

# HCD-M10

## SERVICE MANUAL

Ver 1.0 2002.02



AEP Model  
UK Model  
E Model  
Australian Model

HCD-M10 is the Amplifier, MD deck, CD player, Tape player and Tuner section in CMT-M100MD.

CD Section	Model Name Using Similar Mechanism	HCD-J300
	CD Mechanism Type	CDM55A1-K4BD43
	Base Unit Type	BU-K4BD43
	Optical Pick-up Type	KSM-213DHAP
MD Section	Model Name Using Similar Mechanism	HCD-C5
	MD Mechanism Type	MDM-7B4M
	Optical Pick-up Type	KMS-260E
Tape deck Section	Model Name Using Similar Mechanism	HCD-J300
	Tape Transport Mechanism Type	Mech deck

### SPECIFICATIONS

#### Amplifier section

European model:

DIN power output (Rated): 10 + 10 watts

(6 ohms at 1 kHz, DIN)

Continuous RMS power output (Reference):

15 + 15 watts

(6 ohms at 1 kHz, 10% THD)

Music power output (Reference):

25 + 25 watts

Other models:

DIN power output (Rated): 10 + 10 watts

(6 ohms at 1 kHz, DIN)

Continuous RMS power output (Reference):

15 + 15 watts

(6 ohms at 1 kHz, 10% THD)

Inputs

ANALOG IN (phono jacks):

voltage 250 mV,

impedance 47 kilohms

DIGITAL OPTICAL IN (Supported sampling frequencies: 32 kHz, 44.1 kHz and 48 kHz)

Outputs

PHONES (stereo minijack):

accepts headphones of 16 ohms or more.

SPEAKER: accepts impedance of 6 to 16 ohms.

#### CD player section

System

Compact disc and digital audio system

Laser

Semiconductor laser

( $\lambda = 780 \text{ nm}$ )

Emission duration:

continuous

Frequency response

2 Hz – 20 kHz ( $\pm 0.5 \text{ dB}$ )

— Continued on next page —

## MICRO HI-FI COMPONENT SYSTEM

9-873-570-01

2002B0200-1

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Sony Corporation

Home Audio Company

Published by Sony Engineering Corporation

# SONY®

# HCD-M10

## MD deck section

System	MiniDisc digital audio system
Laser	Semiconductor laser ( $\lambda = 780$ nm) Emission duration: continuous
Sampling frequency	44.1 kHz
Frequency response	5 Hz – 20 kHz ( $\pm 0.5$ dB)

## Tape deck section

Recording system	4-track 2-channel stereo
Frequency response	50 – 13,000 Hz ( $\pm 3$ dB), using Sony TYPE I cassettes

## Tuner section

FM stereo, FM/AM superheterodyne tuner

### FM tuner section

Tuning range	87.5 – 108.0 MHz (50 kHz step)
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Aerial	FM lead aerial
Aerial terminals	75 ohms unbalanced
Intermediate frequency	10.7 MHz

### AM tuner section

Tuning range	
European model:	531 – 1,602 kHz (with the interval set at 9 kHz)

Other models:	531 – 1,602 kHz (with the interval set at 9 kHz) 530 – 1,710 kHz (with the interval set at 10 kHz)
---------------	---

Aerial	AM loop aerial External aerial terminals
Intermediate frequency	450 kHz

## General

### Power requirements

European model:	230 V AC, 50/60 Hz
Other models:	220 – 240 V AC,, 50/60 Hz

### Power consumption

European model:	55 watts 0.5 watts (at the Power Saving mode)
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Other models:	55 watts
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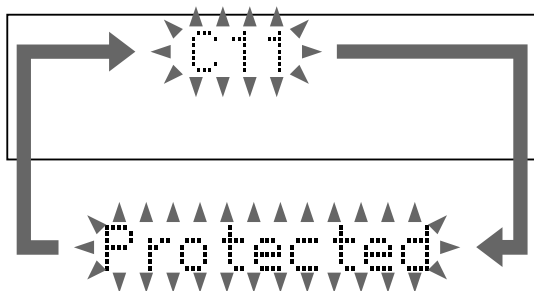
Dimensions (w/h/d) incl. projecting parts and controls	Approx. 159 x 216.5 x 330 mm
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Mass	Approx. 4.9 kg
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Design and specifications are subject to change without notice.

## Self-diagnosis display

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



### C11/Protected

The MD is protected against erasure.

- Remove the MD and slide the tab to close the slot (see page 20).

### C12/Cannot Copy

You tried to record a CD or MD with a format that the system does not support, such as a CD-ROM.

- Remove the disc and turn off the system once, then turn it on again.

### C13/REC Error

Recording could not be performed properly.

- Move the system to a stable place, and start recording over from the beginning.

The MD is dirty or scratched, or the MD does not meet the standards.

- Replace the MD and start recording over from the beginning.

### C13/Read Error

The MD deck cannot read the disc information properly.

- Remove the MD once, then insert it again.

### C14/Toc Error

The MD deck cannot read the disc information properly.

- Replace the MD.
- Erase all the recorded contents of the MD using the All Erase Function (see page 36).

### C41/Cannot Copy

The sound source is a copy of a commercially available music software.

- The Serial Copy Management System prevents making a digital copy (see page 57).

## Messages

One of the following messages may appear or flash in the display during operation.

### MD

#### Assign None

All the tracks on an MD are registered into groups.

#### Auto Cut

The MD deck is pausing the recording because silence continued for 30 seconds or more during digital recording.

#### Blank Disc

The inserted recordable MD is new, or all tracks on the MD have been erased.

#### Cannot Edit

- A pre-mastered MD is in the deck.
- You tried to edit in Programme or Shuffle Play mode.

#### Cannot REC

- A pre-mastered MD is in the deck.
- The function is switched to MD.

#### Cannot SYNC!

- There is no disc in the MD deck, or the MD is protected against erasure.
- There is no time remaining on the MD.

**continued**

## ***Self-diagnosis display (continued)***

---

### **Complete!**

The editing operation of MDs is completed.

