

## Farnsworth Models

The parts shortage has resulted in the substitution of various types of tuning capacitors without change in part numbers stamped on them. In ordering replacement tuning capacitors for ET-060, 061, 063, 064, 065, 066, 069; EK-263, 264, and 265 the following suggestions should be observed:

Gang Capacitor with 21 plate oscillator section requires the removal of trimmer from r-f section of gang if the loop antenna has a r-f trimmer located on it. This capacitor used B.C. oscillator coil #38483 and, if an S.W. oscillator coil is used requires S.W. oscillator coil #38549. Both of these coils have a white dot to indicate finish lug.

A #26239 gang capacitor with 19 plate oscillator section (identified by red dot on rear) may require the removal of r-f trimmer as explained above. This capacitor requires B.C. oscillator coil #38706 and S.W. oscillator coil (if used) #38709. These oscillator coils are marked with a yellow dot at the finish lug.

The following is an alignment hint for the Farnsworth models with respect to the use of the antenna:

The antenna should be held in a vertical position, 3/8 inch from the back side of the radio chassis in order to maintain the maximum output of the antenna after being installed in the cabinet. Therefore, we suggest some type of a jig to be made out of scrap material found around the service department to hold said antenna in the proper position while the serviceman is realigning the radio out of the cabinet. This suggestion is very helpful in getting the best operation out of the radio and, in addition, saving expense and time.

### GALVIN DIAL CORD SLIPPAGE

Dial slippage encountered in 1946 home sets using slide rule type dials can easily be remedied by restringing using two dial cords.

Formerly, a single cord and tension spring was used for both driving the tuning capacitor and moving the pointer. It is recommended that two cords and tension springs be used; one for driving the tuning capacitor and one for moving the pointer.

Before removing the old cord, make a sketch showing the old cord layout. This will assist greatly in restringing.

First install the drive cord between the tuning shaft and tuning capacitor pulley. It is to be routed in exactly the same manner as the old cord was, except run it only between the tuning shaft and tuning capacitor pulley. Be sure to wind 3 turns around the tuning shaft. The old tension

spring is used to provide tension on the cord by hooking in exactly as before. Use the cord originally on the set for this purpose, except cut it down to the required length.

Install the pointer cord supplied by routing it in the same fashion as before except that it does not go to the tuning shaft. Simply run it to the tuning capacitor pulley and apply light tension to it with the attached tension coil spring. There are several holes in the tuning capacitor pulley through which the tension spring may be hooked and/or adjusted.

To calibrate pointer, simply turn the tuning capacitor to the fully meshed position and set pointer to "V" notch or calibration mark provided.

Use a drop of household cement to fix pointer to cord. A drop of cement on all knots will secure them.

### Gamble-Skogmo 43-7601, 43-7601A, 43-7601B

These models, shown on pages 16-1 to 16-5 of *Rider's Volume XVI*, use the General Instrument Record Changer model 205, which can be found on pages RCD.CH. 15-5 to 15-8 of *Rider's Volume XV*.

### General Electric 250

To reduce the hum in this model, which is found on pages 15-32 to 15-36 of *Rider's Volume XV*, it is suggested that the following change be made.

Resistor R16 (2200 ohms) should be removed from the negative battery terminal lug, lengthen pigtail, insulate with a spaghetti covering, and solder to the ground lug of the terminal board located at socket saddle of the 1LH4 tube.

An appreciable increase in duration of operation from a fully charged battery in this model can be effected in the following manner, realizing, however, that some degree of performance is sacrificed in regard to sensitivity and power output. Replace power-supply filter resistor, R17 (1500 ohms) with one of 4700 ohms, 1 watt, carbon. This change should be made only when the customer demands a longer duration of operation to one battery charge.

### Hallcrafters S-38

In the event that an a-c hum develops in this receiver, the schematic of which appears on page 15-59 of *Rider's Volume XV*, it has been found that the 35Z5GT is the cause of the trouble, even though the tube passes a normal test. Also, other tubes in this set have been known to cause hum. Try replacement tubes.

