

HCD-VZ50MD

SERVICE MANUAL

Self Diagnosis
Supported model



E Model
Tourist Model

HCD-VZ50MD is the tuner, deck, CD, MD and amplifier section in DHC-VZ50MD.

This stereo system is equipped with the Dolby B-type noise reduction system*.

* Manufactured under license from Dolby Laboratories Licensing Corporation. DOLBY and the double-D symbol **DD** are trademarks of Dolby Laboratories Licensing Corporation.

CD SECTION	Model Name Using Similar Mechanism	NEW
	CD Mechanism Type	CDM53F-K4BD37
	Base Unit Type	BU-K4BD37
	Optical Pick-up Type	KSM-213DHAP/Z-NP
MD SECTION	Model Name Using Similar Mechanism	HCD-ZX50MD
	MD Mechanism Type	MDM-7B
	Optical Pick-up Type	KMS-260B/J1N
TAPE DECK SECTION	Model Name Using Similar Mechanism	HCD-ZX50MD
	Tape Transport Mechanism Type	TCM-230AWR12

SPECIFICATIONS

Amplifier section

The following measured at 120/220/240 V AC, 50/60 Hz
DIN power output (rated) 115 + 115 watts
(6 ohms at 1 kHz, DIN)
Continuous RMS power output (reference)
150 + 150 watts
(6 ohms at 1 kHz,
10 % THD)

Inputs

VIDEO (AUDIO) IN: voltage 250 mV,
impedance 47 kilohms
(phono jacks)
MIC 1/2:
(mini jack) sensitivity 1 mV,
impedance 10 kilohms

Outputs

VIDEO OUT:
(phono jack) max. output level
1 Vp-p, unbalanced,
Sync negative, load impedance
75 ohms

S-VIDEO OUT:
(4-pin/mini-DIN jack) Y: 1 Vp-p, unbalanced,
Sync negative,
C: 0.286 Vp-p,
load impedance 75 ohms

PHONES:

(stereo mini jack) accepts headphones of
8 ohms or more
FRONT SPEAKER:
accepts impedance of 6 to 16 ohms
SUPER WOOFER:
Voltage 1 V, impedance 1 kilohms

VIDEO CD/CD player section

System Compact disc and digital audio system
Laser Semiconductor laser
($\lambda=780$ nm)
Emission duration: continuous
Max. 44.6 μ W*
Laser output *This output is the value measured
at a distance of 200 mm from the
objective lens surface on the
Optical Pick-up Block with 7 mm
aperture.
Wavelength 780 – 790 nm
Frequency response 2 Hz – 20 kHz (± 0.5 dB)
Signal-to-noise ratio More than 90 dB
Dynamic range More than 90 dB
Video color system format NTSC, PAL

MD deck section

System MiniDisc digital audio system
Laser Semiconductor laser ($\lambda=780$ nm)
Emission duration: continuous
Max. 44.6 μ W*
Laser output *This output is the value measured
at a distance of 200 mm from the
objective lens surface on the
Optical Pick-up Block with a
7 mm aperture.
Sampling frequency 44.1 kHz
Frequency response 20 – 20,000 Hz

Tape player section

Recording system 4-track 2-channel stereo
Frequency response 40 – 13,000 Hz (± 3 dB),
(DOLBY NR OFF) using Sony TYPE I cassette
40 – 14,000 Hz (± 3 dB),
using Sony TYPE II cassette

— Continued on next page —

MINI Hi-Fi COMPONENT SYSTEM

SONY®

Tuner section

FM stereo, FM/AM superheterodyne tuner

FM tuner section

Tuning range	
Tourist model:	76.0 – 108.0 MHz
Other models:	87.5 – 108.0 MHz
Antenna	FM lead antenna
Antenna terminals	75 ohm unbalanced
Intermediate frequency	10.7 MHz

AM tuner section

Tuning range	531 – 1,602 kHz (with the interval set at 9 kHz)
	530 – 1,710 kHz (with the interval set at 10 kHz)
Antenna	AM loop antenna
Antenna terminals	External antenna terminal
Intermediate frequency	450 kHz

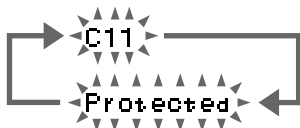
General

Power requirements	120 V, 220 V, 230 – 240 V AC, 50/60 Hz Adjustable with voltage selector
Power consumption	180 watts
Dimensions (w/h/d)	Approx. 250 x 375 x 395 mm
Mass	Approx. 12.0 kg
Supplied accessories:	AM loop antenna (1) FM lead antenna (1) Remote Commander (1) Batteries (2) Video cable (1) Speaker cords (2) Front speaker pads (8)

Design and specifications are subject to change without notice.

Self-diagnosis Display

This system has the Self-diagnosis display function to let you know if there is a system malfunction. The display shows a code made up of three or five letters and a message alternately to show you the problem. To solve the problem, refer to the following list. If any problem persists, consult your nearest Sony dealer.



C11 / Protected

The MD is protected against erasure.
→ Remove the MD and slide the tab to close the slot (page 49).

C12 / Cannot Copy

You are attempting to record a CD with a format that the system does not support, such as CD-ROM.
→ —

C13 / REC Error

Recording is not possible.
→ Move the system to a stable place and start recording over from the beginning.
The MD is dirty or is scratched or the MD does not meet the standards.
→ Change the MD with another one and start recording over from the beginning.

C13 / Read Error

The MD cannot read the disc information correctly.
→ Eject the MD once, then insert it again.

C14 / Toc Error

The MD cannot read the disc information correctly.
→ Change the MD with another one.
→ Erase all the recorded contents of the MD using the Erase function.

C41 / Cannot Copy

This unit complies with the Serial Copy Management System (SCMS) which limits the number of digital copies that can be made of any given digital audio source.

E0001 / MEMORY NG

The component has internal problems.
→ Consult your nearest Sony dealer.

E0101 / LASER NG

There is a problem with the laser pickup.
→ The laser pickup may be damaged. Consult your nearest Sony dealer.

Procedure for using the Self-Diagnosis Function (Error History Display Mode).

Note: Perform the self-diagnosis function in the “error history display mode” in the test mode. The following describes the least required procedure. Be careful not to enter other modes by mistake. If other modes are entered accidentally, press the **NAME EDIT/CHARACTER** button while REC IT is lit, and when REC IT goes off, press the **MD** button to exit the mode.

1. In the power ON state, set the function to MD, and while pressing the **DISPLAY** and **MD** buttons together, press **V-GROOVE**. While the test mode is set, “[Check]” will be displayed.
2. Move the multi-stick left and right to display “[Service]” and press the **PUSH ENTER** button.
3. Move the multi-stick left and right to display “Err Display”.
4. Press the **PUSH ENTER** button to enter the error history mode. “op rec tm” will be displayed.
5. Select the item to be displayed or executed using the multi-stick.
6. Press the **NAME EDIT/CHARACTER** button so that REC IT lights up.
7. Press the **MD REC MODE** button to display the selected item.
8. Press the **REC MODE** button another time to return to step 4.
9. Pressing the **CLEAR** button when REC IT is lit displays “Err Display” and exits the error history display mode.
10. To exit the test mode, press the **MD** button while REC IT is off. This sets the standby state and ends the test mode.

ITEMS OF ERROR HISTORY MODE ITEMS AND CONTENTS

Selecting the Test Mode

Display	History
op rec tm	Displays the total recording time. When the total recording time is more than 1 minute, displays the hour and minute When less than 1 minute, displays "Under 1 min" The display time is the time the laser is set to high power, which is about 1/4 of the actual recording time.
op play tm	Displays the total playback time. When the total playback time is more than 1 minute, displays the hour and minute When less than 1 minute, displays "Under 1 min"
spdl rp tm	Displays the total rotating time of the spindle motor. When the total rotating time is more than 1 minute, displays the hour and minute When less than 1 minute, displays "Under 1 min"
retry err	Displays the total number of retry errors during recording and playback Displays "r xx p yy". xx is the number of errors during recording, yy is the number of errors during playback. This is displayed in hexadecimal from 00 to FF.
total err	Displays the total number of errors Displays "total xx". This is displayed in hexadecimal from 00 to FF.
err history	Displays the past ten errors. Displays "0x ErrCd@@". X is the history number. The younger the number, the more recent is the history (00 is the latest). @@ is the error code. Select the error history number using the Multi stick.
retry adrs	Displays the past five retry addresses. Displays "xx ADRS yyyy", xx is the history number, yyyy is the cluster with the retry error. Select the error history number using the Multi stick.
er refresh	Mode for erasing the error and retry address histories Procedure 1. Press the [MD REC MODE] button while "REC IT" is lit when displayed as "er refresh". 2. Press the [PUSH ENTER] button when the display changes to "er refresh?". When "Complete!!" is displayed, it means erasure has completed. Be sure to check the following after executing this mode. *Data has been erased. *Perform recording and playback, and check that the mechanism is normal.
op change	Mode for erasing the total time of op rec tm, op play tm. These histories are based on the time of replacement of the optical pick-up. If the optical pick-up has been replaced, perform this procedure and erase the history. Procedure 1. Press the [MD REC MODE] button while "REC IT" is lit when displayed as "op change". 2. Press the [PUSH ENTER] button when the display changes to "op change?". When "Complete!!" is displayed, it means erasure has completed.
spdl change	Mode for erasing the total spdl rp tm time These histories are based on the time of replacement of the spindle motor. If the spindle motor has been replaced, perform this procedure and erase the history. Procedure 1. Press the [MD REC MODE] button while "REC IT" is lit when displayed as "spdl change" 2. Press the [PUSH ENTER] button when the display changes to "spdl change?" When "Complete!!" is displayed, it means erasure has completed.

Table of Error Codes

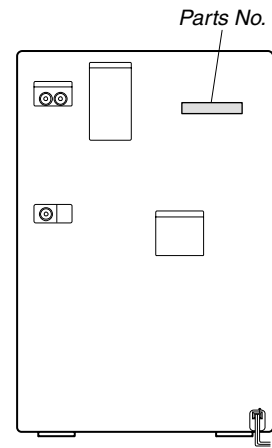
Error Code	Description
10	Could not load
12	Loading switches combined incorrectly
20	Timed out without reading the top of PTOC
21	Could read top of PTOC, but detected error
22	Timed out without accessing UTOC
23	Timed out without reading UTOC
24	Error in UTOC
30	Could not start playback
31	Error in sector
40	Retry cause generated during normal recording
41	Retried in DRAM overflow
42	Retry occurred during TOC writing
43	Retry aborted during S.F editing
50	Other than access processing, and could not read address.
51	Focus NG occurred and overran.

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MODEL IDENTIFICATION

— BACK PANEL —



MODEL	PARTS No.
SP, MY model	4-227-557-0□
HK model	4-227-557-1□
JE model	4-227-557-2□

- Abbreviation
- HK : Hong Kong model
- MY : Malaysia model
- SP : Singapore model
- JE : Tourist model

SECTION 1

SERVICE NOTES

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body. During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts. The flexible board is easily damaged and should be handled with care.

FOR CD

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

FOR MD

NOTES ON LASER DIODE EMISSION CHECK

Never look into the laser diode emission from right above when checking it for adjustment. It is feared that you will lose your sight.

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

CAUTION : INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED, AVOID EXPOSURE TO BEAM.
ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VORSICHT : UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET UND SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT, NICHT DEM STRAHL AUSSETZEN.
VARO! : AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
VARNING : OSYNLIG LASERSTRÅLING NÅR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRÄKTA EJ STRÅLEN.
ADVERSEL : USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.
VIGYÁZAT! : A BURKOLAT NYITÁSAKOR LÁTHATATLAN LÉZERSUGÁRVESZÉLY! KERÜLJE A BESUGÁRZÁST!

This caution label is located inside the unit.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

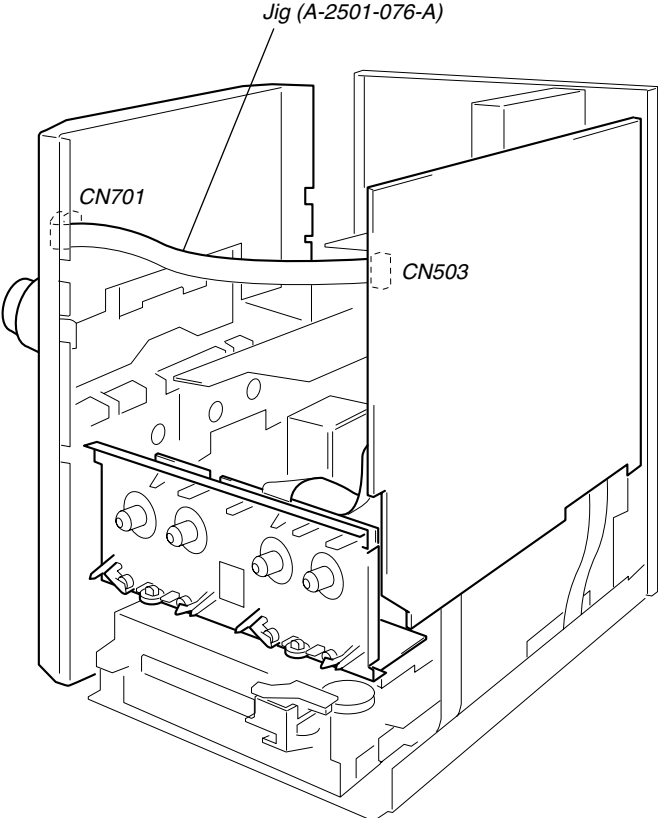
Flexible Circuit Board Repairing

- Keep the temperature of soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

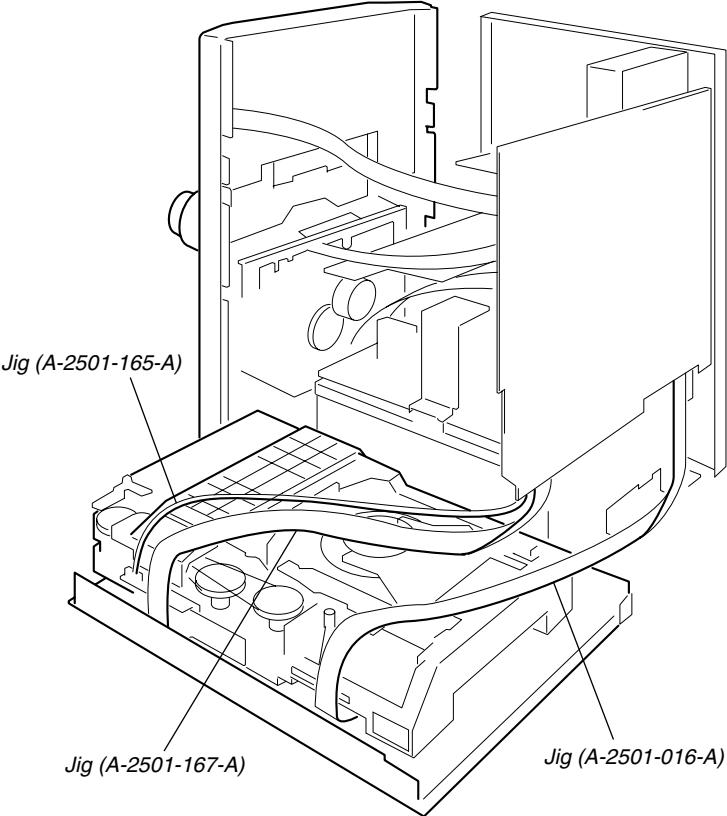
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK \triangle OR DOTTED LINE WITH MARK \triangle ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SERVICE POSITION

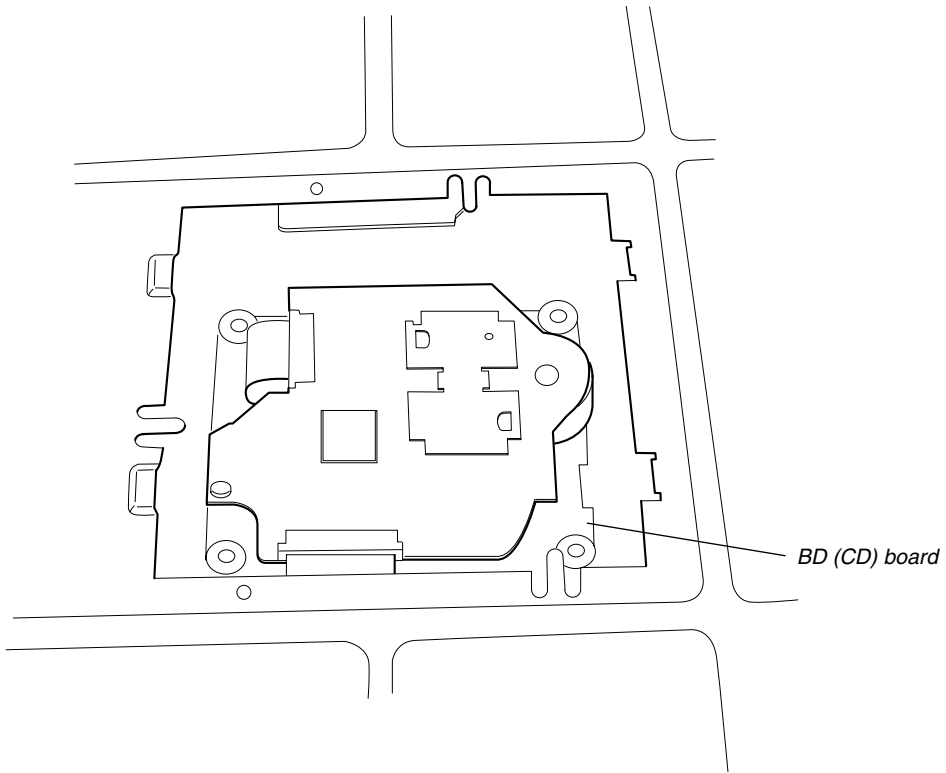


• CD MECHANISM BLOCK



- **BD (CD) BOARD**

To repair the BD (CD) board,remove the bottom plate.

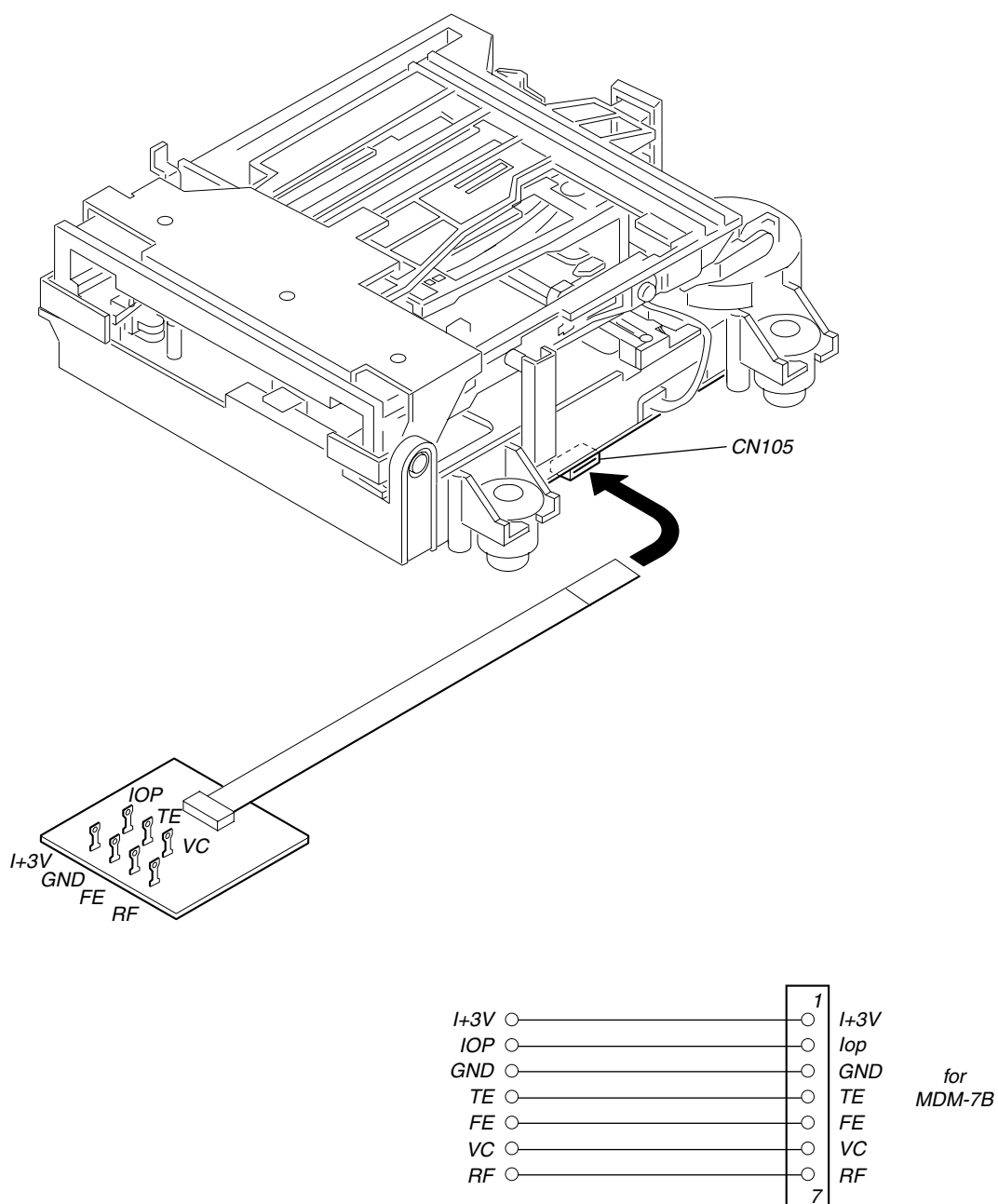


Bottom view

JIG FOR CHECKING BD (MD) BOARD WAVEFORM

The special jig (J-2501-196-A) is useful for checking the waveform of the BD (MD) board. The names of terminals and the checking items to be performed are shown as follows.

- GND : Ground
- I+3V : For measuring IOP (Check the deterioration of the optical pick-up laser)
- IOP : For measuring IOP (Check the deterioration of the optical pick-up laser)
- TE : TRK error signal (Traverse adjustment)
- VC : Reference level for checking the signal
- RF : RF signal (Check jitter)
- FE : Focus error signal



Iop DATA RECORDING AND DISPLAY WHEN OPTICAL PICK-UP AND NON-VOLATILE MEMORY (IC195 OF BD (MD) BOARD) ARE REPLACED

The Iop value labeled on the optical pick-up can be recorded in the non-volatile memory. By recording the value, it will eliminate the need to look at the value on the label of the optical pick-up. When replacing the optical pick-up or non-volatile memory (IC195 of BD (MD) board), record the Iop value on the optical pick-up according to the following procedure.

Record Procedure:

1. In the power ON state, set the function to MD, and while pressing the **DISPLAY** and **■** buttons together, press **V-GROOVE**.
2. Move the Multi stick to display “[Service]”, and press the **PUSH ENTER** button.
3. Move the Multi stick to display “Iop Write” (C05), and press the **PUSH ENTER** button.
4. The display becomes “Ref=@@.@” (@ is an arbitrary number) and the numbers which can be changed will blink.
5. Input the Iop value written on the optical pick-up.
To select the number : Move the Multi stick.
To select the digit : Press the **MD REC MODE** button while REC IT is lit.
6. When the **PUSH ENTER** button is pressed, the display becomes “Measu=@@.@” (@ is an arbitrary number).
7. As the adjustment results are recorded for the 6 value. Leave it as it is and press the **PUSH ENTER** button.
8. “Complete!” will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become “Iop Write” (C05).

Display Procedure:

1. In the power ON state, set the function to MD, and while pressing the **DISPLAY** and **■** buttons together, press **V-GROOVE**.
2. Move the Multi stick to display “[Service]”, and press the **PUSH ENTER** button.
3. Move the Multi stick to display “Iop Read” (C26).
4. “@@.@/##.#” is displayed and the recorded contents are displayed.
@@.@ : indicates the Iop value labeled on the optical pick-up.
##.# : indicates the Iop value after adjustment
5. To end, press the **NAME EDIT/CHARACTER** button while REC IT is lit, or press the **MD REC MODE** button to display “Iop Read” (C26).

CHECKS PRIOR TO PARTS REPLACEMENT AND ADJUSTMENTS

Before performing repairs, perform the following checks to determine the faulty locations up to a certain extent. Details of the procedures are described in “6 Electrical Adjustments”.

- 6-6-2. Laser power check (see page 41)
- 6-6-3. Iop Compare (see page 41)
- 6-6-4. Auto Check (see page 42)

Note:

The criteria for determination above is intended merely to determine if satisfactory or not, and does not serve as the specified value for adjustments.

When performing adjustments, use the specified values for adjustments.

FORCED RESET

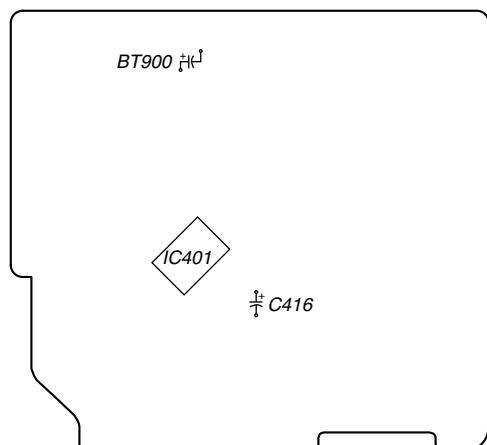
The system microprocessor can be reset in the following procedure.

Use these procedure when the unit cannot be operated normally due to the overrunning of the microprocessor, etc.

Procedure :

1. Disconnect the AC outlet.
2. Momentary short between BT900 pin ⊕ and BT900 pin ⊖ by lead wire.
3. Momentary short between C416 pin ⊕ and C416 pin ⊖ by lead wire.

[MAIN BOARD]



RETRY CAUSE DISPLAY MODE

- In this test mode, the causes for retry of the unit during recording can be displayed on the fluorescent indicator tube. During playback, the “track mode” for obtaining track information will be set. This is useful for locating the faulty part of the unit.
- The following will be displayed :
 During recording and stop : Retry cause, number of retries, and number of retry errors.
 During playback : Information such as type of disc played, part played, copyright.
 These are displayed in hexadecimal.

Procedure:

1. Press the button and **DISPLAY** button, **CINEMA SPACE** button.
2. When the mode is set, “RTs 00c 00e 000” is displayed.
3. Press the **MD REC** button to start recording. Then press the **MD ►||** button and start recording.
4. To check the “track mode”, press the **MD ►||** button to start play.
5. To exit the test mode, press the button, and turn OFF the power. When “TOC” disappears, disconnect the power plug from the outlet. If the test mode cannot be exited, refer to “Forced Reset” on page 12 .

Fig. 1 Reading the Test Mode Display (During recording and stop)

Fluorescent indicator tube

- @@ : Cause of retry
- ## : Number of retries
- *** : Number of retry errors

(During playback)

Fluorescent indicator tube

- @@ : Parts No. (name of area named on TOC)
- ## : Cluster } Address (Physical address on disc)
- ** : Sector }
- \$\$: Track mode (Track information such as copyright information of each part)

Fig. 2 Reading the Test Mode Display

Reading the Retry Cause Display

Hexadecimal	Higher Bits				Lower Bits				Hexa- decimal	Cause of Retry	Occurring conditions
	8	4	2	1	8	4	2	1			
Bit	b7	b6	b5	b4	b3	b2	b1	b0			
Binary	0	0	0	0	0	0	0	1	01	shock	When track jump (shock) is detected
	0	0	0	0	0	0	1	0	02	ader5	When ADER was counted more than five times continuously
	0	0	0	0	0	1	0	0	04	Discontinuous address	When ADIP address is not continuous
	0	0	0	0	1	0	0	0	08	DIN unlock	When DIN unlock is detected
	0	0	0	1	0	0	0	0	10	FCS incorrect	When not in focus
	0	0	1	0	0	0	0	0	20	IVR rec error	When ABCD signal level exceeds the specified range
	0	1	0	0	0	0	0	0	40	CLV unlock	When CLV is unlocked
	1	0	0	0	0	0	0	0	80	Access fault	When access operation is not performed normally

Reading the Display:

Convert the hexadecimal display into binary display. If more than two causes, they will be added.

Example

When 42 is displayed:

Higher bit : 4 = 0100 → b6

Lower bit : 2 = 0010 → b1

In this case, the retry cause is combined of “CLV unlock” and “ader5”.

When A2 is displayed:

Higher bit : A = 1010 → b7+b5

Lower bit : 2 = 0010 → b1

The retry cause in this case is combined of “access fault”, “IVR rec error”, and “ader5”.

Reading the Track Mode Display

Hexadecimal	Higher Bits				Lower Bits				Hexa-decimal	Details	
	8	4	2	1	8	4	2	1		When 0	When 1
Bit	b7	b6	b5	b4	b3	b2	b1	b0			
Binary	0	0	0	0	0	0	0	1	01	Emphasis OFF	Emphasis ON
	0	0	0	0	0	0	1	0	02	Monaural	Stereo
	0	0	0	0	0	1	0	0	04	This is 2-bit display. Normally 01.	
	0	0	0	0	1	0	0	0	08	01:Normal audio. Others:Invalid	
	0	0	0	1	0	0	0	0	10	Audio (Normal)	Invalid
	0	0	1	0	0	0	0	0	20	Original	Digital copy
	0	1	0	0	0	0	0	0	40	Copyright	No copyright
	1	0	0	0	0	0	0	0	80	Write prohibited	Write allowed

Reading the Display:

Convert the hexadecimal display into binary display. If more than two causes, they will be added.

Example When 84 is displayed:

Higher bit : 8 = 1000 → b7

Lower bit : 4 = 0100 → b2

In this case, as b2 and b7 are 1 and others are 0, it can be determined that the retry cause is combined of “Emphasis OFF”, “Monaural”, “Original”, “Copyright”, and “Write allowed”.

Example When 07 is displayed:

Higher bit : 0 = 0000 → All 0

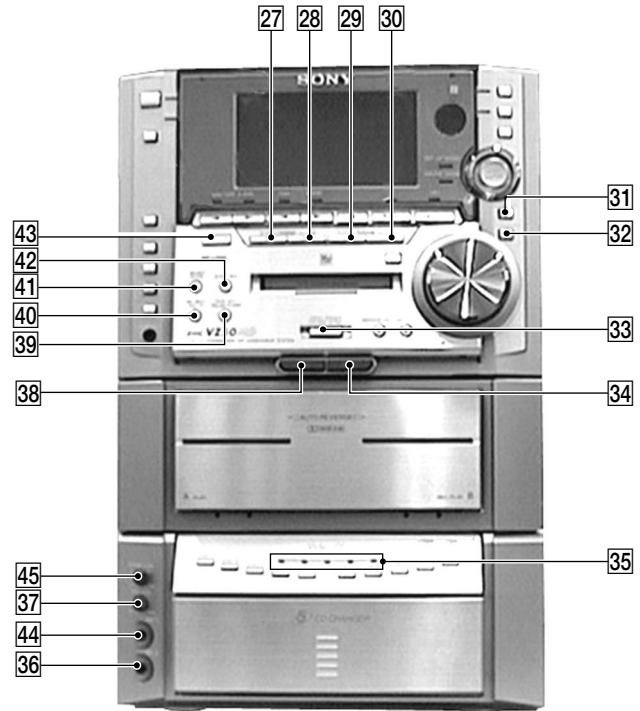
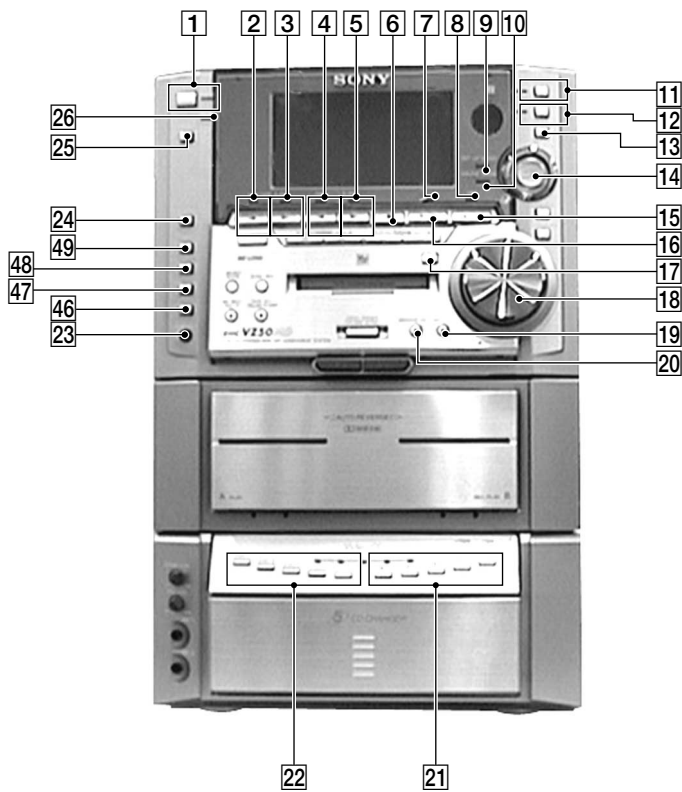
Lower bit : 7 = 0111 → b0+b1+b2

In this case, as b0, b1, and b2 are 1 and others are 0, it can be determined that the retry cause is combined of “Emphasis ON”, “Stereo”, “Original”, “Copyright”, and “Write prohibited”.

Hexadecimal → Binary Conversion Table

Hexadecimal	Binary	Hexadecimal	Binary
0	0000	8	1000
1	0001	9	1001
2	0010	A	1010
3	0011	B	1011
4	0100	C	1100
5	0101	D	1101
6	0110	E	1110
7	0111	F	1111

SECTION 2 GENERAL

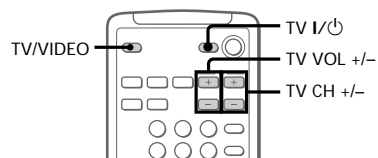


- | | | | |
|-----------|-----------------------------------|-----------|---|
| 1 | I/⏻ button and indicator | 26 | TIMER SELECT indicator |
| 2 | TAPE A ◀ button and indicator | 27 | ◀◀ button |
| 3 | TAPE A ▶ button and indicator | 28 | ▶▶ button |
| 4 | TAPE B ◀ button and indicator | 29 | ◀◀ button |
| 5 | TAPE B ▶ button and indicator | 30 | ▶▶ button |
| 6 | ■ button | 31 | NAME EDIT/CHARACTER button |
| 7 | CD indicator | 32 | CLEAR button |
| 8 | MD indicator | 33 | HIGH SPEED CD-MD SYNC button |
| 9 | SET UP MODE indicator | 34 | TAPE B ▲ button |
| 10 | SOUND MODE indicator | 35 | DISC 1 to DISC 5 indicator |
| 11 | CINEMA SPACE button and indicator | 36 | MIC 2 jack |
| 12 | V-GROOVE button and indicator | 37 | MIC VOL knob |
| 13 | MODE SELECT button | 38 | TAPE A ▲ button |
| 14 | PUSH ENTER button/Multi stick | 39 | TAPE REC PAUSE/START button and indicator |
| 15 | MD ▶ button | 40 | MD REC / REC IT button and indicator |
| 16 | CD ▶ button | 41 | MD REC MODE button |
| 17 | MD ▲ button | 42 | SYNC REC button |
| 18 | VOLUME knob | 43 | TUNER/BAND button |
| 19 | GROOVE button and indicator | 44 | MIC 1 jack |
| 20 | GROOVE EX button and indicator | 45 | ECHO VOL knob |
| 21 | ▲ 1 to ▲ 5 buttons | 46 | PREVIOUS button |
| 22 | DISC 1 to DISC 5 buttons | 47 | NEXT button |
| 23 | PHONES jack | 48 | RETURN button |
| 24 | FUNCTION button | 49 | SELECT button |
| 25 | DISPLAY button | | |

Step 1: Hooking up the system (continued)

Using the remote

You can use the shaded buttons shown below to operate a Sony TV.



To	Press
Turn the TV on or off	TV I/⏻
Switch the TV's video input	TV/VIDEO.
Change the TV channels	TV CH +/-.
Adjusts the volume of the TV speaker(s)	TV VOL +/-.

Tip

With normal use, the batteries should last for about six months. When the remote no longer operates the system, replace both batteries with new ones.

Note

If you do not use the remote for a long period of time, remove the batteries to avoid possible damage from battery leakage.

When carrying this system

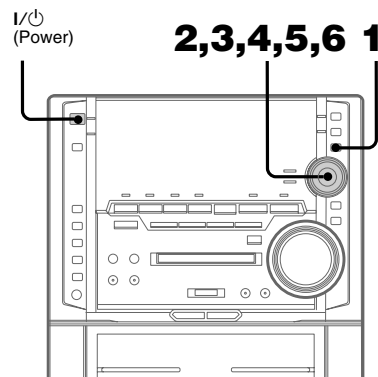
Do the following to protect the CD mechanism. Make sure that all discs are removed from the unit.

- 1 Press FUNCTION repeatedly until "CD" appears in the display.
- 2 Hold down V-GROOVE and press I/⏻ so that "LOCK" appears in the display.

Step 2: Setting the time

You must set the time before using the timer functions.

The clock is on a 12-hour system.



Getting Started

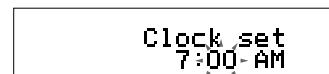
- 1 Press MODE SELECT when the system is turned off. "Clock Set ?" appears.

- 2 Press PUSH ENTER. The hour indication flashes.



- 3 Move the multi stick toward ▲ or ▼ repeatedly to set the hour.

- 4 Move the multi stick toward ►. The minute indication flashes.



- 5 Move the multi stick toward ▲ or ▼ repeatedly to set the minute.

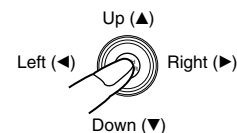
- 6 Press PUSH ENTER.

To cancel the menu operation

Press MODE SELECT.

Tips

- Refer to the illustration to use the multi stick. Place your finger on the center of the multi stick and move in the direction you want (up/down or left/right shown ▲/▼ or ◀/▶ in this manual).



- If you've made a mistake, start over from step 1.

To change the time

The previous explanation shows you how to set the time while the power is off. To change the time while the power is on, do the following:

- 1 Press MODE SELECT repeatedly to select "Set Up Mode", then press PUSH ENTER.
- 2 Move the multi stick toward ◀ or ▶ repeatedly to select "Timer Set Up ?", then press PUSH ENTER.
- 3 Move the multi stick toward ◀ or ▶ repeatedly to select "Clock Set ?", then press PUSH ENTER.
- 4 Perform steps 3 through 6 on the left.

Note

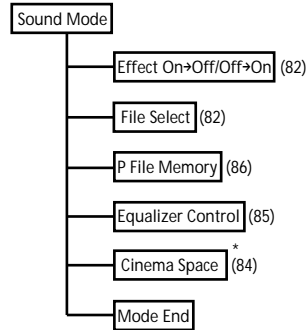
The clock settings are canceled when you disconnect the power cord or if a power failure occurs.

continued

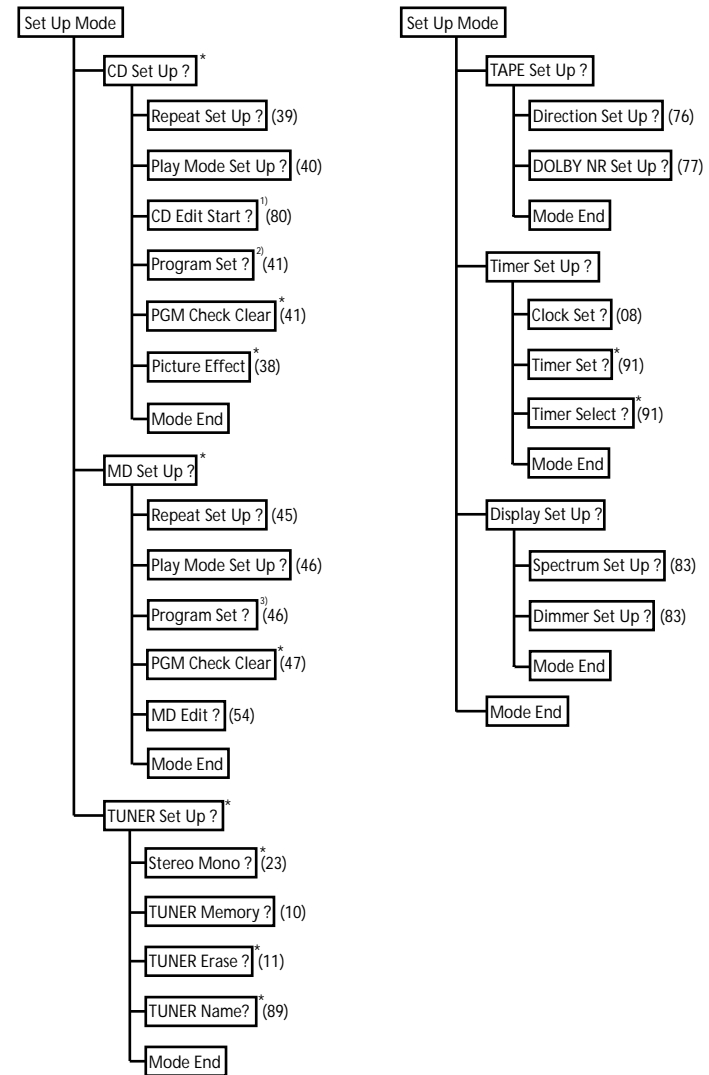
This section is extracted from instruction manual.

Items in “Sound Mode” and “Set Up Mode”

The numbers in parenthesis denotes the page number for the item.



- To cancel the menu operation, press **MODE SELECT**.
- The items with asterisk (*) cannot be selected depending on the situation.
- Select “Mode End” to finish the menu operation.



¹⁾ Cannot be selected during CD playback.

²⁾ Cannot be selected during CD program playback.

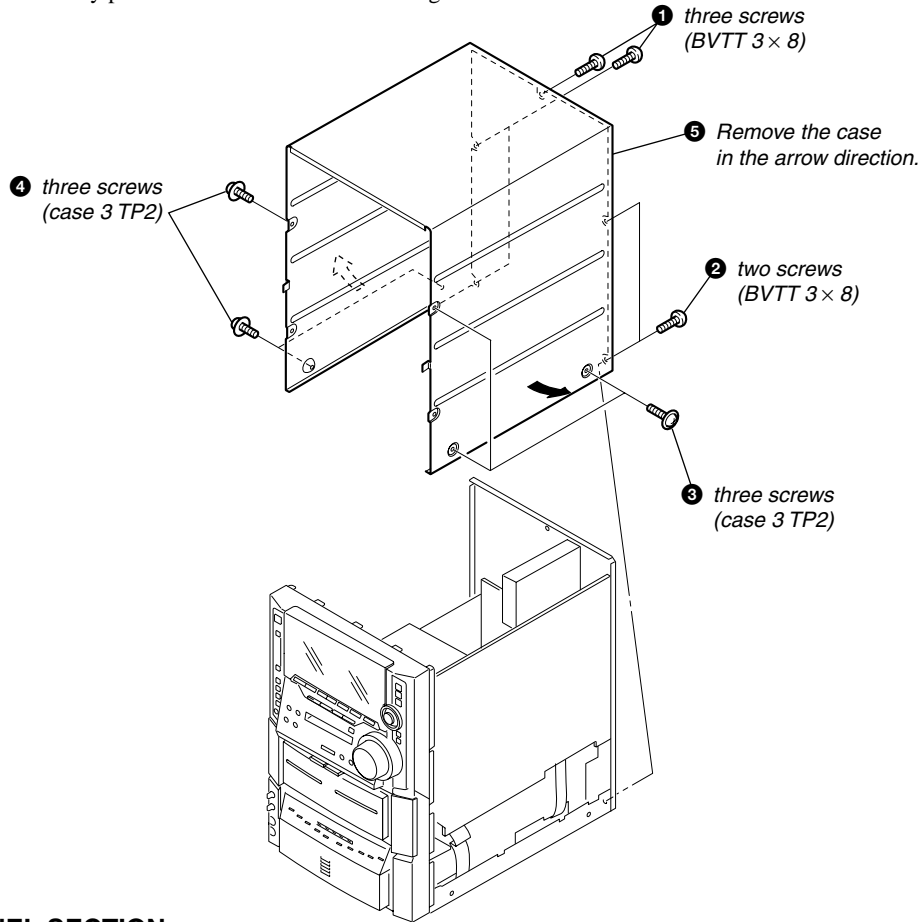
³⁾ Cannot be selected during MD playback.

- The items with asterisk (*) cannot be selected depending on the situation.

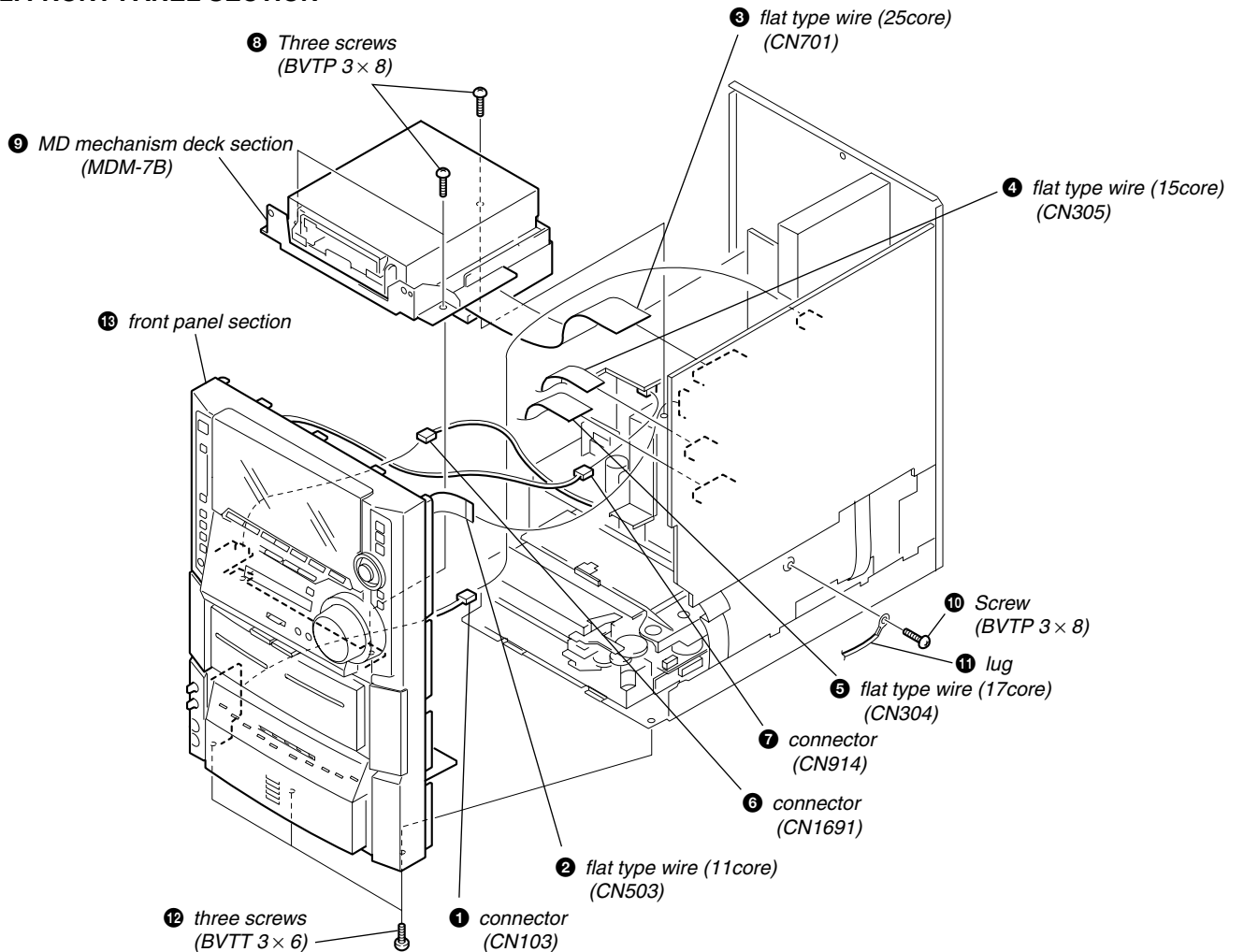
SECTION 3 DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

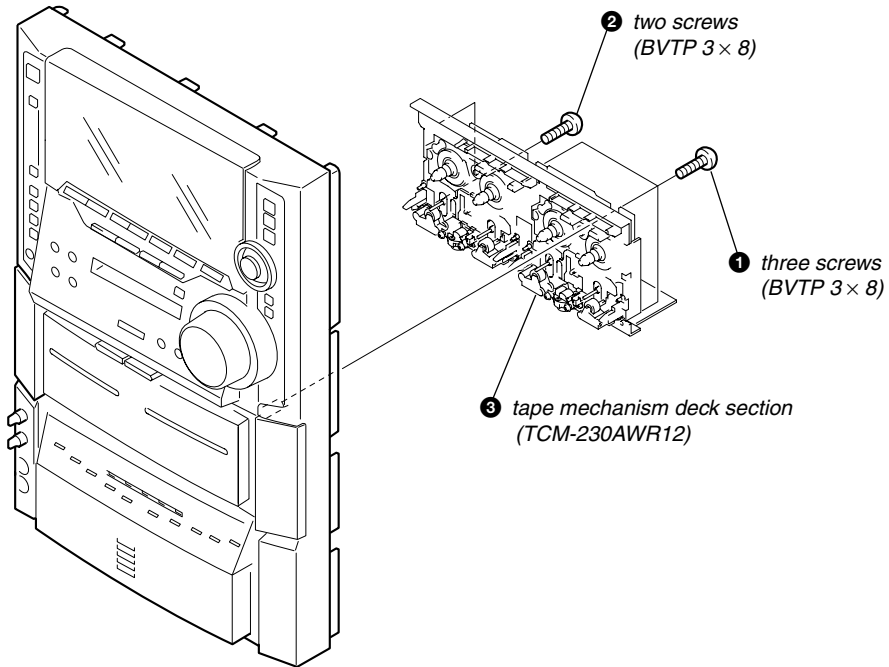
3-1. CASE



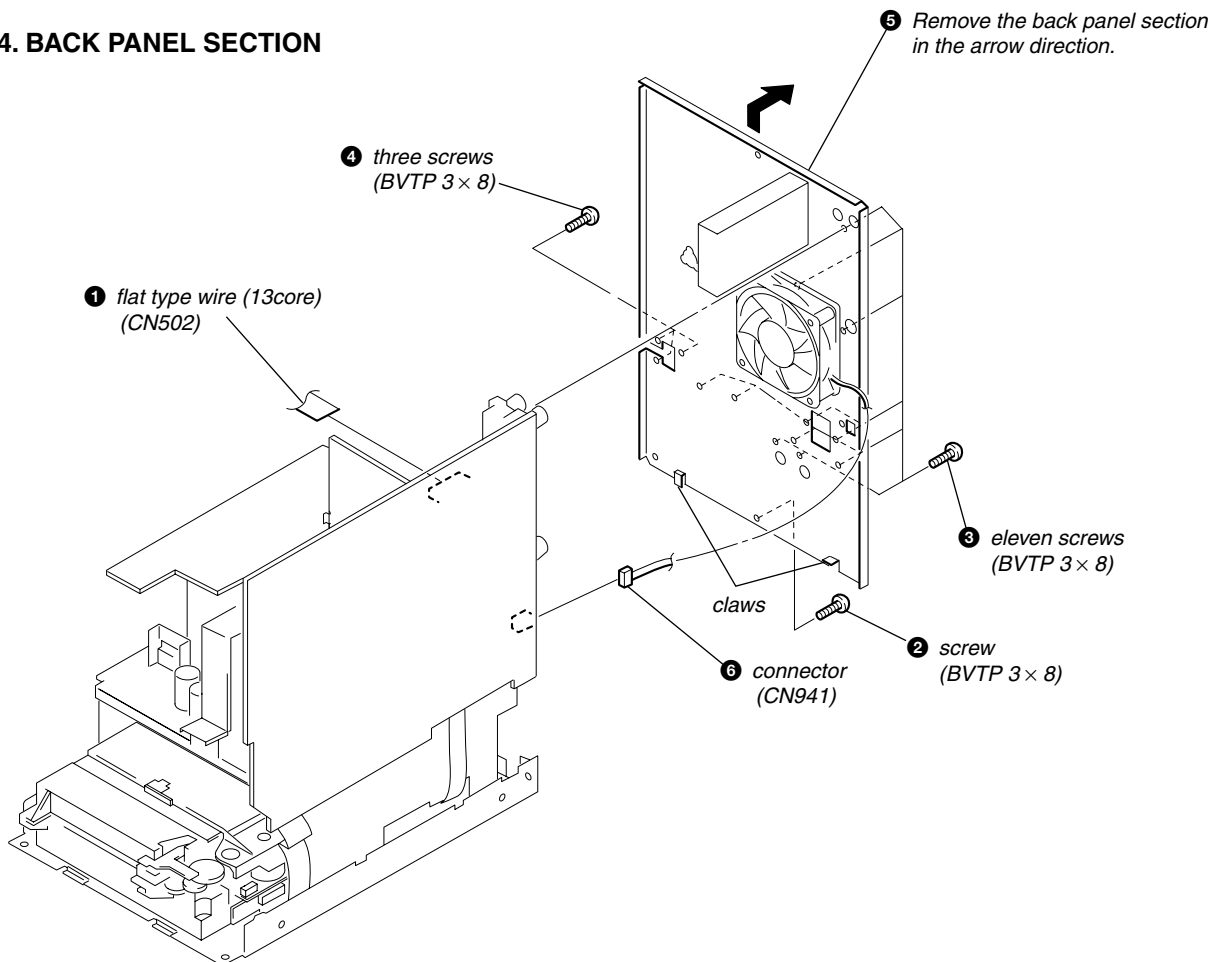
3-2. FRONT PANEL SECTION



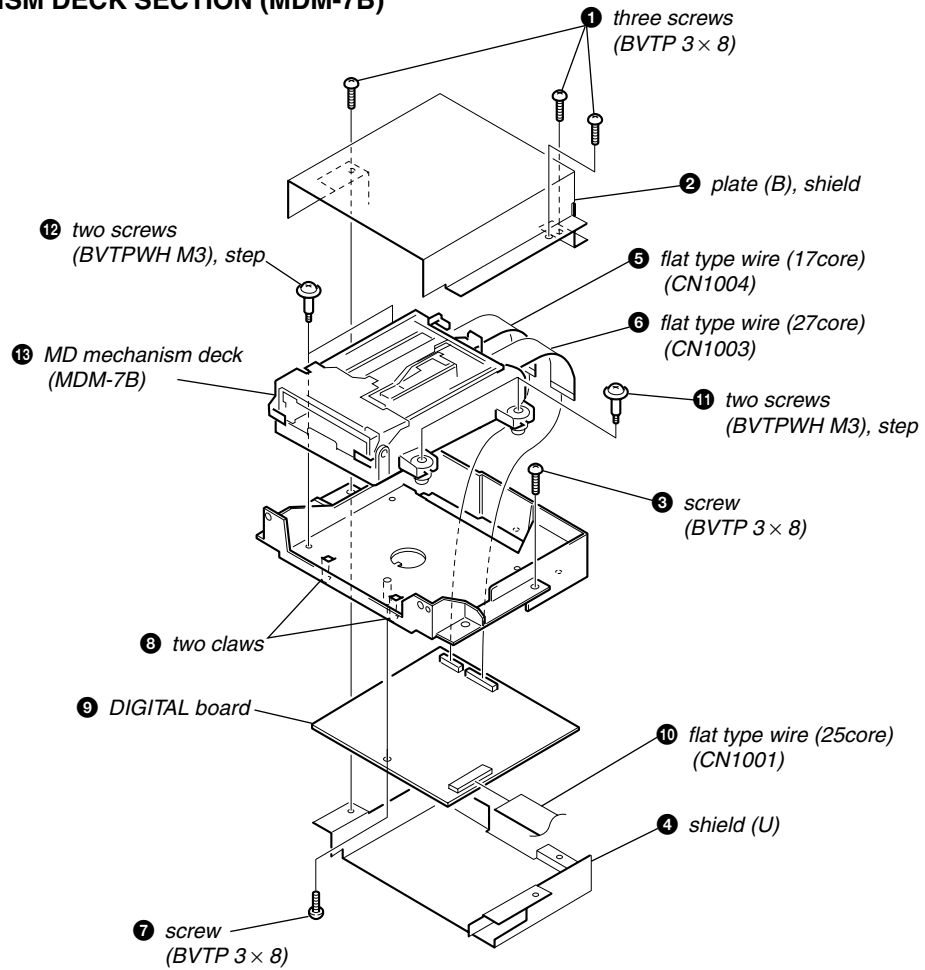
3-3. TAPE MECHANISM DECK SECTION (TCM-230AWR12)



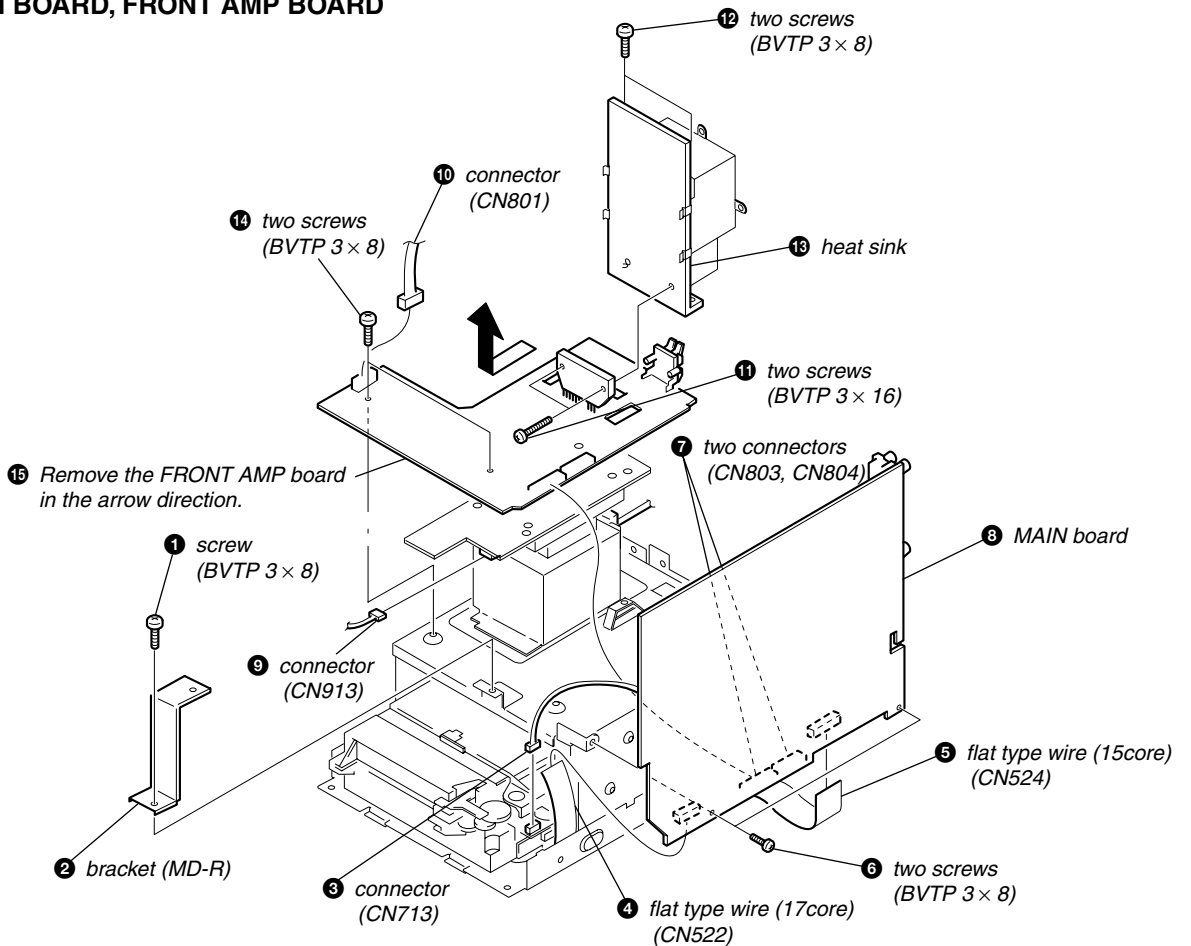
3-4. BACK PANEL SECTION



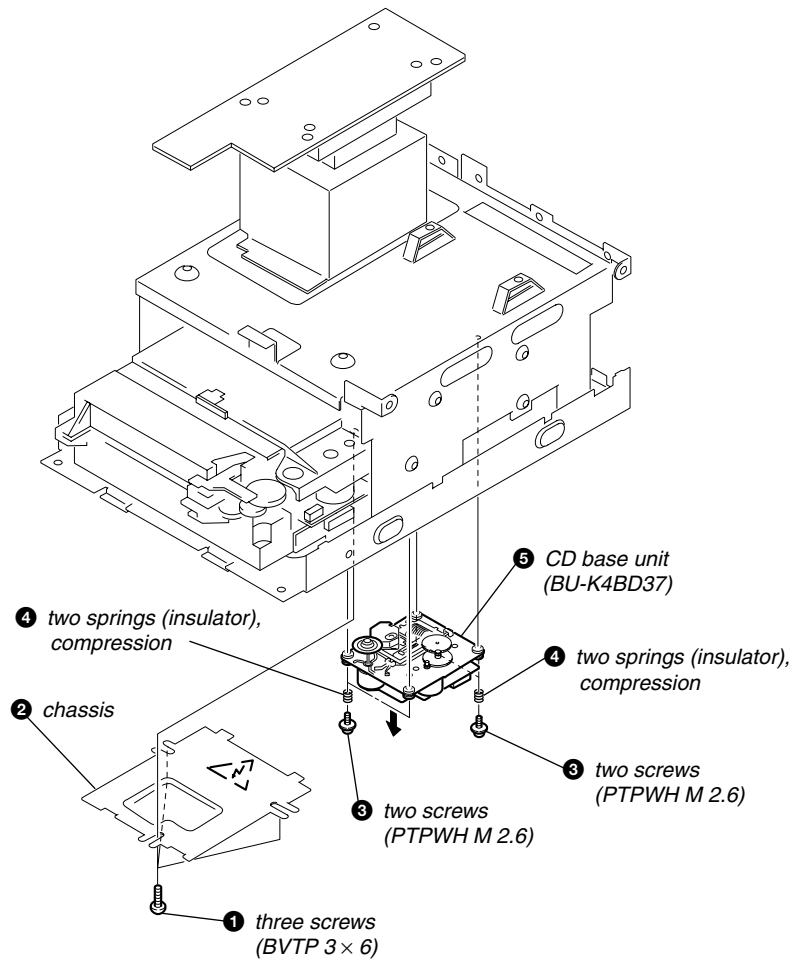
3-5. MD MECHANISM DECK SECTION (MDM-7B)



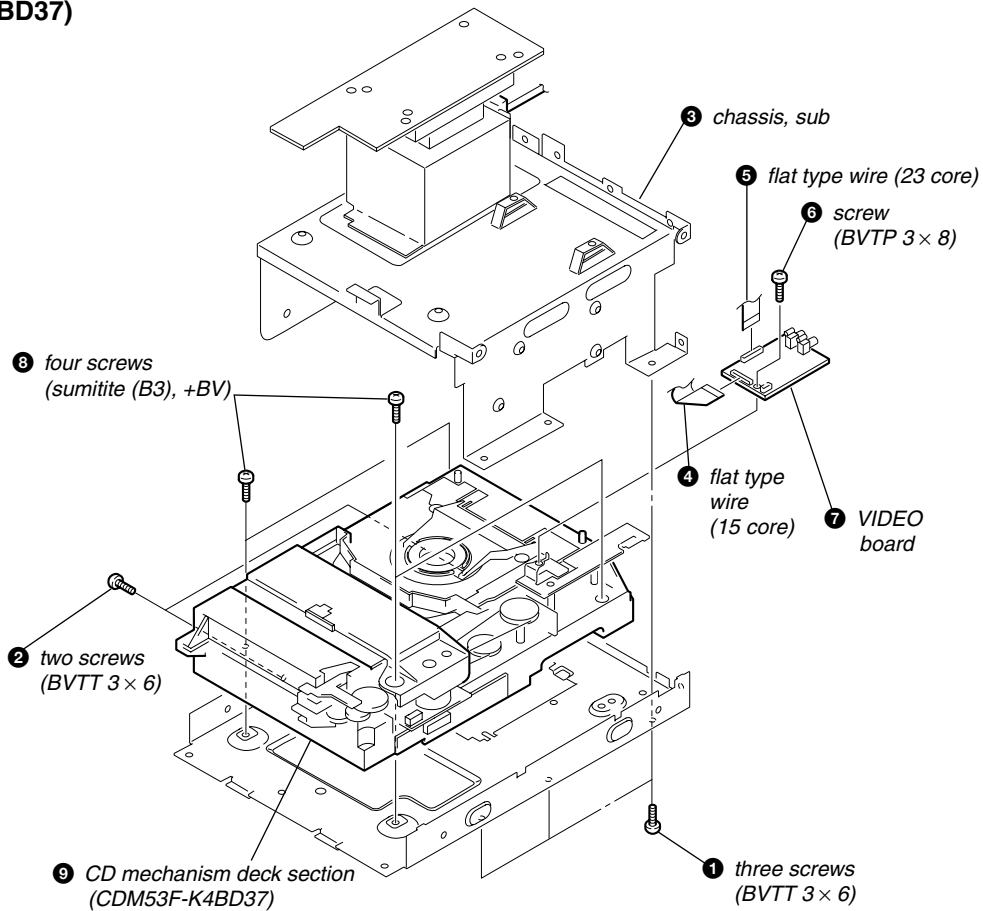
3-6. MAIN BOARD, FRONT AMP BOARD



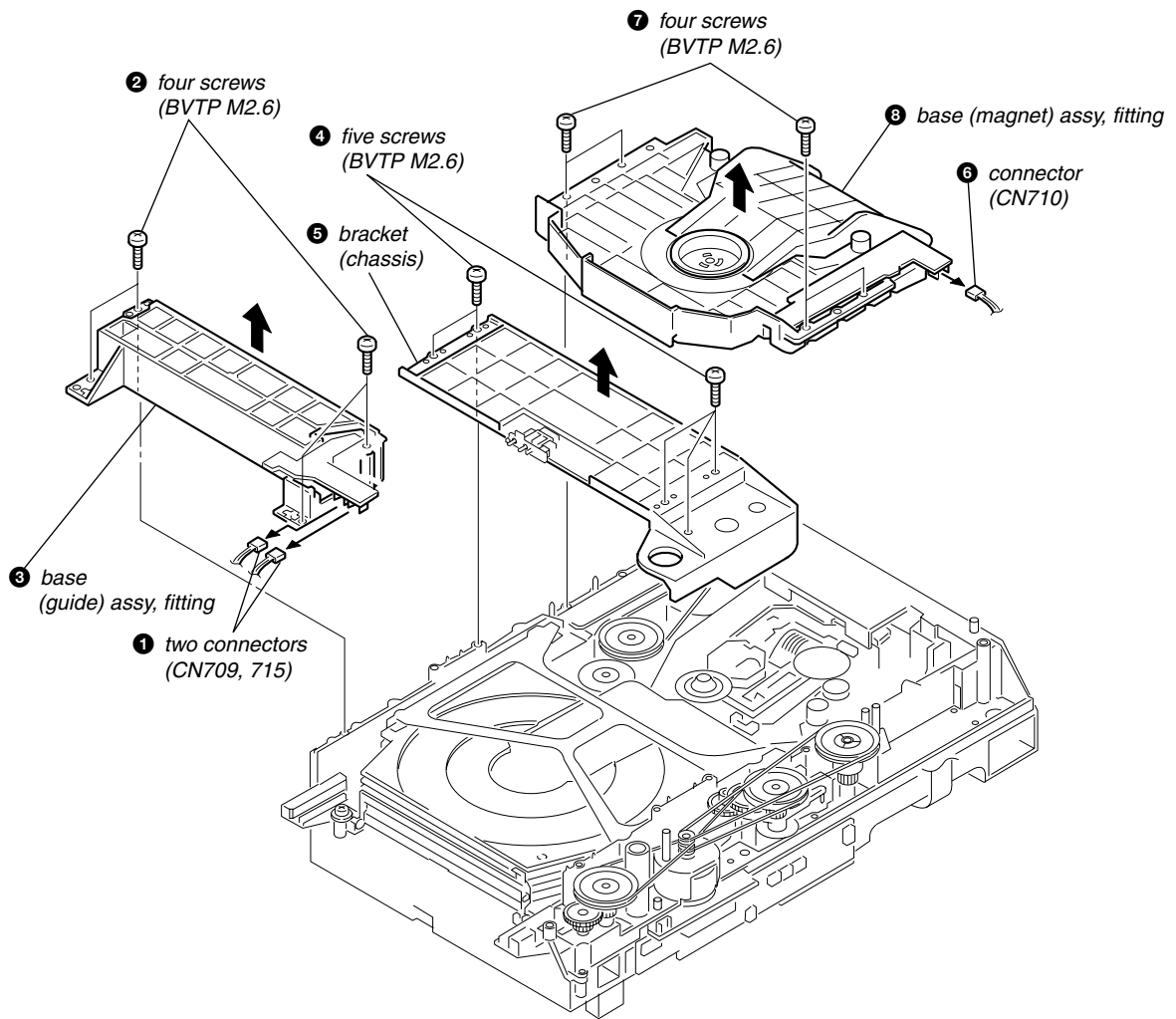
**3-7. CD BASE UNIT
(BU-K4BD37)**



**3-8. CD MECHANISM DECK SECTION
(CDM53F-K4BD37)**

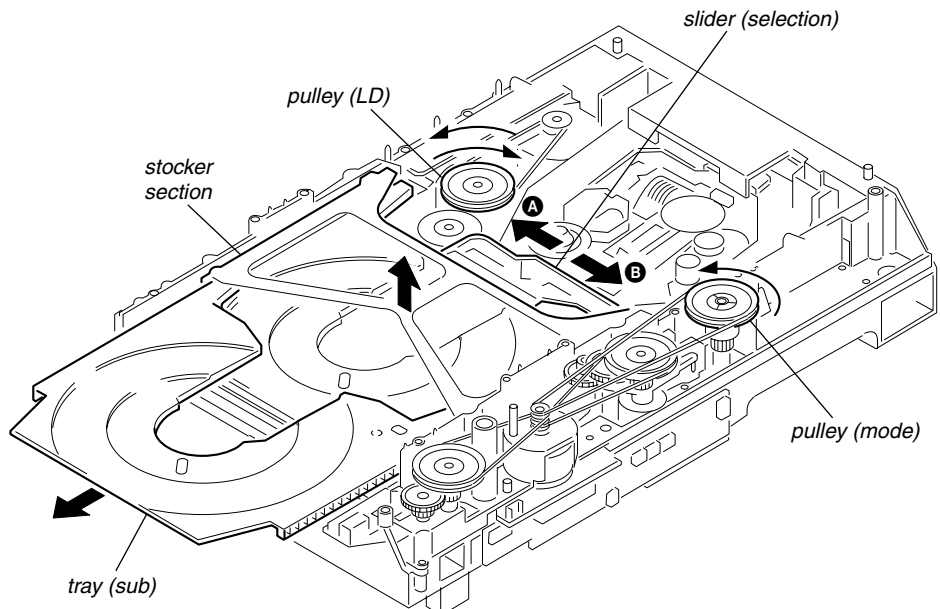


3-9. FITTING BASE (GUIDE) ASSY, BRACKET (CHASSIS) AND FITTING BASE (MAGNET) ASSY



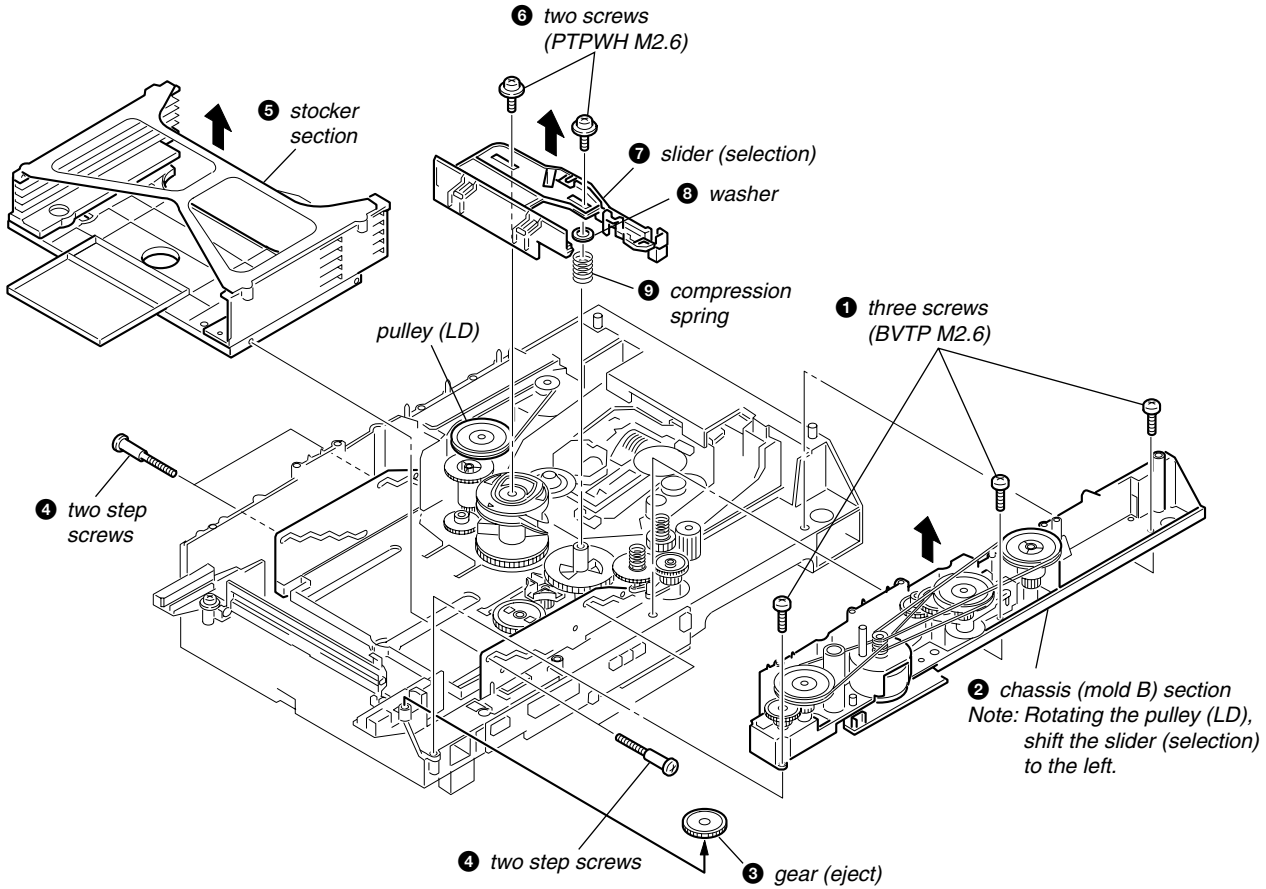
3-10. TRAY (SUB)

- 1 Rotating the pulley (LD), shift the slider (selection) in the arrow **A** direction.
- 2 Rotating the pulley (mode) in the arrow direction, adjust the tray (sub) to be removed.
- 3 Rotating the pulley (LD), shift the slider (selection) in the arrow **B** direction.
- 4 Rotating the pulley (mode) in the arrow direction, remove the tray (sub) to be removed.

