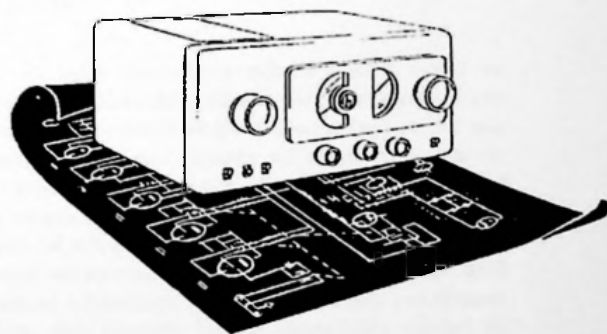


**installation  
and  
operating  
instructions  
for model S-38  
radio receiver**



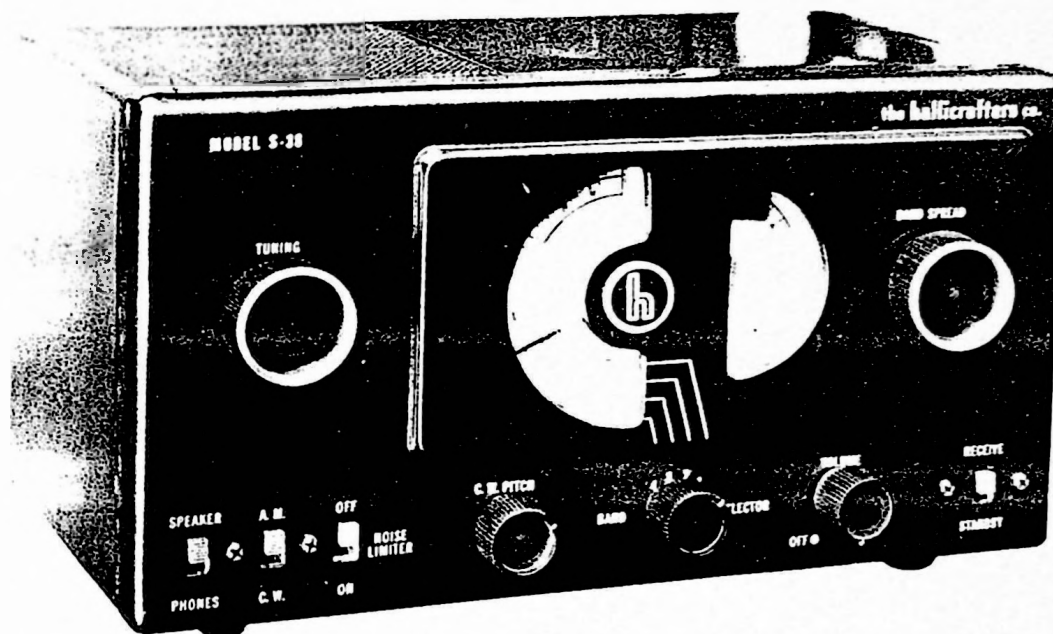
**AUGUST, 1946**

**94-162-A**

**the hallicrafters co.**

**MANUFACTURERS OF RADIO AND ELECTRONIC EQUIPMENT, CHICAGO 16, U. S. A.**

**INSTALLATION AND OPERATING  
INSTRUCTIONS  
FOR  
RADIO RECEIVER MODEL S-38**



*Figure 1. Radio Receiver Model S-38, front view.*

**DESCRIPTION**

**GENERAL.**—The Model S-38 is a table model, six tube superheterodyne radio receiver capable of receiving standard broadcast and foreign or domestic short wave stations over four frequency ranges with continuous coverage provided from 540 kc (kilocycles) to 32 mc (megacycles). A bandswitch is provided for selecting the four ranges of reception which are indicated on the main tuning dial scale. The amateur bands are also clearly indicated on the main tuning dial scale as reference for the radio amateur. A bandspread dial is provided for fine tuning of short wave stations, the use of which is described later in these instructions. Special features are provided to improve reception such as volume control and noise limiter. Provision is made for the optional use of a headset. A beat frequency oscillator is provided for rendering code signals intelligible, this feature being especially useful to radio amateurs and code enthusiasts.

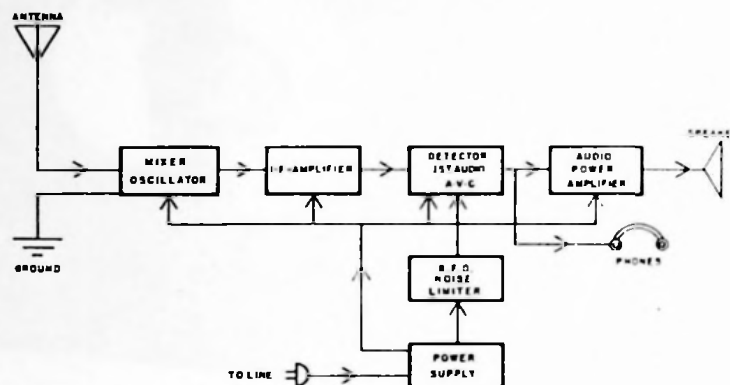
This receiver is designed to operate from a 117-volt a-c d-c source and requires 30 watts of power. Connection to the power source is made by the two prong plug which is attached to the six foot line cord extending from the rear of the cabinet.

A special external resistance line cord can be supplied on request for operation on 220 to 250 volts a-c or d-c.

The complete receiver is  $12\frac{7}{8}$  inches wide by  $7\frac{3}{8}$  inches high by  $8\frac{5}{8}$  inches deep and weighs 10 pounds.

The maximum audio output of the receiver at the speaker is 0.8 watt with less than 10 per cent distortion.

**MECHANICAL DESCRIPTION.**—The Model S-38 radio receiver is housed in a well ventilated sheet metal cabinet to minimize electrical interference and provide mechanical strength. Access to the top of the chassis may be had without removing the chassis from the cabinet. Mixer and oscillator trimmer adjustments may be made from the bottom of the cabinet through the holes provided for this purpose under the notice card. Two holes on the bottom near the front of the cabinet are provided for oscillator padder adjustments. All controls for tuning and operating the receiver are located on the front of the receiver.



*Figure 2. Radio Receiver Model S-38, block diagram showing receiver circuits.*

**ELECTRICAL DESCRIPTION.**—The block diagram (Fig. 2) illustrates the function of the receiver circuits in a simple manner which is described as follows: Radio signals are picked up at the antenna and fed to the antenna coil of the mixer stage where the desired station signal is selected by a resonant circuit and fed to the mixer tube. At the same time, the oscillator section of the tube generates a local r-f signal which is mixed with the incoming station signal. An intermediate frequency signal of 455 kc (kilocycles) is selected by the first i-f transformer and fed to the i-f amplifier tube where it is amplified and then fed through the second i-f transformer to the detector-first audio amplifier tube where it is demodulated. The audio component of the signal is then amplified by the triode section of the tube and capacity coupled to the audio power output tube where it is further amplified and fed to the speaker.

The a-v-c circuit is a conventional one and provides stability when listening to music or voice (phone) broadcasts. It is in use when the AM/CW switch is in the AM position.

The beat frequency oscillator stage operates in the CW position of the AM/CW switch and provides an r-f signal at 455 kc (kilocycles) which is fed to the detector stage to beat against the i-f signal, thereby rendering code signals intelligible. The pitch of the code signal can of course be varied by means of the CW PITCH control which will permit a variation from 0 to 1,000 cycles.

A rectifier stage provides a well filtered source of high voltage to the plate and screen circuits when the receiver is operated from an a-c source.

## INSTALLATION AND OPERATION

### INSTALLING THE RECEIVER.—

1. As soon as the receiver has been unpacked, examine it for any apparent damage which might have occurred in shipment. If any damages are found, file a claim IMMEDIATELY with the transportation company. If purchased "over the counter", examine thoroughly for any possible visible defects, BEFORE ACCEPTANCE.

2. This receiver is equipped with rubber mounting feet for mounting on a table or other piece of furniture. Do not mount this radio on a radiator, gas stove or other area subject to excessive heat or humidity. Metal surfaced areas are not recommended.

3. An external antenna should be connected to the receiver as follows: On the rear apron of the receiver chassis is located the antenna connector strip, marked A1, A2, and G. Select one of the antenna systems described below and connect it to this strip as directed. An external ground connection is not essential to this receiver, but in some locations will give better reception. If it is desired to use an external ground, always connect it to the terminal on the strip marked "G"; NEVER connect it directly to the receiver chassis.

#### A. Single Wire Antenna.—

When using a single wire antenna installation, connect a jumper between the antenna terminals A2 and G. Then connect a single wire antenna of about 50 to 75 feet (including lead-in) to terminal A1. Use #14 (AWG) or heavier wire for best results. Erect the antenna as high and free from surrounding objects as possible. This type of antenna works well where the signal to noise ratio is relatively high and a more elaborate installation is not practical.

