

HCD-PX333

SERVICE MANUAL

Ver 1.0 2001.06



*AEP Model
UK Model
E Model
Australian Model*

HCD-PX333 is the Amplifier, CD player, MD Deck and Tuner section in CMT-PX333.

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CD Section	Model Name Using Similar Mechanism	HCD-MD595
	CD Mechanism Type	CDM55A-21BD53
	Base Unit Name	BU-21BD53
	Optical Pick-up Name	OP Assy (A-MAX. 2)
MD Section	Model Name Using Similar Mechanism	HCD-MD595
	MD Mechanism Type	MDM-7X2A
	Optical Pick-up Name	KMS-262

SPECIFICATIONS

Amplifier section

European model:
DIN power output (Rated): 20 + 20 watts
(6 ohms at 1 kHz, DIN, 230 V)
Continuous RMS power output (Reference):
25 + 25 watts
(6 ohms at 1 kHz, 10% THD, 230 V)
Music power output (Reference):
50 + 50 watts
Other models:
DIN power output (Rated): 20 + 20 watts (6 ohms at 1 kHz, DIN, 240 V)
18 + 18 watts (6 ohms at 1 kHz, DIN, 220 V)
Continuous RMS power output (Reference):
25 + 25 watts
(6 ohms at 1 kHz, 10% THD, 240 V)
23 + 23 watts
(6 ohms at 1 kHz, 10% THD, 220 V)
Inputs
TAPE IN (phono jacks): voltage 250 mV, impedance 47 kilohms
DIGITAL OPTICAL IN (Supported sampling frequencies: 32 kHz, 44.1 kHz and 48 kHz)
Outputs
TAPE OUT (phono jacks): voltage 250 mV, impedance 1 kilohm
PHONES (stereo minijack): accepts headphones of 8 ohms or more.
SPEAKER: accepts impedance of 6 to 16 ohms.

CD player section

System Compact disc and digital audio system
Laser Semiconductor laser ($\lambda=800$ nm)
Emission duration: continuous
Frequency response 2 Hz – 20 kHz

MD deck section

System MiniDisc digital audio system
Laser Semiconductor laser ($\lambda=780$ nm)
Emission duration: continuous
Sampling frequency 44.1 kHz
Frequency response 5 Hz – 20 kHz

Tuner section

FM stereo, FM/AM superheterodyne tuner
FM tuner section
Tuning range 87.5 – 108.0 MHz (50 kHz step)
Antenna FM lead antenna
Antenna terminals 75 ohms unbalanced/300 ohms balanced
Intermediate frequency 10.7 MHz
AM tuner section
Tuning range 531 – 1,602 kHz (with the interval set at 9 kHz)
European model:

Other models: 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
Intermediate frequency External antenna terminals 450 kHz

General

Power requirements
European model: 230 V AC, 50/60 Hz
Australian and Hong Kong models: 220 – 240 V AC, 50/60 Hz
Power consumption
European model: 70 watts
0.8 W or less in standby mode
Other models: 70 watts
Dimensions (w/h/d) incl. projecting parts and controls
Approx. 190 × 141 × 325 mm
Mass Approx. 4.9 kg
Design and specifications are subject to change without notice.

MICRO HI-FI COMPONENT SYSTEM

9-873-168-01
2001F1600-1
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Home Audio Company
Shinagawa Tec Service Manual Production Group

SONY®

SELF-DIAGNOSIS FUNCTION

The self-diagnosis function consists of error codes for customers, which are displayed automatically when errors occur, and error codes, which show the error history in the test mode during servicing. For details on how to view error codes for the customer, refer to the following box in the instruction manual. For details on how to check error codes during servicing, refer to the following “Procedure for using the Self-Diagnosis Function (Error History Display Mode)”.

Self-diagnosis display

This system has a Self-diagnosis display function to let you know if there is a system malfunction. The display shows a code made up of three 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.

C12/Cannot Copy

You tried to record a CD or MD with a format that the system does not support, such as a CD-ROM.
→ Remove the disc and turn off the system once, then turn it on again.

C13/REC Error

Recording could not be performed properly.
→ Move the system to a stable place, and start recording over from the beginning.
The MD is dirty or scratched, or the MD does not meet the standards.
→ Replace the MD and start recording over from the beginning.

C13/Read Error

The MD deck cannot read the disc information properly.
→ Remove the MD once, then insert it again.

C14/Toc Error

The MD deck cannot read the disc information properly.
→ Replace the MD.
→ Erase all the recorded contents of the MD using the All Erase function.

C41/Cannot Copy

The sound source is a copy of a commercially available music software, or you tried to record a CD-R (Recordable CD).
→ The Serial Copy Management System prevents making a digital copy (see page 44). You cannot record a CD-R.

C71/Check OPT-IN

This appears momentarily because of the signal of the digital broadcast during recording.
→ There is no affect on the recorded contents.
No component is connected to the DIGITAL OPTICAL IN jack, or a digital component is not connected properly.
→ Connect a digital component to the DIGITAL OPTICAL IN jack properly using a digital connecting cable.
The connected digital component is not turned on.
→ See the operating instructions supplied with the connected component and confirm whether the component is turned on.
The digital connecting cable connected to the DIGITAL OPTICAL IN jack is pulled out, or the connected digital component is turned off during digital recording.
→ Connect the cable, or turn on the digital component.

E0001/MEMORY NG

There is an error in the internal data that the system needs in order to operate.
→ Consult your nearest Sony dealer.

E0101/LASER NG

There is a problem with the optical pickup.
→ The optical pickup may have failed. Consult your nearest Sony dealer.

MD SECTION

PROCEDURE FOR USING THE SELF-DIAGNOSIS FUNCTION (ERROR HISTORY DISPLAY MODE)

Note 1: About “R”

As this unit has only a few buttons, some operations require the use of remote commander (RM-S55EM/provided with unit: 1-476-664-21) buttons. These operations are indicated as “R” in this manual.

Example: **MENU/NO “R”** ...Press the **MENU/NO** button of the remote commander.

Note 2: Incorrect operations may be performed if the MD test mode is not entered properly.

In this case, press the **I/⏻** button to turn the power off, and retry to enter the MD test mode.

Note 3: Perform the self-diagnosis function in the “error history display mode” in the MD test mode. The following describes the least required procedure. Be careful not to enter other modes by mistake. If you set other modes accidentally, press the **MENU/NO “R”** button to exit the mode.

Procedure:

1. Press the **I/⏻** button to turn the power on.
2. Press the **FUNCTION** button to set the MD function.
3. Press three buttons of **▶▶▶ TUNING+**, **REC MODE**, and **◀◀◀** (MD) simultaneously to enter the MD test mode and display “[Check]”.
4. Press the **◀◀ “R”** or **▶▶ “R”** button to display “[Service]”.
5. Press the **ENTER/YES “R”** button to display “AUTO CHECK”, and press the **▶▶ “R”** button to display “Err Display”.
6. Press the **ENTER/YES “R”** button to enter the error history mode and display “op rec tm”.
7. Select the contents to be displayed or executed using the **◀◀ “R”** or **▶▶ “R”** button.
8. Press the **CD SYNC NORMAL** button to light up “IT” indicator, then press the **REC MODE** button will display or execute the contents selected.
9. Press the **REC MODE** button another time returns to step 7.
10. Press the **MENU/NO “R”** button displays “Err Display” and release the error history mode.
11. To release the MD test mode, press the **REPEAT STEREO/MONO** button to display “Initialize” and release the MD test mode.

ITEMS OF ERROR HISTORY MODE ITEMS AND CONTENTS

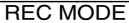
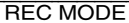
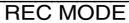
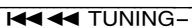
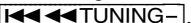
Display	Details of History
op rec tm	Displays the recording time. Displayed as “r□□min”. The displayed time is the total time the laser is set to the high power state. This is about 1/4 of the actual recording time. The time is displayed in decimal digits from 0h.
op play tm	Displays the playback time. Displayed as “p□□□□□h”. The displayed time is the total of the actual play time. The time is displayed in hexadecimal digits from 0h.
spdl rp tm	Displays the spindle motor running time. Displayed as “r□□□□□h”. The time is displayed in hexadecimal digits from 0h.
retry err	Displays the total number of retries during recording and number of retry errors during play. Displayed as “r □□ p □□”. “r” indicates the retries during recording while “p” indicates the retry errors during play. The number of retries and retry errors are displayed in hexadecimal digits from 00 to FF.
total err	Displays the total number of errors. Displayed as “total □□”. The number of errors is displayed in hexadecimal digits from 00 to FF.
err history	Displays the 10 latest errors. Displayed as “0□ ErrCd @@”. □ indicates the history number. The smaller the number, the more recent is the error. (00 is the latest) @@ indicates the error code. Refer to the following table for the details. The error history can be switched by pressing the  “R” or  “R” button.
retry adrs	Display the 5 latest retry address. Display as “□□ ADRS@@@”. □□ indicates the history number. The smaller the number, the more recent is the error. (00 is the latest) @@@ indicates the cluster of retry address. The number of retry address can be switched by pressing the  “R” or  “R” button.
er refresh	Mode to clear the error history and retry address history. Procedure: 1) Press the  button. 2) The display will change to “er refresh?”, and then press the  “R” button. The operation is over if “Complete!” is displayed. After this mode was executed, check the following: • The data have been cleared. • Perform the recording and playing to check that the mechanism operates normally.
tm refresh	Mode to clear cumulative time of “op rec tm” and “op play tm”. Procedure: 1) Press the  button. 2) The display will change to “tm refresh?”, and then press the  “R” button. The operation is over if “Complete!” is displayed.
op change	Mode to clear cumulative time of “op rec tm” and “op play tm”. These historical data are used to determine the timing when the optical pick-up is to be replaced. When the optical pick-up was replaced, perform this operation to clear historical data. Procedure: 1) Press the  button. 2) The display will change to “op change?”, and then press the  “R” button. The operation is over if “Complete!” is displayed.
spdl change	Mode to clear cumulative time of “spdl rp tm”. This historical data is used to determine the timing when the spindle motor is to be replaced. When the spindle motor was replaced, perform this operation to clear historical data. Procedure: 1) Press the  button. 2) The display will change to “spdl change?”, and then press the  “R” button. The operation is over if “Complete!” is displayed.

Table of Error Codes

Error Code	Details of Error
10	Loading failed
12	Loading switch combination is illegal
20	Head of PTOC could not be read within the specified time
21	Head of PTOC could be read but its content is erroneous
22	Access to UTOC could not be made within the specified time
23	UTOC could be not read within the specified time
24	Content of UTOC is erroneous
30	Playing could not start
31	Content of sector is erroneous
40	Cause of retry occurred during normal recording
41	D-RAM overflowed and retry was executed
42	Retry was executed during the writing to TOC
43	S.F editing was interrupted by retry
50	Address could not be read except in access processing
51	Focusing failed and it is out of control
60	Unlock retry

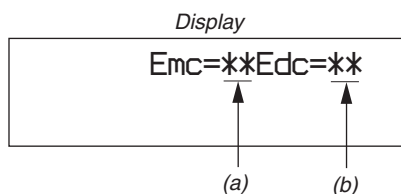
CD SECTION**PROCEDURE FOR USING THE SELF-DIAGNOSIS FUNCTION (ERROR HISTORY DISPLAY MODE)****1. To Enter The CD Test Mode****Procedure:**

1. Press the  button to turn the power on.
2. Press the [FUNCTION] button to set the CD function.
3. Press three buttons of  (CD),  TUNING- and  TUNER/BAND simultaneously.
4. The set enter the CD test mode (menu) and displays “dvt ERR CODE”.

Note: If the consequence was displayed except “dvt ERR CODE”, press the  TUNING-,  TUNING+ button to display “dvt ERR CODE”.

2. Display of Error Number**Procedure:**

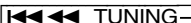
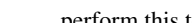
1. Press the  (CD) button to display as bellow.

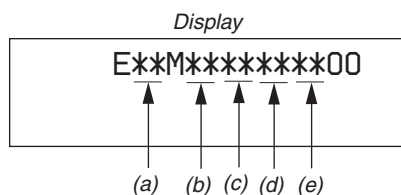


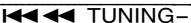
- (a) Number of mechanical error.
- (b) Number of no disc error that occurred after chucking.

2. Press the  (CD) button and return to CD test mode menu (“dvt ERR CODE” is displayed).

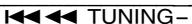
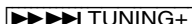
3. Display of Mechanical Error History**Procedure:**

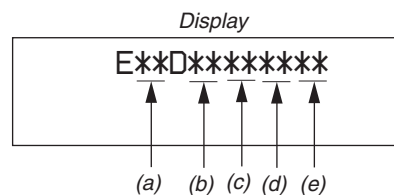
1. In the CD test mode menu, press the  TUNING-,  TUNING+ button to display “dvt ECODE MEC”.
2. Press the  (CD) button to display as bellow.

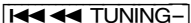


- (a) The number of mechanical error.
Latest one “00” to last ten “09”
(Press the  TUNING-,  TUNING+ button to change the error number)
 - (b) FF: Mechanical error, when normal operation.
Other display: Mechanical error, between mechanical initialize.
 - (c), (d), (e): Not used in servicing.
3. Press the  (CD) button and return to CD test mode menu (“dvt ECODE MEC” is displayed).

4. Display of No Disc Error History**Procedure:**

1. In the CD test mode menu, press the  TUNING-,  TUNING+ button to display “dvt ECODE BU”.
2. Press the  (CD) button to display as bellow.



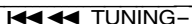
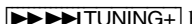
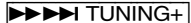
- (a) The number of no disc error.
Latest one “00” to last ten “09”
(Press the  TUNING- or  TUNING+ button to change the error number)
- (b) 01: Focus error
02: GFS error
03: Set up error
04: Focus error (not used in servicing)
- (c) 00: No disc error (Did not chucking retry)
02: No disc error (Chucking retry to completion)
- (d) The status, when determined no disc error.
2x: During setting up
3x: During reading TOC
4x: During accessing
5x: During playback
6x: During pause
7x: During manual search (during playback)
8x: During manual search (during pause)

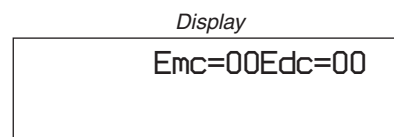
3. Press the  (CD) button and return to CD test mode menu (“dvt ECODE BU” is displayed).

4. To Erase The Error History

When returning the unit to the customer after completing repairs, perform this to erase the past error history.

Procedure:

1. In the CD test mode menu, press the  TUNING-,  TUNING+ button to display “dvt ECNT0 MEC”. (When erase the mechanical error)
Or one more press the  TUNING+ button to display “dvt ECNT0 BU”. (When erase the no disc error)
2. Press the  (CD) button to erase the error history (mechanical error or no disc error) and display as bellow.

**5. To Release The CD Test Mode**

Press the  button to turn the power off.

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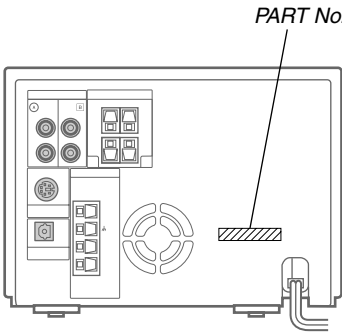
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MODEL IDENTIFICATION

— Back panel —



Model	Part No.
AEP,UK models	4-231-958-1□
Homg Kong,Malaysia, Singapore models	4-231-958-2□
Australian model	4-231-958-3□

SECTION 1 SERVICING 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

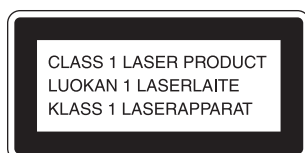
NOTES ON LASER DIODE EMISSION CHECK

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

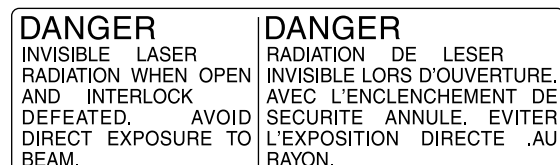
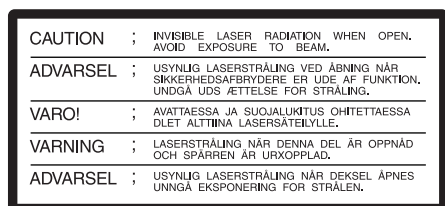
NOTES ON LASER DIODE EMISSION CHECK

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



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

The following 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 Δ OR DOTTED LINE WITH MARK Δ 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.

CAUTION

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

ADVARSEL

Ekspløsjonsfare ved feilaktig skifte av batteri. Benytt samme batteritype eller en tilsvarende type anbefalt av apparatfabrikanten. Brukte batterier kasseres i henhold til fabrikantens instruksjoner.

VARNING

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en likvärdig typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt gällande föreskrifter.

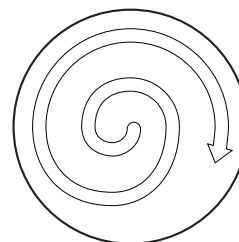
VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

CLEANING OBJECTIVE LENS OF OPTICAL PICK-UP

- In cleaning the objective lens of optical pick-up, be sure the following below.

1. In cleaning the lens, do not apply an excessive force. As the optical pick-up is vulnerable, application of excessive force could damage the lens holder.
2. In cleaning, do not use a cleaner other than exclusive cleaning liquid (KK-91 or isopropyl alcohol).
3. Wipe the objective lens spirally from center toward outside. (See Figure A)

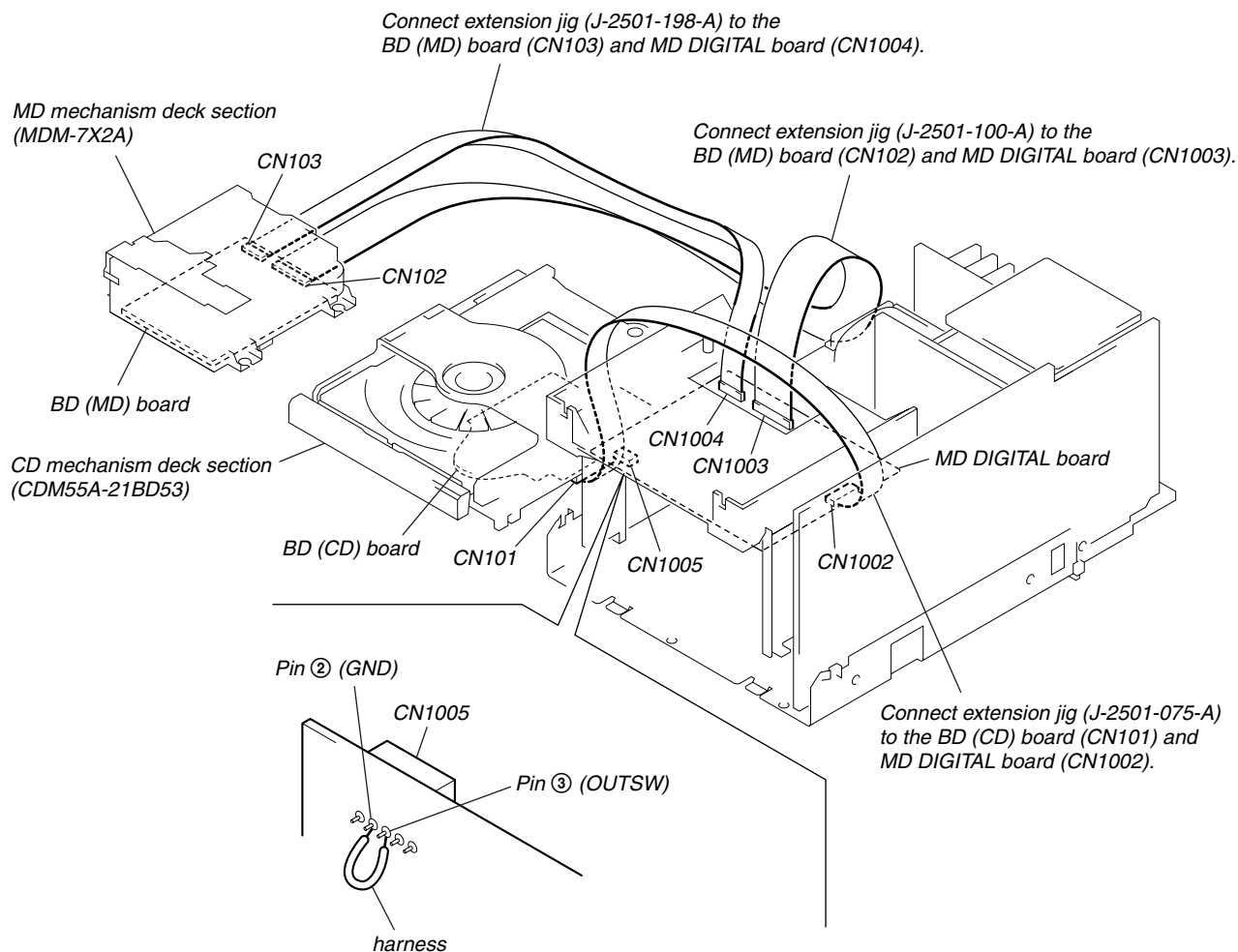


(Figure A)

4. Eject the disk, if loaded.
5. Disconnect the power cord from the socket to shut off the power supply.
6. When cleaning the objective lens of optical pick-up in CD, refer to "HOLDER (BU) ASS'Y" on page XX for removing HOLDER (BU) ASS'Y.

SERVICE POSITION

- In checking the MD mechanism deck section (MDM-7X2A), prepare two extension jigs (Part No. J-2501-100-A: 1.00 mm 27 core and Part No. J-2501-198-A: 1.00 mm 17 core).
- In checking the CD mechanism deck section (CDM55A-21BD53), prepare extension jig (Part No. J-2501-075-A: 1.00 mm 21 core.)



Note on Checking CD Mechanism Deck Section

In performing the operation check with the CD mechanism deck section removed from the main unit, the CD disc loading will be disabled if the connector cable between MD DIGITAL board (CN1005) and LOADING board (CN151) is disconnected. Accordingly, make preparation through the following steps.

1. Insert the CD disc for test with the set assembled.
2. Unplug the AC power cord to turn the power off, and remove the CD mechanism deck section. (Disconnect the connector cable between MD DIGITAL board (CN1005) and LOADING board (CN151), and also the connector cable between MD DIGITAL board (CN1002) and BD (CD) board (CN101))
3. Connect the CN1005 pin ③ (OUTSW) and pin ② (GND) on the MD DIGITAL board with a lead wire.
4. Connect the connectors between MD DIGITAL board (CN1002) and BD (CD) board (CN101) with the extension tool (part No.: J-2501-075-A).

Note 1: Under this condition, the CD can be played but the disc loading operation is disabled.

Note 2: After checking, disconnect the lead wire connected in step 3.

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.

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)

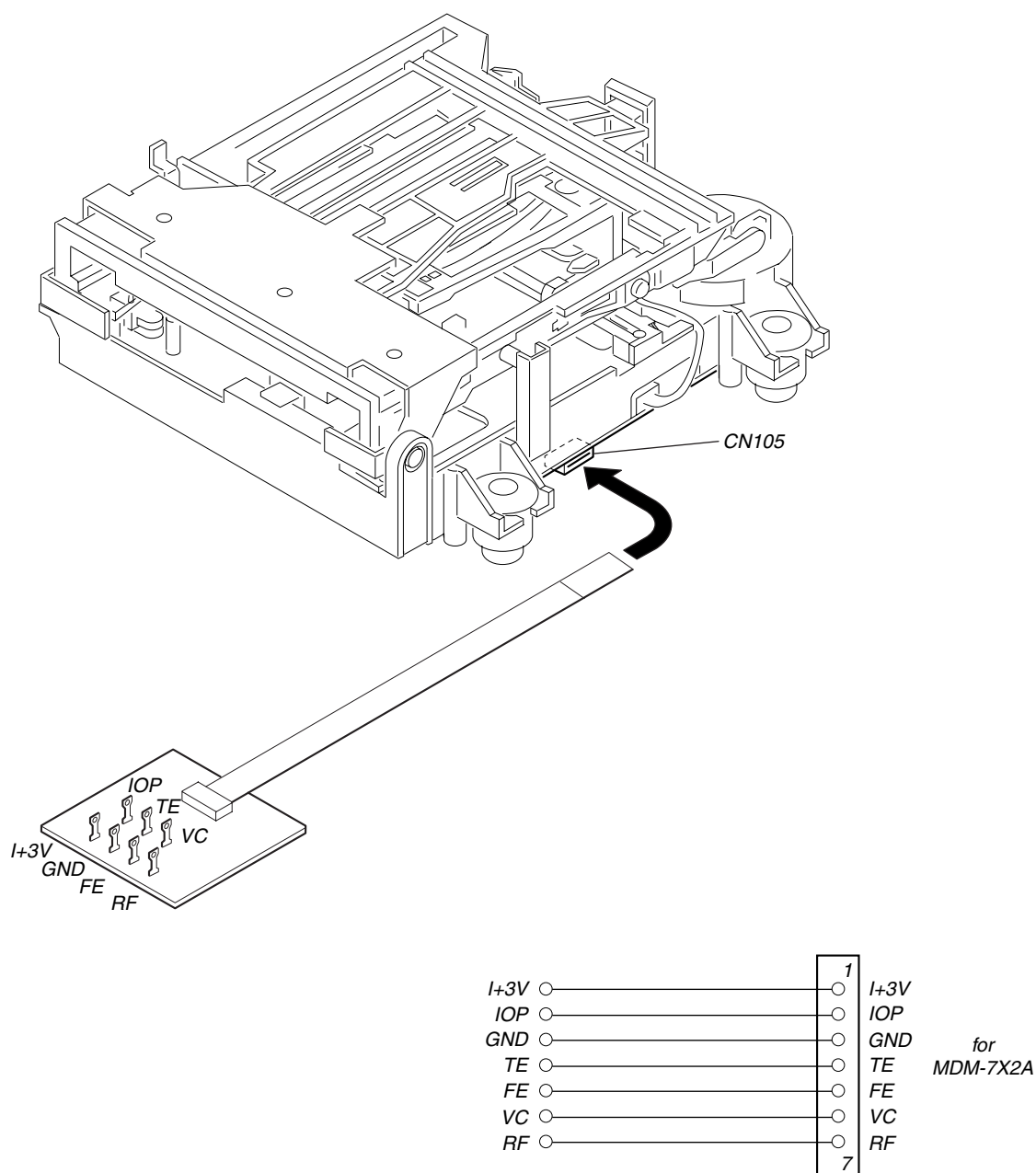
GND : Ground

TE : Tracking error signal (Traverse adjustment)

FE : Focus error signal

VC : Reference level for checking the signal

RF : RF signal (Check jitter)



Note 1: About “R”

As this unit has only a few buttons, some operations require the use of remote commander (RM-S55EN/provided with unit: 1-476-664-21) buttons. These operations are indicated as “R” in this manual.

Example: [MENU/NO “R”] ... Press the [MENU/NO] button of the remote commander.

Note 2: Incorrect operations may be performed if the MD test mode is not entered properly.

In this case, press the [I/⏻] button to turn the power off, and retry to enter the MD test mode.

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. Press the [I/⏻] button to turn the power on.
2. Press the [FUNCTION] button to set the MD function.
3. Press three buttons of [▶▶▶▶ TUNING+], [REC MODE], and [◀◀◀◀ (MD)] simultaneously to enter the MD test mode and display “[Check]”.
4. Press the [◀◀ “R”] or [▶▶ “R”] button to display “[Service]”.
5. Press the [ENTER/YES “R”] button to display “AUTO CHECK”, and press the [▶▶ “R”] button to display “Top Write”.
6. Press the [ENTER/YES “R”] button.
7. The display becomes “Ref= @.@.@” (@ is an arbitrary number) and the numbers which can be changed will blink.
8. Input the IOP value written on the optical pick-up.
To select the number : Press the [◀◀ “R”] or [▶▶ “R”] button.
To select the digit : Press the [REC MODE] button after press the [CD SYNC NORMAL] button to display “IT”.
9. When the [ENTER/YES “R”] button is pressed, the display becomes “Measu=@.@.@” (@ is an arbitrary number).
10. As the adjustment results are recorded for the step 9 value. Leave it as it is and press the [ENTER/YES “R”] button.
11. “Complete!” will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become “Top Write”.
12. Press the [REPEAT STEREO/MONO] button to complete. “Initialize” will be displayed and release the MD test mode.

Display Procedure:

1. Press the [I/⏻] button to turn the power on.
2. Press the [FUNCTION] button to set the MD function.
3. Press three buttons of [▶▶▶▶ TUNING+], [REC MODE], and [◀◀◀◀ (MD)] simultaneously to enter the MD test mode and display “[Check]”.
4. Press the [◀◀ “R”] or [▶▶ “R”] button to display “[Service]”.
5. Press the [ENTER/YES “R”] button to display “AUTO CHECK”, and press the [▶▶ “R”] button to display “Top Read”.
6. Press the [ENTER/YES “R”] button.
7. “@.@./###.#” is displayed and the recorded contents are displayed.
@.@./ : Indicates the Iop value labeled on the pick-up.
###.# : Indicates the Iop value after adjustment.
8. Press the [REPEAT STEREO/MONO] button to complete. “Initialize” will be displayed and release the MD test mode.

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. Enter the MD test mode.
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 [■] (MD) and [▲] (MD) buttons simultaneously.
4. Press the [◀◀ “R”] or [▶▶ “R”] button to display “MDM-7X2A”.
5. Press the [ENTER/YES “R”] button. If the nonvolatile memory is successfully overwritten, the normal MD test mode will be set and a message to select the MD test mode will be displayed.

CHECKS PRIOR TO PARTS REPLACEMENT AND ADJUSTMENTS IN MD

Before performing repairs, perform the following checks to determine the faulty locations up to a certain extent. Details of the procedures are described in “5 Electrical Adjustments”.

	Criteria for Determination (Unsatisfactory if specified value is not satisfied)	Measure if unsatisfactory
Laser power check (6-2 : See page 40)	0.9 mW power Specified value : figure1 8.4 mW power Specified value : figure2	- Clean the optical pick-up - Adjust again - Replace the optical pick-up
	- Iop (at 8.4mW) - Labeled on the optical pick-up - Iop value $\pm$ 10mA	Replace the optical pick-up
Traverse check (6-6 : See page 41)	Traverse waveform Specified value : Below 10% offset	Replace the optical pick-up
Focus bias check (6-7 : See page 42)	Error rate check Specified value : For points A and B C1 error : About 200 AD error : below 2 For point C C1 error: 20 AD error: below 2	Replace the optical pick-up
C PLAY check (6-8 : See page 42)	- Error rate check Specified value: - When using test disc (MDW-74/GA-1) C1 error : Below 20 AD error : 00 - When using check disc (TDYS-1) C1 error : Below 20	Replace the optical pick-up
Self-recording/playback check (6-9 : See page 42)	CPLAY error rate check Specified value: C1 error : Below 20 AD error : Below 2	If always unsatisfactory: - Replace the overwrite head - Check for disconnection of the circuits around the overwrite head
		If occasionally unsatisfactory: - Check if the overwrite head is distorted - Check the mechanism around the sled
Temperature compensation offset check (6-1 : See page 40)	Unsatisfactory if displayed as T=@@ (##) [NG]” NG (@@, ## are both arbitrary numbers)	- Check for disconnection of the circuits around D101 (BD (MD) board) - Check the signals around IC101, IC151, CN102, CN103 (BD (MD) board)

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.

Figure1:

SPECIFIED VALUE	KMS-262A	0.84 to 0.92 mW
	KMS-262E	0.90 to 0.96 mW

Figure2:

SPECIFIED VALUE	KMS-262A	8.1 to 8.7 mW
	KMS-262E	8.4 to 8.9 mW

RETRY CAUSE DISPLAY MODE IN MD

- In this test mode, the causes for retry of the unit during recording can be displayed on the liquid crystal display. 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.

Precedure:

- Load a recordable disc whose contents can be erased into the unit.
- Press the **MENU/NO “R”** button. When “Edit Menu” is displayed on the liquid crystal display, press the **◀◀ “R”** or **▶▶ “R”** button to display “All Erase?”.
- Press the **ENTER/YES “R”** button.
- When “All Erase??” is displayed on the liquid crystal display, the music calendar number blinks.
- Press the **ENTER/YES “R”** button to display “Complete!”.
- Press the **REC/REC IT** button to start recording. Then press the **▶▶ MD** button and start recording. If recording cannot be performed, press the **FUNCTION** button and set a different function.
- Press three buttons of **◀◀ ◀◀** , **PLAY MODE TUNING MODE** and **▶▶ MD** simultaneously to enter the retry cause display mode.
- To check the “track mode”, press the **▶▶ MD** button to start playback.
- To release this mode, press the **I/O** button to turn the power off. When “TOC” goes off, disconnect the power plug from the outlet. If the test mode cannot be released, refer to “MC COLD RESET” on page 31.

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

RTs@@c##e**
Liquid crystal display

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

**Fig. 2 Reading the Test Mode Display
(During playback)**

@@ ##** \$ \$
Liquid crystal display

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

Reading the Retry Cause Display

Hexadecimal Bit Binary	Higher Bits				Lower Bits				Hexa- decimal	Cause of Retry	Occurring conditions
	8	4	2	1	8	4	2	1			
	b7	b6	b5	b4	b3	b2	b1	b0			
	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 Retry Cause Display

	Higher Bits				Lower Bits				Hexa- decimal	Details	
Hexadecimal	8	4	2	1	8	4	2	1			
Bit	b7	b6	b5	b4	b3	b2	b1	b0		When 0	When 1
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. 01:Normal audio. Others:Invalid	
	0	0	0	0	1	0	0	0	08		
	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

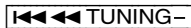
Hexadecimal	Binary	Hexadecimal	Binary
0	0000	8	1000
1	0001	9	1001
2	0010	A	1010
3	0011	B	1011
4	0100	C	1100
5	0101	D	1101
6	0110	E	1110
7	0111	F	1111

CD SECTION

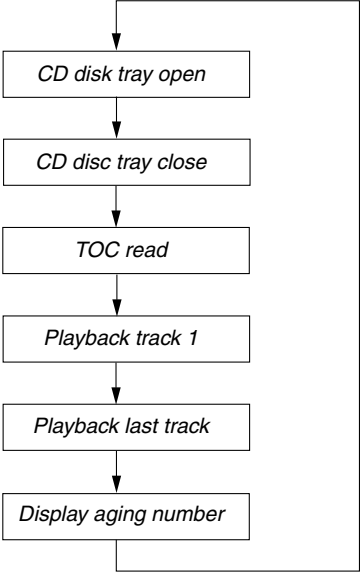
CD AGING MODE

Procedure:

- 1. Press the  button to turn the power on.
- 2. Press the  button to set the CD function, and press the  (CD) button to insert a disc.
- 3. Press three buttons of  (CD) ,  and  simultaneously.
- 4. The set displays “AGING SEL=00”. Between it is displayed, press the  (CD) button to start CD aging mode.
- 5. The sequence during the CD aging mode is following as below.

Note: If the triple button pressing failed to activate the CD test mode, press the  button, and the  (MD) button in this order while pressing the  (CD) button. Also, release the  (MD),  and  (CD) buttons in this order, when releasing the buttons.

CD aging mode sequence:



- 6. To release from this mode, press the  button to turn the power off.

Note: Refer to “Error History Display Mode” (page 5) for display at an error occurred.

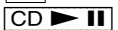
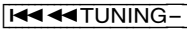
CD-TEXT TEST DISC

This unit is able to display the test data (character information) written in the CD on its fluorescent indicator tube.

The CD-TEXT TEST DISC (TGCS-313:4-989-366-01) is used for checking the display.

To check, perform the following procedure.

Checking Method:

1. Press the  button to turn the power on, set the disc to the disc table with the “test disc” label facing up, and chuck the disc.
2. Press the  button and playback the disc.
3. The following will be displayed on the liquid crystal display.
Display : 1kHz/0dB/L&R
4. Pressing the  or  button, select the track. The text data of each track will be displayed.
For details of the displayed contents for each track, refer to “Table 1 : CD-TEXT TEST DISC TEXT Data Contents” and “Table 2 : CD-TEXT TEST DISC Recorded Contents and Display”.

Restrictions in CD-TEXT Display

In this unit, some special characters will not be displayed properly. These will be displayed as a space or a character resembling it. For details, refer to “Table 2 : CD-TEXT DISC Recorded Contents and Display”.

Table 1 : CD-TEXT TEST DISC TEXT Data Contents (TRACKS No. 1 to 41:Normal Characters)

TRACK No.	Displayed Contents	TRACK No.	Displayed Contents
1	1kHz/0dB/L&R	22	1kHz/−90dB/L&R
2	20Hz/0dB/L&R	23	Infinity Zero w/o emphasis//L&R
3	40Hz/0dB/L&R	24	Infinity Zero with emphasis//L&R
4	100Hz/0dB/L&R	25	400Hz+7kHz(4:1)/0dB/L&R
5	200Hz/0dB/L&R	26	400Hz+7kHz(4:1)/−10dB/L&R
6	500Hz/0dB/L&R	27	19kHz+20kHz(1:1)/0dB/L&R
7	1kHz/0dB/L&R	28	19kHz+20kHz(1:1)/−10dB/L&R
8	5kHz/0dB/L&R	29	100Hz/0dB/L*
9	7kHz/0dB/L&R	30	1kHz/0dB/L*
10	10kHz/0dB/L&R	31	10kHz/0dB/L*
11	16kHz/0dB/L&R	32	20kHz/0dB/L*
12	18kHz/0dB/L&R	33	100Hz/0dB/R*
13	20kHz/0dB/L&R	34	1kHz/0dB/R*
14	1kHz/0dB/L&R	35	10kHz/0dB/R*
15	1kHz/−1dB/L&R	36	20kHz/0dB/R*
16	1kHz/−3dB/L&R	37	100Hz Squer Wave//L&R
17	1kHz/−6dB/L&R	38	1kHz Squer Wave//L&R
18	1kHz/−10dB/L&R	39	1kHz w/emphasis/−0.37dB/L&R
19	1kHz/−20dB/L&R	40	5kHz w/emphasis/−4.53dB/L&R
20	1kHz/−60dB/L&R	41	16kHz w/emphasis/−9.04dB/L&R
21	1kHz/−80dB/L&R		

Note: The contents of Track No. 1 to 41 are the same as those of the current TEST DISC-their titles are displayed.

Table 2: CD-TEXT TEST DISC Recorded Contents and Display

(In this unit, some special characters cannot be displayed. This is not a fault)

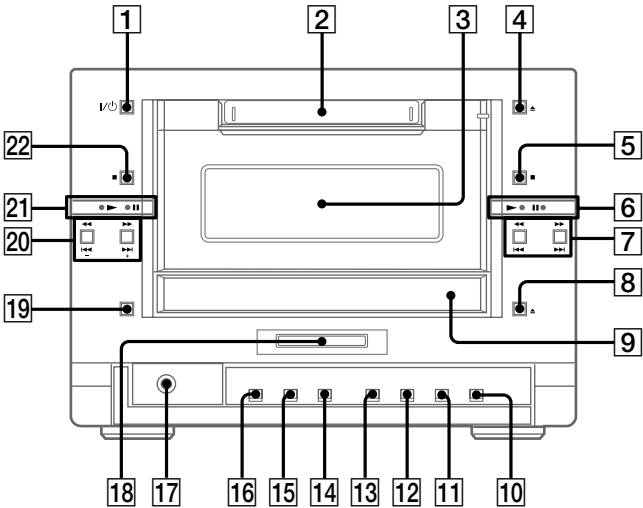
TRACK No.	Recorded contents	Display
42	! " # \$ % & ' (21h to 27h) 1kHz 0dB L&R	← All the same
43	() * + , - . / (28h to 2Fh)	← All the same
44	0 1 2 3 4 5 6 7 (30h to 37h)	← All the same
45	8 9 : ; < = > ? (38h to 3Fh)	← All the same
46	@ A B C D E F G (40h to 47h)	← All the same
47	H I J K L M N O (48h to 4Fh)	← All the same
48	P Q R S T U V W (50h to 57h)	← All the same
49	X Y Z [\] ^ _ (58h to 5Fh)	← All the same
50	` a b c d e f g (60h to 67h)	← All the same
51	h i j k l m n o (68h to 6Fh)	← All the same
52	p q r s t u v w (70h to 77h)	← All the same
53	x y z { } ~ ■ (78h to 7Fh)	← All the same
54	■ i ç £ ¤ ¥ ¦ § (A0h to A7h) 8859-1	(A0h to A7h) 8859-1
55	¨ © ª « ¬ ® ¯ (A8h to AFh)	(A8h to AFh)
56	° ± ² ³ ´ µ ¶ • (B0h to B7h)	(B0h to B7h)
57	† † ° » ¼ ½ ¾ ¿ (B8h to BFh)	(B8h to BFh)
58	À Á Â Ã Ä Å Æ Ç (C0h to C7h)	A A A A A A C (C0h to C7h)
59	È É Ê Ë Ì Í Î Ï (C8h to CFh)	E E E E I I I I (C8h to CFh)
60	Ð Ñ Ò Ó Ô Õ Ö × (D0h to D7h)	D N O O O O O (D0h to D7h)
61	Ø Ù Ú Û Ü Ý Þ ß (D8h to DFh)	O U U U U Y (D8h to DFh)
62	à á â ã ä å æ ç (E0h to E7h)	a a a a a a c (E0h to E7h)
63	è é ê ë ì í î ï (E8h to FFh)	e e e e i i i i (E8h to FFh)
64	ð ñ ò ó ô õ ö ÷ (F0h to F7h)	d n o o o o o (F0h to F7h)
65	ø ù ú û ü ý þ ÿ (F8h to FFh)	o u u u u y y (F8h to FFh)
66	No.66	← All the same
67	No.67	← All the same
to	to	to
99	No.99	← All the same

This section is extracted
from instruction manual.

Parts Identification

The items are arranged in alphabetical order. Refer to the pages indicated in parentheses for details

Main unit



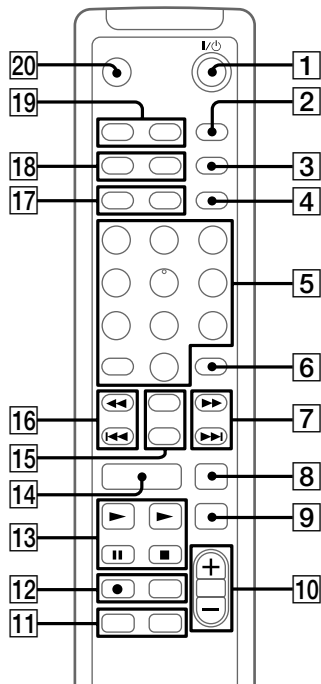
CD disc tray [9] (8)
CD SYNC HIGH [10] (17)
CD SYNC NORMAL [11] (17)
CD ► [22] (9)
Display window [3]
FUNCTION [16] (9, 13, 18, 25, 41)
MD insertion slot [2] (13)
MD ► [6] (13)
PHONES jack [17]

PLAY MODE [15] (9, 13, 24)
REC/REC IT [12] (18)
REC MODE [13] (20)
REPEAT [14] (9, 14)
STEREO/MONO [19] (35)
TUNER/BAND [13] (34)
TUNING MODE [15] (34)
TUNING +/- [20] (34)
VOLUME +/- [18]

BUTTON DESCRIPTIONS	
I/⏻ [1]	
▲MD [4]	
■ (MD) [5]	
◀◀/▶▶ (MD) [7]	
◀◀/▶▶ (MD) [7]	
▲CD [8]	
◀◀/▶▶ (CD) [20]	
◀◀/▶▶ (CD) [20]	
■ (CD) [22]	

Remote Control

Parts Identification



CLEAR [6] (11, 15, 26, 36)
CLOCK/TIMER SELECT [19] (7, 38)
CLOCK/TIMER SET [19] (7, 38)
DBFB [11] (37)
DISPLAY [17] (8, 11, 15)
ENTER/YES [15] (7, 10, 14, 23, 25, 34, 38)
FUNCTION [14] (9, 13, 18, 25, 41)
Letter/Number buttons [5] (10, 14, 25)
MD ● REC [12] (18)
MENU/NO [15] (11, 23)
NAME EDIT [8] (12, 25, 36)

PLAY MODE [18] (9, 13, 24)
PRESET EQ [11] (37)
REPEAT [18] (9, 14)
SCROLL [4] (12, 26)
SELECT [8] (12, 25)
SLEEP [20] (37)
STEREO/MONO [2] (35)
TIME [17] (8, 11, 15)
TIME MACHINE REC [12] (19)
TUNER/BAND [9] (34)
TUNING MODE [3] (34)
VOLUME +/- [10]

BUTTON DESCRIPTIONS

- I/⏻ [1]
- ▶/CURSOR→ [7]
- I/+ [7]
- (MD) [13]
- (CD) [13]
- || [13]
- [13]
- ◀/←CURSOR [16]
- ◀◀/− [16]

Setting the time

5

- 1 Turn on the system.
- 2 Press CLOCK/TIMER SET on the remote.
Proceed to step 5 when you set the clock for the first time.
- 3 Press ◀◀ or ▶▶ on the remote to select “CLOCK SET?”.
- 4 Press ENTER/YES on the remote.
- 5 Press + or − on the remote to set the day.
- 6 Press ENTER/YES or ▶▶ on the remote.
The hour indication flashes.

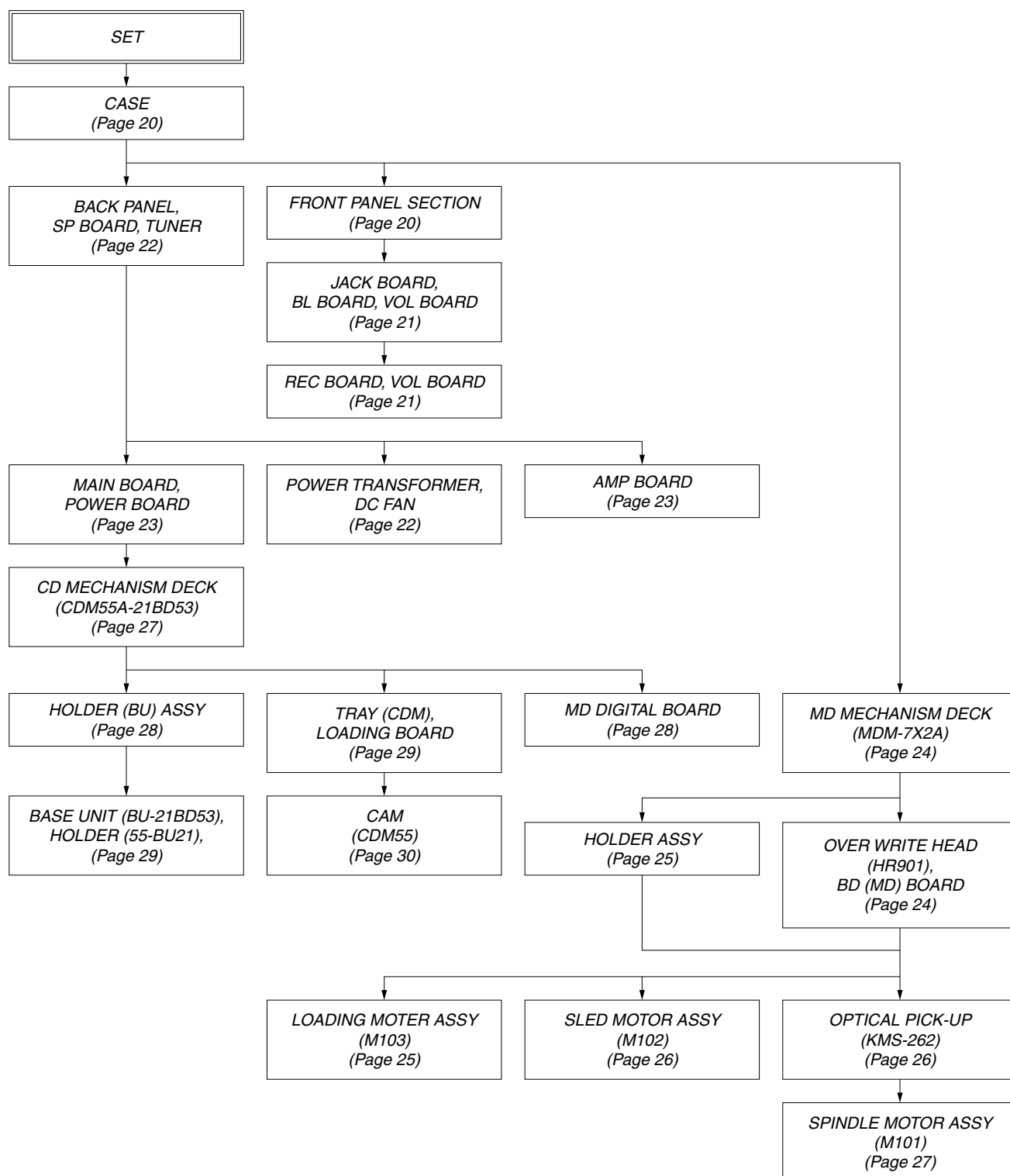
- 7 Press + or − on the remote to set the hour.
- 8 Press ENTER/YES or ▶▶ on the remote.
The minute indication flashes.
- 9 Press + or − on the remote to set the minute.
- 10 Press ENTER/YES on the remote.
The clock starts working.

If you made a mistake
Press ◀◀ or ▶▶ on the remote repeatedly until the incorrect item flashes, then set it again.

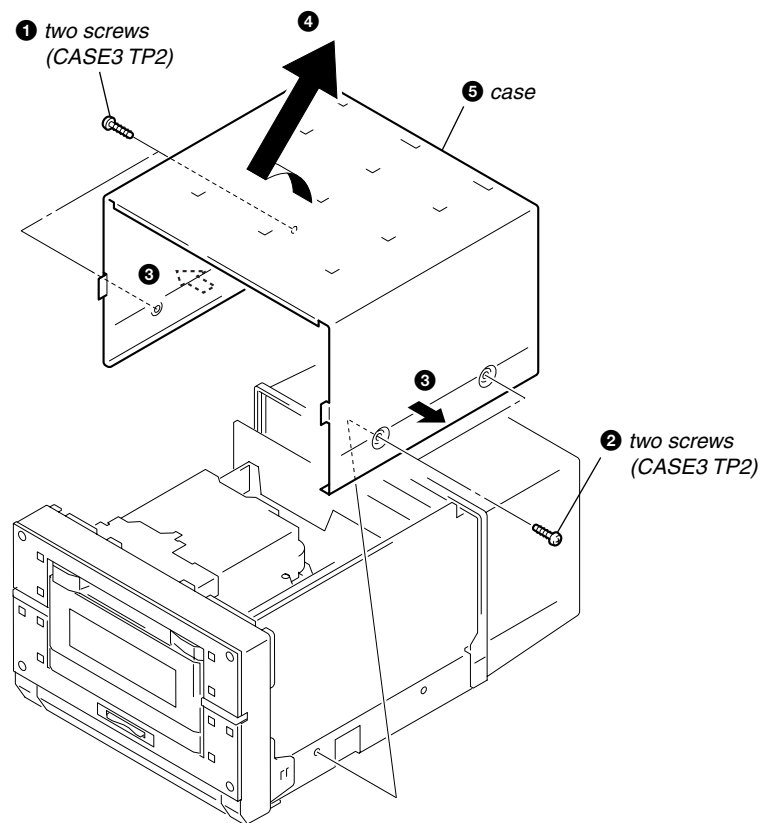
To change the preset time
Start over from step 1.

