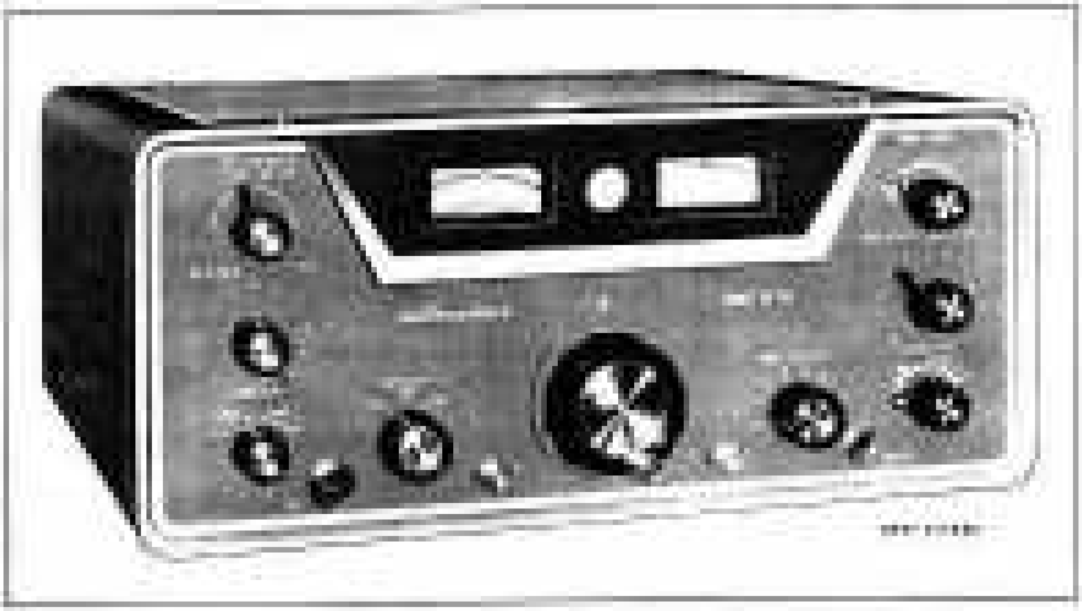

Figure 1. Hallicrafters Model SR-150 Transceiver

SECTION I

GENERAL DESCRIPTION

The Hallicrafters Model SR-150 Transceiver is a precision-built, compact, high-performance radio equipment of advanced design. This transceiver utilizes 15 tubes and a dual conversion IF to provide for the transmission and reception of single-sideband (SSB) and continuous wave (CW) signals on the 80, 40, 20, 15, and 10 meter bands.

The versatility of SR-150 equipment permits it to be operated as a fixed station or as a mobile equipment. A 117-volt, 50/60-cycle, AC power supply, complete with speaker (Model PS-150-120), is available for fixed-station use; a 12-volt DC power supply, Model PS-150-12, and a mobile mounting rack (Model MR-150) are available when the transceiver is to be used in a mobile configuration.

An advanced feature of the SR-150 equipment is the Receiver Incremental Tuning (RIT) control. This control enables the operator to switch the receiver frequency and tune the receiver approximately two KC either side of the transmitter frequency. Flipping the RIT switch OFF automatically returns the equipment to the transceiver condition.

Another special feature is the amplified Automatic Audio Level Control (AALC) which functions in the transmit mode. The AALC circuitry prevents splatter due to severe flat-topping of the final amplifier by providing about 20 dB of compression after a small amount of flat-topping occurs.

Other features of the Model SR-150 Transceiver include:

- A stable, accurately-calibrated VFO.
- A built-in, 100-KC crystal calibrator.
- Upper and lower sideband, MOX, Quick-on AGC, VOX, Manual CW, and break-in CW operation.
- A crystal-lattice filter.
- A product detector.
- An S-meter/RF output level indicator.

IMPORTANT

Do not, under any circumstances, attempt to operate the SR-150 equipment before becoming completely familiar with the instructions contained within this section.

SECTION II

TECHNICAL DATA

FREQUENCY COVERAGE:

Eight-band capability — Full coverage provided for 80, 40, 20, 15, and one segment of the 10-meter band. Provisions made and crystals available for the remaining three segments of the 10-meter band. Other frequencies are available on request.

OPERATION:

Single Sideband — VOX or MOX (push-to-talk).

CW — Manual or break-in.

FRONT PANEL CONTROLS:

Tuning; Band Selector; Final Tuning; RF Level - Mic Gain; Preselector; RIT; RF Gain - AF Gain; Operation (Off/Standby/MOX/VOX); Function (CW/USB/LSB); Cal; Cal Adj.

GENERAL:

Dial Calibration — 5-KC increments (Built-in, 100-KC crystal calibrator).

Calibration Accuracy — Less than 2 KC between 100-KC points after indexing.

VFO — 500 KC tunable range.

Stability — Less than 300 CPS after warmup.

Tubes — 18 plus one voltage regulator, ten diodes, and one varicap.

Ambient Temperature Range — Minus 20° to plus 50° C.

Construction — Rugged, lightweight aluminum.

Dimensions (HWD) — 6-1/2 inches by 15 inches by 13 inches.

Net Weight — 17-1/2 pounds.

Shipping Weight — 22 pounds (approximately).

TRANSMITTER:

Output Tubes — Two 12DQ6B tubes in parallel.

Output Impedance — Fixed, 50-ohm pi-network.

Power Input — SSB . . . . 150 watts PEP MAX.
CW. . . . . 125 watts MAX.

Carrier and Unwanted Sideband Suppression — 50 DB.

Distortion Products — 30 DB.

Audio Response — 600 CPS to 2800 CPS @ 3 DB.

Microphone Input — High impedance.

RECEIVER:

Sensitivity — 1 microvolt for a 20-DB signal-to-noise ratio.

Audio Output — 2 watts.

Output Impedance — 3.2 ohms and 500 ohms.

Overall Gain — 1 microvolt for 1/2 watt output.

Antenna Input — 50 ohms.

IF — Dual Conversion:

First IF . . . . 6.0 MC to 6.5 MC variable (tunes with the VFO).

Second IF . . . 1650 KC, crystal-lattice filter.

ACCESSORIES:

Mobile Mounting Rack Model MR-150 — Quick release design adaptable to transmission hump or floor mount ... all connections made simultaneously ... access holes for VOX controls.

Net Weight — 10 pounds.

Shipping Weight — 12-3/4 pounds (approximately).

12-volt DC Power Supply Model PS-150-12 — Designed for out-of-the-way trunk installation ... terminal strip provides for quick-and-easy connection to the cable from the mounting rack ... contains five silicon diode rectifiers and four transistors.

Dimensions (HWD) — 3-3/4 inches by 10 inches by 6-3/4 inches.

Net Weight — 5-1/2 pounds.

Shipping Weight — 9 pounds (approximately).

