

ALIGNMENT INSTRUCTIONS

Equipment Required

1. Signal Generator
2. VTVM with RF Probe
3. AC Meter for Audio Output indication
4. DC Milliammeter

Note:

Lead Connections in set-up should be kept as short as possible.

TRANSMITTER ALIGNMENT

(See figure 1)

PROCEDURE

- Volume control (R₃₁).....Maximum ("10" position)
- Squelch control (R₃₈).....Minimum ("0" position)
- Push to talk switch (S₁~S₆).....Transmitter (Pressed position)
- Remove shorting link from its terminals and mount it after completing alignment.
- Whip Antenna.....Remove from cabinet.
- Power source voltage.....12V (DC)

STEP	ALIGNMENT	ADJUSTMENT	REMARKS
1	OSC	L ₂ (OSC COIL)	Adjust L ₂ for maximum indication on milliammeter and back down 2 turns.
2	LAST STAGE	L ₃ (LAST STAGE COIL)	Adjust L ₃ for minimum indication on milliammeter.
3	ANT	L ₁ (LOADING COIL)	Adjust L ₁ for maximum indication on milliammeter.
4	CURRENT	R ₁₁ (CURRENT CONTROL)	Adjust R ₁₁ for 20mA milliammeter reading.
5	Repeat Step 1 through 4.	L ₂ , L ₃ , L ₁ & R ₁₁	As above and adjust L ₁ for maximum indication on VTVM with RF Probe.

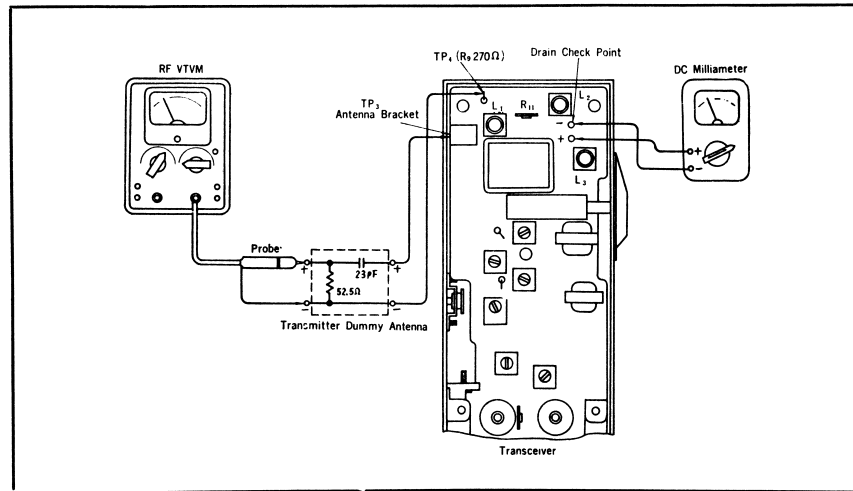


Fig. 1 Test Equipment Set-Up for Transmitter Alignment

RECEIVER ALIGNMENT

(See figure 2)

PROCEDURE

- Volume control (R₃₁).....Maximum ("10" position)
- Squelch control (R₃₈).....Minimum ("0" position)
- Push to talk switch (S₁~S₆)...Receiver (Unpressed position)
- Power source voltage.....12V (DC).
- Whip antenna.....Remove from cabinet.

STEP	ALIGNMENT	SIGNAL GENERATOR	ADJUSTMENT	REMARKS
1	IF	27.240 MHz or 27.330 MHz 100 Hz 30% Mod.	T ₄ , T ₅ , T ₆ (IFT)	T ₄ , T ₅ and T ₆ for maximum audio output.
2	Repeat step 1	"	"	As above.
3	OSC	"	T ₃ (OSC COIL)	Adjust T ₃ for abrupt indication on audio output, then back down the core (T ₃) 2 turns.
4	ANT	"	T ₁ (ANT COIL)	Adjust T ₁ for maximum audio output.
5	DET	"	T ₂ (DET COIL)	Adjust T ₂ for maximum audio output.
6	Repeat Step 3 through 5.	"	T ₃ , T ₁ & T ₂	As above

Notes:

1. During the above alignment, keep signal generator output low enough to maintain reading of 0.5 volts or less on VTVM to avoid AGC action.
2. Use only non-metallic alignment tools to insure proper alignment.
3. After alignment has been completed, all coil slugs that have been moved during alignment should be rewaxed to insure stability of operation with same type wax originally used.
4. Since the receiving frequency is controlled by the fixed oscillator "crystal", discrepancy of IF alignment decreases reception sensitivity, so that the signal generators frequency should be kept within the range of 455 kHz ± 1 kHz. Repeat IF alignment until no output change is noted on VTVM.

