

RLL-TRANSISTOR FM/AM NOSE TYPE

CAR RADIO

MODEL KM-1420DB

SERVICE MANUAL

No. 5 8 0

1 9 7 3

SPECIFICATIONS

CIRCUIT SYSTEM.....All-transistor
FM/AM superheterodyne
TUNING RANGE.....FM: 88~108MHz
AM: 530~1,605KHz
INTERMEDIATE FREQUENCY.....FM: 10.7MHz
AM: 455KHz

TRANSISTORS

TR 1 2SC535.....FM RF Amp.
TR 2 2SC460.....FM Conv.
TR 3 2SC460.....FM 2nd IF Amp.
TR 4 2SC460.....FM 3rd IF Amp.
TR 5 2SC460.....FM 4th IF Amp.
TR 6 2SC461.....TM Oscillator
TR 7 2SC454.....AM Conv.
TR 8 2SC454.....AM 1st IF Amp.
TR 9 2SC454.....AM 2nd IF Amp.
TR10 2SC460.....AM Oscillator
TR11 2SC458.....1st AF Amp.
TR12 2SC458.....2nd AF Amp.
TR13,14 2SB337×2.....Power Amp.
TR15 2SC460.....FM 1st IF Amp.

DIODES

D1 1N60.....FM Limiter
D2 1N60.....FM Limiter
D5,6 1N60P×2.....FM Detector
D 7 1S85.....AFC
D 8 1N60.....AGC
D 9 1N60.....AGC
D10 1N60.....AM Detector
D11 TR5.....Voltage stabilizer
D14 1S2076.....FM Limiter

THERMISTORS

TH1,2 13D27×2.....Temperature compensator

SPEAKER4 $\frac{5}{8}$ " (12cm), use 3.5~8 ohm

AUDIO OUTPUT.....7 W

POWER SUPPLY.....DC 12V, Negative ground

POWER CONSUMPTION.....220mA

ANTENNA.....RO-25, Rod antenna

SENSITIVITY.....Maximum FM: 0 dB, AM: 15 dB
Practical FM: 10 dB, AM: 30 dB

DIMENSIONS.....2"(H)×7 $\frac{1}{8}$ "(W)×5 $\frac{7}{8}$ "(D)
(5×18×15cm)

WEIGHT.....3 lbs. 5 oz. (1.5kg)

ACCESSORIES

NOISE-ELIMINATING CAPACITOR (0219901)..... 1
5mm∅ WASHER (8811117)..... 6
5mm∅×16mm TAPPING SCREW (8785612)..... 4
5mm∅×10mm TAPPING SCREW (7086881)..... 2
BRACKET WITH 5mm∅ SPRING NUT..... 1
5mm∅ SPRING NUT (0043295)..... 1