SECTION 3 DISASSEMBLY

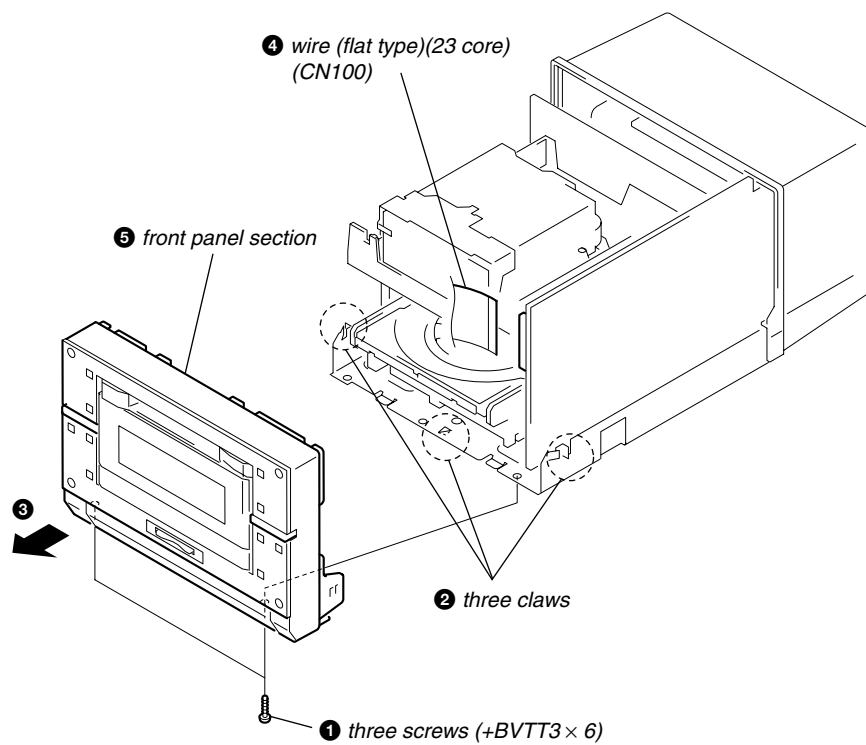
- This set can be disassembled in the order shown below.



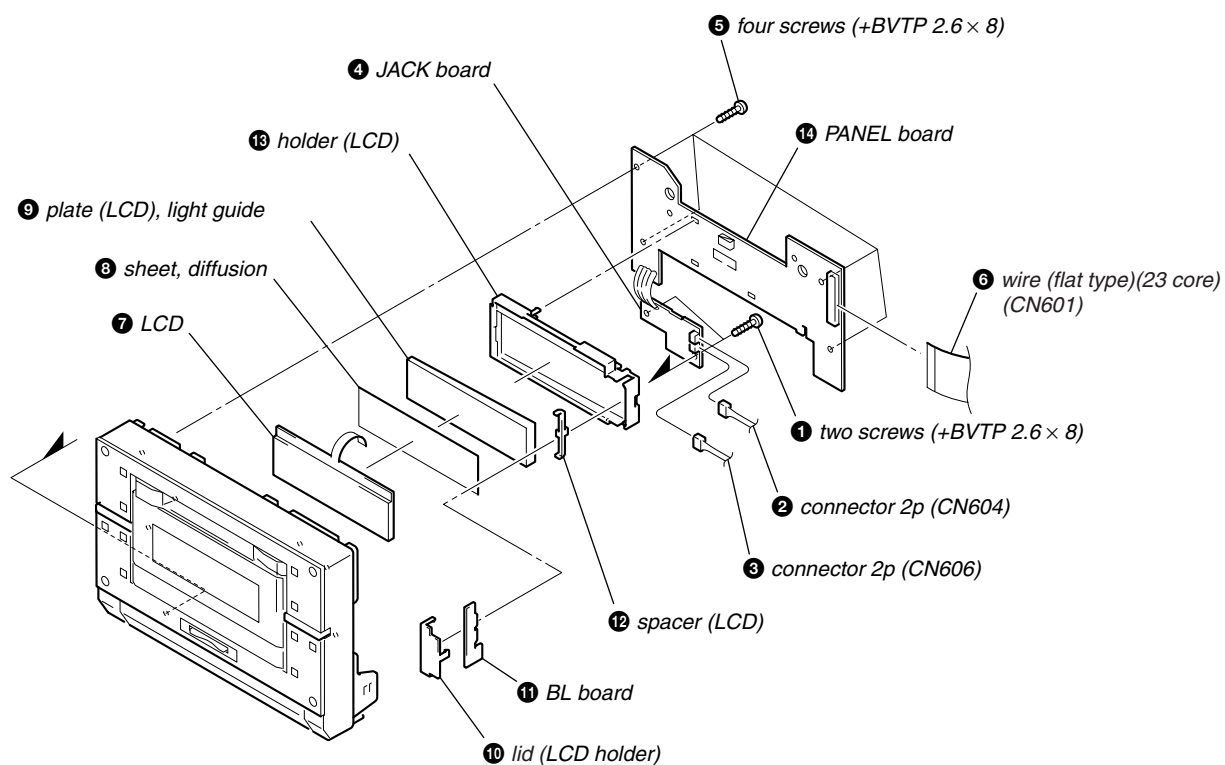
3-1. CASE



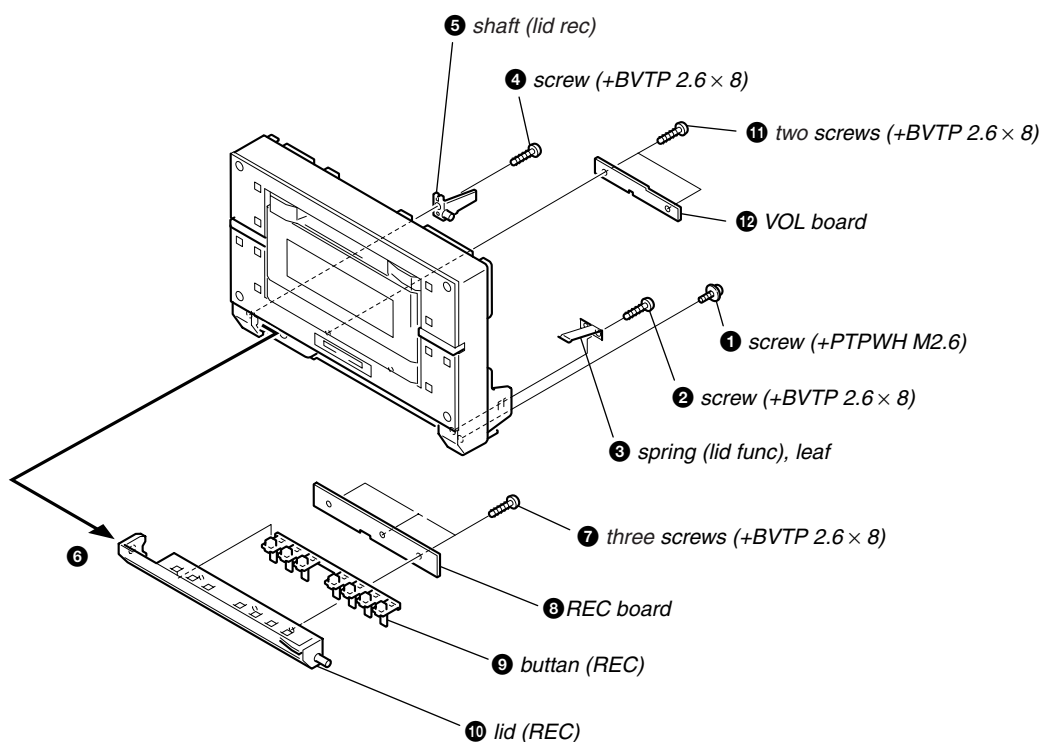
3-2. FRONT PANEL SECTION



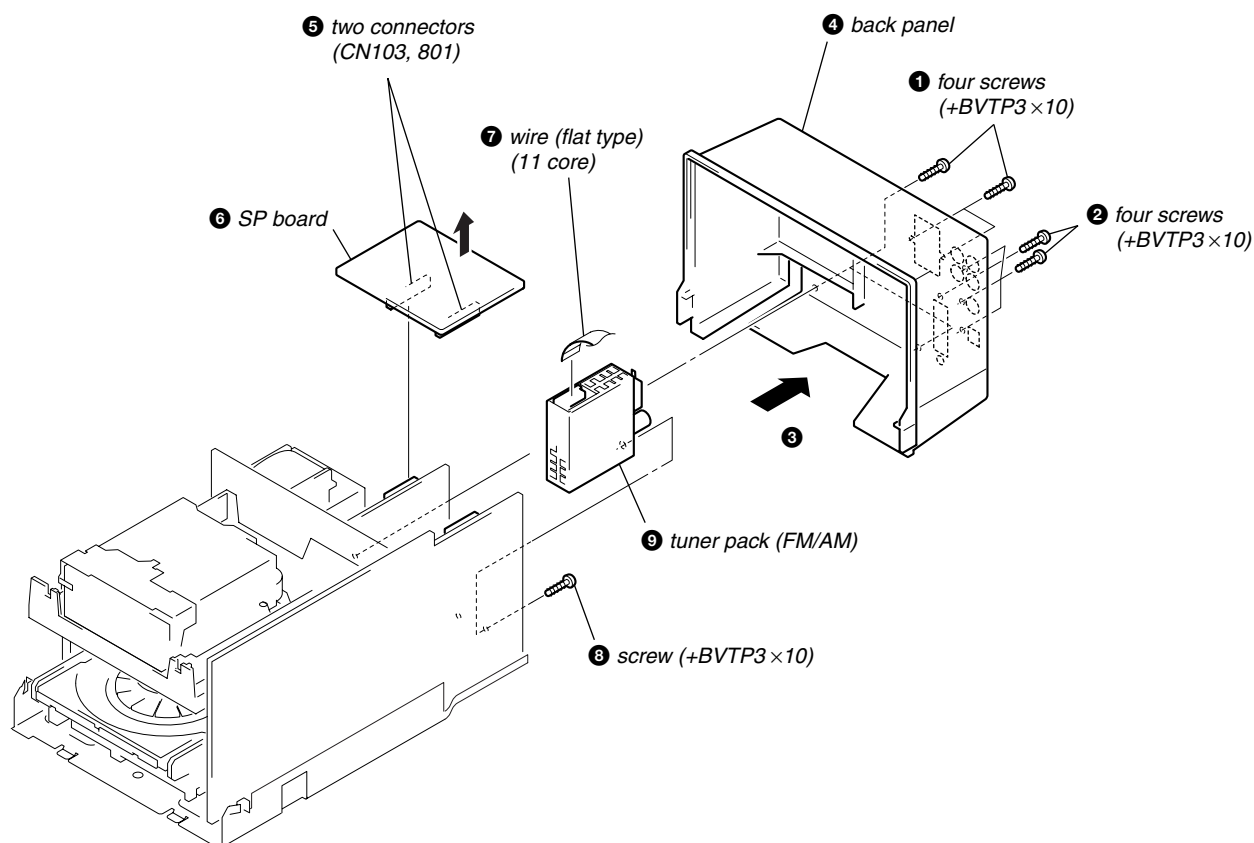
3-3. JACK BOARD, BL BOARD, PANEL BOARD, LCD



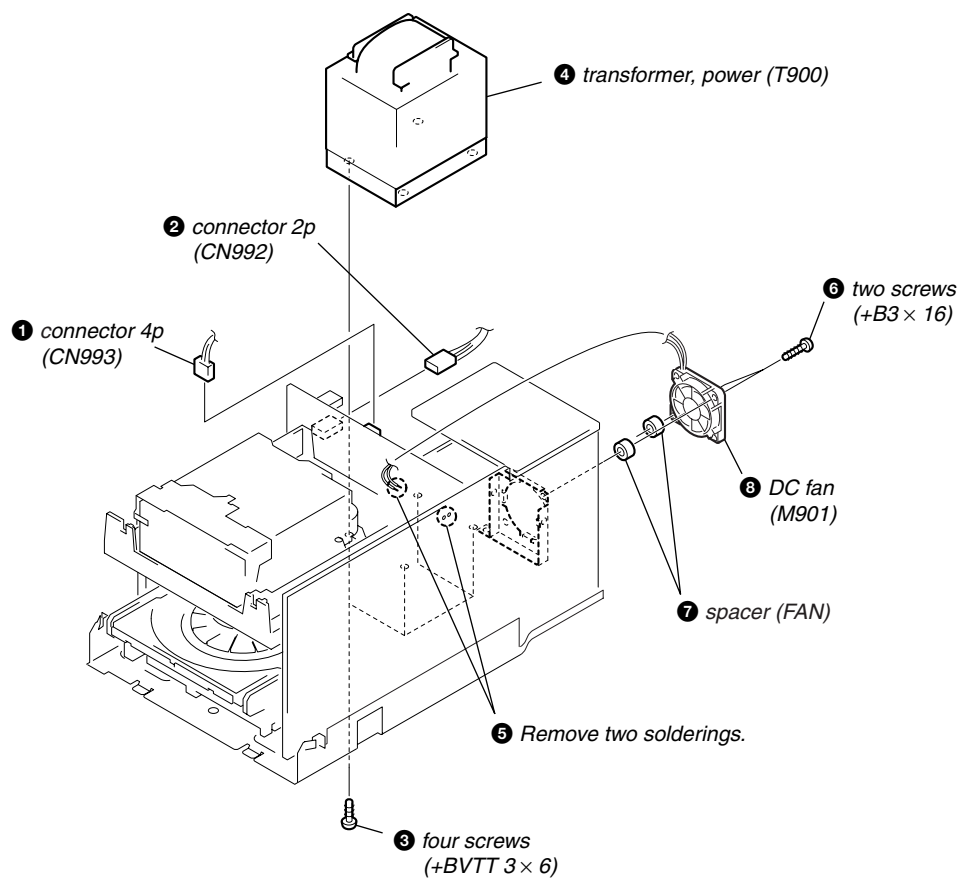
3-4. REC BOARD, VOL BOARD



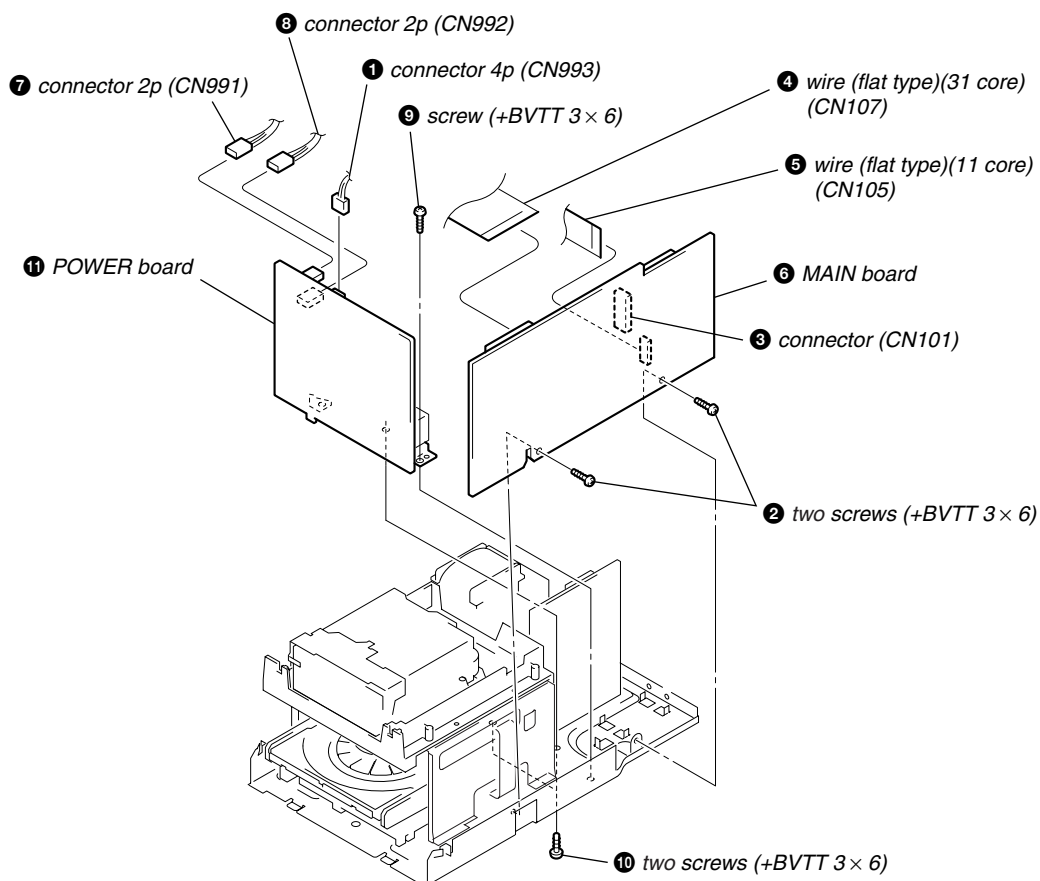
3-5. BACK PANEL, SP BOARD, TUNER



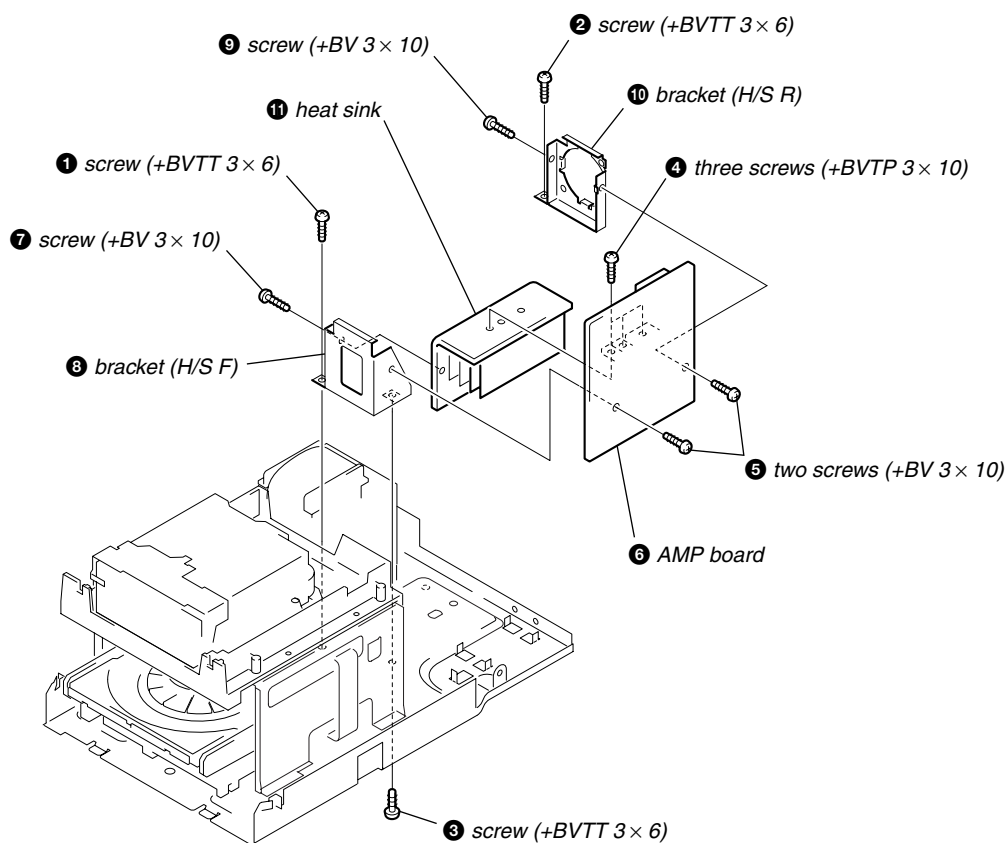
3-6. TRANSFORMER, POWER and DC FAN



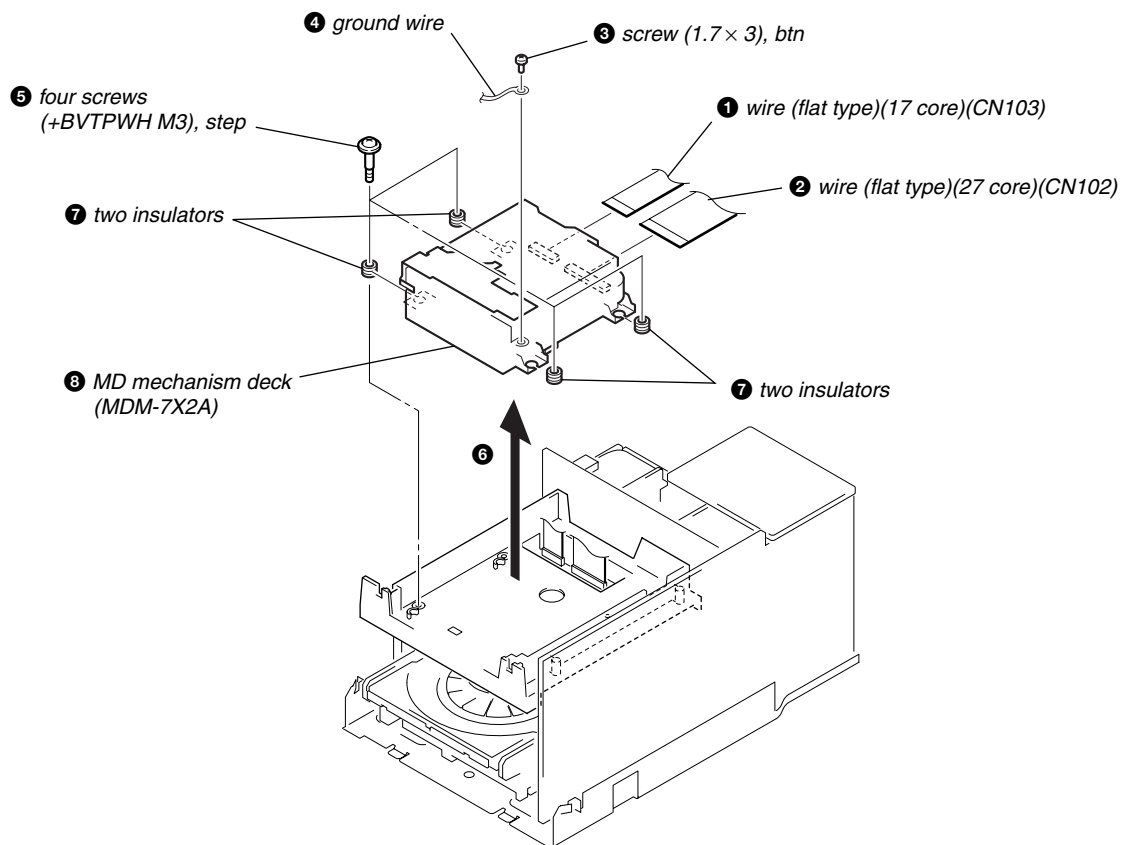
3-7. MAIN BOARD, POWER BOARD



3-8. AMP BOARD



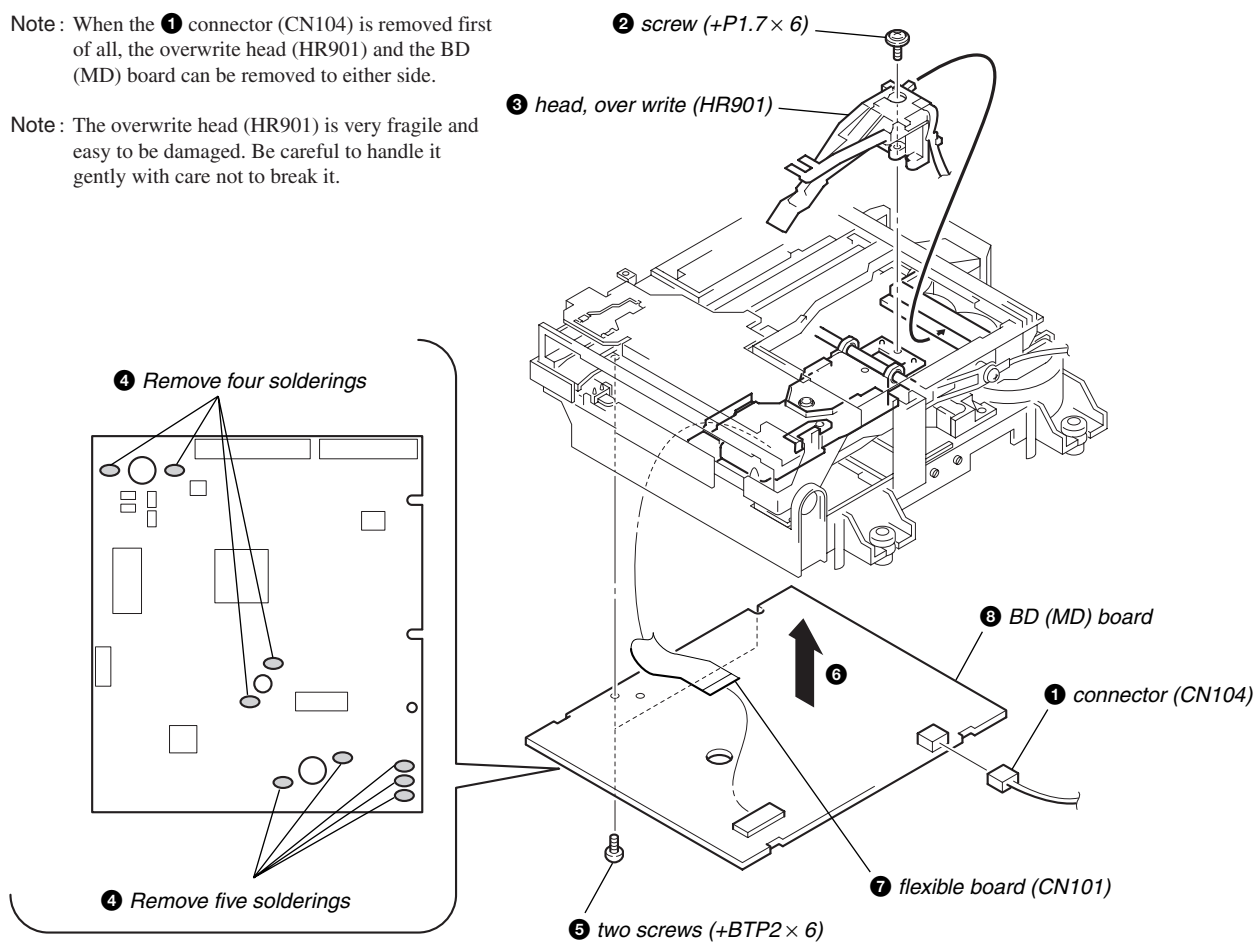
3-9. MD MECHANISM DECK (MDM-7X2A)



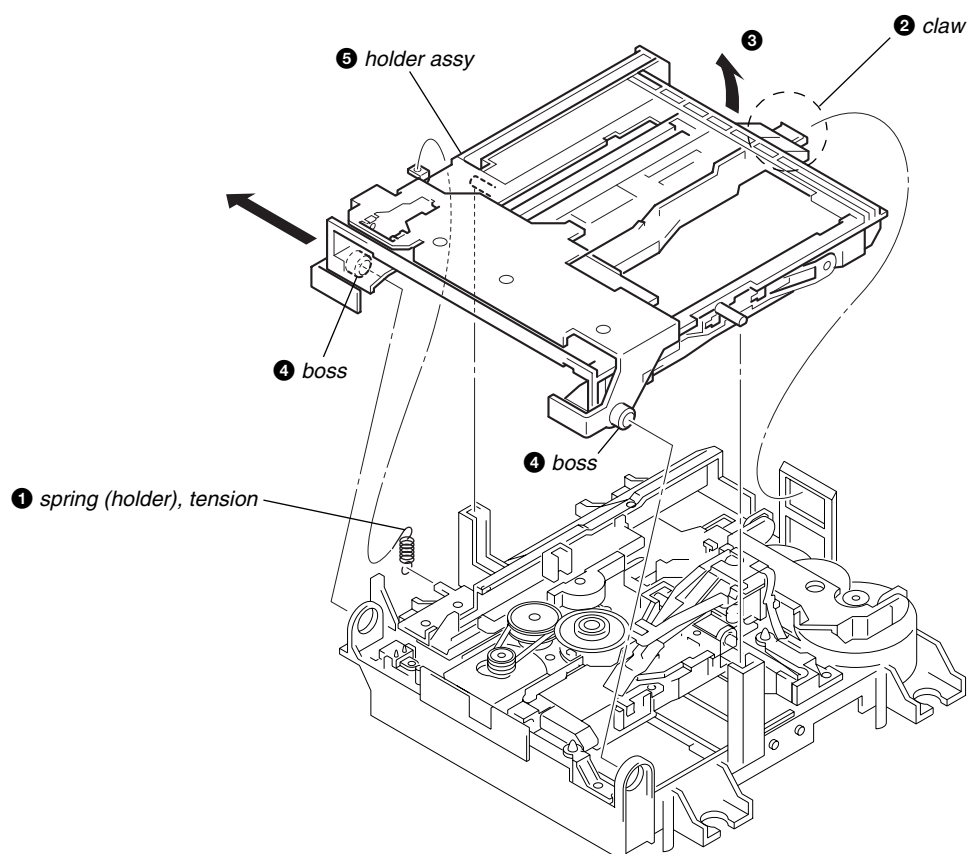
3-10. OVER WRITE HEAD (HR901), BD (MD) BOARD

Note : When the **1** connector (CN104) is removed first of all, the overwrite head (HR901) and the BD (MD) board can be removed to either side.

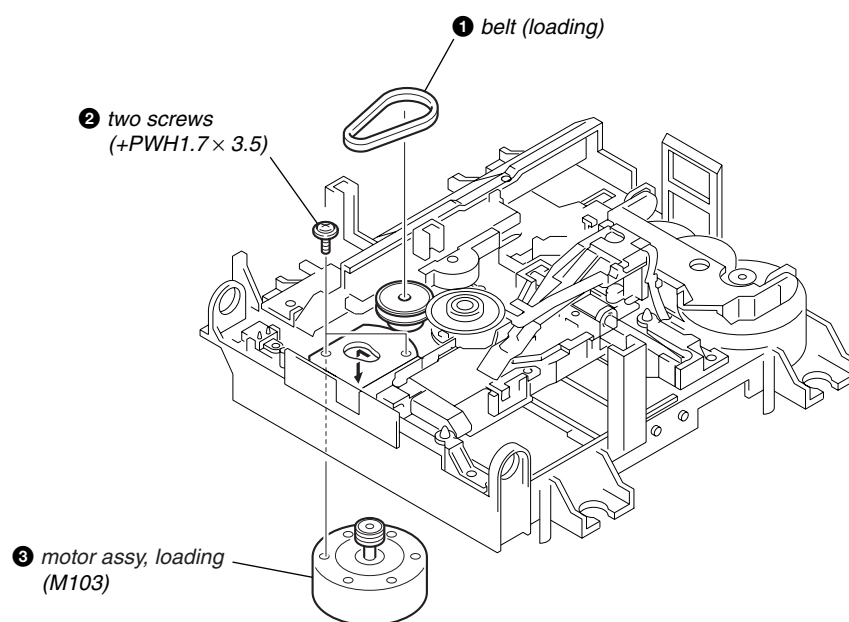
Note : The overwrite head (HR901) is very fragile and easy to be damaged. Be careful to handle it gently with care not to break it.



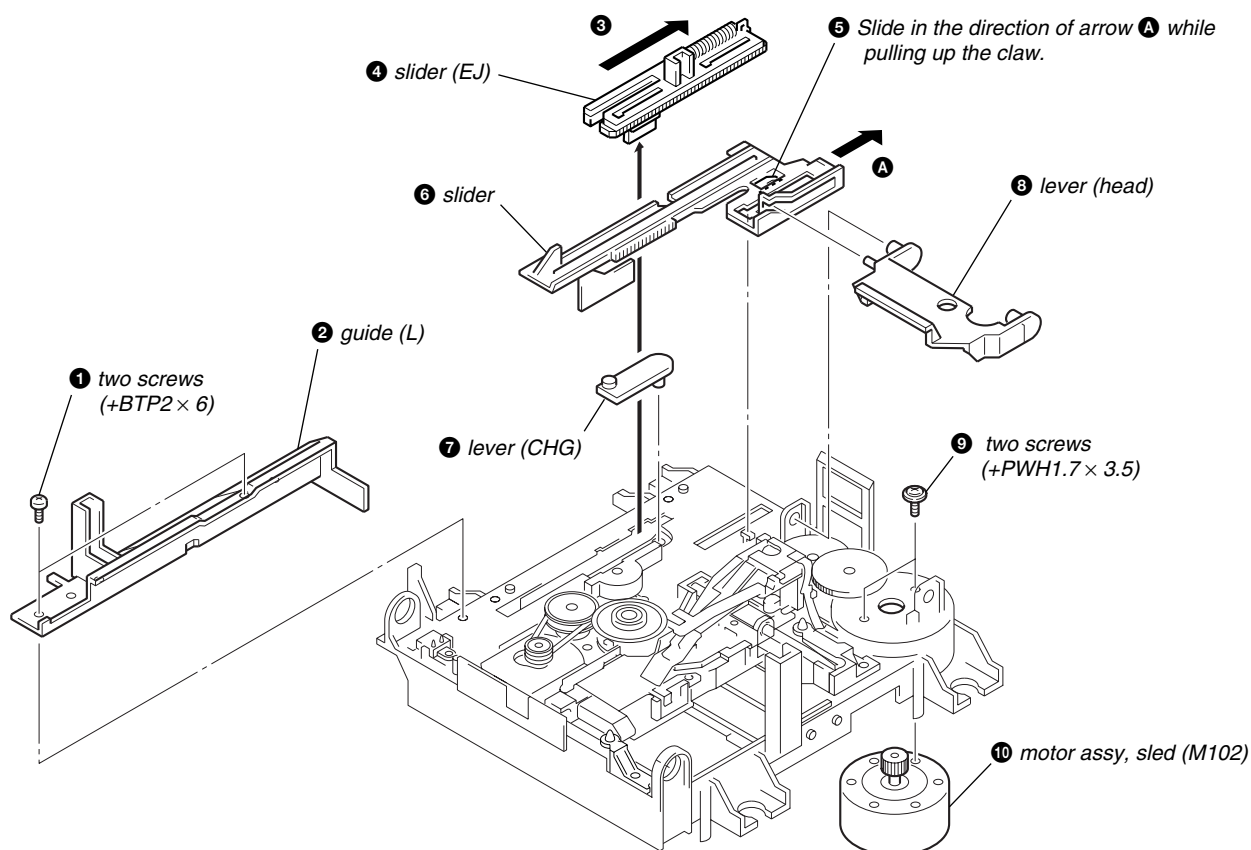
3-11. HOLDER ASSY



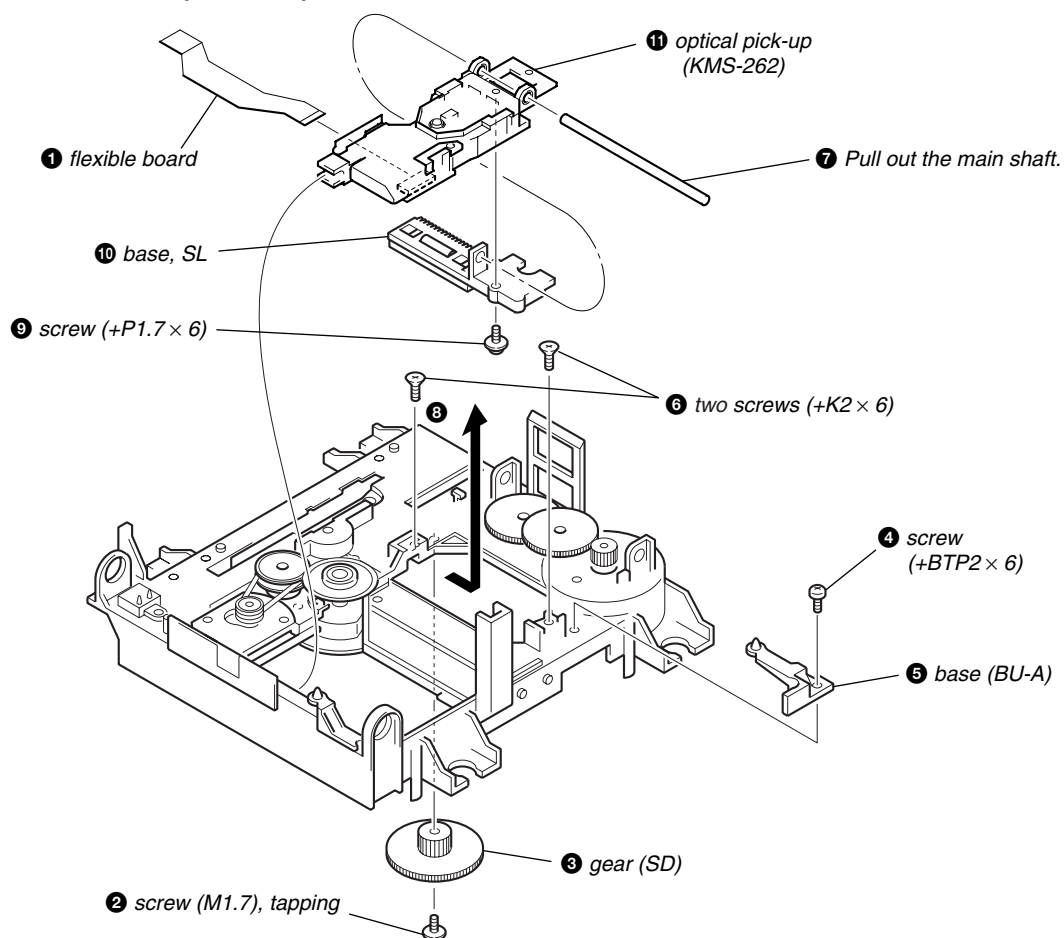
3-12. LOADING MOTOR ASSY (M103)



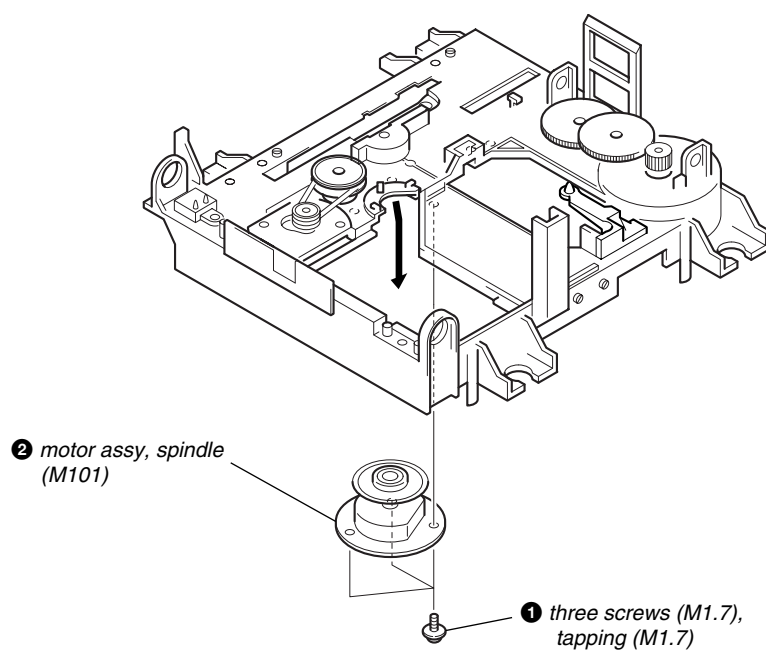
3-13. SLED MOTOR ASSY (M102)



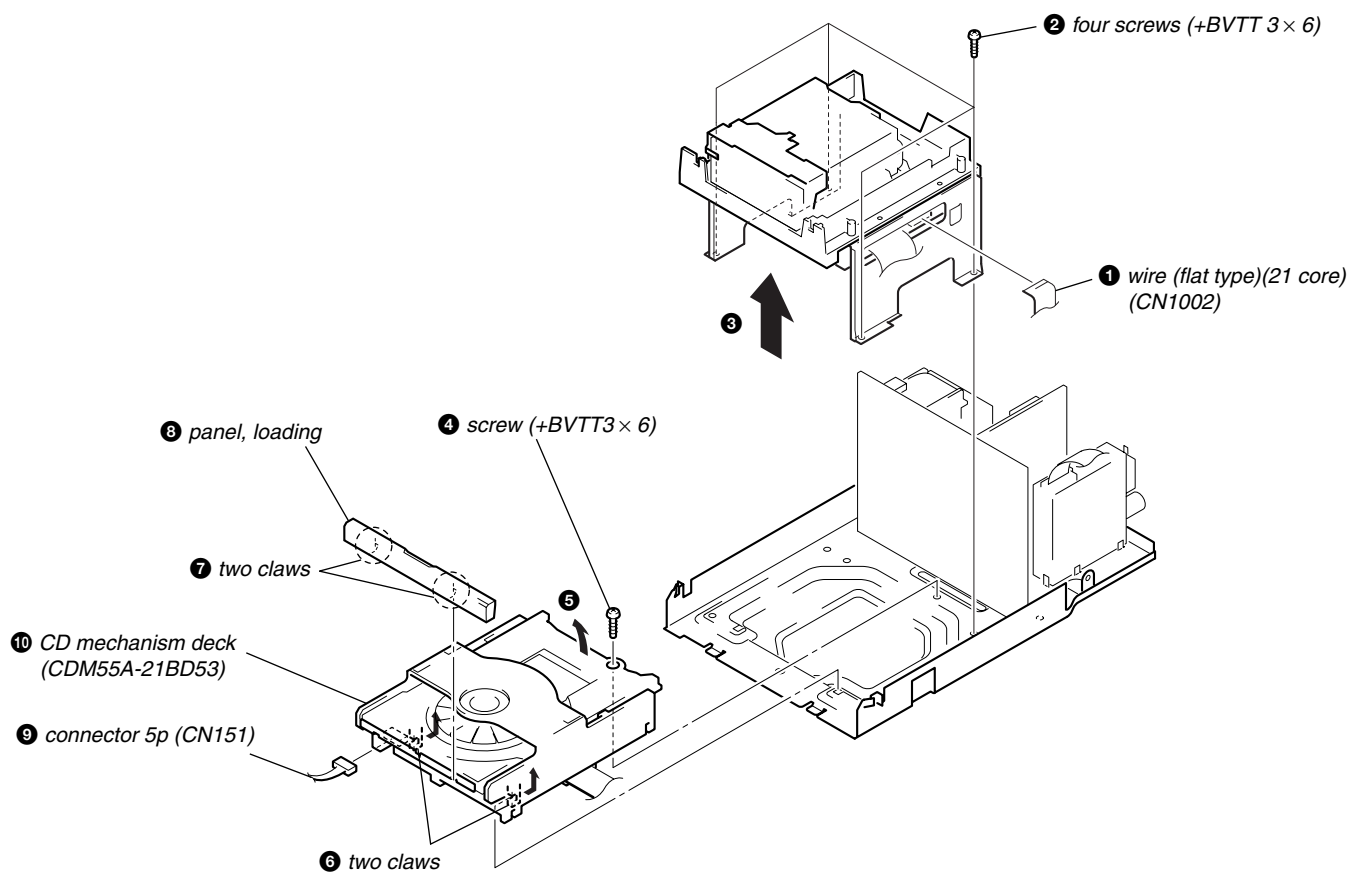
3-14. OPTICAL PICK-UP (KMS-262)



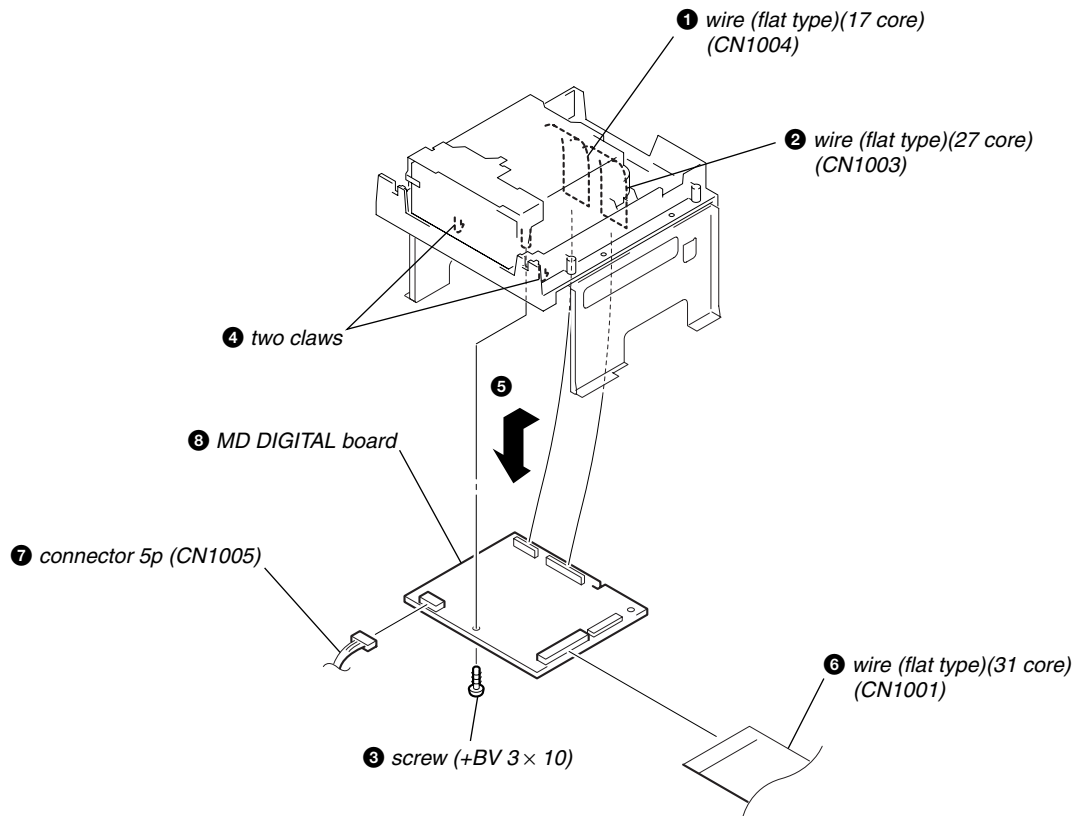
3-15. SPINDLE MOTOR ASSY (M101)



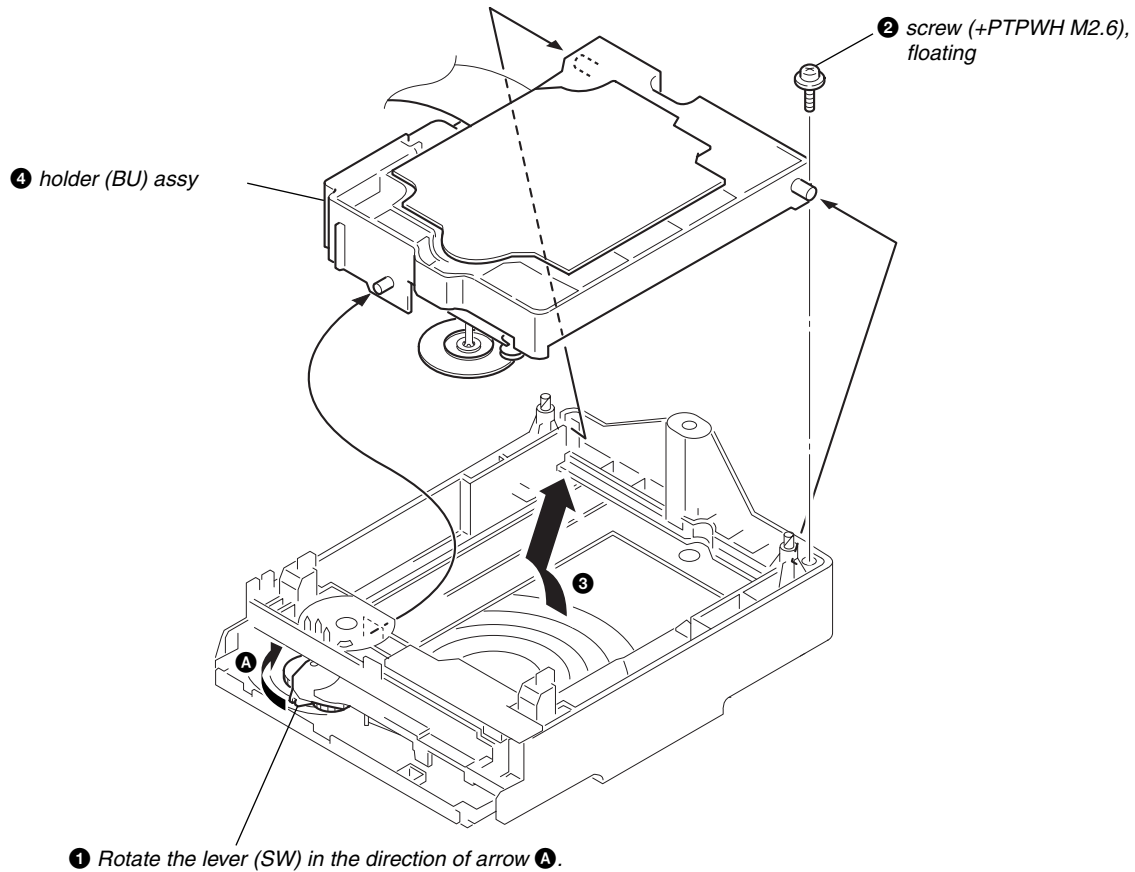
3-16. CD MECHANISM DECK (CDM55A-21BD53)



