

ALIGNMENT INSTRUCTION

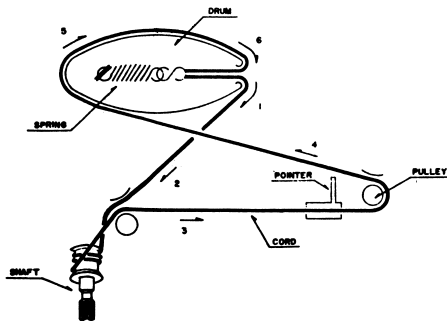
Should it become necessary at any time to check the alignment of this receiver, proceed as follows;

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

AM ALIGNMENT CHART

Signal generator			Receiver		Adjust	
Step	Band	Connection to receiver	Input signal frequency	Dial setting		Remarks
1	AM	Connect signal generator through a 10K Ω resistor to the antenna tuning condenser (TP-1) and the receiver chassis.	Exactly 455KC. (400%, 30% AM modulated.)	Tuning gang fully open. (minimum capacity)	Adjust for maximum output at speaker voice coil lugs.	T-8 T-7 T-6
2	AM	Use radiating loop, or place generator lead close to receiver for adequate signal pickup.	Exactly 530KC. (400%, 30% AM modulated.)	530 KC	Same as step 1.	L8
3	AM	Same as step 2.	Exactly 1600KC. (400%, 30% AM modulated.)	1600 KC	Same as step 1.	C8
4	AM	Same as step 2.	Exactly 600KC. (400%, 30% AM modulated.)	600 KC	See NOTE A.	L6
5	AM	Same as step 2.	Exactly 1400KC. (400%, 30% AM modulated.)	1400 KC	Same as step 4.	C9
6	AM	Same as step 2.	Exactly 1400KC. (400%, 30% AM modulated.)	1400 KC	Same as step 4.	C7
7	AM	Repeat steps 2, 3, 4, 5 and 6 until no further improvement is obtained.				

