M and N correspond to the two positions where the loop is in line with the path of the waves, that is at $\pm$ 90° from the broadside positions. The two positions giving zero voltage are referred to as the "nulls". The nulls are of great importance since they are a sensitive means of determining the path of the signal. However, when ideal conditions are no longer obtained (in a practical case), the nulls of the "figure 8" don't go to zero, as shown for the "practical" case in figure 19(a). Nevertheless, they can still be used as before, except that instead of observing an absolute zero, the minimum must be found.

b. Since the voltage produced by a small loop in picking up a radio wave of usual strength is much too low to measure by any direct means (such as a meter), it must be amplified. That is the function of all the tubes from the antenna circuit to the headset. When the amplification of these tubes is adjusted so that no tube is overloaded, the sound heard in the headset is proportional to the voltage at the loop terminals. The ear can then hear the "figure 8" pattern as the receiver and loop are rotated, and judge the "null" positions.

c. In direction-finding it is necessary to know more than just the path of the signal, namely whether the signal is "coming or going". The latter operation is commonly referred to as finding the "sense" of the direction, or more simply just as "sensing". That is, in addition to the loop, which indicates by means of the "nulls" either of two directions from which the signal may be coming, a sensing device is needed to pick up the true direction. This need is filled by the vertical rod antenna (called "sensing" antenna) used in conjunction with the loop. The directional characteristic of a vertical antenna under ideal conditions is shown in figure 18 by the large circle. Stated in words, figure 18 says that the voltage produced by a vertical antenna remains the same when rotated about its axis. This is popularly known as a "non-directional pickup".

If the voltage produced by a loop and the voltage produced by a vertical antenna (under ideal conditions) are added together (algebraically), a new directional characteristic is obtained. This pat-

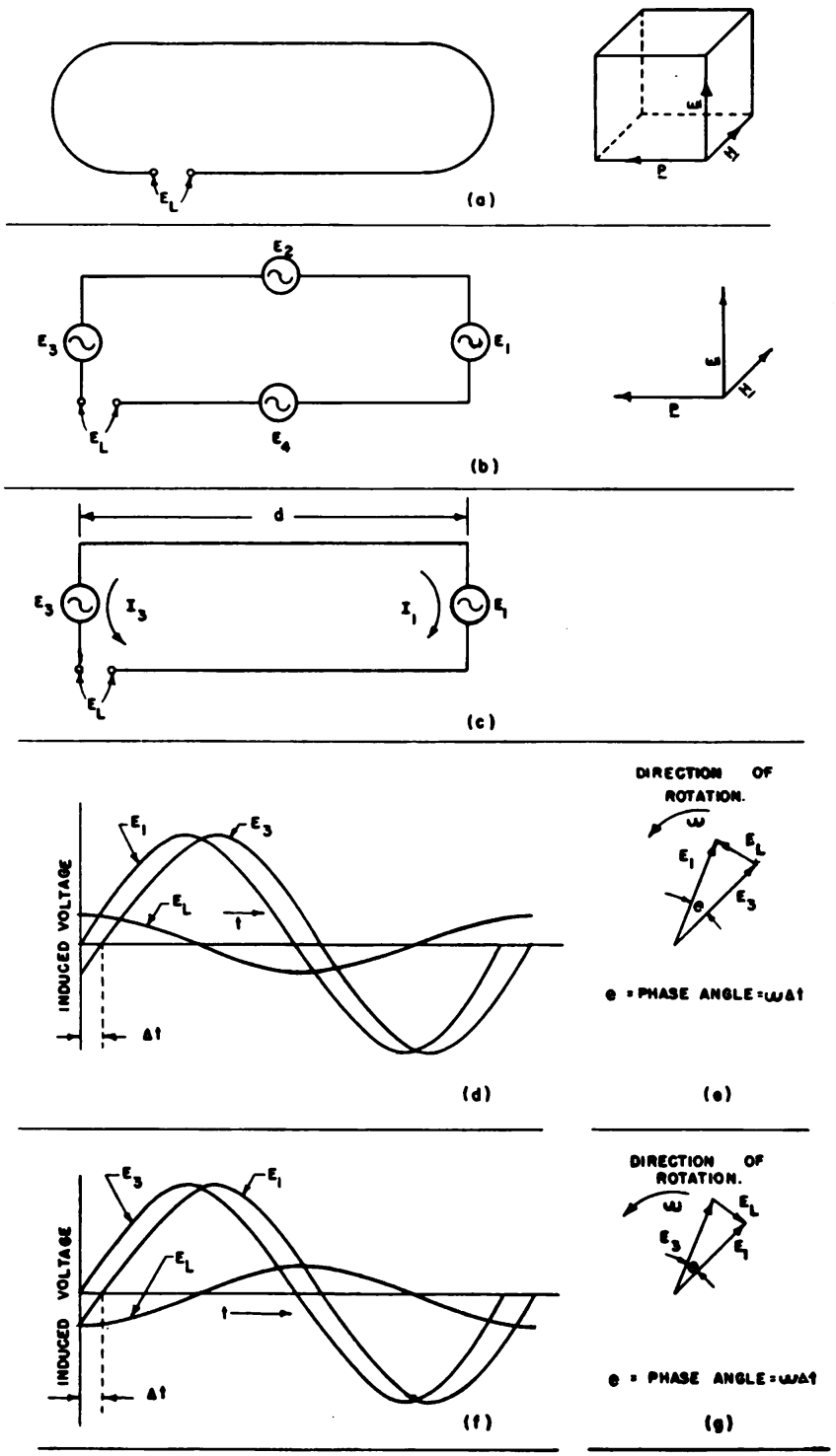


Figure 20. Equivalent Loop Circuit and Voltage Diagrams

tern, likewise shown in figure 18, is called a cardioid because of its heart-like shape. The reason this shape is obtained when the "figure 8" and the circular pattern are added together is that the voltage in the lower lobe of the "figure 8" is opposite in time-phase to the voltage in the circle pattern, while the time-phase of the voltage in the upper lobe of the "figure 8" is in agreement with that of the circle pattern. Thus for each direction above the horizontal line H-H′ (running through the nulls) the voltages add together such as: CA + CB = CD; and for each direction below the horizontal line the "figure 8" voltage subtracts from the circle voltage, such as: CF — CE = CG.

Compare the cardioid with the "figure 8". It is evident that the two positions of the loop which gave outputs of equal magnitude, CM and CN, now are distinguishable in the cardioid in which the voltage CM′ is twice CM and in which CN is reduced to zero. Thus the cardioid provides the needed sensing since you are now able to tell that the signal is coming from the direction in which the CM′ observation is made. You should understand at this point that the cardioid is not a "sharp" indicator of direction because the change in voltage to either side of CM′ is very gradual, but there is no need for the cardioid giving a sharp indication of bearing. This is obtained from the "figure 8" loop voltage, where the change to either side of the nulls is much more rapid. So the two patterns must be used together, each for its specific purpose. In a practical case, this is even more necessary since the ideal cardioid is no longer obtained.

The most notable departure of an actual sense curve or practical cardioid is shown in figure 19 (*c*) by the failure of the curve at N′ to go through C. This is caused by the failure of the voltages from loop and vertical antenna to cancel each other as a result of phase shift and unequal "pickup".

d. Theoretical Analysis of Loop Directional Characteristics.—

An electromagnetic wave, travelling with the velocity of light, c, intercepts a stationary loop and induces voltages in it. For the purposes of this analysis the loop shape of figure 20(a) can be replaced by an electrically equivalent loop which is rectangular and has its terminals at one corner as in figure 20(b). The induction in the

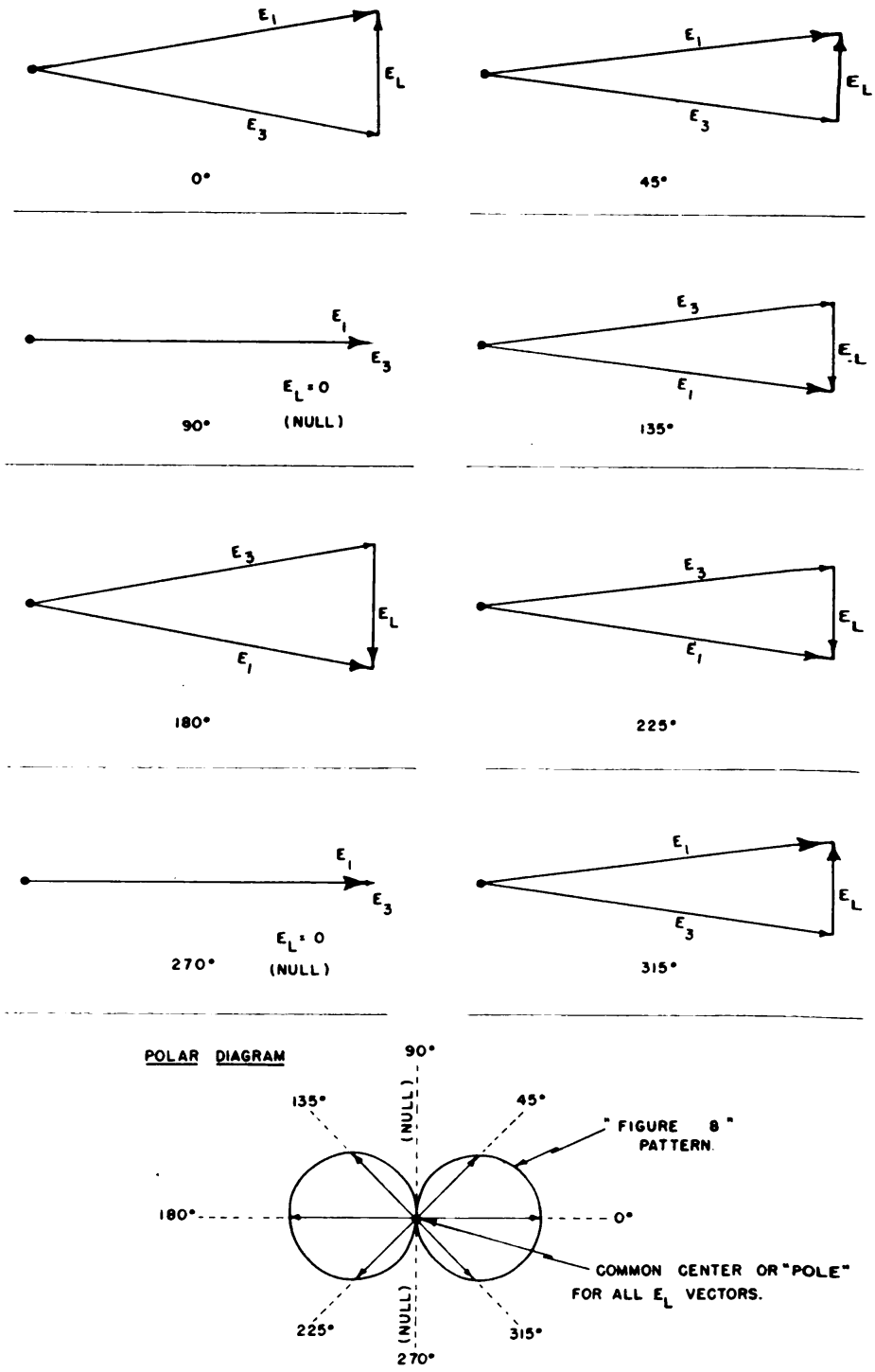


Figure 21. Synthesis of the "Figure 8" Pattern by Vector Diagrams

loop as a whole can be considered as occurring in the four sides of the loop separately. Consequently, for all practical purposes the rectangular loop can be replaced by an equivalent circuit having four generators: E_1, E_2, E_3 and E_4, as in figure 20(b). Assuming that the electromagnetic wave is a vertically-polarized, plane wave, the electric vector *E*, the magnetic vector *H* and the propagation vector *P* at any given instant of time would be directed as in figure 20(a). That is, the electric vector *E* is vertical, while the magnetic vector *H* is horizontal and both are perpendicular to the propagation vector *P*. These vectors are shown in relation to a cube to help you visualize the spatial relation of the vector quantities which must of necessity be illustrated on a flat page.

If the loop is oriented in the direction of receiving maximum signal, *E* will be in the plane of the loop and parallel to the two vertical sides of the loop and will induce voltages E_1 and E_3 in these two sides. Since *E* is perpendicular to the horizontal sides of the loop, no voltage is induced in them, so that E_2 and E_4 are zero in this instance, and need not be considered further. It might be pointed out in passing, however, that if the loop is tilted with respect to the wave, as for example would be the case if the receiver is not held parallel to the ground, or if the wave were a downcoming wave reflected from the ionosphere, *E* would not be perpendicular to the two horizontal arms of the loop and voltages would be induced in them. But this more complicated case will seldom be found in the use of Radio Set SCR-504-A, and so will not be considered further here.

It is seen that the voltages E_1 and E_3 of figure 20(c) oppose each other and at first glance you would suppose that they are equal and would cancel each other. The two voltages E_1 and E_3 are equal in magnitude but they are not equal in time-phase. This is due to the time $\triangle$ t, required by the wave to travel the additional distance, d, between the two sides of the loop. This can be stated mathematically by:

$$\triangle t = \frac{d}{c}$$

where d is the distance between the two sides of the loop and c is the velocity of the electromagnetic wave. This means that the alternating voltage E_1 will lead the alternating voltage E_3. Mathematically,

we can write:

$$E_1 = E_0 \cos \omega t$$
$$E_3 = E_0 \cos \omega (t - \triangle t)$$
$$E_L = E_1 - E_3 = E_0 [\cos \omega t - \cos \omega (t - \triangle t)]$$
$$E_L = E_0 [\cos \omega t - \cos \omega t \cos \omega \triangle t - \sin \omega t \sin \omega \triangle t]$$

If $\triangle t$ is very small; that is, if the distance d is very much less than half a wave length of the electromagnetic wave signal, then

$$E_L = - E_0 \omega \triangle t \sin \omega t$$

This can be illustrated graphically and vectorially, as in figures 20(d) and 20(e) respectively.

Obviously, if the signal comes from the left, instead of from the right, as in figure 20(a), the voltage induced in the E_3 side of the loop will lead the voltage induced in the E_1 side by the phase angle $\omega \triangle t$. This gives rise to the situation shown in figures 20(f) and 20(g). In figure 21 are shown the vector diagrams corresponding to successive positions of the loop relative to the signal path using 45° intervals from 0° to 360°. The resultant loop voltages, E_L, for these positions when plotted in the form of a polar diagram give the "figure 8" pattern.

20. Battery Charger PE-128-A. (Refer to figures 9, 34)

a. Battery Charger PE-128-A is designed to operate from either a 6-volt or a 12-volt vehicular battery. To partially guard against application of the wrong supply voltage to the charger circuits, a separate conductor for the 12-volt connection is included in Cord CD-658-A. Thus, if the SUPPLY switch (133) is accidently thrown in the wrong direction, no fuses are blown as long as the battery cord is properly connected.

b. The energizing coil of the synchronous vibrator (119) is designed to operate on 6 volts; accordingly, the current through it is held to the design value by resistor (75-1) which is connected in series for 12 volt operation.

c. The main function of SUPPLY switch (133) is to connect the transformer (111) primaries in parallel for 6-volt operation, or in series for 12-volt operation. This transformer has two secondaries. The center-tapped secondary is operated in conjunction with the contacts S.S. of the vibrator to supply d.c. for the "B" circuit. The other secondary supplies square wave a.c. to the full-wave selenium rectifier (140) of the "A" circuit.

d. The "B" current is filtered by the tuned choke (112) and the shunt capacitors of (36a, 36b). The dual potentiometer (76) provides adjustment of the charging rate. The two "B" batteries (Batteries BB-52) are connected in series for charging by means of the terminal plate (141). The 3-position METER RANGE switch (135) connects the 100-volt range of the voltmeter (143) to either of the two "B" batteries for measurement of the battery terminal voltages while charging or discharging through a fixed load (79). The METER RANGE switch when in either of the two "B" positions causes the milliammeter (142) to read the current through both "B" batteries. The discharge current applied to the resistor (79) load by the BATTERY LOAD TEST does not pass through the milliammeter.

The d-c output of the selenium rectifier (140) is filtered by resistors, (75-2) and (77), and the shunt capacitors of (37a, 37b). The rectifier output is series-connected with the supply battery, when 6-volt operation is used, thus giving an output voltage which is the sum of the supply voltage and the filtered rectifier output. When 12-volt operation is used, the a-c input to the rectifier (140) is disconnected and the supply battery furnishes charging current through the rectifier. For either mode of operation, the charging rate is adjusted with the tapered potentiometer (77). When in the "A" position the METER RANGE switch (135) connects the 20-volt range of the voltmeter to the "A" battery for measurement of the battery terminal voltage while charging or discharging through a fixed load (78). The milliammeter reads the "A" charging current when the meter switch is at "A". The discharge current applied to the resistor (78) by the BATTERY LOAD TEST does not pass through the milliammeter.

Fuses are connected in various circuits to minimize possible damage by failure of circuit components or by abuse of the charger. The 4-ampere primary fuse (137) protects the windings of the transformer from excessive current caused by sticking of the vibrator or application of 12 volts to the 6-volt circuit. The primary fuse will also blow if capacitor (36a) breaks down. The 1/2-ampere fuse (138) protects the rectifier circuit and resistors. The 1/16 ampere fuse, (139), protects the choke (112) and the resistor (76) against damage by failure of capacitor, (36b), or misuse of the equipment.

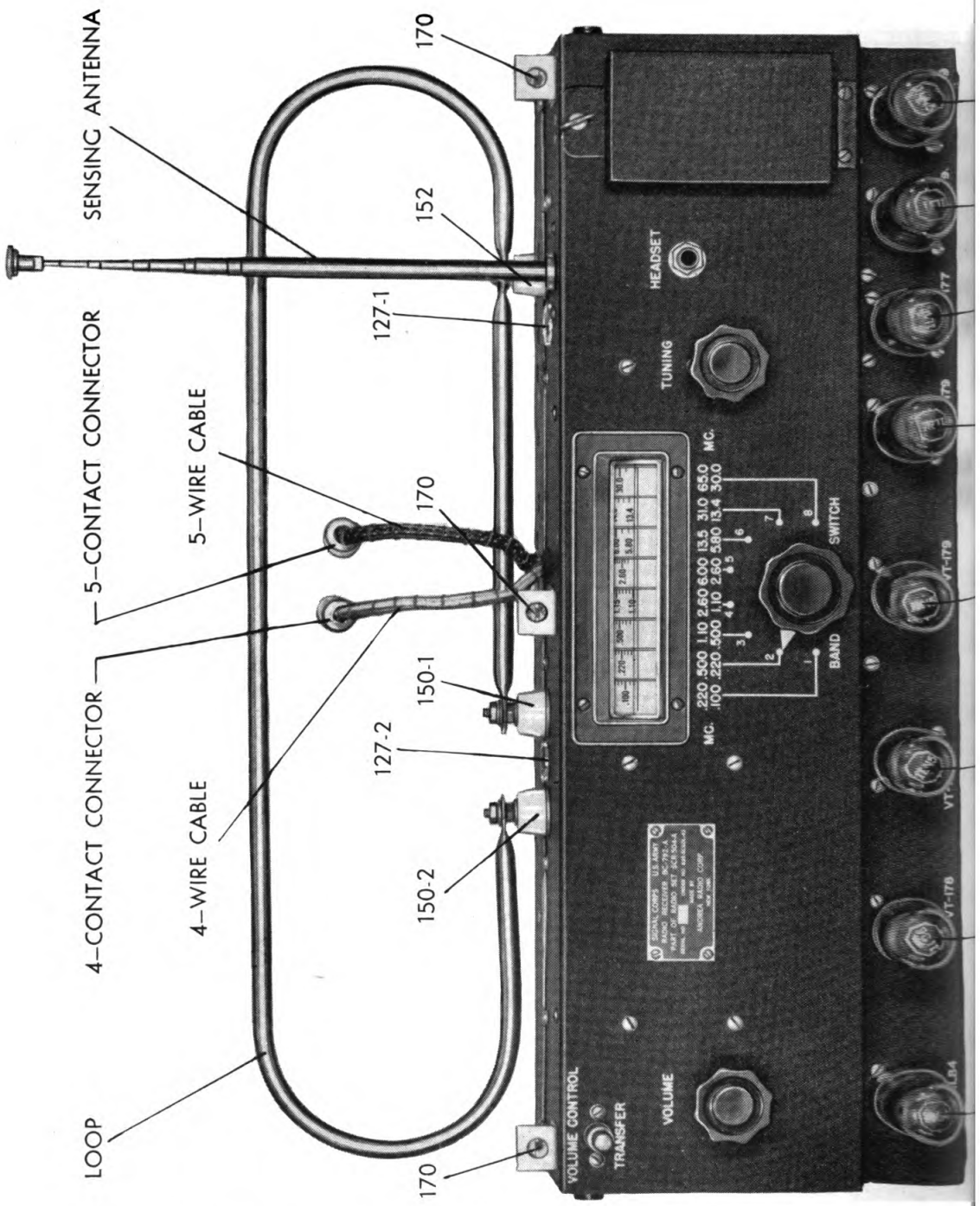


Figure 22. Radio Receiver BC-792-A, Chassis Removed From Suitcase, Front View

SECTION IV
MAINTENANCE

21. General Instructions.—

Operating personnel shall confine their maintenance and repair servicing of this equipment solely to the extent indicated in the following paragraphs. If trouble develops which does not respond to the treatment outlined in the "Trouble Charts", the equipment will require the services of Signal Corps maintenance personnel thoroughly experienced in its repair. Any attempts by inexperienced personnel to service the equipment indiscriminately may result in great damage.

22. Trouble Chart for Radio Receiver BC-792-A.—

Trouble	*Probable Causes*	*Remedy*
Receiver Dead.	POWER switch OFF.	Throw POWER switch to ON.
	VOLUME control turned down.	Turn VOLUME control to right.
	"A" battery (BB-51) dead.	Replace "A" Battery (BB-51).
	One or both "B" batteries (BB-52) dead.	Replace "B" Batteries (BB-52).
	One or more batteries not making contact because of incomplete insertion.	Make sure the batteries are completely pushed in.
	One or more battery prongs corroded.	Remove batteries and clean prongs if necessary.
	Headset HS-34-A not plugged in.	Insert tips of Cord CD-655-A into HEADSET jacks on control plate.
	Receiver R-27-A disconnected from Cord CD-655-A.	Insert tips of Cord CD-655-A into jacks of receiver R-27-A.
	Cord CD-655-A defective.	Replace with spare cord.
	One or more tubes loose in socket.	Push the tubes into sockets firmly.
	One or more tubes defective.	Replace all the tubes with the corresponding types from one of the spare tube kits. Don't throw away the old tubes. Mark them and wait for a chance to test them and find the defective tube. Throw away *only* the defective tube or tubes.

Trouble	*Probable Causes*	*Remedy*
Receiver Dead. (Con't)	4-Contact connector (123) removed from plug (122)	Open leather curtain over panel by turning three small catches to left. Push connector (123) at end of cable into 4-prong plug (122) attached to vertical plate. (See figures 10, 22.)
	5-Contact connector (125) removed from plug (124).	Open leather curtain over panel by turning three small catches to left. Push connector (125) at end of cable into 5-prong plug (124) attached to vertical plate. (See figures 10, 22.)
Received Signals Weak.	"A" battery (BB-51) weak.	Replace "A" battery (BB-51).
	One or both "B" batteries (BB-52) weak.	Replace "B" batteries (BB-52).
	One or more batteries making poor contact because of incomplete insertion.	Make sure the batteries are completely pushed in.
	One or more battery prongs corroded.	Remove batteries and clean prongs if necessary.
	One or more tubes loose in socket.	Push the tubes into sockets firmly.
	One or more tubes defective.	Replace all the tubes with the corresponding types from one of the spare tube kits.
	Excessive moisture in suitcase as a result of long exposure to rain.	Allow receiver to dry out in a well ventilated place. This may take a day or so depending on the existing humidity of the atmosphere. Opening the leather curtain will speed up the process.
	A poor location for reception of radio signals, such as inside a metal structure or a natural "dead spot".	Go to some other location.