117-volt AC Power Supply Model PS-150-120 — Styled as a companion unit to the Model SR-150 Transceiver, this supply also contains a 4-inch by 6-inch speaker ... one-cable connection carries power to an audio from the transceiver ... may be plugged into any 115-volt wall outlet ... contains five silicon diode rectifiers.

Dimensions (HWD) — 6-1/4 inches by 7-1/2 inches by 10 inches.

Net Weight — 22 pounds.

Shipping Weight — 28-1/2 pounds (approximately).

TUBES AND FUNCTIONS

V1	6AZ8	Receiver RF Amplifier and Calibrate Oscillator.
V2	12BA7	Receiver and Transmitter First Mixer.
V3	6EA8	6.0-MC to 6.5-MC IF Amplifier and Audio Cathode Follower.
V4	12BA7	Receiver Second Mixer.
V5	6EA8	Receiver Second 1650-KC IF Amplifier and AALC Amplifier.
V6	12BE6	Product Detector.
V7	6AH6	Transmitter Second Mixer.
V8	12AT7	Heterodyne Oscillator and Cathode Follower.
V9	6EA8	VFO and Cathode Follower.
V10	12AT7	Carrier Oscillator/BFO.
V11	6T8A	Receiver First Audio, AGC Detector, VOX Diode, and QT Diode.
V12	OA2	Voltage Regulator.
V13	6AQ5A	Receiver Audio Output.
V14	12DQ6B/ 12GW6	Power Amplifier.
V15	12DQ6B/ 12GW6	Power Amplifier.
V16	12BY7A	Transmitter Driver.
V17	6EA8	Receiver and Transmitter 1650-KC IF Amplifier and Meter Amplifier.
V18	12AX7	First and Second Microphone Amplifier.
V19	12AT7	VOX Amplifier and VOX Relay Amplifier.

SECTION III
INSTALLATION

3-1 UNPACKING

Carefully remove this equipment from its carton and packing material and examine it for any possible damage which may have occurred during transit. Should any sign of damage be apparent, immediately file a claim with the carrier stating the extent of the damage. Check all shipping labels and tags for special instructions before removing or destroying them.

3-2 LOCATION

The Model SR-150 Transceiver may be placed in any location permitting free air circulation through the ventilation openings in the cabinet. However, excessively warm locations such as those adjacent to radiators and heating units should be avoided.

3-3 ANTENNAS.

Antenna connections are provided on the rear of the transceiver, as shown in figure 2. If a common antenna is used, the antenna switch (S2) should be in the down (common) position and the antenna connected to the bottom connector. If separate antennas are used, the switch should be up, the receiver antenna should be connected to the top connector (J1), and the transmitter antenna connected to the bottom connector (J2).

Figure 3 shows an installation, in block diagram form, making use of a linear amplifier and an external antenna changeover relay. Connections to the power supply from the antenna changeover relay are internal solder connections. Refer to figures 14, 15, 17, and 18 for the internal chassis views and schematic diagrams of the power supplies used in conjunction with the Model SR-150 Transceiver. In the installation shown, the receiver is connected directly to the relay through the top antenna connector (J1); the transmitter is connected through the bottom antenna connector (J2) to the linear amplifier which, in turn, is connected to the relay. If desired, two separate antennas may be used in the installation shown, eliminating the use of the antenna changeover relay.

NOTE

Never operate the transceiver without making a connection to a proper antenna or to a resistive dummy load.

Refer to the ARRL handbook or similar publications for the selection and installation of antennas.

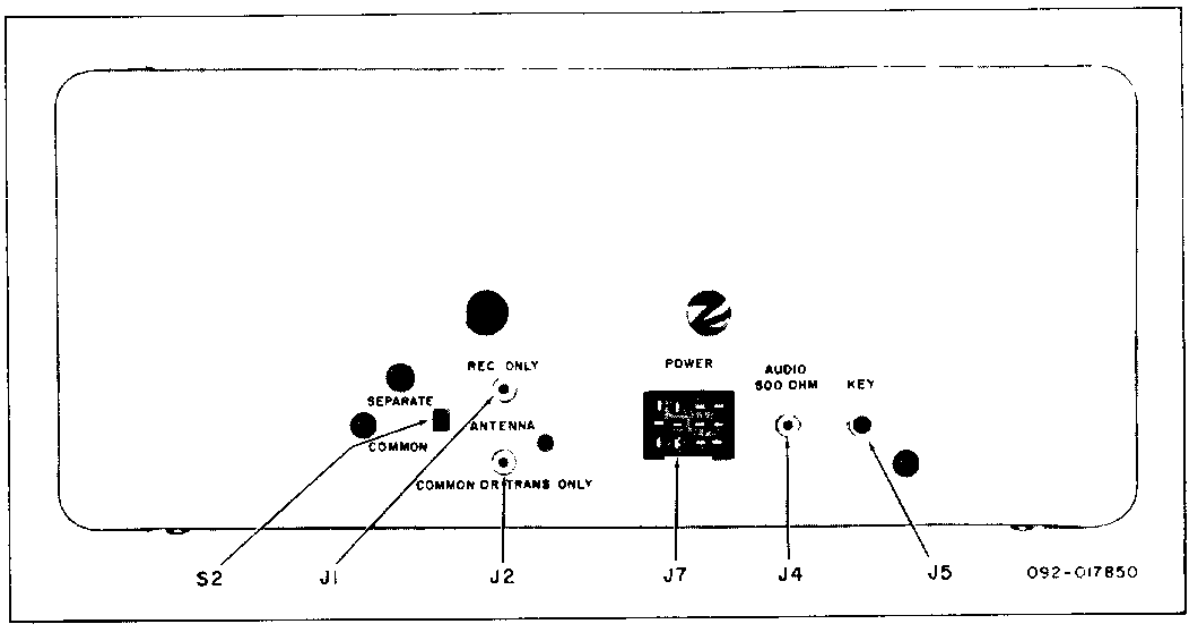

Figure 2. Rear View of Transceiver.

3-4 MOBILE INSTALLATION

The Model SR-150 Transceiver may be installed in any vehicle having a 12-volt DC power source. To complete this mobile installation, a Model PS-150-12 Power Supply and a Model MR-150 Mobile Mounting Rack will be required. The PS-150-12 Power Supply, as shipped, is wired for vehicles having the negative side of the battery grounded. If this equipment is to be installed in vehicles having the positive side grounded, make the wiring change noted in figure 18, schematic diagram of the Model PS-150-12 Power Supply.

Before installing the equipment, it is necessary to set the position of the connectors in the rear of the mounting rack. This may be accomplished as follows:

1. Set the mounting rack on a work bench with the rear of the rack on the bench and the side panels open. Make sure the four nuts securing the power and antenna connectors have been loosened.
2. Holding the transceiver with the front panel up, very carefully slide the transceiver into the rack until the power and antenna connectors mate with those in the mounting rack.

IMPORTANT

Extreme care must be exercised in performing this step to prevent damaging the connectors on the transceiver and in the mounting rack.