DIAL CORD STRINGING



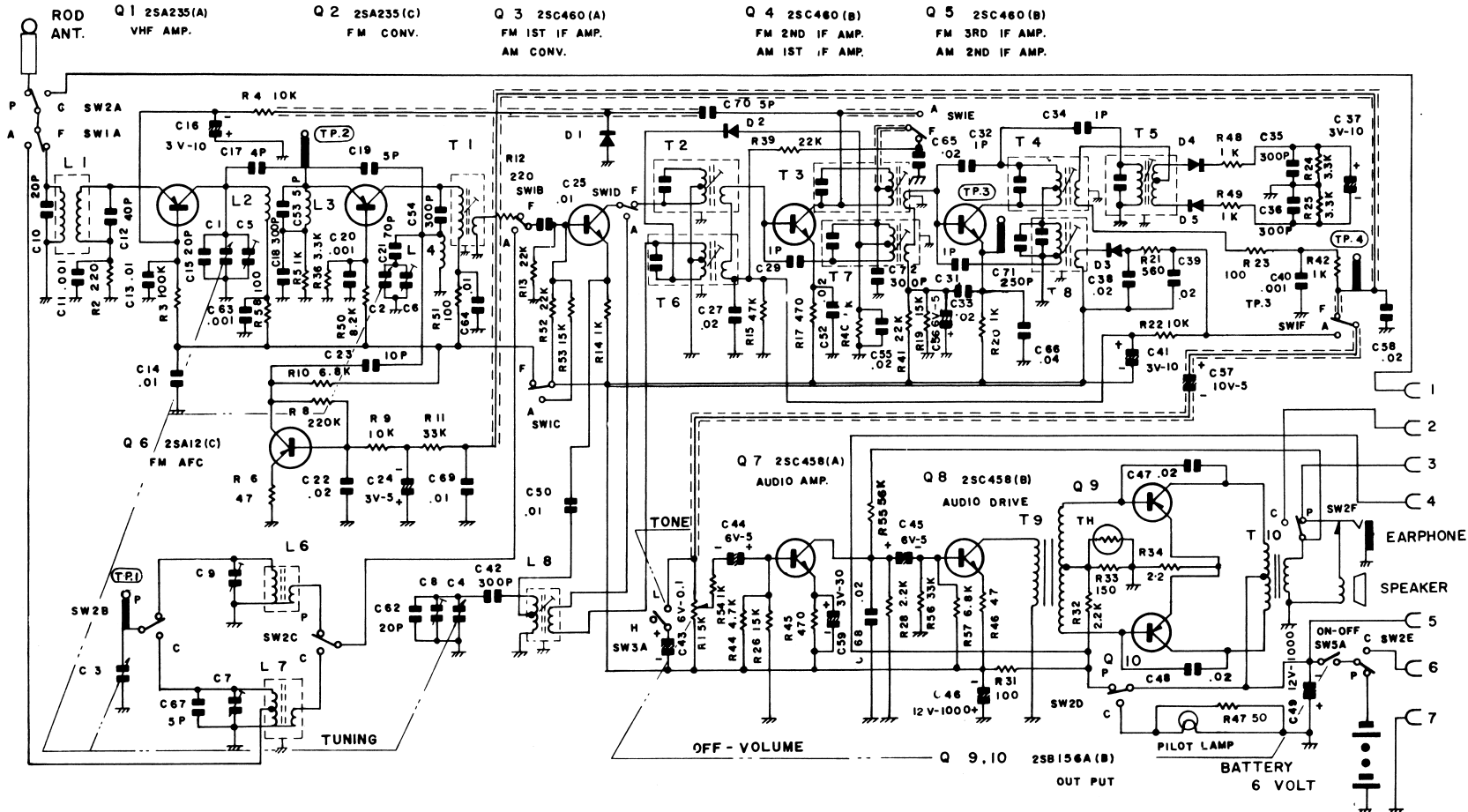
FM ALIGNMENT CHART

Signal generator				Receiver		Adjust
Step	Band	Connection to receiver	Input signal frequency	Dial setting	Remarks	
1	F.M.	Connect signal generator through a 10K Ω resistor to converter emitter, test point TP-2 ground lead to the receiver chassis.	Exactly 10.7MC. (400%, 30% FM modulated.)	Tuning gang fully closed. (maximum capacity)	Connect receiver chassis through a 0.05mfd condenser to IF3 collector, test point '3, of Q5.	3rd-IF Trans. core 2nd-IF Trans. core 1st-IF Trans. core T3 T2 T1
2	F.M.	Same as step 1.	Exactly 10.7MC. (Unmodulated)		See NOTE B.	T5, T4
3	F.M.	Connect signal generator through a 50 Ω resistor to the telescopic rod antenna. Ground lead to the receiver chassis.	Exactly 87MC. (400%, 30% FM modulated.)	87 MC	Adjust for maximum output at speaker voice coil lugs.	L4
4	F.M.	Same as step 3.	Exactly 108MC. (400%, 30% FM modulated.)	108 MC	Same as step 3.	C6
5	F.M.	Same as step 3.	Exactly 88MC. (400%, 30% FM modulated.)	88 MC	Same as step 3.	L2
6	F.M.	Same as step 3.	Exactly 108MC. (400%, 30% FM modulated.)	108 MC	Same as step 3.	C5
7	F.M.	Repeat steps 3, 4, 5 and 6 until further improvement is obtained.				

NOTE

- A. Check alignment 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 coil bobbin toward the center of the antenna loop stick to increase inductance, or away to decrease inductance.
- B. 1) Connect VTVM (0.1 volts range D.C. scale) between TP4 and ground.
 2) Adjust discriminator Sec. core T5 for VTVM 0 volt.
 3) Change signal generator frequency 10.7MC +100KC and -100KC approximately.
 4) Adjust discriminator Pri. core T4 for balanced peaks. Peak separation should be approximately 200KC.

SCHMATIC DIAGRAM



NOTE
 CAPACITANCE VALUES ARE IN MFD AND PF:MMFD.
 RESISTANCE VALUES ARE IN OHM.

