

GENERAL ALIGNMENT INSTRUCTION

Should it become necessary at any time to check the alignment of this receiver, proceed as follows;

- 1) Connect an output meter across the speaker voice coil lugs.
- 2) Set volume control for maximum.
- 3) Attenuate the signals from generator enough to swing the most sensitive range of output meter.
- 4) Use a non-metallic alignment tool.
- 5) Repeat adjustments to insure good results.

AM ALIGNMENT CHART

Signal generator				Receiver		Adjust
Step	Band	Connection to receiver	Input signal frequency	Dial setting	Remarks	
1	A.M.	Connect signal generator through a 10KΩ dummy to the antenna tuning condenser. Connect ground lead of generator to the receiver chassis.	Exactly 455KHz (400Hz, 30% AM modulated.)	Tuning gang fully open. (minimum capacity)	Adjust for maximum output on speaker voice coil lugs.	T-6 T-4 T-2
2	A.M.	Use radiating loop. Loop of several turns of wire, or place generator lead close to receiver for adequate signal pick-up. Connect generator output to one end of this radiating loop.	Exactly 525KHz (400Hz, 30% AM modulated.)	Tuning gang fully closed. (maximum capacity)	Same as step 1.	L5
3	A.M.	Same as step 2.	Exactly 1680KHz (400Hz, 30% AM modulated.)	Tuning gang fully open. (minimum capacity)	Same as step 1.	C8
4	A.M.	Same as step 2.	Exactly 600KHz (400Hz, 30% AM modulated.)	600 KHz	See NOTE A.	L4
5	A.M.	Same as step 2.	Exactly 1400KHz (400Hz, 30% AM modulated.)	1400 KHz	See NOTE A.	C7
6	A.M.	Repeat steps 2, 3, 4 and 5 until no further improvement is obtained.				