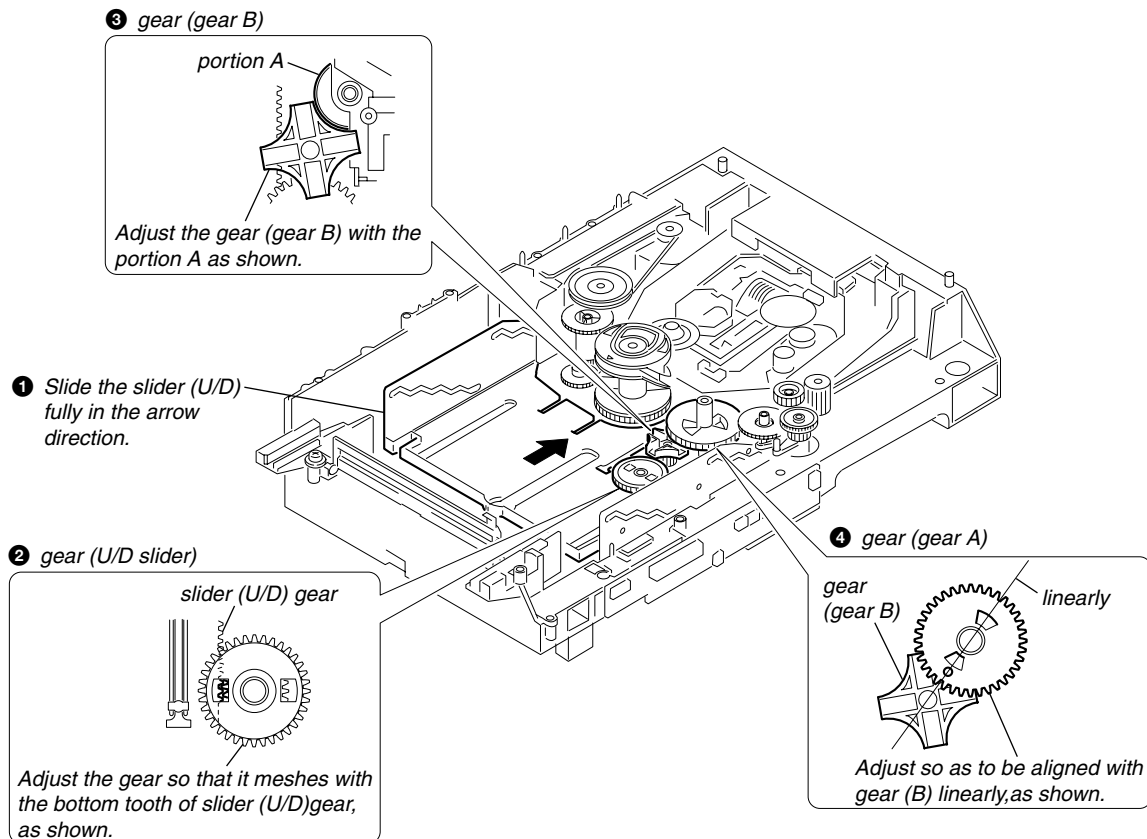


3-11. CHASSIS (MOLD B) SECTION, STOCKER SECTION AND SLIDER (SELECTION)

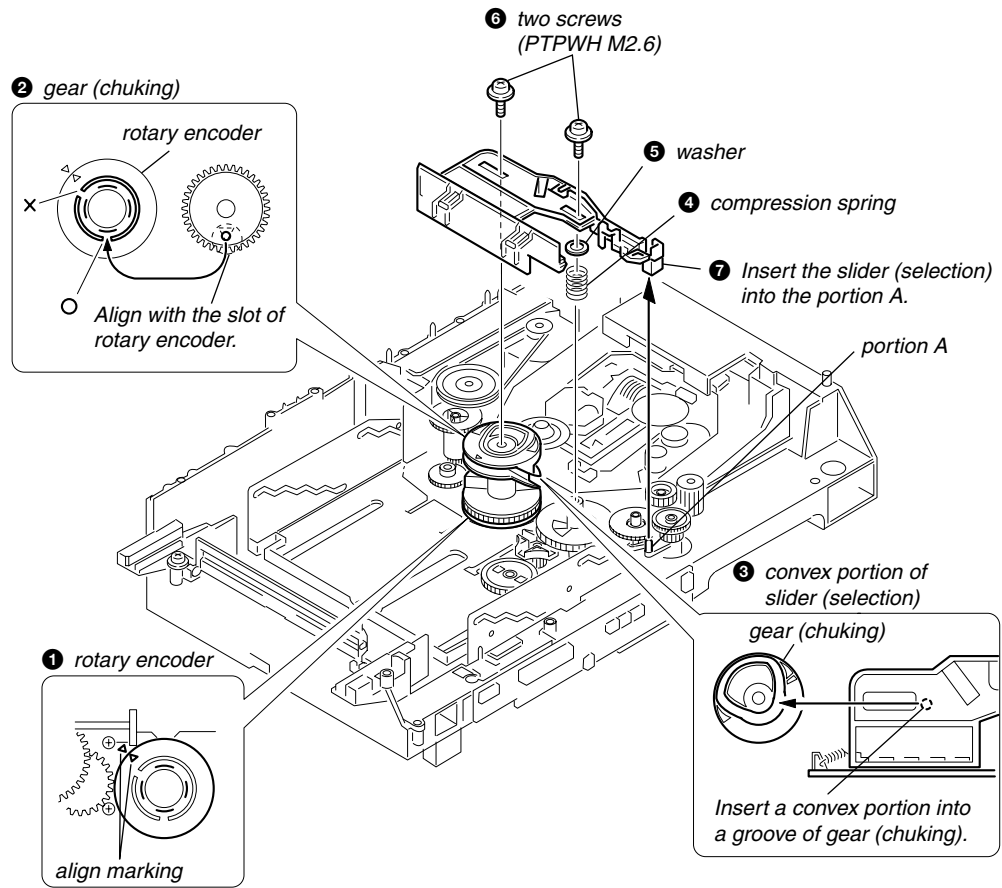
Note : In mounting the parts, refer to page 23 and 24.



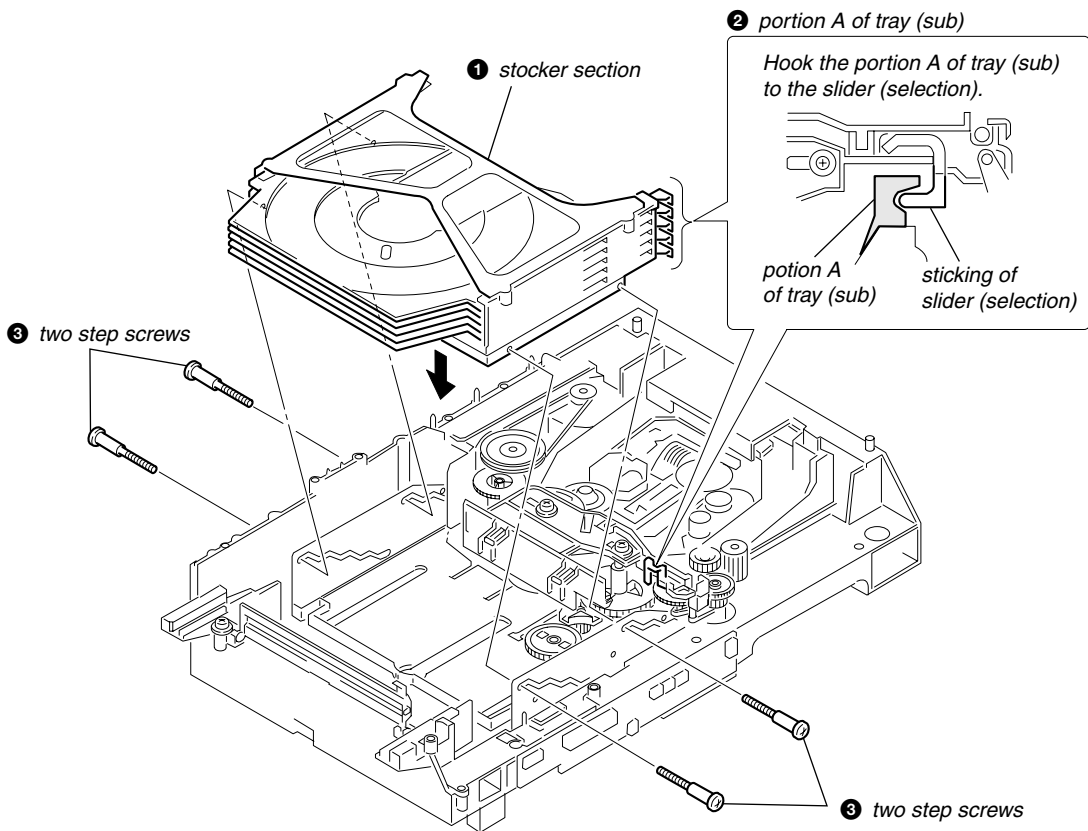
3-12. GEARS INSTALLATION



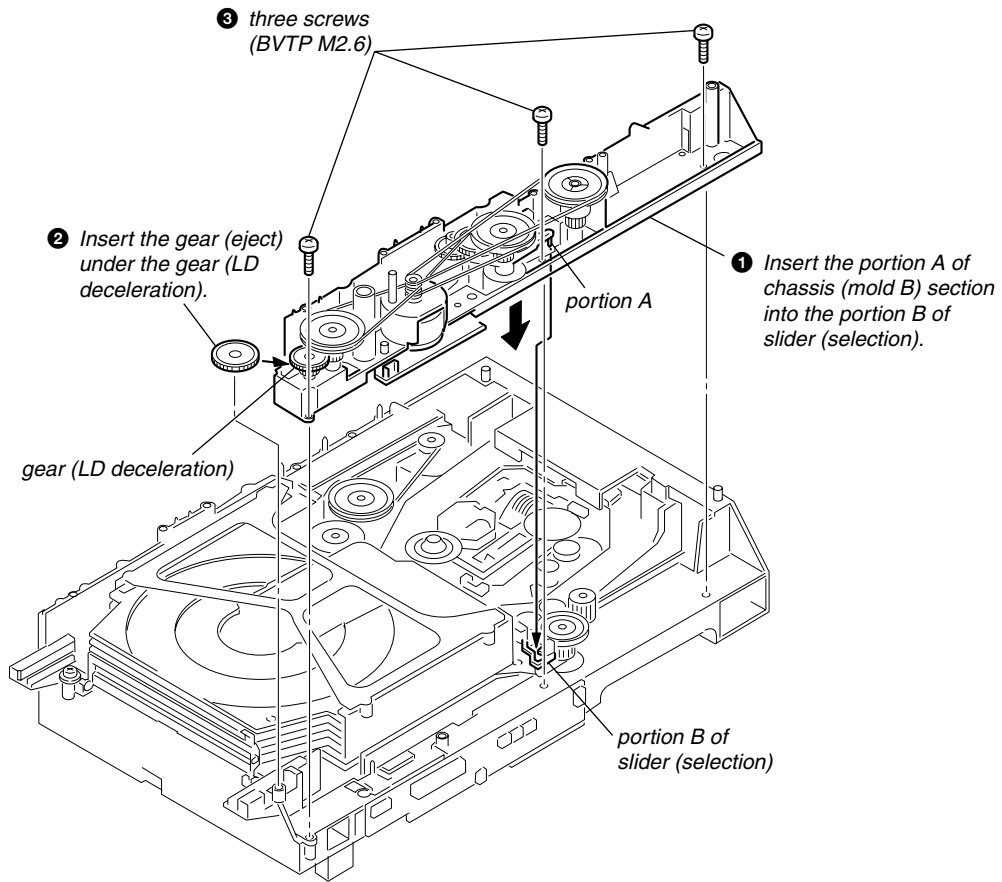
3-13. SLIDER (SELECTION) INSTALLATION



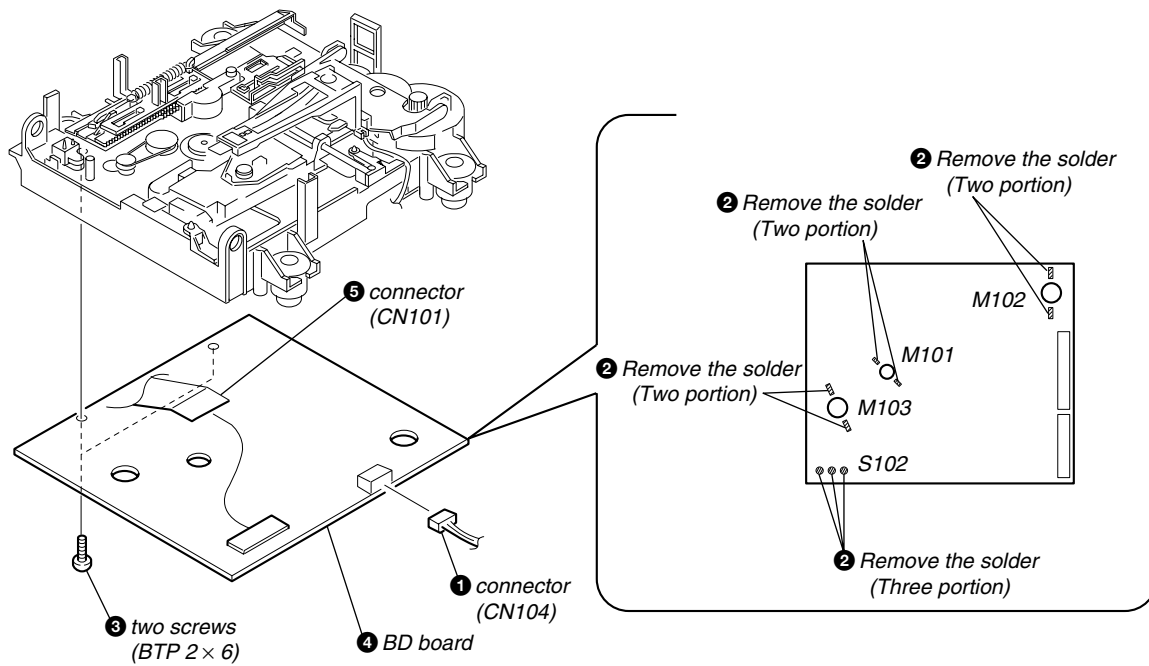
3-14. STOCKER SECTION INSTALLATION



3-15. CHASSIS (MOLD B) SECTION INSTALLATION



3-16. BD (MD) BOARD



SECTION 4 TEST MODE

[MC Cold Reset]

- The cold reset clears all data including preset data stored in the RAM to initial conditions. Execute this mode when returning the set to the customer.

Procedure:

1. Press three buttons **[■]**, **[DISPLAY]**, and **[DISC 5]** simultaneously.
2. The fluorescent indicator tube displays “COLD RESET” and the set is reset.

[CD Ship Mode]

- This mode moves the optical pick-up to the position durable to vibration. Use this mode when returning the set to the customer after repair.

Procedure:

1. Press **[I/O]** button to turn the set ON.
2. Press **[V-GROOVE]** button and **[I/O]** button simultaneously.
3. After the “STANDBY” display blinks six times, a message “LOCK” is displayed on the fluorescent indicator tube, and the CD ship mode is set.

[MC Hot Reset]

- This mode resets the set with the preset data kept stored in the memory. The hot reset mode functions same as if the power cord is plugged in and out.

Procedure:

1. Press three buttons **[■]**, **[DISPLAY]**, and **[DISC 1]** simultaneously.
2. The fluorescent indicator tube becomes blank instantaneously, and the set is reset.

[CD Service Mode]

- This mode can run the CD sled motor freely. Use this mode, for instance, when cleaning the optical pick-up.

Procedure:

1. Press **[I/O]** button to turn the set ON.
2. Select the function “CD”.
3. Press three buttons **[■]**, **[DISPLAY]**, and **[▲ 3]** simultaneously.
4. The CD service mode is selected.
5. With the CD in stop status, turn the shuttle knob clockwise to move the optical pick-up to outside track, or turn the shuttle knob counter-clockwise to inside track.
6. To exit from this mode, perform as follows:
 - 1) Move the optical pick-up to the most inside track.
 - 2) Press three buttons in the same manner as step 2.

- Note:**
- Always move the optical pick-up to most inside track when exiting from this mode. Otherwise, a disc will not be unloaded.
 - Do not run the sled motor excessively, otherwise the gear can be chipped.

[VACS ON/OFF Mode]

- This mode is used to switch ON and OFF the VACS (Variable Attenuation Control System).

Procedure:

Press the **[PUSH ENTER]** and **[■]** buttons simultaneously. The message “VACS OFF” or “VACS ON” appears.

[Change-over of AM Tuner Step between 9 kHz and 10 kHz]

- A step of AM channels can be changed over between 9 kHz and 10 kHz.

Procedure:

1. Press **[I/O]** button to turn the set ON.
2. Select the function “TUNER”, and press **[TUNER/BAND]** button to select the BAND “AM”.
3. Press **[I/O]** button to turn the set OFF.
4. Press **[MODE SELECT]** and **[I/O]** buttons simultaneously, and the display of fluorescent indicator tube changes to “AM 9 k STEP” or “AM 10 k STEP”, and thus the channel step is changed over.

[GC Test Mode]

- This mode is used to check the software version, FL tube, LED, keyboard and VACS.








Procedure:

1. Press three buttons **[■]**, **[DISPLAY]**, and **[DISC 2]** simultaneously.
2. LEDs and fluorescent indicator tube are all turned on.
3. When you want to enter the software version display mode, press **[DISC 1]**. The model number and destination are displayed.
4. Each time **[DISC 1]** is pressed, the display changes starting from MC version, GC version, VC version, CD version, CDM version, ST version, TC version, TA version, TM version and BR version in this order, and returns to the model number and destination display.
5. When **[DISC 3]** is pressed while the version numbers are being displayed except model number and destination, year, month and day of the software creation appear. When **[DISC 3]** is pressed again, the display returns to the software version display. When **[DISC 1]** is pressed while year, month and day of the software creation are being displayed, the year, month and day of creation of the software versions are displayed in the same order of version display.
6. Press **[DISC 2]** button, and the key check mode is activated.
7. In the key check mode, the fluorescent indicator tube displays “K 0 VO 0 STICK N”. Each time a button is pressed, “K 0” value increases. However, once a button is pressed, it is no longer taken into account.
“VO 0” value increases like 1, 2, 3 ... if rotating **[VOLUME]** knob in “+” direction, or it decreases like 0, 9, 8 ... if rotating in “-” direction.
Moving the stick changes the “STICK N” display.
When moved up : “STICK ↑”
When moved down : “STICK ↓”
When moved to the left : “STICK ←”
When moved to the right : “STICK →”
8. Also when **[DISC 3]** is pressed after lighting of all LEDs and FL tubes, value of VACS appears.
9. To exit from this mode, press three buttons in the same manner as step 1, or disconnect the power cord.

[MC Test Mode]

- This mode is used to check operations of the respective sections of Amplifier, Tuner, CD and Tape.

Procedure:

1. Press the  button to turn on the set.
2. Press the three buttons of , **DISPLAY** and **DISC 3** simultaneously.
3. A message "TEST MODE" appears on the FL display tube.
4. When the multi-stick is moved up, GEQ increases to its maximum and a message "GEQ MAX" appears.
5. When the multi-stick is moved down, GEQ decreases to its minimum and a message "GEQ MIN" appears.
6. When the multi-stick is moved left or right, GEQ is set to flat and a message "GEQ FLAT" appears.
7. When the VOLUME control knob is turned clockwise even slightly, the sound volume increases to its maximum and a message "VOLUME MAX" appears for two seconds, then the display returns to the original display.
8. When the VOLUME control knob is turned counter-clockwise even slightly, the sound volume decreases to its minimum and a message "VOLUME MIN" appears for two seconds, then the display returns to the original display.
9. In the test mode, the default-preset channel is called even when the TUNER is selected and an attempt is made to call the preset channel that has been stored in memory, by operating the Shuttle knob. (It means that the memory is cleared.)
10. When CD is selected and press **MODE SELECT**, and press **PUSH ENTER** when "Set up Mode" is displayed. Press **PUSH ENTER** when "CD Set up?" is displayed. Move the stick left and right to display "CD Edit Start?", and press **PUSH ENTER**, the disc that is being chucked at this moment becomes the default setting. It means that the default disc only is accessed when any other discs are selected even though the display indication changes accordingly. At the same time, the  to  cannot be accepted. (It means that the tray motor and the turntable motor are disabled of their operation.)
11. When a tape is inserted in Deck B and recording is started, the input source function selects VIDEO automatically.
12. When  button is pressed to stop recording, the Tape (Deck) B is selected and tape is rewound using the  button, tape is rewound, tape is stops at around the record-starting position and playback of the recorded portion of the tape is started. If PAUSE is inserted even once during recording, tape is rewound to the position around the PAUSE position and is played back.
13. When the **HIGH-SPEED CD-MD SYNC** Button is press during playback of Deck B, either normal speed or high speed can be selected by this button.
14. Select the desired loop by pressing **MODE SELECT**, and press **PUSH ENTER** when "Set up Mode" is displayed. Press **PUSH ENTER** when "CD Set up?" is displayed. Move the stick left and right to display "Tape Set Up?", and press **PUSH ENTER**. Press **PUSH ENTER** when "Direction Set Up?" is displayed. Move the stick left and right to display "Cycle?", and press **PUSH ENTER**. Insert a test tape AMS-110A or AMS-RO to Deck A.
15. Press the **SYNC REC** button to enter the AMS test mode.
16. After a tape is rewound first, the FF AMS is checked, and the mechanism is shut off after detecting the AMS signal twice.
17. Then the REW AMS is checked and the mechanism is shut off after detecting the AMS signal twice.
18. When the check is complete, a message of either OK or NG appears.
19. When you want to exit this mode, press the  button twice. The cold reset is enforced at the same time.


[Aging Mode]

This mode can be used for operation check of CD section and tape deck section.

- If an error occurred:
The aging operation stops and display status.
- If no error occurs:
The aging operation continues repeatedly.

1. Operating method of Aging Mode

Turn on the main power and select "CD" of the function.

- 1) Set a disc in DISC1 tray. Select ALL DISC CONTINUE, and REPEAT OFF.
- 2) Load the tapes recording use into the decks A and B respectively.
- 3) Press three buttons , **DISPLAY**, and **DISC 4** simultaneously.
- 4) Aging operations of CD and tape are started at the same time.

• Tape Deck

1. The tape in deck A is rewind. "TAPE A AG-1" is displayed.
2. The FWD side of deck A is played for two minutes.
"TAPE A AG-2" is displayed.
3. The tape in deck A is fast forwarded. "TAPE A AG-3" is displayed. Fast forward is carried out for 20 seconds or to the tape end.
4. The RVS side of deck A is played for two minutes.
"TAPE A AG-4" is displayed.
5. The tape in deck A is rewind. "TAPE A AG-5" is displayed.
6. The FWD side of deck B is played for two minutes.
"TAPE B AG-2" is displayed.
7. The tape in deck B is fast forwarded. "TAPE B AG-3" is displayed. Fast forward is carried out for 20 seconds or to the tape end.
8. The RVS side of deck B is played for two minutes.
"TAPE B AG-4" is displayed.
9. The tape in deck A is rewind. "TAPE A AG-5" is displayed.
10. Repeated from step 2.

• CD

1. The tray rotates.
2. DISC 5 is chucked.
3. The TOC is read.
4. The first track is played for 3 seconds.
5. The last track is played for 3 seconds.
6. DISC 1 is open.
7. DISC 1 is close.
8. Repeated from step 2.

2. Ending the Aging Mode

- 1) End the Aging Mode with the power off.
- 2) To reset the CD error history, be sure to perform cold reset.

4-1. PRECAUTIONS FOR USE OF TEST MODE

- As loading related operations will be performed regardless of the test mode operations being performed, be sure to check that the disc is stopped before setting and removing it.
Even if the **[MD ▲]** button is pressed while the disc is rotating during continuous playback, continuous recording, etc., the disc will not stop rotating.
Therefore, it will be ejected while rotating.
Be sure to press the **[CLEAR]** button while REC IT is lit, and press the **[MD ▲]** button while REC IT is off after the disc stops rotating.

4-1-1. Recording laser emission mode and operating buttons

- Continuous recording mode (CREC 1MODE) (C35)
- Laser power check mode (LDPWR CHECK) (C13)
- Laser power adjustment mode (LDPWR ADJUS) (C04)
- Iop check (Iop Compare) (C27)
- Iop value nonvolatile writing (Iop NV Save) (C06)
- Traverse (MO) check (EF MO CHECK) (C14)
- Traverse (MO) adjustment (EF MO ADJUS) (C07)
- When pressing the **[MD REC]** button.

4-2. SETTING THE TEST MODE

The following are two methods of entering the test mode.

Procedure 1: In the power ON state, set the function to MD, and while pressing the **[DISPLAY]** and **[■]** buttons together, press **[V-GROOVE]**.
When the test mode is set, “[Check]” will be displayed. Move the multi-stick to switch between the following three groups;
... ↔ Check ↔ Service ↔ Develop ↔ ...

Procedure 2: In the power ON state, set the function to MD, and while pressing the **[DISPLAY]** and **[■]** buttons together, press the **[NAME EDIT/CHARACTER]** button.
When the test mode is set, “AUTO CHECK” will be displayed. By setting the test mode using this method, only the “Check” group of method 1 can be executed.

NOTE: Do not use the test mode in the [Develop] group.

If used, the unit may not operate normally.

If the [Develop] group is set accidentally, press the **[CLEAR]** button while REC IT is lit, immediately to exit the [Develop] group.

4-3. EXITING THE TEST MODE

Press the **[MD ▲]** button while REC IT is off. The disc is ejected when loaded, and “Standby” display blinks, and the STANDBY state is set.

4-4. BASIC OPERATIONS OF THE TEST MODE

Operate using the multi-stick, **[PUSH ENTER]** button, **[MD REC MODE]** button, **[CLEAR]** button, **[NAME EDIT/CHARACTER]** button.

Function name	Function
CLEAR button (When REC IT is lit)	Cancel or move to top hierarchy
PUSH ENTER button	Set
Multistick (Left or Right)	Select
MD REC MODE button (When REC IT is lit)	Set submenu
NAME EDIT/CHARACTER button	Switching of button operations (REC IT lights up/goes off)

4-5. SELECTING THE TEST MODE

There are 26 types of test modes as shown below. The groups can be switched by moving the multi-stick. After selecting the group to be used, press the **[PUSH ENTER]** button. After setting a certain group, move the multi-stick to switch between these modes.

Refer to “Group” in the table for details selected.

All adjustments and checks during servicing can be performed in the test mode in the Service group.

NOTE: Do not use the test mode in the [Develop] group.

If used, the unit may not operate normally.

If the [Develop] group is set accidentally, press the **[CLEAR]** button while REC IT is lit, immediately to exit the [Develop] group.

Display	No.	Details	Mark	Group	
				Check	Service
AUTO CHECK	C01	Automatic self-diagnosis			○
Err Display	C02	Error history display, clear			○
TEMP ADJUS	C03	Temperature compensation offset adjustment			○
LDPWR ADJUS	C04	Laser power adjustment			○
Iop Write	C05	Iop data writing			○
Iop NV Save	C06	Writes current Iop value in read nonvolatile memory using microprocessor			○
EF MO ADJUS	C07	Traverse (MO) adjustment			○
EF CD ADJUS	C08	Traverse (CD) adjustment			○
FBIAS ADJUS	C09	Focus bias adjustment			○
AG Set (MO)	C10	Focus, tracking gain adjustment (MO)			○
AG Set (CD)	C11	Focus, tracking gain adjustment (CD)			○
TEMP CHECK	C12	Temperature compensation offset check		○	○
LDPWR CHECK	C13	Laser power check		○	○
EF MO CHECK	C14	Traverse (MO) check		○	○
EF CD CHECK	C15	Traverse (CD) check		○	○
FBIAS CHECK	C16	Focus bias check		○	○
ScurveCHECK	C17	S-curve check	×	○	
VERIFYMODE	C18	Nonvolatile memory check	×	○	
DETRK CHECK	C19	Detrack check	×	○	
0920 CHECK	C25	Most circumference check	×	○	
Iop Read	C26	Iop data display		○	○
Iop Compare	C27	Comparison with initial Iop value written in nonvolatile memory		○	○
ADJ CLEAR	C28	Initialization of nonvolatile memory for adjustment values			○
INFORMATION	C31	Display of microprocessor version, etc.		○	○
CPLAY1MODE	C34	Continuous playback mode		○	○
CREC 1MODE	C35	Continuous recording mode		○	○

- For details of each adjustment mode, refer to “6. Electrical Adjustments”.
For details of “Err Display”, refer to “Self-Diagnosis Function” on page 2.
- If a different mode has been selected by mistake, press the **[CLEAR]** button while REC IT is lit, to exit that mode.
- Modes with (X) in the Mark column are not used for servicing and therefore are not described in detail. If these modes are set accidentally, press the **[CLEAR]** button while REC IT is lit, to exit the mode immediately.

4-5-1. Operating the Continuous Playback Mode

1. Entering the continuous playback mode

- ① Set the disc in the unit. (Whichever recordable discs or discs for playback only are available.)
- ② Move the multi-stick and display "CPLAY1MODE"(C34).
- ③ Press the **[PUSH ENTER]** button to change the display to "CPLAY1MID".
- ④ When access completes, the display changes to "C = [] AD = []".

Note : The numbers "[]" displayed show you error rates and ADER.

2. Changing the parts to be played back

- ① Press the **[PUSH ENTER]** button during continuous playback to change the display as below.

"CPLAY1MID" → "CPLAY1OUT" → "CPLAY1IN" →

When pressed another time, the parts to be played back can be moved.

- ② When access completes, the display changes to "C = [] AD = []".

Note : The numbers "[]" displayed show you error rates and ADER.

3. Ending the continuous playback mode

- ① Press the **[CLEAR]** button while REC IT is lit. The display will change to "CPLAY1MODE"(C34).
- ② To remove the disc, press the **[MD ▲]** button while REC IT is off.

Note : The playback start addresses for IN, MID, and OUT are as follows.

IN 40h cluster
MID 300h cluster
OUT 700h cluster

4-5-2. Operating the Continuous Recording Mode (Use only when performing self-recording/palyback check.)

1. Entering the continuous recording mode

- ① Set a recordable disc in the unit.
- ② Move the multi-stick and display "CREC 1MODE" (C35).
- ③ Press the **[PUSH ENTER]** button to change the display to "CREC 1MID".
- ④ When access completes, the display changes to "CREC1 ([])" and **MD REC** lights up.

Note : The numbers "[]" displayed shows you the recording position addresses.

2. Changing the parts to be recorded

- ① When the **[PUSH ENTER]** button is pressed during continuous recording, the display changes as below.

"CREC 1MID" → "CREC 1OUT" → "CREC 1IN" →

When pressed another time, the parts to be recorded can be changed. **MD REC** goes off.

- ② When access completes, the display changes to "CREC 1([])" and **MD REC** lights up.

Note : The numbers "[]" displayed shows you the recording position addresses.

3. Ending the continuous recording mode

- ① Press the **[CLEAR]** button while REC IT is lit. The display changes to "CREC 1MODE" (C35) and **MD REC** goes off.
- ② To remove the disc, press the **[MD ▲]** button while REC IT is off.

Note 1 : The recording start addresses for IN, MID, and OUT are as follows.

IN 40h cluster
MID 300h cluster
OUT 700h cluster

Note 2 : Press the **[CLEAR]** button while REC IT is lit can be used to stop recording anytime.

Note 3 : Do not perform continuous recording for long periods of time above 5 minutes.

Note 4 : During continuous recording, be careful not to apply vibration.

4-6. FUNCTIONS OF OTHER BUTTONS

Function	REC IT	Contents
PUSH ENTER	Lit	Sets continuous playback when pressed in the STOP state. When pressed during continuous playback, the tracking servo turns ON/OFF.
CLEAR	Off	Stops continuous playback and continuous recording.
▷▷ (FF)	Off	The sled moves to the outer circumference only when this is pressed.
<< (FR)	Off	The sled moves to the inner circumference only when this is pressed.
REC MODE	Off	Switches between the pit and groove modes when pressed.
REC	Off	Switches the spindle servo mode (CLV S ↔ CLV A).
HIGH SPEED CD-MD	Lit	Switches the displayed contents each time the button is pressed.
EJECT	Off	Ejects the disc.
		Exits the test mode. (When No disc)

4-7. TEST MODE DISPLAYS

Each time the **HIGH SPEED CD-MD SYNC** button is pressed, the display changes in the following order. When CPLAY and CREC are started, the display will forcibly be switched to the error rate display as the initial mode.

1. Mode display

Displays “TEMP ADJUS”(C03), “CPLAY1MODE”(C34), etc.

2. Error rate display

Displays the error rate in the following way.

C1 = □□□□ AD = □□

C1 = Indicates the C1 error.

AD = Indicates ADER.

3. Address display

The address is displayed as follows. (MO:recordable disc, CD:playback only disc)

h = □□□□ s = □□□□ (MO pit and CD)

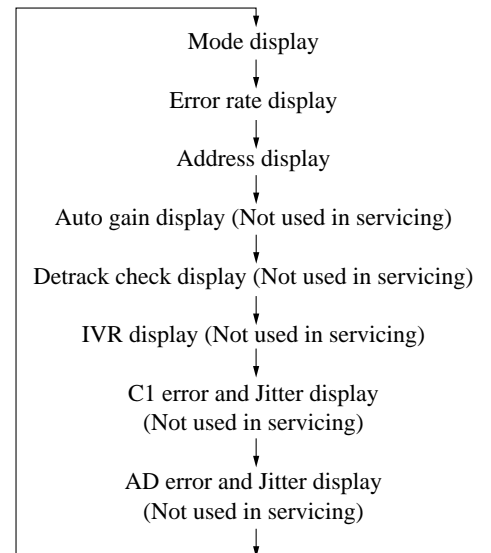
h = □□□□ a = □□□□ (MO groove)

h = Indicates the header address.

s = Indicates the SUBQ address.

a = Indicates the ADIP address.

Note: “-” is displayed when the address cannot be read.



4-8. MEANINGS OF OTHER DISPLAYS

Display	Contents	
	When Lit	When Off
LP2	Servo ON	Servo OFF
LP4	Tracking servo OFF	Tracking servo ON
MD REC	Recording mode ON	Recording mode OFF
TRACK	CLV low speed mode	CLV normal mode
L.SYNC	ABCD adjustment completed	
OVER	Tracking offset cancel ON	Tracking offset cancel OFF
TOC	Tracking auto gain OK	
REPEAT	Focus auto gain OK	
MD PLAY (LED)	Pit	Groove
DISC	High reflection	Low reflection
x1	CLV S	CLV A
MONO	CLV LOCK	CLV UNLOCK

4-9. AUTOMATIC SELF-DIAGNOSIS FUNCTION

This test mode performs CREC and CPLAY automatically for mainly checking the characteristics of the optical pick-up.

To perform this test mode, the laser power must first be checked.

Perform AUTO CHECK after the laser power check and Iop check.

Procedure

1. Press the **[PUSH ENTER]** button. If "LDPWR" is displayed, it means that the laser power check has not been performed. In this case, perform the laser power check and Iop compare, and then repeat from step 1.
2. If a disc is in the mechanical deck, it will be ejected forcibly.
"DISC IN" will be displayed in this case. Load a test disc (MDW-74/GA-1) which can be recorded.
3. If a disk is loaded at step 2, the check will start automatically.
4. When "XX CHECK" is displayed, the item corresponding to XX will be performed.
When "06 CHECK" completes, the disc loaded at step 2 will be ejected. "DISC IN" will be displayed. Load the check disc (MD) TDYS-1.
5. When the disc is loaded in step 4, the check will automatically be resumed from "07 CHECK".
6. After completing to test item 12, check OK or NG will be displayed. If all items are OK, "CHECK ALL OK" will be displayed. If any item is NG, it will be displayed as "NG:xxxx".

When "CHECK ALL OK" is displayed, it means that the optical pick-up is normal. Check the operations of the other spindle motor, thread motor, etc.

When displayed as "NG:xxxx", it means that the optical pick-up is faulty. In this case, replace the optical pick-up.

4-10. INFORMATION

Display the software version.

Procedure

1. If displayed as "INFORMATION", press the **[PUSH ENTER]** button.
2. The software version will be displayed.
3. Press the **[CLEAR]** button while REC IT is lit to end this mode.

4-11. WHEN MEMORY NG IS DISPLAYED

If the nonvolatile memory data is abnormal, "E001"/"MEMORY NG" will be displayed so that the MD deck does not continue operations. In this case, set the test mode promptly and perform the following procedure.

Procedure

1. Set the test mode. (Refer to 4-2.)
2. Normally a message for selecting the test mode will be displayed. However if the nonvolatile memory is abnormal, the following will be displayed. "INIT EEP?"
3. Press the **[■]** button and **[MD ▲]** button together while REC IT is off.
4. Move the multi-stick and select MDM-7B.
5. Press the **[MD REC MODE]** button while REC IT is lit. If the nonvolatile memory is successfully overwritten, the normal test mode will be set and a message to select the test mode will be displayed.

SECTION 5 MECHANICAL ADJUSTMENTS

Precaution

1. Clean the following parts with a denatured alcohol-moistened swab:

record/playback heads	pinch rollers
erase head	rubber belts
capstan	idlers
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

Mode	Torque meter	Meter reading
FWD	CQ-102C	3.04 – 6.96 N • m (31 to 71 g • cm) (0.43 – 0.98 oz • inch)
FWD back tension	CQ-102C	0.20 – 0.58 N • m (2 to 6 g • cm) (0.02 – 0.08 oz • inch)
REV	CQ-102RC	3.04 – 6.96 N • m (31 to 71 g • cm) (0.43 – 0.98 oz • inch)
REV back tension	CQ-102RC	0.20 – 0.58 N • m (2 to 6 g • cm) (0.02 – 0.08 oz • inch)
FF/REW	CQ-201B	6.97 – 14.02 N • m (71 to 143 g • cm) (0.98 – 1.99 oz • inch)
FWD tension	CQ-403A	0.98 N • m or more (100 g or more) (3.53 oz or more)
REV tension	CQ-403R	0.98 N • m or more (100 g or more) (3.53 oz or more)

SECTION 6 ELECTRICAL ADJUSTMENTS

DECK SECTION

0 dB=0.775V

1. Demagnetize the record/playback head with a head demagnetizer.
2. Do not use a magnetized screwdriver for the adjustments.
3. After the adjustments, apply suitable locking compound to the parts adjusted.
4. The adjustments should be performed with the rated power supply voltage unless otherwise noted.
5. The adjustments should be performed in the order given in this service manual. (As a general rule, playback circuit adjustment should be completed before performing recording circuit adjustment.)
6. The adjustments should be performed for both L-CH and R-CH.
7. Switches and controls should be set as follows unless otherwise specified.

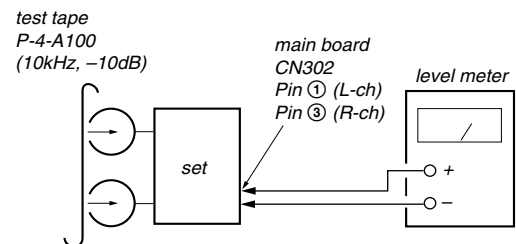
Tape	Signal	Used for
P-4-A100	10 kHz, -10 dB	Azimuth Adjustment
WS-48B	3 kHz, 0 dB	Tape Speed Adjustment
P-4-L300	315 Hz, 0 dB	Level Adjustment

Record/Playback Head Azimuth Adjustment (Deck A, Deck B)

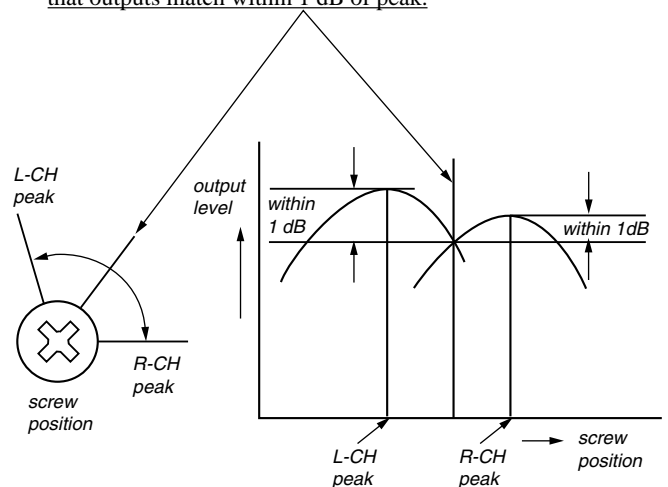
Note: Perform this adjustments for both decks.

Procedure:

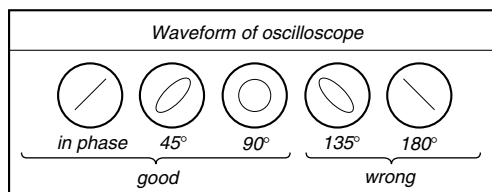
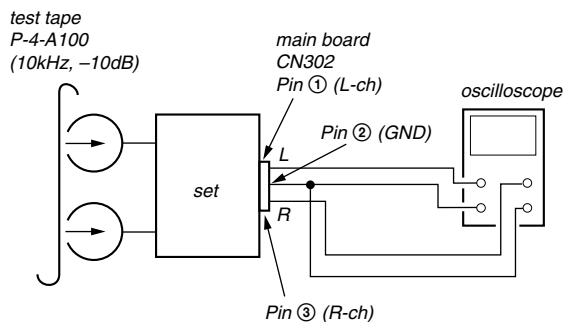
1. Mode : Playback



2. Turn the adjustment screw and check output peaks. If the peaks do not match for L-CH and R-CH, turn the adjustment screw so that outputs match within 1 dB of peak.

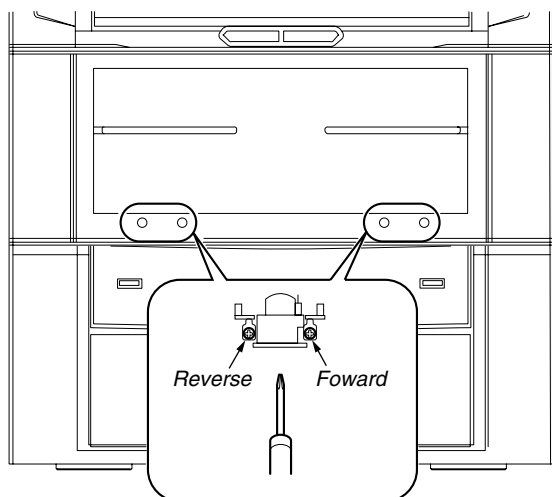


3. Mode: Playback



4. After the adjustments, apply suitable locking compound to the parts adjusted.

Adjustment Location: Playback Head (Deck A)
Record/Playback/Erase Head (Deck B)



Tape Speed Adjustment (Deck A)

Note: Set the test mode using the following method and begin tape speed adjustment.

In the test mode, the speed will switch to double speed or normal speed each time the [HIGH-SPEED CD-MD SYNC] button is pressed.

Procedure:

With the power turned ON, press the [STOP] button, [DISPLAY] button, and [DISC 3] button simultaneously.

(The "VOLUME" on the fluorescent display tube will blink while in the test mode.)

To exit the test mode, press the [POWER] button.

1. Insert the WS-48B into deck B.
2. Press the [STOP] button of deck B.
3. Press the [HIGH-SPEED CD-MD SYNC] button and play the tape at double speed.
4. Adjust RV1001 of the LEAF SW board so that the reading of the frequency counter becomes 6000 ± 180 Hz.
5. Press the [HIGH-SPEED CD-MD SYNC] button and play the tape at

normal speed.

6. Adjust RV1002 of the LEAF SW board so that the reading of the frequency counter becomes 3000 ± 90 Hz.
7. Press the [POWER] button, after the turned ON.
8. Insert the WS-48B into deck A, and insert the normal tape into deck B.
9. Press the [SYNC REC] button and display "TAPE A → B HIGH-SPEED" and then press the [REC] button to start recording.
10. Press the [STOP] button.
11. Press the [PLAY] button of deck B and check the reading of frequency counter becomes 3000 ± 90 Hz.

Adjustment Location: LEAF SW board

Sample Value of Wow and flutter

W.RMS (JIS) less than 0.3%
(test tape: WS-48B)

Playback Level Adjustment (Deck A, Deck B)

Procedure:

Mode: Playback

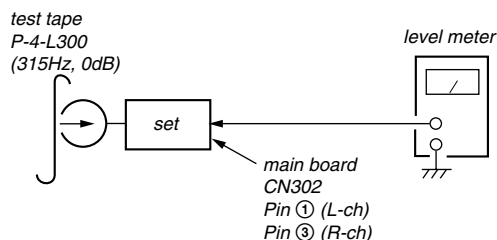
Deck A is RV311 (L-CH) and RV411 (R-CH), deck B is RV301 (L-CH) and RV401 (R-CH)

so that adjustment within the following adjustment level.

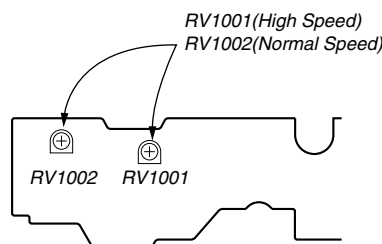
Adjustment level:

CN302 playback level: 301.5 to 338.3 mV (-8.2 to -7.2 dB)
level difference between the channels: within ± 0.5 dB

Adjustment Location: AUDIO board



Adjustment Location [LEAF SW BOARD]



Record Bias Adjustment (Deck B)

Procedure:

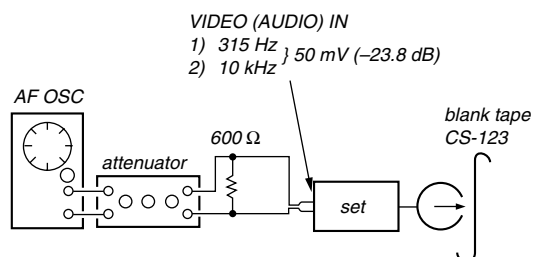
INTRODUCTION

When set to the test mode performed in **Tape Speed Adjustment**, when the tape is rewound after recording, the “REC memory mode” which rewinds only the recorded portion and playback is set.

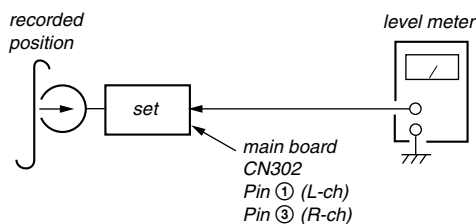
This “REC memory mode” is convenient for performing this adjustment. During recording, the input signal FUNCTION will automatically switch to VIDEO.

(After recording, press the button without stopping will return to the position where recording was started.)

1. Press **FUNCTION** button to select VIDEO. (This step is not necessary if the above test mode has already been set.)
2. Insert a tape into deck B, press the **TAPE REC PAUSE/START** button, and then press the button to start recording.
3. Mode: Record



4. Mode: Playback

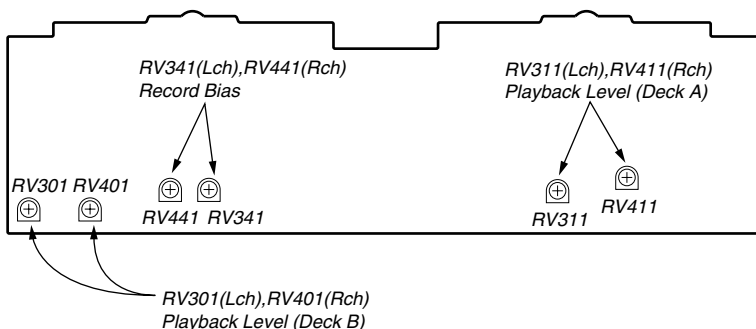


5. Confirm playback the signal recorded in step 2 become adjustment level as follows.
If these levels do not adjustment level, adjust the RV341 (L-CH) and RV441 (R-CH) on the AUDIO board to repeat steps 3 and 4.

Adjustment level: The playback output of 10 kHz level difference against 315 Hz reference should be 0 ± 0.5 dB.

Adjustment Location: AUDIO board

Adjustment Location: [AUDIO BOARD]



Record Level Adjustment (Deck B)

Procedure:

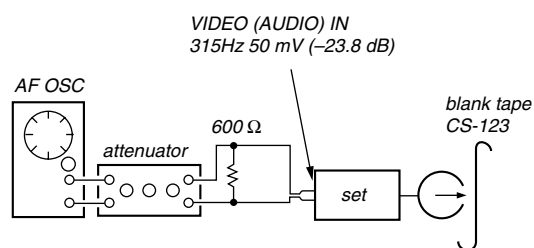
INTRODUCTION

When set to the test mode performed in **Tape Speed Adjustment**, when the tape is rewound after recording, the “REC memory mode” which rewinds only the recorded portion and playback is set.

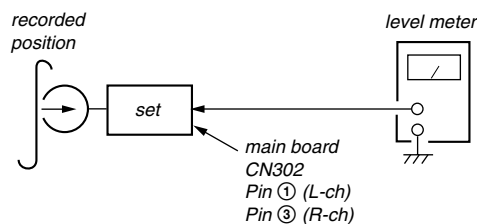
This “REC memory mode” is convenient for performing this adjustment. During recording, the input signal FUNCTION will automatically switch to VIDEO.

(After recording, press the button without stopping will return to the position where recording was started.)

1. Press **FUNCTION** button to select VIDEO. (This step is not necessary if the above test mode has already been set.)
2. Insert a tape into deck B, press the **TAPE REC PAUSE/START** button, and then press the button to start recording.
3. Mode: Record



4. Mode: Playback

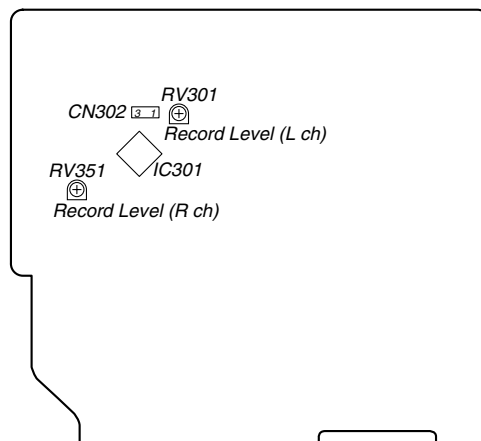


5. Confirm playback the signal recorded in step 2 become adjustment level as follows.
If these levels do not adjustment level, adjust the RV301 (L-CH) and RV351 (R-CH) on the MAIN board to repeat steps 3 and 4.

Adjustment level:
CN302 playback level: 47.2 to 53.0 mV (-24.3 to -23.3 dB)

Adjustment Location: MAIN board

[MAIN BOARD]

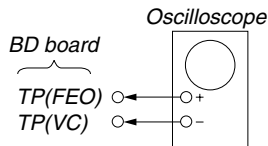


CD SECTION

Note :

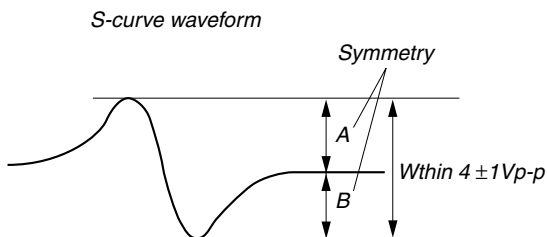
1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than 10MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

S-Curve Check



Procedure :

1. Connect oscilloscope to TP (FEO).
2. Connect between TP (FEO) and TP (VC) by lead wire.
3. Connect between TP (AGCCON) and TP (GND) by lead wire.
4. Turn button on.
5. Load a disc (YEDS-18) and actuate the focus search. (In consequence of open and close the disc tray, actuate the focus search)
6. Confirm that the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 4 ± 1 Vp-p.

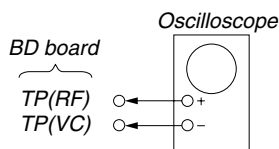


7. After check, remove the lead wire connected in step 2 and 3.

Note : • Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.

- Take sweep time as long as possible and light up the brightness to obtain best waveform.

RF Level Check

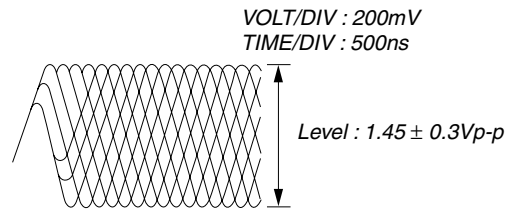


Procedure :

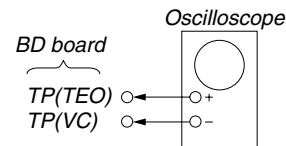
1. Connect oscilloscope to TP (RF).
2. Connect between TP (AGCCON) and TP (GND) by lead wire.
3. Turned button on.
4. Load a disc (YEDS-18) and playback.
5. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.
6. After check, remove the lead wire connected in step 2.

Note : Clear RF signal waveform means that the shape “◇” can be clearly distinguished at the center of the waveform.

RF signal waveform

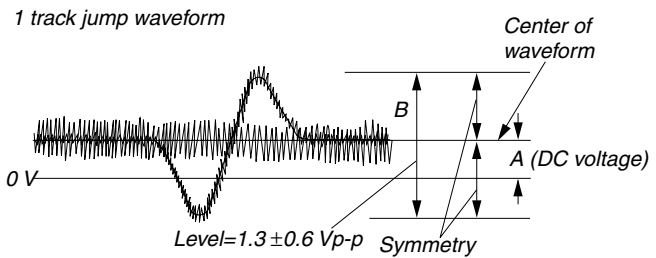


E-F Balance (1 Track jump) Check



Procedure :

1. Connect oscilloscope to TP (TEO) and TP (VC).
2. Turned button on.
3. Load a disc (YEDS-18) and playback the number five track.
4. Press the button. (Becomes the 1 track jump mode.)
5. Confirm that the level B and A (DC voltage) on the oscilloscope waveform.

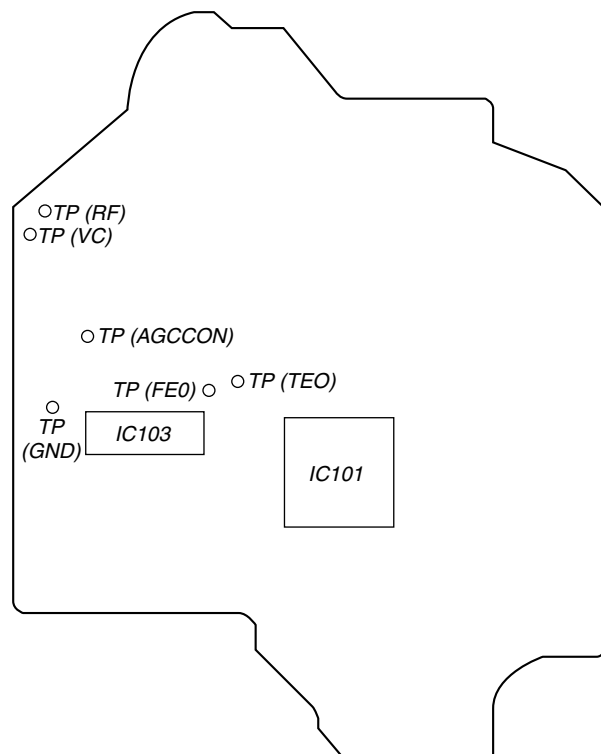


Specified level: $\frac{A}{B} \times 100 =$ less than $\pm 22\%$

6. After check, remove the lead wire connected in step 1.

Adjustment Location:

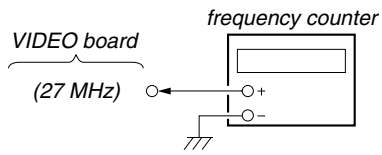
[BD (CD) BOARD] (Conductor Side)



VIDEO SECTION

FREQUENCY ADJUSTMENT

Connection:

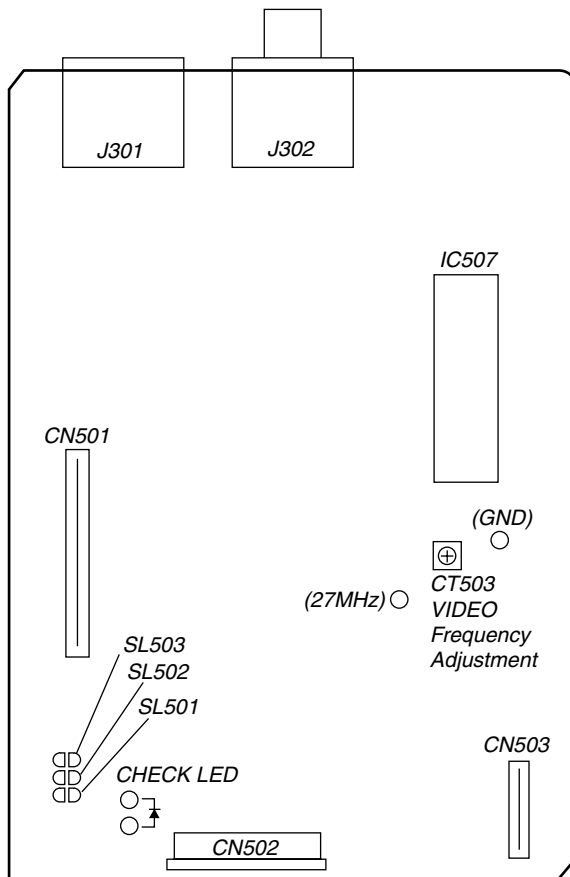


Procedure:

1. Connect the frequency counter to check point of the VIDEO board.
2. Turned **[I/O]** button switch on.
3. Press the **[FUNCTION]** button to select the CD.
4. Adjust CT503 on the VIDEO board so that the frequency counter reading $27.0 \text{ MHz} \pm 80 \text{ Hz}$ at stop status.

Adjustment Location:

[VIDEO BOARD] (SIDE A)

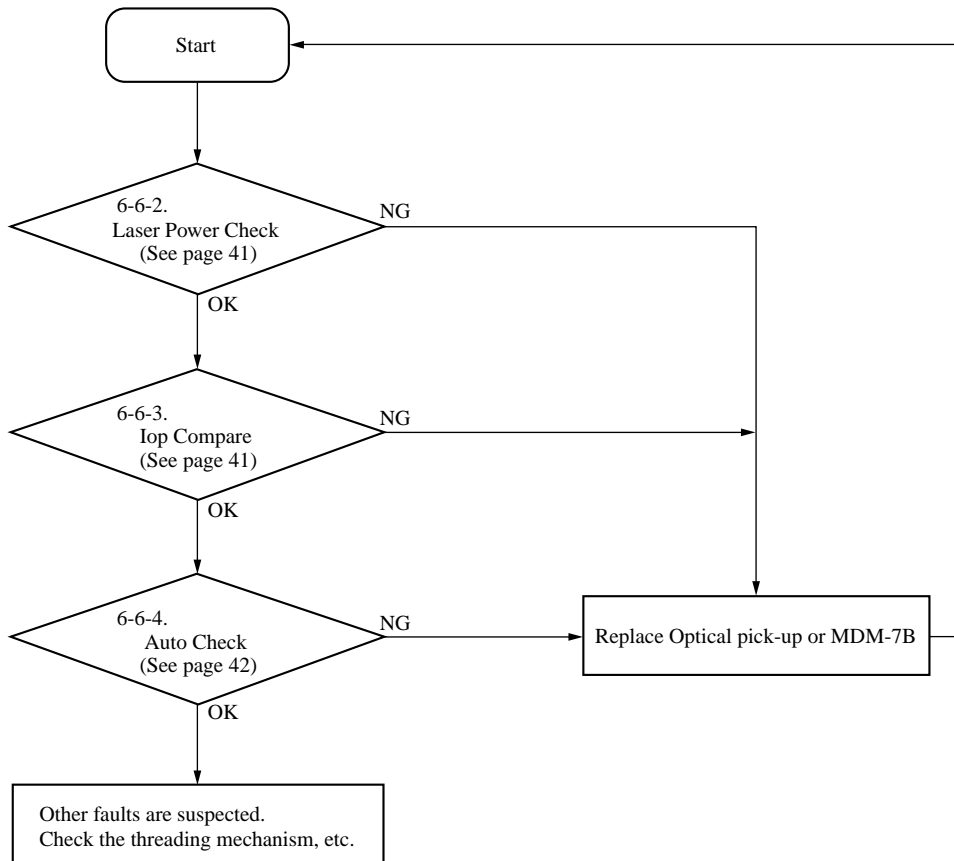


MD SECTION

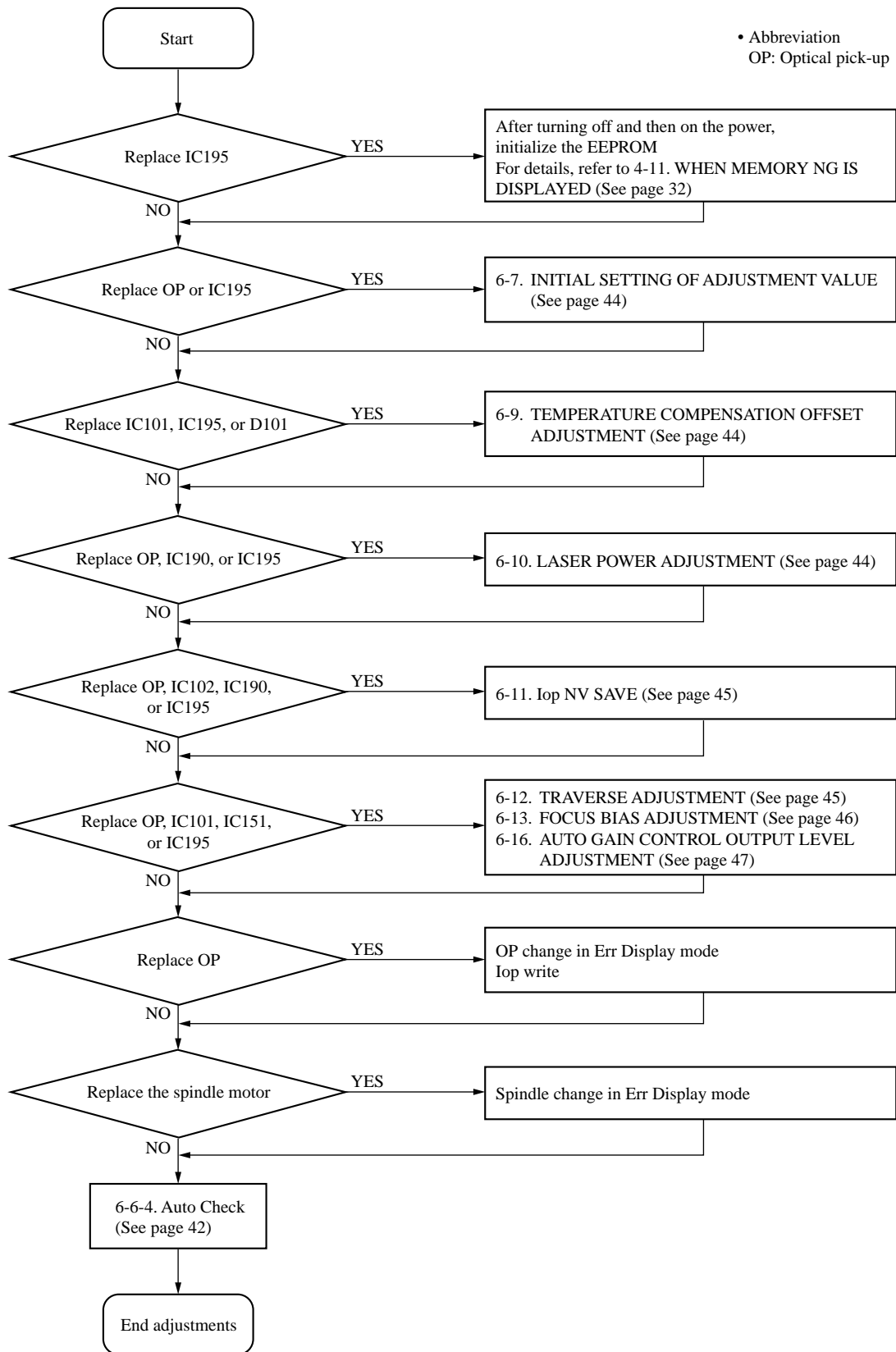
6-1. PARTS REPLACEMENT AND ADJUSTMENT

If malfunctions caused by Optical pick-up such as sound skipping are suspected, follow the following check.

Check before replacement



Adjustment flow

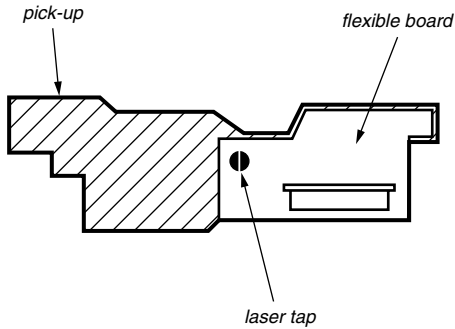


6-2. PRECAUTIONS FOR CHECKING LASER DIODE EMISSION

To check the emission of the laser diode during adjustments, never view directly from the top as this may lose your eye-sight.

6-3. PRECAUTIONS FOR USE OF OPTICAL PICK-UP (KMS-260B/J1N)

As the laser diode in the optical pick-up is easily damaged by static electricity, solder the laser tap of the flexible board when using it. Before disconnecting the connector, desolder first. Before connecting the connector, be careful not to remove the solder. Also take adequate measures to prevent damage by static electricity. Handle the flexible board with care as it breaks easily.



Optical pick-up flexible board

6-4. PRECAUTIONS FOR ADJUSTMENTS

- 1) When replacing the following parts, perform the adjustments and checks with ○ in the order shown in the following table.
- 2) Set the test mode when performing adjustments. After completing the adjustments, exit the test mode. Perform the adjustments and checks in "group S" of the test mode.
- 3) Perform the adjustments to be needed in the order shown.
- 4) Use the following tools and measuring devices.
 - Check Disc (MD) TDYS-1 (Parts No. 4-963-646-01)
 - Test Disk (MDW-74/GA-1) (Parts No. 4-229-747-01)
 - Laser power meter LPM-8001 (Parts No. J-2501-046-A)
or
 - MD Laser power meter 8010S (Parts No. J-2501-145-A)
 - Oscilloscope (Measure after performing CAL of prove.)
 - Digital voltmeter
 - Thermometer
 - Jig for checking BD (MD) board waveform (Parts No. : J-2501-196-A)
- 5) When observing several signals on the oscilloscope, etc., make sure that VC and ground do not connect inside the oscilloscope. (VC and ground will become short-circuited.)
- 6) Using the above jig enables the waveform to be checked without the need to solder. (Refer to Servicing Note on page 9.)
- 7) As the disc used will affect the adjustment results, make sure that no dusts nor fingerprints are attached to it.

Adjustment	Parts to be replaced						
	Optical Pick-up	IC101	IC102	IC151	IC190	IC195	D101
6-7. Initial setting of adjustment values	○	×	×	×	×	○	×
6-8. Recording and displaying the Iop information	○	×	×	×	×	○	×
6-9. Temperature compensation offset adjustment	×	○	×	×	×	○	○
6-10. Laser power adjustment	○	×	×	×	○	○	×
6-11. Iop NV Save	○	×	○	×	○	○	×
6-12. Traverse adjustment	○	○	×	○	×	○	×
6-13. Focus bias adjustment	○	○	×	○	×	○	×
6-16. Auto gain control output level adjustment	○	○	×	○	×	○	×
6-6-4. Auto Check	○	○	×	○	○	○	×

6-5. USING THE CONTINUOUSLY RECORDED DISC

- * This disc is used in focus bias adjustment and error rate check. The following describes how to create a continuous recording disc.

 1. Insert a disc (blank disc) commercially available.
 2. Move the multi-stick and display "CREC 1MODE"(C35).
 3. Press the **[PUSH ENTER]** button again to display "CREC 1MID". Display "CREC (0300)" and start to recording.
 4. Complete recording within 5 minutes.
 5. Press the **[CLEAR]** button while REC IT is lit and stop recording.
 6. Press the **[MD ▲]** button while REC IT is off and remove the disc.

The above has been how to create a continuous recorded data for the focus bias adjustment and error rate check.

Note :

- Be careful not to apply vibration during continuous recording.

6-6. CHECKS PRIOR TO REPAIRS

These checks are performed before replacing parts according to "approximate specifications" to determine the faulty locations. For details, refer to "Checks Prior to Parts Replacement and Adjustments" (See page 11).

6-6-1. Temperature Compensation Offset Check

When performing adjustments, set the internal temperature and room temperature to 22 to 28°C.

Checks cannot be performed properly if performed after some time from power ON due to the rise in the temperature of the IC and diode, etc. So, perform the checks again after waiting some time.

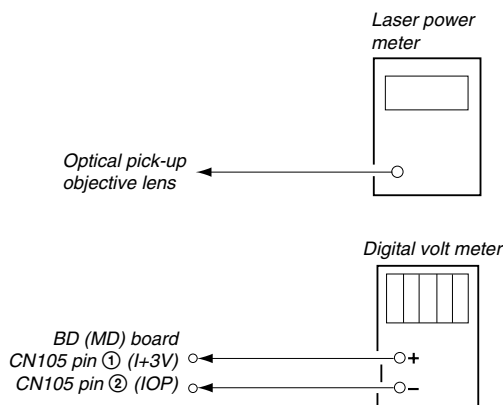
Checking Procedure:

1. Move the multi-stick to display "TEMP CHECK"(C12).
2. Press the **[PUSH ENTER]** button.
3. "T=@@ (##) [OK]" should be displayed. If "T=@@ (##) [NG]" is displayed, it means that the results are bad. (@@ indicates the current value set, and ## indicates the value written in the non-volatile memory.)

6-6-2. Laser Power Check

Before checking, check the Iop value of the optical pick-up. (Refer to 6-8. Recording and Displaying the Iop Information.)

