TM 11-866

WAR DEPARTMENT

TECHNICAL MANUAL

RADIO RECEIVERS BC-779-B, BC-794-B, and BC-1004-C and POWER SUPPLY UNITS RA-74-C, RA-84-B, and RA-94-A

June 4, 1943

17141-PHILA-43

WAR DEPARTMENT

Washington, June 4, 1943

This Technical Manual, published by Hammarlund Mfg. Co. on order W141-PHILA-43, is furnished for the information and guidance of all concerned.

ADDENDUM

TO

TECHNICAL MANUAL TM 11-866

FOR

RADIO SET SCR-244-B

LIST OF COMPONENTS

Quantity	Nomenclature	Stock No.
1	Radio Receiver BC-1004-C	
1	Power Supply Unit RA-94-A	
1	Headset HS-30-B	2B830B
1	Cord CD-605	3E1605–6.5
2	Insulator IN-124	3G624
6	Insulator IN-125	3G625
150 ft.	Wire W-151	1B151
150 ft.	Wire W-152	1B152
150 ft.	Rope RP-3	6Z7925

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Radio Receivers BC-779-B, BC-794-B & BC-1004-C
and
Power Supply Units RA-74-C, RA-84-B & RA-94-A

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DESTRUCTION OF ABANDONED MATERIAL IN THE COMBAT ZONE

In case it should become necessary to prevent the capture of this equipment, and when ordered to do so,

DESTROY IT SO THAT NO PART OF IT CAN BE SALVAGED, RECOGNIZED OR USED BY THE ENEMY. BURN ALL PAPERS AND BOOKS.

MEANS:—

1. Explosives, when provided.
2. Hammers, axes, sledges, or whatever heavy objects are readily available.
3. Burning by means of incendiaries such as gasoline, oil, paper or wood.
4. Grenades and shots from available arms.

PROCEDURE:—

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

DISPOSAL:—

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

SAFETY NOTICE

Audio frequency voltages up to 150 volts may be present at the 600 ohm (SPKR) terminals under certain conditions. Turn the AUDIO GAIN control to 0 before touching these terminals. *Never* remove the sheet metal covers from the connector cable terminal strips without first detaching the plug from the a-c power line (or disconnecting the batteries); *turning the* OFF-ON *switch to* OFF *is not enough.*

With dust cover and bottom plate removed from the receiver great care must be exercised, as 250 volts direct current are present at several points on top of the chassis, and d-c voltages up to 400 and a-c voltages up to 260 exist at several points underneath the chassis.

STILL GREATER CARE MUST BE TAKEN WHEN WORKING ON THE POWER SUPPLY UNIT WITH THE BOTTOM PLATE OFF. HERE ARE D-C VOLTAGES OF OVER 400, AND A-C POTENTIALS UP TO 900 VOLTS.

There is no high-voltage d-c electrical shock hazard during normal operation of this equipment *after* it has been properly connected and installed.

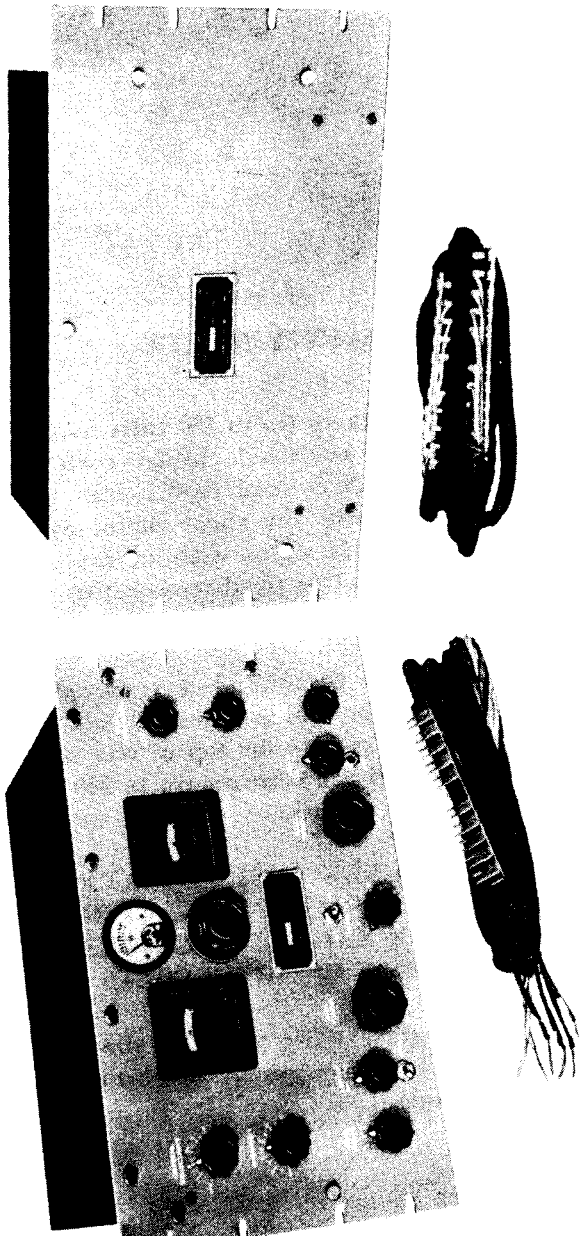

Figure 1. Radio Receiver BC-779-B and Power Supply Unit RA-94-A

SECTION I—DESCRIPTION

1. GENERAL.—

a. Receivers.—The radio receivers covered by this manual are superheterodyne receivers for the reception of amplitude modulated (AM) signals and intended for fixed-station use. The three receivers are identical except that each covers, in five bands, a different frequency range.

RECEIVER	FREQUENCY RANGE
Radio Receiver BC-779-B	100-400 KC, 2500-20,000 KC
Radio Receiver BC-794-B	1,250-40,000 KC
Radio Receiver BC-1004-C	540-20,000 KC

These receivers can receive voice and continuous wave (CW) signals with either the MANUAL or AVC (automatic volume) control.

b. Mechanical.—Receivers and power supply units are rack models having front panel notches to fit the standard relay racks, dust covers fastened by knurled thumb nuts to front panel and rear edge of chassis, and bottom plates for protection against dust and damage in general. For table use, Cabinet CH-104-A is furnished for the receivers. The power supply units can be used either in racks or on tables.

2. POWER SOURCES.—The receivers may be used with either of three power supply units as follows: Power Supply Unit RA-84-B, designed to operate from a 105-115-125-volt, 50-60-cycle power source; Power Supply Unit RA-74-C, designed to operate from a 95-130-volt, 190-260-volt, 25-60-cycle power source; or Power Supply Unit RA-94-A, designed to operate from a 115-or 230-volt, 50-60-cycle power source. The average power consumed is 180 watts. In an emergency any one of the receivers can be operated from a 6-volt storage battery, five 45-volt "B" batteries, and a 45-volt "C" battery connected as shown in FIG. 6.

a. Total heater current required is 6.25 amperes at 6 volts.

b. Total plate voltage required is 225 volts applied in the following manner:

225 volts at .117 amperes

90 volts at .0045 amperes

c. "C" bias voltage required is 45 volts at .010 amperes.

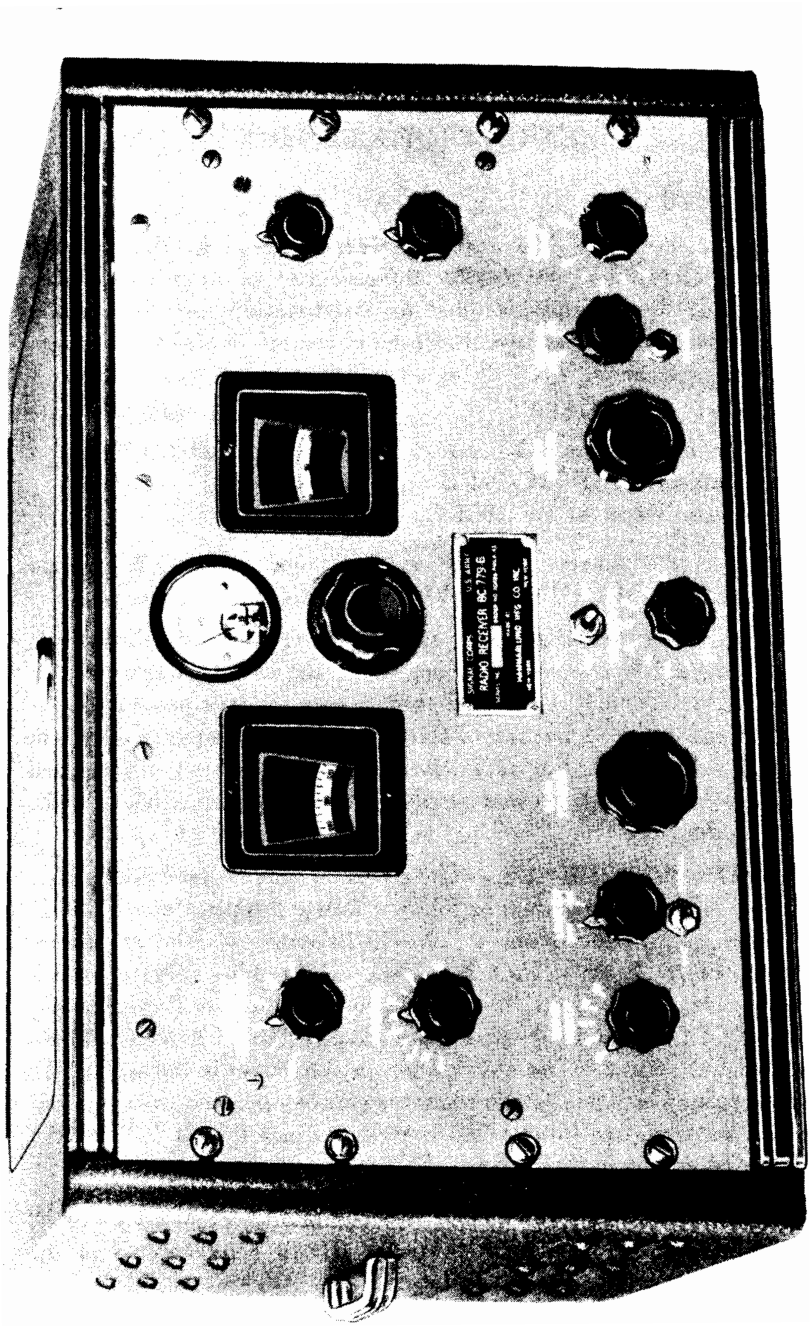

Figure 2. Radio Receiver BC-779-B
in Cabinet CH-104-A

3. WEIGHTS AND DIMENSIONS.—

a. Radio Receivers BC-779-B, BC-794-B and BC-1004-C are each 10½ inches high, 19 inches wide, and 15⅜ inches deep behind front panel. Each receiver weighs 55 pounds. When mounted in Cabinet CH-104-A, each receiver is 12¼ inches high, 23 inches wide, 16½ inches deep, and weighs 73 pounds.

b. Power Supply Units RA-74-C, RA-84-B and RA-94-A are each 10½ inches high, 19 inches wide, and 10 inches deep behind front panel. Power Supply Unit RA-74-C weighs 61 pounds. Power Supply Units RA-84-B and RA-94-A weigh 57 pounds each.

4. FREQUENCY BANDS.—The five frequency bands are marked in aluminum on the band-switch dial (FIG. 4). A large number of earlier models of this receiver already in the field can be identified only by the different frequencies shown on this dial. You can get the frequency band you want by turning the knob right or left until the band is on top (just beneath the up-and-down line above the dial).

a. Frequency Coverage.—

(1) ***Radio Receiver BC-779-B.***—

100–200 kilocycles 2.5–5.0 megacycles
200–400 kilocycles 5–10 megacycles
10–20 megacycles

(2) ***Radio Receiver BC-794-B.***—

1250–2500 kilocycles 5–10 megacycles
2.5–5.0 megacycles 10–20 megacycles
20–40 megacycles

(3) ***Radio Receiver BC-1004-C.***—

540–1160 kilocycles 2.5–5.0 megacycles
1160–2500 kilocycles 5–10 megacycles
10–20 megacycles

b. Besides the markings on the band-switch dial (FIG. 4), a mask with windows shows a calibrated scale on the MAIN TUNING dial (FIG. 4) to correspond with the band selected by the band switch. This operation is automatic—when you turn the band switch, the mask on the MAIN TUNING dial turns with it since they are geared together.

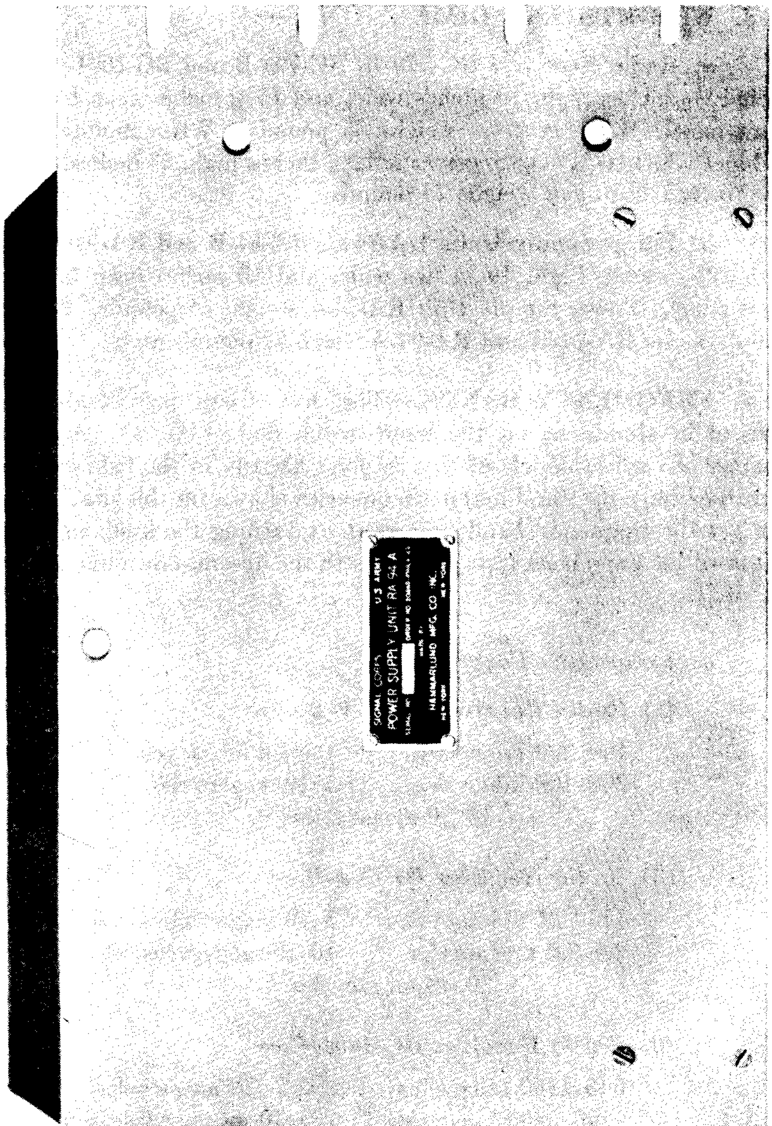

Figure 3. Power Supply Unit RA-94-A
Front View

c. Band Spread.—A separate BAND SPREAD control (E13) gives you simplified tuning over a narrow range of frequency. The BAND SPREAD dial (FIG. 4) has a scale reading from 0 to 100 through about 170°. If set at 100, the frequency covered by moving the dial will extend from that shown by the setting of the MAIN TUNING dial to some lower frequency, depending on how far the BAND SPREAD dial is moved. The capacity of the band-spread capacitor (C2) increases as the scale approaches zero (0).

(1) To cover a specific range with the BAND SPREAD dial, first set the MAIN TUNING dial at the high-frequency end of the band you want to spread.

d. Dial Calibration.—The MAIN TUNING dial is calibrated in frequencies like this (these calibrations hold true only when the BAND SPREAD dial is set at 100):

(1) *Radio Receiver BC-779-B.*—

BAND	CALIBRATION
10 mc –20 mc	100 kc per division
5.0 mc –10 mc	100 kc per division
100 kc –200 kc	2 kc per division
200 kc –400 kc	5 kc per division
2.5 mc –5.0 mc	50 kc per division

(2) *Radio Receiver BC-794-B.*—

BAND	CALIBRATION
10 mc –20 mc	100 kc per division
5.0 mc –10 mc	100 kc per division
20 mc –40 mc	500 kc per division
1250 kc–2500 kc	20 kc per division
2.5 mc –5.0 mc	50 kc per division

(3) *Radio Receiver BC-1004-C.*—

BAND	CALIBRATION
10 mc –20 mc	100 kc per division
5.0 mc –10 mc	100 kc per division
540 kc –1160 kc	10 kc per division
1160 kc–2500 kc	20 kc per division
2.5 mc –5.0 mc	50 kc per division

5. POWER OUTPUT.—The total power output is about 8 watts. Undistorted power output is in the neighborhood of 3 watts with distortion increasing as the power output is increased. The receivers each have two output impedances with marked terminals along the rear edge of the chassis.

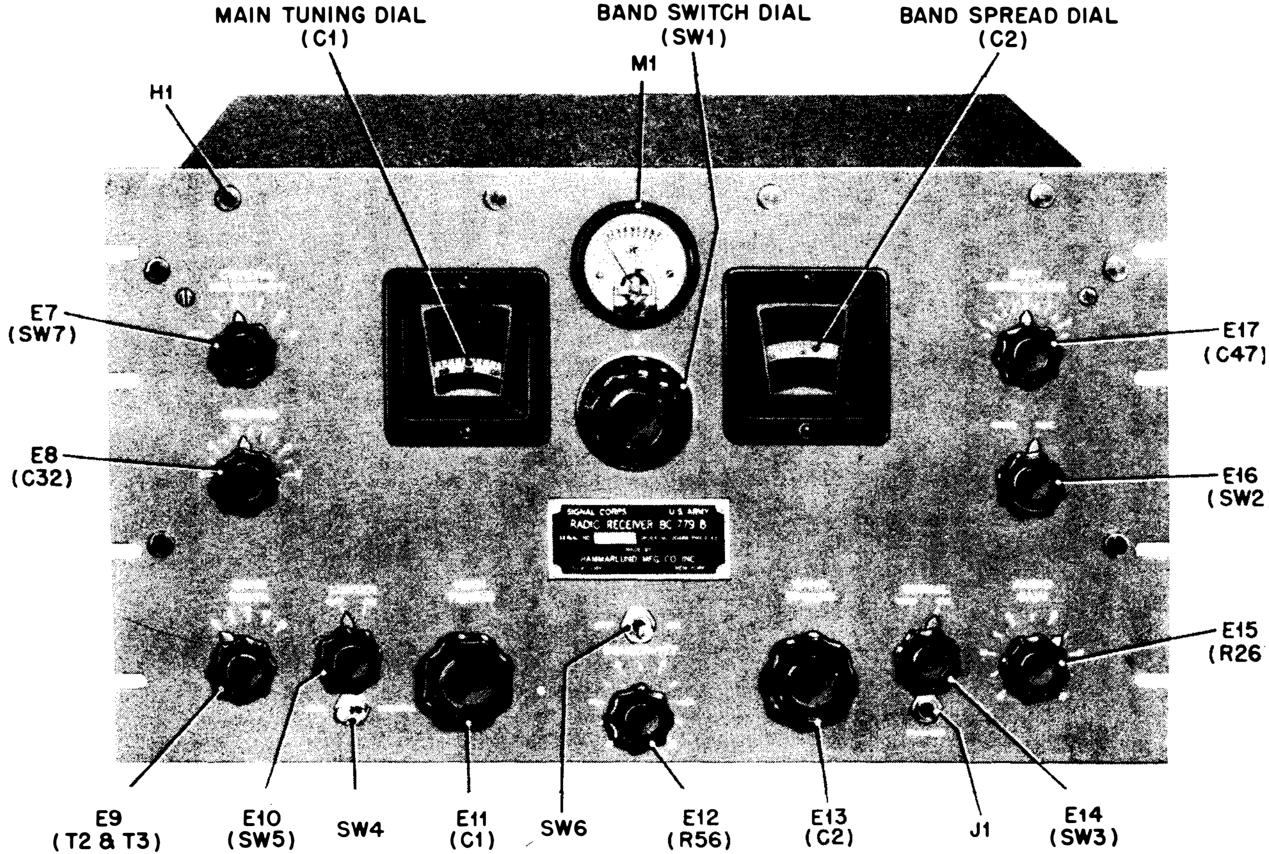

Figure 4. Radio Receiver BC-779-B
Front View

a. The 600-ohm output (marked SPKR) is for use where a good deal of power is needed, such as for loud-speaker, recorder, or for a 600 ohm audio transmission line. All power output measurements and all audio-frequency fidelity readings are to be taken at this terminal.

b. The 8000-ohm output (marked PHONES) is for monitoring only. Do not try to take power measurements at this terminal.

SECTION II—INSTALLATION AND OPERATION

6. INITIAL PROCEDURE.—Unpack the equipment and check it to see that it has not been banged up during shipment. Choose an operating position which will have as even temperature and as little humidity as possible. Steer clear of things that will cause vibration, such as wobbly tables, etc.

7. INSTALLATION.—

a. Connection to Power Supply Unit.—Connect receiver to power supply unit as follows:

(1) Remove the sheet metal covers from terminal strip (E4) on the rear of the receiver and terminal strip (E1) on the power supply unit. See that all ten screws on each strip are unscrewed at least three turns. Then attach one end of the connector cable to each terminal strip *exactly* as shown in FIG. 5 and tighten all the screws securely. Make certain that each slotted spade lug on the cable strips makes contact with its respective screw terminal *only*, since a lug jammed between *two* of the screws could cause plenty of trouble. Then replace both metal covers immediately, and don't ever remove them while the power supply unit is connected to the a-c power line.

(2) The spacing of the spade lugs on the cable terminal strips is exactly the same as the spacing of the screws in the terminal strips on the receiver and power unit. If the two don't go together easily, DO NOT USE FORCE. Instead of cussing around and tearing things apart, sit back and take a nice calm look to see if you've been going at it the right way. Be sure *all* the screws are unscrewed far enough. If one of the spade lugs has been bent or pushed out of place by rough handling, straighten it up and try again. The spade lugs should slip under the screws from the top (FIG. 5).

b. Connection for Battery Operation.—The cable used for battery connection is the one with only one terminal strip (W2).

