

ALL TRANSISTOR CAR RADIO

MODEL TM-701BA

SERVICE MANUAL

No. 242

1969

SPECIFICATIONS

CIRCUIT SYSTEM 7-transistor superheterodyne

TUNING RANGE 530 - 1,605 KHz

INTERMEDIATE FREQUENCY... 455 KHz

TRANSISTORS

TR1 2SC460 RF. Amp.

TR2 2SC454 Frequency Convertor

TR3 2SC454 IF. Amp.

TR4 2SC458 AF. Amp.

TR5 2SC458 AF. Amp.

TR6,7 2SB370 × 2 ... Push-pull power Amp.

DIODES

D1 1N34A AGC

D2 1N34A Detector

THERMISTORS

TH1,2 13D27 × 2 Temperature Compensator

POWER OUTPUT 3.7W

SPEAKER 4 $\frac{3}{4}$ " PM, 8 Ω

POWER SUPPLY DC 12V, Negative grounded battery

CURRENT CONSUMPTION ... 125mA (with no signal)

ANTENNA Telescopic antenna for car use

(RO-25 provided)

DIMENSIONS 3 $\frac{3}{16}$ " (H) × 6 $\frac{5}{16}$ " (W) × 4 $\frac{3}{4}$ " (D)

(8 × 16 × 12cm)

WEIGHT 2 lbs. 3 oz.

ACCESSORIES

Radio set mounting brackets

Speaker

Noise Elimination kit (Capacitor 1)

Telescopic antenna

Spare fuse (1A)

CONTROLS

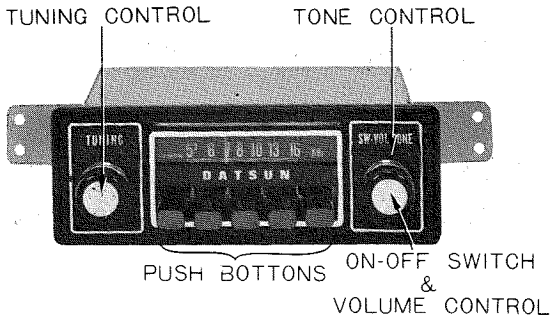


Fig. 1

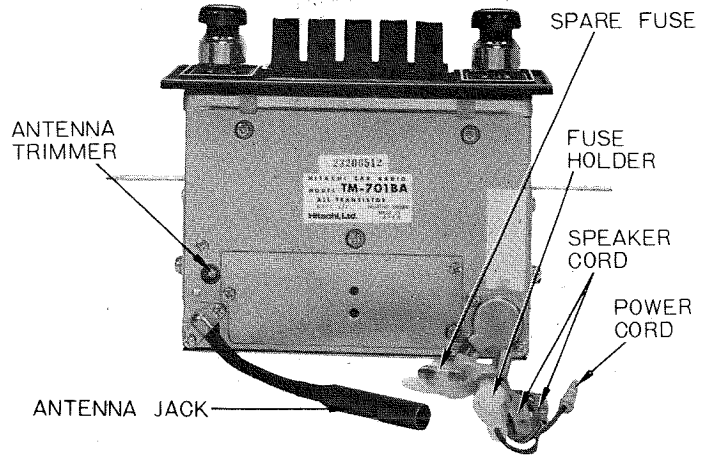


Fig. 2

RADIO AND SPEAKER INSTALLATION

1. Pull out knobs, nuts, washers and escutcheon and install the radio from the underside of the instrument panel. Attach escutcheon, washers, nuts and knobs.
2. Fit screw grommets into the installation brackets of car

and fix radio to car with 4mm ϕ washers and 4mm ϕ tapping screws. Fit speaker into stud bolts already attached to car and fix speaker to car with 4mm ϕ washers, 4mm ϕ spring washers and nuts.

