CLARION SERVICE MANUAL

MW 1 BAND SOLID-STATE TYPE CAR RADIO

(12 VOLTS NEGATIVE GROUND)

MODEL RE-121A·121B

CLARION SHOJI. CO., LTD.
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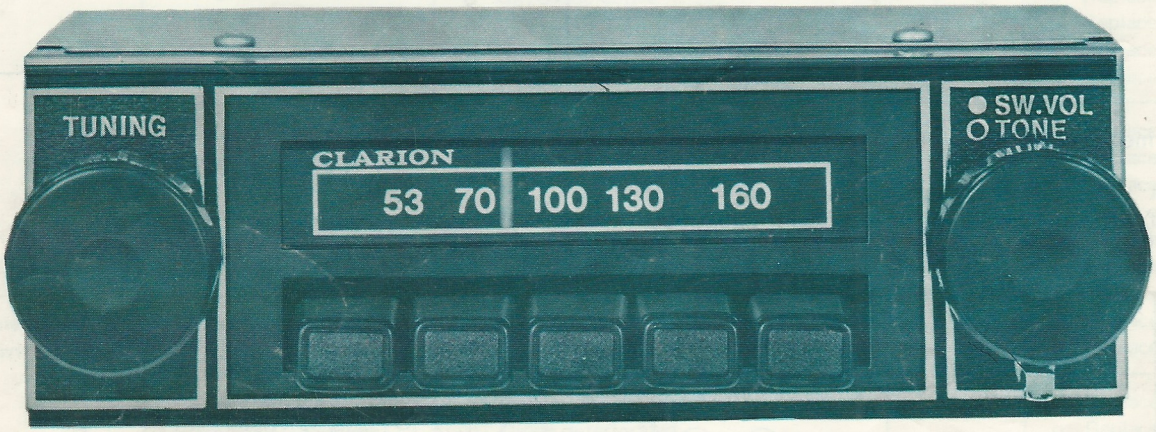
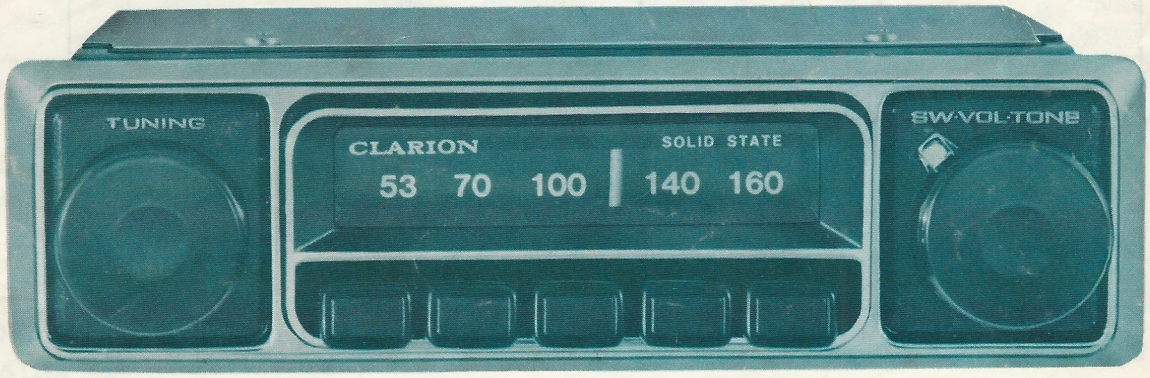
2 HAMBURG 11, HOLZBRUCKE 7, 3 STOCK F. R. GERMANY. PHONE NO. 36 78 61. 36 78 62.



MODEL RE-121A



MODEL RE-121B

＊SPECIFICATIONS :

Circuit system:	Superheterodyne		
	Radio frequency amplifier (1)		
	Frequency converter		
	Intermediate frequency amplifier (1)		
	Audio frequency amplifier (2)		
	SEEP-OTL system		
Tuning system:	μ-tuning, 5 push-button system		
Receive frequency:	530 kHz ~ 1605 kHz		
Intermediate frequency:	262.5 kHz		
Maximum sensitivity:	Less than 24 dB (at 0.5 W)		
Practical sensitivity:	Less than 30 dB (at 20 dB S/N)		
Selectivity:	More than 20 dB at ± 10 kHz detuning		
Image ratio:	More than 50 dB		
Fidelity:	100 Hz	High	- 2 ± 3 dB
		Low	2 ± 3 dB
	400 Hz	High	- 13 ± 5 dB
		Low	- 28 ± 5 dB
Output impedance:	8 Ω		
Maximum output:	More than 3.5 W		
Power supply voltage and current:	13.2 V, Less than 1A		

