Clarion

SERVICE MANUAL

Closer Relations through "CLARION SERVICE MANUAL"

MAZDA AUTOMOBILE GENUINE RADIO
(MAZDA 1979 626)
MODEL RT-386D

Manufacturer CLARION CO., LTD. / Export Division CLARION SHOJI CO., LTD.
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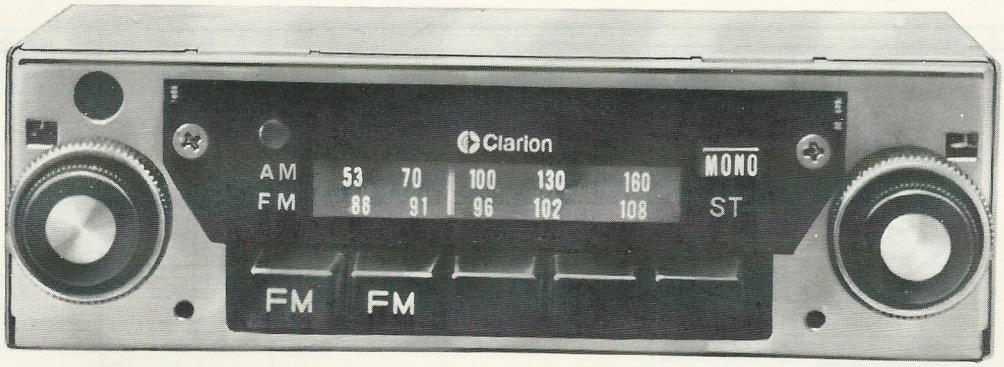


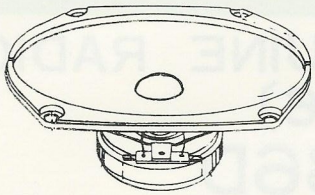
■SPECIFICATIONS:

Circuit system: Superheterodyne
Tuning system: Manual μ-tuning 5-push button system
Receive range: AM 530KHz to 1,605KHz
FM 88MHz to 108MHz
Intermediate frequency:
AM 262.5KHz
FM 10.7MHz
Maximum sensitivity: AM Less than 20dB or 10μV (at 0.5W output)
FM Less than 15dB or 5.623μV (at 0.5W output)
Quieting sensitivity: AM Less than 30dB or 31.62μV (at 20dB S/N)
FM Less than 20dB or 10μV (at 30dB S/N)
Image rejection ratio: AM More than 57dB
FM More than 40dB
Selectivity: AM More than 25dB (at ±10KHz detune)
A.G.C: AM More than 50dB
A.F.C: FM 300KHz to 600KHz

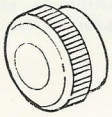
Separation: FM More than 20dB
Stereo indicator lighting sensitivity: Less than 25dB
Fidelity:
AM 100Hz H − 1±5dB
L 0±5dB
4,000Hz H −13±5dB
L −25±5dB
FM 100Hz H − 1±5dB
L + 1±5dB
7,000Hz H −11±5dB
L −25±5dB
Power supply voltage: DC 13.2V (10.8V to 15.6V) Negative ground
Load impedance: 4Ω×2
Power output: More than 3.5W×2 (at 10% distortion)
More than 5.5W×2 (max. power at 4Ω)
Semiconductors: 6 ICs, 3 transistors, 1 FET and 6 diodes
Weight: 1.35kg
Dimensions: Width 160mm
Height 50mm
Depth 130mm

■COMPONENT VIEW:

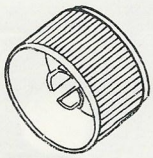
	Main unit	1
SPA-643-100 (090-0170-11)	Speaker ass'y	2



380-3693-00	Inside knob	2

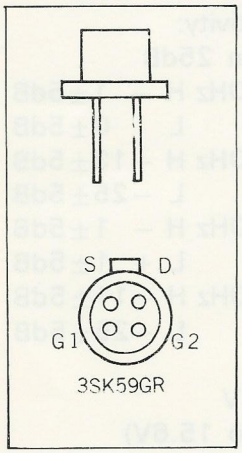


380-3770-00	Outside knob	2

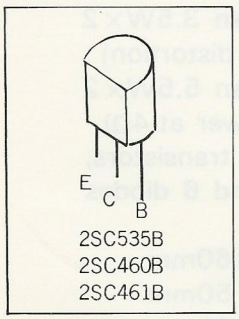


■FET, TRANSISTOR, IC OUTER VIEW:

