

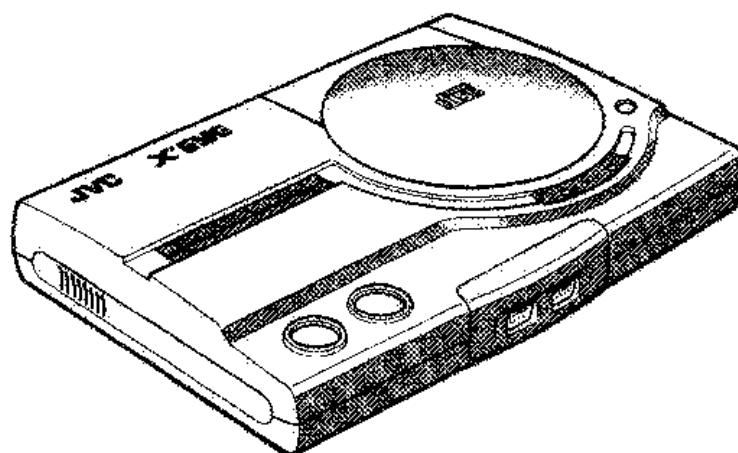
JVC

SERVICE MANUAL

MULTI ENTERTAINMENT SYSTEM

RG-M10BU

Pick up	OPTIMA-6
CD signal processor	CXA1372Q



Area Suffix

J	the U.S.A.
C	Canada

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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 replacement 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 current 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, control 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.).

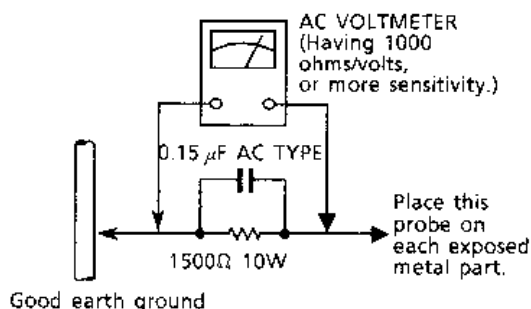
● Alternate check method

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 measure 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.).



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 laserstrålning ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

ADVARSEL : Usynlig laserstrålning ved åpning, når sikkerhetsbryteren er avsløtt. unngå utsettelse for stråling.

REPRODUCTION AND POSITION OF LABELS

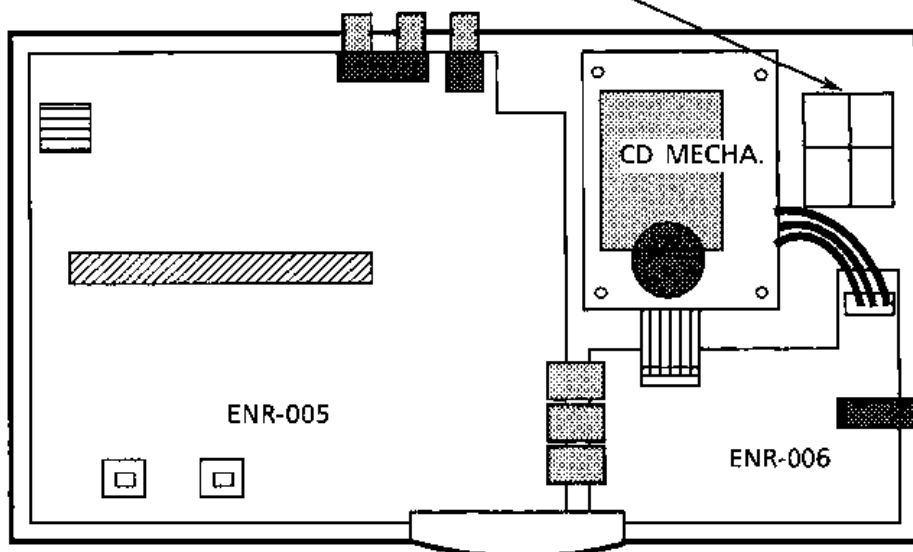
WARNING LABEL (Only for the canada)

DANGER: invisible laser radiation when open and interlock failed or defeated. AVOID DIRECT EXPOSURE TO BEAM. (e)

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

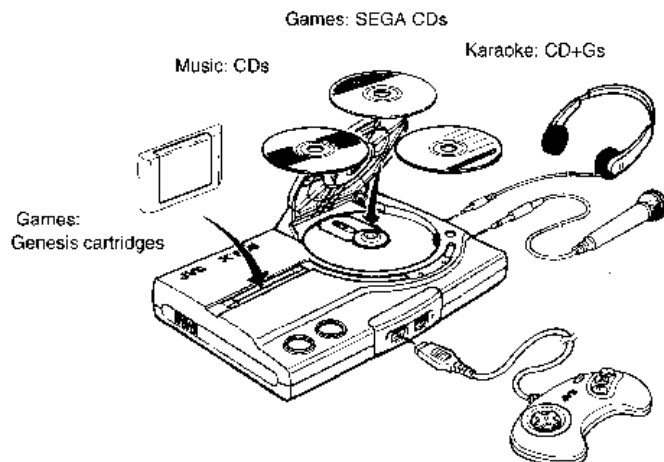
ADVARSEL: Usynlig laserstrålning ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling. (d)

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



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.



The JVC X'EYE is compatible with these disc types*



SEGA CD Games (CD-ROM)

Audio Music (CD)

Audio + Graphics (CD+G)

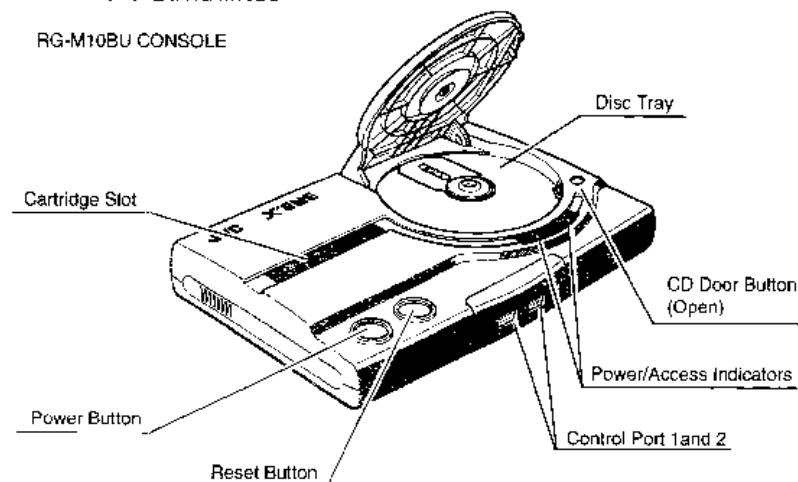
JVC X'EYE can be used to play games on
SEGA CDs and GENESIS cartridges.

SEGA CD GENESIS™

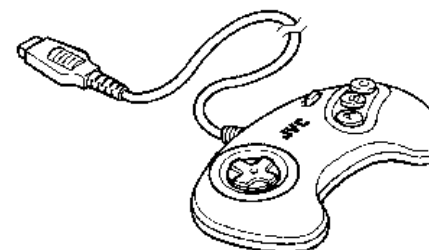
Identifying Parts

JVC X'EYE SYSTEM RG-M10BU

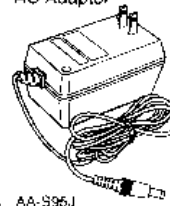
RG-M10BU CONSOLE



CONTROL PAD



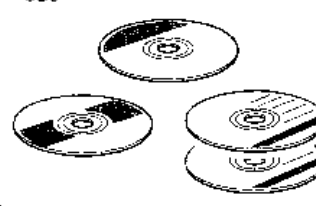
AC Adaptor



RF Unit



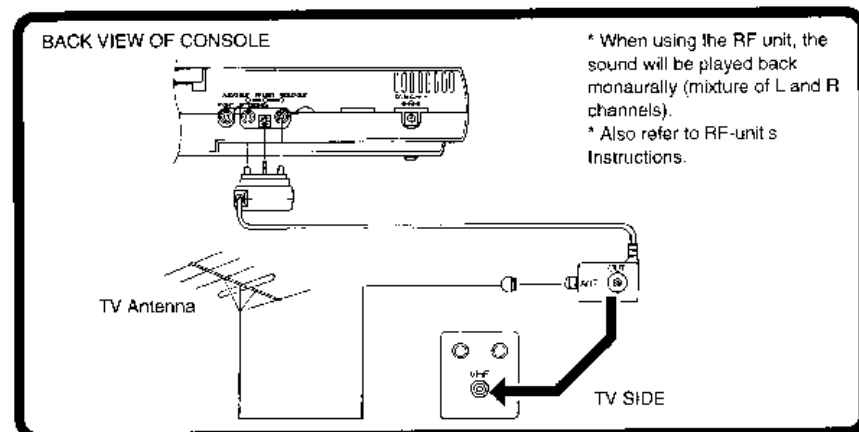
CDs



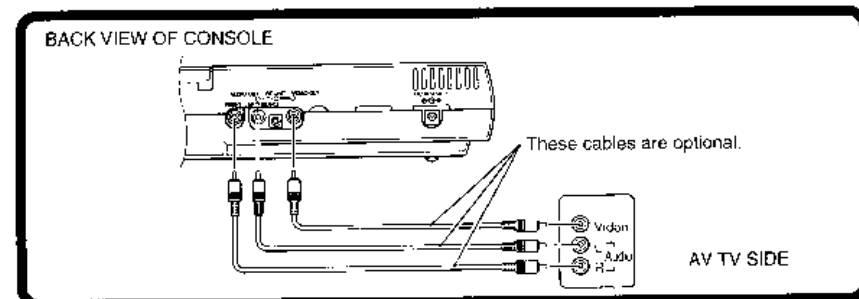
Connecting

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.

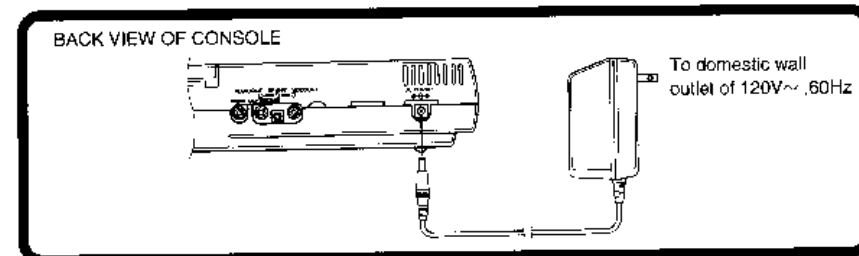
A. Connections to TV and Antenna



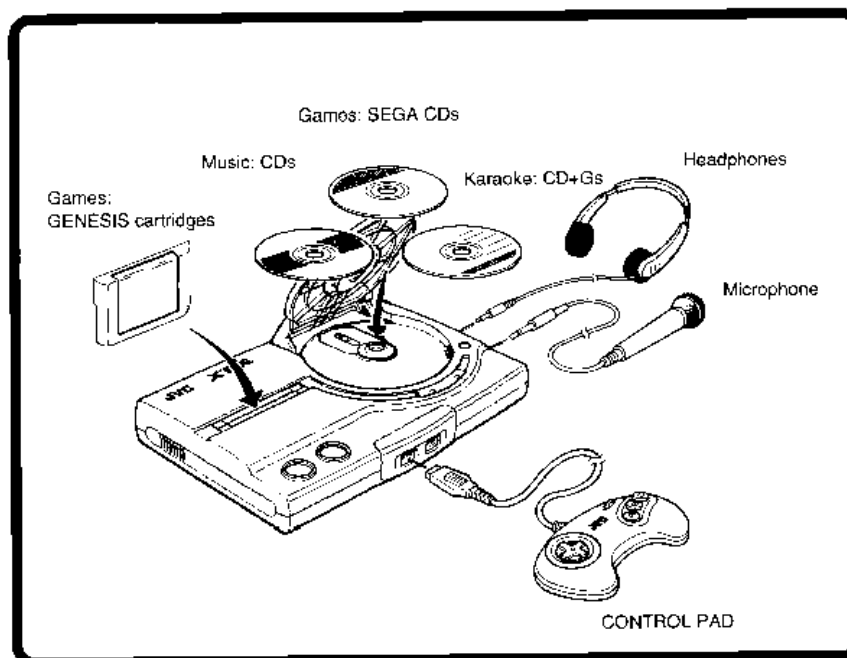
B. Connections to AV TV



Connections to Power



Operating the System



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

ERASING

1. Select **OPTION** on the Control Panel. Press Button C to go to the **DATA STORAGE 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
3 NOT PRESENT

PRESS ANY BUTTON

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

-ERASE ITEM
THE BUILT IN MEMORY
SAVED ITEM(S) : FREE MEMORY
2 : 122

ITEM	NUMBER	NAME	MEMORY USED
1	1	SAVEDAT 1.P2P	1
2	2	SAVEDAT 2.P2P	2

ERASE Screen 1

-ERASE ITEM
THE BUILT IN MEMORY
SAVED ITEM(S) : FREE MEMORY
2 : 122

IS IT OK TO ERASE MEMORY
ITEM SAVEDAT 1.P2P?
YES NO

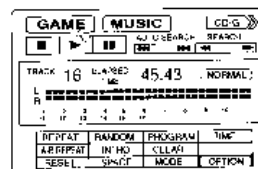
ERASE Screen 2

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.

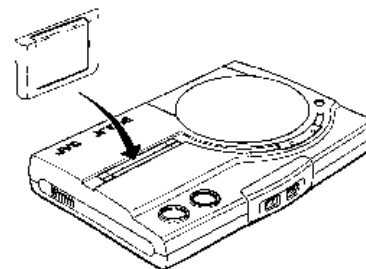


Control Panel

Playing JVC X' EYE

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:

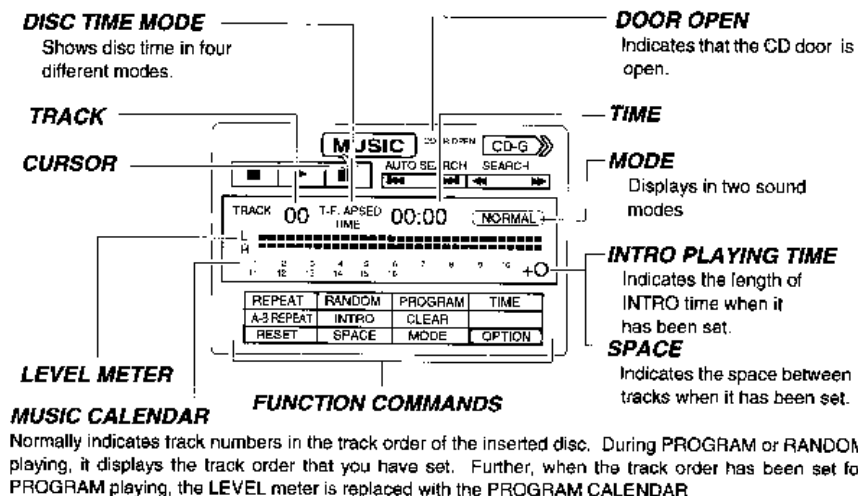
Never take out the cartridge when the power is on as this will cause malfunctioning or damage.

PLAYING CDs (MUSIC)

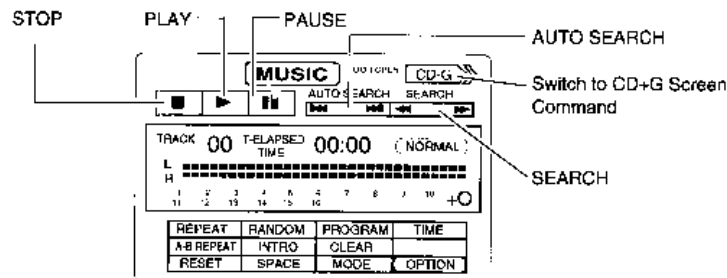
1. Turn on the TV.
2. When inserting a music CD, the "MUSIC" indication is selected.
3. Press **START** on the control pad or press button C to begin playing the CD.
4. When the CD is finished playing, remove the disc from the tray.

Playing JVC X' EYE

CONTROL PANEL DISPLAY



CONTROL PANEL BUTTONS



Playing JVC X' EYE

CONTROL PANEL BUTTONS

- PLAY** When you select [▶] or [MUSIC] and press Button C, the option turns red and play begins.
- PAUSE** When you select [||] 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 [◀◀] (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.

Playing JVC X' EYE

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

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

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

Playing JVC X' EYE

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 or (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

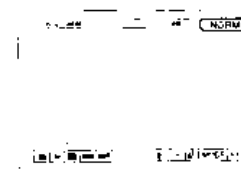
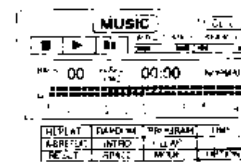
START + Button B: PLAY

START + Button C: PAUSE

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

PLAYING CD+Gs

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



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)

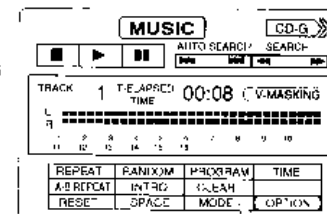
You can change the graphics channel by selecting a desired channel with the direction buttons and pressing Button C. (You can choose from 15 channels.)