3. With the transceiver securely in position, turn the equipment on its side and tighten the four nuts holding the connectors in the mounting rack in place.
4. Carefully remove the transceiver from the mounting rack and proceed with the installation.

A base bracket and mounting straps are provided for installing the Model MR-150 Mounting Rack under the dashboard or on the transmission hump (see figure 4). When selecting a location for installing the mounting rack, an open area should be allowed on the top or bottom to provide adequate ventilation for the transceiver when it is in place.

The SR-150 Transceiver may be installed at this time if desired. Before installing the transceiver in the mounting rack, ascertain that the antenna switch on the rear panel is in the down (common) position. Slide the transceiver back into the MR-150 Mounting Rack so that a good connection is made to the power and antenna receptacles on the rear inside of the mounting rack Secure the units together by means of the wing screws on both sides of the mounting rack.

The Model PS-150-12 Power Supply may be installed in any convenient location. In the installation discussed in this book, the power supply will be installed in the trunk (see figure 5). Mount the power supply securely, using self-tapping screws. Position the power supply in such a

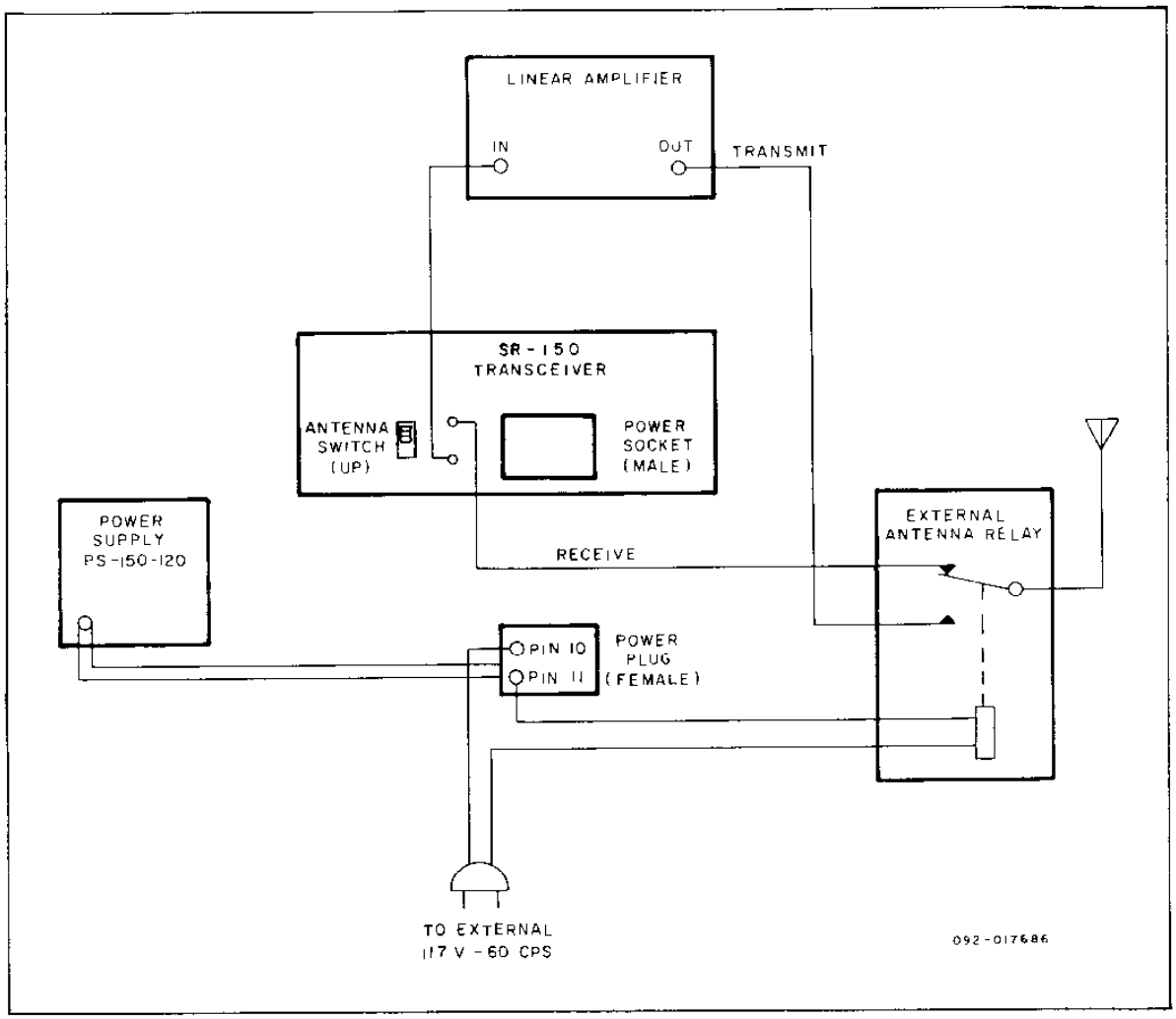

Figure 3. Base Installation Using a Linear Amplifier.

manner that the side with the terminal strips is accessible. Run the cable from the mounting rack under the floor mat and under the rear seat into the trunk. Since this cable is weatherproof, it may be threaded underneath the vehicle if desired. Cut the cable to the desired length, strip the wires, and connect these wires to the terminal strip on the power supply (see figures 5 and 17 for color coding and terminal numbering).

IMPORTANT

Before connecting to the vehicle's battery, check the transceiver, if already installed, to ascertain that the OPERATION switch is in the OFF position.

Connect the two NO. 8 AWG wires supplied between the two-connector terminal strip on the power supply and the battery. The red/white wire should be connected from the top terminal on the power supply to the positive (+) side of the battery and the red/black wire from the bottom terminal to the negative (-) side of the battery. These wires should be cut to a suitable length before being connected to the battery. The positive lead should be connected to the battery through a 30-ampere fuse block (not supplied, see figure 5). If the vehicle has a positive ground electrical system, fuse the negative lead.

CAUTION

USE CARE WHEN MAKING CONNECTIONS TO THE BATTERY IN THE VEHICLE. THE POWER IN A BATTERY CAN CAUSE DANGEROUS BURNS AND EVEN EXPLOSION IF SHORT CIRCUITED.