---

### **Disc Full!**

There is no time remaining on the MD.

---

### **Eject**

The MD deck is ejecting the MD.

---

### **Group Full!**

An attempt was made to create a new group in excess of the maximum number of groups, or there are insufficient characters for updating the group management information.

---

### **Impossible**

- You tried to make an impossible editing operation.
  - You cannot combine or erase the tracks due to the system limitations of MDs.
  - You cannot specify the division point at the beginning or end of a track.
- 

### **Incomplete!**

Adjustment of the recording level after recording or Fade-in and Fade-out procedures have failed since the system was either subject to vibration or there is a damaged or dirty disc in the tray. Place the system in a stable place to minimize shock and vibration. Do not use damaged or dirty discs.

---

### **Initialize**

The power was off for a long time, so the system is initializing itself.

---

### **Name Full**

There is no more space to store track, disc or group titles.

---

### **No Change**

While attempting to change the recording level after recording, you pressed ENTER/YES without actually changing the recording level, so no change was made.

---

### **No Disc**

There is no disc in the MD deck.

---

### **OVER**

You have reached the end of the MD while pressing ►► during playing pause.

---

### **Step Full!**

You tried to programme 26 or more tracks (steps).

---

### **Push STOP!**

You pressed PLAY MODE/DIRECTION (or PLAY MODE on the remote) during play.

---

### **—Rehearsal—**

The MD is playing the specified dividing point for confirmation during the A-B Erase Function and the Divide Function.

---

### **S.F Edit!**

You attempted to perform another operation while in S.F Edit (changing the recording level after recording, Fade-in, Fade-out) mode.

---

### **S.F Edit NOW**

You pressed I/⏻ while in S.F Edit (changing the recording level after recording, Fade-in, Fade-out) mode.

---

### **Smart Space**

The signal was input again after silence continued for 3 or more but less than 30 seconds during digital recording.

---

### **Text Protect**

There is CD TEXT information which cannot be recorded on the MD.

---

### **TOC Reading**

The MD deck is reading the TOC information of the MD.

---

### **TOC Writing**

The MD deck is writing the information of recorded or edited contents.

---

### **Track End**

You have reached the end of the track while adjusting the dividing point during the Divide Function.

---

### **Tr Protect**

You attempted to erase a protected track.

---

## TABLE OF CONTENTS

**CD****Cannot Edit**

You tried to label a CD TEXT disc.

**CD No Disc**

There is no CD in the player.

**Complete!**

The editing operation of CD is completed.

**Name Full**

There are already 50 disc titles stored in the system.

**OVER**

You have reached the end of the CD while pressing ►► during play or pause.

**Step Full!**

You tried to programme 26 or more tracks (steps).

**TAPE****Cannot SYNC!**

There is no tape in the tape deck, or the tab has been removed from the cassette.

**No Tab**

You cannot record the tape because the tab has been removed from the cassette.

**No Tape**

There is no tape in the tape deck.

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**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.

## 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 rear exterior.

**CAUTION** : INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.  
**ADVARSEL** : USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDEDE 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 NYITÁSAKOR LÁTHATATLAN LÉZERSUGÁRVESZÉLY! KERÜLJE A BESUGÁRZÁST!

This caution label is located inside the unit.

### CAUTION

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

#### Notes on chip component replacement

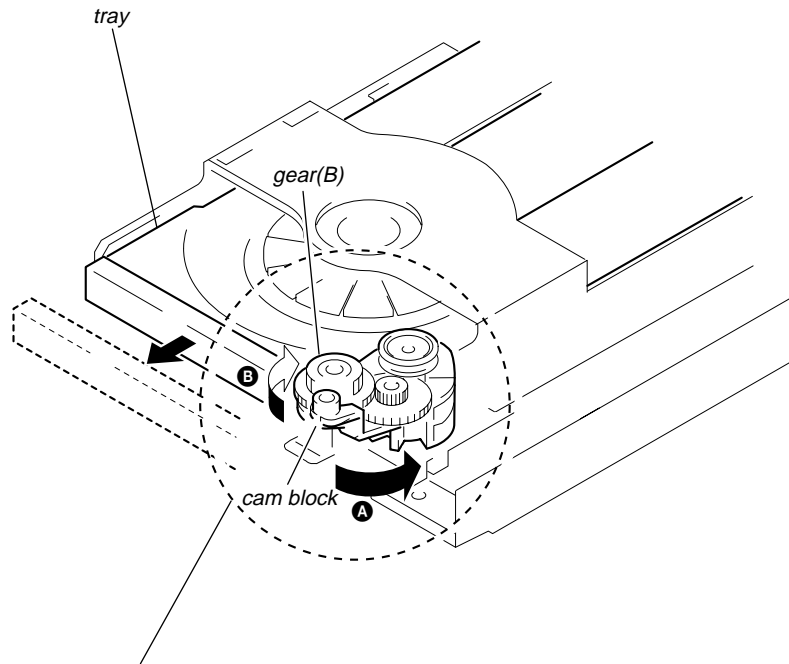
- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

#### Note for Speaker Terminals

The negative speaker outputs are not grounded because of the balanced transformerless circuit.  
(If connecting them to ground, or each other, the circuit is broken)

**DRAWING OUT THE TRAY DURING POWER OUT**

- Perform after removing front panel.



First turn the whole of cam block in the arrow **A** direction with fingers, then put out tray by turning gear (B) in the arrow **B** direction.