CONTROLS

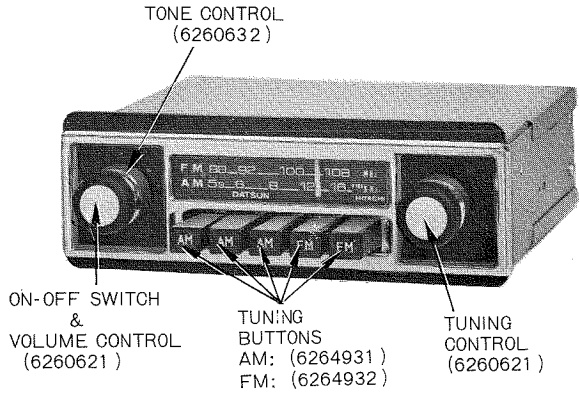


Fig. 1

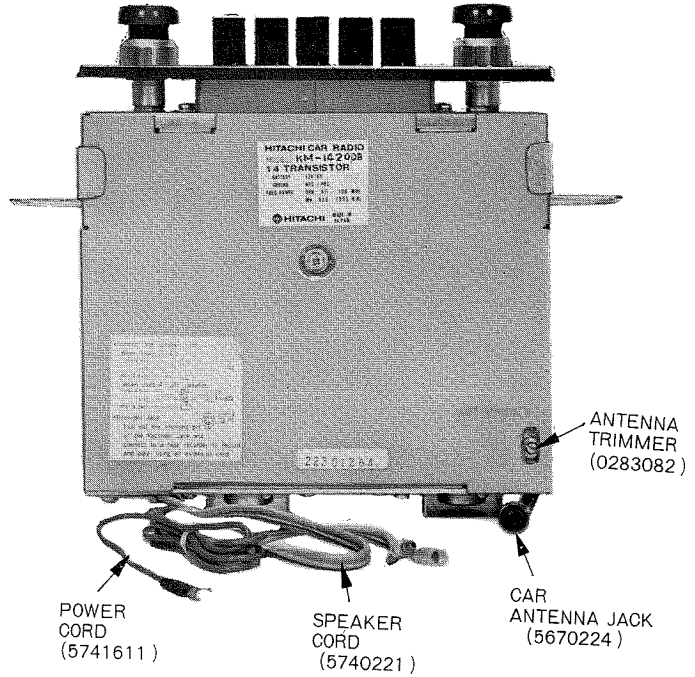


Fig. 2

BLOCK DIAGRAM

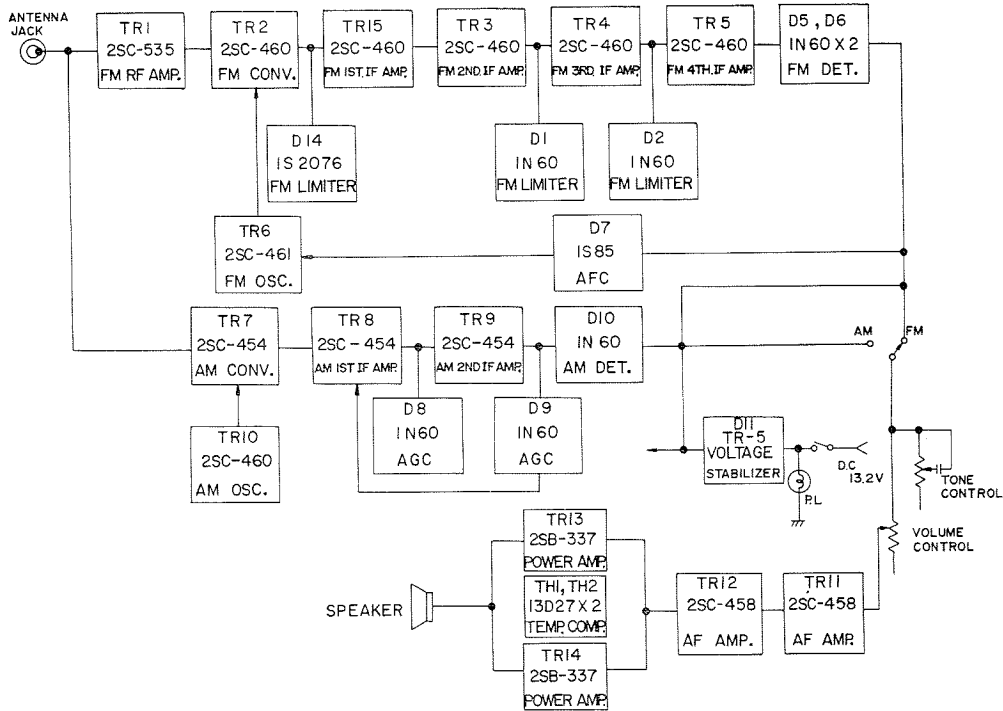


Fig. 3

RADIO SET INSTALLATION

1. RADIO

Install the radio set as shown in the figure.

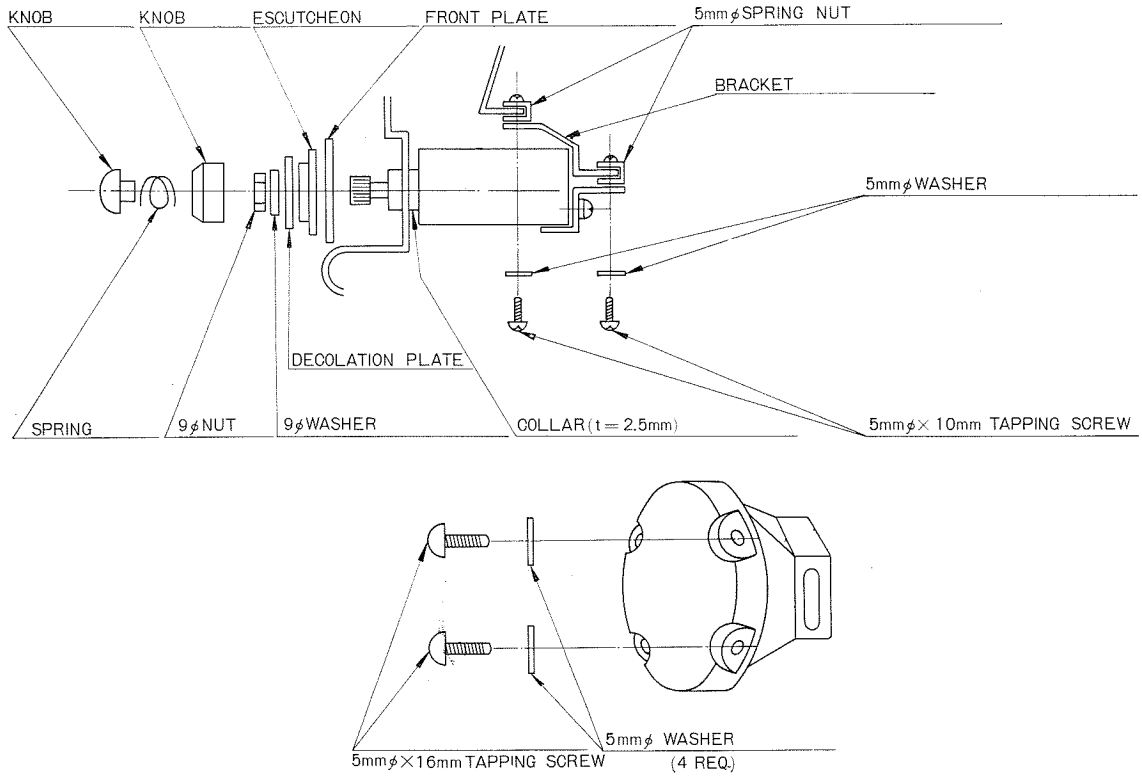


Fig. 4

2. ANTENNA

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.