Trouble	*Probable Causes*	*Remedy*
No SENSE indication.	Rod antenna has not been extended to its full length.	Extend rod antenna completely so that you see all 5 sections above top of suitcase.
	Single-prong plug (126-1) removed from socket (127-1).	Open leather curtain by turning 3 catches. Insert plug (126-1) in socket (127-1) near base of "sensing" antenna.
	Single-prong plug (126-2) removed from socket (127-2).	Open leather curtain over panel by turning three small catches to left. Insert plug (126-2) in socket (127-2) between terminals of loop.
	SENSE button not pushed down far enough.	Push SENSE button all the way down when making sensing observations.
	Peculiar nature of signal or location you're in (inside a building or near a large structure).	Try another signal or another location. Refer to paragraph 15.
	Your body may be too close to sensing antenna.	Hold "sensing end" of suitcase away from your body.

If you have trouble which is confined to one or two bands only, and a change of location doesn't help, then the receiver should be inspected by experienced personnel.

23. Trouble Chart for Battery Charger PE-128-A.—

Trouble	*Probable Causes*	*Remedy*
Charger "dead", that is: neither "A" nor "B" current.	Supply battery dead.	Replace supply battery with a fresh one.
	Cord CD-658-A wrongly connected.	Check conductor markings against voltage and polarity of vehicular supply battery.
	Clips on battery cord not making contact with supply battery terminals.	Check against dirt and corrosion on clips and terminals. Make sure clips "bite" into terminals of supply battery.
	SUPPLY switch in wrong position.	Make sure switch is at 6V. SUPPLY or 12V. SUPPLY, according to voltage of supply battery.

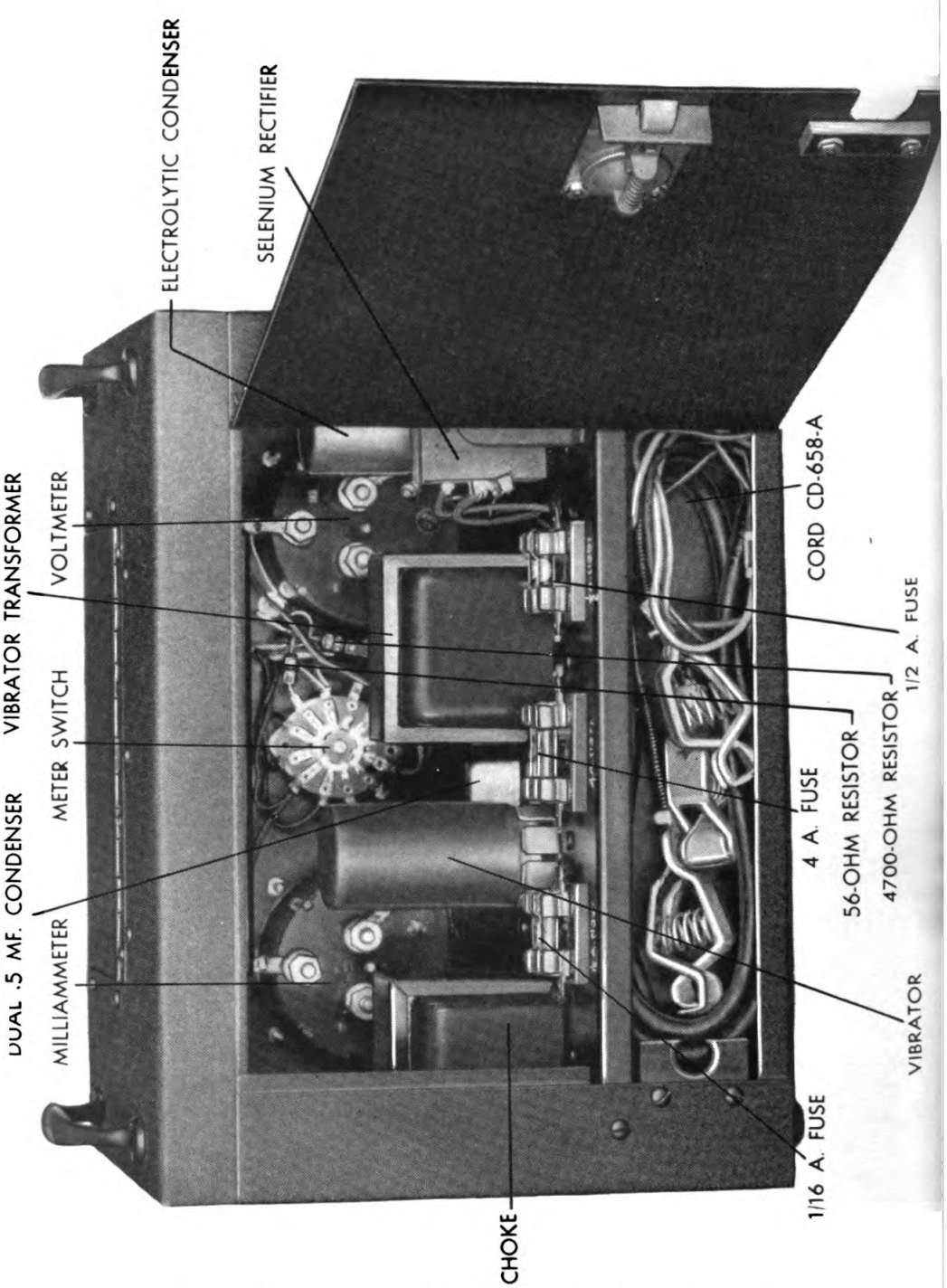


Figure 23. Battery Charger PE-128-A, Rear View

Trouble	*Probable Causes*	*Remedy*
harger dead", iat is: either "A" or "B" irrent. Con't)	Primary fuse blown.	*Remove 4A. (137) fuse from "active" fuse holder (the one nearer front of charger). Examine fuse by eye to see if it has opened up or blown. *Put spare 4A fuse in "active" holder if necessary.
	Both "A" and "B" fuses blown.	*Remove these fuses (138, 139) and replace with spares if necessary.
	Vibrator loose or removed from socket.	Check insertion of vibrator in its socket.
	Vibrator defective.	Replace with spare vibrator if available.
	"A" and "B" batteries not plugged in sufficiently.	Make sure these batteries are pushed "home", in their proper sockets.
	"A" and "B" batteries not filled sufficiently to pass a charging current.	Add acid as required. See paragraph 8.
o "A" irrent, it "B" irrent K.	"A" battery (BB-51) not plugged in completely.	Push "A" battery all the way in.
	"A" battery prongs dirty or corroded.	Remove dirt and corrosion from "A" battery prongs.
	"A" battery not filled sufficiently.	Add acid as required. See paragraph 8.
	"A" fuse blown.	*Remove ½A. (138) fuse from "active" fuse holder. Inspect it by eye to see if it has opened up or blown. Put spare ½A. fuse in "active" holder if necessary.

No "B" current, but "A" current O.K.	One or both "B" batteries not plugged in completely.	Push both "B" batteries all the way in.
	"B" battery prongs dirty or corroded.	Remove dirt and corrosion from "B" battery prongs.
	One or both "B" batteries not filled sufficiently.	Add acid as required. Remember just one unfilled cell is enough to stop passage of charging current. See paragraph 8.
	"B" Fuse blown.	*Remove 1/16A. (139) fuse from active fuse holder. Inspect it by eye to see if it has opened up or blown. Put spare 1/16A. fuse in "active" holder if necessary.
	Vibrator defective.	Replace with spare vibrator.
Low "A" and "B" current.	Vehicular supply battery weak.	Replace supply battery by one that is charged and up to its normal voltage.
	Both "A" and "B" batteries may be fully charged and thus no longer pass much current because of their high terminal voltages.	Check voltage of batteries, using BATTERY LOAD TEST, see paragraph 9. If their voltages under load are high, then continue charging at no more than "trickle rate".
	Both "A" and "B" batteries may not be sufficiently filled.	Add acid as required. See paragraph 8.
	Vibrator defective.	Replace with spare vibrator if available.

***CAUTION:**

Whenever Battery Charger PE-128-A is made inoperative by a fuse blowing, find the cause and correct it before inserting a spare fuse. If the fuse was blown by improper connection of the battery cord, excessive charging rate or any other abuse of the charger, how to remove the cause will be evident. However, if all the rules in the trouble chart are followed and fuses continue to blow, then it's very likely that some circuit component has failed. In this case, the repair of the equipment shall be undertaken only by experienced personnel.

24. Alignment of Radio Receiver BC-792-A.—

a. Because of the inherent stability of the tuned circuits used n Radio Receiver BC-792-A, it is unlikely that the receiver will have o be realigned in the field. However, if the sensitivity of any band hould fall off considerably under normal operating conditions, it nay become necessary to make alignment adjustments. Realignment s also necessary if any coils are replaced. If the dial calibration hould depart seriously, it may also be necessary to make adjustnents on the high frequency oscillator circuits. Before any attempts re made at realignment, it should be definitely ascertained that here are no other factors causing the difficulty experienced. Study he circuit diagram carefully before attempting to make any adustments, since careless readjustment of the circuit trimmers can ake the receiver completely inoperative.

b. Equipment Required for Alignment of Radio Receiver C-729-A.—

(1) Signal Generator. Range 100 kc to 65 mc. The generator hould be well shielded and provided with an attenuator for reducing ie signal to at least 10 microvolts.

(2) Output load box—with 250-ohm position and capable of ieasuring 1 milliwatt of power.

(3) Radiating loop. Construction of this loop is described in aragraph 25.

(4) Insulated screw driver.

(5) Coupling capacitor. A paper capacitor with a capacitance .05 μf equipped with insulated alligator clips is satisfactory.

c. First you must remove the receiver from the suitcase. Take e following steps:—

(1) Remove the four flat-head screws from the suitcase. You'll id the heads of two of these on the bottom side of the suitcase and ie on each side in the position where they are normally concealed the suitcase lid. (See figure 2.)

(2) Unfasten the leather flap by means of the three wing catches er the front panel of the receiver.

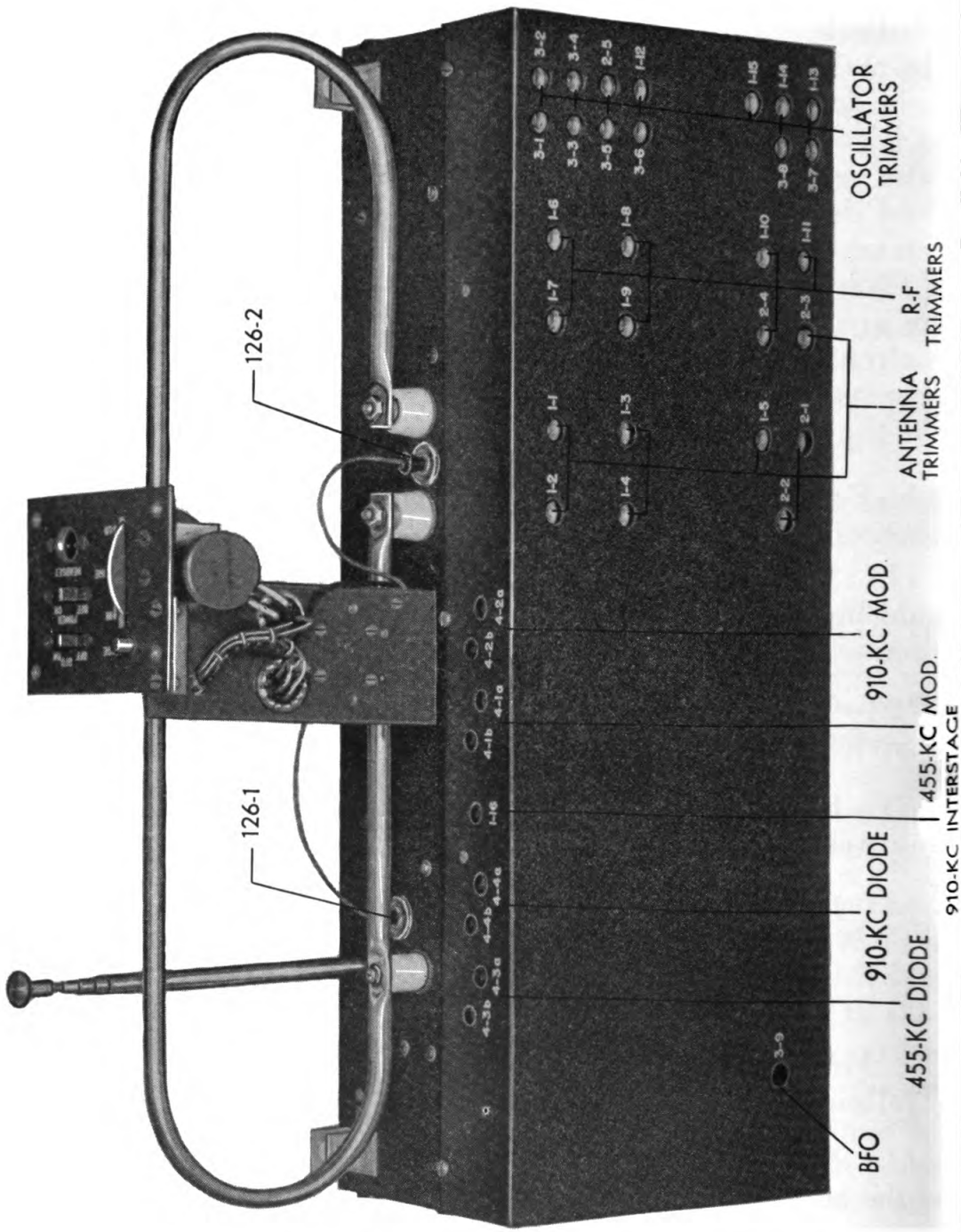


Figure 24. Radio Receiver BC-792-A, Chassis Removed From Suitcase, Rear View

(3) Disconnect the four-prong (123) and five-prong (125) connectors from the control plate.

(4) Remove the single-prong plugs (126-1, 126-2) from their respective jacks on the top of the receiver.

(5) Unscrew the brass button at the top of the sensing antenna (120). Make sure that the sensing antenna is completely collapsed so that it will not catch when removing the receiver.

(6) Grasp the receiver with two hands and pull it out of the suitcase, tilting the bottom slightly so that the loop clears the switches on the control head.

(7) Remove the four screws holding the control head to the top of the suitcase.

(8) Remove the two wood screws holding the control head to the block inside the suitcase. Remove the control head and reconnect it to the receiver by using the plugs and connectors.

d. Since it's generally simpler to realign the receiver by connecting to points within the chassis, remove the ten screws securing the metal cover to the main chassis (there are three each of these screws on the top and bottom of the receiver, and two at each end). The cover may then be pulled straight off the chassis. **I-f alignment may be made with the cover removed but alignment of the other circuits should be made only with the cover in place.**

e. I-F Alignment.—

Connect the signal generator to the signal grid of the modulator tube (pin 6 of 115), through the .05 μf coupling capacitor. Connect the ground side of the signal generator to any convenient point of the chassis. **Be careful in connecting the clip lead to the tube socket so that it does not short circuit or touch any other circuits.** It is best to make this connection before inserting the batteries. Thoroughly check the connection and position of the alligator clip, then insert batteries BB-51 and BB-52 as usual. Connect the output load box to the headset terminals of the receiver. This can be done conveniently by using Cord CD-655-A plugged into the HEADSET terminals on the control plate. Remove Receiver R-27-A from the other end of the cord and then connect the cord to the output box. An alternative means for connecting the output box is to insert a cord, terminated in Plug PL-55 in the HEADSET jack on

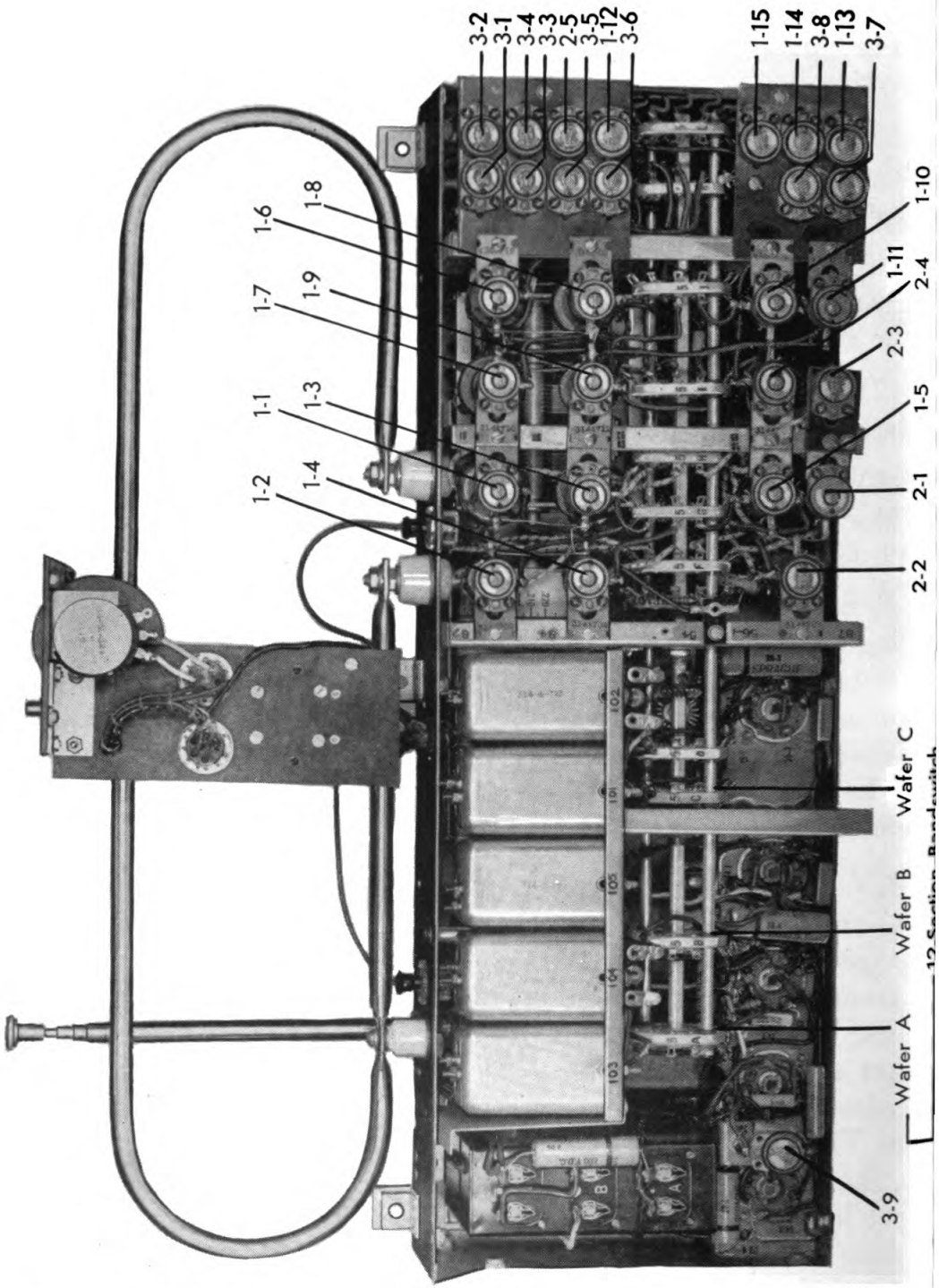


Figure 25. Radio Receiver BC-792-A, Chassis Removed From Suitcase, Rear View With Cover Removed From Chassis

the receiver panel. Make certain that the output load box is adjusted to 250 ohms and that the meter scale is such that 5 milliwatts will not overload the instrument. Throw the power switch to ON and tune the receiver to the low end of band 2. Advance the VOLUME control to maximum. Set the signal generator to 910 kc with 30% (400-cycle or 1,000-cycle) modulation and increase the output until the signal produces a deflection of approximately 1 milliwatt on the output meter. There are five adjustments to be made for the 910 kc i-f channel. Use the insulated screw driver to rotate the trimmers (4-2a, 4-2b, 1-16, 4-4a, 4-4b) in the i-f transformers 102, 104, 105. Each trimmer should be adjusted to produce maximum signal output. Reduce the output of the generator so that the receiver remains in the region of 1 milliwatt, otherwise the receiver will be overloaded as it is brought into alignment. When you have adjusted these trimmers once, it's a good idea to go through the same procedure again to be sure that each is set at its best position. Finally, check the peak response frequency of the i-f channel by tuning the signal generator and observing the frequency giving the maximum output. The frequency observed should be within 2 or 3 kc from 910 kc.

The 455-kc channel is aligned by a similar procedure except that there are only four adjustments to be made. Set the signal generator to 455 kc with 30 per cent modulation. Tune the receiver to the low end of band 1. Advance the VOLUME control to maximum as before. Increase the signal generator output until the signal produces a deflection on the output meter. Adjust the trimmers (4-1a, 4-1b, 4-3a and 4-3b) in the i-f transformers 101 and 103 for maximum output. After the initial adjustment, repeat the procedure to assure optimum adjustment of each. Finally, check the peak response frequency by tuning the signal generator for maximum output. The frequency observed on the generator should be within 1 or 2 kc of 455 kc; the sensitivity at the modulator grid at 910 and 455 kc for .1 milliwatt output should be approximately 15 microvolts and 30 microvolts respectively. These figures are based on normal battery voltage and tubes that are in good condition. Any considerable departure in modulator grid sensitivity is an indication of trouble. Before any of the other circuits are aligned, put the cover back in place.

(1) *Table of I-F Alignment*

Band	*Sig. Gen. Frequency, KC*	*Adjust Trimmers (Fig. 24)*
2	910	4-2a
2	910	4-2b
2	910	1-16
2	910	4-4a
2	910	4-4b
1	455	4-1a
1	455	4-1b
1	455	4-3a
1	455	4-3b

f. Alignment of Oscillator R.F. and Antenna Circuits.—

Since it is not convenient to make a direct electrical connection to the receiver circuits from the signal generator when the cover is in place, it is necessary to use a radiating loop connected to the generator. The construction of a loop of this type is described in paragraph 25. Connect the loop to the signal generator and place it approximately as shown in figure 26 with respect to the receiver. It should be realized in advance that if the circuits of the receiver are seriously out of alignment, the signal generator output may have to be increased considerably in order to produce a deflection on the output meter. If the dial calibration departs from the correct frequencies produced by a reliable signal generator or frequency standard. then it will be necessary to adjust the oscillator trimmers. There are two oscillator trimmers for each band up to and including band 6. For example, in band 1, trimmer 3-2 affects the dial calibration principally at the high frequency end of the band. (See par. 24*f*(1).) Trimmer 3-1 affects the dial calibration principally at the low frequency end of the band. However, there's a certain amount of interdependence between these two adjustments so it will be necessary to readjust each more than once until satisfactory results are obtained. In the higher frequency bands be careful not to confuse the signal with the image when adjusting oscillator trimmers. Remem-

ber that in bands 1 to 7 the oscillator is always above the signal frequency, that is, of the two possible responses that can be obtained when tuning the signal generator, the lower frequency is the one to use. The adjustment of band 7 oscillator circuit is made solely by trimmer 1-15 at the high frequency end of the band. Since band 8 uses the same oscillator circuit as described in paragraph 18*a* (4), no further adjustment is required. The low frequency end of band 7 and 8 oscillator circuit is not adjustable.

