

MINI COMPONENT SYSTEM CRX-E200

RX-E200/NX-E200

SERVICE MANUAL

RX-E200

CRX-E200 is composed of RX-E200 and CDX-E200.

This is a service manual for the RX-E200 (including NX-E200).

For service manuals of CDX-E200, please refer to the service manuals with the following publication numbers :

CDX-E200

100745

IMPORTANT NOTICE

This manual has been provided for the use of authorized YAMAHA Retailers and their service personnel.

It has been assumed that basic service procedures inherent to the industry, and more specifically YAMAHA Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components, and failure of the product to perform as specified. For these reasons, we advise all YAMAHA product owners that any service required should be performed by an authorized YAMAHA Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of YAMAHA are continually striving to improve YAMAHA products. Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and part replacement. Recheck all work before you apply power to the unit.

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This Service Manual uses recycled paper.

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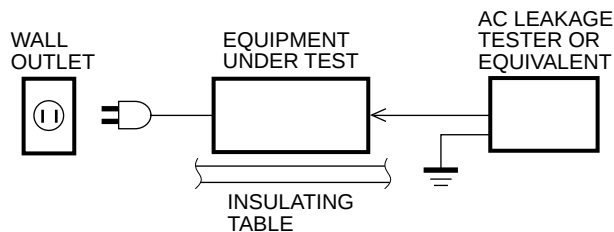


YAMAHA

YAMAHA CORPORATION
P.O.Box 1, Hamamatsu, Japan

■ TO SERVICE PERSONNEL

1. Critical Components Information.
Components having special characteristics are marked $\triangle$ and must be replaced with parts having specifications equal to those originally installed.
 2. Leakage Current Measurement (For 120V Models Only).
When service has been completed, it is imperative to verify that all exposed conductive surfaces are properly insulated from supply circuits.
- Meter impedance should be equivalent to 1500 ohm shunted by 0.15 μ F.



- Leakage current must not exceed 0.5mA.
- Be sure to test for leakage with the AC plug in both polarities.

WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

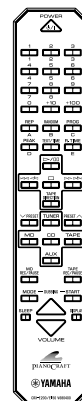
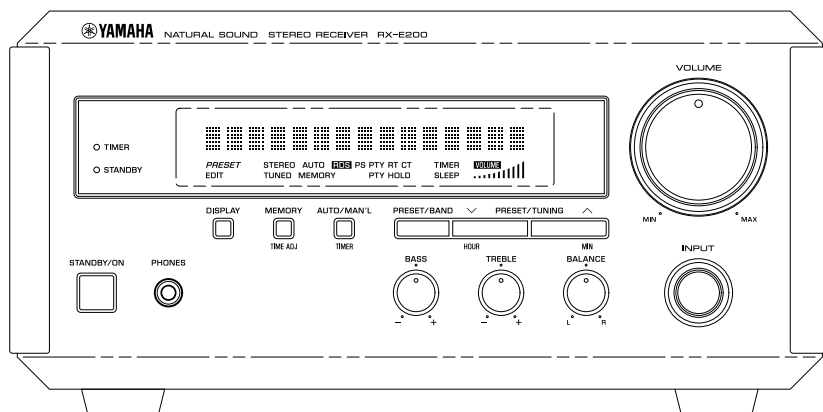
DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHATSOEVER!

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

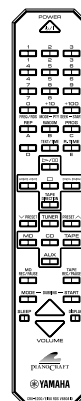
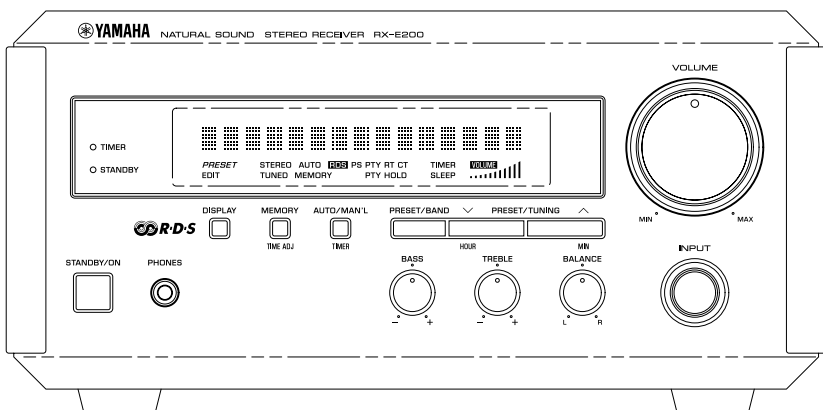
If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

■ FRONT PANELS

▼ U, C, R, A models

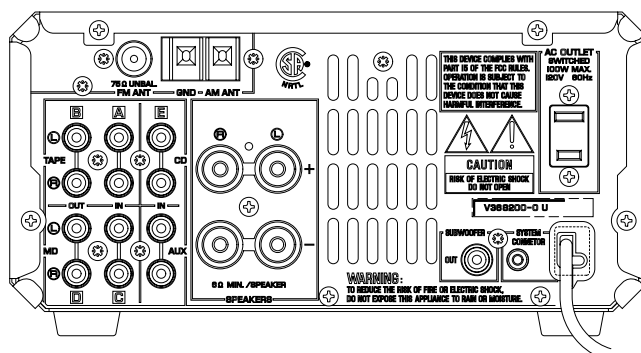


▼ B, G models

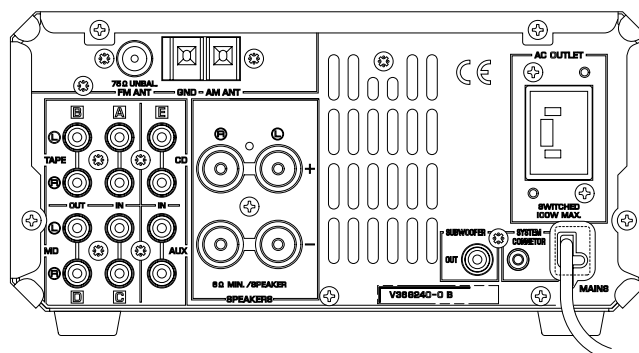


REAR PANELS

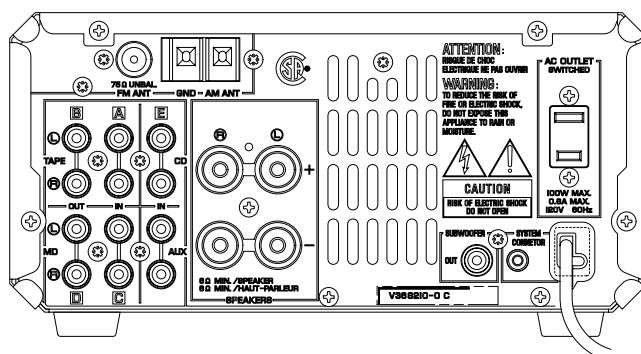
U model



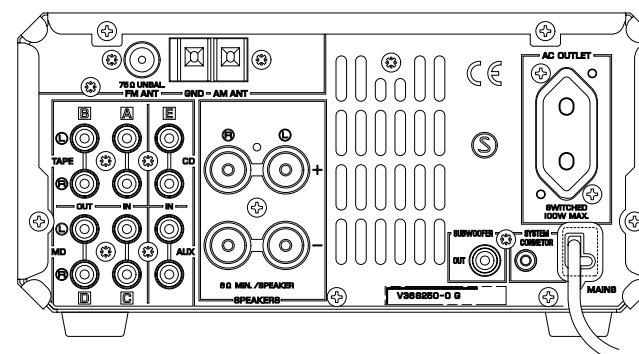
B model



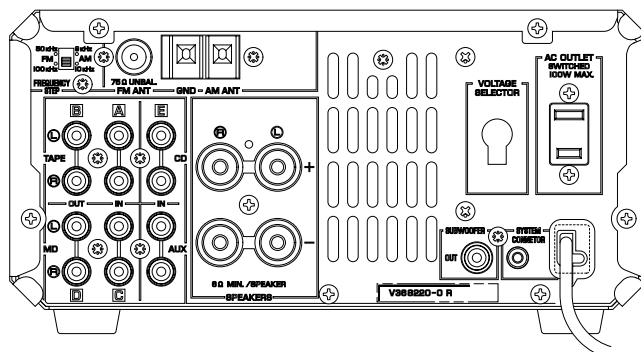
C model



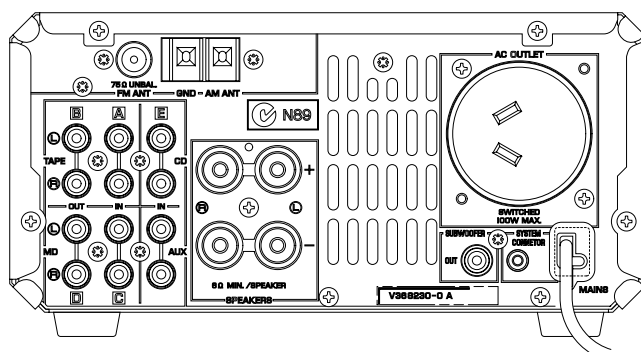
G model



R model



A model



SPECIFICATIONS

AUDIO SECTION

Minimum RMS Output Power per Channel

20Hz to 20kHz, 0.1% THD, 6Ω	
U, C, A, B, G models	40W + 40W
1kHz, 0.07% THD, 6Ω	50W + 50W

Maximum Power per Channel (EIAJ)

1kHz, 10% THD, 6Ω (R model only)	60W + 60W
----------------------------------	-----------

Dynamic Power per Channel (IHF)

8Ω	50W + 50W
6Ω	65W + 65W
4Ω	75W + 75W
2Ω	80W + 80W

DIN Standard Output Power per Channel

1kHz, 0.7% THD, 4Ω (G model only)	60W + 60W
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Dynamic Headroom (6Ω)

U, C, models	1.0dB
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IEC Power

1kHz, 0.04% THD, 6Ω (G model only)	50W + 50W
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Power Band Width

0.1% THD, 30W/6Ω	10Hz to 50kHz
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Damping Factor

20Hz to 20kHz, 6Ω	60 or more
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Input Sensitivity/Impedance

CD, etc	150mV/47kΩ
---------	------------

Maximum Input Signal Level (1kHz, 0.5% THD)

CD, etc	3.0V
---------	------

Output Level/Impedance

REC OUT	150mV/1.2kΩ
SUB WOOFER (50Hz)	2V/730Ω

Headphone Jack Rated Output/Impedance

CD, etc 1kHz, 150mV, 6Ω	0.43V/330Ω
-------------------------	------------

Frequency Response (20Hz to 20kHz)

CD, etc	0±0.5dB
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Total Harmonic Distortion (20Hz to 20kHz)

CD, etc to MAIN SP OUT (20W/6Ω)	0.04%
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Signal-to-Noise Ratio (IHF-A-Network)

CD, etc, Input Shorted (150mV)	93dB
--------------------------------	------

Residual Noise (IHF-A-Network)

SP OUT	100μV
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Channel Separation (Vol. -30dB)

CD, etc, Input 5.1kΩ Shorted, 1kHz/10kHz	60dB/45dB
--	-----------

Tone Control Characteristics

BASS : Boost/cut	±10dB (50Hz)
Turnover Frequency	350Hz
TREBLE : Boost/cut	±10dB (20kHz)
Turnover Frequency	3.5kHz

Filter Characteristics

SUB WOOFER (L.P.F.)	fc = 100Hz, 6dB/oct.
---------------------	----------------------

TUNER SECTION

Tuner Output Level

FM (1kHz)	
100% mod. U, C, R models	500mV
40kHz Dev. A, B, G models	270mV
AM (30% mod., 1kHz)	150mV

FM SECTION

Tuning Range

U, C models	87.5 to 107.9MHz
A, B, G models	87.50 to 108.00MHz
R model	87.5 to 108.0/87.50 to 108.00MHz

Usable Sensitivity (75 Ω)

Mono (S/N 30dB) U, C, R models	1.5μV
DIN, Mono (S/N 26dB) A, B, G models	1.8μV

Alternate Channel Selectivity

U, C, R models	75dB
----------------	------

Selectivity (two signals, 40kHz Dev.)

A, B, G models	55dB
----------------	------

Signal-to-Noise Ratio

Mono/Stereo (IHF)	
U, C, R models	77/71dB
Mono/Stereo (DIN-weighted, 40kHz Dev.)	
A, B, G models	71/65dB

Harmonic Distortion

Mono/Stereo (1kHz)	0.5/1.0%
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Frequency Response

20Hz to 15kHz	0 ± 1.5dB
---------------	-----------

Stereo Separation

1kHz	40dB
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AM SECTION

Tuning Range

U, C models	530 to 1710kHz
A, B, G models	531 to 1611kHz
R model	530 to 1710/531 to 1611kHz

Usable Sensitivity

	300μV/m
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Signal-to-Noise Ratio

	50dB
--	------

SPEAKER SECTION (NX-E200)

Type

2way Bass-reflex Magnetic Shielding Type Driver

Woofer	13cm (5-1/8") Cone Type
Tweeter	2.5cm (1") Dome Type

Frequency Response

55Hz to 28kHz

Impedance

6Ω

Nominal Input

60W

Maximum Input

110W

Sensitivity

87dB/2.83V, 1m

Crossover Frequency

3kHz

Input Terminal

Screw/Banana Type

GENERAL

Power Supply

U, C models	AC 120V, 60Hz
A model	AC 240V, 50Hz
B, G models	AC 230V, 50Hz
R model	AC 110/120/220/240V, 50/60Hz

Power Consumption

U, C models	110W
R, A, B, G models	100W

Standby Power Consumption

U, C models	1.3W
R, A, B, G models	1.4W

AC Outlets

Switched x 1 100W max

Dimensions (W x H x D)RX-E200 217 x 108 x 312mm
(8-9/16" x 4-1/4" x 12-5/16")NX-E200 186 x 300 x 222mm
(7-5/16" x 11-13/16" x 8-3/4")**Weight**

RX-E200 4.5 kg (9 lbs. 14 oz)

NX-E200 4.0 kg (8 lbs. 13 oz)

Finish

RX-E200 U, C, R, A, B, G models Gold color

RX-E200 U, B, G models Silver color

NX-E200 High Gloss Piano Finish

Accessories

AM loop antenna x 1

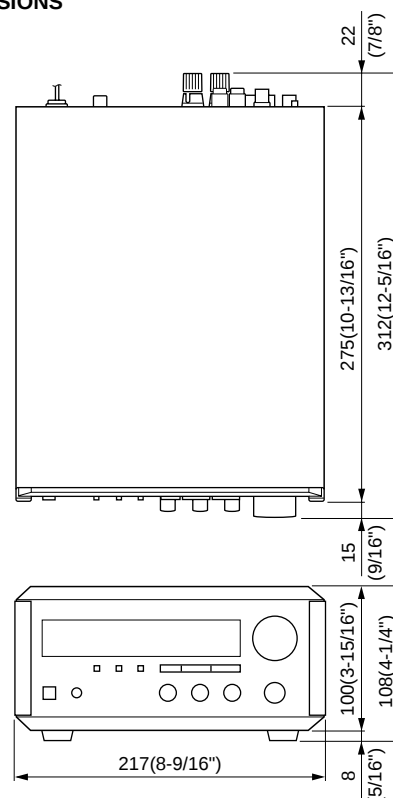
Indoor FM antenna x 1

Remote Control Transmitter x 1

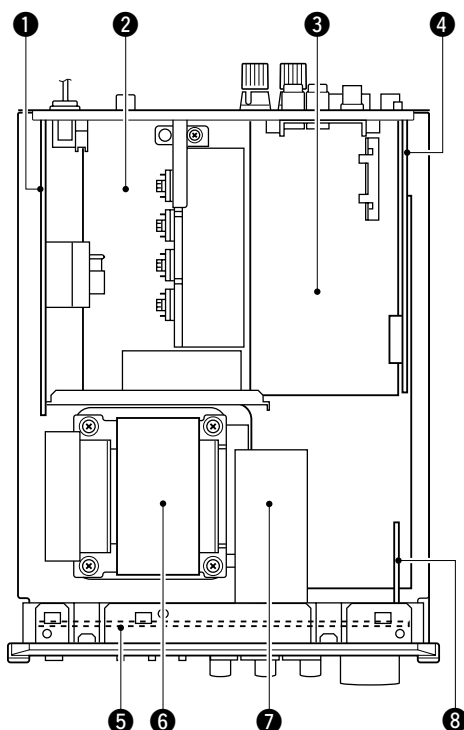
Battery (size "UM-4E", "R03") x 4

Speaker Cord (4m) x 2

* Specifications subject to change without notice.

U *USA model***C** *Canadian model***A** *Australian model***B** *British model***G** *European model***R** *General model***● DIMENSIONS**

Units : mm (inch)

■ INTERNAL VIEW

- ① P. C. B. MAIN (6)
- ② P. C. B. MAIN (1)
- ③ P. C. B. TUNER
- ④ P. C. B. MAIN (2)
- ⑤ P. C. B. OPERATION
- ⑥ POWER TRANSFORMER
- ⑦ P. C. B. MAIN (4)
- ⑧ P. C. B. MAIN (3)

■ DISASSEMBLY PROCEDURES (Remove parts in disassembly order as numbered.)

1. Removal of Top Cover

- a. Remove 4 screws (①) and 4 screws (②) in Fig. 1.

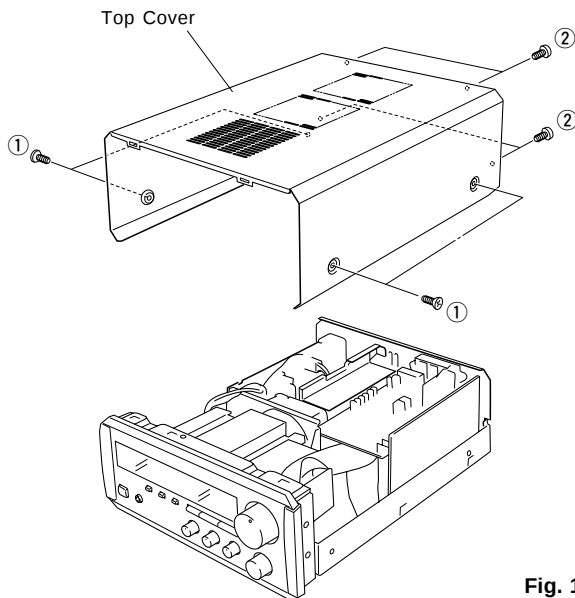


Fig. 1

2. Checking the Amp Unit and replacing parts

- a. Disconnect the power plug from AC outlet.
- b. Remove 2 screws (③) attaching the rear panel to the chassis. (Fig. 2)
- c. Disconnect the connector for the fan.
- d. Remove 3 screws (④, ⑤) attaching the fan to the chassis and then remove the fan. (Fig. 2)
- e. Remove 3 screws (⑥) attaching the Main P.C.B. to the Heat Sink. (Fig. 2)
- f. Loosen the wiring harness.
- g. Move the Amp Unit toward the rear. (Fig. 2)
- h. As shown in Fig. 3, set the Amp Unit upright.
- i. Fit insulating material (thick paper, etc.) to prevent the chassis and the transformer from contacting the Main P.C.B..
- j. Using a wire, connect the pin jack ground to the chassis.
(If they are left unconnected, the grounding remains open and the unit fails.)
- k. Connect the power plug and turn on the power switch.
- l. When replacing parts, remove 5 screws (⑦, ⑧) fixing the P.C.B. Tuner and then remove the P.C.B. Tuner. (Fig. 3)

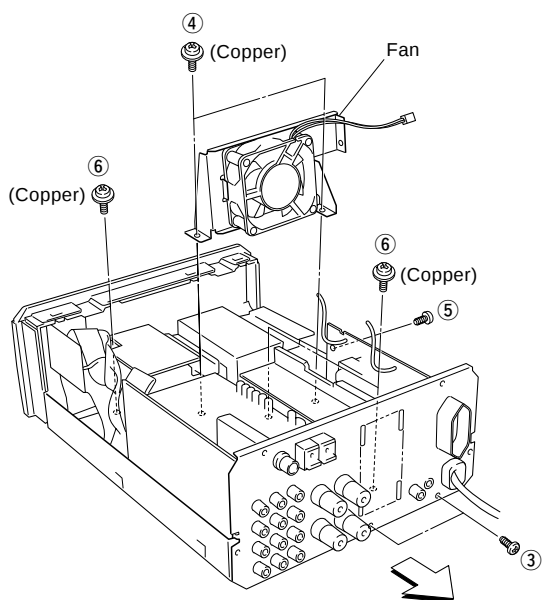


Fig. 2

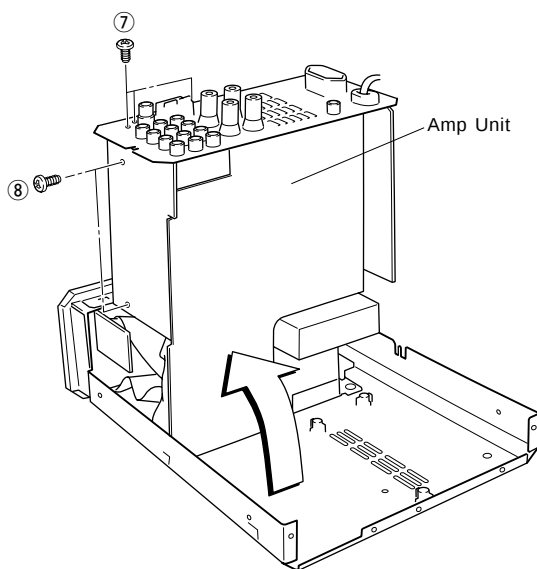
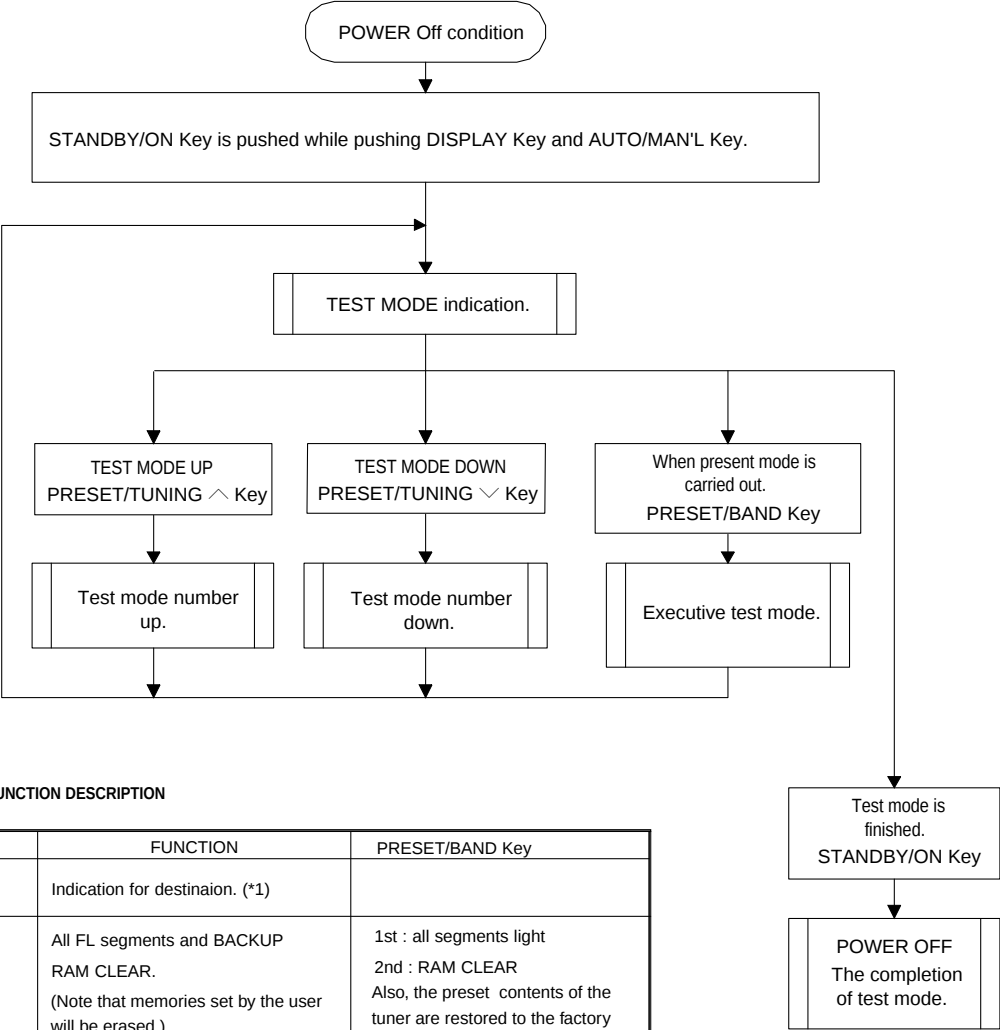


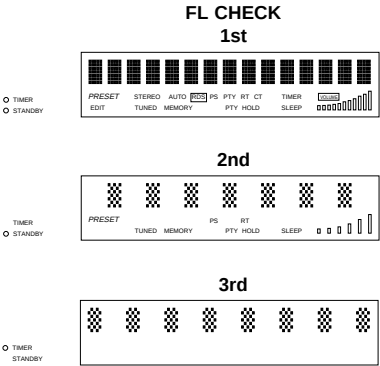
Fig. 3

■ TEST MODE



TEST PROGRAM MODE FUNCTION DESCRIPTION

DISPLAY	FUNCTION	PRESET/BAND Key
01 DEST-B,G	Indication for destinaion. (*1)	
02 FL+CLEAR	All FL segments and BACKUP RAM CLEAR. (Note that memories set by the user will be erased.)	1st : all segments light 2nd : RAM CLEAR Also, the preset contents of the tuner are restored to the factory preset ones.
03 FL CHECK	All FL segments and circuit board short circuit inspection.	1st : all segments light 2nd : Even-numbered segments and even numbered digits are turned on. 3rd : Odd -numbered segments and odd-numbered digits are turned on.
04 FAN[Stop]	Cooling fan drive OUT	Stop/Low/High
05 Ver-Z1.02	Version information of the microcomputer software. (*2)	It is changed to the date indication.
05'99.05.28	The date of the microcomputer software. (*2)	It is changed to version indication.
06 SUM[5b4d]	The calculation of SUM is done and indicated after that. (*2)	Re-calculation



(*1)

DESTINATION	R (AM9k/FM:50k)	R (AM10k/FM100k)	A	B,G	U,C	J
Display	R9k	R10k	A	B, G	U, C	J

(*2) Contents of indication change by the microcomputer software.

