

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.

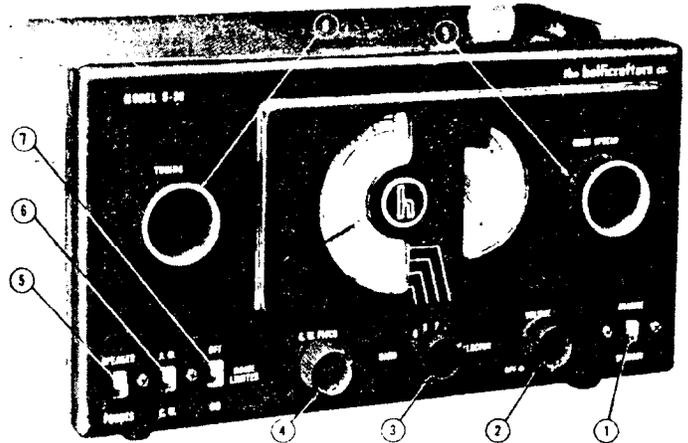


Fig. 1. Front view of receiver showing control locations.

DETAILED SERVICE INFORMATION

| IF FREQUENCY | IF SELECTIVITY | IMAGE RATIO | SENSITIVITY | AUDIO OUTPUT |
|--------------|---|---|---|--|
| 455 kc | 7 kc wide at 6 db down 65 kc wide at 60 db down (for 50 milliwatt output) | 2.7:1 at 30 mc 6:1 at 14 mc 10:1 at 5 mc 35:1 at 1500 kc | 12 microvolt at 600 kc 12 microvolt at 5 mc 11 microvolt at 14 mc 23 microvolt at 30 mc (for 50 milliwatt output) | 675 milliwatt with less than 10% distortion at 400 cycles |

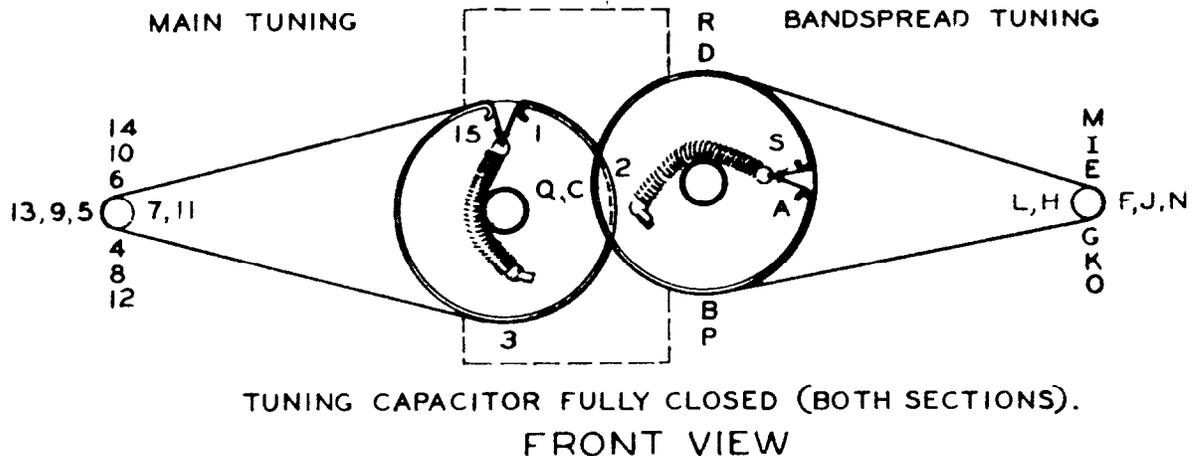
CONTROL SETTINGS FOR PRELIMINARY TEST OPERATION (Broadcast Band)

