Service Manual

74 MR2020 /2G (Layla)

MR2020 F,K,KK,U
CD/Tuner System

COMPACT disc DIGITAL AUDIO

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CAUTION

The System MR2020 (Layla) combines MR2021 (CD/Tuner Amplifier) with LS2021 (Speaker System).

Please use this service manual with referring to the user guide (D.F.U.) without fail.

marantz®

system MR2020 / Layla

4822 725 51183
First Issue 1999.01
298J855010 MIT

Printed in Japan

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SHOCK, FIRE HAZARD SERVICE TEST :

CAUTION : After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins (with unit NOT connected to AC mains and its Power switch ON), and the face or Front Panel of product and controls and chassis bottom.

Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before AC power is applied, and verified before it is return to the user/customer.

Ref. UL Standard N0. 1492(DR700) and No. 813(CDR630).

In case of difficulties, do not hesitate to contact the Technical Department at above mentioned address.

1. TECHNICAL SPECIFICATIONS

FM Tuner

Frequency range ..... 87.5 ~ 108.0 MHz
F only ..... 76.0~ 90.0 MHz
Sensitivity ..... 21.2 dBf / 3.2 µV
S/N (Mono/Stereo) ..... 75 / 43 dB
F only ..... 70 / 50 dB
THD (Mono/Stereo) ..... 1.5 / 1.5 %

MW Tuner

Frequency range ..... 531 ~ 1602 kHz
U only ..... 530 ~ 1700 kHz
Sensitivity ..... 500 µV / m
/02, F only ..... 400 µV / m
S/N ..... 50 dB

LW Tuner

Frequency range ..... 153 ~ 279 kHz
Sensitivity ..... 1800 µV / m

Amplifier

Music power ..... 25 W + 25 W (4Ω)
Input sensitivity (AUX) ..... 310 mV / 47 kΩ
U only ..... 250 mV / 47 kΩ
S/N (AUX) ..... 85 dB

CD Player

Channels ..... 2 channels
Frequency response ..... 20 ~ 20,000 Hz ± 3 dB
S/N ..... 82 dB (1000 Hz)
THD ..... 0.04 % (1000 Hz)
Output level ..... 2 V RMS

General

Power supply
/02 version ..... AC 230 V, 50 Hz
F version ..... AC 100 V, 50Hz / 60 Hz
K version ..... AC 110V / 220 V, 50Hz / 60 Hz
KK version ..... AC 220 V, 60 Hz
U version ..... AC 120 V, 60 Hz
Power consumption ..... 25 W
Power failure backup time ..... APPROX. 15 min.
Dimensions ..... 450(W) x 104(H) x 308(D) mm
Weight ..... 5.8 kg

Table top Speaker LS2021

Speaker
Mid-bass ..... 4”
Dome tweeter. ..... 3/4”
Input power
Rated ..... 25 W (6Ω)
Max. ..... 40 W (6Ω)
Frequency response ..... 80 ~ 20,000 Hz ± 6 dB
Dimensions ..... 190(W) x 200(H) x 100(D) mm
Weight ..... 1.5 kg

Design and specifications are subject to change without notice.

2-1. HOW TO DISASSEMBLE MR2020

1. Take the bottom case (001G) apart

(1) Turn MR2020 upside down by the jig (Refer to fig.1-3). Take care that the top cover will not damaged, especially the 4 levers. If you don't have the jig, you prepare to put some magazine or telephone guide under the MR2020 (The height is over 3cm books).

Fig.1 A jig for MR2020

Fig.2 The jig on MR2020

Fig.3 Turning over the MR2020

(2) Remove 15 screws as shown in fig.4.

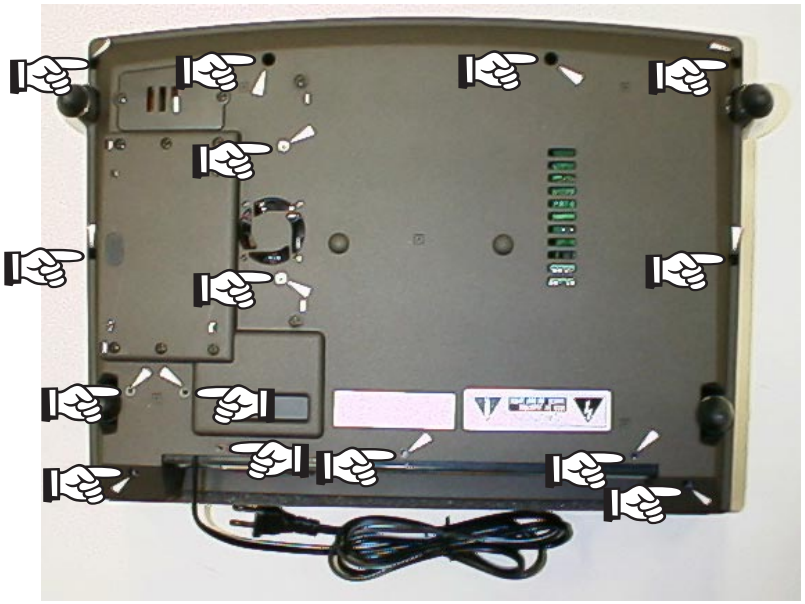


Fig.4 Position of 15 screws

(3) While lifting the bottom case, remove the rear panel as shown in fig.5-6.

Fig.5 Lifting the bottom case

Fig.6 Removing the rear panel

(4) Remove the mains code bush as shown in fig.7.

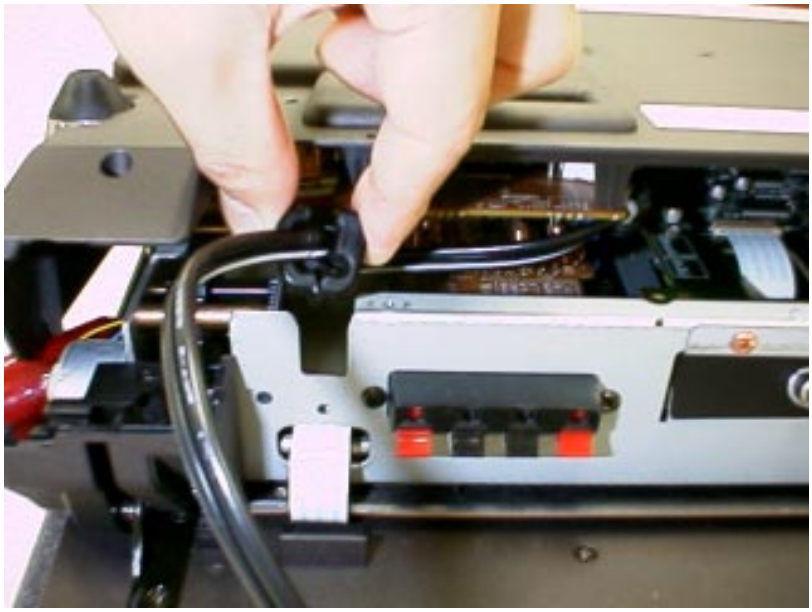


Fig.7 Removing the mains code bush

(5) Lift up the bottom case, remove the put the one with turning to front side (Refer to fig.8).

Fig.8 Taking the bottom case apart

Remark for reassemble

When you fit the bottom case, remove the lid of the bottom case (Refer to fig.9) and confirm the arrangement of lead lines for transformer.(Refer to fig.10).

Fig.9 Removing the lid of the bottom case

Fig.10 Arrangement of lead lines

2. Take the top panel (001D) apart

(1) Turn MR2020 upside down by the jig. (Refer to fig.1-3) Take care that the top cover will not damaged, especially the 4 levers. If you don't have the jig, you prepare to put some magazine or telephone guide under the MR2020. (The height is over 3cm books)

(2) Push the rear panel while keeping hold the top cover (see fig.11 below). The top cover will move 5mm. (fig.12-13) Now, 4 screws on the top cover will become accessible. (fig.14) Take out these screws. (M3 type screw)

Fig.11 Pushing the rear panel

Fig.12 Before pushing the rear panel

Fig.13 Pushed the rear panel

Fig.14 Positions of 4 screws

(3) Turn the MR2020 to its normal operating position.
(4) Open the top cover of MR2020 by hand.
(5) Take out the 2 screws (M2 type screw) on the top (see fig.15).

Fig.15 Positions of 2 screws on the top

(6) The upper part and lower part of the top cover are connected to each other with adhesive tape. Separate these parts by pushing the transparent upper part in the middle (on CD shaped part) from the lower part, while holding the lower part.
(7) The upper part and lower part of the top cover were separated (See fig.16-17).

Fig.16 The upper part of top cover (the reverse side)

Fig.17 The lower part of top cover and the others

2-2. REPAIR INTRODUCTION

PREPARATION FOR CD BLOCK

1. Set a disc for repair into product.
2. Turn the product upside down on the jig (Parts No.*MR2021JIG). Take care that the top cover will not damaged, especially the 4 levers. (Refer to "How to disassemble MD2020")
3. For the top panel will not open while repairing, remove the connecting wires of panel motor from the connector (J812).
4. Repair and operate it on the upside down position of the product.

PREPARATION FOR MAIN AMPLIFIER PCB (P704)

1. Main amplifier is BTL output.
2. For removing the main amplifier PCB (P704) from the product, remove the wire (W802) from the terminal (WU02) of microprocessor PCB (PU04). Connect another wire with terminal (WU02) and GND as chassis instead of the wire (W802).

REMARK

Remove the bottom case from the product, Do not output signals of over 1W from both channels more than 10 minutes continuously.

2-3. EXPLANATION OF CIRCUITS

FAN OPERATION

The voltage added to the diode (D852) is depended on the resistance of the thermistor (R857) and resistors (R855,R858). When the temperature of the heat sink goes up, the resistance of the thermisor (R857) decreases, and the voltage added to the diode (D852) increases.

1. When the temperature of the heat sink is over 70 degrees Celsius, then D852 is on, through R852, Q851 is on, and the fan starts to revolve.
2. When the temperature of the heat sink is approx. 100 degrees Celsius or more, through R853, Q853 is on, and the product is STAND-BY status. But, if the fan revolve normally, the temperature of the heat sink will not be over 100 degrees Celsius and not be STAND-BY status. Therefore, the procedure of the over heat protection circuit check is as follows;

(1) Connect the test point (J814) with a resistor of 680 ohm.
(2) If the product is STAND-BY status, this circuit is normal.
(3) Remove the resistor of 680 ohm from the test point (J814).

FAN OPERATION CHECK

Keep outputting 2.5W from both channels of the product.

When the bottom case is closing. If the fan revolving starts within 10 minutes, the function is correct working.
Otherwise keep outputting 1W from both channels of the product when the bottom case is opening. If the fan revolving starts within 5 minutes, the function is correct working.

REMARK

Do not output over 1W when the bottom case is open.

VCC CONTROL

The regulation of primary voltage is not so higher intentionally for decreasing the no-load loss. Therefore, this circuit is used for the product to keep the voltage tolerance of the power IC. This circuit do not work when the output is from 0 to approx. 1Vrms. Then VCC is supplied from D709 only. When the output is more than 1Vrms, through D701-D704, R722, D706, and Q703 is on, current is supplied from Q702. When the output is over approx. 3Vrms, D709 is off, and VCC is supplied from Q702 only.

SPEAKER PROTECTION

1. When either terminal of BTL outputs connect with GND (chassis) by mistake, the speaker protection circuit will work as follows. through R707-R710, Q704 or Q705 is on, and Q706 is on. Then #5Pin for Q701 is 0V, power IC (Q701) will be in power off. Therefore, the product will be STAND-BY status.
2. When the VCC CONTROL circuit is working correctly, maximum current of R825 is 1A, and voltage between R825 load is maximum 0.33V. When both terminals of BTL outputs are shorted on outputting over 0.25W, R825 is supplied over 2A, Q807 and Q803 is on, and the product will be STAND-BY status.

CD 5V ON/OFF CONTROL

The voltage for CD (CD 5V) is supplied from QX04 when the following conditions are satisfied fully. (for noise and laser protection)

1. Setting a disc on the product, and QU08 is on.
2. Closing top panel, and #78Pin for QU10 is 0V.
3. The product is in CD mode.

MUTE CONTROL

Mute signals output from microprocessor (QU10) are "MUTE (Pin No.37)", "MUTE2 (Pin No.7)", and "DSC MUTE (Pin No.5)".

Fig.1 is workable output terminals by each mute signals, Fig.2 is the status of each mute.

Fig.1

	Q701(SPK)	QN01-QN04 (PHONE)	QX05,QX06 (SUB WOOFER)	QX07,QX08 (LINE OUT)	QE01
MUTE	YES	YES	YES	NO	NO
MUTE2	NO	NO	NO	YES	NO
DSC MUTE	NO	NO	NO	NO	YES

Fig.2

	POWER ON/OFF	CD MODE STOP OR TRACK JUMP	MUTE BUTTON ON	MODE CHANGE	VOLUME MINIMUM
MUTE	YES	YES	YES	YES	YES
MUTE2	YES	YES	NO	YES	NO
DSC MUTE	NO	YES	NO	NO	NO

TOP PANEL OPEN SENSOR

1. The pulse (T=84msec, Duty 50%) is always added to LED (QU15), from #30Pin of QU10, through RF28 and QU22.
2. Cover the sensor with your fingers, the collector voltage of QU01 goes up over 0.7VP-P. and through RU71 and QU09, the pulse of 5VP-P inputs to #29Pin of QU10. Then the top panel will open.
3. Not needing to cover the sensor with your fingers, QU01 receives the light of LED reflected by lens oneself. Therefore, the collector of QU01 adds the reverse pulse through RF29, QU26 and RF32, for reduced incorrect working. So, the voltage of residual pulse for the collector of QU01 is suppressed to 0.1VP-P.

REMARK

When the sensor receives sunlight or a strong light as incandescent, top panel might open.

POPS NOISE KILLER

RX72, CX70 and QX70 are the circuit to delay power supply for approx. 2 seconds. Therefore, this circuit prevents pops noise generation when power switch is on or off.

SUB WOOFER

Sub woofer output is composed a low pass filter of cut-off frequency 150Hz octave 12dB. It is output 2V for AUX L,R input 60Hz, 200mV (volume is maximum).

REMARK

Sub woofer output level is depended on volume control.

3 SERVICE MODE

1. How to set the service mode

(1) While holding the CLOCK and CLEAR buttons together, put the mains plug to mains outlet.
(2) FL check mode will start.
(3) While in FL check mode, each time the FUNCTION button pressed (within 2 seconds), the mode changes in the following order.
TR FREQ (Tracking point frequency memory mode) → CD TEST (CD test mode) → FL CHK (FL check mode) → TR FREQ (Tracking point frequency memory mode)

2. FL CHECK MODE

FL check mode will continue until change other mode.

3. TRACKING POINT FREQUENCY MEMORY MODE

This mode is not available for repair(This is for check in factory.). If you set in this mode, some frequencies will register in each preset memory.

REMARK

User programmed frequencies will be deleted.
While in Tracking point frequency memory mode, press the MEMO button. Press the CLEAR and the DISPLAY buttons together. The display shows “CLEAR” 2 seconds. Then all memories will be clear.

4. CD TEST MODE

(1) Press the “+” button, then the sledge move to the outside. Press the “-” button then the sledge move to the inside. Press the CLEAR button while the sledge is moving, then the sledge stop.
(2) Press the MEMO button, then the laser pick up unit is giving out the beam. Press the MEMO button again then the laser pick up unit stop beam out. All operations are available without the Disc.
(3) While in CD test mode, CD play is available in opening the top panel.
(4) If any ERROR is happened, the display shows “CD ERRX”. (X is a ERROR code.) The ERROR message will not be clear until pressing STOP or POWER buttons.

Error Code	Description
1	The sledge switch not turn on.
2	The sledge switch not turn off.
3	The laser pick up unit not focus.
4	The tracking is not fixed.
5	The spindle motor not locked.

エラーコード	エラーの詳細
1	スレッジのスイッチがONしない
2	スレッジのスイッチがOFFしない
3	フォーカスが合わない
4	トラッキングが合わない
5	スピンドルモーターがロックしない

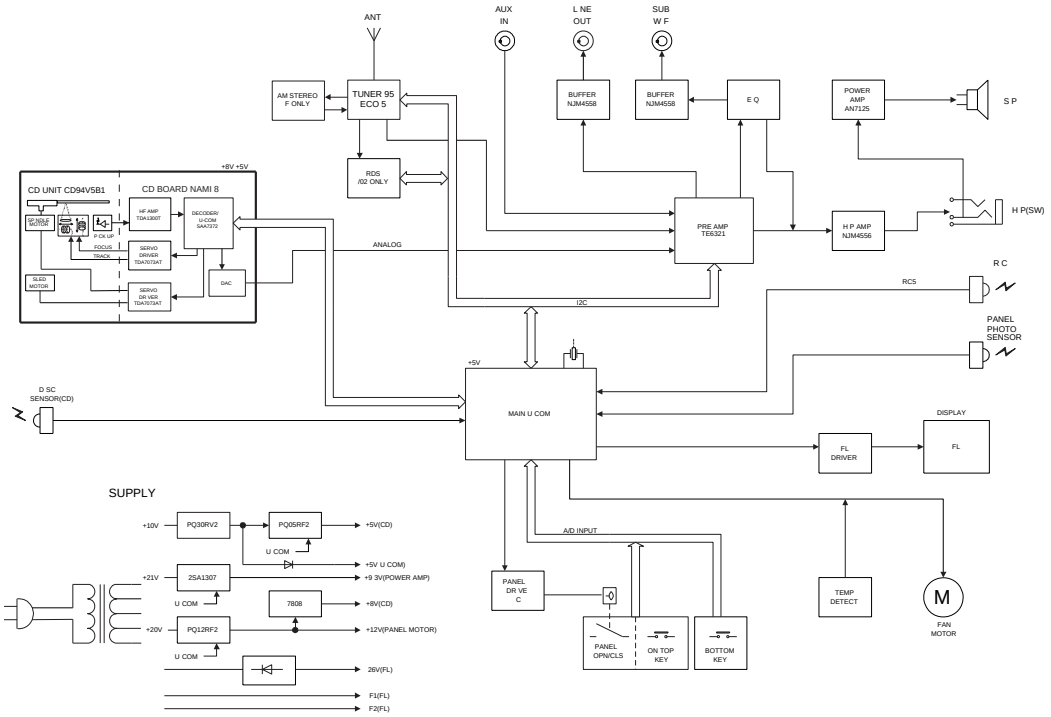
5. How to stop the service mode

Press the POWER button. Then product will be in POWER OFF (STAND-BY).