● FACTORY PRESET

BAND	MARKETS	PRESET No.							
		1	2	3	4	5	6	7	8
FM (MHz)	U, C, R (100k/10k)	98.1	95.1	87.5	101.5	107.9	88.1	106.1	107.9
	A, B, G, R, (50k/9k)	98.10	95.10	87.50	101.50	108.00	88.10	106.10	107.90
AM (kHz)	U, C, R (100k/10k)	630	1080	1400	530	1710	900	1350	1440
	A, B, G, R (50k/9k)	630	1080	1404	531	1611	900	1350	1440

NOTE 1) PRESET PAGE A : FM B : AM C : FM D : AM E : FM

CAUTION : When executing Test mode No. 2 RAM CLEAR, be sure to write down the preset memory contents of the tuner, using a table like the one shown below. Execution of RAM CLEAR will set the memory contents of the tuner back to the factory preset state which means that all the memories preset by the user will be erased.

Preset group	P1	P2	P3	P4	P5	P6	P7	P8
A								
B								
C								
D								
E								

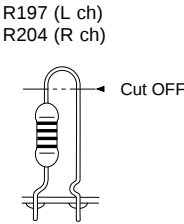
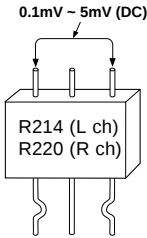
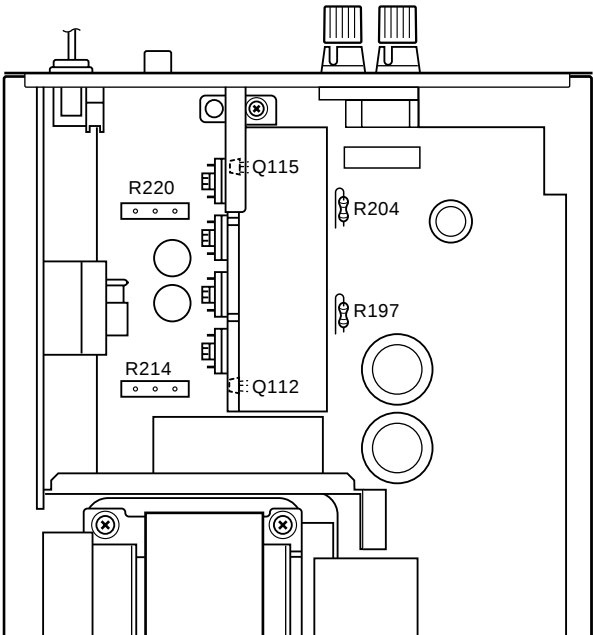
■ AMP ADJUSTMENTS

● Confirmation of Idling Current

- 1) No signal applied.
- 2) Non-loaded condition.
- 3) Aging is not necessary.

Item	Test Poin	Rating (DC)	Note
MAIN L	R214 (Between terminal)	0.1mV—5mV	If the measured voltage exceeds 5mV, cut the lead wire of R197(L ch) or R204(R ch) and then check again if each measured value satisfies the rating.
MAIN R	R220 (Between terminal)		

* Confirm that the idling current is 0.25mV — 15mV after 60 minutes.



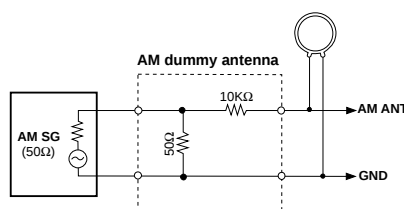
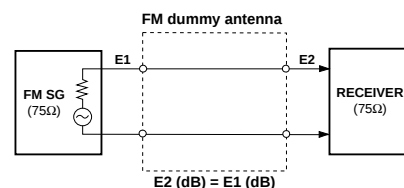
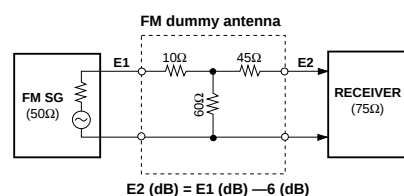
- Note)
- If R197(L ch) or R204(R ch) have already been cut off and idling current does not flow, reconnect R197(1kΩ) or R204(1kΩ).
 - Q112 and Q115 are transistors for temperature correction. Apply silicone grease to the contact surface with the heat sink.

TUNER ADJUSTMENTS

Measuring Instruments

FM signal generator (FM SG)
 Stereo signal generator (SSG)
 AM signal generator (AM SG)
 Distortion meter (DIST. M)
 AC voltmeter (ACVM)
 DC voltmeter (DCVM)
 Oscilloscope
 Low pass filter (YLF-15, $f_c=15\text{kHz}$)
 Oscillator

Dummy antenna



FM Adjustment

Before Adjustment

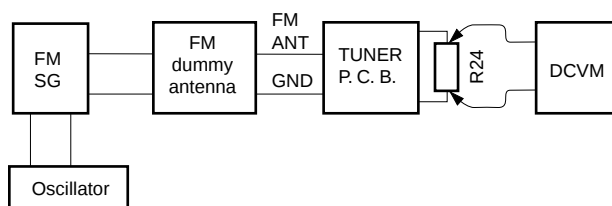
- For dB, $1\mu\text{V}=0\text{dB}\mu$
Example : $60\text{dB}\mu=1\text{mV}$
- 100% modulation means that the frequency deviation is $\pm 75\text{kHz}$.

- Install the Matching Transformer and connect FM SG.
- Set each switch to the following position unless otherwise specified.

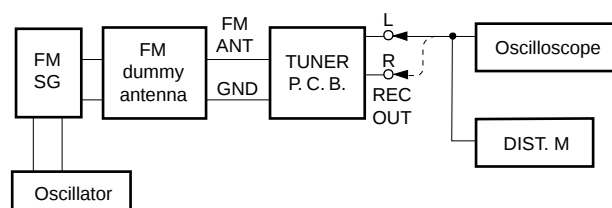
INPUT SELECTOR TUNER
 TUNING MODE AUTO

Connection diagram (Measuring instruments)

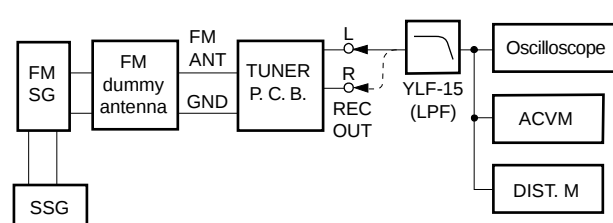
1) Discriminator balance adjustment



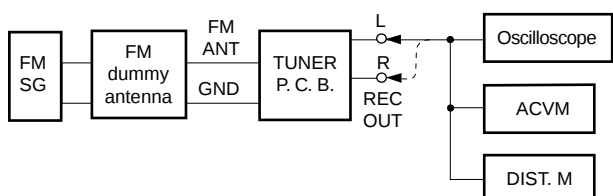
2) Monaural distortion verification



3) Stereo distortion verification/separation verification



4) Sensitivity verification



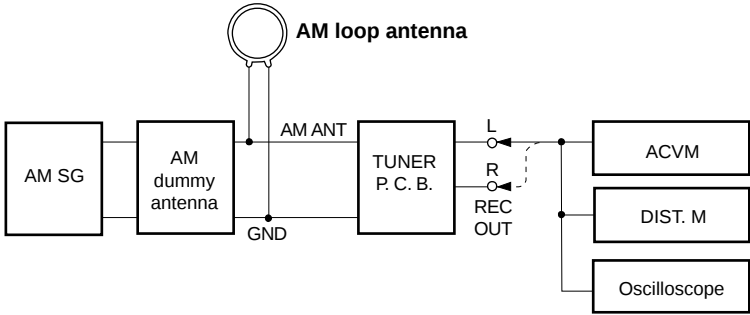
* : Execution of FACTORY PRESET (Refer to page 7.) will facilitate setting reception frequency for adjustment.

Step	Adjustment item	Signal (ANT IN)	Reception frequency	Adjusted point	Test point	Rating
1	Adjustment of discriminator balance	FM ANT (75Ω) 98.1MHz ± 5kHz 70dBμ MONO 1kHz, 100% modulation	98.1MHz * (A-1)	L10	Both ends of R24 (Between pin 26 and pin 28 of IC1)	DC 0V±50mV
2	Verification of monaural distortion	FM ANT (75Ω) 98.1MHz 70dBμ MONO 1kHz, 100% modulation	98.1MHz * (A-1)		REC OUT L, R	– 36dB or less
3	Verification of stereo distortion	FM ANT (75Ω) 98.1MHz 70dBμ Stereo L or R 1kHz, 100% modulation	98.1MHz * (A-1) Tuning mode should be AUTO.		REC OUT L, R	– 29dB or less • STEREO indicator should light.
4	Verification of sensitivity	FM ANT (75Ω) 88.1MHz 98.1MHz 106.1MHz MONO 1kHz Modulation off	88.1MHz * (A-6) 98.1MHz * (A-1) 106.1MHz * (A-7)		ANT (75Ω)	1) Set the tuning mode to MAN'L MONO. (Muting OFF) 2) S/N should be 30dB at each frequency of 88.1MHz, 98.1MHz, and 106.1MHz. 3) Check to ensure that the volt- age at the ANT terminal is 6dBμ (14.25dBf) or less. (A, B, G only : 10dBμ or less)
5	Verification of Separation	FM ANT (75Ω) 98.1MHz 70dBμ Stereo L or R 1kHz, 100% modulation	98.1MHz * (A-1)		REC OUT L, R	22dB or more
6	Verification of auto tuning	FM ANT (75Ω) 98.1MHz 23dBμ Stereo L or R 1kHz, 30% modulation	98.1MHz			• Automatic reception should be available when the tuning key is moved UP and DOWN. • The stereo indicator should light. • Audio muting should be applied during tuning.

AM Adjustment (This should be done after FM adjustment.)

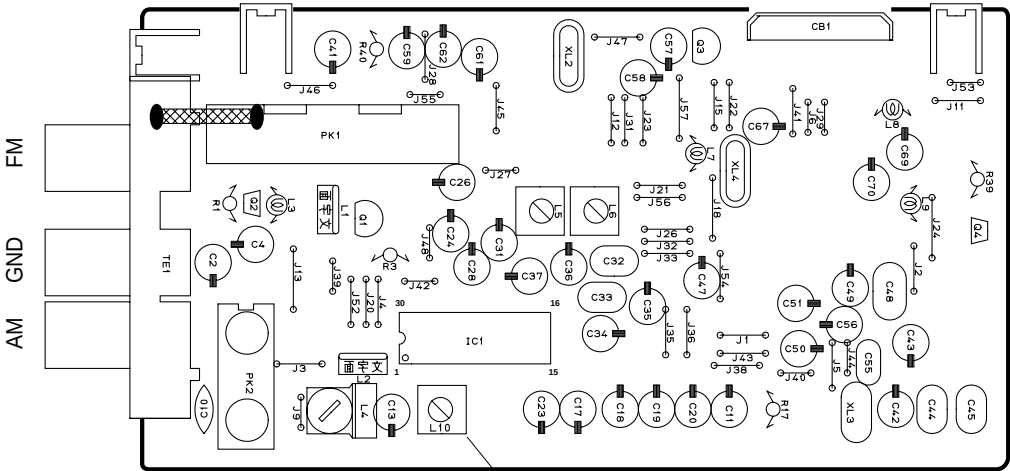
● Connection Diagram (Measuring instruments)

1) Sensitivity verification



Step	Adjustment item	Signal (ANT IN)	Reception frequency	Adjustment point	Test point	Rating
1	Verification of sensitivity	AM ANT 1080kHz 1kHz Modulation off	1080kHz * (B-2)		AM ANT	S/N should be 20dB at frequency of 1080kHz. Check to ensure that the voltage at the ANT terminal is 54dBμ or less.
2	Verification of auto tuning	AM ANT 60dBμ				Auto reception should be available when the tuning key is moved UP and DOWN.

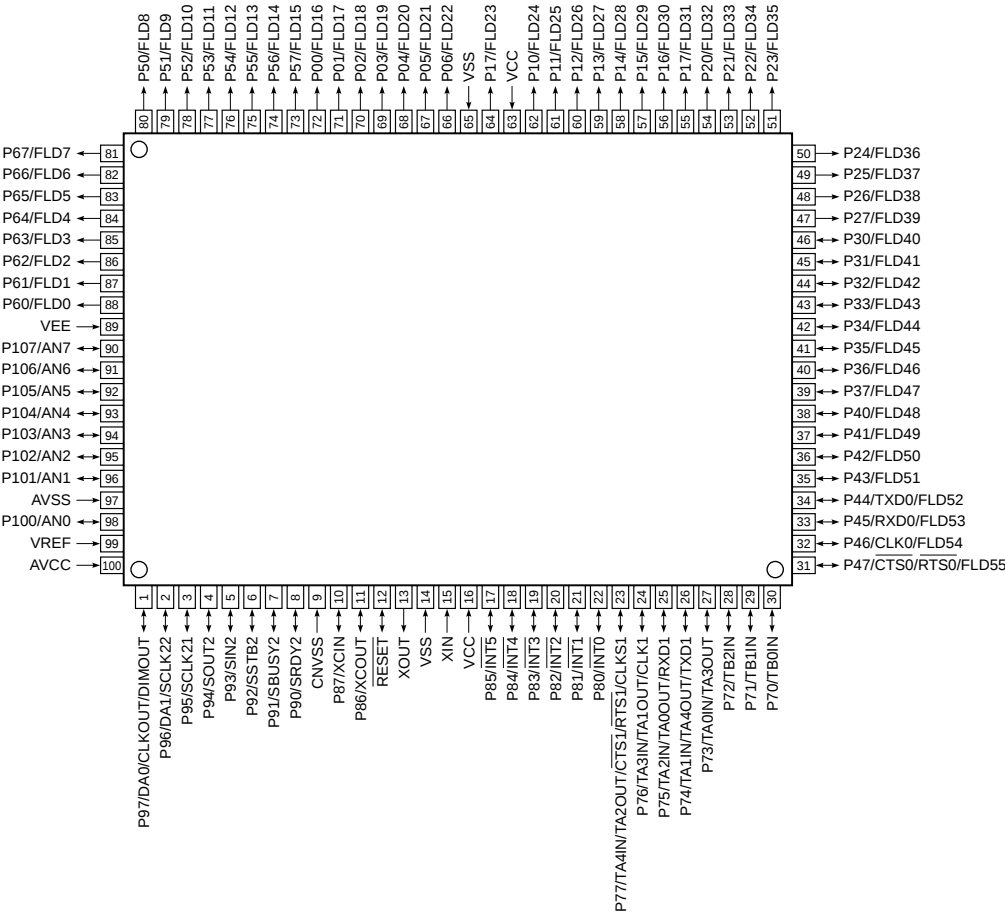
* : Execution of FACTORY PRESET (Refer to page 7.) will facilitate setting reception frequency for adjustment.



Adjustment of discriminator balance

IC DATA

IC501 : M30217M8-A100FP (16 bit μ -COM)



No.	PORT	Name	IN/OUT	Function
1	P97	Fan dr	OUT	Fan pulse OUT (for forced air cooling) [0:OFF 1:ON]
2	P96	RLY PW	OUT	Power supply relay (Power ON) OUT [0:OFF 1:ON]
3	P95	VOL DN	OUT	Motor VR DOWN OUT [1:DOWN]
4	P94	VOL UP	OUT	Motor VR UP OUT [1:UP]
5	P93	ENC B	IN	Rotary encoder-B IN [Pull-up resistor]
6	P92	ENC A	IN	Rotary encoder-A IN [Pull-up resistor]
7	P91	LED T	OUT	Timer LED OUT [0:OFF 1:ON]
8	P90	LED S	OUT	Standby LED OUT [0:OFF 1:ON]
9	CNVSS	CNVss	-	Connected to VSS(GND) via resistor(5.1k Ω)
10	P87	Xin	-	32.768KHz IN (Feedback resistor included)
11	P86	Xout	-	32.768KHz OUT (Feedback resistor included)
12	RESET	Reset	-	RESET [0:RESET]
13	XOUT	10Xout	-	10MHz OUT (Feedback resistor included)
14	VSS	Vss	-	GND
15	XIN	10Xin	-	10MHz IN (Feedback resistor included)
16	VCC	Vcc	-	Power supply +5V [Backup capacitor required]
17	P85	Sys O	OUT	System control OUT
18	P84	Sys I	IN	System control IN
19	P83	RLY SP	OUT	Speaker relay OUT [0:OFF 1:ON]
20	P82	Pro I	IN	Amplifier current detect IN (protection) [1:Abnormality exists]
21	P81	Rem	INT-IN	Remote control IN
22	P80	PD	INT-IN	Power-down DC detect IN [0:POWER DOWN]

IC501 : M30217M8-A100FP (16 bit μ -COM)

No.	PORT	Name	IN/OUT	Function
23	P77	CE	OUT	C2B(LC72131/LC72720/LC78211)CE OUT [1:DATA transmission]
24	P76	CLK	S-CLK	LC72131/LC72720/LC78211 CLK OUT (Serial I/O-1)
25	P75	DAT I	S-IN	LC72131/LC72720 DATA IN (Serial I/O-1)
26	P74	DAT O	S-OUT	LC72131/LC72720/LC78211 DATA OUT (Serial I/O-1)
27	P73	Mut A	OUT	AMP MUTE OUT [0:MUTE ON]
28	P72	Mut T	OUT	Tuner MUTE OUT (TUNER) [1:MUTE ON]
29	P71	Sta	IN	STATION IN (TUNER) [0:Station exists]
30	P70	ST/MO	IN	STEREO/MONO IN (TUNER) [0:STEREO]
31	P47	F CE	OUT	CE OUT(from built-in flush ROM to Busy OUT/EEPROM) [1:DATA transmission(EEPROM)]
32	P46	F CK	S-CLK	CLK OUT(from built-in flush ROM to CLK IN/EEPROM) (Serial I/O-0)
33	P45	F RX	S-IN	DATA IN(from DATA IN/EEPROM to built-in flush ROM) (Serial I/O-0)
34	P44	F TX	S-OUT	DATA OUT(from built-in flush ROM to DATA OUT/EEPROM) (Serial I/O-0)
35	P43	HP	IN	Head phone detect IN [0:SP 1:HP]
36	P42	DIG 16	OUT	DIGIT 16 (16G) [VEE external pull-down]
37	P41	DIG 15	OUT	DIGIT 15 (15G) [VEE external pull-down]
38	P40	DIG 14	OUT	DIGIT 14 (14G) [VEE external pull-down]
39	P37	DIG 13	OUT	DIGIT 13 (13G) [VEE external pull-down]
40	P36	DIG 12	OUT	DIGIT 12 (12G) [VEE external pull-down]
41	P35	DIG 11	OUT	DIGIT 11 (11G) [VEE external pull-down]
42	P34	DIG 10	OUT	DIGIT 10 (10G) [VEE external pull-down]
43	P33	DIG 9	OUT	DIGIT 9 (9G) [VEE external pull-down]
44	P32	DIG 8	OUT	DIGIT 8 (8G) [VEE external pull-down]
45	P31	DIG 7	OUT	DIGIT 7 (7G) [VEE external pull-down]
46	P30	DIG 6	OUT	DIGIT 6 (6G) [VEE external pull-down]
47	P27	DIG 5	OUT	DIGIT 5 (5G) [VEE external pull-down]
48	P26	DIG 4	OUT	DIGIT 4 (4G) [VEE external pull-down]
49	P25	DIG 3	OUT	DIGIT 3 (3G) [VEE external pull-down]
50	P24	DIG 2	OUT	DIGIT 2 (2G) [VEE external pull-down]
51	P23	DIG 1	OUT	DIGIT 1 (1G) [VEE external pull-down]
52	P22	SEG 1	OUT	SEGMENT 1 (P1) [VEE external pull-down]
53	P21	SEG 2	OUT	SEGMENT 2 (P2) [VEE external pull-down]
54	P20	SEG 3	OUT	SEGMENT 3 (P3) [VEE external pull-down]
55	P17	SEG 4	OUT	SEGMENT 4 (P4) (VEE internal pull-down)
56	P16	SEG 5	OUT	SEGMENT 5 (P5) (VEE internal pull-down)
57	P15	SEG 6	OUT	SEGMENT 6 (P6) (VEE internal pull-down)
58	P14	SEG 7	OUT	SEGMENT 7 (P7) (VEE internal pull-down)
59	P13	SEG 8	OUT	SEGMENT 8 (P8) (VEE internal pull-down)
60	P12	SEG 9	OUT	SEGMENT 9 (P9) (VEE internal pull-down)
61	P11	SEG 10	OUT	SEGMENT 10 (P10) (VEE internal pull-down)
62	P10	SEG 11	OUT	SEGMENT 11 (P11) (VEE internal pull-down)
63	VCC	Vcc	-	Power supply +5V [Back-up capacitor]
64	P07	SEG 12	OUT	SEGMENT 12 (P12) (VEE internal pull-down)
65	VSS	Vss	-	GND
66	P06	SEG 13	OUT	SEGMENT 13 (P13) (VEE internal pull-down)
67	P05	SEG 14	OUT	SEGMENT 14 (P14) (VEE internal pull-down)
68	P04	SEG 15	OUT	SEGMENT 15 (P15) (VEE internal pull-down)
69	P03	SEG 16	OUT	SEGMENT 16 (P16) (VEE internal pull-down)
70	P02	SEG 17	OUT	SEGMENT 17 (P17) (VEE internal pull-down)
71	P01	SEG 18	OUT	SEGMENT 18 (P18) (VEE internal pull-down)
72	P00	SEG 19	OUT	SEGMENT 19 (P19) (VEE internal pull-down)
73	P57	SEG 20	OUT	SEGMENT 20 (P20) (VEE internal pull-down)
74	P56	SEG 21	OUT	SEGMENT 21 (P21) (VEE internal pull-down)
75	P55	SEG 22	OUT	SEGMENT 22 (P22) (VEE internal pull-down)
76	P54	SEG 23	OUT	SEGMENT 23 (P23) (VEE internal pull-down)
77	P53	SEG 24	OUT	SEGMENT 24 (P24) (VEE internal pull-down)

IC501 : M30217M8-A100FP (16 bit μ -COM)