After the oscillator circuits have all been adjusted so that the dial calibration reads correctly, adjust the r-f circuits at the high frequency end of the bands so that maximum response is obtained from the output meter. This is done by adjusting the r-f trimmers at the frequencies given in paragraph 24*f*(1). For example, in band 1, trimmer 1-6 is adjusted at 205 kc until maximum output is obtained. Since there is no r-f stage for band 8, only 7 r-f trimmers have to be adjusted. The antenna circuits for bands 1 to 8 inclusive are also adjusted at the high frequency end of the bands. For example, trimmer 1-1 is used to adjust for maximum output at 205 kc in band 1. In general it is preferable to adjust both antenna and r-f circuits for one band before proceeding to the next. Repeat each adjustment several times to be sure you've obtained the best results. At the higher frequencies be sure that the oscillator frequency is accurately tuned with respect to the signal when the alignment adjustments are being made. As a final check on the over-all electrical sensitivity of the receiver, note the necessary signal generator output in microvolts necessary to produce 1 milliwatt on the output meter when the loop to loop distance is 20 inches. The signal generator output divided by 10 gives the field strength in microvolts per meter at a distance of 20 inches, when the loop described in paragraph 25 is used. The sensitivity of the receiver under normal conditions averages about 40 microvolts per meter in bands 1 to 4 inclusive. The sensitivity in microvolts per meter in bands 5 to 6 will average from 50 to 100 microvolts per meter under normal conditions. At the higher frequencies encountered in bands 7 to 8, the introduction of various spurious effects makes the determination of the receiver sensitivity by this method very unreliable in the absence of elaborate test equipment. The only dependable means for ascertaining that the receiver is functioning properly is to listen to the noise level or by actual use of the receiver to pick up signals of known field strength.

(1) *Table of Oscillator, R-F and Ant. Alignment*

Band	*Dial & Sig. Gen. Frequency, Mc.*	*Osc.**	*Adjust Trimmers R.F.*	*Ant.*
1	.100	3-1	-	-
	.205	3-2	1-6	1-1
2	.240	3-3	-	-
	.470	3-4	1-7	1-2
3	.540	3-5	-	-
	1.100	2-5	1-8	1-3
4	1.20	3-6	-	-
	2.40	1-12	1-9	1-4
5	2.70	3-7	-	-
	5.60	1-13	1-10	1-5
6	6.0	3-8	-	-
	13.0	1-14	1-11	2-1
7	14.0	-	-	-
	29.0	1-15	2-4	2-2
8	29.0	-	-	-
	60.0	-	-	2-3

*Adjust these only if dial calibration is off by more than one division.

g. Adjustment of B-F Oscillator.—

(1) The necessity for readjusting the b-f oscillator is evident when an audible beat is no longer produced when the b-f oscillator switch is thrown to ON, after the receiver is tuned to a signal. The best procedure for adjusting the b-f oscillator is to radiate from the loop a signal of 455 kc modulated with 400 cycles.

(2) Tune the receiver near the low end of band 3.

(3) Increase the signal generator output until the signal is clearly audible in the headset. Make sure that the signal generator is tuned exactly to the peak response frequency of the 455 kc channel. Switch off the 400 cycle modulation.

(4) Throw BFO switch to ON.

(5) Adjust trimmer 3-9 so that the audible beat is approximately 1000 cycles. Since there are two positions of 3-9 which will give the 1000-cycle beat, you'll have to find out by trial and error which of

these positions represents the frequency of the b-f oscillator below 455-kc. You can do this best by observing in which direction the signal generator must be tuned in order to produce zero beat.

(6) Since the 910-kc i-f channel utilizes the second harmonic of the b-f oscillator, no further adjustment of 3-9 need be made for the bands using the 910-kc channel. However, if you want to check the performance of the b-f oscillator in conjunction with the 910-kc i-f, proceed as follows:

(a) Tune the receiver to the high end of band 2.

(b) Tune the signal generator to produce peak output when radiating at or near 910 kc with the modulation turned on. Then remove the modulation and throw BFO switch to ON. The beat produced should be within the audible range. If the ratio of the i-f channel peak frequencies is exactly 2-to-1, the beat frequencies also will be in the ratio 2-to-1.

(7) If you don't get an immediate response from the b-f oscillator it is not too serious because in normal use, if you don't hear the beat immediately when you turn on the b-f oscillator, you can make the beat audible by a slight retuning of the receiver.

(8) *Table of B-F Oscillator Adjustment*

Sig. Gen. Frequency Kc.	*Dial Frequency Kc.*	*Adjust Trimmer*
455	600	3-9

25. Construction of a Radiating Loop.—

The construction of the loop for use in radiating a signal to the receiver is described in general terms because the material available won't be the same in all cases. Perhaps the simplest and quickest method of making the loop is to use a heavy piece of wire attached to a support. The main design features which should be retained if the loop is to be used for producing a field strength of known magnitude are the loop diameter and the value of the series-connected resistor, R. If, however, the loop is to serve merely as a means of introducing the signal to the receiver without direct electrical connection, even these design features may be overlooked. The arrangement shown in figure 26 illustrates one possible version that can be

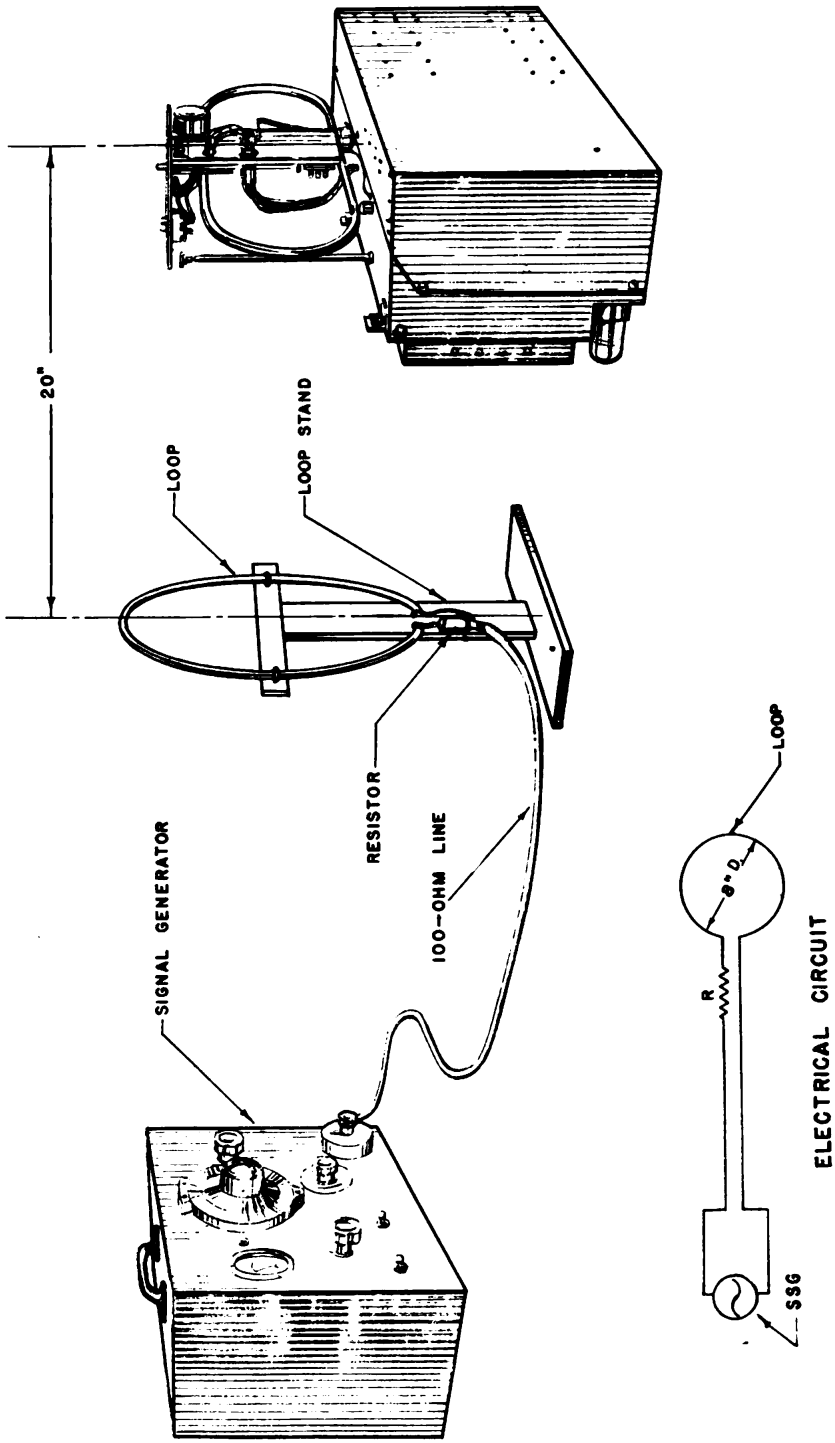


Figure 26. Test Set-up for a Radiating Loop

used. The loop in this case consists of a single turn of 1/4" copper tubing supported by a non-metallic stand. The terminals of the loop are connected to the 100-ohm line of the signal generator through the series resistor, R. The loop when used at a distance of 20 inches from the receiver loop produces a field strength at the receiver which is 1/10 the signal generator output—that is, with a signal generator output of 1000 microvolts, the field strength is 100 microvolts per meter. The factor 1/10 and the other physical constants are calculated from the equation:

$$e = \frac{18.85\ Nr^2\ I}{x^3} \qquad \text{(Eq. 1)}$$

Where e = field strength at the receiving loop in microvolts per meter,
N = number of turns of radiating loop,
r = radius of transmitting loop in centimeters,
I = current through radiating loop in milliamperes,
x = distance between center of radiating and receiving loops in meters.

If the inductance of the loop is made low, so that the reactances of the loop (at the highest frequency it is desired to operate) is small compared to the value of the series resistor, then the current in the loop can be calculated very readily; thus the current is given by:

$$I = \frac{E}{1000\ R} \qquad \text{(Eq. 2)}$$

In which E is the signal generator output in microvolts and R is the value of the series resistor in ohms.

By substituting equation 2 in equation 1, the following expression is obtained:

$$e = \frac{18.85\ Nr^2\ E}{x^3\ 1000\ R} \qquad \text{(Eq. 3)}$$

If e is set equal to .1E then:

$$.1E = \frac{18.85\ Nr^2\ E}{x^3\ 1000\ R} \qquad \text{(Eq. 4)}$$

When equation 4 is solved for R, the following is obtained:

$$R = \frac{18.85\ Nr^2}{100\ x^3} \qquad \text{(Eq. 5)}$$

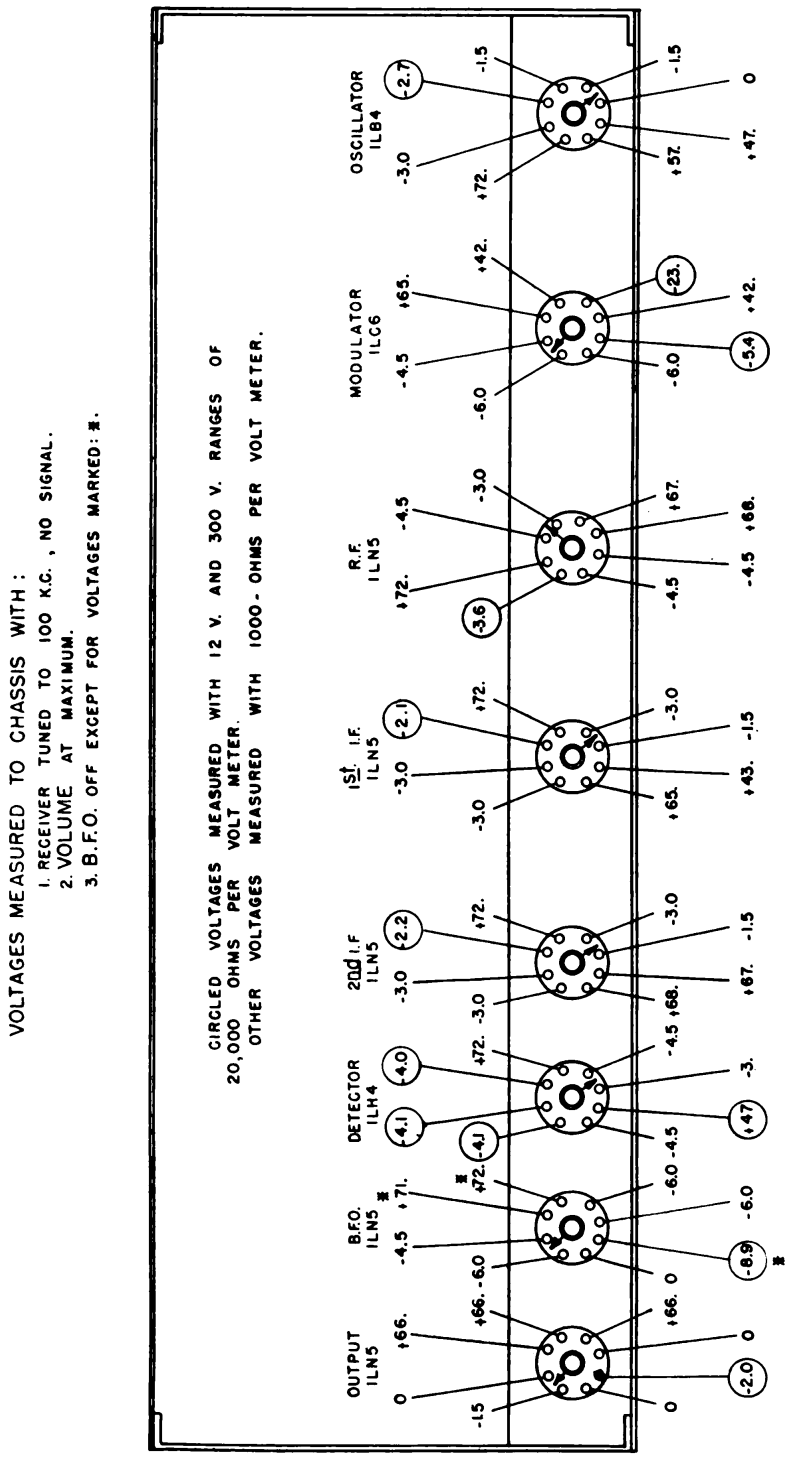


Figure 27. Radio Receiver BC-792-A, Diagram of Tube Sockets With Operating Voltages

For the present case we choose:

$$N = 1$$
$$r = 10 \text{ cm. } (4'')$$
$$x = .5 \text{ m. } (20'')$$

Substituting these values in equation 5 gives:

$$R = 150 \text{ ohms}$$

There are several factors which impose limitations on the upper frequency limit at which a radiating loop of this type can be used to give known field strength. As the frequency approaches 20 mc. the reactance of the loop described becomes sufficiently large (approximately 50 ohms) so that the current no longer remains at the value determined by the resistor, R, at lower frequencies. Another source of error may be introduced by a resonant condition in the line from the signal generator. Further sources of error are caused by capacitive coupling from the loop to the receiver. Capacitive coupling to the receiver includes coupling to the receiver loop and to the leads connecting the output load box. However, despite all these effects which enter at higher frequencies, the loop is still a convenient means of coupling the signal generator to the receiver for purposes of alignment.

26. Voltage Measurements of Radio Receiver BC-792-A.

a. A very useful means for finding the source of trouble in the receiver is to check the d-c voltages at the tube sockets. To make test points accessible it's necessary to remove the cover from the receiver. Before proceeding with the actual measurements, make sure that the A and B batteries are fully charged by testing them with the charger as described in paragraph 9. The control plate must be connected to the receiver with the connectors (123 and 125). Throw POWER switch to ON.

b. The voltages that should be measured on a normal receiver are shown in figure 27. Because of the tolerance allowed on the values of various circuit elements, deviations of $\pm$ 10% from the normal are permissible.

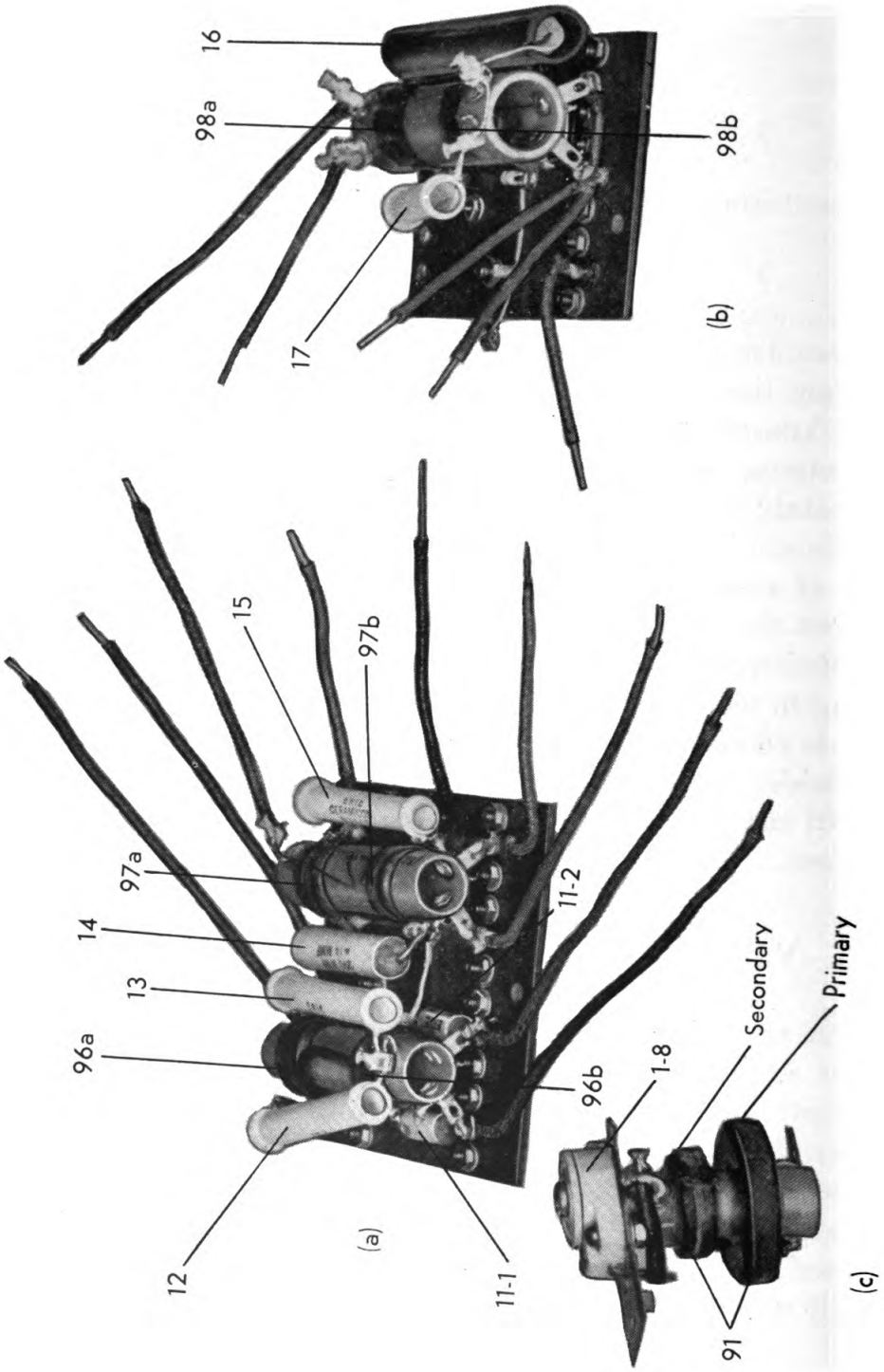


Figure 28. Radio Receiver BC-792-A, Oscillator Coil Sub-Assemblies, Typical R-F Coil Assembly

c. To make the voltage measurements, connect one side of the voltmeter to any convenient part of the chassis, and then use a test prod connected to the other side of the voltmeter to contact the terminals of each of the sockets in turn. Be careful not to short-circuit any adjacent terminals on the tube sockets with the test prod. It's usually most convenient to measure all the positive voltages with respect to chassis, and then, by connecting the positive side of the voltmeter to the chassis, measure all the negative voltages. In general the voltages are measured with a 1000-ohm per volt meter. The exceptions are indicated in figure 27 by the circles around certain voltages measured in very high resistance circuits. In these instances the voltmeter used had a resistance of 20,000 ohms per volt, in order not to reduce excessively the voltage at the points measured. If you have only a 1000-ohm per volt meter available, the voltages you observe will be considerably lower at these points.

d. In case any of the voltages measured are abnormally low, this information can be used to diagnose the source of the trouble. For example, if the plate voltage measured at any of the tube sockets is zero, the coil or resistor in that plate circuit should be investigated for an open circuit, or if the filament voltage is absent at one or more tubes, it's a positive indication that a tube is burned out. Always keep in mind that if one tube in a filament string burns out, the other tubes of that string are deprived of filament current. Another example of using the information given by measuring tube socket voltages is the case in which the screen voltage is also zero in addition to the zero plate voltage. A likely cause for this condition is a damaged screen by-pass capacitor or an open circuited isolation resistor.

