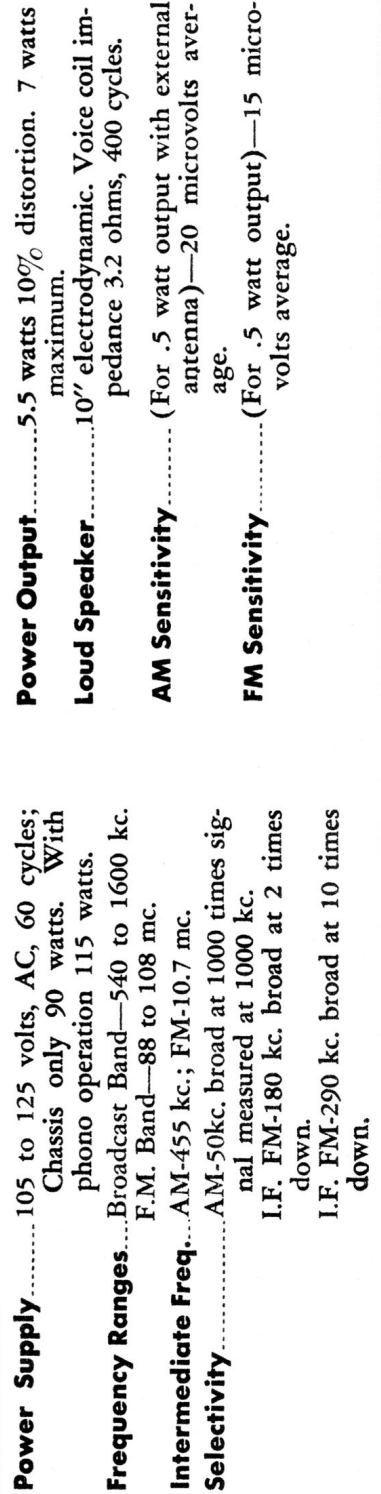
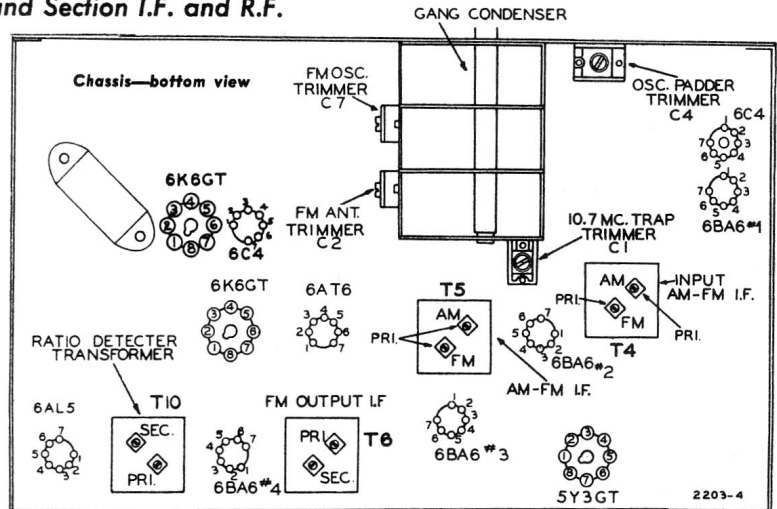




ALIGNMENT PROCEDURE**Broadcast Band Section I.F. and R.F.**

The alignment procedure below includes the sensitivities at the inputs of various stages. All signal input values are based on an output of $\frac{1}{2}$ watt. This may be measured by disconnecting the speaker voice coil and substituting a 3.2-ohm resistor across the secondary winding of the output transformer. A reading of 1.3 volts AC across this resistor will be approximately equivalent to a $\frac{1}{2}$ -watt output with the speaker connected. The volume control must be set at maximum. The tone control must be set for maximum treble.

The signal source must be an accurately calibrated signal generator capable of supplying the frequencies designated, modulated 30% with a 400-cycle audio signal. A 400 cycle audio signal is required for the audio measurement. Variations in sensitivities of plus or minus 25% are usually permissible.

**AM - I. F. ALIGNMENT**

Band Switch in AM Position. Tune Set to 1400 Kc. Dummy Antenna .1 Mfd.