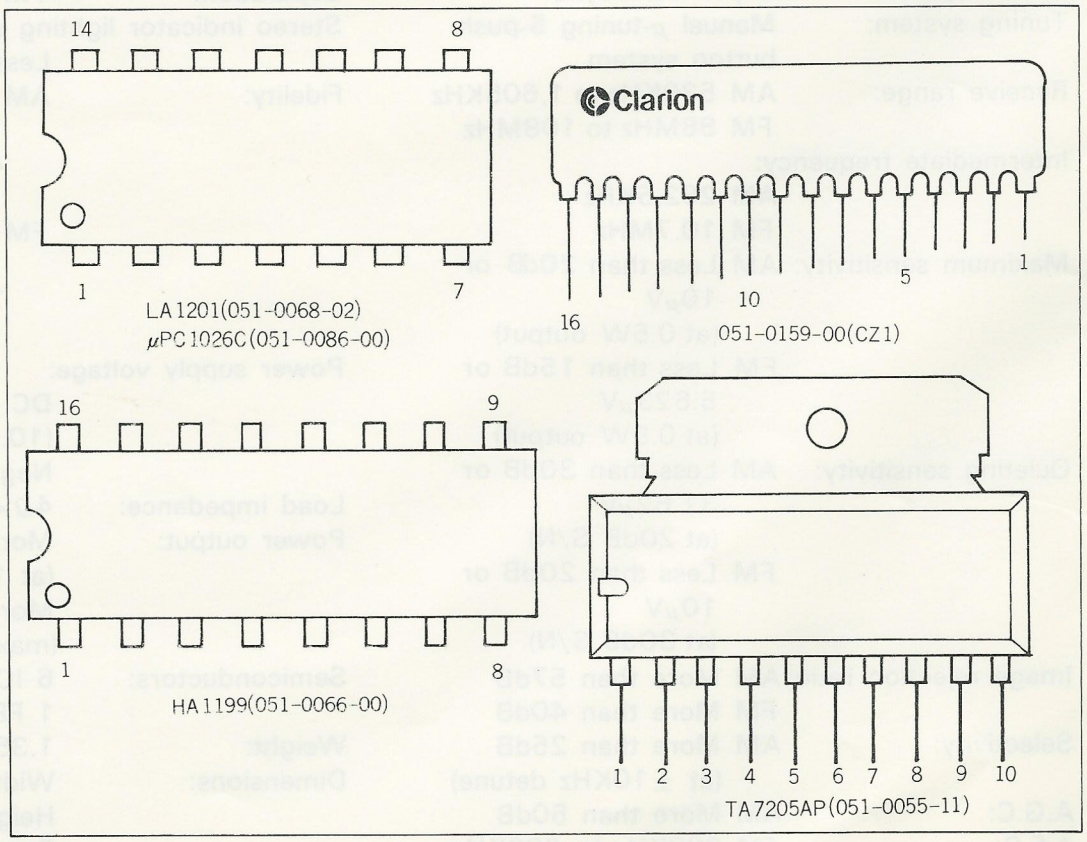
● FET



● Transistors

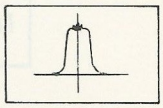
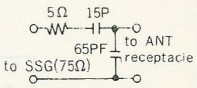


● ICs

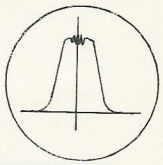
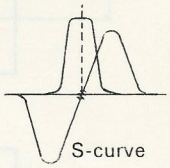
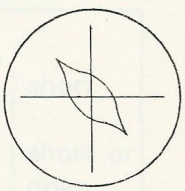


■ADJUSTMENT:

■AM

Adjustment item	Signal input section	Signal frequency	Signal output section	Adjustment section	Adjustment	Instruments required	Note
IFT	TP_{201}	262.5KHz	TP_{202}	$IFT_{201 \sim 204}$	Adjust the core of IFT maximum waveform height with good simmetry	● Sweep generator ● Oscilloscope ● V.T.V.M.	IF curve  Vol: minimum Tone: maximum Balance: center Dial pointer: right end
Tracking	Antenna receptacle	1620KHz	Speaker lead	①TC_{203} ②TC_{202} ③TC_{201}	Adjust the trimmers for maximum indication of V.T.V.M.	● SG ● Speaker ● V.T.V.M.	 Use dummy antenna between SSG and antenna receptacle

■FM

Adjustment item.	Signal input section	Signal frequency	Signal output section	Adjustment section	Adjustment	Instruments required	Note
IFT	TP_{101}	10.7MHz	TP_{102}	$IFT_{101,104,105}$	Detune by tuning the secondary side Ferrite core (IFT105) of the DISC. Next adjust the Ferrite cores of IFT101,104 maximum wave-form height with good symmentry. (Note) At this time, adjust the center frequency to the resonance frequency of the ceramic filter.	● Sweep generator ● Oscilloscope ● V.T.V.M.	
S curve	TP_1	10.7MHz	TP_{102}	IFT_{105}	Adjust the core of the seconda-ry side of the DISC. transfor-mer so that the peak point of the IF curve comes exactly under the point where the S curve intersects the X axis.	● Sweep generator ● Oscilloscope ● V.T.V.M.	IF curve 
Tracking	Antenna receptacle	87.0MHz	Speaker lead	87.0MHz: TC_{103} 98.0MHz: ①TC_{102} ②TC_{101}	Adjust the trimmers for maximum indication of V.T.V.M.	● SG ● Speaker ● V.T.V.M.	
〈MPX〉 19KHz Pilot signal (VCO)	Antenna receptacle	19KHz Pilot signal	TP_{103}	VR_{102}	Adjust the Lissajuous figure does not move	● MPX stereo SG	 after adjust

■TROUBLESHOOTING:

(Refer to the circuit diagram and printed wiring board)

AUDIO SECTION (circuit)

No sound at all → 1. Fuse blown
2. L_{501} open
3. Switch S_1 faulty
4. D_{501} faulty
5. C_{501}, C_{502} short

No sound at L. ch → Voltage check of IC_{301}
- NG → 1. C_{302}, C_{303}, C_{306}, C_{311} short
- OK ↓

Check of IC_{301} section
- NG → 1. C_{302}, C_{304}, C_{311} open
2. R_{302} open
3. Speaker lead (Lch) open
- OK ↓

Check the volume
- NG → 1. Balance volume short
2. Master volume open
- OK ↓

Replace the IC_{301}

Oscillates → 1. C_{305}, C_{307}, C_{310}, C_{405}, C_{407}, C_{410} open
2. R_{302}, R_{402} short

Distortion → 1. C_{308}, C_{408}, C_{502} open

AM SECTION (circuit)

