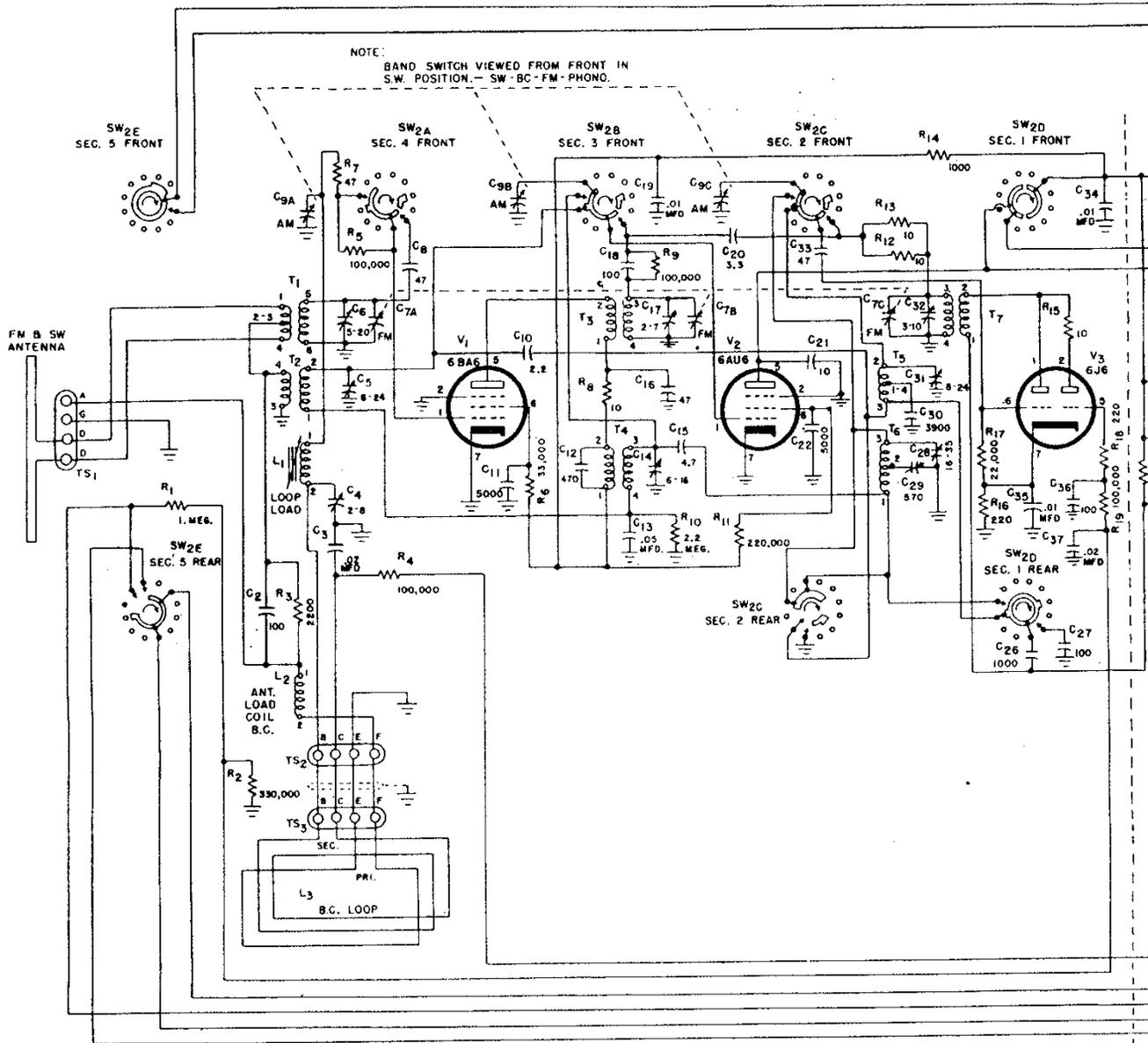
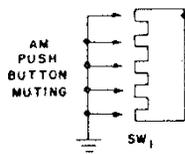


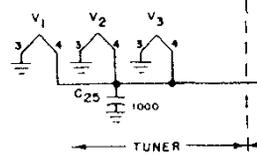
19-3530



NOTE:
BAND SWITCH VIEWED FROM FRONT IN
S.W. POSITION.— SW-BC-FM-PHONO.