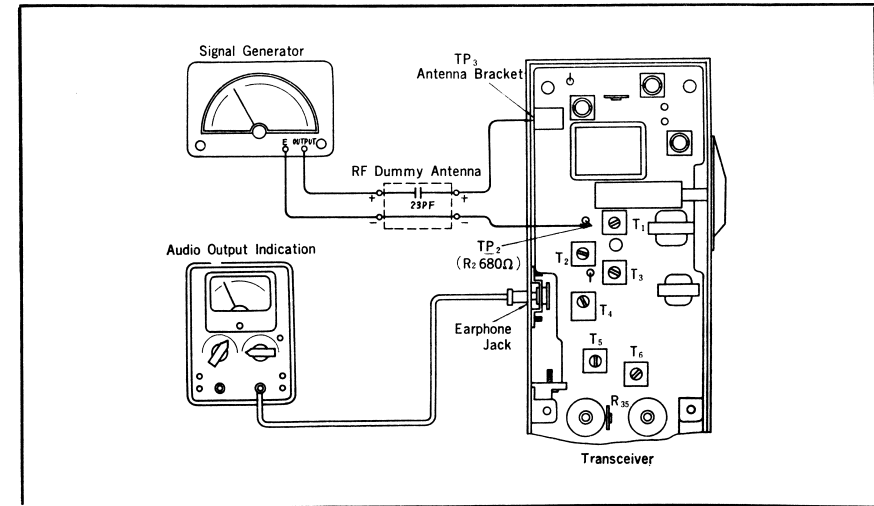
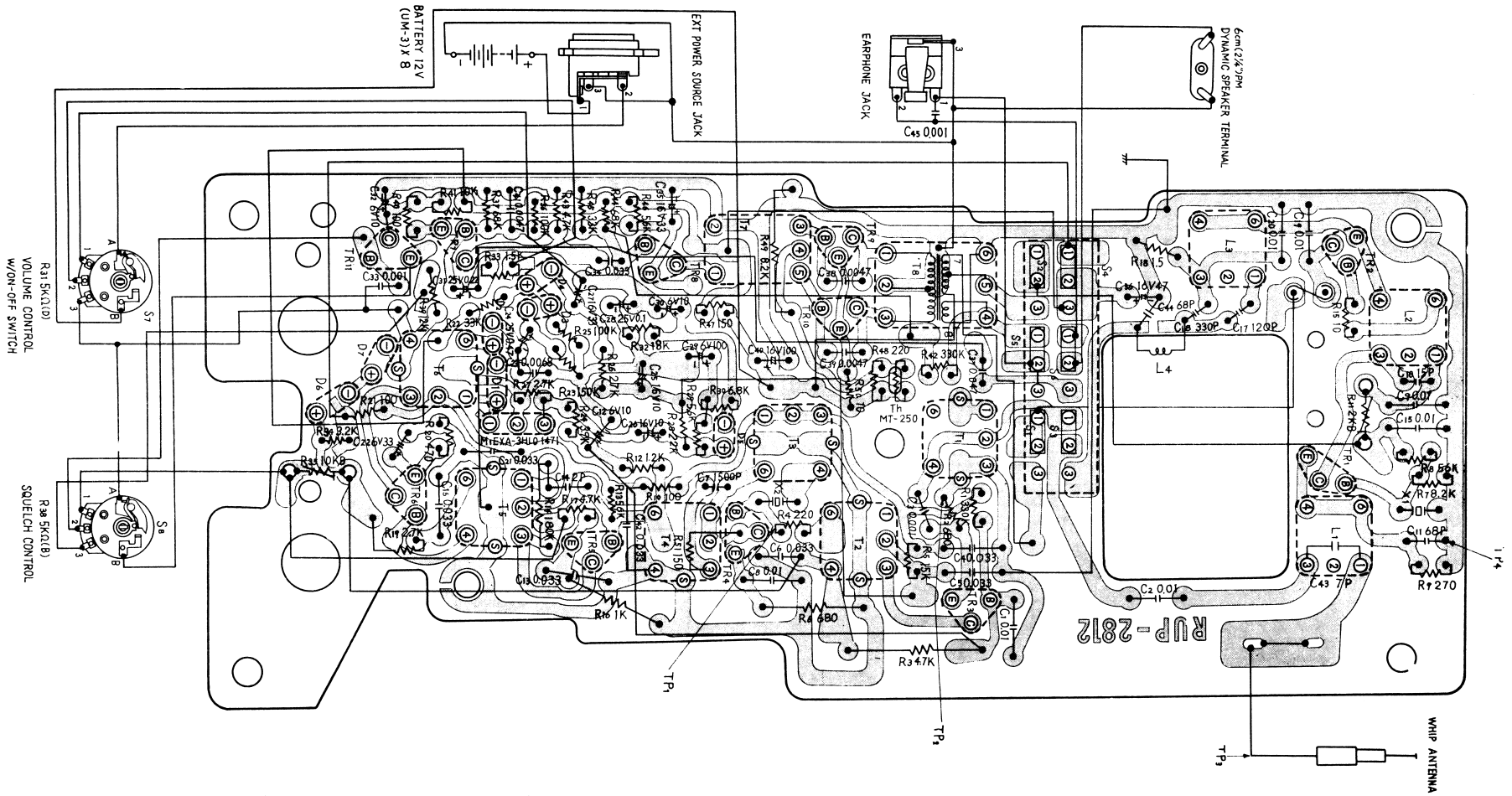