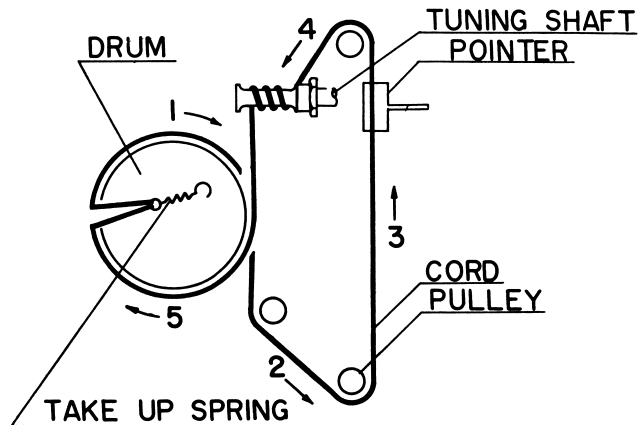
FM ALIGNMENT CHART

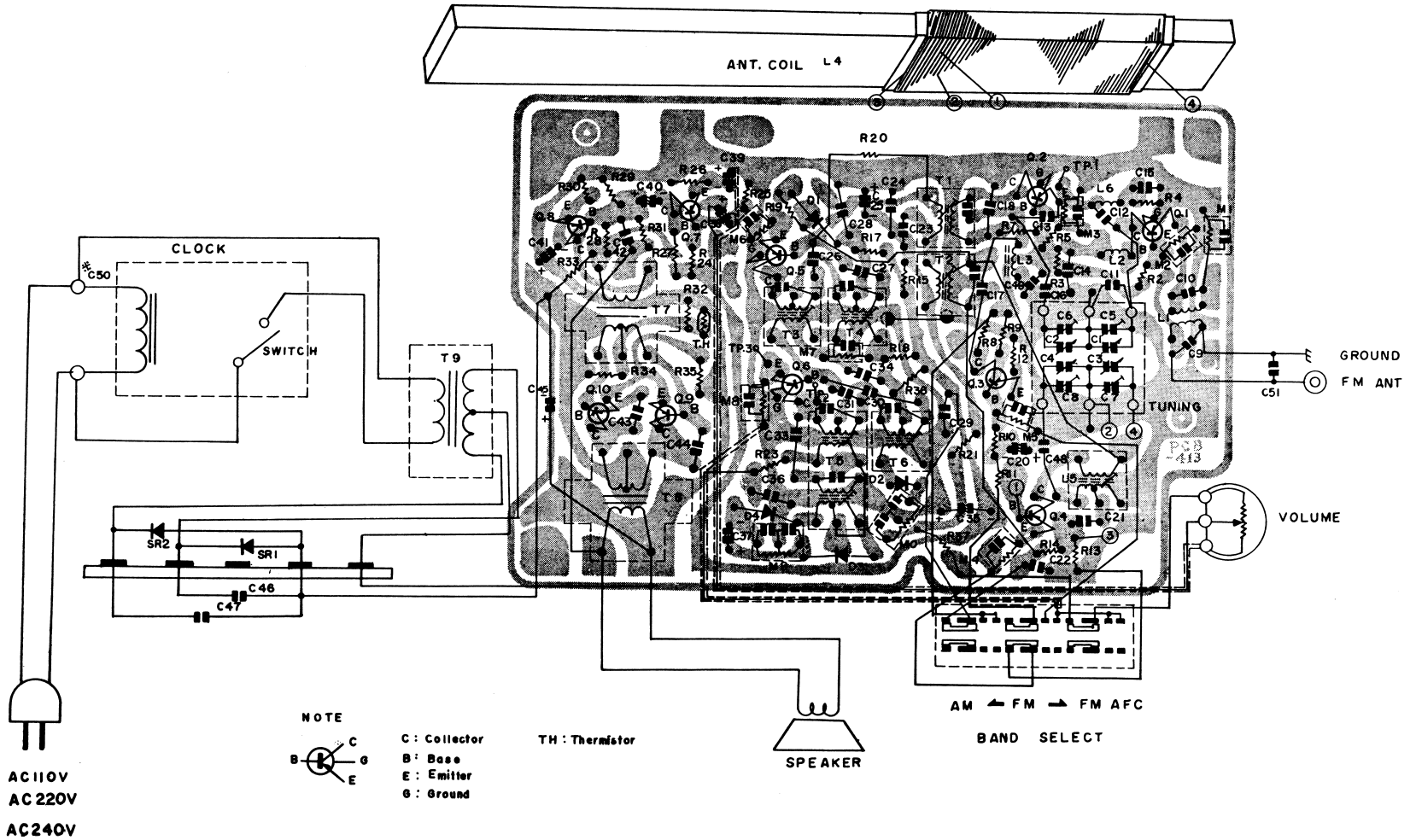
Signal generator				Receiver		Adjust
Step	Band	Connection to receiver	Input signal frequency	Dial setting	Remarks	
1	F.M.	Connect signal generator through a 5MμFD capacitor to test point TP-1. Connect generator ground lead to the receiver chassis.	Exactly 10.7MHz (400Hz, 30% AM modulated)	Tuning gang fully closed. (maximum capacity)	Connect V.T.V.M. between TP3 and chassis ground.	Tune IFT3 and IFT1 for maximum indication.
2	F.M.	Same as step 1.	Exactly 10.7MHz (Unmodulated)	Same as step 1.	Same as step 1.	See NOTE B.
3	F.M.	Connect signal generator through a 100Ω resistor including output impedance of signal generator to the external antenna coil lug. Ground lead of generator connected to the receiver chassis.	Exactly 86MHz (400Hz, 30% FM modulated)	Tuning gang fully closed. (maximum capacity)	Adjust for maximum output speaker voice coil lugs.	L3
4	F.M.	Same as step 3.	Exactly 110MHz (400Hz, 30% FM modulated)	Tuning gang fully open. (Minimum capacity)	Same as step 3.	C6 trimmer VC-12
5	F.M.	Same as step 3.	Exactly 88 MHz (400Hz, 30% FM modulated)	88 MHz	Same as step 3.	Adjust the pitch of L2.
6	F.M.	Same as step 3.	Exactly 105MHz (400Hz, 30% FM modulated)	105 MHz,	Same as step 3.	C5
7	F.M.	Repeat steps 3, 4, 5 and 6 until no further improvement is obtained.				