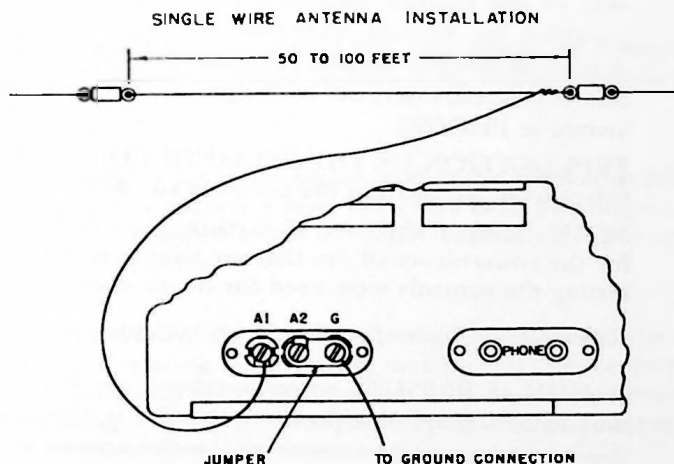


Figure 3. Single Wire Antenna Installation.

B. Doublet Antenna.—The doublet antenna is recommended where the receiving conditions are poor or where maximum sensitivity is required over a relatively narrow range of frequencies. The lead-in wires from the antenna are then connected to terminals A1 and A2. If a concentric line with grounded outer conductor is used, connect the inner conductor to terminal A1, the outer conductor to A2 and connect a jumper between terminals A2 and G.

- (1). To determine the proper length of the doublet antenna in feet:
  - (a) Determine the frequency range to which you wish to listen.
  - (b) Divide 468 by the frequency (in megacycles) of the high frequency end of the range you selected.
- (2) To prepare the antenna for installation:

(a) Measure the wire to the length determined in step (b) above cut exactly in half then insert insulator at that point.

(b) Wrap and solder the two wires of the lead-in to each of the quarter-wave sections at the insulator as shown in Figure 4.

Keep in mind that this type of antenna is directional broadside to its length and should be so orientated if maximum pick-up from a given direction is desired. For reference to other types of antennae refer to the latest edition of the A.R.R.L. Radio Amateur Handbook, section on antennas.

#### HEADSET RECEPTION.—

Phone tip jacks located at the rear of the receiver chassis are provided for headset reception.

A high impedance headset is recommended for use with this receiver. When headset reception is desired, insert the cord tips into the PHONES jacks and set the SPEAKER-PHONES switch at PHONES.

**EXPLANATION OF THE RECEIVER CONTROLS.—**Scanning across the front of the receiver from left to right the controls and an explanation of each is as follows:

**NOTE.** Some of the control markings are in RED. This is an added feature incorporated for the convenience of the listener who is not familiar with radio terminology as an aid in setting the controls most used for the reception of standard broadcast stations.

Reference to Figure 5 will help in becoming familiar with the use of the controls.

**IF HUM IS PRESENT** when operating the receiver from an a-c source of power, reverse the line cord plug in the power outlet. If this does not remove the hum, then it is recommended that a good ground be connected to the ground terminal at rear of receiver.

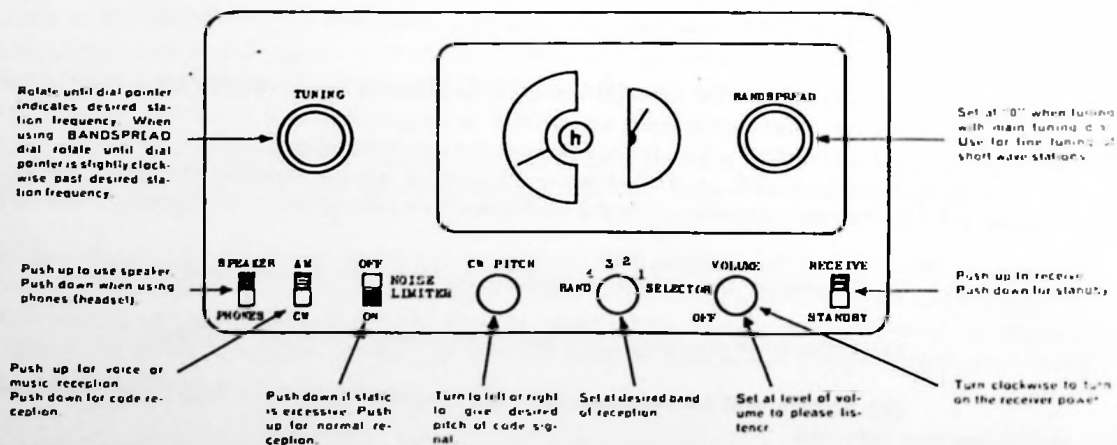


Figure 5. Radio Receiver Model S-38, view showing use of controls.

1. **TUNING.**—This control tunes the receiver to the frequency of the desired station which is read directly on the main tuning dial scale, located to the right of the control, and is indicated by the RED pointer when the bandspread pointer is set at "0".
2. **SPEAKER-PHONES switch.**—This switch connects the output of the receiver to the speaker or a headset depending on which one is used.
3. **AM CW switch.**—This switch is used to connect the beat frequency oscillator into the detector circuit for the reception of code signals and to connect the automatic volume control circuits for the reception of broadcast and phone stations.
4. **NOISE LIMITER switch.**—This switch connects a circuit which clips the noise voltage peaks generated by electrical disturbances, thereby providing intelligible reception in cases where reception would normally be impossible. This feature will not totally remove the noise but will do a good job of limiting it to reasonable levels.
5. **CW PITCH control.**—This control varies the inductance of the beat frequency oscillator coil thereby providing a means of varying the pitch of the code signals from 0 to 1,000 cycles depending on the listener's discretion.
6. **BAND SELECTOR switch.**—This switch selects one of the four bands or frequency ranges available to the listener. The frequencies covered by each band switch position are read directly from the main tuning dial scale.
7. **VOLUME control.**—This control regulates the audio signal level at the speaker or headset and should be set to a position which will provide a level of volume most pleasing to the listener. Ganged to this control is the receiver power switch which connects the power to the receiver when the control is turned clockwise.
8. **RECEIVER-STANDBY switch.**—This switch disconnects the d-c voltage from the receiver while leaving the tube heaters at operating temperature, thus leaving the receiver in condition for instant use. This switch is used by the radio amateur "ham" to put the receiver in a standby condition when transmitting. For the general listener it provides a means of putting the receiver in an operative condition ready for instant use.
9. **BAND SPREAD control.**—This control is used independent of the main tuning control to provide for fine tuning of short wave stations. See Figure 5 for illustration on use of the controls. Also following paragraph on band spreading.

## **BANDSPREAD TUNING**

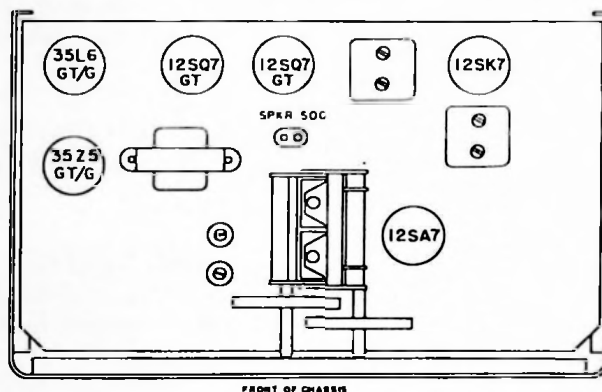
**FOR THE AMATEUR.**—To use the bandspread dial, set the dial pointer at "0", set the main tuning dial pointer at the high frequency end of the range to be covered and tune in the stations with the BANDSPREAD control. Example:—Assume you wish to listen in on the 20 meter band. Set the BAND SELECTOR switch as position #3, the main tuning dial pointer at 14.4 mc (megacycles), the high frequency end of that band, and then set the band spread dial pointer at "0". You can now listen on the 20 meter band by tuning with the BANDSPREAD tuning control. The above example holds true for any of the frequency ranges, altho the higher in frequency is the range of tuning on the main tuning dial scale, the narrower will be the range of tuning on the bandspread tuning dial scale. Bandspread tuning is not necessary on the broadcast band (Position #1 of the BAND SELECTOR switch).

**FOR THE SHORT WAVE LISTENER.**—To tune in short wave broadcast radio stations with the bandspread dial, set the bandspread dial pointer at "0", set the main tuning dial pointer slightly clockwise past the frequency of the station you wish to tune in and then tune in the station with the **BANDSPREAD** tuning control.

**IMPORTANT.**—The calibrations on the main tuning dial scale are only correct when **BAND SPREAD** dial pointer is set at "0".