Semiconductor:	7 transistors, 2 diodes	
	Radio frequency amplifier	2SA355
	Frequency converter	2SA354
	Intermediate frequency	2SA353
	A.G.C	1N34A (Diode)
	Detector	1N34A (Diode)
	Audio frequency amplifier	2SC458
	Audio frequency amplifier	2SB77
Power amplifier	Power amplifier	2SB367 x 2
Weight:	2.lbs (0.9 kg)	
Dimension:	Width 6.3" (160 mm)	
	Height 1.95" (50 mm)	
	Length 3.15" (80 mm)	

＊COMPONENTS :

RA-1212-42	Car radio unit	1 Set
281-0240-00	Warranty card	1 Set
280-0040-03	Owner's guide	1 Each
284-2211-00	Installation manual	1 Each
923-0050-00	Fuse bag	1 Set
950-4475-00	Packaging kit	1 Set

Printed in Japan 298-1549-00

* FEATURES :

- SEPP-OTL system and high power output transistors provide high-quality distortion less sound.
- Ultra-AGC circuit which can cope with any variation in electric field strength which are likely to occure while driving between to insure constant reception.

ADJUSTMENT :

* The following measuring equipment is necessary for adjustment.

(a) Sweep generator
(b) Oscilloscope
(c) AM signal generator (AM.SG)
(d) Dummy antenna (Fig. 1)
(e) Dummy load
(f) Output meter (V.T.VM)

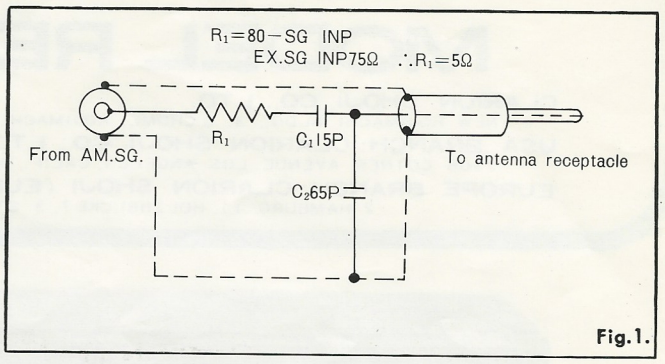


Fig.1.

* AM intermediate frequency (IF) adjustment.

(a) Connect the output of the sweep generator to the hot terminal of the RF coil or of the RF trimmer through the approx 1kΩ resistor. (Refer to Fig. 2)

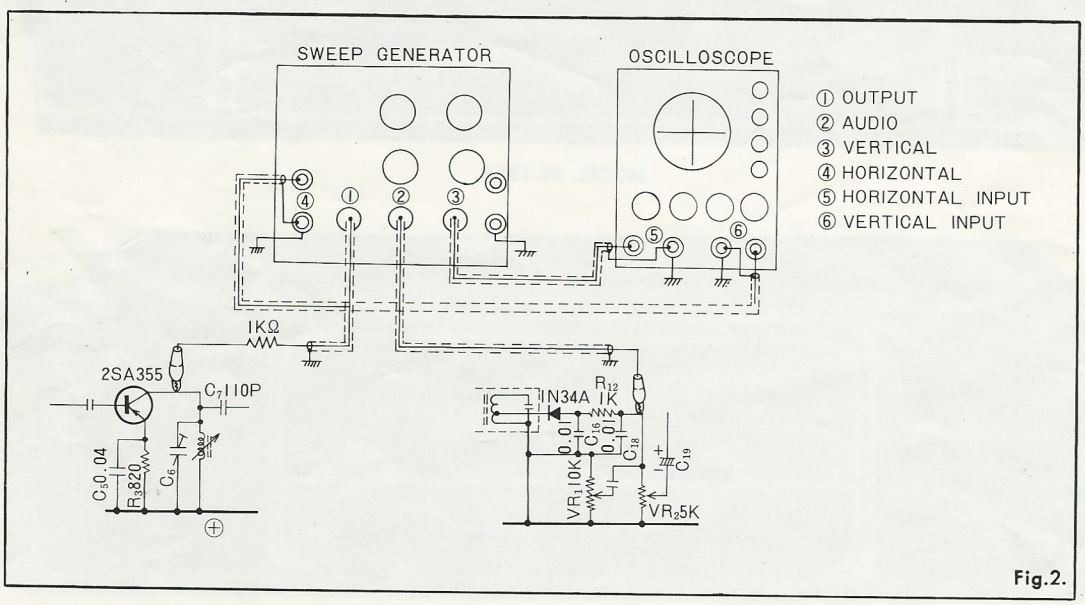


Fig.2.

(b) Connect the audio input of the sweep generator to hot terminal (White lead wire) of the volume control.
(c) Set the vertical knob of the oscilloscope to maximum, the volume control to minimum and the tone control to maximum.
(d) Set the dial pointer to highest frequency, the sweep generator to 262.5 kHz and increase the sweep output.
A waveform such as that shown in Fig. 3 will apear.
(e) Then adjust IFT (intermediate frequency transformer) IFT_1, IFT_2, to obtain the waveform shown in Fig. 3.

