

ALL TRANSISTOR CAR RADIO

MODEL TM-1081ZB

SERVICE MANUAL

No. 308

1970

SPECIFICATIONS

CIRCUIT SYSTEM.....All transistor superheterodyne
with RF automatic tuning
system

TUNING RANGE530~1,605KHz

INTERMEDIATE FREQUENCY...455KHz

TRANSISTORS

- TR1 2SC 460.....RF Amp.
- TR2 2SC 454.....Converter
- TR3 2SC 454.....IF Amp.
- TR4 2SC 454.....Trigger Amp.
- TR5 2SC 458.....Trigger Detector
- TR6 2SC 458.....Relay Driver
- TR7 2SB 337 }Power Amp.
- TR8 2SB 337 }
- IC1 FA-6007T.....AF Amp.

DIODES

- D 1 1N60.....AGC
- D 2 1N60.....AGC
- D 3 1N60.....Detector
- D 4 1N60.....Transistor Protector

D 5 1N34AMotor Noise Limiter

THERMISTORS

- TH1 13D 27}Temperature Compensator
- TH2 13D 27}

LOUDSPEAKER5 $\frac{1}{8}$ " P.M., 4 ohms

AUDIO OUTPUT.....4 W

POWER SUPPLY.....DC 12V, Negative
grounded battery

CURRENT CONSUMPTION.....100mA (with no signal)
700mA (at max. output)

ANTENNA.....Power antenna for car use

SENSITIVITY.....10 dB (max.)
25 dB (practical)

STOP SENSITIVITY.....28 dB (Dx.)
52 dB (local)

DIMENSIONS.....2 $\frac{3}{16}$ "(H) \times 9 $\frac{5}{16}$ " (W)
 \times 5 $\frac{5}{16}$ " (D)
(5.5 \times 16 \times 15cm)

WEIGHT.....4 lbs. 6 oz.

ACCESSORIES

- Speaker (5 $\frac{1}{8}$ " P.M., 4 ohms)
- Power antenna (RO-74B)