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 monaural 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.

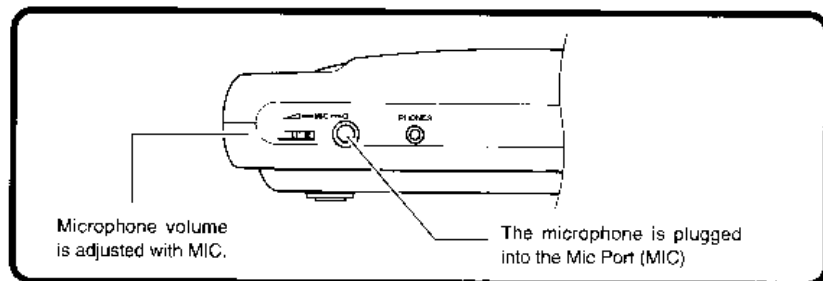
SOME ADVICE:

- 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.

Mic Mixing (Singing along with the music.)

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



JVC X' EYE Hardware information

CPU:		68000 (12.5MHz) 68000 (8MHz) 280A (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 8 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:	0°C - 40°C
	Humidity:	10% - 80% RH
	Custom AC Adaptor:	Input: AC120V ~, 60Hz Output: DC9.5V, 1.5A Elec. consumption: 20W max

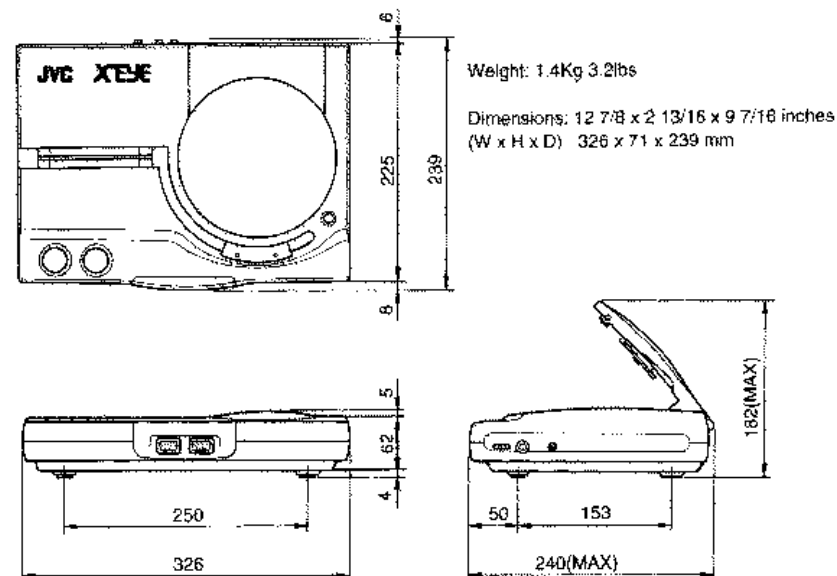
JVC X' EYE Hardware information

Accessories:

AC adaptor (AA-S95U) x 1
Control Pad x 1
RF adaptor (RF-S10U) x 1
Supplied software x 4 (3 types)

Design & specifications subject to change without notice.

Measurements(unit: mm)



Description of ICs

■ MC68HC000 (IC101, 171) : CPU

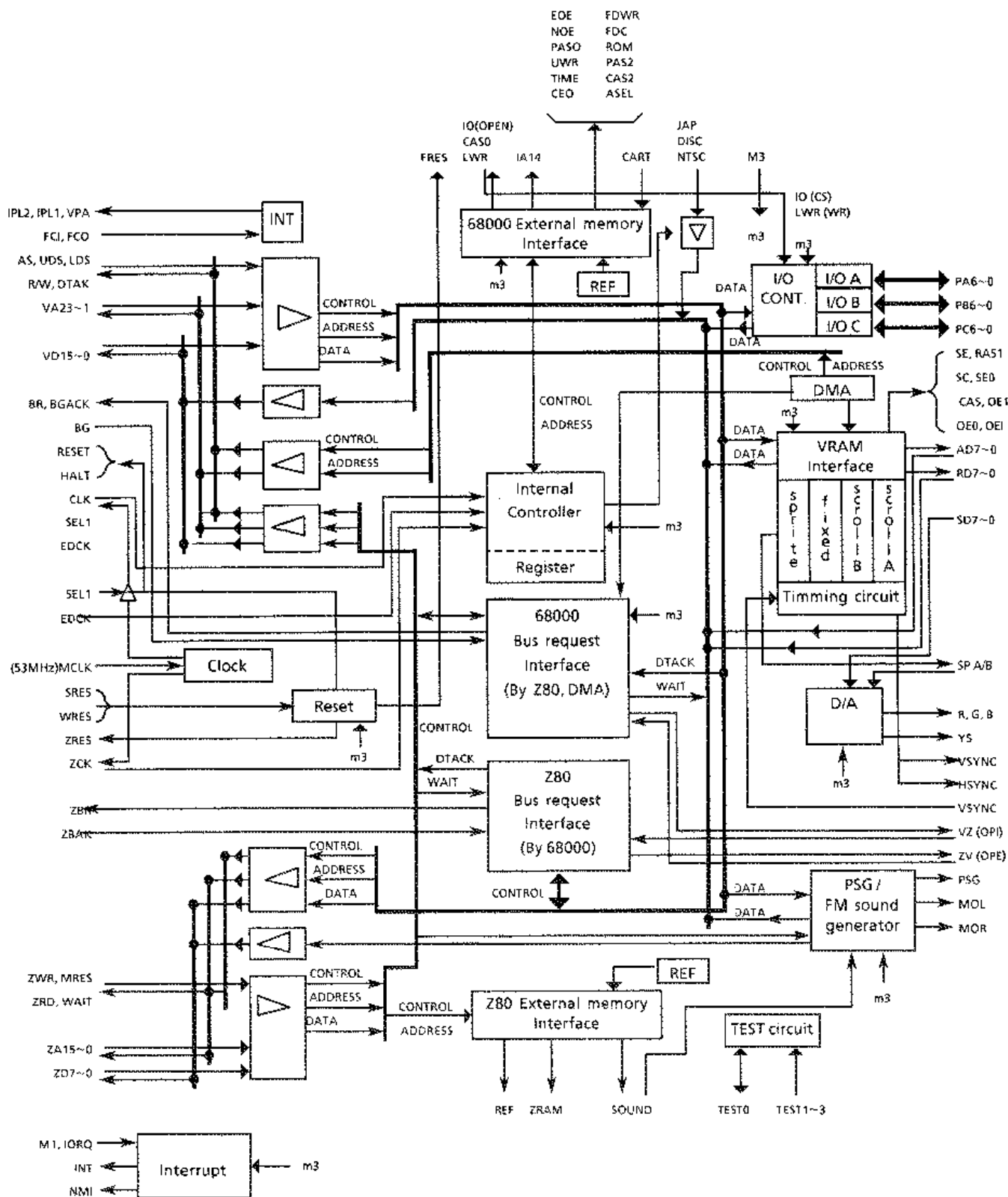
Pin Functions

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	\overline{RW}	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 master, after bus grant is outputted.
27~25	INTERRUPT CONTROL	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 occurred 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 timing 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



3. Pin Functions

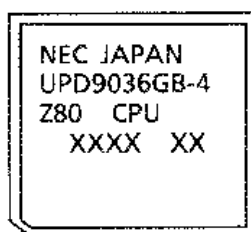
Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
154~176	VA1~VA23	I/O	68000 ADDRESS BUS 68000 DATA BUS	12	RAS1	O	DUAL PORT RAM INTERFACE SIGNALS
137~152	VD0~VD15	I/O		13	CAS1	O	
191	AS	I/O	68000 INTERFACE SIGNALS	16	OE1	O	
192	UDS	I/O		15	WE0	O	
193	LDS	I/O		10	SE0	O	
194	R/W	I/O		14	WE1	O	
195	DTAK	I/O		9	SE1	O	
182	BR	O		11	SC	O	
183	BGACK	I/O		26~33	AD0~AD7	I/O	
184	BG	I		1~8	SD0~SD7	I	
185~186	IPL1~IPL2	O		17~20, 22~25	RD0~RD7	I/O	
47	VPA	O		56	MOL	O	FM
48	HALT	O		55	MOR	O	
49	RESET	O		57	SOUND VDD	—	
50~51	FC0~FC1	I		54	SOUND VSS	—	
130	CLK	I/O		131	SBCR	O	VIDEO + PSG
112~127	ZA0~ZA15	I/O	Z80 ADDRESS BUS	38	VIDEO AVDD	—	
200~207	ZD0~ZD7	I/O	Z80 DATA BUS	34	VIDEO AVSS	—	
187	IORQ	I	Z80 INTERFACE SIGNALS	35	R	O	
188	ZRD	I/O		36	G	O	
189	ZWR	I/O		37	B	O	
190	M1	I		42	CSYNC	I/O	
52	MREQ	I/O		178	PSG	O	
59	ZRES	I/O		177	SOUND VDD	—	
60	ZBAK	I		179	SOUND VSS	—	
61	NMI	O		100~106	PA0~PA6	I/O	JOY PAD INTERFACE
62	ZBR	I/O		93~99	PB0~PB6	I/O	
63	WAIT	I/O		85~91	PC0~PC6	I/O	
181	INT	O		81	TEST 0	I/O	TEST SIGNAL TEST SIGNALS
132	ZCLK	I/O		82~84	TEST 1-3	I	
199	RAS0	O	P-SRAM INTERFACE	111	IO	I/O	NOT USED
64	EOE	O		110	VZ	I/O	
196	UWR	O		109	ZV	I/O	
65	NOE	O		58	SOUND	I/O	
197	LWR	I/O	SRAM INTERFACE	44, 80, 136, 208	VDD	—	POWER SUPPLY
66	ZRAM	O		21, 53, 92, 133, 153, 180	VSS	—	
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					

■ Z80 (IC181) : CPU for FM sound generator

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

Pin Functions

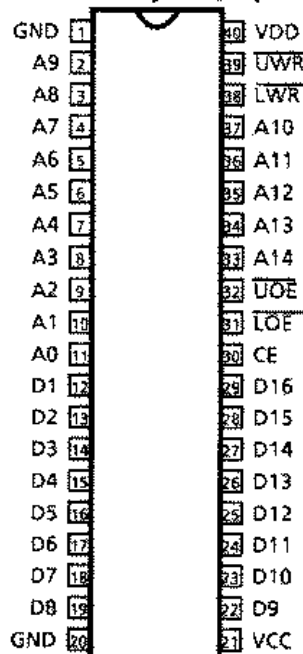
Pin No.	Symbol	I/O	Function
27~44	ZA0~ZA15	O	Address select lines. These lines are normally used to select the port and/or control registers.
9, 10, 7, 3, 2 4, 5, 8	ZZD0~ZD7	I/O	Data bus, bidirectional. 3-state. This bus is used to transfer data between the cpu and the peripheral device.
23	$\overline{\text{ZRES}}$	I	A low on this line resets the CPU.
13	$\overline{\text{NMI}}$	I	This is interrupt request signal which is prior to ZINT.
22	$\overline{\text{ZBR}}$	I	This is inputted when peripheral controllers wants to control data and address bus, memory request, I/O request, read and write. ZBR is prior to NMI.
21	$\overline{\text{ZWAIT}}$	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	$\overline{\text{ZINT}}$	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	$\overline{\text{ZRD}}$	O	The CPU asserts this terminal to read data.
19	$\overline{\text{ZWR}}$	O	The CPU asserts this terminal to write data.
24	$\overline{\text{MT}}$	O	The state of the CPU is presented.
15	$\overline{\text{MREQ}}$	O	The CPU output this memory request signal to read and write data.
16	$\overline{\text{IREQ}}$	O	The CPU outputs this I/O request signal to read and write data.
20	$\overline{\text{ZBAK}}$	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	$\overline{\text{RFSH}}$	--	Non connection
14	HALT	--	Non connection



■ 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)



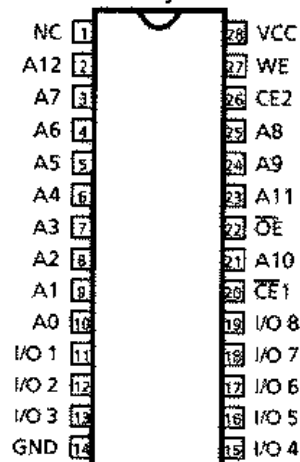
Pin Functions

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 inputted, 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



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)

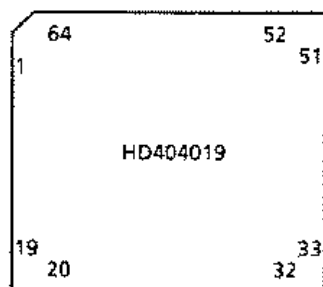
SC	1	40	VSS1
SIO1	2	39	SIO8
SIO2	3	38	SIO7
SIO3	4	37	SIO6
SIO4	5	36	SIO5
DT/OE	6	35	SE
WIO1	7	34	WIO8
WIO2	8	33	WIO7
WIO3	9	32	WIO6
WIO4	10	31	WIO5
VCC1	11	30	VSS2
WB/AWE	12	29	NC
NC	13	28	NC
RAS	14	27	CAS
NC	15	26	NC
NC	16	25	A0
A6	17	24	A1
A5	18	23	A2
A4	19	22	A3
VCC2	20	21	A7

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/AWE 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/AWE	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/AWE is high level at the falling edge of RAS, picture data is transformed from RAM to SAM, and from SAM to RAM when WB/AWE 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 row 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 timing, 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

■ 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)

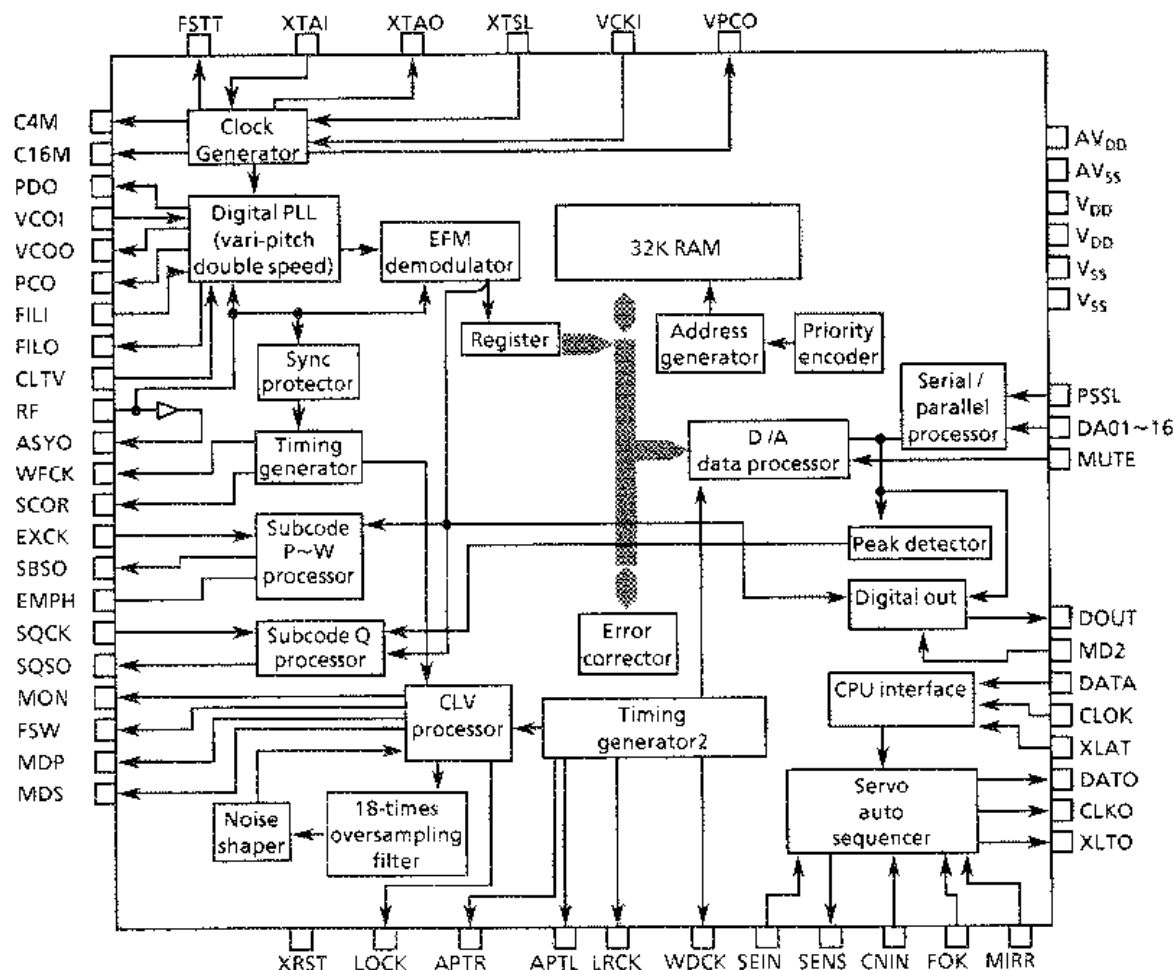
■ CXD2500BQ(IC601) : Digital Signal Processor

1. Outline

The CXD2500BQ is a digital signal processing 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)

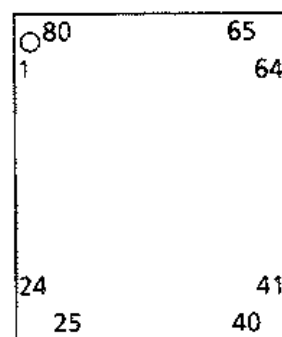
3. Block Diagram



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- μ s periods using a crystal oscillator.
- C2PO is a signal to indicate a data error.
- XRAOF is a signal issued when a jitter margin of $\pm 28F$ is exceeded by the 32K RAM.