Connection :



Checking Procedure:

1. Set the laser power meter on the objective lens of the optical pick-up. (If cannot set properly, press the **[◀▶]** or **[▶▶]** button while REC IT is off and move the optical pick-up.) Connect the digital volt meter to CN105 pin ① (+3V) and CN105 pin ② (IOP).
2. Then, move the multi-stick and display "LDPWR CHECK" (C13).
3. Press the **[PUSH ENTER]** button once and display "LD 0.9 mW \$ 000". Check that the reading of the laser power meter become 0.82 to 0.91 mW.
4. Press the **[PUSH ENTER]** button once more and display "LD 7.0 mW \$ 000". Check that the reading the laser power meter and digital volt meter satisfy the specified value.

Specified Value :

Laser power meter reading : 7.0 ± 0.1 mW

Digital voltmeter reading : Optical pick-up displayed value $\pm 10\%$

KMS260B
20101
H0576

(For details of the method for checking this value, refer to "6-8. Recording and Displaying the Iop Information".)

Iop = 57.6 mA in this case

Iop (mA) = Digital voltmeter reading (mV)/1 (Ω)

(Optical pick-up label)

5. Press the **[CLEAR]** button while REC IT is lit and display "LDPWR CHECK"(C13) and stop the laser emission. (The **[CLEAR]** button while REC IT is lit, it is effective at all times to stop the laser emission.)

Note 1: After step 4, each time the **[PUSH ENTER]** button is pressed, the display will be switched between "LD 0.7 mW \$ 000", "LD 6.2 mW \$ 000", and "LD Wp \$ 000". Nothing needs to be performed here.

6-6-3. Iop Compare

The current Iop value at laser power 7 mw output and reference Iop value (set at shipment) written in the nonvolatile memory are compared, and the rate of increase/decrease will be displayed in percentage.

Note: Perform this function with the optical pick-up set at room temperature.

Procedure

1. Move the multi-stick to display "Iop Compare"(C27).
2. Press the **[PUSH ENTER]** button and start measurements.
3. When measurements complete, the display changes to "±xx%yy". xx is the percentage of increase/decrease, and OK or NG is displayed at yy to indicate whether the percentage of increase/decrease is within the allowable range.
4. Press the **[CLEAR]** button to end while REC IT is lit.

6-6-4. Auto Check

This test mode performs CREC and CPLAY automatically for mainly checking the characteristics of the optical pick-up. To perform this test mode, the laser power must first be checked. Perform Auto Check after the laser power check and Iop compare.

Procedure

1. Press the **[PUSH ENTER]** button. If "LDPWR" is displayed, it means that the laser power check has not been performed. In this case, perform the laser power check and Iop compare, and then repeat from step 1.
2. If a disc is in the mechanical deck, it will be ejected forcibly. "DISC IN" will be displayed in this case. Load a test disc (MDW-74/GA-1) which can be recorded.
3. If a disk is loaded at step 2, the check will start automatically.
4. When "XX CHECK" is displayed, the item corresponding to XX will be performed.
When "06 CHECK" completes, the disc loaded at step 2 will be ejected. "DISC IN" will be displayed. Load the check disc (MD) TDYS-1.
5. When the disc is loaded, the check will automatically be resumed from "07 CHECK".
6. After completing to test item 12, check OK or NG will be displayed. If all items are OK, "CHECK ALL OK" will be displayed. If any item is NG, it will be displayed as "NG:xxxx".

When "CHECK ALL OK" is displayed, it means that the optical pick-up is normal. Check the operations of the other spindle motor, thread motor, etc.

When displayed as "NG:xxxx", it means that the optical pick-up is faulty. In this case, replace the optical pick-up.

6-6-5. Other Checks

All the following checks are performed by the Auto Check mode. They therefore need not be performed in normal operation.

6-6-6. Traverse Check

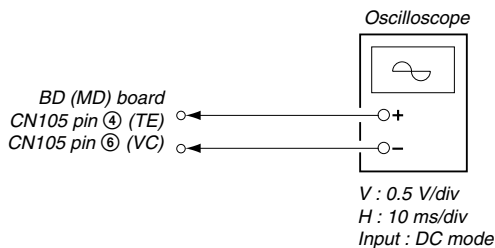
6-6-7. Focus Bias Check

6-6-8. C PLAY Check

6-6-9. Self-Recording/Playback Check

6-6-6. Traverse Check

Connection :

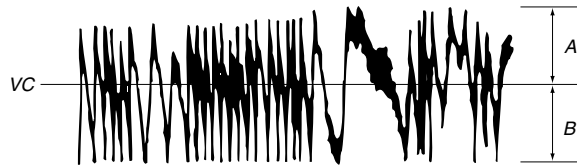


Checking Procedure:

1. Connect an oscilloscope to CN105 pin ④ (TE) and CN105 pin ⑥ (VC) of the BD (MD) board.
2. Load a test disc (MDW-74/GA-1). (Refer to Note 1.)
3. Press the **[◀]** or **[▶]** button while REC IT is off, and move the optical pick-up outside the pit.
4. Move the multi-stick and display "EF MO CHECK" (C14).
5. Press the **[PUSH ENTER]** button and display "EFB = **[MO-R]**". (Laser power READ power/Focus servo ON/tracking servo OFF/spindle (S) servo ON)

6. Observe the waveform of the oscilloscope, and check that the specified value is satisfied.
(Read power traverse checking)

(Traverse Waveform)

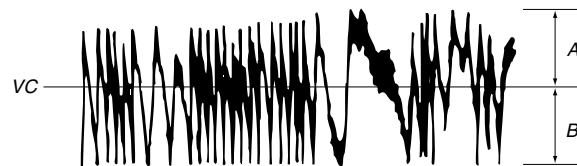


Specified value : Below 10% offset value

$$\text{Offset value (\%)} = \frac{|A - B|}{2(A + B)} \times 100$$

7. Press the **[PUSH ENTER]** button and display "EFB = **[MO-W]**".
8. Observe the waveform of the oscilloscope, and check that the specified value is satisfied.
(Write power traverse checking)

(Traverse Waveform)

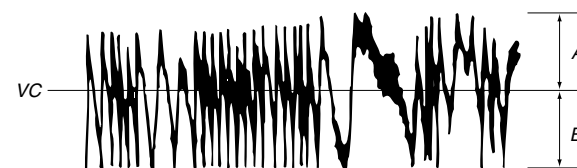


Specified value : Below 10% offset value

$$\text{Offset value (\%)} = \frac{|A - B|}{2(A + B)} \times 100$$

9. Press the **[PUSH ENTER]** button display "EFB = **[MO-P]**".
Then, the optical pick-up moves to the pit area automatically and servo is imposed.
10. Observe the waveform of the oscilloscope, and check that the specified value is satisfied.

(Traverse Waveform)



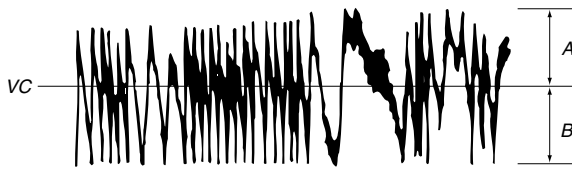
Specified value : Below 10% offset value

$$\text{Offset value (\%)} = \frac{|A - B|}{2(A + B)} \times 100$$

11. Press the **[PUSH ENTER]** button display "EF MO CHECK" (C14).
The disc stops rotating automatically.
12. Press the **[MD ▲]** button while REC IT is off and remove the disc.
13. Load the check disc (MD) TDYS-1.
14. Move the multi-stick and display "EF CD CHECK" (C15).
15. Press the **[PUSH ENTER]** button and display "EFB = **[CD]**".
Servo is imposed automatically.

- Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not move the Multi stick.

(Traverse Waveform)



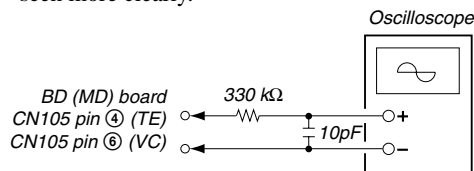
Specified value : Below 10% offset value

$$\text{Offset value (\%)} = \frac{|A - B|}{2(A + B)} \times 100$$

- Press the **PUSH ENTER** button and display “EF CD CHECK”(C15).
- Press the **MD** button while REC IT is off and remove the check disc (MD) TDYS-1.

Note 1 : MO reading data will be erased during if a recorded disc is used in this adjustment.

Note 2 : If the traverse waveform is not clear, connect the oscilloscope as shown in the following figure so that it can be seen more clearly.



6-6-7. Focus Bias Check

Change the focus bias and check the focus tolerance amount.

Checking Procedure :

- Load a continuously recorded test disc (MDW-74/GA-1). (Refer to “6-5. Using the Continuously Recorded Disc”.)
- Move the multi-stick and display “CPLAY1MODE”(C34).
- Press the **PUSH ENTER** button and display “CPLAY1MID”.
- Press the **CLEAR** button while REC IT is lit when “C = [] AD = []” is displayed.
- Move the multi-stick and display “FBIAS CHECK”(C16).
- Press the **PUSH ENTER** button and display “ []/[] c = []”. The first four digits indicate the C1 error rate, the two digits after [] indicate ADER, and the 2 digits after [c =] indicate the focus bias value. Check that the C1 error is below 20 and ADER is below 2.
- Press the **PUSH ENTER** button and display “ []/[] b = []”. Check that the C1 error is below 100 and ADER is below 2.
- Press the **PUSH ENTER** button and display “ []/[] a = []”. Check that the C1 error is below 100 and ADER is below 2.
- Press the **CLEAR** button while REC IT is lit, next press the **MD** button while REC IT is off, and remove the test disc.

6-6-8. C PLAY Check

MO Error Rate Check

Checking Procedure :

- Load a continuously recorded test disc (MDW-74/GA-1). (Refer to “6-5. Using the Continuously Recorded Disc”.)
- Move the multi-stick and display “CPLAY1MODE”(C34).
- Press the **PUSH ENTER** button and display “CPLAY1MID”.
- The display changes to “C1 = [] AD = []”.
- If the C1 error rate is below 20, check that ADER is 00.
- Press the **CLEAR** button while REC IT is lit, stop playback, press the **MD** button while REC IT is off, and test disc.

CD Error Rate Check

Checking Procedure :

- Load a check disc (MD) TDYS-1.
- Move the multi-stick and display “CPLAY1MODE”(C34).
- Press the **PUSH ENTER** button twice and display “CPLAY1MID”.
- The display changes to “C1 = [] AD = []”.
- Check that the C1 error rate is below 20.
- Press the **CLEAR** button while REC IT is lit, stop playback, press the **MD** button while REC IT is off, and the test disc.

6-6-9. Self-Recording/playback Check

Prepare a continuous recording disc using the unit to be repaired and check the error rate.

Checking Procedure :

- Insert a recordable test disc (MDW-74/GA-1) into the unit.
- Move the multi-stick to display “CREC 1MODE”(C35).
- Press the **PUSH ENTER** button to display the “CREC 1MID”.
- When recording starts, “**MD REC**” is displayed, this becomes “CREC (@@@@)” (@@@@ is the address), and recording starts.
- About 1 minute later, press the **CLEAR** button to stop continuous recording while REC IT is lit.
- Move the multi-stick to display “CPLAY1MODE”(C34).
- Press the **PUSH ENTER** button to display “CPLAY1MID”.
- “C1 = [] AD = []” will be displayed.
- Check that the C1 error becomes below 20 and the AD error below 2.
- Press the **CLEAR** button to stop playback while REC IT is lit, and press the **MD** button while REC IT is off and remove the disc.

6-7. INITIAL SETTING OF ADJUSTMENT VALUE

Note:

Mode which sets the adjustment results recorded in the non-volatile memory to the initial setting value. However the results of the temperature compensation offset adjustment will not change to the initial setting value.

If initial setting is performed, perform all adjustments again excluding the temperature compensation offset adjustment.

For details of the initial setting, refer to “6-4. Precautions for Adjustments” and execute the initial setting before the adjustment as required.

Setting Procedure :

1. Move the multi-stick to display “ADJ CLEAR” (C28).
2. Press the **[PUSH ENTER]** button. “Complete!” will be displayed momentarily and initial setting will be executed, after which “ADJ CLEAR” (C28) will be displayed.

6-8. RECORDING AND DISPLAYING THE Iop INFORMATION

The Iop data can be recorded in the non-volatile memory. The Iop value on the label of the optical pick-up and the Iop value after the adjustment will be recorded. Recording these data eliminates the need to read the label on the optical pick-up.

Recording Procedure :

1. Move the multi-stick to display “Iop Write” (C05), and press the **[PUSH ENTER]** button.
2. The display becomes Ref=@@.@ (@ is an arbitrary number) and the numbers which can be changed will blink.
3. Input the Iop value written on the optical pick-up.
To select the number : Move the multi-stick.
To select the digit : Press the **[MD REC MODE]** button while REC IT is lit.
4. When the **[PUSH ENTER]** button is pressed, the display becomes “Meas=@@.@.” (@ is an arbitrary number).
5. As the adjustment results are recorded for the 6 value. Leave it as it is and press the **[PUSH ENTER]** button.
6. “Complete!” will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become “Iop Write” (C05).

Display Procedure :

1. Move the multi-stick to display “Iop Read”(C26).
2. Press the **[PUSH ENTER]** button.
3. “@@.@/##.#” is displayed and the recorded contents are displayed.
@@.@ indicates the Iop value labeled on the pick-up.
##.# indicates the Iop value after adjustment
3. To end, press the **[CLEAR]** button while REC IT is lit, or press the **[MD REC MODE]** button while REC IT is lit and display “Iop Read” (C26).

6-9. TEMPERATURE COMPENSATION OFFSET ADJUSTMENT

Save the temperature data at that time in the non-volatile memory as 25 °C reference data.

Note :

1. Usually, do not perform this adjustment.
2. Perform this adjustment in an ambient temperature of 22 °C to 28 °C. Perform it immediately after the power is turned on when the internal temperature of the unit is the same as the ambient temperature of 22 °C to 28 °C.
3. When D101 has been replaced, perform this adjustment after the temperature of this part has become the ambient temperature.

Adjusting Procedure :

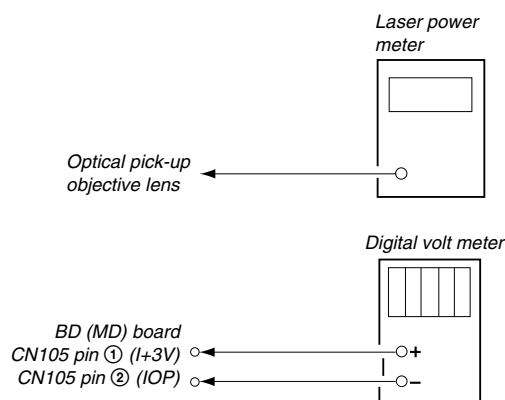
1. Move the multi-stick and display “TEMP ADJUS” (C03).
2. Press the **[PUSH ENTER]** button and select the “TEMP ADJUS” (C03) mode.
3. “TEMP = [] [OK]” and the current temperature data will be displayed.
4. To save the data, press the **[PUSH ENTER]** button.
When not saving the data, press the **[CLEAR]** button while REC IT is lit.
5. When the **[PUSH ENTER]** button is pressed, “TEMP = [] SAVE” will be displayed and turned back to “TEMP ADJUS” (C03) display then. Pressing the **[CLEAR]** button while REC IT is lit displays “TEMP ADJUS” (C03) immediately.

Specified Value :

The “TEMP = []” should be within “E0 - EF”, “F0 - FF”, “00 - 0F”, “10 - 1F” and “20 - 2F”.

6-10. LASER POWER ADJUSTMENT

Check the Iop value of the optical pick-up before adjustments. (Refer to 6-8. Recording and Displaying the Iop Information.)



Connection :

Adjusting Procedure :

1. Set the laser power meter on the objective lens of the optical pick-up. (When it cannot be set properly, press the **[◀▶]** or **[▶▶]** button while REC IT is off and move the optical pick-up.)
Connect the digital volt meter to CN105 pin ① (I+3V) and CN105 pin ② (IOP).
2. Move the multi-stick and display “LDPWR ADJUS” (C04). (Laser power : For adjustment)
3. Press the **[PUSH ENTER]** button once and display “LD 0.9 mW \$ []”.
4. Move the multi-stick so that the reading of the laser power meter becomes 0.85 to 0.91 mW. Press the **[PUSH ENTER]** button after setting the range knob of the laser power meter, and save the adjustment results. (“LD SAVE \$ []” will be displayed for a moment.)
5. Then “LD 7.0 mW \$ []” will be displayed.
6. Move the multi-stick so that the reading of the laser power meter becomes 6.9 to 7.1 mW, press the **[PUSH ENTER]** button and save it.

Note : Do not perform the emission with 7.0 mW more than 15 seconds continuously.

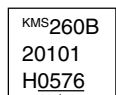
- Then, move the multi-stick and display "LDPWR CHECK" (C13).
- Press the **PUSH ENTER** button once and display "LD 0.9 mW \$ []". Check that the reading of the laser power meter become 0.85 to 0.91 mW.
- Press the **PUSH ENTER** button once more and display "LD 7.0 mW \$ []". Check that the reading the laser power meter and digital volt meter satisfy the specified value.
Note down the digital voltmeter reading value.

Specified Value :

Laser power meter reading : 7.0 ± 0.1 mW

Digital voltmeter reading : Optical pick-up displayed value $\pm 10\%$

(Optical pick-up label)



(For details of the method for checking this value, refer to "6-8. Recording and Displaying the Iop Information".)

$I_{op} = 57.6$ mA in this case

$I_{op} \text{ (mA)} = \text{Digital voltmeter reading (mV)} / 1 (\Omega)$

- Press the **CLEAR** button while REC IT is lit and display "LDPWR CHECK" (C13) and stop the laser emission.
(The **CLEAR** button is effective at all times to stop the laser emission.)
- Move the multi-stick to display "Iop Write"(C05).
- Press the **PUSH ENTER** button. When the display becomes Ref=@@.@ (@ is an arbitrary number), press the **PUSH ENTER** button to display "Measu=@@.@." (@ is an arbitrary number).
- The numbers which can be changed will blink. Input the Iop value noted down at step 9.
To select the number : Move the multi-stick.
To select the digit : Press the **MD REC MODE** button while REC IT is lit.
- When the **PUSH ENTER** button is pressed, "Complete!" will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become "Iop Write" (C05).

Note 1: After step 4, each time the **PUSH ENTER** button is pressed, the display will be switched between "LD 0.7 mW \$ []", "LD 6.2 mW \$ []", and "LD Wp \$ []". Nothing needs to be performed here.

6-11. Iop NV SAVE

Write the reference values in the nonvolatile memory to perform "Iop compare". As this involves rewriting the reference values, do not perform this procedure except when adjusting the laser power during replacement of the optical pick-up and when replacing the IC102. Otherwise the optical pick-up check may deteriorate.

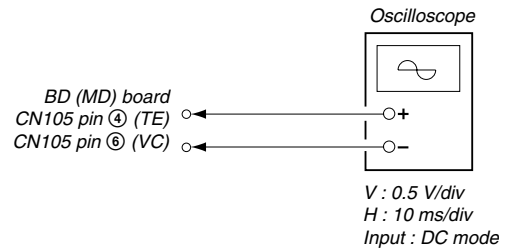
Note: Perform this function with the optical pick-up set at room temperature.

Procedure

- Move the multi-stick to display "Iop NV Save" (C06).
- Press the **PUSH ENTER** button and display "Iop [stop]".
- After the display changes to "Iop =xxsave?", press the **PUSH ENTER** button.
- After "Complete!" is displayed momentarily, the display changes to "Iop 7.0 mW".
- After the display changes to "Iop=yysave?", press the **PUSH ENTER** button.
- When "Complete!" is displayed, it means that Iop NV saving has been completed.

6-12. TRAVERSE ADJUSTMENT

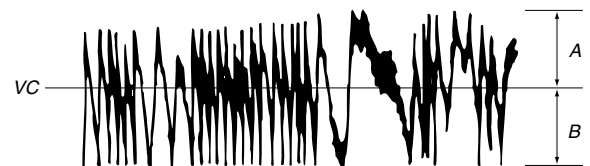
Connection :



Adjusting Procedure :

- Connect an oscilloscope to CN105 pin ④ (TE) and CN105 pin ⑥ (VC) of the BD board.
- Load a test disc (MDW-74/GA-1). (Refer to Note 1.)
- Press the **◀** or **▶** button while REC IT is off and move the optical pick-up outside the pit.
- Move the multi-stick and display "EF MO ADJUS" (C14).
- Press the **PUSH ENTER** button and display "EFB = [] MO-R". (Laser power READ power/Focus servo ON/tracking servo OFF/spindle (S) servo ON)
- Move the multi-stick so that the waveform of the oscilloscope becomes the specified value.
(When the Multi stick is moved, the [] of "EFB = []" changes and the waveform changes.) In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.
(Read power traverse adjustment)

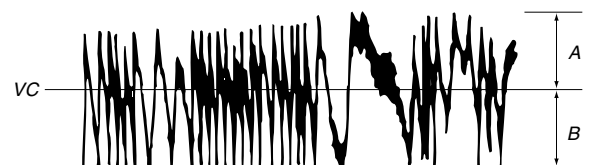
(Traverse Waveform)



Specification $A = B$

- Press the **PUSH ENTER** button and save the result of adjustment to the non-volatile memory ("EFB = [] SAVE" will be displayed for a moment. Then "EFB = [] MO-W" will be displayed).
- Move the multi-stick so that the waveform of the oscilloscope becomes the specified value.
(When the Multi stick is moved, the [] of "EFB = [] MO-W" changes and the waveform changes.) In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.
(Write power traverse adjustment)

(Traverse Waveform)

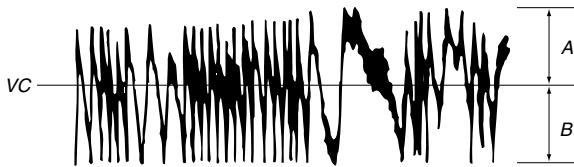


Specification $A = B$

- Press the **PUSH ENTER** button, and save the adjustment results in the non-volatile memory. ("EFB = [] SAVE" will be displayed for a moment.)
- "EFB = [] MO-P". will be displayed.
The optical pick-up moves to the pit area automatically and servo is imposed.

11. Move the multi-stick until the waveform of the oscilloscope moves closer to the specified value.
In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.

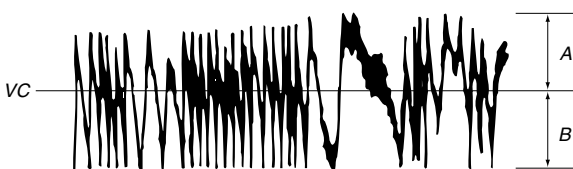
(Traverse Waveform)



Specification $A = B$

12. Press the **PUSH ENTER** button, and save the adjustment results in the non-volatile memory. (“EFB = $\square\square$ SAVE” will be displayed for a moment.)
Next “EF MO ADJUS” (C07) is displayed. The disc stops rotating automatically.
13. Press the **MD** button while REC IT is off and remove the disc.
14. Load the check disc (MD) TDYS-1.
15. Move the multi-stick and display “EF CD ADJUS” (C08).
16. Press the **PUSH ENTER** button and display “EFB = $\square\square$ CD”. Servo is imposed automatically.
17. Move the multi-stick so that the waveform of the oscilloscope moves closer to the specified value.
In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.

(Traverse Waveform)

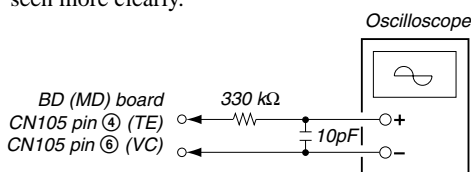


Specification $A = B$

18. Press the **PUSH ENTER** button, display “EFB = $\square\square$ SAVE” for a moment and save the adjustment results in the non-volatile memory.
Next “EF CD ADJUS” (C08) will be displayed.
19. Press the **MD** button while REC IT is off and remove the check disc (MD) TDYS-1.

Note 1 : MO reading data will be erased during if a recorded disc is used in this adjustment.

Note 2 : If the traverse waveform is not clear, connect the oscilloscope as shown in the following figure so that it can be seen more clearly.



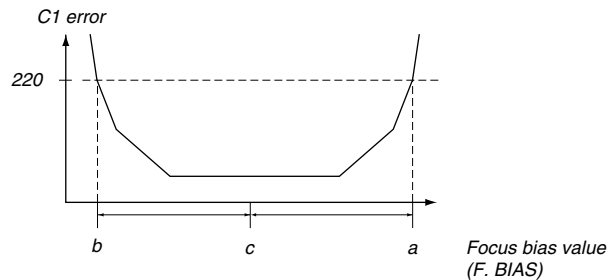
6-13. FOCUS BIAS ADJUSTMENT

Adjusting Procedure :

1. Load a test disk (MDW-74/GA-1).
2. Move the multi-stick and display “CPLAY1MODE” (C34).
3. Press the **PUSH ENTER** button and display “CPLAY1MID”.
4. Press the **CLEAR** button while REC IT is lit when “C1 = $\square\square\square\square$ AD = $\square\square$ ” is displayed.
5. Move the multi-stick and display “FBIAS ADJUS” (C09).
6. Press the **PUSH ENTER** button and display “ $\square\square\square\square/\square\square$ a = $\square\square$ ”.
The first four digits indicate the C1 error rate, the two digits after [/] indicate ADER, and the 2 digits after [a =] indicate the focus bias value.
7. Move the multi-stick in the right direction and find the focus bias value at which the C1 error rate becomes 220 (Refer to Note 2).
8. Press the **PUSH ENTER** button and display “ $\square\square\square\square/\square\square$ b = $\square\square$ ”.
9. Move the multi-stick in the left direction and find the focus bias value at which the C1 error rate becomes 220.
10. Press the **PUSH ENTER** button and display “ $\square\square\square\square/\square\square$ c = $\square\square$ ”.
11. Check that the C1 error rate is below 20 and ADER is 00. Then press the **PUSH ENTER** button.
12. If the “ $\square\square$ ” in “ $\square\square - \square\square - \square\square$ (C09)” is above 20, press the **PUSH ENTER** button.
If below 20, press the **CLEAR** button while REC IT is lit and repeat the adjustment from step 2.
13. Press the **MD** button while REC IT is off and remove the test disc.

Note 1 : The relation between the C1 error and focus bias is as shown in the following figure. Find points a and b in the following figure using the above adjustment. The focal point position C is automatically calculated from points a and b.

Note 2 : As the C1 error rate changes, perform the adjustment using the average value.



6-14. ERROR RATE CHECK

6-14-1. CD Error Rate Check

Checking Procedure :

1. Load a check disc (MD) TDYS-1.
2. Move the multi-stick and display “CPLAY1MODE” (C34).
3. Press the **PUSH ENTER** button twice and display “CPLAY1MID”.
4. The display changes to “C1 = $\square\square\square\square$ AD = $\square\square$ ”.
5. Check that the C1 error rate is below 20.
6. Press the **CLEAR** button while REC IT is lit, stop playback, press the **MD** button while REC IT is off, and remove the test disc.

6-14-2. MO Error Rate Check

Checking Procedure :

1. Load a continuously recorded test disc (MDW-74/GA-1).
(Refer to “6-5. Using the Continuously Recorded Disc”.)
2. Move the multi-stick and display “CPLAY1MODE” (C34).
3. Press the **PUSH ENTER** button and display “CPLAY1MID”.

- The display changes to "C1 = [] [] [] [] AD = [] []".
- If the C1 error rate is below 20, check that ADER is 00.
- Press the **[CLEAR]** button while REC IT is lit, stop playback, press the **[MD ▲]** button while REC IT is off, and remove the test disc.

6-15. FOCUS BIAS CHECK

Change the focus bias and check the focus tolerance amount.

Checking Procedure :

- Load a continuously recorded test disc (MDW-74/GA-1). (Refer to "6-5. Using the Continuously Recorded Disc".)
- Move the multi-stick and display "CPLAY1 MODE"(C34).
- Press the **[PUSH ENTER]** button twice and display "CPLAY1 MID".
- Press the **[CLEAR]** button while REC IT is lit when "C1 = [] [] [] [] AD = [] []" is displayed.
- Move the multi-stick and display "FBIAS CHECK"(C16).
- Press the **[PUSH ENTER]** button and display "[] [] [] [] / [] [] c = [] []". The first four digits indicate the C1 error rate, the two digits after [/] indicate ADER, and the 2 digits after [c =] indicate the focus bias value.
Check that the C1 error is below 20 and ADER is below 2.
- Press the **[PUSH ENTER]** button and display "[] [] [] [] / [] [] b = [] []".
Check that the C1 error is below 100 and ADER is below 2.
- Press the **[PUSH ENTER]** button and display "[] [] [] [] / [] [] a = [] []".
Check that the C1 error is below 100 and ADER is below 2.
- Press the **[CLEAR]** button while REC IT is lit, next press the **[MD ▲]** button while REC IT is off and remove the continuously recorded disc.

Note 1 : If the C1 error and ADER are above other than the specified value at points a (step 8. in the above) or b (step 7. in the above), the focus bias adjustment may not have been carried out properly. Adjust perform the beginning again.

6-16. AUTO GAIN CONTROL OUTPUT LEVEL ADJUSTMENT

Be sure to perform this adjustment when the optical pick-up is replaced.

If the adjustment results becomes "Adjust NG!", the optical pick-up may be faulty or the servo system circuits may be abnormal.

6-16-1. CD Auto Gain Control Output Level Adjustment Adjusting Procedure :

- Insert the check disc (MD) TDYS-1.
- Move the multi-stick to display "AG Set (CD)" (C11).
- When the **[PUSH ENTER]** button is pressed, the adjustment will be performed automatically.
"Complete!" will then be displayed momentarily when the value is recorded in the non-volatile memory, after which the display changes to "AG Set (CD)" (C11).
- Press the **[MD ▲]** button while REC IT is off and remove the disc.

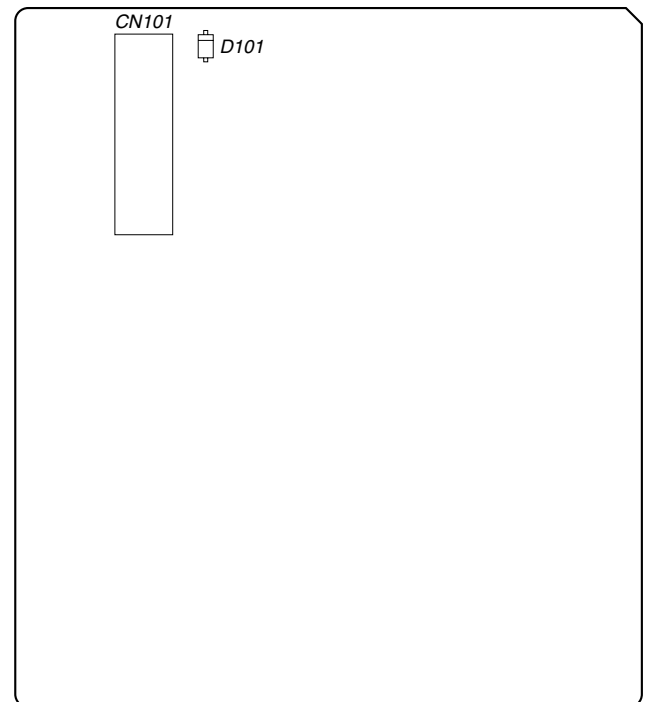
6-16-2. MO Auto Gain Control Output Level Adjustment

Adjusting Procedure :

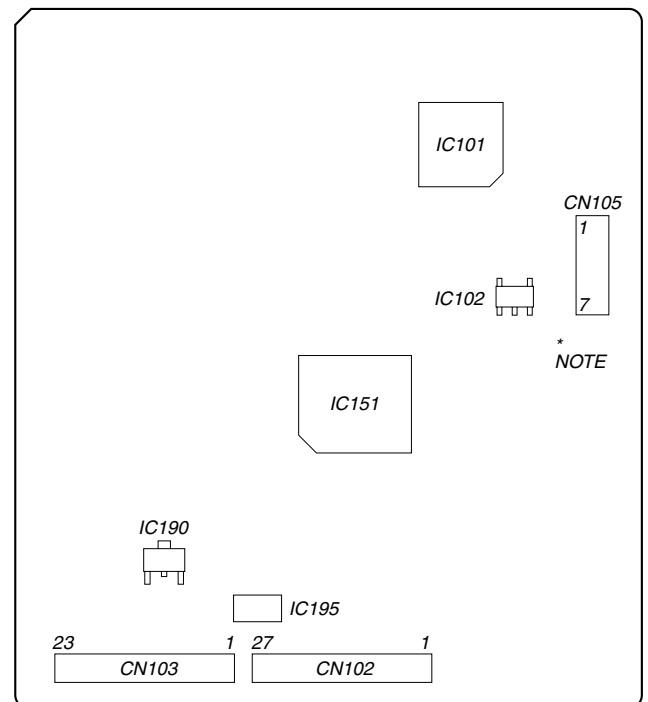
- Insert the reference disc (MDW-74/GA-1) for recording.
- Move the multi-stick to display "AG Set (MO)" (C10).
- When the **[PUSH ENTER]** button is pressed, the adjustment will be performed automatically.
"Complete!" will then be displayed momentarily when the value is recorded in the non-volatile memory, after which the display changes to "AG Set (MO)" (C10).
- Press the **[MD ▲]** button while REC IT is off and remove the disc.

6-17. ADJUSTING POINTS AND CONNECTING POINTS

[BD (MD) BOARD] (SIDE A)



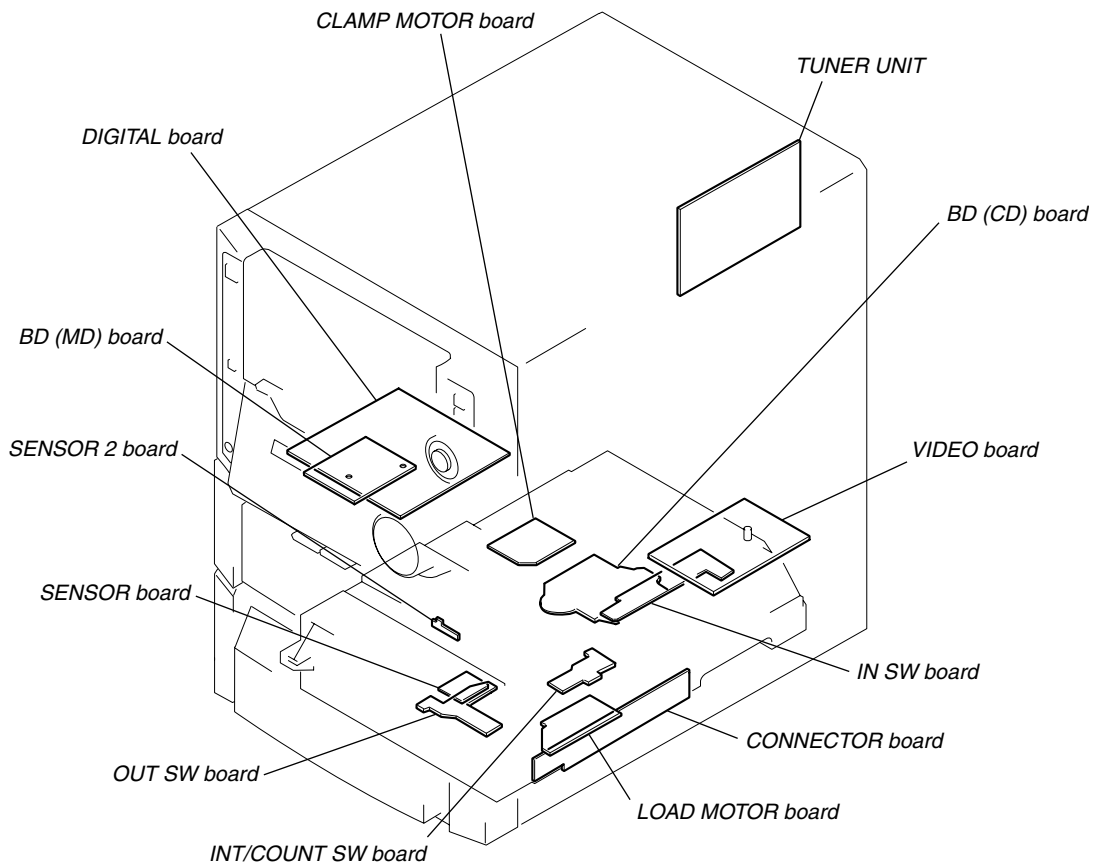
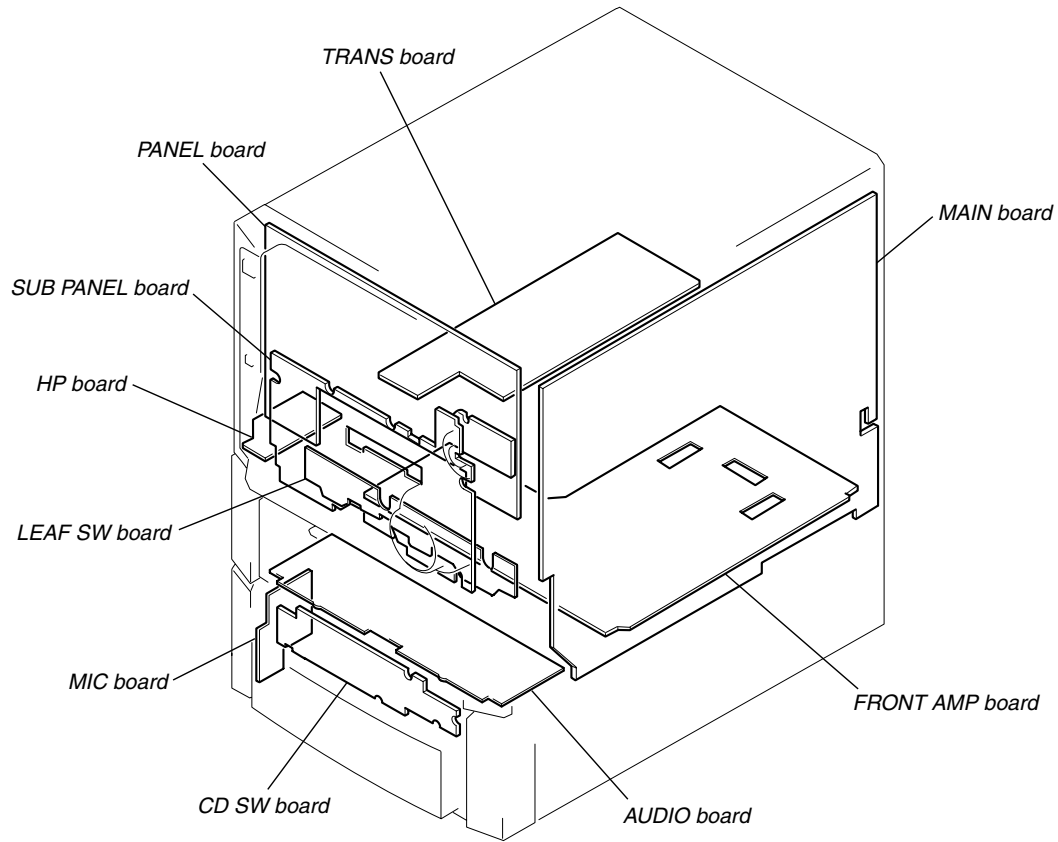
[BD (MD) BOARD] (SIDE B)



NOTE: It is useful to use the jig. for checking the waveform. (Refer to Servicing Note on page 9.)

SECTION 7 DIAGRAMS






7-1. CIRCUIT BOARDS LOCATION














THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

For schematic diagrams.

Note:





- All capacitors are in μF unless otherwise noted. pF: $\mu\mu\text{F}$ 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
- \triangle : internal component.
-  : nonflammable resistor.
-  : fusible resistor.
-  : panel designation.
-  : B+ Line.
-  : B- Line.

Note: The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

-  : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- Voltages are taken with a VOM (Input impedance 10 M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
 -  : FM
 -  : VIDEO/MD (AUDIO)
 -  : PB (DECK A)
 -  : PB (DECK B)
 -  : REC (DECK B)
 -  : CD (Analog)
 -  : CD/MD (Digital)
 -  : MD (PB)
 -  : MD (REC)
 -  : MIC
- Abbreviation
 - HK : Hong Kong model
 - MY : Malaysia model
 - SP : Singapore model
 - JE : Tourist model

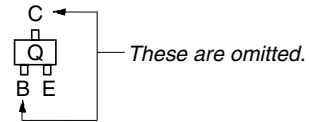
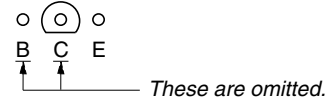
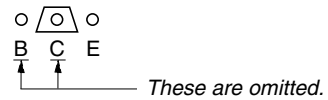
For printed wiring boards.

Note:

-  : parts extracted from the component side.
-  : parts extracted from the conductor side.
-  : Through hole.
-  : Pattern from the side which enables seeing.

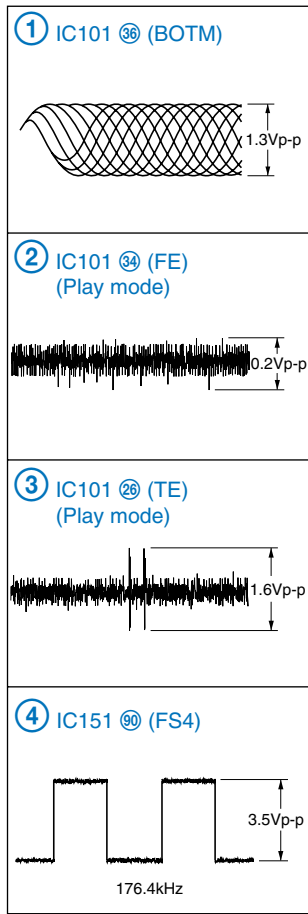
Caution:
 Pattern face side: Parts on the pattern face side seen from the (Side B) pattern face are indicated.
 Parts face side: Parts on the parts face side seen from the (Side A) parts face are indicated.

• Indication of transistor

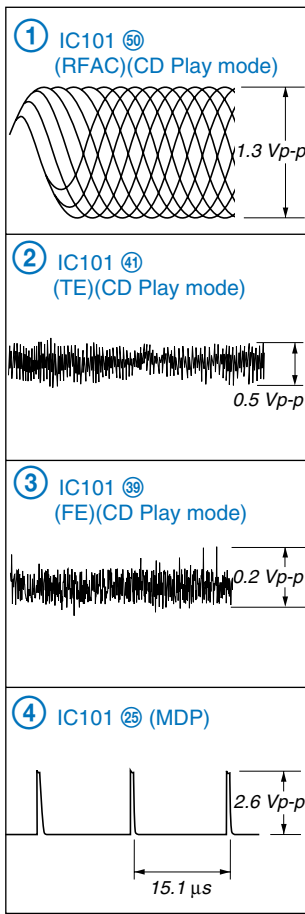


• WAVEFORMS

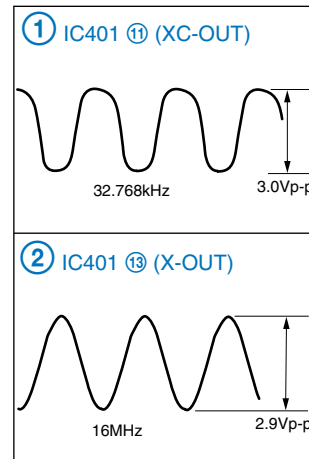
- BD (MD) SECTION -



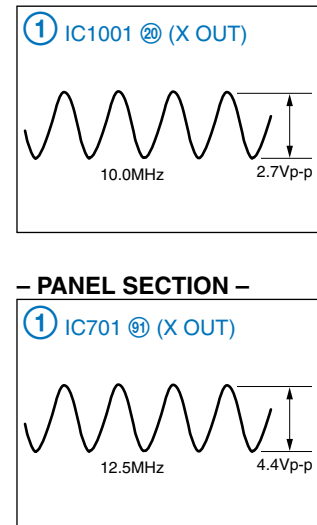
- BD (CD) SECTION -



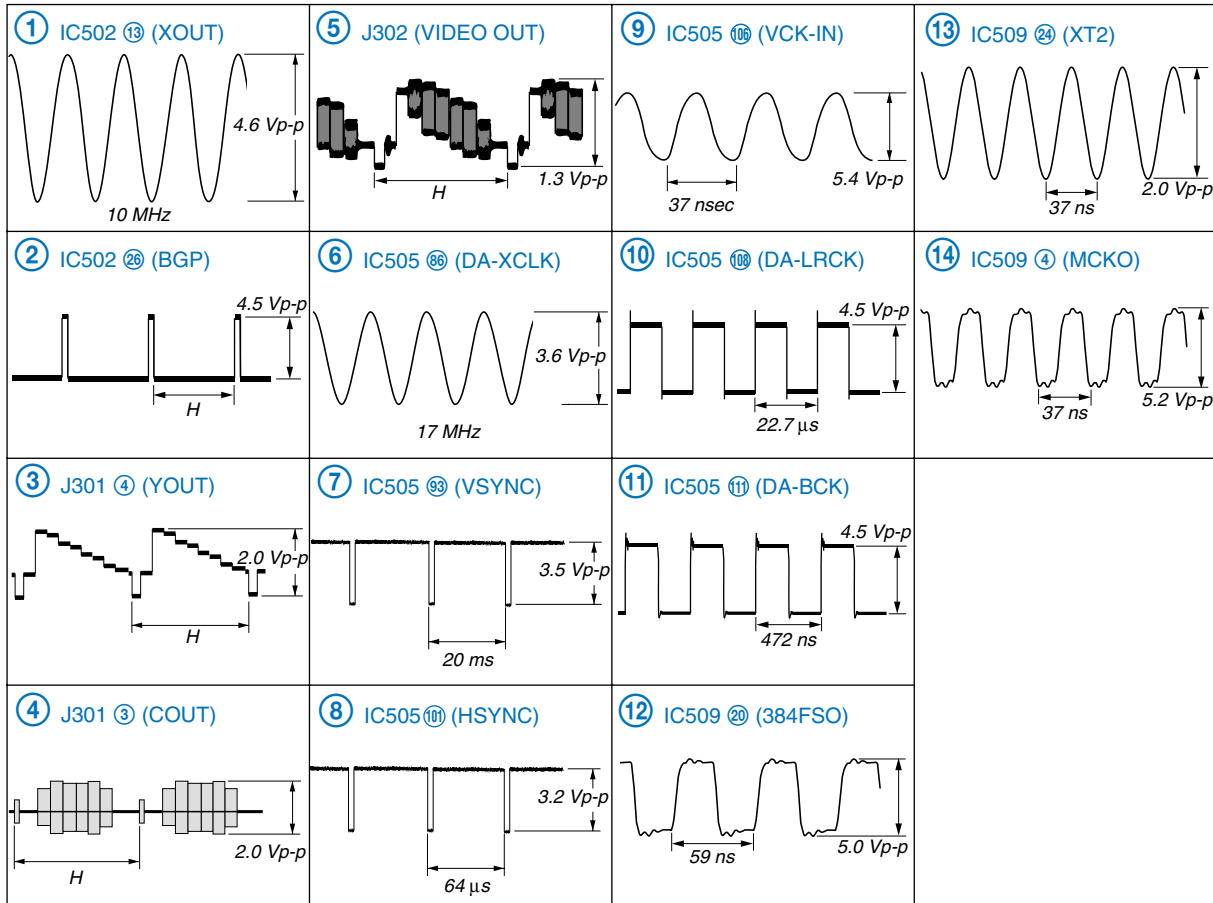
- MAIN SECTION -





- MD DIGITAL SECTION -

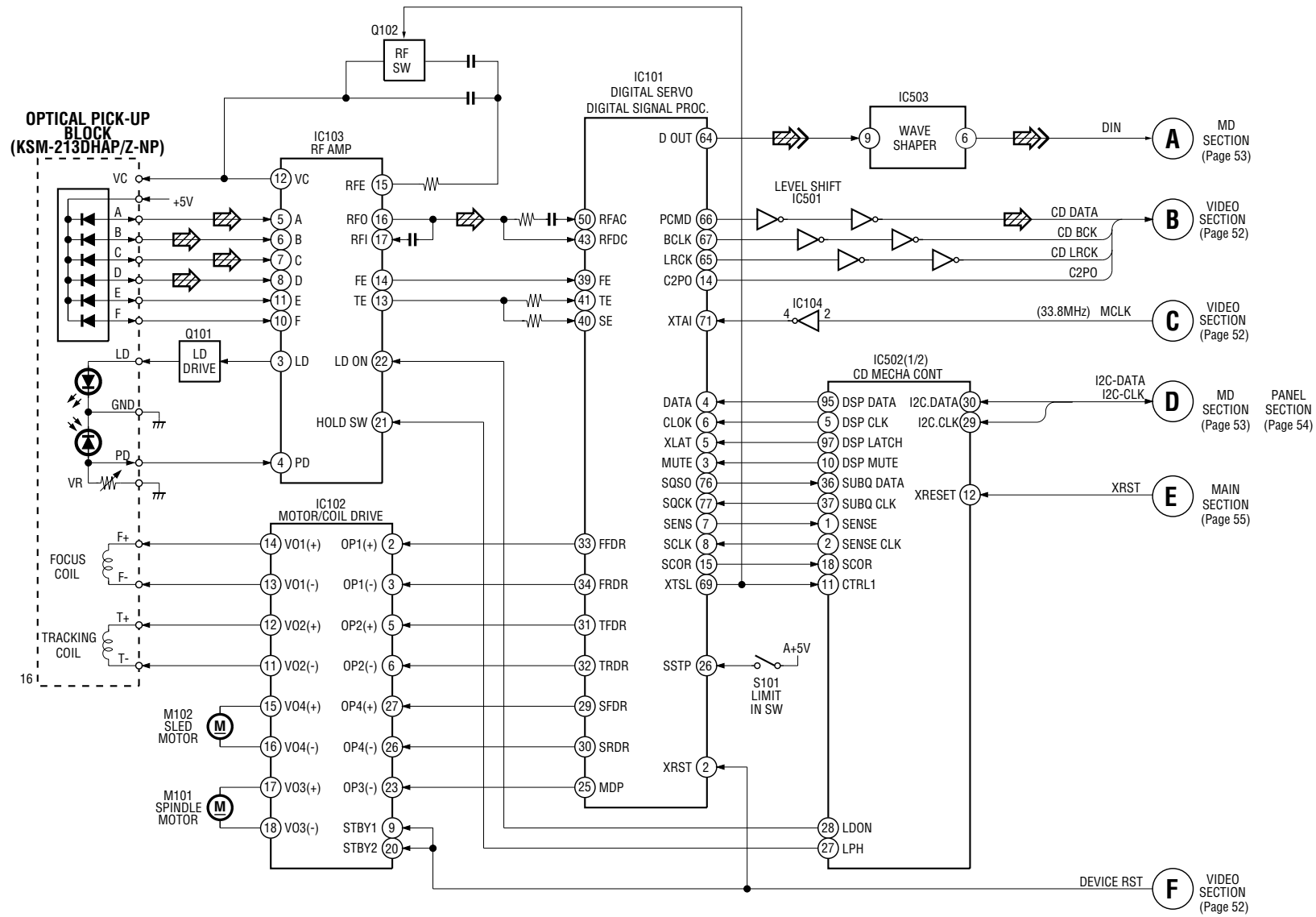


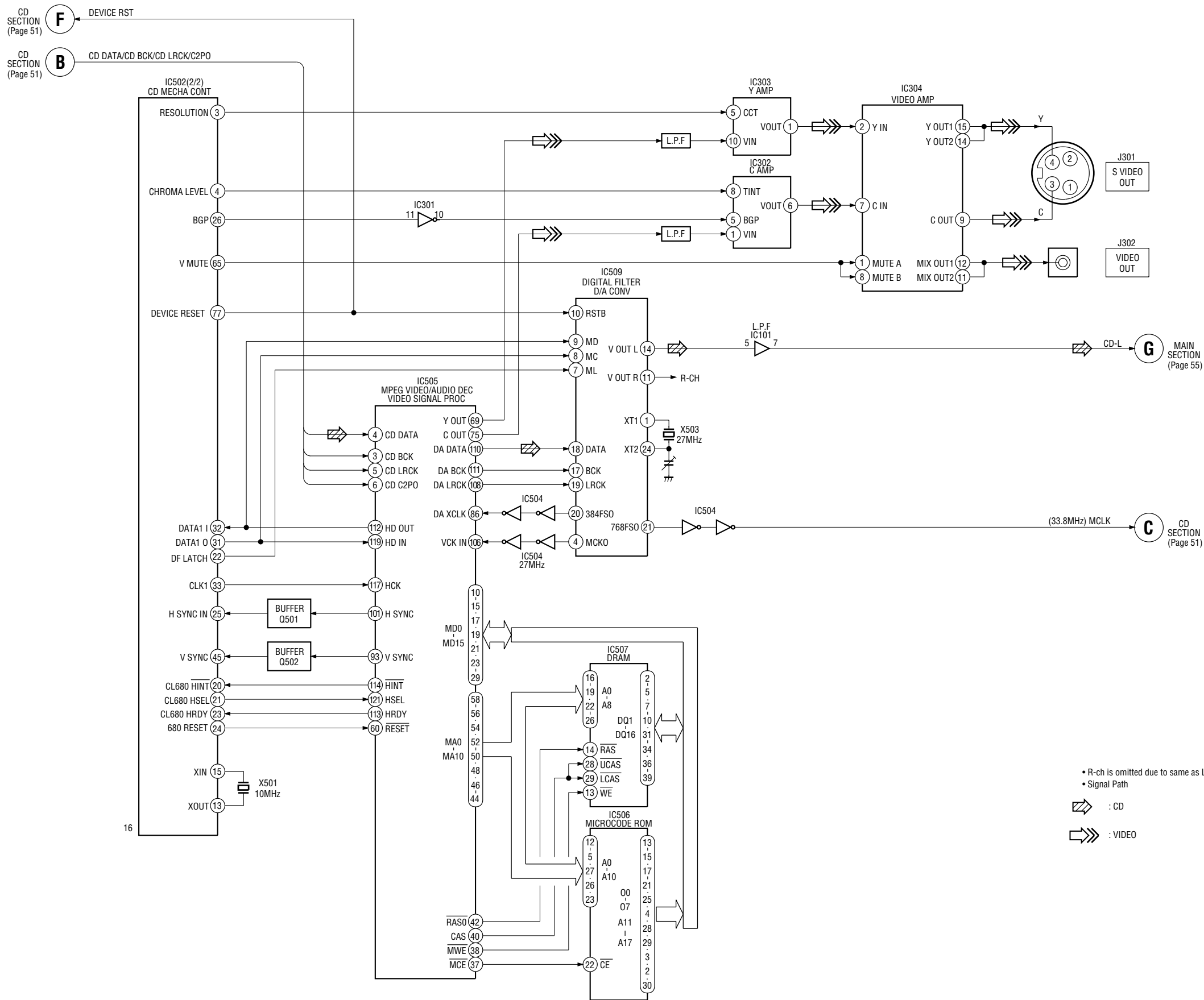
-VIDEO SECTION -



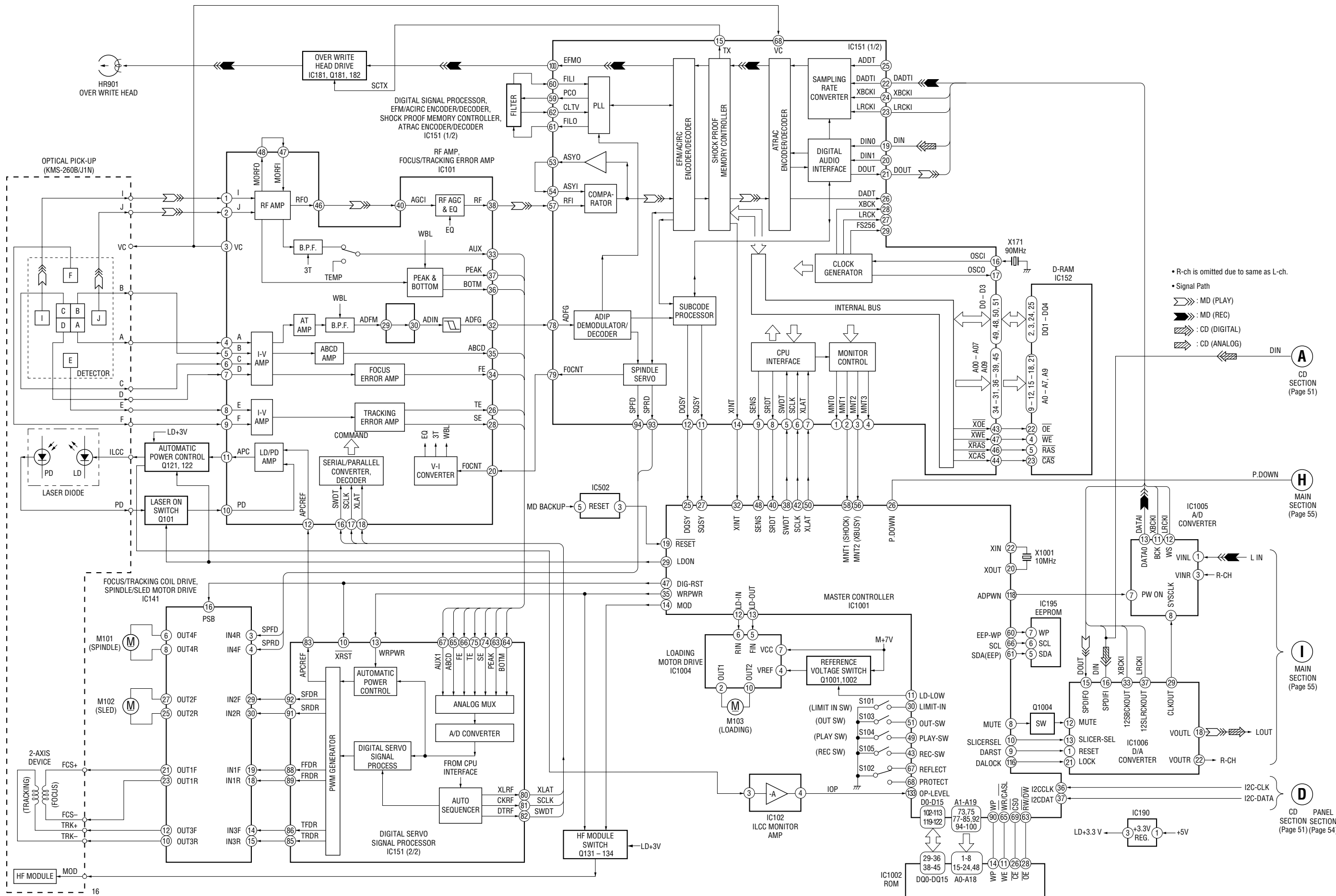
7-2. BLOCK DIAGRAMS
- CD SECTION -

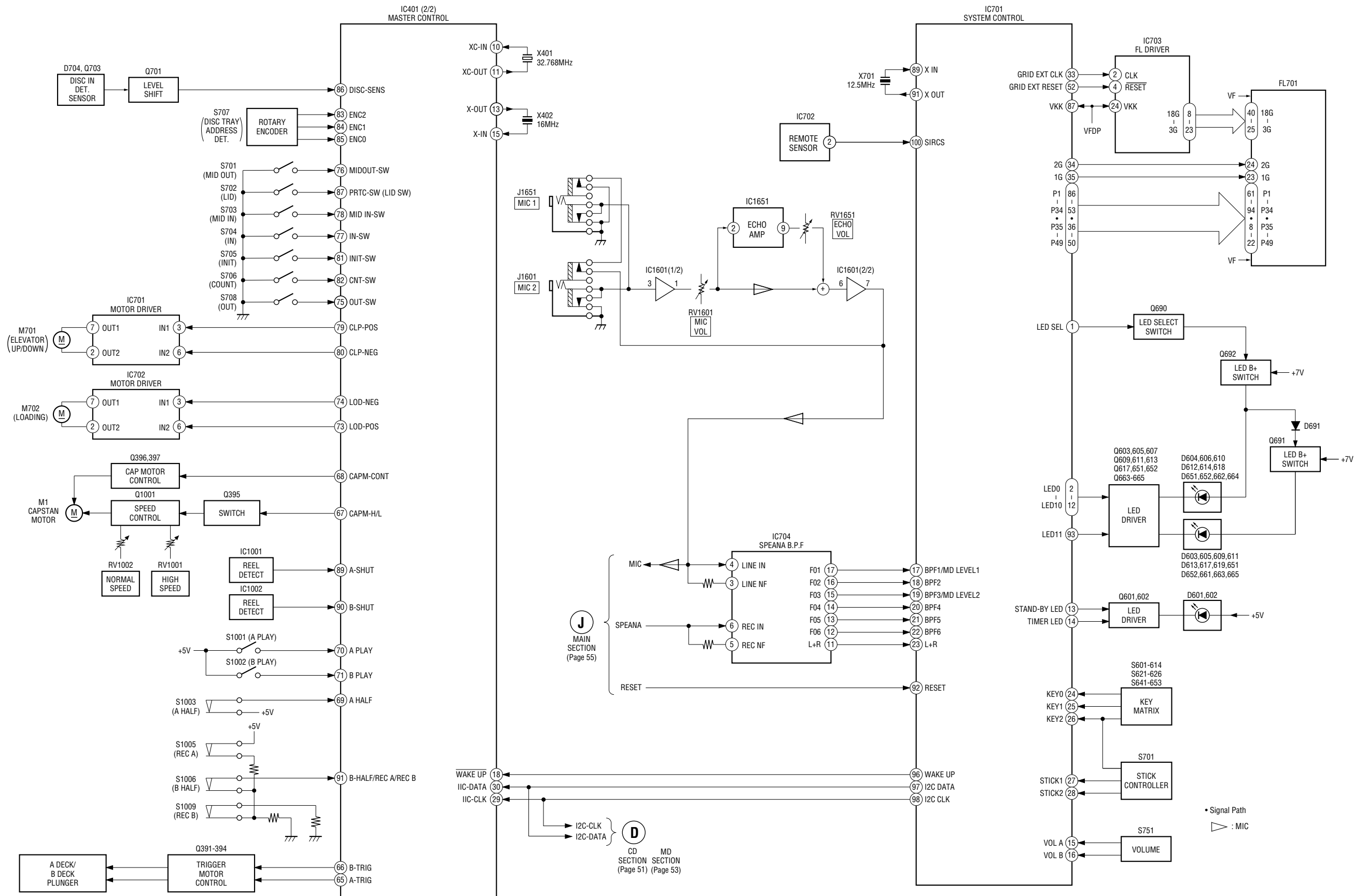
• Signal Path
 : CD (ANALOG)
 : CD (DIGITAL)



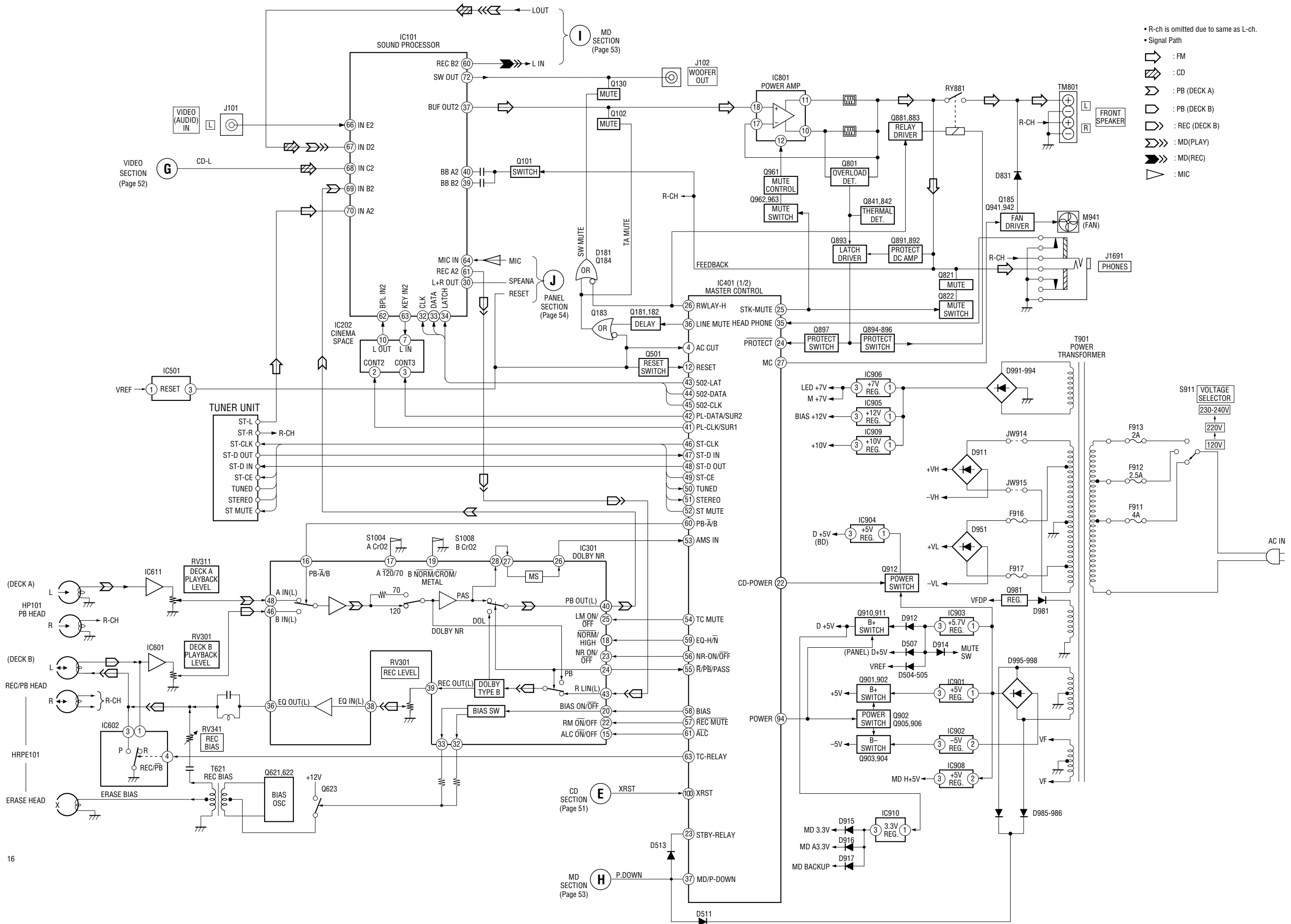


- MD SECTION -

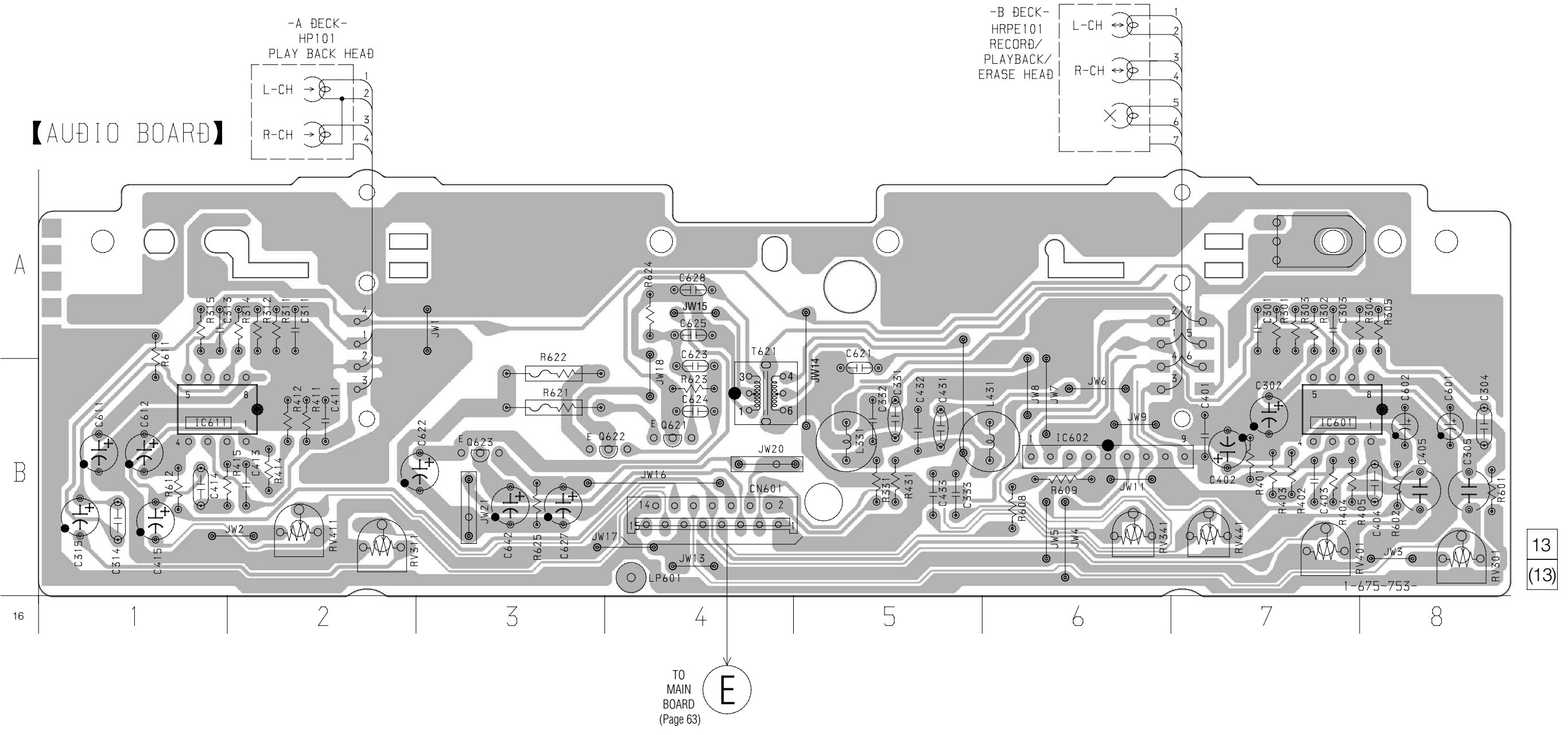




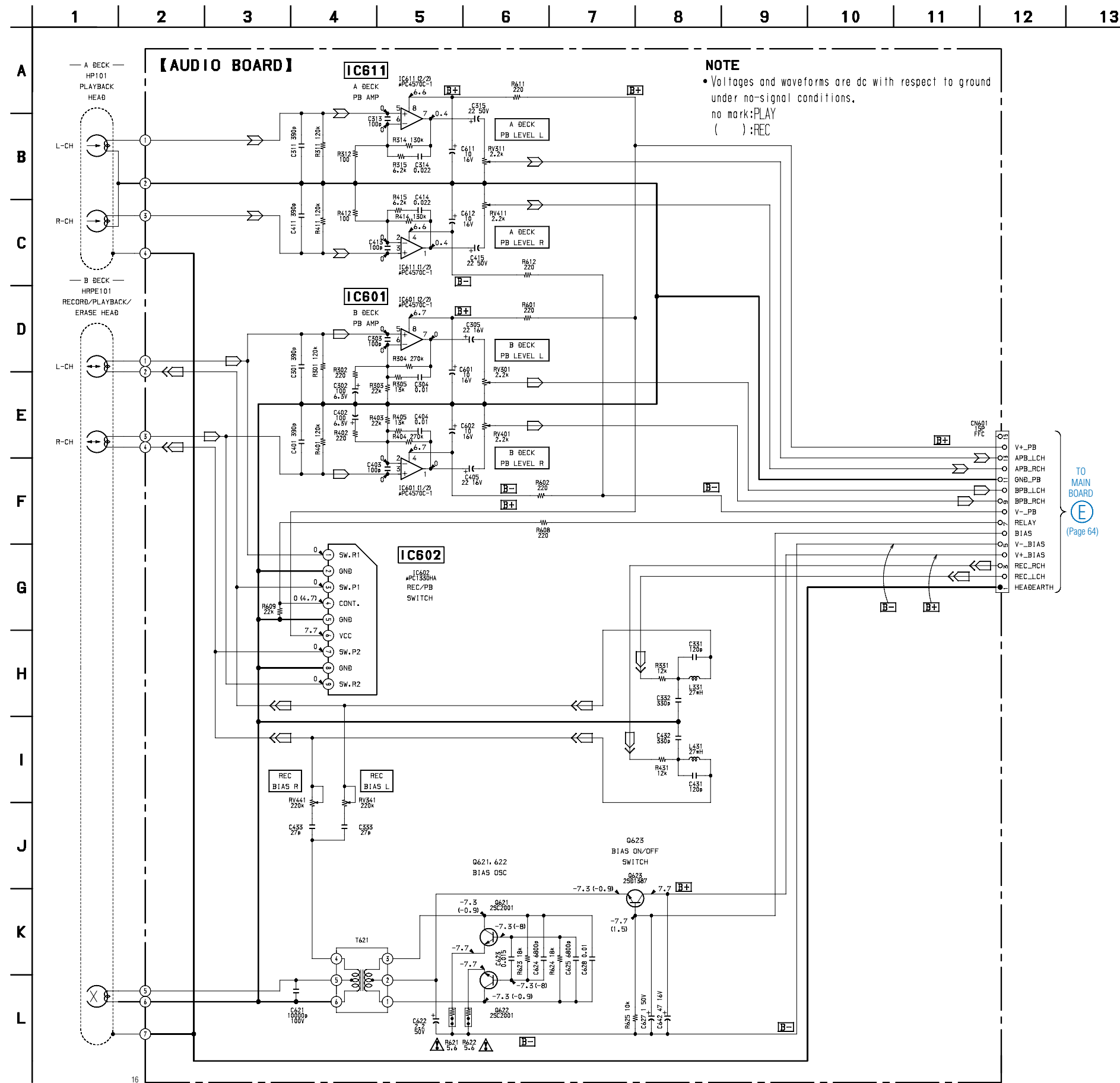
- MAIN SECTION -



- R-ch is omitted due to same as L-ch.
- Signal Path
- FM
- CD
- PB (DECK A)
- PB (DECK B)
- REC (DECK B)
- MD (PLAY)
- MD (REC)
- MIC