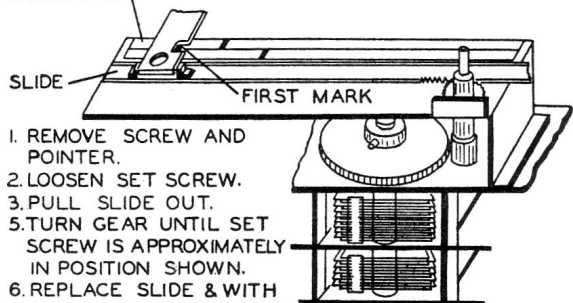
Signal Generator Frequency	Connection to Radio	Adjustment to Be Made	Adjust for
455 Kc. Use 2100 microvolts	Pin No. 1 of 6BA6 No. 2 and ground	Primary and Secondary of T5 AM windings. See top and bottom views	Maximum output. Should be $\frac{1}{2}$ watt
455 Kc. Use 64 microvolts	Pin No. 1 of 6BA6 No. 1 and ground	Primary and Secondary of T4 AM windings. See top and bottom views	Maximum output. Should be $\frac{1}{2}$ watt
400 cycles. Use 63 millivolts	Pin No. 1 of 6AT6 and ground	None	Maximum output. Should be $\frac{1}{2}$ watt

BROADCAST BAND - R. F. ALIGNMENT

Check Pointer so that the inside of the notch is exactly over the first mark to the extreme left when Gang is fully closed. For adjustment loosen set screw on large gear. (see dial mechanism illustration).

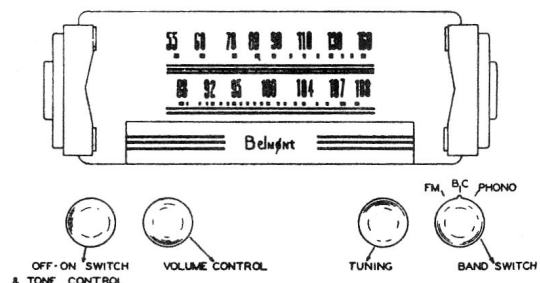
Signal Generator Frequency	Connection to Radio	Dummy Antenna	Adjust
1400 Kc. Use 15 microvolts	Antenna and Ground	200 mmf.	C6A for maximum. $\frac{1}{2}$ watt
600 Kc. Use 25 microvolts	Antenna and Ground	200 mmf.	C4 for maximum. $\frac{1}{2}$ watt
1400 Kc.	Antenna and Ground	200 mmf.	C6 See Note

NOTE: Recheck first two adjustments after this adjustment because of inter-locking effects.

CALIBRATION

1. REMOVE SCREW AND POINTER.
2. LOOSEN SET SCREW.
3. PULL SLIDE OUT.
5. TURN GEAR UNTIL SET SCREW IS APPROXIMATELY IN POSITION SHOWN.
6. REPLACE SLIDE & WITH ROTORS CLOSED LINE UP POINTER WITH FIRST MARK ON CALIBRATION SCALE
7. TIGHTEN SCREW.

ROTORS CLOSED



Procedure for disassembly and assembly of dial mechanism

ALIGNMENT PROCEDURE

FM Band Section. I.F. and R.F.

IMPORTANT

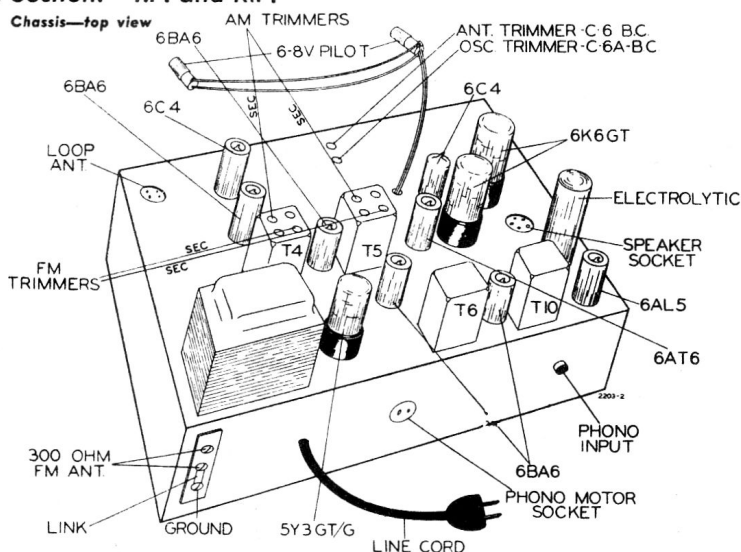
No alignment of the FM section of this radio should be attempted unless you are positive that the circuits are in need of adjustment and you have the necessary equipment.