2. Terminal Layout



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. $f_c = 16.9344\text{MHz}$.
18	FILO	O	Output of filter for master PLL (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 complements, 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	SOCK	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	CLOCK	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

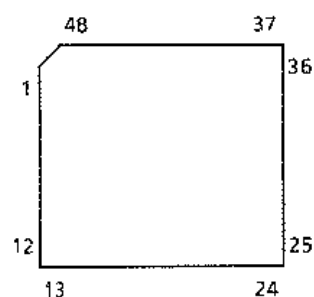
1. Outline

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

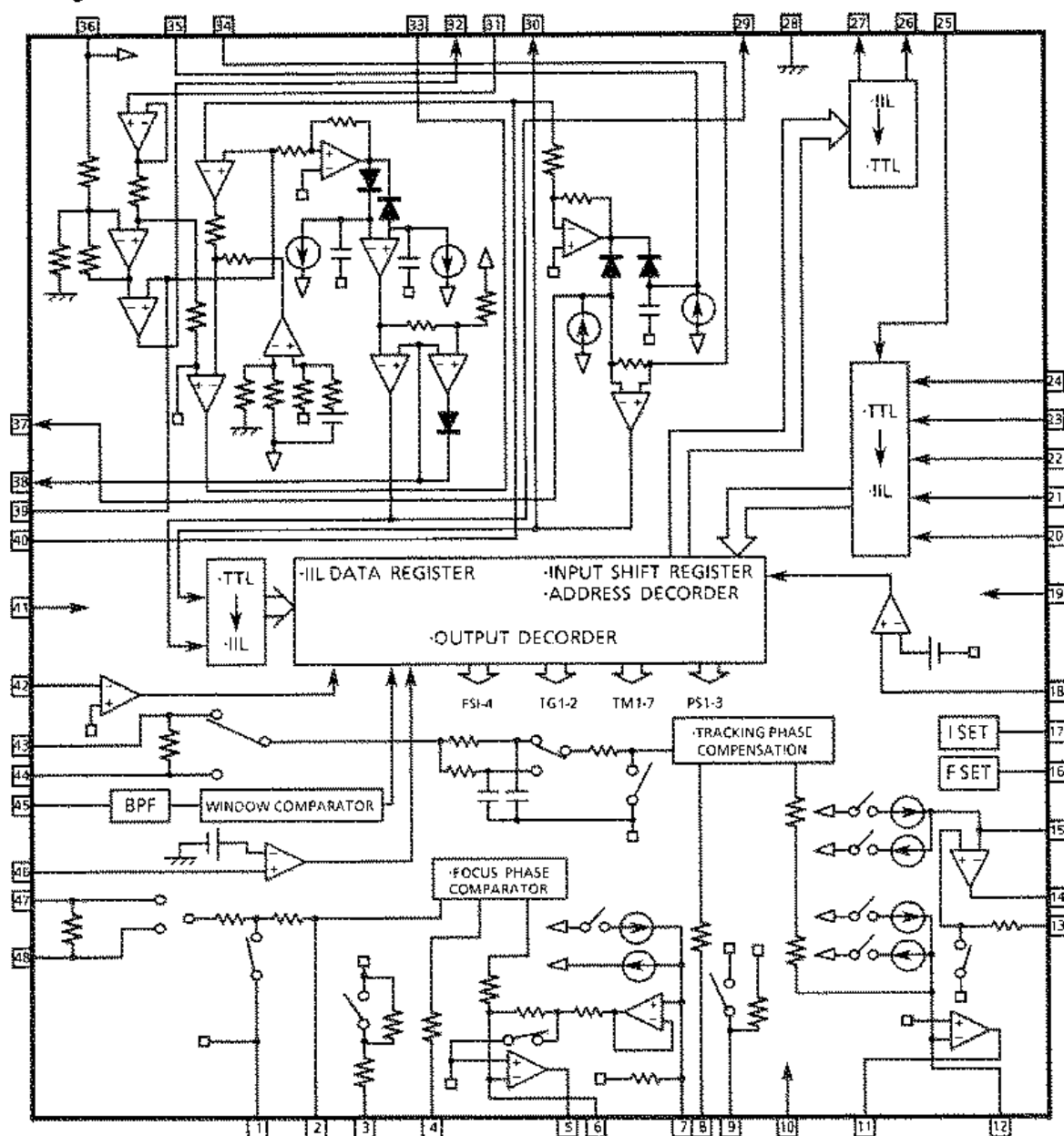
2. Functions

- 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



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 47kΩ pull-up resistor.
27	LOCK	I	At "L" feed runaway prevention circuit operate. Contains a 47kΩ pull-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.

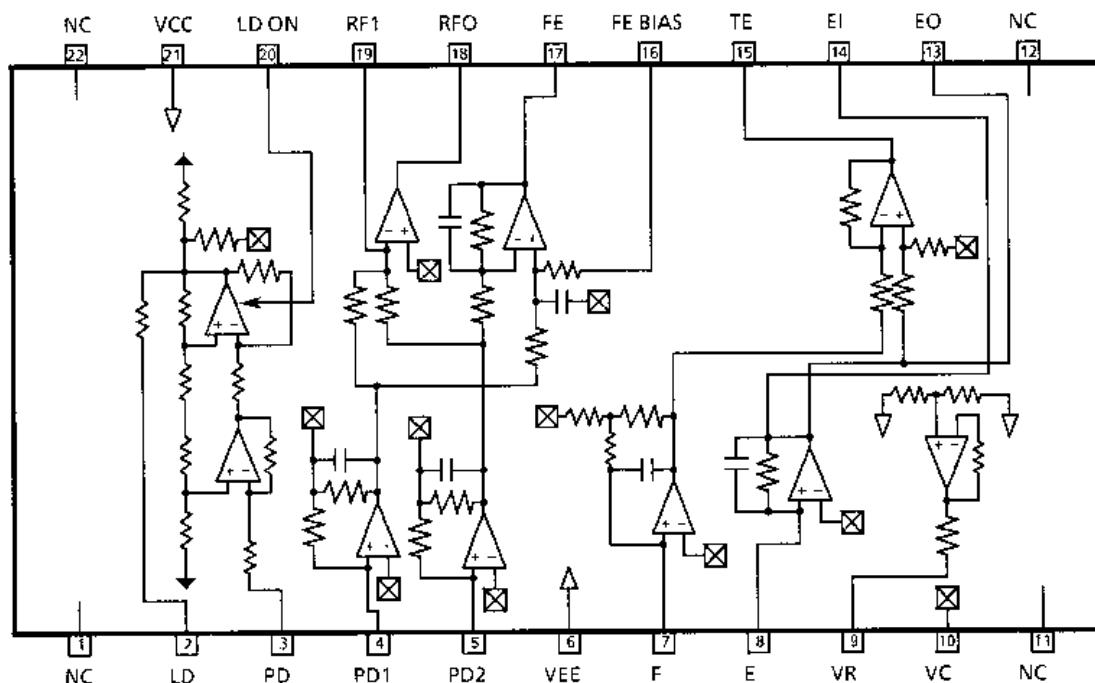
■ CXA1571M(IC501) : RF AMP for compact disc

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

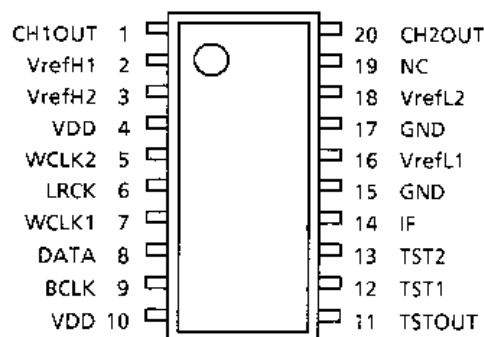


3. Pin Functions

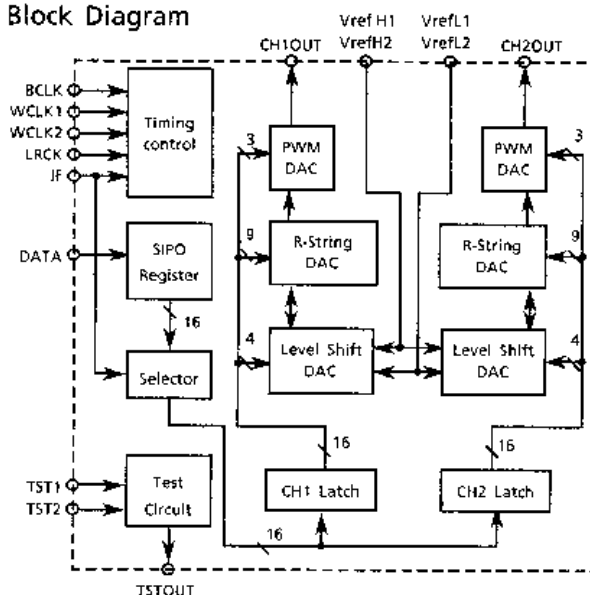
Pin No.	Symbol	I/O	Function
1	LD	O	APC amp output pin.
3	PD	I	APC amp input pin.
4	PD1	I	RF I-V amp inverted input pins; they are connected to the A + C and B + D pins of the photodiode and receive current input.
5	PD2	I	
7	F-IN	I	F and E I-V amp inverted input pin; they are connected to Photodiodes F and E and receive current input.
8	E-IN	I	
9	VR	O	$(VCC + VEE) / 2$ DC voltage output pin.
10	VC	I	VC intermediate voltage input pin; when dual $\pm 5V$ 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	RFO	O	RF amp output pin.
19	RF I	I	RF inverted side input pin; the resistor connected between this pin and the RFO pin determines the gain of the RF amp.
20	LD-ON	I	This pin switches the APC amp on / off: on for VCC, off for ground.

■ LC7881M (IC711) : D/A converter

1. Terminal Layout



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 CH2 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 data from the MSB side with the bit serially. When IF is "Low", it inputs the data from 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 from the MSB first. When it is "Low" level, Digital audio data is inputted by each bit serially from 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

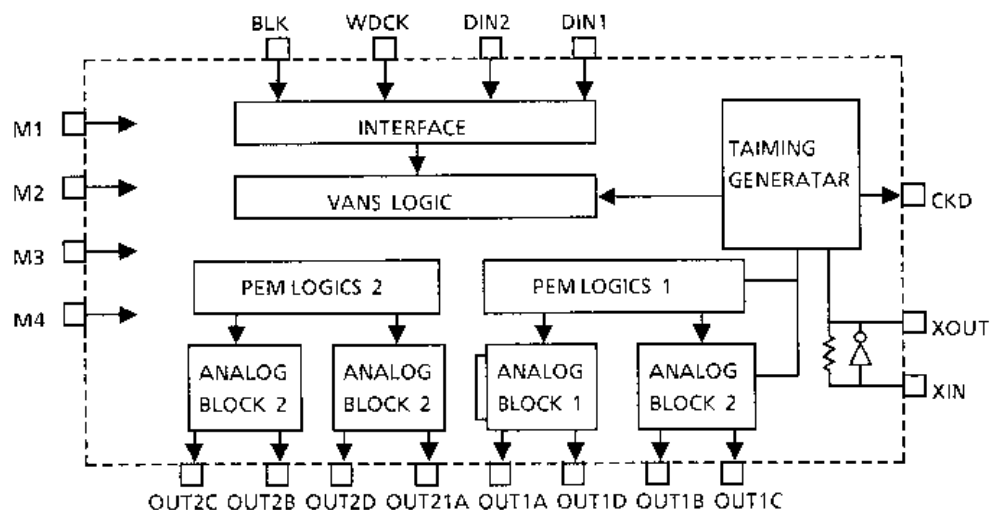
1. Terminal Layout

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

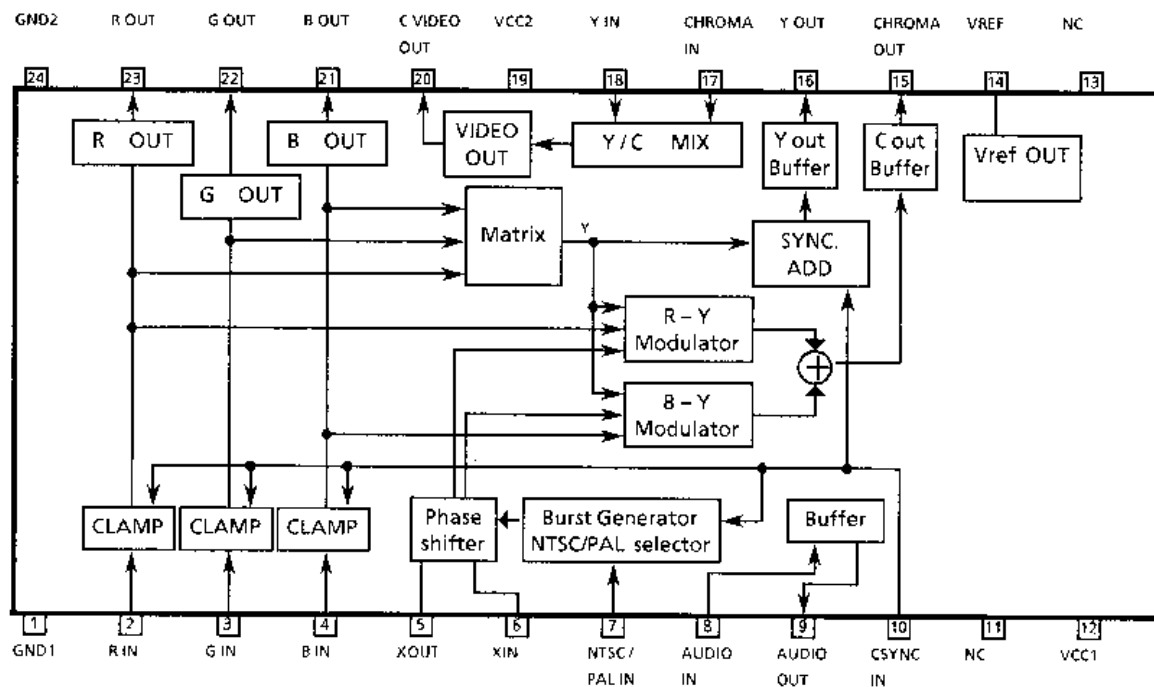


■ CXA1145M(IC221) : RGB Encoder

1. Outline

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

2. Block Diagram

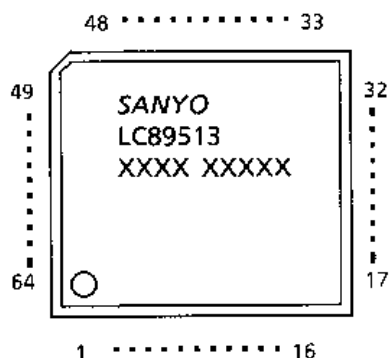


3. Pin Functions

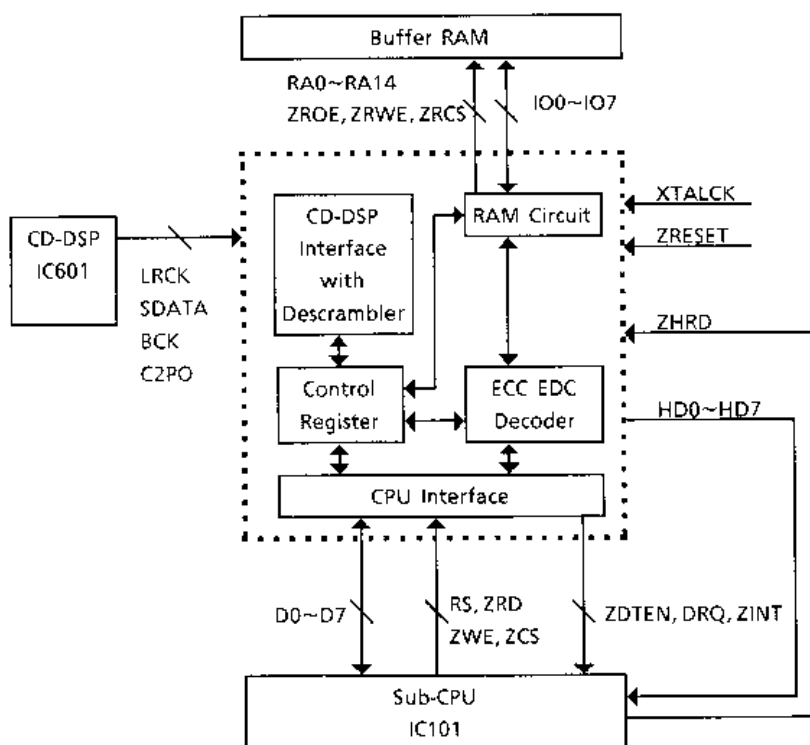
Pin No.	Symbol	I/O	Function
1	GND1	--	GND for the circuits except RGB out and composite out circuits. (Except for load driver)
2	R IN	I	Red signal input
3	G IN	I	Green signal Input
4	B IN	I	Blue signal input
5	X OUT	--	A capacitor is connected to shift phase
6	X IN	I	Sub carrier input
7	NTSC/PAL IN	I	(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	CHROMA OUT	O	Chroma signal is outputted.
16	Y OUT	O	Y signal is outputted.
17	CHROMA 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



2. Block Diagram



3. Pin Functions

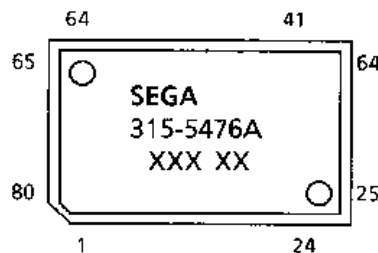
Pin No.	Symbol	I/O	Function
1, 9, 17, 33, 49	VSS	--	GND
24, 56	VDD	--	Power supply
2~8, 10~16, 18	RA0~RA14	O	Address bus. These are used to select the specified address of the external memory (Data buffer RAM).
19	RCE	O	Chip select signal. This signal is asserted when using external RAM.
20	RWE	O	Write 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 occurred 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	IO0~IO7	I/O	Data bus. These are used to transfer data between external RAM and LC89513.