Another cause is a high resistance ground between the chassis and the case.

This usually develops through the rubber mounting grommets or through the switch mounting rivets. Occasionally it may be a defective 25- $\mu$ f capacitor (C36), which should be replaced if defective. It is possible that C36 is not of the correct value. Check this point.

If this set loses sensitivity after being in use for approximately a half hour, replace the 12SA7GT/G tube, as an investigation has revealed that this condition is due to a certain percentage of Hytron tubes of this type, of a particular production run marked 1/6, 2/6, 1A6, or 2A6. The replacement should have any other marking than those listed previously.

### Hallcrafters S-40

In the event that band 4 (15.7 to 43 mc) fails to operate at all times, but reception on other bands is normal, trouble is indicated in the oscillator circuit of this band, which in most cases can be traced to a weak 6SA7 oscillator tube or low line voltage. In those few cases where trouble persists, even though all voltages are normal and the tube has been replaced, this trouble can be remedied by replacement of the oscillator coil T9 and capacitor C18, as follows:

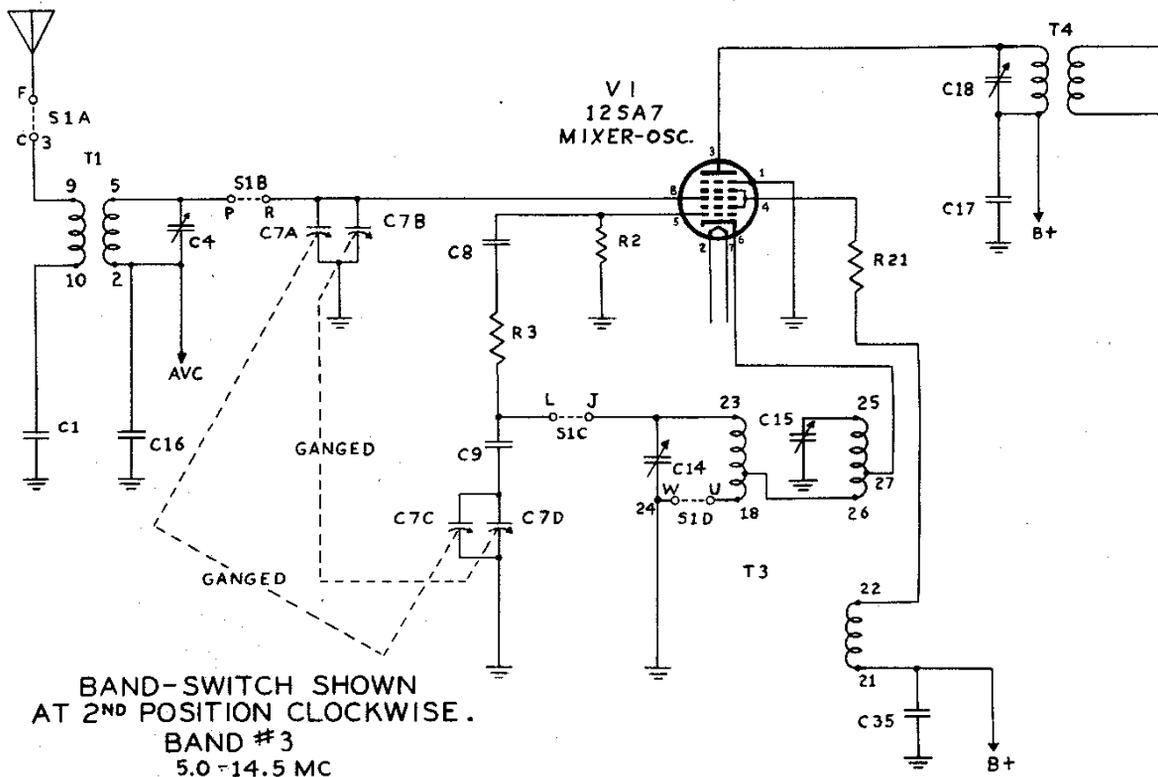
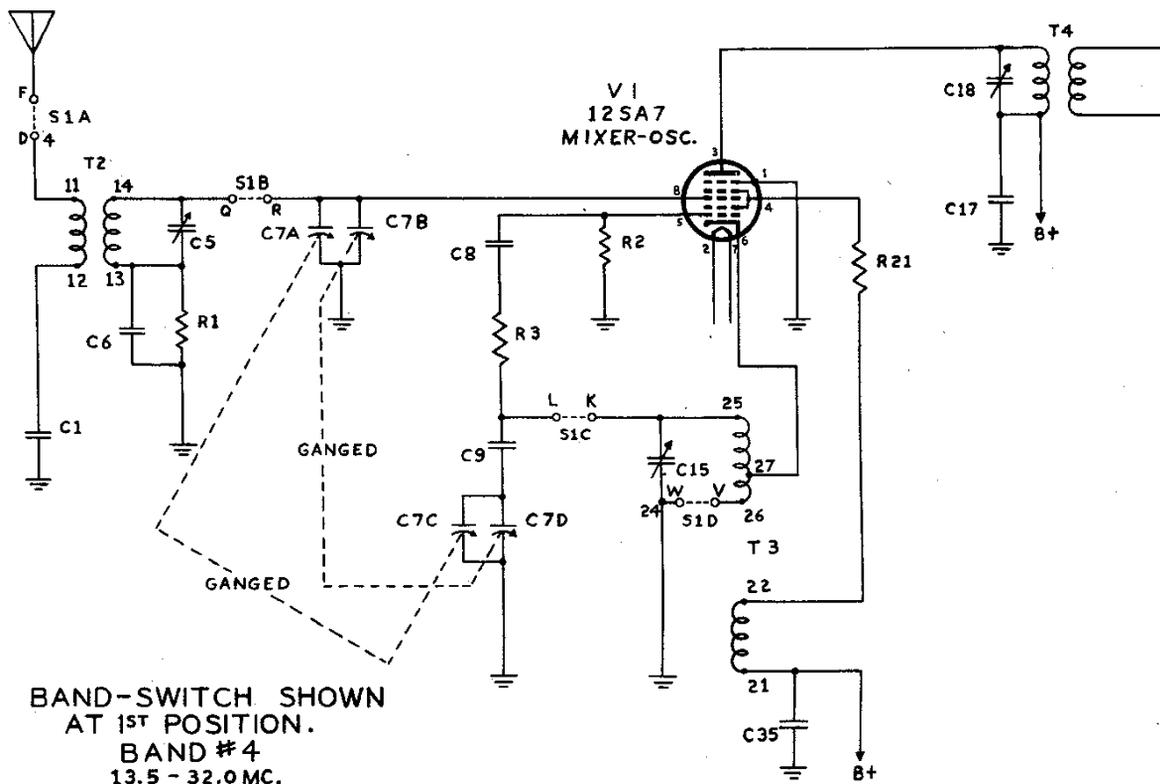
Replace T9 oscillator coil, part #51B791 containing 7 primary turns, with part #51B791B, having 10 primary turns. Change capacitor C8 (100  $\mu$ f) to part #CC25UK680K, 68  $\mu$ f. Connect the cathode lead from terminal 6 of the 6SA7 (V2) to T9 direct to the secondary winding where it leaves the coil form rather than to terminal lug "A" on the top of the coil form. (See sketch of coil form on page 15-67, 68 in *Rider's Volume XV*.) Replacement coils are furnished without the iron cores, as they are interchangeable. If new cores are needed, due to loss or breakage, they can be ordered under part #77A068.