## OWNER'S MAINTENANCE

**PREVENTIVE MAINTENANCE.**—Keep the various parts of the receiver clean, especially the tuning capacitors. Dust and dirt should be blown out with dry air or brushed out carefully without bending the capacitors plates in the slightest. Noisy reception may be also caused by dirty condensers wipers, faulty volume controls, switches and tubes, etc., in the receiver. Check switch contacts and controls and make sure that all tubes are always in their sockets.



*Figure 6. Radio Receiver Model S-38, view showing tube locations.*

**REPLACING THE TUBES AND DIAL LAMP.**—It will be necessary to remove the fiber back cover of the receiver in order to replace tubes and dial lamp. This can be accomplished by removing the two rear screws on the bottom plate and then removing the four screws which hold the cover to the cabinet. When replacing tubes, check the tube type carefully and replace with the correct type. Refer to the top view of the receiver chassis, Fig. 6, to determine the location of each tube. The receiver employs one dial lamp with bayonet type socket to illuminate the two dial scales. Replace this lamp with smaller type, 6.8 volt, 150 ma. "brown bead" G.E. #47 or equivalent. The color code referred to is the color of the glass bead above the glass stem inside the envelope of the lamp.

**PERIODIC ADJUSTMENTS.**—This receiver has been carefully aligned at the factory and should not require realignment until it requires new tubes in the mixer-oscillator stage or shows signs of loss in sensitivity, off frequency calibration or requires service work on this stage. Alignment should not be attempted by inexperienced persons as maximum performance is obtained only by intelligent alignment.

# the hallicrafters co.

## SERVICE BULLETIN No. 2 FOR MODEL S-38

**GENERAL:** Model S-38 is a 6 tube AC/DC superheterodyne table model, radio receiver, incorporating 4 bands of AM/CW reception, as follows: band #1, 540 kc to 1650 kc; band #2, 1650 kc to 5.0 mc; band #3, 5.0 mc to 14.5 mc; band #4, 13.5 mc to 32.0 mc. Provision for AVC, noise limiting, BFO pitch, headset reception, standby operation, and bandspreading are provided.

**REAR PANEL CONNECTIONS:** Consist of line cord with plug, antenna and ground connector strip, and headset connector plug strip.

**POWER SUPPLY DATA:** 105 to 125 volts AC/DC line voltage. Power drain is 30 watts.

**TUBE TYPES AND FUNCTION:** 12SA7—mixer-oscillator; 12SK7—IF amplifier, 12SQ7GT—detector, AVC, audio amplifier; 35L6GT—audio power amplifier; 12SQ7GT—BFO and ANL; 35Z5GT—power rectifier for AC operation.

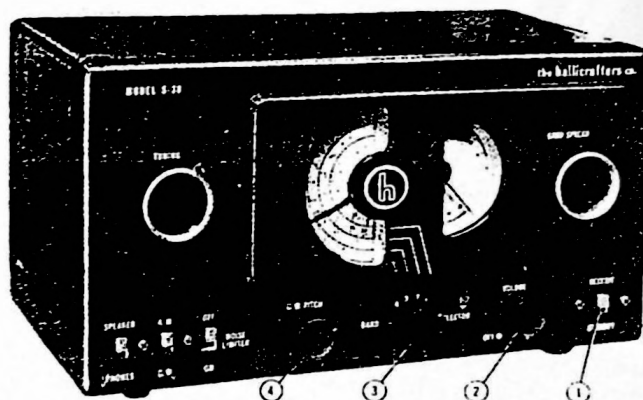


Fig. 1. Front view of receiver showing control locations.

### DETAILED SERVICE INFORMATION

| IF FREQUENCY | IF SELECTIVITY                                                                  | IMAGE RATIO                                                       | SENSITIVITY                                                                                                                   | AUDIO OUTPUT                                                 |
|--------------|---------------------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| 455 kc       | 7 kc wide at 6 db down<br>65 kc wide at 60 db down<br>(for 50 milliwatt output) | 2.7:1 at 30 mc<br>6:1 at 14 mc<br>10:1 at 5 mc<br>35:1 at 1500 kc | 12 microvolt at 600 kc<br>12 microvolt at 5 mc<br>11 microvolt at 14 mc<br>23 microvolt at 30 mc<br>(for 50 milliwatt output) | 675 milliwatt with less than<br>10% distortion at 500 cycles |

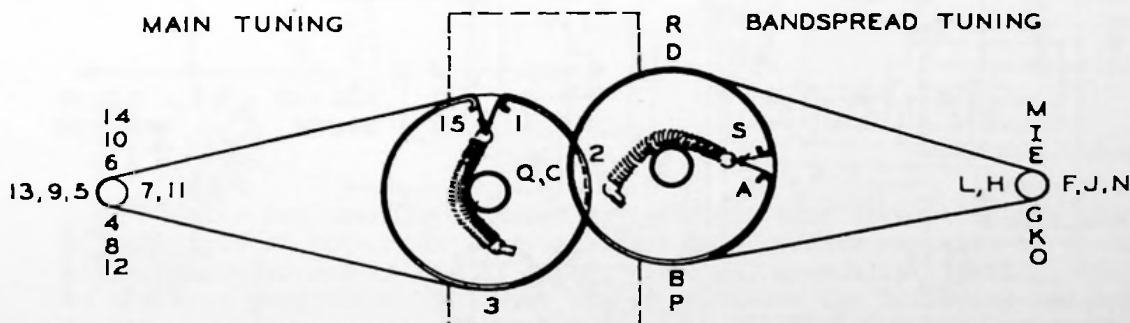
### CONTROL SETTINGS FOR PRELIMINARY TEST OPERATION (Broadcast Band)

| REF. NO.<br>(in<br>Fig. 1) | NAME                | FUNCTION                                            | SETTING                              | REF. NO.<br>(in<br>Fig. 1) | NAME               | FUNCTION                               | SETTING                                      |
|----------------------------|---------------------|-----------------------------------------------------|--------------------------------------|----------------------------|--------------------|----------------------------------------|----------------------------------------------|
| 1                          | STANDBY/<br>RECEIVE | Receiver temporary<br>standby                       | At "RECEIVE"                         | 5                          | SPEAKER/<br>PHONES | Output selector<br>switch              | At "SPEAKER"                                 |
| 2                          | VOLUME              | Audio gain control<br>and receiver on/off<br>switch | Half clockwise; adj.<br>as necessary | 6                          | CW/AM              | BFO on/off switch<br>AVC on/off switch | At "AM" (AVC on)                             |
| 3                          | BAND<br>SELECTOR    | Operating band<br>selector                          | Clockwise to "1"                     | 7                          | NOISE<br>LIMITER   | Noise peak<br>limiting                 | At "OFF"                                     |
| 4                          | PITCH<br>CONTROL    | CW beat note<br>pitch selector                      | Any position<br>(not in use)         | 8                          | TUNING             | Main tuning<br>control                 | To local station freq.<br>on main dial scale |
|                            |                     |                                                     |                                      | 9                          | BAND SPREAD        | Short wave<br>band spreading           | To "0" on small<br>dial scale                |

### HOW TO RESTRING DIAL CORDS

To restring the main tuning dial cord, cut a 14" length of 30 lb. test dial cord and tie one end to the tension spring of the main tuning capacitor drive pulley at position "1" on the diagram. Following the numbers 1 through 15, wind the cord on the pulley and knob drive shaft. At position "15," stretch the tension spring and tie the cord securely. Cut off the excess cord. Note that two complete turns are wound on the knob drive shaft.

To restring the bandspread tuning dial cord, cut a 16" length of dial cord and follow the procedure as explained above, except start at position "A" on the diagram and proceed through position "S." Note that the knob drive shaft has two complete turns.



TUNING CAPACITOR FULLY CLOSED (BOTH SECTIONS).  
FRONT VIEW

Fig. 2. Dial cable stringing procedure.