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

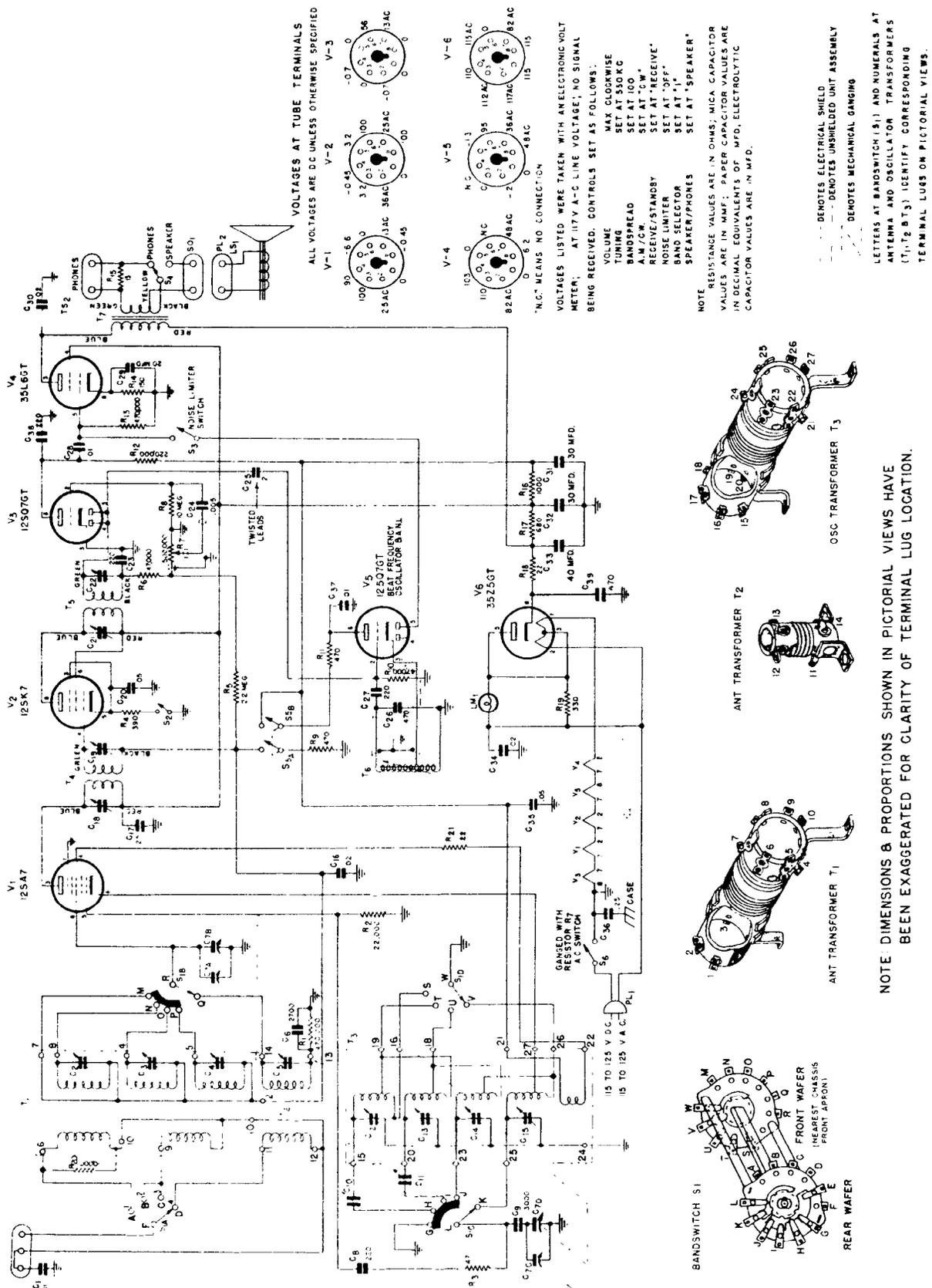


Fig. 3 Schematic diagram including tube terminal voltages and pictorial views of bandswitch, mixer and oscillator coil forms for terminal lug location and cross reference to the schematic.

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."

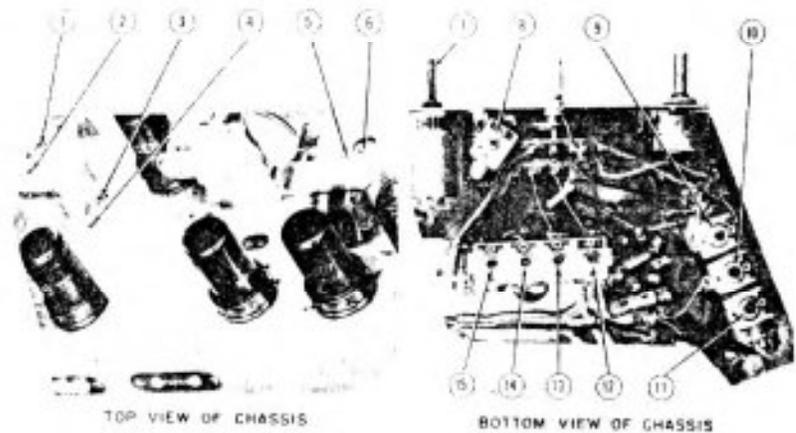


Fig. 5. Top and bottom views of the receiver locating slugs, padders and trimmers for alignment purposes.

| DUMMY ANT. IN SERIES WITH SIG. GENERATOR | CONNECTION OF SIG. GENERATOR OUTPUT TO RECEIVER | SIG. GEN. FREQUENCY SETTING | BAND SWITCH SETTING | RECEIVER DIAL SETTING | ADJUST. SLUG, PADDER, OR TRIMMER NO. | DESCRIPTION | TYPE OF ADJUSTMENT —MAKE ADJUSTMENT FOR: | STEP NO. |
|---|---|-----------------------------|---------------------|-----------------------|--------------------------------------|------------------|--|----------|
| *IF ADJUSTMENT | | | | | | | | |
| None | Stator plates of rear sect. of tuning gang | 455 kc | "1" | 1000 kc | 3 and 4 1 and 2 | 2nd IF 1st IF | Maximum output Maximum output Repeat steps 1 and 2 | 1 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 rear sect. of 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 RMA Dummy | "A1" on antenna strip | 30 mc | "4" | 50 mc | 12 | Osc. Trimmer | Maximum output | 4 |
| | | 30 mc | | 50 mc | † 8 | Mix. Trimmer | Maximum output | 5 |
| BAND #3 ADJUSTMENT | | | | | | | | |
| STANDARD RMA Dummy | "A1" on antenna strip | 14 mc | "3" | 14 mc | 13 | Osc. Trimmer | Maximum output | 6 |
| | | 14 mc | | 14 mc | † 9 | Mix. Trimmer | Maximum output | 7 |
| *BAND #2 ADJUSTMENT | | | | | | | | |
| STANDARD RMA Dummy | "A1" on antenna strip | 5 mc | "2" | 5 mc | 14 | Osc. Trimmer | Maximum output | 8 |
| | | 1.8 mc | | 1.8 mc | 6 | Osc. Padder | Maximum output and repeat step 8 | 9 |
| | | 5 mc | | 5 mc | †10 | Mix. Trimmer | Maximum output | 10 |
| *BAND #1 ADJUSTMENT | | | | | | | | |
| STANDARD RMA Dummy | "A1" on antenna strip | 1500 kc | "1" | 1500 kc | 15 | Osc. Trimmer | Maximum output | 11 |
| | | 600 kc | | 600 kc | 5 | Osc. Padder | Maximum output and 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.