**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 “Section 5 Electrical Adjustments”.

	Criteria for Determination (Unsatisfactory if specified value is not satisfied)	Measure if unsatisfactory
Laser power check (6-2 : See page 33)	<ul style="list-style-type: none"> <li>• 0.9 mW power Specified value : 0.80 to 0.96 mW</li> <li>• 7.0 mW power Specified value : 6.8 to 7.2 mW</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 Iop value <math>\pm</math> 10mA</li> </ul>	
Auto check (6-4 : See page 34)	<ul style="list-style-type: none"> <li>• Unsatisfactory if displayed as “NG : XXXX”NG (XXXX are arbitrary numbers)</li> </ul>	<ul style="list-style-type: none"> <li>• Replace the optical pick-up</li> </ul>
Temperature compensation offset check (6-1 : See page 33)	<ul style="list-style-type: none"> <li>• Unsatisfactory if displayed as “T=@@ (##) [NG]” NG (@@, ## are both arbitrary numbers)</li> </ul>	<ul style="list-style-type: none"> <li>• Check for disconnection of the circuits around D101 (BD board)</li> <li>• Check the signals around IC101, IC151, CN102, CN103 (BD board)</li> </ul>

**Note:**

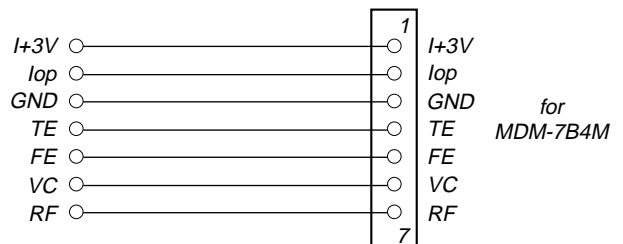
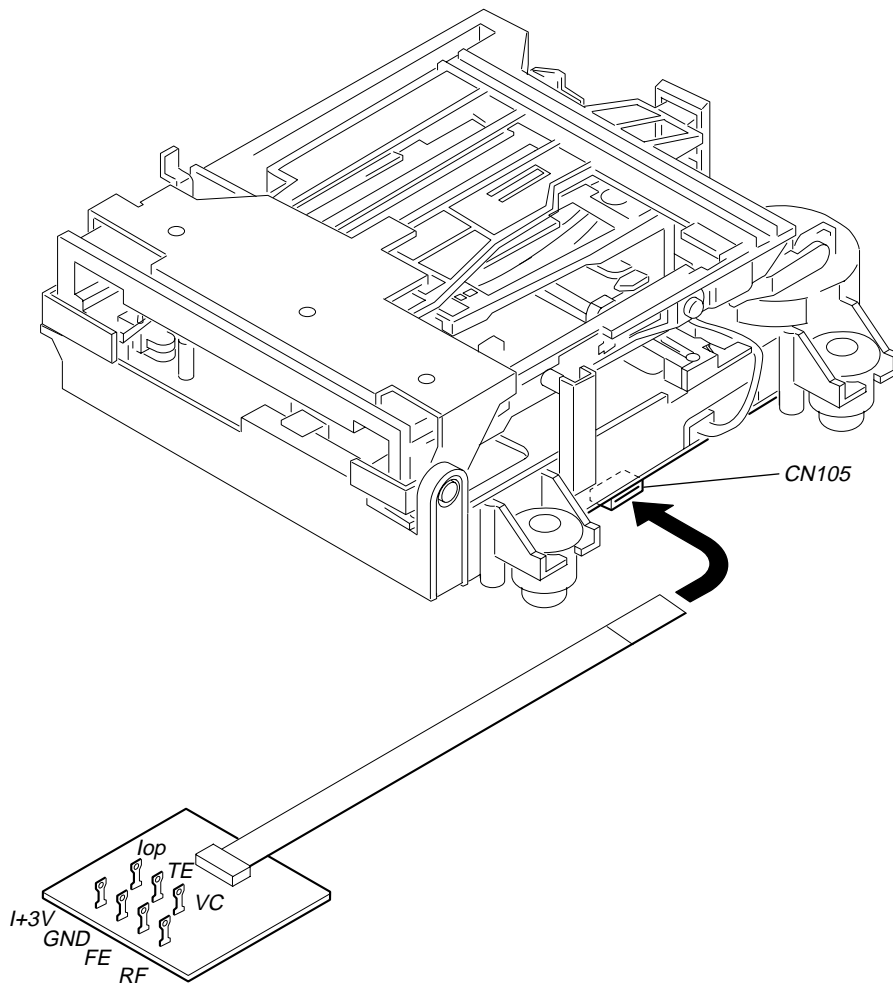
The criteria for determination above is intended merely to determine if satisfactory or not, and does not serve as the specified value for adjustments. When performing adjustments, use the specified values for adjustments.

# HCD-M10

## JIG FOR CHECKING BD (MD) BOARD WAVEFORM

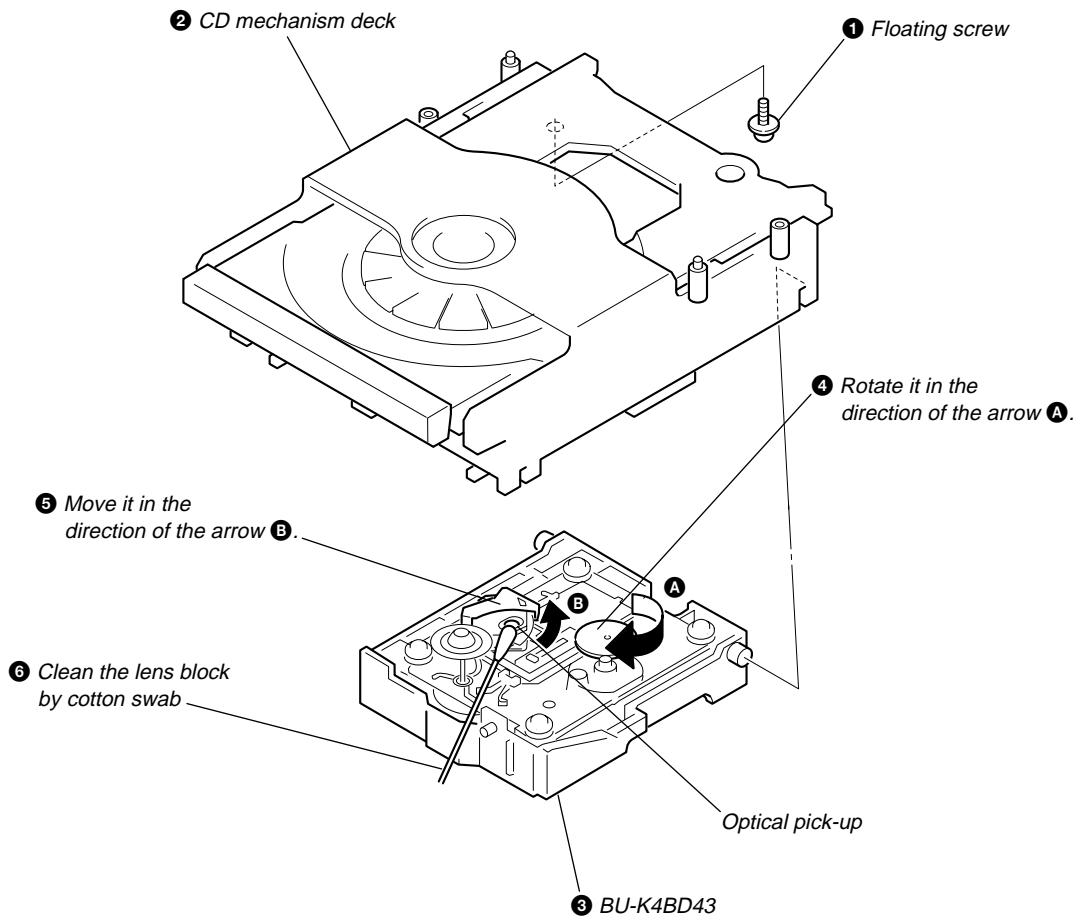
The special jig (J-2501-196-A) is useful for checking the waveform of the BD (MD) board. The names of terminals and the checking items to be performed are shown as follows.