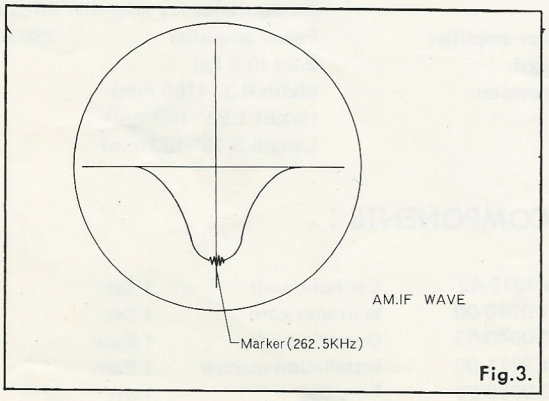


Fig.3.

* AM tracking adjustment (MW adjustment).

(a) Set the volume control to maximum and the tone control to maximum, the dial pointer to highest frequency.
(b) Set the frequency of signal generator to 1620 kHz and tune the radio to the signal generator frequency.
Then adjust osc trimmer (C_{11}) to 1620 kHz.
(c) Next, adjust the MW antenna trimmer (C_1) and MW RF trimmer (C_6) for maximum audio output.

Note: Since the output will increase as adjustment proceeds, adjust the attenuator of the signal generator to obtain a constant output of about 500 mw (converted into voltage for a 8Ω, is load).

* Adjustment of the antenna trimmer.

The antenna trimmer must be adjusted for improvement of sensitivity in the following cases:
(a) After the car-radio has been installed or repaired.
(b) After the antenna cable has been replaced.
(c) When the sensitivity of the car-radio is poor and reception noisy. Adjustment procedure: Turn the volume control fully clockwise so that the volume maximum.
Also turn the tone control fully clockwise. In this state, receive a weak signal at around panel dial scale 1620 kHz and turn the antenna trimmer adjustment screw for maximum volume.

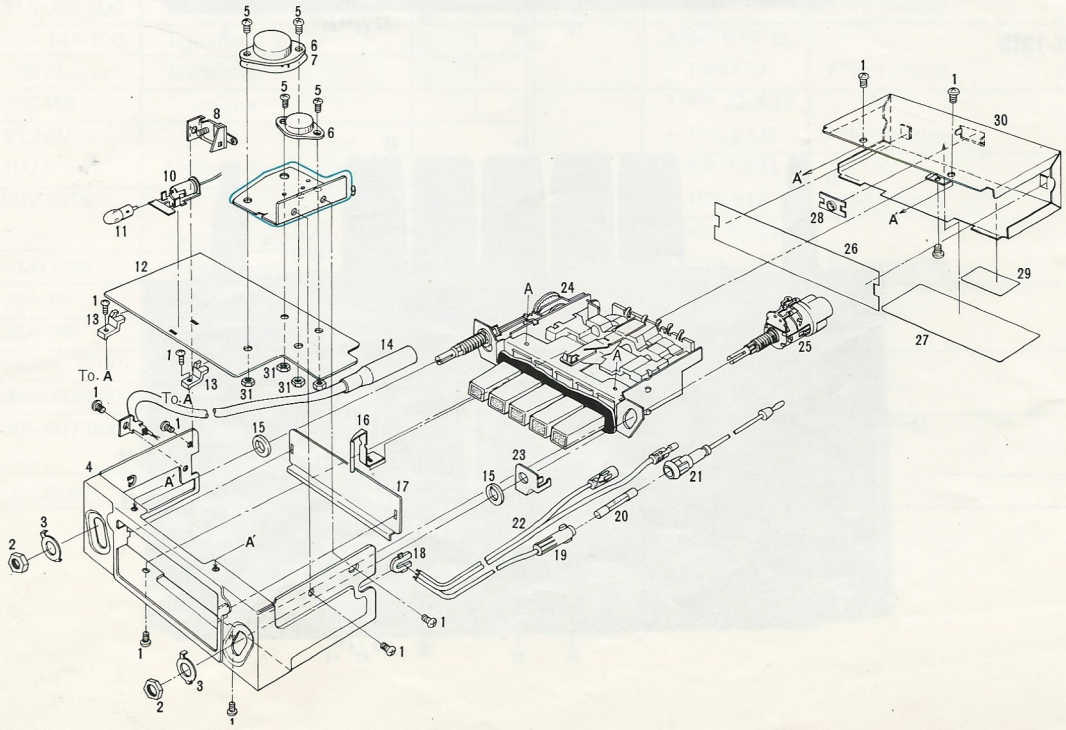
Note: If no broadcast signal is available around 1620 kHz, adjust the knob until the white noise (hissing noise) is maximum.