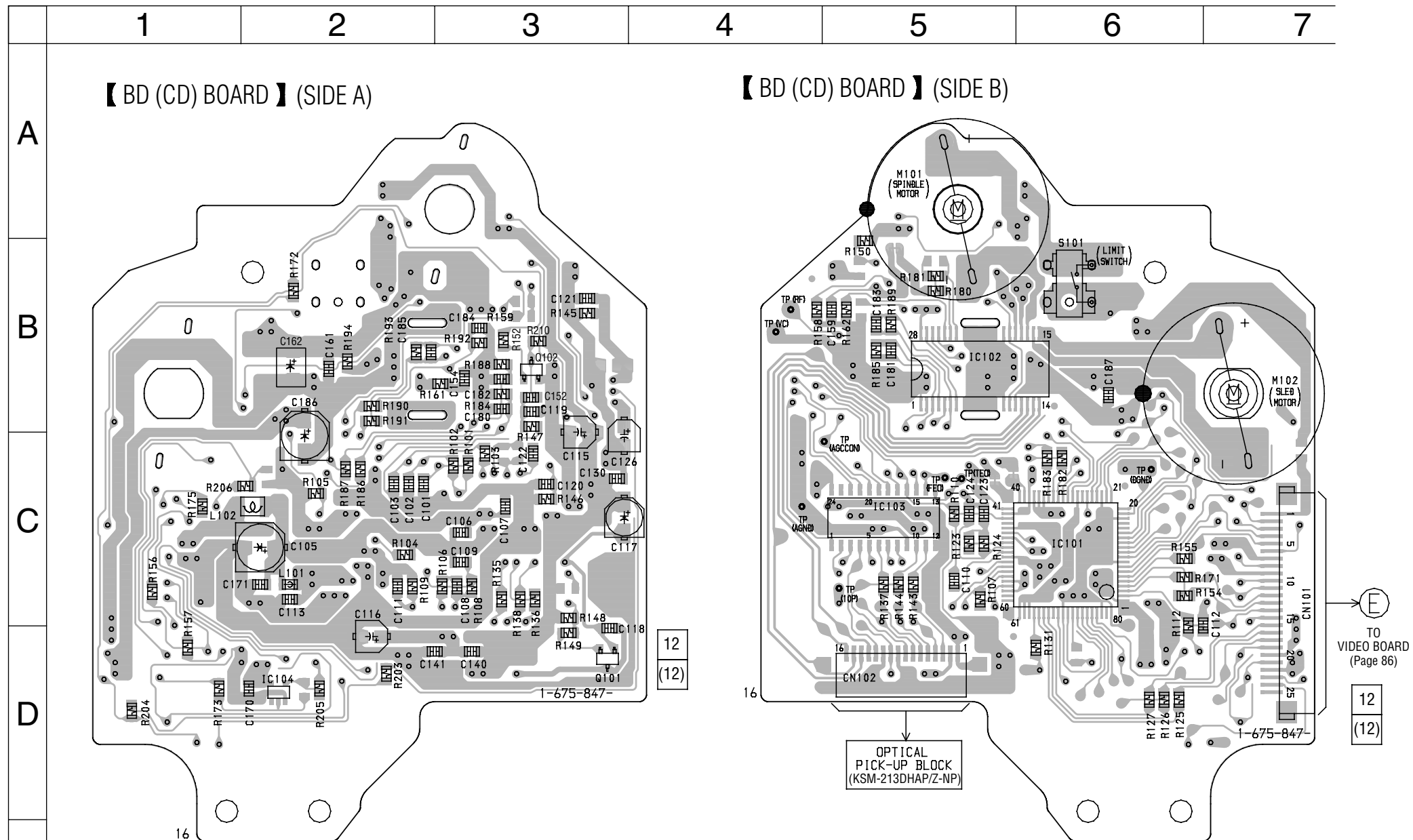


7-4. SCHEMATIC DIAGRAM – DECK SECTION –

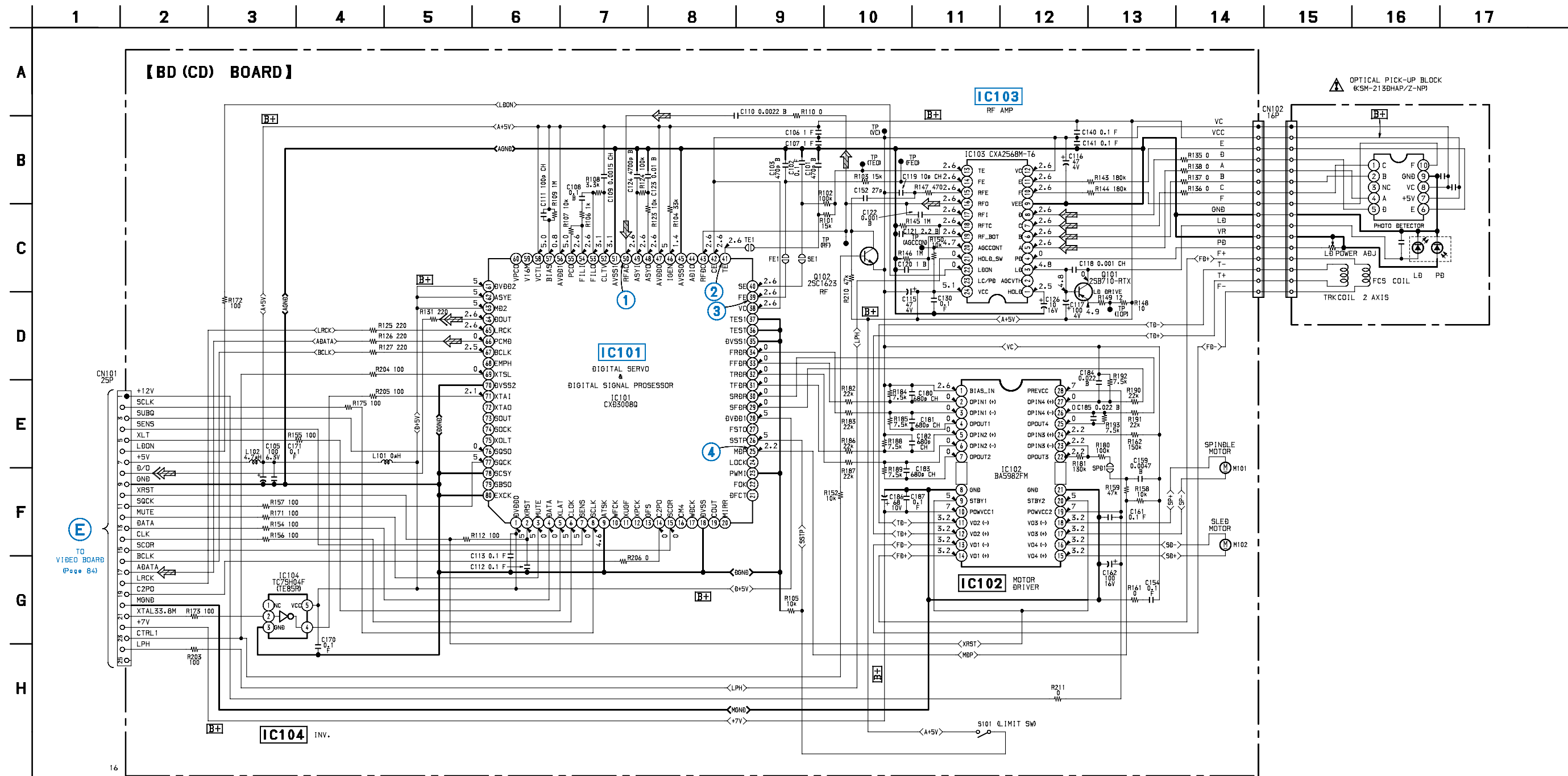


• Semiconductor Location

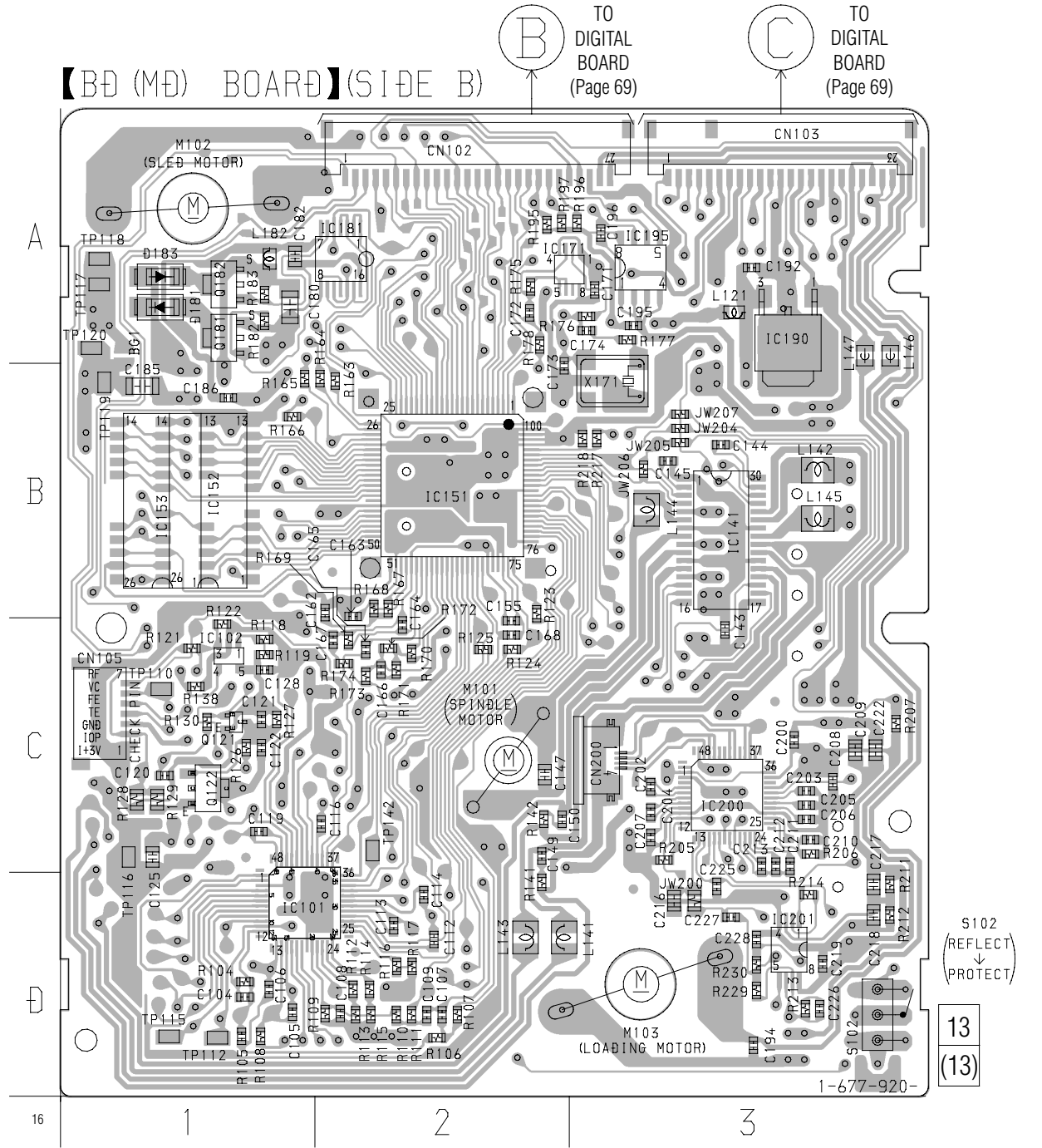
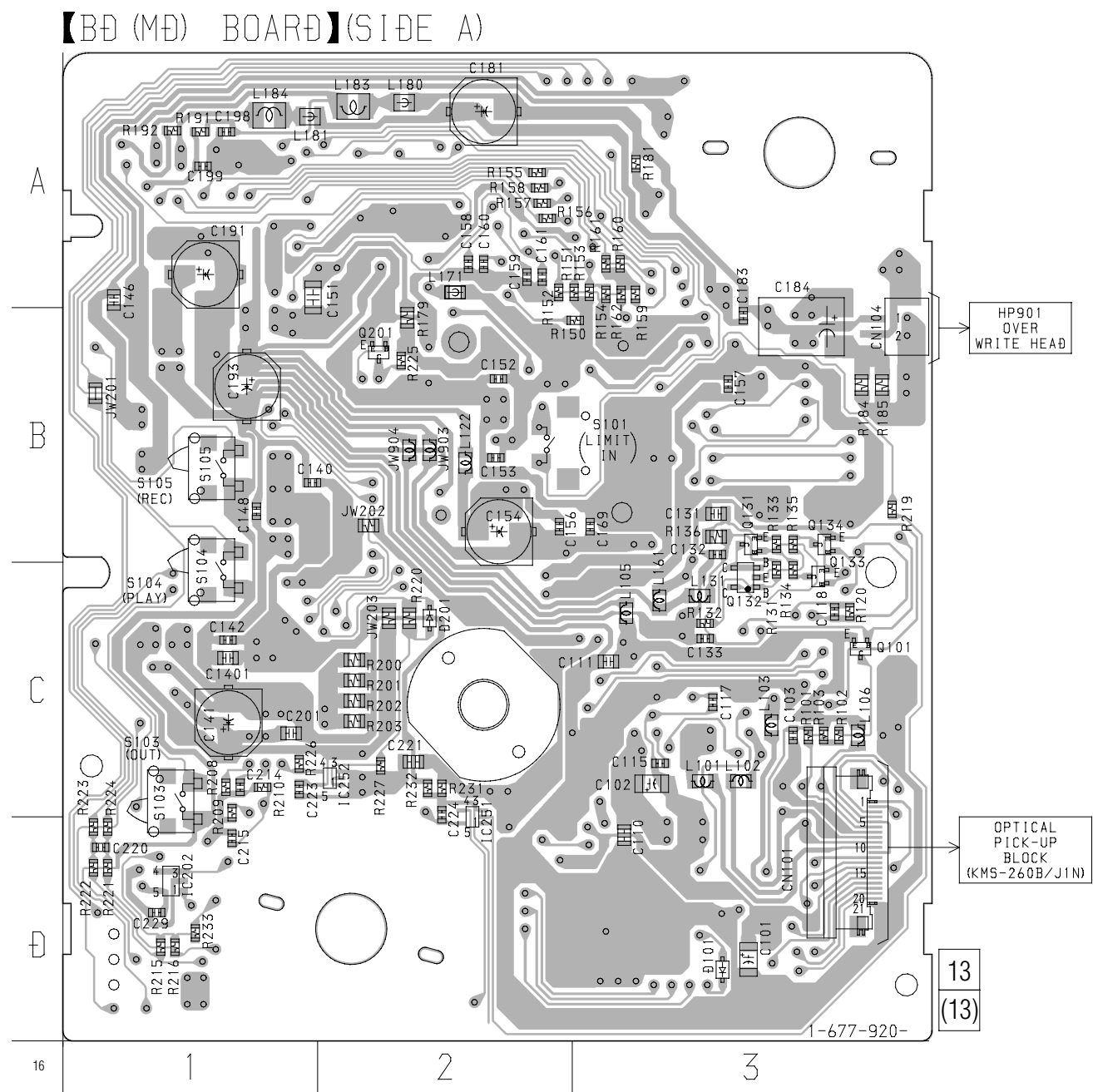
Ref. No.	Location
IC101	C-6
IC102	B-5
IC103	C-5
IC104	D-2
Q101	D-3



7-6. SCHEMATIC DIAGRAM – CD SECTION – • See page 50 for Waveforms. • See page 90 for IC Block Diagrams.



TO VIDEO BOARD (Page 84)



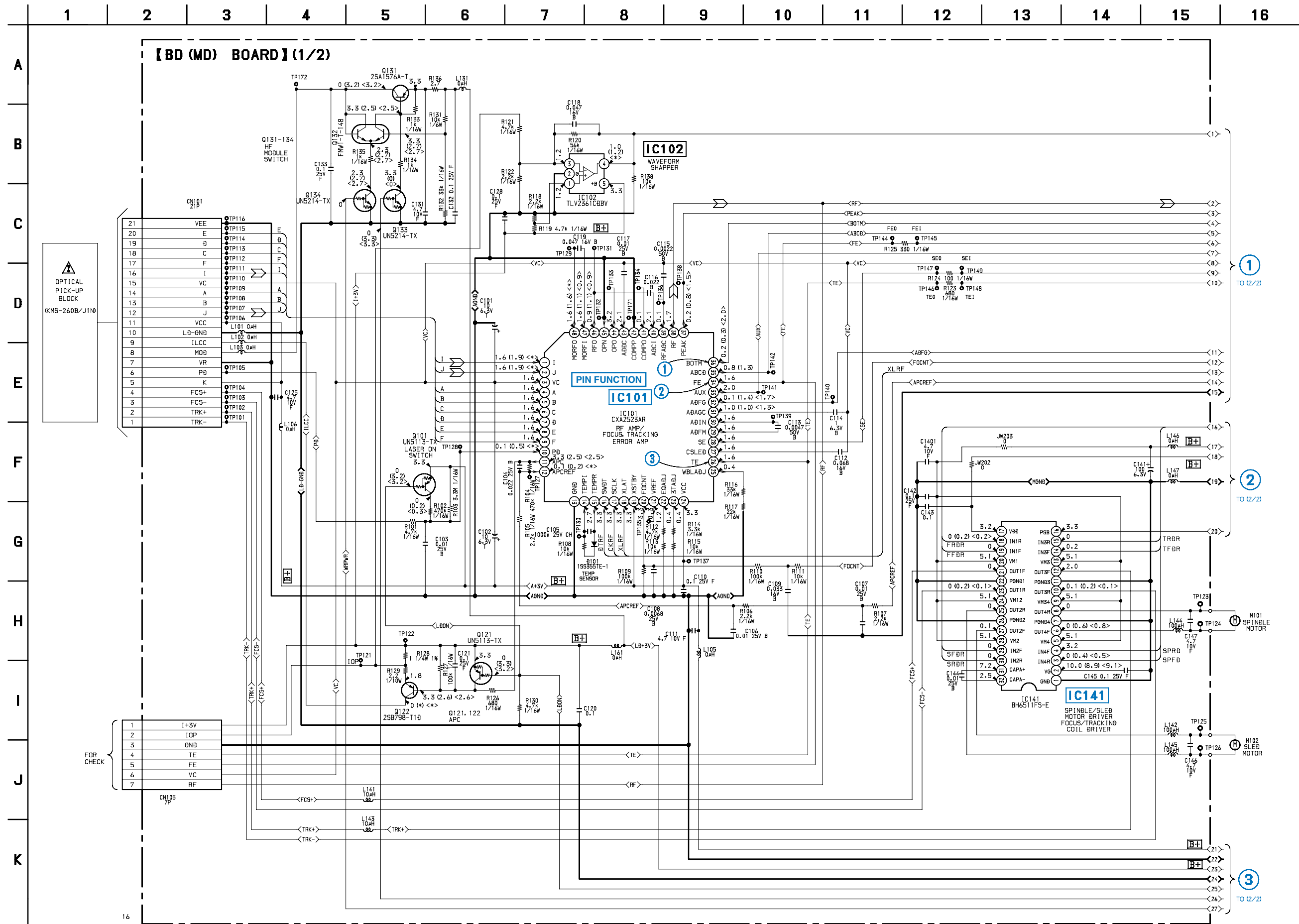
• Semiconductor Location

Ref. No.	Location
D101	D-3
Q101	C-3
Q131	B-3
Q132	C-3
Q133	B-3
Q134	B-3

• Semiconductor Location

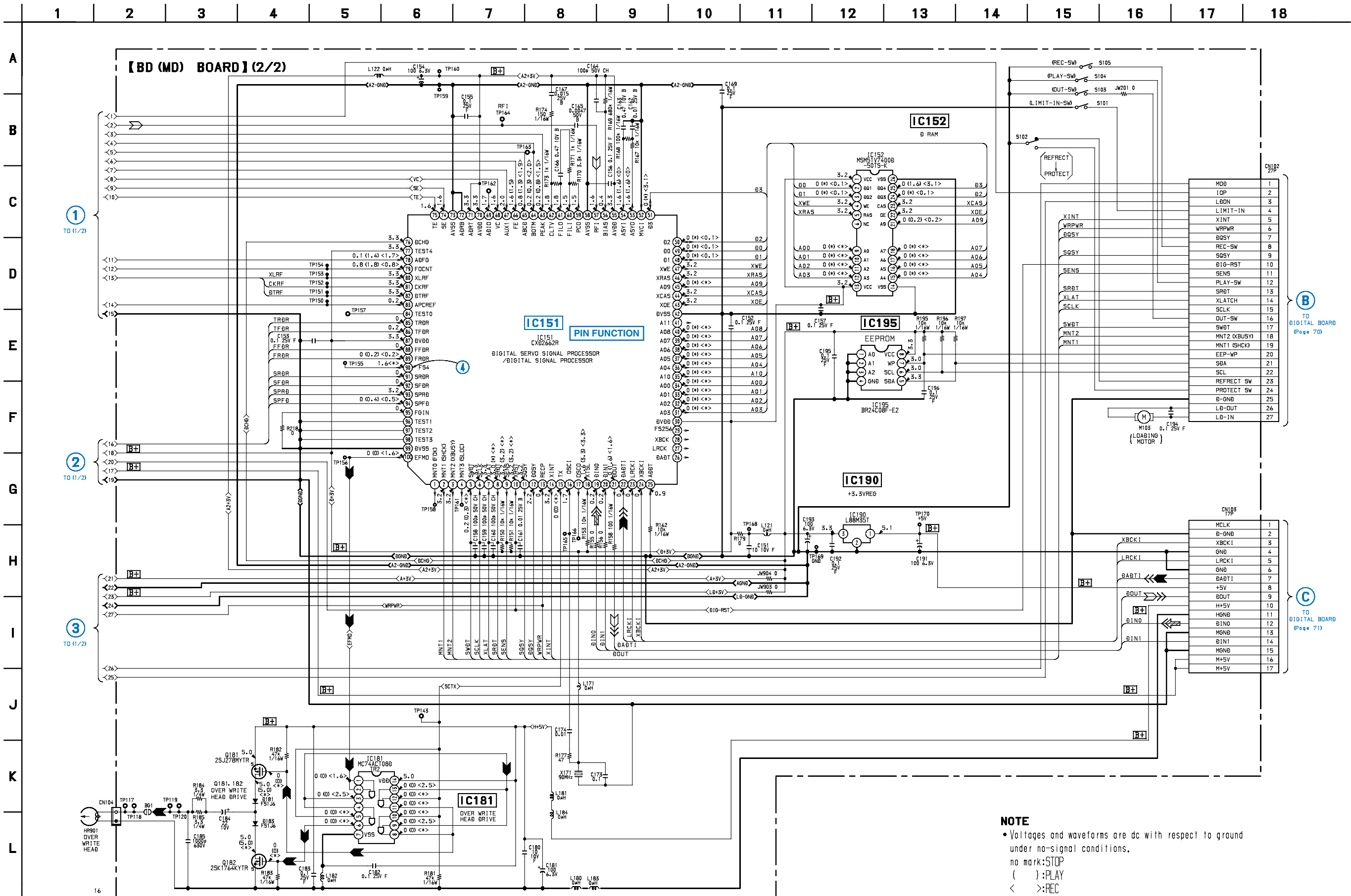
Ref. No.	Location	Ref. No.	Location
D181	A-1	IC181	A-2
D183	A-1	IC190	A-3
		IC195	A-3
IC101	D-1	Q121	C-1
IC102	C-1	Q122	C-1
IC141	A-2	Q181	A-1
IC151	B-2	Q182	A-1
IC152	B-1		

7-8. SCHEMATIC DIAGRAM – MD (1/2) SECTION – • See page 50 for Waveforms. • See page 87,88 for IC Block Diagrams. • See page 96 for IC Pin Functions.



NOTE
• Voltages and waveforms are dc with respect to ground under no-signal conditions.

no mark: STOP
() :PLAY
< >:REC
* :can not be measured.

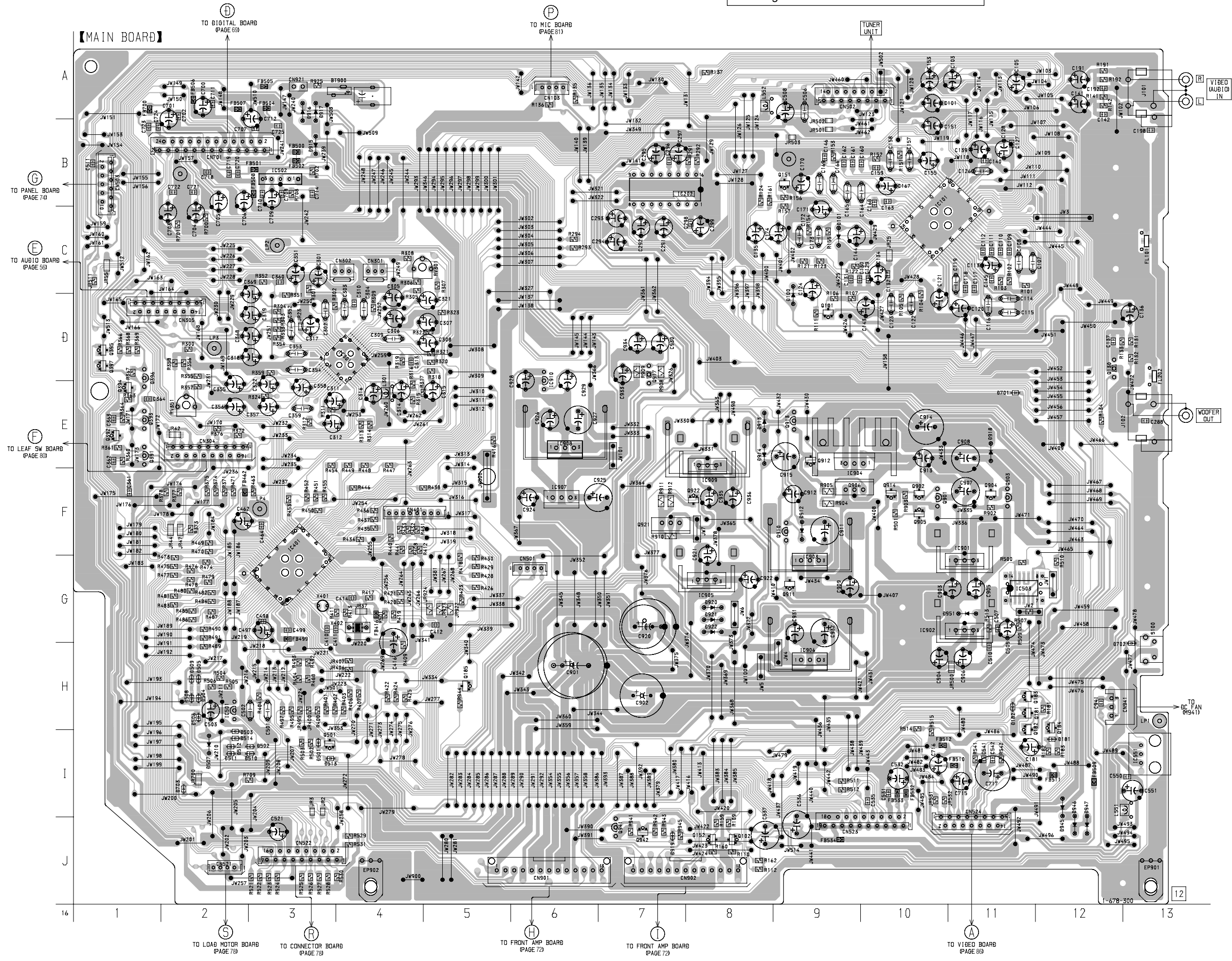


NOTE

- Voltages and waveforms are dc with respect to ground under no-signal conditions.
- () :PLAY
- < > :REC
- * :can not be measured.

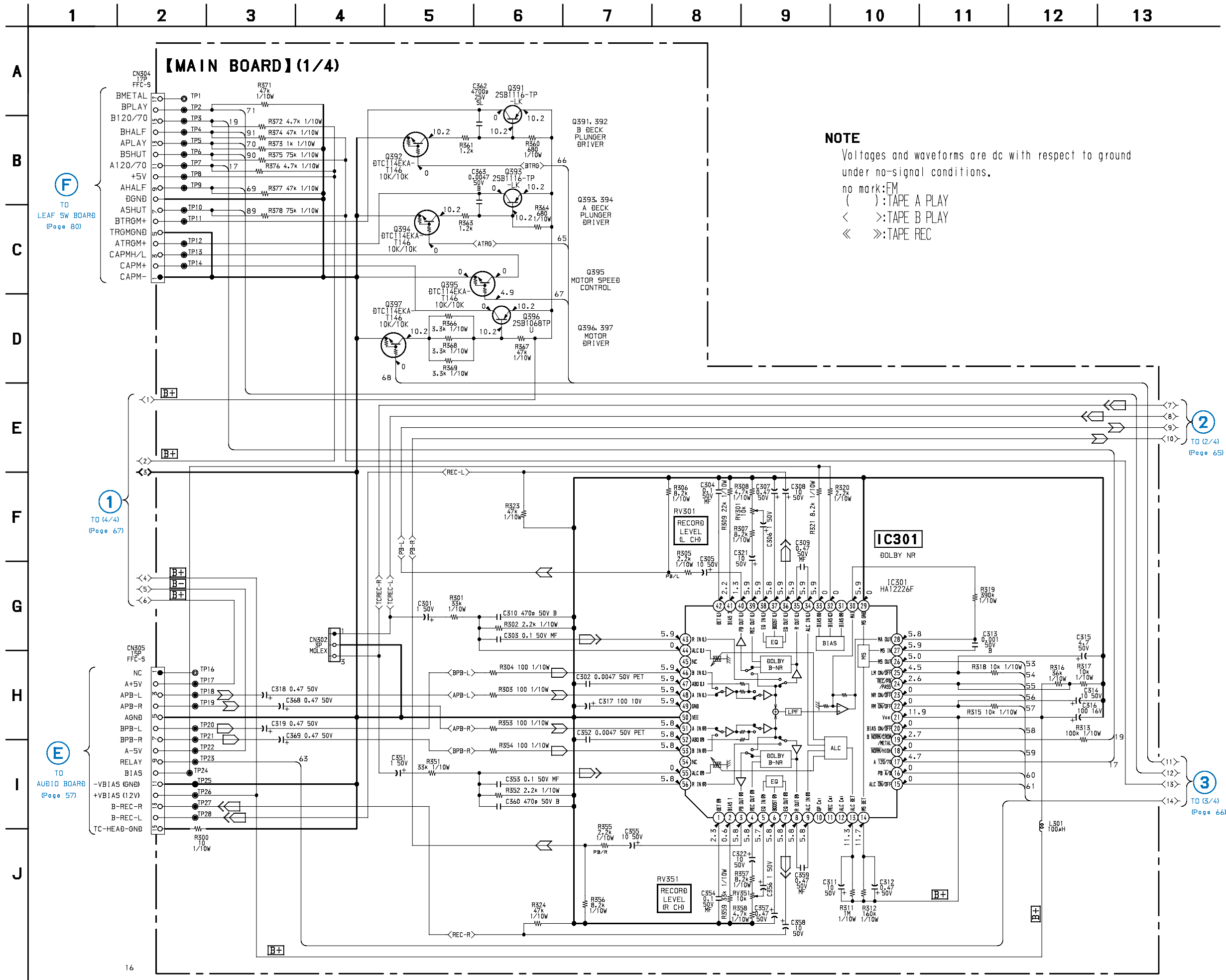
7-10. PRINTED WIRING BOARD – MAIN SECTION – • See page 48 for Circuit Boards Location.

There are a few cases that the part printed on this diagram isn't mounted in this model.



• Semiconductor Location

Ref. No.	Location
D100	C-9
D101	C-9
D181	H-12
D182	H-11
D501	I-3
D502	I-2
D503	I-2
D504	H-2
D505	H-2
D506	H-2
D507	I-2
D508	H-2
D509	H-2
D510	I-2
D511	I-2
D512	I-2
D513	I-3
D514	I-2
D702	G-13
D703	I-2
D912	F-9
D913	E-8
D914	E-8
D915	B-3
D916	A-3
D917	A-3
D918	E-11
D919	J-7
D920	G-8
D921	G-8
D922	G-8
D945	J-12
D946	J-12
D947	J-12
D951	G-11
IC101	C-10
IC202	B-7
IC301	D-4
IC401	F-3
IC501	H-2
IC502	B-3
IC503	G-11
IC551	I-13
IC901	F-11
IC902	G-11
IC903	F-9
IC904	E-9
IC905	G-8
IC906	H-9
IC907	F-6
IC908	E-6
IC909	E-8
IC910	E-6
Q101	C-9
Q102	J-8
Q151	B-9
Q152	J-8
Q181	H-11
Q182	H-11
Q183	H-11
Q184	H-12
Q185	H-5
Q391	E-1
Q392	E-1
Q393	E-1
Q394	E-1
Q395	D-1
Q396	D-1
Q397	D-1
Q501	I-3
Q901	F-10



NOTE
 Voltages and waveforms are dc with respect to ground under no-signal conditions.
 no mark:FM
 ():TAPE A PLAY
 < >:TAPE B PLAY
 << >>:TAPE REC

F
 TO LEAF SW BOARD
 (Page 80)

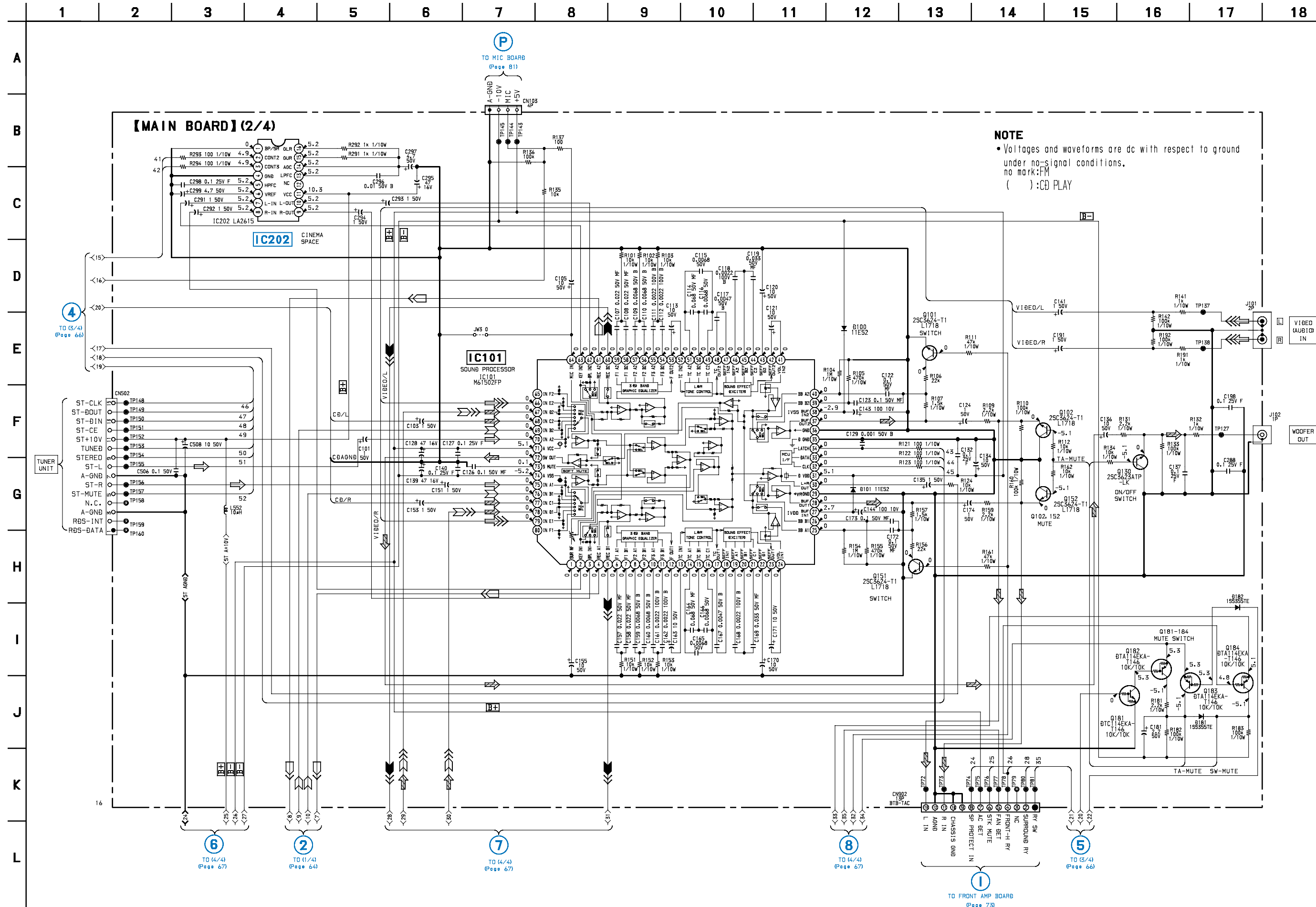
1
 TO (4/4)
 (Page 67)

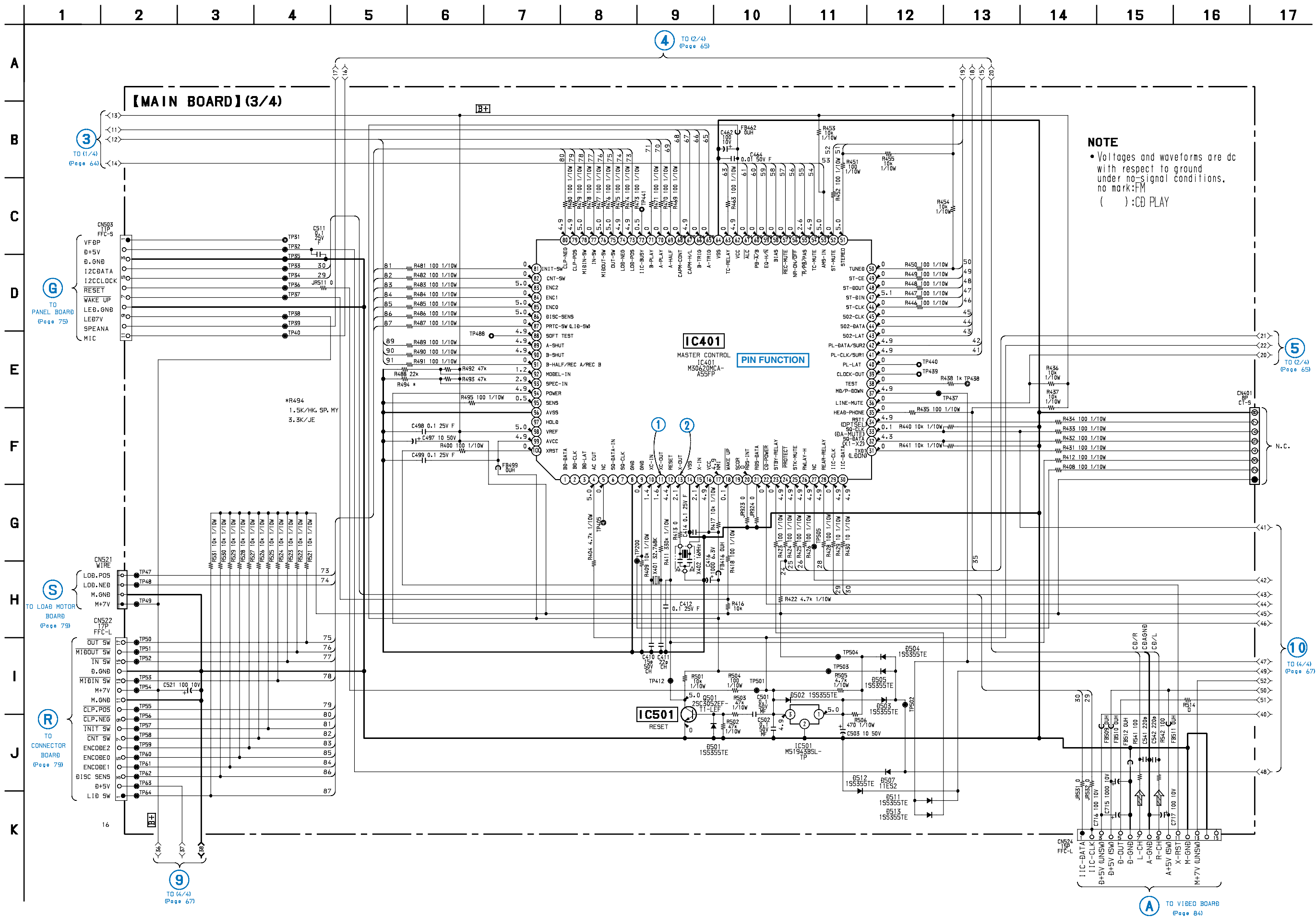
E
 TO AUDIO BOARD
 (Page 57)

2
 TO (2/4)
 (Page 65)

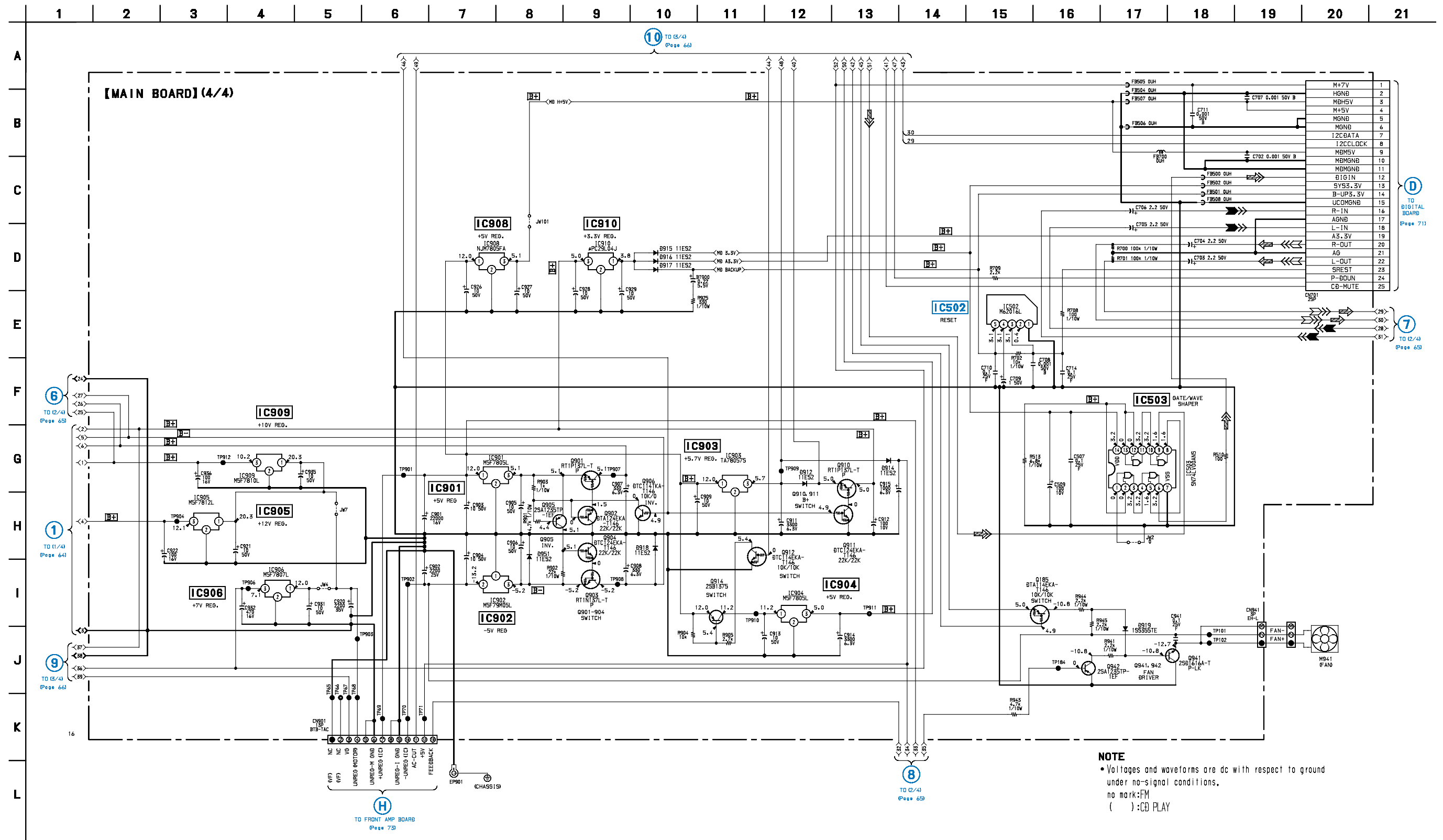
3
 TO (3/4)
 (Page 66)

7-12. SCHEMATIC DIAGRAM – MAIN (2/4) SECTION – • See page 89 for IC Block Diagrams.



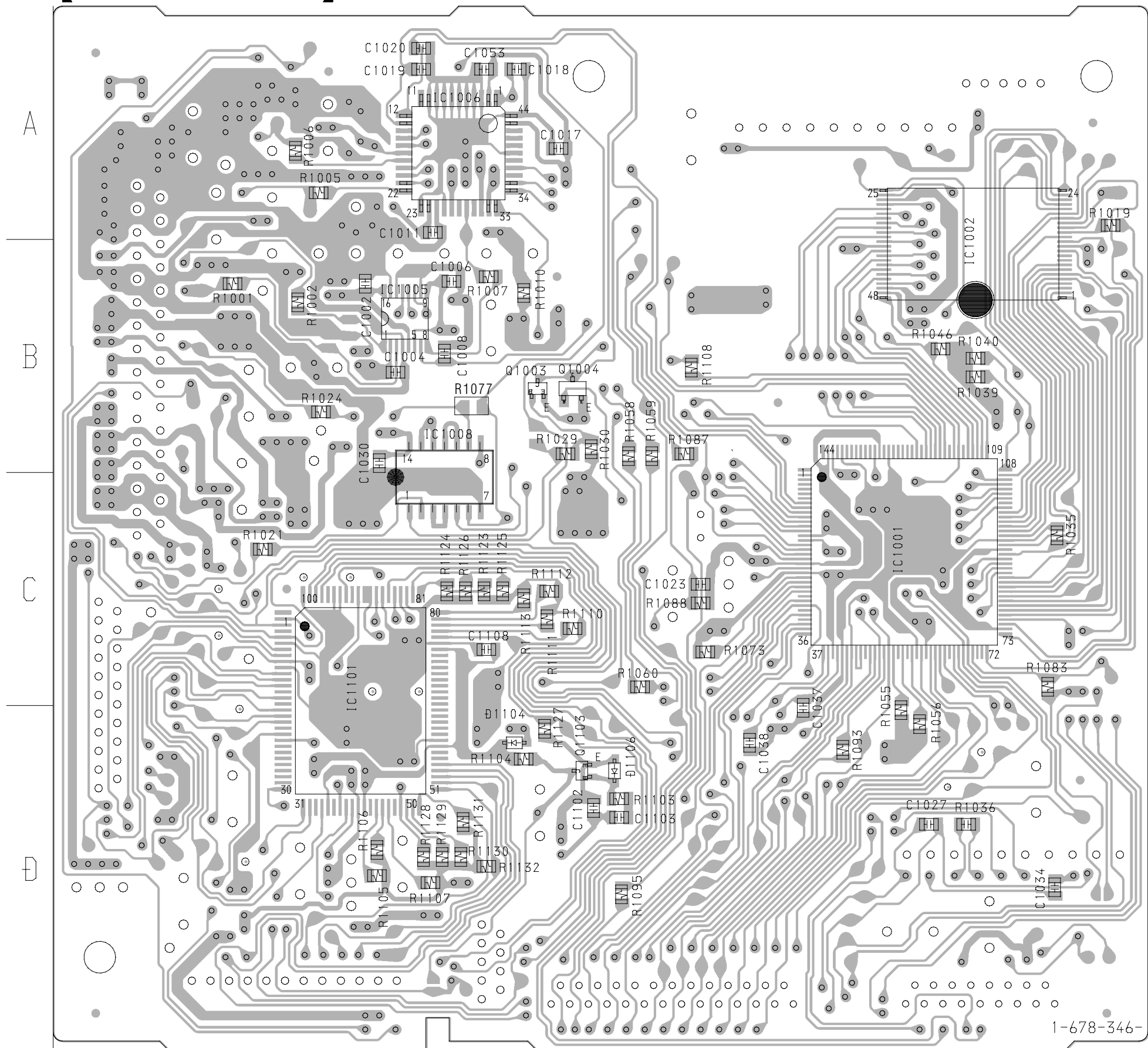


7-14. SCHEMATIC DIAGRAM – MAIN (4/4) SECTION – • See page 89 for IC Block Diagrams.



There are a few cases that the part printed on this diagram isn't mounted in this model.

【DIGITAL BOARD】(SIDE A)



• Semiconductor Location

Ref. No.	Location
IC1001	C-4
IC1002	B-4
IC1005	B-2
IC1006	A-2
Q1003	B-3
Q1004	B-3

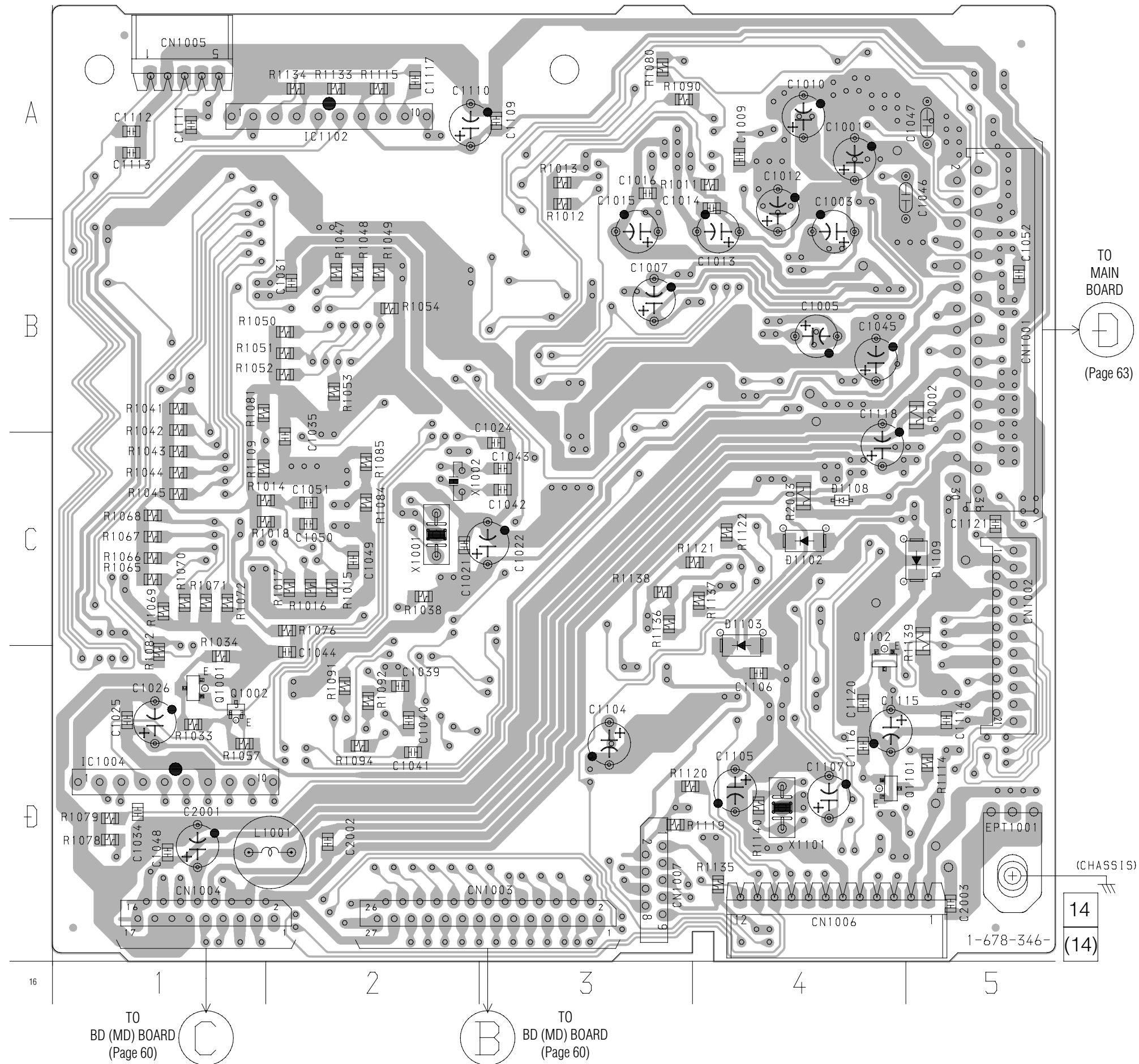
7-16. PRINTED WIRING BOARD – DIGITAL (SIDE B) SECTION – • See page 48 for Circuit Boards Location.

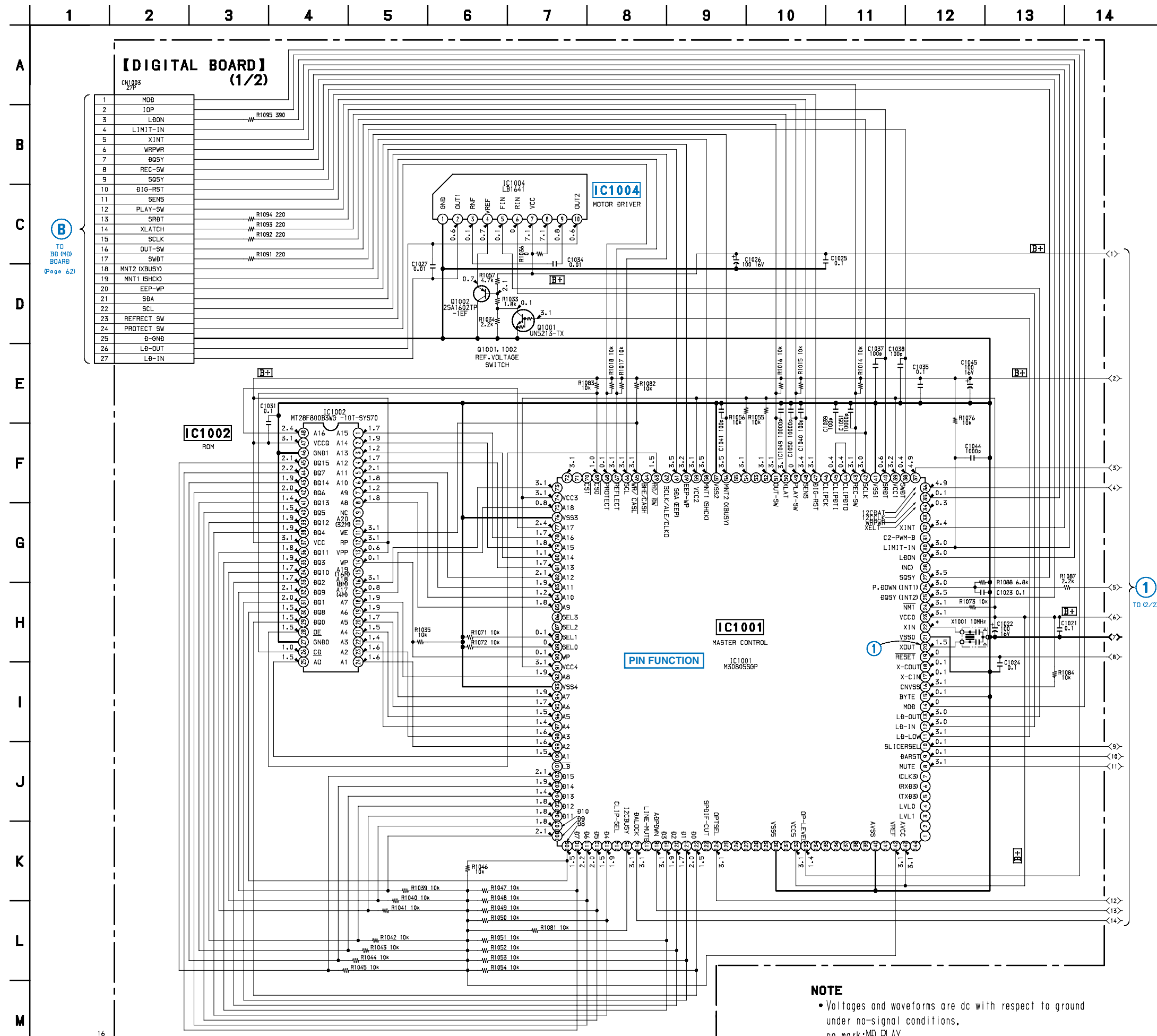
There are a few cases that the part printed on this diagram isn't mounted in this model.

【DIGITAL BOARD】(SIDE B)

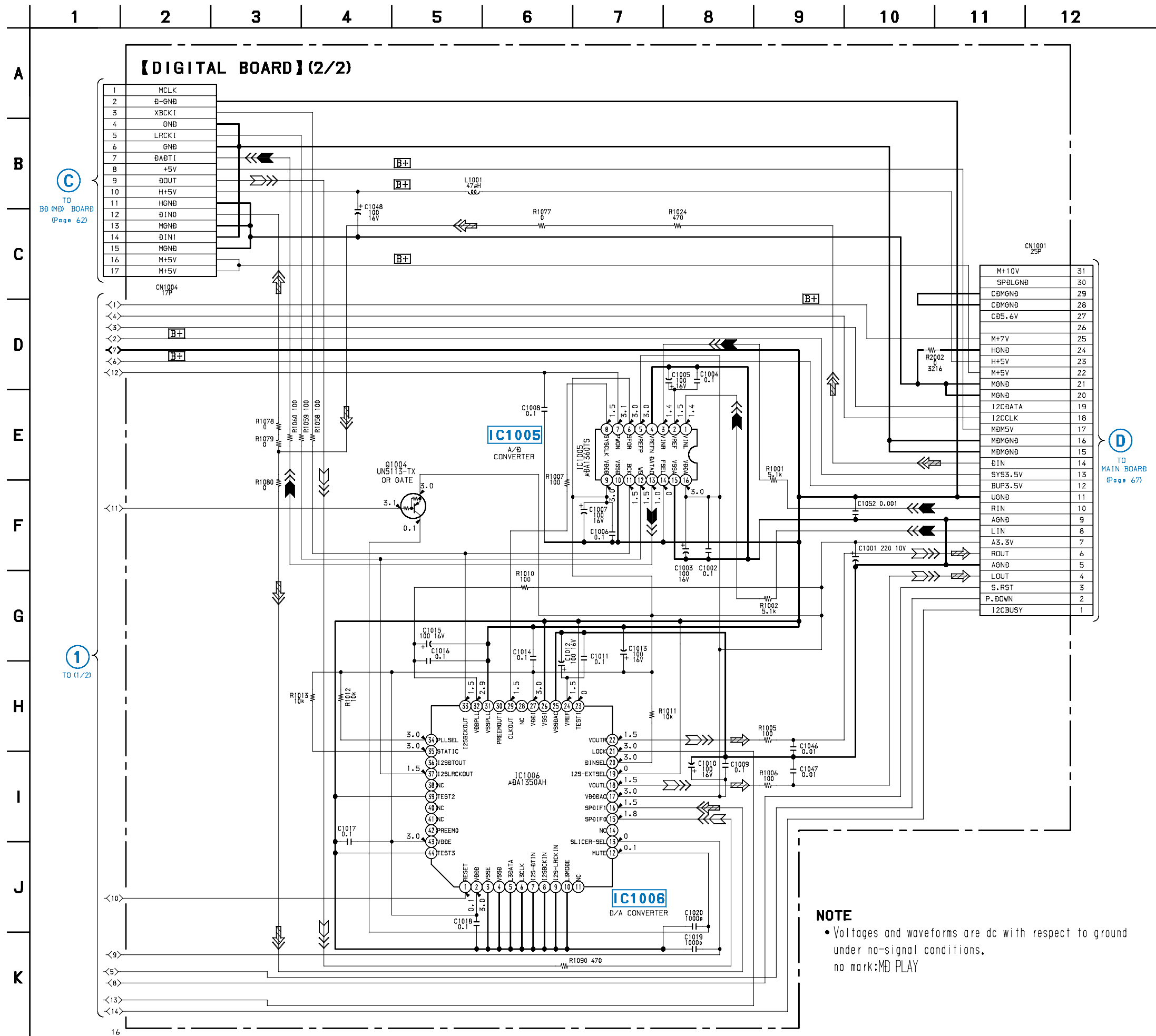
• Semiconductor Location

Ref. No.	Location
IC1004	D-1
Q1001	D-1
Q1002	D-1

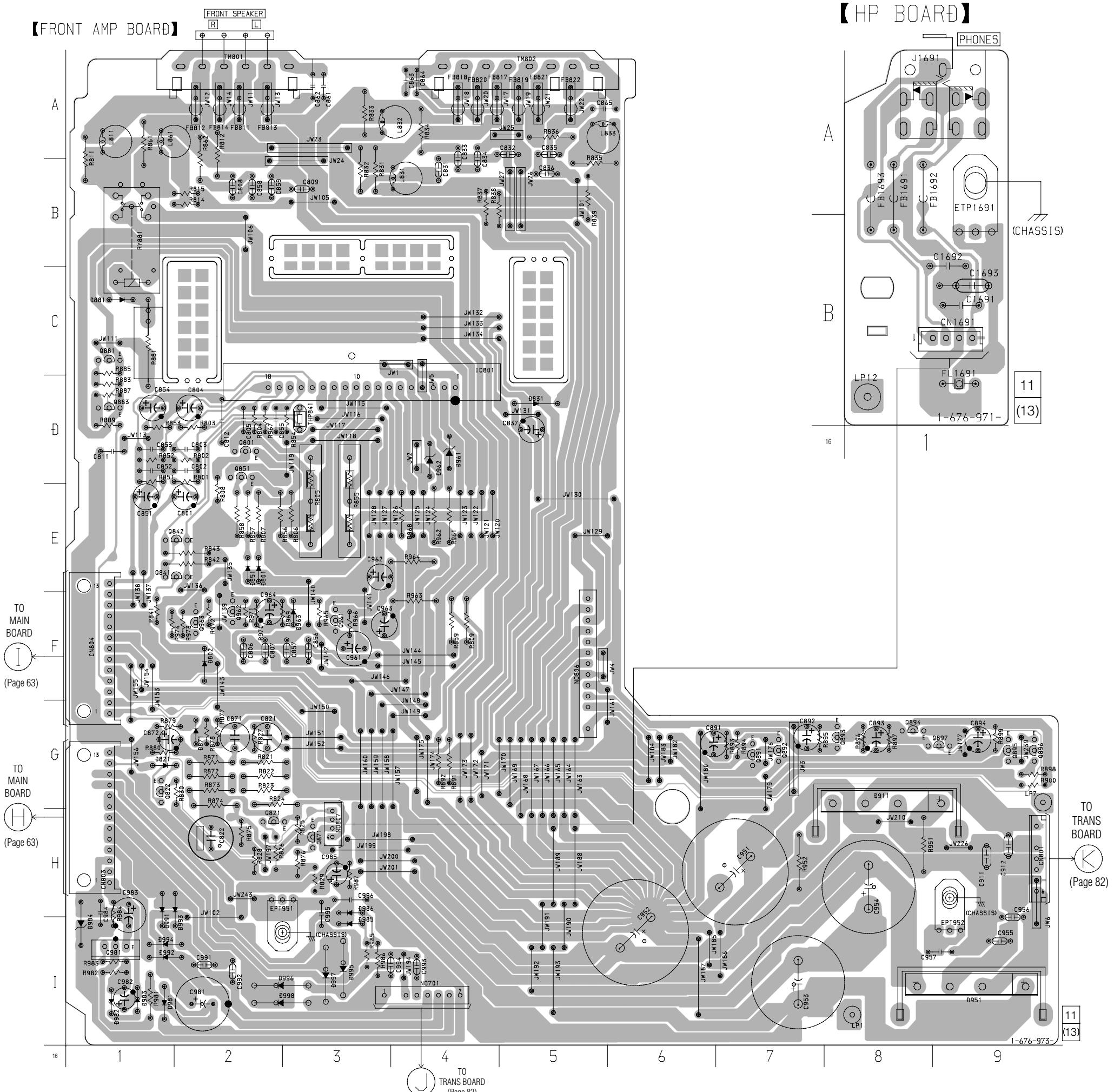




7-18. SCHEMATIC DIAGRAM – DIGITAL (2/2) SECTION – • See page 92 for IC Block Diagrams.



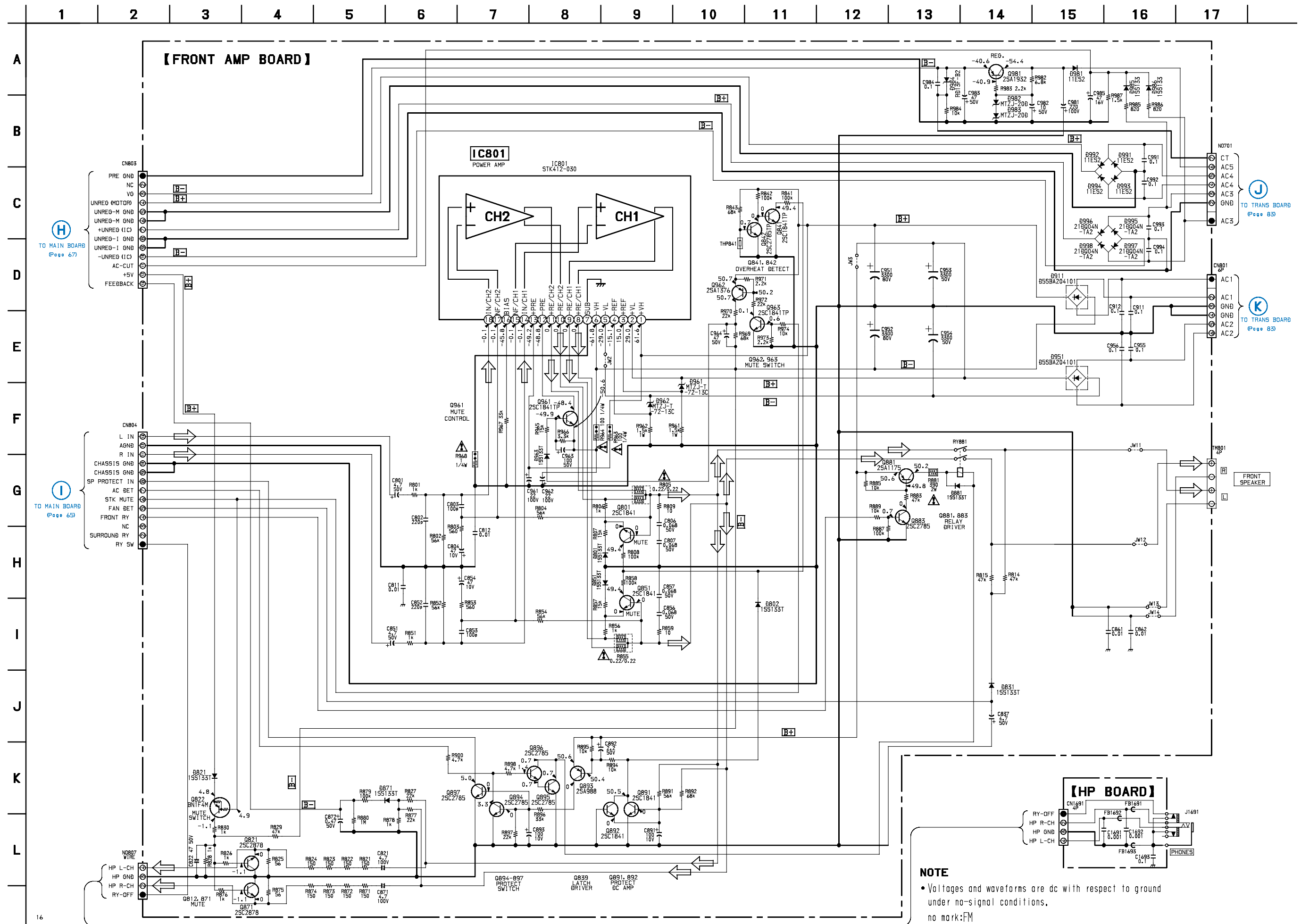
There are a few cases that the part printed on this diagram isn't mounted in this model.



• Semiconductor Location

Ref. No.	Location
D801	E-2
D802	F-2
D821	G-1
D831	D-5
D851	E-2
D871	G-2
D881	C-1
D911	G-8
D951	I-9
D961	D-4
D962	D-4
D963	F-3
D981	I-1
D982	I-1
D983	I-1
D984	I-1
D985	I-3
D986	H-3
D991	H-1
D992	I-1
D993	H-1
D994	I-1
D995	I-3
D996	I-2
D997	I-3
D998	I-2
IC801	D-4
Q801	D-2
Q821	H-2
Q822	G-1
Q841	E-1
Q842	E-1
Q851	D-2
Q871	H-3
Q881	C-1
Q883	D-1
Q891	G-7
Q892	G-7
Q893	G-8
Q894	G-8
Q895	G-9
Q896	G-9
Q897	G-9
Q961	F-3
Q962	F-2
Q963	F-2
Q981	I-1

7-20. SCHEMATIC DIAGRAM – AMP SECTION –



TO MAIN BOARD (Page 67)

TO MAIN BOARD (Page 65)

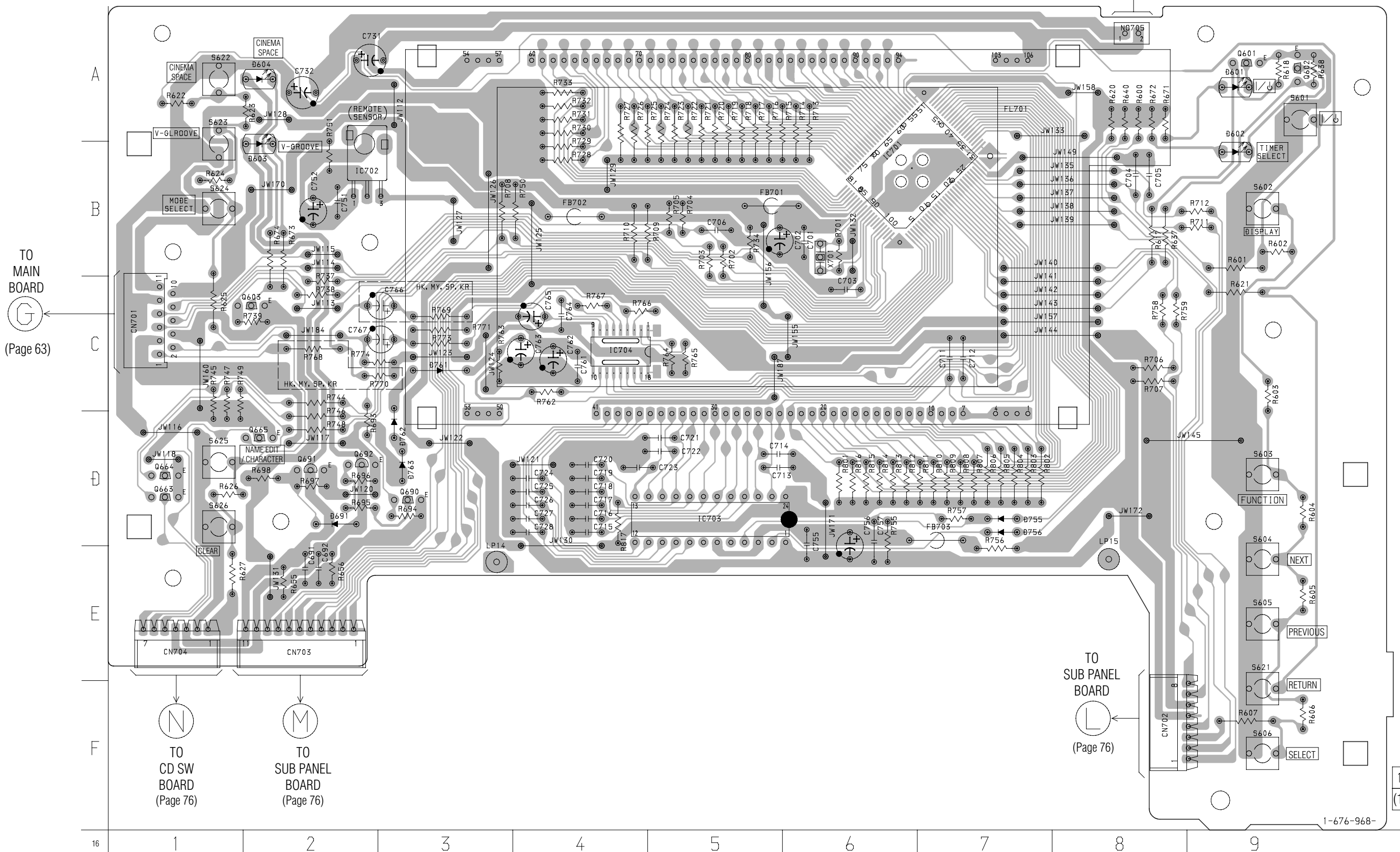
TO TRANS BOARD (Page 83)

TO TRANS BOARD (Page 83)

FRONT SPEAKER

There are a few cases that the part printed on this diagram isn't mounted in this model.

