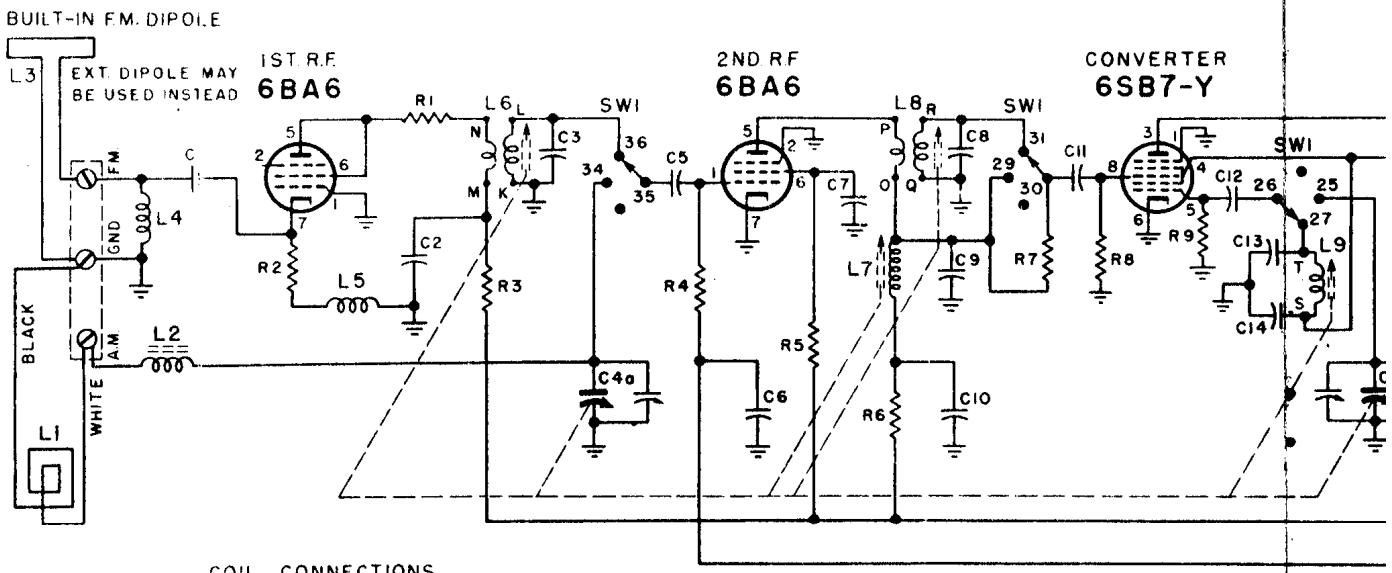
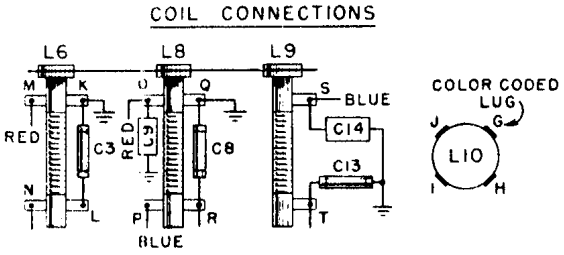
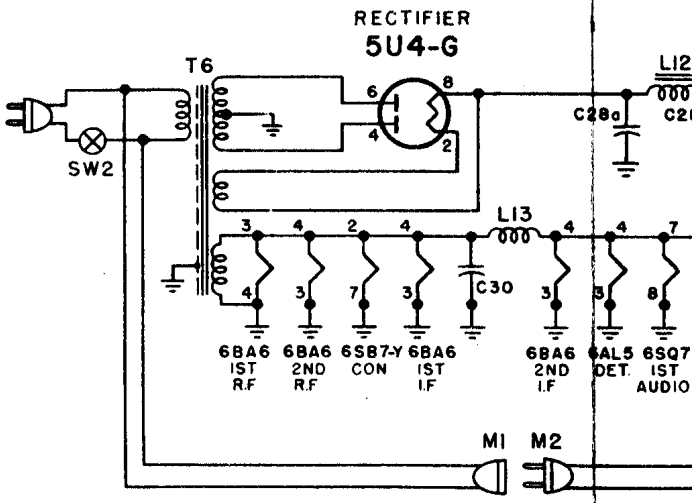
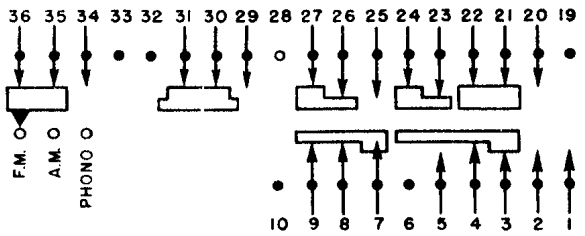
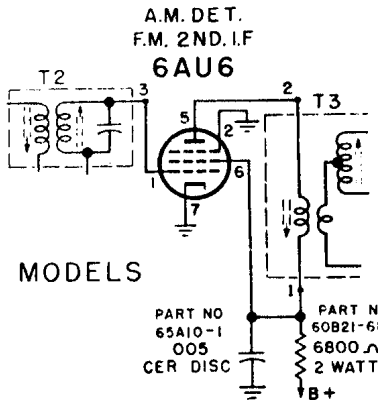










