

# HCD-C5

## SERVICE MANUAL

Ver 1.1 2001.09



AEP Model  
UK Model  
E Model  
Australian Model



HCD-C5 is the Amplifier, CD player, MD Deck and Tuner section in CMT-C5.

CD Section	Model Name Using Similar Mechanism	New
	CD Mechanism Type	TN-CCD1001Z
	Base Unit Name	TT BASE ASSY
	Optical Pick-up Name	OPTIMA-720L1E
MD Section	Model Name Using Similar Mechanism	New
	MD Mechanism Type	MDM-7B4M
	Optical Pick-up Name	KMS-260E/Z-NP

### SPECIFICATIONS

#### Amplifier section

##### European model:

DIN power output (rated): 15 + 15 W  
(6 ohms at 1 kHz, DIN)  
Continuous RMS power output (reference):  
20 + 20 W  
(6 ohms at 1 kHz, 10% THD)  
Music power output (reference):  
45 + 45 W

##### Australian model:

The following measured at 230 V AC, 60 Hz  
DIN power output (rated): 15 + 15 W  
(6 ohms at 1 kHz, DIN)  
Continuous RMS power output (reference):  
20 + 20 W  
(6 ohms at 1 kHz, 10% THD)

##### Other models:

The following measured at 220 V AC, 60 Hz  
DIN power output (rated): 15 + 15 W  
(6 ohms at 1 kHz, DIN)  
Continuous RMS power output (reference):  
20 + 20 W  
(6 ohms at 1 kHz, 10% THD)

##### Inputs

TAPE IN (stereo minijack):  
Sensitivity 250 mV,  
impedance 47 kilohms  
DIGITAL OPTICAL IN (Supported sampling  
frequencies: 32 kHz, 44.1 kHz and 48 kHz)

##### Outputs

TAPE OUT (stereo minijack):  
Sensitivity 250 mV,  
impedance 1 kilohms  
PHONES (stereo minijack):  
Accepts headphones with  
an impedance of 8 ohms  
or more

#### CD player section

System Compact disc and digital  
audio system  
Laser Semiconductor laser  
( $\lambda = 780$  nm)  
Emission  
duration: continuous  
2 Hz – 20 kHz

Frequency response

#### MD deck section

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

Sampling frequency

Frequency response

#### Tuner section

FM stereo, FM/AM superheterodyne tuner

##### FM tuner section

Tuning range 87.5 – 108.0 MHz  
(50-kHz step)  
Antenna FM wire antenna  
Antenna terminals 75 ohm unbalanced  
Intermediate frequency 10.7 MHz

##### AM tuner section

Tuning range  
European model: 531 – 1,602 kHz  
(with the tuning interval  
set at 9 kHz)  
530 – 1,710 kHz  
(with the tuning interval  
set at 10 kHz)  
531 – 1,602 kHz  
(with the tuning interval  
set at 9 kHz)  
Antenna AM loop antenna, external  
antenna terminal  
Intermediate frequency 450 kHz

Other models:

Antenna

Intermediate frequency

#### General

Power requirements  
European model: 230 V AC, 50/60 Hz  
Australian model: 230 V AC, 50/60 Hz  
Other models: 220 V AC, 50/60 Hz

Power consumption

European model: See the nameplate  
0.5 W (at the power  
saving mode)  
Other models: See the nameplate

Other models:

Dimensions (w/h/d) Approx. 145 × 125 ×  
273 mm incl. projecting  
parts and controls

Mass

Approx. 4.5 kg

Supplied accessories

Remote commander (1)  
AM loop antenna (1)  
FM wire antenna (1)

Design and specifications are subject to change  
without notice.

## MICRO HI-FI COMPONENT SYSTEM

9-873-244-02

200111600-1

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Sony Corporation

Home Audio Company

Shinagawa Tec Service Manual Production Group

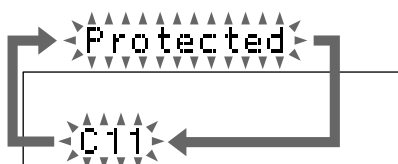
# SONY®

## 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 3 or 5 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 (see page 18).

#### 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 load 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 All Erase Function (see page 29).

#### 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 48). 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 (not supplied, see page 43).

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.

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## SECTION 1 SERVICING NOTE

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

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

The flexible board is easily damaged and should be handled with care.

### FOR CD

#### NOTES ON LASER DIODE EMISSION CHECK

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

### FOR MD

#### NOTES ON LASER DIODE EMISSION CHECK

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

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

CLASS 1 LASER PRODUCT  
LUOKAN 1 LASERLAITE  
KLASS 1 LASERAPPARAT

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

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

This caution label is located inside the unit.

### CAUTION

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

#### Notes on chip component replacement

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

#### Flexible Circuit Board Repairing

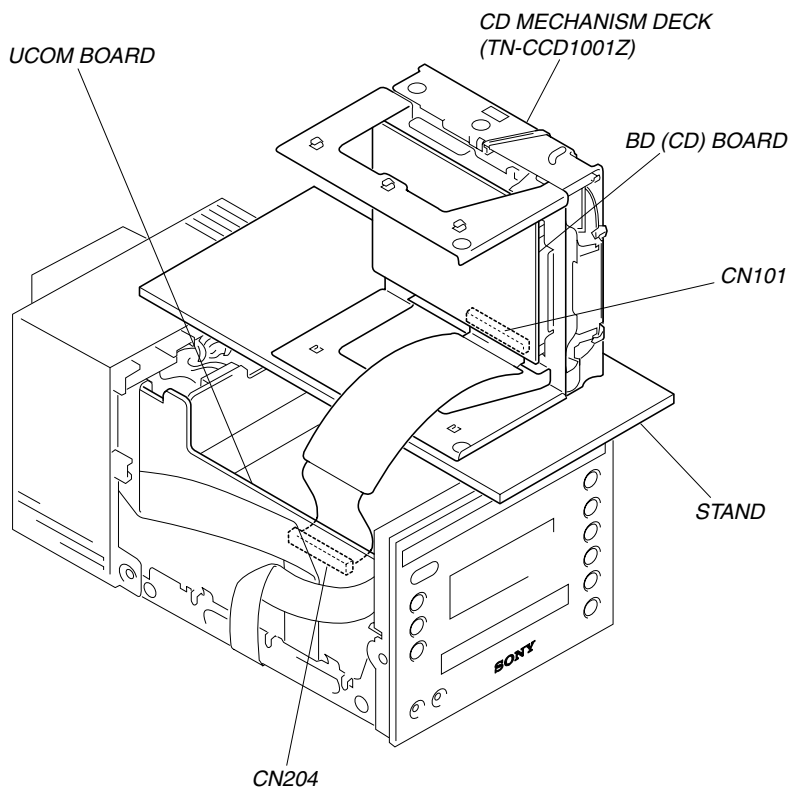
- Keep the temperature of soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

#### SAFETY-RELATED COMPONENT WARNING!!

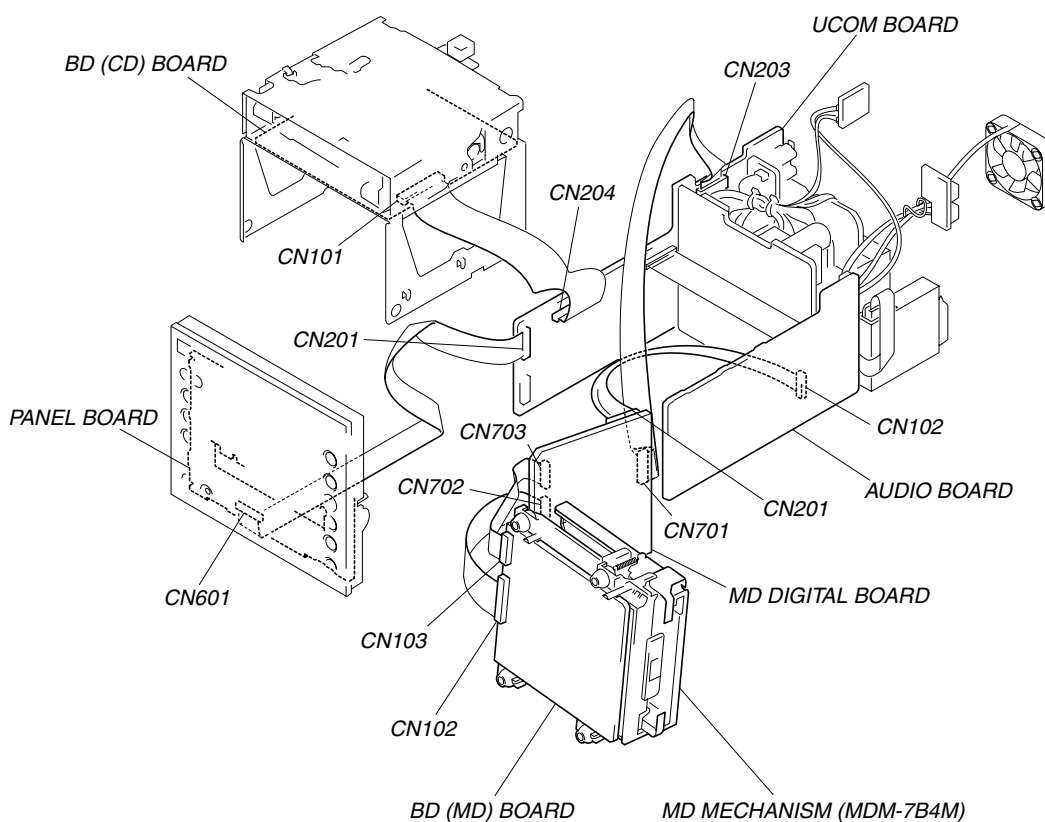
**COMPONENTS IDENTIFIED BY MARK  $\triangle$  OR DOTTED LINE WITH MARK  $\triangle$  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.**



**SERVICE POSITION OF THE CD MECHANISM DECK**



**SERVICE POSITION OF THE MD MECHANISM DECK**



## 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)

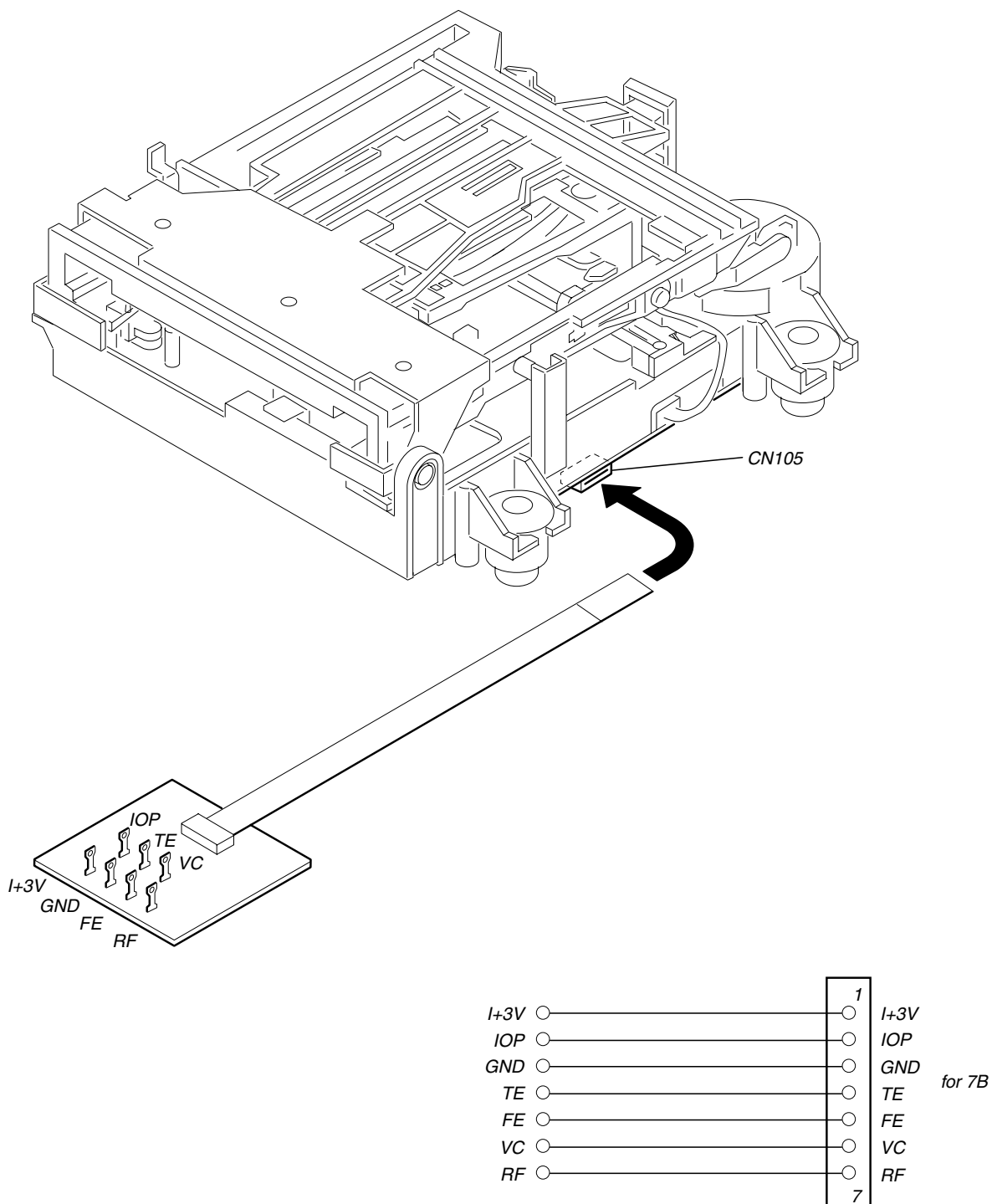
GND : Ground

TE : Tracking error signal (Traverse adjustment)

FE : Focus error signal

VC : Reference level for checking the signal

RF : RF signal (Check jitter)



## SECTION 2 GENERAL

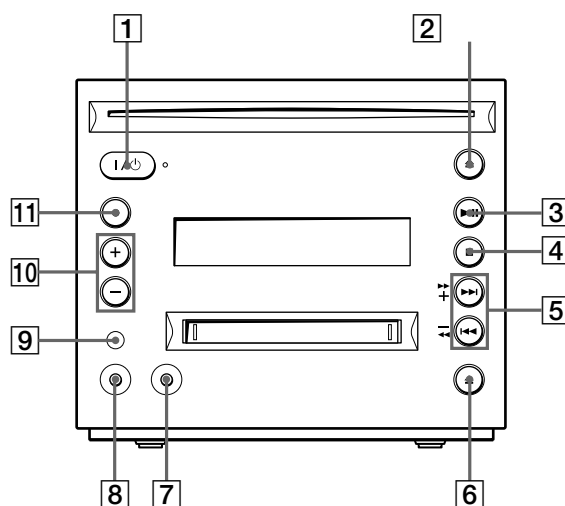
This section is extracted  
from instruction manual.

### Parts Identification

The items are arranged in alphabetical order.

Refer to the pages indicated in parentheses () for details.

### Main unit

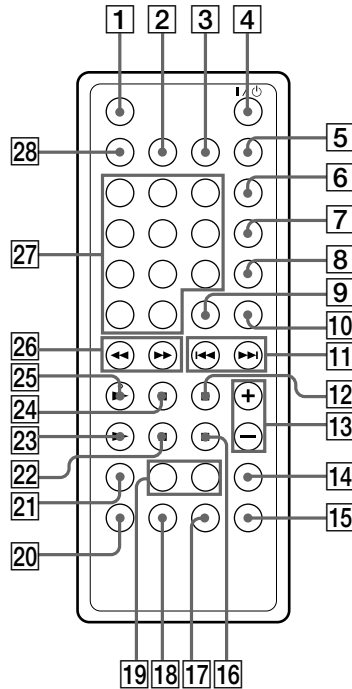


CD SYNC HIGH **7** (19, 51)  
 CD SYNC NORMAL **8** (19)  
 CD **2** (10, 51)  
 FUNCTION **11** (9, 11, 13, 14, 16,  
 21-37, 44)  
 MD **6** (15, 18, 26)  
 REC/REC IT **8** (20, 21, 24, 26,  
 44, 51)  
 Remote sensor **9**  
 TUNING +/- **5** (36, 37)  
 VOL +/- **10** (40)

#### BUTTON DESCRIPTIONS

I/⏻ (power) **1** (7, 18, 26, 27, 37,  
 40, 42)  
 ▶|| **3** (9-11, 14-16, 19, 20, 25,  
 44)  
 ■ **4** (10, 11, 15, 16, 19-21, 26,  
 44)  
 ◀◀▶▶ **5** (10, 11, 13, 15, 16,  
 22-35)  
 ◀◀▶▶ **5** (10, 15, 30, 32)

Remote control



- CD ■ **16** (10)
- CD ■■ **22** (10)
- CD ► **23** (9, 11, 20)
- CLEAR **9** (11, 16, 28, 38)
- CLOCK/TIMER SELECT **6** (41, 42)
- CLOCK/TIMER SET **7** (8, 40, 41)
- CURSOR ←/→ **26** (8, 13, 28)
- DBFB **14** (39)
- DISPLAY **28** (8, 12, 17, 38)
- ENTER/YES **8** (8, 11, 13, 14, 16, 21–36, 38, 40–42)
- FM MODE **17** (37)
- FUNCTION **20** (9, 11, 13, 14, 16, 19, 21–37, 44)
- Letter/Number buttons **27** (10, 13, 15, 16, 27, 28, 37)

- MD ■ **12** (15)
- MD ■■ **24** (15)
- MD ► **25** (14, 16, 19, 20, 25)
- MENU/NO **10** (13, 14, 22–26, 28–36)
- NAME EDIT/SELECT **3** (13, 27, 28, 38)
- PLAY MODE **18** (9, 11, 14, 16, 26, 34, 35)
- PRESET EQ **15** (39)
- REPEAT **17** (10, 15)
- SCROLL **5** (12, 14, 17, 28)
- SLEEP **1** (39)
- TIME **2** (8, 11, 12, 16, 17)
- TUNER BAND **21** (36, 37)
- TUNING MODE **18** (36, 37)
- TUNING +/- **19** (36, 37)
- VOL +/- **13** (40)

**BUTTON DESCRIPTIONS**

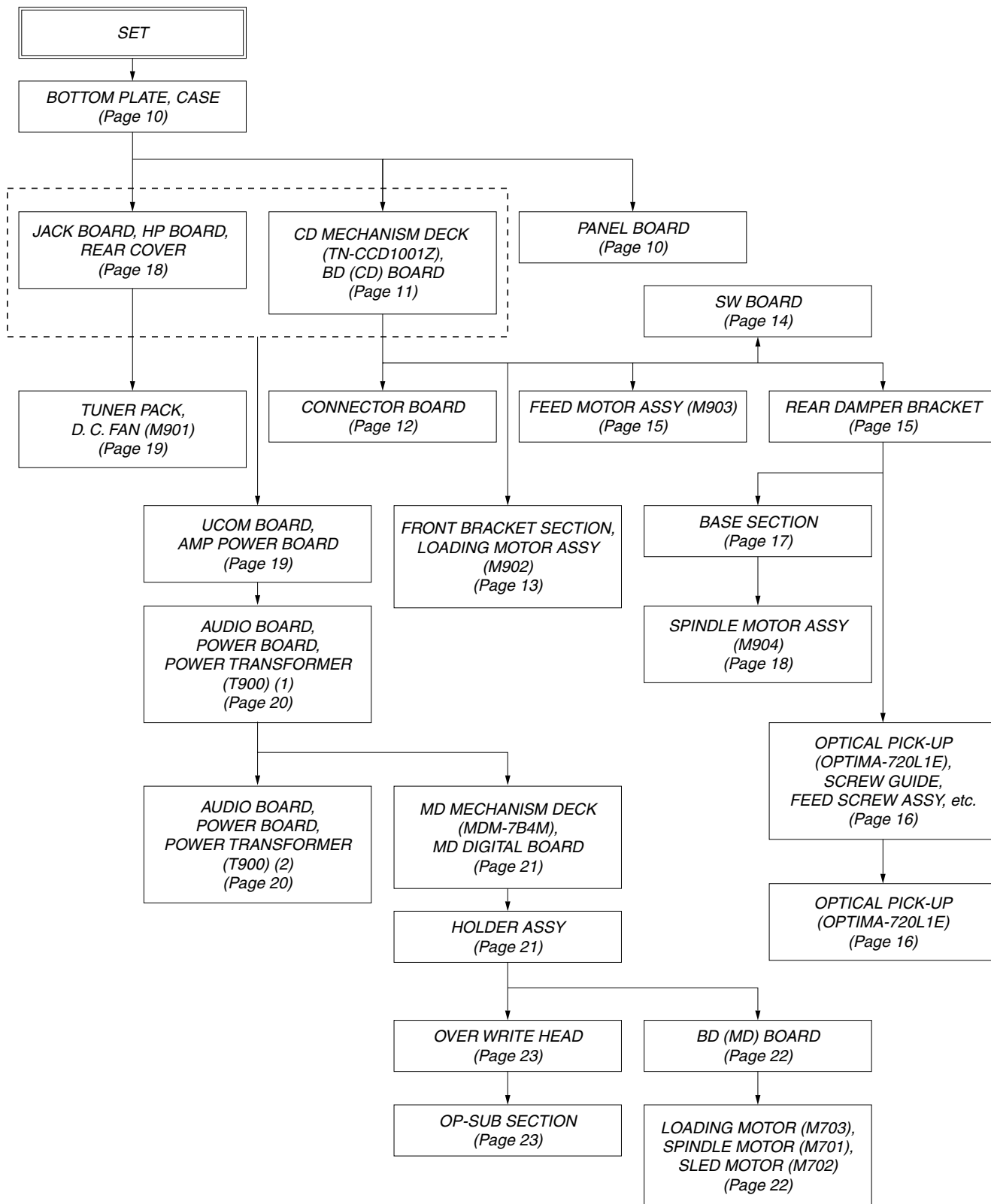
- ⏻ (power) **4** (7, 18, 26, 27, 37, 40, 42)
- ⏪ ⏩ **11** (10, 11, 13–16, 22–35, 40–42)
- /+ **11** (8, 40, 42)
- ⏪ ⏩ **26** (10, 15, 30, 32, 42)

Setting the time

- 1** Turn on the system.
- 2** Press **CLOCK/TIMER SET** on the remote.  
If you are setting the clock for the first time, go to step 5.
- 3** Press - or + (**⏪** or **⏩**) on the remote repeatedly until "CLOCK SET?" appears in the display.
- 4** Press **ENTER/YES** on the remote.  
The day indication flashes.
- 5** Press - or + (**⏪** or **⏩**) on the remote repeatedly to set the day, and then press **ENTER/YES** or **CURSOR→** on the remote.  
The hour indication flashes.
- 6** Press - or + (**⏪** or **⏩**) on the remote to set the hour, and then press **ENTER/YES** or **CURSOR→** on the remote.  
The minute indication flashes.
- 7** Press - or + (**⏪** or **⏩**) on the remote repeatedly to set the minute, and then press **ENTER/YES** on the remote.  
If you made a mistake  
Press ←CURSOR or CURSOR→ on the remote until the indication you wish to change (day, hour, minute) flashes, and then change the setting.  
To reset the time  
Start over from step 1.

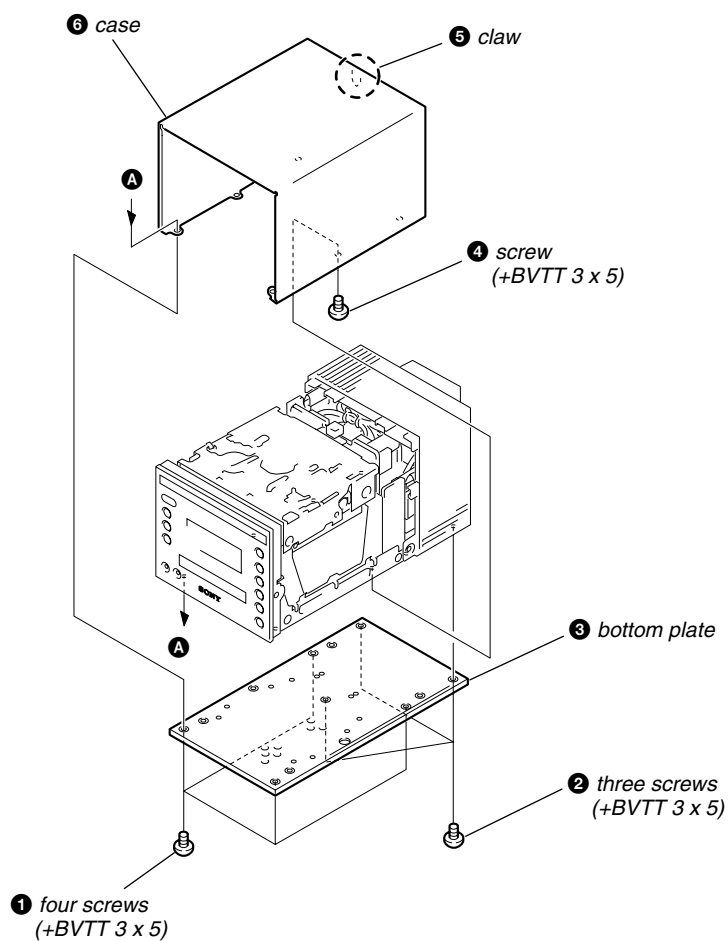
### SECTION 3 DISASSEMBLY

- This set can be disassembled in the order shown below.
- The dotted square with arrow ( [ ] → ) prompts you to move to the next job when all of the works within the dotted square ( [ ] ) are completed.

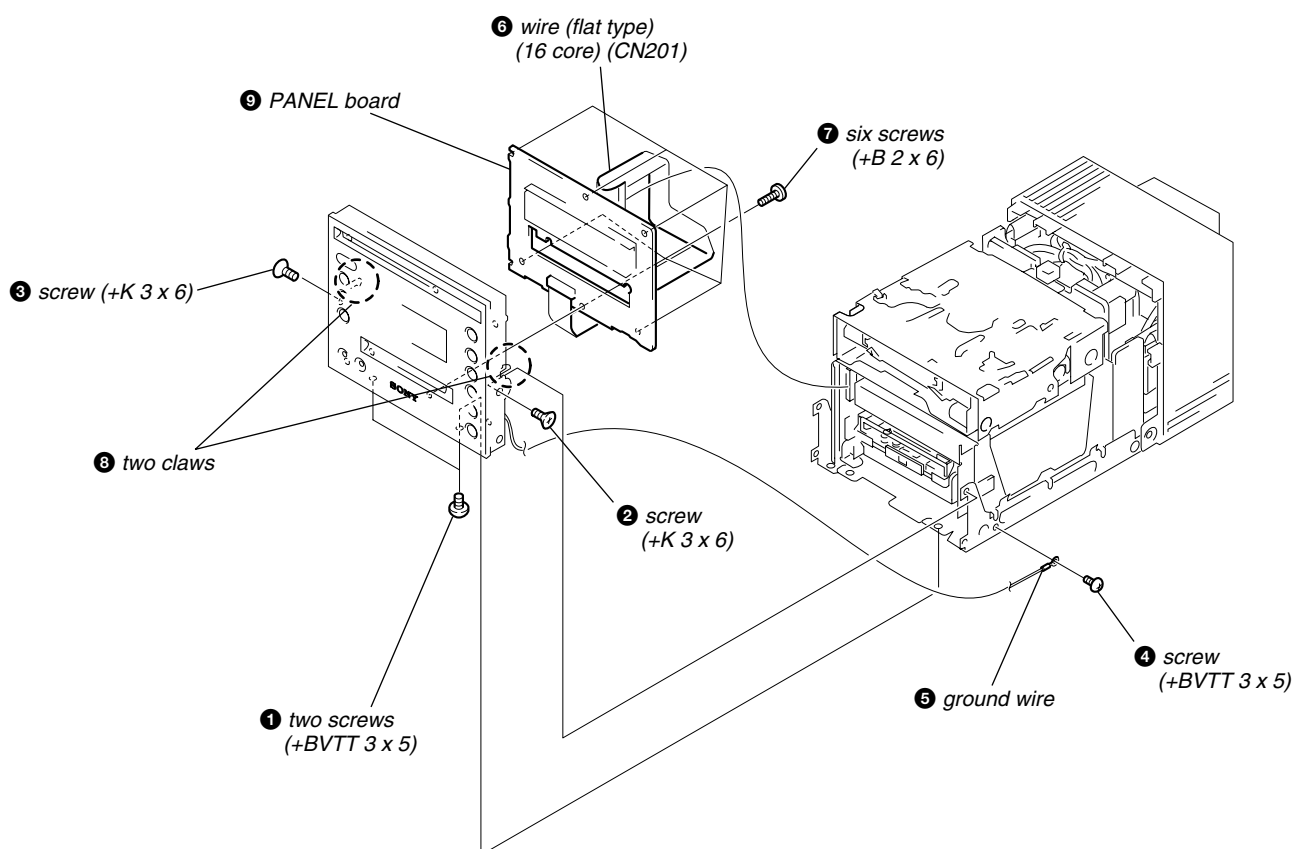


**Note:** Follow the disassembly procedure in the numerical order given.

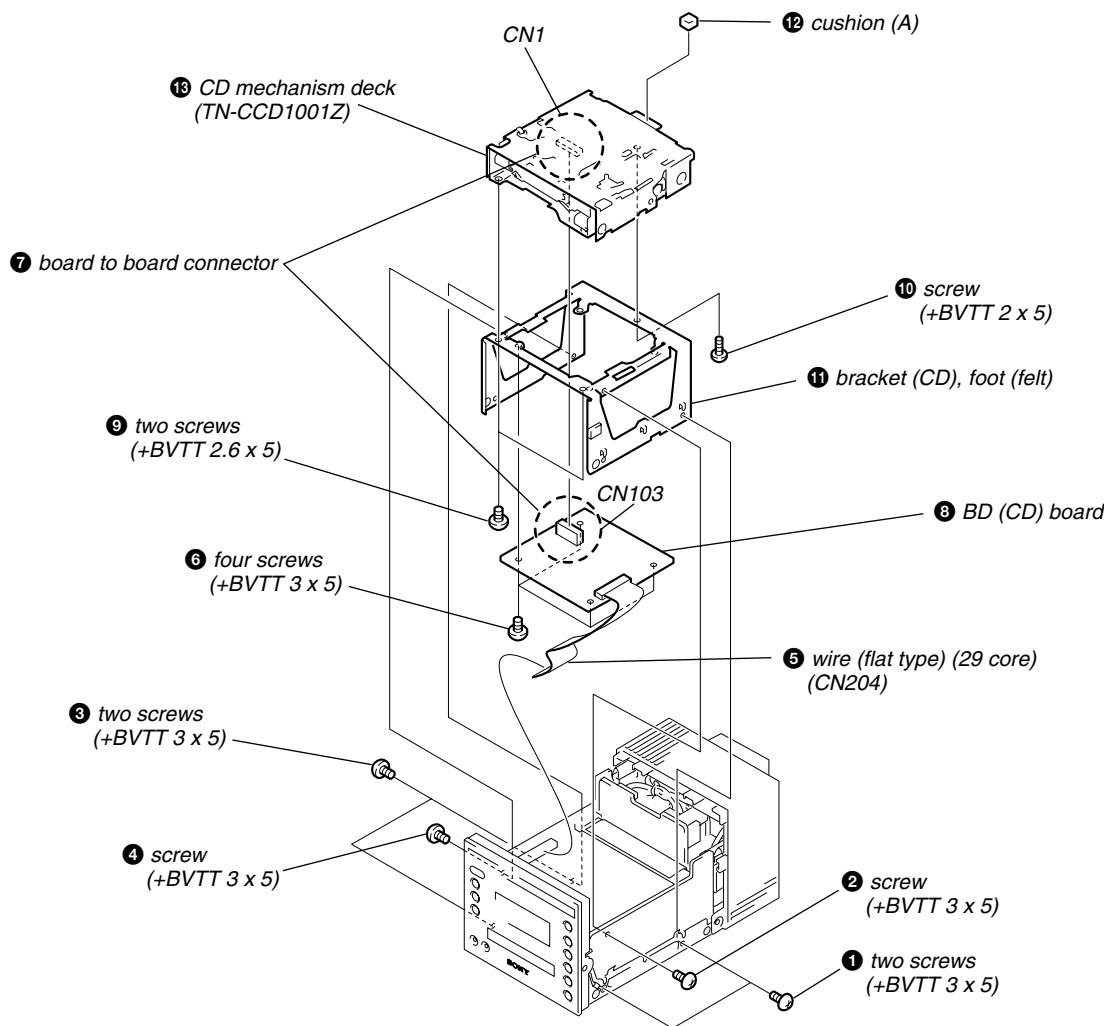
## 3-1. BOTTOM PLATE, CASE



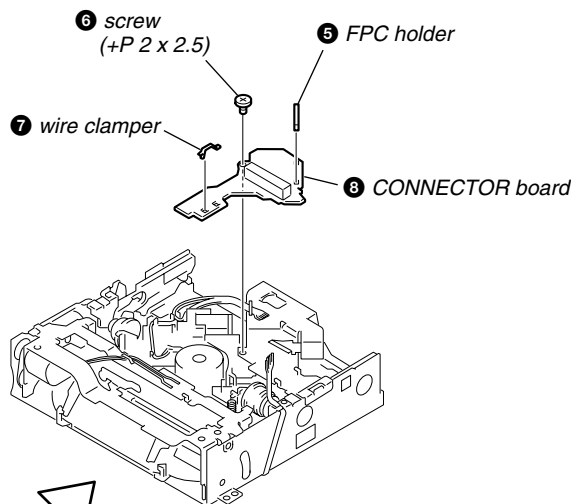
## 3-2. PANEL BOARD



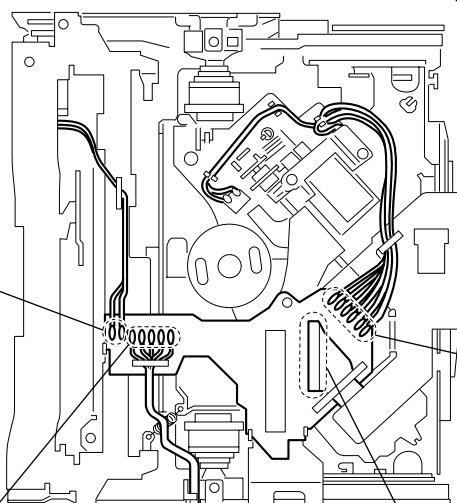
3-3. CD MECHANISM DECK (TN-CCD1001Z), BD (CD) BOARD



## 3-4. CONNECTOR BOARD



1 Remove solderings starting from the left LOADING (+), (-), red and black.



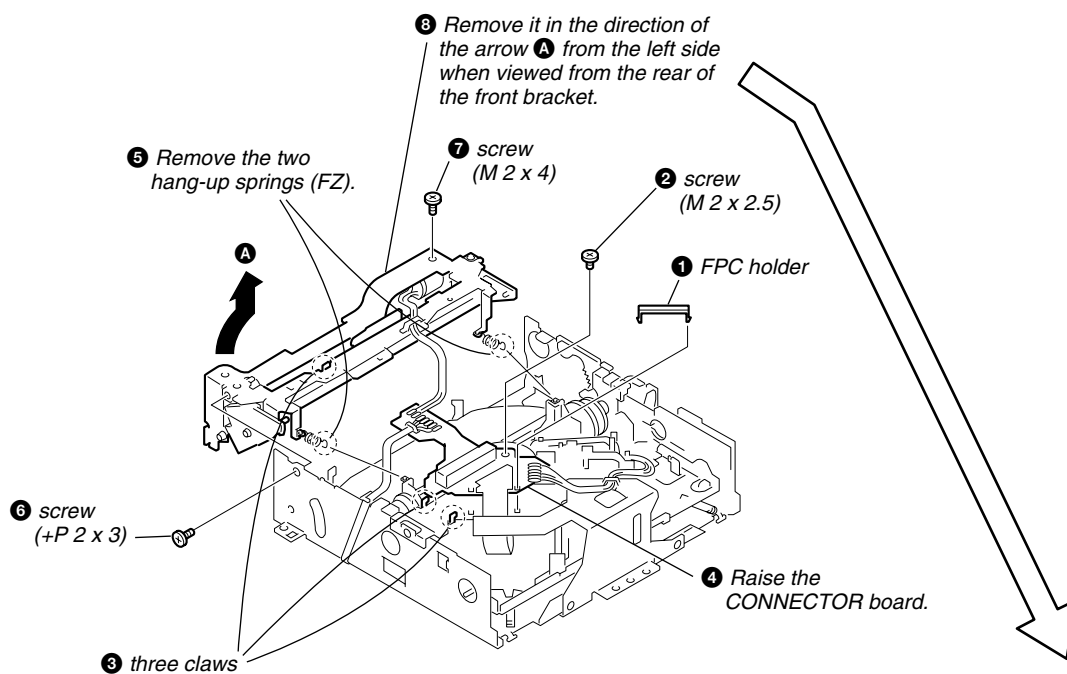
3 Remove solderings starting from the top left SPINDLE (+), (-), FD MOTOR (+), (-) and the LIMIT switch that has no polarity.

2 Remove solderings starting from the left green, yellow, orange, red and brown.

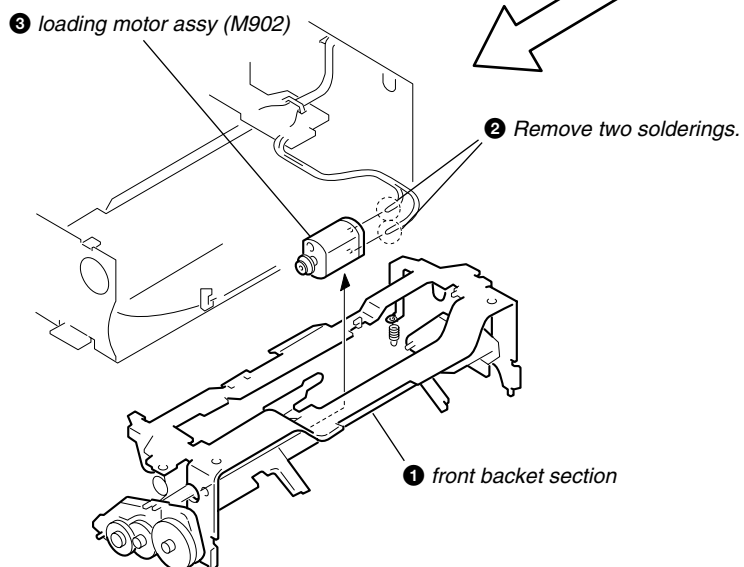
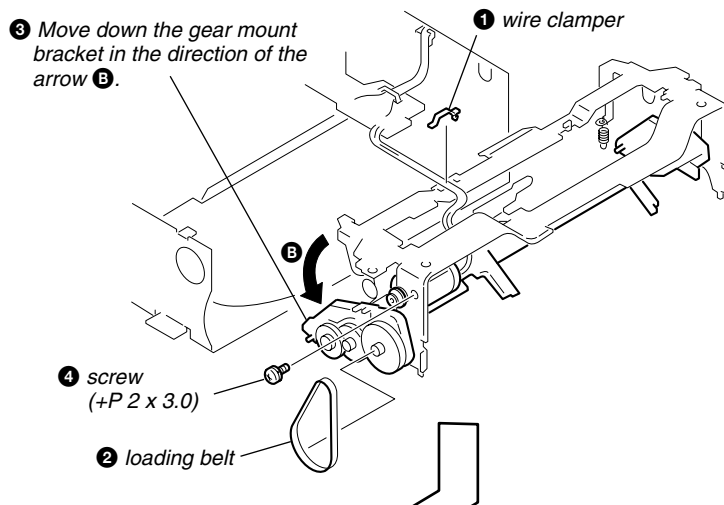
4 Remove the soldering.



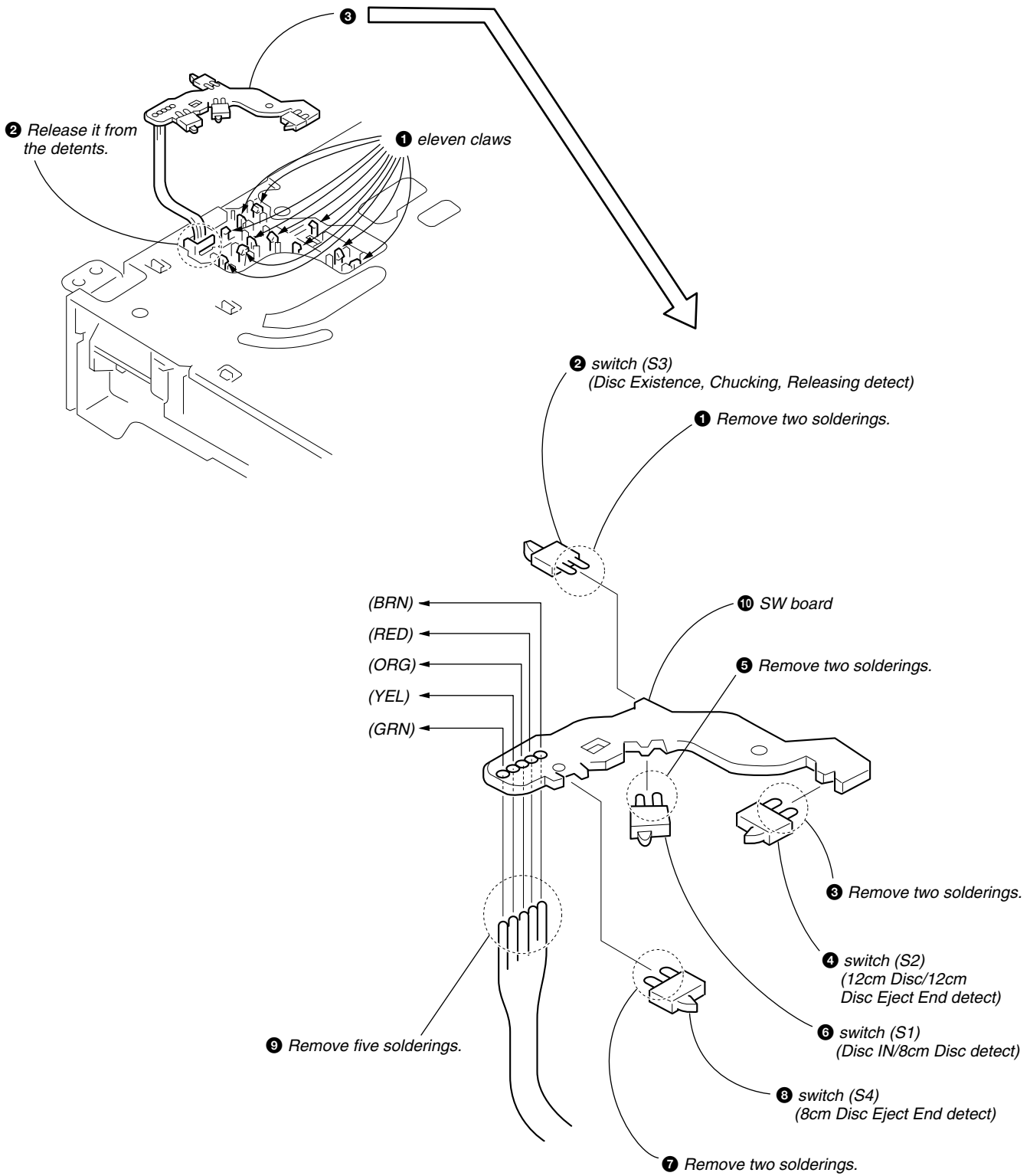
3-5. FRONT BRACKET SECTION, LOADING MOTOR ASSY (M902)



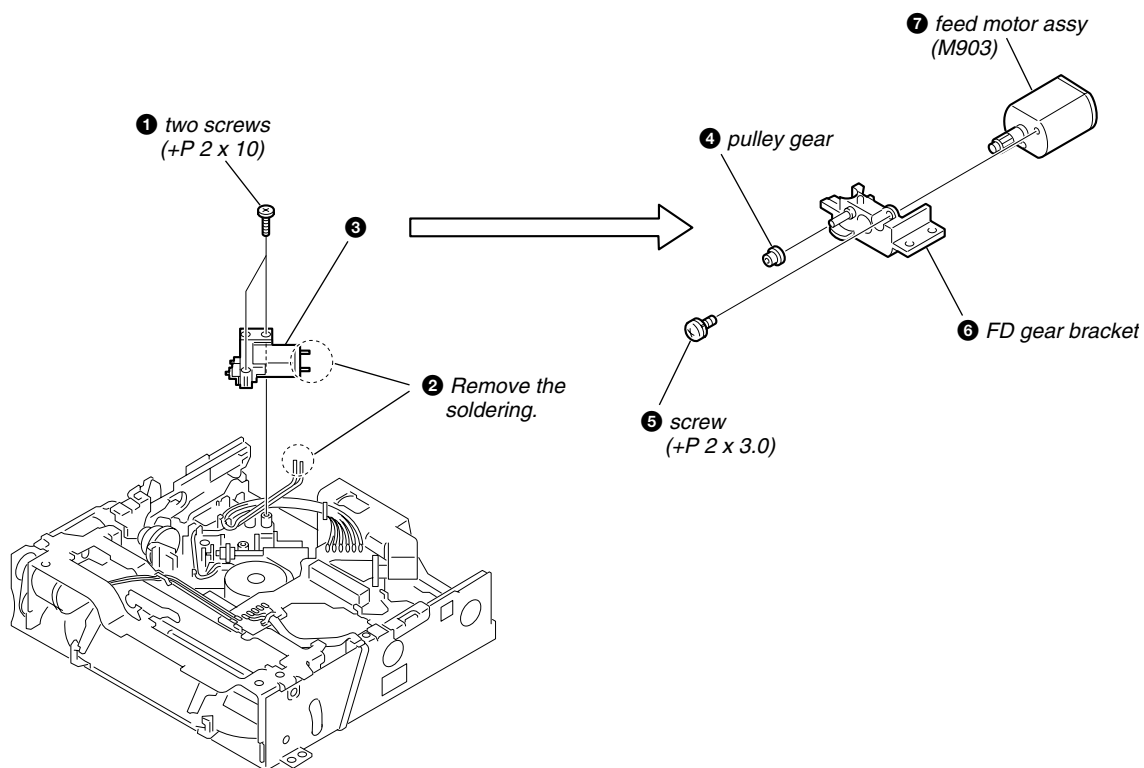
**Note during re-assembling**  
When re-assembling, align the positions as shown.



