

the hallicrafters co.

SERVICE BULLETIN FOR MODEL S-40A

GENERAL

- Tubes Eight plus rectifier
- Speaker 5-inch PM
- Speaker V.C. Impedance. 3.2 ohms
- Headset Output Low Impedance
- Antenna Provision for external antenna
- Tuning Manual

| Tuning Range | Band Selector Position | Frequency Range |
|------------------------|------------------------|------------------|
| | 1. | 540 kc - 1680 kc |
| | 2. | 1680 kc - 5.4 mc |
| | 3. | 5.3 mc - 15.5 mc |
| | 4. | 15.5 mc - 44 mc |

- Intermediate Frequency 455 kc.
- Power Supply Standard Model 105-125 V. 60 cycles AC
Universal Model 105-250 V. 25/60 cycles AC
- Power Consumption 75 Watts

RESTRINGING DIAL CORD

To restring the general coverage tuning dial cord, cut an 18-inch 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. Follow the numbers "1" through "4", and at position "4" stretch the tension spring and tie the cord securely.

To restring the band spread tuning dial cord, cut a 36-inch length of dial cord and follow the procedure as above, starting at position "A" on the diagram. Note that the tuning drive shafts are wrapped with three turns of dial cord for proper traction.

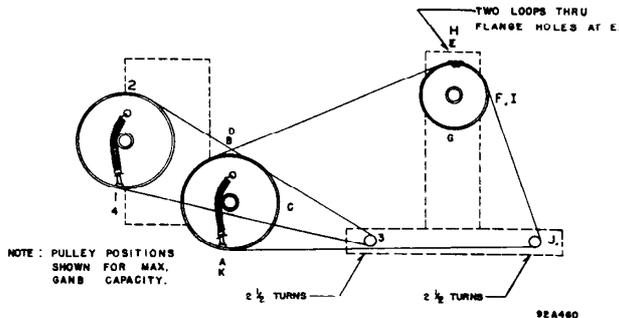
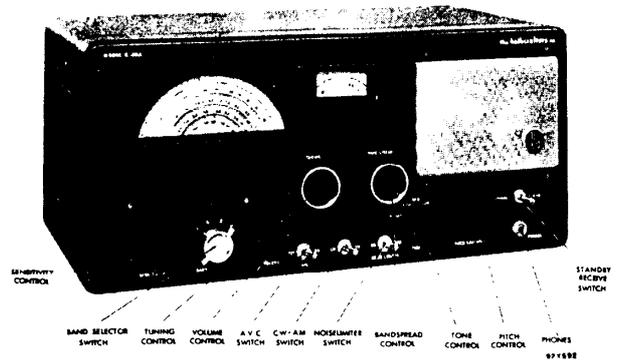


Fig. 1. Dial cable stringing procedure



REPLACING LAMPS

Refer to Fig. 4 for the location of the two dial lamps used in the receiver. To gain access to the defective lamps, lift the cabinet cover and unclip the dial lamp sockets. The sockets may then be brought out into the open to change the defective lamp. Replace defective lamps with 6-8 V. Mazda #44 (Blue bead) lamps or equivalent.

ALIGNMENT PROCEDURE

Set the following controls before alignment.

- SENSITIVITY Set at maximum
- VOLUME Set at maximum
- AVC switch Set at OFF
- Band Spread Set at zero
- CW/AM Set at AM (See step 2)
- NOISE LIMITER Set at OFF
- STANDBY RECEIVE. Set at RECEIVE
- TONE SWITCH Set at HIGH

For the settings of the remaining controls, see alignment chart.

Access to the i-f amplifier alignment adjustments may be had through the cabinet top cover. R-F alignment should be done through the holes provided in the cabinet bottom because the oscillator calibration will be effected slightly by changes in the capacity between the cabinet bottom and the r-f coils and wiring.

Before starting the alignment procedure, check the position of the general coverage dial index marker on the low frequency end of the range and the bandspread dial zero position. The general coverage condenser should index at max. capacity, and the bandspread condenser at min. capacity.

The standard RMA dummy antenna mentioned in the alignment chart consists of a 200 mmf. condenser in series with a 20 uh r-f choke which is shunted by a 400 mmf condenser in series with a 400 ohm carbon resistor.