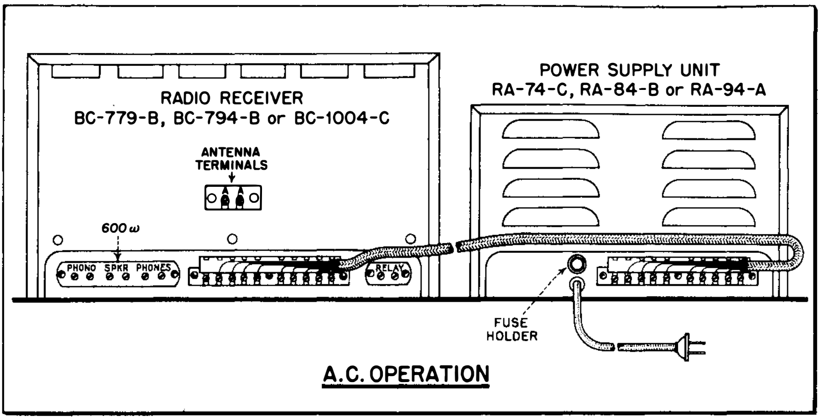

Figure 5. Cable Connections for a-c Operation

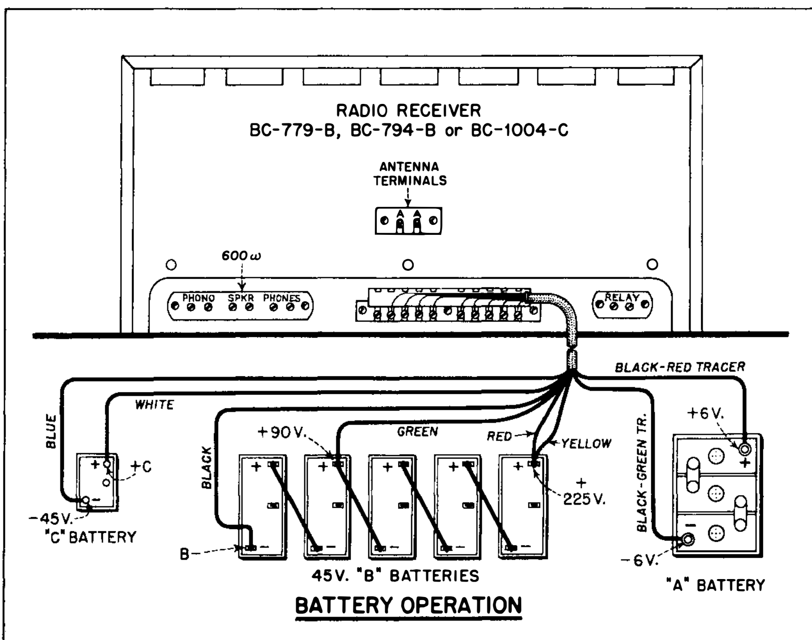

Figure 6. Cable Connections for Battery Operation

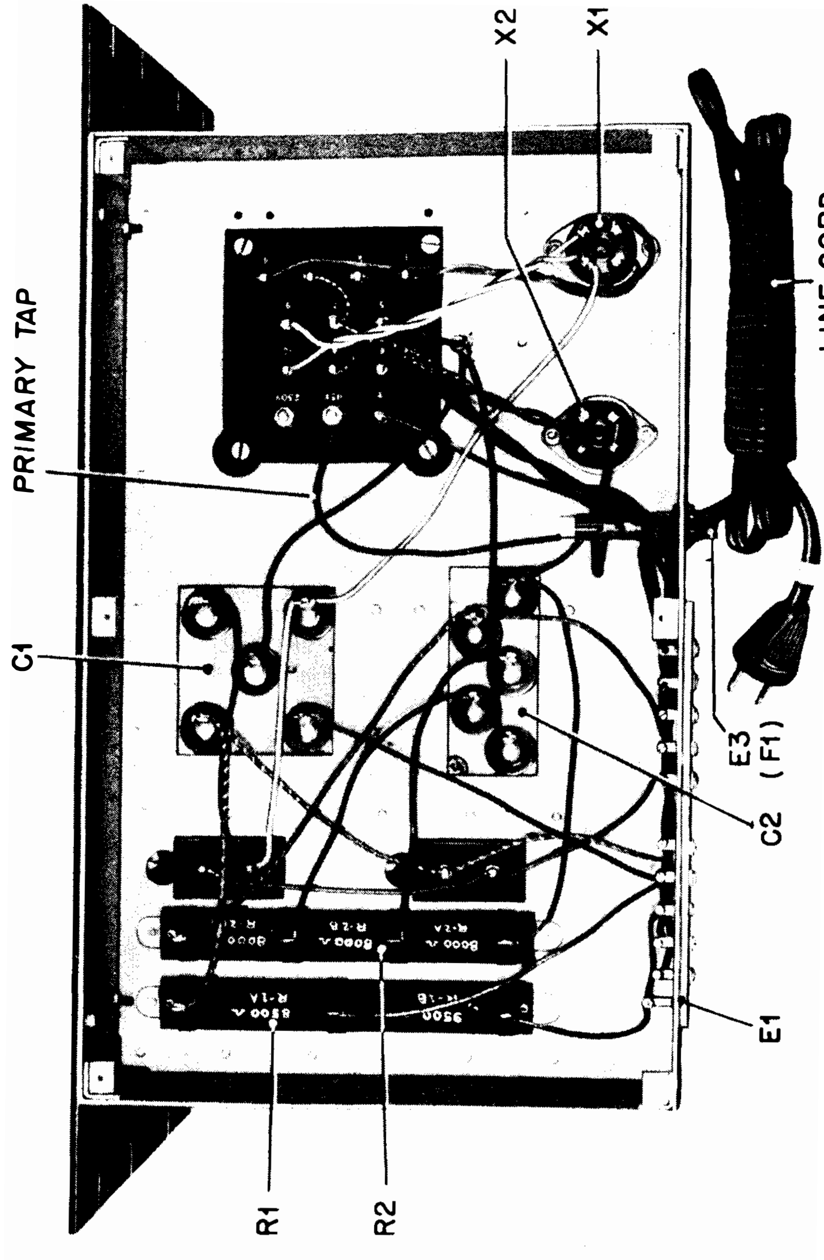

Figure 7. Power Supply Unit RA-94-A
Bottom View

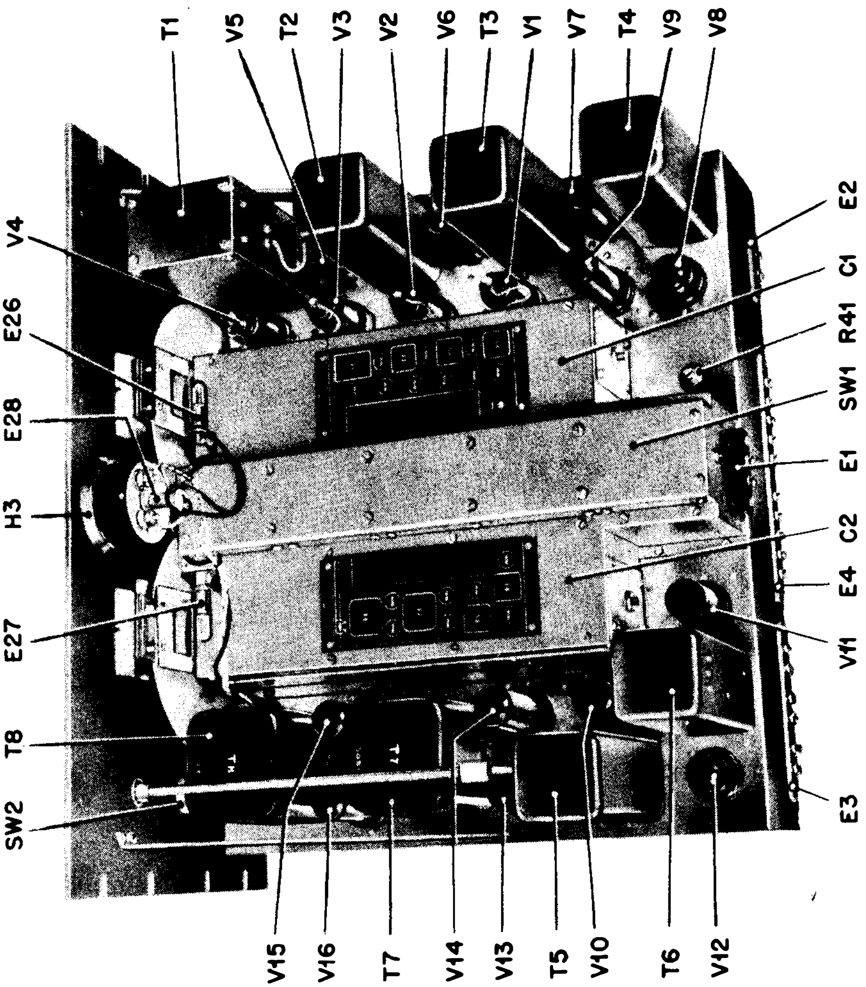

Figure 8. Radio Receiver BC-779-B
Inside View

The other end of it is made up of nine loose wires. Connect this cable according to FIG. 6 (note the color code for the nine loose wires). Connect this battery cable to the receiver first and replace the terminal cover *before* connecting the cable to the batteries. When discontinuing battery operation, disconnect the loose ends of the cable from the batteries *before* detaching the cable from the receiver. All operations of the receiver are the same with either the power supply unit or the battery set-up.

c. Antenna.—The antenna input can be coupled to a balanced transmission line of about 115 ohms impedance or to a single wire antenna and ground. There is an electrostatic screen between primary and secondary of each antenna input transformer. This screening, plus a two-wire balanced lead-in, cuts noise pick-up to the least possible.

(1) ***Transmission Line Lead In.***—Connect the feeders to the terminals marked "A" at the rear of the receiver.

(2) ***Single Wire Antenna.***—If this is used, connect its lead-in to one of the "A" terminals. Connect the other "A" terminal to a good ground.

NOTE: You'll get unusually satisfying results when receiving over a narrow band of high frequencies if you connect a suitably designed doublet or similar tuned antenna to the receiver through a good lead-in cable.

(3) ***Ground.***—You don't *have* to ground the receiver chassis but you *can* do it by connecting a wire under one of the thumb screws that hold the dust cover to the rear of the chassis.

d. Earphones.—Plug your Headset HS-30 into the PHONES jack (J1, FIG. 4) in the lower right hand corner of the front panel of the receiver. Or you can connect the headset to the screw terminals marked PHONES on the rear edge of the chassis.

e. Before plugging the power cord into the a-c power line, remove the bottom plate from the power supply unit to see that the primary tap is properly connected for the particular a-c voltage available. This primary tap connects the fuse-holder (E3) to one of the screw terminals on the power transformer, and is marked PRIMARY TAP in FIG. 7.

(1) Power Supply Unit RA-74-C has eight taps marked 95, 105, 117, 130, 190, 210, 234, and 260.

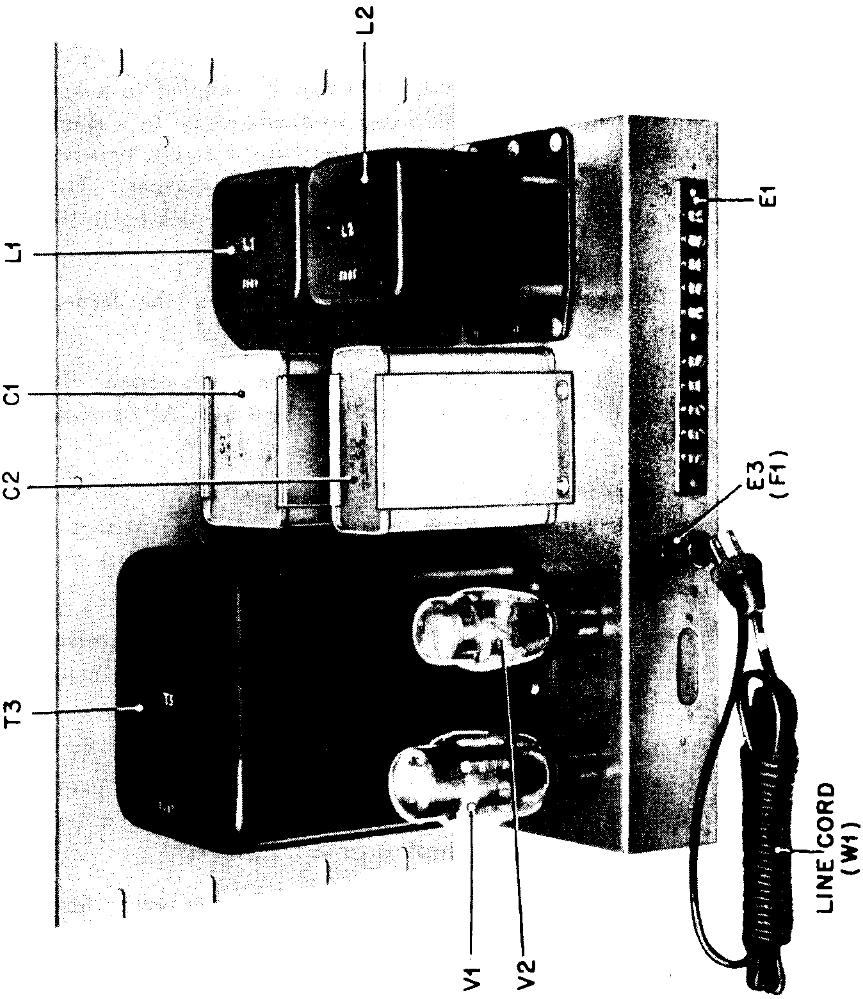

Figure 9. Power Supply Unit RA-94-A
Inside View

(2) Power Supply Unit RA-84-B has three taps marked 105, 115, and 125.

(3) Power Supply Unit RA-94-A has two taps marked 115 and 230.

Connect the PRIMARY TAP to the screw terminal most closely agreeing with the available a-c line voltage and replace the bottom cover plate.

f. Turn the OFF-ON switch on the receiver front panel to OFF and plug the power cord into the a-c power line.

8. PREPARATION FOR USE.—After installation, again look the equipment over for mechanical defects or damage caused by shipping, handling, and so forth.

a. Tubes.—Receiver and power supply unit tubes are in their proper sockets when this equipment is packed for shipment. Check to see that tubes are where they're supposed to be before you start operating.

(1) ***Receiver.***—To inspect tubes in the receiver you'll have to remove the dust cover. Do this by removing the thumb nuts which hold the cover to front panel and rear edge of the chassis. Leave this dust cover off until you are satisfied that the receiver is operating okay.

(*a*) All three receivers use the same tubes as follows:

REF. NO.	TYPE		FUNCTION
V1	VT-86	(RMA 6K7)	1st R.F. amplifier
V2	VT-86	(RMA 6K7)	2nd R.F. amplifier
V3	VT-87	(RMA 6L7)	1st Detector (mixer)
V4	VT-91	(RMA 6J7)	H.F. oscillator
V5	VT-86	(RMA 6K7)	1st I.F. amplifier
V6	VT-117	(RMA 6SK7)	2nd I.F. amplifier
V7	VT-117	(RMA 6SK7)	3rd I.F. amplifier
V8	VT-90	(RMA 6H6)	2nd Detector
V9	VT-96	(RMA 6N7)	Noise Limiter
V10	VT-116	(RMA 6SJ7)	B.F. oscillator
V11	VT-117	(RMA 6SK7)	AVC amplifier
V12	VT-90	(RMA 6H6)	AVC rectifier
V13	VT-65	(RMA 6C5)	1st A.F. amplifier
V14	VT-66	(RMA 6F6)	2nd A.F. amplifier
V15	VT-66	(RMA 6F6)	3rd A.F. amplifier
V16	VT-66	(RMA 6F6)	3rd A.F. amplifier

Their proper location is clearly shown in the etched location plates attached to the top of the tuning unit as well as the marking of their respective sockets (FIG. 8.)

(2) *Power Supply Unit.*—Take the dust cover off the power supply unit and remove the cardboard jackets from the two rectifier tubes.

(*a*) Each of the three power supply units uses the same tubes as follows:

REF. NO.	TYPE		FUNCTION
V1	VT-145	(RMA 5Z3)	"B" rectifier
V2	VT-80	(RMA 80)	"C" rectifier

Tube VT-145 goes in the socket nearest the corner of the power supply chassis.

b. Adjustments.—This equipment is already adjusted when you get it—no adjusting for you to do.

9. OPERATION.—

a. Radiophone Reception.—Set the front panel controls this way:

CONTROL	POSITION
CRYSTAL SELECTIVITY	OFF
PHASING	on arrow
BAND WIDTH	3
LIMITER	OFF
AVC-MANUAL	AVC
SENSITIVITY	10
BAND SPREAD	100
SIGNAL-MOD-CW	MOD
AUDIO GAIN	6
SEND-REC	REC
BEAT OSCILLATOR	0

(1) Throw the OFF-ON power switch in the center of the panel to ON. This puts the receiver in operation.

(2) Adjust the band switch to the band which you are likely to find most active. This will make it simpler for you to get familiar with the various adjustments. Set the BAND WIDTH control at 3. If interference is not serious, the BAND WIDTH control can be adjusted to a wider degree of selectivity, depending

upon the amount of fidelity you want. In general, adjust this control to the band width giving you best tone quality with the least interference.

(3) Do all tuning, with or without the meter, with the BAND WIDTH control set at 3. Other settings give wider bands making tuning hard. Make band width adjustments *after* the signal is tuned in properly.

(4) To turn the beat oscillator on, set the SIGNAL-MOD-CW switch at CW. The BEAT OSCILLATOR control varies the pitch of the beat between the oscillator and the incoming signal. Use the beat oscillator for code reception and for locating weak modulated signals.

(5) The LIMITER-OFF-ON control turns the noise limiter on and off. The noise limiter will be worth most to you on the higher frequencies where interference is serious from things like gas engine ignition systems.

b. Code Reception.—Flip the AVC-MANUAL switch to MANUAL and turn down the SENSITIVITY control to provide proper sensitivity.

(1) On strong signals, do not turn the SENSITIVITY control all the way on because it will cause overloading. If you set the AUDIO GAIN control at about 7, you can regulate volume with only the SENSITIVITY control.

(2) Code signals can be well controlled by the automatic volume control (AVC).

c. Crystal Filter.—The first three positions of the CRYSTAL SELECTIVITY control are generally used for radiophone reception and will serve for code reception where interference is not serious. The last two positions are for code reception *only*.

(1) After you have adjusted the CRYSTAL SELECTIVITY control for the degree of selectivity you want, you may use the PHASING control to get rid of heterodyne interference or "whistle".

d. The receiver can be silenced by turning the SEND-REC. switch to SEND. This allows the receiver to remain ready for instant service during transmission periods.

e. All tuning *can* be done with the MAIN TUNING control. In this case, leave the band spread dial at 100. The BAND SPREAD control spreads out a narrow band of frequencies *below* the frequency

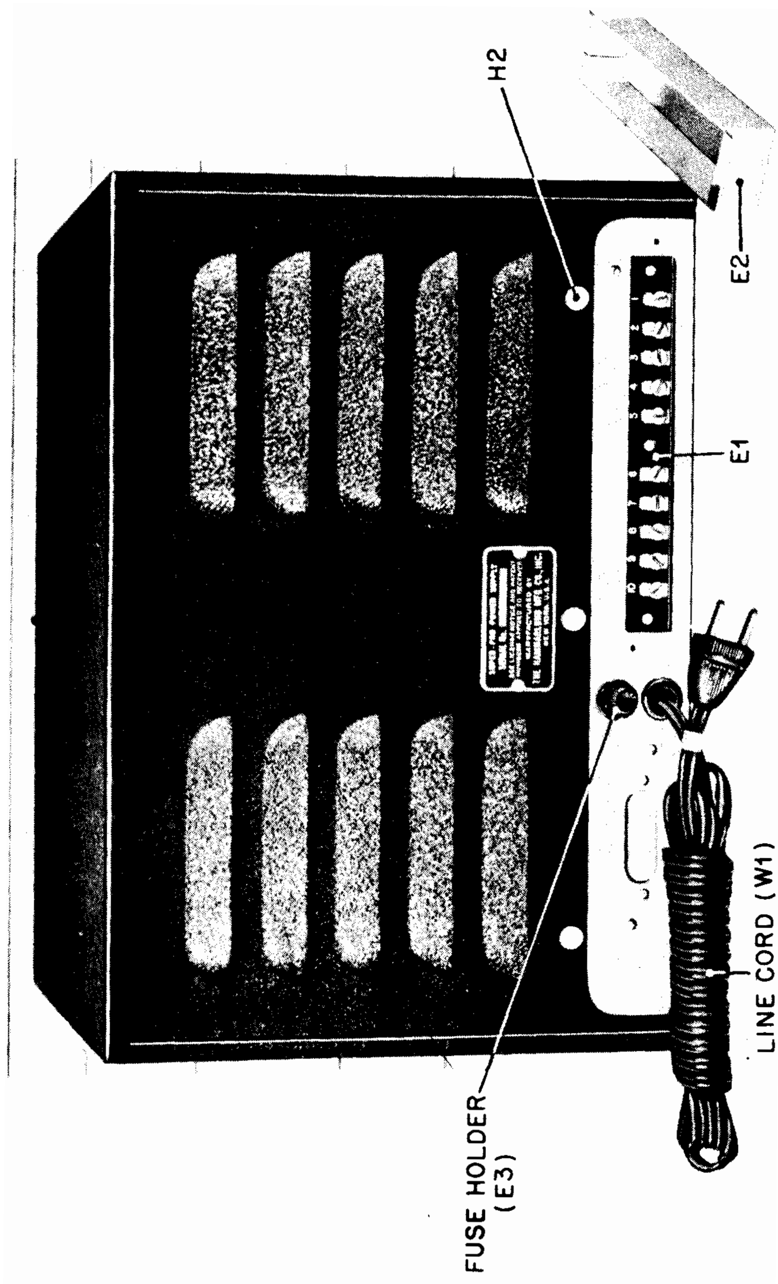

Figure 10. Power Supply Unit RA-94-A
Rear View

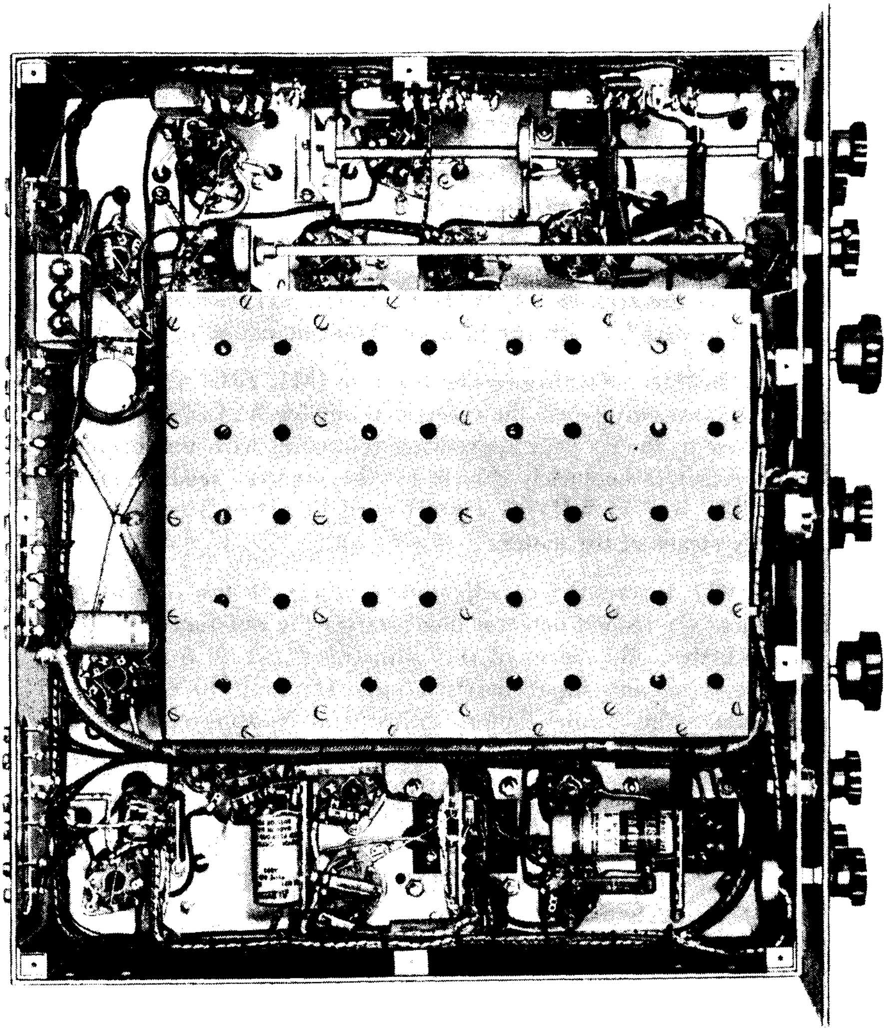

Figure 11. Radio Receiver BC-779-B
Bottom View

to which the main dial is set. In Radio Receivers BC-779-B and BC-1004-C the BAND SPREAD control operates throughout the three high frequency bands only, and is automatically disconnected by the band change switch on the two low frequency bands. In this way, high frequency signals can be spread out over the band spread dial for easy tuning. In Radio Receiver BC-794-B the BAND SPREAD control operates continuously throughout the entire tuning range of the receiver, and signals can be spread out in any one of its five bands.

f. Earphone Operation.—For earphone operation, plug your earphones into the PHONES jack (J1, FIG. 4) provided for them on the front panel. Or you can connect the earphones to the PHONES terminals on the rear of the receiver chassis. These terminals are connected in parallel with the jack on the front panel.

g. S-Meter Tuning.—The S-meter (M1, FIG. 4), a tuning guide, operates only when the receiver is set for AVC. Its reading will increase as the receiver approaches resonance with the incoming signal. Exact resonance is shown by the greatest reading of the meter. The BAND WIDTH control must be set at 3 for accurate tuning by means of the meter.

(1) A screwdriver adjustment (R41) at the rear of the chassis near the second detector diode varies the resistance in shunt with the meter. By means of this adjustment, an S9 reading may be obtained on any input between approximately 10 and 10,000 micro-volts. The normal factory adjustment is made on an input of 50 micro-volts, and when so adjusted each "S" number represents a change in signal input of approximately 6 decibels.

SECTION III—FUNCTIONING OF PARTS

10. RECEIVER VARIATIONS.—

a. Radio Receivers BC-779-B, BC-794-B, and BC-1004-C employ the superheterodyne, or double detection type of circuit. All three receivers are alike beyond the first detector except receiver BC-779-B, which has a .25 μf by-pass capacitor (C30) across the 3 volt C bias terminal.

b. The RF amplifier circuits of receivers BC-779-B and BC-1004-C are the same except for two damping resistors (R57, R58) in receiver BC-1004-C. The plates of the two RF amplifier tubes

(V1, V2) in receiver BC-794-B are shunt fed through RF chokes (L35, L36) and are coupled to their respective tuned circuits through fixed capacitors (C57, C58). This change was made to keep plate voltage off the tuned impedance interstage coupling circuits of the 20-40 mc band. Therefore, two filter resistors (R4, R8) and two filter capacitors (C6, C10) are not used in this model.

c. The HF oscillator circuits of all three receivers are also alike except that BC-794-B has no series padding capacitor in the 20-40 mc band, and BC-779-B has fixed parallel trimmers (C84, C85) and variable parallel padding capacitors (C86, C87) in its two low frequency bands (100-200 kc and 200-400 kc). These, as well as other circuit details are shown in FIGS. 24, 25, and 26.