REMARK

The microprocessor will not be clear by this operation. (Refer to "3. TRACKING POINT FREQUENCY MEMORY MODE")

4-1 BLOCK DIAGRAM



4-1

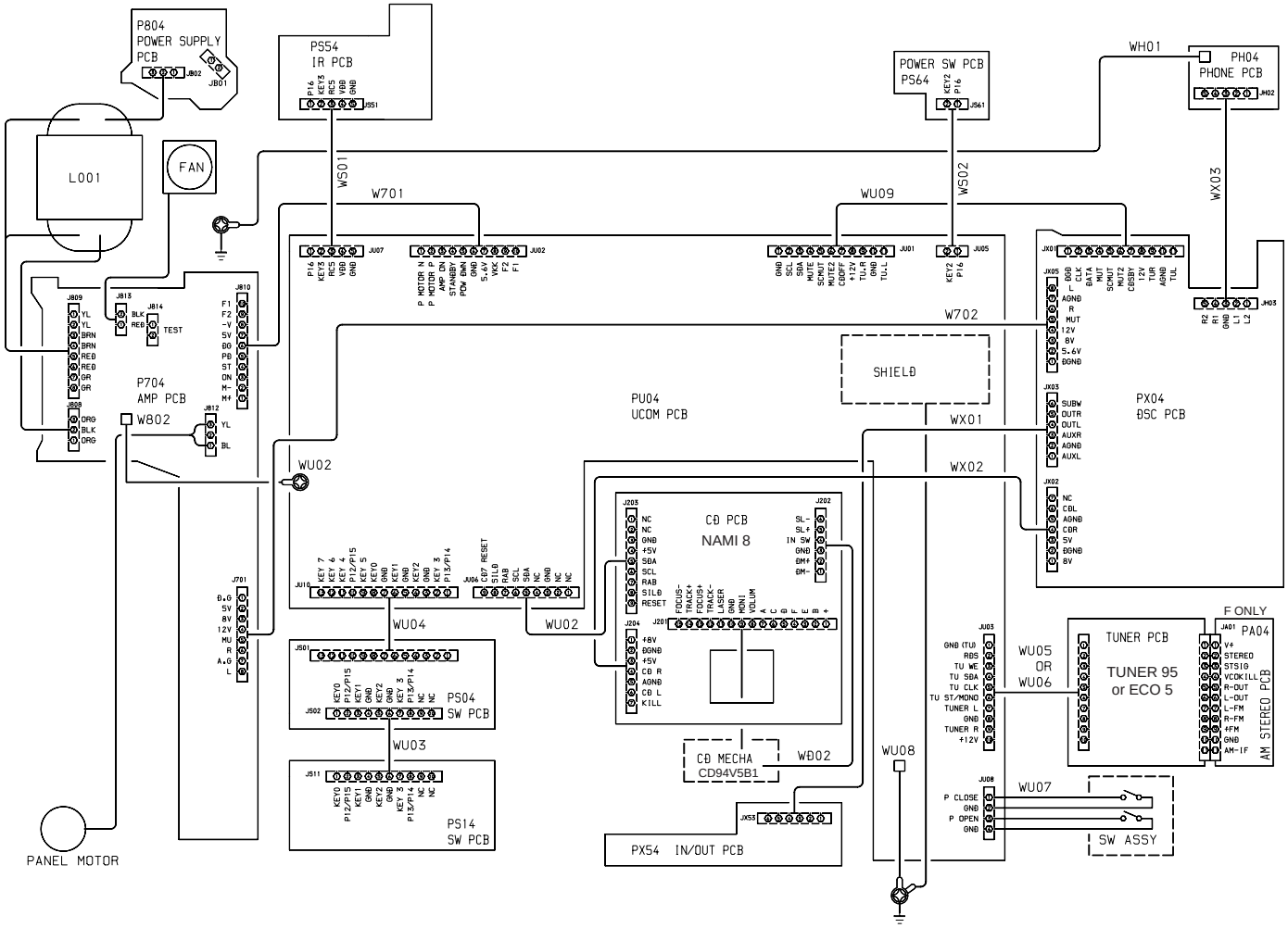
4-3 MICROPROCESSOR DATA

Pin No	Pin Name	S gnal Name	I/O	Active	Slow	Function
1	P10 (INT0)	POW DWN	INT	↓	L	POWER DOWN
2	P11 (INT1)	STANDBY	OUT	L	L	POWER STANDBY
3	P12 (INT2)	SDA	N/OUT			I C SDA(for RDS DSC)
4	P13 (DVO)	SCL	OUT	H	L	I C SCL(for RDS DSC)
5	P14	DSC MUTE	OUT	L	L	DSC MUTE
6	P15	CD STANDBY	OUT	L	L	CD STANDBY
7	P16	MUTE2	OUT	L	L	L NE MUTE
8	P17	*	N			N C
9	TEST		N			GND
10	P21 (XTIN)	32 768kHz	IN			SUB X TAL
11	P22 (XTOUT)	32 768kHz	OUT			SUB X TAL
12	RESET	RESET	N	L		RESET
13	XIN	8 0MHz	IN			X TAL
14	XOUT	8 0MHz	OUT			X TAL
15	VSS		GND			GND
16	P20 (INT5)	HOLD	IN	L		HOLD N
17	P30 (INT3)	RCIN	INT	↑		RC S BUS IN
18	P31	RCOUT	OUT	L	L	RC S BUS OUT
19	P32 (SCK)	UNE CLK	OUT	H	L	TUNER CLK
20	P33 (SI)	TUNE WE	OUT	L		TUNER WRITE ENABLE
21	P34 (SO)	UNE SDA	IN/OUT	H	L	TUNER SDA
22	P35 (HSCK)	TUNER ST M ON	IN	H	L	TUNER STEREO/MONO
23	P36	CD7 RESET	OUT	L	L	CD7 RESET
24	P37 (HSO)	DISC IN	IN	H		DISC IN SENSOR
25	P00	SILD	OUT	L	L	CD7 CONTROL
26	P01	RAB	OUT	H	L	CD7 CONTROL
27	P02	SCL	OUT	H	L	CD7 CONTROL
28	P03	SDA	IN/OUT	H	L	CD7 CONTROL
29	P04	P SEN IN	N	H		PANEL SENSOR IN
30	P05	P SEN OUT	OUT	H	L	PANEL SENSOR OUT
31	P06	P MOTOR P	OUT	H	L	PANEL MOTOR +
32	P07	P MOTOR N	OUT	H	L	PANRL MOTOR -
33	VDD	+5V	+5VS			VDD
34	P60 (G15)	*	IN			N C
35	P61 (G14)	*	IN			N C
36	P62 (G13)	AMPON	OUT	H	L	AMP POWER ON
37	P63 (G12)	MUTE	OUT	H	L	MUTE
38	P64 (G11)	RDS ON	OUT	H	L	RDS POWER
39	P65 (G10)	11G	OUT	H		DIGIT OUT
40	P66 (G9)	10G	OUT	H		DIGIT OUT

Pin No	Pin Name	Signal Name	I/O	Active	Slow	Function
41	P67 (G8)	9G	OUT	H		DIGIT OUT
42	P70 (G7)	8G	OUT	H		DIGIT OUT
43	P71 (G6)	7G	OUT	H		DIGIT OUT
44	P72 (G5)	6G	OUT	H		DIGIT OUT
45	P73 (G4)	5G	OUT	H		DIGIT OUT
46	P74 (G3)	4G	OUT	H		DIGIT OUT
47	P75 (G2)	3G	OUT	H		DIGIT OUT
48	P76 (G1)	2G	OUT	H		DIGIT OUT
49	P77 (G0)	1G	OUT	H		DIGIT OUT
50	P80 (S0)	P16	OUT	H		SEGMENT OUT
51	P81 (S1)	P15	OUT	H		SEGMENT OUT
52	P82 (S2)	P14	OUT	H		SEGMENT OUT
53	P83 (S3)	P13	OUT	H		SEGMENT OUT
54	P84 (S4)	P12	OUT	H		SEGMENT OUT
55	P85 (S5)	P11	OUT	H		SEGMENT OUT
56	P86 (S6)	P10	OUT	H		SEGMENT OUT
57	P87 (S7)	P9	OUT	H		SEGMENT OUT
58	P90 (S8)	P8	OUT	H		SEGMENT OUT
59	P91 (S9)	P7	OUT	H		SEGMENT OUT
60	P92 (S10)	P6	OUT	H		SEGMENT OUT
61	P93 (S11)	P5	OUT	H		SEGMENT OUT
62	P94 (S12)	P4	OUT	H		SEGMENT OUT
63	P95 (S13)	P3	OUT	H		SEGMENT OUT
64	P96 (S14)	P2	OUT	H		SEGMENT OUT
65	P97 (S15)	P1	OUT	H		SEGMENT OUT
66	VKK	B				Power Supply for FL
67	P40 (KEY0)	Key0	IN	H		Key0
68	P41 (KEY1)	Key1	IN	H		Key1
69	P42 (KEY2)	Key2	IN	H		Key2
70	P43 (KEY3)	Key3	IN	H		Key3
71	P44 (KEY4)	Key4	IN	H		Key4
72	P45 (KEY5)	Key5	IN	H		Key5
73	P46 (KEY6)	Key6	IN	H		Key6
74	P47 (KEY7)	Key7	IN	H		Key7
75	P50 (A D)	DAVN	N	L		RDS DAVAN
76	P51 (A D)	PSWN	N	L		RDS PSWN
77	P52 (A D)	P OPEN	N	L		PANEL SW OPEN
78	P53 (A D)	P CLOSE	N	L		PANEL SW CLOSE
79	P54	VER SET0	IN			0 F 1 :U 0 :K KK 1 / :/2
80	P55	VER SET1	IN			0 0 1 1

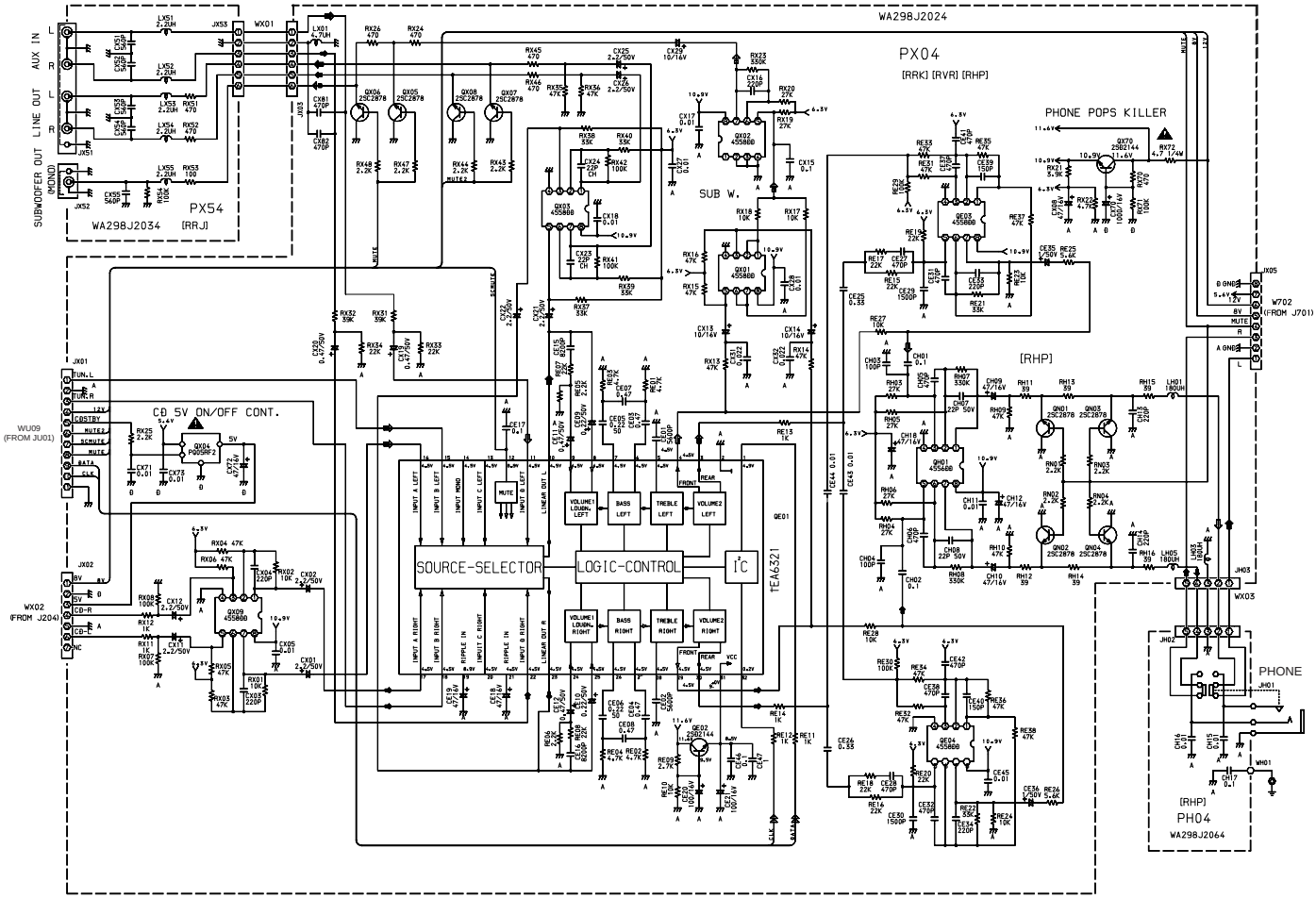
5-1

5. WIRING DIAGRAM

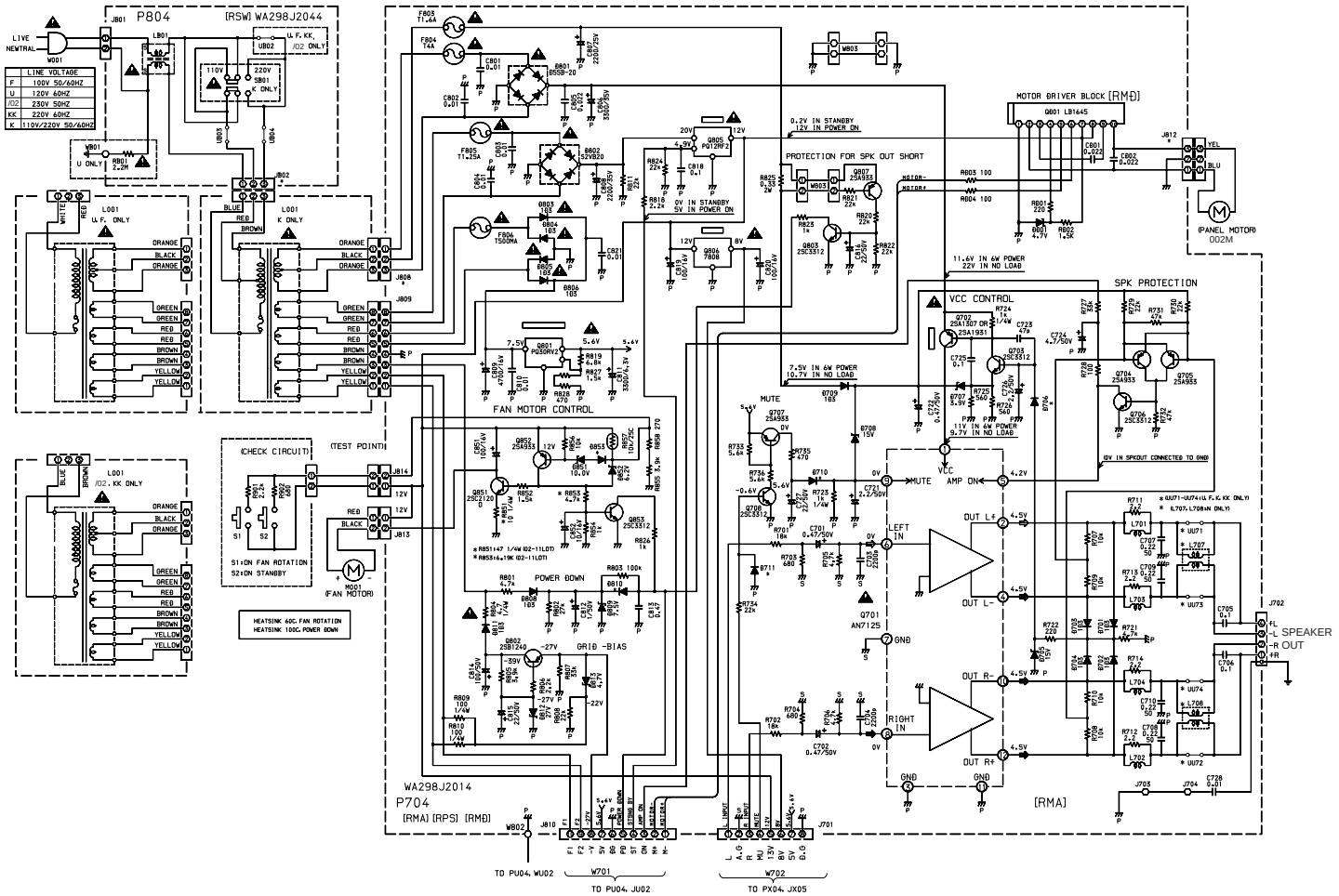


6-1

6. SCHEMATIC DIAGRAM AND PARTS LOCATION



6-2


P804 [RSW] WA298J2044
LINE VOLTAGE
F 100V 50/60HZ
U 120V 60HZ
/02 230V 50HZ
KK 220V 60HZ
K 110V/220V 50/60HZ
MOTOR DRIVER BLOCK [RMD]
Q001 LB1645
(PANEL MOTOR) 002M
SPK PROTECTION
VCC CONTROL
PROTECTION FOR SPK OUT SHORT
FAN MOTOR CONTROL
POWER DOWN
GRID -BIAS
MUTE
VCC AMP ON
LEFT IN
RIGHT IN
OUT L+
OUT L-
OUT R-
OUT R+
Q701 AN7125
(CHECK CIRCUIT)
(TEST POINT)
(FAN MOTOR)
S1:ON FAN ROTATION
S2:ON STANBY
HEATSINK 60C: FAN ROTATION
HEATSINK 100C: POWER DOWN
WA298J2014
P704
[RMA] [RPS] [RMD]
[RMA]
J702
+L
-L SPEAKER
-R OUT
+R
TO PU04, WU02
TO PU04, JU02
TO PX04, JX05
W701
W702