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





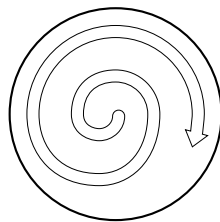
**CLEANING THE OPTICAL PICK-UP (CD PLAYER)**



**Note 1:** In cleaning the lens, do not apply an excessive force  
As the optical pick-up is vulnerable, application of excessive force could damage the lens holder.

**Note 2:** In cleaning, do not use a cleaner other than exclusive cleaning liquid. (KK-91 or isopropyl alcohol)

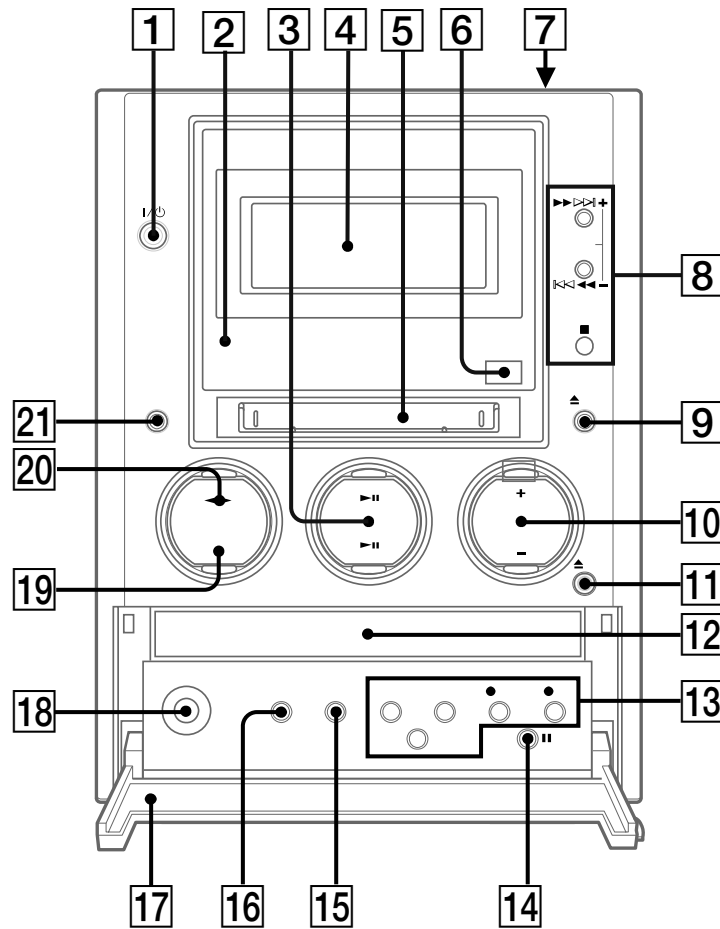
**Note 3:** Wipe the objective lens spirally from center toward outside. (See Figure A)



(FIGURE A)

This section is extracted from instruction manual.

Main unit



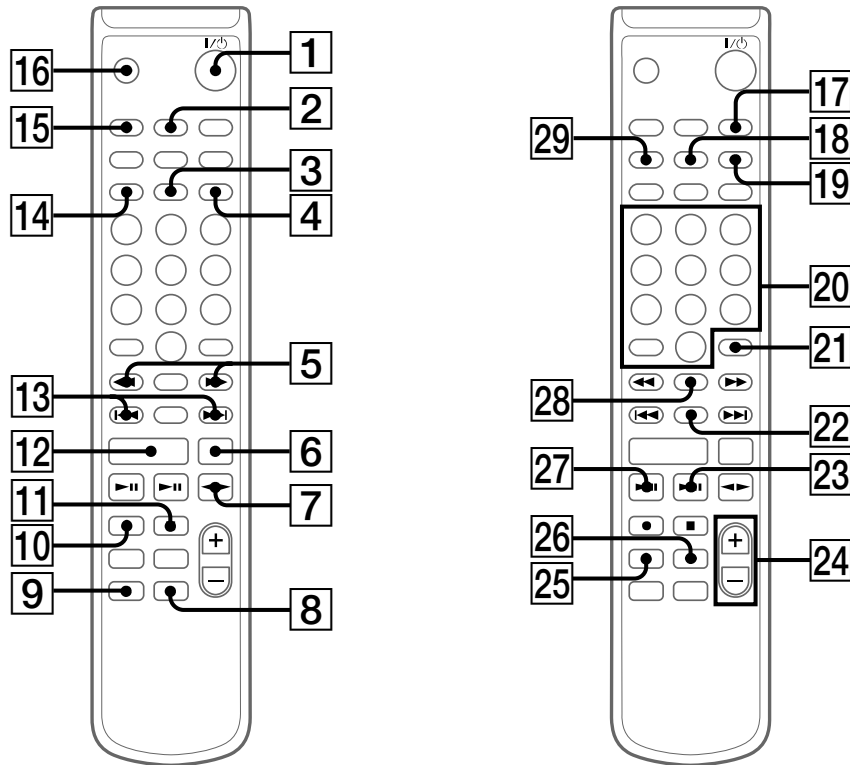
- CD disc tray **12** (9)
- CD **▶||** **3** (9, 11)
- Cover **17**
- Display window **4**
- ENTER/START **13** (22, 24, 46, 47)
- FM MODE **15** (44)
- FUNCTION **21** (9, 11, 13, 15, 17, 18, 21, 25, 26, 31-39, 41, 46, 48, 53)
- GROUP indicator **2** (18, 21, 22, 32-34)
- MD insertion slot **5**
- MD **▶||** **3** (15, 17, 18, 21, 25)

