Service Manual

3DO Interactive Multiplayer

FZ-1

This is the Service Manual for the following area.

[C]...for Canada.

[E]...for U.K.

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic®

WARNING

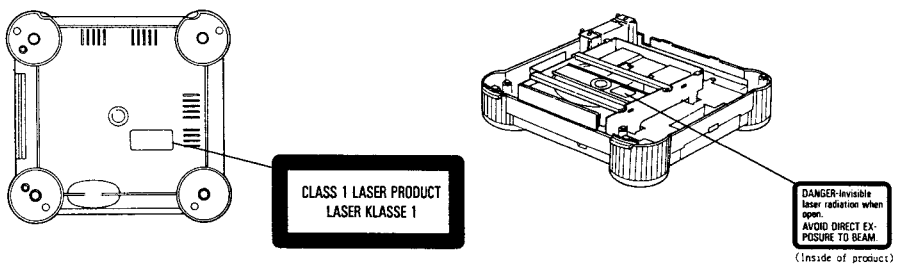
■PRECAUTION OF LASER DIODE

[C] [E]

CAUTION: This unit utilizes a class 1 laser.
Invisible laser radiation is emitted from the optical pickup lens when the unit is turned on:

1. Do not look directly into the pickup lens.
2. Do not use optical instruments to look at the pickup lens.
3. Do not adjust the preset variable resistor on the optical pickup.
4. Do not disassemble the optical pickup unit.
5. If the optical pickup is replaced, use the manufactures specified replacement pickup only.
6. Use of control, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

[E]



■SAFETY PRECAUTION

[C] [E]

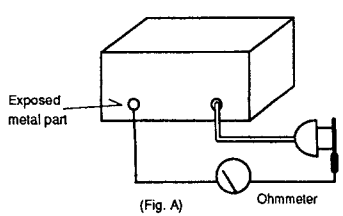
1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

[C]

• INSULATION RESISTANCE TEST

1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc.
   Equipment should read between 4.8 MΩ and 8.8 MΩ to all exposed parts. (Fig. A)

Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance=4.8–8.8MΩ

4. If the measurement is outside the specified limits, there is a possibilty of a shock hazard.
   The equipment should be repaired and rechecked before it is returnd to the custom

[C] [E]

LITHIUM BATTERY ⚠

• CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacture.
Dispose of used batteries according to the manufacture's instruction.

[C]

FUSE REPLACEMENT ⚠

• CAUTION

For continued protection against risk
of fire, replace only with same fast operating type
3.15A, 125V fuse.

•ATTENTION

AFIN D'ASSURER UNE PROTECTION
CONTINUE CONTRE LES RISQUES
D'INCENDIE, UTILISER À ACTION RAPIDE
UN FUSIBLE DE RECHANGE DE MÊME
TYPE DE 3,15A, 125V.

[E]

FUSE REPLACEMENT ⚠

• CAUTION

For continued protection against risk
of fire, replace only with same type
3.15A, 250V fuse.

[E]

Warning

FOR YOUR SAFETY PLEASE READ THE FOLLOWING TEXT CAREFULLY

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.
A 3 amp fuse is fitted in this plug.
Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 3 amps and that it is approved by ASTA or BSI to BS1362.

Check for the ASTA mark ⓐ or the BSI mark ♡ on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local Panasonic Dealer.
IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.
THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13 AMP SOCKET.
If a new plug is to be fitted please observe the wiring code as shown below.
If in any doubt please consult a qualified electrician.

[E]

Important

The wires in this mains lead are coloured in accordance with the following code:
Blue: Neutral
Brown: Live
As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

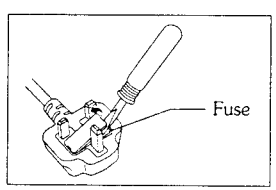
The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

Under no circumstances should either of these wires be connected to the earth terminal of the three pin plug, marked with the letter E or the Earth Symbol ⏚ .

■ How to replace the fuse

[E]

Open the fuse compartment with a screwdriver and replace the fuse.



This equipment is produced to BS800/1983.

The unit is in the standby condition when the AC power supply cord is connected.
The primary circuit is always "live" as long as the power cord is connected to an electrical outlet.

Contents

1. System Overview

1-1. General Description

The FZ-1 is a high performance audio/video entertainment and education system capable of realistic interactive video and CD-quality audio presentations.

The FZ-1 will play standard audio CDs at full 16-bit precision and bandwidth like audio stereo CD player. Also display and play Kodak Photo CD disc and Portfolio photo CD disc (Photo with CD sound).

The FZ-1 will produce composite video, S-video and RF modulated composite video (Ⓒ: NTSC ; Ⓔ: PAL) outputs to almost broadcast quality.

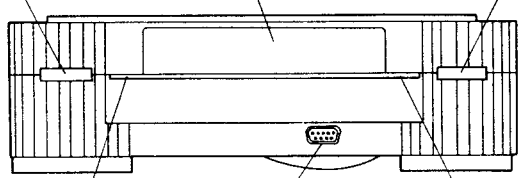
1-2. Specifications

CPU	CPU	32-bit RISC processor ARM60 (12.5 MHz)
Memory	RAM/VRAM	3 MB (Total) 2 MB: Main-RAM 1 MB: VRAM
	SRAM	32 KB (Battery back up)
	ROM	1 MB
DSP (Digital Signal Processor)		Original 16-bit digital signal processor
Video/Audio	Video output	Ⓒ Composite video, NTSC (RS170A standard) S-Video, NTSC RF Video, NTSC, Channel 3 or 4 (Switch selectable)
		Ⓔ Composite video, PAL S-Video, PAL RF Video, PAL-I, channel 21
	Resolution	Ⓒ 640 (H) × 480 (V) dots (Inside 320 × 240 dots)
		Ⓔ 768 (H) × 576 (V) dots (Inside 384 × 288 dots)
	Colors	Max. 16.7 Million / Std. 32K (Pixel Clock: 12.3 MHz)
	Audio	Stereo 16-bit (CD single) PCM (Sampling: 44.1 kHz)
Storage	CD-ROM drive	Size: 4.7 and 3.1 inch (12 and 8 cm) Double Speed CD-ROM Drive (Read Buffer: 32 KB)
	Extension memory	(via Expansion Port)
I/O Port	Control port	Low speed I/O: Dsub 9-pin × 1 Daisy-chain system
	Expansion port	High speed I/O: 30-pin × 1
	AV Expansion port	High speed AV-I/O (Video CD adaptor) : 68-pin × 1
System	System dimensions (W × D × H)	284 × 268 × 88 mm (11.2 × 10.6 × 3.5 inch)
	Weight	2.9 kg (6.4 lb.)
	Power requirement	Ⓒ 120 V AC
		Ⓔ 230 – 240 V AC
	Power consumption	30 W
Indicator	Power indicator	Red-LED × 1
	CD-access indicator	Green-LED × 1
Temperature	Operating	50 °F to 86 °F (10 °C to 30 °C)
	Storage	−4 °F to 140 °F (−20 °C to 60 °C) (When packed for shipment)

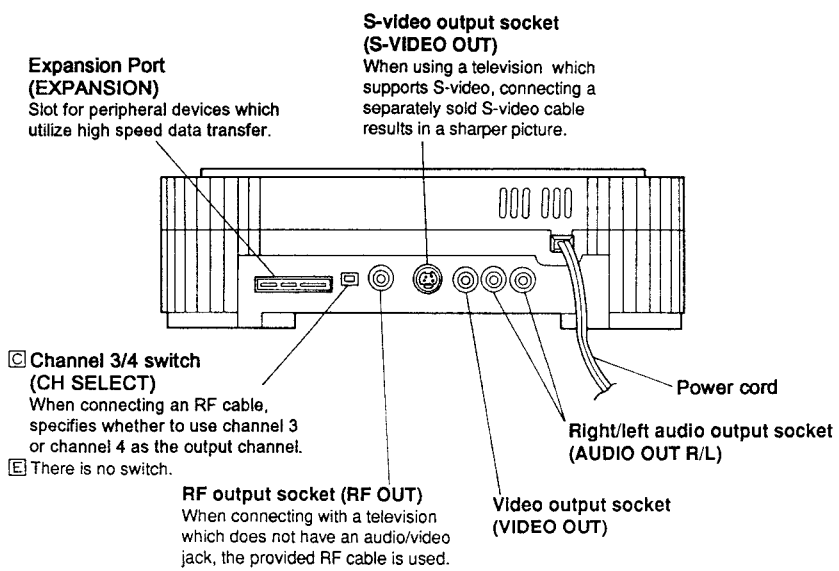
FMV: Full Motion Video

1-3. Location of Controls and Components

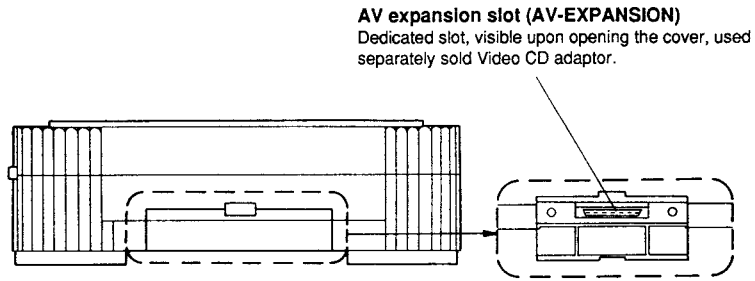
• Front View

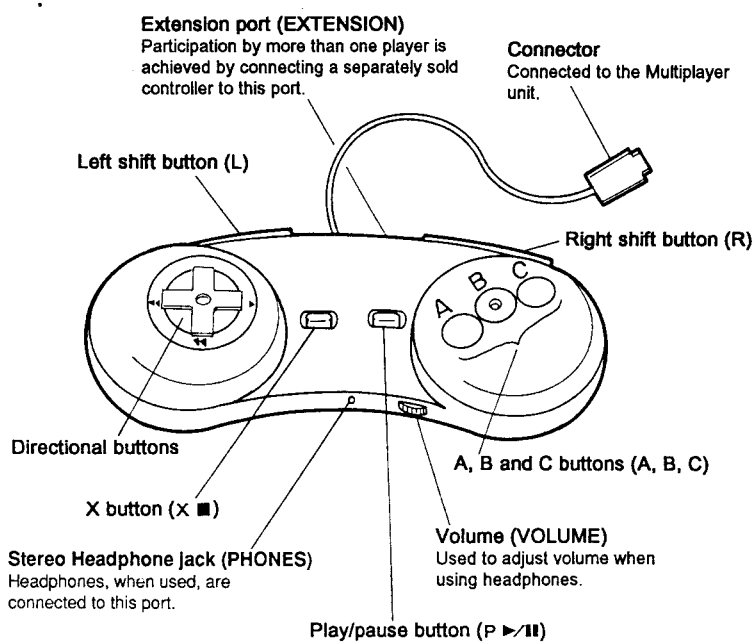


• Rear View

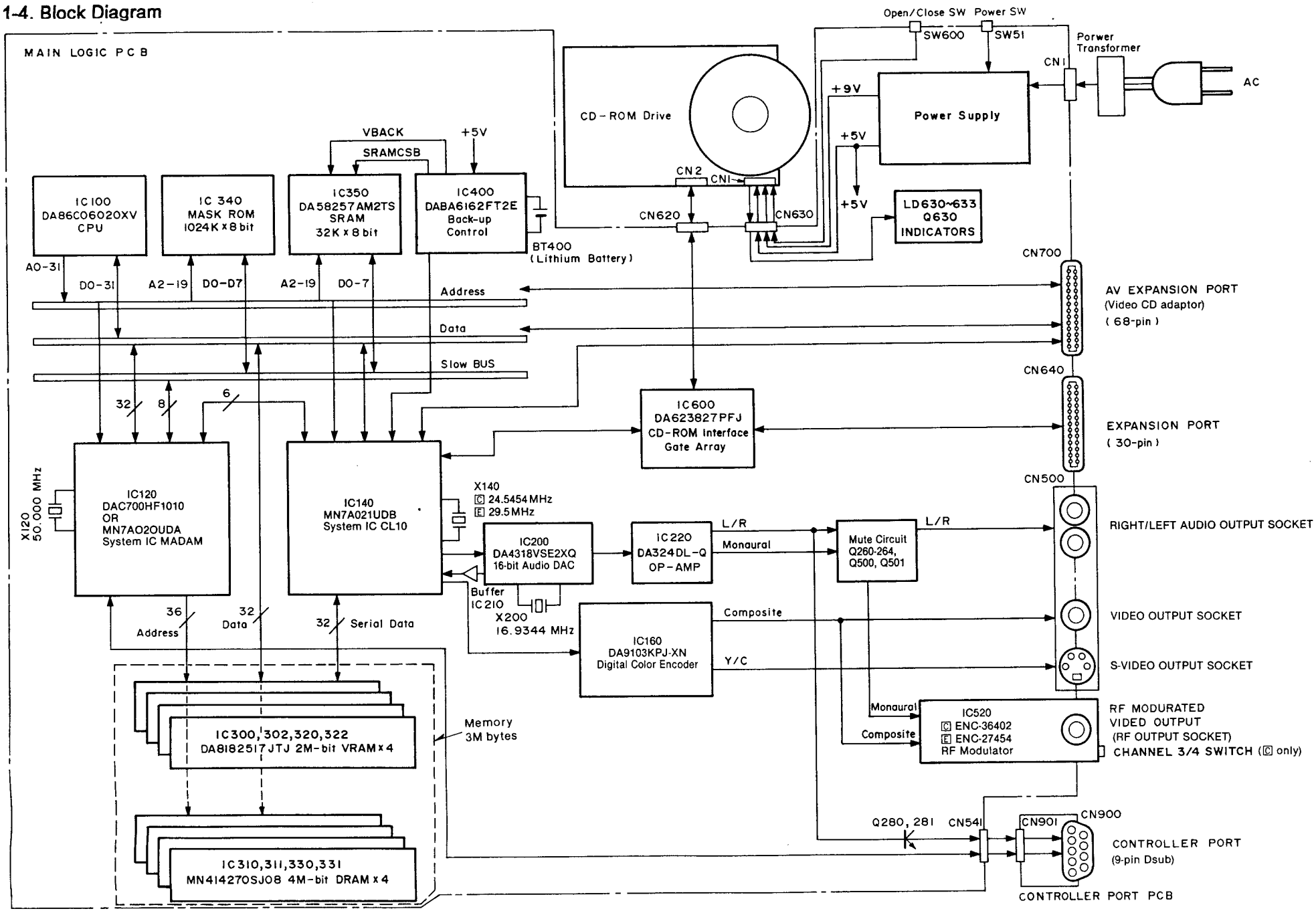


• Right Side View





1-4. Block Diagram



1-5. Block Explanation

CPU
CPU is ARM60. This RISC type micro processer has 32-bit address and 32-bit data path.
MADAM supplies CPU with 12.5 MHz clock.

ROM
1 MB ROM stores the system management program. The ROM is connected to Slow bus and its data is read by MADAM and MADAM arranges 8-bit data into 32-bit word and send it to CPU.

SRAM
32 KB SRAM is connected to Slow bus. Since Lithium battery backs up SRAM while power is down, SRAM can retain data. It may be used to back up game data, for example.

DRAM/VRAM
DRAM and VRAM is used as main memory.
VRAM is dual-port memory. This means one port is used as normal DRAM and the other one is used to read and write data simultaneously with the former port. Therefore, it is used as Frame Buffer which is required fast access.

MADAM
MADAM is Address Engine. It includes DMA logic, CPU control logic, bus sharing logic and Cell Engine.
A oscillator provides MADAM with 50 MHz clock, and MADAM divides it by two, and it provides CLIO, CPU and CD-ROM interface with 25 MHz clock.

CLIO
CLIO is Data Engine. It includes pixel decoding logic, 16-bit Digital Signal Processer and video interface logic. With a crystal, CLIO oscillates 24.5454 MHz (C) or 29.5 MHz (E) clock and supplies MADAM with 24.54 MHz (C) or 29.5 MHz (E) and supplies Digital Color Encoder with 12.27 MHz (C) or 14.75 MHz (E).

Digital Color Encoder
CLIO supplies Digital Color Encoder with RGB data and some control signals. And Digital Color Encoder modifies them into NTSC or PAL signals. It outputs both composit signal and Y/C signal.

Audio DAC
16-bit Audio DAC converts digital audio data from CLIO into analog audio data.
CLIO sends DAC data with serial communication manner.

CD-ROM interface
CD-ROM interface Gate Array is the interface between CLIO and both internal CD-ROM drive and External drives which are connected through Expansion Port.

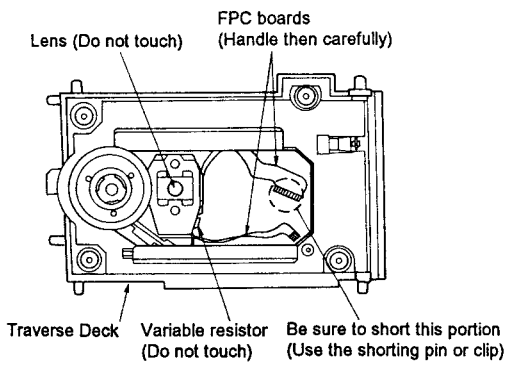
2. Checking Information

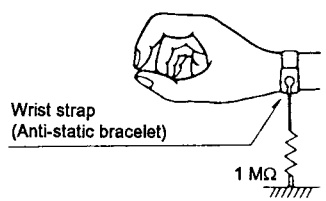
2-1. Handling Precautions for Traverse Deck

The laser diode in the traverse deck (optical pickup) may break down due to potential difference caused by static electricity of clothes or human body.
So, be careful of electrostatic breakdown during repair of the traverse deck (optical pickup).

- **Handling of traverse deck (optical pickup)**

1. Do not subject the traverse deck (optical pickup) to static electricity as it is extremely sensitive to electrical shock.
2. To prevent the breakdown of the laser diode, an antistatic shorting pin is inserted into the flexible board (FPC board).
   When removing or connecting the short pin, finish the job in as short time as possible.
3. Take care not to apply excessive stress to the flexible board (FPC board).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

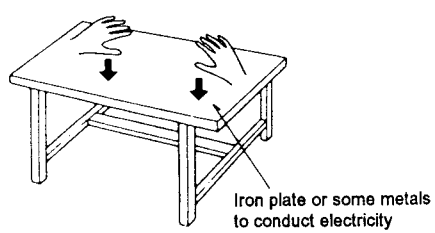




- **Grounding for electrostatic breakdown prevention**

1. Human body grounding
   Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table grounding
   Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.

Caution:
The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the traverse deck (optical pickup).



2-2. Disassembly / Reassembly

Note: Before disassembling, be sure to perform the following procedures first.

1. Remove the CD-ROM disk if it is inserted in the CD-ROM drive.
2. Turn the power switch off.
3. Disconnect the AC power cord.
4. Remove the optional units.

Caution: Please follow directions carefully.
Do not interchange screws in any part of the system.

Top Case

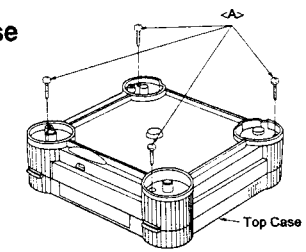


Figure 1

(1) Turn this unit (FZ-1) upside down and place it on a flat surface.

(2) Remove four screws <A> (3 × 14 mm) as shown in Figure 1.

(3) Turn it over again and gradually raise the top case.

*Reassemble in the reverse order.

CD-ROM Drive

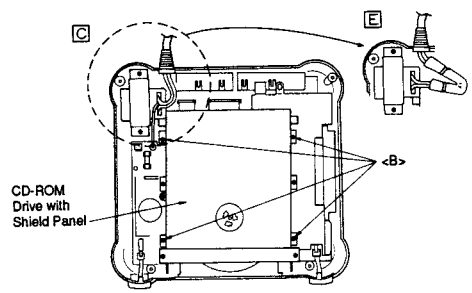


Figure 2

(1) Remove four screws <B> (2.6 × 8 mm) as shown in Figure 2.

(2) Gradually raise the front end of the CD-ROM drive and then disconnect the flat cables from two connectors (CN 620, CN 630) as shown in Figure 3.

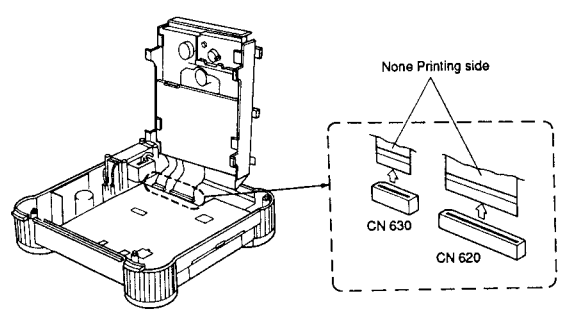


Figure 3

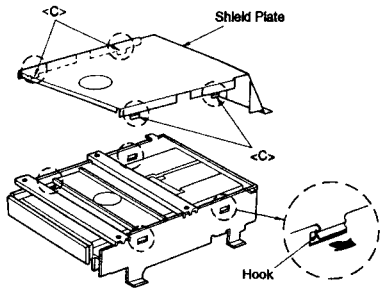


Figure 4

(3) Unhook four hooks <C> as shown in Figure 4.

