JVC

SERVICE MANUAL

MULTI ENTERTAINMENT SYSTEM

RG-M10BU

Pick up	OPTIMA-6
CD signal processor	CXA1372Q
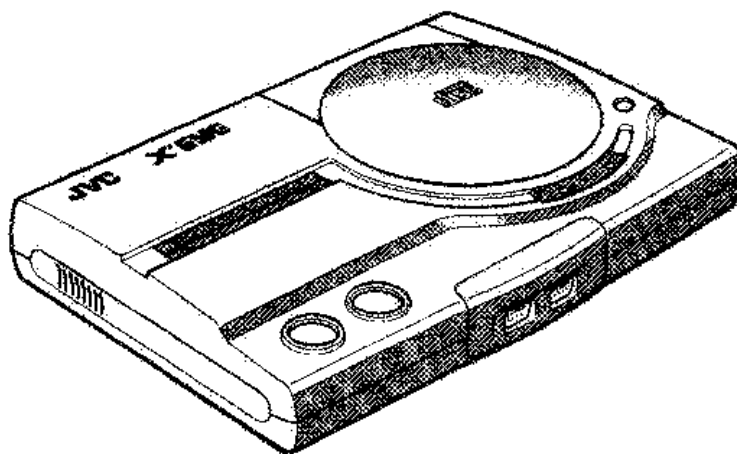
COMPACT
disc

COMPACT
disc
DIGITAL AUDIO

COMPACT
disc
DIGITAL AUDIO
GRAPHICS

Area Suffix
J ...... the U.S.A.
C ..... Canada

Contents

Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.

2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.

3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute repalcement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.

4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.

5. Leakage currnet check (Electrical shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, contorl shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isolation transformer during this check.

   • Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.).

   • Alternate check method
   Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500Ω 10 W resistor paralleled by a 0.15 μF AC-type capacitor between an exposed metal part and a known good earth ground.
   Measure the AC voltage across the resistor with the AC voltmeter.
   Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and meausre the AC voltage across the resistor.
   Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).

AC VOLTMETER
(Having 1000 ohms/volts, or more sensitivity.)

0.15 μF AC TYPE

Place this probe on each exposed metal part.

1500Ω 10W

Good earth ground
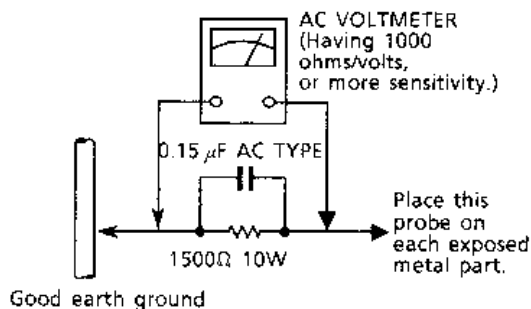
Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

Important for Laser Products

1. **DANGER** : Invisible laser radiation when open and interlock failed or defeated. Avoid direct exposure to beam.

2. **CAUTION** : There are no serviceable parts inside the Laser Unit. Do not disassemble the Laser Unit. Replace the complete Laser Unit if it malfunctions.

3. **CAUTION** : The compact disc player uses invisible laser radiation and is equipped with safety switches which prevent emission of radiation when the drawer is open and the safety interlocks have failed or are defeated. It is dangerous to defeat the safety switches.

4. **CAUTION** : If safety switches malfunction, the laser is able to function.

5. **CAUTION** : Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

6. **CAUTION** : The compact disc player provides a laser diode of wavelength 780-790nm and optical output power typical 3mW at the laser diode.

VARNING : Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

VARO : Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

ADVARSEL : Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

ADVARSEL : Usynlig laserstråling ved åpning, når sikkerhetsbryteren er avslott. unngå utsettelse for stråling.

REPRODUCTION AND POSITION OF LABELS

WARNING LABEL
(Only for the canada)

DANGER: invisible laser radiation when open and interlock failed or defeated. AVOID DIRECT EXPOSURE TO BEAM. (e)	VARNING: Osynling laserstråling när denna del å öppnad och spärren är urkoppled. Betrakta ej stålen. (s)
ADVARSEL: Usynling laserstråling ved åbning, når sikkerhedsafbrydere er ude at funktion. Undgåudsættelse for stråling. (d)	VARO: Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömä/fe lasersäteilylle. Älä katso säteeseen. (f)

CD MECHA.

ENR-005

ENR-006
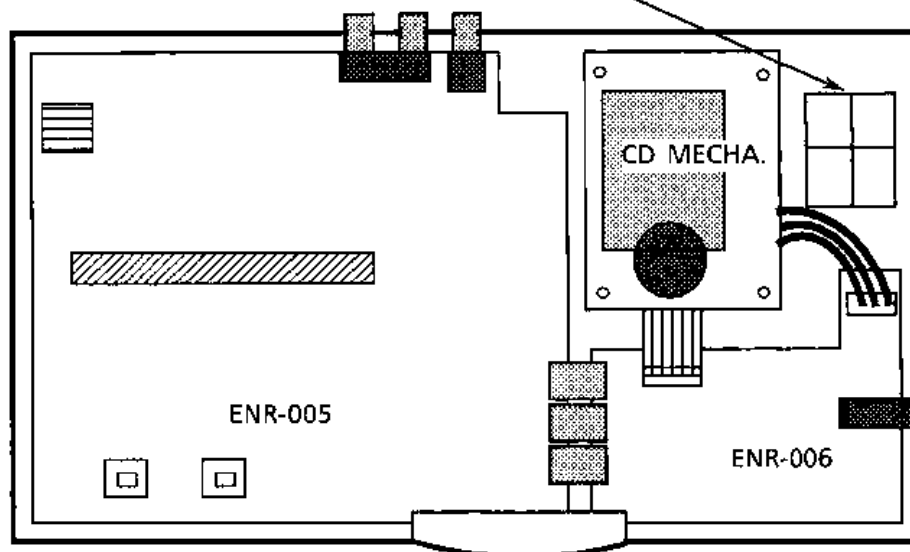
Introduction

Since the JVC X' EYE features CD-ROM playing, it can be used to enjoy games on Sega CDs along with games on Genesis cartridges, music on audio CDs, and karaoke music on CD+Gs.

Games: SEGA CDs

Music: CDs

Karaoke: CD+Gs

Games: Genesis cartridges
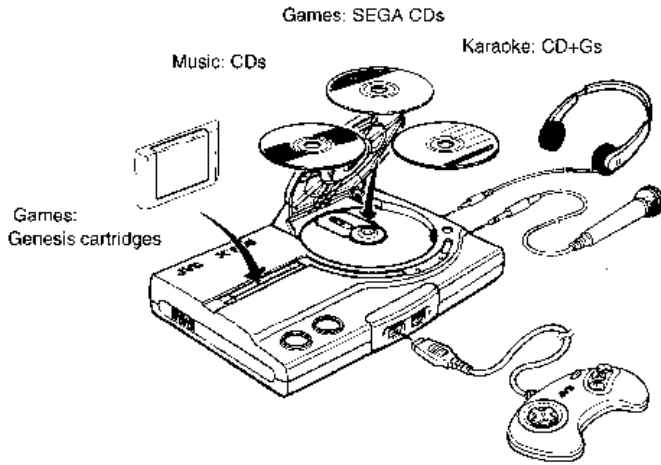
The JVC X'EYE is compatible with these disc types*

COMPACT
disc — SEGA CD Games (CD-ROM)

COMPACT
disc
DIGITAL AUDIO — Audio Music (CD)

COMPACT
disc
DIGITAL AUDIO
GRAPHICS — Audio + Graphics (CD+G)

JVC X' EYE can be used to play games on SEGA CDs and GENESIS cartridges.   SEGA CD   GENESIS

Identifying Parts

JVC X'EYE SYSTEM RG-M10BU

RG-M10BU CONSOLE

Disc Tray

Cartridge Slot

CD Door Button (Open)

Power/Access Indicators

Power Button

Control Port 1 and 2

Reset Button
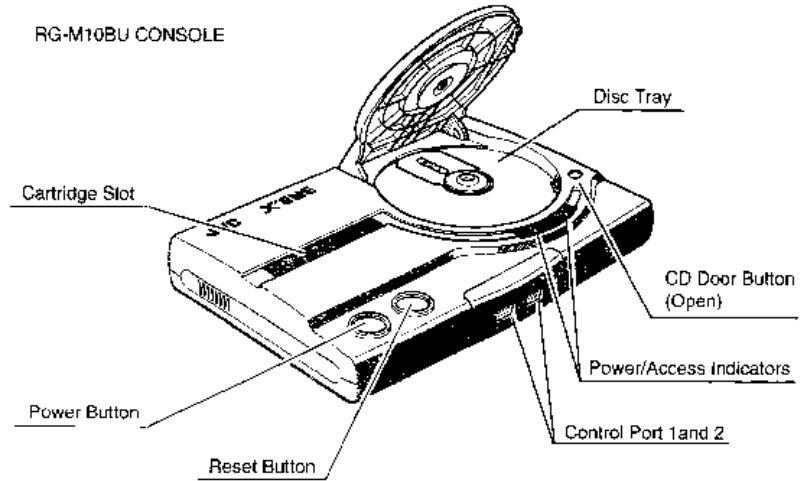
CONTROL PAD

AC Adaptor
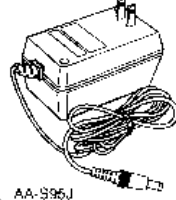
AA-S95J

RF Unit
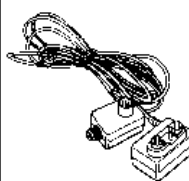
RF-S10J

CDs
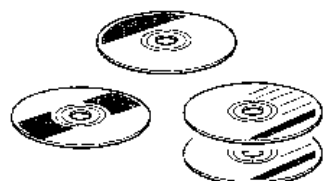
Connecting

Select A or B according to whether your TV is equipped with an AV input terminal or not.
Set the POWER switch of X'EYE to OFF before making any connections.

A. Connections to TV and Antenna

BACK VIEW OF CONSOLE

* When using the RF unit, the sound will be played back monaurally (mixture of L and R channels).
* Also refer to RF-unit s Instructions.

TV Antenna

TV SIDE

B. Connections to AV TV

BACK VIEW OF CONSOLE

These cables are optional.

Video
Audio
L
R

AV TV SIDE

Connections to Power

BACK VIEW OF CONSOLE

To domestic wall outlet of 120V~ ,60Hz

Operating the System

Games: SEGA CDs

Music: CDs

Karaoke: CD+Gs

Headphones

Games: GENESIS cartridges

Microphone
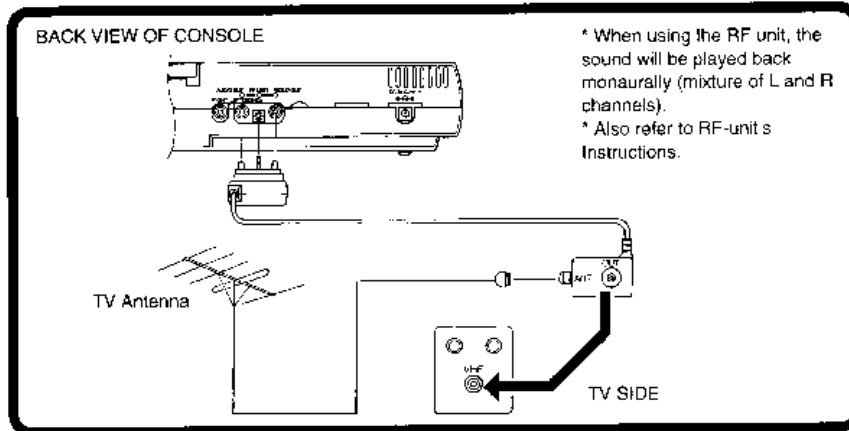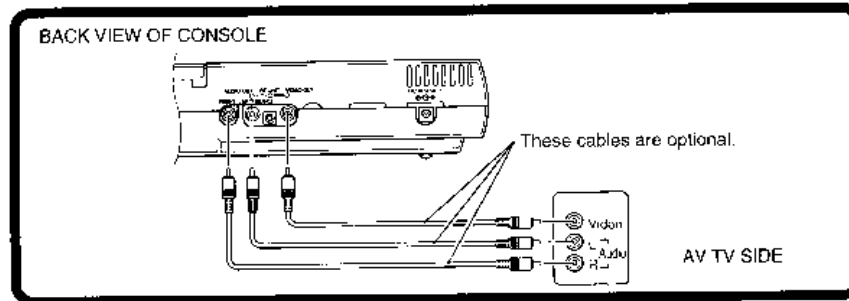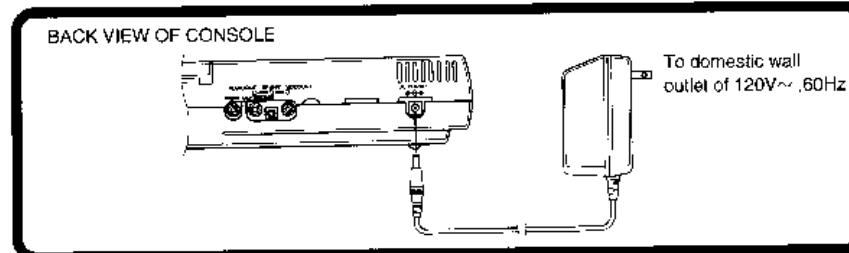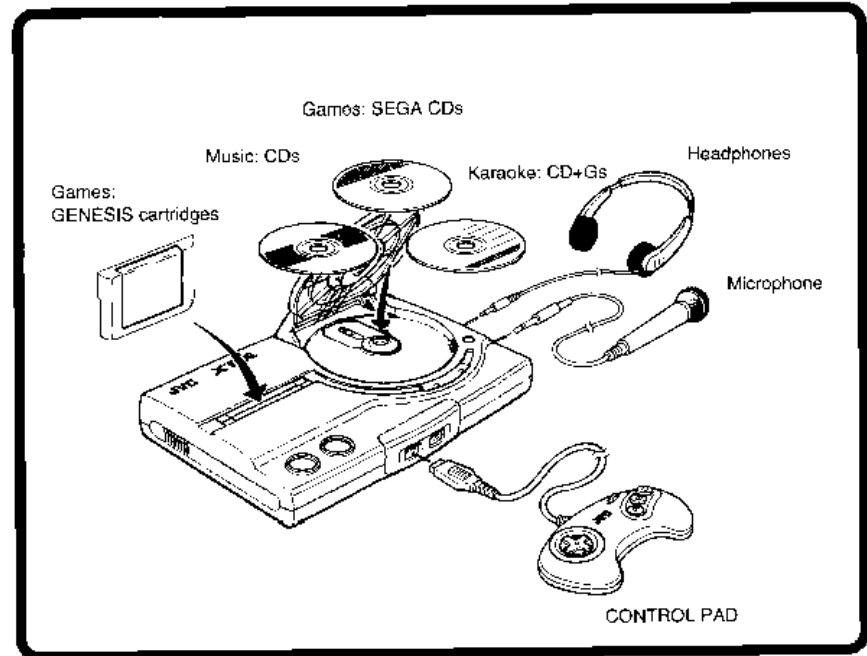
CONTROL PAD

1. Connect the control pad to control port 1. Two people can play if an optional control pad is connected to control port 2.

2. Turn ON the TV. (Adjust the TV's input selector, channel or tuning according to the connection method.)

3. Insert the software you wish to use in the cartridge slot or disc tray.

4. Turn the power of X'EYE to on. Be sure the power indicator light is on.

5. If all connections have been properly made, the X'EYE logo and, in some cases, a demonstration of the game appears on the screen.
   *Use of CD: X'EYE logo
   *Use of cartridge: Game demonstration
   (When both a cartridge and a CD have been set, the software of the cartridge will operate with priority.)

Note:
Be sure the power is off when inserting or removing cartridge.

Playing JVC X' EYE

PLAYING SEGA CD GAMES (CD-ROMS)

When playing games on SEGA CDs for the first time, be sure to carry out FORMAT of the built-in backup memory before starting. (For more details, please see page 7.) If you do not format the built-in backup memory, you may not be able to save your data in some cases.

1. When inserting a SEGA CD disc, the "GAME" will be selected.

2. Press START on the control pad or press Button C to go to the game screen.

   Please refer to the instruction manual of each game for instructions on operation after these two steps.
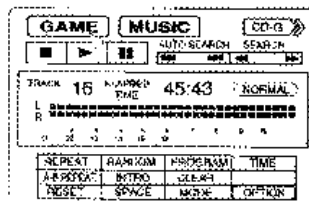
ENDING A SESSION

1. Press the reset button on the JVC X' EYE console.
   * However, please do not press the reset button when data is being saved.

2. The screen first displays the JVC X' EYE title screen before displaying the Control Panel.

   * There may be slight differences depending on the game. Please refer to the instruction manual of each game for more details.

3. Remove the SEGA CD.

BACKUP MEMORY

SAVING YOUR GAMES

Some games allow you to save your current game data at the time you stop playing so you can continue playing later. The JVC X' EYE console has a internal circuit to save your data which is called "built-in backup memory."

* Since there is a limit to the date that can be saved, please delete unnecessary items.

Note:
Since saved data is erased if the JVC X' EYE is left off for a month or more, turn it on at least once a month even if you do not use it.

* If the data is erased, reformat the built-in backup memory and leave the power on for at least one hour.

Playing JVC X' EYE

READING THE SCREENS

1. Menu Screen

- FORMAT — 1. Formats built-in backup memory.
- FORMAT — 2. Formats backup cartridge memory.
- ERASE ITEM — 3. Erases data in built-in backup memory.
- ERASE ITEM — 4. Erases data in backup cartridge memory.
- COPY TO — 5. Copies data in built-in backup memory to backup cartridge memory.
- COPY TO — 6. Copies data in backup cartridge memory to built-in backup memory.
- EXIT — 7. Returns you to the Control Panel.

2. ERASE Screen
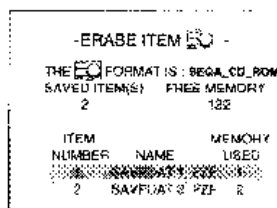
Saved Item(s): Number of items saved.
Free Memory: Unused space in backup memory. Units are blocks.
Item Number: Sequential item number.
Name: The name that a data item is saved under in backup memory.
It cannot be written by the player. An abbreviation of the game's name or other title is automatically used.
Memory Used: Size of each item. Units are blocks.

FORMATTING

1. Select OPTION on the Control Panel and press Button C.
   * If the number of saved items and free memory in internal memory is displayed on the DATA STORAGE INFORMATION Screen, it means that it was already formatted at the time of shipment. In that case, use as it is.

2. When "PLEASE FORMAT" appears, press Button C to go to the menu.

3. Select "internal backup format built-in backup memory" and press Button C to go to the FORMAT Screen.

4. Select "Yes" and press Button C. Formatting is carried out and you will return to the menu.

* If a "Cannot Format" message appears, it is possible that there is a breakdown or defect again in the JVC X EYE. In such case, please consult the retail seller from whom you purchased it.
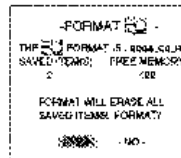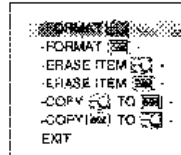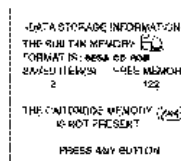
ERASING

1. Select OPTION on the Control Panel. Press Button C to go to the DATA STRAGE INFORMATION Screen.

2. Press Button C to go to the menu

3. Select ERASE. Press Button C to go to the ERASE Screen. (Please see page 7 for instructions on reading the menu.)

4. The saved items will appear on the screen. Select the item you want to erase and press Button C. You will then go to ERASE Screen 1 to 2. (Please see page 7 for instructions on reading ERASE Screen.)

5. Select "Yes" and press Button C. Erasing is carried out and you will return to the menu.

```
-DATA STORAGE INFORMATION-
THE BUILT IN MEMORY
FORMAT 2 : SEGA_CD_ROM
SAVED ITEM(S)     FREE MEMORY
   1                  122

THE CARTRIDGE MEMORY
IS NOT PRESENT

PRESS ANY BUTTON
```

```
-FORMAT -
-FORMAT -
-ERASE ITEM -
-ERASE ITEM -
-COPY  TO  -
-COPY  TO  -
EXIT
```

```
-ERASE ITEM  -

THE  FORMAT IS  SEGA_CD_ROM
SAVED ITEM(S)     FREE MEMORY
   2                  122

ITEM
NUMBER   NAME     MEMORY USED
  1    SAVEDAT 1   1
  2    SAVEDAT 2. PZF   2
```

```
-ERASE ITEM  -

THE  FORMAT IS : SEGA CD ROM
SAVED ITEM(S)     FREE MEMORY
   2                  122

IS IT OK TO ERASE MEMORY
ITEM SAVEDAT 1. PZF?
      -YES-
      -NO-
```

ERASE Screen 1   ERASE Screen 2

ENDING FORMATTING, ERASING, and COPYING

1. Select EXIT on menu. Press Button C to return to the Control Panel.

```
-FORMAT  -
FORMAT  -
-ERASE ITEM  -
-ERASE ITEM  -
-COPY  TO  -
-COPY  TO  -
EXIT
```
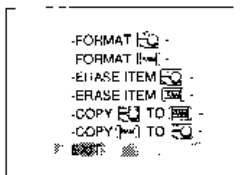
2. Insert the Sega CD you want to use and operate the Control Panel to start the game.

```
GAME   MUSIC        CD-G

TRACK 16  ELAPSED 45.43   NORMAL
L
R

REPEAT  RANDOM  PROGRAM  TIME
A-B REPEAT  IN-HD  CLEAR
SEREL   SPACE   MODE    OPTION
```
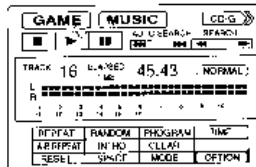
Control Panel

PLAYING CARTRIDGES (GAMES)

1. Turn the power of X'EYE to OFF.

2. Insert the cartridge into the cartridge slot, label side facing forward.
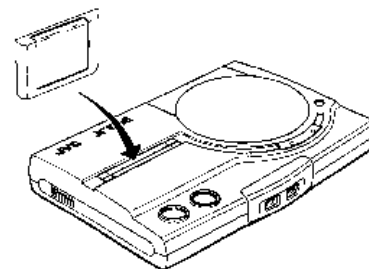
3. Press the power button on the JVC X EYE console to turn it on.

4. Use the control pad to start the game.

> When playing a long game, it is suggested that you take a 10 to 20 minute rest every hour for your health.

ENDING GAMES

1. Press the power button on the JVC X' EYE console to turn it off.

2. Gently pull the cartridge straight out.

3. Unplug the AC adaptor.

NOTE:
   Never take out the cartridge when the power is on as this will cause malfunctioning or damage.

PLAYING CDs (MUSIC)

1. Turn on the TV.

2. When inserting a music CD, the "MUSIC" indication is selected.

3. Press START on the control pad or press button C to begin playing the CD.

4. When the CD is finished playing, remove the disc from the tray.

Playing JVC X' EYE

CONTROL PANEL DISPLAY

DISC TIME MODE
Shows disc time in four
different modes.

TRACK

CURSOR

DOOR OPEN
Indicates that the CD door is
open.

TIME

MODE
Displays in two sound
modes

INTRO PLAYING TIME
Indicates the length of
INTRO time when it
has been set.

SPACE
Indicates the space between
tracks when it has been set.

LEVEL METER

MUSIC CALENDAR
Normally indicates track numbers in the track order of the inserted disc. During PROGRAM or RANDOM playing, it displays the track order that you have set. Further, when the track order has been set for PROGRAM playing, the LEVEL meter is replaced with the PROGRAM CALENDAR

FUNCTION COMMANDS

CONTROL PANEL BUTTONS

STOP   PLAY   PAUSE

AUTO SEARCH

Switch to CD+G Screen
Command

SEARCH

CONTROL PANEL BUTTONS

PLAY	When you select [►] or (MUSIC) and press Button C, the option turns red and play begins.
PAUSE	When you select [II] and press Button C, the option turns red and play of the current track is paused. Playing resumes from where the track was stopped if you press it again.
STOP	When you select [■] and press Button C, play of the current track stops.
AUTO SEARCH	(Can be used during PLAY, PAUSE. and STOP and PAUSE) 1. When you select either [►►] (right) or [I◄◄] (left) and press Button C, this option takes you forward or back by one track. 2. When PAUSE or STOP are highlighted, you can resume play by pressing PLAY again.
SEARCH	(Can be used only during PLAY) When you select either [►►] (right) or [◄◄] (left) and press Button C, the option turns red and cues forward [►►] or back [◄◄] through the current track while you hold down Button C.
CD-G	When you select CD-G and press Button C, the display changes to the CD-G screen.

FUNCTION COMMANDS

REPEAT	(Can be set during PLAY, PAUSE, and STOP) Repeats play. When you select REPEAT and press Button C, the option turns red. During PLAY, play starts by itself. During PAUSE or STOP, play is started by selecting PLAY and pressing Button C. All the tracks on the CD or the tracks that you select for PROGRAM playing are repeated. RANDOM and INTRO playing can also be repeated.
A-B REPEAT	Repeats a section of track. (Can only be used during PLAY.) 1. When you select A-B REPEAT and press Button C, the option turns blue and the starting point of section to be repeated (A) is marked. 2. The end of the section to be repeated (B) is marked by pressing Button C again. AB-REPEAT turns red and repeat playing of section A to B begins.
RANDOM	Plays automatically selected tracks. (Can only be set during STOP.) 1. When you select RANDOM and press Button C, the option turns red. 2. When you select [►] and press Button C, random playing begins. This option can also be combined with INTRO, PROGRAM, and REPEAT playing.
PROGRAM	Enables you to listen to tracks in the order you choose. (Can only be set during STOP.) 1. When you select PROGRAM and press Button C, the option turns blue.

2. When you select the track you want to hear with the cursor and press Button C, its number is displayed on the MUSIC CALENDAR.
(Up to 99 tracks can be programmed.)

3. After selecting a track, when you select EXIT and press Button C, the cursor moves to the PROGRAM option. (The PROGRAM option turns red.)

4. When you select [►] and press Button C, PROGRAM playing begins.

CLEAR Clears the PROGRAM option (Can be used during PLAY, PAUSE, and STOP).
When you select CLEAR and press Button C, everything in PROGRAM is erased. To execute PROGRAM again, stop play by selecting [■] and then carry out PROGRAM steps 1 to 4. To clear when in PROGRAM, select EXIT and press Button C (the cursor will move to PROGRAM) before carrying out steps for CLEAR given above.

INTRO Plays the beginning of each track in order (Can be used during PLAY, PAUSE, and STOP).
The beginning section (intro) to be played can be from 1 to 59 seconds.
1. When you select INTRO and press Button C, the option turns red and INTRO time is displayed on the screen.

2. INTRO time is changed with the direction buttons. The right and left buttons are to select either the ones or tens digit and the up and down buttons are to increase or decrease the number.

3. When Button C is pressed to end time setting, the INTRO time display disappears. During PLAY, play starts by itself. During PAUSE or STOP, play is started by selecting PLAY and pressing Button C.

SPACE Pauses for a number of seconds between tracks (Can be used during PLAY, PAUSE, and STOP).
The pause between tracks (space) can be from 1 to 59 seconds. This feature can be combined with INTRO, PROGRAM, and REPEAT playing.

1. When you select SPACE and press Button C, the option turns red and SPACE time is displayed on the screen.

2. SPACE time is changed with the direction buttons. The right and left buttons are to select either the ones or tens digit and the up and down buttons are to increase or decrease the number.

3. When you press Button C to end time setting, the SPACE time display disappears. During PLAY, play starts by itself.

MODE Is used for the karaoke function.
When you select MODE and press Button C, the following sound modes are displayed. The mode changes each time you press Button C.
NORMAL is for normal stereo sound.
V-MASKING is for lowering the voice of a vocalist on a normal music CD and to enjoy Karaoke by singing along.
When you use Karaoke Disc, please set to NORMAL position.

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TIME If you select TIME and press the Button C during playback, the modes below will be displayed. The mode changes each time you press the button.

ELAPSED: Time that has passed since the current track started playing.

T-ELAPSED: Total time that has passed since the disc started playing.

REMAIN: Time remaining in the current track.

T-REMAIN: Total time remaining on the disc.

RESET Turns all function commands off.
When you select RESET and press Button C, all the function commands that are on (those highlighted in red) are turned off.

OPTION Is selected when you want to back up your data or use optional functions that will be available later.
When you select OPTION, the optional function screen appears.