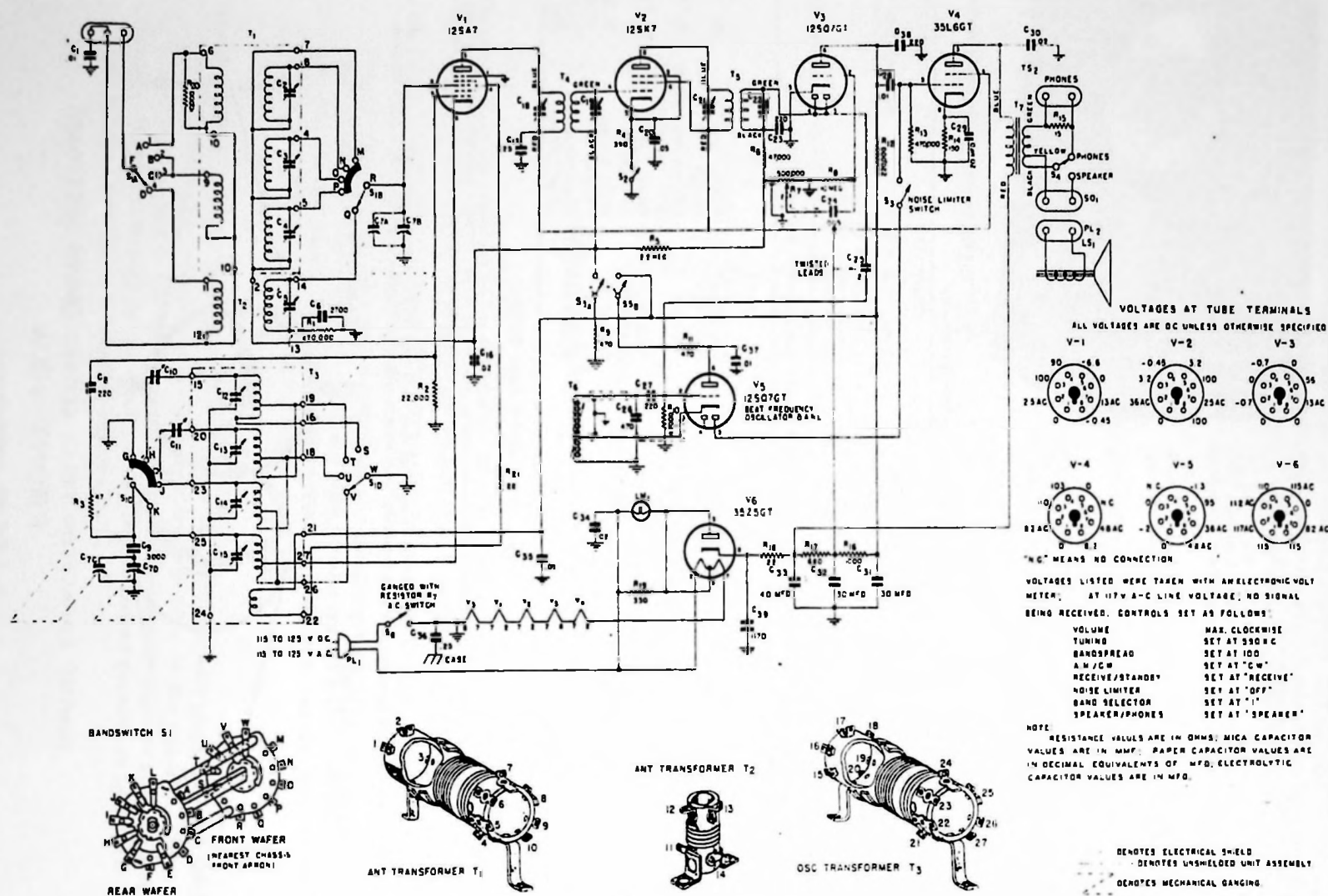


Fig. 3 Schematic diagram including tube terminal voltages and pictorial views of bandswitch, mixer and oscillator coil forms for terminal lug location and cross reference to the schematic.

# Service Bulletin



## hallicrafters

Bulletin 1954-10

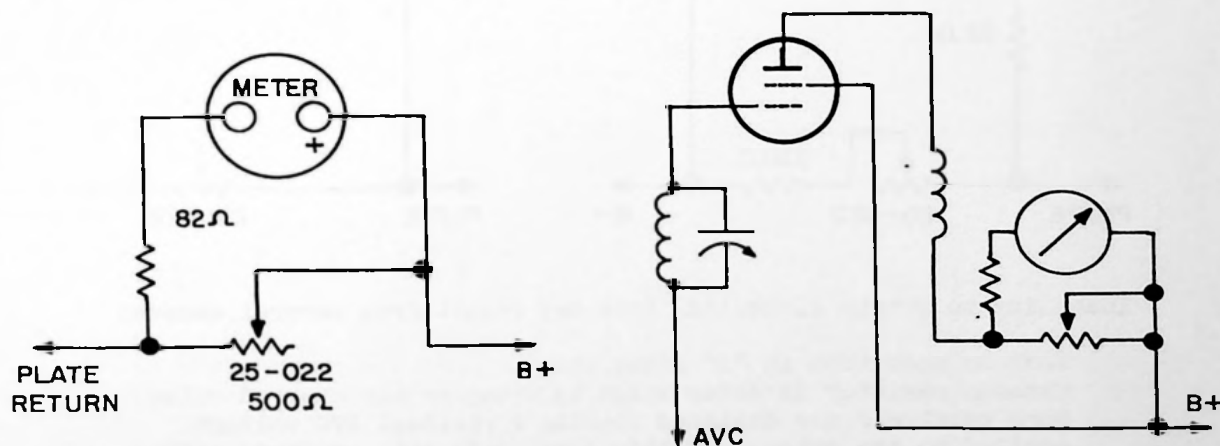
Revised 10-5-60

Reprinted 3-30-62

"S" METER CIRCUITS FOR USE WITH THE HALLICRAFTERS MODELS + CB-3 SERIES  
+ S-38 SERIES  
S20R, S38, S40, S40A, S40B, S53A, SX62, S77, S77A, + S-40BU  
+ S-120 SERIES  
S85, S85U, S86, S107 AND S108 COMMUNICATIONS RECEIVERS

In answer to many requests for an "S" meter circuit which could be installed in the Hallicrafters model S-85 and similar receivers not originally equipped with a built in "S" meter, we are pleased to announce herewith a kit of parts that is adaptable for installing such a meter not only in the S-85, but also models S20R, S40, S40A, S40B, SX62, S77, S77A, etc.

Because the plate current of an R.F. or I.F. stage, controlled by AVC, varies inversely with the received signal strength, it is only necessary to measure the plate current of such a stage to get a relative indication of the signal strength. Provision should be made to balance out the residual plate current to "zero" the meter for calibration purposes. The basic circuit of the Hallicrafters "S" meter kit for performing these functions is shown below:



Best results are usually obtained by inserting this circuit in the plate return of the first RF tube. In some receivers good results may also be obtained in the plate return of one of the IF tubes, although, generally speaking, the RF stage is the more sensitive. Whatever the stage chosen the following conditions must be met:

- (a) The stage MUST be controlled by AVC.
- (b) The tube's screen current MUST NOT pass through the meter.

(cont. on page 2)

After the meter is installed in the receiver it will be necessary to make the following adjustments. The setting of the meter should also be checked occasionally, after long periods of use:

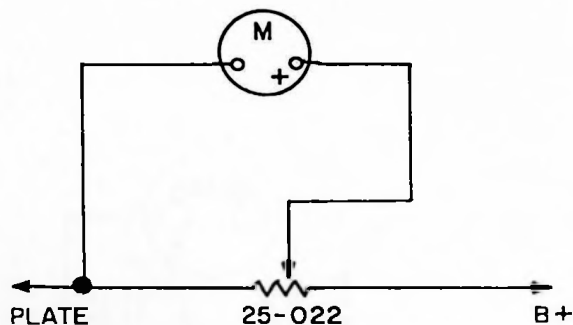
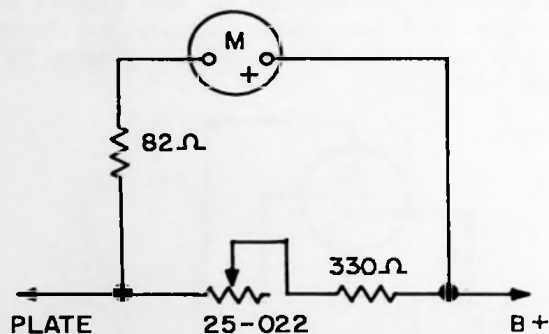
**Mechanical zero set:**

Turn set off. With pointer adjustment screw on front of meter, set pointer on last calibration mark on right hand side of meter scale.

**Electrical zero set:**

Set the RF gain or sensitivity control to Maximum (full clockwise) position; AVC on; noise limiter (ANL) off; BFO off (CW-AM switch to AM); selectivity to broad or sharp (no xtal); turn up volume (AF gain) control. Turn set on and allow to warm up for at least ten minutes. Tune to a quiet spot on the dial, preferably on one of the higher frequency bands. Do not tune in a signal. Remove antenna and short the antenna terminals to ground. With zero set control (25-022) set meter pointer to "S" unit zero on left hand side of meter scale. Remove short on antenna terminals and reconnect antenna.

If difficulty is encountered in obtaining electrical zero, variation in the basic circuit as shown below may prove helpful.



Inability to obtain electrical zero may result from several causes:

Weak or aged tube in "S" meter stage.

Cathode resistor in meter stage is wrong or has changed value.

Some receivers are designed leaving a residual AVC voltage applied to the tubes. IN this case, with sets equipped with an AVC on-off switch, the meter may be zeroed with the AVC off.