* REFERENCE FOR TROUBLE SHOOTING : (Refer to the printed circuit board and circuit diagram)

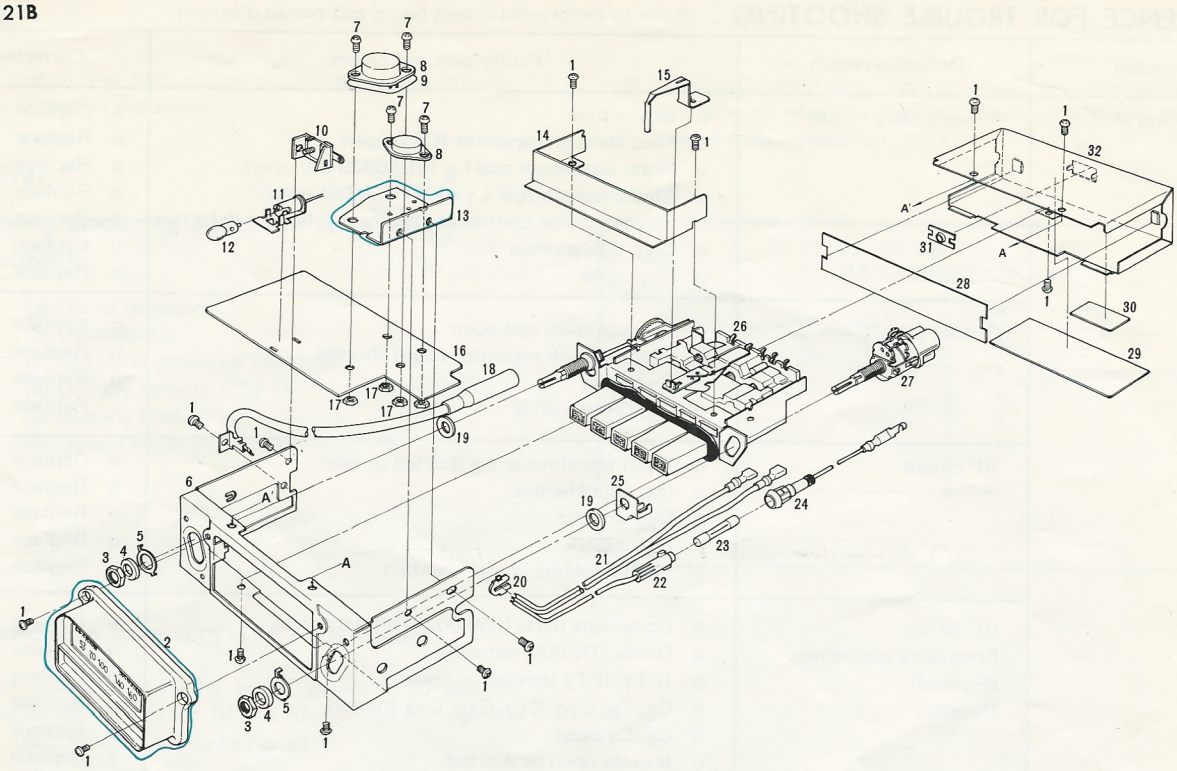
Trouble	Defective circuit	Faulty part and causes	Corrective action
No sound at all	Power supply circuit	o Blown fuse o Feed through capacitor (C_{23}) open o Noise suppressor coil L_5 (010-0820-00) open o Choke transformer L_7 (009-0530-00) open o Faulty volume control contact or mechanism defective o C_{20}, C_{25} shorted o R_{20} open	o Replace o Replace o Replace o Replace o Replace o Replace o Replace
	Output circuit	o Speaker voice coil open o Feed through capacitor (C_{27}) shorted o C_{26} open o Q_6, Q_7 defective	o Replace o Replace o Replace o Replace
	AF circuit	o Input transformer L_6 shorted or open o Q_4, Q_5 defective o C_{22} shorted o C_{19} open o Faulty volume control contact	o Replace o Replace o Replace o Replace o Replace
	RF circuit Frequency converter IF circuit Detector	o Composite parts (050-0020-00) defective o Diode (1N34A) defective o IFT_1, IFT_2 shorted or open o C_5, C_8, C_{10}, C_{12}, C_{13}, C_{14} shorted o C_4, C_7 open o μ-tuner open or shorted	o Replace o Replace o Replace o Replace o Replace o Replace
Volume is small and sensitivity is low	Output circuit AF circuit	o Q_4, Q_5, Q_6, Q_7 deteriorated o C_{19}, C_{22}, C_{26} leakly	o Replace o Replace
	RF circuit Frequency converter IF detector cir	o Q_1, Q_2, Q_3 deteriorated o Diode deteriorated o IFT_1, IFT_2 out of of tune o Trimmer C_1, C_6, C_{11} out of tune o C_4, C_5, C_7, C_8, C_{12}, C_{14} leaky o Antenna receptacle open	o Replace o Replace o Readjust o Readjust o Replace o Replace
Sound is distorted	AF circuit Output circuit	o R_{23}, R_{25} resistance change o C_{24} shorted o Input transformer L_6 secon dary side open or shorted o Thermistor TD_1, TD_2 defective o R_{19} open	o Replace o Replace o Replace o Replace o Replace
	AGC circuit Detector circuit	o D_1, D_2 (1N34A) defective	o Replace