EARLY MODELS

Early models used a 6AU6 tube for the AM detector FM 2nd I.F. in place of the 6BA6 tube shown in the schematic. Connections of the 6AU6 tube are shown above.

CAUTION: The two tubes are not interchangeable.

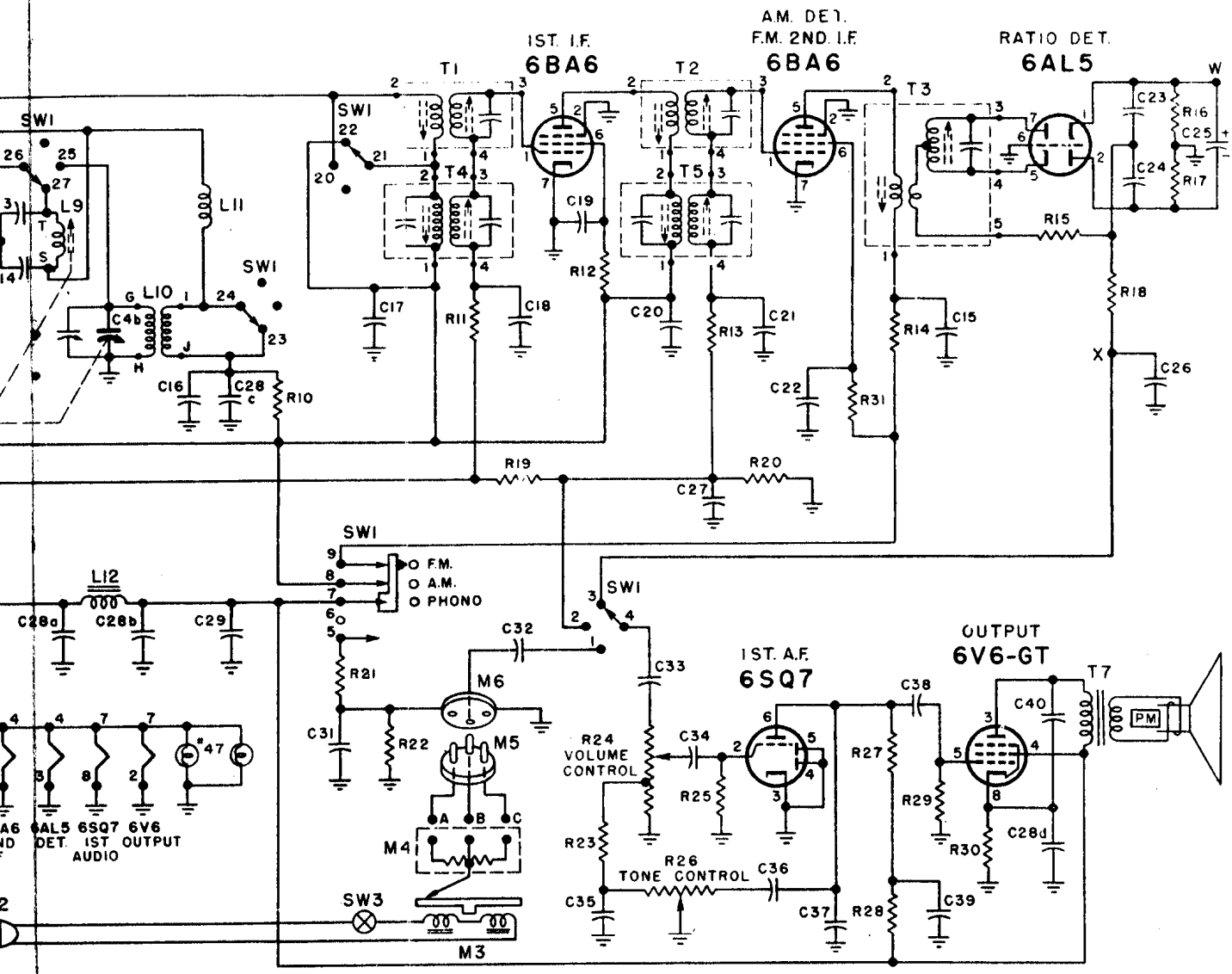
FM SERVICE

il characteristics of a ground connections l as originally made in rtain circuits, the type ritical at the high FM ıg condensers it is im- ed with condensers of ɔlerances, temperature . For example: C3 is ɛmperature coefficient, ctive it should be re- 2%, zero temperature ɔr.

service necessary for AM receivers such as voltage analysis, parts replacement, etc. The chief differences arise because of the considerably higher frequencies used in FM operation, and because of the different type of second detector needed in FM.