ALIGNMENT CHART

| | Antenna | Signal Generator Coupling | Signal Generator Frequency | Band Switch Setting | Receiver Dial Setting | Adjust | Remarks |
|---|---------------|--|----------------------------|---------------------|-----------------------|-----------------|---|
| | None | Stator plates in center section of tuning gang. | 455 kc | "1" | 1000 kc | 1,2,3 | Maximum audio output at speaker voice coil. Use just enough signal generator output to obtain a 50 mw signal level. |
| 2 | None | See step 1 | 455 kc (No modulation) | "1" | 1000 kc | T-17 | With the CW/AM switch set at CW, remove the pitch control knob and adjust T-17 for zero beat. Replace the knob with the dot in the center position. |
| 3 | Std RMA dummy | "A1" on antenna strip. Jumper connected between "A2" and "G" | 36 mc | "4" | 36 mc | *C-19,C-1, C-12 | Maximum output as in step 1. |
| | | | 18 mc | | 18 mc | *8,5,6 | |
| 4 | Std RMA dummy | See step 3 | 14 mc | "3" | 14 mc | *C-20,C-2, C-13 | Maximum output as in step 1. |
| | | | 10 mc | | 10 mc | *9,4,7 | |
| 5 | Std RMA dummy | See step 3 | 5 mc | "2" | 5 mc | *C-21,C-3, C-14 | Maximum output as in step 1. |
| | | | 1.8 mc | | 1.8 mc | *11 | |
| 6 | Std RMA dummy | See step 3 | 1500 kc | "1" | 1500 kc | *C-22,C-4, C-15 | Maximum output as in step 1. |
| | | | 600 kc | | 600 kc | *C-25 | |

*Note - Calibration adjustments.