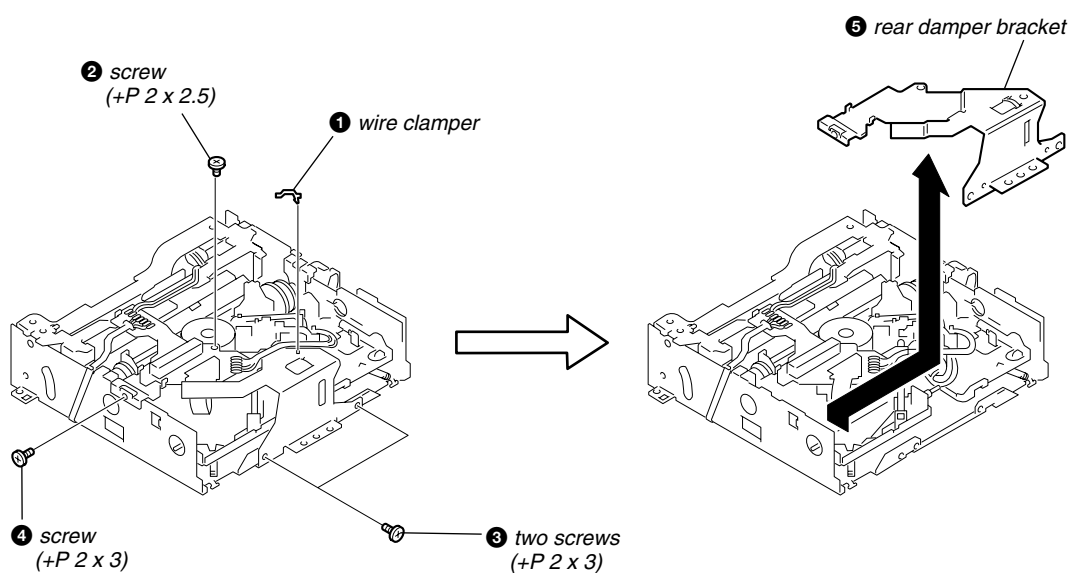
## 3-6. SW BOARD



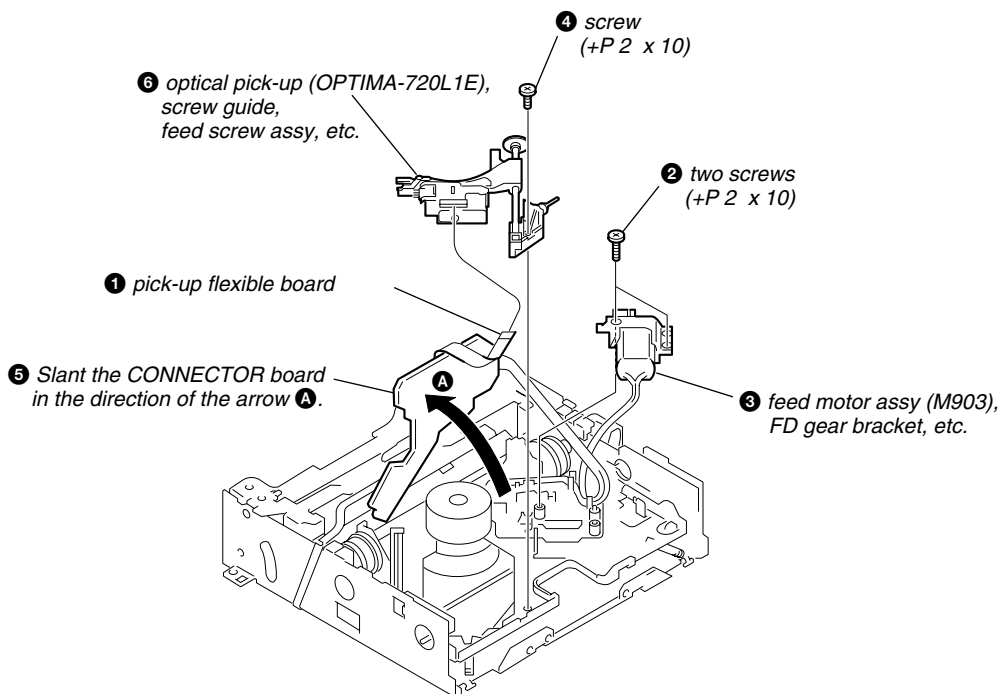
**3-7. FEED MOTOR ASSY (M903)**



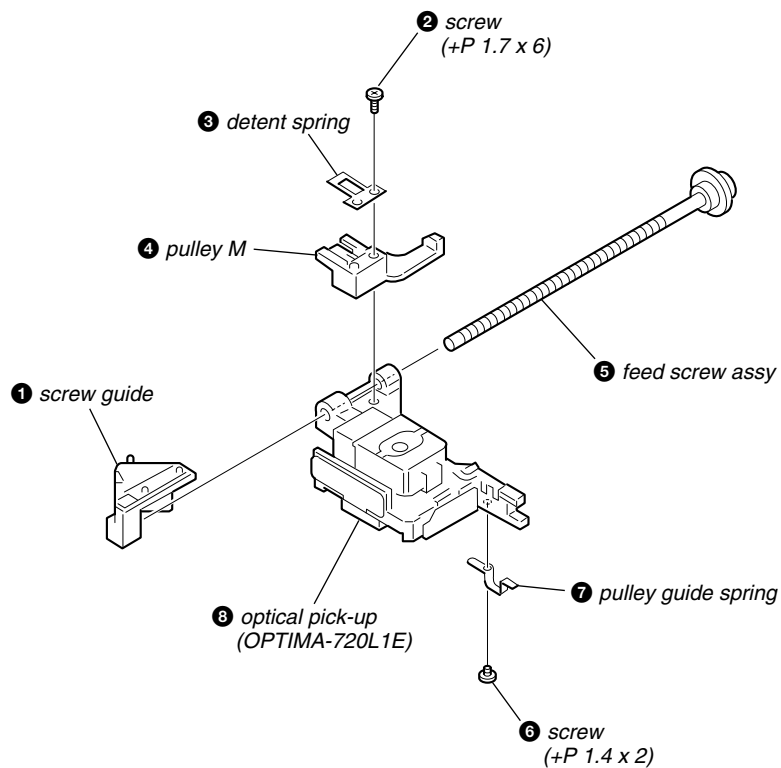
**3-8. REAR DAMPER BRACKET**



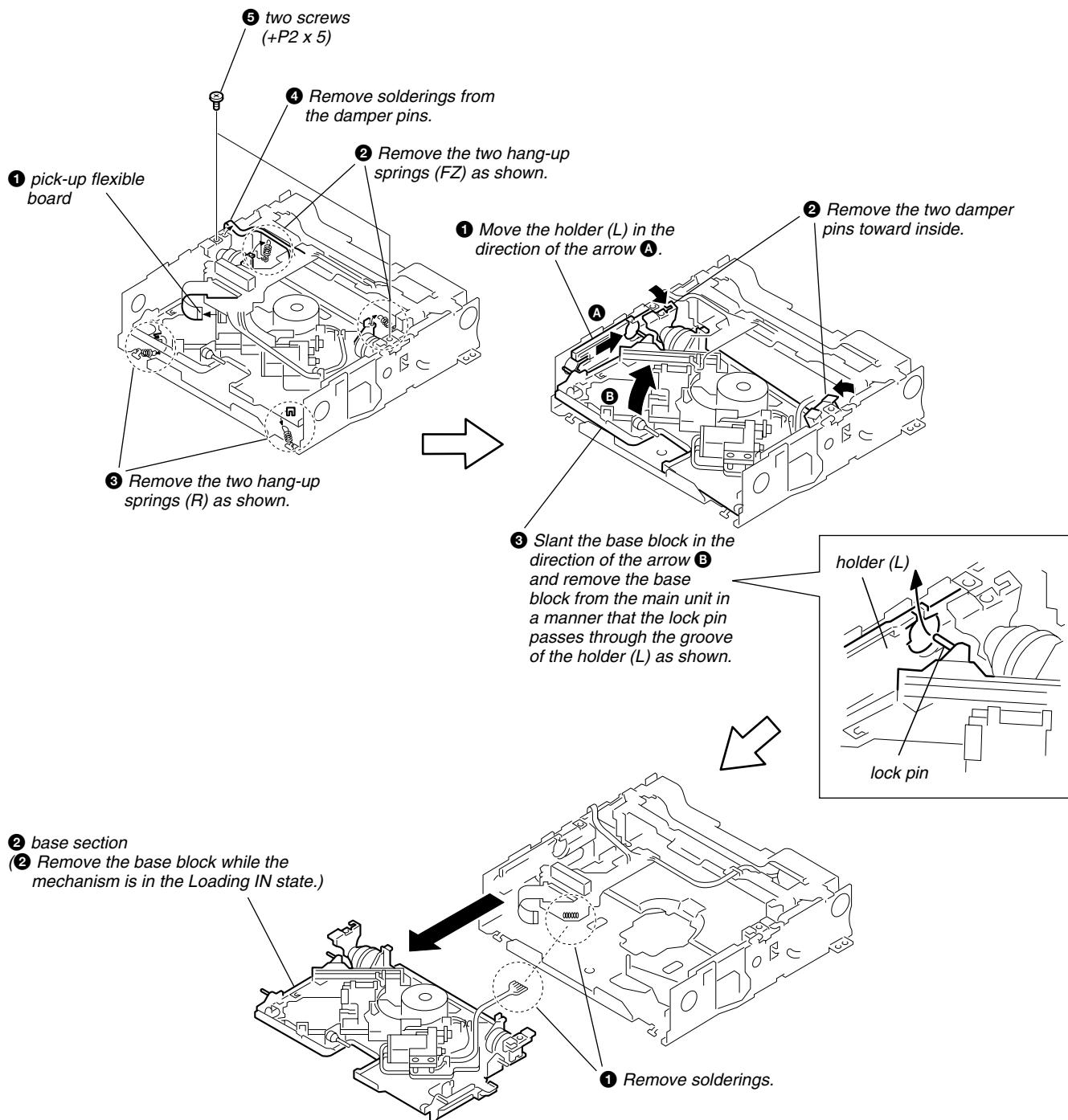
## 3-9. OPTICAL PICK-UP (OPTIMA-720L1E), SCREW GUIDE, FEED SCREW ASSY, etc.



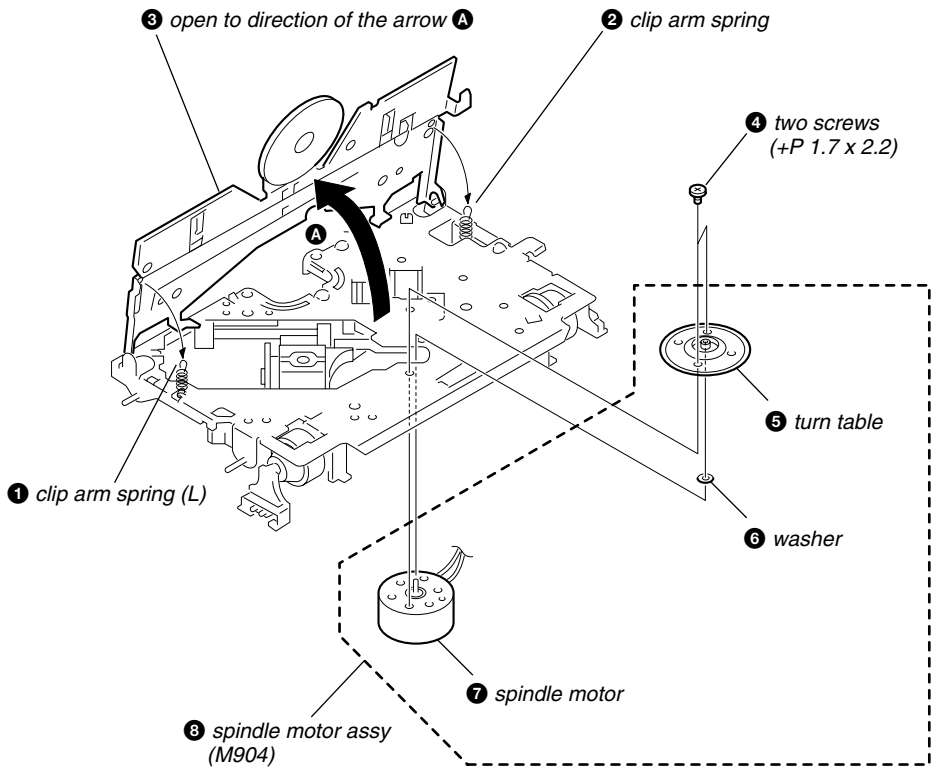
## 3-10. OPTICAL PICK-UP (OPTIMA-720L1E)



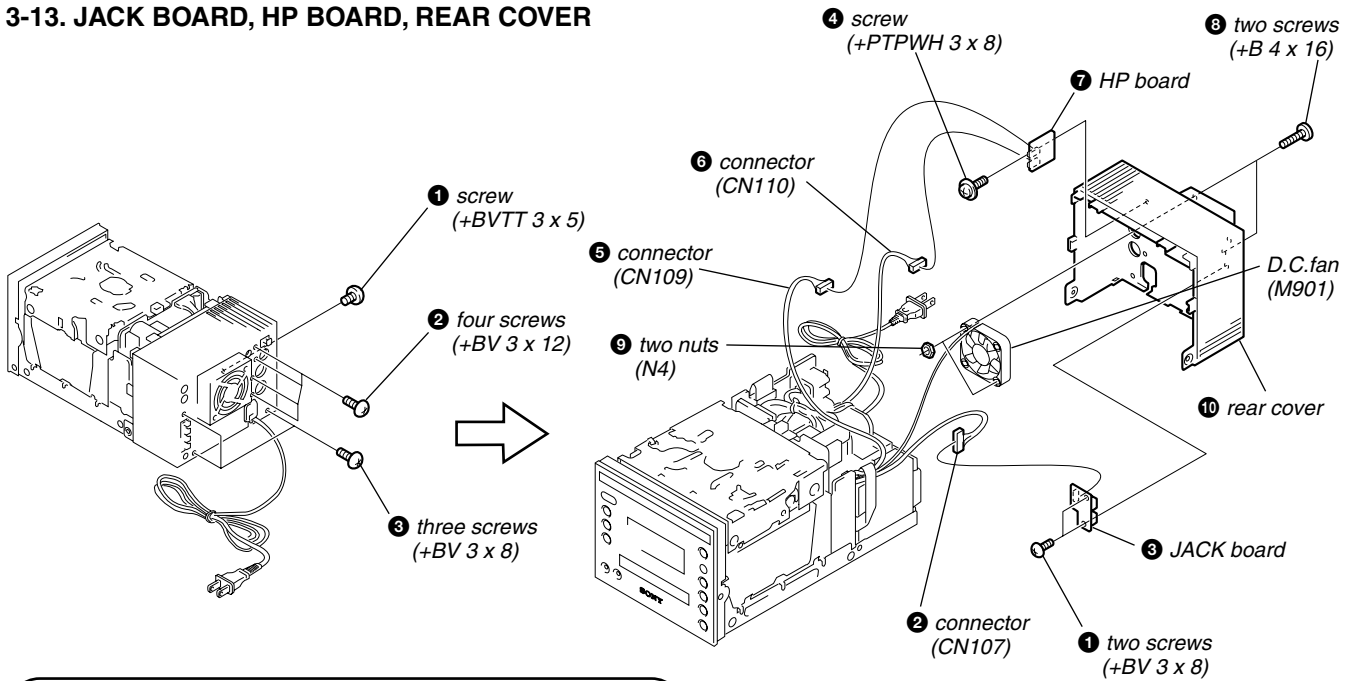
3-11. BASE SECTION



3-12. SPINDLE MOTOR ASSY (M904)

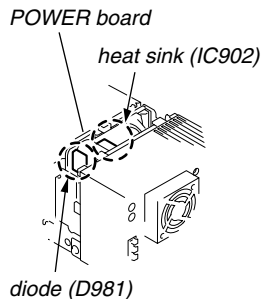


3-13. JACK BOARD, HP BOARD, REAR COVER



Note for re-installation-1

When installing the rear cover, be careful that the three harnesses coming from "2 Connector (CN107)", "5 Connector (CN109)", "6 Connector (CN110)", and the harness coming from the DC fan (M901) must not contact the heat sink (IC902) and the diode (D981) and the heat sink (IC904).



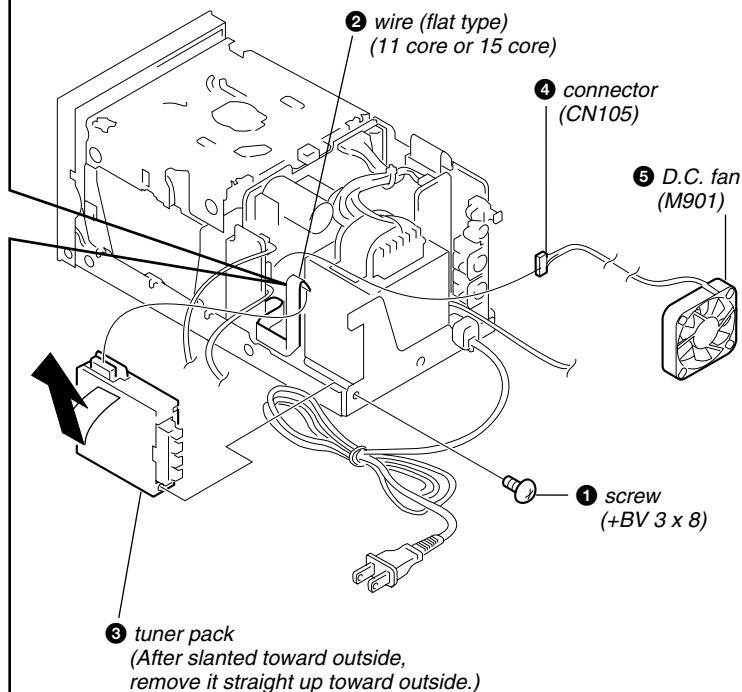
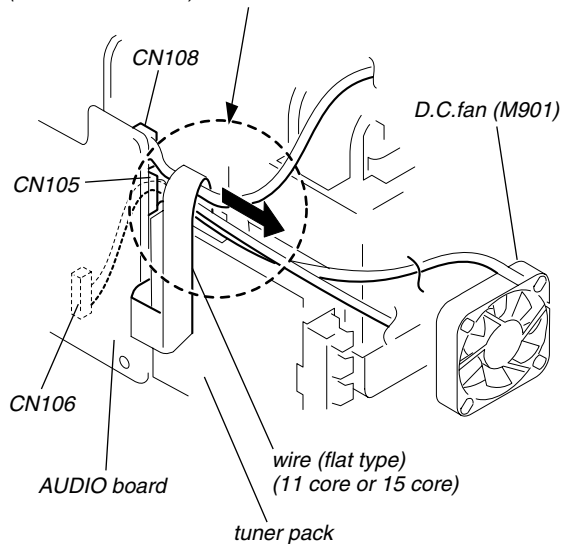
Note for re-installation-2

When installing the rear cover, be careful that the three harnesses coming from "2 Connector (CN107)", "5 Connector (CN109)", "6 Connector (CN110)", and the harness coming from the D.C. fan (M901) must not be pinched by the rear cover, the UCOM board, power transformer (T900) and tuner pack.

### 3-14. TUNER PACK, D. C. FAN (M901)

**Note for re-installation**

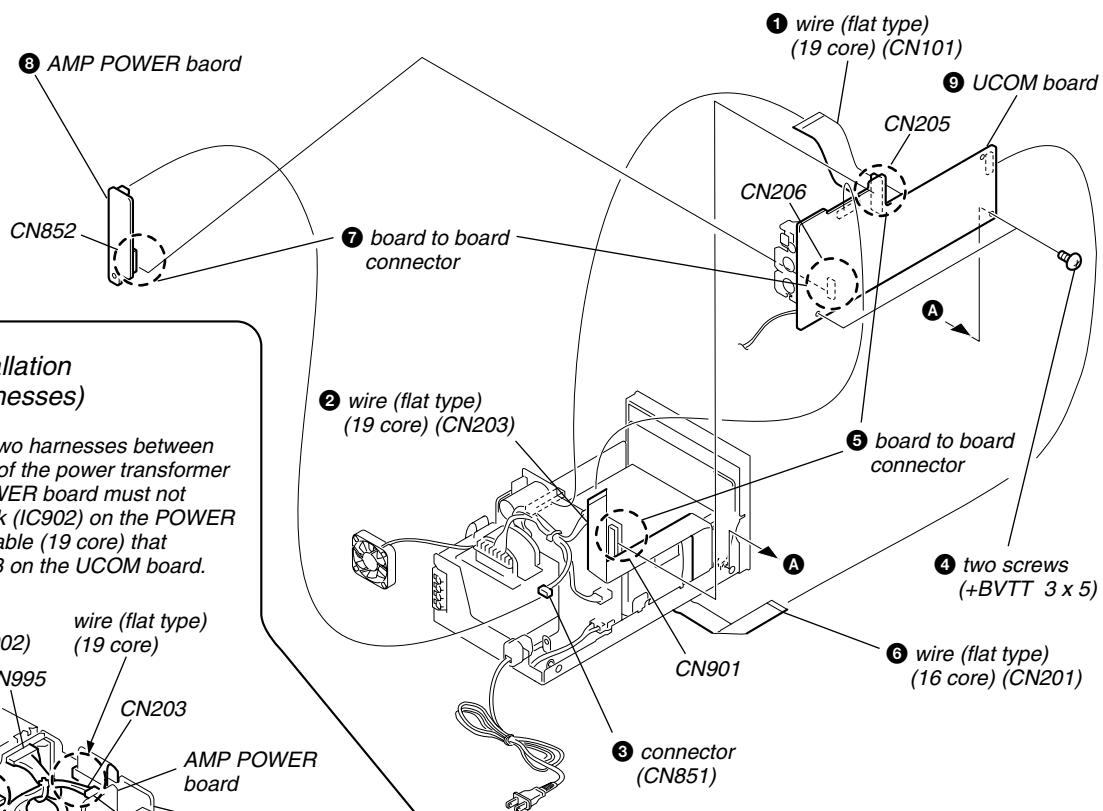
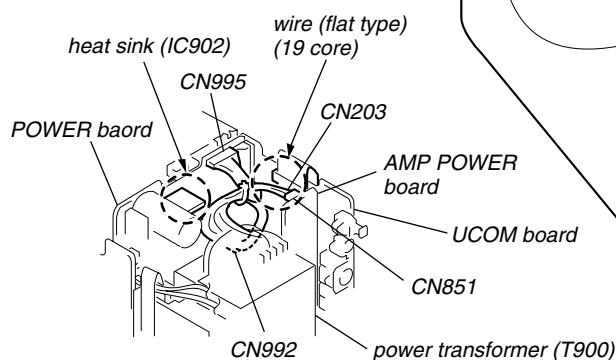
When installing the tuner pack, insert the three harnesses connected to CN105 and connected to CN106 and connected to CN108 of the AUDIO board, in between the flat cable (11 core or 15 core) and the tuner pack in the direction of the arrow so that the flat cable (11 core or 15 core) must be inserted.



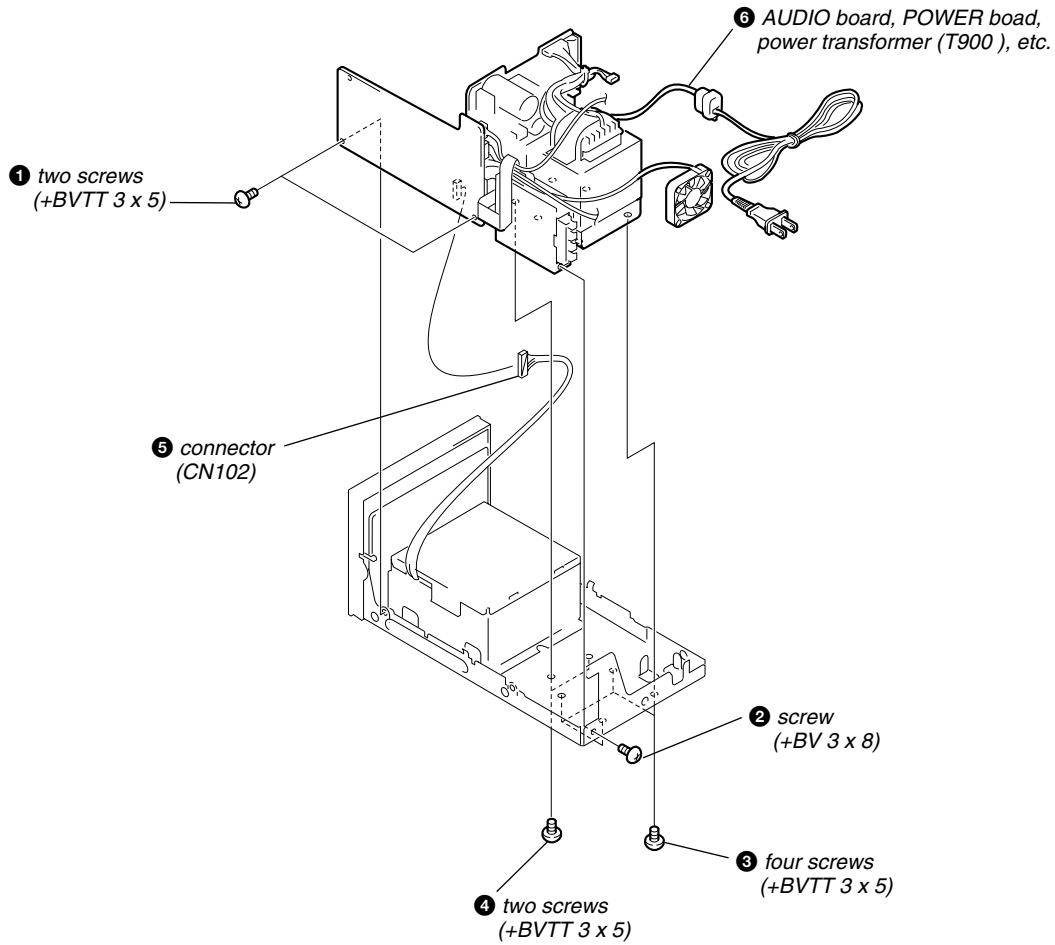
### 3-15. UCOM BOARD, AMP POWER BOARD

**Note for re-installation (routing the harnesses)**

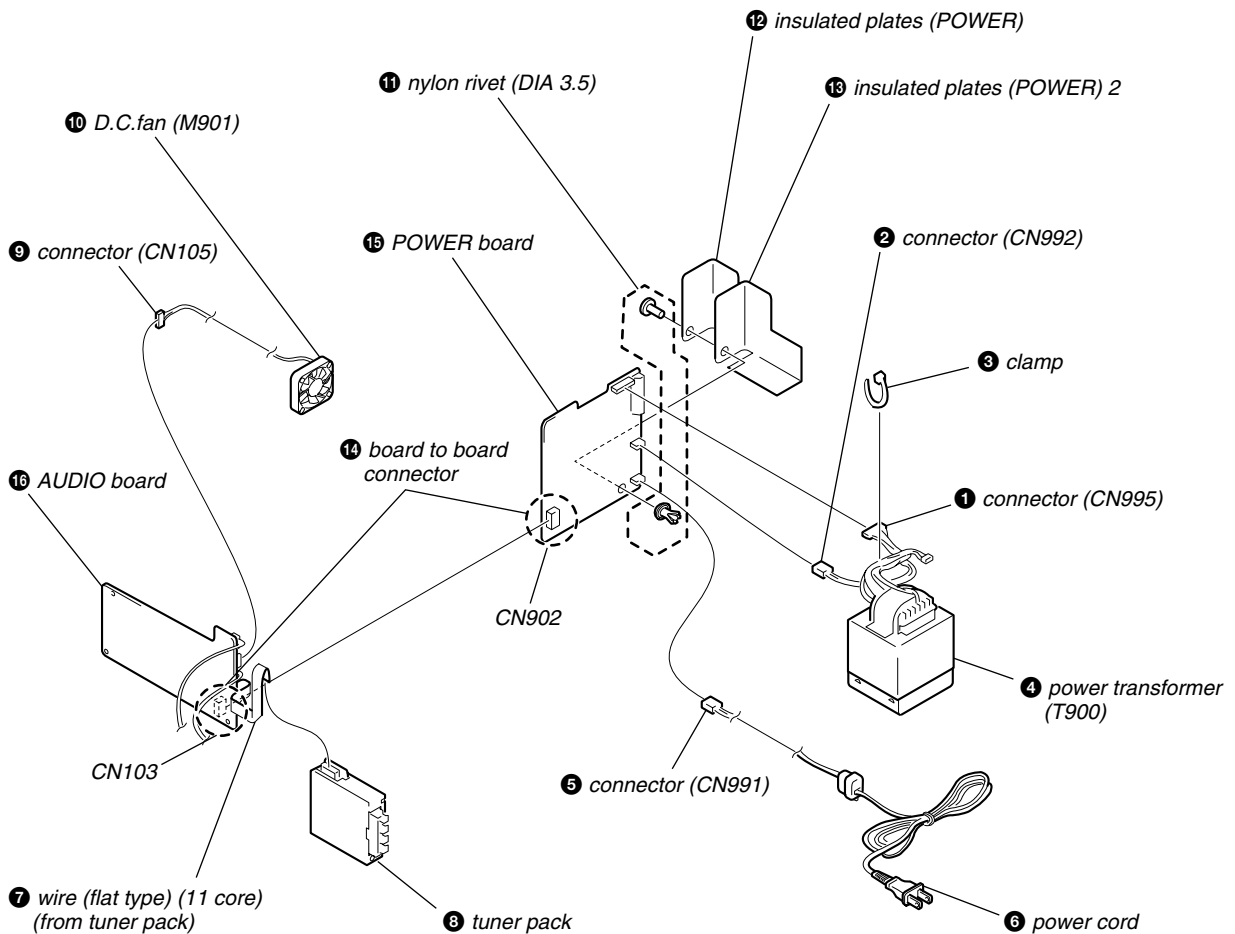
Be careful that the two harnesses between CN995 and CN992 of the power transformer (T900) and the POWER board must not contact the heat sink (IC902) on the POWER board and the flat cable (19 core) that is inserted to CN203 on the UCOM board.



3-16. AUDIO BOARD, POWER BOARD, POWER TRANSFORMER (T900) (1)

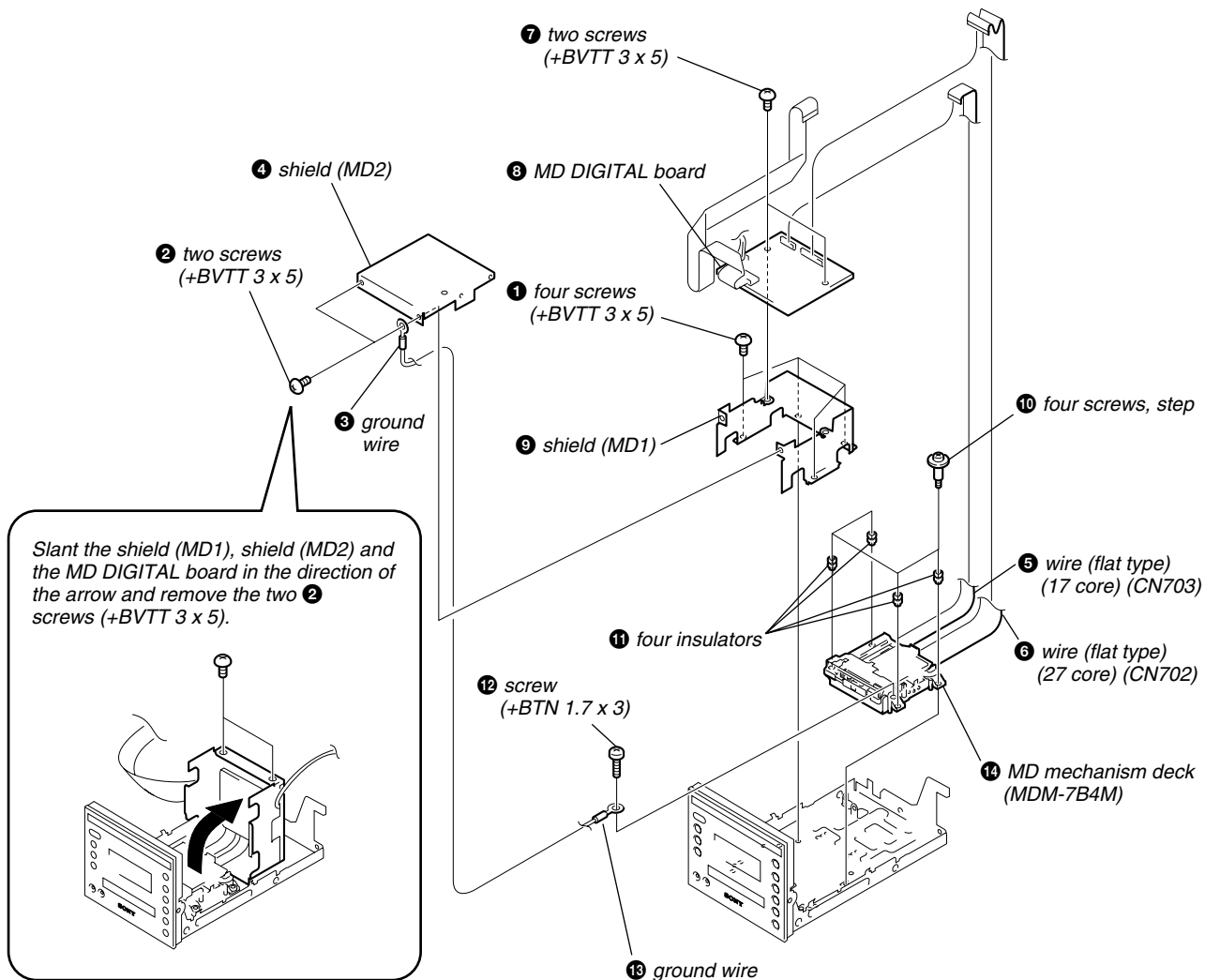


3-17. AUDIO BOARD, POWER BOARD, POWER TRANSFORMER (T900) (2)

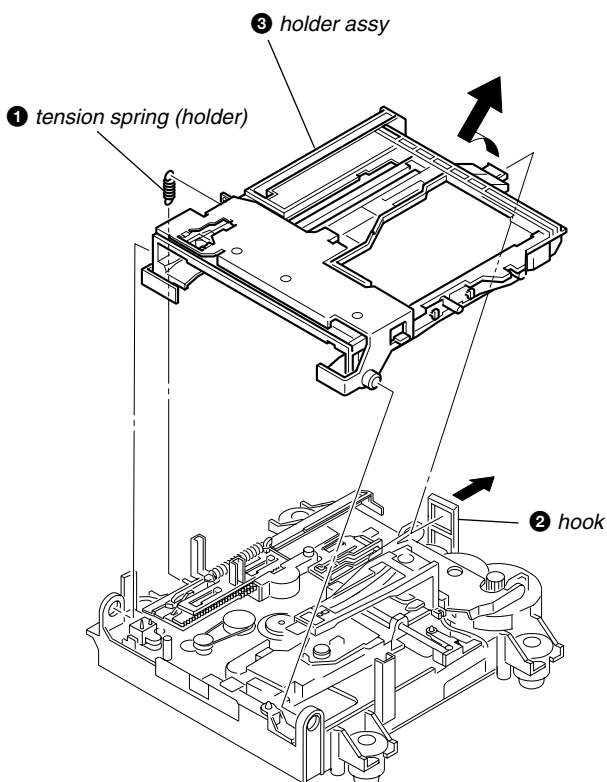




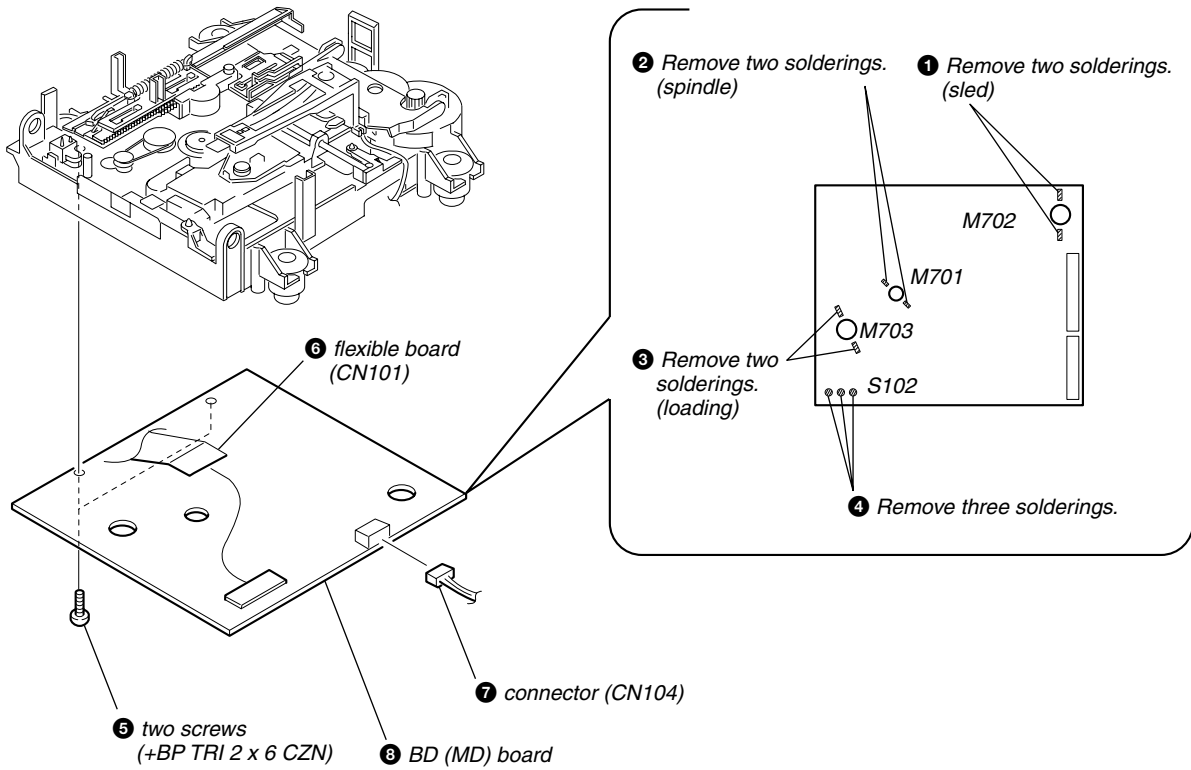
3-18. MD MECHANISM DECK (MDM-7B4M), MD DIGITAL BOARD



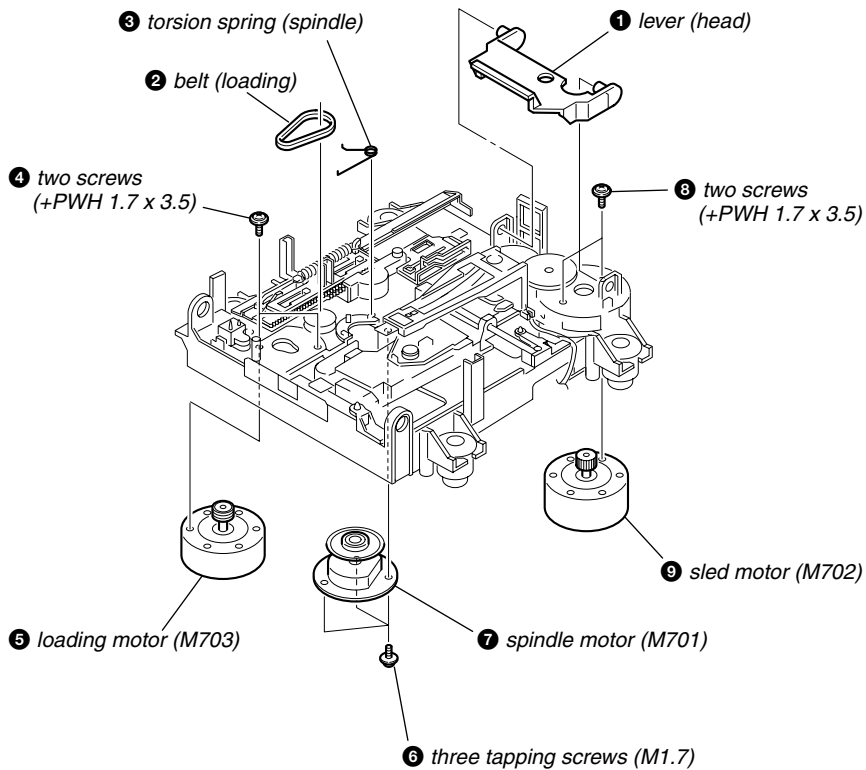
3-19. HOLDER ASSY



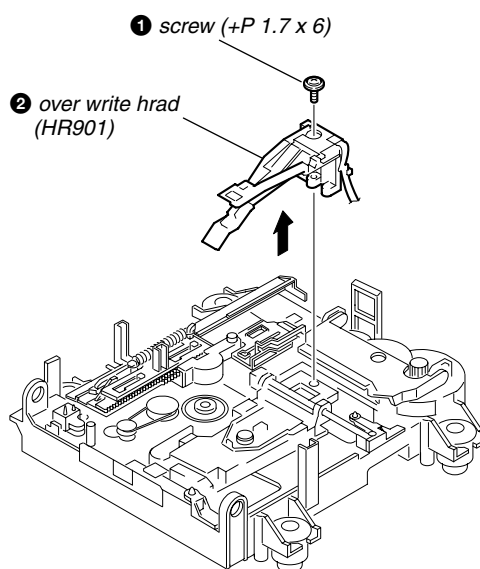
3-20. BD (MD) BOARD



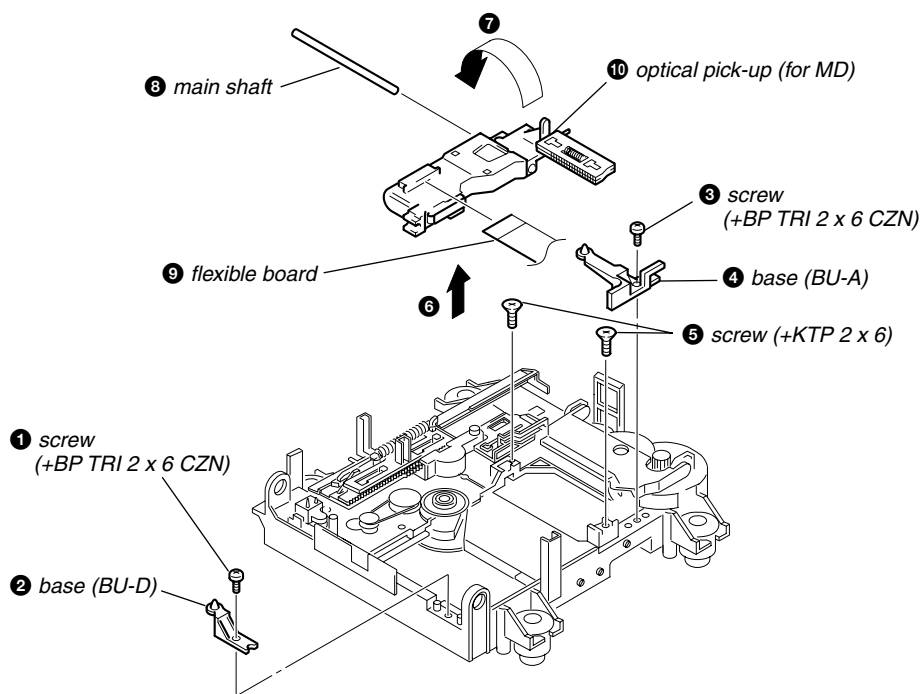
3-21. LOADING MOTOR (M703), SPINDLE MOTOR (M701), SLED MOTOR (M702)



3-22. OVER WRITE HEAD



3-23. OP-SUB SECTION



## SECTION 4 TEST MODE

### [Factory Preset Mode]

\* This mode clears all data including preset data stored in the RAM to initial conditions. Execute this mode when returning the set to the customer.

#### Procedure:

1. Press the button to turn the power on.
2. Press the button to set the CD function. (except the TUNER function)
3. Press three buttons , and simultaneously.
4. The message "COLD RESET" blinks and the present contents are reset to the default values.

### [Version and Destination Display Mode]

\* The version or destination is displayed.

#### Procedure:

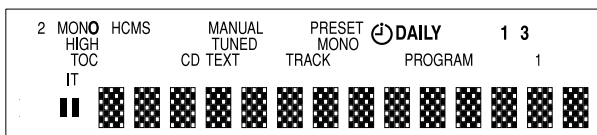
1. Press the button to turn the power on.
2. To enter the test mode, press the three buttons , and simultaneously.
3. The model and destination are displayed.
4. Press the and buttons simultaneously.
5. The version is displayed as "STR/CD V . . .".
6. Press the and buttons simultaneously.
7. The version is displayed as "MD V . . .".
8. Press the and buttons simultaneously, then the mode returns to step 3.
9. To exit from this mode, press the button to turn the power off.

### [FL Tube Test Mode]

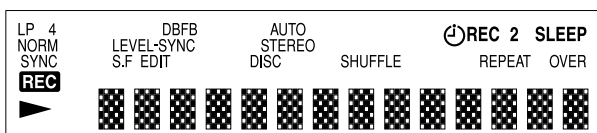
\* All fluorescent segments and LEDs are tested.

#### Procedure:

1. Press the button to turn the power on.
2. To enter the test mode, press three buttons , and simultaneously.
3. All segments and LEDs are turned on.
4. Press the and buttons simultaneously.
5. All segments are turned off (All LEDs still lit).
6. Press the and buttons simultaneously.
7. Almost half segments are turned on. (PATTERN 1)



8. Press the and buttons simultaneously.
9. The segments which are turned on in step 7 are turned off, then remaining segments are turned on. (PATTERN 2)



10. Press the and buttons simultaneously, the mode returns to step 3 and all segments are turned on.
11. To exit from this mode, press the button to turn the power off.

### [Key Test Mode]

\* Keyboard check.

#### Procedure:

1. Press the button to turn the power on.
2. To enter the test mode, press three buttons , and simultaneously.
3. In the key test mode, the fluorescent indicator displays "KEY00".
4. Each time a button is pressed, "KEY 00" value increases. However, once a button is pressed, it is no longer taken into account.
5. To exit from this mode, press three buttons simultaneously as step 2, or disconnect the power cord.

### [Amp Test Mode]

#### Procedure:

1. Press the button to turn the power on.
2. Press three buttons , and simultaneously.
3. Press two buttons and simultaneously.
4. The message "7 [TESTMIN]" is displayed for a few seconds.
5. Press two buttons and simultaneously again.
6. Each time two buttons are depressed, the display changes as "8 [TESTMID]", "9 [TESTMAX]", and "10 [TESTSUR]" .
7. Press the , the display changes "VOLUME 21" to "VOLUME MAX".
8. Press the , the display changes "VOLUME 21" to "VOLUME MIN".
9. To exit from this mode, press the button to turn the power off and cold reset is executed.

### [CD Test Mode]

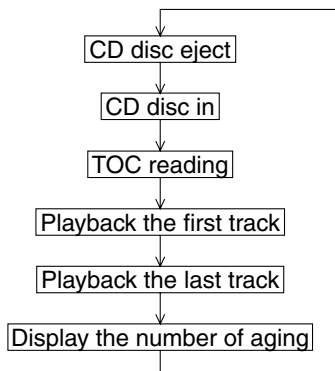
\* The CD system versions are displayed.

#### Procedure:

1. Press the button to turn the power on.
2. Press the button to set the CD function.
3. Press three buttons of , and simultaneously.
4. The message "dut CD VER" is displayed.
5. Press the button and the version "CD . . ." is displayed.
6. Press the button and "CDSYS" is displayed.
7. Each time the button is depressed, the display changes as "CDMA S", "CDBD O", "CDCD M".
8. By depressing the button the versions are displayed in reverse.
9. To exit this mode, press the button to turn the power off.