The RF gain control on the receiver may not reach absolute zero resistance at maximum gain position (design function).

With the set out of the cabinet this may be checked by shorting out the RF gain control.

(cont. on page 3)

In this case short out the RF gain control and zero set the meter. Remove the short from the gain control and observe and record the reading. This reading is the true electrical zero and should be used for any future resetting of the electrical zero.

\* \* \* \* \*

HALLICRAFTERS "S" METER KIT

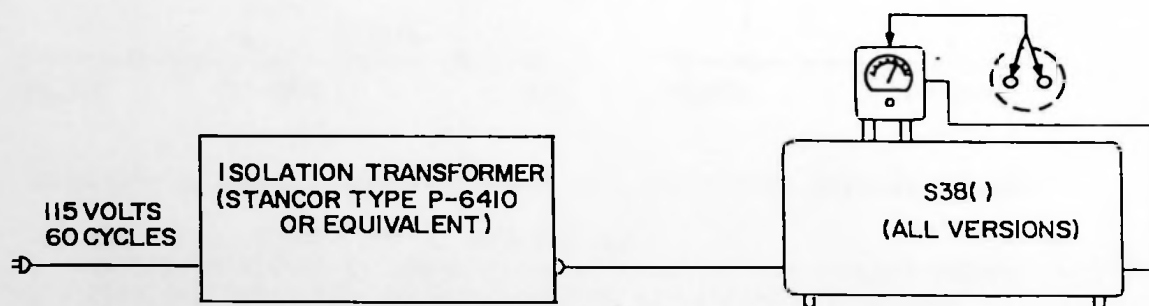
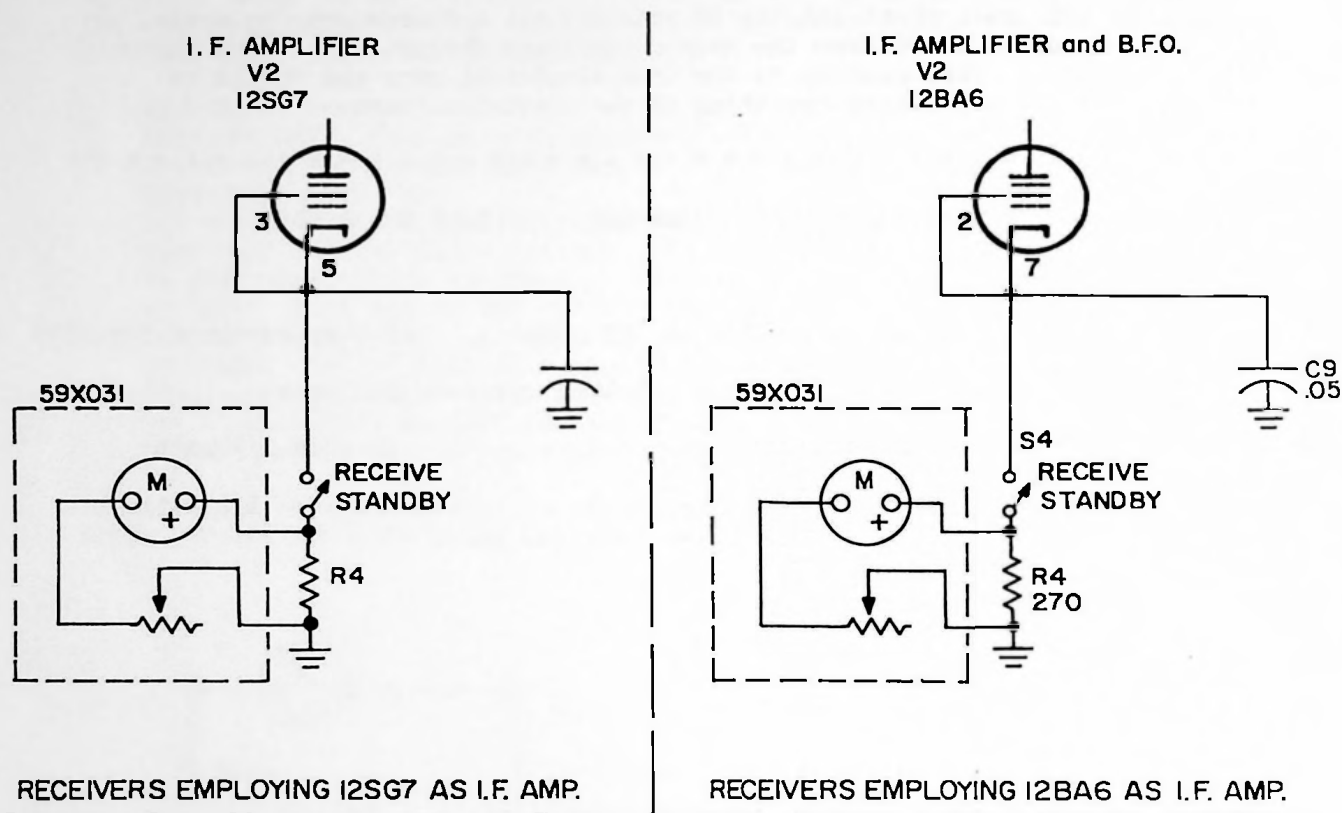
PART NO. 59X031

Includes:

- |   |                                     |                          |
|---|-------------------------------------|--------------------------|
| 1 | Meter calibrated in "S" units       | 0-5 ma movement (82-283) |
| 1 | 25-022 control, electrical zero set | 500 ohms                 |
| 1 | 23X20X820 Resistor                  | 82 ohms 1/2 watt         |
| 1 | 23X20X331 Resistor                  | 330 ohms 1/2 watt        |

(cont on page 4)

A SUGGESTED CIRCUIT AND INSTALLATION INSTRUCTIONS FOR  
INSTALLING AN "S" METER ON THE S-38 SERIES RECEIVERS



An "S" meter installed according to the above diagram will have one lead connected to B- and in this type of receiver B- is connected to one side of the AC line. In order to prevent a hazard, an isolation transformer (STANCOR type P-6410 or equivalent) must be used. In addition the meter terminals "A" must be completely covered and the connecting lead "B" must be the rubber covered 115 volts AC type.

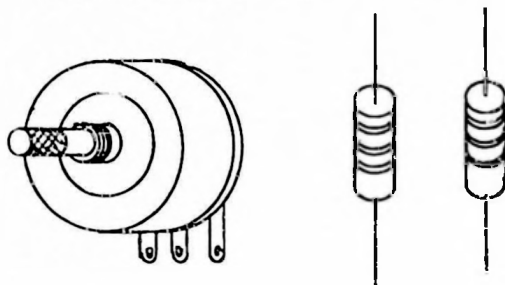
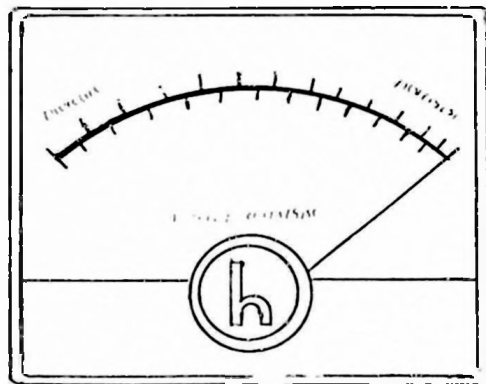
# Service Bulletin



**Hallicrafters** .....

BULLETIN 1954-8

May 13, 1954



CALLING ALL COMMUNICATIONS RECEIVER OWNERS

HERE'S WHAT YOU'VE BEEN ASKING FOR!

AN "S" METER KIT YOU CAN INSTALL IN YOUR  
RECEIVER.

KIT CONSISTS OF:

- 1 - "S" meter as used in Hallicrafters receivers calibrated in "S" units.
- 1 - Zero Potentiometer
- 2 - Resistors
- 1 - Installation instructions.

You will be glad to hear that this kit will work in any communications receiver employing AVC, such as all versions of the following:

S-20R, S-38, S-40, S-53, SX-62, S-77, S-85 and S-86

Full instructions included with each kit or write for further information.

Ask for kit number 59X031.....Special Price \$12.00 each Amateur Net Price quoted F.O.B. Factory. Shipping weight approximately 1 lb. Please include 20% deposit with requests for C.O.D. shipment. Prices subject to change without notice.

Order from your nearest jobber or write to Hallicrafters Service Division, 4401 West 5th Avenue, Chicago 24, Illinois

# ALIGNMENT INSTRUCTIONS

### EQUIPMENT:

- 1. Signal Generator capable of the ranges indicated in the Alignment Chart, including a 400 cycle audio modulator.
- 2. Output meter capable of handling 1 watt of audio power.
- 3. Standard RMA dummy consisting of a 200 mmf condenser in series with a 20uh r-f choke which is shunted by a 400 mmf condenser in series with a 400 ohm carbon resistor.
- 4. Non-metallic screw driver.

