ALIGNMENT INSTRUCTION

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

1) Connect an output meter across the speaker voice coil lugs.
2) Set volume control for maximum.
3) Use the lowest setting of signal generator capable of producing adequate indication on the lowest scale of output meter.
4) Use a non-metallic alignment tool.
5) Repeat adjustments to insure good results.

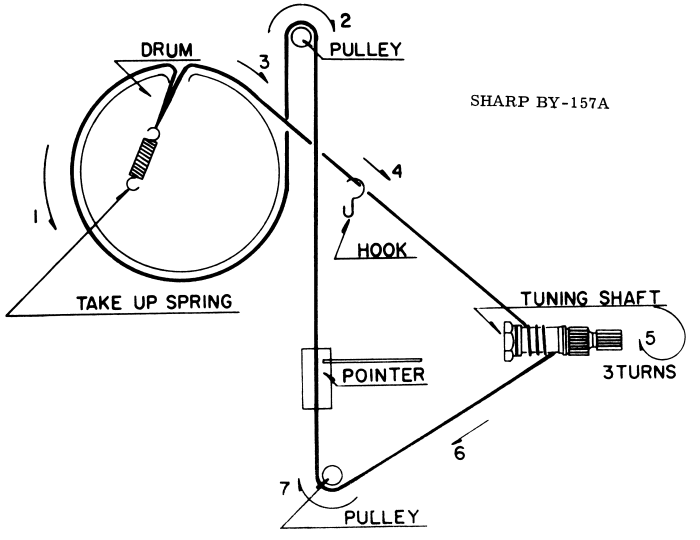
ALIGNMENT CHART

Signal generator				Receiver		Adjust
Step	Band	Connection to Receiver	Input signal frequency	Dial setting	Remarks	
1	MW	Connect signal generator through a 10KΩ resistor to the antenna tuning condenser. Connect generator ground lead to the receiver chassis.	Exactly 455KC. (400%, 30%, AM modulated.)	Tuning gang fully open. (minimum capacity)	Adjust for maximum output on speaker voice coil lugs.	T1 T2 T3
2	MW	Use radiating loop. Loop of several turns of wire, or place generator lead close to reciver for adequate signal pickup. Connect generator output to one end of this wire.	Exactly 520KC. (400%, 30%, AM modulated.)	Tuning gang fully closed. (maximum capacity)	Same as step 1.	L2
3	MW	Same as step 2.	Exactly 1680KC. (400%, 30%, AM modulated.)	Tuning gang fully open. (minimum capacity)	Same as step 1.	C7
4	MW	Same as step 2.	Exactly 600KC. (400%, 30%, AM modulated.)	600KC	See NOTE.	L1 (M.W.)
5	MW	Same as step 2.	Exactly 1400KC. (400%, 30%, AM modulated.)	1400KC	Same as step 1.	C4
6	MW	Repeat steps 2, 3, 4 and 5 until no further improvment is obtained.				
7	SW 1	Same as step 2.	Exactly 2.25MC. (400%, 30, AM modulated.)	Tuning gang fully closed. (maximum capacity)	Same as step 1.	L3
8	SW 1	Same as step 2.	Exactly 7.4MC. (400%, 30%, AM modulated.)	Tuning gang fully open. (minimum capacity)	Same as step 1.	C8
9	SW 1	Same as step 2.	Exactly 2.6MC. (400%, 30%, AM modulated.)	2.6MC	See NOTE.	L1 (SW1)
10	SW 1	Same as step 2.	Exactly 6MC. (400%, 30%, AM modulated.)	6MC	Same as step 1.	C5
11	SW 1	Repeat steps 7, 8, 9 and 10 until no further improvement is obtained.				
12	SW 2	Connect signal generator through a 10KΩ resistor to the externel antenna coil lug. Ground lead to the receiver chassis.	Exactly 7.2MC. (400%, 30%, AM modulated.)	Tuning gang fully closed. (maximum capacity)	Same as step 1.	L4
13	SW 2	Same as step 12.	Exactly 22.5MC. (400%. 30%, AM modulated.)	Tuning gang fully open. (minimum capacity)	Same as step 1.	C9
14	SW 2	Same as step 12.	Exactly 8.5MC. (400%, 30%, AM modulated.)	8.5MC	See NOTE.	L1 (SW2)
15	SW 2	Same as step 12.	Exactly 19MC. (400%, 30%, AM modulated.)	19MC	Same as step 1.	C6
16	SW 2	Repeat steps 12, 13, 14 and 15 until no further improvment is obtained.				

NOTE

Check alignment of receiver antenna coil (L1) 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. (This adjustment is not normory required unless L1 has been replaced.)