【PANEL BOARD】



TO MAIN BOARD
(Page 63)

TO TRANS BOARD
(Page 82)

TO SUB PANEL BOARD
(Page 76)

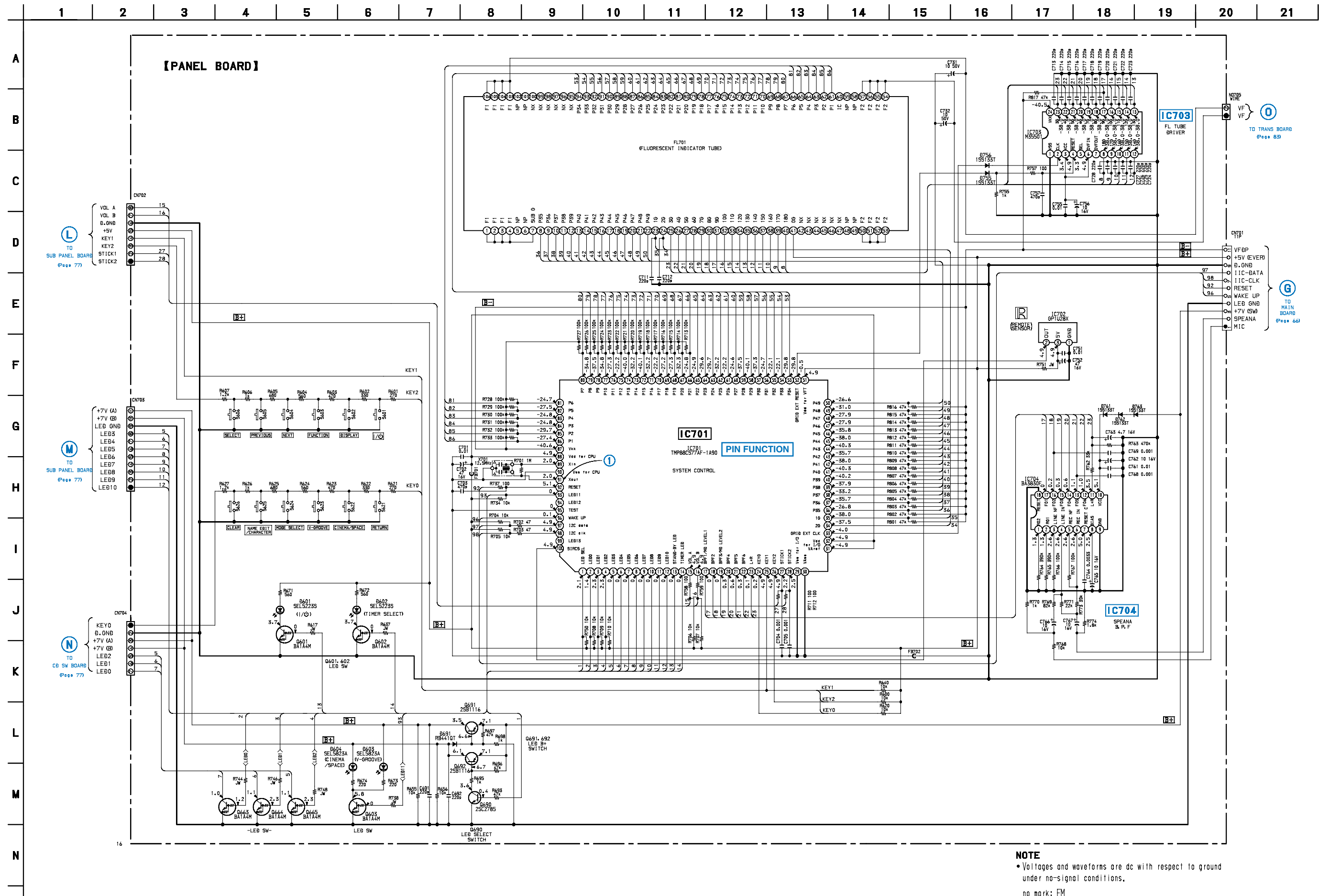
TO CD SW BOARD
(Page 76)

TO SUB PANEL BOARD
(Page 76)

• Semiconductor Location

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D601	A-9	D755	D-7	IC701	B-6	Q601	A-9	Q665	D-2
D602	B-9	D756	D-7	IC702	B-2	Q602	A-9	Q690	D-3
D603	B-2	D761	C-3	IC703	D-5	Q603	C-2	Q691	D-2
D604	A-2	D762	D-3	IC704	C-4	Q663	D-1	Q692	D-2
D691	D-2	D763	D-3			Q664	D-1		

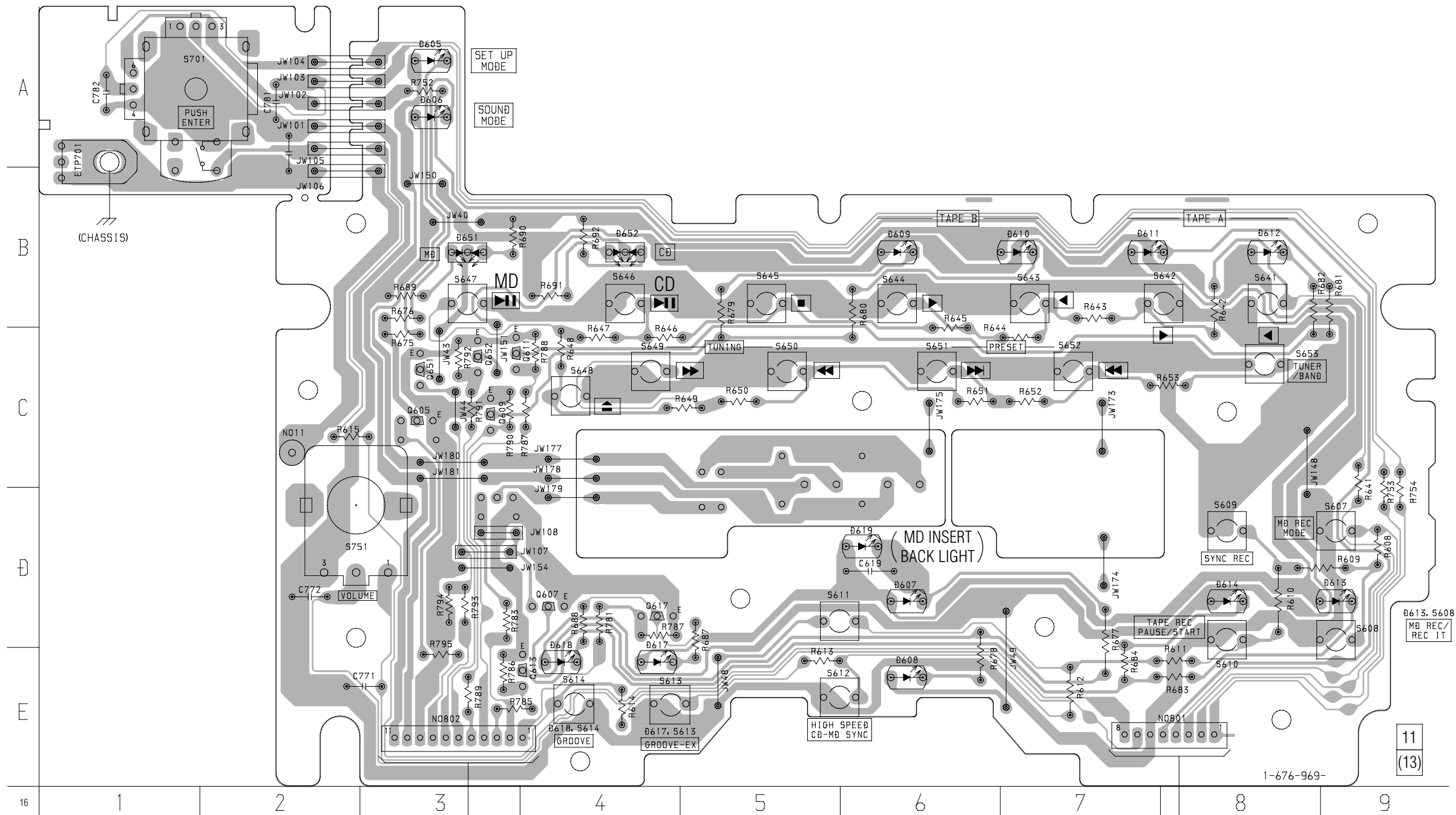
7-22. SCHEMATIC DIAGRAM – PANEL SECTION – • See page 50 for Waveforms. • See page 93 for IC Block Diagrams. • See page 104 for IC Pin Functions.



NOTE
 • Voltages and waveforms are dc with respect to ground under no-signal conditions.
 no mark: FM

There are a few cases that the part printed on this diagram isn't mounted in this model.

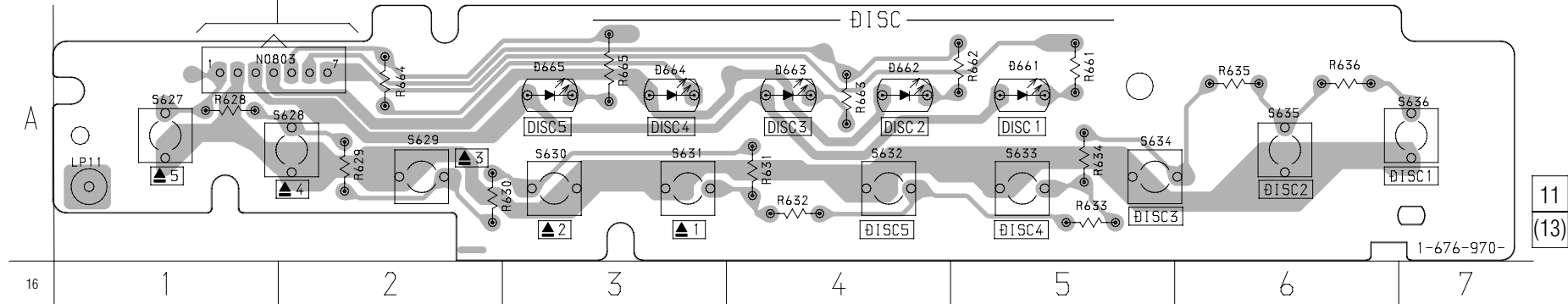
【SUB PANEL BOARD】



• Semiconductor Location

Ref. No.	Location
D605	A-3
D606	A-3
D609	B-6
D610	B-7
D611	B-7
D612	B-8
D613	D-9
D614	D-8
D617	E-4
D618	E-4
D619	D-6
D651	B-3
D652	B-4
Q605	C-3
Q607	D-4
Q609	C-3
Q611	C-3
Q613	E-4
Q617	D-4
Q651	C-3
Q652	C-3

【CD SW BOARD】



• Semiconductor Location

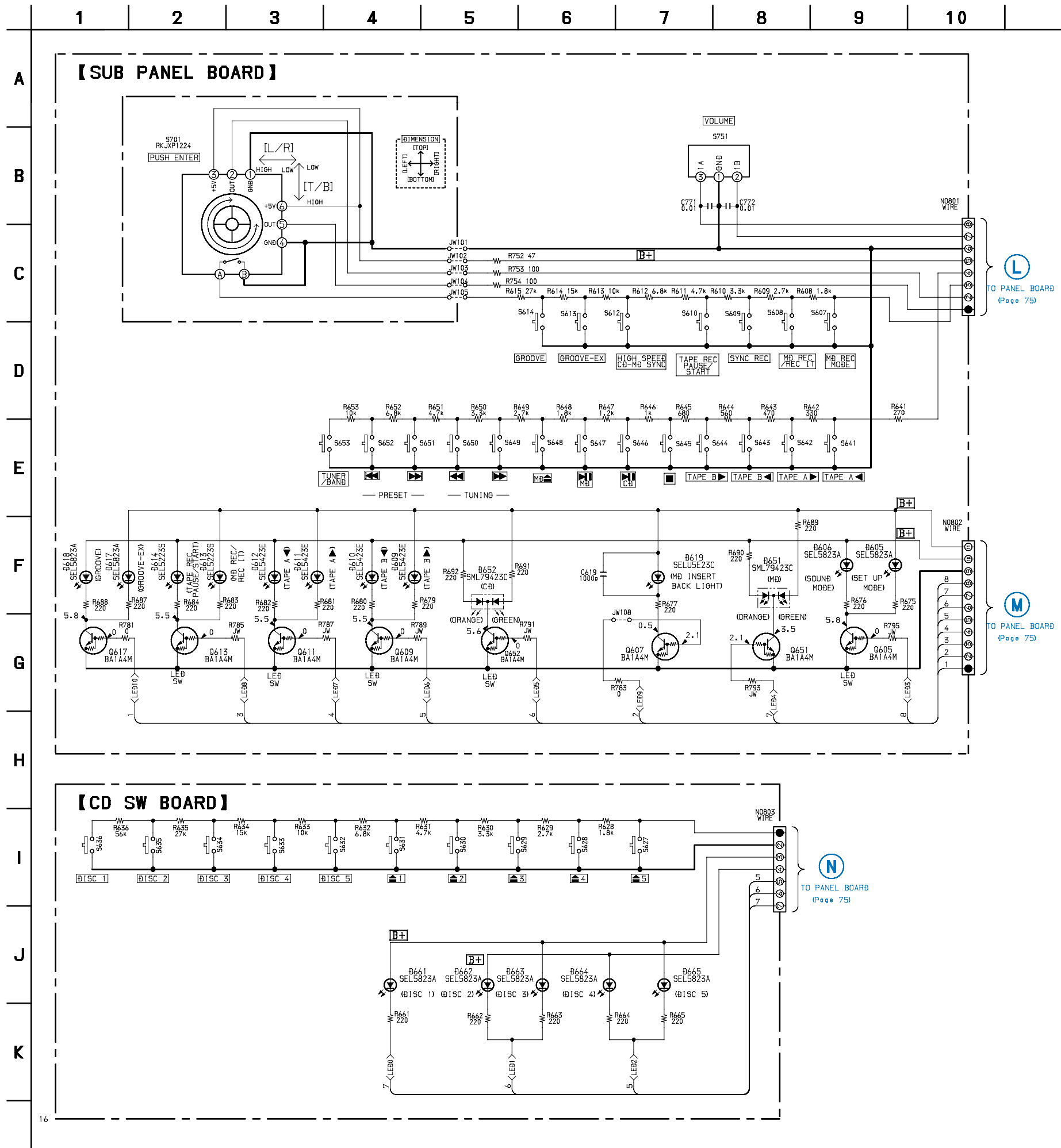
Ref. No.	Location
D661	A-5
D662	A-4
D663	A-4
D664	A-3
D665	A-3

TO PANEL BOARD (Page 74)

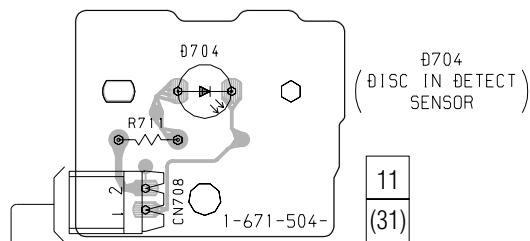
TO PANEL BOARD (Page 74)

TO PANEL BOARD (Page 74)

7-24. SCHEMATIC DIAGRAM – SWITCH SECTION –

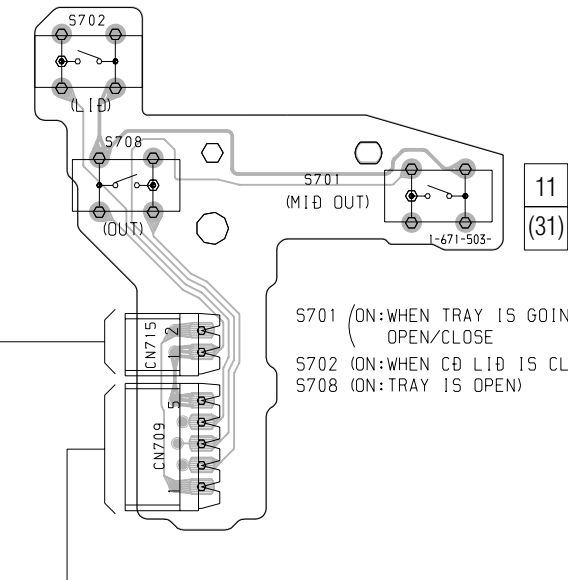


【SENSOR BOARD】



11
(31)

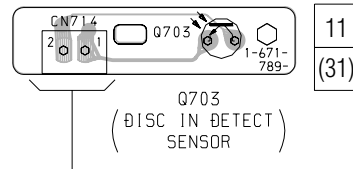
【OUT SW BOARD】



11
(31)

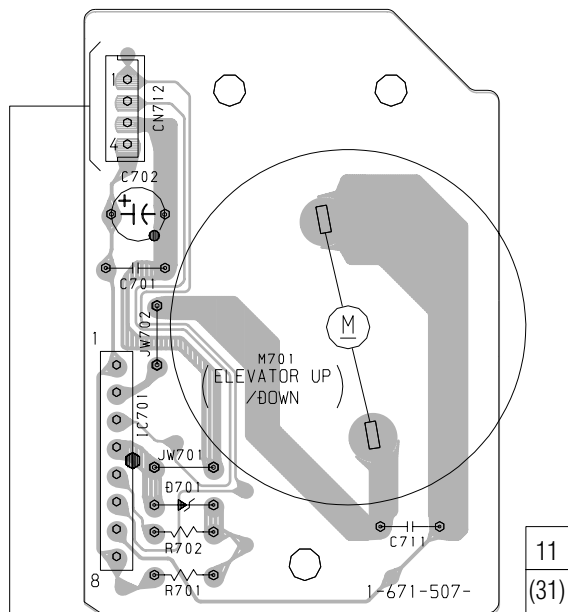
S701 (ON:WHEN TRAY IS GOING TO OPEN/CLOSE)
S702 (ON:WHEN CD LID IS CLOSE)
S708 (ON:TRAY IS OPEN)

【SENSOR 2 BOARD】



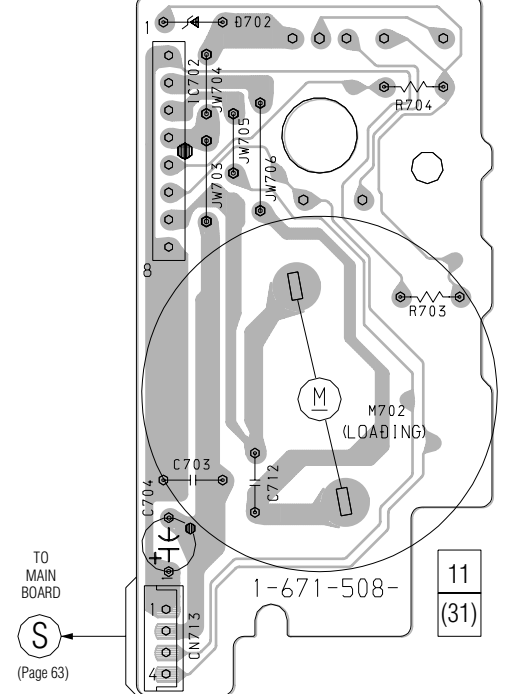
11
(31)

【CLAMP MOTOR BOARD】



11
(31)

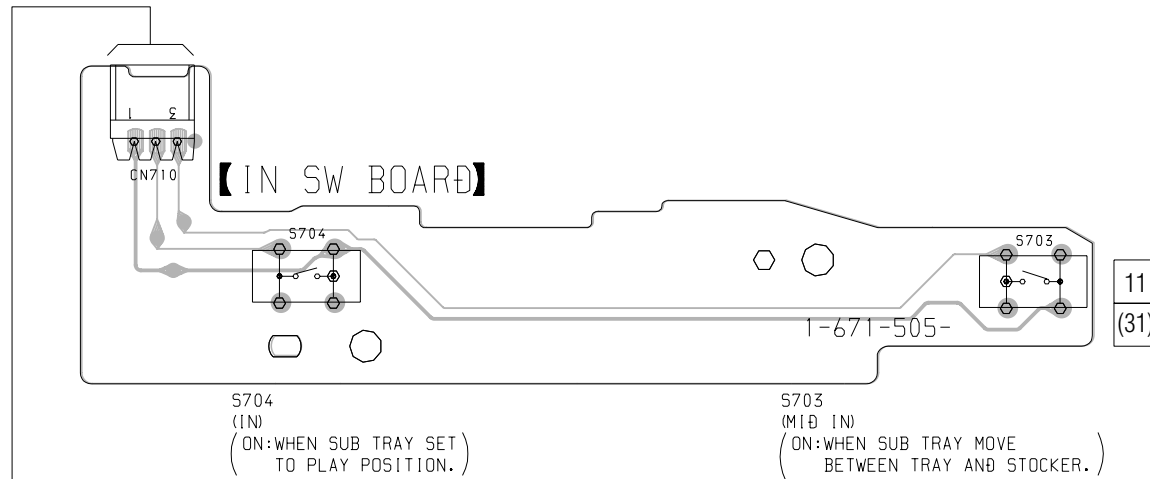
【LOAD MOTOR BOARD】



11
(31)

TO MAIN BOARD
S
(Page 63)

【IN SW BOARD】

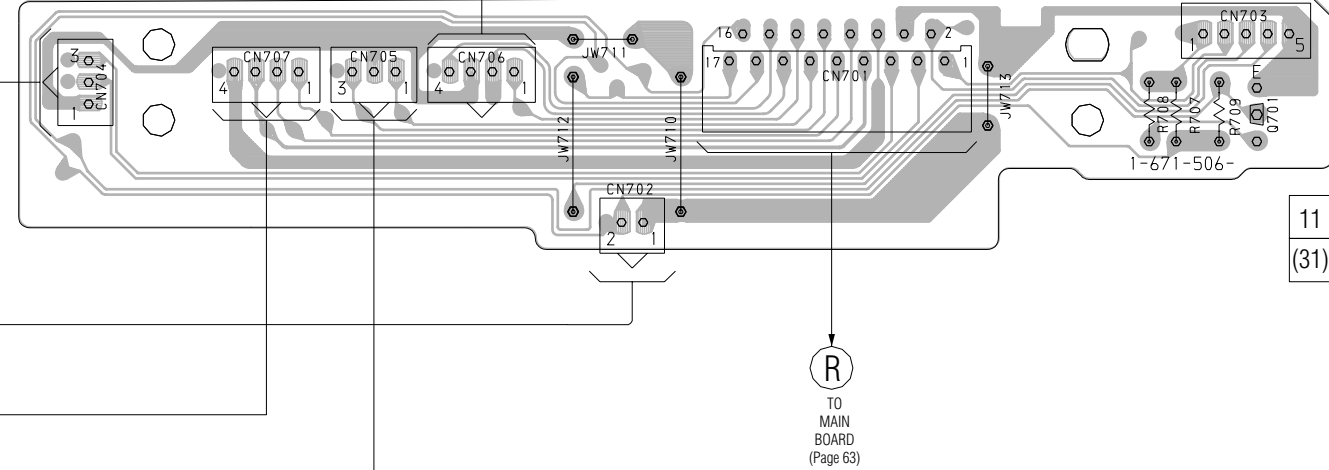


11
(31)

S704 (IN)
(ON:WHEN SUB TRAY SET TO PLAY POSITION.)

S703 (MID IN)
(ON:WHEN SUB TRAY MOVE BETWEEN TRAY AND STOCKER.)

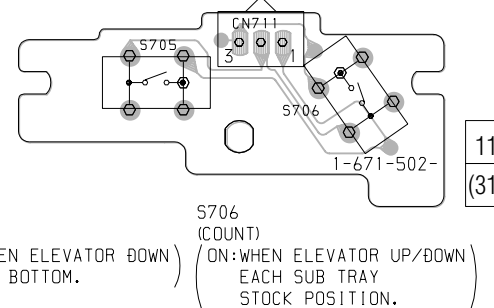
【CONNECTOR BOARD】



11
(31)

R
TO MAIN BOARD
(Page 63)

【INT/COUNT SW BOARD】

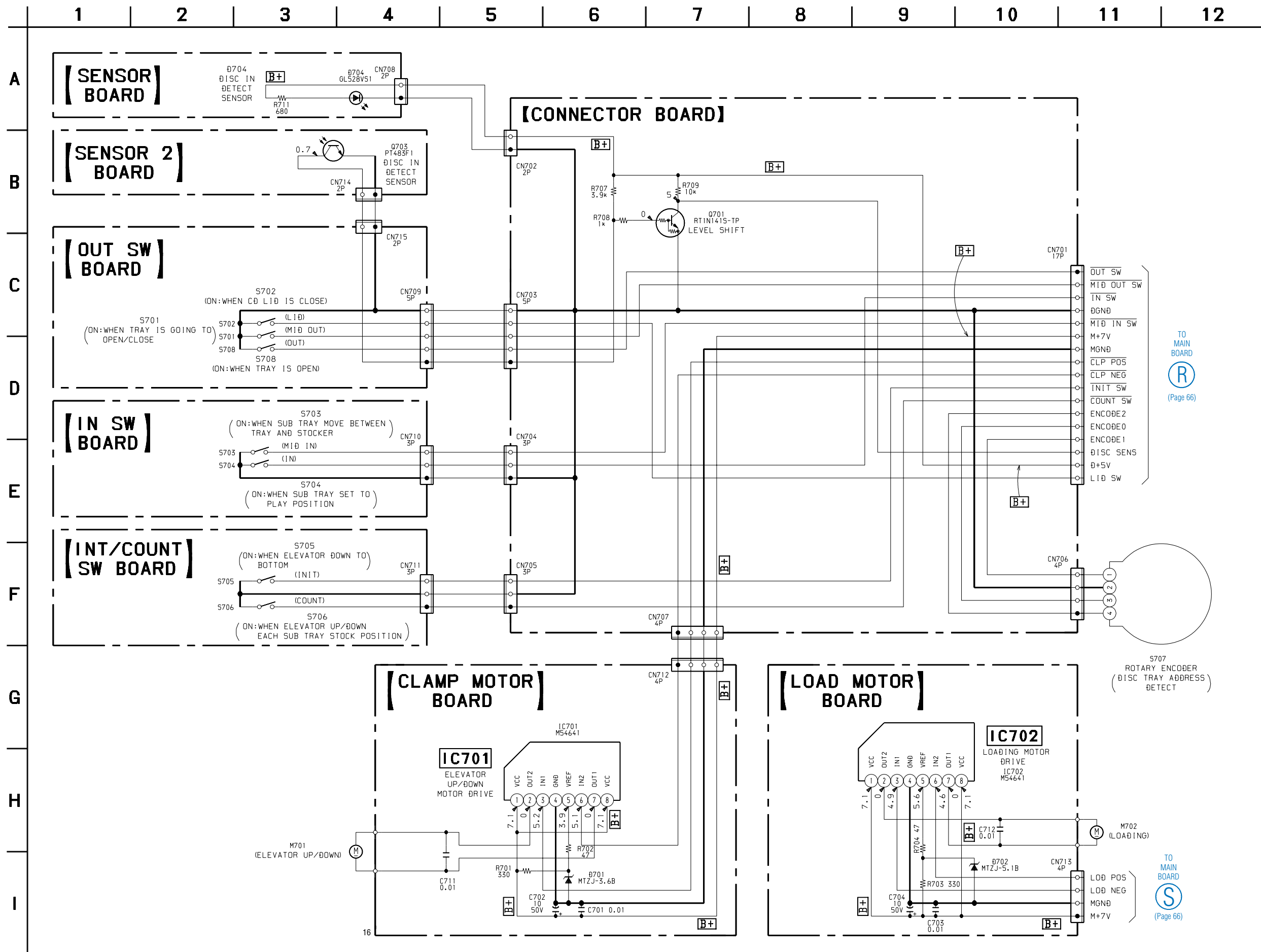


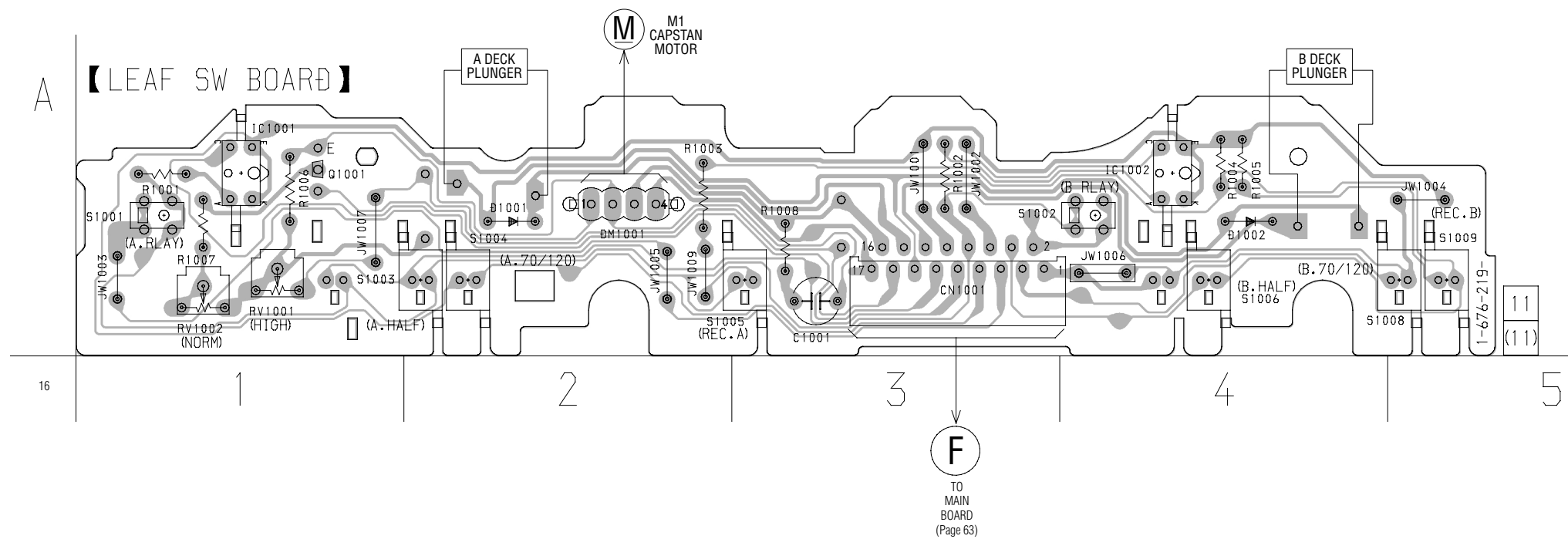
11
(31)

S705 (INIT)
(ON:WHEN ELEVATOR DOWN TO BOTTOM.)

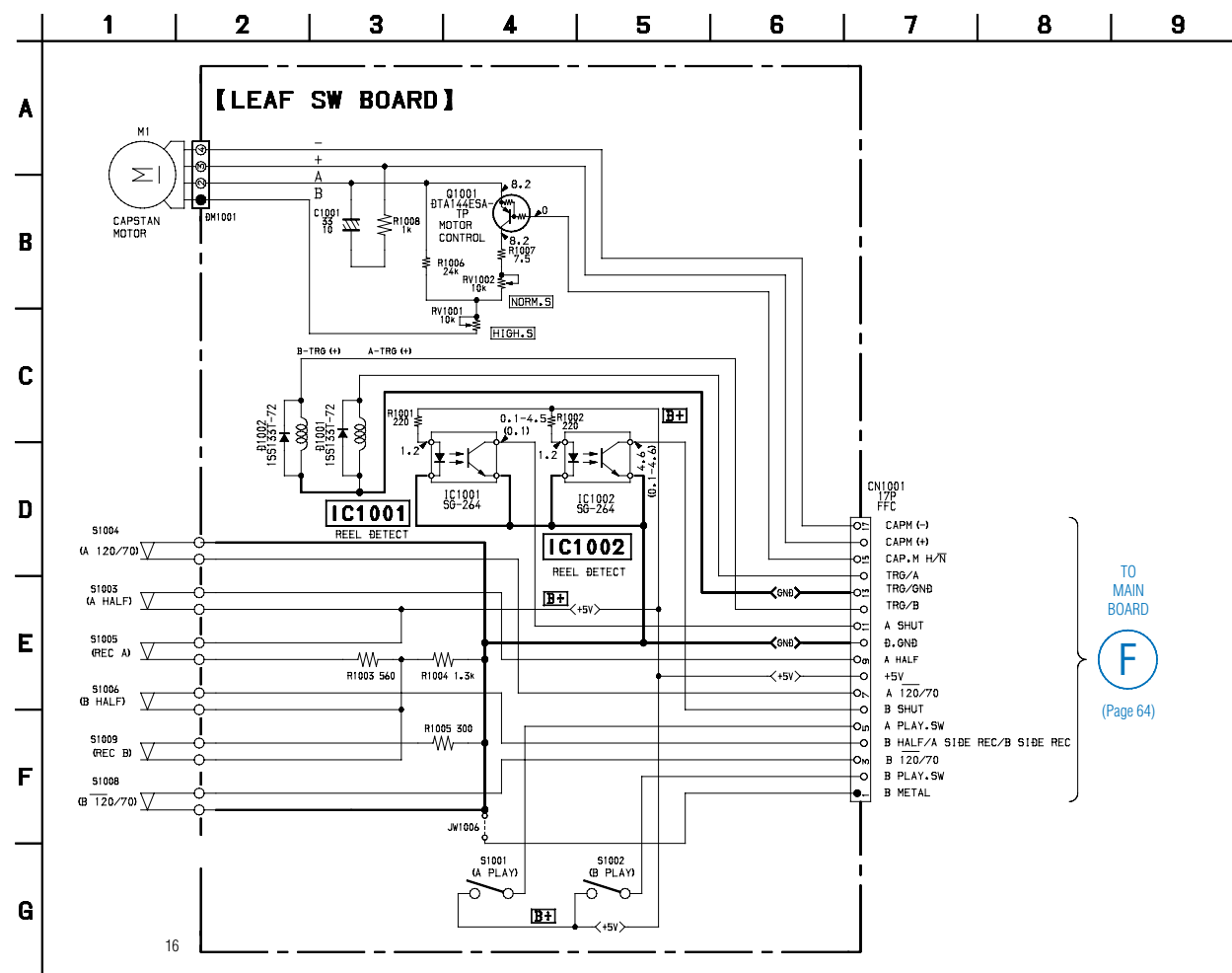
S706 (COUNT)
(ON:WHEN ELEVATOR UP/DOWN EACH SUB TRAY STOCK POSITION.)

7-26. SCHEMATIC DIAGRAM – CD MECHANISM SECTION –



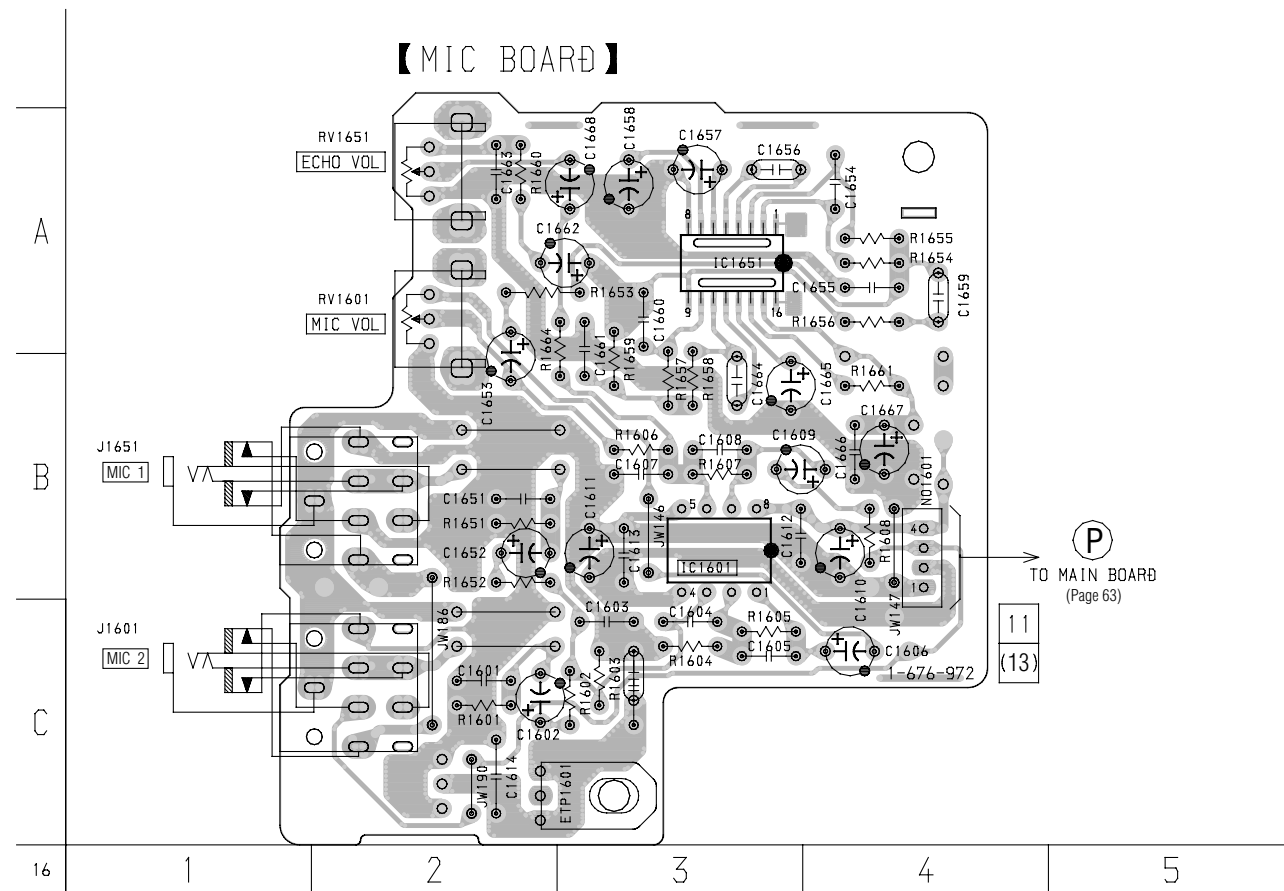


7-28. SCHEMATIC DIAGRAM – LEAF SW SECTION –

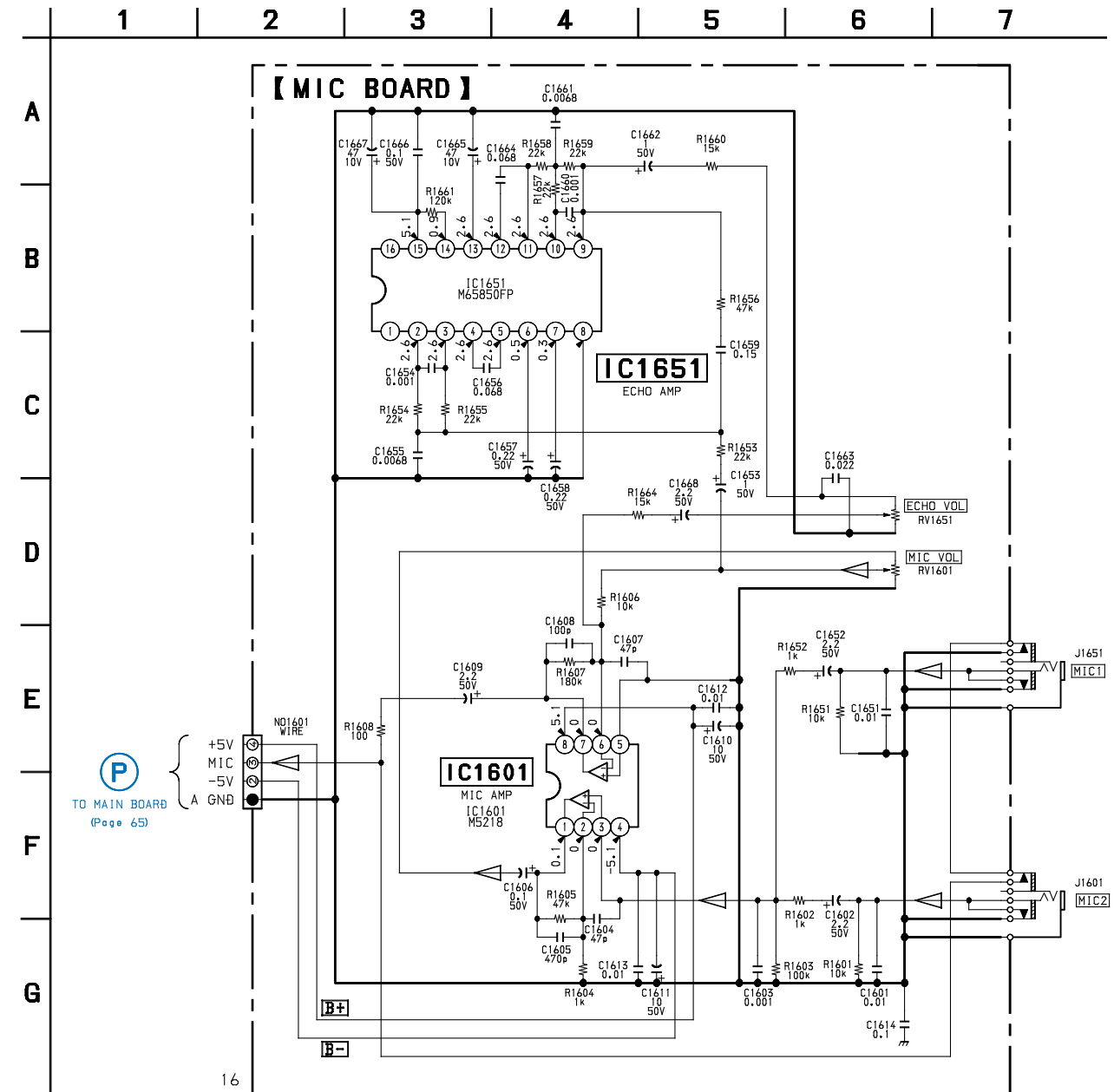


7-29. PRINTED WIRING BOARD – MIC SECTION – • See page 48 for Circuit Boards Location.

There are a few cases that the part printed on this diagram isn't mounted in this model.

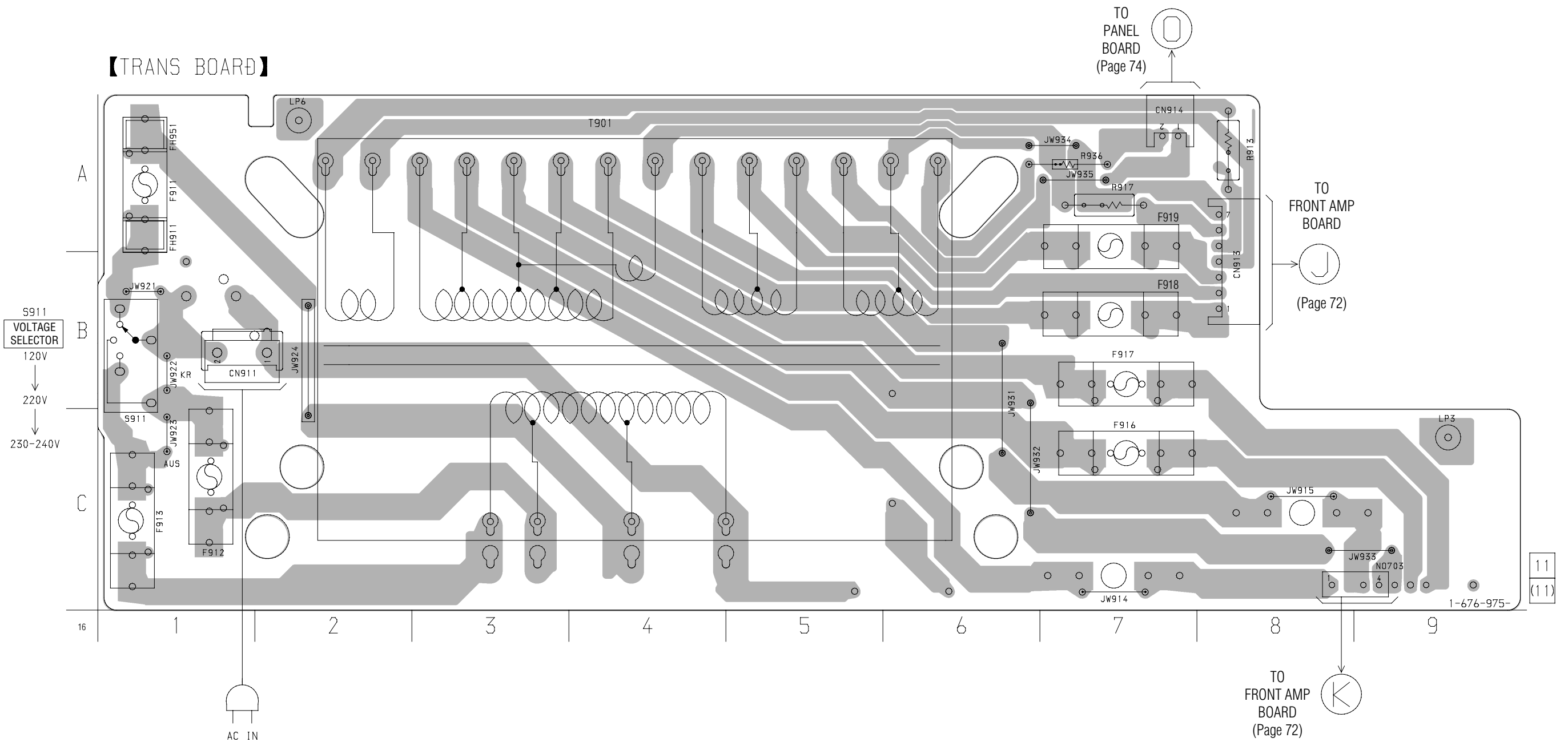


7-30. SCHEMATIC DIAGRAM – MIC SECTION –

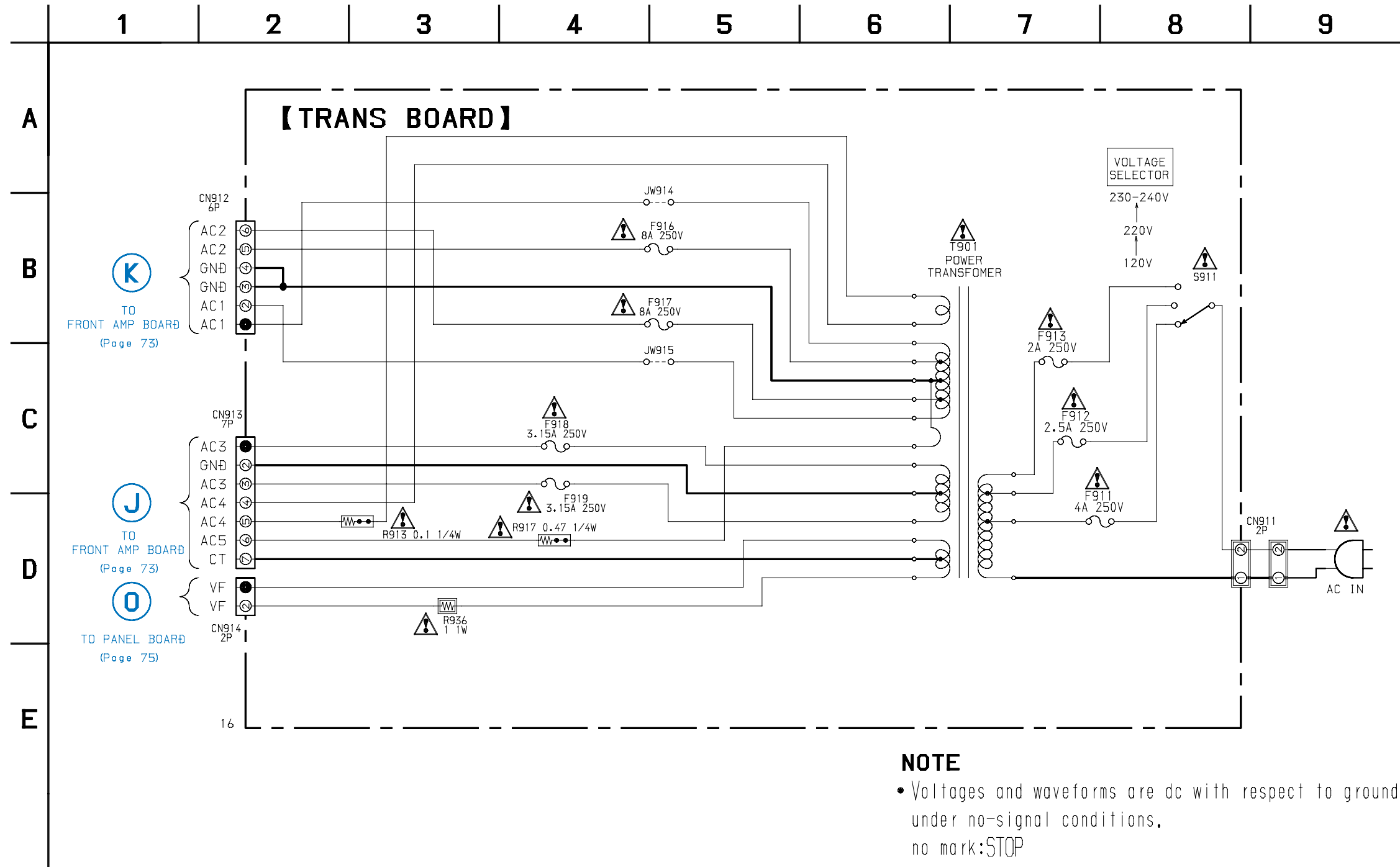


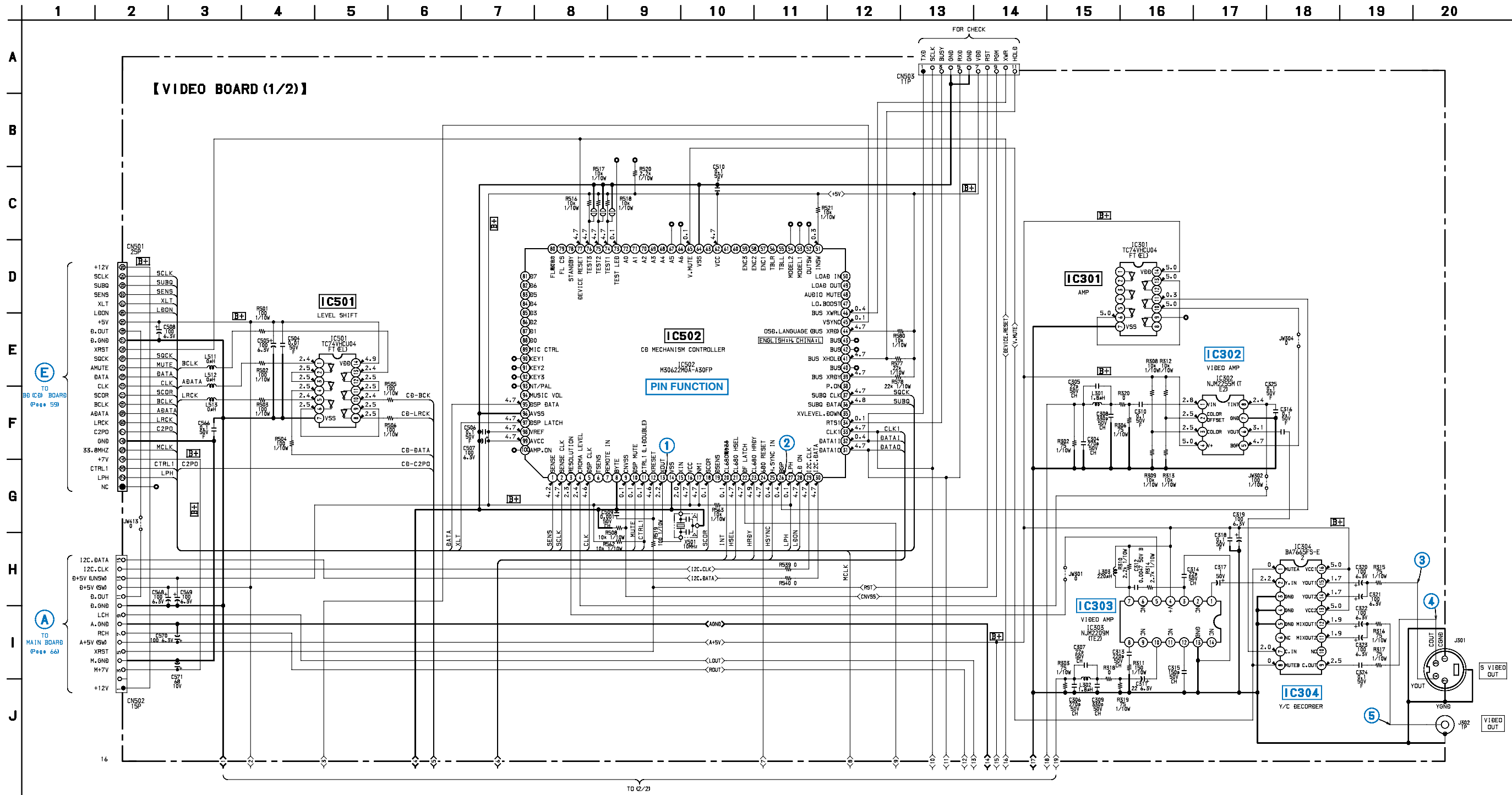
Voltages are dc with respect to ground under no-signal (detuned) conditions. no mark:FM

There are a few cases that the part printed on this diagram isn't mounted in this model.

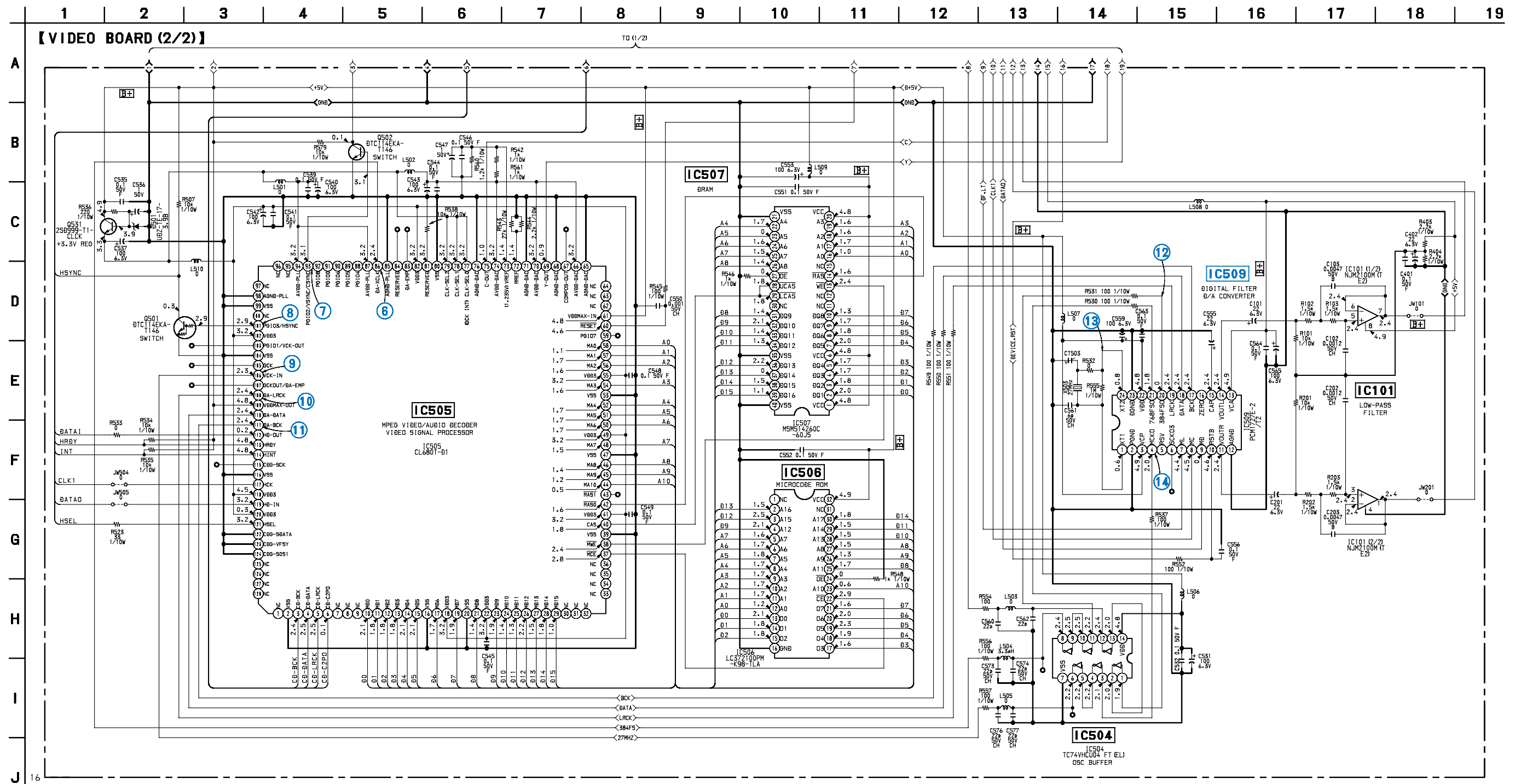


7-32. SCHEMATIC DIAGRAM – POWER SUPPLY SECTION –





7-34. SCHEMATIC DIAGRAM – VIDEO CD SECTION (2/2) – • See page 50 for Waveforms. • See page 91 for IC Block Diagrams.



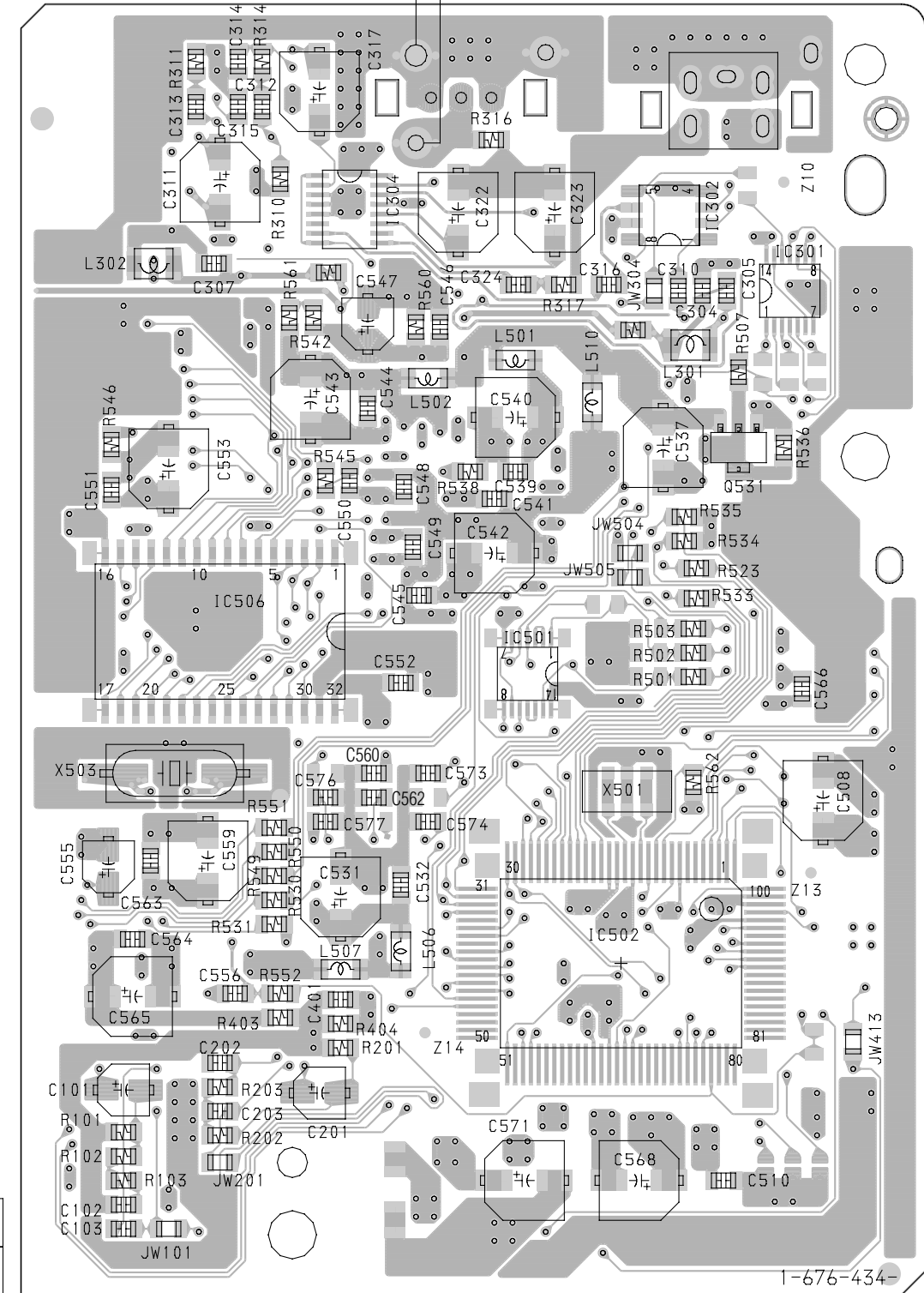
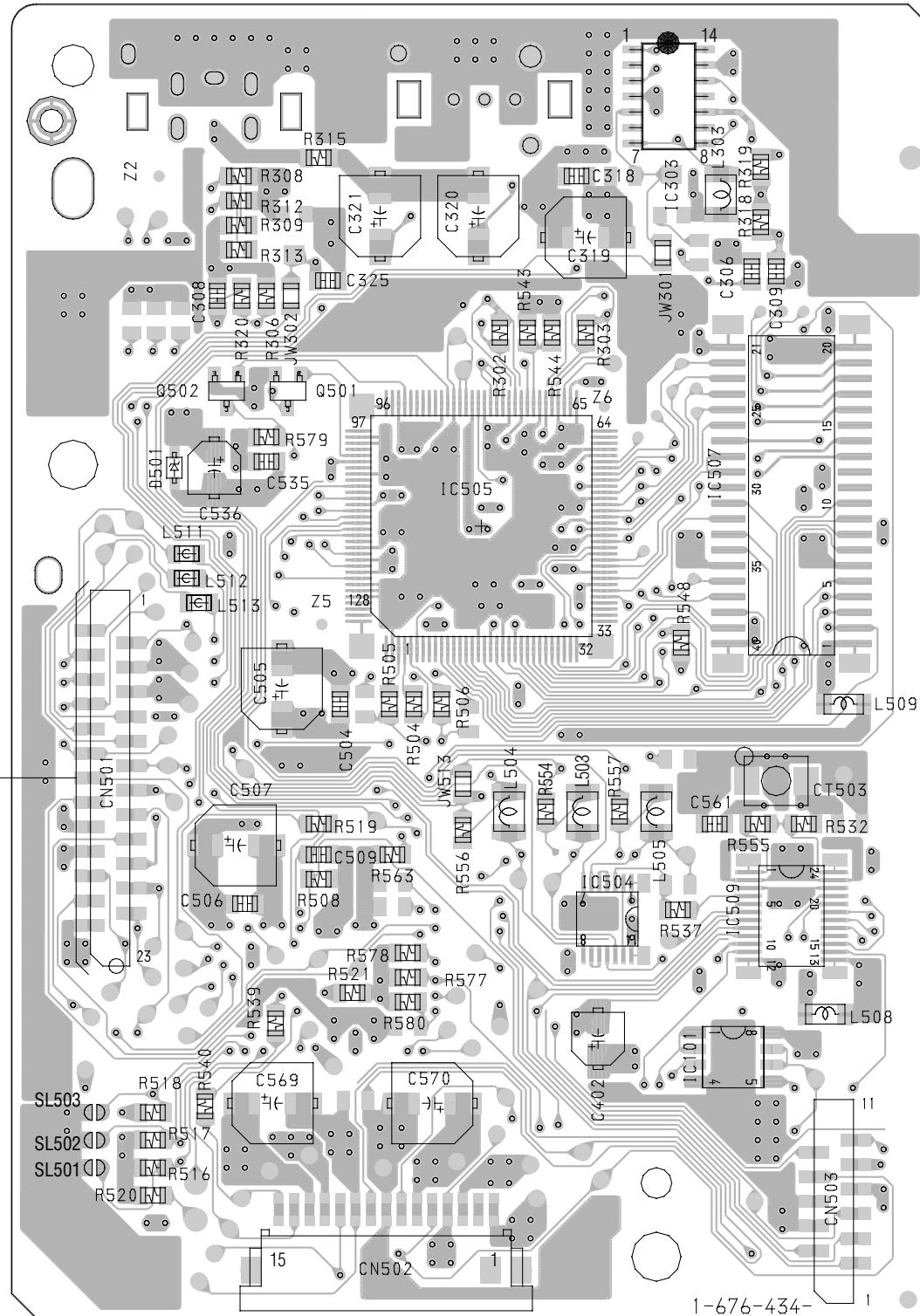
There are a few cases that the part printed on this diagram isn't mounted in this model.