No.	PORT	Name	IN/OUT	Function
78	P52	SEG 25	OUT	SEGMENT 25 (P25) (VEE internal pull-down)
79	P51	SEG 26	OUT	SEGMENT 26 (P26) (VEE internal pull-down)
80	P50	SEG 27	OUT	SEGMENT 27 (P27) (VEE internal pull-down)
81	P67	SEG 28	OUT	SEGMENT 28 (P28) (VEE internal pull-down)
82	P66	SEG 29	OUT	SEGMENT 29 (P29) (VEE internal pull-down)
83	P65	SEG 30	OUT	SEGMENT 30 (P30) (VEE internal pull-down)
84	P64	SEG 31	OUT	SEGMENT 31 (P31) (VEE internal pull-down)
85	P63	SEG 32	OUT	SEGMENT 32 (P32) (VEE internal pull-down)
86	P62	SEG 33	OUT	SEGMENT 32 (P33) (VEE internal pull-down)
87	P61	SEG 34	OUT	SEGMENT 34 (P34) (VEE internal pull-down)
88	P60	SEG 35	OUT	SEGMENT 35 (P35) (VEE internal pull-down)
89	VEE	– VP	-	P0,P1,P5,P6 pull-down resistor voltage input [-29V]
90	P107	Audio	A-D IN	Power amplifier sound IN [0 — VREF]
91	P106	TH	A-D IN	Heat sinking plate temperature detect IN [0 — VREF]
92	P105	Pro PS	A-D IN	Power voltage detect IN (protection) [0 — VREF]
93	P104	Fan fe	A-D IN	Air cooling fan voltage detect IN [0 — VREF]
94	P103	Des	A-D IN	Destination select input (TUNER) [Pull-up at 10k Ω → VREF]
95	P102	KEY 2	A-D IN	KEY 2 input [Pull-up at 10k Ω → VREF]
96	P101	KEY 1	A-D IN	KEY 1 input [Pull-up at 10k Ω → VREF]
97	AVSS	AVss	-	Connected to VSS(GND)
98	P100	KEY 0	A-D IN	KEY 0 input [Pull-up at 10k Ω → VREF]
99	VREF	Vref	-	A-D,D-A reference voltage input [— VCC]
100	AVCC	AVcc	-	Connected to VCC terminal (+5V)

● KEY INPUT (A-D) PULL UP RESISTOR 10k Ω

Ω	0	+2k	+1.8k	+2.4k	+3.9k	+5.6k	+10k	+24k
V	0 — 0.556	— 1.111	— 1.667	— 2.222	— 2.778	— 3.333	— 3.889	— 4.444
KEY 0 (98pin)	POWER	PRESET/TUNING ∧	PRESET/TUNING ∨	NO KEY	NO KEY	NO KEY	NO KEY	NO KEY
KEY 1 (96pin)	PRESET/BAND	AUTO/MAN'L TIMER	NO KEY	NO KEY	NO KEY	NO KEY	NO KEY	NO KEY
KEY 2 (95pin)	DISPLAY	MEMORY TIME ADJ	NO KEY	NO KEY	NO KEY	NO KEY	NO KEY	NO KEY

● TUNER MARKET SELECT IN (94 pin, A-D) PULL UP RESISTOR 10k Ω

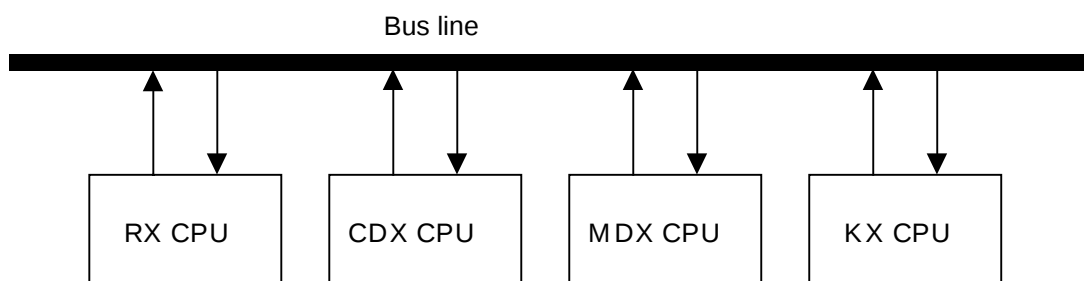
Ω	0	2k	3.9k	6.2k	10k	16k
V	0 — 0.556	— 1.111	— 1.667	— 2.222	— 2.778	— 3.333
Market	R model (50k / 9k)	R model (100k / 10k)	A model	B, G models	U, C models	J model

SYSTEM CONTROL

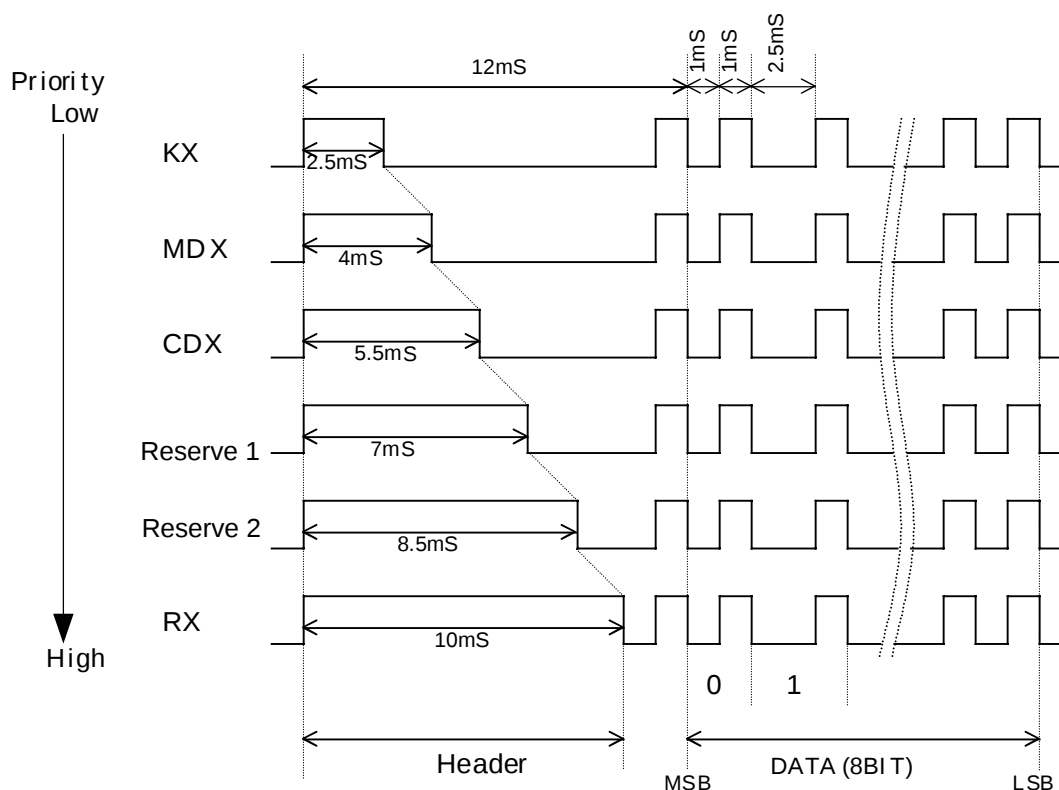
Features

- One bus line controls all the units.
- Units are connected in series, using monaural mini jacks.
- Units can be connected in any order

Description of Operation

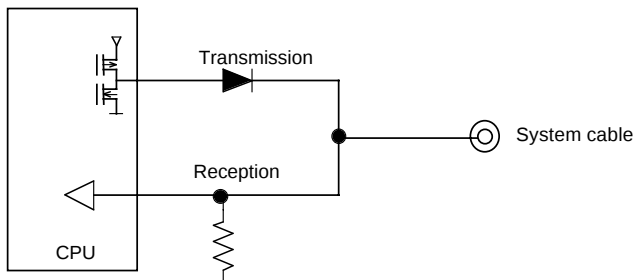


Serial Data Format



Note) When transmitting a data following the previous data, leave at least 2mS space between them.
(at least 4mS only when transmitting the CD text data)

Microprocessor peripheral circuit

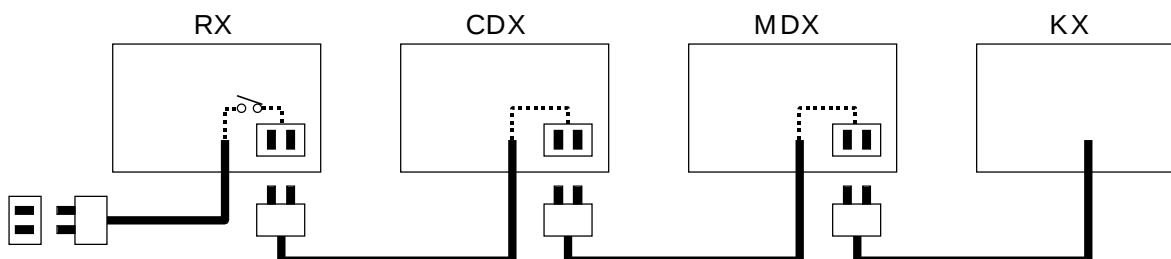


Description of data transmission and reception

- ① Although there is only 1 bus line, prepare special ports for data transmission and reception at each CPU.
- ② The bus data consists of a header and data (8 bits). CPU receives and transmits at a 0.5mS or less timer interruption.
- ③ The header is used to identify the model and to prevent butting by changing the length for each unit.
- ④ At each CPU, data transmission and reception are carried out independently. Before transmitting the data, be sure to check the reception status. If the data is being received, wait until the data has been received and then transmit the data.
- ⑤ When the data transmission is completed, each CPU also checks the received data. If the header of the received data does not agree with its own head, the data may have been overlapped by that of the other model. In such case, stop the data transmission and restart it after confirming that the the data transmission of other model has been completed. This means that the unit with a longer header has a higher priority.

Description of main system operation

1) POWER ON/OFF processing [(1) to (4)]



- The power cord of each unit is connected to the AC outlet in series and switched on and off through the RX relay.
- Turning off the RX power switch will turn off the power to other units (primary connection) but turning off the power switch of any other unit will turn off the secondary connection of each unit only (i.e., the microprocessor remains on).
- Each unit has a backup function to save the secondary connection status when unplugged (taking use of a unit alone into consideration)
- The indicators of units are turned on after a dimmer level signal is fed from RX so that they light up simultaneously when the RX power switch is turned on. However, as the indicator of a unit does not light up when the unit is used alone in this setting, the indicator is forced to turn on when 2 seconds have elapsed without a dimmer level signal being fed (and the power for the backup function is turned on). When the CD unit is used alone, the timer play mode is set regardless of the backup function status.
- Make sure that the power off processing of each unit has been completed before turning off the power by using the RX relay.

2) FUNCTION [(5) to (6)]

- No source other than that selected by the input selector will be reproduced.
- The functions are selected automatically to be suitable for the source to be reproduced.
- Selecting the functions is prohibited during recording.

3) TIMER operation [(7) to (8)]

- TIMER PLAY to start reproduction at a specified time
- TIMER REC to start recording at a specified time

4) AUTO POWER OFF [(9)]

The RX power is turned OFF when the FUNCTION setting is other than TUNER and AUX and no key operation has been made for half an hour while all the connected units are at stop.

5) AUTO POWER ON [(10)]

If the power of the connected units has been turned off while the RX power is on and when a key involving reproduction is pressed, the power is turned on automatically.

6) CD TEXT compatible

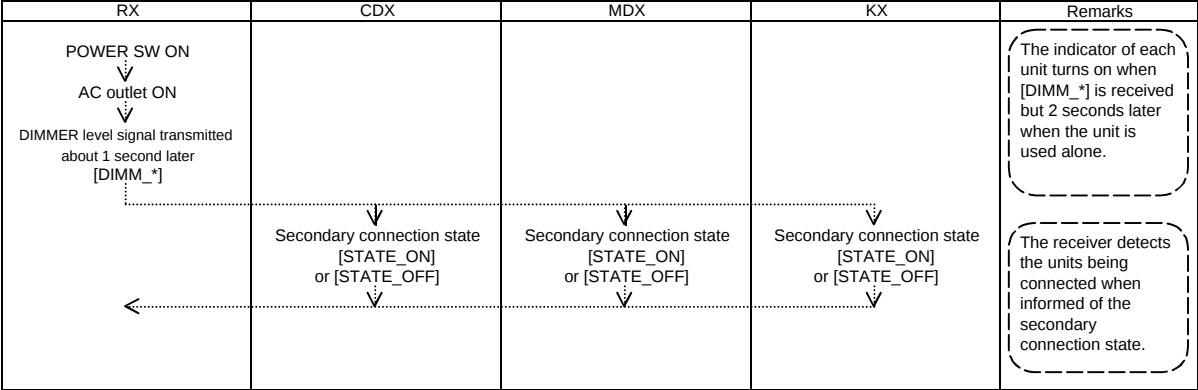
When recording the contents of the CD TEXT compatible CD into an MD in the SYNCHRONOUS or EDIT mode, the text data is recorded as well although limited up to 127 characters of the track name only for SYNCHRONOUS recording, and names of the disc, artist and track for EDIT recording.

7) Dimmer

There are 7 dimmer level settings. The dimmer level data is transmitted from the receiver when the power is turned on. The dimmer level is "0" when a unit is used alone.

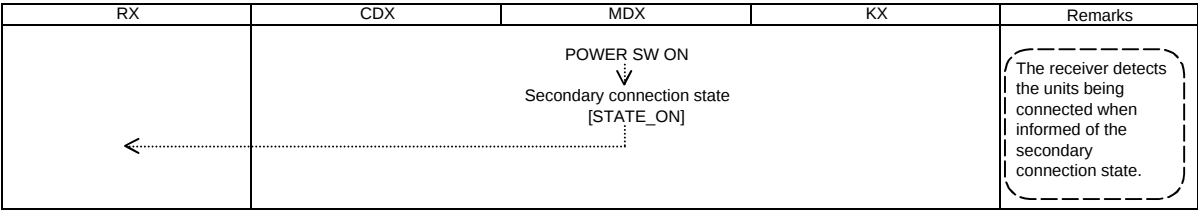
(1) POWER ON PROCESSING (Receiver)

When the power is turned on at the receiver, the relay of the AC outlet is turned on to supply power to each unit.
Each unit informs the receiver of its status when started (secondary connection status).



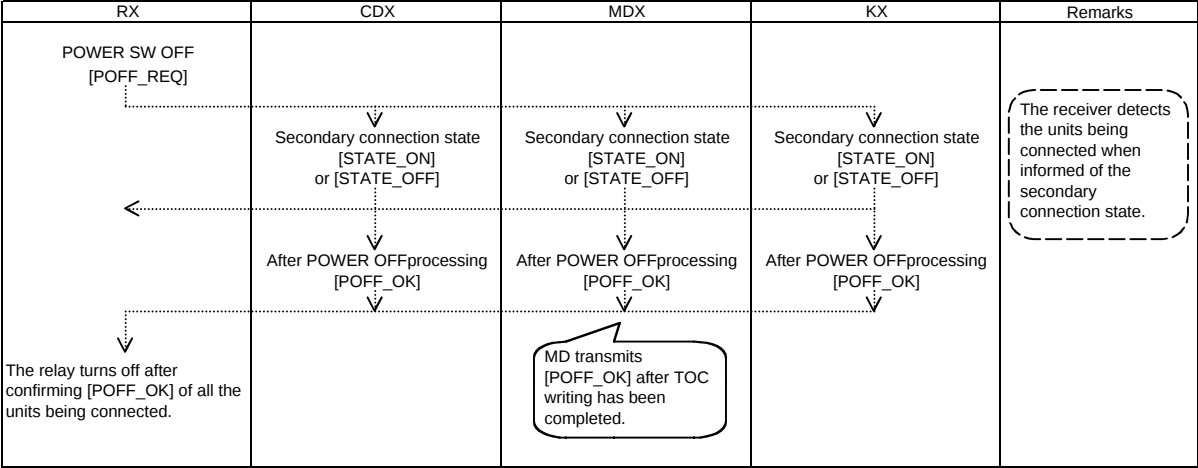
(2)POWER ON PROCESSING (except receiver)

When the power is turned on at a unit other than the receiver, the unit informs the receiver of the status then.



(3)POWER OFF PROCESSING (Receiver)

The receiver turns off the AC outlet when the power off processing of each unit has been completed.



(4) POWER OFF processing (except receiver)

When the power is turned off at a unit other than the receiver, the unit informs the receiver of the status when the power off processing has been completed.

RX	CDX	MDX	KX	Remarks
	POWER OFF ↓ After POWER OFF processing Secondary connection state [STATE_OFF]			The receiver detects the units being connected when informed of the secondary connection state.
←				

(5) FUNCTION selection

When the RX function is selected, the unit in the PLAY mode will be stopped.

RX	CDX	MDX	KX	Remarks
FUNCTION selection [FUNC_CD] or [FUNC_MD] or [FUNC_TAPE] or [FUNC_TU] or [FUNC_AUX]				When MD or TAPE is in RECORD mode, or in EDIT mode, it is prohibited to select functions.
↓	↓	↓	↓	
	Stop when FUNC≠ CD and in PLAY mode [STOP]	Stop when FUNC≠ MD and in PLAY mode [STOP]	Stop when FUNC≠ TAPE and in PLAY mode [STOP]	
←	↓	↓	↓	

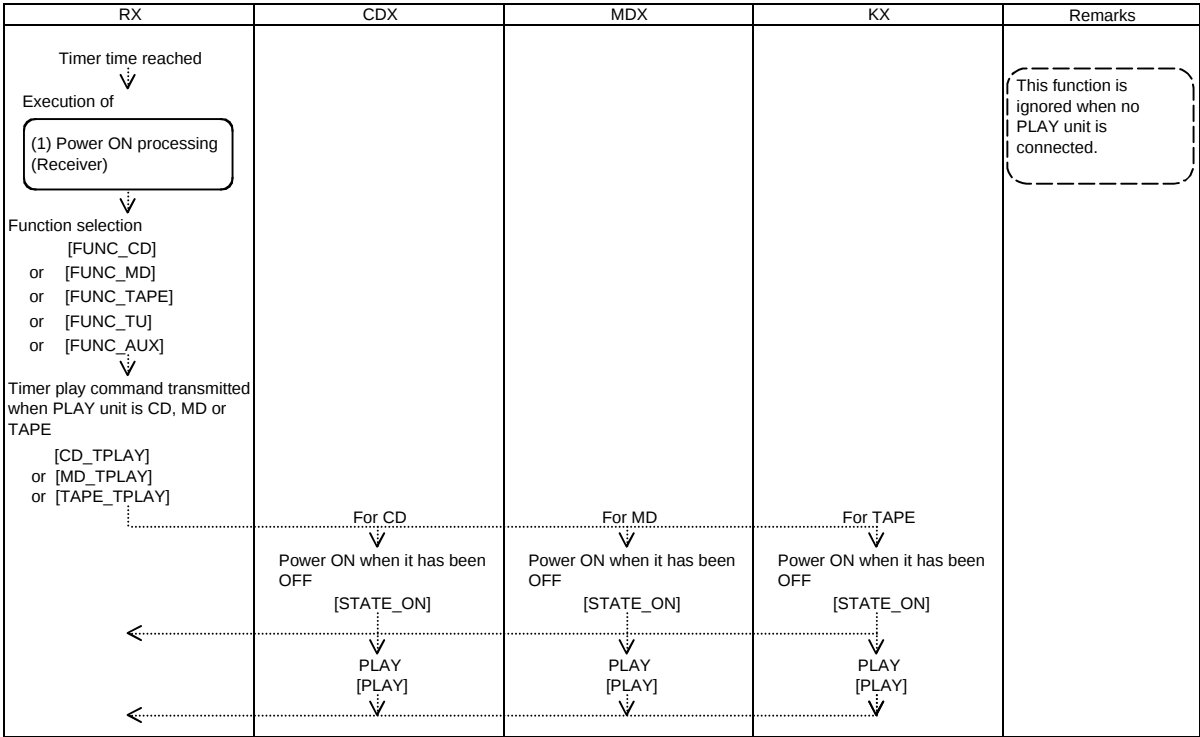
(6) AUTO FUNCTION

When each unit is set to the PLAY mode, the receiver selects the function to be suitable for that.

RX	CDX	MDX	KX	Remarks
	PLAY START [PLAY]	PLAY START [PLAY]	PLAY START [PLAY]	
↓	↓	↓	↓	
When FUNC≠ PLAY FUNCTION selection [FUNC_CD] or [FUNC_MD] or [FUNC_TAPE] or [FUNC_TU] or [FUNC_AUX]				
↓	↓	↓	↓	
	Stop when FUNC≠ CD and in PLAY mode [STOP]	Stop when FUNC≠ MD and in PLAY mode [STOP]	Stop when FUNC≠ TAPE and in PLAY mode [STOP]	
←	↓	↓	↓	Same function as (5) FUNCTION selection.

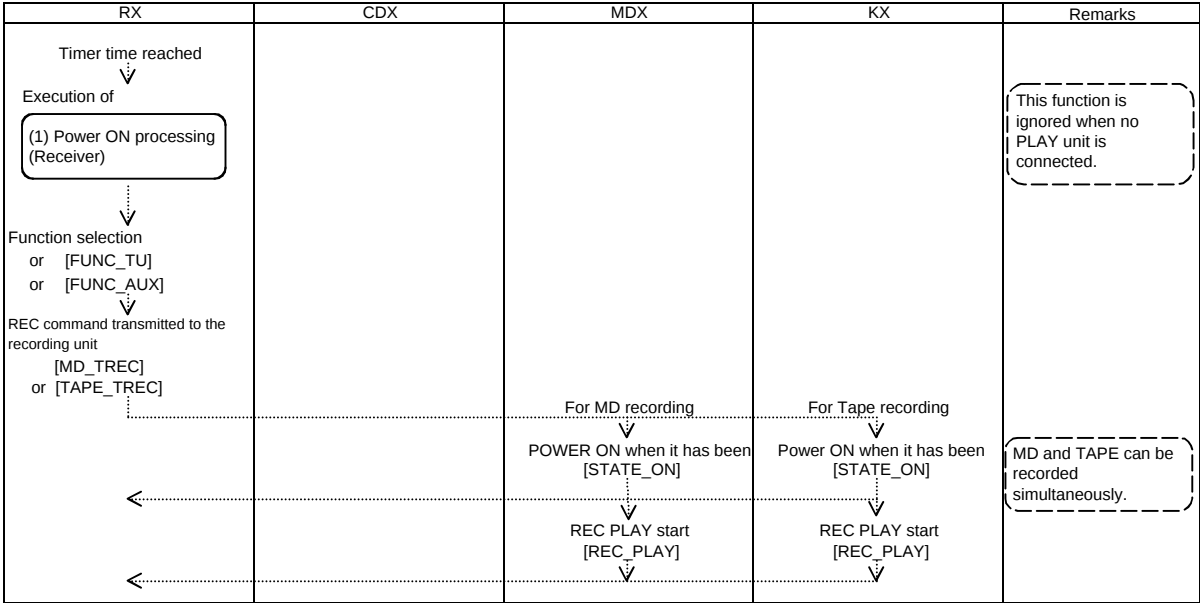
(7)TIMER PLAY

Timer play by built-in timer



(8)TIMER REC

Timer recording by built-in timer



The receiver turns off the power when the unit is left at stop for half an hour without any operation.