If the receiver cannot be placed in "break-in" operation, apply the following remedy: Notice on the schematic of the receiver on page 15-67, 68 in *Rider's Volume XV* that the grid of V6 the output 6F6G tube is connected to the power switch S7, so that when the switch is in the "send" position the grid of this tube is grounded. Many operators wish to leave this switch in the "send" position and connect from terminal 5 on the plug PL2, through the transmitter relay to ground. In order to do this, the lead between S7 and V6 should be removed. On later production runs, this lead has been eliminated. See notes on "Power Requirements" and "Preparation for Use" on page 15-71 of *Rider's Volume XV*.



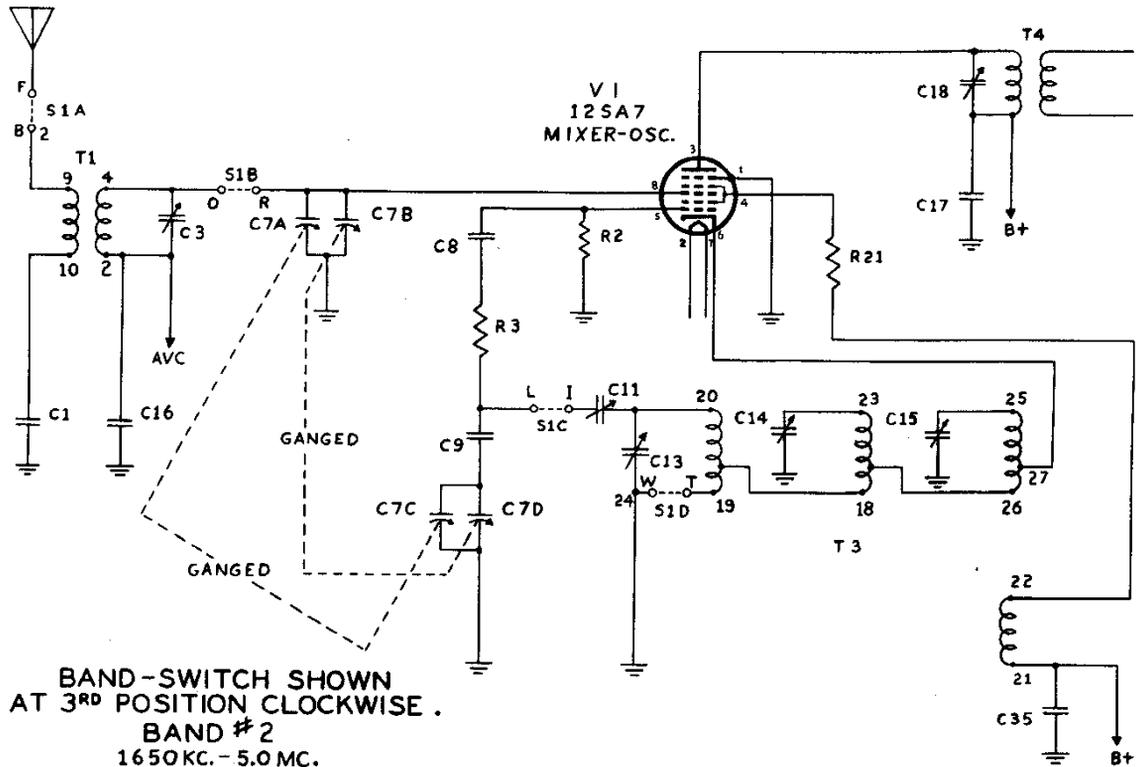
MODEL S-38, Early  
and Revised

THE HALLICRAFTERS CO.