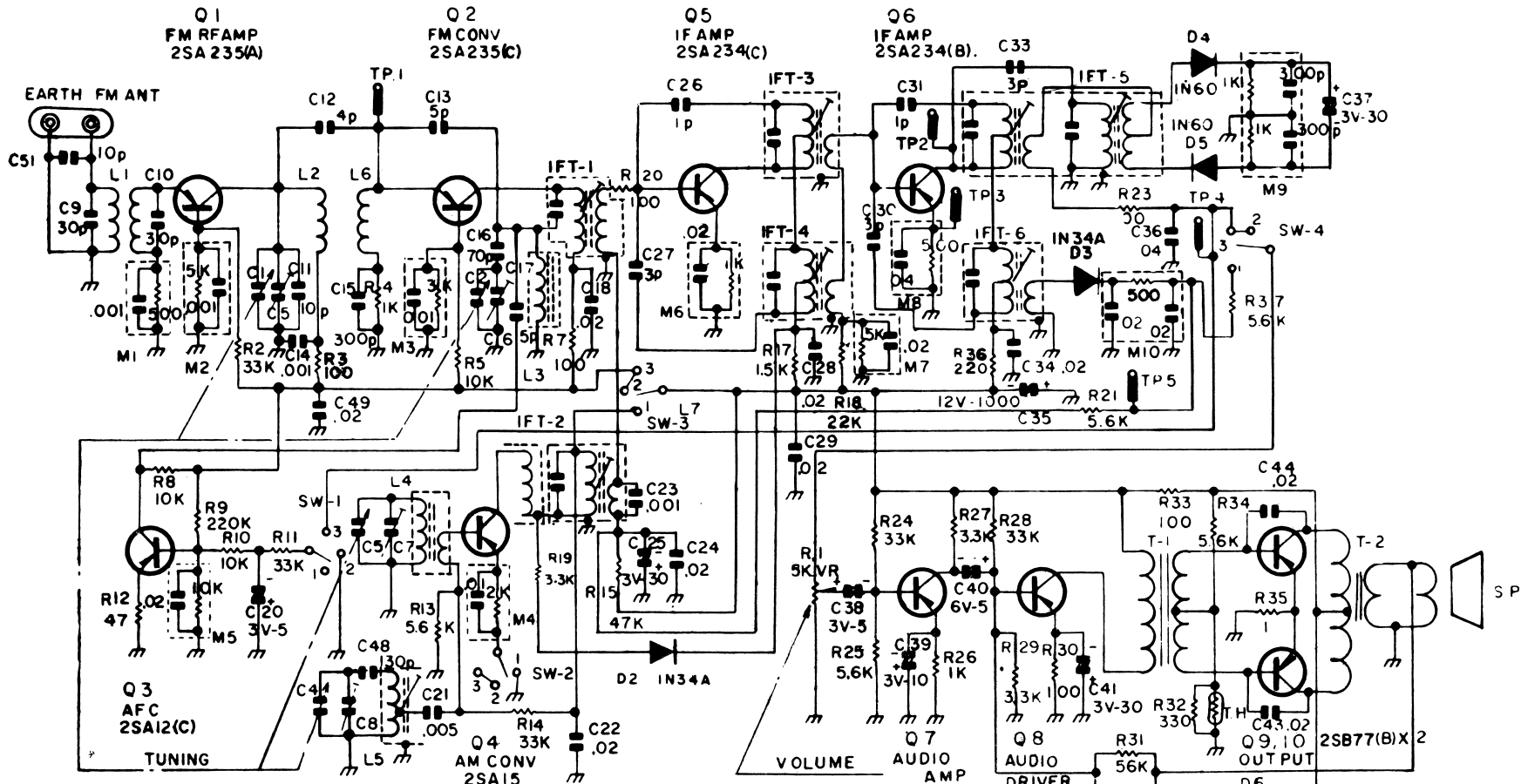
NOTE

- A Check alignment of receiver antenna coil by bringing a piece of ferrite (such as a coil slug) near the antenna loop stick, then a piece of brass. If ferrite increases output, loop requires more inductance. If brass increases output, loop requires less inductance. Change loop inductance by sliding the bobbin toward the center of ferrite core to increase inductance, or away to decrease inductance. Adjustment should not be required unless L6 has been replaced.
- B
- 1) Connect VTVM (0.1 volts range D.C. scale) across volume control of receiver. (Grounded terminal to high side of control.)
 - 2) Adjust T6B for VTVM 0 volt.
 - 3) Change signal generator frequency 10.7MHz+100KHz and -100KHz approximately.
 - 4) Adjust T6A for balanced peaks. Peak separation should be approximately 200KC.

DIAL CORD STRINGING







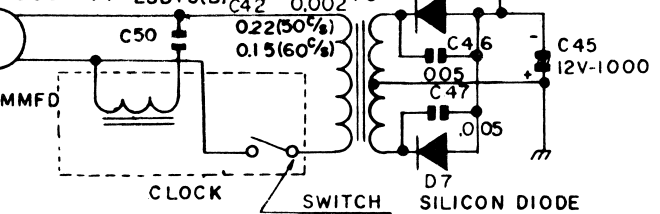
TRANSISTOR VOLTAGES

Q NO	Collect(V)	Base(V)	Emitt(V)	
Q 1	5.7	0.76	0.47	FM
Q 2	5.7	1.25	1.00	FM
Q 3	1.1	0.15	—	FM
Q 4	6.0	0.70	0.65	AM
Q 5	4.9(5.2)	0.8(0.8)	0.58(0.60)	FM (AM)