- Antenna connecting cord
- Set screws

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CONTROLS

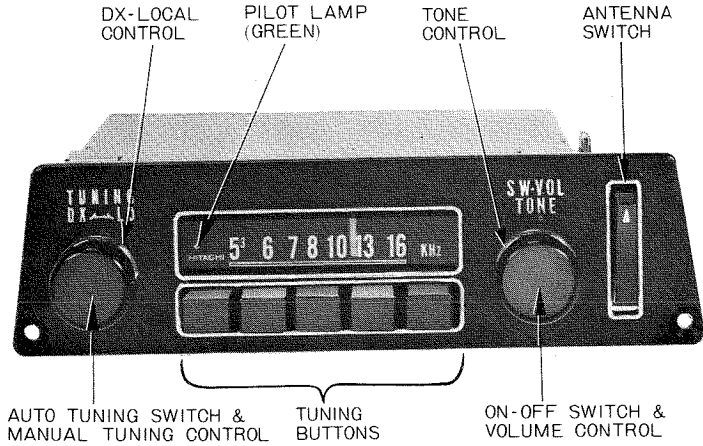


Fig. 1

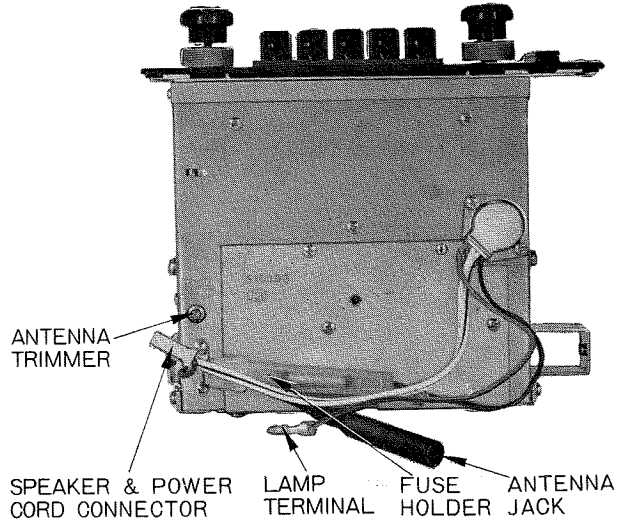


Fig. 2

BLOCK DIAGRAM

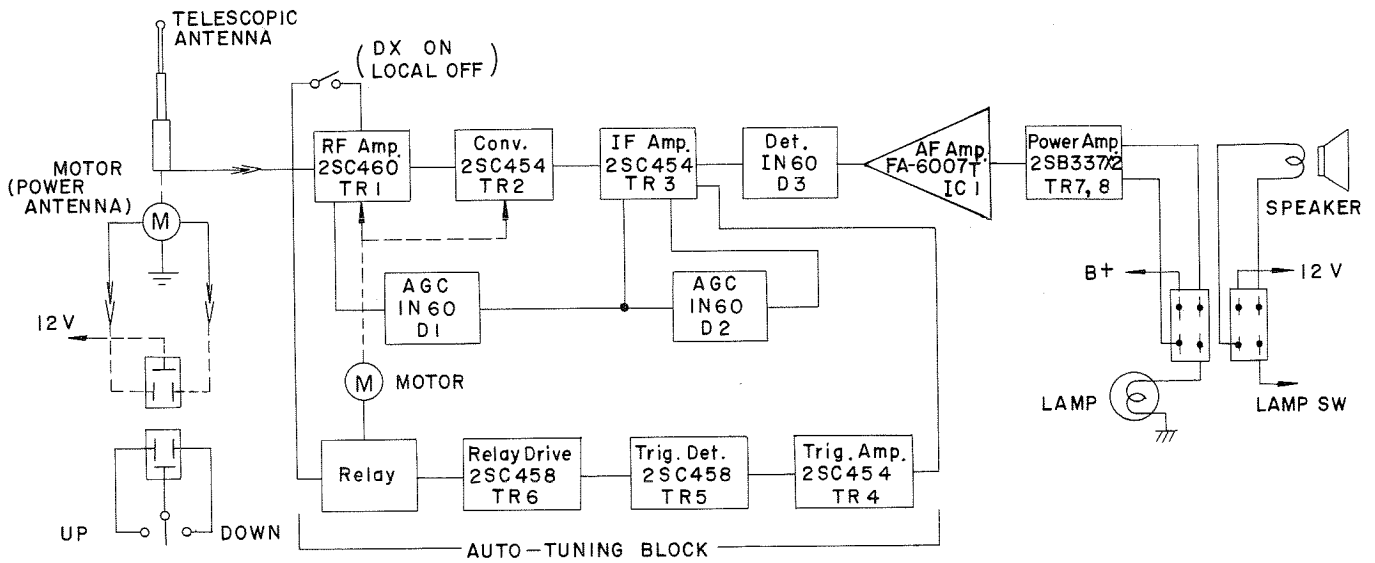


Fig. 3

BLOCK DIAGRAM OF AUTO TUNING

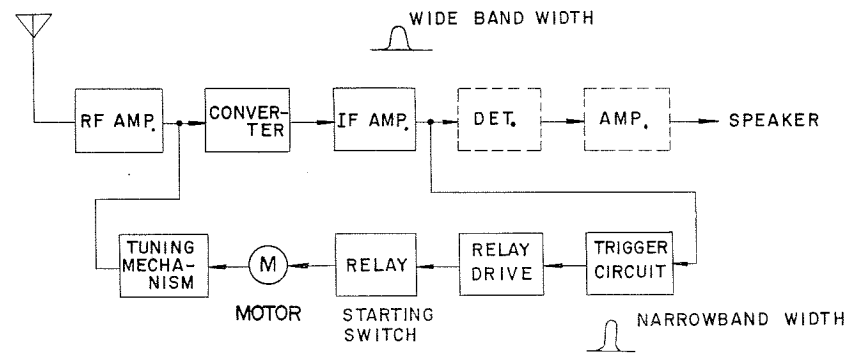


Fig. 4

DISASSEMBLY

1. Removal of upper cover

Remove two screws holding upper cover as shown in Fig. 5.

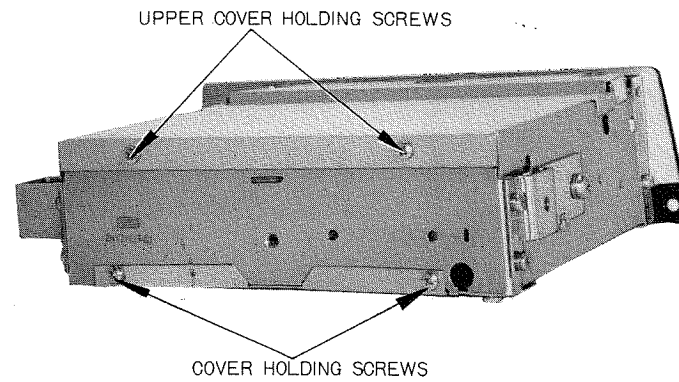


Fig. 5

2. Removal of circuit board

Remove two screws holding circuit board as shown in Fig. 6.

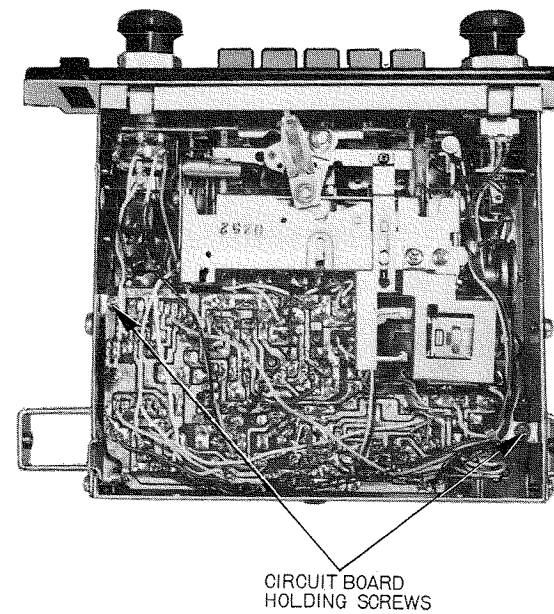


Fig. 6

3. Removal of chassis

Remove four screws holding chassis as shown in Figs. 7 and 8.