BLIND CONTROL It is possible to control audio CD playing without turning on your TV. Control functions can be executed while holding down the START button.

START + Button A: STOP

START + Button B: PLAY

START + Button C: PAUSE

START + direction button (right/left): AUTO SEARCH (forward or reverse)

PLAYING CD+Gs

1. Insert a CD+G the disc tray and close the CD door.

2. Press START on the control pad or press button C. The CD+G begins playing and the screen goes automatically to the CD+G display.

3. Control during Play is carried out with the CD+G Control Panel. Press Button B on the control pad to hide or restore the CD+G Control Panel. (With every other toggle, a status line appears on the CD+G screen.)

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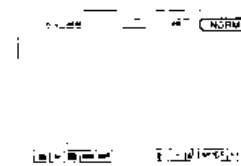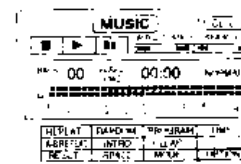
Playing JVC X' EYE

What is a CD+G?

Since a CD+G contains not only signals for sound, but also signals for graphics, you can play still pictures and characters along with the music.

- A disc may contain up to 15 graphics channels and by switching channels, you can choose different languages (e.g. Japanese or French) for a song's lyrics. Whether possible or not depends on the disc, so please read the instructions of the disc.

- As with audio CDs, you can control CD+G playing with the Control Panel. (CD+G graphics are hidden when the Control Panel is being displayed.)

- You may see distortion in the picture after you cue forward or back with the Control Panel during PLAY and return to the CD+G graphics.

FUNCTION COMMANDS

TIME

TRACK NUMBER

PLAY

STOP

PAUSE

AUTO SEARCH

CHANNEL
Displays the graphics channel that you select with Channel Select.

MODE
Enables you to switch the sound mode.

EXIT
Takes you back to the Control Panel.

CHANNEL SELECT (CH)
You can change the graphics channel by selecting a desired channel with the direction buttons and pressing Button C. (You can choose from 15 channels.)

Mic Mixing (Singing along with the music.)

1. Connect the microphone to the console.
2. Adjust microphone volume.

Microphone volume is adjusted with MIC.

The microphone is plugged into the Mic Port (MIC)
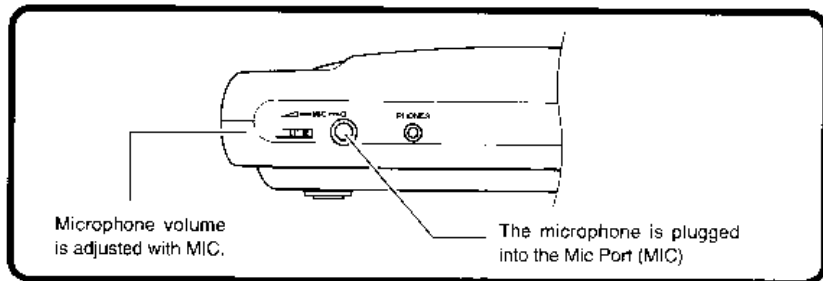
Playing JVC X' EYE

The vocal masking (V-MASKING)

Lowers the volume of the singer's voice on audio CDs

Select MODE and press Button C, then select the V-MASKING Control Panel.
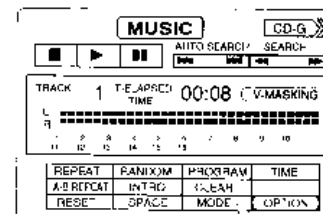
- What is vocal masking?
By lowering the sound in the central position of music recorded in stereo, you can reduce the volume of the singer's voice. However, the vocal masking does not mute the singer's voice.

Please play music recorded in stereo when using the vocal masking. If it is used with monoral recordings, the volume of both the singer's voice and the music will be reduced.

However, the vocal masking may not work even with stereo recordings of classical pieces, songs with few instruments, duets, songs with strong echoing (such as chorus performances), songs where the singer's voice is not in the central position, etc.

SOME ADVICE: ————

* You may experience howling (a sharp screeching noise) when you turn the microphone volume all the way up. To prevent this:
1. Do not face the microphone toward the speakers or keep the microphone a distance from the speakers.
2. Turn down MIC volume.
Turn the volume down when not using the microphone.

CPU:		68000 (12.5MHz) 68000 (8MHz) Z80A (4MHz)
Memory:	RAM:	6Mbit (CD-ROM buffer memory) 512kbit (PCM waveform memory) 128kbit (CD-ROM data cache memory) 64kbit (backup memory) 576kbit (program memory) 512kbit (video memory)
	Boot ROM:	1Mbit CD game BIOS CD player software CD+G compatible
Sound circuitry	sound source:	PCM sound source (Stereo 8 channels Monaural 1 channel) FM sound source (Stereo 6 channels) PSG sound source (3 sounds + 1 noise)
	D/A converter:	PEM 1Bit D/A converter 8 x internal over-sampling digital filter
Graphics:		Maximum no. color display:64 colors from a 512 palette Maximum resolution:320 x 244 dots Sprites: 80 Backgrounds: 2 Special display functions:Rotation, enlargement, and reduction
Input/Output Ports:	Audio input:	Mic. connection standard jack (Input impedance : 10 kohms)
	Audio output:	RCA pin jack (L/R) Headphone connection mini-jack (L/R)
	Video output:	composite video output (1.0Vp-p 75 ohms; imbalance) RF adaptor connection output
	Control port:	Control pad connection 9-pin D-SUB connector x 2
CD drive unit:		CD diameter: 12cm and 8cm Access time: Average 0.8 sec.
Battery back-up:	secondary duration:	Approx. 1 month
Usage environment:	Temperature: Humidity:	0°C- 40°C 10% - 80% RH
	Custom AC Adaptor:	Input: AC120V ~, 60Hz Output: DC9.5V, 1.5A Elec. consumption: 20W max

17

Accessories:	AC adaptor (AA-S95J) x 1 Control Pad x 1 RF adaptor (RF-S10J) x 1 Supplied software x 4 (3 types)

Design & specifications subject to change without notice.

Measurements(unit: mm)

Weight: 1.4Kg 3.2lbs

Dimensions: 12 7/8 x 2 13/16 x 9 7/16 inches
(W x H x D)   326 x 71 x 239 mm

250
326
50   153
240(MAX)
182(MAX)

18
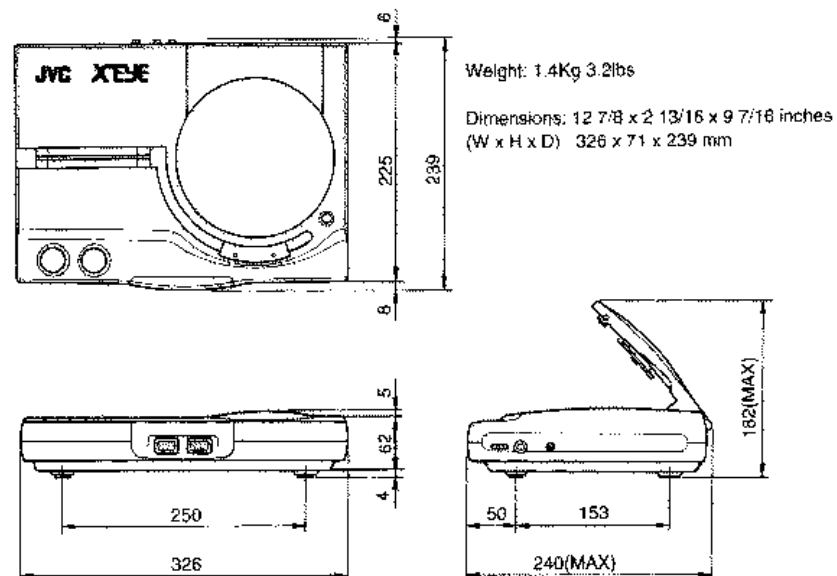
Description of ICs

■ MC68HC000 (IC101, 171) : CPU

Pin Functions

Pin No.	Name	Symbol	I/O	Function
32~51 53~55	ADDRESS BUS	A1~A23	O	It can specifies 16M Bytes memory directly.
5~1 68~58	DATA BUS	D0~D15	I/O	Data lines D0~D15 are bidirectional and used for data transfer. Interrupt vector is inputted at a acknowledge cycle of interrupt from I/O.
6	ADDRESS STROBE	$\overline{AS}$	O	This output strobe is used to indicate the presence of an address on the 24-bit multiplexed bus.
9	READ / WRITE	$R/\overline{W}$	O	This output pin is used to indicate the direction of data transfer.
7 8	DATA STROBE	$\overline{UDS}$ $\overline{LDS}$	O O	This outputs are used to transfer data to or from a peripheral or memory. UDS indicates upper byte. One of them is active when accessing by byte, and the both are active when accessing by word.
10	DATA TRANSFER ACKNOWLEDGE	$\overline{DTACK}$	I	This signal is inputted after transferring data with peripheral devices.
13	BUS REQUEST	$\overline{BR}$	I	The signal which requests to make data and address bus free is inputted from one of the other peripheral controllers. The address and data bus and control terminals become high impedance state after receiving this signal.
11	BUS GRANT	$\overline{BG}$	O	When bus request is inputted, this pin lets the the peripheral controllers know that the data and address bus and control terminals are free.
12	BUSS GRANT ACKNOWLEDGE	$\overline{BGACK}$	I	The signal from the peripheral controller is inputted which means that the controller become bus mustar, after bus grant is outputted.
27~25	INTERRUPT CONTROL	$\overline{IPL0~2}$	I	Interrupt request which has seven levels is inputted. IPL2 is most significant bit.
24	BUS ERROR	$\overline{BERR}$	O	When a trouble occurs on the bus cycle in execution, bus error is asserted.
20	RESET	$\overline{RESET}$	I/O	This terminal is used as an input to initialize the CPU by pulling RESET low. When the reset command is executed, this terminal is used as an output to the peripheral devices.
19	HALT	$\overline{HALT}$	I/O	A low level on this terminal will cause the CPU to stop running at the end of the present instruction. As an output, HALT indicates that a bus error has occured two times successively. In the halt state, address and data bus and control terminal are in high impedance states.
22	ENABLE	E	O	This is used to communicate with the peripheral device for 6800.
23	VALID PERIPHERAL ADDRESS	$\overline{VPA}$	I	This is used to access the peripheral devices for 6800. The access signals for the peripheral devices are outputted by asserting this pin. When VPA is asserted on the interrupt acknowledge cycle, MPU executes the interrupt acknowledge cycle specified by automatic vector.
21	VALID MEMORY ADDRESS	$\overline{VMA}$	O	This signal is outputted when the peripheral devices like I/O assert this terminal to request an access timming for the peripheral LSIs for 6800. The active of this terminal means that the address bus are valid.
30~28	PROCESSOR STATUS SIGNAL	FC0~ FC2	O	These 3 bits indicates the state of the CPU : fetching instructions, accessing data and interrupt acknowledge.
15	CLOCK	CLK	I	Operational clock input
14, 52	POWER SUPPLY	VCC	--	+5V
16, 17,56,57	GROUND	GND	--	GND

■ 315-5660(IC191) : Game processor

1. Outline

Game processor only controlled by the main-CPU performs all of the screen controls. The controlled screen consists of five layers : sprite, scroll A, scroll B, window and background. Monaural PCM sound generator, programable sound generator and FM sound generator controlled by Z80 are also included

RG-M10BU
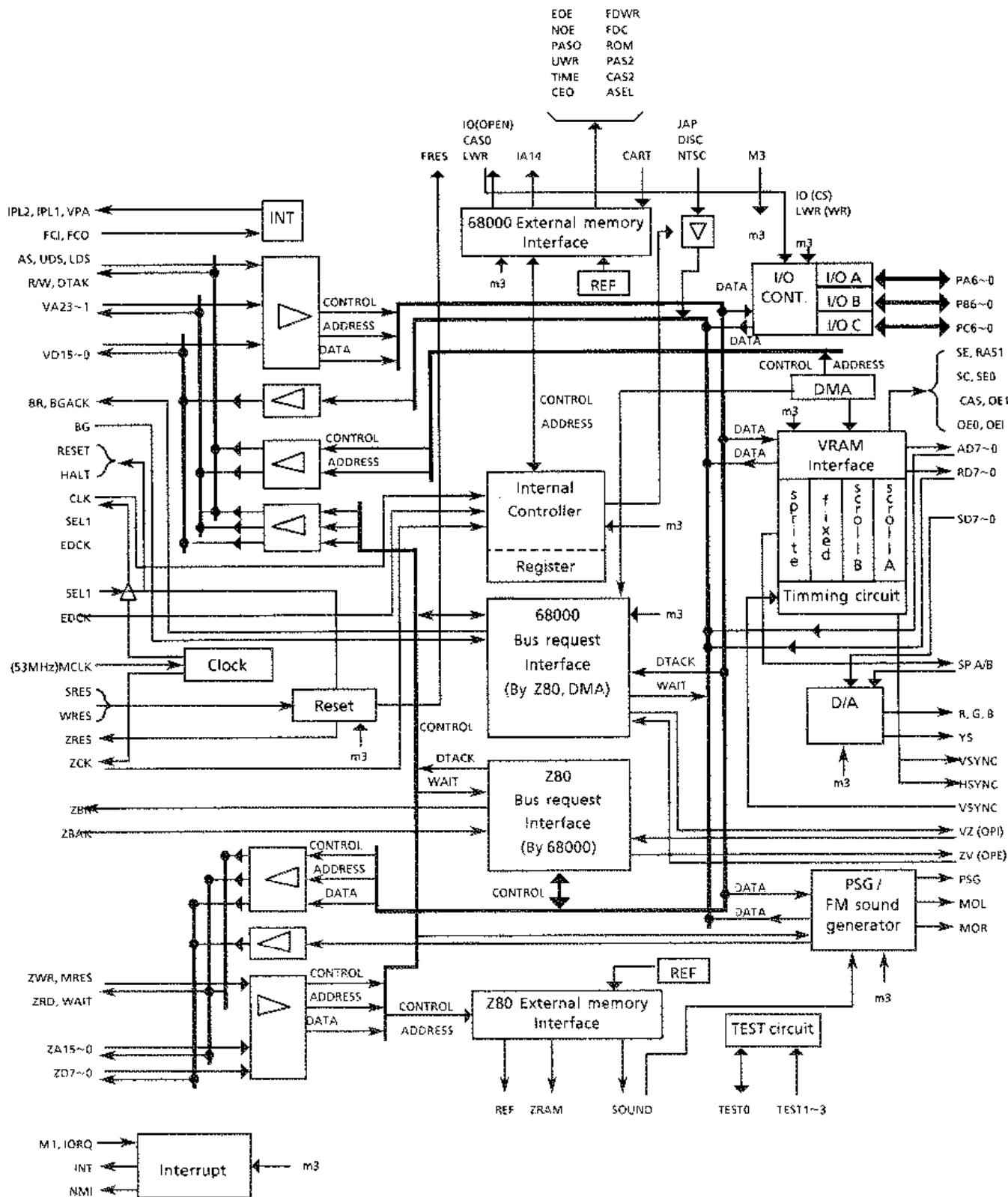
3. Pin Functions

Pin No.	Symbol	I/O	Function
154~176	VA1~VA23	I/O	68000 ADDRESS BUS
137~152	VD0~VD15	I/O	68000 DATA BUS
191	AS	I/O	
192	UDS	I/O	
193	LDS	I/O	
194	R/W	I/O	
195	DTAK	I/O	
182	BR	O	
183	BGACK	I/O	68000 INTERFACE SIGNALS
184	BG	I	
185~186	IPL1~IPL2	O	
47	VPA	O	
48	HALT	O	
49	RESET	O	
50~51	FC0~FC1	I	
130	CLK	I/O	
112~127	ZA0~ZA15	I/O	Z80 ADDRESS BUS
200~207	ZD0~ZD7	I/O	Z80 DATA BUS
187	IORQ	I	
188	ZRD	I/O	
189	ZWR	I/O	
190	M1	I	
52	MREQ	I/O	Z80 INTERFACE SIGNALS
59	ZRES	I/O	
60	ZBAK	I	
61	NMI	O	
62	ZBR	I/O	
63	WAIT	I/O	
181	INT	O	
132	ZCLK	I/O	
199	RAS0	O	
64	EOE	O	
196	UWR	O	P-SRAM INTERFACE
65	NOE	O	
197	LWR	I/O	
66	ZRAM	O	SRAM INTERFACE
67	REF	O	
39	YS	O	
41	VSYNC	O	
43	HSYNC	I/O	
135	EDCLK	I/O	
198	CAS0	I/O	
68	CAS2	O	
69	RAS2	O	
70	ASEL	O	
71	ROM	O	
72	FDC	O	
108	FRES	I/O	
73	FDWR	O	
74	CEO	O	
45	M3	I	
75	TIME	O	
76	CART	I	
79	DISK	I/O	
77	IA14	O	
40	SPA/B	I/O	
129	SEL1	I	
134	MCLK	I	
46	NTSC	I	
78	WRES	I	
128	SRES	I	
107	JAP	I/O	

Pin No.	Symbol	I/O	Function
12	RAS1	O	
13	CAS1	O	
16	OE1	O	
15	WE0	O	DUAL PORT RAM INTERFACE SIGNALS
10	SE0	O	
14	WE1	O	
9	SE1	O	
11	SC	O	
26~33	AD0~AD7	I/O	
1~8	SD0~SD7	I	
17~20, 22~25	RD0~RD7	I/O	
56	MOL	O	FM
55	MOR	O	
57	SOUND VDD	—	
54	SOUND VSS	—	
131	SBCR	O	VIDEO+PSG
38	VIDEO AVDD	—	
34	VIDEO AVSS	—	
35	R	O	
36	G	O	
37	B	O	
42	CSYNC	I/O	
178	PSG	O	
177	SOUND VDD	—	
179	SOUND VSS	—	
100~106	PA0~PA6	I/O	JOY PAD INTERFACE
93~99	PB0~PB6	I/O	
85~91	PC0~PC6	I/O	
81	TEST 0	I/O	TEST SIGNAL TEST SIGNALS
82~84	TEST 1-3	I	
111	IO	I/O	NOT USED
110	VZ	I/O	
109	ZV	I/O	
58	SOUND	I/O	
44, 80, 136, 208	VDD	—	POWER SUPPLY
21, 53, 92, 133, 153, 180	VSS	—	GND

■ Z80 (IC181) : CPU for FM sound generator

This IC is central processing unit which fetches instructions to execute a program.

Pin Functions

Pin No.	Symbol	I/O	Function
27~44	ZA0~ZA15	O	Address select lines. These lines are normally used to select the port and/or control registers.
9,10,7,3,2 4,5,8	ZZD0~ZD7	I/O	Data bus, bidirectional. 3-state. This bus is used to transfer data between the cpu and the peripheral device.
23	ZRES	I	A low on this line resets the CPU.
13	NMI	I	This is interrupt request signal which is prior to ZINT.
22	ZBR	I	This is inputted when pripheral controllers wants to control data and address bus, memory request, I/O request, read and write. ZBR is prior to NMI.
21	ZWAIT	I	A low on this line indicates that the responding device needs more time to complete a transaction. The CPU can wait process of the devices.
12	ZINT	I	This signal can be driven by any peripheral capable of generating an interrupt. A low on INT indicates that an interrupt request is being made.
18	ZRD	O	The CPU asserts this terminal to read data.
19	ZWR	O	The CPU asserts this terminal to write data.
24	M1	O	The state of the CPU is presented.
15	MREQ	O	The CPU output this memory request signal to read and write data.
16	IREQ	O	The CPU outputs this I/O request signal to read and write data.
20	ZBAK	O	A low on this line indicates that the Z-BUS CPU has relinquished control of the bus in response to a bus request.
6	VCC	--	Power supply
26	GND	--	GND
11,17,33,39	NC	--	Non connection
25	RFSH	--	Non connection
14	HALT	--	Non connection

```
NEC JAPAN
UPD9036GB-4
Z80  CPU
   XXXX  XX
```

RG-M10BU
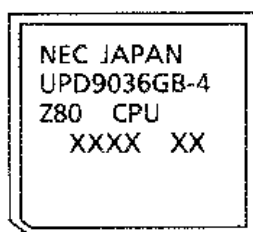
■ TC511632FL-10 (IC172) : Psevdo static RAM (Program-RAM for main-CPU)

These RAM are used to store the programs that main-CPU executes.

Terminal Layout (Top view)

```
GND  1        40  VDD
A9   2        39  UWR
A8   3        38  LWR
A7   4        37  A10
A6   5        36  A11
A5   6        35  A12
A4   7        34  A13
A3   8        33  A14
A2   9        32  UOE
A1  10        31  LOE
A0  11        30  CE
D1  12        29  D16
D2  13        28  D15
D3  14        27  D14
D4  15        26  D13
D5  16        25  D12
D6  17        24  D11
D7  18        23  D10
D8  19        22  D9
GND 20        21  VCC
```
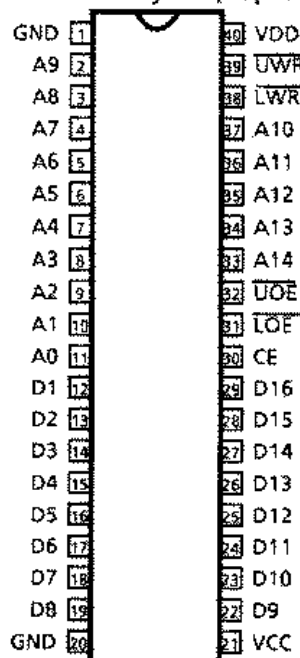
Pin Functions

Pin No.	Symbol	I/O	Function
2~11, 33~37	A0~A14	I	Address bus. These are used to selected the specified memory.
12~19, 22~29	D1~D16	I/O	Data bus. These are bidirectional ports and used to transfer data between main-CPU and RAM.
39	UWR	I	This signal is inputted when writing upper bits of data.
38	LWR	I	This signal is inputted when writing lower bits of data.
32	UOE	I	Data (upper bits) can be outputted when this terminal is low level.
31	LOE	I	Data (lower bits) can be outputted when this terminal is low level.
30	CE	I	Chip enable. This signal is inputeed, when this ic is used.
40, 21 1, 20	VDD, VCC GND, GND	I	Power supply

■ LC3564QM-10 (IC102) : Static RAM (Backup-RAM for sub-CPU)
  BR65265AF-10LL (IC182) : Static RAM (Program-RAM for Z80)

Terminal Layout

```
NC   1        28  VCC
A12  2        27  WE
A7   3        26  CE2
A6   4        25  A8
A5   5        24  A9
A4   6        23  A11
A3   7        22  OE
A2   8        21  A10
A1   9        20  CE1
A0  10        19  I/O 8
I/O 1 11      18  I/O 7
I/O 2 12      17  I/O 6
I/O 3 13      16  I/O 5
GND 14        15  I/O 4
```
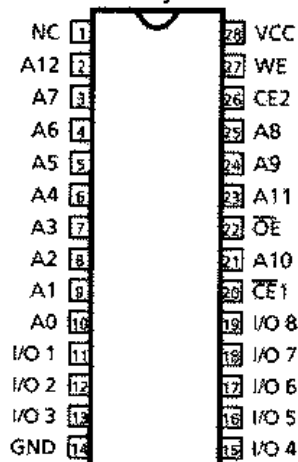
Pin Functions

Pin No.	Symbol	I/O	Function
2~10, 21, 23~25	A0~A12	I	Address bus. These are used to be selected the specified memory.
27	WE	I	When this is low, data can be written.
22	OE	I	When this is low, data can be read.
20	CE1	I	The CE input signal is inputted when data is read or written.
11~13, 15~19	I/O1~I/O8	I/O	Data bus. These are bidirectional ports.
28	VDD	–	Power supply
14	GND	–	Gnd

■ MSM54C864 (IC192) : DUal Port RAM (Video-RAM)

SC	1	40	VSS1
SIO1	2	39	SIO8
SIO2	3	38	SIO7
SIO3	4	37	SIO6
SIO4	5	36	SIO5
DT/OE	6	35	SE
WIO1	7	34	WIO8
WIO2	8	33	WIO7
WIO3	9	32	WIO6
WIO4	10	31	WIO5
VCC1	11	30	VSS2
WB/WE	12	29	NC
NC	13	28	NC
RAS	14	27	CAS
NC	15	26	NC
NC	16	25	A0
A6	17	24	A1
A5	18	23	A2
A4	19	22	A3
VCC2	20	21	A7

Pin Functions

Pin No.	Symbol	I/O	Function
7~10, 31~34	WIO1~ WIO8	I/O	Write mask data is inputted at the falling edge of RAS when WB/WE is low level. The ports specified by the data can not be written picture data. The picture data is written at falling edge of the latest signal among CAS and WE.
12	WB/WE	I	This signal is used to determine the writing mode at the falling edge of RAS on the read/write cycle. (L : Write per bit mode) On data transform cycle, when WB/WE is high level at the falliing edge of RAS, picture data is transformed from RAM to SAM, and from SAM to RAM when WB/WE is low.
21~25 17~19	A0~A7	I	Address bus. These are used to address the memory.
14	RAS	I	The address on the address bus are latched as raw address of the memory at the falling edge of RAS.
27	CAS	I	The address on the address bus are latched as column address of the memory at the falling edge of CAS.
1	SC	I	The serial data transfer is controlled by SC(Serial clock). The valid data are outputted from SIO0~SIO8 after the rising edge of SC on read cycle. And the data on SIO0~SIO8 are latched at the rising edge of SC on write cycle.
6	DT/OE	O	This signal is used as output enable during the read cycle when DT/OE is high at the falling edge of RAS. When DT/OE is low at the same timming, the operation cycle of this ic becomes data transfer cycle.
35	SE	I	Serial enable. This is used as output enable signal during serial read mode, and as input enable during serial write mode.
2~5, 36~39	SIO0~SIO8	I/O	Serial port for SAM
11, 20	VCC	–	POWER SUPPLY
30, 40	VSS	–	GND

RG-M10BU

■ HD404019RC23FS (IC691) : CD controller

1. Terminal Layout
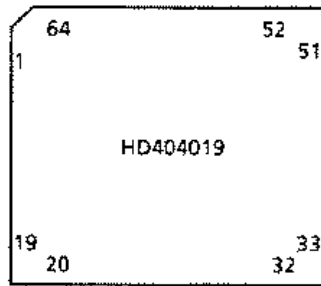
2. Pin Functions

Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	PCD	O		33	—	--	Not used (Non connection)
2	DSPM	O	Muting signal for audio signal	34	—	--	Not used (Non connection)
3	MONO	O	'Voice changer','L-ch','R-ch' : High	35	—	--	Not used (Non connection)
4	VCAN	O	'Vocal masking' : High	36	—	--	Not used (Non connection)
5	VCHN	O	'Voice changer' : High	37	—	--	Not used (Non connection)
6	L	O	'Normal','Vocal masking','L-ch' : High	38	LIVE	--	Not used (Non connection)
7	R	O	'Normal','Vocal masking','R-ch' : High	39	PANOSW	--	Not used (Non connection)
8	—	--	Non connection	40	—	--	Not used (Connected to GND)
9	—	--	Non connection	41	—	--	Not used (Connected to GND)
10	—	--	Non connection	42	—	--	Not used (Connected to GND)
11	—	--	Non connection	43	RST	I	Reset signal inputted
12	—	--	Non connection	44	VCC	--	Power supply
13	GND	--	Ground	45	OSC	--	Oscillation terminal
14	ERES	I	Reset signal for IC141	46	OSC	--	Oscillation terminal
15	HOCK	O		47	GND	--	Ground
16	SCOR	I	Detect the appearance of sync. of subcode	48	LASER	O	H : Laser on / L : off
17	WFCK	I	Not used	49	XCX	O	H : Tracking off
18	DB0	I/O	Communication data with sub-CPU	50	XLAT	O	Latch signal for CXD2500BQ
19	DB1	I/O	Communication data with sub-CPU	51	DFCT	O	Defect signal out
20	DB2	I/O	Communication data with sub-CPU	52	LOCK	I	Lock signal input
21	DB3	I/O	Communication data with sub-CPU	53	FOK	I	Focus ok signal input
22	CDCK	O	Clock out to communicate with sub-CPU	54	SENS	I	Sense signal out
23	IRQ	O	Interrupt request signal to sub-CPU	55	TEST	I	Test mode terminal
24	DMUTE	O	Muting signal for 'Serch' and 'Pause'	56	EMP	O	Emphasis control signal
25	D/M	O	CD-ROM : H, Audio disc : L	57	—	--	Not used (Non connection)
26	VCC	--	Power supply	58	—	--	Not used (Non connection)
27	SQCK	O	Clock out to read SQSO	59	—	--	Not used (Non connection)
28	SQSO	I	Q data of subcode is inputted	60	—	--	Not used (Non connection)
29	DATA	O	Control data for CXD2500BQ	61	PANO	--	Not used (Non connection)
30	CLOCK	O	Clock for transforming DATA	62	—	--	Not used (Non connection)
31	CLOSE SW	I	Detect the disc door closing	63	—	--	Not used (Non connection)
32	—	--	Not used (Non connection)	64	—	--	Not used (Non connection)