• Semiconductor Location

Ref. No.	Location
D501	C-2
IC101	F-4
IC301	B-9
IC302	B-9
IC303	B-4
IC304	B-7
IC501	D-8
IC502	E-9
IC504	E-4
IC505	C-3
IC506	D-7
IC507	C-4
IC509	E-5
Q501	C-3
Q502	C-2
Q531	C-9

【VIDEO BOARD】(SIDE A)

【VIDEO BOARD】(SIDE B)



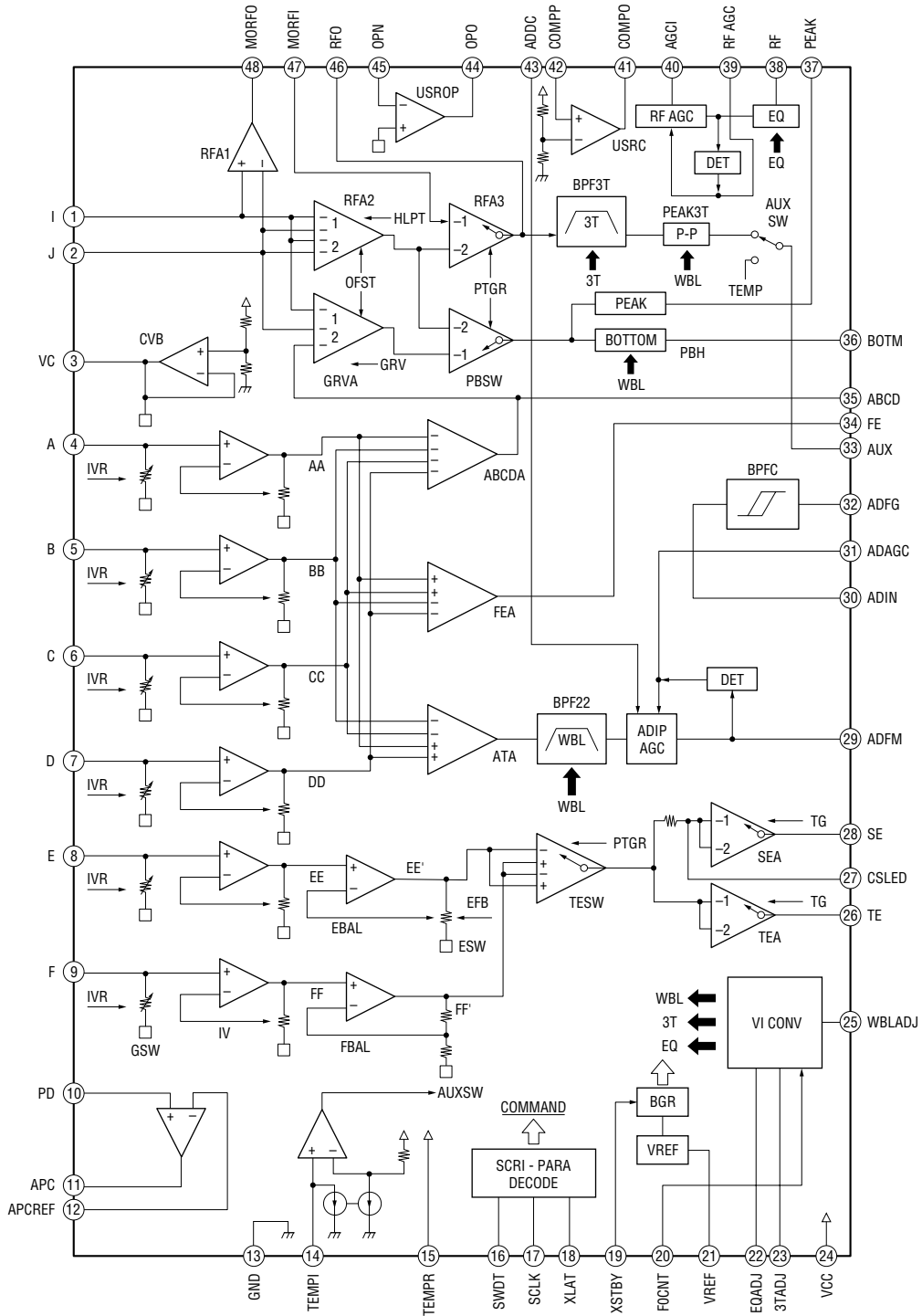
13
(13)

13
(13)

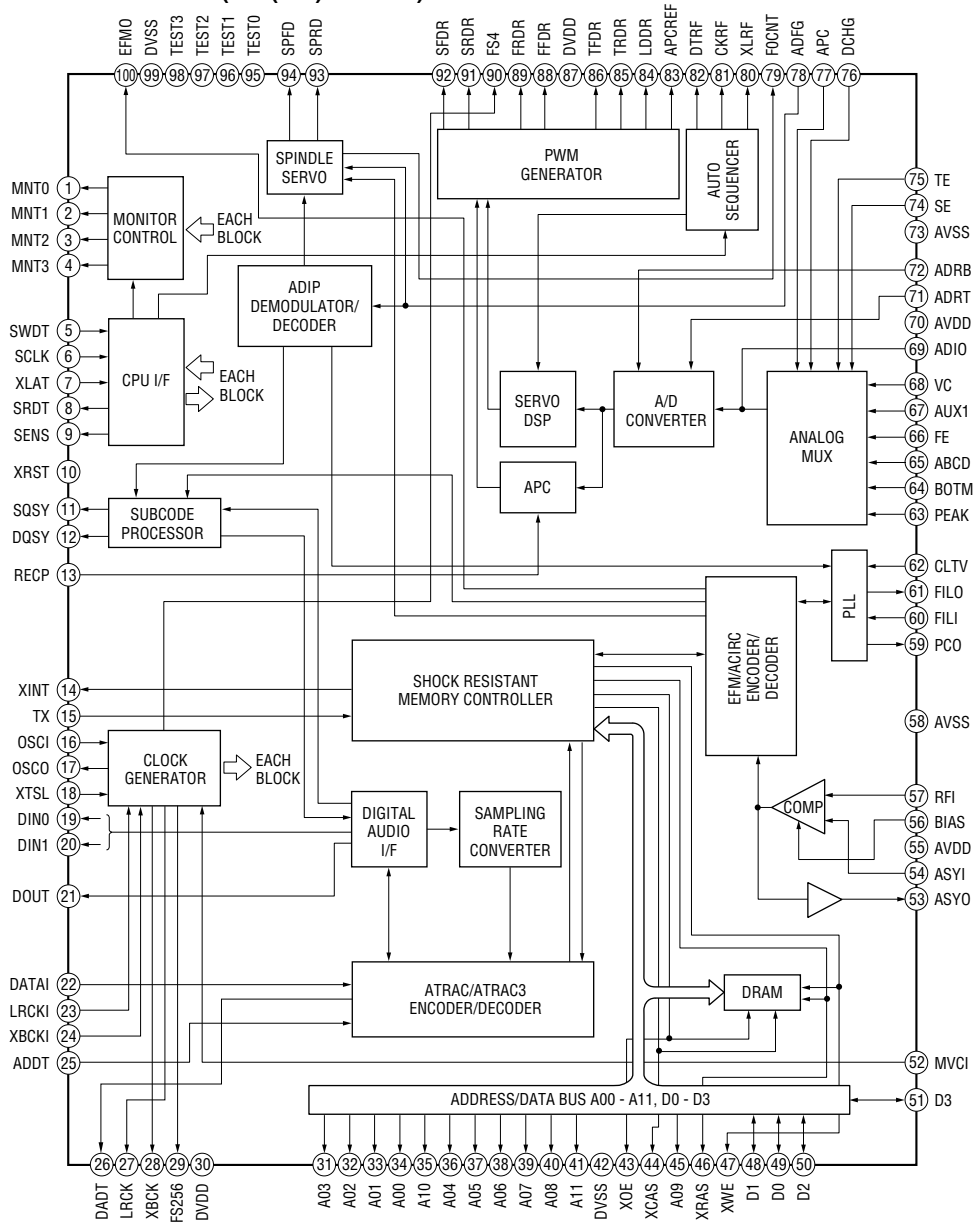
A
TO MAIN BOARD
(Page 63)

7-36. IC BLOCK DIAGRAMS

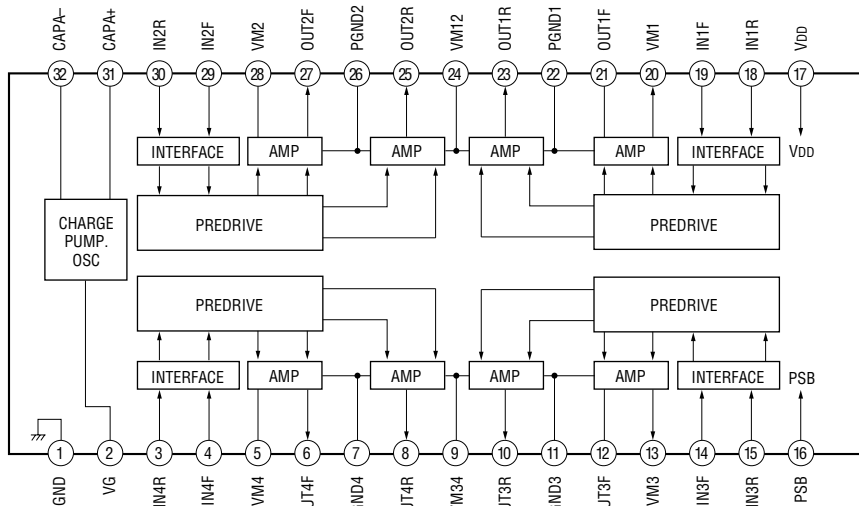
IC101 CXA2523AR (BD (MD) BOARD)



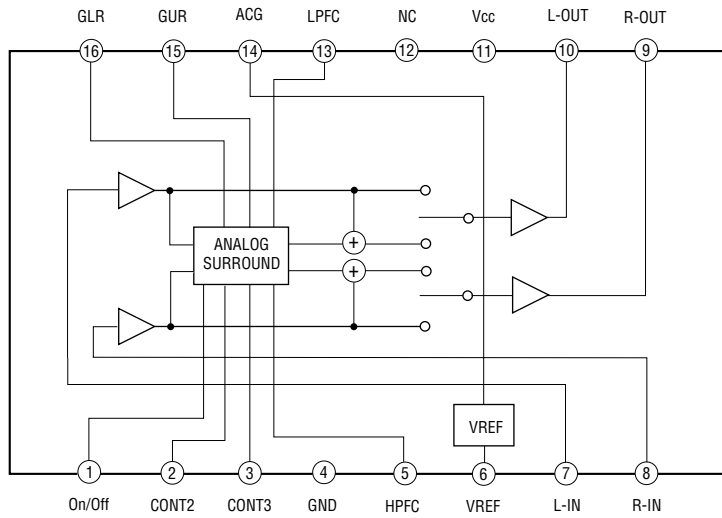
IC151 CXD2662R (BD (MD) BOARD)



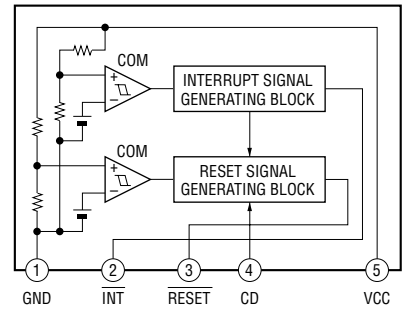
IC141 BH6511FS-E2 (BD (MD) BOARD)



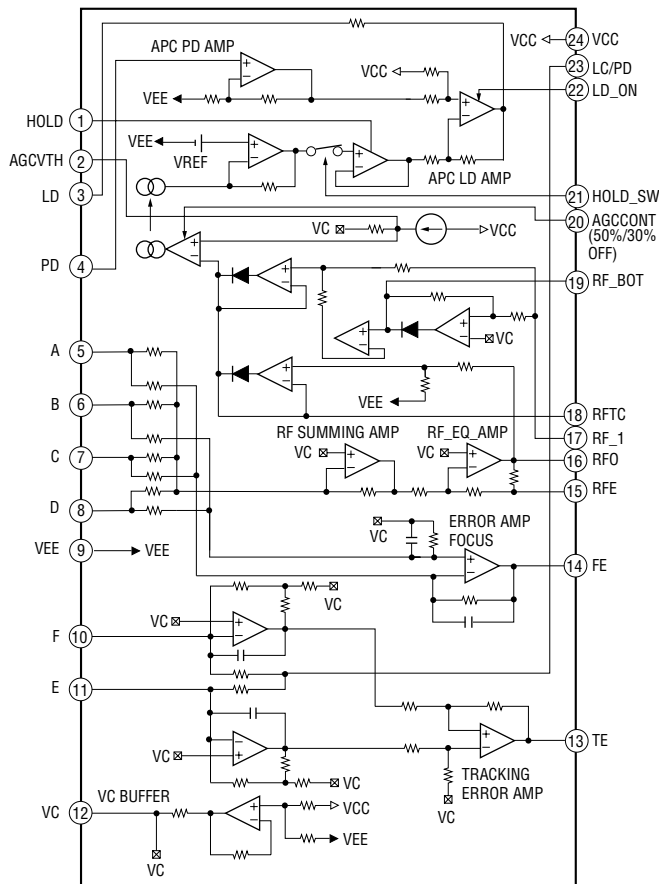
IC202 LA2615 (MAIN BOARD)



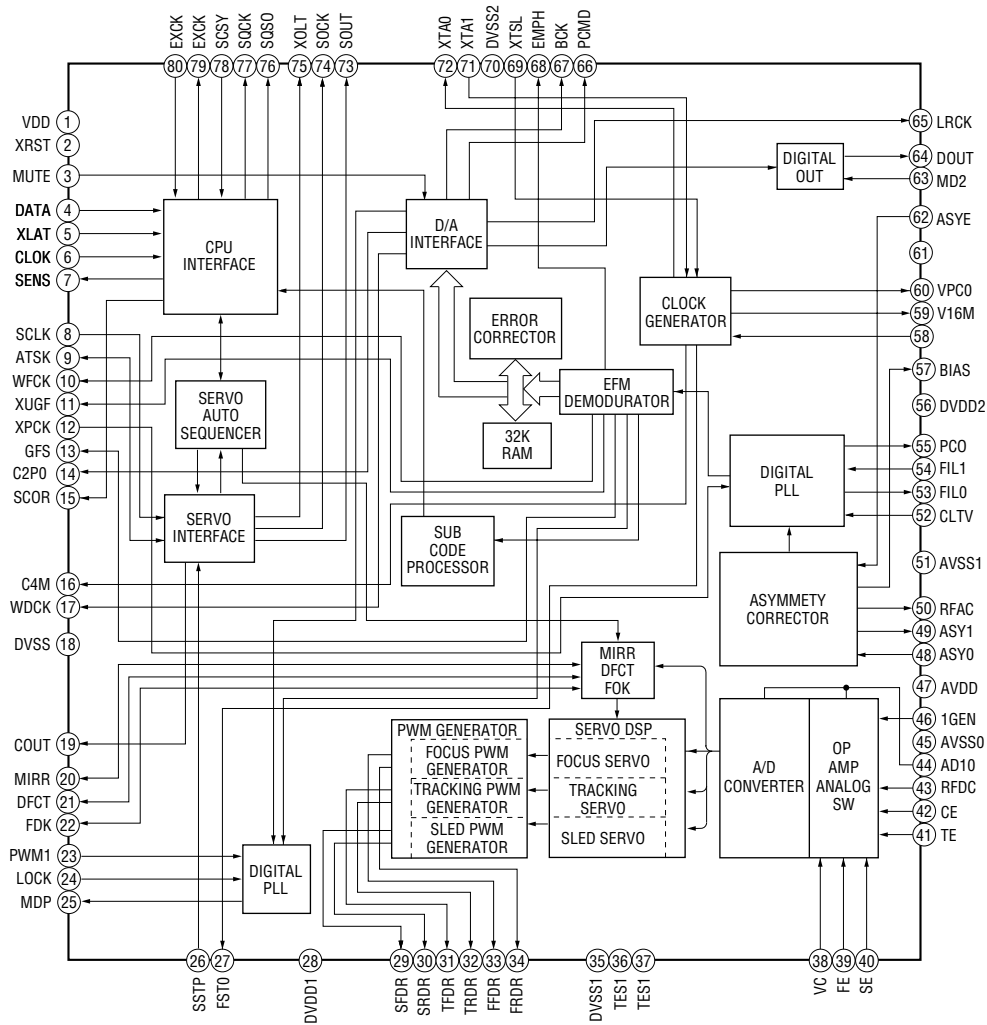
IC502 M62016L (MAIN BOARD)



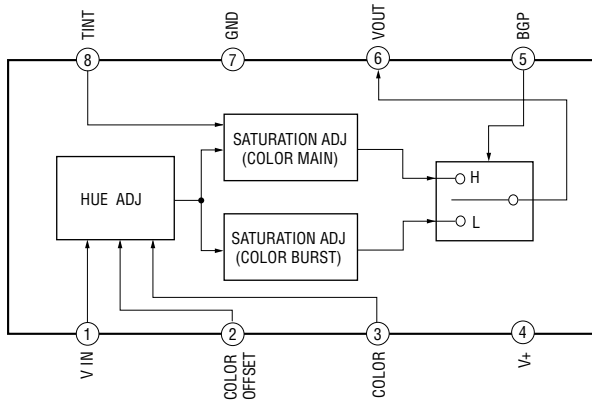
IC103 CXA2568M-T6 (BD (CD) BOARD)



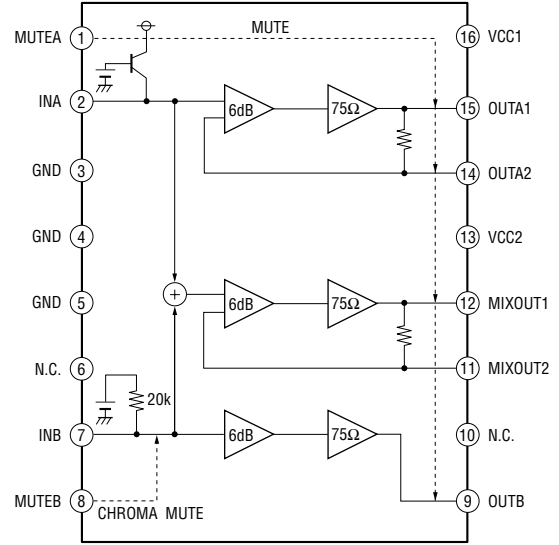
IC101 CXD3008Q (BD (CD) BOARD)



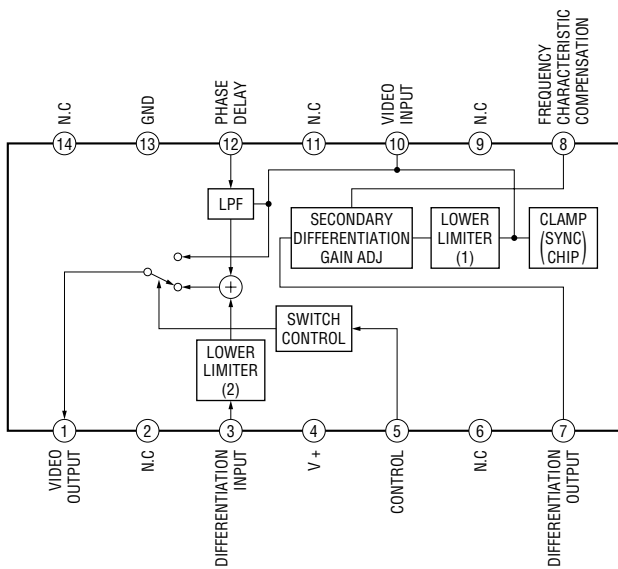
IC302 NJM2255M (VIDEO BOARD)



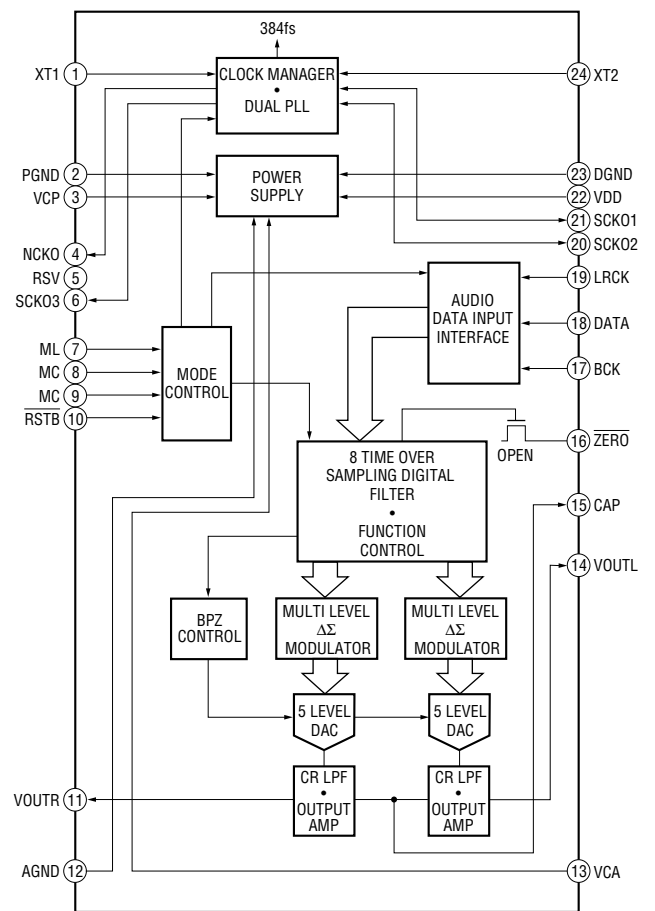
IC304 BA7665FS-E2 (VIDEO BOARD)



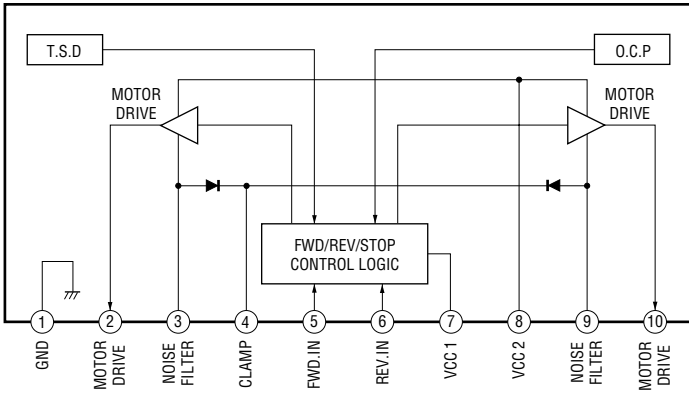
IC303 NJM2209M (VIDEO BOARD)



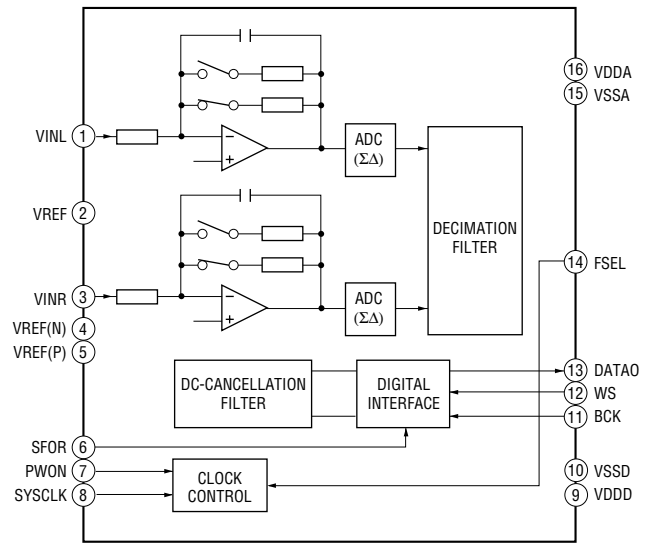
IC509 PCM1727E-2/T2 (VIDEO BOARD)



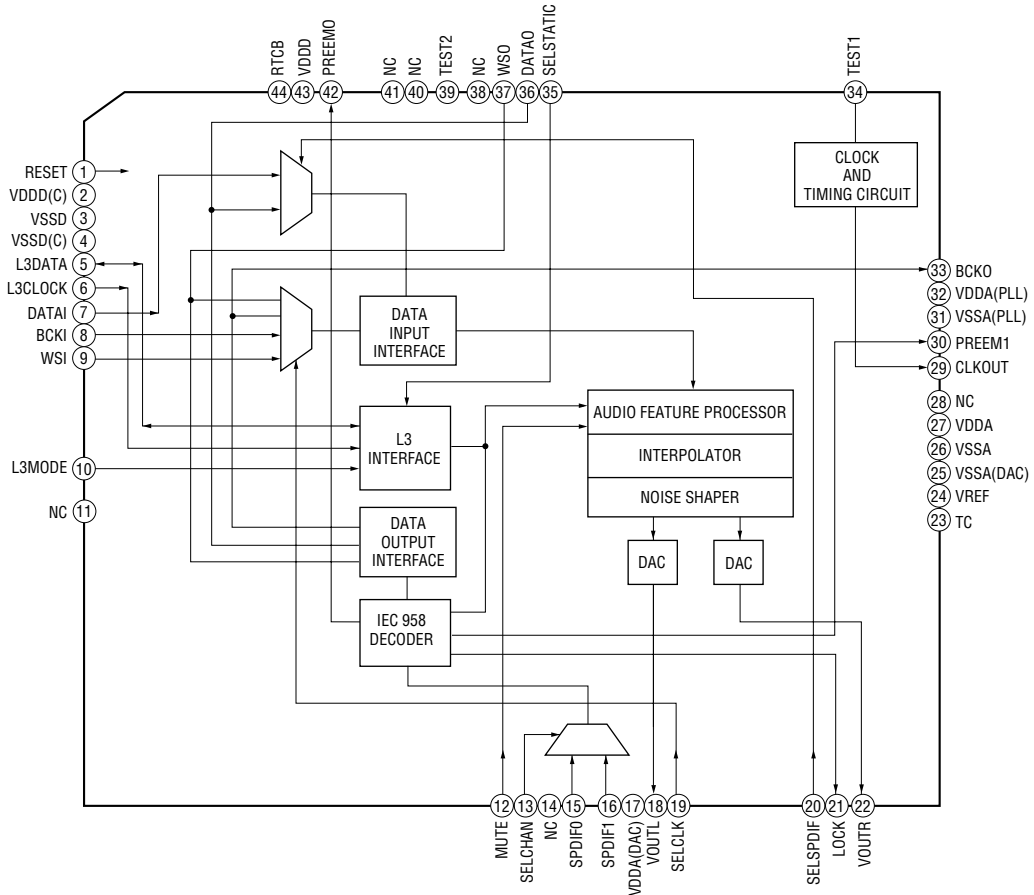
IC1004 LB1641 (DIGITAL BOARD)



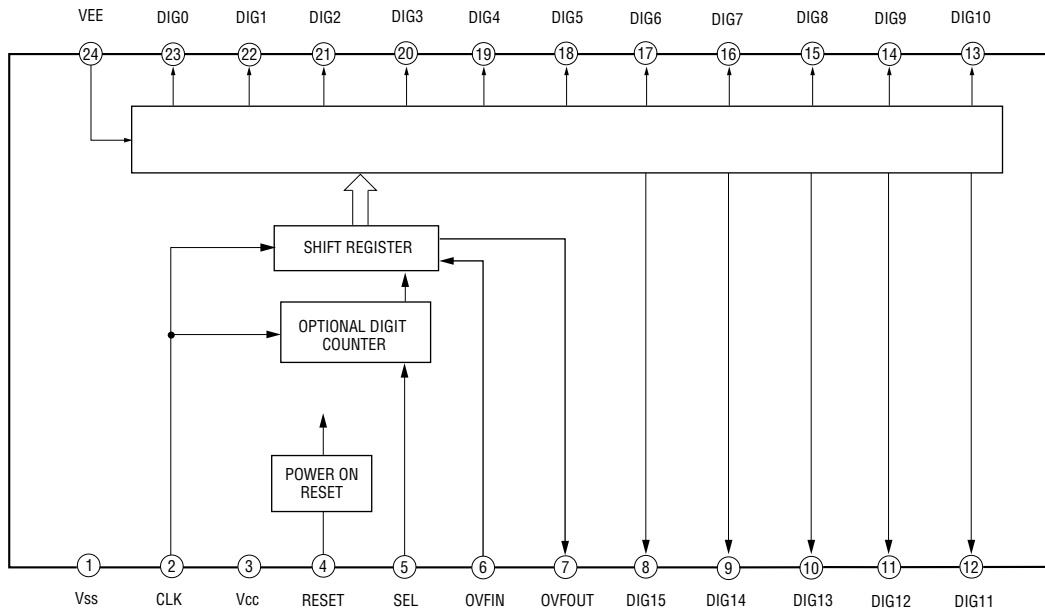
IC1005 μDA1360TS (DIGITAL BOARD)



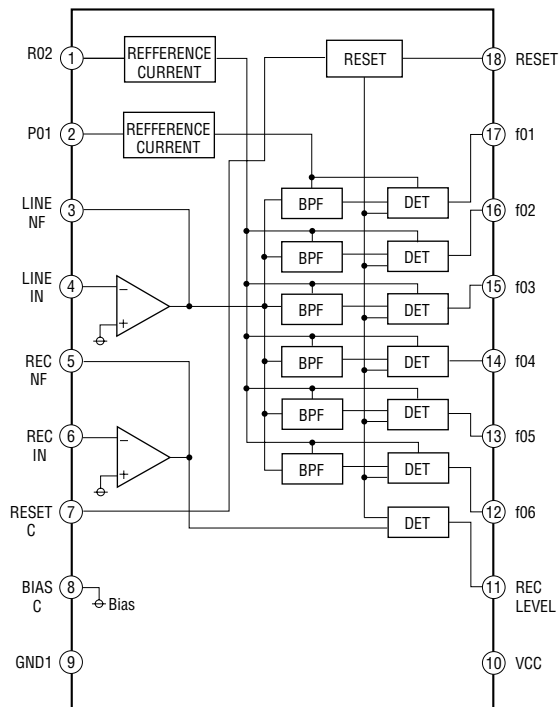
IC1006 μDA1350AH (DIGITAL BOARD)



IC703 M35501P (PANEL BOARD)



IC704 BA3830F (PANEL BOARD)



7-38. IC PIN FUNCTIONS

• IC502 M30622MGA-A30FP (CD MECHANISM CONTROLLER) (VIDEO BOARD)

Pin No.	Pin Name	I/O	Description
1	SENSE	I	Internal status (SENSE) signal input from the CXD3008Q (IC101)
2	SENSE CLK	O	Sense serial data reading clock signal output to the CXD3008Q (IC101)
3	RESOLUTION	O	Y resolution output
4	CHROMA LEVEL	O	Chroma level output
5	DSP CLK	O	Serial data transfer clock signal output to the CXD3008Q (IC101)
6	TSENS	O	Not used (open)
7	REMOTE IN	I	Remote control signal input terminal Not used (open)
8	BYTE	I	External data bus line byte selection signal input "L": 16 bit, "H": 8 bit (fixed at "L")
9	CN VSS	—	Ground terminal
10	DSP MUTE	O	Muting on/off control signal output to the CXD3008Q (IC101) "H": muting on
11	CTRL1	O	Clock selection signal output to the CXD3008Q (IC101) "L": 16.9344 MHz (double speed), "H": 33.8688 MHz
12	$\overline{\text{XRESET}}$	I	Reset signal input from the system controller (IC501) "L": reset For several hundreds msec. after the power supply rises, "L" is input, then it changes to "H"
13	XOUT	O	Main system clock output terminal (10 MHz)
14	VSS	—	Ground terminal
15	XIN	I	Main system clock input terminal (10 MHz)
16	VCC	—	Power supply terminal (+5V)
17	NMI	I	Non-maskable interrupt input terminal (fixed at "H" in this set)
18	SCOR	I	Subcode sync (S0+S1) detection signal input from the CXD3008Q (IC101)
19	DSSENS	O	Not used (open)
20	$\overline{\text{CL680 HINT}}$	I	Interrupt request signal input from the MPEG video/audio decoder (IC505)
21	CL680 HSEL	O	
22	DF LATCH	O	Serial data latch pulse output to the D/A converter (IC509) "L" active
23	CL680 HRDY	—	
24	$\overline{\text{CL680 RESET}}$	O	Reset signal output to the MPEG video/audio decoder (IC505) "L": reset
25	H.SYNC IN	I	Horizontal sync signal input
26	BGP	O	Burst gate pulse signal output
27	LPH	O	AGC hold signal output
28	LD ON	O	Laser power selection signal output to the CXA2568M (IC103) "H": laser on
29	12C.CLK	I/O	I ² C clock signal from CD mechanism control (IC501).
30	12C.DATA	I/O	I ² C data signal from CD mechanism control (IC501).
31	DATA1O	O	Serial data output to the MPEG video/audio decoder (IC506) and D/A converter (IC509)
32	DATA1I	I	Serial data input from the MPEG video/audio decoder (IC506)
33	CLK1	O	Serial data transfer clock signal output to the MPEG video/audio decoder (IC506) and D/A converter (IC509)
34	RTS1	O	RTS signal to serial port (check connector).
35	XVLEVEL.DOWN	O	Not used (open)
36	SUBQ DATA	I	Sub-code Q data input from the CXD3008Q (IC101)
37	SUBQ CLK	O	Sub-code Q data reading clock signal output to the CXD3008Q (IC101)
38	P.ON	O	Power on/off control signal output terminal Not used (open)
39	BUS XRDY	I	Ready signal input terminal Not used (fixed at "H")
40	BUS	O	Not used (open)
41	BUS XHOLD	I	Hold signal input terminal Not used (fixed at "H")
42, 43	BUS	O	Not used (open)
44	OSD.LANGUAGE	I	OSD language select input terminal "H": English, "L": China
45	VS YNC	I	Vertical sync signal input
46	BUS XWRL	O	Bus write signal output.
47	LO.BOOST	O	Not used (open)
48	AUDIO MUTE	O	Audio muting on/off control signal output terminal "L": muting on Not used (open)
49	LOAD OUT	O	Loading motor drive signal output terminal Not used (open)
50	LOAD IN	O	Loading motor drive signal output terminal Not used (open)
51	INSW	I	Disc detection (load in) switch input terminal Not used (fixed at "H")

Pin No.	Pin Name	I/O	Description
52	OUTSW	I	Disc detection (load out) switch input terminal Not used (fixed at "H")
53	MODEL1	I	Destination setting terminal (fixed at "L")
54	MODEL2	I	Destination setting terminal (fixed at "L")
55	TBLL	—	Not used (open)
56	TBLR	—	Not used (open)
57 to 59	ENC1 to ENC3	—	Not used (open)
60, 61		—	Not used (open)
62	VCC	—	Power supply terminal (+5V)
63		—	Not used (open)
64	VSS	—	Ground terminal
65	V.MUTE	O	Video muting on/off control signal output
66 to 72	A6 to A0	O	Address signal output for the external device
73	TEST LED	O	LED drive signal output for the self diagnosis indicator (D502) Normally: "L" (LED on)
74	TEST1	I	Setting terminal for the test mode 1 (for VCD check) Normally: fixed at "H" ("L": test mode)
75	TEST2	I	Setting terminal for the test mode 2 (for SERVO check) Normally: fixed at "H" ("L": test mode)
76	TEST3	I	Setting terminal for the test mode 3 Normally: fixed at "H" ("L": test mode) Not used (fixed at "H")
77	DEVICE RESET	O	System reset signal output to the CXD3008Q (IC101), BA5974FP (IC102) and D/A converter (IC509) "L": reset
78	STANDBY	O	Standby on/off control signal output terminal Not used (open)
79	FL CS	O	Chip select signal output terminal Not used (open)
80	FLBLK	O	Blank control signal output terminal Not used (open)
81 to 88	D7 to D0	I/O	Two-way data bus with the external device Not used (open)
89	MIC CTRL	—	Not used.
90 to 92	KEY1 to KEY3	I	Key input terminal Not used (fixed at "H")
93	NT/PAL	I	Video system select input terminal (open: AUTO)
94	MUSIC VOL	—	Not used.
95	DSP DATA	O	Serial data output to the CXD3008Q (IC101)
96	AVSS	—	Ground terminal (for A/D conversion)
97	DSP LATCH	O	Serial data latch pulse output to the CXD3008Q (IC101)
98	VREF	I	Reference voltage (+5V) input terminal (for A/D conversion)
99	AVCC	—	Power supply terminal (+5V) (for A/D conversion)
100	AMP ON	—	Not used.

• IC101 CXA2523AR RF Amplifier (BD (MD) BOARD)

Pin No.	Pin Name	I/O	Function
1	I	I	I-V converted RF signal I input
2	J	I	I-V converted RF signal J input
3	VC	O	Middle point voltage (+1.5V) generation output
4 to 9	A to F	I	Signal input from the optical pick-up detector
10	PD	I	Light amount monitor input
11	APC	O	Laser APC output
12	APCREF	I	Reference voltage input for setting laser power
13	GND	—	Ground
14	TEMPI	I	Temperature sensor connection
15	TEMPR	O	Reference voltage output for the temperature sensor
16	SWDT	I	Serial data input from the CXD2662R
17	SCLK	I	Serial clock input from the CXD2662R
18	XLAT	I	Latch signal input from the CXD2662R “L”: Latch
19	XSTBY	I	Stand by signal input “L”: Stand by
20	FOCNT	I	Center frequency control voltage input of BPF22, BPF3T, EQ from the CXD2662R
21	VREF	O	Reference voltage output (Not used)
22	EQADJ	I/O	Center frequency setting pin for the internal circuit EQ
23	3TADJ	I/O	Center frequency setting pin for the internal circuit BPF3T
24	Vcc	—	+3V power supply
25	WBLADJ	I/O	Center frequency setting pin for the internal circuit BPF22
26	TE	O	Tracking error signal output to the CXD2662R
27	CSLED	—	External capacitor connection pin for the sled error signal LPF
28	SE	O	Sled error signal output to the CXD2662R
29	ADFM	O	FM signal output of ADIP
30	ADIN	I	ADIP signal comparator input ADFM is connected with AC coupling
31	ADAGC	—	External capacitor connection pin for AGC of ADIP
32	ADFG	O	ADIP duplex signal output to the CXD2662R
33	AUX	O	I3 signal/temperature signal output to the CXD2662R (Switching with a serial command)
34	FE	O	Focus error signal output to the CXD2662R
35	ABCD	O	Light amount signal output to the CXD2662R
36	BOTM	O	RF/ABCD bottom hold signal output to the CXD2662R
37	PEAK	O	RF/ABCD peak hold signal output to the CXD2662R
38	RF	O	RF equalizer output to the CXD2662R
39	RFAGC	—	External capacitor connection pin for the RF AGC circuit
40	AGCI	I	Input to the RF AGC circuit The RF amplifier output is input with AC coupling
41	COMPO	O	User comparator output (Not used)
42	COMPP	I	User comparator input (Fixed at “L”)
43	ADDC	I/O	External capacitor pin for cutting the low band of the ADIP amplifier
44	OPO	O	User operation amplifier output (Not used)
45	OPN	I	User operation amplifier inversion input (Fixed at “L”)
46	RFO	O	RF amplifier output
47	MORFI	I	Groove RF signal is input with AC coupling
48	MORFO	O	Groove RF signal output

• Abbreviation

APC: Auto Power Control
AGC: Auto Gain Control

• IC151 CXD2662R Digital Signal Processor, Digital Servo Signal Processor (BD (MD) BOARD)

Pin No.	Pin Name	I/O	Function
1	MNT0 (FOK)	O	FOK signal output to the system control (monitor output) “H” is output when focus is on
2	MNT1 (SHCK)	O	Track jump detection signal output to the system control (monitor output)
3	MNT2 (XBUSY)	O	Monitor 2 output to the system control (monitor output)
4	MNT3 (SLOC)	O	Monitor 3 output to the system control (monitor output)
5	SWDT	I	Writing data signal input from the system control
6	SCLK	I (S)	Serial clock signal input from the system control
7	XLAT	I (S)	Serial latch signal input from the system control
8	SRDT	O (3)	Reading data signal output to the system control
9	SENS	O (3)	Internal status (SENSE) output to the system control
10	XRST	I (S)	Reset signal input from the system control “L”: Reset
11	SQSY	O	Subcode Q sync (SCOR) output to the system control “L” is output every 13.3 msec. Almost all, “H” is output
12	DQSY	O	Digital In U-bit CD format or MD format subcode Q sync (SCOR) output to the system control
13	RECP	I	Laser power switching input from the system control “H”: Recording, “L”: Playback
14	XINT	O	Interrupt status output to the system control
15	TX	I	Recording data output enable input from the system control
16	OSCI	I	System clock input (512Fs=22.5792 MHz)
17	OSCO	O	System clock output (512Fs=22.5792 MHz) (Not used)
18	XTSL	I	System clock frequency setting “L”: 45.1584 MHz, “H”: 22.5792 MHz (Fixed at “H”)
19	DIN0	I	Digital audio input (Optical input)
20	DIN1	I	Digital audio input (Optical input)
21	DOUT	O	Digital audio output (Optical output)
22	DADTI	I	Serial data input
23	LRCKI	I	LR clock input “H” : Lch, “L” : R ch
24	XBCKI	I	Serial data clock input
25	ADDT	I	Data input from the A/D converter
26	DADT	O	Data output to the D/A converter
27	LRCK	O	LR clock output for the A/D and D/A converter (44.1 kHz)
28	XBCK	O	Bit clock output to the A/D and D/A converter (2.8224 MHz)
29	FS256	O	11.2896 MHz clock output (Not used)
30	DVDD	—	+3V power supply (Digital)
31 to 34	A03 to A00	O	DRAM address output
35	A10	O	DRAM address output (Not used)
36 to 40	A04 to A08	O	DRAM address output
41	A11	O	DRAM address output (Not used)
42	DVSS	—	Ground (Digital)
43	XOE	O	Output enable output for DRAM
44	XCAS	O	CAS signal output for DRAM
45	A09	O	Address output for DRAM
46	XRAS	O	RAS signal output for DRAM
47	XWE	O	Write enable signal output for DRAM
48	D1	I/O	Data input/output for DRAM
49	D0	I/O	
50, 51	D2, D3	I/O	
52	MVCI	I (S)	Clock input from an external VCO (Fixed at “L”)
53	ASYO	O	Playback EFM duplex signal output

* I (S) stands for Schmidt input, I (A) for analog input, O (3) for 3-state output, and O (A) for analog output in the column I/O

Pin No.	Pin Name	I/O	Function
54	ASYI	I (A)	Playback EFM comparator slice level input
55	AVDD	—	+3V power supply (Analog)
56	BIAS	I (A)	Playback EFM comparator bias current input
57	RFI	I (A)	Playback EFM RF signal input
58	AVSS	—	Ground (Analog)
59	PCO	O (3)	Phase comparison output for the recording/playback EFM master PLL
60	FILI	I (A)	Filter input for the recording/playback EFM master PLL
61	FILO	O (A)	Filter output for the recording/playback EFM master PLL
62	CLTV	I (A)	Internal VCO control voltage input for the recording/playback EFM master PLL
63	PEAK	I (A)	Light amount signal peak hold input from the CXA2523AR
64	BOTM	I (A)	Light amount signal bottom hold input from the CXA2523AR
65	ABCD	I (A)	Light amount signal input from the CXA2523AR
66	FE	I (A)	Focus error signal input from the CXA2523AR
67	AUX1	I (A)	Auxiliary A/D input
68	VC	I (A)	Middle point voltage (+1.5V) input from the CXA2523AR
69	ADIO	O (A)	Monitor output of the A/D converter input signal (Not used)
70	AVDD	—	+3V power supply (Analog)
71	ADRT	I (A)	A/D converter operational range upper limit voltage input (Fixed at “H”)
72	ADRB	I (A)	A/D converter operational range lower limit voltage input (Fixed at “L”)
73	AVSS	—	Ground (Analog)
74	SE	I (A)	Sled error signal input from the CXA2523AR
75	TE	I (A)	Tracking error signal input from the CXA2523AR
76	DCHG	I (A)	Connected to +3V power supply
77	APC	I (A)	Error signal input for the laser digital APC (Fixed at “L”)
78	ADFG	I (S)	ADIP duplex FM signal input from the CXA2523AR (22.05 ± 1 kHz)
79	FOCNT	O	Filter f ₀ control output to the CXA2523AR
80	XLRF	O	Control latch output to the CXA2523AR
81	CKRF	O	Control clock output to the CXA2523AR
82	DTRF	O	Control data output to the CXA2523AR
83	APCREF	O	Reference PWM output for the laser APC
84	TEST0	O	PWM output for the laser digital APC (Not used)
85	TRDR	O	Tracking servo drive PWM output (-)
86	TFDR	O	Tracking servo drive PWM output (+)
87	DVDD	—	+3V power supply (Digital)
88	FFDR	O	Focus servo drive PWM output (+)
89	FRDR	O	Focus servo drive PWM output (-)
90	FS4	O	176.4 kHz clock signal output (X'tal) (Not used)
91	SRDR	O	Sled servo drive PWM output (-)
92	SFDR	O	Sled servo drive PWM output (+)
93	SPRD	O	Spindle servo drive PWM output (-)
94	SPFD	O	Spindle servo drive PWM output (+)
95	FGIN	I (S)	Test input (Fixed at “L”)
96 to 98	TEST1 to TEST3	I	
99	DVSS	—	Ground (Digital)
100	EFMO	O	EFM output when recording

• Abbreviation

EFM: Eight to Fourteen Modulation

PLL : Phase Locked Loop

VCO: Voltage Controlled Oscillator

• IC1001 M30805SGP SYSTEM CONTROL (DIGITAL BOARD)

Pin No.	Pin Name	I/O	Function
1	————	—	Not used.
2	————	—	Not used.
3	LVLI	—	Not used.
4	LVLO	—	Not used.
5	(TXD3)	—	Not used.
6	(RXD3)	—	Not used.
7	(CLK3)	—	Not used.
8	MUTE	O	Line out muting output. L: Mute
9	DARST	O	Reset signal output to the D/A converter. L: Active
10	SLICERSEL	O	IEC958 input select signal output to the D/A converter. L: CD H: MD
11	LD-LOW	O	Loading motor voltage control output L: High voltage H: Low voltage
12	LDIN	I	Loading motor control input. H: IN
13	LDOUT	O	Loading motor control output. H: OUT
14	MOD	O	Laser modulation switching signal output. L: OFF H: ON
15	BYTE	I	Data bus changed input. (Connected to ground.)
16	CNVSS	—	Ground.
17	X-CIN	I	Sub clock input. (32.768kHz) (Not used.)
18	X-COUT	O	Sub clock output. (32.768kHz) (Not used.)
19	$\overline{\text{RESET}}$	I	System rest input. L : ON
20	XOUT	O	Main clock output. (10MHz)
21	VSS0	—	Ground.
22	XIN	I	Main clock input. (10MHz)
23	VCC0	—	Power supply. (+3.3V)
24	$\overline{\text{NMI}}$	I	Fixed at H. (Pull-up)
25	DQSY	I	Digital in sync input. (Record system)
26	P.DOWN	I	Power down detection input. L: Power down
27	SQSY	I	ADIP (MO) sync or subcode Q (PIT) sync input from CXD2662R.(Playback system)
28	NC	—	Not used.
29	LDON	O	Laser ON/OFF control output. H: Laser ON
30	LIMIT-IN	I	Detection input from the limit switch. L: Sled limit-In H: Sled limit-Out
31	C2-PWM-B	—	Not used.
32	XINIT	I	Interrupt status input from CXD2662R.
33	————	—	Not used.
34	XELT	I	XELT input from DSP IC.
35	WR PWR	O	Write power ON/OFF output. L: OFF H: ON
36	IIC CLK	I/O	IIC serial clock input/output.
37	IIC DATA	I/O	IIC serial data input/output.
38	SWDT	O	Writing data signal output to the serial bus.
39	VCC1	—	Power supply. (+3.3V)
40	SRDT	I	Reading data signal input from the serial bus.
41	VSS1	—	Ground.
42	SCLK	O	Clock signal output to the serial bus.
43	REC-SW	I	Detection signal input from the recording position detection switch. L: REC
44	CLIP DTO	O	CLIP serial data output.
45	CLIPDTI	I	CLIP serial data input. (Not used.)
46	CLIP CLK	O	CLIP serial clock output. (Not used.)
47	DIG-RST	O	Digital rest signal output to the CXD2662R and motor driver. L: Reset
48	SENS	I	Internal status (SENSE) input from the CXD2662R.
49	PLAY-SW	I	Detection signal input from the playback position detection switch. L: PLAY
50	XLAT	O	Latch signal output to DSP IC.
51	OUT-SW	I	Detection signal input from the loading out detection switch.
52	————	—	Not used.

Pin No.	Pin Name	I/O	Function
53	————	—	Not used.
54	————	—	Not used.
55	————	O	Not used.
56	MNT2 (XBUSY)	I	In the state of executive command from the CXD2662R
57	VSS2	—	Ground.
58	MNT1 (SHCK)	I	Track jump signal input from the CXD2662R
59	VCC2	—	Power supply. (+3.3V)
60	EEP-WP	O	EEP-ROM write protect signal output. L: write possibility
61	SDA (EEP)	I/O	Data signal input/output pin with the EEPROM.
62	BCLK/ALE/CLKO	—	Not used.
63	$\overline{RD}/\overline{DW}$	O	Read signal output.
64	$\overline{BHE}/\overline{CASH}$	—	Not used.
65	$\overline{WR}/\overline{CASL}$	O	Write signal output.
66	SCL	O	Clock signal output to the EEPROM.
67	REFLECT	I	Disk reflection rate detection input from the reflect detection switch. H: Disk with low reflection rate
68	PROTECT	I	Recording-protection claw detection input from the protection detection switch. H: Protect
69	$\overline{CS0}$	O	Chip select signal output to the Flash ROM.
70	$\overline{CS1}$	O	Not used.
71	————	O	Not used.
72	A20	O	Address bus signal output to Flash ROM.
73	A19	O	Address bus signal output to Flash ROM.
74	VCC3	—	Power supply. (+3.3V)
75	A18	O	Address bus signal output to Flash ROM.
76	VSS3	—	Ground
77 to 85	A17 to A9	O	Address bus signal output to Flash ROM.
86 to 89	SEL 3 to 0	O	Not used.
90	WP	O	Write protect signal to the Flash ROM.
91	VCC4	—	Power supply. (+3.3V)
92	A8	O	Address bus signal output to Flash ROM.
93	VSS4	—	Ground.
94 to 100	A7 to A1	O	Address bus signal output to Flash ROM.
101	\overline{LB}	—	Not used.
102 to 113	D15 to D4	I/O	Data bus signal input/output to the Flash ROM.
114	CLIP-SEL	O	Not used.
115	IIC BUSY	O	IIC cable connect check. L: Active
116	DALOCK	I	LOCK signal input from D/A converter.
117	LINE-MUTE	O	Not used.
118	ADP DOWN	O	Reset signal output to the A/D converter.
119 to 122	D3 to D0	I/O	Data bus signal input/output to the Flash ROM.
123	SPDIF-CUT	I	Jog dial pulse input from the rotary encoder. (Not used.)
124	OPT SEL	O	Optical select signal output.
125 to 129	————	—	Not used.
130	VSS5	—	Ground.
131	————	O	Not used.
132	VCC5	—	Power supply. (+3.3V)
133	OP-LEVEL	I	Optical Pick-up voltage (current) detect signal input.
134 to 139	————	—	Not used.
140	AVSS	—	Ground. (Analog)
141	————	—	Not used.
142	VREF	—	Power supply. (+3.3V)
143	AVCC	—	Power supply. (+3.3V)
144	NC	I	Not used.

• IC401 M30620MCA-A55FP MASTER CONTROL (MAIN BOARD)

Pin No.	Pin Name	I/O	Descriptions
1	BD-DATA	O	CD data output.
2	BD-CLK	O	CD clock output.
3	BD-LAT	O	CD latch signal output.
4	AC-CUT	I	AC cut input. L= ON,H=OFF
5	N.C	—	Not used.
6	SQ-DATA-IN	I	Subcode Q data input.
7	SQ-CLK	I	Subcode Q data input.
8	GND	—	Connected to ground.
9	GND	—	Connected to ground.
10	XC IN	I	SUB CLOCK input. (32.768kHz)
11	XC OUT	O	SUB CLOCK output. (32.768kHz)
12	RESET	I	System reset input.
13	X-OUT	O	MAIN SYSTEM CLOCK output. (16MHz)
14	VSS	—	Vss
15	X-IN	I	MAIN SYSTEM CLOCK input. (16MHz)
16	VCC	—	Power supply. (+5V)
17	NMI	I	PULL UP (EVER +5V)
18	$\overline{\text{WAKE_UP}}$	I	WAKE UP signal input. (L)
19	SCOR	I	CD Q-data request signal input.
20	RDS-INT	I	RDS interrupt signal input.
21	RDS-DATA	I	RDS data signal input.
22	$\overline{\text{CD-POWER}}$	O	CD-POWER ON/OFF signal output. H=ON, L=OFF
23	STBY-RELAY	O	STANDBY relay control signal output.
24	$\overline{\text{PROTECT}}$	I	Speaker protect signal input. L=ON, H=OFF
25	STK-MUTE	O	Power amplifier mute ON/OFF signal output. H=ON, L=OFF
26	RWLAY-H	O	Speaker terminal relay control signal output. H=ON, L=OFF
27	N.C	I	Not used.
28	REAR-RELAY	O	Rear speaker relay control signal output.(Not used.)
29	IIC_CLK	O	IIC SCL output.
30	IIC_DATA	O	IIC SDA output.
31	TXD1 (LD ON)	O	Write data output for FLASH connector/LD ON signal output.
32	SQ-DATA (X1-X2)	O	Read data output for FLASH connector/X'tal select signal output.
33	SQ-CLK (DA-MUTE)	O	Clock data output for FLASH connector/D/A converter mute signal output.
34	RST1 (OPT SEL)	O	Reset output for FLASH connector/Optical select signal output.
35	HEAD PHONE	I	Head phone signal detect. H=ON,L=OFF
36	LINE-MUTE	O	Line mute signal output. L=ON, H=OFF
37	MD/P-DOWN	O	MDM power down
38	TEST	I	Test terminal
39	CLOCK-OUT	I	Clock check signal input. (Not used.)
40	PL-LAT	O	Latch output to PRO-LOGIC IC
41	PL-CLK/SUR1	O	Clock output to PRO-LOGIC IC/Surround control signal output
42	PL-DATA/SUR2	O	Data output to PRO-LOGIC IC/Surround control signal output
43	502-LAT	O	Latch output to sound processor

Pin No.	Pin Name	I/O	Descriptions
44	502-DATA	O	Data output to sound processor
45	502-CLK	O	Clock output to sound processor
46	ST-CLK	O	TUNER clock signal output.
47	ST-DIN	I	TUNER data input.
48	ST-DOUT	O	TUNER data output.
49	ST-CE	O	TUNER chip enable output.
50	TUNED	I	TUNED detect signal input. L=ON, H=OFF
51	STEREO	I	STEREO detect signal input. L=ON, H=OFF
52	ST-MUTE	O	Tuner mute signal output.
53	AMS-IN	I	AMS signal input. L=ON,H=OFF"
54	TC-MUTE	O	Tape deck line mute ON/OFF signal output. H=ON, L=OFF
55	\overline{R} /PB/PAS	I	REC/PB/PASS select signal input.
56	$\overline{NR-ON/OFF}$	O	DOLBY NR ON/OFF signal output. H=ON, L=OFF
57	$\overline{REC-MUTE}$	O	REC mute ON/OFF signal output. L=ON, H=OFF
58	BAIS	O	BIAS ON/OFF signal output.H=ON, L=OFF
59	$\overline{EQ-H/N}$	O	EQ High/Normal select signal output. H=High, L=Normal
60	$\overline{PB-A/B}$	O	Playback deckA/B select signal output. H=deckB, L=deckA
61	\overline{ALC}	O	ALC ON/OFF signal output. L=ON, H=OFF
62	VCC	—	Power Supply (+5V)
63	TC-RELAY	O	Tape deck relay ON/OFF signal output. H=ON, L=OFF
64	VSS	—	Ground.
65	A TRIG	O	A deck trigger control signal output.H=ON, L=OFF
66	B TRIG	O	B deck trigger control signal output.H=ON, L=OFF
67	CAPM-H/L	O	Capstan motor High/Low speed control signal output.
68	CAPM-CONT	O	Capstan motor REV/FWD/STOP control signal output.H=REV, L=FWD/STOP
69	A HALF	I	A deck half detect signal input.
70	A PLAY	I	A deck play detect signal input.
71	B PLAY	I	B deck play detect signal input.
72	IIC-BUSY	I	IIC_BUSY(Not used.)
73	LOD-POS	O	CD loading motor control signal output
74	LOD-NEG	O	CD loading motor control signal output
75	OUT SW	I	Detection input from the tray open/close detect switch (S708) on the CD mechanism block
76	MIDOUT SW	I	Detection input from the mid out detect switch (S701) on the CD mechanism block
77	IN SW	I	Detection input from the tray open/close detect switch (S704) on the CD mechanism block
78	MIDIN SW	I	Detection input from the mid in detect switch (S703) on the CD mechanism block
79	CLP-POS	O	CD elevator up/down motor (M701) control signal output to the motor driver IC (IC701)
80	CLP-NEG	O	CD elevator up/down motor (M701) control signal output to the motor driver IC (IC701)
81	INIT SW	I	Detection input from the INIT detection switch (S705) on the CD mechanism block
82	CNT-SW	I	Detection input from the count detect switch (S706) on the CD mechanism block
83 to 85	ENC2, ENC1, ENC0	I	Detection input from the disc tray address detect rotary encoder (S707) on the CD mechanism block
86	DISC-SENS	I	Detection input from the disc in detect sensor (D704 and Q703) on the CD mechanism block
87	PRTC SW	I	Detection input from the CD tray door open/close detect switch (S702)
88	SOFT-TEST	—	Not used.

Pin No.	Pin Name	I/O	Descriptions
89	A SHUT	O	A deck reel pulse detect signal output.
90	B SHUT	O	B deck reel pulse detect signal output.
91	B HALF/REC A/REC B	I	B deck half detect signal input./A deck or B deck record detect signal input.
92	MODEL-IN	I	MODEL input.
93	SPEC-IN	I	Version select signal input.
94	POWER	O	POWER ON/OFF signal output. H=ON, L=OFF
95	SENS	I	BD condition signal input.
96	AVSS	—	Analog ground.
97	HOLD	I	MODE signal input.
98	VREF	—	Analog Reference Voltage
99	AVCC	—	Analog Power Supply
100	XRST	O	CD reset signal output.

• IC701 TMP88CS77AF-1A90 SYSTEM CONTROL (PANEL BOARD)

Pin No.	Pin Name	I/O	Descriptions
1	LED SEL	O	LED select signal output
2 to 12	LED0 to LED10	O	LED driver output
13	STANDBY LED	O	STANDBY LED driver output
14	TIMER LED	O	TIMER SEL LED driver output
15, 16	VOLUME A, B	I	Rotary encoder pulse input
17 to 22	BPF1 to BPF5	I	Rec level signal input
23	L+R	I	Rec level signal input for feedback
24 to 26	KEY 0 to KEY2	I	Key input
27	STICK 1	I	STICK CONTROL Up / Down
28	STICK 2	I	STICK CONTROL Right / Left
29	VSS	—	Ground
30	VASS	—	Ground
31	VAREF	—	Analog reference voltage
32	VDD	—	Power supply
33	GRID EXT CLK	O	Clock output for GRID EXTENDER
34	2G	O	FL gride signal output
35	1G	O	FL gride signal output
36 to 50	P35 to P49	O	FL segment signal output
51	VDD	—	Power supply
52	GRID EXT RESET	O	Reset output for GRID EXTENDER
53 to 86	P34 to P1	O	FL segment signal output
87	VKK	—	Power supply for FL segment signal output
88	VDD	—	Power supply
89	X IN	I	X'tal(12.5MHz) input
90	VSS	—	Ground
91	X OUT	O	X'tal(12.5MHz) output
92	RESET	I	RESET signal input
93	LED11	O	LED driver output
94	LED12	O	LED driver output(Not used)
95	TEST	I	Connected to ground
96	WAKE UP	O	WAKE-UP signal output
97	I2C data	O	IIC serial data output
98	I2C clk	O	IIC serial clock output
99	LED13	O	LED driver output
100	SIRCS	I	Remote commander input

SECTION 8 EXPLODED VIEWS

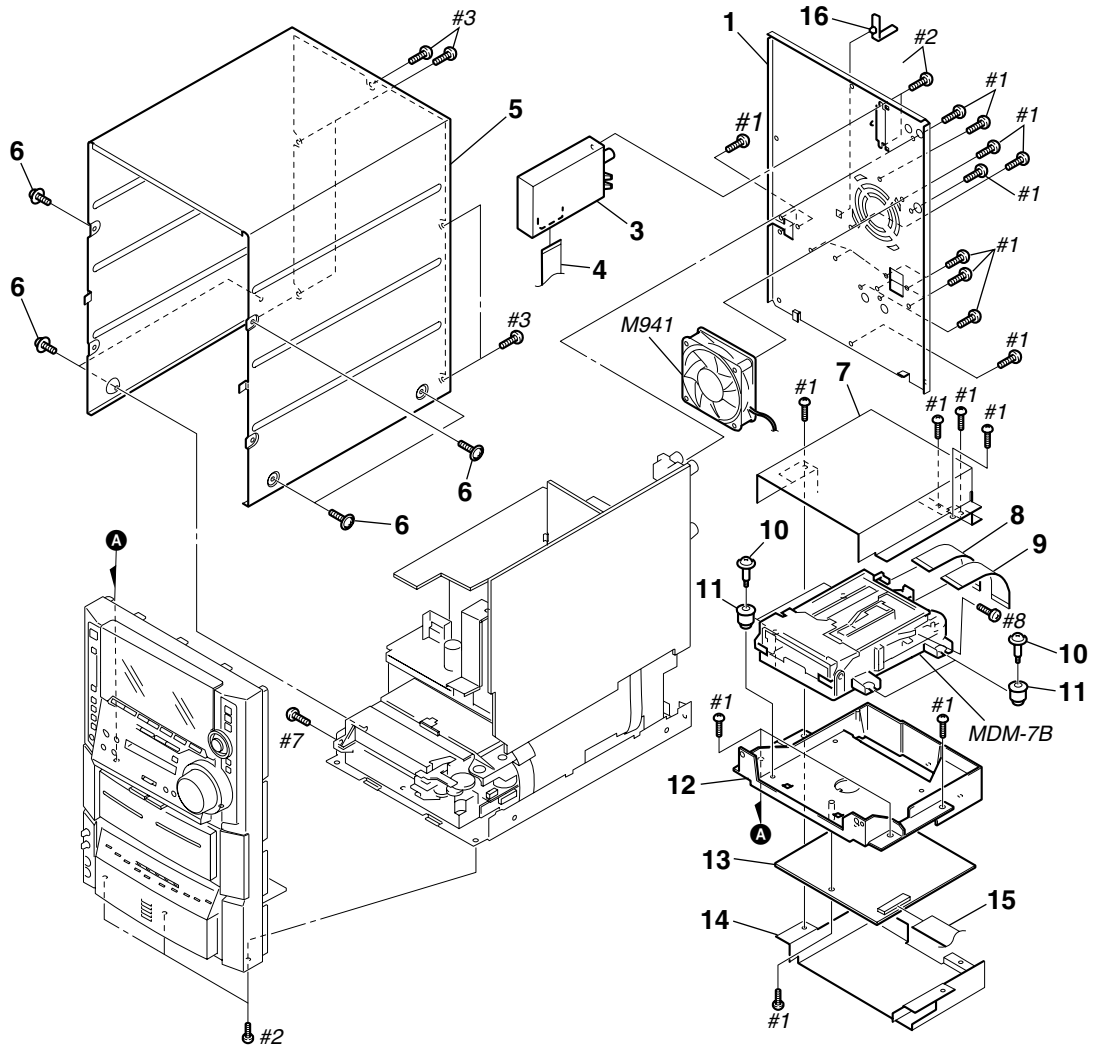
NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

- Abbreviation
 HK : Hong Kong model
 MY : Malaysia model
 SP : Singapore model
 JE : Tourist model

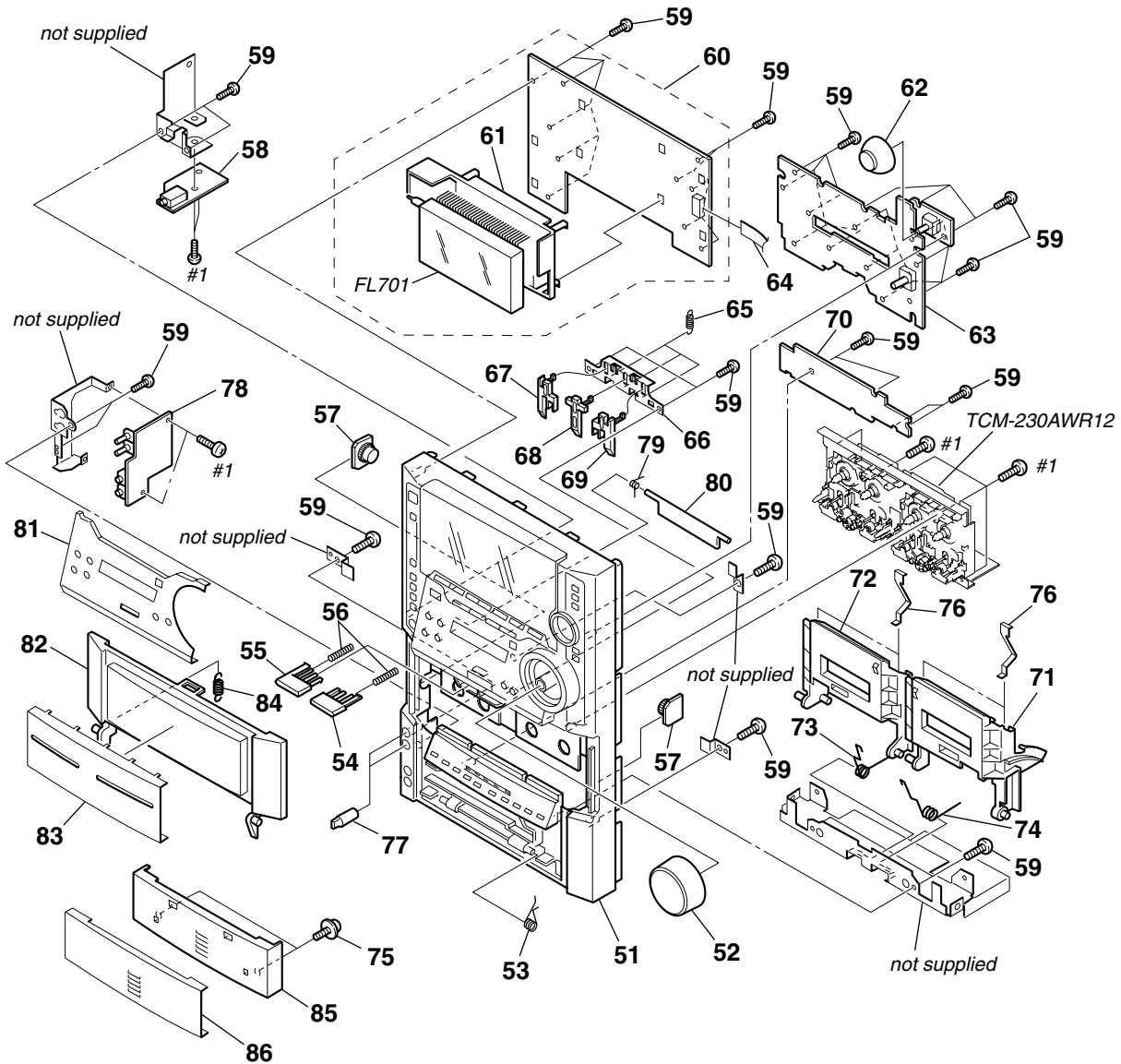
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

8-1. BACK PANEL SECTION



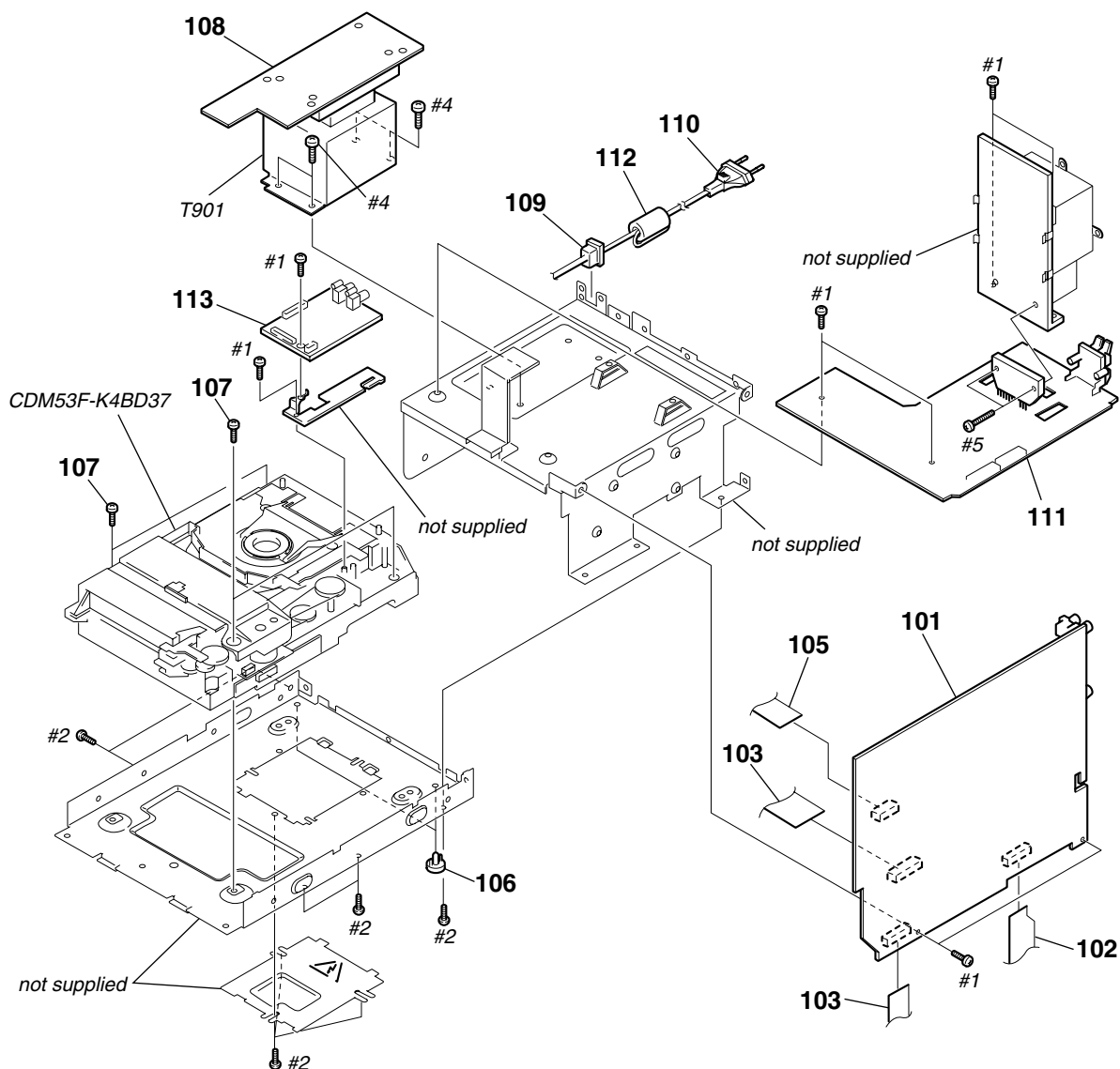
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
1	4-227-557-01	PANEL, BACK (SP,MY)		9	1-775-236-11	WIRE (FLAT TYPE)(27 CORE)	
1	4-227-557-11	PANEL, BACK (HK)		10	4-228-684-11	SCREW (+BVTPTH M3), STEP	
1	4-227-557-21	PANEL, BACK (JE)		11	4-228-689-01	INSULATOR	
3	1-693-482-41	TUNER (FM/AM)(HK,SP,MY)		12	4-228-332-01	HOLDER (MD)	
3	1-693-508-41	TUNER (FM/AM)(JE)		13	A-4473-391-A	DIGITAL BOARD, COMPLETE	
4	1-769-972-11	WIRE (FLAT TYPE)(13 CORE)		14	4-228-555-01	SHIELD (U)	
5	4-226-746-01	CASE		15	1-773-217-11	WIRE (FLAT TYPE)(25 CORE)	
6	3-363-099-21	SCREW (CASE 3 TP2)		16	4-956-370-12	BAND, PLUG FIXED (HK)	
7	4-228-556-01	PLATE (B), SHIELD		M941	1-763-072-11	FAN, DC	
8	1-775-151-11	WIRE (FLAT TYPE)(17 CORE)					

8-2. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
51	X-4953-111-1	PANEL ASSY, FRONT		70	A-4428-661-A	CD SW BOARD, COMPLETE	
52	4-226-715-01	KNOB, VOLUEME		71	X-4952-712-1	HOLDER (B) ASSY, TC	
53	4-226-897-01	SPRING (CD)		72	X-4952-711-1	HOLDER (A) ASSY, TC	
54	4-226-735-01	BUTTON (B), EJECT		73	4-227-458-01	SPRING (TC A)	
55	4-226-734-01	BUTTON (A), EJECT		74	4-227-459-01	SPRING (TC B)	
56	4-226-537-01	SPRING (TC EJECT), COIL		75	4-957-577-01	SCREW PTP WH (2.6X8) (DIA. 10)	
57	4-224-104-11	DAMPER		76	4-959-229-11	DETENT, CASSETTE	
58	1-676-971-11	HP BOARD		77	4-214-385-91	KNOB (MIC)	
59	4-951-620-01	SCREW (2.6X8), +BVTP		78	1-676-972-11	MIC BOARD	
60	A-4475-161-A	PANEL BOARD, COMPLETE		79	4-231-388-01	SPRING (MD)	
61	4-226-723-01	HOLDER (FL)		80	4-228-335-01	LID (MD)	
62	4-226-713-01	CURSOR		81	4-226-712-61	PANEL (STR), ALUMINUM	
63	A-4473-383-A	SUB PANEL BOARD, COMPLETE		82	4-226-729-01	LID,TC	
64	1-769-938-11	WIRE (FLAT TYPE)(11 CORE)		83	4-226-728-01	PANEL (TC), ALUMINUM	
65	4-227-544-01	SPRING, TENSION		84	4-227-460-01	SPRING, TENSION	
66	4-226-755-01	COVER, LOCK		85	4-226-737-01	LID (CD)	
67	4-226-733-01	LOCK (B)		86	4-226-741-01	PANEL (CD), ALUMINUM	
68	4-226-731-01	LOCK (LID)		FL701	1-517-984-11	INDICATOR TUBE, FLUORESCENT	
69	4-226-732-01	LOCK (A)					

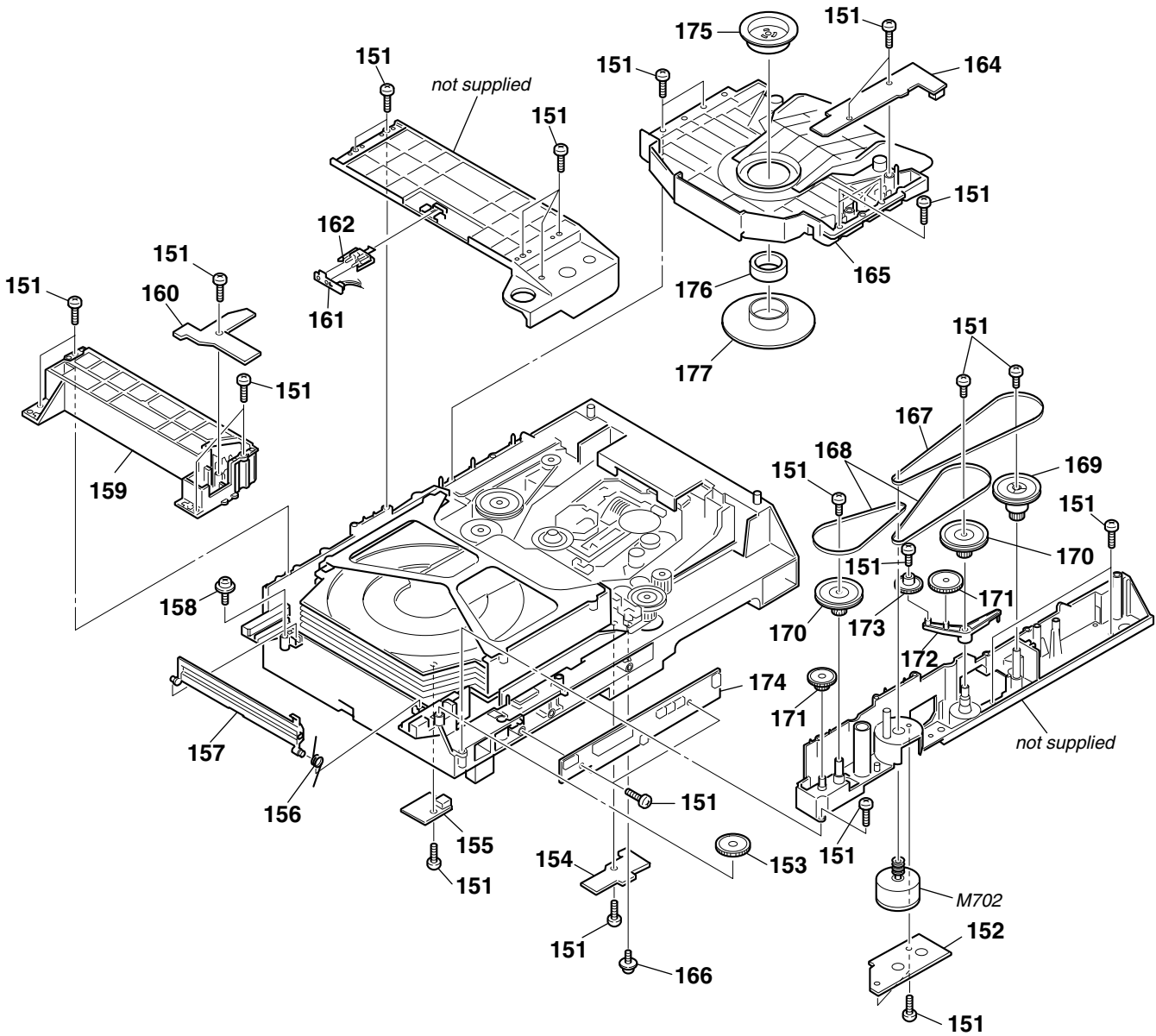
8-3. CHASSIS SECTION



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
101	A-4475-164-A	MAIN BOARD, COMPLETE (HK,SP,MY)		109	3-703-571-11	BUSHING (S) (4516), CORD (JE)	
101	A-4475-214-A	MAIN BOARD, COMPLETE (JE)		* 109	3-703-244-00	BUSHING (2104), CORD (HK,SP,MY)	
102	1-757-088-11	WIRE (FLAT TYPE)(15 CORE)		△ 110	1-777-071-51	CORD, POWER (HK,SP,MY)	
103	1-773-042-11	WIRE (FLAT TYPE)(17 CORE)		△ 110	1-791-901-11	CORD, POWER (JE)	
105	1-773-020-11	WIRE (FLAT TYPE)(15 CORE)		111	A-4475-598-A	FRONT AMP BOARD, COMPLETE	
106	4-965-822-01	FOOT		112	1-500-386-11	FILTER, CLAMP (FERRITE CORE)	
107	3-970-608-11	SUMITITE (B3), +BV		113	A-4725-333-A	VIDEO BOARD, COMPLETE	
108	1-676-975-11	TRANS BOARD		△ T901	1-435-774-11	TRANSFORMER, POWER	