All components used in this radio are extremely stable and the tuned circuits should require no adjustment over long periods of time.

NOTE

The following alignment is based on the use of the new Simpson vacuum tube voltmeter which has a "floating ground." In other words, the meter, when used as a vacuum tube voltmeter, can have both the positive and negative sides connected to points above ground and still give true readings.

A standard AM signal generator is required.



FM - I. F. ALIGNMENT

Band Switch in FM Position. Dummy Antenna .1 Mfd.

<i>Signal Generator Frequency</i>	<i>Connection to Radio</i>	<i>Vacuum Tube Volt Meter Connection to Radio</i>	<i>Adjustment to Be Made</i>	<i>Adjust for</i>
10.7 Mc. Use about .1 volt	Pin No. 1 of 6BA6 No. 4 and ground	Pin No. 7 of 6AL5 and ground	Primary of T10	Resonance should be about 3 volts
10.7 Mc. Use about .1 volt	Pin No. 1 of 6BA6 No. 4 and ground	See note "A"	Secondary of T10	Zero. Use zero center scale. See note "B"
10.7 Mc. Use about 4000 microvolts	Pin No. 1 of 6BA6 No. 3 and ground	Pin No. 7 of 6AL5 and ground	Primary and Secondary of T6	Resonance should be about 3 volts
10.7 Mc. Use about 150 microvolts	Pin No. 1 of 6BA6 No. 2 and ground	Pin No. 7 of 6AL5 and ground	Primary and Secondary of 10.7 mc. windings of T5. See top and bottom views.	Resonance should be about 3 volts
10.7 Mc. Use 3000 microvolts	FM Antenna input and ground	Pin No. 7 of 6AL5 and ground	Primary and Secondary of 10.7 mc. windings of T4. See top and bottom views.	Resonance should be about 3 volts See Note "C"
10.7 Mc.	FM Antenna input and ground	Pin No. 7 of 6AL5 and ground	C1	Minimum response. This is a trap circuit

NOTES ON FM—I.F. ALIGNMENT

NOTE "A"—Connect two resistors, 100K OHMS each, from Pin No. 7 of 6AL5 to ground. These resistors must be matched within 5%. Connect as shown in dotted lines on schematic diagram. Connect vacuum tube voltmeter between the mid point of the resistors and point zz.

NOTE "B"—If T10 has been tampered with, it is possible that no cross-

over point will be found at first. Careful adjustment of both primary and secondary is necessary.

GENERAL—Input signals should be adjusted to give approximately 3 volts. The ratio detector is operating at a reasonable level at this point and will give the truest indication of correct alignment with the procedure specified.

NOTE "C"—The input microvolts specified is based on the trap circuits being adjusted.

FM - R. F. ALIGNMENT

Check Pointer so that the inside of the notch is exactly over the first mark to the extreme left when Gang is fully closed. For adjustment loosen set screw on large gear. (see dial mechanism illustration).

<i>Signal Generator Frequency</i>	<i>Connection to Radio</i>	<i>Dummy Antenna</i>	<i>Adjust</i>	<i>Vacuum Tube Volt Meter Connection to Radio</i>	<i>Adjust to</i>
100 Mc. Use about 15 microvolts	FM Antenna lead	300 ohms	C7 Osc. C2 Ant.	Pin No. 7 of 6AL5 and Ground	Resonance about 3 volts

NOTE—If a signal generator with the above fundamental frequency is not available, it is sometimes possible to use harmonics. Use extreme care in picking harmonics. An alternate procedure is to use a local

station carrier of known frequency to align the F.M. Band and to use the vacuum tube volt meter as above for resonance indication. A weak carrier, however, will not produce 3 volts.