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

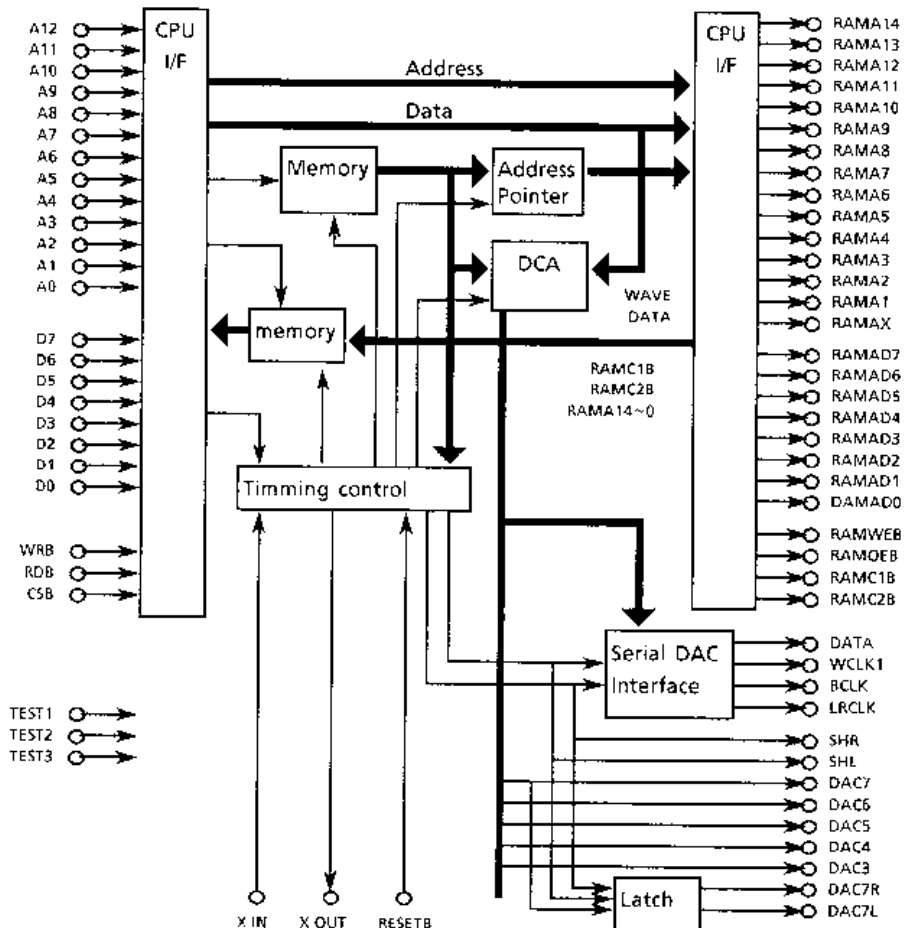
1. Outline

This ic is for PCM sound generator system, including DCO(Digital control oscillator) and DCA5 (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

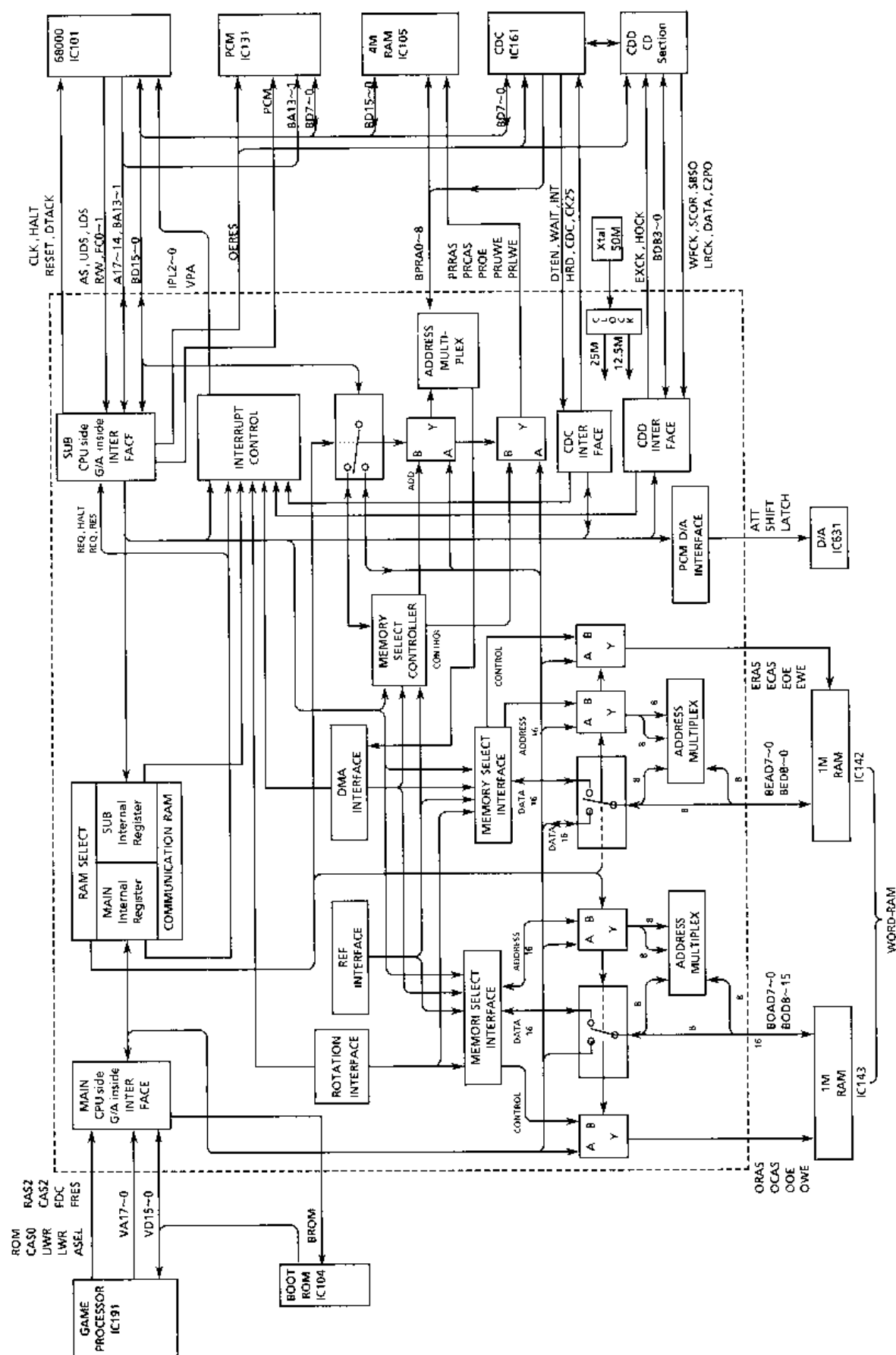


4. Pin Functions

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	RAMA14~RAMA8	O	RAMA14~RAMA8 are used to address upper 8 bits of external memory.
73~76	RAMA7~RAMA0	O	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

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 communicate 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 \$3FFFFFF, 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 attenuator and mode flag register
69	DTM	O	Audio data output

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 pin27).
124	IPL1	O	Interrupt control signal for sub CPU (IC101 pin26).
125	IPL2	O	Interrupt control signal for sub CPU (IC101 pin25).
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 pin15) and PCM sound controller (IC131 pin70).
84	50M	I	Master clock input.
64	LEDR	O	LED indication signal.
65	LEDG	O	LED indication signal.

■ 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
\overline{UW}	12	29	\overline{CAS}
\overline{LW}	13	28	\overline{OE}
\overline{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	\overline{UW}	I	This signal is inputted when writing upper bytes of data.
13	\overline{LW}	I	This signal is inputted when writing lower bytes of data.
14	\overline{RAS}	I	Row address strobe signal input.
28	\overline{OE}	I	Output enable signal input
29	\overline{CAS}	I	Column address strobe signal input.

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

Terminal Layout

NC	1	40	VDD
\overline{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
\overline{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	\overline{CE}	I	Chip enable signal input.
20	\overline{OE}	I	Output enable signal input.
1, 38, 39	NC	--	Non connection

■ LC33832M-70X (IC162) : Psevd 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	$\overline{OE}/\overline{RFSH}$
A2	8	21	A10
A1	9	20	\overline{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	\overline{CE}	I	Chip enable signal input.
22	$\overline{OE}/\overline{RFSH}$	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

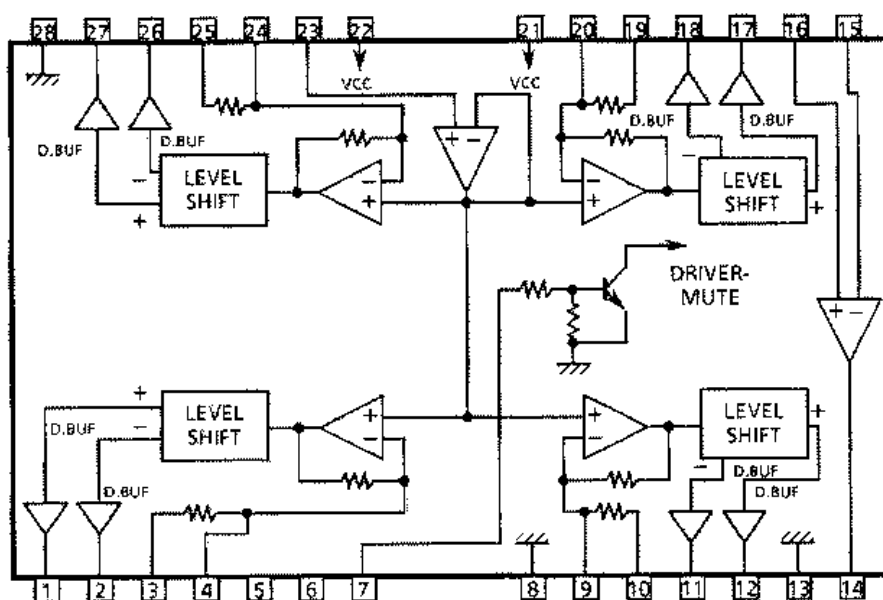
Pin No.	Symbol	I/O	Function
1, 6, 20	VCC	--	Power supply
21, 35, 40	VSS	--	GND
2~5, 7~10, 31~34, 36~39	DQ0 ~DQ15	I/O	Data input/output bus.
16~19 22~26	A0 ~A8	I	Address bus input
12	LWE	I	This signal is inputted when writing lower bytes of data.
13	UWE	I	This signal is inputted when writing upper bytes 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 Driver

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

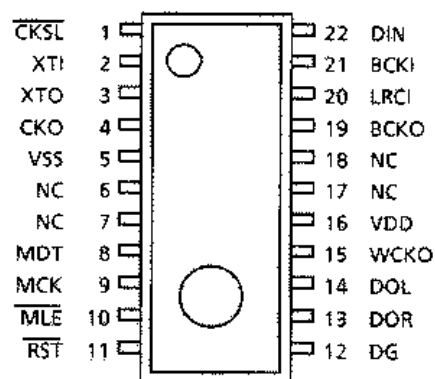


3. Description

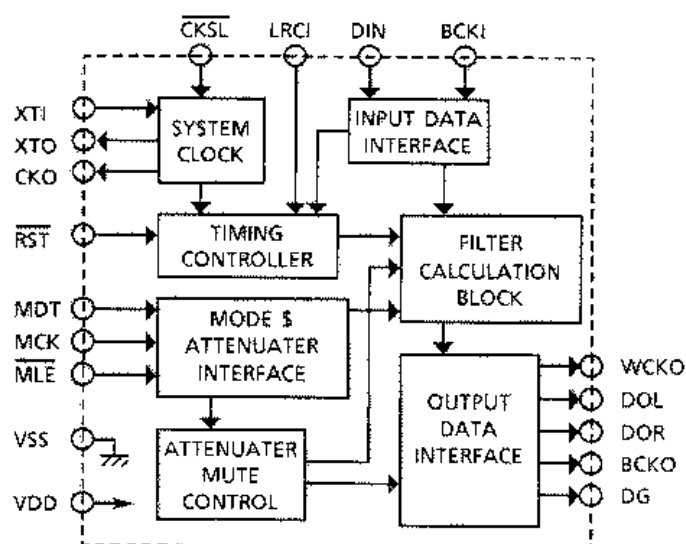
Pin No.	Symbol	I/O	Description
1	CH1-OUT A	O	Focus drive output
2	CH1-OUT B	O	
3	CH1-IN A	I	Focus drive input
4	CH1-IN B	—	Non connection
5,6	NC		
10	CH2-IN A		
19	CH3-IN A		
24	CH4-IN B		
7	MUTE	I	Mute signal input pin
9	CH2-IN B	I	Spindle motor drive input
20	CH3-IN B	I	
25	CH4-IN A	I	Tracking drive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

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

1. Terminal Layout



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

$\overline{\text{RFSH}}$	1	32	VCC
NC	2	31	A15
A14	3	30	C5
A12	4	29	R/W
A7	5	28	A13
A6	6	27	A8
A5	7	26	A9
A4	8	25	A11
A3	9	24	$\overline{\text{OE}}$
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	$\overline{\text{CE}}$	I	Chip Enable
24	$\overline{\text{OE}}$	I	Output Enable
1	$\overline{\text{RFSH}}$	I	Refresh Input
29	R/W	I	Read / write Signal Input

Disassembly Procedures

■ Top cover

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

■ Holder L (Fig.3)

1. The spring is hung to part ③.
2. Take off 2 screws ②.
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.
4. The other arm is removed.

■ Main P.C.Board

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

■ CD mechanism assembly

1. Take off a screw ⑥ securing the CD mechanism assembly.
2. Remove each wire from J501 and J502.
3. Remove the CD mechanism assembly from the insulator.