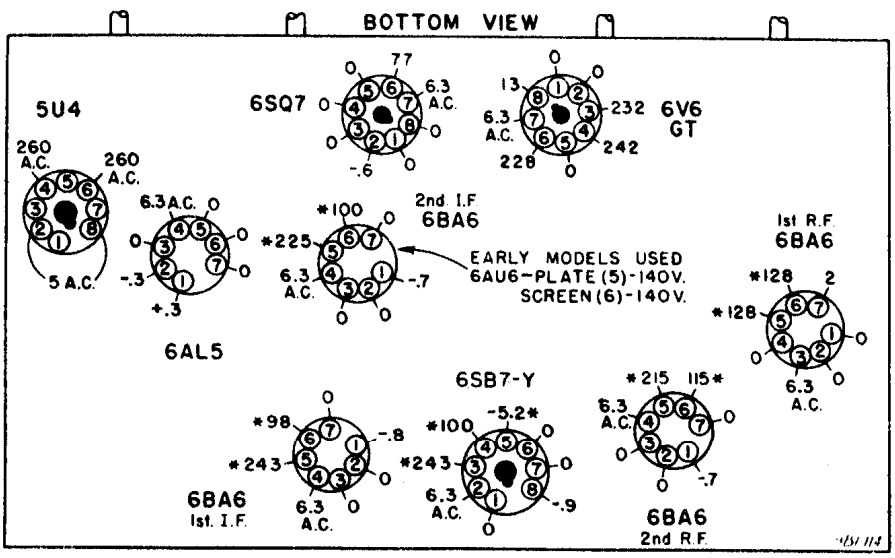
The higher frequencies involved means that more care must be exercised in location and length of leads. Leads tend to act as small inductances or

preciably alter the electrica circuit. For this reason, should always be maintaine the set. Also note that in ce by-pass condenser used is c frequencies. When replacin portant that they be replac identical capacity values, tc coefficients and construction a 22 mmfd ± 2%, zero te ceramic capacitor. If defe placed with a 22 mmfd ± coefficient, ceramic capacito



VOLTAGE CHART

- Line Voltage 117.
- Voltages measured with a vacuum tube voltmeter. Many readings will be lower if measured with a 1000 ohm-per-volt meter.
- Voltages read between socket terminals and ground, unless otherwise indicated.
- Band switch in FM position.
- Dial turned to low frequency end.
- Volume Control—minimum.



*If voltages are measured with band switch in phono position, reading will be zero or practically zero.

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RECORD CHANGERS: Admiral Model RC-170A, RCD.CH. 16-
Admiral Model RC-181, RCD.CH. 18-

9B1 CIRCUIT DESCRIPTION

Two stages of RF amplification using 6BA6 tubes are used for FM. For AM sufficient gain is obtained by using one RF stage only and so the input is to the 2nd 6BA6 RF tube.

The band switch short circuits the 1st I.F. FM primary when in the AM position and short circuits the 1st I.F. AM primary when in the FM position.

A 6BA6 tube is used in a second stage of I.F. amplification for FM operation. Self-bias is developed in the grid resistor (R13 and R20 in series) of this stage. Since this DC bias voltage is dependent on signal strength, it is used for AVC purposes. In the AM setting of the band switch, plate and screen voltages are removed from this tube. The grid and cathode then function as an AM second detector (diode) and AVC tube in a conventional manner. (In early models a 6AU6 tube was used in place of this 6BA6 tube.)

Ratio Detector and Grounded-Grid RF Amplifier

The ratio detector circuit and grounded-grid 1st RF amplifier are the same as used in the 9A1 chassis. Reference can be made to the 9A1 service manual for description of these circuits.

ALIGNMENT PROCEDURE

FM ALIGNMENT

The model 9B1 chassis should be aligned only with an AM signal generator and a vacuum tube voltmeter. Any standard brand vacuum tube voltmeter with a DC scale of not over 5 volts is suitable. A 3-volt zero center scale is desirable. A signal generator with a frequency range up to 110 MC. is desirable. It is possible however, to align the receiver with a signal generator going to 20 or 30 megacycles, by using the harmonics of these lower frequencies. To do this merely set the signal generator dial as follows and align exactly as explained in the alignment instructions.