* EXPLODED VIEW (See Parts List)

MODEL RE-121A



MODEL RE-121B



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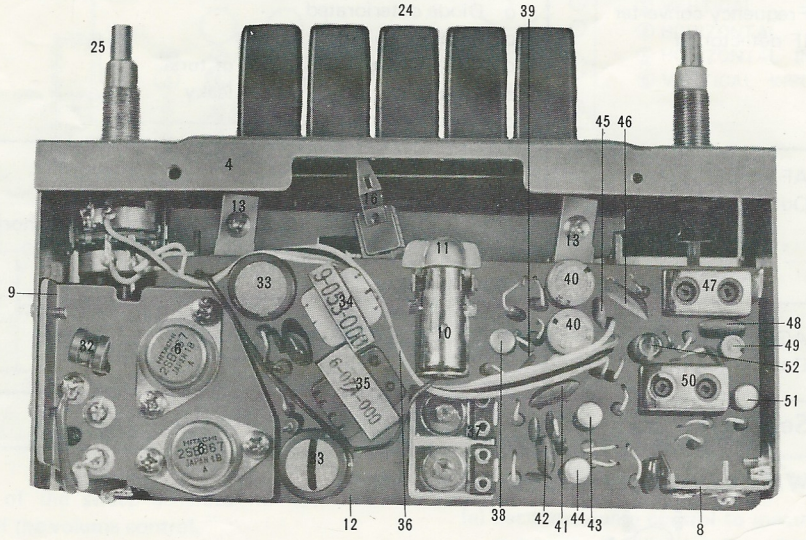
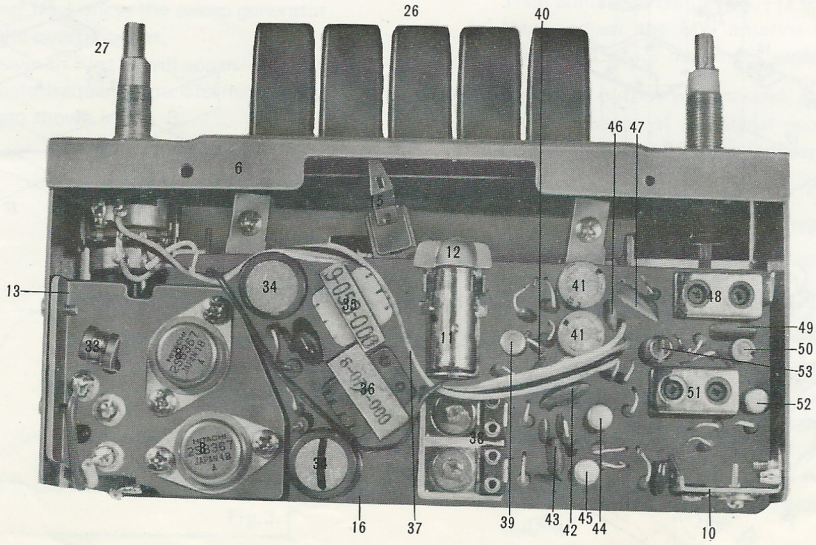


MODEL RE-121B



* PARTS LIST: MODEL RE-121A.

(Refer to disassembly diagram: Blue portions in the parts list designate assemblies.)