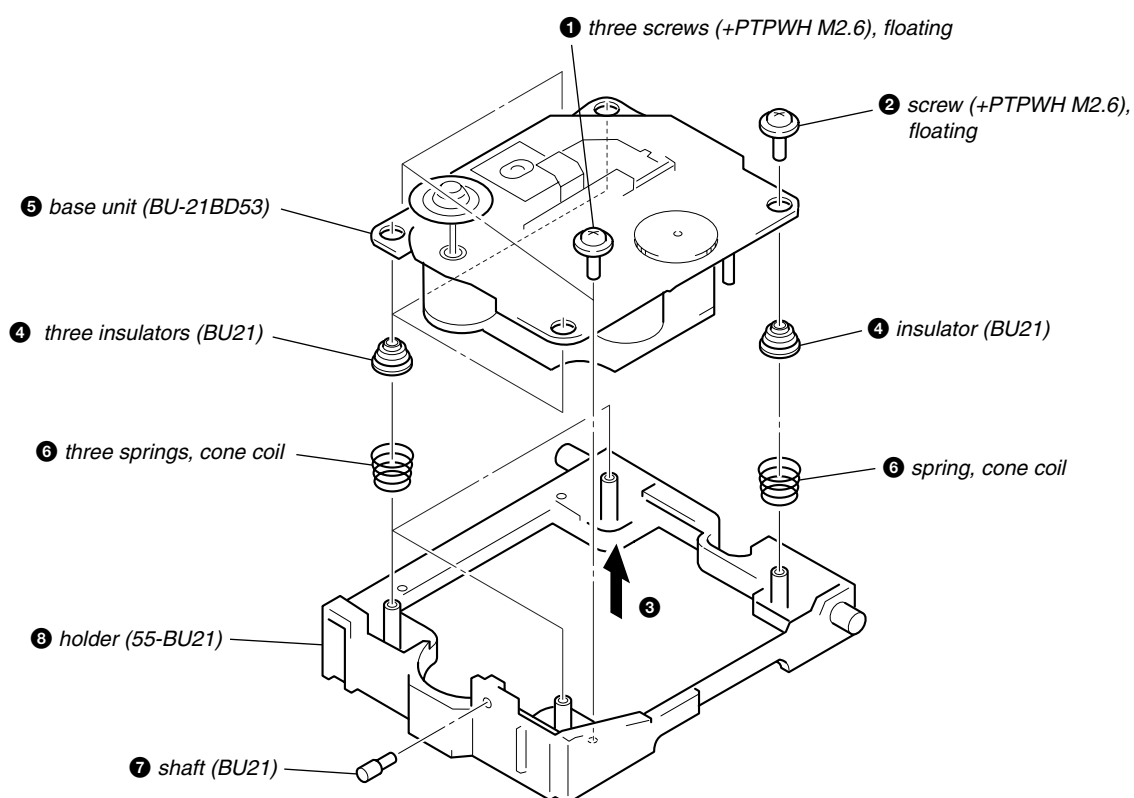
3-17. MD DIGITAL BOARD



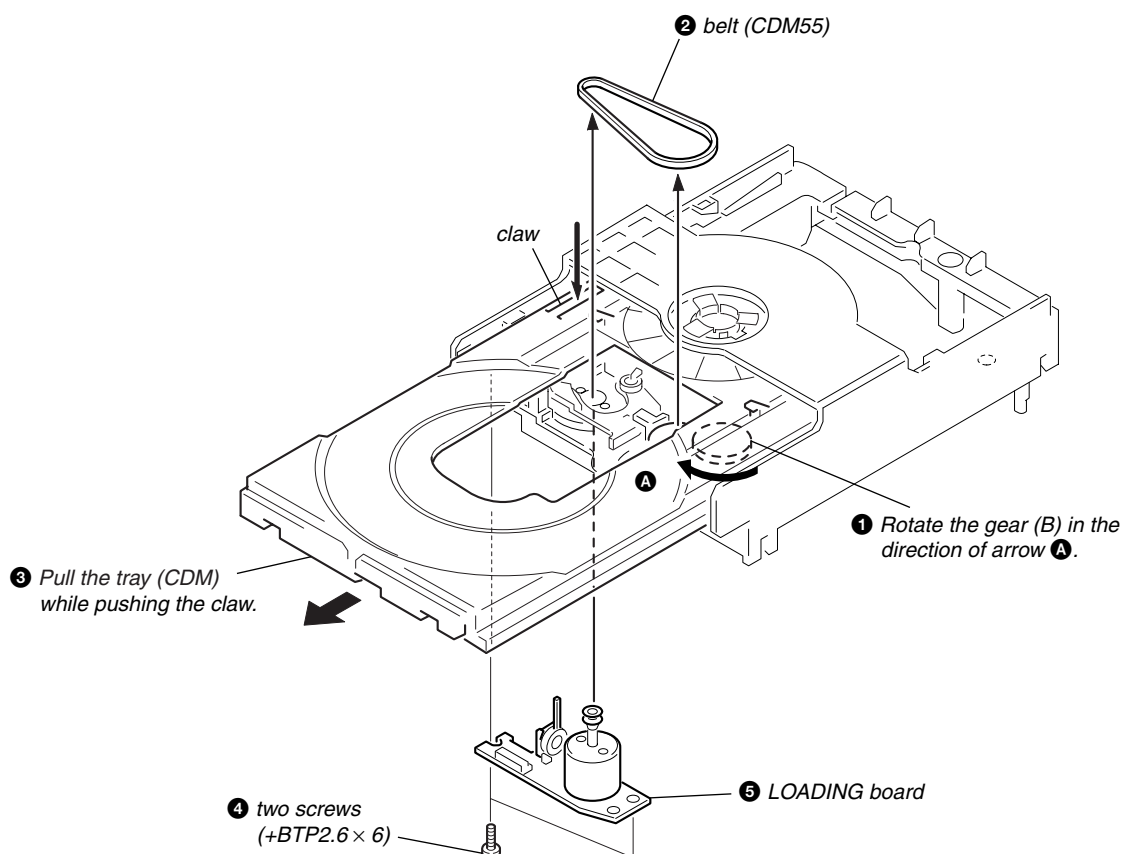
3-18. HOLDER (BU) ASSY



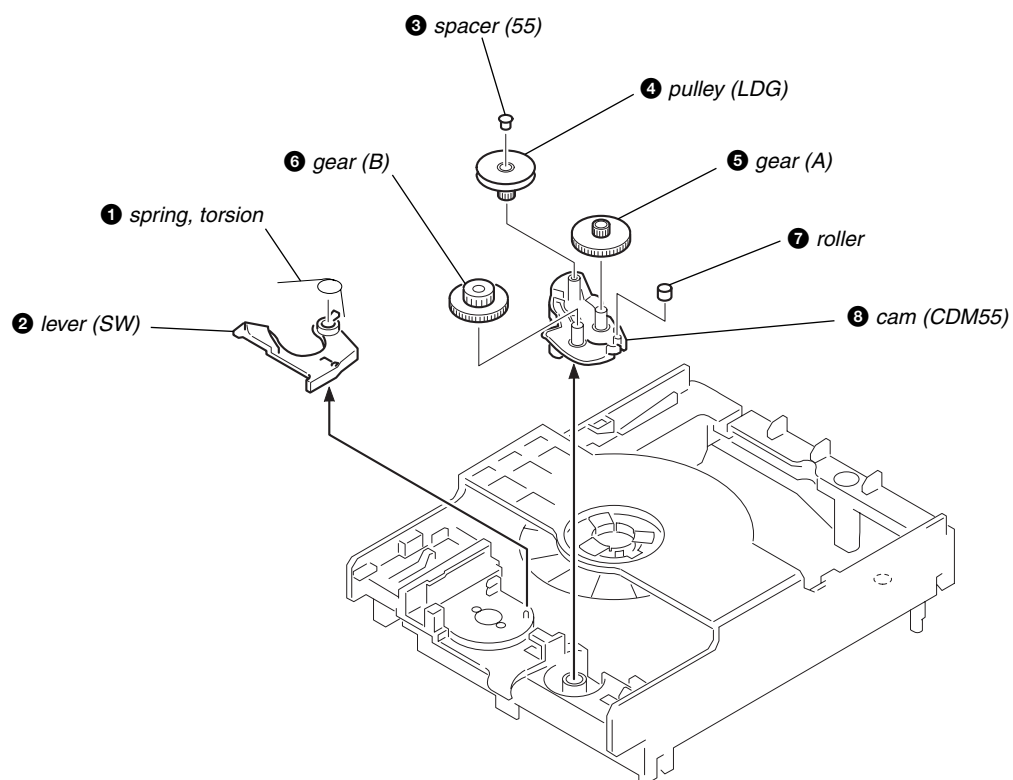
3-19. BASE UNIT (BU-21BD53), HOLDER (55-BU21)



3-20. TRAY (CDM), LOADING BOARD



3-21. CAM (CDM55)



SECTION 4 TEST MODE

Note 1: About “R”

As this unit has only a few buttons, some operations require the use of remote commander (RM-S55EN/provided with unit: 1-476-664-21) buttons. These operations are indicated as “R” in this manual.

Example: [MENU/NO “R”]...Press the [MENU/NO] button of the remote commander.

Note 2: Incorrect operations may be performed if the MD test mode is not entered properly.

In this case, press the [I/⏻] button to turn the power off, and retry to enter the MD 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:

- Press the [I/⏻] button to turn the power on.
- Press three buttons of [VOLUME-], [REC MODE], and [■] (MD) simultaneously.
- The set is reset, and displays “See you”, then becomes standby status.

AMP TEST

Procedure:

- Press the [I/⏻] button to turn the power on.
- Press three buttons of [◀◀◀ TUNING-], [▶▶▶ TUNING+], and [▶▶▶] (MD) simultaneously.
- Each buttons are pressed, it changes display as follows.

Button	Display
■ (CD)	7[TESTMIN]
REC MODE	8[TESTMID]
■ (MD)	9[TESTMAX]

- Press the [VOLUME+] button, the display switches “VOLUME 21” to “VOLUME MAX”. And the display returns to the original display after a few second.
- Press the [VOLUME-] button, the display switches “VOLUME 21” to “VOLUME MIN”. And the display returns to the original display after a few second.
- To release from this mode, press the [I/⏻] button to turn the power off and cold reset.

VERSION DISPLAY

Procedure:

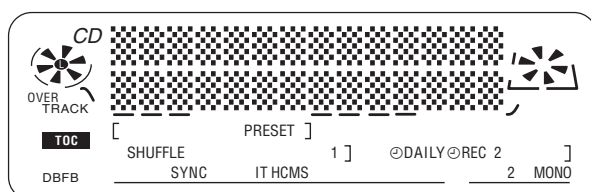
- Press the [I/⏻] button to turn the power on.
- Press three buttons of [◀◀◀ TUNING-], [▶▶▶ TUNING+], and [TUNER/BAND] simultaneously.
- Enter the version display mode and STR version is shown in the upper position, the distination is shown in the lower position
- Each time the [■] (MD) button is pressed, it changes display STR version → CD version → MD version → STR version → ...
- To release from this mode, press the [I/⏻] button to turn the power off.

LCD AND LED TEST

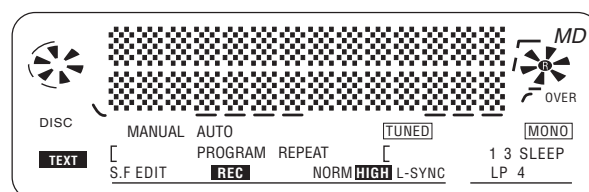
Procedure:

- Press the [I/⏻] button to turn the power on.
- Press three buttons of [◀◀◀ TUNING-], [▶▶▶ TUNING+], and [■] (MD) simultaneously.
- Liquid crystal display and LEDs are all turned on.
- Each time the [■] (MD) button is pressed, it changes display all turned on → all turned off → pattern 1 → pattern 2 → all turned on → ...
- Each time the [■] (CD) button is pressed, it changes LED indication all turned on → all turned off → [I/⏻] → “REC” → [▶] (MD) → [■] (MD) → [▶] (CD) → [■] (CD) → all turned on → ...
- To release from this mode, press the [I/⏻] button to turn the power off.

PATTERN 1



PATTERN 2



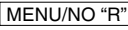
KEY TEST

Procedure:

- Press the [I/⏻] button to turn the power on.
- Press three buttons of [◀◀◀ TUNING-], [▶▶▶ TUNING+], and [◀◀◀] (MD) simultaneously.
- Enter the key test mode and display “KEY00”.
- Each time a button is pressed, “KEY” value increases. However, once a button is pressed, it is no longer taken into account.
- To release from this mode, press three buttons in the same manner as step 2, or disconnect the power cord.

MD SECITON

1. PRECAUTIONS FOR USE OF TEST MODE

- As operations related to loading 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  (MD) button after pressing the  button and the rotation of disc is stopped.

1-1. Recording laser emission mode and operating buttons

- Continuous recording mode (CREC 2MODE)
- Laser power check mode (LDPWR CHECK)
- Laser power adjustment mode (LDPWR ADJUST)
- Comparison with initial Iop value written in nonvolatile memory (Iop Compare)
- Write current Iop value in read nonvolatile memory using microprocessor (Iop NV Save)
- Traverse (MO) check (EF MO CHECK)
- Traverse (MO) adjustment (EF MO ADJUST)
- When pressing the .

2. SETTING THE TEST MODE

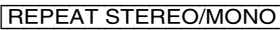
The following are two methods of entering the test mode.

Procedure 1: 1. Press the  button to turn the power on.
2. Press the  button to set the MD function.
3. Press three buttons of  TUNING +, , and  (MD) simultaneously.
When the test mode is set, “[Check]” will be displayed. Pressing the  “R” or  “R” button between the following three groups; ... [Check]  [Service]  [Develop]  ...

Procedure 2: 1. Press the  button to turn the power on.
2. Press the  button to set the MD function.
3. Press three buttons of , , and  (MD) simultaneously.
When the test mode is set, “AUTO CHECK” (C01) will be displayed. By setting the test mode using this method, only the “Check” group of procedure1 can be executed.

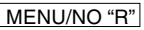
Note: Do not use the test mode in the [Develop] group.
If used, the unit may not operate normally.
If the [Develop] group is set accidentally, press the  button immediately to exit the [Develop] group.

3. RELEASING THE TEST MODE

Press the  button to display “Initialize”, then release the MD test mode.

4. BASIC OPERATIONS OF THE TEST MODE

All operations are performed using the  “R”,  “R”,  and  .
The functions of these buttons are as follows.

Function name	Function
 “R”,  “R” buttons	Changes parameters and modes
 button	Proceeds onto the next step. Finalizes input
 button	Returns to previous step. Stops operations

5. SELECTING THE TEST MODE

There are 26 types of test modes as shown below. The groups can be switched by pressing the **◀◀ "R"** or **▶▶ "R"** button. After selecting the group to be used, press the **ENTER/YES "R"** button. After setting a certain group, pressing the **◀◀ "R"** or **▶▶ "R"** button switches modes shown below.

Refer to "Group" in the table for details can be selected.

All items used for servicing can be treated using group [Service]. So be carefully not to enter other groups by mistake.

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 **MENU/NO "R"** button 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 ADJUST	C03	Temperature compensation offset adjustment			○
LDPWR ADJUST	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 ADJUST	C07	Traverse (MO) adjustment			○
EF CD ADJUST	C08	Traverse (CD) adjustment			○
FBIAS ADJUST	C09	Focus bias adjustment			○
AG Set (MO)	C10	Auto gain output level adjustment (MO)			○
AG Set (CD)	C11	Auto gain output level 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.		○	○
CPLAY2MODE	C36	Continuous playback mode		○	○
CREC 2MODE	C37	Continuous recording mode		○	○

- For details of each adjustment mode, refer to "5. 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 **MENU/NO "R"** button to release that mode.
- Modes with (×) in the Mark column are not used for servicing and therefore are not described in detail. If these modes are set accidentally, press the **MENU/NO "R"** button to release the mode immediately.

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) Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY2MODE" (C36).
 - (3) Press the **ENTER/YES "R"** button to change the display to "CPLAY2MID".
 - (4) When access completes, the display changes to "C = 0000 AD = 00".

Note: The numbers "0" displayed show you error rates and ADER.

2. Changing the parts to be played back

- (1) Press the **ENTER/YES "R"** button during continuous playback to change the display as below.

"CPLAY2MID" → "CPLAY2OUT" → "CPLAY2IN"

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

- (2) When access completes, the display changes to "C = 0000 AD = 00".

Note: The numbers "0" displayed show you error rates and ADER.

3. Ending the continuous playback mode

- (1) Press the **MENU/NO "R"** button. The display will change to "CPLAY2MODE" (C36).
- (2) Press the **▲ (MD)** button and take out the disc.

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

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

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) Press the **◀◀ "R"** or **▶▶ "R"** button to display "CREC 2MODE" (C37).
 - (3) Press the **ENTER/YES "R"** button to change the display to "CREC 2MID".
 - (4) When access completes, the display changes to "CREC 2(0000)" and "**REC**" lights up.

Note: The numbers "0" displayed shows you the recording position addresses.

2. Changing the parts to be recorded

- (1) When the **ENTER/YES "R"** button is pressed during continuous recording, the display changes as below.

"CREC 2MID" → "CREC 2OUT" → "CREC 2IN"

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

- (2) When access completes, the display changes to "CREC 2(0000)" and "**REC**" lights up.

Note: The numbers "0" displayed shows you the recording position addresses.

3. Ending the continuous recording mode

- (1) Press the **MENU/NO "R"** button. The display changes to "CREC 2MODE" (C37) and "**REC**" goes off.
- (2) Press the **▲ (MD)** button and take out the disc.

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: The **MENU/NO "R"** button 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.

6. FUNCTIONS OF OTHER BUTTONS

Function	Contents
▶▶ MD	Sets continuous playback when this is pressed in the STOP state. When this is pressed during continuous playback, playback position moves.
■ (MD)	Stops continuous playback and continuous recording
▶▶ "R"	The sled moves to the outer circumference only when this is pressed
◀◀ "R"	The sled moves to the inner circumference only when this is pressed
CD SYNC HIGH	Switches between the pit and groove modes when pressed
PLAY MODE	Switches the spindle servo mode (CLV S ↔ CLV A)
CD SYNC HIGH (*1)	Switches the displayed contents each time the button is pressed
MD ▲	Ejects the disc
REPEAT STEREO/MONO	Releases the test mode

*1) Press the **CD SYNC NORMAL** button to light up "IT" indicator, then press the **CD SYNC HIGH** button.

7. TEST MODE DISPLAYS

Each time the **CD SYNC HIGH** button is pressed, the display changes in the following order.

When CPLAY or CREC are started, the display will forcibly be switched to the error rate display as the initial mode.

1. Mode display

Displays “TEMP ADJUST” (C03), “CPLAY2MODE” (C36), etc.

2. Error rate display

Displays the error rate in the following way.

C = 0000 AD = 00

C = : Indicates the C1 error.

AD = : Indicates ADER.

3. Address display

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

h = 0000 s = 0000 (MO pit and CD)

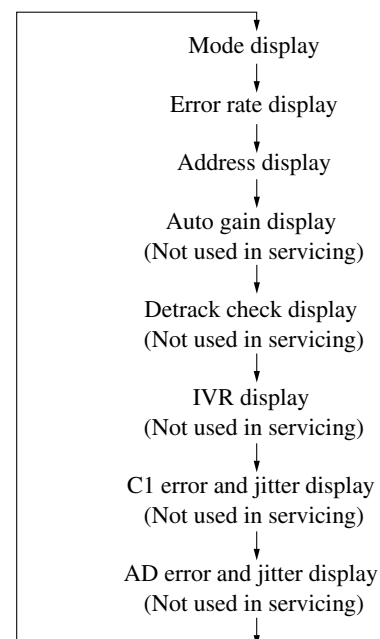
h = 0000 a = 0000 (MO groove)

h = : Indicates the header address.

s = : Indicates the SUBQ address.

a = : Indicates the ADIP address.

Note: “—” is displayed when servo is not imposed.



MEANINGS OF OTHER DISPLAYS

Display	Contents	
	When Lit	When Off
2	Servo ON	Servo OFF
4	Tracking servo OFF	Tracking servo ON
REC	Recording mode ON	Recording mode OFF
SYNC, TRACK	CLV low speed mode	CLV normal mode
L.SYNC	ABCD adjustment completed	
PROGRAM	Tracking offset cancel ON	Tracking offset cancel OFF
TOC	Tracking auto gain OK	
REPEAT	Focus auto gain OK	
SF EDIT	Pit	Groove
DISC	High reflection	Low reflection
NORM	CLV S	CLV A
MONO	CLV LOCK	CLV UNLOCK

8. 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 Compare.

Procedure:

1. Press the  "R" or  "R" button to display "AUTO CHECK" (C01).
2. Press the  button. If "LDPWR ミチェック" 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 enter the MD test mode.
3. 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.
4. If a disc is loaded at step 3, the check will start automatically.
5. When "XX CHECK" is displayed, the item corresponding to XX will be performed.
When "06 CHECK" completes, the disc loaded at step 3 will be ejected. "DISC IN" will be displayed. Load the check disc (TDYS-1).
6. When the disc is loaded in step 5, the check will automatically be resumed from "07 CHECK".
7. 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 other parts (spindle motor, sled motor, etc.).

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

9. INFORMATION

Display the software version.

Procedure:

1. Press the  "R" or  "R" button to display "INFORMATION" (C31).
2. Press the  button.
3. The software version will be displayed.
4. Press the  button to end this mode.

SECTION 5 ELECTRICAL ADJUSTMENTS

MD SECTION

Note 1: About “R”

As this unit has only a few buttons, some operations require the use of remote commander (RM-S55EN/provided with unit: 1-476-664-21) buttons. These operations are indicated as “R” in this manual.

Example: **MENU/NO** “R” ...Press the **MENU/NO** button of the remote commander.

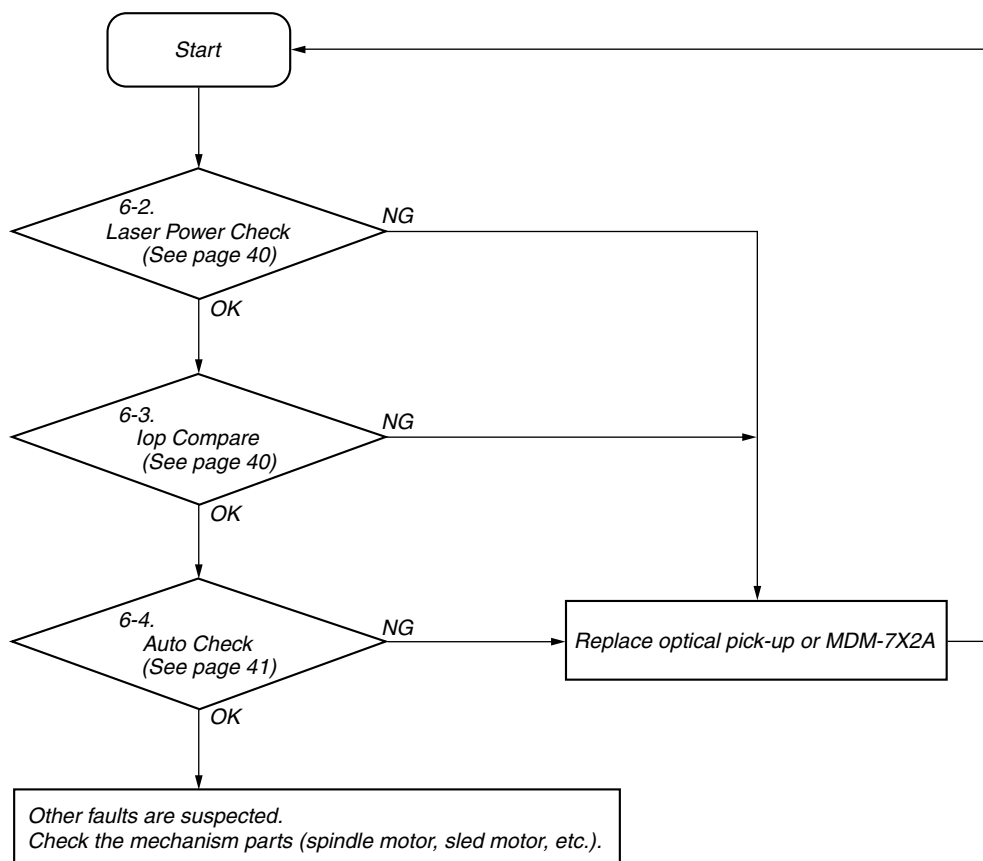
Note 2: Incorrect operations may be performed if the MD test mode is not entered properly.

In this case, press the **I/O** button to turn the power off, and retry to enter the MD test mode.

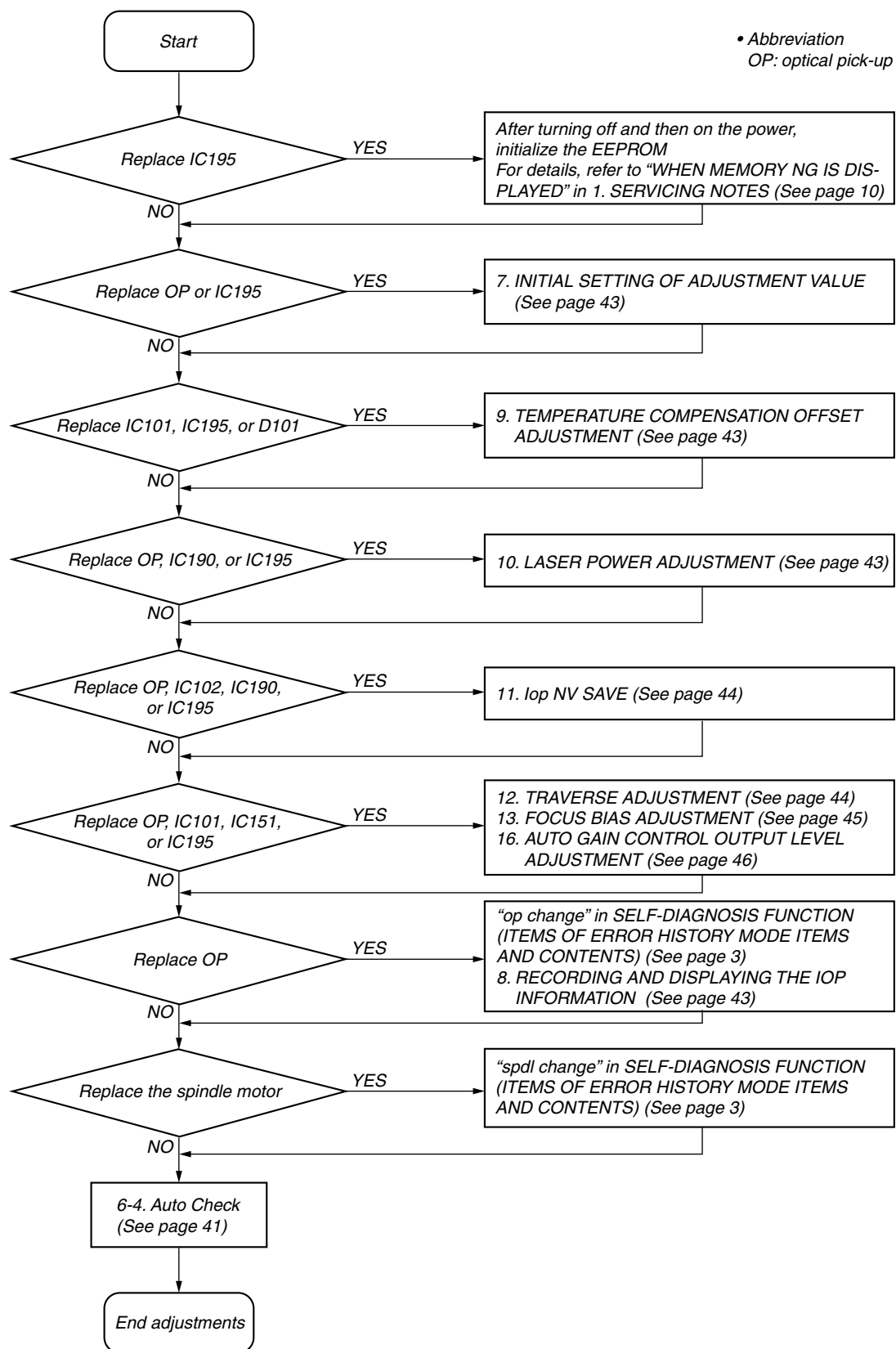
1. PARTS REPLACEMENT AND ADJUSTMENT

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

Check before replacement



Adjustment flow

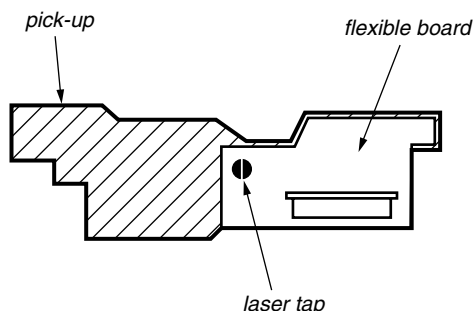


2. PRECAUTIONS FOR CHECKING LASER DIODE EMISSION

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

3. PRECAUTIONS FOR USE OF OPTICAL PICK-UP (KMS-262A/262E)

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

4. PRECAUTIONS FOR ADJUSTMENTS

- When replacing the following parts, perform the adjustments and checks with ○ in the order shown in the following table.
- Set the MD test mode when performing adjustments. After completing the adjustments, exit the MD test mode. Perform the adjustments and checks in “Group Service” of the MD test mode.
- Perform the adjustments to be needed in the order shown.
- Use the following tools and measuring devices.
 - Extension jig (27 core) (Part No. : J-2501-100-A)
CN102 on the BD (MD) board to CN1003 on the MD DIGITAL board
 - Extension jig (17 core) (Part No. : J-2501-198-A)
CN103 on the BD (MD) board to CN1004 on the MD DIGITAL board
 - Check Disc (TDYS-1) (Part No. : 4-963-646-01)
 - Test Disk (MDW-74/GA-1) (Part No. : 4-229-747-01)
 - Laser power meter LPM-8001 (Part No. : J-2501-046-A)
or
MD Laser power meter 8010S (Part No. : J-2501-145-A)*1

- Oscilloscope (Measure after performing CAL of prove.)
 - Digital voltmeter
 - Thermometer
 - Jig for checking BD (MD) board waveform (Part No. : J-2501-196-A)
- 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.)
 - Using the above jig enables the waveform to be checked without the need to solder. (Refer to Servicing Notes on page 9.)
 - As the disc used will affect the adjustment results, make sure that no dusts nor fingerprints are attached to it.

*1 Laser power meter

When performing laser power checks and adjustment (electrical adjustment), use of the new MD laser power meter 8010S (Part No. J-2501-145-A) instead of the conventional laser power meter is convenient.

It sharply reduces the time and trouble to set the laser power meter sensor onto the objective lens of optical pick-up.

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

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. Press the [◀◀“R”] or [▶▶“R”] button and display “CREC 2MODE” (C37).
3. Press the [ENTER/YES “R”] button again to display “CREC 2 MID”.
Display “CREC 2(0300)” and start to recording.
4. Complete recording within 5 minutes.
5. Press the [MENU/NO “R”] button and stop recording .
6. Press the [▲](MD) button 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. 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 in MD” (see page 11).

6-1. Temperature Compensation Offset Check

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

Procedure:

1. Press the [◀◀“R”] or [▶▶“R”] button to display “TEMP CHECK” (C12).
2. Press the [ENTER/YES “R”] 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.)

6-2. Laser Power Check

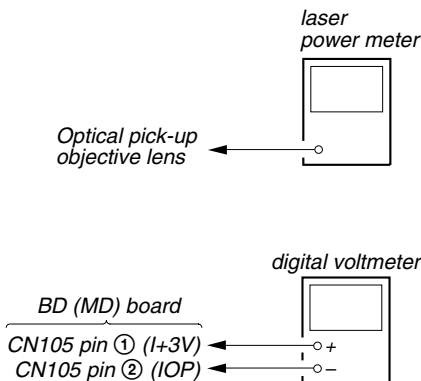
Before starting adjustment;

The laser power adjustment value changes depending upon the types of the optical pick-up (KMS-262A or KMS-262E).

Check the type of the optical pick-up before starting adjustment.
(See the illustrations “The method of identifying the optical pick-up” on page 44

Before checking, check the Iop value of the optical pick-up.
(Refer to 8. Recording and Displaying the Iop Information (see page 43)

Connection:



Procedure:

1. Set the laser power meter on the objective lens of the optical pick-up. (When it cannot be set properly, press the [◀◀“R”] button or [▶▶“R”] button to move the optical pick-up.)
Connect the digital volt meter to CN105 pin ① (I+3V) and CN105 pin ② (IOP).
2. Then, press the [◀◀“R”] or [▶▶“R”] button and display “LDPWR CHECK” (C13).
3. Press the [ENTER/YES “R”] button once and display “LD 0.9mW\$”\$. Check that the reading of the laser power meter becomes specified value.

SPECIFIED VALUE	KMS-262A	0.84 to 0.92 mW
	KMS-262E	0.90 to 0.96 mW

4. Press the [ENTER/YES “R”] button once more and display “LD 8.4mW\$”\$. Check that the reading the laser power meter and digital volt meter satisfy the specified value.

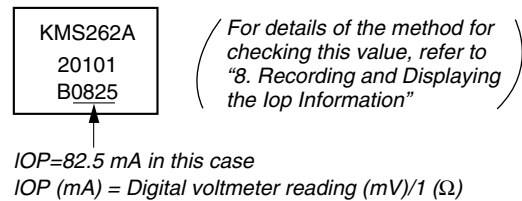
Specified Value:

Laser power meter reading :

KMS-262A	8.4 ± 0.3 mW
KMS-262E	8.65 ± 0.25 mW

Digital voltmeter reading : Optical pick-up displayed value ± 10%

(Optical pick-up label)



5. Press the [MENU/NO “R”] button and display “LDPWR CHECK” (C13) and stop the laser emission.
(The [MENU/NO “R”] button is effective at all times to stop the laser emission.)

Note: After step 4, each time the [ENTER/YES “R”] button is pressed, the display will be switched to “LD 0.7W\$”\$ and “LD 7.5mW\$”\$. “LD WP ホセ イ \$”\$. Nothing needs to be performed here.

Checking Location: BD (MD) board (see page 47)

6-3. Iop Compare

The current Iop value at laser power 8.4 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. Press the [◀◀“R”] or [▶▶“R”] button to display “Iop Compare” (C27).
2. Press the [ENTER/YES “R”] 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 [MENU/NO “R”] button to end.

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 **◀◀ "R"** or **▶▶ "R"** button to display "AUTO CHECK" (C01).
2. Press the **ENTER/YES "R"** button. If "LDPWR ミチェック" 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 enter the MD test mode.
3. 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.
4. If a disc is loaded at step 3, the check will start automatically.
5. When "XX CHECK" is displayed, the item corresponding to XX will be performed.
When "06 CHECK" completes, the disc loaded at step 3 will be ejected. "DISC IN" will be displayed. Load the check disc (TDYS-1).
6. When the disc is loaded in the step 5, the check will automatically be resumed from "07 CHECK".
7. 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 other parts (spindle motor, sled motor, etc.).

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

6-5. Other Checks

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

6-6. Traverse Check

6-7. Focus Bias Check

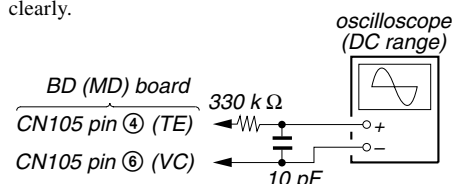
6-8. C PLAY Check

6-9. Self-Recording/Playback Check

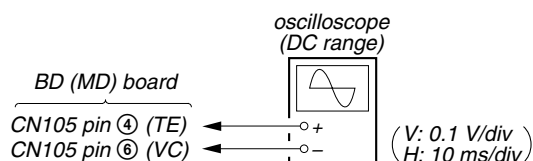
6-6. Traverse Check

Note 1: Data will be erased during MO reading 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.



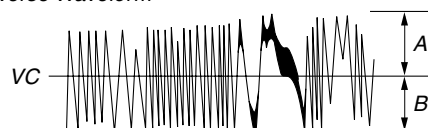
Connection:



Procedure:

1. Connect an oscilloscope to CN105 pin ④ (TE) and CN105 pin ⑥ (VC) on the BD (MD) board.
2. Load a disc (any available on the market). (Refer to Note 1)
3. Press the **▶▶ "R"** button to move the optical pick-up outside the pit.
4. Press the **◀◀ "R"** or **▶▶ "R"** button to display "EF MO CHECK" (C14).
5. Press the **ENTER/YES "R"** button to 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. Do not press the **◀◀ "R"** or **▶▶ "R"** button.
(Read power traverse checking)

Traverse Waveform

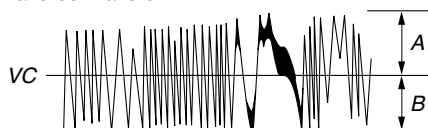


Specified value : Below 10% offset value

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

7. Press the **ENTER/YES "R"** button to display "EFB = □□ MO-W".
8. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not press the **◀◀ "R"** or **▶▶ "R"** button.
(Write power traverse checking)

Traverse Waveform

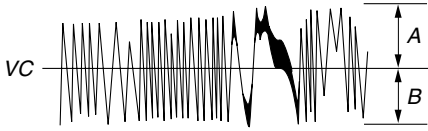


Specified value : Below 10% offset value

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

9. Press the **ENTER/YES "R"** button to display "EFB = **00** 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. Do not press the **◀◀ "R"** or **▶▶ "R"** button.

Traverse Waveform

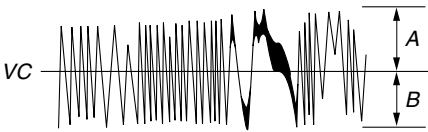


Specified value : Below 10% offset value

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

11. Press the **ENTER/YES "R"** button to display "EF MO CHECK" (C14).
The disc stops rotating automatically.
12. Press the **▲ (MD)** button and take out the disc.
13. Load the check disc (TDYS-1).
14. Press the **◀◀ "R"** or **▶▶ "R"** button and display "EF CD CHECK" (C15).
15. Press the **ENTER/YES "R"** button to display "EFB = **00** CD".
Servo is imposed automatically.
16. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not press the **◀◀ "R"** or **▶▶ "R"** button.

Traverse Waveform



Specified value : Below 10% offset value

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

17. Press the **ENTER/YES "R"** button to display "EF CD CHECK" (C15).
18. Press the **▲ (MD)** button and take out the check disc (TDYS-1).

Checking Location: BD (MD) board (see page 47)

6-7. Focus Bias Check

Change the focus bias and check the focus tolerance amount.

Procedure:

1. Load the test disc (MDW-74/GA-1).
2. Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY2MODE" (C36).
3. Press the **ENTER/YES "R"** button to display "CPLAY2MID".
4. Press the **MENU/NO "R"** button when "C = **0000** AD = **00**" is displayed.
5. Press the **◀◀ "R"** or **▶▶ "R"** button to display "FBIAS CHECK" (C16).
6. Press the **ENTER/YES "R"** button to display "**0000/00** c = **00**".
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.
7. Press the **ENTER/YES "R"** button to display "**0000/00** b = **00**".
Check that the C1 error is about 200 and ADER is below 2.
8. Press the **ENTER/YES "R"** button to display "**0000/00** a = **00**".
Check that the C1 error is about 200 and ADER is below 2.
9. Press the **MENU/NO "R"** button, then press the **▲ (MD)** button and take out the test disc.

6-8. C PLAY Check

MO Error Rate Check

Procedure:

1. Load the test disc (MDW-74/GA-1).
2. Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY2MODE" (C36).
3. Press the **ENTER/YES "R"** button to display "CPLAY2MID".
4. The display changes to "C = **0000** AD = **00**".
5. If the C1 error rate is below 20, check that ADER is 00.
6. Press the **MENU/NO "R"** button to stop playback, then press the **▲ (MD)** button and take out the test disc.

CD Error Rate Check

Procedure:

1. Load the check disc (TDYS-1).
2. Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY2MODE" (C36).
3. Press the **ENTER/YES "R"** button to display "CPLAY2MID".
4. The display changes to "C = **0000** AD = **00**".
5. Check that the C1 error rate is below 20.
6. Press the **MENU/NO "R"** button to stop playback, then press the **▲ (MD)** button and take out the check disc.

6-9. Self-Recording/playback Check

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

Procedure:

1. Load a recordable disc (blank disc).
2. Press the **◀◀ "R"** or **▶▶ "R"** button to display "CREC 2MODE" (C37).
3. Press the **ENTER/YES "R"** button to display "CREC 2MID".
4. When recording starts, lights up "**REC**" and display "CREC 2 @@@@@" (@@@@ is the address).
5. About 1 minute later, press the **MENU/NO "R"** button to stop continuous recording.
6. Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY2 MODE" (C36).
7. Press the **ENTER/YES "R"** button to display "CPLAY2 MID".
8. "C = **0000** AD = **00**" will be displayed.
9. Check that the C1 error becomes below 20 and the AD error below 2.
10. Press the **MENU/NO "R"** button to stop playback, then press the **▲ (MD)** button and take out the disc.

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 "4. Precautions for Adjustments" (See page 39) and execute the initial setting before the adjustment as required.

Procedure:

1. Press the **◀◀ "R"** or **▶▶ "R"** button to display "ADJ CLEAR" (C28).
2. Press the **ENTER/YES "R"** button. "Complete!" will be displayed momentarily and initial setting will be executed, after which "ADJ CLEAR" (C28) will be displayed.

8. RECORDING AND DISPLAYING THE IOP INFORMATION

The IOP data can be recorded in the non-volatile memory. The IOP value on the optical pick-up label 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. Press the **◀◀ "R"** or **▶▶ "R"** button to display "Iop Write" (C05), and press the **ENTER/YES "R"** button.
2. The display becomes "Ref=@@.@@" (@ is an arbitrary number) and the numbers which can be changed will blink.
3. Input the IOP value on the optical pick-up label.
To select the number: Press the **◀◀ "R"** or **▶▶ "R"** button.
To select the digit : Press the **CD SYNC NORMAL** button so that "IT" is displayed. Then press the **REC MODE** button.
Press the **REC MODE** button.
4. When the **ENTER/YES "R"** button is pressed, the display becomes "Measu=@@.@@" (@ is an arbitrary number).
5. As the adjustment results are recorded for the step 4 value. Leave it as it is and press the **ENTER/YES "R"** 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. Press the **◀◀ "R"** or **▶▶ "R"** button to display "IopRead"(C26).
2. "@@.@/###.#" is displayed and the recorded contents are displayed.
@@.@ indicates the IOP value on the optical pick-up label.
###.# indicates the IOP value after adjustment
3. To end, press the **MENU/NO "R"** button to display "Iop Read" (C26).

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.

Procedure:

1. Press the **◀◀ "R"** or **▶▶ "R"** button to display "TEMP ADJUST" (C03).
2. Press the **ENTER/YES "R"** button to select the "TEMP ADJUST" mode.
3. "TEMP = [] [OK]" and the current temperature data will be displayed.
4. To save the data, press the **ENTER/YES "R"** button. When not saving the data, press the **MENU/NO "R"** button.
5. When the **ENTER/YES "R"** button is pressed, "TEMP = [] SAVE" will be displayed and turned back to "TEMP ADJUST" (C03) display then. When the **MENU/NO "R"** button is pressed, "TEMP ADJUST" (C03) will be displayed immediately.

Specified Value:

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

10. LASER POWER ADJUSTMENT

Before starting adjustment;

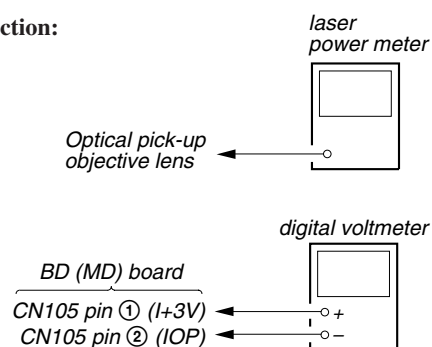
The laser power adjustment value changes depending upon the types of the optical pick-up (KMS-262A or KMS-262E).

Check the type of the optical pick-up before starting adjustment. (See the illustrations "The method of identifying the optical pick-up on page 44.)

Check the IOP value of the optical pick-up before adjustments.

(Refer to 8. Recording and Displaying the Iop Information)

Connection:



Procedure:

1. Insert the laser power meter probe into the disk insertion slot and set it on top of the objective lens of the optical pick-up. (When it cannot be set properly, press the **◀◀ "R"** button or **▶▶ "R"** button to move the optical pick-up)
Connect the digital voltmeter to CN105 pin ① (I+3V) and CN105pin ② (IOP) on the BD (MD) board.
2. Press the **◀◀ "R"** or **▶▶ "R"** button to display "LDPWR ADJUST" (C04).
(Laser power : For adjustment)
3. Press the **ENTER/YES "R"** button once to display "LD 0.9 mW \$ []".
4. Press the **◀◀ "R"** or **▶▶ "R"** button until the laser power meter reading matches with the specified value as described in the following table.

SPECIFIED VALUE	KMS-262A	0.85 to 0.91 mW
	KMS-262B	0.90 to 0.95 mW

- Press the **ENTER/YES "R"** 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 8.4 mW \$ []" will be displayed.

6. Press the **◀◀ "R"** or **▶▶ "R"** button so that the reading of the laser power meter becomes the specified value, press the **ENTER/YES "R"** button to save it.

SPECIFIED VALUE	KMS-262A	8.2 to 8.6 mW
	KMS-262E	8.5 to 8.8 mW

Note: Do not perform the emission with 8.4 mW more than 15 seconds continuously.

7. Then, press the **◀◀ "R"** or **▶▶ "R"** button to display "LDPWR CHECK" (C13).
 8. Press the **ENTER/YES "R"** button once to display "LD 0.9mW\$". Check that the reading of the laser power meter matches with the specified value as described in the following table.

SPECIFIED VALUE	KMS-262A	0.84 to 0.92 mW
	KMS-262E	0.90 to 0.96 mW

9. Press the **ENTER/YES "R"** button once more to display "LD 8.4mW\$". Check that the reading of the laser power meter and digital voltmeter satisfy the specified value.
 Note down the digital voltmeter reading value.

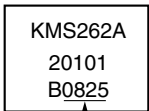
Specified Value:

Laser power meter reading :

SPECIFIED VALUE	KMS-262A	8.4 ± 0.3 mW
	KMS-262E	8.65 ± 0.25 mW

Digital voltmeter reading : Value on the optical pick-up label ±10%

(Optical pick-up label)



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

IOP=82.5 mA in this case

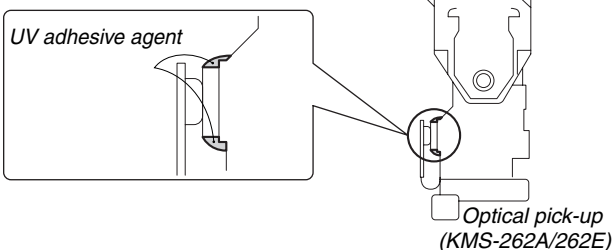
$IOP (mA) = \text{Digital voltmeter reading (mV)} / 1 (\Omega)$

10. Press the **MENU/NO "R"** button to display "LDPWR CHECK" (C13) and stop the laser emission. (The **MENU/NO "R"** button is effective at all times to stop the laser emission)
 11. Press the **◀◀ "R"** or **▶▶ "R"** button to display "Iop Write" (C05).
 12. Press the **ENTER/YES "R"** button. When the display becomes Ref=@.@.@ (@ is an arbitrary number), press the **ENTER/YES "R"** button to display "Measu=@.@.@.@ (@ is an arbitrary number).
 13. The numbers which can be changed will blink. Input the Iop value noted down at step 9.
 To select the number : Press the **◀◀ "R"** or **▶▶ "R"** button.
 To select the digit : Press the **CD SYNC NORMAL** button so that "IT" is displayed.
 Then press the **REC MODE** button.
 14. When the **ENTER/YES "R"** 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: After step 4, each time the **ENTER/YES "R"** button is pressed, the display will be switched to "LD 0.7mW\$ ", "LD 7.5mW\$ " and "LD WP ホセ イ" Nothing needs to be performed here.

The method of identifying the optical pick-up (KMS-262A/262E)

UV adhesive agent = (Pink : KMS-262A
 White : KMS-262E)



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.

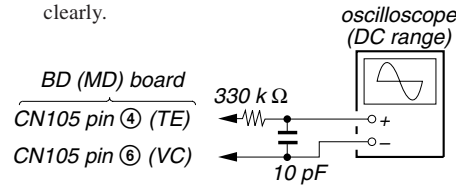
Procedure:

1. Press the **◀◀ "R"** or **▶▶ "R"** button to display "Iop NV Save" (C06).
2. Press the **ENTER/YES "R"** button and display "Iop [stop]".
3. After the display changes to "Iop =xxsave?", press the **ENTER/YES "R"** button.
4. After "Complete!" is displayed momentarily, the display changes to "Iop 8.4 mW".
5. After the display changes to "Iop=yysave?", press the **ENTER/YES "R"** button.
6. When "Complete!" is displayed, it means that Iop NV saving has been completed.

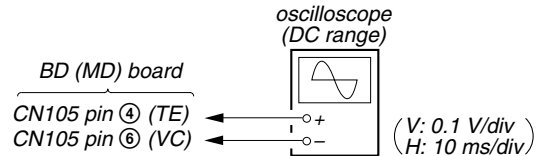
12. TRAVERSE ADJUSTMENT

Note 1: Data will be erased during MO reading 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.



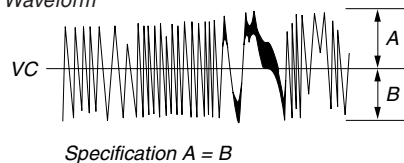
Connection:



Procedure:

1. Connect an oscilloscope to CN105 pin ④ (TE) and CN105 pin ⑥ (VC) on the BD (MD) board.
2. Load a disc (any available on the market). (Refer to Note 1)
3. Press the **▶▶ "R"** button to move the optical pick-up outside the pit.
4. Press the **◀◀ "R"** or **▶▶ "R"** button to display "EF MO ADJUST" (C07).
5. Press the **ENTER/YES "R"** button to display "EFB = MO-R". (Laser power READ power/Focus servo ON/tracking servo OFF/spindle (S) servo ON)
6. Press the **◀◀ "R"** or **▶▶ "R"** button so that the waveform of the oscilloscope becomes the specified value. (When the **◀◀ "R"** or **▶▶ "R"** button is pressed, the "EFB = MO-R" 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)

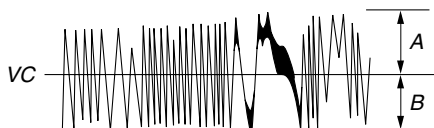
Traverse Waveform



7. Press the **ENTER/YES "R"** button and save the result of adjustment to the non-volatile memory ("EFB = MO-SAVE" will be displayed for a moment. Then "EFB = MO-W" will be displayed).