(10)AUTO POWER ON

Function to turn ON the power without using the power switch on the unit other than the receiver

RX	CDX	MDX	KX	Remarks
	Auto power ON applicable key input ↓ When in the power OFF state Secondary connection state [STATE_ON] ↓ Operation according to the input key	Auto power ON applicable key input ↓ When in the power OFF state Secondary connection state [STATE_ON] ↓ Operation according to the input key	Auto power ON applicable key input ↓ When in the power OFF state Secondary connection state [STATE_ON] ↓ Operation according to the input key	

System Control Bus Data Table

FUNCTION		RX	CODE	CDX	CODE	MDX	CODE	KX	CODE
Secondary connection ON				STATE_ON	01	STATE_ON	01	STATE_ON	01
Secondary cary connection OFF				STATE_OFF	02	STATE_OFF	02	STATE_OFF	02
Power OFF request		POFF_REQ	D0						
End of power OFF processing				POFF_OK	03	POFF_OK	03	POFF_OK	03
STATE request		STATE_REQ	D1						
Auto power OFF request				APOFF_REQ	04	APOFF_REQ	04	APOFF_REQ	04
Auto power OFF cancel				APOFF_CL	05	APOFF_CL	05	APOFF_CL	05
Timer operation	Timer PLAY request(CD)	CD_TPLAY	D2						
	Timer PLAY request(MD)	MD_TPLAY	D3						
	Timer PLAY request(TAPE)	TAPE_TPLAY	D4						
	Timer REC request(MD)	MD_TREC	D5						
	Timer REC request(TAPE)	TAPE_TREC	D6						
FUNCTION selection		FUNC_CD	D7						
		FUNC_MD	D8						
		FUNC_TAPE	D9						
		FUNC_TU	DA						
		FUNC_AUX	DB						
PLAY operation				PLAY	06	PLAY	06	PLAY	06
STOP operation				STOP	07	STOP	07	STOP	07
PAUSE				PAUSE	08	PAUSE	08		
REC PAUSE operation						REC_PAUSE	09	REC_PAUSE	09
REC PLAY operation						REC_PLAY	0A	REC_PLAY	0A
Dimmer level	0	DIMM_0	E0						
	-1	DIMM_1	E1						
	-2	DIMM_2	E2						
	-3	DIMM_3	E3						
	-4	DIMM_4	E4						
	-5	DIMM_5	E5						
	-6	DIMM_6	E6						
EDIT related operation	EDIT mode	EDIT_C→T	EA						
		EDIT(TR1) C→T	EB						
		EDIT_C→M	EC						
		EDIT(TR1) C→M	ED						
		EDIT_M→T	EE						
		EDIT_T→M	EF						
	Track no change			TNO_CHG	0B	TNO_CHG	0B		
	"A" side tape end							TAPE_END	0B
	CD open wait			OPEN_WAIT	0C				
	Disc name end			DNAME_STAT	10				
CD text related operation	Disc name end			DNAME_END	11				
	Artist name start			ANAME_STAT	12				
	Artist name end			ANAME_END	13				
	Track name start			TNAME_STAT	14				
	Track name end			TNAME_END	15				
	Text data protect			PROTECT	16				
	Reception OK					GET_OK	0C		
	Reception NG					GET_NG	0D		
	Text data			ASCII_CODE	20 7F				
	Number of characters(0 to127)			COUNT	80 FF				

Function		RX	CODE	CDX	CODE	MDX	CODE	KX	CODE
Remote control	CD	CD_STOP	80						
		CD_PLAY/PAUSE	81						
		CD_EJECT	82						
		CD_SKIP+	83						
		CD_SKIP-	84						
		SEARCH+	85						
		SEARCH-	86						
		SEACH_END	87						
		CD_RANDOM	88						
		CD_TIME	89						
		CD_PRG	8A						
		CD_RPT	8B						
		TAPE	8C						
		PEAK SEARCH	8D						
		CD_0	90						
		CD_1	91						
		CD_2	92						
		CD_3	93						
		CD_4	94						
		CD_5	95						
		CD_6	96						
		CD_7	97						
		CD_8	98						
		CD_9	99						
		CD_10	9A						
	MD	MD_STOP	A0						
		MD_PLAY/PAUSE	A1						
		MD_EJECT	A2						
		MD_SKIP+	A3						
		MD_SKIP-	A4						
		SEARCH+	A5						
		SEARCH-	A6						
		SEACH_END	A7						
		MD_RANDOM	A8						
		MD_TIME	A9						
		MD_PRG	AA						
		MD_RPT	AB						
		MD_REC PAUSE	AC						
		MD_0	B0						
		MD_1	B1						
		MD_2	B2						
		MD_3	B3						
		MD_4	B4						
		MD_5	B5						
		MD_6	B6						
		MD_7	B7						
		MD_8	B8						
		MD_9	B9						
		MD_10	BA						
		MD +100	BB						
	TAPE	TAPE_STOP	C0						
		TAPE_PLAY	C1						
		TAPE_EJECT	C2						
		TAPE_FF	C3						
		TAPE_REW	C4						
		TAPE_PAUSE	C5						
		TAPE_DIR	C6						

Reception status of operation switches during recording

(*=AUX or TUNER)

Unit	SW	EDIT or EDIT(TR-1) RECORDING				SYNCHRONOUS or MANUAL RECORDING							
		C→T	C→M	M→T	T→M	C→T	C→M	M→T	T→M	C→T,M	*→M	*→T	*→T,M
RX	POWER	O	O	O	O	O	O	O	O	O	O	O	O
	FUNCTION	X	X	X	X	X	X	X	X	X	X	X	X
CD	POWER	O	O	O	O	O	O	O	O	O	O	O	O
	EJECT	X	X	O	O	O	O	O	O	O	O	O	O
	PLAY	X	X	X	X	O	O	X	X	O	X	X	X
	STOP	O	O	X	X	O	O	X	X	O	X	X	X
	SKIP	X	X	X	X	O	O	X	X	O	X	X	X
	SEARCH	X	X	X	X	O	O	X	X	O	X	X	X
	REC	X	X	X	X	O	O	X	X	O	X	X	X
MD	POWER	O	O	O	O	O	O	O	O	O	O	O	O
	EJECT	O	X	X	X	O	O	O	O	O	O	O	O
	PLAY	X	X	X	X	X	X	O	X	X	X	X	X
	STOP	X	O	O	O	X	O	O	O	O	O	X	O
	SKIP	X	X	X	X	X	X	O	X	X	X	X	X
	SEARCH	X	X	X	X	X	X	O	X	X	X	X	X
	REC	X	X	X	X	X	O	X	O	O	O	X	O
TAPE	POWER	O	O	O	O	O	O	O	O	O	O	O	O
	EJECT	X	O	X	X	O	O	O	O	O	O	O	O
	PLAY	X	X	X	X	X	X	X	O	X	X	X	X
	STOP	O	O	O	O	O	O	O	O	O	O	O	O
	FF/REW	X	O	X	X	O	O	O	O	O	O	O	O
	REC	X	X	X	X	O	X	O	X	O	X	O	O

Principle of switch rec operation reception

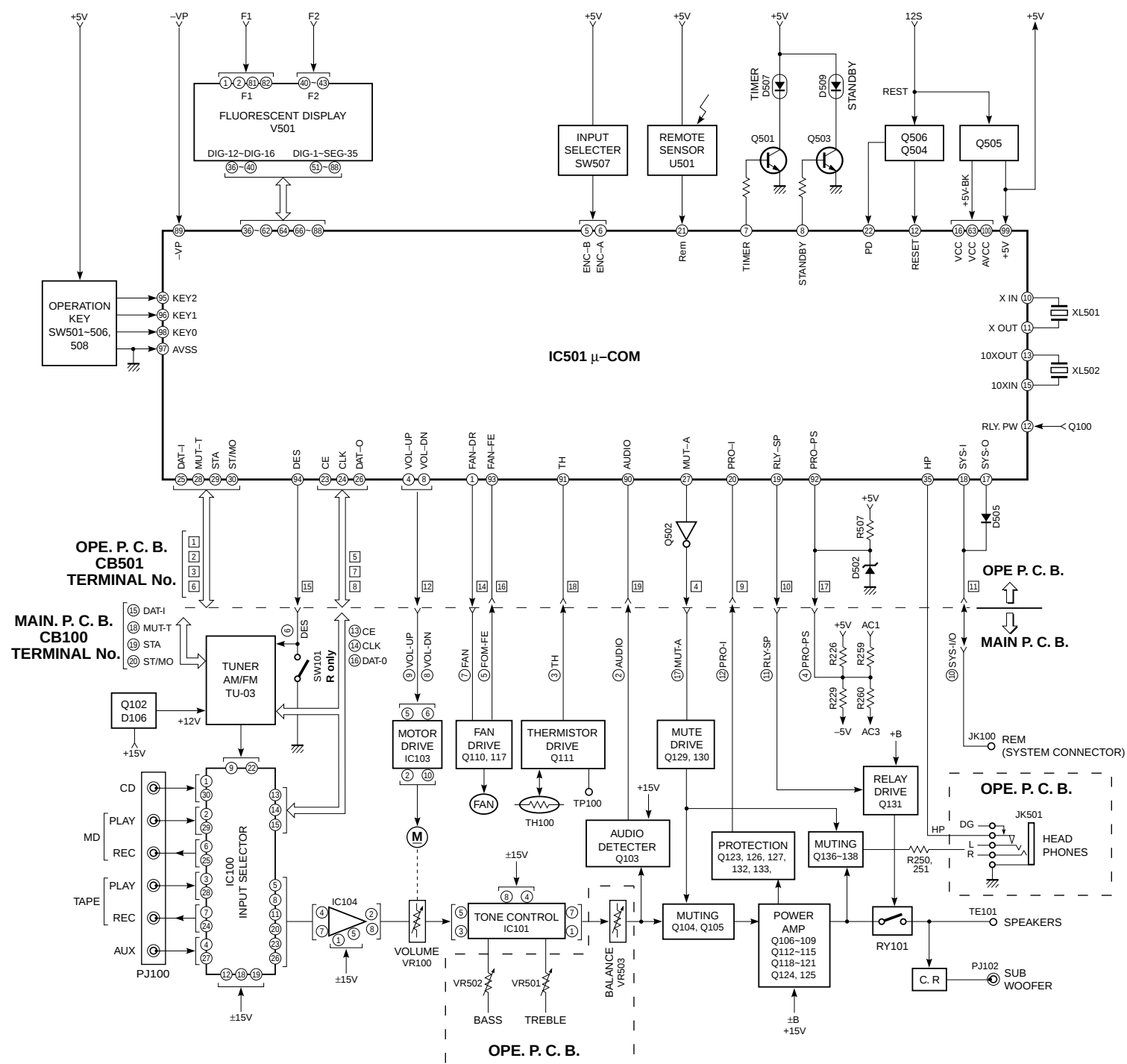
- The POWER SW has priority regardless of any other conditions.
- During EDIT recording, no switch operation other than discontinuing the EDIT function (STOP SW of recording and reproduction units) is received. However, if it is clear that the switch operation would not affect the EDIT function, it will be accepted.
- During SYNCHRONOUS or MANUAL recording, the switch operation of the recording and reproduction units is accepted but switch operation of other units that would affect recording are not accepted.

AUTO POWER ON RECEPTION SW

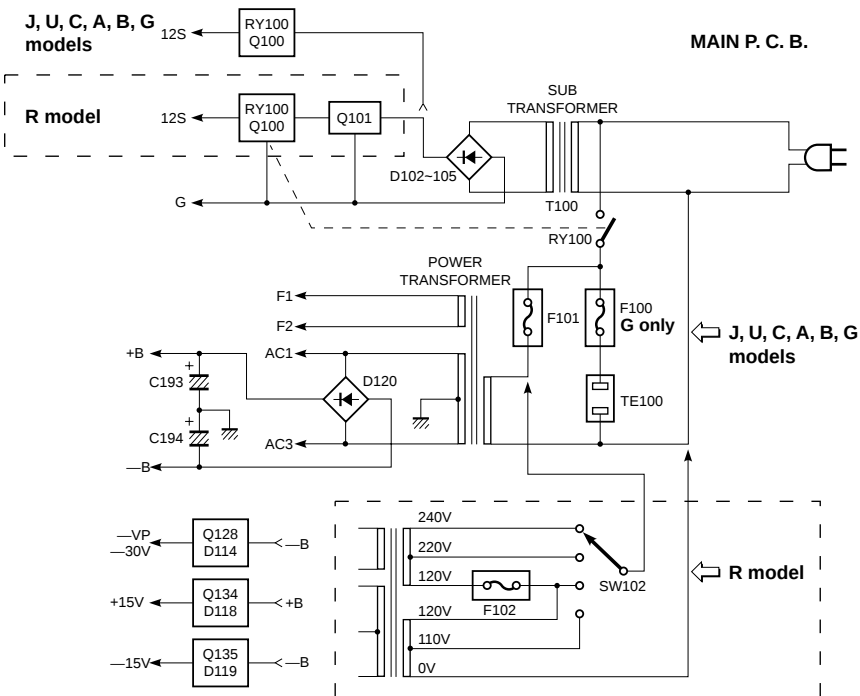
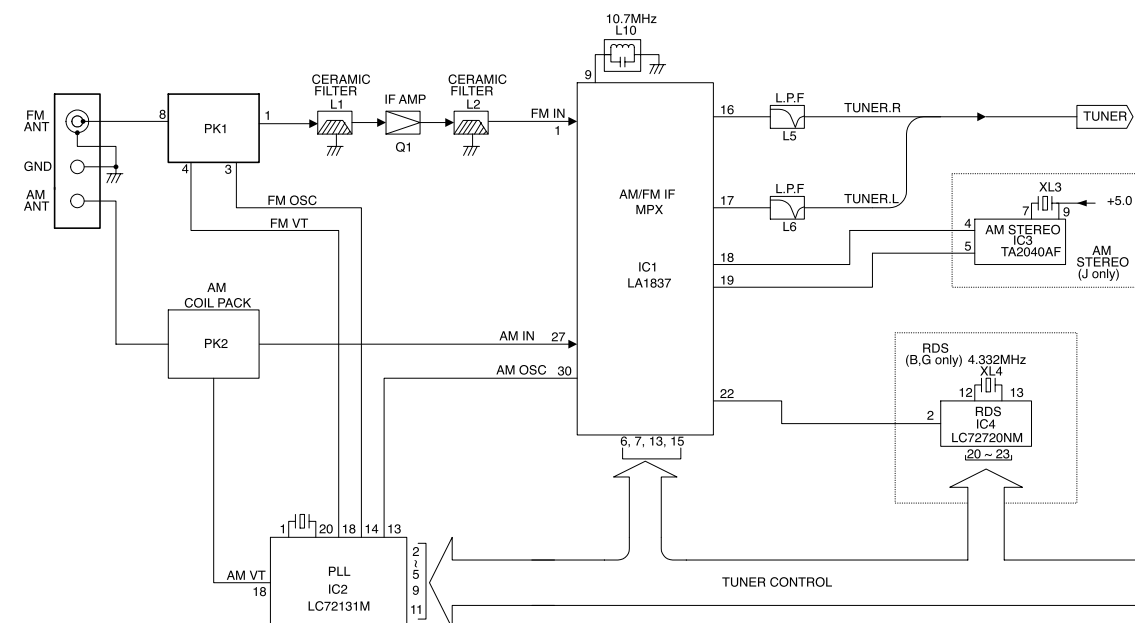
(This switch can turn on the power instead of the POWER SW when the secondary switch has been turned off.)

Unit	SW
CD	EJECT
	PLAY
MD	EJECT
	PLAY
TAPE	EJECT
	PLAY

■ BLOCK DIAGRAM



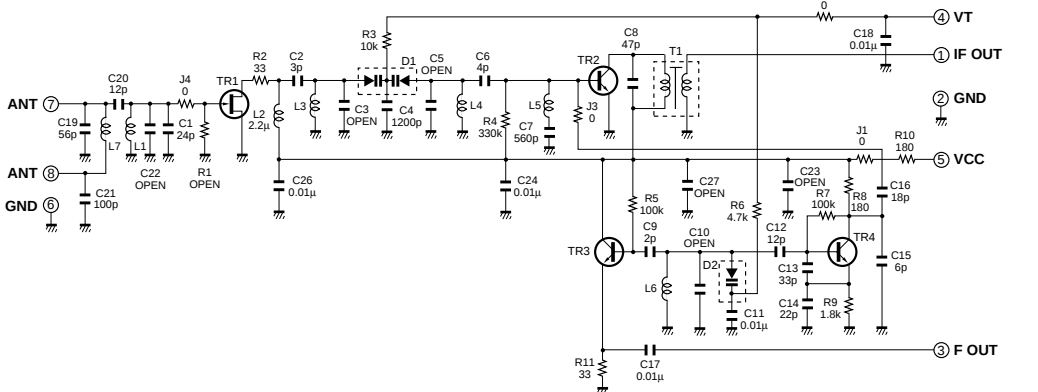
TU-03 (TUNER AM/FM)



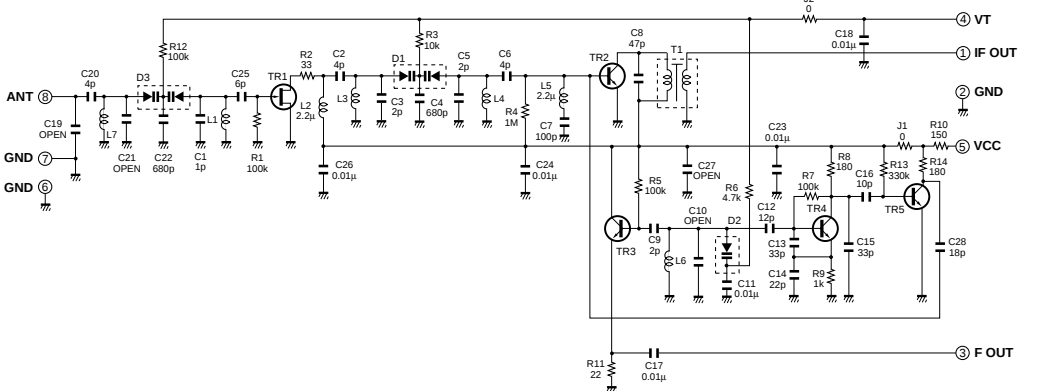
SCHEMATIC DIAGRAM (TUNER)

Each voltage represents the voltage when receiving FM (stereo) signal and the voltage in the parentheses () is the voltage when receiving AM signal.

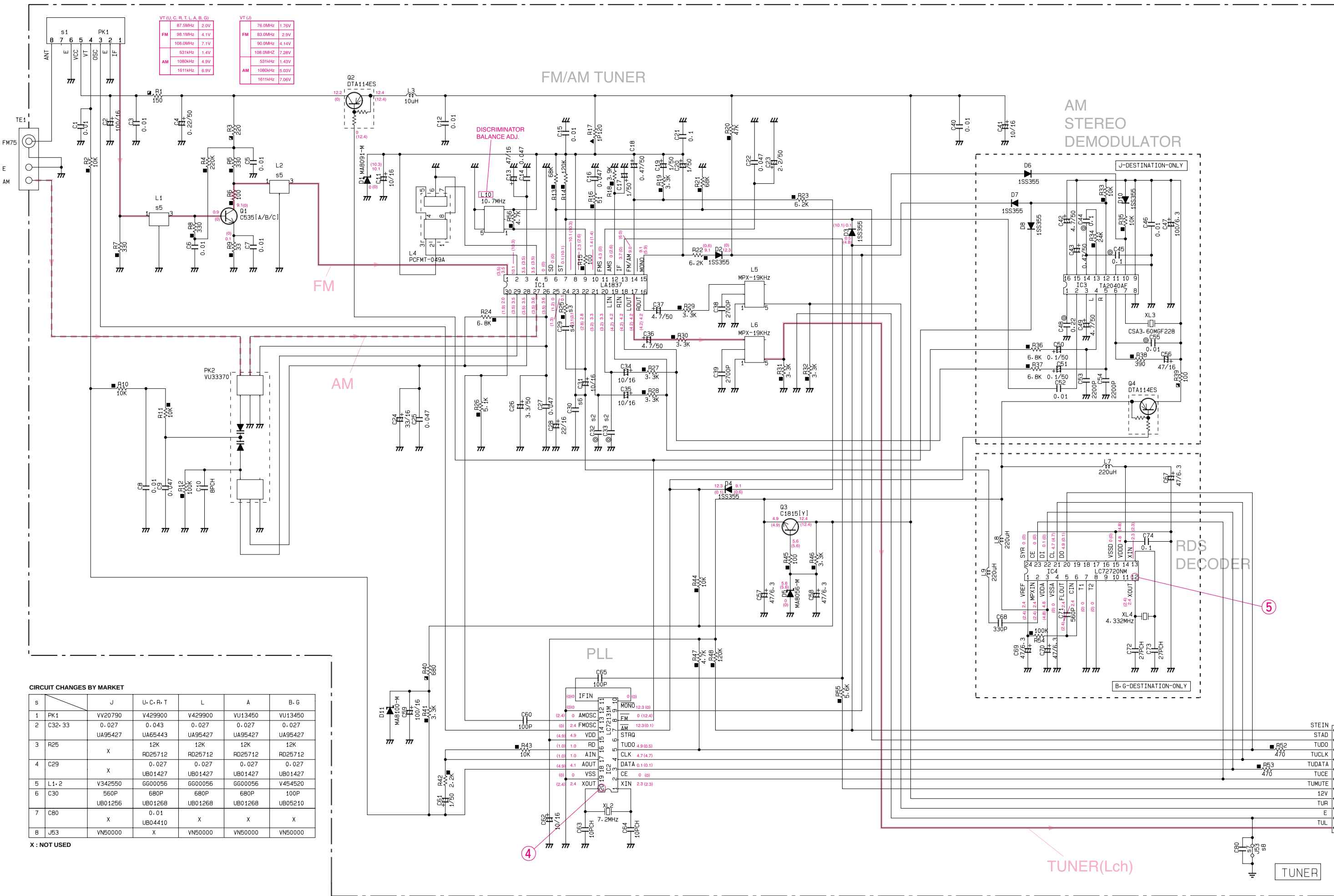
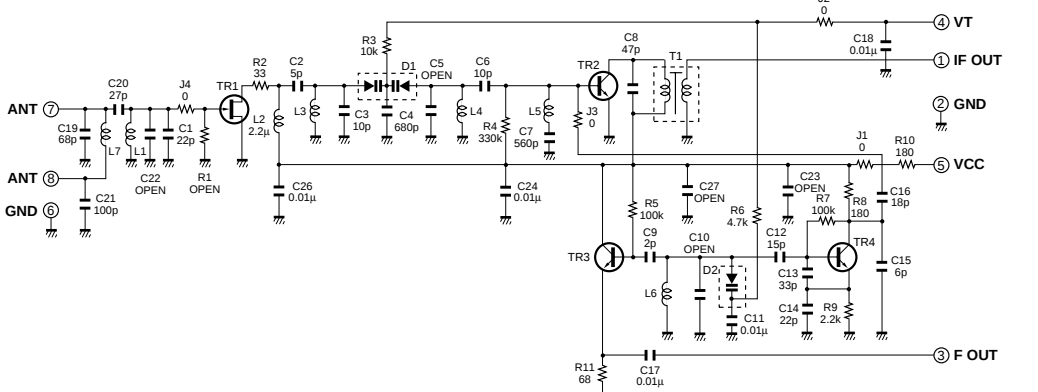
PK1 : TFFJ2U515A (V4299000) U, C, R, T, L models



PK1 : TFFJ4E515A (VU134500) A, B, G models



PK1 : TFFJ2J541A (VV207900) J model



CIRCUIT CHANGES BY MARKET

S	J	U-C-R-T	L	A	B-G
1 PK1	VV20790	V429900	V429900	VU13450	VU13450
2 C32-33	0.027	0.043	0.027	0.027	0.027
	UA95427	UA65443	UA95427	UA95427	UA95427
3 R25	X	12K	12K	12K	12K
		RD25712	RD25712	RD25712	RD25712
4 C29	X	0.027	0.027	0.027	0.027
		UB01427	UB01427	UB01427	UB01427
5 L1-2	V342550	GG00056	GG00056	GG00056	V454520
	6B0P	6B0P	6B0P	6B0P	100P
6 C30	UB01256	UB01268	UB01268	UB01268	UB05210
	0.01	UB04410	X	X	X
8 J53	VN50000	X	VN50000	VN50000	VN50000

X: NOT USED

RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
⊠	CARBON FILM RESISTOR (P=10)
Δ	METAL OXIDE FILM RESISTOR
⊡	METAL FILM RESISTOR
⊞	METAL PLATE RESISTOR
⊞	FIRE PROOF CARBON FILM RESISTOR
⊞	CEMENT MOLDED RESISTOR
⊞	SEMI VARIABLE RESISTOR
⊞	CHIP RESISTOR

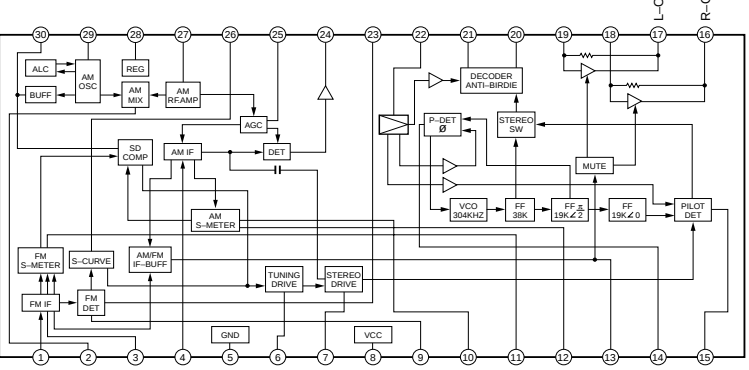
CAPACITOR

REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊗	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
⊙	CERAMIC TUBULAR CAPACITOR
⊙	POLYESTER FILM CAPACITOR
⊙	POLYSTYRENE FILM CAPACITOR
⊙	MICA CAPACITOR
⊙	POLYPROPYLENE FILM CAPACITOR
⊙	SEMICONDUCTIVE CERAMIC CAPACITOR