6-3

P704

Q708

Q707 Q701
Q705 Q704 Q706

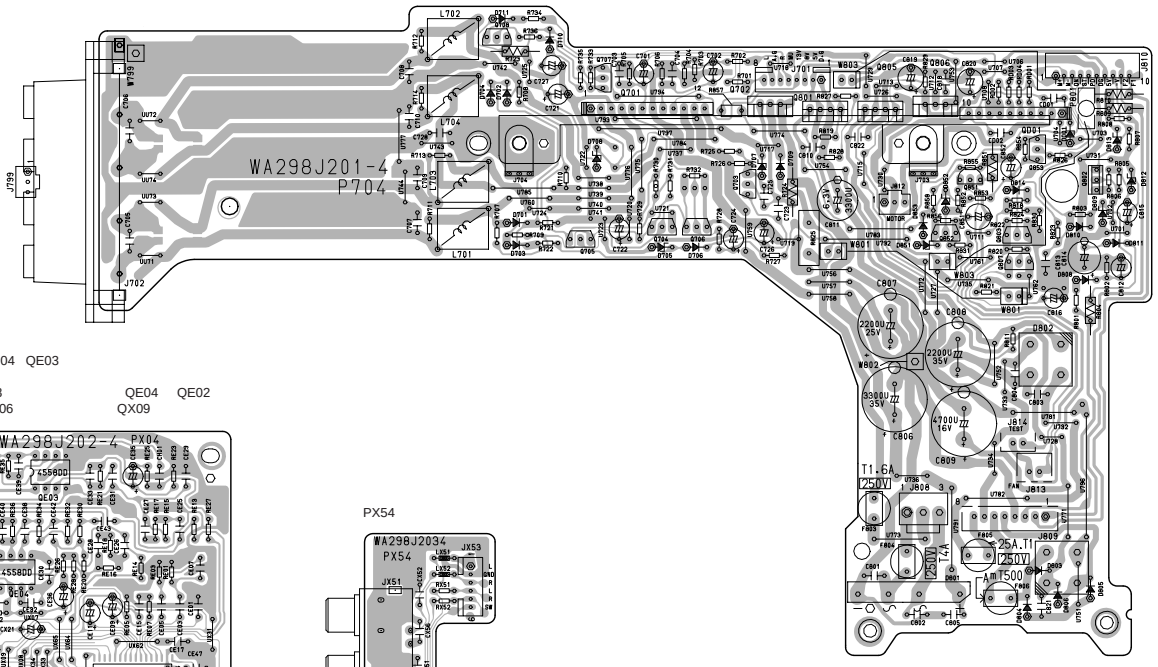
Q702
Q703

Q801

Q805

Q806

QD01 Q853
Q852 Q851 Q803 Q807



PX04

QN03 QN01 QH01

QE04 QE03

QN04 QN02

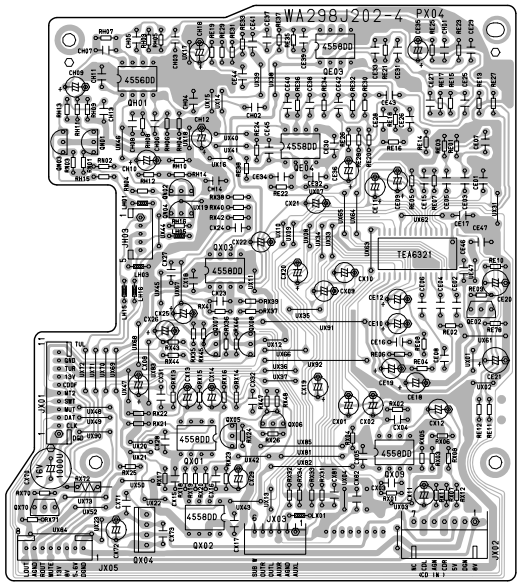
QX07 QX03 QX08

QE04 QE02

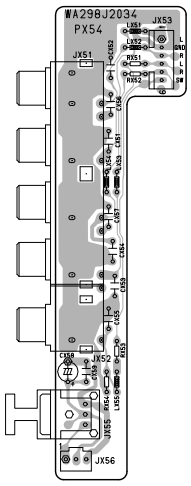
QX70

QX04 QX01 QX02 QX05 QX06

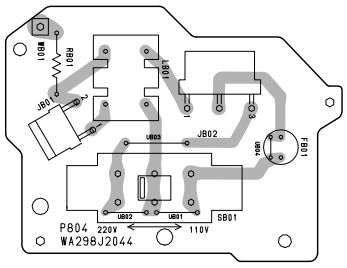
QX09



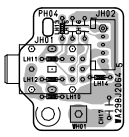
PX54



P804



PH04



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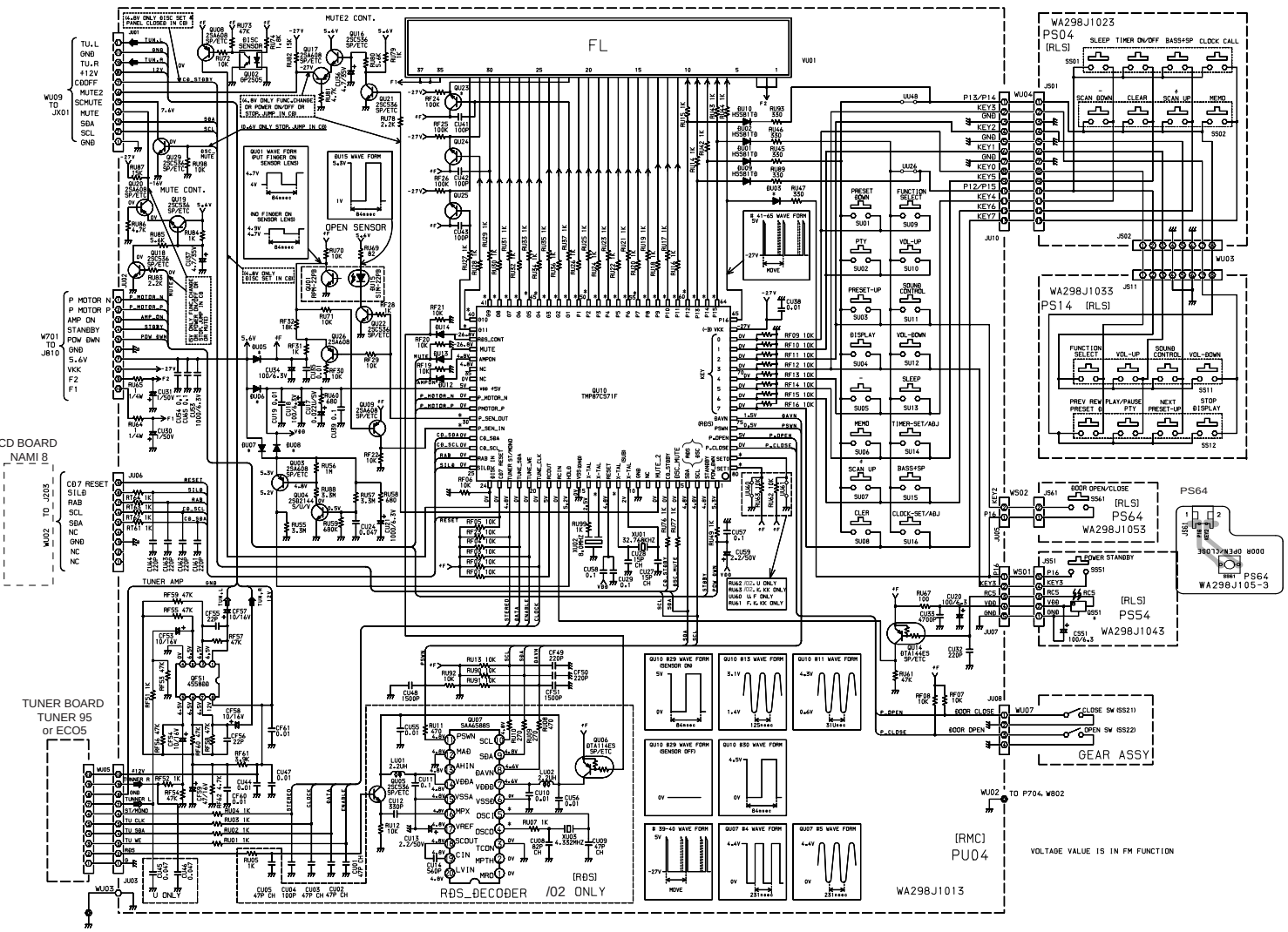
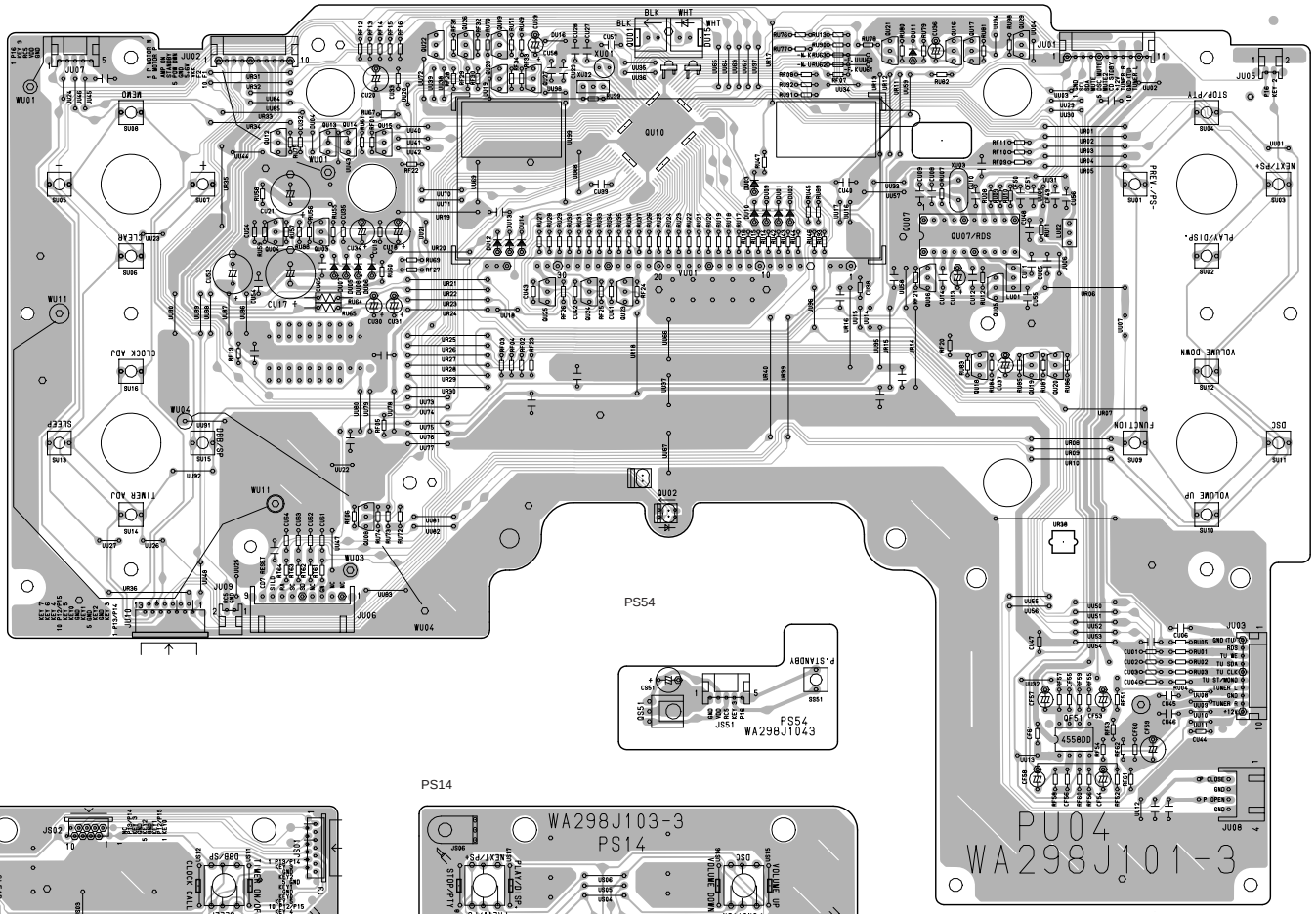

FL
TUNER AMP
TUNER BOARD
TUNER 95
or ECO5
CD BOARD
NAMI 8
RDS_DECODER /02 ONLY
WA298J1023
PS04
WA298J1033
PS14
WA298J1053
PS64
WA298J1043
PS54
WA298J105-3
GEAR ASSY
WA298J1013
PU04
VOLTAGE VALUE IS IN FM FUNCTION

PU04

QU12 QU13 QU14 QU15 QU22 QU26 QU09 QU10 QU21 QU16 QU17 1U28
QU04 QU03 QU28 QU27 QU06 QU07 QU05
QU08 QU25 QU24 QU23 QU18 QU19 QU20 QF51



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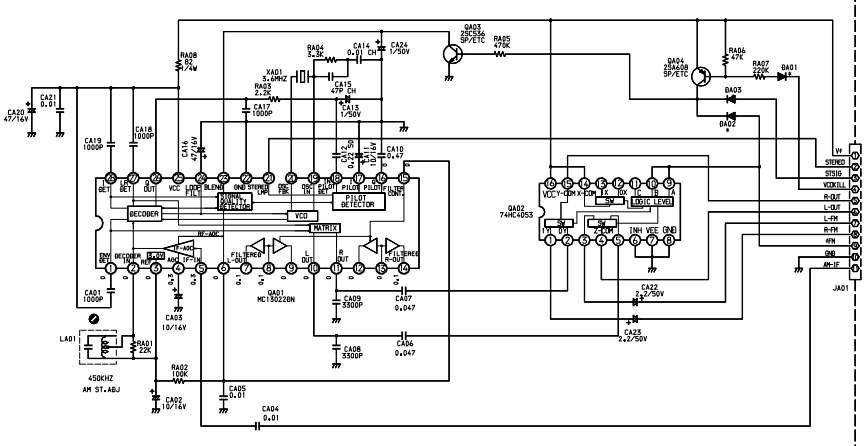
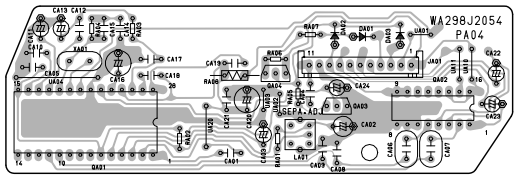
PA04 [F] VERSION

WA298J2054 (RAS)

AM STEREO



PA01 QA01 QA04 QA03 QA02



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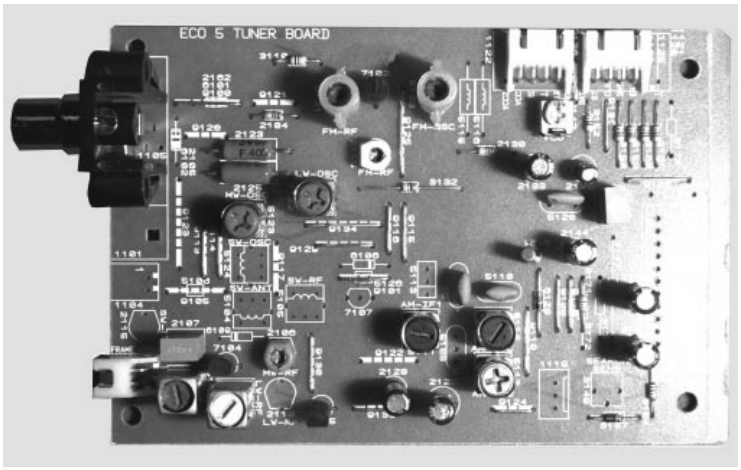

TUNER BOARD ECO5

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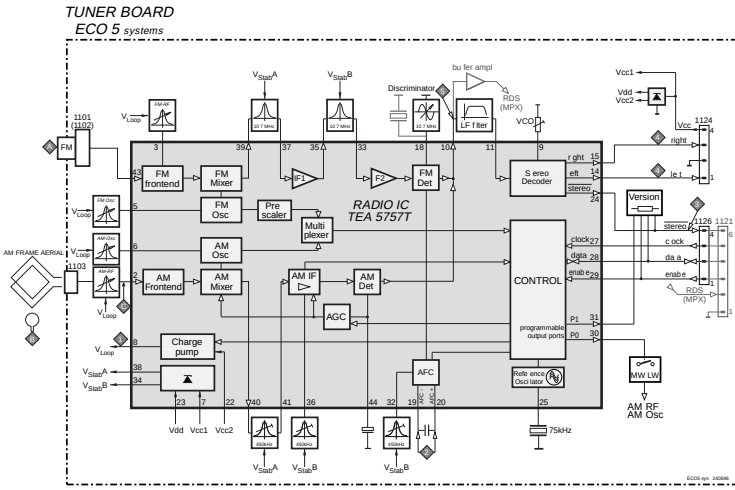
BLOCK DIAGRAM



TUNER ADJUSTMENT TABLE (ECO5 FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65 81 74 87 5 108MHz)			108MHz	5130		8V ±0.2V
			87.5MHz (65 81MHz)	check		4.3V ±0.5V (1 2V ±0 5V)
MW FM/AM version 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW version 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check	1	1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW LW version 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 50mV continuous wave	F	IC 7101 21 shor circuit to b ock AFC 2141	5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65 81 74 87 5 108MHz)	108MHz	A	108MHz	2155	4	MAX
	87.5MHz (65 81MHz)	mod=1kHz Δf=±22.5kHz	87.5MHz (65 81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz [1]
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with short wire to ground (pin 4)	C	IC 7101 36 100nF 220R	5111	4	max f_0 symmetr c
		Δf=±15kHz V_{RF} = 3mV	IC 7101 40 100nF 220R see remark 2)	5112		
AM AFC MW		C continuous wave V_{RF} = 10mV		5114	2	0 ± 2 mV DC
AM RF [3]						
MW [4] FM/MW/LW and FM/MW version (9kHz grid) 531 - 1602kHz	1494kHz	B	1494kHz	2106	4	max f_0 symmetr c
	558kHz		558kHz	5102		
LW 198kHz	198kHz		198kHz	5103		
MW FM/AM version 10kHz grid 530 - 1700kHz	1500kHz	Δf = ±30kHz V_{RF} as low as possible	1500kHz	2106		
	560kHz		560kHz	5102		

ECO5 discr cs t 090797

Use service test program By selecting the TUNER TEST test frequenc es will be stored as preset frequencies automatically

[1] If sens tivity of frequency counter is too low adjust to max channel separat on (input s gnal stereo left 90% + 9% adjust output on right channel to min mum)

[2] RC network serves for damp ng the IF filter while adjusting the other one

[3] For AM RF adjustments the or ginal frame antenna has to be used !

[4] MW has to be al gned before LW

Repeat

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TUNER ADJUSTMENT TABLE (ECO5 FM/MW- stereo versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz			108MHz	5130		8V ±0.2V
			87.5MHz	check		4.3V ±0.5V
FM Japan 76 - 90MHz plus Ch1 95 75MHz Ch2 101 75MHz Ch3 107 75MHz			107,75MHz	5130		8V ±0.2V
			76MHz	check	1	2.4V ±0.5V
MW FM/AM version 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
MW FM/MW version 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 50mV continuous wave	F	C 7101 21 shortcircuit to block AFC 2141	5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz	108MHz	A	108MHz	2155	5	MAX
	87.5MHz		87.5MHz	5131		
FM Japan 76 - 90MHz plus Ch1 95 75MHz Ch2 101 75MHz Ch3 107 75MHz	107.75MHz	mod=1kHz Δf=±22.5kHz	107.75MHz	2155		
	76MHz		76MHz	5131		
VCO						
FM	98MHz, 1mV (83MHz for Japan) continuous wave	A	98MHz (83MHz for Japan)	3142	3	152kHz ±1kHz [1]
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with short wire to ground (pin 4)	C	C 7101 36 100nF 220R	5111	5	max f_0 symmetr c
		Δf=±15kHz V_{RF} = 3mV	C 7101 40 100nF 220R see remark 2)	5112		
AM AFC MW		C cont nuous wave V_{RF} = 10mV		5114	2	0 ± 2 mV DC
IF stereo module MW		100nF 50R E Δf=±15kHz V_{RF} = 1mV		5240	4	max
AM RF [3]						
MW FM/MW version 9kHz grid 531 - 1602kHz	1494kHz	B	1494kHz	2106	4	max f_0 symmetr c
	558kHz		558kHz	5102		
MW FM/AM version 10kHz grid 530 - 1700kHz	1500kHz	Δf = ±30kHz V_{RF} as low as possible	1500kHz	2106		
	560kHz		560kHz	5102		

ECO5 AM stereo discr cs t 090797

Use serv ce test program By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatica ly

[1] If sensit vity of frequency counter s too low adjust to max channel separat on (nput signal stereo left 90% + 9% adjust output on right channel to minimum)

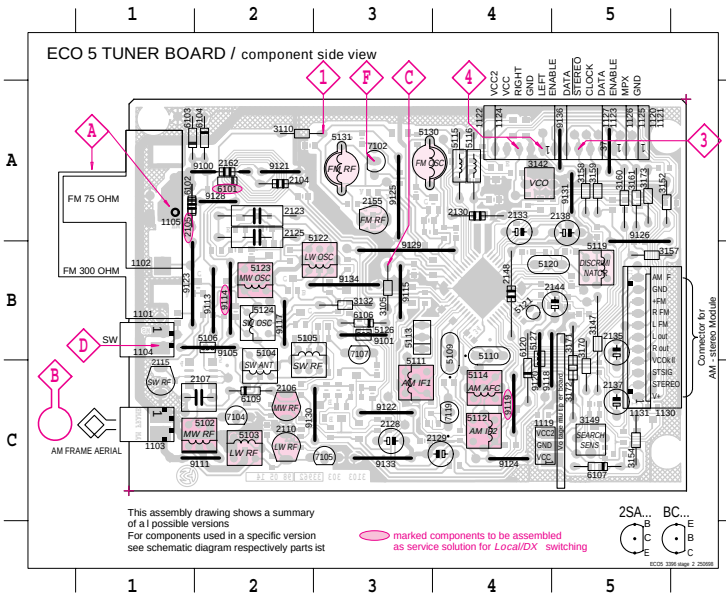
[2] RC network serves for damping the IF f lter while adjusting the other one

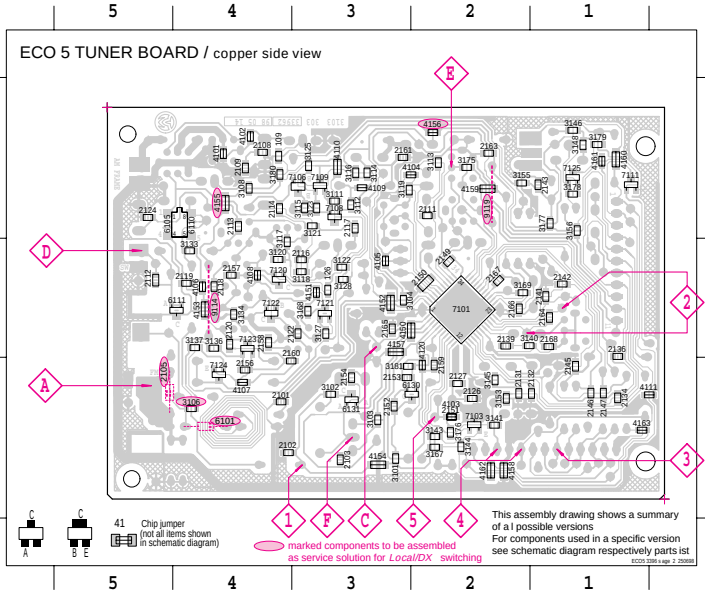
[3] For AM RF adjustments the original frame antenna has to be used !