27. Resistance Measurements of Radio Receiver BC-792-A.—

a. If all voltages are normal or the interpretation of any abnormalities doesn't lead to the trouble, further investigation should be carried on by measuring the continuity between various points and resistance to ground. The following table lists the nominal resistance measurable in a normal receiver. Resistance values greater than 5 megohms are tabulated as infinite. CAUTION: BEFORE MAKING POINT-TO-POINT RESISTANCE MEASUREMENTS THE

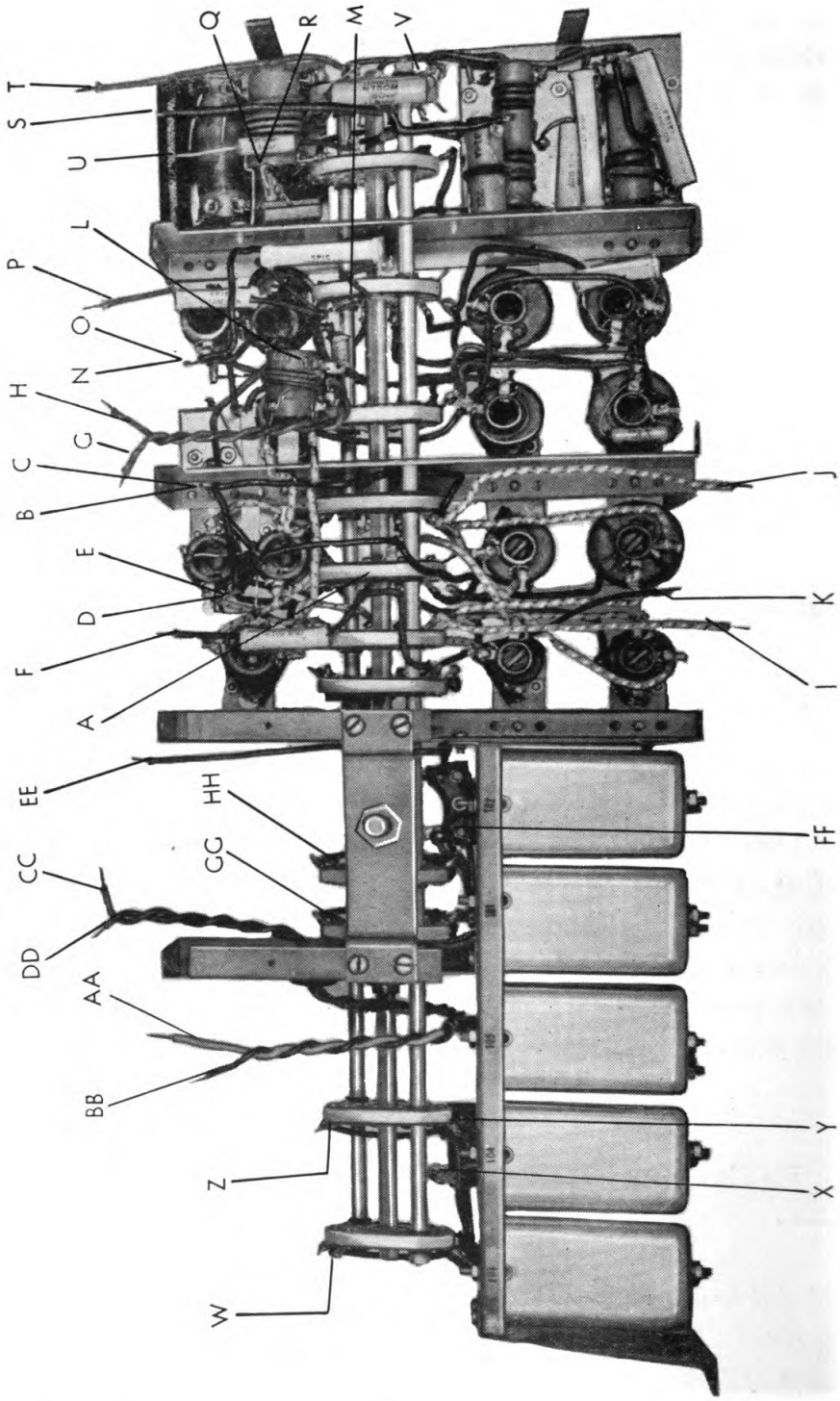


Figure 29. Radio Receiver BC-792-A, Underside View of Band Switch Assembly Showing Designations of Leads and Terminal Points

BATTERIES MUST BE REMOVED FROM THE RECEIVER; OTHERWISE INCORRECT READINGS WILL RESULT AND THE OHMMETER WILL BE DAMAGED. **IMPORTANT: REMOVE BATTERIES.**

b. Table of Resistance Measurements From Tube Sockets To Ground

Stage	*Tube Ref. No.*	*Plate (Pin 2)*	*Screen (Pin 3)*	*Grid (Pin 6)*
Oscillator	116	Infinite	Infinite	22,000 Ohms
Modulator	115	Infinite	Infinite	3.3 Meg.
R-F	118-1	Infinite	Infinite	3.3 Meg.
1st I-F	118-2	Infinite	Infinite	1.6 Meg.
2nd I-F	118-3	Infinite	Infinite	2.2 Meg.
Detector	117	Infinite	Infinite	4.7 Meg.
B-F Oscillator	118-5	Infinite	Infinite	15,000 Ohms
Output	118-4	Infinite	Infinite	2.2 Meg.

c. Table of Resistance Measurements From Tube Sockets To + 72-Volt Terminal on Battery Box

Stage	*Tube Ref. No.*	*Plate (Pin 2)*	*Screen (Pin 3)*
Oscillator	116	5500 Ohms	2200 Ohms
Modulator	115	2200 Ohms	10,000 Ohms
R-F	118-1	2200 Ohms	2200 Ohms
1st I-F	118-2	24,000 Ohms	2200 Ohms
2nd I-F	118-3	2200 Ohms	2200 Ohms
Detector	117	1 Meg.	—
*B-F Oscillator	118-5	23 Ohms	0
Output	118-4	4700 Ohms	4700 Ohms

* BFO Switch On

d. Since the measurement of each and every circuit in the receiver would require considerable time, make measurements according to the type of trouble at hand. For example, if the receiver is operative in only one band, all the coils which are used solely in that band should be tested for continuity. If, however, the receiver is inoperative in bands 1, 3, 4, and 5, investigations should center around the 455-kc i-f channel. The continuity of transformers 101,

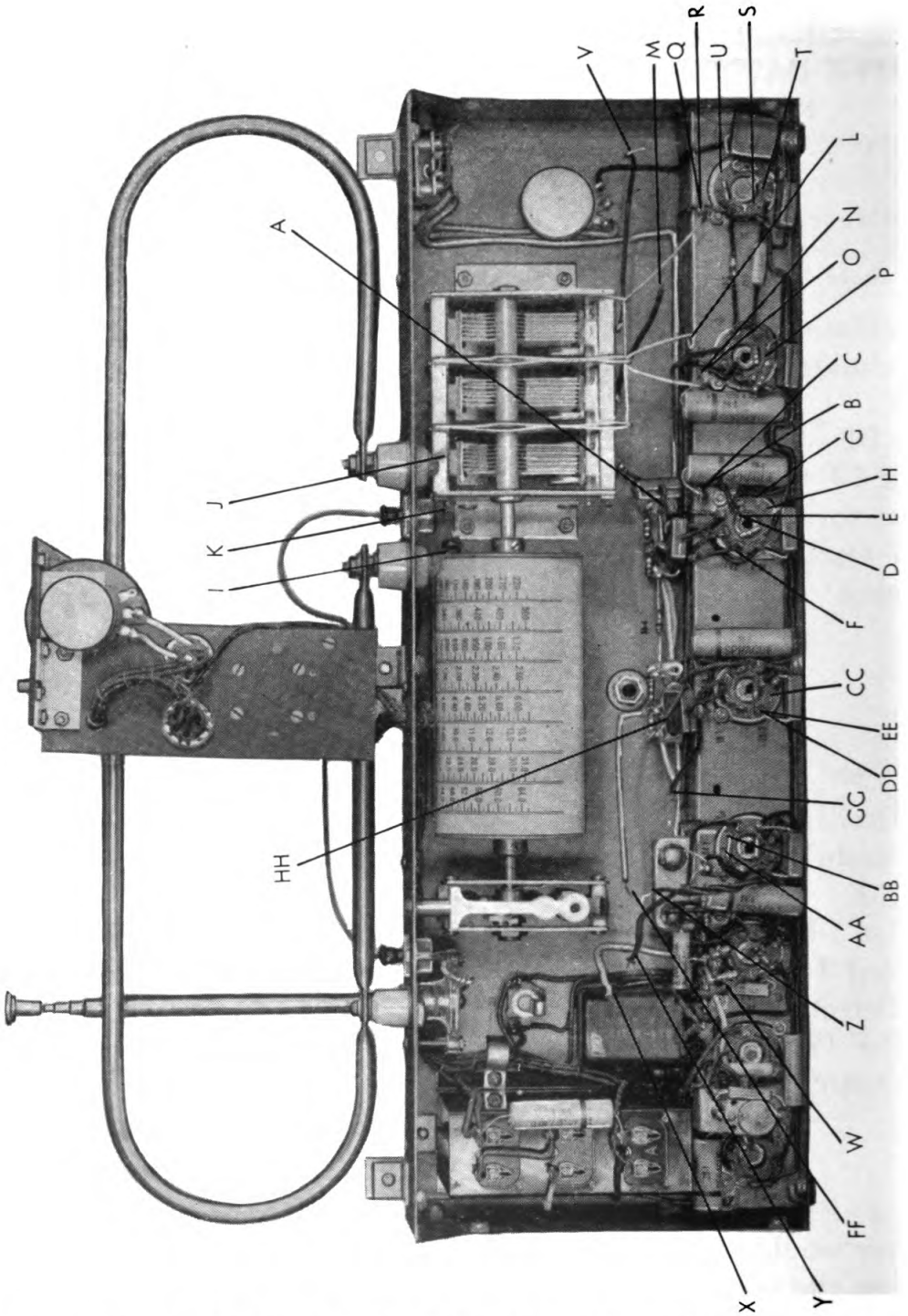


Figure 30. Radio Receiver BC-792-A, Rear View With Band Switch Assembly Removed From Chassis, Showing Designations of Leads and Terminal Points

103 should be checked. By the same token if only bands 2, 6, 7 and 8 are inoperative, the continuity of transformers 102, 104, 105 should be checked. If the receiver is inoperative on all bands, it's usually quicker to determine in which stage of the receiver the trouble is by using a signal generator. This technique will be explained in paragraph 28. The following table of Resistance Measurements gives the resistance of all inductors. The resistance measurements having values less than 1 ohm are tabulated as zero since for the purpose of trouble shooting it's not necessary to know the exact resistance.

e. Table of Resistance Measurements of Inductors

(1) *Transformer Resistance (In Ohms)*

Band	Ref. No.	Antenna Pri.	Antenna Sec.	Ref. No.	R-F Pri.	R-F Sec.	Ref. No.	Oscillator Pri.	Oscillator Sec.
1	(81)	0	52	(89)	155	115	(96a)	—	8
2	(82)	0	15	(90)	150	40	(96b)	—	4
3	(83)	0	5	(91)	145	11	(97a)	—	5
4	(84)	0	1.8	(92)	55	5	(97b)	0	2.5
5	(85)	0	1.4	(93)	19	1	(98a)	0	1.5
6	(86)	0	0	(94)	7	0	(98b)	0	0
7	(87)	0	0	(95)	3	0	(99)	0	0
8	(88)	0	0	—	—	—	(99)	0	0

(2) *I-F Transformer Resistance (In Ohms)*

Ref. No.	Transformer	Primary	Secondary
101	455-Kc Modulator	9.4	9.4
102	910-Kc Modulator	11.	11.
103	455-Kc Diode	9.4	9.4
104	910-Kc Diode	11.	11.
105	Interstage (both channels)	22,000*	—

*Measured external to can between red and blue leads.

(3) *Miscellaneous Inductor Resistance (In Ohms)*

Ref. No.	Item	Primary	Secondary
100	Choke	10.	—
106	BFO Transformer	10.	23.
107	Output Transformer	650.	14.

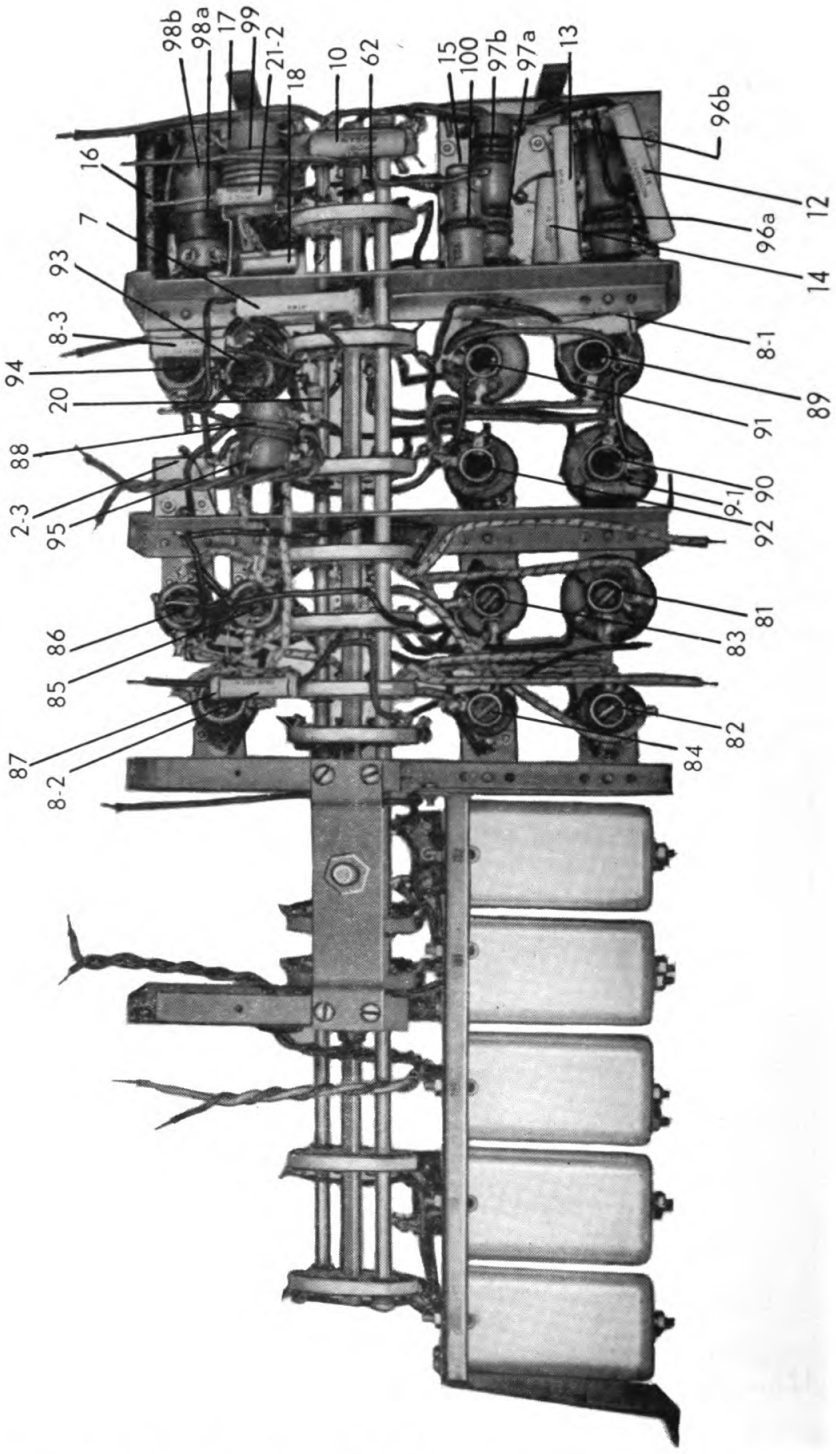


Figure 31. Radio Receiver BC-792-A, Underside View of Band Switch Assembly Showing Reference Numbers of Parts

28. Use of Signal Generator to Locate Trouble.—

If neither the voltage nor continuity measurements lead to the source of trouble in a completely inoperative receiver, the following procedure is recommended.

a. Prepare the receiver as for normal operation; insert batteries, turn on POWER switch and connect an output meter and a headset.

b. Advance the VOLUME control to maximum and connect a signal generator through a suitable coupling capacitor successively to the signal grids of the tubes.

c. The order of doing this should start with the output tube in which case an audio frequency (400 cycles) is required from the signal generator. If no output is heard in the headset, the trouble is then known to be in the output tube or its associated circuit.

d. If the output stage passes the signal, then proceed to the previous tube connecting the audio frequency generator to the signal grid of the detector (117).

e. In like fashion, a signal generator supplying the correct intermediate frequency to the signal grids of tubes 118-3, 118-2 and 115 successively will reveal in which stage of the receiver the trouble exists.

f. If the sensitivity at the modulator signal grid (pin 6) is normal (approximately 20 microvolts), then the sensitivity at the same grid should be checked using the r-f signal to which the receiver is tuned.

g. The signal generator should then finally be coupled to the signal grid of the r-f tube in order to complete the step by step search for the source of trouble.

29. Replacement of Individual I-F, R-F and Antenna Transformers.—

a. If it becomes necessary to remove one of the transformers as a result of damage to either the coils or the associated trimmer, in general this may be done without resorting to a major dismemberment.

b. I-F Transformers.—

The i-f transformers can be removed by unsoldering the leads from the switch and other terminals. After the two nuts on the spade bolts are taken off, the i-f transformer complete with can should be gently removed from the metal channel.

c. Antenna Transformers.—

In removing the antenna transformers unsolder the leads from the band switch at the transformer terminals rather than at the switch. Each antenna transformer of bands 1 to 7 is fastened to the top of the switch partition by a single screw. Band 8 antenna transformer is fastened by a single screw to the side of a switch partition and is located near the modulator tube. To facilitate removing its fastening screw, a hole has been provided in the partition between the oscillator and modulator tubes so that a long, thin screw driver may be inserted from the oscillator end of the receiver.

d. R-F Transformers.—

All the r-f transformers can be detached by means of the single fastening screw and by disconnecting the leads at the transformer terminals. A typical r-f transformer assembly is shown in figure 28(c). The terminals at the trimmer end of the transformer belong to the secondary circuit and those at the other end belong to the primary circuit.

e. Oscillator Transformers.—

(1) If one of the oscillator transformers of bands 1 to 4 has to be removed, this can be accomplished only by removing the entire sub-assembly on which these are mounted. This sub-assembly is shown in figure 28(a).

(2) The most convenient way to remove this sub-assembly is to unsolder the leads going to switch wafers K and L. A total of 8 leads on the latter wafers must be unsoldered. In addition, the black lead going to the solder lug on the five-trimmer plate must be unsoldered at the lug. The eight-trimmer plate assembly can then be removed by taking out three screws of which two are in the switch shield partition and one in the support bracket. When this sub-assembly has been removed, all the necessary soldered joints are accessible for removing any defective components.

(3) If band 5 or band 6 oscillator transformers must be removed, it is necessary in like fashion to remove the sub-assembly from the receiver. This sub-assembly is shown in figure 28(b). To accomplish this operation, the leads going to wafers K and L of the band switch should be unsoldered.

(4) Band 7-8 oscillator transformer is held to the switch partition by a single screw. It can be removed without disconnecting any leads other than those connecting to it.

30. Removal of Band Switch Assembly From Radio Receiver BC-792-A.—

a. If some defect occurs in the receiver which can't be remedied because it's inaccessible, you can remove the entire switch assembly and get at the part you want to fix. SINCE THIS OPERATION IS QUITE COMPLICATED AND TIME CONSUMING, IT MUST NOT BE UNDERTAKEN UNLESS IT HAS BEEN DEFINITELY ESTABLISHED THAT THE DIFFICULTY CANNOT BE REMEDIED WITHOUT REMOVING THE ASSEMBLY. BEFORE ATTEMPTING TO REMOVE THE SWITCH ASSEMBLY, TAKE CARE OF THE FOLLOWING:

(1) Remove all batteries.

(2) Set tuning control to low frequency end of dial (if this is not done, the tuning capacitor plates may become bent in the following work).

(3) Disconnect the control head completely by removing the connectors and plugs.

b. Figure 29 shows the switch assembly removed from the receiver. Figure 30 shows the receiver chassis after the switch assembly has been removed. Note that in each figure certain leads remain with each unit. In disconnecting the leads at their terminals, make certain that they remain with the units exactly as shown in these two figures. To identify the leads and their respective connecting terminals they have been designated with the same reference letter. Since there are 34 connections, the designations go from A to Z and from AA to HH. There is no significance attached to the use of the double letter designations beyond that necessary to distinguish them from the single letter. After all 34 junctions have been unsoldered, remove the screws fastening the switch partitions to the chassis. There's a

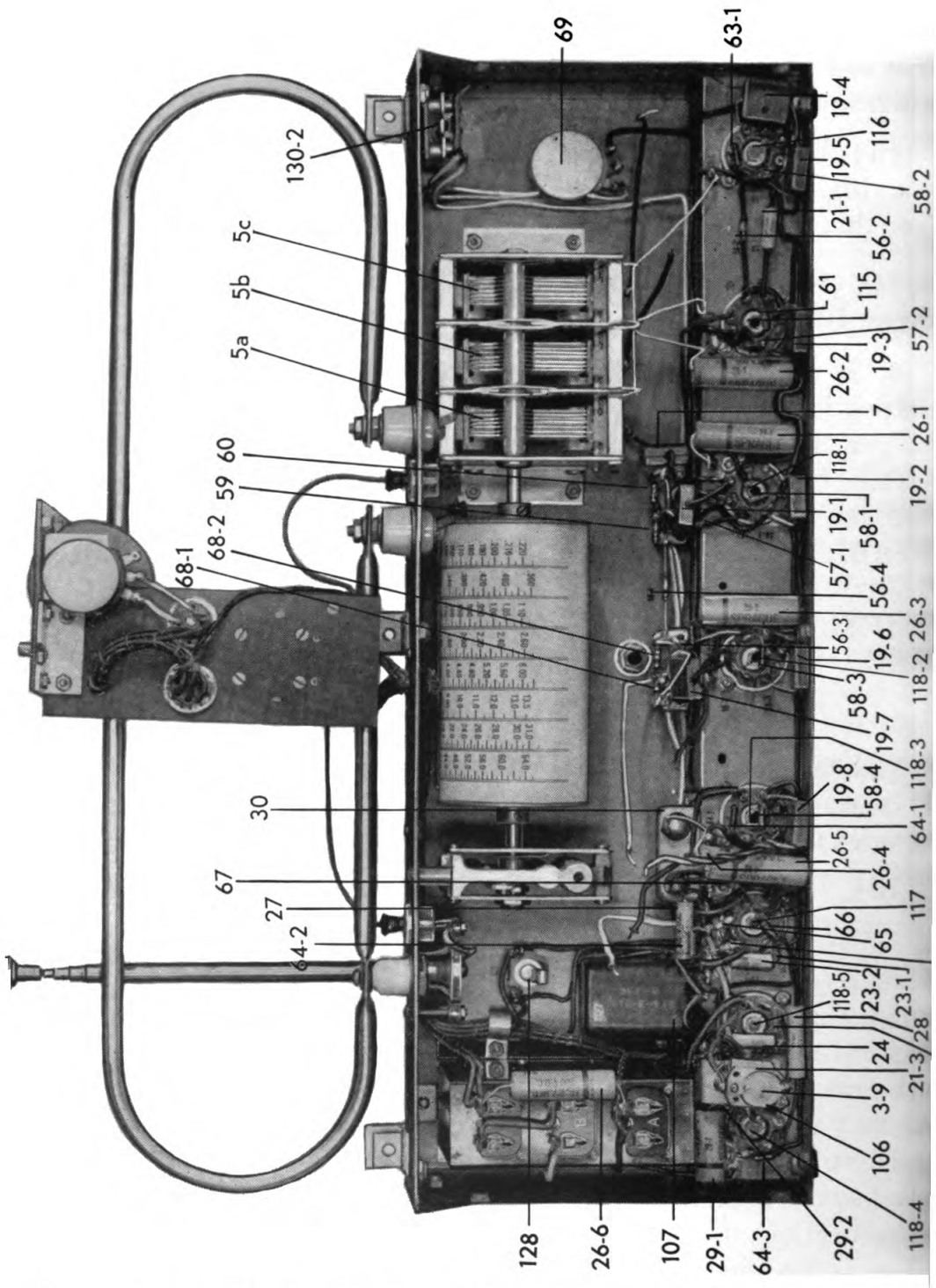


Figure 32. Radio Receiver BC-792-A, Rear View With Band Switch Assembly Removed From Chassis, Showing Reference Numbers of Parts

total of 13 screws to be removed before the switch assembly is mechanically free. Then remove the BAND SWITCH knob from its shaft. Very carefully pull the switch assembly out of the receiver by grasping it at the central partitions. It will come out without the application of much force. If it tends to bind or catch, look for the cause before anything is damaged by excessive strain.

Figure 31 shows the switch assembly with all its components referenced according to the numbers given in the List of Replaceable Parts. The components in the chassis assembly are similarly shown in figure 32.