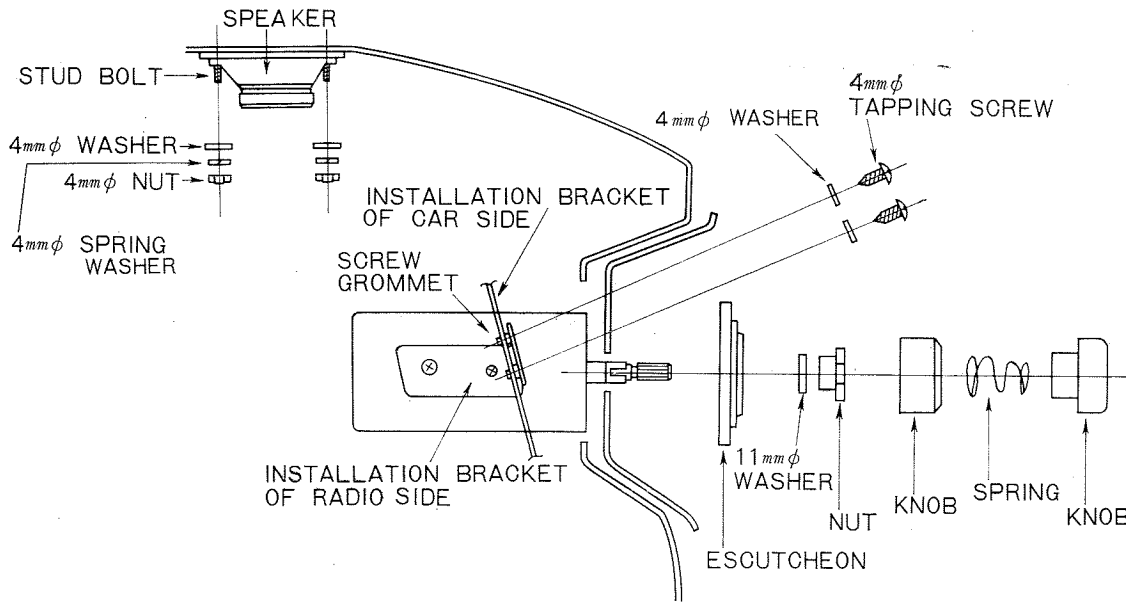


Fig. 3

NOISE ELIMINATION

Connect the 0.47 MFD noise-eliminating capacitor between the tip of primary lead terminal (\oplus terminal) of the ignition coil and the adjacent grounding.

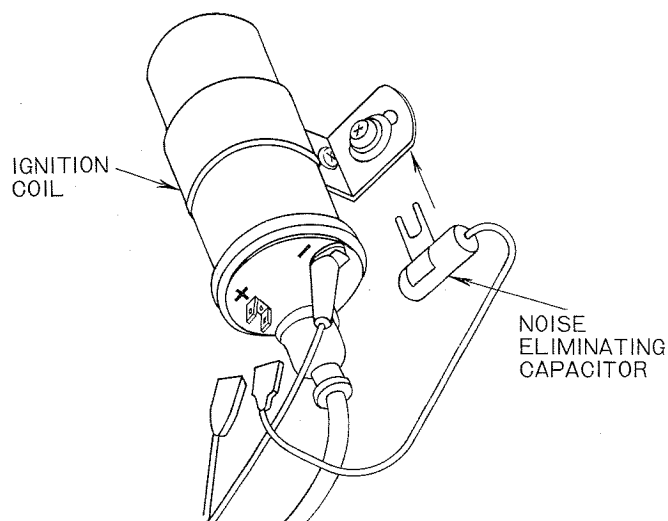


Fig. 4

ANTENNA INSTALLATION

1. Remove rubber bushings from antenna installation holes.
2. Fix antenna supporter and base to installation holes with 2 tapping screws passing antenna cable through hole.

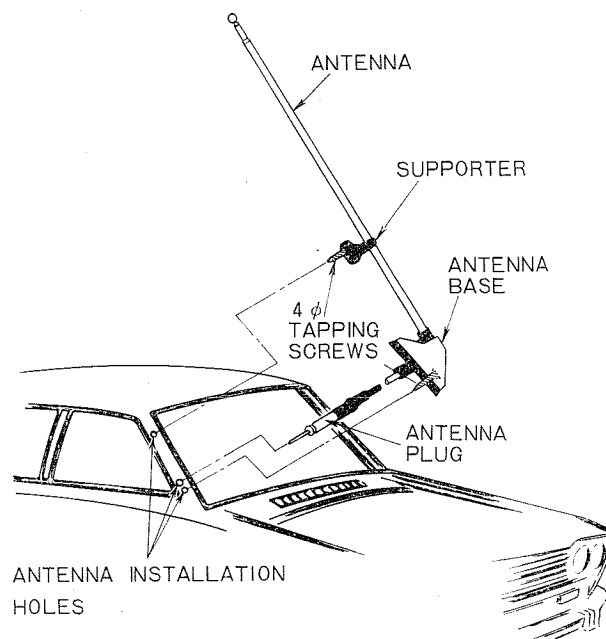


Fig. 5

ALIGNMENT AFTER INSTALLATION

When the antenna is mounted, preceding to mounting of the radio unit, connect the battery with the radio, turn on the switch to adjust the antenna trimmer in the following procedures.