**CONNECTIONS:** Connect the Sig. Gen. "cold" lead to "G" on the antenna strip; the "hot" lead is connected as indicated in the Chart.

Connect the output meter across the terminals of socket SO-1 and remove the speaker plug from the socket and adjust the meter for 3 ohms impedance.

Caution: Set the meter at a sufficiently high range to prevent possible damage from overload.

**CONTROL SETTINGS:** After allowing about a ten minute warm up period, set the receiver's control as follows:

- SPEAKER PHONES switch at "SPEAKER."
- VOLUME control at full clockwise (maximum).
- CW AM switch at "AM" (except for BFO adjustment).
- NOISE LIMITER switch at "OFF."
- BANDSPREAD TUNING control at "0," (min. cap.).
- STANDBY/RECEIVE switch at "RECEIVE."

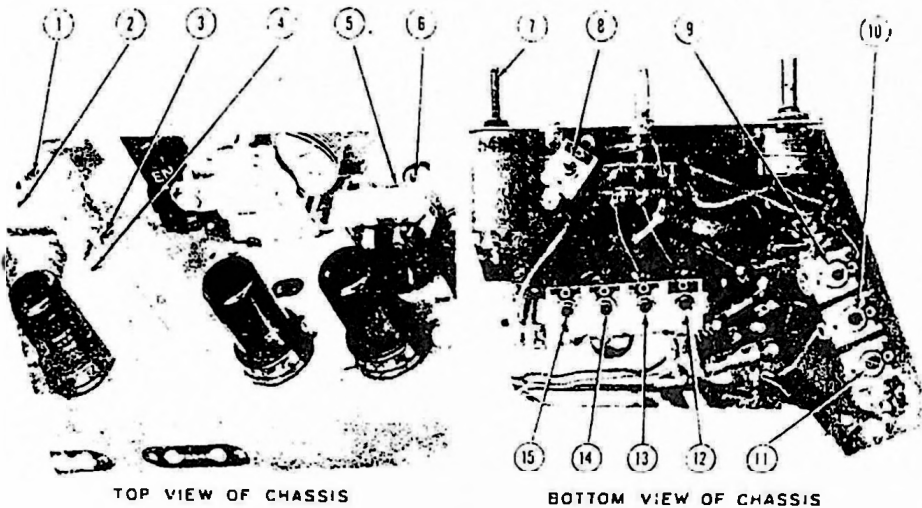


Fig. 5. Top and bottom views of the receiver locating slugs, padders and trimmers for alignment purposes.

| DUMMY ANT.<br>IN SERIES<br>WITH SIG.<br>GENERATOR                                                                                                 | CONNECTION OF<br>SIG. GENERATOR<br>OUTPUT TO<br>RECEIVER | SIG. GEN.<br>FREQUENCY<br>SETTING | BAND<br>SWITCH<br>SETTING | RECEIVER<br>DIAL<br>SETTING | ADJUST SLUG,<br>PADDER, OR<br>TRIMMER NO. | DESCRIPTION          | TYPE OF ADJUSTMENT<br>—MAKE ADJUSTMENT<br>FOR: | STEP NO. |
|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------|---------------------------|-----------------------------|-------------------------------------------|----------------------|------------------------------------------------|----------|
| *IF ADJUSTMENT                                                                                                                                    |                                                          |                                   |                           |                             |                                           |                      |                                                |          |
| None                                                                                                                                              | Stator plates of<br>rear sect. of<br>tuning gang         | 455 kc                            | "1"                       | 1000 kc                     | 3 and 4<br>1 and 2                        | 2nd IF               | Maximum output                                 | 1        |
|                                                                                                                                                   |                                                          |                                   |                           |                             |                                           | 1st IF               | Maximum output                                 | 2        |
|                                                                                                                                                   |                                                          |                                   |                           |                             |                                           | Repeat steps 1 and 2 |                                                |          |
| BFO ADJUSTMENT—NOTE: Turn off Sig. Gen. 400 cycle modulation; set CW/AM switch at "CW"; remove Pitch Control knob and adjust slotted screw shaft. |                                                          |                                   |                           |                             |                                           |                      |                                                |          |
| None                                                                                                                                              | Stator plates of<br>rear sect. of<br>tuning gang         | 455 kc                            | "1"                       | 1000 kc                     | 7                                         | BFO slug             | Zero beat                                      | 3        |
| BAND #4 ADJUSTMENT—NOTE: Make sure 400 cycle audio modulator is turned on; AM/CW switch should be at "AM."                                        |                                                          |                                   |                           |                             |                                           |                      |                                                |          |
| STANDARD                                                                                                                                          | "A1" on antenna                                          | 30 mc                             | "4"                       | 30 mc                       | 12                                        | Osc. Trimmer         | Maximum output                                 | 4        |
| RMA Dummy                                                                                                                                         | strip                                                    | 30 mc                             |                           | 30 mc                       | † 8                                       | Mix. Trimmer         | Maximum output                                 | 5        |
| BAND #3 ADJUSTMENT                                                                                                                                |                                                          |                                   |                           |                             |                                           |                      |                                                |          |
| STANDARD                                                                                                                                          | "A1" on antenna                                          | 14 mc                             | "3"                       | 14 mc                       | 13                                        | Osc. Trimmer         | Maximum output                                 | 6        |
| RMA Dummy                                                                                                                                         | strip                                                    | 14 mc                             |                           | 14 mc                       | † 9                                       | Mix. Trimmer         | Maximum output                                 | 7        |
| *BAND #2 ADJUSTMENT                                                                                                                               |                                                          |                                   |                           |                             |                                           |                      |                                                |          |
| STANDARD                                                                                                                                          | "A1" on antenna                                          | 5 mc                              | "2"                       | 5 mc                        | 14                                        | Osc. Trimmer         | Maximum output                                 | 8        |
| RMA Dummy                                                                                                                                         | strip                                                    | 1.8 mc                            |                           | 1.8 mc                      | 6                                         | Osc. Padder          | Maximum output and<br>repeat step 8            | 9        |
|                                                                                                                                                   |                                                          | 5 mc                              |                           | 5 mc                        | †10                                       | Mix. Trimmer         | Maximum output                                 | 10       |
| *BAND #1 ADJUSTMENT                                                                                                                               |                                                          |                                   |                           |                             |                                           |                      |                                                |          |
| STANDARD                                                                                                                                          | "A1" on antenna                                          | 1500 kc                           | "1"                       | 1500 kc                     | 15                                        | Osc. Trimmer         | Maximum output                                 | 11       |
| RMA Dummy                                                                                                                                         | strip                                                    | 600 kc                            |                           | 600 kc                      | 5                                         | Osc. Padder          | Maximum output and<br>repeat step 11           | 12       |
|                                                                                                                                                   |                                                          | 1500 kc                           |                           | 1500 kc                     | 11                                        | Mix. Trimmer         | Maximum output                                 | 13       |

\*It may be necessary to repeat the indicated adjustments several times.

†Rock the main tuning capacitor slightly (turn back and forth) when making these adjustments.

### ATTENTION

Always give Model and Serial No. of equipment when ordering replacement parts or requesting information.