(4) Raise the CD-ROM Drive shield plate.

*Reassemble in the reverse order.

Power Transformer

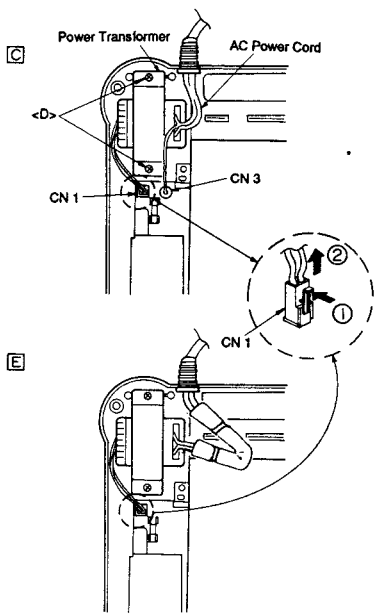


Figure 5

(1) After removing the top case and the CD-ROM drive, remove two screws <D> (3 × 10 mm).
C Then disconnect two connectors (CN 1, CN 3) as shown in Figure 5.

E Then disconnect a connector (CN 1) as shown in Figure 5.

(2) Raise the power transformer (with the AC power cord).

*Reassemble in the reverse order.

Main PCB

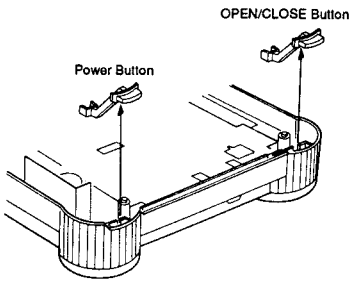


Figure 6

(1) After removing the top case, the CD-ROM drive and the power transformer, raise the power button and the open/close button as shown in Figure 6.

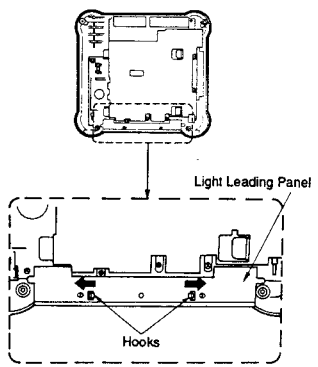


Figure 7

(2) Gently pull out the light leading panel from the bottom cabinet while pushing two hooks as shown in Figure 7.

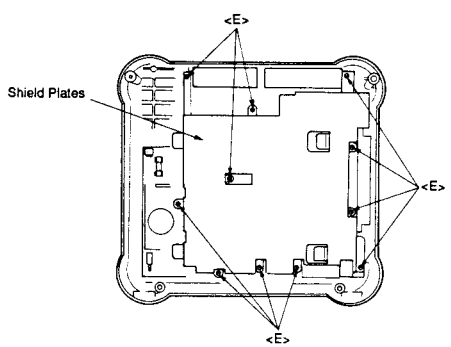


Figure 8

(3) Remove all eleven screws <E> (2.6 x 8 mm) as shown in Figure 8.

(4) Carefully raise shield plate.

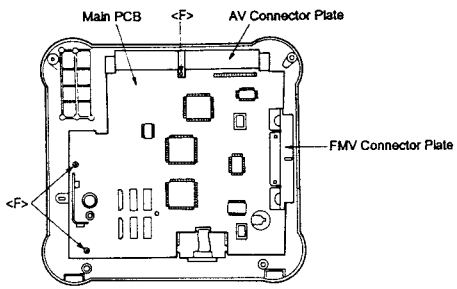


Figure 9

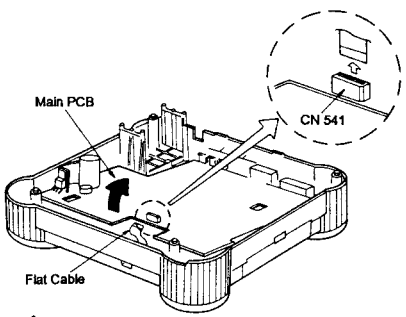


Figure 10

(5) After removing the top case, the CD-ROM drive and the power transformer, remove three screws <F> (2.6 x 8 mm), then remove the AV connector plate and the FMV-connector plate as shown in Figure 9.

(6) Disconnect the flat cable from connector (CN 541).

(7) Gradually raise the front end of the main PCB and remove it from bottom cabinet as shown in Figure 10.

*Reassemble in the reverse order.

Controller Port PCB

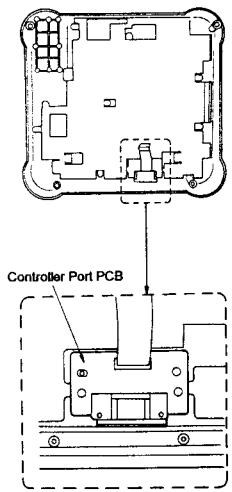


Figure 11

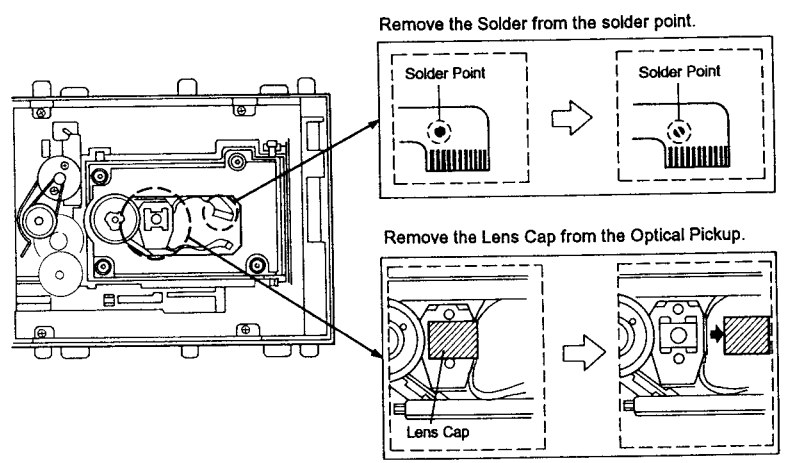
(1) After removing the top case, the CD-ROM drive, the power transformer, and the main PCB, gradually raise the Controller Port PCB as shown in Figure 11.

*Reassemble in the reverse order.

CD-ROM Drive

Precaution for replacing the CD-ROM Drive Mechanism

When replacing the Mechanism (P/N: LMXY00479), the Solder and the Lens Cap should be removed as shown below.



• Tray

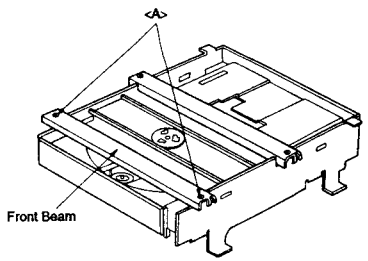


Figure 12

(1) Remove two screws <A> (3 × 6 mm), then remove the Front Beam as shown in Figure 12.

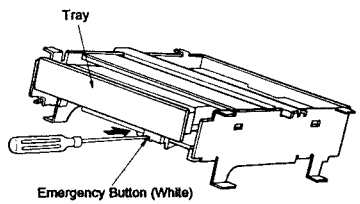


Figure 13

(2) Push the Emergency Button by using a thin screwdriver as shown in Figure 13.

(3) Draw out the Tray to limit.

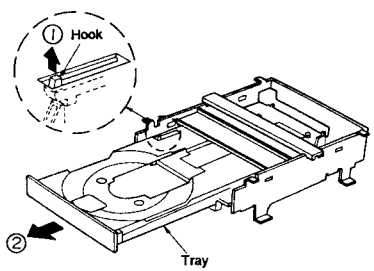


Figure 14

(4) Push up the hook from the reverse side as shown in the arrow ① of Figure 14.

(5) Pull out the Tray as shown in the arrow ② of Figure 14.

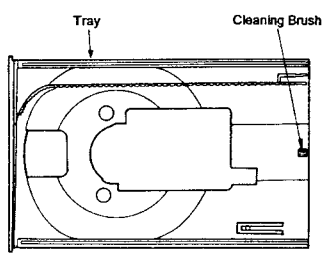


Figure 15

Caution: Don't touch the Cleaning Brush in Figure 15.

• Tray Reassembly

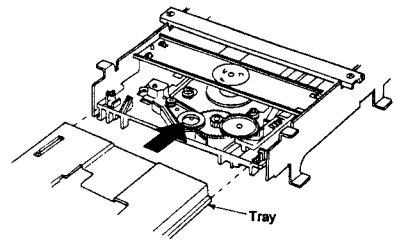


Figure 16

(1) The Tray can be fitted into the mechanism unit as shown in Figure 16.

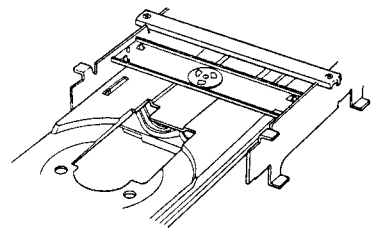


Figure 17

(2) Gradually insert the Tray.

• Mechanism

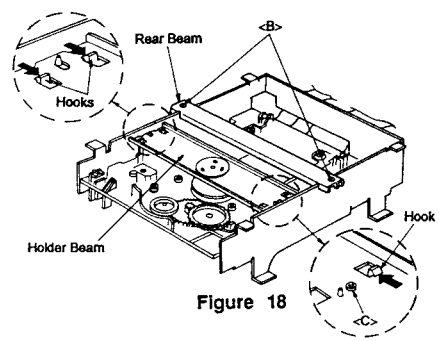


Figure 18

(1) Remove two screws <B> (3 × 6 mm), then remove the Rear Beam as shown in Figure 18.

(2) Remove the screw <C> (2.6 × 8 mm) in Figure 18.

(3) Remove the Holder Beam while pushing three Hooks as shown in Figure 18.

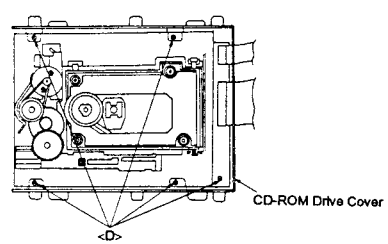


Figure 19

(4) Remove five screws <D> (2.6 × 8 mm), then remove the CD-ROM Drive Unit cover.

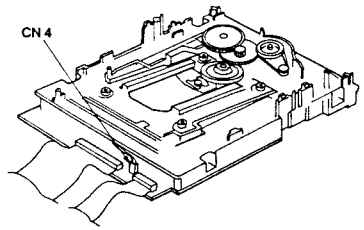


Figure 20

(5) Disconnect the connector (CN 4) as shown in Figure 20.

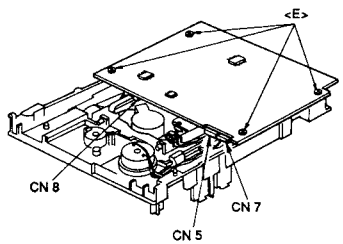


Figure 21

(6) Turn the CD-ROM Drive Unit upside down and remove four screws <E> (2.6 × 8 mm) as shown in Figure 21.

(7) Disconnect three connectors (CN 5, CN 7, CN 8) as shown in Figure 21.

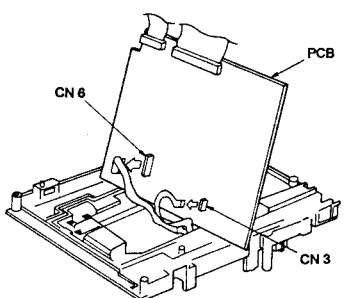


Figure 22

(8) Gradually raise the PCB and then disconnect two connectors (CN 3, CN 6) as shown in Figure 22.

(9) Remove the PCB.

• Mechanism Reassembly

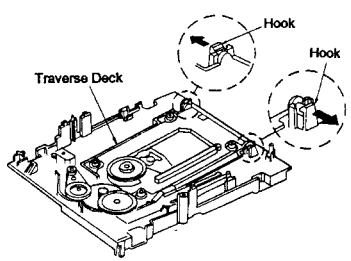


Figure 23

(1) After removing the Tray, unhook two Hooks securing the Traverse Deck as shown in Figure 23.

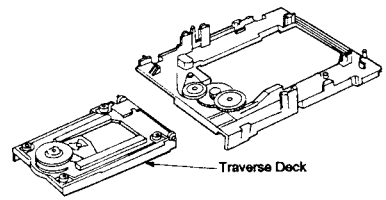


Figure 24

(2) Remove the Traverse Deck.

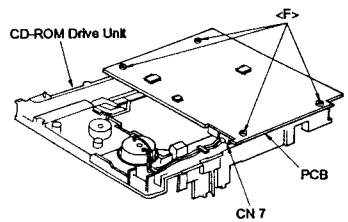


Figure 25

(3) Turn the CD-ROM Drive Unit as shown in Figure 25.

(4) Secure the PCB with four screws <F> (2.6 × 8 mm) as shown in Figure 25.

(5) Connect the connector (CN 7) as shown in Figure 25.

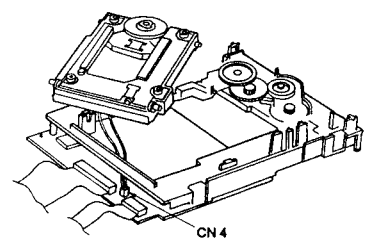


Figure 26

(6) Turn over the CD-ROM Drive Unit again.

(7) Connect the connector (CN 4) as shown in Figure 26.

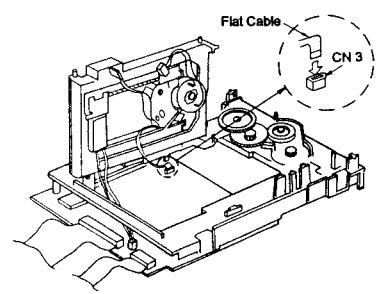


Figure 27

(8) Connect the flat cable to CN 3 as shown in Figure 27.

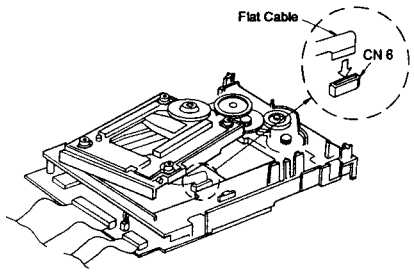


Figure 28

(9) Connect the flat cable to CN 6 as shown in Figure 28.

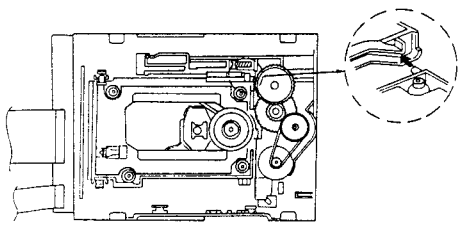


Figure 29

(10) Fit the front end of the Traverse Deck as shown in Figure 29.

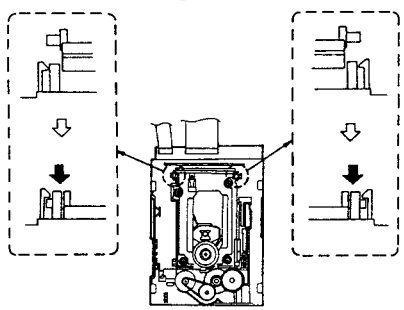


Figure 30

(11) Lock the rear end of the Traverse Deck as shown in Figure 30.

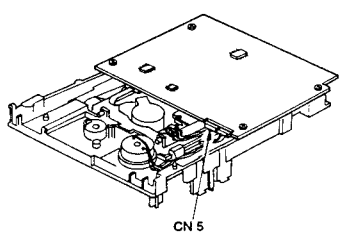


Figure 31

(12) Turn the CD-ROM Drive Unit.

(13) Connect the connector (CN 5) as shown in Figure 31.

Replacing the Mechanism Base parts

[Perform the following procedures in removed the Traverse Deck, as shown in Figure 24.]

• Disassembling the Load Gear ass'y and Slide Lever

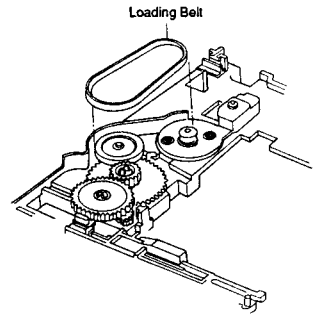


Figure 32

(1) Remove the Loading Belt as shown in Figure 32.

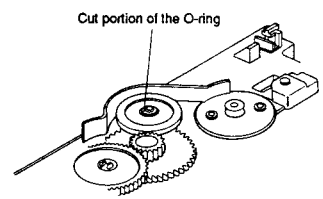


Figure 33

(2) Remove the O-ring (open the cut portion of it), and lift the pulley to remove.
(Replace the O-ring, if it is damaged.)

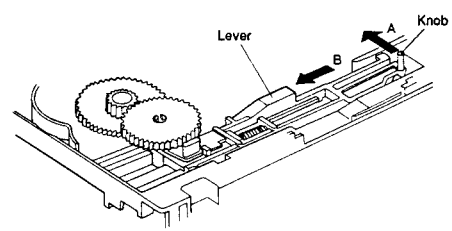


Figure 34

(3) While pressing the knob in direction arrow A, as shown in Figure 34, move the Slide Lever in direction arrow B until to stop.

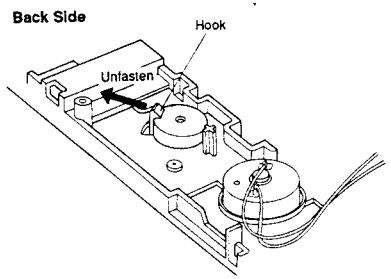


Figure 35

(4) Flip the Base upside down in state of procedure (3).
Unfasten the hook of Load Gear ass'y, and remove the Gear ass'y.

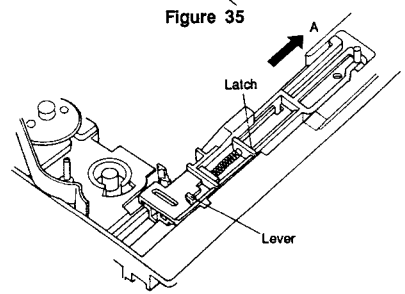


Figure 36

(5) Move the Slide Lever in direction arrow A, as shown in Figure 36, until to stop.
Press down the latch, and move the Slide Lever to stop again.
Lift the Slide Lever to remove.

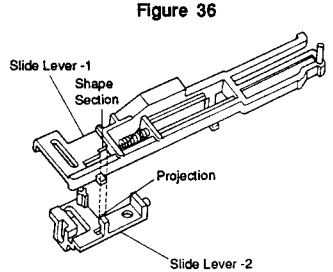


Figure 37

(6) After removing the spring, move the projection of Slide Lever -2 into the shape section of Slide Lever -1, to separate them.
Reassemble the Slide Levers in the reverse order.

• Reassembling the Load Gear ass'y and Slide Lever

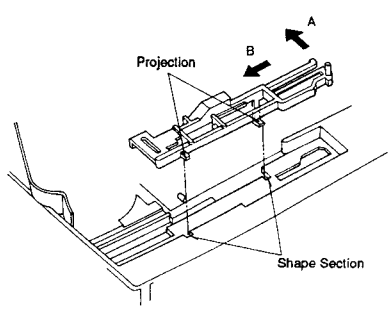


Figure 38

(1) Insert projection of Slide Lever into the shape section of Base.
While pressing the Knob in direction arrow A, as shown in Figure 38, move the Slide Lever in direction arrow B until to stop.

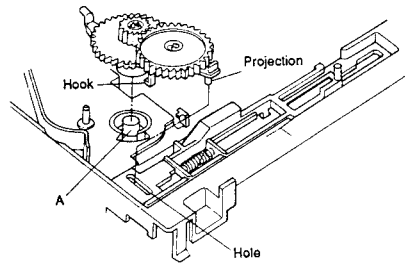


Figure 39

(2) While keeping procedure (1), insert the projection of Load Gear ass'y into the hole of Slide Lever and the hook into the portion A, as shown in Figure 39, then fasten the hook.

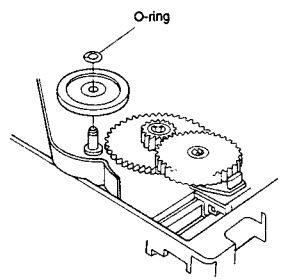


Figure 40

(3) Insert the pulley into the shaft, and fix it with an O-ring as shown in Figure 40.