Where alignment chart specifies 109 *MC.*, set signal generator to highest available frequency of the following:

109. MC	27.25 MC
54.50 MC	21.80 MC
36.33 MC	18.17 MC

Where alignment chart specifies 104 *MC.*, set signal generator to highest available frequency of the following:

104. MC	26.00 MC
52.00 MC	20.80 MC
34.67 MC	17.33 MC

Signal generators which do not tune to 110 MC or whose harmonics are not strong enough, cannot be used for FM alignment.

In FM alignment, it is essential that every step be followed. Especially important is picking the center of the I.F. curve (step 4 in the FM-I.F. alignment instructions). During this portion of the alignment it is necessary to tune the signal generator very carefully; it may necessitate having to estimate the dial readings to a tenth of a division.

POINTER SETTING

With the gang open, the pointer should be at the position as shown in the stringing diagram (Fig. 4), that is, the tip of the pointer should point to the space between the "AM KC" lettering on the dial scale. If the pointer is in a different position, move it by hand while keeping the gang open.

TRIMMER IDENTIFICATION CHART

Trimmer Symbol		Function
A	T3	Discriminator transformer
B	T2	2nd IF transformer (FM)
C	T2	2nd IF transformer (FM)
D	T1	1st IF transformer (FM)
E	T1	1st IF transformer (FM)
F	T3	Discriminator transformer
G	L9	FM oscillator coil
H	L8	FM 2nd RF coil
I	L6	FM 1st RF coil
J	T5	2nd IF transformer (AM)
K	T5	2nd IF transformer (AM)
L	T4	1st IF transformer (AM)
M	T4	1st IF transformer (AM)
N	C4b	AM oscillator trimmer
O	L7	AM RF coil
P	C4a	AM antenna trimmer

REPLACING TUNING SLUGS

With the gang wide open, all three FM tuning slugs should be ⅜ inch out of their coil forms. The AM-RF tuning slug (adjustment "0" in the trimmer location diagram) should be 1 inch out of its coil form.

If it becomes necessary to change a tuning slug, proceed as follows: Set the gang to its wide open position. Unsolder and remove the old slug. Set the slug adjusting screw about half way down. Place the new slug in its correct position. Solder in place making sure that it does not slip during the operation and that the slug wire is straight.

Realignment is necessary after slug replacement.

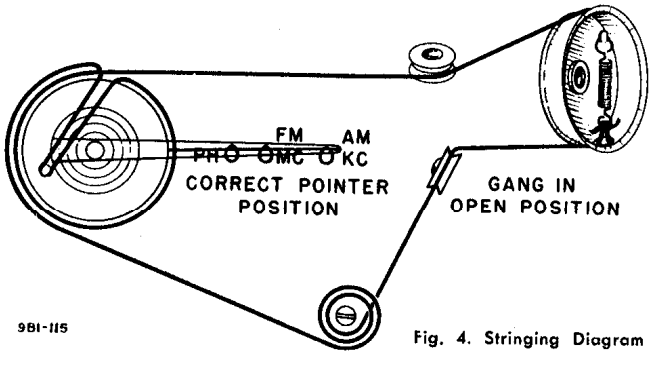

Fig. 4. Stringing Diagram

MODELS 9B14, 9B15, 9B16, CHASSIS 9B1

ADMIRAL CORPORATION

IMPORTANT PRELIMINARY ALIGNMENT STEPS

With the gang open, the pointer should be at the position as shown in the stringing diagram, that is, the tip of the pointer should point to the space between the "AM KC" lettering on the dial scale. If the pointer is in a different position, move it by hand while keeping the gang open.

Check the set screws that hold the tuning drum to the shaft to see that they are tight and that the drum has not slipped on the shaft. The correct position of the drum can be seen in the stringing diagram.

With the gang wide open, all FM tuning slugs should be ⅜ inch out of their coil forms. The AM-RF tuning slug (adjustment "O" in the trimmer location diagram) should be 1 inch out of its coil form. If there is any serious deviation, or if there has been any tampering, turn the adjusting screw until this distance is corrected. (See paragraph on tuning slug replacement.)

FM I.F. AND RATIO DETECTOR ALIGNMENT

Solder output indicator leads in place and keep them well separated from signal generator leads and chassis wiring.

Band switch in FM position (red signal at MC on dial).

While peaking IF's, keep reducing signal generator output so VTVM reading is approximately +1.5 volts DC with exception of Step #5.