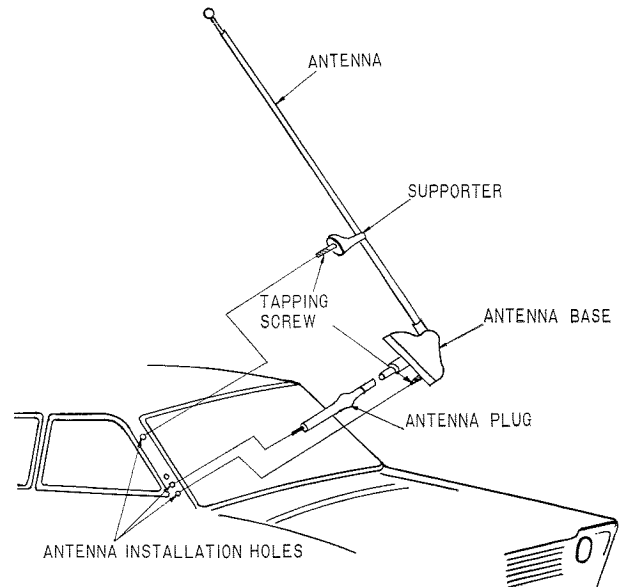


Fig. 5

MODEL KM-1420DB SERVICE MANUAL

3. NOISE ELIMINATION

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

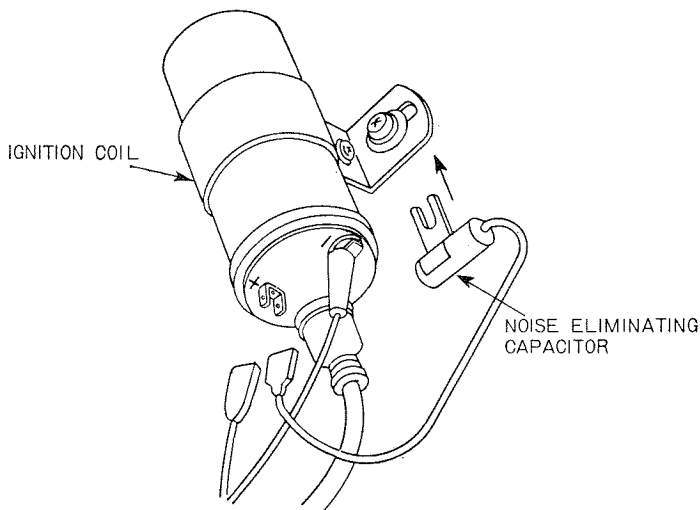


Fig. 6

ALIGNMENT PROCEDURE

Trimmer adjustment is important to obtain the best receiving condition matched with your car antenna.

After switching on the radio adjust the antenna trimmer in the following procedures.

1. Extend the car antenna to its full length.
 2. Set the dial pointer near 1400KHz and tune in the frequency of the furthest station.
 3. Adjust the trimmer with a screw driver until the clearest and loudest signal is obtained.
- When the adjustment is completed, connect the wires again to the proper positions respectively.

DISASSEMBLY

1. Removal of upper and bottom cover

Remove five screws holding upper and bottom covers as shown in Fig. 7.

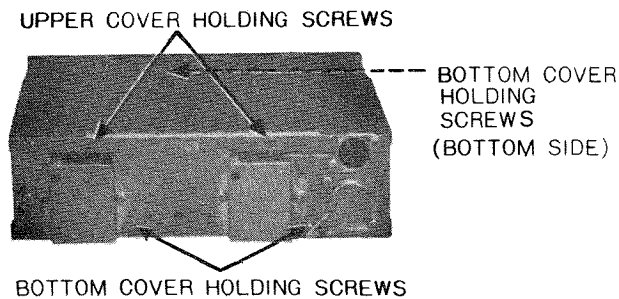


Fig. 7

SOLDERED LUG TERMINALS

2. Removal of circuit board

Remove two screws holding circuit board and soldered lug terminal fixed to circuit board as shown in Fig. 8.