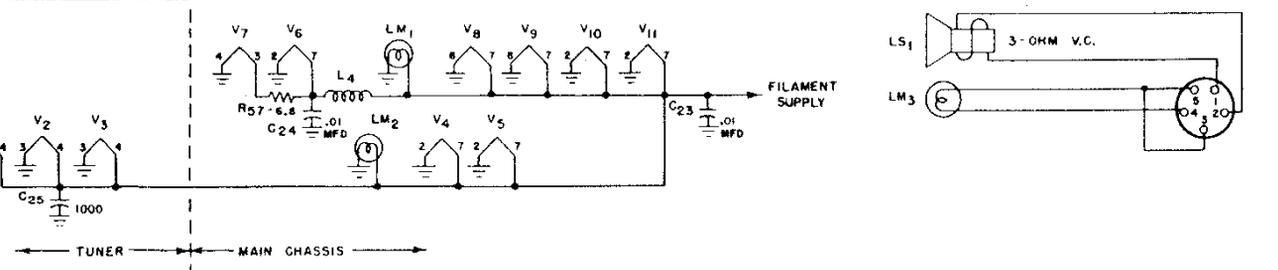
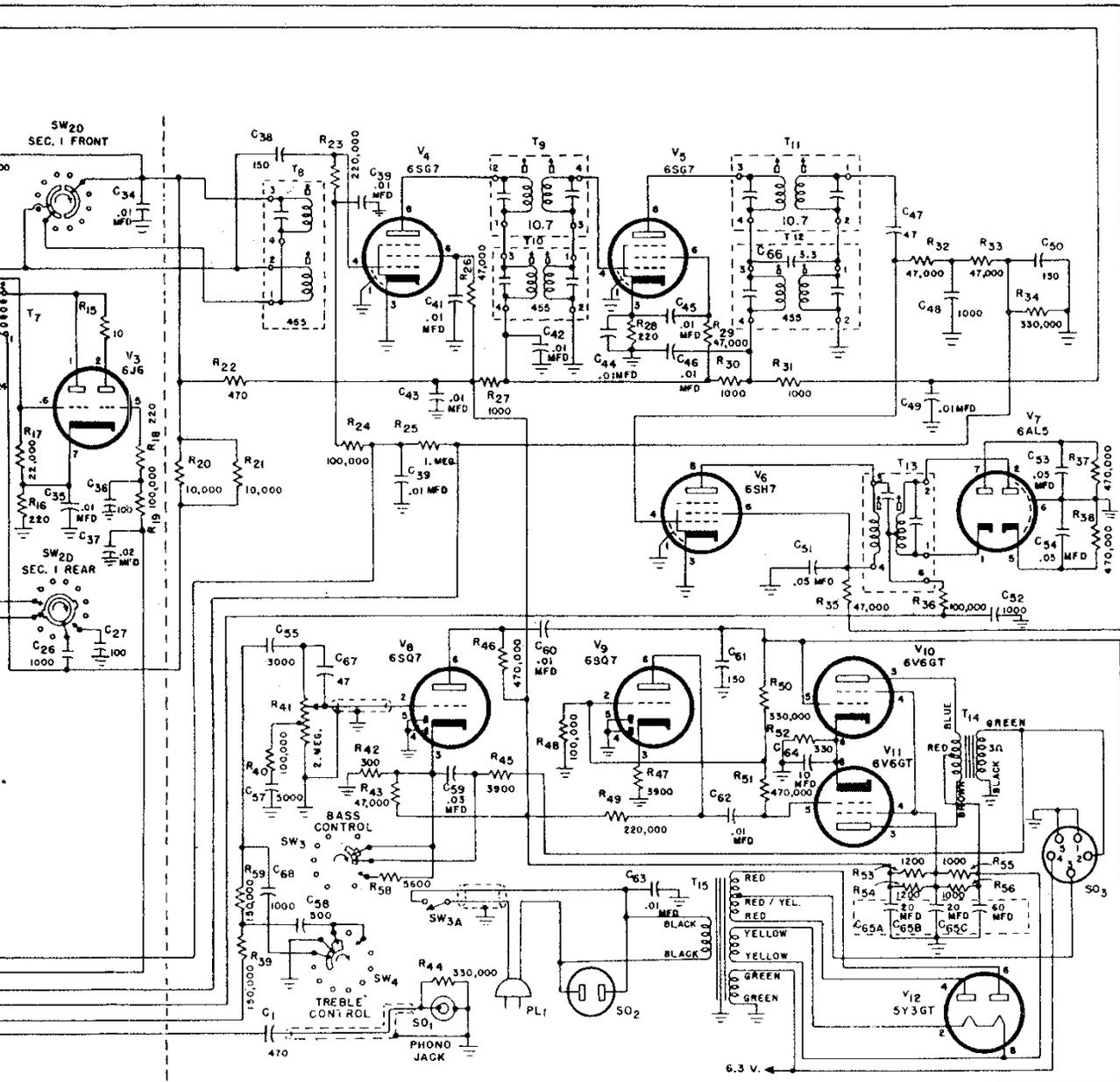


NOTE:
ALL RESISTOR VALUES ARE IN OHMS.
ALL CAPACITOR VALUES ARE IN MMF.
UNLESS OTHERWISE INDICATED.
SWITCHES SW-3 AND SW-4 VIEWED FROM
FRONT IN COUNTER CLOCKWISE POSITION.
LAST RESISTOR SYMBOL - R-59
LAST CAPACITOR SYMBOL - C-68



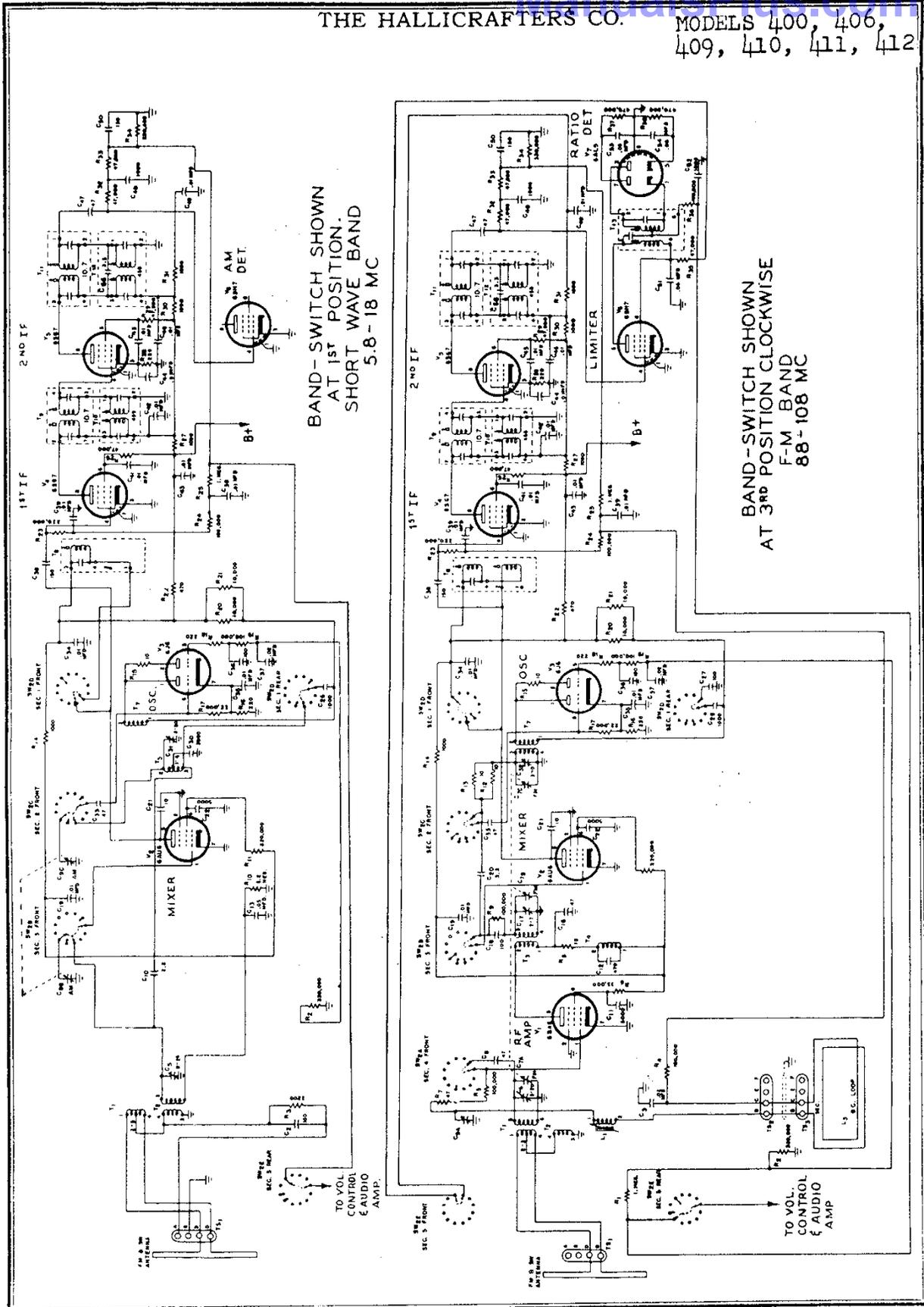
HALLICRAFTERS CO.