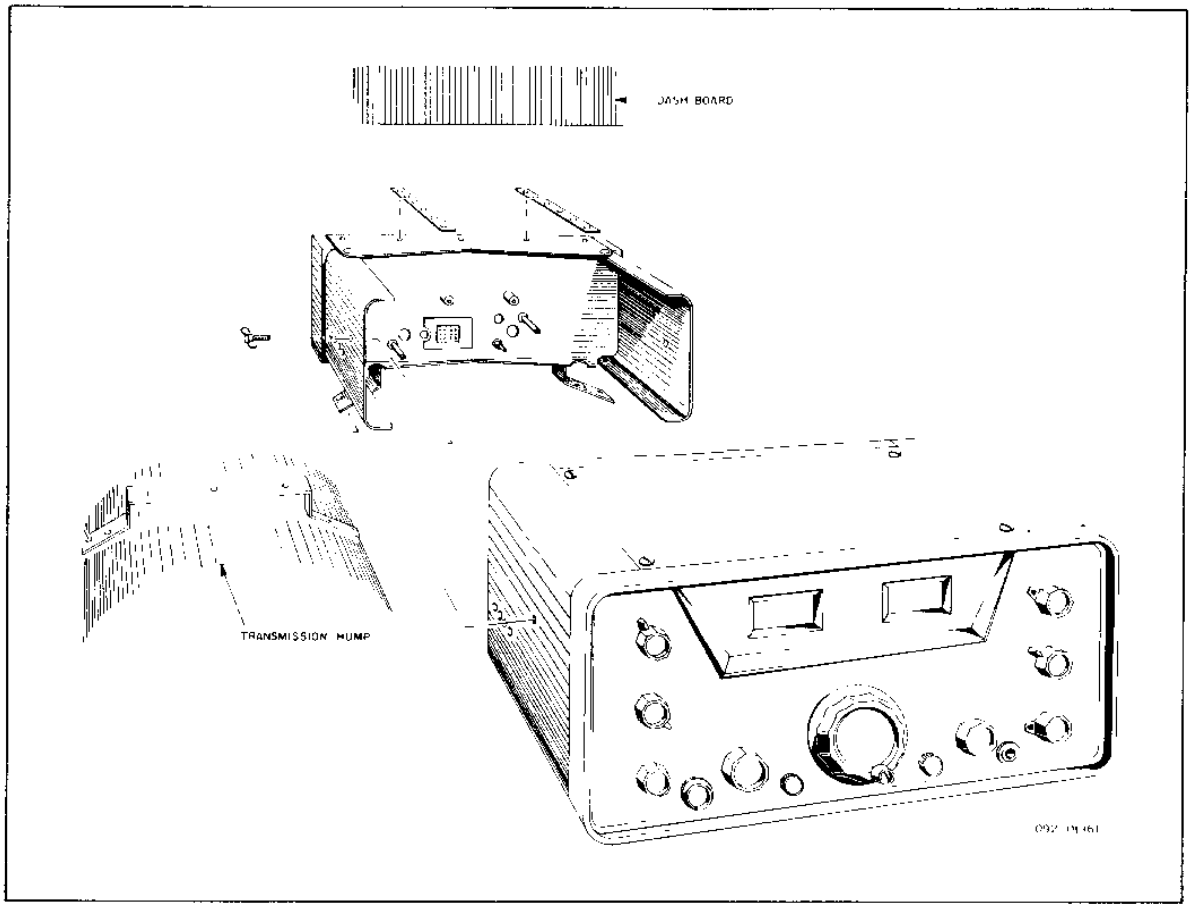

Figure 4. Installing the Model MR 150 Mounting Rack

Connect the speaker to the jack provided on the side of the mounting rack. This jack accepts a standard PL55 type plug.

Use of the auto radio loud speaker is not recommended unless a switch is installed to remove the speaker from the auto radio when operating the SR-150.

Install the antenna in the manner recommended by the antenna manufacturer. Connect the coaxial cable from the antenna, through the hole in the right side of the mounting rack, and solder to the rear of the phono-pin-plug type connector in the rear of the mounting rack. Use care when soldering. Solder on the outside of the center pin must be removed to prevent possible damage to the female antenna connector in the transceiver. If desired, prior to installing the mounting rack, a length of coaxial cable may be connected from this phono-pin-plug type connector to a coaxial connector attached to the right side of the mounting rack in the space provided. If this is done, when the antenna is installed, it may be attached to the connector using a mating connector.

Connect a suitable microphone to the jack provided on the front panel. It is important that the internal wiring of the microphone be as shown in figure 6.

IMPORTANT

Before proceeding, refer to alignment procedure, paragraph 8-3, for bias adjustment.

Only after familiarizing yourself with the controls and their functions, as outlined in Sections IV and V, should you perform an operational check. It is recommended that the engine be running while operating the Model SR-150 Transceiver to prevent draining power from the battery.

3-5. MOBILE NOISE SUPPRESSION.

The following suggestions may be helpful in the suppression of noise encountered in mobile operation. Install resistor-type spark plugs and