12. RF AMPLIFIER.—

a. The antenna is coupled to the grid of the 1st RF amplifier (V1) through an input transformer having an untuned primary and tuned secondary. There is an electrostatic shield or screen between primary and secondary which prevents direct capacitive coupling between the antenna circuit and any part of the tuned secondary which is connected to the grid of tube V1. This arrangement results in substantially pure inductive coupling *only*, permitting full advantage to be taken of the noise-reducing properties of a balanced transmission line lead-in. The impedance of the input circuit averages approximately 100 ohms throughout the tuning range of the receiver.

b. There are two stages of RF amplification preceding the 1st detector or mixer. These stages are coupled by means of RF transformers having tuned secondaries and low inductance untuned primaries, except the 20-40 mc band of receiver BC-794-B which has straight tuned impedance coupling (L49, L50). In receiver BC-1004-C, the RF transformers in the 540-1160 kc band (L42, L44) have 20 ohm series damping resistors (R57, R58) inserted in their tuned secondaries. This additional resistance materially reduces the "Q" of the RF transformers and results in less side-band cutting, especially at the low-frequency end of the band.

12. HF OSCILLATOR.—

a. The HF oscillator operates at a frequency exactly 465 kc (the frequency for which the IF amplifier is adjusted) higher than that of the incoming signal. The oscillator section of the variable tuning capacitor (CID) has the same capacitance and plate shape as RF sections (C1A, C1B, C1C) and the constant 465 kc frequency difference is maintained by means of a padding capacitor in series with the variable, together with appropriate values of oscillator inductance and parallel trimmer capacitance. Due to the very slight difference in frequency ratio between the HF oscillator and RF amplifier circuits in the 20-40 mc band of receiver BC-794-B, no series padding capacitor is necessary. With the exception of the 200-400 kc and 100-200 kc bands in receiver BC-779-B (L24, L25), fixed padding capacitors are used, and exact tracking is accomplished by adjusting oscillator inductance and trimmer capacitance. In these two bands, the oscillator inductance is fixed, and tracking is accomplished by adjusting the variable padding capacitors (C86, C87) and variable trimmers (C82, C83).

b. The oscillator circuit is a modified Hartley employing a triode-connected VT-91 (V4). The plate, screen and suppressor grid are tied together and by-passed to ground (chassis). Injection voltage for the 1st detector (V3) is taken from the oscillator cathode, which is connected to a tap well down on the oscillator tuning coil. This minimizes oscillator frequency changes caused by reaction from the 1st detector signal grid circuit.

13. FIRST DETECTOR. — The 1st detector employs a VT-87 pentagrid mixer (V3). Its injection grid (grid No. 3) is coupled to the HF oscillator cathode, and its signal grid (grid cap) is coupled to the plate of the second RF amplifier tube (V2) by means of the second RF transformer. When the receiver is tuned so that the HF oscillator (V4) generates an RF voltage exactly 465 kc higher in frequency than an incoming signal being amplified by the second RF amplifier (V2), these two RF voltages are mixed together in the first detector (V3). This mixing process results in the generation of a very complex waveform in its plate circuit. One of the components of this complex wave has a frequency of 465 kc (equal to the difference between the two RF voltages). This, the desired component, is selected and amplified by the resonant step-up of the tuned circuit C21, L26 (in T1). The remaining components (mostly higher in frequency) are by-passed by C21 and C18A in series. Any modulation of the incoming signal carrier is faithfully reproduced in the 465 kc output of the 1st detector.

14. CRYSTAL FILTER.—

a. The Quartz Crystal Filter (T1) couples the 1st detector (V3) to the 1st IF amplifier (V5). Its selectivity can be varied in definite steps by the CRYSTAL SELECTIVITY switch (SW7) controlled from the front panel by knob and pointer (E7). In addition, its selectivity characteristic can be greatly sharpened on one side or the other by adjusting the PHASING condenser (C32), which is controlled by knob (E8).

b. When the CRYSTAL SELECTIVITY switch is set at OFF the quartz crystal is short-circuited and signal voltages present in the secondary of the 1st detector plate coil (L26) are impressed directly on the control grid of the 1st IF amplifier tube (V5). At any other setting (1 to 5), the quartz crystal is in use and acts as an extremely high "Q", high impedance, series tuned circuit interposed between the secondary of plate coil (L26) and the 1st IF grid circuit (L27, C33), which constitutes the load into which the crystal works. Selectivity is varied by altering the impedance of this parallel tuned circuit (L27, C33), which is accomplished by adding resistance (R42, R43, R44, R45) in series with coil L27 and capacitor C33. As this series resistance is increased (reducing the parallel impedance of circuit L27, C33) the overall selectivity of the filter is also *increased.*

15. IF AMPLIFIER.—

a. The intermediate frequency amplifier has three stages consisting of three coupling transformers (T2, T3, and T4) and three pentode amplifier tubes (V5, V6 and V7) of the remote cut-off, or super-control type. The first two transformers (T2, T3) are identical, and have tuned primaries as well as tuned secondaries. The secondary coils are fixed in position, while the primary coils are mounted on slide rods permitting them to be moved back and forth with respect to the secondaries, thus changing the degree of inductive coupling between them. When the coils are farthest apart the coupling is at its lowest value and the transformers exhibit their maximum selectivity or minimum band width. Conversely, when pushed close together the coupling is greatly increased and minimum selectivity or maximum band width results. At any adjustment between these two extremes, an intermediate degree of selectivity is obtained. This variation in coupling is accomplished by a combination of cams and levers operated by the BAND WIDTH control (E9) on the front panel. The third transformer (T4) has a tuned primary and a closely coupled untuned secondary wound directly over it (L32). This transformer couples the 3rd IF amplifier (V7) to the diode 2nd detector (V8).

b. The coils (L28, L29, L30, and L31) in transformers (T2, T3) are wound with 7/41 Litz in three pies on ceramic cores and are tuned by means of air-dielectric variable capacitors (C36, C37, C38, and C39). Grid coils (L29, L31) are tapped for connection to the control grids of amplifier tubes (V6) and (V7). These taps are located at approximately one tenth of the total turns up from the low-potential ends of the coils. Consequently, variations in grid input capacitance and conductance due to changes in SENSITIVITY control settings (or AVC) have no noticeable effect on the tuning of these IF transformers.

16. SECOND DETECTOR. — The 2nd detector (V8) is a twin diode operated with both plates and both cathodes connected in parallel. Its IF input is obtained from the untuned secondary of coil (L32) in transformer (T4) in the plate circuit of the 3rd IF amplifier (V7). To facilitate operation of the LIMITER tube (V9) the diode load resistance totaling 475,000 ohms is divided into two approximately equal parts. One part, 250,000 ohms (R30), is placed between the paralleled cathodes and ground and is by-passed (for IF) by a 50 $\mu\mu f$ capacitor (C26). The other part, totaling 225,000 ohms is between the low-potential end of the secondary and ground, and is made up of 100,000 ohms (R48), 75,000 ohms (R24), and 50,000 ohms (R25). The 100,000 ohm resistor (R48), together with two 50 $\mu\mu f$ capacitors (C44, C45), constitute a filter to prevent IF voltages from reaching the 50,000 ohm resistor (R25) and the AUDIO GAIN control (R26).

17. NOISE LIMITER.—

a. The noise limiter tube (V9) is a class B twin triode with its two grids and two plates connected in parallel to secure the lowest possible impedance. When the LIMITER switch (SW5) is closed, the relative potentials of cathode, grids, and plates of the limiter tube (V9) depend on the d-c current flowing in the load circuit of the 2nd detector diode (V8), which in turn depends on the IF carrier voltage impressed on the diode plates. The potential of the grids of (V9) is controlled by the filter made up of a 1,000,000 ohm resistor (R49) and a .05 μf capacitor (C42). The time constant of this combination is one-twentieth second, which is long enough to prevent the grids of (V9) from following the carrier variations due to normal modulation, and yet short enough to follow the variations due to fading. This arrangement provides *automatic* adjustment of the noise limiter circuit for widely different carrier levels at the second detector.

b. With the LIMITER switch (SW5) turned to ON, and a steady carrier being received, the cathode of the limiter tube (V9) assumes a negative voltage with respect to ground (chassis) equal to the drop across resistor (R24) and (R25) in series. At the same time the grids are held at a potential more negative than the cathode by the drop across resistor (R48), and the plates at a positive potential equal to the drop across resistor (R30). Under these conditions, with the control grids of limiter tube (V9) appreciably more negative than its cathode, its plate-to-cathode resistance is high and very little conduction takes place as long as the carrier remains unmodulated. On high peaks of modulation this balance is upset and some conduction takes place, resulting in distortion of the modulation envelope. This distortion is negligible for modulation percentages up to about 50%, but increases rapidly as the modulation approaches 100%.

c. When the current through the diode load is *suddenly* greatly increased by the arrival of a pulse of "noise" voltage, the balance described above is changed completely. Due to the time constant of the filter (R49, C42), the grids of the limiter tube (V9) remain at their original potential, while the cathode goes more negative and the plates more positive. If the pulse is a strong one the cathode will be negative with respect to the control grids, and the plate-to-cathode resistance will fall to a low value. This low-resistance plate-to-cathode path is in shunt with the greater part of the diode load (R24, R25, and R30). Therefore the current flowing in resistor (R25) due to the noise voltage is much less than it would be with the LIMITER switch turned OFF.

18. AVC AMPLIFIER AND RECTIFIER.—

a. The control grid of the AVC amplifier tube (V11) is connected in parallel with the control grid of the 3rd IF amplifier (V7) which is driven from the tap on secondary coil (L31) of IF transformer (T3). Amplified IF voltages present in the plate circuit of tube (V11) are impressed on the AVC rectifier tube (V12) by means of transformer (T6). Transformer (T6) has a tuned primary and closely coupled untuned secondary (L34). The untuned secondary is connected to both diode plates of tube (V12) and to the diode load composed of resistors (R53, R54, and R55). AVC control voltage is obtained from the high end of resistor (R53) and connected to the AVC-MANUAL switch (SW4) through an IF filter consisting of a 1,000,000 ohm resistor (R52) and a .05 μf by-pass capacitor (C56). This resistor-capacitor combination also determines the time constant of the AVC system for the reception of modulated signals.

b. When AVC is used for CW code reception, a longer time constant is desirable, and this is secured by adding a .25 μf capacitor (C17) in parallel with the .05 μf capacitor (C56). This extra timing capacitor is connected to one pole of the SIGNAL-MOD-CW switch (SW3) which controls the beat oscillator. Therefore, when the beat oscillator is turned on for CW code reception, capacitor (C17) is automatically added to the AVC system.

c. The low-potential end of the AVC rectifier diode load and the paralleled cathodes of the diode itself (V12) are returned to the –3 volt point on the "C" bias voltage divider. This provides the minimum recommended grid bias for the controlled RF and IF amplifier tubes (V1, V2, V5, and V6) without regard to any negative bias furnished by diode (V12).

d. When the AVC-MANUAL switch (SW4) is thrown to AVC, the "S" meter (M1) is connected in shunt with the 1,000 ohm adjustable resistor (R41). Since resistor (R41) is in series with the AVC diode load, some of the rectified d-c current flows through the meter. The amount of this current depends on the strength of the IF voltage impressed on the plates of the AVC diode (V12). This voltage in turn depends on both the strength of the incoming signal and the accuracy of tuning. The meter reading varies as the receiver is tuned through a signal, being highest at exact resonance. Strong signals produce higher meter readings than weak signals, therefore the actual meter reading at resonance is an indication of the strength of the incoming signal carrier. The setting of the variable resistor (R41) controls the degree of meter deflection on any given signal, and is usually adjusted to produce a reading of "S9" on a 50 microvolt signal at 3.5 mc. When so adjusted, a change of one "S" number on the meter indicates a change in signal strength of approximately two to one. The SENSITIVITY control (R56) must be turned full on (10) for maximum "S" meter accuracy.

19. BEAT OSCILLATOR. — The beat oscillator tube (V10) and associated oscillator circuit (T5) provide an IF voltage of approximately 465 kc. This voltage, when introduced into the input circuit of the 2nd detector (V8) by means of the small coupling capacitor (C41), mixes with the IF signal being delivered to the detector by the 3rd IF amplifier tube (V7). The mixture of these two similar frequencies results in a "beat" or difference frequency in the output of the 2nd detector. By adjusting the beat oscillator frequency to the proper value, the pitch of this difference frequency can be controlled at will. Fine adjustment of the frequency is accomplished by means of the BEAT OSCILLATOR control (E17) on the front panel which turns a small variable capacitor (C47) in transformer (T5). The oscillator is turned on by throwing the SIGNAL-MOD-CW switch (SW3) to CW. In addition to being necessary for proper reception of CW code signals, the beat oscillator is useful for locating weak signals of any kind.

20. **AF AMPLIFIER.** — The AF amplifier has three stages using one VT-65 triode (V13) and three VT-66 pentodes (V14, V15, and V16). The grid of the first tube (V13) is connected to the moving arm of the AUDIO GAIN control (R26) through a blocking capacitor (C24). Its plate is coupled to the grid of the second AF amplifier (V14) by means of capacitor (C25), plate resistor (R28), and grid leak (R29). The second amplifier tube (V14), while a pentode, is operated as a triode by connecting its plate and screen together. It drives the output tubes (V15, V16) through a push-pull input transformer (T7). The output tubes (V15, V16) are also triode connected and are operated as class AB_2 amplifiers, which means that grid current flows during some part of the input cycle. For a power output up to approximately 3 watts no grid current flows, and harmonic distortion is negligible. Above 3 watts, and up to 10 watts (maximum output) grid current steadily increases causing a corresponding increase in harmonic distortion. The output transformer (T8) has two secondary windings; a 600 ohm secondary (4-5) for power output, and a monitoring secondary (6-7) designed to deliver about 2% of the output power into an 8,000 ohm resistive load when the 600 ohm secondary is connected to a matching load.

21. **POWER SUPPLY UNIT.** — Power Supply Units RA-74-C, RA-84-B, and RA-94-A are alike except for variations in the power transformers (T1, T2, and T3 respectively). These differences are described in detail in PAR. 2 and PAR. 7*e*. The power unit furnishes "A", "B" and "C" voltages for the receiver. The "A", or heater voltage, is 6.3 volts a-c obtained from a separate secondary winding (1-2) on the power transformer. "B" voltage is obtained from the center-tapped high-voltage secondary (7-8-10) connected to the plates of the "B" rectifier tube (V1) which is a type VT-145. After rectification this voltage is filtered by the combined action of the first filter choke (L1) and the first two 8 μf sections of filter capacitor (C1). This provides 380 volts d-c for the plates of the power output tubes in the receiver. Further filtering by the second filter choke (L2) and another 8 μf section of capacitor (C1) provides 250 volts d-c for the plates of the remaining tubes in the receiver. Approximately 100 volts d-c for the screen grids of the receiver tubes is obtained from the tap on the bleeder resistor (R1), which is by-passed by the remaining section of capacitor (C1). Negative "C" voltage

is obtained from a tap (9) on the high voltage secondary connected to the filament of the "C" rectifier (V2) which is a type VT-80. The rectified output from the plates of this tube (V2) is filtered by the three 8000 ohm sections of resistor (R2) and the four 3 μf sections of filter capacitor (C2). When connected to the receiver, the voltage at the end of this filter is approximately minus 50.

SECTION IV—MAINTENANCE

22. GENERAL.—Servicing adjustments and repairs should not be attempted by unqualified personnel. Satisfactory operation of radio receivers depends partly upon several outside mechanical conditions. In case of trouble, look over all the equipment before taking the receiver from its case.

a. Visual Inspection.—If you have trouble, take a look at the following items to see that the right apparatus is in good mechanical condition, that connections are good and are made correctly, and that all plugs and sockets are clean.

(1) Antenna and lead-in or transmission line.

(2) Ground.

(3) Earphones or speaker, including cord and plug.

(4) Power cable and plug.

(5) Line fuse.

23. TUBE CHECK.—Test vacuum tubes regularly and replace any showing low sensitivity. Use Test Set I-56-( ), or whatever testing equipment is available.

24. CONTINUITY TESTS.—If the receiver won't work at all, it may have a shorted filter or by-pass capacitor or an open resistor. Measure socket voltages and compare them with TABLE 1. If this doesn't uncover the trouble, start checking the socket terminal resistance values against TABLE 2. In checking these resistance values be sure to set the "variable" controls to the positions given in the table. This way you can quickly locate the part that is faulty for either the receiver or the power supply unit (TABLE 3). Remove the bottom cover plates so you can get at all parts. If the receiver is being used in Cabinet CH-104-A, remove it from the cabinet. Get the values of any resistors and capacitors by spotting the reference number on the proper circuit diagram (FIGS. 21 to 26) and looking it up in the Table of Replaceable Parts, Section V, PAR. 27.

FIG. 18, 19, or 20, showing the location of the component parts, will also be of help.

25. ALIGNMENT—GENERAL.—When either selectivity or sensitivity (or both) appear to be below normal and all tubes have been tested, check the alignment. Remove the dust cover and bottom cover plate of the receiver and you can get at all parts for making adjustments. CAUTION: ANY CHANGES FROM ORIGINAL SETTINGS WILL BE SMALL SO USE GREAT CARE WHEN CHECKING ADJUSTMENTS. This is especially true of the HF Oscillator circuits (FIG. 12, 13, or 14) which should NOT be disturbed unless the MAIN TUNING dial is definitely known to be off calibration AND BE CAREFUL HOW YOU HANDLE THAT SCREWDRIVER.

a. Test Oscillator.—This should be an accurately calibrated instrument producing modulated radio-frequency signals. In addition to 465 kc (the IF), the frequency range required of the test oscillator depends on the tuning range of the receiver to be aligned. The alignment frequencies required for Radio Receivers BC-779-B, BC-794-B, and BC-1004-C are shown in FIGS. 12, 13, and 14, respectively. In a pinch, the second harmonic can generally be used when the fundamental frequency is not available. For example: a test oscillator covering all frequencies from 465 kc to 20 mc, in addition to being ideal for checking Radio Receiver BC-1004-C, could be used to check Radio Receiver BC-794-B by using the second harmonic of 20 mc instead of the 40 mc called for in FIG. 13. The oscillator should have an output of about 100 micro-volts and an output impedance of approximately 100 ohms for best results when aligning the RF and HF Oscillator circuits. For IF alignment these values are not critical. The frequency calibration of the test oscillator is extremely important *if* the receiver dial calibration is to be correct.

b. Output Meter.—The output meter should respond to the modulation frequency of the test oscillator, preferably 400 cps, and should provide at least half-scale deflection for 10 volts. Its resistance should be greater than 500 ohms.

c. Tools.—An insulated screw driver 9-64″ wide and .025″ thick at the bit, is required for alignment of the receiver.

d. Preliminary Procedure.—Throw the OFF-ON switch to ON and let the receiver warm up for about an hour before beginning adjustments. Connect the output meter to the SPKR terminals located at the rear of the receiver chassis.

26. ALIGNMENT—IF, AVC, AND BEAT OSCILLATOR.— Adjust the test oscillator to approximately 465 kc, and connect the output to the control grid cap of the 1st detector tube (V4) through a fixed capacitor (anything larger than 100$\mu\mu$f will do). Set front panel controls as follows:

SENSITIVITY	0
AVC-MANUAL	MANUAL
SIGNAL-MOD-CW	MOD
SEND-REC	REC
BAND SWITCH	2.5–5.0 mc
AUDIO GAIN	10
CRYSTAL SELECTIVITY	OFF
PHASING	on arrow
BAND WIDTH	3
BAND SPREAD DIAL	100

a. IF Alignment Check.—Set the MAIN TUNING dial near 2.5 mc, but be careful not to tune in a powerful local signal. Now tune the test oscillator to the proper alignment frequency this way. Set the CRYSTAL SELECTIVITY switch on 3, the AVC-MANUAL switch on AVC, and advance the SENSITIVITY to 10. Turn off the modulation of the test oscillator and adjust its frequency slightly until you get maximum deflection of the "S" meter. The adjustment of the test oscillator frequency in this manner is necessary in order to get exact agreement with the natural period of the particular quartz crystal in the receiver being checked. After reducing SENSITIVITY to 0, the modulation may be switched on, but the tuning of the test oscillator must not be altered until the alignment check is completed. Return the CRYSTAL SELECTIVITY and AVC-MANUAL controls to their original settings of OFF and MANUAL and advance the SENSITIVITY control until you get a suitable output meter reading. A half-scale reading in the neighborhood of 5 to 10 volts will be okay.

Now check the alignment of both upper (grid) and lower (plate) air trimmer capacitors in IF transformers T2 and T3 and the single trimmer in T4 for peak reading of the output meter. If one or more of these adjustments results in a sizeable increase of output, reduce the SENSITIVITY control enough to bring the meter reading back to half-scale. Alignment of the plate circuit of the crystal filter (T1) can be tested in the same way by means of the lower adjusting screw on the side of the unit. This screw varies the position of the powdered iron core in coil L26. (Do not change the setting of the upper adjusting screw which tunes grid coil L27, as this circuit cannot be adjusted properly by the method just described. This circuit may, however, be correctly aligned by the "visual" method employing a frequency-modulated oscillator and cathode ray oscillograph.)

b. AVC Alignment Check.—Leaving all other controls as above, and without changing the test oscillator frequency, reduce AUDIO GAIN to 0, switch to AVC and increase SENSITIVITY to 10. Increase AUDIO GAIN to restore half-scale reading on output meter and adjust the single trimmer capacitor in T6 for *minimum* output meter reading. The "S" meter reading should "peak" at the same time the output meter reading "dips".

c. BF Oscillator Alignment Check.— (AVC alignment, PAR. 26*b*) Continuing with controls as above switch off the output meter and plug in a pair of headphones, or replace the meter with a suitable loudspeaker. Throw the SIGNAL-MOD-CW switch to CW and see that the BEAT OSCILLATOR control is exactly on 0 (zero). If tone in headphones (or speaker) is not very low in pitch, readjust the trimmer capacitor near the bottom of T5 until it is. If the beat frequency oscillator is in perfect alignment when this test is made, no sound will be heard since the test oscillator and the beat frequency oscillator will be oscillating at the same frequency and so you will hear no audible difference or "beat". Check this by turning the BEAT OSCILLATOR control knob slightly off 0 (zero) toward one side or the other. If this brings a tone rising in pitch as the pointer is turned away from 0 (zero) to either side, the beat frequency oscillator is perfectly aligned.

d. HF Oscillator Calibration Check.—The accuracy of the MAIN DIAL calibration depends solely on the HF oscillator frequency, which in these receivers is 465 kc (the IF) *higher* than the signal frequency. For example, when the receiver is tuned to a 10.0 mc signal, the frequency of the HF oscillator must be 10.465 mc. While the frequency of the HF oscillator can be measured directly if accurate frequency-measuring equipment is on hand, it is far simpler to check it by tuning in signals of known frequency and noting the MAIN DIAL readings.

CAUTION: BE SURE THE BAND SPREAD DIAL IS SET AT 100 WHEN MAKING THIS TEST.

(1) To correct dial calibration, refer to the alignment chart (FIG. 12, 13, or 14) for the location of the HF oscillator adjust-

ments as well as the signal frequencies at which the settings should be made. If the 2.5–5.0 mc band is to be corrected, the test oscillator may be accurately set to 2.5 mc and its second harmonic (if strong enough) used for the 5.0 mc end of the band. The output of the test oscillator should be unmodulated and the SIGNAL-MOD-CW switch on the receiver turned to CW. Set the BEAT OSCILLATOR control at 0, the AUDIO GAIN at 10, the AVC-MANUAL switch on MANUAL, and the BAND WIDTH at 16. Disconnect the output meter and use headphones or loud speaker to make the necessary adjustments by the "zero beat" method. The test oscillator should be connected to the antenna terminals for this test.

(2) Tune in the second harmonic at the 5.0 mc end of the dial to zero beat. Notice the approximate dial error. Then turn the main dial slightly toward the 5.0 mc calibration line until the beat note rises to a high pitch. Do not turn the dial far enough to raise the beat note so high that you can't hear it. With the alignment screwdriver adjust the trimmer capacitor marked HF OSC-5.0 mc until the beat note is again zero. Turn the main dial still further toward the 5.0 mc line and make a further adjustment of the trimmer capacitor to return to zero beat. Repeat this process as many times as necessary to bring the dial to exactly 5.0 mc. (It is plain that the main dial could be set at once on exactly 5.0 mc and the trimmer turned enough at one time to produce zero beat, but this step-by-step method is recommended.) Then tune in the 2.5 mc fundamental at the low frequency end of the main dial and correct the calibration step-by-step, as before, using the inductance trimming adjustment HF OSC-2.5 mc (FIG. 12,13, or 14). When the second harmonic is again tuned in at the other end of the dial, you will find that the adjustment of the inductance at 2.5 mc has changed the correction previously made at 5.0 mc. This is perfectly normal, as an adjustment at one end of the dial also affects the other end of the band. So you will have to go back and forth several times from 2.5 to 5.0 mc in order to bring both ends of the dial scale into exact agreement with the signal frequency.