8. Press the $\boxed{\leftarrow} \text{"R"}$ or $\boxed{\rightarrow} \text{"R"}$ button so that the waveform of the oscilloscope becomes the specified value.
(When the $\boxed{\leftarrow} \text{"R"}$ or $\boxed{\rightarrow} \text{"R"}$ button is pressed, the $\boxed{\text{VC}}$ of "EFB = $\boxed{\text{VC}}$ " 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)

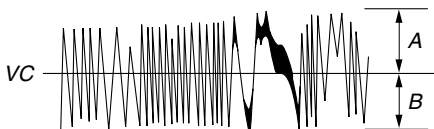
Traverse Waveform



Specification A = B

9. Press the $\boxed{\text{ENTER/YES "R"}}$ button, and save the adjustment results in the non-volatile memory. ("EFB = $\boxed{\text{VC}}$ SAVE" will be displayed for a moment)
10. "EFB = $\boxed{\text{VC}}$ MO-P" will be displayed.
The optical pick-up moves to the pit area automatically and servo is imposed.
11. Press the $\boxed{\leftarrow} \text{"R"}$ or $\boxed{\rightarrow} \text{"R"}$ button 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.

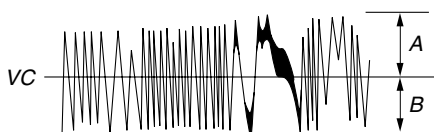
Traverse Waveform



Specification A = B

12. Press the $\boxed{\text{ENTER/YES "R"}}$ button, and save the adjustment results in the non-volatile memory. ("EFB = $\boxed{\text{VC}}$ SAVE" will be displayed for a moment)
Next "EF MO ADJUST" (C07) is displayed. The disc stops rotating automatically.
13. Press the $\boxed{\Delta} \text{(MD)}$ button and take out the disc.
14. Load the check disc (TDYS-1).
15. Press the $\boxed{\leftarrow} \text{"R"}$ or $\boxed{\rightarrow} \text{"R"}$ button to display "EF CD ADJUST" (C08).
16. Press the $\boxed{\text{ENTER/YES "R"}}$ button to display "EFB = $\boxed{\text{VC}}$ CD". Servo is imposed automatically.
17. Press the $\boxed{\leftarrow} \text{"R"}$ or $\boxed{\rightarrow} \text{"R"}$ button 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 $\boxed{\text{ENTER/YES "R"}}$ button, display "EFB = $\boxed{\text{VC}}$ SAVE" for a moment and save the adjustment results in the non-volatile memory.
Next "EF CD ADJUST" (C08) will be displayed.
19. Press the $\boxed{\Delta} \text{(MD)}$ button and take out the check disc.

Adjustment Location: BD (MD) board (see page 47)

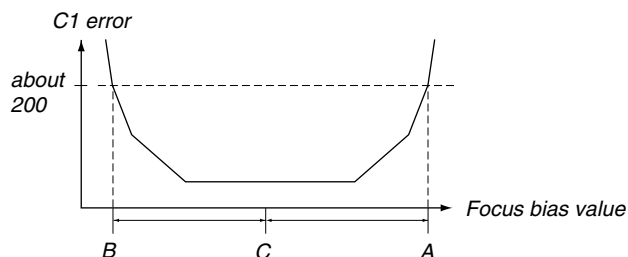
13.FOCUS BIAS ADJUSTMENT

Procedure:

- Load the continuously-recorded disc. (Refer to "5. USING THE CONTINUOUSLY RECORDED DISC" (See page 40))
- Press the $\boxed{\leftarrow} \text{"R"}$ or $\boxed{\rightarrow} \text{"R"}$ button to display "CPLAY2 MODE" (C36).
- Press the $\boxed{\text{ENTER/YES "R"}}$ button to display "CPLAY2MID".
- Press the $\boxed{\text{MENU/NO "R"}}$ button when "C = $\boxed{\text{VC}}$ AD = $\boxed{\text{VC}}$ " is displayed.
- Press the $\boxed{\leftarrow} \text{"R"}$ or $\boxed{\rightarrow} \text{"R"}$ button to display "FBIAS ADJUST" (C09).
- Press the $\boxed{\text{ENTER/YES "R"}}$ button to display " $\boxed{\text{VC}}$ / $\boxed{\text{VC}}$ a = $\boxed{\text{VC}}$ ". 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.
- Press the $\boxed{\rightarrow} \text{"R"}$ button and find the focus bias value at which the C1 error rate becomes about 200 (refer to Note 2).
- Press the $\boxed{\text{ENTER/YES "R"}}$ button to display " $\boxed{\text{VC}}$ / $\boxed{\text{VC}}$ b = $\boxed{\text{VC}}$ ".
- Press the $\boxed{\leftarrow} \text{"R"}$ button and find the focus bias value at which the C1 error rate becomes about 200.
- Press the $\boxed{\text{ENTER/YES "R"}}$ button to display " $\boxed{\text{VC}}$ / $\boxed{\text{VC}}$ c = $\boxed{\text{VC}}$ ".
- Check that the C1 error rate is below 20 and ADER is 00. Then press the $\boxed{\text{ENTER/YES "R"}}$ button.
- If the " $\boxed{\text{VC}}$ " in " $\boxed{\text{VC}}$ - $\boxed{\text{VC}}$ - $\boxed{\text{VC}}$ ($\boxed{\text{VC}}$)" is above 20, press the $\boxed{\text{ENTER/YES "R"}}$ button.
If below 20, press the $\boxed{\text{MENU/NO "R"}}$ button and repeat the adjustment from step 2.
- Press the $\boxed{\Delta} \text{(MD)}$ button and take out the 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.



14. ERROR RATE CHECK

14-1. CD Error Rate Check

Procedure:

1. Load the check disc (TDYS-1).
2. Press the **◀◀ "R"** or **▶▶ "R"** button and display "CPLAY2 MODE" (C36).
3. Press the **ENTER/YES "R"** button twice and display "CPLAY2 MID".
4. The display changes to "C = 0000 AD = 00".
5. Check that the C1 error rate is below 20.
6. Press the **MENU/NO "R"** button to stop playback, then press the **▲ (MD)** button and take out the check disc.

14-2. MO Error Rate Check

Procedure:

1. Load the continuously-recorded disc. (Refer to "5. USING THE CONTINUOUSLY RECORDED DISC" (See page 40))
2. Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY2 MODE" (C36).
3. Press the **ENTER/YES "R"** button to display "CPLAY2MID".
4. The display changes to "C1 = 0000 AD = 00".
5. If the C1 error rate is below 20, check that ADER is 00.
6. Press the **MENU/NO "R"** button to stop playback, then press the **▲ (MD)** button and take out the disc.

15. FOCUS BIAS CHECK

Change the focus bias and check the focus tolerance amount.

Procedure:

1. Load the continuously-recorded disc. (Refer to "5. USING THE CONTINUOUSLY RECORDED DISC" (See page 40))
2. Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY2 MODE" (C36).
3. Press the **ENTER/YES "R"** button twice to display "CPLAY2 MID".
4. Press the **MENU/NO "R"** button when "C1 = 0000 AD = 00" is displayed.
5. Press the **◀◀ "R"** or **▶▶ "R"** button to display "FBIAS CHECK" (C16).
6. Press the **ENTER/YES "R"** button to display "0000/00 c = 00". 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.
7. Press the **ENTER/YES "R"** button and display "0000/00 b = 00".
Check that the C1 error is below 100 and ADER is below 2.
8. Press the **ENTER/YES "R"** button and display "0000/00 a = 00".
Check that the C1 error is below 100 and ADER is below 2.
9. Press the **MENU/NO "R"** button, then press the **▲ (MD)** button and take out the disc.

Note: 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.

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.

16-1. CD Auto Gain Control Output Level Adjustment

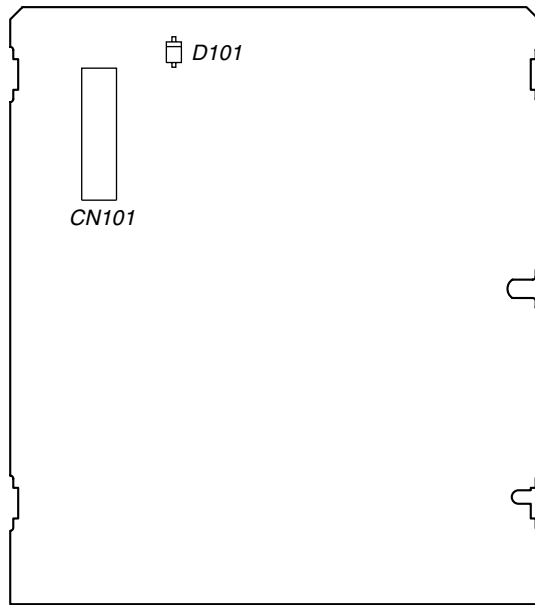
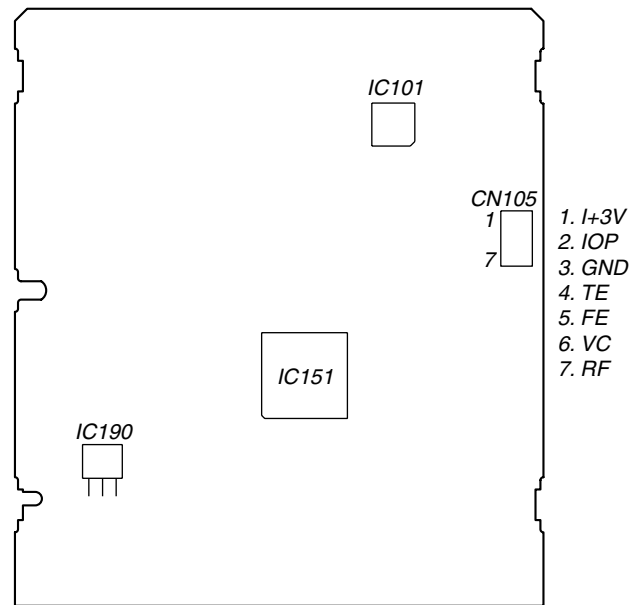
Procedure:

1. Load the check disc (TDYS-1).
2. Press the **◀◀ ◀◀ "R"** or **▶▶ ▶▶ "R"** button to display "AG Set (CD)" (C11).
3. When the **ENTER/YES "R"** 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).
4. Press the **▲ (MD)** button and take out the check disc.

16-2. MO Auto Gain Control Output Level Adjustment

Procedure:

1. Load the test disc (MDW-74/GA-1).
2. Press the **◀◀ "R"** or **▶▶ "R"** button to display "AG Set (MO)" (C10).
3. When the **ENTER/YES "R"** 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).
4. Press the **▲ (MD)** button and take out the test disc.

Adjustment and checking Location:**– BD (MD) BOARD (Component Side) –****– BD (MD) BOARD (Conductor Side) –**

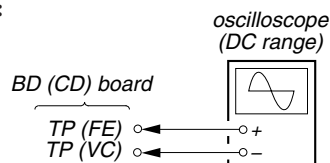
Note: It is useful to use the jig for checking the waveform. (Refer to Servicing Notes on page 9)

CD SECTION

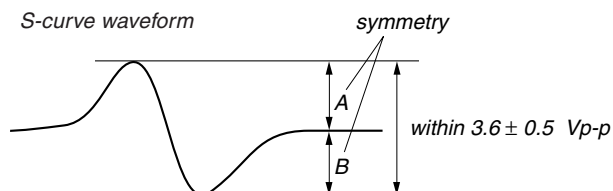
Note:

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 10M Ω 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.
5. Level doesn't change whichever with normal speed or with four times speed.
6. Use the following jig.
 - Extension jig (21 core) (Part No. J-2501-075-A)

CN101 on the BD (CD) board to CN1002 on the MD DIGITAL board

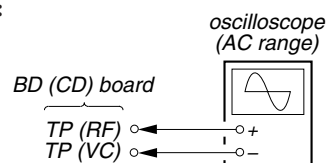
S Curve Check**Connection:****Procedure:**

1. Connect an oscilloscope to test point TP (FE) and TP (VC) on the BD (CD) board.
2. Turn the power on.
3. Put the disc (YEDS-18) in and turned power switch on again and actuate the focus search. (actuate the focus search when disc table is moving in and out)
4. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3.6 ± 0.5 Vp-p.



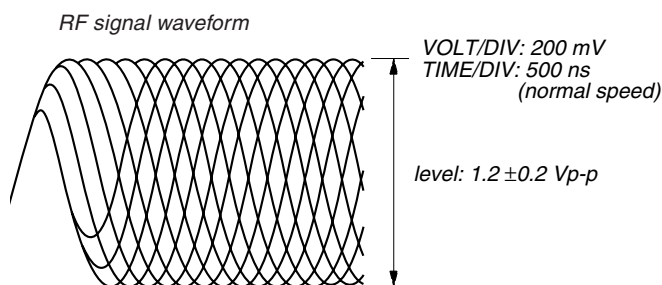
- Note:**
- Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.
 - Take sweep time as long as possible and light up the brightness to obtain best waveform.

Checking Location: BD (CD) board

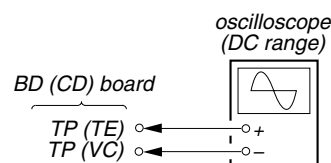
RF Level Check**Connection:****Procedure:**

1. Connect an oscilloscope to test point TP (RF) and TP (VC) on the BD (CD) board.
2. Turn the power on.
3. Put the disc (YEDS-18) in to playback the number five track.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

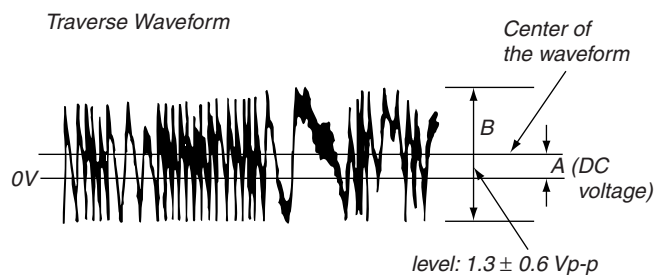
Note: A clear RF signal waveform means that the shape "◇" can be clearly distinguished at the center of the waveform.



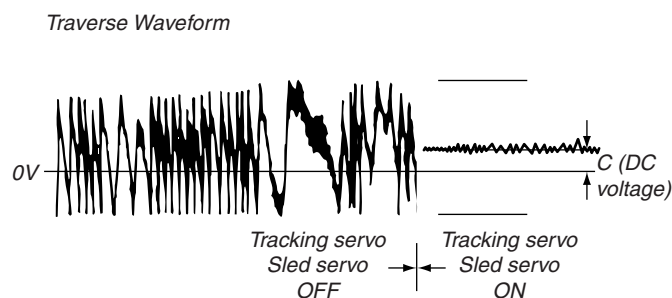
Checking Location: BD (CD) board

E-F Balance Check**Connection:****Procedure:**

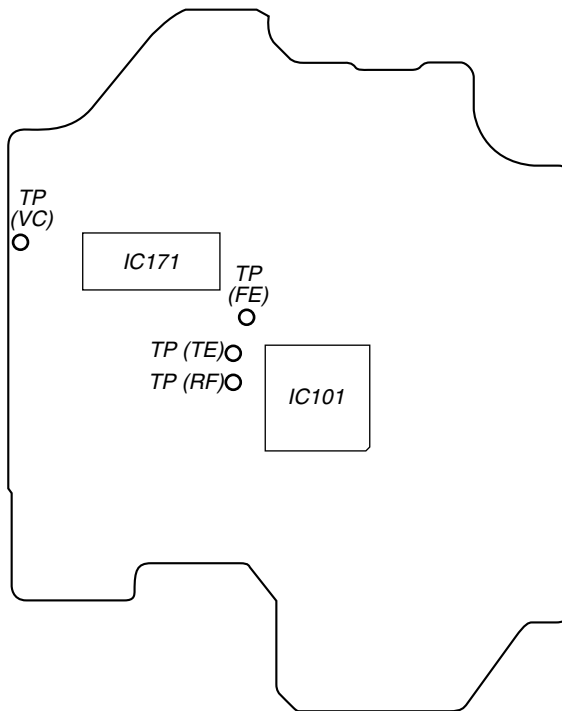
1. Connect an oscilloscope to test point TP (TE) and TP (VC) on the BD (CD) board.
2. Turn the power on.
3. Put the disc (YEDS-18) in to playback the number five track.
4. Press the **REPEAT STEREO/MONO** button. (The tracking servo and the sledding servo are turned OFF)
5. Check the level B of the oscilloscope's waveform and the A (DC voltage) of the center of the Traverse waveform. Confirm the following :
 $A/B \times 100 = \text{less than } \pm 22\%$



6. Press the **REPEAT STEREO/MONO** button. (The tracking servo and sledding servo are turned ON)
 Confirm the C (DC voltage) is almost equal to the A (DC voltage) is step 5.



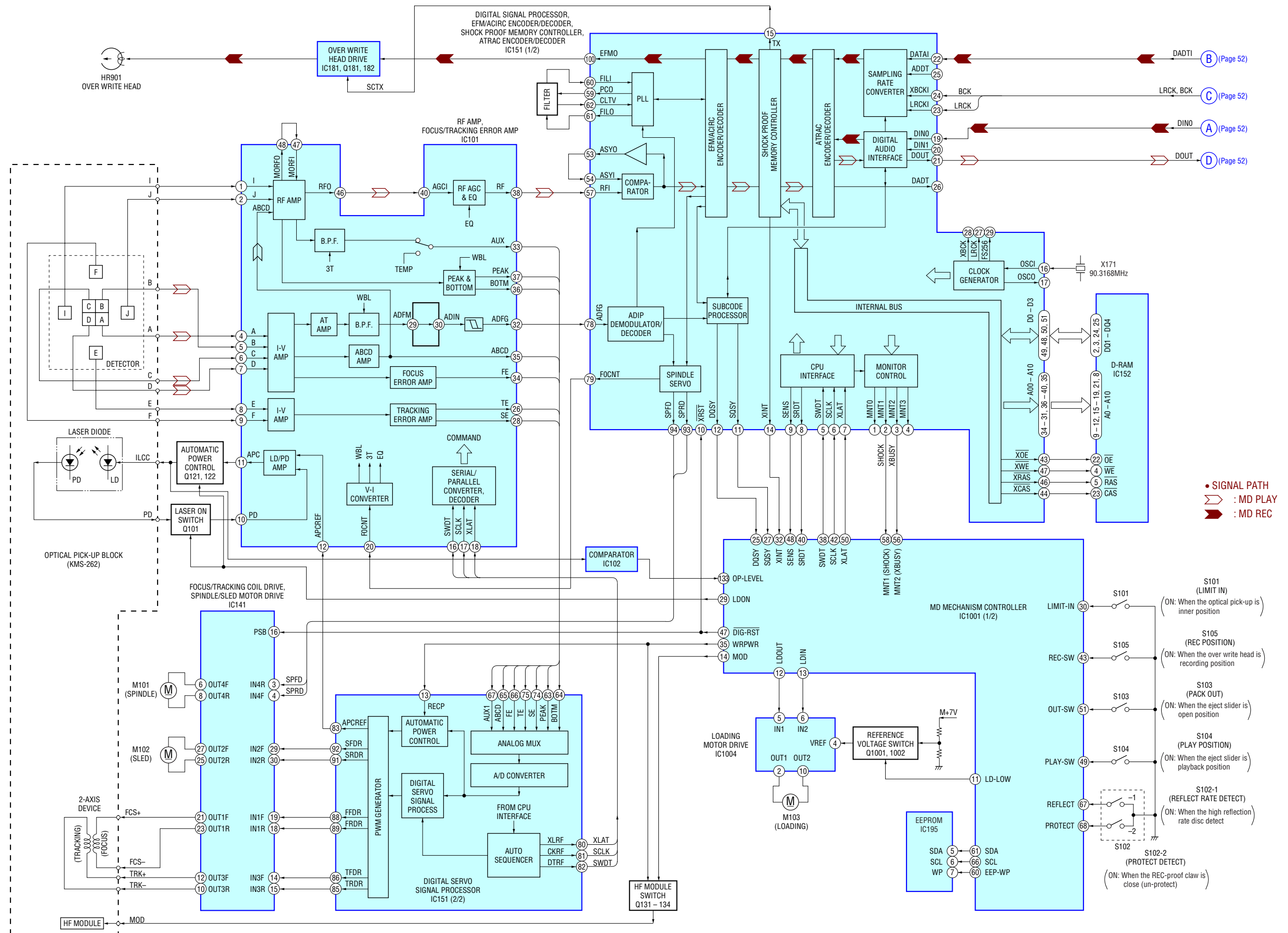
Checking Location: BD (CD) board

Checking Location:**– BD (CD) BOARD (Conductor Side) –**

MEMO

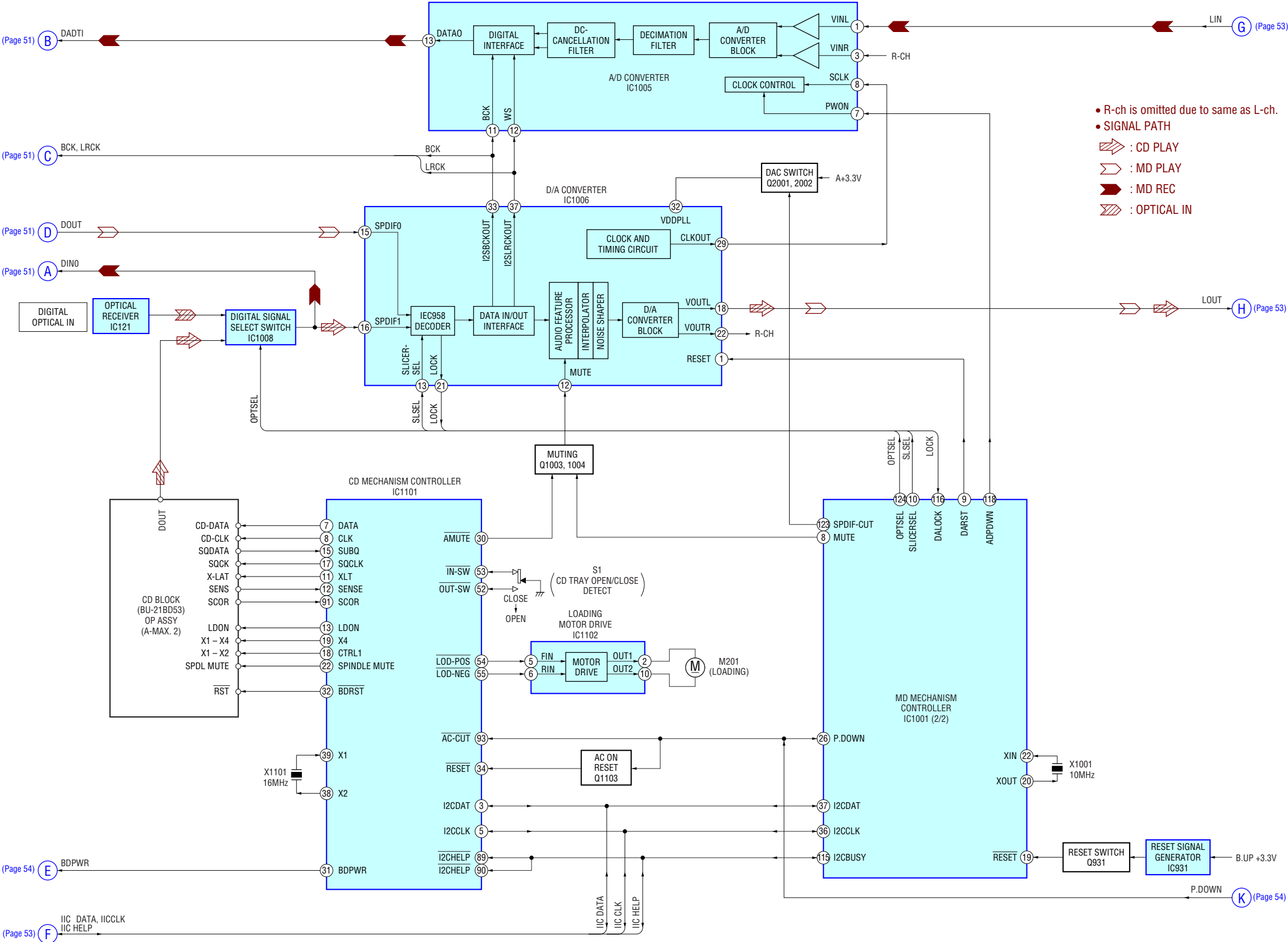
SECTION 6 DIAGRAMS

6-1. BLOCK DIAGRAMS MD SERVO SECTION

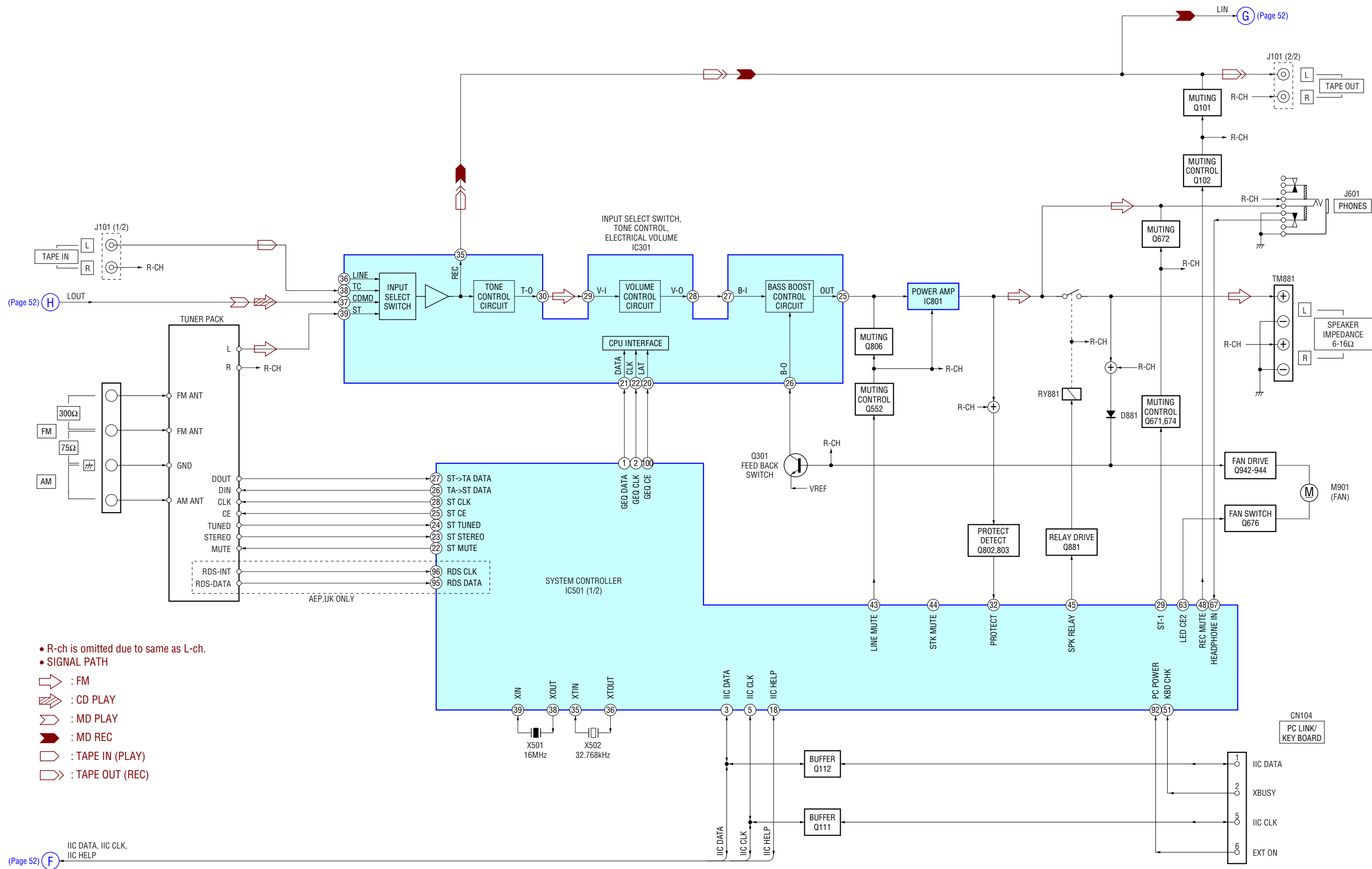


HCD-PX333

D/A, A/D CONVERTER SECTION

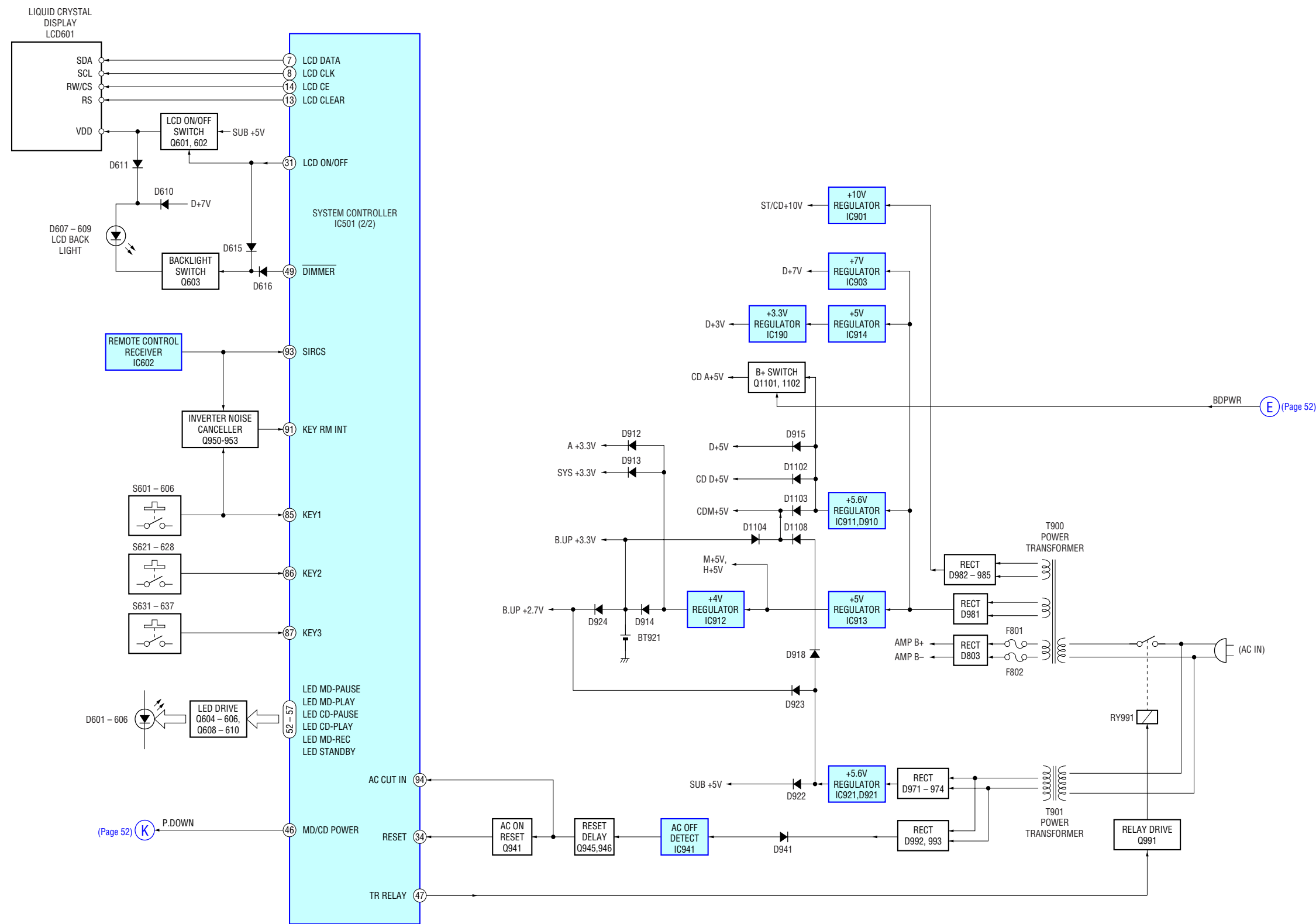


MAIN SECTION



HCD-PX333

DISPLAY, POWER SUPPLY SECTION



6-2. NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

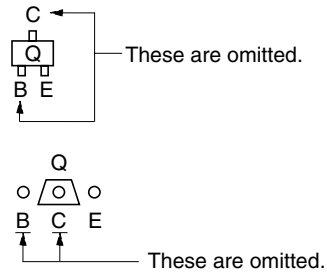
Note on Printed Wiring Boards:

- — : parts extracted from the component side.
- : parts extracted from the conductor side.
- : Pattern from the side which enables seeing.
(The other layers' patterns are not indicated.)

Caution:

Pattern face side:	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side:	Parts on the parts face side seen from the parts face are indicated.

• Indication of transistor.



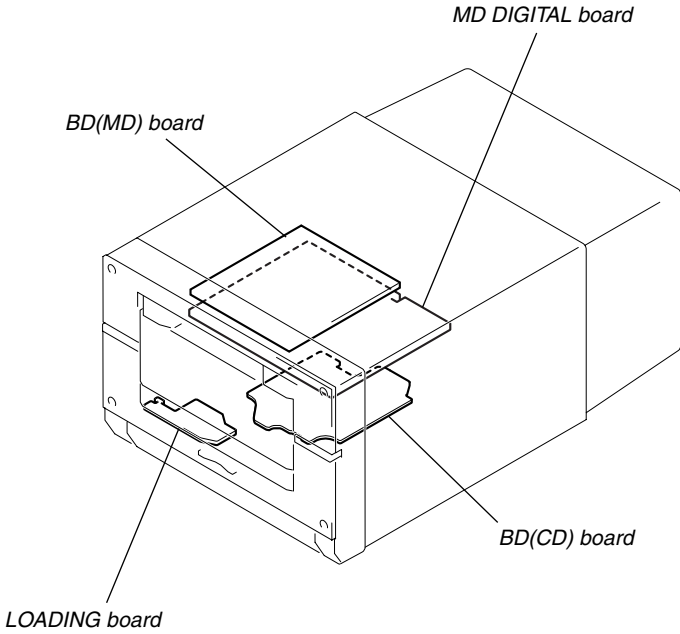
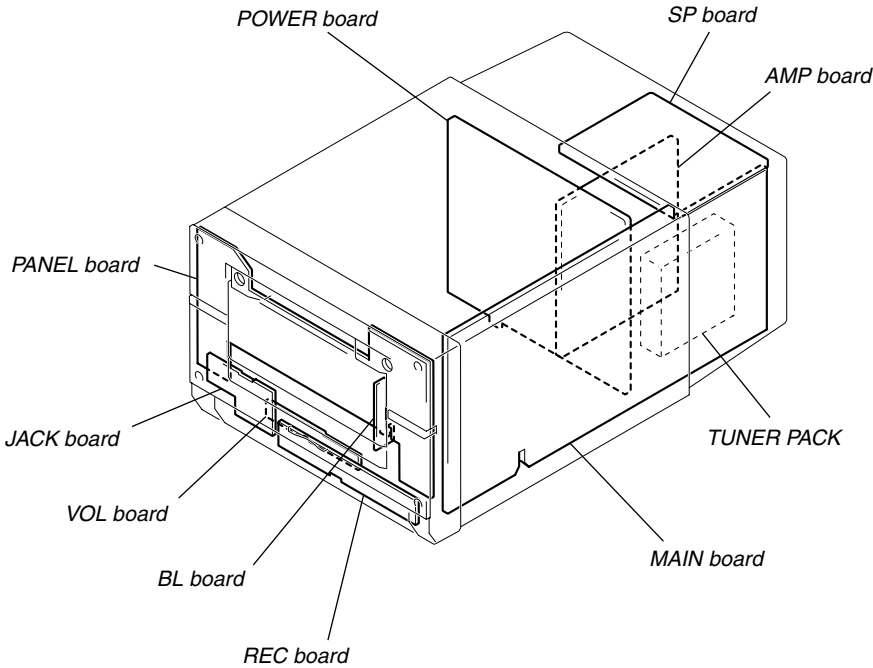
Note on Schematic Diagram:

- 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.
- % : indicates tolerance.
- Δ : internal component.
- : fusible resistor.
- : panel designation.

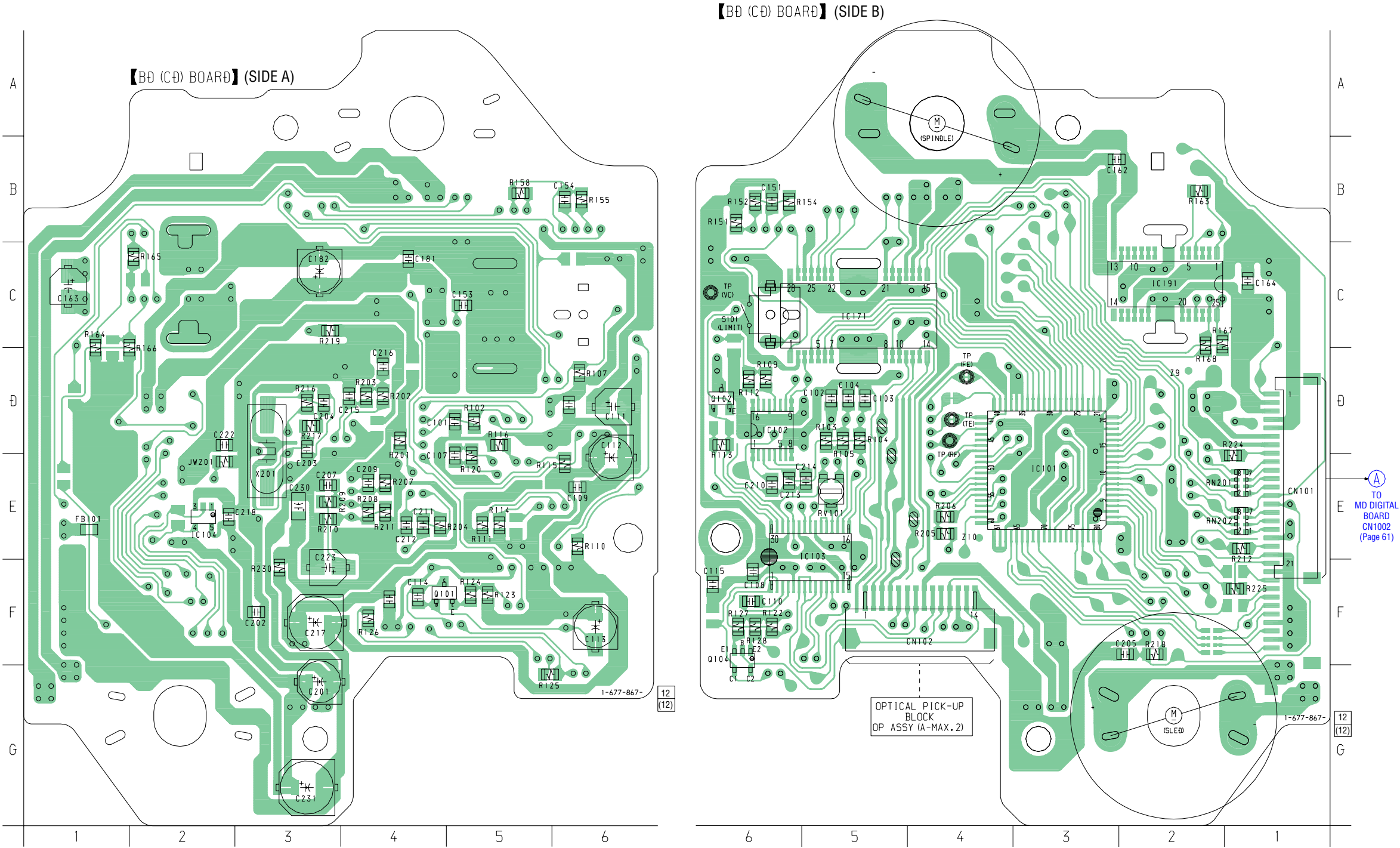
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

- : B+ Line.
- : B- Line.
- Voltagess 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
 - : CD PLAY
 - : MD PLAY
 - : MD REC
 - : DIGITAL OPTICAL IN
 - : TAPE IN (PLAY)
 - : TAPE OUT (REC)
- Abbreviation
 - MY : Malaysia model
 - SP : Singapore model
 - HK : Hong Kong model
 - AUS : Australian model

• Circuit Boards Location



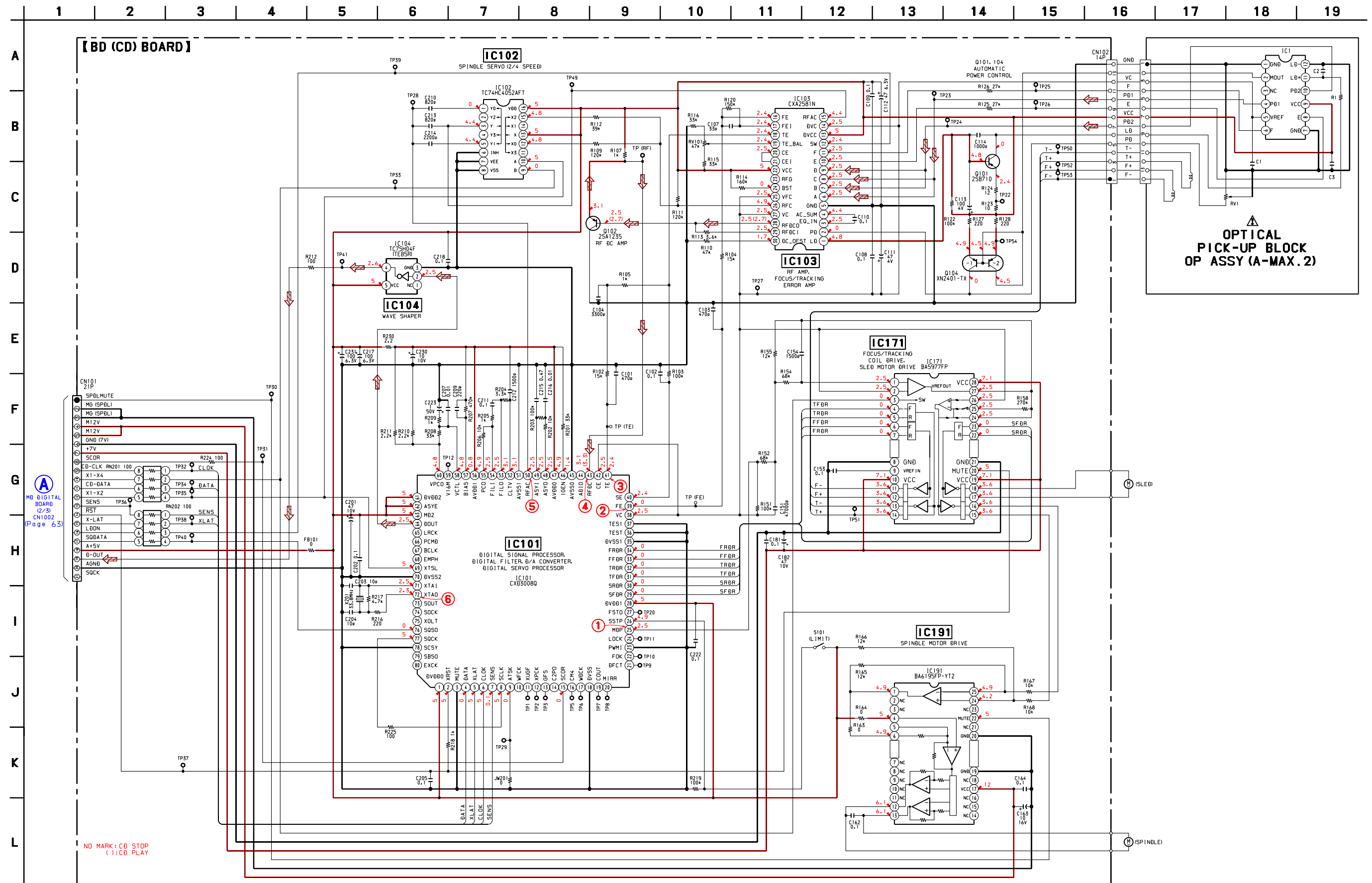
Printed wiring board of BD (CD) board is shown only for referring, because CD base unit is replaced as a block.

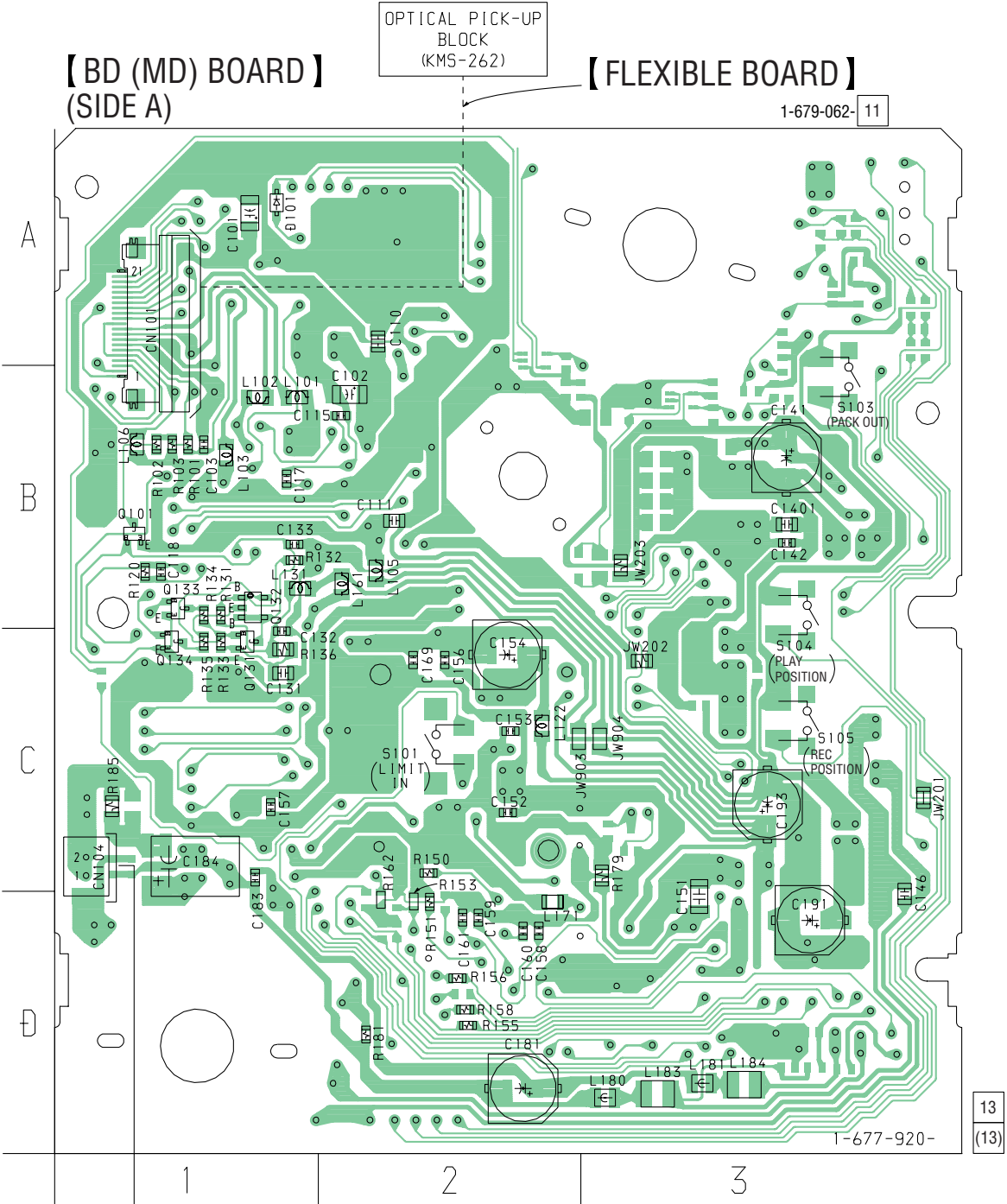


6-4. SCHEMATIC DIAGRAM BD (CD) BOARD

• See page 76 for Waveforms.

Schematic diagram of BD (CD) board is shown only for referring, because CD base unit is replaced as a block.