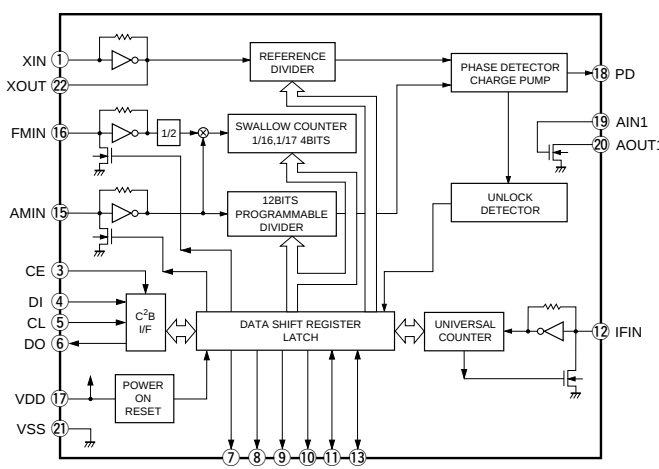
NOTICE (model)

(J)..... JAPANESE
(U)..... U. S. A
(C)..... CANADIAN
(R)..... GENERAL
(A)..... AUSTRALIAN
(B)..... BRITISH
(G)..... EUROPEAN
(T)..... CHINA
(L)..... SINGAPORE

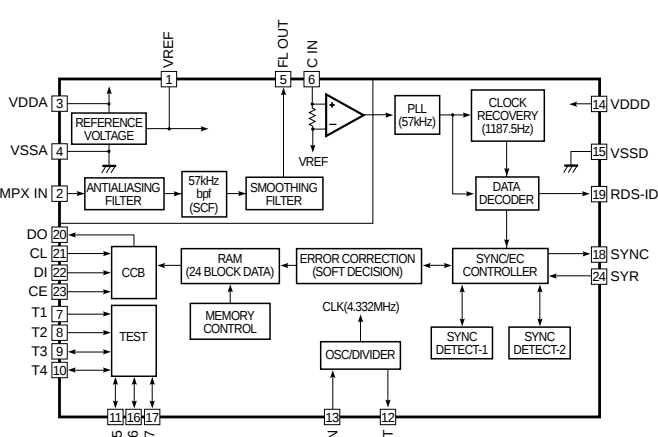
IC1 : LA1838
AM/FM Tuner



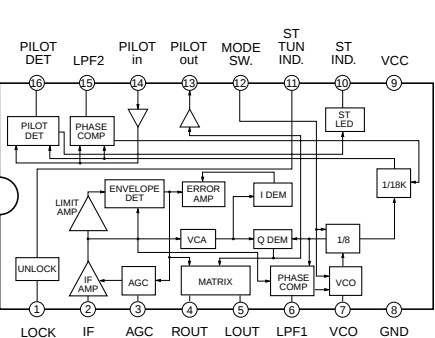
IC2 : LC72131M
PLL Controller



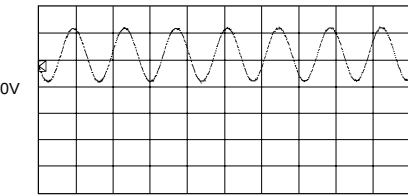
IC4 : LC72720NM
RDS Decoder & Controller



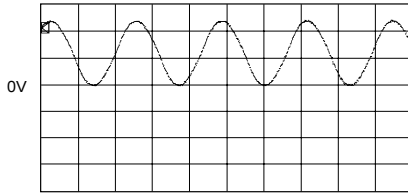
IC3 : TA2040AF
AM Stereo Demodulator



Point ④ (Pin20 of IC2)
V : 2V/div H : 0.1 μsec/div
DC range 1 : 1 probe

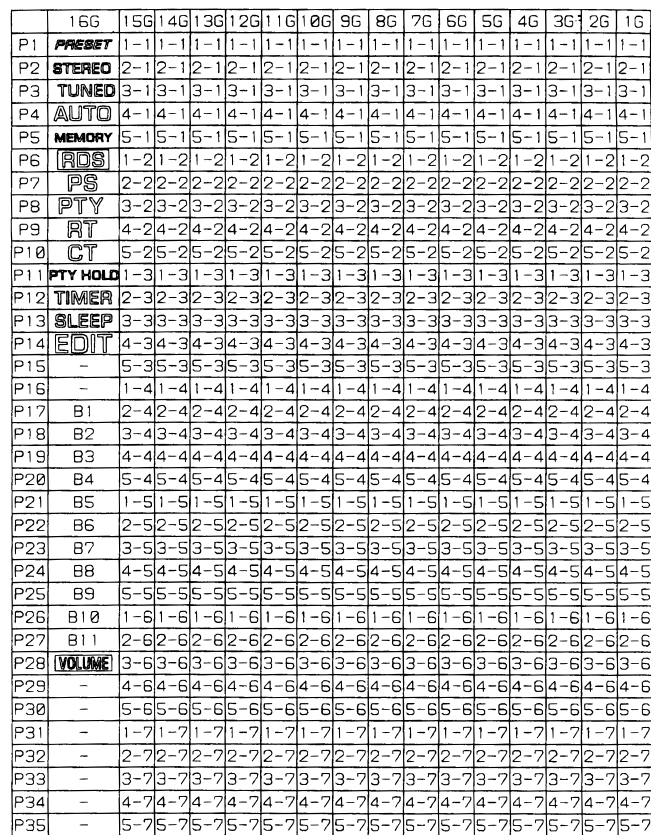


Point ⑤ (Pin12 of IC4)
V : 2V/div H : 0.1 μsec/div
DC range 1 : 1 probe



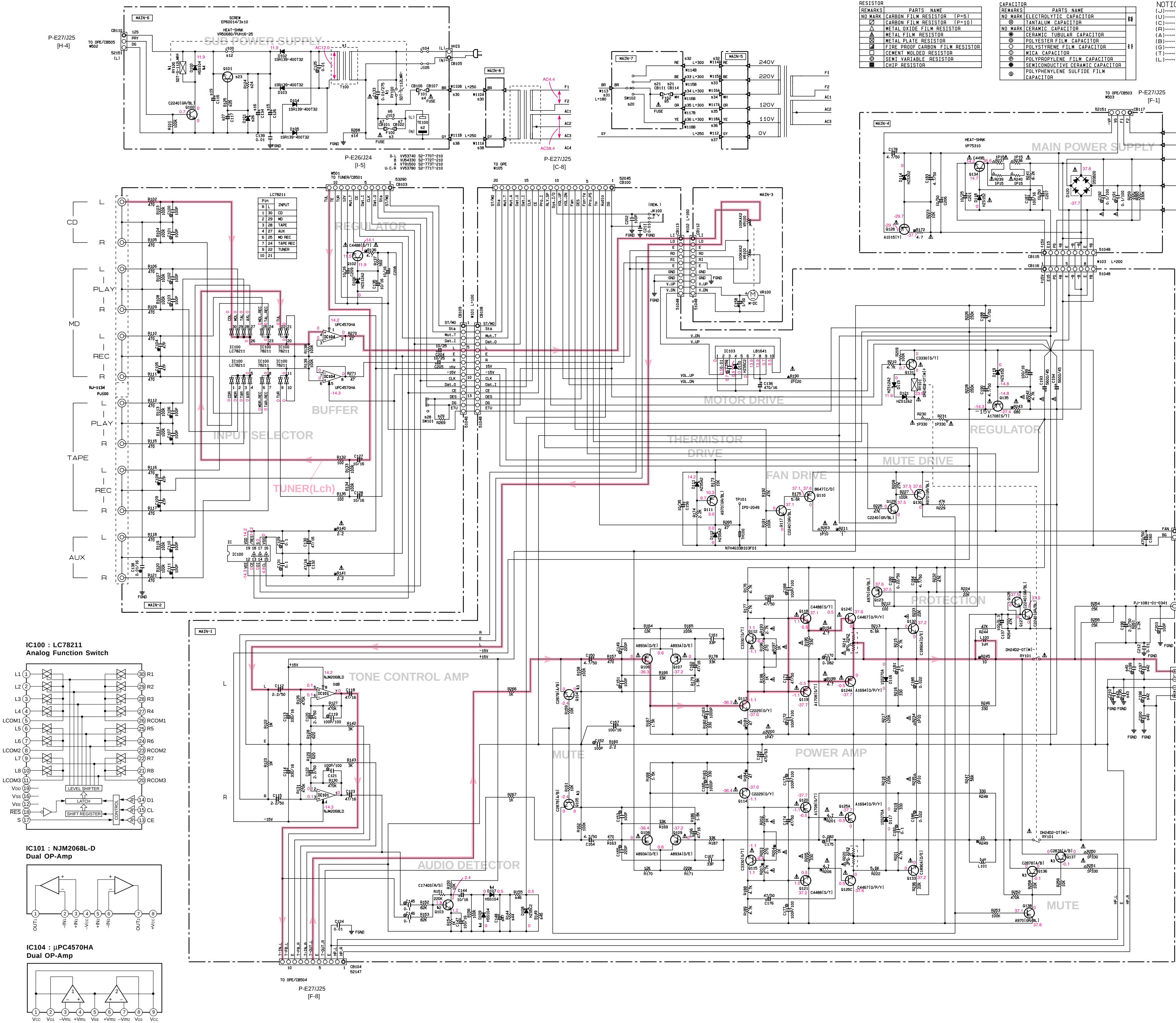
* All voltage are measured with a 10MΩ/V DC electric volt meter.
* Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.
* Schematic diagram is subject to change without notice.

■ SCHEMATIC DIAGRAM (OPERATION)



E-27/J-25

SCHEMATIC DIAGRAM (MAIN)



CIRCUIT CHANGES BY MARKET

	J	U-C	R	A	B	G
91	T100	XY442	XY443	XC082	XC084	XC084
92	TE100	YV53780	YV53780	YV53780	YV53780	YV53780
93	F100	X	X	X	X	X
94	F101	Y862290 4A/125V	Y862290 4A/125V	Y862290 4A/125V	Y862290 4A/125V	Y862290 4A/125V
95	F102	X	X	X	X	X
96	J103	0	0	0	0	0
97	CB101-102	X	X	X	X	X
98						
99						
100						
101						
102						
103						
104	R268	X	X	X	X	X
105	C126	UR64833 330/25	UR64833 330/25	UR64833 330/25	UR64833 330/25	UR64833 330/25
106	C134	X	X	X	X	X
107						
108						
109	C116	UR64833 330/25	UR64833 330/25	UR64833 330/25	UR64833 330/25	UR64833 330/25
110	SW102	X	X	X	X	X
111	CB111-114	X	X	X	X	X
112						
113	G101	X	X	X	X	X
114	R124	X	X	X	X	X
115	R125	X	X	X	X	X
116	S101	X	X	X	X	X
117	C117	X	X	X	X	X
118	SW101	X	X	X	X	X
119	R269	10K	10K	3.9K	5.2K	5.2K
120	W110	WH01030	WH01030	WH01030	WH01030	WH01030
121	W113	X	X	X	X	X
122	W114	X	X	X	X	X
123	W115	X	X	X	X	X
124	W116	X	X	X	X	X
125	W117	X	X	X	X	X
126	W118	X	X	X	X	X
127	W112	X	X	X	X	X
128	W111	WH08025	WH08025	WH08025	WH08025	WH08025
129						
130	C199-200	X	X	X	X	X
131	TE101	YV69630	YV69630	YV69630	YV69630	YV69630
132	C197-198	X	X	X	X	X
133	C195-210	X	X	X	X	X
134	R144	HF45768 50K	HF45768 50K	HF45768 50K	HF45768 50K	HF45768 50K
135	R149	HF45768 50K	HF45768 50K	HF45768 50K	HF45768 50K	HF45768 50K
136	R155	HF45768 100K	HF45768 100K	HF45768 100K	HF45768 100K	HF45768 100K
137	C148	UR66522 4.7/50	UR66522 4.7/50	UR66522 4.7/50	UR66522 4.7/50	UR66522 4.7/50

O : USED
X : NOT USED

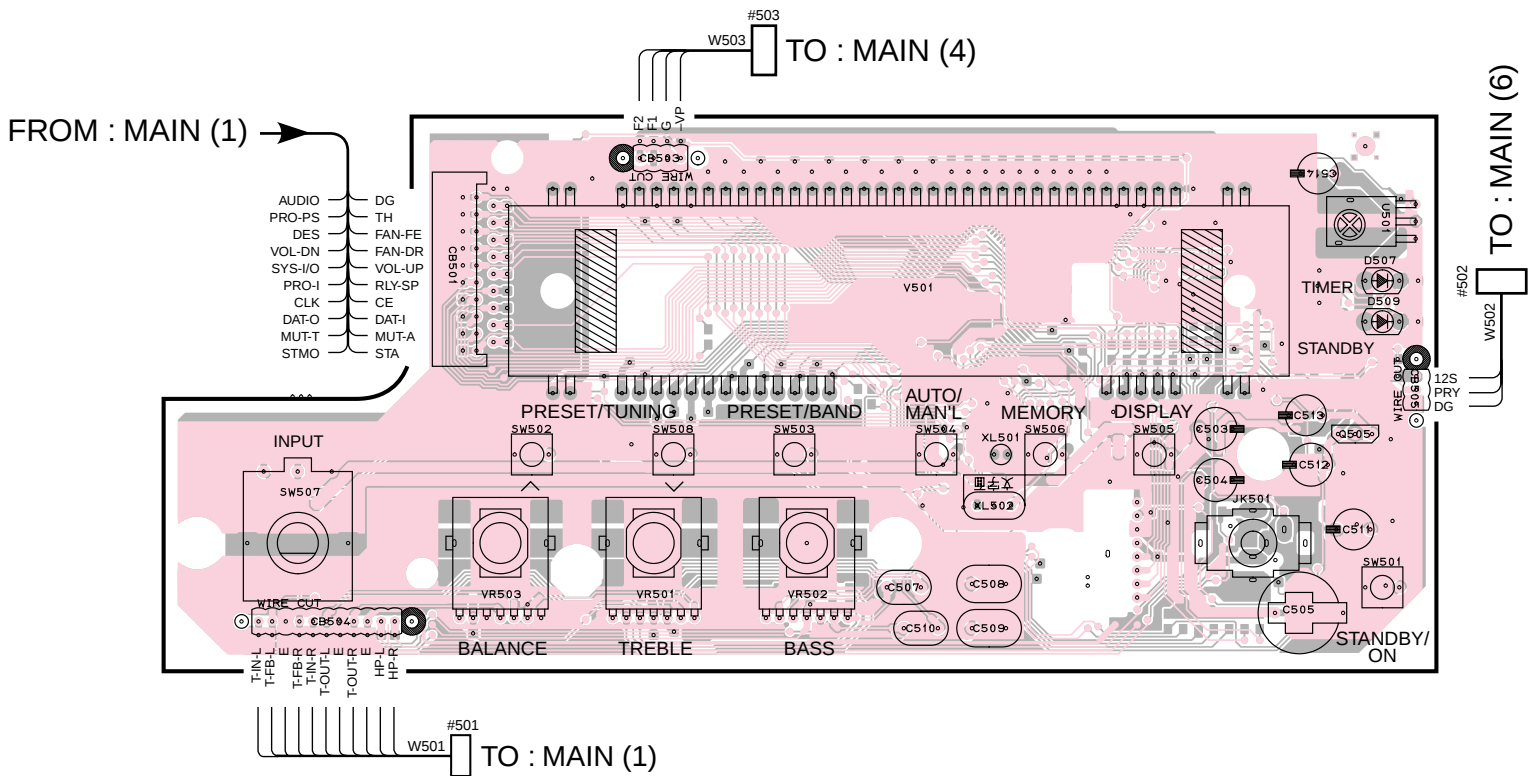
Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
91	RY100	RY100-112M D61201-01W111 ALK3321
92	G103	2SC1740S(1/5) 2SC2603E(1/1)
93	G104-105-136-137	2SC26781A(1/1) 2SC1815F(1/1)
94	D100-107-109	H5104 158133 158176
95		

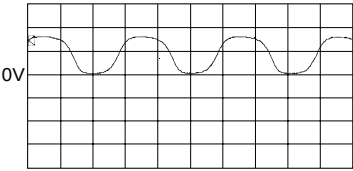
* All voltage are measured with a 10M Ω /V DC electric volt meter.
* Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.
* Schematic diagram is subject to change without notice.

PRINTED CIRCUIT BOARD (Foil side)

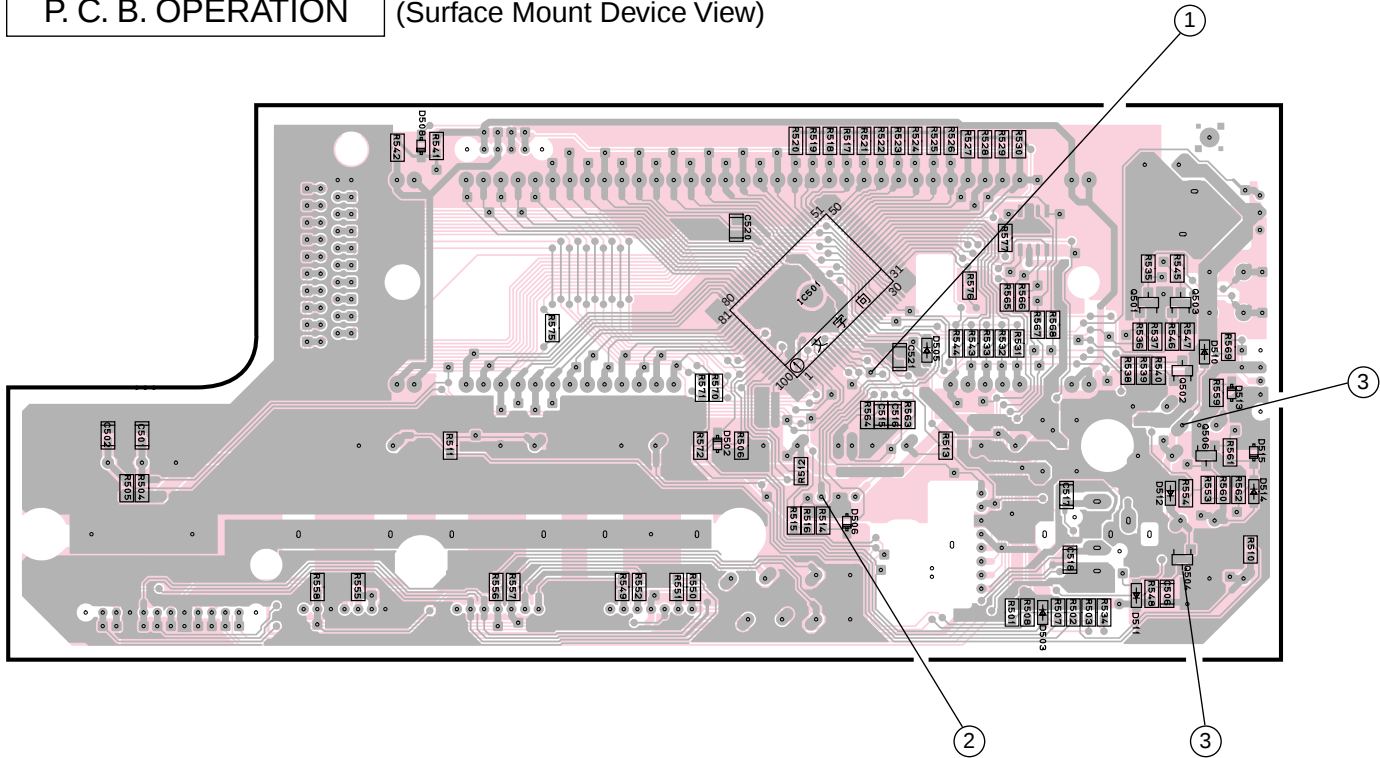
P. C. B. OPERATION (Lead Type Device View)



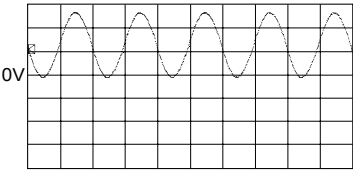
Point ① (Pin 11 of IC501)
V : 2V/div, H : 10μsec/div
DC, 1 : 1 probe



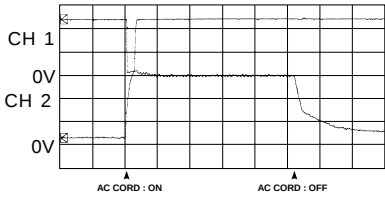
P. C. B. OPERATION (Surface Mount Device View)



Point ② (Pin 13 of IC501)
V : 2V/div, H : 50nsec/div
DC, 1 : 1 probe



Point ③
CH 1 : Collector of Q504
CH 2 : Collector of Q505
V : 2V/div (CH 1)
V : 5V/div (CH 2)
DC, 1 : 1 probe, H : 0.5sec/div

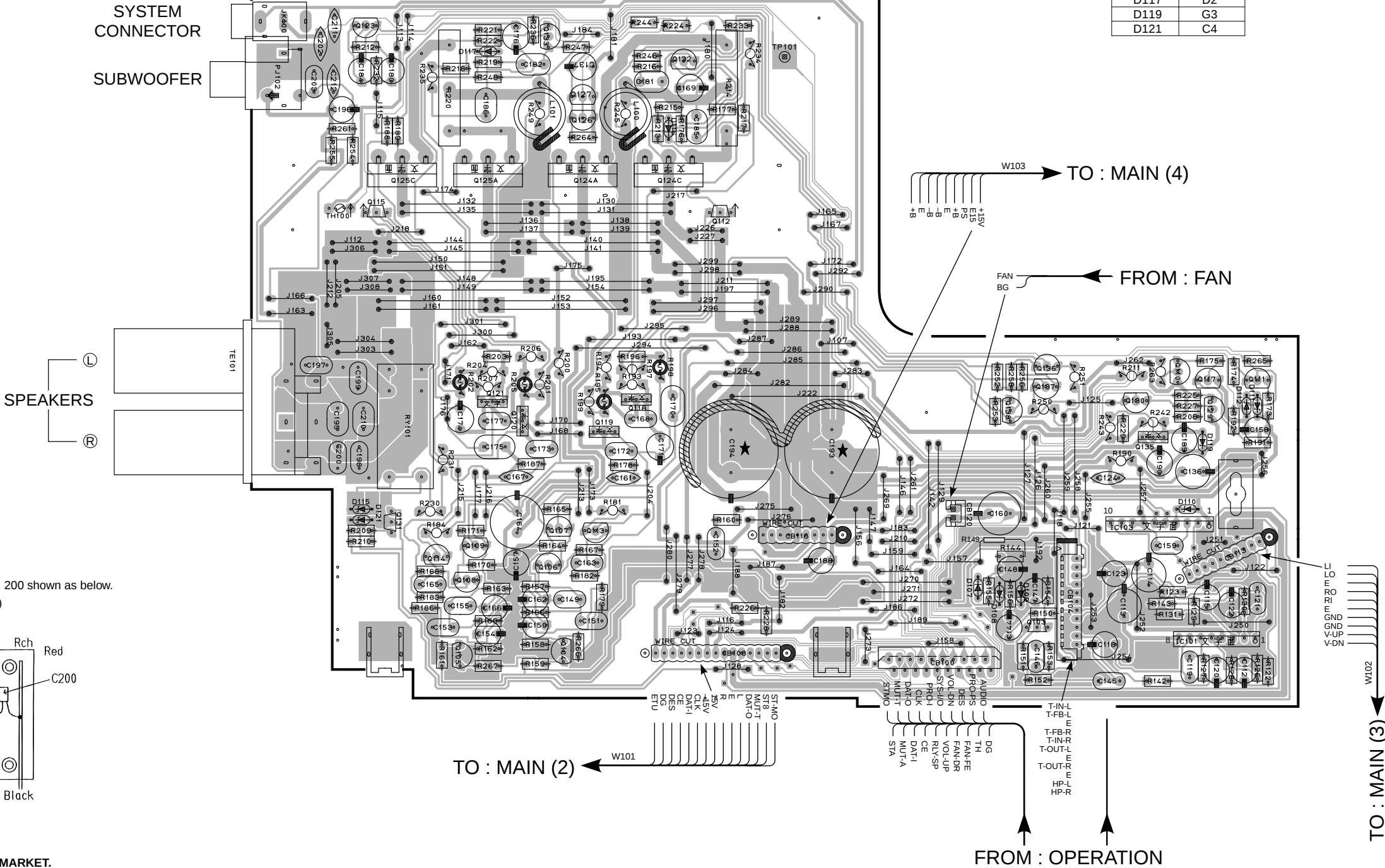


PRINTED CIRCUIT BOARD (Foil side)

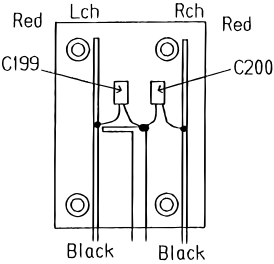
P. C. B. MAIN (1)

Semiconductor Location

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D107	F4	IC101	G4	Q103	F4
D108	F4	IC103	F4	Q104	D4
D109	F4			Q105	D4
D110	G4			Q106	D4
D111	G3			Q107	D4
D112	G3			Q108	D4
D115	C4			Q109	D4
D116	E2			Q110	G3
D117	D2			Q111	G3
D119	G3			Q112	E2
D121	C4			Q113	D4
				Q114	D4
				Q115	C2
				Q117	G3
				Q118	D3
				Q119	D3
				Q120	D3
				Q121	D3
				Q123	C2
				Q124A	D2
				Q124C	E2
				Q125A	D2
				Q125C	C2
				Q126	D2
				Q127	D2
				Q129	G3
				Q130	F3
				Q131	C4
				Q132	E2
				Q133	D2
				Q135	G3
				Q136	F3
				Q137	F3
				Q138	F3



Note : Mounting of C199, 200 shown as below.
(B, G models only)



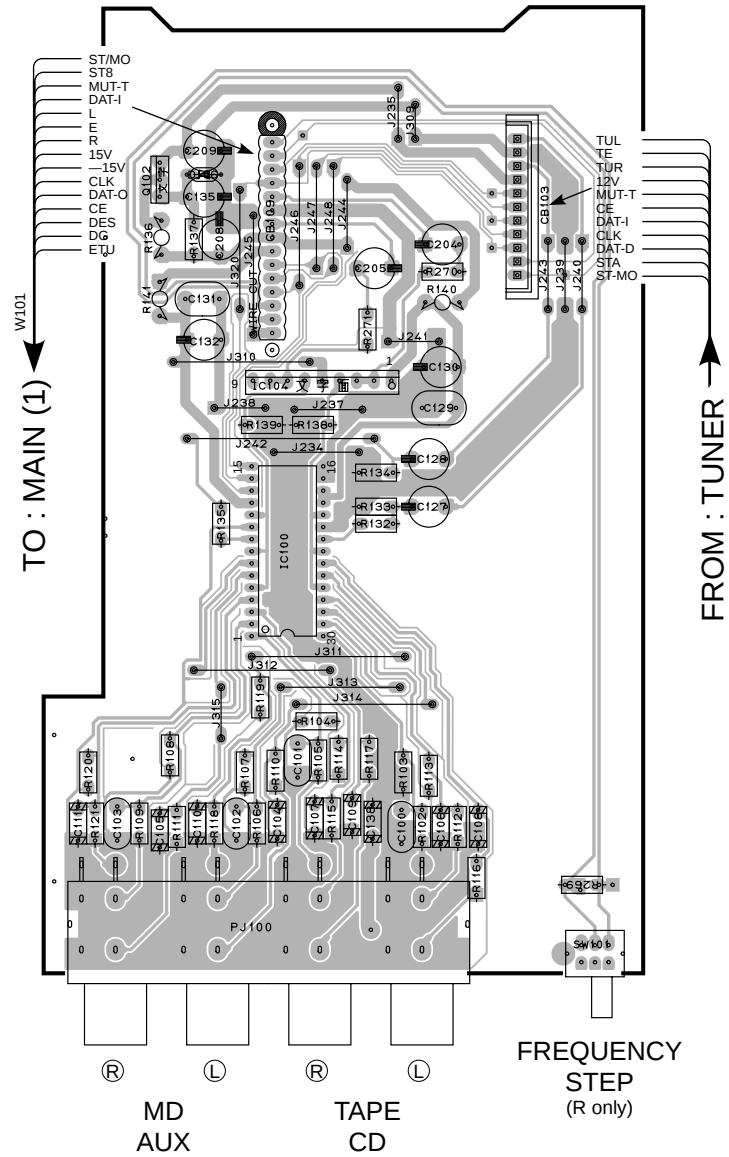
CIRCUIT CHANGES BY MARKET.