Repeat

1101 A1 2106 C2 2137 C5 3149 C5 3173 A5 5114 C4 5130 A3 7104 C2 9117 B2 9129 B3
1102 A1 2107 C2 2138 A5 3152 A5 5102 C2 5115 A4 6101 A2 7107 B3 9118 B4 9130 C3
1103 C1 2110 C2 2144 B5 3154 C5 5103 C2 5116 A4 6102 A1 7119 C4 9119 C4 9131 A5
1104 B1 2115 C1 2148 B4 3157 B5 5104 C2 5119 B5 6103 A1 9100 A2 9120 B4 9133 C3
1105 A1 2123 A2 2155 A3 3158 A5 5105 B2 5120 B4 6104 A2 9101 B3 9121 A2 9134 B3
1119 C5 2125 A2 2162 A2 3159 A5 5106 B2 5121 B4 6106 B3 9105 B2 9122 C3 9136 A5
1120 A5 2128 C3 3105 B3 3160 A5 5109 B4 5122 B3 6107 C5 9111 C2 9123 B1 9137 A5
1130 B5 2129 C4 3110 A2 3161 A5 5110 B4 5123 B2 6109 C2 9113 B2 9124 C4
1131 B5 2130 A4 3132 B3 3170 C5 5111 C3 5124 B2 6120 C4 9114 B2 9125 A3
2104 A2 2133 A4 3142 A4 3171 C5 5112 C4 5126 B3 6121 C2 9115 B2 9126 B5
2105 A1 2135 B5 3147 B5 3172 C5 5113 B3 5127 B4 7102 A3 9115 B3 9128 A2

2101 C4 2118 B4 2139 B2 2153 C3 2166 B2 3112 A3 3123 A3 3143 C2 3175 A2 4105 B3 4153 B4 6105 A4 7120 B4
2102 C4 2119 B4 2141 B1 2154 C3 2167 B2 3113 A2 3125 A3 3144 C2 3176 C2 4106 B4 4154 C3 6110 A4 7121 B3
2103 C3 2120 B4 2142 B1 2156 C4 2168 B1 3114 A3 3126 B3 3145 C2 3177 A1 4107 C4 4155 A4 6111 B4 7122 B4
2108 A4 2122 B3 2143 A1 2157 B4 3101 C3 3115 A3 3127 B3 3146 A1 3178 A1 4108 B4 4156 A2 6130 C2 7123 B4
2109 A4 2124 A5 2145 C1 2158 B4 3102 C3 3116 A3 3128 B3 3148 A1 3179 A1 4109 A3 4157 B3 6131 C3 7124 C4
2111 A2 2126 C2 2146 C1 2159 C2 3103 C3 3117 B4 3133 B4 3153 C2 3180 A4 4110 A3 4158 C2 7101 B2 7125 A1
2112 B5 2127 C2 2147 C1 2160 C4 3104 B3 3118 B3 3134 B4 3155 A2 3181 C3 4111 C1 4159 A2 7103 C2
2113 A4 2131 C2 2149 B2 2161 A3 3106 C4 3119 A3 3136 B4 3156 A1 4101 A4 4120 C2 4160 A1 7106 A3
2114 A4 2132 C1 2150 B2 2163 A2 3108 A4 3120 B4 3137 B4 3167 C2 4102 A4 4150 B2 4161 A1 7108 A3
2116 B3 2134 C1 2151 C2 2164 B1 3109 A4 3121 A3 3140 B2 3168 B3 4103 C2 4151 B3 4162 C1 7109 A3
2117 A3 2136 B1 2152 C3 2165 B3 3111 A3 3122 B3 3141 C2 3169 B2 4104 A2 4152 B3 4163 C1 7111 A1





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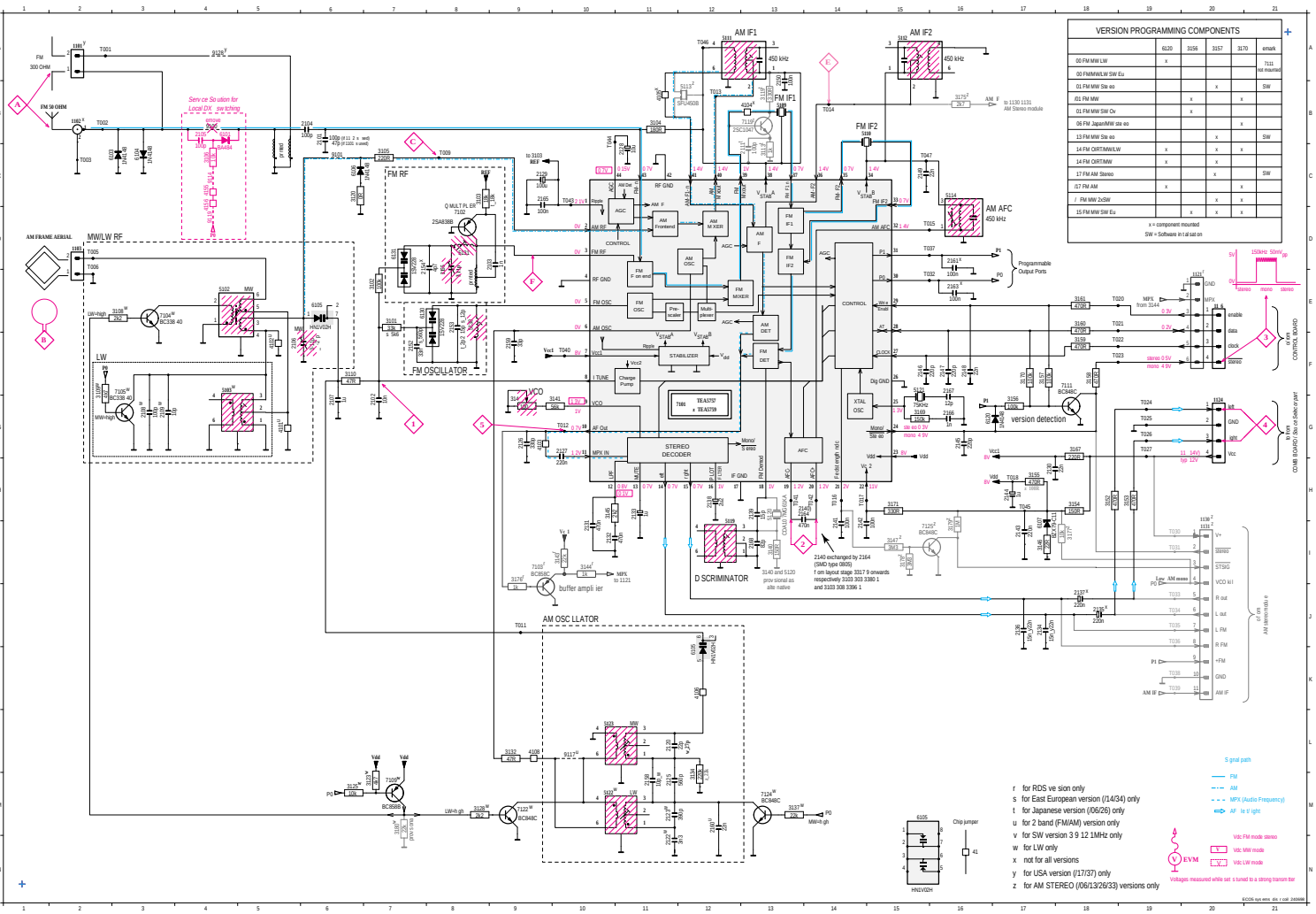
TUNER BOARD ECO5 / Systems



ELECTRICAL PARTSLIST *TUNER ECO5*

MISCELLANEOUS

1101	4822 267 31505	SOCKET 2-POLE CLICKFIT, 300Ω	only for /17
1102	4822 267 10283	SOCKET COAX, IEC 75Ω	not for /17

CAPACITORS

2101 ©	5322 122 32531	100pF	5%	50V	not for /17
2101 ©	5322 122 32452	47pF	5%	63V	only for /17
2102 ©	4822 122 33177	10nF	20%	50V	
2103 ©	5322 122 34123	1nF	10%	50V	
2104	4822 122 33195	100pF	10%	50V	
2106	4822 125 60101	3-11pF	TRIMCAP.		
2107	4822 121 51319	1µF	20%	50V	
2120 ©	5322 122 32658	22pF	5%	50V	
2125	4822 121 51381	560pF	1%	400V	
2126 ©	5322 122 31863	330pF	5%	50V	
2127 ©	4822 126 13473	220nF	20%	50V	
2128	4822 124 41579	10µF	20%	50V	
2129	4822 124 41584	100µF	20%	10V	
2130	4822 126 11585	22nF	20%	50V	
2131 ©	4822 126 13482	470nF	20%	16V	
2132 ©	4822 126 13482	470nF	20%	16V	
2133	4822 124 40242	1µF	20%	63V	
2134 ©	4822 126 13188	15nF	5%	63V	not for /17
2134 ©	5322 122 32654	22nF	10%	63V	only for /17
2135	4822 124 40746	0,22µF	20%	63V	
2136 ©	4822 126 13188	15nF	5%	63V	not for /17
2136 ©	5322 122 32654	22nF	10%	63V	only for /17
2137	4822 124 40746	0,22µF	20%	63V	
2138	4822 124 41576	2,2µF	20%	50V	
2139 ©	4822 126 14236	15pF	5%	50V	
2141 ©	4822 126 10002	100nF	20%	50V	
2142 ©	4822 126 10002	100nF	20%	50V	
2143 ©	4822 126 13473	220nF	20%	50V	
2144	4822 124 40242	1µF	20%	63V	
2145 ©	4822 122 33575	220pF	5%	50V	
2146 ©	4822 122 33575	220pF	5%	50V	
2147 ©	4822 122 33575	220pF	5%	50V	
2148	4822 126 11585	22nF	20%	50V	
2149 ©	5322 122 32654	22nF	10%	63V	
2150 ©	4822 122 31947	100nF	20%	50V	
2152 ©	4822 126 12105	33nF	5%	63V	not for /14
2152 ©	5322 116 80853	560pF	5%	63V	only for /14
2153 ©	4822 122 32139	12pF	5%	63V	only for /14
2153 ©	4822 122 32504	15pF	5%	50V	not for /14
2155	4822 125 60101	3-11pF	TRIMCAP.		
2159 ©	5322 122 32659	33pF	5%	50V	
2160 ©	5322 122 32654	22nF	10%	63V	
2164 ©	4822 126 13482	470nF	20%	16V	
2165 ©	4822 126 10002	100nF	20%	50V	
2166 ©	5322 122 34123	1nF	10%	50V	
2167 ©	4822 122 32139	12pF	5%	63V	
2168 ©	4822 126 13695	82pF	1%	63V	

RESISTORS

3101 ©	4822 051 20333	33kΩ	5%	0,1W	not for /14
3101 ©	4822 051 20562	5,6kΩ	5%	0,1W	only for /14
3102 ©	4822 051 20104	100kΩ	5%	0,1W	
3103 ©	4822 117 10965	18kΩ	2%	0,1W	
3104 ©	4822 117 11448	180Ω	10%	0,1W	
3105	4822 116 83872	220Ω	5%	0,5W	
3110	4822 116 52195	47Ω	5%	0,5W	
3120 ©	4822 051 20008	CHIP JUMPER 0805			
3132	4822 116 52195	47Ω	5%	0,5W	
3134 ©	4822 051 20224	220kΩ	5%	0,1W	
3141 ©	4822 117 11148	56kΩ	1%	0,1W	

RESISTORS

3142	4822 100 11163	100kΩ TRIMPOT LIN.			
3145 ©	4822 117 11449	2,2kΩ	1%	0,1W	
3146 ©	4822 051 20229	22Ω	5%	0,1W	
3152	4822 116 83883	470Ω	5%	0,16W	
3153 ©	4822 051 20471	470Ω	5%	0,1W	
3154	4822 116 83868	150Ω	5%	0,5W	
3155 ©	4822 051 20471	470Ω	5%	0,1W	
3156 ©	4822 051 20104	100kΩ	5%	0,1W	not for /14/17
3157	4822 116 52234	100kΩ	5%	0,5W	only for /14
3158	4822 116 83883	470Ω	5%	0,16W	
3159	4822 116 83883	470Ω	5%	0,16W	
3160	4822 116 83883	470Ω	5%	0,16W	
3161	4822 116 83883	470Ω	5%	0,16W	
3167 ©	4822 117 11503	220Ω	5%	0,1W	
3169 ©	4822 051 20154	150kΩ	5%	0,1W	
3170	4822 116 52234	100kΩ	5%	0,5W	not for /14
3171	4822 116 52219	330Ω	5%	0,5W	
4101 ©	4822 051 20008	CHIP JUMPER 0805			
4102 ©	4822 051 20008	CHIP JUMPER 0805			
4103 ©	4822 051 20008	CHIP JUMPER 0805			
4104 ©	4822 051 20008	CHIP JUMPER 0805			
4105 ©	4822 051 20008	CHIP JUMPER 0805			
4106 ©	4822 051 20008	CHIP JUMPER 0805			
4108 ©	4822 051 20008	CHIP JUMPER 0805			
4111 ©	4822 051 20008	CHIP JUMPER 0805			
4120 ©	4822 051 20008	CHIP JUMPER 0805			
4150 ©	4822 051 10008	CHIP JUMPER 1206			
4152 ©	4822 051 10008	CHIP JUMPER 1206			
4153 ©	4822 051 10008	CHIP JUMPER 1206			
4154 ©	4822 051 10008	CHIP JUMPER 1206			
4157 ©	4822 051 10008	CHIP JUMPER 1206			
4158 ©	4822 051 10008	CHIP JUMPER 1206			
4159 ©	4822 051 10008	CHIP JUMPER 1206			

COILS

5102	4822 157 71634	RF-COIL MW
5109	4822 242 70665	FM-IF FILTER 10,7MHZ
5110	4822 242 70665	FM-IF FILTER 10,7MHZ
5111	4822 158 60511	AM-IF FILTER 450kHz
5112	4822 157 70302	AM-IF FILTER 450kHz
5114	4822 157 70302	AM-IF FILTER 450kHz
5119	4822 157 11443	DISCRIMINATOR COIL
5121	4822 242 10261	QUARTZ 75kHz
5123	4822 157 60517	RF-COIL AM
5130	4822 156 30947	RF COIL 1,5 TURNS
5131	4822 156 30947	RF COIL 1,5 TURNS

DIODES

6103	4822 130 30621	1N4148	
6104	4822 130 30621	1N4148	
6105 ©	4822 130 83075	HN1V02H	
6106	4822 130 30621	1N4148	
6107	4822 130 34488	BZX79-C11	
6120	4822 130 30621	1N4148	only for /14/17
6130 ©	4822 130 82833	1SV228	
6131 ©	4822 130 82833	1SV228	

TRANSISTORS

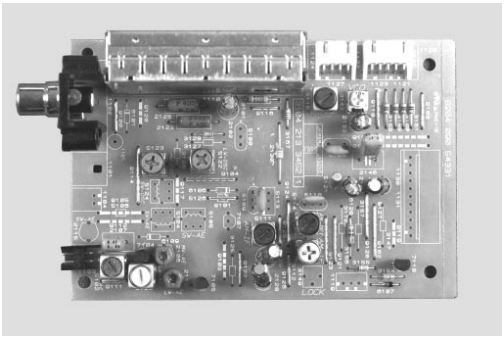
7102	4822 130 60093	2SA838B
7111 ©	5322 130 42136	BC848C

INTEGRATED CIRCUITS

7101 ©	4822 209 90924	TEA5757H/V1, RADIO IC

ELECTRICAL PARTS LIST *TUNER ECO5 for 06 (Japanese version)*

1102	4822 265 20598	SOCKET COAX YKD31-0468 75Ω
1130	4822 267 10749	CONNECTOR S11B-XH-A (11P)
2111	5322 122 32531	100pF 5%NP0 50V
2153	5322 122 33063	2.2pF 5% NP0 50V
3113	4822 051 10102	1kΩ 2% 0,25W
3119	4822 051 20331	330Ω 5% 0,1W
3134	4822 051 20223	22kΩ 5% 0,1W
3147	4822 111 50499	3.3MΩ 5% 0,2W
3155	4822 051 20101	100Ω 5% 0,1W
3175	4822 117 12955	2.7kΩ 1% 0,1W 0805
3177	4822 117 10833	10kΩ 1% 0,1W
3178	4822 051 20335	3.3MΩ 5% 0,1W
3179	4822 051 20105	1MΩ 5% 0,1W
4161	4822 051 20008	CHIP JUMPER. 0805
5113	4822 242 80989	FILTER SER. SFU450B 457kHz
5130	4822 157 70033	COIL-FM OSC
7101		TEA5759H/V1 RADIO IC
7119	4822 130 60163	2SC1047C
7125	5322 130 42755	BC847C BC848C



TUNER 95 BOARD

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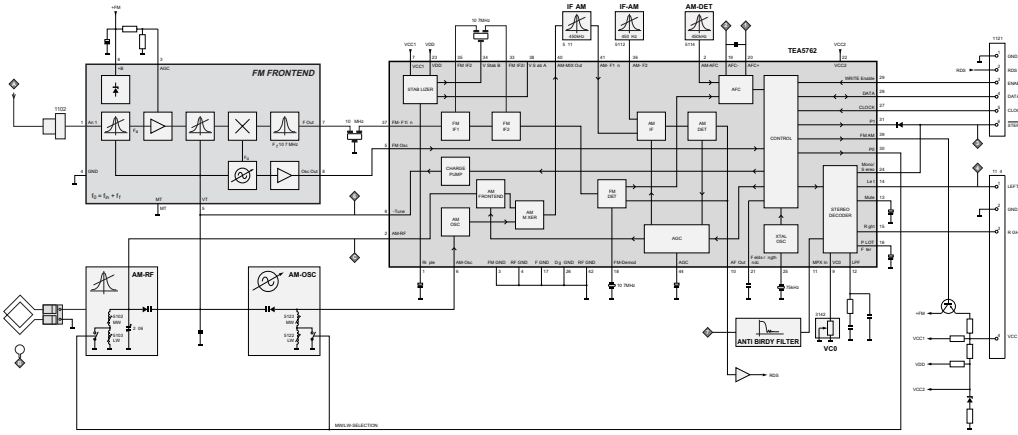
BLOCKDIAGRAM



TUNER 95 bis Adjustment Table (FM, MW, LW with Frame antenna)

Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter
VARICAP ALIGNMENT						
FM (50)			108 MHz	check		7 9V
87 5 108 MHz			87 5 MHz	check		1 3 2V
MW (9)			1602 kHz	5123		8 3V ± 0 2V
531 1602 kHz			531 kHz	check	6	1V ± 0 4V
LW (3)			279 kHz	5122		8 3V ± 0 2V
153 279 kHz			153 kHz	check		1V ± 0 4V
FM DETECTION						
FM	98 MHz 1mV cont nuous wave *short pin 21 (IC7101) o ground*	A	98 MHz	5107	1 2	0mV ± 3mV
FM VCO						
FM	98 MHz 1 mV continuous wave	A	98 MHz	3142	3	152kHz ± 1 kHz
DISTORTION						
FM	98 MHz 1 mV 90 % L + 9 % pilot mod 1kHz	A	98MHz	mixcoil inside Tuner 1110	4	Distortion min mum
AM IF						
MW	450kHz Δf 10kHz Low as possible Swept s gnal	C	MW	5111	7	symmetrical and max height
				5112		
	450kHz continuous wave	C		5114	1 2	0mV ± 2mV
AM RF						
MW	558kHz Mod 1kHz 30 % AM 1494 kHz	B	558kHz	5102	7	MAX
			1494kHz	2106		
LW	198kHz mod 1kHz 30 % AM	*	198kHz	5103		MAX

adj ahk for 3104 217 04121/043 1

* Signal send via a frame antenna
( ) tuning grid in kHz

repeat

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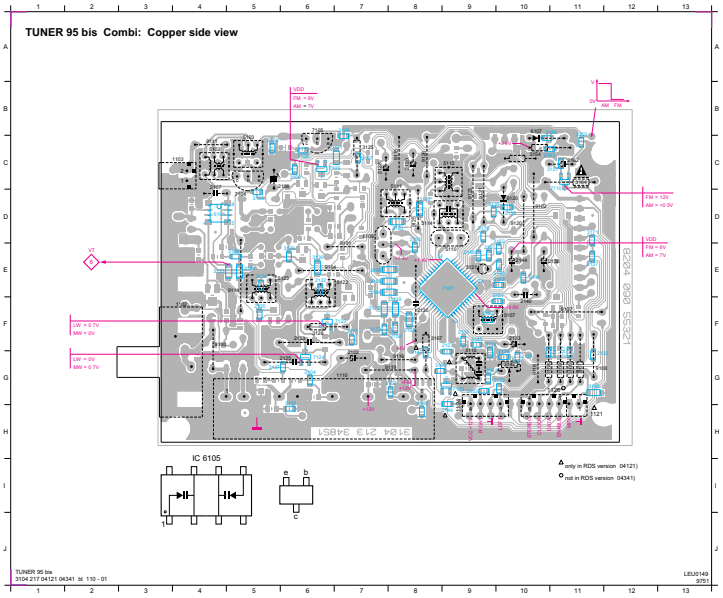
1102 F4 2107 C4 2128 C7 2136 G10 2145 G11 2161 E9 3124 E5 3137 G5 3145 F9 3158 G11 3167 F8 3183 E7 5103 C5 5121 E9 7104 D5 9102 D10 9118 G10
1103 C3 2108 C6 2129 C8 2137 E11 2147 G11 2162 C11 3125 C7 3138 D9 3146 B10 3159 G11 3169 D5 3184 E7 5107 F10 5122 E7 7105 B6 9104 E6 9119 G7
1110 G7 2109 C5 2130 F8 2138 E10 2148 E9 3103 H6 3126 F6 3139 F8 3150 C11 3160 G11 3171 D11 3185 E7 5109 D7 5123 E5 7109 C6 9107 E11 9120 D10
1121 H11 2120 F5 2131 F9 2140 F10 2150 F8 3104 G6 3129 E6 3140 H8 3151 C10 3161 G11 3172 F7 3186 G8 5110 E9 6105 D4 7110 D11 9108 G11 9121 D9
1124 H9 2122 E6 2132 F9 2141 E10 2151 F9 3107 G7 3130 E6 3141 G9 3152 G9 3162 D8 3173 F7 3188 G11 5111 C8 6107 B10 7122 F7 9111 C4 9123 D9
1126 G10 2123 F6 2133 F10 2142 E9 2152 F9 3108 C6 3131 C6 3142 G10 3153 G9 3163 F8 3176 D9 3192 D8 5112 C9 6120 D10 7124 G6 9114 E5 9125 D8
2102 G7 2125 G5 2134 G10 2143 C10 2158 D10 3109 B7 3132 E5 3143 G8 3154 C10 3164 C11 3177 F7 3197 C7 5114 D8 7101 E9 9100 F4 9115 C8 9126 C8
2106 C5 2127 F9 2135 G11 2144 E10 2160 E9 3123 E4 3134 E5 3144 H8 3155 C10 3165 D8 3181 D8 5102 C4 5115 G9 7103 G9 9101 E7 9116 G8