CAUTION: DURING THIS ADJUSTMENT BE VERY CAREFUL TO ADJUST THE SENSITIVITY CONTROL IN A WAY TO AVOID OVERLOADING OR "FREAK" RECEPTION DUE TO TOO MUCH AMPLIFICATION.

e. RF and 1st Detector Alignment.—Although the alignment of these three circuits (1st and 2nd RF and 1st Det) can be checked at the same time as the HF oscillator, it is simpler to consider each check as a separate operation. Efficient weak-signal reception, with low receiver noise level and high image rejection ratios, depends on the relative alignment of these three circuits with respect to the HF oscillator and without regard to calibration accuracy. As long as these circuits are adjusted to resonate at a frequency 465 kc lower than that of the HF oscillator, you'll get good results.

(1) Accurate calibration of the test oscillator is not required to check these adjustments. Modulation of the oscillator, while convenient, is not strictly necessary. The input to the antenna terminals should be through 100 ohms (approximate) including the output resistance of the oscillator. If the test oscillator is modulated, the receiver controls should be set as for IF alignment—if unmodulated, set BEAT OSCILLATOR knob to 2 (on either side) and throw SIGNAL-MOD-CW switch to CW. Adjust SENSITIVITY to produce a half-scale reading on the output meter when signals are exactly in tune.

(2) Starting with the 2.5–5.0 mc band, set the main dial at 5.0 mc (band spread dial at 100) and adjust the frequency of the test oscillator for peak deflection of the output meter. Then check the setting of the trimmer marked 1st DET and 5.0 mc in FIG. 12, 13, or 14. Repeat this procedure on trimmers indicated as 2nd RF and 1st RF in the same row. If readjustments on one of these settings results in a sizeable increase in output meter reading, alter the SENSITIVITY control slightly to reduce the reading to half-scale. After each adjustment check the tuning of the receiver to make sure the test signal is still accurately tuned. The BAND SPREAD control may be used as a vernier for this purpose in those bands in which it operates (see PAR. 9*e*). **CAUTION: THIS TUNING CHECK IS EXTREMELY IMPORTANT AT THE HIGH END OF THE 10-20 MC AND 20-40 MC BANDS WHERE THERE IS SOME SLIGHT INTERACTION BETWEEN THE IST DET AND HF OSC CIRCUITS.** After checking the three trimmers at the high end of this band, turn the main dial to 2.5 mc and retune the test oscillator to suit. Then check the three inductance adjuster settings marked 2.5 mc in the same row. Since adjustments at one end of a band also affect the other end of the band (as described under HF OSC alignment) it will be necessary to repeat the above procedure until no further improvement can be secured. The number of repetitions necessary will depend on how much mistuning existed to start with. The rest of the bands may be checked in the same manner.

(3) For best possible efficiency with a particular antenna arrangement, the 1st RF circuits may be adjusted without discon-

necting it. This can be done by loosely coupling the output of the test oscillator to the antenna system instead of directly to the antenna terminals through a 100 ohm resistor. Make sure that the signal from the test oscillator actually reaches the receiver by way of the antenna rather than by some form of direct coupling.

(4) In all the foregoing tests using output meter readings for circuit adjustment it is recommended that headphones (or speaker) be used to monitor the signal. In this way you may avoid false adjustments due to overloading, freakish responses, etc.

TABLE 1—TUBE SOCKET VOLTAGES

Socket No.	Tube No.	VOLTS AT SOCKET TERMINAL NUMBER*					
		3	4	5	6	7	8
X1	V1	+250	+135		+135	6.3AC	0
X2	V2	+250	+135		+135	6.3AC	0
X3	V3	+250	+115			6.3AC	0
X4	V4	+150**	+150**	+150**		6.3AC	
X5	V5	+250	+135	0		6.3AC	0
X6	V6	0	−43	0	+135	6.3AC	+250
X7	V7	0	−1.5	0	+100	6.3AC	+240
X8	V8	−.2	+.4	−.2		6.3AC	+.4
X9	V9	+.4	0	0	+.4	4.0AC	−.2
X10	V10	0		0	+40	6.3AC	+155
X11	V11	0	−1.5	0	+110	6.3AC	+240
X12	V12	−3.2	−3.2	−3.2		6.3AC	−3.2
X13	V13	+110			−3.2	6.3AC	0
X14	V14	+240	+240		−20	6.3AC	0
X15	V15	+380	+380	0		6.3AC	+38
X16	V16	+380	+380	0		6.3AC	+38

*Terminals 1 and 2 of all sockets are at zero potential with respect to chassis.

**Varies widely with different tubes; also with dial setting.

The above voltage readings are based on an a-c line voltage exactly equal to the primary tap on the power transformer—higher or lower line voltage should result in corresponding variations in these readings.

All d-c readings are based on the use of a meter having a resistance of 1000 ohms per volt, and are taken between socket terminals and chassis.

SENSITIVITY and AUDIO GAIN should be set at a 0.

SIGNAL-MOD-CW switch should be on CW.

AVC-MANUAL switch should be on MANUAL.

SEND-REC switch should be on REC.

LIMITER switch should be ON.

TABLE 2—SOCKET TERMINAL RESISTANCE VALUES

(All measurements made between socket terminal and chassis)

Radio Receivers BC-779-B, BC-794-B, and BC-1004-C

Terminal Name	Pin No.	Variable		Resistance in ohms
		Ref. No.	Setting	
V1 grid	Cap	SW4 SW4	AVC MAN	1,160,000 515,000
V1 Plate	3	SW2 SW2	SEND REC	infinity 20,000
V1 screen	4			11,500
V2 grid	Cap	SW4 SW4	AVC MAN	1,160,000 515,000
V2 plate	3	SW2 SW2	SEND REC	infinity 20,000
V2 screen	4			11,500
V3 sig. grid	Cap			510,000
V3 plate	3	SW2 SW2	SEND REC	infinity 20,000
V3 screen	4	SW2 SW2	SEND REC	infinity 43,000
V3 inj. grid	5			50,000
V4 grid	Cap			50,000
V4 plate	3,4,5			30,000
V4 cathode	8			.01 to 1.8*
V5 grid	Cap	SW4	AVC	670,000
		SW4 R56	MAN 0	14,600
		SW4 R56	MAN 10	10,300

* Varies with band change switch setting

TABLE 2—SOCKET TERMINAL RESISTANCE VALUES—(*Cont'd.*)

(All measurements made between socket terminal and chassis)

Radio Receivers BC-779-B, BC-794-B, and BC-1004-C

Terminal Name	Pin No.	Variable		Resistance in ohms
		Ref. No.	Setting	
V5 plate	3			20,000
V5 screen	4			11,500
V6 grid	4	SW4	AVC	670,000
		SW4 R56	MAN 0	14,600
		SW4 R45	MAN 10	10,300
V6 screen	6			11,500
V6 plate	8			20,000
V7 grid	4			10,300
V7 screen	6			68,000
V7 plate	8			20,000
V8 plates	3,5			217,000
V8 cathodes	4,8			250,000
V9 plates	3,6			250,000
V9 grids	4,5			1,220,000
V9 heater	7			4**
V9 cathode	8	SW5 SW5	ON OFF	117,000 infinity
V10 grid	4			100,000
V10 screen	6	SW3 SW3	CW MOD	523,000 infinity

** with V9 removed from socket

TABLE 2—SOCKET TERMINAL RESISTANCE VALUES—(*Cont'd.*)

(All measurements made between socket terminal and chassis)

Radio Receivers BC-779-B, BC-794-B, and BC-1004-C

Terminal Name	Pin No.	Variable		Resistance in ohms
		Ref. No.	Setting	
V10 plate	8	SW3 SW3	CW MOD	73,000 infinity
V11 grid	4			10,300
V11 screen	6			68,000
V11 plate	8			20,000
V12 plates	3,5			35,300
V12 cathodes	4,8			300
V13 plate	3			68,000
V13 grid	5			500,000
V14 plate	3,4			18,600
V14 grid	5			500,000
V15 plate	3,4			19,400
V15 grid	5			320
V15 cathode	8			750
V16 plate	3,4			19,400
V16 grid	5			320
V16 cathode	8			750

TABLE 3—SOCKET TERMINAL RESISTANCE VALUES

(All measurements made between socket terminal and chassis)

Power Supply Units RA-74-C, RA-84-B, and RA-94-A

Terminal Name	Pin No.	Resistance in ohms
V1 plate	2	40 *
V1 plate	3	40 *
V1 filament	1,4	19,500
V2 plates	2,3	28,500
V2 filament	1,4	22 **

* 55 ohms for RA-74-C

** 34 ohms for RA-74-C

TABLE 4—TUBE BASING DESIGNATION

TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
VT-65 (RMA-6C5)	shell	heater	plate		gird		heater	cathode
VT-66 (RMA-6F6)	shell	heater	plate	screen	grid		heater	cathode
VT-80 (RMA-80)	filament	plate	plate	filament				
*VT-86 (RMA-6K7)	shell	heater	plate	screen	suppressor		heater	cathode
*VT-87 (RMA-6L7)	shell	heater	plate	screen	inj. grid		heater	cathode
VT-90 (RMA-6H6)	shell	heater	plate (2)	cathode (2)	plate (1)		heater	cathode (1)
*VT-91 (RMA-6J7)	shell	heater	plate	screen	suppressor		heater	cathode
VT-96 (RMA-6N7)	shell	heater	plate (2)	grid (2)	grid (1)	plate (1)	heater	cathode
VT-116 (RMA-6SJ7)	shell	heater	suppressor	grid	cathode	screen	heater	plate
VT-117 (RMA-6SK7)	shell	heater	suppressor	grid	cathode	screen	heater	plate
VT-145 (RMA-5Z3)	filament	plate	plate	filament				