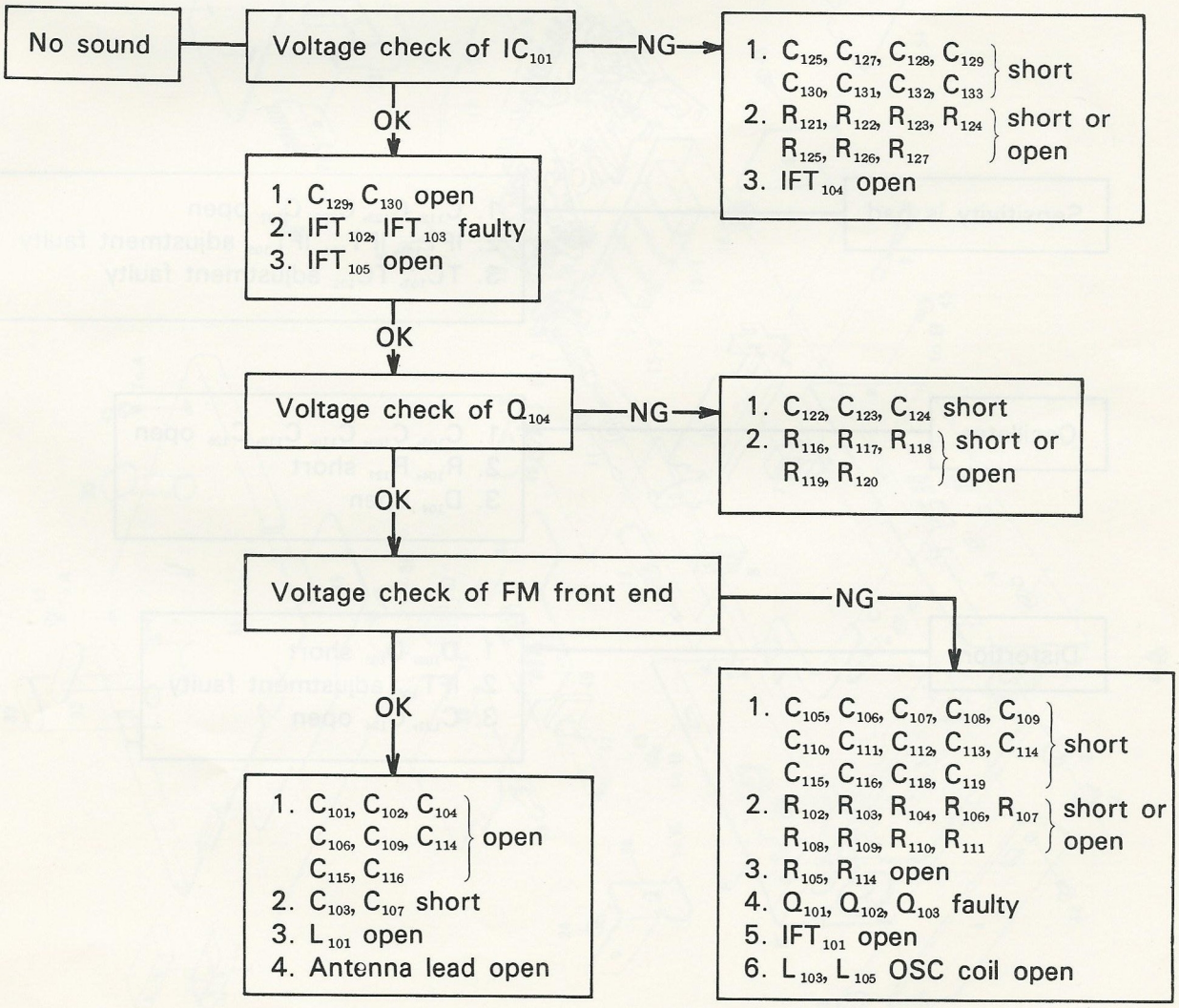
No sound → Voltage check of IC_{201} → 1. C_{202}, C_{203}, C_{204}, C_{205}, C_{206}, C_{207}, C_{208}, C_{211}, C_{212}, C_{213}, C_{214}, C_{215}, C_{216} } short
2. RF, OSC coil or IFT_{201} open

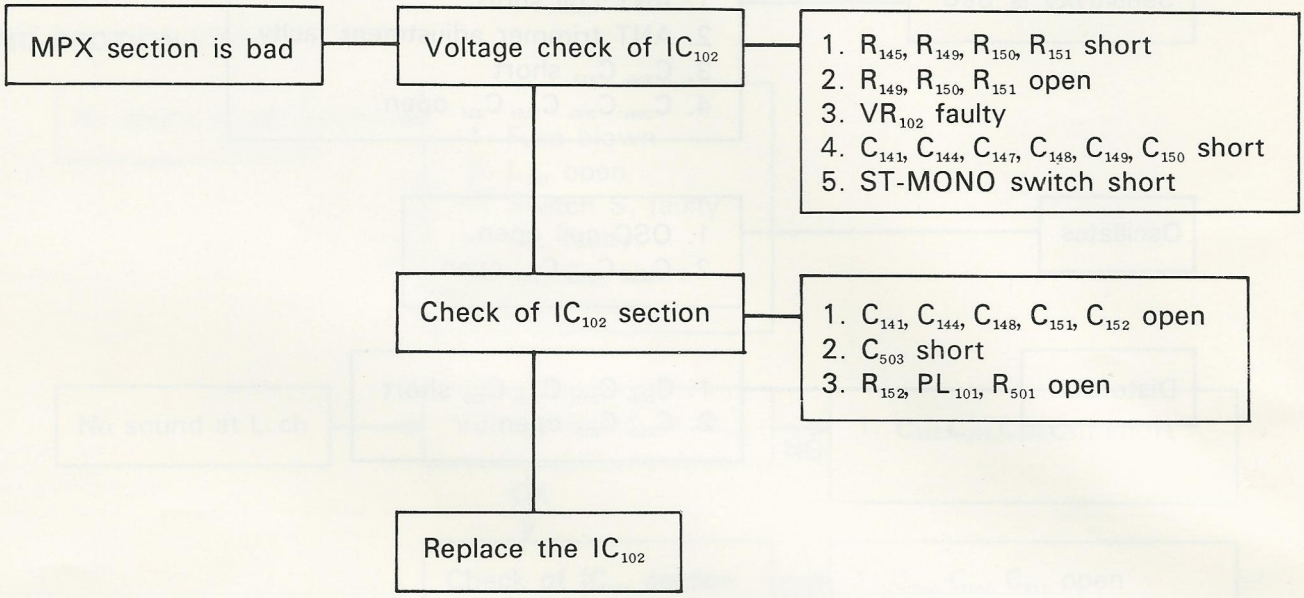
Check of IC_{201} section → 1. ANT coil open
2. RF, OSC coil short
3. ANT, RF, OSC trimmer short
4. C_{201} short or open
5. C_{217} open
6. R_{201}, R_{202}, C_{216} open
7. $IFT_{201 \sim 204}$ faulty