# REPLACEMENT PARTS

| REF. NO.             | DESCRIPTION                                                                                                                                                         | HALLICRAFTER'S<br>PART NUMBER | LIST PRICE<br>PER<br>COMPONENT | REF. NO.                                   | DESCRIPTION                                                                        | HALLICRAFTER'S<br>PART NUMBER | LIST PRICE<br>PER<br>COMPONENT |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------------|--------------------------------------------|------------------------------------------------------------------------------------|-------------------------------|--------------------------------|
| <b>CAPACITORS</b>    |                                                                                                                                                                     |                               |                                | <b>SWITCHES</b>                            |                                                                                    |                               |                                |
| C-1                  | 0.01 mfd; 600 vdcw; paper                                                                                                                                           | 46AY103J                      | \$ .10                         | S-1a, b, c                                 | Bandswitch; two sections ganged; rotary                                            | 60A240                        |                                |
| C-2, 3 & 4           | Trimmer Unit for antenna transformer T-1                                                                                                                            | 44B129                        | .40                            | S-2 & 3                                    | "RECEIVE-STANDBY" and "NOISE<br>LIMITER" switches; slide action; SPST              | 60A244                        |                                |
| C-5                  | Trimmer for antenna transformer T-2                                                                                                                                 | 44A039                        | .10                            | S-4                                        | "SPEAKER-PHONES" switch; slide action;<br>SPDT                                     | 60A243                        |                                |
| C-6                  | 2700 mmf; $\pm 5\%$ ; 500 vdcw; mica                                                                                                                                | CM30A272J                     | .30                            | S-5                                        | "A.M.-C.W." switch; slide action, DPST                                             | 60A245                        |                                |
| C-7                  | Tuning capacitor; air; 2 sections ganged                                                                                                                            | 48C162                        | 2.90                           | <b>TRANSFORMERS</b>                        |                                                                                    |                               |                                |
| C-8, 23, 27<br>& 38  | 220 mmf; 500 vdcw; mica                                                                                                                                             | CM20A221K                     | .15                            | T-1                                        | Antenna coil for bands 1, 2 and 3                                                  | 51C821                        |                                |
| C-9                  | 3000 mmf; $5\%$ ; 500 vdcw; mica                                                                                                                                    | CM30A302J                     |                                | T-2                                        | Antenna coil for band 4                                                            | 51C818                        |                                |
| C-10 & 11            | Dual padder for oscillator transformer T-3                                                                                                                          | 44A152                        | .65                            | T-3                                        | Oscillator coil for bands 1, 2, 3 and 4                                            | 51C822                        |                                |
| C-12, 13, 14<br>& 15 | Trimmer Unit for oscillator transformer T-3                                                                                                                         | 44B159                        | .50                            | T-4                                        | Input IF transformer; 455 kc                                                       | 50C183                        |                                |
| C-16 & 34            | 0.02 mfd; 400 vdcw; paper                                                                                                                                           | 46AW203J                      | .10                            | T-5                                        | Diode IF transformer; 455 kc                                                       | 50B184                        |                                |
| C-17 & 36            | 0.25 mfd; 200 vdcw; paper                                                                                                                                           | 46AT254J                      | .15                            | T-6                                        | Beat frequency oscillator coil; 455 kc                                             | 54B031                        |                                |
| C-18, 19, 21<br>& 22 | Trimmers for IF transformers T-4 and T-5                                                                                                                            | 44A097                        | .25                            | T-7                                        | Audio output transformer; 3,000 ohm primary<br>—15 ohm. secondary tapped at 3 ohms | 55A075                        |                                |
| C-20 & 35            | 0.05 mfd; 200 vdcw; paper                                                                                                                                           | 46AU503J                      | .10                            | <b>TERMINAL STRIPS</b>                     |                                                                                    |                               |                                |
| C-24                 | 0.005 mfd; 400 vdcw; paper                                                                                                                                          | 46AW502J                      | .10                            | TS-1                                       | Antenna and ground connector strip                                                 | 88A032                        |                                |
| C-25                 | 2 mmf; twisted insulated wire leads; NOT AVAILABLE AS A SPARE PART.                                                                                                 |                               |                                | TS-2                                       | Headset plug connector strip; bakelite                                             | 88A071                        |                                |
| C-26 & 39            | 470 mmf; 500 vdcw; mica                                                                                                                                             | CM20A471K                     | .20                            | <b>MISCELLANEOUS MECHANICAL COMPONENTS</b> |                                                                                    |                               |                                |
| C-28 & 37            | 0.01 mfd; 400 vdcw; paper                                                                                                                                           | 46AW102J                      | .10                            | QUANT. IN<br>EQUIPMENT                     | DESCRIPTION                                                                        | HALLICRAFTER'S<br>PART NUMBER | LIST PRICE<br>PER<br>COMPONENT |
| C-29, 31, 32<br>& 33 | Electrolytic; four section unit; color coded<br>leads; sect. 1(C-29) 20 mfd, 25 vdcw; sect.<br>2 & 3(C-31 & 32) 30 mfd, 150 vdcw; sect.<br>4(C-33) 40 mfd, 150 vdcw | 45B091                        | .80                            | 2                                          | Knob; for Volume Control and Band Selector<br>switches                             | 15A049                        |                                |
| C-30                 | 0.02 mfd; 600 vdcw; paper                                                                                                                                           | 46AY203J                      | .10                            | 1                                          | Knob; for C. W. PITCH Control                                                      | 15A058                        |                                |
| <b>PILOT LAMP</b>    |                                                                                                                                                                     |                               |                                | 2                                          | Knob; for main TUNING and BANDSPREAD<br>tuning Controls                            | 15A047                        |                                |
| LM-1                 | 6.8 v @ 150ma; brown bead; G. E. type 47                                                                                                                            | 39A004                        | .10                            | 1                                          | Pointer; for main tuning dial                                                      | 82A102                        |                                |
| <b>LOUDSPEAKER</b>   |                                                                                                                                                                     |                               |                                | 1                                          | Pointer; for bandspread tuning dial                                                | 82A103                        |                                |
| LS-1                 | 5" P.M. speaker; 3.2 ohm voice coil                                                                                                                                 | 85C035                        | 2.50                           | 1                                          | Calibrated dial assembly, complete                                                 | 83B257                        |                                |
| <b>PLUGS</b>         |                                                                                                                                                                     |                               |                                | 1                                          | Dial window; glass                                                                 | 22B157                        |                                |
| PL-1                 | AC line cord with two prong plug at one end                                                                                                                         | 87A078                        | .35                            | 6                                          | Octal tube sockets; Amphenol type MIP-8                                            | 6A035                         |                                |
| PL-2                 | Speaker voice coil connector plug                                                                                                                                   | 88A072                        | .10                            | 1                                          | Dial lamp socket; bayonet                                                          | 86A011                        |                                |
| <b>RESISTORS</b>     |                                                                                                                                                                     |                               |                                | 2                                          | Tuning capacitor dial drive pulley                                                 | 28A002                        |                                |
| R-1 & 13             | 470,000 ohm; $\frac{1}{2}$ watt; carbon                                                                                                                             | RC20AE474M                    | .10                            | 1                                          | Tuning capacitor rear mounting bracket                                             | 67A568                        |                                |
| R-2                  | 22,000 ohm; $\frac{1}{2}$ watt; carbon                                                                                                                              | RC20AE223M                    | .10                            | 1                                          | Tuning capacitor front mounting bracket                                            | 67A559                        |                                |
| R-3                  | 47 ohm; $\frac{1}{2}$ watt; carbon                                                                                                                                  | RC20AE470M                    | .10                            | 1                                          | Left hand switch mounting bracket                                                  | 67B560                        |                                |
| R-4                  | 390 ohm; $\pm 10\%$ ; $\frac{1}{2}$ watt; carbon                                                                                                                    | RC20AE391K                    | .10                            | 1                                          | Right hand switch mounting bracket                                                 | 67B561                        |                                |
| R-5                  | 2.2 megohm; $\frac{1}{2}$ watt; carbon                                                                                                                              | RC20AE225M                    | .10                            | 1                                          | Rubber mounting feet for cabinet                                                   | 16A007                        |                                |
| R-6 & 10             | 47,000 ohm; $\frac{1}{2}$ watt; carbon                                                                                                                              | RC20AE473M                    | .10                            | 2                                          | Spring washers for grounding tuning capacitor<br>drive shafts                      | 4A043                         |                                |
| R-7 & S-6            | Volume Control; $\frac{1}{2}$ megohm; includes SPST<br>toggle action switch assembly on rear                                                                        | 25B094                        | .50                            | 4                                          | "C" washers; (hair-pin type)                                                       | 75A062                        |                                |
| R-8                  | 10 megohm; $\frac{1}{2}$ watt; carbon                                                                                                                               | RC20AE106M                    | .10                            | 1                                          | Rear cover plate; cardboard                                                        | 32C331                        |                                |
| R-9 & 11             | 470 ohm; $\pm 10\%$ ; $\frac{1}{2}$ watt; carbon                                                                                                                    | RC20AE471K                    | .10                            | 1                                          | Bottom cover plate; painted steel                                                  | 63C220                        |                                |
| R-12                 | 220,000 ohm; $\frac{1}{2}$ watt; carbon                                                                                                                             | RC20AE224M                    | .10                            |                                            |                                                                                    |                               |                                |
| R-14                 | 150 ohm; $\pm 10\%$ ; $\frac{1}{2}$ watt; carbon                                                                                                                    | RC20AE151K                    | .10                            |                                            |                                                                                    |                               |                                |
| R-15                 | 15 ohm; $\frac{1}{2}$ watt; carbon                                                                                                                                  | RC20AE150M                    | .10                            |                                            |                                                                                    |                               |                                |
| R-16                 | 1,000 ohm; $\frac{1}{2}$ watt; carbon                                                                                                                               | RC20AE102M                    | .10                            |                                            |                                                                                    |                               |                                |
| R-17                 | 680 ohm; 1 watt; carbon                                                                                                                                             | RC30AE681M                    | .10                            |                                            |                                                                                    |                               |                                |
| R-18 & 21            | 22 ohm; $\frac{1}{2}$ watt; carbon                                                                                                                                  | RC20AE220M                    | .10                            |                                            |                                                                                    |                               |                                |
| R-19                 | 330 ohm; $\frac{1}{2}$ watt; carbon                                                                                                                                 | RC20AE331M                    | .10                            |                                            |                                                                                    |                               |                                |
| R-20                 | 10,000 ohm; $\frac{1}{2}$ watt; carbon                                                                                                                              | RC20AE103M                    | .10                            |                                            |                                                                                    |                               |                                |

NOTE: Mica dielectric capacitors have a tolerance of  $\pm 10\%$  unless otherwise specified; paper dielectric capacitors tolerance is  $-10 +40\%$ ; carbon resistors have a tolerance of  $\pm 20\%$  unless otherwise specified.