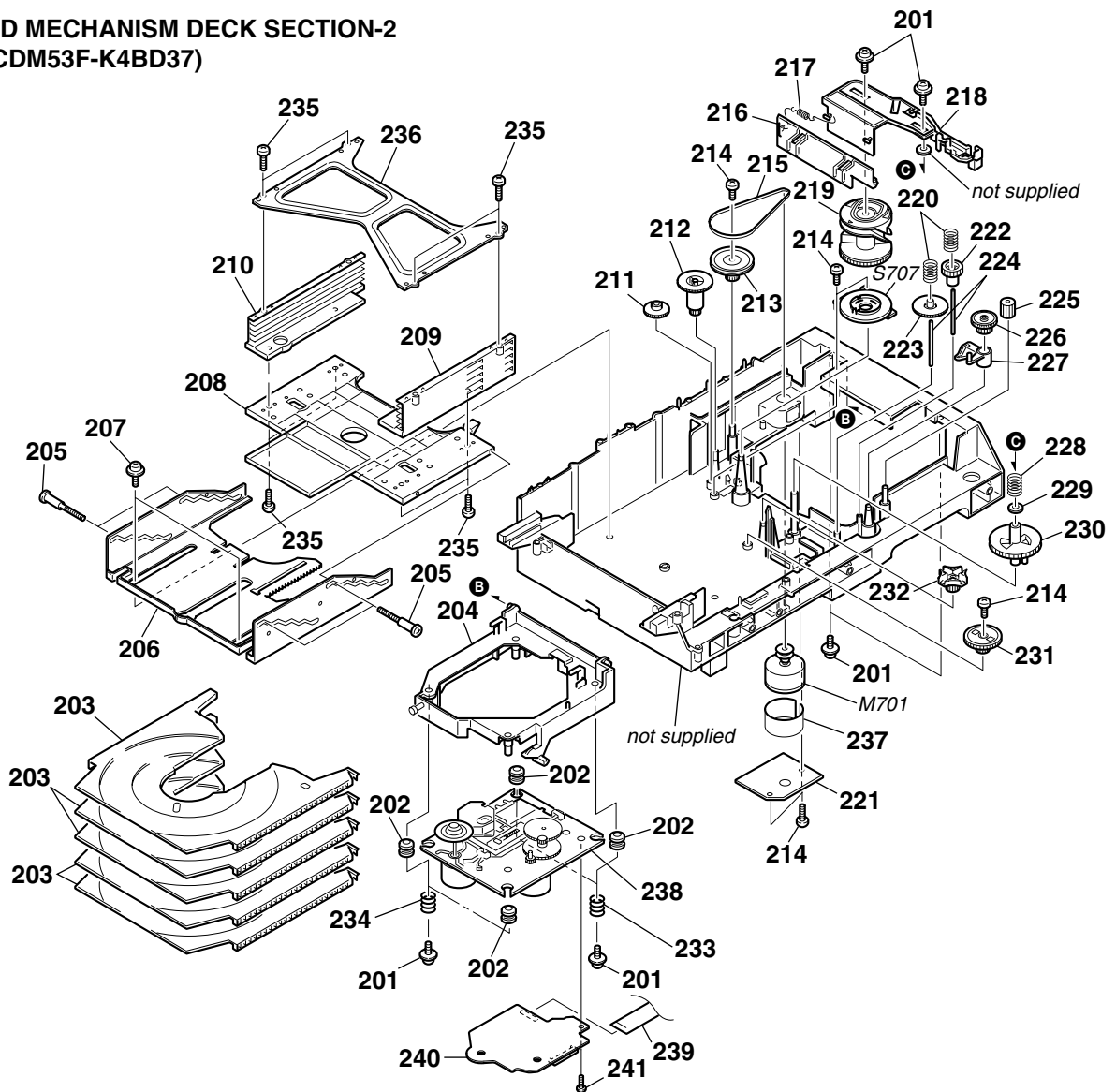
The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

8-4. CD MECHANISM DECK SECTION-1
(CDM53F-K4BD37)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
151	4-218-253-11	SCREW (M2.6), +BTTP		166	3-341-549-01	SCREW(2.6X12)(DIA.7.5),+PTP WH	
152	1-671-508-11	LOAD MOTOR BOARD		167	4-211-235-01	BELT (COMMUNICATION)	
153	4-211-215-01	GEAR (EJECT)		168	4-211-236-01	BELT (LOADING)	
154	1-671-502-11	INT/COUNT SW BOARD		169	4-211-231-01	PULLEY (MODE)	
155	1-671-504-11	SENSOR BOARD		170	4-211-214-01	PULLEY (LD)	
156	4-212-676-01	SPRING (LID), TORSION		171	4-211-232-01	GEAR (LD DECELERATION)	
157	4-212-674-01	LID (DISC)		172	4-211-228-01	LEVER (GOOSENECK)	
158	4-985-672-01	SCREW (+PTPWH M2.6), FLOATING		173	4-214-130-01	GEAR (TRAY)	
159	A-4672-873-A	BASE (GUIDE) ASSY, FITTING		174	1-671-506-11	CONNECTOR BOARD	
160	1-671-503-11	OUT SW BOARD		175	4-225-368-01	PULLEY (C), CHUCKING	
161	1-671-789-11	SENSOR 2 BOARD		176	1-471-061-11	MAGNET ASSY	
162	4-964-461-02	HOLDER (SENSOR)		177	X-4952-936-1	PULLEY (A) ASSY, CHUCKING	
164	1-671-505-11	IN SW BOARD		M702	X-4950-342-1	MOTOR (LOADING) ASSY (CD)	
165	A-4672-872-D	BASE (MAGNET) ASSY, FITTING					

**8-5. CD MECHANISM DECK SECTION-2
(CDM53F-K4BD37)**

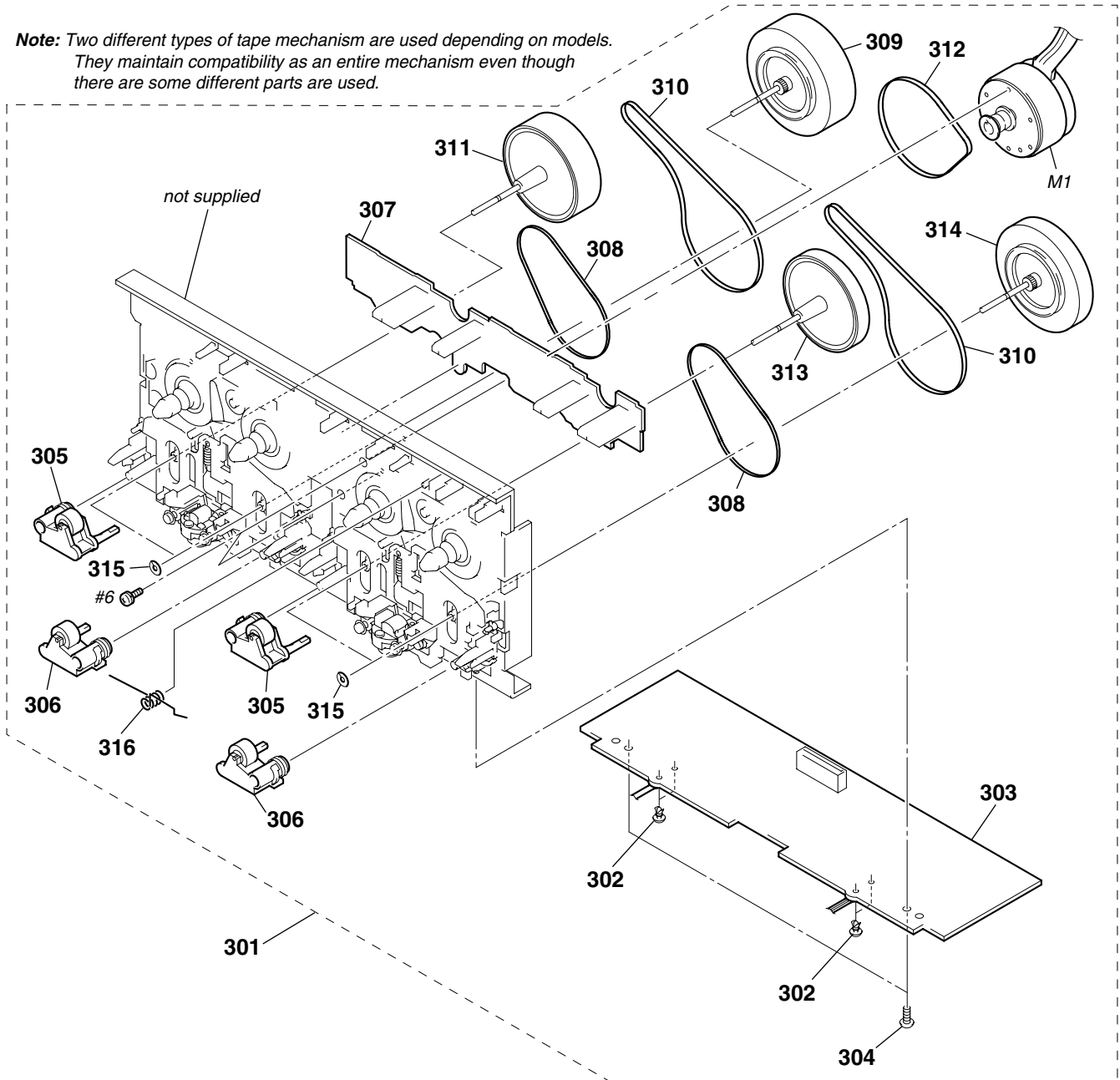


Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
201	4-985-672-01	SCREW (+PTPWH M2.6), FLOATING		223	4-211-217-01	GEAR (SELECTION)	
202	4-220-933-01	INSULATOR		224	4-211-242-11	SHAFT (SELECTION GEAR)	
203	4-211-212-51	TRAY (SUB)		225	4-211-240-01	GEAR (LD DECELERATION B)	
204	X-4950-322-3	HOLDER (BU) ASSY		226	4-211-216-01	GEAR (RELAY)	
205	4-211-244-01	SCREW, STEP		227	4-211-241-01	LEVER (SELECTION)	
206	4-211-223-01	SLIDER (U/D)		228	4-216-879-01	SPRING (GEAR), COMPRESSION	
207	4-933-134-01	SCREW (M2.6), +PTPWH		229	3-701-446-21	WASHER	
208	4-221-504-01	BASE (STOCKER), FITTING		230	4-211-218-01	GEAR (GEAR A)	
209	4-211-211-01	STOCKER (R)		231	4-211-220-01	GEAR (U/D SLIDER)	
210	4-211-210-01	STOCKER (L)		232	4-211-219-01	GEAR (GEAR B)	
211	4-211-215-01	GEAR (EJECT)		233	4-222-784-01	SPRING (INSULATOR), COMPRESSION	
212	4-211-232-01	GEAR (MODE DECELERATION)		234	4-222-785-01	SPRING (INSULATOR), COMPRESSION	
213	4-211-214-01	PULLEY (LD)		235	4-218-253-21	SCREW (M2.6), +BTTP	
214	4-218-253-31	SCREW (M2.6), +BTTP		236	4-211-234-01	BRACKET (STOCKER T)	
215	4-211-237-01	BELT (MODE)		237	4-228-772-02	PLATE, SHIELD	
216	4-212-677-01	SLIDER (SHUTTER)		△238	8-820-122-01	OPTICAL PICK-UP KSM-213DHAP/Z-NP	
217	4-212-678-01	SPRING (SHUTTER), TENSION		239	1-769-069-11	WIRE (FLAT TYPE)(16 CORE)	
218	4-211-233-01	SLIDER (SELECTION)		240	A-4724-949-A	BD(CD) BOARD, COMPLETE	
219	4-211-230-01	GEAR (CHUCKING)		241	4-951-620-01	SCREW (2.6X8), +BVTP	
220	4-211-245-01	SPRING, COMPRESSION		M701	X-4950-341-1	MOTOR (CLAMP) ASSY	
221	1-671-507-11	CLAMP MOTOR BOARD		S707	1-418-045-01	ENCODER, ROTARY (DISC TRAY ADDRESS DET.)	
222	4-211-221-01	GEAR (LD MOVABLE)					

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

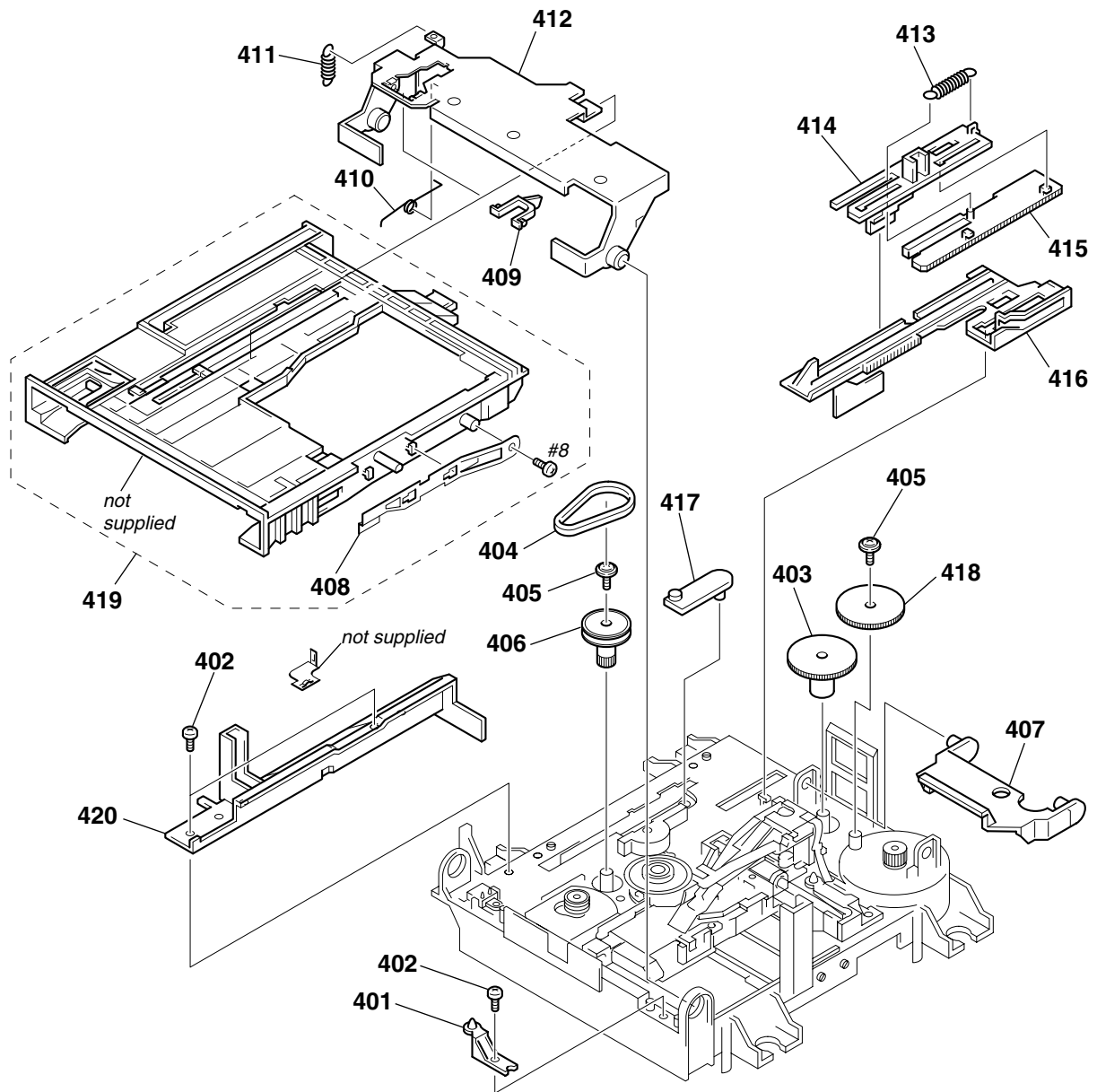
8-6. TAPE MECHANISM DECK SECTION (TCM-230AWR12)

Note: Two different types of tape mechanism are used depending on models.
They maintain compatibility as an entire mechanism even though
there are some different parts are used.



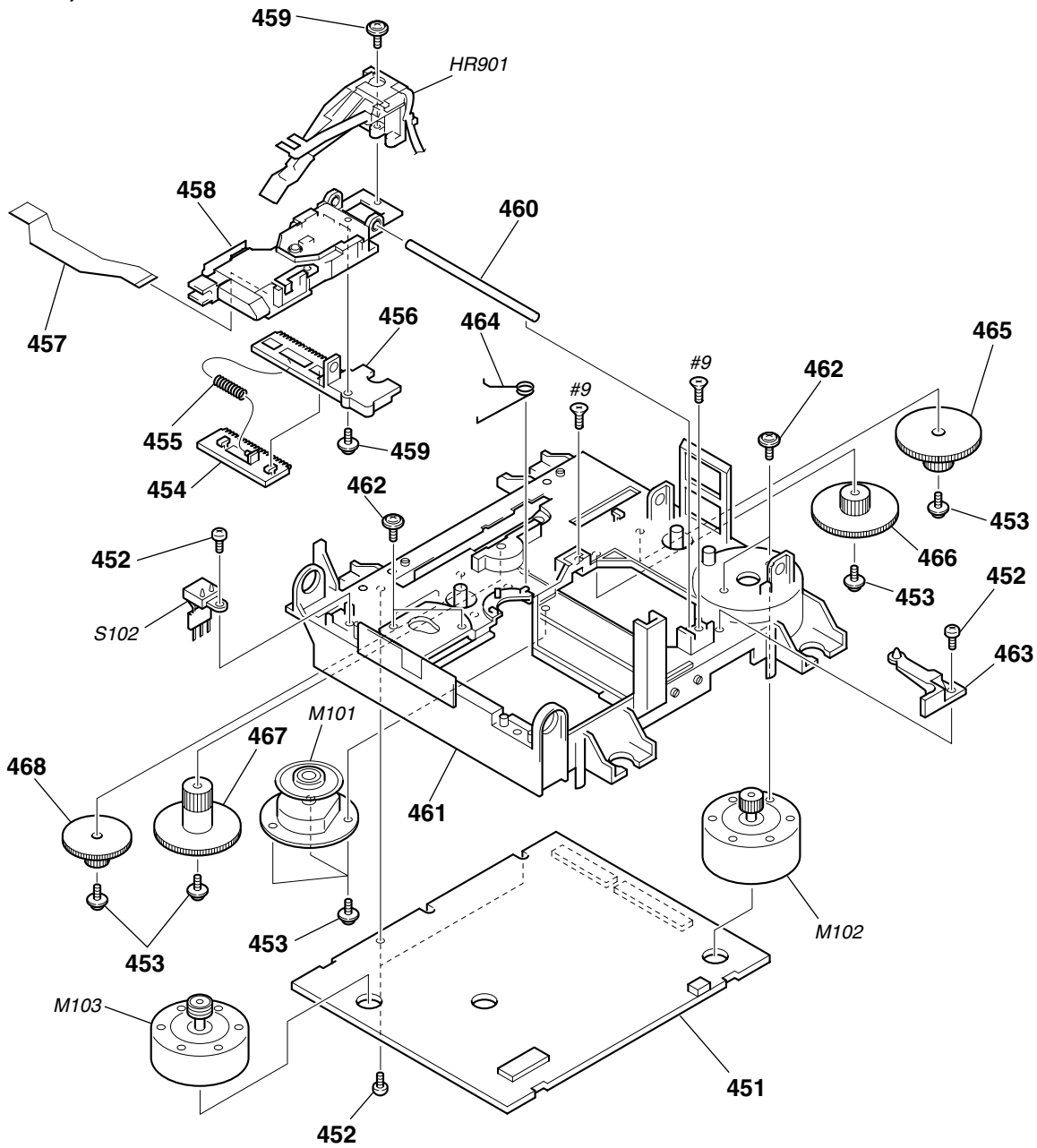
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
301	A-2100-898-A	TAPE MECHANISM ASSY TCM-230AWR12		311	X-3378-040-1	FLYWHEEL (A-FWD) ASSY	
302	3-911-116-42	RIVET, PUSH		312	4-227-239-01	BELT (CAPSTAN C)	
303	A-2007-845-A	AUDIO BOARD, COMPLETE		313	X-3378-042-1	FLYWHEEL (B-FWD) ASSY	
304	3-376-464-11	SCREW(+PTT 2.6X6),GROUND POINT		314	X-3378-043-1	FLYWHEEL (B-REV) ASSY	
305	X-3374-156-4	PINCH LEVER (REV) ASSY		315	3-019-208-01	WASHER, STOPPER	
306	X-3374-155-4	PINCH LEVER (FWD) ASSY		316	4-227-455-02	SPRING (HALF), TORSION	
307	A-2007-838-A	LEAF SW BOARD, COMPLETE		M1	X-3378-241-1	MOTOR ASSY (CAPSTAN)	
308	3-041-947-01	BELT (FR)					
309	X-3378-041-1	FLYWHEEL (A-REV) ASSY					
310	3-041-946-01	BELT (CAPSTAN B)					

**8-7. MD MECHANISM SECTION-1
(MDM-7B)**



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
* 401	4-996-267-01	BASE (BU-D)		411	4-227-012-01	SPRING (HOLDER), TENSION	
402	4-908-618-21	SCREW (+BTP) (2X6)		412	4-227-019-02	PLATE (HOLDER), RETAINER	
403	4-227-007-01	GEAR (SB)		413	4-227-013-01	SPRING (EJ), TENSION	
404	4-227-025-01	BELT (LOADING)		414	4-226-995-01	SLIDER (EJ)	
405	3-372-761-01	SCREW (M1.7), TAPPING		415	4-226-996-01	LIMITTER (EJ)	
406	4-227-002-01	GEAR, PULLEY		416	4-226-997-01	SLIDER	
407	4-226-999-01	LEVER (HEAD)		417	4-226-998-01	LEVER (CHG)	
408	X-4952-665-1	SPRING (SHT) ASSY, LEAF		418	4-227-006-01	GEAR (SA)	
409	4-228-923-01	LOCK (HOLDER)		419	A-4673-973-A	HOLDER ASSY	
410	4-229-533-02	SPRING (STOPPER), TORSION		420	4-226-994-01	GUIDE (L)	

**8-8. MD MECHANISM SECTION-2
(MDM-7B)**



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
451	A-4725-101-A	BD (MD) BOARD		463	4-226-990-01	BASE (BU-A)	
452	4-908-618-21	SCREW (+BTP) (2X6)		464	4-227-023-01	SPRING (SPINDLE), TORSION	
453	3-372-761-01	SCREW (M1.7), TAPPING		465	4-227-004-01	GEAR (LC)	
454	4-226-993-01	RACK		466	4-227-005-01	GEAR (LD)	
455	4-227-014-01	SPRING (RACK), COMPRESSION		467	4-227-009-01	GEAR (SD)	
456	4-226-992-01	BASE, SL		468	4-227-008-01	GEAR (SC)	
457	1-678-514-11	FLEXIBLE BOARD		HR901	1-500-670-11	HEAD, OVER LIGHT	
△ 458	A-4672-541-A	OPTICAL PICK-UP KMS-260B/J1N		M101	A-4672-898-A	MOTOR ASSY, SPINDLE	
459	4-988-560-01	SCREW (+P 1.7X6)		M102	A-4672-900-A	MOTOR ASSY, SLED	
460	4-996-265-01	SHAFT, MAIN		M103	A-4672-975-A	MOTOR ASSY, LOADING (MD)	
461	4-226-989-01	CHASSIS		S102	1-771-957-11	SWITCH, PUSH (2KEY)(REFLECT/PROTECT SW)	
462	4-211-036-01	SCREW (1.7X2.5), +PWH					

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

SECTION 9 ELECTRICAL PARTS LIST

AUDIO

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
uF: µF

- RESISTORS
All resistors are in ohms.
METAL: metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable
- COILS
uH: µH
- SEMICONDUCTORS
In each case, u: µ, for example:
uA...: µA..., uPA..., µPA...,
uPB..., µPB..., uPC..., µPC...,
uPD..., µPD...

When indicating parts by reference number, please include the board name.

The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

- Abbreviation
HK : Hong Kong model
MY : Malaysia model
SP : Singapore model
JE : Tourist model

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
	A-2007-845-A	AUDIO BOARD, COMPLETE *****				< IC >	
		< CAPACITOR >					
C301	1-162-289-31	CERAMIC	390PF 10.00% 50V	IC601	8-759-111-44	IC uPC4570C-1	
C302	1-126-968-11	ELECT	100uF 20.00% 6.3V	IC602	8-759-143-54	IC uPC1330HA	
C303	1-162-282-31	CERAMIC	100PF 10% 50V	IC611	8-759-111-44	IC uPC4570C-1	
C304	1-130-483-00	MYLAR	0.01uF 5% 50V			< COIL >	
C305	1-128-551-11	ELECT	22uF 20.00% 25V	L331	1-410-780-11	INDUCTOR 27mH	
				L431	1-410-780-11	INDUCTOR 27mH	
C311	1-162-289-31	CERAMIC	390PF 10.00% 50V			< TRANSISTOR >	
C313	1-162-282-31	CERAMIC	100PF 10% 50V	Q621	8-729-142-46	TRANSISTOR 2SC2001TP-LK	
C314	1-130-487-00	MYLAR	0.022uF 5% 50V	Q622	8-729-142-46	TRANSISTOR 2SC2001TP-LK	
C315	1-126-233-11	ELECT	22uF 20% 50V	Q623	8-729-801-93	TRANSISTOR 2SD1387-34-TP	
C331	1-137-427-11	MYLAR	120PF 5.00% 50V			< RESISTOR >	
C332	1-162-288-31	CERAMIC	330PF 10% 50V	R301	1-247-881-00	CARBON 120K 5% 1/4W	
C333	1-162-209-31	CERAMIC	27PF 5.00% 50V	R302	1-249-409-11	CARBON 220 5% 1/4W F	
C401	1-162-289-31	CERAMIC	390PF 10.00% 50V	R303	1-249-433-11	CARBON 22K 5% 1/4W	
C402	1-126-968-11	ELECT	100uF 20.00% 6.3V	R304	1-247-889-00	CARBON 270K 5% 1/4W	
C403	1-162-282-31	CERAMIC	100PF 10% 50V	R305	1-247-858-11	CARBON 13K 5% 1/4W	
C404	1-130-483-00	MYLAR	0.01uF 5% 50V	R311	1-247-881-00	CARBON 120K 5% 1/4W	
C405	1-128-551-11	ELECT	22uF 20.00% 25V	R312	1-247-807-31	CARBON 100 5% 1/4W	
C411	1-162-289-31	CERAMIC	390PF 10.00% 50V	R314	1-247-882-11	CARBON 130K 5% 1/4W	
C413	1-162-282-31	CERAMIC	100PF 10% 50V	R315	1-247-850-11	CARBON 6.2K 5% 1/4W	
C414	1-130-487-00	MYLAR	0.022uF 5% 50V	R331	1-249-430-11	CARBON 12K 5% 1/4W	
C415	1-126-233-11	ELECT	22uF 20% 50V	R401	1-247-881-00	CARBON 120K 5% 1/4W	
C431	1-137-427-11	MYLAR	120PF 5.00% 50V	R402	1-249-409-11	CARBON 220 5% 1/4W F	
C432	1-162-288-31	CERAMIC	330PF 10% 50V	R403	1-249-433-11	CARBON 22K 5% 1/4W	
C433	1-162-209-31	CERAMIC	27PF 5.00% 50V	R404	1-247-889-00	CARBON 270K 5% 1/4W	
C601	1-104-396-11	ELECT	10uF 20.00% 16V	R405	1-247-858-11	CARBON 13K 5% 1/4W	
C602	1-104-396-11	ELECT	10uF 20.00% 16V	R411	1-247-881-00	CARBON 120K 5% 1/4W	
C611	1-104-396-11	ELECT	10uF 20.00% 16V	R412	1-247-807-31	CARBON 100 5% 1/4W	
C612	1-104-396-11	ELECT	10uF 20.00% 16V	R414	1-247-882-11	CARBON 130K 5% 1/4W	
C621	1-137-150-11	FILM	0.01uF 5.00% 100V	R415	1-247-850-11	CARBON 6.2K 5% 1/4W	
C622	1-126-961-11	ELECT	2.2uF 20.00% 50V	R431	1-249-430-11	CARBON 12K 5% 1/4W	
C623	1-136-155-00	FILM	0.015uF 5% 50V	R601	1-249-409-11	CARBON 220 5% 1/4W F	
C624	1-130-481-00	MYLAR	0.0068uF 5% 50V	R602	1-249-409-11	CARBON 220 5% 1/4W F	
C625	1-130-481-00	MYLAR	0.0068uF 5% 50V	R608	1-249-409-11	CARBON 220 5% 1/4W F	
C627	1-124-903-11	ELECT	1uF 20.00% 50V	R609	1-249-433-11	CARBON 22K 5% 1/4W	
C628	1-136-153-00	FILM	0.01uF 5% 50V	R611	1-249-409-11	CARBON 220 5% 1/4W F	
C642	1-104-664-11	ELECT	47uF 20.00% 16V	R612	1-249-409-11	CARBON 220 5% 1/4W F	
		< CONNECTOR >		\triangle R621	1-212-851-00	FUSIBLE 5.6 5% 1/4W	
CN601	1-695-338-11	PIN, CONNECTOR (PC BOARD) 15P		\triangle R622	1-212-851-00	FUSIBLE 5.6 5% 1/4W	
				R623	1-249-432-11	CARBON 18K 5% 1/4W	
				R624	1-249-432-11	CARBON 18K 5% 1/4W	
				R625	1-249-429-11	CARBON 10K 5% 1/4W	

AUDIO **BD (CD)**

Ref. No.	Part No.	Description	Remarks
< VARIABLE RESISTOR >			
RV301	1-238-598-11	RES, ADJ, CARBON 2.2K	
RV311	1-238-598-11	RES, ADJ, CARBON 2.2K	
RV341	1-241-768-11	RES, ADJ, CARBON 220K	
RV401	1-238-598-11	RES, ADJ, CARBON 2.2K	
RV411	1-238-598-11	RES, ADJ, CARBON 2.2K	
RV441	1-241-768-11	RES, ADJ, CARBON 220K	
< TRANSFORMER >			
T621	1-423-980-11	TRANSFORMER, BIAS OSCILLATION	

A-4724-949-A	BD(CD) BOARD, COMPLETE		

< CAPACITOR >			
C101	1-163-005-11	CERAMIC CHIP 470PF	10% 50V
C102	1-163-038-11	CERAMIC CHIP 0.1uF	25V
C103	1-163-005-11	CERAMIC CHIP 470PF	10% 50V
C105	1-126-206-11	ELECT CHIP 100uF	20% 6.3V
C106	1-164-346-11	CERAMIC CHIP 1uF	16V
C107	1-164-346-11	CERAMIC CHIP 1uF	16V
C108	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
C109	1-163-145-00	CERAMIC CHIP 0.0015uF	5% 50V
C110	1-164-161-11	CERAMIC CHIP 0.0022uF	10% 100V
C111	1-163-251-11	CERAMIC CHIP 100PF	5.00% 50V
C112	1-163-038-11	CERAMIC CHIP 0.1uF	25V
C113	1-163-038-11	CERAMIC CHIP 0.1uF	25V
C115	1-126-607-11	ELECT CHIP 47uF	20% 4V
C116	1-126-607-11	ELECT CHIP 47uF	20% 4V
C117	1-126-209-11	ELECT CHIP 100uF	20.00% 4V
C118	1-163-275-11	CERAMIC CHIP 0.001uF	5.00% 50V
C119	1-163-227-11	CERAMIC CHIP 10PF	0.50PF 50V
C120	1-109-982-11	CERAMIC CHIP 1uF	10.00% 10V
C121	1-125-838-11	CERAMIC CHIP 2.2uF	10% 6.3V
C122	1-163-009-11	CERAMIC CHIP 0.001uF	10% 50V
C123	1-163-021-91	CERAMIC CHIP 0.01uF	10.00% 50V
C124	1-163-017-00	CERAMIC CHIP 0.0047uF	5% 50V
C126	1-124-779-00	ELECT CHIP 10uF	20% 16V
C130	1-163-038-11	CERAMIC CHIP 0.1uF	25V
C140	1-163-038-11	CERAMIC CHIP 0.1uF	25V
C141	1-163-038-11	CERAMIC CHIP 0.1uF	25V
C152	1-163-237-11	CERAMIC CHIP 27PF	5.00% 50V
C154	1-163-038-11	CERAMIC CHIP 0.1uF	25V
C159	1-163-017-00	CERAMIC CHIP 0.0047uF	5% 50V
C161	1-163-038-11	CERAMIC CHIP 0.1uF	25V
C162	1-117-681-11	ELECT CHIP 100uF	20.00% 16V
C170	1-163-038-11	CERAMIC CHIP 0.1uF	25V
C171	1-163-038-11	CERAMIC CHIP 0.1uF	25V
C180	1-163-137-00	CERAMIC CHIP 680PF	5% 50V
C181	1-163-137-00	CERAMIC CHIP 680PF	5% 50V
C182	1-163-137-00	CERAMIC CHIP 680PF	5% 50V
C183	1-163-137-00	CERAMIC CHIP 680PF	5% 50V
C184	1-163-037-11	CERAMIC CHIP 0.022uF	10% 25V
C185	1-163-037-11	CERAMIC CHIP 0.022uF	10% 25V
C186	1-128-065-11	ELECT CHIP 68uF	20.00% 10V
C187	1-163-038-11	CERAMIC CHIP 0.1uF	25V

Ref. No.	Part No.	Description	Remarks
< CONNECTOR >			
CN101	1-770-708-11	CONNECTOR, FFC/FPC 25P	
CN102	1-777-937-11	CONNECTOR, FFC/FPC 16P	
< IC >			
IC101	8-752-397-42	IC CXD3008Q	
IC102	8-759-640-22	IC BA5982FM	
IC103	8-752-085-51	IC CXA2568M-T6	
IC104	8-759-325-67	IC TC7SH04F(TE85R)	
< COIL >			
L101	1-414-234-22	INDUCTOR	0uH
L102	1-410-377-31	INDUCTOR CHIP	4.7uH
< TRANSISTOR >			
Q101	8-729-010-08	TRANSISTOR	MSB710-RT1
Q102	8-729-120-28	TRANSISTOR	2SC1623-T1-L5L6
< RESISTOR >			
R101	1-216-077-91	RES-CHIP	15K 5% 1/10W
R102	1-216-097-11	RES-CHIP	100K 5% 1/10W
R103	1-216-077-91	RES-CHIP	15K 5% 1/10W
R104	1-216-085-00	METAL CHIP	33K 5% 1/10W
R105	1-216-073-00	METAL CHIP	10K 5% 1/10W
R106	1-216-049-11	RES-CHIP	1K 5% 1/10W
R107	1-216-073-00	METAL CHIP	10K 5% 1/10W
R108	1-216-061-00	METAL CHIP	3.3K 5% 1/10W
R109	1-216-121-11	RES-CHIP	1M 5% 1/10W
R110	1-216-295-11	SHORT	0
R112	1-216-025-11	RES-CHIP	100 5% 1/10W
R123	1-216-073-00	METAL CHIP	10K 5% 1/10W
R124	1-216-097-11	RES-CHIP	100K 5% 1/10W
R125	1-216-033-00	METAL CHIP	220 5% 1/10W
R126	1-216-033-00	METAL CHIP	220 5% 1/10W
R127	1-216-033-00	METAL CHIP	220 5% 1/10W
R131	1-216-033-00	METAL CHIP	220 5% 1/10W
R135	1-216-295-11	SHORT	0
R136	1-216-295-11	SHORT	0
R137	1-216-295-11	SHORT	0
R138	1-216-295-11	SHORT	0
R143	1-216-103-00	METAL CHIP	180K 5% 1/10W
R144	1-216-103-00	METAL CHIP	180K 5% 1/10W
R145	1-216-121-11	RES-CHIP	1M 5% 1/10W
R146	1-216-121-11	RES-CHIP	1M 5% 1/10W
R147	1-216-041-00	METAL CHIP	470 5% 1/10W
R148	1-216-001-00	METAL CHIP	10 5% 1/10W
R149	1-216-003-11	RES-CHIP	12 5% 1/10W
R150	1-216-073-00	METAL CHIP	10K 5% 1/10W
R152	1-216-073-00	METAL CHIP	10K 5% 1/10W
R154	1-216-025-11	RES-CHIP	100 5% 1/10W
R155	1-216-025-11	RES-CHIP	100 5% 1/10W
R156	1-216-025-11	RES-CHIP	100 5% 1/10W
R157	1-216-025-11	RES-CHIP	100 5% 1/10W
R158	1-216-073-00	METAL CHIP	10K 5% 1/10W
R159	1-216-089-11	RES-CHIP	47K 5% 1/10W
R161	1-216-295-11	SHORT	0
R162	1-216-101-00	METAL CHIP	150K 5% 1/10W
R171	1-216-025-11	RES-CHIP	100 5% 1/10W
R172	1-216-025-11	RES-CHIP	100 5% 1/10W

Ref. No.	Part No.	Description	Quantity	Value	Remarks
R173	1-216-025-11	RES-CHIP	100	5%	1/10W
R175	1-216-025-11	RES-CHIP	100	5%	1/10W
R180	1-216-097-11	RES-CHIP	100K	5%	1/10W
R181	1-216-100-00	RES-CHIP	130K	5%	1/10W
R182	1-216-081-00	METAL CHIP	22K	5%	1/10W
R183	1-216-081-00	METAL CHIP	22K	5%	1/10W
R184	1-216-070-00	METAL CHIP	7.5K	5%	1/10W
R185	1-216-070-00	METAL CHIP	7.5K	5%	1/10W
R186	1-216-081-00	METAL CHIP	22K	5%	1/10W
R187	1-216-081-00	METAL CHIP	22K	5%	1/10W
R188	1-216-070-00	METAL CHIP	7.5K	5%	1/10W
R189	1-216-070-00	METAL CHIP	7.5K	5%	1/10W
R190	1-216-081-00	METAL CHIP	22K	5%	1/10W
R191	1-216-081-00	METAL CHIP	22K	5%	1/10W
R192	1-216-070-00	METAL CHIP	7.5K	5%	1/10W
R193	1-216-070-00	METAL CHIP	7.5K	5%	1/10W
R203	1-216-025-11	RES-CHIP	100	5%	1/10W
R204	1-216-025-11	RES-CHIP	100	5%	1/10W
R205	1-216-025-11	RES-CHIP	100	5%	1/10W
R206	1-216-295-11	SHORT	0		
R210	1-216-089-11	RES-CHIP	47K	5%	1/10W
R211	1-216-295-11	SHORT	0		
< SWITCH >					
S101	1-771-853-11	SWITCH, DETECTION (LIMIT)			

	A-4725-101-A	BD(MD) BOARD, COMPLETE			

< CAPACITOR >					
C101	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V
C102	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V
C103	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C104	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C105	1-115-416-11	CERAMIC CHIP	0.001uF	5.00%	25V
C106	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C107	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C108	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C109	1-164-677-11	CERAMIC CHIP	0.033uF	10.00%	16V
C110	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C111	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C112	1-110-563-11	CERAMIC CHIP	0.068uF	10.00%	16V
C113	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C114	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C115	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C116	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C117	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C118	1-165-176-11	CERAMIC CHIP	0.047uF	10.00%	16V
C119	1-165-176-11	CERAMIC CHIP	0.047uF	10.00%	16V
C120	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C121	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C125	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C128	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C131	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C132	1-164-156-11	CERAMIC CHIP	0.1uF		25V

Ref. No.	Part No.	Description	Quantity	Value	Remarks
C133	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C141	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C142	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C143	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C144	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C145	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C146	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C147	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C151	1-117-370-11	CERAMIC CHIP	10uF		10V
C152	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C153	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C154	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C155	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C156	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C157	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C158	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C159	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C160	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C161	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C162	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C163	1-125-891-11	CERAMIC CHIP	0.47uF	10.00%	10V
C164	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C165	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C166	1-125-891-11	CERAMIC CHIP	0.47uF	10.00%	10V
C167	1-164-245-11	CERAMIC CHIP	0.015uF	10.00%	25V
C169	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C173	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C174	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C180	1-117-370-11	CERAMIC CHIP	10uF		10V
C181	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C182	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C183	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C184	1-117-970-11	ELECT CHIP	22uF	20.00%	10V
C185	1-131-872-91	CERAMIC CHIP	1000PF	10%	630V
C191	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C192	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C193	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C194	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C195	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C196	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1401	1-117-720-11	CERAMIC CHIP	4.7uF		10V
< CONNECTOR >					
CN101	1-766-833-21	CONNECTOR, FFC/FPC (ZIF) 21P			
CN102	1-784-835-21	CONNECTOR, FFC (LIF(NON-ZIF))27P			
CN103	1-784-869-21	CONNECTOR, FFC (LIF(NON-ZIF))17P			
* CN104	1-580-055-21	PIN, CONNECTOR (SMD) 2P			
CN105	1-784-859-21	CONNECTOR, FFC (LIF(NON-ZIF))7P			
< DIODE >					
D101	8-719-988-61	DIODE 1SS355TE-17			
D181	8-719-080-81	DIODE FS1J6			
D183	8-719-080-81	DIODE FS1J6			
< IC >					
IC101	8-752-080-95	IC CXA2523AR			
IC102	8-759-473-51	IC TLV2361CDBV			
IC141	8-759-430-25	IC BH6511FS-E2			
IC151	8-752-404-64	IC CXD2662R			
IC152	8-759-599-51	IC MSM51V17400D-50TS-K			

BD (MD)

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
IC181	8-759-481-17	IC MC74ACT08DTR2		R111	1-216-833-11	METAL CHIP 10K 5%	1/16W
IC190	8-759-677-64	IC L88M35T		R112	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
IC195	8-759-640-41	IC BR24C08F-E2		R113	1-216-833-11	METAL CHIP 10K 5%	1/16W
		< JUMPER RESISTOR >		R114	1-216-827-11	METAL CHIP 3.3K 5%	1/16W
				R115	1-216-833-11	METAL CHIP 10K 5%	1/16W
JW201	1-216-295-11	SHORT 0		R116	1-216-839-11	METAL CHIP 33K 5%	1/16W
JW202	1-216-295-11	SHORT 0		R117	1-216-837-11	METAL CHIP 22K 5%	1/16W
JW203	1-216-295-11	SHORT 0		R118	1-218-855-11	METAL CHIP 2.2K 0.5%	1/16W
JW903	1-216-295-11	SHORT 0		R119	1-218-863-11	METAL CHIP 4.7K 0.5%	1/16W
JW904	1-216-295-11	SHORT 0		R120	1-218-889-11	METAL CHIP 56K 0.5%	1/16W
		< COIL >		R121	1-218-863-11	METAL CHIP 4.7K 0.5%	1/16W
L101	1-500-245-11	INDUCTOR 0uH		R122	1-218-855-11	METAL CHIP 2.2K 0.5%	1/16W
L102	1-500-245-11	INDUCTOR 0uH		R123	1-216-819-11	METAL CHIP 680 5%	1/16W
L103	1-500-245-11	INDUCTOR 0uH		R124	1-216-809-11	METAL CHIP 100 5%	1/16W
L105	1-414-235-22	INDUCTOR 0uH		R125	1-216-815-11	METAL CHIP 330 5%	1/16W
L106	1-500-245-11	INDUCTOR 0uH		R126	1-216-819-11	METAL CHIP 680 5%	1/16W
L121	1-500-245-11	INDUCTOR 0uH		R127	1-216-845-11	METAL CHIP 100K 5%	1/16W
L122	1-500-245-11	INDUCTOR 0uH		R128	1-219-724-11	METAL CHIP 1 1%	1/4W
L131	1-500-245-11	INDUCTOR 0uH		R129	1-216-298-00	METAL CHIP 2.2 5%	1/10W
L141	1-412-029-11	INDUCTOR CHIP 10uH		R130	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
L142	1-412-032-11	INDUCTOR CHIP 100uH		R131	1-216-833-11	METAL CHIP 10K 5%	1/16W
L143	1-412-029-11	INDUCTOR CHIP 10uH		R132	1-216-839-11	METAL CHIP 33K 5%	1/16W
L144	1-412-032-11	INDUCTOR CHIP 100uH		R133	1-216-821-11	METAL CHIP 1K 5%	1/16W
L145	1-412-032-11	INDUCTOR CHIP 100uH		R134	1-216-821-11	METAL CHIP 1K 5%	1/16W
L146	1-469-855-21	FERRITE 0uH		R135	1-216-821-11	METAL CHIP 1K 5%	1/16W
L147	1-469-855-21	FERRITE 0uH		R136	1-216-302-00	METAL CHIP 2.7 5%	1/10W
L161	1-500-245-11	INDUCTOR 0uH		R138	1-216-833-11	METAL CHIP 10K 5%	1/16W
L171	1-500-245-11	INDUCTOR 0uH		R150	1-216-833-11	METAL CHIP 10K 5%	1/16W
L180	1-469-855-21	FERRITE 0uH		R151	1-216-833-11	METAL CHIP 10K 5%	1/16W
L181	1-469-855-21	FERRITE 0uH		R153	1-216-833-11	METAL CHIP 10K 5%	1/16W
L182	1-500-245-11	INDUCTOR 0uH		R155	1-216-864-11	METAL CHIP 0 5%	1/16W
L183	1-216-296-91	SHORT 0		R156	1-216-864-11	METAL CHIP 0 5%	1/16W
L184	1-216-296-91	SHORT 0		R158	1-216-809-11	METAL CHIP 100 5%	1/16W
		< TRANSISTOR >		R162	1-216-833-11	METAL CHIP 10K 5%	1/16W
Q101	8-729-403-35	TRANSISTOR UN5113-TX		R167	1-216-833-11	METAL CHIP 10K 5%	1/16W
Q121	8-729-403-35	TRANSISTOR UN5113-TX		R168	1-216-845-11	METAL CHIP 100K 5%	1/16W
Q122	8-729-101-07	TRANSISTOR 2SB798-T1DK		R169	1-216-855-11	METAL CHIP 680K 5%	1/16W
Q131	8-729-026-53	TRANSISTOR 2SA1576A-T106-QR		R170	1-216-827-11	METAL CHIP 3.3K 5%	1/16W
Q132	8-729-903-10	TRANSISTOR FMW1-T-148		R171	1-216-821-11	METAL CHIP 1K 5%	1/16W
Q133	8-729-402-93	TRANSISTOR UN5214-TX		R173	1-216-821-11	METAL CHIP 1K 5%	1/16W
Q134	8-729-402-93	TRANSISTOR UN5214-TX		R174	1-216-811-11	METAL CHIP 150 5%	1/16W
Q181	8-729-018-75	TRANSISTOR 2SJ278MYTR		R177	1-216-805-11	METAL CHIP 47 5%	1/16W
Q182	8-729-017-65	TRANSISTOR 2SK1764KYTR		R179	1-216-295-11	SHORT 0	
		< RESISTOR >		R181	1-216-841-11	METAL CHIP 47K 5%	1/16W
R101	1-216-829-11	METAL CHIP 4.7K 5%	1/16W	R182	1-216-841-11	METAL CHIP 47K 5%	1/16W
R102	1-216-853-11	METAL CHIP 470K 5%	1/16W	R183	1-216-841-11	METAL CHIP 47K 5%	1/16W
R103	1-216-863-11	RES-CHIP 3.3M 5%	1/16W	R184	1-220-942-11	METAL CHIP 3.3 1%	1/4W
R104	1-216-853-11	METAL CHIP 470K 5%	1/16W	R185	1-220-942-11	METAL CHIP 3.3 1%	1/4W
R105	1-216-825-11	METAL CHIP 2.2K 5%	1/16W	R195	1-216-833-11	METAL CHIP 10K 5%	1/16W
R106	1-216-825-11	METAL CHIP 2.2K 5%	1/16W	R196	1-216-833-11	METAL CHIP 10K 5%	1/16W
R107	1-216-825-11	METAL CHIP 2.2K 5%	1/16W	R197	1-216-833-11	METAL CHIP 10K 5%	1/16W
R108	1-216-833-11	METAL CHIP 10K 5%	1/16W	R218	1-216-864-11	METAL CHIP 0 5%	1/16W
R109	1-216-845-11	METAL CHIP 100K 5%	1/16W			< SWITCH >	
R110	1-216-845-11	METAL CHIP 100K 5%	1/16W	S101	1-762-596-21	SWITCH, PUSH (1 KEY)(LIMIT IN)	
				S103	1-771-956-21	SWITCH, PUSH (1 KEY)(OUT)	
				S104	1-771-955-21	SWITCH, PUSH (1 KEY)(PLAY)	
				S105	1-771-955-21	SWITCH, PUSH (1 KEY)(REC)	

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
		< VIBRATOR >				< RESISTOR >	
X171	1-781-569-21	OSCILLATOR, CRYSTAL(90MHz)		R701	1-249-411-11	CARBON 330 5%	1/4W
*****				R702	1-249-401-11	CARBON 47 5%	1/4W F
*****				*****			
A-4428-661-A		CD SW BOARD, COMPLETE		1-671-506-11		CONNECTOR BOARD	
*****				*****			
		< DIODE >				< CONNECTOR >	
D661	8-719-058-64	DIODE SEL5823A-TP15 (DISC 1)		CN701	1-568-860-11	SOCKET, CONNECTOR 17P	
D662	8-719-058-64	DIODE SEL5823A-TP15 (DISC 2)				< TRANSISTOR >	
D663	8-719-058-64	DIODE SEL5823A-TP15 (DISC 3)		Q701	8-729-029-66	TRANSISTOR RT1N141S-TP	
D664	8-719-058-64	DIODE SEL5823A-TP15 (DISC 4)				< RESISTOR >	
D665	8-719-058-64	DIODE SEL5823A-TP15 (DISC 5)		R707	1-249-424-11	CARBON 3.9K 5%	1/4W F
		< RESISTOR >		R708	1-249-417-11	CARBON 1K 5%	1/4W F
R628	1-249-420-11	CARBON 1.8K 5%	1/4W F	R709	1-249-429-11	CARBON 10K 5%	1/4W
R629	1-249-422-11	CARBON 2.7K 5%	1/4W F	*****			
R630	1-247-843-11	CARBON 3.3K 5%	1/4W	A-4473-391-A		DIGITAL BOARD, COMPLETE	
R631	1-249-425-11	CARBON 4.7K 5%	1/4W F	*****			
R632	1-249-427-11	CARBON 6.8K 5%	1/4W F			< CAPACITOR >	
R633	1-249-429-11	CARBON 10K 5%	1/4W	C1001	1-126-934-11	ELECT 220uF 20.00%	10V
R634	1-249-431-11	CARBON 15K 5%	1/4W	C1002	1-163-038-11	CERAMIC CHIP 0.1uF	25V
R635	1-249-434-11	CARBON 27K 5%	1/4W	C1003	1-126-933-11	ELECT 100uF 20.00%	16V
R636	1-249-438-11	CARBON 56K 5%	1/4W	C1004	1-163-038-11	CERAMIC CHIP 0.1uF	25V
R661	1-249-409-11	CARBON 220 5%	1/4W F	C1005	1-126-933-11	ELECT 100uF 20.00%	16V
R662	1-249-409-11	CARBON 220 5%	1/4W F	C1006	1-163-038-11	CERAMIC CHIP 0.1uF	25V
R663	1-249-409-11	CARBON 220 5%	1/4W F	C1007	1-126-933-11	ELECT 100uF 20.00%	16V
R664	1-249-409-11	CARBON 220 5%	1/4W F	C1008	1-163-038-11	CERAMIC CHIP 0.1uF	25V
R665	1-249-409-11	CARBON 220 5%	1/4W F	C1009	1-163-038-11	CERAMIC CHIP 0.1uF	25V
		< SWITCH >		C1010	1-126-933-11	ELECT 100uF 20.00%	16V
S627	1-762-875-21	SWITCH, KEYBOARD (▲ 5)		C1011	1-163-038-11	CERAMIC CHIP 0.1uF	25V
S628	1-762-875-21	SWITCH, KEYBOARD (▲ 4)		C1012	1-126-933-11	ELECT 100uF 20.00%	16V
S629	1-762-875-21	SWITCH, KEYBOARD (▲ 3)		C1013	1-126-933-11	ELECT 100uF 20.00%	16V
S630	1-762-875-21	SWITCH, KEYBOARD (▲ 2)		C1014	1-163-038-11	CERAMIC CHIP 0.1uF	25V
S631	1-762-875-21	SWITCH, KEYBOARD (▲ 1)		C1015	1-126-933-11	ELECT 100uF 20.00%	16V
S632	1-762-875-21	SWITCH, KEYBOARD (DISC 5)		C1016	1-163-038-11	CERAMIC CHIP 0.1uF	25V
S633	1-762-875-21	SWITCH, KEYBOARD (DISC 4)		C1017	1-163-038-11	CERAMIC CHIP 0.1uF	25V
S634	1-762-875-21	SWITCH, KEYBOARD (DISC 3)		C1018	1-163-038-11	CERAMIC CHIP 0.1uF	25V
S635	1-762-875-21	SWITCH, KEYBOARD (DISC 2)		C1019	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V
S636	1-762-875-21	SWITCH, KEYBOARD (DISC 1)		C1020	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V
*****				C1021	1-163-038-11	CERAMIC CHIP 0.1uF	25V
1-671-507-11		CLAMP MOTOR BOARD		C1022	1-126-933-11	ELECT 100uF 20.00%	16V
*****				C1023	1-163-038-11	CERAMIC CHIP 0.1uF	25V
		< CAPACITOR >		C1024	1-163-038-11	CERAMIC CHIP 0.1uF	25V
C701	1-162-306-11	CERAMIC 0.01uF 30.00%	16V	C1025	1-163-038-11	CERAMIC CHIP 0.1uF	25V
C702	1-126-964-11	ELECT 10uF 20.00%	50V	C1026	1-126-933-11	ELECT 100uF 20.00%	16V
C711	1-162-306-11	CERAMIC 0.01uF 30.00%	16V	C1027	1-163-031-11	CERAMIC CHIP 0.01uF	50V
		< CONNECTOR >		C1031	1-163-038-11	CERAMIC CHIP 0.1uF	25V
CN712	1-506-469-11	PIN, CONNECTOR 4P		C1034	1-163-031-11	CERAMIC CHIP 0.01uF	50V
		< DIODE >		C1035	1-163-038-11	CERAMIC CHIP 0.1uF	25V
D701	8-719-983-66	DIODE MTZJ-T-72-3.6B		C1037	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
		< IC >		C1038	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
IC701	8-759-633-65	IC M54641L		C1039	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
				C1040	1-163-117-00	CERAMIC CHIP 100PF 5%	50V

DIGITAL

FRONT AMP

Ref. No.	Part No.	Description	Remarks		
C1044	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C1045	1-126-933-11	ELECT	100uF	20.00%	16V
C1046	1-136-153-00	FILM	0.01uF	5%	50V
C1047	1-136-153-00	FILM	0.01uF	5%	50V
C1048	1-126-933-11	ELECT	100uF	20.00%	16V
C1049	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C1050	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C1051	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C1052	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
< CONNECTOR >					
CN1001	1-784-747-11	CONNECTOR, FFC 25P			
CN1003	1-779-295-11	CONNECTOR,FFC (LIF(NON-ZIF))27P			
CN1004	1-779-285-11	CONNECTOR,FFC (LIF(NON-ZIF))17P			
< IC >					
IC1001	8-759-698-95	IC M30805SGP			
IC1002	8-759-714-81	IC MT28F800B3WG-10T-SYS70-90			
IC1004	8-759-822-09	IC LB1641			
IC1005	8-759-675-78	IC UDA1360TS			
IC1006	8-759-675-77	IC UDA1350AH			
< COIL >					
L1001	1-412-533-21	INDUCTOR	47uH		
< TRANSISTOR >					
Q1001	8-729-402-42	TRANSISTOR	UN5213-TX		
Q1002	8-729-602-36	TRANSISTOR	2SA1602TP-1EF		
Q1004	8-729-403-35	TRANSISTOR	UN5113-TX		
< RESISTOR >					
R1001	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R1002	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R1005	1-216-025-11	RES-CHIP	100	5%	1/10W
R1006	1-216-025-11	RES-CHIP	100	5%	1/10W
R1007	1-216-025-11	RES-CHIP	100	5%	1/10W
R1010	1-216-025-11	RES-CHIP	100	5%	1/10W
R1011	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1012	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1013	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1014	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1015	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1016	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1017	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1018	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1024	1-216-041-00	METAL CHIP	470	5%	1/10W
R1033	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R1034	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R1035	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1036	1-216-295-11	SHORT	0		
R1039	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1040	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1041	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1042	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1043	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1044	1-216-073-00	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description	Remarks		
R1045	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1046	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1047	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1048	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1049	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1050	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1051	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1052	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1053	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1054	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1055	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1056	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1057	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1058	1-216-025-11	RES-CHIP	100	5%	1/10W
R1059	1-216-025-11	RES-CHIP	100	5%	1/10W
R1060	1-216-025-11	RES-CHIP	100	5%	1/10W
R1071	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1072	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1073	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1076	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1077	1-216-295-11	SHORT	0		
R1078	1-216-295-11	SHORT	0		
R1080	1-216-295-11	SHORT	0		
R1081	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1082	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1083	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1084	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1087	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R1088	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R1090	1-216-041-00	METAL CHIP	470	5%	1/10W
R1091	1-216-033-00	METAL CHIP	220	5%	1/10W
R1092	1-216-033-00	METAL CHIP	220	5%	1/10W
R1093	1-216-033-00	METAL CHIP	220	5%	1/10W
R1094	1-216-033-00	METAL CHIP	220	5%	1/10W
R1095	1-216-039-00	METAL CHIP	390	5%	1/10W
R2002	1-216-296-91	SHORT	0		
R2005	1-216-295-11	SHORT	0		
< VIBRATOR >					
X1001	1-579-175-11	VIBRATOR, CERAMIC (10MHz)			

	A-4475-598-A	FRONT AMP BOARD, COMPLETE			

< CAPACITOR >					
C801	1-126-963-11	ELECT	4.7uF	20.00%	50V
C802	1-162-286-31	CERAMIC	220PF	10%	50V
C803	1-162-282-31	CERAMIC	100PF	10%	50V
C804	1-104-664-11	ELECT	47uF	20.00%	10V
C806	1-136-495-11	FILM	0.068uF	5.00%	50V
C807	1-136-495-11	FILM	0.068uF	5.00%	50V
C811	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C812	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C821	1-107-721-11	ELECT	4.7uF	20.00%	100V
C822	1-107-717-11	ELECT	47uF	20.00%	50V

FRONT AMP

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C837	1-126-963-11	ELECT	4.7uF 20.00% 50V	D984	8-719-160-59	DIODE RD13F-T7B3	
C851	1-126-963-11	ELECT	4.7uF 20.00% 50V	D985	8-719-911-19	DIODE 1SS133T-72	
C852	1-162-286-31	CERAMIC	220PF 10% 50V	D986	8-719-911-19	DIODE 1SS133T-72	
C853	1-162-282-31	CERAMIC	100PF 10% 50V	D991	8-719-024-99	DIODE 11ES2-NTA2B	
C854	1-104-664-11	ELECT	47uF 20.00% 10V	D992	8-719-024-99	DIODE 11ES2-NTA2B	
C856	1-136-495-11	FILM	0.068uF 5.00% 50V	D993	8-719-024-99	DIODE 11ES2-NTA2B	
C857	1-136-495-11	FILM	0.068uF 5.00% 50V	D994	8-719-024-99	DIODE 11ES2-NTA2B	
C861	1-162-306-11	CERAMIC	0.01uF 30.00% 16V	D995	8-719-975-85	DIODE 21DQ04N-TA2	
C862	1-162-306-11	CERAMIC	0.01uF 30.00% 16V	D996	8-719-975-85	DIODE 21DQ04N-TA2	
C871	1-107-721-11	ELECT	4.7uF 20.00% 100V	D997	8-719-975-85	DIODE 21DQ04N-TA2	
C872	1-126-959-11	ELECT	0.47uF 20.00% 50V	D998	8-719-975-85	DIODE 21DQ04N-TA2	
C891	1-104-665-11	ELECT	100uF 20.00% 10V			< EARTH >	
C892	1-126-961-11	ELECT	2.2uF 20.00% 50V				
C893	1-104-665-11	ELECT	100uF 20.00% 10V	* EPT951	1-537-738-21	TERMINAL, EARTH	
C911	1-130-777-00	MYLAR	0.1uF 5.00% 100V			< IC >	
C912	1-130-777-00	MYLAR	0.1uF 5.00% 100V				
C951	1-127-754-11	ELECT	3300uF 20% 80V	IC801	8-749-017-04	IC STK412-030	
C952	1-127-754-11	ELECT	3300uF 20% 80V			< TRANSISTOR >	
C953	1-135-515-11	ELECT	3300uF 20% 50V				
C954	1-127-751-11	ELECT	3300uF 20% 50V	Q801	8-729-140-84	TRANSISTOR 2SC1841TP-PAFAEA	
C955	1-136-165-00	FILM	0.1uF 5.00% 50V	Q821	8-729-231-55	TRANSISTOR 2SC2878AB-TPE2	
C956	1-136-165-00	FILM	0.1uF 5.00% 50V	Q822	8-729-900-63	TRANSISTOR BN1F4M-TP	
C961	1-128-560-11	ELECT	22uF 20.00% 100V	Q841	8-729-140-84	TRANSISTOR 2SC1841TP-PAFAEA	
C962	1-128-560-11	ELECT	22uF 20.00% 100V	Q842	8-729-119-78	TRANSISTOR 2SC2785TP-HFE	
C963	1-126-968-11	ELECT	100uF 20.00% 50V				
C964	1-126-967-11	ELECT	47uF 20.00% 50V	Q851	8-729-140-84	TRANSISTOR 2SC1841TP-PAFAEA	
C981	1-128-564-11	ELECT	220uF 20.00% 100V	Q871	8-729-231-55	TRANSISTOR 2SC2878AB-TPE2	
C982	1-126-964-11	ELECT	10uF 20.00% 50V	Q881	8-729-119-76	TRANSISTOR 2SA1175TP-HFE	
C983	1-126-967-11	ELECT	47uF 20.00% 50V	Q883	8-729-119-78	TRANSISTOR 2SC2785TP-HFE	
C984	1-164-159-11	CERAMIC	0.1uF 50V	Q891	8-729-140-84	TRANSISTOR 2SC1841TP-PAFAEA	
C985	1-104-664-11	ELECT	47uF 20.00% 16V	Q892	8-729-140-84	TRANSISTOR 2SC1841TP-PAFAEA	
C991	1-136-165-00	FILM	0.1uF 5.00% 50V	Q893	8-729-140-82	TRANSISTOR 2SA988TP-PAFAEA	
C992	1-136-165-00	FILM	0.1uF 5.00% 50V	Q894	8-729-119-78	TRANSISTOR 2SC2785TP-HFE	
C993	1-136-165-00	FILM	0.1uF 5.00% 50V	Q895	8-729-119-78	TRANSISTOR 2SC2785TP-HFE	
C994	1-136-165-00	FILM	0.1uF 5.00% 50V	Q896	8-729-119-78	TRANSISTOR 2SC2785TP-HFE	
		< CONNECTOR >		Q897	8-729-119-78	TRANSISTOR 2SC2785TP-HFE	
CN801	1-691-768-11	PLUG (MICRO CONNECTOR) 6P		Q961	8-729-140-84	TRANSISTOR 2SC1841TP-PAFAEA	
CN803	1-778-982-21	CONNECTOR, BOARD TO BOARD 13P		Q962	8-729-140-82	TRANSISTOR 2SA1376-T-L	
CN804	1-778-982-21	CONNECTOR, BOARD TO BOARD 13P		Q963	8-729-140-84	TRANSISTOR 2SC1841TP-PAFAEA	
		< DIODE >		Q981	8-729-048-52	TRANSISTOR 2SA1932(TP)	
D801	8-719-911-19	DIODE 1SS133T-72				< RESISTOR >	
D802	8-719-911-19	DIODE 1SS133T-72		R801	1-249-417-11	CARBON 1K 5% 1/4W F	
D821	8-719-911-19	DIODE 1SS133T-72		R802	1-249-438-11	CARBON 56K 5% 1/4W	
D831	8-719-911-19	DIODE 1SS133T-72		R803	1-249-414-11	CARBON 560 5% 1/4W F	
D851	8-719-911-19	DIODE 1SS133T-72		R804	1-249-438-11	CARBON 56K 5% 1/4W	
				△ R805	1-234-499-21	ENCAPSULATED COMPONENT	
D871	8-719-911-19	DIODE 1SS133T-72		R806	1-249-417-11	CARBON 1K 5% 1/4W F	
D881	8-719-911-19	DIODE 1SS133T-72		R807	1-249-431-11	CARBON 15K 5% 1/4W	
D911	8-719-510-68	DIODE D5SBA204101		R808	1-249-441-11	CARBON 100K 5% 1/4W	
D951	8-719-510-68	DIODE D5SBA204101		R809	1-260-076-11	CARBON 10 5% 1/2W	
D961	8-719-110-36	DIODE MTZJ-T-72-13C		R814	1-249-437-11	CARBON 47K 5% 1/4W	
D962	8-719-110-36	DIODE MTZJ-T-72-13C		R815	1-249-437-11	CARBON 47K 5% 1/4W	
D963	8-719-911-19	DIODE 1SS133T-72		R821	1-260-089-11	CARBON 150 5% 1/2W	
D981	8-719-024-99	DIODE 11ES2-NTA2B		R822	1-260-089-11	CARBON 150 5% 1/2W	
D982	8-719-079-21	DIODE MTZJ-T-72-20D		R823	1-260-089-11	CARBON 150 5% 1/2W	
D983	8-719-079-21	DIODE MTZJ-T-72-20D		R824	1-260-089-11	CARBON 150 5% 1/2W	

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

FRONT AMP	HP	IN SW	INT/COUNT SW
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Ref. No.	Part No.	Description	Remarks
R825	1-249-402-11	CARBON	56 5% 1/4W F
R826	1-249-417-11	CARBON	1K 5% 1/4W F
R827	1-249-433-11	CARBON	22K 5% 1/4W
R828	1-249-417-11	CARBON	1K 5% 1/4W F
R829	1-249-437-11	CARBON	47K 5% 1/4W
R830	1-249-417-11	CARBON	1K 5% 1/4W F
R841	1-249-441-11	CARBON	100K 5% 1/4W
R842	1-249-441-11	CARBON	100K 5% 1/4W
R843	1-249-439-11	CARBON	68K 5% 1/4W
R851	1-249-417-11	CARBON	1K 5% 1/4W F
R852	1-249-438-11	CARBON	56K 5% 1/4W
R853	1-249-414-11	CARBON	560 5% 1/4W F
R854	1-249-438-11	CARBON	56K 5% 1/4W
△ R855	1-234-499-21	ENCAPSULATED COMPONENT	
R856	1-249-417-11	CARBON	1K 5% 1/4W F
R857	1-249-431-11	CARBON	15K 5% 1/4W
R858	1-249-441-11	CARBON	100K 5% 1/4W
R859	1-260-076-11	CARBON	10 5% 1/2W
R871	1-260-089-11	CARBON	150 5% 1/2W
R872	1-260-089-11	CARBON	150 5% 1/2W
R873	1-260-089-11	CARBON	150 5% 1/2W
R874	1-260-089-11	CARBON	150 5% 1/2W
R875	1-249-402-11	CARBON	56 5% 1/4W F
R876	1-249-417-11	CARBON	1K 5% 1/4W F
R877	1-249-433-11	CARBON	22K 5% 1/4W
R878	1-249-417-11	CARBON	1K 5% 1/4W F
R879	1-249-441-11	CARBON	100K 5% 1/4W
R880	1-247-903-00	CARBON	1M 5% 1/4W
△ R881	1-216-454-11	METAL OXIDE	390 5% 2W
R883	1-249-437-11	CARBON	47K 5% 1/4W
R885	1-249-429-11	CARBON	10K 5% 1/4W
R887	1-249-441-11	CARBON	100K 5% 1/4W
R889	1-249-429-11	CARBON	10K 5% 1/4W
R891	1-249-438-11	CARBON	56K 5% 1/4W
R892	1-249-439-11	CARBON	68K 5% 1/4W
R894	1-249-429-11	CARBON	10K 5% 1/4W
R895	1-249-429-11	CARBON	10K 5% 1/4W
R896	1-249-435-11	CARBON	33K 5% 1/4W
R897	1-249-433-11	CARBON	22K 5% 1/4W
R898	1-249-425-11	CARBON	4.7K 5% 1/4W F
R900	1-249-425-11	CARBON	4.7K 5% 1/4W F
R961	1-215-870-11	METAL OXIDE	1.5K 5% 1W
R962	1-215-870-11	METAL OXIDE	1.5K 5% 1W
△ R963	1-212-881-11	FUSIBLE	100 5% 1/4W
△ R964	1-212-881-11	FUSIBLE	100 5% 1/4W
R965	1-249-431-11	CARBON	15K 5% 1/4W
R966	1-249-435-11	CARBON	33K 5% 1/4W
R967	1-249-435-11	CARBON	33K 5% 1/4W
△ R968	1-202-972-61	FUSIBLE	1 5% 1/4W
R969	1-249-439-11	CARBON	68K 5% 1/4W
R970	1-249-433-11	CARBON	22K 5% 1/4W
R971	1-249-421-11	CARBON	2.2K 5% 1/4W F
R972	1-249-433-11	CARBON	22K 5% 1/4W
R973	1-249-421-11	CARBON	2.2K 5% 1/4W F
R974	1-249-429-11	CARBON	10K 5% 1/4W
R982	1-249-427-11	CARBON	6.8K 5% 1/4W F
R983	1-249-421-11	CARBON	2.2K 5% 1/4W F
R984	1-249-429-11	CARBON	10K 5% 1/4W
R985	1-249-416-11	CARBON	820 5% 1/4W F
R986	1-249-416-11	CARBON	820 5% 1/4W F

Ref. No.	Part No.	Description	Remarks
R987	1-249-419-11	CARBON	1.5K 5% 1/4W F
		< RELAY >	
RY881	1-755-141-11	RELAY	
		< THERMISTOR(POSITIVE) >	
THP841	1-807-796-11	THERMISTOR	
		< TERMINAL >	
TM801	1-694-677-11	TERMINAL BOARD (4P)(FRONT SPEAKER)	

	1-676-971-11	HP BOARD	

		< CAPACITOR >	
C1691	1-162-294-31	CERAMIC	0.001uF 10% 50V
C1692	1-162-294-31	CERAMIC	0.001uF 10% 50V
C1693	1-164-159-11	CERAMIC	0.1uF 50V
		< CONNECTOR >	
CN1691	1-785-316-51	PIN, CONNECTOR (STRAIGHT) 4P	
		< EARTH >	
* EPT1691	1-537-738-21	TERMINAL, EARTH	
		< FERRITE BEAD >	
FB1691	1-412-473-21	INDUCTOR	0UH
FB1692	1-412-473-21	INDUCTOR	0UH
FB1693	1-412-473-21	INDUCTOR	0UH
		< JACK >	
J1691	1-793-829-11	JACK, HEADPHONE (PHONES)	

	1-671-505-11	IN SW BOARD	

		< CONNECTOR >	
* CN710	1-568-941-11	PIN, CONNECTOR 3P	
		< SWITCH >	
S703	1-771-218-11	SWITCH, MICRO (MID IN)	
S704	1-771-218-11	SWITCH, MICRO (IN)	