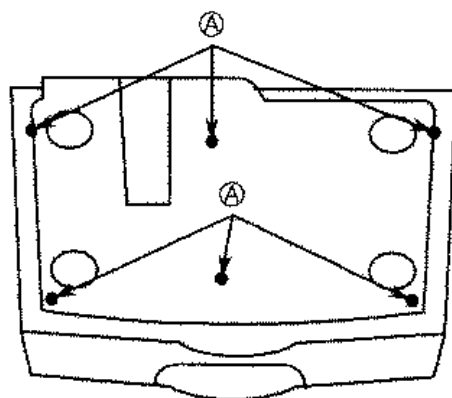


Fig.1 Bottom view

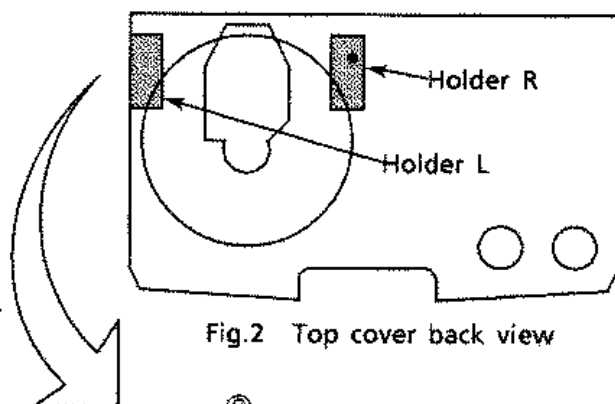


Fig.2 Top cover back view

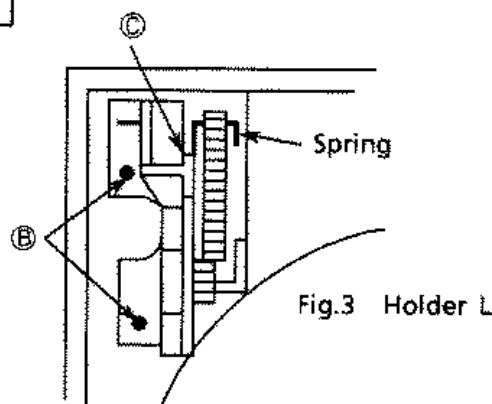


Fig.3 Holder L

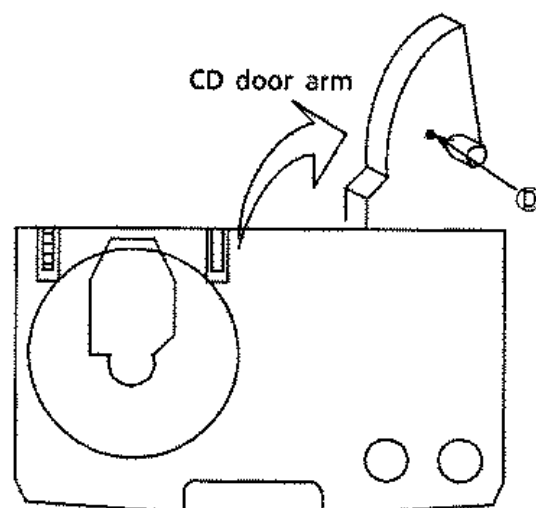


Fig.4 Top cover back view

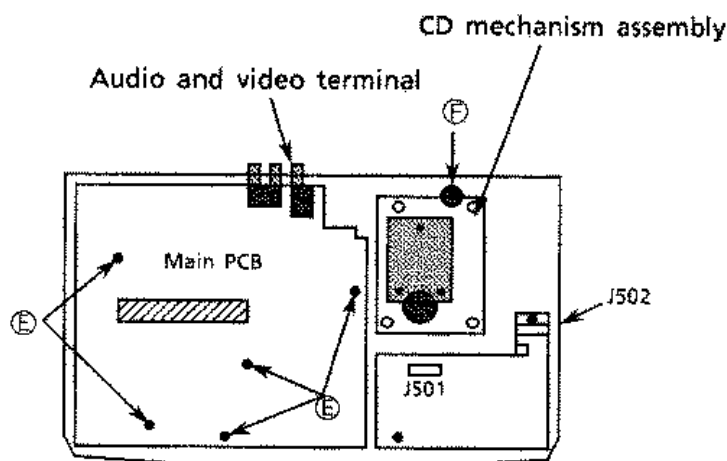


Fig.5 RG-M10BU inside view

■ Clamper ass'y

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

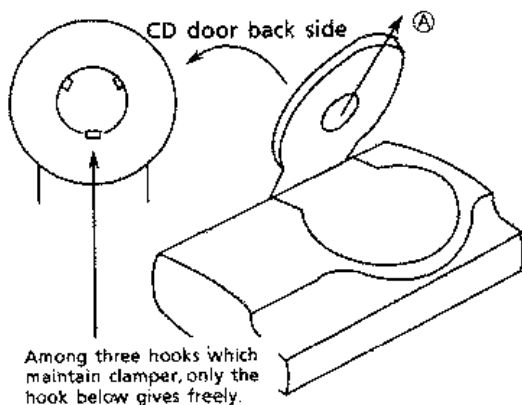


Fig.6

■ 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.

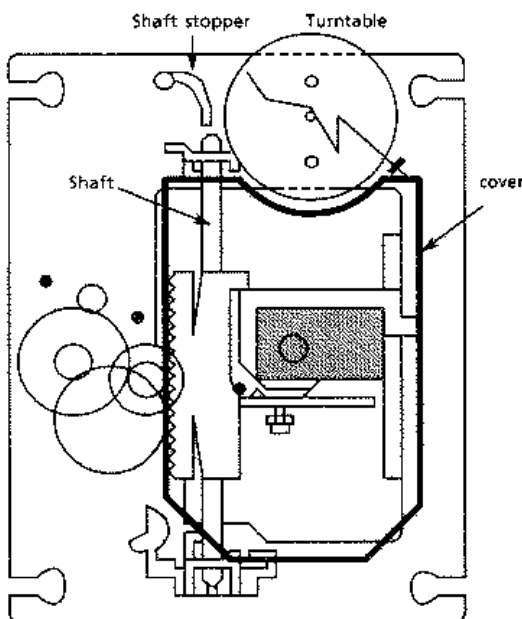


Fig.7 CD mechanism assembly

■ 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.

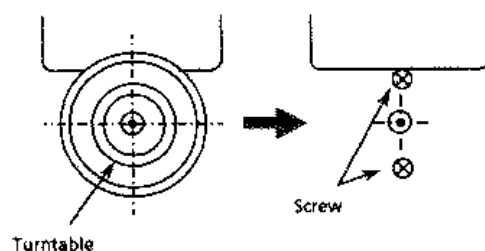


Fig.8

■ 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 $19.4 \pm 0.1\text{mm}$.

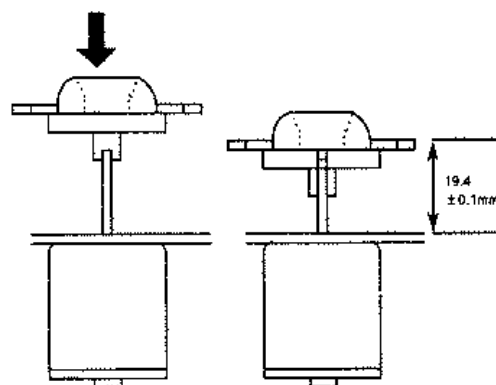


Fig.9

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).

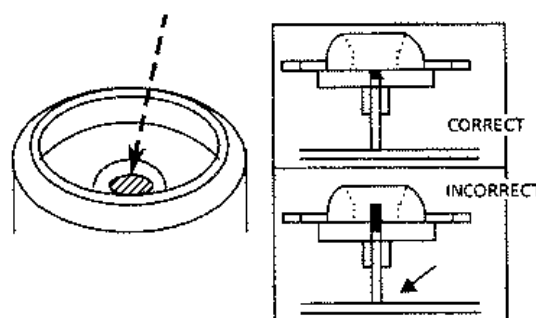


Fig.10

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 arrow 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 $0 \pm 10\text{mV}$.

2) EF balance

- ① Connect TP501 pin6 (TEST) with TP501 pin7 (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 $0 \pm 0.05\text{V}$.

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.

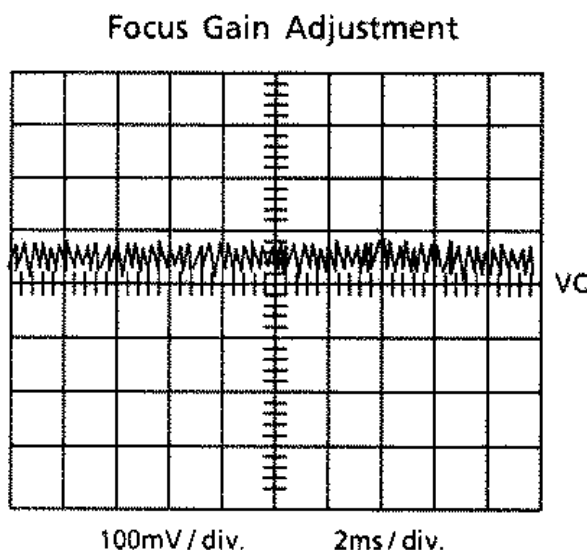


Fig. 1

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.

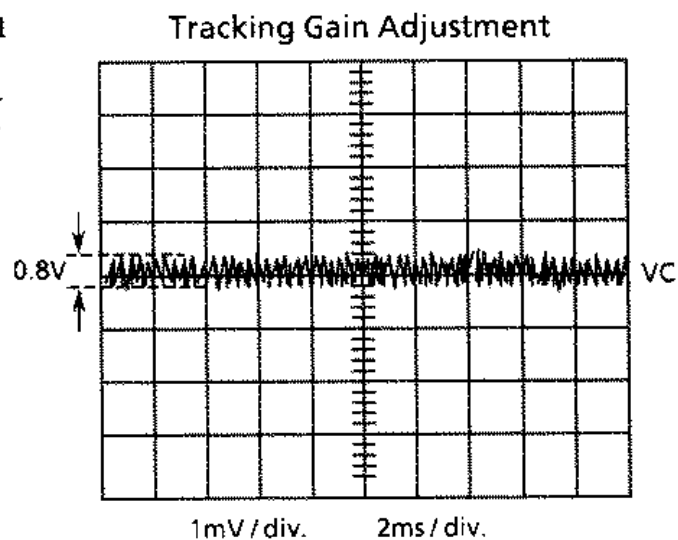


Fig. 2

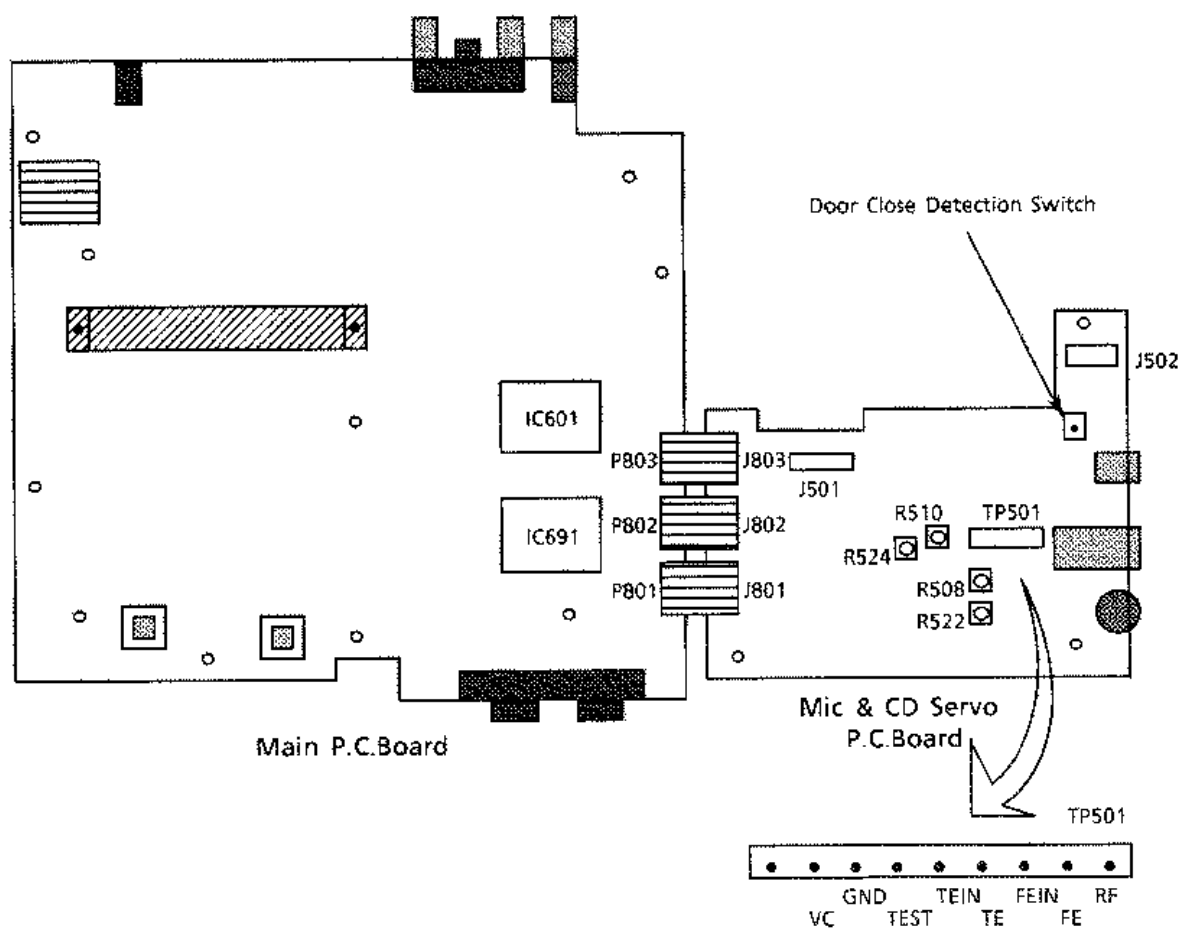
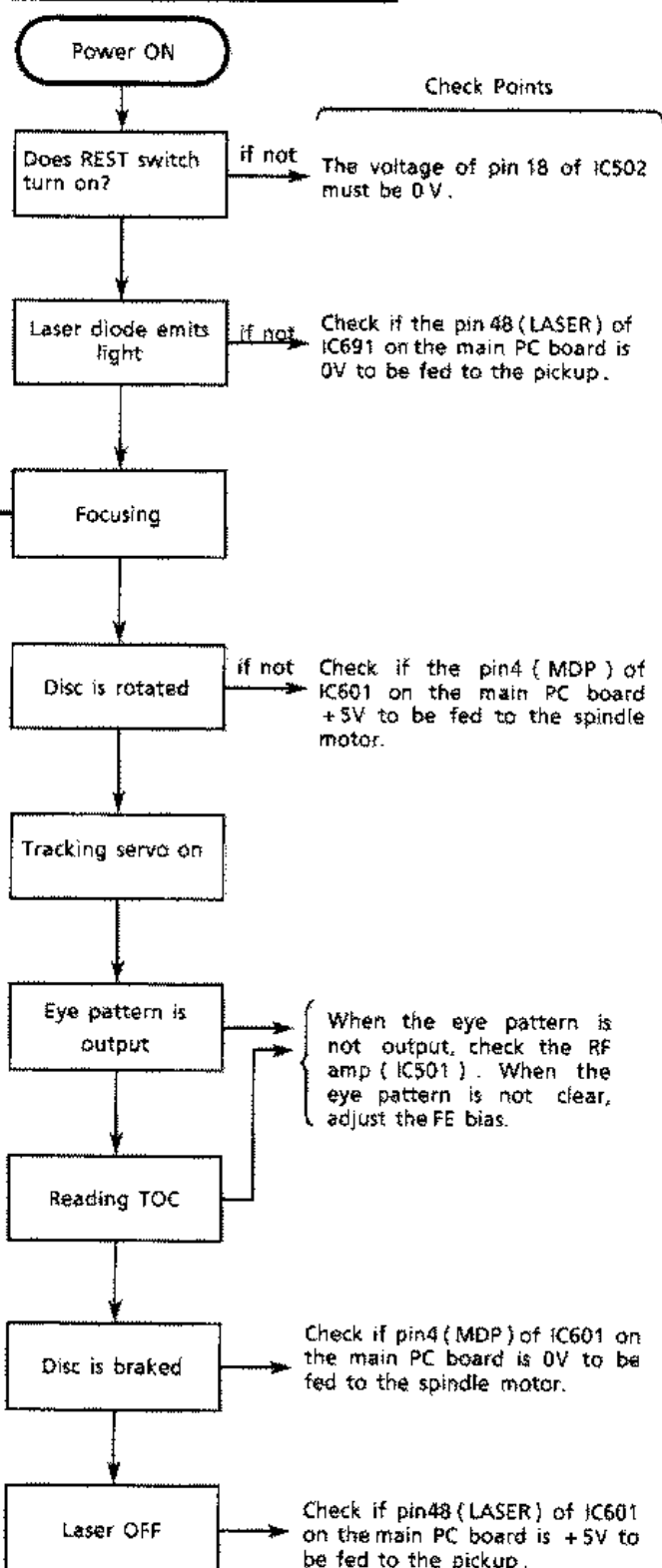
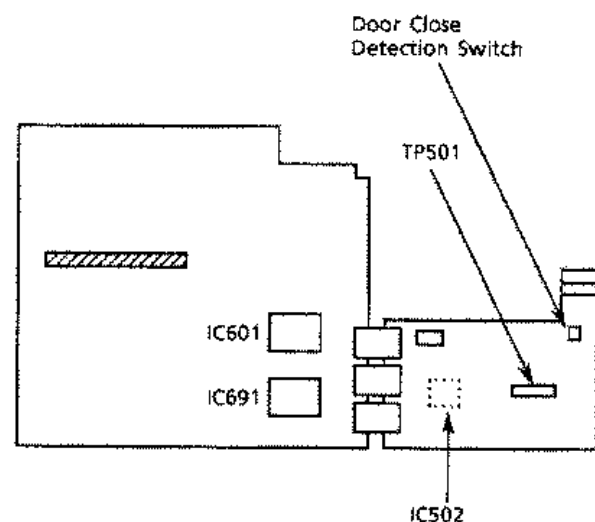
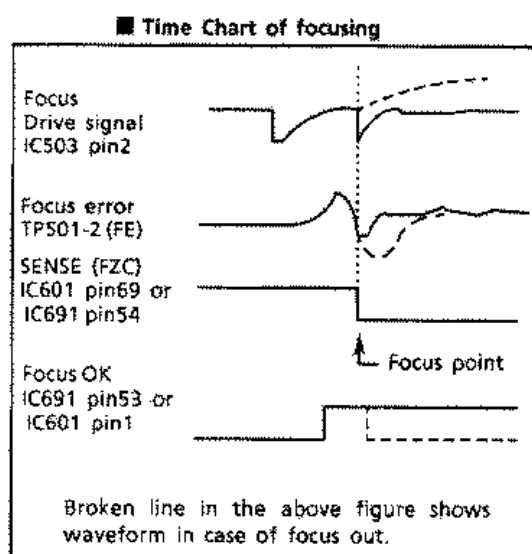


Fig.3

Flow of Functional Operation Until TOC is Read



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.