Q 6	5.7(6.0)	1.45(1.60)	1.17(1.25)	FM (AM)
Q 7	4.0	0.80	0.68	FM AM
Q 8	5.5	0.40	0.26	FM AM
Q 9	6.7	0.16	—	FM AM
Q 10	6.7	0.16	—	FM AM

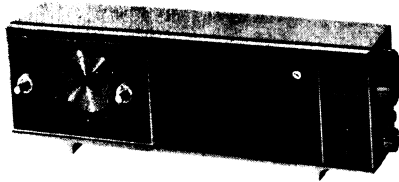
1. AM
2. FM
3. FM AFC

AC 220V
240V

CAPACITANCE VALUES ARE IN MFD.
RESISTANCE VALUES ARE IN OHM.
FREQ. RANGE FM 86.5-108 MC
AM 535-1650 KC
FM 10.7 MC
AM 455 KC



Service Manual



MODEL
FXC-23

SPECIFICATIONS

Tuning Range	
AM	535~1650 KHz
FM	86.5~108 MHz
Intermediate Frequency	
AM	455 KHz
FM	10.7 MHz
Power Supply	
	AC 110, 220 or 240V
Power Output	
Undistorted	350 mW
Maximum	500 mW
Speaker	
	7cm x 11cm oval PDS 8 ohm

Transistor Complement

Q 1	2SA235 (A)	RF Amplifier
Q 2	2SA235 (C)	FM Converter
Q 3	2SA12 (C)	FM AFC
Q 4	2SA15	AM Converter
Q 5	2SA234 (C)	IF Amplifier
Q 6	2SA234 (B)	IF Amplifier
Q 7	2SB75 (B)	Audio Driver
Q 9	2SB77 (B)	Output
Q10	2SB77 (B)	Output

GENERAL DESCRIPTION

The circuitry used in this clock radio incorporates 10 transistors, 2 rectifiers, 4 diodes and 1 thermistor. A bar antenna feeds the AM amplifiers and 1 diode detector. The signal then passes through a 4 transistor audio amplifier circuit.