P: PORTABLE RADIO USE
 C: CAR RADIO USE
 A: AM BAND
 F: FM BAND

SWITCH DESIGNATION SYMBOLS

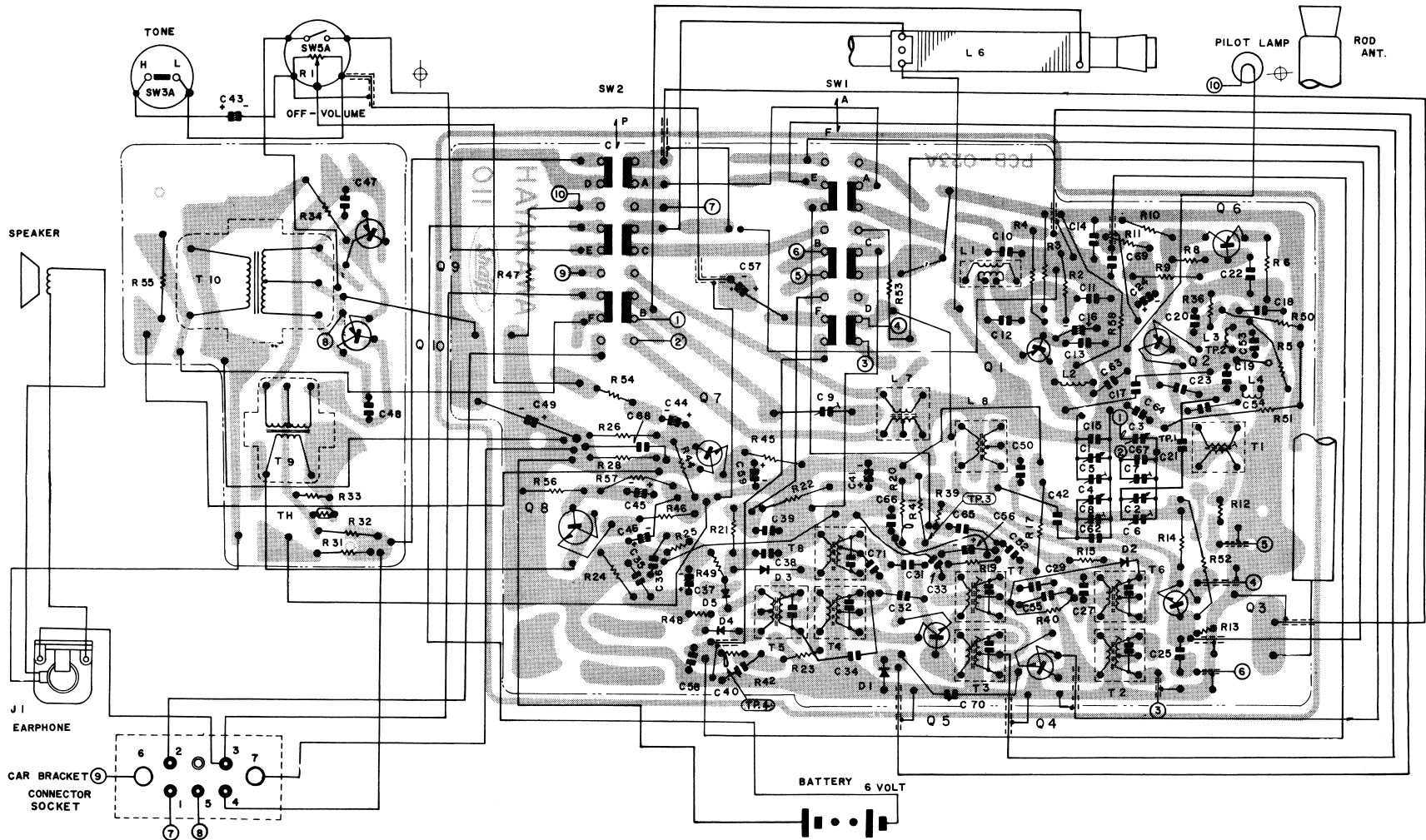
MARKS: CAR BRACKET CONNECTOR

TUNING RANGE
 (A) AM 530-1605 KC
 (F) FM 87-108 MC
 IF 10.7 MC (FM) 455 KC (MW)

TRANSISTOR VOLTAGE (FM/AM)

Q NO	Ec (V)	Eb (V)	Ee (V)	Q NO	Ec (V)	Eb (V)	Ee (V)
1	4.5	0.6	0.3	7	1.6	3.8	4.4
2	4.5	1.3	1.0	8	0.7	3.8	4.5
3	0	2.6	3.2	9	6.0	0.15	—
4	1.2	3.2	3.6	10	6.0	0.15	—
5	0	2.2	2.6	11	6.0	0.15	—
6	2.5	0.14	0.01	12	6.0	0.15	—