* These three types have grid caps

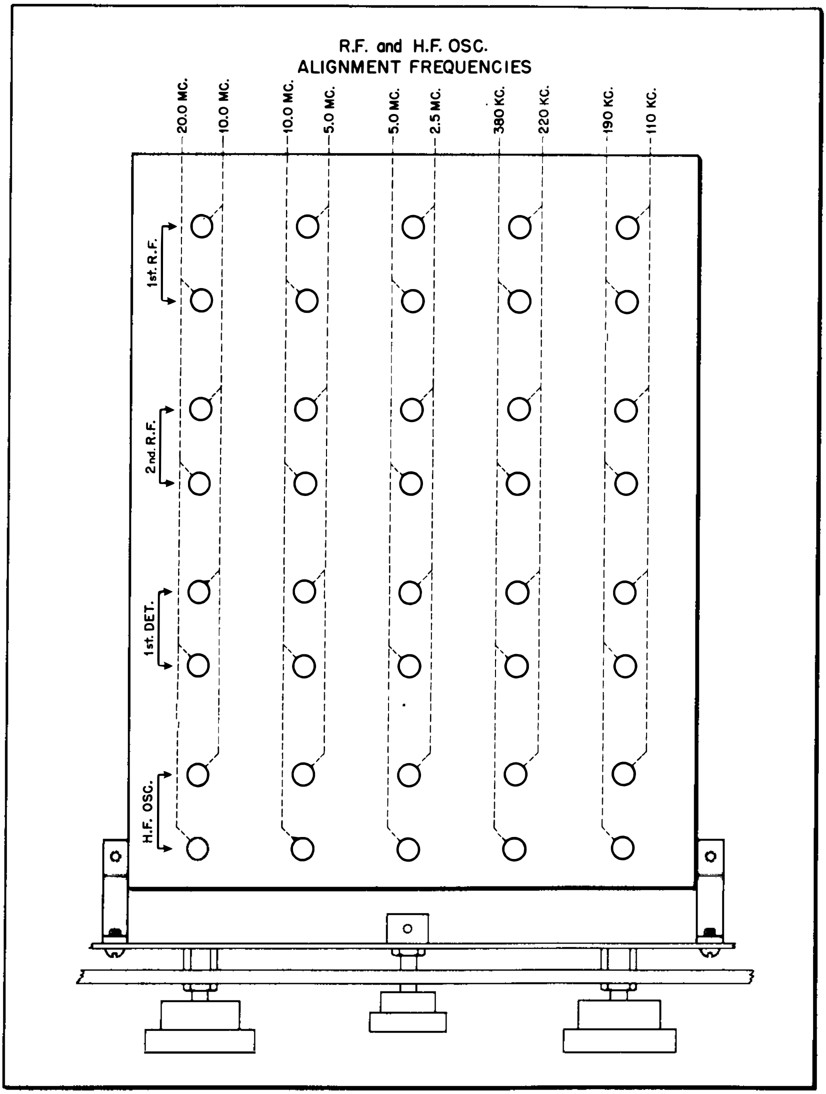

Figure 12. Radio Receiver BC-779-B Alignment Chart

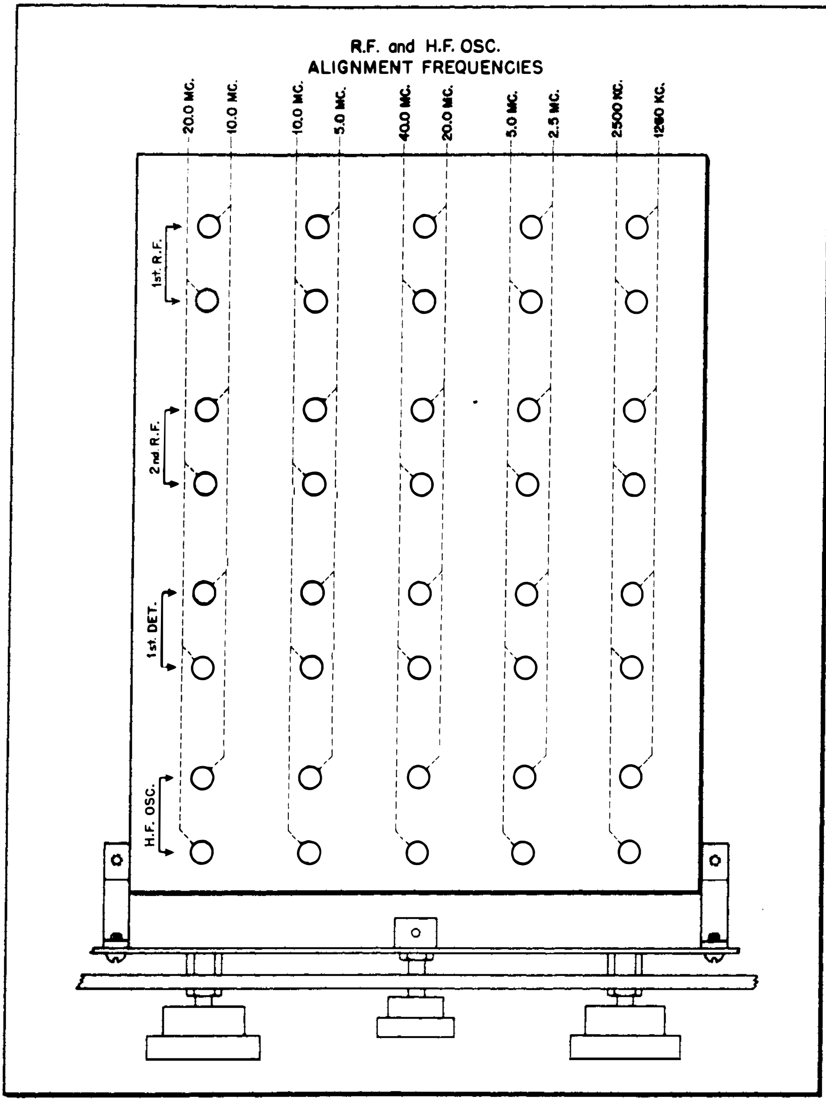

Figure 13. Radio Receiver BC-794-B
Alignment Chart

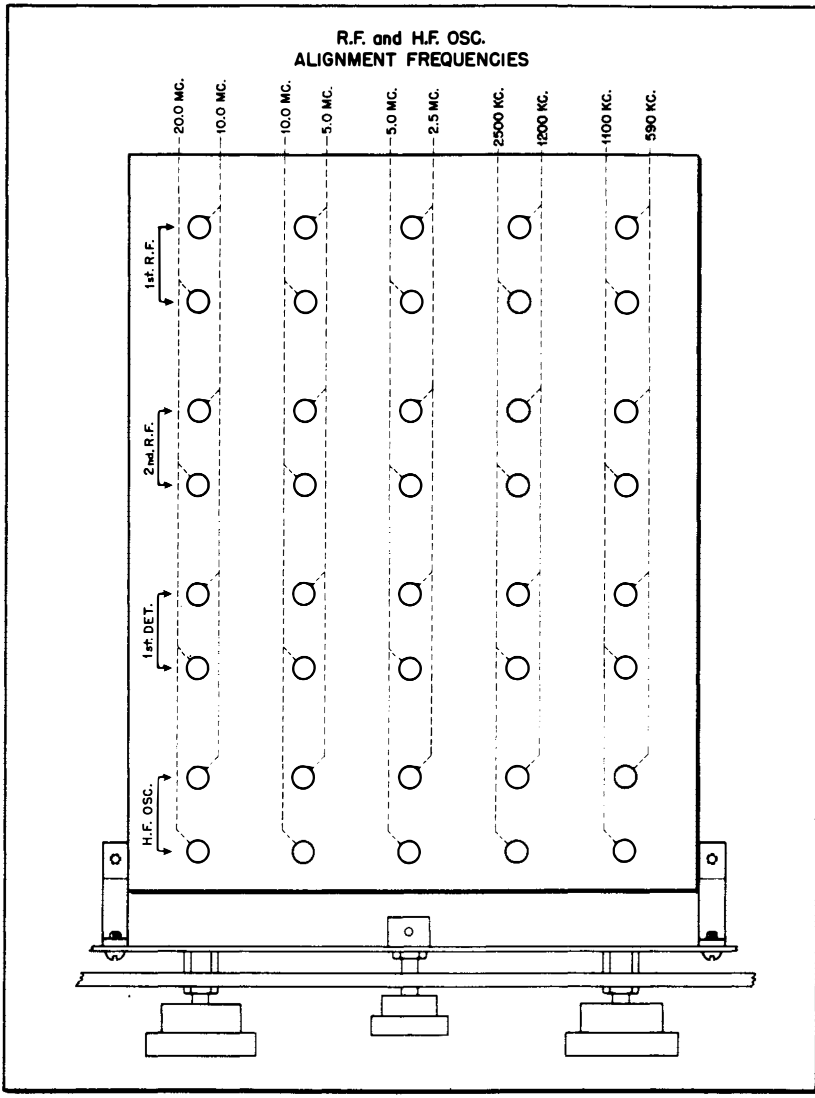

Figure 14. Radio Receiver BC-1004-C
Alignment Chart

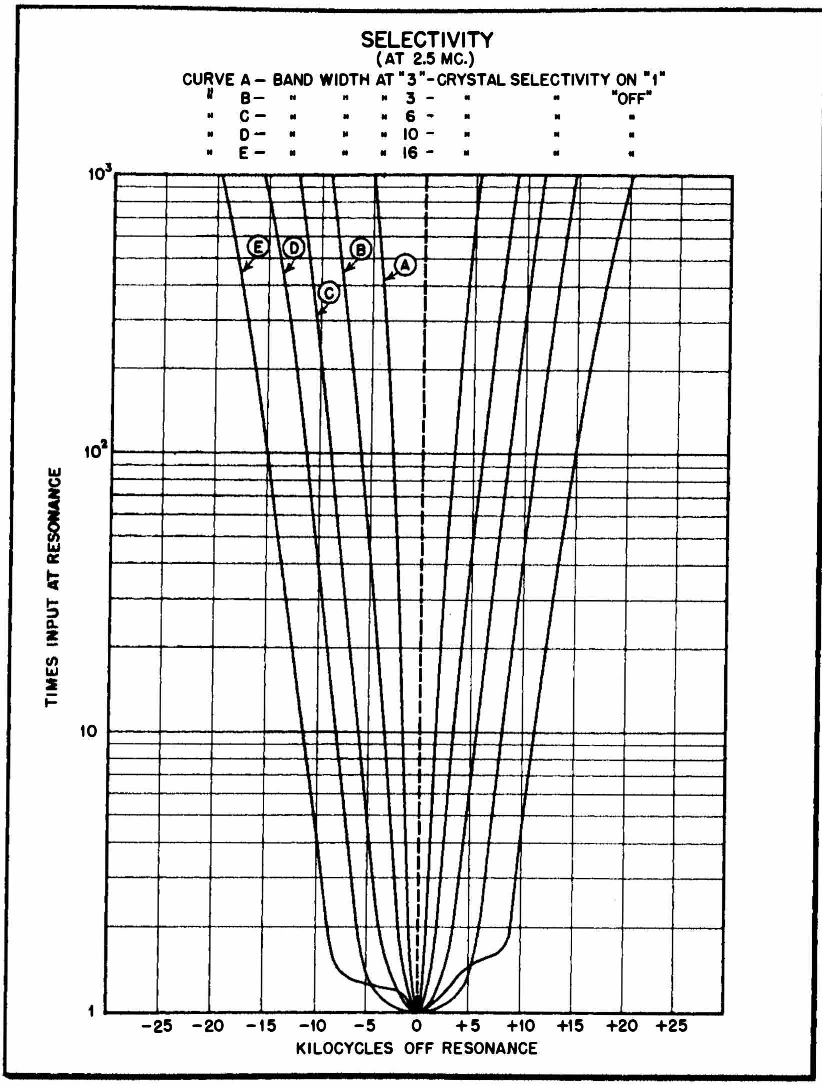

Figure 15. Radio Receiver BC-779-B Selectivity

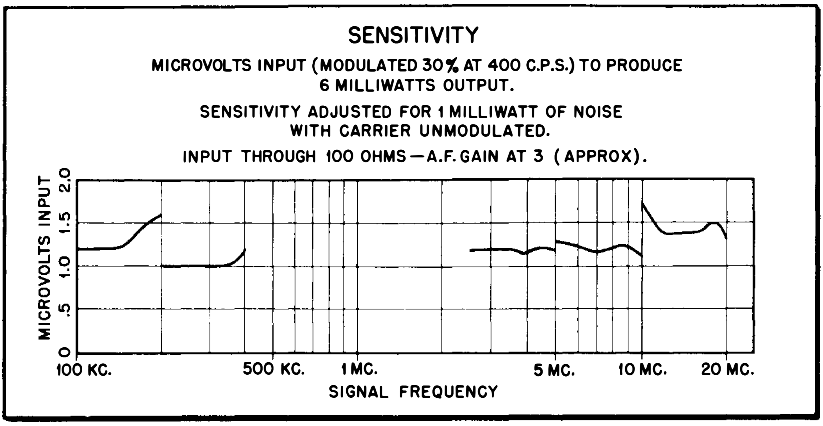

Figure 16. Radio Receiver BC-779-B Sensitivity

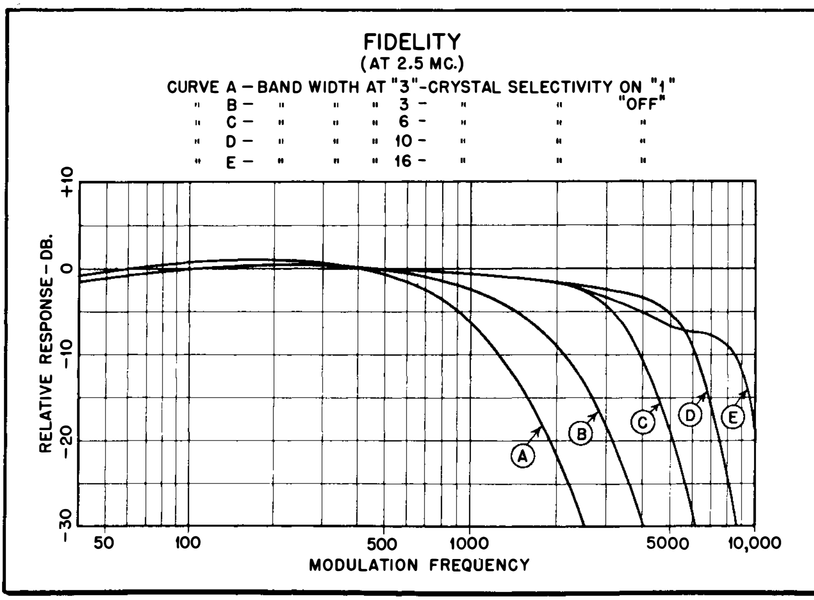

Figure 17. Radio Receiver BC-779-B Fidelity

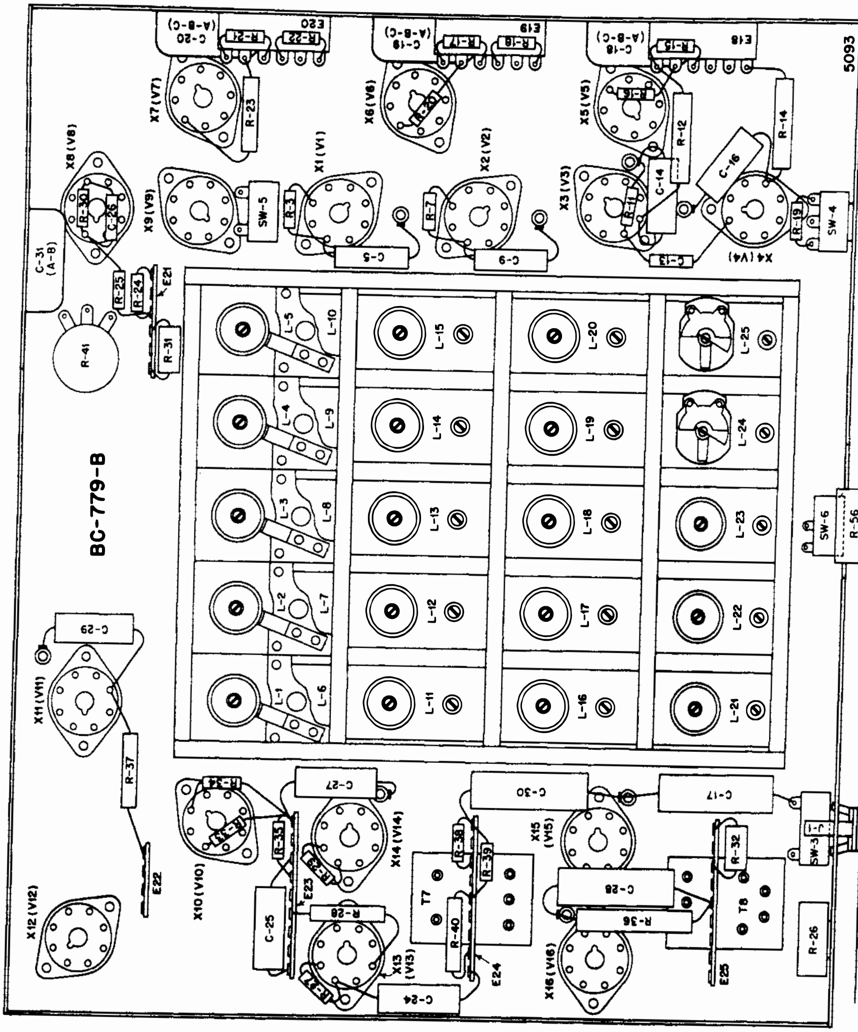

Figure 18. Radio Receiver BC-779-B
Location of Parts

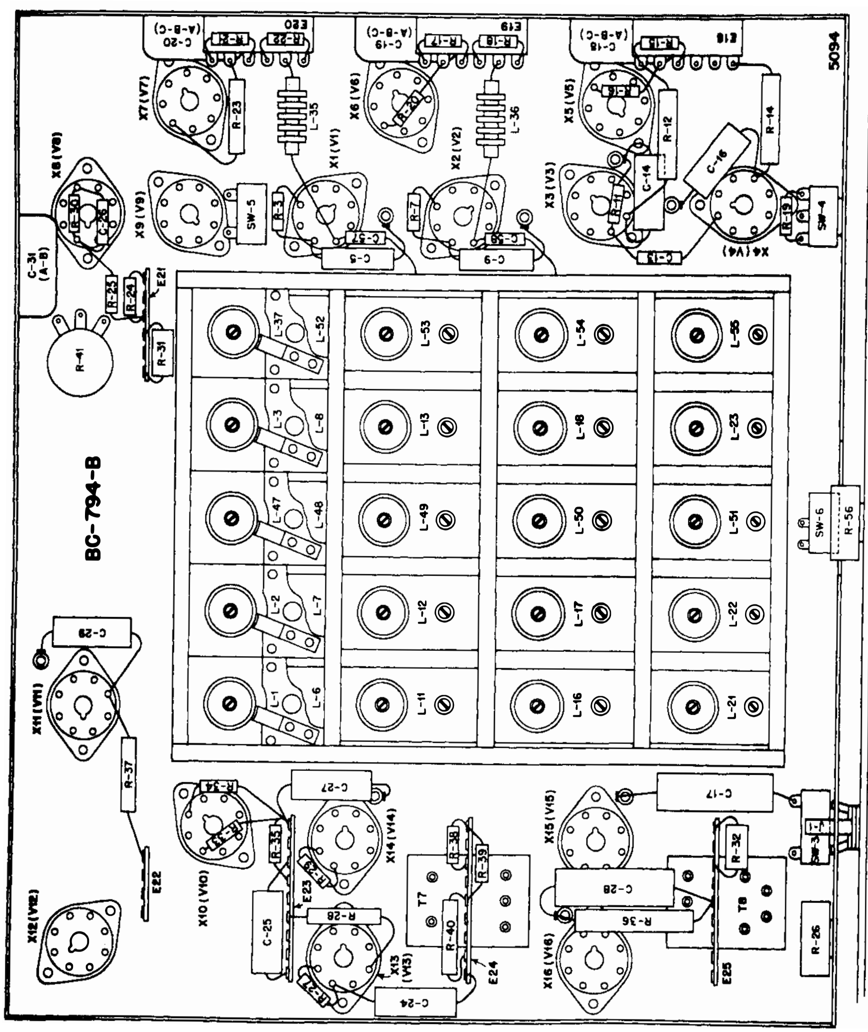

Figure 19. Radio Receiver BC-794-B
Location of Parts

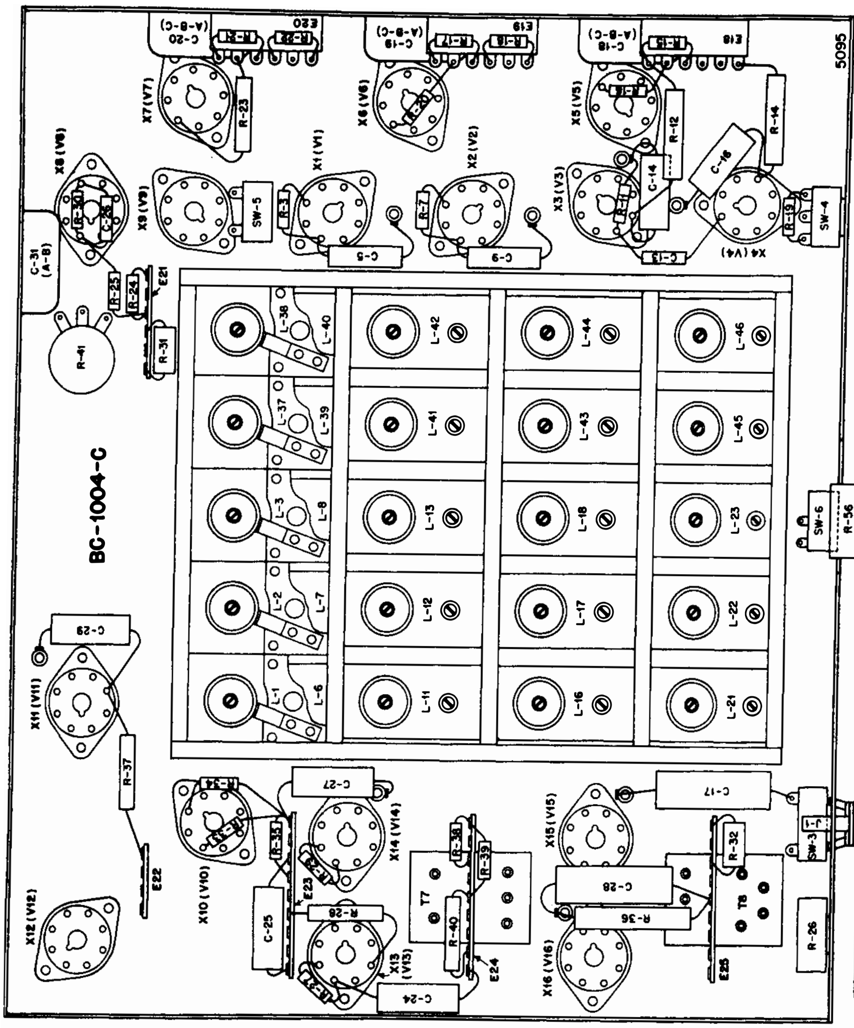

Figure 20. Radio Receiver BC-1004-C
Location of Parts

SECTION V—SUPPLEMENTARY DATA

27. TABLE OF REPLACEABLE PARTS.—

a. Radio Receivers BC-779-B, BC-794-B and BC-1004-C.—

Ref. No.			Sig. Corps Stock No.	Name of Part and Description	Function	** Mfr. Code	Cont'r. Dwg. or Part No.
BC-779	BC-794	BC-1004					
C1 A B C D	C1 A B C D	C1 A B C D	No Stock No. Required	*Capacitor, Four section, air variable (integral part of tuning unit) Shown on Dwg. H-102 (BC-779-B) H-103 (BC-794-B) H-104 (BC-1004-C) *Special*	Main Tuning 1st R.F. grid tuning 2nd R.F. grid tuning 1st Det. grid tuning H.F. Osc. grid tuning	9	H-102 H-103 H-104
C2 A B C D	C2 A B C D	C2 A B C D	No Stock No. Required	*Capacitor, Four section, air variable (integral part of tuning unit) Shown on Dwg. H-102 (BC-779-B) H-103 (BC-794-B) H-104 (BC-1004-C) *Special*	Band Spread tuning 1st R.F. grid band spread 2nd R.F. grid band spread 1st Det. grid band spread H.F. Osc. grid band spread	9	H-102 H-103 H-104
C3	C3	C3	2C4528.7/4-4	Capacitor, 600 μμf (+10%—10%) 300V molded mica 3/4 in. x 7/16 in. x 3/16 in. Type 5 W	1st R.F. grid coupling	6	6073
C4	C4	C4		Capacitor, .01 μf (+20%-10%) 600V molded paper 1 7/16 in. x 3/4 in. x 5/16 in. Type 342	1st R.F. grid by-pass	27	5099
C5	C5	C5		Capacitor, Same as C4	1st R.F. screen by-pass		

C6		C6		Capacitor, Same as C4	1st R.F. plate by-pass		
C7	C7	C7	2C4528.7/4–4	Capacitor, Same as C3	2nd R.F. grid coupling		
C8	C8	C8		Capacitor, Same as C4	2nd R.F. grid by-pass		
C9	C9	C9		Capacitor, Same as C4	2nd R.F. screen by-pass		
C10		C10		Capacitor, Same as C4	2nd R.F. plate by-pass		
C11	C11	C11	2C4528.7/4–4	Capacitor, Same as C3	1st Det. signal grid coupling		
C12	C12	C12		Capacitor, Same as C4	1st Det. signal grid by-pass		
C13	C13	C13	2C4528.7/4–7	Capacitor, 95μμf (+2%–2%) 500V molded silvered mica ¾ in. x 7⁄16 in. x 3⁄16 in. Type 5 R	1st Det. Osc. grid coupling	6	6195
C14	C14	C14		Capacitor, Same as C4	1st Det. screen by-pass		
C15	C15	C15	2C4528.7/4–8	Capacitor, 50 μμf (+5%–5%) 500V molded silvered mica ¾ in. x 7⁄16 in. x 3⁄16 in. Type 5 R	H.F. Osc. grid coupling	6	6074
C16	C16	C16		Capacitor, Same as C4	H.F. Osc. plate by-pass		
C17	C17	C17	3DA250–39	Capacitor, .25μf (+20%–10%) 600V paper tubular 15⁄16 in. dia. x 23⁄16 in. long Type 689	Extra AVC timing for CW	15	4892

** See List of Manufacturers, Page 85.
Special Indicates part made for, or by the contractor.
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27. TABLE OF REPLACEABLE PARTS (*Cont'd*).—

a. Radio Receivers BC-779-B, BC-794-B and BC-1004-C.—

Ref. No.			Sig. Corps Stock No.	Name of Part and Description	Function	** Mfr. Code	Cont'r. Dwg. or Part No.
BC-779	BC-794	BC-1004					
C18 A B C	C18 A B C	C18 A B C	3DA50-51	Capacitor, 3 x .05 µf (+20%-10%) 600V paper in metal case 1 13/16 in. x 15/16 in. x 13/16 in. Type 630	 1st Det. plate by-pass Common grid return by-pass 1st I.F. screen by-pass	15	4891
C19 A B C	C19 A B C	C19 A B C	3DA50-51	Capacitor, Same as C18	 1st I.F. plate by-pass 2nd I.F. grid by-pass 2nd I.F. screen by-pass		
C20 A B C	C20 A B C	C20 A B C	3DA50-51	Capacitor, Same as C18	 2nd I.F. plate by-pass 3rd I.F. grid by-pass 3rd I.F. screen by-pass		
C21	C21	C21		Capacitor, 120µµf (+2%-2%) 500V molded silvered mica 3/4 in. x 7/16 in. x 3/16 in. Type 5 R	1st Det. plate tuning	6	6179
C22	C22	C22	3D9100-64	Capacitor, 100µµf (+5%-5%) 500V molded mica 3/4 in. x 7/16 in. x 3/16 in. Type 5 W	Crystal Filter plate coil center tapping	6	6172
C23	C23	C23	3D9100-64	Capacitor, Same as C22	Crystal Filter plate coil center tapping		

C24	C24	C24	3DA20–50	Capacitor, .02μf (+20%–10%) 600V paper tubular 11/16 in. dia. x 1 11/16 in. long Type 689	1st A.F. grid coupling	15	4894
C25	C25	C25	3DA50–55	Capacitor, .05μf (+20%–10%) 600V paper tubular 11/16 in. dia. x 2 3/16 in. long Type 689	2nd A.F. grid coupling	15	4893
C26	C26	C26	2C4528.7/4–2	Capacitor, 50 μμf (+10%–10%) 500V molded mica 3/4 in. x 7/16 in. x 3/16 in. Type 5 W	2nd Det. cathode by-pass	6	6199
C27	C27	C27	3DA50–55	Capacitor, Same as C25	B.F.O. plate by-pass		
C28	C28	C28	3DB40	Capacitor, 40μf. 150V dry electrolytic 15/16 in. dia. x 2 3/16 in. long Type PRS	3rd A.F. cathode by-pass	15	6171
C29	C29	C29	3DA50–55	Capacitor, Same as C25	AVC amplifier screen by-pass		
C30			3DA250–39	Capacitor, Same as C17	3 volt "C" bias by-pass		
C31 A B	C31 A B	C31 A B	3DA250–20	Capacitor, 2 x .25 μf (+20%–10%) 600V paper in metal case 1 13/16 in. x 1 1/4 in. x 3/4 in. Type DYR	 B+ 250V by-pass B+ 100V by-pass	6	4890
C32	C32	C32	No Stock No. Required	*Capacitor, Air variable, opposed stator type 2μμf min., 6μμf max. rotor to each stator *Special*	Crystal Filter Phasing	9	SA-179

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27. TABLE OF REPLACEABLE PARTS (*Cont'd*).—

a. Radio Receivers BC-779-B, BC-794-B and BC-1004-C.—

Ref. No.			Sig. Corps Stock No.	Name of Part and Description	Function	** Mfr. Code	Cont'r. Dwg. or Part No.
BC-779	BC-794	BC-1004					
C33	C33	C33	3D9025–2	Capacitor, 85μμf (+2%–2%) 500V molded silvered mica $\frac{3}{4}$ in. x $\frac{7}{16}$ in. x $\frac{3}{16}$ in. Type 5 R	1st I.F. grid tuning	6	6180
C34	C34	C34		Capacitor, Same as C4	1st I.F. grid by-pass		
C35	C35	C35		Capacitor, 1.5 μμf to 5μμf mica trimmer, compression type *Special*	Crystal Filter phasing trimmer	9	6189
C36	C36	C36	No Stock No. Required	*Capacitor, 100 μμf air variable *Special*	1st I.F. plate tuning	9	SA-1
C37	C37	C37	No Stock No. Required	*Capacitor, Same as C36	2nd I.F. grid tuning		
C38	C38	C38	No Stock No. Required	*Capacitor, Same as C36	2nd I.F. plate tuning		
C39	C39	C39	No Stock No. Required	*Capacitor, Same as C36	3rd I.F. grid tuning		
C40	C40	C40	No Stock No. Required	*Capacitor, Same as C36	3rd I.F. plate tuning		
C41	C41	C41	3D9005E5	Capacitor, 5.5 μμf (+10%–10%) 500V molded mica $\frac{3}{4}$ in. x $\frac{7}{16}$ in. x $\frac{3}{16}$ in. Type 5 W	B.F.O. coupling	6	6151

C42	C42	C42	3DA50-55	Capacitor, Same as C25	Noise Limiter timing		
C43	C43	C43		Capacitor, Same as C4	3rd I.F. plate by-pass		
C44	C44	C44	2C4528.7/4-2	Capacitor, Same as C26	2nd Det. R.F. by-pass		
C45	C45	C45	2C4528.7/4-2	Capacitor, Same as C26	2nd Det. R.F. by-pass		
C46	C46	C46	No Stock No. Required	*Capacitor, 100 μμf air variable *Special*	B.F.O. tuning	9	SA-197
C47	C47	C47	No Stock No. Required	*Capacitor, 9μμf air variable *Special*	B.F.O. pitch control	9	SA-170
C48	C48	C48	2C4528.7/4-7	Capacitor, Same as C13	B.F.O. parallel padding		
C49	C49	C49	2C4528.7/4-4	Capacitor, Same as C3	B.F.O. plate coupling		
C50	C50	C50	3D9100-64	Capacitor, Same as C22	B.F.O. grid coupling		
C51	C51	C51	No Stock No. Required	*Capacitor, Same as C36	AVC amplifier plate tuning		
C52	C52	C52		Capacitor, .005 μf (+20%-10%) 500V paper tubular 3/8 in. dia. x 1¼ in. long Type 538 T	AVC R.F. by-pass	15	5051
C53	C53	C53		Capacitor, Same as C4	AVC amplifier plate by-pass		
C54	C54	C54		Capacitor, Same as C4	AVC R.F. filter		

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27. TABLE OF REPLACEABLE PARTS (*Cont'd*).—

a. Radio Receivers BC-779-B, BC-794-B and BC-1004-C.—

Ref. No.			Sig. Corps Stock No.	Name of Part and Description	Function	** Mfr. Code	Cont'r. Dwg. or Part No.
BC-779	BC-794	BC-1004					
C55	C55	C55		Capacitor, Same as C4	AVC R.F. filter		
C56	C56	C56	3DA50-55	Capacitor, Same as C25	AVC timing		
	C57			Capacitor, 300μμf (+2%-2%) 500V molded silvered mica ¾ in. x 7/16 in. x 3/16 in. Type 5 R	1st R.F. plate coupling	6	6060
	C58			Capacitor, Same as C57	2nd R.F. plate coupling		
C59	C59	C59	No Stock No. Required	*Capacitor, 3 to 30 μμf mica trimmer, compression type, part L6 *Special*	L6 trimmer	9	SA-107
C60	C60	C60	No Stock No. Required	*Capacitor, 3 to 30 μμf mica trimmer, compression type, part of L7 *Special*	L7 trimmer	9	SA-108
C61	C61	C61	No Stock No. Required	*Capacitor, Same as C60, part of L8	L8 trimmer		
C62			No Stock No. Required	*Capacitor, 5 to 40 μμf mica trimmer, part of L9 *Special*	L9 trimmer	9	SA-108B
C63			No Stock No. Required	*Capacitor, Same as C62, part of L10	L10 trimmer		

C64	C64	C64	No Stock No. Required	*Capacitor, 3 to 30 μμf mica trimmer, compression type, part of L11 *Special*	L11 trimmer	9	SA-32
C65	C65	C65	No Stock No. Required	*Capacitor, 3 to 30 μμf mica trimmer, compression type, part of L12 *Special*	L12 trimmer	9	SA-109
C66	C66	C66	No Stock No. Required	*Capacitor, Same as C65, part of L13	L13 trimmer		
C67			No Stock No. Required	*Capacitor, 5 to 40 μμf mica trimmer, compression type, part of L14 *Special*	L14 trimmer	9	SA-109B
C68			No Stock No. Required	*Capacitor, Same as C67, part of L15	L15 trimmer		
C69	C69	C69	No Stock No. Required	*Capacitor, Same as C64, part of L16	L16 trimmer		
C70	C70	C70	No Stock No. Required	*Capacitor, Same as C65, part of L17	L17 trimmer		
C71	C71	C71	No Stock No. Required	*Capacitor, Same as C65, part of L18	L18 trimmer		
C72			No Stock No. Required	*Capacitor, Same as C67, part of L19	L19 trimmer		

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27. TABLE OF REPLACEABLE PARTS (*Cont'd*).—

a. Radio Receivers BC-779-B, BC-794-B and BC-1004-C.—

Ref. No.			Sig. Corps Stock No.	Name of Part and Description	Function	** Mfr. Code	Cont'r. Dwg. or Part No.
BC-779	BC-794	BC-1004					
C73			No Stock No. Required	*Capacitor, Same as C67, part of L20	L20 trimmer		
C74	C74	C74	No Stock No. Required	*Capacitor, 4 to 28 μμf air trimmer part of L21 *Special*	L21 trimmer	9	SA-36
C75	C75	C75	No Stock No. Required	*Capacitor, Same as C74, part of L22	L22 trimmer		
C76	C76	C76	No Stock No. Required	*Capacitor, Same as C74, part of L23	L23 trimmer		
C77			No Stock No. Required	*Capacitor, Same as C74, part of L24	L24 trimmer		
C78			No Stock No. Required	*Capacitor, Same as C74, part of L25	L25 trimmer		
C79	C79	C79		Capacitor, 4800 μμf (+5%–5%) 500V metal clad "toothpick" $2\frac{1}{4}$ in. x $\frac{9}{16}$ in. x $\frac{3}{16}$ in. part of L21 Type 704	L21 series padding	6	3844
C80	C80	C80		Capacitor, 2400μμf (+5%–5%) 500V metal clad "toothpick" $2\frac{1}{4}$ in. x $\frac{9}{16}$ in. x $\frac{3}{16}$ in., part of L22 Type 704	L22 series padding	6	3845

C81	C81	C81		Capacitor, 1220$\mu\mu$f (+5%–5%) 500V metal clad "toothpick" $2\frac{1}{4}$ in. x $\frac{3}{8}$ in. x $\frac{3}{16}$ in., part of L23 Type 702	L23 series padding	6	3846
C82				Capacitor, 122$\mu\mu$f (+2%–2%) 500V molded silvered mica $1\frac{1}{16}$ in. x $\frac{9}{16}$ in. x $\frac{3}{16}$ in., part of L24 "Silver Cap"	L24 fixed series padding	23	4833
C83				Capacitor, 70$\mu\mu$f (+2%–2%) 500V molded silvered mica $1\frac{1}{16}$ in. x $\frac{9}{16}$ in. x $\frac{3}{16}$ in., part of L25 "Silver Cap"	L25 fixed series padding	23	4874
C84				Capacitor, 36$\mu\mu$f (+3%–3%) 500V molded silvered mica $1\frac{1}{16}$ in. x $\frac{9}{16}$ in. x $\frac{3}{16}$ in., part of L24 "Silver Cap"	L24 fixed parallel trimmer	23	4853
C85				Capacitor, 61 $\mu\mu$f (+2%–2%) 500V molded silvered mica $1\frac{1}{16}$ in. x $\frac{9}{16}$ in. x $\frac{3}{16}$ in., part of L25 "Silver Cap"	L25 fixed parallel trimmer	23	4873
C86			No Stock No. Required	*Capacitor, 4 to 44 $\mu\mu$f air variable, part of L24 *Special*	L24 variable series padding	9	SA-198
C87			No Stock No. Required	*Capacitor, Same as C86, part of L25	L25 variable series padding		

** See List of Manufacturers, Page 85.

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27. TABLE OF REPLACEABLE PARTS (*Cont'd*).—

a. Radio Receivers BC-779-B, BC-794-B and BC-1004-C.—

Ref. No. BC-779	Ref. No. BC-794	Ref. No. BC-1004	Sig. Corps Stock No.	Name of Part and Description	Function	** Mfr. Code	Cont'r. Dwg. or Part No.
	C88			Capacitor, 522 μμf (+2%–2%) 500V molded silvered mica, 1 1/16 in. x 9/16 in. x 3/16 in., part of L55 "Silver Cap"	L55 series padding	23	3847
		C88		Capacitor, Same as C88 above, part of L45	L45 series padding		
		C89		Capacitor, 275 μμf (+2%–2%) 500V molded silvered mica, 1 1/16 in., x 9/16 in. x 3/16 in., part of L46 "Silver Cap"	L46 series padding	23	3848
		C90	No Stock No. Required	*Capacitor, Same as C60, part of L39	L39 trimmer		
		C91	No Stock No. Required	*Capacitor, Same as C60, part of L40	L40 trimmer		
		C92	No Stock No. Required	*Capacitor, Same as C65, part of L41	L41 trimmer		
		C93	No Stock No. Required	*Capacitor, Same as C65, part of L42	L42 trimmer		

		C94	No Stock No. Required	*Capacitor, Same as C65, part of L43	L43 trimmer		
		C95	No Stock No. Required	*Capacitor, Same as C65, part of L44	L44 trimmer		
		C96	No Stock No. Required	*Capacitor, Same as C74, part of L45	L45 trimmer		
		C97	No Stock No. Required	*Capacitor, Same as C74, part of L46	L46 trimmer		
	C98		No Stock No. Required	*Capacitor, 4 to 36 μμf air trimmer, part of L48 *Special*	L48 trimmer	9	SA-139
	C99		No Stock No. Required	*Capacitor, 4 to 16 μμf air trimmer, part of L49 *Special*	L49 trimmer	9	SA-141
	C100		No Stock No. Required	*Capacitor, Same as C99, part of L50	L50 trimmer		
	C101		No Stock No. Required	*Capacitor, 4 to 25 μμf air trimmer, part of L51 *Special*	L51 trimmer	9	SA-140
	C102		No Stock No. Required	*Capacitor, Same as C60, part of L52	L52 trimmer		
	C103		No Stock No. Required	*Capacitor, Same as C65, part of L53	L53 trimmer		

** See List of Manufacturers, Page 85.
Special Indicates part made for, or by the contractor.
* Indicates item is an integral part of another item and is not replaceable.