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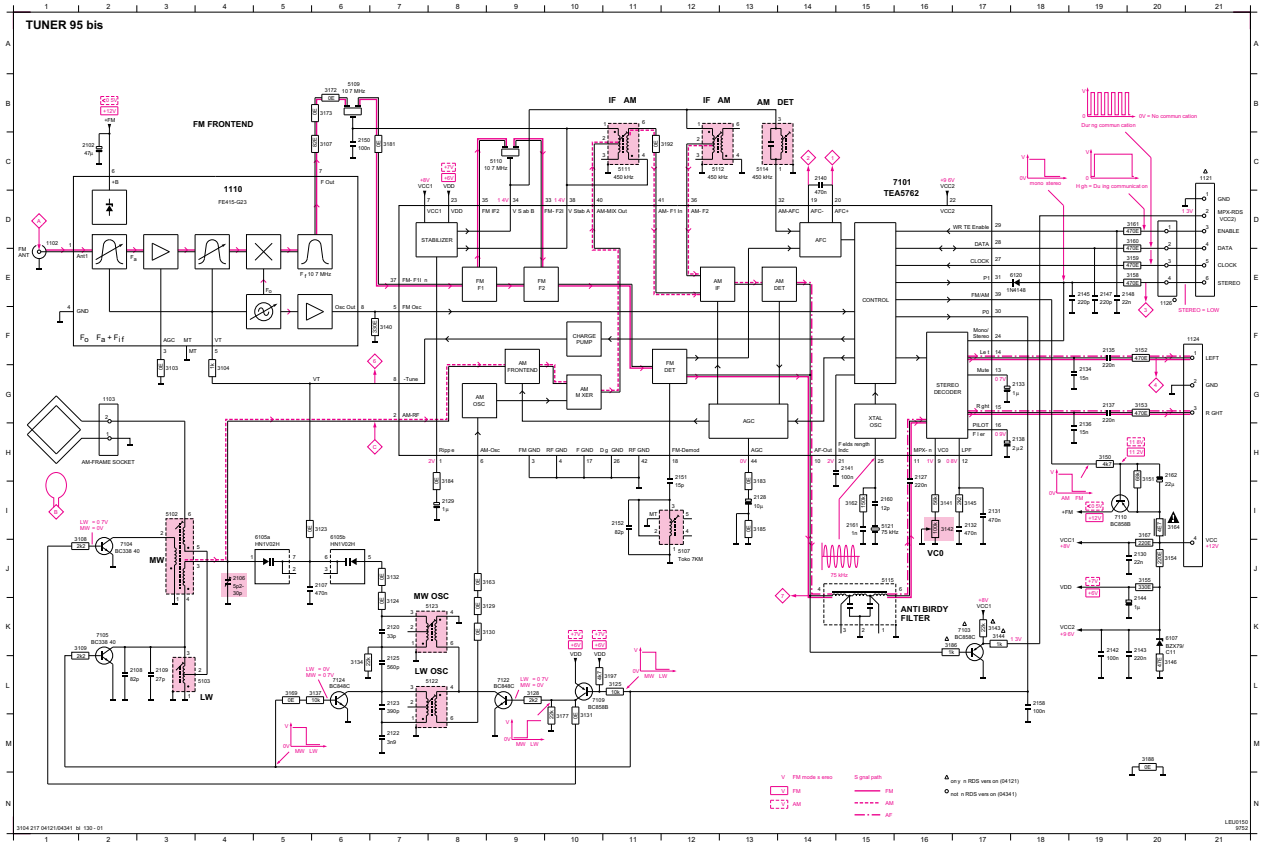
TUNER 95 bis
FM FRONTEND
1110
FE415-G23
IF AM
IF AM
AM DET
7101
TEA5762
STABILIZER
AFC
CONTROL
FM F1
FM F2
AM IF
AM DET
CHARGE PUMP
AM FRONTEND
FM DET
AM M XER
AM OSC
AGC
XTAL OSC
STEREO DECODER
MW OSC
LW OSC
MW
LW
VC0
ANTI BIRDY FILTER
AM-FRAME SOCKET
WR TE Enable
DATA
CLOCK
IF1
FMAM
IF0
Mono/ Stereo
Left
Mute
Right
PILOT
F ilter
MPX- n
VC0
LPF
AF-Out
AFC-
AFC+
AM-AFC
VCC2
GND
MPX-RDS VCC2)
ENABLE
DATA
CLOCK
STEREO
LEFT
GND
R GHT
STEREO = LOW
Dur ng commun cation
H gh = Du ng communicat on
mono- stereo
FM mode s enec
AM
S gnal path
FM
AM
AF
ony n RDS vers on (04121)
not n RDS vers on (04341)
3104 217 04121/04341 bl 130 - 01
LEU0150
9752

PCS 922

ELECTRICAL PARTS LIST - TUNER 95 BOARD

MISCELLANEOUS

1102	4822 267 10283	Socket Coaxial IEC 75R
1103	4822 265 31184	JST Connector 2 pin
1110	4822 210 10739	FrontendAssembly FE415-G23

CAPACITORS

2102	4822 124 40433	47µF 20% 25V
2106	4822 125 60102	Trimmer 5,2-30pF 100V
2107	4822 121 51252	470nF 5% 63V
2108	4822 126 13695	82pF 1% 63V
2109	4822 126 13691	27pF 1% 63V
2120	5322 122 32659	33pF 5% 50V
2122	5322 126 10465	3,9nF 10% 63V
2125	4822 121 10578	560P 1% 630V
2127	4822 122 32927	220nF +80/-20% 50V
2128	4822 124 41579	10µF 20% 50V
2129	4822 124 40242	1µF 20% 63V
2130	4822 126 11585	22nF +80/-20% 25V
2131	4822 122 33325	470nF 16V
2132	4822 122 33325	470nF 16V
2133	4822 124 40242	1µF 20% 63V
2134	4822 126 13188	15nF 5% 63V
2135	4822 122 32927	220nF +80/-20% 50V
2136	4822 126 13188	15nF 5% 63V
2137	4822 122 32927	220nF +80/-20% 50V
2138	4822 124 41576	2,2µF 20% 50V
2140	4822 121 51252	470nF 5% 63V
2141	4822 122 31947	100nF 20% 63V
2142	4822 122 31947	100nF 20% 63V
2143	4822 122 32927	220nF +80/-20% 50V
2144	4822 124 40242	1µF 20% 63V
2145	4822 122 33575	220pF 5% 50V
2147	4822 122 33575	220pF 5% 50V
2148	4822 122 33809	22nF 20% 50V
2150	4822 122 31947	100nF 20% 63V
2151	4822 126 14236	50V 15pF 5%
2152	4822 126 13695	82pF 1% 63V
2158	4822 122 31947	100nF 20% 63V
2160	4822 122 32139	12pF 2% 63V
2161	5322 122 34123	1nF 10% 50V
2162	4822 124 81151	22µF 50V

RESISTORS

3103	4822 051 20008	0R Jumper 0805
3104	4822 051 10102	1k 2% 0,25W
3107	4822 051 20829	82R 5% 0,1W
3108	4822 117 11449	2k2 1% 0,1W
3109	4822 117 11449	2k2 1% 0,1W
3123	4822 051 10008	0R 5% 0,25W
3124	4822 051 10008	0R 5% 0,25W
3125	4822 116 83864	10k 5% 0,5W
3128	4822 116 52256	2k2 5% 0,5W
3129	4822 051 20008	0R Jumper 0805
3130	4822 051 10008	0R 5% 0,25W
3131	4822 051 10008	0R 5% 0,25W
3132	4822 051 20008	0R Jumper 0805
3134	4822 051 20223	22k 5% 0,1W
3137	4822 117 10833	10k 1% 0,1W
3138	4822 051 20008	0R Jumper 0805
3139	4822 051 10008	0R 5% 0,25W
3140	4822 051 20331	330R 5% 0,1W
3141	4822 051 20563	56k 5% 0,1W
3142	4822 100 11163	Trimmer 100k 30% 0,1W
3143	4822 051 20223	22k 5% 0,1W
3144	4822 051 10102	1k 2% 0,25W
3145	4822 117 11449	2k2 1% 0,1W
3146	4822 051 20479	47R 5% 0,1W
3150	4822 051 20472	4k7 5% 0,1W
3151	4822 051 20683	68k 5% 0,1W
3152	4822 051 20471	470R 5% 0,1W
3153	4822 051 20471	470R 5% 0,1W
3154	4822 116 83872	220R 5% 0,5W
3155	4822 116 52219	330R 5% 0,5W
3158	4822 116 83883	470R 5% 0,5W
3159	4822 116 83883	470R 5% 0,5W
3160	4822 116 83883	470R 5% 0,5W
3161	4822 116 83883	470R 5% 0,5W
3162	4822 051 20224	220k 5% 0,1W
3163	4822 051 10008	0R 5% 0,25W
3164	4822 052 10478 ⚠	4R7 5% 0,33W
3165	4822 051 10008	0R 5% 0,25W
3167	4822 116 83872	220R 5% 0,5W
3169	4822 051 20008	0R Jumper 0805
3171	4822 051 20008	0R Jumper 0805
3172	4822 051 10008	0R 5% 0,25W
3173	4822 051 20008	0R Jumper 0805
3176	4822 051 20008	0R Jumper 0805
3177	4822 051 20223	22k 5% 0,1W
3181	4822 051 10008	0R 5% 0,25W
3183	4822 051 10008	0R 5% 0,25W
3184	4822 051 10008	0R 5% 0,25W
3185	4822 051 10008	0R 5% 0,25W
3186	4822 051 10102	1k 2% 0,25W
3188	4822 051 10008	0R 5% 0,25W
3192	4822 051 20008	0R Jumper 0805
3197	4822 051 20472	4k7 5% 0,1W

COILS & FILTERS

5102	4822 157 71634	MW AERIAL
5103	4822 157 71635	LW AERIAL
5107	4822 157 11443	FM Discriminator 10,7MHz
5109	4822 157 71639	Ceram Filter 10,7MHz
5110	4822 242 70665	Ceram Filter 10,7MHz
5111	4822 158 60511	AM-IF Filter 450kHz
5112	4822 157 70302	AM-IF Filter 450kHz

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ELECTRICAL PARTS LIST - TUNER 95 BOARD

5114	4822 157 70302	AM-IF Filter 450kHz
5115	4822 157 71636	Anti-Birdy Filter
5121	4822 242 10261	X'tal Resonator 75kHz
5122	4822 157 60517	RF Coil AM
5123	4822 157 60517	RF Coil AM

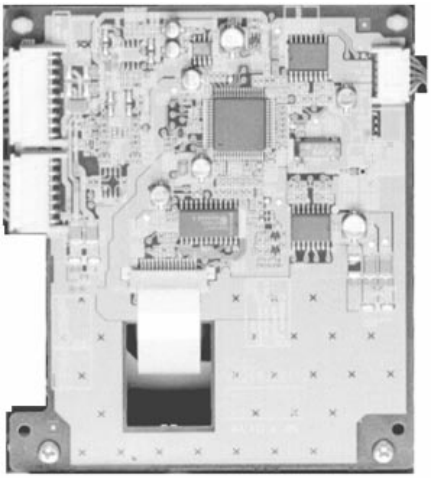
DIODES

6105	4822 130 83075	HN1V02H-B
6107	4822 130 34488	BZX79-B11
6120	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1
7103	4822 130 42513	BC858C
7104	5322 130 44779	BC338-40
7105	5322 130 44779	BC338-40
7109	5322 130 41983	BC858B
7110	5322 130 41983	BC858B
7122	5322 130 42136	BC848C
7124	5322 130 42136	BC848C

Note: Only the parts mentioned in this list are normal service spare parts.



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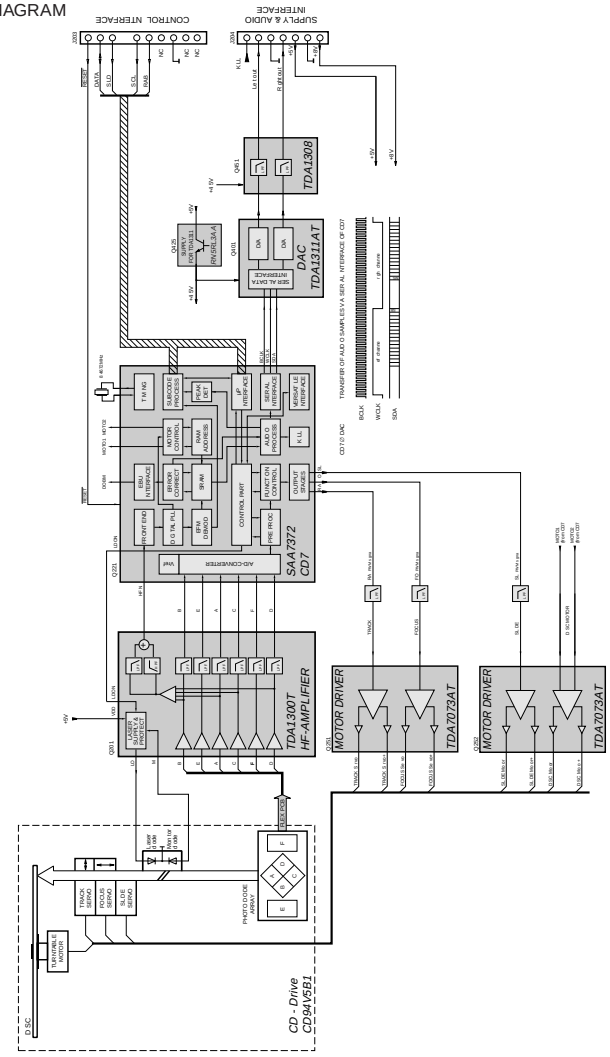
BLOCK DIAGRAM



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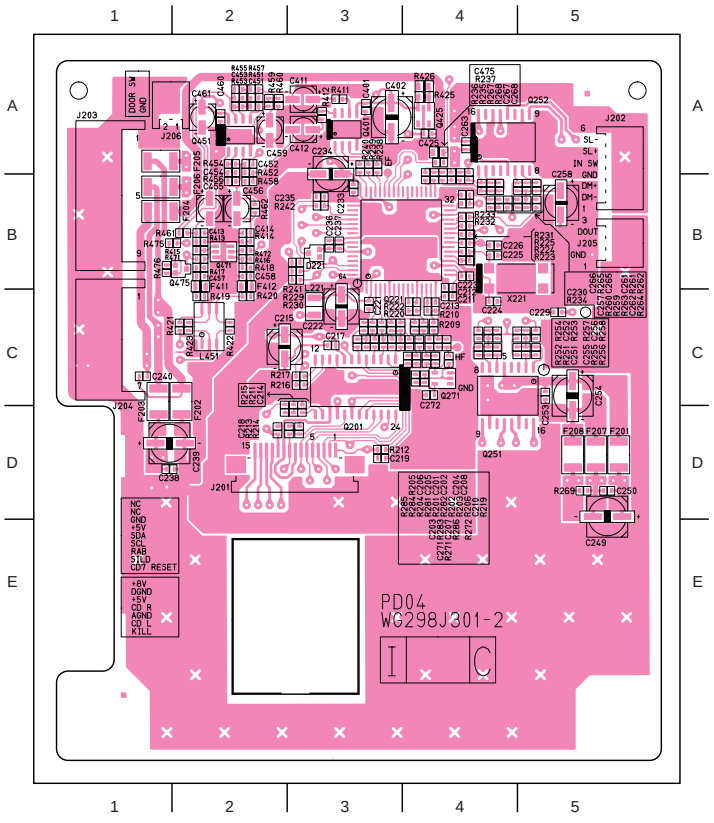
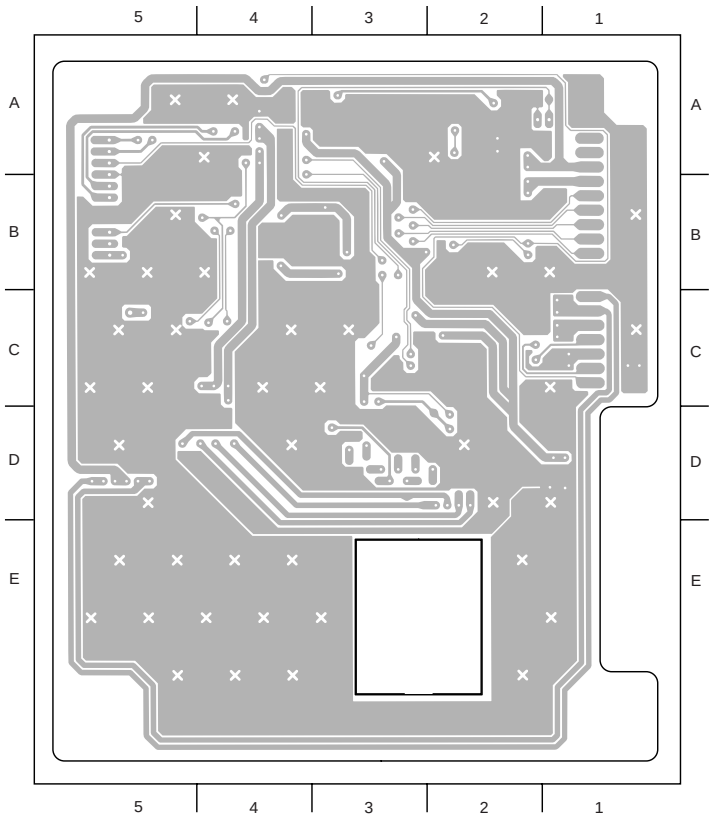
C201C3	C212B4	C224C4	C238D1	C255C5	C268B4	C451A2	C461A2	F208 D5	L451 C2	Q475B2	R212D3	R224B4	R237A3	R256C5	R267B4	R411A3	R421C2	R456A2	R476C3
C202C3	C213C4	C225B4	C239D1	C256C5	C271C4	C452A2	C475A4	F411 B2	Q201C3	R201C4	R213D3	R225B3	R238A3	R257C5	R268D5	R412B2	R422C2	R457B2	X221B5
C203C4	C214D3	C226B4	C240C1	C257B4	C272C4	C453A2	D221B3	F412 B2	Q221B3	R202C4	R214C3	R229B3	R240B3	R258C5	R269C4	R413B2	R423A4	R458A2	
C204C4	C215C2	C229C5		C258B5	C401A3	C454A2	F201 D5	J201 D2	Q251C4	R203C3	R215D2	R230B4	R241B3	R259B4	R271C4	R414B2	R425A4	R459A2	
C205C3	C217C3	C230B4	C249D5	C261B5	C402A3	C455B2	F202 C2	J202 A5	Q252A4	R204C3	R216C3	R231B4	R242C4	R260B5	R272C3	R415B2	R426A2	R460B2	
C206C3	C218D2	C233B3	C250D5	C262B5	C411A3	C456B2	F203 C1	J203 A1	Q271C4	R205C4	R217C4	R232B4	R251C4	R261B5	R281C3	R416B2	R451A2	R461B2	
C207C4	C219D3	C234A3	C251C4	C263A4	C412A3	C457B2	F204 B1	J204 C1	Q401A3	R206C4	R219C4	R233B4	R252C4	R262B5	R282C4	R417B2	R452A2	R462B2	
C208C4	C221C3	C235B3	C252C4	C265B4	C413B2	C458B2	F205 A1	J205 B5	Q425A4	R209C4	R220C4	R234B4	R253C4	R263B5	R283C3	R418C2	R453A2	R471B2	
C210C4	C222C3	C236B3	C253C5	C266B4	C414B2	C459A2	F206 B1	J206 A1	Q451A2	R210D3	R222B4	R235B4	R254C5	R264B4	R284C3	R419C2	R454A2	R472B1	
C211C4	C223B4	C237B3	C254C5	C267B4	C425A4	C460A2	F207 D5	L221 C3	Q471B2	R211D3	R223B4	R236A4	R255C5	R265B4	R286A3	R420C2	R455B2	R475B1	