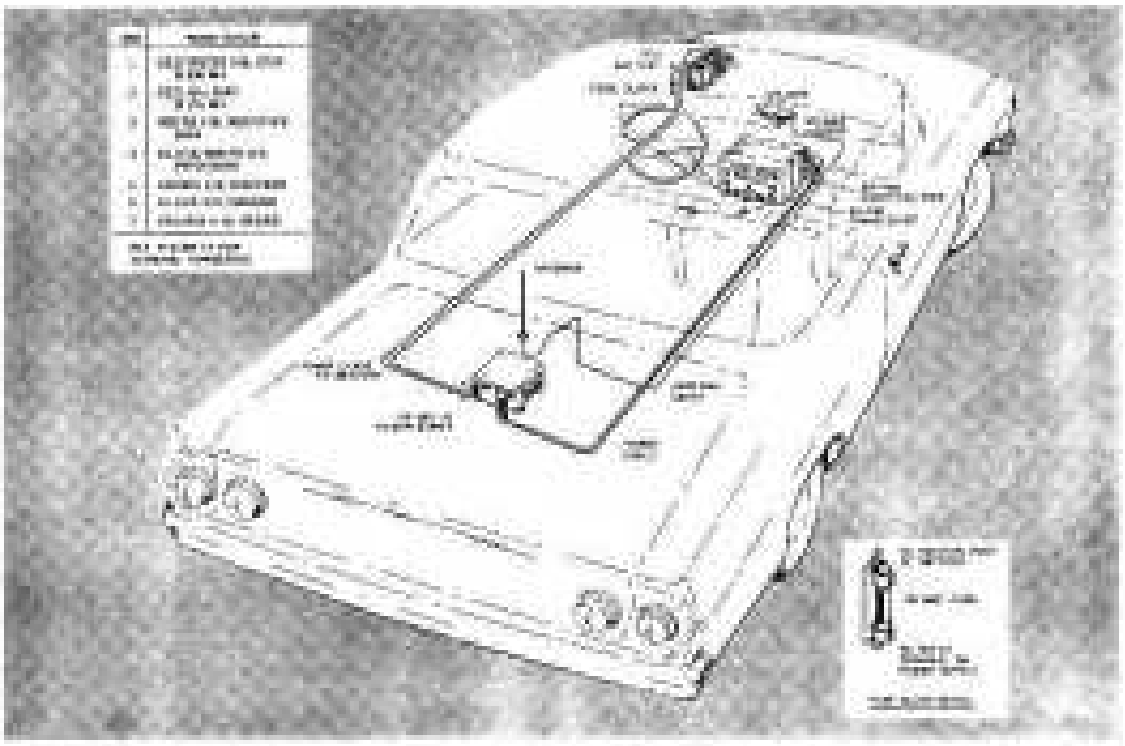

Figure 5. Wiring Diagram of Mobile Installation

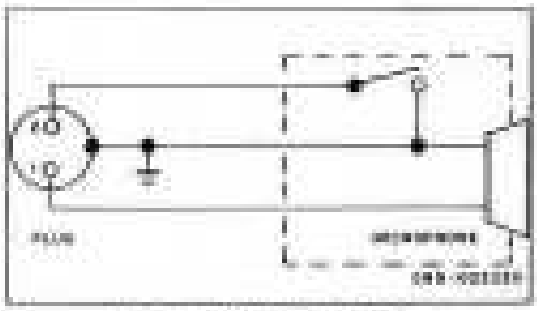

Figure 6. Required Microphone Wiring

coaxial bypass capacitors in the ignition coil, generator, and voltage regulator leads, install transient-resistor coaxial capacitors in the generator and battery leads to the voltage regulator and connect a 0.005 microfarad mica or disc capacitor from the generator lead to ground. Chokes may be used in the generator field and armature leads instead of the bypass capacitors—approximately 12 turns of NO. 18 wire on a 1/4-inch powdered iron core for the field lead choke and approximately 12 turns of NO. 12 or NO. 14 wire on a 1/4-inch powdered iron core for the armature lead choke.

Hallicrafters has available a Mobile Noise Suppression Kit, Model HA-3, which will fulfill any suppression requirements of this installation.

Additional information concerning the proper suppression of mobile noise, is available in the Handbook of Instructions for Hallicrafters' Model HA-3 Mobile Noise Suppression Kit and in other current handbooks on the same subject.

3-6. BASE INSTALLATION.

The Model SR-150 Transceiver, as a base station, may be used with or without a linear amplifier. To operate from 117 volts AC, the Model PS-150-120 Power Supply, or an equivalent, is required. Merely connect the power plug from the power supply to the receptacle on the rear of the transceiver, connect the AC cord from the power supply to the wall outlet, and connect to an antenna installation as described in paragraph 3-5. A four by six inch speaker is contained in the power supply and is interconnected to the transceiver through the power plug.

IMPORTANT

Before operating the SR-150, the bias adjustment control on the power supply must be set. See paragraph 5-3 of the adjustment procedure.

If a linear amplifier and an antenna changeover relay are used, the cap on the plug of the power supply cable must be loosened, enabling wires to be soldered to pins 10 and 11 of the plug (see figure 3), thus providing a control circuit for the relay.

SECTION IV

FUNCTION OF OPERATING CONTROLS

All controls utilized during normal operation of Hallicrafters Model SR-150 Transceiver are located on the front panel (see figure 7).

4.1. RIT CONTROL – ON/OFF.

The Receiver Incremental Tuning (RIT) control is made up of two controls with concentric shafts. The ON/OFF function of the lower control either puts the variable-frequency RIT control in or out of operation. This control, in the ON position, enables the operator to fine-tune the receiver plus or minus two KC by means of the RIT potentiometer (inner knob) without disturbing the initial calibration or transmitting frequency. Returning the control to the OFF position locks the receiver frequency to the transmitter frequency.

4.2. RF GAIN – AF GAIN.

The RF GAIN and AF GAIN controls are two controls mounted on concentric shafts. The RF GAIN control (lever control) varies the gain of the receiver RF amplifier and mixer. Maximum sensitivity is obtained with the control set at 10 (fully clockwise).

The AF GAIN control (round knob) adjusts the audio output level at the speaker terminals and PHONES jack. Clockwise rotation increases the signal applied to the grid of the audio amplifier, thus increasing the audio output.

4.3. OPERATION.

The OPERATION control is a four-position switch. In the OFF position, all power is disconnected from the circuitry. In the STBY position, the receiver portion of the unit is in operation and all circuits common to both receiver and transmitter are in the receive condition. In this position, those functions used only in the transmit mode are turned off. In the MOX (push-to-talk) position, the transmitter portion of the unit is in operation and all circuits common to both transmitter and receiver are in the transmit condition.

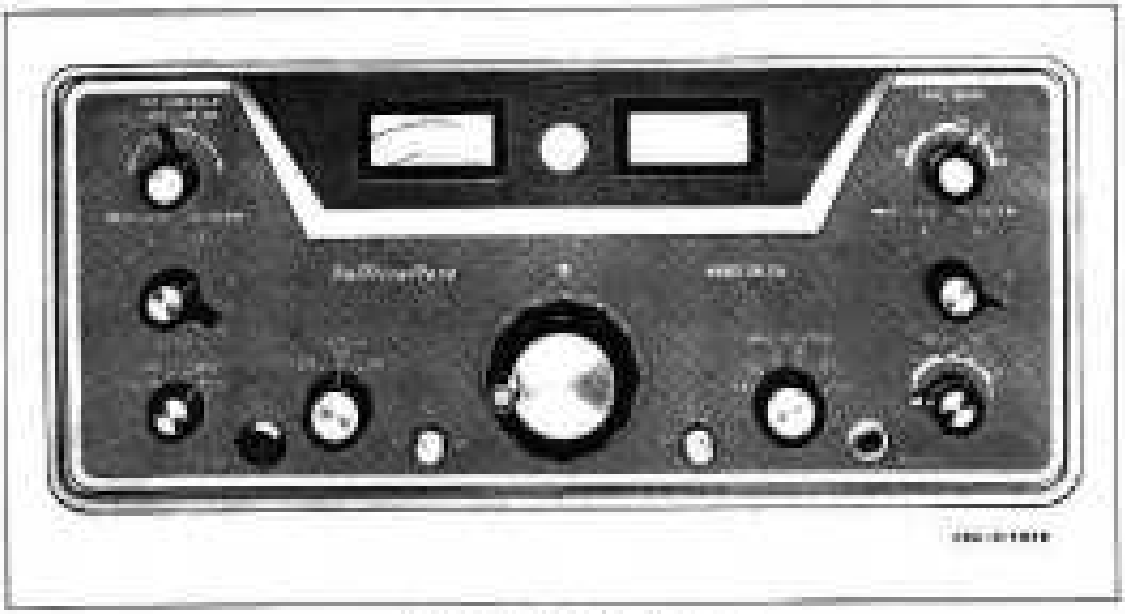

Figure 7. Front Panel View of Transceiver.

In this position, those circuits used only in the receive mode are automatically biased off when the transmitter is keyed (microphone button depressed). In the VOX position, the transmitter is energized by voice or part of the first character of a CW transmission. In the absence of voice or keying, the unit is automatically placed in the receive mode. This portion can also be referred to as Automatic.

4-4. FUNCTION

The FUNCTION control is a three-position switch. This switch is used to select the mode of operation: CW, LSB, or USB.