MODELS 400, 406, 409, 410, 411, 412

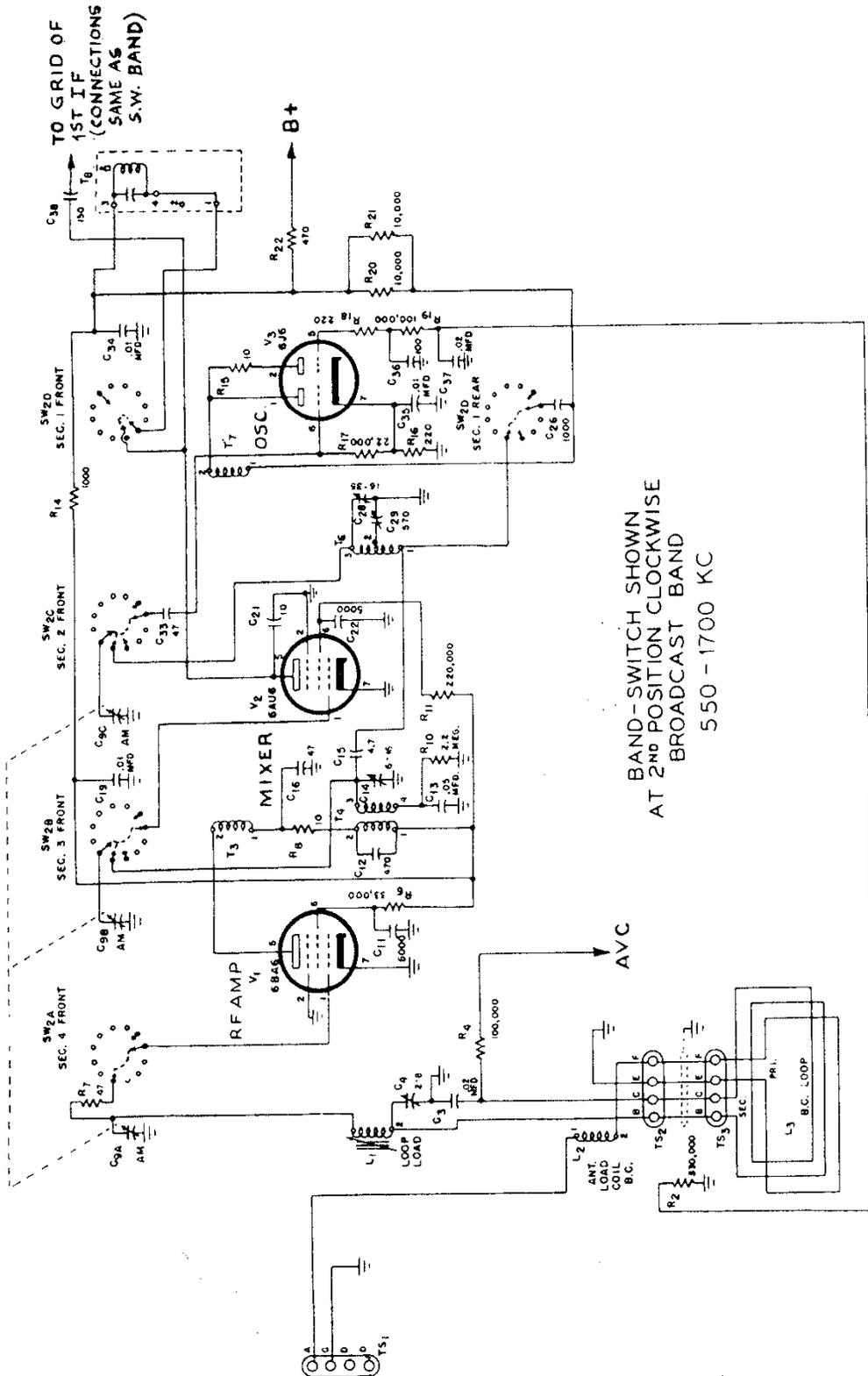


THE HALLICRAFTERS CO.

MODELS 400, 406,
409, 410, 411, 412



MODELS 400, 406,
409, 410, 411, 412



BAND-SWITCH SHOWN
AT 2ND POSITION CLOCKWISE
BROADCAST BAND
550 - 1700 KC

THE HALLICRAFTERS CO.

MODELS 400, 406,
409, 410, 411, 412

REPLACING DIAL AND PILOT LAMPS

Refer to Fig. 11 for location of the two dial lamps used in the receiver. To gain access to them, remove the dial escutcheon. The pilot lamp at the base of the cabinet is removed by slipping the socket assembly straight back a short distance releasing it from its mounting tongue. The defective lamp may now be brought out in the open for replacement. Replace all lamps with 6-8 volt Mazda #44 or equivalent.

ALIGNMENT PROCEDURE

Removal of the receiver chassis from the cabinet requires the use of other calibration means than the dial glass. Calibration strips mounted on the pointer rails are provided for alignment purposes.