NAMI 8 BOARD component side view



NAMI 8 BOARD copper side view



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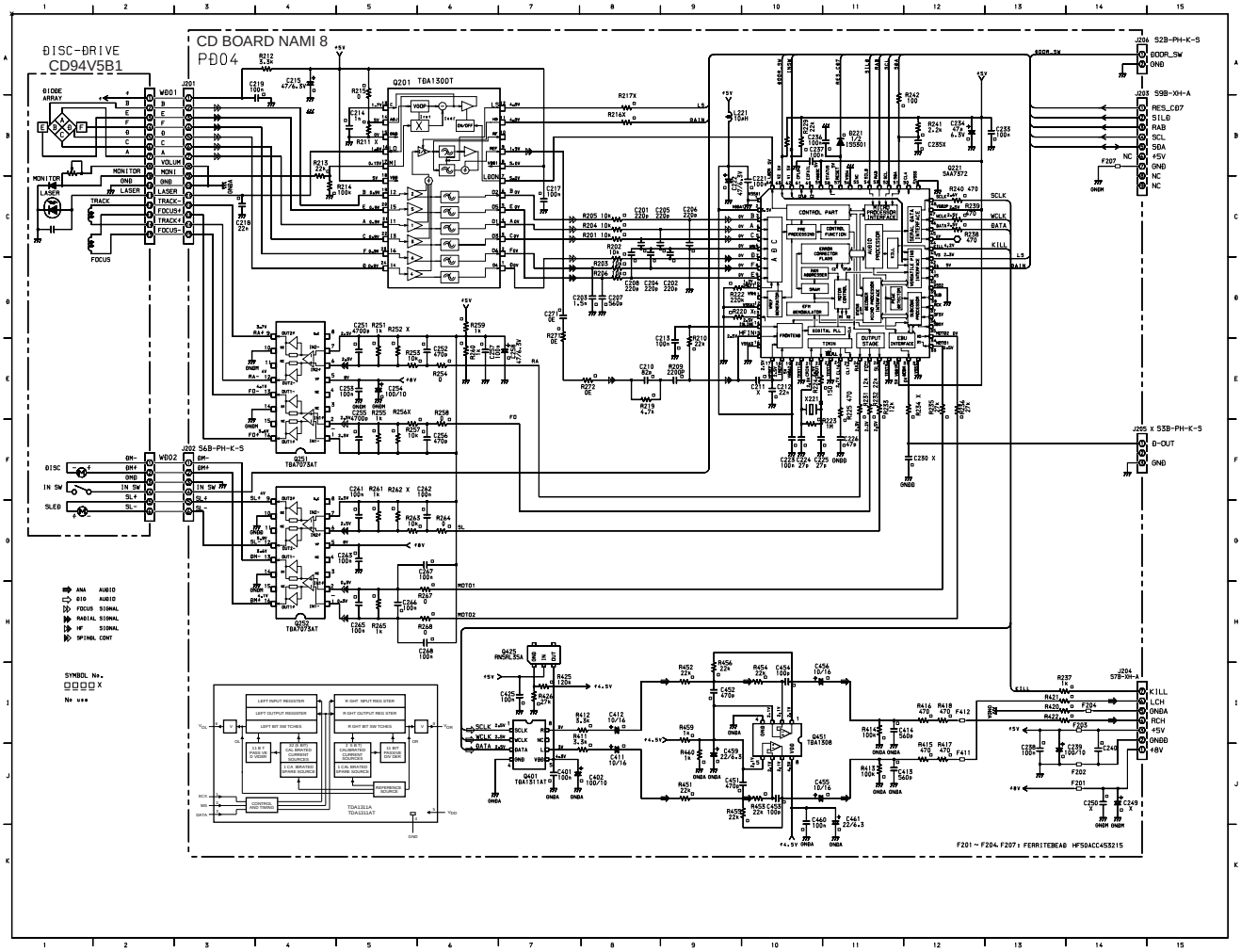

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(VERS. :VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, ⁎:EUROPE)

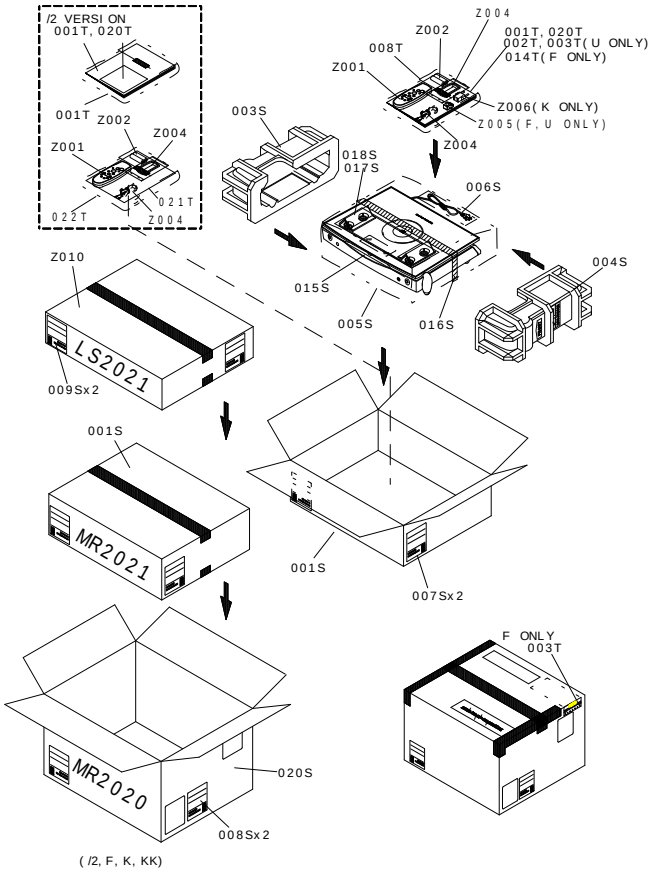
POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
			PD04-CD SERVO DECODER DAC CIRCUIT BOARD	
			PD04-CAPACITORS	
C201		4822 126 13883	CER. CHIP 220pF ±5% CG 50V	DD95221300
C202		4822 126 13883	CER. CHIP 220pF ±5% CG 50V	DD95221300
C203		4822 126 12495	CER. CHIP 1500pF ±10%	DK96152300
C204		4822 126 13883	CER. CHIP 220pF ±5% CG 50V	DD95221300
C205		4822 126 13883	CER. CHIP 220pF ±5% CG 50V	DD95221300
C206		4822 126 13883	CER. CHIP 220pF ±5% CG 50V	DD95221300
C207		4822 126 14249	CER. CHIP 560PF ±10%	DK96561300
C208		4822 126 13883	CER. CHIP 220pF ±5% CG 50V	DD95221300
C210		4822 122 33788	CER. CHIP 82PF ±5%	DD95820300
C212		4822 126 11567	CER. CHIP 0.022µF ±10% XTR	DK96223200
C213		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C214		4822 126 12516	CER. CHIP 1000pF ±10% B 50V	DK96102300
C215		4822 124 11131	ELECT CHIP 47µF 6.3V	EY47600620
C217		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C218		4822 126 11567	CER. CHIP 0.022µF ±10 % XTR	DK96223200
C219		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C221		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C222		4822 124 11131	ELECT CHIP 47µF 6.3V	EY47600620
C223		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C224		4822 126 11669	CER. CHIP 27pF ±5%	DD95270300
C225		4822 126 11669	CER. CHIP 27pF ±5%	DD95270300
C226		4822 122 33777	CER. CHIP 47pF ±5% C6 50V	DD95470300
C233		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C234		4822 124 11131	ELECT CHIP 47µF 6.3V	EY47600620
C236		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C237		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C238		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C239		4822 124 11432	ELECT CHIP 100µF 10V	EY10701020
C251		4822 126 11685	CER. CHIP 4700pF ±10%	DK96472300
C252		4822 126 11568	CER. CHIP 470pF ±10%	DK96471300
C253		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C254		4822 124 11432	ELECT CHIP 100µF 10V	EY10701020
C255		4822 126 11685	CER. CHIP 4700pF ±10%	DK96472300
C256		4822 126 11568	CER. CHIP 470pF ±10%	DK96471300
C257		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C258		4822 124 11131	ELECT CHIP 47µF 6.3V	EY47600620
C261		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C262		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C263		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C265				
⟆		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C268				
C271		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
C401		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C402		4822 124 11432	ELECT CHIP 100µF 10V	EY10701020
C411		4822 124 11074	ELECT CHIP 10µF 16V	EY10601620
C412		4822 124 11074	ELECT CHIP 10µF 16V	EY10601620
C413		4822 126 14249	CER. CHIP 560PF ±10%	DK96561300
C414		4822 126 14249	CER. CHIP 560PF ±10%	DK96561300
C425		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C451		4822 126 11568	CER. CHIP 470pF ±10%	DK96471300
C452		4822 126 11568	CER. CHIP 470pF ±10%	DK96471300
C453		4822 126 11759	CER. CHIP 100PF ±5%	DD95101300
C454		4822 126 11759	CER. CHIP 100PF ±5%	DD95101300
C455		4822 124 11074	ELECT CHIP 10µF 16V	EY10601620
C456		4822 124 11074	ELECT CHIP 10µF 16V	EY10601620
C459		4822 124 11226	ELECT CHIP 22µF 6.3V	EY22600620
C460		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C461		4822 124 11226	ELECT CHIP 22µF 6.3V	EY22600620

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
			PD04-RESISTORS	
R201				
⟆		4822 051 30103	CHIP 10kΩ ±5% 1/16W	NN05103610
R206				
R209		4822 126 12339	CER. 2200PF 10%	DK96222300
R210		4822 051 30223	CHIP 22kΩ ±5% 1/16W	NN05223610
R212		4822 051 30332	CHIP 3.3kΩ ±5% 1/16W	NN05332610
R213		4822 051 30223	CHIP 22kΩ ±5% 1/16W	NN05223610
R214		4822 051 30104	CHIP 100kΩ ±5% 1/16W	NN05104610
R215		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R219		4822 051 30472	CHIP 4.7kΩ ±5% 1/16W	NN05472610
R222		4822 051 30224	CHIP 220kΩ ±5% 1/16W	NN05224610
R223		4822 051 30105	CHIP 1MΩ ±5% 1/16W	NN05105610
R224		4822 051 30151	CHIP 150Ω ±5% 1/16W	NN05151610
R225		4822 051 30471	CHIP 470Ω ±5% 1/16W	NN05471610
R229		4822 051 30223	CHIP 22kΩ ±5% 1/16W	NN05223610
R231		4822 116 83208	CHIP 12kΩ ±5% 1/16W	NN05123610
R232		4822 051 30223	CHIP 22kΩ ±5% 1/16W	NN05223610
R233		4822 116 83208	CHIP 12kΩ ±5% 1/16W	NN05123610
R235		4822 051 30273	CHIP 27kΩ ±5% 1/16W	NN05273610
R236		4822 051 30273	CHIP 27kΩ ±5% 1/16W	NN05273610
R238		4822 051 30471	CHIP 470Ω ±5% 1/16W	NN05471610
R239		4822 051 30471	CHIP 470Ω ±5% 1/16W	NN05471610
R240		4822 051 30471	CHIP 470Ω ±5% 1/16W	NN05471610
R241		4822 051 30222	CHIP 2.2kΩ ±5% 1/16W	NN05222610
R242		4822 051 30101	CHIP 100Ω ±5% 1/16W	NN05101610
R251		4822 051 30102	CHIP 1kΩ ±5% 1/16W	NN05102610
R253		4822 051 30103	CHIP 10kΩ ±5% 1/16W	NN05103610
R254		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R255		4822 051 30102	CHIP 1kΩ ±5% 1/16W	NN05102610
R257		4822 051 30103	CHIP 10kΩ ±5% 1/16W	NN05103610
R258		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R259		4822 051 30102	CHIP 1kΩ ±5% 1/16W	NN05102610
R260		4822 051 30102	CHIP 1kΩ ±5% 1/16W	NN05102610
R261		4822 051 30102	CHIP 1kΩ ±5% 1/16W	NN05102610
R263		4822 051 30103	CHIP 10kΩ ±5% 1/16W	NN05103610
R264		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R265		4822 051 30102	CHIP 1kΩ ±5% 1/16W	NN05102610
R267		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R268		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R271		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R272		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R411		4822 051 30332	CHIP 3.3kΩ ±5% 1/16W	NN05332610
R412		4822 051 30332	CHIP 3.3kΩ ±5% 1/16W	NN05332610
R413		4822 051 30104	CHIP 100kΩ ±5% 1/16W	NN05104610
R414		4822 051 30104	CHIP 100kΩ ±5% 1/16W	NN05104610
R415				
⟆		4822 051 30471	CHIP 470Ω ±5% 1/16W	NN05471610
R418				
R419			FERRITE BEADS	FC90020120
			BK1608HM102-T	
R420			FERRITE BEADS	FC90020120
			BK1608HM102-T	
R421		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R422		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R423		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R425		4822 117 11374	CHIP 120kΩ ±1% 1/10W	NI01124110
R426		4822 117 12024	CHIP 27kΩ ±1% 1/10W	NI01273110
R451				
⟆		4822 051 30223	CHIP 22kΩ ±5% 1/16W	NN05223610
R456				
R459		4822 051 30102	CHIP 1kΩ ±5% 1/16W	NN05102610
R460		4822 051 30102	CHIP 1kΩ ±5% 1/16W	NN05102610

(VERS. :VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, ⁎:EUROPE)

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
			PD04-SEMICONDUCTORS	
D221		4822 130 83715	CHIP DIODE 1SS301 DAN202U	HZ21005000
Q201		4822 209 16855	IC TDA1300T HF AMP AND LASER CONT	HC10172490
Q221		4822 209 91174	IC SAA7372GP SERVO	HC10132490
Q251		4822 209 16372	IC TDA7073AT DUAL BTL DRIVER	HC10165490
Q252		4822 209 16372	IC TDA7073AT DUAL BTL DRIVER	HC10165490
Q401		4822 209 32196	IC TDA1311AT CC-DAC	HC10173490
Q425		4822 209 15595	IC RN5RL35AA V-REGULATOR 3.5V	HC10021770
Q451		4822 209 33165	IC TDA1308 POWER OP AMP	HC10138490
			PD04-MISCELLANEOUS	
F201				
⟆		4822 157 10313	HF50ACC453215	FN31020010
F207				
L221		4822 157 53872	CHIP INDUCTANCE NL322522-100K	LU12103010
WD01		4822 320 12646	JUMPER LEAD FFC	YU15073500
X221		4822 242 11017	CRYSTAL CM309S 8.4672MHz	JX08001320

9. EXPLODED VIEW AND PARTS LIST



(VERS. :VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, **:EUROPE)

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
			PACKING	
001T	F		USER GUIDE	298J851110
001T	K		USER GUIDE	298J851350
001T	KK		USER GUIDE	298J851360
001T	/2	4822 736 16729	USER GUIDE	298J851310
001T	U		USER GUIDE	298J851250
Z001			REMOTE COMMANDER RC2020MR	ZK298J0010

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
			NOT STANDARD SPARE PARTS	
001S	F,U		PACKING CASE MR2021	298J801010
003S	F,U		CUSHION L	298J809010
004S	F,U		CUSHION R	298J809020
020S	F		MASTER CARTON CASE MR2020	298J801030
010T			CLAMPER ASSY	298J005500
014T	F		USER?S CARD	145J865210
020T	F		LABEL FLY SHEET JAPANESE	298J861110
020T	/2,K, KK,U		LABEL FLY SHEET ENGL1S4	298J861120
021T	/2		SHEET FOR REMOCON ETC	298J107040
055T			SCHEMATIC DIAGRAM	298J493A00
Z001			REMOTE COMMANDER RC2020MR	ZK298J0010
Z002	F		BATTERY UM-4NEPH/2S	ZF24302000
Z003			AM LOOP ANTENNA LA-700HB	LA00055020
Z004	F	4822 303 30314	FM FEEDER ANTENNA	ZA02000070
Z004	/2,K, KK		FM ANTENNA 931222R	ZA02800020
Z004	U	4822 303 30314	FM FEEDER ANTENNA	ZA02000070
Z005	F,U	4822 264 30265	PLUG ANT ADAPTER FM	YP90000310
Z006	K	4822 265 10092	JACK AC ADAPTER S-I6116 PLRTY	YJ04001240
Z007	F,K,KK		SPEAKER BOX SPK SYSTEM	AS20100180
Z007	U		SPEAKER BOX SPK SYSTEM	AS20100190
Z008			BADGE MARANTZ	354H251230
Z010	F,		PACKING CASE FOR SPEAKER LS2021	298J801020

(VERS. :VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, **:EUROPE)

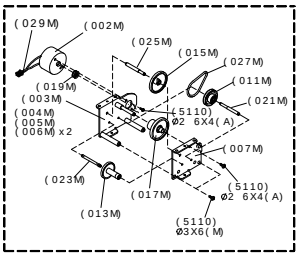
POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
001B	F,K,KK, U		FRONT PANEL ASSY	298J248510
001B	/2	4822 466 12193	FRONT PANEL ASSY	298J248500
002B	F,K,KK, U		FRONT PANEL	298J248020
002B	/2		FRONT PANEL	298J248010
003B		4822 45010615	WINDOW FL	298J158040
005B			LENS SENSOR	298J355020
009B			LENS DSC SENS	298J355030
011B		4822 410 12282	BUTTON TOP	298J270010
018B		4822 532 11388	T.L. WASHER FOR W802	54050300R0
023B			SCREW FOR CD MECHA	183J010010
031B		4822 404 10992	SUSTAINER L	298J106020
032B		4822 404 10991	SUSTAINER R	298J106030
033B			P.H.M. SCREW FOR SUSTAINER+PANEL	51250308U0
034B		4822 520 10859	SUSTAINER BEARING	298J106060
037B		4822 528 11315	CAM L	298J054010
039B		4822 528 11316	CAM R	298J054020
041B		4822 502 13315	B.T.SCREW W/TL FOR CUM+PANEL	51290308M0
043B			P.H. B TITE 1 SCREW FOR CUM+SENSOR	51900208U0
049B			WASHER FOR CD MECHA REAR	298J012010
052B			COVER FOR GEAR ASSY	298J053020
055B			BUFFER FOR CD	298J056070
001D	F,K,KK, U	WINDOWF	298J158030	
001D	/2	4822 466 10616	WINDOW N	298J158010
003D		4822 466 12194	LID	298J257010
004D			BUFFER FOR LID	298J056020
005D		4822 402 11277	LEVER ASSY	298J354500
010D			STICKER ADHESIVE FOR 011D	298J122010
011D		4822 462 11164	CAP FOR WINDOW	298J067030
012D		4822 402 11278	BRACKET ROLLER ASSY L	298J160520
013D		4822 402 11279	BRACKET ROLLER ASSY R	298J160530
015D			ROLLER LID	298J358010
016D			ROLLER LID	298J358010
019D		4822 530 70122	RG RING E RING	64000200R0
020D		4822 530 70122	RG RING E RING	64000200R0
041D			P.H.M. SCREW FOR RETAINER	51250305U0
047D		4822 522 10751	GEAR FOR LID	298J058020
049D		4822 502 13315	B.T.SCREW W/TL FOR GEAR+LID	51290308M0
053D			P.H.M. SCREW FOR LID	51250305U0
067D			BUFFER FOR SHIELD	345S056030
001G		4822 442 01753	CASE BOTTOM	298J064010
003G		4822 381 12069	LENS IR	298J355010
005G		4822 410 12283	BUTTON FRONT STANDBY	298J270020
007G		4822 410 12282	BUTTON FRONT OPEN/CLOSE	298J270030
021G		4822 462 11165	LEG FRONT	298J057010
023G		4822 502 13315	B.T.SCREW W/TL FOR LEG FRONT+BOTTOM CASE	51290308M0
025G		4822 462 11166	LEG REAR	298J057020
026G		4822 462 11167	LEG FOR FRONT	298J057050
027G		4822 462 11168	LEG FOR REAR	298J057030
028G		4822 535 10629	PIN FOR FRONT LEG	298J254020
029G		4822 535 10631	PIN FOR REAR LEG	298J254010
030G			LEG SUB	298J057040
037G		4822 522 10752	GEAR E	298J058010
049G		4822 442 01754	LID BOTTOM	298J257020
901G	F		REAR PANEL	298J250020
901G	K		REAR PANEL	298J250040
901G	KK		REAR PANEL	298J250050
901G	/2		REAR PANEL	298J250010