DIAL CORD STRINGING



OVERALL LENGTH OF DIAL CORD IS 21¼ INCHES.

S183 SHARP BY-157A

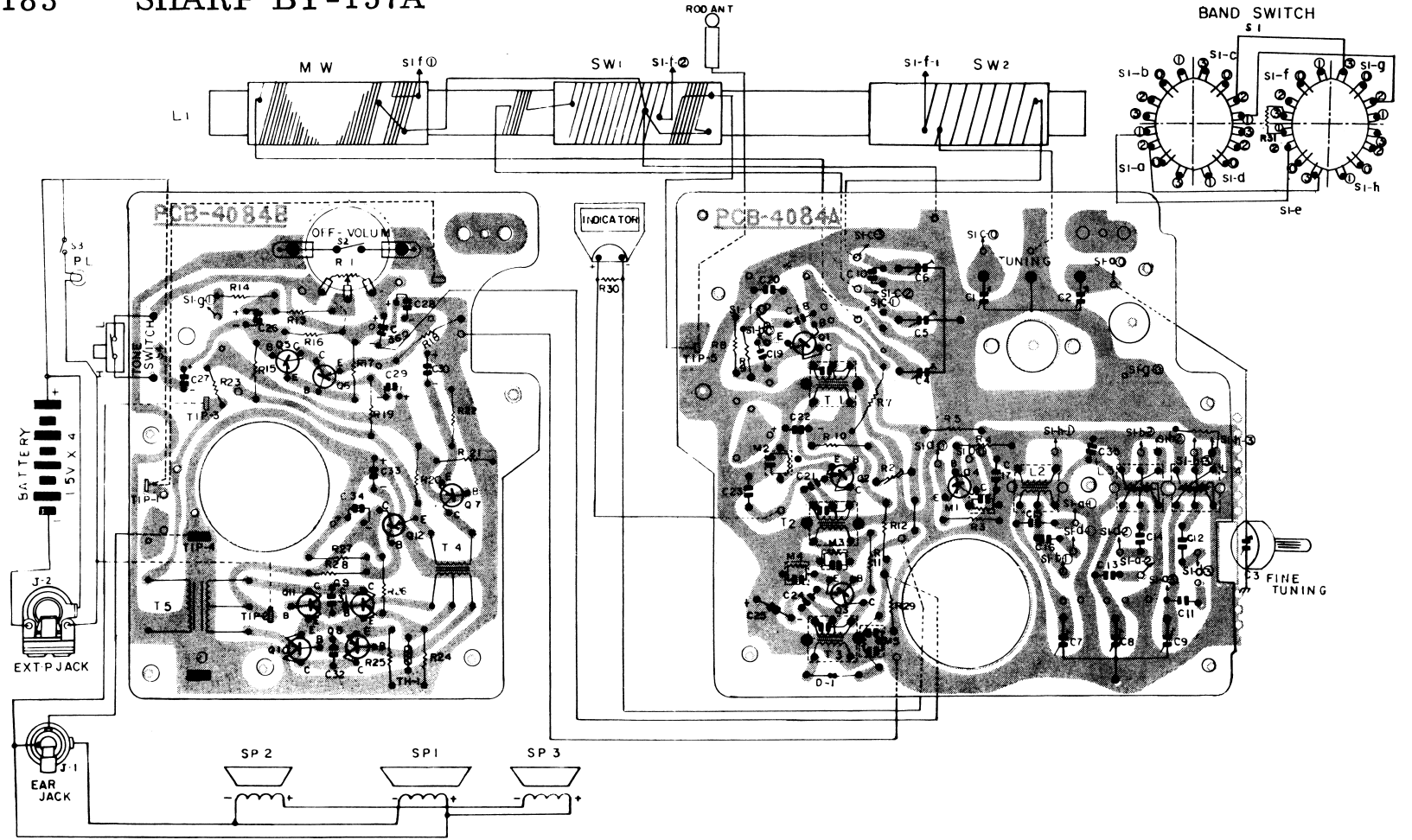
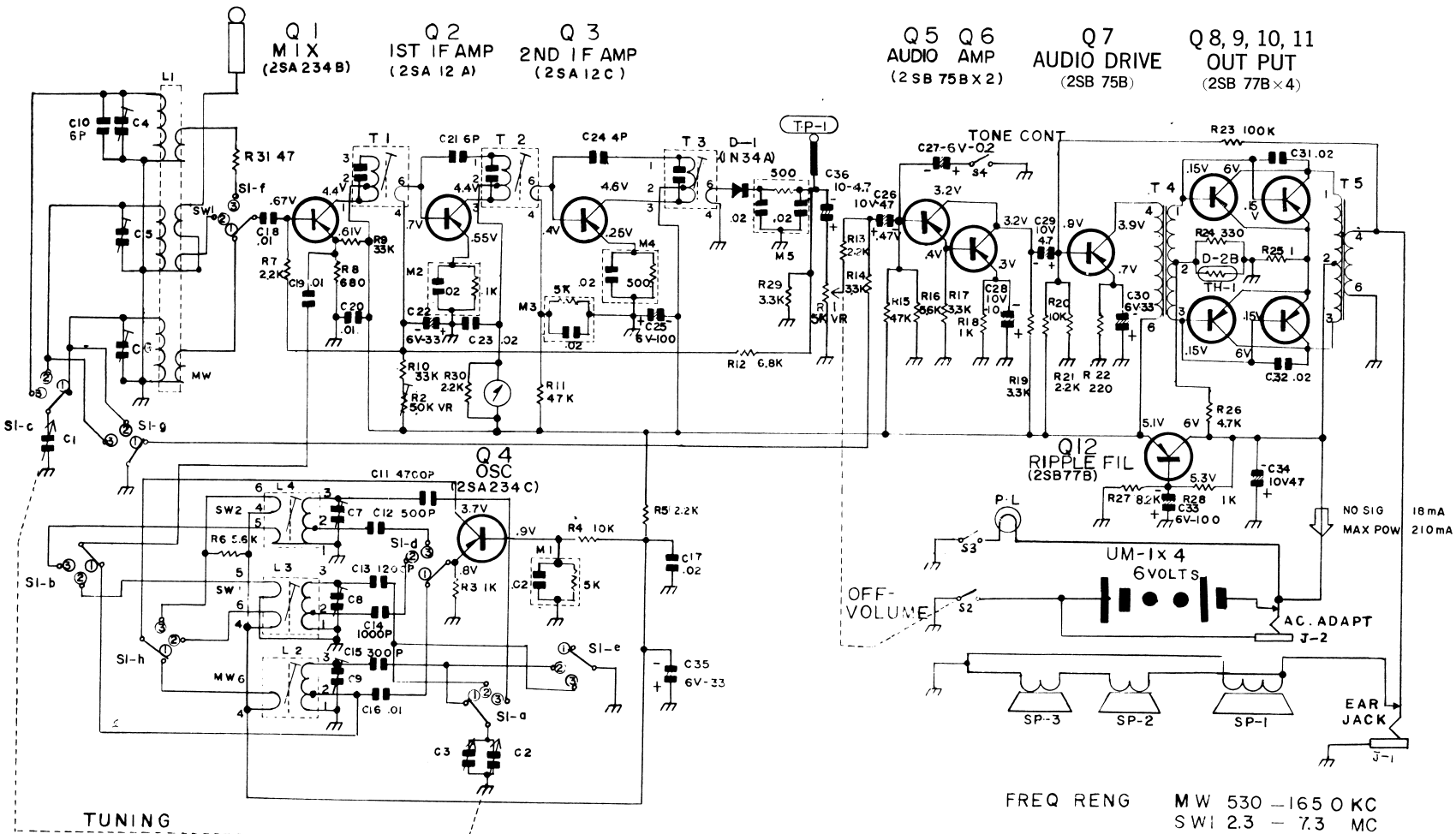