31. Trouble Shooting for Battery Charger PE-128-A.—

a. If you find trouble in the use of the charger, all the items in paragraph 23 should be thoroughly checked. If you can't fix the charger by using the remedies prescribed in this chart, the source of the trouble should be investigated through voltage and resistance measurements. Remove the ten screws holding the bottom plate of the charger so that the circuits are accessible. (See figure 33.)

b. The panel voltmeter (143) reading obtained when no batteries are in the circuit serves to indicate the presence of voltage in the "A" portion of the charger. If this voltage is low or entirely absent, an external voltmeter should be connected successively to the terminals of capacitor (37 a and b), and to the terminals of fuse (138). The presence or absence of voltage at these various points will indicate which circuit element is damaged. When there are no "B" batteries inserted in the charger, the panel voltmeter (143) does not indicate the charger voltage developed in the "B" portion. The voltage between the common negative of capacitor (36), and the terminals of fuse (139), and the terminals of control (76) should indicate the circuit element at fault. The normal voltage (with 6-volt supply) should be approximately 150 volts at the junction of the capacitor (36a) and fuse (139). If no load is connected, the same voltage will be measured at the terminals of control (76).

c. In the event that the voltage measured is abnormally low, capacitors (34, 36 a & b and 37 a & b) should be checked for breakdown. The resistance of the windings on transformer (111) are given

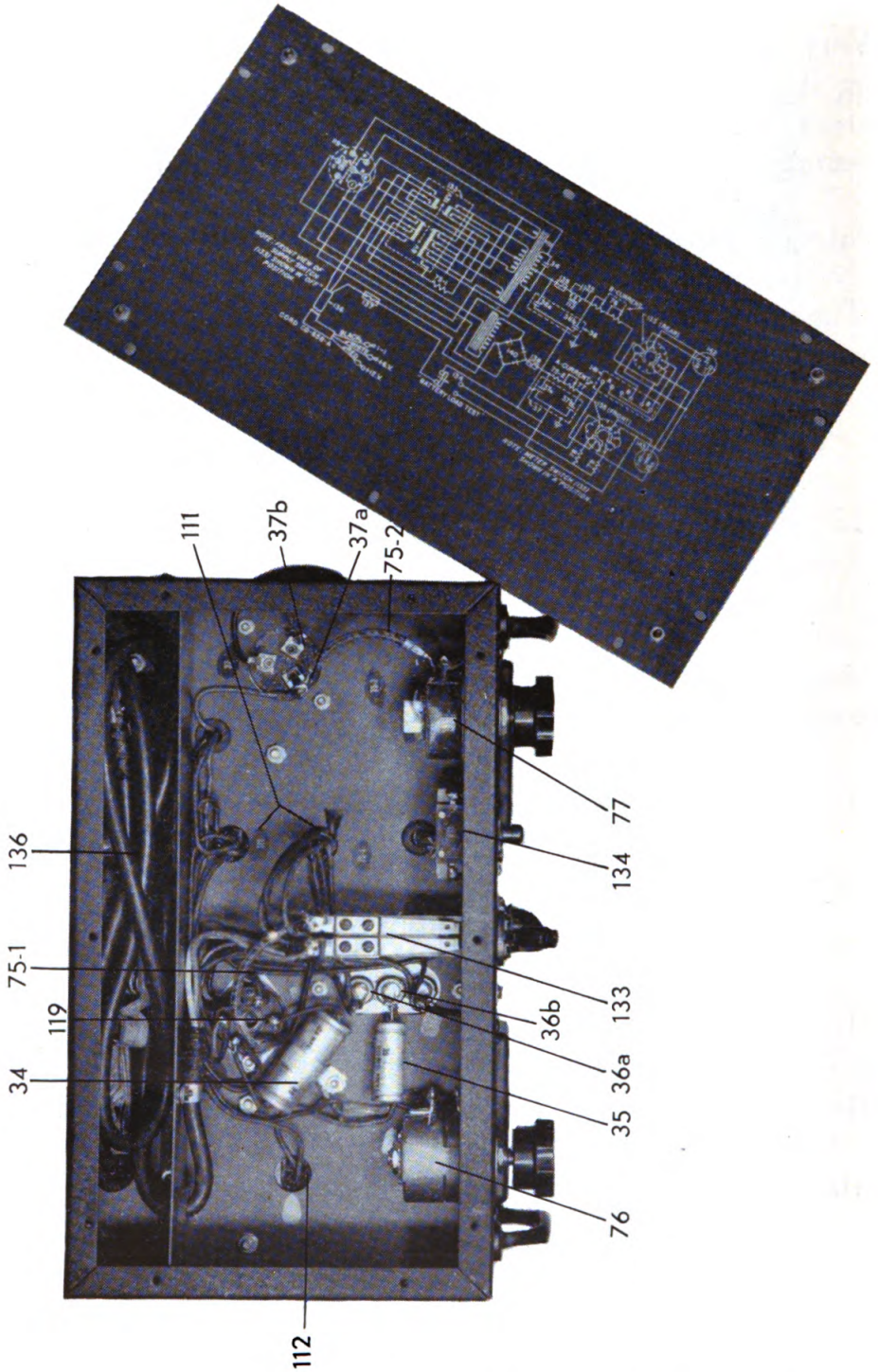


Figure 33. Battery Charger PE-128-A, Bottom View With Bottom Plate Removed

in the following table. You must make these measurements with the SUPPLY switch in the OFF position. The continuity of the energizing coil on the vibrator can be checked by connecting the ohmmeter to terminals 3 and 6 of socket of vibrator (119). Switch (134) should be checked for continuity between the terminals connected to the black leads. The terminals connected to the green leads normally should show an open circuit. When the button of the BATTERY LOAD TEST is pushed, the black lead terminals should show open circuit and the green lead terminals short circuit.

d. Table of Resistance Measurements on Charger PE-128-A

(1) *Winding*	*Color Code*	*Resistance Ohms*
Primary	BK-OR to YL-BU	0.4
Primary	WH to YL-BK	0.4
Primary	YL-BK to BK	0.4
Primary	GR-WH to GR	0.4
Secondary	RD-GR to RD-YL	210.
Secondary	RD-YL to RD	220.
Secondary	BU to BU	2.
Choke (112)	RD to RD	1000.

(2) *Winding*	*Where Measured*	*Resistance Ohms*
Vibrator Energizing Coil	Pins 3 and 6 of (119)	11.
B Control (76) HIGH position	Terminals to red leads	0.
B Control (76) LOW position	Terminals to red leads	10,000.
A Control (77) HIGH position	Blue lead terminal to center.	0.
A Control (77) LOW position	Blue lead terminal to center.	450.

NOTE: The common negative of the charger circuit is not connected to the chassis and therefore no connection should be made to chassis when making voltage and resistance measurements.

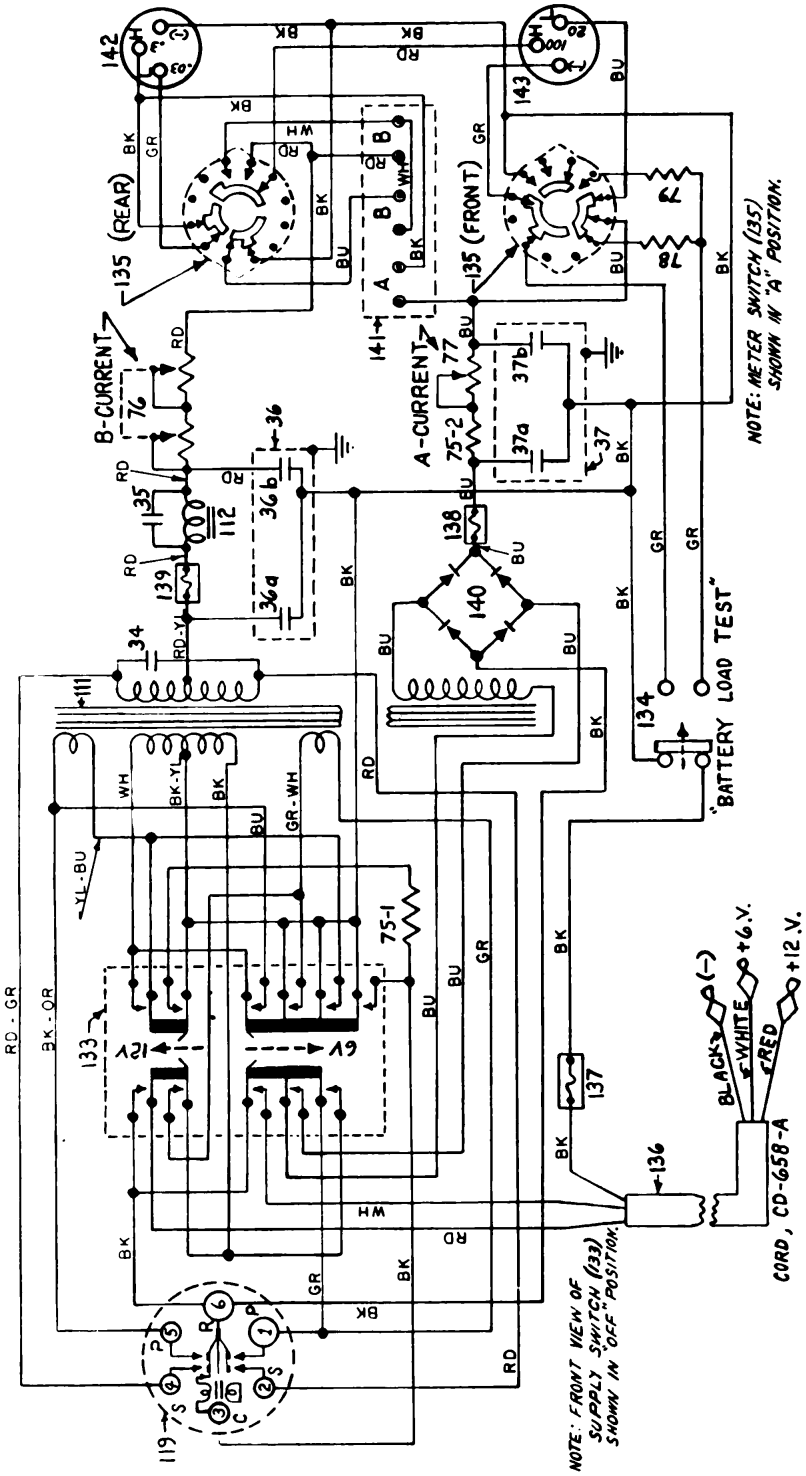


Figure 34. Battery Charger PE-128-A, Schematic Diagram

(3) *Color Code for Wiring of Battery Charger PE-128-A*

Color of Wire	*Code of Circuit Diagram*
Red with Green Tracer	RD-GR
Red with Yellow Tracer	RD-YL
Red	RD
Blue	BU
Black	BK
Yellow with Black Tracer	YL-BK
White	WH
Green with White Tracer	GR-WH
Yellow with Blue Tracer	YL-BU
Black with Orange Tracer	BK-OR
Green	GR

32. General Maintenance of Battery Charger PE-128-A.— Since the charger is subjected to the corrosive action of the acid from the batteries, a periodic inspection and cleaning is recommended. The battery compartment should be thoroughly cleansed of all accumulations of dirt and acid so that corrosion will be minimized. The pin jacks in the rear of the battery compartment should be examined and cleaned, if necessary, to prevent corrosion. The battery clips on Cord CD-658-A should be inspected and cleaned frequently. The leads attached to the clips should also be examined for breakage and loose connections.

SECTION V
SUPPLEMENTARY DATA

33. RMA Color Code for Resistors and Capacitors.—

Color	*Significant Figure*	*Multiplier*	*Tolerance*	*Voltage Rating*
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

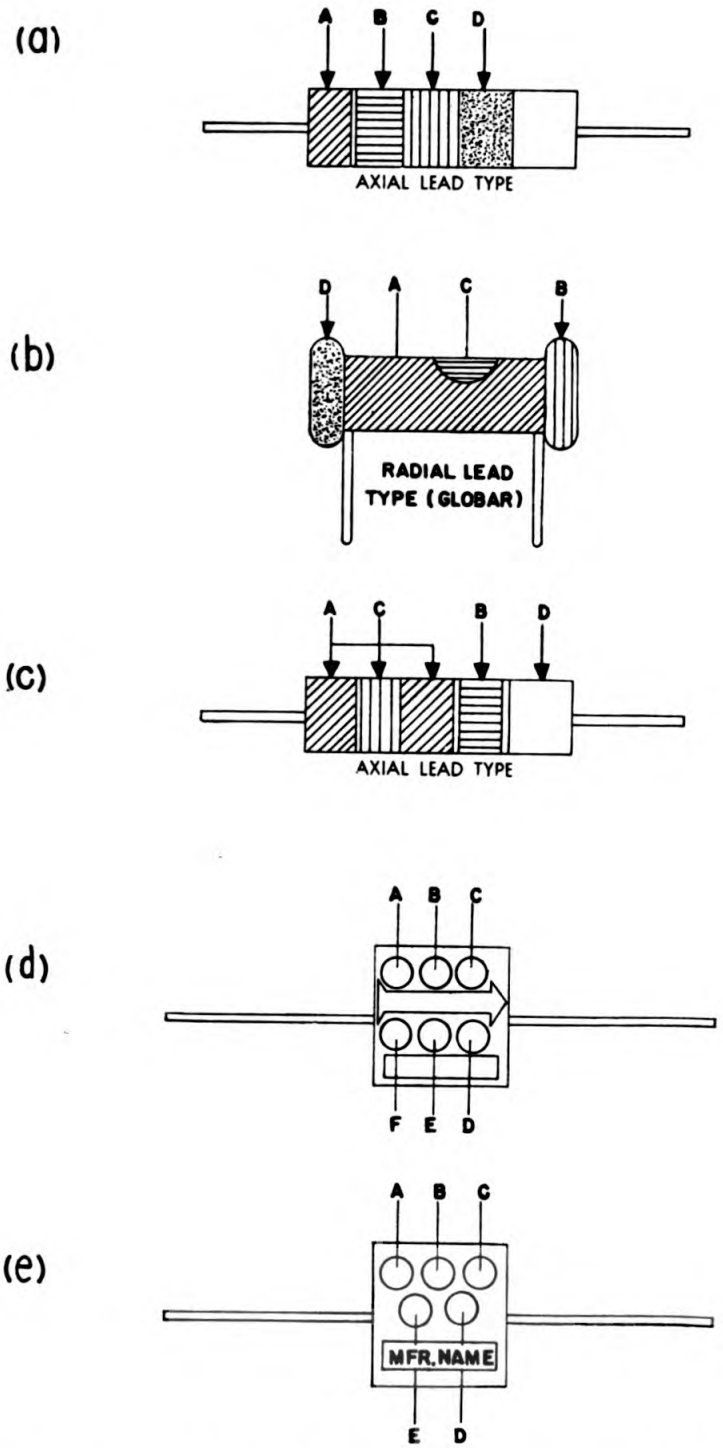


Figure 35. Diagram of RMA Color Code for Resistors and Capacitors

*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 colors used to represent the resistance values in ohms are given in the above table. The system in most common use for axial lead resistors indicates the value with colored bands as in figure 35(a), in which:

(1) Band A indicates the first significant figure of the resistance value.

(2) Band B indicates the second significant figure.

(3) Band C indicates the multiplier.

(4) Band D, if any, indicates the tolerance limits about the nominal resistance value. No tolerance color indicates 20 percent.

For radial lead resistors (such as Globar) the system shown in figure 35 (b) is used, in which the colors of—

(1) The body (A) indicates the first significant figure of the resistance value.

(2) One end (B) indicates the second significant figure.

(3) A dot (C) indicates the multiplier.

(4) The other end (D) indicates the tolerance limits about the nominal resistance value. No tolerance color indicates 20 percent.

A system, not too commonly used at present, for indicating nominal resistance value of axial lead resistors is shown in figure 35 (c) in which the colors of:

(1) The body (A) indicates the first significant figure of the resistance value.

(2) A band (B) indicates the second significant figure.

(3) A band or dot (C) indicates the multiplier.

(4) Band (D) if any, indicates the tolerance limits about the nominal resistance value. No tolerance color indicates 20 percent.

b. Capacitors.—Two systems for color coding fixed mica capacitors are in use. The colors used to represent the capacitance value, in micro-microfarads, are given in the table at the beginning of this paragraph. Note that the colored dots are read from left to right in the direction indicated by the molded arrow, or in the same direction as the manufacturer's name.

A system now in common use involves six dots of color as in figure 35 (d) in which the color of:

(1) Dot A indicates the first significant figure of the capacitance value.

(2) Dot B indicates the second significant figure.

(3) Dot C indicates the third significant figure.

(4) Dot D indicates the multiplier.

(5) Dot E indicates the tolerance of the nominal capacitance value.

(6) Dot F indicates the voltage rating.

Another commonly used system involves the use of three dots of color which is interpreted in the same manner as the first part of the five-dot system shown in figure 35 (e). The latter is described because a number of mica capacitors used in Radio Receiver BC-792-A are thus coded. In figure 35 (e) the color of:

(1) Dot A indicates the first significant figure of the capacitance value.

(2) Dot B indicates the second significant figure.

(3) Dot C indicates the multiplier.

(4) Dot D indicates the tolerance of the nominal capacitance.

(5) Dot E indicates the voltage rating.

34. Color Code for Wiring of Radio Receiver BC-792-A.—

Color of Wire	*Code of Circuit Diagram*
Black	BK
Red	RD
Blue	BU
Green	GR
White	WH
Black with White Tracer	BK-WH
White with Blue Tracer	WH-BU

TABLE OF REPLACEABLE PARTS

35. TABLE OF REPLACEABLE PARTS FOR RADIO SET SCR-504-A

a. Radio Receiver BC-792-A

Total Quantity in Equip.	Ref. No.	Signal Corps Stock No.	Name of Part and Description	Function	M'f'r Code **	Part/Dwg. No.
#15	1-1		Capacitor, 1.5—7 $\mu\mu$f adjustable ceramic, type NPO, TS2A.	Tune Band 1 ant. circuit.	E	314-M-318
—	1-2		Same as 1-1.	Tune Band 2 ant. circuit.	—	—
—	1-3		Same as 1-1.	Tune Band 3 ant. circuit.	—	—
—	1-4		Same as 1-1.	Tune Band 4 ant. circuit.	—	—
—	1-5		Same as 1-1.	Tune Band 5 ant. circuit.	—	—
—	1-6		Same as 1-1.	Tune Band 1 r-f circuit.	—	—
—	1-7		Same as 1-1.	Tune Band 2 r-f circuit.	—	—
—	1-8		Same as 1-1.	Tune Band 3 r-f circuit.	—	—
—	1-9		Same as 1-1.	Tune Band 4 r-f circuit.	—	—
—	1-10		Same as 1-1.	Tune Band 5 r-f circuit.	—	—
—	1-11		Same as 1-1.	Tune Band 6 r-f circuit.	—	—

—	1-12		Same as 1-1.	Tune Band 4 osc. circuit, high freq. end.	—	—
—	1-13		Same as 1-1.	Tune Band 5 osc. circuit, high freq. end.	—	—
—	1-14		Same as 1-1.	Tune Band 6 osc. circuit, high freq. end.	—	—
—	1-15		Same as 1-1.	Tune osc. circuit for bands 7 and 8.	—	—
—	1-16		Same as 1-1, inside and part of 105.	Tune interstage i-f transformer, 105.	—	—
#5	2-1		Capacitor, 4-30 $\mu\mu$f, adjustable ceramic, type N500-TS2A.	Tune Band 6 ant. circuit.	E	314-M-320
—	2-2		Same as 2-1.	Tune Band 7 ant. circuit.	—	—
—	2-3		Same as 2-1.	Tune Band 8 ant. circuit.	—	—
—	2-4		Same as 2-1.	Tune Band 7 r-f circuit.	—	—
—	2-5		Same as 2-1.	Tune Band 3 osc. circuit, high freq. end.	—	—
#9	3-1		Capacitor, 7-45 $\mu\mu$f, adjustable ceramic, type N500-TS2A.	Tune Band 1 osc. circuit, low freq. end.	E	314-M-319

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35. TABLE OF REPLACEABLE PARTS FOR RADIO SET SCR-504-A (Continued)

a. Radio Receiver BC-792-A (Continued)

Total Quantity in Equip.	Ref. No.	Signal Corps Stock No.	Name of Part and Description	Function	M'f'r Code **	Part/Dwg. No.
—	3-2		Same as 3-1.	Tune Band 1 osc. circuit, high freq. end.	—	—
—	3-3		Same as 3-1.	Tune Band 2, osc. circuit, low freq. end.	—	—
—	3-4		Same as 3-1.	Tune Band 2, osc. circuit, high freq. end.	—	—
—	3-5		Same as 3-1.	Tune Band 3, osc. circuit, low freq. end.	—	—
—	3-6		Same as 3-1.	Tune Band 4, osc. circuit, low freq. end.	—	—
—	3-7		Same as 3-1.	Tune Band 5, osc. circuit, low freq. end.	—	—
—	3-8		Same as 3-1.	Tune Band 6, osc. circuit, low freq. end.	—	—
—	3-9		Same as 3-1.	Tune BFO	—	—
—	4-1a 4-1b		Capacitor, 7-45 $\mu\mu$f, dual adjustable ceramic, type N500-TD2A, inside, and part of 101.	Tune pri. and sec. of 455-kc mod. transf'r.	E	314-M-321
—	4-2a 4-2b		Same as 4-1a, 4-1b, except inside and part of 102.	Tune pri. and sec. of 910-kc mod. transf'r.	—	—
—	4-3a 4-3b		Same as 4-1a, 4-1b, except inside and part of 103.	Tune pri. and sec. of 455-kc diode transf'r.	—	—

—	4-4a 4-4b		Same as 4-1a, 4-1b, except inside and part of 104.	Tune pri. and sec. of 910-kc diode transf'r.	—	—
#1	5a 5b 5c		Capacitor, 3-section, variable gang condenser. Effective capacitance change per section is 241 $\mu\mu$f. Min. cap. is 10.6 $\mu\mu$f. Special.	Tune ant. r-f and osc. circuits.	0	314-M-306
#1	6		Capacitor, 9200 $\mu\mu$f, ±5%, moulded mica, type MWBW.	Tune ant. circuit, all bands.	SO	314-C-620
#1	7		Capacitor, 540 $\mu\mu$f, ±2%, fixed ceramic, style E, type N750.	Tune ant. circuit band 8. Tune r-f circuit band 7.	E	314-C-612
#3	8-1		Capacitor, 500 $\mu\mu$f, ±20%, fixed ceramic, style D, type N750.	Tune r-f pri., band 1.	E	314-C-611
—	8-2		Same as 8-1.	R-F grid coupling.	—	—
—	8-3		Same as 8-1.	Mod. grid coupling.	—	—
#1	9-1		Capacitor, 75 $\mu\mu$f, ±10%, fixed ceramic, style L, type N750.	Tune r-f pri., band 2.	E	314-C-604
—	9-2		Same as 9-1, except inside and part of 101.	Tune pri. 455-kc mod. transf'r.	—	—
—	9-3		Same as 9-1, except inside and part of 101.	Tune sec. 455-kc mod. transf'r.	—	—
—	9-4		Same as 9-1, except inside and part of 103.	Tune pri. 455-kc. diode transf'r.	—	—

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35. TABLE OF REPLACEABLE PARTS FOR RADIO SET SCR-504-A (Continued)

a. Radio Receiver BC-792-A (Continued)

Total Quantity in Equip.	Ref. No.	Signal Corps Stock No.	Name of Part and Description	Function	M'f'r Code **	Part/Dwg. No.
—	9-5		Same as 9-1, except inside and part of 103.	Tune sec. 455-kc. diode transf'r.	—	—
#1	10		Capacitor, 150 μμf, ±1%, fixed ceramic, style M, type N750.	Tune osc sec. for bands 1 and 2.	E	314-C-608
#2	11-1		Capacitor, 50 μμf, ±5%, fixed ceramic, style K, type N750.	Tune osc. band 1.	E	314-C-603
—	11-2		Same as 11-1.	Tune osc. band 2.	—	—
#1	12		Capacitor, 935 μμf, ±2%, fixed ceramic, style F, type N750.	Tune osc. band 1.	E	314-C-615
#1	13		Capacitor, 880 μμf, ±2%, fixed ceramic, style F, type N750.	Tune osc. band 2.	E	314-C-614
#1	14		Capacitor, 290 μμf, ±5%, fixed ceramic, style M, type N750.	Tune osc. band 3.	E	314-C-610
#1	15		Capacitor, 620 μμf, ±2%, fixed ceramic, style E, type N750.	Tune osc. band 4.	E	314-C-613
#1	16		Capacitor, 950 μμf, ±2%, fixed ceramic, style F, type N750.	Tune osc. band 5.	E	314-C-616
#1	17		Capacitor, 970 μμf, ±2%, fixed ceramic, style F, type N750.	Tune osc. band 6.	E	314-C-617
#1	18		Capacitor, 2200 μμf, ±5%, moulded mica, type W.	Tune osc. bands 7 and 8.	SO	314-C-618

#8	19-1		Capacitor, 5000 $\mu\mu$f, ±20%, moulded mica, type W.	Bypass r-f grid return.	M	314-C-619
—	19-2		Same as 19-1.	Bypass r-f screen grid.	—	—
—	19-3		Same as 19-1.	Bypass mod. screen grid.	—	—
—	19-4		Same as 19-1.	Bypass osc. filament.	—	—
—	19-5		Same as 19-1.	Bypass osc. screen grid.	—	—
—	19-6		Same as 19-1.	Bypass first i-f screen grid.	—	—
—	19-7		Same as 19-1.	Bypass first i-f grid return.	—	—
—	19-8		Same as 19-1.	Bypass second i-f screen grid.	—	—
#1	20		Capacitor, 2.5 $\mu\mu$f, ±20%, fixed ceramic, style K, type N750.	R-F transf'r coupling, bands 1 to 7.	E	314-C-601
#3	21-1		Capacitor, 100 $\mu\mu$f, ±5%, fixed ceramic, style L, type N750.	Coupling osc. to mod.	E	314-C-605
—	21-2		Same as 21-1.	Osc. feedback coupling.	—	—

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35. TABLE OF REPLACEABLE PARTS FOR RADIO SET SCR-504-A (Continued)

a. Radio Receiver BC-792-A (Continued)