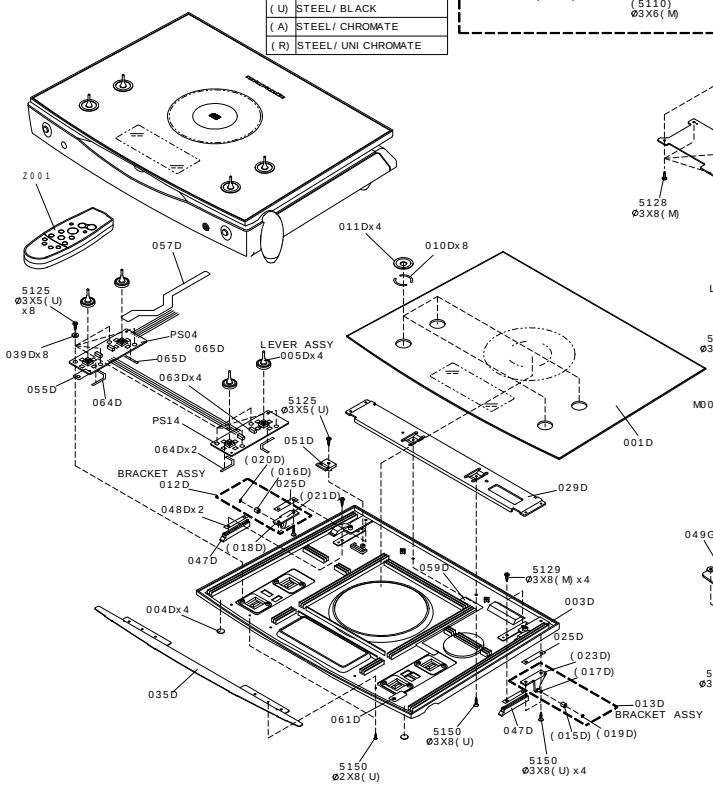
POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
901G	U		REAR PANEL	298J250030
917G		4822 532 60948	BUSHING AC MAINS	450H259010
001M		4822 522 10753	MECHANISM GEAR ASSY	298J304510
002M		4822 361 30368	D.C MOTOR	MM00460020
011M		4822 522 10754	GEAR A	298J058100
013M		4822 522 10755	GEAR B	298J058110
015M		4822 522 10756	GEAR C	298J058120
017M		4822 522 10757	GEAR D	298J058130
019M			PULLEY	298J262100
021M			SHAFT A	298J112100
023M			SHAFT B	298J112110
027M		4822 358 10273	BELT	298J264100
041M		4822 691 10781	MECHANISM CD MECHA ASSY	298J304500
045M		4822 529 10428	DAMPER SUSPENSION RUBBER A	298J130010
047M		4822 529 10429	DAMPER SUSPENSION RUBBER B	298J130020
049M			COVER CD MECHA	298J053010
FH01	/2		FERRITE CORE ZCAT1325-0530A CLAMP	FC50200020
⚠ L001	F		MAINS TRANSF. AC100V	TS17206010
⚠ L001	K		MAINS TRANSF. AC110-220V	TS17206040
⚠ L001	KK		MAINS TRANSF. AC220V	TS17206050
⚠ L001	/2	4822 146 11124	MAINS TRANSF. AC230V	TS17206030
⚠ L001	U		MAINS TRANSF. AC120V	TS17206020
M001		4822 361 11159	D.C MOTOR BRUSHLESS FAN KD1204PFB2-8	MM01200290
M705			LEAF SPRING	298J116010
SS21		4822 271 30768	MINI SW. DOOR CLOSE	SM01011530
SS22		4822 271 30768	MINI SW. DOOR OPEN	SM01011530
WU03		4822 320 12647	JUMPER LEAD 8P FFC JS02-JS11	YU08238500
WU04		4822 320 12648	JUMPER LEAD 13P FFC JU10-JS01	YU13268500
⚠ W001	F	4822 321 11359	A.C MAINS CORD	YC01800800
⚠ W001	K,U		A.C MAINS CORD AC250V 10A	YC01800880
⚠ W001	KK		A.C MAINS CORD 3A 250V	YC02000820
⚠ W001	/2	4822 321 11343	A.C MAINS CORD	YC01800790

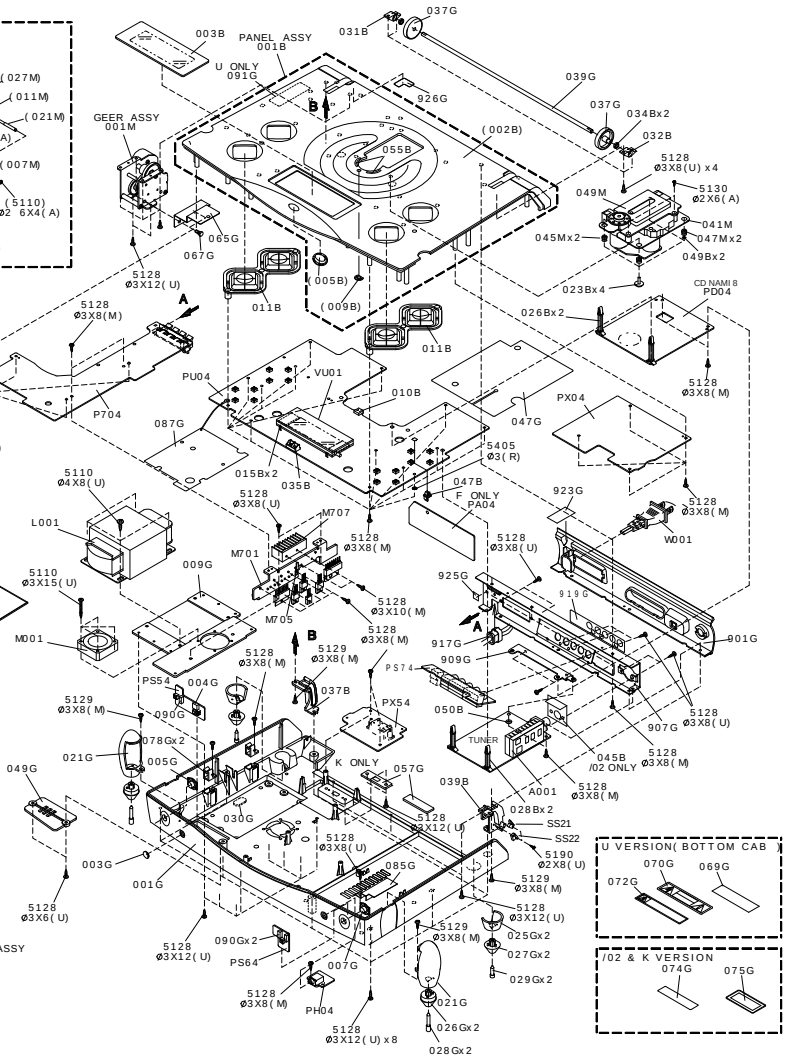
9-3

SYMBOL	STYLE	PARTS NAME
5110	⊗	+B H M SCREW
5125	⊗	+B H TAP TITE SCREW(P TYPE)
5128	⊗	+B H TAP TITE SCREW(B TYPE)
5129	⊗	+B H TAP TITE SCREW(W T L WASHER)
5130	⊗	+P H TAP TITE SCREW(B TYPE)
5150	⊗	+F H TAP TITE SCREW(B TYPE)
5190	⊗	+P H TAP TITE SCREW(B TYPE)
5405	⊗	TOOTHED LOCK WASHERS

MARK	MATERIAL/ FINISH
(M)	STEEL/ COPPER
(U)	STEEL/ BLACK
(A)	STEEL/ CHROMATE
(R)	STEEL/ UNI CHROMATE







10-1

10. ELECTRICAL PARTS LIST

ASSIGNMENT OF COMMON PARTS CODES.

RESISTORS

R✱✱✱: 1) GD05×××140, Carbon film fixed resistor, ±5% 1/4W
R✱✱✱: 2) GD05×××160, Carbon film fixed resistor, ±5% 1/6W

① —— Resistance value

Examples ;
① Resistance value

0.1 Ω 001	10 Ω 100	1 kΩ 102	100 kΩ 104
0.5 Ω 005	18 Ω 180	2.7 kΩ 272	680 kΩ 684
1 Ω 010	100 Ω 101	10 kΩ 103	1 MΩ 105
6.8 Ω 068	390 Ω 391	22 kΩ 223	4.7 MΩ 475

Note : Please distinguish 1/4W from 1/6W by the shape of parts used actually.

CAPACITORS

C✱✱✱: CERAMIC CAP.
3) DD1×××370, Ceramic capacitor Disc type Temp.coeff.P350 ~N1000, 50V
② ③
② —— Capacity value
③ —— Tolerance

Examples ;
② Tolerance (Capacity deviation)
±0.25 pF 0
±0.5 pF 1
±5% 5
✻ Tolerance of COMMON PARTS handled here are as follows :
0.5 pF ~ 5 pF .... ±0.25 pF
6 pF ~ 10 pF .... ±0.5 pF
12 pF ~ 560 pF .... ±5%
③ Capacity value

0.5 pF 005	3 pF 030	100 pF 101
1 pF 010	10 pF 100	220 pF 221
1.5 pF 015	47 pF 470	560 pF 561

C✱✱✱ : CERAMIC CAP.
4) DK16×××300, High dielectric constant ceramic capacitor Disc type Temp.chara. 2B4, 50V
④
④ —— Capacity value

Examples ;
④ Capacity value

100 pF 101	1000 pF 102	10000 pF 103
470 pF 471	2200 pF 222	

C✱✱✱ :5) ELECTROLY CAP. (⏚), 6) FILM CAP. (⫩)
5) EA×××××10, Electrolytic capacitor One-way lead type, Tolerance ±20%
⑤ ⑥
⑥ —— Working voltage
⑤ —— Capacity value

Examples ;
⑤ Capacity value

0.1 µF 104	4.7 µF 475	100 µF 107
0.33 µF 334	10 µF 106	330 µF 337
1 µF 105	22 µF 226	1100 µF 118
		2200 µF 228

⑥ Working voltage

6.3V 006	25V 025	
10V 010	35V 035	
16V 016	50V 050	

6) DF15×××350 —— Plastic film capacitor
DF15×××310 —— One-way type, Mylar ±5% 50V
DF16×××310 —— Plastic film capacitor One-way type, Mylar ±10% 50V
⑦
⑦ —— Capacity value

Examples ;
⑦ Capacity value

0.001 µF (1000 pF) 102	0.1 µF 104
0.0018 µF 182	0.56 µF 564
0.01 µF 103	1 µF 105
0.015 µF 153	

NOTE : 1) The above CODES (R✱✱✱ , R✱✱✱ , C✱✱✱ , C✱✱✱ and C ✱✱✱ are omitted on the schematic diagram in some case.
2) On the occasion, be confirmed the common parts on the parts list.
3) Refer to "Common Parts List" for the other common parts (RI05, DD4, DK4).

NOTE ON SAFETY FOR FUSIBLE RESISTOR :

The suppliers and their type numbers of fusible resistors are as follows;

1. KOA Corporation

Part No. (MJI)	Type No. (KOA)	Description
NH05×××140	RF25S××××ΩJ	(±5% 1/4W)
NH05×××120	RF50S××××ΩJ	(±5% 1/2W)
NH85×××110	RF73B2A××××ΩJ	(±5% 1/10W)
NH95×××140	RF73B2E××××ΩJ	(±5% 1/4W)

✻ Resistance value —— Resistance value (0.1 Ω – 10 kΩ)

2. Matsushita Electronic Components Co., Ltd

Part No. (MJI)	Type No. (MEC)	Description
NF05×××140	ERD-2FCJ×××	(±5% 1/4W)
RF05×××140		
NF02×××140	ERD-2FCG×××	(±2% 1/4W)
RF02×××140		

✻ Resistance value —— ✻ Resistance value

Examples ;
✻ Resistance value

0.1 Ω 001	10 Ω 100	1 kΩ 102	100 kΩ 104
0.5 Ω 005	18 Ω 180	2.7 kΩ 272	680 kΩ 684
1 Ω 010	100 Ω 101	10 kΩ 103	1 MΩ 105
6.8 Ω 068	390 Ω 391	22 kΩ 223	4.7 MΩ 475

ABBREVIATION AND MARKS

ANT	ANTENNA	BATT	BATTERY
CAP	CAPACITOR	CER	CERAMIC
CONN	CONNECTING	DIG	DIGITAL
HP	HEADPHONE	MIC	M CROPHONE
µ PRO	MICROPROCESSOR	REC	RECORDING
RES	RESISTOR	SPK	SPEAKER
SW	SWITCH	TRANSF	TRANSFORMER
TRIM	TRIMMING	TRS	TRAMSISTOR
VAR	VARIABLE	X'TAL	CRYSTAL

NOTE ON SAFETY :

Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replaced any part marked with symbol ⚠ . Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

⚠

SM970926ACT

(VERS. :VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, ✻:EUROPE)

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
			P704-MOTOR DRIVE MAIN AMP CIRCUIT BOARD	
			P704-CAPACITORS	
CD01		4822 122 30103	CER. 0.022µF +80%-20% 50V	DK18223310
CD02		4822 122 30103	CER. 0.022µF +80%-20% 50V	DK18223310
C701		4822 124 22273	ELECT. 0.47µF 50V	OA47405020
C702		4822 124 22273	ELECT. 0.47µF 50V	OA47405020
C721		4822 124 90357	ELECT. 2.2µF ±20% 50V RA-2	OA22505020
C722		4822 124 22273	ELECT. 0.47µF ±20% 50V	OA47405020
C723		4822 122 31205	CER. 47pF ±5% CH 50V	DD15470300
C724		4822 124 22274	ELECT. 4.7µF ±20% 50V RA-2	OA47505020
C725		4822 122 40617	CER. 0.1µF +80%-20% 50V	DD38104010
C726		4822 124 90357	ELECT. 2.2µF 50V	OA22505020
C727		4822 124 90362	ELECT. 22µF 50V ±20% RA2	OA22605020
C728		4822 126 12496	CER. 0.01µF +80%-20% 50V	DD38103010
C801 ∫ C804		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
C805		4822 122 30103	CER. 0.022µF +80%-20% 50V	DK18223310
C806		4822 124 42367	ELECT 3300µF 35V RE3	EA33803570
C807		4822 124 90367	ELECT. 2200µF 25V	OA22802520
C808		4822 124 22695	ELECT. 2200µF 35V	OA22803520
C809		4822 124 80582	ELECT. 4700µF 16V	OA47801620
C810		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
C811		4822 124 12399	ELECT 3300µF 6.3V RE3	EA33800670
C812		4822 124 41543	ELECT. 1µF 50V	OA10505020
C814		4822 124 90355	ELECT. 100µF 50V	OA10705020
C815		4822 124 90362	ELECT. 22µF 50V	OA22605020
C816		4822 124 90362	ELECT. 22µF 50V	OA22605020
C818		4822 122 40617	CER. 0.1 +80%-20% 50V	DD38104010
C819		4822 124 90354	ELECT. 100µF 16V	OA10701620
C820		4822 124 90354	ELECT. 100µF 16V	OA10701620
C821		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
C851		4822 124 90354	ELECT. 100µF 16V	OA10701620
C852		4822 124 90352	ELECT. 10µF 16V	OA10601620
C✱✱✱			P704 CAPACITORS (COMMON) PLASTIC FILM CAPACITOR ±5% 50V : C703-C710 C813	
			P704-RESISTORS	
R723		4822 050 21022	1kΩ ±5% 1/4W	GG05102140
R724		4822 050 21022	1kΩ ±5% 1/4W	GG05102140
▲ R804		4822 111 90967	FUSE 4.7Ω 5%1/4W	NF05047140
R809		4822 050 21021	100Ω ±5% 1/4W	GG05101140
R810		4822 050 21021	100Ω ±5% 1/4W	GG05101140
R825		4822 116 82444	0.33Ω ±10% 2W	GO10332020
R830			JUMPER	75060501P0
R851		4822 052 10479	47Ω ±5% 1/4W	GG05470140
R853		4822 116 80257	6.19kΩ 1% 1/6W	GM11661910
R857			THERMISTOR ERTD2ZHJ103T	HH00033020
R✱✱✱			P704-RESISTORS (COMMON) CARBON F LM FIXED RES. ±5% 1/6W : R701-R714 R721 R722 R725-R736 R801-R803 R805-R808 R811 R818-R824 R826-R828 R852 R854 -R856 R858 RD01-RD04	
			P704-SEMICONDUCTORS	
DD01		4822 130 10667	ZENER DIODE 4.7V	HD30471000
D701 ∫ D704		4822 130 82421	DIODE 1D3 1A 200V	HD20002710
D705		4822 130 80322	ZENER DIODE 15V	HD31501000
D706		4822 130 32362	DIODE 1SS176 MA165 1SS254 30V 0.1A	HD20002000

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
D707		4822 130 80132	ZENER DIODE 3.9V	HD30391000
D708		4822 130 80838	ZENER DIODE 18V	HD31801000
D709		4822 130 82421	DIODE 1D3 1A 200V	HD20002710
D710		4822 130 32362	DIODE 1SS176 MA165 1SS254 30V 0.1A	HD20002000
D711		4822 130 32362	DIODE 1SS176 MA165 1SS254 30V 0.1A	HD20002000
D801		4822 130 83438	DIODE D5SB-10 200V 5A	HE20016290
D802		4822 130 33057	DIODE S2VB20	HE20011290
D803 ∫ D806		4822 130 82421	DIODE 1D3 1A 200V	HD20002710
D808		4822 130 82421	DIODE 1D3 1A 200V	HD20002710
D809		4822 130 80272	ZENER DIODE 7.5V	HD30751000
D810		4822 130 32362	DIODE 1SS176 MA165 1SS254 30V 0.1A	HD20002000
D811		4822 130 82421	DIODE 1D3 1A 200V	HD20002710
D812		4822 130 81659	ZENER DIODE 27V	HD32701000
D813		4822 130 10667	ZENER DIODE 4.7V	HD30471000
D814			JUMPER	75060501P0
D851		4822 130 80321	ZENER DIODE 10V	HD31001000
D852		4822 130 83142	ZENER DIODE 6.2V	HD30621000
D853		4822 130 32362	DIODE 1SS176 MA165 1SS254 30V 0.1A	HD20002000
QD01		4822 209 83803	IC LB1641 MOTOR DRIVER	HC10148030
Q701		4822 209 16224	IC AN7125 POWER AMP	HC10169020
Q702		4822 130 11588	TRS. 2SA1307 O Y	HT113072A0
Q703		4822 130 43313	TRS. 2SC3312 R S	HT333122A0
Q704		4822 130 42433	TRS. 2SA933S R S	HT109332B0
Q705		4822 130 42433	TRS. 2SA933S R S	HT109332B0
Q706		4822 130 43313	TRS. 2SC3312 R S	HT333122A0
Q707		4822 130 42433	TRS. 2SA933S R S	HT109332B0
Q708		4822 130 43313	TRS. 2SC3312 R S	HT333122A0
Q801		4822 209 17378	IC PQ30RV2	HC31930320
Q802		4822 130 61417	TRS. 2SB1240 TV-2 Q R	HT212402A0
Q803		4822 130 43313	TRS. 2SC3312 R S	HT333122A0
Q805		4822 209 17379	IC PQ12RF2 REQ.12V 2A	HC31912320
Q806		4822 209 14623	IC NJM7808FA 8V 1A	HC38908090
Q807		4822 130 42433	TRS. 2SA933 R S	HT109332B0
Q851		4822 130 42292	TRS. 2SC2120 O	HT321201A0
Q852		4822 130 42433	TRS. 2SA933S R S	HT109332B0
Q853		4822 130 43313	TRS. 2SC3312 R S	HT333122A0
			P704-MISCELLANEOUS	
▲ F803	F,U		FUSE 1.6A 125V	FS20160220
▲ F803	/2,K,KK	4822 071 51602	FUSE T1.6A 250V	FS20160200
▲ F804	F,U		FUSE 4.0A 125V UL CSA	FS20400220
▲ F804	/2,K,KK	4822 071 54002	FUSE 4.0A 250V VDE SEMKO	FS20400200
▲ F805	F,U		FUSE T 1.25A 125V UL CSA	FS20125220
▲ F805	/2,K,KK	4822 071 51252	FUSE T1.25A 250V	FS20125200
▲ F806	F,U		FUSE 500mA 125V UL CSA	FS20050220
▲ F806	/2,K,KK	4822 071 55001	FUSE T0.5A 250V	FS20050200
J702		4822 290 60752	TERMINAL 4 PIN PUSH	YT03040330
L701 ∫ L704		4822 157 63085	AIR CO L SPK CHOCK COIL HORIZONTAL TYPE	ML08010010
L707	/2	4822 157 11848	ZJYS51R5-2P	FN21000060
L708	/2	4822 157 11848	ZJYS51R5-2P	FN21000060
			P804-POWER SUPPLY CIRCUIT BOARD	
LB01		4822 157 70419	LF-4D-102	FN01020020
RB01	U	2.2M	Ω ±10% 1/2W FOR UL	RC10225820
SB01	K		SLIDE SW. SLIDE 110V-220V	SS02021670

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POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
			PA04-AM-STEREO	
			CIRCUIT BOARD [F Version]	
			PA04-CAPACITORS	
CA02	F	4822 124 21894	ELECT 10µF 16V	EJ10601610
CA03	F	4822 124 21894	ELECT 10µF 16V	EJ10601610
CA04	F	4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CA05	F	4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CA11	F	4822 124 21894	ELECT 10µF 16V	EJ10601610
CA13	F	4822 124 23053	ELECT 1µF 50V	EJ10505010
CA14	F	4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CA15	F	4822 122 31205	CER. 47pF ±5% CH 50V BLK	DD15470300
CA16	F	4822 124 23056	ELECT 47µF 16V	EJ47601610
CA20	F	4822 124 23056	ELECT 47µF 16V	EJ47601610
CA21	F	4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CA22	F	4822 124 40786	ELECT 2.2µF 50V	EJ22505010
CA23	F	4822 124 40786	ELECT 2.2µF 50V	EJ22505010
CA24	F	4822 124 23053	ELECT 1µF 50V	EJ10505010
			PA04 CAPACITORS (COMMON)	
C***			HIGH DIELECTRIC CONSTANT	
			CER. CAPACITOR ±10% 50V :	
			CA01 CA17-CA19	
			PLASTIC FILM CAPACITOR	
C***			±5% 50V : CA06-CA10 CA12	
			PA04-RESISTOR	
⚠ RA08	F	FUSE82	Ω G 1/4W	NF02820140
			PA04-RESISTORS (COMMON)	
R***			CARBON FILM FIXED RES.	
			±5% 1/6W : RA01-RA07	
			PA04-SEMICONDUCTORS	
DA01	F	4822 130 32362	DIODE 1SS176 MA165 1SS254	HD20002000
			30V 0.1A	
DA02	F	4822 130 32362	DIODE 1SS176 MA165 1SS254	HD20002000
			30V 0.1A	
DA03	F	4822 130 32362	DIODE 1SS176 MA165 1SS254	HD20002000
			30V 0.1A	
QA01	F		IC MC13022P AM STEREO	HC10078170
QA02	F		IC 74HC4053 C-MOS	HC705300B0
QA03	F	4822 130 41947	TRS. 2SC2458 2SC1740S	HT30001000
			2SC3199 ETC.	
QA04	F	4822 130 42715	TRS. 2SA1048 2SA933S	HT10001000
			2SA1267 ETC.	
			PB04-MISCELLANEOUS	
LA01	F		I.F.T. COIL A7NRES-T1370Y	LI71010120
			450kHz	
XA01	F		SERAMVIB. CSA3.6MGF103	FQ03604020
			PH04-HEAD PHONE JACK	
			CIRCUIT BOARD	
			PH04-CAPACITORS	
CH15		4822 126 12496	CER. 0.01µF +80%-20% 50V	DD38103010
CH16		4822 126 12496	CER. 0.01µF +80%-20% 50V	DD38103010
CH17		4822 122 40617	CER. 0.1µF +80%-20% 50V	DD38104010
			PB04-MISCELLANEOUS	
JH01		4822 242 11018	JACK HEAD PHONE	YJ01004500
			HS10914-01-040	
LH10				
∫			JUMPER	75060501P0
LH14				