• Removing the OPEN Switch ass'y

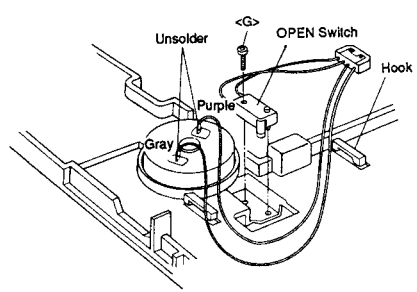


Figure 41

(1) Unfasten lead wires from the hook.
Unsolder two lead wires on the motor.
Remove the screw <G>, and lift the OPEN Switch out.

* Reassemble in the reverse order.

E

AC Cord

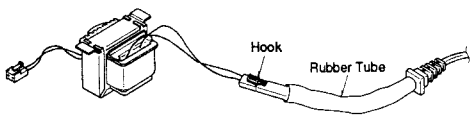


Figure 42

(1) After cutting two cord clamps, move rubber tube aside, and unhooking hook of connector, disconnect AC cable as shown in Figure 42.

E

• AC Cord Reassembly

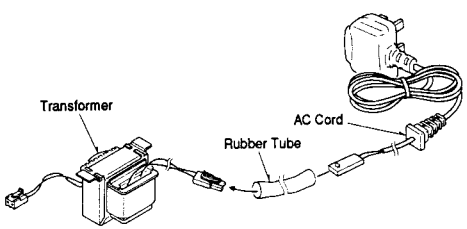


Figure 43

(1) Connect AC cord with transformer as shown in Figure 43.

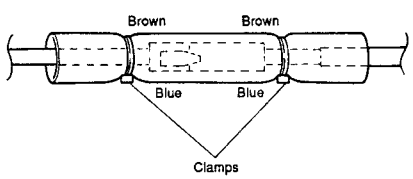
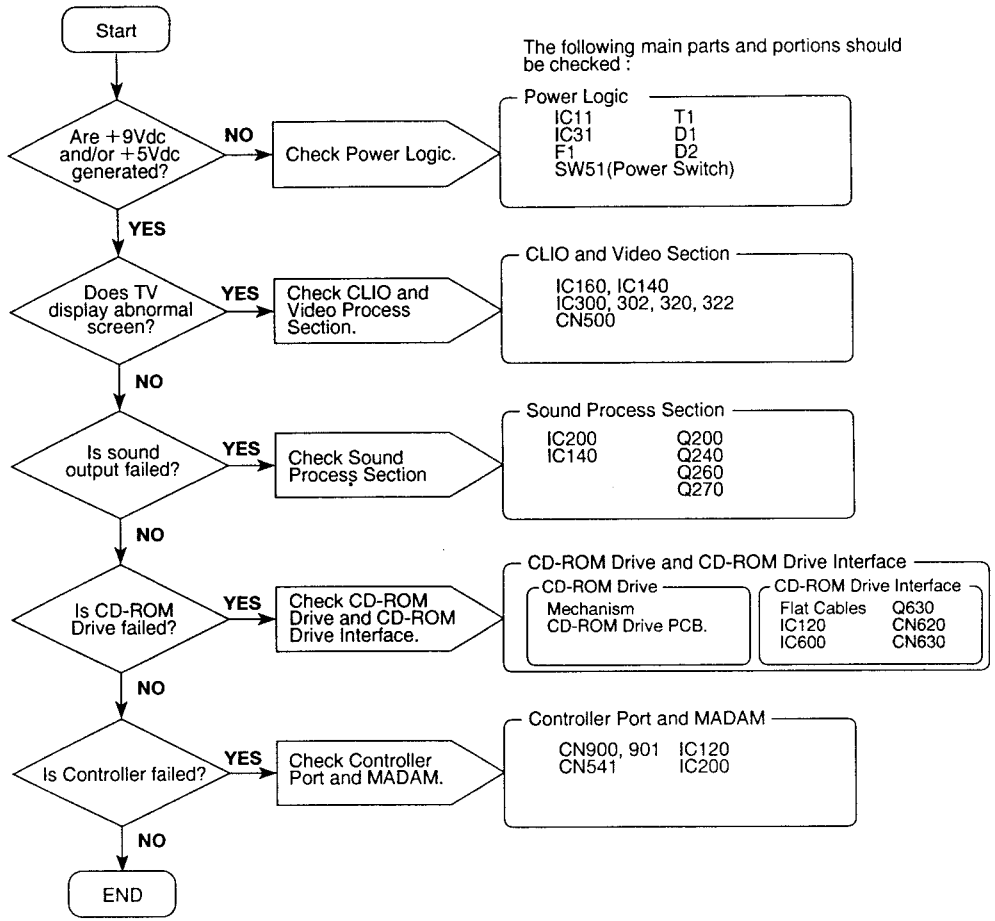


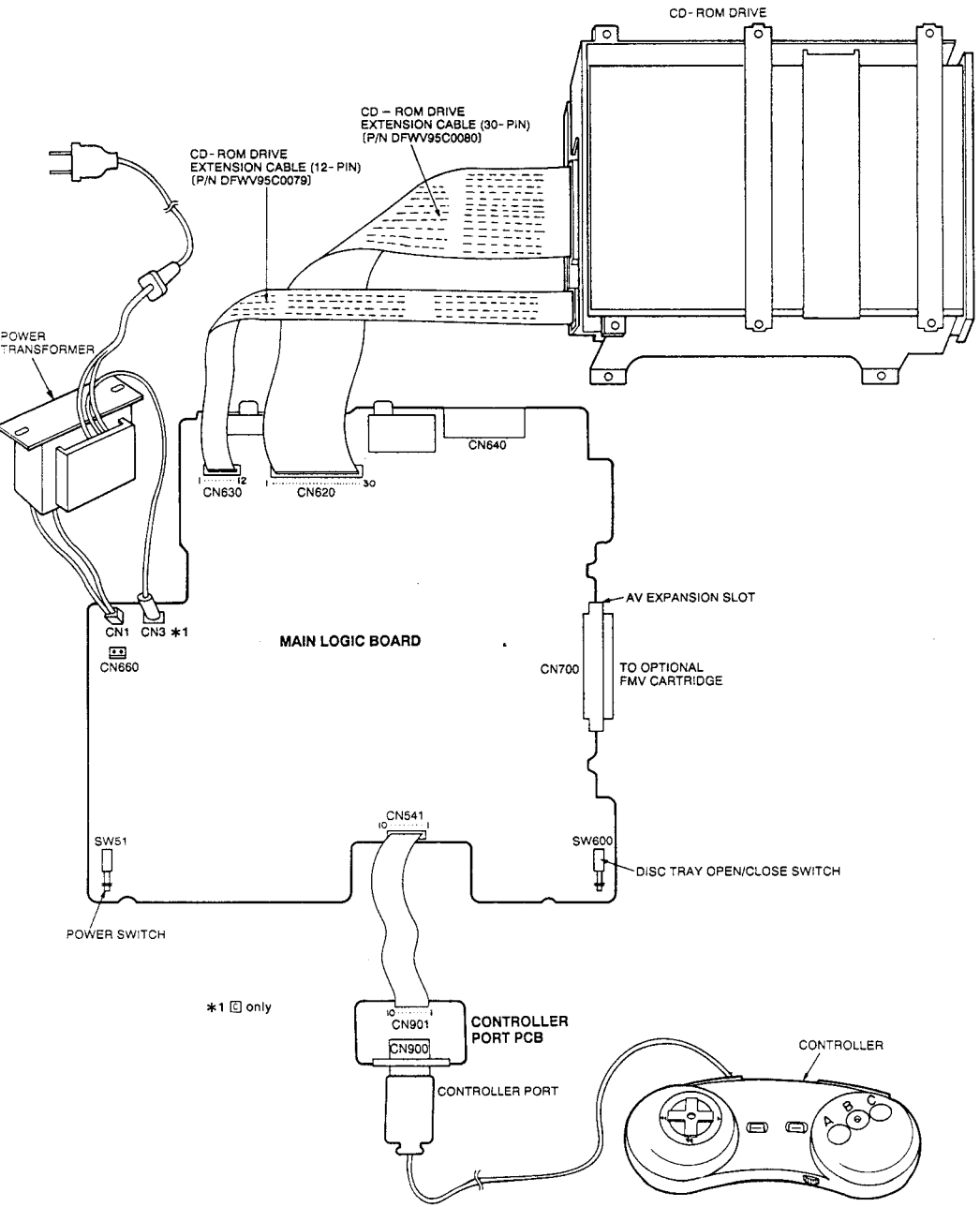
Figure 44

(2) Move rubber tube so as to place connector at the center of the tube, and tie tube using clamps as shown in Figure 44, and cut needless portion of the clamps.

2-3. Troubleshooting Flowchart



2-4. Interconnection of Operation Check



2-5. Terminal Function of IC's

IC100
CPU (P/N: DA86C0602XV)

Pin No.	I/O	Pin Name	Comment
1	I/O, TTL	D27	Data Bus 2^{27}
2	I/O, TTL	D28	Data Bus 2^{28}
3	I/O, TTL	D29	Data Bus 2^{29}
4	I/O, TTL	D30	Data Bus 2^{30}
5	I/O, TTL	D31	Data Bus 2^{31}
6	In, TTL	CPA	Coprocessor absent
7		Vss	
8		Vdd	
9	Out	LOCK	Locked Operation
10	In, TTL	BIGEND	Big Endian configuration
11	Out	CPI-	Coprocessor Instruction
12	In, TTL	DBE	Data Bus Enable
13	Out	WORD	Byte- / Word
14	In, TTL	MCLK	Memory Clock input
15	In, TTL	WAIT-	Wait signal input
16	In, TTL	LATEABT	Late Abort input
17	In, TTL	PROG32	32-bit Program configuration
18	In, TTL	DATA32	32-bit data configuration
19	Out	WRITE	Read - / Write
20	Out	OPC-	Opecode fetch
21	Out	MREQ-	Memory Request
22	Out	SEQ	Sequential address
23	In, TTL	ABORT	Memory Abort input
24	In, TTL	IRQ-	Interrupt Request input
25	In, TTL	FIRQ-	Fast Interrupt Request input
26	In, TTL	RESET-	Reset signal input
27	I/O, TTL	ALE	Address Latch Enable
28	I/O, TTL	CPB	Coprocessor Busy
29	I/O, TTL	TRANS-	Memory Translation
30	Out	A31	Address 2^{31}
31	Out	A30	Address 2^{30}
32	Out	A29	Address 2^{29}
33	Out	A28	Address 2^{28}
34	Out	A27	Address 2^{27}
35	Out	A26	Address 2^{26}
36	Out	A25	Address 2^{25}
37	Out	A24	Address 2^{24}
38	Out	A23	Address 2^{23}
39	Out	A22	Address 2^{22}
40	Out	A21	Address 2^{23}
41	Out	A20	Address 2^{20}

Continued (IC100)

Pin No.	I/O	Pin Name	Comment
42	Out	A19	Address 2^{19}
43	Out	A18	Address 2^{18}
44	Out	A17	Address 2^{17}
45	Out	A16	Address 2^{16}
46	Out	A15	Address 2^{15}
47	Out	A14	Address 2^{14}
48	Out	A13	Address 2^{13}
49	Out	A12	Address 2^{12}
50	Out	A11	Address 2^{13}
51		Vdd	
52		Vss	
53	Out	A10	Address 2^{10}
54	Out	A9	Address 2^{9}
55	Out	A8	Address 2^{8}
56	Out	A7	Address 2^{7}
57	Out	A6	Address 2^{6}
58	Out	A5	Address 2^{5}
59	Out	A4	Address 2^{4}
60	Out	A3	Address 2^{3}
61	Out	A2	Address 2^{2}
62	Out	A1	Address 2^{3}
63	Out	A0	Address 2^{0}
64		Vss	
65		Vdd	
66	In, TTL	ABE	Address Bus Enable
67	In, TTL, w/pullup	TCK	Test Clock
68	In, TTL, w/pull-up	TMS	Test Mode Select
69	In, TTL, w/pull-up	TRST-	Test Mode Reset
70	In, TTL, w/pull-up	TDI	Test Data Input
71	Out	TDO	Test Data Output
72	I/O, TTL	D0	Data Bus 2^{0}
73	I/O, TTL	D1	Data Bus 2^{1}
74	I/O, TTL	D2	Data Bus 2^{3}
75	I/O, TTL	D3	Data Bus 2^{4}
76	I/O, TTL	D4	Data Bus 2^{5}
77	I/O, TTL	D5	Data Bus 2^{6}
78	I/O, TTL	D6	Data Bus 2^{7}
79	I/O, TTL	D7	Data Bus 2^{8}
80		Vss	
81		Vdd	

Continued (IC100)

Pin No.	I/O	Pin Name	Comment
82	I/O, TTL	D8	Data Bus 2^8
83	I/O, TTL	D9	Data Bus 2^9
84	I/O, TTL	D10	Data Bus 2^{10}
85	I/O, TTL	D11	Data Bus 2^{11}
86	I/O, TTL	D12	Data Bus 2^{12}
87	I/O, TTL	D13	Data Bus 2^{13}
88	I/O, TTL	D14	Data Bus 2^{14}
89	I/O, TTL	D15	Data Bus 2^{15}
90	I/O, TTL	D16	Data Bus 2^{16}
91	I/O, TTL	D17	Data Bus 2^{17}
92	I/O, TTL	D18	Data Bus 2^{18}
93	I/O, TTL	D19	Data Bus 2^{19}
94	I/O, TTL	D20	Data Bus 2^{20}
95	I/O, TTL	D21	Data Bus 2^{21}
96	I/O, TTL	D22	Data Bus 2^{22}
97	I/O, TTL	D23	Data Bus 2^{23}
98	I/O, TTL	D24	Data Bus 2^{24}
99	I/O, TTL	D25	Data Bus 2^{25}
100	I/O, TTL	D26	Data Bus 2^{26}

IC120
System IC MADAM (P/N: DA1205FDBX0Z)

Pin No.	I/O	Pin Name	Comment
1	Out, TTL	RA10	Right part memory address 2^{10}
2	Out, TTL	RA9	Right part memory address 2^9
3	Out, TTL	RA8	Right part memory address 2^8
4	Out, TTL	RA0	Right part memory address 2^0
5	Out, TTL	RA7	Right part memory address 2^7
6		Vss	
7	Out, TTL	RA1	Right part memory address 2^1
8	Out, TTL	RA6	Right part memory address 2^6
9	Out, TTL	RA2	Right part memory address 2^2
10	Out, TTL	RA5	Right part memory address 2^5
11		Vss	
12	Out, TTL	RA3	Right part memory address 2^3
13	Out, TTL	RA4	Right part memory address 2^4
14		Vdd	
15	Out, TTL	CLC2	Device control code 2^2
16	Out, TTL	CLC1	Device control code 2^1
17		Vss	

Continued (IC120)

Pin No.	I/O	Pin Name	Comment
18	Out, TTL	CLC0	Device control code 2^0
19	Out, TTL	PBCLK	Control port serial clock
20	Out, TTL	PBDOUT	Control port serial data output
21	In, TTL	PBDIN	Control port serial data input
22	In, TTL, w/pull-up	DIAGRQ-	Diag. test request input
23	In, TTL	PCSC-	Pixel sync signal
24	In, TTL	DMAREQ	DMA request
25		Vss	
26	In, CMOS	X25MIN	Main clock input
27		Vdd	
28	In, CMOS	XV25M	Video clock input
29	In, TTL	CREADY-	Device control hand shake signal
30	In, TTL, w/pull-up	RESET-	Master reset signal input
31	Out, TTL	PDCS3-	Chip select for slow device 3
32		Vss	
33	Out, TTL	PDCS2-	Chip select for slow device 2
34	Out, TTL	SRAMW-	SRAM Write signal
35	Out, TTL	SRAMR-	SRAM Read signal
36	Out, TTL	PDCS0-	Chip select for slow device 0
37	Out, TTL	PDWR-	Write signal for slow bus
38	Out, TTL	PDRD-	Read signal for slow bus
39		Vss	
40	I/O, TTL	PD0	Data bus 2^0 for slow devices
41	I/O, TTL	PD1	Data bus 2^1 for slow devices
42	I/O, TTL	PD2	Data bus 2^2 for slow devices
43	I/O, TTL	PD3	Data bus 2^3 for slow devices
44		Vdd	
45	I/O, TTL	PD4	Data bus 2^4 for slow devices
46	I/O, TTL	PD5	Data bus 2^5 for slow devices
47	I/O, TTL	PD6	Data bus 2^6 for slow devices
48	I/O, TTL	PD7	Data bus 2^7 for slow devices
49		Vss	
50	Out, TTL	ROMCS-	ROM Chip Select signal
51	Out, TTL	SIPDEL	Status output
52		A2	CPU address 2^2
53	Out, TTL	X25M	X25M clock output
54		Vss	
55	In, special	XIN	Crystal Oscillator input for X25M

Continued (IC120)

Pin No.	I/O	Pin Name	Comment
56	Out, special	XOUT	Crystal Oscillator input for X25M
57	In, TTL	A3	CPU address 2^3
58		Vss	
59		Vdd	
60	In, TTL	A4	CPU address 2^4
61	In, TTL	A5	CPU address 2^5
62	In, TTL	A6	CPU address 2^6
63	In, TTL	A7	CPU address 2^7
64	In, TTL	A8	CPU address 2^8
65	In, TTL	A9	CPU address 2^9
66	In, TTL	A10	CPU address 2^{10}
67	In, TTL	A11	CPU address 2^{11}
68	In, TTL	A12	CPU address 2^{12}
69	In, TTL	A13	CPU address 2^{13}
70	In, TTL	A14	CPU address 2^{14}
71	In, TTL	A15	CPU address 2^{15}
72	In, TTL	A16	CPU address 2^{16}
73	In, TTL	A0	CPU address 2^0
74	In, TTL	A1	CPU address 2^1
75	In, TTL	A17	CPU address 2^{17}
76	In, TTL	A18	CPU address 2^{18}
77	In, TTL	A19	CPU address 2^{19}
78		Vss	
79		Vdd	
80	In, TTL	A20	CPU address 2^{20}
81	In, TTL	A21	CPU address 2^{21}
82	In, TTL	A22	CPU address 2^{22}
83	In, TTL	A23	CPU address 2^{23}
84	In, TTL	A24	CPU address 2^{24}
85	In, TTL	A25	CPU address 2^{25}
86	In, TTL	A26	CPU address 2^{26}
87	In, TTL	A27	CPU address 2^{27}
88	In, TTL	A28	CPU address 2^{28}
89	In, TTL	A29	CPU address 2^{29}
90	In, TTL	A30	CPU address 2^{30}
91	In, TTL	A31	CPU address 2^{31}
92	In, TTL	TRANS-	CPU TRANS signal
93	Out, TTL	CPBUSY	CPU BUSY signal
94	Out, TTL	CPURES-	CPU Reset signal
95	In, TTL	MIRQ-	Interrupt request input

Continued (IC120)

Pin No.	I/O	Pin Name	Comment
96		Vss	
97		Vdd	
98	Out, TTL	ABORT	CPU Abort signal
99	In, TTL	SEQ	CPU Sequential signal
100	In, TTL	MREQ-	CPU Memory Request signal
101	In, TTL	READ-	CPU Read-/Write signal
102		Vss	
103	In, TTL	OPC-	CPU OPC- signal
104	Out, TTL	MCLK	CPU clock
105		Vdd	
106	In, TTL	BYTE-	CPU Byte-/Word signal
107	Out, TTL	DBE	CPU Data Bus Enable signal
108		Vss	
109	In, TTL	CPI-	CPU CPI- signal
110	In, TTL	LOCK	CPU LOCK signal
111	Out, TTL	CPA	CPU CPA signal
112	Out, TTL	MCLK2	CPU clock (copy of MCLK)
113		Vss	
114	I/O, TTL	D0	Main system data bus 2^0
115	I/O, TTL	D1	Main system data bus 2^1
116	I/O, TTL	D2	Main system data bus 2^2
117	I/O, TTL	D3	Main system data bus 2^3
118		Vss	
119	I/O, TTL	D4	Main system data bus 2^4
120	I/O, TTL	D5	Main system data bus 2^5
121		Vdd	
122	I/O, TTL	D6	Main system data bus 2^6
123	I/O, TTL	D7	Main system data bus 2^7
124		Vss	
125	I/O, TTL	D8	Main system data bus 2^8
126	I/O, TTL	D9	Main system data bus 2^9
127	I/O, TTL	D10	Main system data bus 2^{10}
128	I/O, TTL	D11	Main system data bus 2^{11}
129		Vss	
130	I/O, TTL	D12	Main system data bus 2^{12}
131	I/O, TTL	D13	Main system data bus 2^{13}
132	I/O, TTL	D14	Main system data bus 2^{14}
133	I/O, TTL	D15	Main system data bus 2^{15}
134		Vss	
135	I/O, TTL	D16	Main system data bus 2^{16}