A line cord FM antenna feeds the FM broadcast signal to the RF amplifier, 2 FM IF amplifiers and FM detector (2 diodes). Audio signal then passes through a 4 transistor audio amplifier circuit.

An AM AGC voltage is fed back to 1st IF amplifier. An AFC voltage is fed back to the FM converter.

CHASSIS REMOVAL

1. Pull off the 2 control knobs from the side of the cabinet.
2. Remove the 3 back cover retaining screws.
3. Remove the back cover.
4. Remove the 2 screws between dial shaft and variable resistor shaft.
5. Remove 1 screw on the side of band selector knob.
6. Remove the 2 printed circuit board mounting screws on the right side.
7. Remove the dial pointer from the dial cord string.
8. Lay the cabinet face down. Carefully lift the chassis up and remove it from the cabinet. Exercise caution to avoid breaking the leads.

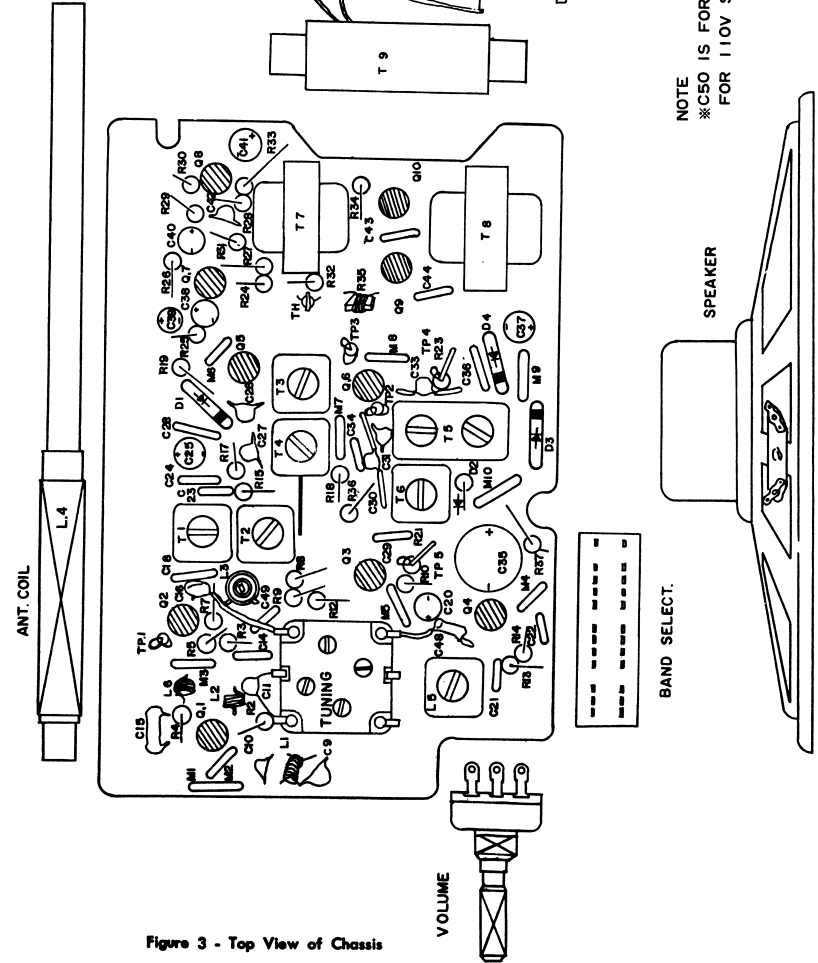


Figure 3 - Top View of Chassis

NOTE
*C50 IS FOR 220V OR 240V SETS ONLY.
FOR 110V SET R38 IS USED INSTEAD OF C50.