**[CD Aging Mode]****Procedure:**

1. Press the **I/O** button to turn the power on.
2. Press the **FUNCTION** button to set the CD function, and insert a disc.
3. Press three buttons of **VOL -**, **CD** and **▶▶/▶▶ TUNING +** simultaneously.
4. The message "Eject" is displayed, a disc is ejected and inserted again automatically.
5. The sequence during the CD aging mode is following as below.

**CD aging mode sequence:**

6. To exit this mode, press the **I/O** button to turn the power off.

**[CD/MD Aging Mode]**

\* Aging of CD and MD is performed at the same time.

**Procedure:**

1. Press the **I/O** button to turn the power on.
2. Press the **FUNCTION** button to set the CD function.
3. Insert a disc (CD) and a recordable disc (MD).
4. Press three buttons of **VOL +**, **▶||** and **MD** simultaneously.
5. The message "Eject" is displayed and aging started.
6. The sequence of CD aging is same as the CD aging mode, however the MD aging is repetition of changing the track after a few seconds recording.
7. The number of aging is displayed in hexadecimal. For example, AGING00000011 means the 17th routine of aging.
8. To exit this mode, press the **I/O** button to turn the power off, or press three buttons of **VOL +**, **CD** and **MD** simultaneously and cold reset is executed.

**MD SECITON****Note 1:** About "R"

As this unit has only a few buttons, some operations require the use of remote commander (RM-SCSBEN/provided with unit: 1-476-649-21) 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. 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 **MENU/NO "R"** button and the rotation of disc is stopped.

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

- Continuous recording mode (CREC 1MODE)
- 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 **REC/REC IT** button.

**2. SETTING THE TEST MODE**

The following is the method of entering the test mode.

- Procedure:**
1. Press the **I/O** button to turn the power on.
  2. Press the **FUNCTION** button to set the MD function.
  3. Press three buttons of **VOL -**, **■**, and **CD SYNC HIGH** (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] ↔ ...

**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.

**3. RELEASING THE TEST MODE**

**Procedure 1:** Press the **REPEAT "R"** button to display "Initial-ize", then release the MD test mode.

**Procedure 2:** Press two buttons of **VOL -** and **MD** to display "Initialize", then release the MD test mode.

#### 4. BASIC OPERATIONS OF THE TEST MODE

All operations are performed using the  $\leftarrow$  "R",  $\rightarrow$  "R",  $\text{ENTER/YES}$  "R" and  $\text{MENU/NO}$  "R". The functions of these buttons are as follows.

Function name	Function
$\leftarrow$ "R", $\rightarrow$ "R" buttons	Changes parameters and modes
$\text{ENTER/YES}$ "R" button	Proceeds onto the next step. Finalizes input
$\text{MENU/NO}$ "R" 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  $\leftarrow$  "R" or  $\rightarrow$  "R" button. After selecting the group to be used, press the  $\text{ENTER/YES}$  "R" button. After setting a certain group, pressing the  $\leftarrow$  "R" or  $\rightarrow$  "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  $\text{MENU/NO}$  "R" button immediately to exit the [Develop] group.

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

- 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  $\text{MENU/NO}$  "R" button to release that mode.
- Modes with (x) in the Mark column are not used for servicing and therefore are not described in detail. If these modes are set accidentally, press the  $\text{MENU/NO}$  "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 "CPLAY1MODE" (C34).
- (3) Press the **ENTER/YES "R"** button to change the display to "CPLAY1MID".
- (4) When access completes, the display changes to "C = 0000 AD = 000".  
**Note:** The numbers "000" 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.

"CPLAY1MID" → "CPLAY1OUT" → "CPLAY1IN" ↷  
 ↶

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

- (2) When access completes, the display changes to "C = 0000 AD = 000".  
**Note:** The numbers "000" 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 "CPLAY1MODE" (C34).
- (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/playback 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 1MODE" (C35).
- (3) Press the **ENTER/YES "R"** button to change the display to "CREC 1MID".
- (4) When access completes, the display changes to "CREC 1(0000)" and "**REC**" is displayed.  
**Note:** The numbers "0000" 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 1MID" → "CREC 1OUT" → "CREC 1IN" ↷  
 ↶

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

- (2) When access completes, the display changes to "CREC 1(0000)" and "**REC**" is displayed.  
**Note:** The numbers "0000" 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 1MODE" (C35) 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
	Sets continuous playback when this is pressed in the STOP state. When this is pressed during continuous playback, playback position moves.
	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
+ /  TUNING +	Switches the spindle servo mode (CLV S ↔ CLV A)
VOL - +	Switches the displayed contents each time the button is pressed
MD	Ejects the disc
REPEAT "R"	Releases the test mode

## 7. 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 "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 "060 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 ("oC CHECK"), check OK or NG will be displayed. If all items are OK, "CHK ALL OK" will be displayed. If any item is NG, it will be displayed as "NG:xxxx".

When "CHK 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.

## 8. INFORMATION

Display the software version.

### Procedure:

1. Press the "R" or "R" button to display "INFORMATION" (C31).
2. Press the "R" button.
3. The software version will be displayed.
4. Press the "R" button to end this 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/O** button to turn the power on.
2. Press the **FUNCTION** button to set the MD function.
3. Press three buttons of **VOL -**, **■** and **CD SYNC HIGH**, 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 “Iop 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 two buttons of **VOL -** and **CD ▲** simultaneously.
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 “Iop Write”.
12. Press the **REPEAT “R”** button, or press two buttons of **VOL -** and **MD ▲** simultaneously, to complete. “Initialize” will be displayed and release the MD test mode.

### Display Procedure:

1. Press the **I/O** button to turn the power on.
2. Press the **FUNCTION** button to set the MD function.
3. Press three buttons of **VOL -**, **■**, and **CD SYNC HIGH** 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 “Iop 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 “R”** 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 **■** and **MD ▲** buttons simultaneously.
4. Press the **◀◀ “R”** or **▶▶ “R”** button to display “MDM-7B4M”.
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”.

	<b>Criteria for Determination</b> (Unsatisfactory if specified value is not satisfied)	<b>Measure if unsatisfactory</b>
<b>Laser power check</b> (6-2 : See page 37)	<ul style="list-style-type: none"> <li>0.9 mW power Specified value : figure1</li> <li>7.0 mW power Specified value : figure2</li> </ul>	<ul style="list-style-type: none"> <li>Clean the optical pick-up</li> <li>Adjust again</li> <li>Replace the optical pick-up</li> </ul>
	<ul style="list-style-type: none"> <li>Iop (at 7.0mW)</li> <li>Labeled on the optical pick-up</li> <li>Iop value <math>\pm</math> 10mA</li> </ul>	<ul style="list-style-type: none"> <li>Replace the optical pick-up</li> </ul>
<b>Auto check</b> (6-4 : See page 38)	<ul style="list-style-type: none"> <li>Unsatisfactory if displayed as “NG: XXXX” (X is an arbitrary number)</li> </ul>	<ul style="list-style-type: none"> <li>Replace the optical pick-up</li> </ul>
<b>Temperature compensation offset check</b> (6-1 : See page 37)	<ul style="list-style-type: none"> <li>Unsatisfactory if displayed as “T-@@ (##) [NG]” (@@, ## are both arbitrary numbers)</li> </ul>	<ul style="list-style-type: none"> <li>Check for disconnection of the circuits around D101 (BD (MD) board)</li> <li>Check the signals around IC101, IC151, CN102, CN103 (BD (MD) board)</li> </ul>

**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-260B	0.85 to 0.91 mW
	KMS-260E	0.90 to 0.96 mW

**Figure2:**

SPECIFIED VALUE	KMS-260B	6.8 to 7.2 mW
	KMS-260E	7.0 to 7.5 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 fluorescent indicator tube. During playback, the “track mode” for obtaining track information will be set. This is useful for locating the faulty part of the unit.
- The following will be displayed :  
During recording and stop : Retry cause, number of retries, and number of retry errors.  
During playback : Information such as type of disc played, part played, copyright.  
These are displayed in hexadecimal.

**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 fluorescent indicator tube, press the **◀◀ “R”** or **▶▶ “R”** button to display “All Erase?”.
- Press the **ENTER/YES “R”** button.
- When “All Erase??” is displayed on the fluorescent indicator tube.
- Press the **ENTER/YES “R”** button to display “Complete!”.
- Press the **REC/REC IT** button to start recording. Then press the **▶||** button and start recording. If recording cannot be performed, press the **FUNCTION ●** button and set a different function.
- Press three buttons of **VOL -**, **▶||** and **CD SYNC HIGH** simultaneously to enter the retry cause display mode.
- To check the “track mode”, press the **▶||** button to start playback.
- To release this mode, press the **I/⏻** 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 “Factory Preset” on page 24.

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

RTs@ @c##e\*\*  
fluorescent indicator tube

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

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

@@ #### \$\$  
fluorescent indicator tube

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

**Reading the Retry Cause Display**

	Higher Bits				Lower Bits				Hexadecimal	Cause of Retry	Occurring conditions
Hexadecimal	8	4	2	1	8	4	2	1			
Bit	b7	b6	b5	b4	b3	b2	b1	b0			
<b>Binary</b>	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 Bit				Lower Bits				Hexadecimal	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

## SECTION 5 ELECTRICAL ADJUSTMENTS

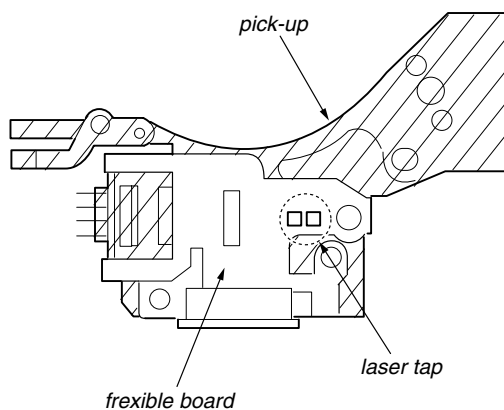
**CD SECTION**

**Note 1:**

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

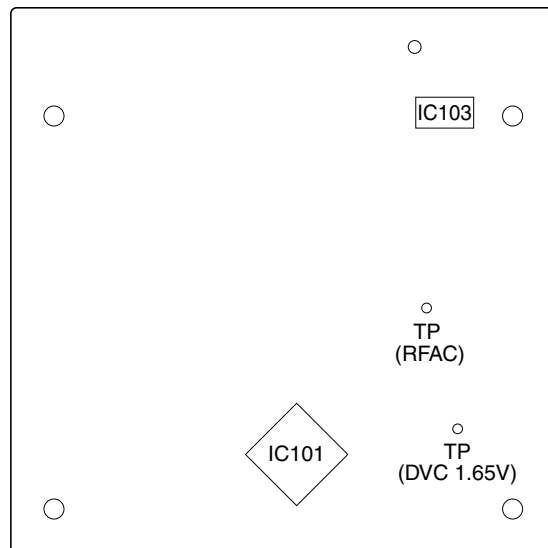
**Note 2:**

As the laser diode in the optical pick-up (OPTIMA-720L1E) is easily damaged by static electricity, solder the laser tap of the flexible board when handling it. Before disconnecting the connector, solder 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.



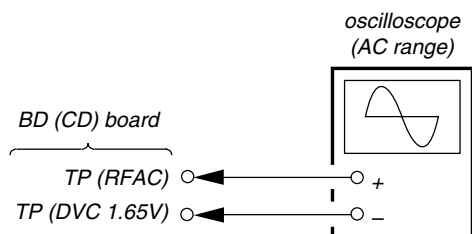
**Checking Location:**

– BD (CD) BOARD –



**RF Level Check**

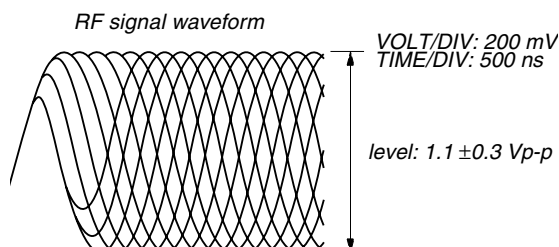
**Connection:**



**Procedure:**

1. Connect an oscilloscope to test point TP (RFAC) and TP (DVC 1.65V) 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

**MD SECTION**

**Note 1:** About “R”

As this unit has only a few buttons, some operations require the use of remote commander (RM-SC5BEN/provided with unit: 1-476-649-11) buttons. These operations are indicated as “R” in this manual.

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

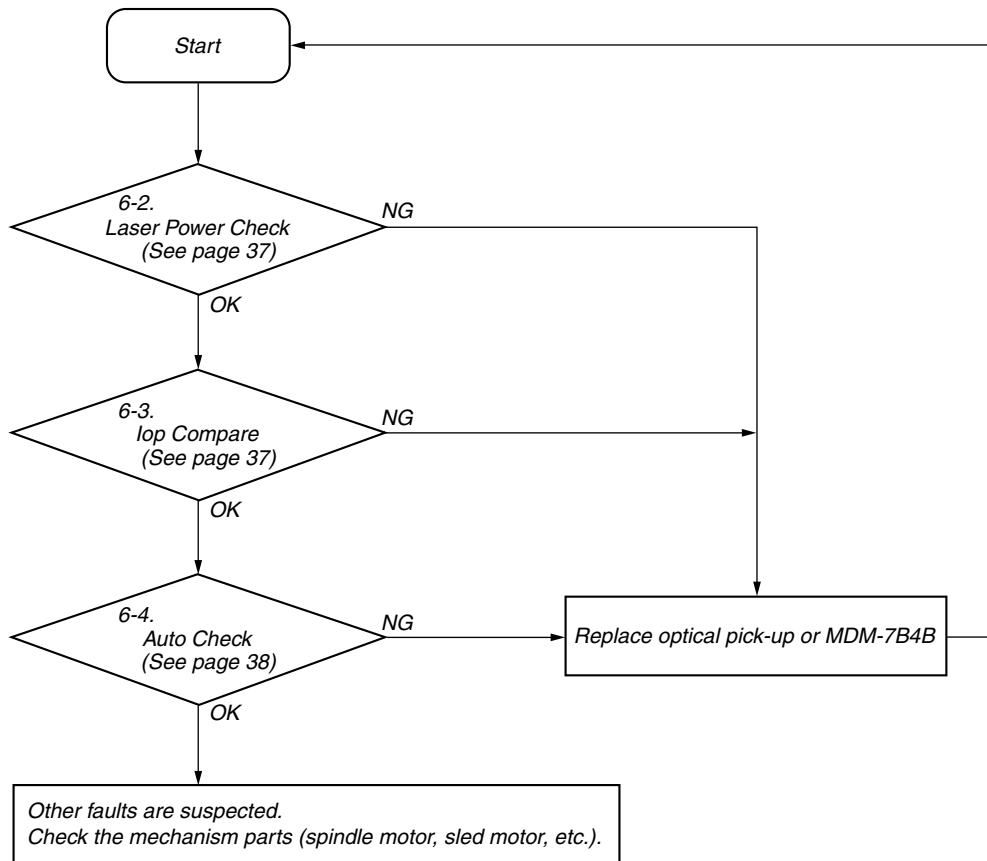
**Note 2:** Incorrect operations may be performed if the MD test mode is not entered properly.

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**

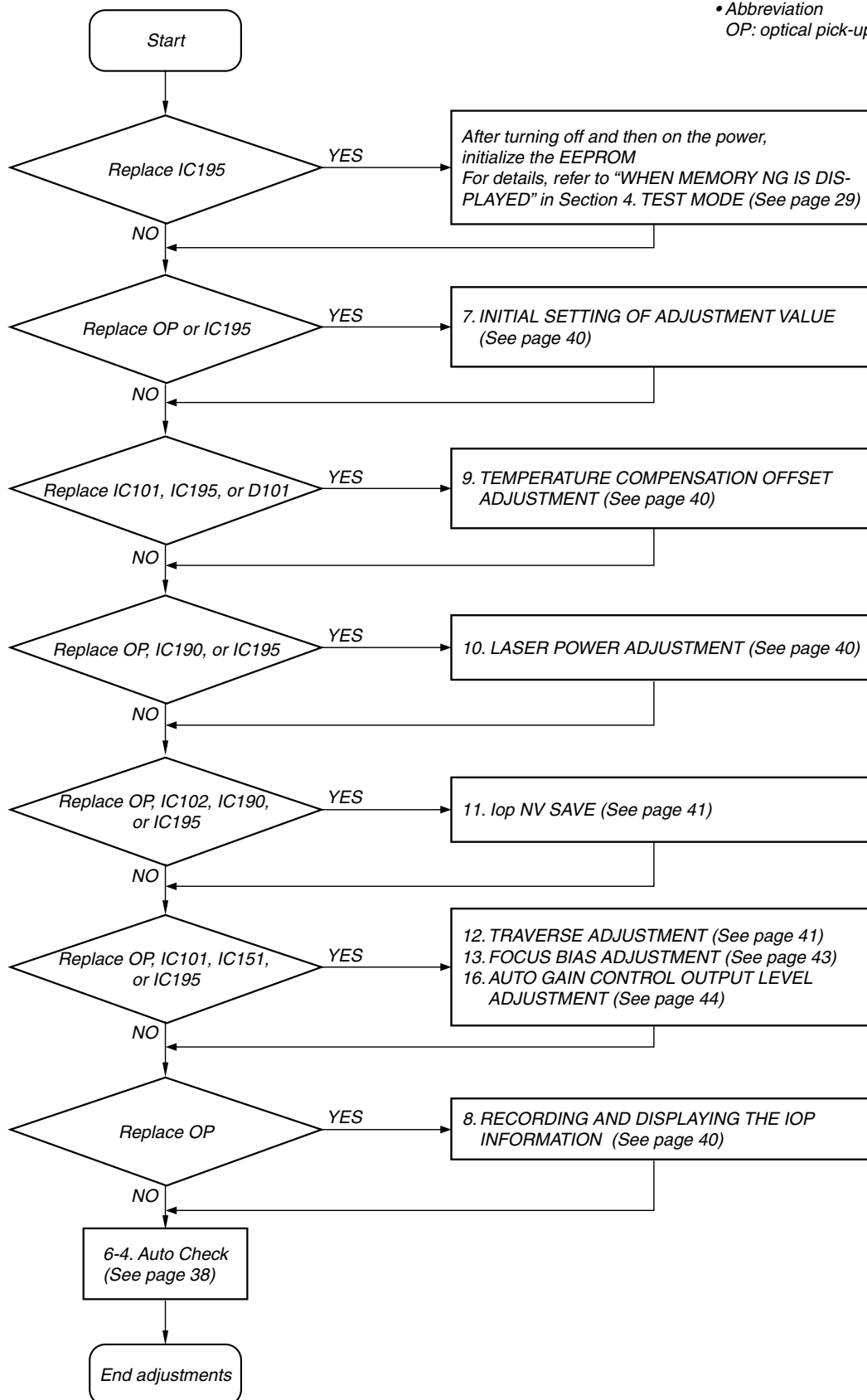
If malfunctions caused by optical pick-up such as sound skipping are suspected, follow the following check.

**Check before replacement**



Adjustment flow

• Abbreviation  
OP: optical pick-up



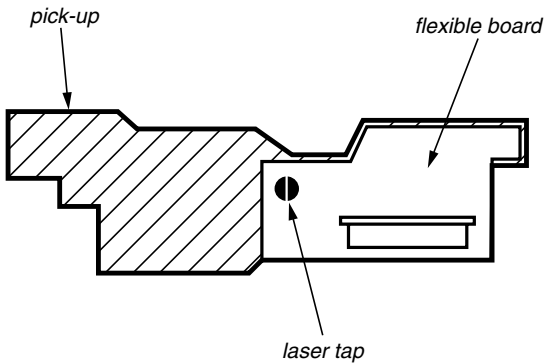
**2. PRECAUTIONS FOR CHECKING LASER DIODE EMISSION**

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-260B/260E)**

As the laser diode in the optical pick-up is easily damaged by static electricity, solder the laser tap of the flexible board when handling it.

Before disconnecting the connector, solder 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**

1. When replacing the following parts, perform the adjustments and checks with ○ in the order shown in the following table.
2. 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.
3. Perform the adjustments to be needed in the order shown.
4. Use the following tools and measuring devices.
  - 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)\*<sup>1</sup>
  - Oscilloscope (Measure after performing CAL of prove.)
  - Digital voltmeter
  - Thermometer
  - Jig for checking BD (MD) board waveform (Part No. : J-2501-196-A)
5. When observing several signals on the oscilloscope, etc., make sure that VC and ground do not connect inside the oscilloscope. (VC and ground will become short-circuited.)
6. Using the above jig enables the waveform to be checked without the need to solder. (Refer to Servicing Notes on page 6.)
7. As the disc used will affect the adjustment results, make sure that no dusts nor fingerprints are attached to it.

**\*<sup>1</sup> 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 control output level 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 1MODE" (C35).
3. Press the **ENTER/YES "R"** button again to display "CREC 1 MID". Display "CREC 1(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 30).

#### 6-1. Temperature Compensation Offset Check

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

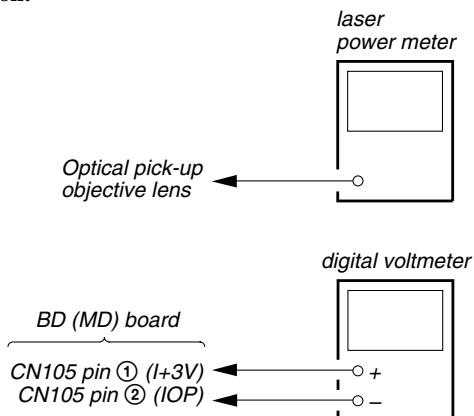
**Procedure:**

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-260B or KMS-260E).  
Check the type of the optical pick-up before starting adjustment. (See the illustrations "The method of identifying the optical pick-up" on page 41)  
Before checking, check the Iop value of the optical pick-up. (Refer to 8. Recording and Displaying the Iop Information (see page 40))

**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\$ 0.0". Check that the reading of the laser power meter becomes specified value.

SPECIFIED VALUE	KMS-260B	0.85 to 0.91 mW
	KMS-260E	0.90 to 0.96 mW

4. Press the **ENTER/YES "R"** button once more and display "LD 7.0mW\$ 0.0". Check that the reading the laser power meter and digital volt meter satisfy the specified value.

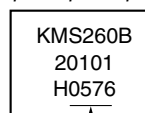
**Specified Value:**

Laser power meter reading :

KMS-260B	7.0 to 0.2 mW
KMS-260E	7.25 to 0.25 mW

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

(Optical pick-up label)



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

IOP = 57.6 mA in this case

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

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\$ 0.0" and "LD 6.2mW\$ 0.0" "LD WP ホセ イ \$ 0.0". Nothing needs to be performed here.

**Checking Location:** BD (MD) board (see page 44)

#### 6-3. Iop Compare

The current Iop value at laser power 7.0 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 0000" 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 ("oC CHECK"), check OK or NG will be displayed. If all items are OK, "CHK ALL OK" will be displayed. If any item is NG, it will be displayed as "NG:xxxx".

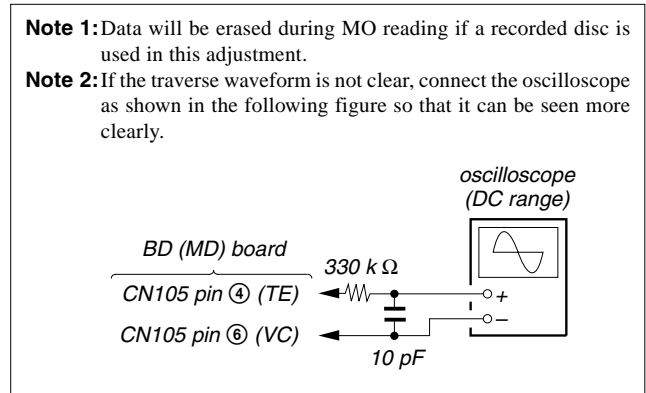
When "CHK ALL OK" is displayed, it means that the optical pick-up is normal. Check the operations of other parts (spindle motor, sled motor, etc.).  
When displayed as "NG:xxxx", it means that the optical pick-up is faulty. In this case, replace the optical pick-up.

**6-5. Other Checks**

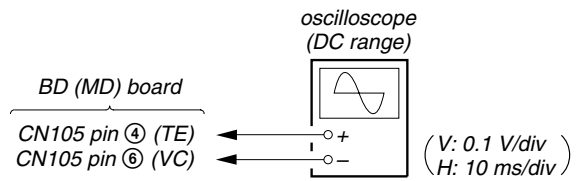
All the following checks are performed by the Auto Check mode. They therefore need not be performed in normal operation.

- 6-6. Traverse Check
- 6-7. Focus Bias Check
- 6-8. C PLAY Check
- 6-9. Self-Recording/Playback Check

**6-6. Traverse Check**



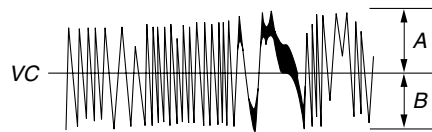
**Connection:**



**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 = 000 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 = 000 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*

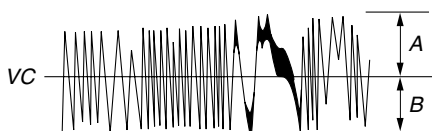


Specified value : Below 10% offset value

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

- Press the **ENTER/YES "R"** button to display "EFB =  $\square\square$  MO-P".  
Then, the optical pick-up moves to the pit area automatically and servo is imposed.
- Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not press the **◀◀ "R"** or **▶▶ "R"** button.

#### Traverse Waveform

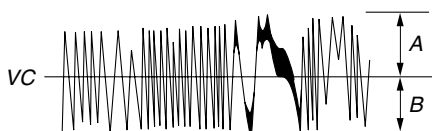


Specified value : Below 10% offset value

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

- Press the **ENTER/YES "R"** button to display "EF MO CHECK" (C14).  
The disc stops rotating automatically.
- Press the **MD ▲** button and take out the disc.
- Load the check disc (TDYS-1).
- Press the **◀◀ "R"** or **▶▶ "R"** button and display "EF CD CHECK" (C15).
- Press the **ENTER/YES "R"** button to display "EFB =  $\square\square$  CD".  
Servo is imposed automatically.
- 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

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

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

**Checking Location:** BD (MD) board (see page 44)

### 6-7. Focus Bias Check

Change the focus bias and check the focus tolerance amount.

#### Procedure:

- Load the test disc (MDW-74/GA-1).
- Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY 1MODE" (C34).
- Press the **ENTER/YES "R"** button to display "CPLAY 1MID".
- Press the **MENU/NO "R"** button when "C =  $\square\square\square\square$  AD =  $\square\square$ " is displayed.
- Press the **◀◀ "R"** or **▶▶ "R"** button to display "FBIAS CHECK" (C16).

- Press the **ENTER/YES "R"** button to display " $\square\square\square\square$  /  $\square\square$  c =  $\square\square$ ".  
The first four digits indicate the C1 error rate, the two digits after [/] indicate ADER, and the 2 digits after [c =] indicate the focus bias value.  
Check that the C1 error is below 20 and ADER is below 2.
- Press the **ENTER/YES "R"** button to display " $\square\square\square\square$  /  $\square\square$  b =  $\square\square$ ".  
Check that the C1 error is about 100 and ADER is below 2.
- Press the **ENTER/YES "R"** button to display " $\square\square\square\square$  /  $\square\square$  a =  $\square\square$ ".  
Check that the C1 error is about 100 and ADER is below 2.
- 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:

- Load the test disc (MDW-74/GA-1).
- Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY 1MODE" (C34).
- Press the **ENTER/YES "R"** button to display "CPLAY 1MID".
- The display changes to "C =  $\square\square\square\square$  AD =  $\square\square$ ".
- If the C1 error rate is below 20, check that ADER is 00.
- 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:

- Load the check disc (TDYS-1).
- Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY 1MODE" (C34).
- Press the **ENTER/YES "R"** button to display "CPLAY 1MID".
- The display changes to "C =  $\square\square\square\square$  AD =  $\square\square$ ".
- Check that the C1 error rate is below 20.
- 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:

- Load a recordable disc (blank disc).
- Press the **◀◀ "R"** or **▶▶ "R"** button to display "CREC 1MODE" (C34).
- Press the **ENTER/YES "R"** button to display "CREC 1MID".
- When recording starts, "**REC**" and display "CREC 1 @@@@" (@@@@ is the address).
- About 1 minute later, press the **MENU/NO "R"** button to stop continuous recording.
- Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY 1MODE" (C34).
- Press the **ENTER/YES "R"** button to display "CPLAY 1MID".
- "C =  $\square\square\square\square$  AD =  $\square\square$ " will be displayed.
- Check that the C1 error becomes below 20 and the AD error below 2.
- 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 36) 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 two buttons of **VOL -** and **CD ▲** simultaneously.
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 "Iop Read"(C26) and press the **ENTER/YES "R"** button.
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 = 00.0 [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 = 00.0 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:**

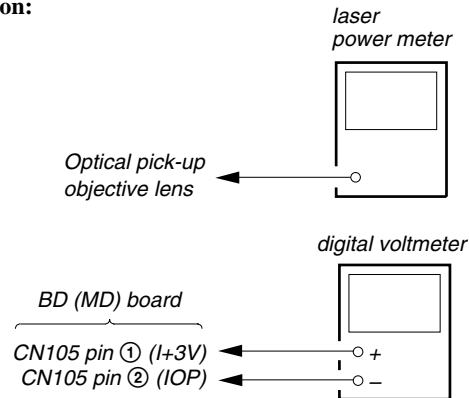
The "TEMP = 00.0" should be within "E0 - EF", "F0 - FF", "00 - 0F", "10 - 1F" and "20 - 2F".

**10.LASER POWER ADJUSTMENT**

Before starting adjustment;

The laser power adjustment value changes depending upon the types of the optical pick-up (KMS-260B or KMS-260E). Check the type of the optical pick-up before starting adjustment. (See the illustrations "The method of identifying the optical pick-up on page 41.)  
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 disc 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 \$ 0.0".
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-260B	0.85 to 0.91 mW
		KMS-260E

- Press the **ENTER/YES "R"** button after setting the range knob of the laser power meter, and save the adjustment results. ("LD SAVE \$ 0.0" will be displayed for a moment)
5. Then "LD 7.0 mW \$ 0.0" will be displayed.

- 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-260B	6.9 to 7.1 mW
	KMS-260E	7.2 to 7.3 mW

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

- Then, press the **◀◀ "R"** or **▶▶ "R"** button to display "LDPWR CHECK" (C13).
- Press the **ENTER/YES "R"** button once to display "LD 0.9mW\$ 000". Check that the reading of the laser power meter matches with the specified value as described in the following table.

SPECIFIED VALUE	KMS-260B	0.85 to 0.91 mW
	KMS-260E	0.90 to 0.96 mW

- Press the **ENTER/YES "R"** button once more to display "LD 8.4mW\$ 000". Check that the reading the laser power meter and digital voltmeter satisfy the specified value. Note down the digital voltmeter reading value.

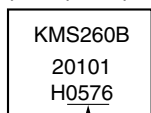
**Specified Value:**

Laser power meter reading :

SPECIFIED VALUE	KMS-260B	7.0 to 0.2 mW
	KMS-260E	7.25 to 0.25 mW

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

(Optical pick-up label)



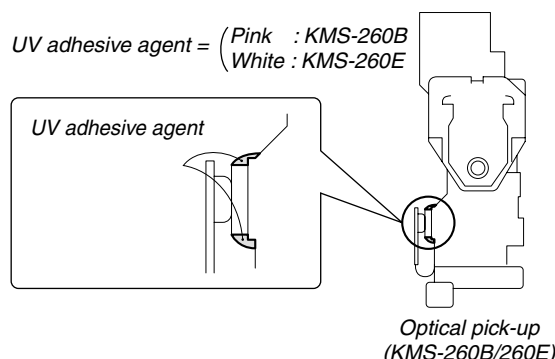
(For details of the method for checking this value, refer to "8. Recording and Displaying the Iop Information")

IOP = 57.6 mA in this case  
 $IOP (mA) = Digital\ voltmeter\ reading (mV) / 1 (\Omega)$

- 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)
- Press the **◀◀ "R"** or **▶▶ "R"** button to display "Iop Write" (C05).
- 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).
- 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 two buttons of **VOL -** and **CD ▲** simultaneously.
- 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 9, each time the **ENTER/YES "R"** button is pressed, the display will be switched to "LD 0.7mW\$ 000", "LD 6.2mW\$ 000" and "LD WP 00000". Nothing needs to be performed here.

**The method of identifying the optical pick-up (KMS-260B/260E)**



**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.

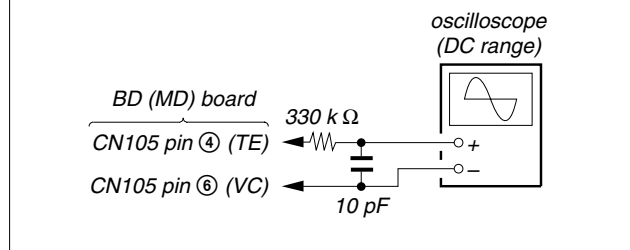
**Procedure:**

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

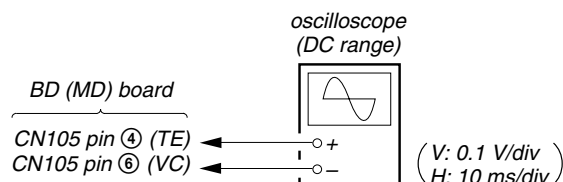
**12. TRAVERSE ADJUSTMENT**

**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.



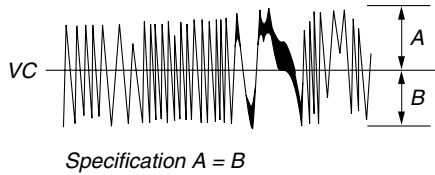
**Connection:**



**Procedure:**

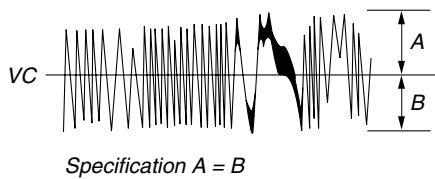
1. Connect an oscilloscope to CN105 pin ④ (TE) and CN105 pin ⑥ (VC) on the BD (MD) board.
2. Load a disc (any available on the market). (Refer to Note 1)
3. Press the **▶▶ "R"** button to move the optical pick-up outside the pit.
4. Press the **◀◀ "R"** or **▶▶ "R"** button to display "EF MO ADJUST" (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 ◻ ◻ of "EFB=◻◻" changes and the waveform changes) In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible. (Read power traverse adjustment)

*Traverse Waveform*



7. Press the **ENTER/YES "R"** button and save the result of adjustment to the non-volatile memory ("EFB = ◻ ◻ SAVE" will be displayed for a moment. Then "EFB = ◻ ◻ MO-W" will be displayed).
8. 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 ◻ ◻ of "EFB=◻◻" changes and the waveform changes) In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible. (Write power traverse adjustment)

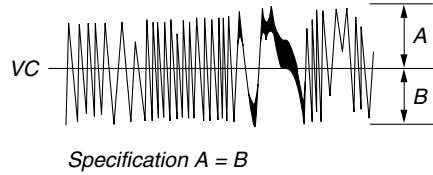
*Traverse Waveform*



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

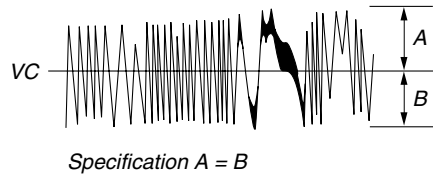
11. Press the **◀◀ "R"** or **▶▶ "R"** button until the waveform of the oscilloscope moves closer to the specified value.  
In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.

*Traverse Waveform*



12. Press the **ENTER/YES "R"** button, and save the adjustment results in the non-volatile memory. ("EFB = ◻ ◻ SAVE" will be displayed for a moment)  
Next "EF MO ADJUST" (C07) is displayed. The disc stops rotating automatically.
13. Press the **MD ▲** button and take out the disc.
14. Load the check disc (TDYS-1).
15. Press the **◀◀ "R"** or **▶▶ "R"** button to display "EF CD ADJUST" (C08).
16. Press the **ENTER/YES "R"** button to display "EFB = ◻ ◻ CD". Servo is imposed automatically.
17. Press the **◀◀ "R"** or **▶▶ "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*



18. Press the **ENTER/YES "R"** button, display "EFB = ◻ ◻ 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 **MD ▲** button and take out the check disc.

**Adjustment Location:** BD (MD) board (see page 44)

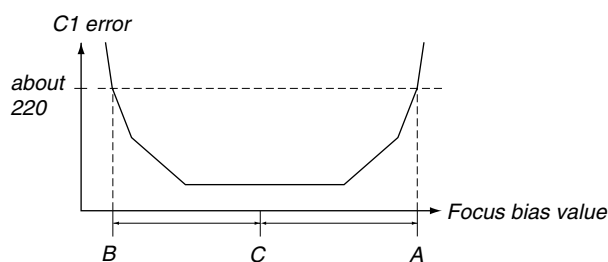
### 13. FOCUS BIAS ADJUSTMENT

#### Procedure:

1. Load the continuously-recorded disc. (Refer to "5. USING THE CONTINUOUSLY RECORDED DISC" (See page 37))
2. Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY 1 MODE" (C34).
3. Press the **ENTER/YES "R"** button to display "CPLAY 1MID".
4. Press the **MENU/NO "R"** button when "C = 0000 = 00" is displayed.
5. Press the **◀◀ "R"** or **▶▶ "R"** button to display "FBIAS ADJUST" (C09).
6. Press the **ENTER/YES "R"** button to display "0000/00 a = 00T".  
The first four digits indicate the C1 error rate, the two digits after "/" indicate ADER, and the 2 digits after "a =" indicate the focus bias value.
7. Press the **▶▶ "R"** button and find the focus bias value at which the C1 error rate becomes about 220 (refer to Note 2).
8. Press the **ENTER/YES "R"** button to display "0000/00 b = 00T".
9. Press the **◀◀ "R"** button and find the focus bias value at which the C1 error rate becomes about 220.
10. Press the **ENTER/YES "R"** button to display "0000/00 c = 00T".
11. Check that the C1 error rate is below 20 and ADER is 00. Then press the **ENTER/YES "R"** button.
12. If the "(00)" in "00 - 00 - 00 (00)" is above 20, press the **ENTER/YES "R"** button.  
If below 20, press the **MENU/NO "R"** button and repeat the adjustment from step 2.
13. Press the **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 "CPLAY 1 MODE" (C34).
3. Press the **ENTER/YES "R"** button and display "CPLAY 1 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 37))
2. Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY 1 MODE" (C34).
3. Press the **ENTER/YES "R"** button to display "CPLAY 1MID".
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 37))
2. Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY 1 MODE" (C34).
3. Press the **ENTER/YES "R"** button twice to display "CPLAY 1 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 about 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 about 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 from 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.

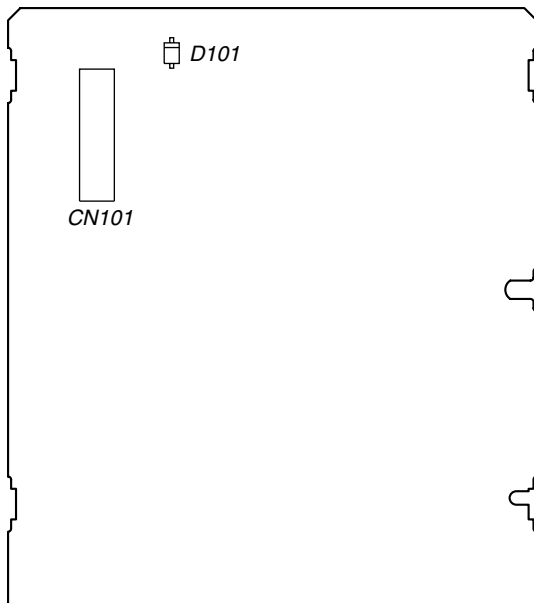
### 16-2. MO Auto Gain Control Output Level Adjustment

**Procedure:**

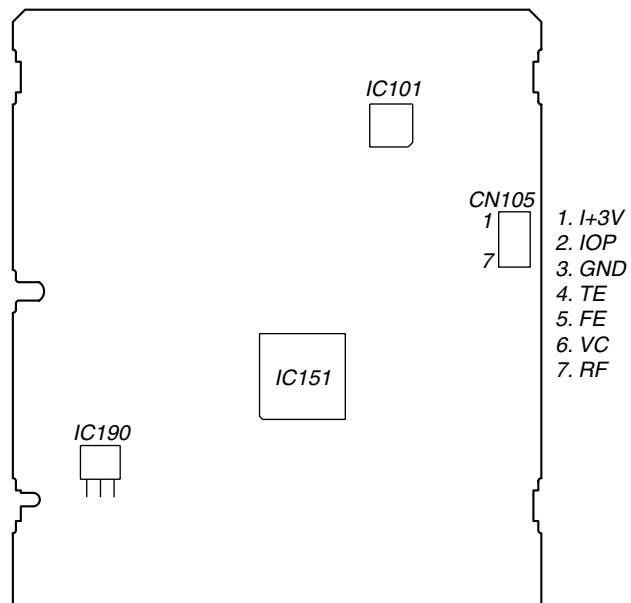
1. Load the test disc (MDW-74/GA-1).
2. Press the **◀◀ "R"** or **▶▶ "R"** button to display "AG Set (MO)" (C10).
3. When the **ENTER/YES "R"** button is pressed, the adjustment will be performed automatically.  
"Complete!" will then be displayed momentarily when the value is recorded in the non-volatile 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 6)



## SECTION 6 DIAGRAMS

### 6-1. 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:

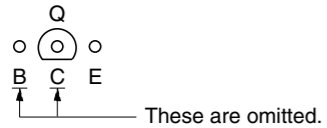
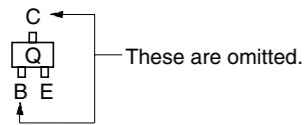
- : parts extracted from the component side.
- : Through hole.
- : parts extracted from the conductor side.
- : Pattern from the side which enables seeing.

#### 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.

(The other layers' patterns are not indicated.)

- Indication of transistor.



#### • Abbreviation

AUS : Australian model  
HK : Hong Kong model  
KR : Korean model

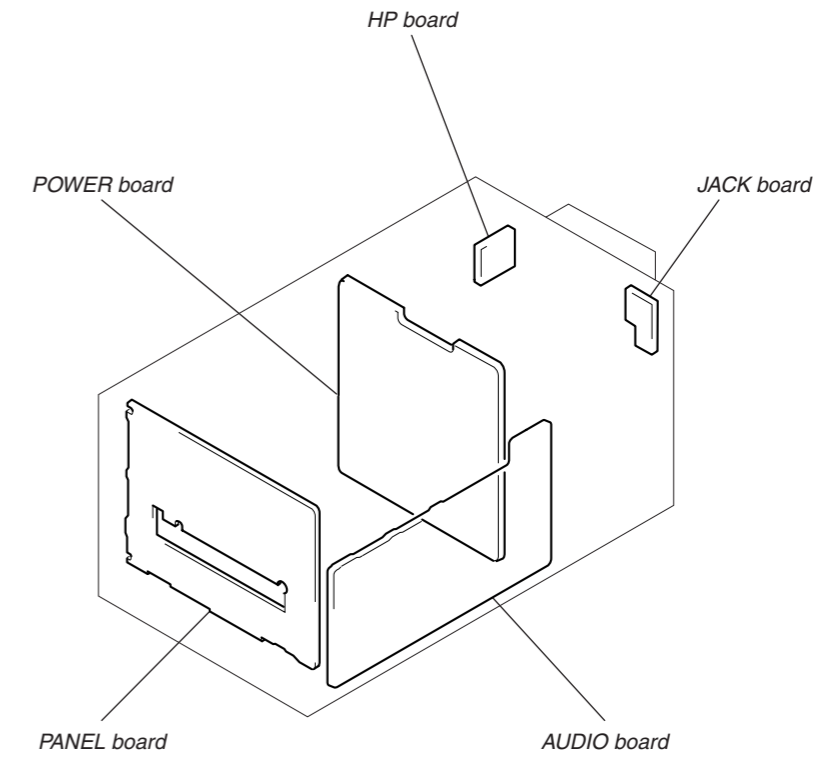
#### Note on Schematic Diagram:

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

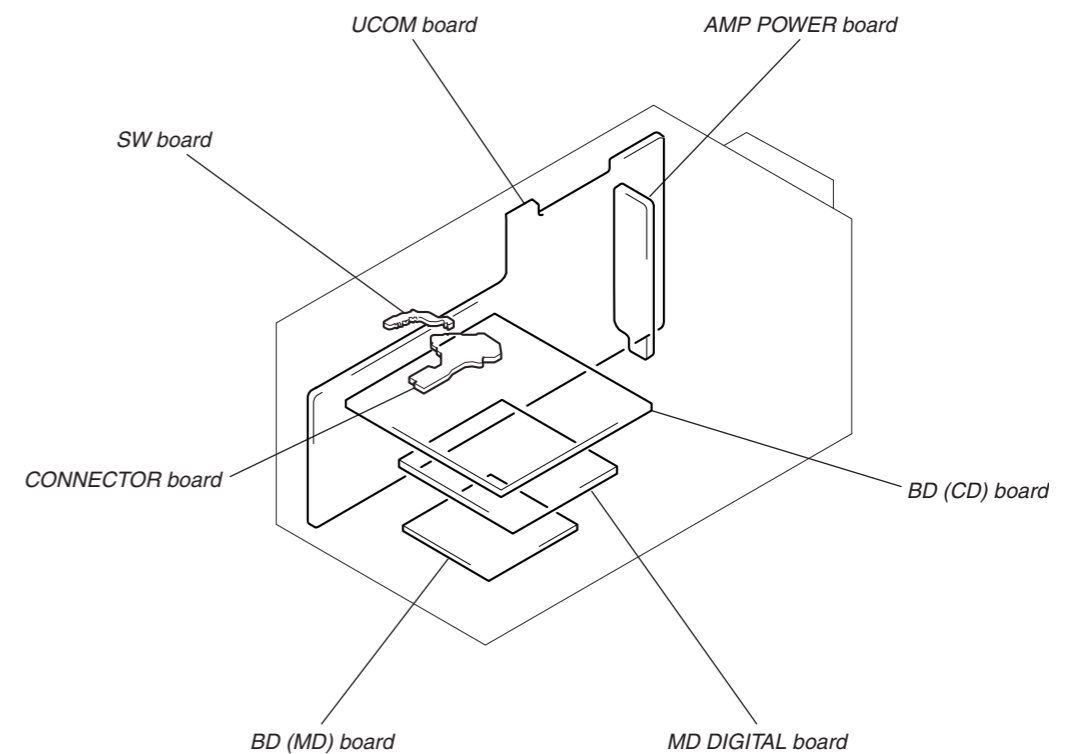
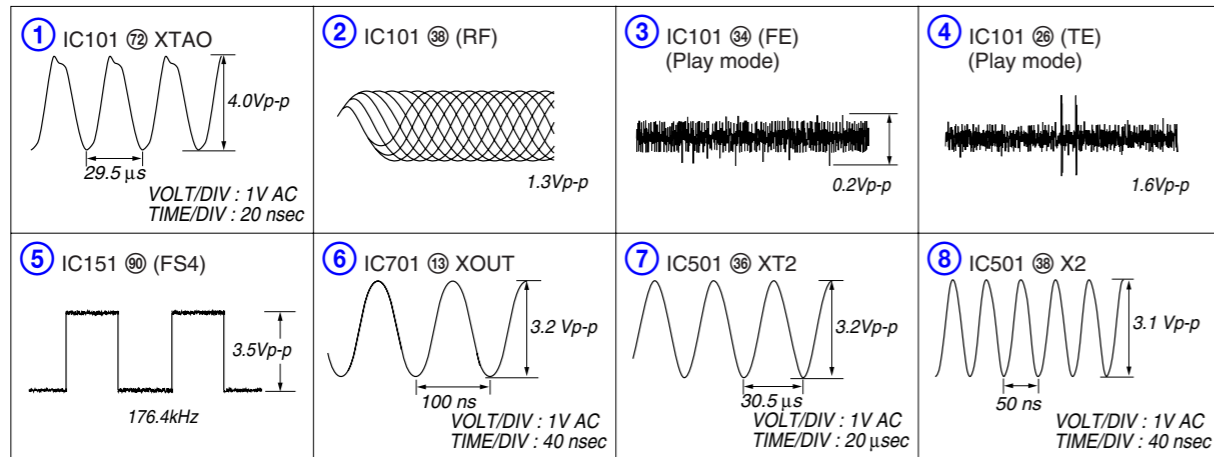
**Note:** The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety. Replace only with part number specified.