Speaker must be connected during alignment.

FM antenna disconnected during alignment.

I.F. SLUG INFORMATION

To avoid splitting the slotted head of the powdered iron core tuning slug in the I.F. transformers, use a screw-driver with a blade ⅛" wide for I.F. alignment.

Under normal operating conditions, mis-alignment of slug-tuned circuits with age is slight. Therefore, re-alignment of the I.F. transformers should be accomplished by only a slight adjustment of the slugs.

Before proceeding, be sure to follow all steps listed above, under "Important Preliminary Alignment Steps." Steps 1 and 2 may be omitted if set is not badly out of alignment so signal comes through in Step 3.

	Connect Signal Generator	Generator Frequency	Receiver Dial Setting	Output Indicator and Special Connections	Adjust as Follows (very carefully)
1	Thru .01 cond. to 2nd IF grid (Pin #1 of 2nd IF)	10.7 MC unmodulated.	Tuning gang wide open	Connect 3300 ohm carbon resistors across secondaries of both FM-IF transformers. Connect VTVM (DC probe) from point "W" to ground. (See Fig. 11.)	"A" (ratio detector primary) for maximum reading on VTVM.
2	Thru .01 cond. to 1st IF grid (Pin #1 of 6BA6 1st IF)	"	"	" "	Iron cores "B" and "C" (2nd IF trans.) for maximum reading on VTVM.
3	To pin # 1 of 6BA6 2nd R.F. amplifier**	"	"	" " If not enough IF signal comes thru during this step, ground pin #5 on the 6SB7-Y. Leave generator set at 10.7 MC until step 4c.	Iron cores "D" and "E" for maximum on VTVM. Readjust A, B, C, D, E, for maximum. (Keep reducing generator output to keep VTVM at 1.5 volts).
4	"	a. Remove 3300 ohm resistors from IF transformers. b. Reduce output of signal generator until VTVM reads **exactly** +1.5 volts DC. c. Tune generator frequency above 10.7 MC until VTVM reads **exactly** +1.0 volt. Note **exact** generator frequency. Extreme care in reading this is essential. d. Tune generator frequency below 10.7 MC until VTVM reads **exactly** +1.0 volt. Note **exact** generator frequency. Extreme care in reading this is essential. e. Add generator frequency in step c to generator frequency in step d and divide by 2. The result is the center frequency of the IF curve to be used in step 5. See example on next page. f. Tune generator frequency above and below 10.7 MC and note voltage reading on VTVM at different frequency points until you have a good impression of the shape of the selectivity curve. If you have two peaks as in Figures 9 or 10, note readings (voltage) of both peaks. If one peak is over 20% higher than the other one, it will be necessary to realign IF's. A selectivity curve that would require realignment is illustrated by Figure 10.			
5	"	Center of IF selectivity curve per step 4e above. See "EXAMPLE" on next page.	Set pointer to upper limit on dial.	Connect VTVM (DC probe) from point "X" to ground. (See Fig. 11.)	Iron core "F" (ratio detector secondary) for zero voltage reading on VTVM. (The correct zero point is located between a positive and a negative maximum.)

If any adjustments were very far off, it is desirable to repeat steps 3, 4 and 5.

**Do not feed I.F. signal into converter grid as this will cause mis-alignment.

SETTING SIGNAL GENERATOR TO CENTER OF I.F. SELECTIVITY CURVE

CAUTION: Due to the difficulty of setting a signal generator to the accuracy required by this operation, extreme care must be exercised in making each setting. Otherwise, improper alignment of the ratio detector and consequent audio distortion will result.

EXAMPLE: (See Figures 5 and 6)

Voltage reading in Step 4b is + 1.5 volts.

Generator frequency on low side of 10.7 MC for a reading of + 1 volt DC = 10.640 MC.

Generator frequency on high side of 10.7 MC for a reading of + 1 volt DC = 10.800 MC.

Center frequency is obtained by adding 10.640 and 10.800, then dividing by 2. For these readings it will be 10.72 MC.

Set generator frequency to 10.72 MC as this is center of selectivity curve as shown in Figure 6.

Note: Numerical vernier dial readings may be used instead of MC.

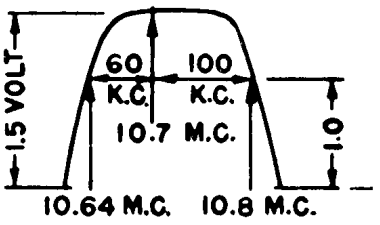

Fig. 5

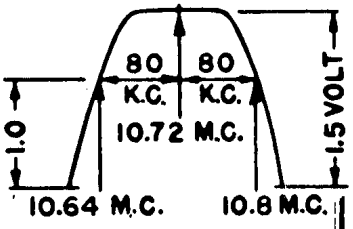

Fig. 6

TYPICAL SELECTIVITY CURVES

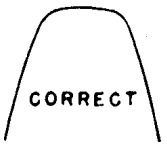

Fig. 7.