Total Quantity in Equip.	Ref. No.	Signal Corps Stock No.	Name of Part and Description	Function	M'f'r Code **	Part/Dwg. No.
—	21-3		Same as 21-1.	Tune BFO	—	—
—	22		Capacitor, 200 $\mu\mu$f, ±20%, fixed ceramic, style M, type N750. Inside and part of 105.	Coupling to second i-f grid.	E	314-C-609
#2	23-1		Capacitor, 100 $\mu\mu$f, ±20%, fixed ceramic, style L, type N750.	Bypass diode load.	E	314-C-607
—	23-2		Same as 23-1.	Bypass diode load.	—	—
#1	24		Capacitor, 100 $\mu\mu$f, ±10%, fixed ceramic, style L, type N750.	BFO feedback coupling.	E	314-C-606
—	25-1		Capacitor, 40 $\mu\mu$f, ±10%, fixed ceramic, style K, type N750. Inside and part of 102.	Tune pri. 910-kc mod. transf'r.	E	314-C-602
—	25-2		Same as 25-1, also inside and part of 102.	Tune sec. 910-kc mod. transf'r.	—	—
—	25-3		Same as 25-1, except inside and part of 104.	Tune pri. 910-kc. diode transf'r.	—	—
—	25-4		Same as 25-1, except inside and part of 104.	Tune sec. 910-kc. diode transf'r.	—	—
#6	26-1		Capacitor, .05 μf, +30%, — 10%, 600 V., paper tubular.	Bypass r-f fil.	SP	314-C-624
—	26-2		Same as 26-1.	Bypass mod. fil.	—	—

—	26-3		Same as 26-1.	Bypass first i-f. fil.	—	—
—	26-4		Same as 26-1.	Bypass second i-f fil.	—	—
—	26-5		Same as 26-1.	Bypass diode fil.	—	—
—	26-6		Same as 26-1.	Bypass "B" battery.	—	—
#1	27		Capacitor, .001 μf, +50%, — 20%, 200 V., paper tubular, type PX24.	Coupling to first a-f grid.	SP	314-C-621
#1	28		Capacitor, .002 μf, +50%, — 20%, 200 V., paper tubular, type PX24.	Coupling to grid of output tube.	SP	314-C-622
#2	29-1		Capacitor, .02 μf, +30%, — 10%, 600 V., paper tubular, type PX24A.	Bypass pri. of output transf'r.	SP	314-C-623
—	29-2		Same as 29-1.	Bypass BFO fil.	—	—
#1	30		Capacitor, 1 μf, +30%, — 10%, 200 V., paper, bathtub type can.	Bypass plate return of output tube.	SP	314-C-625
#1	51		Resistor, 150,000 ohms, ±20%, ⅓ w. ins. carbon, type MB.	Sensing attenuator.	ST	314-R-511
#1	52		Resistor, 68,000 ohms, ±20%, ⅓ w. insula-lated carbon, type MB.	Sensing attenuator.	ST	314-R-510

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35. TABLE OF REPLACEABLE PARTS FOR RADIO SET SCR-504-A (Continued)

a. Radio Receiver BC-792-A (Continued)

Total Quantity in Equip.	Ref. No.	Signal Corps Stock No.	Name of Part and Description	Function	M'f'r Code **	Part/Dwg. No.
#2	53-1		Resistor, 47,000 ohms, ±20%, ⅓ w. insulated carbon, type MB.	Sensing attenuator.	ST	314-R-509
—	53-2		Same as 53-1.	Part of diode load circuit (filter).	—	—
#1	54		Resistor, 33,000 ohms, ±20%, ⅓ w. insulated carbon, type MB.	Sensing attenuator.	ST	314-R-508
#2	55-1		Resistor, 15,000 ohms, ±20%, ⅓ w. insulated carbon, type MB.	Sensing attenuator.	ST	314-R-506
—	55-2		Same as 55-1.	BFO grid leak.	—	—
#4	56-1		Resistor, 10,000 ohms, ±20%, ⅓ w. insulated carbon, type MB.	Sensing attenuator.	ST	314-R-505
—	56-2		Same as 56-1.	Mod. screen isolation.	—	—
—	56-3		Same as 56-1.	Bias voltage divider.	—	—
—	56-4		Same as 56-1.	Bias voltage divider.	—	—
#2	57-1		Resistor, 3.3 Megohms, ±20%, ⅓ w. insulated carbon, type MB.	R-F grid-leak.	ST	314-R-518
—	57-2		Same as 57-1.	Mod. signal gridleak.	—	—

#4	58-1		Resistor, 2,200 ohms, ±20%, ⅓ w. insulated carbon, type MB.	R-F screen and plate isolation.	ST	314-R-501
—	58-2		Same as 58-1.	Osc. screen and plate isolation.	—	—
—	58-3		Same as 58-1.	First i-f screen and plate isolation.	—	—
—	58-4		Same as 58-1.	Second i-f screen and plate isolation.	—	—
#1	59		Resistor, 1 Megohm, ±10%, ⅓ w. insulated carbon, type MB.	Bias voltage divider.	ST	314-R-514
#1	60		Resistor, 330,000 ohms, ±10%, ⅓ w. insulated carbon, type MB.	Bias voltage divider.	ST	314-R-513
#1	61		Resistor, 220,000 ohms, ±20%, ⅓ w. insulated carbon, type MB.	Mod. injection gridleak.	ST	314-R-512
#1	62		Resistor, 3,300 ohms, ±20%, ⅓ w. insulated carbon, type MB.	Osc. feedback.	ST	314-R-502
#1	63-1		Resistor, 22,000 ohms, ±20%, ⅓ w. insulated carbon, type MB.	Osc. gridleak.	ST	314-R-507
—	63-2		Same as 63-1. Inside and part of 105.	Plate circuit damping.	—	—
#3	64-1		Resistor, 2.2 Megohms, ±20%, ⅓ w. insulated carbon, type MB.	Second i-f gridleak.	ST	314-R-516

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35. TABLE OF REPLACEABLE PARTS FOR RADIO SET SCR-504-A (Continued)

a. Radio Receiver BC-792-A (Continued)

Total Quantity in Equip.	Ref. No.	Signal Corps Stock No.	Name of Part and Description	Function	M'f'r Code **	Part/Dwg. No.
—	64-2		Same as 64-1.	Part of diode load.	—	—
—	64-3		Same as 64-1.	Gridleak of output tube.	—	—
#1	65		Resistor, 4.7 Megohms, ±20%, ⅓ w. insulated carbon, type MB.	Gridleak of first a-f amplifier.	ST	314-R-519
#1	66		Resistor, 1 Megohm, ±20%, ⅓ w. insulated carbon, type MB.	Plate load of first a-f amplifier.	ST	314-R-515
#1	67		Resistor, 4,700 ohms, ±20%, ⅓ w. insulated carbon, type MB.	Isolation for output tube.	ST	314-R-503
#2	68-1		Resistor, 3.3 Megohms, ±10%, ⅓ w. insulated carbon, type MB.	Bias voltage divider.	ST	314-R-517
—	68-2		Same as 68-1.	Bias voltage divider.	—	—
#1	69		Resistor, 2000 ohms, ±10%, 4 w. wire-wound potentiometer.	VOLUME control on panel.	C	314-M-325
#1	70		Same as 69 electrically.	VOLUME control on control plate.	C	314-M-324
#1	81		Transformer, band 1 antenna. Two-pie universal, #5-41 s.s.e. on 7/16" o.d. form. #22 s.c.c. primary wound over one pie. Special.	Couple loop to r-f tube.	T	314-A-701

#1	82		Transformer, band 2 antenna. Two-pie universal, #5-41 s.s.e. on 7/16" o.d. form. #22 s.c.e. primary wound over one pie. Special.	Couple loop to r-f tube.	T	314-A-702
#1	83		Transformer, band 3 antenna. Two-pie universal #7-41 s.c.e. on 7/16" o.d. form. #28 s.s.e primary wound over one pie. Special.	Couple loop to r-f tube.	T	314-A-703
#1	84		Transformer, band 4 antenna. Two-pie universal, #7-41 s.c.e. on 7/16" o.d. form. #28 s.s.e. primary wound over one pie. Special.	Couple loop to r-f tube.	T	314-A-704
#1	85		Transformer, band 5 antenna. Secondary: spacewound solenoid, #34 e. on 5/8" o.d. form. Pri.: double layer solenoid, #22 d.c.c. adjacent to secondary. Special.	Couple loop to r-f tube.	T	314-A-705
#1	86		Transformer, band 6 antenna. Secondary: spacewound solenoid, #28 s.s.e. on 5/8" o.d. form. Pri.: double layer solenoid, #22 d.c.c. adjacent to secondary. Special.	Couple loop to r-f tube.	T	314-A-706
#1	87		Transformer, band 7 antenna. Secondary: spacewound solenoid, #22 d.c.c. on 5/8" o.d. form. Pri.: double layer solenoid, #22 d.c.c. adjacent to secondary. Special.	Couple loop to r-f tube.	T	314-A-707
#1	88		Transformer, band 8 antenna. Secondary: fractional turn, #16 tinned, on 5/8" o.d. form. Pri.: double layer solenoid adjacent to secondary. Special.	Couple loop to Mod. tube.	T	314-A-708

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35. TABLE OF REPLACEABLE PARTS FOR RADIO SET SCR-504-A (Continued)

a. Radio Receiver BC-792-A (Continued)

Total Quantity in Equip.	Ref. No.	Signal Corps Stock No.	Name of Part and Description	Function	M'f'r Code **	Part/Dwg. No.
#1	89		Transformer, band 1 r-f. Pri.: Universal, #38 s.s.e. Sec.: Two-pie universal, #38 s.s.e. Form: 7/16" o.d. Special.	Couple r-f tube to Mod. tube.	T	314-A-709
#1	90		Transformer, band 2 r-f. Pri.: Universal, #38 s.s.e. Sec.: Two-pie Universal, #38 s.s.e. Form: 7/16" o.d. Special.	Couple r-f tube to Mod. tube.	T	314-A-710
#1	91		Transformer, band 3 r-f. Pri.: Universal, #38 s.s.e. Sec.: Two-pie Universal, #3-41 s.s.e. Form: 7/16" o.d. Special.	Couple r-f tube to Mod. tube.	T	314-A-711
#1	92		Transformer, band 4 r-f. Pri.: Universal, #38 s.s.e. Sec.: Two-pie Universal, #3-41 s.s.e. Form: 7/16" o.d. Special.	Couple r-f tube to Mod. tube.	T	314-A-712
#1	93		Transformer, band 5 r-f. Pri.: Universal, #38 s.s.e. Sec.: Spacewound solenoid, #32 s.s.e. Form: 5/8" o.d. Special.	Couple r-f tube to Mod. tube.	T	314-A-713
#1	94		Transformer, band 6 r-f. Pri.: Universal, #38 s.s.e. Sec.: Closewound, solenoid, #24 d.s.c. Form: 5/8" o.d. Special.	Couple r-f tube to Mod. tube.	T	314-A-714
#1	95		Transformer, band 7 r-f. Pri.: Universal, #38 s.s.e. Sec.: Closewound solenoid, #20 d.c.c. Form: 5/8" o.d. Special.	Couple r-f tube to Mod. tube.	T	314-A-715
#1	96a		Inductor, band 1, osc. coil. Two-pie Universal, #34 s.s.e.	Generate a voltage having a frequency 455 kc greater than the signal frequency.	T	314-A-716

—	96b		Inductor, band 2, osc. coil. Two-pie Universal #34 s.s.e. Form: 7/16" o.d. Special.	Generate a voltage having a frequency 910 kc greater than the signal frequency.	—	—
#1	97a		Inductor, band 3, osc. coil. Two-pie Universal, #34 s.s.e.	Generate a voltage having a frequency 455 kc greater than the signal frequency.	T	314-A-717
—	97b		Transformer, band 4, oscillator. Sec.: Two-pie Universal, #34 s.s.e. Pri.: Universal wound over one of sec. pies, #34 s.s.e. Form: 7/16" o.d. Special.	Generate a voltage having a frequency 455 kc greater than the signal frequency.	—	—
#1	98a		Transformer, band 5, oscillator. Sec.: Spacewound solenoid, #34 e. Pri.: Interwound solenoid, #38 s.s.e.	Generate a voltage having a frequency 455 kc greater than the signal frequency.	T	314-A-718
—	98b		Transformer, band 6 oscillator. Sec.: Spacewound solenoid, #28 s.s.e. Pri.: Interwound solenoid, #38 s.s.e. Form: 5/8" o.d. Special.	Generate a voltage having a frequency 910 kc greater than the signal frequency.	—	—
#1	99		Transformer, bands 7 and 8 oscillator. Sec.: Spacewound solenoid, #18 d.c.c. Pri.: Interwound solenoid, #36 s.s.e. Form: 5/8" o.d. Special.	Generate a voltage 910 kc greater than signals in band 7. Generate a voltage 910 kc less than signals in band 8.	T	314-A-719

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35. TABLE OF REPLACEABLE PARTS FOR RADIO SET SCR-504-A (Continued)

a. Radio Receiver BC-792-A (Continued)

Total Quantity in Equip.	Ref. No.	Signal Corps Stock No.	Name of Part and Description	Function	M'f'r Code **	Part/Dwg. No.
#1	100		Inductor, Osc. choke coil. Universal,#38 s.s.e., 7/16" o.d. form. Special.	Provide an impedance in osc. grid circuit.	T	314-A-721
#1	101		Transformer, 455-kc modulator. Pri.: Universal, 7-41 s.s.e. Sec.: Universal, 7-41 s.s.e. Form: 7/16" o.d. Shield: 1 3/8" square by 2 1/2" long. Special.	Couple mod. tube to first i. f. tube at 455 kc.	T	314-A-722
#1	102		Transformer, 910-kc. modulator. Pri.: Universal, 3-41 s.s.e. Sec.: Universal, 3-41 s.s.e. Form: 7/16" o.d. Shield: 1 3/8" square by 2 1/2" long. Special.	Couple mod. tube to first i. f. tube at 910 kc.	T	314-A-723
#1	103		Transformer, 455-kc diode. Pri.: Universal, 7-41 s.s.e. Sec.: Universal, 7-41 s.s.e. Form: 7/16" o.d. Shield: 1 3/8" square by 2 1/2" long. Special.	Couple second i.f. tube to diode, at 455 kc.	T	314-A-725
#1	104		Transformer, 910-kc diode. Pri.: Universal, 3-41 s.s.e. Sec.: Universal, 3-41 s.s.e. Form: 7/16" o.d. Shield: 1 3/8" square by 2 1/2" long. Special.	Couple second i.f. tube to diode, at 910 kc.	T	314-A-726
#1	105		Transformer, interstage. Pri.: Universal, #38 s.s.e. Sec.: Universal, #38 s.s.e. Form: 7/16" o.d. Shield: 1 3/8" square by 2 1/2" long. Special.	Couple first i.f. tube to second i-f tube at 455 kc and 910 kc.	T	314-A-724

#1	106		Transformer, beat-frequency osc. Pri.: Universal, #38 s.s.e. Sec.: Universal, #38 s.s.e. Form: 7/16" o.d. Special.	Generate a voltage of frequency nearly equal to the i-f e.g.: 454 kc which beats with 455 kc to produce a 1-kc tone.	T	314-A-720
#1	107		Transformer, audio output. Pri.: 3200 T. ±5%, #39E. Sec.: 385 T. ±5%, #31E. Can: 1 3/8" square by 1 15/16" long. Special.	Couple the output tube to the headset.	G	314-M-312
*1	115		Tube 1LC6/VT-178. R.M.A. type 1LC6.	Modulator.	SY	—
*1	116		Tube 1LB4. R.M.A. type 1LB4.	Oscillator.	SY	—
*1	117		Tube 1LH4/VT-177. R.M.A. type 1LH4.	Diode detector and first a-f amplifier.	SY	—
*5	118-1		Tube 1LN5/VT-179. R.M.A. type 1LN5.	R-F amplifier.	SY	—
—	118-2		Same as 118-1.	First i-f amplifier.	—	—
—	118-3		Same as 118-1.	Second i-f amplifier.	—	—
—	118-4		Same as 118-1.	Output a-f amplifier.	—	—
—	118-5		Same as 118-1.	Beat-freq. oscillator.	—	—
#1	120		Antenna, collapsible "fishpole." Six sections, 31 1/2" overall length when extended. Special.	Provide non-directional pick-up for "sensing."	SL	314-M-305
#1	121		Antenna, single-turn loop. 3/8" o.d. Copper tubing, silver-plated. Special.	Provide directional pick-up.	SL	314-M-308

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35. TABLE OF REPLACEABLE PARTS FOR RADIO SET SCR-504-A (Continued)

a. Radio Receiver BC-792-A (Continued)

Total Quantity in Equip.	Ref. No.	Signal Corps Stock No.	Name of Part and Description	Function	M'f'r Code **	Part/Dwg. No.
#1	122		Plug, miniature 4-prong.	Make connections to control plate.	A	314-M-329
#1	123		Connector, miniature 4-contact shielded.	Connect wires from chassis to 4-prong plug attached to control plate.	A	314-M-331
#1	124		Plug, miniature 5-prong.	Make connections to control plate.	A	314-M-330
#1	125		Connector, miniature 5-contact shielded.	Connect wires from chassis to 5-prong plug attached to control plate.	A	314-M-332
#2	126-1		Plug, single prong.	Connect sensing ant. to switch.	A	314-M-344
—	126-2		Same as 126-1.	Connect switch to socket on chassis.	—	—
#2	127-1		Socket, single contact, polystyrene.	Connect to sensing ant. and to 126-1.	A	314-M-343
—	127-2		Same as 127-1.	Connect to 56-1 and to 126-2.	—	—
#1	128		Jack JK-34-A.	Provide outlet on receiver panel for connecting headset.	C	@314-M-334

#1	129		Jack plate assembly. Special.	Connection to receiver output for Cord CD-655-A.	MY	314-M-322
#2	130-1		Switch, push.	Connect sensing antenna.	O	314-M-326
—	130-2		Same as 130-1.	Transfer circuit from panel volume control to control plate volume control.	—	—
#2	131-1		Switch, slide. SPST.	ON-OFF for filaments.	ST	314-M-323
—	131-2		Same as 131-1.	ON-OFF for B. F. O.	—	—
#1	132		SWITCH, BAND. 12 section. 8-position, rotary switch. Ceramic wafers, silver-plated rotors and clips. Wafers stamped with identifying letters A, B, etc. to L. Fifth clip on each section identified by number 5 stamped on wafer. Special.	Switch operation to any one of 8 bands.	O	314-M-307
#2	150-1		Insulator, isolantite stand-off. Female section.	Support and insulate loop.	I	314-M-313
—	150-2		Same as 150-1.	Support and insulate loop.	—	—
#2	151-1		Insulator, isolantite stand-off. Male section.	Support and insulate loop.	I	314-M-314

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35. TABLE OF REPLACEABLE PARTS FOR RADIO SET SCR-504-A (Continued)

a. Radio Receiver BC-792-A (Continued)

Total Quantity in Equip.	Ref. No.	Signal Corps Stock No.	Name of Part and Description	Function	M'f'r Code **	Part/Dwg. No.
—	151-2		Same as 151-1.	Support and insulate loop.	—	—
#1	152		Insulator, isolantite stand-off. Threaded end.	Support and insulate loop.	I	314-M-315
#1	153		Socket, polystyrene.	Support and insulate rod ant.	A	314-M-304
#8	154		Socket, loctal tube. Mica-filled bakelite, 8 prong, beryllium copper, silver-plated springs.	For 8 loctal tubes.	CI	314-M-303
#1	155		Terminal plate, battery. Assembly "A." Special.	Connect to BB-51 in battery box.	UC	314-M-309A
#2	156-1		Terminal plate, battery. Assembly "B." Special.	Connect to BB-52 in battery box.	UC	314-M-309B
—	156-2		Terminal plate, battery. Assembly "B." Special.	Connect to BB-52 in battery box.	—	—
#11	157		Terminal, soldering. #6 hole, Zierick #88.	Connections to chassis.	Z	314-P-238
#2	158		Terminal, soldering. #10. Hot tinned, Shakeproof #2103-10, or Zierick #115.	Connect to loop.	SH or Z	314-P-225
#1	159		Terminal, soldering. Shakeproof #8. Hot tinned #2103-8.	Connect to rod ant.	Z	314-P-226

#1	160		Terminal strip. 4 insulated and 2 ground terminals.	Support resistors and condensers.	F	314-M-336
#2	161		Terminal strip. 3 insulated terminals.	Support resistors and condensers.	F	314-M-337
#2	162		Terminal strip. 2 insulated terminals.	Connect leads from i.f. transf'rs.	F	314-M-338
#1	163		Terminal strip. 1 insulated terminal.	Connect resistor 56-1.	F	314-M-341
*1	164		Headset HS-34-A	To reproduce sound.	MY	314-M-401
*#1	165		Insert, for right ear.	Adapt receiver to ear.	MY	314-M-402
*#1	166		Insert, for left ear.	Adapt receiver to ear.	MY	314-M-403
#1	167		Handle, for suitcase.	For carrying.	UN	—
#1	168		Lock, for right side of suitcase.	For locking.	UN	—
#1	169		Lock, for left side of suitcase.	For locking.	UN	—
#4	170		Spring, junction box. United Carr #99808. Spring steel, cadmium-plated.	To hold leather curtain and bat. comp. lid.	UNC	314-P-242
#4	171		Pin, cross. C.R.S. cadmium-plated. United Carr #99785-2.	To hold leather curtain and bat. comp. lid.	UNC	314-P-243

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35. TABLE OF REPLACEABLE PARTS FOR RADIO SET SCR-504-A (Continued)

a. Radio Receiver BC-792-A (Continued)

Total Quantity in Equip.	Ref. No.	Signal Corps Stock No.	Name of Part and Description	Function	M'f'r Code **	Part/Dwg. No.
#1	172		Stud, wing type. C.R.S. cadmium-plated. United Carr #99899-1 — .070".	To hold bat. comp. lid.	UNC	314-P-244
#3	173		Stud, wing type. C.R.S. cadmium-plated. United Carr #99899-2 — .190".	To hold leather curtain.	UNC	314-P-245
6	300		Tubular Rivet, .120" x 1/8" long—Brass, Nic. or cad. plated deep drilled.	Fasten chassis cover springs.	TH	314-E-61
2	300		—	Fasten battery cover spring junction box.	—	—
6	301		Tubular Rivet, .120" x 5/32" long—Brass, Nic. or cad. deep drilled.	Fasten 3 angles to top of chassis.	TH	314-E-62
4	302		Tubular Rivet, .093" x 5/32" long—Brass, Nic. or cad. deep drilled—#H-149.	Fasten springs to battery shelves.	STI	314-E-63
9	303		Tubular Rivet, .087" x .089" x 3/16" long 9/64" head dia.—Brass, Nic. or Cad. deep drilled #2281.	Fasten battery term. strips to box.	.TU	314-E-64
1	304		3/8" Rubber Grommet—black rubber—#22A.	I-F leads through shield.	PI	314-E-65
1	305		1/2" Rubber Grommet—black rubber—#155.	4-wire and 5-wire cables through chassis.	PI	314-E-66
3	306		Eyelet, head 7/16" dia., 9/32" largest barrel dia., 3/16" length under head—Brass, N.P. (bird cage style)—#31201.	To be installed by suitcase mfr. in leather curtain.	UNC	314-E-67