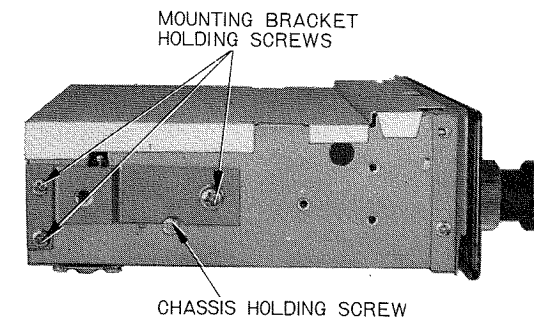


Fig. 7

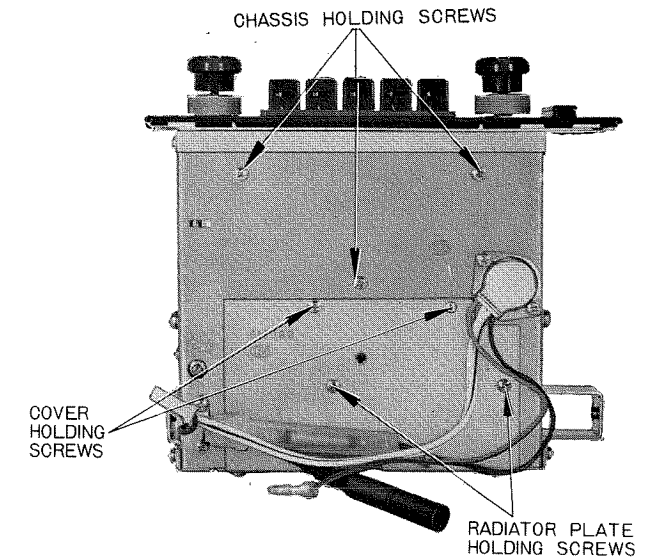


Fig. 8

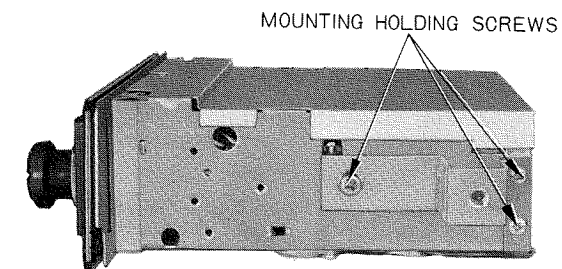


Fig. 9

ALIGNMENT PROCEDURE

Instrument Required

1. RF. Signal Generator
2. IF. Sweep Generator (Centered at 455KHz for AM)
3. Marker Generator
4. VTVM (Vacuum-tube Voltmeter)
5. Oscilloscope

General Preparation

1. Use batteries having the specified voltage. Voltage, when the switch is turned on (with no signal), must not be less than 13.2V.
2. Turn the volume control knob to maximum.
3. Connect the output terminal of signal generator

4. Connect the VTVM (vacuum tube voltmeter, with AC 3V or less scale) to each speaker cords.
5. Make the following adjustment to gain maximum on VTVM.
6. During alignment, be sure to adjust the output of the signal generator so that the reading on VTVM may drop to minimum adjustable, as it rises according to adjustment.