27. TABLE OF REPLACEABLE PARTS (*Cont'd*).—

a. Radio Receivers BC-779-B, BC-794-B and BC-1004-C.—

Ref. No.			Sig. Corps Stock No.	Name of Part and Description	Function	** Mfr. Code	Cont'r. Dwg. or Part No.
BC-779	BC-794	BC-1004					
	C104		No Stock No. Required	*Capacitor, Same as C65, part of L54	L54 trimmer		
	C105		No Stock No. Required	*Capacitor, Same as C74, part of L55	L55 trimmer		
E1	E1	E1		Terminal Strip, Bakelite, two screw terminals marked "A" *Special*	Antenna connections	12	3842
E2	E2	E2		Terminal Strip, Bakelite, two screw terminals marked "RELAY" *Special*	"Send-Receive" relay	12	4904
E3	E3	E3		Terminal Strip, Bakelite, six screw terminals marked PHONO-SPKR-PHONES *Special*	"Phono-Spkr-Phones" connections	12	4905
E4	E4	E4		Terminal Strip, Bakelite, ten screw terminals numbered 1 to 10 *Special*	Power supply connections	12	3838
E5	E5	E5		Terminal Cover, C.P. Steel, .031 in. thick *Special*	Cover for E2	29	2829
E6	E6	E6		Terminal Cover, C.P. Steel, .031 in. thick *Special*	Cover for E4	29	2813

E7	E7	E7		Control Knob, Black Bakelite, 1⅛ in. dia. with pointer, shaft hole ¼ in. dia. x ½ in. deep *Special*	Crystal Filter selectivity	9	SA-86
E8	E8	E8		Control Knob, Same as E7	Crystal Filter phasing		
E9	E9	E9		Control Knob, Same as E7	Band Width		
E10	E10	E10		Control Knob, Same as E7	Limiter switch		
E11	E11	E11		Control Knob, Black Bakelite, 1⅝ in. dia., shaft hole ¼ in. dia. x ½ in. deep	Main tuning	14	3856
E12	E12	E12		Control Knob, Same as E7	Sensitivity		
E13	E13	E13		Control Knob, Same as E11	Band Spread Tuning		
E14	E14	E14		Control Knob, Same as E7	MOD-CW switch		
E15	E15	E15		Control Knob, Same as E7	A.F. gain		
E16	E16	E16		Control Knob, Same as E7	SEND-REC switch		
E17	E17	E17		Control Knob, Same as E7	B.F.O. pitch control		
E18	E18	E18		Terminal Strip, Bakelite, metal base, six lugs, 2¼ in. mounting centers No. 2006	Capacitor and resistor mounting	12	6153

** See List of Manufacturers, Page 85.
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ǂ Indicates item is an integral part of another item and is not replaceable.

27. TABLE OF REPLACEABLE PARTS (*Cont'd*).—

a. Radio Receivers BC-779-B, BC-794-B and BC-1004-C.—

Ref. No.			Sig. Corps Stock No.	Name of Part and Description	Function	** Mfr. Code	Cont'r. Dwg. or Part No.
BC-779	BC-794	BC-1004					
E19	E19	E19		Terminal Strip, Same as E18	Component mounting		
E20	E20	E20		Terminal Strip, Same as E18	Component mounting		
E21	E21	E21		Terminal Strip, Same as E18	Component mounting		
E22	E22	E22		Terminal Strip, Bakelite, metal base, 4 lugs, 1⅝ in. mounting centers No. 2004	Component mounting	12	6152
E23	E23	E23		Terminal Strip, Bakelite, metal base, 9 lugs, 3 3/16 in. mounting centers No. 2009	Component mounting	12	4885
E24	E24	E24		Terminal Strip, Same as E23	Component mounting		
E25	E25	E25		Terminal Strip, Same as E23	Component mounting		
E26	E26	E26	2Z5988-13	Lamp Socket, Miniature screw-type socket on metal bracket VB-13762-SUB O	Dial light	16	2978
E27	E27	E27		Lamp Socket, Same as E26	Dial light		

E28	E28	E28		Lamp Socket, Miniature Socket, bayonet type No. 99315	"S" meter light	28	4929
H1	H1	H1		Cap Nut, Knurled, nickel-plated brass, tapped 8–32 (8 required) *Special*	Dust cover fastening	9	2951
H2	H2	H2		Cap Screw, Knurled, nickel-plated brass, threaded 6–32 (3 required) *Special*	Dust cover fastening	9	2952
H3	H3	H3		Meter Clamp, Ring type, nickel-plated brass Type D-54108	"S" meter mounting	17	3926
I1	I1	I1		Dial Lamp, 6–8V, .15 amp., miniature screw base No. 40	Dial light	8	3920
I2	I2	I2		Dial Lamp, Same as I1	Dial light		
I3	I3	I3		Meter Lamp, 6–8V, .15 amp., miniature bayonet base No. 47	Meter light	8	6036
J1	J1	J1	2Z5534A	Jack JK-34-A, Phone Jack (headset) No. SC1A	Reduced A.F. output	16	†SC-D-2339 (5066)
L1	L1	L1		Coil Assembly, Antenna primary, 10–20 mc *Special*	Antenna coupling	9	SA-46
L2	L2	L2		Coil Assembly, Antenna primary, 5–10 mc *Special*	Antenna coupling	9	SA-47

** See List of Manufacturers, Page 85.
Special Indicates part made for, or by the Contractor.
† Indicates Signal Corps Drawing or Specification.

27. TABLE OF REPLACEABLE PARTS (*Cont'd*).—

a. Radio Receivers BC-779-B, BC-794-B and BC-1004-C.—

Ref. No.			Sig. Corps Stock No.	Name of Part and Description	Function	** Mfr. Code	Cont'r. Dwg. or Part No.
BC-779	BC-794	BC-1004					
L3	L3	L3		Coil Assembly, Antenna primary, 2.5–5 mc *Special*	Antenna coupling	9	SA-48
L4				Coil Assembly, Antenna primary, 200–400 kc *Special*	Antenna coupling	9	SA-161
L5				Coil Assembly, Antenna primary, 100–200 kc *Special*	Antenna coupling	9	SA-162
L6	L6	L6		Coil Assembly, Grid coil, 10–20 mc (includes C59) *Special*	1st R.F. grid input	9	SA-110
L7	L7	L7		Coil Assembly, Grid coil, 5–10 mc (includes C60) *Special*	1st R.F. grid input	9	SA-113
L8	L8	L8		Coil Assembly, Grid coil, 2.5–5 mc (includes C61) *Special*	1st R.F. grid input	9	SA-116
L9				Coil Assembly, Grid coil, 200–400 kc (includes C62) *Special*	1st R.F. grid input	9	SA-160
L10				Coil Assembly, Grid coil, 100–200 kc (includes C63) *Special*	1st R.F. grid input	9	SA-159

L11	L11	L11		Coil Assembly, R.F. transformer, 10–20 mc (includes C64) *Special*	2nd R.F. grid input	9	SA-111
L12	L12	L12		Coil Assembly, R.F. transformer, 5–10 mc (includes C65) *Special*	2nd R.F. grid input	9	SA-114
L13	L13	L13		Coil Assembly, R.F. transformer, 2.5–5 mc (includes C66) *Special*	2nd R.F. grid input	9	SA-117
L14				Coil Assembly, R.F. transformer, 200–400 kc (includes C67) *Special*	2nd R.F. grid input	9	SA-157
L15				Coil Assembly, R.F. transformer, 100–200 kc (includes C68) *Special*	2nd R.F. grid input	9	SA-158
L16	L16	L16		Coil Assembly, Same as L11 (includes C69)	1st Det. grid input		
L17	L17	L17		Coil Assembly, Same as L12 (includes C70)	1st Det. grid input		
L18	L18	L18		Coil Assembly, Same as L13 (includes C71)	1st Det. grid input		
L19				Coil Assembly, Same as L14 (includes C72)	1st Det. grid input		
L20				Coil Assembly, Same as L15 (includes C73)	1st Det. grid input		

** See List of Manufacturers, Page 85.
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27. TABLE OF REPLACEABLE PARTS (*Cont'd*).—

a. Radio Receivers BC-779-B, BC-794-B and BC-1004-C.—

Ref. No.			Sig. Corps Stock No.	Name of Part and Description	Function	** Mfr. Code	Cont'r. Dwg. or Part No.
BC-779	BC-794	BC-1004					
L21	L21	L21		Coil Assembly, Oscillator Coil, 10–20 mc (includes C74, C79) *Special*	H.F. Osc. grid input	9	SA-112
L22	L22	L22		Coil Assembly, Oscillator coil, 5–10 mc (includes C75, C80) *Special*	H.F. Osc. grid input	9	SA-115
L23	L23	L23		Coil Assembly, Oscillator coil, 2.5–5 mc (includes C76, C81) *Special*	H.F. Osc. grid input	9	SA-118
L24				Coil Assembly, Oscillator coil, 200–400 kc (includes C77, C82, C84, C86) *Special*	H.F. Osc. grid input	9	SA-155
L25				Coil Assembly, Oscillator coil, 100–200 kc (includes C78, C83, C85, C87) *Special*	H.F. Osc. grid input	9	SA-156
L26	L26	L26	No Stock No. Required	*Coil, Universal, 7/41 Litz., iron dust core *Special*	1st Det. plate	23	6146
L27	L27	L27	No Stock No. Required	*Coil, Universal, 7/41 Litz., iron dust core *Special*	1st I.F. grid	23	6147
L28	L28	L28	No Stock No. Required	*Coil, 3 pie universal, 7/41 Litz., ceramic core *Special*	1st I.F. plate	9	2903-A

L29	L29	L29	No Stock No. Required	*Coil, 3 pie universal, 7/41 Litz., ceramic core *Special*	2nd I.F. grid	9	3990
L30	L30	L30	No Stock No. Required	*Coil, Same as L28	2nd I.F. plate		
L31	L31	L31	No Stock No. Required	*Coil, Same as L29	3rd I.F. grid		
L32	L32	L32	No Stock No. Required	*Coil, universal, 7/41 Litz., ceramic core *Special*	2nd Det. input	9	4907
L33	L33	L33	No Stock No. Required	*Coil, 3 pie universal, 7/41 Litz., ceramic core *Special*	B.F.O. tuning	9	2931
L34	L34	L34	No Stock No. Required	*Coil, universal, 7/41 Litz., ceramic core *Special*	AVC diode input	9	4906
	L35			Choke coil, 5 pie universal R.F. choke, ceramic core, wire leads Type CHX	1st R.F. plate coupling	9	6181
	L36			Choke coil, Same as L35	2nd R.F. plate coupling		
	L37			Coil Assembly, Antenna primary, 1250–2500 kc *Special*	Antenna coupling	9	SA-49
		L37		Coil Assembly, Antenna primary, 1160–2500 kc, Same as L37 above	Antenna coupling		

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27. TABLE OF REPLACEABLE PARTS (*Cont'd*).—

a. Radio Receivers BC-779-B, BC-794-B and BC-1004-C.—

Ref. No.			Sig. Corps Stock No.	Name of Part and Description	Function	** Mfr. Code	Cont'r. Dwg. or Part No.
BC-779	BC-794	BC-1004					
		L38		Coil Assembly, Antenna primary, 540–1160 kc *Special*	Antenna coupling	9	SA-50
		L39		Coil Assembly, Grid coil, 1160–2500 kc (includes C90) *Special*	1st R.F. grid input	9	SA-119
		L40		Coil Assembly, Grid coil, 540–1160 kc (includes C91) *Special*	1st R.F. grid input	9	SA-122
		L41		Coil Assembly, R.F. transformer, 1160–2500 kc (includes C92) *Special*	2nd R.F. grid input	9	SA-120
		L42		Coil Assembly, R.F. transformer, 540–1160 kc (includes C93, R57) *Special*	2nd R.F. grid input	9	SA-123
		L43		Coil Assembly, Same as L41 (includes C94)	1st Det. grid input		
		L44		Coil Assembly, Same as L42 (includes C95, R58)	1st Det. grid input		
		L45		Coil Assembly, Oscillator coil, 1160–2500 kc (includes C88, C96) *Special*	H.F. Osc. grid input	9	SA-121

		L46		Coil Assembly, Oscillator coil, 540–1160 kc (includes C89, C97) *Special*	H.F. Osc. grid input	9	SA-124
	L47			Coil Assembly, Antenna primary, 20–40 mc, Same as L1	Antenna coupling		
	L48			Coil Assembly, Grid coil, 20–40 mc (includes C98) *Special*	1st R.F. grid input	9	SA-130
	L49			Coil Assembly, R.F. transformer, 20-40 mc (includes C99) *Special*	2nd R.F. grid input	9	SA-131
	L50			Coil Assembly, Same as L49 (includes C100)	1st Det. grid input		
	L51			Coil Assembly, Oscillator coil, 20–40 mc (includes C101) *Special*	H.F. Osc. grid input	9	SA-132
	L52			Coil Assembly, Grid coil, 1250–2500 kc (includes C102) *Special*	1st R.F. grid input	9	SA-136
	L53			Coil Assembly, R.F. transformer, 1250-2500 kc (includes C103) *Special*	2nd R.F. grid input	9	SA-137
	L54			Coil Assembly, Same as L53 (includes C104)	1st Det. grid input		
	L55			Coil Assembly, Oscillator coil, 1250–2500 kc (includes C88, C105) *Special*	H.F. Osc. grid input	9	SA-138

** See List of Manufacturers, Page 85.
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27. TABLE OF REPLACEABLE PARTS (*Cont'd*).—

a. Radio Receivers BC-779-B, BC-794-B and BC-1004-C.—

Ref. No.			Sig. Corps Stock No.	Name of Part and Description	Function	** Mfr. Code	Cont'r. Dwg. or Part No.
BC-779	BC-794	BC-1004					
M1	M1	M1	2C4528.7/15	Meter, 0–200 micro-ampere movement, special scale, tapered pole-pieces, 2 in. flush type *Special*	Tuning and "S" indicator	3	4903
N1				Knob & Dial, Black bakelite knob, 1⅝ in. dia., with etched dial 2⅛ in. dia. x 1/16 in. thick marked 100–200 kc, 200–400 kc, 2.5–5.0 mc, 5–10 mc, and 10–20 mc at 72 degree intervals *Special*	Band change switch	9	SA-163
N2				Dial Assembly, Calibrated dial and masking disc, 6 in. dia., with five scales; 100–200 kc, 200–400 kc, 2.5–5.0 mc, 5–10 mc, and 10–20 mc *Special*	Main tuning	9	SA-164
N3	N3	N3		Dial Assembly, Calibrated dial, 6 in. dia., with mounting disc and hub, 0–100 divisions *Special*	Band spread tuning	9	SA-27
N4	N4	N4		Drive Assembly, Bearing, shaft and driving discs (2 required) *Special*	Main and Band Spread dial drive	9	SA-199

	N5			Knob & Dial, Similar to N1 except marked 1250–2500 kc, 2.5–5.0 mc, 5–10 mc, 10–20 mc, and 20–40 mc *Special*	Band change switch	9	SA-134
	N6			Dial Assembly, Similar to N2 except scales for 1250–2500 kc, 2.5–5.0 mc 5–10 mc, 10–20 mc, and 20–40 mc *Special*	Main Tuning	9	SA-133
		N7		Knob & Dial, Similar to N1 except marked 540–1160 kc, 1160–2500 kc, 2.5–5.0 mc, 5–10 mc, and 10–20 mc *Special*	Band change switch	9	SA-74
		N8		Dial Assembly, Similar to N2 except scales for 540–1160 kc, 1160–2500 kc, 2.5–5.0 mc, 5–10 mc, and 10–20 mc *Special*	Main tuning	9	SA-25
R1	R1	R1	3Z6750–17	Resistor, 500,000 ohms (+10%–10%) 1/3W metallized, ¼ in. dia. x ¾ in. long Type F 1/3	1st R.F. grid coupling	10	4959
R2	R2	R2	3Z6610–7	Resistor, 10,000 ohms (+10%–10%) ½W metallized 3/16 in. dia. x ⅝ in. long Type BT ½	1st R.F. grid filter	10	6165
R3	R3	R3	3Z4526	Resistor, 2,000 ohms (+10%–10%) ½W metallized 3/16 in. dia. x ⅝ in. long Type BT ½	1st R.F. screen filter	10	6160

** See List of Manufacturers, Page 85.
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27. TABLE OF REPLACEABLE PARTS (*Cont'd*).—

a. Radio Receivers BC-779-B, BC-794-B and BC-1004-C.—

Ref. No. BC-779	Ref. No. BC-794	Ref. No. BC-1004	Sig. Corps Stock No.	Name of Part and Description	Function	** Mfr. Code	Cont'r. Dwg. or Part No.
R4		R4	3Z4526	Resistor, Same as R3	1st R.F. plate filter		
R5	R5	R5	3Z6750-17	Resistor, Same as R1	2nd R.F. grid coupling		
R6	R6	R6	3Z6610-7	Resistor, Same as R2	2nd R.F. grid filter		
R7	R7	R7	3Z4526	Resistor, Same as R3	2nd R.F. screen filter		
R8		R8	3Z4526	Resistor, Same as R3	2nd R.F. plate filter		
R9	R9	R9	3Z6750-17	Resistor, Same as R1	1st Det. signal grid coupling		
R10	R10	R10	3Z6610-7	Resistor, Same as R2	1st Det. signal grid filter		
R11	R11	R11		Resistor, 50,000 ohms (+10%-10%) 1/3W metallized ¼ in. dia. x ¾ in. long Type F 1/3	1st Det. osc. grid coupling	10	4960
R12	R12	R12	3Z6625-3	Resistor, 25,000 ohms (+10%-10%) 2W metallized 5/16 in. dia. x 1¾ in. long Type BT 2	1st Det. screen filter	10	3999
R13	R13	R13		Resistor, Same as R11	H.F. Osc. grid coupling		
R14	R14	R14	3Z6612-2	Resistor, 12,000 ohms (+10%-10%) 2W metallized 5/16 in. dia. x 1¾ in. long Type BT 2	H.F. Osc. plate filter	10	4840

R15	R15	R15	3Z4526	Resistor, Same as R3	1st Det. plate filter		
R16	R16	R16	3Z4526	Resistor, Same as R3	1st I.F. screen filter		
R17	R17	R17	3Z4526	Resistor, Same as R3	1st I.F. plate filter		
R18	R18	R18	3Z6610-7	Resistor, Same as R2	2nd I.F. grid filter		
R19	R19	R19	3Z4542	Resistor, 2,000,000 ohms (+10%-10%) ½W metallized 3/16 in. dia. x ⅝ in. long Type BT ½	AVC-MANUAL shunt	10	4920
R20	R20	R20	3Z4526	Resistor, Same as R3	2nd I.F. screen filter		
R21	R21	R21	3Z4526	Resistor, Same as R3	2nd I.F. plate filter		
R22	R22	R22	3Z6610-7	Resistor, Same as R2	3rd I.F. grid filter		
R23	R23	R23	3Z6650-15	Resistor, 50,000 ohms (+10%-10%) 1W metallized ¼ in. dia. x 1¼ in. long Type BT 1	3rd I.F. screen filter	10	6166
R24	R24	R24	3Z4541	Resistor, 75,000 ohms (+10%-10%) ½W metallized 3/16 in. dia. x ⅝ in. long Type BT ½	2nd Det. diode load	10	4914
R25	R25	R25	3Z6650-10	Resistor, 50,000 ohms (+10%-10%) ½W metallized 3/16 in. dia. x ⅝ in. long Type BT ½	2nd Det. diode load	10	6075

** See List of Manufacturers, Page 85.

27. TABLE OF REPLACEABLE PARTS (*Cont'd*).—

a. Radio Receivers BC-779-B, BC-794-B and BC-1004-C.—

Ref. No.			Sig. Corps Stock No.	Name of Part and Description	Function	** Mfr. Code	Cont'r. Dwg. or Part No.
BC-779	BC-794	BC-1004					
R26	R26	R26	2C4528.6/16	Potentiometer, 250,000 ohms, (+20%–20%) 1¼ in. dia., taper B Type C	A.F. gain control	10	4919
R27	R27	R27	3Z6750–4	Resistor, 500,000 ohms (+10%–10%) ½W metallized 3/16 in. dia. x ⅝ in. long Type BT ½	1st A.F. grid coupling	10	6076
R28	R28	R28	3Z6650–15	Resistor, Same as R23	1st A.F. plate coupling		
R29	R29	R29	3Z6750–4	Resistor, Same as R27	2nd A.F. grid coupling		
R30	R30	R30	3Z6725–2	Resistor, 250,000 ohms (+10%–10%) ½W metallized 3/16 in. dia. x ⅝ in. long Type BT ½	2nd Det. cathode biasing	10	4912
R31	R31	R31	2C4528.6/19	Resistor, 4 ohms (+10%–10%) 5W, wire wound ⅜ in. dia. x ⅞ in. long Type AA	Noise limiter heater dropping	10	4921
R32	R32	R32	2C4528.6/19	Resistor, Same as R31	Dial lamp series dropping		
R33	R33	R33	3Z6750–4	Resistor, Same as R27	B.F.O. screen dropping		
R34	R34	R34	3Z6650–10	Resistor, Same as R25	B.F.O. plate dropping		

R35	R35	R35	3Z4528	Resistor, 5000 ohms (+10%-10%) ½W metallized 3/16 in. dia. x 5/8 in. long Type BT ½	B.F.O. plate and screen filter	10	4814
R36	R36	R36	3Z6075-1	Resistor, 750 ohms (+5%-5%) 10W wire wound 3/8 in. dia. x 1¾ in. long Type 10-VWQ	3rd A.F. cathode biasing	18	3836
R37	R37	R37	3Z6650-15	Resistor, Same as R23	AVC amplifier screen filter		
R38	R38	R38	3Z6030-8	Resistor, 300 ohms (+5%-5%) ½W metallized 3/16 in. dia. x 5/8 in. long Type BT ½	"C" bias voltage divider	10	6169
R39	R39	R39	3Z6170	Resistor, 1700 ohms (+5%-5%) ½W metallized 3/16 in. dia. x 5/8 in. long Type BT ½	"C" bias voltage divider	10	4947
R40	R40	R40	3Z6300-1	Resistor, 3000 ohms (+5%-5%) 1W metallized ¼ in. dia. x 1¼ in. long Type BT 1	"C" bias voltage divider	10	3809
R41	R41	R41		Potentiometer, 1000 ohms (+20%-20%) 1¼ in. dia., linear Type 37	"S" meter shunt	11	5080
R42	R42	R42	3Z6002-3	Resistor, 25 ohms, (+10%-10%) ½W wire wound 3/16 in. dia. x 5/8 in. long Type BW ½	Crystal selectivity controlling	10	6155

** See List of Manufacturers, Page 85.

27. TABLE OF REPLACEABLE PARTS (*Cont'd*).—

a. Radio Receivers BC-779-B, BC-794-B and BC-1004-C.—

Ref. No.			Sig. Corps Stock No.	Name of Part and Description	Function	** Mfr. Code	Cont'r. Dwg. or Part No.
BC-779	BC-794	BC-1004					
R43	R43	R43	3Z6005–13	Resistor, 50 ohms (+10%–10%) ½W wire wound 3/16 in. dia. x 5/8 in. long Type BW ½	Crystal selectivity controlling	10	6170
R44	R44	R44	3Z6030–8	Resistor, Same as R38	Crystal selectivity controlling		
R45	R45	R45	3Z4526	Resistor, Same as R3	Crystal selectivity controlling		
R46	R46	R46	3Z6610–7	Resistor, Same as R2	1st I.F. grid filter		
R47	R47	R47	3Z4526	Resistor, Same as R3	3rd I.F. plate filter		
R48	R48	R48	3Z6700–6	Resistor, 100,000 ohms (+10%–10%) ½W metallized 3/16 in. dia. x 5/8 in. long Type BT ½	2nd Det. diode load	10	6135
R49	R49	R49	3Z6801–1	Resistor, 1,000,000 ohms (+10%–10%) ½W metallized 3/16 in. dia. x 5/8 in. long Type BT ½	Noise limiter timing	10	6167
R50	R50	R50	3Z6700–6	Resistor, Same as R48	B.F.O. grid leak		
R51	R51	R51	3Z4526	Resistor, Same as R3	AVC amplifier plate filter		

R52	R52	R52	3Z6801-1	Resistor, Same as R49	AVC timing		
R53	R53	R53	3Z6625-4	Resistor, 25,000 ohms (+10%-10%) ½W metallized 3/16 in. dia. x 5/8 in. long Type BT ½	AVC diode load	10	6198
R54	R54	R54	3Z4528	Resistor, Same as R35	AVC diode load		
R55	R55	R55	3Z4528	Resistor, Same as R35	AVC diode load		
R56	R56	R56		Potentiometer, 50,000 ohms (+20%-20%) linear, 1¼ in. dia. Type C	Sensitivity, R.F. and I.F.	10	5023
		R57		Resistor, 20 ohm (+10%-10%) ½W wire wound 3/16 in. dia. x 5/8 in. long Type BW ½	L42 selectivity controlling	10	3987
		R58		Resistor, Same as R57	L44 selectivity controlling		
SW1 A B C D E	SW1 A B C D E	SW1 A B C D E	No Stock No. Required	*Switch, 10 pole, 5 position, 5 section, (integral part of tuning unit) Shown on Dwg. H-102 (BC-779-B) H-103 (BC-794-B) H-104 (BC-1004-C) *Special*	Band changing Antenna switching 1st R.F. grid switching 1st R.F. plate & 2nd R.F. grid 2nd R.F. plate & 1st Det. grid H.F. Osc. grid & cathode	9	H-102 H-103 H-104
SW2	SW2	SW2	3Z9900-2	Switch, SPST rotory snap, 1 1/8 in. dia., ¼ in. dia. shaft, 3/8 in. long	Send-Receive	11	4917

** See List of Manufacturers, Page 85.
Special Indicates part made for, or by the Contractor.
* Indicates item is an integral part of another item and is not replaceable.