1. Pull up the telescopic antenna to its full length.
2. Set the dial indicator near 1,000 KHz where any broadcast is not obtained.

3. Adjust the trimmer under the radio unit with a screw driver until the noise comes to be maximum. When the adjustment is completed, disconnect each wire and mount the radio unit on the car. When the radio is mounted, connect the wires again to the proper positions respectively.

DISASSEMBLY

Removal of circuit board.

1. After pulling out the knobs, escutcheon and installation brackets, remove two screws on the upper cover as shown in Fig. 6.
2. Remove two screws holding circuit board and remove soldered lug terminals fixed to circuit board as shown in Fig. 7.

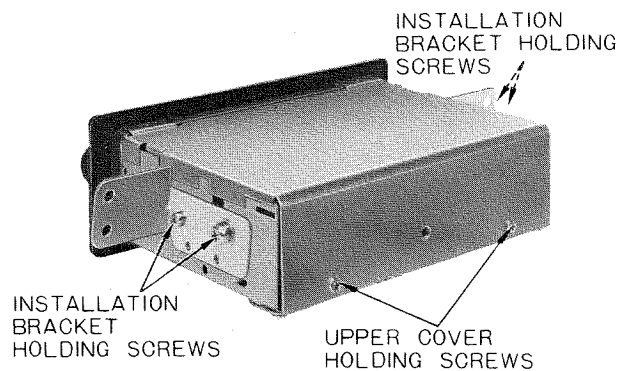


Fig. 6

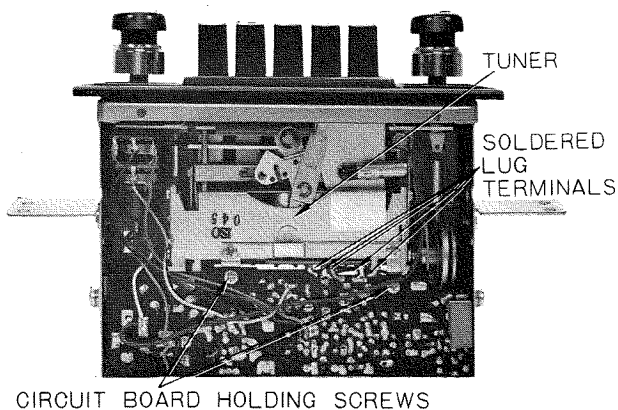


Fig. 7

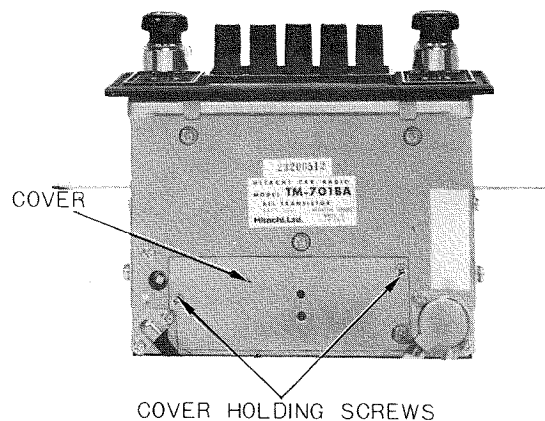
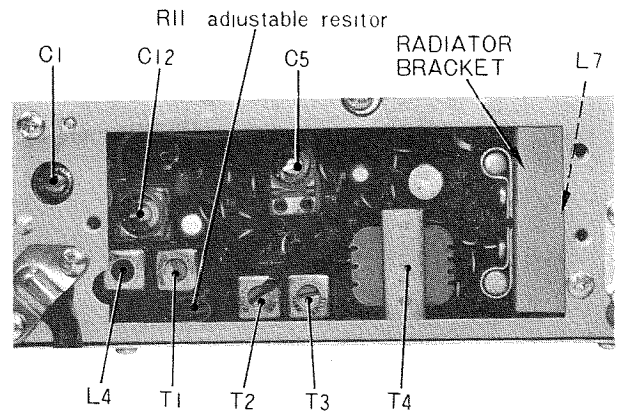
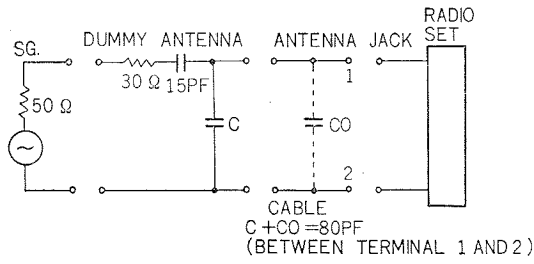