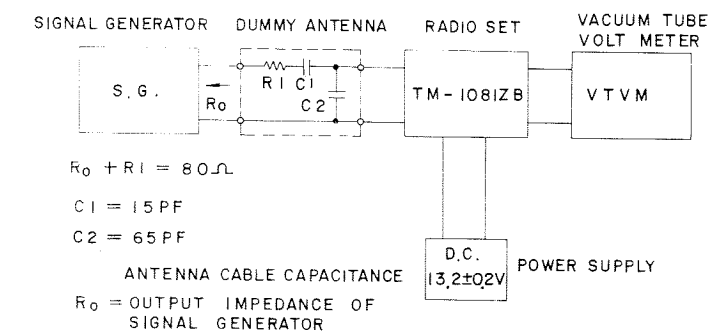
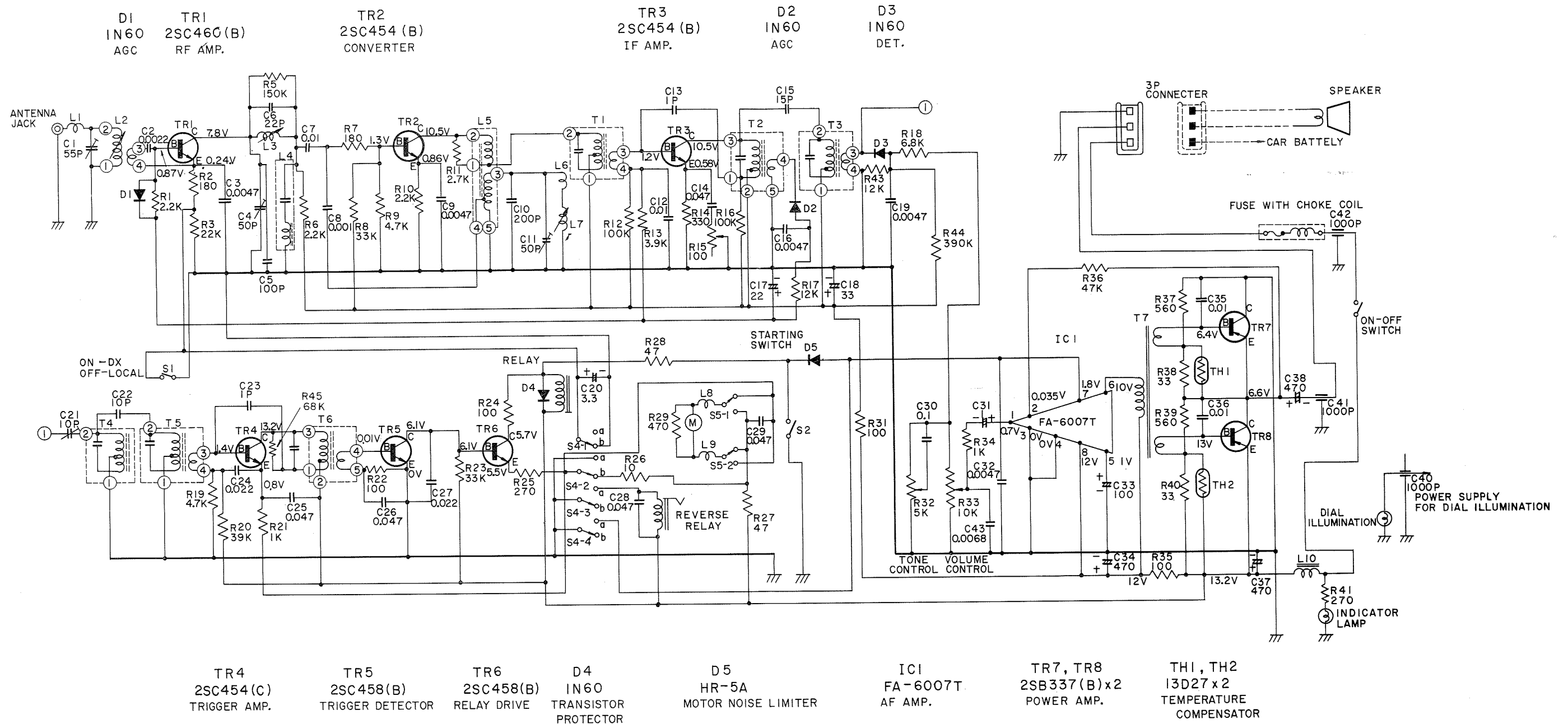