27. TABLE OF REPLACEABLE PARTS (*Cont'd*).—

a. Radio Receivers BC-779-B, BC-794-B and BC-1004-C.—

Ref. No. BC-779	Ref. No. BC-794	Ref. No. BC-1004	Sig. Corps Stock No.	Name of Part and Description	Function	** Mfr. Code	Cont'r. Dwg. or Part No.
SW3	SW3	SW3	3Z9900–1	Switch, DPST rotary snap, 1⅛ in. dia., ¼ in. dia. shaft, 23/32 in. long	Modulation-CW	11	4915
SW4	SW4	SW4	3Z9900–6	Switch, DPDT toggle, 1⅛ in. x 11/16 in. x 9/16 in. with 15/32 in. x 32 threaded mounting bushing 25/32 in. long *Special*	AVC-Manual	13	2990
SW5	SW5	SW5	3Z9900–3	Switch, SPST rotary snap, 1⅛ in. dia., ¼ in. dia. shaft 10¾ in. long *Special*	Noise limiter	11	4916
SW6	SW6	SW6	3Z9900	Switch, DPST toggle, 1⅛ in. x 11/16 in. x 9/16 in. with 15/32 in. x 32 threaded mounting bushing 21/32 in. long *Special*	Power "off-on"	13	2983
SW7	SW7	SW7	3Z9903–5	Switch, Wafer type, six position *Special*	Crystal filter selectivity	20	4911
T1	T1	T1	2C4528.7/63	Filter assembly, Variable selectivity quartz crystal filter, 3 in. x 5 in. x 2 1/16 in. (includes C21, C22, C23, C32, C33, C34, C35, L26, L27, R42, R43, R44, R45, R46, SW7 & Y1) *Special*	Selectivity varying	9	SA-178A

T2	T2	T2	2C4528.7/5.1	Transformer, Variable selectivity, I.F. transformer 2 in. x 2 in. x 5 in. (includes C36, C37, L28 and L29) *Special*	Selectivity varying	9	SA-166A
T3	T3	T3	2C4528.7/5.1	Transformer, Same as T2	Selectivity varying		
T4	T4	T4	2C4528.7/62	Transformer, Fixed selectivity I.F. transformer, 2 in. x 2 in. x 5 in. (includes C40, C41, C42, C43, C44, C45, L32, R47, R48 and R49) *Special*	2nd Det. input	9	SA-167A
T5	T5	T5	2C4528.7/9	Transformer, 465 kc oscillator assembly, 2 in. x 2 in. x 5 in. (includes C46, C47, C48, C49, C50, L33 and R50) *Special*	B.F.O.	9	SA-169A
T6	T6	T6	2C4528.7/61	Transformer, Fixed selectivity I.F. transformer, 2 in. x 2 in. x 5 in. (includes C51, C52, C53, C54, C55, C56, L34, R51, R52, R53, R54 and R55) *Special*	AVC diode input	9	SA-168A
T7	T7	T7		Transformer, A.F. transformer, push-pull input 2¾ in. x 2^{13}⁄$_{16}$ in x 3½ in. high, four 8 x 32 threaded mounting studs on 1⅞ in. x 2 in. centers Chicago Transformer Co. Spec. No. 4212-C *Special*	Push-pull input	5	5081

** See List of Manufacturers, Page 85.

Special Indicates part made for, or by the contractor.

27. TABLE OF REPLACEABLE PARTS (*Cont'd*).—

a. Radio Receivers BC-779-B, BC-794-B and BC-1004-C.—

Ref. No.			Sig. Corps Stock No.	Name of Part and Description	Function	** Mfr. Code	Cont'r. Dwg. or Part No.
BC-779	BC-794	BC-1004					
T8	T8	T8		Transformer, A.F. transformer, push-pull output, mechanically similar to T7, 600 ohm power output secondary and 8000 ohm monitoring secondary, Chicago Transformer Co. Spec. No. 8271 *Special*	Push-pull output	5	5082
V1	V1	V1	2T86	Tube VT-86, R.F. pentode RMA type 6K7	1st R.F. amplifier	21	†71-786-A
V2	V2	V2	2T86	Same as V1	2nd R.F. amplifier		
V3	V3	V3	2T87	Tube VT-87, pentagrid mixer RMA type 6L7	1st Detector (mixer)	21	†71-787-B
V4	V4	V4	2T91	Tube VT-91, R.F. pentode RMA type 6J7	H.F. Oscillator	21	†71-791-A
V5	V5	V5	2T86	Same as V1	1st I.F. amplifier		
V6	V6	V6	2T117	Tube VT-117, R.F. pentode RMA type 6SK7	2nd I.F. amplifier	21	†71-1217-A
V7	V7	V7	2T117	Same as V6	3rd I.F. amplifier		

V8	V8	V8	2T90	Tube VT-90, Twin diode RMA type 6H6	2nd Detector	21	†71-790-A
V9	V9	V9	2T96	Tube VT-96,Twin triode, class B RMA type 6N7	Noise limiter	21	†71-796
V10	V10	V10	2T116	Tube VT-116, R.F. pentode RMA type 6SJ7	B.F. Oscillator	21	†71-1216-A
V11	V11	V11	2T117	Same as V6	AVC amplifier		
V12	V12	V12	2T90	Same as V8	AVC rectifier		
V13	V13	V13	2T65	Tube VT-65, Triode amplifier RMA type 6C5	1st A.F. amplifier	21	†71-765
V14	V14	V14	2T66	Tube VT-66, Power pentode RMA type 6F6	2nd A.F. amplifier (driver)	21	†71-766-A
V15	V15	V15	2T66	Same as V14	3rd A.F. amplifier (output)		
V16	V16	V16	2T66	Same as V14	3rd A.F. amplifier (output)		
W1	W1	W1		Connector Cable, Nine wire, with two 10 terminal connector strips *Special*	Power supply connector	2	SA-35
W2	W2	W2		Connector Cable, Eight wire, with one 10 terminal connector strip *Special*	Battery connector cable	2	SA-67

** See List of Manufacturers, Page 85.
Special Indicates part made for, or by the contractor.
† Indicates Signal Corps Drawing or Specification.

27. TABLE OF REPLACEABLE PARTS (*Cont'd.*).—

a. Radio Receivers BC-779-B, BC-794-B and BC-1004-C.—

Ref. No. BC-779	Ref. No. BC-794	Ref. No. BC-1004	Sig. Corps Stock No.	Name of Part and Description	Function	** Mfr. Code	Cont'r. Dwg. or Part No.
X1	X1	X1		Tube Socket, Molded octal, low-loss bakelite, 1½ in. mounting centers marked VT-86 Type MIP-8-T	Socket for V1	1	5067
X2	X2	X2		Tube Socket, Same as X1	Socket for V2		
X3	X3	X3		Tube Socket, Molded octal, low-loss bakelite 1½ in. mounting centers, marked VT-87 Type MIP-8-T	Socket for V3	1	5068
X4	X4	X4		Tube Socket, Molded octal, low-loss bakelite 1½ in. mounting centers, marked VT-91 Type MIP-8-T	Socket for V4	1	5069
X5	X5	X5		Tube Socket, Same as X1	Socket for V5		
X6	X6	X6		Tube Socket, Molded octal, low-loss bakelite 1½ in. mounting centers marked VT-117 Type MIP-8-T	Socket for V6	1	5070
X7	X7	X7		Tube Socket, Same as X6	Socket for V7		
X8	X8	X8		Tube Socket, Molded octal, low-loss bakelite 1½ in. mounting centers, marked VT-90 Type MIP-8-T	Socket for V8	1	5072

X9	X9	X9		Tube Socket, Molded octal, low-loss bakelite 1½ in. mounting centers, marked VT-96 Type MIP-8-T	Socket for V9	1	5073
X10	X10	X10		Tube Socket, Molded octal, low-loss bakelite 1½ in. mounting centers, marked VT-116 Type MIP-8-T	Socket for V10	1	5071
X11	X11	X11		Tube Socket, Same as X6	Socket for V11		
X12	X12	X12		Tube Socket, Same as X8	Socket for V12		
X13	X13	X13		Tube Socket, Molded octal, low-loss bakelite 1½ in. mounting centers, marked VT-65 Type MIP-8-T	Socket for V13	1	5074
X14	X14	X14		Tube Socket, Molded octal, low-loss bakelite 1½ in. mounting centers, marked VT-66 Type MIP-8-T	Socket for V14	1	5075
X15	X15	X15		Tube Socket, Same as X14	Socket for V15		
X16	X16	X16		Tube Socket, Same as X14	Socket for V16		
Y1	Y1	Y1		Quartz Crystal, Resonator type, ground for 465 kc (+.5 kc–.5 kc) .655 in. x .255 in. x .150 in. thick *Special*	Variable selectivity filter	22	4944

** See List of Manufacturers, Page 85.
Special Indicates part made for, or by the contractor.

27. TABLE OF REPLACEABLE PARTS (*Cont'd*).—

b. Power Supply Units RA-74-C, RA-84-B and RA-94-A.—

Ref. No.			Sig. Corps Stock No.	Name of Part and Description	Function	** Mfr. Code	Cont'r. Dwg. or Part No.
RA-74	RA-84	RA-94					
C1	C1	C1	3DB8-44	Capacitor, 4 x 8 µf Dykanol, (+20%–20%) 600V Cornell-Dubilier PC-1936 *Special*	"B" supply filter	6	4884
C2	C2	C2	3DB3.12	Capacitor, 4 x 3 µf Dykanol (+20%–20%) 600V Cornell-Dubilier PC-1937 *Special*	"C" supply filter	6	4883
E1	E1	E1		Terminal Strip, Bakelite, 10 screw terminals numbered 1 to 10 *Special*	Receiver connections	12	3838
E2	E2	E2		Terminal Cover, C. P. Steel, .031 in. thick *Special*	Cover for E1	29	2813
E3	E3	E3		Fuse Holder, Molded bakelite, screw type Type 1075-A	Power line fuse holder	7	4996
F1	F1	F1	3Z1927	Fuse FU-27, 2 amp. 250V, glass enclosed ¼ in. dia. x 1¼ in. long Type 3AG	Power line fuse	4	3921
H1	H1	H1		Cap Nut, Knurled, nickel-plated brass, tapped 8-32 (5 required) *Special*	Dust cover fastening (front)	9	2951

H2	H2	H2		Cap Screw, Knurled, nickel-plated brass, threaded 6-32 (3 required) *Special*	Dust cover fastening (rear)	9	2952
L1	L1	L1		Filter Choke, Potted, 350 ohms, 25h at .160 amp. Chicago Transformer Co. 7410A *Special*	First filter choke	5	5084
L2	L2	L2		Filter Choke, Potted, 1150 ohms, 50h at .110 amp. Chicago Transformer Co. 7393A *Special*	Second filter choke	5	5085
R1	R1	R1	2C4528.6/18	Resistor, 18,000 ohms tapped at 9500 (+5%-5%) 10 watt, Wirt Co. "Steelbak" *Special*	"B" voltage divider	24	4946
R2	R2	R2	3Z6624-1	Resistor, 24,000 ohms tapped at 8000 and 16,000 (+5%-5%) 10 watt, Wirt Co. "Steelbak" *Special*	"C" supply filter	24	4882
T1				Transformer, 25-60 cycle, primary tapped at 95, 105, 117, 130, 190, 210, 234, 260V Chicago Transformer Co. Spec. 8050-A *Special*	"A", "B", and "C" power transformer	5	5086
	T2			Transformer, 50-60 cycle, primary tapped at 105, 115, 125V Chicago Transformer Co. Spec. 7397-A *Special*	"A", "B", and "C" power transformer	5	5083

** See List of Manufacturers, Page 85.
Special Indicates part made for, or by the contractor.

27. TABLE OF REPLACEABLE PARTS (*Cont'd*).—

b. Power Supply Units RA-74-C, RA-84-B and RA-94-A.—

Ref. No. RA-74	Ref. No. RA-84	Ref. No. RA-94	Sig. Corps Stock No.	Name of Part and Description	Function	** Mfr. Code	Cont'r. Dwg. or Part No.
		T3		Transformer, 50-60 cycle, primary tapped at 115, 230V Chicago Transformer Co. Spec. 8274 *Special*	"A", "B", and "C" power transformer	5	5087
V1	V1	V1	2T145	Tube, VT-145, full wave rectifier, RMA type 5Z3	"B" supply rectifier	21	†71–1245
V2	V2	V2	2T80	Tube, VT-80, full wave rectifier, RMA type 80	"C" supply rectifier	21	†71–780-A
W1	W1	W1		Line Cord, 2 conductor with plug, 7 ft. long	Power line connection	2	6143
X1	X1	X1		Tube Socket, Molded bakelite, four prong, marked VT-145, American Phenolic MIP-4	Socket for V1	1	5076
X2	X2	X2		Tube Socket, Molded bakelite, four prong, marked VT-80, American Phenolic MIP-4	Socket for V2	1	5077

** See List of Manufacturers, Page 85.
Special Indicates part made for, or by the contractor.
† Indicates Signal Corps Drawing or Specification.

LIST OF MANUFACTURERS

No.	Name	Address
1	American Phenolic Corp.	Chicago, Ill.
2	Belden Mfg. Co.	Chicago, Ill.
3	Beede Electrical Instrument Co.	Penacook, N. H.
4	Bussman Mfg. Co.	New York, N. Y.
5	Chicago Transformer Corp.	Chicago, Ill.
6	Cornell-Dubilier Electric Corp.	South Plainfield, N. J.
7	Littlefuse Inc.	Chicago, Ill.
8	General Electric Co.	Cleveland, Ohio
9	Hammarlund Mfg. Co., Inc.	New York, N. Y.
10	International Resistance Co.	Philadelphia, Pa.
11	Clarostat Mfg. Co.	Brooklyn, N. Y.
12	Howard B. Jones Co.	Chicago, Ill.
13	Cutler-Hammer, Inc.	Milwaukee, Wisc.
14	Kurz-Kasch Co.	Dayton, Ohio
15	Aerovox Corp.	New Bedford, Mass.
16	P. R. Mallory & Co., Inc.	Indianapolis, Ind.
17	Weston Electrical Instrument Co.	Newark, N. J.
18	Utah Radio Products Co.	Chicago, Ill.
19	National Lock Co.	Rockford, Ill.
20	Oak Mfg. Co.	Chicago, Ill.
21	R. C. A. Mfg. Co.	Harrison, N. J.
22	R. C. A. Mfg. Co.	Camden, N. J.
23	F. W. Sickles Co.	Springfield, Mass.
24	Wirt Company	Philadelphia, Pa.
25	Par-Metal Products Corp.	Long Island City, N. Y.
26	American Emblem Company	Utica, N. Y.
27	Micamold Radio Corp.	Brooklyn, N. Y.
28	United Car Fastener Corp.	Cambridge, Mass.
29	H. K. Lorentzen	New York, N. Y.

[A.G. 062.11 (2-24-43)]

By order of the Secretary of War:

G. C. MARSHALL,
Chief of Staff.

Official:

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

Distribution: X and Par. 7*a*.