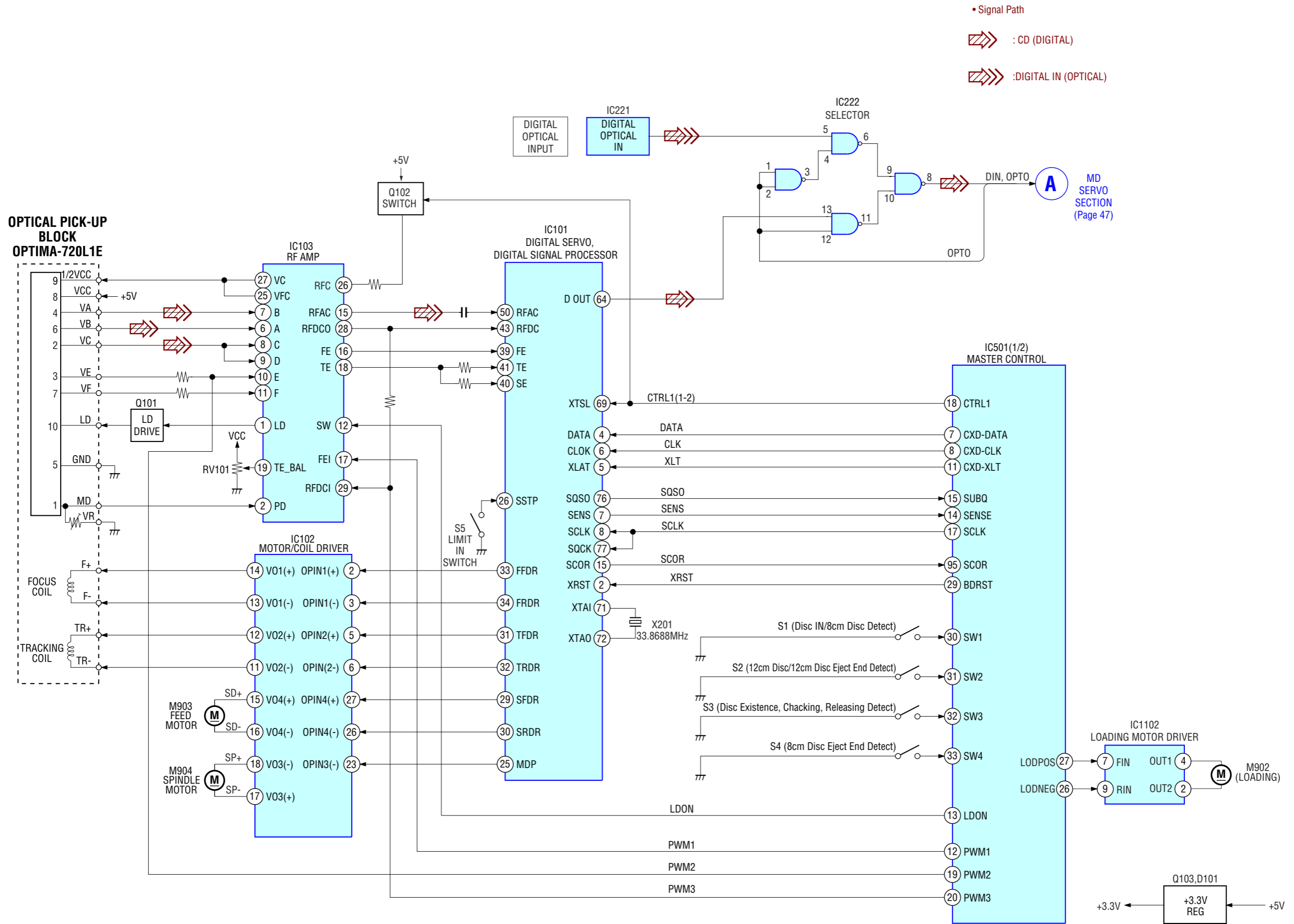
- Voltages are taken with a VOM (Input impedance  $10\text{M}\Omega$ ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  - : FM
  - : CD (ANALOG)
  - : CD (DIGITAL)
  - : PB (MD)
  - : REC (MD)
  - : DIGITAL IN (OPTICAL)
  - : PB (TAPE)
  - : REC (TAPE)

#### • Circuit Boards Location

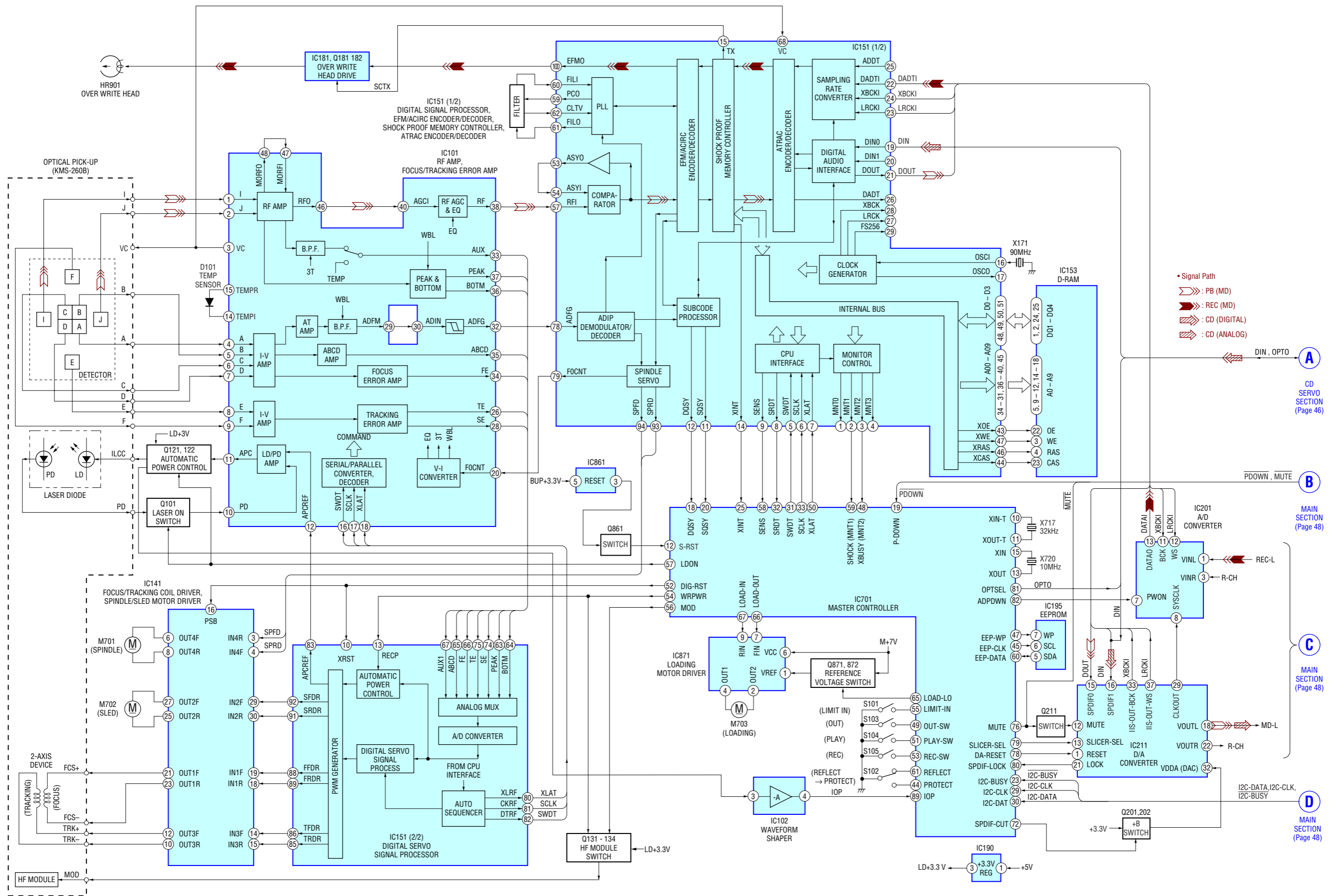


#### • Waveforms

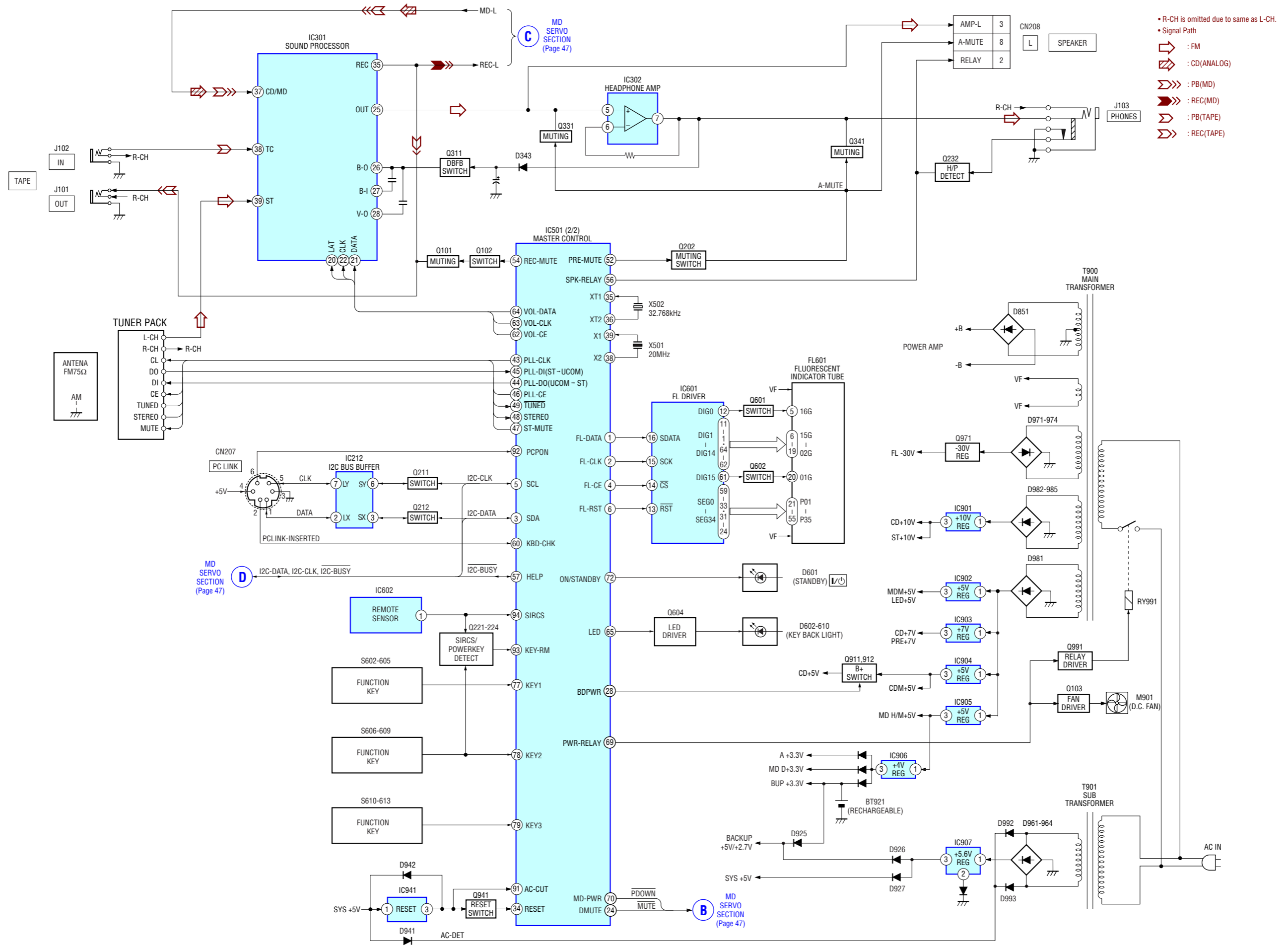




6-3. BLOCK DIAGRAM – MD SERVO SECTION –



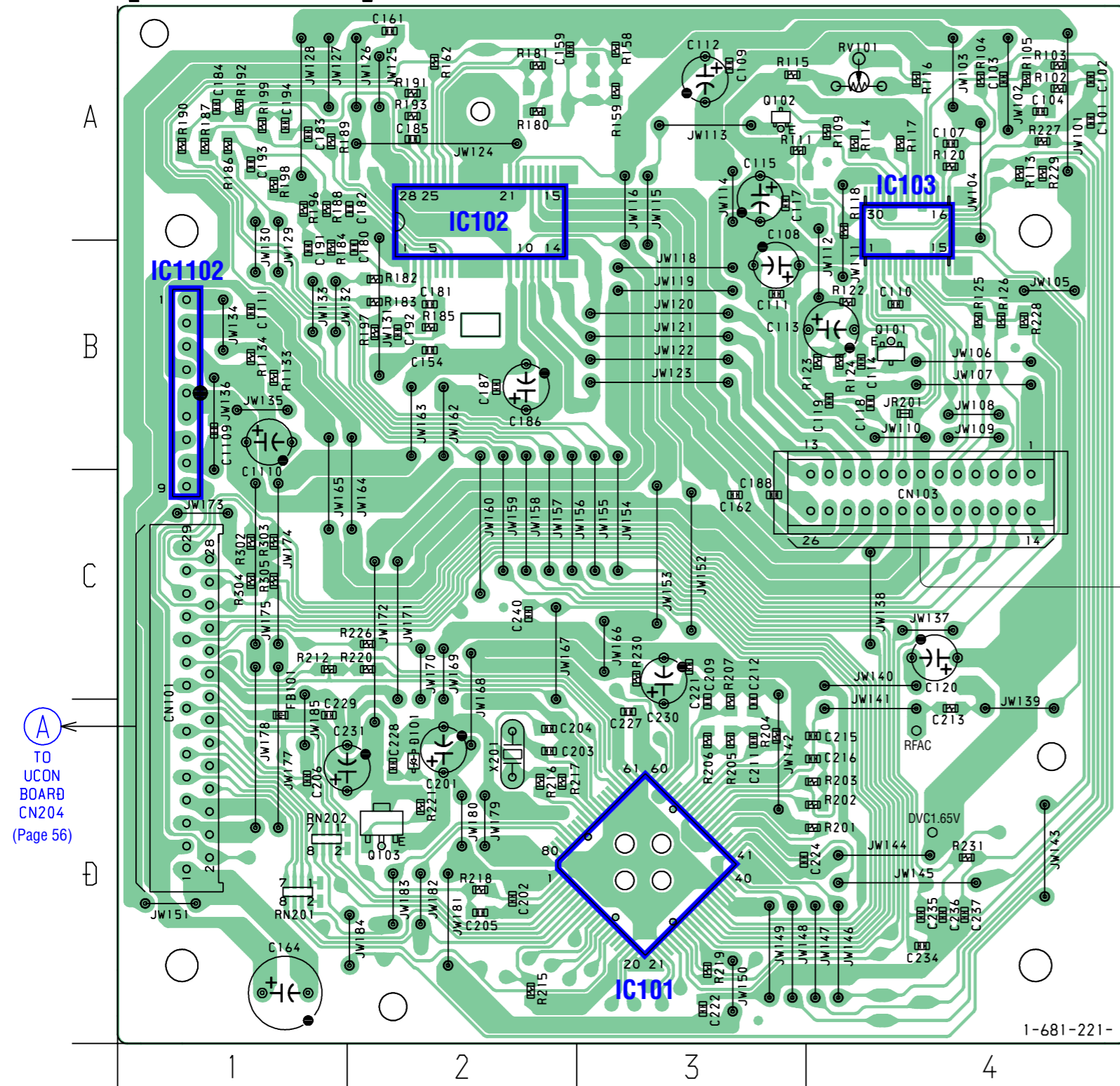
6-4. BLOCK DIAGRAM – MAIN SECTION –



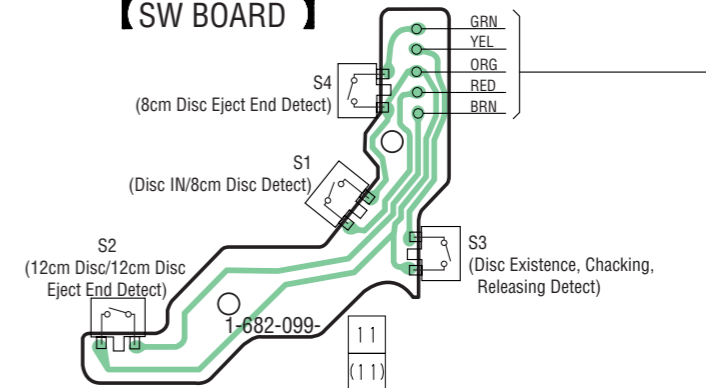


6-5. PRINTED WIRING BOARDS – CD SECTION – • See page 45 for Circuit Boards Location.

【BD (CD) BOARD】



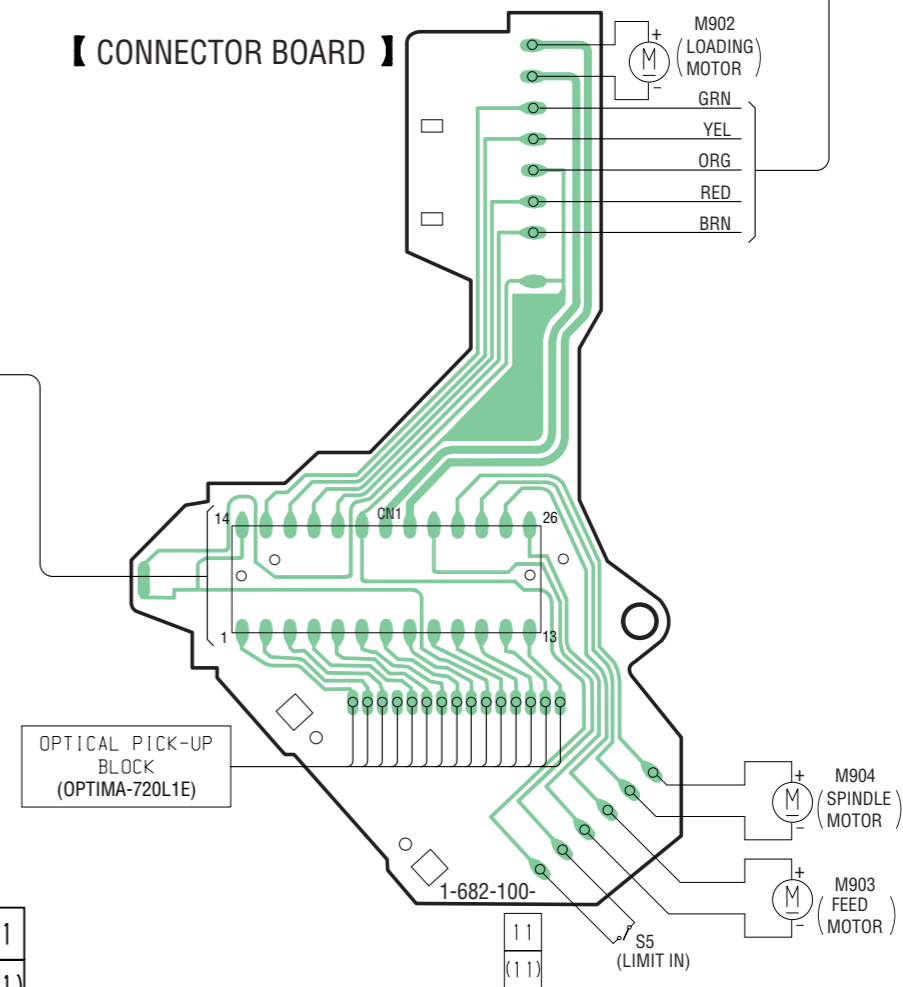
【SW BOARD】

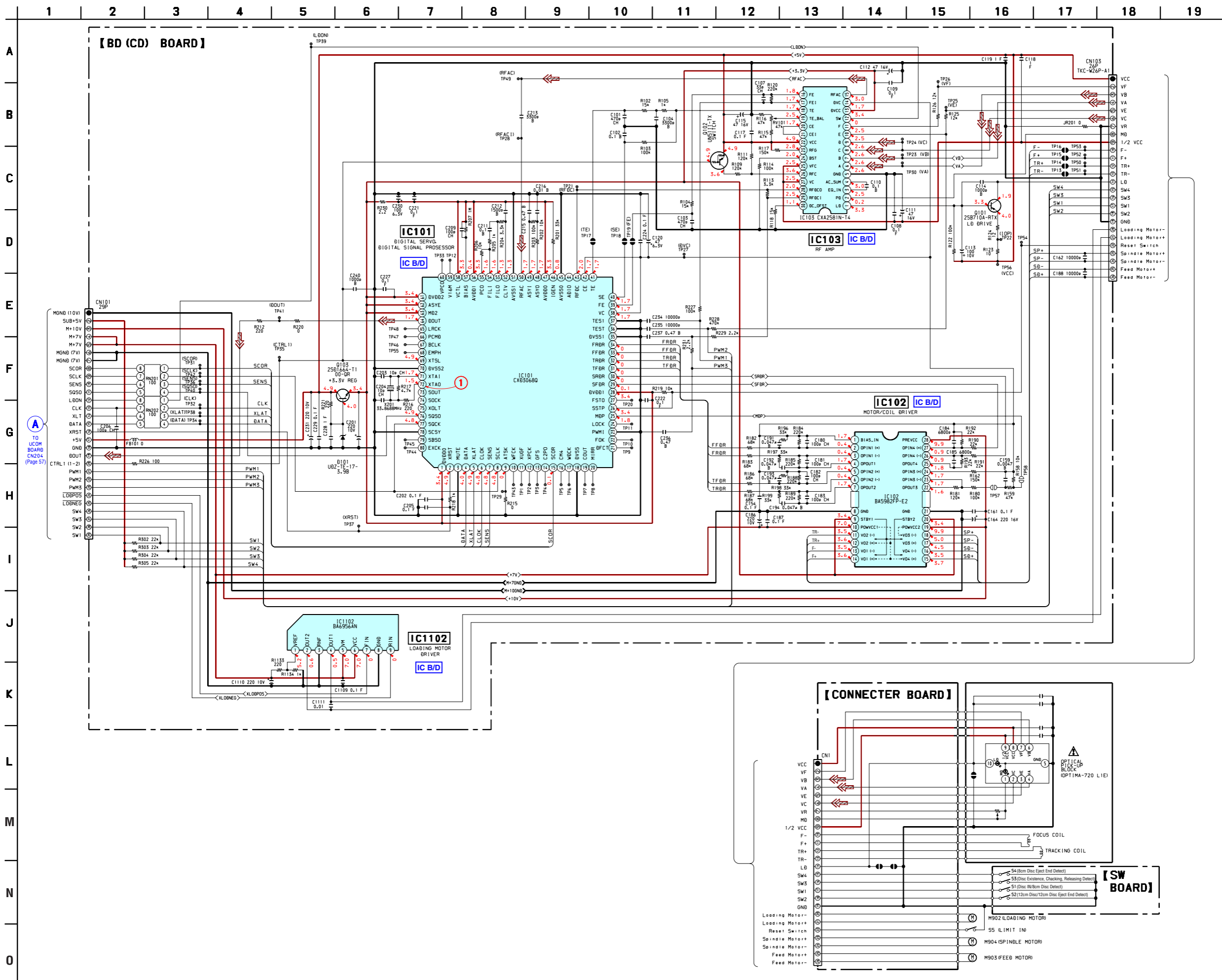


• Semiconductor Location

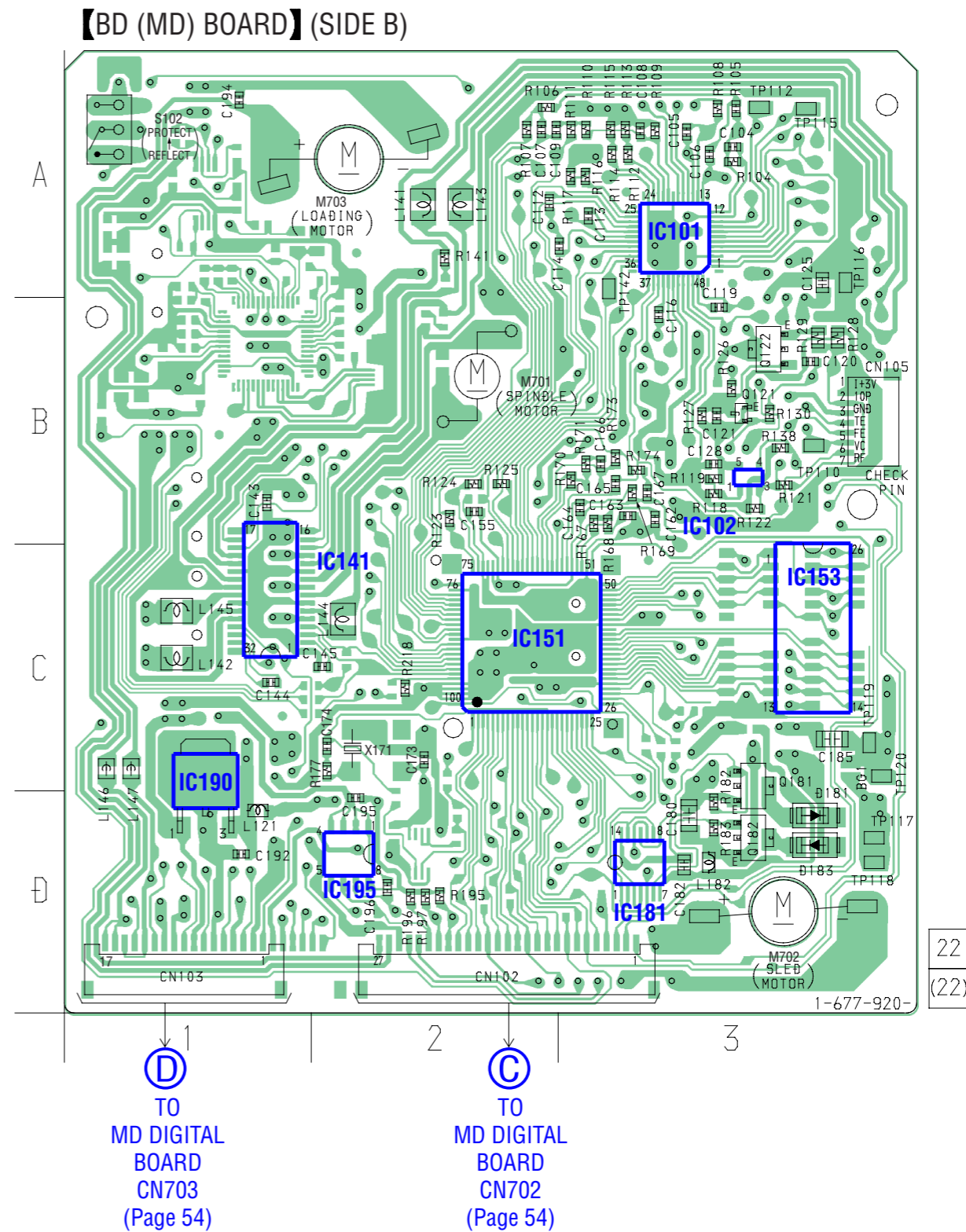
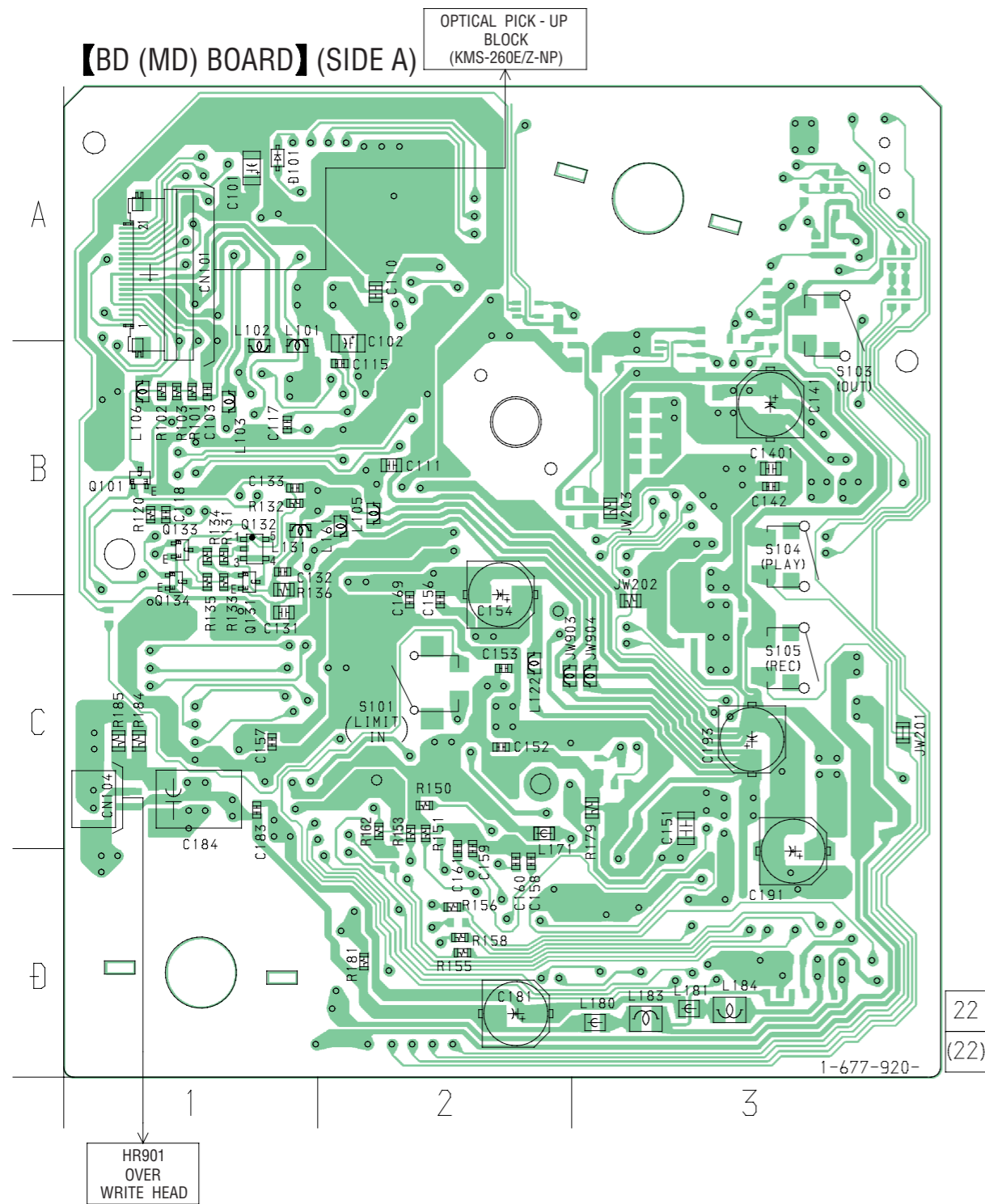
Ref. No.	Location
D101	D-2
IC101	D-3
IC102	A-2
IC103	A-4
IC1102	B-1
Q101	B-4
Q102	A-3
Q103	D-2

【CONNECTOR BOARD】





6-7. PRINTED WIRING BOARD – BD (MD) BOARD – • See page 45 for Circuit Boards Location.



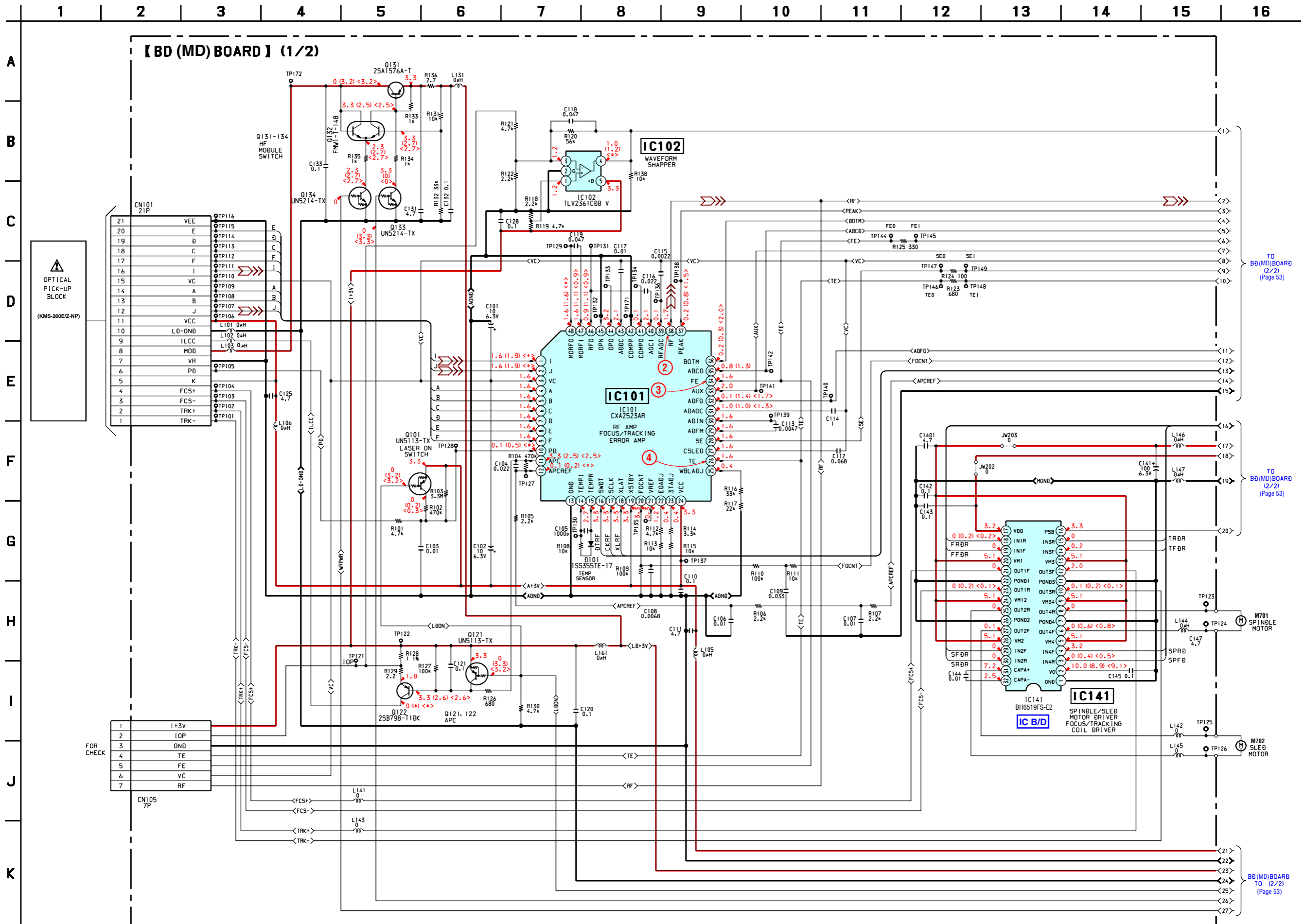
• Semiconductor Location Side A

Ref. No.	Location
D101	A-1
Q101	B-1
Q131	B-1
Q132	B-1
Q133	B-1
Q134	B-1

• Semiconductor Location Side B

Ref. No.	Location
D181	D-3
D183	D-3
IC101	A-3
IC102	B-3
IC141	C-1
IC151	C-2
IC153	C-3
IC181	D-3
IC190	D-1
IC195	D-2
Q121	B-3
Q122	B-3
Q181	C-3
Q182	D-3





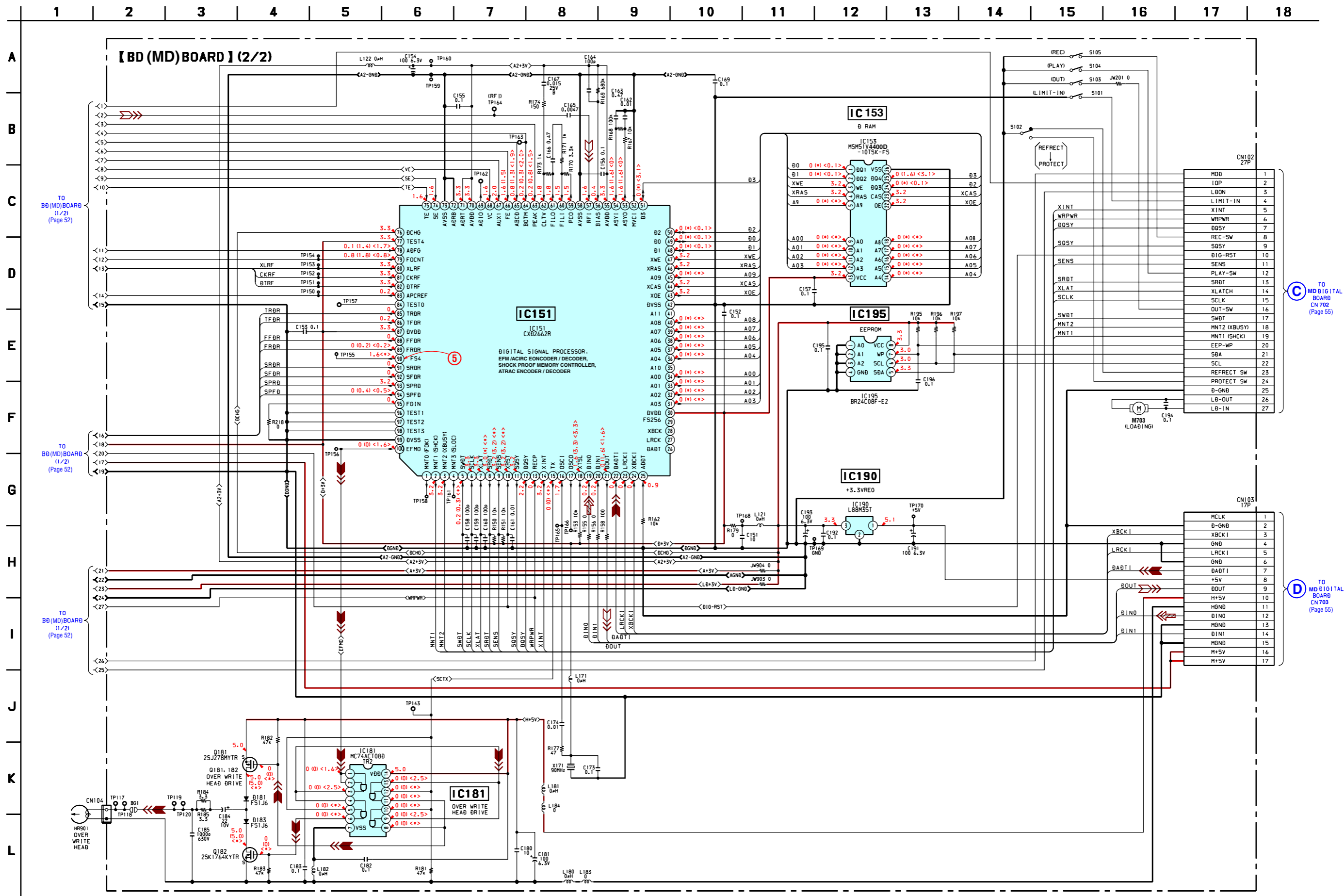
TO BB(MD)BOARD (2/2) (Page 53)

TO BB(MD)BOARD (2/2) (Page 53)

BB(MD)BOARD TO (2/2) (Page 53)



6-9. SCHEMATIC DIAGRAM – BD (MD) BOARD (2/2) – • See page 45 for Waveforms. • See page 69 for IC Pin Function Description.