REPLACEMENT PARTS LIST

When ordering specify part number, model number, and series

Ref. No.	Part No.	Description	Qty. Used in Set
R.F. TUNER PARTS			
CONDENSERS			
C3A-B-C-D	B-8A-11275	Two gang split stator variable	1
C2	A-8E-12079	Trimmer cond. F.M. antenna	1
C1	A-8E-11506	Trimmer cond. I.F. trap	1
C7	A-8E-11279	Trimmer cond. F.M. osc. trimmer	1
C6, C6A	A-8E-12557	Trimmer cond. B.C. antenna and oscillator	1
C4	A-8E-12177	Padder cond.—B.C. Band	1
C8	C-8G-11484	50 mmf, $\pm 10\%$, ceramic	1
C55	C-18G-12408	1.0 mmf, ± 2 mmf, ceramic	1
C-9-10-11-12	C-8G-11486	3000 mmf, $\pm 20\%$, ceramic	4
C5-13	C-8F3-12	470 mmf, 500 volts, $\pm 20\%$ mica	2
RESISTORS			
R3	C-9B1-61	820 ohms, $\frac{1}{2}$ watt, 10%	1
R12	A-10B-11263	Volume control (1 megohm)	1
R20, S8	A-11A-11262	Tone control (500M ohms) and switch	1
R5, R6	C-9B1-15	2200 ohms, $\frac{1}{2}$ watt, 20%	2
R1	C-9B1-32	1.5 megohm, $\frac{1}{2}$ watt, 20%	1
R2	C-9B1-78	22K megohms, $\frac{1}{2}$ watt, 10%	1
MISCELLANEOUS			
	A-15C-11491	7-prong miniature tube socket	1
	A-15A-11276	Miniature tube socket, ceramic with base	1
	A-2H-12337	Socket shield base	1
	A-2H-11494	Tube shield	2
	200-12862	Spur gear assembly—consists of two gears, two springs and bushing	1
	A-49A-11673	Spring for above assembly	2
S1-2-3-4-5-6-7	B-20A-11261	Band switch and phono-radio switch	1
	B-2C-11188-1	Dial plate assembly with tape guide, bushing, shaft and pinion gears	1
	A-3J-11182	Pinion gear—inner side of plate	1
	A-3J-11183	Pinion gear—outer side of plate	1
	A-3A-11181	Shaft—for pinion gears	1
	B-2J-11190	Rack tape—with teeth and bracket	1
	B-2G-10588-2	Pointer	1
	A-2D-11513	Pointer bracket	1
	A-2J-11041	Pointer tension spring	1
	32F4-10830	B.H.M.S. 4-40 x $\frac{1}{8}$ screw, to fasten pointer and bracket to tape bracket	1
COILS			
T2	A-13D-11282	88-108 mc oscillator coil	1
T1	A-13E-11283	88-108 mc antenna coil secondary	1
T12A, T12B	A-13E-11284	88-108 mc antenna coil primary with trap	1
MAIN CHASSIS PARTS			
C52	A-8C-11495	Electrolytic condenser 10 mfd x 150 volts	1
C19A, B, C	A-8C-10272	Electrolytic condenser 10 mfd x 10 mfd x 20 mfd	1
C24, C36, C37	C-8D-10774	.02 mfd x 400 v., 20%, tubular	3
C20	C-8D-10770	.05 mfd x 200 v., 20%, tubular	1
C22	C-8D-11738	.01 mfd x 200 v., 20%, tubular	1
C25, 35	C-8D-10761	.01 mfd x 400 v., 20%, tubular	2
C50, 53, 56	C-8D-10788	.004 mfd x 600 v., 20%, tubular	3
C49	C-8F3-116	180 mmfd x 500 v., 10%, mica	1
C23, 38, 45	C-8F9-20	10K mmfd x 300 v., 20%, mica	3
C21, 18	C-8F3-12	470 mmfd x 500 v., 20%, mica	2
C30, 33, 34	C-8F3-10	220 mmfd x 500 v., 20%, mica	3
C44	C-8J-11388	.05 mfd x 600 v., 20%, molded case paper	1
C26-27-39-40-46-47	C-8G-12449	3000 mmfd, 20%, ceramic-insulated	6
C14, 16, 28, 31, 42, 43	C-8G-12159	30 mmfd, 500 volts, 5%, ceramic	6
C48	C-8G-11789	10 mmfd, 10%, ceramic	1
Ref. No.	Part No.	Description	Qty. Used in Set
C51	C-8G-11891	51 mmfd, 5%, ceramic	1