	1-671-502-11	INT/COUNT SW BOARD	

		< SWITCH >	
S705	1-771-264-11	SWITCH, PUSH (DETECTION)(1 KEY)(INIT)	
S706	1-771-264-11	SWITCH, PUSH (DETECTION)(1 KEY)(COUNT)	

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

LEAF SW

LOAD MOTOR

MAIN

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
	A-2007-838-A	LEAF SW BOARD, COMPLETE *****				< DIODE >	
		< CAPACITOR >		D702	8-719-109-85	DIODE MTZJ-T-72-5.1B	
C1001	1-107-716-11	ELECT 33uF 20.00% 10V				< IC >	
		< CONNECTOR >		IC702	8-759-633-65	IC M54641L	
CN1001	1-568-860-21	SOCKET, CONNECTOR 17P				< RESISTOR >	
		< DIODE >		R703	1-249-411-11	CARBON 330 5% 1/4W	
D1001	8-719-911-19	DIODE 1SS133T-72		R704	1-249-401-11	CARBON 47 5% 1/4W F	
D1002	8-719-911-19	DIODE 1SS133T-72		*****			
		< IC >		A-4475-164-A	MAIN BOARD, COMPLETE (HK,SP,MY) *****		
IC1001	8-749-016-76	IC RPI-321		A-4475-214-A	MAIN BOARD, COMPLETE (JE) *****		
IC1002	8-749-016-76	IC RPI-321		4-875-327-31	HEATSINK		
		< TRANSISTOR >		7-685-646-79	SCREW+BVTP 3X8 TYPE2 N-S		
Q1001	8-729-029-56	TRANSISTOR DTA144ESA-TP				< BATTERY >	
		< RESISTOR >		BT900	1-125-623-11	DOUBLE LAYER 0.22F	5.5V
R907	1-247-879-11	CARBON 100K 5% 1/4W				< CAPACITOR >	
R1001	1-249-409-11	CARBON 220 5% 1/4W F		C101	1-126-960-11	ELECT 1uF 20.00% 50V	
R1002	1-249-409-11	CARBON 220 5% 1/4W F		C103	1-126-960-11	ELECT 1uF 20.00% 50V	
R1003	1-249-414-11	CARBON 560 5% 1/4W F		C105	1-126-964-11	ELECT 10uF 20.00% 50V	
R1004	1-247-834-11	CARBON 1.3K 5% 1/4W		C107	1-136-157-00	FILM 0.022uF 5.00% 50V	
R1005	1-247-818-11	CARBON 300 5% 1/4W		C108	1-136-157-00	FILM 0.022uF 5.00% 50V	
R1006	1-247-864-11	CARBON 24K 5% 1/4W		C109	1-163-019-00	CERAMIC CHIP 0.0068uF 10% 50V	
R1007	1-247-780-00	CARBON 7.5 5% 1/4W		C110	1-163-019-00	CERAMIC CHIP 0.0068uF 10% 50V	
R1008	1-249-417-11	CARBON 1K 5% 1/4W F		C111	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V	
		< VARIABLE RESISTOR >		C112	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V	
RV1001	1-241-785-11	RES, ADJ, CARBON 10K		C113	1-126-964-11	ELECT 10uF 20.00% 50V	
RV1002	1-241-785-11	RES, ADJ, CARBON 10K		C114	1-136-495-11	FILM 0.068uF 5.00% 50V	
		< SWITCH >		C115	1-130-481-00	MYLAR 0.0068uF 5% 50V	
S1001	1-570-953-11	SWITCH, PUSH (1 KEY)(DECK A PLAY)		C116	1-130-481-00	MYLAR 0.0068uF 5% 50V	
S1002	1-570-953-11	SWITCH, PUSH (1 KEY)(DECK B PLAY)		C117	1-163-017-00	CERAMIC CHIP 0.0047uF 5% 50V	
S1003	1-771-333-11	SWITCH, LEAF (DECK A HALF)		C118	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V	
S1004	1-771-205-11	SWITCH, LEAF (DECK A 70/120)		C119	1-136-159-00	FILM 0.033uF 5.00% 50V	
S1005	1-771-205-11	SWITCH, LEAF (DECK A REC)		C120	1-126-964-11	ELECT 10uF 20.00% 50V	
S1006	1-771-333-11	SWITCH, LEAF (DECK B HALF)		C121	1-126-964-11	ELECT 10uF 20.00% 50V	
S1008	1-771-205-11	SWITCH, LEAF (DECK B 70/120)		C122	1-136-165-00	FILM 0.1uF 5.00% 50V	
S1009	1-771-205-11	SWITCH, LEAF (DECK B REC)		C123	1-136-165-00	FILM 0.1uF 5.00% 50V	

	1-671-508-11	LOAD MOTOR BOARD *****		C124	1-126-960-11	ELECT 1uF 20.00% 50V	
		< CAPACITOR >		C126	1-136-165-00	FILM 0.1uF 5.00% 50V	
C703	1-162-306-11	CERAMIC 0.01uF 30.00% 16V		C127	1-163-038-11	CERAMIC CHIP 0.1uF 25V	
C704	1-126-964-11	ELECT 10uF 20.00% 50V		C128	1-104-664-11	ELECT 47uF 20.00% 16V	
C712	1-162-306-11	CERAMIC 0.01uF 30.00% 16V		C129	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
		< CONNECTOR >		C132	1-163-038-11	CERAMIC CHIP 0.1uF 25V	
CN713	1-506-469-11	PIN, CONNECTOR 4P		C134	1-126-964-11	ELECT 10uF 20.00% 50V	
		< DIODE >		C135	1-126-960-11	ELECT 1uF 20.00% 50V	
		< IC >		C136	1-126-964-11	ELECT 10uF 20.00% 50V	
		< RESISTOR >		C137	1-163-038-11	CERAMIC CHIP 0.1uF 25V	
		< TRANSISTOR >		C139	1-104-664-11	ELECT 47uF 20.00% 16V	
		< BATTERY >		C140	1-163-038-11	CERAMIC CHIP 0.1uF 25V	
		< CAPACITOR >		C141	1-126-960-11	ELECT 1uF 20.00% 50V	
		< CONNECTOR >		C143	1-104-665-11	ELECT 100uF 20.00% 10V	
		< DIODE >		C144	1-104-665-11	ELECT 100uF 20.00% 10V	

MAIN

Ref. No.	Part No.	Description	Remarks			Ref. No.	Part No.	Description	Remarks		
C151	1-126-960-11	ELECT	1uF	20.00%	50V	C356	1-126-960-11	ELECT	1uF	20.00%	50V
C153	1-126-960-11	ELECT	1uF	20.00%	50V	C357	1-126-959-11	ELECT	0.47uF	20.00%	50V
C155	1-126-964-11	ELECT	10uF	20.00%	50V	C358	1-126-964-11	ELECT	10uF	20.00%	50V
C157	1-136-157-00	FILM	0.022uF	5.00%	50V	C359	1-137-194-81	FILM	0.47uF	5.00%	50V
C158	1-136-157-00	FILM	0.022uF	5.00%	50V	C360	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C159	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V	C362	1-117-721-11	CERAMIC CHIP	4700PF	5.00%	25V
C160	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V	C363	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C161	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V	C368	1-126-959-11	ELECT	0.47uF	20.00%	50V
C162	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V	C369	1-126-959-11	ELECT	0.47uF	20.00%	50V
C163	1-126-964-11	ELECT	10uF	20.00%	50V	C410	1-163-231-11	CERAMIC CHIP	15PF	5.00%	50V
C164	1-136-495-11	FILM	0.068uF	5.00%	50V	C411	1-163-235-11	CERAMIC CHIP	22PF	5.00%	50V
C165	1-130-481-00	MYLAR	0.0068uF	5%	50V	C412	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C166	1-130-481-00	MYLAR	0.0068uF	5%	50V	C414	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C167	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V	C416	1-126-916-11	ELECT	1000uF	20.00%	6.3V
C168	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V	C462	1-104-665-11	ELECT	100uF	20.00%	10V
C169	1-136-159-00	FILM	0.033uF	5.00%	50V	C464	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C170	1-126-964-11	ELECT	10uF	20.00%	50V	C497	1-126-964-11	ELECT	10uF	20.00%	50V
C171	1-126-964-11	ELECT	10uF	20.00%	50V	C498	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C172	1-136-165-00	FILM	0.1uF	5.00%	50V	C499	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C173	1-136-165-00	FILM	0.1uF	5.00%	50V	C501	1-136-165-00	FILM	0.1uF	5.00%	50V
C174	1-126-960-11	ELECT	1uF	20.00%	50V	C502	1-136-165-00	FILM	0.1uF	5.00%	50V
C181	1-126-961-11	ELECT	2.2uF	20.00%	50V	C503	1-126-964-11	ELECT	10uF	20.00%	50V
C191	1-126-960-11	ELECT	1uF	20.00%	50V	C506	1-136-165-00	FILM	0.1uF	5.00%	50V
C198	1-163-038-11	CERAMIC CHIP	0.1uF		25V	C507	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C288	1-163-038-11	CERAMIC CHIP	0.1uF		25V	C508	1-126-964-11	ELECT	10uF	20.00%	50V
C291	1-126-960-11	ELECT	1uF	20.00%	50V	C509	1-104-665-11	ELECT	100uF	20.00%	10V
C292	1-126-960-11	ELECT	1uF	20.00%	50V	C511	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C293	1-126-960-11	ELECT	1uF	20.00%	50V	C521	1-104-665-11	ELECT	100uF	20.00%	10V
C294	1-126-960-11	ELECT	1uF	20.00%	50V	C541	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C295	1-104-664-11	ELECT	47uF	20.00%	16V	C542	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C296	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V	C702	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C297	1-126-963-11	ELECT	4.7uF	20.00%	50V	C703	1-126-961-11	ELECT	2.2uF	20.00%	50V
C298	1-163-038-11	CERAMIC CHIP	0.1uF		25V	C704	1-126-961-11	ELECT	2.2uF	20.00%	50V
C299	1-126-963-11	ELECT	4.7uF	20.00%	50V	C705	1-126-961-11	ELECT	2.2uF	20.00%	50V
C301	1-126-960-11	ELECT	1uF	20.00%	50V	C706	1-126-961-11	ELECT	2.2uF	20.00%	50V
C302	1-130-479-00	MYLAR	0.0047uF	5%	50V	C707	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C303	1-136-165-00	FILM	0.1uF	5.00%	50V	C708	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C304	1-136-165-00	FILM	0.1uF	5.00%	50V	C709	1-126-960-11	ELECT	1uF	20.00%	50V
C305	1-126-964-11	ELECT	10uF	20.00%	50V	C710	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C306	1-126-960-11	ELECT	1uF	20.00%	50V	C711	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C307	1-126-959-11	ELECT	0.47uF	20.00%	50V	C714	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C308	1-126-964-11	ELECT	10uF	20.00%	50V	C715	1-126-926-11	ELECT	1000uF	20.00%	10V
C309	1-137-194-81	FILM	0.47uF	5.00%	50V	C716	1-104-665-11	ELECT	100uF	20.00%	10V
C310	1-163-005-11	CERAMIC CHIP	470PF	10%	50V	C717	1-104-665-11	ELECT	100uF	20.00%	10V
C311	1-126-964-11	ELECT	10uF	20.00%	50V	C901	1-115-364-11	ELECT	22000uF	20.00%	16V
C312	1-126-959-11	ELECT	0.47uF	20.00%	50V	C902	1-126-943-11	ELECT	2200uF	20.00%	25V
C313	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	C903	1-126-964-11	ELECT	10uF	20.00%	50V
C314	1-126-964-11	ELECT	10uF	20.00%	50V	C904	1-126-964-11	ELECT	10uF	20.00%	50V
C315	1-126-963-11	ELECT	4.7uF	20.00%	50V	C905	1-126-964-11	ELECT	10uF	20.00%	50V
C316	1-126-933-11	ELECT	100uF	20.00%	16V	C906	1-126-964-11	ELECT	10uF	20.00%	50V
C317	1-104-665-11	ELECT	100uF	20.00%	10V	C907	1-126-924-11	ELECT	330uF	20.00%	6.3V
C318	1-126-959-11	ELECT	0.47uF	20.00%	50V	C908	1-126-924-11	ELECT	330uF	20.00%	6.3V
C319	1-126-959-11	ELECT	0.47uF	20.00%	50V	C909	1-126-964-11	ELECT	10uF	20.00%	50V
C321	1-126-964-11	ELECT	10uF	20.00%	50V	C911	1-126-917-11	ELECT	3300uF	20.00%	6.3V
C322	1-126-964-11	ELECT	10uF	20.00%	50V	C912	1-104-665-11	ELECT	100uF	20.00%	10V
C351	1-126-960-11	ELECT	1uF	20.00%	50V	C913	1-126-964-11	ELECT	10uF	20.00%	50V
C352	1-130-479-00	MYLAR	0.0047uF	5%	50V	C914	1-126-917-11	ELECT	3300uF	20.00%	6.3V
C353	1-136-165-00	FILM	0.1uF	5.00%	50V	C915	1-126-916-11	ELECT	1000uF	20.00%	6.3V
C354	1-136-165-00	FILM	0.1uF	5.00%	50V	C920	1-126-953-11	ELECT	2200uF	20.00%	35V
C355	1-126-964-11	ELECT	10uF	20.00%	50V	C921	1-126-964-11	ELECT	10uF	20.00%	50V

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C922	1-126-933-11	ELECT	100uF 20.00% 16V	FB502	1-414-772-11	FERRITE	OUH
C926	1-126-964-11	ELECT	10uF 20.00% 50V	FB504	1-414-772-11	FERRITE	OUH
C927	1-126-964-11	ELECT	10uF 20.00% 50V	FB505	1-414-772-11	FERRITE	OUH
C928	1-126-964-11	ELECT	10uF 20.00% 50V	FB506	1-414-772-11	FERRITE	OUH
C929	1-126-964-11	ELECT	10uF 20.00% 50V	FB507	1-414-772-11	FERRITE	OUH
C931	1-126-964-11	ELECT	10uF 20.00% 50V	FB508	1-414-772-11	FERRITE	OUH
C932	1-126-935-11	ELECT	470uF 20.00% 16V	FB509	1-414-772-11	FERRITE	OUH
C935	1-126-964-11	ELECT	10uF 20.00% 50V	FB510	1-414-772-11	FERRITE	OUH
C936	1-126-933-11	ELECT	100uF 20.00% 16V	FB511	1-414-772-11	FERRITE	OUH
C941	1-163-038-11	CERAMIC CHIP	0.1uF 25V	FB512	1-414-772-11	FERRITE	OUH
< CONNECTOR >				FB700	1-414-772-11	FERRITE	OUH
CN103	1-785-316-11	PIN, CONNECTOR (STRAIGHT) 4P		< FILTER >			
* CN302	1-568-449-11	HOUSING, CONNECTOR (PC BOARD)3P		FL101	1-233-289-21	FILTER, EMI (SMD)	
CN304	1-784-778-11	CONNECTOR, FFC 17P		FL202	1-233-289-21	FILTER, EMI (SMD)	
CN305	1-784-776-11	CONNECTOR, FFC 15P		< IC >			
CN401	1-785-320-11	PIN, CONNECTOR (STRAIGHT) 8P		IC101	8-759-663-66	IC M61502FP	
CN502	1-784-774-11	CONNECTOR, FFC 13P		IC202	8-759-652-01	IC LA2615	
CN503	1-568-830-11	CONNECTOR, FFC 11P		IC301	8-759-652-02	IC HA12226F	
CN522	1-784-778-11	CONNECTOR, FFC 17P		IC401	8-759-676-73	IC M30620MCA-A55FP	
CN524	1-784-776-11	CONNECTOR, FFC 15P		IC501	8-759-635-63	IC M51943BSL-TP	
CN701	1-784-786-11	CONNECTOR, FFC 25P		IC502	8-759-481-02	IC M62016L	
CN901	1-778-981-21	CONNECTOR, BOARD TO BOARD 13P		IC503	8-759-548-57	IC SN74LV00ANSR	
CN902	1-778-981-21	CONNECTOR, BOARD TO BOARD 13P		IC901	8-759-231-53	IC M5F7805L	
* CN941	1-564-518-11	PLUG, CONNECTOR 3P		IC902	8-759-701-65	IC M5F79M05L	
< DIODE >				IC903	8-759-158-62	IC TA78057S	
D100	8-719-200-82	DIODE	11ES2-TB5	IC904	8-759-231-53	IC M5F7805L	
D101	8-719-200-82	DIODE	11ES2-TB5	IC905	8-759-231-58	IC M5F7812L	
D181	8-719-988-61	DIODE	1SS355TE-17	IC906	8-759-604-86	IC M5F7807L	
D182	8-719-988-61	DIODE	1SS355TE-17	IC908	8-759-701-75	IC NJM7805FA	
D501	8-719-988-61	DIODE	1SS355TE-17	IC909	8-759-604-32	IC M5F7810L	
D502	8-719-988-61	DIODE	1SS355TE-17	IC910	8-759-686-72	IC uPC29L04J-T	
D503	8-719-988-61	DIODE	1SS355TE-17	< JACK >			
D504	8-719-988-61	DIODE	1SS355TE-17	J101	1-793-987-11	JACK, PIN 2P (VIDEO(AUDIO) IN)	
D505	8-719-988-61	DIODE	1SS355TE-17	J102	1-770-377-31	JACK, PIN 1P (WOOFER OUT)	
D507	8-719-200-82	DIODE	11ES2-TB5	< JUMPER RESISTOR >			
D511	8-719-988-61	DIODE	1SS355TE-17	JR2	1-216-295-11	SHORT	0
D512	8-719-988-61	DIODE	1SS355TE-17	JR3	1-216-295-11	SHORT	0
D513	8-719-988-61	DIODE	1SS355TE-17	JR23	1-216-295-11	SHORT	0
D912	8-719-200-82	DIODE	11ES2-TB5	JR25	1-216-296-91	SHORT	0
D914	8-719-200-82	DIODE	11ES2-TB5	JR37	1-216-296-91	SHORT	0
D915	8-719-200-82	DIODE	11ES2-TB5	JR42	1-216-296-91	SHORT	0
D916	8-719-200-82	DIODE	11ES2-TB5	JR44	1-216-296-91	SHORT	0
D917	8-719-200-82	DIODE	11ES2-TB5	JR47	1-216-296-91	SHORT	0
D918	8-719-200-82	DIODE	11ES2-TB5	JR55	1-216-296-91	SHORT	0
D919	8-719-988-61	DIODE	1SS355TE-17	JR406	1-216-295-11	SHORT	0
D951	8-719-200-82	DIODE	11ES2-TB5	JR495	1-216-295-11	SHORT	0
< EARTH >				JR500	1-216-296-91	SHORT	0
* EP901	1-537-738-21	TERMINAL, EARTH		JR511	1-216-295-11	SHORT	0
< FERRITE BEAD >				JR531	1-216-295-11	SHORT	0
FB416	1-414-772-11	FERRITE	OUH	JR532	1-216-295-11	SHORT	0
FB462	1-414-772-11	FERRITE	OUH	JR922	1-216-296-91	SHORT	0
FB499	1-414-772-11	FERRITE	OUH	JR923	1-216-296-91	SHORT	0
FB500	1-414-772-11	FERRITE	OUH	JR924	1-216-296-91	SHORT	0
FB501	1-414-772-11	FERRITE	OUH				

MAIN

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
		< COIL >					
L301	1-410-393-11	INDUCTOR CHIP 100uH		R136	1-216-097-11	RES-CHIP 100K 5%	1/10W
L552	1-410-381-11	INDUCTOR CHIP 10uH		R137	1-216-025-11	RES-CHIP 100 5%	1/10W
		< TRANSISTOR >		R141	1-216-049-11	RES-CHIP 1K 5%	1/10W
Q101	8-729-107-43	TRANSISTOR 2SC3624-T1L1718		R142	1-216-097-11	RES-CHIP 100K 5%	1/10W
Q102	8-729-107-43	TRANSISTOR 2SC3624-T1L1718		R151	1-216-073-00	METAL CHIP 10K 5%	1/10W
Q130	8-729-141-30	TRANSISTOR 2SC3623ATP-LK		R152	1-216-073-00	METAL CHIP 10K 5%	1/10W
Q151	8-729-107-43	TRANSISTOR 2SC3624-T1L1718		R153	1-216-073-00	METAL CHIP 10K 5%	1/10W
Q152	8-729-107-43	TRANSISTOR 2SC3624-T1L1718		R154	1-216-121-11	RES-CHIP 1M 5%	1/10W
Q181	8-729-900-53	TRANSISTOR DTC114EKA-T146		R155	1-216-113-00	METAL CHIP 470K 5%	1/10W
Q182	8-729-027-23	TRANSISTOR DTA114EKA-T146		R156	1-216-081-00	METAL CHIP 22K 5%	1/10W
Q183	8-729-027-23	TRANSISTOR DTA114EKA-T146		R157	1-216-053-00	METAL CHIP 1.5K 5%	1/10W
Q184	8-729-027-23	TRANSISTOR DTA114EKA-T146		R159	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
Q185	8-729-027-23	TRANSISTOR DTA114EKA-T146		R160	1-216-097-11	RES-CHIP 100K 5%	1/10W
Q391	8-729-140-04	TRANSISTOR 2SB1116-TP-LK		R161	1-216-089-11	RES-CHIP 47K 5%	1/10W
Q392	8-729-900-53	TRANSISTOR DTC114EKA-T146		R162	1-216-073-00	METAL CHIP 10K 5%	1/10W
Q393	8-729-140-04	TRANSISTOR 2SB1116-TP-LK		R181	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
Q394	8-729-900-53	TRANSISTOR DTC114EKA-T146		R182	1-216-097-11	RES-CHIP 100K 5%	1/10W
Q395	8-729-900-53	TRANSISTOR DTC114EKA-T146		R183	1-216-097-11	RES-CHIP 100K 5%	1/10W
Q396	8-729-116-59	TRANSISTOR 2SB1068TP		R191	1-216-049-11	RES-CHIP 1K 5%	1/10W
Q397	8-729-900-53	TRANSISTOR DTC114EKA-T146		R192	1-216-097-11	RES-CHIP 100K 5%	1/10W
Q501	8-729-120-28	TRANSISTOR 2SC3052EF-T1-LEF		R291	1-216-049-11	RES-CHIP 1K 5%	1/10W
Q901	8-729-040-20	TRANSISTOR RT1P137L-TP		R292	1-216-049-11	RES-CHIP 1K 5%	1/10W
Q902	8-729-027-31	TRANSISTOR DTA124EKA-T146		R293	1-216-025-11	RES-CHIP 100 5%	1/10W
Q903	8-729-040-19	TRANSISTOR RT1N137L-TP		R294	1-216-025-11	RES-CHIP 100 5%	1/10W
Q904	8-729-901-00	TRANSISTOR DTC124EKA-T146		R300	1-216-001-00	METAL CHIP 10 5%	1/10W
Q905	8-729-600-22	TRANSISTOR 2SA1235TP-1EF		R301	1-216-085-00	METAL CHIP 33K 5%	1/10W
Q906	8-729-027-44	TRANSISTOR DTC114TKA-T146		R302	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
Q910	8-729-040-20	TRANSISTOR RT1P137L-TP		R303	1-216-025-11	RES-CHIP 100 5%	1/10W
Q911	8-729-901-00	TRANSISTOR DTC124EKA-T146		R304	1-216-025-11	RES-CHIP 100 5%	1/10W
Q912	8-729-900-53	TRANSISTOR DTC114EKA-T146		R305	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
Q914	8-729-018-59	TRANSISTOR 2SB1375(LB-SONY)		R306	1-216-071-00	METAL CHIP 8.2K 5%	1/10W
Q941	8-729-111-29	TRANSISTOR 2SD1616A-TP-LK		R307	1-216-071-00	METAL CHIP 8.2K 5%	1/10W
Q942	8-729-600-22	TRANSISTOR 2SA1235TP-1EF		R308	1-216-065-91	RES-CHIP 4.7K 5%	1/10W
		< RESISTOR >		R309	1-216-081-00	METAL CHIP 22K 5%	1/10W
R101	1-216-073-00	METAL CHIP 10K 5%	1/10W	R311	1-216-121-11	RES-CHIP 1M 5%	1/10W
R102	1-216-073-00	METAL CHIP 10K 5%	1/10W	R312	1-216-102-00	RES-CHIP 160K 5%	1/10W
R103	1-216-073-00	METAL CHIP 10K 5%	1/10W	R313	1-216-097-11	RES-CHIP 100K 5%	1/10W
R104	1-216-121-11	RES-CHIP 1M 5%	1/10W	R315	1-216-073-00	METAL CHIP 10K 5%	1/10W
R105	1-216-113-00	METAL CHIP 470K 5%	1/10W	R316	1-216-086-00	RES-CHIP 36K 5%	1/10W
R106	1-216-081-00	METAL CHIP 22K 5%	1/10W	R317	1-216-073-00	METAL CHIP 10K 5%	1/10W
R107	1-216-053-00	METAL CHIP 1.5K 5%	1/10W	R318	1-216-073-00	METAL CHIP 10K 5%	1/10W
R109	1-216-057-00	METAL CHIP 2.2K 5%	1/10W	R319	1-216-111-00	METAL CHIP 390K 5%	1/10W
R110	1-216-097-11	RES-CHIP 100K 5%	1/10W	R320	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R111	1-216-089-11	RES-CHIP 47K 5%	1/10W	R321	1-216-071-00	METAL CHIP 8.2K 5%	1/10W
R112	1-216-073-00	METAL CHIP 10K 5%	1/10W	R323	1-216-089-11	RES-CHIP 47K 5%	1/10W
R121	1-216-025-11	RES-CHIP 100 5%	1/10W	R324	1-216-089-11	RES-CHIP 47K 5%	1/10W
R122	1-216-025-11	RES-CHIP 100 5%	1/10W	R351	1-216-085-00	METAL CHIP 33K 5%	1/10W
R123	1-216-025-11	RES-CHIP 100 5%	1/10W	R352	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R124	1-216-073-00	METAL CHIP 10K 5%	1/10W	R353	1-216-025-11	RES-CHIP 100 5%	1/10W
R131	1-216-057-00	METAL CHIP 2.2K 5%	1/10W	R354	1-216-025-11	RES-CHIP 100 5%	1/10W
R132	1-216-049-11	RES-CHIP 1K 5%	1/10W	R355	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R133	1-216-097-11	RES-CHIP 100K 5%	1/10W	R356	1-216-071-00	METAL CHIP 8.2K 5%	1/10W
R134	1-216-073-00	METAL CHIP 10K 5%	1/10W	R357	1-216-071-00	METAL CHIP 8.2K 5%	1/10W
R135	1-216-073-00	METAL CHIP 10K 5%	1/10W	R358	1-216-065-91	RES-CHIP 4.7K 5%	1/10W
				R359	1-216-085-00	METAL CHIP 33K 5%	1/10W
				R360	1-216-045-00	METAL CHIP 680 5%	1/10W
				R361	1-216-051-00	METAL CHIP 1.2K 5%	1/10W
				R363	1-216-051-00	METAL CHIP 1.2K 5%	1/10W
				R364	1-216-045-00	METAL CHIP 680 5%	1/10W
				R366	1-216-061-00	METAL CHIP 3.3K 5%	1/10W

Ref. No.	Part No.	Description	Quantity	Unit	Percentage	Remarks	Ref. No.	Part No.	Description	Quantity	Unit	Percentage	Remarks
R367	1-216-089-11	RES-CHIP	47K		5%	1/10W	R480	1-216-025-11	RES-CHIP	100		5%	1/10W
R368	1-216-061-00	METAL CHIP	3.3K		5%	1/10W	R481	1-216-025-11	RES-CHIP	100		5%	1/10W
R369	1-216-061-00	METAL CHIP	3.3K		5%	1/10W	R482	1-216-025-11	RES-CHIP	100		5%	1/10W
R371	1-216-089-11	RES-CHIP	47K		5%	1/10W	R483	1-216-025-11	RES-CHIP	100		5%	1/10W
R372	1-216-065-91	RES-CHIP	4.7K		5%	1/10W	R484	1-216-025-11	RES-CHIP	100		5%	1/10W
R373	1-216-049-11	RES-CHIP	1K		5%	1/10W	R485	1-216-025-11	RES-CHIP	100		5%	1/10W
R374	1-216-089-11	RES-CHIP	47K		5%	1/10W	R486	1-216-025-11	RES-CHIP	100		5%	1/10W
R375	1-216-094-00	RES-CHIP	75K		5%	1/10W	R487	1-216-025-11	RES-CHIP	100		5%	1/10W
R376	1-216-065-91	RES-CHIP	4.7K		5%	1/10W	R488	1-216-081-00	METAL CHIP	22K		5%	1/10W
R377	1-216-089-11	RES-CHIP	47K		5%	1/10W	R489	1-216-025-11	RES-CHIP	100		5%	1/10W
R378	1-216-094-00	RES-CHIP	75K		5%	1/10W	R490	1-216-025-11	RES-CHIP	100		5%	1/10W
R400	1-216-025-11	RES-CHIP	100		5%	1/10W	R491	1-216-025-11	RES-CHIP	100		5%	1/10W
R404	1-216-065-91	RES-CHIP	4.7K		5%	1/10W	R492	1-216-089-11	RES-CHIP	47K		5%	1/10W
R408	1-216-025-11	RES-CHIP	100		5%	1/10W	R493	1-216-089-11	RES-CHIP	47K		5%	1/10W
R409	1-216-073-00	METAL CHIP	10K		5%	1/10W	R494	1-216-053-00	METAL CHIP	1.5K		5%	1/10W (HK,SP,MY)
R411	1-216-109-00	METAL CHIP	330K		5%	1/10W	R494	1-216-061-00	METAL CHIP	3.3K		5%	1/10W (JE)
R412	1-216-025-11	RES-CHIP	100		5%	1/10W	R495	1-216-025-11	RES-CHIP	100		5%	1/10W
R413	1-216-295-11	SHORT	0				R501	1-216-073-00	METAL CHIP	10K		5%	1/10W
R416	1-216-073-00	METAL CHIP	10K		5%	1/10W	R502	1-216-089-11	RES-CHIP	47K		5%	1/10W
R417	1-216-073-00	METAL CHIP	10K		5%	1/10W	R503	1-216-089-11	RES-CHIP	47K		5%	1/10W
R418	1-216-025-11	RES-CHIP	100		5%	1/10W	R504	1-216-025-11	RES-CHIP	100		5%	1/10W
R422	1-216-065-91	RES-CHIP	4.7K		5%	1/10W	R505	1-216-065-91	RES-CHIP	4.7K		5%	1/10W
R423	1-216-025-11	RES-CHIP	100		5%	1/10W	R506	1-216-041-00	METAL CHIP	470		5%	1/10W
R424	1-216-025-11	RES-CHIP	100		5%	1/10W	R510	1-216-025-11	RES-CHIP	100		5%	1/10W
R425	1-216-025-11	RES-CHIP	100		5%	1/10W	R513	1-216-069-00	METAL CHIP	6.8K		5%	1/10W
R426	1-216-025-11	RES-CHIP	100		5%	1/10W	R514	1-216-295-11	SHORT	0			
R428	1-216-025-11	RES-CHIP	100		5%	1/10W	R521	1-216-073-00	METAL CHIP	10K		5%	1/10W
R429	1-216-001-00	METAL CHIP	10		5%	1/10W	R522	1-216-073-00	METAL CHIP	10K		5%	1/10W
R430	1-216-001-00	METAL CHIP	10		5%	1/10W	R523	1-216-073-00	METAL CHIP	10K		5%	1/10W
R431	1-216-025-11	RES-CHIP	100		5%	1/10W	R524	1-216-073-00	METAL CHIP	10K		5%	1/10W
R432	1-216-025-11	RES-CHIP	100		5%	1/10W	R525	1-216-073-00	METAL CHIP	10K		5%	1/10W
R433	1-216-025-11	RES-CHIP	100		5%	1/10W	R526	1-216-073-00	METAL CHIP	10K		5%	1/10W
R434	1-216-025-11	RES-CHIP	100		5%	1/10W	R527	1-216-073-00	METAL CHIP	10K		5%	1/10W
R435	1-216-025-11	RES-CHIP	100		5%	1/10W	R528	1-216-073-00	METAL CHIP	10K		5%	1/10W
R436	1-216-073-00	METAL CHIP	10K		5%	1/10W	R529	1-216-073-00	METAL CHIP	10K		5%	1/10W
R437	1-216-073-00	METAL CHIP	10K		5%	1/10W	R530	1-216-073-00	METAL CHIP	10K		5%	1/10W
R438	1-216-049-11	RES-CHIP	1K		5%	1/10W	R531	1-216-073-00	METAL CHIP	10K		5%	1/10W
R440	1-216-073-00	METAL CHIP	10K		5%	1/10W	R541	1-216-025-11	RES-CHIP	100		5%	1/10W
R441	1-216-073-00	METAL CHIP	10K		5%	1/10W	R542	1-216-025-11	RES-CHIP	100		5%	1/10W
R446	1-216-025-11	RES-CHIP	100		5%	1/10W	R700	1-216-097-11	RES-CHIP	100K		5%	1/10W
R447	1-216-025-11	RES-CHIP	100		5%	1/10W	R701	1-216-097-11	RES-CHIP	100K		5%	1/10W
R448	1-216-025-11	RES-CHIP	100		5%	1/10W	R702	1-216-073-00	METAL CHIP	10K		5%	1/10W
R449	1-216-025-11	RES-CHIP	100		5%	1/10W	R708	1-216-025-11	RES-CHIP	100		5%	1/10W
R450	1-216-025-11	RES-CHIP	100		5%	1/10W	R709	1-216-057-00	METAL CHIP	2.2K		5%	1/10W
R451	1-216-025-11	RES-CHIP	100		5%	1/10W	R901	1-216-065-91	RES-CHIP	4.7K		5%	1/10W
R452	1-216-025-11	RES-CHIP	100		5%	1/10W	R902	1-216-081-00	METAL CHIP	22K		5%	1/10W
R453	1-216-073-00	METAL CHIP	10K		5%	1/10W	R903	1-216-049-11	RES-CHIP	1K		5%	1/10W
R454	1-216-073-00	METAL CHIP	10K		5%	1/10W	R904	1-216-222-00	RES-CHIP	10K		5%	1/8W
R455	1-216-073-00	METAL CHIP	10K		5%	1/10W	R905	1-216-208-00	RES-CHIP	2.7K		5%	1/8W
R463	1-216-025-11	RES-CHIP	100		5%	1/10W	R925	1-216-037-00	METAL CHIP	330		5%	1/10W
R469	1-216-025-11	RES-CHIP	100		5%	1/10W	R941	1-216-057-00	METAL CHIP	2.2K		5%	1/10W
R470	1-216-025-11	RES-CHIP	100		5%	1/10W	R942	1-216-097-11	RES-CHIP	100K		5%	1/10W
R471	1-216-025-11	RES-CHIP	100		5%	1/10W	R943	1-216-065-91	RES-CHIP	4.7K		5%	1/10W
R473	1-216-025-11	RES-CHIP	100		5%	1/10W	R944	1-216-057-00	METAL CHIP	2.2K		5%	1/10W
R474	1-216-025-11	RES-CHIP	100		5%	1/10W	R945	1-216-057-00	METAL CHIP	2.2K		5%	1/10W
R475	1-216-025-11	RES-CHIP	100		5%	1/10W							
R476	1-216-025-11	RES-CHIP	100		5%	1/10W							
R477	1-216-025-11	RES-CHIP	100		5%	1/10W							
R478	1-216-025-11	RES-CHIP	100		5%	1/10W							
R479	1-216-025-11	RES-CHIP	100		5%	1/10W							

MAIN **MIC** **OUT SW** **PANEL**

Ref. No.	Part No.	Description	Remarks
< VARIABLE RESISTOR >			
RV301	1-238-600-11	RES, ADJ, CARBON 10K	
RV351	1-238-600-11	RES, ADJ, CARBON 10K	
< VIBRATOR >			
X401	1-567-098-41	VIBRATOR, CRYSTAL (32.768K)	
X402	1-781-107-21	VIBRATOR, SERAMIC (16MHz)	

	1-676-972-11	MIC BOARD	

< CAPACITOR >			
C1601	1-162-306-11	CERAMIC	0.01uF 30.00% 16V
C1602	1-126-961-11	ELECT	2.2uF 20.00% 50V
C1603	1-162-294-31	CERAMIC	0.001uF 10% 50V
C1604	1-162-215-31	CERAMIC	47PF 5% 50V
C1605	1-162-290-31	CERAMIC	470PF 10% 50V
C1606	1-126-956-91	ELECT	0.1uF 20.00% 50V
C1607	1-162-215-31	CERAMIC	47PF 5% 50V
C1608	1-162-282-31	CERAMIC	100PF 10% 50V
C1609	1-126-961-11	ELECT	2.2uF 20.00% 50V
C1610	1-126-964-11	ELECT	10uF 20.00% 50V
C1611	1-126-964-11	ELECT	10uF 20.00% 50V
C1612	1-162-306-11	CERAMIC	0.01uF 30.00% 16V
C1613	1-162-306-11	CERAMIC	0.01uF 30.00% 16V
C1614	1-164-159-11	CERAMIC	0.1uF 50V
C1651	1-162-306-11	CERAMIC	0.01uF 30.00% 16V
C1652	1-126-961-11	ELECT	2.2uF 20.00% 50V
C1653	1-126-960-11	ELECT	1uF 20.00% 50V
C1654	1-162-294-31	CERAMIC	0.001uF 10% 50V
C1655	1-162-305-11	CERAMIC	0.0068uF 30.00% 16V
C1656	1-136-495-11	FILM	0.068uF 5.00% 50V
C1657	1-126-957-11	ELECT	0.22uF 20.00% 50V
C1658	1-126-957-11	ELECT	0.22uF 20.00% 50V
C1659	1-136-167-00	FILM	0.15uF 5.00% 50V
C1660	1-162-294-31	CERAMIC	0.001uF 10% 50V
C1661	1-162-305-11	CERAMIC	0.0068uF 30.00% 16V
C1662	1-126-960-11	ELECT	1uF 20.00% 50V
C1663	1-161-494-00	CERAMIC	0.022uF 25V
C1664	1-136-495-11	FILM	0.068uF 5.00% 50V
C1665	1-104-664-11	ELECT	47uF 20.00% 10V
C1666	1-164-159-11	CERAMIC	0.1uF 50V
C1667	1-104-664-11	ELECT	47uF 20.00% 10V
C1668	1-126-961-11	ELECT	2.2uF 20.00% 50V
< EARTH >			
* EPT1601	1-537-738-21	TERMINAL, EARTH	
< IC >			
IC1601	8-759-634-51	IC M5218AP	
IC1651	8-759-496-40	IC M65850FP	
< JACK >			
J1601	1-793-829-11	JACK, HEADPHONE (MIC 2)	
J1651	1-793-829-11	JACK, HEADPHONE (MIC 1)	

Ref. No.	Part No.	Description	Remarks
< RESISTOR >			
R1601	1-249-429-11	CARBON	10K 5% 1/4W
R1602	1-249-417-11	CARBON	1K 5% 1/4W F
R1603	1-249-441-11	CARBON	100K 5% 1/4W
R1604	1-249-417-11	CARBON	1K 5% 1/4W F
R1605	1-249-437-11	CARBON	47K 5% 1/4W
R1606	1-249-429-11	CARBON	10K 5% 1/4W
R1607	1-247-885-00	CARBON	180K 5% 1/4W
R1608	1-247-807-31	CARBON	100 5% 1/4W
R1651	1-249-429-11	CARBON	10K 5% 1/4W
R1652	1-249-417-11	CARBON	1K 5% 1/4W F
R1653	1-249-433-11	CARBON	22K 5% 1/4W
R1654	1-249-433-11	CARBON	22K 5% 1/4W
R1655	1-249-433-11	CARBON	22K 5% 1/4W
R1656	1-249-437-11	CARBON	47K 5% 1/4W
R1657	1-249-433-11	CARBON	22K 5% 1/4W
R1658	1-249-433-11	CARBON	22K 5% 1/4W
R1659	1-249-433-11	CARBON	22K 5% 1/4W
R1660	1-249-431-11	CARBON	15K 5% 1/4W
R1661	1-247-881-00	CARBON	120K 5% 1/4W
R1664	1-249-431-11	CARBON	15K 5% 1/4W
< VARIABLE RESISTOR >			
RV1601	1-227-171-11	RES, VAR CARBON 50K (MIC VOL)	
RV1651	1-227-171-11	RES, VAR CARBON 50K (ECHO VOL)	

	1-671-503-11	OUT SW BOARD	

< CONNECTOR >			
* CN709	1-568-943-11	PIN, CONNECTOR 5P	
CN715	1-506-481-11	PIN, CONNECTOR 2P	
< SWITCH >			
S701	1-771-218-11	SWITCH, MICRO (MID OUT)	
S702	1-771-218-11	SWITCH, MICRO (LID)	
S708	1-771-218-11	SWITCH, MICRO (OUT)	

A-4475-161-A		PANEL BOARD, COMPLETE	

4-226-723-01		HOLDER (FL)	
4-949-935-41		CUSHION (FL)	
< CAPACITOR >			
C691	1-162-286-31	CERAMIC	220PF 10% 50V
C692	1-162-286-31	CERAMIC	220PF 10% 50V
C701	1-162-306-11	CERAMIC	0.01uF 30.00% 16V
C702	1-124-589-11	ELECT	47uF 20% 16V
C703	1-162-290-31	CERAMIC	470PF 10% 50V
C704	1-162-294-31	CERAMIC	0.001uF 10% 50V
C705	1-162-294-31	CERAMIC	0.001uF 10% 50V
C711	1-162-286-31	CERAMIC	220PF 10% 50V
C712	1-162-286-31	CERAMIC	220PF 10% 50V
C713	1-162-286-31	CERAMIC	220PF 10% 50V

PANEL	SENSOR	SENSOR 2	SUB PANEL
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Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description	Remarks
R713	1-249-441-11	CARBON	100K	5%	1/4W			< SWITCH >	
R714	1-249-441-11	CARBON	100K	5%	1/4W				
R715	1-249-441-11	CARBON	100K	5%	1/4W	S601	1-762-875-21	SWITCH, KEYBOARD (I/O)	
R716	1-249-441-11	CARBON	100K	5%	1/4W	S602	1-762-875-21	SWITCH, KEYBOARD (DISPLAY)	
R717	1-249-441-11	CARBON	100K	5%	1/4W	S603	1-762-875-21	SWITCH, KEYBOARD (FUNCTION)	
R718	1-249-441-11	CARBON	100K	5%	1/4W	S604	1-762-875-21	SWITCH, KEYBOARD (NEXT)	
R719	1-249-441-11	CARBON	100K	5%	1/4W	S605	1-762-875-21	SWITCH, KEYBOARD (PREVIOUS)	
R720	1-249-441-11	CARBON	100K	5%	1/4W	S606	1-762-875-21	SWITCH, KEYBOARD (SELECT)	
R721	1-249-441-11	CARBON	100K	5%	1/4W	S621	1-762-875-21	SWITCH, KEYBOARD (RETURN)	
R722	1-249-441-11	CARBON	100K	5%	1/4W	S622	1-762-875-21	SWITCH, KEYBOARD (CINEMA SPACE)	
R723	1-249-441-11	CARBON	100K	5%	1/4W	S623	1-762-875-21	SWITCH, KEYBOARD (V-GROOVE)	
R724	1-249-441-11	CARBON	100K	5%	1/4W	S624	1-762-875-21	SWITCH, KEYBOARD (MODE SELECT)	
R725	1-249-441-11	CARBON	100K	5%	1/4W	S625	1-762-875-21	SWITCH, KEYBOARD (NAME EDIT/CHARACTER)	
R726	1-249-441-11	CARBON	100K	5%	1/4W	S626	1-762-875-21	SWITCH, KEYBOARD (CLEAR)	
R727	1-249-441-11	CARBON	100K	5%	1/4W			< VIBRATOR >	
R728	1-249-441-11	CARBON	100K	5%	1/4W	X701	1-781-312-11	VIBRATOR, CERAMIC (12.5MHz)	
R729	1-249-441-11	CARBON	100K	5%	1/4W			*****	
R730	1-249-441-11	CARBON	100K	5%	1/4W				
R731	1-249-441-11	CARBON	100K	5%	1/4W				
R732	1-249-441-11	CARBON	100K	5%	1/4W				
R733	1-249-441-11	CARBON	100K	5%	1/4W				
R734	1-249-429-11	CARBON	10K	5%	1/4W			< CONNECTOR >	
R737	1-247-807-31	CARBON	100	5%	1/4W				
R750	1-249-429-11	CARBON	10K	5%	1/4W	CN708	1-506-481-11	PIN, CONNECTOR 2P	
R755	1-249-417-11	CARBON	1K	5%	1/4W F			< DIODE >	
R757	1-247-807-31	CARBON	100	5%	1/4W				
R758	1-247-807-31	CARBON	100	5%	1/4W	D704	8-719-055-84	DIODE GL528VS1	
R759	1-247-807-31	CARBON	100	5%	1/4W			< RESISTOR >	
R762	1-249-435-11	CARBON	33K	5%	1/4W				
R763	1-247-895-00	CARBON	470K	5%	1/4W	R711	1-249-415-11	CARBON 680 5% 1/4W F	
R764	1-247-893-11	CARBON	390K	5%	1/4W			*****	
R765	1-247-893-11	CARBON	390K	5%	1/4W				
R766	1-249-441-11	CARBON	100K	5%	1/4W				
R767	1-249-441-11	CARBON	100K	5%	1/4W				
R768	1-249-429-11	CARBON	10K	5%	1/4W				
R769	1-249-440-11	CARBON	82K	5%	1/4W				
R770	1-249-417-11	CARBON	1K	5%	1/4W F			< TRANSISTOR >	
R771	1-249-433-11	CARBON	22K	5%	1/4W				
R773	1-249-436-11	CARBON	39K	5%	1/4W	Q703	8-729-926-31	PHOTO TRANSISTOR PT483F1	
R774	1-249-420-11	CARBON	1.8K	5%	1/4W F			*****	
R801	1-249-437-11	CARBON	47K	5%	1/4W				
R802	1-249-437-11	CARBON	47K	5%	1/4W	A-4473-383-A		SUB PANEL BOARD, COMPLETE	
R803	1-249-437-11	CARBON	47K	5%	1/4W			*****	
R804	1-249-437-11	CARBON	47K	5%	1/4W			< CAPACITOR >	
R805	1-249-437-11	CARBON	47K	5%	1/4W				
R806	1-249-437-11	CARBON	47K	5%	1/4W	C619	1-162-294-31	CERAMIC 0.001uF 10% 50V	
R807	1-249-437-11	CARBON	47K	5%	1/4W	C771	1-162-306-11	CERAMIC 0.01uF 30.00% 16V	
R808	1-249-437-11	CARBON	47K	5%	1/4W	C772	1-162-306-11	CERAMIC 0.01uF 30.00% 16V	
R809	1-249-437-11	CARBON	47K	5%	1/4W			< DIODE >	
R810	1-249-437-11	CARBON	47K	5%	1/4W				
R811	1-249-437-11	CARBON	47K	5%	1/4W	D605	8-719-058-64	DIODE SEL5823A-TP15 (SET UP MODE)	
R812	1-249-437-11	CARBON	47K	5%	1/4W	D606	8-719-058-64	DIODE SEL5823A-TP15 (SOUND MODE)	
R813	1-249-437-11	CARBON	47K	5%	1/4W	D609	8-719-058-03	DIODE SEL5423E-TP15 (TAPE B ►)	
R814	1-249-437-11	CARBON	47K	5%	1/4W	D610	8-719-058-03	DIODE SEL5423E-TP15 (TAPE B ◀)	
R815	1-249-437-11	CARBON	47K	5%	1/4W	D611	8-719-058-03	DIODE SEL5423E-TP15 (TAPE A ►)	
R816	1-249-437-11	CARBON	47K	5%	1/4W	D612	8-719-058-03	DIODE SEL5423E-TP15 (TAPE A ◀)	
R817	1-249-437-11	CARBON	47K	5%	1/4W	D613	8-719-058-04	DIODE SEL5223S-TP15 (MD REC/REC IT)	
					D614	8-719-058-04	DIODE SEL5223S-TP15 (TAPE REC PAUSE/START)		
					D617	8-719-058-64	DIODE SEL5823A-TP15 (GROOVE-EX)		
					D618	8-719-058-64	DIODE SEL5823A-TP15 (GROOVE)		

SUB PANEL

TRANS

Ref. No.	Part No.	Description	Remarks
D619	8-719-072-81	DIODE SELU5E23C-STP15 (MD INSERT BACK LIGHT)	
D651	8-719-056-13	DIODE SML79423C-TP15 (MD)	
D652	8-719-056-13	DIODE SML79423C-TP15 (CD)	
< TRANSISTOR >			
Q605	8-729-900-80	TRANSISTOR BA1A4M-TP	
Q607	8-729-900-80	TRANSISTOR BA1A4M-TP	
Q609	8-729-900-80	TRANSISTOR BA1A4M-TP	
Q611	8-729-900-80	TRANSISTOR BA1A4M-TP	
Q613	8-729-900-80	TRANSISTOR BA1A4M-TP	
Q617	8-729-900-80	TRANSISTOR BA1A4M-TP	
Q651	8-729-900-80	TRANSISTOR BA1A4M-TP	
Q652	8-729-900-80	TRANSISTOR BA1A4M-TP	
< EARTH >			
* EPT701	1-537-738-21	TERMINAL, EARTH	
< RESISTOR >			
R608	1-249-420-11	CARBON 1.8K 5%	1/4W F
R609	1-249-422-11	CARBON 2.7K 5%	1/4W F
R610	1-247-843-11	CARBON 3.3K 5%	1/4W
R611	1-249-425-11	CARBON 4.7K 5%	1/4W F
R612	1-249-427-11	CARBON 6.8K 5%	1/4W F
R613	1-249-429-11	CARBON 10K 5%	1/4W
R614	1-249-431-11	CARBON 15K 5%	1/4W
R615	1-249-434-11	CARBON 27K 5%	1/4W
R641	1-249-410-11	CARBON 270 5%	1/4W F
R642	1-249-411-11	CARBON 330 5%	1/4W
R643	1-249-413-11	CARBON 470 5%	1/4W F
R644	1-249-414-11	CARBON 560 5%	1/4W F
R645	1-249-415-11	CARBON 680 5%	1/4W F
R646	1-249-417-11	CARBON 1K 5%	1/4W F
R647	1-249-418-11	CARBON 1.2K 5%	1/4W F
R648	1-249-420-11	CARBON 1.8K 5%	1/4W F
R649	1-249-422-11	CARBON 2.7K 5%	1/4W F
R650	1-247-843-11	CARBON 3.3K 5%	1/4W
R651	1-249-425-11	CARBON 4.7K 5%	1/4W F
R652	1-249-427-11	CARBON 6.8K 5%	1/4W F
R653	1-249-429-11	CARBON 10K 5%	1/4W
R675	1-249-409-11	CARBON 220 5%	1/4W F
R676	1-249-409-11	CARBON 220 5%	1/4W F
R677	1-249-409-11	CARBON 220 5%	1/4W F
R679	1-249-409-11	CARBON 220 5%	1/4W F
R680	1-249-409-11	CARBON 220 5%	1/4W F
R681	1-249-409-11	CARBON 220 5%	1/4W F
R682	1-249-409-11	CARBON 220 5%	1/4W F
R683	1-249-409-11	CARBON 220 5%	1/4W F
R684	1-249-409-11	CARBON 220 5%	1/4W F
R687	1-249-409-11	CARBON 220 5%	1/4W F
R688	1-249-409-11	CARBON 220 5%	1/4W F
R689	1-249-409-11	CARBON 220 5%	1/4W F
R690	1-249-409-11	CARBON 220 5%	1/4W F
R691	1-249-409-11	CARBON 220 5%	1/4W F
R692	1-249-409-11	CARBON 220 5%	1/4W F
R752	1-249-401-11	CARBON 47 5%	1/4W F
R753	1-247-807-31	CARBON 100 5%	1/4W
R754	1-247-807-31	CARBON 100 5%	1/4W

Ref. No.	Part No.	Description	Remarks
		< SWITCH >	
S607	1-762-875-21	SWITCH, KEYBOARD (MD REC MODE)	
S608	1-762-875-21	SWITCH, KEYBOARD (MD REC/REC IT)	
S609	1-762-875-21	SWITCH, KEYBOARD (SYNC REC)	
S610	1-762-875-21	SWITCH, KEYBOARD (TAPE REC PAUSE/START)	
S612	1-762-875-21	SWITCH, KEYBOARD (HIGH SPEED CD-MD SYNC)	
S613	1-762-875-21	SWITCH, KEYBOARD (GROOVE-EX)	
S614	1-762-875-21	SWITCH, KEYBOARD (GROOVE)	
S641	1-762-875-21	SWITCH, KEYBOARD (TAPE A ◀)	
S642	1-762-875-21	SWITCH, KEYBOARD (TAPE A ▶)	
S643	1-762-875-21	SWITCH, KEYBOARD (TAPE B ◀)	
S644	1-762-875-21	SWITCH, KEYBOARD (TAPE B ▶)	
S645	1-762-875-21	SWITCH, KEYBOARD (■)	
S646	1-762-875-21	SWITCH, KEYBOARD (CD ▶▶)	
S647	1-762-875-21	SWITCH, KEYBOARD (MD ▶▶)	
S648	1-762-875-21	SWITCH, KEYBOARD (MD ▲)	
S649	1-762-875-21	SWITCH, KEYBOARD (TUNING ▶▶)	
S650	1-762-875-21	SWITCH, KEYBOARD (TUNING ◀◀)	
S651	1-762-875-21	SWITCH, KEYBOARD (PRESET ▶▶)	
S652	1-762-875-21	SWITCH, KEYBOARD (PRESET ◀◀)	
S653	1-762-875-21	SWITCH, KEYBOARD (TUNER/BAND)	
S701	1-772-502-11	CONTROLLER, JOY STICK (PUSH ENTER)	
S751	1-473-392-11	ENCODER, ROTARY (VOLUME)	

	1-676-975-11	TRANS BOARD *****	
	1-533-293-11	FUSE HOLDER	
< CONNECTOR >			
CN911	1-564-321-00	PIN, CONNECTOR 2P	
* CN913	1-564-510-11	PLUG, CONNECTOR 7P	
* CN914	1-564-517-11	PLUG, CONNECTOR 2P	
< FUSE >			
△ F911	1-533-471-11	FUSE, GLASS TUBE (DIA. 5) 4A/250V	
△ F912	1-533-469-11	FUSE, GLASS TUBE (DIA. 5) 2.5A/250V	
△ F913	1-533-468-11	FUSE, GLASS TUBE (DIA. 5) 2A/250V	
△ F916	1-533-949-31	FUSE, CYLINDRICAL (TIME LUG) 8A/250V	
△ F917	1-533-949-31	FUSE, CYLINDRICAL (TIME LUG) 8A/250V	
△ F918	1-533-470-11	FUSE, GLASS TUBE (DIA. 5) 3.15A/250V	
△ F919	1-533-470-11	FUSE, GLASS TUBE (DIA. 5) 3.15A/250V	
< RESISTOR >			
△ R913	1-219-119-81	FUSIBLE 0.1 5%	1/4W
△ R917	1-219-123-11	FUSIBLE 0.47 5%	1/4W
△ R936	1-216-349-00	METAL OXIDE 1 5%	1W
< SWITCH >			
△ S911	1-771-291-11	SWITCH, POWER (VOLTAGE SELECTOR)	
< TRANSFORMER >			
△ T901	1-435-774-11	TRANSFORMER, POWER	

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

VIDEO

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
	A-4725-333-A	VIDEO BOARD, COMPLETE *****					
		< CAPACITOR >					
C101	1-124-778-00	ELECT CHIP 22uF	20% 6.3V	C552	1-165-319-11	CERAMIC CHIP 0.1uF	50V
C102	1-163-143-00	CERAMIC CHIP 0.0012uF	5% 50V	C553	1-126-206-11	ELECT CHIP 100uF	20% 6.3V
C103	1-163-017-00	CERAMIC CHIP 0.0047uF	5% 50V	C555	1-124-778-00	ELECT CHIP 22uF	20% 6.3V
C201	1-124-778-00	ELECT CHIP 22uF	20% 6.3V	C556	1-165-319-11	CERAMIC CHIP 0.1uF	50V
C202	1-163-143-00	CERAMIC CHIP 0.0012uF	5% 50V	C559	1-126-206-11	ELECT CHIP 100uF	20% 6.3V
C203	1-163-017-00	CERAMIC CHIP 0.0047uF	5% 50V	C560	1-163-235-11	CERAMIC CHIP 22PF	5.00% 50V
C304	1-163-127-00	CERAMIC CHIP 270PF	5% 50V	C561	1-163-089-00	CERAMIC CHIP 6PF	50V
C305	1-163-235-11	CERAMIC CHIP 22PF	5.00% 50V	C562	1-163-235-11	CERAMIC CHIP 22PF	5.00% 50V
C306	1-163-127-00	CERAMIC CHIP 270PF	5% 50V	C563	1-165-319-11	CERAMIC CHIP 0.1uF	50V
C307	1-163-235-11	CERAMIC CHIP 22PF	5.00% 50V	C564	1-165-319-11	CERAMIC CHIP 0.1uF	50V
C308	1-163-263-11	CERAMIC CHIP 330PF	5.00% 50V	C565	1-126-206-11	ELECT CHIP 100uF	20% 6.3V
C309	1-163-263-11	CERAMIC CHIP 330PF	5.00% 50V	C566	1-165-319-11	CERAMIC CHIP 0.1uF	50V
C310	1-165-319-11	CERAMIC CHIP 0.1uF	50V	C568	1-126-206-11	ELECT CHIP 100uF	20% 6.3V
C311	1-124-778-00	ELECT CHIP 22uF	20% 6.3V	C569	1-126-206-11	ELECT CHIP 100uF	20% 6.3V
C312	1-163-017-00	CERAMIC CHIP 0.0047uF	5% 50V	C570	1-126-206-11	ELECT CHIP 100uF	20% 6.3V
C313	1-163-259-91	CERAMIC CHIP 220PF	5.00% 50V	C571	1-128-065-11	ELECT CHIP 68uF	20.00% 10V
C314	1-163-235-11	CERAMIC CHIP 22PF	5.00% 50V	C573	1-163-235-11	CERAMIC CHIP 22PF	5.00% 50V
C315	1-163-255-11	CERAMIC CHIP 150PF	5.00% 50V	C574	1-163-235-11	CERAMIC CHIP 22PF	5.00% 50V
C316	1-165-319-11	CERAMIC CHIP 0.1uF	50V	C576	1-163-235-11	CERAMIC CHIP 22PF	5.00% 50V
C317	1-126-193-11	ELECT 1uF	20% 50V	C577	1-163-235-11	CERAMIC CHIP 22PF	5.00% 50V
C318	1-165-319-11	CERAMIC CHIP 0.1uF	50V			< CONNECTOR >	
C319	1-126-206-11	ELECT CHIP 100uF	20% 6.3V	CN501	1-774-769-11	CONNECTOR, FFC/FPC 25P	
C320	1-126-206-11	ELECT CHIP 100uF	20% 6.3V	CN502	1-793-580-11	CONNECTOR,FFC (LIF(NON-Z1F))15P	
C321	1-126-206-11	ELECT CHIP 100uF	20% 6.3V			< TRIMMER >	
C322	1-126-206-11	ELECT CHIP 100uF	20% 6.3V	CT503	1-141-539-11	CAP, ADJ 10PF	
C323	1-126-206-11	ELECT CHIP 100uF	20% 6.3V			< DIODE >	
C324	1-165-319-11	CERAMIC CHIP 0.1uF	50V	D501	8-719-422-12	DIODE UDZ-TE-17-3.9B	
C325	1-165-319-11	CERAMIC CHIP 0.1uF	50V			< IC >	
C401	1-165-319-11	CERAMIC CHIP 0.1uF	50V	IC101	8-759-701-40	IC NJM2100M(TE2)	
C402	1-124-778-00	ELECT CHIP 22uF	20% 6.3V	IC301	8-759-530-30	IC TC74VHCU04FT(EL)	
C504	1-165-319-11	CERAMIC CHIP 0.1uF	50V	IC302	8-759-662-94	IC NJM2255M(TE2)	
C505	1-126-206-11	ELECT CHIP 100uF	20% 6.3V	IC303	8-759-711-47	IC NJM2209M(TE2)	
C506	1-165-319-11	CERAMIC CHIP 0.1uF	50V	IC304	8-759-662-95	IC BA7665FS-E2	
C507	1-126-206-11	ELECT CHIP 100uF	20% 6.3V	IC501	8-759-530-30	IC TC74VHCU04FT(EL)	
C508	1-126-206-11	ELECT CHIP 100uF	20% 6.3V	IC502	8-759-672-65	IC M30622MGA-A30FP	
C509	1-163-275-11	CERAMIC CHIP 0.001uF	5.00% 50V	IC504	8-759-530-30	IC TC74VHCU04FT(EL)	
C510	1-165-319-11	CERAMIC CHIP 0.1uF	50V	IC505	8-759-535-48	IC CL680T-D1	
C531	1-126-206-11	ELECT CHIP 100uF	20% 6.3V	IC506	8-759-677-67	IC LC372100PM-K98-TLA	
C532	1-165-319-11	CERAMIC CHIP 0.1uF	50V	IC507	8-759-342-01	IC MSM514260C-60JS	
C535	1-165-319-11	CERAMIC CHIP 0.1uF	50V	IC509	8-759-535-62	IC PCM1727E-2/T2	
C536	1-126-193-11	ELECT 1uF	20% 50V			< JACK >	
C537	1-126-206-11	ELECT CHIP 100uF	20% 6.3V	J301	1-537-943-11	TERMINAL, S (S VIDEO OUT)	
C539	1-165-319-11	CERAMIC CHIP 0.1uF	50V	J302	1-774-227-11	JACK, PIN 1P (VIDEO OUT)	
C540	1-126-206-11	ELECT CHIP 100uF	20% 6.3V			< JUMPER RESISTOR >	
C541	1-165-319-11	CERAMIC CHIP 0.1uF	50V	JW101	1-216-295-11	SHORT 0	
C542	1-126-206-11	ELECT CHIP 100uF	20% 6.3V	JW201	1-216-295-11	SHORT 0	
C543	1-126-206-11	ELECT CHIP 100uF	20% 6.3V	JW301	1-216-295-11	SHORT 0	
C544	1-165-319-11	CERAMIC CHIP 0.1uF	50V	JW302	1-216-025-11	RES-CHIP 100	5% 1/10W
C545	1-165-319-11	CERAMIC CHIP 0.1uF	50V	JW304	1-216-295-11	SHORT 0	
C546	1-165-319-11	CERAMIC CHIP 0.1uF	50V	JW413	1-216-295-11	SHORT 0	
C547	1-126-193-11	ELECT 1uF	20% 50V	JW504	1-216-295-11	SHORT 0	
C548	1-165-319-11	CERAMIC CHIP 0.1uF	50V	JW505	1-216-295-11	SHORT 0	
C549	1-165-319-11	CERAMIC CHIP 0.1uF	50V				
C550	1-163-275-11	CERAMIC CHIP 0.001uF	5.00% 50V				
C551	1-165-319-11	CERAMIC CHIP 0.1uF	50V				

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
		< COIL >					
L301	1-410-372-21	INDUCTOR 1.8uH		R519	1-216-025-11	RES-CHIP 100 5%	1/10W
L302	1-410-372-21	INDUCTOR 1.8uH		R520	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
L303	1-410-658-31	INDUCTOR CHIP 220uH		R521	1-216-073-00	METAL CHIP 10K 5%	1/10W
L501	1-216-296-91	SHORT 0		R523	1-216-013-00	METAL CHIP 33 5%	1/10W
L502	1-216-296-91	SHORT 0		R530	1-216-025-11	RES-CHIP 100 5%	1/10W
L503	1-216-296-91	SHORT 0		R531	1-216-025-11	RES-CHIP 100 5%	1/10W
L504	1-410-375-11	INDUCTOR CHIP 3.3uH		R532	1-216-295-11	SHORT 0	
L505	1-216-296-91	SHORT 0		R533	1-216-295-11	SHORT 0	
L506	1-216-296-91	SHORT 0		R534	1-216-073-00	METAL CHIP 10K 5%	1/10W
L507	1-216-296-91	SHORT 0		R535	1-216-073-00	METAL CHIP 10K 5%	1/10W
L508	1-216-296-91	SHORT 0		R536	1-216-033-00	METAL CHIP 220 5%	1/10W
L509	1-216-296-91	SHORT 0		R537	1-216-025-11	RES-CHIP 100 5%	1/10W
L510	1-216-296-91	SHORT 0		R538	1-216-073-00	METAL CHIP 10K 5%	1/10W
L511	1-469-145-21	FERRITE 0uH		R539	1-216-295-11	SHORT 0	
L512	1-469-145-21	FERRITE 0uH		R540	1-216-295-11	SHORT 0	
L513	1-469-145-21	FERRITE 0uH		R542	1-216-651-11	METAL CHIP 1K 0.5%	1/10W
		< TRANSISTOR >		R543	1-216-685-11	METAL CHIP 27K 0.5%	1/10W
Q501	8-729-900-53	TRANSISTOR DTC114EKA-T146		R544	1-216-659-11	METAL CHIP 2.2K 0.5%	1/10W
Q502	8-729-900-53	TRANSISTOR DTC114EKA-T146		R545	1-216-025-11	RES-CHIP 100 5%	1/10W
Q531	8-729-140-75	TRANSISTOR 2SD999-T1-CLCK		R546	1-216-049-11	RES-CHIP 1K 5%	1/10W
		< RESISTOR >		R548	1-216-049-11	RES-CHIP 1K 5%	1/10W
R101	1-216-073-00	METAL CHIP 10K 5%	1/10W	R549	1-216-025-11	RES-CHIP 100 5%	1/10W
R102	1-208-441-61	RES-CHIP 1.5K 2%	1/10W	R550	1-216-025-11	RES-CHIP 100 5%	1/10W
R103	1-208-441-61	RES-CHIP 1.5K 2%	1/10W	R551	1-216-025-11	RES-CHIP 100 5%	1/10W
R201	1-216-073-00	METAL CHIP 10K 5%	1/10W	R552	1-216-025-11	RES-CHIP 100 5%	1/10W
R202	1-208-441-61	RES-CHIP 1.5K 2%	1/10W	R554	1-216-025-11	RES-CHIP 100 5%	1/10W
R203	1-208-441-61	RES-CHIP 1.5K 2%	1/10W	R555	1-216-121-11	RES-CHIP 1M 5%	1/10W
R302	1-216-624-11	METAL CHIP 75 0.5%	1/10W	R556	1-216-025-11	RES-CHIP 100 5%	1/10W
R303	1-216-624-11	METAL CHIP 75 0.5%	1/10W	R557	1-216-025-11	RES-CHIP 100 5%	1/10W
R306	1-216-624-11	METAL CHIP 75 0.5%	1/10W	R560	1-216-653-11	METAL CHIP 1.2K 0.5%	1/10W
R308	1-216-073-00	METAL CHIP 10K 5%	1/10W	R561	1-216-651-11	METAL CHIP 1K 0.5%	1/10W
R309	1-216-073-00	METAL CHIP 10K 5%	1/10W	R562	1-216-073-00	METAL CHIP 10K 5%	1/10W
R310	1-216-057-00	METAL CHIP 2.2K 5%	1/10W	R563	1-216-073-00	METAL CHIP 10K 5%	1/10W
R311	1-216-029-00	METAL CHIP 150 5%	1/10W	R577	1-216-081-00	METAL CHIP 22K 5%	1/10W
R312	1-216-073-00	METAL CHIP 10K 5%	1/10W	R578	1-216-081-00	METAL CHIP 22K 5%	1/10W
R313	1-216-073-00	METAL CHIP 10K 5%	1/10W	R579	1-216-073-00	METAL CHIP 10K 5%	1/10W
R314	1-216-059-00	METAL CHIP 2.7K 5%	1/10W	R580	1-216-073-00	METAL CHIP 10K 5%	1/10W
R315	1-216-624-11	METAL CHIP 75 0.5%	1/10W			< VIBRATOR >	
R316	1-216-022-00	METAL CHIP 75 5%	1/10W	X501	1-767-510-11	VIBRATOR, CERAMIC (10MHz)	
R317	1-216-022-00	METAL CHIP 75 5%	1/10W	X503	1-767-519-11	VIBRATOR, CRYSTAL (27MHz)	
R318	1-216-295-11	SHORT 0		*****			
R319	1-216-624-11	METAL CHIP 75 0.5%	1/10W			MISCELLANEOUS	
R320	1-216-295-11	SHORT 0				*****	
R403	1-216-057-00	METAL CHIP 2.2K 5%	1/10W	3	1-693-482-41	TUNER (FM/AM)(HK,SP,MY)	
R404	1-216-057-00	METAL CHIP 2.2K 5%	1/10W	3	1-693-508-41	TUNER (FM/AM)(JE)	
R501	1-216-025-11	RES-CHIP 100 5%	1/10W	4	1-769-972-11	WIRE(FLAT TYPE)(13 CORE)	
R502	1-216-025-11	RES-CHIP 100 5%	1/10W	8	1-775-151-11	WIRE(FLAT TYPE)(17 CORE)	
R503	1-216-025-11	RES-CHIP 100 5%	1/10W	9	1-775-236-11	WIRE(FLAT TYPE)(27 CORE)	
R504	1-216-025-11	RES-CHIP 100 5%	1/10W	15	1-773-217-11	WIRE (FLAT TYPE)(25 CORE)	
R505	1-216-025-11	RES-CHIP 100 5%	1/10W	64	1-769-938-11	WIRE (FLAT TYPE)(11 CORE)	
R506	1-216-025-11	RES-CHIP 100 5%	1/10W	102	1-757-088-11	WIRE (FLAT TYPE)(15 CORE)	
R507	1-216-073-00	METAL CHIP 10K 5%	1/10W	103	1-773-042-11	WIRE (FLAT TYPE)(17 CORE)	
R508	1-216-073-00	METAL CHIP 10K 5%	1/10W	105	1-773-020-11	WIRE (FLAT TYPE)(15 CORE)	
R516	1-216-073-00	METAL CHIP 10K 5%	1/10W				
R517	1-216-073-00	METAL CHIP 10K 5%	1/10W				
R518	1-216-073-00	METAL CHIP 10K 5%	1/10W				

HCD-VZ50MD

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
△ 110	1-777-071-51	CORD, POWER (HK,SP,MY)				*****	
△ 110	1-791-901-11	CORD, POWER (JE)				HARDWARE LIST	
112	1-500-386-11	FILTER, CLAMP (FERRITE CORE)				*****	
176	1-471-061-11	MAGNET ASSY					
△ 238	8-820-122-01	OPTICAL PICK-UP KSM213DHAP/Z-NP		#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
239	1-769-069-11	WIRE (FLAT TYPE)(16 CORE)		#2	7-685-871-01	SCREW +BVTT 3X6 (S)	
457	1-678-514-11	FLEXIBLE BOARD		#3	7-685-872-09	SCREW +BVTT 3X8 (S)	
△ 458	A-4672-541-A	OPTICAL PICK-UP KMS-260B/J1N		#4	7-685-881-09	SCREW +BVTT 4X8 (S)	
HR901	1-500-670-12	HEAD, OVER LIGHT		#5	7-685-650-79	SCREW +BVTP 3X16 TYPE2 N-S	
M1	X-3378-241-1	MOTOR ASSY (CAPSTAN)		#6	7-628-254-05	SCREW +PS 2.6X5	
M101	A-4672-898-A	MOTOR ASSY, SPINDLE		#7	7-685-146-11	SCREW +P 3X8 TYPE2 NON-SLIT	
M102	A-4672-900-A	MOTOR ASSY, SLED		#8	7-685-850-04	SCREW +BVTT 2X3 (S)	
M103	A-4672-975-A	MOTOR ASSY, LOADING (MD)		#9	7-685-204-19	SCREW +KTP 2X6 TYPE2 NON-SLIT	
M701	X-4950-341-1	MOTOR (CLAMP) ASSY					
M702	X-4950-342-1	MOTOR (LOADING) ASSY (CD)					
M941	1-763-072-11	FAN, DC					
S102	1-771-957-11	SWITCH, PUSH (2 KEY)					
S707	1-418-045-01	ENCODER, ROTARY (DISC TRAY ADDRESS DET.)					
FL701	1-517-984-11	INDICATOR TUBE, FLUORESCENT					

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.