TO BD(MD)BOARD (1/2) (Page 52)

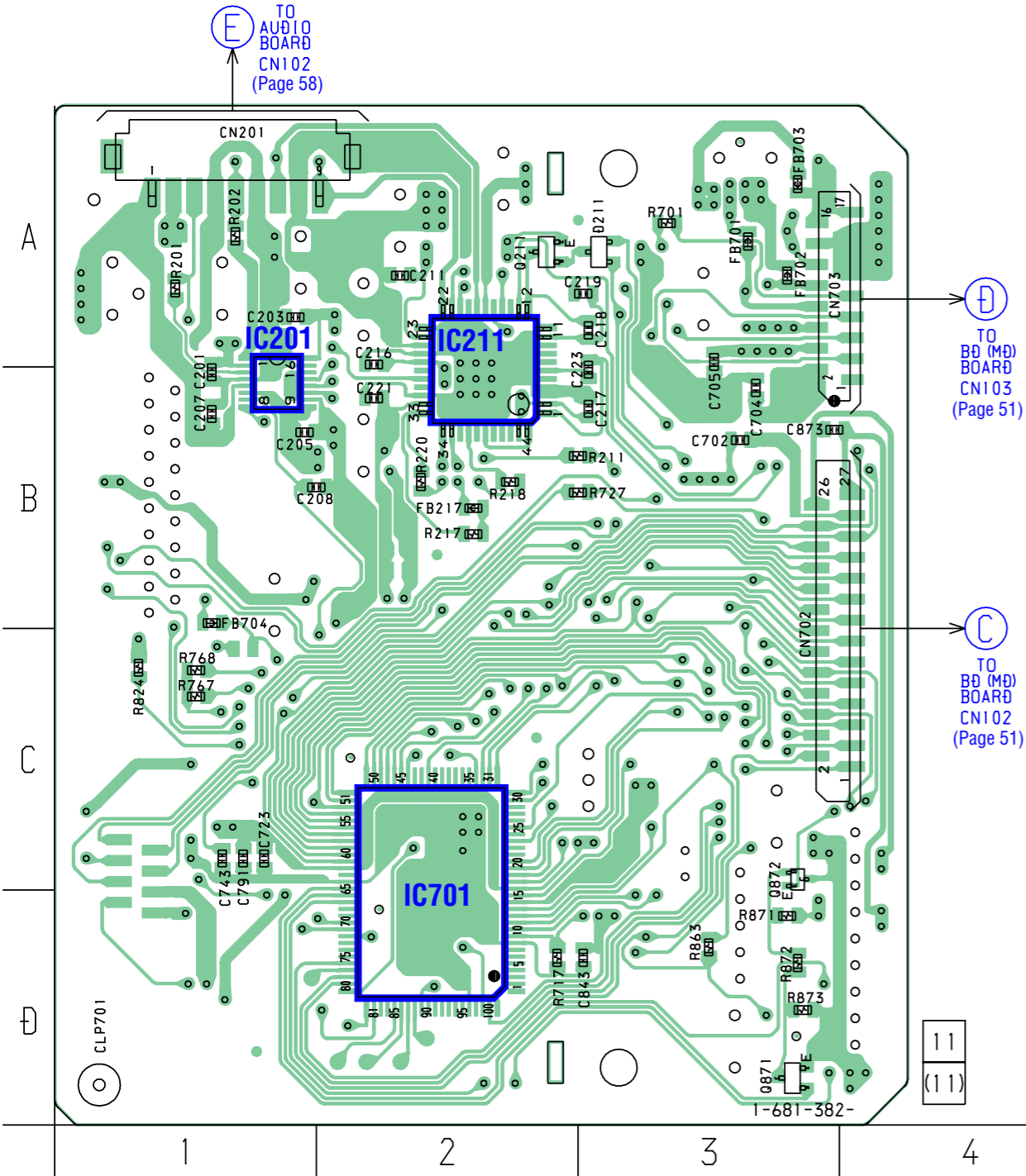
TO BD(MD)BOARD (1/2) (Page 52)

TO BD(MD)BOARD (1/2) (Page 52)

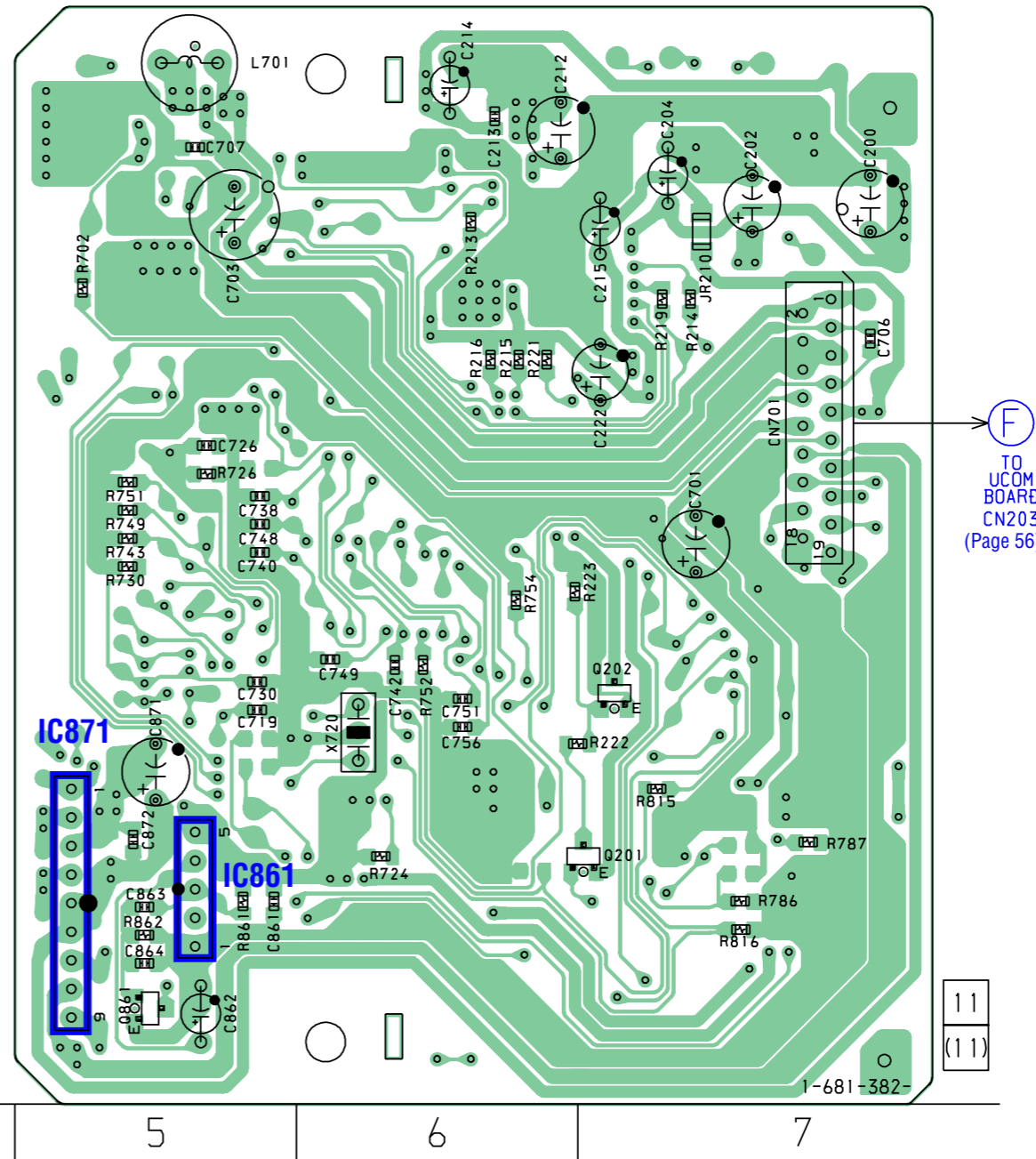
TO MD DIGITAL BOARD CN 702 (Page 55)

TO MD DIGITAL BOARD CN 703 (Page 55)

【MD DIGITAL BOARD】(SIDE A)



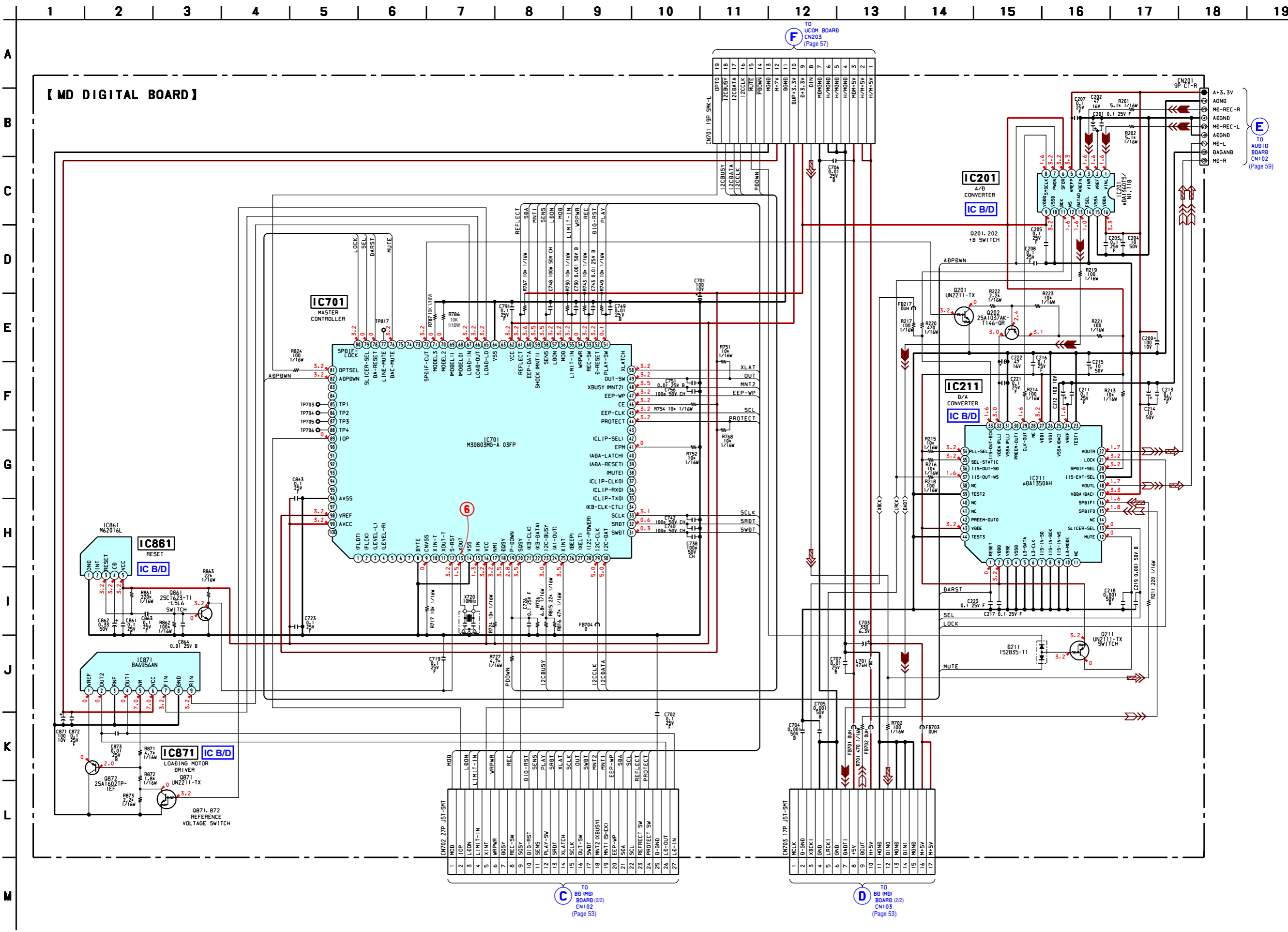
【MD DIGITAL BOARD】(SIDE B)



• Semiconductor Location

Ref. No.	Location
D211	A-3
IC201	B-1
IC211	B-2
IC701	D-2
IC861	D-5
IC871	D-5
Q201	D-7
Q202	C-7
Q211	A-2
Q861	D-5
Q871	D-3
Q872	C-3

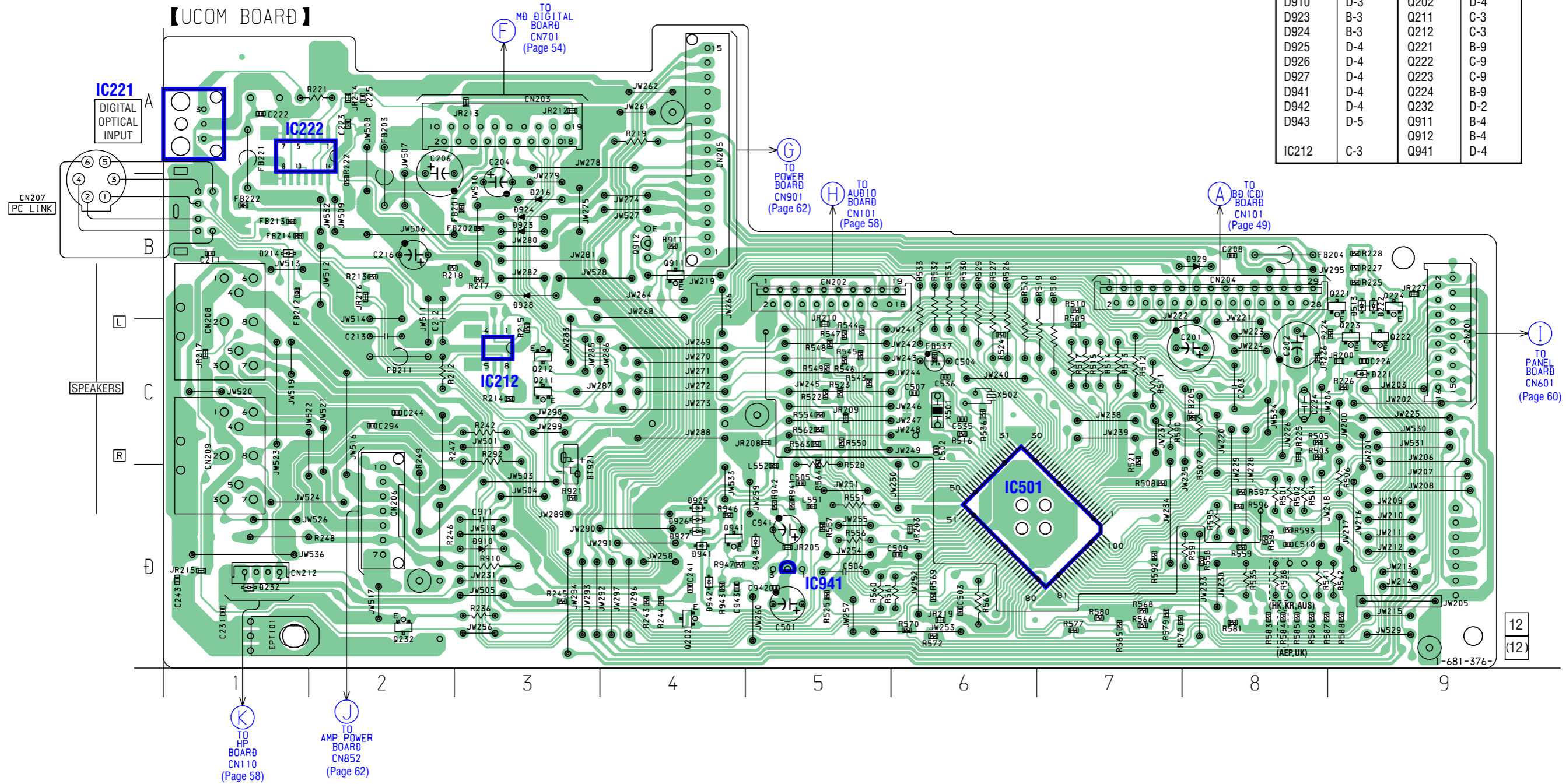
6-11. SCHEMATIC DIAGRAM – MD DIGITAL BOARD – • See page 45 for Waveforms. • See page 65, 66 for IC Block Diagrams. • See page 72 for IC Pin Function Description.



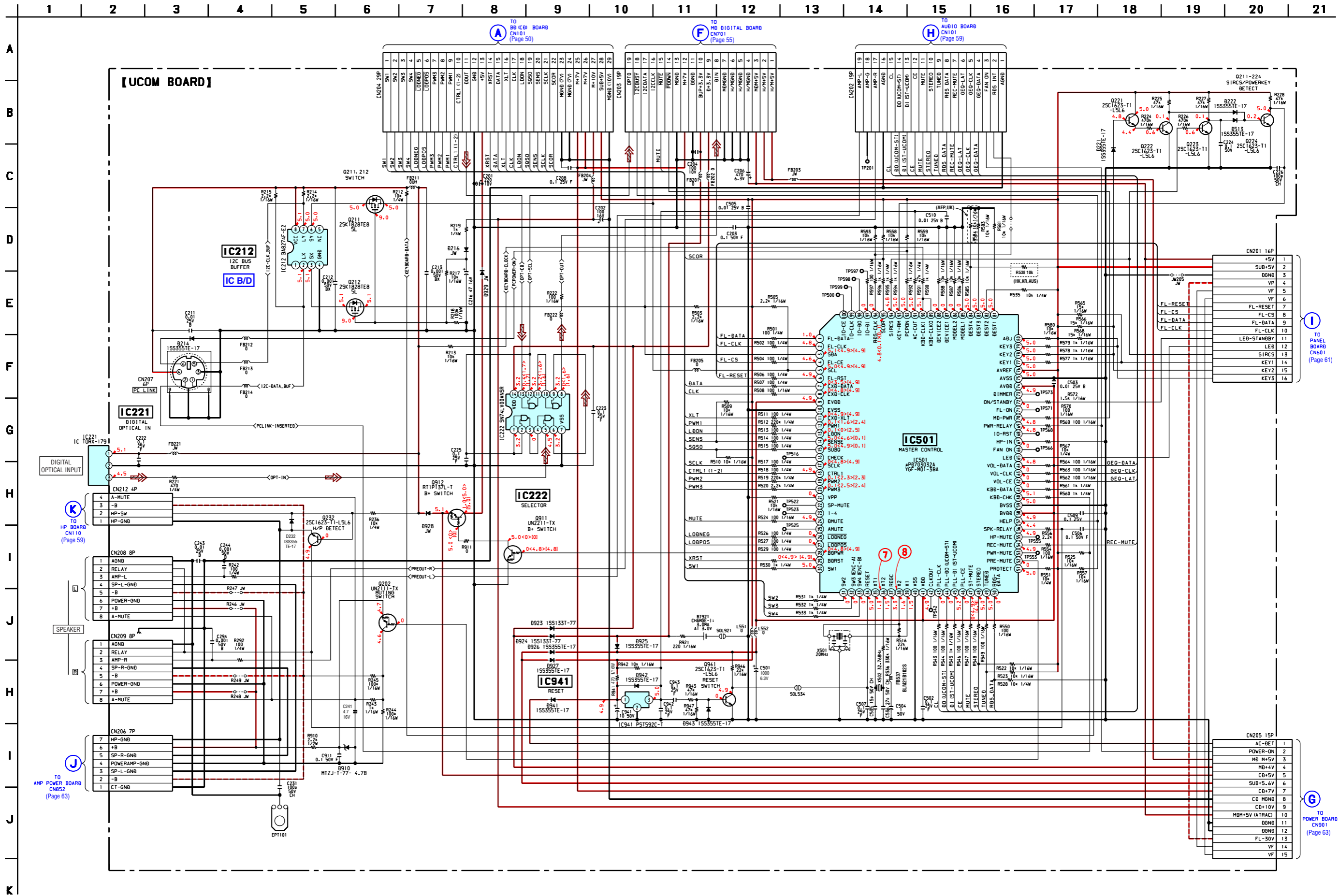


• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D214	B-1	IC221	A-1
D221	C-9	IC222	A-1
D222	B-9	IC501	D-6
D232	D-1	IC941	D-5
D513	B-9		
D910	D-3	Q202	D-4
D923	B-3	Q211	C-3
D924	B-3	Q212	C-3
D925	D-4	Q221	B-9
D926	D-4	Q222	C-9
D927	D-4	Q223	C-9
D941	D-4	Q224	B-9
D942	D-4	Q232	D-2
D943	D-5	Q911	B-4
		Q912	B-4
IC212	C-3	Q941	D-4

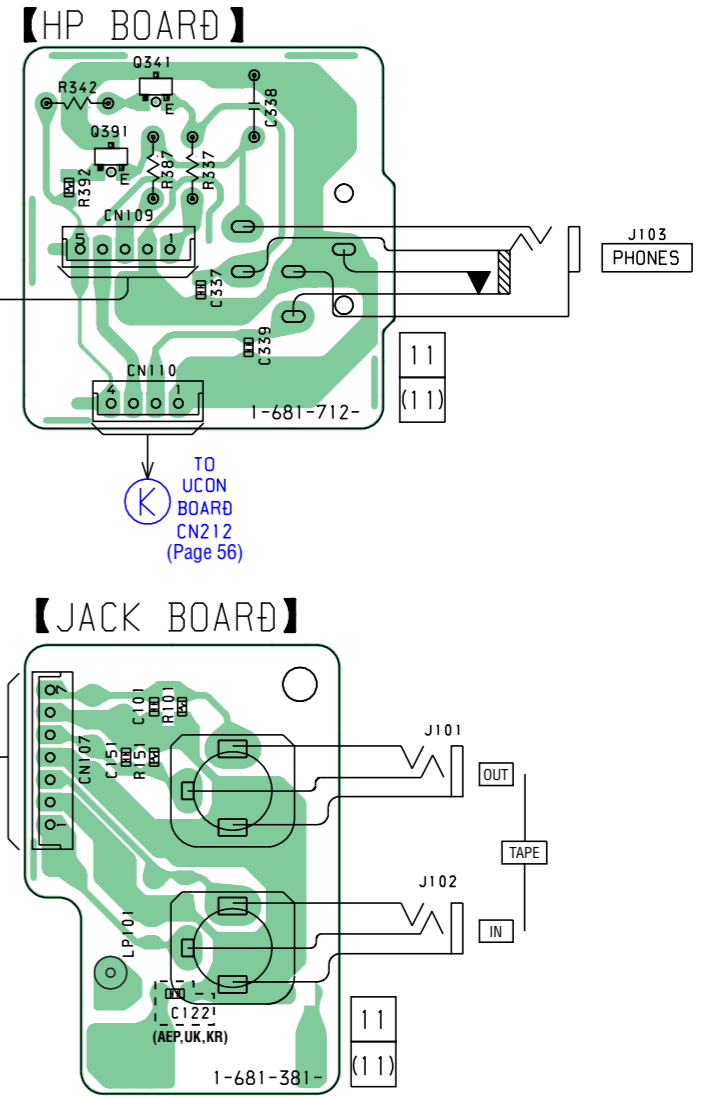
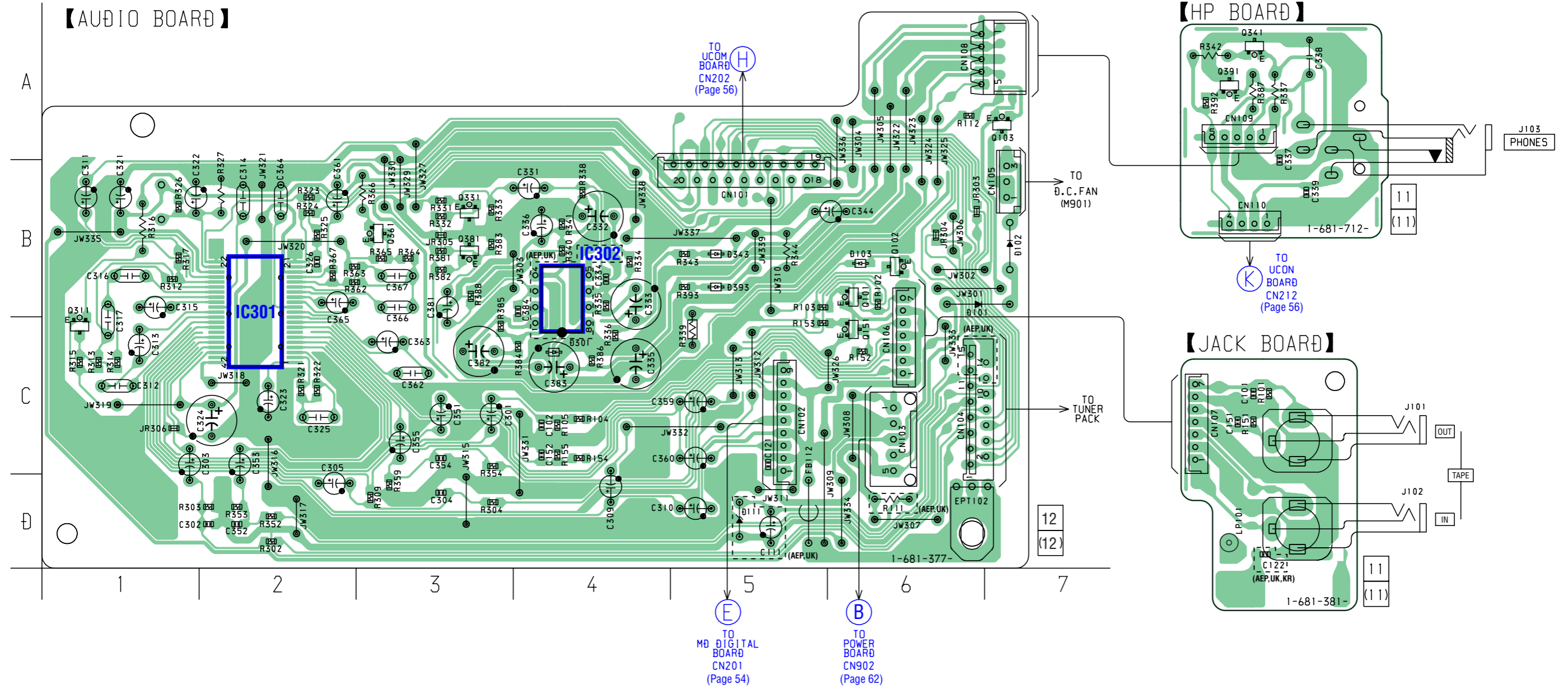


6-13. SCHEMATIC DIAGRAM – UCOM BOARD – • See page 45 for Waveforms. • See page 67 for IC Block Diagrams. • See page 74 for IC Pin Function Description.



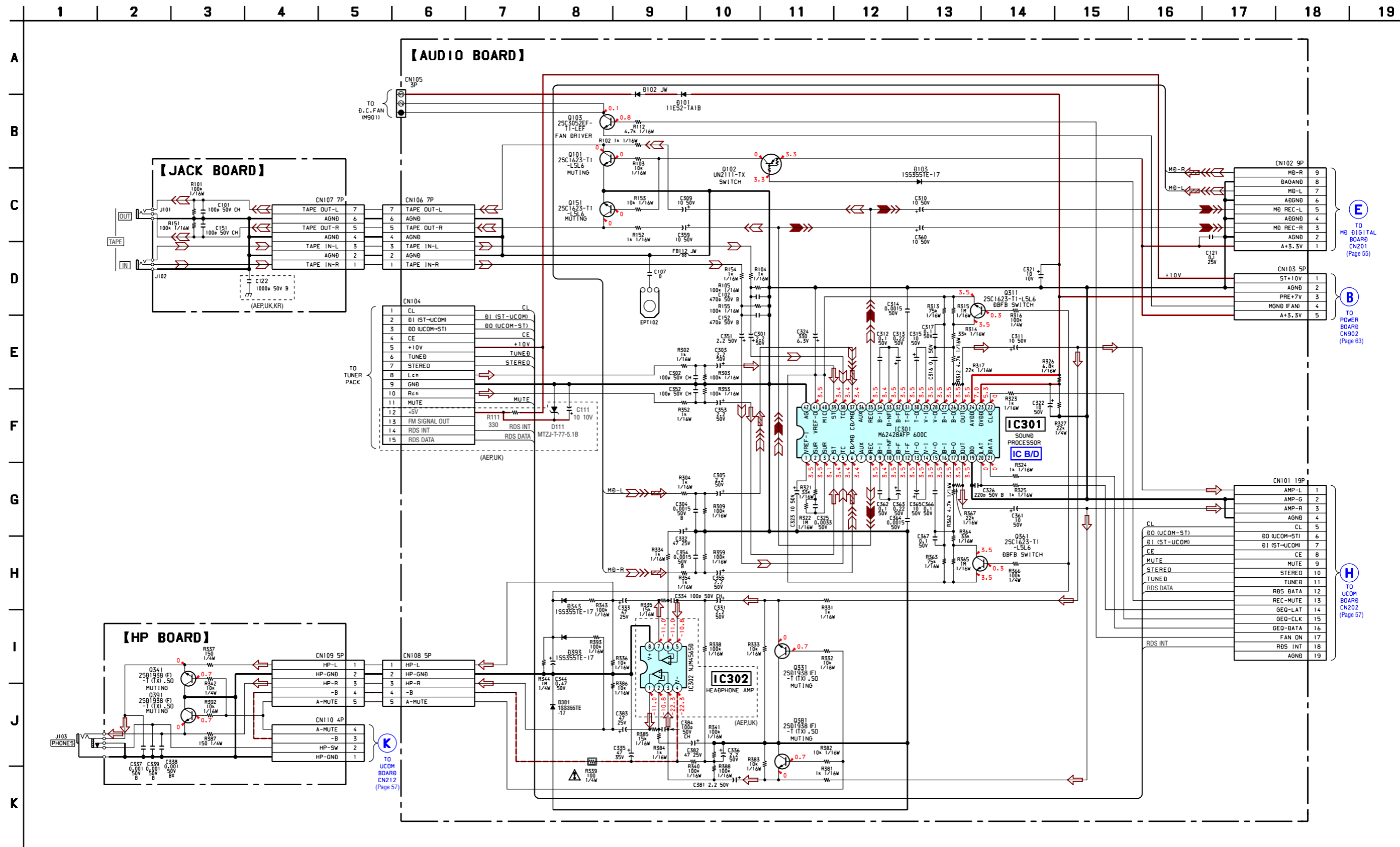
• Semiconductor Location

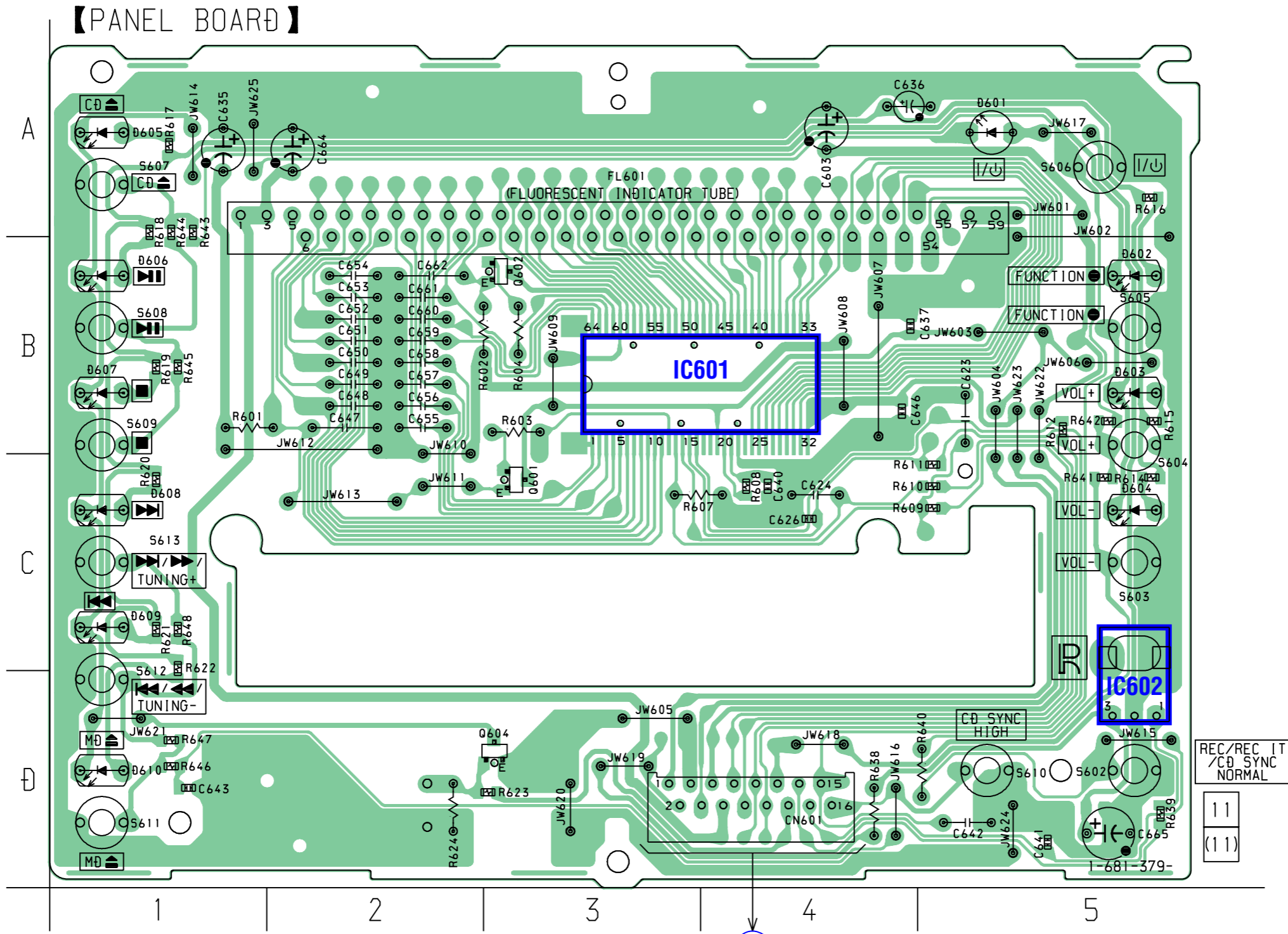
Ref. No.	Location	Ref. No.	Location
D101	B-6	Q101	B-6
D111	D-5	Q102	B-6
D301	C-4	Q103	A-7
D103	B-6	Q151	C-6
D343	B-5	Q311	C-1
D393	B-5	Q331	B-3
		Q361	B-3
IC301	B-2	Q381	B-3
IC302	B-4		





6-15. SCHEMATIC DIAGRAM – AUDIO SECTION – • See page 64 for IC Block Diagrams.





• Semiconductor Location

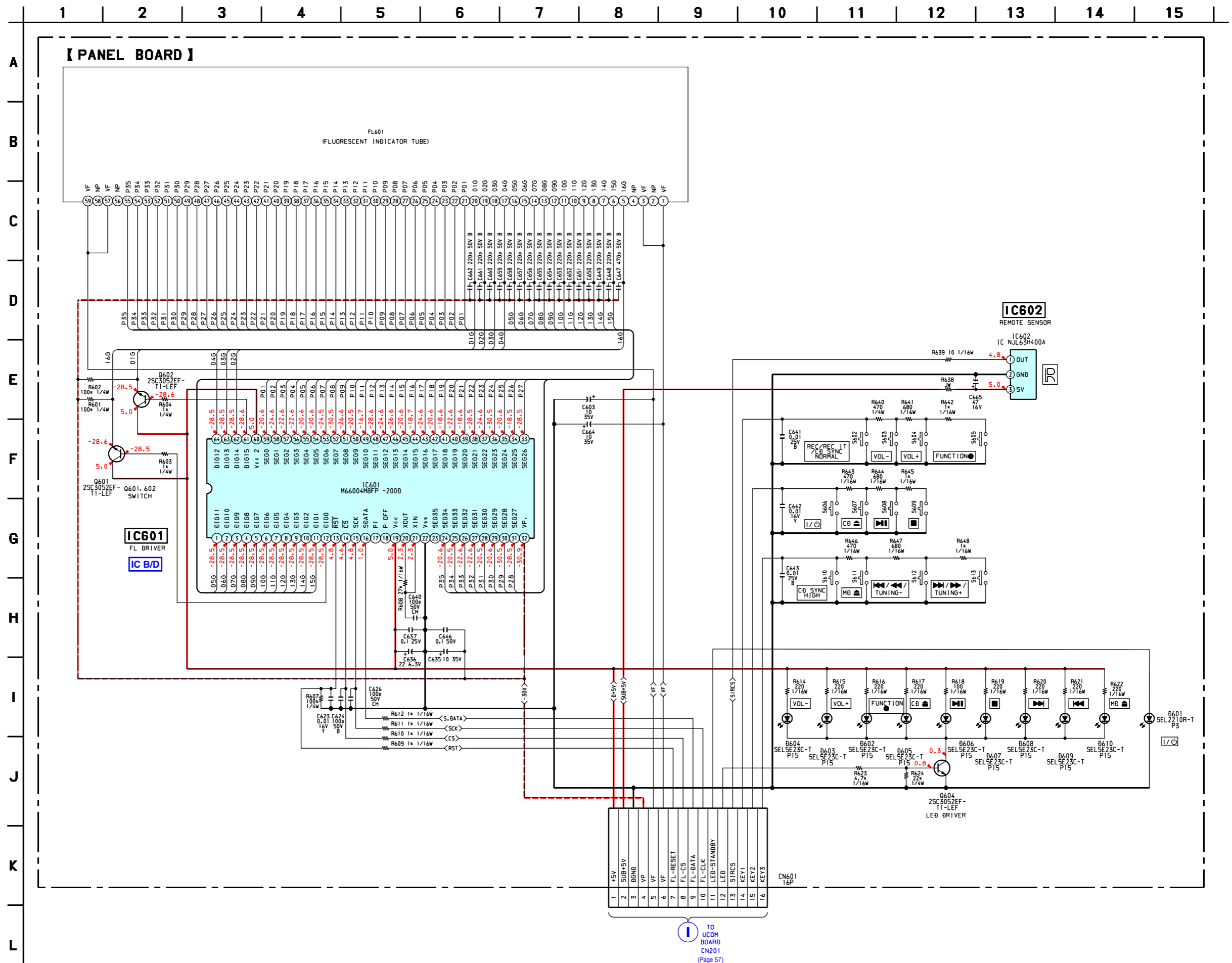
Ref. No.	Location
D601	A-5
D602	B-5
D603	B-5
D604	C-5
D605	A-1
D606	B-1
D607	B-1
D608	C-1
D609	C-1
D610	D-1
IC601	B-3
IC602	C-5
Q601	C-3
Q602	B-3
Q604	D-3

REC/REC IT /CD SYNC NORMAL  
11  
(11)

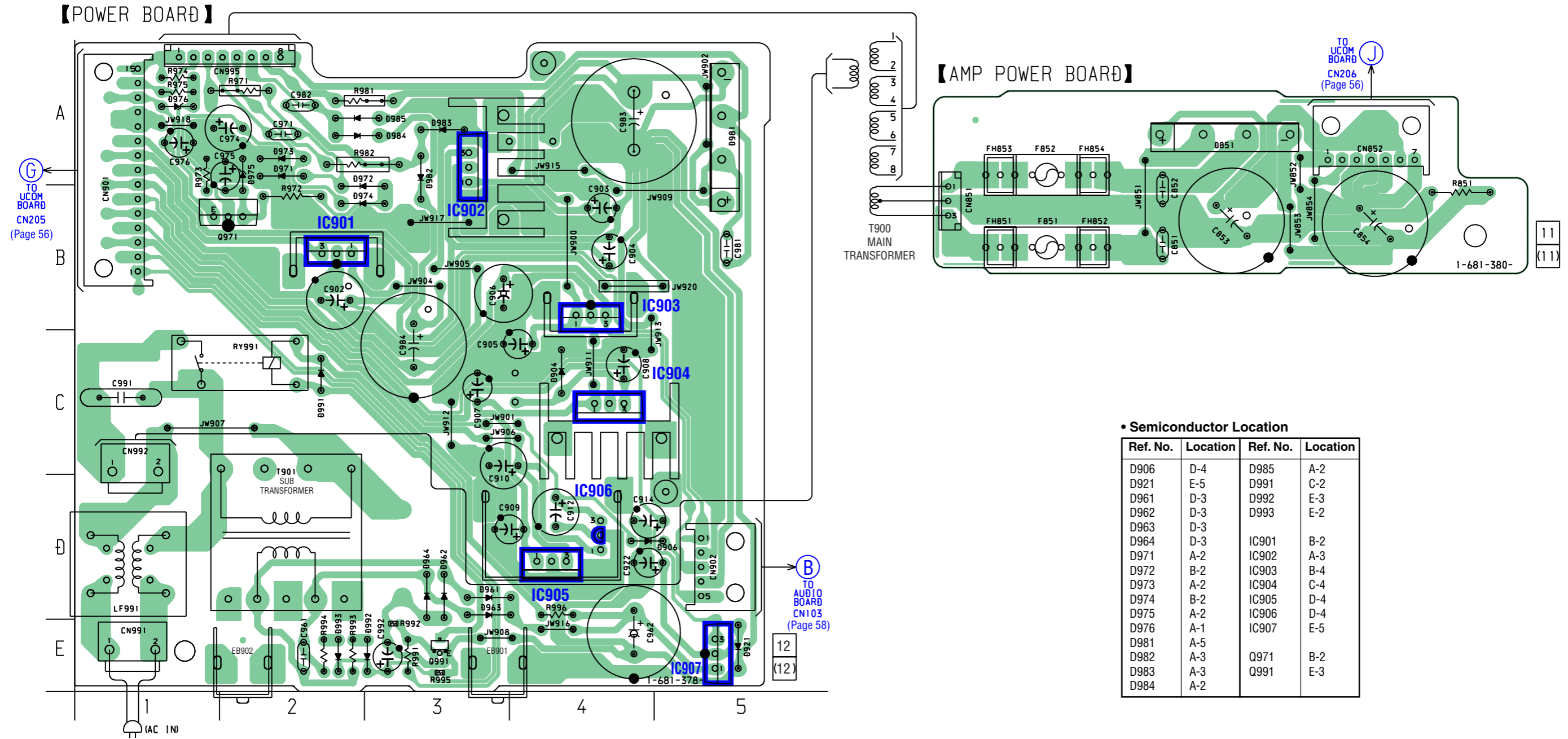
TO UCOM BOARD CN201 (Page 56)



6-17. SCHEMATIC DIAGRAM – PANEL BOARD – • See page 67 for IC Block Diagrams.



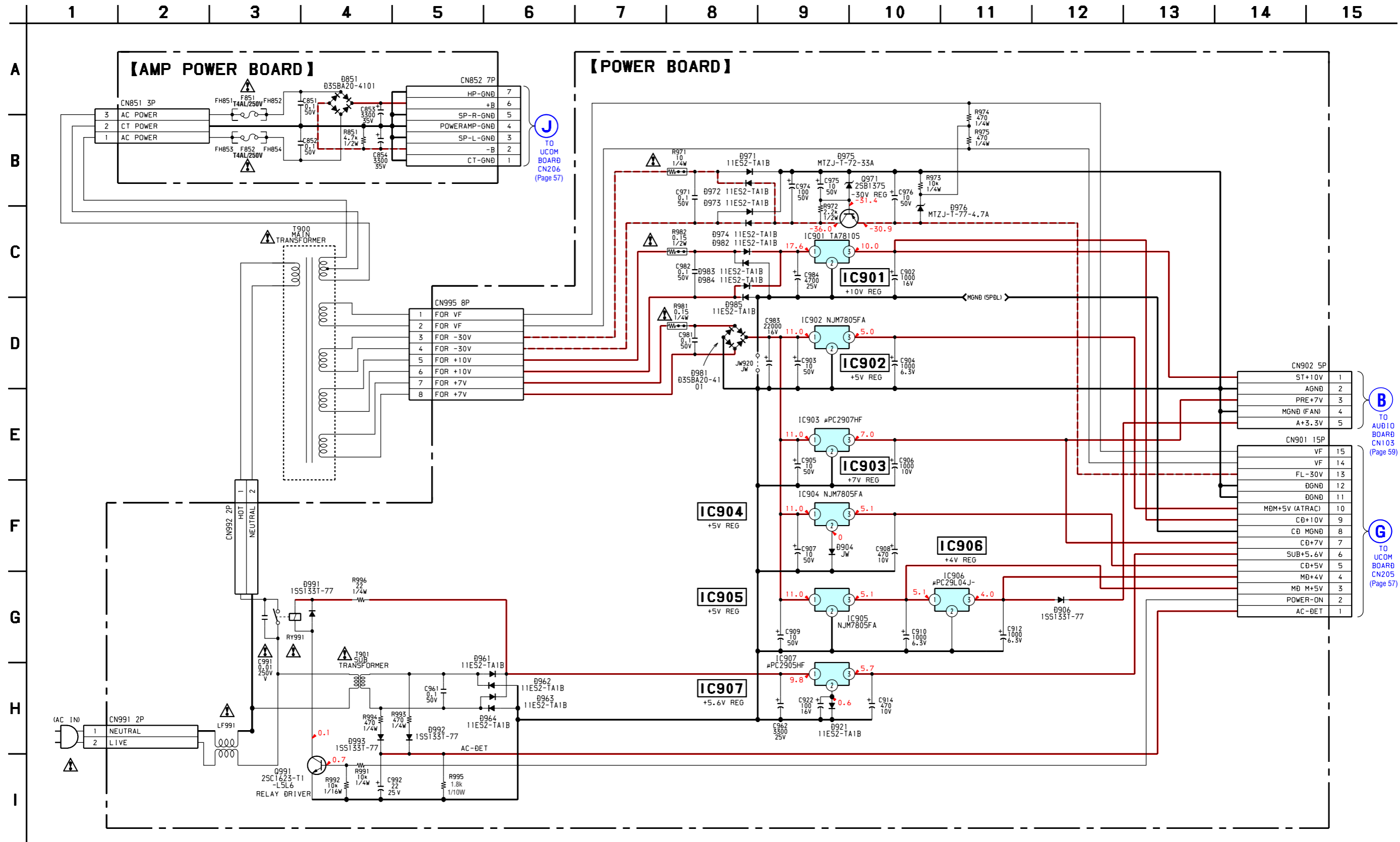
TO  
UCOM  
BOARD  
CN201  
(Page 57)



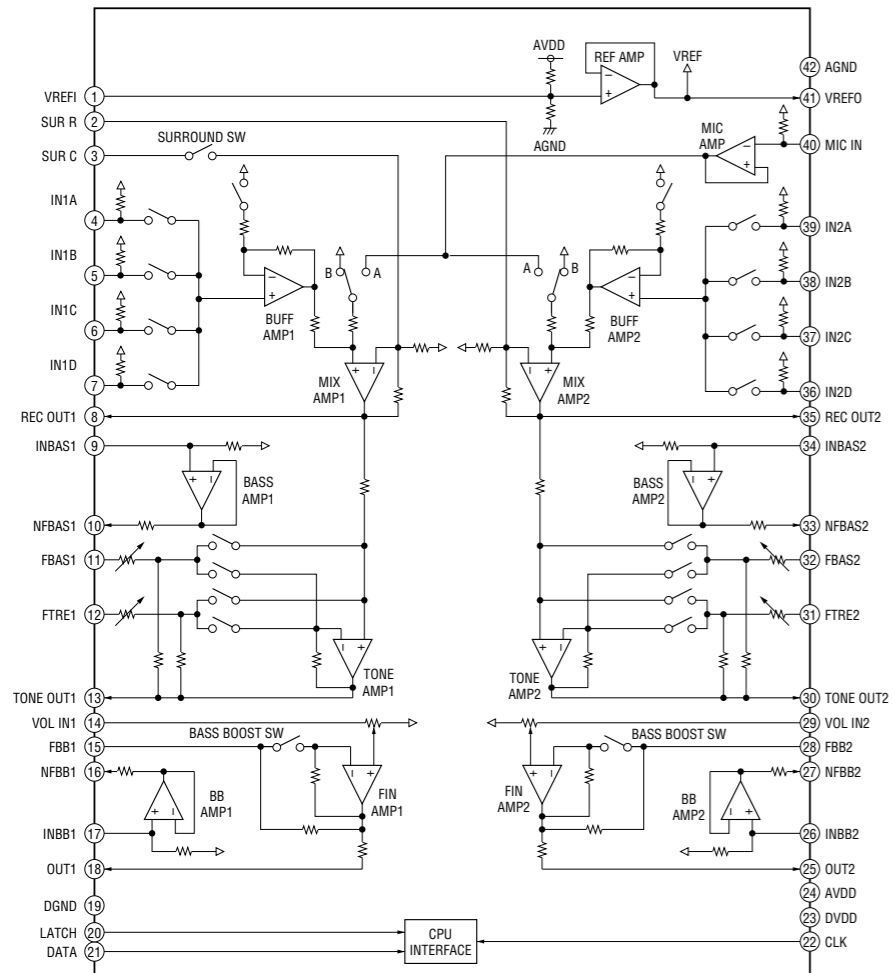
• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D906	D-4	D985	A-2
D921	E-5	D991	C-2
D961	D-3	D992	E-3
D962	D-3	D993	E-2
D963	D-3		
D964	D-3	IC901	B-2
D971	A-2	IC902	A-3
D972	B-2	IC903	B-4
D973	A-2	IC904	C-4
D974	B-2	IC905	D-4
D975	A-2	IC906	D-4
D976	A-1	IC907	E-5
D981	A-5		
D982	A-3	Q971	B-2
D983	A-3	Q991	E-3
D984	A-2		

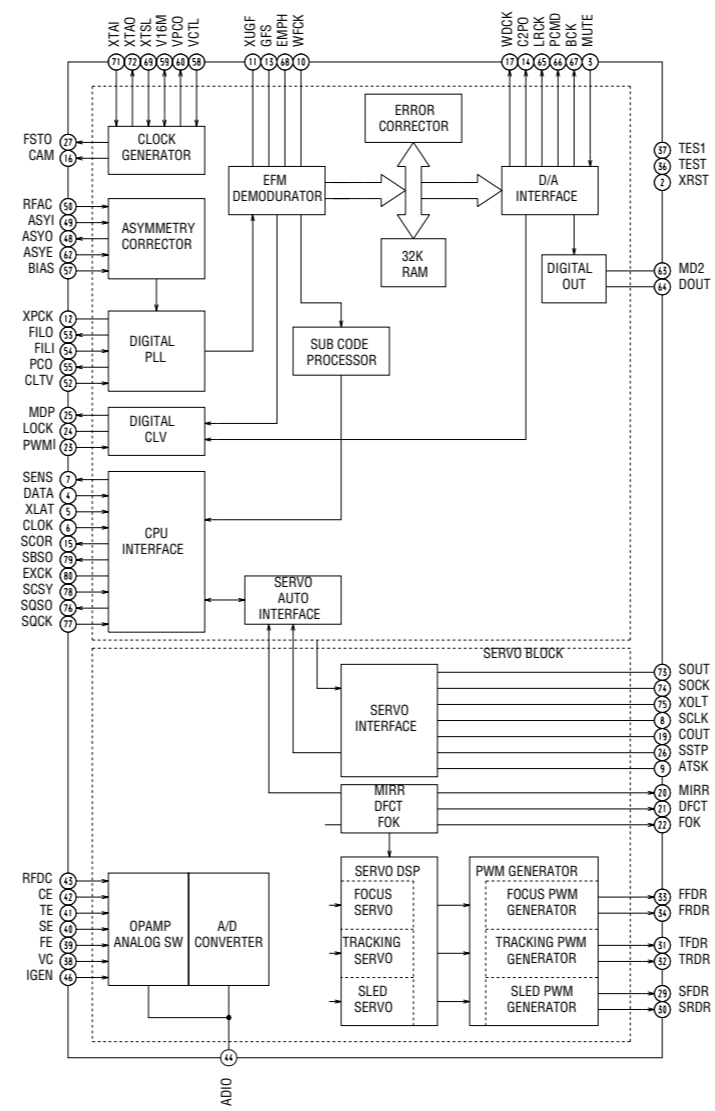
6-19. SCHEMATIC DIAGRAM – POWER SECTION –



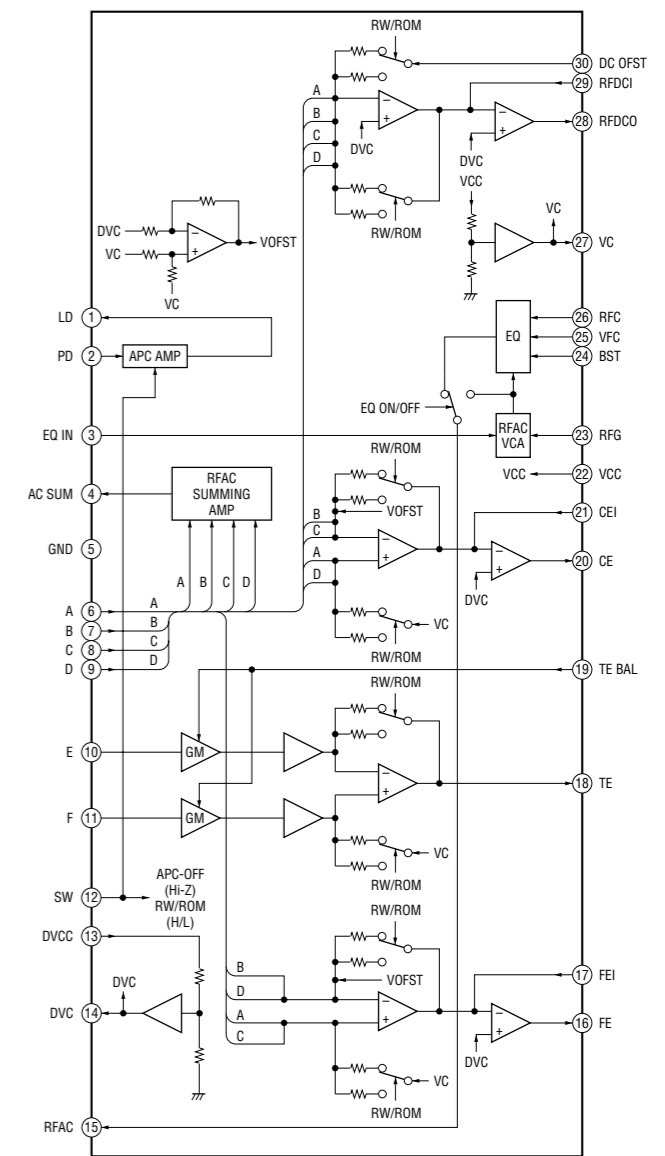
IC301 M62428AFP600C (AUDIO BOARD)