Fig. 10

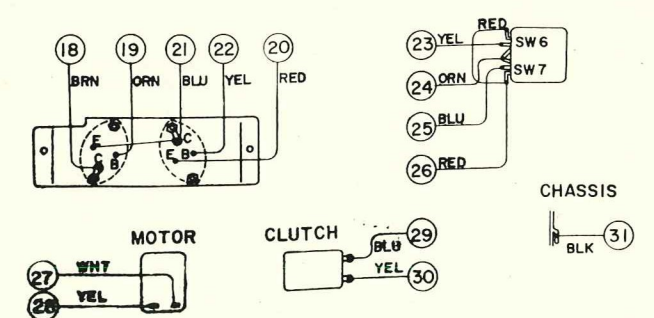
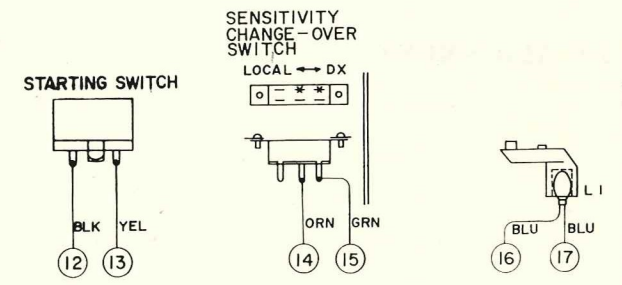
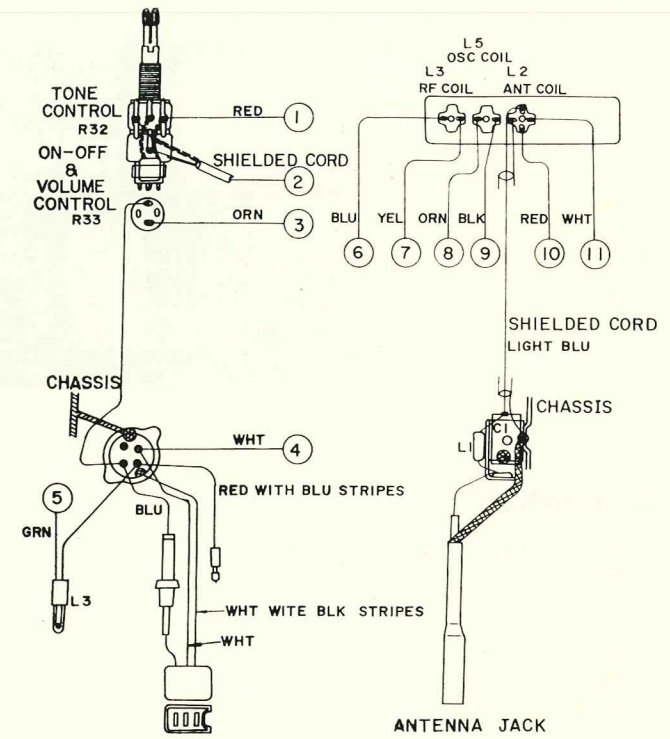
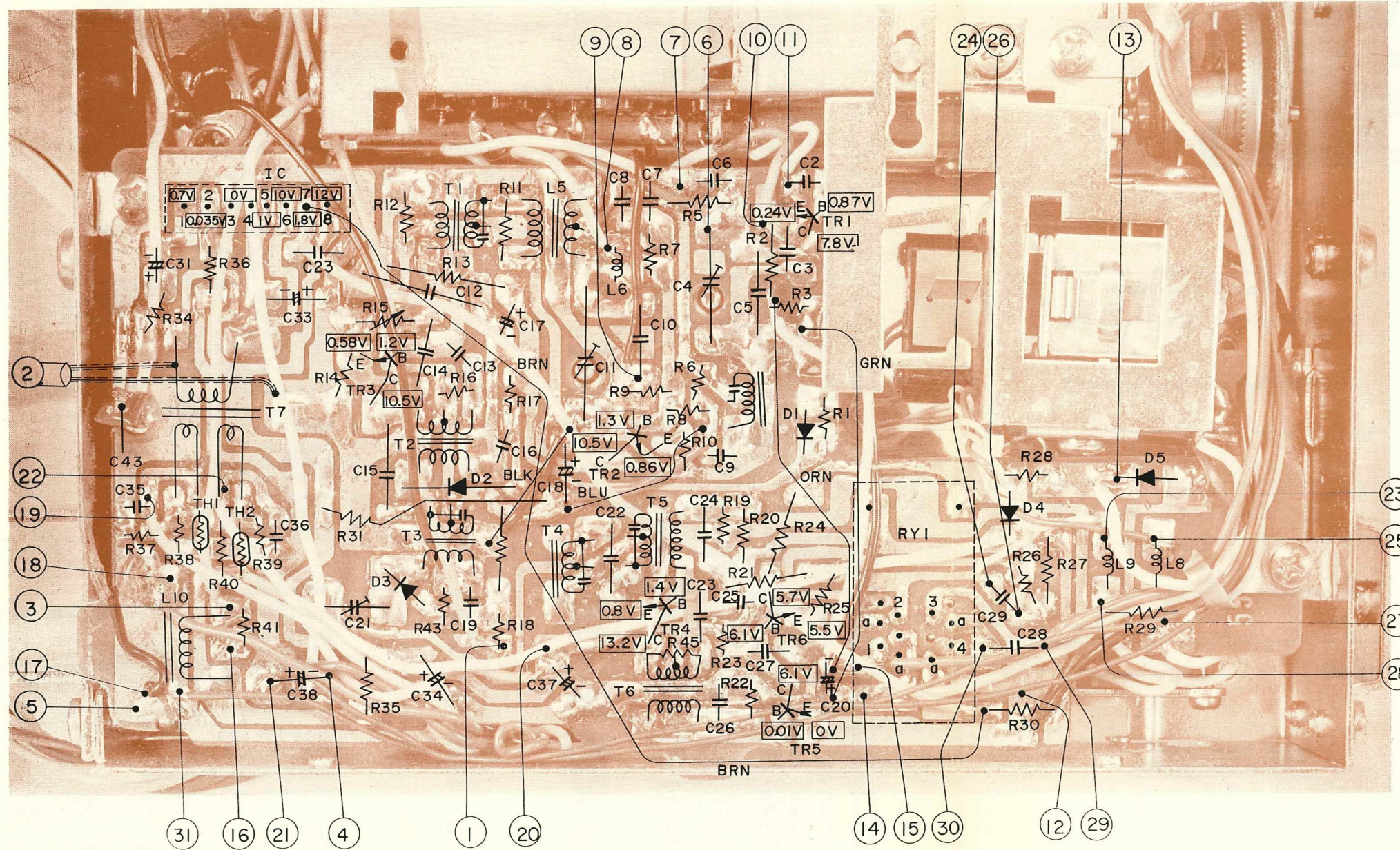
CIRCUIT DIAGRAM