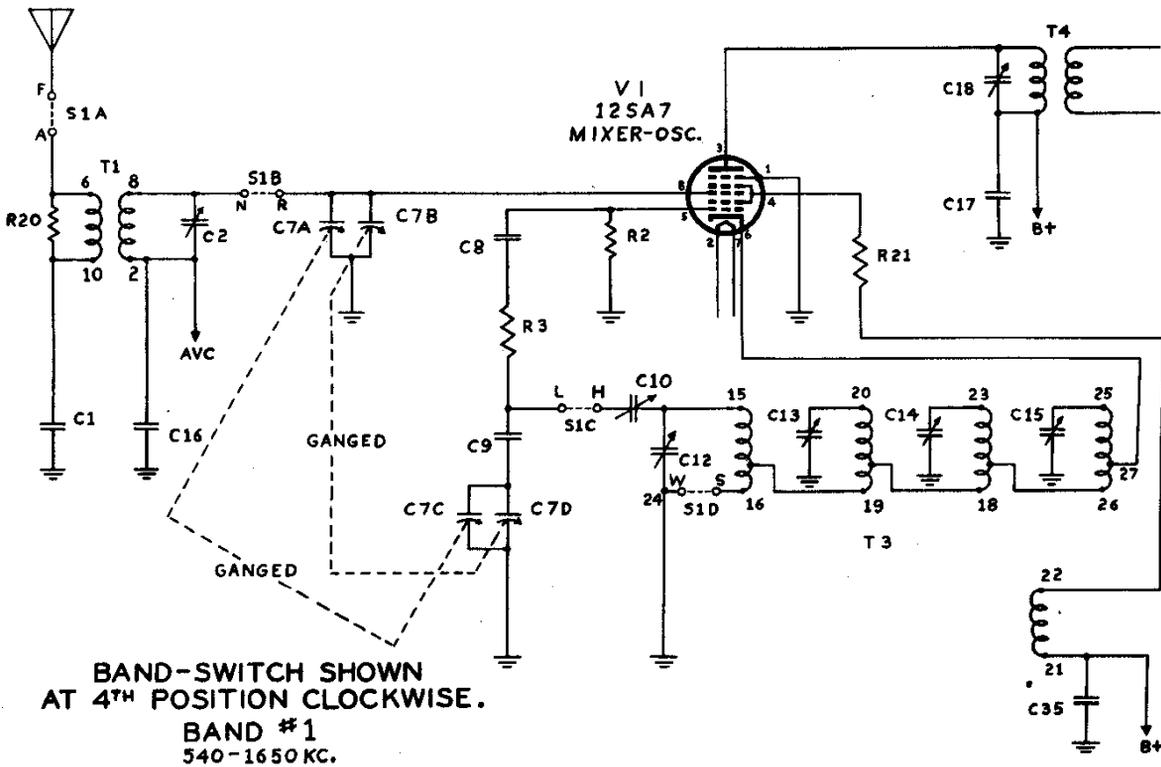


THE HALLICRAFTERS CO.

MODEL S-38, Early and Revised



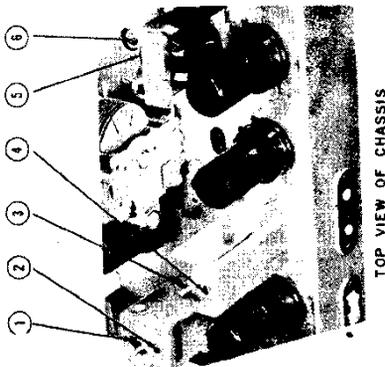
BAND-SWITCH SHOWN AT 3<sup>RD</sup> POSITION CLOCKWISE.  
BAND #2  
1650 KC. - 5.0 MC.



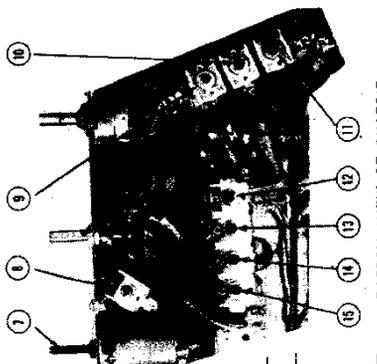
BAND-SWITCH SHOWN AT 4<sup>TH</sup> POSITION CLOCKWISE.  
BAND #1  
540-1650 KC.

MODEL S-38, Early and Revised

THE HALLICRAFTERS CO.