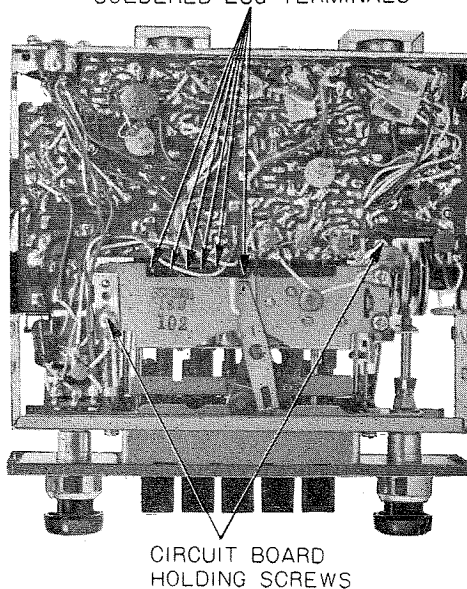


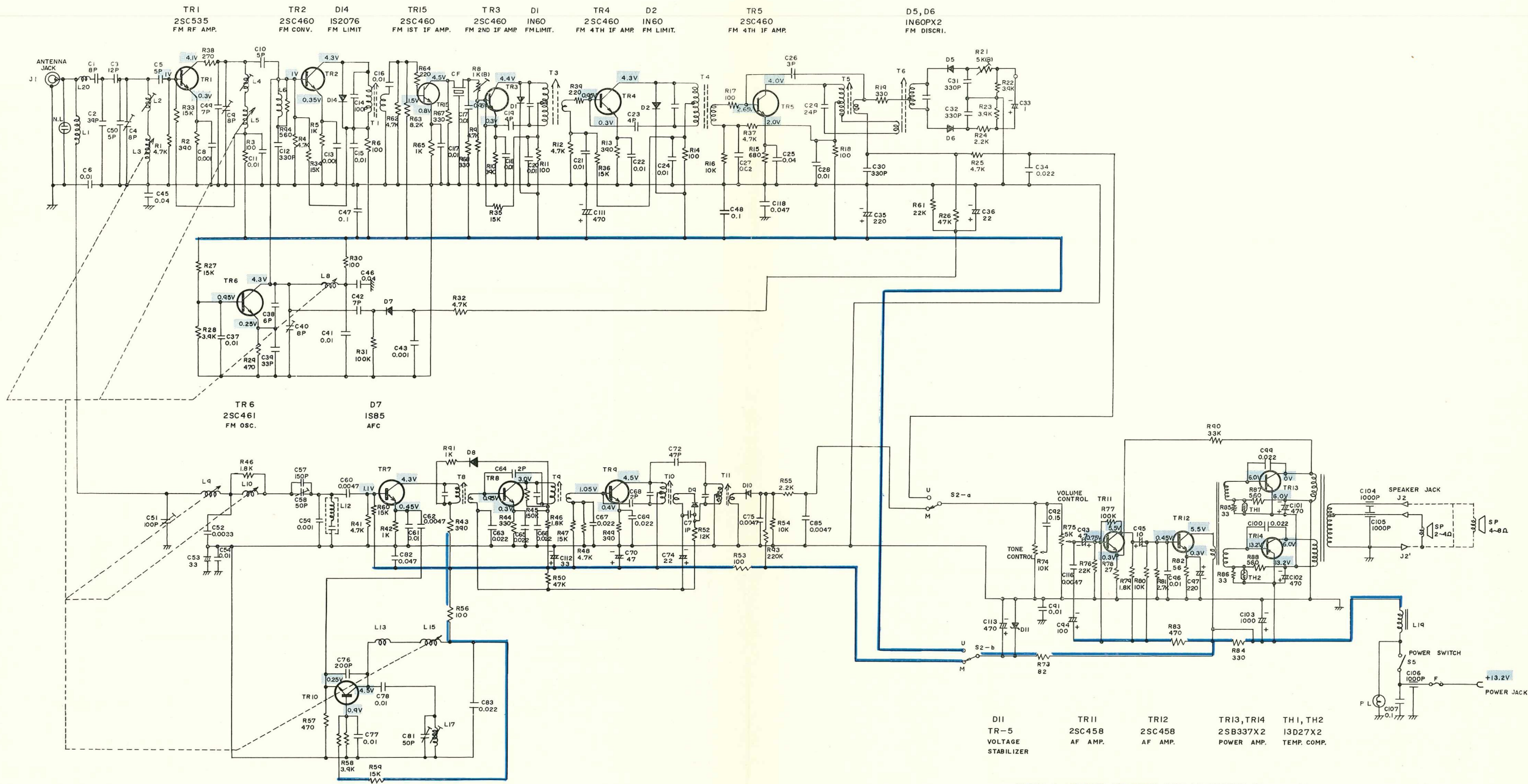
Fig. 8

REPLACEMENT PARTS

Symbol No.	Stock No.	Description	Symbol No.	Stock No.	Description
CAPACITORS:					
C 1	0248648	Ceramic, discal	C 61	0275111	Mylar 0.01μF
C 2	0248714	Ceramic, discal	C 62	0274115	Mylar 0.0047μF±20%
C 3	0248702	Ceramic, discal	C 63	0275113	Mylar 0.022μF
C 4	0283113	Trimmer	C 64	0248632	Ceramic, discal 2pF±0.25pF
C 5	0248635	Ceramic, discal	C 65	0275113	Mylar 0.022μF
C 6	0245017	Ceramic, discal	C 66	0275113	Mylar 0.022μF
C 7		Ceramic, discal	C 67	0275113	Mylar 0.022μF
C 8	0244016	Ceramic, discal	C 68	0248632	Ceramic, discal 2pF±0.25pF
C 9	0283113	Trimmer	C 69	0275113	Mylar 0.022μF
C 10	0248635	Ceramic, discal	C 70	0252525	Electrolytic 47μF 10WV
C 11	0245017	Ceramic, discal	C 72	0248716	Ceramic, discal 47pF±10%
C 12	0249513	Ceramic, discal	C 74	0252322	Electrolytic 22μF 10WV
C 13	0244016	Ceramic, discal	C 75	0274115	Mylar 0.0047μF±20%
C 14	0248724	Ceramic, discal	C 76	0233055	Ceramic, discal 200pF
C 15	0245017	Ceramic, discal	C 77	0275111	Mylar 0.01μF
C 16	0245017	Ceramic, discal	C 78	0275111	Mylar 0.01μF
C 17	0275111	Ceramic, discal	C 81	0283082	Trimmer 50pF
C 18	0245017	Ceramic, discal	C 82	0275115	Mylar 0.047μF±20%
C 19	0248634	Ceramic, discal	C 83	0275113	Mylar 0.022μF
C 20	0245017	Ceramic, discal	C 85	0274115	Mylar 0.0047μF±20%
C 21	0245017	Ceramic, discal	C 91	0245017	Ceramic, discal 0.01μF +80% -20%
C 22	0245017	Ceramic, discal	C 92	0276112	Mylar 0.15μF±20%
C 23	0248634	Ceramic, discal	C 93	0252815	Electrolytic 4.7μF 50WV
C 24	0245017	Ceramic, discal	C 94	0252331	Electrolytic 100μF 10WV
C 25	0245019	Ceramic, discal	C 95	0252621	Electrolytic 10μF 6.3WV
C 26	0243633	Ceramic, discal	C 96	0275111	Mylar 0.01μF
C 27	0245018	Ceramic, discal	C 97	0252232	Electrolytic 220μF 6.3WV
C 28	0245017	Ceramic, discal	C 99	0275113	Mylar 0.022μF
C 29	0248669	Ceramic, discal	C 100	0275113	Mylar 0.022μF
C 30	0249513	Ceramic, discal	C 101	0252335	Electrolytic 470μF 10WV