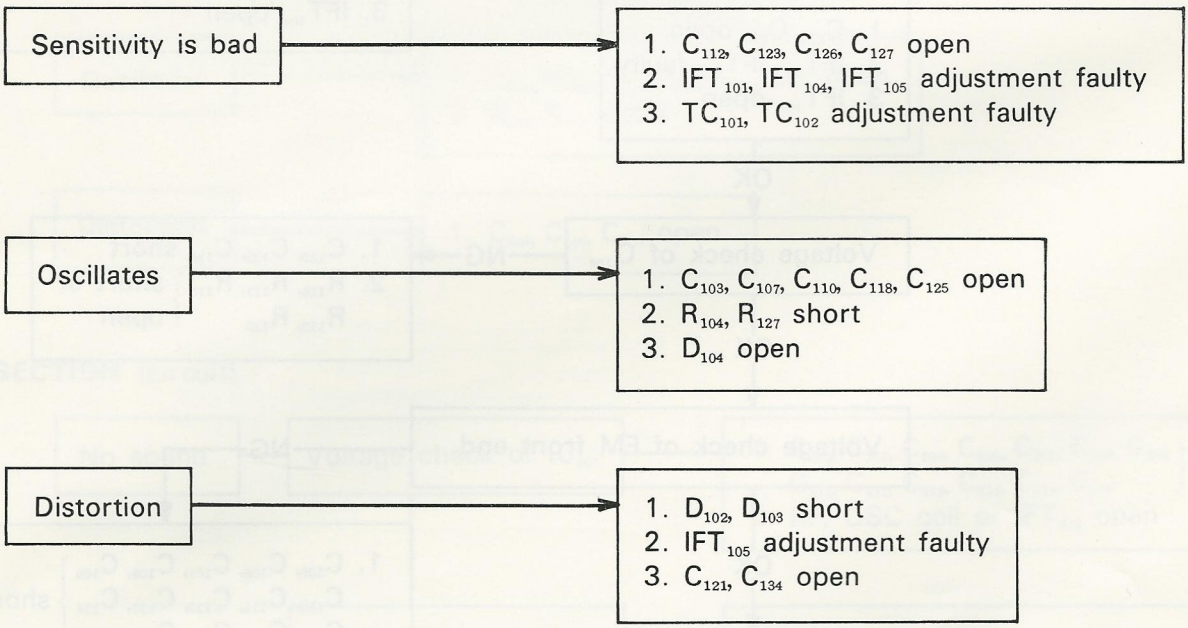
Replace the IC_{201}

Sensitivity is bad	1. ANT coil short 2. ANT trimmer adjustment faulty 3. C_{208}, C_{213} short 4. C_{204}, C_{206}, C_{215}, C_{216} open
Oscillates	1. OSC coil open 2. C_{203}, C_{210}, C_{213} open
Distortion	1. C_{204}, C_{207}, C_{208}, C_{213} short 2. C_{206}, C_{215} open

FM SECTION (circuit)