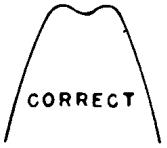

Fig. 8.

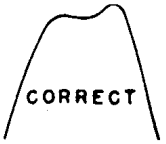

Fig. 9.

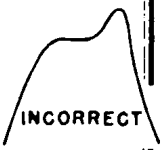

Fig. 10.

FM RF ALIGNMENT PROCEDURE

	Connect Signal Generator	Generator Frequency	Receiver Dial Setting	Output Indicator and Connections	Adjust as Follows
6	Thru 250 ohms to FM ant. terminal.	109 MC† (unmodulated).	Tuning gang wide open	Connect VTVM (DC probe) from point "W" to ground.	*G for maximum VTVM reading.
7	"	104 MC† (unmodulated).	104 MC	"	*Tune in generator signal on receiver. Adjust H and I for max. VTVM reading.

* It is advisable to adjust generator output so VTVM readings do not exceed approximately + 1.5 V. DC after peaking.
† If your signal generator does not reach this frequency, use harmonics as described in "FM Alignment"

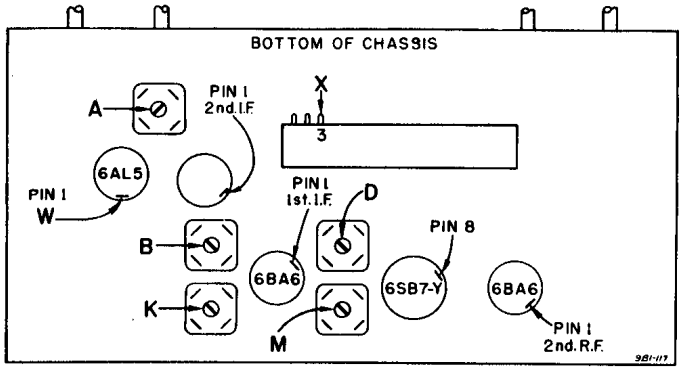

Fig. 11. Bottom Trimmer Location

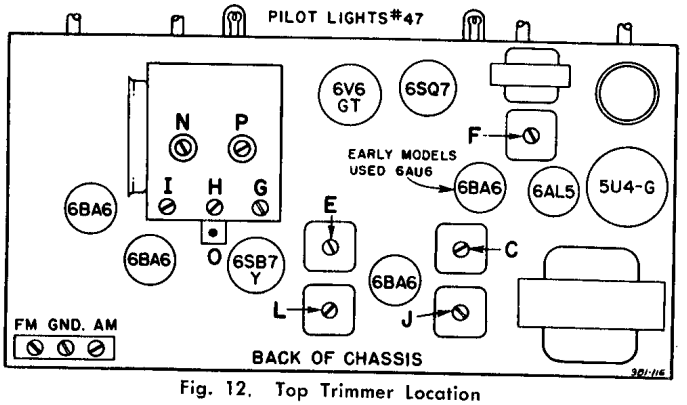

Fig. 12. Top Trimmer Location

AM ALIGNMENT PROCEDURE

- Use regular output meter connected across voice coil.
- Be sure both the set and the signal generator are thoroughly warmed up before starting alignment.
- Turn receiver Volume Control full on.
- Use lowest output setting of signal generator that gives a satisfactory reading on meter.

	Connect Signal Generator	Dummy Antenna Between Radio and Signal Generator	Signal Generator Frequency	Receiver Dial Setting	Adj. Trimmers in Following Order to Max.
	Set Band Switch to Broadcast Position (center) and be sure to follow instructions under heading "Important Preliminary Alignment Steps." Loop antenna can be disconnected from chassis in Steps 1, 2 and 3.				
1	6SB7-Y (Pin #8)	.1 MFD	455 KC	Tuning gang wide open	J, K, L, M
2	To loop ant. terminal	Direct connection	1620 KC	Tuning gang wide open	N
3	To loop ant. terminal	Direct connection	1400 KC	Tune in signal	O
	Set Receiver Chassis on table next to back of cabinet. Connect Loop Antenna to Receiver.				
4	To loop ant. terminal	10 MMFD (Or wrap several turns of generator lead around white loop lead.)	1400 KC	Tune in signal	P