Continued (IC120)

Pin No.	I/O	Pin Name	Comment
136	I/O, TTL	D17	Main system data bus 2^{17}
137		Vdd	
138	I/O, TTL	D18	Main system data bus 2^{18}
139	I/O, TTL	D19	Main system data bus 2^{19}
140		Vss	
141	I/O, TTL	D20	Main system data bus 2^{20}
142	I/O, TTL	D21	Main system data bus 2^{21}
143	I/O, TTL	D22	Main system data bus 2^{22}
144	I/O, TTL	D23	Main system data bus 2^{23}
145		Vss	
146	I/O, TTL	D24	Main system data bus 2^{24}
147	I/O, TTL	D25	Main system data bus 2^{25}
148		Vdd	
149	I/O, TTL	D26	Main system data bus 2^{26}
150	I/O, TTL	D27	Main system data bus 2^{27}
151		Vss	
152	I/O, TTL	D28	Main system data bus 2^{28}
153	I/O, TTL	D29	Main system data bus 2^{29}
154	I/O, TTL	D30	Main system data bus 2^{30}
155	I/O, TTL	D31	Main system data bus 2^{31}
156		Vss	
157	Out, TTL	LPSC-	Left Part Serial Clock for sync.
158	Out, TTL	LSPARE	Reserved signal
159	Out, TTL	LRAS3-	RAS signal for Left Bank 3
160	Out, TTL	LRAS2-	RAS signal for Left Bank 2
161		Vss	
162	Out, TTL	LRAS1-	RAS signal for Left Bank 1
163	Out, TTL	LRAS0-	RAS signal for Left Bank 0
164		Vdd	
165		Vss	
166	Out, TTL	LSC	Serial Clock for Left part VRAM
167	Out, TTL	LSOE0-	SOE signal for Left Bank 0 memory
168	Out, TTL	LSOE1-	SOE signal for Left Bank 1 memory
169	Out, TTL	LDTOE-	DTOE signal for Left part memory
170	Out, TTL	LDSF	DSF signal for Right part VRAM
171	Out, TTL	LCAS-	CAS signal for Right part memory
172		Vss	
173	Out, TTL	LWEL-	WE signal for Right Upper byte
174	Out, TTL	LWEU-	WE signal for Right Lower byte
175	In, TTL	LQSF-	QSF signal for Right part VRAM

Continued (IC120)

Pin No.	I/O	Pin Name	Comment
176	Out, TTL	LA10	Left part memory address 2^{10}
177	Out, TTL	LA9	Left part memory address 2^{9}
178	Out, TTL	LA8	Left part memory address 2^{8}
179	Out, TTL	LA0	Left part memory address 2^{0}
180	Out, TTL	LA7	Left part memory address 2^{7}
181	Out, TTL	LA1	Left part memory address 2^{1}
182		Vdd	
183		Vss	
184	Out, TTL	LA6	Left part memory address 2^{6}
185	Out, TTL	LA2	Left part memory address 2^{2}
186	Out, TTL	LA5	Left part memory address 2^{5}
187	Out, TTL	LA3	Left part memory address 2^{3}
188	Out, TTL	LA4	Left part memory address 2^{4}
189	Out, TTL	RPSC-	Right Part Serial Clock for sync.
190	Out, TTL	RSPARE	Reserved signal
191		Vss	
192	Out, TTL	RRAS3-	RAS signal for Right Bank 3
193	Out, TTL	RRAS2-	RAS signal for Right Bank 2
194	Out, TTL	RRAS1-	RAS signal for Right Bank 1
195	Out, TTL	RRAS0-	RAS signal for Right Bank 0
196	Out, TTL	RSC	Serial Clock for Right part VRAM
197		Vss	
198	Out, TTL	RSOE0-	SOE signal for Right Bank 0 memory
199	Out, TTL	RSOE1-	SOE signal for Right Bank 1 memory
200	Out, TTL	RDTOE-	DTOE signal for Right part memory
201	Out, TTL	RDSF	DSF signal for Right part VRAM
201		Vdd	
203		Vss	
204	Out, TTL	RCAS-	CAS signal for Right part memory
205	Out, TTL	RWEL-	WE signal for Right Upper byte
206	Out, TTL	RWEU-	WE signal for Right Lower byte
207	In, TTL	RQSF	QSF signal for Right part VRAM
208		Vss	

IC140
System IC CLIO (P/N: DA1205GDBX0Z)

Pin No.	I/O	Pin Name	Comment
1	In, TTL	S19	VRAM Serial data bus 2^{19}
2	In, TTL	S18	VRAM Serial data bus 2^{18}
3	In, TTL	S1	VRAM Serial data bus 2^{1}

Continued (IC140)

Pin No.	I/O	Pin Name	Comment
4	In, TTL	S0	VRAM Serial data bus 2^{0}
5	In, TTL	S3	VRAM Serial data bus 2^{3}
6	In, TTL	S2	VRAM Serial data bus 2^{2}
7	In, TTL	S21	VRAM Serial data bus 2^{21}
8		Vdd	
9		Vss	
10	In, TTL	S20	VRAM Serial data bus 2^{20}
11	In, TTL	S23	VRAM Serial data bus 2^{23}
12	In, TTL	S22	VRAM Serial data bus 2^{22}
13	In, TTL	S5	VRAM Serial data bus 2^{5}
14	In, TTL	S4	VRAM Serial data bus 2^{4}
15	In, TTL	S7	VRAM Serial data bus 2^{7}
16	In, TTL	S6	VRAM Serial data bus 2^{6}
17		Vdd	
18	In, TTL	S25	VRAM Serial data bus 2^{25}
19	In, TTL	S24	VRAM Serial data bus 2^{24}
20	In, TTL	S27	VRAM Serial data bus 2^{27}
21	In, TTL	S26	VRAM Serial data bus 2^{26}
22	In, TTL	S9	VRAM Serial data bus 2^{9}
23		Vss	
24		X25M	System clock
25		Vss	
26	In, TTL	S8	VRAM Serial data bus 2^{8}
27	In, TTL	S11	VRAM Serial data bus 2^{11}
28	In, TTL	S10	VRAM Serial data bus 2^{10}
29	In, TTL	S29	VRAM Serial data bus 2^{29}
30	In, TTL	S28	VRAM Serial data bus 2^{28}
31	In, TTL	S31	VRAM Serial data bus 2^{31}
32	In, TTL	S30	VRAM Serial data bus 2^{30}
33	In, TTL	S13	VRAM Serial data bus 2^{13}
34	In, TTL	S12	VRAM Serial data bus 2^{12}
35	In, TTL	S15	VRAM Serial data bus 2^{15}
36	In, TTL	S14	VRAM Serial data bus 2^{14}
37		Vss	
38	In, CMOS	XV25MIN	Video Clock input
39		Vdd	
40		Vss	
41	Out, special	XOUT	Crystal Oscillator Output
42	In, special	XIN	Crystal Oscillator Input
43		Vss	
44	In, TTL, w/pull-up	PDINT-	Slow Bus Interrupt

Continued (IC140)

Pin No.	I/O	Pin Name	Comment
45	Out, TTL	XV25MO	Video Clock Output
46	Out, TTL	FIRQ-	CPU Fast Interrupt signal
47	Out, TTL	PCSC-	Video timing signal
48	Out, TTL	DMAREQ	DMA Request signal
49	I/O, TTL	CREADY-	Hand shake control for devices
50	Out, TTL	RESET-	System Reset signal
51	In, TTL, w/pull-up	CLC2	Opera device control signal 2^{2}
52	In, TTL, w/pull-up	CLC1	Opera device control signal 2^{1}
53		Vss	
54	In, TTL, w/pull-up	CLC0	Opera device control signal 2^{0}
55	I/O, TTL	D31	Main system data bus 2^{31}
56	I/O, TTL	D30	Main system data bus 2^{30}
57		Vss	
58	I/O, TTL	D29	Main system data bus 2^{29}
59	I/O, TTL	D28	Main system data bus 2^{28}
60	I/O, TTL	D27	Main system data bus 2^{27}
61	I/O, TTL	D26	Main system data bus 2^{26}
62		Vss	
63	I/O, TTL	D25	Main system data bus 2^{25}
64	I/O, TTL	D24	Main system data bus 2^{24}
65	I/O, TTL	D23	Main system data bus 2^{23}
66		Vss	
67		Vdd	
68	I/O, TTL	D22	Main system data bus 2^{22}
69	I/O, TTL	D21	Main system data bus 2^{21}
70		Vss	
71	I/O, TTL	D20	Main system data bus 2^{20}
72	I/O, TTL	D19	Main system data bus 2^{19}
73	I/O, TTL	D18	Main system data bus 2^{18}
74		Vss	
75	I/O, TTL	D17	Main system data bus 2^{17}
76	I/O, TTL	D16	Main system data bus 2^{18}
77	I/O, TTL	D15	Main system data bus 2^{15}
78		Vss	
79	I/O, TTL	D14	Main system data bus 2^{14}
80	I/O, TTL	D13	Main system data bus 2^{13}
81	I/O, TTL	D12	Main system data bus 2^{12}
82		Vss	
83		Vdd	
84	I/O, TTL	D11	Main system data bus 2^{11}

FZ-1

Continued (IC140)

Pin No.	I/O	Pin Name	Comment
85	I/O, TTL	D10	Main system data bus 2^{10}
86	I/O, TTL	D9	Main system data bus 2^{9}
87		Vss	
88	I/O, TTL	D8	Main system data bus 2^{8}
89	I/O, TTL	D7	Main system data bus 2^{7}
90	I/O, TTL	D6	Main system data bus 2^{6}
91		Vss	
92	I/O, TTL	D5	Main system data bus 2^{5}
93	I/O, TTL	D4	Main system data bus 2^{4}
94	I/O, TTL	D3	Main system data bus 2^{3}
95		Vss	
96	I/O, TTL	D2	Main system data bus 2^{2}
97	I/O, TTL	D1	Main system data bus 2^{1}
98		Vss	
99		Vdd	
100	I/O, TTL	D1	Main system data bus 2^{1}
101	Out, TTL	UNCACKR	Uncle chip read Acknowledge
102	Out, TTL	UNCACKW	Uncle chip Write Acknowledge
103	In, TTL, pull-down	UNCREQR	Uncle chip Read Request
104		Vss	
105	In, TTL, pull-down	UNCREQR	Uncle chip Read Request
106	In, TTL pull-up	A15	System address input 2^{15}
107	In, TTL pull-up	A14	System address input 2^{14}
108	In, TTL pull-up	A13	System address input 2^{13}
109	In, TTL pull-up	A12	System address input 2^{12}
110		Vss	
111	In, TTL pull-up	A11	System address input 2^{11}
112	In, TTL pull-up	A10	System address input 2^{10}
113	In, TTL pull-up	A9	System address input 2^{9}
114	In, TTL pull-up	A8	System address input 2^{8}
115	In, TTL pull-up	A7	System address input 2^{7}
116	In, TTL pull-up	A6	System address input 2^{6}
117		Vss	
118		Vdd	
119	In, TTL pull-up	A5	System address input 2^{5}

Continued (IC140)

Pin No.	I/O	Pin Name	Comment
120	In, TTL pull-up	A4	System address input 2^{4}
121	In, TTL pull-up	A3	System address input 2^{3}
122	In, TTL pull-up	A2	System address input 2^{2}
123	In, TTL, pull-up	SERL	Serial audio data left select
124	In, TTL, pull-up	SERR	Serial audio data right select
125	In, TTL, pull-up	SERDAT	Serial audio data input
126	In, TTL, pull-up	SERCLK	Serial audio clock input
127		Vss	
128	In, CMOS, pull-up	MCLK2	MCLK2 input
129	In, TTL	XACLK	Serial audio clock input
130		Vss	
131	Out, TTL	AUDBCK	Serial audio bit clock
132	Out, TTL	AUDWS	Serial audio word select
133	Out, TTL	AUDDAT	Serial audio data output
134	In, TTL, pull-up	EINT-	External bus interrupt input
135	In, TTL, pull-down	ERDY-	Expansion bus Ready signal
136	Out, TTL	ESEL-	Expansion bus Select signal
137	Out, TTL	ECMD-	Expansion bus Command signal
138	Out, TTL	ERST-	Expansion bus Reset signal
139	Out, TTL	EWRT-	Expansion bus Write signal
140	Out, TTL	WSTR-	Expansion bus Strobe signal
141		Vdd	
142		Vss	
143	I/O, TTL	ED7	Expansion bus Address/Data 2^{7}
144	I/O, TTL	ED6	Expansion bus Address/Data 2^{6}
145	I/O, TTL	ED5	Expansion bus Address/Data 2^{5}
146	I/O, TTL	ED4	Expansion bus Address/Data 2^{4}
147	I/O, TTL	ED3	Expansion bus Address/Data 2^{3}
148	I/O, TTL	ED2	Expansion bus Address/Data 2^{2}
149	I/O, TTL	ED1	Expansion bus Address/Data 2^{1}
150	I/O, TTL	ED0	Expansion bus Address/Data 2^{0}
151		Vss	
152	In, CMOS	PON	Power on reset input
153	In, CMOS	WDIN	Watch Dog Timer C/R input
154	In, TTL, pull-up	HSYNC-	Video Hsync input
155	In, TTL, pull-up	VSYNC-	Video Vsync input

Continued (IC140)

Pin No.	I/O	Pin Name	Comment
156	Out, TTL, ODout	WDRES-	Watch Dog timer reset output
157		Vss	
158	Out, TTL	AD0	Video pixel data 2^{0}
159	Out, TTL	AD1	Video pixel data 2^{1}
160	Out, TTL	AD2	Video pixel data 2^{2}
161	Out, TTL	AD3	Video pixel data 2^{3}
162		Vdd	
163		Vss	
164	Out, TTL	AD4	Video pixel data 2^{4}
165	Out, TTL	AD5	Video pixel data 2^{5}
166	Out, TTL	AD6	Video pixel data 2^{6}
167	Out, TTL	AD7	Video pixel data 2^{7}
168		Vss	
169	Out, TTL	AD8	Video pixel data 2^{8}
170	Out, TTL	AD9	Video pixel data 2^{9}
171	Out, TTL	AD10	Video pixel data 2^{10}
172	Out, TTL	AD11	Video pixel data 2^{11}
173		Vss	
174	Out, TTL	AD12	Video pixel data 2^{12}
175	Out, TTL	AD13	Video pixel data 2^{13}
176	Out, TTL	AD14	Video pixel data 2^{14}
177	Out, TTL	AD15	Video pixel data 2^{15}
178		Vdd	
179		Vss	
180	Out, TTL	AD16	Video pixel data 2^{16}
181	Out, TTL	AD17	Video pixel data 2^{17}
182	Out, TTL	AD18	Video pixel data 2^{18}
183	Out, TTL	AD19	Video pixel data 2^{19}
184		Vss	
185	Out, TTL	AD20	Video pixel data 2^{20}
186	Out, TTL	AD21	Video pixel data 2^{21}
187	Out, TTL	AD22	Video pixel data 2^{22}
188	Out, TTL	AD23	Video pixel data 2^{23}
189		Vss	
190	Out, TTL	AMYCTL	Color encoder control signal
191	Out, TTL	TMUXSEL	Color encoder control signal
192	Out, TTL	BLANK-	Video Blanking signal
193	Out, TTL	EXTACKR	External Read Acknowledge
194	Out, TTL	EXTACKW	External Write Acknowledge
195		Vdd	
196		Vss	

Continued (IC140)

Pin No.	I/O	Pin Name	Comment
197	I/O, TTL	ADBIO0	General purpose video I/O 1
198	I/O, TTL	ADBIO1	General purpose video I/O 2
199	I/O, TTL	ADBIO2	General purpose video I/O 3
200	I/O, TTL	ADBIO3	General purpose video I/O 4
201		Vss	
201	In, TTL, pull-down	EXTREQR	External Read DMA Request
203	In, TTL, pull-down	EXTREQW	External Write DMA Request
204	In, TTL, pull-up	RPSC-	Right part VRAM serial clock
205	In, TTL, pull-up	LPSC-	Left part VRAM serial clock
206	In, TTL	S17	VRAM Serial data bus 2^{17}
207	In, TTL	S16	VRAM Serial data bus 2^{18}
208		Vss	

IC160
Video Encoder (P/N: DA9103KPJ-XN)

Pin No.	I/O	Pin Name	Comment
1		GND	
2	Analog output	COMPO0	Composite video output 0
3		GND	
4	Analog output	COMPO1	Composite video output 1
5		GND	
6	Analog output	COUT	Chroma signal output
7		GND	
8	Analog output	YOUT	Luminance signal output
9		GND	
10		N/C	
11		N/C	
12		GND	
13	TTL, Input	R0	Red pixel data input 0
14	TTL, Input	R1	Red pixel data input1
15		GND	
16		VAA	
17	TTL, Input	R2	Red pixel data input 2
18	TTL, Input	R3	Red pixel data input 3
19	TTL, Input	R4	Red pixel data input 4
20	TTL, Input	R5	Red pixel data input 5
21		GND	
22		VAA	
23	TTL, Input	R6	Red pixel data input 6
24	TTL, Input	R7	Red pixel data input 7
25	TTL, Input	GAMMA-	GAMMA CORRECTION
26	TTL, Input	YCRCB	YCrCb, RGB selector
27		N/C	
28	TTL, Input	B0	Blue pixel data input 0
29	TTL, Input	B1	Blue pixel data input 1
30	TTL, Input	B2	Blue pixel data input 2
31	TTL, Input	B3	Blue pixel data input 3
32	TTL, Input	B4	Blue pixel data input 4
33	TTL, Input	B5	Blue pixel data input 5
34	TTL, Input	B6	Blue pixel data input 6
35	TTL, Input	B7	Blue pixel data input 7
36	TTL, Input	G0	Green pixel data input 0
37	TTL, Input	G1	Green pixel data input 1
38	TTL, Input	G2	Green pixel data input 2
39	TTL, Input	G3	Green pixel data input 3
40	TTL, Input	G4	Green pixel data input 4

Continued (IC160)

Pin No.	I/O	Pin Name	Comment
41	TTL, Input	G5	Green pixel data input 5
42	TTL, Input	G6	Green pixel data input 6
43	TTL, Input	G7	Green pixel data input 7
44		GND	
45		GND	
46		GND	
47		GND	
48	TTL, Input	2XCLOCK	2x pixel clock input
49	TLL, Input	CLOCK	Pixel clock input
50		GND	
51		VAA	
52	TTL, Input	RESET-	Reset control input
53	TLL, Input	BLANK-	Composite blanking control
54	TTL, Output	VSYNC	Vertical sync
55	TLL, Output	HSYNK	Horizontal sync
56		GND	
57		VAA	
58	TTL, Input	SQUARE	Square pixel/CCIR 601
59	TLL, Input	INTERLACE	Interlace/Noninterlace
60	TLL, Input	PAL	PAL/NTSC
61		VAA	
62	Analog input	FSADJUST	Full-scale adjust control
63	Analog input	VREFIN	Voltage reference input
64	Analog output	VREFOUT	Voltage reference output
65		VAA	
66		VAA	

IC200
Audio DAC (P/N: DA4318VSE2XQ)

Pin No.	I/O	Pin Name	Comment
1		N/C	
2	Output	VREF	Voltage Reference output
3		N/C	
4		AVDD	Analog power supply
5		AVSS	Analog ground
6	Input	TST	Test pin
7	Input	ZMUTE	Mute
8	Input	DIF0	Input format 0
9	Input	DIF1	Input format 1
10		DVSS	Digital ground
11		DVDD	Digital power supply
12	Input	LRCK	L/R Clock pin
13	Input	BICK	Bit clock
14	Input	SDATA	Data input
15	Input	PD*	Reset
16	Input	XT1	Master clock input
17	Output	XT0	Crystal oscillator output
18	Input	SMUTE	Software mute
19	Input	DEM0	De-emphasis mode 0
20	Input	DEM1	De-emphasis mode 1
21	Input	CKS	Clock select
22	Output	DZF	Zero output detect
23	Output	AOUTR-	R-ch Analog minus output
24	Output	AOUTR+	R-ch Analog plus output
25	Output	AOUTL-	L-ch Analog minus output
26	Output	AOUTL+	L-ch Analog plus output
27		N/C	
28		N/C	

IC400
Backup Controller (P/N: DABA6162FT2E)

Pin No.	I/O	Pin Name	Comment
1		N/C	(Not Connected)
2	Output	VREF	Voltage Reference Output
3		N/C	(Not Connected)
4		AVDD	
5		AVSS	
6	Input	TST	Test pin
7	Input	LRCK	L/R Clock input
8	Input	BICK	Serial data clock