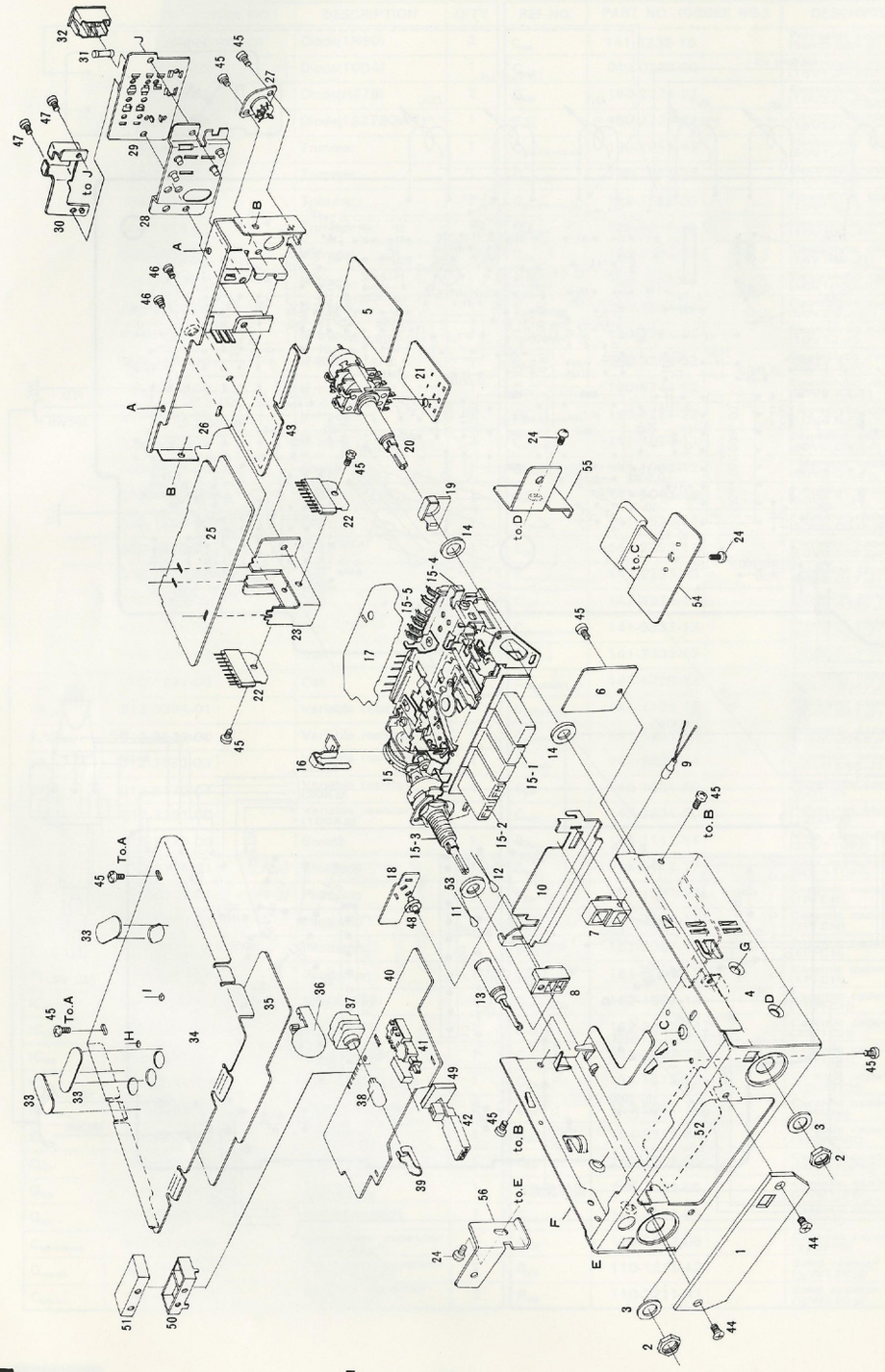



MPX section is bad
Voltage check of IC_{102}
1. R_{145}, R_{149}, R_{150}, R_{151} short
2. R_{149}, R_{150}, R_{151} open
3. VR_{102} faulty
4. C_{141}, C_{144}, C_{147}, C_{148}, C_{149}, C_{150} short
5. ST-MONO switch short
Check of IC_{102} section
1. C_{141}, C_{144}, C_{148}, C_{151}, C_{152} open
2. C_{503} short
3. R_{152}, PL_{101}, R_{501} open
Replace the IC_{102}


Sensitivity is bad
1. C_{112}, C_{123}, C_{126}, C_{127} open
2. IFT_{101}, IFT_{104}, IFT_{105} adjustment faulty
3. TC_{101}, TC_{102} adjustment faulty
Oscillates
1. C_{103}, C_{107}, C_{110}, C_{118}, C_{125} open
2. R_{104}, R_{127} short
3. D_{104} open
Distortion
1. D_{102}, D_{103} short
2. IFT_{105} adjustment faulty
3. C_{121}, C_{134} open

■EXPLODED VIEW:

◎Main section



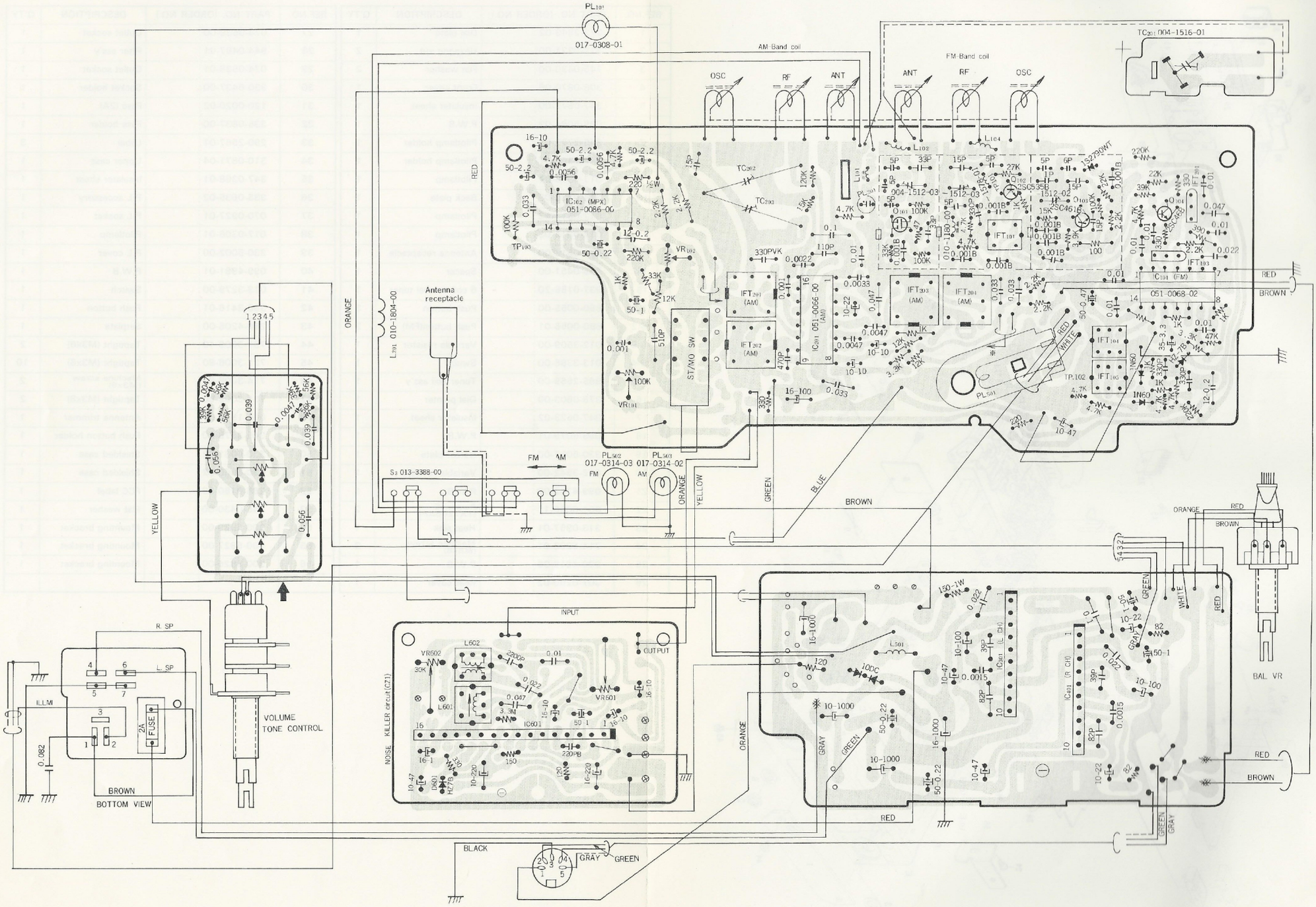
■PARTS LIST:

◎Main section

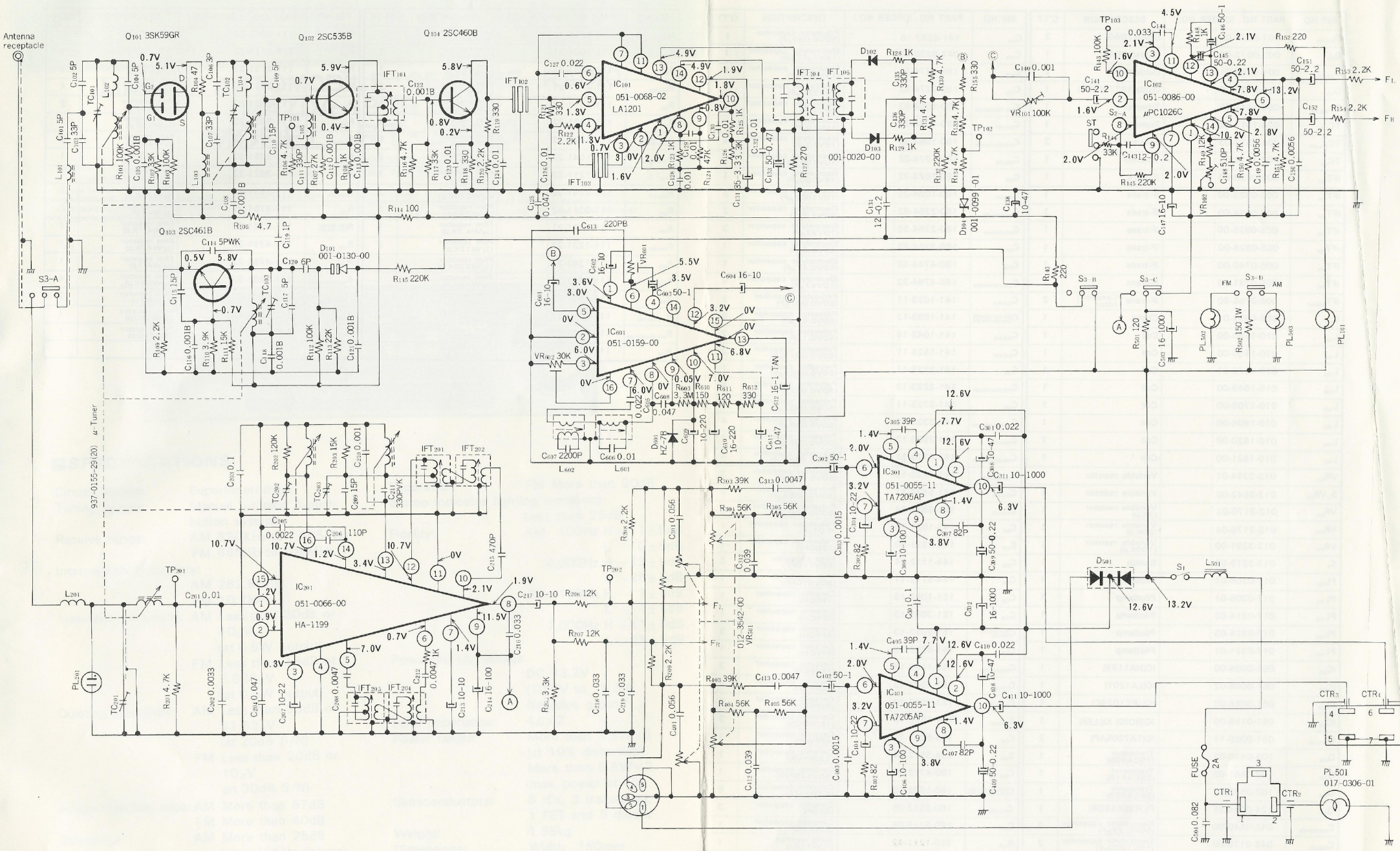
REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
1	372-2849-02	Dial plate	1
2	722-0231-00	Hexagon nut	2
3	745-0430-00	Flat washer	2
4	308-0870-06	Front cover	1
5	347-0577-00	Insulater sheet	1
6	099-5094-02	P.W.B	1
7	345-2777-01	Pilotlamp holder	1
8	345-2868-01	Pilotlamp holder	1
9	017-0308-01	Pilotlamp	1
10	374-0729-03	Back plate	1
11	017-0314-02	Pilotlamp	1
12	017-0314-03	Pilotlamp	1
13	092-0516-00	Antenna receptacle	1
14	745-0451-00	Spacer	1
15	937-0155-20	6 coil manual tuner	1
15-1	680-0055-00	Push button	3
15-2	680-0055-01	Push button(FM)	2
15-3	012-3509-00	Variable resistor	1
15-4	013-3388-00	Switch	1
15-5	965-2569-00	Tuner coil ass'y	1
16	376-0803-00	Dial pointer	1
17	347-0523-02	Insulater sheet	1
18	099-5079-01	P.W.B	1
19	330-6087-00	Holder plate	1
20	012-3542-00	Variable resistor	1
21	099-4742-00	P.W.B	1
22	051-0055-11	Power IC (TA7205AP)	2
23	313-0957-01	Heat sink	1
24	714-5008-81	Machine screw (M5x8)	3
25	099-4616-05	P.W.B	1
26	307-0260-02	Rear cover	1