TOP VIEW OF CHASSIS



BOTTOM VIEW OF CHASSIS

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

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

- EQUIPMENT:**
- Signal Generator capable of the ranges indicated in the Alignment Chart, including a 400 cycle audio modulator.
  - Output meter capable of handling 1 watt of audio power.
  - Standard RMA dummy consisting of a 200 mmf condenser in series with a 20oh r-f choke which is shunted by a 400 mmf condenser in series with a 400 ohm carbon resistor.
  - 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.

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

\*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.

THE HALLICRAFTERS CO.

MODEL S-38, Early  
and Revised

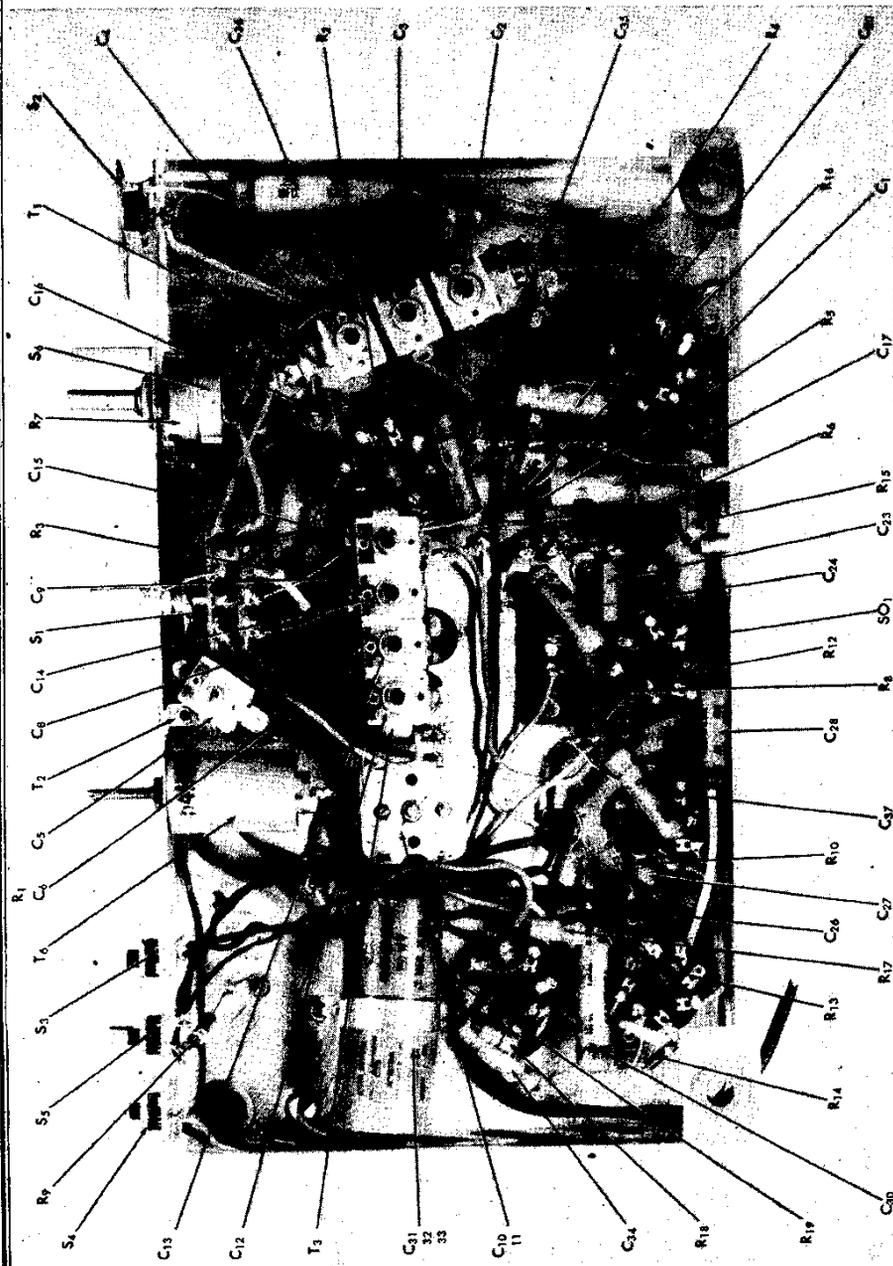


Fig. 4. Bottom view of the receiver showing components location.