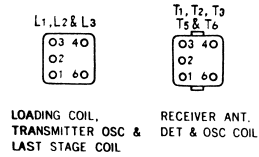
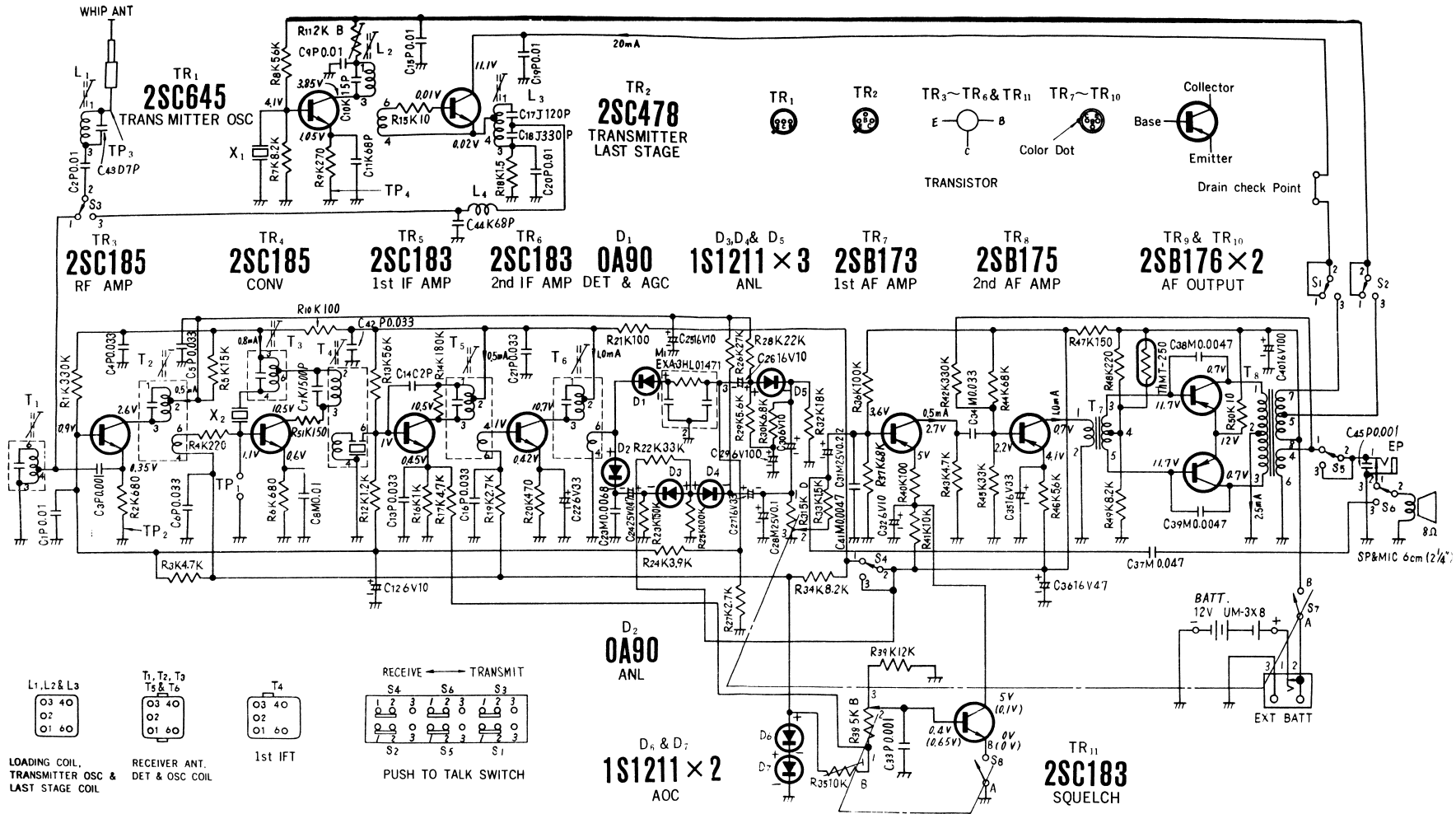