Fig. 8

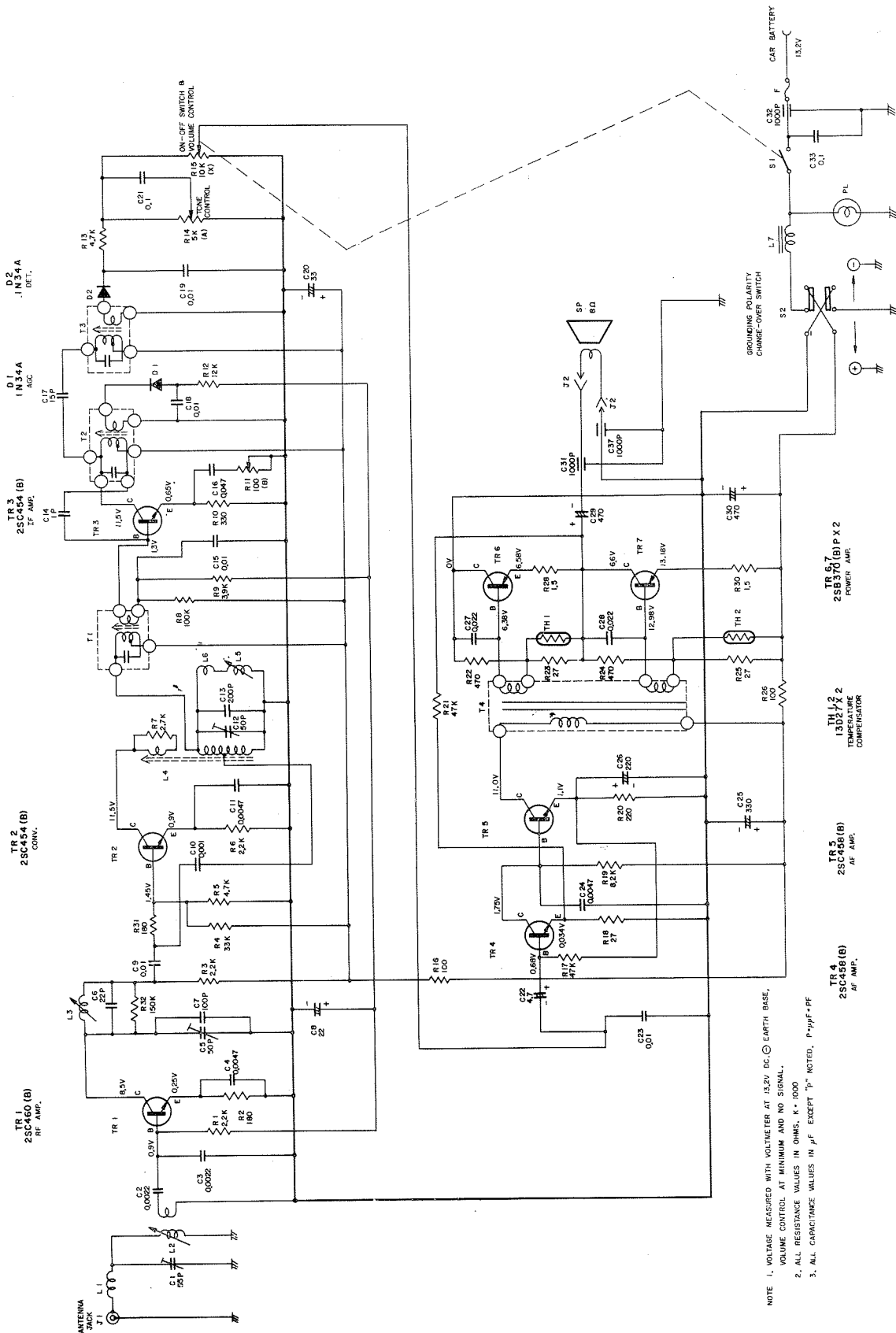
ALIGNMENT PROCEDURE

1. When the radio is turned (with no signal), the voltage should be kept in 13.2V.
2. Turn the volume control knob fully clockwise.
3. Connect the output terminal of signal generator (modulated by 400 Hz or 1,000 Hz 30%) to such the dummy antenna as the following Fig. 8 and connect the earth terminal of signal generator to the receiver chassis.
4. Connect the vacuum tube voltmeter (with AC 3V or less scale) to each speaker cords.
5. Make the following adjustments to gain maximum on the voltmeter.