	J	U, C	R	A	B, G
C199, 200	X	X	X	X	O
C197, 198	X	X	X	O	O
C195, 210	X	X	X	O	O
R144	X	O	O	O	O

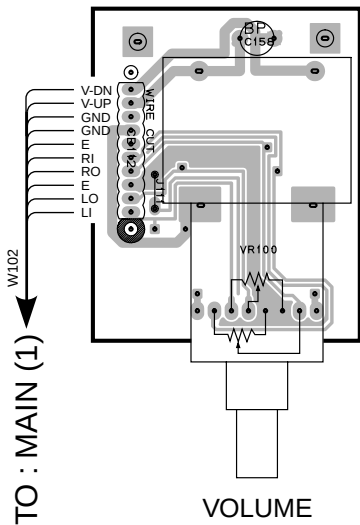
O : USED
X : NOT USED

PRINTED CIRCUIT BOARD (Foil side)

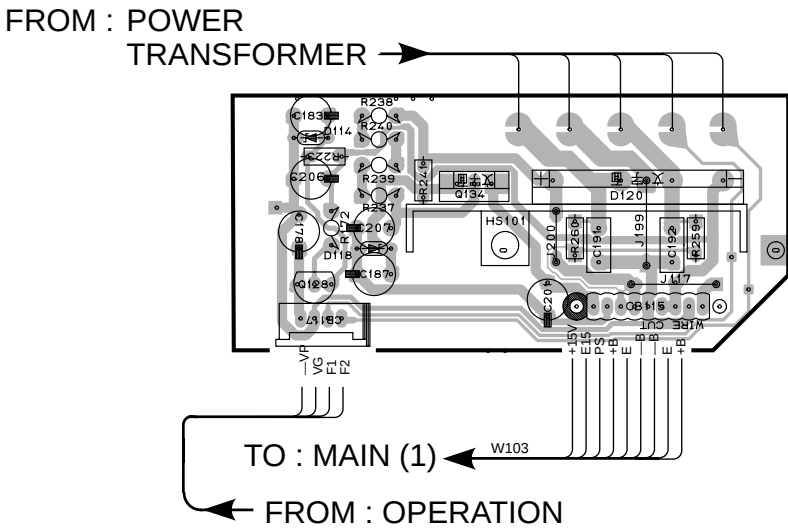
P. C. B. MAIN (2)



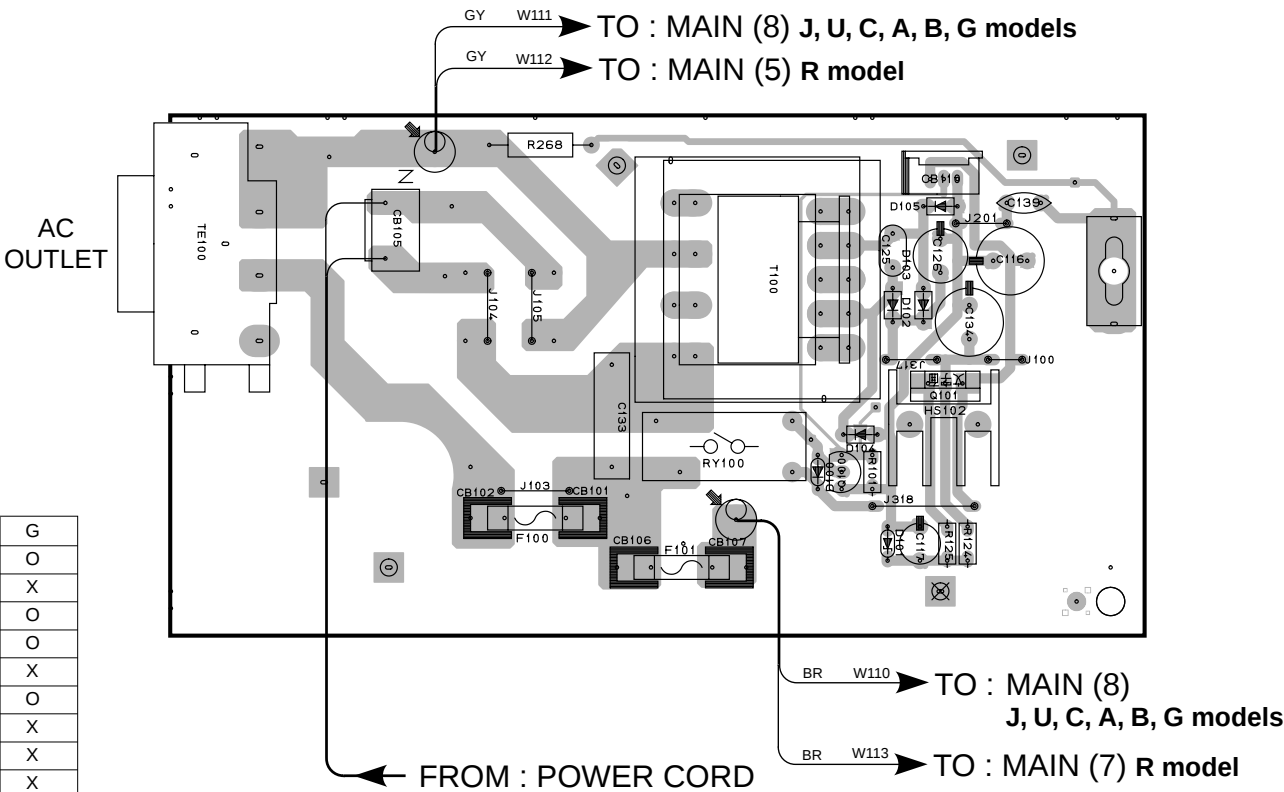
P. C. B. MAIN (3)



P. C. B. MAIN (4)



P. C. B. MAIN (6)



CIRCUIT CHANGES BY MARKET.

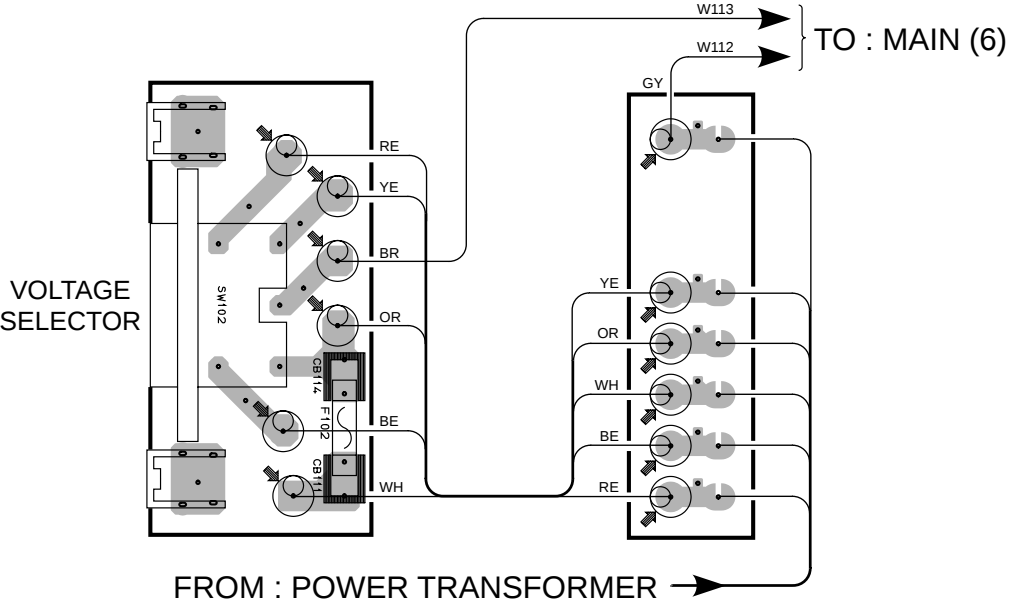
	J	U, C	R	A	B	G
F100	X	X	X	X	X	O
J103	O	O	O	O	O	X
CB101, 102	X	X	X	X	X	O
J100	O	O	X	O	O	O
R268	X	O	X	X	X	X
C126	O	O	X	O	O	O
C134	X	X	O	X	X	X
Q101	X	X	O	X	X	X
R124, 125	X	X	O	X	X	X
D101	X	X	O	X	X	X
C117	X	X	O	X	X	X
SW101	X	X	O	X	X	X

O : USED
X : NOT USED

PRINTED CIRCUIT BOARD (Foil side)

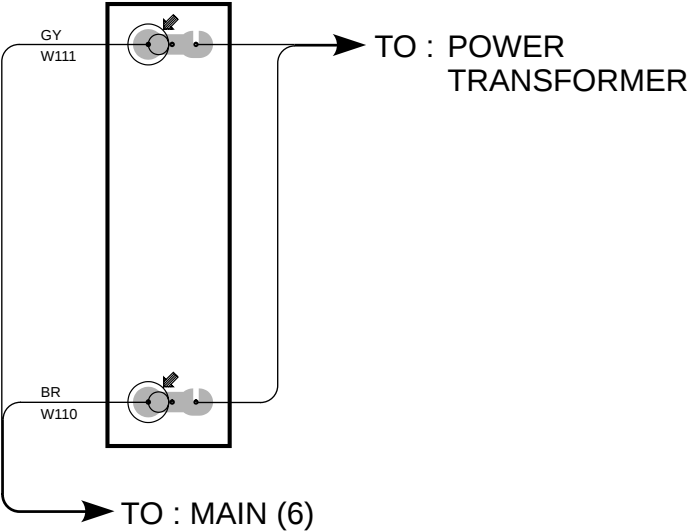
R model

P. C. B. MAIN (7) P. C. B. MAIN (5)



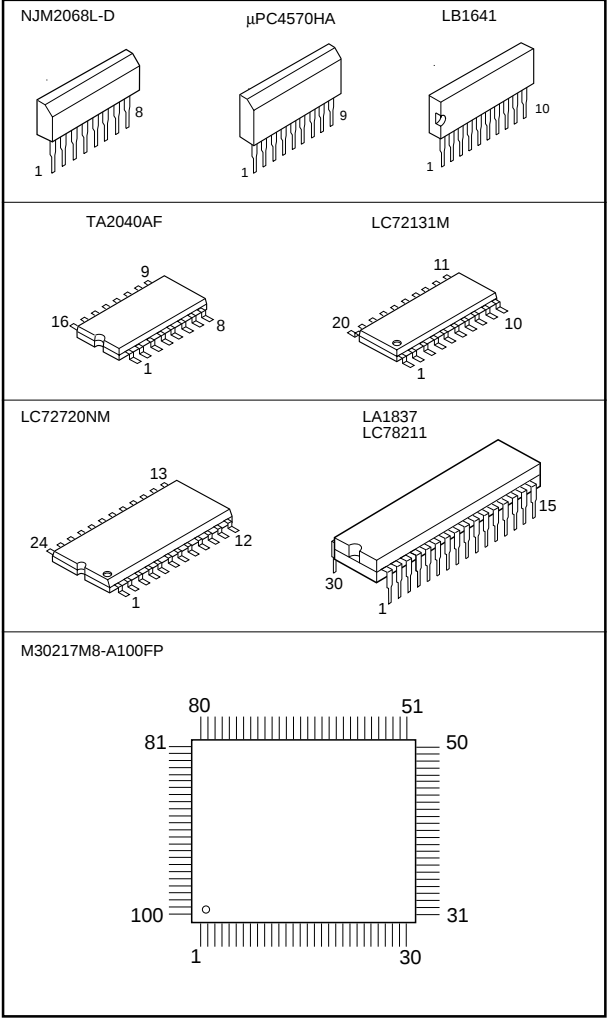
J, U, C, A, B, G models

P. C. B. MAIN (8)

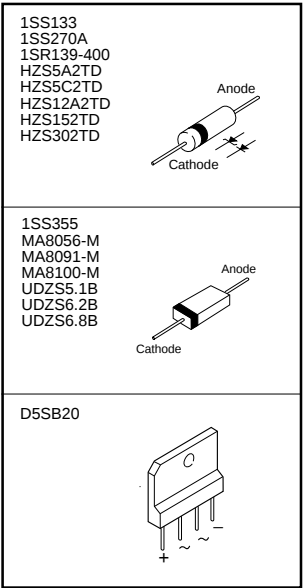


PIN CONNECTION DIAGRAM

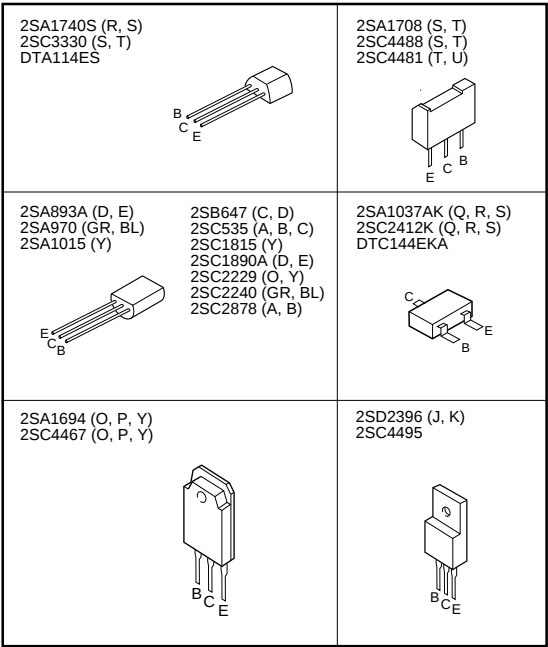
ICs



Diodes



Transistors



1

REMOTE CONTROL TRANSMITTER

■ SCHEMATIC DIAGRAM

2

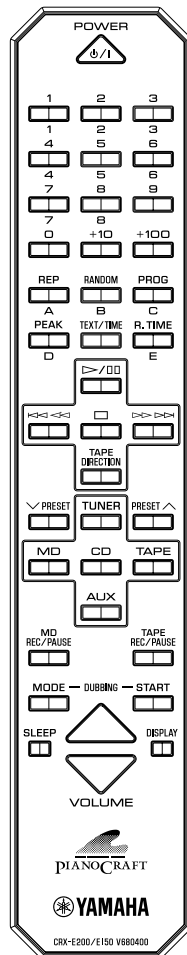
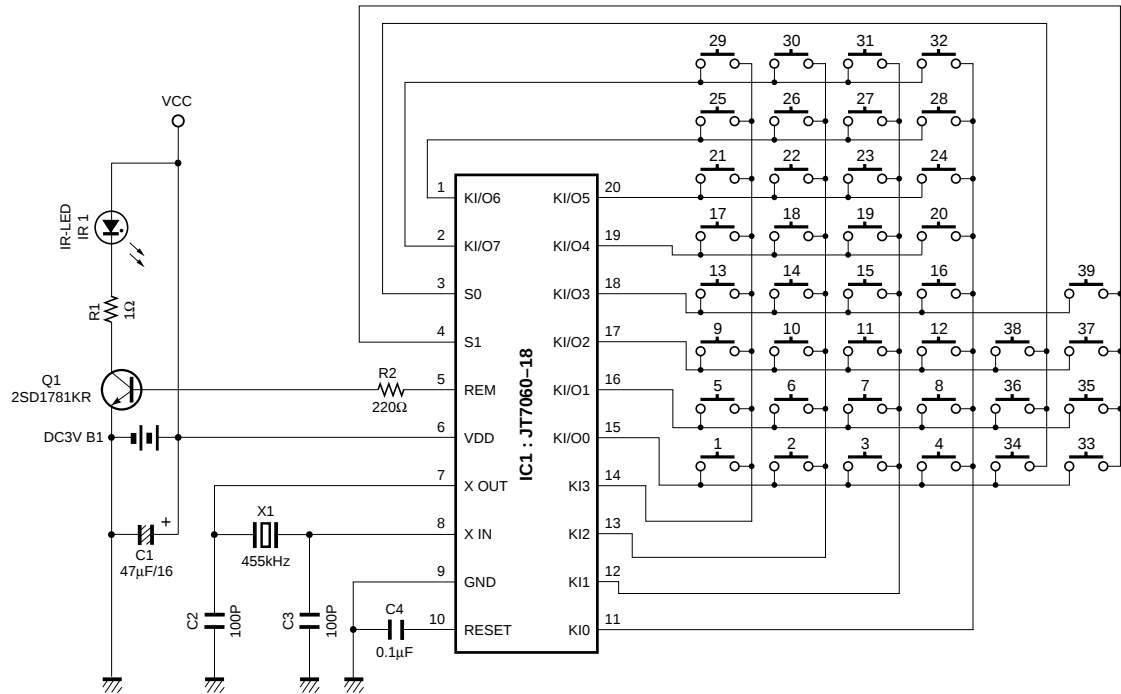
3

4

5

6

7



TRANSMISSION FORMAT: NEC-FORMAT
CUSTOM CODE (HEX): 78

Key No.	Key Name	Data Code (HEX)	Key No.	Key Name	Data Code (HEX)
1	POWER	0F	21	◀◀ ◀◀	04
2	1	11	22	■	01
3	2	12	23	▶▶ ▶▶	03
4	3	13	24	TAPE DIRECTION	43
5	4	14	25	∨ PRESET	1C
6	5	15	26	TUNER	4B
7	6	16	27	PRESET ^	1B
8	7	17	28	MD	57
9	8	18	29	CD	4A
10	9	19	30	TAPE	41
11	0 (FREQ/RDS)	10	31	AUX	49
12	+10 (MODE)	1A	32	MD REC/PAUSE	58
13	+100 (START)	1D	33	TAPE REC/PAUSE	46
14	REP (A)	0C	34	MODE	05
15	RANDOM (B)	07	35	START	06
16	PROG (C)	0B	36	SLEEP	4F
17	D	09	37	VOLUME ^	1E
18	TEXT/TIME	0A	38	DISPLAY	4E
19	R. TIME (E)	08	39	VOLUME ∨	1F
20	▶ / ■	02			

PARTS LIST

■ ELECTRICAL PARTS

■ WARNING

Components having special characteristics are marked $\triangle$ and must be replaced with parts having specifications equal to those originally installed.

- Carbon resistors (1/6W or 1/4W) are not included in the ELECTRICAL PARTS List. For the part Nos. of the carbon resistors, refer to the last page.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS :

C.A.EL.CHP	: CHIP ALUMI. ELECTROLYTIC CAP	L.EMIT	: LIGHT EMITTING MODULE
C.CE	: CERAMIC CAP	LED.DSPLY	: LED DISPLAY
C.CE.ARRAY	: CERAMIC CAP ARRAY	LED.INFRD	: LED, INFRARED
C.CE.CHP	: CHIP CERAMIC CAP	MODUL.RF	: MODULATOR, RF
C.CE.ML	: MULTILAYER CERAMIC CAP	PHOT.CPL	: PHOTO COUPLER
C.CE.M.CHP	: CHIP MULTILAYER CERAMIC CAP	PHOT.INTR	: PHOTO INTERRUPTER
C.CE.SAFTY	: RECOGNIZED CERAMIC CAP	PHOT.RFLCT	: PHOTO REFLECTOR
C.CE.TUBLR	: CERAMIC TUBULAR CAP	PIN.TEST	: PIN, TEST POINT
C.CE.SMI	: SEMI CONDUCTIVE CERAMIC CAP	PLST.RIVET	: PLASTIC RIVET
C.EL	: ELECTROLYTIC CAP	R.ARRAY	: RESISTOR ARRAY
C.MICA	: MICA CAP	R.CAR	: CARBON RESISTOR
C.ML.FLM	: MULTILAYER FILM CAP	R.CAR.CHP	: CHIP RESISTOR
C.MP	: METALLIZED PAPER CAP	R.CAR.FP	: FLAME PROOF CARBON RESISTOR
C.MYLAR	: MYLAR FILM CAP	R.FUS	: FUSABLE RESISTOR
C.MYLAR.ML	: MULTILAYER MYLAR FILM CAP	R.MTL.CHP	: CHIP METAL FILM RESISTOR
C.PAPER	: PAPER CAPACITOR	R.MTL.FLM	: METAL FILM RESISTOR
C.PLS	: POLYSTYRENE FILM CAP	R.MTL.OXD	: METAL OXIDE FILM RESISTOR
C.POL	: POLYESTER FILM CAP	R.MTL.PLAT	: METAL PLATE RESISTOR
C.POLY	: POLYETHYLENE FILM CAP	RSNR.CE	: CERAMIC RESONATOR
C.PP	: POLYPROPYLENE FILM CAP	RSNR.CRYS	: CRYSTAL RESONATOR
C.TNTL	: TANTALUM CAP	R.TW.CEM	: TWIN CEMENT FIXED RESISTOR
C.TNTL.CHP	: CHIP TANTALUM CAP	R.WW	: WIRE WOUND RESISTOR
C.TRIM	: TRIMMER CAP	SCR.BND.HD	: BIND HEAD B-TITE SCREW
CN	: CONNECTOR	SCR.BW.HD	: BW HEAD TAPPING SCREW
CN.BS.PIN	: CONNECTOR, BASE PIN	SCR.CUP	: CUP TITE SCREW
CN.CANNON	: CONNECTOR, CANNON	SCR.TERM	: SCREW TERMINAL
CN.DIN	: CONNECTOR, DIN	SCR.TR	: SCREW, TRANSISTOR
CN.FLAT	: CONNECTOR, FLAT CABLE	SUPRT.PCB	: SUPPORT, P.C.B.
CN.POST	: CONNECTOR, BASE POST	SURG.PRTCT	: SURGE PROTECTOR
COIL.MX.AM	: COIL, AM MIX	SW.TACT	: TACT SWITCH
COIL.AT.FM	: COIL, FM ANTENNA	SW.LEAF	: LEAF SWITCH
COIL.DT.FM	: COIL, FM DETECT	SW.LEVER	: LEVER SWITCH
COIL.MX.FM	: COIL, FM MIX	SW.MICRO	: MICRO SWITCH
COIL.OUTPT	: OUTPUT COIL	SW.PUSH	: PUSH SWITCH
DIOD.ARRAY	: DIODE ARRAY	SW.RT.ENC	: ROTARY ENCODER
DIODE.BRG	: DIODE BRIDGE	SW.RT.MTR	: ROTARY SWITCH WITH MOTOR
DIODE.CHP	: CHIP DIODE	SW.RT	: ROTARY SWITCH
DIODE.VAR	: VARACTOR DIODE	SW.SLIDE	: SLIDE SWITCH
DIOD.Z.CHP	: CHIP ZENER DIODE	TERM.SP	: SPEAKER TERMINAL
DIODE.ZENR	: ZENER DIODE	TERM.WRAP	: WRAPPING TERMINAL
DSCR.CE	: CERAMIC DISCRIMINATOR	THRMST.CHP	: CHIP THERMISTOR
FER.BEAD	: FERRITE BEADS	TR.CHP	: CHIP TRANSISTOR
FER.CORE	: FERRITE CORE	TR.DGT	: DIGITAL TRANSISTOR
FET.CHP	: CHIP FET	TR.DGT.CHP	: CHIP DIGITAL TRANSISTOR
FL.DSPLY	: FLUORESCENT DISPLAY	TRANS	: TRANSFORMER
FLTR.CE	: CERAMIC FILTER	TRANS.PULS	: PULSE TRANSFORMER
FLTR.COMB	: COMB FILTER MODULE	TRANS.PWR	: POWER TRANSFORMER ASS'y
FLTR.LC.RF	: LC FILTER, EMI	TUNER.AM	: TUNER PACK, AM
GND.MTL	: GROUND PLATE	TUNER.FM	: TUNER PACK, FM
GND.TERM	: GROUND TERMINAL	TUNER.PK	: FRONT-END TUNER PACK
HOLDER.FUS	: FUSE HOLDER	VR	: ROTARY POTENTIOMETER
IC.PRTCT	: IC PROTECTOR	VR.MTR	: POTENTIOMETER WITH MOTOR
JUMPER.CN	: JUMPER CONNECTOR	VR.SW	: POTENTIOMETER WITH ROTARY SW
JUMPER.TST	: JUMPER, TEST POINT	VR.SLIDE	: SLIDE POTENTIOMETER
L.DTCT	: LIGHT DETECTING MODULE	VR.TRIM	: TRIMMER POTENTIOMETER

Note) Those parts marked with “#” are not included in the P.C.B. ass'y.