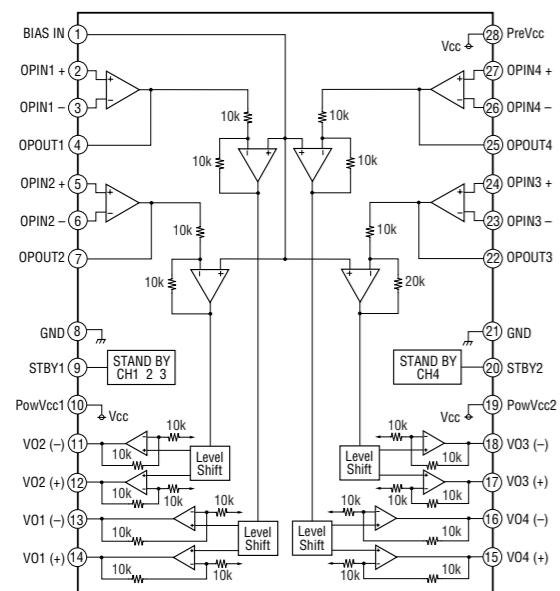
IC101 CXD3068Q (BD (CD) BOARD)



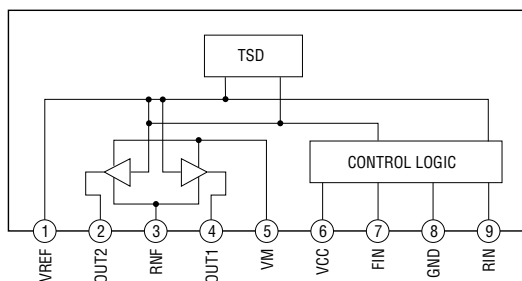
IC103 CXA2581N-T4 (BD (CD) BOARD)



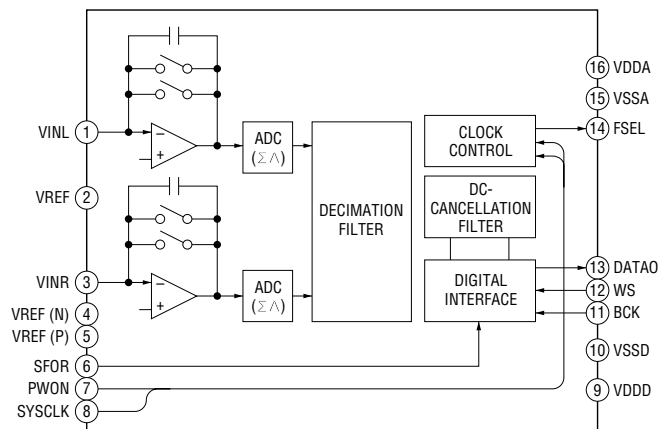
IC102 BA5982FP-E2 (BD (CD) BOARD)



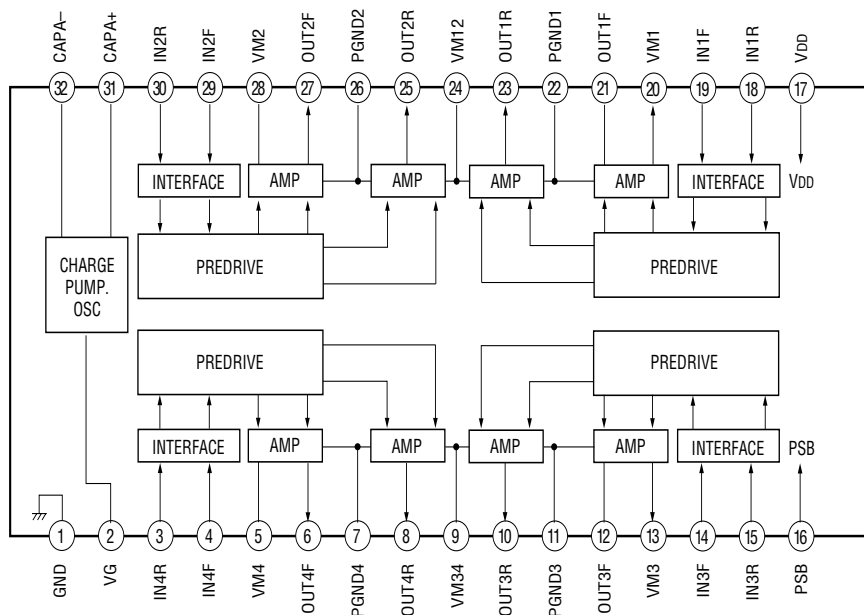
**IC1102 BA6956AN (BD (CD) BOARD)**  
**IC871 BA6956AN (MD DIGITAL BOARD)**



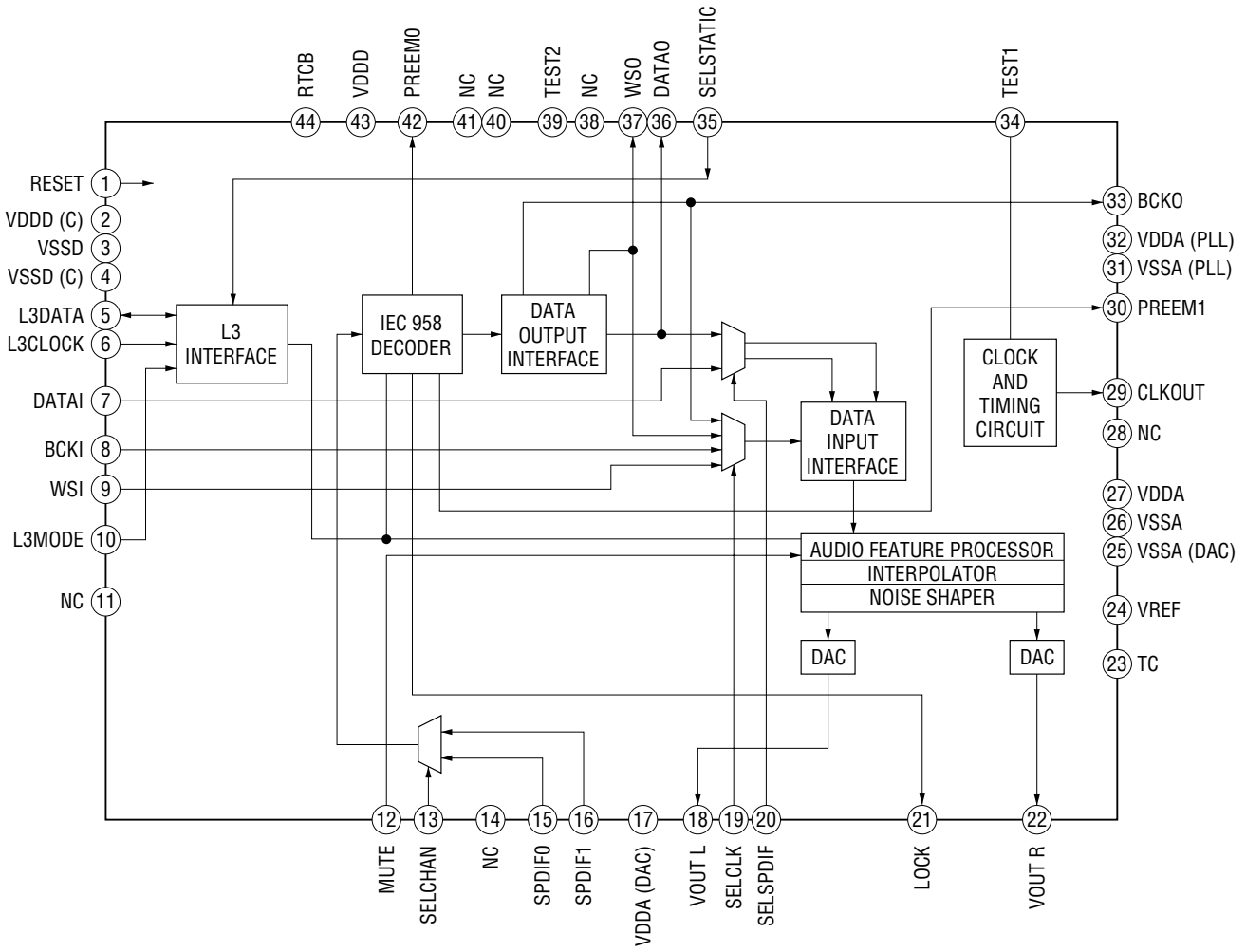
**IC201  $\mu$ DA1360TS (MD DIGITAL BOARD)**



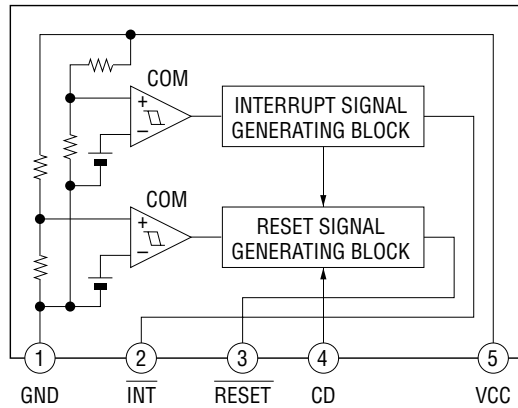
**IC141 BH6519FS-E2 (BD (MD) BOARD)**



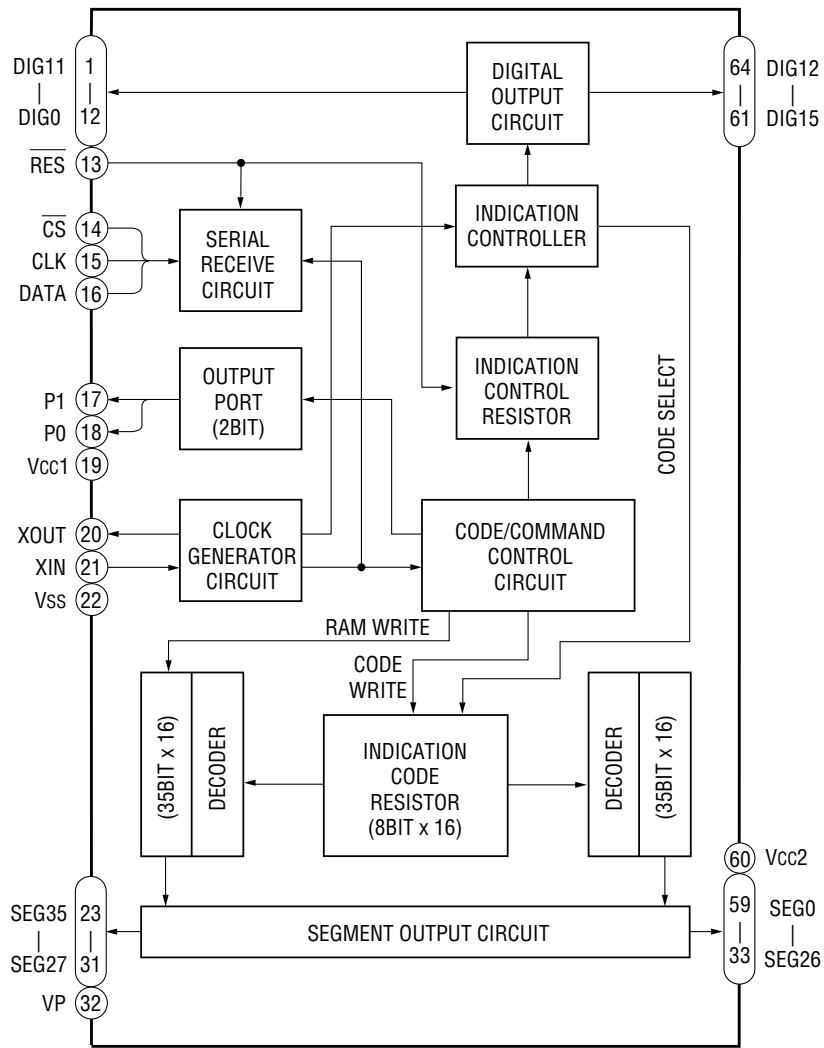
**IC211  $\mu$ DA1350AH (MD DIGITAL BOARD)**



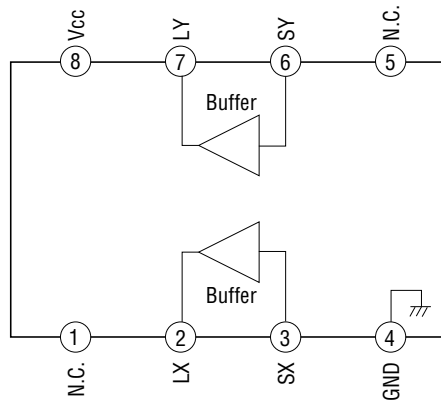
**IC861 M62016L (MD DIGITAL BOARD)**



**IC601 M66004M8FP-200D (PANEL BOARD)**



**IC212 BA8274F-E2 (UCOM BOARD)**



## 6-21. IC PIN FUNCTION DESCRIPTION

## • IC101 CXA2523AR (RF AMP, FOCUS/TRACKING ERROR AMP) (BD (MD) BOARD)

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	—	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	O	Ground terminal
14	TEMPI	I	Connected to the temperature sensor
15	TEMPR	I	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	O	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 (I3 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



- **IC151** CXD2662R  
(DIGITAL SIGNAL PROCESSOR, EFM/ACIRC ENCODER/DECODER, SHOCK PROOF MEMORY CONTROLLER, ATRAC ENCODER/DECODER) (BD (MD) BOARD)

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 (SHCK)	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 (SLOC)	O	Spindle servo lock status monitor signal output to the MD mechanism controller (IC1001) (open)
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	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	DATI	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) (open)
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	XOE	O	Output enable signal output to the D-RAM (IC152) "L" active
44	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	XRAS	O	Row address strobe signal output to the D-RAM (IC152) "L" active
47	XWE	O	Write 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
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 (I3 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	APCREF	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)
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)

\* 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
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.

## • IC701 M30803MG-A03FP MASTER CONTROLLER (MD DIGITAL BOARD)

Pin No.	Pin Name	I/O	Description
1	(FLDT)	—	Not used
2	(FLCK)	—	Not used
3	(LEVEL-L)	—	Not used
4	(LEVEL-R)	—	Not used
5 to 7	—	—	Not used
8	BYTE	—	Data bus changed signal input (Connected to ground)
9	CNVSS	—	Processor mode selection terminal
10	XIN-T	I	Not used
11	XOUT-T	I	Not used
12	S-RST	I	System reset input
13	XOUT	O	Main clock output (10MHz)
14	VSS	I	Ground
15	XIN	O	Main clock input (10MHz)
16	VCC	—	Power supply
17	NMI	I	Fixed at H (Pull-up)
18	DQSY	—	Digital in sync signal input (Record system)
19	P-DOWN	I	Power down detection signal input (L:Power down)
20	SQSY	I	ADIP (MO) sync signal or subcode Q (PIT) sync signal input from the CXD2662R (Playback system)
21	(KB-CLK)	I	Not used
22	(KB-DATA)	I	Not used
23	I2C-BUSY	—	I2C cable connect check signal output
24	(A1-OUT)	—	Not used
25	XINT	O	Interrupt status signal input from the CXD2662R
26	(BEEP)	—	Not used
27	(XELT)	I	Not used
28	(I2C-POWER)	—	Not used
29	I2C-CLK	—	I2C serial clock input/output
30	I2C-DAT	—	I2C serial data input/output
31	SWDT	I/O	Writing data signal output to the serial bus
32	SRDT	I/O	Reading data signal input from the serial bus
33	SCLK	O	Clock signal output to the serial bus
34	(KB-CLK-CTL)	I	Not used
35	(CLIP-TX0)	O	Not used
36	(CLIP-RX0)	—	Not used
37	(CLIP-CLK0)	—	Not used
38	(MUTE)	—	Not used
39	(ADA-RESET)	—	Not used
40	(ADA-LATCH)	—	Not used
41	EPM	—	Not used (Pull-down)
42	(CLIP-SEL)	—	Not used
43	—	—	Not used
44	PROTECT	I	Recording protection tab detection signal input from the protection detection switch (H:Protect)
45	EEP-CLK	O	Clock signal output to the EEP-ROM
46	CE	I	Fixed at H (Pull-up)
47	EEP-WP	O	Write protect signal output to the EEP ROM (L:Write enable)
48	XBUSY(MNT2)	I	Busy signal input from the CXD2662R
49	OUT-SW	I	Detection signal input from the loading out detection switch

Pin No.	Pin Name	I/O	Description
50	XLATCH	O	Latch signal output to the DSP IC
51	PLAY-SW	I	Detection signal input from the playback position detection switch (L:PLAY)
52	D-RESET	O	Digital reset signal output to the CXD2662R and the motor driver (L:Reset)
53	REC—SW	I	Detection signal input from the recording position detection switch (L:REC)
54	WRPWR	O	Write power ON/OFF signal output (L:OFF, H:ON)
55	LIMIT—IN	I	Detection signal input from the limit switch (L:Sled limit-in, H:Sled limit-out)
56	MOD	O	Modulation signal output to the laser diode (L:OFF, H:ON)
57	LDON	O	Laser ON/OFF control signal output (H:Laser ON)
58	SENS	I	SENS signal input from the CXD2662R
59	SHOCK(MNT1)	I	Track jump signal input from the CXD2662R
60	EEP—DATA	I/O	Data signal input/output terminal with the EEPROM
61	REFLECT	I	Disc reflection rate detection input from the reflect detection switch (H:Disc with low reflection rate)
62	VCC	—	Power supply (+3.3V)
63	—	—	Not used
64	VSS	—	Ground
65	LOAD—LO	O	Loading motor voltage control signal output (L:High voltage, H:Low voltage)
66	LOAD—OUT	O	Loading motor control signal output (H:Out)
67	LOAD—IN	O	Loading motor control signal output (H:In)
68	(MODEL0)	—	Not used
69	(MODEL1)	—	Not used
70	MODEL2	I	Model setting input terminal
71	MODEL3	I	Model setting input terminal
72	SPDIF—CUT	O	Power control signal output for the PLL power supply of the D/A converter
73 to 75	—	—	Not used
76	DAC—MUTE	O	Muting signal output to the D/A converter
77	LINE—MUTE	—	Not used
78	DA—RESET	O	Reset signal output to the D/A converter (L:Active)
79	SLICER—SEL	O	IEC958 input select signal output to the D/A converter
80	SPDIF—LOCK	I	LOCK signal input from the D/A converter
81	OPTSEL	O	Optical input selection signal output
82	ADPDWN	O	Power control signal output to the A/D converter
83 to 84	—	—	Not used
85	TP1	—	Not used
86	TP2	—	Not used
87	TP3	—	Not used
88	TP4	—	Not used
89	IOP	I	Optical pick-up voltage (current) detect signal input
90 to 95	—	—	Not used
96	AVSS	—	Ground (Analog)
97	—	—	Not used
98	VREF	I	Reference voltage input terminal
99	AVCC	—	Power supply (Analog)
100	—	—	Not used

## HCD-C5

• IC501  $\mu$ PD703032AYGF-M01-3BA MASTER CONTROL (UCOM BOARD)

Pin No.	Pin Name	I/O	Description
1	FL-DATA	O	FL tube data signal output
2	FL-CLK	O	FL tube clock signal output
3	SDA	I/O	IIC data signal input or output
4	FL-CE	O	FL tube enable signal output
5	SCL	I/O	IIC clock signal input or output
6	FL-RST	O	FL tube reset signal output
7	CXD-DATA	O	Data signal output to DSP
8	CXD-CLK	O	Clock signal output to DSP
9	EVDD	—	Power supply for I/O port
10	EVSS	—	Ground for I/O port
11	CXD-XLT	O	Latch signal output to DSP
12	PWM1	O	PWM1 signal output
13	LDON	O	Laser power control signal output
14	SENSE	I	CD SENSE signal input
15	SUBQ	I	CD SUBQ signal input
16	CHECK	O	Not used (open)
17	SCLK	O	CD SUBQ clock signal output
18	CTRL1	O	CTRL1 (setting double speed) signal output
19	PWM2	O	PWM2 signal output
20	PWM3	O	PWM3 signal output
21	VPP	—	Not used
22	SP-MUTE	O	Not used (open)
23	1-4	O	Not used (open)
24	DMUTE	O	Muting signal output to DAC
25	AMUTE	O	Not used (open)
26	LODNEG	O	Loading motor control signal output
27	LODPOS	O	Loading motor control signal output
28	BDPWR	O	CD power control signal output
29	BDRST	O	CD reset signal output
30	SW1	I	Loading switch signal input
31	SW2	I	Loading switch signal input
32	SW3(ENC-A)	I	Loading switch signal input
33	SW4(ENC-B)	I	Loading switch signal input
34	RESET	I	System reset input
35	XT1	I	Sub clock input
36	XT2	—	Sub clock output
37	REGC	—	Terminal for regulator clock
38	X2	—	Main system clock output
39	X1	I	Main system clock input
40	VSS	—	Ground
41	VDD	—	Power supply
42	CLKOUT	O	Clock output (open)
43	PLL-CLK	O	Tuner clock signal output
44	PLL-DO( $\mu$ COM-ST)	O	Tuner data signal output
45	PLL-DI(ST- $\mu$ COM)	I	Tuner data signal input
46	PLL-CE	O	Tuner chip enable signal output
47	ST-MUTE	O	Tuner muting signal output
48	STEREO	I	Stereo tuning signal input
49	TUNED	I	TUNED detect signal input
50	RDS-DATA	I	RDS data signal input

Pin No.	Pin Name	I/O	Description
51	PROTECT	I	Not used (pull-up)
52	PRE-MUTE	O	Pre-amplifier muting signal output
53	PWR-MUTE	O	Not used (open)
54	REC-MUTE	O	REC output muting signal output
55	HP-MUTE	O	Not used (open)
56	SPK-RELAY	O	Speaker relay control signal output
57	HELP	I/O	IIC busy signal input or output
58	BVDD	—	Power supply for bus interface
59	BVSS	—	Ground for bus interface
60	KBD-CHK	I	PC LINK inserted detect signal input
61	KBD-DATA	I	Key board data input (pull-up)
62	VOL-CE	O	Volume latch signal output to the sound processor
63	VOL-CLK	O	Volume clock signal output to the sound processor
64	VOL-DATA	O	Volume data signal output to the sound processor
65	LED	O	LED control signal output
66	FAN-ON	O	Not used (open)
67	HP-IN	I	Headphone detect signal input (pull-down)
68	IO-RST	O	Not used (open)
69	PWR-RELAY	O	Power relay control signal output
70	MD-PWR	O	MD power control signal output
71	FL-ON	O	Not used (open)
72	ON/STANDBY	O	STANDBY LED control signal output
73	DIMMER	O	Not used (open)
74	AVDD	—	Analog power supply
75	AVSS	—	Analog ground
76	AVREF	—	Analog reference voltage
77	KEY1	I	Key input signal from function switch
78	KEY2	I	Key input signal from function switch
79	KEY3	I	Key input signal from function switch
80	ADJ	I	Adjust mode input (pull-up)
81	DEST1	I	Destination setting input
82	DEST2	I	Destination setting input
83	DEST3	I	Destination setting input
84	DEST4	I	Destination setting input
85	MODEL1	I	Model setting input
86	MODEL2	I	Model setting input
87	DEVICE1	I	Device setting input
88	DEVICE2	I	Device setting input
89	KBD-CLKO	O	Keyboard clock output (pull-up)
90	KBD-CLKI	I	Keyboard clock input (pull-up)
91	AC-CUT	I	AC off detect signal input
92	PCPON	I	PC power detect signal input for PC LINK
93	KEY-RM	I	Remote control receiver or power key detect signal input
94	SIRCS	I	Remote control receiver data signal input
95	SCOR	I	CD Q-data request signal input
96	RDS-CLK	I	RDS clock signal input
97	IO-DI	—	Not used (open)
98	IO-DO	—	Not used (open)
99	IO-CLK	—	Not used (open)
100	IO-CE	—	Not used (open)

## SECTION 7 EXPLODED VIEWS

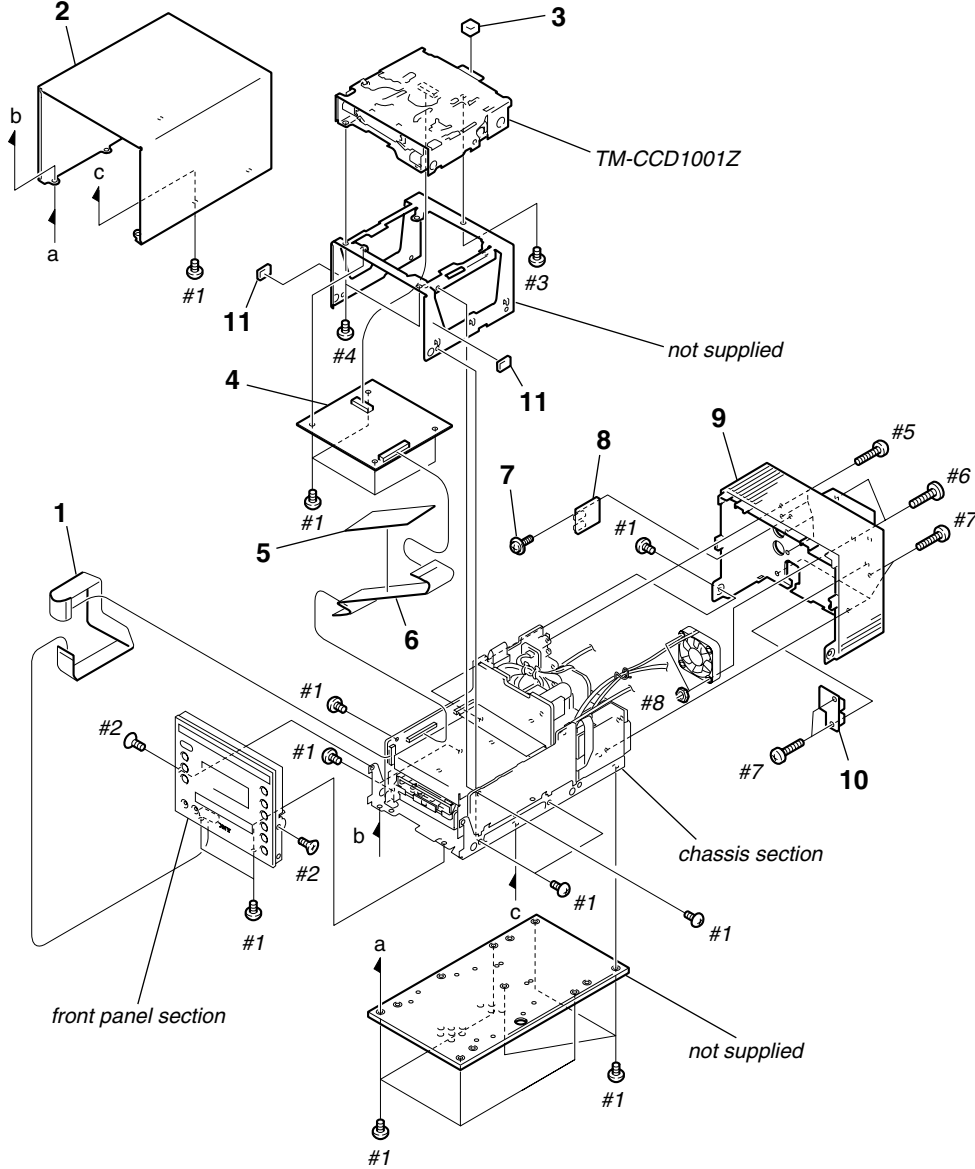
**NOTE:**

- -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  
 AUS : Australian model  
 HK : Hong Kong model  
 KR : Korean model

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

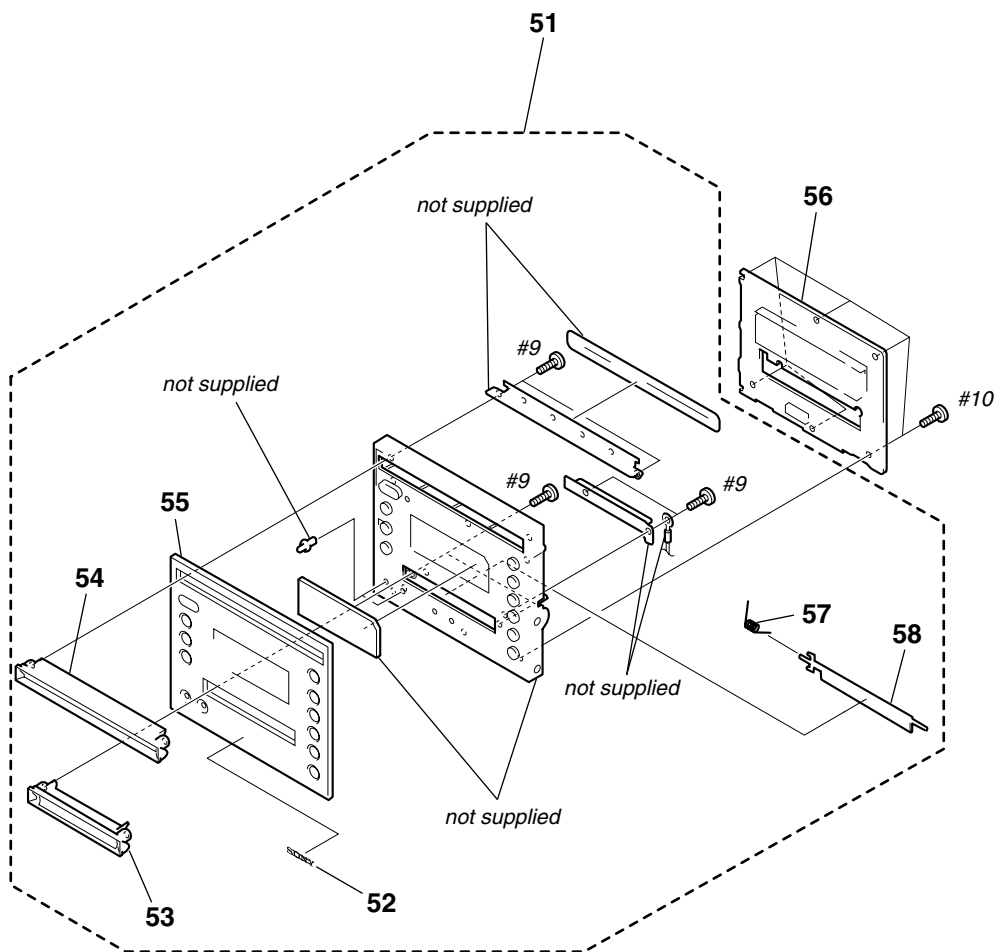
**7-1. OVERALL SECTION**



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
1	1-757-791-11	WIRE (FLAT TYPE) (16 CORE)		7	7-685-903-21	SCREW +PTW 3X8 (TYPE2)	
2	4-233-859-01	CASE		8	1-681-712-11	HP BOARD	
3	4-886-865-01	CUSHION (A)		9	4-233-862-11	COVER, REAR (AEP,UK,KR)	
4	A-4476-934-A	BD BOARD, COMPLETE		9	4-233-862-21	COVER, REAR (AUS,HK)	
5	4-235-553-01	SPACER (A)		10	1-681-381-11	JACK BOARD	
6	1-773-289-11	WIRE (FLAT TYPE) (29 CORE)		* 11	4-930-336-71	FOOT (FELT)	

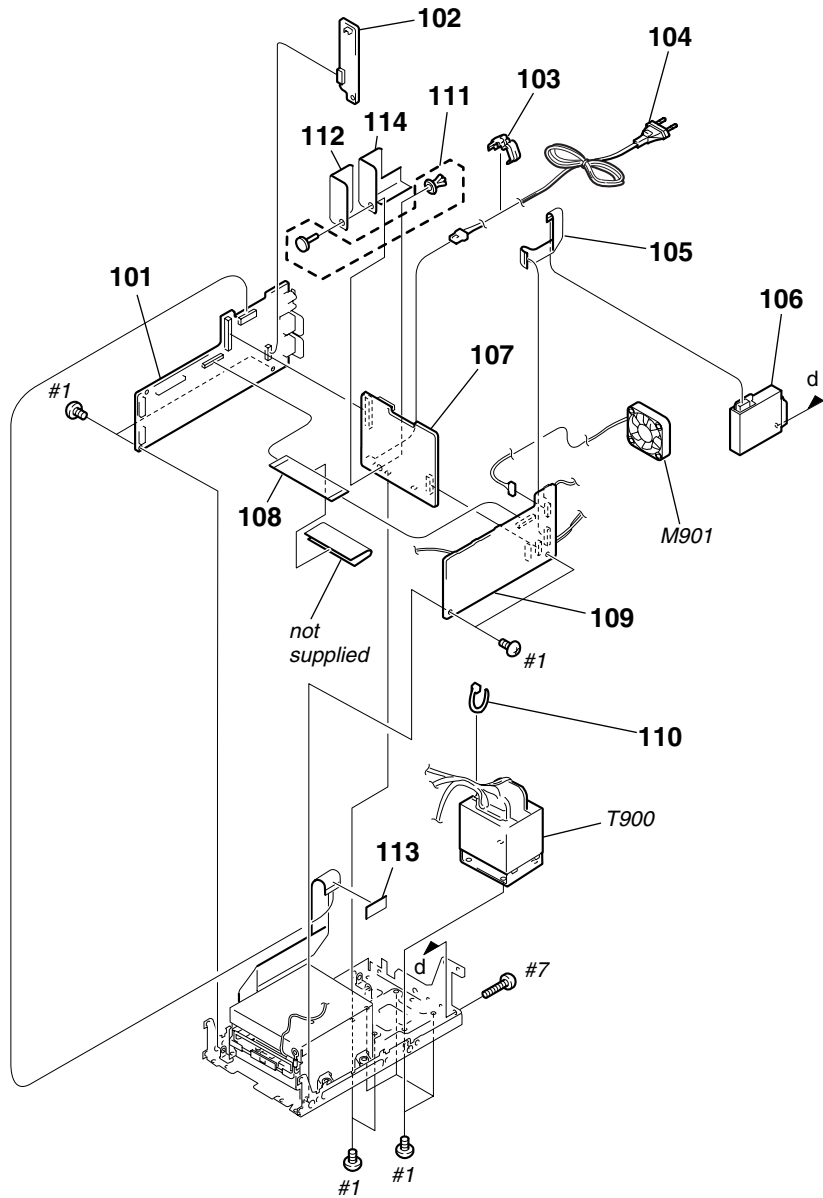


7-2. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
51	X-4953-691-1	PANEL ASSY (B), FRONT		55	4-233-840-01	PANEL, FRONT	
52	4-942-636-01	EMBLEM (NO.3.5), SONY		56	A-4476-936-A	PANEL BOARD, COMPLETE	
53	4-233-846-01	ESCUTCHEON (MD)		57	4-228-323-01	SPRING (MD)	
54	4-233-847-01	ESCUTCHEON (CD)		58	4-228-335-11	LID (MD)	

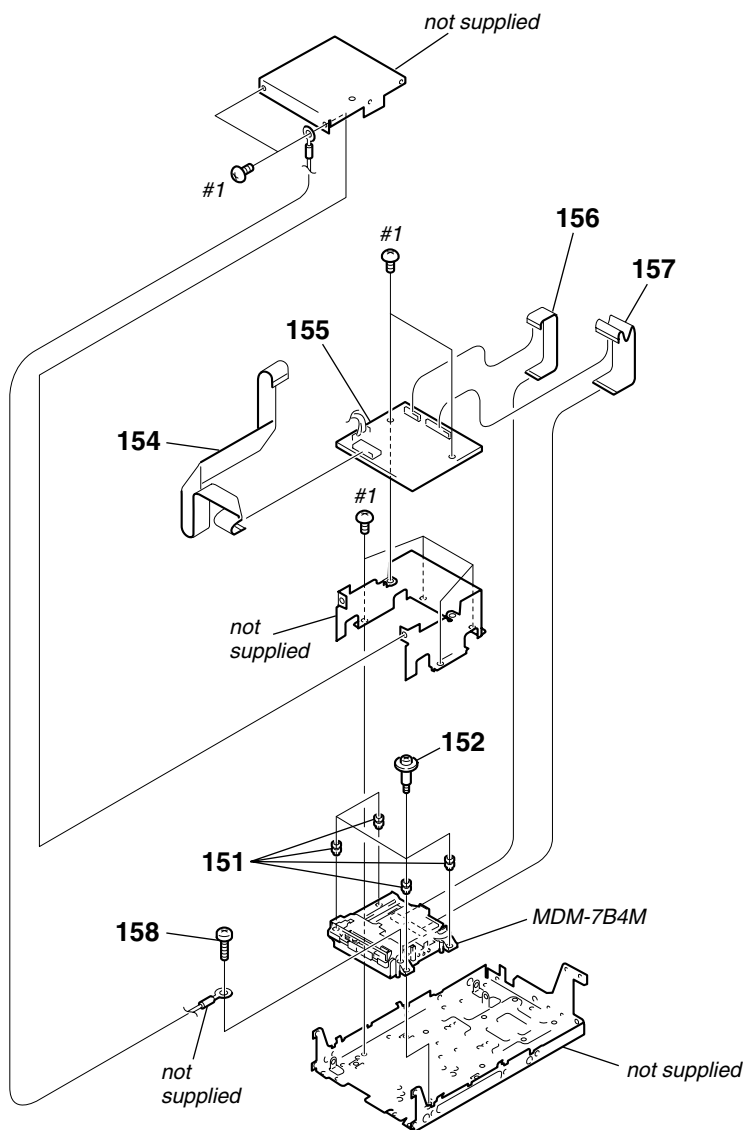
7-3. CHASSIS SECTION-1



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
101	A-4476-947-A	UCOM BOARD, COMPLETE (AEP,UK)		107	A-4727-414-A	POWER BOARD, COMPLETE (HK,KR)	
101	A-4727-413-A	UCOM BOARD, COMPLETE (AUS, HK,KR)		108	1-773-110-11	WIRE (FLAT TYPE) (19 CORE)	
102	1-681-380-11	AMP POWER BOARD		109	A-4476-938-A	AUDIO BOARD, COMPLETE (AUS,HK,KR)	
103	3-703-244-00	BUSHING (2104), CORD		109	A-4476-949-A	AUDIO BOARD, COMPLETE (AEP,UK)	
△ 104	1-696-847-11	CORD, POWER (AUS)		110	3-701-748-00	CLAMP	
△ 104	1-769-079-21	CORD, POWER (KR)		111	4-812-134-31	RIVET (DIA. 3.5), NYLON	
△ 104	1-777-071-21	CORD, POWER (AEP,UK,HK)		112	4-234-235-01	INSULATED PLATE (POWER)	
105	1-769-943-11	WIRE (FLAT TYPE) (11CORE) (AUS, HK,KR)		113	4-937-971-01	CUSHION	
105	1-773-007-11	WIRE (FLAT TYPE) (15 CORE) (AEP,UK)		114	4-237-035-01	INSULATED PLATE (POWER) 2	
106	1-693-529-11	TUNER PACK (FM/AM) (AEP,UK)		M901	1-698-997-11	FAN, D.C.	
106	1-693-531-11	TUNER PACK (FM/AM) (AUS,HK)		△ T900	1-437-239-11	TRANSFORMER, POWER (AEP,UK,AUS)	
106	1-693-536-11	TUNER PACK (FM/AM) (KR)		△ T900	1-437-241-11	TRANSFORMER, POWER (HK,KR)	
107	A-4476-948-A	POWER BOARD, COMPLETE (AEP,UK,AUS)					

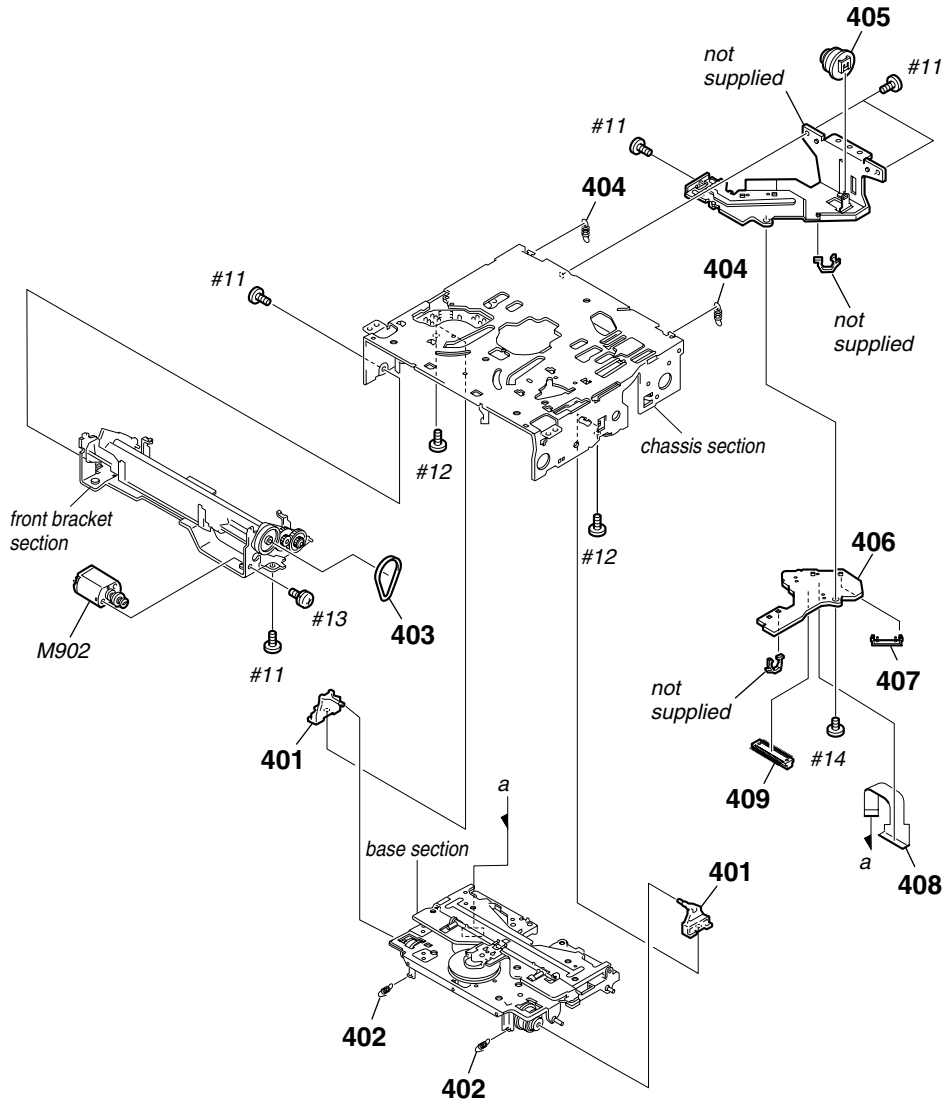
The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

7-4. CHASSIS SECTION-2



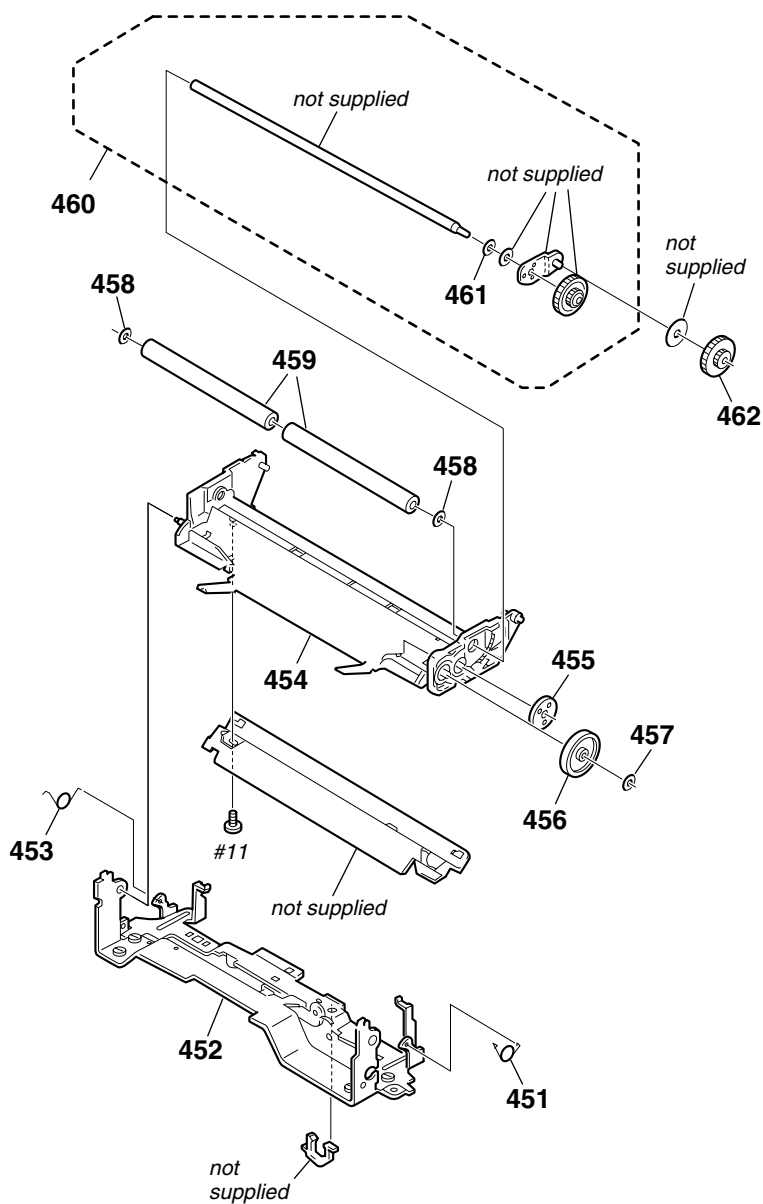
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
				155	A-4725-732-A	MD DIGITAL BOARD, COMPLETE	
151	4-231-555-01	INSULATOR		156	1-757-079-11	WIRE (FLAT TYPE) (17 CORE)	
152	4-228-643-21	SCREW (+BVTWH M3), STEP		157	1-757-080-11	WIRE (FLAT TYPE) (27 CORE)	
154	1-773-138-11	WIRE (FLAT TYPE) (19 CORE)		158	4-231-113-01	SCREW (1.7X3), BTN	