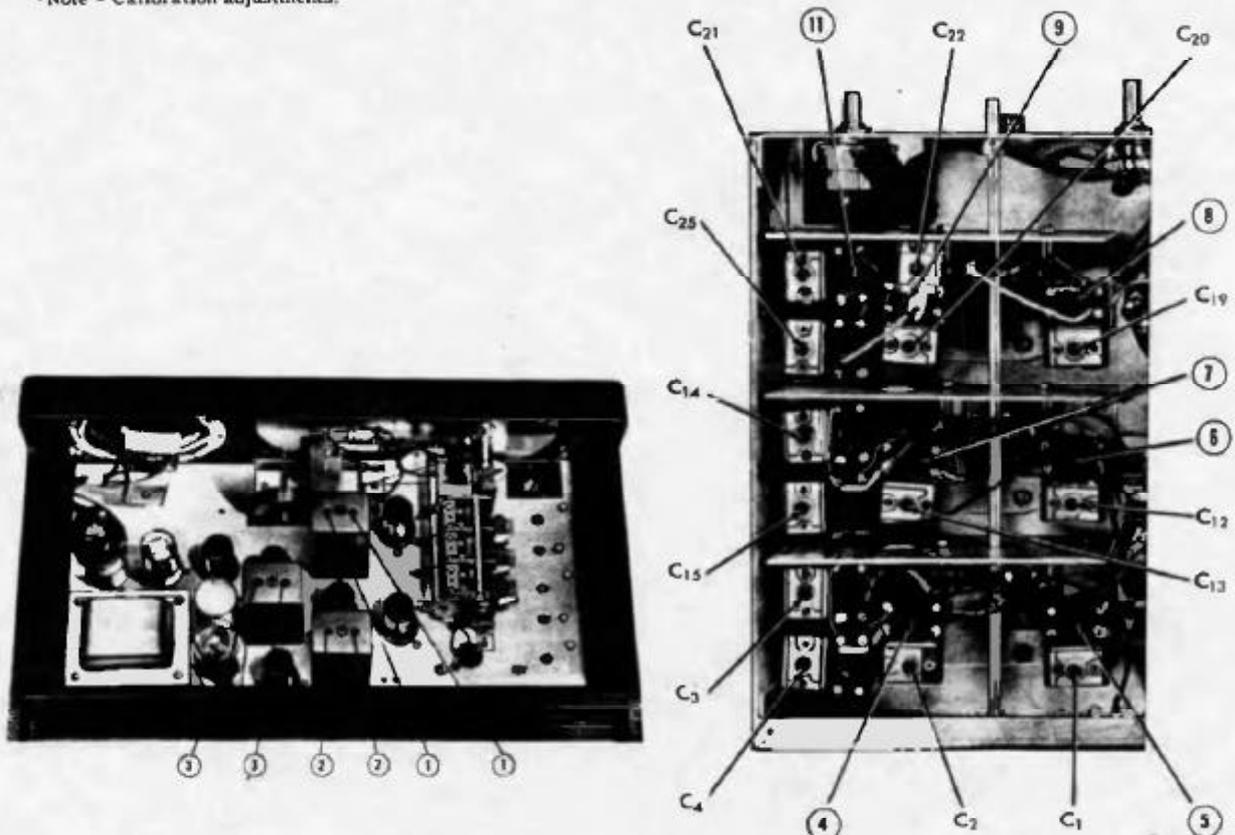
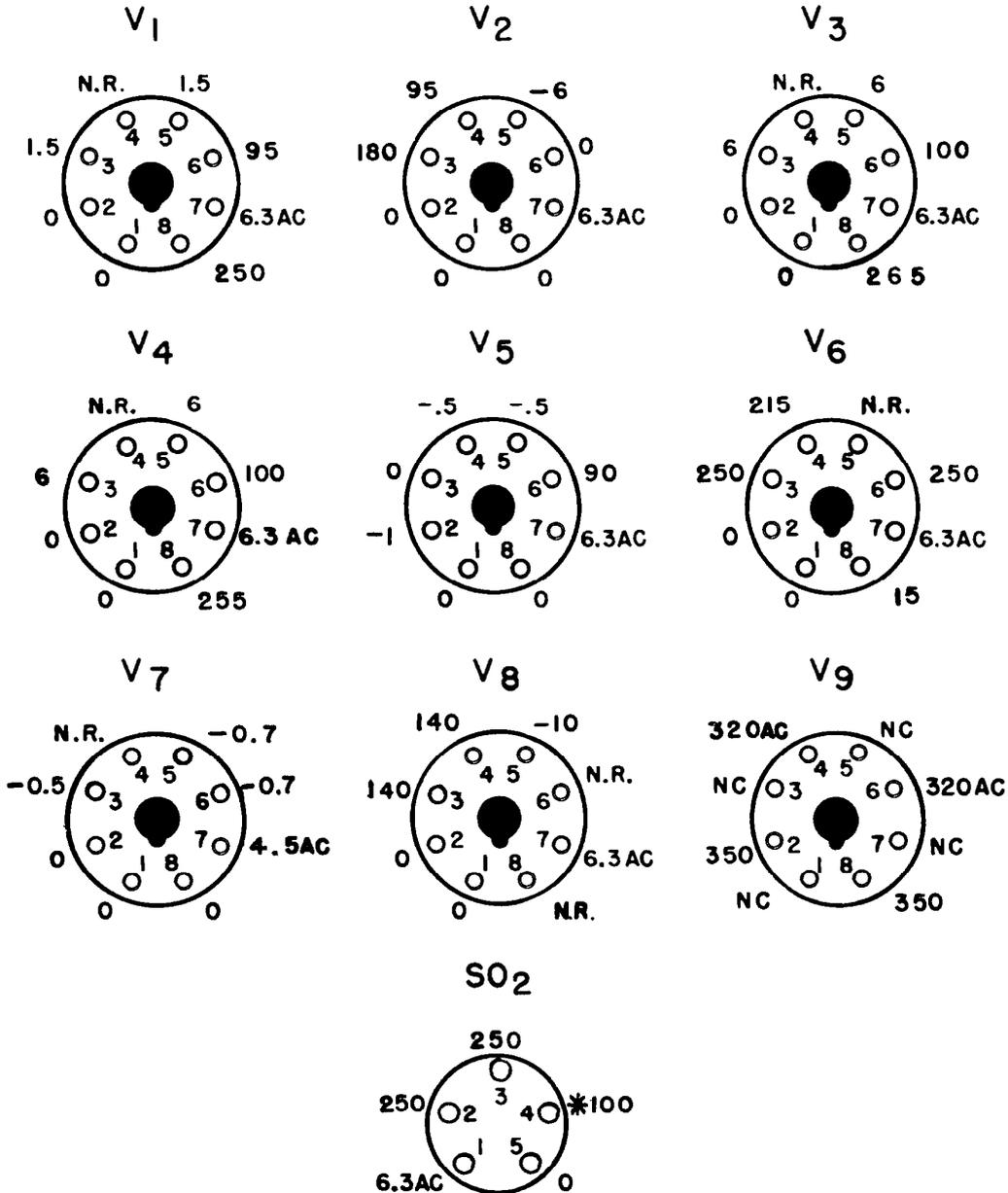