P.C.B. MAIN

Schm Ref.	PART NO.	Description	Market
	V4217700	P.C.B.	UC
	V4217800	P.C.B.	R
	V4217900	P.C.B.	A
	V4218000	P.C.B.	B
	V4218100	P.C.B.	G
CB100	VQ047500	CN.BS.PIN	20P
CB101	VP206500	HOLDER.FUS	EYF-52BCT
CB102	VP206500	HOLDER.FUS	EYF-52BCT
CB103	VQ963200	CN.BS.PIN	11P
CB104	VK025500	CN.BS.PIN	11P
CB105	VG879900	CN.BS.PIN	2P
CB106	VP206500	HOLDER.FUS	EYF-52BCT
CB107	VP206500	HOLDER.FUS	EYF-52BCT
CB108	Vi879300	CN.BS.PIN	15P
CB109	Vi879300	CN.BS.PIN	15P
CB110	VK026200	CN.BS.PIN	3P
CB111	VP206500	HOLDER.FUS	EYF-52BCT
CB112	Vi878800	CN.BS.PIN	10P
CB113	Vi878800	CN.BS.PIN	10P
CB114	VP206500	HOLDER.FUS	EYF-52BCT
CB115	Vi878700	CN.BS.PIN	9P
CB116	Vi878700	CN.BS.PIN	9P
CB117	VK026300	CN.BS.PIN	4P
CB120	VB389800	CN.BS.PIN	2P
C100	UA652100	C.MYLAR	100pF 50V
C101	UA652100	C.MYLAR	100pF 50V
C102	UA652100	C.MYLAR	100pF 50V
C103	UA652100	C.MYLAR	100pF 50V
C104	VF466700	C.CE.TUBLR	47pF 50V
C105	VF466700	C.CE.TUBLR	47pF 50V
C106	VF466800	C.CE.TUBLR	100pF 50V
C107	VF466800	C.CE.TUBLR	100pF 50V
C108	VF466700	C.CE.TUBLR	47pF 50V
C109	VF466700	C.CE.TUBLR	47pF 50V
C110	VF466800	C.CE.TUBLR	100pF 50V
C111	VF466800	C.CE.TUBLR	100pF 50V
C112	UR866220	C.EL	2.2uF 50V
C113	UR838330	C.EL	330uF 16V
C114	UR838330	C.EL	330uF 16V
C115	UR866220	C.EL	2.2uF 50V
C116	UR838100	C.EL	100uF 16V
C116	UR848330	C.EL	330uF 25V
C117	UR837100	C.EL	10uF 16V
C118	UR837470	C.EL	47uF 16V
C119	VR325000	C.MYLAR	100pF 100V
C120	UR866220	C.EL	2.2uF 50V
C121	VR325000	C.MYLAR	100pF 100V
C122	UR866220	C.EL	2.2uF 50V
C123	UR837470	C.EL	47uF 16V
C124	FG644100	C.CE	0.01uF 50V
C125	UA654100	C.MYLAR	0.01uF 50V
C126	UR848330	C.EL	330uF 25V
C127	UR837100	C.EL	10uF 16V

* New Parts

Schm Ref.	PART NO.	Description	Market
C128	UR837100	C.EL	10uF 16V
C129	VE326000	C.MYLAR.ML	0.1uF 50V
C130	UR837470	C.EL	47uF 16V
C131	VE326000	C.MYLAR.ML	0.1uF 50V
C132	UR837470	C.EL	47uF 16V
C133	VS741700	C.CE.SAFTY	0.01uF 275V
C134	UR878330	C.EL	330uF 63V
C135	UR837100	C.EL	10uF 16V
C136	UR838470	C.EL	470uF 16V
C137	UR818100	C.EL	100uF 6.3V
C138	VF467300	C.CE.TUBLR	0.01uF 16V
C139	FG644100	C.CE	0.01uF 50V
C144	UR847100	C.EL	10uF 25V
C145	VE326000	C.MYLAR.ML	0.1uF 50V
C146	VE326000	C.MYLAR.ML	0.1uF 50V
C147	UR838100	C.EL	100uF 16V
C148	UR866220	C.EL	2.2uF 50V
C149	UA652220	C.MYLAR	220pF 50V
C150	UR866470	C.EL	4.7uF 50V
C151	UA652100	C.MYLAR	100pF 50V
C152	UA652100	C.MYLAR	100pF 50V
C153	UA652100	C.MYLAR	100pF 50V
C154	UR866470	C.EL	4.7uF 50V
C155	UA652220	C.MYLAR	220pF 50V
C156	UR857100	C.EL	10uF 35V
C157	UR838100	C.EL	100uF 16V
C158	UN866100	C.EL	1uF 50V
C159	UA654100	C.MYLAR	0.01uF 50V
C160	UR768470	C.EL	470uF 50V
C161	FG651330	C.CE	33pF 50V
C162	UR837470	C.EL	47uF 16V
C163	UA653100	C.MYLAR	1000pF 50V
C164	VK347900	C.EL	470uF 63V
C165	UA653100	C.MYLAR	1000pF 50V
C166	UR837470	C.EL	47uF 16V
C167	FG651330	C.CE	33pF 50V
C168	VR325000	C.MYLAR	100pF 100V
C169	UR867470	C.EL	47uF 50V
C170	UA654820	C.MYLAR	0.082uF 50V
C171	UR867470	C.EL	47uF 50V
C172	VR325000	C.MYLAR	100pF 100V
C173	VR325000	C.MYLAR	100pF 100V
C174	UR867470	C.EL	47uF 50V
C175	UA654820	C.MYLAR	0.082uF 50V
C176	UR867470	C.EL	47uF 50V
C177	VR325000	C.MYLAR	100pF 100V
C178	UR866470	C.EL	4.7uF 50V
C180	UR865220	C.EL	0.22uF 50V
C181	VE326000	C.MYLAR.ML	0.1uF 50V
C182	VE326000	C.MYLAR.ML	0.1uF 50V
C183	UR866470	C.EL	4.7uF 50V
C184	UR866470	C.EL	4.7uF 50V
C185	UA654220	C.MYLAR	0.022uF 50V

* New Parts

P.C.B. MAIN

RX-E200

Schm Ref.	PART NO.	Description	Market
C186	UA654220	C.MYLAR 0.022uF 50V	
C187	UR838100	C.EL 100uF 16V	
C188	UR866470	C.EL 4.7uF 50V	
C189	UR838100	C.EL 100uF 16V	
C190	UR866470	C.EL 4.7uF 50V	
△ C191	VS745400	C.POL.MTL 0.1uF 100V	
△ C192	VS745400	C.POL.MTL 0.1uF 100V	
△ C193	V3588900	C.EL 5600uF 45V	
△ C194	V3588900	C.EL 5600uF 45V	
C195	VE326000	C.MYLAR.ML 0.1uF 50V	ABG
C196	UR866220	C.EL 2.2uF 50V	
C197	UA654100	C.MYLAR 0.01uF 50V	ABG
C198	UA654100	C.MYLAR 0.01uF 50V	ABG
C199	UA653470	C.MYLAR 4700pF 50V	BG
C200	UA653470	C.MYLAR 4700pF 50V	BG
C201	UR847100	C.EL 10uF 25V	
C202	FG652100	C.CE 100pF 50V	
C203	UA652100	C.MYLAR 100pF 50V	
C204	UR847100	C.EL 10uF 25V	
C205	UR847100	C.EL 10uF 25V	
C206	UR867100	C.EL 10uF 50V	
C207	UR867100	C.EL 10uF 50V	
C208	UR837100	C.EL 10uF 16V	
C209	UR837100	C.EL 10uF 16V	
C210	VE326000	C.MYLAR.ML 0.1uF 50V	ABG
C211	FG644100	C.CE 0.01uF 50V	
C212	FG644100	C.CE 0.01uF 50V	
D100	VD631600	DIODE 1SS133,176	
D101	VM975500	DIODE.ZENR HZS12A2TD 12V	R
D102	VU264100	DIODE 1SR139-400	
D103	VU264100	DIODE 1SR139-400	
D104	VU264100	DIODE 1SR139-400	
D105	VU264100	DIODE 1SR139-400	
D106	VM975500	DIODE.ZENR HZS12A2TD 12V	
D107	VD631600	DIODE 1SS133,176	
D108	VM974200	DIODE.ZENR HZS5C2TD 5.0V	
D109	VD631600	DIODE 1SS133,176	
D110	VM974200	DIODE.ZENR HZS5C2TD 5.0V	
D111	VM974000	DIODE.ZENR HZS5A2TD 5.0V	
D112	VM974000	DIODE.ZENR HZS5A2TD 5.0V	
D114	VM976500	DIODE.ZENR HZS302TD 30V	
D115	VM975500	DIODE.ZENR HZS12A2TD 12V	
D116	VN008700	DIODE 1SS270A	
D117	VN008700	DIODE 1SS270A	
△ D118	VM975800	DIODE.ZENR HZS152TD 15V	
D119	VM975800	DIODE.ZENR HZS152TD 15V	
△ D120	VN011400	DIODE.BRG D5SB20 5A 200V	
D121	VM975500	DIODE.ZENR HZS12A2TD 12V	
△ F100	VT942900	FUSE TH2.5A 250V	G
△ F101	KB000680	FUSE 1.25A 250V	ABG
△ F101	VS822900	FUSE T4.0A 125V	UCR
△ F102	KB000680	FUSE 1.25A 250V	R
HS101	V2989200	HEAT.SINK	

* New Parts

Schm Ref.	PART NO.	Description	Market
HS102	VR506800	HEAT.SINK	
IC100	XP894A00	IC	
IC101	XM356A00	IC	
IC103	XF494A00	IC	
IC104	XB247A00	IC	
JK100	VJ726800	JACK.MNI	
L100	V2604200	COIL 1uH	
L101	V2604200	COIL 1uH	
PJ100	V4164500	JACK.PIN 12P	
PJ102	VV306800	JACK.PIN 1P	
Q100	iC224030	TR 2SC2240 GR,BL	
Q101	VR510800	TR 2SD2396 J,K	R
△ Q102	VP872700	TR 2SC4488 S,T	
Q103	iC174020	TR 2SC1740S R,S	
Q104	iC287820	TR 2SC2878 A,B	
Q105	iC287820	TR 2SC2878 A,B	
△ Q106	VP883000	TR 2SA893A D,E	
△ Q107	VP883000	TR 2SA893A D,E	
△ Q108	VP883000	TR 2SA893A D,E	
△ Q109	VP883000	TR 2SA893A D,E	
Q110	VR402300	TR 2SB647 C,D	
Q111	iA097030	TR 2SA970 GR,BL	
△ Q112	VC218900	TR 2SC3330 R,S,T	
△ Q113	VR325600	TR 2SC2229 O,Y	
△ Q114	VR325600	TR 2SC2229 O,Y	
△ Q115	VC218900	TR 2SC3330 R,S,T	
Q117	iC224030	TR 2SC2240 GR,BL	
△ Q118	VP872700	TR 2SC4488 S,T	
△ Q119	VP872600	TR 2SA1708 S,T	
△ Q120	VP872600	TR 2SA1708 S,T	
△ Q121	VP872700	TR 2SC4488 S,T	
Q123	iA097030	TR 2SA970 GR,BL	
△ Q124A	iX615750	TR 2SA1694 O,P,Y	
△ Q124C	iX615760	TR 2SC4467 O,P,Y	
△ Q125A	iX615750	TR 2SA1694 O,P,Y	
△ Q125C	iX615760	TR 2SC4467 O,P,Y	
Q126	iC224030	TR 2SC2240 GR,BL	
Q127	iC224030	TR 2SC2240 GR,BL	
Q128	iA101510	TR 2SA1015 Y	
Q129	iC224030	TR 2SC2240 GR,BL	
Q130	iA097030	TR 2SA970 GR,BL	
△ Q131	VC218900	TR 2SC3330 R,S,T	
△ Q132	VP883100	TR 2SC1890A D,E	
△ Q133	VP883100	TR 2SC1890A D,E	
△ Q134	VN996900	TR 2SC4495	
△ Q135	VP872600	TR 2SA1708 S,T	
Q136	iC287820	TR 2SC2878 A,B	
Q137	iC287820	TR 2SC2878 A,B	
Q138	iA097030	TR 2SA970 GR,BL	
△ R136	HV753470	R.CAR.FP 4.7Ω 1/4W	
△ R140	HV753220	R.CAR.FP 2.2Ω 1/4W	
△ R141	HV753220	R.CAR.FP 2.2Ω 1/4W	
△ R172	HV753470	R.CAR.FP 4.7Ω 1/4W	

* New Parts

P.C.B. MAIN & OPERATION

Schm Ref.	PART NO.	Description	Market
△	R181	HV754470 R.CAR.FP 47Ω 1/4W	
△	R184	HV754470 R.CAR.FP 47Ω 1/4W	
△	R190	VV901100 R.MTL.OXD 120Ω 1W	
△	R193	HV756270 R.CAR.FP 2.7KΩ 1/4W	
△	R194	HV753470 R.CAR.FP 4.7Ω 1/4W	
△	R195	VK188400 R.FUS 330Ω 1/4W	
△	R197	HV756100 R.CAR.FP 1KΩ 1/4W	
△	R198	VK189000 R.FUS 1KΩ 1/4W	
△	R199	HV753470 R.CAR.FP 4.7Ω 1/4W	
△	R200	VP940200 R.MTL.OXD 47Ω 1W	
△	R201	HV753470 R.CAR.FP 4.7Ω 1/4W	
△	R202	VK189000 R.FUS 1KΩ 1/4W	
△	R204	HV756100 R.CAR.FP 1KΩ 1/4W	
△	R205	VK188400 R.FUS 330Ω 1/4W	
△	R206	HV753470 R.CAR.FP 4.7Ω 1/4W	
△	R207	HV756270 R.CAR.FP 2.7KΩ 1/4W	
△	R211	HV753100 R.CAR.FP 1Ω 1/4W	
△	R214	VU981700 R.MTL.PLAT 0.22Ω+0.22 3W	
△	R220	VU981700 R.MTL.PLAT 0.22Ω+0.22 3W	
△	R230	VP940700 R.MTL.OXD 330Ω 1W	
△	R231	VP940700 R.MTL.OXD 330Ω 1W	
△	R234	VP939800 R.MTL.OXD 10Ω 1W	
△	R235	VP939800 R.MTL.OXD 10Ω 1W	
△	R237	VP939900 R.MTL.OXD 15Ω 1W	
△	R238	VP939900 R.MTL.OXD 15Ω 1W	
△	R239	VP939900 R.MTL.OXD 15Ω 1W	
△	R240	VP939900 R.MTL.OXD 15Ω 1W	
△	R242	HV756470 R.CAR.FP 4.7KΩ 1/4W	
△	R243	HV755680 R.CAR.FP 680Ω 1/4W	
	R245	HV754100 R.CAR.FP 10Ω 1/4W	
	R249	HV754100 R.CAR.FP 10Ω 1/4W	
	R250	VP940700 R.MTL.OXD 330Ω 1W	
	R251	VP940700 R.MTL.OXD 330Ω 1W	
△	R263	VP939800 R.MTL.OXD 10Ω 1W	
	RY100	V2712300 RELAY DC SDT-S-112LMR	
△	RY101	VK438300 RELAY DH24D2-OT/M2	
	SW101	V3624300 SW.SLIDE SS029-P022MJB-PA6	R
△	SW102	VG388100 VOLT.SELCT HXW0244-01-080	R
△	T100	XC082A00 TRANS.PWR	R
△	T100	XC084A00 TRANS.PWR	ABG
△	T100	XV443A00 TRANS.PWR	UC
△	TE100	VT915000 OUTLET.AC 2P	A
△	TE100	VU543300 OUTLET.AC 1P	B
△	TE100	VV537400 OUTLET.AC 1P	G
△	TE100	VV537800 OUTLET.AC 1P	UCR
	TE101	V2504700 TERM.SP 4P	ABG
	TE101	VF018400 TERM.SP 4P	UCR
	TH100	V4185500 THRMST NTH4G33B103F01 10K	
	TP101	VT969000 PIN.TEST IRS-2049	
	VR100	V3555900 VR.MTR EUW MGM 021 A15	
		V3750200 PIN L=70	
		V3750100 PIN L=50	
		VY940400 CUSHION T=0.8	

* New Parts

Schm Ref.	PART NO.	Description	Market
	V4040500	SCR.TERM M3	
	VR264300	PLATE.GND	
	VQ368600	PUSH.RIVET P3555-B	
	EP600830	SCR.BND.HD 3x8 MFC2-BL	
	EP600140	SCR.BND.HD 3x10 MFZN2-BL R	
	V4193900	P.C.B.	SI:OPERATION
CB501	VQ045000	CN.BS.PIN 20P	
CB503	Vi878200	CN.BS.PIN 4P	
CB504	Vi878900	CN.BS.PIN 11P	
CB505	Vi878100	CN.BS.PIN 3P	
C501	UB012680	C.CE.M.CHP 680pF 50V	
C502	UB012680	C.CE.M.CHP 680pF 50V	
C503	UM388100	C.EL 100uF 10V	
C504	UM388100	C.EL 100uF 10V	
C505	VU545000	C.EL 47000uF 5.5V	
C506	UB045100	C.CE.M.CHP 0.1uF 50V	
C507	UA655120	C.MYLAR 0.12uF 50V	
C508	UA654330	C.MYLAR 0.033uF 50V	
C509	UA654330	C.MYLAR 0.033uF 50V	
C510	UA655120	C.MYLAR 0.12uF 50V	
C511	UM416100	C.EL 1uF 50V	
C512	UM388100	C.EL 100uF 10V	
C513	UM416220	C.EL 2.2uF 50V	
C514	UM397100	C.EL 10uF 16V	
C515	VJ900300	C.CE.M.CHP 22pF 50V	
C516	VJ900300	C.CE.M.CHP 22pF 50V	
C517	UB044100	C.CE.M.CHP 0.01uF 50V	
C518	UB044100	C.CE.M.CHP 0.01uF 50V	
C520	UB045100	C.CE.M.CHP 0.1uF 50V	
C521	UB045100	C.CE.M.CHP 0.1uF 50V	
C522	UB044100	C.CE.M.CHP 0.01uF 50V	
C523	UB044100	C.CE.M.CHP 0.01uF 50V	
C524	UB013100	C.CE.M.CHP 1000pF 50V	
D502	VU171900	D1ODE.ZENR UDZ5.1B 5.1V	
D503	VT332900	D1ODE 1SS355	
D505	VT332900	D1ODE 1SS355	
D506	VU171900	D1ODE.ZENR UDZ5.1B 5.1V	
D507	VR711400	LED(gr) SLR-325MC	
D508	VU171900	D1ODE.ZENR UDZ5.1B 5.1V	
D509	VS132300	LED(re) SLR-325VCT31	
D510	VT332900	D1ODE 1SS355	
D511	VT332900	D1ODE 1SS355	
D512	VT332900	D1ODE 1SS355	
D513	VU172100	D1ODE.ZENR UDZS6.2B 6.2V	
D514	VT332900	D1ODE 1SS355	
D515	VU172200	D1ODE.ZENR UDZ6.8B 6.8V	
IC501	XV939B00	IC.CPU M30217M8-A101FP	
JK501	V3589000	JACK.MNI HTJ-035-18EBGT	
Q501	VV556400	TR 2SC2412K Q,R,S	
Q502	VV556500	TR 2SA1037K Q,R,S	

* New Parts

P.C.B. OPERATION & TUNER

RX-E200

Schm Ref.	PART NO.	Description	Market
Q503	VV556400	TR	2SC2412K Q,R,S
Q504	VV655700	TR.DGT	DTC144EKA
Q505	VR412800	TR	2SC4481 T,U
Q506	VV556500	TR	2SA1037K Q,R,S
R549	RD556180	R.THCK.CHP	1.8KΩ 1/10W
R550	RD556180	R.THCK.CHP	1.8KΩ 1/10W
R551	RD556180	R.THCK.CHP	1.8KΩ 1/10W
R552	RD556180	R.THCK.CHP	1.8KΩ 1/10W
R556	RD555390	R.THCK.CHP	390Ω 1/10W
R557	RD555390	R.THCK.CHP	390Ω 1/10W
SW501	V2014900	SW.TACT	EVQ21304M
SW502	V2014900	SW.TACT	EVQ21304M
SW503	V2014900	SW.TACT	EVQ21304M
SW504	V2014900	SW.TACT	EVQ21304M
SW505	V2014900	SW.TACT	EVQ21304M
SW506	V2014900	SW.TACT	EVQ21304M
SW507	VT140300	SW.RT.ENC	EC16B12204
SW508	V2014900	SW.TACT	EVQ21304M
U501	VU591000	L.DTCT	GP1U271X
V501	V3579300	FL.DSPLY	16-BT-67GN
VR501	V3555700	VR	W25KΩ
VR502	V3555600	VR	B20KΩ
VR503	V3555800	VR	MN100KΩ
XL501	VQ328900	RSNR.CRYS	32.768KHz
XL502	VQ791000	RSNR.CE	10MHz
	V3688300	SHEET.FL	SI
	VR519500	SHEET.FL	GD
	V3747500	SUPRT	
	V3747400	SPACER.FL	T4x6x18

* New Parts

! : Note on the Operation PCB

Of the Operation PCB part Nos., only the silver (SI) type part Nos. are included in the table.

The only different part between the gold (GD) and silver (SI) type parts is the sheet/FL that is attached to the fluorescent character display tube. When a GD type Operation PCB becomes necessary, order a SI type Operation PCB and a GD type sheet/FL (VR519500) and replace the sheet/FL of the SI type Operation PCB with the GD type sheet/FL.