4-5. CALIBRATION ADJUSTMENT (CAL ADJ)

The CAL ADJ control varies the frequency of the Variable Frequency Oscillator (VFO) over a small range so that its frequency can be set precisely when compared to a standard.

4-6 OFF-CALIBRATE (CAL)

The OFF-CAL control is a two-position switch used to turn the crystal calibrator off or on. When in the CAL or on position, it provides standard frequencies at 100-KC intervals to accurately calibrate the VFO.

4-7. BAND SELECTOR

The BAND SELECTOR control is an eight-position switch used to select the desired band for receiving or transmitting. This control also indicates the low-frequency end of the band and which scale, red or black, to read on the dial for direct frequency determination.

4-8. TUNING (VFO).

The TUNING control tunes in the frequency to which you are listening. As an added feature, the position of this knob may be adjusted by using the bristol wrench supplied. Loosen the two set screws and position the TUNING knob on the shaft against the felt pad for the desired amount of drag or torque.

4 9 PRESELECTOR

The PRESELECTOR tunes to the desired frequency within a given band, as indicated by the setting of the BAND SELECTOR. The function of the PRESELECTOR, however, is determined by the OPERATION control. With the OPERATION control in the STBY position, the PRESELECTOR tunes the receiver RF and first mixer stages; with the OPERATION control in the MOX or VOX position, the PRESELECTOR tunes the transmitter mixer and driver stages.

4 10 RF LEVEL - MIC GAIN

The RF LEVEL and MIC GAIN controls are two controls mounted on concentric shafts. The RF LEVEL control (lever control) varies the output of the transmitter mixer, thereby varying the RF output. Maximum drive to the output stages is obtained with the control set at 10 (fully clockwise). The RF LEVEL control functions only in the CW mode of operation.

The MIC GAIN control (round knob) varies the audio level from the microphone amplifier stages to the balanced modulator. The control has sufficient range to permit adjustment of any high-level crystal microphone or low-level dynamic microphone normally used for voice communication.

4-11 FINAL TUNING

The FINAL TUNING control consists of a continuously tunable capacitor with a band-segment indicator. This control tunes the final output stage to the operating frequency.

SECTION V
TUNING PROCEDURE

5-1 GENERAL.

The tuning procedure of the Model SR-150 Transceiver is not complicated; however, care should be exercised when tuning to insure peak performance of the equipment. The following paragraphs describe the procedures for receiver and transmitter tuning.

IMPORTANT

Before operating the SR-150, the Bias Adj. control on the power supply must be set. See paragraph 8-3 of alignment procedure.

5-2. RECEIVER CALIBRATION.

Preset the controls as indicated:

OPERATION	STBY (receive, power on)
RF GAIN	Maximum
AF GAIN	As required
FUNCTION	Desired sideband
BAND SELECTOR	Desired band
TUNING	100-KC point nearest desired frequency

PRESELECTOR . . . . Desired band segment

RIT . . . . . OFF

CAL . . . . . CAL (on)

CAL ADJ . . . . . As required

To calibrate, set the TUNING control to the 100-KC point on the dial nearest the desired frequency. Rotate the CAL ADJ control for zero beat. It may be necessary to increase the AF GAIN control to get sufficient indication at or near zero beat. The RIT control switch must be in the OFF position when calibrating. Turn the CAL switch to OFF and tune to the desired frequency. Peak the PRESELECTOR control for maximum S-meter indication.

NOTE

The CAL switch should be in the OFF position in normal use of the receiver. It should be in the CAL position only when calibrating the receiver.

5-3. BASIC TUNE-UP

Preset the indicated controls as follows:

OPERATION . . . . . MOX

FINAL TUNING . . . . . Desired band segment

FUNCTION . . . . . CW

BAND SELECTOR . . . Desired band

TUNING . . . . . Desired frequency

PRESELECTOR . . . . Desired band segment

RF LEVEL . . . . . Between 4 and 5, or as required.

Adjust the RF LEVEL control until a small indication is seen on the S-meter. In the transmit mode, the S-meter indicates relative RF output voltage. Adjust the FINAL TUNING control for maximum output and then adjust the PRESELECTOR for maximum output indication. Adjust the RF LEVEL control as required to keep the S-meter reading below S9, while tuning the PRESELECTOR.

5-4 MANUAL CW OPERATION.

Use the procedure as given in paragraphs 5-2 and 5-3. (If a key is plugged into the Key jack, J5, it must be closed.) Advance the RF LEVEL control to just below saturated output.

Saturated output is determined in the following manner. Start at "0" setting of the RF LEVEL control and slowly increase the control (clockwise) while observing the S-meter. Set the control at a point where further rotation does not cause an appreciable increase in the S-meter reading. This is saturated output; operate slightly below this level.

The transmitter is now ready to key. To receive, it is necessary to turn the OPERATION switch to the STBY position.

5-5 BREAK-IN CW OPERATION

Use the tuning procedure as given in paragraphs 5-2 and 5-3. Set the OPERATION switch to the VOX position. Adjust the delay control (see figure 12) for the desired drop-out delay; delay increases with clockwise rotation. The unit is now ready for break-in CW operation.

5-6. PUSH-TO-TALK SSB OPERATION (MOX).

Use the procedure given in paragraphs 5-2 and 5-3. Set the FUNCTION switch to the desired sideband (USB or LSB). Set the OPERATION switch to MOX. Depress the microphone switch (push-to-talk) and advance the MIC GAIN control (while speaking into the microphone in a normal voice level) until the S-meter indicates approximately one-half the level shown at saturation. The MIC GAIN setting is not critical, because of the action of the AALC circuitry, and may be advanced slightly beyond this point to increase compression. Typical settings will run from 5 to 8.

5-7 VOICE CONTROLLED SSB OPERATION (VOX)

For voice operated transmission, use the tuning procedure in paragraphs 5-2 and 5-3. Set the FUNCTION switch to the desired sideband (USB or LSB). Set the OPERATION switch to the VOX position. Set the receiver AF GAIN to "0" or a low level. While speaking into the microphone, advance the VOX gain control clockwise (see figure 12) until the VOX relay closes; use no more VOX gain than necessary. Adjust the delay control for the desired drop-out delay; delay time increases with clockwise rotation. It may be necessary to readjust the VOX gain slightly because of interaction between the controls. Adjust the receiver AF GAIN to the desired listening level. Advance the QT (anti-trip) control (see figure 12) clockwise until received signals do not actuate the VOX relay. Use no more anti-trip gain than necessary.

SECTION VI

THEORY OF OPERATION

6-1 GENERAL

The Model SR-150 Transceiver consists of a double-conversion receiver and a double-conversion transmitter. The VFO circuitry, the heterodyne crystal oscillator circuitry, and the crystal filter/IF circuitry are common to both the transmitter and receiver. Refer to figure 8 for a block diagram of the equipment and to figure 21 for a schematic diagram.