REF NO.	PART NO.	DESCRIPTION	P.C.S.
1	730-3006-80	Tap tite	9
2	722-0231-00	Special nut	2
3	330-4571-00	Joint plate	2
4	308-0742-01	Front cover	1
5	714-3006-81	Machine screw	4
6	2SB367	Transistor	2
7		Mylar sheet	2
8	004-1462-00	Trimmer	1
9	944-0380-00	Filter assembly	1
10	070-0901-00	Pilot lamp socket	1
11	017-0280-00	Pilot lamp	1
12	099-3793-00	Printed circuit board	1
13	335-0621-00	Printed circuit board holder	2
14	092-0431-00	Antenna receptacle	1
15	340-0329-00	Speacer	2
16	376-0728-00	Dial pointer	1
17	374-0582-00	Back plate	1
18	335-0580-00	Cord holder	1
19	850-1560-00	Power supply cord	1
20	120-0010-00	Fuse (1A)	1
21	850-1560-01	Power supply cord	1
22	851-0730-00	Speaker cord	1
23	330-4122-00	Variable resistor stopper	1
24	935-1370-07	3 coil push button tuner	1
		(μ-Tuner)	1
25	012-3300-00	Variable resistor	1
26	347-0297-01	Insulater sheet	1
27	285-0576-00	Guide rabel	1
28	725-0161-00	Plate nut	1
29	286-3678-00	Set plate	1
30	310-0652-00	Upper case	1
31	725-0182-00	Plate nut	1
32	010-082-005	Coil	1
33	VL15V 300μF Y	Electrolytic capacitor	2
34	009-053-000	Choke	1
35	006-074-000	Input transformer	1
36	815-064-100	Shielded wire	1
37	004-144-100	Trimmer	1
38	2SB77	Transistor	1
39	2SC458	Transistor	1
40	VL10V 100μF W	Electrolytic capacitor	2
41	50V 270PF ± 5%	Ceramic capacitor	1
42	VM110PF	Mica capacitor	1
43	2SA354	Transistor	1
44	2SA355	Transistor	1
45	043-0020-00	Special capacitor	1
46	050-0020-00	Component circuit	1
47	005-067-000	IF-Transformer	1
48	VM390PF	Mica capacitor	1
49	VL10V 10μF W	Electrolytic capacitor	2
50	005-066-000	IF-Transformer	1
51	2SA353	Transistor	1
52	VL10V 22μF W	Electrolytic capacitor	1
	0.0047μF ± 10%	Mylar capacitor	2
	0.01μF ± 20%	Mylar capacitor	4
	0.04μF ± 20%	Mylar capacitor	1
	0.1μF ± 20%	Mylar capacitor	1
	0.0033μF ± 20%	Mylar capacitor	1
	50V 22PF	Mica capacitor	1
	1/4W 15Ω ± 10% ELR	Film resistor	3
	1/4W 18kΩ ± 10% ELR	Film resistor	1
	1/4W 820Ω ± 10% ELR	Film resistor	1
	1/4W 560Ω ± 10% ELR	Film resistor	1
	1/4W 180kΩ ± 10% ELR	Film resistor	1
	1/4W 1kΩ ± 10% ELR	Film resistor	3
	1/4W 150kΩ ± 10% ELR	Film resistor	1
	1/4W 2.2kΩ ± 10% ELR	Film resistor	2
	1/4W 3.3kΩ ± 10% ELR	Film resistor	1
	1/4W 4.7kΩ ± 10% ELR	Film resistor	2
	1/4W 5.6kΩ ± 10% ELR	Film resistor	1
	1/4W 6.8kΩ ± 10% ELR	Film resistor	1
	1/4W 220kΩ ± 10% ELR	Film resistor	1
	1/4W 22kΩ ± 10% ELR	Film resistor	2
	1/4W 33kΩ ± 10% ELR	Film resistor	1

* PARTS LIST: MODEL RE-121B.

(Refer to disassembly diagram: Blue portions in the parts list designate assemblies.)