NOTE: ALL PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.  
Explanation of abbreviations: mmf—micromicrofarads; mfd—microfarads; vdcw—DC v  
volts; v—volts; ma—milliamperes; IF—intermediate frequency; sect.—section; REF  
circuit symbol as on the schematic diagram.

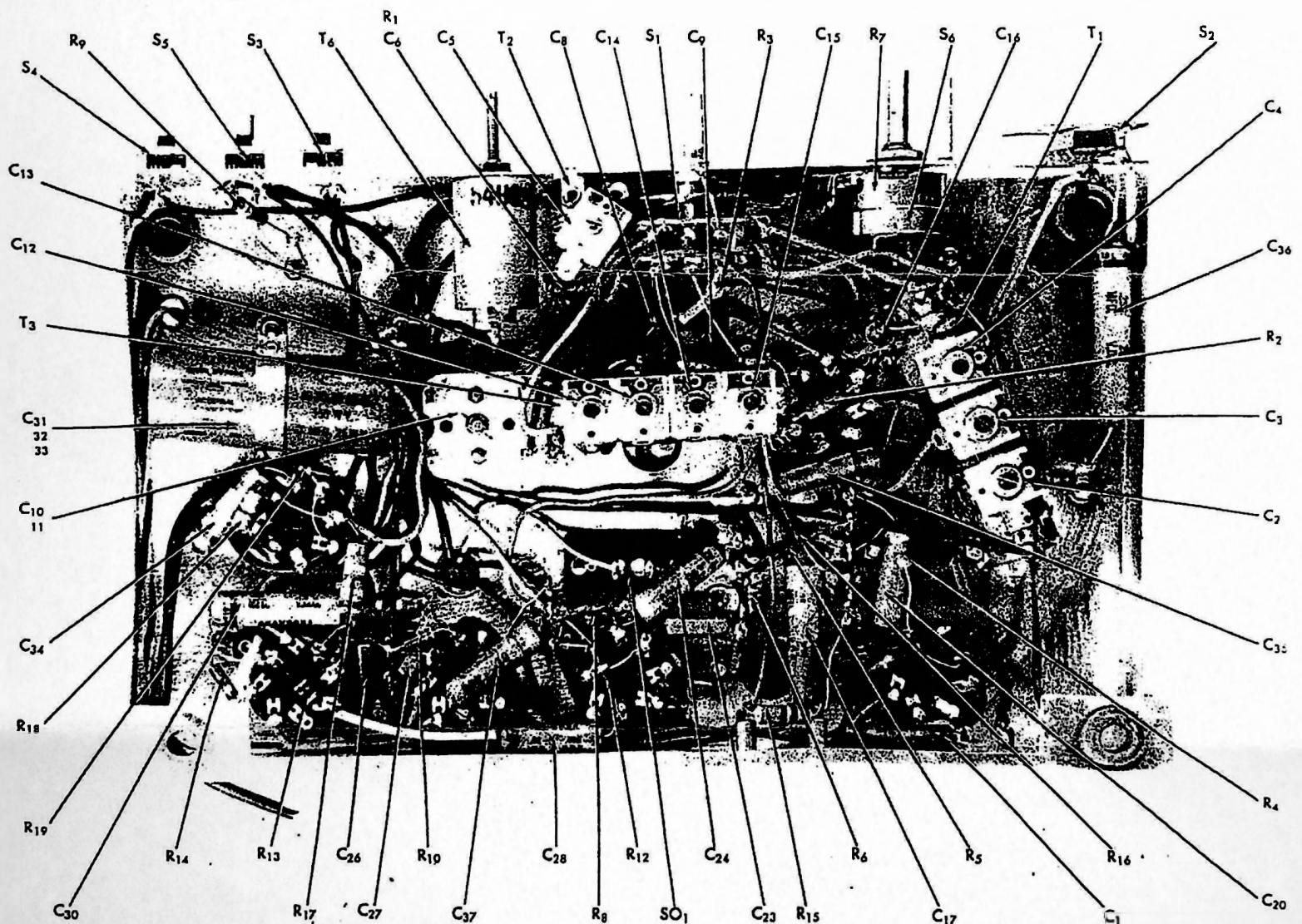


Fig. 4. Bottom view of the receiver showing components location.

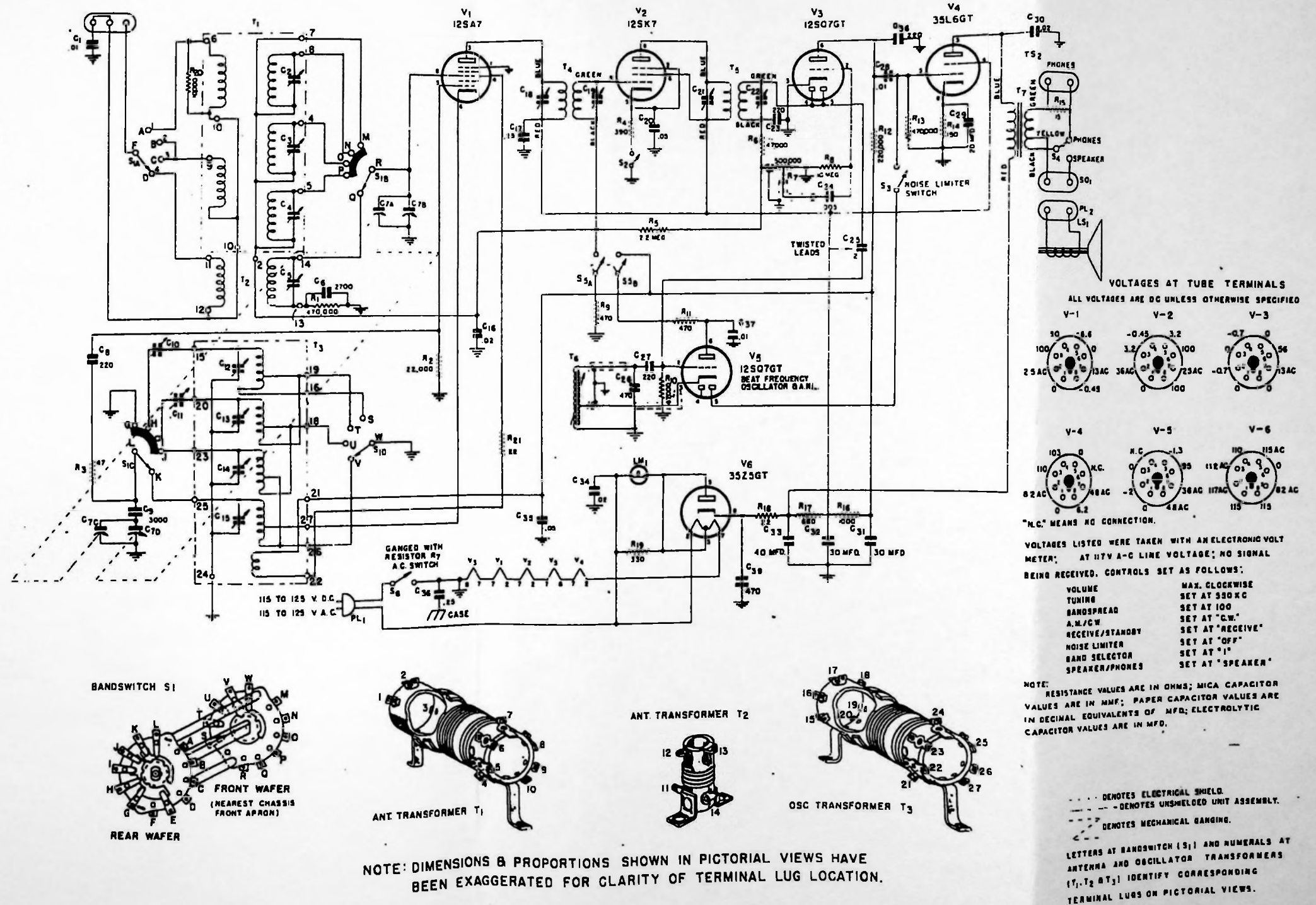


Fig. 3 Schematic diagram including tube terminal voltages and pictorial views of bandswitch, mixer and oscillator coil forms for terminal lug location and cross reference to the schematic.