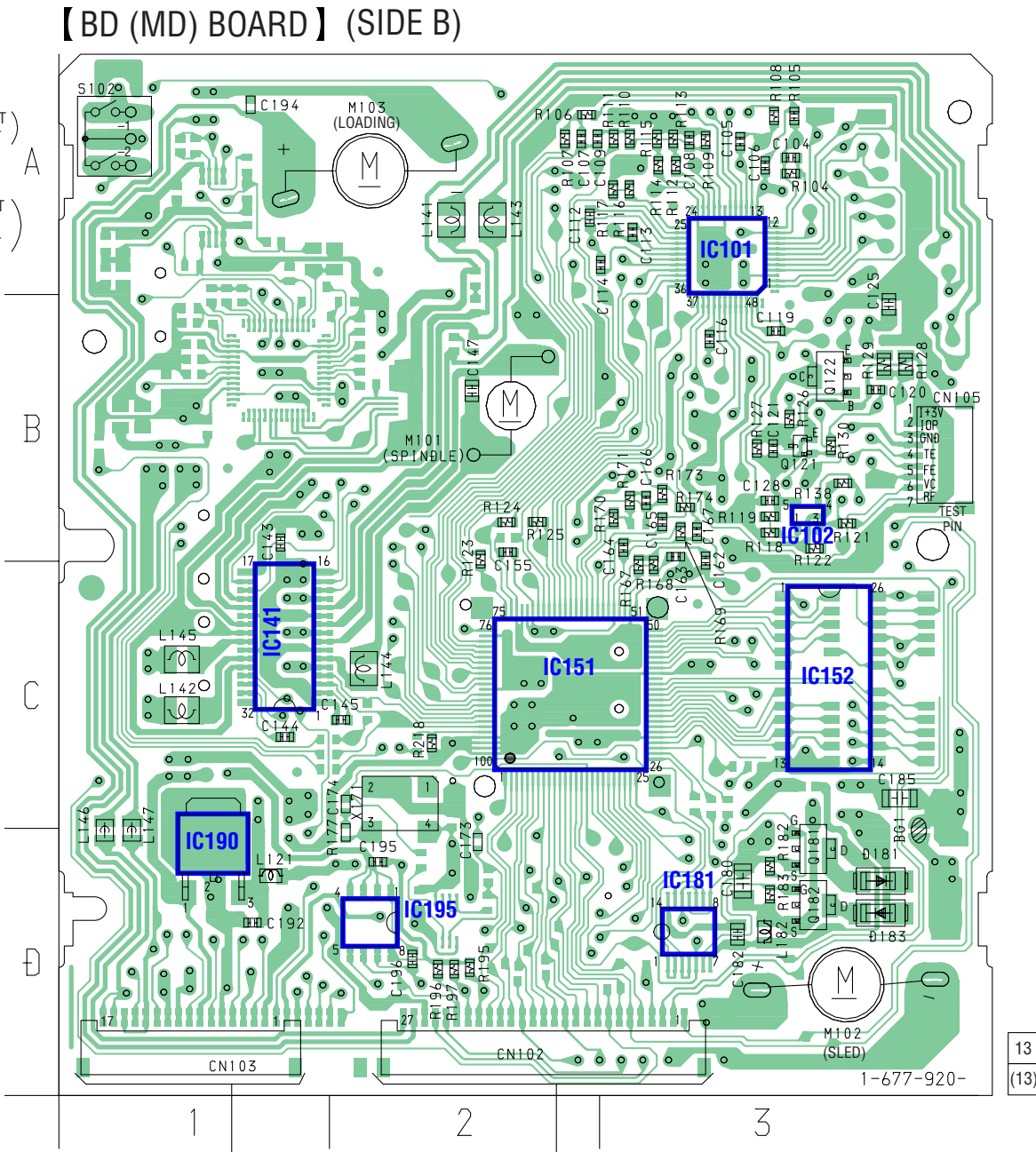




HR901
(OVER
WRITE HEAD)

• Semiconductor

Ref. No.	Location
D101	A-1
Q101	B-2
Q131	C-1
Q131	C-1
Q132	B-1



D

TO
MD DIGITAL BOARD
CN1004
(Page 61)

C

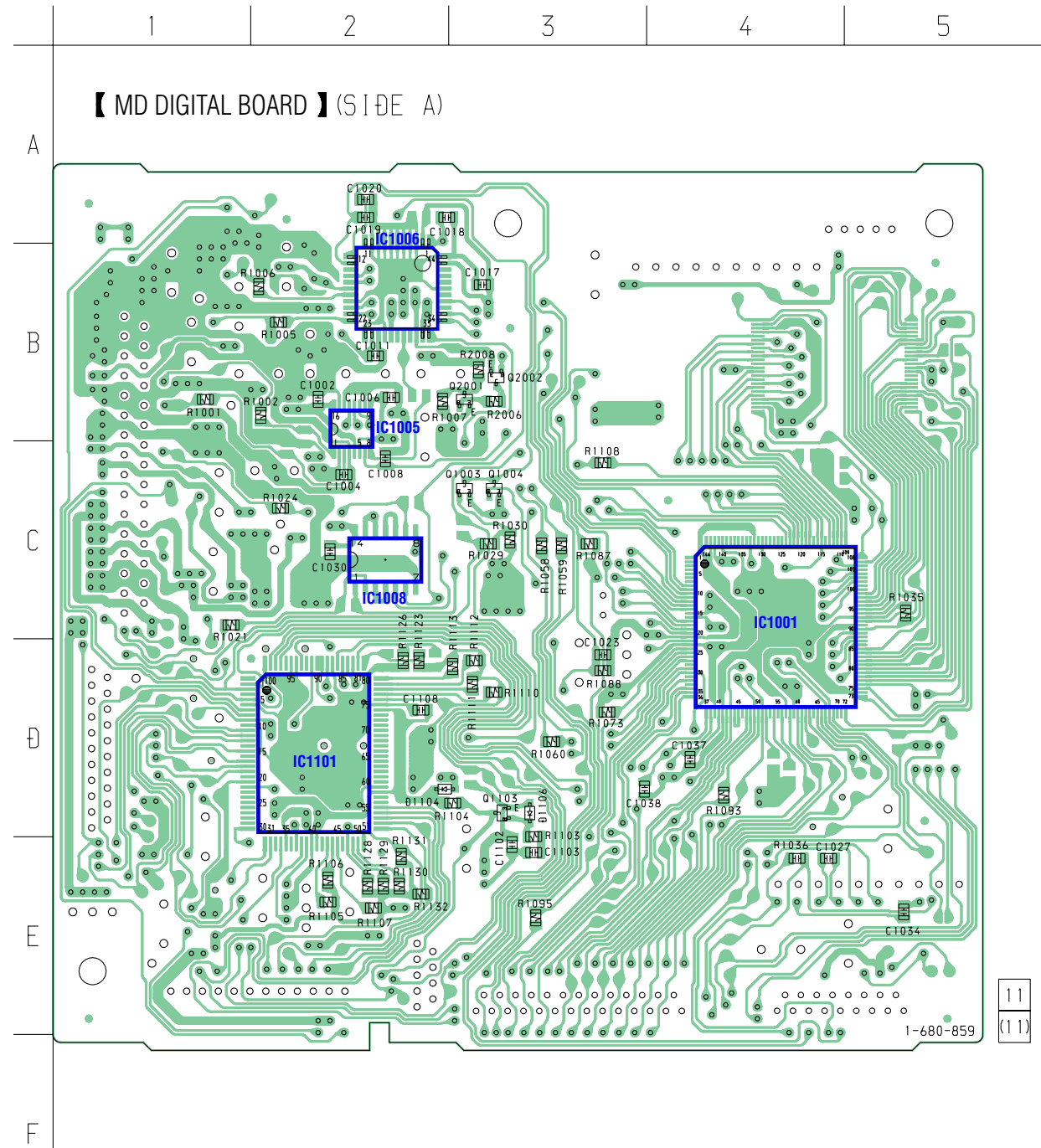
TO
MD DIGITAL BOARD
CN1003
(Page 61)

• Semiconductor
Location

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

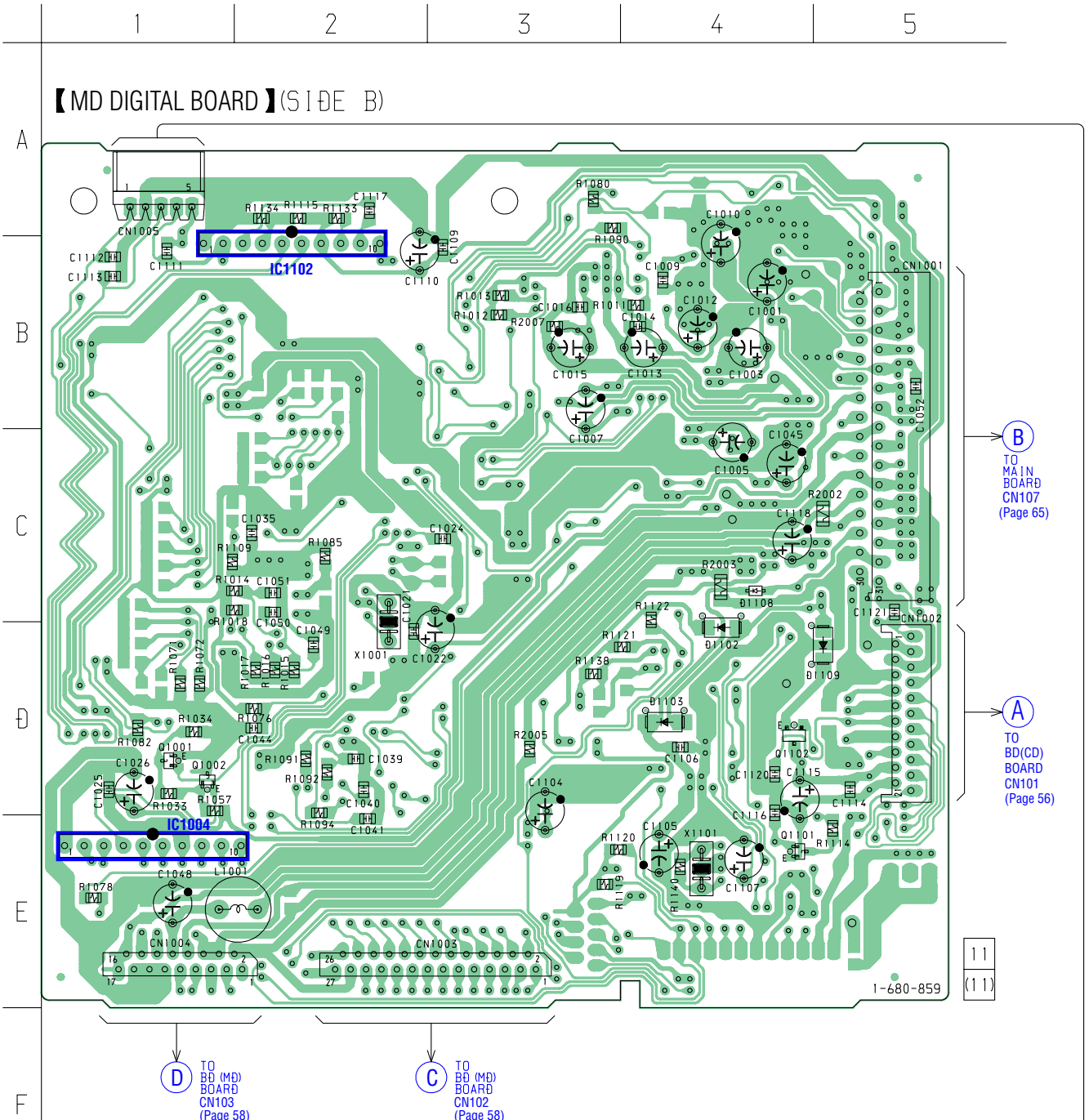


6-8. PRINTED WIRING BOARD MD DIGITAL SECTION • See page 55 for Circuit Boards Location.



• Semiconductor Location

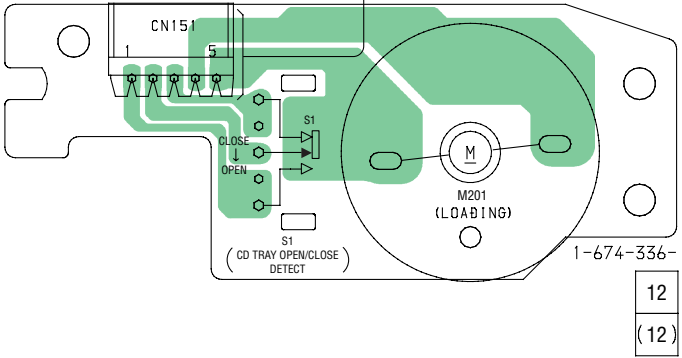
Ref. No.	Location
D1106	D-3
D1104	D-3
IC1001	D-4
IC1005	B-2
IC1006	B-2
IC1008	C-2
IC1101	D-2
Q1003	C-3
Q1004	C-3
Q1103	D-3
Q2001	B-3
Q2002	B-3



• Semiconductor Location

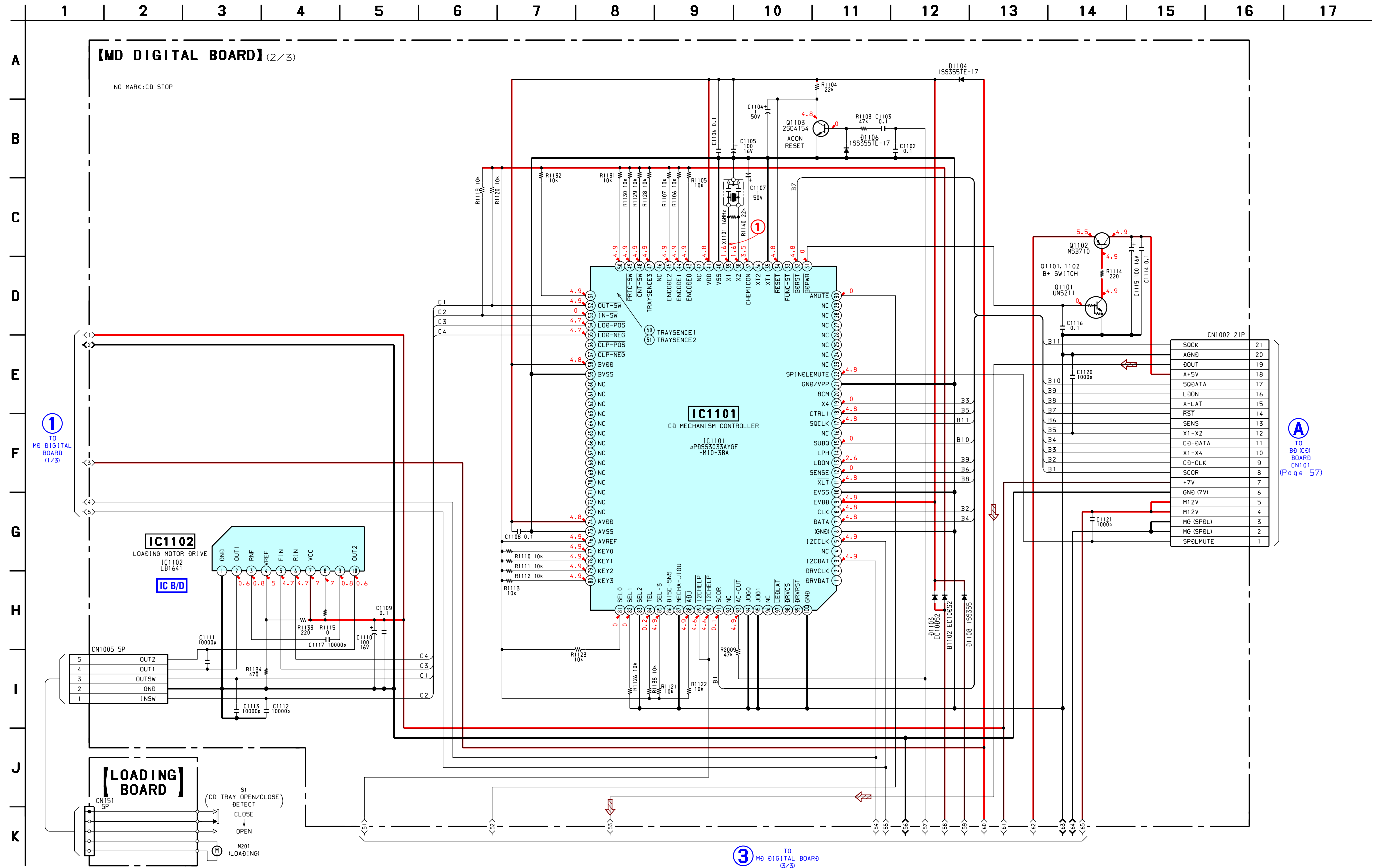
Ref. No.	Location
D1102	C-4
D1103	D-4
D1108	C-4
D1109	C-5
IC1004	E-1
IC1102	B-2
Q1001	D-1
Q1002	D-1
Q1101	E-4
Q1102	D-4

【 LOADING BOARD 】



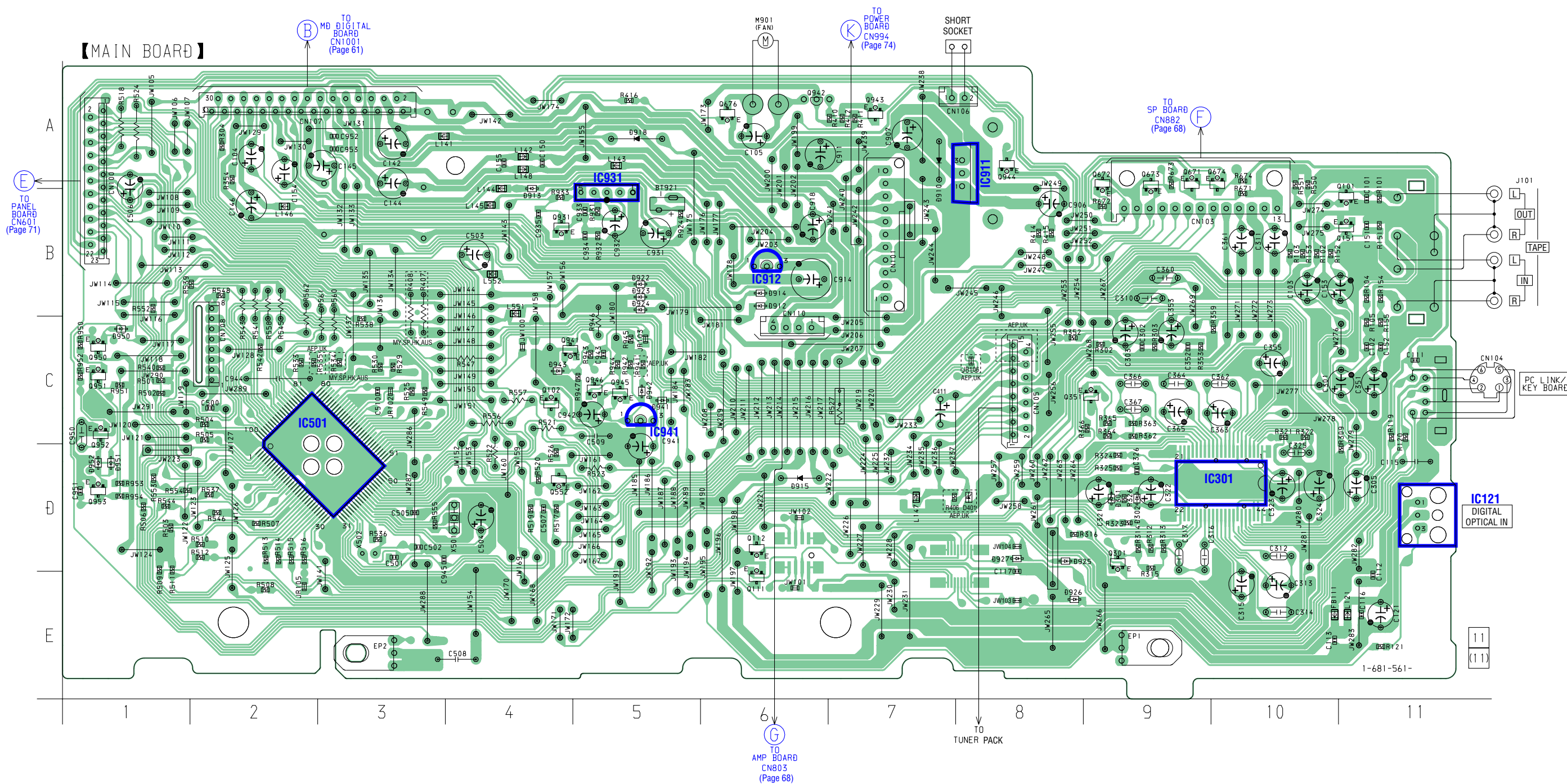


6-10. SCHEMATIC DIAGRAM MD DIGITAL SECTION (2/3) • See page 79 for IC Block Diagrams.





6-12. PRINTED WIRING BOARD MAIN BOARD • See page 55 for Circuit Boards Location.



• Semiconductor Location

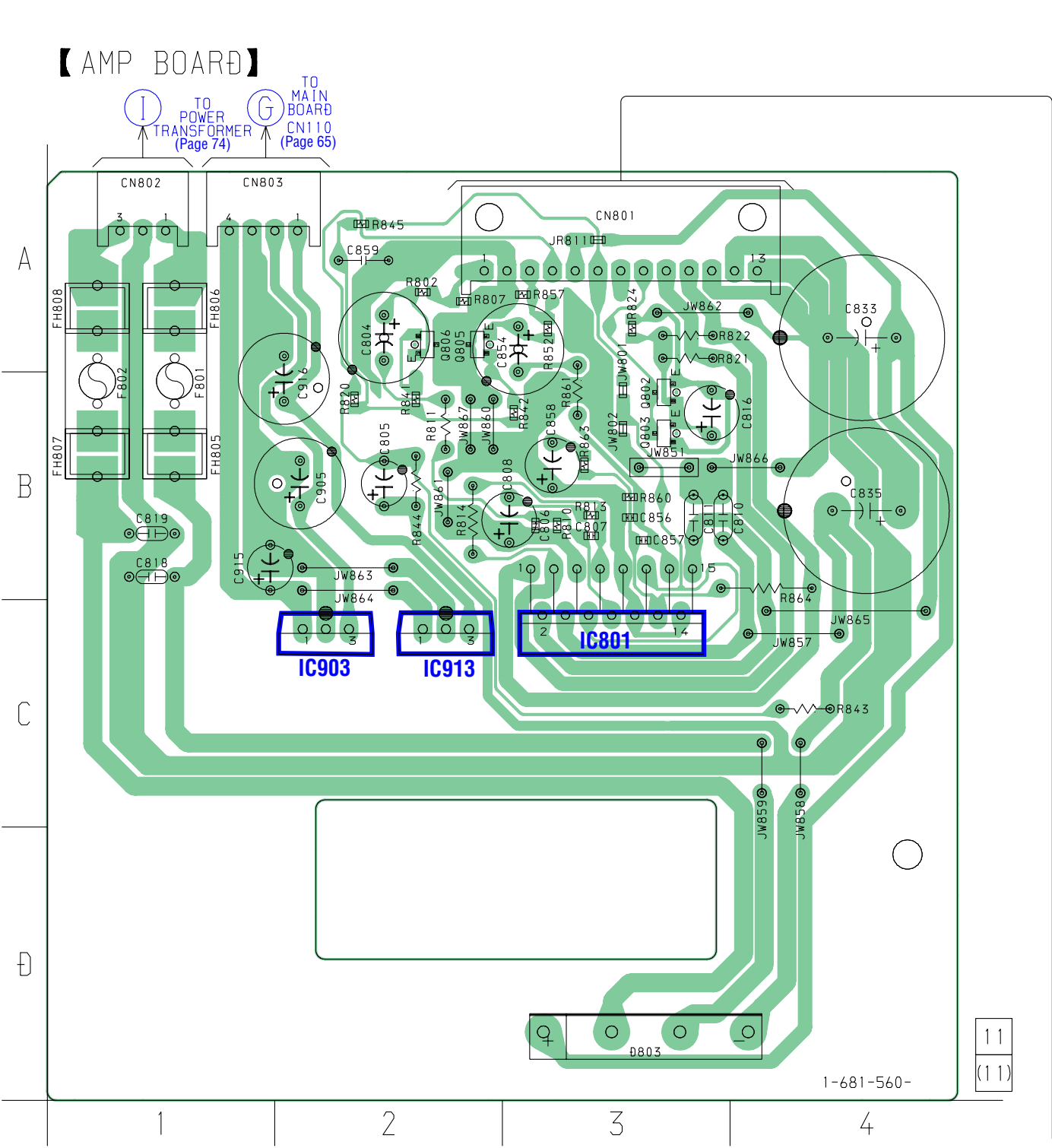
Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D301	D-9	D952	D-1	Q676	A-6
D302	D-9	IC121	D-11	Q931	B-4
D401	D-8	IC301	D-9	Q941	C-4
D910	A-7	IC501	C-2	Q942	A-6
D912	B-6	IC911	A-8	Q943	A-7
D913	B-4	IC912	B-6	Q944	A-8
D914	B-6	IC931	A-5	Q945	C-5
D915	D-6	IC941	C-5	Q946	C-5
D918	A-5	Q101	B-10	Q950	C-1
D922	B-5	Q102	C-4	Q951	C-1
D923	B-5	Q111	E-6	Q952	C-1
D924	B-5	Q112	D-6	Q953	D-1
D925	D-8	Q151	B-10		
D926	E-8	Q301	D-9		
D927	D-8	Q351	C-9		
D941	C-5	Q552	D-4		
D942	C-5	Q671	A-9		
D943	C-4	Q672	A-9		
D950	C-1	Q673	A-9		
D951	D-1	Q674	A-9		





6-15. PRINTED WIRING BOARD AMP BOARD

• See page 55 for Circuit Boards Location.

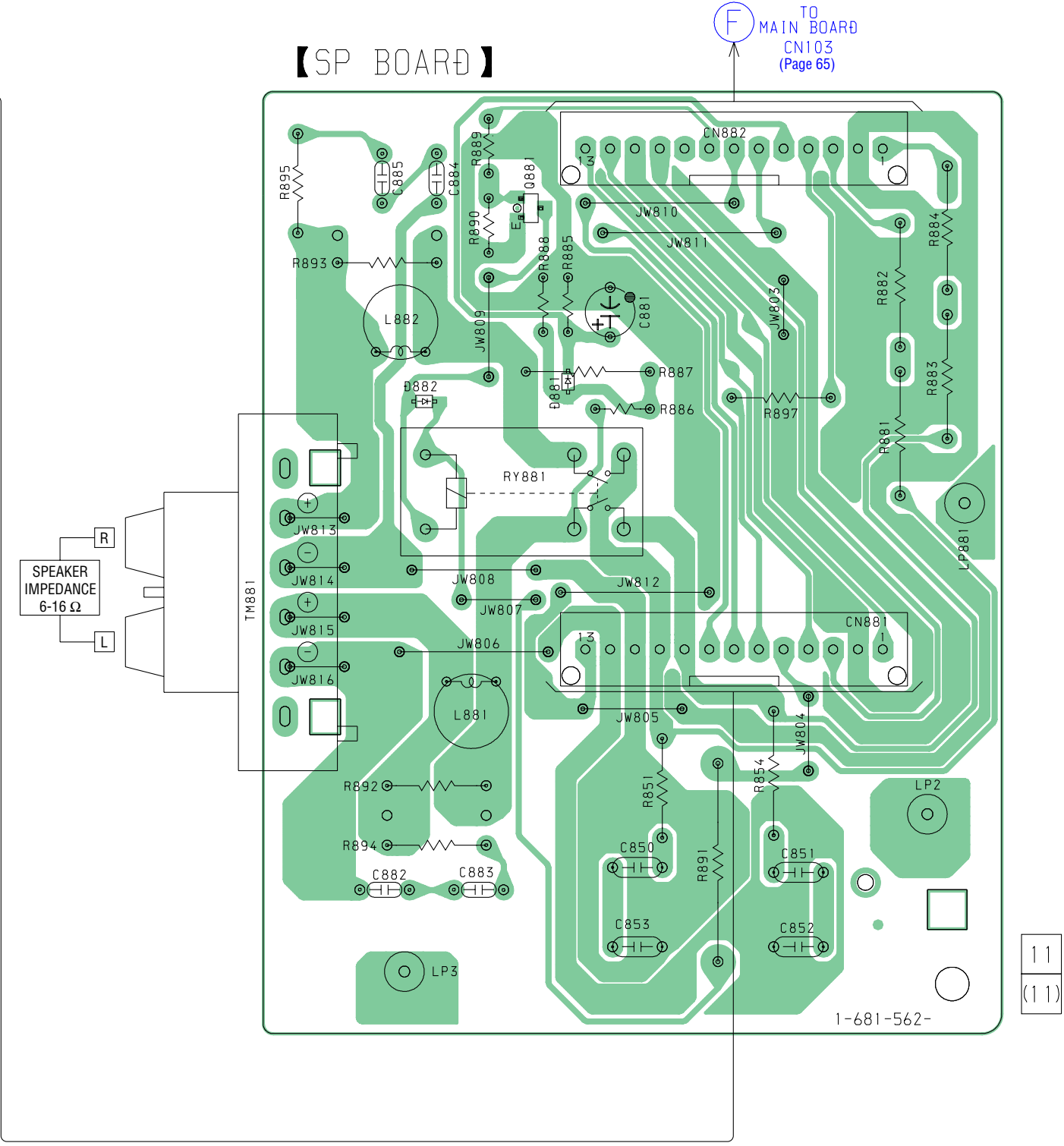


• Semiconductor Location

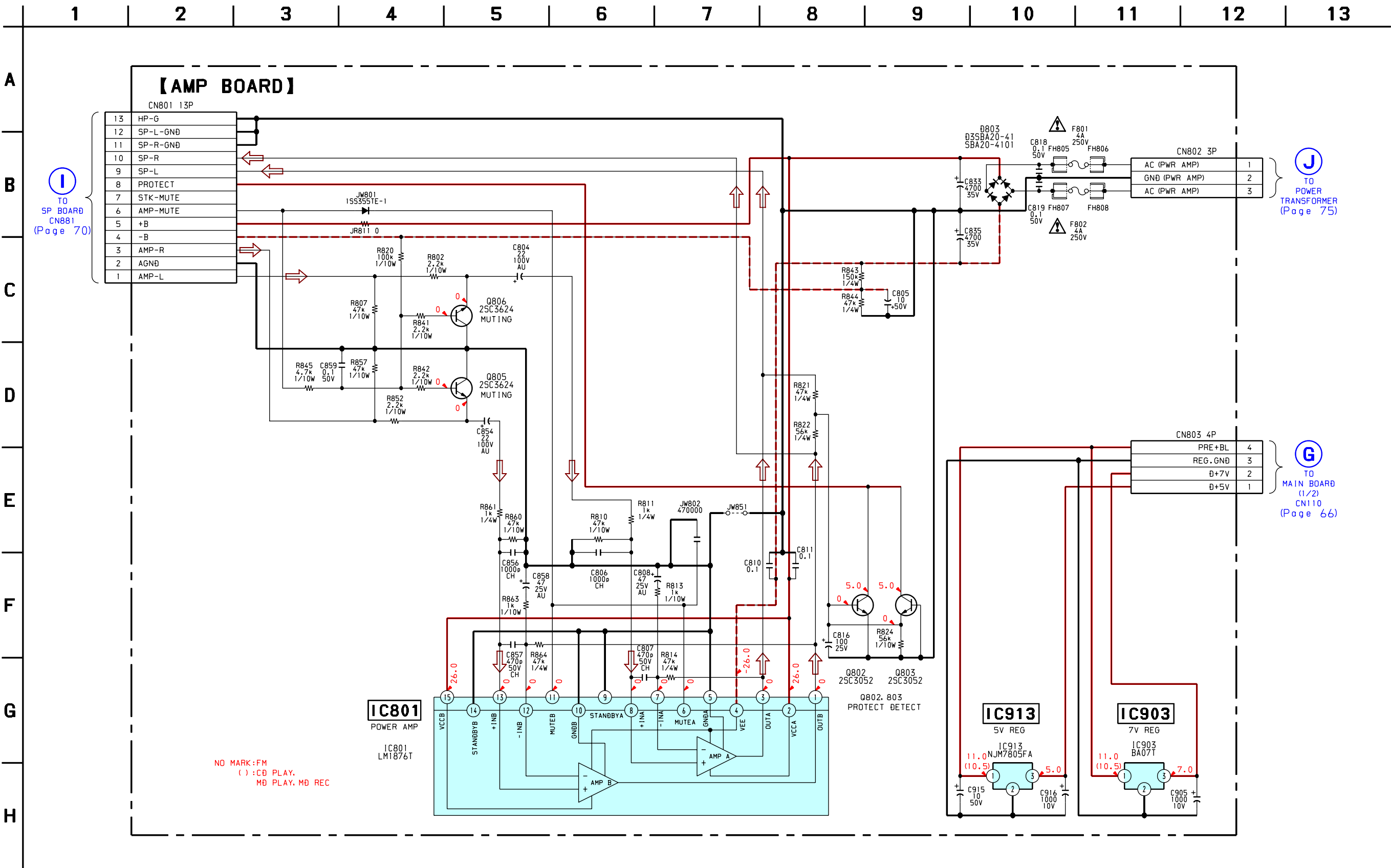
Ref. No.	Location
D803	D-3
IC801	C-3
IC903	C-2
IC913	C-2
Q802	B-3
Q803	B-3
Q805	A-2
Q806	A-2

6-16. PRINTED WIRING BOARD SP BOARD

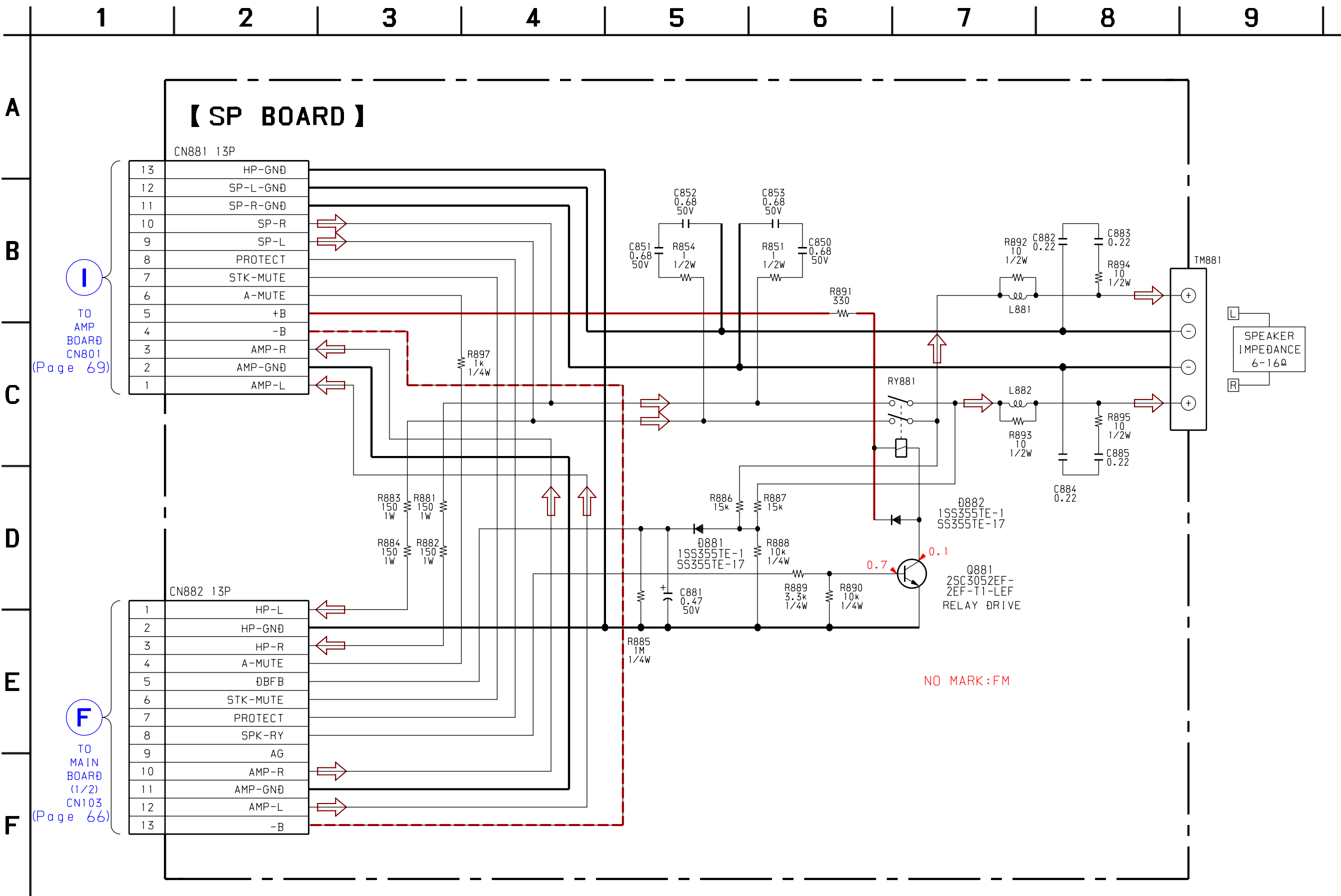
• See page 55 for Circuit Boards Location. • See page 70 for Schematic Diagram of SP Board.

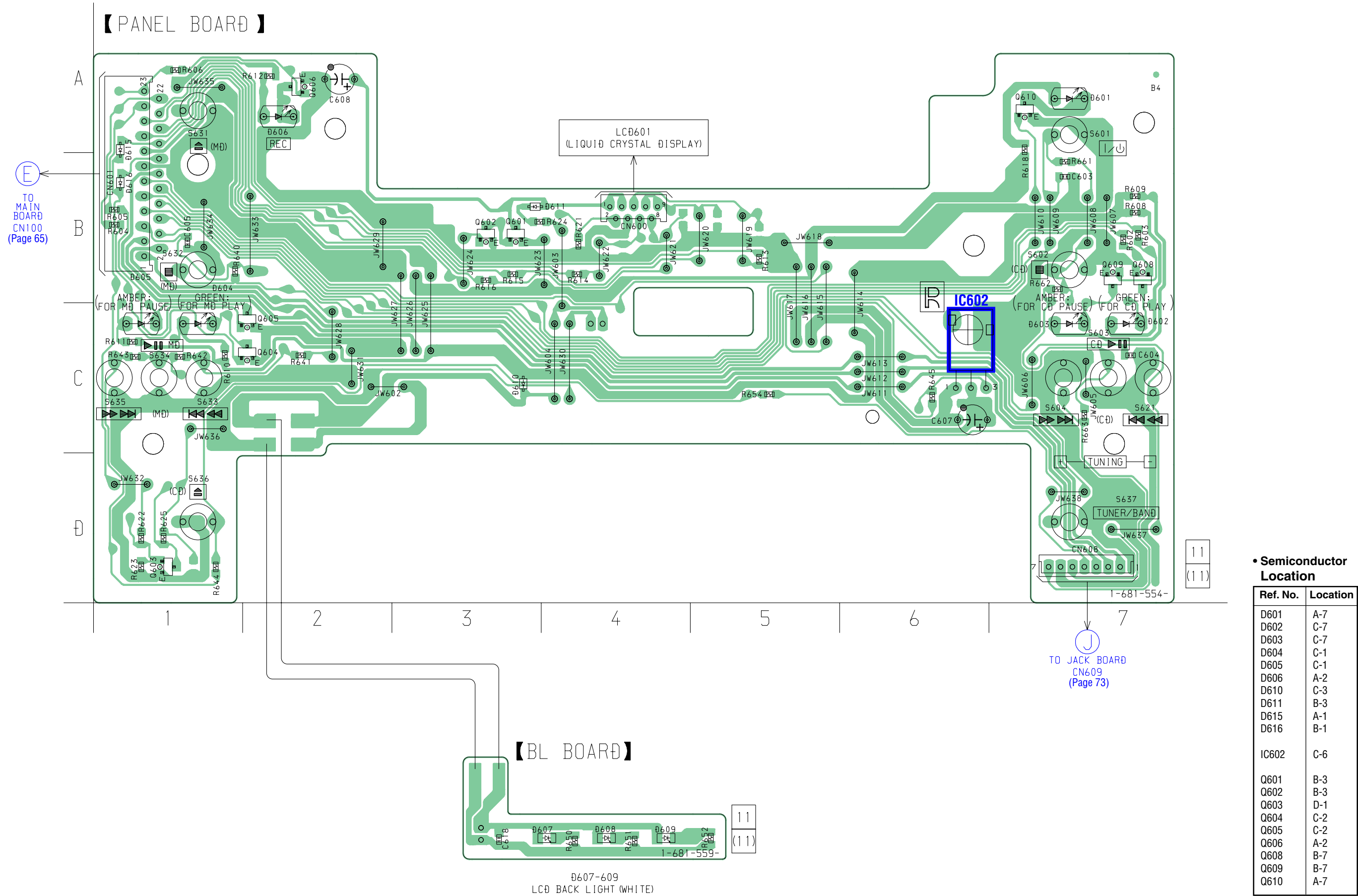


6-17. SCHEMATIC DIAGRAM AMP BOARD

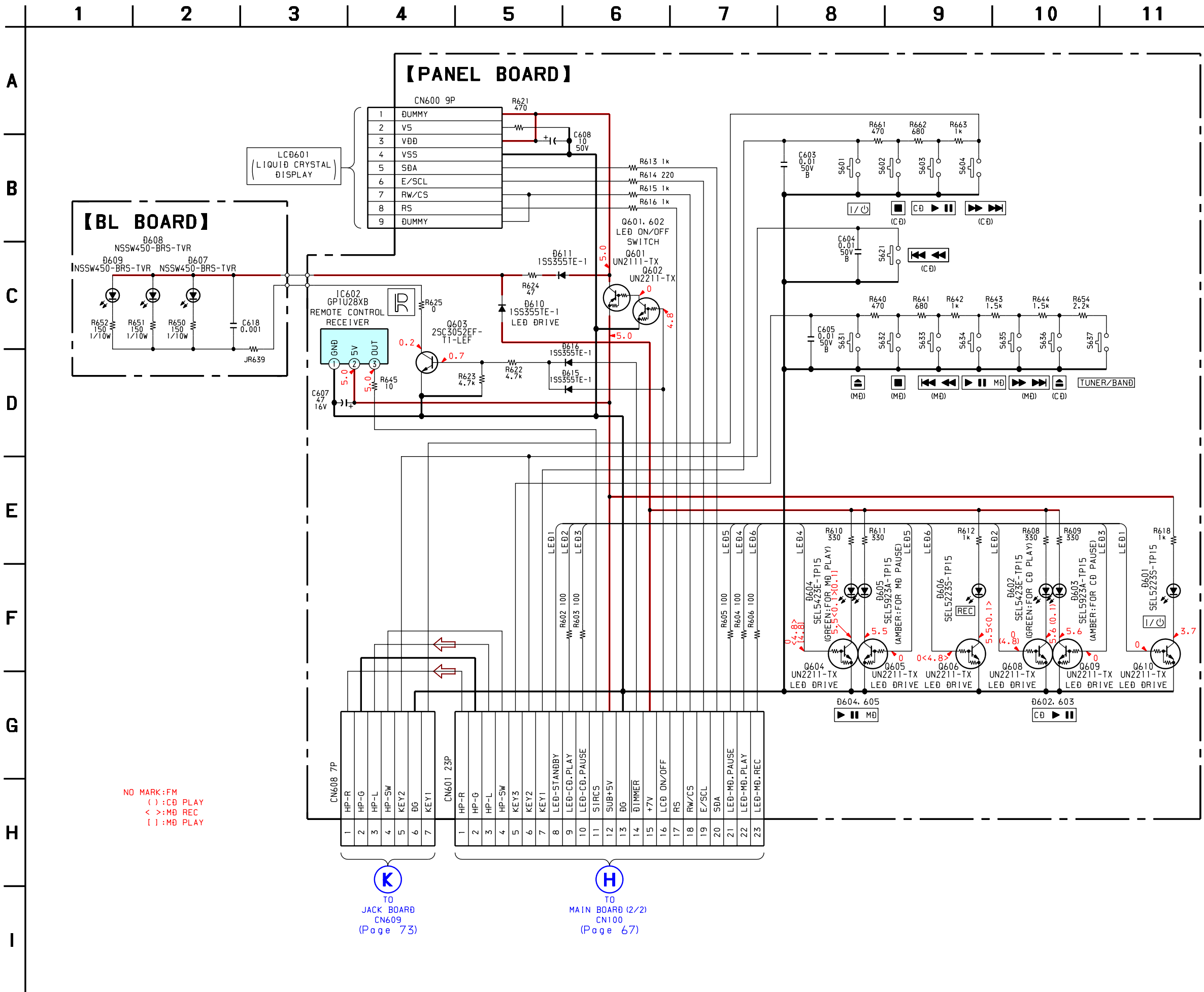


6-18. SCHEMATIC DIAGRAM SP BOARD

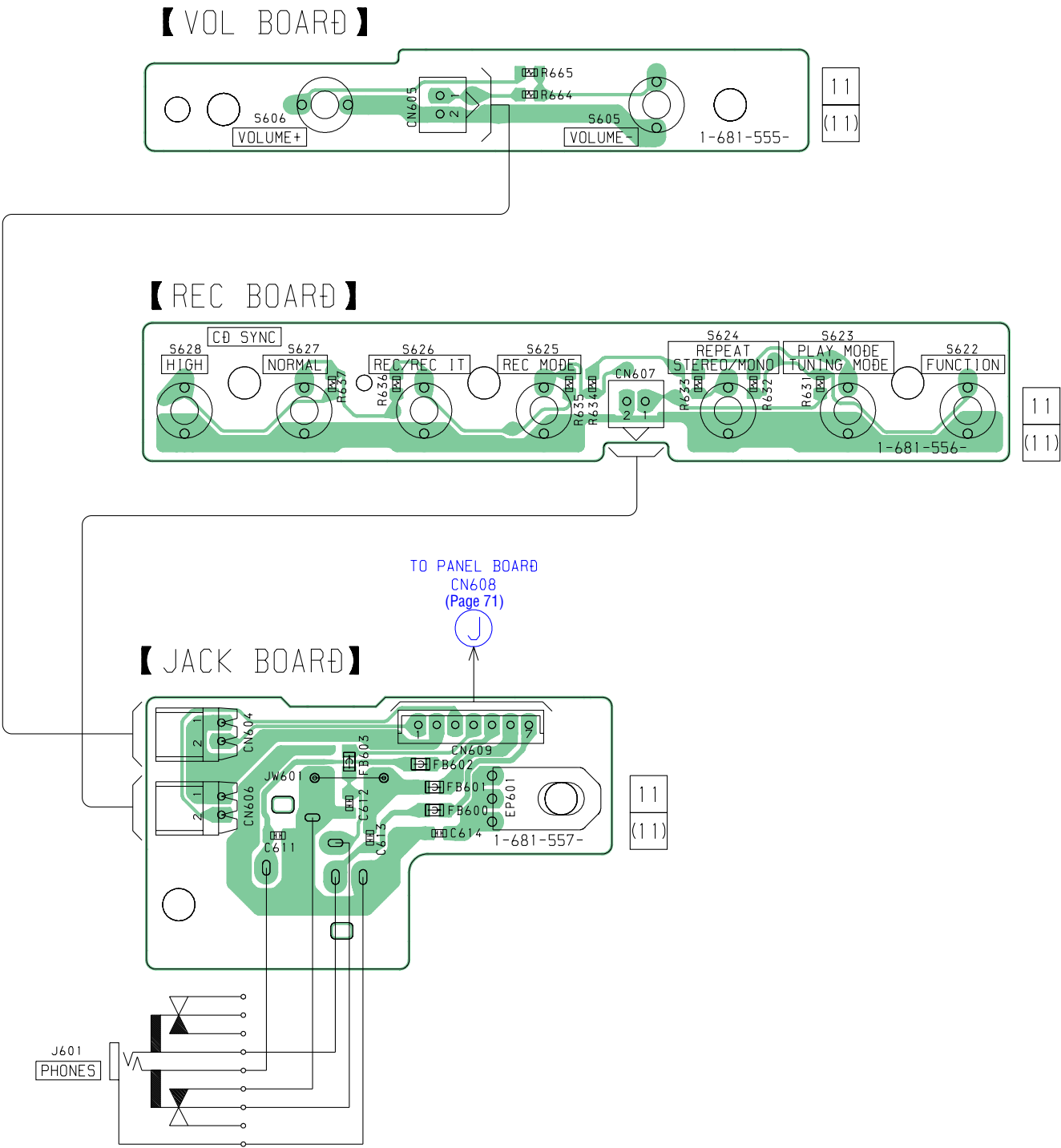




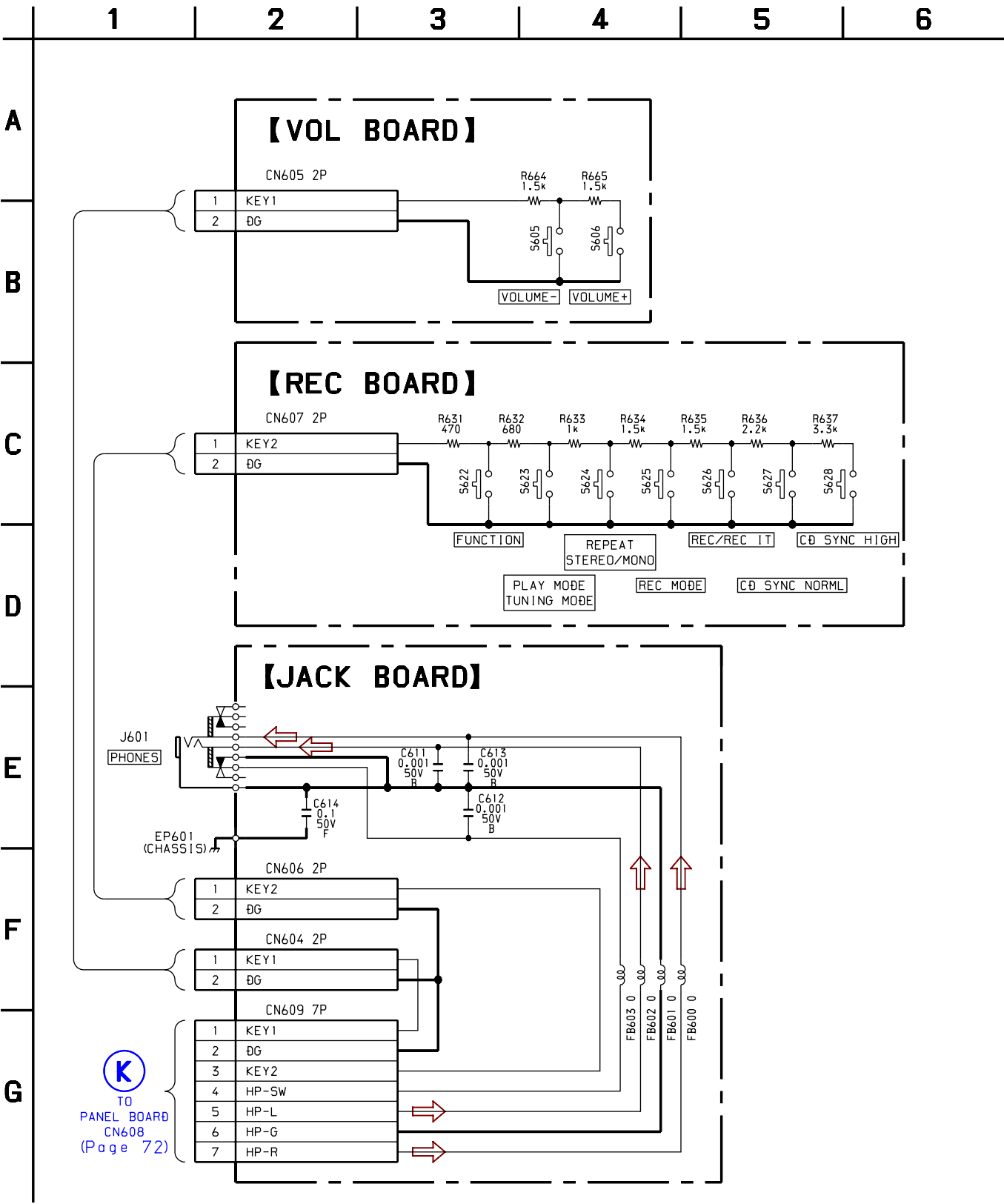
6-20. SCHEMATIC DIAGRAM PANEL SECTION1



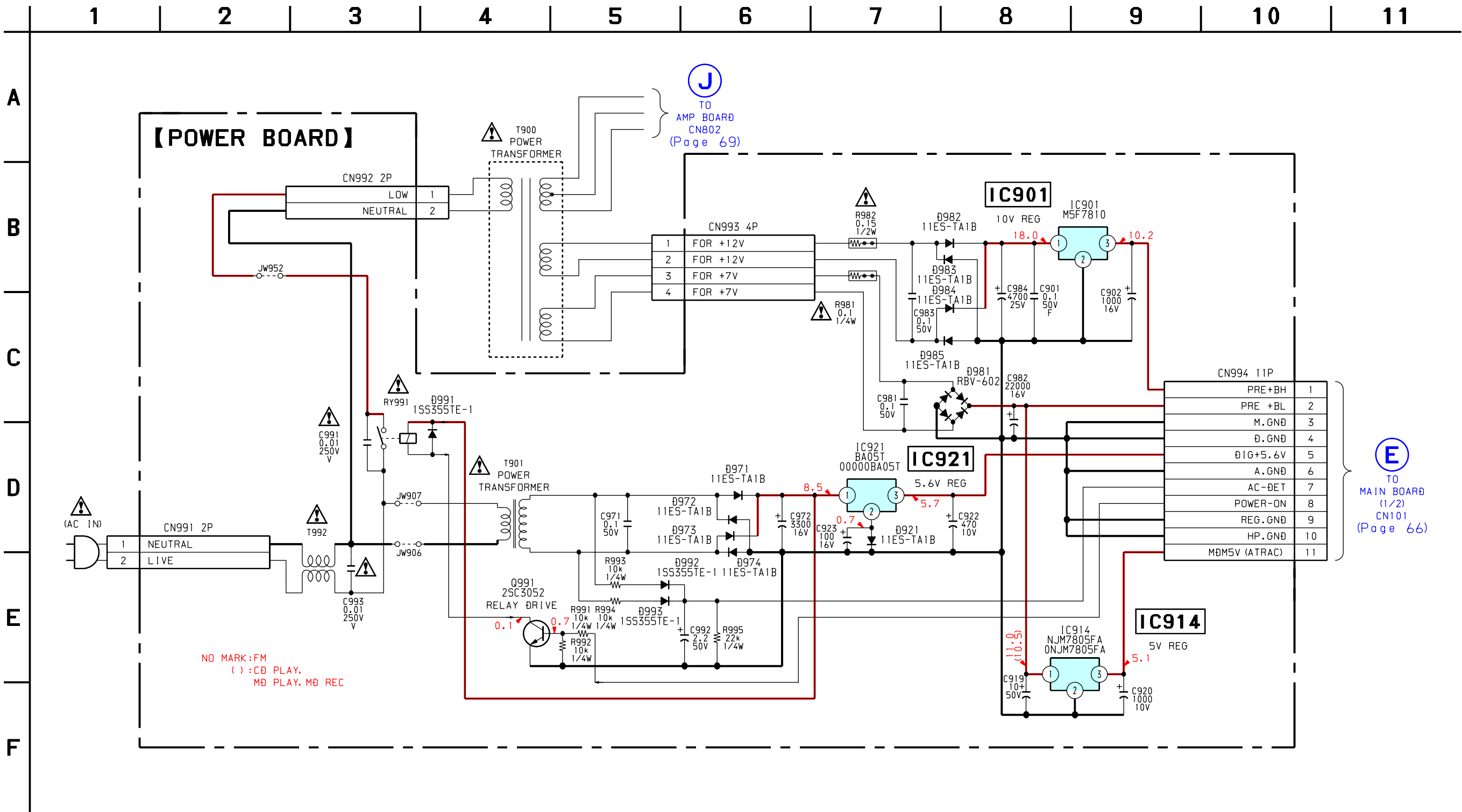
6-21. PRINTED WIRING BOARD PANEL SECTION2 • See page 55 for Circuit Boards Location.