To use these calibration strips, it is necessary to remove the dial plate (brown metal cover) in the following manner.

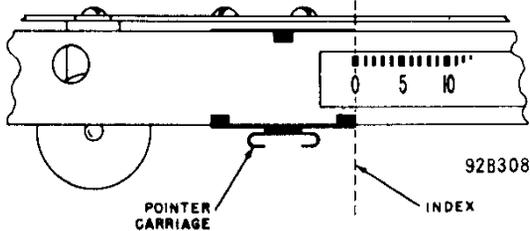
1. Remove dial pointers - Pull them straight out of their spring clips.
2. Remove the two dial lamp sockets.
3. Remove dial plate fastened to the chassis with seven sheet metal screws.

With the variable condensers fully meshed, the right hand side of the pointer carriage will be

indexed to zero on the calibration strips. Refer to Fig. 4.

The receiver is equipped with AUTOMATIC FREQUENCY CONTROL on the FM band to compensate for mechanical variations in the push-button mechanism. The correction factor is approximately 5 times: AFC takes hold 100 kc before the station frequency is reached and released before tuning 450kc passed the station frequency when receiving a 0.1 volt signal.

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



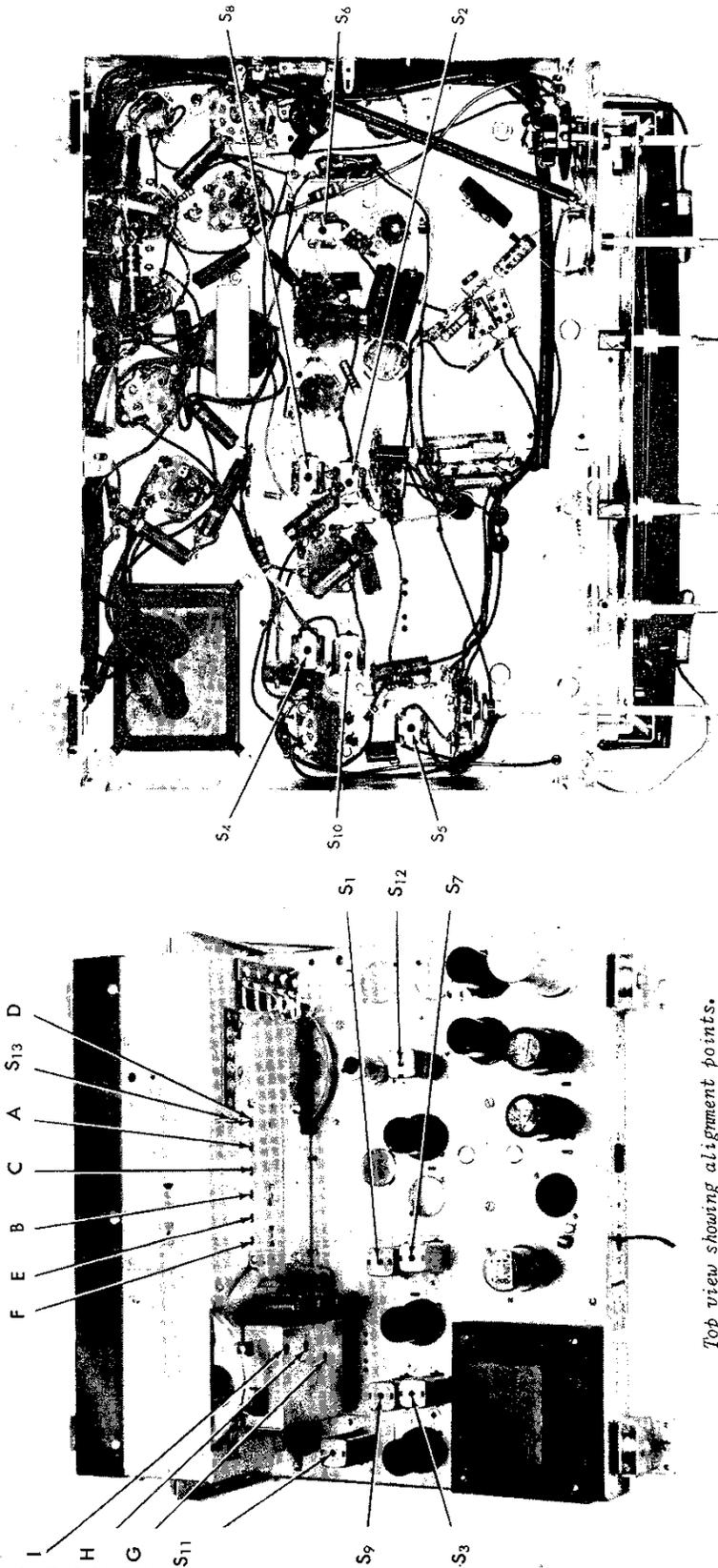
ALIGNMENT CHART

Step	Dummy Antenna	Signal Generator Coupling	Signal Generator Frequency	Band Switch Pos.	Radio Dial Setting	Cal. No.	Adjust	Remarks
1	0.01 mfd cap.	To stator plates of center section of AM tuning cap.	455 kc	"BC"	1000 kc	55	S1, S2, S3, S4, & S5	Adjust for max. output.
2	0.01 mfd cap.	To stator plates of center section of FM tuning cap	10.7 mc (No modulation)	"FM"	Mid-scale	55	S6, S7, S8, S9, S10, & S11	Adjust for max. AVC voltage as measured between pin #7 of 6AL5 and ground with a 20,000-ohm per volt meter.
3	0.01 mfd cap.	To stator plates of center section of FM tuning cap.	10.7 mc (No modulation)	"FM"	Mid-scale	55	S12	Adjust for zero voltage as measured between the junction of C55 and C68 ground with a 20,000-ohm per volt meter.
4	Std. RMA dummy.	To terminals "A" and "G" on ant. term. strip	1500 kc 600 kc	"BC" "BC"	1500 kc 600 kc	82 15.5	A*, B, & C D* & S13	Adjust for max. output
5	Std. RMA	To terminals "A" and "G" on ant. term. strip.	16 mc	"SW"	16 mc	84	E* & F	Adjust for max. output.
6	Two 150 ohm carbon resistors	To "D" terminals on ant. term. strip;	108 mc	"FM"	108 mc	83.5	G*, H & I	Adjust for max. limiter grid voltage as measured between the junction of R33 and R34 and ground with a 20,000-ohm per volt meter

* NOTE - Calibration adjustments.