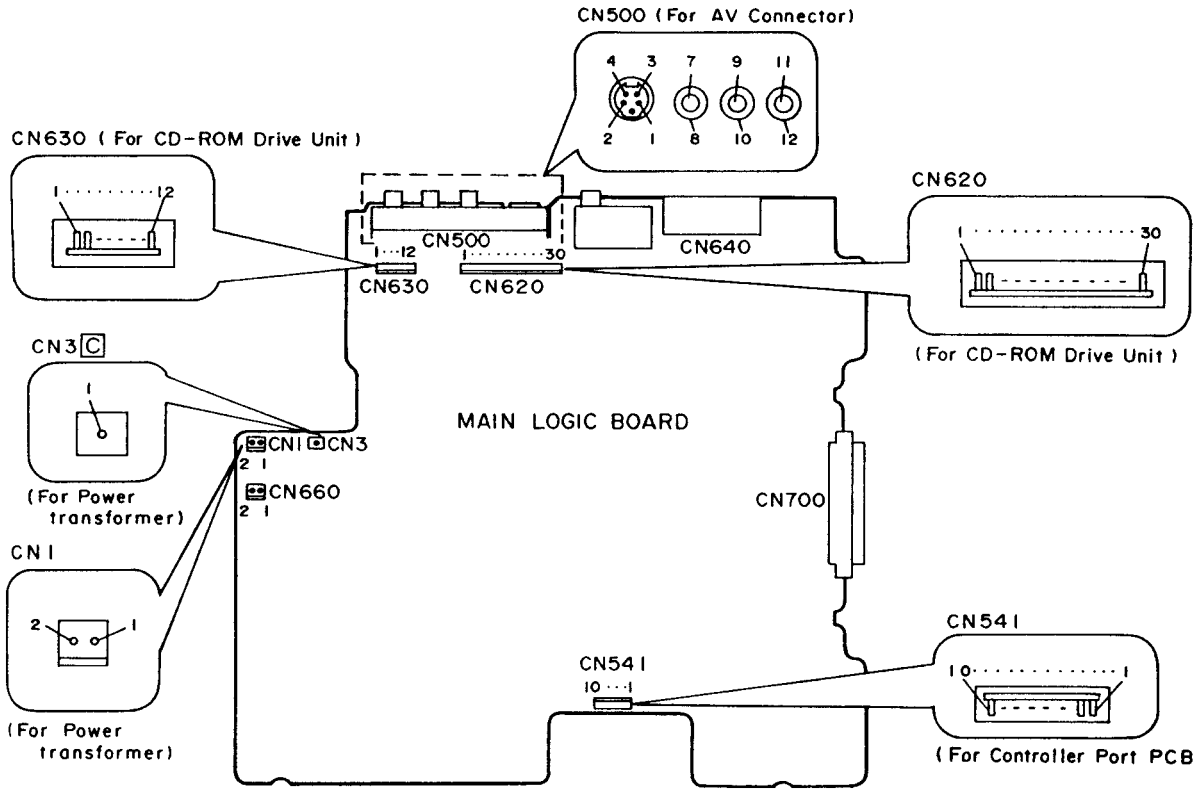
IC600
CD-ROM Interface Gate Array
(P/N: DA623827PFJ)

Pin No.	I/O	Pin Name	Comment
1	I/O, TTL, w/Pull-up	EXD3	Internal expansion bus (2^3)
2	I/O, TTL, w/Pull-up	EXD4	Internal expansion bus (2^4)
3	I/O, TTL, w/Pull-up	EXD5	Internal expansion bus (2^5)
4	I/O, TTL, w/Pull-up	EXD6	Internal expansion bus (2^6)
5	I/O, TTL, w/Pull-up	EXD7	Internal expansion bus (2^7)
6	In, TTL	EXSTR-	Internal Strobe signal
7	In, TTL	EXWRT-	Internal Write signal
8	In, TTL	EXRST-	Internal Reset signal
9	Tri-out, TTL	EXRDY-	Internal Ready signal
10		Vss	
11	Tri-out, TTL	EXINT-	Internal Interrupt signal
12	In, TTL	EXCMD-	Internal Command signal
13	In, TTL	EXSEL-	Internal Selection signal
14	In, TTL	BFRST-	External Reset signal
15	Out, TTL	IDOUT	ID output to next device
16	I/O, TTL, w/Pull-up	BFWRT-	External Write signal
17	Out, TTL	BFSEL-	External Selection signal
18	In, TTL, w/Pull-up	IDIN	ID input from previous device
19	In, TTL, w/Pullup	BFRDY-	External bus Ready input
20	Out, TTL	BFCMD-	External bus Command output
21	Out, TTL	BFSTR-	External bus Strobe output
22	In, TTL, w/Pull-up	BFINT-	External bus Interrupt input
23	I/O, TTL, w/Pull-up	BFD7	External bus data 2^7
24	I/O, TTL, w/Pull-up	BFD6	External bus data 2^6
25		Vss	
26		Vdd	
27	I/O, TTL, w/Pull-up	BFD5	External bus data 2^5
28	I/O, TTL, w/Pull-up	BFD4	External bus data 2^4
29	I/O, TTL, w/Pull-up	BFD3	External bus data 2^3
30	I/O, TTL, w/Pull-up	BFD2	External bus data 2^2
31	In, TTL, w/Pull-up	EN7B	General purpose input
32	In, TTL, w/Pull-up	EN15B	General purpose output

Continued (IC600)

Pin No.	I/O	Pin Name	Comment
33	I/O, TTL, w/Pull-up	BFD1	External bus data 2^1
34	I/O, TTL, w/Pull-up	BFD1	External bus data 2^0
35	In, TTL	PDCS0-	Slow bus Chip select strobe
36	I/O, TTL, w/Pull-up	BFIDIN	ID signal return from EX-Bus
37	In, TTL	PDWR-	Slow bus Write signal
38	In, TTL	PDRD-	Slow bus Read signal
39	Out, TTL	PDWRO-	Write strobe to BT9101
40	Out, TTL	PDRDO-	Read strobe to BT9101
41	In, TTL	CLK25M	Clock input 25 MHz
42		Vss	
43	I/O, TTL, w/Pull-up	CDD0	Data bus for CD drive 2^0
44	I/O, TTL, w/Pull-up	CDD1	Data bus for CD drive 2^1
45	I/O, TTL, w/Pull-up	CDD2	Data bus for CD drive 2^2
46	I/O, TTL, w/Pull-up	CDD3	Data bus for CD drive 2^3
47	I/O, TTL, w/Pull-up	CDD4	Data bus for CD drive 2^4
48	I/O, TTL, w/Pull-up	CDD5	Data bus for CD drive 2^5
49	I/O, TTL, w/Pull-up	CDD6	Data bus for CD drive 2^6
50	I/O, TTL, w/Pull-up	CDD7	Data bus for CD drive 2^7
51	Out, TTL	CDEN-	CD drive Enable signal
52	Out, TTL	CDHWR-	CD drive Write signal
53	Out, TTL	CDHRD-	CD drive Read signal
54	In, TTL, w/Pull-up	CDWAIT-	CD drive Wait signal
55	In, TTL, w/Pull-up	CDDTEN-	CD drive Data enable signal
56	In, TTL, w/Pull-up	CDSTEN-	CD drive Status enable signal
57		Vss	
58		Vdd	
59	Out, TTL	CDCMD-	CD drive Command signal
60	In, TTL, w/Pull-up	CDMDCHG	CD drive Media change signal
61	Out, TTL	CDRST-	CD drive Reset signal
62	I/O, TTL, w/Pull-up	EXD0	Internal expansion data 2^0
63	I/O, TTL, w/Pull-up	EXD1	Internal expansion data 2^1
64	I/O, TTL, w/Pull-up	EXD2	Internal expansion data 2^2

2-6. Pin Configurations of PCB



CN1
Power Connector (2-pin)

Pin No.	Signal Name/ Description	Direction
1	AC	–
2	AC	–

CN3
Power Connector (1-pin)

Pin No.	Signal Name/ Description	Direction
1	(for discharge)	–

CN500
AV Connector (12-pin)

Pin No.	Signal Name/ Description	Direction
1	GND	–
2	GND	–
3	Y SVHS OUT	Out
4	C SVHS OUT	Out
5	GND	–
6	GND	–
7	COMP VIDEO	Out
8	GND	–
9	LEFT AUDIO	Out
10	GND	–
11	RIGHT AUDIO	Out
12	GND	–

CN541
PCB Connector (10-pin)

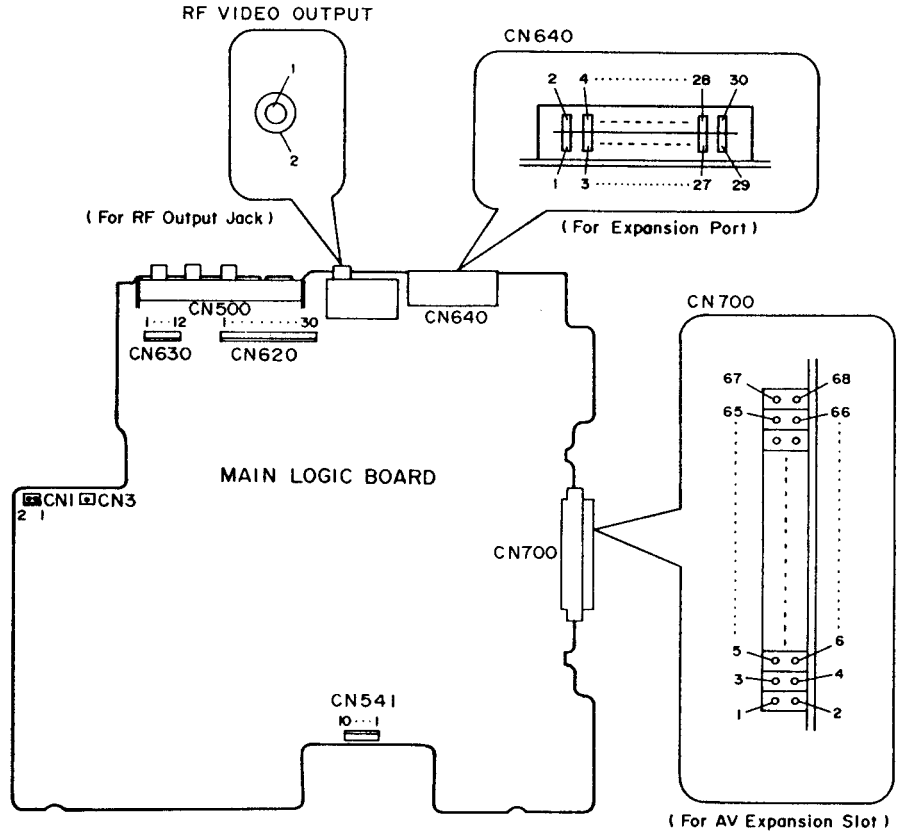
Pin No.	Signal Name/ Description	Direction
1	+5V	–
2	PBDIN	In
3	PBCLK	Out
4	PBDOUT	Out
5	GND	–
6	+5V	–
7	GND	–
8	RIGHT AUDIO	Out
9	LEFT AUDIO	Out
10	GND	–

CN620
CD-ROM I/F Connector (30-pin)

Pin No.	Signal Name/ Description	Direction	Pin No.	Signal Name/ Description	Direction
1	CDRSTB	Out	16	CDENB	Out
2	CDMDCHG	In	17	GND	–
3	GND	–	18	CDD7	In/Out
4	CDCMDB	Out	19	GND	–
5	GND	–	20	CDD6	In/Out
6	CDSTENB	In	21	GND	–
7	GND	–	22	CDD5	In/Out
8	CDDTENB	In	23	CDD4	In/Out
9	GND	–	24	GND	–
10	CDWAITB	In	25	CDD3	In/Out
11	GND	–	26	CDD2	In/Out
12	CDHRDB	Out	27	GND	–
13	GND	–	28	CDD1	In/Out
14	CDHWRB	Out	29	GND	–
15	GND	–	30	CDD0	In/Out

CN630
CD-ROM Power Suply Connector (12-pin)

Pin No.	Signal Name/ Description	Direction
1	LED (BUSY)	In
2	SWITCH	Out
3	+5V	Out
4	+5V	Out
5	GND	–
6	GND	–
7	GND	–
8	GND	–
9	GND	–
10	VDC1 (+9V)	Out
11	VDC1 (+9V)	Out
12	VDC1 (+9V)	Out



RF VIDEO OUTPUT
(IC520: RF Modulater)

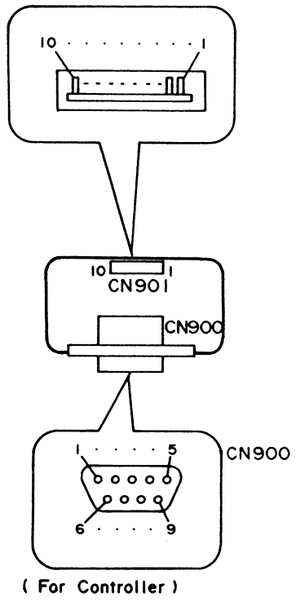
Pin No.	Signal Name/ Description	Direction
1	RF VIDEO OUT	Out
2	GND	–

CN640
Expansion Port (30-pin)

Pin No.	Signal Name/ Description	Direction
1	GND	–
2	XD0	In/Out
3	XD1	In/Out
4	GND	–
5	XD2	In/Out
6	XD3	In/Out
7	GND	–
8	XD4	In/Out
9	XD5	In/Out
10	GND	–
11	XD6	In/Out
12	XD7	In/Out
13	GND	–
14	XINTB	In
15	+5V	–
16	GND	–
17	XSTRB	Out
18	XCMDB	Out
19	GND	–
20	XRDYB	In
21	XSELB	Out
22	GND	–
23	XWRTB	Out
24	XIDIN	In
25	GND	–
26	XIDOUT	Out
27	XRSTB	Out
28	GND	–
29	NC	–
30	NC	–

CN700
AV Expansion Connector (68-pin)

Pin No.	Signal Name/ Description	Direction	Pin No.	Signal Name/ Description	Direction
1	A2	Out	35	GND	–
2	A3	Out	36	D13	In/Out
3	GND	–	37	D12	In/Out
4	A4	Out	38	D11	In/Out
5	A5	Out	39	GND	–
6	A14	Out	40	D10	In/Out
7	GND	–	41	D9	In/Out
8	A15	Out	42	D8	In/Out
9	UNCREQW	Out	43	GND	–
10	UNCREQR	In	44	D7	In/Out
11	GND	–	45	D6	In/Out
12	UNCACKW	Out	46	D5	In/Out
13	UNCACKR	Out	47	D4	In/Out
14	D31	In/Out	48	D3	In/Out
15	D30	In/Out	49	D2	In/Out
16	D29	In/Out	50	D1	In/Out
17	D28	In/Out	51	GND	–
18	D27	In/Out	52	D0	In/Out
19	GND	–	53	EXTREQW	In
20	D26	In/Out	54	EXTREQR	In
21	D25	In/Out	55	GND	–
22	D24	In/Out	56	EXTACKW	Out
23	GND	–	57	EXTACKR	Out
24	D23	In/Out	58	CLC0	Out
25	D22	In/Out	59	GND	–
26	D21	In/Out	60	CLC1	Out
27	GND	–	61	CLC2	Out
28	D20	In/Out	62	RESETB	Out
29	D19	In/Out	63	GND	–
30	D18	In/Out	64	CREADYB	In/Out
31	D17	In/Out	65	UNCINTB	In
32	D16	In/Out	66	+5V	–
33	D15	In/Out	67	+5V	–
34	D14	In/Out	68	X25M	Out



Top View of
Controller Port PCB

CN901
PCB Connector (12-pin)

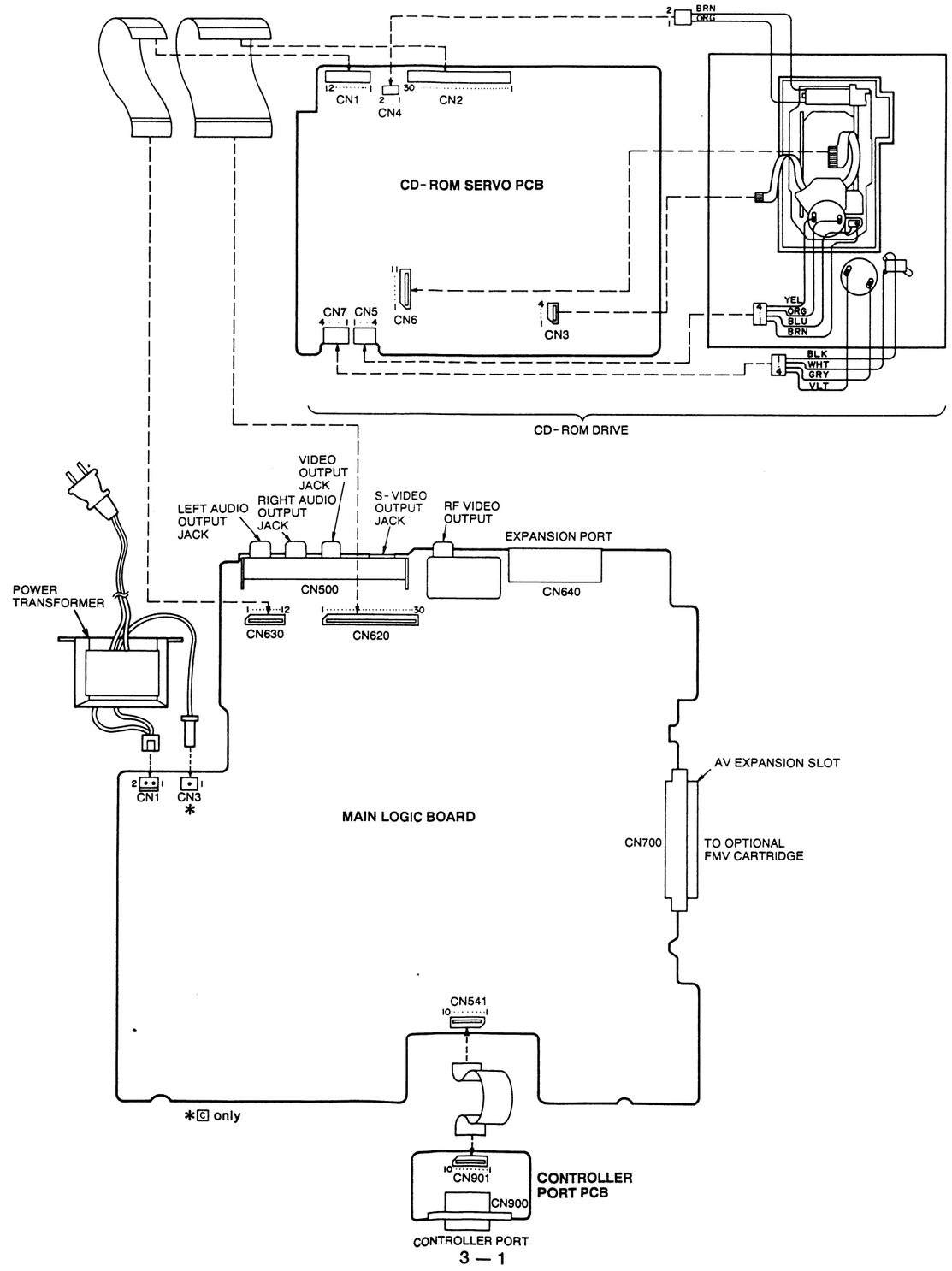
Pin No.	Signal Name/ Description	Direction
1	ZVCC	–
2	ZPDIN	Out
3	ZPBCLK	In
4	ZPBDOUT	In
5	GND	–
6	GND	–
7	GND	–
8	ZLAUDIO	In
9	ZRAUDIO	In
10	GND	–

CN900
Controller Port (9-pin)