6-22. SCHEMATIC DIAGRAM PANEL SECTION2



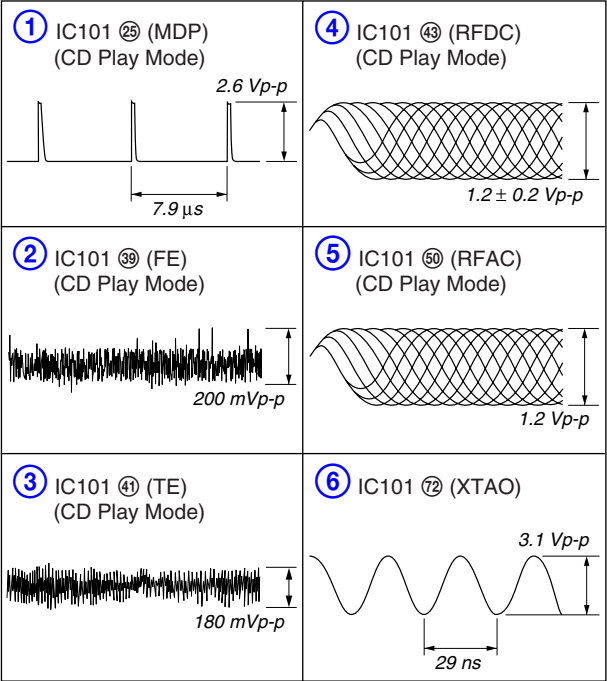
6-24. SCHEMATIC DIAGRAM POWER BOARD



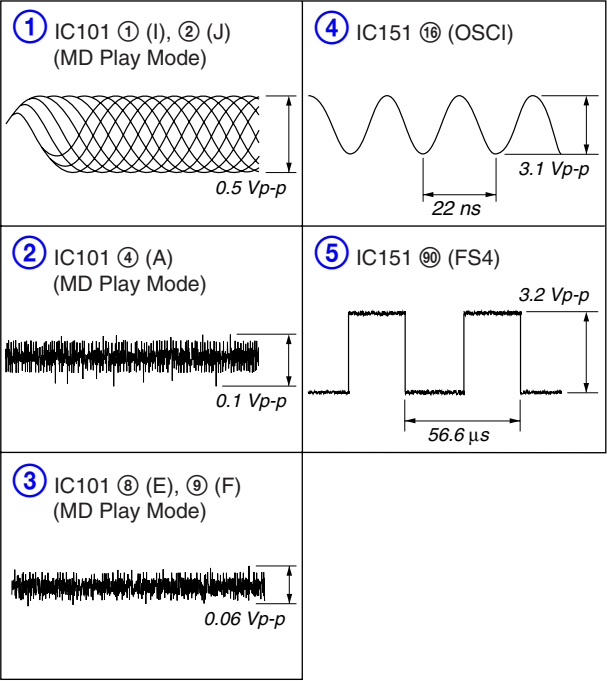
HCD-PX333

• WAVEFORMS

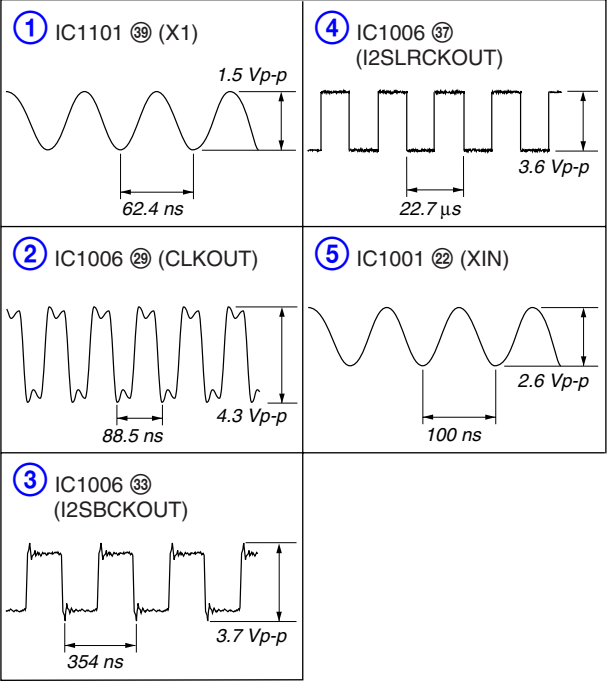
BD (CD) BOARD



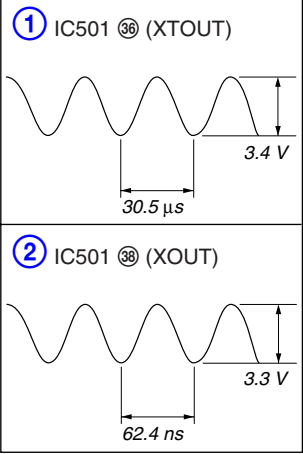
BD (MD) BOARD



MD DIGITAL BOARD

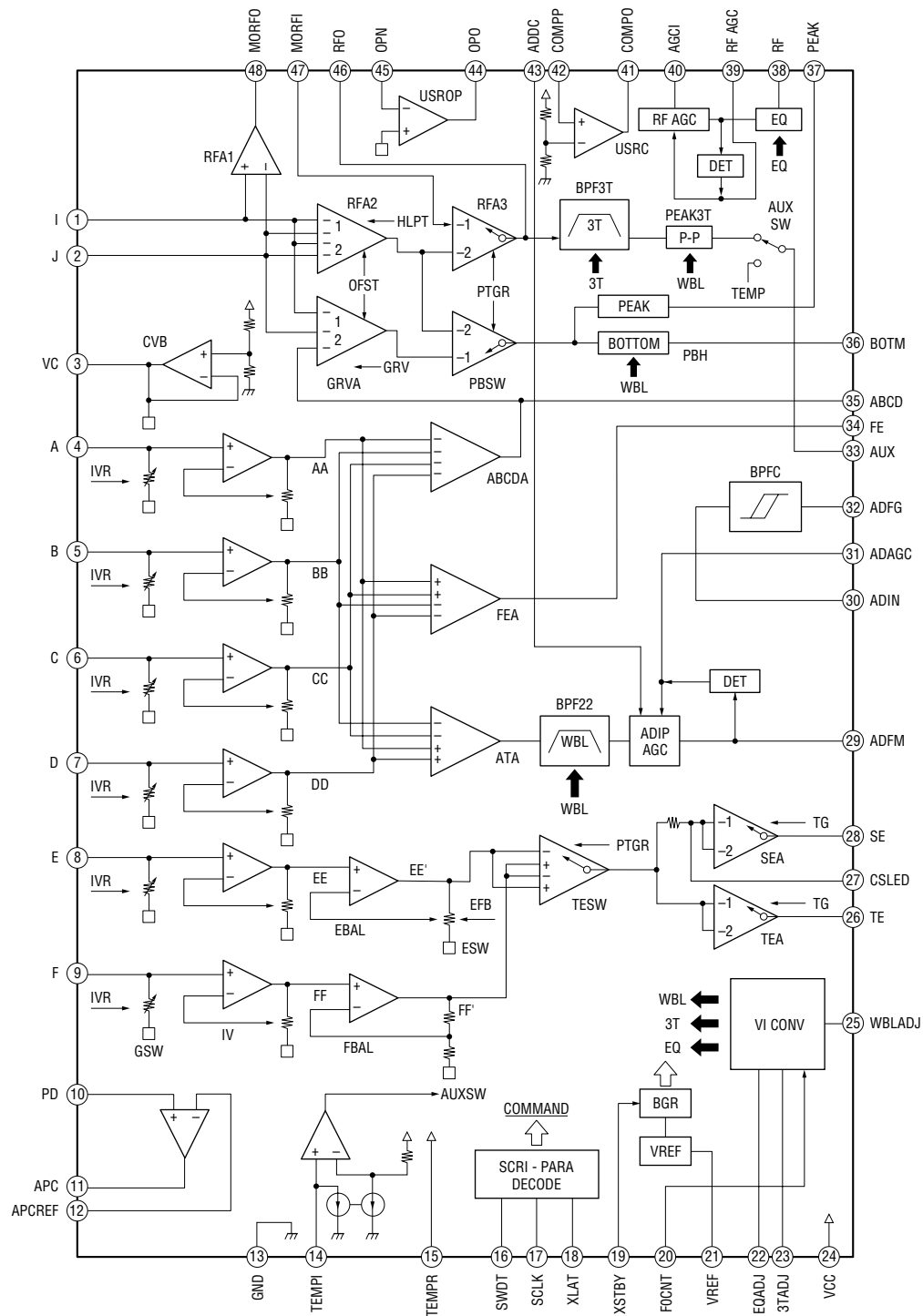


MAIN BOARD

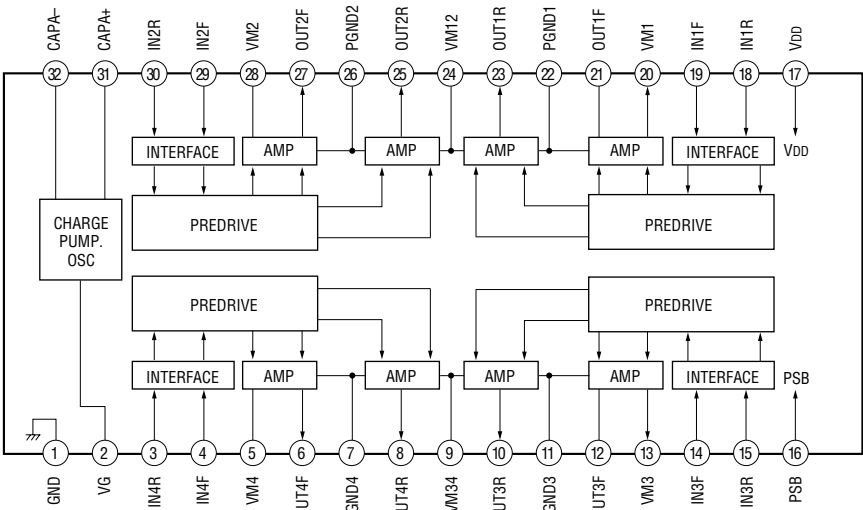


6-25. IC BLOCK DIAGRAMS

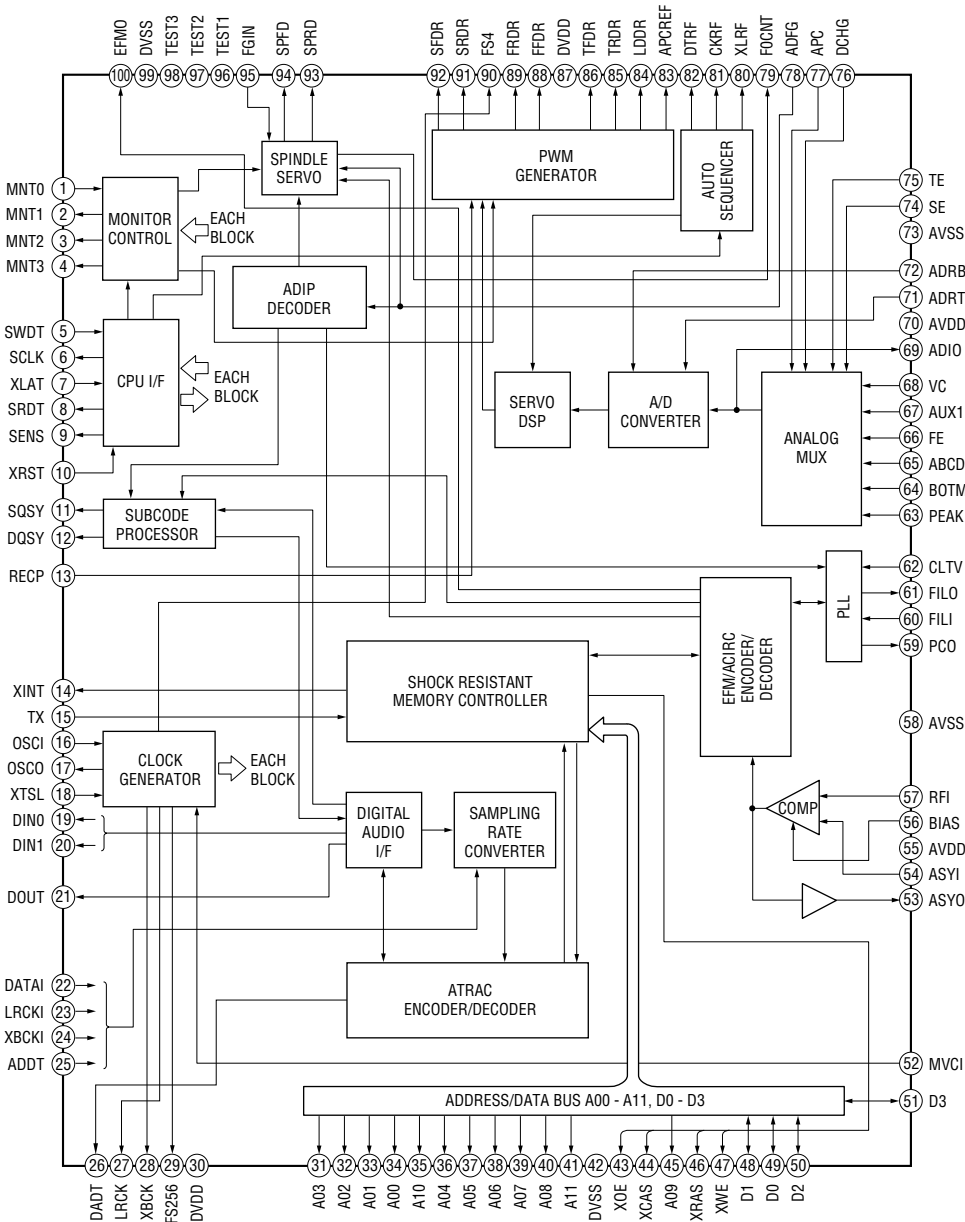
IC101 CXA2523AR (BD (MD) BOARD)



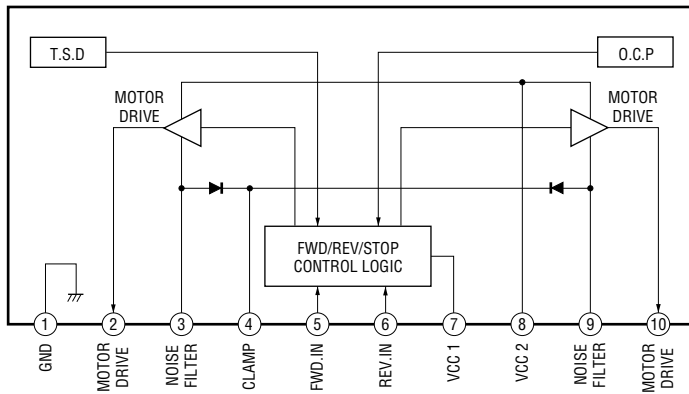
IC141 BH6519FS-E2 (BD (MD) BOARD)



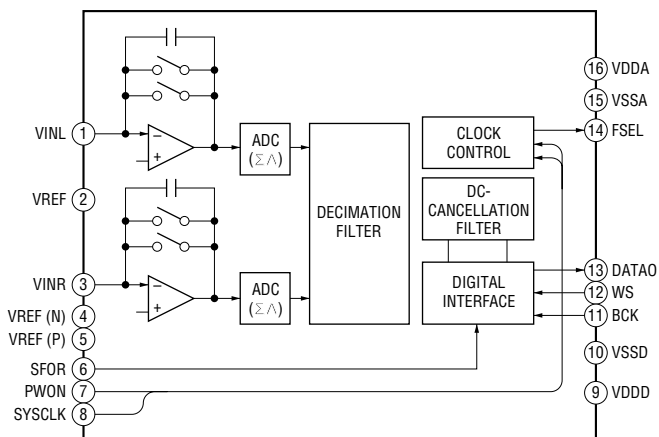
IC151 CXD2662R (BD (MD) BOARD)



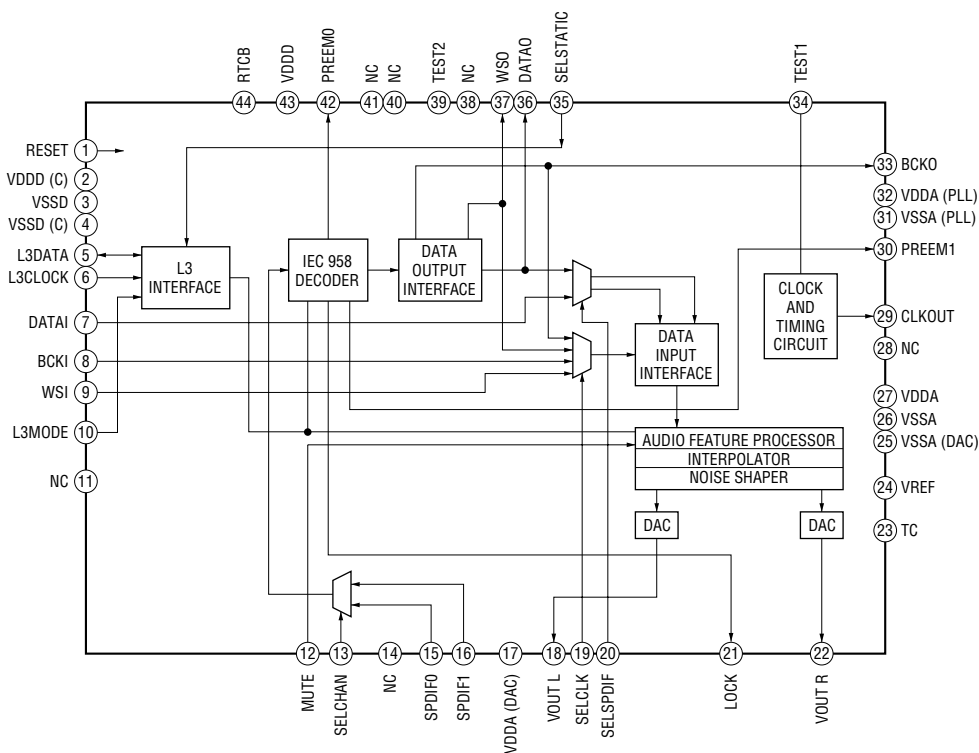
IC1004 LB1641 (MD DIGITAL BOARD)
IC1102 LB1641 (MD DIGITAL BOARD)



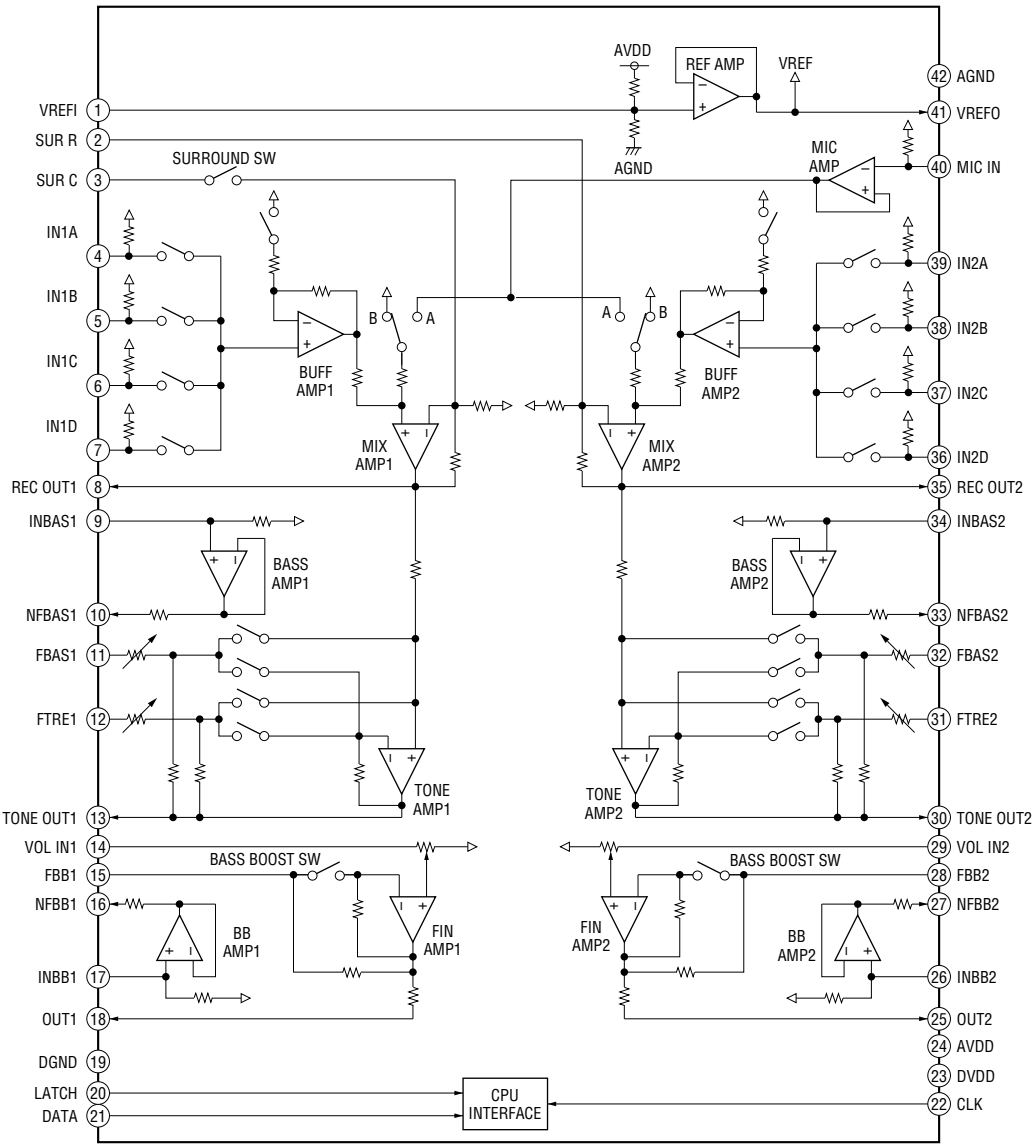
IC1005 uDA1360TS (MD DIGITAL BOARD)



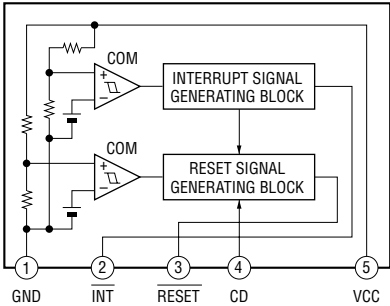
IC1006 uDA1360AH (MD DIGITAL BOARD)



IC301 M62428AFP600C (MAIN BOARD)



IC931 M62016L (MAIN BOARD)



6-26. IC PIN FUNCTION DESCRIPTION**• BD (MD) BOARD IC101 CXA2523AR (RF AMP, FOCUS/TRACKING ERROR AMP)**

Pin No.	Pin Name	I/O	Description
1	I	I	I-V converted RF signal I input from the optical pick-up block detector
2	J	I	I-V converted RF signal J input from the optical pick-up block detector
3	VC	O	Middle point voltage (+1.65V) generation output terminal
4 to 9	A to F	I	Signal input from the optical pick-up detector
10	PD	I	Light amount monitor input from the optical pick-up block laser diode
11	APC	O	Laser amplifier output terminal to the automatic power control circuit
12	APCREF	I	Reference voltage input for setting laser power from the CXD2662R (IC151)
13	GND	—	Ground terminal
14	TEMPI	I	Connected to the temperature sensor
15	TEMPR	O	Output terminal for a temperature sensor reference voltage
16	SWDT	I	Writing serial data input from the CXD2662R (IC151)
17	SCLK	I	Serial data transfer clock signal input from the CXD2662R (IC151)
18	XLAT	I	Serial data latch pulse signal input from the CXD2662R (IC151)
19	XSTBY	I	Standby signal input terminal “L”: standby (fixed at “H” in this set)
20	F0CNT	I	Center frequency control voltage input terminal of internal circuit (BPF22, BPF3T, EQ) input from the CXD2662R (IC151)
21	VREF	O	Reference voltage output terminal Not used (open)
22	EQADJ	I	Center frequency setting terminal for the internal circuit (EQ)
23	3TADJ	I	Center frequency setting terminal for the internal circuit (BPF3T)
24	VCC	—	Power supply terminal (+3.3V)
25	WBLADJ	I	Center frequency setting terminal for the internal circuit (BPF22)
26	TE	O	Tracking error signal output to the CXD2662R (IC151)
27	CSLED	I	Connected to the external capacitor for low-pass filter of the sled error signal
28	SE	O	Sled error signal output to the CXD2662R (IC151)
29	ADFM	O	FM signal output of the ADIP
30	ADIN	I	Receives a ADIP FM signal in AC coupling
31	ADAGC	I	Connected to the external capacitor for ADIP AGC
32	ADFG	O	ADIP duplex signal (22.05 kHz $\pm$ 1 kHz) output to the CXD2662R (IC151)
33	AUX	O	Auxiliary signal (I ₃ signal/temperature signal) output to the CXD2662R (IC151)
34	FE	O	Focus error signal output to the CXD2662R (IC151)
35	ABCD	O	Light amount signal (ABCD) output to the CXD2662R (IC151)
36	BOTM	O	Light amount signal (RF/ABCD) bottom hold output to the CXD2662R (IC151)
37	PEAK	O	Light amount signal (RF/ABCD) peak hold output to the CXD2662R (IC151)
38	RF	O	Playback EFM RF signal output to the CXD2662R (IC151)
39	RFAGC	I	Connected to the external capacitor for RF auto gain control circuit
40	AGCI	I	Receives a RF signal in AC coupling
41	COMPO	O	User comparator output terminal Not used (open)
42	COMPP	I	User comparator input terminal Not used (fixed at “L”)
43	ADDC	I	Connected to the external capacitor for cutting the low band of the ADIP amplifier
44	OPO	O	User operational amplifier output terminal Not used (open)
45	OPN	I	User operational amplifier inversion input terminal Not used (fixed at “L”)
46	RFO	O	RF signal output terminal
47	MORFI	I	Receives a MO RF signal in AC coupling
48	MORFO	O	MO RF signal output terminal

• BD (MD) BOARD IC151 CXD2662R

(DIGITAL SIGNAL PROCESSOR, DIGITAL SERVO PROCESSOR, EFM/ACIRC ENCODER/DECODER, SHOCK PROOF MEMORY CONTROLLER, ATRAC ENCODER/DECODER)

Pin No.	Pin Name	I/O	Description
1	MNT0 (FOK)	O	Focus OK signal output terminal “H” is output when focus is on (“L”: NG) Not used (open)
2	MNT1 (SHOCK)	O	Track jump detection signal output to the MD mechanism controller (IC1001)
3	MNT2 (XBUSY)	O	Busy monitor signal output to the MD mechanism controller (IC1001)
4	MNT3 (SLOCK)	O	Spindle servo lock status monitor signal output to the MD mechanism controller (IC1001)
5	SWDT	I	Writing serial data signal input from the MD mechanism controller (IC1001)
6	SCLK	I (S)	Serial data transfer clock signal input from the MD mechanism controller (IC1001)
7	XLAT	I (S)	Serial data latch pulse signal input from the MD mechanism controller (IC1001)
8	SRDT	O (3)	Reading serial data signal output to the MD mechanism controller (IC1001)
9	SENS	O (3)	Internal status (SENSE) output to the MD mechanism controller (IC1001)
10	$\overline{\text{XRST}}$	I (S)	Reset signal input from the MD mechanism controller (IC1001) “L”: reset
11	SQSY	O	Subcode Q sync (SCOR) output to the MD mechanism controller (IC1001) “L” is output every 13.3 msec Almost all, “H” is output
12	DQSY	O	Digital In U-bit CD format subcode Q sync (SCOR) output to the MD mechanism controller (IC1001) “L” is output every 13.3 msec Almost all, “H” is output
13	RECP	I	Laser power selection signal input from the MD mechanism controller (IC1001) “L”: playback mode, “H”: recording mode
14	XINT	O	Interrupt status output to the MD mechanism controller (IC1001)
15	TX	O	Magnetic head on/off signal output to the over write head drive (IC181)
16	OSCI	I	System clock signal (90.3168 MHz) input terminal
17	OSCO	O	System clock signal (512Fs=90.3168 MHz) output terminal Not used (open)
18	XTSL	I	Input terminal for the system clock frequency setting “L”: 45.1584 MHz, “H”: 90.3168 MHz (fixed at “H” in this set)
19	DIN0	I	Digital audio signal input terminal when recording mode Not used
20	DIN1	I	Digital audio signal input terminal when recording mode
21	DOUT	O	Digital audio signal output terminal when playback mode
22	DADTAI	I	Recording data input from the A/D converter (IC1005)
23	LRCKI	I	L/R sampling clock signal (44.1 kHz) input from the D/A converter (IC1006), A/D converter (IC1005)
24	XBCKI	I	Bit clock signal (2.8224 MHz) input from the D/A converter (IC1006), A/D converter (IC1005)
25	ADDT	I	Recording data input terminal Not used (fixed at “L”)
26	DADT	O	Playback data output terminal Not used (open)
27	LRCK	O	L/R sampling clock signal (44.1 kHz) output terminal Not used (open)
28	XBCK	O	Bit clock signal (2.8224 MHz) output terminal Not used (open)
29	FS256	O	Clock signal (11.2896 MHz) output terminal Not used (open)
30	DVDD	—	Power supply terminal (+3.3V) (digital system)
31 to 34	A03 to A00	O	Address signal output to the D-RAM (IC152)
35	A10	O	Address signal output to the D-RAM (IC152)
36 to 40	A04 to A08	O	Address signal output to the D-RAM (IC152)
41	A11	O	Address signal output to the external D-RAM Not used (open)
42	DVSS	—	Ground terminal (digital system)
43	$\overline{\text{XOE}}$	O	Output enable signal output to the D-RAM (IC152) “L” active

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

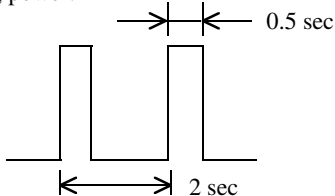
Pin No.	Pin Name	I/O	Description
44	$\overline{\text{XCAS}}$	O	Column address strobe signal output to the D-RAM (IC152) “L” active
45	A09	O	Address signal output to the D-RAM (IC152)
46	$\overline{\text{XRAS}}$	O	Row address strobe signal output to the D-RAM (IC152) “L” active
47	$\overline{\text{XWE}}$	O	Write enable signal output to the D-RAM (IC152) “L” active
48	D1	I/O	Two-way data bus with the D-RAM (IC152)
49	D0	I/O	
50	D2	I/O	
51	D3	I/O	
52	MVCI	I (S)	Digital in PLL oscillation input from the external VCO Not used (fixed at “L”)
53	ASYO	O	Playback EFM full-swing output terminal
54	ASYI	I (A)	Playback EFM asymmetry comparator voltage input terminal
55	AVDD	—	Power supply terminal (+3.3V) (analog system)
56	BIAS	I (A)	Playback EFM asymmetry circuit constant current input terminal
57	RFI	I (A)	Playback EFM RF signal input from the CXA2523AR (IC101)
58	AVSS	—	Ground terminal (analog system)
59	PCO	O (3)	Phase comparison output for master clock of the recording/playback EFM master PLL
60	FILI	I (A)	Filter input for master clock of the recording/playback master PLL
61	FILO	O (A)	Filter output for master clock of the recording/playback master PLL
62	CLTV	I (A)	Internal VCO control voltage input of the recording/playback master PLL
63	PEAK	I (A)	Light amount signal (RF/ABCD) peak hold input from the CXA2523AR (IC101)
64	BOTM	I (A)	Light amount signal (RF/ABCD) bottom hold input from the CXA2523AR (IC101)
65	ABCD	I (A)	Light amount signal (ABCD) input from the CXA2523AR (IC101)
66	FE	I (A)	Focus error signal input from the CXA2523AR (IC101)
67	AUX1	I (A)	Auxiliary signal (I ₃ signal/temperature signal) input from the CXA2523AR (IC101)
68	VC	I (A)	Middle point voltage (+1.65V) input from the CXA2523AR (IC101)
69	ADIO	O (A)	Monitor output of the A/D converter input signal Not used (open)
70	AVDD	—	Power supply terminal (+3.3V) (analog system)
71	ADRT	I (A)	A/D converter operational range upper limit voltage input terminal (fixed at “H” in this set)
72	ADRB	I (A)	A/D converter operational range lower limit voltage input terminal (fixed at “L” in this set)
73	AVSS	—	Ground terminal (analog system)
74	SE	I (A)	Sled error signal input from the CXA2523AR (IC101)
75	TE	I (A)	Tracking error signal input from the CXA2523AR (IC101)
76	DCHG	I (A)	Connected to the +3.3V power supply
77	TEST4	I	Input terminal for the test Not used (fixed at “H”)
78	ADFG	I (S)	ADIP duplex FM signal (22.05 kHz $\pm$ 1 kHz) input from the CXA2523AR (IC101)
79	F0CNT	O	Filter f0 control signal output to the CXA2523AR (IC101)
80	XLRF	O	Serial data latch pulse signal output to the CXA2523AR (IC101)
81	CKRF	O	Serial data transfer clock signal output to the CXA2523AR (IC101)
82	DTRF	O	Writing serial data output to the CXA2523AR (IC101)
83	APCREP	O	Control signal output to the reference voltage generator circuit for the laser automatic power control
84	TEST0	O	Input terminal for the test Not used (open)
85	TRDR	O	Tracking servo drive PWM signal (–) output to the BH6511FS (IC141)
86	TFDR	O	Tracking servo drive PWM signal (+) output to the BH6511FS (IC141)
87	DVDD	—	Power supply terminal (+3.3V) (digital system)
88	FFDR	O	Focus servo drive PWM signal (+) output to the BH6511FS (IC141)

* I (S) stands for schmitt 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	Description
89	FRDR	O	Focus servo drive PWM signal (–) output to the BH6511FS (IC141)
90	FS4	O	Clock signal (176.4 kHz) output terminal (X’tal system) Not used (open)
91	SRDR	O	Sled servo drive PWM signal (–) output to the BH6511FS (IC141)
92	SFDR	O	Sled servo drive PWM signal (+) output to the BH6511FS (IC141)
93	SPRD	O	Spindle servo drive PWM signal (–) output to the BH6511FS (IC141)
94	SPFD	O	Spindle servo drive PWM signal (+) output to the BH6511FS (IC141)
95	FGIN	I (S)	Input terminal for the test (fixed at “L”)
96	TEST1	I	
97	TEST2	I	
98	TEST3	I	
99	DVSS	—	Ground terminal (digital system)
100	EFMO	O	EFM signal output terminal when recording mode

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

• MD DIGITAL BOARD IC1001 M30805MG-205GP (MD MECHANISM CONTROLLER)

Pin No.	Pin Name	I/O	Description
1, 2	—	O	Not used (open)
3	LVL1	O	L-ch level output terminal Not used (open)
4	LVL0	O	R-ch level output terminal Not used (open)
5 to 7	—	O	Not used (open)
8	MUTE	O	Muting control signal output to the D/A converter (IC1006) “L”: muting
9	DARST	O	Reset signal output to the D/A converter (IC1006) “H”: reset
10	SLICERSEL	O	IEC958 input selection signal output to the D/A converter (IC1006) “L”: MD, “H”: CD
11	LD-LOW	O	Loading motor drive voltage control signal output for the loading motor driver (IC1004) “H” active
12	LDIN	O	Motor control signal output to the loading motor driver (IC1004) “L” active *1
13	LDOUT	O	Motor control signal output to the loading motor driver (IC1004) “L” active *1
14	MOD	O	Laser modulation select signal output to the HF module switch circuit Stop: “L”, Playback power: “H”, Recording power: 
15	BYTE	I	External data bus line byte selection signal input “L”: 16 bit, “H”: 8 bit (fixed at “L”)
16	CNVSS	I	Mode setting terminal “L”: single-chip mode (fixed at “L”)
17	X-CIN	I	Sub system clock input terminal Not used (open)
18	X-COUT	O	Sub system clock output terminal Not used (open)
19	RESET	I	System reset signal input from the reset signal generator (IC931) “L”: reset For several hundreds msec. after the power supply rises, “L” is input, then it changes to “H”
20	XOUT	O	Main system clock output terminal (10 MHz)
21	VSS0	—	Ground terminal
22	XIN	I	Main system clock input terminal (10 MHz)
23	VCC0	—	Power supply terminal (+3.3V)
24	NMI	I	Non-maskable interrupt input terminal “L” active (fixed at “H” in this set)
25	DQSY	I	Digital In U-bit CD format subcode Q sync (SCOR) input from the CXD2662R (IC151) “L” is input every 13.3 msec Almost all, “H” is input
26	P.DOWN	I	Power down detection signal input from the system controller (IC501) “L”: power down, normally: “H”
27	SQSY	I	Subcode Q sync (SCOR) input from the CXD2662R (IC151) “L” is input every 13.3 msec Almost all, “H” is input
28	NC	O	Not used (open)
29	LDON	O	Laser diode on/off control signal output to the automatic power control circuit “H”: laser on
30	LIMIT-IN	I	Detection input from the sled limit-in detect switch (S101) The optical pick-up is inner position when “L”

*1 Loading motor (M103) control

Terminal \ Mode	LOADING	EJECT	BRAKE	RUN IDLE
LDIN (pin ⑫)	“L”	“H”	“L”	“H”
LDOUT (pin ⑬)	“H”	“L”	“L”	“H”

Pin No.	Pin Name	I/O	Description
31	C2-PWM-B	O	Not used (open)
32	XINT	I	Interrupt status input from the CXD2662R (IC151)
33	—	O	Not used (open)
34	XELT	I	Not used (open)
35	WR-PWR	O	Laser power select signal output to the CXD2662R (IC151) and HF module switch circuit “L”: playback mode, “H”: recording mode
36	I2CCLK	I/O	Shift clock signal input/output terminal for the IIC bus
37	I2CDAT	I/O	Data input/output terminal for the IIC bus
38	SWDT	O	Writing data output to the CXD2662R (IC151)
39	VCC1	—	Power supply terminal (+3.3V)
40	SRDT	I	Reading data input from the CXD2662R (IC151)
41	VSS1	—	Ground terminal
42	SCLK	O	Serial clock signal output to the CXD2662R (IC151)
43	REC-SW	I	Detection input from the recording position of over write head (HR901) detect switch (S105) “L” recording mode
44	CLIPDTO	O	Serial data output terminal
45	CLIPDTI	I	Serial data input terminal
46	CLIPCK	O	Serial clock signal output terminal Not used (open)
47	$\overline{\text{DIG-RST}}$	O	Reset signal output to the CXD2662R (IC151) and BH6519FS (IC141) “L”: reset
48	SENS	I	Internal status (SENSE) input from the CXD2662R (IC151)
49	PLAY-SW	I	Detection input from the playback position of slider (eject) detect switch (S104) “L” playback mode
50	XLAT	O	Serial data latch pulse signal output to the CXD2662R (IC151)
51	OUT-SW	I	Detection input from the loading-out detect switch (S103) “L” at a load-out position, others: “H”
52	—	I	Not used (open)
53	—	O	Not used (open)
54	—	I	Not used (open)
55	—	O	Not used (open)
56	MNT2 (XBUSY)	I	Busy signal input from the CXD2662R (IC151)
57	VSS2	—	Ground terminal
58	MNT1 (SHOCK)	I	Track jump detection signal input from the CXD2662R (IC151)
59	VCC2	—	Power supply terminal (+3.3V)
60	EEP-WP	O	Writing protect signal output to the EEPROM (IC195)
61	SDA	I/O	Two-way data bus with the EEPROM (IC195)
62	BCLK/ALE/CLKO	O	Not used (open)
63	OE	O	Data reading strobe signal output Not used (open)
64	$\overline{\text{BHE/CASH}}$	O	Not used (open)
65	$\overline{\text{WE}}$	O	Writing enable signal output Not used (open)
66	SCL	O	Clock signal output to the EEPROM (IC195)
67	REFLECT	I	Detection input from the disc reflection rate detect switch (S102-1) “L”: high reflection rate disc, “H”: low reflection rate disc
68	PROTECT	I	REC-proof claw detect input from the protect detect switch (S102-2) “H”: write protect
69	$\overline{\text{CS0}}$	O	Chip select signal output Not used (open)
70	$\overline{\text{CS1}}$	O	Chip select signal output terminal Not used (open)
71. 72	—	—	Not used (open)
73	A19	O	Address signal output Not used (open)

Pin No.	Pin Name	I/O	Description
74	VCC3	—	Power supply terminal (+3.3V)
75	A18	O	Address signal output Not used (open)
76	VSS3	—	Ground terminal
77 to 85	A17 to A9	O	Address signal output Not used (open)
86 to 89	SEL3 to SEL0	I	Model destination setting input terminal
90	WP	O	Writing protect signal output Not used (fixed at “L”)
91	VCC4	—	Power supply terminal (+3.3V)
92	A8	O	Address signal output Not used (open)
93	VSS4	—	Ground terminal
94 to 100	A7 to A1	O	Address signal output Not used (open)
101	$\overline{\text{LB}}$	O	Not used (open)
102 to 113	D15 to D4	I/O	Two-way data bus Not used (open)
114	CLIP SEL	O	Not used (open)
115	I2CBUSY	I/O	Busy signal input/output for the IIC bus
116	DALOCK	I	Lock signal input from the D/A converter (IC1006)
117	LINE-MUTE	O	Audio line muting on/off control signal output
118	ADPDWN	O	Power down detection signal output to the A/D converter (IC1005)
119 to 122	D3 to D0	I/O	Two-way data bus Not used (open)
123	SPDIF-CUT	O	MD/CD digital input selection signal output terminal Not used (open)
124	OPTSEL	O	CD/optical digital input selection signal output to the digital signal selector (IC1008)
125 to 129	—	O	Not used (open)
130	VSS5	—	Ground terminal
131	—	O	Not used (open)
132	VCC5	—	Power supply terminal (+3.3V)
133	OP-LEVEL	I	Optical pick-up voltage input from the automatic power control circuit
134 to 139	—	O	Not used (open)
140	AVSS	—	Ground terminal (for analog system)
141	—	O	Not used (open)
142	VREF	I	Reference voltage (+3.3V) input terminal (for A/D converter)
143	AVCC	—	Power supply terminal (+3.3V) (for analog system)
144	—	O	Not used (open)

• MD DIGITAL BOARD IC1101 μ PDSS3033AYGF-M10-3BA (CD MECHANISM CONTROLLER)

Pin No.	Pin Name	I/O	Description
1	DRVDAT	O	Serial data output to a FL driver Not used (open)
2	DRVCLK	O	Serial data transfer clock signal output to a FL driver Not used
3	I2CDAT	I	Data input/output terminal for the IIC bus
4	NC	O	Not used (open)
5	I2CCLK	I	Shift clock signal input/output terminal for the IIC bus
6	GND	—	Ground terminal
7	DATA	O	Serial data output to the CD block
8	CLK	O	Serial data transfer clock signal output to the CD block
9	EVDD	—	Power supply terminal (+5V)
10	EVSS	—	Ground terminal
11	$\overline{\text{XLT}}$	O	Serial data latch pulse output to the CD block
12	SENSE	I	Internal status detection monitor input from the CD block
13	LDON	O	Laser diode on/off control signal output to the CD block
14	LPH	O	Laser power control signal output terminal Not used (open)
15	SUBQ	I	Subcode Q data input from the CD block
16	NC	O	Not used (open)
17	SQCLK	O	Subcode Q data reading clock signal output to the CD block
18	CTRL1	O	Disc speed selection (normal/double speed) signal output to the CD block
19	X4	O	Disc speed selection (normal/quadruple speed) signal output to the CD block
20	8CM	O	CD disc size select (8cm/12cm) signal output terminal Not used (open)
21	GND/VPP	—	Ground terminal
22	SPINDLEMUTE	O	Spindle motor muting control signal output to the CD block “H”: muting on
23 to 29	NC	O	Not used (open)
30	$\overline{\text{AMUTE}}$	O	Muting on/off control signal output to the D/A converter (IC1006) “L”: muting on
31	$\overline{\text{BDPWR}}$	O	Power supply for the CD block on/off control signal output “H”: power on
32	$\overline{\text{BDRST}}$	O	Reset signal output to the CD block
33	$\overline{\text{FUNC ST}}$	O	Function select signal output terminal Not used (open)
34	$\overline{\text{RESET}}$	I	Reset signal input from the system controller (IC501)
35	XT1	I	Sub system clock input terminal Not used (fixed at “L”)
36	XT2	O	Sub system clock output terminal Not used (open)
37	CHEMICON	I	Connected to the external capacitor
38	X2	O	Main system clock output terminal (16MHz)
39	X1	I	Main system clock input terminal (16MHz)
40	VSS	—	Ground terminal
41	VDD	—	Power supply terminal (+5V)
42	NC	—	Not used (open)
43 to 45	ENCODE0 to ENCODE2	I	Jog dial pulse input terminal Not used (fixed at “H”)
46	NC	O	Not used (open)
47	TRAYSENCE3	I	Detection input from the disc tray address detect rotary encoder Not used (fixed at “H”)
48	$\overline{\text{CNT-SW}}$	I	Detection input from the count detect switch Not used (fixed at “H”)
49	$\overline{\text{PRTC-SW}}$	I	Detection input from the protect switch Not used (fixed at “H”)
50, 51	TRAYSENS1, TRAYSENS2	I	Detection input from the disc tray address detect rotary encoder Not used (fixed at “H”)
52	$\overline{\text{OUT-SW}}$	I	Detection input from the tray open/close detect switch (S1) “L”: when tray is open