MODELS 400, 406,
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Top view showing alignment points.

Bottom view showing alignment points.

GENERAL

- Tubes.....Eleven plus rectifier
- Speaker.....12-inch PM
- Voice Coil Impedance...3.2 ohms
- Antenna.....Built-in loop, "AM"
Built-in dipole, "FM"
and shortwave. Pro-
visions for external
antennas.
- Tuning.....Manual and mechani-
cal push-buttons;
five P.B. for "AM",
five P.B. for "FM".

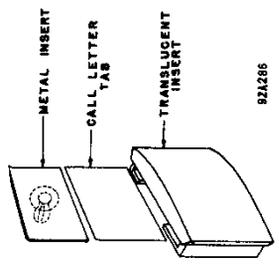
- Tuning Range.....Band -
BC 550 kc - 1700 kc.
SW 5.8 mc - 18 mc.
FM 88 mc - 108 mc.
- Intermediate Frequency...455 kc/10.7 mc.
- Power Supply.....105-125 V. 60
cycles AC.
- Power Consumption.....120 Watts (140 watts
with changer).

THE HALLICRAFTERS CO.

MODELS 400, 406, 409, 410, 411, 412

3. Insert screw driver blade through large hole of pushbutton into slot of locking screw
4. Loosen locking screw about one-half turn (Not more than one full turn.)
5. With pushbutton depressed, carefully tune in desired station with the manual control and tighten the locking screw.
6. Replace the translucent insert with the proper station call letters inserted.

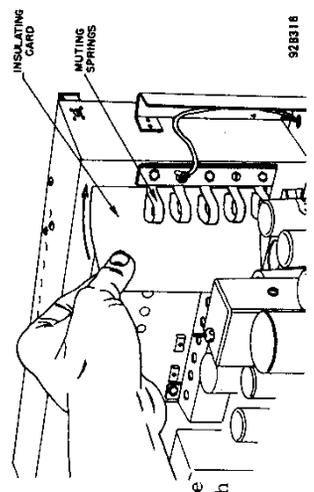
INSERTING CALL LETTERS



924286

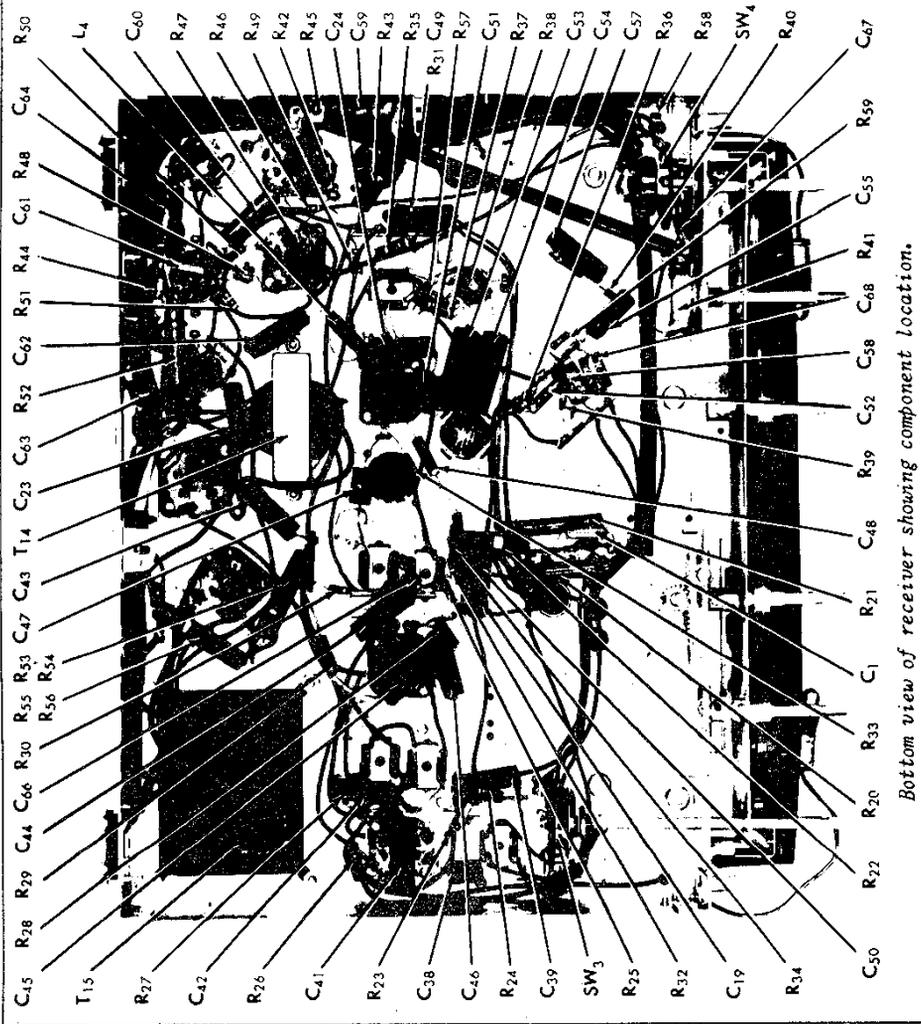
1. Slide out metal insert from translucent insert assembly. (See Fig. 2.)
2. Insert desired call letter tab.
3. Replace metal insert behind call letter tab.
4. Replace translucent insert assembly into pushbutton mechanism.

Fig. 2. View showing call letter installation.



928316

Insulating the mating switch contacts.

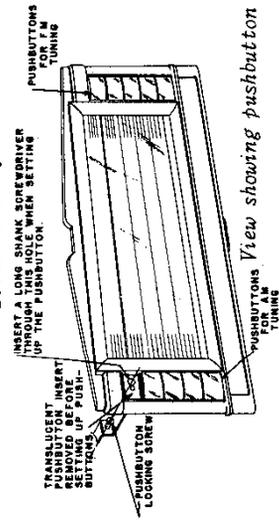


Bottom view of receiver showing component location.