Fig. 2. Top and bottom view, alignment adjustment

TUBE TERMINAL VOLTAGES (PIN VIEW)

ALL VOLTAGES ARE POSITIVE DC UNLESS OTHERWISE SPECIFIED



* "S" METER SWITCH CLOSED (MAX. CLOCKWISE);
 NR - NOT READABLE WITH METER USED.
 ALL READINGS TAKEN AT 117V. AC LINE VOLTAGE; WITH
 20,000 OHM/VOLT METER; NO SIGNAL BEING RECEIVED;
 CONTROLS SET AS FOLLOWS: STANDBY/RECEIVE SWITCH AT
 "RECEIVE"; AVC, NOISE LIMITER AT "ON"; AM/CW SWITCH
 AT "CW"; SENSITIVITY AND VOLUME CONTROLS FULL CLOCKWISE;
 TUNING, PITCH CONTROL AND TONE CONTROLS IN ANY
 POSITION AS THEY DO NOT AFFECT READINGS. BAND SELECTOR
 SET AT BAND 1.
 NC - NO CONNECTION.

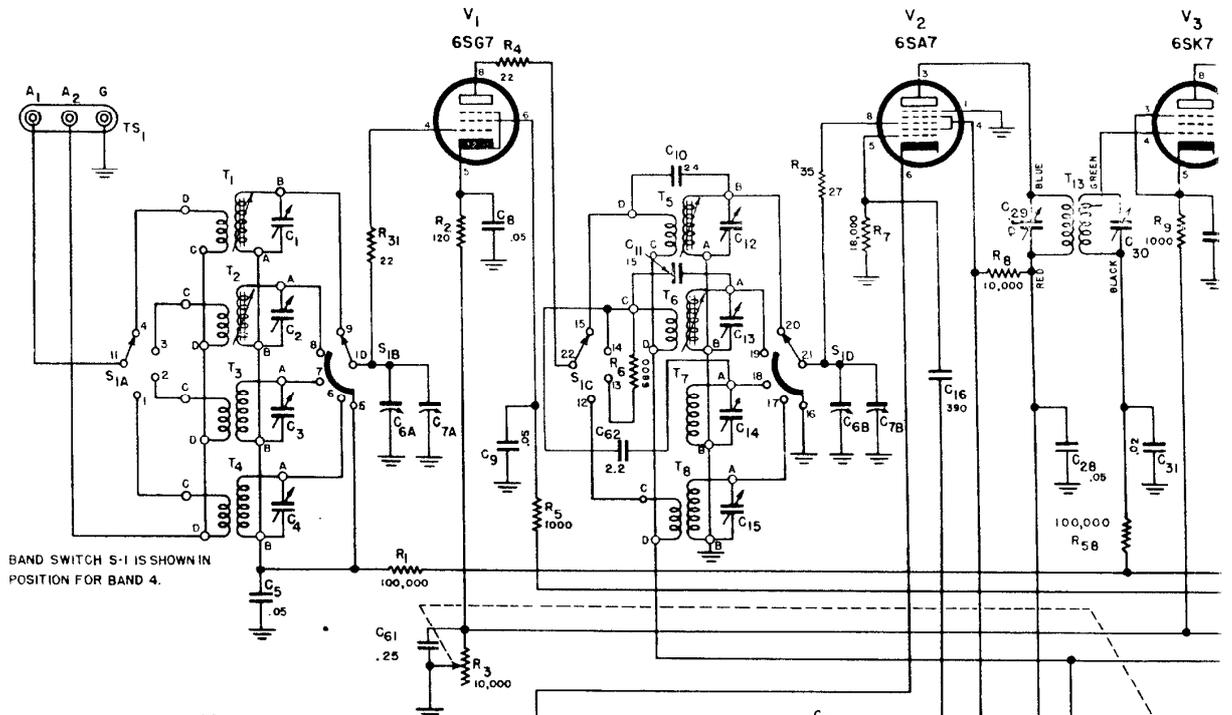
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Fig. 5. Tube socket voltage chart