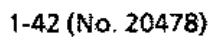
Adjust focus gain.

Adjust tracking gain.

Check the eye-pattern at TP501 pin1(RF)

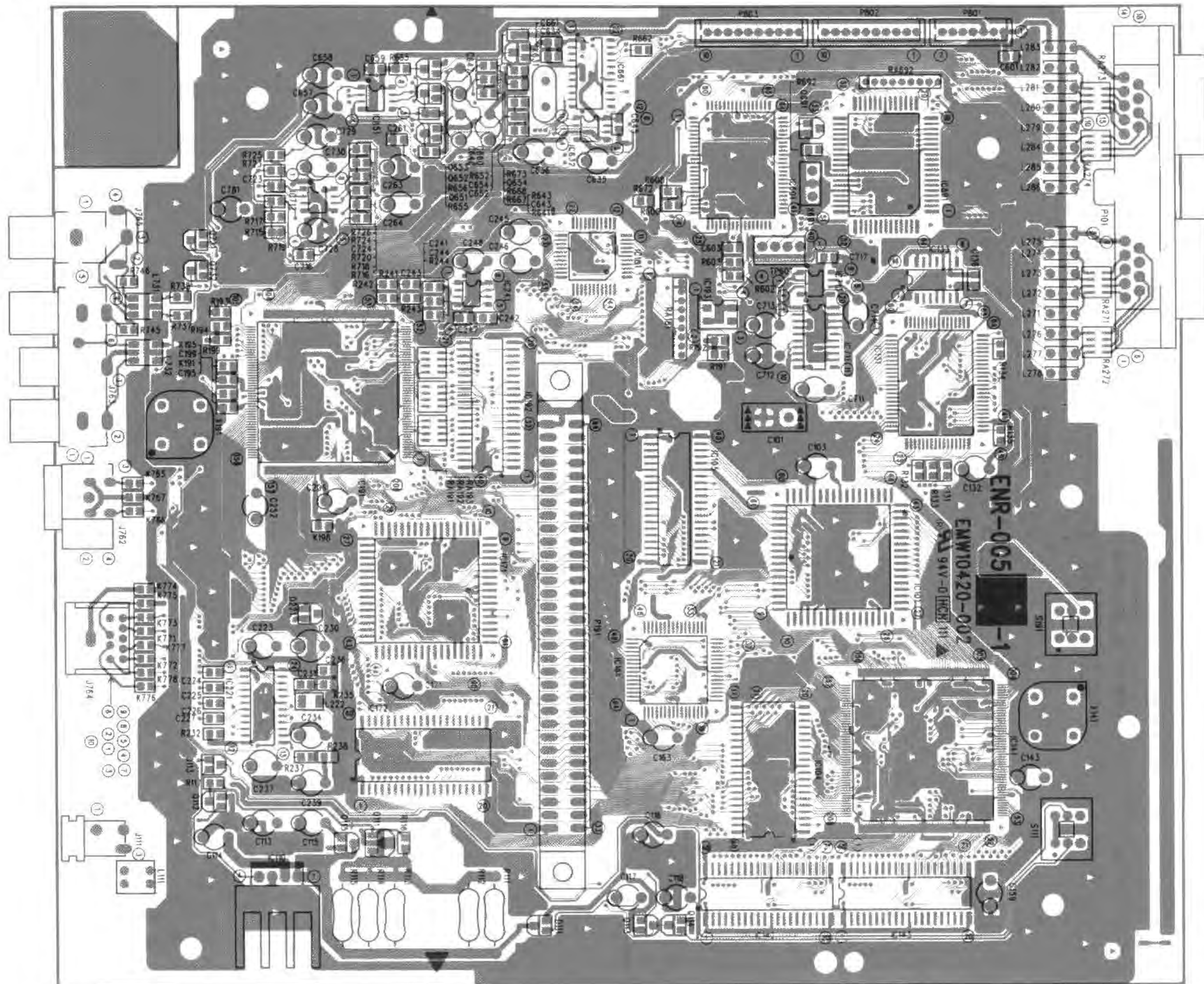
Finish.

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

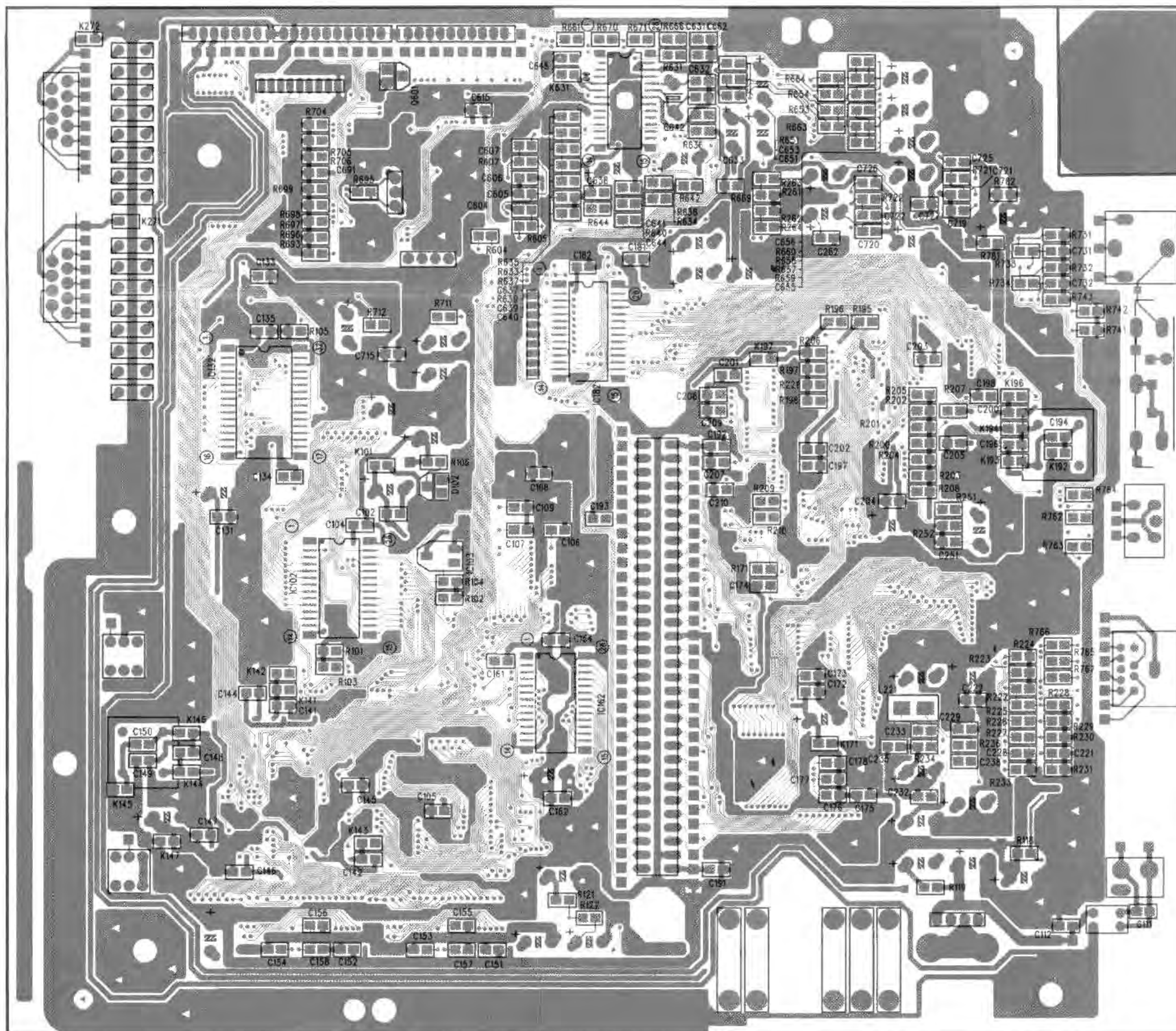


Printed Circuit Boards

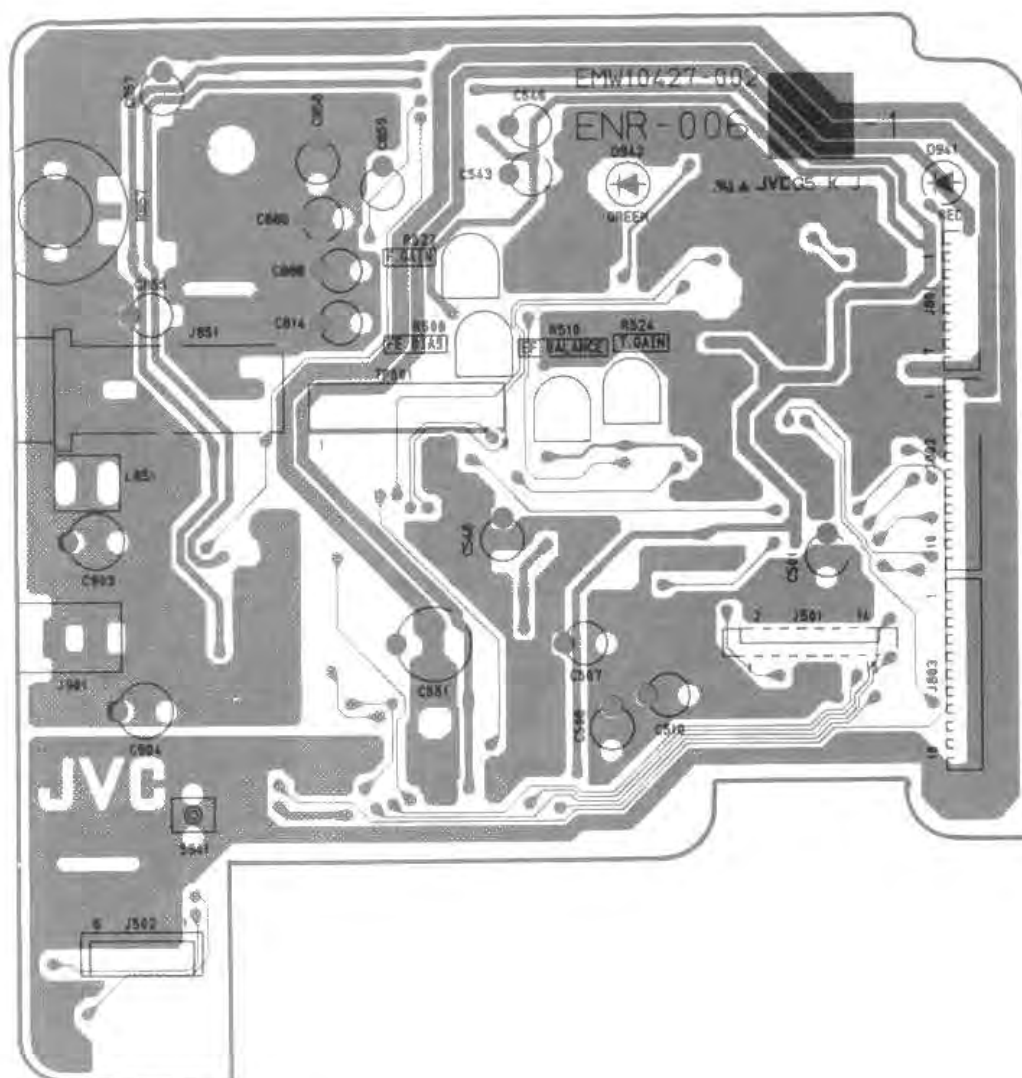
■ Main & DSP P.C.Board (ENR-005)
Front side



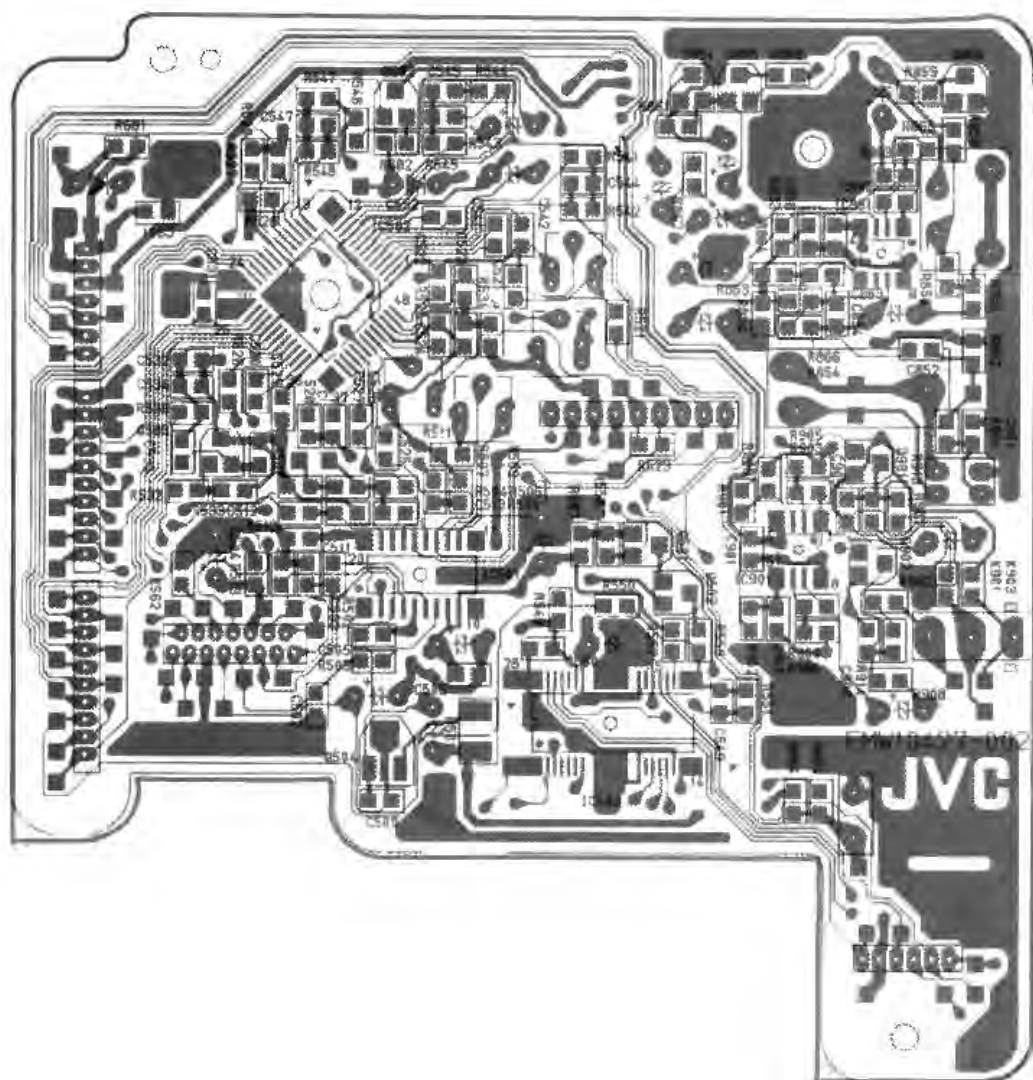
■ Main & DSP P.C.Board (ENR-005)
Back side