Pin No.	Pin Name	I/O	Description
53	$\overline{\text{IN-SW}}$	I	Detection input from the tray open/close detect switch (S1) “L”: when tray is close
54	$\overline{\text{LOD POS}}$	O	CD loading motor (M201) control signal output to the motor driver IC (IC1102) “L” active *1
55	$\overline{\text{LOD NEG}}$	O	CD loading motor (M201) control signal output to the motor driver IC (IC1102) “L” active *1
56	$\overline{\text{CLP POS}}$	O	Motor control signal output to the motor driver IC “L” active Not used (open)
57	$\overline{\text{CLP NEG}}$	O	Motor control signal output to the motor driver IC “L” active Not used (open)
58	BVDD	—	Power supply terminal (+5V) (for digital system)
59	BVSS	—	Ground terminal (for digital system)
60 to 73	NC	O	Not used (open)
74	AVDD	—	Power supply terminal (+5V)
75	AVSS	—	Ground terminal
76	AVREF	I	Reference voltage (+5V) input terminal
77 to 80	KEY0 to KEY3	I	Key input terminal (A/D input) Not used (fixed at “H”)
81 to 83	SEL0 to SEL2	I	Model destination setting terminal (A/D input)
84	TEL	I	Tracking error level detection input terminal Not used (open)
85	SEL3	I	Model (CD mechanism deck) destination setting terminal (A/D input)
86	DISC-SENS	I	Detection input from the disc in detect sensor (A/D input) “H”: disc in Not used (open)
87	MECHA-JIGU	I	Not used (open)
88	$\overline{\text{ADJ}}$	I	Setting terminal for the CD test mode “L”: CD test mode Normally: fixed at “H”
89	$\overline{\text{I2CHELP}}$	I	Busy signal input for the IIC bus
90	$\overline{\text{I2CHELP}}$	I	Busy signal input for the IIC bus
91	SCOR	I	Subcode sync (S0+S1) detection signal input from the CD block
92	NC	O	Not used (open)
93	$\overline{\text{AC-CUT}}$	I	Power off signal input from the system controller (IC501)
94, 95	JOG0, JOG1	I	Rotary encoder jog dial pulse input terminal Not used (fixed at “L”)
96	NC	O	Not used (open)
97	$\overline{\text{LEDLAT}}$	O	Serial data latch pulse output to a FL driver Not used
98	$\overline{\text{DRVCS}}$	I	Chip select signal output to a FL driver Not used
99	$\overline{\text{DRVRST}}$	I	Reset signal output to a FL driver “L”: reset Not used
100	GND	—	Ground terminal

*1 Loading motor (M201) control

Terminal \ Mode	LOADING	EJECT	BRAKE	RUN IDLE
$\overline{\text{LOD NEG}}$ (pin 55)	“L”	“H”	“L”	“H”
$\overline{\text{LOD POS}}$ (pin 54)	“H”	“L”	“L”	“H”

• MAIN BOARD IC501 μ PDSS3033AYGF-M18-3BA (SYSTEM CONTROLLER)

Pin No.	Pin Name	I/O	Description
1	GEQ DATA	O	Serial data output to the M62428AFP (IC301)
2	GEQ CLK	O	Serial data transfer clock signal output to the M62428AFP (IC301)
3	IIC DAT	I/O	Data input/output terminal for the IIC bus
4	CANT USE	O	Not used (open)
5	IIC CLK	I/O	Shift clock signal input/output terminal for the IIC bus
6	CANT USE	I	Not used (open)
7	LCD DATA	O	Display serial data output to the liquid crystal display (LCD600)
8	LCD CLK	O	Display serial data transfer clock signal output to the liquid crystal display (LCD600)
9	EVDD	—	Power supply terminal (+5V)
10	EVSS	—	Ground terminal
11, 12	MOTOR1, MOTOR2	O	Motor drive signal output terminal Not used (open)
13	LCD CLEAR	O	Reset signal output to the liquid crystal display (LCD600) “L”: reset
14	LCD CE	O	Serial data latch pulse signal output to the liquid crystal display (LCD600) “L”: data output
15	KB DATA	I	Key board data input terminal
16	KB CLK OUT	O	Key board data transfer clock signal output terminal
17	KB CLK	I	Key board data reading clock signal input terminal
18	IIC HELP	I/O	Busy signal input/output for the IIC bus
19, 20	MODEL2, MODEL1	I	Model Destination setting terminal
21	VPP	O	Not used
22	ST MUTE	O	Tuner muting on/off control signal output to the FM/AM tuner unit
23	ST STEREO	I	FM stereo detection signal input from the FM/AM tuner unit “L”: stereo
24	ST TUNED	I	Tuning detection signal input from the FM/AM tuner unit “L”: tuned, “H”: detuned
25	ST CE	O	PLL serial chip enable signal output to the FM/AM tuner unit
26	TA->ST DATA	O	PLL serial data output to the FM/AM tuner unit
27	ST->TA DATA	I	PLL serial data input from the FM/AM tuner unit
28	ST CLK	O	PLL serial data transfer clock signal output to the FM/AM tuner unit
29	ST-1	O	Headphone muting control signal output terminal
30	SOFT CHK	O	For soft check terminal Normally open
31	LCD ON/OFF	O	Power supply for liquid crystal display (LCD600) on/off control terminal
32	PROTECT	O	Speaker output over load detection signal input “L”: over load
33	DEVICE1	I	Not used (fixed at “L”)
34	$\overline{\text{RESET}}$	I	System reset signal input from the reset signal generator (IC941) “L”: reset For several hundreds msec. after the power supply rises, “L” is input, then it changes to “H”
35	XTIN	I	Sub system clock input terminal (32.768 kHz)
36	XTOUT	O	Sub system clock output terminal (32.768 kHz)
37	REGC	I	Connected to the external capacitor
38	XOUT	O	Main system clock output terminal (16 MHz)
39	XIN	I	Main system clock input terminal (16 MHz)
40	VSS	—	Ground terminal
41	VDD	—	Power supply terminal (+5V)
42	CLK OUT	O	Not used (open)
43	LINE MUTE	O	Line muting on/off control signal output terminal “L”: muting on
44	STK MUTE	O	Audio muting on/off control signal output Not used
45	SPK RELAY	O	Speaker on/off relay (RY881) control signal output “L”: speaker off

Pin No.	Pin Name	I/O	Description
46	MD/CD POWER	O	Power down detection signal output to the MD mechanism controller (IC1001) and CD mechanism controller (IC1101)
47	TR RELAY	O	Standby relay (RY991) control signal output (“L”: standby, “H”: power on) PC LINK/KEY BOARD (CN104) ON/OFF control signal output (“H”: on, “L”: off)
48	RECMUTE	O	Muting on/off control signal output of tape output signal “L”: muting on
49	$\overline{\text{DIMMER}}$	O	LCD back light on/off control signal output “H”: LED on
50	GC POWER	O	Not used (open)
51	KBD CHK	I	Key board check signal input terminal
52	LED MD-PAUSE	O	LED drive signal output of the  (MD) indicator (D605) “H”: LED on
53	LED MD-PLAY	O	LED drive signal output of the  (MD) indicator (D604) “H”: LED on
54	LED CD-PAUSE	O	LED drive signal output of the  (CD) indicator (D603) “H”: LED on
55	LED CD-PLAY	O	LED drive signal output of the  (CD) indicator (D602) “H”: LED on
56	LED MD-REC	O	LED drive signal output of the REC indicator (D606) “H”: LED on
57	LED STANDBY	O	LED drive signal output of the I/⏻ indicator (D601) “H”: LED on
58	BVDD	—	Power supply terminal (+5V)
59	BVSS	—	Ground terminal
60	LED DATA	O	Serial data output terminal for LED driver Not used (open)
61	LED CLK	O	Serial data transfer clock signal output terminal for LED driver Not used (open)
62	LED CE1	O	Chip select signal output terminal for LED driver Not used (open)
63	LED CE2	O	Fan motor (M901) drive signal output “H”: fan motor on
64	LED CLEAR	O	Reset signal output terminal for LED driver Not used (open)
65, 66	FUNC1, FUNC2	O	Function selection signal output terminal Not used (open)
67	HEADPHONE IN	I	Headphone in detection signal input “H”: headphone in
68	ENC VOL A	I	Jog dial pulse input from the rotary encoder A phase input Not used (fixed at “L”)
69	ENC VOL B	I	Jog dial pulse input from the rotary encoder B phase input Not used (fixed at “L”)
70	ENC JOG 1A	I	Jog dial pulse input from the rotary encoder A phase input Not used (fixed at “L”)
71	ENC JOG 1B	I	Jog dial pulse input from the rotary encoder B phase input Not used (fixed at “L”)
72, 73	DEVICE3, DEVICE2	—	Not used (fixed at “L”)
74	AVDD	—	Power supply terminal (+5V)
75	AVSS	—	Ground terminal
76	AVREF	I	Reference voltage (+5V) input terminal
77, 78	LID SW1, LID SW2	I	Switch input terminal Not used (fixed at “L”)
79 to 82	DIST 1 to DIST 4	I	Model destination setting terminal
83	LEVEL-L	I	L-ch level input terminal Not used (fixed at “L”)
84	LEVEL-R	I	L-ch level input terminal Not used (fixed at “L”)
85	KEY1	I	Key input terminal (A/D input) S601 to S606 (I/⏻,  ,  ,  ,  ,  , TUNING +, VOLUME –, VOLUME + keys input)
86	KEY2	I	Key input terminal (A/D input) S621 to S628 ( ,  , TUNING –, FUNCTION, PLAY MODE TUNING MODE, REPEAT STEREO/MONO, REC MODE, REC/REC IT, CD SYNC NORMAL, CD SYNC HIGH keys input)
87	KEY3	I	Key input terminal (A/D input) S631 to S637 ( ,  ,  ,  ,  ,  ,  ,  ,  , TUNER/BAND keys input)
88	KEY4	I	Key input terminal (A/D input) Not used (fixed at “H”)
89	NMI	I	Non-maskable interrupt input terminal Fixed at “L” in this set
90	KBD CLK	I	Key board data reading clock signal input terminal
91	KEY RM INT	I	Interrupt signal input from function keys or remote control receiver

HCD-PX333

Pin No.	Pin Name	I/O	Description
92	PC POWER	I	Power on request signal input from the PC LINK jack (CN104)
93	SIRCS	I	Remote control signal input from the remote control receiver (IC602)
94	AC CUT IN	I	AC power off detection signal input terminal
95	RDS DATA	I	RDS serial data input from the RDS decoder (IC401) Used for the AEP, UK models
96	RDS CLK	I	RDS serial data transfer clock signal input from the RDS decoder (IC401) Used for the AEP, UK models
97	SELF WRITE IN	I	Not used (open)
98	OUT	O	Not used (open)
99	CLK	I	Not used (open)
100	GEQ CE	O	Serial data latch pulse signal output to the M62428AFP (IC301)

SECTION 7 EXPLODED VIEWS

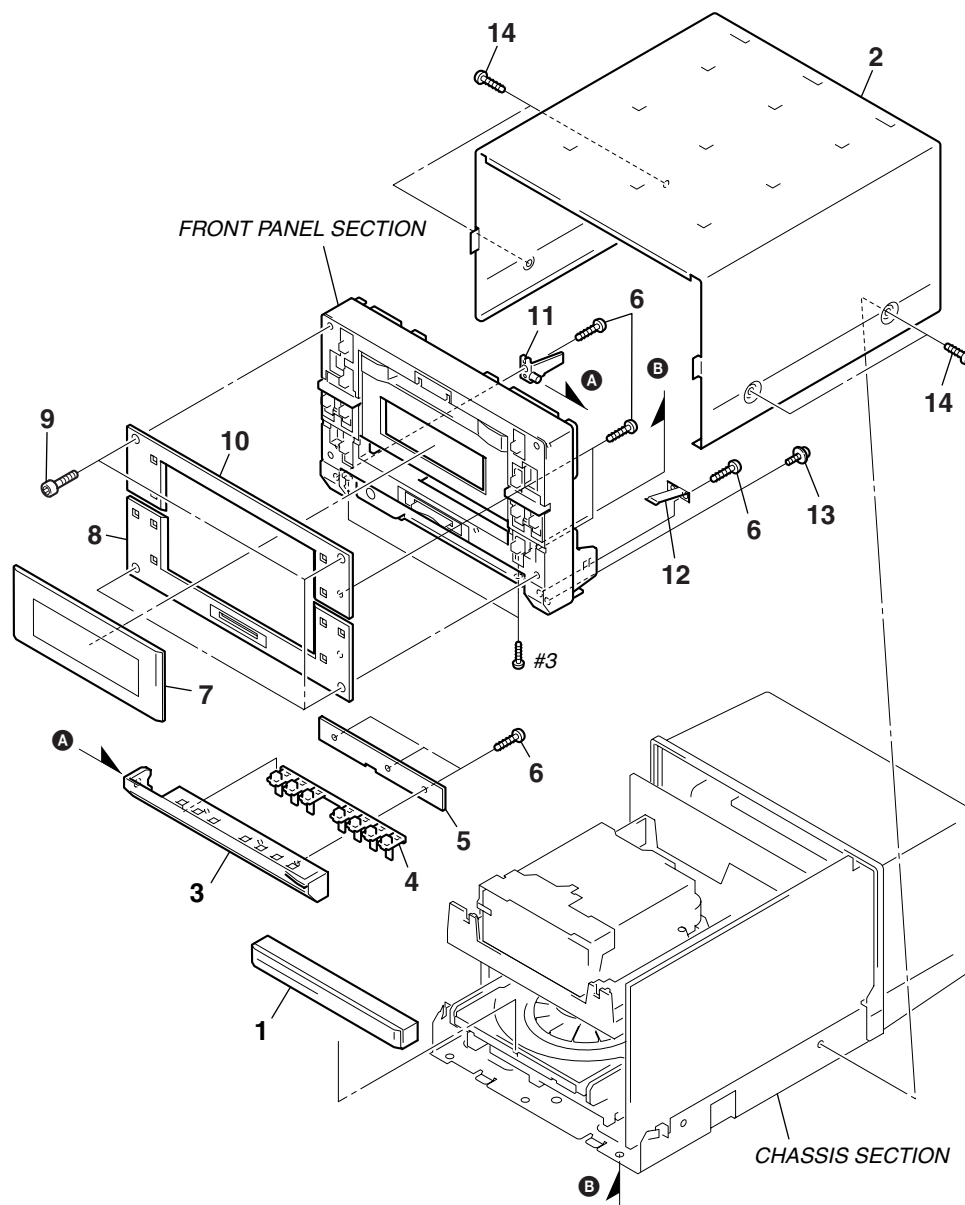
NOTE:

- -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
MY : Malaysia model
SP : Singapore model
HK : Hong Kong model
AUS : Australian model

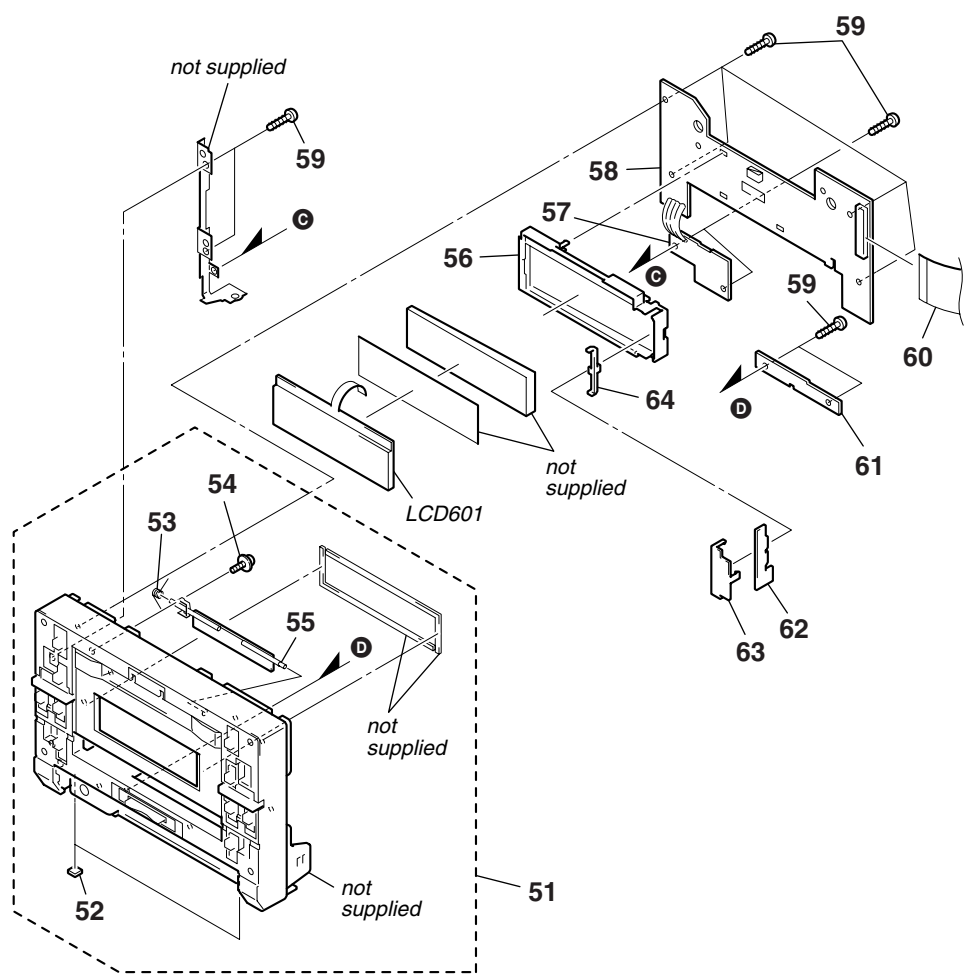
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

7-1. CASE



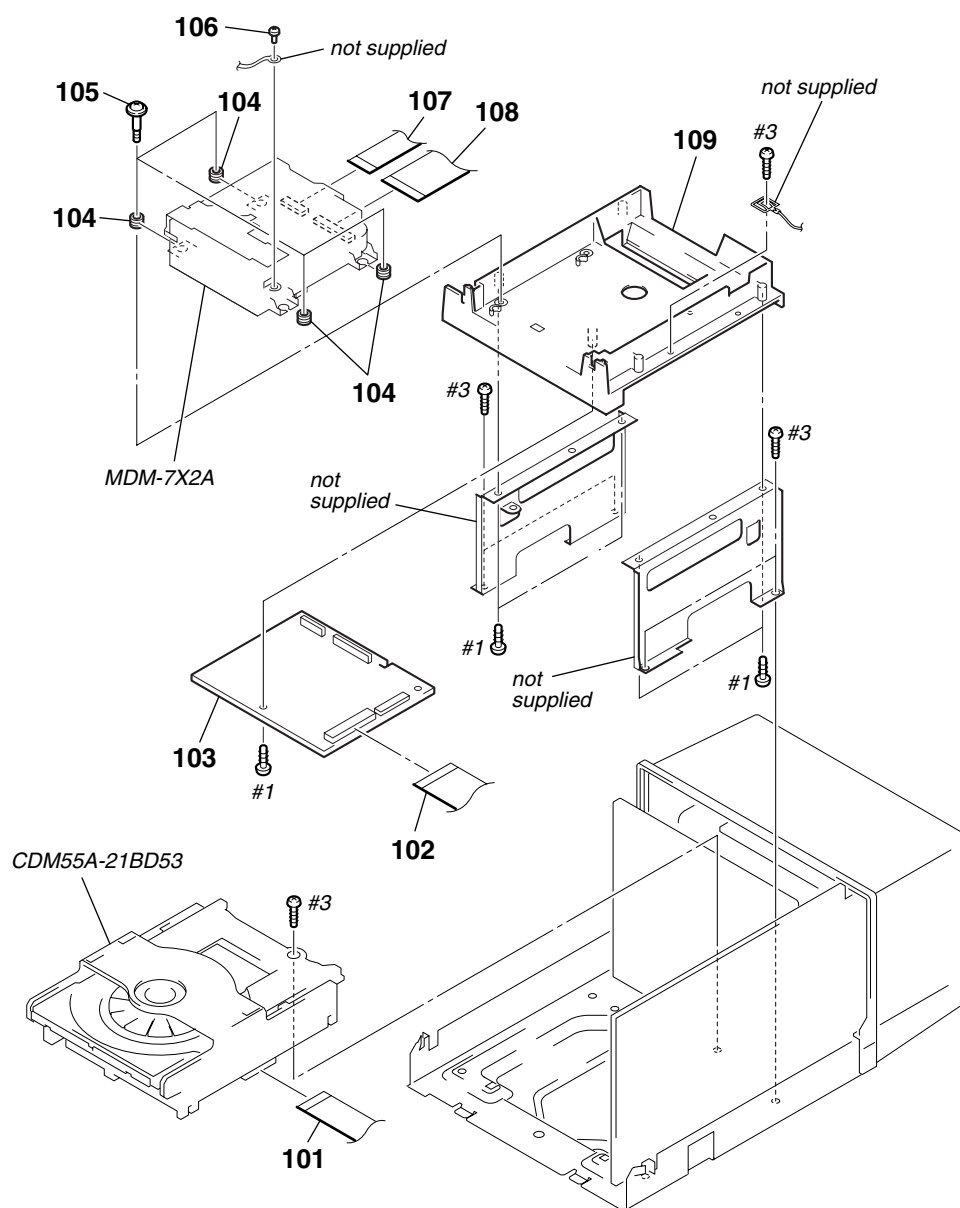
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
1	4-4954-215-1	PANEL ASSY, LOADING		8	4-231-940-01	PANEL (LOWER), FRONT	
2	4-231-957-01	CASE		9	4-230-228-01	SCREW (TOP)	
3	4-231-950-01	LID (REC)		10	4-231-939-01	PANEL (UPPER), FRONT	
4	4-231-951-01	BUTTON (REC)		11	4-231-952-01	SHAFT (LID REC)	
5	1-681-556-11	REC BOARD		12	4-235-134-01	SPRING (LID FUNC), LEAF	
6	4-951-620-01	SCREW (2.6X8), +BVTP		13	4-985-672-01	SCREW (+PTPWHM2.6), FLOATING	
7	4-231-942-11	WINDOW, INDICATION (MY,SP,HK,AUS)		14	3-363-099-11	SCREW (CASE 3 TP2)	
7	4-231-942-21	WINDOW, INDICATION (AEP,UK)					

7-2. FRONT PANEL SECTION



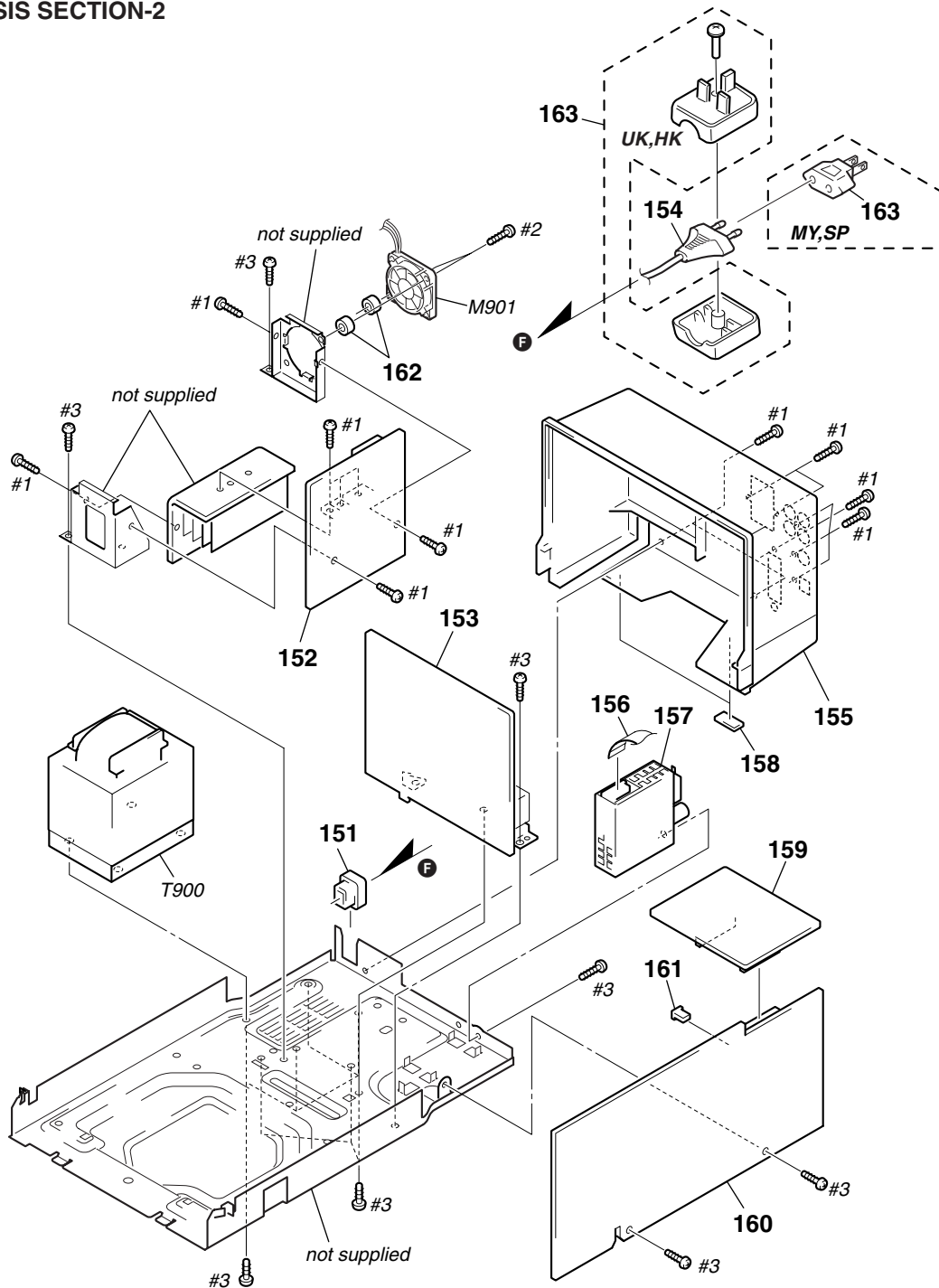
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
51	X-4953-426-1	PANEL ASSY/S, FRONT		59	4-951-620-01	SCREW (2.6X8), +BVTP	
52	4-233-372-01	FOOT (FELT)		60	1-823-118-11	WIRE (FLAT TYPE) (23 CORE)	
53	4-231-954-01	SPRING (LID MD), TORSION		61	1-681-555-11	VOL BOARD	
54	4-985-672-01	SCREW (+PTPWHM2.6), FLOATING		62	1-681-559-11	BL BOARD	
55	4-231-949-01	LID (MD)		63	4-233-236-01	LID (LCD HOLDER)	
56	4-231-964-01	HOLDER (LCD)		64	4-233-237-01	SPACER (LCD)	
57	1-681-557-11	JACK BOARD		LCD601	1-804-371-11	INDICATOR TUBE, LIQUID CRYSTAL	
58	A-4476-550-A	PANEL BOARD, COMPLETE					

7-3. CHASSIS SECTION-1



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
101	1-757-124-11	WIRE (FLAT TYPE) (21 CORE)		106	4-231-113-01	SCREW (1.7X3), BTN	
102	1-773-314-11	WIRE (FLAT TYPE) (31 CORE)		107	1-792-830-11	WIRE (FLAT TYPE) (17 CORE)	
103	A-4725-832-A	MD DIGITAL BOARD, COMPLETE		108	1-792-829-11	WIRE (FLAT TYPE) (27 CORE)	
104	4-231-555-01	INSULATOR		109	4-231-960-01	HOLDER (MDM)	
105	4-228-684-01	SCREW (+BVTPWH M3), STEP					

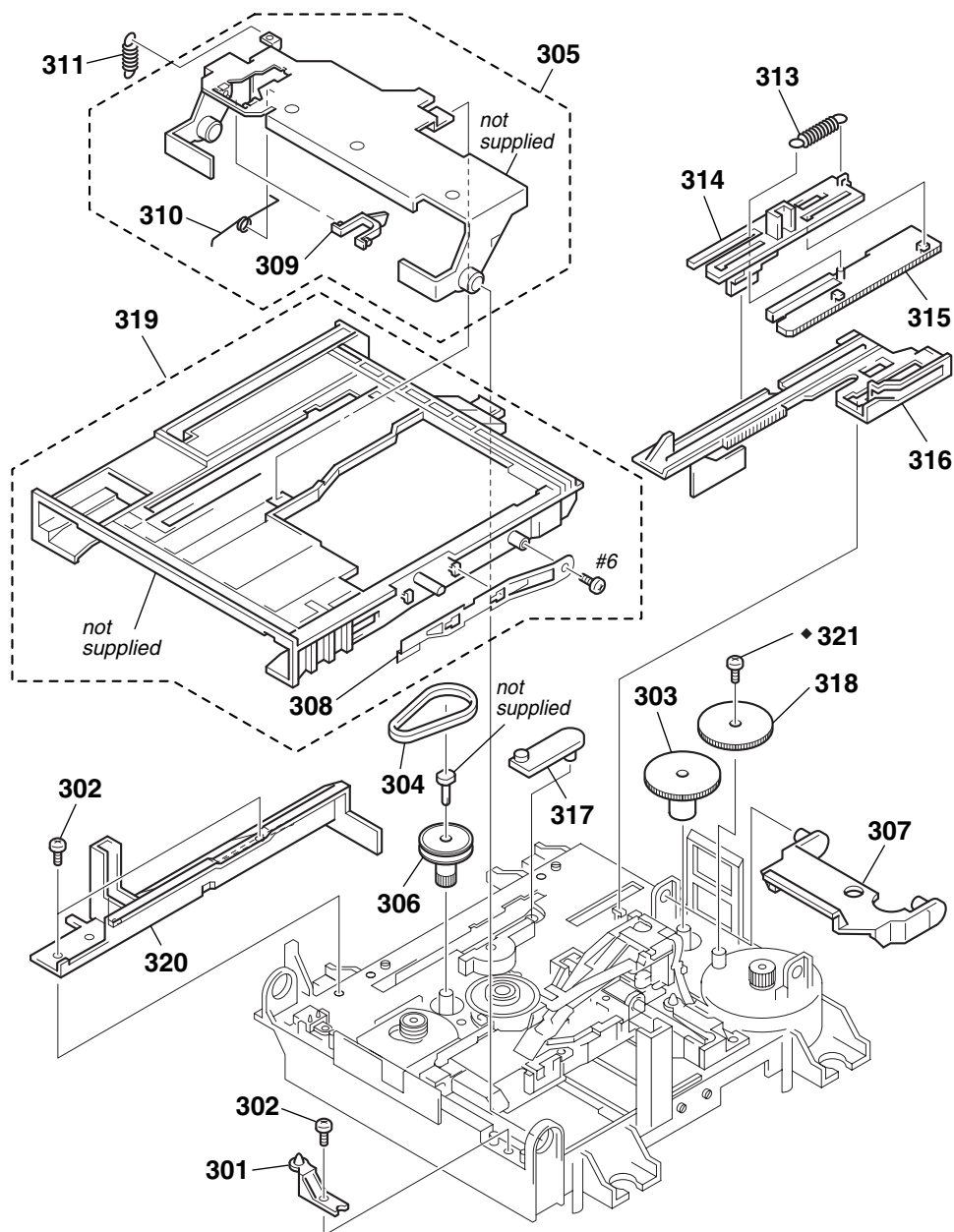
7-4. CHASSIS SECTION-2



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
151	3-703-244-00	BUSHING (2104), CORD		157	1-693-531-11	TUNER PACK (FM/AM)(MY,SP,HK,AUS)	
152	A-4726-889-A	AMP BOARD, COMPLETE		158	4-233-372-01	FOOT (FELT)	
153	A-4476-565-A	POWER BOARD, COMPLETE (AEP,UK)		159	1-681-562-11	SP BOARD	
153	A-4476-569-A	POWER BOARD, COMPLETE (MY,SP,HK,AUS)		160	A-4476-562-A	MAIN BOARD, COMPLETE (AEP,UK)	
△ 154	1-696-847-11	CORD, POWER (AUS)		160	A-4476-567-A	MAIN BOARD, COMPLETE (MY,SP,HK,AUS)	
△ 154	1-777-071-21	CORD, POWER (AEP,UK,MY,SP,HK)		* 161	1-569-972-21	SOCKET, SHORT 2P	
155	4-231-958-11	PANEL, BACK (AEP,UK)		162	4-236-011-01	SPACER (FAN)	
155	4-231-958-22	PANEL, BACK (MY,SP,HK)		△ 163	1-569-008-21	ADAPTOR, CONVERSION 2P (MY,SP)	
155	4-231-958-31	PANEL, BACK (AUS)		△ 163	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (UK,HK)	
156	1-769-942-11	WIRE (FLAT TYPE) (11 CORE) (MY,SP,HK,AUS)		M901	1-763-682-21	FAN, DC	
156	1-773-006-11	WIRE (FLAT TYPE) (15 CORE) (AEP,UK)		△ T900	1-437-373-12	TRANSFORMER, POWER	
157	1-693-529-11	TUNER PACK (FM/AM)(AEP,UK)					

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

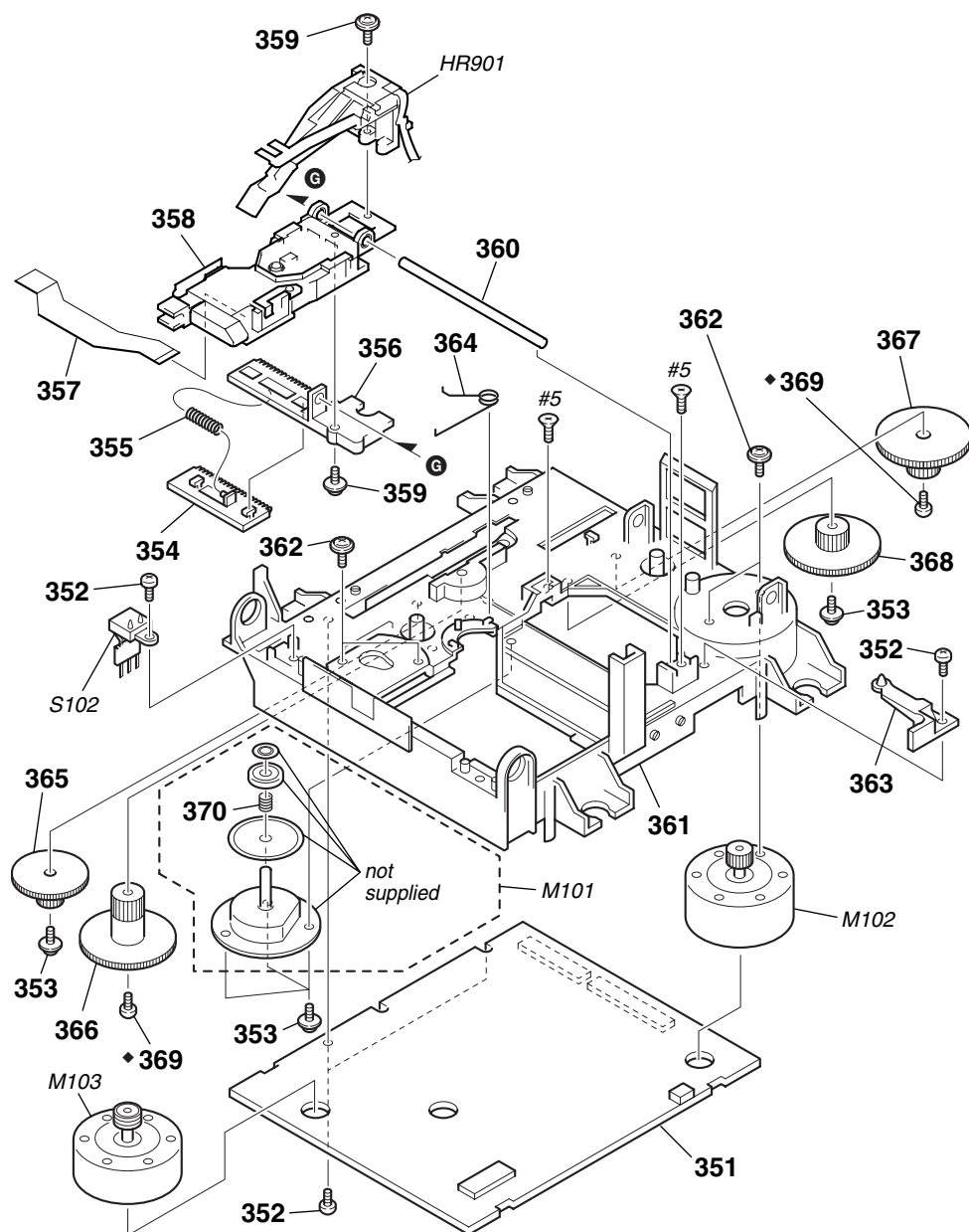
7-5. MD MECHANISM DECK SECTION-1 (MDM-7X2A)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
* 301	4-996-267-01	BASE (BU-D)		311	4-227-012-01	SPRING (HOLDER), TENSION	
302	4-231-319-01	SCREW (2X6) CZN, +B (P) TRI		313	4-227-013-01	SPRING (EJ), TENSION	
303	4-227-007-01	GEAR (SB)		314	4-226-995-01	SLIDER (EJ)	
304	4-227-025-01	BELT (LOADING)		315	4-226-996-01	LIMITTER (EJ)	
305	A-4680-638-B	PLATE (HOLDER) ASSY, RETAINER		316	4-226-997-04	SLIDER	
306	4-227-002-01	GEAR, PULLEY		317	4-226-998-01	LEVER (CHG)	
307	4-226-999-01	LEVER (HEAD)		318	4-227-006-01	GEAR (SA)	
308	X-4952-665-1	SPRING (SHT) ASSY, LEAF		319	A-4735-075-A	HOLDER ASSY	
309	A-4680-638-A	LOCK (HOLDER)		320	4-226-994-01	GUIDE (L)	
310	4-229-533-02	SPRING (STOPPER), TORSION		◆ 321	3-372-761-01	SCREW (M1.7), TAPPING	

◆: For service only

7-6. MD MECHANISM DECK SECTION-2 (MDM-7X2A)

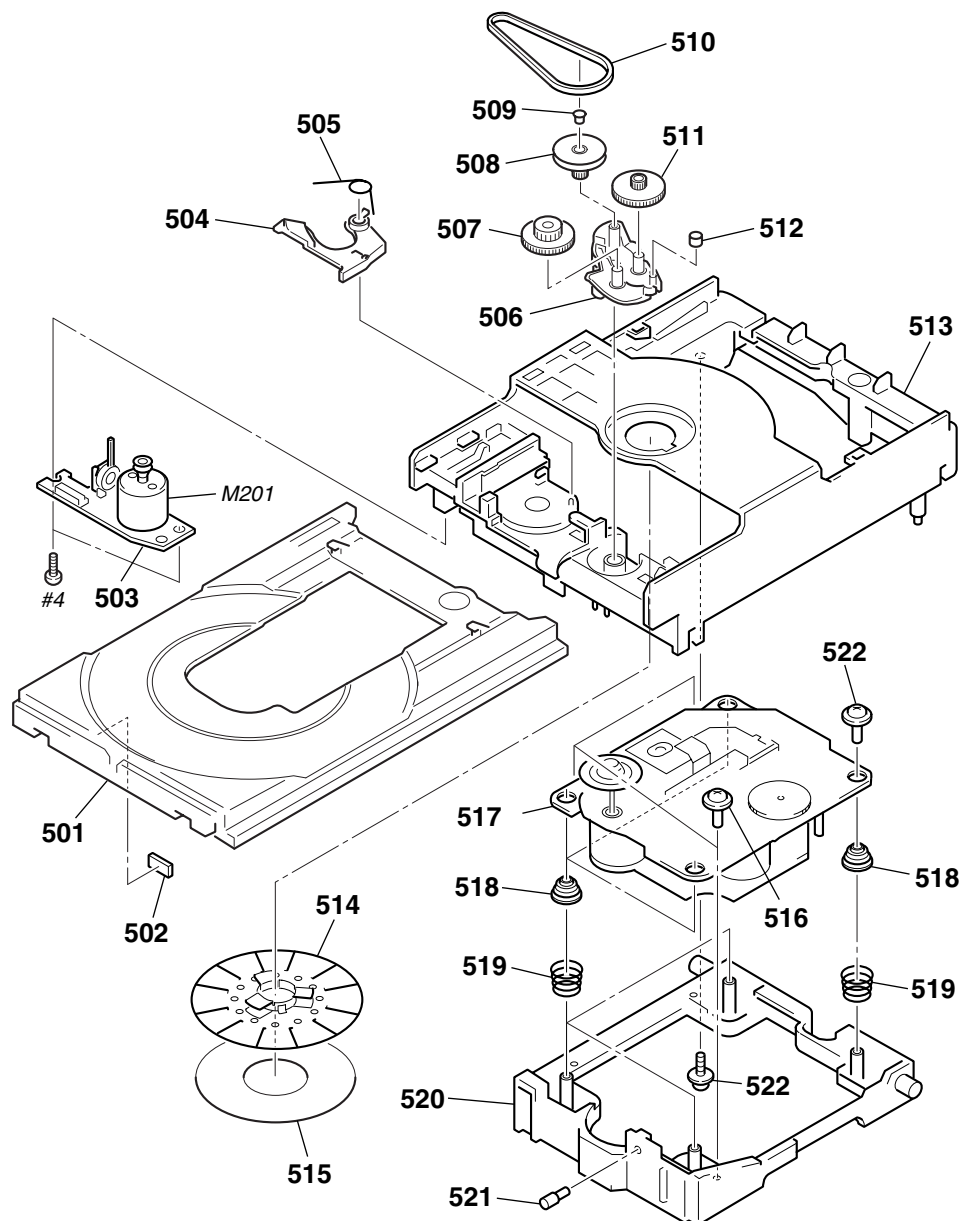


Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
351	A-4725-056-A	BD BOARD, COMPLETE		364	4-230-716-01	SPRING (SPDL), TORSION	
352	4-231-319-01	SCREW (2X6) CZN, +B (P) TRI		365	4-227-004-01	GEAR (LC)	
353	3-372-761-01	SCREW (M1.7), TAPPING		366	4-227-005-01	GEAR (LD)	
354	4-226-993-01	RACK		367	4-227-008-01	GEAR (SC)	
355	4-227-014-01	SPRING (RACK), COMPRESSION		368	4-227-009-01	GEAR (SD)	
356	4-226-992-01	BASE, SL		◆ 369	3-372-761-01	SCREW (M1.7), TAPPING	
357	1-678-514-11	FLEXIBLE BOARD		370	4-957-050-01	SPRING, COMPRESSION	
▲ 358	A-4672-976-A	OPTICAL PICK-UP (KMS-262)		HR901	1-500-670-11	HEAD, OVER WRITE	
359	4-988-560-01	SCREW (+P 1.7X6)		M101	A-4735-029-A	MOTOR ASSY, SPINDLE	
360	4-996-265-01	SHAFT, MAIN		M102	A-4735-076-A	MOTOR ASSY, SLED	
361	4-226-989-01	CHASSIS		M103	A-4735-074-A	MOTOR ASSY, LOADING	
362	4-211-036-01	SCREW (1.7X2.5), +PWH		S102	1-771-957-11	SWITCH, PUSH (2 KEY)	
363	4-226-990-01	BASE (BU-A)					

◆: For service only

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

7-7. CD MECHANISM DECK SECTION (CDM55A-21BD53)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
501	4-220-231-01	TRAY (CDM)		513	4-220-230-01	CHASSIS	
502	4-925-315-31	DAMPER		514	X-4953-668-1	PULLEY (4TCD) ASSY	
503	1-674-336-11	LOADING BOARD		515	4-220-951-02	SHEET (KH)	
504	4-220-229-01	LEVER (SW)		516	4-227-899-21	SCREW (DIA. 12), FLOATING	
505	4-220-239-01	SPRING, TORSION		△ 517	A-4735-171-A	BASE UNIT (BU-21BD53)	
506	4-220-233-01	CAM (CDM55)		518	4-230-386-11	INSULATOR (BU21)	
507	4-220-238-01	GEAR (B)		519	4-230-389-01	SPRING, CONE COIL	
508	4-220-234-01	PULLEY (LDG)		520	4-228-353-04	HOLDER (55-BU21)	
509	4-227-598-01	SPACER (55)		521	4-229-358-01	SHAFT (BU21)	
510	4-221-816-01	BELT (CDM55)		522	4-985-672-01	SCREW (+PTPWHM2.6), FLOATING	
511	4-220-237-01	GEAR (A)					
512	4-221-815-01	ROLLER		M201	A-4672-771-A	MOTOR (LD) ASSY	

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

SECTION 8
ELECTRICAL PARTS LIST

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: μ F
- RESISTORS
All resistors are in ohms.
METAL: metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable
- COILS
uH: μ H
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA..., μ PA...,
uPB..., μ PB..., uPC..., μ PC...,
uPD..., μ PD...