■ CXD2500BQ(IC601) : Digital Signal Processor

1. Outline

The CXD2500BQ is a digital signal processsing LSI designed for use in compact disc players. It has the following functions:
· All digital signals for regeneration are processed using one chip.
· The built-in RAM enables high-integration mounting.
· Generation by the use of a digital PLL of bit clock pulses for strobing the EFM signal.
· EFM data demodulation
· Subcode demodulation and subcode Q data error detection
· Digital spindle servo system (incorporating an oversampling filter)

2. Terminal Layout

3. Block Diagram
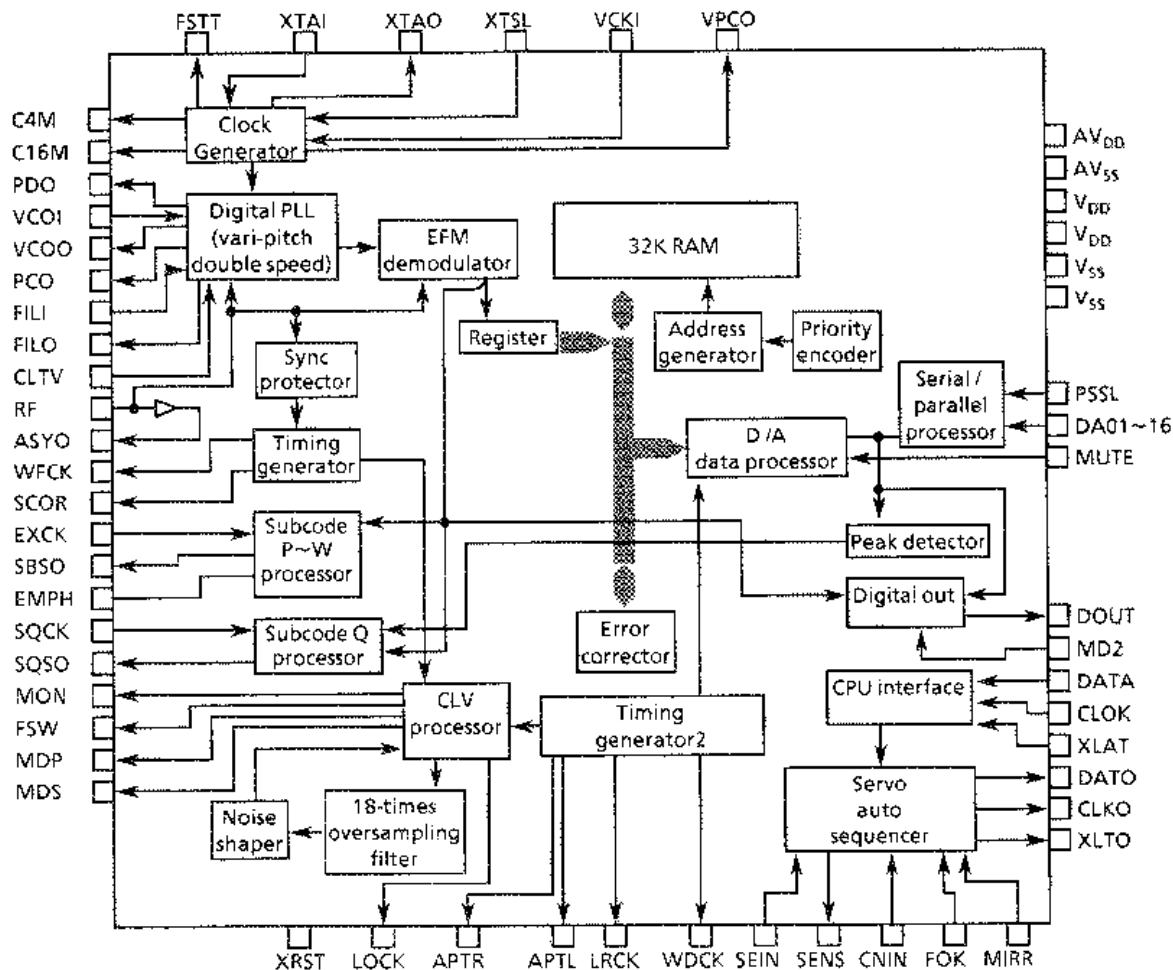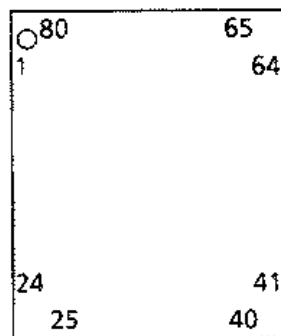
Notes:
· The data at the 64-bit slot is output in 2's complements on an LSB-first basis. The data at the 48-bit slot is output in 2's complements on an MSB-first basis.
· GTOP monitors the state of Frame Sync protection. ("H" : Sync protection window released)
· XUFG is a negative Frame Sync pulse obtained from the EFM signal before Frame Sync protection is effected.
· XPLCK is an inversion of the EFM PLL clock. The PLL is designed so that the falling edge of XPLCK coincides with a change point of the EFM signal.
· The GFS signal turns "H" upon coincidence between Frame Sync and the timing of interpolation protection.
· RFCK is a signal generated at 136-μs periods using a crystal oscillator.
· C2PO is a signal to indicate a data error.
· XRAOF is a signal issued when a jitter margin of ± 28F is exceeded by the 32K RAM.

RG-M10BU

4. Pin Functions

Pin No.	Symbol	I/O	Function
1	FOK	I	Focus OK input pin. Used for SENS output and servo auto sequencer.
2	FSW	O	Non connection
3	MON	O	Output for spindle motor ON / OFF control.
4	MDP	O	Output for spindle servo control.
5	MDS	O	Output for spindle servo control (Non connection).
6	LOCK	O	This terminal is "H" when the GFS signal sampled at 460Hz is "H". It turns "L" when the GFS signal turns out "L" 8 or more times in succession.
7~9	—	--	Non connection
10	TEST	I	Test pin (Normally at 0V)
11	PDO	O	Output of charge pump for analog EFM PLL (Non connection).
12	Vss	--	GND
13~16	—	—	Non connection
17	VCKI	I	Clock input from external VCO for vari-pitch control. fc = 16.9344MHz.
18	FILO	O	Output of filter for masterPLL (Slave = Digital PLL)
19	FILI	I	Input to filter for master PLL.
20	PCO	O	Output of charge pump for master PLL.
21	AVss		Analog GND
22	CLTV	I	VCO control voltage input for master PLL.
23	AV_{DD}	—	Analog power supply
24	RF	I	EFM signal input
25	TEST2	I	TEST pin (Connected to GND)
26	TEST3	I	TEST pin (Connected to GND)
27	ASYO	O	EFM full-swing output
28	TEST4	I	TEST pin (Connected to GND)
29	NC	--	Non connection
30	PSSL	I	Input used to switch the audio data output mode. "L" for serial output, "H" for parallel output.
31	WDCK	O	D / A interface for 48-bit slot. Word clock f = 2Fs.
32	LRCK	O	D / A interface for 48-bit slot. LR clock f = Fs.
33	V_{DD}	--	Power supply
34	DA16	O	Output DA16(MSB) when PSSL = 1 or serial data from 48-bit slot(2's completements,MSB first) when PSSL = 0.
35	DDA15	O	Output DA15 when PSSL = 1 or bit clock from 48-bit slot when PSSL = 0.
36~51	—	--	Non connection
52	VSS	--	GND
53	XTAI	I	Input to 16.9344MHz Xtal oscillation circuit or 33.8688MHz input.
54	XTAO	O	Output of 16.9344 MHz Xtal oscillation circuit.
55	XTSL	I	Xtal selection input pin. "L" for 16,344MHz Xtal, "H" for 33.8688 MHz Xtal.
56~58	—	—	Non connection
59	MD2	I	Digital-Out ON/OFF control. "H" for ON, "L" for OFF.
60	DOUT	O	Digital-Out output pin.
61	EMPH	O	H : emphasis on L : emphasis off
62	—	--	Non connection
63	SCOR	O	Turns "H" when subcode Sync S0 or S1 is detected.
64	SBSO	O	Serial output of Sub P to W.
65	EXCK	I	Clock input for reading SBSO.
66	SQSO	O	Outputs 80-bit Sub Q and 16-bit PCM peak-level data.
67	SQCK	I	Clock input for reading SQSO.
68	MUTE	I	"H" for muting, "L" for release.
69	SENS	O	SENS output to CPU.
70	XRST	I	System reset. "L" for resetting.
71	DATA	I	Inputs serial data from CPU.
72	XLAT	I	Latches serial data input from CPU at falling edge.
73	V_{DD}	--	Power supply(+ 5V)
74	CLOK	I	Inputs serial data transfer clock from CPU.
75	SEIN	I	Inputs SENSE from SSP.
76	CNIN	I	Inputs track jump count signal.
77	DATO	O	Outputs serial data to SSP.
78	XLTO	O	Latches serial data output to SSP at falling edge.
79	CLKO	O	Outputs serial data transfer clock to SSP.
80	MIRR	I	Inputs mirror signal to be used by auto sequencer when jumping 128 or more tracks.

■ CXA1372Q (IC502) : RF Signal Processing Servo Amplifier

1. Outline

The CXA1372Q is a bipolar IC developed for RF signal processing (focus OK, mirror, defect detection, EFM comparator) and servo control.

2. Functions

- Auto asymmetry control
- Focus OK detection circuit
- Mirror detection circuit
- Defects detection, counter measures circuit
- EFM comparator
- Focus servo control
- Tracking servo control
- Feed servo control

3. Terminal Layout

4. Block Diagram

RG-M10BU
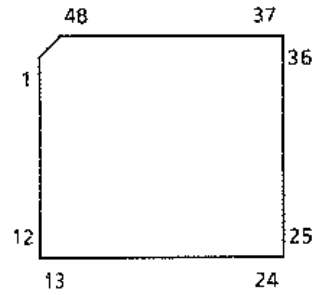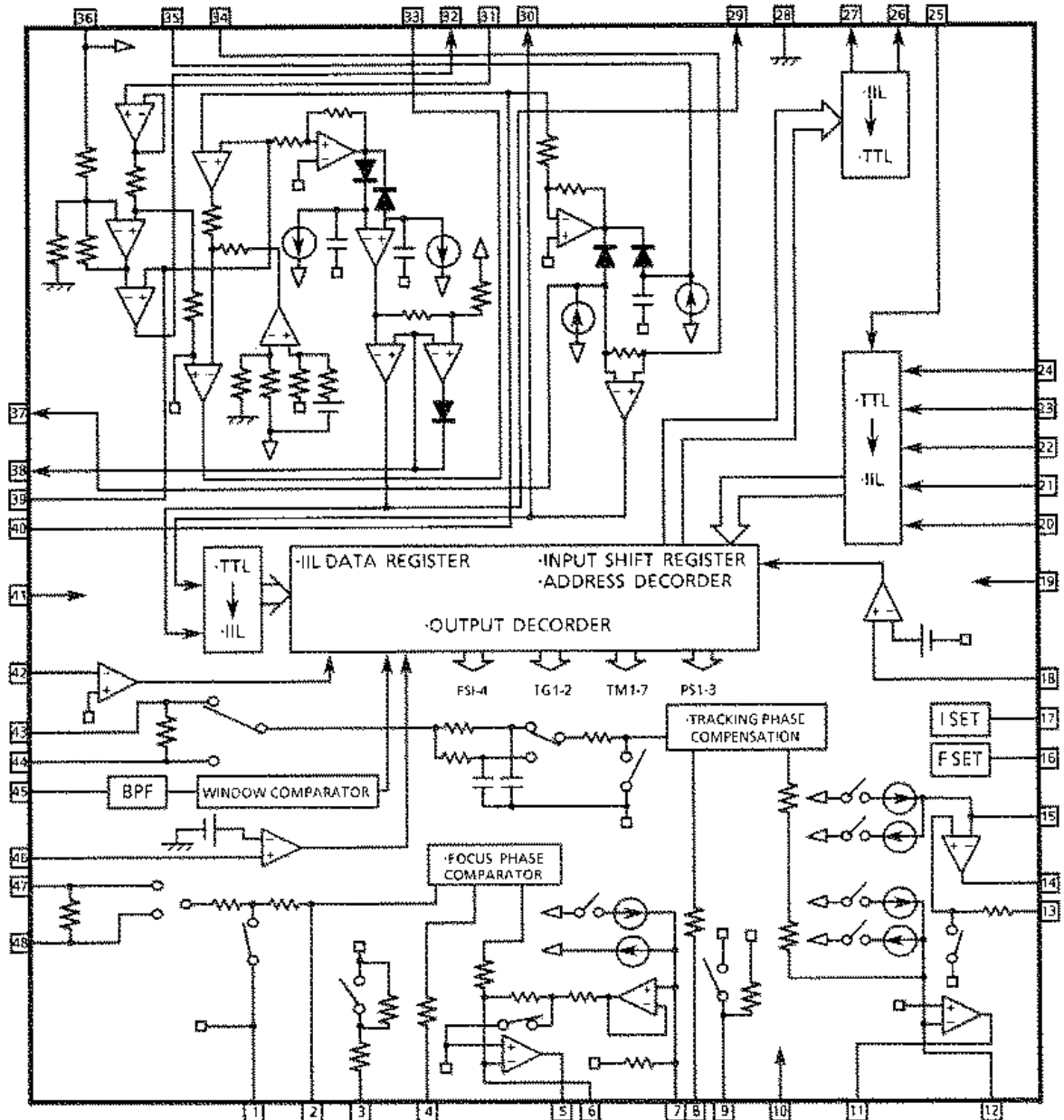
5. Pin Functions

Pin No.	Symbol	I/O	Function
1	TE	I	Input pin of tracking error amplifier.
2	TDFCT	I	Capacitor connecting pin for time constant during defects.
3	ATSC	I	Window comparator input pin for ATSC detection.
4	FZC	I	Pin for focus zero-cross comparator input.
5	FE	I	Input pin of focus error.
6	FDFCT	I	Capacitor connecting pin for time constant during defect functions.
7	VC	I	Center voltage input pin. For dual power: GND For single power supply: (VCC + GND)/2
8	FGD	I	Connect a capacitor between this pin and pin3 to reduce high-frequency gain.
9	FS3	I	The high-frequency gain of the focus servo is switched through FS3 ON and OFF.
10	FLB	I	Time constant external pin to raise the low bandwidth of the focus servo.
11	FEO	O	Focus drive output.
12	FE-	I	Inverse input for focus amplifier.
13	SRCH	I	Time constant external pin for formation of focus search waveform.
14	TGU	I	Time constant external pin for the selection of tracking high band gain.
15	TG2	I	Time constant external pin for the selection of tracking high band gain.
16	AVCC	--	Power supply
17	TAO	O	Tracking drive output.
18	TA-	I	Inverse input pin for tracking amplifier.
19	SL+	I	Non- inverse input pin for feed amplifier.
20	SLO	O	Feed drive output.
21	SL-	I	Inverse input pin for feed amplifier.
22	F SET	I	Pin to set peak frequency of focus tracking phase compensation and fo of CLV LPF.
23	I SET	I	Current is input to determine focus search, track jump, and feed kick height.
24	S STOP	I	Limit SW ON/OFF signal detection pin for disc inner periphery detection.
25	AVEE	--	– 5V
26	DIRC	I	Pin for one-track jump. Contains 47kΩpull-up resistor.
27	LOCK	I	At "L" feed runaway prevention circuit operate. Contains a 47kΩpull-up resistor.
28	CLK	I	Serial data transfer clock input from CPU.
29	XLT	I	Latch input from CPU.
30	DATA	I	Serial data input from CPU.
31	XRST	I	Reset input pin, reset at "L".
32	C.OUT	O	Track number count signal output.
33	SENS	O	Outputs FZC, AS, TZC and S STOP through command from CPU.
34	DGND	--	GND
35	MIRR	O	MIRR comparator output pin.
36	DFCT	O	Output pin of DEFECT comparator.
37	ASY	I	Input pin of auto asymmetry control.
38	EFM	O	Output pin of EFM comparator.
39	FOK	O	Output pin of FOK comparator.
40	CC1	I	Output pin of DEFECT bottom hold.
41	CC2	O	Input pin for the capacitance coupled output of DEFECT bottom hold.
42	DVCC	--	– 5V
43	CB	I	Connection pin of DEFECT bottom hold capacitor.
44	CP	I	Connecting pin of MIRR hold condenser. Non-inverted input pin of MIRR comparator.
45	RFI	I	Input pin with coupling capacitor where RF summing amplifier output is connected.
46	RFO	O	Output pin of RF summing amplifier and check point of eye pattern.
47	DVEE	--	– 5V
48	TZC	I	Input pin of tracking zero-cross comparator.

■ CXA1571M(IC501) : RF AMP for compact disc

1. Outline

The CXA1571M IC for compact disc 3-point method optical pickup output has following functions.
·RF amplifier   · Focus error amp   · Tracking error   · APC circuit

2. Block Diagram
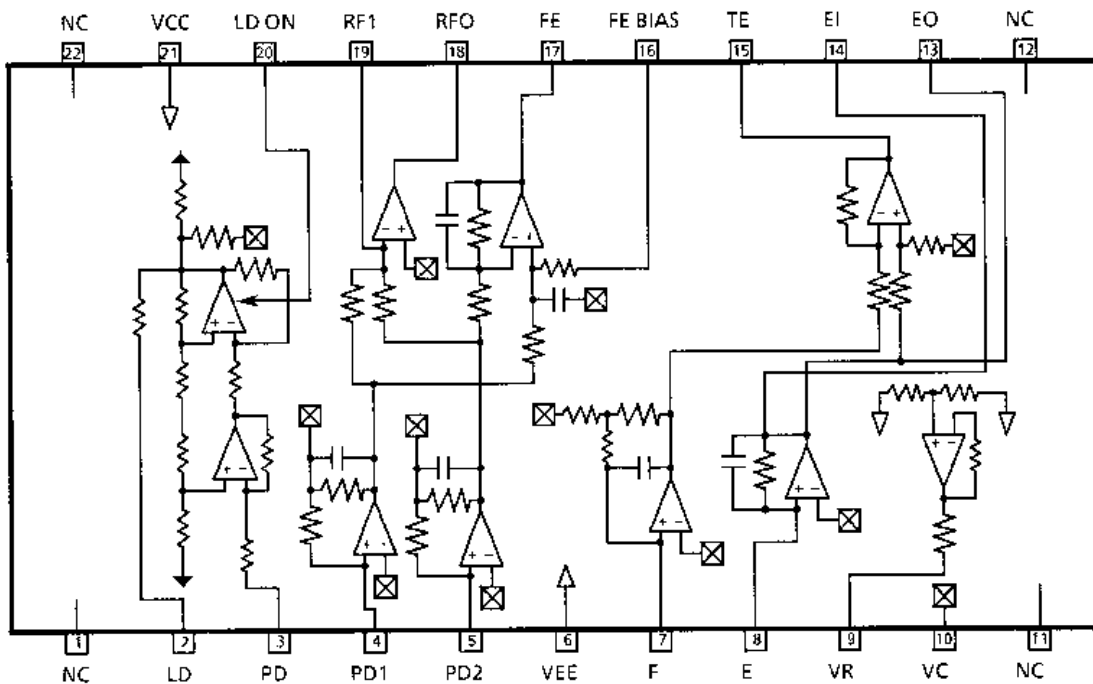
3. Pin Functions

Pin No.	Symbol	I/O	Function
1	LD	O	APC amp output pin.
3	PD	I	APC amp input pin.
4	PD1	I	RF I-V amp inverted input pins; they are connected to the A + C and B + D pins of the
5	PD2	I	photodiode and receive current input.
7	F-IN	I	F and E I-V amp inverted input pin; they are connected to Photodiodes F and E and receive
8	E-IN	I	current input.
9	VR	O	(VCC + VEE) / 2 DC voltage output pin.
10	VC	I	VC intermediate voltage input pin; when dual ± 5V power supplies are used, this pin is connected to GND; for a single + 5V power supply, it is connected to the VR pin.
13	EO	O	Monitor output pin for I-V amp E.
14	EI	I	Gain adjustment pin for I-V amp E.
15	TE	O	Tracking error amp output pin.
16	FE-BIAS	I	Bias adjustment pin for the mon-inverted side of the focus error amp.
17	FE	O	Focus error amp output pin.
18	RF O	O	RF amp output pin.
19	RF I	I	RF inverted side input pin; the resister connected between this pin and the RFO pin determines the gain of theRF amp.
20	LD-ON	I	This pin switches the APC amp on / off: on for VCC, off for ground.

RG-M10BU

■ LC7881M (IC711) : D/A converter

1. Terminal Layout

```
CH1OUT   1 ┌──────┐ 20  CH2OUT
VrefH1   2 │   ○  │ 19  NC
VrefH2   3 │      │ 18  VrefL2
VDD      4 │      │ 17  GND
WCLK2    5 │      │ 16  VrefL1
LRCK     6 │      │ 15  GND
WCLK1    7 │      │ 14  IF
DATA     8 │      │ 13  TST2
BCLK     9 │      │ 12  TST1
VDD     10 └──────┘ 11  TSTOUT
```

2. Block Diagram

3. Pin Functions

Pin No.	Symbol	I/O	Functions
1	CH1 OUT	O	Channel 1 Output terminal (Left channel).
2	VrefH1	I	Reference voltage "High" input terminal 1.
3	VrefH2	I	Reference voltage "High" input terminal 2.
4	V_{DD}	—	Power supply, +5V.
5	WCLK2	I	Word clock 2 input terminal. When IF is "High", it is necessary to adjust WCLK2 = "Low". When IF is "Low", it makes the CH1 data of the audio digital data by using the standing fall of WCLK2 and an internal signal which does the latch is made.
6	LRCK	I	LR clock input terminal. This terminal shows CH1 and CH2 of the input digital audio data. High : CH1 data , Low : CH2 data
7	WCLK1	I	Word clock 1 input terminal. When IF is "High", it makes the data of both CH1 and CH@ channels by using the WCLK1 standing fall and an internal signal which does the latch is made. When IF is "Low", it makes the CH2 data of the audio digital data by using the standing fall of WCLK1 and an internal signal which does the latch is made.
8	DATA	I	Digital audio data input terminal. When IF is "High", it inputs the datafrom the MSB side with the bit serially. When IF is "Low", it inputs the datafrom the LSB side with the bit serially.
9	BCLK	I	Bit clock terminal. This clock signal is used when reading the digital audio data by each bit serially, and for the PWMDCA.
10	V_{DD}	--	Power supply, +5V.
11	TST OUT	O	Test signal output terminal. Normally leave this terminal open.
12	TST1	I	Test signal input terminal. Normally connect this terminal GND.
13	TST2	I	Test signal input terminal. Normally connect this terminal GND.
14	IF	I	Interface select terminal. When it is "High" level, Digital audio data is inputted by each bit serially form the MSB first. When it is "Low" level, Digital audio data is inputted by each bit serially form the LSB first.
15	GND	—	Ground
16	VrefL2	I	Reference voltage "Low" input terminal 1.
17	GND	—	Ground.
18	VrefL2	I	Reference voltage "Low" input terminal 2.
19	NC	—	No connection.
20	CH2 OUT	O	Channel 2 output terminal (Right channel).

■ MN35501 (IC631) : D/A converter

1. Terminal Layout

DIN1	1	28	RSTB
DIN2	2	27	M4
WDCK	3	26	M3
BCK	4	25	DVDD1
DVDD2	5	24	XIN
CKO	6	23	XOUT
DVSS2	7	22	DVSS1
M1	8	21	M2
OUT1C	9	20	OUT2C
OUT1B	10	19	OUT2B
AVDD1	11	18	AVDD2
OUT1D	12	17	OUT2D
OUT1A	13	16	OUT2A
AVSS1	14	15	AVSS2

2. Pin Functions

Pin No.	Symbol	I/O	Function
1,2	DIN1, DIN2	I	Serial data input
3	WDCK	I	Word clock input
4	BCK	I	Bit clock input
5	DVDD2	–	Power supply for digital circuit
6	CKO	O	Clock output
7	DVSS2	–	GND for digital circuit
8	M1	I	Input for mode select
9,10	OUT1C , OUT1B	O	PEM signal output (Channel 1)
11	AVDD1	–	Power supply for analog circuit (Channel 1)
12,13	OUT1D ,OUT1A	O	PEM signal output (Channel 1)
14	AVSS1	–	GND for analog circuit (Channel 1)
15	AVSS2	–	GND for analog circuit (Channel 2)
16,17	OUT2A, OUT2D	O	PEM signal output (Channel 2)
18	AVDD2	–	Power supply for analog circuit (Channel 2)
19,20	OUT2B, OUT2C	O	PEM signal output (Channel 2)
21	M2	I	Input for mode select
22	DVSS1	–	GND for clock circuit
23,24	XOUT, XIN	–	Oscillation terminal
25	DVDD1	–	Power supply for clock circuit
26, 27	M3, M4	I	Input for mode select
28	RSTB	I	Reset input (Low active)

3. Block Diagram

RG-M10BU
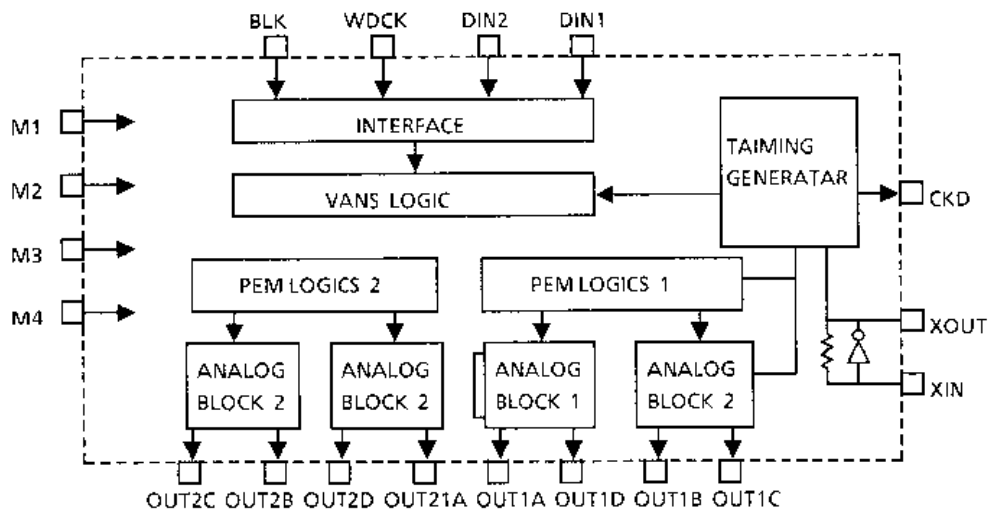
■ CXA1145M(IC221) : RGB Encoder

1. Outline

This LSI makes composite signal, chroma signal and Y-signal from Red, Green and Blue signal.