SERVICE PARTS LIST

| Ref. No. | Description | Manufacturer's Part Number | Ref. No. | Description | Manufacturer's Part Number |
|-------------------------------|---|----------------------------|---|--|----------------------------|
| CONDENSERS | | | | | |
| C-1,2,12,13,19 | Trimmer, adjustable, part of transformers T-1,2,5,6 and 9 | 44B149 | T-12 | Transformer, oscillator stage, band 1 | 51B912 |
| C-3,4,14,15,20,21,25 | Trimmer, adjustable, part of transformers T-3,4,7,8,10, 11 and 12 | 44A147 | T-13 | Transformer, 1st IF | 50C185 |
| C-5 | .05 mfd. 200 V., tubular | 46A091 | T-14 | Transformer, 2nd IF | 50C186 |
| C-6,7 | Tuning capacitor, 3 sections ganged | 48C138 | T-15 | Transformer, detector stage | 50C192 |
| C-8,32,35,59,60 | .05 mfd. 200 V., tubular | 46AU503J | T-16 | Transformer, audio output | 55B093 |
| C-9,28,52 | .05 mfd. 400 V., tubular | 46AW503J | T-17 | Transformer, BFO | 54B033-2 |
| C-10 | 24 mmf. 500 V., ceramic | 47X21UK240M | T-18 | Transformer, power | 52C140 |
| C-11 | 15 mmf. 500 V., ceramic | 47X21UK150M | *T-18 | Transformer, power (universal) | 52C139 |
| C-16 | 390 mmf. 500 V., mica | 47X20A391K | SWITCHES | | |
| C-17,53 | .01 mfd. 400 V., tubular | 46AW103J | Bandswitch assy. ant. and mixer | | |
| C-18 | 68 mmf. 500 V., ceramic | 47X25UK680K | S-1 | Bandswitch ass'y, oscillator | 62B039 |
| C-22 | Trimmer, adjustable | 44A191 | S-2,3,5,7 | Switch, toggle, S.P.S.T., STANDBY-RECEIVE, A.V.C., A.N.L., and CW-AM | 62B044 |
| C-23 | 3,000 mmf. 500 V., mica | 47X30C302K | S-4 | Switch, PWR TONE control | 60A138 |
| C-24 | 1500 mmf. 500 V., mica | 47X30C152J | S-6 | Switch, part of SENSITIVITY control R-3 | 60A225 |
| C-26 | 3 mmf. temperature compensator for osc. stage | 44A158 | PLUGS AND SOCKETS | | |
| C-27,50,51 | 30-10-10 mfd. 450 V., electrolytic | 45A062 | J-1 | Jack, headset | 36A002 |
| C-31,43,58 | .02 mfd. 200 V., tubular | 46AU203J | PL-1 | Line cord | 87B1573 |
| C-38 | 2 mmf., twisted wire gimmick | | PL-2 | AC shorting plug | 35A003 |
| C-39,45,48 | .02 mfd. 600 V., tubular | 46AY203J | SO-1 | Socket, POWER (DC operation) | 6A035 |
| C-41,42,55 | 47 mmf. 500 V., mica | 47X20A470M | SO-2 | Socket, "S" meter connection (5 prong) | 6A186 |
| C-44 | 270 mmf. 500 V., mica | 47X20A271K | Socket, octal (tube) | | |
| C-46 | 10 mfd. 25 V., electrolytic | 45A121 | Socket, dial light, general coverage dial | | |
| C-47 | .002 mfd. 1000 V., tubular | 46A104 | Socket, dial light, bandsread dial | | |
| C-49 | .1 mfd. 400 V., tubular | 46AV104J | TUBES, RECTIFIERS AND LAMPS | | |
| C-54 | 470 mmf. 500 V., mica | 47X20A471J | V-1 | Type 6SG7, antenna | 90X6SG7 |
| C-56 | .01 mfd. 600 V., molded paper | 46AC103J | V-2 | Type 6SA7, mixer | 90X6SA7 |
| C-57 | 1000 mmf. 500 V., mica | 47X25A102M | V-3,4 | Type 6SK7, 1st and 2nd i-f amplifiers | 90X6SK7 |
| C-61 | .25 mfd. 200 V., tubular | 46AT254J | V-5 | Type 6SQ7, detector, audio amplifier | 90X6SQ7 |
| C-62 | 2.2 mmf. 500 V., bakelite | 47A160-4 | V-6 | Type 6F6G, audio power amplifier | 90X6F6G |
| RESISTORS | | | | | |
| R-1,15,58 | 100,000 ohms 1/2 watt, carbon | 23X20X104M | V-7 | Type 6H6, gas gate and noise limiter | 90X6H6 |