- PHONES jack **18**
- PLAY MODE/DIRECTION **16** (9, 11, 13, 15, 17, 24, 30, 46-48)
- REC MODE **13** (26)
- Remote sensor **6**
- REPEAT **15** (10, 16)
- SYNCHRO MODE **13** (22, 24, 46, 47)
- TAPE **◀▶** **20** (46-48)
- TUNER BAND **19** (43, 44)
- TUNING MODE **16** (43, 44)
- TUNING +/- **8** (44)
- VOLUME +/- **10**

**BUTTON DESCRIPTIONS**

- I/⏻ (power) **1** (8, 20, 30, 43, 44, 50, 52)
- ▲ PUSH OPEN/CLOSE **7** (46)
- ◀◀/▶▶ **8** (10, 16, 37, 39, 43, 44, 46)
- ◀◀/▶▶ **8** (10, 11, 13, 16-18, 26, 31, 33-38, 40, 41, 43)
- **8** (10, 16, 21, 23-25, 29, 46-48)
- ▲ MD **9** (15, 16, 20, 30)
- ▲ CD **11** (9, 10)
- MD **13** (21, 25, 28, 40)
- TAPE **13** (48)
- || TAPE **14** (46, 48)

## Remote Control



BASS/TRE **8** (49)  
 CD **▶||** **23** (9, 11)  
 CLEAR **21** (11, 13, 17, 31, 45)  
 CLOCK/TIMER SELECT **15**  
 (50, 52)  
 CLOCK/TIMER SET **2** (8, 50,  
 51)  
 CURSOR **←/→** **5** (8, 13, 31)  
 DISPLAY **22** (8, 11, 12, 17, 19,  
 21, 45)  
 DSG **9** (49)  
 ENTER/YES **4** (8, 11, 14, 17,  
 25, 26, 30, 33-35, 37, 38, 40,  
 41, 43, 45, 50, 51)  
 FM MODE **17** (44)  
 FUNCTION **12** (9, 11, 13, 15, 17,  
 18, 21, 25, 26, 31-39, 41, 46,  
 48, 53)  
 GROUP **29** (18, 20, 22, 32-34)

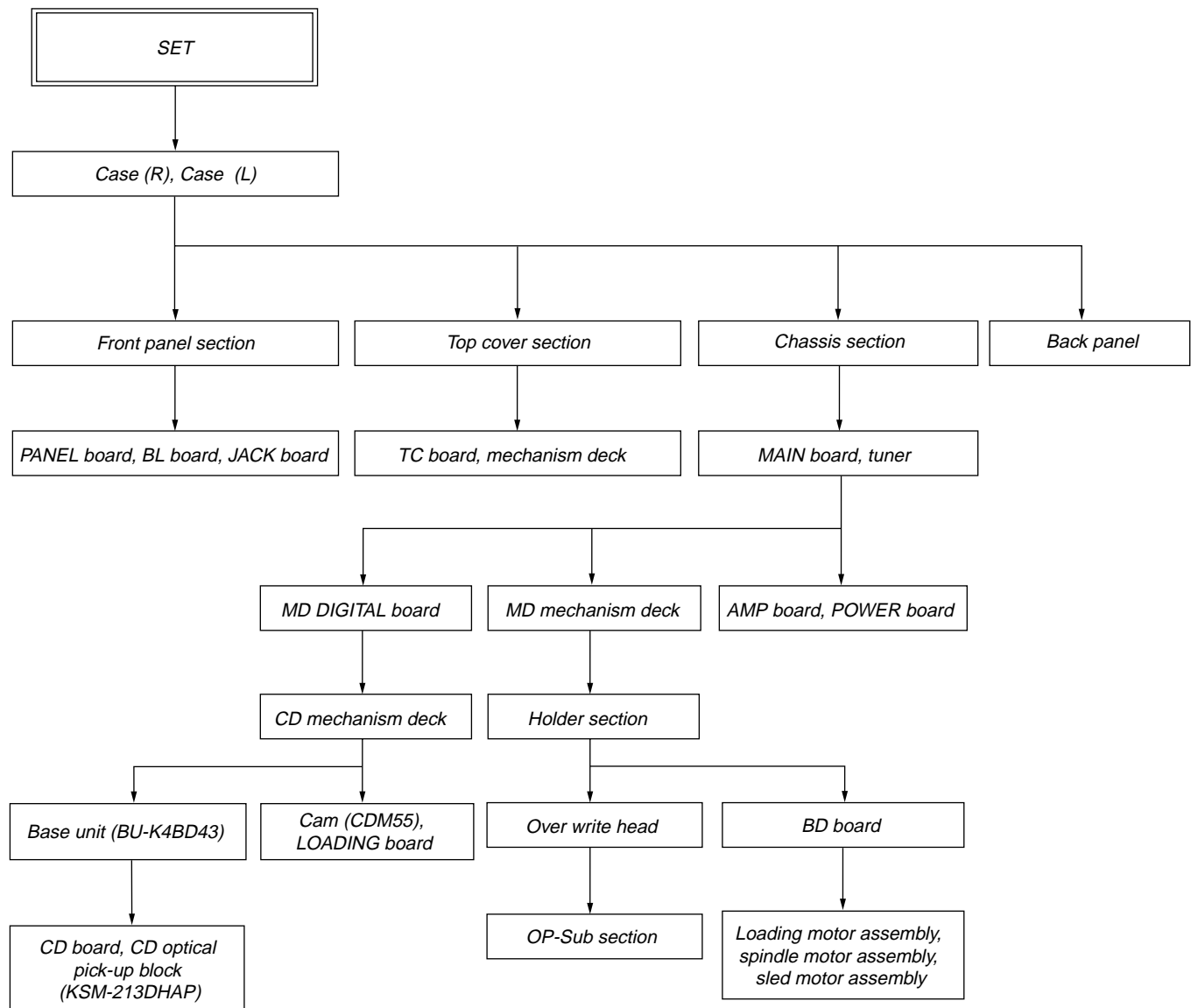
GROUP SKIP **18** (18, 22, 32, 34)  
 MD **●** **10** (21, 25, 28)  
 MD **▶||** **27** (15, 17, 18, 21, 25)  
 MENU/NO **14** (14, 26, 30,  
 32-35, 37-41, 43)  
 NAME EDIT/SELECT **3** (13,  
 30, 32, 45)  
 Number buttons **20** (10, 13, 16,  
 31, 44)  
 PLAY MODE **25** (9, 11, 13, 15,  
 17, 30)  
 REPEAT **26** (10, 16)  
 SCROLL **28** (14, 19, 32, 33)  
 SLEEP **16** (49)  
 TAPE **◀▶** **7** (46-48)  
 TUNER BAND **6** (43, 44)  
 TUNING MODE **19** (43, 44)  
 VOL +/- **24**