2. Block Diagram
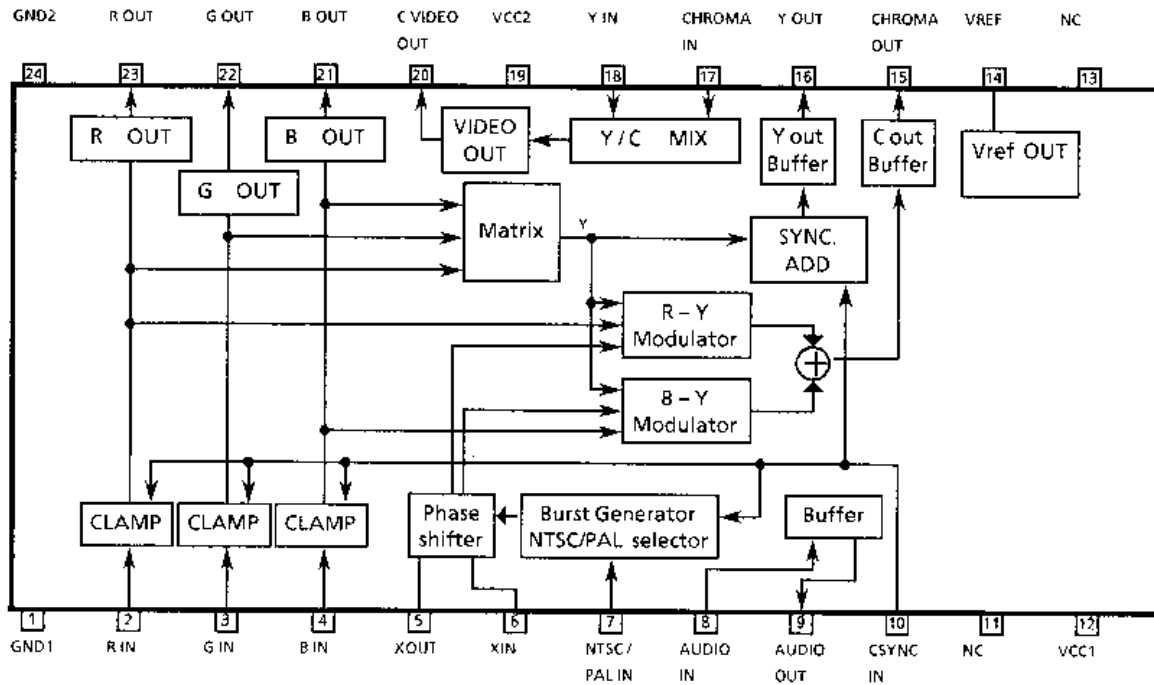
3. Pin Functions

Pin No.	Symbol	I/O	Function
1	GND1	--	GND for the circuits except RGB out and composite out circuits. (Except for load driver)
2	R IN	I	Red signal inpput
3	G IN	I	Green signal Input
4	B IN	I	Blue signal input
5	XOUT	--	A capacitor is connected to shift phase
6	XIN	I	Sub carrier input
7	NTSC/PAL IN	I	(Vcc:NTSC,GND:PAL)
8	AUDIO IN	I	Input terminal of internal audio buffer. (Non connection)
9	AUDIO OUT	O	Output terminal of internal audio buffer. (Non connection)
10	CSYNC IN	I	Composite synchronizing signal is inputted.
11	NC	--	Non connection
12	VCC1	--	Power supply (Except for load driver)
13	NC	--	Non connection
14	VREF	--	Reference voltage is applied.
15	CROMA OUT	O	Chroma signal is outputted.
16	Y OUT	O	Y signal is outputted.
17	CROMA IN	I	Chroma signal is inputted.
18	Y IN	I	Y signal is inputted.
19	VCC2	--	Power supply (For load driver)
20	VIDEO OUT	O	Composite signal out
21	B OUT	O	Analog blue signal out. (Non connection)
22	G OUT	O	Analog green signal out. (Non connection)
23	R OUT	O	Analog red signal out. (Non connection)
24	GND2	--	GND (For load driver)

■ LC89513 (IC161) : Data decoder for CD-ROM

1. Terminal Layout

```
        48 ··········· 33
      ┌─────────────────┐
   49 │                 │ 32
      │   SANYO         │
      │   LC89513       │
      │   XXXX XXXXX    │
   64 │  ○              │ 17
      └─────────────────┘
         1 ··········· 16
```
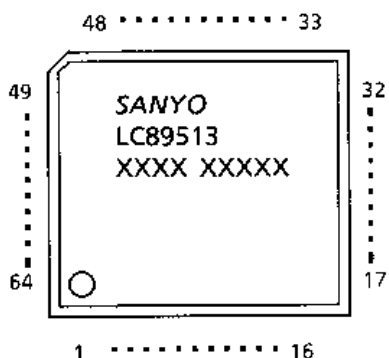
2. Block Diagram
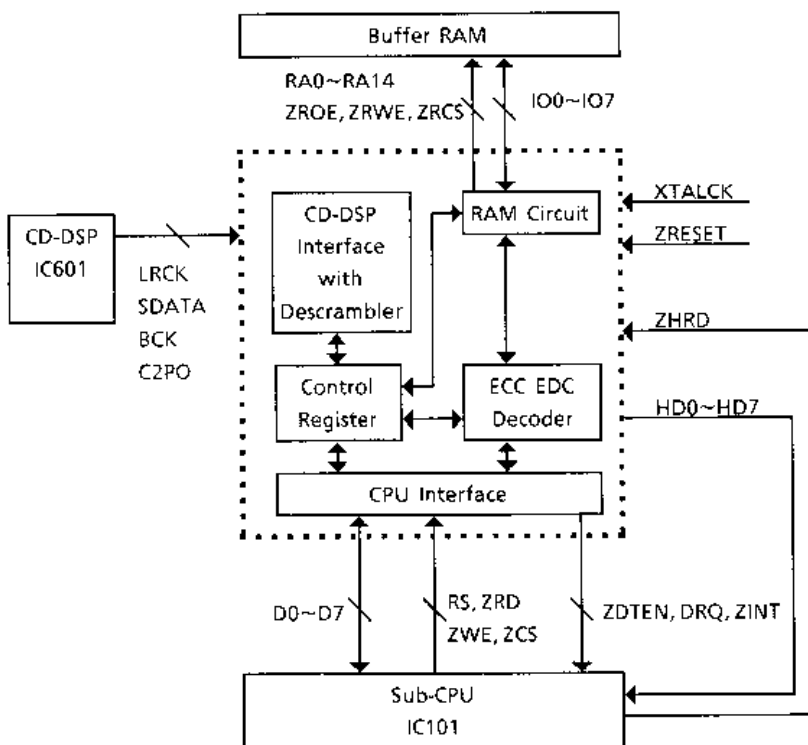
3. Pin Functions

Pin No.	Symbol	I/O	Function
1, 9, 17, 33, 49	VSS	--	GND
24, 56	VDD	--	Power suply
2~8, 10~16 18	RA0~RA14	O	Address bus. These are used to select the specified address of the external memory (Data buffer RAM).
19	RCE	O	Chip select signal. This signal is asserted when using external RAM.
20	RWE	O	Write enable signal. This signal is outputted when writing data on the external RAM.
21	ROE	O	Output enable signal. This signal is outputted when reading data on the external RAM.
22	RESET	I	The RESET input pin is an active-low line.
23	XTALCK	I	Clock input terminal for internal clock.
25	C2PO	I	C2 error flag occured on the CIRC decoding of digital data at CXD2500BQ is inputted. This data is latched with the timing signal made from BCK and LRCK.
26	BCK	I	Bit clock. This clock is used to input data.
27	SDATA	I	Serial data input terminal. The data is stored into the external RAM.
28	LRCK	I	This signal is used to distinguish that data is right or left.
29	RS	I	Register select signal. H : Register　L : Address register
30	RD	I	This signal is inputted when data on a register is read by sub-CPU.
31	WR	I	This signal is inputted when data is written on a register by sub-CPU.
32	CS	I	Chip select signal. This IC is selected with this signal by sub-CPU.
34~41	D0~D7	I/O	Data bus. These are used to transfer data.
42	GSRAM	I	
43	INT	O	Interrupt request signal. This signal is outputted when LC89513 requests interrupt process to sub-CPU.
44	DRQ	O	Data request signal. This signal is asserted when reading data from sub-CPU.
45~48, 50~53	HD0~HD7	O	Data bus. Sub-CPU reads data from these terminals.
54	HRD	I	This signal is inputted when sub-CPU read data.
55	DTEN	O	Data enable. Sub-CPU can read data when this terminal is low level.
57~64	I00~I07	I/O	Data bus. These are used to transfer data between external RAM and LC89513.

RG-M10BU

■ 315-5476A (IC131) : PCM sound generator

1. Outline

This ic is for PCM sound generator system, including DCO(Digital control oscilator) and DCAS (Digital control amplifier). PCM sound generator system can be composed by connecting external memory for wave data and D/A converter. This system is controlled by sub-CPU.

2. Terminal Layout
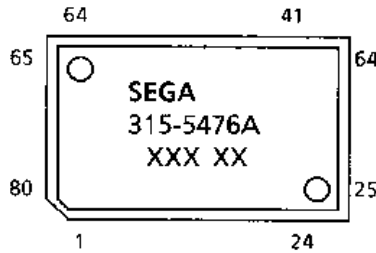
3. Block Diagram
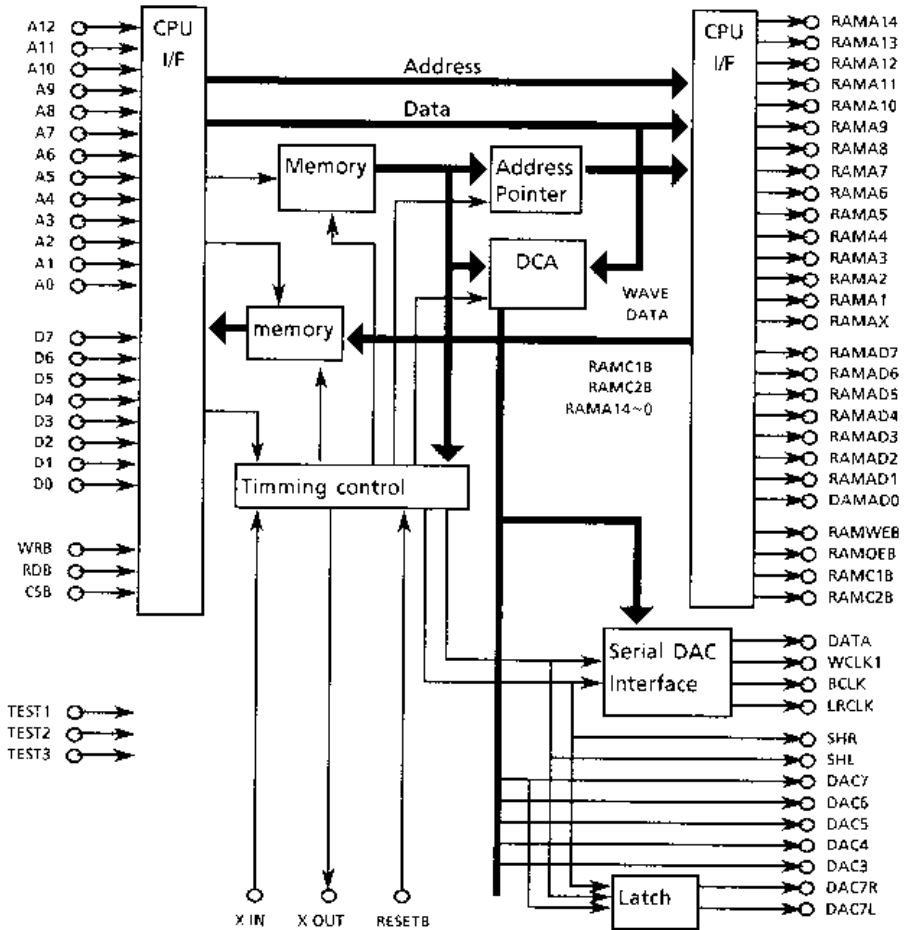
4. Pin Functions

Pin No.	Symbol	I/O	Function
1~10, 80~78	A0~A12	I	Address bus. These are used to specify the memory.
13	RD	I	This signal is used to be read data by an external device.
14	WR	I	This signal is used to be written data by an external device.
28~21	D0~D7	I/O	These are used to transfer data.
35	BCLK	O	Bit clock. This is used to transfer data to D/A converter.
36	DATA	O	Serial data to D/A converter.
40	LRCK	O	L/R clock. This is used to distinguish that DATA is left channel or right channel.
44~51	RAMAD7~ RAMAD0	I/O	Data bus. These are used to transfer data between external RAMs and this ic.
53~59, 65~68 73~76	RAMA14~RAMA8 RAMA7~RAMA0	O O	RAMA14~RAMA8 are used to address upper 8 bits of external memory. RAMA7~RAMA0 are used to address lower 8 bits of external memory.
60	RCS1	O	Chip select signal. this is used to select the external memory for lower data.
61	RCS2	O	Chip select signal. this is used to select the external memory for upper data.
62	ROE	O	This is outputted when reading data from the external memory.
63	RWE	O	This is outputted when writing data into the external memory.
64	RES	I	Reset signal input.
70	XIN	I	System clock input.
77	CS	I	Chip select signal.

■ 315-5632V (IC141) : Data Processor

This IC does the circuit role of the CPU in the surrounding and takes the data and sub-code and controls the memory in addition.
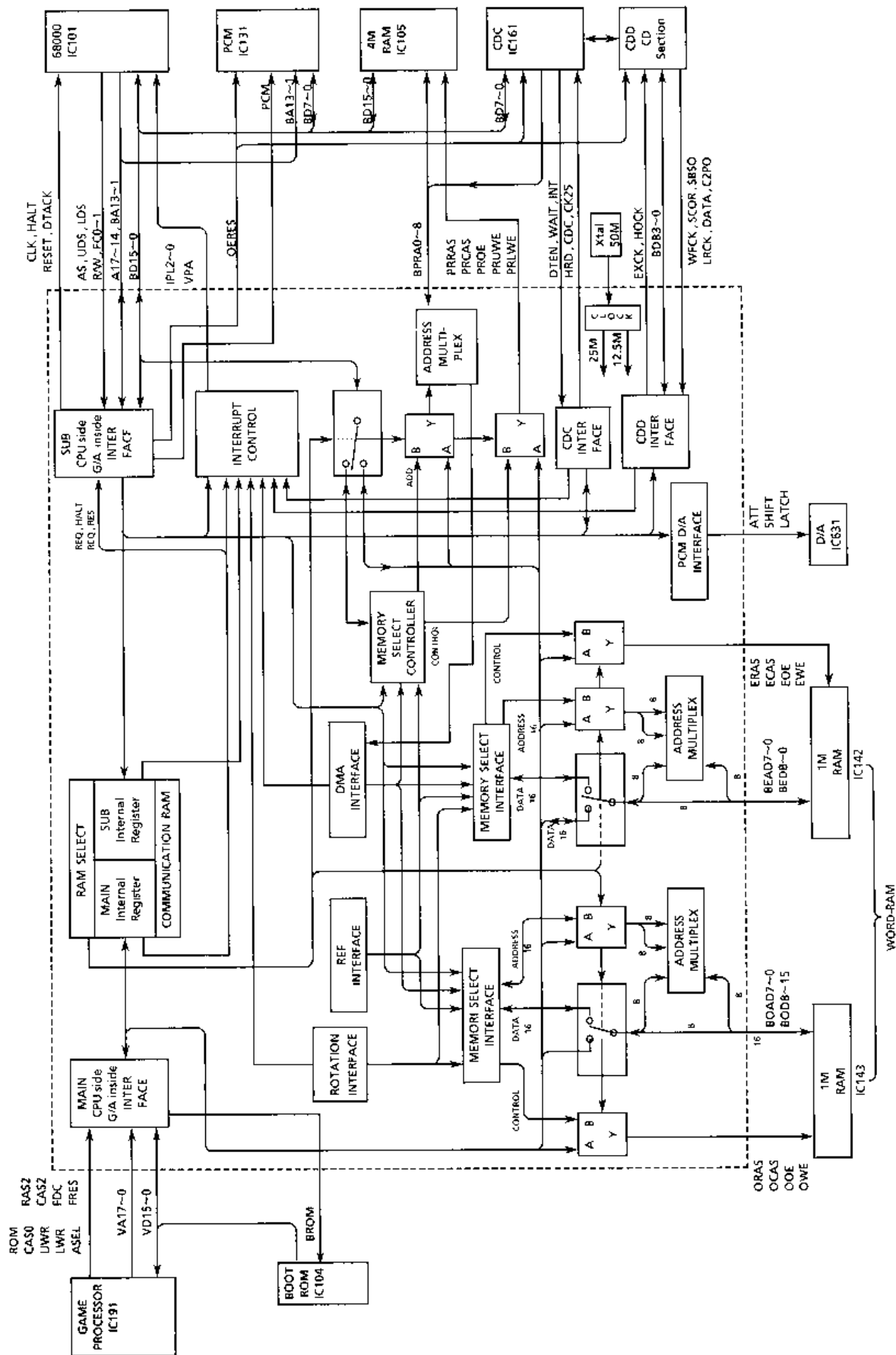
Block Diagram of the CD-ROM Data Processor and Surround Circuit

RG-M10BU

Pin Functions

Connect to the CD drive

Pin No.	Symbol	I/O	Function
70, 73	WFCK, SBSO	I	Signal input from CD drive (CXD2500BQ) when sub-code is received.
71	SCOR	I	Signal input from CXD2500BQ (IC601) through the mechanism controller when sub-code is received.
75, 76	LRCK, SDATA	I	Data input from CXD2500BQ
77	C2PO	--	Non connection
87	D/M (L : VOICE H : ROM)	I	The input data is the voice data or ROM data is shown. When the input level is "High", C2PO input signal outputs to C2LR (pin98). When it is "Low", LRCK input signal outputs to C2LR.
86	IRQ	I	Interrupt request signal from IC691
88	CDCK	I	Clock in from comminicate with IC691
83	HOCK	O	Clock out to communicate with IC691
82, 81 80, 78	DB0, DB1 DB2, DB3	I/O	Communication data with IC691
74	EXCK	O	Clock out to CXD2500BQ

Connect to the Game Processor

Pin No.	Symbol	I/O	Function
5	ROM	I	When the main-CPU accesses the address $0 to $3FFFFF, signal is input.
6	CAS0	I	When the main-CPU is read mode, signal is input.
8, 7	UWR, LWR	I	When the main-CPU is write mode, signal is input.
11, 9, 12	RAS2, ASEL, CAS2	I	When the MAIN-CPU accesses the D-RAM (IC172), signal is inputs. (RAS2→ASEL→CAS2)
13	FDC	I	When internal register has the access from the outside, signal is input.
14	FRES	I	Power on reset signal
171~190	VA1~17	I	Address bus from main-CPU (IC171)
191~208	VD0~15	I/O	Data bus to main-CPU (IC171)

Connect to the D/A Converter

Pin No.	Symbol	I/O	Function
66	LATCH	O	Mode set latch enable
67	SHIFT	O	Mode set clock
68	ATT	O	Set up the digital attenuater and mode flag legister
69	DTM	O	Audio data 0output

Pin No.	Symbol	I/O	Function
137~141, 143~146, 148~153, 155	D0~D15	I/O	Data bus for sub CPU. sub CPU (IC101), PROGRAM RAM (IC105): D0~D15 Data decoder (IC161), PCM sound LSI (IC131), backup RAM (IC102): D0~D7
99~106, 108~113, 115~118, 120	A19~A1	O	Address bus for sub-CPU (IC101) sub CPU (IC101): A1~A19 backup RAM (IC102), PCM sound LSI (IC131): A1~A13
45~49, 51~53 / 17~24 54~59, 62, 63 / 25, 28~34	OAD0~7 / EAD0~7 OD8~15 / ED8~15	I/O I/O	Address / data bus for IC142, 143. Data bus to IC142, 143.
40 / 35	ORAS, ERAS	O	Row address strobe for IC142, 143.
41 / 36	OCAS, ECAS	O	Column address strobe for IC142, 143.
42 / 37	OOE, EOE	O	Output enable for IC142, 143.
44 / 39	OWE, EWE	O	Write enable for IC142, 143.
156~163, 166	PA0~PA8	O	Address bus for data decoder (IC161) and sub-CPU program RAM (IC105)

Pin No.	Symbol	I/O	Function
2	BRAM	O	Chip select signal for backup RAM (IC102 pin20).
4	BROM	O	Chip select signal for boot ROM (IC104 pin10).
167	PRAS	O	Row address strobe signal for program RAM (IC105 pin14).
168	PCAS	O	Column address strobe signal for program RAM (IC105 pin28).
89	PCM	O	Chip select signal for PCM sound controller (IC131 pin77).
94	CDC	O	Chip select signal for data decoder (IC161 pin32).
95	COE	O	Output enable signal for backup RAM (IC102 pin22), program RAM (IC105 pin27). This signal is outputted for PCM sound LSI (IC131 pin13) and data decoder (IC161 pin30) when data on a register is read.
169	CUWE	O	This signal is outputted for program RAM (IC105 pin13) when writing upper bits of data.
170	CLWE	O	This signal is outputted for backup RAM (IC102 pin27).
93	INT	O	Interrupt request signal for data decoder (IC161 pin43).
92	HRD	O	Sub CPU read data signal for data decoder (IC161 pin54).
91	WAIT	O	Data request signal for data decoder (IC161 pin44).
90	DTEN	O	Data enable signal for data decoder (IC161 pin55).
98	C2LR	O	For data decoder (IC161 pin25).
16	ERES	O	Reset signal for data decoder (IC161 pin22), mechanism controller (IC691 pin14) and PCM sound controller (IC131 pin64).
1	25M	O	Clock signal for data decoder (IC161 pin23).
136	AS	I	Address strobe signal from sub CPU (IC101 pin6).
133	R/W	I	Read/write signal from sub CPU (IC101 pin9).
135	UDS	I	Upper data strobe signal from sub CPU (IC101 pin7).
134	LDS	I	Lower data strobe signal from sub CPU (IC101 pin8).
132	DTAK	O	Data transfer acknowledge signal for sub CPU (IC101 pin10).
123	IPL0	O	Interrupt control signal for sub CPU (IC101 pin 27).
124	IPL1	O	Interrupt control signal for sub CPU (IC101 pin 26).
125	IPL2	O	Interrupt control signal for sub CPU (IC101 pin 25).
126	VPA	O	Valid peripheral address signal for sub CPU (IC101 pin23).
121	FC0	I	Processor status signal from sub CPU (IC101 pin30).
122	FC1	I	Processor status signal from sub CPU (IC101 pin29).
128	HALT	O	Halt signal for sub CPU (IC101 pin19).
127	RESET	O	Reset signal for sub CPU (IC101 pin20).
129	12M	O	Clock signal for sub CPU (IC101 pin 15) and PCM sound controller (IC131 pin70).
84	50M	I	Master clock input.
64	LEDR	O	LED indication signal.
65	LEDG	O	LED indication signal.

RG-M10BU

■ TC511664BJ-10 (IC142,143) : D RAM (Word RAM for Data Processor)

Terminal Layout

VCC	1	40	VSS
I/O1	2	39	I/O16
I/O2	3	38	I/O15
I/O3	4	37	I/O14
I/O4	5	36	I/O13
I/O5	6	35	I/O12
I/O6	7	34	I/O11
I/O7	8	33	I/O10
I/O8	9	32	I/O9
NC	10	31	NC
VCC	11	30	VSS
UW	12	29	CAS
LW	13	28	OE
RAS	14	27	NC
A0	15	26	NC
A1	16	25	NC
A2	17	24	A7
A3	18	23	A6
A4	19	22	A5
VCC	20	21	VSS

Pin Functions

Pin No.	Symbol	I/O	Function
1, 11, 20	VCC	--	Power supply
21, 30, 40	VSS	--	GND
2~9 32~39	I/O1~I/O8 I/O9~I/O16	I/O	Data input / output bus.
15~19 22~24	A0~A4 A5~A7	I	Address bus input.
12	UW	I	This signal is inputted when writing upper bytes of data.
13	LW	I	This signal is inputted when writing lower bytes of data.
14	RAS	I	Row address strobe signal input.
28	OE	I	Output enable signal input
29	CAS	I	Column address strobe signal input.

■ TC531024F (IC104) : Mask ROM (BOOT ROM for main-CPU)

Terminal Layout

NC	1	40	VDD
CE	2	39	NC
D15	3	38	NC
D14	4	37	A15
D13	5	36	A14
D12	6	35	A13
D11	7	34	A12
D10	8	33	A11
D9	9	32	A10
D8	10	31	A9
GND	11	30	GND
D7	12	29	A8
D6	13	28	A7
D5	14	27	A6
D4	15	26	A5
D3	16	25	A4
D2	17	24	A3
D1	18	23	A2
D0	19	22	A1
OE	20	21	A0

Pin Functions

Pin No.	Symbol	I/O	Function
40	VDD	--	Power supply
11, 30	GND	--	GND
3~10 12~19	D15~D8 D7~D0	O	Data output
37~31 29~21	A15~A9 A8~A0	I	Address bus input.
2	CE	I	Chip enable signal input.
20	OE	I	Output enable signal input.
1, 38, 39	NC	--	Non connection

■ LC33832M-70X (IC162) : Psevdo static RAM (Cash RAM for CD-ROM Data Decoder)

Terminal Layout

A14	1	28	VDD
A12	2	27	R/W
A7	3	26	A13
A6	4	25	A8
A5	5	24	A9
A4	6	23	A11
A3	7	22	OE/RFSH
A2	8	21	A10
A1	9	20	CE
A0	10	19	I/O8
I/O1	11	18	I/O7
I/O2	12	17	I/O6
I/O3	13	16	I/O5
GND	14	15	I/O4

Pin Functions

Pin No.	Symbol	I/O	Function
28	VDD	--	Power supply
14	GND	--	GND
11~13, 15~19	I/O1~I/O3, I/O4~I/O8	I/O	Data input / output
1~10, 21, 23~26	A0~A14	I	Address bus input.
20	CE	I	Chip enable signal input.
22	OE/RFSH	I	Output enable / refresh input.
27	R/W	I	Read / write signal input.

■ MN414270SJ-08 (IC105) : D RAM (Program RAM for sub-CPU)

Terminal Layout

VCC	1	40	VSS
DQ0	2	39	DQ15
DQ1	3	38	DQ14
DQ2	4	37	DQ13
DQ3	5	36	DQ12
VCC	6	35	VSS
DQ4	7	34	DQ11
DQ5	8	33	DQ10
DQ6	9	32	DQ9
DQ7	10	31	DQ8
NC	11	30	NC
LWE	12	29	NC
UWE	13	28	CAS
RAS	14	27	OE
NC	15	26	A8
A0	16	25	A7
A1	17	24	A6
A2	18	23	A5
A3	19	22	A4
VCC	20	21	VSS

Pin Functions

Pin No.	Symbol	I/O	Function
1, 6, 20	VCC	--	Power supply
21, 35, 40	VSS	--	GND
2~5, 7~10, 31~34, 36~39	DQ0 ~DQ15	I/O	Data input / output bus .
16~19 22~26	A0 ~A8	I	Address bus input
12	LWE	I	This signal is inputted when writing lower bytes of data.
13	UWE	I	This signal is inputted when writing lupper bytes of data.
14	RAS	I	Row address strobe signal input.
27	OE	I	Output enable signal input.
28	CAS	I	Column address strobe signal input.