| R-2 | 120 ohms 1/2 watt, carbon | 23X20X121K | V-8 | Type 6J5, BFO | 90X6J5 |
| R-3 | 10,000 ohms, SENSITIVITY Control | 25A533 | V-9 | Type 5Y3GT, rectifier | 90X5Y3GT |
| R-4,31 | 22 ohms 1/2 watt, carbon | 23X20X220M | LM-1,2 | Lamp, dial light, Mazda #44 | 39A003 |
| R-5,18 | 1000 ohms 1/2 watt, carbon | 23X20X102K | MISCELLANEOUS | | |
| R-6 | 6800 ohms 1 watt, carbon | 23X30X682K | TS-1 | Terminal strip, antenna | 88A032 |
| R-7 | 18,000 ohms 1/2 watt, carbon | 23X20X183K | Lock, line cord | | |
| R-8 | 10,000 ohms 2 watts, carbon | 23X40X103K | Shaft, bandswitch and index plate | | |
| R-9 | 1000 ohms 1/2 watt, carbon | 23X20X102M | Collar, bandswitch | | |
| R-10 | 12,000 ohms 4 watts, carbon | 23X65C123K | Bracket, dial drive mtg. | | |
| R-11 | 330 ohms 1/2 watt, carbon | 23X20X331K | Dial shaft, bandsread | | |
| R-12,59 | 2.2 megohms 1/2 watt, carbon | 23X20X225M | Drive shaft, main tuning | | |
| R-14,29 | 47,000 ohms 1/2 watt, carbon | 23X20X473M | Drive shaft, bandsread | | |
| R-20 | 1/2 megohm, VOLUME control | 25A534 | Washer, spring (Bandswitch, bandsread dial, and main tuning drive shafts) | | |
| R-21 | 150 ohms 1/2 watt, carbon | 23X20X151M | Spring, retainer (Bandsread, and main tuning drive shaft) | | |
| R-22 | 270,000 ohms 1/2 watt, carbon | 23X20X274K | Flywheel, bandsread tuning | | |
| R-23,61 | 470,000 ohms 1/2 watt, carbon | 23X20X474M | Pulley, bandsread dial | | |
| R-24 | 680 ohms 1 watt, carbon | 23X30X681K | Dial cord | | |
| R-25 | 15,000 ohms 1 watt, carbon | 23X30X153M | Spring, dial cord | | |
| R-26 | 12,000 ohms 2 watts, carbon | 23X40X123K | Dial, bandsread | | |
| R-27 | 10,000 ohms 4 watts, carbon | 23X65CE103K | Dial, general coverage | | |
| R-28 | 15,000 ohms 2 watts, carbon | 23X40X153M | Escutcheon, bandsread dial | | |
| R-30 | 10 ohms 1/2 watt, carbon | 23X10X100M | Escutcheon, general coverage dial | | |
| R-32 | 1500 ohms 10 watts, WW | 24BG152E | Glass, general coverage dial | | |
| R-33 | 15 megohms 1/4 watt, carbon | 23X10X156M | Speaker, P.M. (5-inch) | | |
| R-34 | 10,000 ohms 1/2 watt, carbon | 23X20X103M | Baffle, speaker | | |
| R-35 | 27 ohms 1/4 watt, carbon | 23X10X270K | Grill, speaker | | |
| R-60 | 330,000 ohms 1/2 watt, carbon | 23X20X334K | Knob, PITCH CONTROL | | |
| R-62 | 1 megohm 1/2 watt, carbon | 23X20X105M | KNOB, SENSITIVITY, VOLUME and TONE | | |
| R-63 | 6.8 ohms 1 watt, carbon | 23X30X068K | Knob, TUNING and BANDSPREAD | | |
| TRANSFORMERS AND COILS | | | | | |
| T-1 | Transformer, antenna stage, band 4 | 51B783 | Knob, BAND SELECTOR | | |
| T-2 | Transformer, antenna stage, band 3 | 51B782 | Foot, rubber | | |
| T-3 | Transformer, antenna stage, band 2 | 51B781 | | | |
| T-4 | Transformer, antenna stage, band 1 | 51B780 | | | |
| T-5 | Transformer, mixer stage, band 4 | 51B787 | | | |
| T-6 | Transformer, mixer stage, band 3 | 51B786 | | | |
| T-7 | Transformer, mixer stage, band 2 | 51B785 | | | |
| T-8 | Transformer, mixer stage, band 1 | 51B784 | | | |
| T-9 | Transformer, oscillator stage, band 4 | 51B791 | | | |
| T-10 | Transformer, oscillator stage, band 3 | 51B913 | | | |
| T-11 | Transformer, oscillator stage, band 2 | 51B789 | | | |