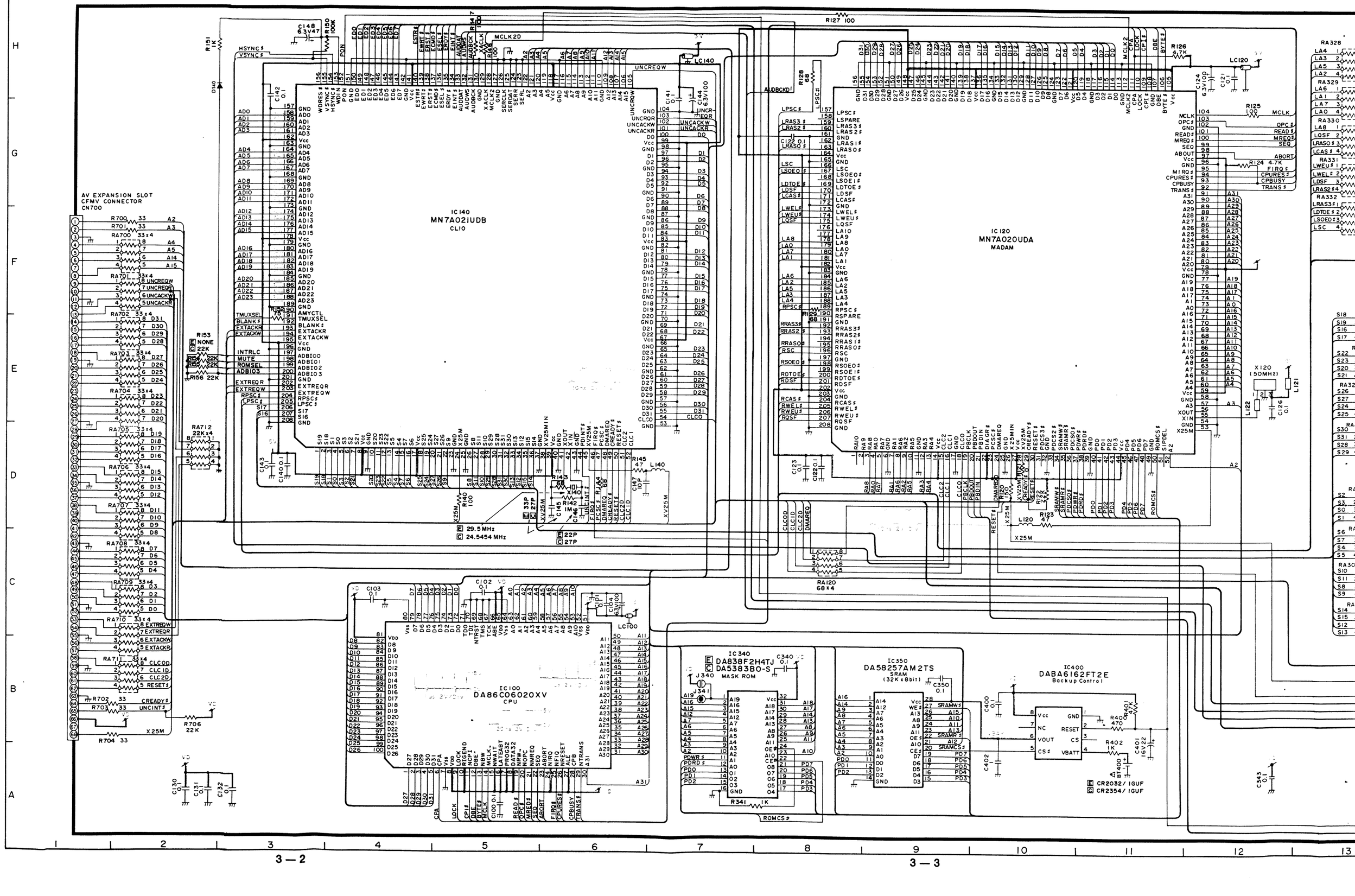
Pin No.	Signal Name/ Description	Direction
1	GND	–
2	ZVCC	–
3	ZRAUDIO	Out
4	ZLAUDIO	Out
5	ZVCC	–
6	ZPBDOUT	Out
7	ZPBCLK	Out
8	GND	–
9	ZPDIN	In

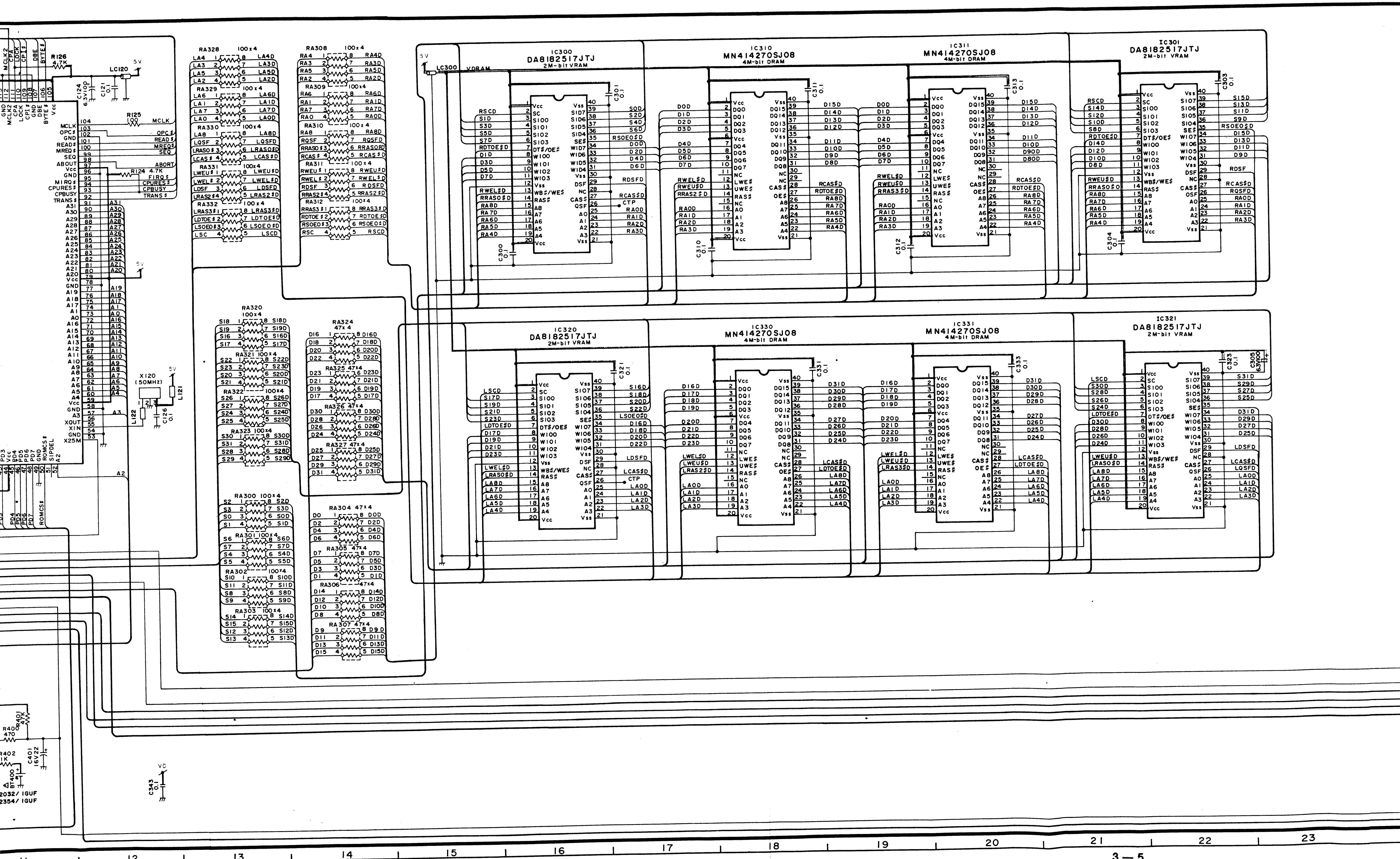
3. Diagrams and Replacement Parts List

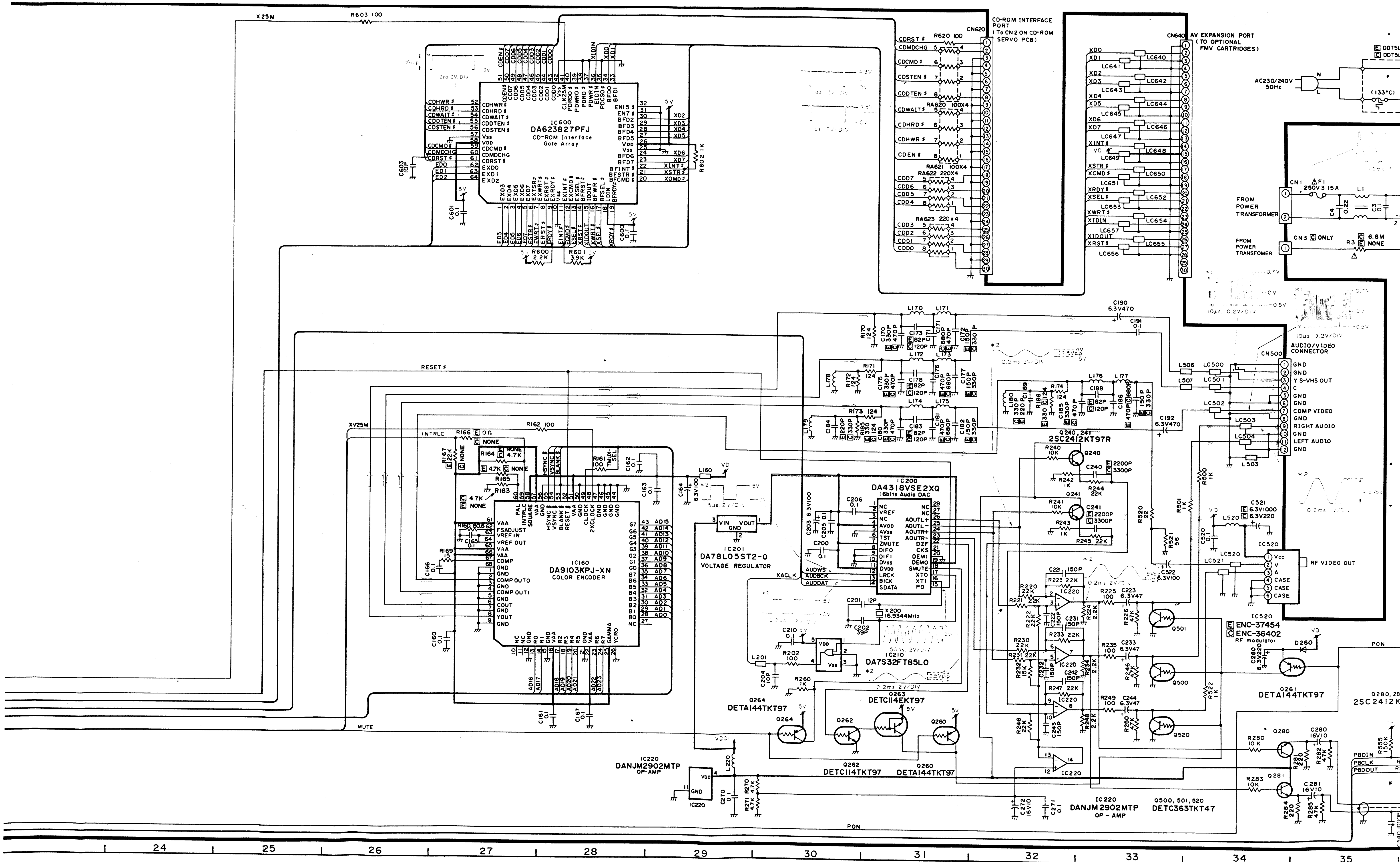
3-1. Wiring Connection Diagram



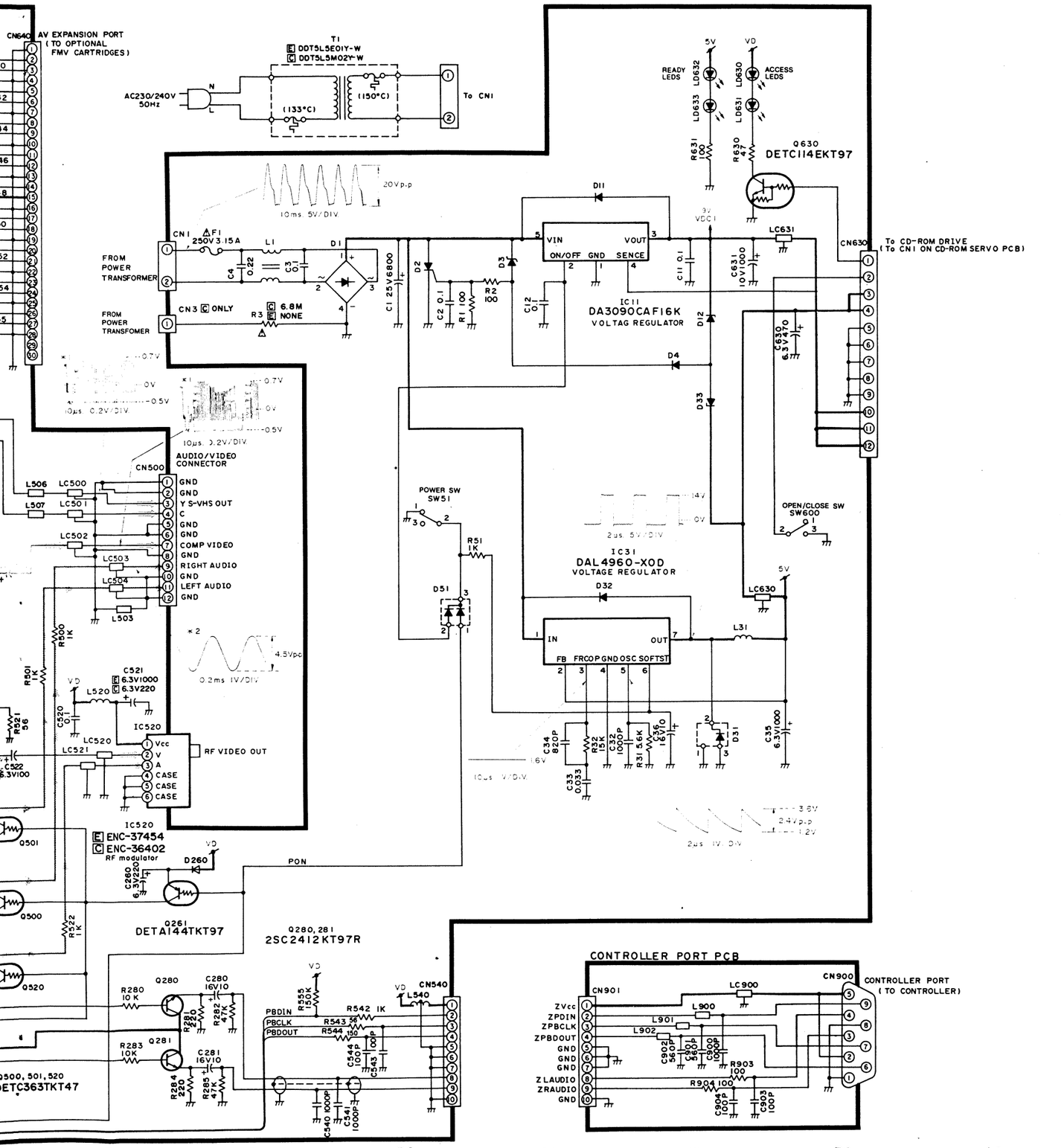
3-2. Schematic Diagrams




IC300
DA8182517JTJ
2M-bit VRAM
IC310
MN414270SJ08
4M-bit DRAM
IC311
MN414270SJ08
4M-bit DRAM
IC301
DA8182517JTJ
2M-bit VRAM
IC320
DA8182517JTJ
2M-bit VRAM
IC330
MN414270SJ08
4M-bit DRAM
IC331
MN414270SJ08
4M-bit DRAM
IC321
DA8182517JTJ
2M-bit VRAM
X120
(50MHZ)
LC120
LC300
11
12
13
14
15
16
17
18
19
20
21
22
23



CD-ROM INTERFACE PORT (To CN2 ON CD-ROM SERVO PCB)
CN620
AV EXPANSION PORT (TO OPTIONAL FMV CARTRIDGES)
CN640
IC600
DA623827PFJ
CD-ROM Interface Gate Array
IC160
DA9103KPJ-XN
COLOR ENCODER
IC200
DA4318VSE2XQ
16bits Audio DAC
IC201
DA78L05ST2-0
VOLTAGE REGULATOR
IC210
DA7S32FT85LO
X200
16.9344MHz
Q240,241
2SC2412KT97R
AUDIO/VIDEO CONNECTOR
CN500
GND
GND
Y S-VHS OUT
C
GND
GND
COMP VIDEO
GND
RIGHT AUDIO
GND
LEFT AUDIO
GND
IC520
RF VIDEO OUT
IC520
E ENC-37454
C ENC-36402
RF modulator
Q264
DETA144TKT97
Q263
DETC114EKT97
Q262
DETC114TKT97
Q260
DETA144TKT97
Q261
DETA144TKT97
IC220
DANJM2902MTP
OP-AMP
Q500, 501, 520
DETC363TKT47
Q280, 281
2SC2412K
AC230/240V 50Hz
FROM POWER TRANSFORMER
CN3 C ONLY
RESET #
XY25M
X25M
R603 100
MUTE
PON
VDC1
24
25
26
27
28
29
30
31
32
33
34
35



Notes:

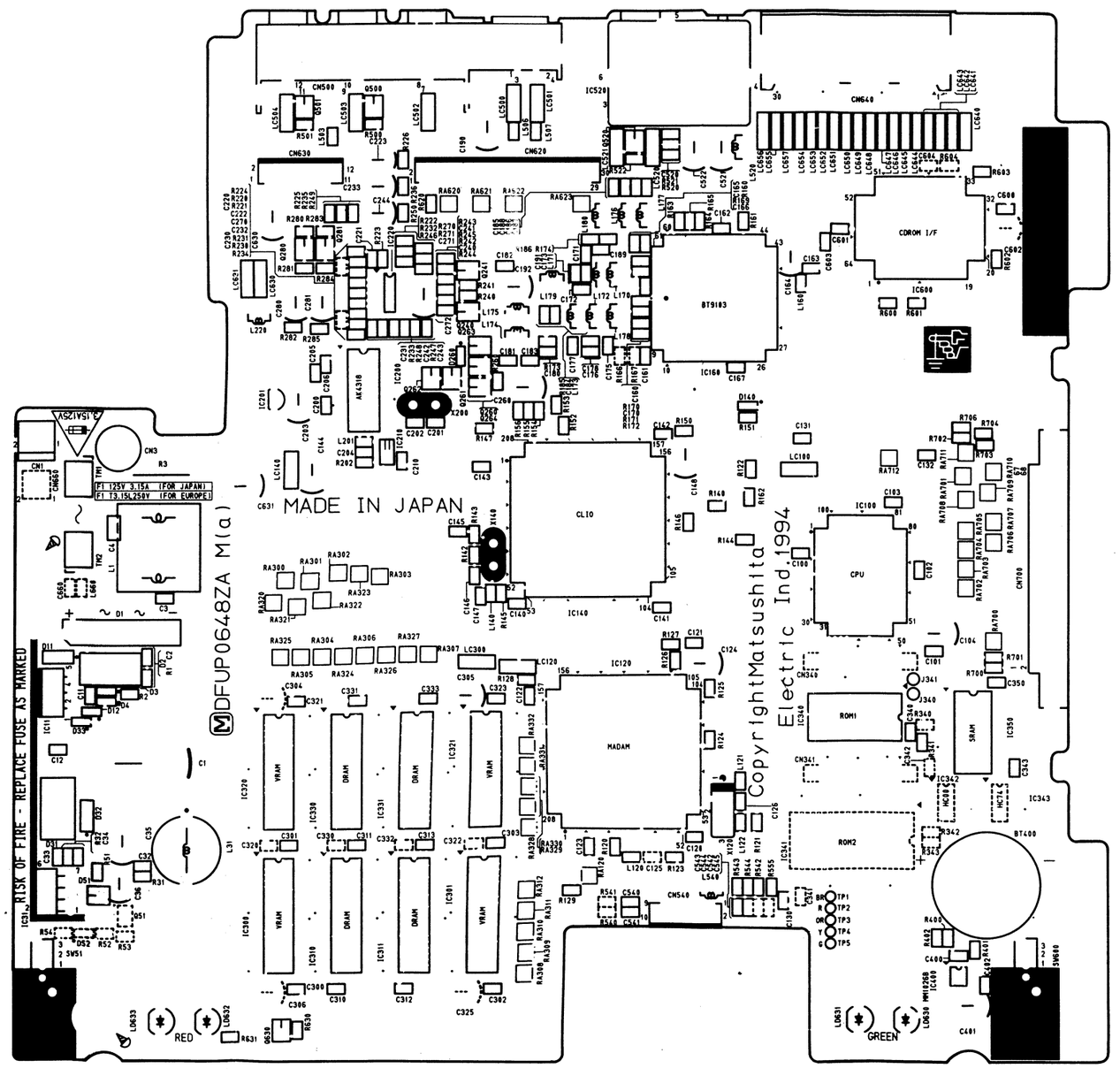
- DC voltage measurements are taken with digital voltmeter.
- All wave-forms are measured under no signal condition specified otherwise.
- Wave-forms marked *1 are measured while the TV displays 8-color bar using the test disc (P/N: CDT-R015J-2).
- Wave-forms marked *2 are measured while reproducing the 1 KHz (0 dB) signal portion of the test audio CD.