3	307		Washer, 7/16" O.D. x 9/32" I.D. x .016" thick—Brass, N.P.—#31501.	To be installed by suitcase mfr. in leather curtain.	UNC	314-E-68
3	308		Eyelet, .401"-.408" barrel dia., 5/8" head dia., 7/16" under head—Brass, lacquered—#A-71.	Bearing for sensing ant. through suitcase. To be installed by suitcase mfr.	STI	314-E-69
1	309		Washer 13/16" O.D. x 13/32" I.D. x 1/32" thick—Brass, lacquered—#8475.	Retainer for eyelet 308.	ME	314-E-70
1	310		Push rod—1/4" dia. nat. linen bakelite. Special.	Top control plate.	MA	314-SM-101
3	311		Bearing bushing—Brass, N.P. Special.	Band switch assembly.	AN	314-SM-102
1	312		Thrust collar—C.R.S. nickel plated. Special.	Band switch assembly.	AN	314-SM-103
1	313		Shaft-Jeweler's Rod, N.P. Special.	Band switch drive shaft.	AN	314-SM-104
2	314		Bushing, 5/16" high—C.R.S. Copper Plated. Special.	Spacer under gear—drive unit.	AN	314-SM-105
2	315		Bushing, 5/8" high—Bakelite. Special.	Spacer on sensing ant. socket.	MA	314-SM-106
1	316		Bushing, 1/4" high—Brass, N.P. Special.	Spacer on sensing ant. terminal.	AN	314-SM-107
2	317		Bushing, 7/32" high—C.R.S. Cadmium. Special.	Spacer for vol. cont. transfer switch.	AN	314-SM-108

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35. TABLE OF REPLACEABLE PARTS FOR RADIO SET SCR-504-A (Continued)

a. Radio Receiver BC-792-A (Continued)

Total Quantity in Equip.	Ref. No.	Signal Corps Stock No.	Name of Part and Description	Function	M'f'r Code **	Part/Dwg. No.
4	318		Spacing ring—C.R.S. copper plated. Special.	Clinch nuts for chassis mounting.	AN	314-SM-109
1	319		Bushing, 19/32" high—C.R.S. copper plated. Special.	Spacer for top support of gear drive.	AN	314-SM-110
1	320		Wheel hub—C.R.S. nic. or cad. Special.	Top control plate vol. control.	AN	314-SM-111
1	321		Bushing—Brass, dull nic. plated. Special.	Vol. control transfer switch bearing.	AN	314-SM-112
1	322		Push button, brass, dull nic. plated. Special.	Vol. control transfer switch.	AN	314-SM-113
1	323		Plunger—Jeweler's rod, N.P. Special.	Vol. control transfer switch.	AN	314-SM-114
1	324		Chassis—.031" C.R.S. copper-plated, black wrinkle. Front markings to be screened with white enamel. Special.	—	BR	314-P-201
1	325		Chassis cover—.025" C.R.S. copper-plated, black wrinkle. Trimmer numbers to be screened with white enamel. Special.	—	BR	314-P-202
1	326		I.F. transformer mtg. channel—.031" C.R.S. copper plated. Special.	—	BR	314-P-203
1	327		I.F. channel mtg. bracket—.031" C.R.S. copper plated. Special.	—	BR	314-P-204

1	328		Band switch shield,—.031″ C.R.S. copper plated. Special.		BR	314-P-205
1	329		Band switch shield, —.031″ C.R.S. copper plated. Special.	—	BR	314-P-206
1	330		Band switch shield, —.031″ C.R.S. copper plated. Special.	—	BR	314-P-207
1	331		Band switch shield, —.031″ C.R.S. copper plated. Special.	—	BR	314-P-208
1	332		Gear shaft support bracket— .062″ C.R.S. copper plated. Special.	—	BR	314-P-209
2	333		Gang cond. mtg. bracket— .062″ C.R.S. cad. or silver plated. Special.	Gang. cond. mtg. bracket. To be supplied with 3-section gang condenser ref. No. 5.	O	314-P-210
1	334		Battery box— .025″ C.R.S. parkerized and acid proof varnish. Special.	—	BR	314-P-211
3	335		Battery support spring — .012″ Phosphor bronze, spring temper, blank appr. 2¼″ x 5/16″ acid proof varnish. Special.	—	AND	314-P-212
1	336		Battery box cover — 025″ C R.S. parkerized black wrinkle inside, acid-proof varnish. Special.	—	BR	314-P-213
1	337		Spring insulating strip — 1/32″ linen bakelite, black. Special.	—	MA	314-P-214

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35. TABLE OF REPLACEABLE PARTS FOR RADIO SET SCR-504-A (Continued)

a. Radio Receiver BC-792-A (Continued)

Total Quantity in Equip.	Ref. No.	Signal Corps Stock No.	Name of Part and Description	Function	M'f'r Code **	Part/Dwg. No.
2	338		Battery shelf — 5/16" linen bakelite, black. Special.	—	MA	314-P-215
1	339		Trimmer mtg. board — 1/16" linen bakelite, nat. Special.	Support trimmers for osc. bands 5 to 8.	MA	314-P-216
1	340		Trimmer mtg. board (8 tr.)—1/16" linen bakelite, nat. Special.	Support trimmers for osc. bands 1 to 4.	MA	314-P-217
2	341		Trimmer board support angle — .062 C.R.S. copper plated. Special.	—	BR	314-P-218
56	342		#3 Fibre washer — 1/64" gray fibre, .101" hole x .196" o.d. Special.	Under screw heads of ant. and r.f. transformers.	AND	314-P-219
14	343		Ant. and r-f transformer mtg. bracket — .031" C.R.S. copper plated, blank appr., 1 1/8" x 3/4". Special.	Transformer and trimmer mtg. bracket.	AND	314-P-220
2	344		Lead washer 7/8" O.D. x 1/2" hole x 1/16" thick —lead.	Loop Ant. Mtg.	ME	314-P-221
3	345		Lead washer 3/4" O.D. x 15/32" hole x 1/16" thick —lead.	Loop Ant. Mtg.	ME	314-P-222
6	346		Brass washer #10, N.P. 1/2" O.D. x hole .195" x .040" thick—nickel plated.	Loop Ant. Mtg.	ME	314-P-223
3	347		Brass washer #8, N.P. 7/16" O.D. x hole. .170" x .036" thick—nickel plated.	Loop Ant. Mtg.	ME	314-P-224

1	348		Angle — .062 C.R.S. Copper plated. Special.	B-F osc. coil (106) mounting.	BR	314-P-227
1	349		Trimmer mtg. strip — 1/16" linen bakelite, nat. Special.	Single trimmer 2-3 on shield.	MA	314-P-228
1	350		Top control plate — 3/32" linen bakelite, nat. Special.	Mounting for top controls.	MA	314-P-229
1	351		Switch mtg. strip — 1/8" linen bakelite, nat. Special.	Support 122, 124 and 130-1.	MA	314-P-230
1	352		V.C. drive wheel — 1/16" linen bakelite, nat. Special.	For rotating vol. cont. 70.	MA	314-P-231
1	353		Angle — .062" C.R.S. nic. or cad.	Support switch 130-1.	BR	314-P-232
1	354		V.C. mtg. angle — .062" C.R.S. nic. or cad. Special.	For mtg. vol. cont. 70.	BR	314-P-233
1	355		Strap — 1/32" C.R.S. nic. or cad. Blank size = 3/8" x 2". Special.	Strap to guide push rod.	AND	314-P-234
1	356		Clamping disc — 1/32" C.R.S. cad.—Crowe #125.	Support 352.	CR	314-P-235
2	357-1		Cable clamp—Zierick #78 with #6 hole—.031" C.R.S. cad.	Clamp wires going to 130-1.	Z	314-P-236
—	357-2		Same as 357-1.	Clamp wires near 130-2.	—	—

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35. TABLE OF REPLACEABLE PARTS FOR RADIO SET SCR-504-A (Continued)

a. Radio Receiver BC-792-A (Continued)

Total Quantity in Equip.	Ref. No.	Signal Corps Stock No.	Name of Part and Description	Function	M'f'r Code **	Part/Dwg. No.
3	358		Cable clamp with #6 hole, Zierick #79, — .031 C.R.S. Cad.	Clamp cables inside chassis.	BR	314-P-237
1	359		Transfer switch mtg. Special.	Support 130-2.	BR	314-P-240
6	360		Cover spring — .027″ spring steel cad. United Carr #52156.	On chassis cover for contact.	UNC	314-P-241
3	361		Angle — .050″ C.R.S. cad. plated. Special.	Leather curtain support.	BR	314-P-246
4	362		#4 C's'k. washer — .025″ brass polished and lacquered. Special.	Top control plate screws into suitcase.	AND	314-P-247
4	363		#8 C's'k. washer — .025″ brass polished and lacquered. Special.	Screws holding receiver in suitcase.	AND	314-P-248
2	364		Fibre shoulder washer — red fibre ¼″ O.D. x 5/16″ x 1/32″ shoulder x .110″ hole—American Radio Hardware #1201.	Battery box spring.	AR	314-P-249
1	365		Sponge Rubber pad — ¼″ thick sponge rubber 2¼″ x 3 11/16″. Special.	Battery box cover.	EL	314-P-250
1	366		Vellumoid washer (⅞″ O.D. x 15/32″ I.D.)— 1/64″ thick vellumoid. Special.	Under nut of loop insulator, 152.	AND	314-P-251
1	367		Dial escutcheon. Special.	Window and hair-line for tuning drum.	CR	314-M-301
1	368		Scale drum assembly. Special.	Tuning drum.	CR	314-M-302

1	369		Miter gear set (1 pair)	Special.	Drive drum assembly and 3-section gang cond. 5.	GR	314-M-310
1	370		Worm drive unit.	Special.	Drive miter gear set.	MI	314-M-311
2	371-1		Tuning knob 1⅜" dia.-blk. bakelite.		Tuning control.	K	314-M-316
—	371-2		Same as 371-1.		Volume control.	K	314-M-316
1	372		Band switch knob — 1⅝" dia., with pointer-black bakelite.		—	K	314-M-317
1	373		Suitcase—Tan leather.	Special.	Housing of receiver.	UN	314-M-333
1	374		Plunger spring.	Special.	Part of vol. cont. transfer switch 130-2.	H	314-M-335
1	375		Nameplate — .025" zinc.	Special.	For receiver.	EP	314-M-342
1	376		Carton—cardboard.	Special.	For receiver.	AG	314-M-345
1	377		Circuit diagram label—80 lb. paper, size 7½" x 20" coated on 2 sides.	Special.	Attached inside suitcase.	SA	314-M-346

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35. TABLE OF REPLACEABLE PARTS FOR RADIO SET SCR-504-A (Continued)

b. Battery Charger PE-128-A

Total Quantity in Equip.	Ref. No.	Signal Corps Stock No.	Name of Part and Description	Function	M'f'r Code **	Part/Dwg. No.
#1	34		Capacitor, .03 μf, ±20%, 1000 V.W., paper tubular, metal tube.	Timing	M	314-C-632
#1	35		Capacitor, .025 μf, ±20%, 400 V.W., paper tubular, metal tube, floating.	Tune choke	M	314-C-633
#1	36a		Capacitor, 0.5 μf, —10%, +30%, 400 V.W., paper, metal can floating.	"B" circuit filter input.	M	314-C-631
—	36b		Same as 36a, and in same can.	"B" circuit filter output.	—	—
#1	37a		Capacitor, 125 μf, —20% +90%, 25 V.W., electrolytic, metal can floating. Special.	"A" circuit filter input.	SO	314-C-630
—	37b		Same as 37a, and in same can.	"A" circuit filter output.	—	—
#2	75-1		Resistor, 20-ohm, ±5%, 2-w. flexible wire wound.	Adjust vib. coil current for 12 V. operation.	CL	314-R-525
—	75-2		Same as 75-1.	"A" circuit filter series element.	—	—
#1	76		Resistor, 5000-ohm dual, wire-wound potentiometer, tapered. Min. resistance not more than 10 ohms. Max. resistance 10,000 ohms ±10%, series-connected. Special.	Adjust "B" charging rate.	C	314-M-461
#1	77		Resistor, 450-ohm. Wire-wound potentiometer, tapered, 75 ohms in 75% of rotation. 375 ohms in 25% of rotation. Special.	Adjust "A" charging rate.	OH	314-M-450

#1	78		Resistor, 56-ohm, ±10%, ½ w. insulated carbon.	"A" load for test.	ST	314-R-526
#1	79		Resistor, 4700-ohm, ±10%, 1 w. insulated carbon.	"B" load for test.	ST	314-R-527
#1	111		Transformer, 6-12 v. vibrator, 3 primaries, 2 secondaries. Special.	Step-up voltage.	G	314-M-462
#1	112		Inductor, 25 h. choke. Special.	"B" circuit filter.	G	314-M-463
#1	119		Vibrator, 6-volt, 100-cycle, synchronous, 6-prong base.	Convert d.c. to a.c.	O	314-M-457
#1	133		Switch, lever type, electrically equivalent to 4-p.d.t. plus 3-p.s.t. position—locking attachment. Special.	Select 6V. or 12V. operation.	AU	314-M-455
#1	134		Switch, pressure. Make-break.	Stop charger and connect load to batteries.	AH	314-M-473
#1	135		Switch, rotary. 3-position type H. Special.	Switch meters.	O	314-M-460
#1	136		Cord CD-658-A, 3-conductor rubber-covered cable. Special.	Connect charger to to supply battery.	R	314-M-459
#1	137		Fuse, 4A, 250V. Type 3AG. Littelfuse #1357.	Protect pri. circuit.	L	314-M-465
#1	138		Fuse, ½ A., 250V. Type 8AG. Littelfuse #1007.	Protect "A" circuit.	L	314-M-466

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35. TABLE OF REPLACEABLE PARTS FOR RADIO SET SCR-504-A (Continued)

b. Battery Charger PE-128-A (Continued)

Total Quantity in Equip.	Ref. No.	Signal Corps Stock No.	Name of Part and Description	Function	M'f'r Code **	Part/Dwg. No.
#1	139		Fuse, 1/16 A., 250V. Type 8AG. Littelfuse #1003.	Protect "B" circuit.	L	314-M-467
#1	140		Rectifier, Selenium. Benwood Linze #1DOBIFIC.	Change a.c. to d.c. in "A" circuit.	B	314-M-464
#1	141		Terminal plate, 3-battery. Special.	Connect 1, BB-51 and 2, BB-52's to output.	UC	314-M-456
1	142		Meter, dual range milliammeter. .03 A. and .3A full scale ranges. Westinghouse type RX-35. Special dial.	Indicate "A" and "B" charging rate.	W	314-M-452
1	143		Meter, dual range voltmeter. 20V. and 100V. full scale ranges. Westinghouse type RX-35, 1000 ohm/V. Special dial.	Indicate "A" and "B" voltages.	W	314-M-451
#6	180		Terminal, soldering. 9/32" hole. Zierick #93.	Connections to meters.	Z	314-P-281
#1	181		Socket, 6-contact. Amphenol #MIP6M.	Vibrator.	A	314-M-453
#1	182		Clamp, vibrator-socket ground.	Hold vibrator in place.	UNC	314-M-454
#2	183-1		Socket, fuse mounting. For 1 active and 1 spare fuse. Special.	Hold 1/16 A. fuses.	L	314-M-468
—	183-2		Same as 183-1.	Hold 1/2 A. fuses.	—	—

#1	184		Socket, fuse mounting. For 1 active and 1 spare fuse. Special.	Hold 4A fuse.	L	314-M-469
#4	185		Handle. Black baked enameled steel over Parkerizing.	For carrying and protecting meters.	AM	314-M-470
#1	186		Catch, trunk. Brass, black nickel-plated and dull black enamel.	Hold battery compartment lid closed.	P	314 M-474
#1	187		Catch, ring. Bronze, bonderized and dull black enamel.	Hold rear door closed.	CO	314-M-475
8	390		Tubular rivet, .093″ x 7/32″ long—brass, nickel, or cad. plated, deep drilled—Stimpson #H-149	Battery term. plate.	STI	314-E-75
6	390		—	Battery tray bottom plate.	—	—
3	391		Tubular rivet, .087″ x .089″ dia. x 3/16″ long x 9/64″ head dia., brass, black nickel and black lacquer—Tubular Rivet and Stud Co. #2281 x 3/16″.	Front catch.	TU	314-E-76
3	392		3/8″ Rubber grommet—Black rubber, Pierce Roberts #22-A.	Protect fuse leads.	PI	314-E-65
1	392		—	Protect meter leads.	—	—
1	393		5/8″ Rubber grommet—Black rubber, Pierce Roberts #51-A.	Protect cord CD-658-A.	PI	314-E-77

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35. TABLE OF REPLACEABLE PARTS FOR RADIO SET SCR-504-A (Continued)

b. Battery Charger PE-128-A (Continued)

Total Quantity in Equip.	Ref. No.	Signal Corps Stock No.	Name of Part and Description	Function	M'f'r Code **	Part/Dwg. No.
1	394		Cabinet assembly — .050″ (#18 gauge) C.R.S. parkerized, black wrinkle outside, drill black inside battery compartment lid, acidproof enamel on underside. Special.	—	BR	314-P-271
1	394-a		Cabinet—refer to 394. Special.	—	BR	314-P-271A
1	394-b		Battery compartment, lid and hinge assy. (refer to 394). Special.	—	BR	314-P-271B
1	394-c		Rear door and hinge assy. (refer to 394). Special.	—	BR	314-P-271C
1	395		Cabinet bottom plate — .050″ (#18 gauge) C.R.S. parkerized and dull black enamel. Special.	Enclose bottom of cabinet.	BR	314-P-272
1	396		Battery tray housing — .050″ (#18 gauge) C.R.S. parkerized and acid-proof enamel. Special.	—	BR	314-P-273
1	397		Tray bottom plate — 3/16″ black linen bakelite. Special.	—	MA	314-P-274
13	398		Chassis — .050″ (#18 gauge) C.R.S. parkerized dull black enamel.	—	BR	314-P-275
1	399		Bottom shield — .050″ (#18 gauge) C.R.S. parkerized and dull black enamel.	Enclose cord compartment.	BR	314-P-276
1	400		3/16″ black linen bakelite strip. Special.	Cord support.	MA	314-P-277

1	401		3/16" black linen bakelite strip. Special.	Insulating strip.	MA	314-P-278
1	402		Mtg. clamps — .042" C.R.S. cad. plated.	Hold capacitor, 34.	Z	314-P-279
1	403		Cable clamps — .032" C.R.S. cad. plated. Cinch #1126.	Cord anchoring.	CI	314-P-280
4	404		Rubber feet—black rubber. Elastic Tip Co. #1½.	—	ELA	314-M-458
1	405		Terminal strip, 1 insulated terminal.	Support resistors 78, 79.	FR	314-M-339
1	406		Terminal strip, 1 insulated terminal, 1 ground terminal.	Support capacitor 35.	FR	314-M-340
1	407		Nameplate — .025" zinc.	For charger.	EP	314-M-471

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35. TABLE OF REPLACEABLE PARTS FOR RADIO SET SCR-504-A (Continued)

c. Case CS-96-A

Total Quantity in Equip.	Ref. No.	Signal Corps Stock No.	Name of Part and Description	Function	M'f'r Code **	Part/Dwg. No.
#1	188		Bottle, acid. 16 oz. glass.	Store supply of sulfuric acid for batteries.	WH	314-M-408
#*1	189		Stopper, rubber. Skirt type.	Close bottle 188.	WH	314-M-409
1	499		Case CS-96-A	For equipment	CA	
1	500		Label CS-96-A—60 lb. paper, size—8½" x 5¼".	Contents for CS-96-A case.	SA	314-M-412
1	501		Nameplate — .025" Zinc.	For case CS-96-A	EP	314-M-410
2	502		Yoke—Bond. steel—Hart & McKay #2011.	Lift batt. tray.	HA	
#2	503		"D" rings—Bond. steel—Hart & McKay #2008.	Lift batt. tray	HA	
#1	504		Hasp—Bond. steel—Stanley #925K-3.	Lock	STA	
#2	505		Handles—Bond. steel—Stanley #1207.	To carry case.	STA	
#2	506		Hinges—Bond. steel—Stanley #902.	Hinge lid to case.	STA	
#2	507		Snap Lock Drawbolts—Bond. steel—Corbin #15795F.	Fasten lid to case.	CO	
#4	508		Corners—Bond. steel—Corbin #3727.	Corner reinforcement, bottom of case.	CO	
#4	509		Corners—Bond. steel—Corbin #3726.	Lid corners reinforcement.	CO	

#4	510		Brackets—Bond steel—Corbin #3630S.	Corner reinforcement top of case.	CO
2	511		Felt Strips—1⅜″ x ⅛″ x 9″—Aetna #2300.	Front corner bumpers—Charger compartment	CON
2	512		Felt strips—2¼″ x ⅛″ x 9″—Aetna #2300.	Side front corner bumpers, battery charger compartment.	CON
2	513		Felt strips—1¼″ x ⅛″ x 9″—Aetna #2300.	Rear corner bumper, battery charger compartment.	CON
2	514		Felt strips—1⅛″ x ⅛″ x 9″—Aetna #2300.	Rear side corner bumper-battery charger compartment.	CON
2	515		Felt strips—1½″ x ¼″ x 6″—Aetna #2300.	Cover bumper, battery charger compartment.	CON
1	516		Sponge Rubber—⅜″ x 4″ x 4″. Good Year Tire Rubber Co. #SP-T-75989.	Bottom bumper of acid bottle compartment.	GO
4	517		Sponge Rubber—⅜″ x 1¼″ x 6″. Good Year Tire Rubber Co. #SP-T-75989.	Side bumper of acid bottle compartment.	GO
2	518		Sponge Rubber—½″ x 1½″ x 7¼″. Good Year Tire Rubber Co. #SP-T-75989.	Cover bumper of acid bottle compartment.	GO

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35. TABLE OF REPLACEABLE PARTS FOR RADIO SET SCR-504-A (Continued)

d. Index of Manufacturers

Mfr. Code	Name	Street Address	City	State
A	American Phenolic Corp.	1830 South 54th Ave.	Chicago	Illinois
AG	Agar Container Div. of International Paper Co.		Whippany	New Jersey
AH	Arrow, Hart & Hegeman		Hartford	Connecticut
AM	American Cabinet Hardware		Rockford	Illinois
AN	Antler Industries	16 Hudson St.	New York City	New York
AND	Andrea Radio Corp.	43-20 34th St.	Long Island City	New York
AR	American Radio Hardware Co.	476 Broadway	New York City	New York
AU	American Automatic Electric Sales Co.	1033 West Van Buren St.	Chicago	Illinois
B	Benwood Linze Co.	1811 Locust St.	St. Louis	Missouri
BR	Brumberger Co., Inc.	34 - 34th St.	Brooklyn	New York
C	Chicago Telephone Supply Co.		Elkhart	Indiana
CA	Cassard Romano Co., Inc.	305 East 63rd St.	New York City	New York
CI	Cinch Manufacturing Co.	2335 West Van Buren St.	Chicago	Illinois
CL	Clarostat Mfg. Co., Inc.	285 North 6th St.	Brooklyn	New York
CO	P & F Corbin Co.		New Britain	Connecticut
CON	Continental Felt Co.	880 Broadway	New York City	New York
CR	Crowe Nameplate & Mfg. Co.	3701 Ravenswood Ave.	Chicago	Illinois
E	Erie Resistor Co.		Erie	Pennsylvania
EL	Elmhurst Rubber Co., Inc.	79-48 Albion St.	Elmhurst, L. I.	New York
ELA	Elastic Tip Co.	370 Atlantic Ave.	Boston	Massachusetts
EP	Etched Products Corp.	Queens Blvd. and 39th St.	Long Island City	New York
FR	Friedman Co.	220 East 23rd St.	New York City	New York
F	A. W. Franklin Mfg. Co.	175 Varick St.	New York City	New York
G	General Transformer Co.	1250 West Van Buren St.	Chicago	Illinois
GO	Good Year Tire & Rubber Co.	600 West 58th St.	New York City	New York
GR	Grant Gear Works, Inc.	2nd and "B" Sts.	Boston	Massachusetts
H	Han-Dee Spring & Mfg. Co.		Hartford	Connecticut
HA	Hart & McCabe	16 Reade St.	New York City	New York
I	Isolantite, Inc.		Belleville	New Jersey
L	Littelfuse, Inc.	4757 Ravenswood Ave.	Chicago	Illinois
M	Micamold, Inc.	1087 Flushing Ave.	Brooklyn	New York
MA	Manne-Knowlton Insulation Co.	150 West 18th St.	New York City	New York
ME	H. K. Metalcraft Mfg. Co.	444 West 31st St.	New York City	New York