### BUTTON DESCRIPTIONS

**I/⏻** (power) **1** (8, 20, 30, 43,  
 44, 50, 52)  
**◀◀/▶▶** **5** (10, 16, 37, 39, 43,  
 44, 46)  
**■** **11** (10, 16, 21, 23-25, 29,  
 46-48)  
**◀◀/▶▶** **13** (8, 10, 11, 13,  
 16-18, 26, 31, 33-38, 40, 41,  
 43, 49-51)  
 +/- **13** (44)

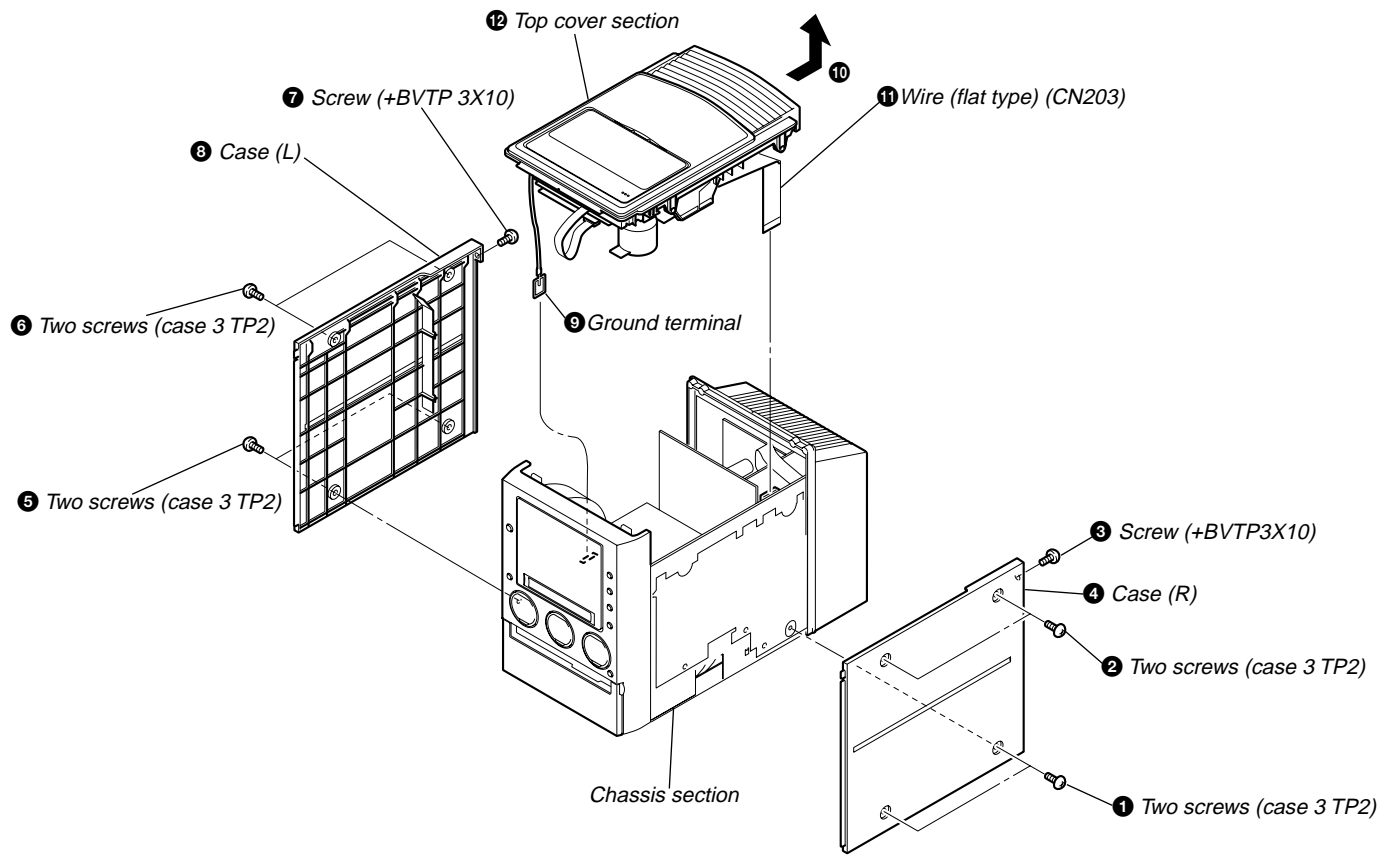
### SECTION 3 DISASSEMBLY

• The equipment can be removed using the following procedure.