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
			PS04-SW ASSY	
			CIRCUIT BOARD	
SS01		4822 276 14088	TACT SW. ALPS-SKQUAA	SP01013280
SS02		4822 276 14088	TACT SW. ALPS-SKQUAA	SP01013280
			PS14-SW ASSY	
			CIRCUIT BOARD	
SS11		4822 276 14088	TACT SW.ALPS-SKQUAA	SP01013280
SS12		4822 276 14088	TACT SW.ALPS-SKQUAA	SP01013280
			PS54-IR ASSY C	
			IRCUIT BOARD	
CS51		4822 126 10935	ELECT 100µF 6.3V	EJ10700610
QS51		4822 130 11494	PHOTO UNIT RPM6936-V4	HW10004210
			IR SENSOR	
SS51		4822 276 20508	PUSH SW. EVQ11L05R	SP01013370
			PS64-DOOR SW ASSY	
			CIRCUIT BOARD	
SS61		4822 276 20508	PUSH SW. EVQ11L05R	SP01013370
			PU04-µ-COM ASSY	
			CIRCUIT BOARD	
			PU04-CAPACITORS	
CF22		4822 126 11558	CER. 0.1µF +80%-20% 50V	DA17104110
CF49	/2	4822 126 10408	CER. 220pF ±10% B 50V	DA16221110
CF50	/2	4822 126 10408	CER. 220pF ±10% B 50V	DA16221110
CF51	/2		CER. 1500pF ±20% X 50V	DA17152110
CF53		4822 124 21894	ELECT 10µF 16V	EJ10601610
CF54		4822 124 21894	ELECT 10µF 16V	EJ10601610
CF55		4822 126 10362	CER. 22pF ±5% SL 50V	DA15220110
CF56		4822 126 10362	CER. 22pF ±5% SL 50V	DA15220110
CF57		4822 124 21894	ELECT 10µF 16V	EJ10601610
CF58		4822 124 21894	ELECT 10µF 16V	EJ10601610
CF59		4822 124 23056	ELECT 47µF 16V	EJ47601610
CF60		4822 122 40586	CER. 0.01µF ±20% Y 50V	DA17103110
CF61		4822 122 40586	CER. 0.01µF ±20% Y 50V	DA17103110
CU01		4822 126 10513	CER. 47pF ±5% SL 50V	DA15470110
CU02		4822 126 10513	CER. 47pF ±5% SL 50V	DA15470110
CU03		4822 126 10513	CER. 47pF ±5% SL 50V	DA15470110
CU04		4822 126 10364	CER. 100pF ±10% B 50V	DA16101110
CU05	/2	4822 126 10513	CER. 47pF ±5% SL 50V	DA15470110
CU08	/2	4822 122 31237	CER. 82pF ±5% CH 50V	DD15820300
CU09	/2	4822 122 31205	CER. 47pF ±5% CH 50V	DD15470300
CU10	/2	4822 126 12496	CER. 0.01µF DC50V +80 -20%	DD38103010
CU11	/2	4822 122 40617	CER. 0.1µF DC50V +80 -20%	DD38104010
CU12	/2	4822 126 11071	CER. 330pF ±10% B 50V	DA16331110
CU13	/2	4822 124 40786	ELECT 2.2µF 50V	EJ22505010
CU14	/2	4822 126 10409	CER. 560pF ±10% B 50V	DA16561110
CU17		4822 124 23295	BIG ELECT 0.022µF 5V	EX22300510
CU18		4822 126 10935	ELECT 100µF 6.3V	EJ10700610
CU19		4822 122 40586	CER. 0.01µF ±20% 50V	DA17103110
CU20		4822 126 10935	ELECT 100µF 6.3V	EJ10700610
CU21		4822 126 12867	ELECT. 1000µF 6.3V	OA108006Q0
CU24		4822 122 40589	CER. 0.047µF ±10% F 50V	DA17473110
CU27		4822 122 31823	CER. 15pF ±5% CH 50V	DD15150300
CU28		4822 122 31823	CER. 15pF ±5% CH 50V	DD15150300
CU29		4822 122 40617	CER. 0.1µF +80%-20% 50V	DD38104010
CU30		4822 124 23053	ELECT 1µF 50V	EJ10505010
CU31		4822 124 23053	ELECT 1µF 50V	EJ10505010
CU32		4822 126 10408	CER. 220pF ±10% B 50V	DA16221110
CU33		4822 122 33795	CER. 4700pF ±20% X 50V	DA17472110
CU34		4822 126 10935	ELECT 100µF 6.3V	EJ10700610
CU35		4822 122 40586	CER. 0.01µF ±20% Y 50V	DA17103110
CU36		4822 124 22726	ELECT 4.7µF 35V	EJ47503510
CU37		4822 124 22726	ELECT 4.7µF 35V	EJ47503510
CU38		4822 122 40586	CER. 0.01µF ±20% Y 50V	DA17103110
CU39		4822 122 40617	CER. 0.1µF +80%-20% 50V	DD38104010
CU41		4822 126 10364	CER. 100pF ±10% B 50V	DA16101110
CU42		4822 126 10364	CER. 100pF ±10% B 50V	DA16101110

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POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
CU43		4822 126 10364	CER. 100pF ±10% B 50V	DA16101110
CU44		4822 122 40586	CER. 0.01µF ±20% Y 50V	DA17103110
CU47		4822 122 40586	CER. 0.01µF ±20% Y 50V	DA17103110
CU48	/2		CER. 1500pF ±20% X 50V	DA17152110
CU53		4822 126 12867	ELECT. 1000µF 6.3V	OA108006Q0
CU54		4822 122 40617	CER. 0.1µF +80 -20% 50V DC	DD38104010
CU55	/2	4822 126 12496	CER. 0.01µF +80 -20% DC50V	DD38103010
CU56	/2	4822 126 12496	CER. 0.01µF +80 -20% DC50V	DD38103010
CU57		4822 122 40617	CER. 0.1µF +80%-20% 50V	DD38104010
CU58		4822 122 40617	CER. 0.1µF +80%-20% 50V	DD38104010
CU59		4822 124 40786	ELECT 2.2µF 50V	EJ22505010
CU61 ʃ		4822 126 10408	CER. 220P ±10% 50V	DA16221110
CU64				
CU65		4822 122 40617	CER. 0.1µF +80%-20% 50V	DD38104010
			PU04-CAPACITORS (COMMON)	
C***			PLASTIC FILM CAPACITOR ±5% 50V : [CU45 CU46 : KK U]	
			PU04-RESISTORS	
RU55		4822 050 23308	3.3MΩ ±5% 1/6W	GD05335160
RU57		4822 050 23308	3.3MΩ ±5% 1/6W	GD05335160
RU64		4822 117 10158	1Ω 1/4W GG	GG05010140
RU65		4822 117 10158	1Ω 1/4W GG	GG05010140
RU67		4822 052 10101	100Ω ±5% 1/6W	GG05101160
RU88		4822 050 23308	3.3MΩ ±5% 1/6W	GD05335160
			PU04-RESISTORS (COMMON)	
R***			CARBON FILM FIXED RES. ±5% 1/6W : RF01-RF16 RF19-RF26 RF28-RF32 RF51-RF62 RT61-RT64 RU01-RU04 [RU05 RU07-RU12 : /02] RU13-RU37 RU41-RU47 RU49 RU56 RU58-RU61 [RU62 : /02 U] [RU63 : /02 K KK] RU69 RU71-RU74 RU76-RU87 RU89-RU93 RU98 RU99	
			PU04-SEMICONDUCTORS	
DU01		4822 130 80837	DIODE HSS81TD 150V 150mA	HD20027010
DU02		4822 130 80837	DIODE HSS81TD 150V 150mA	HD20027010
DU03		4822 130 80837	DIODE HSS81TD 150V 150mA	HD20027010
DU04			JUMPER	75060501P0
DU05		4822 130 82421	DIODE 1D3 1A 200V	HD20002710
DU06		4822 130 32362	DIODE 1SS176 MA165 1SS254 30V 0.1A	HD20002000
DU07		4822 130 32362	DIODE 1SS176 MA165 1SS254 30V 0.1A	HD20002000
DU08		4822 130 32362	DIODE 1SS176 MA165 1SS254 30V 0.1A	HD20002000
DU09		4822 130 80837	DIODE HSS81TD 150V 150mA	HD20027010
DU10		4822 130 80837	DIODE HSS81TD 150V 150mA	HD20027010
DU12		4822 130 80837	DIODE HSS81TD 150V 150mA	HD20027010
DU13		4822 130 80837	DIODE HSS81TH 150V 150mA	HD20027010
DU14		4822 130 80837	DIODE HSS81TD 150V 150mA	HD20027010
DU15		4822 130 11585	L.E.D. SIM-22ST FOR DOOR	HI20001210
DU16			JUMPER	75060501P0
QF51		4822 209 83631	IC NJM4558D-D	HC10008090
QU01		4822 130 11586	PHOTO UNIT RPM-22PB PHOTO-DOOR	HW10006210
QU02		4822 130 91368	PHOTO UNIT NJL5165KL DISC SENSOR	HW10004090
QU03		4822 130 42715	TRS. 2SA1048 2SA933S 2SA1267 ETC.	HT10001000
QU04		4822 130 61892	TRS. 2SD2144S U V	HT421442A0
QU05	/2	4822 130 41947	TRS. 2SC2458 2SC1740S 2SC3199 ETC.	HT30001000
QU06	/2	4822 130 61227	DIG.TRS. DTA114ES UN4111 10K 10K	BA10001000
QU07	/2	4822 209 17372	IC SAA6588 RDS DECODER	HC10174490
QU08		4822 130 42715	TRS. 2SA1048 2SA933S 2SA1267 ETC.	HT10001000
QU09		4822 130 42715	TRS. 2SA1048 2SA933S 2SA1267 ETC.	HT10001000
QU10		4822 209 17376	MICROPROCESSOR TMP87CS71F MR2020 E3E5	HU298JT000
QU14		4822 130 42682	DIG.TRS. DTA144ES UN4113 47K 47K	BA10002000
QU16		4822 130 41947	TRS. 2SC2458 2SC1740S 2SC3199 ETC.	HT30001000
QU17		4822 130 42715	TRS. 2SA1048 2SA933S 2SA1267 ETC.	HT10001000
QU18		4822 130 41947	TRS. 2SC2458 2SC1740S 2SC3199 ETC.	HT30001000
QU19		4822 130 41947	TRS. 2SC2458 2SC1740S 2SC3199 ETC	HT30001000
QU20		4822 130 42715	TRS. 2SA1048 2SA933S 2SA1267 ETC.	HT10001000
QU21		4822 130 41947	TRS. 2SC2458 2SC1740S 2SC3199 ETC.	HT30001000
QU22		4822 130 41947	TRS. 2SC2458 2SC1740S 2SC3199 ETC.	HT30001000
QU23		4822 130 43313	TRS. 2SC3312 2SC1740SLN	HT30002000
QU24		4822 130 43313	TRS. 2SC3312 2SC1740SLN	HT30002000
QU25		4822 130 43313	TRS. 2SC3312 2SC1740SLN	HT30002000
QU26		4822 130 42715	TRS. 2SA1048 2SA933S 2SA1267 ETC	HT10001000
QU29		4822 130 41947	TRS. 2SC2458 2SC1740S 2SC3199 ETC	HT30001000
			PU04-MISCELLANEOUS	
LU01	/2	4822 242 73843	EMI FILTER 0.022µF	FM12223010
LU02	/2	4822 242 73843	EMI FILTER 0.022µF	FM12223010
SU01				
		4822 276 20508	PUSH SW. EVQ11L05R	SP01013370
SU16				
VU01		4822 135 00271	DISPLAY UNIT FL FTABA 11-BT-164GK	HQ30806410
XU01		4822 242 72236	CRYSTAL DT-38 32.768kHz	XO001001T2
XU02		4822 242 72066	SERAMVIB. CST8.0MHz MT	FQ08004010
XU03	/2	4822 242 10857	CRYSTAL 4.332MHz AT-49	JX04003260
			PX04-SOUND CONT. H.P AMP CIRCUIT BOARD	
			PX04-CAPACITORS	
CE09		4822 124 22703	ELECT. 0.22µF ±20% 50V	OA22405020
CE10		4822 124 22703	ELECT. 0.22µF ±20% 50V	OA22405020
CE11		4822 124 22273	ELECT. 0.47µF ±20% 50V	OA47405020
CE12		4822 124 22273	ELECT. 0.47µF ±20% 50V	OA47405020
CE17		4822 122 40617	CER. 0.1µF +80 -20% 50V DC	DD38104010
CE18		4822 124 41539	ELECT. 47µF ±20% 16V RA-2	OA47601620
CE19		4822 124 41539	ELECT. 47µF ±20% 16V RA-2	OA47601620
CE20		4822 124 90354	ELECT. 100µF 16V	OA10701620
CE21		4822 124 90354	ELECT. 100µF 16V	OA10701620
CE27		4822 121 42327	FILM 470pF ±5% 50V	DF15471350
CE28		4822 121 42327	FILM 470pF ±5% 50V	DF15471350
CE31		4822 121 42327	FILM 470pF ±5% 50V	DF15471350
CE32		4822 121 42327	FILM 470pF ±5% 50V	DF15471350
CE35		4822 124 41543	ELECT. 1µF ±20% 50V RA-2	OA10505020
CE36		4822 124 41543	ELECT. 1µF ±20% 50V RA-2	OA10505020
CE37		4822 121 42327	FILM 470pF ±5% 50V	DF15471350
CE38		4822 121 42327	FILM 470pF ±5% 50V	DF15471350
CE41		4822 121 42327	FILM 470pF ±5% 50V	DF15471350
CE42		4822 121 42327	FILM 470pF ±5% 50V	DF15471350

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POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
CE45		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CE46		4822 122 40617	CER. 0.1µF +80%-20% 50V	DD38104010
CH07		5322 122 32143	CER. 22pF ±5% 50V	DD15220300
CH08		5322 122 32143	CER. 22pF ±5% 50V	DD15220300
CH09		4822 124 41539	ELECT. 47µF ±20% 16V RA-2	OA47601620
CH10		4822 124 41539	ELECT. 47µF ±20% 16V RA-2	OA47601620
CH11		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CH12		4822 124 41539	ELECT. 47µF ±20% 16V RA-2	OA47601620
CH18		4822 124 41539	ELECT. 47µF 16V	OA47601620
CX01		4822 124 90357	ELECT. 2.2µF 50V	OA22505020
CX02		4822 124 90357	ELECT. 2.2µF 50V	OA22505020
CX05		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CX08		4822 124 41539	ELECT. 47µF 16V RA-2	OA47601620
CX09		4822 124 90352	ELECT. 10µF 16V	OA10601620
CX10		4822 124 90352	ELECT. 10µF 16V	OA10601620
CX11		4822 124 90357	ELECT. 2.2µF 50V	OA22505020
CX12		4822 124 90357	ELECT. 2.2µF 50V	OA22505020
CX13		4822 124 90352	ELECT. 10µF 16V	OA10601620
CX14		4822 124 90352	ELECT. 10µF 16V	OA10601620
CX17		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CX18		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CX19		4822 124 22273	ELECT. 0.47µF ±20% 50V	OA47405020
CX20		4822 124 22273	ELECT. 0.47µF ±20% 50V	OA47405020
CX21		4822 124 90357	ELECT. 2.2µF 50V	OA22505020
CX22		4822 124 90357	ELECT. 2.2µF 50V	OA22505020
CX23		5322 122 32143	CER. 22pF ±5% CH 50V BLK	DD15220300
CX24		5322 122 32143	CER. 22pF ±5% CH 50V BLK	DD15220300
CX25		4822 124 90357	ELECT. 2.2µF ±20% 50V RA-2	OA22505020
CX26		4822 124 90357	ELECT. 2.2µF ±20% 50V RA-2	OA22505020
CX27		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CX28		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CX29		4822 124 90352	ELECT. 10µF 16V	OA10601620
CX70		4822 124 11574	ELECT 1000µF 16V RE3	EA10801670
CX71		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CX72		4822 124 41539	ELECT. 47µF 16V	OA47601620
CX73		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
			PX04-CAPACITORS (COMMON)	
C***			HIGH DIELECTRIC CONSTANT CER. CAPACITOR ±10% 50V : CE33 CE34 CE39 CE40 CH05 CH06 CH13 CH14 CX03 CX16 CX81 CX82	
C***			PLASTIC FILM CAPACITOR ±5% 50V : CE01-CE08 CE15 CD16 CE25 CE26 CE29 CE30 CE43 CE44 CE47 CH01-CH04 CX15 CX31 CX32	
			PX04-RESISTOR	
RX72		4822 111 90967	FUSE 4.7Ω 1/4W	NF05047140
R***			PX04-RESISTORS (COMMON) CARBON FILM FIXED RES. ±5% 1/6W : RE01-RE38 RH03-RH16 RN01-RN04 RX01-RX08 RX11-RX26 RX31-RX48 RX70 RX71	
			PX04-SEMICONDUCTORS	
QE01		4822 209 17382	IC TEA6321 DSC	HC10170490
QE02		4822 130 61892	TRS. 2SD2144S U V	HT421442A0
QE03		4822 209 83631	IC NJM4558D-D	HC10008090
QE04		4822 209 83631	IC NJM4558D-D	HC10008090
QH01		4822 209 82362	IC NJM4556D	HC10016090
QN01 ∫ QN04		4822 130 43818	TRS. 2SC2878 A BRANK	HT328782A0

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
QX01		4822 209 83631	IC NJM4558D-D	HC10008090
QX02		4822 209 83631	IC NJM4558D-D	HC10008090
QX03		4822 209 83631	IC NJM4558D-D	HC10008090
QX04		4822 209 17381	IC PQ05RF2 REQ.5V 2A	HC31905320
QX05 ∫ QX08		4822 130 43818	TRS. 2SC2878 A BRANK	HT328782A0
QX09		4822 209 83631	IC NJM4558DD	HC10008090
QX70		4822 130 61892	TRS. 2SD2144S U V	HT421442A0
			PX04-MISCELLANEOUS	
LH01		4822 157 62898	CHOKE COIL 180µH J	LC11843800
LH03		4822 157 62898	CHOKE COIL 180µH J	LC11843800
LH05		4822 157 62898	CHOKE COIL 180µH J	LC11843800
LH15			JUMPER	75060501P0
LH16			JUMPER	75060501P0
LX01		4822 157 60122	CHOKE COIL 4.7µH J	LC14723800
			PX54-AUX-IN MONI-OUT REMOTE CIRCUIT BOARD	
			PX54-CAPACITORS (COMMON)	
C***			HIGH DIELECTRIC CONSTANT CER. CAPACITOR ±10% 50V : CX51-CX55	
			PX54-RESISTORS (COMMON)	
R***			CARBON FILM FIXED RES. ±5% 1/6W : RX51-RX54	
			PX54-MISCELLANEOUS	
JX51		4822 265 11573	TERMINAL MONI-OUT AUX-IN	YT02041230
JX52		4822 265 10684	TERMINAL SUB WOOFER RCA-1PIN	YT02011020
LX51 ∫ LX55		4822 157 62908	CHOKE COIL 2.2µH J	LC12223800

Service Manual

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LS2021 F,K,KK,U
Speaker System

(VERS. :VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, /X : EUROPE)

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
LS01		4822 240 10354	LOUDSPEAKER, TWEETER	✱QK000030R
LS02		4822 240 10355	LOUDSPEAKER, WOOFER	✱QK000040R
LS03		4822 265 11569	SPEAKER TERMINAL	✱YT001430R

Please use this service manual with referring to the user guide (D.F.U.) without fail.

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system LS2021