C 31	0249513	Ceramic, discal	C 102	0252335	Electrolytic 470μF 10WV
C 32	0249513	Ceramic, discal	C 103	0256010	Electrolytic 1000μF 16WV
C 33	0252811	Electrolytic	C 107	0276111	Mylar 0.1μF±20%
C 34	0275113	Mylar	C 111	0252335	Electrolytic 470μF 10WV
C 35	0252632	Electrolytic	C 112	0251080	Electrolytic 33μF 16WV
C 36	0252322	Electrolytic	C 113	0252335	Electrolytic 470μF 10WV
C 37	0245017	Ceramic, discal	C 116	0274115	Mylar 0.0047μF±20%
C 38	0248466	Ceramic, discal	C 117	0275111	Mylar 0.01μF
C 39	0248712	Ceramic, discal	C 118	0275115	Mylar 0.047μF±20%
C 40	0283113	Trimmer	C 104~106	0239913	Ceramic 1000pF
C 41	0245017	Ceramic, discal	C F	5160211	Ceramic filter CF107A
C 42	0241854	Ceramic, discal	RESISTORS:		
C 43	0244016	Ceramic, discal	R 1	0137859	Carbon film 4.7kΩ 1/4SD
C 44			R 2	0137808	Carbon film 390Ω 1/4SD
C 45	0245019	Ceramic, discal	R 3	0137801	Carbon film 100Ω 1/4SD
C 46	0245019	Ceramic, discal	R 4	0137859	Carbon film 4.7kΩ 1/4SD
C 47	0276111	Mylar	R 5	0137851	Carbon film 1kΩ 1/4SD
C 48	0276111	Mylar	R 6	0137801	Carbon film 100Ω 1/4SD
C 49	0248647	Ceramic, discal	R 8	0151806	Semi variable 1kΩ(B)
C 50	0248635	Ceramic, discal	R 9	0137859	Carbon film 4.7kΩ 1/4SD
C 51	0283554	Trimmer	R 10	0137808	Carbon film 390Ω 1/4SD
C 52	0274114	Mylar	R 11	0137801	Carbon film 100Ω 1/4SD
C 53	0252623	Electrolytic	R 12	0137859	Carbon film 4.7kΩ 1/4SD
C 54	0275111	Mylar	R 13	0137808	Carbon film 390Ω 1/4SD
C 55			R 14	0137801	Carbon film 100Ω 1/4SD
C 56			R 15	0137811	Carbon film 680Ω±10% 1/4SD
C 57	0248688	Ceramic, discal	R 16	0137901	Carbon film 10kΩ 1/4SD
C 58	0283082	Trimmer	R 17	0137801	Carbon film 100Ω 1/4SD
C 59	0274111	Mylar	R 18	0137801	Carbon film 100Ω 1/4SD
C 60	0274115	Mylar	R 19	0137807	Carbon film 330Ω 1/4SD
			R 21	0151360	Semi variable 5kΩ(B)
			R 22	0137858	Carbon film 3.9kΩ 1/4SD
			R 23	0137858	Carbon film 3.9kΩ 1/4SD
			R 24	0137855	Carbon film 2.2kΩ 1/4SD
			R 25	0137859	Carbon film 4.7kΩ 1/4SD
			R 26	0137909	Carbon film 47kΩ 1/4SD
			R 27	0137903	Carbon film 15kΩ 1/4SD