6-2. RECEIVER CIRCUIT

The signal at the antenna is applied to the receiver's RF amplifier stage (V1A) through the antenna relay located in the transmitter final amplifier section. This signal is amplified and then fed to a mixer (V2), where it is mixed with the signal from the heterodyne crystal oscillator (V8), resulting in a variable IF signal of 6.0 MC to 6.5 MC. The RF amplifier and mixer tuned circuits are selected by the BAND SELECTOR switch and tuned by the PRESELECTOR control.

The variable IF signal is amplified by a tunable IF amplifier (V3A) and then mixed with the signal from the VFO (variable frequency oscillator), V9, in the receiver mixer (V4), resulting in a second IF signal of 1650 KC. This signal is amplified by the first 1650-KC IF amplifier (V17A), passed through the crystal-lattice filter (FL1), and applied to the second 1650-KC IF amplifier (V5A). The output from V5A is fed to the product detector (V6) where it is mixed with the correct carrier oscillator output to present the desired detected sideband signal to the receiver first audio amplifier (V11A).

The output of the first audio amplifier is applied to the audio output stage (V13) and then to the speaker. The proper sideband is selected by a shift in the VFO frequency coupled with a selection of the proper carrier oscillator and the passage of the signal through the crystal-lattice filter, thereby rejecting the undesired sideband.

6-3 TRANSMITTER SECTION

The signal from the microphone is applied through the first and second microphone amplifiers (V18A and V18B) and fed to an audio cathode follower (V3B). The output of V3B is presented to the balanced modulator along with the selected signal from the carrier oscillator (V10), to produce a double-sideband suppressed carrier signal.

The balanced modulator output signal is applied to the first 1650-KC IF amplifier (V17A), through the crystal-lattice filter (FL1) which attenuates the unwanted sideband, to the receiver and transmitter mixer (V2) where the signal is added to the VFO (V9) output signal. The sum of these signals (in the 6.0-MC to 6.5-MC range) is then amplified by the tunable IF amplifier (V3A) and fed to the transmitter mixer (V7) where it is subtracted from the heterodyne crystal oscillator (V8) signal.

The output of the transmitter mixer is the desired operating frequency and is amplified by the transmitter driver (V16) and then fed to the transmitter final amplifiers (V14 and V15). The selected final output signal is applied through the antenna relay to the antenna.

The tuned circuits of the transmitter mixer and transmitter driver are selected by the BAND SELECTOR switch and tuned by the PRESELECTOR control, while the final amplifier output tuned circuit is selected by the BAND SELECTOR switch and tuned by the FINAL TUNING control.

The Automatic Audio Level Control (AALC) circuitry operates in the following manner. When a small amount of flat-topping occurs in the final amplifier, an audio signal appears on the amplifier bias line, in proportion to the amount of flat-topping. This audio signal, which is not present without final amplifier flat-topping, is coupled to the AALC amplifier (V5B) whose output is rectified by diodes CR7 and CR8. The resulting DC voltage, which is in direct proportion to the amount of flat-topping occurring in the final amplifier, is connected to the 6.5-MC to 6.0-MC IF amplifier and the first 1650-KC IF amplifier as gain control bias.

SECTION VII
SERVICE DATA

7-1 COVER AND CHASSIS REMOVAL

A. TOP COVER REMOVAL. - Loosen the four top-cover screws 1/4 turn only and remove cover. To replace cover, tighten cover screws 1/4 turn only, so that the plastic latch nuts will not be damaged.

B. BOTTOM COVER REMOVAL. - Remove the four bottom cover screws located in the feet, and remove the cover. When replacing the bottom cover, make certain that the grounding clip on the cover engages properly at the final amplifier shield partition.

C. CHASSIS REMOVAL. - To remove the chassis from the cabinet, it is first necessary to remove the bottom cover (see paragraph 7-1B). Remove the four cabinet screws at the bottom near the cabinet feet and carefully slide the chassis and panel assembly out from the front of the cabinet.

7-2 TUBE AND DIAL LIGHT REPLACEMENT

Access to the dial light and all tubes may be obtained by removing the top cover of the cabinet. See paragraph 7-1A.

7-3. TROUBLESHOOTING

In the design of this transceiver, full consideration was given to keep maintenance problems at an absolute minimum. As in all well-designed electronic equipment, maintenance and repair problems are generally confined to the checking and replacement of tubes and semiconductor devices which may become defective. Malfunctions of this nature are usually easily isolated and corrected. However, it is entirely possible that a more obscure malfunction may arise. In this event, only thoroughly trained technical personnel should attempt to service equipment of this complexity.

A recommended aid to troubleshooting the Model SR-150 Transceiver is a general-coverage receiver which can be used to provide a quick check on the various oscillator circuits within the SR-150. A lead connected to the antenna of this receiver, when placed in the proximity of the oscillator tube in the circuit to be checked, can determine the presence or absence of signal from the stage in question.

If a malfunction occurs when operating on one particular band and/or mode of operation, the unit should be checked on all other bands and in all other modes of operation to isolate the difficulty. A careful study of the block diagram (figure 8) will give a quick clue as to which tubes should be checked. The voltage and resistance charts (figures 9 and 10) and schematic diagram (figure 21) will also aid in isolating and correcting a malfunction.

7-4. SERVICE AND OPERATING QUESTIONS.

For further information regarding operation or servicing of the Model SR-150 Transceiver, contact the dealer from whom the unit was purchased. The Hallicrafters Company maintains an extensive system of Authorized Service Centers where any required service will be performed promptly and efficiently at no charge if this equipment is delivered to the service center within 90 days from date of purchase by the original buyer and the defect falls within the terms of the warranty. It is necessary to present the bill of sale in order to establish warranty status. After the expiration of the warranty, repairs will be made for a nominal charge. All Hallicrafters Authorized Service Centers display the sign shown below. For the location of the one nearest you, consult your dealer or your local telephone directory.

Make no service shipments to the factory unless instructed to do so by letter, as The Hallicrafters Company will not accept responsibility for unauthorized shipments.

The Hallicrafters Company reserves the privilege of making revisions in current production of equipment and assumes no obligation to incorporate such revisions in earlier models.