BUTTON SETTING

Insulate the muting switch contacts before setting the left hand group of AM push buttons.

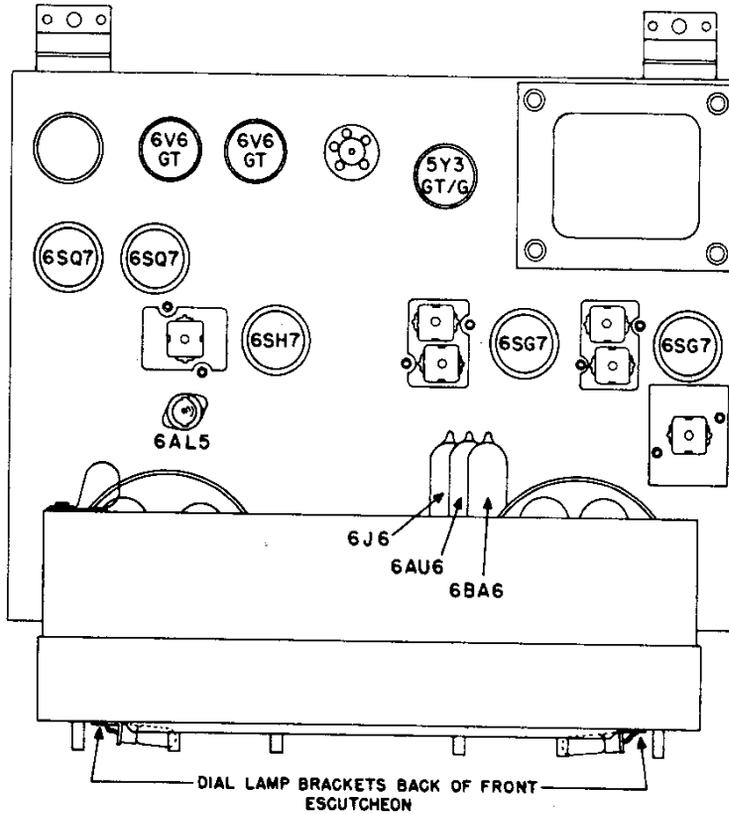
1. Select any one pushbutton.



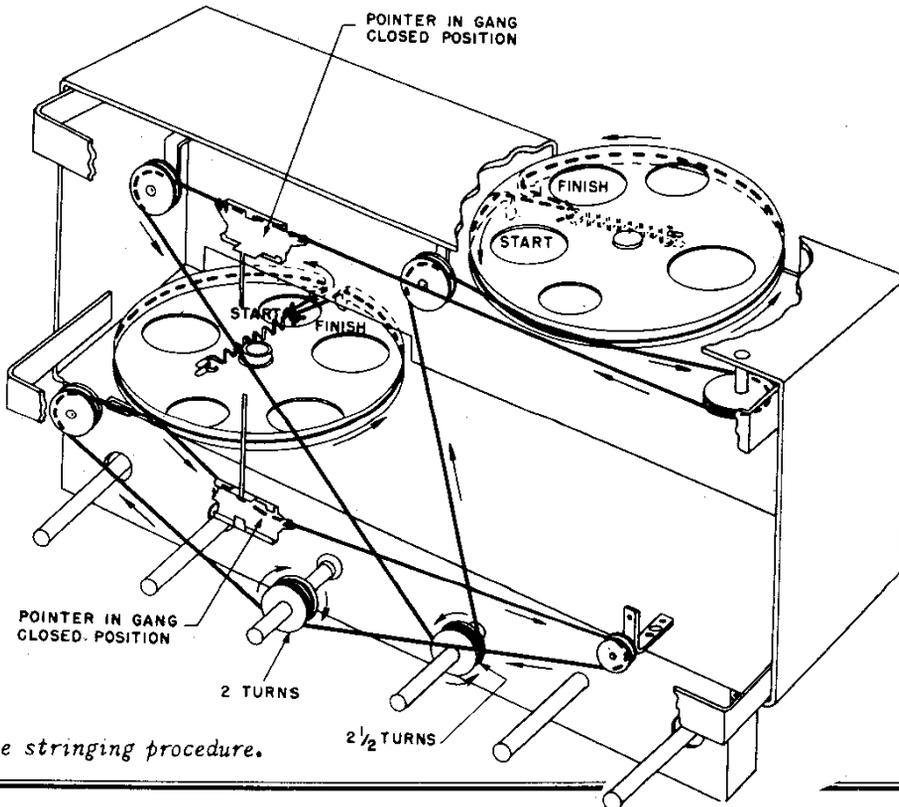
View showing pushbutton setup.

MODELS 400, 406,
409, 410, 411, 412

THE HALLICRAFTERS CO.