Symbol No.	Stock No.	Description	Symbol No.	Stock No.	Description
R 28	0137858	Carbon film 3.9kΩ 1/4SD	T R 10	0573486	2SC460(B) Si 100MHz 200mW
R 29	0137809	Carbon film 470Ω 1/4SD	T R 11	5320064	2SC458(D) Si 10kHz 200mW
R 30	0137801	Carbon film 100Ω 1/4SD	T R 12	0573480	2SC458(B) Si 10kHz 200mW
R 31	0137951	Carbon film 100kΩ 1/4SD	T R 13	0573040	2SB337(B)P Ge 10kHz 100mW
R 32	0137859	Carbon film 4.7kΩ 1/4SD	T R 14	0573040	2SB337(B)P Ge 10kHz 100mW
R 33	0137903	Carbon film 15kΩ 1/4SD	T R 15	0573486	2SC460(B) Si 100MHz 200mW
R 34	0137903	Carbon film 15kΩ 1/4SD	D 1	0575005	Dioed 1N60 Ge 10.7MHz
R 35	0137903	Carbon film 15kΩ 1/4SD	D 2	0575005	Dioed 1N60 Ge 10.7MHz
R 36	0137903	Carbon film 15kΩ 1/4SD	D 5	0575019	Diode 1N60P Ge 10.7MHz
R 37	0137859	Carbon film 4.7kΩ 1/4SD	D 6	0575019	Diode 1N60P Ge 10.7MHz
R 38	0137806	Carbon film 270Ω 1/4SD	D 7	0575024	Diode 1S85WT Si 10MHz
R 39	0137805	Carbon film 220Ω±10% 1/4SD	D 8	0575005	Diode 1N60 Ge 10.7MHz
R 41	0137859	Carbon film 4.7kΩ 1/4SD	D 9	0575005	Diode 1N60 Ge 10.7MHz
R 42	0137851	Carbon film 1kΩ 1/4SD	D 10	0575005	Diode 1N60 Ge 10.7MHz
R 43	0137808	Carbon film 390Ω 1/4SD	D 11	5330171	Zener Diode TR-5GS
R 44	0137807	Carbon film 330Ω 1/4SD	D 14	5330131	Diode 1S2076 Si 60Hz Si 4nS
R 45	0137953	Carbon film 150kΩ 1/4SD	T H 1	0576031	Thermistor 13D-27
R 46	0137854	Carbon film 1.8kΩ 1/4SD	T H 2	0576031	Thermistor 13D-27
R 47	0137903	Carbon film 15kΩ 1/4SD	TRANSFORMERS:		
R 48	0137859	Carbon film 4.7kΩ 1/4SD	T 1	0322306	FM IF
R 49	0137808	Carbon film 390Ω 1/4SD	T 3	0322227	FM IF
R 50	0137909	Carbon film 47kΩ 1/4SD	T 4	0322227	FM IF
R 52	0137902	Carbon film 12kΩ 1/4SD	T 5	0326005	Discriminators
R 53	0137801	Carbon film 100Ω 1/4SD	T 6	0326006	Discriminators
R 54	0137901	Carbon film 10kΩ 1/4SD	T 8	0322105	AM IF 30kΩ:0.5kΩ
R 55	0137855	Carbon film 2.2kΩ 1/4SD	T 9	0322099	AM IF 20kΩ:0.3kΩ
R 56	0137801	Carbon film 100Ω 1/4SD	T 10	0322112	AM IF 10kΩ:5kΩ
R 57	0137809	Carbon film 470Ω 1/4SD	T 11	0322112	AM IF 10kΩ:5kΩ
R 58	0137858	Carbon film 3.9kΩ 1/4SD	T 12	0441058	Driver 2kΩ:70Ω×2
R 59	0137903	Carbon film 15kΩ 1/4SD	T 13	5250861	Out put 3Ω×2:2×4Ω
R 60	0137903	Carbon film 15kΩ 1/4SD	COILS:		
R 61	0137903	Carbon film 22kΩ 1/4SD	L 1	0333118	Antenna 4μH
R 62	0137859	Carbon film 4.7kΩ 1/4SD	L 2	5126091	FM Padding 4μH
R 63	0137862	Carbon film 8.2kΩ 1/4SD	L 3	0333118	Antenna 4μH
R 64	0137805	Carbon film 220Ω±10% 1/4SD	L 4	5126091	FM Padding
R 65	0137851	Carbon film 1kΩ 1/4SD	L 6	0324003	FM IF Trapping 0.5μH
R 67	0137807	Carbon film 330Ω 1/4SD	L 12	0324001	IF Trap 455kHz
R 68	0137807	Carbon film 330Ω 1/4SD	L 17	0316099	AM Oscillator 200μH
R 73	0137770	Carbon film 82Ω 1/4SD	L 19	5220001	Choke 1.5mH
R 76	0137905	Carbon film 22kΩ 1/4SD	L 20	0324003	FM IF Trapping 0.5μH
R 77	0137951	Carbon film 100kΩ 1/4SD	for Final assembly		
R 78	0137764	Carbon film 27Ω 1/4SD	7235161	Bracket assembly	
R 79	0137854	Carbon film 1.8kΩ 1/4SD	0219901	Noise eliminating	
R 80	0137901	Carbon film 10kΩ 1/4SD	7086881	Set screw	
R 81	0137856	Carbon film 2.7kΩ 1/4SD	7086891	S.P screw for speaker mounting	
R 82	0137768	Carbon film 56Ω 1/4SD	7630661	Guide	
R 83	0137809	Carbon film 470Ω 1/4SD	for Case assembly		
R 84	0137807	Carbon film 330Ω 1/4SD	7173441	Case assembly	
R 85	0137765	Carbon film 33Ω 1/4SD	7771211	Screw with spring washer-3mm∅×5mm for trimmer holder mounting	
R 86	0137765	Carbon film 33Ω 1/4SD	7177731	Trimmer holder	
R 87	0137810	Carbon film 560Ω 1/4SD	5670224	Antenna jack	
R 88	0137810	Carbon film 560Ω 1/4SD	0594094	Neon lamp	
R 90	0137907	Carbon film 33kΩ 1/4SD	7196052	Cord cover	
R 91	0137851	Carbon film 1kΩ 1/4SD	5740221	Cord with relay terminal (A)	
R 93	0137955	Composition 220kΩ 1/4SD	5741611	Power cord (2A)	
R 94	0137810	Carbon film 560Ω 1/4SD	0591138	Fuse (2A)	
TRANSISTORS:					
T R 1	0573510	2SC535(B) Si 100MHz 200mW	0647538	Fuse indicator (2A)	
T R 2	0573486	2SC460(B) Si 100MHz 200mW	7213841	Cord holder	
T R 3	0573486	2SC460(B) Si 100MHz 200mW			
T R 4	0573486	2SC460(B) Si 100MHz 200mW			
T R 5	0573486	2SC460(B) Si 100MHz 200mW			
T R 6	0573507	2SC461(B) Si 100MHz 200mW			
T R 7	0573491	2SC454(B) Si 2MHz 200mW			
T R 8	0573491	2SC454(B) Si 2MHz 200mW			
T R 9	0573491	2SC454(B) Si 2MHz 200mW			