RESISTORS

Symbol	Description	Part No.
R1	10 Ohms, ¼ Watt	60B 27-100
R2	100 Ohms, ½ Watt, 10%	60B 8-101
R3	6,800 Ohms, 2 Watt	60B 21-682
R4	470,000 Ohms, ¼ Watt	60B 3-474
R5	27,000 Ohms, 1 Watt, 10%	60B 14-273
R6	2,200 Ohms, ¼ Watt	60B 3-222
R7	2.2 Megohms, ¼ Watt	60B 27-225
R8	56,000 Ohms, ¼ Watt, 10%	60B 2-563
R9	22,000 Ohms, ¼ Watt	60B 3-223
R10	15,000 Ohms, 2 Watt	60B 21-153
R11	470,000 Ohms, ¼ Watt	60B 3-474
R12	27,000 Ohms, 1 Watt, 10%	60B 14-273
R13	220,000 Ohms, ¼ Watt	60B 3-224
*R14	2,200 Ohms, ¼ Watt	60B 3-222
R15	390 Ohms, ¼ Watt, 10%	60B 2-391
R16	6,800 Ohms, ¼ Watt, 5%	60B 1-682
R17	6,800 Ohms, ¼ Watt, 5%	60B 1-682
R18	27,000 Ohms, ¼ Watt	60B 3-273
R19	470,000 Ohms, ¼ Watt	60B 3-474
R20	100,000 Ohms, ¼ Watt, 10%	60B 2-104
R21	120,000 Ohms, ¼ Watt, 10%	60B 2-124
R22	100,000 Ohms, ¼ Watt, 10%	60B 2-104
R23	47,000 Ohms, ¼ Watt	60B 3-473
R24	1 Megohm Volume Control (Tapped at ½ Megohm. Includes Switch SW2)	75B 2-9
R25	4.7 Megohms, ¼ Watt	60B 3-475
R26	2 Megohms Tone Control	75B 1-23
R27	470,000 Ohms, ¼ Watt	60B 3-474
R28	47,000 Ohms, ¼ Watt	60B 3-473
R29	470,000 Ohms, ¼ Watt	60B 3-474
R30	390 Ohms, 1 Watt, 10%	60B 14-391
*R31	27,000 Ohms, 1 Watt, 10%	60B 14-273

*See article on early models at right of schematic—

CONDENSERS

Symbol	Description	Part No.
C1	.001 mfd. min., Ceramic	65B 6-41
C2	.001 mfd. min., Ceramic	65B 6-41
C3	22 mmfd., ±2%, Zero Temp. Coeff. Ceramic	65B 6-30
C4a	387.7 mmfd. (max.) Antenna Section	Gang Cond. 68B 17
C4b	126. mmfd. (max.) Osc. Section	Gang Cond. 68B 17
C5	50 mmfd., Ceramic	65B 6-4
C6	.05 mfd., 400 Volts, Paper	64B 1-22
C7	.005 mfd. min., Ceramic (Disc)	65A 10-1
C8	17 mmfd., ±2%, Zero Temp. Coeff. Ceramic	65B 6-42
C9	955 mmfd., ±3%, Mica	65B 1-51
C10	.1 mfd., 400 Volts, Paper	64B 1-20
C11	50 mmfd., Ceramic	65B 6-4
C12	50 mmfd., Ceramic	65B 6-4
C13	45 mmfd., ±2%, —.00015 Temp. Coeff. Ceramic	65B 6-32
C14	180 mmfd., ±3%, Mica	65B 1-29
*C15	.001 mfd. min., Ceramic	65B 6-41
C16	.005 mfd. min., Ceramic (Disc)	65A 10-1
C17	.005 mfd. min., Ceramic (Disc)	65A 10-1
C18	.001 mfd. min., Ceramic	65B 6-41
C19	.005 mfd. min., Ceramic (Disc)	65A 10-1
C20	.005 mfd. min., Ceramic (Disc)	65A 10-1
C21	100 mmfd., Ceramic	65B 6-3
*C22	.005 mfd. min., Ceramic (Disc)	65A 10-1
C23	100 mmfd., 5%, Ceramic	65B 6-7
C24	100 mmfd., 5%, Ceramic	65B 6-7
C25	4 mfd., 150 Volts, Electrolytic	67A 4-2
C26	.002 mfd., 600 Volts, Paper	64B 1-14
C27	100 mmfd., Ceramic	65B 6-3
C28a	30 mfd., 350 Volts	Elect. 67C 7-10
C28b	30 mfd., 350 Volts	Elect. 67C 7-10
C28c	10 mfd., 350 Volts	Elect. 67C 7-10
C28d	20 mfd., 25 Volts	Elect. 67C 7-10
C29	.1 mfd., 400 Volts, Paper	64B 1-20
C30	.005 mfd. min., Ceramic (Disc)	65A 10-1
C31	.2 mfd., 200 Volts, Paper	64B 1-29
C32	.001 mfd. min., Ceramic	65B 6-41
C33	.005 mfd., 600 Volts, Paper	64B 1-12
C34	.01 mfd., 400 Volts, Paper	64B 1-25
C35	.01 mfd., 400 Volts, Paper	64B 1-25
C36	.005 mfd., 600 Volts, Paper	64B 1-12
C37	50 mmfd., Ceramic	65B 6-4
C38	.005 mfd., 600 Volts, Paper	64B 1-12
C39	.1 mfd., 400 Volts, Paper	64B 1-20
C40	.005 mfd., 600 Volts, Paper	64B 1-12