* Used on universal model S-40AU only.



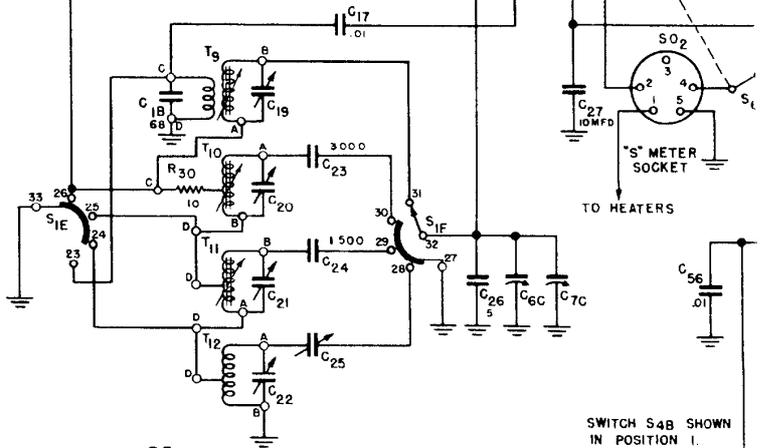
BAND SWITCH S-1 IS SHOWN IN POSITION FOR BAND 4.

NOTE.

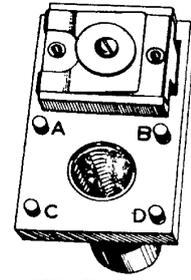
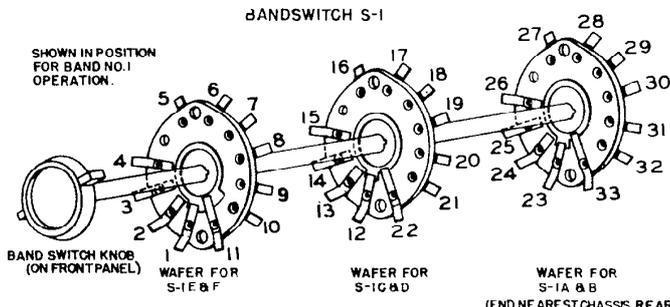
RESISTANCE VALUES ARE IN OHMS, MICA CAPACITOR VALUES ARE IN MME, PAPER CAPACITOR VALUES ARE IN DECIMAL EQUIVALENTS OF MFD; ELECTROLYTIC CAPACITOR VALUES ARE IN MFD.