⇨ : Video Process Signal Line
: Audio Process Signal Line

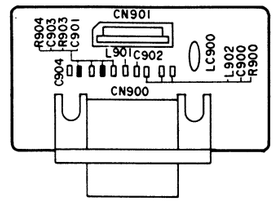
3-3. Printed Circuit Boards

Main Logic PCB

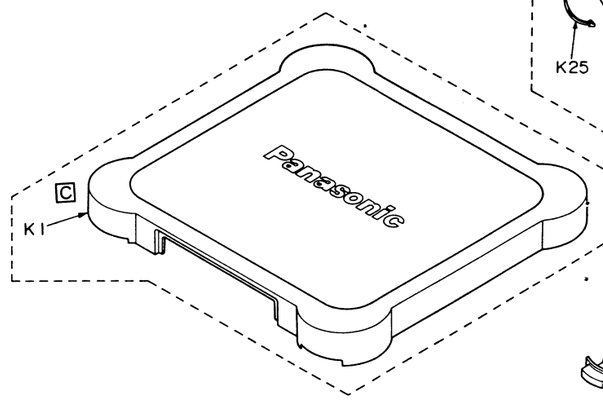
Rear Side



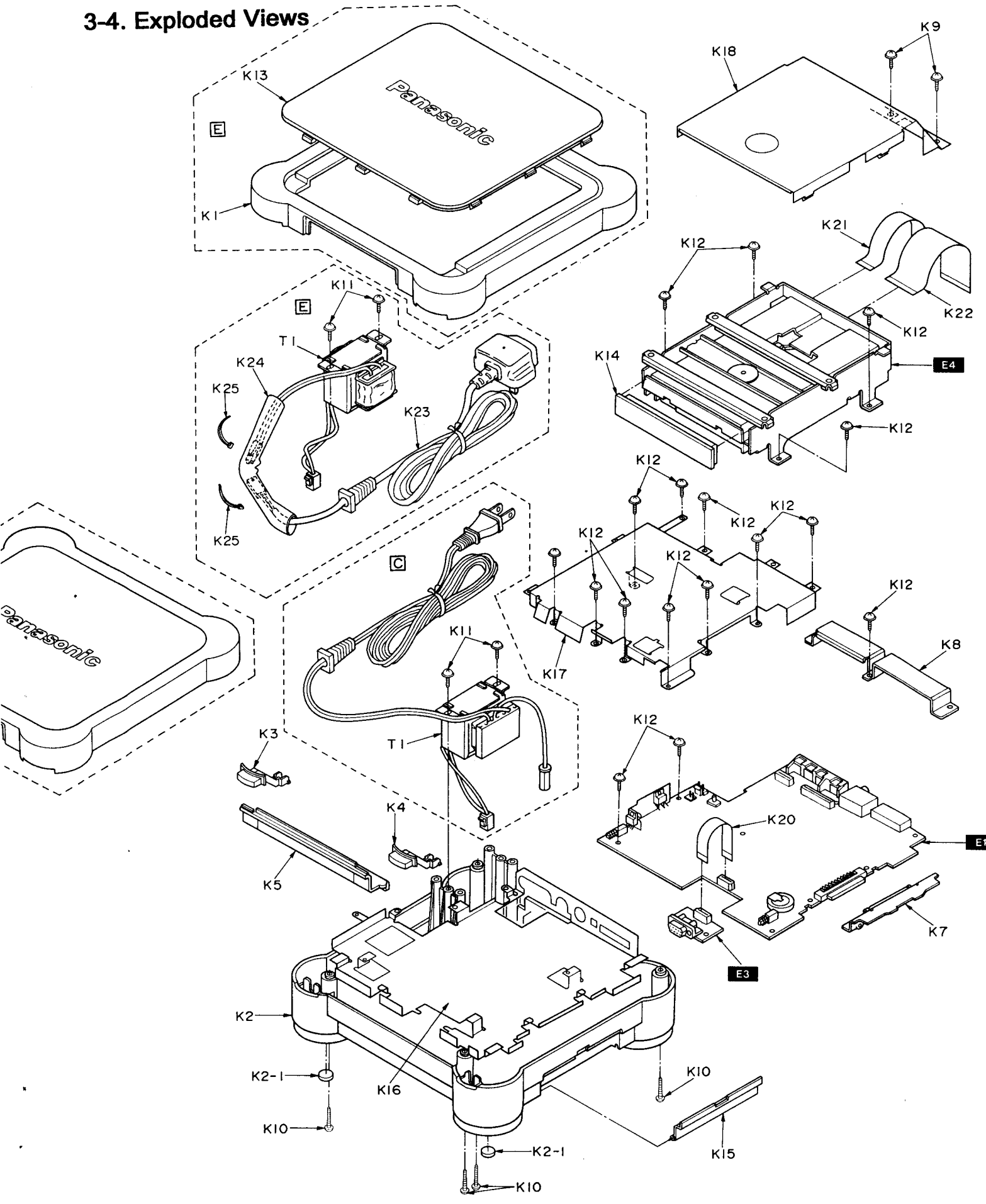
Controller Port PCB

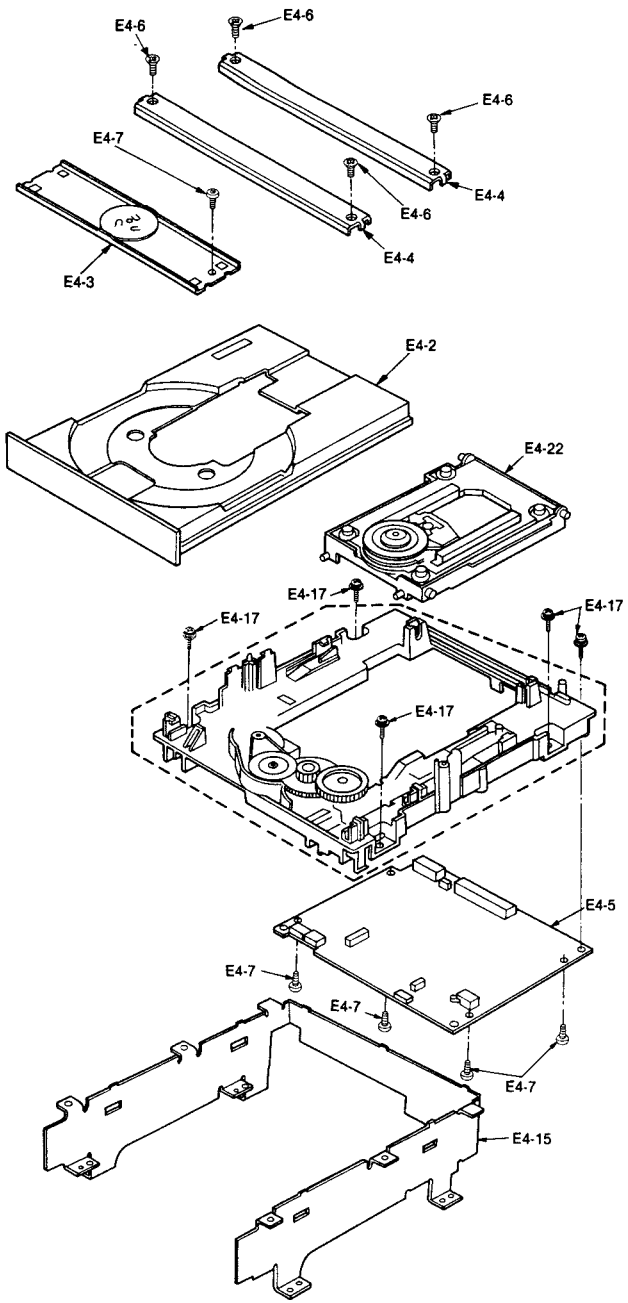


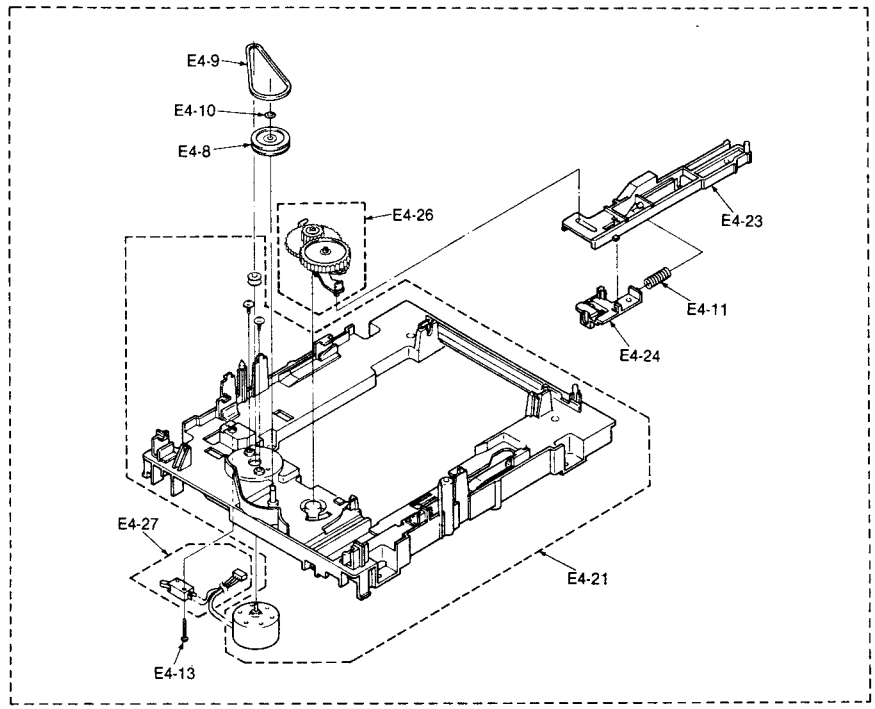
3-4. Exploded



3-4. Exploded Views




E4-6
E4-6
E4-6
E4-7
E4-4
E4-6
E4-4
E4-3
E4-2
E4-22
E4-17
E4-17
E4-17
E4-17
E4-5
E4-7
E4-7
E4-7
E4-15


E4-9
E4-10
E4-8
E4-26
E4-23
E4-11
E4-24
E4-27
E4-21
E4-13

Replacement Parts List
(Mechanical, Accessories, Packing and Electrical)

Note: Important safety notice.
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's special parts.

REF.No. and AREA			PART No.	DESCRIPTION	Q'TY
MAIN BLOCK UNITS					
E 1	E		DL3U10648BAA	Ass'y, MAIN LOGIC PCB	1
	C		DL3U10648CAA		
E 3	E		DL3U20648BAA	Ass'y, CONTROLLER PORT PCB	1
	C		DL3U20648CAA		
E 4		⚠	CR-560-BCD-4	Ass'y, CD-ROM DRIVE	1
MECHANICAL PARTS					
K 1	E		DFKM0149XB-0	TOP CABINET	1
	C		DFKM0161YA-0		
K 2	E		DFWV80C0326	BOTTOM CABINET	1
	C		DFWV80C0327		
K 2-1			DFHG330ZA-0	FOOT	2
K 3	E		DFBC0139ZA-0	POWER ON/OFF BUTTON	1
	C		DFBC0128ZA-0		
K 4			DFBC0127ZA-0	DISC TRAY OPEN/CLOSE BUTTON	1
K 5			DFGL0031ZA	LIGHT LEADING PANEL	1
K 7			DFMD7206ZA	FMV CONNECTOR HOLDER	1
K 8			DFMD7231ZA	AV CONNECTOR HOLDER	1
K 10			XTN3+14JFZ	SCREW, 3 × 14mm	4
K 11			XTW3+10QFZ	SCREW, 3 × 10mm	2
K 12			DFHE5036ZA	SCREW, 2.6 × 8mm	18
K 13	E		DFKE0260ZB-0	TOP PANEL	1
K 14			DFGP0147ZB-0	TRAY ORNAMENT	1
K 15			DFKE0261ZA-0	LID, FMV CONNECTOR	1
K 16			DFMC0307ZB	LOWER SHIELD PLATE	1
K 17			DFMC0308ZB	UPPER SHIELD PLATE	1
K 18			DFMC0329ZA	SHIELD PLATE(CD-ROM DRIVE)	1
K 20			DFJE10A050AV	FLAT CABLE(10-PIN)	1
K 21			DFJE12A070AV	FLAT CABLE(12-PIN)	1
K 22			DFJE30A070AV	FLAT CABLE(30-PIN)	1
K 23	E	⚠	DFJA0039ZAKK	AC CORD	1
K 24	E		DFHR4040ZA	RUBBER TUBE	1
K 25	E		DFHR4039ZA	CORD CLAMP	1

REF.No. and AREA			PART No.	DESCRIPTION	Q'TY
ACCESSORIES					
A 1			DFJL0003ZA-0	CONTROLLER	1
A 2	E		DFSE9005ZA	RF CABLE	1
	C		DFSE9004ZA		
A 3			DFJP014ZA	AV CABLE	1
A 4	E		DFJN5011ZAZ	DEMO CD (SAMPLER CD)	1
	C		DFJN5001ZBZ		
A 5	C		DFJN5002ZAZ	DEMO CD (GAME)	1
A 6	E		DFQS3008ZA	MANUAL, OPERATING	1
	C		DFQS3009ZA		
A 7	C		DFQS3010ZA	MANUAL, PRECAUTIONS	1
A 9	E		DFJP045ZA	RGB ADAPTOR	1
A 10	C		DFJP018YA	RF EXTENTION CABLE	1
A 11	C		DFQS1010ZA	FRENCH BROCHURE	1
PACKING MATERIALS					
P 1			DFPK0671XA	PACKING CASE	1
P 2			DFPE0185ZA	HOLDER, ACCESSORIES	1
P 3			DFPN0542ZA	CUSHION (LEFT)	1
P 4			DFPN0543ZA	CUSHION (RIGHT)	1
P 5			DFPP0083ZA	POLY SHEET	1
MAIN LOGIC PCB					
E 1	E		DL3U10648BAA	Ass'y, MAIN LOGIC PCB	1
	C		DL3U10648CAA		
T 1	E	⚠	DDT5L5E01Y-W	POWER TRANSFORMER	1
	C	⚠	DDT5L5M02Y-W		
BT 400	E	⚠	CR2032/1GUF	LITHIUM BATTERY, 3V	1
	C	⚠	CR2354/1GUF		
C 1			ECEC1EA682BB	CAPACITOR,ELECTROLYTIC,25V,6800uF	1
C 2,3			DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	2
C 4			DCUC1E224KBY	CAPACITOR, CERAMIC, CHIP 0.22uF	1
C 11,12			DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	2
C 32			DCUV1H102KBL	CAPACITOR, CERAMIC, CHIP 1000pF	1
C 33			DCUV1E333ZFL	CAPACITOR, CERAMIC, CHIP 0.033uF	1
C 34			DCUV1H821KBL	CAPACITOR, CERAMIC, CHIP 820pF	1
C 35			ECEA0JGE102B	CAPACITOR, ELECTROLYTIC, 6.3V 1000uF	1
C 36			ECEA1CGE100B	CAPACITOR, ELECTROLYTIC, 16V 10uF	1
C 100-103			DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	4
C 104			ECEA0JU101B	CAPACITOR, ELECTROLYTIC, 6.3V 100uF	1
C 120-123			DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	4
C 124			ECEA0JU101B	CAPACITOR, ELECTROLYTIC, 6.3V 100uF	1
C 126			DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	1
C 130-132			DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	3
C 140-143			DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	4
C 144			ECEA0JU101B	CAPACITOR, ELECTROLYTIC, 6.3V 100uF	1
C 145	E		ECUV1H330JCG	CAPACITOR, CERAMIC, CHIP 33pF	1
	C		DCUV1H270JCL	CAPACITOR, CERAMIC, CHIP 27pF	1

REF.No. and AREA		PART No.	DESCRIPTION	Q'TY
C 146	E	DCUV1H220JCL	CAPACITOR, CERAMIC, CHIP 22pF	1
	C	DCUV1H270JCL	CAPACITOR, CERAMIC, CHIP 27pF	1
C 147		DCUV1H100JCL	CAPACITOR, CERAMIC, CHIP 10pF	1
C 148		ECEA0JU470B	CAPACITOR, ELECTROLYTIC, 6.3V 47uF	1
C 160-163		DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	4
C 164		ECEA0JU101B	CAPACITOR, ELECTROLYTIC, 6.3V 100uF	1
C 165-167		DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	3
C 170	E	ECUV1H331JCG	CAPACITOR, CERAMIC, CHIP 330pF, 5%	1
	C	DCUV1H471JCL	CAPACITOR, CERAMIC, CHIP 470pF, 5%	1
C 171	E	DCUV1H471JCL	CAPACITOR, CERAMIC, CHIP 470pF, 5%	1
	C	DCUV1H681JCL	CAPACITOR, CERAMIC, CHIP 680pF, 5%	1
C 172	E	DCUV1H151JCL	CAPACITOR, CERAMIC, CHIP 150pF, 5%	1
	C	ECUV1H331JCG	CAPACITOR, CERAMIC, CHIP 330pF, 5%	1
C 173	E	ECUV1H820JCG	CAPACITOR, CERAMIC, CHIP 82pF	1
	C	DCUV1H121JCL	CAPACITOR, CERAMIC, CHIP 120pF	1
C 175	E	ECUV1H331JCG	CAPACITOR, CERAMIC, CHIP 330pF, 5%	1
	C	DCUV1H471JCL	CAPACITOR, CERAMIC, CHIP 470pF, 5%	1
C 176	E	DCUV1H471JCL	CAPACITOR, CERAMIC, CHIP 470pF, 5%	1
	C	DCUV1H681JCL	CAPACITOR, CERAMIC, CHIP 680pF, 5%	1
C 177	E	DCUV1H151JCL	CAPACITOR, CERAMIC, CHIP 150pF, 5%	1
	C	ECUV1H331JCG	CAPACITOR, CERAMIC, CHIP 330pF, 5%	1
C 178	E	ECUV1H820JCG	CAPACITOR, CERAMIC, CHIP 82pF	1
	C	DCUV1H121JCL	CAPACITOR, CERAMIC, CHIP 120pF	1
C 180	E	ECUV1H331JCG	CAPACITOR, CERAMIC, CHIP 330pF, 5%	1
	C	DCUV1H471JCL	CAPACITOR, CERAMIC, CHIP 470pF, 5%	1
C 181	E	DCUV1H471JCL	CAPACITOR, CERAMIC, CHIP 470pF, 5%	1
	C	DCUV1H681JCL	CAPACITOR, CERAMIC, CHIP 680pF, 5%	1
C 182	E	DCUV1H151JCL	CAPACITOR, CERAMIC, CHIP 150pF, 5%	1
	C	ECUV1H331JCG	CAPACITOR, CERAMIC, CHIP 330pF, 5%	1
C 183	E	ECUV1H820JCG	CAPACITOR, CERAMIC, CHIP 82pF	1
	C	DCUV1H121JCL	CAPACITOR, CERAMIC, CHIP 120pF	1
C 184	E	ECUV1H221JCG	CAPACITOR, CERAMIC, CHIP 220pF	1
	C	ECUV1H331JCG	CAPACITOR, CERAMIC, CHIP 330pF	1
C 185	E	ECUV1H331JCG	CAPACITOR, CERAMIC, CHIP 330pF, 5%	1
	C	DCUV1H471JCL	CAPACITOR, CERAMIC, CHIP 470pF, 5%	1
C 186	E	DCUV1H471JCL	CAPACITOR, CERAMIC, CHIP 470pF, 5%	1
	C	DCUV1H681JCL	CAPACITOR, CERAMIC, CHIP 680pF, 5%	1
C 187	E	DCUV1H151JCL	CAPACITOR, CERAMIC, CHIP 150pF, 5%	1
	C	ECUV1H331JCG	CAPACITOR, CERAMIC, CHIP 330pF, 5%	1
C 188	E	ECUV1H820JCG	CAPACITOR, CERAMIC, CHIP 82pF	1
	C	DCUV1H121JCL	CAPACITOR, CERAMIC, CHIP 120pF	1
C 189	E	ECUV1H221JCG	CAPACITOR, CERAMIC, CHIP 220pF	1
	C	ECUV1H331JCG	CAPACITOR, CERAMIC, CHIP 330pF	1
C 190		ECA0JM471B	CAPACITOR, ELECTROLYTIC, 6.3V 470uF	1
C 191		DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	1
C 192		ECA0JM471B	CAPACITOR, ELECTROLYTIC, 6.3V 470uF	1
C 200		DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	1
C 201		DCUV1H120JCL	CAPACITOR, CERAMIC, CHIP 12pF	1