CONTROL SETTINGS FOR PRELIMINARY TEST OPERATION (Broadcast Band)

NAME	FUNCTION	SETTING	NAME	FUNCTION	SETTING
STANDBY/ RECEIVE	Receiver temporary standby	At "RECEIVE"	SPEAKER/ PHONES	Output selector switch	At "SPEAKER"
VOLUME	Audio gain control and receiver on/off switch	Half clockwise; adj. as necessary	CW/AM	BFO on/off switch AVC on/off switch	At "AM" (AVC on)
BAND SELECTOR	Operating band selector	Clockwise to "1"	NOISE LIMITER	Noise peak limiting	At "OFF"
PITCH CONTROL	CW beat note pitch selector	Any position (not in use)	TUNING	Main tuning control	To local station freq. on main dial scale
			BAND SPREAD	Short wave band spreading	To "0" on small dial scale

MODEL S-38, Early  
and Revised

THE HALLICRAFTERS CO.

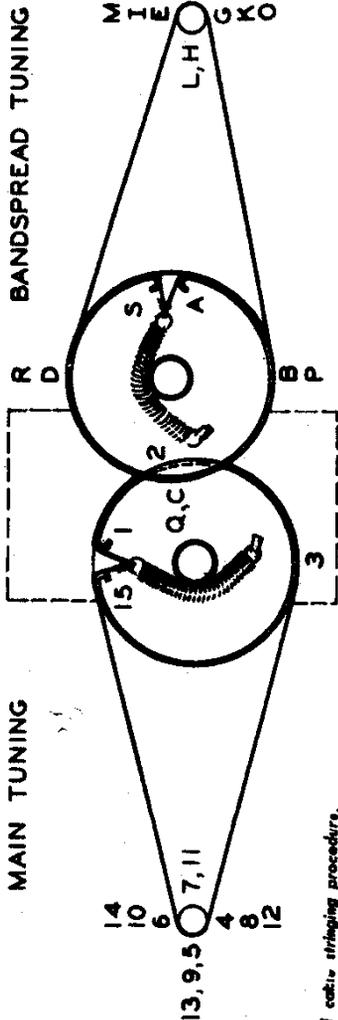


Fig. 2. Dial cable strapping procedure.

HOW TO RESTRING DIAL CORDS

To restringing 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 restringing 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