■ BA6393FP(IC503) : BTL DRriver

1. Terminal Layout

CH1-OUT A	1	28	GND
CH1-OUT B	2	27	CH4-OUT A
CH1-IN A	3	26	CH4-OUT B
CH1-IN B	4	25	CH4-IN A
NC	5	24	CH4-IN B
NC	6	23	BIAS IN
MUTE	7	22	VCC
GND	8	21	VCC
CH2-IN B	9	20	CH3-IN B
CH2-IN A	10	19	CH3-IN A
CH2-OUT B	11	18	CH3-OUT B
CH2-OUT A	12	17	CH3-OUT A
GND	13	16	OP IN +
OP OUT	14	15	OP IN-

2. Block Diagram
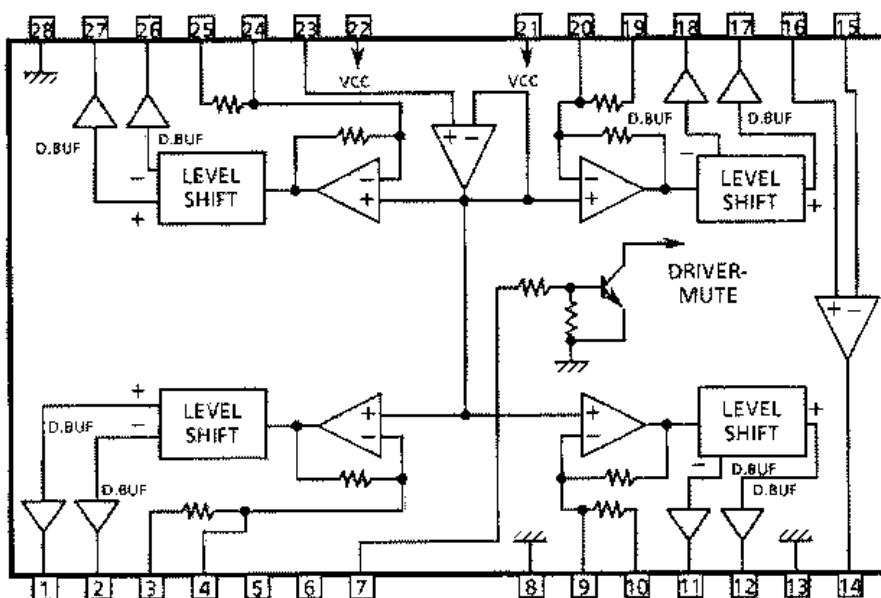
3.Description

Pin No.	Symbol	I/O	Description
1 2	CH1-OUT A CH1-OUT B	O	Focus drive output
3	CH1-IN A	I	Focus drive input
4 5,6 10 19 24	CH1-IN B NC CH2-IN A CH3-IN A CH4-IN B	—	Non connection
7	MUTE	I	Mute signal input pin
9 20	CH2-IN B CH3-IN B	I I	Spindle motor drive input Feed motor drive input
25	CH4-IN A	I	Tracking drive input

Pin No.	Symbol	I/O	Description
8,13,28	GND	—	GND
11 12	CH2-OUT B CH2-OUT A	O	Spindle motor drive output
14	OP OUT	O	OP amp output
15,16	OP IN	I	OP amp input
17 18	CH3-OUT A CH3-OUT B	O	Feed motor drive output
21,22	Vcc	—	Power supply
23	BIAS IN	I	Input pin of Bias
26 27	CH4-OUT B CH4-OUT A	O	Tracking drive output

RG-M10BU

■ SM5841AS-ET (IC661) : Digital Filter

1. Terminal Layout

```
CKSL   1 ▭        ▭ 22   DIN
 XTI   2 ▭        ▭ 21   BCKI
 XTO   3 ▭        ▭ 20   LRCI
 CKO   4 ▭        ▭ 19   BCKO
 VSS   5 ▭        ▭ 18   NC
  NC   6 ▭        ▭ 17   NC
  NC   7 ▭        ▭ 16   VDD
 MDT   8 ▭        ▭ 15   WCKO
 MCK   9 ▭        ▭ 14   DOL
 MLE  10 ▭        ▭ 13   DOR
 RST  11 ▭        ▭ 12   DG
```
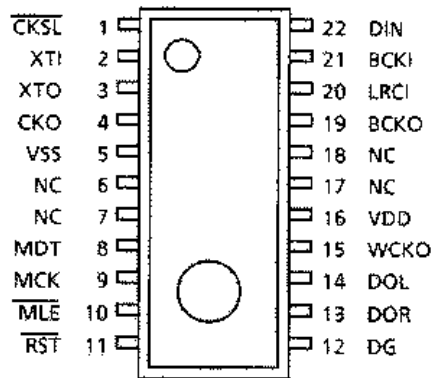
2. Block Diagram
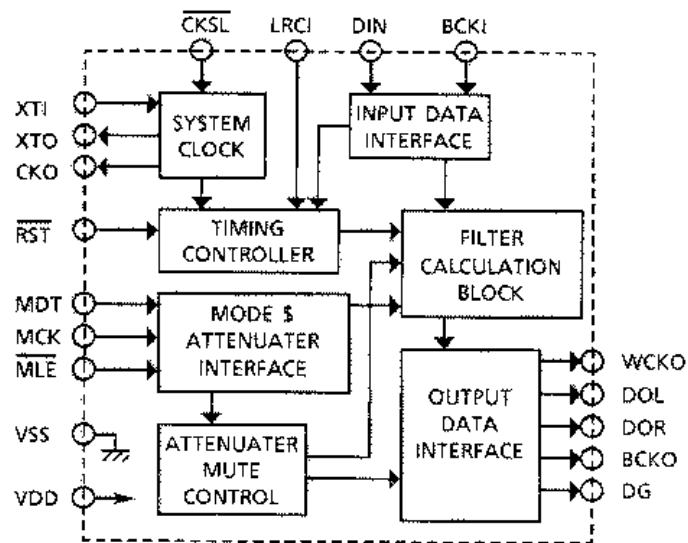
3. Pin Functions

Pin No.	Symbol	I/O	Function
1	CKSL	I	Oscillation and input frequency select terminal CKSL = High ··· > 384fs CKSL = Low ··· > 256fs
2	XTI	–	Oscillator input
3	XTO	–	Oscillator output
4	CKO	O	Oscillator clock
5	VSS	–	GND
6	NC	–	Non connection
7	NC	–	Non connection
8	MDT	I	Mode set data (The digital attenuator and the mode flag register are set.)
9	MCK	I	Mode set clock
10	MLE	I	Mode set latch enable
11	RST	I	System clock (Initialize)
12	DG	O	When the 8fsLR parallel output mode, this signal is deglitch output. When the 4fsLR alternate output mode, this signal is deglitch output.
13	DOR	O	When the 8fsLR parallel output mode, this signal is right channel data output. When the 4fsLR alternate output mode, this signal is LR clock signal output.
14	DOL	O	When the 8fsLR parallel output mode, this signal is left channel data output. When the 4fsLR alternate output mode, this signal is left / right channel data output.
15	WCKO	O	Output word clock
16	VDD	–	Power supply
17	NC	–	Non connection
18	NC	–	Non connection
19	BCKO	O	Output bit clock
20	LRCI	I	Sample rate (fs) clock for input data
21	BCKI	I	Output bit clock
22	DIN	I	Input data

■ TC51864FL-10 (IC132) : Psevdo Static RAM (65,536word × 8bit) (PCM wave-form RAM)

Terminal Layout

RFSH	1	32	VCC
NC	2	31	A15
A14	3	30	CS
A12	4	29	R/W
A7	5	28	A13
A6	6	27	A8
A5	7	26	A9
A4	8	25	A11
A3	9	24	OE
A2	10	23	A10
A1	11	22	CE
A0	12	21	D7
D0	13	20	D6
D1	14	19	D5
D2	15	18	D4
GND	16	17	D3

Pin Functions

Pin No.	Symbol	I/O	Function
32	VCC	--	Power Supply
16	GND	--	GND
13~15, 17~21	D0~D2, D3~D7	I/O	Data Input / Output
3~12, 23, 25~28, 31	A0~A15	I	Address Input
22	CE	I	Chip Enable
24	OE	I	Output Enable
1	RFSH	I	Refresh Input
29	R/W	I	Read / write Signal Input

RG-M10BU

Disassembly Procedures

■ Top cover

1. Take off 6 screws Ⓐ on the bottom. (See fig.1)
2. Remove the top cover.

■ Holder L (Fig.3)

1. The spring is hung to part Ⓒ.
2. Take off 2 screws Ⓑ.
3. Open the CD door.
4. Remove the Holder L.

■ CD door

1. Remove the Holder L and Holder R.
2. Open the CD door.
3. One of the arm is removed pushing the part shown by the arrow Ⓓ.
4. The other arm is removed.

■ Main P.C.Board

1. Remove each connector from J801, J802 and J803.
2. Take off 5 screws Ⓔ securing the main PCB.
3. Remove the main PCB.

■ CD mechanism assembly

1. Take off a screw Ⓕ securing the CD mechanism assembly.
2. Remove each wire from J501 and J502.
3. Remove the CD mechanism assembly from the insulator.
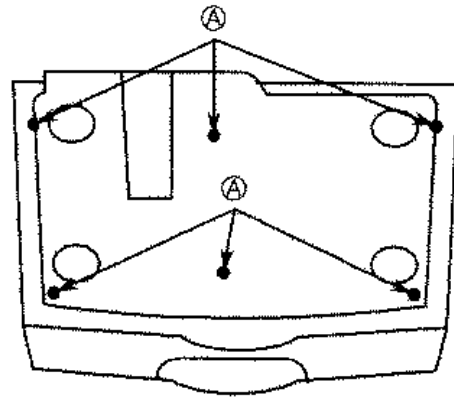
Fig.1 Bottom view
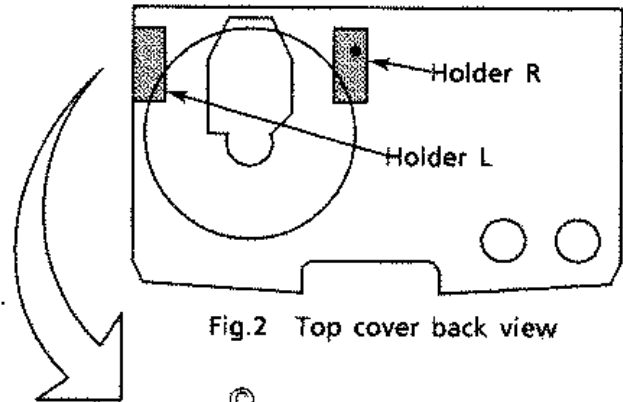
Fig.2 Top cover back view
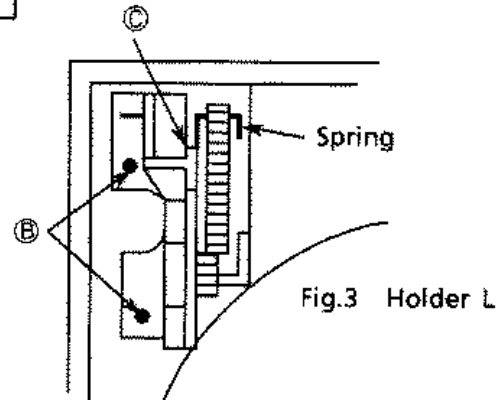
Fig.3 Holder L
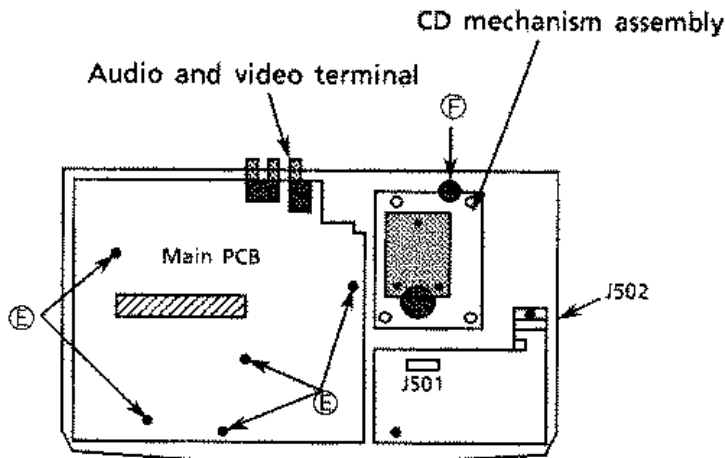
Fig5 RG-M10BU inside view
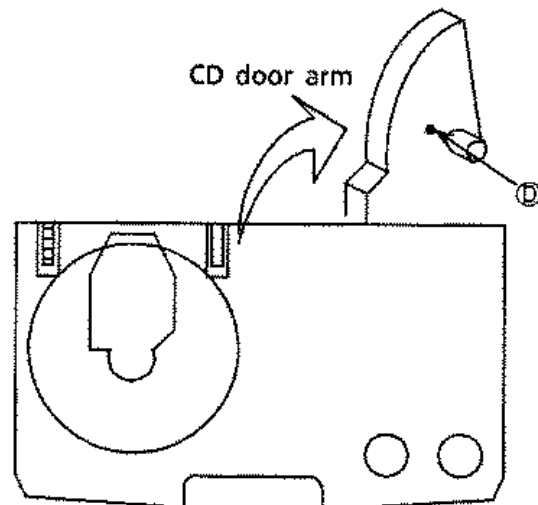
Fig.4 Top cover back view

■ Clamper ass'y

1. The clamper is drawn in the direction of Ⓐ as shown in figure 6 and the clamper removes from the lower side. (Power is somewhat necessary.)
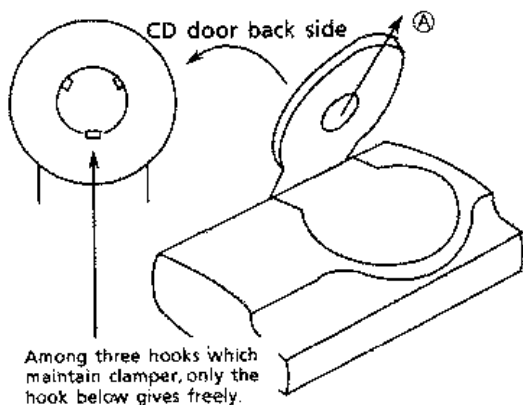
Fig.6

■ Pickup

1. Remove the top cover.
2. Remove the cover on the pickup (Fig.7).
3. Release the shaft to remove the pickup.
4. Remove the wire on the pickup.
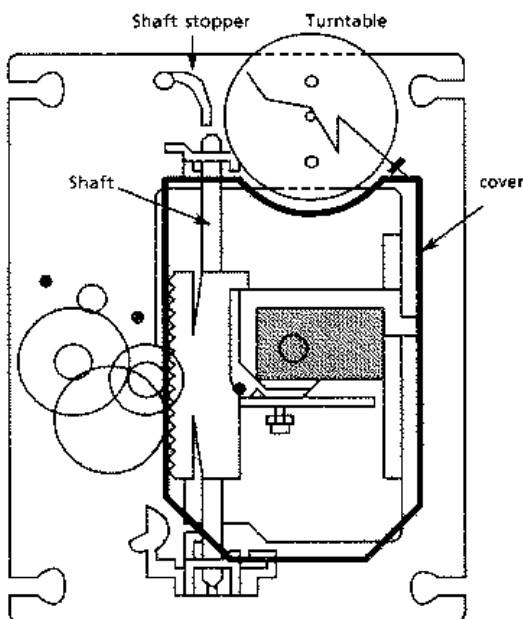
Fig.7   CD mechanism assembley

■ Spindle motor

1. Remove the CD mechanism assembly.
2. Remove the turntable, and remove the two screws retaining the spindle motor.
3. Remove the screws retaining the spindle and feed motor P.C. Board and unsolder it.
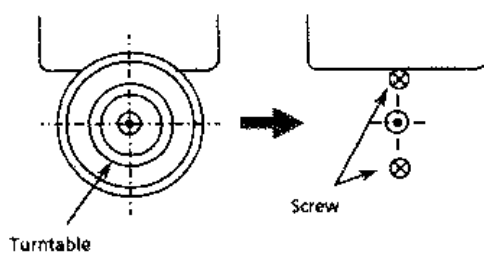
Fig.8

■ Spindle motor installation

1. Tighten the 2 screws to the same torque.
2. Fasten the spindle and feed motor P.C. board with the screw and solder.
3. Install the turntable. When installing, press straight down at the center of the turntable until the distance from the surface of the mechanism base to the turntable is exactly 19.4 ± 0.1 mm.
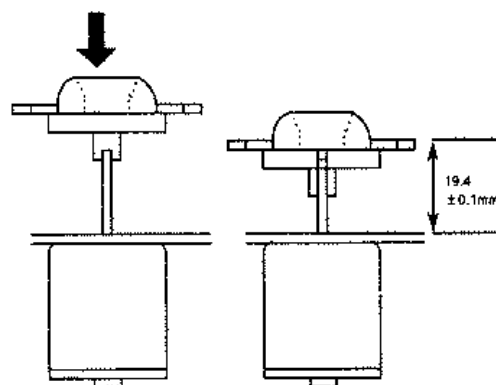
Fig.9

4. After inserting the turntable, bond the motor shaft and turntable together (at the section marked by an arrow in fig. 10 on the left below).
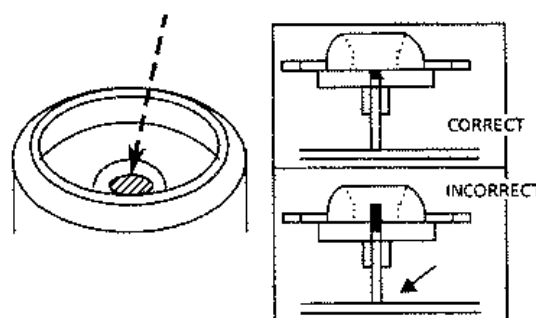
Fig.10

5. Use "LOCKTITE" #460 bonding agent, and apply as little as possible. Take care not to allow any excess bonding agent to get onto the turntable. Be extremely careful not to allow bonding agent to adhere to the motor bearings (the section marked by an allow in fig. 10 on the right).

Adjustment Procedures

■ Before the adjustment

The initial screen (that is a comment "Put a disc on the turntable") is displayed when the power supply is turned on without a disc.
The screen shifts to the control screen after reading a disc if a disc is set and the door close detection switch is pressed. The disc keeps rotating for approximately 1 minute after shifting to the control screen. Press the playback and then the stop button if you want to stop the rotation. With a disc on the turntable , the screen shifts to the control screen quickly after reading a TOC when the power supply is turned on. (The initial screen is displayed while TOC is being read.)

■ Adjustment measure
Oscilloscope , Test disc (CRG-1117)

■ Procedures

1) FE (focus error) bias (CD stop mode)
   ① Connect an oscilloscope between TP501 pin2 (FE) and TP501 pin9 (GND).
   ② Adjust R508 so that the DC voltage of the focus error signal becomes 0 ± 10mV.
2) EF balance
   ① Connect TP501 pin6 (TEST) with TP501pin7 (GND).
   ② Connect a oscilloscope between TP501 pin4 (TE) and TP501 pin8 (VC) and play the test disc.
   ③ Adjust R510 so that the center voltage of the waveform becomes 0 ± 0.05V.

3) Gain adjustment
   If the gain is out of adjustment, the symptoms below will appear.

● Gain too low
   Focus gain   : Focus is not obtained and disc does not rotate.
   Tracking gain : Mechanical shock occurs easily and sound is interrupted. Or time counter display
                    stops counting.
● Gain too high
   Focus gain   : Scratches (on the disc) easily interrupt play, and noise is increased during play.
   Tracking gain : Since the follow-up ability of the pickup is too high, the pickup may oscillate and
                    oscillating sound may output.

As described above, the focus and tracking gain adjustment are performed to satisfy mutually contradictory characteristics.
A simplified adjustment procedure is described below. However, since exact adjustment can not be performed prior to adjustments, note(or mark) the positions of the semi-fixed resistors.
If the positions after the adjustment are only different, return the VRs to their original position.

Focus gain adjustment
1. Connect an oscilloscope to TP 501 pin(FE) and TP 501 pin8 (VC).
2. Load the test disc and press the PLAY button.
3. Adjust R522 (F.GAIN ADJ.) so that the correct waveform as shown in figure 1 is obtain.

Focus Gain Adjustment

100mV / div.   2ms / div.
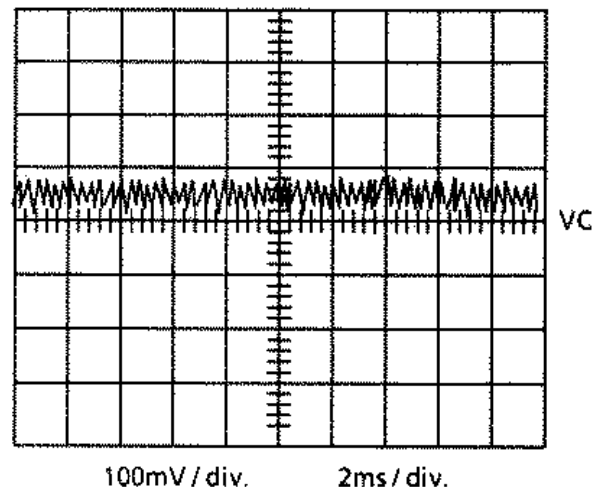
Fig. 1

Tracking gain adjustment

1. Connect an oscilloscope to TP 501 pin4(TE) and TP 501 pin8 (VC).
2. Load the test disc and press the PLAY button.
3. Adjust R524 (T.GAIN ADJ.) so that the correct waveform as shown in figure 2 is obtain.

Tracking Gain Adjustment

0.8V

VC

1mV / div.   2ms / div.

Fig. 2

Door Close Detection Switch

J502

IC601

P803 | J803
J501

P802 | J802

R510   TP501
R524

IC691

P801 | J801

R508
R522

Main P.C.Board

Mic & CD Servo
P.C.Board

TP501

GND   TEIN   FEIN   RF
VC   TEST   TE   FE
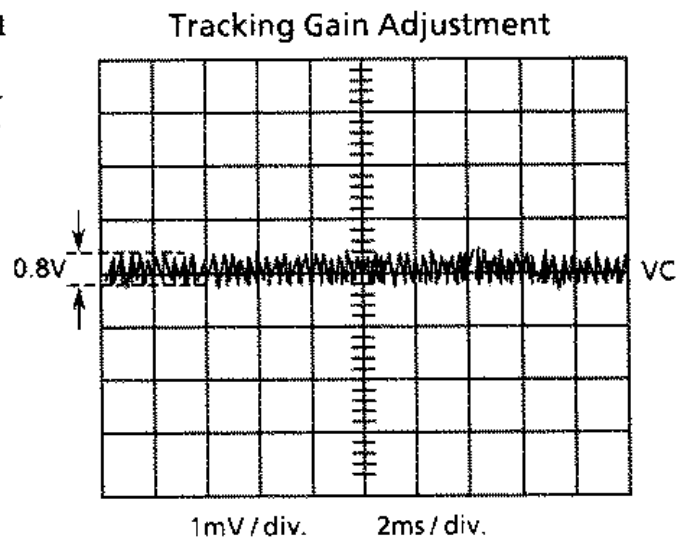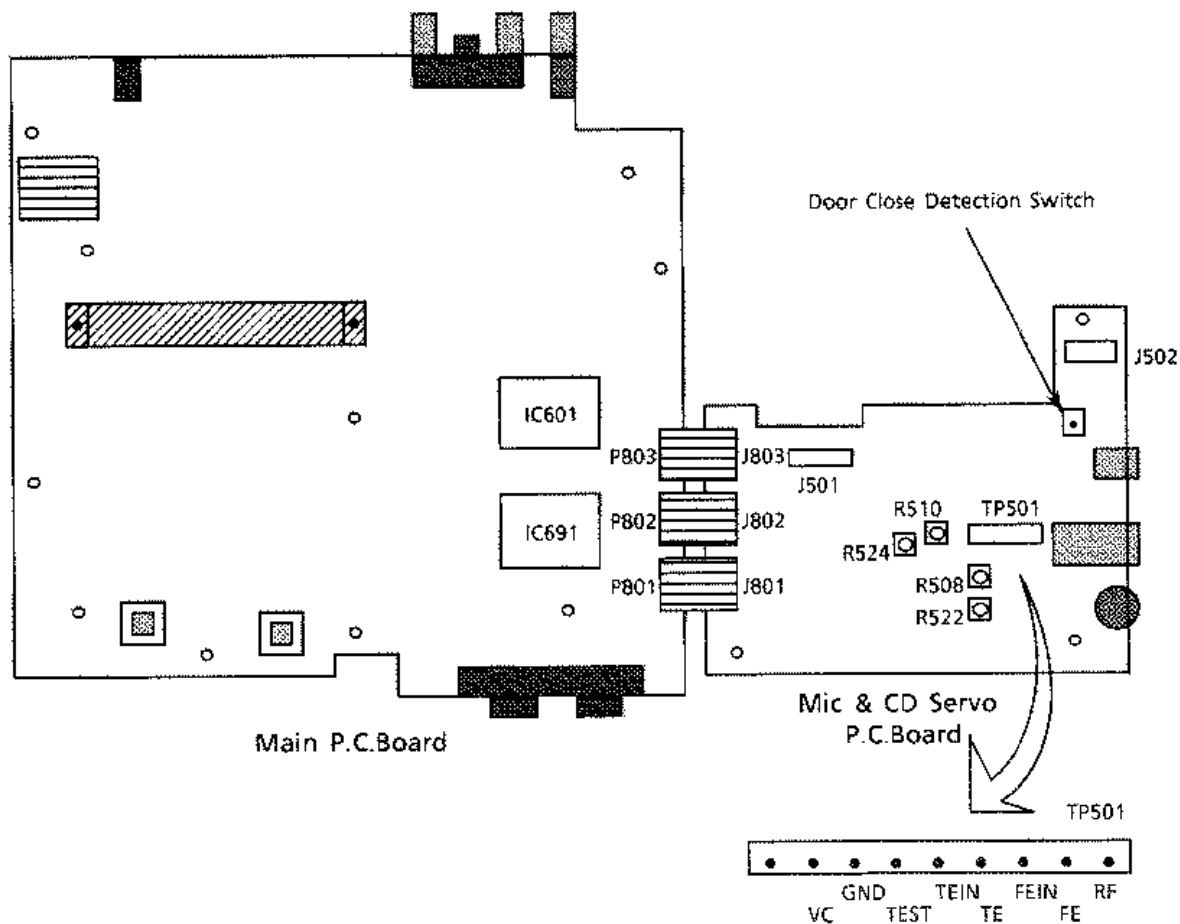
Fig.3

Flow of Functional Operation Until TOC is Read

Power ON

Check Points

■ Time Chart of focusing

Focus
Drive signal
IC503 pin2

Focus error
TP501-2 (FE)

SENSE (FZC)
IC601 pin69 or
IC691 pin54

Focus OK
IC691 pin53 or
IC601 pin1

└─ Focus point

Broken line in the above figure shows
waveform in case of focus out.

Door Close
Detection Switch

TP501

IC601

IC691

IC502

Does REST switch
turn on?

if not → The voltage of pin 18 of IC502 must be 0 V .

Laser diode emits
light

if not → Check if the pin 48 (LASER) of IC691 on the main PC board is 0V to be fed to the pickup .

Focusing

Disc is rotated

if not → Check if the pin4 (MDP) of IC601 on the main PC board +5V to be fed to the spindle motor.

Tracking servo on

Eye pattern is
output

→ When the eye pattern is not output, check the RF amp (IC501) . When the eye pattern is not clear, adjust the FE bias.

Reading TOC

Disc is braked

→ Check if pin4 (MDP) of IC601 on the main PC board is 0V to be fed to the spindle motor.

Laser OFF

→ Check if pin48 (LASER) of IC601 on the main PC board is +5V to be fed to the pickup .

Maintenance of Laser Pickup

(1) Life of the laser diode

RF level (amplitude of eye pattern) is decreased when the life of laser diode is run out.

Check that the RF level is over 0.7Vp-p and under 1.2V.

The pickup should be exchanged with new one for run out of its life if the value is 0.7Vp-p below.

(2) Semi-fixed resistor on the APC PC board

The semi-fixed resistor on the APC printed circuit board which is attached to the pickup is used to adjust the laser power. Since this adjustment should be performed to match the characteristics of the whole optical block, do not touch the semi-fixed resistor.

If the laser power is lower than the specified value, the laser diode is almost worn out, and the laser pickup should be replaced.

If the semi-fixed resistor is adjusted while the pickup is functioning normally, the laser pickup may be damaged due to excessive current.

Replacement of Laser Pickup

Turn off the power switch , and disconnect the DC plug.

Replace the pickup with a normal one. (Refer to "Disassembly Procedures" on the previous page)

Plug the power supply adaptor. Set the power switch on while turning on the door close detection switch forcefully. Check that the laser diode emits for approx. 3sec. and the objective lens moves up and down.

Check FE bias.

Adjust EF balance.

Play a disc.

Adjust focus gain.

Adjust tracking gain.

Check the eye-pattern at TP501 pin1(RF)

Finish.

Note: Since one adjustment may affect other settings, repeat these adjustments a few times.

Block Diagrams

VIDEO

HEADPHONE

Lch Rch

MIC.