6. Adjust the signal generator's output so that the reading on voltmeter may drop to minimum adjustable, as it rises according to adjustment.



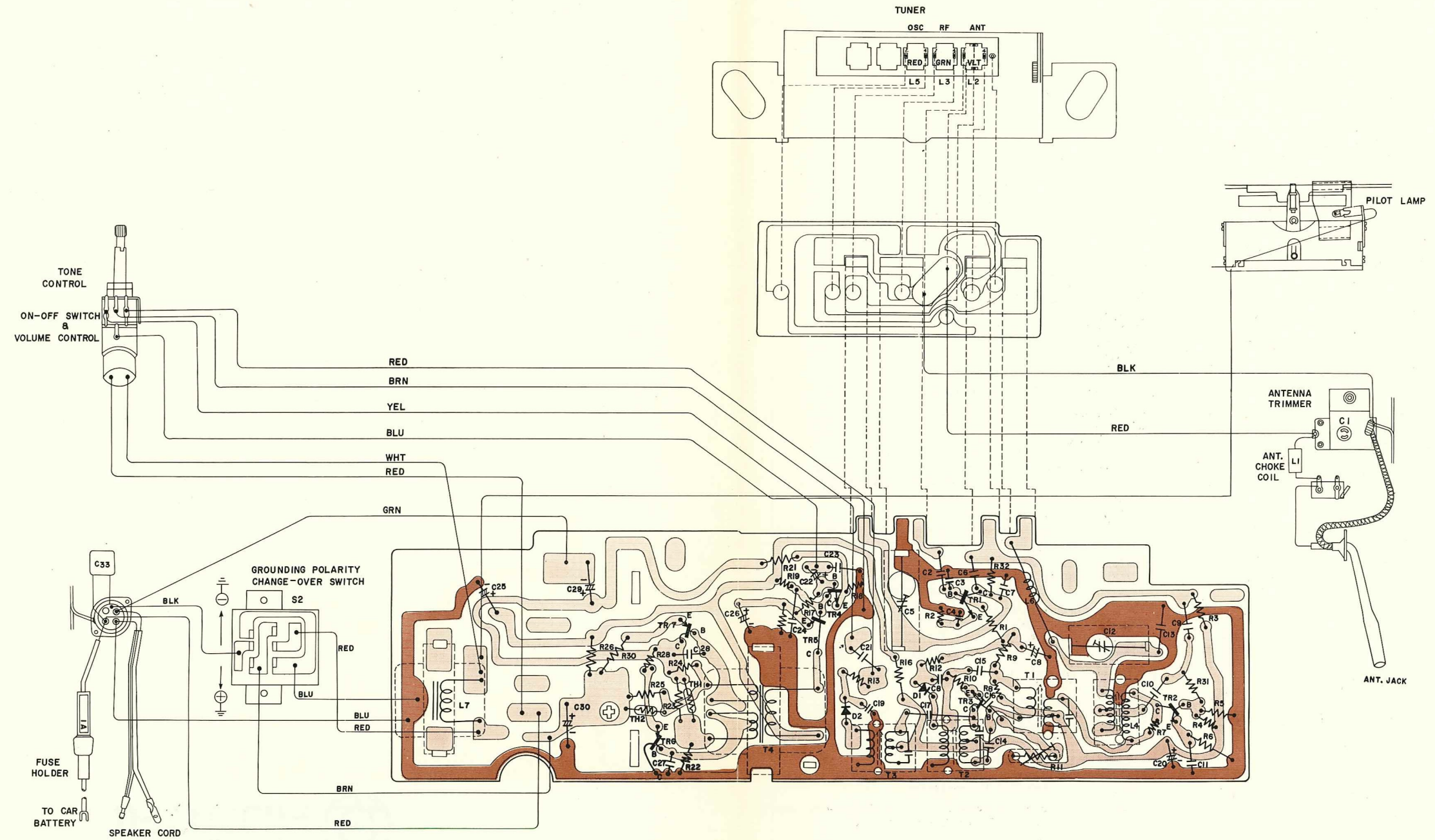
Step	Sig. Gen. Output	Dial Pointer Setting	Adjustment for Max. Output
1	455 KHz	Quiet point at the highest frequency	T3, T2 and T1
2	Repeat step (1) for few times		
3	520 KHz	Quiet point at the lowest frequency	L4
4	1,650 KHz	Quiet point at the highest frequency	C12
5	Repeat steps (3) and (4) for few times		
6	1,000 KHz	1,000 KHz signal	C1 (antenna trimmer)
7	1,000 KHz	1,000 KHz signal	C5
8	Repeat steps (6) and (7) for few times		