C15-17	C-8G-12160	91 mmfd, 5%, ceramic	2
C-29-32	C-8F5-224	91 mmfd, 5%, silver mica	2
C41	C-8D-10789	.002 mfd x 600 v., 20%	1
C57	C-8F3-8	100 mmfd x 500 v., 20%, mica	1
RESISTORS			
R4	C-9B1-87	120K ohms, $\frac{1}{2}$ watt, 10%	1
R15	C-9B1-73	8200 ohms, $\frac{1}{2}$ watt, 10%	1
R26	C-9B1-77	18K ohms, $\frac{1}{2}$ watt, 10%	1
R18	C-9B1-96	680K ohms, $\frac{1}{2}$ watt, 10%	1
R21, 35	C-9B1-82	47K ohms, $\frac{1}{2}$ watt, 10%	2
R28	C-9B2-81	39K ohms, 1 watt, 10%	1
R7	B-9C-11489	10K ohms, 5 watts, 10%, wire-wound	1
R30	C-9B1-78	22K ohms, $\frac{1}{2}$ watt, 10%	1
R16, 25, 29	C-9B1-15	2200 ohms, $\frac{1}{2}$ watt, 20%	3
R8	C-9B1-107	5.6 megohms, $\frac{1}{2}$ watt, 10%	1
R9, 10	C-9B1-31	1 megohm, $\frac{1}{2}$ watt, 20%	2
R13	C-9B1-50	100 ohms, $\frac{1}{2}$ watt, 10%	1
R11, R17	C-9B1-23	47K ohms, $\frac{1}{2}$ watt, 20%	1
R19	C-9B1-27	220K ohms, $\frac{1}{2}$ watt, 20%	1
R14	C-9B1-37	10 megohms, $\frac{1}{2}$ watt, 20%	1
R27	C-9B1-54	220 ohms, $\frac{1}{2}$ watt, 10%	1
R32, 22, 33	C-9B1-94	470K ohms, $\frac{1}{2}$ watt, 10%	3
R31	C-9B1-78	22K ohms, $\frac{1}{2}$ watt, 10%	1
R23	C-9B1-58	470 ohms, $\frac{1}{2}$ watt, 10%	1
R34	C-9B1-62	1000 ohms, $\frac{1}{2}$ watt, $\pm 10\%$	1
R36	C-9B2-55	270 ohms, 1 watt, $\pm 10\%$	1
COILS			
T3	A-13D-11285	B.C. oscillator coil	1
T4	C-203-11743	Input I.F. coil combination assembly, 455 kc and 10.7 mc	1
T5	C-203-11746	2nd I.F. coil combination assembly, 455 kc and 10.7 mc	1
T6	C-203-11744	3rd I.F. coil assembly, 10.7 mc	1
T10	C-203-11745	Ratio detector I.F. coil assembly, 10.7 mc	1
T11, C55	C-13E-12340	Loop antenna assembly with 1.0 mmfd cond. C-8G-12408	1
TRANSFORMERS			
T7	B-12C-10234-2	Output transformer for speaker	1
T9	B-12A-12254	Power transformer—105-125 volts AC, 60 cycles primary	1
SPEAKER			
T8	B-18B-10617	Electrodynamic speaker, 10-inch, less output transformer	1
MISCELLANEOUS			
	C-6D-12459	Dial scale	1
	B-5C-12457-14	Escutcheon—walnut	2
	B-5C-12457-41	Escutcheon—mahogany	2
	B-5B-10376-14	Knob, "Volume"—walnut	1
	B-5B-11672-14	Knob, "Bandswitch"—walnut	1
	B-5B-10377-14	Knob, "Tuning"—walnut	1
	B-5B-10378-14	Knob, "Tone"—walnut	1
	B-5B-10376-41	Knob, "Volume"—mahogany	1
	B-5B-11672-41	Knob, "Bandswitch"—mahogany	1
	B-5B-10377-41	Knob, "Tuning"—mahogany	1
	B-5B-10378-41	Knob, "Tone"—mahogany	1
	B-47A-12458	Pilot lite assembly	1
P1, P2	A-46A-11739	Pilot lite bulb, 6-8 volt, T-44	2
	A-19B-11009	Socket for phono motor	1
	A-15B-11538	Speaker socket	1
	A-19B-12170	Socket for tone arm lead	1
	A-19B-11272	Antenna socket	1
	A-15B-10440	8-prong, octal, tube socket	3
	A-15C-10717	7-prong, miniature tube socket	6
	A-2H-10718	Shield base	6
	A-2H-10974	Shield can	6
	B-14M-11479	A.C. line cord	1
	A-23A-10344	Line cord lock	1
RECORD CHANGER			
B-201-12262		Record changer assembly, 115 volts, 60 cycles	1
Note: For list of record changer parts, see Record Changer Manual.			