SCHMATIC DIAGRAM



- | | | | | | | | | | |
|-----------------------------|---------------------------|---------------------------|----------------------------------|---------------------------------|-------------------------|---------------------------------|-------------------------|---------------------------------|---------------------------------|
| TR1
2SC535
FM RF AMP. | TR2
2SC460
FM CONV. | D14
IS2076
FM LIMIT | TR15
2SC460
FM 1ST IF AMP. | TR3
2SC460
FM 2ND IF AMP. | D1
IN60
FM LIMIT. | TR4
2SC460
FM 4TH IF AMP. | D2
IN60
FM LIMIT. | TR5
2SC460
FM 4TH IF AMP. | D5, D6
IN60PX2
FM DISCRI. |
|-----------------------------|---------------------------|---------------------------|----------------------------------|---------------------------------|-------------------------|---------------------------------|-------------------------|---------------------------------|---------------------------------|

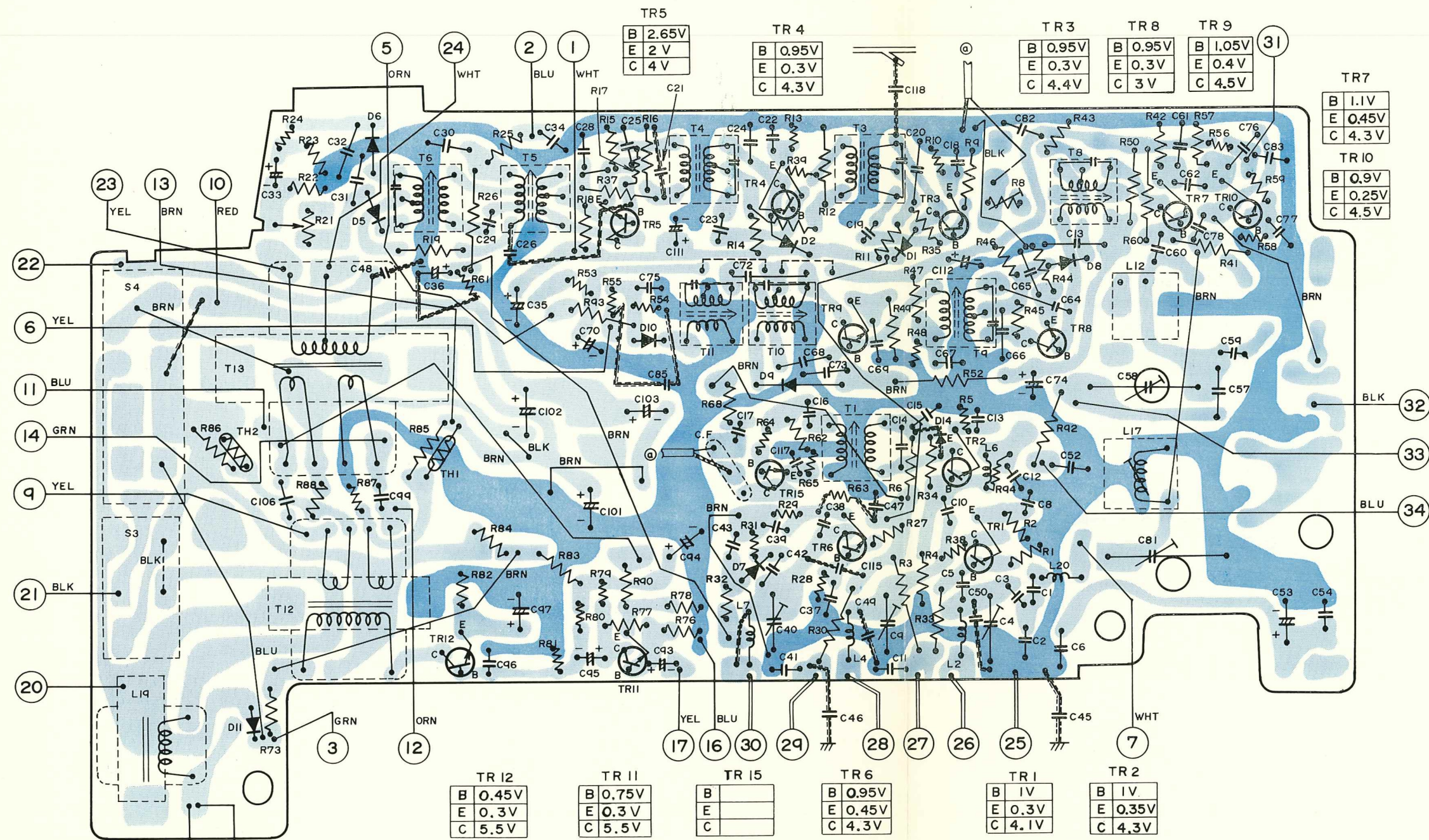
- | | |
|--------------------------|-------------------|
| TR6
2SC461
FM OSC. | D7
IS85
AFC |
|--------------------------|-------------------|

- | | | | | | | |
|---------------------------|---------------------------|-------------------|---------------------------------|---------------------------------|-------------------|------------------------|
| TR10
2SC460
AM OSC. | TR7
2SC454
AM CONV. | D8
IN60
AGC | TR8
2SC454
AM 1ST IF AMP. | TR9
2SC454
AM 2ND IF AMP. | D9
IN60
AGC | D10
IN60
AM DET. |
|---------------------------|---------------------------|-------------------|---------------------------------|---------------------------------|-------------------|------------------------|

- | | | | | |
|--------------------------------------|---------------------------|---------------------------|--------------------------------------|------------------------------------|
| D11
TR-5
VOLTAGE
STABILIZER | TR11
2SC458
AF AMP. | TR12
2SC458
AF AMP. | TR13, TR14
2SB337X2
POWER AMP. | TH1, TH2
13D27X2
TEMP. COMP. |
|--------------------------------------|---------------------------|---------------------------|--------------------------------------|------------------------------------|

NOTE: 1. VOLTAGE MEASURED WITH VOLTMETER AT 13.2V DC,
⊖ SIDE EARTH BASE. VOLUME CONTROL AT MINIMUM
AND NO SIGNAL.
2. ALL RESISTANCE VALUES IN OHMS. K=1000
3. ALL CAPACITANCE VALUES IN μF EXCEPT "P" NOTED. P=μμF = PF