CIRCUIT DIAGRAM



NOTE 1. VOLTAGE MEASURED WITH VOLTMETER AT 13.2V DC EARTH GROUND.
 VOLUME CONTROL AT MINIMUM AND NO SIGNAL.
 2. ALL RESISTANCE VALUES IN OHMS, K = 1000
 3. ALL CAPACITANCE VALUES IN μ F EXCEPT "P" NOTED, P = P.P.F.

CIRCUIT BOARD DIAGRAM



REPLACEMENT PARTS

Symbol No.	Stock No.	Description	Symbol No.	Stock No.	Description	
CAPACITORS:						
C 1	0283552	Trimmer	D 1	0575001	Germanium diode 1N34A	
C 2	0274113	Mylar	D 2	0575001	Same as D1	
C 3	0274113	Same as C2	TH 1	0576031	Thermistor 13D27	
C 4	0274115	Mylar	TH 2	0576031	Same as TH1	
C 5	0283082	Trimmer	TRANSFORMERS:			
C 6	0248708	Ceramic	T 1	0322116	1F 20kΩ:1kΩ	
C 7	0248724	Ceramic	T 2	0322117	1F 20kΩ:3kΩ	
C 8	0252222	Electrolytic	T 3	0322117	Same as T2	
C 9	0275111	Mylar	T 4	0441114	Driver 2kΩ:200Ω×2	
C 10	0274111	Mylar	COILS:			
C 11	0274115	Same as C4	L 1	0316071	Antenna choke 14μH	
C 12	0283082	Same as C5	L 2	—	included in tuner	
C 13	0233058	Ceramic	L 3	—	included in tuner	
C 14	0248631	Ceramic	L 4	0316099	Oscillator 200μH	
C 15	0275111	Same as C9	L 5	—	included in tuner	
C 16	0275115	Mylar	L 6	0333118	Padding 4μH	
C 17	0248704	Ceramic	L 7	5220001	Choke 1.5mH	
C 18	0275111	Same as C9	for Final assembly			
C 19	0275111	Same as C9	8813124	Spring washer-3mm ∅	} (2 req'd)	
C 20	0251080	Electrolytic	8741405	Screw-3mm ∅ × 5mm bind		
C 21	0276111	Mylar	8811117	Washer-5mm ∅		
C 22	0252215	Electrolytic	8813127	Spring washer-5mm ∅		
C 23	0275111	Same as C9	8711708	Screw-5mm ∅ × 8mm pan head		
C 24	0274115	Same as C4	8811116	Washer-4mm ∅ (5 req'd)	} Accessory	
C 25	0252533	Electrolytic	8821116	Nut-4mm ∅		
C 26	0252232	Electrolytic	8785612	Screw-4mm ∅ × 12mm(4 req'd)		
C 27	0275113	Mylar	8813126	Spring washer-4mm ∅		
C 28	0275113	Same as C27	6706461	Screw grommet		
C 29	0252335	Electrolytic	8811116	Washer-4mm ∅		
C 30	0252535	Electrolytic	7176631	Set bracket (Left)		
C 31	—	included in capacitor ass'y	7176621	Set bracket (Right)		
C 32	—	Same as C21	for Case assembly			
C 33	0276111	included in capacitor ass'y	6112083	Case		
C 37	—	included in capacitor ass'y	0544056	1P Terminal		
RESISTORS:						
R 1	0137855	Carbon film	0841525	Round rivet-3mm ∅ for 1P terminal mounting		
R 2	0137804	Carbon film	7771211	Binding screw-3mm ∅ × 5mm ∅ with spring washer for trimmer capacitor mounting		
R 3	0137855	Same as R1	0543197	Antenna jack		
R 4	0137907	Carbon film	7166201	Antenna jack holder		
R 5	0137859	Carbon film	7771211	Binding screw-3mm ∅ × 5mm with spring washer for antenna jack holder mounting		
R 6	0137855	Same as R1	0047027	Cord cover		