Schm Ref.	PART NO.	Description	Market
	V5000200	P.C.B.	TU-03
	V5000300	P.C.B.	TU-03
	V5000400	P.C.B.	TU-03
CB1	VQ961400	CN.BS.PIN	11P
C1	UB044100	C.CE.M.CHP	0.01uF 50V
C2	UR838100	C.EL	100uF 16V
C3	UB044100	C.CE.M.CHP	0.01uF 50V
C4	UR865220	C.EL	0.22uF 50V
C5	UB044100	C.CE.M.CHP	0.01uF 50V
C6	UB044100	C.CE.M.CHP	0.01uF 50V
C7	UB044100	C.CE.M.CHP	0.01uF 50V
C8	UB044100	C.CE.M.CHP	0.01uF 50V
C9	UB044470	C.CE.M.CHP	0.047uF 50V
C10	VA760500	C.CE	8pF 50V
C11	UR837100	C.EL	10uF 16V
C12	UB044100	C.CE.M.CHP	0.01uF 50V
C13	UR837470	C.EL	47uF 16V
C14	UB044470	C.CE.M.CHP	0.047uF 50V
C15	UB044100	C.CE.M.CHP	0.01uF 50V
C16	UB044470	C.CE.M.CHP	0.047uF 50V
C17	UR866100	C.EL	1uF 50V
C18	UR865470	C.EL	0.47uF 50V
C19	UR866100	C.EL	1uF 50V
C20	UR866100	C.EL	1uF 50V
C21	UB045100	C.CE.M.CHP	0.1uF 50V
C22	UB044470	C.CE.M.CHP	0.047uF 50V
C23	UR866220	C.EL	2.2uF 50V
C24	UR837330	C.EL	33uF 16V
C25	UB044470	C.CE.M.CHP	0.047uF 50V
C26	UR866330	C.EL	3.3uF 50V
C27	UB044470	C.CE.M.CHP	0.047uF 50V
C28	UR837220	C.EL	22uF 25V
C29	UB014270	C.CE.M.CHP	0.027uF 50V
C30	UB012680	C.CE.M.CHP	680pF 50V
C30	UB052100	C.CE.M.CHP	100pF 50V
C31	UR837100	C.EL	10uF 16V
C32	UA654430	C.MYLAR	0.043uF 50V
C32	UA954270	C.MYLAR	0.027uF 50V
C33	UA654430	C.MYLAR	0.043uF 50V
C33	UA954270	C.MYLAR	0.027uF 50V
C34	UR837100	C.EL	10uF 16V
C35	UR837100	C.EL	10uF 16V
C36	UR866470	C.EL	4.7uF 50V
C37	UR866470	C.EL	4.7uF 50V
C38	UB013270	C.CE.M.CHP	2700pF 50V
C39	UB013270	C.CE.M.CHP	2700pF 50V
C40	UB044100	C.CE.M.CHP	0.01uF 50V
C41	UR837100	C.EL	10uF 16V
C57	UR817470	C.EL	47uF 6.3V
C58	UR817470	C.EL	47uF 6.3V
C59	UR838100	C.EL	100uF 16V
C60	UB052100	C.CE.M.CHP	100pF 50V
C61	UR866100	C.EL	1uF 50V

* New Parts

P.C.B. TUNER

Schm Ref.	PART NO.	Description	Market
C62	UR837100	C.EL 10uF 16V	
C63	VJ899500	C.CE.M.CHP 10pF 50V	
C64	VJ899500	C.CE.M.CHP 10pF 50V	
C65	UB052100	C.CE.M.CHP 100pF 50V	
C67	UR817470	C.EL 47uF 6.3V	BG
C68	UB012330	C.CE.M.CHP 330pF 50V	BG
C69	UR817470	C.EL 47uF 6.3V	BG
C70	UR817470	C.EL 47uF 6.3V	BG
C71	UB012560	C.CE.M.CHP 560pF 50V	BG
C72	VJ900500	C.CE.M.CHP 27pF 50V	BG
C73	VJ900500	C.CE.M.CHP 27pF 50V	BG
C74	UB045100	C.CE.M.CHP 0.1uF 50V	BG
C80	UB044100	C.CE.M.CHP 0.01uF 50V	UCR
D1	VU995000	DIODE.ZENR MA8091-M 9.1V	
D2	VT332900	DIODE 1SS355	
D3	VT332900	DIODE 1SS355	
D4	VT332900	DIODE 1SS355	
D5	VU993000	DIODE.ZENR MA8056-M 5.6V	
D11	VU995400	DIODE.ZENR MA8100-M 10V	
IC1	XW755A00	IC LA1837 AM,FM IF	
IC2	XV229A00	IC LC72131M	
IC4	XV230A00	IC LC72720NM	BG
L1	GG000560	FLTR.CE SFE10.7MS3GHY-A	UCRA
L1	V4545200	FLTR.CE SFE10.7MJA1	BG
L2	GG000560	FLTR.CE SFE10.7MS3GHY-A	UCRA
L2	V4545200	FLTR.CE SFE10.7MJA1	BG
L3	VU887900	COIL 10uH	
L4	VU434500	FLTR.CE 450K PCFMT-049A	
L5	VR888000	FLTR.LC 19KHz	
L6	VR888000	FLTR.LC 19KHz	
L7	VU889500	COIL 220uH	BG
L8	VU889500	COIL 220uH	BG
L9	VU889500	COIL 220uH	BG
L10	V4608500	COIL.DT 10.7MHz	
PK1	V4299000	TUNER.FM TFFJ2U584A	UCR
PK1	VU134500	TUNER.FM TFFJ4E515A	ABG
PK2	VU333700	COIL.RF.AM 940536051A	
Q1	iC053540	TR 2SC535 A,B,C	
Q2	VD678500	TR.DGT DTA114ES	
Q3	iC181510	TR 2SC1815 Y	
R1	HV755150	R.CAR.FP 150Ω 1/4W	
R3	HV755220	R.CAR.FP 220Ω 1/4W	
R17	VV901100	R.MTL.OXD 120Ω 1W	
R40	HV755680	R.CAR.FP 680Ω 1/4W	
TE1	VU477800	TERM.ANT AJ-2038-040	
XL2	VY734600	RSNR.CRYS 7.2MHz	
XL4	V3930900	RSNR.CRYS 4.332MHz	BG
	BB071360	SCR.TERM 8.3x13	

* New Parts

Schm Ref.	PART NO.	Description	Market
	RD254330	R.CAR.CHP 33Ω 1/10W	
	RD254510	R.CAR.CHP 51Ω 1/10W	
	RD255100	R.CAR.CHP 100Ω 1/10W	
	RD255220	R.CAR.CHP 220Ω 1/10W	
	RD255270	R.CAR.CHP 270Ω 1/10W	
	RD255330	R.CAR.CHP 330Ω 1/10W	
	RD255390	R.CAR.CHP 390Ω 1/10W	
	RD255470	R.CAR.CHP 470Ω 1/10W	
	RD256100	R.CAR.CHP 1KΩ 1/10W	
	RD256180	R.CAR.CHP 1.8KΩ 1/10W	
	RD256200	R.CAR.CHP 2KΩ 1/10W	
	RD256220	R.CAR.CHP 2.2KΩ 1/10W	
	RD256330	R.CAR.CHP 3.3KΩ 1/10W	
	RD256390	R.CAR.CHP 3.9KΩ 1/10W	
	RD256470	R.CAR.CHP 4.7KΩ 1/10W	
	RD256510	R.CAR.CHP 5.1KΩ 1/10W	
	RD256560	R.CAR.CHP 5.6KΩ 1/10W	
	RD256620	R.CAR.CHP 6.2KΩ 1/10W	
	RD256680	R.CAR.CHP 6.8KΩ 1/10W	
	RD257100	R.CAR.CHP 10KΩ 1/10W	
	RD257120	R.CAR.CHP 12KΩ 1/10W	
	RD257180	R.CAR.CHP 18KΩ 1/10W	
	RD257220	R.CAR.CHP 22KΩ 1/10W	
	RD257240	R.CAR.CHP 24KΩ 1/10W	
	RD257270	R.CAR.CHP 27KΩ 1/10W	
	RD257470	R.CAR.CHP 47KΩ 1/10W	
	RD257680	R.CAR.CHP 68KΩ 1/10W	
	RD258100	R.CAR.CHP 100KΩ 1/10W	
	RD258120	R.CAR.CHP 120KΩ 1/10W	
	RD258220	R.CAR.CHP 220KΩ 1/10W	
	RD556390	R.CAR.CHP 3.9KΩ 1/10W	

* New Parts

MECHANICAL PARTS

Ref. No.	PART NO.	Description	Remarks	Markets
!	1- 1	V4193900 P.C.B. ASS'Y	SI : OPERATION	
	1-10	MF120160 FLEXIBLE FLAT CABLE	20P 160mm	
*	1-11	V6779500 FRONT PANEL	SI	UCRA
*	1-11	V6779700 FRONT PANEL	SI	BG
*	1-11	V6779600 FRONT PANEL	GD	UCRA
*	1-11	V6779800 FRONT PANEL	GD	BG
	1-12	V3686800 SUB PANEL-RX	SI	
	1-12	V3810400 SUB PANEL-KX	GD	
	1-13	V3687400 PANEL, SIDE-H81		
	1-14	V3687900 SHEET, WINDOW-RX		
	1-20	VQ368600 PUSH RIVET	P3555-B	
	1-21	VF617600 PAN HEAD P-TITE SCREW	2.6x8 FCRM3-BL	
	2- 1	V4217700 P.C.B. ASS'Y	MAIN	UC
	2- 1	V4217800 P.C.B. ASS'Y	MAIN	R
	2- 1	V4217900 P.C.B. ASS'Y	MAIN	A
	2- 1	V4218000 P.C.B. ASS'Y	MAIN	B
	2- 1	V4218100 P.C.B. ASS'Y	MAIN	G
	2- 2	V5000200 P.C.B. ASS'Y	TU-03	UCR
	2- 2	V5000300 P.C.B. ASS'Y	TU-03	A
	2- 2	V5000400 P.C.B. ASS'Y	TU-03	BG
	2- 8	V4804400 EARTH CLIP ASSY	1P 50mm	UC
	2-11	V3685300 HEAT SINK		
	2-12	V3685000 SUPPORT, HS-L		
	2-13	V3685100 SUPPORT, HS-R		
	2-14	V3685200 SUPPORT, REAR		
	2-15	VW849300 SHEET	19x24	
	2-20	VQ368500 PUSH RIVET	P3545-B	
	2-21	VK173200 SCREW, TRANSISTOR	3x15 SP FCM3	
	2-22	EP600830 BIND HEAD B-TITE SCREW	3x8 FCRM3-BL	
	2-23	EG330030 BIND HEAD SCREW	3x6 FCRM3-BL	
	2-24	VT669300 PW HEAD B-TITE SCREW	3x8-8 MFC2	UC
⚠	10	XW338A00 POWER TRANSFORMER		U
⚠	10	XW339A00 POWER TRANSFORMER		C
⚠	10	XW340A00 POWER TRANSFORMER		R
⚠	10	XW341A00 POWER TRANSFORMER		A
⚠	10	XW342A00 POWER TRANSFORMER		BG
⚠	11	V2296800 POWER CORD ASS'Y		A
⚠	11	V2363800 POWER CORD ASS'Y		UC
⚠	11	VN363700 POWER CORD ASS'Y		G
⚠	11	VV437300 POWER CORD ASS'Y		B
⚠	11	VZ542500 POWER CORD ASS'Y		R
	12	V2438700 CORD STOPPER	10P1	
	13	VU590000 BINDING TIE	CBTD001B	
	15	VB933800 FERRITE CORE	BP53RB310190NOA	BG
	16	VZ625600 BINDING TIE	SE140 L=140	UCABG
	20	VV272500 DC FAN MOTOR	2410ML-05W-B20-L00	
	101	V3681600 TOP COVER	SI	
	101	V3809100 TOP COVER	GD	
	102	V3684400 CHASSIS		
	103	V3682000 REAR PANEL		U
	103	V3682100 REAR PANEL		C
	103	V3682200 REAR PANEL		R
	103	V3682300 REAR PANEL		A

* New Parts

Ref. No.	PART NO.	Description	Remarks	Markets
103	V3682400	REAR PANEL		B
* 103	V6779400	REAR PANEL		G
104	V3684900	FRAME, FAN		
105	VZ679700	DAMPER	T8/PCB	
110	V3688500	LEG	M0080-M0	
* 111	V6746200	KNOB	D30	SI
* 111	V6746300	KNOB	D30	GD
* 112	V6746700	KNOB	D12	SI
* 112	V6746800	KNOB	D12	GD
113	V3687800	KNOB	D10	SI
113	V3811300	KNOB	D10	GD
120	VR264400	SPACER	H8	
122	VP857700	DAMPER	4x6x5	
140	VN413300	BIND HEAD BONDING B-T. SCREW	3x8 MFZN2-BL	
141	VY731200	BONDING HEAD TAPPING SCREW	3x10 MFN133	
142	EP600830	BIND HEAD B-TITE SCREW	3x8 FCRM3-BL	
143	EP600250	BIND HEAD B-TITE SCREW	3x8 ZMC2-Y	
144	EG330030	BIND HEAD SCREW	3x6 FCRM3-BL	R
145	VT669400	PW HEAD B-TITE SCREW	3x15-8 MFC2	
146	V2728500	BIND HEAD S-TITE SCREW	4x7 MFZN2-BL	
147	VV220300	BIND HEAD B-TITE SCREW	3x30 MFZN2-BL	
148	EL300650	PW HEAD B-TITE SCREW	3x8-8 FCRM3-BL	
149	EP600790	FLAT HEAD B-TITE SCREW	3x8 MFZN2-BL	
150	VY712800	PW HEAD B-TITE SCREW	3x8-8 MFN133	
!	VR519500	SHEET, FL	GD	
		ACCESSORIES		
* 200	V6804000	REMOTE CONTROL TRANSMITTER	CRX-E200/E150	RC7060-01-0018 UCRA
* 200	V6804100	REMOTE CONTROL TRANSMITTER	CRX-E200/E150	RC7060-01-0019 BG
200-1	AAX13340	LID	BLJYE 60050001	60050001
	VQ147100	ANTENNA, FM	1.4m	
	VR248500	ANTENNA, AM LOOP	1.0m	
	VY952200	PIN-PLUG CORD	2P 1.0m	
	V4135300	SYSTEM CORD	1P 1.0m	
		BATTERY, MANGANESE	SUM-4,AAA,R03	

* New Parts

1

NX-E200

2

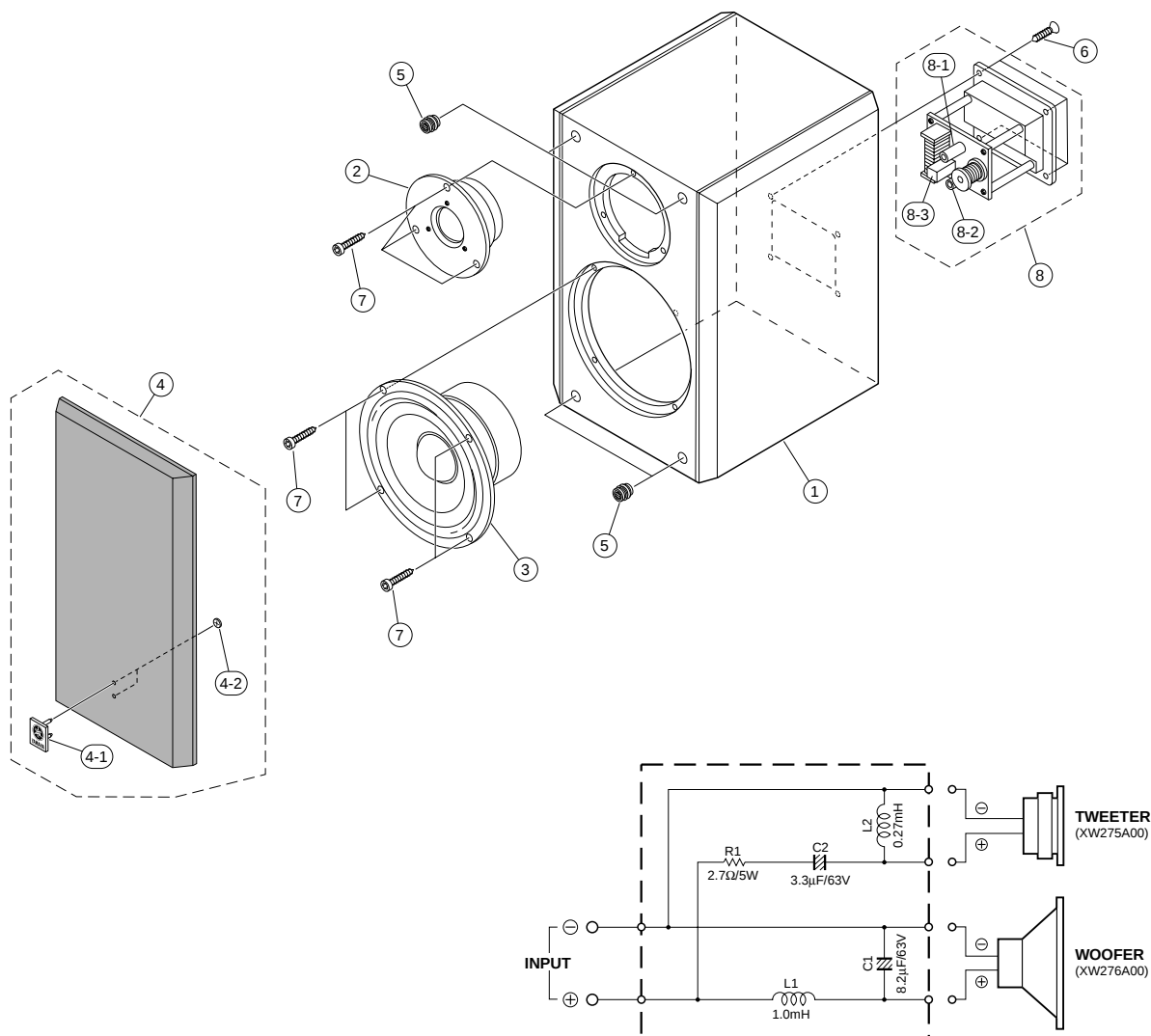
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7



Ref. No.	PART NO.	Description	Remarks	Markets
* 1	AAX24110	CABINET ASS'Y	BL	001 00000011
2	XW275A00	DRIVER	2.5cm 5Ω	XR02502701
3	XW276A00	DRIVER	13cm 6Ω	CR13005301
* 4	AAX24160	FRONT GRILLE ASS'Y		073 00100002
4-1	V2192200	EMBLEM		
4-2	VP161000	PUSH NUT	SPN1.5	
* 5	AAX24170	HOLDER		054 00100011
6	EM030180	FLAT HEAD TAPPING SCREW	3.5x20 MFZN2BL	7002792002
* 7	AAX24140	HEXAGON SOCKET TAPPING SCREW	4x25 MFZN2BL	025 00540250
* 8	AAX24150	NETWORK ASS'Y		011 07205116
* 8-1	AAX24130	CAPACITOR	8.2uF 63V	013 08210010
* 8-2	AAX24120	CAPACITOR	3.3uF 63V	013 03310001
* 8-3	AAX24180	RESISTOR	2.7Ω 5W	015 02700501
	AAX07730	ACCESSORIES SPEAKER CODE ASS'Y	4.0m 2pcs/set	6200038201

* New Parts

Parts List for Carbon Resistors

Value	1/4W Type Part No.	1/6W Type Part No.	Value	1/4W Type Part No.	1/6W Type Part No.
1.0 Ω	HJ35 3100	HF85 3100	10 kΩ	HF45 7100	HF45 7100
1.8 Ω	HJ35 3180	※	11 kΩ	HF45 7110	HF45 7110
2.2 Ω	HJ35 3220	HF85 3220	12 kΩ	HJ35 7120	HF85 7120
3.3 Ω	HJ35 3330	HF85 3330	13 kΩ	HF45 7130	HF45 7130
4.7 Ω	HJ35 3470	HF85 3470	15 kΩ	HF45 7150	HF45 7150
5.6 Ω	HJ35 3560	HF85 3560	18 kΩ	HF45 7180	HF45 7180
10 Ω	HF45 4100	HF45 4100	22 kΩ	HF45 7220	HF45 7220
15 Ω	HJ35 4150	HF85 4150	24 kΩ	HF45 7240	HF45 7240
22 Ω	HF45 4220	HF45 4220	27 kΩ	HJ35 7270	HF85 7270
27 Ω	HJ35 4270	HF85 4270	30 kΩ	HF45 7300	HF45 7300
33 Ω	HF45 4330	HF45 4330	33 kΩ	HF45 7330	HF45 7330
39 Ω	HJ35 4470	HF85 4390	36 kΩ	HF45 7360	HF45 7360
47 Ω	HF45 4470	HF45 4470	39 kΩ	HF45 7390	HF45 7390
56 Ω	HF45 4560	HF45 4560	47 kΩ	HF45 7470	HF45 7470
68 Ω	HF45 4680	HF45 4680	51 kΩ	HF45 7510	HF45 7510
75 Ω	HF45 4750	HF45 4750	56 kΩ	HF45 7560	HF45 7560
82 Ω	HF45 4820	HF45 4820	62 kΩ	HF45 7620	HF45 7620
91 Ω	HF45 4910	HF45 4910	68 kΩ	HF45 7680	HF45 7680
100 Ω	HF45 5100	HF45 5100	82 kΩ	HF45 7820	HF45 7820
110 Ω	HJ35 5110	HF85 5110	91 kΩ	HF45 7910	HF45 7910
120 Ω	HF45 5120	HF45 5120	100 kΩ	HF45 8100	HF45 8100
150 Ω	HF45 5150	HF45 5150	110 kΩ	HF45 8110	HF45 8110
160 Ω	HJ35 5160	※	120 kΩ	HF45 8120	HF45 8120
180 Ω	HF45 5180	HF45 5180	150 kΩ	HF45 8150	HF45 8150
200 Ω	HF45 5200	HF45 5200	180 kΩ	HF45 8180	HF45 8180
220 Ω	HF45 5220	HF45 5220	220 kΩ	HJ35 8220	HF85 8220
270 Ω	HF45 5270	HF45 5270	270 kΩ	HF45 8270	HF45 8270
330 Ω	HF45 5330	HF45 5330	300 kΩ	HF45 8300	HF45 8300
390 Ω	HF45 5390	HF45 5390	330 kΩ	HF45 8330	HF45 8330
430 Ω	HF45 5430	HF45 5430	390 kΩ	HJ35 8390	HF85 8390
470 Ω	HF45 5470	HF45 5470	470 kΩ	HF45 8470	HF45 8470
510 Ω	HF45 5510	HF45 5510	560 kΩ	HJ35 8560	HF85 8560
560 Ω	HF45 5560	HF45 5560	680 kΩ	HJ35 8680	HF85 8680
680 Ω	HF45 5680	HF45 5680	820 kΩ	HJ35 8820	HF85 8820
820 Ω	HF45 5820	HF45 5820	1.0 MΩ	HF45 9100	HF45 9100
910 Ω	HF45 5910	HF45 5910	1.2 MΩ	HJ35 9120	※
1.0 kΩ	HF45 6100	HF45 6100	1.5 MΩ	HJ35 9150	HF85 9150
1.2 kΩ	HF45 6120	HF45 6120	1.8 MΩ	HJ35 9180	HF85 9180
1.5 kΩ	HF45 6150	HF45 6150	2.2 MΩ	HJ35 9220	HF85 9220
1.8 kΩ	HF45 6180	HF45 6180	3.3 MΩ	HJ35 9330	HF85 9330
2.0 kΩ	HJ35 6200	HF85 6200	3.9 MΩ	HJ35 9390	※
2.2 kΩ	HF45 6220	HF45 6220	4.7 MΩ	HJ35 9470	HF85 9470
2.4 kΩ	HJ35 6240	HF85 6240			
2.7 kΩ	HF45 6270	HF45 6270			
3.0 kΩ	HF45 6300	HF45 6300			
3.3 kΩ	HF45 6330	HF45 6330			
3.6 kΩ	HJ35 6360	HF85 6360			
3.9 kΩ	HF45 6390	HF45 6390			
4.7 kΩ	HF45 6470	HF45 6470			
5.1 kΩ	HF45 6510	HF45 6510			
5.6 kΩ	HF45 6560	HF45 6560			
6.8 kΩ	HF45 6680	HF45 6680			
8.2 kΩ	HF45 6820	HF45 6820			
9.1 kΩ	HF45 6910	HF45 6910			

1/4W Type

HJ35 ○○○○

10mm

1/4W Type

HF45 ○○○○

1/6W Type

HF85 ○○○○

5mm