NOTE

- 1 VOLTAGE MEASURED WITH VOLTMETER AT 13.2V DC, ⊖ EARTH BASE, VOLUME CONTROL AT MINIMUM AND NO SIGNAL.
- 2 ALL RESISTANCE VALUES IN OHMS. K=1,000
- 3 ALL CAPACITANCE VALUES IN μF EXCEPT "P" NOTED. P=μμF=PF

CIRCUIT BOARD DIAGRAM



REPLACEMENT PARTS

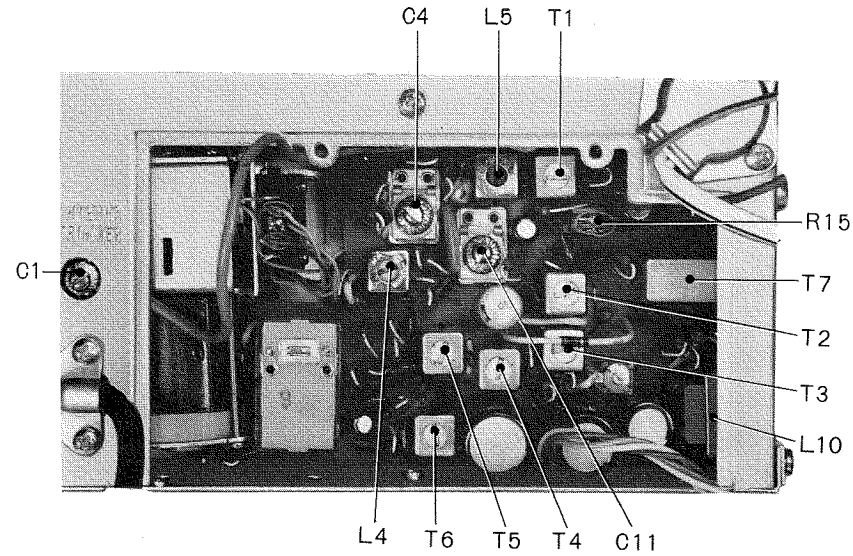


Fig. 11

IF ALIGNMENT

Step	Sig. Gen. Output	Dial Pointer Setting	Adjust for Max. Output
①	455KHz	High freq. end	Remove L4 core and adjust T3, T2 and T1
②	Repeat step ①		
③	455KHz	High freq. end	L4 (IF trap coil) adjust to gain minimum
④	Repeat step ③		

RF ALIGNMENT

⑤	515KHz	Low freq. end	L5
⑥	1,650KHz	High freq. end	C11
⑦	Repeat steps ⑤ and ⑥		
⑧	1,000KHz	1,000KHz signal	C1 (antenna trimmer), C7
⑨	Repeat step ⑧		

SENSITIVITY ALIGNMENT

Referring to Fig. 12, make the adjustments to gain 10dB sensitivity.