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

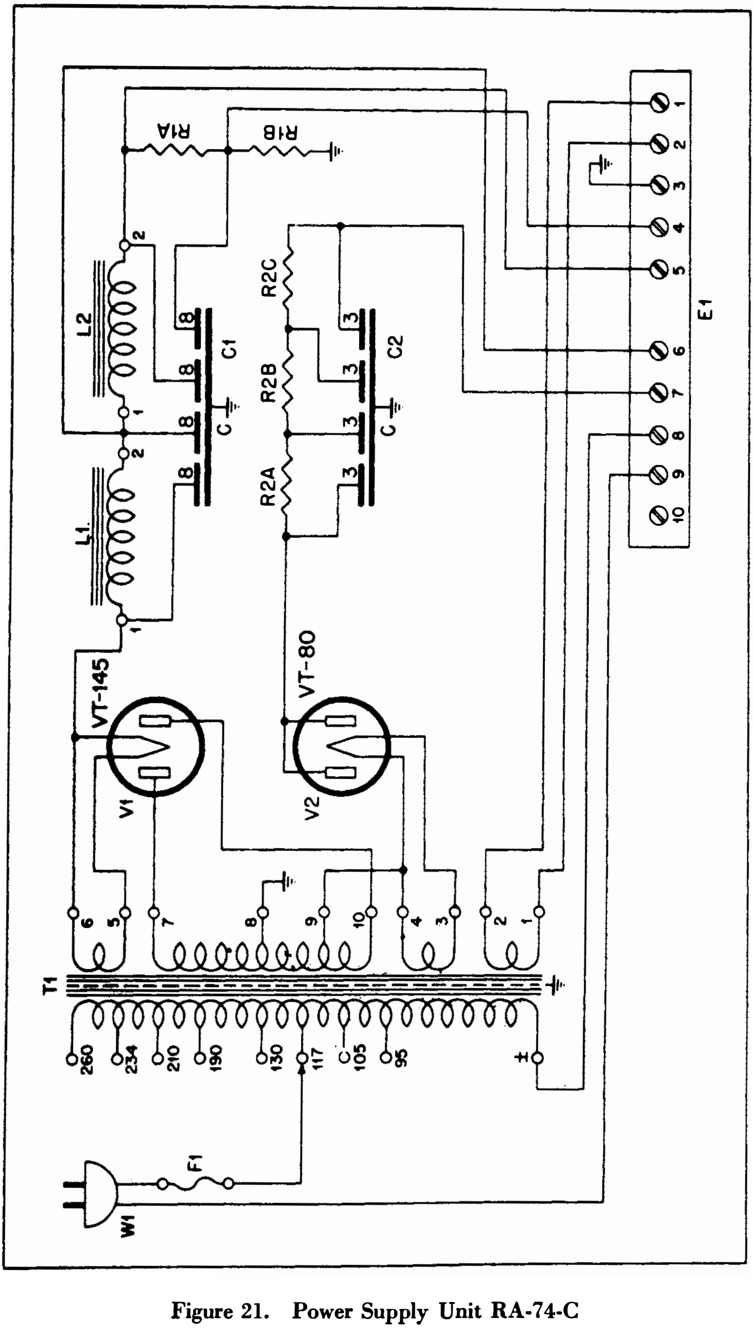


Figure 21. Power Supply Unit RA-74-C
Circuit Diagram

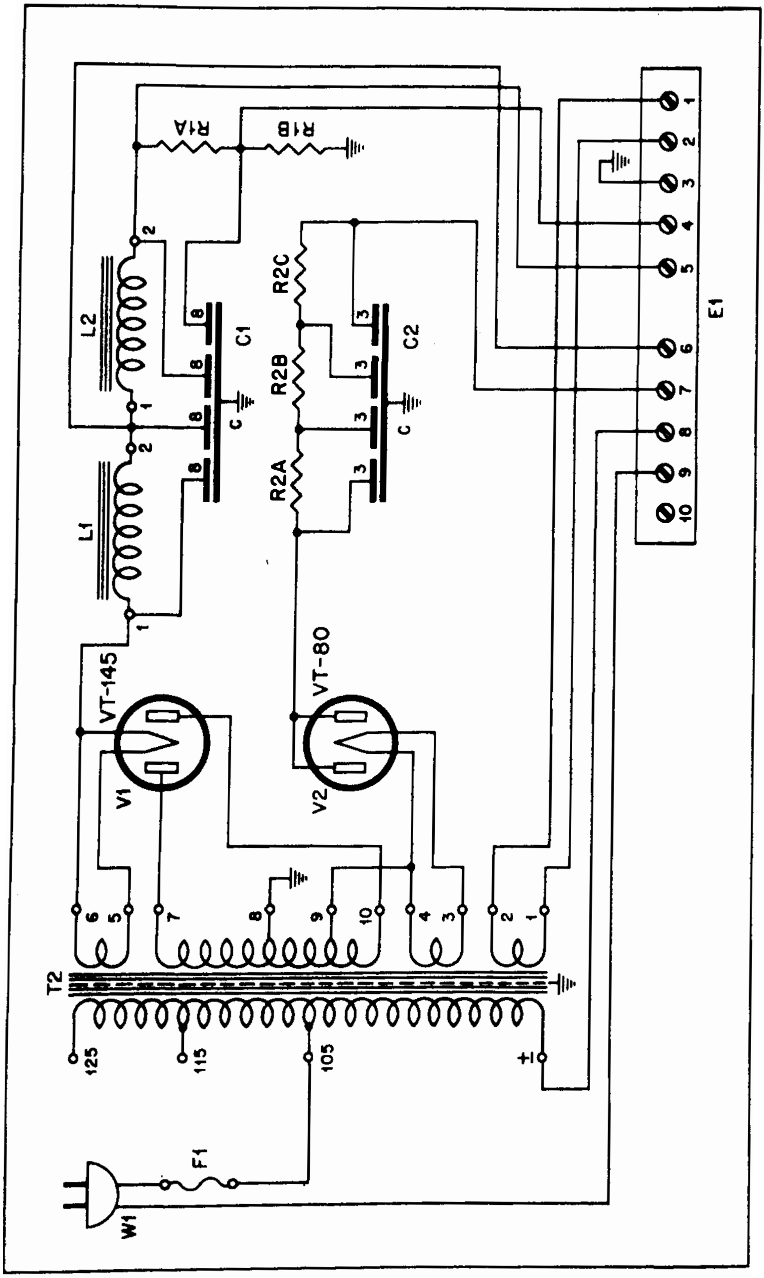


Figure 22. Power Supply Unit RA-84-B
Circuit Diagram

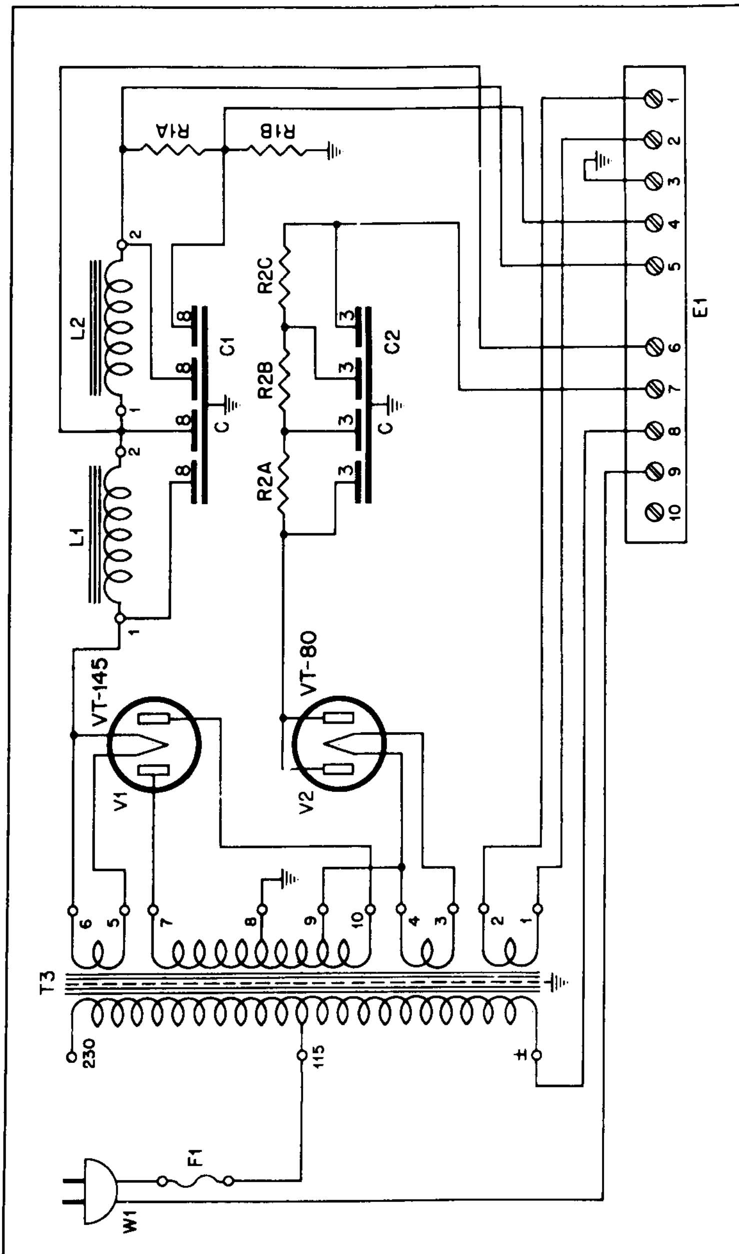
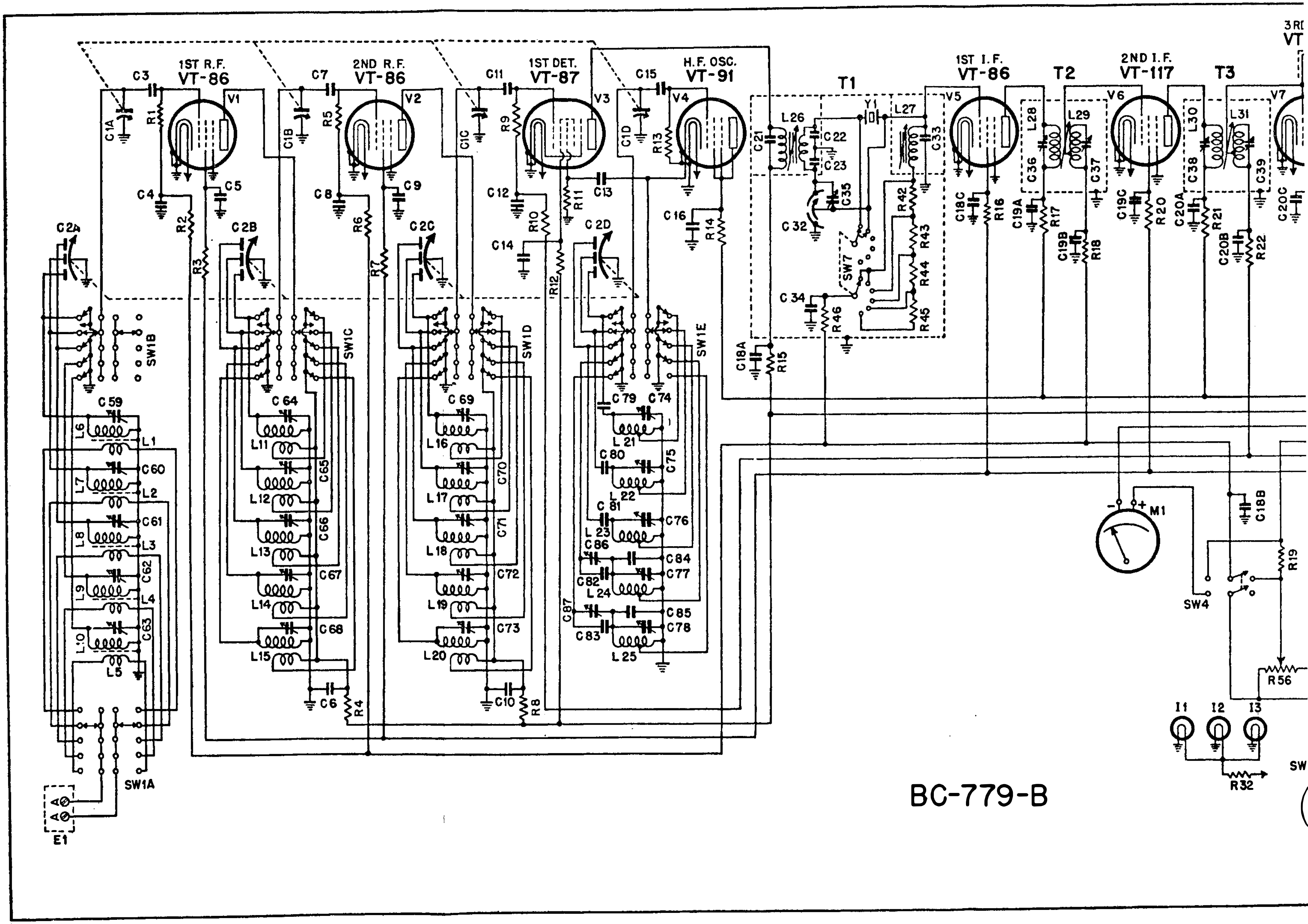


Figure 23. Power Supply Unit RA-94-A
Circuit Diagram


1ST R.F.
VT-86
2ND R.F.
VT-86
1ST DET.
VT-87
H.F. OSC.
VT-91
T1
1ST I.F.
VT-86
T2
2ND I.F.
VT-117
T3
SW1A
SW1B
SW1C
SW1D
SW1E
SW4
SW7
M1
E1
I1
I2
I3
R32
R56

BC-779-B

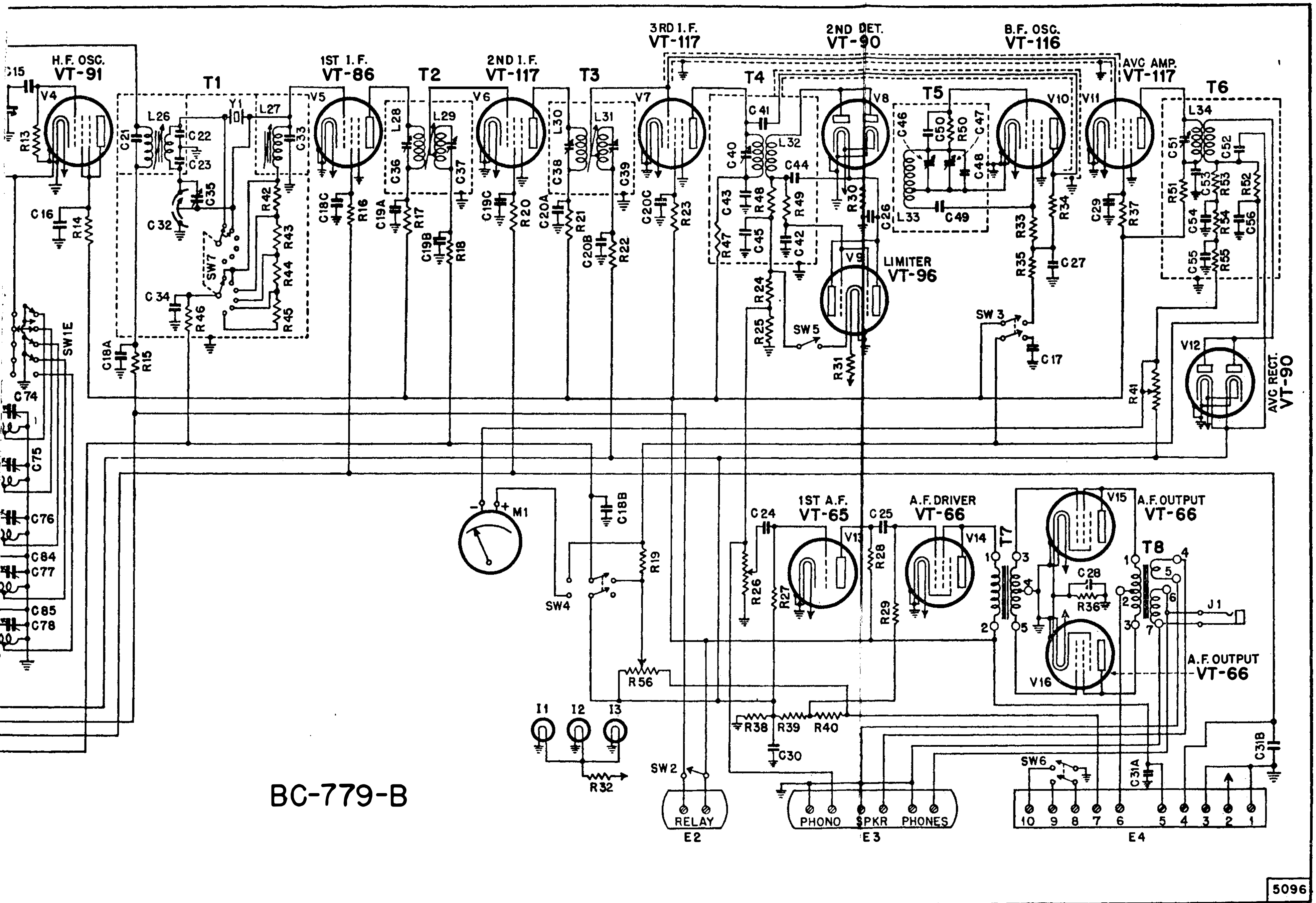
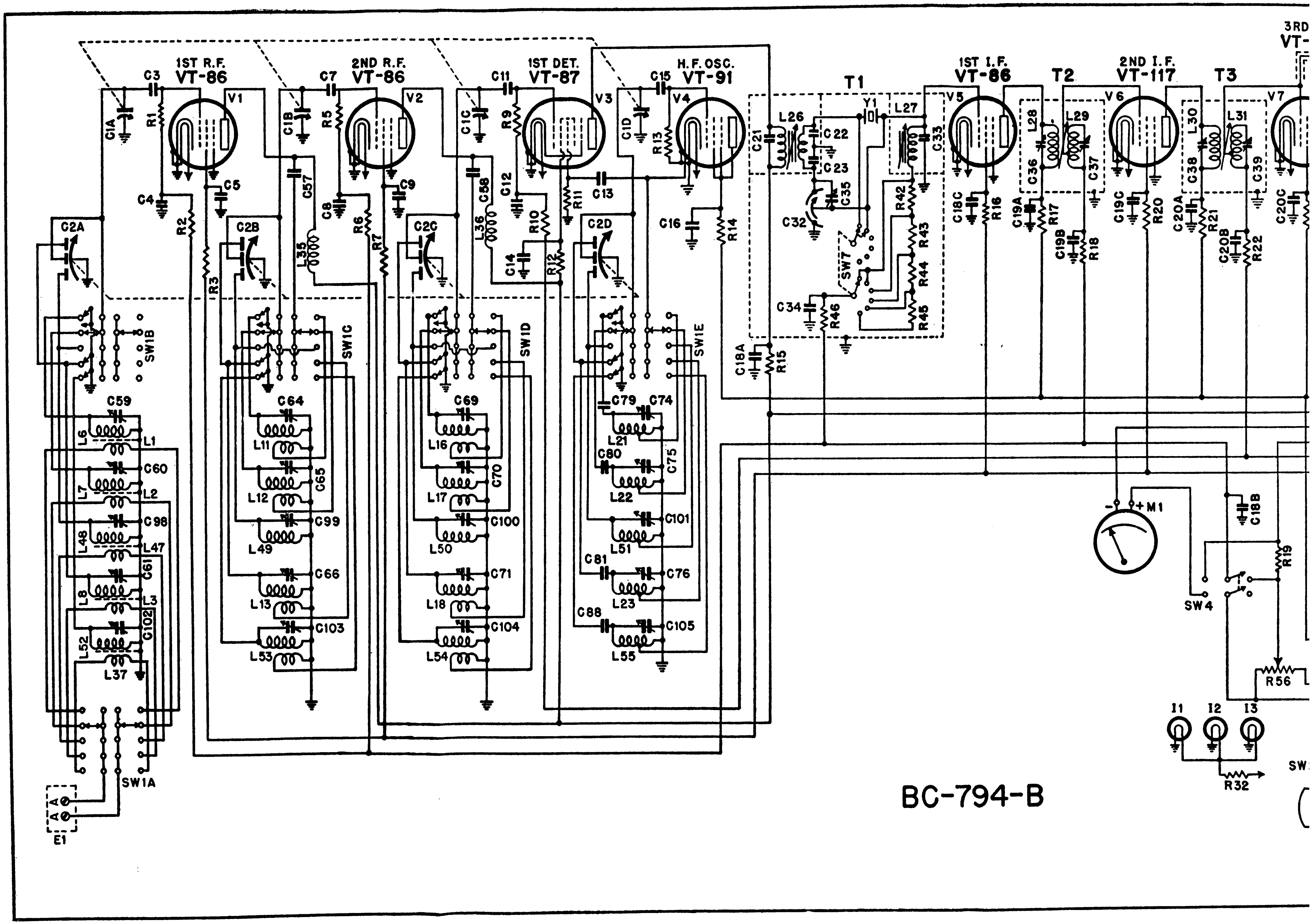


Figure 24. Radio Receiver BC-779-B Circuit Diagram


1ST R.F. VT-86
2ND R.F. VT-86
1ST DET. VT-87
H.F. OSC. VT-91
1ST I.F. VT-86
2ND I.F. VT-117
3RD VT-
T1
T2
T3
SW1A
SW1B
SW1C
SW1D
SW1E
SW7
SW4
M1
E1
R56
R32
I1
I2
I3
BC-794-B

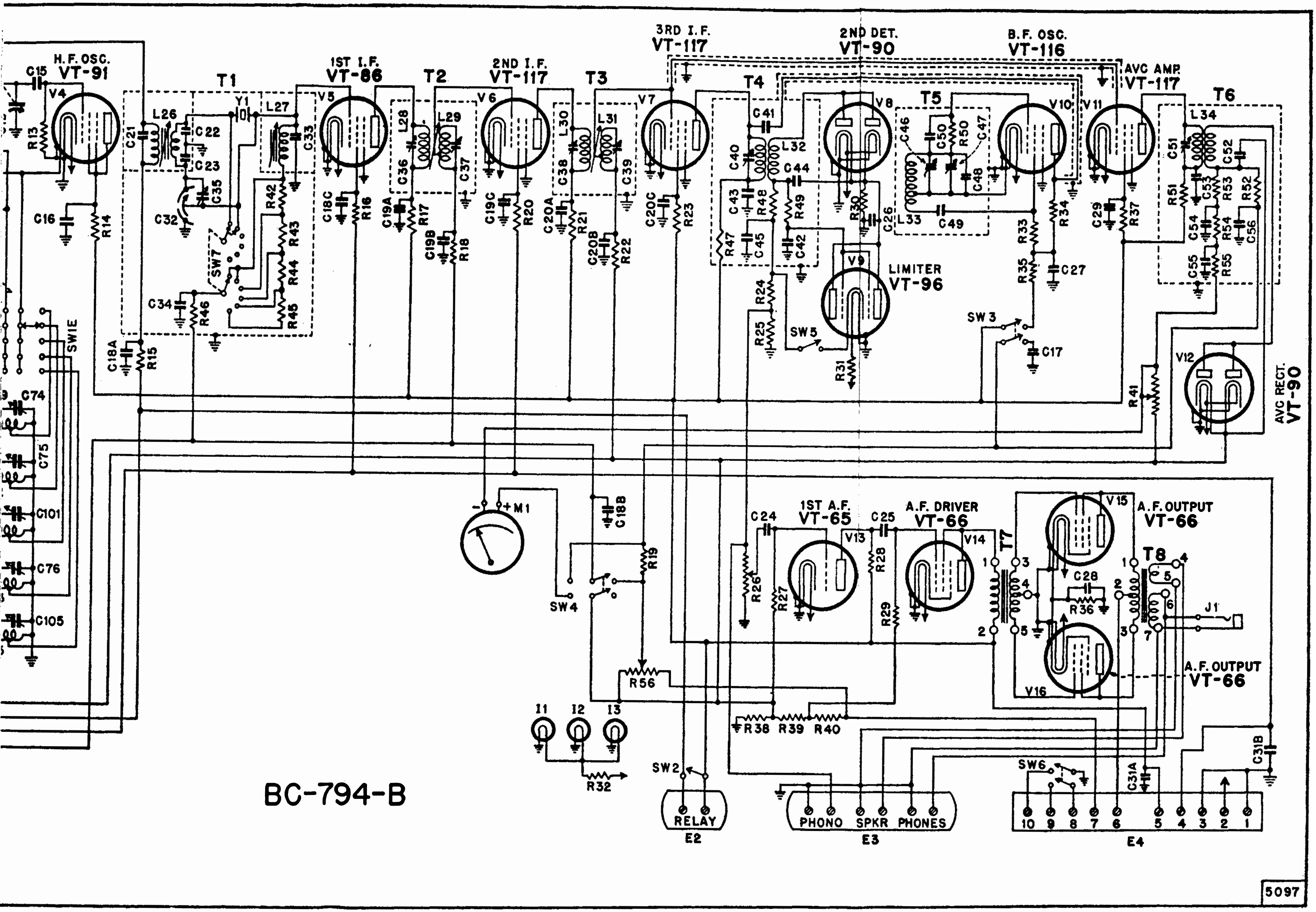
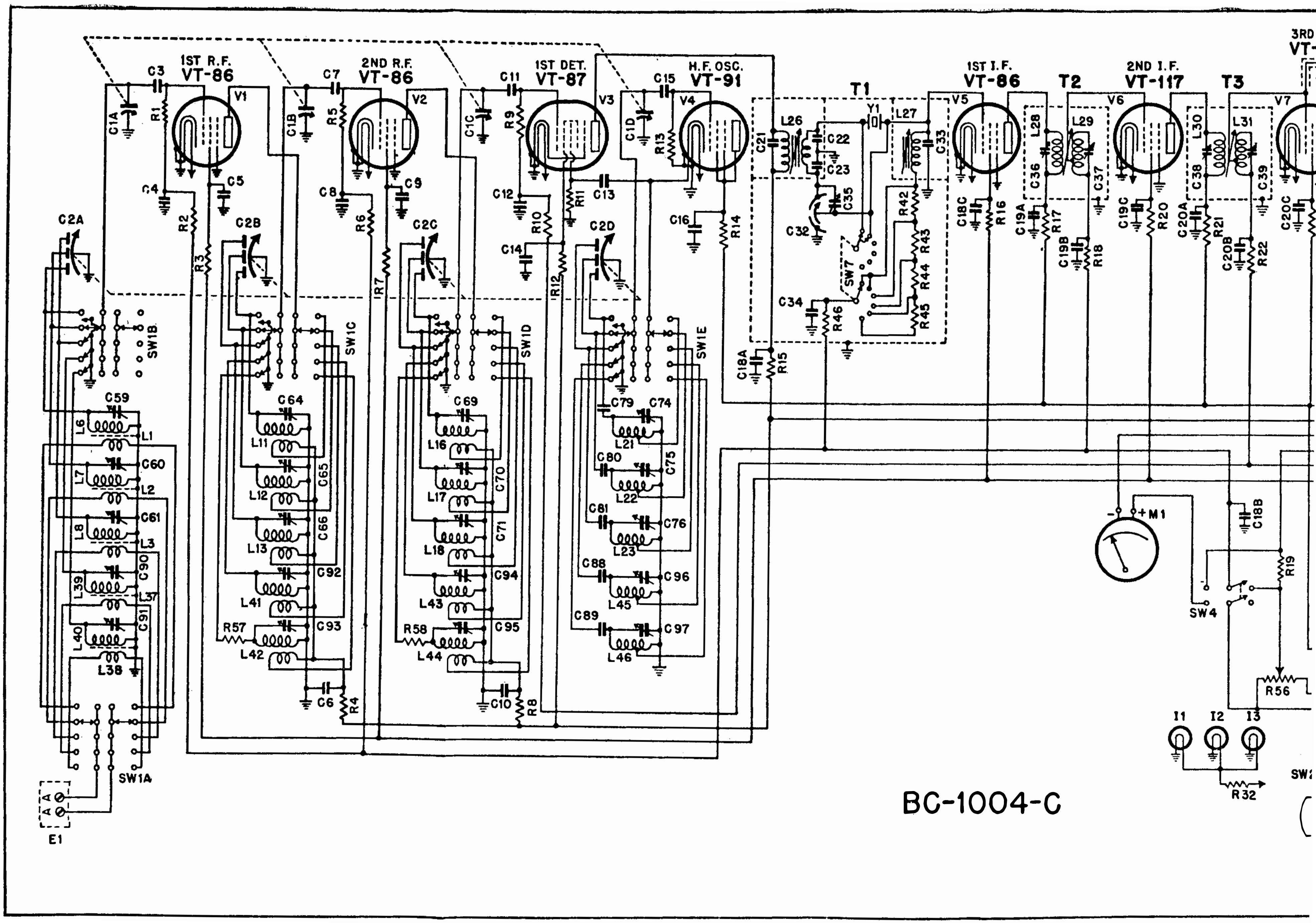


Figure 25. Radio Receiver BC-794-B
Circuit Diagram


1ST R.F.
VT-86
2ND R.F.
VT-86
1ST DET.
VT-87
H.F. OSC.
VT-91
T1
1ST I.F.
VT-86
T2
2ND I.F.
VT-117
T3
3RD
SW1A
SW1B
SW1C
SW1D
SW1E
SW7
SW4
M1
E1
BC-1004-C

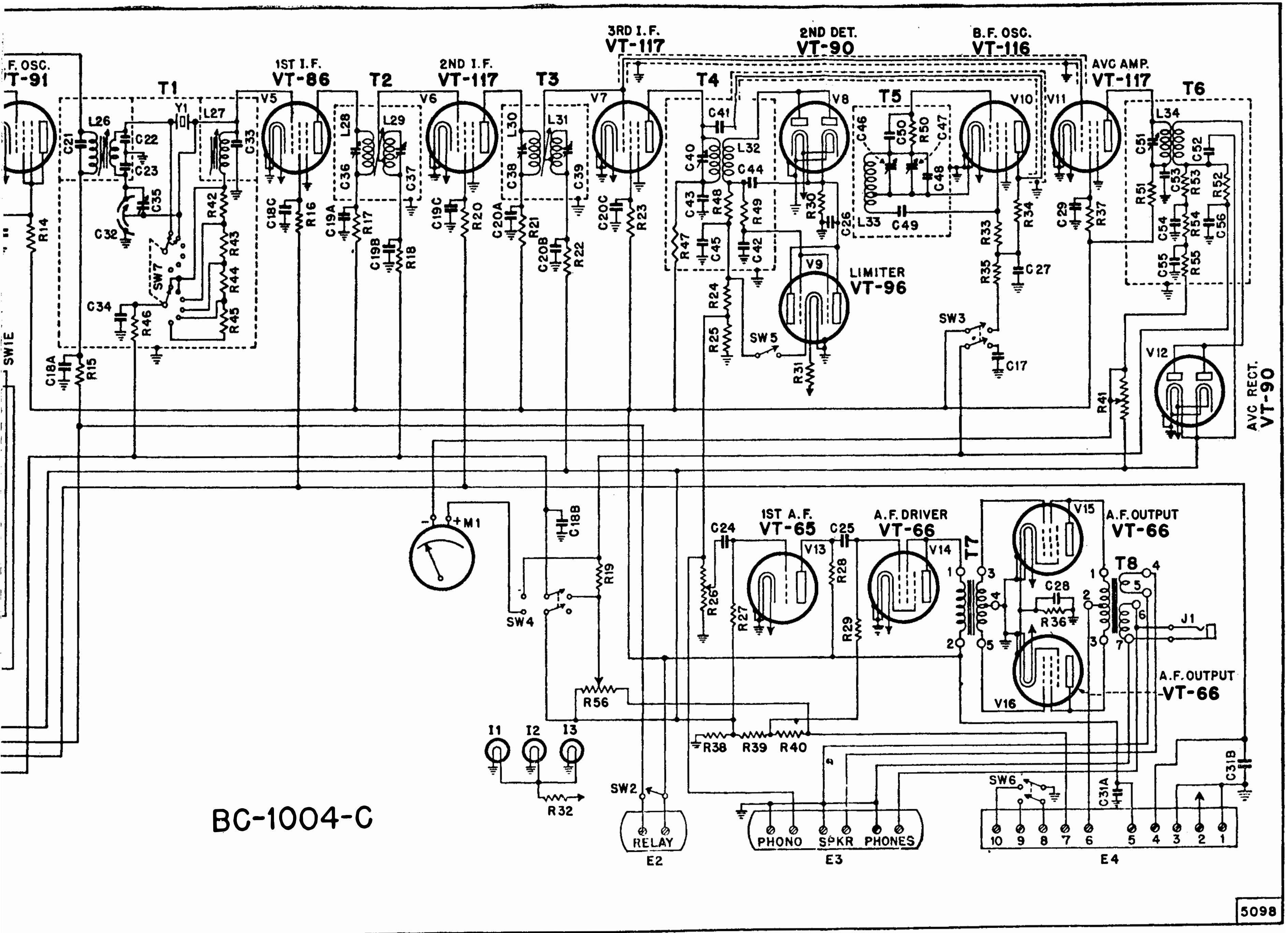


Figure 26. Radio Receiver BC-1004-C Circuit Diagram