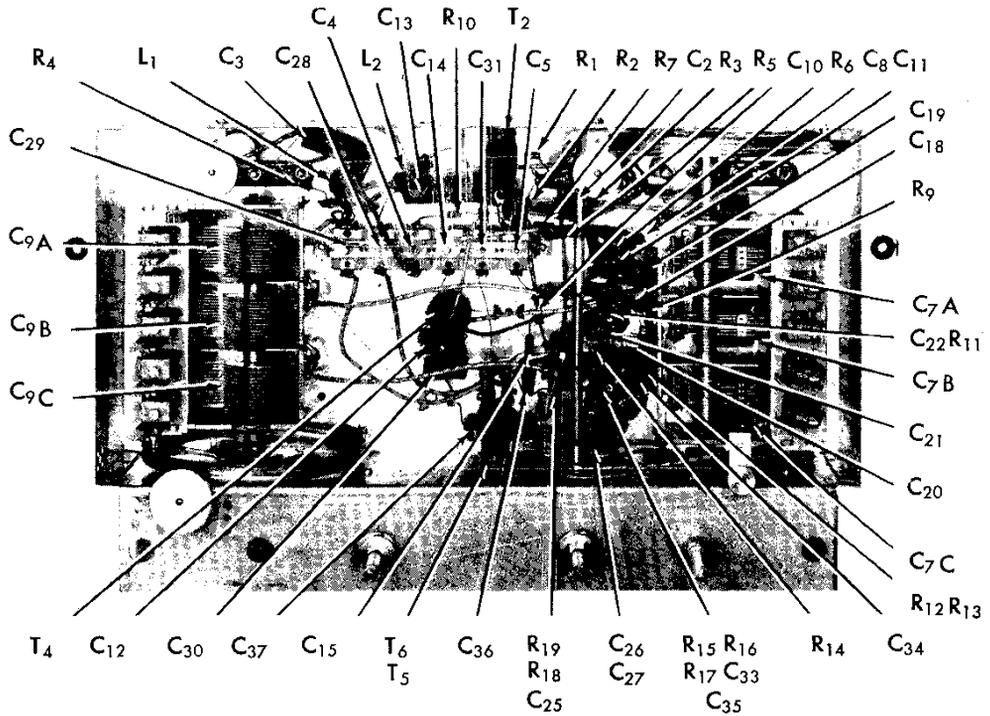


Top view showing location of tubes and dial lamps.

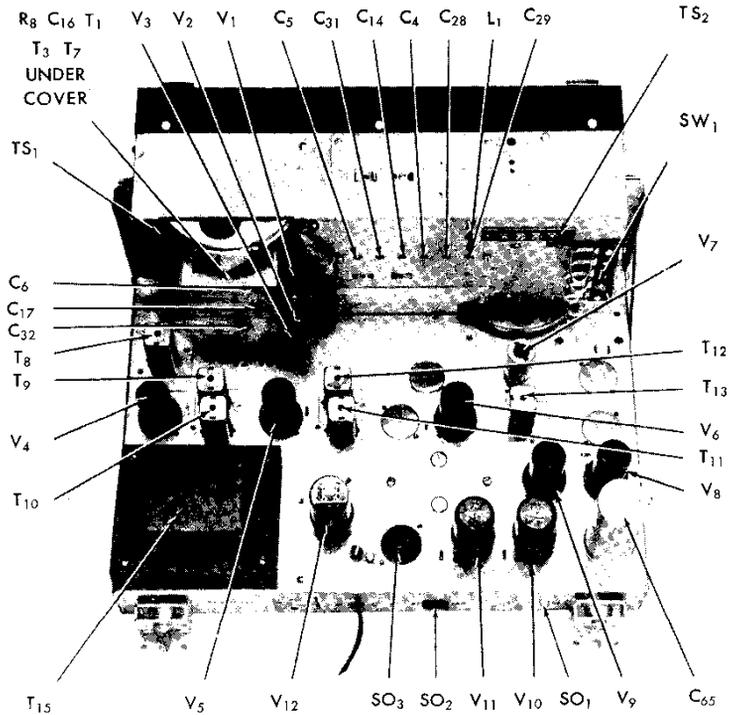


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MODELS 400, 406,
 409, 410, 411, 412



Front view of R.F. chassis showing component location.



Top view showing component location.

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MODELS 400, 406,
409, 410, 411, 412

SERVICE PARTS LIST

Ref. No.	Description	Hallcrafters Part No.
CONDENSERS		
C-1	470 mmf. 500 V., mica	CM20A471M
C-2,36	100 mmf. 500 V., mica	CM20A101M
C-3,37	.02 mfd. 600 V., tubular paper	46AY203F
C-4,5,14,28,29,31	Trimmer assembly	44B34B
C-6	Trimmer, FM, ant. stage	44A194
C-7	Tuning condenser, FM	48C175
C-8,33	47 mmf. 500 V., ceramic	47A150
C-9	Tuning condenser, AM	49C176
C-10	2.2 mmf., ceramic	47A160-4
C-11,22	5000 mmf. 500 V., ceramic	47A148
C-12	470 mmf. 500 V., mica	CM20A471K
C-13,51,53,54	.05 mfd. 600 V., tubular paper	46AY503F
C-15	4.7 mmf., ceramic	47A160-6
C-16,47, 67	47 mmf. 500 V., mica	CM20A470M
C-17	Trimmer, FM, mixer stage	44A192
C-18,27	100 mmf. 500 V., ceramic	47A055
C-19,23,24,34,39,40,41,42,43,44,45,46,49,60,62	.01 mfd. 600 V., tubular paper	46AZ103F
C-20,66	3.3 mmf., ceramic	47A160-5
C-21	10 mmf. 500 V., ceramic	47A149
C-25,26,48,52	1000 mmf. 500 V., ceramic	47A148
C-30	3900 mmf. 500 V., mica	CM35A392J
C-32	Trimmer, FM, osc. stage	44A218
C-35	.008 mfd. 150 V., ceramic	47B32802M1
C-38,50, 61	150 mmf. 500 V., mica	CM20A151M
C-55	.003 mfd. 600 V., tubular paper	46AZ302J
C-57	.005 mfd. 600 V., tubular paper	46AZ502J
C-58	500 mmf. 350 V., ceramic	47A147
C-59	.03 mfd. 200 V., tubular paper	46AU303J
C-63	.01 mfd. 600 V., molded paper	46AG103J
C-64	10 mfd. 25 V., electrolytic	45A121
C-65	60-20 mfd. 450 V., 20 mfd. 400 V., electrolytic	45B113
C-68	1000 mmf. 500V., mica	CM20A102M
RESISTORS		
R-1,25	1 megohm $\frac{1}{2}$ watt, carbon	RC20AE105M
R-2,34,44	330,000 ohms $\frac{1}{2}$ watt, carbon	RC20AE334M
R-3	2200 ohms $\frac{1}{2}$ watt, carbon	RC20AE222M
R-4,5,9,19,24,36,40	100,000 ohms $\frac{1}{2}$ watt, carbon	RC20AE104M
R-6	33,000 ohms 1 watt, carbon	RC30AE333M
R-7	47 ohms $\frac{1}{2}$ watt, carbon	RC20AE470M
R-8,12,13,15	10 ohms $\frac{1}{2}$ watt, carbon	RC20AE100M
R-10	2.2 megohms $\frac{1}{2}$ watt, carbon	RC20AE225M
R-11,23,49	220,000 ohms $\frac{1}{2}$ watt, carbon	RC20AE224M
R-14,27,30,31	1000 ohms $\frac{1}{2}$ watt, carbon	RC20AE102M
R-16,18,28	220 ohms $\frac{1}{2}$ watt, carbon	RC20AE221M
R-17	22,000 ohms $\frac{1}{2}$ watt, carbon	RC20AE223M
R-20,21	10,000 ohms 2 watts, carbon	RC40AE103M
R-22	470 ohms 1 watt, carbon	RC30AE471M
R-26,29,35	47,000 ohms 1 watt, carbon	RC30AE473M
R-32,33	47,000 ohms $\frac{1}{2}$ watt, carbon	RC20AE473M
R-37,38,51	470,000 ohms $\frac{1}{2}$ watt, carbon	RC20AE474K
R-39,59	150,000 ohms $\frac{1}{2}$ watt, carbon	RC20AE154M
R-41	Resistor, variable, 2 megohms (tapped)	25B622
R-42	300 ohms $\frac{1}{2}$ watt, carbon	RC20AE301J
R-43	47,000 ohms 2 watts, carbon	RC40AE473K
R-45,47	3900 ohms $\frac{1}{2}$ watt, carbon	RC20AE392K
R-46	470,000 ohms $\frac{1}{2}$ watt, carbon	RC20AE474M
R-46	10,000 ohms $\frac{1}{2}$ watt, carbon	RC20AE104K
R-50	330,000 ohms $\frac{1}{2}$ watt, carbon	RC20AE334K
R-52	330 ohms 2 watts, carbon	RC40AE331M
R-53,54	1200 ohms 2 watts, WW	24BV122E
R-55,56	1000 ohms 2 watts, WW	24BV102E
R-57	6.8 ohms $\frac{1}{2}$ watt, carbon	RC30AE068K
R-58	5600 ohms $\frac{1}{2}$ watt, carbon	RC20AE562K
TRANSFORMERS AND COILS		
T-1	Transformer, FM, antenna stage	51B916
T-2	Transformer, SW, antenna stage	51B993
T-3	Transformer, FM, mixer stage	51B915
T-4	Transformer, BC, mixer stage	51B910
T-5	Transformer, SW, osc. stage	51B908
T-6	Transformer, BC, osc. stage	51B911
T-7	Transformer, FM, osc. stage	51B914
T-8	Transformer, 1st I.F.	50C298
T-9,11	Transformer, FM, interstage I.F.	50C237
T-10	Transformer, AM, interstage I.F.	50C236
T-12	Transformer, AM, detector stage	50C235
T-13	Transformer, FM, detector stage I.F.	50C263