7-5. CD MECHANISM DECK SECTION (TN-CCD1001Z)



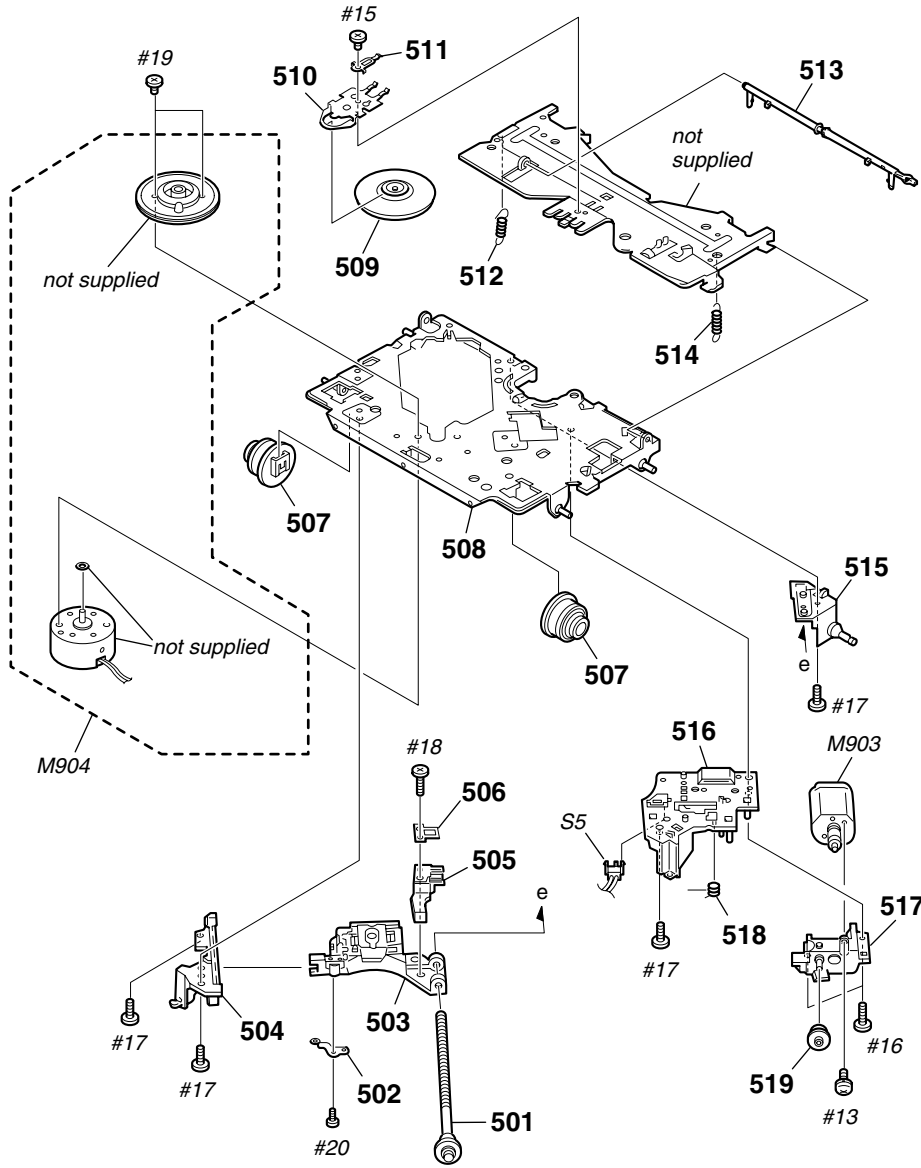
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remarks</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remarks</u>
401	4-236-062-01	PIN, DAMPER		406	1-682-100-11	CONNECTOR BOARD	
402	4-236-087-01	SPRING (FZ), HANG UP		407	4-236-105-01	HOLDER, FPC	
403	4-236-114-01	BELT, LOADING		408	1-682-101-11	PICK-UP FLEXIBLE BOARD	
404	4-236-088-01	SPRING (R), HANG UP		409	1-815-750-11	CONNECTOR	
405	4-236-101-01	DAMPER (J)		M902	X-4954-023-1	MOTOR ASSY, LOADING	

7-6. CD MECHANISM DECK SECTI – FRONT BRACKET SECTION (TN-CCD1001Z)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
451	4-236-112-01	SPRING (R), LOADING PULLEY		457	4-236-118-01	WASHER (117)	
452	4-236-115-01	BRACKET (J), FRONT		458	4-236-116-01	WASHER (113)	
453	4-236-111-01	SPRING (L), LOADING PULLEY		459	4-236-110-01	ROLLER, LOADING	
454	4-236-106-01	BRACKET, GEAR MOUNT		460	X-4954-024-1	SHAFT ASSY, LOADING ROLLER	
455	4-236-108-01	GEAR (3), LOADING		461	4-236-117-01	WASHER, WAVE	
456	4-236-107-01	GEAR (2), LOADING		462	4-236-109-01	GEAR (5), LOADING	

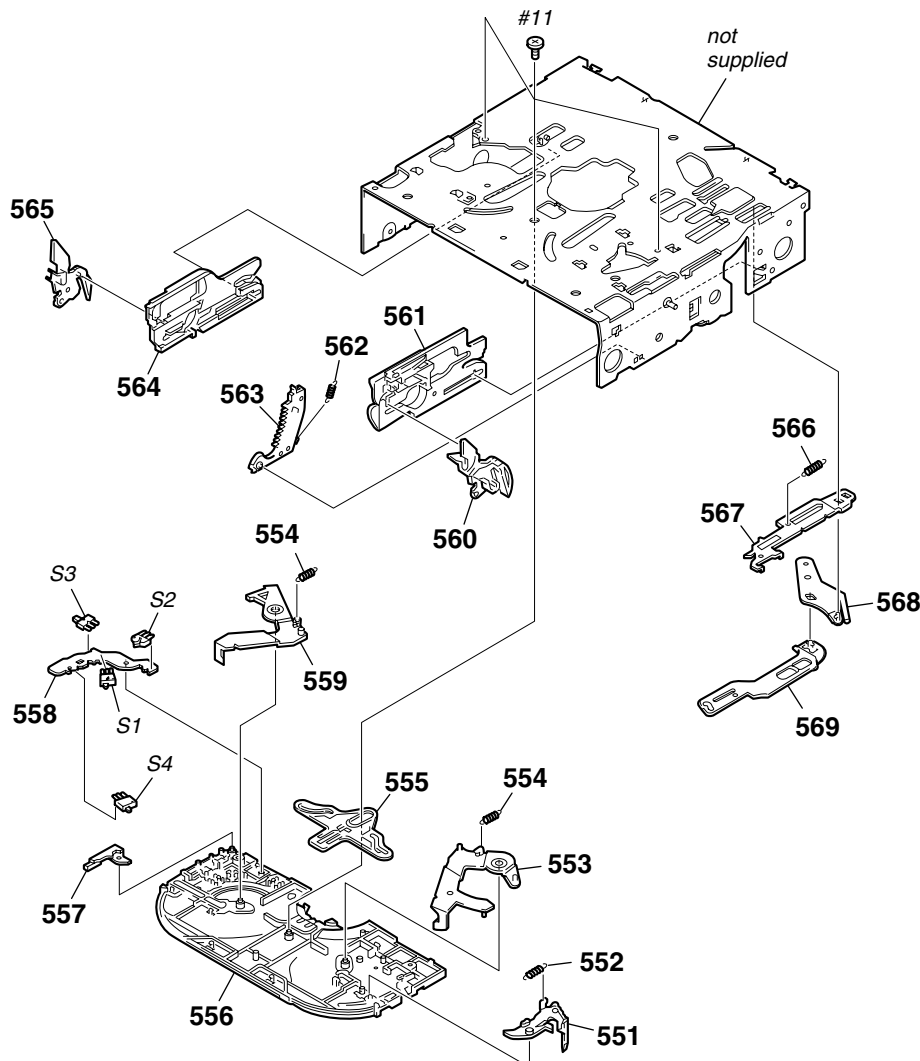
7-7. CD MECHANISM DECK SECTION – BASE SECTION (TN-CCD1001Z)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
501	X-4954-022-1	SCREW ASSY, FEED		512	4-236-102-01	SPRING (L), CLIP ARM	
502	4-236-104-01	SPRING, PULLEY GUIDE		513	4-236-098-01	STOPPER, 8CM	
△503	1-758-631-11	OPTICAL PICK-UP BLOCK (OPTIMA-720L1E)		514	4-236-096-01	SPRING, CLIP ARM	
504	4-236-092-01	GUIDE, PULLEY		515	4-236-103-01	GUIDE, SCREW	
505	4-236-094-01	PULLEY (M)		516	4-236-090-01	BASE, FM	
506	4-236-095-01	SPRING, DETENT		517	4-236-091-01	BRACKET, FD GEAR	
507	4-236-101-01	DAMPER (J)		518	4-236-093-01	SPRING, THRUST	
508	X-4954-025-1	BASE ASSY, TT		519	4-236-089-01	GEAR, PULLEY	
509	4-236-097-01	CLAMP		S5	1-786-212-11	SWITCH (DETECTION) (LIMIT IN)	
510	4-236-100-01	PLATE, CLAMP		M903	X-4954-020-1	MOTOR ASSY, FEED	
511	4-236-099-01	RETAINER, 8CM STOPPER		M904	X-4954-021-1	MOTOR ASSY, SPINDLE	

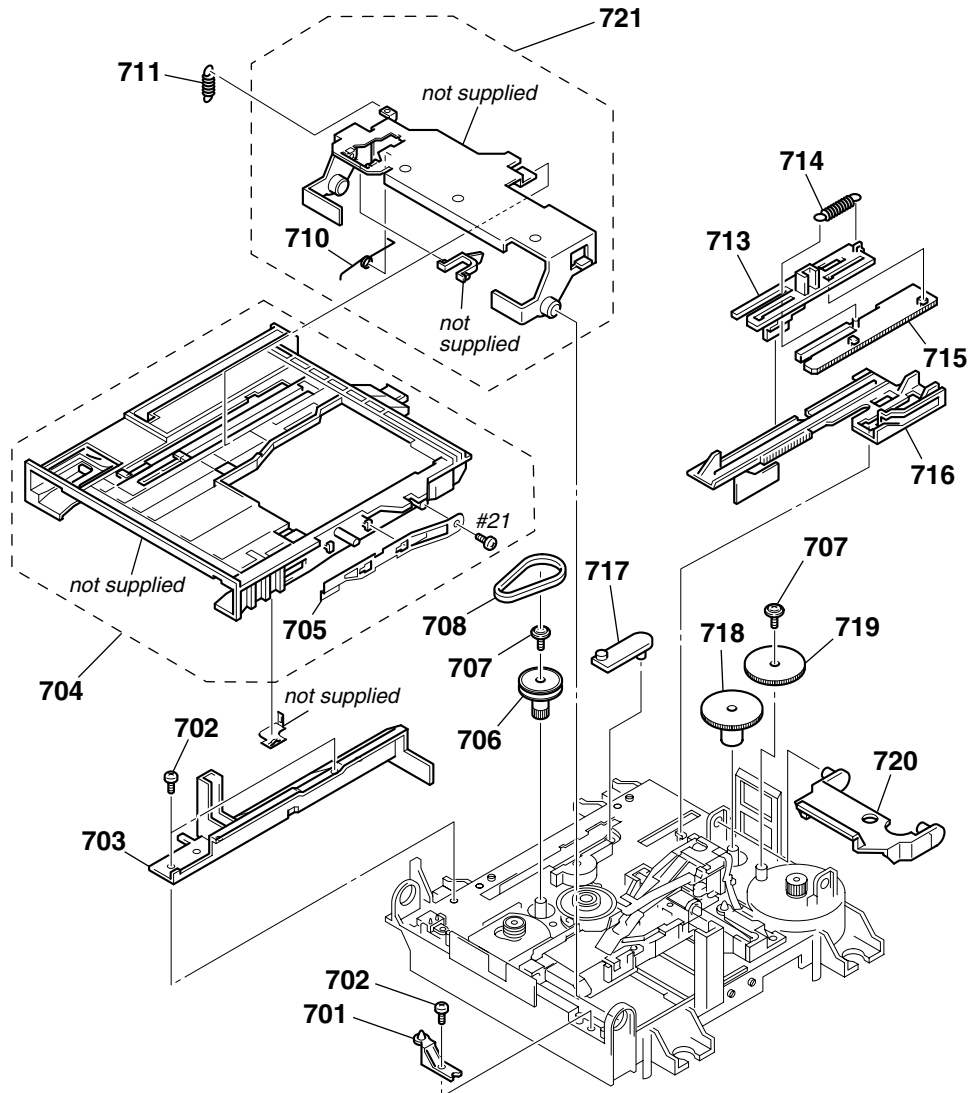
The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

7-8. CD MECHANISM DECK SECTION – CHASSIS SECTION (TN-CCD1001Z)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
551	4-236-085-01	ARM, SLIDE		564	4-236-081-01	HOLDER (L)	
552	4-236-086-01	SPRING, SLIDE ARM		565	4-236-079-01	ARM (L), HOLDER	
553	4-236-073-01	ARM (R), S		566	4-236-077-01	SPRING, TRIGGER	
554	4-236-074-01	SPRING, S ARM		567	4-236-076-01	TRIGGER (Z)	
555	4-236-064-01	HOLDER, S ARM		568	4-236-078-01	ARM, TRIGGER	
556	4-236-063-01	HOLDER, UPPER		569	4-236-075-01	LEVER, TRIGGER	
557	4-236-113-01	ACTUATOR, SWITCH		S1	1-786-214-11	SWITCH (DETECTION)	(Disc IN/8cm Disc detect)
558	1-682-099-11	SW BOARD		S2	1-786-213-11	SWITCH (DETECTION)	(12cm Disc/12cm Disc Eject End detect)
559	4-236-065-01	ARM (L), S		S3	1-786-213-11	SWITCH (DETECTION)	(Disc Existence, Chucking, Releasing detect)
560	4-236-080-01	ARM (R), HOLDER		S4	1-786-214-11	SWITCH (DETECTION)	(8cm Disc Eject detect)
561	4-236-082-01	HOLDER (R)					
562	4-236-084-01	SPRING, LOADING GEAR					
563	4-236-083-01	GEAR (6), LOADING					

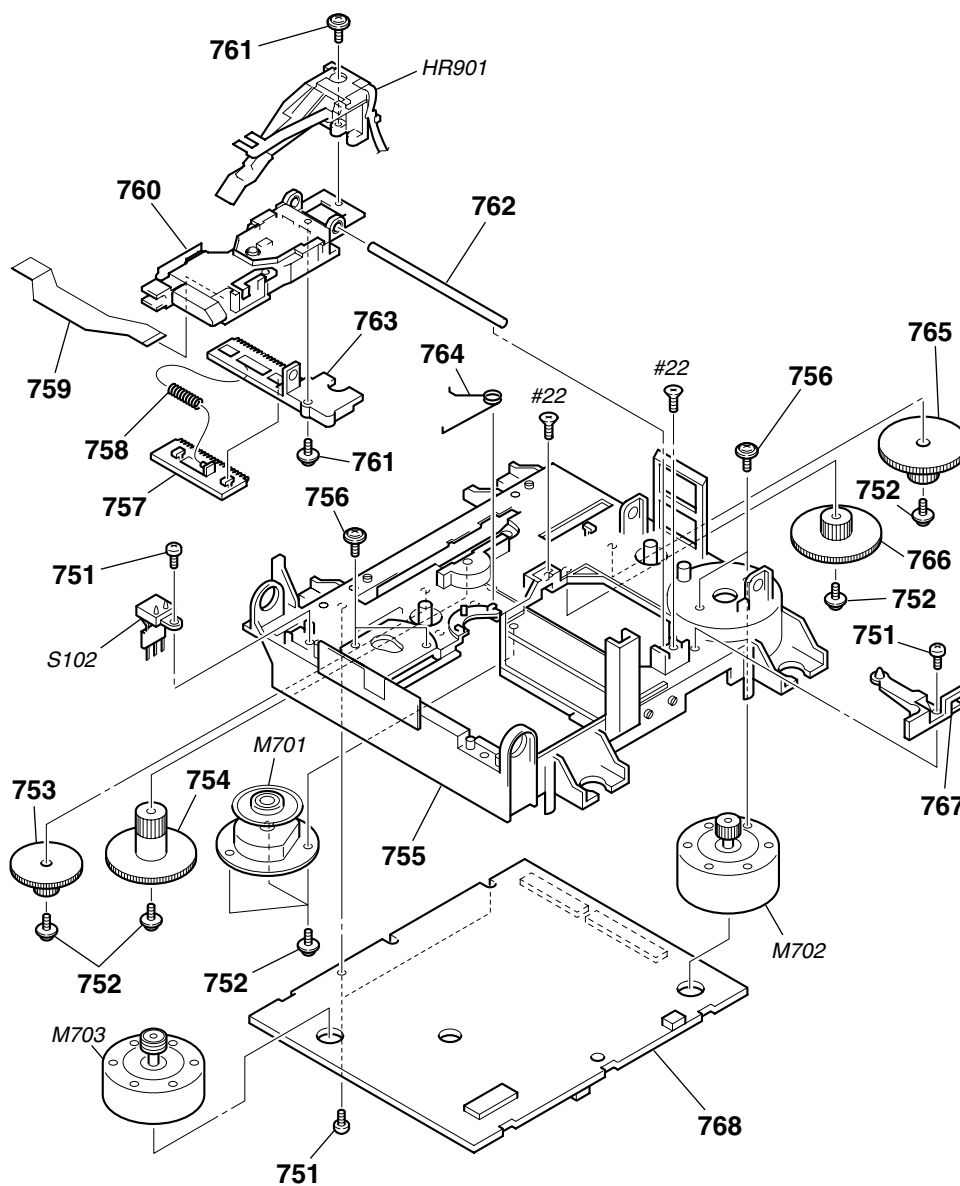
7-9. MD MECHANISM DECK SECTION-1 (MDM-7B4M)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
* 701	4-996-267-01	BASE (BU-D)		713	4-226-995-01	SLIDER (EJ)	
702	4-231-319-01	SCREW (2X6) CZN, +B (P) TRI		714	4-227-013-01	SPRING (EJ), TENSION	
703	4-226-994-01	GUIDE (L)		715	4-226-996-01	LIMITTER (EJ)	
704	A-4735-075-A	HOLDER ASSY		716	4-226-997-04	SLIDER	
705	X-4952-665-1	SPRING (SHT) ASSY, LEAF		717	4-226-998-01	LEVER (CHG)	
706	4-227-002-01	GEAR, PULLEY		718	4-227-007-01	GEAR (SB)	
707	3-372-761-01	SCREW (M1.7), TAPPING		719	4-227-006-01	GEAR (SA)	
708	4-2270-250-1	BELT (LOADING)		720	4-226-999-01	LEVER (HEAD)	
710	4-229-533-01	SPRING (STOPPER), TORSION		721	A-4680-638-B	PLATE (HOLDER) ASSY, RETAINER	
711	4-227-012-01	SPRING (HOLDER), TENSION					



7-10. MD MECHANISM DECK SECTION-2 – (MDM-7B4M)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
751	4-231-319-01	SCREW (2X6) CZN, +B (P) TRI		763	4-226-992-01	BASE, SL	
752	3-372-761-01	SCREW (M1.7), TAPPING		764	4-227-023-01	SPRING (SPINDLE), TORSION	
753	4-227-008-01	GEAR (SC)		765	4-227-004-01	GEAR (LC)	
754	4-227-009-01	GEAR (SD)		766	4-227-005-01	GEAR (LD)	
755	4-226-989-01	CHASSIS		767	4-226-990-01	BASE (BU-A)	
756	4-232-270-01	SCREW (1.7X3.5), +PWH		768	A-4726-344-A	BD (MD) BOARD, COMPLETE	
757	4-226-993-01	RACK		HR901	1-500-670-11	HEAD, OVER WRITE	
758	4-227-014-01	SPRING (RACK), COMPRESSION		M701	A-4672-898-A	MOTOR ASSY, SPINDLE	
759	1-678-514-11	FLEXIBLE BOARD		M702	A-4735-076-A	MOTOR ASSY, SLED	
△ 760	A-4672-541-A	MINI DISK OPTICAL PICK-UP (KMS-260B)		M703	A-4735-074-A	MOTOR ASSY, LOADING	
761	4-988-560-01	SCREW (+P 1.7X6)		S102	1-771-957-11	SWITCH, PUSH (2 KEY) (REFLECT→PROTECT)	
762	4-996-265-01	SHAFT, MAIN					

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

AMP

AUDIO

**NOTE:**

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:  
uF: μF
- RESISTORS  
All resistors are in ohms.  
METAL: metal-film resistor  
METAL OXIDE: Metal Oxide-film resistor  
F: nonflammable
- COILS  
uH: μH
- SEMICONDUCTORS  
In each case, u: μ, for example:  
uA...: μA... , uPA... , μPA... ,  
uPB... , μPB... , uPC... , μPC... ,  
uPD... , μPD...

- Abbreviation  
AUS : Australian model  
HK : Hong Kong model  
KR : Korean 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
	1-681-380-11	AMP POWER BOARD *****		C310	1-124-261-00	ELECT 10uF 20% 50V	
		< CAPACITOR >		C311	1-124-261-00	ELECT 10uF 20% 50V	
C851	1-136-165-00	FILM 0.1uF 5.00% 50V		C312	1-136-165-00	FILM 0.1uF 5.00% 50V	
C852	1-136-165-00	FILM 0.1uF 5.00% 50V		C313	1-124-464-11	ELECT 0.22uF 20% 50V	
C853	1-128-549-11	ELECT 3300uF 20.00% 35V		C314	1-137-365-11	MYLAR 0.0015uF 5.00% 50V	
C854	1-128-549-11	ELECT 3300uF 20.00% 35V		C315	1-124-261-00	ELECT 10uF 20% 50V	
		< CONNECTOR >		C316	1-136-165-00	FILM 0.1uF 5.00% 50V	
CN851	1-564-506-11	PLUG, CONNECTOR 3P		C317	1-136-165-00	FILM 0.1uF 5.00% 50V	
CN852	1-779-939-11	CONNECTOR, BOARD TO BOARD 7P		C321	1-124-261-00	ELECT 10uF 20% 50V	
		< DIODE >		C322	1-124-261-00	ELECT 10uF 20% 50V	
D851	8-719-028-23	DIODE D3SBA20-4101		C323	1-124-261-00	ELECT 10uF 20% 50V	
		< FUSE >		C324	1-128-057-11	ELECT 330uF 20.00% 6.3V	
Δ F851	1-533-471-11	FUSE, GLASS TUBE (DIA. 5) T4AL/250V		C325	1-137-367-11	MYLAR 0.0033uF 5.00% 50V	
Δ F852	1-533-471-11	FUSE, GLASS TUBE (DIA. 5) T4AL/250V		C326	1-162-960-11	CERAMIC CHIP 220PF 10% 50V	
		< FUSE HOLDER >		C331	1-124-257-00	ELECT 2.2uF 20% 50V	
FH851	1-533-293-11	FUSE HOLDER		C332	1-119-772-11	ELECT 47uF 20% 25V	
FH852	1-533-293-11	FUSE HOLDER		C333	1-119-772-11	ELECT 47uF 20% 25V	
FH853	1-533-293-11	FUSE HOLDER		C334	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
FH854	1-533-293-11	FUSE HOLDER		C335	1-119-772-11	ELECT MELF 47uF 20.00% 35V	
		< RESISTOR >		C336	1-124-257-00	ELECT 2.2uF 20% 50V	
R851	1-260-107-11	CARBON 4.7K 5% 1/2W		C344	1-124-465-00	ELECT 0.47uF 20% 50V	
*****				C351	1-124-257-00	ELECT 2.2uF 20% 50V	
A-4476-938-A	AUDIO BOARD, COMPLETE (AUS,HK,KR)			C352	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
A-4476-949-A	AUDIO BOARD, COMPLETE (AEP,UK)			C353	1-124-257-00	ELECT 2.2uF 20% 50V	
		< CAPACITOR >		C354	1-162-965-11	CERAMIC CHIP 0.0015uF 10% 50V	
C102	1-162-962-11	CERAMIC CHIP 470PF 10% 50V		C355	1-124-257-00	ELECT 2.2uF 20% 50V	
C111	1-124-227-00	ELECT 10uF 20% 10V (AEP,UK)		C359	1-124-261-00	ELECT 10uF 20% 50V	
C121	1-164-156-00	CERAMIC CHIP 0.1 25V		C360	1-124-261-00	ELECT 10uF 20% 50V	
C152	1-162-962-11	CERAMIC CHIP 470PF 10% 50V		C361	1-124-261-00	ELECT 10uF 20% 50V	
C301	1-124-257-00	ELECT 2.2uF 20% 50V		C362	1-136-165-00	FILM 0.1uF 5.00% 50V	
C302	1-162-927-11	CERAMIC CHIP 100PF 5% 50V		C363	1-124-464-11	ELECT 0.22uF 20% 50V	
C303	1-124-257-00	ELECT 2.2uF 20% 50V		C364	1-137-365-11	MYLAR 0.0015uF 5.00% 50V	
C304	1-162-965-11	CERAMIC CHIP 0.0015uF 10% 50V		C365	1-124-261-00	ELECT 10uF 20% 50V	
C305	1-124-257-00	ELECT 2.2uF 20% 50V		C366	1-136-165-00	FILM 0.1uF 5.00% 50V	
C309	1-124-261-00	ELECT 10uF 20% 50V		C367	1-136-165-00	FILM 0.1uF 5.00% 50V	
		< CONNECTOR >		C381	1-124-257-00	ELECT 2.2uF 20% 50V	
CN101	1-784-780-11	CONNECTOR, FFC 19P		C382	1-119-772-11	ELECT 47uF 20% 25V	
* CN102	1-568-936-11	PIN, CONNECTOR 9P		C383	1-119-772-11	ELECT 47uF 20% 25V	
CN103	1-778-240-11	CONNECTOR, BOARD TO BOARD 5P		C384	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
CN104	1-568-830-11	CONNECTOR, FFC 11P (AUS,HK,KR)					
CN104	1-784-776-11	CONNECTOR, FFC 15P (AEP,UK)					

**AUDIO**

**BD (CD)**

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
CN105	1-564-506-11	PLUG, CONNECTOR 3P		R321	1-216-839-11	METAL CHIP 33K	5% 1/16W
* CN106	1-568-934-11	PIN, CONNECTOR 7P		R322	1-216-857-11	METAL CHIP 1M	5% 1/16W
* CN108	1-568-943-11	PIN, CONNECTOR 5P		R323	1-216-821-11	METAL CHIP 1K	5% 1/16W
		< DIODE >		R324	1-216-821-11	METAL CHIP 1K	5% 1/16W
D101	8-719-200-82	DIODE 11ES2-TA1B		R325	1-216-821-11	METAL CHIP 1K	5% 1/16W
D103	8-719-988-61	DIODE 1SS355TE-17		R326	1-216-831-11	METAL CHIP 6.8K	5% 1/16W
D111	8-719-923-34	DIODE MTZJ-T-77-5.1B (AEP,UK)		R327	1-249-433-11	CARBON 22K	5% 1/4W
D301	8-719-988-61	DIODE 1SS355TE-17		R331	1-216-821-11	METAL CHIP 1K	5% 1/16W
D343	8-719-988-61	DIODE 1SS355TE-17		R332	1-216-833-11	METAL CHIP 10K	5% 1/16W
		< TERMINAL >		R333	1-216-833-11	METAL CHIP 10K	5% 1/16W
D393	8-719-988-61	DIODE 1SS355TE-17		R334	1-216-821-11	METAL CHIP 1K	5% 1/16W
		< IC >		R335	1-216-835-11	METAL CHIP 15K	5% 1/16W
EPT102	1-537-771-21	TERMINAL BOARD, GROUND		R336	1-216-833-11	METAL CHIP 10K	5% 1/16W
		< CONDUCTOR >		R338	1-216-845-11	METAL CHIP 100K	5% 1/16W
IC301	8-759-494-40	IC M62428AFP600C		△ R339	1-249-405-11	CARBON 100	5% 1/4WF
IC302	8-759-167-88	IC NJM4565D (AEP,UK)		R340	1-216-845-11	METAL CHIP 100K	5% 1/16W
		< TRANSISTOR >		R341	1-216-845-11	METAL CHIP 100K	5% 1/16W
JR303	1-216-864-11	METAL CHIP 0 5% 1/16W		R343	1-216-845-11	METAL CHIP 100K	5% 1/16W
JR304	1-216-864-11	METAL CHIP 0 5% 1/16W		R344	1-247-903-00	CARBON 1M	5% 1/4W
JR305	1-216-864-11	METAL CHIP 0 5% 1/16W		R352	1-216-821-11	METAL CHIP 1K	5% 1/16W
JR306	1-216-864-11	METAL CHIP 0 5% 1/16W		R353	1-216-845-11	METAL CHIP 100K	5% 1/16W
		< RESISTOR >		R354	1-216-821-11	METAL CHIP 1K	5% 1/16W
Q101	8-729-120-28	TRANSISTOR 2SC1623-T1-L5L6		R359	1-216-845-11	METAL CHIP 100K	5% 1/16W
Q102	8-729-424-08	TRANSISTOR UN2111-TX		R362	1-216-829-11	METAL CHIP 4.7K	5% 1/16W
Q103	8-729-120-28	TRANSISTOR 2SC3052EF-T1-LEF		R363	1-218-296-11	RES-CHIP 75K	5% 1/16W
Q151	8-729-120-28	TRANSISTOR 2SC1623-T1-L5L6		R364	1-216-839-11	METAL CHIP 33K	5% 1/16W
Q311	8-729-120-28	TRANSISTOR 2SC1623-T1-L5L6		R365	1-216-857-11	METAL CHIP 1M	5% 1/16W
Q331	8-729-046-97	TRANSISTOR 2SD1938(F)-T(TX).SO		R366	1-249-441-11	CARBON 100K	5% 1/4W
Q361	8-729-120-28	TRANSISTOR 2SC1623-T1-L5L6		R367	1-216-837-11	METAL CHIP 22K	5% 1/16W
Q381	8-729-046-97	TRANSISTOR 2SD1938(F)-T(TX).SO		R381	1-216-821-11	METAL CHIP 1K	5% 1/16W
		< CAPACITOR >		R382	1-216-833-11	METAL CHIP 10K	5% 1/16W
R102	1-216-821-11	METAL CHIP 1K 5% 1/16W		R383	1-216-833-11	METAL CHIP 10K	5% 1/16W
R103	1-216-833-11	METAL CHIP 10K 5% 1/16W		R384	1-216-821-11	METAL CHIP 1K	5% 1/16W
R104	1-216-821-11	METAL CHIP 1K 5% 1/16W		R385	1-216-835-11	METAL CHIP 15K	5% 1/16W
R105	1-216-845-11	METAL CHIP 100K 5% 1/16W		R386	1-216-833-11	METAL CHIP 10K	5% 1/16W
R111	1-247-819-11	CARBON 330 5% 1/4W (AEP,UK)		R388	1-216-845-11	METAL CHIP 100K	5% 1/16W
R112	1-216-829-11	METAL CHIP 4.7K 5% 1/16W		R393	1-216-845-11	METAL CHIP 100K	5% 1/16W
R152	1-216-821-11	METAL CHIP 1K 5% 1/16W					
R153	1-216-833-11	METAL CHIP 10K 5% 1/16W					
R154	1-216-821-11	METAL CHIP 1K 5% 1/16W					
R155	1-216-845-11	METAL CHIP 100K 5% 1/16W					
R302	1-216-821-11	METAL CHIP 1K 5% 1/16W					
R303	1-216-845-11	METAL CHIP 100K 5% 1/16W					
R304	1-216-821-11	METAL CHIP 1K 5% 1/16W					
R309	1-216-845-11	METAL CHIP 100K 5% 1/16W					
R312	1-216-829-11	METAL CHIP 4.7K 5% 1/16W					
R313	1-218-296-11	RES-CHIP 75K 5% 1/16W					
R314	1-216-839-11	METAL CHIP 33K 5% 1/16W					
R315	1-216-857-11	METAL CHIP 1M 5% 1/16W					
R316	1-249-441-11	CARBON 100K 5% 1/4W					
R317	1-216-837-11	METAL CHIP 22K 5% 1/16W					

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A-4476-934-A BD (CD) BOARD, COMPLETE  
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7-685-852-04 SCREW +BVTT 2X5 (S)

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

# HCD-C5

## BD (CD)

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C113	1-124-584-00	ELECT	100uF 20% 10V			< DIODE >	
C114	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V				
C115	1-124-589-11	ELECT	47uF 20% 16V				
C117	1-164-360-11	CERAMIC CHIP	0.1uF 16V	D101	8-719-056-77	DIODE UDZ-TE-17-3.9B	
C118	1-115-156-11	CERAMIC CHIP	1uF 10V			< FERRITE BEAD >	
C119	1-115-156-11	CERAMIC CHIP	1uF 10V	FB101	1-500-445-21	FERRITE 0uH	
C120	1-126-513-11	ELECT	47uF 20.00% 6.3V			< IC >	
C154	1-164-360-11	CERAMIC CHIP	0.1uF 16V	IC101	8-752-408-73	IC CXD3068Q	
C159	1-162-968-11	CERAMIC CHIP	0.0047uF 10% 50V	IC102	8-759-536-50	IC BA5982FP-E2	
C161	1-164-360-11	CERAMIC CHIP	0.1uF 16V	IC103	8-752-089-74	IC CXA2581N-T4	
C162	1-162-974-11	CERAMIC CHIP	0.01uF 50V	IC1102	8-759-598-69	IC BA6956AN	
C164	1-128-499-11	ELECT	220uF 20.00% 16V			< CONDUCTOR >	
C180	1-162-927-11	CERAMIC CHIP	100PF 5% 50V	JR201	1-216-864-11	METAL CHIP 0 5% 1/16W	
C181	1-162-927-11	CERAMIC CHIP	100PF 5% 50V			< TRANSISTOR >	
C182	1-162-927-11	CERAMIC CHIP	100PF 5% 50V	Q101	8-729-049-31	TRANSISTOR 2SB710A-RTX	
C183	1-162-927-11	CERAMIC CHIP	100PF 5% 50V	Q102	8-729-015-74	TRANSISTOR UN5111-TX	
C184	1-162-969-11	CERAMIC CHIP	0.0068uF 10% 25V	Q103	8-729-920-85	TRANSISTOR 2SD1664-T100-QR	
C185	1-162-969-11	CERAMIC CHIP	0.0068uF 10% 25V			< RESISTOR >	
C186	1-126-934-11	ELECT	220uF 20.00% 10V	R102	1-216-835-11	METAL CHIP 15K 5% 1/16W	
C187	1-164-360-11	CERAMIC CHIP	0.1uF 16V	R103	1-216-845-11	METAL CHIP 100K 5% 1/16W	
C188	1-162-974-11	CERAMIC CHIP	0.01uF 50V	R104	1-216-835-11	METAL CHIP 15K 5% 1/16W	
C191	1-165-176-11	CERAMIC CHIP	0.047uF 10.00% 16V	R105	1-216-821-11	METAL CHIP 1K 5% 1/16W	
C192	1-165-176-11	CERAMIC CHIP	0.047uF 10.00% 16V	R109	1-216-846-11	METAL CHIP 120K 5% 1/16W	
C193	1-165-176-11	CERAMIC CHIP	0.047uF 10.00% 16V	R111	1-216-846-11	METAL CHIP 120K 5% 1/16W	
C194	1-165-176-11	CERAMIC CHIP	0.047uF 10.00% 16V	R113	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
C201	1-126-934-11	ELECT	220uF 20.00% 10V	R114	1-216-845-11	METAL CHIP 100K 5% 1/16W	
C202	1-164-360-11	CERAMIC CHIP	0.1uF 16V	R115	1-216-841-11	METAL CHIP 47K 5% 1/16W	
C203	1-162-915-11	CERAMIC CHIP	10PF 0.5PF 50V	R116	1-216-841-11	METAL CHIP 47K 5% 1/16W	
C204	1-162-915-11	CERAMIC CHIP	10PF 0.5PF 50V	R117	1-216-847-11	METAL CHIP 150K 5% 1/16W	
C205	1-164-360-11	CERAMIC CHIP	0.1uF 16V	R118	1-216-835-11	METAL CHIP 15K 5% 1/16W	
C206	1-162-927-11	CERAMIC CHIP	100PF 5% 50V	R120	1-216-849-11	METAL CHIP 220K 5% 1/16W	
C209	1-162-927-11	CERAMIC CHIP	100PF 5% 50V	R122	1-216-845-11	METAL CHIP 100K 5% 1/16W	
C211	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	R123	1-216-797-11	METAL CHIP 10 5% 1/16W	
C212	1-162-965-11	CERAMIC CHIP	0.0015uF 10% 50V	R124	1-216-798-11	RES-CHIP 12 5% 1/16W	
C213	1-162-967-11	CERAMIC CHIP	0.0033uF 10% 50V	R125	1-216-834-11	METAL CHIP 12K 5% 1/16W	
C215	1-117-863-11	CERAMIC CHIP	0.47uF 10.00% 6.3V	R126	1-216-834-11	METAL CHIP 12K 5% 1/16W	
C216	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	R158	1-216-833-11	METAL CHIP 10K 5% 1/16W	
C221	1-164-360-11	CERAMIC CHIP	0.1uF 16V	R159	1-216-841-11	METAL CHIP 47K 5% 1/16W	
C222	1-164-360-11	CERAMIC CHIP	0.1uF 16V	R162	1-216-847-11	METAL CHIP 150K 5% 1/16W	
C224	1-164-360-11	CERAMIC CHIP	0.1uF 16V	R180	1-216-845-11	METAL CHIP 100K 5% 1/16W	
C227	1-164-360-11	CERAMIC CHIP	0.1uF 16V	R181	1-216-846-11	METAL CHIP 120K 5% 1/16W	
C228	1-115-156-11	CERAMIC CHIP	1uF 10V	R182	1-216-843-11	METAL CHIP 68K 5% 1/16W	
C229	1-164-360-11	CERAMIC CHIP	0.1uF 16V	R183	1-216-843-11	METAL CHIP 68K 5% 1/16W	
C230	1-126-382-11	ELECT	100uF 20.00% 6.3V	R184	1-216-849-11	METAL CHIP 220K 5% 1/16W	
C231	1-126-934-11	ELECT	220uF 20.00% 10V	R185	1-216-849-11	METAL CHIP 220K 5% 1/16W	
C234	1-162-974-11	CERAMIC CHIP	0.01uF 50V	R186	1-216-843-11	METAL CHIP 68K 5% 1/16W	
C235	1-162-974-11	CERAMIC CHIP	0.01uF 50V	R187	1-216-843-11	METAL CHIP 68K 5% 1/16W	
C236	1-117-863-11	CERAMIC CHIP	0.47uF 10.00% 6.3V	R188	1-216-849-11	METAL CHIP 220K 5% 1/16W	
C237	1-117-863-11	CERAMIC CHIP	0.47uF 10.00% 6.3V	R189	1-216-849-11	METAL CHIP 220K 5% 1/16W	
C240	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	R190	1-216-837-11	METAL CHIP 22K 5% 1/16W	
C1109	1-164-360-11	CERAMIC CHIP	0.1uF 16V	R191	1-216-837-11	METAL CHIP 22K 5% 1/16W	
C1110	1-126-934-11	ELECT	220uF 20.00% 10V	R192	1-216-837-11	METAL CHIP 22K 5% 1/16W	
C1111	1-162-974-11	CERAMIC CHIP	0.01uF 50V	R193	1-216-837-11	METAL CHIP 22K 5% 1/16W	
		< CONNECTOR >					
CN101	1-784-751-11	CONNECTOR, FFC 29P					
CN103	1-815-510-11	CONNECTOR, BOARD TO BOARD 26P					

**BD (CD)**

**BD (MD)**

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R196	1-216-839-11	METAL CHIP	33K 5% 1/16W	C111	1-117-720-11	CERAMIC CHIP	4.7uF 10V
R197	1-216-839-11	METAL CHIP	33K 5% 1/16W	C112	1-110-563-11	CERAMIC CHIP	0.068uF 10.00% 16V
R198	1-216-839-11	METAL CHIP	33K 5% 1/16W	C113	1-162-968-11	CERAMIC CHIP	0.0047uF 10% 50V
R199	1-216-839-11	METAL CHIP	33K 5% 1/16W	C114	1-125-837-11	CERAMIC CHIP	1uF 10% 6.3V
R201	1-216-839-11	METAL CHIP	33K 5% 1/16W	C115	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V
R202	1-216-833-11	METAL CHIP	10K 5% 1/16W	C116	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V
R203	1-216-845-11	METAL CHIP	100K 5% 1/16W	C117	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
R204	1-216-827-11	METAL CHIP	3.3K 5% 1/16W	C118	1-165-176-11	CERAMIC CHIP	0.047uF 10.00% 16V
R205	1-216-821-11	METAL CHIP	1K 5% 1/16W	C119	1-165-176-11	CERAMIC CHIP	0.047uF 10.00% 16V
R206	1-216-833-11	METAL CHIP	10K 5% 1/16W	C120	1-164-156-11	CERAMIC CHIP	0.1uF 25V
R207	1-216-857-11	METAL CHIP	1M 5% 1/16W	C121	1-164-156-11	CERAMIC CHIP	0.1uF 25V
R212	1-216-813-11	METAL CHIP	220 5% 1/16W	C125	1-117-720-11	CERAMIC CHIP	4.7uF 10V
R215	1-216-864-11	METAL CHIP	0 5% 1/16W	C128	1-164-156-11	CERAMIC CHIP	0.1uF 25V
R216	1-216-813-11	METAL CHIP	220 5% 1/16W	C131	1-117-720-11	CERAMIC CHIP	4.7uF 10V
R217	1-216-829-11	METAL CHIP	4.7K 5% 1/16W	C132	1-164-156-11	CERAMIC CHIP	0.1uF 25V
R218	1-216-821-11	METAL CHIP	1K 5% 1/16W	C133	1-164-156-11	CERAMIC CHIP	0.1uF 25V
R219	1-216-833-11	METAL CHIP	10K 5% 1/16W	C141	1-126-206-11	ELECT CHIP	100uF 20% 6.3V
R220	1-216-864-11	METAL CHIP	0 5% 1/16W	C142	1-164-156-11	CERAMIC CHIP	0.1uF 25V
R221	1-216-813-11	METAL CHIP	220 5% 1/16W	C143	1-164-156-11	CERAMIC CHIP	0.1uF 25V
R226	1-216-809-11	METAL CHIP	100 5% 1/16W	C144	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
R227	1-216-845-11	METAL CHIP	100K 5% 1/16W	C145	1-164-156-11	CERAMIC CHIP	0.1uF 25V
R228	1-216-853-11	METAL CHIP	470K 5% 1/16W	C151	1-117-370-11	CERAMIC CHIP	10uF 10V
R229	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	C152	1-164-156-11	CERAMIC CHIP	0.1uF 25V
R230	1-216-789-11	METAL CHIP	2.2 5% 1/16W	C153	1-164-156-11	CERAMIC CHIP	0.1uF 25V
R231	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	C154	1-126-206-11	ELECT CHIP	100uF 20% 6.3V
R302	1-216-837-11	METAL CHIP	22K 5% 1/16W	C155	1-164-156-11	CERAMIC CHIP	0.1uF 25V
R303	1-216-837-11	METAL CHIP	22K 5% 1/16W	C156	1-164-156-11	CERAMIC CHIP	0.1uF 25V
R304	1-216-837-11	METAL CHIP	22K 5% 1/16W	C157	1-164-156-11	CERAMIC CHIP	0.1uF 25V
R305	1-216-837-11	METAL CHIP	22K 5% 1/16W	C158	1-162-927-11	CERAMIC CHIP	100PF 5% 50V
R1133	1-216-813-11	METAL CHIP	220 5% 1/16W	C159	1-162-927-11	CERAMIC CHIP	100PF 5% 50V
R1134	1-216-821-11	METAL CHIP	1K 5% 1/16W	C160	1-162-927-11	CERAMIC CHIP	100PF 5% 50V
		< NETWORK >		C161	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
RN201	1-233-576-11	RES, CHIP NETWORK 100		C162	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
RN202	1-233-576-11	RES, CHIP NETWORK 100		C163	1-125-891-11	CERAMIC CHIP	0.47uF 10.00% 10V
		< VARIABLE RESISTOR >		C164	1-162-927-11	CERAMIC CHIP	100PF 5% 50V
RV101	1-238-602-11	RES, ADJ, CARBON 47K		C165	1-162-968-11	CERAMIC CHIP	0.0047uF 10% 50V
		< VIBRATOR >		C166	1-125-891-11	CERAMIC CHIP	0.47uF 10.00% 10V
X201	1-579-834-11	VIBRATOR, CRYSTAL 33.8688MHZ		C167	1-164-245-11	CERAMIC CHIP	0.015uF 10.00% 25V
*****				C169	1-164-156-11	CERAMIC CHIP	0.1uF 25V
A-4726-344-A		BD (MD) BOARD, COMPLETE		C173	1-164-156-11	CERAMIC CHIP	0.1uF 25V
		*****		C174	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
		< CAPACITOR >		C180	1-117-370-11	CERAMIC CHIP	10uF 10V
C101	1-135-259-11	TANTAL. CHIP	10uF 20.00% 6.3V	C181	1-126-206-11	ELECT CHIP	100uF 20% 6.3V
C102	1-135-259-11	TANTAL. CHIP	10uF 20.00% 6.3V	C182	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C103	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C183	1-164-156-11	CERAMIC CHIP	0.1uF 25V
C104	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V	C184	1-117-970-11	ELECT CHIP	22uF 20.00% 10V
C105	1-115-416-11	CERAMIC CHIP	0.001uF 5.00% 25V	C185	1-131-872-11	CERAMIC CHIP	1000PF 10% 630V
C106	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C191	1-126-206-11	ELECT CHIP	100uF 20% 6.3V
C107	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C192	1-164-156-11	CERAMIC CHIP	0.1uF 25V
C108	1-162-969-11	CERAMIC CHIP	0.0068uF 10% 25V	C193	1-126-206-11	ELECT CHIP	100uF 20% 6.3V
C109	1-164-677-11	CERAMIC CHIP	0.033uF 10.00% 16V	C194	1-164-156-11	CERAMIC CHIP	0.1uF 25V
C110	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C195	1-164-156-11	CERAMIC CHIP	0.1uF 25V
				C196	1-164-156-11	CERAMIC CHIP	0.1uF 25V
				C1401	1-117-720-11	CERAMIC CHIP	4.7uF 10V