CONTROL PAD TERMINAL
CONTROL PAD TERMINAL

MUTE Q901,902

IC901
IC902

MUTE Q731,732

Q113,Q112

Q113,Q114

IC851

IC851
ALC Q855,856

PROGRAM RAM for MAIN CPU
IC172
TC511632FL-10X

VIDEO RAM
IC192
M5M54CB64

VIDEO-ENCODER
IC221
MB3514PFW

IC864

IC804

MAIN CPU
IC171
MC68HC000FN8

GAME PROCESSOR
IC191
315-5660

PSG

IC712

IC712

IC632

Q651,Q652

IC632

MOL

IC241

BOOT ROM
IC104
TC531024F12

GAME CARTRIDGE

ANALOG AUDIO SIGNAL

LPF
R263,264
C261,262

FM SOUND CONTROL CPU
IC181 Z80

PROGRAM RAM for Z80
IC182
BR6265AF-LL10X

MOR

IC241

SL2

SR2

D/A CONVERTER for PCM SOUND
IC711 LC78891M-CW

VOICE CANCEL CONTROL
Q653,Q654

D/A CONVERTER for CD
IC631
MN35501

VA,VD

WORD RAM
IC142
TC511664BJ
-10X

WORD RAM
IC143
TC511664BJ
-10X

CD AUDIO SIGNAL

DIGITAL-FILTER
IC661
SM5841A5
-ETW

DATA PROCESSOR
IC141
315-5632V

MECHANISM CONTROLLER
IC691
HD404019RC23FS

GREEN

VCC

Q632

D942

CLOSE SW

VCC

VCC

D941

SUB CPU
IC101
MC68HC000FN12

PA

D

A

in case of AUDIO DATA

PCM SERIAL DATA

DIGITAL SIGNAL PROCESSOR
IC601
CXD2500BQ

RF PROCESSOR
IC502
CXA1372Q

RF AMP.
IC501
CXA1571M

PROGRAM RAM for SUB CPU
IC105
MN414270SJ-08

BACKUP RAM
IC102
LC3564QM-10T2

PCM SOUND
IC131
315-5476AV

PCM SERIAL DATA

CD-ROM DATA-DECODER
IC161
LC89513

in case of CD-ROM DATA

SPINDLE

FOCUS
TRACKING
FEED

PCM WAVE-FORM RAM
IC132
TC511664FL-10

CD-ROM CASH RAM
IC162
LC33832M-70X

SERVO DRIVER
IC503
BA6393FPT2

LASER PICKUP
Optima-6

MECHANISM

Printed Circuit Boards

■ Main & DSP P.C.Board (ENR-005)
Front side

RG-M10BU
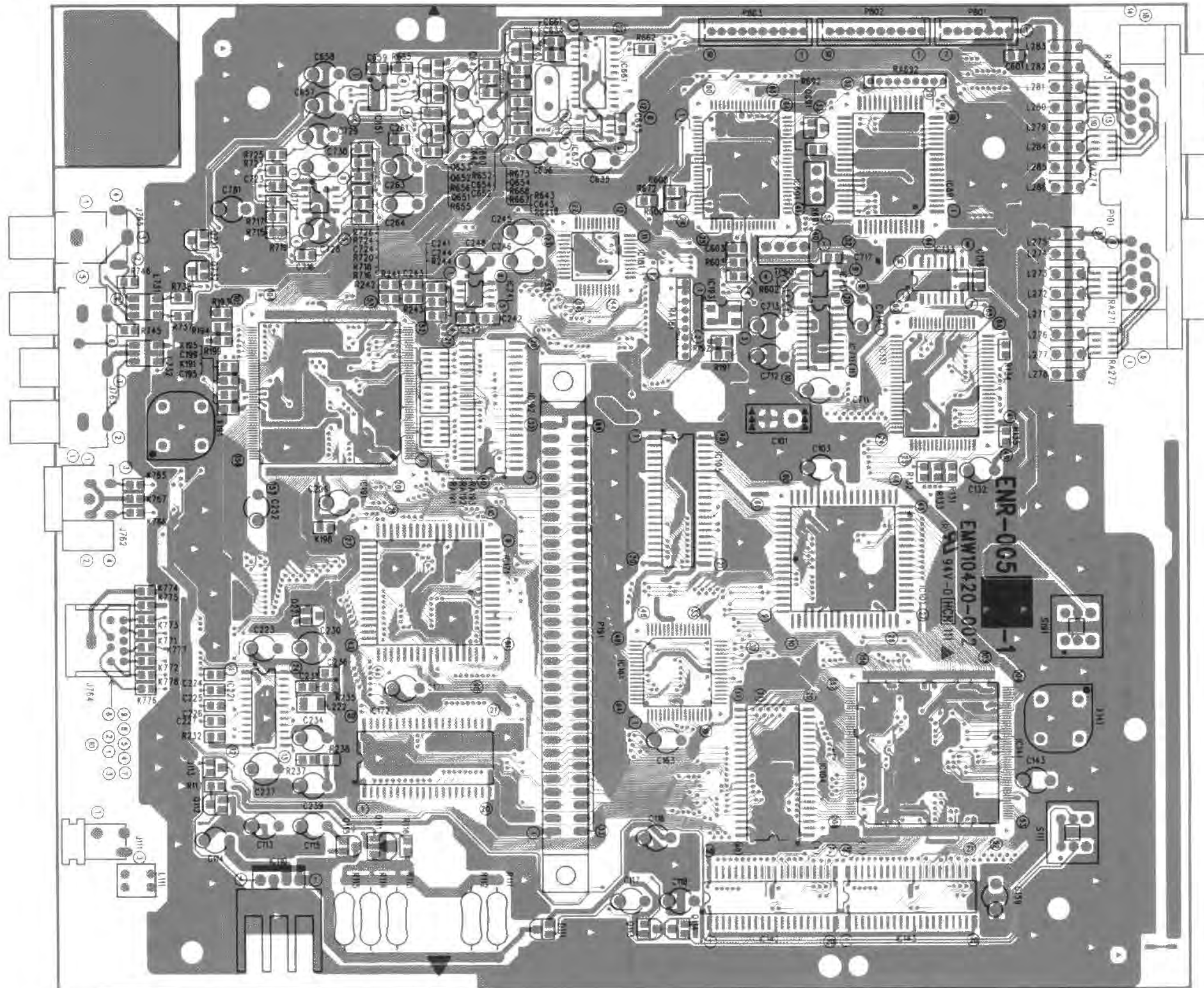
■ Main & DSP P.C.Board (ENR-005)
  Back side
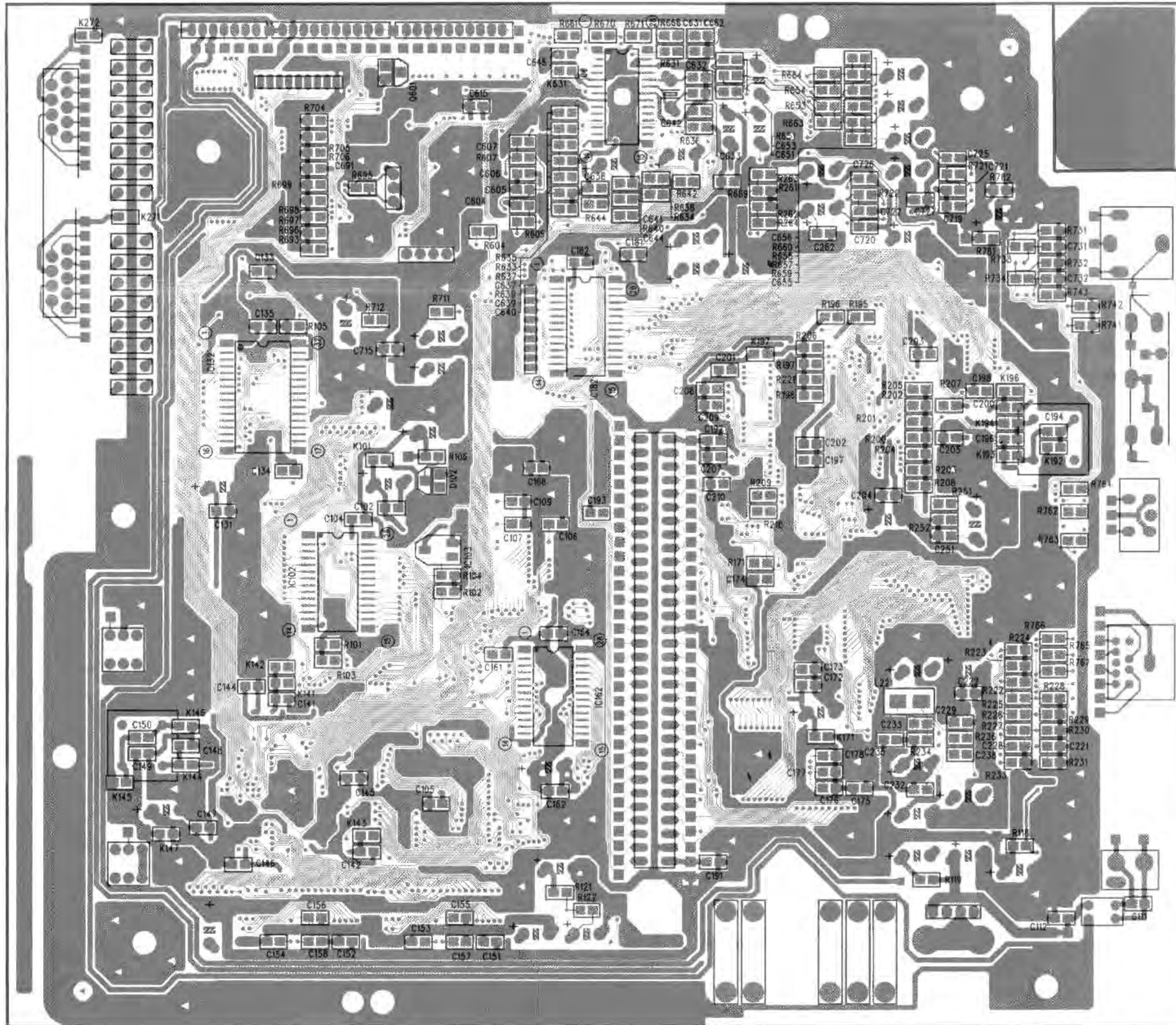
■ Mic, Headphone & CD Servo P.C.Board (ENR-006)
Front side
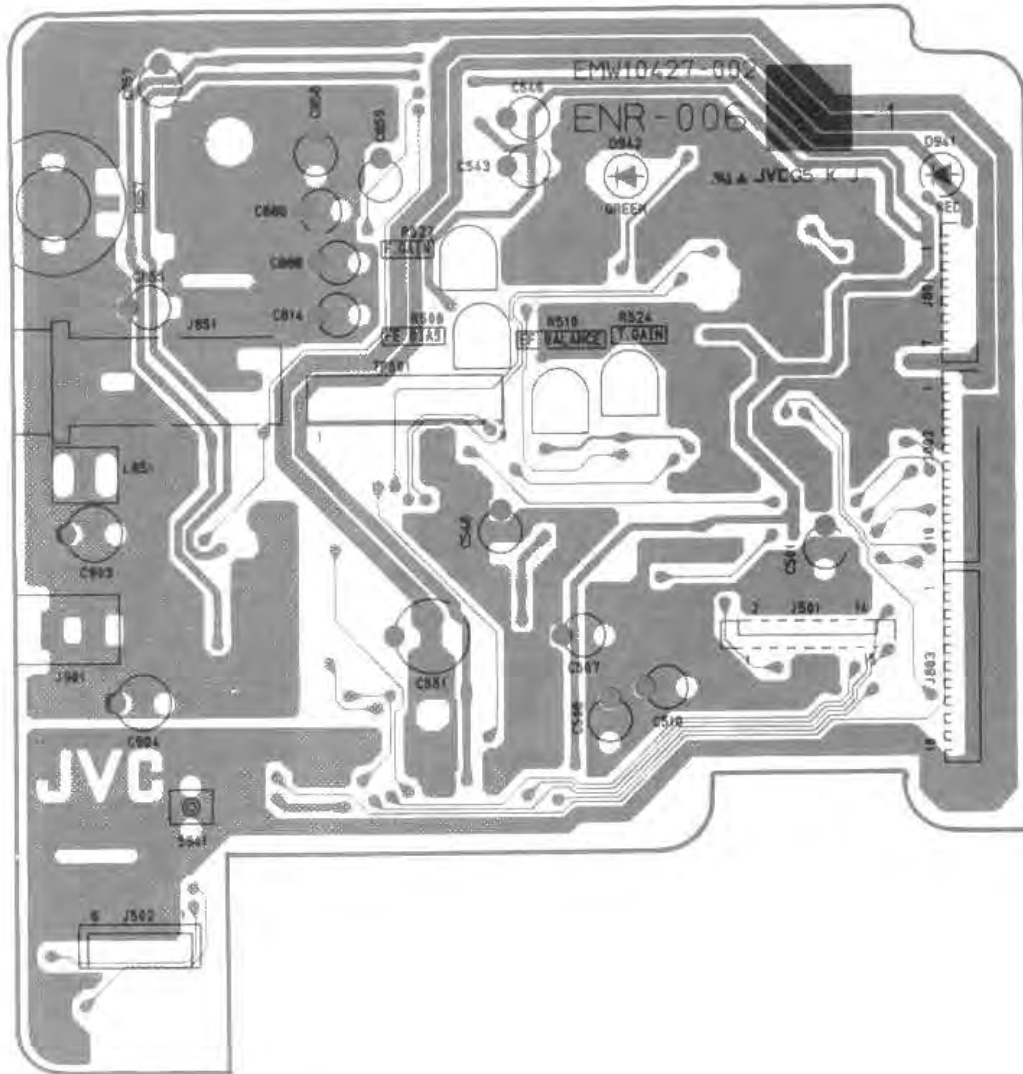
■ Mic, Headphone & CD Servo P.C.Board (ENR-006)
Back side
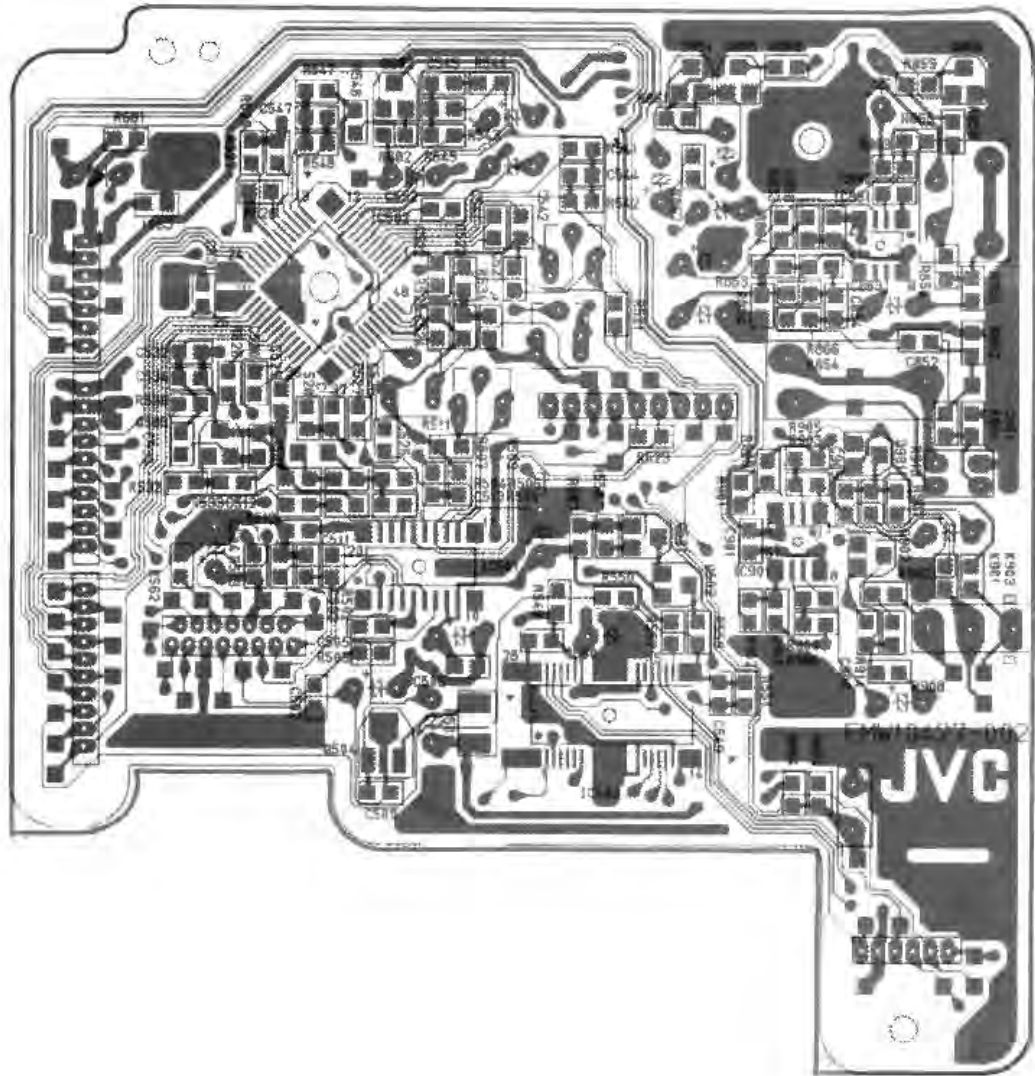
Schematic Diagrams

(1) Sub CPU & Data Processor Section

RG-M10BU
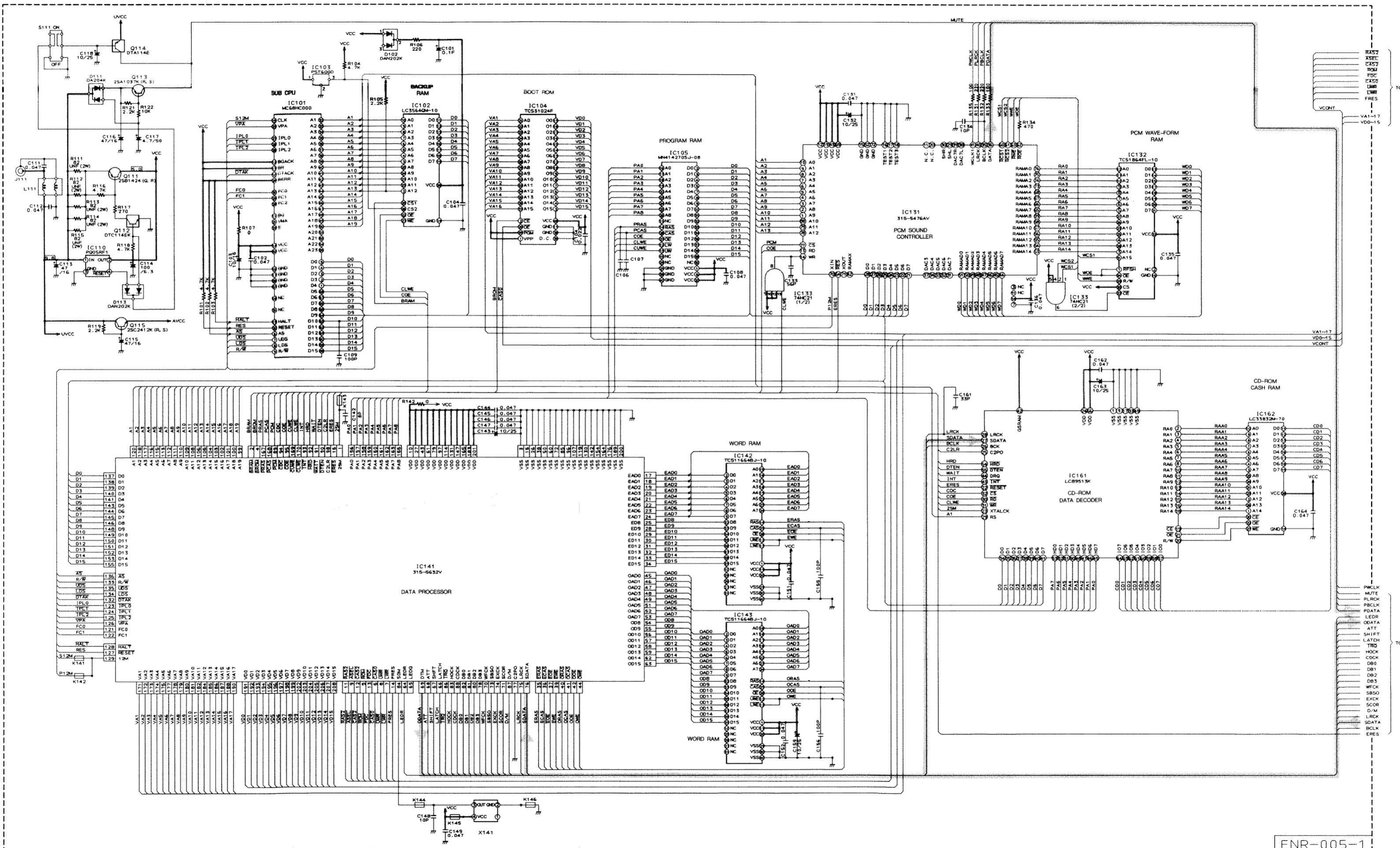
Notes:
1. —— indicates + B power supply.
2. indicates CD PLAY signal path.
3. indicates Mic signal path.
4. indicates PCM sound signal path.
5. indicates VIDEO signal path.
6. This is the standard circuit diagram.
   The design and contents are subject to change without notice.

ENR-005-1

(No.20478) 1-47

RG-M10BU
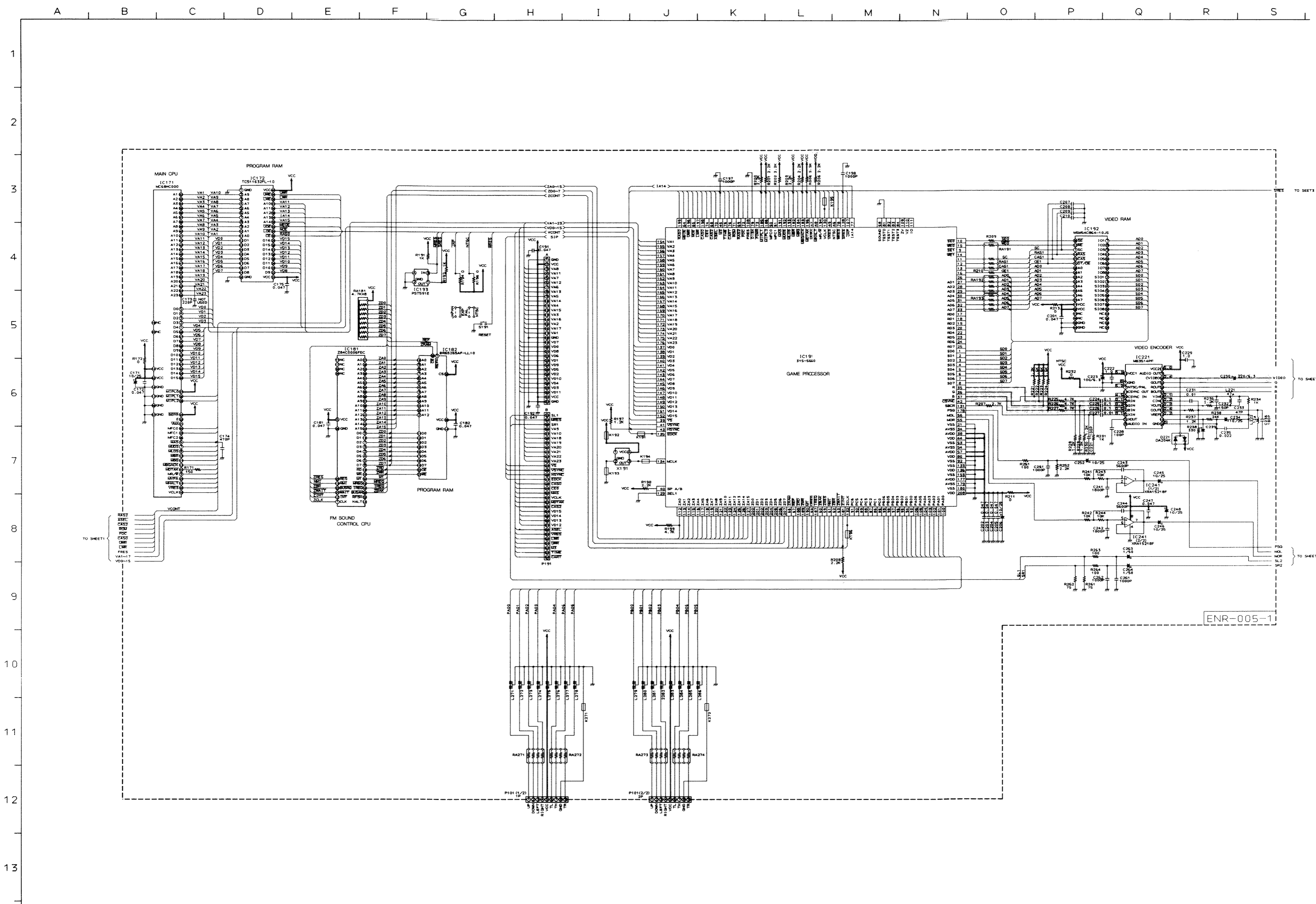
ENR-005-1

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(3) CD & Digital Signal Processor Section

RG-M10BU

(No.20478) 1-49
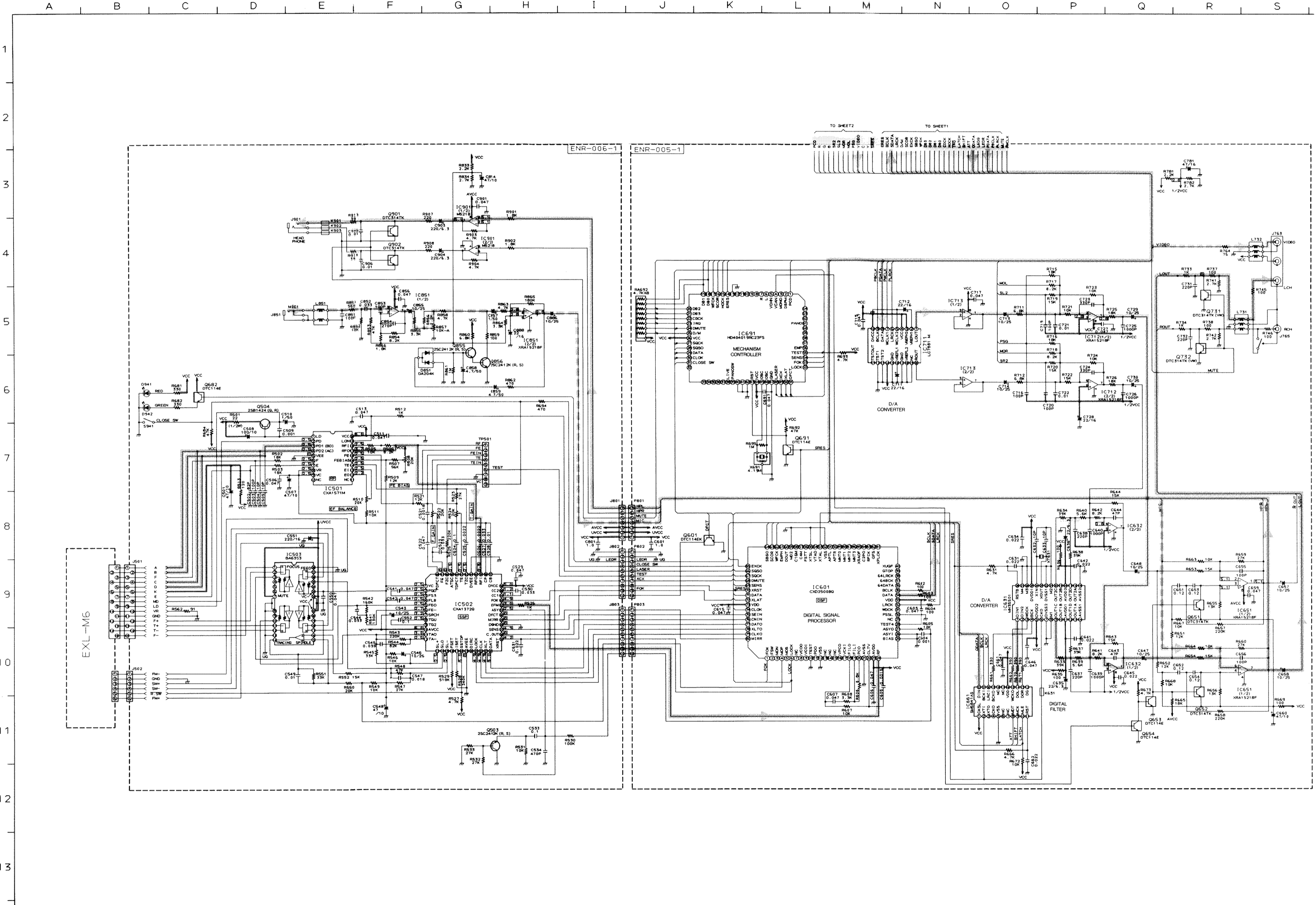
PARTS LIST

Note : All printed circuit borads and its assemblies are not available as service parts.