Fig. 2 Test Equipment Set-Up for Receiver IF and RF Alignment



Notes:

1. All resistor values in ohms (K=1000 Ω).
2. All capacitor values in micro farads (P=mmf).



LOADING COIL, TRANSMITTER OSC & LAST STAGE COIL
RECEIVER ANT. DET & OSC COIL
1st IFT
PUSH TO TALK SWITCH

Notes:

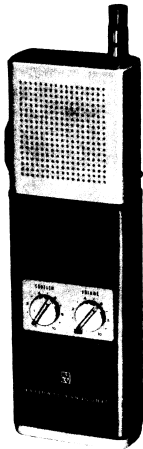
1. When replacement of a transistor is necessary, realignment may be necessary.
2. S1~S6: Push to talk switch in 'RECEIVE' position.
3. S7 : Power source switch in "OFF" position.
4. S8 : Squelch control in "0" position.
5. DC Voltage measurements are taken with circuit tester

6. Capital letters (M,K,J,P,C) in the circuit diagram show allowable tolerances of resistors and capacitors as follows:
M = ±20% K = ±10% J = ±5% P = +100% C = ±0.25PF - 0%
- 10kΩ/Volt from negative terminal of battery.
() Voltage of TR11 is at the "10" position of the Squelch Control.

7. Battery current: Set volume control to minimum.
Receiver.....10mA (at no input signal)
.....60mA (at maximum output)
Transmitter *35mA (at no modulation)
8. PF=pico farad=mmf
9. μF=micro farad=mfd
9. All resistor values in ohms (K=1000Ω).
11. All capacitor values in micro farads (P=mmf).