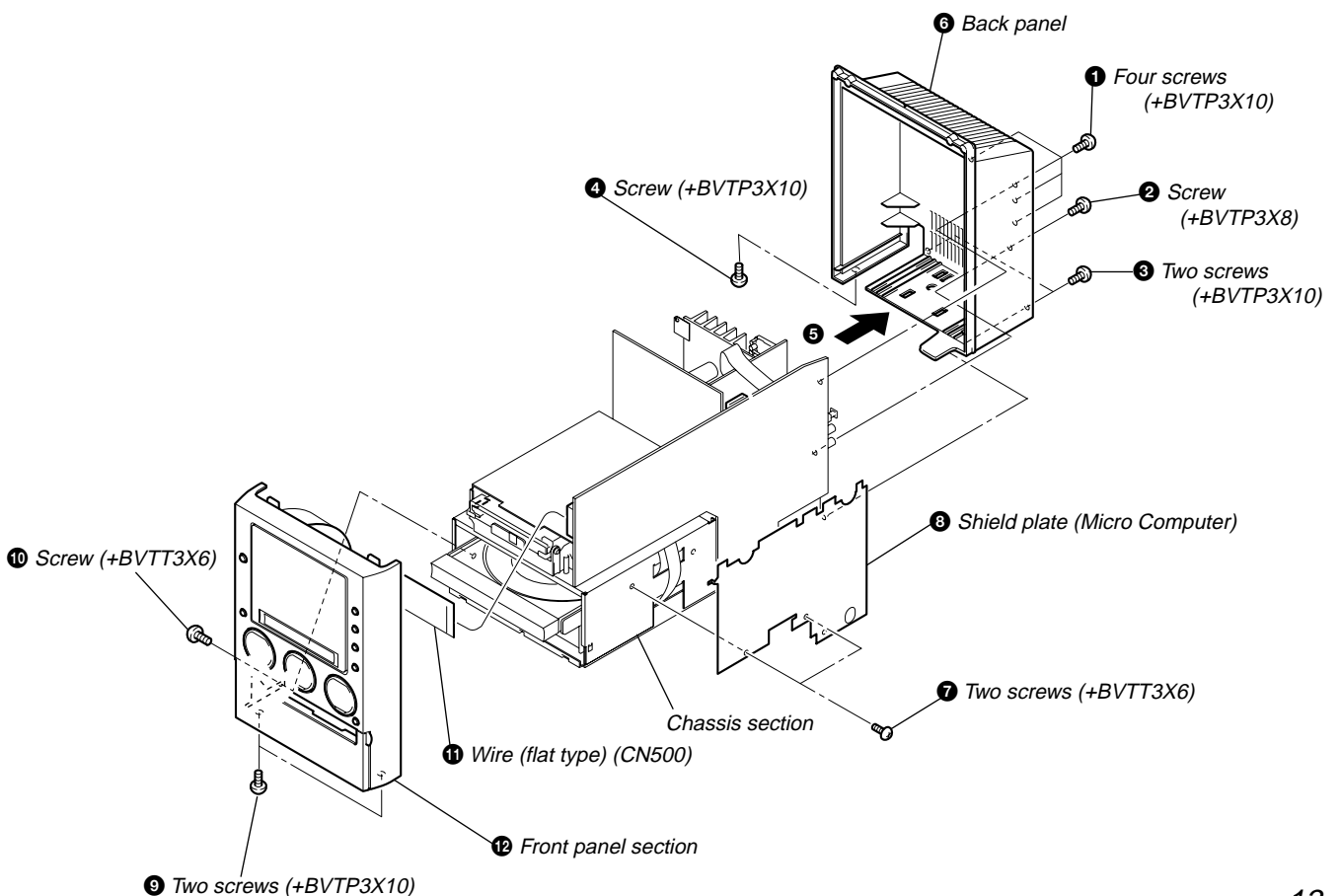


**Note:** Follow the disassembly procedure in the numerical order given.

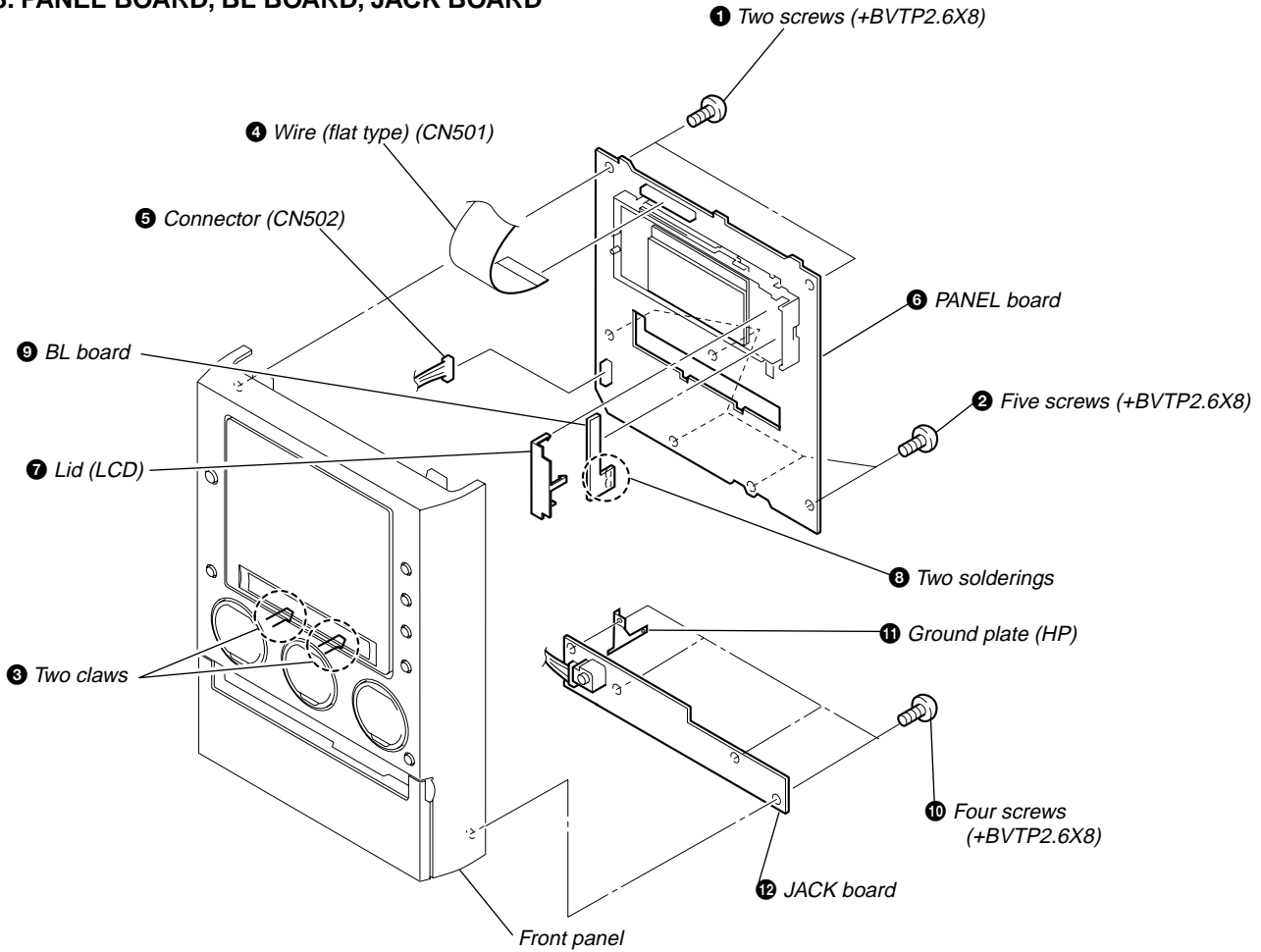