DENOTES MECHANICAL GANGING

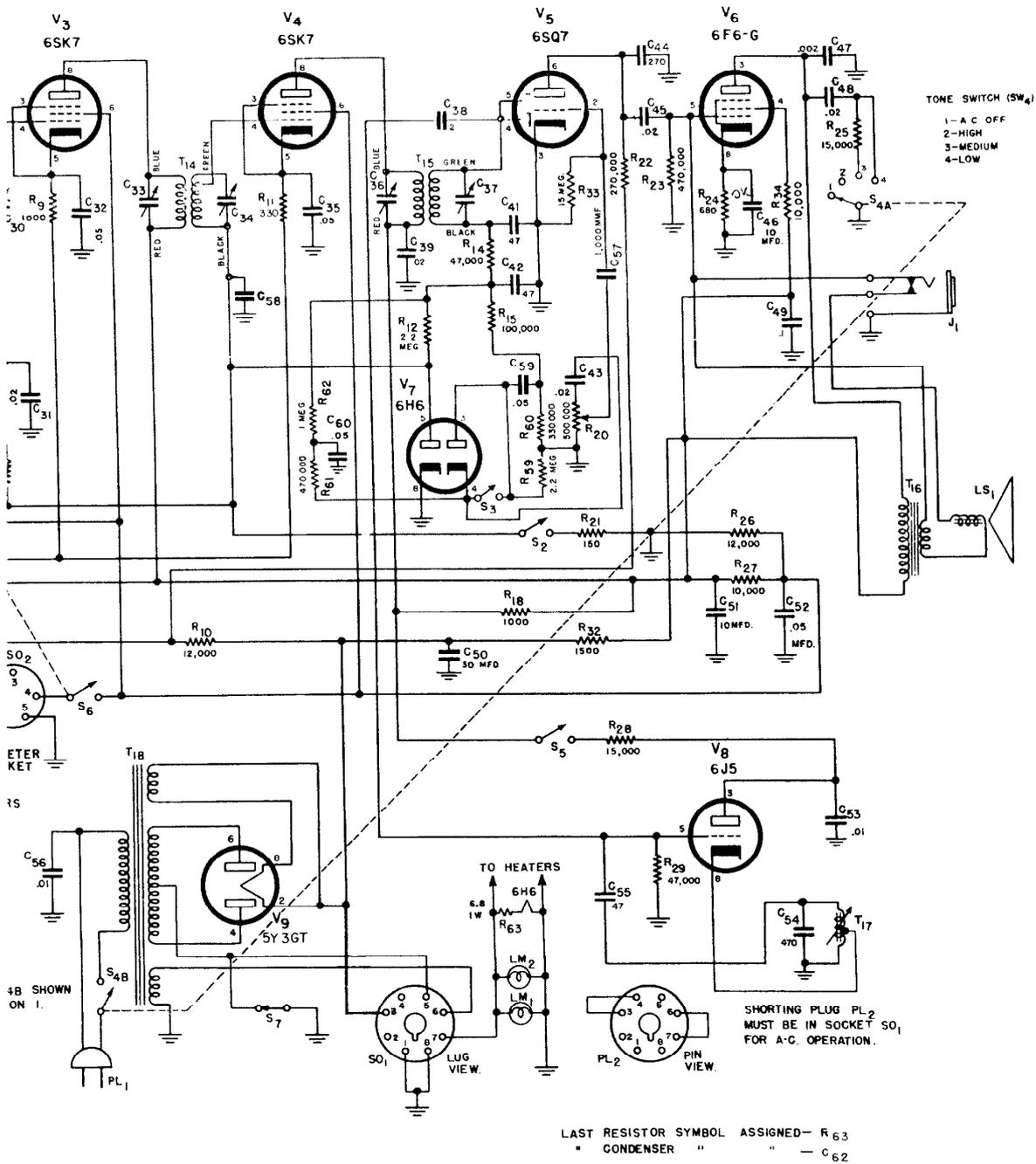
NUMERALS AT BANDSWITCH (S₁) AND LETTERS AT ANTENNA, MIXER AND OSCILLATOR TRANSFORMERS (T₁ TO T₁₂) IDENTIFY CORRESPONDING TERMINAL LUGS ON PICTORIAL VIEWS.



SWITCH S4B SHOWN IN POSITION I.



REPRESENTS TRANSFORMERS T1 TO T12 (END NEAREST CHASSIS REAR APRON)



89D222-F

Fig. 6. Schematic diagram.