Figure 3 – Bottom View of P. C. Board



BOTTOM VIEWS

L2 T2 T1 T3 L3 L4 T4·T5

TRANSISTOR (BASE, EMITT, COLL)

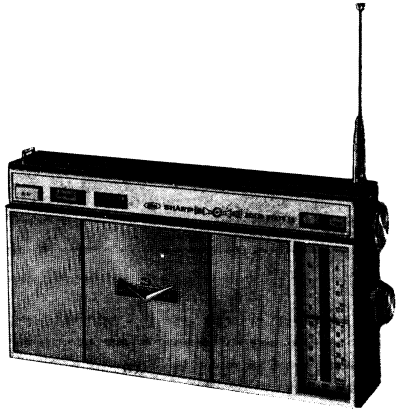
T4	1RY4-6	2RY1-3
IMP	3KΩ	1.7KΩCT
R_{DC}	190Ω	105Ω

T5	1RY1-3	2RY4-6
IMP	100ΩCT	8Ω
R_{DC}	50Ω	0.5Ω

FREQ RENG MW 530 — 1650 KC
SW1 2.3 — 7.3 MC
SW2 7.3 — 22.0 MC
IF 455 KC
CAPACITANCE VALUES ARE IN MFD
P = MMFD
RESISTANCE VALUES ARE IN OHMS
K = 1000
VOLTAGE READINGS TO COMMON GRAND(+) ARE MEASURD WITH VTVM UNDER NO SIGNAL CONDITIONS