MI	J. Millen Mfg. Co.	150 Exchange St.	Malden	Massachusetts
MY	Myers and Sons, E. A.	306 Beverly Road	Mt. Lebanon	Pennsylvania
O	Oak Manufacturing Co.	1260 Clybourn Ave.	Chicago	Illinois
OH	Ohmite, Inc.	4835 West Flournoy St.	Chicago	Illinois
P	Presto Lock Corp.	100 Outwater Lane	Garfield	New Jersey
PI	Pierce Roberts Rubber Co.		Trenton	New Jersey
R	Raylite Electric Corp.	19-19 24th Ave.	Long Island City	New York
SA	Sackett & Wilhelms	Thomson Ave. & Manly St.	Long Island City	New York
SH	Shakeproof, Inc.	2501 North Keeler Ave.	Chicago	Illinois
SL	Spirling Products Co.	62 Grand St.	New York City	New York
SO	Solar, Inc.		Bayonne	New Jersey
SP	Sprague Specialties Co.		North Adams	Massachusetts
ST	Stackpole Carbon Co.		St. Marys	Pennsylvania
STA	Stanley Works		New Britain	Connecticut
STI	E. B. Stimpson Co.	70 Franklin Ave.	Brooklyn	New York
SY	Sylvania Electric Products Co.		Emporium	Pennsylvania
T	Teleradio Engineering Corp.	Shannon & Barrett Sts.	Wilkes Barre	Pennsylvania
TH	J. L. Thomson Mfg. Co.		Waltham	Massachusetts
TU	Tubular Rivet & Stud Co.		Wollaston	Massachusetts
UC	Ucinite Co.	13 Nevada St.	Newtonville	Massachusetts
UN	United Luggage Co.	28 West 23rd St.	New York City	New York
UNC	United Carr Fastener Corp.	31 Ames St.	Cambridge	Massachusetts
W	Westinghouse Electric Co.		Newark	New Jersey
WH	T. C. Wheaton Co.	165 Broadway	New York City	New York
Z	Zierick Manufacturing Co.	385 Gerard Ave.	Bronx	New York

36. TABLE OF STANDARD NUTS, BOLTS, SCREWS AND WASHERS

a. Radio Receiver BC-792-A

Quantity	Ref. No.	Description	Size	Length	Thread*	Where Used
1	200	Hardened drive screw parker-Kalon, Type "U"—Steel. Cad.	#0	1/4"		Control plate push rod
8	200	—				Battery Box shelves
2	201	Escutcheon pin—Brass, N.P.	#19 (.041" dia.)	3/8"		Single prong plugs
2	202	Rd. hd. mach. screws—Brass, N.P.	#3	1/4"	48	Top spring to battery box
2	240	Hex nut—Brass, N.P.	#3	3/16"	48	Used with above
2	250	Lockwasher, Internal teeth,—steel, cad.	#3			Used with above
4	203	Oval head, mach. screw—Brass, dull nickel finish	#3	1/4"	48	Escutcheon to chassis
4	240	—	—	—	—	Used with above
4	250	—	—	—	—	Used with above
4	204	Rd. hd. mach. screw—Brass, dull nickel	#3	3/16"	48	Nameplate
4	240	—	—	—	—	Used with above
4	250	—	—	—	—	Used with above
28	205	Rd. hd. mach. screw—Brass, N.P.	#3	3/8"	48	Trimmers to bakelite strips
28	240	—	—	—	—	Used with above
28	250	—	—	—	—	Used with above
11	206	Flat hd. mach. screw—Brass, head polished and lacquered	#4	5/16"	40	Top control plate
7	241	Hex. nut—Brass, N.P.	#4	1/4"	40	Used with above
7	251	Lockwasher, Internal Teeth—Steel Cad.	#4	—	—	Used with above
4	207	Flat hd., mach. screw—Brass, head polished and lacquered	#4	7/8"	40	Top control to suitcase

4	245	Clinch, elastic stop nut—Brass nickel plated or zinc plated and lacquered	#4	.105″	40	Used with above
2	208	Rd. hd., mach. screw—Brass N.P.	#4	½″	40	Transfer switch assy.
2	241	—	—	—	—	Used with above
2	251	—	—	—	—	Used with above
3	209	Binding head, mach. screw—Brass, dull nickel finish.	#4	¼″	40	Osc. coils to trimmer plates
3	251	—	—	—	—	Used with above
6	209	—	—	—	—	Battery box to chassis
6	241	—	—	—	—	Used with above
6	251	—	—	—	—	Used with above
2	209	—	—	—	—	Transfer switch to chassis
2	251	—	—	—	—	Used with above
2	209	—	—	—	—	B.F.O. coil to mtg. angle
2	251	—	—	—	—	Used with above
1	209	—	—	—	—	Ant. coil on shield (207)
1	241	—	—	—	—	Used with above
1	251	—	—	—	—	Used with above
5	210	Binding head, mach. screw—Brass, dull nickel finish	#4	5/16″	40	Trimmer plate and coil angles
5	251	—	—	—	—	Used with above
4	211	Binding head, self-tapping—steel cad.	#4	¼″	40	Trimmer plate support angles
4	251	—	—	—	—	Used with above
16	211	—	—	—	—	Shield and switch assy.
16	251	—	—	—	—	Used with above
6	211	—	—	—	—	Coil and trimmers to shields
6	251	—	—	—	—	Used with above

*All screws are U.S.S. (National Coarse Thread).

36. TABLE OF STANDARD NUTS, BOLTS, SCREWS AND WASHERS (Continued)

a. Radio Receiver BC-792-A (Continued)

Quantity	Ref. No.	Description	Size	Length	Thread*	Where Used
1	211	—	—	—	—	Term. strip on switch shield
1	251	—	—	—	—	Used with above
2	211	—	—	—	—	Coils on band switch shield
2	251	—	—	—	—	Used with above
1	211	—	—	—	—	Single trimmer on bakelite strip
1	251	—	—	—	—	Used with above
6	212	Flat head, mach. screw—Brass, head polished and lacquered	#6	5/16"	32	Top control plate
6	242	Hex. nut—Brass, N.P.	#6	1/4"	32	Used with above
6	252	Lockwasher, Internal teeth—steel, cad.	#6	—	—	Used with above
2	213	Rd. Hd. woodscrew—Brass, N.P.	#6	1/2"	—	Top control to suitcase
2	214	Binding Hd., mach. screw—brass, dull nickel plated	#6	3/16"	32	Output transf.
2	252	—	—	—	—	Used with above
2	214	—	—	—	—	B.F.O. coil bracket
2	252	—	—	—	—	Used with above
10	242	—	—	—	—	I.F. transformers
10	252	—	—	—	—	Used with above
4	215	Binding hd., mach. screw—brass	#6	1/4"	32	Gang Cond. to chassis
4	242	—	—	—	—	Used with above
4	252	—	—	—	—	Used with above
4	215	—	—	—	—	Bandswitch supp. bearing bracket
4	242	—	—	—	—	Used with above
4	252	—	—	—	—	Used with above

16	215	—	—	—	—	Tube sockets
16	242	—	—	—	—	Used with above
16	252	—	—	—	—	Used with above
1	215	—	—	—	—	Ground lug on trimmer plate
1	242	—	—	—	—	Used with above
1	252	—	—	—	—	Used with above
3	215	—	—	—	—	Cable clamps
3	242	—	—	—	—	Used with above
3	252	—	—	—	—	Used with above
4	215	—	—	—	—	Term. strips
4	242	—	—	—	—	Used with above
4	252	—	—	—	—	Used with above
2	215	—	—	—	—	Can type cond.
2	242	—	—	—	—	Used with above
2	252	—	—	—	—	Used with above
10	216	Binding hd., mach. screw—Brass dull nickel plated	#6	3/8″	32	Back cover to chassis
10	246	Clinch, elastic stopnut—Brass nickel plated or zinc plated and lacquered	#6	.063″	32	Used with above
2	217	Binding hd. mach. screw—Brass dull nickel plated	#6	5/8″	32	Gear drive unit to chassis
2	252	—	—	—	—	Used with above
1	218	Rd. hd., mach. screw—Brass, dull nickel plated	#6	7/8″	32	Top support of gear drive
1	252	—	—	—	—	Used with above
2	219	Rd. hd., mach. screw—Brass, N.P.	#6	1″	32	Sensing Ant. socket to chassis
2	242	—	—	—	—	Used with above
2	252	—	—	—	—	Used with above

*All screws are U.S.S. (National Coarse Thread).

36. TABLE OF STANDARD NUTS, BOLTS, SCREWS AND WASHERS (Continued)

a. Radio Receiver BC-792-A (Continued)

Quantity	Ref. No.	Description	Size	Length	Thread*	Where Used
4	220	Flat hd., mach. screw—Brass, head polished and lacquered	#8	7/8"	32	Receiver to suitcase
4	247	Clinch, elastic stop nuts—Brass, nickel plated or zinc plated and lacquered.	#8	.195"	32	Used with above
1	221	Rd. hd., mach. screw—Steel, cad.	#8	1/2"	32	Loop ant. to chassis
1	253	Lockwasher, internal teeth—steel, cad.	#8			Used with above
1	222	Rd. hd., mach. screw—Brass, N.P.	#8	5/8"	32	Sensing Ant. to socket
1	253	—	—	—	—	Used with above
4	223	Cup point set screw, headless, slotted—steel, hardened and parkerized.	#10	3/16"	32	Miter gears
2	223	—	—	—	—	Thrust collar
1	223	—	—	—	—	Top control
2	224	Rd. hd., mach. screw—steel, cad.	#10	1 1/2"	32	Loop, ant. mounting
4	243	Hex. nut—steel, cad.	#10	3/8"	32	Used with above
4	254	Lockwasher, internal teeth—steel, cad.	#10	—	—	Used with above
3	244	Hex. nut—Brass, nic. or steel cad.	#3/8	1/2"	32	Switch shaft bearings
3	255	Lockwasher, internal teeth—steel, cad.	#3/8			Used with above

36. TABLE OF STANDARD NUTS, BOLTS, SCREWS AND WASHERS (Continued)

b. Battery Charger PE-128-A

Quantity	Ref. No.	Description	Size	Length	Thread*	Where Used
1	225	Rd. Hd. Mach. Screw—Brass, black nickel and black lacquer	#3	5/16"	48	Front catch
2	240	Hex. nut—Brass, N.P.	#3	3/16"	48	Used with above
2	250	Lockwasher, Internal Teeth—Steel, Cad. or zinc	#3	—	—	Used with above
4	204	Rd. head, mach. screw—Brass, dull nickel	#3	3/16"	48	Nameplate
4	240	—	—	—	—	Used with above
4	250	—	—	—	—	Used with above
4	226	Binding hd., mach. screw—Brass, black nickel and black lacquer	#4	1/4"	40	Battery compartment lid
4	241	Hex Nut—Brass, N.P.	#4	1/4"	40	Used with above
4	251	Lockwasher Int. Teeth—Steel, cad. or zinc	#4	—	—	Used with above
4	226	—	—	—	—	Rear door
4	241	—	—	—	—	Used with above
4	251	—	—	—	—	Used with above
2	227	Flat hd., mach. screw—Brass, black nickel and black lacquer	#4	3/8"	40	Lever switch
2	241	—	—	—	—	Used with above
2	251	—	—	—	—	Used with above
4	228	Binding hd., mach. screw—Brass, black nickel and black lacquer	#6	3/8"	32	Battery cable insulator
4	242	Hex nut—Brass, N.P.	#6	1/4"	32	Used with above
4	252	Lockwasher, internal teeth—steel, cad. or zinc	#6	—	—	Used with above
4	228	—	—	—	—	Rubber feet
4	242	—	—	—	—	Used with above
4	252	—	—	—	—	Used with above

*All screws are U.S.S. (National Coarse Thread).

36. TABLE OF STANDARD NUTS, BOLTS, SCREWS AND WASHERS (Continued)

b. Battery Charger PE-128-A (Continued)

Quantity	Ref. No.	Description	Size	Length	Thread*	Where Used
6	229	Rd. head, mach. screws—Brass or steel-cad., nickel or zinc plated	#6	3/8"	32	Fuse holders
6	242	—	—	—	—	Used with above
6	252	—	—	—	—	Used with above
2	215	Binding hd., mach. screw—Brass or steel—cad., nickel or zinc plated	#6	1/4"	32	Clamps
2	242	—	—	—	—	Used with above
2	252	—	—	—	—	Used with above
2	215	—	—	—	—	Can type cond.
2	242	—	—	—	—	Used with above
2	252	—	—	—	—	Used with above
2	215	—	—	—	—	Electrolytic cond.
2	242	—	—	—	—	Used with above
2	252	—	—	—	—	Used with above
2	215	—	—	—	—	Vibrator socket
2	242	—	—	—	—	Used with above
2	252	—	—	—	—	Used with above
10	230	Binding hd., mach. screw—brass, black nickel and black lacquer	#6	1/4"	32	Chassis to cabinet
10	242	—	—	—	—	Used with above
10	252	—	—	—	—	Used with above
4	230	—	—	—	—	Ring catch
4	242	—	—	—	—	Used with above
4	252	—	—	—	—	Used with above

6	230	—	—	—	—	Chassis shield
6	242	—	—	—	—	Used with above
6	252	—	—	—	—	Used with above
10	231	Binding hd. screws—Sems units (with internal lock washer) Steel black nickel and black lacquer	#6	¼"	32	Bottom plate to cabinet
13	231	—	—	—	—	Battery tray to cabinet
1	232	Rd. hd., mach. screw—steel-cad. or zinc plated	#8	⅜"	32	Selenium rectifier
1	248	Hex. nut—Brass, N.P.—or steel, zinc plated	#8	5/16"	32	Used with above
1	253	Lockwasher, internal teeth—steel, cad. or zinc	#8	—	—	Used with above
2	232	—	—	—	—	Choke
2	248	—	—	—	—	Used with above
2	253	—	—	—	—	Used with above
2	232	—	—	—	—	Vibrator transformer
2	248	—	—	—	—	Used with above
2	253	—	—	—	—	Used with above
8	233	Oval head mach. screw—steel, black nickel and black lacquer	#8	⅜"	32	Handles
8	248	—	—	—	—	Used with above
8	253	—	—	—	—	Used with above
1	256	Lockwasher, internal teeth—steel—cad. or zinc	½"	—	—	Pressure switch

*All screws are U.S.S. (National Coarse Thread).

36. TABLE OF STANDARD NUTS, BOLTS, SCREWS AND WASHERS (Continued)

c. Case CS-96-A

Quantity	Ref. No.	Description	Size	Length	Thread*	Where Used
4	520	Rd. hd. wood screws—Brass, dull nickel	#4	½"		Nameplate
4	521	Rd. hd. wood screws—Bonderized steel	#4	½"		Yoke
7	523	Flat hd. wood screws—Bonderized steel	#8	½"		Hasp lock
6	524	Flat hd. mach. screws—Bonderized steel	#10	⅝"	24	Case carrying handles
6	540	Tee nuts—Bonderized steel—United Carr Fastener #48442	#10		24	Used with above
4	522	Flat hd. wood screws—Bonderized steel	#7	½"		Used with above
10	524	—	—	—	—	Lid Hinges
10	540	—	—	—	—	Used with above
8	524	—	—	—	—	Snap lock draw-bolts
8	540	—	—	—	—	Used with above
12	525	Flat hd. wood screws—Bonderized steel	#10	⅝"	—	Bottom case corners
12	525	—	—	—	—	Lid corners
8	525	—	—	—	—	Top case corner brackets

*All screws are U.S.S. (National Coarse Thread).

List of Signal Corps Stock Numbers

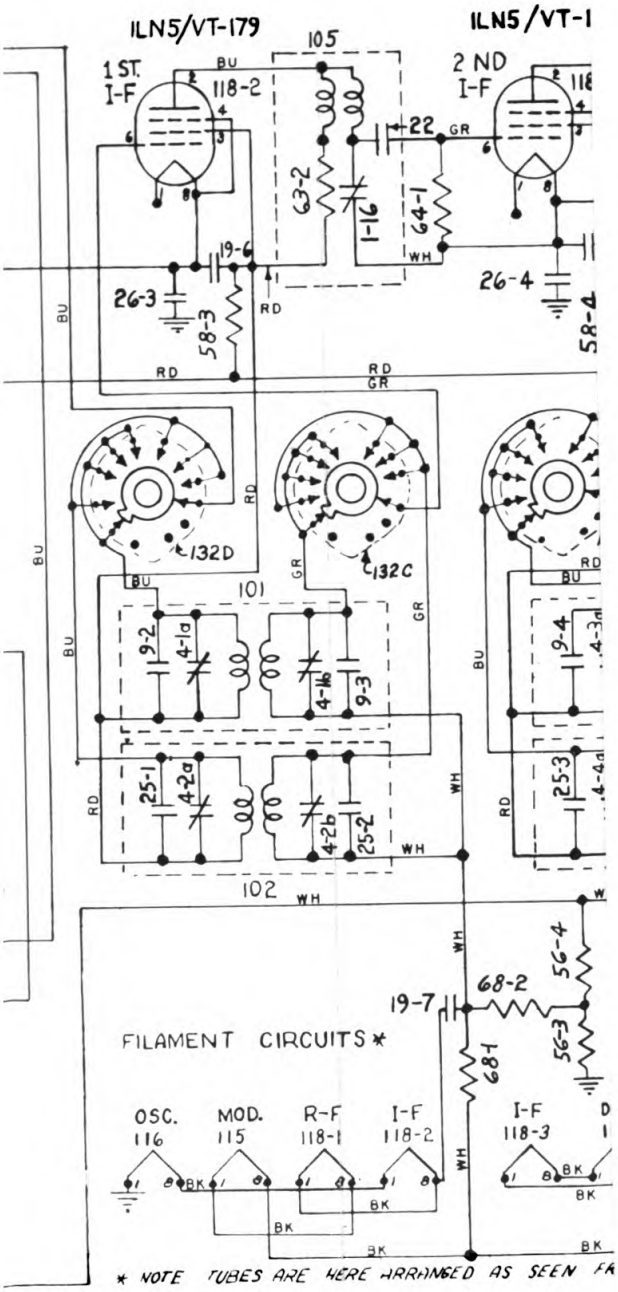
Ref. No.	I. B. M.	Signal Corps Stock No.	Ref. No.	I. B. M.	Signal Corps Stock No.
1-1 To 1-16	312724000	3D9001VE5-1	64-1 To 64-3	394050240	3Z6802A2-17
2-1 To 2-5	313334100	3D9030V-6	65	394098160	3Z6804A7-8
3-1 To 3-9	313420120	3DK9045V-2	66	393971060	3Z6801-69
4-1a To 4-4b	313420140	3DK9045V-3	67	391890260	3Z6470-24
5a To 5c	314182080	3D9241V-1	68-1–68-2	394074674	3Z6803A3-10
6	315552600	3DA9.200	69	294479080	2Z7280-36
7	314592100	3D9540-1	70	294479080	2Z7280-36
8-1 To 8-3	314576442	3D9500-89.1	81	218798225	2C4792A/T7
9-1 To 9-5	313664100	3D9075-10.1	82	218798200	2C4792A/T1
10	314014130	3D9150-21.1	83	218798220	2C4792A/T6
11-1–11-2	313594000	3D9056-1	84	218798238	2C4792A/T13
12	314688580	3D9935	85	218798237	2C4792A/T12
13	314686480	3D9880	86	218798239	2C4792A/T14
14	314289300	3D9290	87	218798236	2C4792A/T11
15	314619320	3D9620-3	88	218798230	2C4792A/T8
16	314689100	3D9950	89	218798210	2C4792A/T3
17	314689620	3D9970	90	218798215	2C4792A/T4
18	376128400	3K3022212	91	218798232	2C4792A/T9
19-1 To 19-8	315242020	3DA3-35	92	218798240	2C4792A/T15
20	312738100	3D9002E5-2	93	218798218	2C4792A/T5
21-1 To 21-3	313746400	3D9100-15.1	94	218798241	2C4792A/T16
22	314098420	3D9200-6.3	95	218798205	2C4792A/T2
23-1–23-2	313889480	3DK9100-118	96A–96B	218798080	2C4792A/C4
24	313838000	3D9100-65	97A–97B	218798234	2C4792A/T10
25-1 To 25-4	313402020	3D9040-14	98A–98B	218798060	2C4792A/C2
26-1 To 26-6	316102060	3DA50-25.2	99	218798050	2C4792A/C1
27	314940710	3DA1-111	100	218798090	2C4792A/C5
28	315157235	3DA2-115	101	297061990	2Z9641.40
29-1–29-2	315992495	3DA20-74	102	297063560	2Z9642.20
30	316437290	3DA100-169	103	297061990	2Z9641.40
51	393534520	3Z6715-44	104	297063560	2Z9642.20
52	393222706	3Z6668-19	105	297063550	2Z9642.19
53-1–53-2	393004590	3Z6647-27	106	218798070	2C4792A/C3
54	392894270	3Z6633-15	107	297014100	2Z9632.74
55-1–55-2	392530900	3Z6615-84	120	203012100	2A294-2
56-1 To 56-4	392371462	3Z6610-131	121	203823870	2A1960
57-1–57-2	394074674	3Z6803A3-10	122	294266000	2Z7234
58-1 To 58-4	391548450	3Z6220-21	123	294269000	2Z7234-1
59	393942000	3Z6801-34	124	293583220	2Z7115.10
60	393710000	3Z6733-5	125	293583230	2Z7115.11
61	393584000	3Z6722-9	126-1–126-2	293581260	2Z7111.23
62	391746320	3Z6330-19	127-1–127-2	295927590	2Z8671.21
63-1–63-2	392706600	3Z6622-27	129	296632210	2Z9402.46

List of Signal Corps Stock Numbers (Continued)

Ref. No.	I. B. M.	Signal Corps Stock No.	Ref. No.	I. B. M.	Signal Corps Stock No.
130-1–130-2	395346100	3Z9824-261.1	35	316016230	3DA25-14
131-1–131-2	395617020	3Z9835-1	36A–36B	317606100	3DB125-2
132	395501936	3Z9825-81.2	37A–37B	316748875	3DA500-114
150-1–150-2	331114970	3G112-32.1M	75-1–75-2	394024460	3Z6002-25
151-1–151-2	331112800	3G112-29	76	294492270	2Z7284.46
152	331124800	3G112-58.1	77	294475750	2Z7278-17
153	333087930	3G1839-13	111	296946630	2Z9625-12
154	295955960	2Z8678.9	112	218798100	2C4792A/C6
155	296632310	2Z9402.56	119	371711063	3H6694-3
156-1–156-2	296632280	2Z9402.53	133	395050310	3Z9580-7
157	396469060	3Z12072-22	134	395217500	3Z9692-3392
158	396469040	3Z12072-21	135	395501932	3Z9825-81
159	396469080	3Z12072-23	137	387980100	3Z2604.1
160	296643710	2Z9404.19	140	371387300	3H4957-4
161	296640760	2Z9403.21	141	296657200	2Z9406.31
162	296632200	2Z9402.45	142	325442140	3F930-18
163	296619000	2Z9401.11	143	328308020	3F8100-5
167	696916200	6Z4996-3	180	396458000	3Z12066
168	697290300	6Z6947	182	287160030	2Z2626.9
169	697290300	6Z6947	183-1–183-2	388281000	3Z3285A
170	287224620	2Z2721-3	184	388281020	3Z3285A-1
171	697697600	6Z7546	185	696924320	6Z5010-5
172	656239500	6L31409C	186	696556250	6Z3810-11
173	656239570	6L31412C	187	695692480	6Z1747-11
34	316038260	3DA30-19	188	304375500	3B306

Color Code for Wiring of Radio Receiver BC-792-A

Color of Wire	*Code of Circuit Diagram*
Black	BK
Red	RD
Blue	BU
Green	GR
White	WH
Black with White Tracer	BK-WH
White with Blue Tracer	WH-BU



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