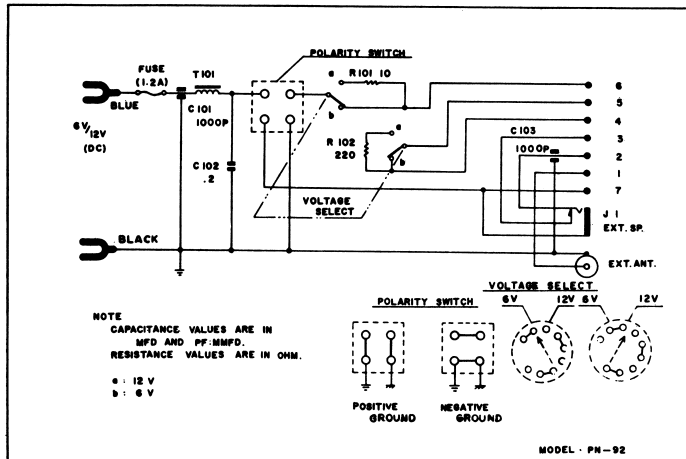
BOTTOM VIEW OF P.C. BOARD



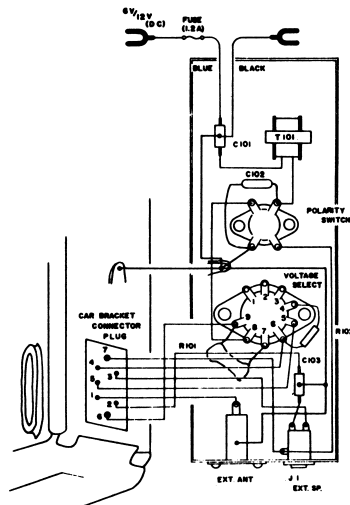
SW-1 A, B, C, D, E, F shown FM position.

SW-2 A, B, C, D, E, F shown portable radio use position.

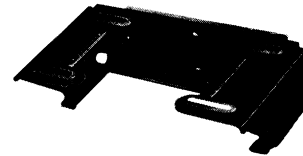
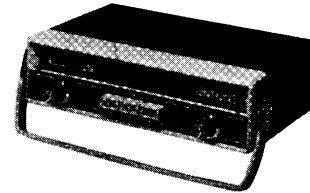
SCHEMATIC DIAGRAM (Car Bracket Model PN-92)



LOCATION DIAGRAM (PN-92)



Service Manual



MODEL
FX-27B
PN-92

SPECIFICATIONS

Frequency Range	
AM	530-1605KC
FM	66-74.5 MC
Intermediate Frequency	
AM	455KC
FM	10.7MC
Power Supply	
DC	6V (4 UM-2 Batteries), 12V /6V Car Battery, (+) or (-) ground (Use specially designed car bracket PN-92.)
Power Output	1.3W (on 12V Car Battery)
Speaker	4" Permanent Dynamic Speaker
Transistor Complement	
Q1	2SA235A..... FM RF Amplifier
Q2	2SA235C..... FM Converter
Q3	2SC460A..... FM 1st IF Amplifier & AM Converter
Q4	2SC460B..... FM 2nd IF Amplifier & AM 1st IF Amplifier
Q5	2SC460B..... FM 3rd IF Amplifier & AM 2nd IF Amplifier
Q6	2SA12C..... FM AFC
Q7	2SC458A..... Audio Amplifier
Q8	2SC458B..... Audio Driver
Q9,10	2SB156A(B)..... Output

GENERAL DESCRIPTION

The circuitry used in this car-portable radio incorporates 10 transistors, 5 diodes and 1 thermistor. A bar antenna feeds the AM broadcast signal to the converter. After going through 2 IF amplifiers and one diode detector, the signal passes through the 6 transistor audio amplifier circuit. A telescopic rod antenna feeds the FM broadcast signal to the RF amplifier. After going through 3 IF amplifiers and 2 diode detectors, then the signal passes through the 4 transistor audio amplifier circuit.

An AM AGC voltage is fed back to 1st IF amplifier. An FM AGC voltage is fed back from 2nd IF amplifier to FM RF amplifier.

An AFC voltage is fed back to the FM converter.

CHASSIS REMOVAL

1. Remove 5 screws located on the back of the cabinet and remove the back, top and bottom covers. To remove front panel proceed following steps.
2. Remove 2 knobs on the front of the cabinet.
3. Remove 4 screws located on both sides of the cabinet and free the chassis from the cabinet.
4. Remove a screw securing telescopic antenna and pull it out to the front.