Contents

General Exploded View and Parts List

ENR-005

ENR-006

Symbol No. M 1 M M

■ Parts List

⚠	Item	Part Number	Part Name	Q'ty	Description	Area
	1	E207839-001	CD DOOR	1		
	2	VYH7314-001	YOKE PLATE	1		
	3	VYH7313-003	MAGNET	1		
	4	E407872-001	CLAMPER CUSHION	1		
	5	E308761-002	CD CLAMPER	1		
	6	E102708-003SA	CD CABINET ASSY	1		
	6-1	E102708-003	CD CABINET	1		
	6-2	E308512-003	C.D W.SCREEN	1		
	7	E407590-001	PUSH BUTTON	1		
	8	E308514-001	HOLDER	1	RIGHT	
	9	SBSF3008Z	TAPPING SCREW	13		
	10	E308515-001	HOLDER	1	LEFT	
	11	E304434-005	DAMPER ASSY	1		
	12	E407625-001	SPRING	1		
	13	E308657-001	INDICATOR LENS	1		
	14	E308509-001	SHUTTER	2		
	15	E406960-001	SPRING	2		
	16	E65923-003	TAPPING SCREW	4		
	17	E407550-001	PUSH BUTTON	1		
	18	E407550-002	PUSH BUTTON	1		
	19	E208126-003	SHIELD PLATE	1		
	20	-------------	CD MECHANISM ASSY	1	SEE PAGE 2-4	
	21	E406871-001	SPRING	2		
	22	E406294-002	INSULATOR	4		
	23	EWS266-B408	SOCKET WIRE ASSY	1		
	24	EWR115M-19BB	FLAT WIRE ASSY	1		
	25	E65923-003	TAPPING SCREW	1	BOTTOM MECHA	
	26	VJD5410-004	PICK UP COVER	1		
	27	SDSF2005M	TAPPING SCREW	3		
	28	E406507-001	CAUTION LABEL	1		C
	29	E102840-001	BOTTOM COVER	1		
	30	E406855-010	SPACER	2		
	31	SBSF3010M	TAPPING SCREW	6		
	32	E308516-001	PUSH BUTTON ASSY	1		
	-	E309118-001	RATING LABEL	1		C
	-	E309005-003	RATING LABEL	1		J
	-	E307570-001	NUMBER LABEL	1		J
	-	E408140-001	FCC LABEL	1		J

⚠ : Safety Parts

The Marks for Designated Areas

J ...... the U.S.A.   C ..... Canada   No mark indicates all area.

CD Mechansim Ass'y and Parts List

Symbol No. | M | 2 | M | M |
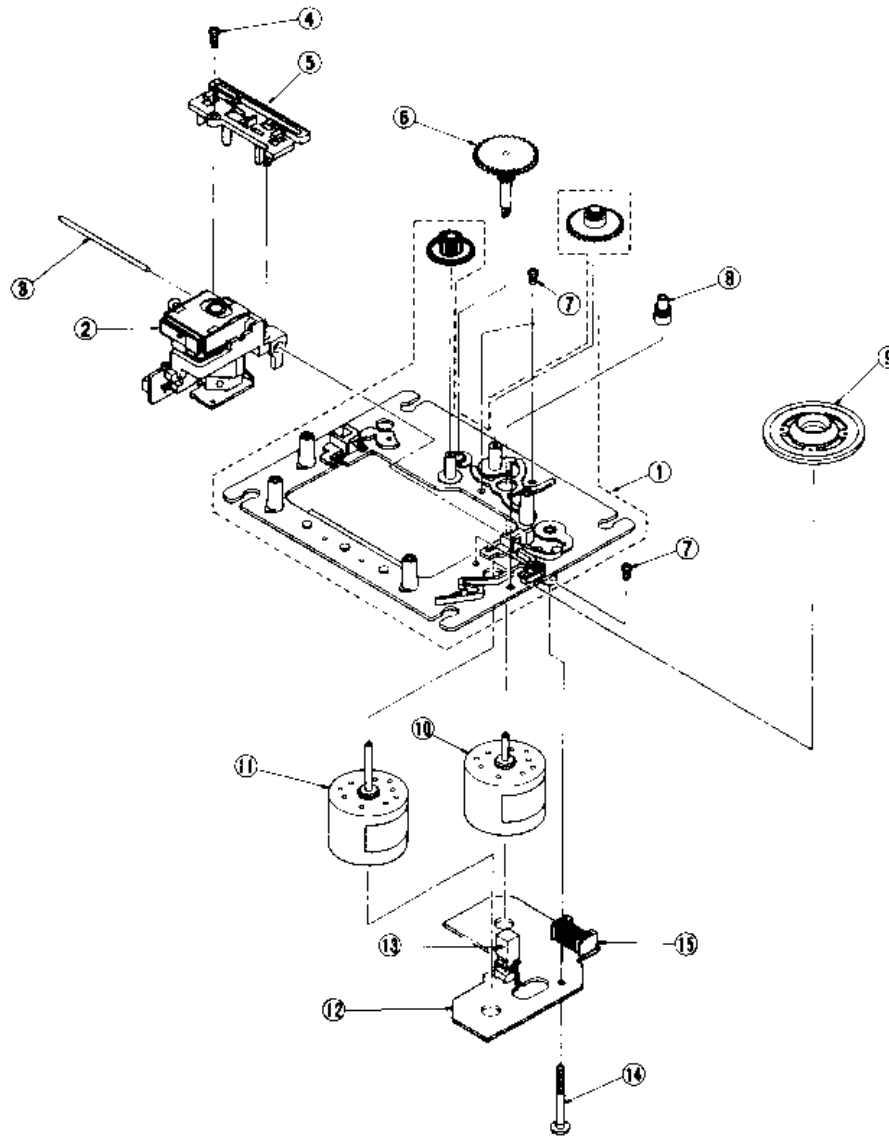
Symbol No. | M | 2 | M | M |

■ Parts List (CD Mechanism Ass'y)

Item	Part Number	Part Name	Q'ty	Description	Area
1	EPB-002A	MECHANISM BASE ASSY	1		
2	OPTIMA-6S	PICK UP ASSY	1		
3	E406777-001	SHAFT	1		
4	SDSF2006Z	SCREW	1		
5	E307746-001	CD RACK	1		
6	EPB-003A	MECHANISM BASE ASSY	1		
7	SDSP2003N	SCREW	4		
8	E406750-001	PINION GEAR	1		
9	EPB-001C	TURN TABLE	1		
10	E406784-001	DC MOTOR	1		
11	E406783-001	DC MOTOR	1		
12	EW10190-001(S)	CIRCUIT BOARD	1		
13	ESB1100-005	LEAF SWITCH	1		
14	E75832-001	SPECIAL SCREW	1		
15	EMV5109-006B	PLUG ASSY	1	6PIN	

Printed Circuit Board Ass'y and Parts List

■ ENR-005 Ⓐ Main & DSP P.C Board Ass'y
● Surface

FLOW ➡

ENR-005 ▮ -1

EMW10420-002

94V-0 HCN 111 ▲

● Foil

Transistors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	Q111	2SB1424(QR)-X	SI.TRANSIST ROHM	
	Q112	DTC114EK	DIGITAL TRA MITSUMI	
	Q113	2SA1037K(R,S)	SI.TRANSIST	
	Q114	DTA114EK	DIGITAL TRA ROHM	
	Q115	2SC2412K(R,S)	SI.TRANSIST	
	Q601	DTC114EK	DIGITAL TRA MITSUMI	
	Q651	DTC314TK	SI.TRANSIST ROHM	
	Q652	DTC314TK	SI.TRANSIST ROHM	
	Q653	DTC114EK	DIGITAL TRA MITSUMI	
	Q654	DTC114EK	DIGITAL TRA MITSUMI	
	Q691	DTC114EK	DIGITAL TRA MITSUMI	
	Q731	DTC314TK	SI.TRANSIST ROHM	
	Q732	DTC314TK	SI.TRANSIST ROHM	
	Q733	2SD2144S(VW)-T	SI. TRANSIST	

⚠ SAFETY PARTS

I.C.s

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	IC101	MC68HC000FN12	I.C(MICRO-C NIHON MOTOROR	
	IC102	LC3564BM-10T2	I.C(S-RAM) SANYO	
	IC103	PST600DX	I.C(MONO-AN MITSUMI	
	IC104	TC531024F12634X	I.C(M) TOSHIBA	
	IC104	UPD27C4000	I.C.	
	IC105	MN414270SJ-08	I.C(D-RAM) MATSUSHITA	
	IC110	PQ05RF1	I.C(HYBRID) SHARP	
	IC131	315-5476AV	I.C(M) 9954	
	IC132	TC51B64FL-10X	I.C(M) TOSHIBA	
	IC133	TC74HC21AFX	I.C(DIGI-MO TOSHIBA	
	IC141	315-5632V	I.C(M) 9954	
	IC142	TC511664BJ-10X	I.C(D-RAM) TOSHIBA	
	IC143	TC511664BJ-10X	I.C(D-RAM) TOSHIBA	
	IC161	LC89513K	I.C(M) SANYO	
	IC162	LC33832M-70X	I.C(S-RAM) SANYO	
	IC171	MC68HC000FN8	I.C(MICRO-C MOTOROR	
	IC172	LC331632M-12X	I.C(S-RAM) SANYO	
	IC181	UPD9036GB-4	I.C(DIGI-MO NEC	
	IC182	BR6265AF-10LLX	I.C(M) ROHM	
	IC191	315-5660	I.C(M) 9954	
	IC192	MSM54C864-80JSX	I.C(DIGI-MO NIHON DENSO	
	IC193	PST591EX	I.C(MONO-AN MITSUMI	
	IC221	CXA1145MTZ	I.C(MONO-AN 1680	
	IC241	XRA15218F	I.C.	
	IC601	CXD2500BQ	I.C(DIGI-MO 1680	
	IC631	MN35501	I.C(DIGI-MO MATSUSHITA	
	IC632	XRA15218F	I.C.	
	IC651	XRA15218F	I.C.	
	IC661	SM5841AS-ETW	I.C(DIGI-MO KANEMATSU	
	IC691	HD404019RC36FS	I.C(MICRO-C HITACHI	
	IC691	HD4074019FS	I.C.	
	IC711	LC7881M-C	I.C(DIGI-MO SANYO	
	IC712	XRA15218F	I.C.	
	IC713	XRA15218F	I.C.	

⚠ SAFETY PARTS

Diodes

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	D102	DAN202KT146	SI.DIODE ROHM	
	D111	DA204K	DIODE ARRAY	
	D113	DAN202KT146	SI.DIODE ROHM	
	D221	DA204K	DIODE ARRAY	

⚠ SAFETY PARTS

Capacitors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	C101	QEADOHZ-10AZM		AL E.CAPAC
	C102	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C103	QETB1EM-106	10MF 16V	AL E.CAPAC
	C104	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C105	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C107	NCS21HJ-101AY	100PF 50V	CER.CAPACI
	C108	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C110	QCS31HJ-101Z	100PF 50V	CER.CAPACI
	C111	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C112	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C113	QETB1CM-476	47MF 16V	AL E.CAPAC
	C114	QETCOJM-107ZM	100MF 6.3V	AL E.CAPAC
	C115	QETB1CM-476	47MF 16V	AL E.CAPAC
	C116	QETB1CM-476	47MF 16V	AL E.CAPAC
	C117	QETB1HM-475E	4.7MF 50V	E.CAPACITO
	C118	QETB1CM-226	22MF 16V	E.CAPACITO
	C121	QCS31HJ-101Z	100PF 50V	CER.CAPACI
	C131	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C132	QETB1EM-106	10MF 25V	AL E.CAPAC
	C133	NCS21HJ-560AY	56PF 50V	CER.CAPACI
	C134	NCS21HJ-100AY	10PF 50V	CER.CAPACI
	C135	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI

⚠ SAFETY PARTS

Capacitors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	C136	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C141	NCS21HJ-470AY	47PF 50V	CER.CAPACI
	C142	NCS21HJ-8R0AY	8PF 50V	CER.CAPACI
	C143	QETB1EM-106	10MF 25V	AL E.CAPAC
	C144	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C145	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C146	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C147	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C148	NCS21HJ-100AY	10PF 50V	CER.CAPACI
	C149	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C150	NCB21HJ-102AY	1000PF 50V	CER.CAPACI
	C151	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C152	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C155	NCS21HJ-101AY	100PF 50V	CER.CAPACI
	C156	NCS21HJ-101AY	100PF 50V	CER.CAPACI
	C159	QETB1EM-106	10MF 25V	AL E.CAPAC
	C161	NCS21HJ-330AY	33PF 50V	CER.CAPACI
	C162	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C163	QETB1EM-106	10MF 25V	AL E.CAPAC
	C164	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C171	QETB1EM-106	10MF 25V	AL E.CAPAC
	C172	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C174	NCS21HJ-331AY	330PF 50V	CER.CAPACI
	C175	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C181	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C182	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C190	QCS31HJ-330Z	33PF 50V	CER.CAPACI
	C191	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C192	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C194	NCB21HK-102AY	1000PF 50V	CER.CAPACI
	C196	NCS21HJ-470AY	47PF 50V	CER.CAPACI
	C197	NCS21HJ-102AY	1000PF 50V	CER.CAPACI
	C198	NCB21HK-223AY	0.022MF 50V	CER.CAPACI
	C201	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C202	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C203	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C204	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C205	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C206	QETB1EM-106	10MF 25V	AL E.CAPAC
	C221	NCS21HJ-101AY	100PF 50V	CER.CAPACI
	C222	NCF21CZ-105AY	1MF 16V	CER.CAPACI
	C223	QETCOJM-107ZM	100MF 6.3V	AL E.CAPAC
	C224	NCF21EZ-104AYU	0.1MF 25V	CER.CAPACI
	C225	NCF21EZ-104AYU	0.1MF 25V	CER.CAPACI
	C226	NCF21EZ-104AYU	0.1MF 25V	CER.CAPACI
	C227	NCB21HK-103AY	0.01MF 50V	CER.CAPACI
	C228	NCS21HJ-101AY	100PF 50V	CER.CAPACI
	C229	NCF21CZ-105AY	1MF 16V	CER.CAPACI
	C230	QETB0JM-227	220MF 6.3V	E.CAPACITO
	C231	NCB21HK-103AY	0.01MF 50V	CER.CAPACI
	C232	NCS21HJ-151AY	150PF 50V	CER.CAPACI
	C233	NCS21HJ-470AY	47PF 50V	CER.CAPACI
	C234	QETB1EM-106	10MF 25V	AL E.CAPAC
	C235	NCB21HK-223AY	0.022MF 50V	CER.CAPACI
	C236	NCS21HJ-181AY	180PF 50V	CER.CAPACI
	C241	NCS21HJ-122AYM	1200PF 50V	CER.CAPACI
	C241	QCY31HK-122Z	1200PF 50V	CER.CAPACI
	C242	NCS21HJ-122AYM	1200PF 50V	CER.CAPACI
	C242	QCY31HK-122Z	1200PF 50V	CER.CAPACI
	C243	NCB21HK-562AY	5600PF 50V	E.CAPACITO
	C244	NCB21HK-562AY	5600PF 50V	E.CAPACITO
	C245	QETB1EM-106	10MF 25V	AL E.CAPAC
	C246	QETB1EM-106	10MF 25V	AL E.CAPAC
	C247	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C248	QETB1EM-106	10MF 25V	AL E.CAPAC
	C251	NCS21HJ-102AY	1000PF 50V	CER.CAPACI
	C252	QETB1EM-106	10MF 25V	AL E.CAPAC
	C261	NCS21HJ-102AY	1000PF 50V	CER.CAPACI
	C262	NCS21HJ-102AY	1000PF 50V	CER.CAPACI
	C263	QETB1HM-105	1MF 50V	AL E.CAPAC
	C264	QETB1HM-105	1MF 50V	AL E.CAPAC
	C601	NCF21CZ-105AY	1MF 16V	CER.CAPACI
	C603	NCF21CZ-105AY	1MF 16V	CER.CAPACI
	C604	NCS21HJ-102AY	1000PF 50V	CER.CAPACI
	C605	NCS21HJ-152AY	1500PF 50V	CER.CAPACI
	C606	NCF21CZ-105AY	1MF 16V	CER.CAPACI
	C607	NCB21CK-473AY	0.047MF 16V	C.CAPA. C
	C615	NCF21CZ-105AY	1MF 16V	CER.CAPACI
	C616	QCS31HJ-331Z	33PF 50V	CER.CAPACI
	C631	NCS21HJ-180AY	18PF 50V	CER.CAPACI
	C631	NCB21HK-223AY	0.022MF 50V	CER.CAPACI
	C632	NCS21HJ-180AY	18PF 50V	CER.CAPACI
	C632	NCS21HJ-100AY	10PF 50V	CER.CAPACI
	C633	NCS21HJ-100AY	10PF 50V	CER.CAPACI
	C633	QETCOJM-107ZM	100MF 6.3V	AL E.CAPAC
	C634	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C635	QETB1CM-226	22MF 16V	E.CAPACITO
	C636	NCF21EZ-473AYU	0.047MF 25V	CER.CAPACI
	C636	QETB1CM-226	22MF 16V	E.CAPACITO
	C637	NCS21HJ-221AY	220PF 50V	CER.CAPACI
	C637	QETB1EM-106	10MF 25V	AL E.CAPAC
	C638	NCS21HJ-221AY	220PF 50V	CER.CAPACI
	C638	QETB1EM-106	10MF 25V	AL E.CAPAC
	C639	NCS21HJ-102AY	1000PF 50V	CER.CAPACI
	C640	NCS21HJ-102AY	1000PF 50V	CER.CAPACI
	C641	NCB21HK-223AY	0.022MF 50V	CER.CAPACI
	C642	NCB21HK-223AY	0.022MF 50V	CER.CAPACI
	C643	NCS21HJ-47CAY	47PF 50V	CER.CAPACI

⚠ SAFETY PARTS

RG-M10BU

Capacitors

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	C644	NCS21HJ-470AY	47PF	50V	CER.CAPACI	
	C645	NCF21EZ-473AYU	0.047MF	25V	CER.CAPACI	
	C646	NCF21EZ 473AYU	0.047MF	25V	CER.CAPACI	
	C647	QETB1EM-106	10MF	25V	AL E.CAPAC	
	C648	QETB1EM-106	10MF	25V	AL E.CAPAC	
	C651	NCB21CK-124AYU	0.12MF	16V	CER.CAPACI	
	C652	NCB21CK-124AYU	0.12MF	16V	CER.CAPACI	
	C653	NCB21CK-124AYU	0.12MF	16V	CER.CAPACI	
	C654	NCB21CK-124AYU	0.12MF	16V	CER.CAPACI	
	C655	NCS21HJ-101AY	100PF	50V	CER.CAPACI	
	C656	NCS21HJ-101AY	100PF	50V	CER.CAPACI	
	C657	QETB2EM-106	10MF	25V	AL E.CAPAC	
	C658	QETB1EM-106	10MF	25V	AL E.CAPAC	
	C659	NCF21EZ-473AYU	0.047MF	25V	CER.CAPACI	
	C660	QET81AM-476	47MF	10V	E.CAPACITO	
	C661	NCF21EZ-473AYU	0.047MF	25V	CER.CAPACI	
	C662	NCB21HK-223AY	0.022MF	50V	CER.CAPACI	
	C663	QETC0JM-107ZM	100MF	6.3V	AL E.CAPAC	
	C691	NCF21EZ-473AYU	0.047MF	25V	CER.CAPACI	
	C711	QETB1CM-226	22MF	16V	E.CAPACITO	
	C712	QETB1CM-226	22MF	16V	E.CAPACITO	
	C713	QETB1EM-106	10MF	25V	AL E.CAPAC	
	C714	QETB1EM-106	10MF	25V	AL .E.CAPAC	
	C715	NCF21EZ-473AYU	0.047MF	25V	CER.CAPACI	
	C716	NCS21HJ-101AYU	100PF	50V	CER.CAPACI	
	C717	NCF21EZ-473AYU	0.047MF	25V	CER.CAPACI	
	C719	NCS21HJ-101AY	100PF	50V	CER.CAPACI	
	C720	NCS21HJ-101AY	100PF	50V	CER.CAPACI	
	C721	NCB21HK-103AY	0.01MF	50V	CER.CAPACI	
	C722	NCB21HK-103AY	0.01MF	50V	CER.CAPACI	
	C723	NCS21HJ-331AY	330PF	50V	CER.CAPACI	
	C724	NCS21HJ-331AY	330PF	50V	CER.CAPACI	
	C725	NCS21HJ-102AY	1000PF	50V	CER.CAPACI	
	C726	NCS21HJ-102AY	1000PF	50V	CER.CAPACI	
	C727	NCF21EZ-473AYU	0.047MF	25V	CER.CAPACI	
	C728	QETB1CM-226	22MF	16V	E.CAPACITO	
	C729	QETB1EM-106	10MF	25V	AL E.CAPAC	
	C730	QETB1EM-106	10MF	25V	AL E.CAPAC	
	C731	NCS21HJ-221AY	220PF	50V	CER.CAPACI	
	C732	NCS21HJ-221AY	220PF	50V	CER.CAPACI	
	C781	QETB1CM-476	47MF	16V	AL E.CAPAC	

⚠ SAFETY PARTS

Resistors

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	R101	NRSA02J-472NY			METAL GLAZ	
	R102	NRSA02J-472NY			METAL GLAZ	
	R103	NRSA02J-472NY			METAL GLAZ	
	R104	NRSA02J-472NY			METAL GLAZ	
	R105	NRSA02J-222NY			METAL GLAZ	
	R106	NRSA02J-221NY			METAL GLAZ	
	R107	NRSA02J-0R0AY			METAL GLAZ	
	R108	QRD161J-102Y	1K	1/6W	CARBON RESI	
⚠	R111	QRG022J-820AM	82	2W	OXIDE META	
⚠	R112	QRG022J-820AM	82	2W	OXIDE META	
⚠	R113	QRG022J-820AM	82	2W	OXIDE META	
⚠	R114	QRG022J-820AM	82	2W	OXIDE META	
⚠	R115	QRG022J-820AM	82	2W	OXIDE META	
	R116	NRSA02J-472NY			METAL GLAZ	
	R117	NRSA02J-271NY			METAL GLAZ	
	R118	NRSA02J-472NY			METAL GLAZ	
	R119	NRSA02J-222NY			METAL GLAZ	
	R121	NRSA02J-222NY			METAL GLAZ	
	R122	NRSA02J-103NY			METAL GLAZ	
	R131	NRSA02J-221NY			METAL GLAZ	
	R132	NRSA02J-221NY			METAL GLAZ	
	R133	NRSA02J-101NY			METAL GLAZ	
	R134	NRSA02J-471NY			METAL GLAZ	
	R135	NRSA02J-101NY			METAL GLAZ	
	R142	NRSA02J-0R0AY			METAL GLAZ	
	R171	NRSA02J-151NY			METAL GLAZ	
	R172	NRSA02J-0R0AY			METAL GLAZ	
	R191	NRSA02J-102NY			METAL GLAZ	
	R192	NRSA02J-102NY			METAL GLAZ	
	R194	NRSA02J-0R0AY			METAL GLAZ	
	R196	NRSA02J-0R0AY			METAL GLAZ	
	R197	NRSA02J-222NY			METAL GLAZ	
	R198	NRSA02J-222NY			METAL GLAZ	
	R199	NRSA02J-472NY			METAL GLAZ	
	R200	NRSA02J-222NY			METAL GLAZ	
	R201	NRSA02J-222NY			METAL GLAZ	
	R202	NRSA02J-222NY			METAL GLAZ	
	R203	NRSA02J-222NY			METAL GLAZ	
	R204	NRSA02J-222NY			METAL GLAZ	
	R205	NRSA02J-222NY			METAL GLAZ	
	R206	NRSA02J-222NY			METAL GLAZ	
	R207	NRSA02J-272NY			METAL GLAZ	
	R208	NRSA02J-222NY			METAL GLAZ	
	R209	NRSA02J-471NY			METAL GLAZ	
	R210	NRSA02J-471NY			METAL GLAZ	
	R211	NRSA02J-0R0AY			METAL GLAZ	

⚠ SAFETY PARTS

Resistors

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	R213	NRSA02J-0R0AY			METAL GLAZ	
	R221	NRSA02J-222NY			METAL GLAZ	
	R222	NRSA02J-562NY			METAL GLAZ	
	R223	NRSA02J-562NY			METAL GLAZ	
	R224	NRSA02J-562NY			METAL GLAZ	
	R225	NRSA02J-472NY			METAL GLAZ	
	R226	NRSA02J-472NY			METAL GLAZ	
	R227	NRSA02J-472NY			METAL GLAZ	
	R228	NRSA02J-122NY			METAL GLAZ	
	R229	NRSA02J-122NY			METAL GLAZ	
	R230	NRSA02J-122NY			METAL GLAZ	
	R231	NRSA02J-122NY			METAL GLAZ	
	R232	NRSA02J-0R0AY			METAL GLAZ	
	R234	NRSA02J-102NY			METAL GLAZ	
	R235	NRSA02J-331NY			METAL GLAZ	
	R236	NRSA02J-122NY			METAL GLAZ	
	R237	NRSA02J-122NY			METAL GLAZ	
	R238	NRSA02J-243NY			METAL GLAZ	
	R241	NRSA02J-103NY			METAL GLAZ	
	R242	NRSA02J-103NY			METAL GLAZ	
	R243	NRSA02J-103NY			METAL GLAZ	
	R244	NRSA02J-103NY			METAL GLAZ	
	R251	NRSA02J-101NY			METAL GLAZ	
	R252	NRSA02J-222NY			METAL GLAZ	
	R261	NRSA02J-750NY			METAL GLAZ	
	R262	NRSA02J-750NY			METAL GLAZ	
	R263	NRSA02J-101NY			METAL GLAZ	
	R264	NRSA02J-101NY			METAL GLAZ	
	R602	NRSA02J-101NY			METAL GLAZ	
	R603	NRSA02J-101NY			METAL GLAZ	
	R604	NRSA02J-101NY			METAL GLAZ	
	R605	NRSA02J-103NY			METAL GLAZ	
	R606	NRSA02J-682NY			METAL GLAZ	
	R607	NRSA02J-103NY			METAL GLAZ	
	R608	NRSA02J-103NY			METAL GLAZ	
	R631	NRSA02J-0R0AY			METAL GLAZ	
	R633	NRSA02J-393NY			METAL GLAZ	
	R634	NRSA02J-393NY			METAL GLAZ	
	R635	NRSA02J-101NY			METAL GLAZ	
	R636	NRSA02J-101NY			METAL GLAZ	
	R637	NRSA02J-393NY			METAL GLAZ	
	R638	NRSA02J-393NY			METAL GLAZ	
	R639	NRSA02J-562NY			METAL GLAZ	
	R640	NRSA02J-562NY			METAL GLAZ	
	R641	NRSA02J-822NY			METAL GLAZ	
	R642	NRSA02J-822NY			METAL GLAZ	
	R643	NRSA02J-153NY			METAL GLAZ	
	R644	NRSA02J-153NY			METAL GLAZ	
	R651	NRSA02J-123NY			METAL GLAZ	
	R652	NRSA02J-123NY			METAL GLAZ	
	R653	NRSA02J-153NY			METAL GLAZ	
	R653	NRSA02J-273NY			METAL GLAZ	
	R654	NRSA02J-273NY			METAL GLAZ	
	R654	NRSA02J-153NY			METAL GLAZ	
	R655	NRSA02J-133NY			METAL GLAZ	
	R656	NRSA02J-133NY			METAL GLAZ	
	R657	NRSA02J-224NY			METAL GLAZ	
	R658	NRSA02J-133NY			METAL GLAZ	
	R659	NRSA02J-273NY			METAL GLAZ	
	R660	NRSA02J-273NY			METAL GLAZ	
	R661	NRSA02J-331NY			METAL GLAZ	
	R662	NRSA02J-391NY			METAL GLAZ	
	R662	NRSA02J-682NY			METAL GLAZ	
	R663	NRSA02J-103NY			METAL GLAZ	
	R664	NRSA02J-103NY			METAL GLAZ	
	R665	NRSA02J-183NY			METAL GLAZ	
	R666	NRSA02J-0R0AY			METAL GLAZ	
	R667	NRSA02J-103NY			METAL GLAZ	
	R668	NRSA02J-103NY			METAL GLAZ	
	R669	NRSA02J-103NY			METAL GLAZ	
	R669	QRD167J-102	1K	1/6W	CARBON RES	
	R670	NRSA02J-391NY			METAL GLAZ	
	R671	NRSA02J-103NY			METAL GLAZ	
	R672	NRSA02J-103NY			METAL GLAZ	
	R673	NRSA02J-472NY			METAL GLAZ	
	R692	NRSA02J-472NY			METAL GLAZ	
	R693	NRSA02J-472NY			METAL GLAZ	
	R695	NRSA02J-105NY			METAL GLAZ	
	R696	NRSA02J-472NY			METAL GLAZ	
	R697	NRSA02J-472NY			METAL GLAZ	
	R698	NRSA02J-472NY			METAL GLAZ	
	R699	NRSA02J-472NY			METAL GLAZ	
	R704	NRSA02J-472NY			METAL GLAZ	
	R705	NRSA02J-472NY			METAL GLAZ	
	R706	NRSA02J-472NY			METAL GLAZ	
	R711	NRSA02J-682NY			METAL GLAZ	
	R712	NRSA02J-682NY			METAL GLAZ	
	R715	NRSA02J-183NY			METAL GLAZ	
	R716	NRSA02J-183NY			METAL GLAZ	
	R717	NRSA02J-822NY			METAL GLAZ	
	R718	NRSA02J-822NY			METAL GLAZ	
	R719	NRSA02J-153NY			METAL GLAZ	
	R720	NRSA02J-153NY			METAL GLAZ	
	R721	NRSA02J-103NY			METAL GLAZ	
	R722	NRSA02J-103NY			METAL GLAZ	