CIRCUIT BOARD DIAGRAM



TR5

B	2.65V
E	2V
C	4V

TR4

B	0.95V
E	0.3V
C	4.3V

TR3

B	0.95V
E	0.3V
C	4.4V

TR8

B	0.95V
E	0.3V
C	3V

TR9

B	1.05V
E	0.4V
C	4.5V

TR7

B	1.1V
E	0.45V
C	4.3V

TR10

B	0.9V
E	0.25V
C	4.5V

TR12

B	0.45V
E	0.3V
C	5.5V

TR11

B	0.75V
E	0.3V
C	5.5V

TR15

B	
E	
C	

TR6

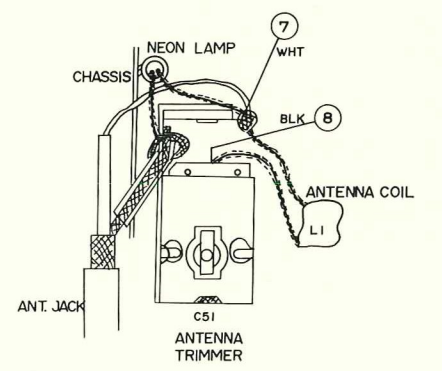
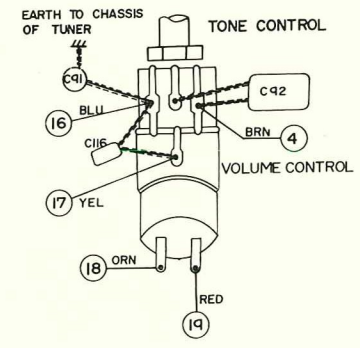
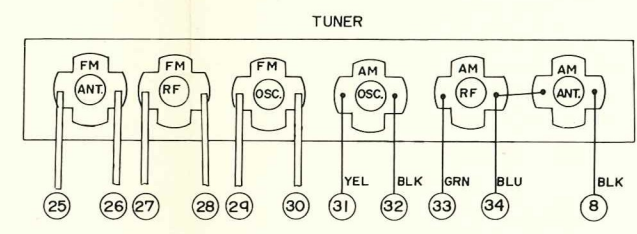
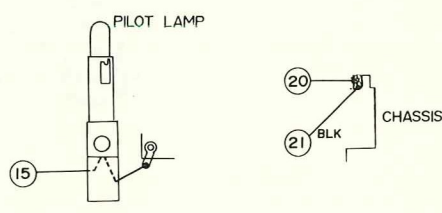
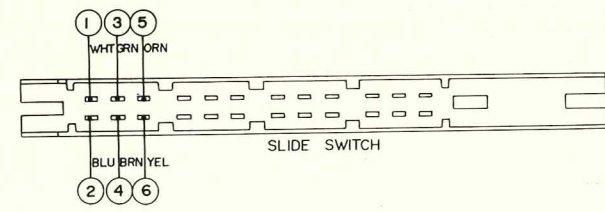
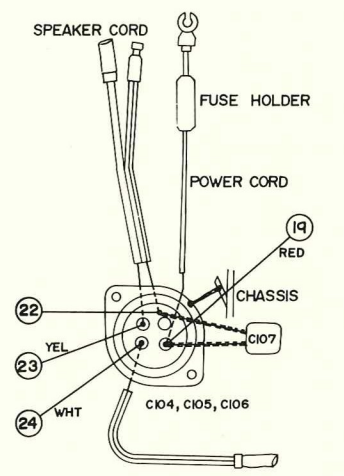
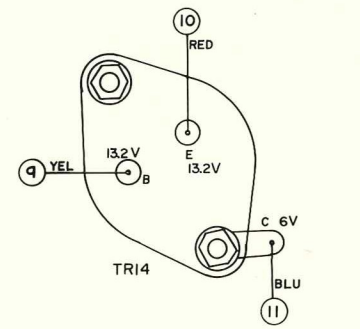
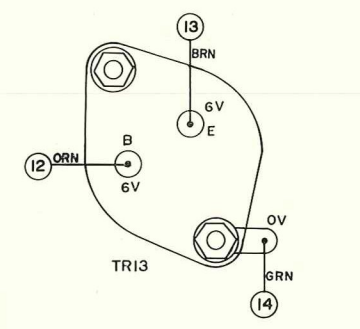
B	0.95V
E	0.45V
C	4.3V

TR1

B	IV
E	0.3V
C	4.1V

TR2

B	IV
E	0.35V
C	4.3V



MODEL KM-1420DB SERVICE MANUAL

Symbol No.	Stock No.	Description	Symbol No.	Stock No.	Description
	8781436	Tapping screw-3mm ϕ ×6mm (2 req'd) for cord cover mounting		6602504	Escutcheon
	8741406	Bind screw-3mm ϕ ×6mm (4 req'd) for stopper & P.W.B mounting		7234811	Front panel
	7771874	Screw with spring washer-3mm ϕ ×8mm (2 req'd) for radiator mounting		7771211	Screw with spring washer-3mm ϕ ×5mm (4 req'd) for nose volume control knob mounting
	0239913	Capacitors assembly		6460444	Scale plate
	5580085	Button tuner-5mm ϕ		7173453	Upper cover
	6264931	Push button (AM)		7173452	Under cover
	6264932	Push button (FM)		7771273	Binding screw with spring washer-3mm ϕ ×6mm (2 req'd) for upper cover, under cover mounting
	7229841	Lamp holder		7503673	Collar t=3 for side of tuner
	7666741	Rubber plate		7503674	Collar t=4 for side of variable
	5760255	Pilot lamp		7235081	Installation bracket
	7164751	P.W.B stopper (B)		7771063	Pan head screw-5mm ϕ ×6mm
	7171851	Bracket		7193641	Dial pointer
	7205901	Radiator		7193011	Back plate
	8711410	Pan head screw-3mm ϕ ×10mm (4 req'd)		8741405	Bind screw-3mm ϕ ×5mm for back plate mounting
	6709371	Twin bush (2 req'd)		7717051	Insulating plate
	8821114	Nut-3mm ϕ (4 req'd)			for Speaker box assembly
	7199161	Lug plate (2 req'd) for transistor mounting		6706442	Speaker grill
	0544408	Lug terminal		5410041	Speaker-12cm
	7771211	Screw with spring washer-3mm ϕ ×5mm (2 req'd) for screw, tuner stopper mounting		0628460	Cord holder
	6709211	Transistor cover		8811114	Washer-3mm ϕ
R74, R75	0156542	Variable RV-24		8781438	Tapping screw-3mm ϕ ×8mm
	0043569	Spring		0593221	Cord with relay terminal $\ell=400$
	6260621	Knob (small)		0593250	Cord with relay terminal $\ell=700$
	6260632	Knob (large)		8811117	Washer-5mm ϕ
	6602511	Front metal		8785716	Tapping screw-5mm ϕ ×16mm
	7164691	Nose volume control knob		7082231	Car antenna Ro-25
	7517081	Collar T=2.5			for P.W.B. assembly
	7517082	Collar T=3.5		0532185	Slide switch
	0643135	Nut-9mm ϕ (4 req'd) for volume, tuner mounting	S 3	0532136	Slide switch
	0629187	Washer-9mm ϕ for volume, tuner mounting	S 4		



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