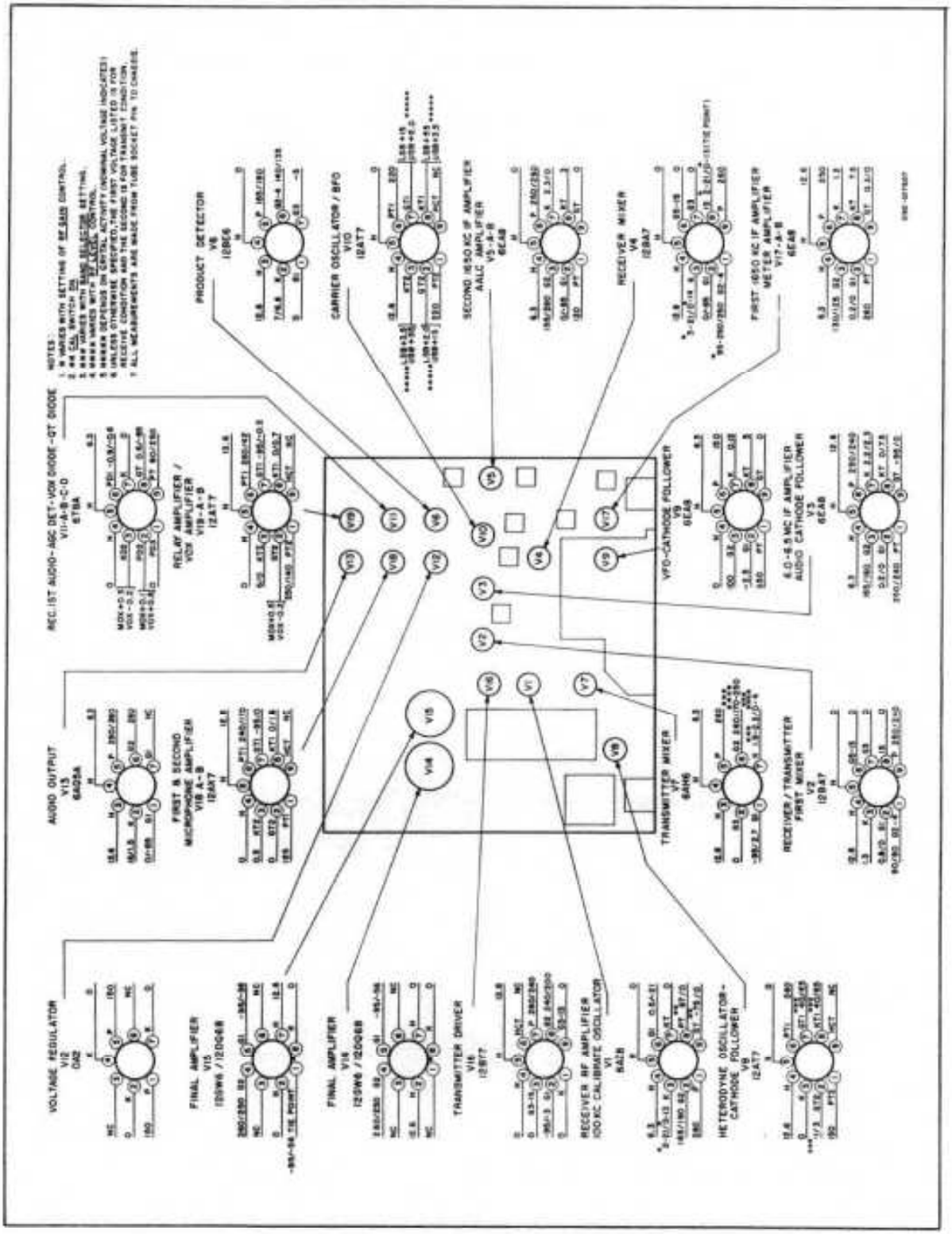

Figure 9. Voltage Chart.

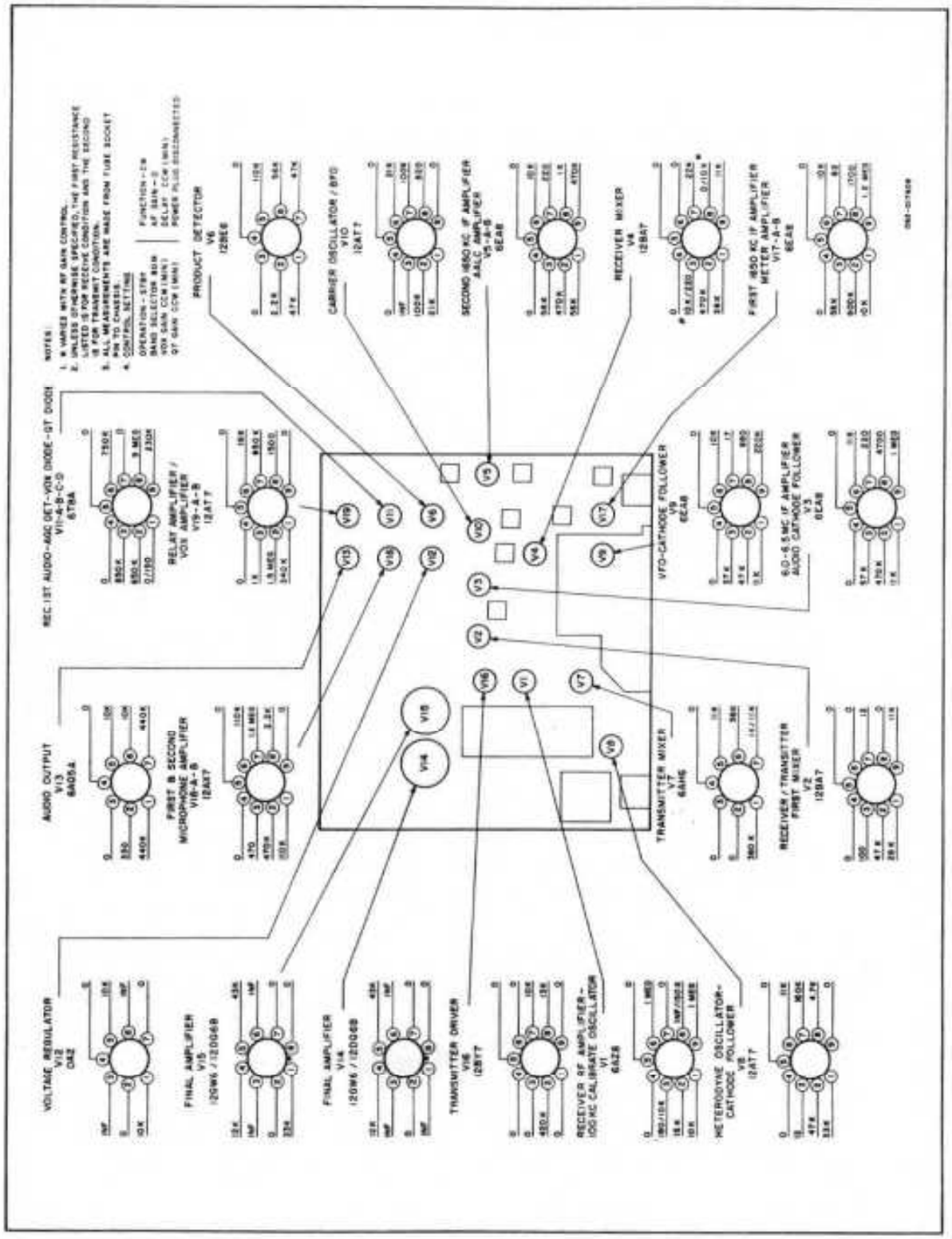

Figure 10. Resistance Chart.