*See article on early models at right of schematic—

TRANSFORMERS, COILS, ETC.

Symbol	Description	Part No.
T1	Transformer, 1st I.F. (F.M.)	72B 37
T2	Transformer, 2nd I.F. (F.M.)	72B 38
T3	Transformer, Discriminator	72B 39
T4	Transformer, 1st I.F. (A.M.)	72B 48
T5	Transformer, 2nd I.F. (A.M.)	72B 49
T6	Transformer, Power	80B 9
T7	Transformer, Output	79A 9
	Speaker 12" P.M. Dynamic	78B 35
L1	Loop Antenna—A.M.	95A 18-2
L2	Coil, Loop Loading—A.M.	69A 45
L3	Antenna F.M.—Folded Dipole	AB128
L4	F.M. Coupling Coil	AB103-33
L5	Cathode Choke	AB103-35
L6	Coil, 1st R.F.—F.M.	69A 46
L7	Coil, R.F.—A.M.	A1475
	Slug used in L7	71C 1-2
L8	Coil, 2nd R.F.—F.M.	69A 47
L9	Coil, Oscillator—F.M.	69A 48
	Slug used in L6, L8, L9	71C 1-25
L10	Coil, Oscillator—AM.	69A 42
L11	Choke, Oscillator plate F.M.	73A 1
L12	Choke, Filter	74A 13
L13	Choke, R.F.	73A 1
SW1	Switch, Band (FM, AM, Phono)	77B 14
SW2	Switch, Power	(Part of R24)
SW3	Switch, Phono Motor (see record changer manuals)	

DIAL PARTS

Description	Part No.
Bracket, Dial Background Mounting	15B 274
Dial Bulb, #47	81A 1-8
Dial Bulb Socket (with leads)	82A 8-7
Dial Cord (36")	50A 1-3
Dial Pointer	A1487
Dial Scale and Indicator Assembly	A1506
Drum and Hub Assembly (Pointer Shaft)	A1504
Dial Escutcheon and Window (less rectangular insert)	23E 20-1
Escutcheon Insert	23C 25-1
Indicator Arm and Hub (on Band Switch Shaft)	A1508
Indicator Link	15A 176
Lever Arm (band switch drive)	A1493
Pointer Shaft	28A 19-1
Pulley Bracket Assembly	A1496
Shaft, Band Switch	28B 21-3
Snap Button (used with Indicator Link)	13A 1-4-47
Sponge Rubber (inside edge of dial scale)	12A 5-8
Spring, Band Switch Shaft	18A 14
Spring, Dial Cord	19B 1-7
Spring, Hair Pin (for Pointer Shaft)	19A 2-2-0
Spring Washer (for Pointer Shaft)	4A 6-11-0
Washer ("C" used with Band Switch)	4A 4-6-0

TUNER PARTS

Description	Part No.
Ball Bearing (2 used with top plate)	30A 1-1
Damping Bar	32A 69
Drum and Cam Assembly	A1502
Grommet, Osc. Coil (L9) Mounting	12A 1-15
Grommet, R.F. & Antenna Coil (L6 and L8) Mounting	12A 1-14
Grommet, R.F. Coil (L7) Mounting	12A 1-12
Insulator, Mounting Plate (for AM-RF coil slug adjusting Screw)	32A 50
Insulator, Mounting Plate (for FM coils)	32A 52
Insulator, Mounting Plate (for FM slug adjusting screws)	32A 51
Screw, Slug Adjusting	27A 4
Slug Drive (top plate) Assembly	A1503
Spring, Slug Drive Plate Tension	19B 1-13
Spring Washer (for Tuning Shaft)	4A 5-3-0
Tuning Shaft	28A 1-6
Washer ("C" for Tuning Shaft)	4A 4-6-0