REF NO.	PART NO.	DESCRIPTION	P.C.S.
1	730-3006-80	Tap tite (M3 x 6)	13
2	940-2190-00	Escutcheon assembly	1
3	722-0231-00	Special nut	2
4	745-0492-00	Special washer	2
5	330-4571-00	Joint plate	2
6	308-0742-00	Front cover	1
7	714-3006-81	Machine screw (M3 x 0.5 x 6)	4
8	2SB367	Transistor	2
9		Mylar sheet	2
10	004-1462-00	Trimmer	
11	070-0901-00	Pilot lamp socket	11
12	017-0280-00	Pilot lamp	1
13	944-0380-00	Filter assembly	1
14	374-0640-00	Back plate	1
15	376-0737-00	Dial pointer	1
16	099-3793-00	Printed circuit board	1
17	725-0182-00	Plate nut (M3 x 0.5)	4
18	092-0431-00	Antenna receptacle	1
19	340-0329-00	Speacer	2
20	335-0580-00	Cord holder	1
21	851-0880-00	Speaker cord	1
22	850-1460-00	Power supply cord	1
23	120-0010-00	Fuse (1A)	1
24	850-1460-01	Power supply cord	1
25	330-4122-00	Variable resistor stopper	1
26	935-1370-07	3 coil push button tuner (μ - Tuner)	1
27	012-3300-00	Variable resistor	1
28	347-0297-00	Insulater sheet	1
29	285-0576-00	Gide rabel	1
30	286-3678-00	Set plate	1
31	725-0161-00	Plate nut (M5 x 0.8)	1
32	310-0652-00	Upper case	1
33	010-082-005	Coil	1
34	VL15V 300 μFY	Electrolytic capacitor	2
35	009-053-000	Chocke	1
36	006-074-000	Input transformer	1
37	815-064-100	Shielded wire	1
38	004-144-100	Trimmer	1
39	2SB77	Transistor	1
40	2SC458	Transistor	1
41	VL10V 100 μF W	Electrolytic capacitor	2