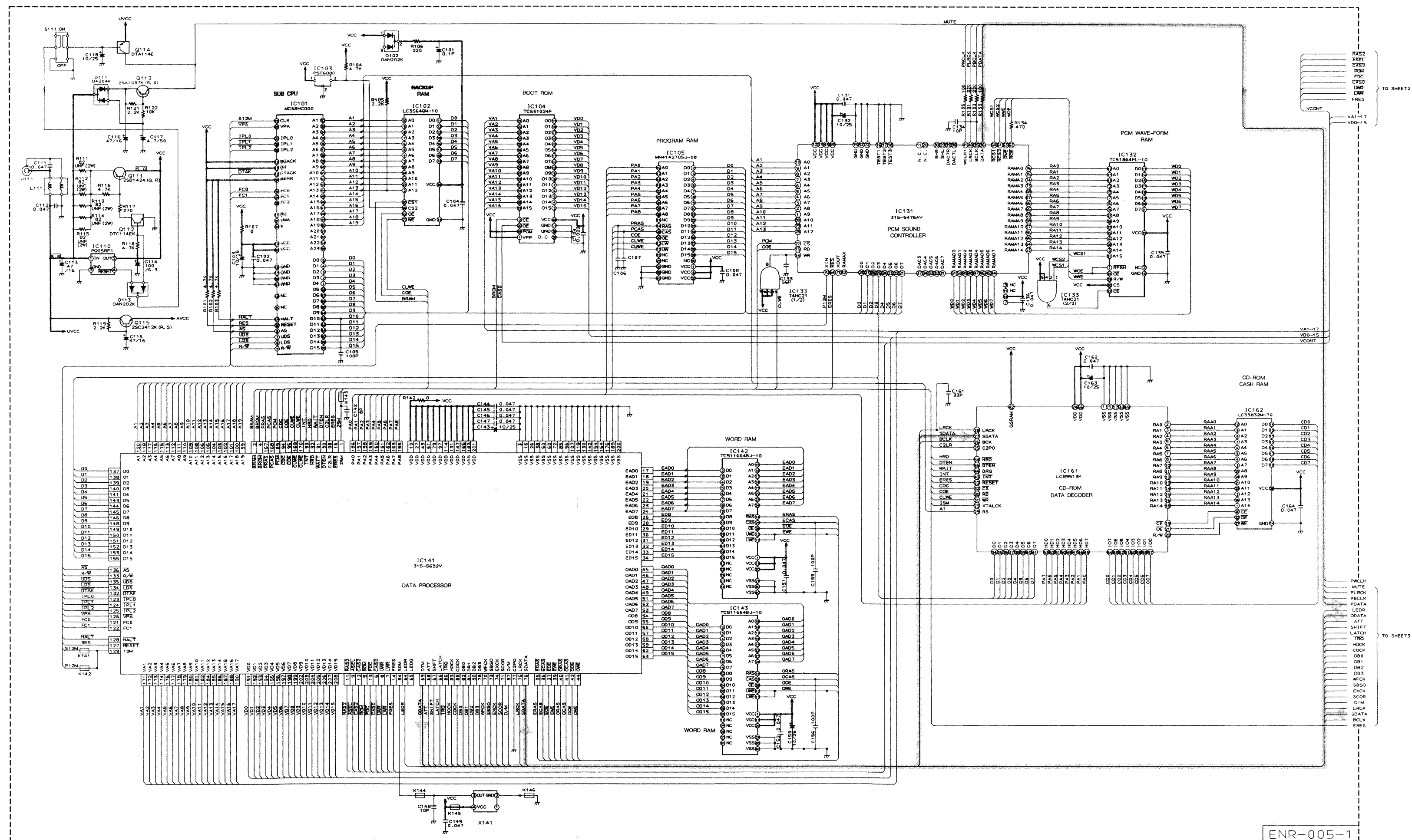
■ Mic, Headphone & CD Servo P.C.Board (ENR-006)
Front side



■ Mic, Headphone & CD Servo P.C.Board (ENR-006)
Back side



(1) Sub CPU & Data Processor Section



Notes:

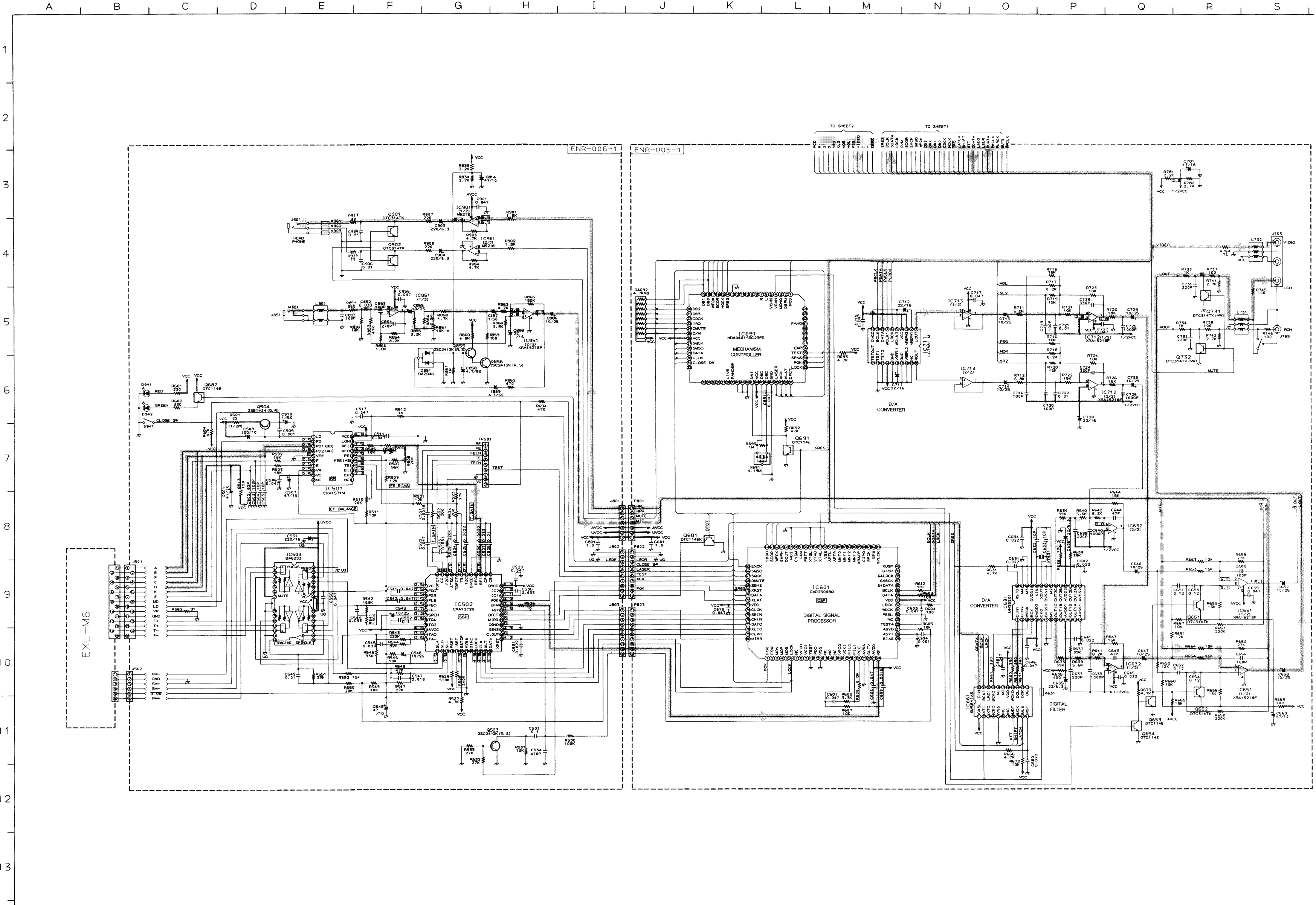
1. — indicates +B power supply.
2. indicates CD PLAY signal path.
3. indicates Mic signal path.
4. indicates PCM sound signal path.
5. indicates VIDEO signal path.
6. This is the standard circuit diagram.

The design and contents are subject to change without notice.

1-48 (No.20478)





(3) CD & Digital Signal Processor Section



PARTS LIST

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

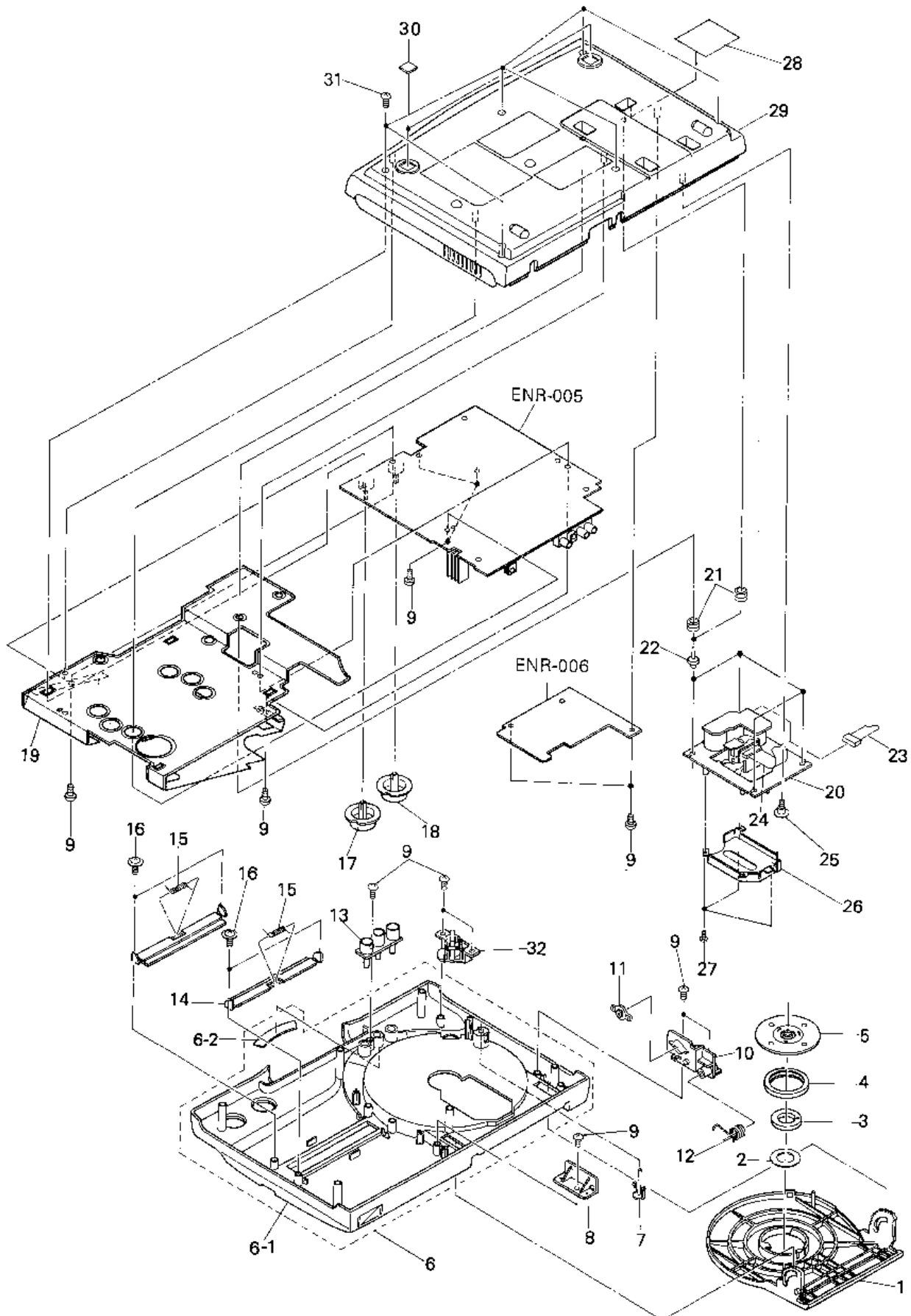
Contents

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General Exploded View and Parts List

Symbol No.

M	1	M	M
---	---	---	---



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.

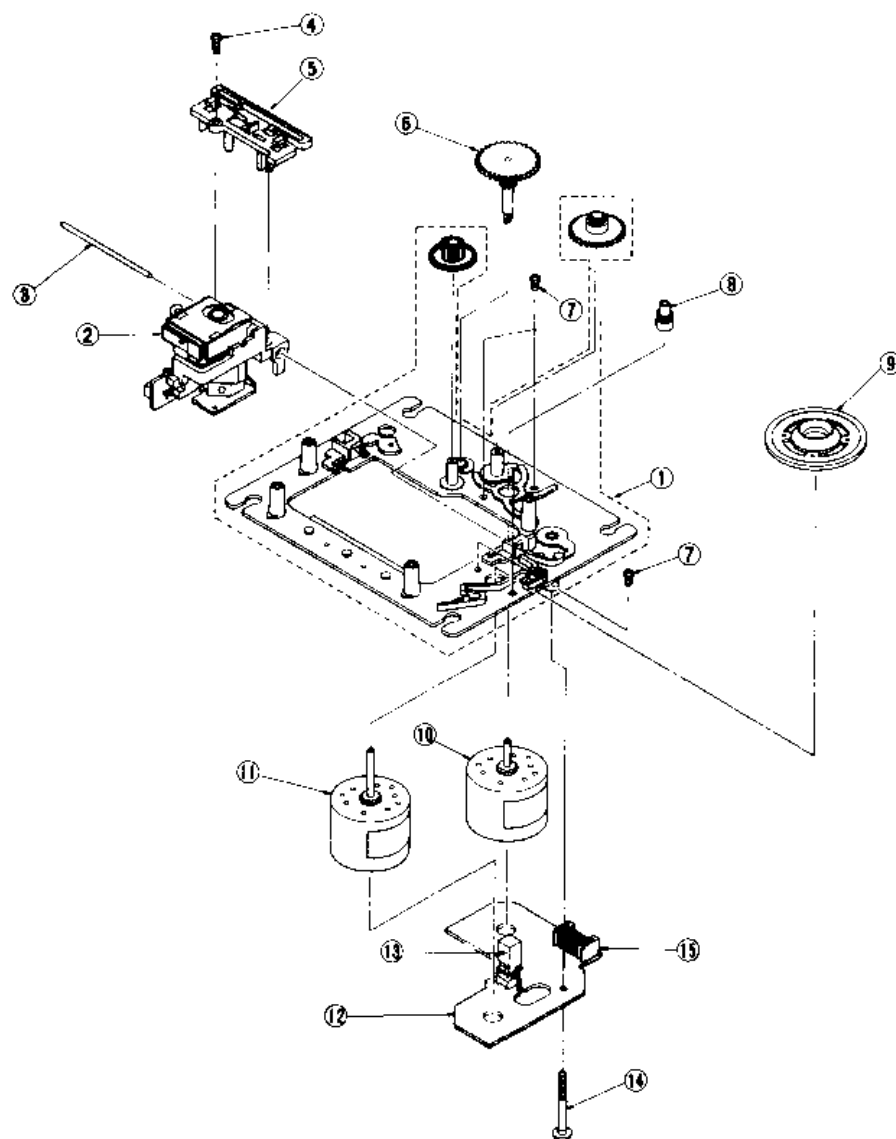
C Canada

No mark indicates all area.

CD Mechanism Ass'y and Parts List

Symbol No.

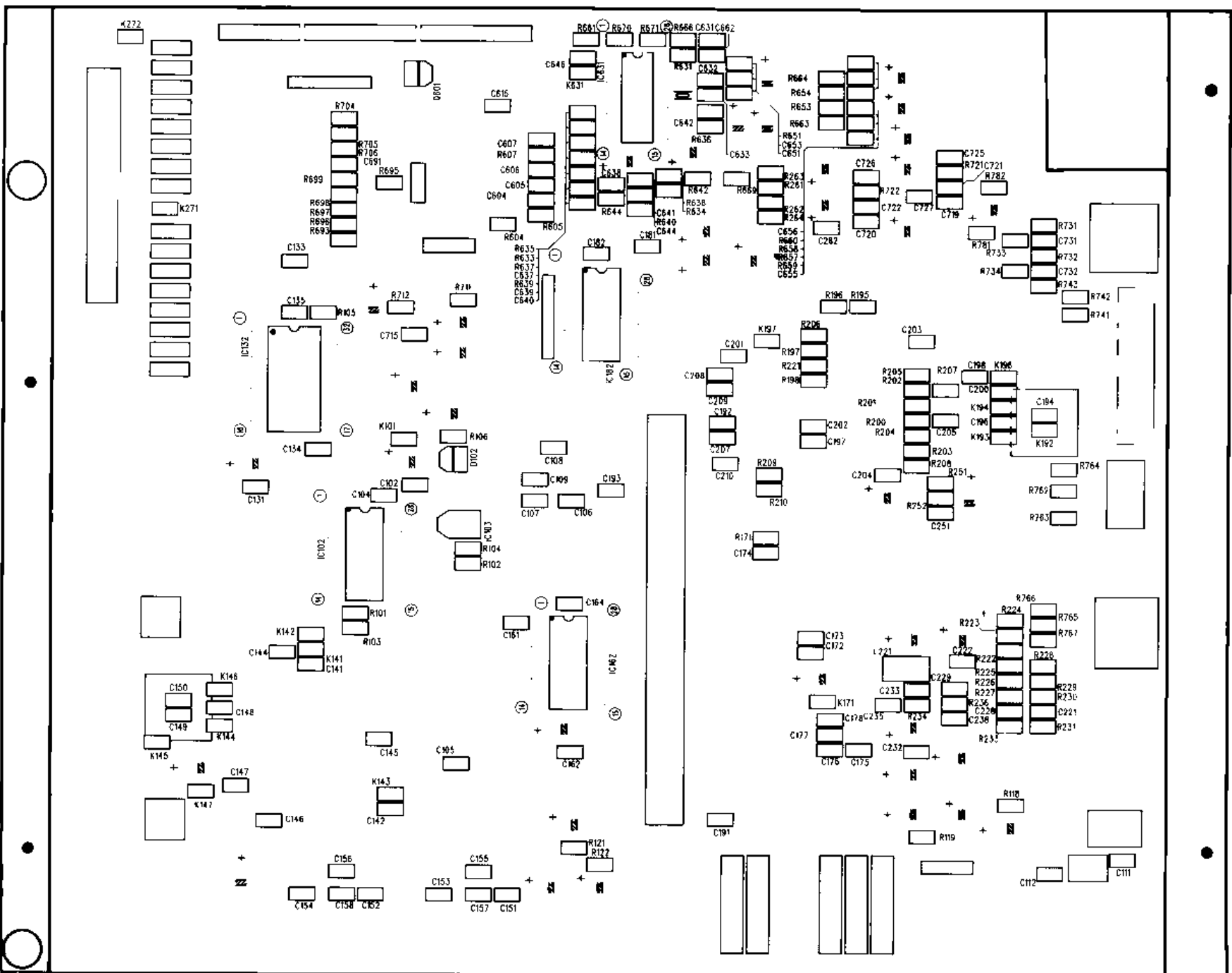
M	2	M	M
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Symbol No.