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
27	074-0539-00	Outlet socket	1
28	944-0467-01	Filter ass'y	1
29	074-0528-01	Outlet socket	1
30	330-6437-00	Socket holder	1
31	120-0020-02	Fuse (2A)	1
32	335-0837-00	Fuse holder	1
33	290-2567-01	Label	3
34	310-0871-04	Upper case	1
35	347-0368-01	Insulater sheet	1
36	335-0635-02	P.L accessory	1
37	070-0927-01	P.L socket	1
38	017-0306-01	Pilotlamp	1
39	330-5002-00	P.L cover	1
40	099-4981-01	P.W.B	1
41	013-3279-00	Switch	1
42	380-3416-01	Push button	1
43	286-4205-00	Setplate	1
44	731-3006-40	Taptight (M3x6)	2
45	731-3006-80	Taptight (M3x6)	10
46	714-3006-81	Machine screw (M3x6)	2
47	731-3008-80	Taptight (M3x8)	2
48	004-1516-01	Antenna trimmer	1
49	345-2875-00	Push button holder	1
50	330-6061-02	Shielded case	1
51	330-6060-02	Shielded case	1
52	285-0160-00	FCC label	1
53	745-0430-00	Flat washer	1
54	300-5829-00	Mounting bracket	1
55	300-5827-00	Mounting bracket	1
56	300-5826-00	Mounting bracket	1

■PRINTED WIRING BOARD:



■CIRCUIT DIAGRAM:



RT-386D

PARTS LIST:

◎Electrical section

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
$D_{102,103}$	001-0020-00	Diode(1N60)	2
D_{501}	001-0072-00	Diode(10D4)	1
$D_{104,601}$	001-0099-01	Diode(HZ7B)	2
D_{101}	001-0130-00	Diode(1S2790WT)	1
$TC_{202,203}$	004-1441-00	Trimmer	1
TC_{103}	004-1512-02	Trimmer	1
$TC_{101,102}$	004-1512-03	Trimmer	2
TC_{201}	004-1516-01	Trimmer	1
IFT_{101}	005-0698-00	IF-trans	1
IFT_{201}	005-0823-00	IF-trans	1
IFT_{203}	005-0824-00	IF-trans	1
IFT_{202}	005-0825-00	IF-trans	1
IFT_{204}	005-0826-00	IF-trans	1
IFT_{104}	005-0740-00	IF-trans	1
IFT_{105}	005-0741-00	IF-trans	1
$IFT_{102,103}$	005-0765-00	IF-trans (Ceramic filter)	2
L_{501}	009-0592-01	Choke	1
L_{103}	010-1180-00	Coil	1
L_{104}	010-1560-00	Coil	1
L_{105}	010-1570-01	Coil	1
L_{102}	010-1649-00	Coil	1
L_{101}	010-1708-00	Coil	1
L_{201}	010-1804-00	Coil	1
L_{601}	010-1820-00	Coil	1
L_{602}	010-1821-00	Coil	1
VR_{102}	012-3394-01	Variable resistor	1
S_1, VR_{501}	012-3542-00	Variable resistor	1
VR_{601}	012-3170-03	Variable resistor (3KΩ)	1
VR_{602}	012-3170-04	Variable resistor (30KΩ)	1
VR_{101}	012-3391-00	Variable resistor (100KΩ)	1
S_2	013-3279-00	Switch	1
PL_{501}	017-0306-01	Pilotlamp	1
PL_{101}	017-0308-01	Pilotlamp	1
PL_{503}	017-0314-02	Pilotlamp	1
PL_{502}	017-0314-03	Pilotlamp	1
PL_{201}	017-0321-01	Pilotlamp	1
IC_{201}	051-0066-00	IC(HA1199)	1
IC_{101}	051-0068-02	IC(LA1201)	1
IC_{102}	051-0086-00	IC(μPC1026C)	1
IC_{601}	051-0159-00	IC(NOISE KILLER)	1
$IC_{301,401}$	051-0055-11	IC(TA7205AP)	2
Q_{104}	102-0460-02	Transistor (2SC460B)	1
Q_{103}	102-0461-02	Transistor (2SC461B)	1
Q_{102}	102-0535-02	Transistor (2SC535B)	1
Q_{101}	124-0059-28	FET(3SK59GR)	1
$C_{145,309,409}$	042-0140-00	Electrolytic capacitor (50V0.22μF)	3
$C_{502,503}$	042-0178-00	Electrolytic capacitor (16V1000μF)	2
$C_{134,143}$	043-0020-00	Ceramic capacitor (12V0.2μF)	2