SERVICE PARTS LIST

Ref. No.	Description	Hallcrafters Part No.
TRANSFORMERS AND COILS (Continued)		
T-14	Transformer, audio output	55B105
T-15	Transformer, power	52C153
L-1	Coil, loop loading	51B907
L-2	Coil, antenna loading	51B994
L-3	Loop antenna (Models 400,406,409)	57C114
L-3	Loop antenna (Models 410,411,412)	57C116
L-4	Coil, R.F. choke	53B009
SWITCHES		
SW-1	Switch, muting	18A092
SW-2	Band switch assembly	60C308
SW-3	Switch, power and bass tone cont.	60B265
SW-4	Switch, treble tone control	60B325
PLUGS AND SOCKETS		
PL-1	Line cord and plug	87B1625
SO-1	Receptacle, phono pickup	36A034
SO-2	Receptacle, phono motor	10A015
SO-3	Socket, speaker (5 pin)	6A277
-	Socket, octal (tube)	6A190
-	Socket, octal (6V6GT tubes)	6A296
-	Socket, miniature (tube)	6A276
-	Socket & bracket, dial light, L.H.	86A046
-	Socket & bracket, dial light, R.H.	86A047
-	Socket, cabinet pilot light	86B050-2
TUBES, RECTIFIERS AND LAMPS		
V-1	Type 6BA6, antenna	90X6BA6
V-2	Type 6AU6, mixer	90X6AU6
V-3	Type 6J6, osc.	90X6J6
V-4,5	Type 6SG7, 1st & 2nd I.F.	90X6SG7
V-6	Type 6SH7, FM limiter, AM detector	90X6SH7
V-7	Type 6AL5, FM detector	90X6AL5
V-8,9	Type 6SQ7, audio amp.	90X6SQ7
V-10,11	Type 6V6GT/6, power amp.	90X6V6GT/6
V-12	Type 5Y3GT, rectifier	90X5Y3GT
LM-1,2,3	Lamp, 6-B V., 250 MA., G.E. #44	39A003
MISCELLANEOUS		
	Shield, tube base (miniature tube)	69A169
	Shield, tube (miniature tube)	69A104
	Spring, tube retainer	75A076
	Shield, dial light	86A037
	Shield, pilot light	69A197
	Shield, FM coil section	69C172
	Carriage, pointer	67B645
	Pointer, FM	82A145
	Pointer, AM	82A146
	Spring, pointer	75A132
	Push-button (brown)	17B028
	Insert, push-button, lucite	17A027
	Insert, push-button, metal	17A029
	Call letters	17A025
	Spring, dial drive	75A006
	Cord, dial drive	38A017
	Plate, dial drive cover	83A300
	Escutcheon (Models 409,410)	70C39
	Escutcheon (Models 400, 406,411, 412)	70D39-2
	Dial glass, upper	22D195
	Dial glass, lower	22B207
	Clips, dial glass	76A331
	Knob, power switch & tone control (Models 400,406,411,412)	15B96-1
	Knob, power switch & tone control (Models 409,410)	15B096
	Knob, tuning & volume controls (Models 400, 406,411,412)	15B095-2
	Knob, tuning & volume controls (Models 409,410)	15B093
	Knob, & pin ass'y bandswitch (Models 400,406,411,412)	15A136
	Knob & pin ass'y, bandswitch (Models 409,410)	15A129
	Terminal strip, antenna	88A277
	Terminal strip, loop	88A278
	Transmission line, loop	87A1615-1
	FM folded doublet	57C108-1
	Jewel, pilot lamp	86A057
	Bracket, pilot lamp	67A765
	Speaker assembly	85C069
	Record changer	115C017