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	



Transistors

ITEM	PART NUMBER	DESCRIPTION	AREA
Q111	2SB1424(QR)-X	SI. TRANSIST ROHM	
Q112	DT0114EK	DIGITAL TRA MITSUMI	
Q113	2SA1037K(R,S)	SI. TRANSIST	
Q114	DTA114EK	DIGITAL TRA ROHM	
Q115	2SC2412K(R,S)	SI. TRANSIST	
Q601	DT0114EK	DIGITAL TRA MITSUMI	
Q651	DT0314TK	SI. TRANSIST ROHM	
Q652	DT0314TK	SI. TRANSIST ROHM	
Q653	DT0114EK	DIGITAL TRA MITSUMI	
Q654	DT0114EK	DIGITAL TRA MITSUMI	
Q691	DT0114EK	DIGITAL TRA MITSUMI	
Q731	DT0314TK	SI. TRANSIST ROHM	
Q732	DT0314TK	SI. TRANSIST ROHM	
Q733	2SD2144S(VW)-T	SI. TRANSIST	

△ ASSA FETTY PARTS

I.C.s

ITEM	PART NUMBER	DESCRIPTION	AREA
IC101	MC68HC000FN12	I.C(MICRO-C NIHON MOTOROL	
IC102	LC3564QM-10T2	I.C(S-RAM) SANYO	
IC103	PST600DX	I.C(MONO-AN MITSUMI	
IC104	TC531024F12634X	I.C(CM) TOSHIBA	
IC104	UPD27C4000	I.C.	
IC105	MN414270SJ-08	I.C(CD-RAM) MATSUSHITA	
IC110	P805RF1	I.C(HYBRID) SHARP	
IC131	315-5476AV	I.C(CM) 9954	
IC132	TC51864FL-10X	I.C(CM) TOSHIBA	
IC133	TC74HC21AFX	I.C(DIGI-MO TOSHIBA	
IC141	315-5632V	I.C(CM) 9954	
IC142	TC511664BJ-10X	I.C(CD-RAM) TOSHIBA	
IC143	TC511664BJ-10X	I.C(CD-RAM) TOSHIBA	
IC141	LC89513K	I.C(CM) SANYO	
IC142	LC33832M-70X	I.C(S-RAM) SANYO	
IC171	MC68HC000FN8	I.C(MICRO-C NIHON MOTOROL	
IC172	LC331632M-12X	I.C(S-RAM) SANYO	
IC181	UPD90C56GB-4	I.C(DIGI-MO NEC	
IC182	BR6265AF-10LLX	I.C(CM) ROHM	
IC191	315-5660	I.C(CM) 9954	
IC192	MSM54C864-80JSX	I.C(DIGI-MO NIHON DENSO	
IC193	PST591EX	I.C(MONO-AN MITSUMI	
IC221	CXA1145MT2	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	SMS841AS-ETW	I.C(DIGI-MO KANEMATSU	
IC691	HD0404019RC36FS	I.C(MICRO-C HITACHI	
IC691	HD074019FS	I.C.	
IC711	LC7681M-C	I.C(DIGI-MO SANYO	
IC712	XRA15218F	I.C.	
IC713	XRA15218F	I.C.	

△ ASSA FETTY 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	

△ ASSA FETTY PARTS

Capacitors

ITEM	PART NUMBER	DESCRIPTION	AREA
C101	QEAD0H2-10AZM	0.047MF 25V AL E.CAPAC	
C102	NCF21EZ-473AYU	0.047MF 25V CER.CAPACI	
C103	QETB1EM-106	10MF 25V 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	QETC0JM-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-100AY	56PF 50V CER.CAPACI	
C134	NCS21HJ-100AY	10PF 50V CER.CAPACI	
C135	NCF21EZ-473AYU	0.047MF 25V CER.CAPACI	

△ ASSA FETTY PARTS

Capacitors

ITEM	PART NUMBER	DESCRIPTION	AREA
C136	NCF21EZ-473AYU	0.047MF 25V CER.CAPACI	
C141	NCS21HJ-470AY	47PF 50V CER.CAPACI	
C142	NCS21HJ-800AY	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	NCS21HJ-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	NCS21HJ-102AY	1000PF 50V CER.CAPACI	
C196	NCS21HJ-470AY	47PF 50V CER.CAPACI	
C197	NCS21HJ-102AY	1000PF 50V CER.CAPACI	
C198	NCS21HJ-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	NCF21EZ-105AY	1MF 16V CER.CAPACI	
C223	QETC0JM-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	NCS21HJ-103AY	0.01MF 50V CER.CAPACI	
C228	NCS21HJ-101AY	100PF 50V CER.CAPACI	
C229	NCF21EZ-105AY	1MF 16V CER.CAPACI	
C230	QETB0JM-227	220MF 6.3V E.CAPACITO	
C231	NCS21HJ-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	NCS21HJ-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	NCS21HJ-562AY	5600PF 50V E.CAPACITO	
C244	NCS21HJ-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	NCF21EZ-105AY	1MF 16V CER.CAPACI	
C603	NCF21EZ-105AY	1MF 16V CER.CAPACI	
C604	NCS21HJ-102AY	1000PF 50V CER.CAPACI	
C605	NCS21HJ-152AY	1500PF 50V CER.CAPACI	
C606	NCF21EZ-105AY	1MF 16V CER.CAPACI	
C607	NCS21HJ-473AY	0.047MF 16V CER.CAPACI	
C615	NCF21EZ-105AY	1MF 16V CER.CAPACI	
C616	QCS31HJ-331Z	33PF 50V CER.CAPACI	
C631	NCS21HJ-180AY	18PF 50V CER.CAPACI	
C631	NCS21HJ-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	QETC0JM-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	NCS21HJ-223AY	0.022MF 50V CER.CAPACI	
C642	NCS21HJ-223AY	0.022MF 50V CER.CAPACI	
C643	NCS21HJ-470AY	47PF 50V CER.CAPACI	

△ ASSA FETTY PARTS

Capacitors

Δ	ITEM	PART NUMBER	DESCRIPTION	AREA
	C644	NCS21HJ-473AY	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	QETB1EM-106	10MF 25V AL E.CAPAC	
	C658	QETB1EM-106	10MF 25V AL E.CAPAC	
	C659	NCF21EZ-473AYU	0.047MF 25V CER.CAPACI	
	C660	QETB1AM-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-102AYU	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	

Δ ISIA RECTV. PARTS

Resistors

Δ	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-102NY	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-333NY	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-224NY	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-101NY	METAL GLAZ	
	R669	QRD167J-102	1K 1/6W CARBON RES	
	R670	NRSA02J-391NY	METAL GLAZ	
	R671	NRSA02J-391NY	METAL GLAZ	
	R672	NRSA02J-103NY	METAL GLAZ	
	R673	NRSA02J-472NY	METAL GLAZ	
	R692	NRSA02J-473NY	METAL GLAZ	
	R693	NRSA02J-472NY	METAL GLAZ	
	R693	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	

Δ ISIA RECTV. PARTS

Resistors

Δ	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 RES	
	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-122NY	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	
	R212	NRSA02J-0R0AY	METAL GLAZ	

Δ ISIA RECTV. PARTS

Resistors

ITEM	PART NUMBER	DESCRIPTION	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-103NY	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	QR0161J-474Y	100 1/6W CARBON RES	
R764	NRSA02J-750NY	METAL GLAZ	
R781	NRSA02J-222NY	METAL GLAZ	
R782	NRSA02J-272NY	METAL GLAZ	
RA181	GRB089J-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	GRB089J-472	4.7K 1/10W NETWORK RE	

▲: DISASSEMBLY PARTS

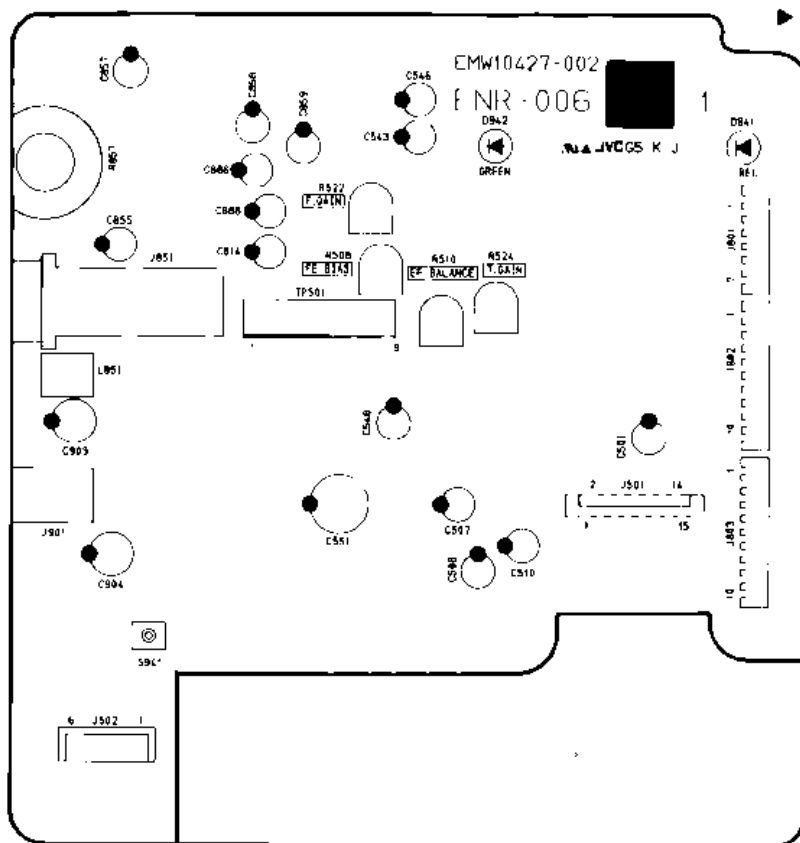
Others

ITEM	PART NUMBER	DESCRIPTION	AREA
	E70945-H35B	HEAT SINK	
	SBSB3008Z	WOOD SCREW	
	SBS-3008M	TAPPING SCR	
	E3400-431	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	
X769	ENZ8102-N121AY	FERRITE BEA	
K770	ENZ8102-N601AY	FERRITE BEA	
K779	ENZ8102-N601AY	FERRITE BEA	
L111	EQL1003-400	INDUCTOR	
L221	EQL5002-470T	INDUCTOR	
L222	EQL5002-120T	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 8PIN	
P191	EMZ1007-002	CONNECT TER 6PIN	
P801	VMC0194-S07	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	CKO-826(50MHZ)	CRYSTAL	
X191	1338M153693	CRYSTAL	
X631	ECX0149-344EF	CRYSTAL	
X691	ECX0004-194KM	CERAMIC RES	

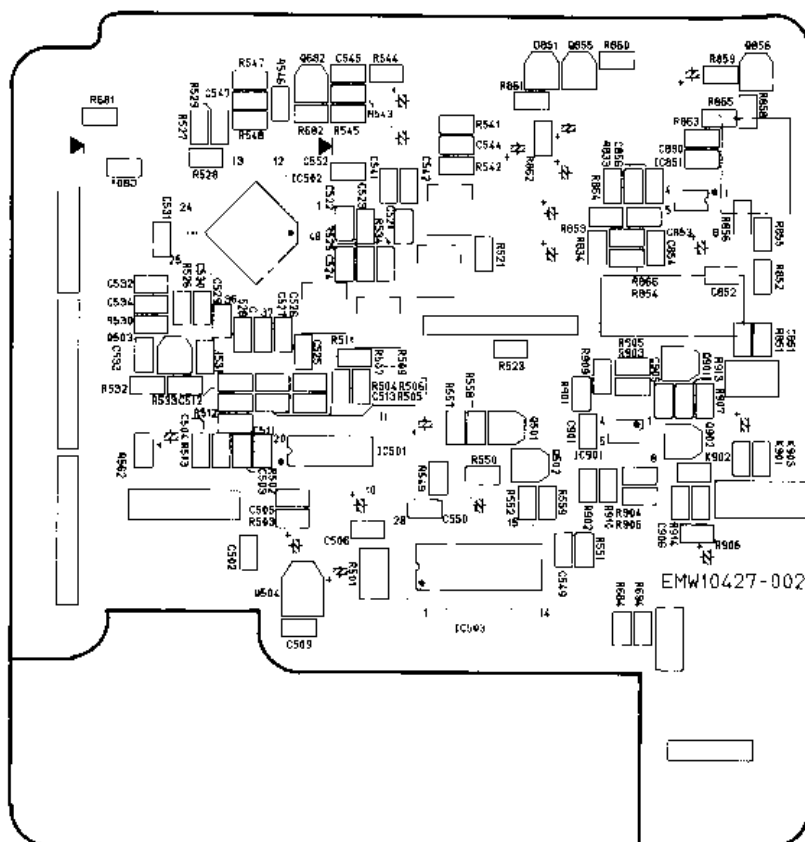
▲: DISASSEMBLY PARTS

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

● Surface



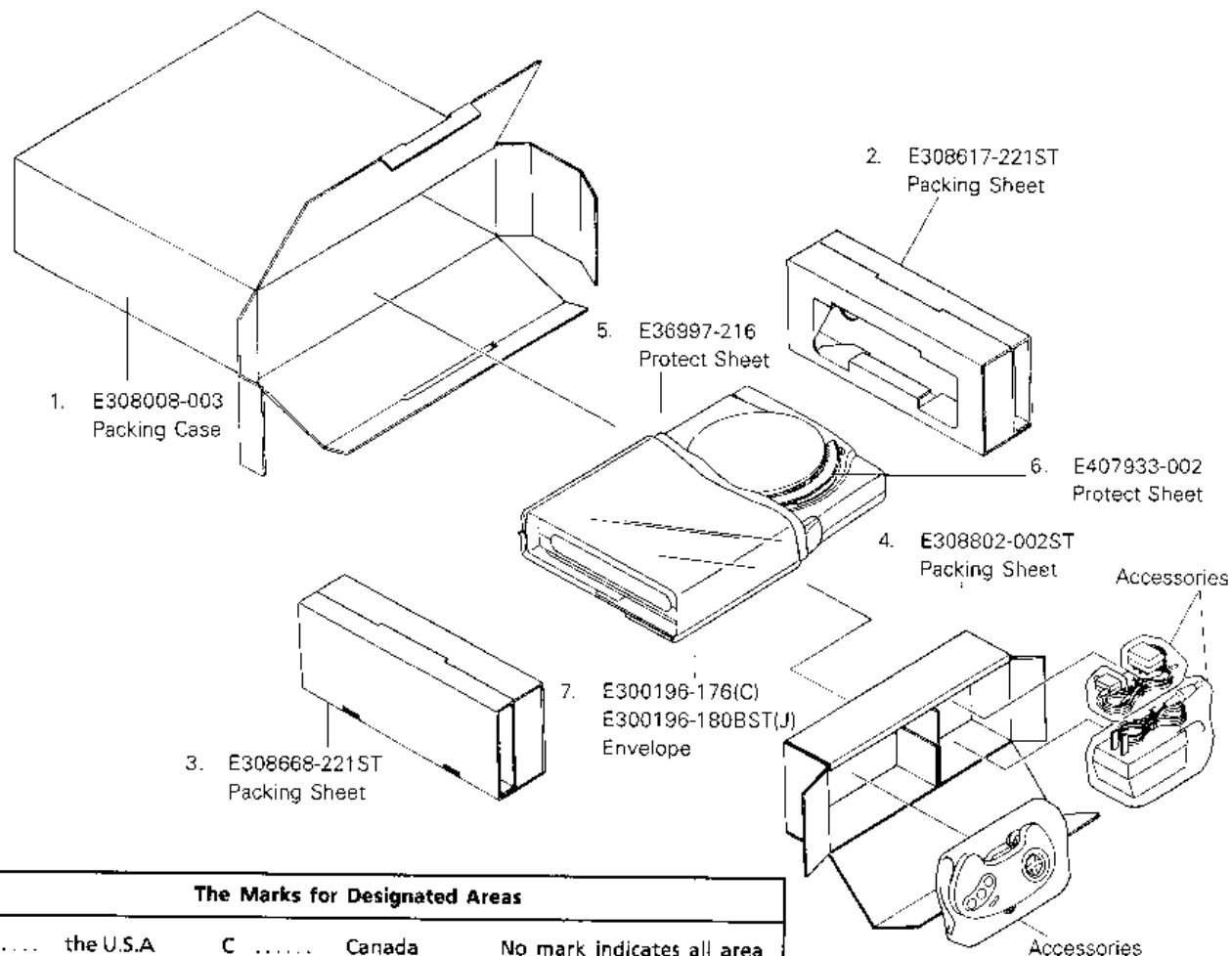
● Foil



Packing Materials and Part Numbers

 Symbol No.

M	3	M	M
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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
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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

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JVC

VICTOR COMPANY OF JAPAN, LIMITED

AUDIO DIVISION, YAMATO PLANT, 1644, SHIMOTSURUMA, YAMATO-SHI, KANAGAWA-KEN, 242, JAPAN