⚠ SAFETY PARTS

Resistors

△	ITEM	PART NUMBER	D E S C R I P T I O N			AREA
	R723	NRSA02J-103NY			METAL GLAZ	
	R724	NRSA02J-103NY			METAL GLAZ	
	R725	NRSA02J-183NY			METAL GLAZ	
	R726	NRSA02J-183NY			METAL GLAZ	
	R731	NRSA02J-103NY			METAL GLAZ	
	R732	NRSA02J-103NY			METAL GLAZ	
	R733	NRSA02J-102NY			METAL GLAZ	
	R734	NRSA02J-102NY			METAL GLAZ	
	R737	NRSA02J-101NY			METAL GLAZ	
	R738	NRSA02J-101NY			METAL GLAZ	
	R741	NRSA02J-272NY			METAL GLAZ	
	R742	NRSA02J-272NY			METAL GLAZ	
	R745	NRSA02J-101NY			METAL GLAZ	
	R746	NRSA02J-101NY			METAL GLAZ	
	R747	QRD161J-474Y	100	1/6W	CARBON RES	
	R764	NRSA02J-750NY			METAL GLAZ	
	R781	NRSA02J-222NY			METAL GLAZ	
	R782	NRSA02J-272NY			METAL GLAZ	
	RA181	QRB089J-472	4.7K	1/10W	NETWORK RE	
	RA191	NRB042J-471NZ			RESISTOR A	
	RA192	NRB042J-471NZ			RESISTOR A	
	RA193	NRB042J-471NZ			RESISTOR A	
	RA271	NRB042J-101NZ			RESISTOR A	
	RA272	NRB042J-101NZ			RESISTOR A	
	RA273	NRB042J-101NZ			RESISTOR A	
	RA274	NRB042J-101NZ			RESISTOR A	
	RA692	QRB089J-472	4.7K	1/10W	NETWORK RE	

△ : SAFETY PARTS

Others

△	ITEM	PART NUMBER	D E S C R I P T I O N	AREA
		E70945-H358	HEAT SINK	
		SBSB3008Z	WOOD SCREW	
		SBSF3008M	TAPPING SCR	
		C3400-431	FELT SPACER	
		EWE270-08DB	WIRE	
	J111	QMA3001-E02S	DC JACK	
	J763	EMN10YV-301A	PIN JACK VIDEO/AUDIO Lch/VCC	
	J765	EMN01TV-101A	PIN JACK AUDIO Rch	
	K101	ENZ8102-N601AY	FERRITE BEA	
	K141	ENZ8102-N601AY	FERRITE BEA	
	K142	ENZ8102-N601AY	FERRITE BEA	
	K143	ENZ8102-N601AY	FERRITE BEA	
	K144	ENZ8102-N601AY	FERRITE BEA	
	K145	ENZ8102-N601AY	FERRITE BEA	
	K146	ENZ8102-N601AY	FERRITE BEA	
	K147	ENZ8102-N601AY	FERRITE BEA	
	K171	ENZ8102-N601AY	FERRITE BEA	
	K191	ENZ8102-N601AY	FERRITE BEA	
	K192	ENZ8102-N601AY	FERRITE BEA	
	K193	ENZ8102-N601AY	FERRITE BEA	
	K194	ENZ8102-N601AY	FERRITE BEA	
	K195	ENZ8102-N601AY	FERRITE BEA	
	K196	ENZ8102-N601AY	FERRITE BEA	
	K197	ENZ8102-N601AY	FERRITE BEA	
	K271	ENZ8102-N601AY	FERRITE BEA	
	K272	ENZ8102-N601AY	FERRITE BEA	
	K631	ENZ8102-N601AY	FERRITE BEA	
	K768	ENZ8102-N121AY	FERRITE BEA	
	K769	ENZ8102-N121AY	FERRITE BEA	
	K770	ENZ8102-N601AY	FERRITE BEA	
	K779	ENZ8102-N601AY	FERRITE BEA	
	L111	EQL1003-400	INDUCTOR	
	L221	EQLS002-470T	INDUCTOR	
	L222	EQLS002-120T	INDUCTOR	
	L271	EQF0601-222	CERAMIC FIL	
	L272	EQF0601-222	CERAMIC FIL	
	L273	EQF0601-222	CERAMIC FIL	
	L274	EQF0601-222	CERAMIC FIL	
	L275	EQF0601-222	CERAMIC FIL	
	L276	EQF0601-222	CERAMIC FIL	
	L277	EQF0601-222	CERAMIC FIL	
	L278	EQF0601-222	CERAMIC FIL	
	L279	EQF0601-222	CERAMIC FIL	
	L280	EQF0601-222	CERAMIC FIL	
	L281	EQF0601-222	CERAMIC FIL	
	L282	EQF0601-222	CERAMIC FIL	
	L283	EQF0601-222	CERAMIC FIL	
	L284	EQF0601-222	CERAMIC FIL	
	L285	EQF0601-222	CERAMIC FIL	
	L286	EQF0601-222	CERAMIC FIL	
	L731	EQF0808-N01ZS	INDUCTOR	
	L732	EQF0808-N01ZS	INDUCTOR	
	P101	EMZ1008-006	CONNECT TER 9PIN	
	P191	EMZ1007-002	CONNECT TER 64PIN	
	P801	VMC0194-SC7	CONNECT TER 7PIN	
	P802	VMC0194-S10	CONNECT TER 10PIN	
	P803	VMC0194-S10	CONNECT TER 10PIN	
	S111	QSP2006-E02	PUSH SWITCH POWER SW	
	S191	QSP2006-E01	PUSH SWITCH RESET SW	
	X141	CXO-826(50MHZ)	CRYSTAL	
	X191	1338M153693	CRYSTAL	
	X631	ECX0169-344EF	CRYSTAL	
	X691	ECX0004-194KM	CERAMIC RES	

△ : SAFETY PARTS

■ ENR-006Ⓐ Mic Headphone & CD Servo P.C Board Ass'y

● Surface

EMW10427-002

ENR-006

1

● Foil

EMW10427-002
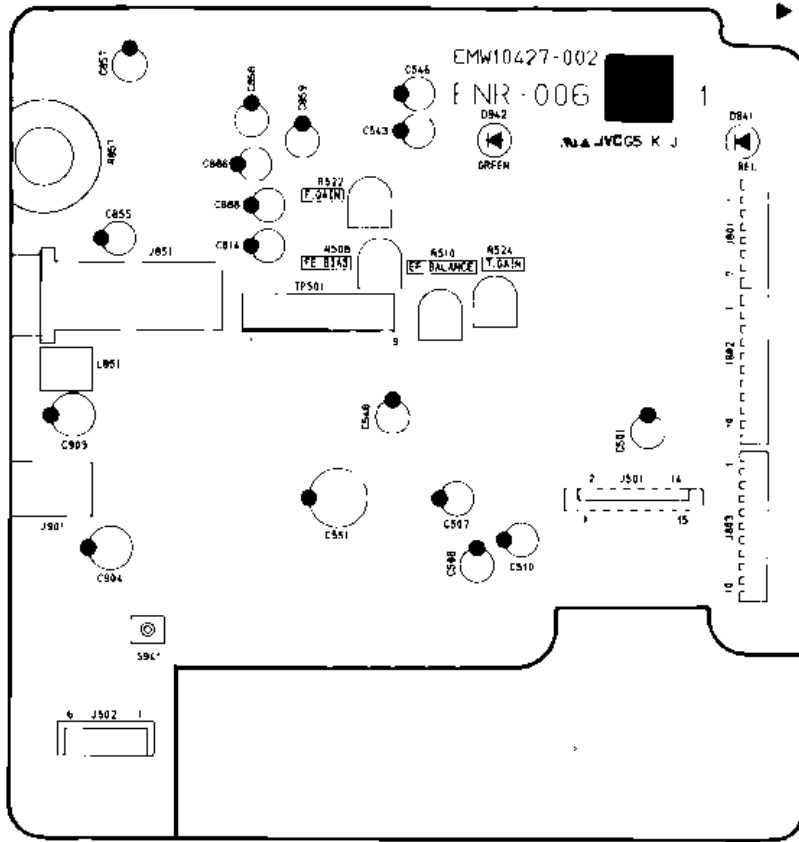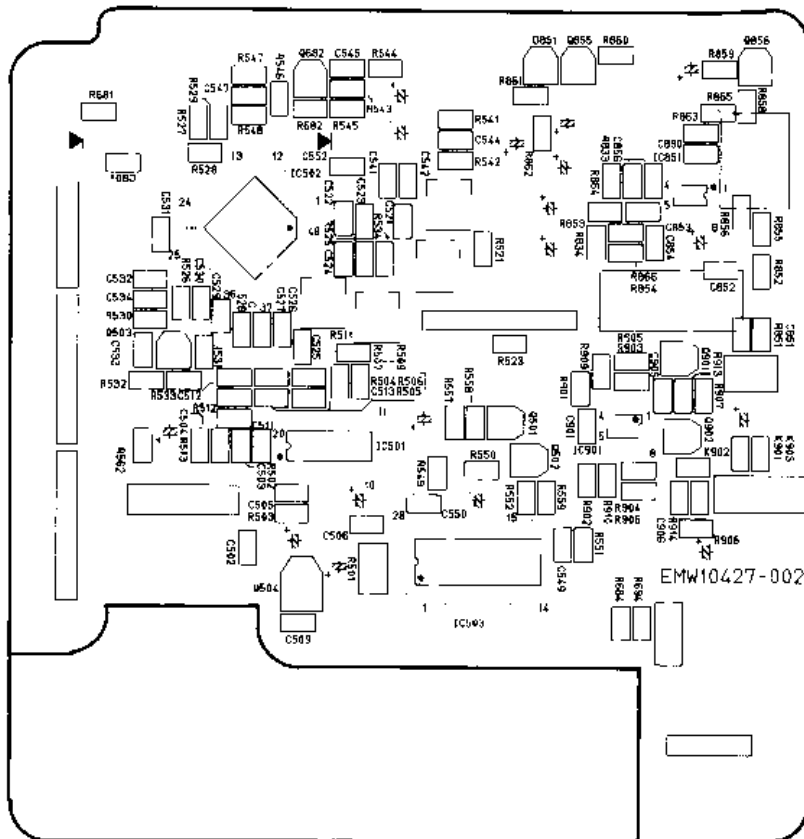
Transistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	Q503	2SC2412K(R,S)	SI.TRANSIST	
	Q504	2SB1426(QR)-X	SI.TRANSIST ROHM	
	Q692	DTC114EK	DIGITAL TRA MITSUMI	
	Q855	2SC2412K(R,S)	SI.TRANSIST	
	Q856	2SC2412K(R,S)	SI.TRANSIST	
	Q901	DTC314TK	SI.TRANSIST ROHM	
	Q902	DTC314TK	SI.TRANSIST	

△ :SAFETY PARTS

I.C.s

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	IC501	CXA1571M71	I.C(MONO-AM 1680	
	IC502	CXA1372G	I.C(MONO-AM 1680	
	IC503	BA6393FP	I.C(MONO-AM ROHM	
	IC851	XRA15218F	I.C.	
	IC901	M5218AFPT1	I.C(MONO-AM MITSUBISHI	

△ :SAFETY PARTS

Diodes

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	D851	DA204K	DIODE ARRAY	
	D941	SLH-56VCF29	L.E.D. ROHM	
	D941	SLH-56VC50F165	L.E.D. ROHM	
	D942	SLH-56MCF29	L.E.D. ROHM	
	D942	SLH-56MC50F165	L.E.D. ROHM	

△ :SAFETY PARTS

Capacitors

△	ITEM	PART NUMBER	DESCRIPTION			AREA
	C501	QETB1AM-476	47MF	10V	E.CAPACITO	
	C502	NCS21HJ-820AY	82PF	50V	CER.CAPACI	
	C503	NCS21HJ-101AY	100PF	50V	CER.CAPACI	
	C504	NCS21HJ-100AY	10PF	50V	CER.CAPACI	
	C505	NCS21HJ-100AY	10PF	50V	CER.CAPACI	
	C506	NCF21CZ-105AY	1MF	16V	CER.CAPACI	
	C507	QETB1AM-476	47MF	10V	E.CAPACITO	
	C508	QETC0JM-107ZM	100MF	6.3V	AL E.CAPAC	
	C509	NCS21HJ-102AY	1000PF	50V	CER.CAPACI	
	C510	QETB1HM-105	1MF	50V	AL E.CAPAC	
	C511	NCF21EZ-473AYU	0.047MF	25V	CER.CAPACI	
	C512	NCS21HJ-7R0AYM	7PF	50V	CER.CAPACI	
	C513	NCF21EZ-473AYU	0.047MF	25V	CER.CAPACI	
	C521	NCS21HJ-182AY	1800PF	50V	CER.CAPACI	
	C522	NCB21CK-473AY	0.047MF	16V	C.CAPA. C	
	C523	NCB21CK-333AY	0.033MF	16V	C.CAPA. C	
	C524	NCB21CK-104AY	0.1MF	16V	C.CAPA. C	
	C525	NCS21HJ-222AY	2200PF	50V	CER.CAPACI	
	C526	NCS21HJ-222AYM	2200PF	50V	CER.CAPACI	
	C527	NCB21CK-333AY	0.033MF	16V	C.CAPA. C	
	C528	NCB21HK-103AY	0.01MF	50V	CER.CAPACI	
	C529	NCF21EZ-473AYU	0.047MF	25V	CER.CAPACI	
	C530	NCB21CK-333AY	0.033MF	16V	C.CAPA. C	
	C531	NCB21HK-223AY	0.022MF	50V	CER.CAPACI	
	C533	NCB21CK-104AY	0.1MF	16V	C.CAPA. C	
	C534	NCS21HJ-471AY	470PF	50V	CER.CAPACI	
	C541	NCB21CK-473AY	0.047MF	16V	C.CAPA. C	
	C542	NCB21CK-473AY	0.047MF	16V	C.CAPA. C	
	C543	QETB1EM-106	10MF	25V	AL E.CAPAC	
	C544	NCB21CK-333AY	0.033MF	16V	C.CAPA. C	
	C545	NCB21CK-393AYU	0.039MF	16V	CER.CAPACI	
	C546	QETB1EM-106	10MF	25V	AL E.CAPAC	
	C547	NCB21HK-183AY	0.018MF	50V	CER.CAPACI	
	C548	QETB1AM-476	47MF	10V	E.CAPACITO	
	C549	NCB21HK-103AY	0.01MF	50V	CER.CAPACI	
	C550	NCF21EZ-473AYU	0.047MF	25V	CER.CAPACI	
	C551	QETB1CM-227	220MF	16V	AL E.CAPAC	
	C552	NCB21CK-104AY	0.1MF	16V	C.CAPA. C	
	C801	NCF21CZ-105AY	1MF	16V	CER.CAPACI	
	C814	QETB1AM-476	47MF	10V	E.CAPACITO	
	C851	NCS21HJ-101AY	100PF	50V	CER.CAPACI	
	C852	NCB21CK-333AY	0.033MF	16V	C.CAPA. C	
	C853	NCS21HJ-101AYU	100PF	50V	CER.CAPACI	
	C854	NCS21HJ-271AY	270PF	50V	CER.CAPACI	
	C855	QETB1EM-106	10MF	25V	AL E.CAPAC	
	C856	NCF21EZ-473AYU	0.047MF	25V	CER.CAPACI	
	C857	QETB1HM-105	1MF	50V	AL E.CAPAC	
	C858	QETB1HM-475E	4.7MF	50V	E.CAPACITO	
	C859	QETB1HM-475E	4.7MF	50V	E.CAPACITO	
	C886	QETB1EM-106	10MF	25V	AL E.CAPAC	
	C888	QETB1CM-226	22MF	16V	E.CAPACITO	
	C901	NCF21EZ-473AYU	0.047MF	25V	CER.CAPACI	
	C903	QETC0JM-107ZM	100MF	6.3V	AL E.CAPAC	
	C904	QETC0JM-107ZM	100MF	6.3V	AL E.CAPAC	
	C905	NCB21HK-103AY	0.01MF	50V	CER.CAPACI	
	C906	NCB21HK-103AY	0.01MF	50V	CER.CAPACI	

△ :SAFETY PARTS

Resistors

△	ITEM	PART NUMBER	DESCRIPTION			AREA
	R501	NRS12BJ-220NZ	22PF	125V	METAL GLAZ	
	R502	NRSA02J-183NY			METAL GLAZ	
	R503	NRSA02J-183NY			METAL GLAZ	
	R504	NRSA02J-333NY			METAL GLAZ	
	R505	NRSA02J-153NY			METAL GLAZ	
	R506	NRSA02J-822NY			METAL GLAZ	
	R507	NRSA02J-563NY			METAL GLAZ	
	R508	QVPA601-203A	20K		VARIABLE R	
	R509	NRSA02J-123NY			METAL GLAZ	
	R510	QVPA601-203A	20K		VARIABLE R	
	R511	NRSA02J-103NY			METAL GLAZ	
	R512	NRSA02J-102NY			METAL GLAZ	
	R513	NRSA02J-121NY			METAL GLAZ	
	R521	NRSA02J-123NY			METAL GLAZ	
	R522	QVPA601-203A	20K		VARIABLE R	
	R523	NRSA02J-273NY			METAL GLAZ	
	R524	QVPA601-203A	20K		VARIABLE R	
	R525	NRSA02J-224NY			METAL GLAZ	
	R526	NRSA02J-102NY			METAL GLAZ	
	R527	NRSA02J-472NY			METAL GLAZ	
	R528	NRSA02J-244NY			METAL GLAZ	
	R529	NRSA02J-514NY			METAL GLAZ	
	R530	NRSA02J-103NY			METAL GLAZ	
	R531	NRSA02J-103NY			METAL GLAZ	
	R532	NRSA02J-273NY			METAL GLAZ	
	R533	NRSA02J-273NY			METAL GLAZ	
	R541	NRSA02J-134NY			METAL GLAZ	
	R542	NRSA02J-164NY			METAL GLAZ	
	R543	NRSA02J-224NY			METAL GLAZ	
	R544	NRSA02J-823NY			METAL GLAZ	
	R545	NRSA02J-333NY			METAL GLAZ	
	R546	NRSA02J-103NY			METAL GLAZ	
	R547	NRSA02J-273NY			METAL GLAZ	
	R548	NRSA02J-473NY			METAL GLAZ	
	R549	NRSA02J-103NY			METAL GLAZ	
	R550	NRSA02J-203NY			METAL GLAZ	
	R551	NRSA02J-333NY			METAL GLAZ	
	R552	NRSA02J-153NY			METAL GLAZ	
	R562	NRSA02J-910NY			METAL GLAZ	
	R681	NRSA02J-331NY			METAL GLAZ	
	R682	NRSA02J-331NY			METAL GLAZ	
	R684	NRSA02J-473NY			METAL GLAZ	
	R694	NRSA02J-471NY			METAL GLAZ	
	R801	QRD14CJ-2R25X	2.2Ω	1/4W		
	R833	NRSA02J-222NY			METAL GLAZ	
	R834	NRSA02J-272NY			METAL GLAZ	
	R851	NRSA02J-561NY			METAL GLAZ	
	R852	NRSA02J-103NY			METAL GLAZ	
	R853	NRSA02J-473NY			METAL GLAZ	
	R854	NRSA02J-822NY			METAL GLAZ	
	R855	NRSA02J-333NY			METAL GLAZ	
	R856	NRSA02J-222NY			METAL GLAZ	
	R857	QVAA73A-E14B	10K		VARIABLE R	
	R858	NRSA02J-472NY			METAL GLAZ	
	R859	NRSA02J-101NY			METAL GLAZ	
	R860	NRSA02J-682NY			METAL GLAZ	
	R861	NRSA02J-105NY			METAL GLAZ	
	R862	NRSA02J-471NY			METAL GLAZ	
	R863	NRSA02J-472NY			METAL GLAZ	
	R864	NRSA02J-333NY			METAL GLAZ	
	R865	NRSA02J-184NY			METAL GLAZ	
	R866	NRSA02J-182NY			METAL GLAZ	
	R901	NRSA02J-182NY			METAL GLAZ	
	R902	NRSA02J-182NY			METAL GLAZ	
	R903	NRSA02J-472NY			METAL GLAZ	
	R904	NRSA02J-472NY			METAL GLAZ	
	R907	NRSA02J-221NY			METAL GLAZ	
	R908	NRSA02J-221NY			METAL GLAZ	
	R909	QRD167J-332	3.3K	1/6W	CARBON RES	
	R910	QRD167J-332	3.3K	1/6W	CARBON RES	
	R913	NRSA02J-390NY			METAL GLAZ	
	R914	NRSA02J-390NY			METAL GLAZ	

△ :SAFETY PARTS

Others

△	ITEM	PART NUMBER	DESCRIPTION	AREA
		E3400-431	FELT SPACER	
	J501	EMV7144-015	F.P.C.PLUG 15PIN	
	J502	EMV5109-006A	CONNECT TER 6PIN	
	J801	VMC0194-P07	CONNECT TER 7PIN	
	J802	VMC0194-P10	MALE CONNEC 10PIN	
	J803	VMC0194-P10	MALE CONNEC 10PIN	
	J851	QMS6A10-EA1H	MICROPHONE	
	J901	QMS3L38-E20S	PIN JACK HEAD PHONE	
	K901	ENZ8102-N601AY	FERRITE BEA	
	K902	ENZ8102-N601AY	FERRITE BEA	
	K903	ENZ8102-N601AY	FERRITE BEA	
	L851	EQL1003-400	INDUCTOR	
	S941	QSP2007-E01	PUSH SWITCH CLOSE SW	
	TP501	EMV5005-009	CONNECT TER 9PIN	

△ :SAFETY PARTS

Packing Materials and Part Numbers

Symbol No. | M | 3 | M | M |

2. E308617-221ST
Packing Sheet

5. E36997-216
Protect Sheet

1. E308008-003
Packing Case

6. E407933-002
Protect Sheet

4. E308802-002ST
Packing Sheet

Accessories

7. E300196-176(C)
E300196-180BST(J)
Envelope

3. E308668-221ST
Packing Sheet
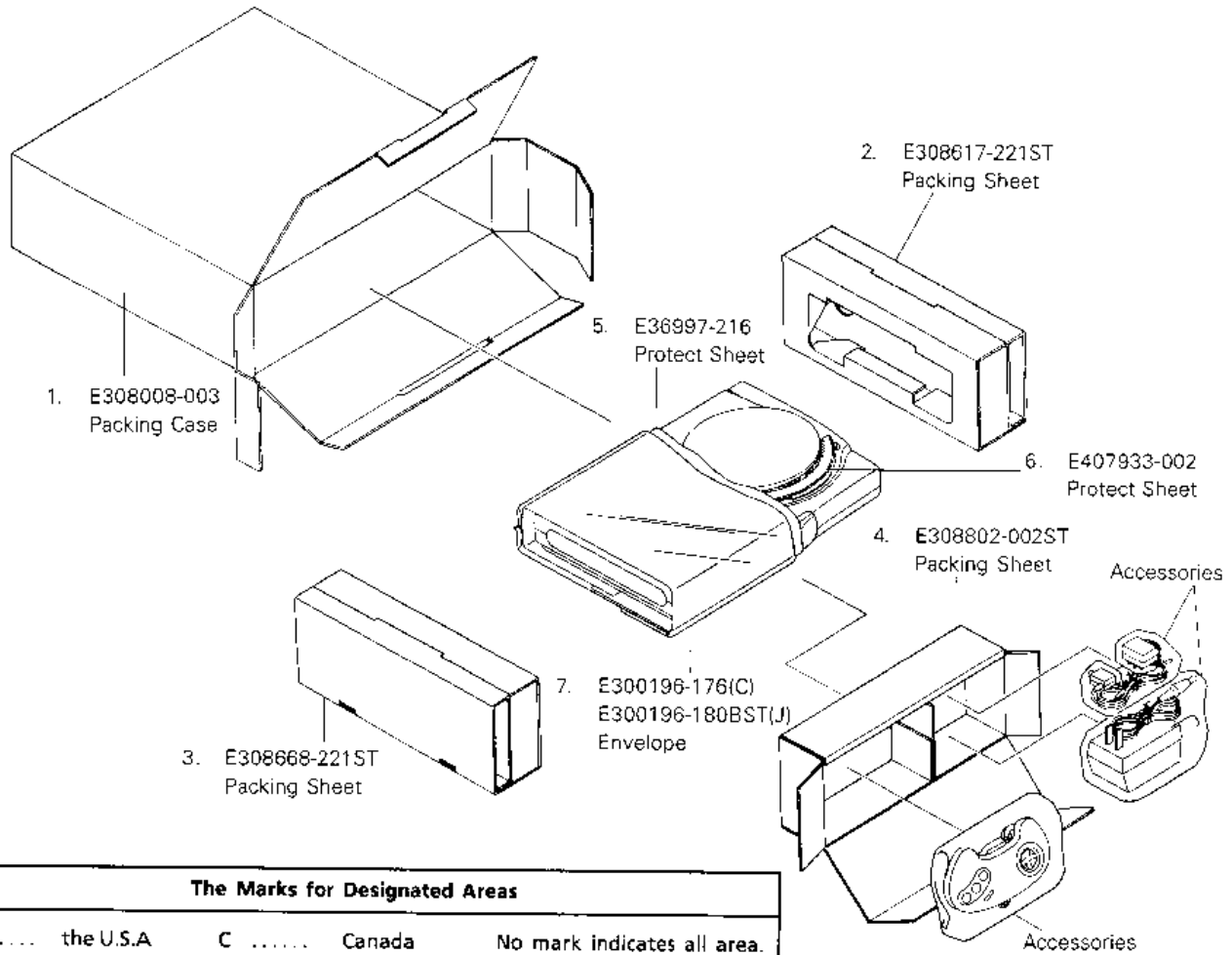
Accessories

The Marks for Designated Areas		
J .... the U.S.A	C ...... Canada	No mark indicates all area.

Accessories List

Symbol No. | M | 4 | M | M |

⚠	Item	Part Number	Part Name	Q'ty	Description	Area
	1	E30580-2159A	INSTRUCTION BOOK	1		C
		E30580-2119A	INSTRUCTION BOOK	1		J
	2	E300196-010	POLY BAG	1		C
		E300196-010B	ENVELOPE	1		J
	3	EGGCIE SEGA V200	C.ENCYCLOPEDIA	1		
	4	EGG19945	CIE COUPON	1		
	5	EGGMK 4206	PRIZE FIGHTER	1		
	6	EGGACDGGP1	TOP HIT SAMPLER	1		
	7	EGGSBD0001	SONG BOOK	1		
	8	EGG1014206	P.FIGHTER INST	1		
	9	EGGCIE SEGA MNL 1	CIE SEGA MANUAL	1		
	10	BT-51006-1	REGISTER CARD	1		J
	11	E43486-603A	RG-M10 C.SHEET	1		J
	12	BT-20071B	SERVICE NETWORK	1		C
	13	BT-20025L	WARRANTY CARD	1		C
	14	E43486-604A	RG-M10 C.SHEET	1		C
	15	6105606	JOY PAD	1		
	16	AA-S95J	AC ADAPTOR	1		
	17	RF-S10J	RF UNIT	1		

⚠ : Safety Parts

The Marks for Designated Areas

J ...... the U.S.A.   C ... Canada   No mark indicates all area.

JVC