R 7	0137856	Carbon film	7771211	Binding screw-3mm ∅ × 5mm with spring washer for cord cover mounting		
R 8	0137951	Carbon film	5740221	Cord with relay terminal (A)		
R 9	0137858	Carbon film	5740473	Power cord (Fuse 1A)		
R 10	0137807	Carbon film	0591167	Fuse (1A)		
R 11	0151352	Semi variable	0239903	Cylindric ceramic capacitor ass'y		
R 12	0137902	Carbon film	6260051	Push button		
R 13	0137859	Same as R5	5580045	"5" button tuner		
R 14	0156542	Variable	0541369	Lamp socket		
R 15	—	10kΩ(X)	0594102	Lamp		
R 16	0137801	Carbon film	7771211	Binding screw-3mm ∅ × 5mm with spring washer for lamp socket mounting		
R 17	0137909	Carbon film	7178162	P.C.B. mounting bracket		
R 18	0137764	Carbon film	8741405	Screw-3mm ∅ × 5mm bind (4 req'd) for P.C.B. mounting		
R 19	0137862	Carbon film	7771211	Binding screw-3mm ∅ × 5mm with spring washer (3 req'd) for tuner mounting		
R 20	0137805	Carbon film	7161754	Transistor cover		
R 21	0137909	Same as R17	7771211	Binding screw-3mm ∅ × 5mm with spring washre (3 req'd) for TR cover, radiator bracket mounting		
R 22	0137809	Carbon film	0643135	Nut-9mm ∅ for volume mounting		
R 23	0137764	Same as R18	7500274	Collar for tuning shaft		
R 24	0137809	Same as R22	7500272	Collar for volume shaft		
R 25	0137764	Same as R18	7161862	Front cover		
R 26	0137801	Same as R16				
R 28	0134701	Composition				
R 30	0134701	Same as R28				
R 31	0137804	Same as R2				
R 32	0137953	Carbon film				
TRANSISTORS:						
TR 1	0573486	2SC460(B)				
TR 2	0573491	2SC454(B)				
TR 3	0573491	Same as TR2				
TR 4	0573480	2SC458(B)				
TR 5	0573480	Same as TR4				
TR 9	0573023	2SB370(B)P				
TR 7	0573023	Same as TR6				

Symbol No.	Stock No.	Description	Symbol No.	Stock No.	Description
	0643135	Nut-9mm ∅	7771201		Nut
	0629187	Washer-9mm ∅ } (2 req'd)	0621445		Washer-11mm ∅ } (2req'd) Accessory
	8715105	Screw-2mm ∅ × 5mm pan head (2 req'd) for front cover mounting	0043569		Spring
	7771211	Screw-3mm ∅ × 5mm bind (2 req'd) for switch mounting	6260621		Knob (small)
	6160012	Upper cover	6260632		Knob (large)
	7771211	Screw-3mm ∅ × 5mm ∅ bind (2 req'd) for upper cover mounting	6213171		Speaker ass'y
	7617602	Label	5410561		Speaker-15cm × 10cm 8Ω
	7771211	Screw-3mm ∅ × 5mm bind spring washer (2 req'd) for back plate mounting	5741292		Cord with relay terminal
	7162423	Pointer	for Printed circuit board assembly		
	7162411	Back plate	8741406		Screw-3mm ∅ × 6mm bind (2 req'd) for radiator plate mounting
	7161891	Reflector plate	7161743		Radiator bracket
	6213182	Escutcheon ass'y	7162431		Radiator plate
			7082231		Car antenna
			5750631		Antenna supporter



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