REF.No. and AREA		PART No.	DESCRIPTION	Q'TY
C 202		DCUV1H390JCL	CAPACITOR, CERAMIC, CHIP 39pF	1
C 203		ECEA0JU101B	CAPACITOR, ELECTROLYTIC, 6.3V 100uF	1
C 204		DCUV1H100JCL	CAPACITOR, CERAMIC, CHIP 10pF	1
C 205,206		DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	2
C 210		DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	1
C 221,222		DCUV1H151JCL	CAPACITOR, CERAMIC, CHIP 150pF, 5%	2
C 223		ECEA0JU470B	CAPACITOR, ELECTROLYTIC, 6.3V 47uF	1
C 231,232		DCUV1H151JCL	CAPACITOR, CERAMIC, CHIP 150pF, 5%	2
C 233		ECEA0JU470B	CAPACITOR, ELECTROLYTIC, 6.3V 47uF	1
C 240,241	E	ECUV1H222KBN	CAPACITOR, CERAMIC, CHIP 2200pF	2
	C	DCUV1H332KBL	CAPACITOR, CERAMIC, CHIP 3300pF	2
C 242,243		DCUV1H151JCL	CAPACITOR, CERAMIC, CHIP 150pF, 5%	2
C 244		ECEA0JU470B	CAPACITOR, ELECTROLYTIC, 6.3V 47uF	1
C 260		ECEA0JU221B	CAPACITOR, ELECTROLYTIC, 6.3V 220uF	1
C 270,271		DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	2
C 272		ECEA1CU100B	CAPACITOR, ELECTROLYTIC, 16V 10uF	1
C 280		ECEA1CU100B	CAPACITOR, ELECTROLYTIC, 16V 10uF	1
C 281		ECEA1CU100B	CAPACITOR, ELECTROLYTIC, 16V 10uF	1
C 300-303		DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	4
C 305		ECEA0JU101B	CAPACITOR, ELECTROLYTIC, 6.3V 100uF	1
C 310-313		DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	4
C 321		DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	1
C 323		DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	1
C 331		DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	1
C 333		DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	1
C 340		DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	1
C 343		DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	1
C 350		DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	1
C 400		DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	1
C 401		ECEA1CU220B	CAPACITOR, ELECTROLYTIC, 16V 22uF	1
C 402		DCUV1C105ZFL	CAPACITOR, CERAMIC, CHIP 1uF	1
C 520		DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	1
C 521	E	ECA0JM102B	CAPACITOR, ELECTROLYTIC, 6.3V, 1000uF	1
	C	ECEA0JU221B	CAPACITOR, ELECTROLYTIC, 6.3V, 220uF	1
C 522		ECEA0JU101B	CAPACITOR, ELECTROLYTIC, 6.3V 100uF	1
C 540,541		DCUV1H102KBL	CAPACITOR, CERAMIC, CHIP 1000pF	2
C 543,544		DCUV1H101KCL	CAPACITOR, CERAMIC, CHIP 100pF	2
C 600,601		DCUV1E104ZFL	CAPACITOR, CERAMIC, CHIP 0.1uF	2
C 603		DCUV1H100JCL	CAPACITOR, CERAMIC, CHIP 10pF	1
C 630		ECA0JM471B	CAPACITOR, ELECTROLYTIC, 6.3V 470uF	1
C 631		ECA1AM102B	CAPACITOR, ELECTROLYTIC, 10V 1000uF	1
C 900		DCUV1H102KBL	CAPACITOR, CERAMIC, CHIP 1000pF	1
C 901,902		DCUV1H561KBL	CAPACITOR, CERAMIC, CHIP 560pF	2
C 903,904		DCUV1H101KCL	CAPACITOR, CERAMIC, CHIP 100pF	2
CN 1		DFJP02C14ZAB	CONNECTOR, 2-PIN, POWER TRANSFORMER	1
CN 3	C	DFJP006ZA001	CONNECTOR, 1-PIN, POWER TRANSFORMER	1

REF.No. and AREA		PART No.	DESCRIPTION	Q'TY
CN 500		DFJF0A003ZAH	CONNECTOR, 12-PIN, AUDIO/VIDEO	1
CN 540		DFJS10N12YAJ	CONNECTOR, 10-PIN, CONTROLLER PORT PCB	1
CN 620		DFJS30N12YAJ	CONNECTOR, 30-PIN, CD-ROM DRIVE	1
CN 630		DFJS12N12YAJ	CONNECTOR, 12-PIN, CD-ROM DRIVE	1
CN 640		DFJP30C95ZAH	CONNECTOR, EXPANSION PORT	1
CN 700		DFJS68D61YAF	CONNECTOR, 68-PIN, FMV CARTRIDGE	1
D 1		DEDD3SBA20	RECTIFIER, BRIDGE, SILICON	1
D 2		DED5P4JZE2-D	DIODE, THYRISTOR	1
D 3		DEDDTZ033CTT	DIODE, ZENNER	1
D 4		MA110TX	DIODE	1
D 11		DEDSFPM52V	DIODE	1
D 12		DEDDTZ011ATT	DIODE, ZENNER	1
D 31		DED30QS04FTF	DIODE	1
D 32		DEDSFPM52V	DIODE	1
D 33		DEDDTZ5R6ATT	DIODE, ZENNER	1
D 51		DEDAN202KT97	DIODE	1
D 140		MA110TX	DIODE	1
D 260		MA110TX	DIODE	1
F 1	E ⚠	XBAD2183R15L	FUSE, 3.15A	1
	C ⚠	XBADFBT3R15F		
IC 11		DA3090CAF16K	IC, VOLTAGE REGULATOR, 9V	1
IC 31		DAL4960-X0D	IC, VOLTAGE REGULATOR, 5V	1
IC 100		DA86C06020XV	IC, CPU	1
IC 120		MN7A020UDA	IC, SYSTEM IC MADAM	1
IC 140		MN7A021UDB	IC, SYSTEM IC CLIO	1
IC 160		DA9103KPJ-XN	IC, COLOR ENCODER	1
IC 200		DA4318VSE2XQ	IC, AUDIO DAC	1
IC 201		DA78L05ST2-0	IC, VOLTAGE REGULATOR, 5V	1
IC 210		DA7S32FT85L0	IC, OR-GATE	1
IC 220		DANJM2902MTP	IC, OP-AMP	1
IC 300-301		DA8182517JTJ	IC, 2M-bit VRAM	2
IC 310-311		MN414270SJ08	IC, 4M-bit DRAM	2
IC 320-321		DA8182517JTJ	IC, 2M-bit VRAM	2
IC 330-331		MN414270SJ08	IC, 4M-bit DRAM	2
IC 340	E	DA838F2H4TJ	IC, MASKROM	1
	C	DA5383B0-S		
IC 350		DA58257AM2TS	IC, 256K-bit SRAM	1
IC 400		DABA6162FT2E	IC, BACK-UP CONTROLLER	1
IC 520	E	ENC-37454	IC, RF-MODULATOR	1
	C	ENC-36402		
IC 600		DA623827PFJ	IC, CD-ROM INTERFACE GATE ARRAY	1
L 1		DDB8Z031-F	FILTER	1
L 31		DDAWZ101KV2W	CHOKING COIL	1
L 120		DDAZRR10KT1Y	INDUCTOR, 0.1uH	1
L 121		DDB5Z015-Y	FERRITE BEAD	1
L 122		DDB5Z016-Y	FERRITE BEAD	1
L 140		DDAZRR10KT1Y	INDUCTOR, 0.1uH	1
L 160		DDB5Z015-Y	FERRITE BEAD	1

REF.No. and AREA		PART No.	DESCRIPTION	Q'TY
L 170-177		ELESN2R7KA	INDUCTOR, 2.7uH	8
L 178		ELESN470KA	INDUCTOR, 47uH	1
L 179,180		ELESN2R7KA	INDUCTOR, 2.7uH	2
L 201		DDB5Z005-L	FERRITE BEAD	1
L 220		ELESN470KA	INDUCTOR, 47uH	1
L 503		DDB5Z015-Y	FERRITE BEAD	1
L 506,507		DDB5Z015-Y	FERRITE BEAD	2
L 520	E	DEDRB441QT91	FILTER	1
	C	ELESN470KA		
L 540		ELEV101KA	INDUCTOR, 100uH	1
LC 100		DEA306F223TL	FILTER	1
LC 120		DEA306F223TL	FILTER	1
LC 140		DEA306F223TL	FILTER	1
LC 300		EXCEMT103DT	FILTER	1
LC 500,501		EXCEMT101BT	FILTER	2
LC 502		EXCEMT471BT	FILTER	1
LC 503,504		DDB6Z017-F	FERRITE BEAD	2
LC 520		EXCEMT101BT	FILTER	1
LC 521		DDB6Z017-F	FERRITE BEAD	1
LC 630		DEA306F223TL	FILTER	1
LC 631		DEA306F223TL	FILTER	1
LC 640		EXCEMT101BT	FILTER	1
LC 641-648		EXCEMT101BT	FILTER	8
LC 649		EXCEMT103DT	FILTER	1
LC 650-657		EXCEMT101BT	FILTER	8
LD 630,631		DEDSLR305MCA	LED, CD ACCESS INDICATOR	2
LD 632,633		DEDSLR305VCA	LED, READY INDICATOR	2
Q 240,241		2SC2412KT97R	TRANSISTOR	2
Q 260,261		DETA144TKT97	TRANSISTOR, RESISTOR BUILT-IN	2
Q 262		DETC114TKT97	TRANSISTOR, RESISTOR BUILT-IN	1
Q 263		DETA114EKT97	TRANSISTOR, RESISTOR BUILT-IN	1
Q 264		DETA144TKT97	TRANSISTOR, RESISTOR BUILT-IN	1
Q 280,281		2SC2412KT97R	TRANSISTOR	2
Q 500,501		DETC363TKT47	TRANSISTOR, RESISTOR BUILT-IN	2
Q 520		DETC363TKT47	TRANSISTOR, RESISTOR BUILT-IN	1
Q 630		DETC114EKT97	TRANSISTOR, RESISTOR BUILT-IN	1
R 1,2		DBJ6GMJ101VE	RESISTOR, 1/10W 100	2
R 3	C ⚠	ERC12UGK685C	RESISTOR, 1/2W 6.8M	1
R 31		DBJ6GMJ562VE	RESISTOR, 1/10W 5.6K	1
R 32		DBJ6GMJ153VE	RESISTOR, 1/10W 15K	1
R 51		DBJ6GMJ102VE	RESISTOR, 1/10W 1K	1
R 120		DBJ6GMJ151VE	RESISTOR, 1/10W 150	1
R 121		DBJ6GMJR00VE	JUMPER	1
R 122		DBJ6GMJ222VE	RESISTOR, 1/10W 2.2K	1
R 123		DBJ6GMJ470VE	RESISTOR, 1/10W 47	1
R 124		DBJ6GMJ472VE	RESISTOR, 1/10W 4.7K	1
R 125		DBJ6GMJ101VE	RESISTOR, 1/10W 100	1
R 126		DBJ6GMJ472VE	RESISTOR, 1/10W 4.7K	1

REF.No. and AREA		PART No.	DESCRIPTION	Q'TY
R 127		DBJ6GMJ101VE	RESISTOR, 1/10W 100	1
R 128,129		DBJ6GMJ680VE	RESISTOR, 1/10W 68	2
R 140		DBJ6GMJ101VE	RESISTOR, 1/10W 100	1
R 142		DBJ6GMJ105VE	RESISTOR, 1/10W 1M	1
R 143,144		DBJ6GMJ680VE	RESISTOR, 1/10W 68	2
R 145		DBJ6GMJ470VE	RESISTOR, 1/10W 47	1
R 146,147		DBJ6GMJ101VE	RESISTOR, 1/10W 100	2
R 150		DBJ6GMJ104VE	RESISTOR, 1/10W 100K	1
R 151		DBJ6GMJ102VE	RESISTOR, 1/10W 1K	1
R 152		DBJ6GMJ750VE	RESISTOR, 1/10W 75	1
R 153	C	DBJ6GMJ223VE	RESISTOR, 1/10W 22K	1
R 154-156		DBJ6GMJ223VE	RESISTOR, 1/10W 22K	3
R 160		ERJ6ENF80R6V	RESISTOR, 1/10W 80.6 1%	1
R 161,162		DBJ6GMJ101VE	RESISTOR, 1/10W 100	2
R 163-164	C	DBJ6GMJ472VE	RESISTOR, 1/10W 4.7K	1
R 165	E	DBJ6GMJ472VE	RESISTOR, 1/10W 4.7K	1
R 166	E	DBJ6GMJR00VE	JUMPER	1
R 167	E	DBJ6GMJ223VE	RESISTOR, 1/10W 22K	1
R 169		ERJ6GEYJ150V	RESISTOR, 1/10W 1.5K	1
R 170-174		ERJ6ENF1240V	RESISTOR, 1/10W 124 1%	5
R 185,186	E	ERJ6ENF3300V	RESISTOR, 1/10W 330 1%	2
	C	ERJ6ENF1240V	RESISTOR, 1/10W 124 1%	2
R 202		DBJ6GMJ101VE	RESISTOR, 1/10W 100	1
R 220-223		DBJ6GMJ223VE	RESISTOR, 1/10W 22K	4
R 224		DBJ6GMJ222VE	RESISTOR, 1/10W 2.2K	1
R 225		DBJ6GMJ101VE	RESISTOR, 1/10W 100	1
R 226		DBJ6GMJ473VE	RESISTOR, 1/10W 47K	1
R 230-233		DBJ6GMJ223VE	RESISTOR, 1/10W 22K	4
R 234		DBJ6GMJ222VE	RESISTOR, 1/10W 2.2K	1
R 235		DBJ6GMJ101VE	RESISTOR, 1/10W 100	1
R 236		DBJ6GMJ473VE	RESISTOR, 1/10W 47K	1
R 240,241		DBJ6GMJ103VE	RESISTOR, 1/10W 10K	2
R 242,243		DBJ6GMJ102VE	RESISTOR, 1/10W 1K	2
R 244-247		DBJ6GMJ223VE	RESISTOR, 1/10W 22K	4
R 248		DBJ6GMJ222VE	RESISTOR, 1/10W 2.2K	1
R 249		DBJ6GMJ101VE	RESISTOR, 1/10W 100	1
R 250		DBJ6GMJ473VE	RESISTOR, 1/10W 47K	1
R 260		DBJ6GMJ102VE	RESISTOR, 1/10W 1K	1
R 270,271		DBJ6GMJ472VE	RESISTOR, 1/10W 4.7K	2
R 280		DBJ6GMJ103VE	RESISTOR, 1/10W 10K	1
R 281		DBJ6GMJ221VE	RESISTOR, 1/10W 220	1
R 282		DBJ6GMJ473VE	RESISTOR, 1/10W 47K	1
R 283		DBJ6GMJ103VE	RESISTOR, 1/10W 10K	1
R 284		DBJ6GMJ221VE	RESISTOR, 1/10W 220	1
R 285		DBJ6GMJ473VE	RESISTOR, 1/10W 47K	1
R 341		DBJ6GMJ102VE	RESISTOR, 1/10W 1K	1
R 400		DBJ6GMJ471VE	RESISTOR, 1/10W 470	1
R 401		DBJ6GMJ473VE	RESISTOR, 1/10W 47K	1

REF.No. and AREA		PART No.	DESCRIPTION	Q'TY
R 402		DBJ6GMJ102VE	RESISTOR, 1/10W 1K	1
R 500,501		DBJ6GMJ102VE	RESISTOR, 1/10W 1K	2
R 520		DBJ6GMJ220VE	RESISTOR, 1/10W 22	1
R 521		DBJ6GMJ560VE	RESISTOR, 1/10W 56	1
R 522		DBJ6GMJ102VE	RESISTOR, 1/10W 1K	1
R 542		DBJ6GMJ102VE	RESISTOR, 1/10W 1K	1
R 543		DBJ6GMJ560VE	RESISTOR, 1/10W 56	1
R 544		DBJ6GMJ151VE	RESISTOR, 1/10W 150	1
R 555		DBJ6GMJ154VE	RESISTOR, 1/10W 150K	1
R 600		DBJ6GMJ222VE	RESISTOR, 1/10W 2.2K	1
R 601		DBJ6GMJ392VE	RESISTOR, 1/10W 3.9K	1
R 602		DBJ6GMJ102VE	RESISTOR, 1/10W 1K	1
R 603		DBJ6GMJ101VE	RESISTOR, 1/10W 100	1
R 620		DBJ6GMJ101VE	RESISTOR, 1/10W 100	1
R 630		DBJ6GMJ470VE	RESISTOR, 1/10W 47	1
R 631		DBJ6GMJ101VE	RESISTOR, 1/10W 100	1
R 700-704		DBJ6GMJ330VE	RESISTOR, 1/10W 33	5
R 706		DBJ6GMJ223VE	RESISTOR, 1/10W 22K	1
RA 120		EXBV8V680JV	RESISTOR ARRAY, 68	1
RA 300-303		EXBV8V101JV	RESISTOR ARRAY, 100	4
RA 304-307		EXBV8V470JV	RESISTOR ARRAY, 47	4
RA 308-312		EXBV8V101JV	RESISTOR ARRAY, 100	5
RA 320-323		EXBV8V101JV	RESISTOR ARRAY, 100	4
RA 324-327		EXBV8V470JV	RESISTOR ARRAY, 47	4
RA 328-332		EXBV8V101JV	RESISTOR ARRAY, 100	5
RA 620,621		EXBV8V101JV	RESISTOR ARRAY, 100	2
RA 622,623		EXBV8V221JV	RESISTOR ARRAY, 220	2
RA 700-711		EXBV8V330JV	RESISTOR AARAY, 33	12
RA 712		EXBV8V223JV	RESISTOR ARRAY, 22K	1
SW 51		ESB60517	SWITCH, POWER ON/OFF	1
SW 600		ESB60515	SWITCH, DISC TRAY OPEN/CLOSE	1
TM 1		EYF52BCL	FUZE HOLDER	1
TM 2		EYF52BCR	FUZE HOLDER	1
X 120		DECL50000P2W	OSCILATOR(50.00MHz)	1
X 140	E	DECX29500H1U	CRYSTAL 29.5MHZ	1
	C	DECX24545L1U	CRYSTAL 24.5454MHZ	1
X 200		DECX16934L1W	CRYSTAL 16.9344MHZ	1

FZ-1

REF.No. and AREA		PART No.	DESCRIPTION	Q'TY
CONTROLLER PORT PCB				
E 3	E	DL3U20648BAA	Ass'y, CONTROLLER PORT PCB	1
	C	DL3U20648CAA		
C 900		DCUV1H102KBL	CAPACITOR, CERAMIC, CHIP 1000pF	1
C 901,902		DCUV1H561KBL	CAPACITOR, CERAMIC, CHIP 560pF	2
C 903,904		DCUV1H101KCL	CAPACITOR, CERAMIC, CHIP 100pF	2
CN 900		DFJP09E22ZAM	CONNECTOR, 9-PIN, CONTROLLER PORT	1
CN 901		DFJS10N12YAJ	CONNECTOR, 10-PIN, MAIN LOGIC PCB	1
L 900-902		DDB5Z016-Y	FERRITE BEAD	3
LC 900		DEA306F223TL	FILTER	1
R 903		DBJ6GMJ101VE	RESISTOR, 1/10W 100	1
R 904		DBJ6GMJ101VE	RESISTOR, 1/10W 100	1
CD-ROM DRIVE				
E 4 ⚠		CR-560-BCD-4	Ass'y, CD-ROM DRIVE	1
E 4-2		LMXQ0114	Ass'y, TRAY	1
E 4-3		LMXA0116	Ass'y, HOLDER BEAM	1
E 4-4		LMMA0155	BEAM	2
E 4-5		LMEP0306A	Ass'y, CD-ROM DRIVE PCB	1
E 4-6		XSS3+6	SCREW	4
E 4-7		XTN26+8G	SCREW	5
E 4-8		LMDP0013	LOADING PULLEY	1
E 4-9		LMDV0004	LOADING BELT	1
E 4-10		VMXS0336	WASHER	1
E 4-11		LMMB00771	S.L.SPRING	1
E 4-13		XQN17+CQ8	SCREW	1
E 4-15		LMMK0027	FRAME	1
E 4-17		XYC26+JF8	SCREW	5
E 4-21		LMXK0153A	Ass'y, MECHA. CHASSIS	1
E 4-22		LMXY00473	Ass'y, TRAVERSE BASE	1
E 4-23		LMML00432	SLIDE LEVER1	1
E 4-24		LMML0044	SLIDE LEVER2	1
E 4-26		LMXG0026	Ass'y, LOAD GEAR	1
E 4-27		LMES0026	Ass'y, OPEN SW	1