- Abbreviation
MY : Malaysia model
SP : Singapore model
HK : Hong Kong model
AUS : Australian model

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

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

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
	A-4726-889-A	AMP BOARD, COMPLETE *****				< IC >	
		< CAPACITOR >		IC801	8-759-543-55	IC LM1876T	
				IC903	8-759-450-49	IC BA07T	
				IC913	8-759-701-75	IC NJM7805FA	
C804	1-124-748-11	ELECT 22uF 20%	100V			< JUMPER RESISTOR >	
C805	1-126-964-11	ELECT 10uF 20%	50V				
C806	1-163-275-11	CERAMIC CHIP 0.001uF 5%	50V				
C807	1-163-133-00	CERAMIC CHIP 470PF 5%	50V	JR811	1-216-295-00	SHORT 0	
C808	1-126-967-11	ELECT 47uF 20%	25V			< JUMPER >	
C810	1-136-165-00	FILM 0.1uF 5%	50V	JW801	8-719-988-61	DIODE 1SS355TE-17	
C811	1-136-165-00	FILM 0.1uF 5%	50V	JW802	1-107-823-11	CERAMIC CHIP 0.47UF 10% 16V	
C812	1-165-319-11	CERAMIC CHIP 0.1uF	50V			< TRANSISTOR >	
C813	1-165-319-11	CERAMIC CHIP 0.1uF	50V				
C814	1-163-251-11	CERAMIC CHIP 100PF 5%	50V				
C816	1-104-665-11	ELECT 100uF 20%	25V	Q802	8-729-120-28	TRANSISTOR 2SC3052EF-T1-LEF	
C818	1-136-165-00	FILM 0.1uF 5%	50V	Q803	8-729-120-28	TRANSISTOR 2SC3052EF-T1-LEF	
C819	1-136-165-00	FILM 0.1uF 5%	50V	Q805	8-729-107-43	TRANSISTOR 2SC3624-T1L1718	
C833	1-127-734-51	ELECT MELF 4700uF 20%	35V	Q806	8-729-107-43	TRANSISTOR 2SC3624-T1L1718	
C835	1-127-734-51	ELECT MELF 4700uF 20%	35V			< RESISTOR >	
C854	1-124-748-11	ELECT 22uF 20%	100V	R802	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
C856	1-163-275-11	CERAMIC CHIP 0.001uF 5%	50V	R807	1-216-089-00	RES-CHIP 47K 5% 1/10W	
C857	1-163-133-00	CERAMIC CHIP 470PF 5%	50V	R810	1-216-089-00	RES-CHIP 47K 5% 1/10W	
C858	1-126-967-11	ELECT 47uF 20%	25V	R811	1-249-417-11	CARBON 1K 5% 1/4W F	
C859	1-164-159-21	CERAMIC 0.1uF	50V	R813	1-216-049-11	RES-CHIP 1K 5% 1/10W	
C905	1-126-926-11	ELECT 1000uF 20%	10V	R814	1-249-437-11	CARBON 47K 5% 1/4W	
C915	1-126-964-11	ELECT 10uF 20%	50V	R820	1-216-097-11	RES-CHIP 100K 5% 1/10W	
C916	1-126-926-11	ELECT 1000uF 20%	10V	R821	1-249-437-11	CARBON 47K 5% 1/4W	
				R822	1-249-438-11	CARBON 56K 5% 1/4W	
				R824	1-216-091-00	METAL CHIP 56K 5% 1/10W	
		< CONNECTOR >		R841	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
CN801	1-778-982-21	CONNECTOR, BOARD TO BOARD 13P		R842	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
* CN802	1-564-518-11	PLUG, CONNECTOR 3P		R843	1-247-883-00	CARBON 150K 5% 1/4W	
* CN803	1-564-519-11	PLUG, CONNECTOR 4P		R844	1-249-437-11	CARBON 47K 5% 1/4W	
				R845	1-216-065-00	RES-CHIP 4.7K 5% 1/10W	
		< DIODE >					
D803	8-719-028-23	DIODE D3SBA20-4101		R852	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
				R857	1-216-089-00	RES-CHIP 47K 5% 1/10W	
		< FUSE >		R860	1-216-089-00	RES-CHIP 47K 5% 1/10W	
Δ F801	1-532-350-00	FUSE 4A 250V		R861	1-249-417-11	CARBON 1K 5% 1/4W F	
Δ F802	1-532-350-00	FUSE 4A 250V		R863	1-216-049-11	RES-CHIP 1K 5% 1/10W	
		< FUSE HOLDER >		R864	1-249-437-11	CARBON 47K 5% 1/4W	

FH805	1-533-293-11	FUSE HOLDER					
FH806	1-533-293-11	FUSE HOLDER					
FH807	1-533-293-11	FUSE HOLDER					
FH808	1-533-293-11	FUSE HOLDER					

Ref. No.	Part No.	Description	Remarks			Ref. No.	Part No.	Description	Remarks		
	A-4725-056-A	BD (MD) BOARD, COMPLETE *****				C184	1-117-970-11	ELECT CHIP	22uF	20.00%	10V
		< CAPACITOR >				C185	1-128-795-91	ELECT CHIP	470PF	10%	630V
C101	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V	C191	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C102	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V	C192	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C103	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C193	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C104	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V						
C105	1-115-416-11	CERAMIC CHIP	0.001uF	5.00%	25V	C194	1-164-156-11	CERAMIC CHIP	0.1uF		25V
						C195	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C106	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C196	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C107	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C1401	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C108	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V			< CONNECTOR >			
C109	1-164-677-11	CERAMIC CHIP	0.033uF	10.00%	16V	CN101	1-766-833-21	CONNECTOR, FFC/FPC (ZIF) 21P			
C110	1-163-038-00	CERAMIC CHIP	0.1uF		25V	CN102	1-784-835-21	CONNECTOR,FFC(LIF(NON-ZIF))27P			
						CN103	1-784-869-21	CONNECTOR,FFC(LIF(NON-ZIF))17P			
C111	1-117-720-11	CERAMIC CHIP	4.7uF		10V	* CN104	1-580-055-21	PIN, CONNECTOR (SMD) 2P			
C112	1-110-563-11	CERAMIC CHIP	0.068uF	10.00%	16V	CN105	1-784-859-21	CONNECTOR, FFC(LIF(NON-ZIF))7P			
C113	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V			< DIODE >			
C114	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V	D101	8-719-988-61	DIODE 1SS355TE-17			
C115	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	D181	8-719-046-86	DIODE F1J6TP			
						D183	8-719-046-86	DIODE F1J6TP			
C116	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V			< IC >			
C117	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	IC101	8-752-080-95	IC CXA2523AR			
C118	1-165-176-11	CERAMIC CHIP	0.047uF	10.00%	16V	IC102	8-759-473-51	IC TLV2361CDBV			
C119	1-165-176-11	CERAMIC CHIP	0.047uF	10.00%	16V	IC141	8-759-836-79	IC BH6519FS-E2			
C120	1-164-156-11	CERAMIC CHIP	0.1uF		25V	IC151	8-752-404-64	IC CXD2662R			
						IC152	6-700-052-01	IC MSM51V17400F-50TS-K			
C121	1-164-156-11	CERAMIC CHIP	0.1uF		25V						
C125	1-117-720-11	CERAMIC CHIP	4.7uF		10V	IC181	8-759-481-17	IC MC74ACT08DTR2			
C128	1-164-156-11	CERAMIC CHIP	0.1uF		25V	IC190	8-759-677-64	IC L88M35T			
C131	1-117-720-11	CERAMIC CHIP	4.7uF		10V	IC195	8-759-640-41	IC BR24C08F-E2			
C132	1-164-156-11	CERAMIC CHIP	0.1uF		25V			< JUMPER >			
						JW201	1-216-295-00	SHORT	0		
C133	1-164-156-11	CERAMIC CHIP	0.1uF		25V	JW202	1-216-295-00	SHORT	0		
C141	1-126-206-11	ELECT CHIP	100uF	20%	6.3V	JW203	1-216-295-00	SHORT	0		
C142	1-164-156-11	CERAMIC CHIP	0.1uF		25V	JW903	1-216-295-00	SHORT	0		
C143	1-164-156-11	CERAMIC CHIP	0.1uF		25V	JW904	1-216-295-00	SHORT	0		
C144	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V			< COIL >			
						L101	1-500-245-11	FERRITE	0uH		
C145	1-164-156-11	CERAMIC CHIP	0.1uF		25V	L102	1-500-245-11	FERRITE	0uH		
C151	1-117-370-11	CERAMIC CHIP	10uF		10V	L103	1-500-245-11	FERRITE	0uH		
C152	1-164-156-11	CERAMIC CHIP	0.1uF		25V	L105	1-414-235-11	FERRITE	0uH		
C153	1-164-156-11	CERAMIC CHIP	0.1uF		25V	L106	1-500-245-11	FERRITE	0uH		
C154	1-126-206-11	ELECT CHIP	100uF	20%	6.3V						
						L121	1-500-245-11	FERRITE	0uH		
C155	1-164-156-11	CERAMIC CHIP	0.1uF		25V	L122	1-500-245-11	FERRITE	0uH		
C156	1-164-156-11	CERAMIC CHIP	0.1uF		25V	L131	1-500-245-11	FERRITE	0uH		
C157	1-164-156-11	CERAMIC CHIP	0.1uF		25V	L141	1-216-296-11	SHORT	0		
C158	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	L142	1-216-296-11	SHORT	0		
C159	1-162-927-11	CERAMIC CHIP	100PF	5%	50V						
						L143	1-216-296-11	SHORT	0		
C160	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	L144	1-216-296-11	SHORT	0		
C161	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	L145	1-216-296-11	SHORT	0		
C162	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	L146	1-469-855-21	FERRITE	0uH		
C163	1-125-891-11	CERAMIC CHIP	0.47uF	10.00%	10V	L147	1-469-855-21	FERRITE	0uH		
C164	1-162-927-11	CERAMIC CHIP	100PF	5%	50V						
						L161	1-500-245-11	FERRITE	0uH		
C165	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	L171	1-500-245-11	FERRITE	0uH		
C166	1-125-891-11	CERAMIC CHIP	0.47uF	10.00%	10V	L180	1-469-855-21	FERRITE	0uH		
C167	1-164-245-11	CERAMIC CHIP	0.015uF	10.00%	25V	L181	1-469-855-21	FERRITE	0uH		
C169	1-164-156-11	CERAMIC CHIP	0.1uF		25V	L182	1-500-245-11	FERRITE	0uH		
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	1-163-038-00	CERAMIC CHIP	0.1uF		25V						
C183	1-164-156-11	CERAMIC CHIP	0.1uF		25V						

HCD-PX333

BD (MD)

BL

JACK

Ref. No.	Part No.	Description	Remarks		
L183	1-216-296-11	SHORT	0		
L184	1-216-296-11	SHORT	0		
< TRANSISTOR >					
Q101	8-729-403-35	TRANSISTOR	UN5113-TX		
Q121	8-729-403-35	TRANSISTOR	UN5113-TX		
Q122	8-729-101-07	TRANSISTOR	2SB798-T1DK		
Q131	8-729-026-53	TRANSISTOR	2SA1576A-T106-QR		
Q132	8-729-903-10	TRANSISTOR	FMW1-T-148		
Q133	8-729-402-93	TRANSISTOR	UN5214-TX		
Q134	8-729-402-93	TRANSISTOR	UN5214-TX		
Q181	8-729-048-87	TRANSISTOR	2SJ518AZTR		
Q182	8-729-048-88	TRANSISTOR	2SK2788VYTR		
< RESISTOR >					
R101	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R102	1-216-853-11	METAL CHIP	470K	5%	1/16W
R103	1-216-863-11	RES-CHIP	3.3M	5%	1/16W
R104	1-216-853-11	METAL CHIP	470K	5%	1/16W
R105	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R106	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R107	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R108	1-216-833-11	METAL CHIP	10K	5%	1/16W
R109	1-216-845-11	METAL CHIP	100K	5%	1/16W
R110	1-216-845-11	METAL CHIP	100K	5%	1/16W
R111	1-216-833-11	METAL CHIP	10K	5%	1/16W
R112	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R113	1-216-833-11	METAL CHIP	10K	5%	1/16W
R114	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R115	1-216-833-11	METAL CHIP	10K	5%	1/16W
R116	1-216-839-11	METAL CHIP	33K	5%	1/16W
R117	1-216-837-11	METAL CHIP	22K	5%	1/16W
R118	1-218-855-11	METAL CHIP	2.2K	0.5%	1/16W
R119	1-218-863-11	METAL CHIP	4.7K	0.5%	1/16W
R120	1-218-889-11	METAL CHIP	56K	0.5%	1/16W
R121	1-218-863-11	METAL CHIP	4.7K	0.5%	1/16W
R122	1-218-855-11	METAL CHIP	2.2K	0.5%	1/16W
R123	1-216-819-11	METAL CHIP	680	5%	1/16W
R124	1-216-809-11	METAL CHIP	100	5%	1/16W
R125	1-216-815-11	METAL CHIP	330	5%	1/16W
R126	1-216-819-11	METAL CHIP	680	5%	1/16W
R127	1-216-845-11	METAL CHIP	100K	5%	1/16W
R128	1-219-724-11	METAL CHIP	1	1%	1/4W
R129	1-216-298-00	METAL CHIP	2.2	5%	1/10W
R130	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R131	1-216-833-11	METAL CHIP	10K	5%	1/16W
R132	1-216-840-11	METAL CHIP	39K	5%	1/16W
R133	1-216-821-11	METAL CHIP	1K	5%	1/16W
R134	1-216-821-11	METAL CHIP	1K	5%	1/16W
R135	1-216-821-11	METAL CHIP	1K	5%	1/16W
R136	1-216-302-00	METAL CHIP	2.7	5%	1/10W
R138	1-216-833-11	METAL CHIP	10K	5%	1/16W
R150	1-216-833-11	METAL CHIP	10K	5%	1/16W
R151	1-216-833-11	METAL CHIP	10K	5%	1/16W
R153	1-216-833-11	METAL CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R155	1-216-864-11	METAL CHIP	0	5%	1/16W
R156	1-216-864-11	METAL CHIP	0	5%	1/16W
R158	1-216-809-11	METAL CHIP	100	5%	1/16W
R162	1-216-833-11	METAL CHIP	10K	5%	1/16W
R167	1-216-833-11	METAL CHIP	10K	5%	1/16W
R168	1-216-845-11	METAL CHIP	100K	5%	1/16W
R169	1-216-855-11	METAL CHIP	680K	5%	1/16W
R170	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R171	1-216-821-11	METAL CHIP	1K	5%	1/16W
R173	1-216-821-11	METAL CHIP	1K	5%	1/16W
R174	1-216-811-11	METAL CHIP	150	5%	1/16W
R177	1-216-805-11	METAL CHIP	47	5%	1/16W
R179	1-216-295-00	SHORT	0		
R181	1-216-841-11	METAL CHIP	47K	5%	1/16W
R182	1-216-841-11	METAL CHIP	47K	5%	1/16W
R183	1-216-841-11	METAL CHIP	47K	5%	1/16W
R185	1-216-295-00	SHORT	0		
R195	1-216-833-11	METAL CHIP	10K	5%	1/16W
R196	1-216-833-11	METAL CHIP	10K	5%	1/16W
R197	1-216-833-11	METAL CHIP	10K	5%	1/16W
R218	1-216-864-11	METAL CHIP	0	5%	1/16W
< SWITCH >					
S101	1-762-596-21	SWITCH, PUSH (1 KEY)(LIMIT IN)			
S103	1-771-956-21	SWITCH, PUSH (1 KEY)(PACK OUT)			
S104	1-771-955-21	SWITCH, PUSH (1 KEY)(PLAY POSITION)			
S105	1-771-955-21	SWITCH, PUSH (1 KEY)(REC POSITION)			
< VIBRATOR >					
X171	1-781-569-21	OSCILLATOR, CRYSTAL 90MHz			

	1-681-559-11	BL BOARD			

< CAPACITOR >					
C618	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
< DIODE >					
D607	8-719-079-49	DIODE NSSW450-BRS-TVR			
D608	8-719-079-49	DIODE NSSW450-BRS-TVR			
D609	8-719-079-49	DIODE NSSW450-BRS-TVR			
< RESISTOR >					
R650	1-216-029-00	METAL CHIP	150	5%	1/10W
R651	1-216-029-00	METAL CHIP	150	5%	1/10W
R652	1-216-029-00	METAL CHIP	150	5%	1/10W

	1-681-557-11	JACK BOARD			

< CAPACITOR >					
C611	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C612	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C613	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C614	1-165-319-11	CERAMIC CHIP	0.1uF		50V

JACK

LOADING

MAIN

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
		< CONNECTOR >					
CN604	1-506-481-11	PIN, CONNECTOR 2P		C154	1-126-964-11	ELECT 10uF 20%	50V
CN606	1-568-940-21	PIN, CONNECTOR 2P		C155	1-165-319-11	CERAMIC CHIP 0.1uF	50V
		< GROUND TERMINAL >		C301	1-124-721-11	ELECT 10uF 20%	50V
EP601	1-537-771-21	TERMINAL BOARD, GROUND		C302	1-163-251-11	CERAMIC CHIP 100PF 5%	50V
		< FERRITE BEAD >		C303	1-126-964-11	ELECT 10uF 20%	50V
FB600	1-414-813-11	FERRITE 0UH		C305	1-124-721-11	ELECT 10uF 20%	50V
FB601	1-414-813-11	FERRITE 0UH		C310	1-130-471-00	MYLAR 0.001uF 5%	50V
FB602	1-414-813-11	FERRITE 0UH		C311	1-124-721-11	ELECT 10uF 20%	50V
FB603	1-414-813-11	FERRITE 0UH		C312	1-136-165-00	FILM 0.1uF 5%	50V
		< JACK >		C313	1-126-957-11	ELECT 0.22uF 20%	50V
J601	1-815-736-11	JACK, PIN (PHONES)		C314	1-130-473-00	MYLAR 0.0015uF 5%	50V
*****				C315	1-124-721-11	ELECT 10uF 20%	50V
	1-674-336-12	LOADING BOARD		C316	1-136-165-00	FILM 0.1uF 5%	50V
		*****		C317	1-136-165-00	FILM 0.1uF 5%	50V
		< CONNECTOR >		C321	1-126-933-11	ELECT 100uF 20%	16V
* CN151	1-568-943-11	PIN, CONNECTOR 5P		C322	1-126-964-11	ELECT 10uF 20%	50V
		< SWITCH >		C323	1-124-721-11	ELECT 10uF 20%	50V
S1	1-771-799-11	SWITCH, LEVER (SLIDE)		C324	1-124-724-11	ELECT 47uF 20%	50V
*****				C325	1-130-477-00	MYLAR 0.0033uF 5%	50V
	A-4476-562-A	MAIN BOARD, COMPLETE (AEP,UK)		C326	1-163-001-11	CERAMIC CHIP 220PF 10%	50V
		*****		C351	1-124-721-11	ELECT 10uF 20%	50V
	A-4476-567-A	MAIN BOARD, COMPLETE (MY,SP,HK,AUS)		C352	1-163-251-11	CERAMIC CHIP 100PF 5%	50V
		*****		C353	1-126-964-11	ELECT 10uF 20%	50V
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 TT(B)		C355	1-124-721-11	ELECT 10uF 20%	50V
	7-685-647-79	SCREW +BVTP 3X10 TYPE2 TT(B)		C360	1-130-471-00	MYLAR 0.001uF 5%	50V
		< LITHIUM BATTERY >		C361	1-124-721-11	ELECT 10uF 20%	50V
BT921	1-528-938-11	BATTERY, LITHIUM ION SECONDARY		C362	1-136-165-00	FILM 0.1uF 5%	50V
		< CAPACITOR >		C363	1-126-957-11	ELECT 0.22uF 20%	50V
C101	1-163-251-11	CERAMIC CHIP 100PF 5%	50V	C364	1-130-473-00	MYLAR 0.0015uF 5%	50V
C102	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V	C365	1-124-721-11	ELECT 10uF 20%	50V
C103	1-126-964-11	ELECT 10uF 20%	50V	C366	1-136-165-00	FILM 0.1uF 5%	50V
C104	1-126-964-11	ELECT 10uF 20%	50V	C367	1-136-165-00	FILM 0.1uF 5%	50V
C105	1-126-964-11	ELECT 10uF 20%	50V	C411	1-126-964-11	ELECT 10uF 20%	50V (AEP,UK)
C111	1-165-319-11	CERAMIC CHIP 0.1uF	50V	C500	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V
C112	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V	C501	1-163-233-11	CERAMIC CHIP 18PF 5%	50V
C113	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V	C502	1-163-235-11	CERAMIC CHIP 22PF 5%	50V
C115	1-162-282-31	CERAMIC 100PF 10%	50V	C503	1-126-935-11	ELECT 470uF 20%	6.3V
C116	1-165-319-11	CERAMIC CHIP 0.1uF	50V	C504	1-126-960-11	ELECT 1uF 20%	50V
C117	1-165-319-11	CERAMIC CHIP 0.1uF	50V	C505	1-165-319-11	CERAMIC CHIP 0.1uF	50V
C121	1-126-933-11	ELECT 100uF 20%	16V	C506	1-126-964-11	ELECT 10uF 20%	50V
C142	1-126-933-11	ELECT 100uF 20%	16V	C507	1-163-021-11	CERAMIC CHIP 0.01uF 10%	50V
C144	1-126-935-11	ELECT 470uF 20%	10V	C508	1-162-282-31	CERAMIC 100PF 10%	50V
C145	1-126-933-11	ELECT 100uF 20%	16V	C509	1-162-294-31	CERAMIC 0.001uF 10%	50V
C146	1-126-933-11	ELECT 100uF 20%	16V	C510	1-163-021-11	CERAMIC CHIP 0.01uF 10%	50V
C150	1-165-319-11	CERAMIC CHIP 0.1uF	50V	C906	1-126-964-11	ELECT 10uF 20%	50V
C151	1-163-251-11	CERAMIC CHIP 100PF 5%	50V	C907	1-126-935-11	ELECT 470uF 20%	10V
C152	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V	C911	1-126-935-11	ELECT 470uF 20%	10V
C153	1-126-964-11	ELECT 10uF 20%	50V	C914	1-126-926-11	ELECT 1000uF 20%	10V
				C918	1-126-964-11	ELECT 10uF 20%	50V
				C931	1-126-933-11	ELECT 100uF 20%	16V
				C932	1-126-960-11	ELECT 1uF 20%	50V
				C933	1-165-319-11	CERAMIC CHIP 0.1uF	50V
				C934	1-163-021-11	CERAMIC CHIP 0.01uF 10%	50V
				C935	1-163-021-11	CERAMIC CHIP 0.01uF 10%	50V
				C941	1-126-961-11	ELECT 2.2uF 20%	50V (AEP,UK)

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MAIN

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C942	1-126-964-11	ELECT 10uF 20%	50V			< JACK >	
C943	1-165-319-11	CERAMIC CHIP 0.1uF	50V	J101	1-793-344-11	JACK, PIN 4P (TAPE OUT/IN)	
C944	1-164-159-11	CERAMIC 0.1uF	50V			< JUMPER RESISTOR >	
C945	1-165-319-11	CERAMIC CHIP 0.1uF	50V	JR102	1-216-295-00	SHORT	0
C950	1-136-165-00	FILM 0.1uF 5%	50V	JR103	1-216-295-00	SHORT	0
C951	1-163-251-11	CERAMIC CHIP 100PF 5%	50V	JR105	1-216-295-00	SHORT	0
C952	1-163-251-11	CERAMIC CHIP 100PF 5%	50V	JR106	1-216-295-00	SHORT	0 (AEP,UK)
C953	1-163-251-11	CERAMIC CHIP 100PF 5%	50V			< JUMPER RESISTOR >	
		< CONNECTOR >		JW100	1-216-295-00	SHORT	0
CN100	1-784-784-11	CONNECTOR, FFC 23P		JW101	1-216-295-00	SHORT	0
* CN101	1-766-955-11	CONNECTOR, BOARD TO BOARD 11P		JW102	1-216-295-00	SHORT	0
CN103	1-778-982-21	CONNECTOR, BOARD TO BOARD 13P		JW103	1-216-295-00	SHORT	0
CN104	1-774-136-11	CONNECTOR, ROUND TYPE 6P		JW104	1-216-295-00	SHORT	0
		(PC LINK/KEY BOARD)				< COIL >	
CN105	1-568-830-11	CONNECTOR, FFC 11P (MY,SP,HK,AUS)		L121	1-216-295-00	SHORT	0
CN105	1-784-776-11	CONNECTOR, FFC 15P (AEP,UK)		L141	1-216-295-00	SHORT	0
CN106	1-568-683-11	PIN, CONNECTOR (PC BAORD) 2P		L142	1-414-813-11	FERRITE	0uH
CN107	1-784-792-11	CONNECTOR, FFC 31P		L143	1-216-295-00	SHORT	0
		< DIODE >		L144	1-216-295-00	SHORT	0
D301	1-216-053-00	METAL CHIP 1.5K 5%	1/10W	L145	1-216-295-00	SHORT	0
D302	8-719-988-61	DIODE 1SS355TE-17		L146	1-216-295-00	SHORT	0
D401	8-719-422-43	DIODE MA8051-H-TX (AEP,UK)		L147	1-216-295-00	SHORT	0
D910	8-719-200-82	DIODE 11ES2-TA1B		L148	1-414-813-11	FERRITE	0uH
D912	8-719-988-61	DIODE 1SS355TE-17		L551	1-216-295-00	SHORT	0
D913	8-719-988-61	DIODE 1SS355TE-17		L552	1-216-295-00	SHORT	0
D914	8-719-988-61	DIODE 1SS355TE-17		L553	1-216-295-00	SHORT	0
D915	8-719-200-82	DIODE 11ES2-TA1B				< TRANSISTOR >	
D918	8-719-210-21	DIODE 11EQS04-TA2B		Q101	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF
D922	8-719-988-61	DIODE 1SS355TE-17		Q102	8-729-424-12	TRANSISTOR	UN2112-TX
D923	8-719-988-61	DIODE 1SS355TE-17		Q111	8-729-025-28	TRANSISTOR	2SK1828TE85L
D924	8-719-988-61	DIODE 1SS355TE-17		Q112	8-729-025-28	TRANSISTOR	2SK1828TE85L
D925	8-719-988-61	DIODE 1SS355TE-17		Q151	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF
D926	8-719-988-61	DIODE 1SS355TE-17		Q301	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF
D927	8-719-988-61	DIODE 1SS355TE-17		Q351	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF
D941	8-719-988-61	DIODE 1SS355TE-17		Q552	8-729-424-12	TRANSISTOR	UN2112-TX
D942	8-719-988-61	DIODE 1SS355TE-17		Q671	8-729-424-08	TRANSISTOR	UN2111-TX
D943	8-719-988-61	DIODE 1SS355TE-17		Q672	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF
D950	8-719-988-61	DIODE 1SS355TE-17		Q673	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF
D951	8-719-988-61	DIODE 1SS355TE-17		Q674	8-729-424-08	TRANSISTOR	UN2111-TX
D952	8-719-988-61	DIODE 1SS355TE-17		Q676	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF
		< GROUND TERMINAL >		Q931	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF
EP1	1-537-771-21	TERMINAL BOARD, GROUND		Q941	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF
EP2	1-537-771-21	TERMINAL BOARD, GROUND		Q942	8-729-111-29	TRANSISTOR	2SD1616A-TP-LK
		< FERRITE BEAD >		Q943	8-729-424-08	TRANSISTOR	UN2111-TX
FB111	1-216-295-00	SHORT 0		Q944	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF
		< IC >		Q945	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF
IC121	8-749-923-05	TORX178B (DIGITAL OPTICAL IN)		Q946	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF
IC301	8-759-494-40	IC M62428AFP600C		Q950	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF
IC501	8-759-831-60	IC uPDSS3033AYGF-M18-3BA		Q951	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF
IC911	8-759-450-47	IC BA05T		Q952	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF
IC912	8-759-686-72	IC uPC29L04J-T		Q953	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF
IC931	8-759-481-02	IC M62016L					
IC941	8-759-165-81	IC PST600D-T					

Ref. No.	Part No.	Description	Remarks			Ref. No.	Part No.	Description	Remarks		
< RESISTOR >						R510	1-216-049-11	RES-CHIP	1K	5%	1/10W
R101	1-216-097-11	RES-CHIP	100K	5%	1/10W	R511	1-216-073-00	RES-CHIP	10K	5%	1/10W
R102	1-216-049-11	RES-CHIP	1K	5%	1/10W	R512	1-216-049-11	RES-CHIP	1K	5%	1/10W
R103	1-216-073-00	RES-CHIP	10K	5%	1/10W	R513	1-216-025-11	RES-CHIP	100	5%	1/10W
R104	1-216-049-11	RES-CHIP	1K	5%	1/10W	R514	1-216-025-11	RES-CHIP	100	5%	1/10W
R105	1-216-097-11	RES-CHIP	100K	5%	1/10W	R515	1-216-049-11	RES-CHIP	1K	5%	1/10W
R119	1-216-001-00	METAL CHIP	10	5%	1/10W	R516	1-216-025-11	RES-CHIP	100	5%	1/10W
R120	1-216-295-00	SHORT	0			R517	1-216-073-00	RES-CHIP	10K	5%	1/10W
R121	1-216-041-00	METAL CHIP	470	5%	1/10W	R518	1-247-807-31	CARBON	100	5%	1/4W
R151	1-216-097-11	RES-CHIP	100K	5%	1/10W	R519	1-216-049-11	RES-CHIP	1K	5%	1/10W
R152	1-216-049-11	RES-CHIP	1K	5%	1/10W	R520	1-216-089-00	RES-CHIP	47K	5%	1/10W
R153	1-216-073-00	RES-CHIP	10K	5%	1/10W	R521	1-247-807-31	CARBON	100	5%	1/4W
R154	1-216-049-11	RES-CHIP	1K	5%	1/10W	R522	1-247-807-31	CARBON	100	5%	1/4W
R155	1-216-097-11	RES-CHIP	100K	5%	1/10W	R523	1-247-807-31	CARBON	100	5%	1/4W
R302	1-216-295-00	SHORT	0			R524	1-247-807-31	CARBON	100	5%	1/4W
R303	1-216-097-11	RES-CHIP	100K	5%	1/10W	R525	1-216-049-11	RES-CHIP	1K	5%	1/10W
R304	1-216-049-11	RES-CHIP	1K	5%	1/10W	R526	1-216-025-11	RES-CHIP	100	5%	1/10W
R309	1-216-097-11	RES-CHIP	100K	5%	1/10W	△R527	1-219-153-11	FUSIBLE	10	5%	1/4W
R312	1-216-063-00	RES-CHIP	3.9K	5%	1/10W	R529	1-216-073-00	RES-CHIP	10K	5%	1/10W
R313	1-216-103-00	METAL CHIP	180K	5%	1/10W	R534	1-216-073-00	RES-CHIP	10K	5%	1/10W
R314	1-216-085-00	RES-CHIP	33K	5%	1/10W	(MY,SP,HK,AUS)					
R315	1-216-121-11	RES-CHIP	1M	5%	1/10W	R530	1-216-073-00	RES-CHIP	10K	5%	1/10W
R316	1-216-097-11	RES-CHIP	100K	5%	1/10W	R533	1-216-073-00	RES-CHIP	10K	5%	1/10W
R321	1-216-085-00	RES-CHIP	33K	5%	1/10W	R535	1-216-073-00	RES-CHIP	10K	5%	1/10W
R322	1-216-121-11	RES-CHIP	1M	5%	1/10W	(AEP,UK)					
R323	1-216-049-11	RES-CHIP	1K	5%	1/10W	R536	1-216-109-00	METAL CHIP	330K	5%	1/10W
R324	1-216-049-11	RES-CHIP	1K	5%	1/10W	R537	1-216-025-11	RES-CHIP	100	5%	1/10W
R325	1-216-049-11	RES-CHIP	1K	5%	1/10W	R538	1-216-077-00	RES-CHIP	15K	5%	1/10W
R326	1-216-041-00	METAL CHIP	470	5%	1/10W	R539	1-216-077-00	RES-CHIP	15K	5%	1/10W
R352	1-216-295-00	SHORT	0			R540	1-216-077-00	RES-CHIP	15K	5%	1/10W
R353	1-216-097-11	RES-CHIP	100K	5%	1/10W	R541	1-249-429-11	CARBON	10K	5%	1/4W
R354	1-216-049-11	RES-CHIP	1K	5%	1/10W	R542	1-216-049-11	RES-CHIP	1K	5%	1/10W
R359	1-216-097-11	RES-CHIP	100K	5%	1/10W	R543	1-249-417-11	CARBON	1K	5%	1/4W F
R362	1-216-063-00	RES-CHIP	3.9K	5%	1/10W	R544	1-216-025-11	RES-CHIP	100	5%	1/10W
R363	1-216-103-00	METAL CHIP	180K	5%	1/10W	R545	1-249-431-11	CARBON	15K	5%	1/4W
R364	1-216-085-00	RES-CHIP	33K	5%	1/10W	R546	1-216-025-11	RES-CHIP	100	5%	1/10W
R365	1-216-121-11	RES-CHIP	1M	5%	1/10W	R547	1-249-437-11	CARBON	47K	5%	1/4W
R366	1-216-097-11	RES-CHIP	100K	5%	1/10W	R548	1-216-049-11	RES-CHIP	1K	5%	1/10W
R406	1-216-039-00	METAL CHIP	390	5%	1/10W	R549	1-216-073-00	RES-CHIP	10K	5%	1/10W
R407	1-249-429-11	CARBON	10K	5%	1/4W	R550	1-216-081-00	METAL CHIP	22K	5%	1/10W
R408	1-249-429-11	CARBON	10K	5%	1/4W	R551	1-216-081-00	METAL CHIP	22K	5%	1/10W
				(MY,SP,HK,AUS)		R552	1-216-049-11	RES-CHIP	1K	5%	1/10W
				(MY,SP,HK,AUS)		R553	1-216-049-11	RES-CHIP	1K	5%	1/10W
R410	1-216-049-11	RES-CHIP	1K	5%	1/10W	R554	1-216-049-11	RES-CHIP	1K	5%	1/10W
R411	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	R555	1-216-081-00	METAL CHIP	22K	5%	1/10W
R412	1-216-025-11	RES-CHIP	100	5%	1/10W	R556	1-247-807-31	CARBON	100	5%	1/4W
R414	1-216-073-00	RES-CHIP	10K	5%	1/10W	R557	1-249-429-11	CARBON	10K	5%	1/4W
R415	1-216-097-11	RES-CHIP	100K	5%	1/10W	R558	1-247-807-31	CARBON	100	5%	1/4W
R416	1-216-065-00	RES-CHIP	4.7K	5%	1/10W	R560	1-249-417-11	CARBON	1K	5%	1/4W F
R501	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	R561	1-249-417-11	CARBON	1K	5%	1/4W F
R502	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	R562	1-249-417-11	CARBON	1K	5%	1/4W F
R503	1-216-073-91	RES-CHIP	10K	5%	1/10W	R671	1-216-073-00	RES-CHIP	10K	5%	1/10W
R504	1-216-025-11	RES-CHIP	100	5%	1/10W	R672	1-216-041-00	METAL CHIP	470	5%	1/10W
R505	1-216-025-11	RES-CHIP	100	5%	1/10W	R673	1-216-041-00	METAL CHIP	470	5%	1/10W
R506	1-216-025-11	RES-CHIP	100	5%	1/10W	R674	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R507	1-216-073-00	RES-CHIP	10K	5%	1/10W	R924	1-216-037-00	METAL CHIP	330	5%	1/10W
R508	1-216-025-11	RES-CHIP	100	5%	1/10W	R931	1-216-105-00	RES-CHIP	220K	5%	1/10W
R509	1-216-061-00	RES-CHIP	3.3K	5%	1/10W	The components identified by mark △ or dotted line with mark ▲ are critical for safety.					

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

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MAIN

MD DIGITAL

Ref. No.	Part No.	Description	Remarks
R932	1-216-097-11	RES-CHIP 100K 5%	1/10W
R933	1-216-081-00	METAL CHIP 22K 5%	1/10W
R941	1-126-961-11	ELECT 2.2UF 20%	50V (MY,SP,HK,AUS)
R941	1-216-073-00	RES-CHIP 10K 5%	1/10W (AEP,UK)
R942	1-216-097-11	RES-CHIP 100K 5%	1/10W
R943	1-216-089-00	RES-CHIP 47K 5%	1/10W
R944	1-216-097-11	RES-CHIP 100K 5%	1/10W
R945	1-216-081-00	METAL CHIP 22K 5%	1/10W
R946	1-249-433-11	CARBON 22K 5%	1/4W
R947	1-216-089-91	RES-CHIP 47K 5%	1/10W
R950	1-216-113-00	METAL CHIP 470K 5%	1/10W
R951	1-216-089-00	RES-CHIP 47K 5%	1/10W
R952	1-216-113-00	METAL CHIP 470K 5%	1/10W
R953	1-216-089-00	RES-CHIP 47K 5%	1/10W
R954	1-216-089-00	RES-CHIP 47K 5%	1/10W
< VIBRATOR >			
X501	1-781-107-21	VIBRATOR, SERAMIC 16MHz	
X502	1-567-098-41	VIBRATOR, CRYSTAL 32.768kHz	

A-4725-832-A MD DIGITAL BOARD, COMPLETE			

< CAPACITOR >			
C1001	1-126-934-11	ELECT 220uF 20%	10V
C1002	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1003	1-126-933-11	ELECT 100uF 20%	16V
C1004	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1005	1-126-933-11	ELECT 100uF 20%	16V
C1006	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1007	1-126-933-11	ELECT 100uF 20%	16V
C1008	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1009	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1010	1-124-994-11	ELECT 100uF 20%	10V
C1011	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1012	1-126-059-11	ELECT 10uF 20%	63V
C1013	1-126-933-11	ELECT 100uF 20%	16V
C1014	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1015	1-126-933-11	ELECT 100uF 20%	16V
C1016	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1017	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1018	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1019	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V
C1020	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V
C1021	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1022	1-126-933-11	ELECT 100uF 20%	16V
C1023	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1024	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1025	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1026	1-126-933-11	ELECT 100uF 20%	16V
C1027	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C1030	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1034	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C1035	1-163-038-00	CERAMIC CHIP 0.1uF	25V

Ref. No.	Part No.	Description	Remarks
C1037	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C1038	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C1039	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C1040	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C1041	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C1044	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V
C1045	1-126-933-11	ELECT 100uF 20%	16V
C1048	1-126-933-11	ELECT 100uF 20%	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
C1102	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1103	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1104	1-126-960-11	ELECT 1uF 20%	50V
C1105	1-126-933-11	ELECT 100uF 20%	16V
C1106	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1107	1-126-960-11	ELECT 1uF 20%	50V
C1108	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1109	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1110	1-126-933-11	ELECT 100uF 20%	16V
C1111	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C1112	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C1113	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C1114	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1115	1-126-933-11	ELECT 100uF 20%	16V
C1116	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1117	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C1118	1-126-934-11	ELECT 220uF 20%	16V
C1120	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V
C1121	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V
< CONNECTOR >			
CN1001	1-784-753-11	CONNECTOR, FFC 31P	
CN1002	1-779-558-11	CONNECTOR,FFC(LIF(NON-ZIF))21P	
CN1003	1-779-295-11	CONNECTOR,FFC(LIF(NON-ZIF))27P	
CN1004	1-779-285-11	CONNECTOR,FFC(LIF(NON-ZIF))17P	
* CN1005	1-568-943-11	PIN, CONNECTOR 5P	
< DIODE >			
D1102	8-719-210-33	DIODE EC10DS2TE12L	
D1103	8-719-210-33	DIODE EC10DS2TE12L	
D1104	8-719-988-61	DIODE 1SS355TE-17	
D1106	8-719-988-61	DIODE 1SS355TE-17	
D1108	8-719-988-61	DIODE 1SS355TE-17	
D1109	1-216-296-11	SHORT 0	
< IC >			
IC1001	8-759-828-80	IC M30805MG-205GP	
IC1004	8-759-822-09	IC LB1641	
IC1005	8-759-675-78	IC UDA1360TS/N1.118	
IC1006	8-759-675-77	IC UDA1350AH	
IC1008	8-759-548-57	IC SN74LV00ANSR	
IC1101	8-759-699-44	IC uPDSS3033AYGF-M10-3BA	
IC1102	8-759-822-09	IC LB1641	

MD DIGITAL

PANEL

Ref. No.	Part No.	Description				Remarks	Ref. No.	Part No.	Description				Remarks
< COIL >							R1095	1-216-039-00	METAL CHIP	390	5%	1/10W	
L1001	1-412-533-21	INDUCTOR	47uH				R1103	1-216-089-00	RES-CHIP	47K	5%	1/10W	
							R1104	1-216-081-00	METAL CHIP	22K	5%	1/10W	
							R1105	1-216-073-00	RES-CHIP	10K	5%	1/10W	
							R1106	1-216-073-00	RES-CHIP	10K	5%	1/10W	
< TRANSISTOR >													
Q1001	8-729-402-42	TRANSISTOR	UN5213-TX				R1107	1-216-073-00	RES-CHIP	10K	5%	1/10W	
Q1002	8-729-602-36	TRANSISTOR	2SA1602TP-1EF				R1108	1-216-089-00	RES-CHIP	47K	5%	1/10W	
Q1003	8-729-602-36	TRANSISTOR	2SA1602TP-1EF				R1109	1-216-093-00	RES-CHIP	68K	5%	1/10W	
Q1004	8-729-403-35	TRANSISTOR	UN5113-TX				R1110	1-216-073-00	RES-CHIP	10K	5%	1/10W	
Q1101	8-729-015-76	TRANSISTOR	UN5211-TX				R1111	1-216-073-00	RES-CHIP	10K	5%	1/10W	
Q1102	8-729-010-08	TRANSISTOR	MSB710-RT1				R1112	1-216-073-00	RES-CHIP	10K	5%	1/10W	
Q1103	8-729-602-21	TRANSISTOR	2SC4154TP-1EF				R1113	1-216-073-00	RES-CHIP	10K	5%	1/10W	
Q2001	8-729-602-36	TRANSISTOR	2SA1602TP-1EF				R1114	1-216-033-00	METAL CHIP	220	5%	1/10W	
Q2002	8-729-015-76	TRANSISTOR	UN5211-TX				R1115	1-216-295-00	SHORT	0			
							R1119	1-216-073-00	RES-CHIP	10K	5%	1/10W	
< RESISTOR >													
							R1120	1-216-073-00	RES-CHIP	10K	5%	1/10W	
R1001	1-216-066-00	METAL CHIP	5.1K	5%	1/10W		R1121	1-216-073-00	RES-CHIP	10K	5%	1/10W	
R1002	1-216-066-00	METAL CHIP	5.1K	5%	1/10W		R1122	1-216-073-00	RES-CHIP	10K	5%	1/10W	
R1005	1-216-025-11	RES-CHIP	100	5%	1/10W		R1123	1-216-073-00	RES-CHIP	10K	5%	1/10W	
R1006	1-216-025-11	RES-CHIP	100	5%	1/10W		R1126	1-216-073-00	RES-CHIP	10K	5%	1/10W	
R1007	1-216-025-11	RES-CHIP	100	5%	1/10W								
							R1128	1-216-073-00	RES-CHIP	10K	5%	1/10W	
R1011	1-216-073-00	RES-CHIP	10K	5%	1/10W		R1129	1-216-073-00	RES-CHIP	10K	5%	1/10W	
R1012	1-216-073-00	RES-CHIP	10K	5%	1/10W		R1130	1-216-073-00	RES-CHIP	10K	5%	1/10W	
R1013	1-216-073-00	RES-CHIP	10K	5%	1/10W		R1131	1-216-073-00	RES-CHIP	10K	5%	1/10W	
R1014	1-216-073-00	RES-CHIP	10K	5%	1/10W		R1132	1-216-073-00	RES-CHIP	10K	5%	1/10W	
R1015	1-216-073-00	RES-CHIP	10K	5%	1/10W								
							R1133	1-216-033-00	METAL CHIP	220	5%	1/10W	
R1016	1-216-073-00	RES-CHIP	10K	5%	1/10W		R1134	1-216-041-00	METAL CHIP	470	5%	1/10W	
R1017	1-216-073-00	RES-CHIP	10K	5%	1/10W		R1138	1-216-073-00	RES-CHIP	10K	5%	1/10W	
R1018	1-216-073-00	RES-CHIP	10K	5%	1/10W		R1140	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R1021	1-216-025-11	RES-CHIP	100	5%	1/10W		R2002	1-216-296-11	SHORT	0			
R1024	1-216-025-11	RES-CHIP	100	5%	1/10W								
							R2003	1-216-296-11	SHORT	0			
R1029	1-216-049-11	RES-CHIP	1K	5%	1/10W		R2005	1-216-295-00	SHORT	0			
R1030	1-216-061-00	RES-CHIP	3.3K	5%	1/10W		R2006	1-216-025-11	RES-CHIP	100	5%	1/10W	
R1033	1-216-055-00	METAL CHIP	1.8K	5%	1/10W		R2007	1-216-097-11	RES-CHIP	100K	5%	1/10W	
R1034	1-216-057-00	METAL CHIP	2.2K	5%	1/10W		R2008	1-216-025-11	RES-CHIP	100	5%	1/10W	
R1035	1-216-073-00	RES-CHIP	10K	5%	1/10W								
							R2009	1-216-089-00	RES-CHIP	47K	5%	1/10W	
R1036	1-216-295-00	SHORT	0				< VIBRATOR >						
R1057	1-216-065-00	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		X1001	1-579-175-11	VIBRATOR, CERAMIC 10MHz				
R1060	1-216-025-11	RES-CHIP	100	5%	1/10W		X1101	1-781-107-21	VIBRATOR, SERAMIC 16MHz				

R1071	1-216-073-00	RES-CHIP	10K	5%	1/10W		A-4476-550-A PANEL BOARD, COMPLETE *****						
R1072	1-216-073-00	RES-CHIP	10K	5%	1/10W								
R1073	1-216-073-00	RES-CHIP	10K	5%	1/10W								
R1076	1-216-073-00	RES-CHIP	10K	5%	1/10W		< CAPACITOR >						
R1078	1-216-025-11	RES-CHIP	100	5%	1/10W								
R1080	1-216-041-00	METAL CHIP	470	5%	1/10W		C603	1-163-021-11	CERAMIC CHIP	0.01uF	10%	50V	
R1082	1-216-073-00	RES-CHIP	10K	5%	1/10W		C604	1-163-021-11	CERAMIC CHIP	0.01uF	10%	50V	
R1085	1-216-073-00	RES-CHIP	10K	5%	1/10W		C605	1-163-021-11	CERAMIC CHIP	0.01uF	10%	50V	
R1087	1-216-065-00	RES-CHIP	4.7K	5%	1/10W		C607	1-124-589-11	ELECT	47uF	20%	16V	
R1088	1-216-069-00	METAL CHIP	6.8K	5%	1/10W		C608	1-124-261-00	ELECT	10uF	20%	50V	
< CONNECTOR >													
R1090	1-216-041-00	METAL CHIP	470	5%	1/10W		* CN600 1-779-546-11 CONNECTOR, FFC(LIF(NON-ZIF))9P CN601 1-568-865-11 SOCKET, CONNECTOR 23P						
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								

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PANEL

POWER

Ref. No.	Part No.	Description	Remarks
< DIODE >			
D601	8-719-058-04	DIODE SEL5223S-TP15 (I/⏏)	
D602	8-719-058-03	DIODE SEL5423E-TP15 (CD ►►►) (GREEN:FOR CD PLAY)	
D603	8-719-057-97	DIODE SEL5923A-TP15 (CD ►►►) (AMBER:FOR CD PAUSE)	
D604	8-719-058-03	DIODE SEL5423E-TP15 (►►► MD) (GREEN:FOR MD PLAY)	
D605	8-719-057-97	DIODE SEL5923A-TP15 (►►► MD) (AMBER:FOR MD PAUSE)	
D606	8-719-058-04	DIODE SEL5223S-TP15 (REC)	
D610	8-719-988-61	DIODE 1SS355TE-17	
D611	8-719-988-61	DIODE 1SS355TE-17	
D615	8-719-988-61	DIODE 1SS355TE-17	
D616	8-719-988-61	DIODE 1SS355TE-17	
< IC >			
IC602	8-759-339-53	IC GP1U28XB (■)	
< TRANSISTOR >			
Q601	8-729-424-08	TRANSISTOR UN2111-TX	
Q602	8-729-421-22	TRANSISTOR UN2211-TX	
Q603	8-729-120-28	TRANSISTOR 2SC3052EF-T1-LEF	
Q604	8-729-421-22	TRANSISTOR UN2211-TX	
Q605	8-729-421-22	TRANSISTOR UN2211-TX	
Q606	8-729-421-22	TRANSISTOR UN2211-TX	
Q608	8-729-421-22	TRANSISTOR UN2211-TX	
Q609	8-729-421-22	TRANSISTOR UN2211-TX	
Q610	8-729-421-22	TRANSISTOR UN2211-TX	
< RESISTOR >			
R602	1-216-025-11	RES-CHIP 100 5% 1/10W	
R603	1-216-025-11	RES-CHIP 100 5% 1/10W	
R604	1-216-025-11	RES-CHIP 100 5% 1/10W	
R605	1-216-025-11	RES-CHIP 100 5% 1/10W	
R606	1-216-025-11	RES-CHIP 100 5% 1/10W	
R608	1-216-037-00	METAL CHIP 330 5% 1/10W	
R609	1-216-037-00	METAL CHIP 330 5% 1/10W	
R610	1-216-037-00	METAL CHIP 330 5% 1/10W	
R611	1-216-037-00	METAL CHIP 330 5% 1/10W	
R612	1-216-049-11	RES-CHIP 1K 5% 1/10W	
R613	1-216-049-11	RES-CHIP 1K 5% 1/10W	
R614	1-216-033-00	METAL CHIP 220 5% 1/10W	
R615	1-216-049-11	RES-CHIP 1K 5% 1/10W	
R616	1-216-049-11	RES-CHIP 1K 5% 1/10W	
R618	1-216-049-11	RES-CHIP 1K 5% 1/10W	
R621	1-216-041-00	METAL CHIP 470 5% 1/10W	
R622	1-216-065-00	RES-CHIP 4.7K 5% 1/10W	
R623	1-216-065-00	RES-CHIP 4.7K 5% 1/10W	
R624	1-216-017-00	RES-CHIP 47 5% 1/10W	
R625	1-216-295-00	SHORT 0	
R640	1-216-041-00	METAL CHIP 470 5% 1/10W	
R641	1-216-045-00	METAL CHIP 680 5% 1/10W	
R642	1-216-049-11	RES-CHIP 1K 5% 1/10W	
R643	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R644	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	

Ref. No.	Part No.	Description			Remarks
R645	1-216-001-00	METAL CHIP	10	5%	1/10W
R654	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R661	1-216-041-00	METAL CHIP	470	5%	1/10W
R662	1-216-045-00	METAL CHIP	680	5%	1/10W
R663	1-216-049-11	RES-CHIP	1K	5%	1/10W
< SWITCH >					
S601	1-762-875-21	SWITCH, KEYBOARD (I/⏏)			
S602	1-762-875-21	SWITCH, KEYBOARD (■ (CD))			
S603	1-762-875-21	SWITCH, KEYBOARD (CD ►►►)			
S604	1-762-875-21	SWITCH, KEYBOARD ((CD) ►►►►►I,TUNING+)			
S621	1-762-875-21	SWITCH, KEYBOARD ((CD) ◀◀◀◀◀,TUNING-)			
S631	1-762-875-21	SWITCH, KEYBOARD (▲ (MD))			
S632	1-762-875-21	SWITCH, KEYBOARD (■ (MD))			
S633	1-762-875-21	SWITCH, KEYBOARD ((MD) ◀◀◀◀◀)			
S634	1-762-875-21	SWITCH, KEYBOARD (►►► MD)			
S635	1-762-875-21	SWITCH, KEYBOARD ((MD) ►►►►►I)			
S636	1-762-875-21	SWITCH, KEYBOARD (▲ (CD))			
S637	1-762-875-21	SWITCH, KEYBOARD (TUNER/BAND)			

A-4476-565-A		POWER BOARD, COMPLETE (AEP,UK)			

A-4476-569-A		POWER BOARD, COMPLETE (MY,SP,HK,AUS)			

4-230-423-01		SHEET, INSULATING			
< CAPACITOR >					
C901	1-164-159-11	CERAMIC	0.1uF		50V
C902	1-126-767-11	ELECT	1000uF	20%	16V
C919	1-126-964-11	ELECT	10uF	20%	50V
C920	1-126-926-11	ELECT	1000uF	20%	10V
C922	1-126-935-11	ELECT	470uF	20%	10V
C923	1-126-933-11	ELECT	100uF	20%	16V
C971	1-136-165-00	FILM	0.1uF	5%	50V
C972	1-126-936-11	ELECT	3300uF	20%	16V
C981	1-136-165-00	FILM	0.1uF	5%	50V
C982	1-135-933-11	ELECT	22000uF	20%	16V
C983	1-136-165-00	FILM	0.1uF	5%	50V
C984	1-128-548-11	ELECT	4700uF	20%	25V
△ C991	1-113-925-11	CERAMIC	0.01uF	20%	250V
C992	1-126-961-11	ELECT	2.2uF	20%	50V
△ C993	1-113-925-11	CERAMIC	0.01uF	20%	250V
< CONNECTOR >					
CN991	1-564-321-00	PIN, CONNECTOR 2P			
* CN992	1-564-321-21	PIN, CONNECTOR 2P			
* CN993	1-564-519-11	PLUG, CONNECTOR 4P			
* CN994	1-770-730-11	CONNECTOR, BOARD TO BOARD 11P			
< DIODE >					
D921	8-719-200-82	DIODE 11ES2-TA1B			
D971	8-719-200-82	DIODE 11ES2-TA1B			
D972	8-719-200-82	DIODE 11ES2-TA1B			
D973	8-719-200-82	DIODE 11ES2-TA1B			
D974	8-719-200-82	DIODE 11ES2-TA1B			

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

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

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VOL

Ref. No.	Part No.	Description	Remarks
	1-681-555-11	VOL BOARD *****	
		< RESISTOR >	
R664	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R665	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
		< SWITCH >	
S605	1-762-875-21	SWITCH, KEYBOARD (VOLUME-)	
S606	1-762-875-21	SWITCH, KEYBOARD (VOLUME+)	

		MISCELLANEOUS *****	
60	1-823-118-11	WIRE (FLAT TYPE) (23 CORE)	
101	1-757-124-11	WIRE (FLAT TYPE) (21 CORE)	
102	1-773-006-11	WIRE (FLAT TYPE) (15 CORE)(AEP,UK)	
102	1-773-314-11	WIRE (FLAT TYPE) (31 CORE)	
107	1-792-830-11	WIRE (FLAT TYPE) (17 CORE)	
108	1-792-829-11	WIRE (FLAT TYPE) (27 CORE)	
△ 154	1-696-847-11	CORD, POWER (AUS)	
△ 154	1-777-071-21	CORD, POWER (MY,SP,HK,AUS)	
156	1-769-942-11	WIRE (FLAT TYPE) (11 CORE) (MY,SP,HK,AUS)	
157	1-693-529-11	TUNER PACK (FM/AM)(AEP,UK)	
157	1-693-531-11	TUNER PACK (FM/AM)(MY,SP,HK,AUS)	
* 161	1-569-972-21	SOCKET, SHORT 2P	
△ 163	1-569-008-21	ADAPTOR, CONVERSION 2P (MY,SP)	
△ 163	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (UK,HK)	
357	1-678-514-11	FLEXIBLE BOARD	
△ 358	A-4672-976-A	OPTICAL PICK-UP (KMS-262E/K1NP1)	
HR901	1-500-670-11	HEAD, OVER WRITE	
LCD601	1-804-371-11	INDICATOR TUBE, LIQUID CRYSTAL	
M101	A-4735-029-A	MOTOR ASSY, SPINDLE	
M102	A-4735-076-A	MOTOR ASSY, SLED	
M103	A-4735-074-A	MOTOR ASSY, LOADING	
M201	A-4672-771-A	MOTOR (LD) ASSY	
M901	1-763-682-21	FAN, DC	
S102	1-771-957-11	SWITCH, PUSH (2 KEY)	
△ T900	1-437-373-12	TRANSFORMER, POWER	

Ref. No.	Part No.	Description	Remarks
		***** HARDWARE LIST *****	
#1	7-685-647-79	SCREW +BVTP 3X10 TYPE2 TT(B)	
#2	7-685-650-79	SCREW +BTP 3X16 TYPE2 N-S	
#3	7-685-871-01	SCREW +BVTT 3X6 (S)	
#4	7-685-533-19	SCREW +BTP 2.6X6 TYPE2 N-S	
#5	7-685-204-19	SCREW +KTP 2X6 TYPE2 NON-SLIT	
#6	7-685-850-04	SCREW +BVTT 2X3 (S)	

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

MEMO

REVISION HISTORY

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