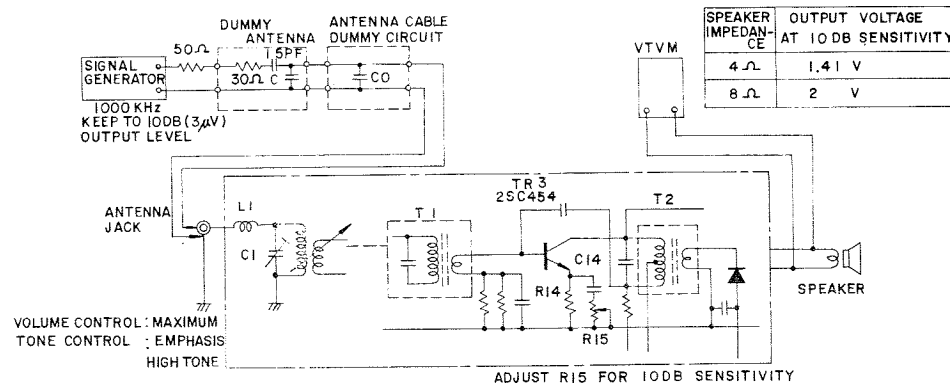


Fig. 12

Symbol No.	Stock No.	Description	Symbol No.	Stock No.	Description
CAPACITORS:					
C 1	0283559	Trimmer	R 36	0137909	Carbon film 47kΩ 1/4SD
C 2	0274113	Mylar	R 37	0137810	Carbon film 560Ω 1/4SD
C 3	0274115	Mylar	R 38	0137765	Carbon film 33Ω±10% 1/4SD
C 4	0283082	Trimmer	R 39	0137810	Same as R37
C 5	0248724	Ceramic, discal	R 40	0137765	Same as R38
C 6	0248708	Ceramic, discal	R 41	0134366	Composition 270Ω±10% 1/2GF
C 7	0275111	Mylar	R 43	0137902	Same as R17
C 8	0274111	Mylar	R 44	0137952	Carbon film 390kΩ 1/4SD
C 9	0274115	Same as C3	R 45	0131743	Composition 68kΩ±10% 1/4GF
C 10	0248361	Ceramic, discal	TRANSISTORS:		
C 11	0283082	Same as C4	TR 1	0573486	2SC460(B)
C 12	0275111	Same as C7	TR 2	0573491	2SC454(B)
C 13	0248631	Ceramic, discal	TR 3	0573491	Same as TR2
C 14	0275115	Mylar	TR 4	0573492	2SC454(C)
C 15	0248704	Ceramic, discal	TR 5	0573480	2SC458(B)
C 16	0274115	Same as C3	TR 6	0573480	Same as TR5
C 17	0252322	Electrolytic	IC 1	5350041	Hybrid IC
C 18	0251080	Electrolytic	D 1	0575005	Diode 1N60
C 19	0274115	Same as C3	D 2	0575005	Same as D1
C 20	0252613	Electrolytic	D 3	0575005	Same as D1
C 21	0283113	Plastic film trimmer	D 4	0575005	Same as D1
C 22	0248650	Ceramic, discal	D 5	0575001	Diode 1N34A
C 23	0248631	Same as C13	TH 1	0576031	Thermistor 13D27
C 24	0275113	Mylar	TH 2	5330041	Same as TH1
C 25	0275115	Same as C14	TRANSFORMERS:		
C 26	0275115	Same as C14	T 1	0322116	IF 20kΩ:1kΩ
C 27	0275113	Same as C24	T 2	0322117	IF 20kΩ:3kΩ
C 28	0275115	Same as C14	T 3	0322117	Same as T2
C 29	0275115	Same as C14	T 4	0322117	Same as T2
C 30	0276111	Mylar	T 5	0322116	Same as T1
C 31	0252811	Electrolytic	T 6	0322117	Same as T2
C 32	0274115	Same as C3	T 7	0441114	Driver 20kΩ:200Ω×2
C 33	0252231	Electrolytic	COILS:		
C 34	0252535	Electrolytic	L 1	0316071	Antenna choke 14μH
C 35	0245017	Ceramic, discal	L 4	0324001	IF trap 455KC
C 36	0245017	Same as C35	L 5	0316099	Oscillator
C 37	0252535	Same as C34	L 6	5152008	Pading 3.9μH
C 38	0252335	Electrolytic	L 8	5152021	Pading 33μH
C 39	0276111	Same as C30	L 9	5152021	Same as L8
C 40	0239903	Cylindric ceramic capacitor ass.	L 10	5220001	Choke 1.5mH
C 41	0239903	Same as C40	RESISTORS:		
C 42	0239903	Same as C40	R 1	0137855	Carbon film 2.2kΩ 1/4SD
C 43	0274116	Mylar	R 2	0137804	Carbon film 180Ω 1/4SD
R 3	0137901	Carbon film 10kΩ 1/4SD	R 3	0137901	Carbon film 10kΩ 1/4SD
R 5	0137953	Carbon film 150kΩ 1/4SD	R 5	0137953	Carbon film 150kΩ 1/4SD
R 6	0137855	Same as R1	R 6	0137855	Same as R1
R 7	0137804	Same as R2	R 7	0137804	Same as R2
R 8	0137907	Carbon film 33kΩ 1/4SD	R 8	0137907	Carbon film 33kΩ 1/4SD
R 9	0137859	Carbon film 4.7kΩ 1/4SD	R 9	0137859	Carbon film 4.7kΩ 1/4SD
R 10	0137855	Same as R1	R 10	0137855	Same as R1
R 11	0131696	Composition 2.7kΩ 1/4GF	R 11	0131696	Composition 2.7kΩ 1/4GF
R 12	0137951	Carbon film 100kΩ 1/4SD	R 12	0137951	Carbon film 100kΩ 1/4SD
R 13	0137858	Carbon film 3.9kΩ 1/4SD	R 13	0137858	Carbon film 3.9kΩ 1/4SD
R 14	0137807	Carbon film 330Ω 1/4SD	R 14	0137807	Carbon film 330Ω 1/4SD
R 15	0151352	Semi variable 100Ω	R 15	0151352	Semi variable 100Ω
R 16	0137951	Same as R12	R 16	0137951	Same as R12
R 17	0137902	Carbon film 12kΩ 1/4SD	R 17	0137902	Carbon film 12kΩ 1/4SD
R 18	0137861	Carbon film 6.8kΩ 1/4SD	R 18	0137861	Carbon film 6.8kΩ 1/4SD
R 19	0137859	Carbon film 4.7kΩ 1/4SD	R 19	0137859	Carbon film 4.7kΩ 1/4SD
R 20	0137908	Carbon film 39kΩ 1/4SD	R 20	0137908	Carbon film 39kΩ 1/4SD
R 21	0137851	Carbon film 1.0kΩ 1/4SD	R 21	0137851	Carbon film 1.0kΩ 1/4SD
R 22	0137801	Carbon film 100Ω 1/4SD	R 22	0137801	Carbon film 100Ω 1/4SD
R 23	0137907	Carbon film 33kΩ 1/4SD	R 23	0137907	Carbon film 33kΩ 1/4SD
R 24	0137801	Same as R22	R 24	0137801	Same as R22
R 25	0137806	Carbon film 270Ω 1/4SD	R 25	0137806	Carbon film 270Ω 1/4SD
R 26	0137759	Carbon film 10Ω±10% 1/4SD	R 26	0137759	Carbon film 10Ω±10% 1/4SD
R 27	0134293	Composition 22Ω±10% 1/2GF	R 27	0134293	Composition 22Ω±10% 1/2GF
R 28	0137767	Carbon film 47Ω±10% 1/4SD	R 28	0137767	Carbon film 47Ω±10% 1/4SD
R 29	0134369	Composition 470Ω±10% 1/2GF	R 29	0134369	Composition 470Ω±10% 1/2GF
R 31	0131649	Composition 100Ω±10% 1/4GF	R 31	0131649	Composition 100Ω±10% 1/4GF
R 34	0137851	Same as R21	R 34	0137851	Same as R21
R 35	0137801	Same as R22	R 35	0137801	Same as R22
for Case assembly					
6122621	Case		6122621	Case	
7167382	Trimmer holder		7167382	Trimmer holder	
7771211	Binding screw with spring washer-3mm∅×5mm		7771211	Binding screw with spring washer-3mm∅×5mm	
0543197	Antenna jack		0543197	Antenna jack	
7166201	Antenna jack holder		7166201	Antenna jack holder	
7771211	Binding screw with spring washer-3mm∅×5mm for trimmer holder mounting		7771211	Binding screw with spring washer-3mm∅×5mm for trimmer holder mounting	
7196052	Cord cover		7196052	Cord cover	
7771211	Binding screw with spring washer-3mm∅×5mm (2 req'd) for antenna jack mounting		7771211	Binding screw with spring washer-3mm∅×5mm (2 req'd) for antenna jack mounting	
5741861	3P cord		5741861	3P cord	
5740525	Cord		5740525	Cord	
0239903	Capacitor assembly		0239903	Capacitor assembly	
8741405	Binding screw-3mm∅×5mm (2 req'd) for P.C.B. mounting		8741405	Binding screw-3mm∅×5mm (2 req'd) for P.C.B. mounting	
6160941	Rear cover		6160941	Rear cover	
8741406	Binding screw-3mm∅×6mm		8741406	Binding screw-3mm∅×6mm	
8713124	Spring washer-3mm∅ (4 req'd) for rear cover mounting		8713124	Spring washer-3mm∅ (4 req'd) for rear cover mounting	
7716161	Spacer		7716161	Spacer	
6160931	Bottom plate		6160931	Bottom plate	
7167191	Radiator plate		7167191	Radiator plate	
0573040	Transistor 2SB337(B)		0573040	Transistor 2SB337(B)	
8711410	Pan head screw-3mm∅×10mm		8711410	Pan head screw-3mm∅×10mm	
8811114	Washer-3mm∅		8811114	Washer-3mm∅	
8813124	Spring washer-3mm∅		8813124	Spring washer-3mm∅	
8821114	Nut-3mm∅		8821114	Nut-3mm∅	
7771211	Binding screw with spring washer-3mm∅×5mm (2 req'd) for radiator plate mounting		7771211	Binding screw with spring washer-3mm∅×5mm (2 req'd) for radiator plate mounting	