REF. NO.	DESCRIPTION	HALLICRAFTERS PART NUMBER	LIST PRICE PER COMPONENT
C-1	0.01 mfd; 500 vdcw; mica.	46AY103J	.10
C-2, 3 & 4	Trimmer Unit for antenna transformer T-1.	44B129	.10
C-5	Trimmer for antenna transformer T-2.	44A039	.10
C-6	2700 mfd; ±5%; 500 vdcw; mica.	CM30A272J	.30
C-7	Tuning capacitor; air; 2 sections ganged.	48C182	2.90
C-8, 23, 27 & 38	250 mfd; 500 vdcw; mica.	CM20A251K	.15
C-9	3000 mfd; 5%; 500 vdcw; mica.	CM30A302J	.65
C-10 & 11	Dial padder for oscillator transformer T-3.	44A152	.50
C-12, 13, 14 & 15	Trimmer Unit for oscillator transformer T-3.	44B159	.10
C-16 & 34	0.02 mfd; 400 vdcw; paper.	46AW203J	.10
C-17 & 36	0.25 mfd; 200 vdcw; paper.	46AT254J	.25
C-18, 19, 21 & 22	Trimmers for IF transformers T-4 and T-5.	44A087	.10
C-20 & 35	0.05 mfd; 200 vdcw; paper.	46AU603J	.10
C-24	0.005 mfd; 500 vdcw; paper.	46AW502J	.10
C-25 & 39	2 mfd; twisted insulated wire leads; NOT AVAILABLE AS A SPARE PART.	CM20A471K	.20
C-28 & 37	470 mfd; 500 vdcw; paper.	46AW102J	.10
C-29, 31, 32 & 35	Electrolytic; four section unit; color coded leads; sect. 1 (C-29) 20 mfd, 25 vdcw; sect. 2 (C-31) 40 mfd, 150 vdcw; sect. 3 (C-32) 30 mfd, 150 vdcw; sect. 4 (C-35) 40 mfd, 150 vdcw.	45B091 46Y203J 39A004	.80 .10 .10
C-30	0.02 mfd; 600 vdcw; paper.	45B091	.80
LM-1	PILOT LAMP 6/8 v @ 150ms; brown bead; G. E. type 47.	39A004	.10
LS-1	LOUDSPEAKER 5" P. M. speaker; 3.2 ohm voice coil.	85C035	2.50
PL-1	PLUGS AC line cord with two prong plug at one end. Speaker voice coil connector plug.	87A078 88A072	.35 .10
R-1 & 13	470,000 ohm; 1/2 watt; carbon.	RC20AE474M	.10
R-2	22,000 ohm; 1/2 watt; carbon.	RC20AE223M	.10
R-3	300 ohm; 1/2 watt; carbon.	RC20AE300M	.10
R-4	300 ohm; 1/2 watt; carbon.	RC20AE300K	.10
R-5	2.2 megohm; 1/2 watt; carbon.	RC20AE223M	.10
R-6 & 10	47,000 ohm; 1/2 watt; carbon.	RC20AE473M	.10
R-7 & S-6	Volume Control; 1/2 megohm; includes SPST toggle action switch assembly on rear.	25B094	.50
R-8	10 megohm; 1/2 watt; carbon.	RC20AE106M	.10
R-9 & 11	470 ohm; ±10%; 1/2 watt; carbon.	RC20AE471K	.10
R-12	220,000 ohm; 1/2 watt; carbon.	RC20AE224M	.10
R-14	150 ohm; ±10%; 1/2 watt; carbon.	RC20AE151K	.10
R-15	15 ohm; 1/2 watt; carbon.	RC20AE150M	.10
R-16	800 ohm; 1/2 watt; carbon.	RC20AE800M	.10
R-17	250 ohm; 1/2 watt; carbon.	RC20AE250M	.10
R-18 & 21	330 ohm; 1/2 watt; carbon.	RC20AE331M	.10
R-20	10,000 ohm; 1/2 watt; carbon.	RC20AE103M	.10

MISCELLANEOUS MECHANICAL COMPONENTS

HALLICRAFTERS PART NUMBER	DESCRIPTION	QUANT. IN EQUIPMENT	LIST PRICE PER COMPONENT
15A049	Knob; for Volume Control and Band Selector switches.	2	.15
15A058	Knob; for C. W. PITCH Control.	1	.15
15A077	Knob; for BANDSPREAD TUNING and BANDSPREAD Tuning Controls.	1	.25
15A078	Pointer; for main tuning dial.	1	.15
82A102	Calibrated dial assembly, complete.	1	.15
82A103	Dial window; glass.	1	.30
22B157	Octal tube sockets; Amphenol type MIP-8.	6	.10
6A035	Dial lamp socket; bayonet.	1	.15
86A011	Tuning capacitor dial drive pulley.	2	.10
28A002	Tuning capacitor rear mounting bracket.	1	.10
67A358	Left hand switch mounting bracket.	1	.15
67B560	Right hand switch mounting bracket.	1	.10
67B561	Supplementing test for cabinet.	4	.10
16A007	Spring washers for grounding tuning capacitor drive shafts.	10	.10
4A043	"C" washers (hair-pin type).	4	.10
32C331	Rear cover plate; cardboard.	1	.10
63C220	Bottom cover plate; painted steel.	1	.45

NOTE: ALL PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.