Figure 1 Schematic Diagram

Service Manual



MODEL

BY-157A

SPECIFICATIONS

Frequency Range		
MW		530~1650KC
SW1		2.3~7.3MC
SW2		7.3~22MC
Intermediate Frequency		455KC
Power Supply		6V
Power Output		
Undistorted		550mW
Maximum		800mW
Speaker		
SP1		3 1 2" P.D.S.
SP2, SP3		2 3 8" P.D.S.
Transistor Complement		
Q1	2SA234B	Mixer
Q2	2SA12A	1st IF Amplifier
Q3	2SA12C	2nd IF Amplifier
Q4	2SA234C	Oscillator
Q5, Q6	2SB75B	Audio Amplifier
Q7	2SB75B	Audio Driver
Q8, Q9, Q10, Q11	2SB77B	Output
Q12	2SB77B	Ripple Filter

GENERAL DESCRIPTION

The circuitry used in this portable radio incorporates 12 transistors, 1 diode and 1 thermistor.

A bar antenna feeds the MW broadcast signal to the mixer.

A telescopic rod antenna feeds the SW broadcast signal to the mixer.

After going through 2 IF amplifiers and 1 diode detector, audio signal then passes through a 7 transistor audio amplifier circuit.

Local oscillator voltage is fed back to the mixer.

An AM AGC voltage is fed back to 1st IF amplifier.

CHASSIS REMOVAL

1. Remove the battery compartment cover.
2. Remove the two back cover retaining screws.
3. Put the dial pointer at the high end of the dial and detach the dial string from the pointer.
4. Pull off the three operation knobs on the left-hand side of the cabinet.
5. Remove four chassis mounting screws, three screws on the printed circuit board. Remove the back cover retaining stud and the whole chassis can be separated from the cabinet. Exercise caution to avoid breaking the leads.

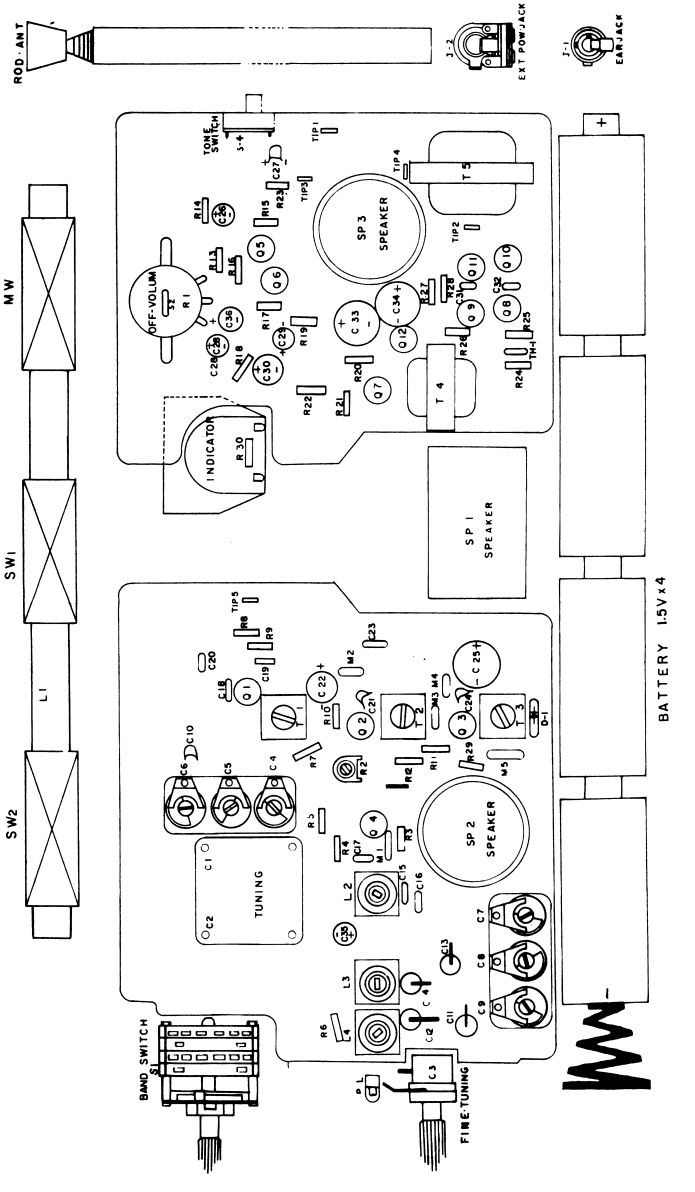


Figure 2 – Top View of Chassis