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Symbol No.	Stock No.	Description	Symbol No.	Stock No.	Description
	7771211	Binding screw with spring washer-3mm ϕ \times 5mm (4 req'd) for bottom plate mounting		0643135	Nut-9mm ϕ }
	5580252	Manual tuner		0629187	Washer-9mm ϕ } for front cover mounting
	7771211	Binding screw with spring washer-3mm ϕ \times 5mm (3 req'd) for tuner mounting		6160922	Rear cover
	0156904	Variable resistor		0591138	Fuse (2A)
	7500272	Coller		6213471	Escutcheon assembly
	0643135	Nut-9mm ϕ		7187931	Set bracket (R)
	5620221	Slide switch		7187941	Set bracket (L)
	8715104	Pan head screw-2mm ϕ \times 4mm		7771063	Pan head screw with spring washer-5mm ϕ \times 6mm
	7188553	Back plate		6263792	Knob (small)
	7771211	Binding screw-3mm ϕ \times 5mm		6263782	Knob (large)
	7196701	Pointer		7772031	Nut
	6163742	Escutcheon cover		0621445	Washer-11mm ϕ } (2 req'd) for volume shaft, tuner shaft mounting for Speaker assembly
	6702743	Indicator		5410663	Speaker assembly
	5760072	Lamp (6V)		5410542	Speaker-5 $\frac{1}{8}$ " (13cm) for Seesaw switch assembly
	0594102	Lamp		5630741	Seesaw switch assembly
	0541369	Lamp socket		5741141	3P cord for Printed circuit board assembly
	7771211	Binding screw with spring washer-3mm ϕ \times 5mm for lamp socket mounting			
	6160953	Front cover			
	7771211	Binding screw with spring washer for front cover mounting			
			R Y 1	5640042	Relay



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