# HCD-C5

## BD (MD)

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
		< CONNECTOR >					
CN101	1-766-833-21	CONNECTOR, FFC/FPC (ZIF) 21P		Q133	8-729-402-93	TRANSISTOR UN5214-TX	
CN102	1-784-835-21	CONNECTOR,FFC(LIF(NON-ZIF))27P		Q134	8-729-402-93	TRANSISTOR UN5214-TX	
CN103	1-784-869-21	CONNECTOR,FFC(LIF(NON-ZIF))17P		Q181	8-729-018-75	TRANSISTOR 2SJ278MYTR	
* CN104	1-580-055-21	PIN, CONNECTOR (SMD) 2P		Q182	8-729-017-65	TRANSISTOR 2SK1764KYTR	
CN105	1-784-859-21	CONNECTOR, FFC(LIF(NON-ZIF))7P				< RESISTOR >	
		< DIODE >		R101	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
D101	8-719-988-61	DIODE 1SS355TE-17		R102	1-216-853-11	METAL CHIP 470K 5%	1/16W
D181	8-719-080-81	DIODE FS1J6		R103	1-216-863-11	RES-CHIP 3.3M 5%	1/16W
D183	8-719-080-81	DIODE FS1J6		R104	1-216-853-11	METAL CHIP 470K 5%	1/16W
		< IC >		R105	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
IC101	8-752-080-95	IC CXA2523AR		R106	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
IC102	8-759-473-51	IC TLV2361CDBV		R107	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
IC141	8-759-836-79	IC BH6519FS-E2		R108	1-216-833-11	METAL CHIP 10K 5%	1/16W
IC151	8-752-404-64	IC CXD2662R		R109	1-216-845-11	METAL CHIP 100K 5%	1/16W
IC153	8-759-671-27	IC MSM51V4400D-10TSK-FS		R110	1-216-845-11	METAL CHIP 100K 5%	1/16W
IC181	8-759-481-17	IC MC74ACT08DTR2		R111	1-216-833-11	METAL CHIP 10K 5%	1/16W
IC190	8-759-677-64	IC L88M35T		R112	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
IC195	8-759-640-41	IC BR24C08F-E2		R113	1-216-833-11	METAL CHIP 10K 5%	1/16W
		< CONDUCTOR >		R114	1-216-827-11	METAL CHIP 3.3K 5%	1/16W
JW201	1-216-295-00	SHORT 0		R115	1-216-833-11	METAL CHIP 10K 5%	1/16W
JW202	1-216-295-00	SHORT 0		R116	1-216-839-11	METAL CHIP 33K 5%	1/16W
JW203	1-216-295-00	SHORT 0		R117	1-216-837-11	METAL CHIP 22K 5%	1/16W
JW903	1-216-295-00	SHORT 0		R118	1-218-855-11	METAL CHIP 2.2K 0.5%	1/16W
JW904	1-216-295-00	SHORT 0		R119	1-218-863-11	METAL CHIP 4.7K 0.5%	1/16W
		< CONDUCTOR / FERRITE BEAD >		R120	1-218-889-11	METAL CHIP 56K 0.5%	1/16W
L101	1-500-245-11	FERRITE 0uH		R121	1-218-863-11	METAL CHIP 4.7K 0.5%	1/16W
L102	1-500-245-11	FERRITE 0uH		R122	1-218-855-11	METAL CHIP 2.2K 0.5%	1/16W
L103	1-500-245-11	FERRITE 0uH		R123	1-216-819-11	METAL CHIP 680 5%	1/16W
L105	1-414-235-22	FERRITE 0uH		R124	1-216-809-11	METAL CHIP 100 5%	1/16W
L106	1-500-245-11	FERRITE 0uH		R125	1-216-815-11	METAL CHIP 330 5%	1/16W
L121	1-500-245-11	FERRITE 0uH		R126	1-216-819-11	METAL CHIP 680 5%	1/16W
L122	1-500-245-11	FERRITE 0uH		R127	1-216-845-11	METAL CHIP 100K 5%	1/16W
L131	1-500-245-11	FERRITE 0uH		R128	1-219-724-11	METAL CHIP 1 1%	1/4W
L141	1-216-296-11	SHORT 0		R129	1-216-298-00	METAL CHIP 2.2 5%	1/10W
L142	1-216-296-11	SHORT 0		R130	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
L143	1-216-296-11	SHORT 0		R131	1-216-833-11	METAL CHIP 10K 5%	1/16W
L144	1-216-296-11	SHORT 0		R132	1-216-839-11	METAL CHIP 33K 5%	1/16W
L145	1-216-296-11	SHORT 0		R133	1-216-821-11	METAL CHIP 1K 5%	1/16W
L146	1-469-855-21	FERRITE 0uH		R134	1-216-821-11	METAL CHIP 1K 5%	1/16W
L147	1-469-855-21	FERRITE 0uH		R135	1-216-821-11	METAL CHIP 1K 5%	1/16W
L161	1-500-245-11	FERRITE 0uH		R136	1-216-302-00	METAL CHIP 2.7 5%	1/10W
L171	1-500-245-11	FERRITE 0uH		R138	1-216-833-11	METAL CHIP 10K 5%	1/16W
L180	1-469-855-21	FERRITE 0uH		R150	1-216-833-11	METAL CHIP 10K 5%	1/16W
L181	1-469-855-21	FERRITE 0uH		R151	1-216-833-11	METAL CHIP 10K 5%	1/16W
L182	1-500-245-11	FERRITE 0uH		R153	1-216-833-11	METAL CHIP 10K 5%	1/16W
L183	1-216-296-11	SHORT 0		R155	1-216-864-11	METAL CHIP 0 5%	1/16W
L184	1-216-296-11	SHORT 0		R156	1-216-864-11	METAL CHIP 0 5%	1/16W
		< TRANSISTOR >		R158	1-216-809-11	METAL CHIP 100 5%	1/16W
Q101	8-729-403-35	TRANSISTOR UN5113-TX		R162	1-216-833-11	METAL CHIP 10K 5%	1/16W
Q121	8-729-403-35	TRANSISTOR UN5113-TX		R167	1-216-833-11	METAL CHIP 10K 5%	1/16W
Q122	8-729-101-07	TRANSISTOR 2SB798-T1DK		R168	1-216-845-11	METAL CHIP 100K 5%	1/16W
Q131	8-729-026-53	TRANSISTOR 2SA1576A-T106-QR		R169	1-216-855-11	METAL CHIP 680K 5%	1/16W
Q132	8-729-903-10	TRANSISTOR FMW1-T-148		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



**BD (MD)**

**CONNECTOR**

**HP**

**JACK**

**MD DIGITAL**

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R183	1-216-841-11	METAL CHIP	47K 5% 1/16W			< CONNECTOR >	
R184	1-220-942-11	METAL CHIP	3.3 1% 1/4				
R185	1-220-942-11	METAL CHIP	3.3 1% 1/4				
R195	1-216-833-11	METAL CHIP	10K 5% 1/16W	* CN107	1-568-934-11	PIN, CONNECTOR 7P	
R196	1-216-833-11	METAL CHIP	10K 5% 1/16W			< JACK >	
R197	1-216-833-11	METAL CHIP	10K 5% 1/16W	J101	1-793-439-11	JACK (SMALL TYPE) (TAPE OUT)	
R218	1-216-864-11	METAL CHIP	0 5% 1/16W	J102	1-793-439-11	JACK (SMALL TYPE) (TAPE IN)	
		< SWITCH >				< RESISTOR >	
S101	1-762-596-21	SWITCH, PUSH (1 KEY) (LIMIT-IN)		R101	1-216-845-11	METAL CHIP 100K 5% 1/16W	
S103	1-771-956-21	SWITCH, PUSH (1 KEY) (OUT)		R151	1-216-845-11	METAL CHIP 100K 5% 1/16W	
S104	1-771-955-21	SWITCH, PUSH (1 KEY) (PLAY)		*****			
S105	1-771-955-21	SWITCH, PUSH (1 KEY) (REC)			A-4725-732-A	MD DIGITAL BOARD, COMPLETE	
		< VIBRATOR >				*****	
X171	1-781-569-21	OSCILLATOR, CRYSTAL 90MHz				< CAPACITOR >	
*****							
	1-682-100-11	CONNECTOR BOARD		C200	1-124-584-00	ELECT 100uF 20% 10V	
		*****		C201	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
		< CONNECTOR >		C202	1-124-589-11	ELECT 47uF 20% 16V	
CN1	1-815-750-11	CONNECTOR		C203	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
*****							
	1-681-712-11	HP BOARD		C204	1-124-261-00	ELECT 10uF 20% 50V	
		*****		C205	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
		< CAPACITOR >		C207	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C337	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	C208	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C338	1-162-294-31	CERAMIC	0.001uF 10% 50V	C211	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C339	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	C212	1-124-584-00	ELECT 100uF 20% 10V	
		< CONNECTOR >		C213	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
* CN109	1-568-954-11	PIN, CONNECTOR 5P		C214	1-124-261-00	ELECT 10uF 20% 50V	
CN110	1-506-469-11	PIN, CONNECTOR 4P		C215	1-124-261-00	ELECT 10uF 20% 50V	
		< JACK >		C216	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
J103	1-794-702-11	JACK, HEADPHONE (PHONES)		C217	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
		< TRANSISTOR >		C218	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
Q341	8-729-046-97	TRANSISTOR	2SD1938(F)-T(TX).SO	C219	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
Q391	8-729-046-97	TRANSISTOR	2SD1938(F)-T(TX).SO	C221	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
		< RESISTOR >		C222	1-124-589-11	ELECT 47uF 20% 16V	
R337	1-249-407-11	CARBON	150 5% 1/4W F	C223	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
R342	1-249-429-11	CARBON	10K 5% 1/4W	C701	1-124-584-00	ELECT 100uF 20% 10V	
R387	1-249-407-11	CARBON	150 5% 1/4W F	C702	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
R392	1-216-833-11	METAL CHIP	10K 5% 1/16W	C703	1-126-245-11	ELECT 330uF 20.00% 6.3V	
*****							
	1-681-381-11	JACK BOARD		C704	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
		*****		C705	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
		< CAPACITOR >		C706	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C101	1-162-927-11	CERAMIC CHIP	100PF 5% 50V	C707	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C122	1-162-964-11	CERAMIC CHIP	1000PF 50V	C719	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
			(AEP,UK,KR)	C723	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C151	1-162-927-11	CERAMIC CHIP	100PF 5% 50V	C726	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
				C730	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
				C738	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
				C740	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
				C742	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
				C743	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
				C748	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
				C749	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
				C751	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
				C756	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
				C791	1-164-156-11	CERAMIC CHIP 0.1uF 25V	

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**MD DIGITAL**

**PANEL**

Ref. No.	Part No.	Description	Remarks
C843	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C861	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C862	1-115-869-11	ELECT 0.33uF	20.00% 50V
C863	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C864	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C871	1-124-584-00	ELECT 100uF	20% 10V
C872	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C873	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
< CONNECTOR >			
CN201	1-790-669-21	PIN, CONNECTOR (PC BOARD) 9P	
CN701	1-784-741-11	CONNECTOR, FFC 19P	
CN702	1-784-384-11	CONNECTOR, FFC/FPC 27P	
CN703	1-784-376-11	CONNECTOR, FFC/FPC 17P	
< DIODE >			
D211	8-719-104-34	DIODE 1S2835-T1	
< FERRITE BEAD / CONDUCTOR >			
FB217	1-469-116-21	FERRITE 0UH	
FB701	1-469-324-21	FERRITE 0UH	
FB702	1-469-324-21	FERRITE 0UH	
FB703	1-469-324-21	FERRITE 0UH	
FB704	1-216-864-11	METAL CHIP 0	5% 1/16W
< IC >			
IC201	8-759-675-78	IC UDA1360TS/N1.118	
IC211	8-759-675-77	IC UDA1350AH	
IC701	6-800-339-01	IC M30803MG-A03FP	
IC861	8-759-481-02	IC M62016L	
IC871	8-759-598-69	IC BA6956AN	
< CONDUCTOR >			
JR210	1-216-296-11	SHORT 0	
< COIL >			
L701	1-412-533-21	INDUCTOR 47uH	
< TRANSISTOR >			
Q201	8-729-421-22	TRANSISTOR UN2211-TX	
Q202	8-729-026-49	TRANSISTOR 2SA1037AK-T146-QR	
Q211	8-729-424-08	TRANSISTOR UN2111-TX	
Q861	8-729-120-28	TRANSISTOR 2SC1623-T1-L5L6	
Q871	8-729-421-22	TRANSISTOR UN2211-TX	
Q872	8-729-602-36	TRANSISTOR 2SA1602TP-1EF	
< RESISTOR >			
R201	1-218-272-11	RES-CHIP 5.1K	5% 1/16W
R202	1-218-272-11	RES-CHIP 5.1K	5% 1/16W
R211	1-216-813-11	METAL CHIP 220	5% 1/16W
R213	1-216-833-11	METAL CHIP 10K	5% 1/16W
R214	1-216-809-11	METAL CHIP 100	5% 1/16W
R215	1-216-833-11	METAL CHIP 10K	5% 1/16W
R216	1-216-833-11	METAL CHIP 10K	5% 1/16W
R217	1-216-809-11	METAL CHIP 100	5% 1/16W
R218	1-216-809-11	METAL CHIP 100	5% 1/16W
R219	1-216-809-11	METAL CHIP 100	5% 1/16W

Ref. No.	Part No.	Description	Remarks
R220	1-216-817-11	METAL CHIP 470	5% 1/16W
R221	1-216-809-11	METAL CHIP 100	5% 1/16W
R222	1-216-825-11	METAL CHIP 2.2K	5% 1/16W
R223	1-216-833-11	METAL CHIP 10K	5% 1/16W
R701	1-216-817-11	METAL CHIP 470	5% 1/16W
R702	1-216-809-11	METAL CHIP 100	5% 1/16W
R717	1-216-833-11	METAL CHIP 10K	5% 1/16W
R724	1-216-833-11	METAL CHIP 10K	5% 1/16W
R726	1-216-831-11	METAL CHIP 6.8K	5% 1/16W
R727	1-216-829-11	METAL CHIP 4.7K	5% 1/16W
R730	1-216-833-11	METAL CHIP 10K	5% 1/16W
R743	1-216-833-11	METAL CHIP 10K	5% 1/16W
R749	1-216-833-11	METAL CHIP 10K	5% 1/16W
R751	1-216-833-11	METAL CHIP 10K	5% 1/16W
R752	1-216-833-11	METAL CHIP 10K	5% 1/16W
R754	1-216-833-11	METAL CHIP 10K	5% 1/16W
R767	1-216-833-11	METAL CHIP 10K	5% 1/16W
R768	1-216-833-11	METAL CHIP 10K	5% 1/16W
R786	1-216-833-11	METAL CHIP 10K	5% 1/16W
R787	1-216-833-11	METAL CHIP 10K	5% 1/16W
R815	1-216-837-11	METAL CHIP 22K	5% 1/16W
R816	1-216-841-11	METAL CHIP 47K	5% 1/16W
R824	1-216-809-11	METAL CHIP 100	5% 1/16W
R861	1-216-849-11	METAL CHIP 220K	5% 1/16W
R862	1-216-845-11	METAL CHIP 100K	5% 1/16W
R863	1-216-837-11	METAL CHIP 22K	5% 1/16W
R871	1-216-829-11	METAL CHIP 4.7K	5% 1/16W
R872	1-216-824-11	METAL CHIP 1.8K	5% 1/16W
R873	1-216-825-11	METAL CHIP 2.2K	5% 1/16W
< VIBRATOR >			
X720	1-579-175-11	VIBRATOR, CERAMIC 10MHZ	
*****			
A-4476-936-A	PANEL BOARD, COMPLETE		
*****			
4-233-850-01	HOLDER (FL)		
< CAPACITOR >			
C603	1-124-247-11	ELECT 10uF	20.00% 35V
C623	1-162-306-11	CERAMIC 0.01uF	30.00% 16V
C624	1-162-282-31	CERAMIC 100PF	10% 50V
C626	1-162-927-11	CERAMIC CHIP 100PF	5% 50V
C635	1-124-247-11	ELECT 10uF	20.00% 35V
C636	1-126-153-11	ELECT 22uF	20% 6.3V
C637	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C640	1-162-927-11	CERAMIC CHIP 100PF	5% 50V
C641	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C642	1-162-306-11	CERAMIC 0.01uF	30.00% 16V
C643	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C646	1-165-319-91	CERAMIC CHIP 0.1uF	50V
C647	1-162-290-31	CERAMIC 470PF	10% 50V
C648	1-162-286-31	CERAMIC 220PF	10.00% 50V
C649	1-162-286-31	CERAMIC 220PF	10.00% 50V
C650	1-162-286-31	CERAMIC 220PF	10.00% 50V
C651	1-162-286-31	CERAMIC 220PF	10.00% 50V
C652	1-162-286-31	CERAMIC 220PF	10.00% 50V
C653	1-162-286-31	CERAMIC 220PF	10.00% 50V
C654	1-162-286-31	CERAMIC 220PF	10.00% 50V



<b>PANEL</b>	<b>POWER</b>
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Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C655	1-162-286-31	CERAMIC	220PF 10.00% 50V	R624	1-249-433-11	CARBON	22K 5% 1/4W
C656	1-162-286-31	CERAMIC	220PF 10.00% 50V	R639	1-216-797-11	METAL CHIP	10 5% 1/16W
C657	1-162-286-31	CERAMIC	220PF 10.00% 50V	R640	1-249-413-11	CARBON	470 5% 1/4W
C658	1-162-286-31	CERAMIC	220PF 10.00% 50V	R641	1-216-819-11	METAL CHIP	680 5% 1/16W
C659	1-162-286-31	CERAMIC	220PF 10.00% 50V	R642	1-216-821-11	METAL CHIP	1K 5% 1/16W
C660	1-162-286-31	CERAMIC	220PF 10.00% 50V	R643	1-216-817-11	METAL CHIP	470 5% 1/16W
C661	1-162-286-31	CERAMIC	220PF 10.00% 50V	R644	1-216-819-11	METAL CHIP	680 5% 1/16W
C662	1-162-286-31	CERAMIC	220PF 10.00% 50V	R645	1-216-821-11	METAL CHIP	1K 5% 1/16W
C664	1-124-247-11	ELECT	10uF 20.00% 35V	R646	1-216-817-11	METAL CHIP	470 5% 1/16W
C665	1-124-589-11	ELECT	47uF 20% 16V	R647	1-216-819-11	METAL CHIP	680 5% 1/16W
< CONNECTOR >				R648	1-216-821-11	METAL CHIP	1K 5% 1/16W
* CN601	1-784-738-11	CONNECTOR, FFC 16P		< SWITCH >			
< DIODE >				S602	1-762-875-21	SWITCH, KEYBOARD	(REC/REC IT/CD SYNC NORMAL)
D601	8-719-300-71	DIODE	SEL2210R-TP3 (I/⏏)	S603	1-762-875-21	SWITCH, KEYBOARD	(VOL -)
D602	8-719-072-76	DIODE	SEL5E23C-TP15 (FUNCTION●)	S604	1-762-875-21	SWITCH, KEYBOARD	(VOL +)
D603	8-719-072-76	DIODE	SEL5E23C-TP15 (VOL +)	S605	1-762-875-21	SWITCH, KEYBOARD	(FUNCTION●)
D604	8-719-072-76	DIODE	SEL5E23C-TP15 (VOL -)	S606	1-762-875-21	SWITCH, KEYBOARD	(I/⏏)
D605	8-719-072-76	DIODE	SEL5E23C-TP15 (CD▲)	S607	1-762-875-21	SWITCH, KEYBOARD	(CD▲)
D606	8-719-072-76	DIODE	SEL5E23C-TP15 (▶▶)	S608	1-762-875-21	SWITCH, KEYBOARD	(▶▶)
D607	8-719-072-76	DIODE	SEL5E23C-TP15 (■)	S609	1-762-875-21	SWITCH, KEYBOARD	(■)
D608	8-719-072-76	DIODE	SEL5E23C-TP15 (▶▶▶)	S610	1-762-875-21	SWITCH, KEYBOARD	(CD SYNC HIGH)
D609	8-719-072-76	DIODE	SEL5E23C-TP15 (◀◀◀)	S611	1-762-875-21	SWITCH, KEYBOARD	(MD▲)
D610	8-719-072-76	DIODE	SEL5E23C-TP15 (MD▲)	S612	1-762-875-21	SWITCH, KEYBOARD	(◀◀◀/◀◀/TUNING-)
< FILTER >				S613	1-762-875-21	SWITCH, KEYBOARD	(▶▶▶/▶▶/ TUNING+)
FL601	1-518-755-11	INDICATOR TUBE, FLUORESCENT		*****			
< IC >				A-4427-414-A	POWER BOARD, COMPLETE (HK,KR)		
IC601	8-759-297-23	IC	M66004M8FP-200D	A-4476-948-A	POWER BOARD, COMPLETE (AEP,UK,AUS)		
IC602	8-759-827-69	IC	NJL63H400A-1 (R)	*****			
< TRANSISTOR >				< CAPACITOR >			
Q601	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF	C902	1-126-767-11	ELECT	1000uF 20.00% 16V
Q602	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF	C903	1-126-964-11	ELECT	10uF 20.00% 50V
Q604	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF	C904	1-126-916-11	ELECT	1000uF 20.00% 6.3V
< RESISTOR >				C905	1-126-964-11	ELECT	10uF 20.00% 50V
R601	1-249-441-11	CARBON	100K 5% 1/4W	C906	1-126-926-11	ELECT	1000uF 20.00% 10V
R602	1-249-441-11	CARBON	100K 5% 1/4W	C907	1-126-964-11	ELECT	10uF 20.00% 50V
R603	1-249-417-11	CARBON	1K 5% 1/4W	C908	1-126-935-11	ELECT	470uF 20.00% 10V
R604	1-249-417-11	CARBON	1K 5% 1/4W	C909	1-126-964-11	ELECT	10uF 20.00% 50V
R607	1-249-441-11	CARBON	100K 5% 1/4W	C910	1-126-916-11	ELECT	1000uF 20.00% 6.3V
R608	1-216-838-11	METAL CHIP	27K 5% 1/16W	C912	1-126-916-11	ELECT	1000uF 20.00% 6.3V
R609	1-216-821-11	METAL CHIP	1K 5% 1/16W	C914	1-126-935-11	ELECT	470uF 20.00% 10V
R610	1-216-821-11	METAL CHIP	1K 5% 1/16W	C922	1-126-933-11	ELECT	100uF 20.00% 16V
R611	1-216-821-11	METAL CHIP	1K 5% 1/16W	C961	1-136-165-00	FILM	0.1uF 5.00% 50V
R612	1-216-821-11	METAL CHIP	1K 5% 1/16W	C962	1-126-944-11	ELECT	3300uF 20.00% 25V
R614	1-216-813-11	METAL CHIP	220 5% 1/16W	C971	1-136-165-00	FILM	0.1uF 5.00% 50V
R615	1-216-813-11	METAL CHIP	220 5% 1/16W	C974	1-126-968-11	ELECT	100uF 20.00% 50V
R616	1-216-813-11	METAL CHIP	220 5% 1/16W	C975	1-126-964-11	ELECT	10uF 20.00% 50V
R617	1-216-813-11	METAL CHIP	220 5% 1/16W	C976	1-126-964-11	ELECT	10uF 20.00% 50V
R618	1-216-809-11	METAL CHIP	100 5% 1/16W	C981	1-136-165-00	FILM	0.1uF 5.00% 50V
R619	1-216-813-11	METAL CHIP	220 5% 1/16W	C982	1-136-165-00	FILM	0.1uF 5.00% 50V
R620	1-216-813-11	METAL CHIP	220 5% 1/16W	C983	1-135-933-11	ELECT	22000uF 20% 16V
R621	1-216-813-11	METAL CHIP	220 5% 1/16W	C984	1-128-548-11	ELECT	4700uF 20.00% 25V
R622	1-216-813-11	METAL CHIP	220 5% 1/16W	△C991	1-113-925-11	CERAMIC	0.01uF 20.00% 250V
R623	1-216-829-11	METAL CHIP	4.7K 5% 1/16W	C992	1-126-963-11	ELECT	4.7uF 20.00% 50V

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

**POWER**   **SW**   **UCOM**

Ref. No.	Part No.	Description	Remarks
< CONNECTOR >			
* CN901	1-770-732-11	CONNECTOR, BOARD TO BOARD 15P	
CN902	1-778-241-11	CONNECTOR, BOARD TO BOARD 5P	
CN991	1-564-321-00	PIN, CONNECTOR 2P	
* CN992	1-564-321-21	PIN, CONNECTOR 2P	
* CN995	1-564-511-11	PLUG, CONNECTOR 8P	
< DIODE >			
D906	8-719-991-33	DIODE 1SS133T-77	
D921	8-719-200-82	DIODE 11ES2-TA1B	
D961	8-719-200-82	DIODE 11ES2-TA1B	
D962	8-719-200-82	DIODE 11ES2-TA1B	
D963	8-719-200-82	DIODE 11ES2-TA1B	
D964	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	
D975	8-719-982-24	DIODE MTZJ-T-77-33A	
D976	8-719-921-40	DIODE MTZJ-T-77-4.7A	
D981	8-719-028-23	DIODE D3SBA20-4101	
D982	8-719-200-82	DIODE 11ES2-TA1B	
D983	8-719-200-82	DIODE 11ES2-TA1B	
D984	8-719-200-82	DIODE 11ES2-TA1B	
D985	8-719-200-82	DIODE 11ES2-TA1B	
D991	8-719-991-33	DIODE 1SS133T-77	
D992	8-719-991-33	DIODE 1SS133T-77	
D993	8-719-991-33	DIODE 1SS133T-77	
< BRACKET >			
EB901	4-924-906-21	BRACKET (MT)	
EB902	4-924-906-21	BRACKET (MT)	
< IC >			
IC901	8-759-231-57	IC TA7810S	
IC902	8-759-701-75	IC NJM7805FA	
IC903	8-759-450-49	IC uPC2907HF	
IC904	8-759-701-75	IC NJM7805FA	
IC905	8-759-701-75	IC NJM7805FA	
IC906	8-759-686-72	IC uPC29L04J-T	
IC907	8-759-647-11	IC uPC2905HF	
< LINE FILTER >			
△ LF991	1-419-625-11	COIL, LINE FILTER	
< TRANSISTOR >			
Q971	8-729-141-83	TRANSISTOR 2SB1375	
Q991	8-729-120-28	TRANSISTOR 2SC1623-T1-L5L6	
< RESISTOR >			
△ R971	1-219-153-11	FUSIBLE 10	5% 1/4W
R972	1-260-103-11	CARBON 2.2K	5% 1/2W
R973	1-249-429-11	CARBON 10K	5% 1/4W
R974	1-249-413-11	CARBON 470	5% 1/4W
R975	1-249-413-11	CARBON 470	5% 1/4W

Ref. No.	Part No.	Description	Remarks
△ R981	1-219-120-81	FUSIBLE 0.15	5% 1/4W
△ R982	1-240-877-11	FUSIBLE 0.15	5% 1/2W
R991	1-249-429-11	CARBON 10K	5% 1/4W
R992	1-216-833-11	METAL CHIP 10K	5% 1/16W
R993	1-249-413-11	CARBON 470	5% 1/4W
R994	1-249-413-11	CARBON 470	5% 1/4W
R995	1-216-055-11	METAL CHIP 1.8K	5% 1/10W
R995	1-216-827-11	METAL CHIP 3.3K	5% 1/16W
R996	1-247-791-91	CARBON 22	5% 1/4W
< RELAY >			
△ RY991	1-755-276-11	RELAY, POWER	
< TRANSFORMER >			
△ T901	1-437-243-11	TRANSFORMER, POWER (SUB) (AEP,UK,AUS)	
△ T901	1-437-245-11	TRANSFORMER, POWER (SUB) (HK,KR)	
*****			
	1-682-099-11	SW BOARD	
*****			
< SWITCH >			
S1	1-786-214-11	SWITCH (DETECTION)	
		(Disc IN/8cm Disc Detect)	
S2	1-786-212-11	SWITCH (DETECTION)	
		(12cm Disc/12cm Disc Eject End Detect)	
S3	1-786-213-11	SWITCH (DETECTION)	
		(Disc Existence, Chaking, Releasing Detect)	
S4	1-786-214-11	SWITCH (DETECTION)	
		(8cm Disc Eject End Detect)	
*****			
	A-4427-413-A	UCOM BOARD, COMPLETE (AUS,HK,KR)	
	A-4476-947-A	UCOM BOARD, COMPLETE (AEP,UK)	
*****			
*	4-363-146-00	HEAT SINK, V.OUT	
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
< LITHIUM BATTERY >			
BT921	1-528-938-11	BATTERY, LITHIUM ION SECONDARY	
< CAPACITOR >			
C201	1-126-176-11	ELECT 220uF	20% 10V
C202	1-119-774-11	ELECT 100uF	20.00% 16V
C203	1-164-159-11	CERAMIC 0.1uF	50V
C204	1-104-665-11	ELECT 100uF	20.00% 10V
C206	1-119-941-11	ELECT 470uF	20.00% 6.3V
C208	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C211	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C212	1-162-294-31	CERAMIC 0.001uF	10% 50V
C213	1-162-294-31	CERAMIC 0.001uF	10% 50V
C216	1-126-786-11	ELECT 47uF	20.00% 16V
C222	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C223	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C224	1-136-165-00	FILM 0.1uF	5.00% 50V
C225	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C226	1-162-927-11	CERAMIC CHIP 100PF	5% 50V

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

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C231	1-162-927-11	CERAMIC CHIP	100PF 5% 50V	FB213	1-216-864-11	METAL CHIP	0 5% 1/16W
C241	1-127-820-11	CERAMIC	4.7uF 16V	FB214	1-216-864-11	METAL CHIP	0 5% 1/16W
C243	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	FB222	1-216-864-11	METAL CHIP	0 5% 1/16W
C244	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	FB537	1-414-813-21	EMI FERRITE (SMD)	
C294	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V			< IC >	
C501	1-126-916-11	ELECT	1000uF 20.00% 6.3V	IC212	8-759-683-99	IC BA8274F-E2	
C502	1-164-156-11	CERAMIC CHIP	0.1uF 25V	IC221	8-749-017-36	IC TORX-179	
C503	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	IC222	8-759-548-57	IC SN74LV00ANSR	
C504	1-126-160-11	ELECT	1uF 20% 50V	IC501	6-800-396-01	IC uPD703032AYGF-M01-3BA	
C505	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	IC941	8-759-637-58	IC PST592C-T	
C506	1-164-159-11	CERAMIC	0.1uF 50V			< CONDUCTOR >	
C507	1-164-156-11	CERAMIC CHIP	0.1uF 25V	JR200	1-216-864-11	METAL CHIP	0 5% 1/16W
C509	1-164-156-11	CERAMIC CHIP	0.1uF 25V	JR203	1-216-864-11	METAL CHIP	0 5% 1/16W
C510	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	JR205	1-216-864-11	METAL CHIP	0 5% 1/16W
C535	1-162-917-11	CERAMIC CHIP	15PF 5% 50V	JR208	1-216-864-11	METAL CHIP	0 5% 1/16W
C536	1-162-920-11	CERAMIC CHIP	27PF 5% 50V	JR209	1-216-864-11	METAL CHIP	0 5% 1/16W
C911	1-164-159-11	CERAMIC	0.1uF 50V	JR210	1-216-864-11	METAL CHIP	0 5% 1/16W
C941	1-126-964-11	ELECT	10uF 20.00% 50V	JR212	1-216-864-11	METAL CHIP	0 5% 1/16W
C942	1-164-156-11	CERAMIC CHIP	0.1uF 25V	JR213	1-216-864-11	METAL CHIP	0 5% 1/16W
C943	1-164-156-11	CERAMIC CHIP	0.1uF 25V	JR214	1-216-864-11	METAL CHIP	0 5% 1/16W
		< CONNECTOR >		JR215	1-216-864-11	METAL CHIP	0 5% 1/16W
* CN201	1-784-738-11	CONNECTOR, FFC 16P		JR216	1-216-864-11	METAL CHIP	0 5% 1/16W
CN202	1-784-780-11	CONNECTOR, FFC 19P		JR217	1-216-864-11	METAL CHIP	0 5% 1/16W
CN203	1-764-698-11	SOCKET, CONNECTOR (NON ZIF)19P		JR219	1-216-864-11	METAL CHIP	0 5% 1/16W
CN204	1-568-844-11	CONNECTOR, FFC 29P		JR225	1-216-864-11	METAL CHIP	0 5% 1/16W
CN205	1-766-956-11	CONNECTOR, BOARD TO BOARD 15P		JR226	1-216-864-11	METAL CHIP	0 5% 1/16W
* CN206	1-774-813-11	CONNECTOR, BOARD TO BOARD 7P		JR227	1-216-864-11	METAL CHIP	0 5% 1/16W
CN207	1-774-136-11	CONNECTOR, ROUND TYPE 6P				< CONDUCTOR >	
CN208	1-774-281-11	CONNECTOR (DIN) 8P		L551	1-216-864-11	METAL CHIP	0 5% 1/16W
CN209	1-774-281-11	CONNECTOR (DIN) 8P		L552	1-216-864-11	METAL CHIP	0 5% 1/16W
CN212	1-506-469-11	PIN, CONNECTOR 4P				< TRANSISTOR >	
		< DIODE >		Q202	8-729-424-08	TRANSISTOR	UN2111-TX
D214	8-719-988-61	DIODE 1SS355TE-17		Q211	8-729-025-28	TRANSISTOR	2SK1828TE85L
D221	8-719-988-61	DIODE 1SS355TE-17		Q212	8-729-025-28	TRANSISTOR	2SK1828TE85L
D222	8-719-988-61	DIODE 1SS355TE-17		Q221	8-729-120-28	TRANSISTOR	2SC1623-T1-L5L6
D232	8-719-988-61	DIODE 1SS355TE-17		Q222	8-729-120-28	TRANSISTOR	2SC1623-T1-L5L6
D513	8-719-988-61	DIODE 1SS355TE-17		Q223	8-729-120-28	TRANSISTOR	2SC1623-T1-L5L6
D910	8-719-921-40	DIODE MTZJ-T-77-4.7B		Q224	8-729-120-28	TRANSISTOR	2SC1623-T1-L5L6
D923	8-719-991-33	DIODE 1SS133T-77		Q232	8-729-120-28	TRANSISTOR	2SC1623-T1-L5L6
D924	8-719-991-33	DIODE 1SS133T-77		Q911	8-729-421-22	TRANSISTOR	UN2211-TX
D925	8-719-988-61	DIODE 1SS355TE-17		Q912	8-729-040-20	TRANSISTOR	RT1P137L-TP
D926	8-719-988-61	DIODE 1SS355TE-17		Q941	8-729-120-28	TRANSISTOR	2SC1623-T1-L5L6
D927	8-719-988-61	DIODE 1SS355TE-17				< RESISTOR >	
D941	8-719-988-61	DIODE 1SS355TE-17		R212	1-249-429-11	CARBON	10K 5% 1/4W
D942	8-719-988-61	DIODE 1SS355TE-17		R213	1-216-833-11	METAL CHIP	10K 5% 1/16W
D943	8-719-988-61	DIODE 1SS355TE-17		R214	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
		< TERMINAL >		R215	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
EPT101	1-537-770-21	TERMINAL BOARD, GROUND		R217	1-216-833-11	METAL CHIP	10K 5% 1/16W
		< CONDUCTOR / COIL >		R218	1-216-845-11	METAL CHIP	100K 5% 1/16W
FB201	1-216-864-11	METAL CHIP	0 5% 1/16W	R219	1-249-417-11	CARBON	1K 5% 1/4W
FB202	1-216-864-11	METAL CHIP	0 5% 1/16W	R221	1-249-413-11	CARBON	470 5% 1/4W
FB205	1-216-864-11	METAL CHIP	0 5% 1/16W	R222	1-216-809-11	METAL CHIP	100 5% 1/16W
FB211	1-412-473-21	INDUCTOR	0uH	R224	1-216-853-11	METAL CHIP	470K 5% 1/16W
FB212	1-216-864-11	METAL CHIP	0 5% 1/16W				

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Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R225	1-216-841-11	METAL CHIP	47K 5%	1/16W	R560	1-249-417-11	CARBON 1K 5% 1/4W
R226	1-216-853-11	METAL CHIP	470K 5%	1/16W	R561	1-249-417-11	CARBON 1K 5% 1/4W
R227	1-216-841-11	METAL CHIP	47K 5%	1/16W	R562	1-216-809-11	METAL CHIP 100 5% 1/16W
R228	1-216-841-11	METAL CHIP	47K 5%	1/16W	R563	1-216-809-11	METAL CHIP 100 5% 1/16W
R236	1-249-429-11	CARBON	10K 5%	1/4W	R564	1-216-809-11	METAL CHIP 100 5% 1/16W
R242	1-247-807-31	CARBON	100 5%	1/4W	R565	1-216-835-11	METAL CHIP 15K 5% 1/16W
R243	1-216-821-11	METAL CHIP	1K 5%	1/16W	R566	1-216-835-11	METAL CHIP 15K 5% 1/16W
R244	1-216-845-11	METAL CHIP	100K 5%	1/16W	R567	1-249-429-11	CARBON 10K 5% 1/4W
R245	1-216-845-11	METAL CHIP	100K 5%	1/16W	R568	1-216-835-11	METAL CHIP 15K 5% 1/16W
R292	1-247-807-31	CARBON	100 5%	1/4W	R569	1-216-809-11	METAL CHIP 100 5% 1/16W
R501	1-247-807-31	CARBON	100 5%	1/4W	R570	1-216-809-11	METAL CHIP 100 5% 1/16W
R502	1-247-807-31	CARBON	100 5%	1/4W	R572	1-216-823-11	METAL CHIP 1.5K 5% 1/16W
R503	1-216-825-11	METAL CHIP	2.2K 5%	1/16W	R577	1-216-821-11	METAL CHIP 1K 5% 1/16W
R504	1-247-807-31	CARBON	100 5%	1/4W	R578	1-216-821-11	METAL CHIP 1K 5% 1/16W
R505	1-216-825-11	METAL CHIP	2.2K 5%	1/16W	R579	1-216-821-11	METAL CHIP 1K 5% 1/16W
R506	1-247-807-31	CARBON	100 5%	1/4W	R580	1-216-833-11	METAL CHIP 10K 5% 1/16W
R507	1-247-807-31	CARBON	100 5%	1/4W	R581	1-216-833-11	METAL CHIP 10K 5% 1/16W
R508	1-216-809-11	METAL CHIP	100 5%	1/16W	R583	1-216-833-11	METAL CHIP 10K 5% 1/16W
R509	1-216-833-11	METAL CHIP	10K 5%	1/16W	R584	1-216-833-11	METAL CHIP 10K 5% 1/16W
R510	1-216-833-11	METAL CHIP	10K 5%	1/16W	R585	1-216-833-11	METAL CHIP 10K 5% 1/16W (AEP,UK)
R511	1-247-807-31	CARBON	100 5%	1/4W	R586	1-216-833-11	METAL CHIP 10K 5% 1/16W
R512	1-247-887-00	CARBON	220K 5%	1/4W	R587	1-216-833-11	METAL CHIP 10K 5% 1/16W
R513	1-247-807-31	CARBON	100 5%	1/4W	R588	1-216-833-11	METAL CHIP 10K 5% 1/16W
R514	1-247-807-31	CARBON	100 5%	1/4W	R590	1-249-417-11	CARBON 1K 5% 1/4W
R515	1-247-807-31	CARBON	100 5%	1/4W	R591	1-249-437-11	CARBON 47K 5% 1/4W
R516	1-216-837-11	METAL CHIP	22K 5%	1/16W	R592	1-216-821-11	METAL CHIP 1K 5% 1/16W
R517	1-247-807-31	CARBON	100 5%	1/4W	R593	1-216-833-11	METAL CHIP 10K 5% 1/16W
R518	1-247-807-31	CARBON	100 5%	1/4W	R594	1-216-821-11	METAL CHIP 1K 5% 1/16W
R519	1-247-887-00	CARBON	220K 5%	1/4W	R595	1-249-417-11	CARBON 1K 5% 1/4W
R520	1-249-421-11	CARBON	2.2K 5%	1/4W	R596	1-216-821-11	METAL CHIP 1K 5% 1/16W
R521	1-216-833-11	METAL CHIP	10K 5%	1/16W	R597	1-216-809-11	METAL CHIP 100 5% 1/16W
R522	1-216-833-11	METAL CHIP	10K 5%	1/16W	R910	1-260-103-11	CARBON 2.2K 5% 1/2W
R523	1-216-833-11	METAL CHIP	10K 5%	1/16W	R911	1-216-864-11	METAL CHIP 0 5% 1/16W
R524	1-216-809-11	METAL CHIP	100 5%	1/16W	R921	1-216-813-11	METAL CHIP 220 5% 1/16W
R525	1-216-833-11	METAL CHIP	10K 5%	1/16W	R941	1-216-817-11	METAL CHIP 470 5% 1/16W
R526	1-247-807-31	CARBON	100 5%	1/4W	R942	1-216-833-11	METAL CHIP 10K 5% 1/16W
R527	1-247-807-31	CARBON	100 5%	1/4W	R943	1-216-841-11	METAL CHIP 47K 5% 1/16W
R528	1-249-429-11	CARBON	10K 5%	1/4W	R946	1-216-837-11	METAL CHIP 22K 5% 1/16W
R529	1-247-807-31	CARBON	100 5%	1/4W	R947	1-216-841-11	METAL CHIP 47K 5% 1/16W
R530	1-249-417-11	CARBON	1K 5%	1/4W			< VIBRATOR >
R531	1-249-417-11	CARBON	1K 5%	1/4W			
R532	1-249-417-11	CARBON	1K 5%	1/4W	X501	1-760-014-31	VIBRATOR, CERAMIC 20MHZ
R533	1-249-417-11	CARBON	1K 5%	1/4W	X502	1-567-098-41	VIBRATOR, CRYSTAL 32.768KHz
R535	1-249-429-11	CARBON	10K 5%	1/4W			*****
R536	1-216-851-11	METAL CHIP	330K 5%	1/16W			
R538	1-249-429-11	CARBON	10K 5%	1/4W			MISCELLANEOUS
R543	1-216-809-11	METAL CHIP	100 5%	1/16W			*****
R544	1-216-809-11	METAL CHIP	100 5%	1/16W	1	1-757-791-11	WIRE (FLAT TYPE) (16 CORE)
R545	1-216-821-11	METAL CHIP	1K 5%	1/16W	6	1-773-289-11	WIRE (FLAT TYPE) (29 CORE)
R546	1-216-809-11	METAL CHIP	100 5%	1/16W	△ 104	1-696-847-11	CORD, POWER (AUS)
R547	1-216-809-11	METAL CHIP	100 5%	1/16W	△ 104	1-769-079-21	CORD, POWER (KR)
R548	1-216-809-11	METAL CHIP	100 5%	1/16W	△ 104	1-777-071-21	CORD, POWER (AEP,UK,HK)
R549	1-216-809-11	METAL CHIP	100 5%	1/16W			
R550	1-216-809-11	METAL CHIP	100 5%	1/16W	105	1-769-943-11	WIRE (FLAT TYPE) (11CORE) (AUS,HK,KR)
R551	1-249-429-11	CARBON	10K 5%	1/4W	105	1-773-007-11	WIRE (FLAT TYPE) (15 CORE) (AEP,UK)
R554	1-216-809-11	METAL CHIP	100 5%	1/16W	106	1-693-529-11	TUNER PACK (FM/AM) (AEP,UK)
R556	1-249-421-11	CARBON	2.2K 5%	1/4W	106	1-693-531-11	TUNER PACK (FM/AM) (AUS,HK)
R557	1-216-833-11	METAL CHIP	10K 5%	1/16W	106	1-693-536-11	TUNER PACK (FM/AM) (KR)
R558	1-216-833-11	METAL CHIP	10K 5%	1/16W			
R559	1-216-833-11	METAL CHIP	10K 5%	1/16W			

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

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
108	1-773-110-11	WIRE (FLAT TYPE) (19 CORE)				*****	
154	1-773-138-11	WIRE (FLAT TYPE) (19 CORE)				HARDWARE LIST	
156	1-757-079-11	WIRE (FLAT TYPE) (17 CORE)				*****	
157	1-757-080-11	WIRE (FLAT TYPE) (27 CORE)		#1	7-685-870-01	SCREW +BVTT 3X5 (S)	
408	1-682-101-11	PICK-UP FLEXIBLE BOARD		#2	7-685-245-19	SCREW +KTP 3X6 TYPE2 NON-SLIT	
△503	1-758-631-11	OPTICAL PICK-UP (OPTIMA-720L1E)		#3	7-685-852-04	SCREW +BVTT 2X5 (S)	
759	1-678-514-11	FLEXIBLE BOARD		#4	7-685-861-01	SCREW +BVTT 2.6X5 (S)	
△760	A-4672-541-A	OPTICAL PICK-UP (KMS-260B)		#5	7-685-648-79	SCREW +BVTP 3X12 TYPE2 N-S	
HR901	1-500-670-11	HEAD, OVER WRITE		#6	7-682-565-09	SCREW +B 4X16	
M701	A-4672-898-A	MOTOR ASSY, SPINDLE		#7	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
M702	A-4735-076-A	MOTOR ASSY, SLED		#8	7-684-024-04	N 4, TYPE 2	
M703	A-4735-074-A	MOTOR ASSY, LOADING		#9	7-685-104-19	SCREW +P 2X6 TYPE2 NON-SLIT	
M901	1-698-997-11	FAN, D.C.		#10	7-685-504-19	SCREW +BTP 2X6 TYPE2 N-S	
M902	X-4954-023-1	MOTOR ASSY, LOADING		#11	7-685-101-11	SCREW +P 2X3 NON-SLIT TYPE2	
M903	X-4954-020-1	MOTOR ASSY, FEED		#12	7-685-103-19	SCREW +P 2X5 TYPE2 NON-SLIT	
M904	X-4954-021-1	MOTOR ASSY, SPINDLE		#13	7-627-553-38	SCREW, PRECISION +P 2X3	
S1	1-786-214-11	SWITCH (DETECTION) (Disc IN/8cm Disc detect)		#14	7-627-553-28	SCREW, PRECISION +P 2X2.5	
S2	1-786-213-11	SWITCH (DETECTION) (12cm Disc/12cm Disc Eject End detect)		#15	7-627-553-17	PRECISION SCREW +P 2X2 TYPE 3	
S3	1-786-213-11	SWITCH (DETECTION) (Disc Existence, Chucking, Releasing detect)		#16	7-627-553-78	SCREW, PRECISION +P 2X10	
S4	1-786-214-11	SWITCH (DETECTION) (8cm Disc Eject detect)		#17	7-627-553-68	SCREW, PRECISION +P 2X6 TYPE3	
S5	1-786-212-11	SWITCH (DETECTION) (LIMIT IN)		#18	7-627-552-77	SCREW, PRECISION +P 1.7X6	
S102	1-771-957-11	SWITCH, PUSH (2 KEY) (REFLECT→PROTECT)		#19	7-627-552-88	SCREW, PRECISION +P 1.7X2.2	
△T900	1-437-239-11	TRANSFORMER, POWER (AEP,UK,AUS)		#20	7-627-551-18	SCREW, PRECISION +P 1.4X2	
△T900	1-437-241-11	TRANSFORMER, POWER (HK,KR)		#21	7-685-850-04	SCREW +BVTT 2X3 (S)	
				#22	7-685-204-19	SCREW +KTP 2X6 TYPE2 NON-SLIT	

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