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
C_{504}	141-8233-15	Polyester capacitor (50V0.082μF)	1
C_{612}	042-0239-00	Electrolytic capacitor (16V1μFTAN)	1
C_{609}	180-2274-22	Electrolytic capacitor (10V220μF)	1
C_{610}	180-2274-32	Electrolytic capacitor (16V220μF)	1
$C_{146,302,402,603}$	180-1054-62	Electrolytic capacitor (50V1μF)	4
$C_{213,217}$	180-1064-22	Electrolytic capacitor (10V10μF)	2
$C_{147,601,602,604}$	180-1064-32	Electrolytic capacitor (16V10μF)	4
$C_{306,406}$	180-1074-22	Electrolytic capacitor (10V100μF)	2
C_{214}	180-1074-32	Electrolytic capacitor (16V100μF)	1
$C_{311,411}$	180-1084-22	Electrolytic capacitor (10V1000μF)	2
$C_{141,151,152}$	180-2254-62	Electrolytic capacitor (50V2.2μF)	3
$C_{207,304,404}$	180-2264-22	Electrolytic capacitor (10V22μF)	3
C_{131}	180-3354-52	Electrolytic capacitor (35V3.3μF)	1
C_{133}	180-4744-62	Electrolytic capacitor (50V0.47μF)	1
$C_{138,308,408,611}$	180-4764-22	Electrolytic capacitor (10V47μF)	4
$C_{140,210}$	141-1023-11	Polyester capacitor (50V0.001μF)	2
$C^{123,124,126,128}_{129,130,132,201}$	141-1033-12	Polyester capacitor (50V0.01μF)	8
$C_{203,501}$	141-1043-16	Polyester capacitor (50V0.1μF)	2
$C_{303,403}$	141-1523-11	Polyester capacitor (50V0.0015μF)	2
C_{205}	141-2223-11	Polyester capacitor (50V0.0022μF)	1
$C_{127,310,410,605}$	141-2233-13	Polyester capacitor (50V0.022μF)	4
C_{202}	141-3323-11	Polyester capacitor (50V0.0033μF)	1
$C_{144,216,218,219}$	141-3333-13	Polyester capacitor (50V0.033μF)	4
$C_{312,412}$	141-3933-13	Polyester capacitor (50V0.039μF)	2
$C_{208,212,313,413}$	141-4723-11	Polyester capacitor (50V0.0047μF)	4
$C_{125,204,608}$	141-4733-13	Polyester capacitor (50V0.047μF)	3
$C_{149,150}$	141-5623-11	Polyester capacitor (50V0.0056μF)	2
$C_{301,401}$	141-5633-14	Polyester capacitor (50V0.056μF)	2
C_{606}	143-1031-50	Polystylen capacitor (0.01μF)	1
C_{607}	143-2221-50	Polystylen capacitor (2200PF)	1
C_{206}	144-1112-14	Mica capacitor (50V110PF)	1
C_{148}	144-5112-17	Mica capacitor (50V510PF)	1
C_{119}	151-1097-13	Ceramic capacitor (1PFCH)	1
C_{106}	151-3097-13	Ceramic capacitor (3PFCH)	1
$C^{101,102,104}_{109,117}$	151-5097-13	Ceramic capacitor (5PFCH)	5
C_{120}	151-6097-13	Ceramic capacitor (6PFCH)	1
$C_{110,115,209}$	152-1502-13	Ceramic capacitor (15PFCH)	3
$C_{103,107}$	152-3302-13	Ceramic capacitor (33PFCH)	2
$C_{305,405}$	152-3902-13	Ceramic capacitor (39PFCH)	2
$C_{307,407}$	154-1512-13	Ceramic capacitor (150PFCH)	2
C_{114}	153-5097-70	Ceramic capacitor (5PFWK)	1
C_{211}	154-3312-64	Ceramic capacitor (330PFVK)	1
C_{215}	160-4712-05	Ceramic capacitor (50V470PFB)	1
$C^{105,108,112,113}_{116,118,121,122}$	160-1022-05	Ceramic capacitor (0.001μFB)	8
$C_{111,135,136}$	160-3312-05	Ceramic capacitor (330PF)	3
C_{613}	160-2212-05	Ceramic capacitor (220PFB)	1
R_{501}	110-1211-42	Solid resistor (½W120Ω)	1
R_{152}	110-2211-41	Solid resistor (½W220Ω)	1

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
R_{140}	110-2211-42	Solid resistor (½W220Ω)	1
R_{143}	111-1041-31	Film resistor (¼W100KΩ)	1
R_{206}	111-1231-31	Film resistor (¼W12KΩ)	1
$R_{134,201}$	111-4721-31	Film resistor (¼W4.7KΩ)	2
R_{114}	111-1011-22	Film resistor (⅛W100Ω)	1
R_{108}	111-1021-22	Film resistor (⅛W1KΩ)	1
$R_{123,125,128,129,148,204}$	111-1021-32	Film resistor (¼W1KΩ)	6
$R_{101,103,112}$	111-1041-22	Film resistor (⅛W100KΩ)	3
R_{120}	111-1211-32	Film resistor (¼W120Ω)	1
$R_{132,145}$	111-2241-32	Film resistor (¼W220KΩ)	2
R_{612}	111-3311-42	Film resistor (½W330Ω)	1
R_{106}	111-4721-21	Film resistor (⅛W4.7KΩ)	1
$R_{149,207}$	111-1231-32	Film resistor (¼W12KΩ)	2
R_{202}	111-1241-32	Film resistor (¼W120KΩ)	1
R_{111}	111-1531-22	Film resistor (⅛W15KΩ)	1
R_{203}	111-1531-32	Film resistor (¼W15KΩ)	1
$R_{109,120,122}$	111-2221-22	Film resistor (⅛W2.2KΩ)	3
$R_{153,154,208,209}$	111-2221-32	Film resistor (¼W2.2KΩ)	4
R_{113}	111-2231-22	Film resistor (⅛W22KΩ)	1

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
R_{115}	111-2241-22	Film resistor (⅛W220KΩ)	1
R_{127}	111-2711-32	Film resistor (¼W270Ω)	1
R_{107}	111-2731-22	Film resistor (⅛W27KΩ)	1
$R_{118,119,121,155}$	111-3311-32	Film resistor (¼W330Ω)	4
$R_{126,205}$	111-3321-32	Film resistor (¼W3.3KΩ)	2
R_{102}	111-3331-22	Film resistor (⅛W33KΩ)	1
$R_{117,144}$	111-3331-32	Film resistor (¼W33KΩ)	2
R_{603}	111-3351-32	Film resistor (¼W3.3MΩ)	1
R_{110}	111-3921-22	Film resistor (⅛W3.9KΩ)	1
$R_{303,403}$	111-3931-32	Film resistor (¼W39KΩ)	2
R_{104}	111-4701-22	Film resistor (⅛W47Ω)	1
$R_{116,130,131,133,150,151}$	111-4721-32	Film resistor (¼W4.7KΩ)	6
R_{124}	111-4731-32	Film resistor (¼W47KΩ)	1
R_{105}	111-4791-22	Film resistor (⅛W4.7Ω)	1
$R_{304,305,404,405}$	111-5631-32	Film resistor (¼W56KΩ)	4
$R_{302,402}$	111-8201-32	Film resistor (¼W82Ω)	2
R_{610}	111-1511-32	Film resistor (¼W150Ω)	1
R_{502}	115-1511-51	Film resistor (1W150Ω)	1