11-TRANSISTOR CITIZEN BAND TRANSCEIVER

MODEL RJ-27AA



SPECIFICATIONS

Frequency :	27.240 MHz or 27.330 MHz	Diodes :	OA90 Detector & AGC
Intermediate Frequency :	455 kHz		OA90 Automatic Noise Limiter
Transistors :	2SC645 Transmitter Oscillator		1S1211 Automatic Noise Limiter
	2SC47B Transmitter Last Stage Amp.		1S1211 Automatic Noise Limiter
	2SC185 Receiver RF Amp.		1S1211 Automatic Noise Limiter
	2SC185 Receiver Converter		1S1211 Operation Compensator
	2SC183 Receiver 1st IF Amp.	Sensitivity :	1 μ V for 50mW Output
	2SC183 Receiver 2nd IF Amp.	Audio Power Output :	400mW maximum
	2SB173 1st AF Amp.	Speaker & Microphone :	6cm (2 $\frac{1}{4}$ ") PM Dynamic Speaker, 8 Ω
	2SB175 2nd AF Amp.	Batteries :	12V (eight "AA" size penlight batteries) (NATIONAL UM-3 or equivalent)
	2SB176 AF Power Amp. (push-pull)	Cabinet Dimensions :	80(Wide) \times 237(High) \times 41(Deep)mm (3 $\frac{1}{8}$ " \times 9 $\frac{3}{8}$ " \times 1 $\frac{1}{8}$ ")
	2SC183 Squelch	Weight :	600g. (1 lb. 5 oz.) without batteries

SQUELCH ALIGNMENT

PROCEDURE

- Volume control (R₃₁).....Maximum ("10" position)
- Squelch control (R₃₅).....Minimum ("0" position)
- Push to talk switch (S₁~S₆)...Receiver (Unpressed position)
- Power source voltage.....12V(DC)
- Whip Antenna.....Remove from Cabinet.

STEP	ALIGNMENT	SIGNAL GENERATOR	ADJUSTMENT	REMARKS
1	SQUELCH	27.240 MHz or 27.330 MHz 1000Hz 30% Mod. (40 dB)	R ₃₅ (SQUELCH CURRENT CONTROL)	Set squelch control to "10" position and adjust R ₃₅ so that audio output is obtained. Then lock R ₃₅ in place with lacquer.

To Remove Chassis (Refer to figs. 3-A, B & C)

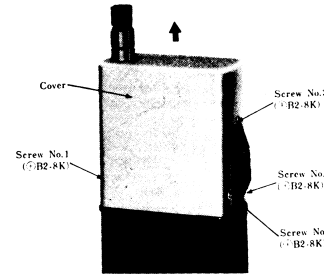


Fig. 3-A

1. Remove two (2) control knobs from cabinet front.
2. Remove four (4) cover mounting screws, nos. 1~4, as illustrated in fig. 3-A.
3. Turn cover in the direction of arrow as illustrated in fig. 3-A.
4. Remove battery cover by turning battery cover mounting screw towards "OPEN".
5. Remove three (3) cabinet back cover mounting screws, nos. 1~3, as illustrated in fig. 3-B.
6. Remove cabinet back cover.
7. Remove red whip antenna-mounting screw, no. 2, as illustrated in fig. 3-C.
(Note: When removing screw, be careful not to break volume control terminals.)
8. Remove five (5) red chassis-mounting screws, nos. 1 & 3~6, as illustrated in fig. 3-C.
9. To remove chassis completely, unsolder leadwires to earphone jack, EXT power source jack & speaker terminals.
10. To reassemble chassis, reverse the above procedures noting the following:

- Notes:** (1) Tighten all mounting screws.
 (2) When mounting cover, apply silicon grease to the rubber or the "Push to Talk Switch" and insert cover into cabinet pressing the rubber.
 (3) Insert knob fully.

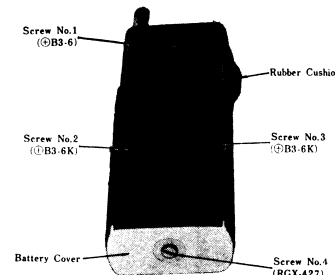


Fig. 3-B

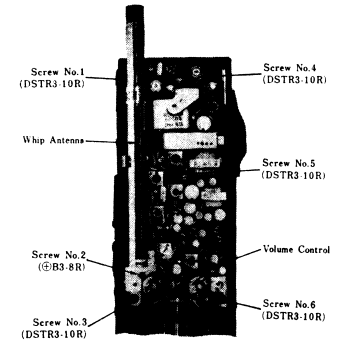


Fig. 3-C

Fig. 3 Top View—Disassembly Points