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44	2SA354	Transistor	1
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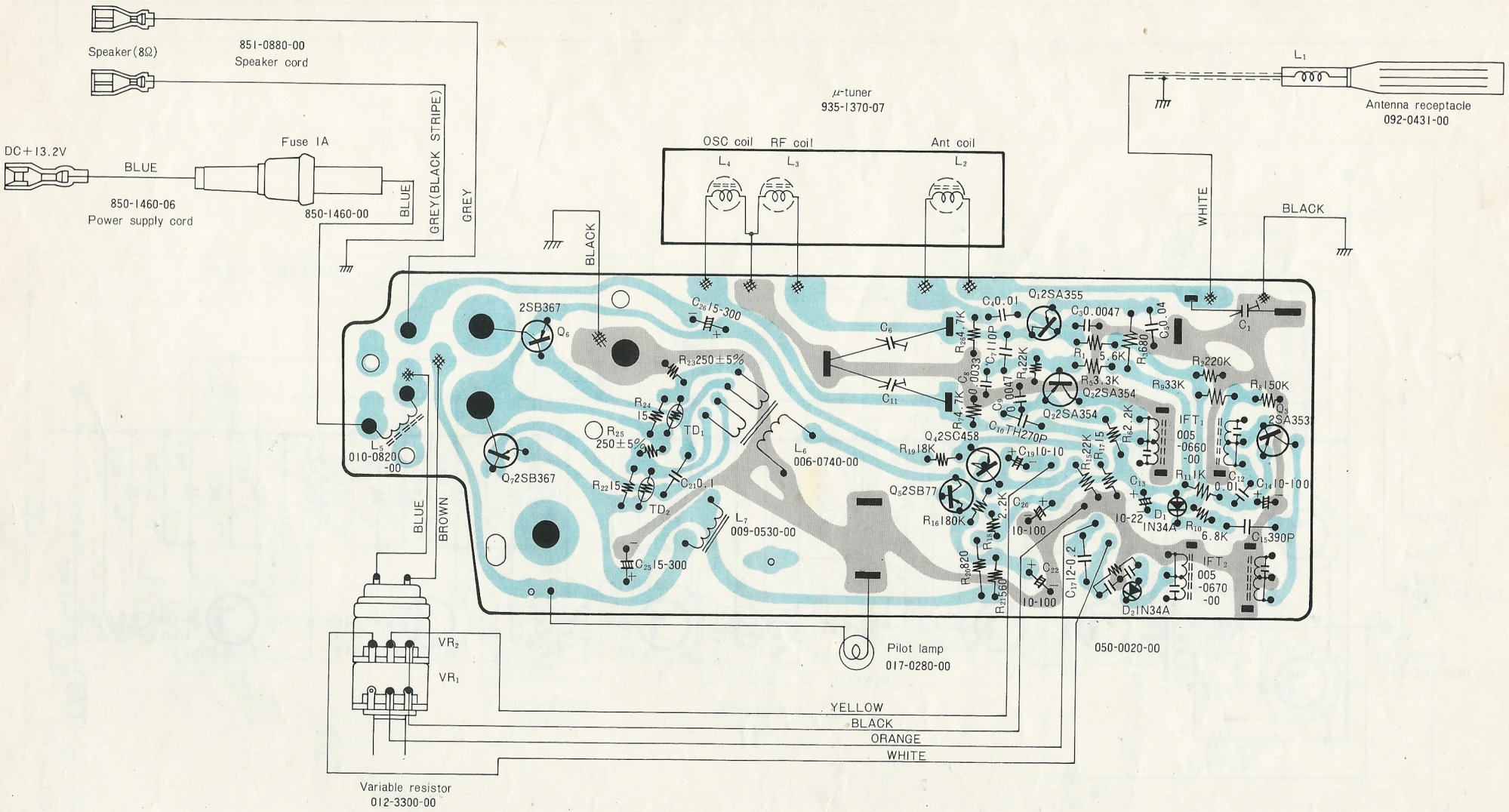
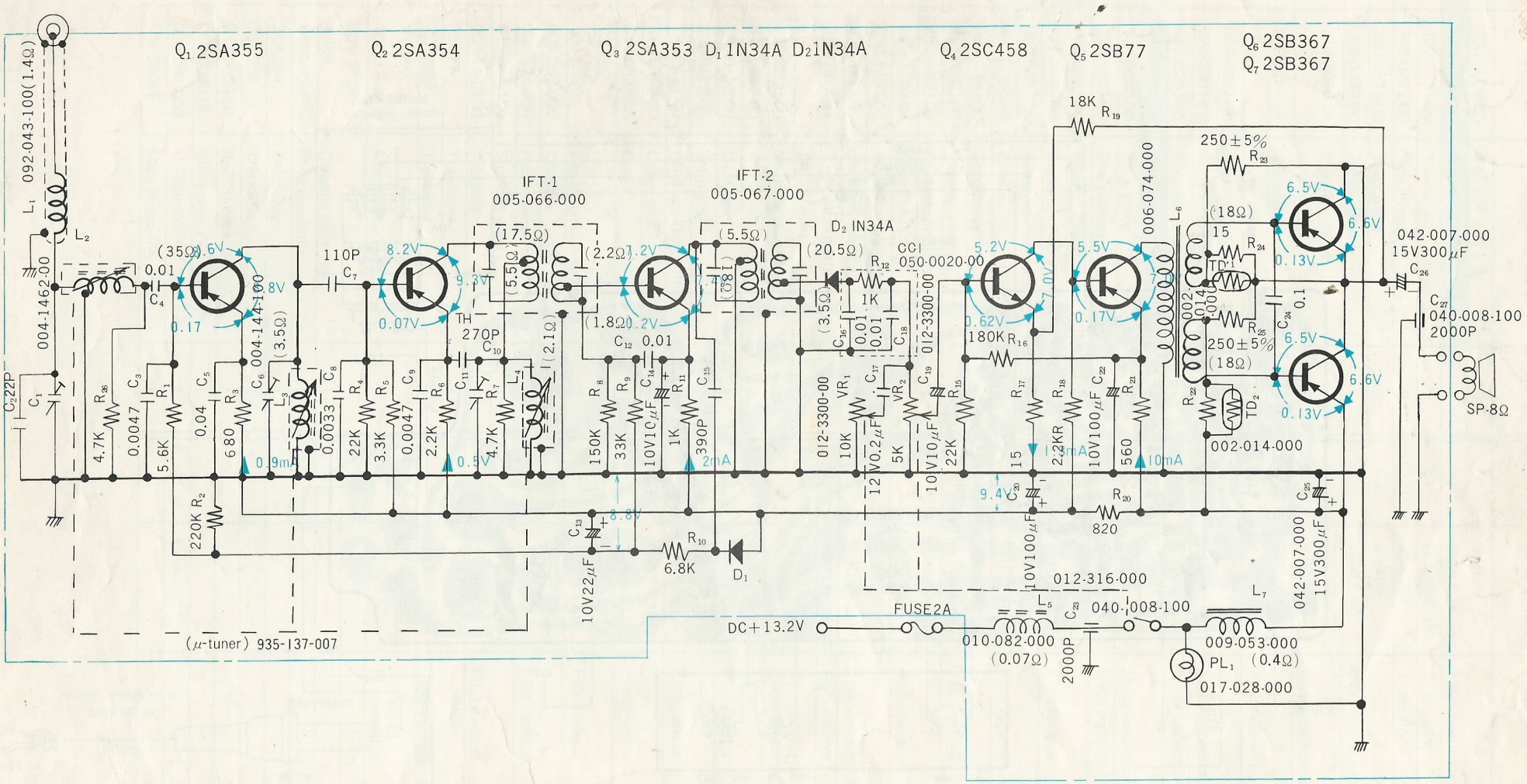
46	043-0020-00	Special capacitor	1
47	050-0020-00	Component	1
48	005-067-000	IF-Transformer	1
49	VM 390PF	Mica capacitor	1
50	VL10V 10 μF W	Electrolytic capacitor	2
51	005-066-000	IF transformer	
52	2SA353	Transistor	1
53	VL10V 22 μF W	Electrolytic capacitor	1
	0.0047 μF ± 10%	Mylar capacitor	2
	0.01 μF ± 20%	Mylar capacitor	4
	0.04 μF ± 20%	Mylar capacitor	1
	0.1 μF ± 20%	Mylar capacitor	1
	0.0033 μF ± 20%	Mylar capacitor	1
	50V 22PF	Mica capacitor	1
	1/4W15 ± 10% ELR	Film resistor	3
	1/4W18kΩ ±10% ELR	Film resistor	1
	1/4W 820Ω ±10% ELR	Film resistor	1
	1/4W 560Ω ±10% ELR	Film resistor	1
	1/4W 180KΩ ±10% ELR	Film resistor	1
	1/4W1KΩ±10%ELR	Film resistor	3
	1/4W150KΩ ±10% ELR	Film resistor	1
	1/4W2.2KΩ ±10% ELR	Film resistor	2
	1/4W 3.3kΩ ± 10% ELR	Film resistor	1
	1/4W 4.7kΩ ± 10% ELR	Film resistor	2
	1/4W 5.6kΩ ± 10% ELR	Film resistor	1
	1/4W 6.8kΩ ± 10% ELR	Film resistor	1
	1/4W 220kΩ ± 10% ELR	Film resistor	1
	1/4W 22kΩ ± 10% ELR	Film resistor	1
	1/4W 33kΩ ± 10% ELR	Film resistor	1

* PRINTED CIRCUIT BOARD (See circuit Diagram)



* CIRCUITE DIAGRAM



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