**3-1. CASE (R), CASE (L), TOP COVER SECTION**



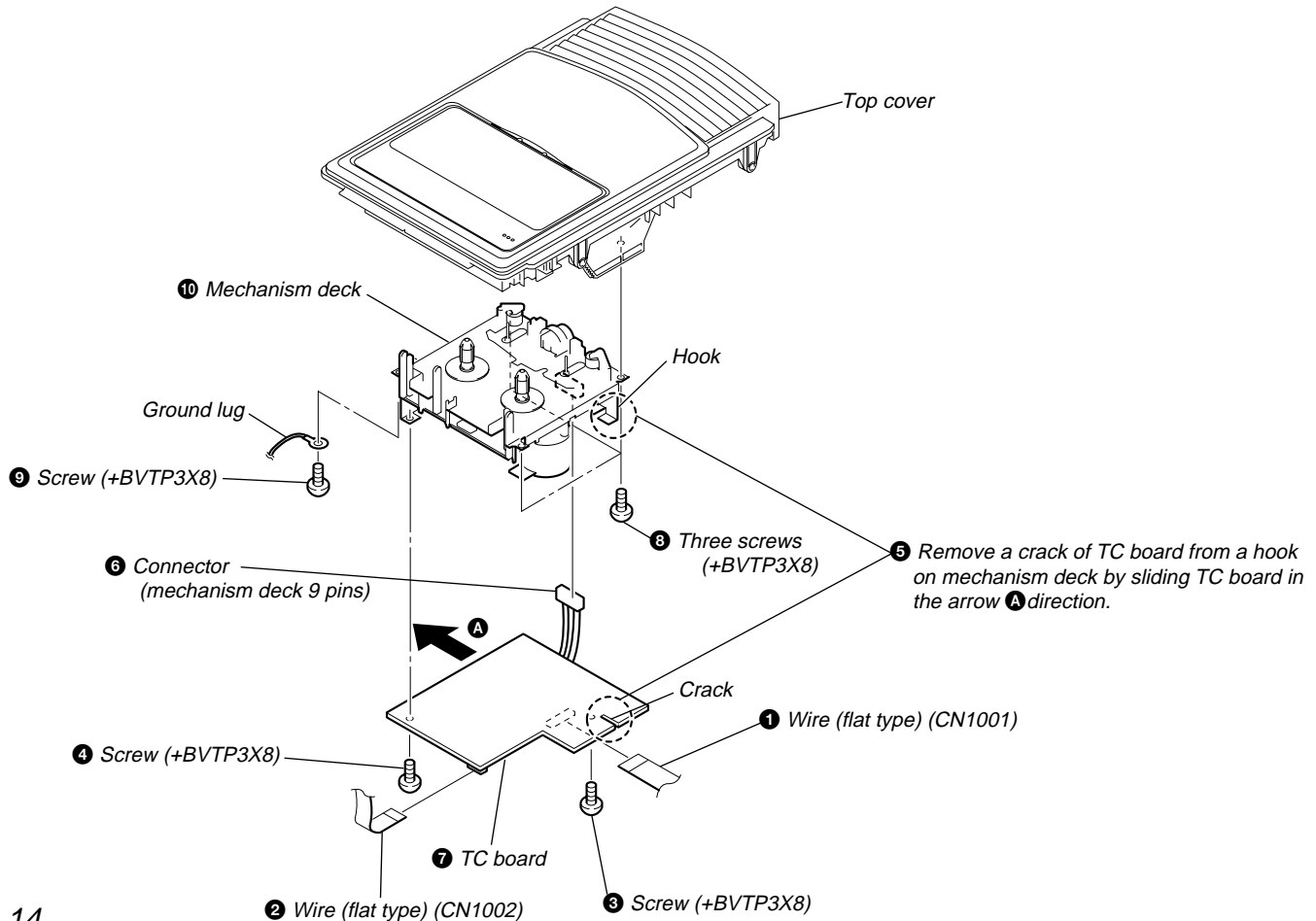
**3-2. BACK PANEL, FRONT PANEL SECTION**



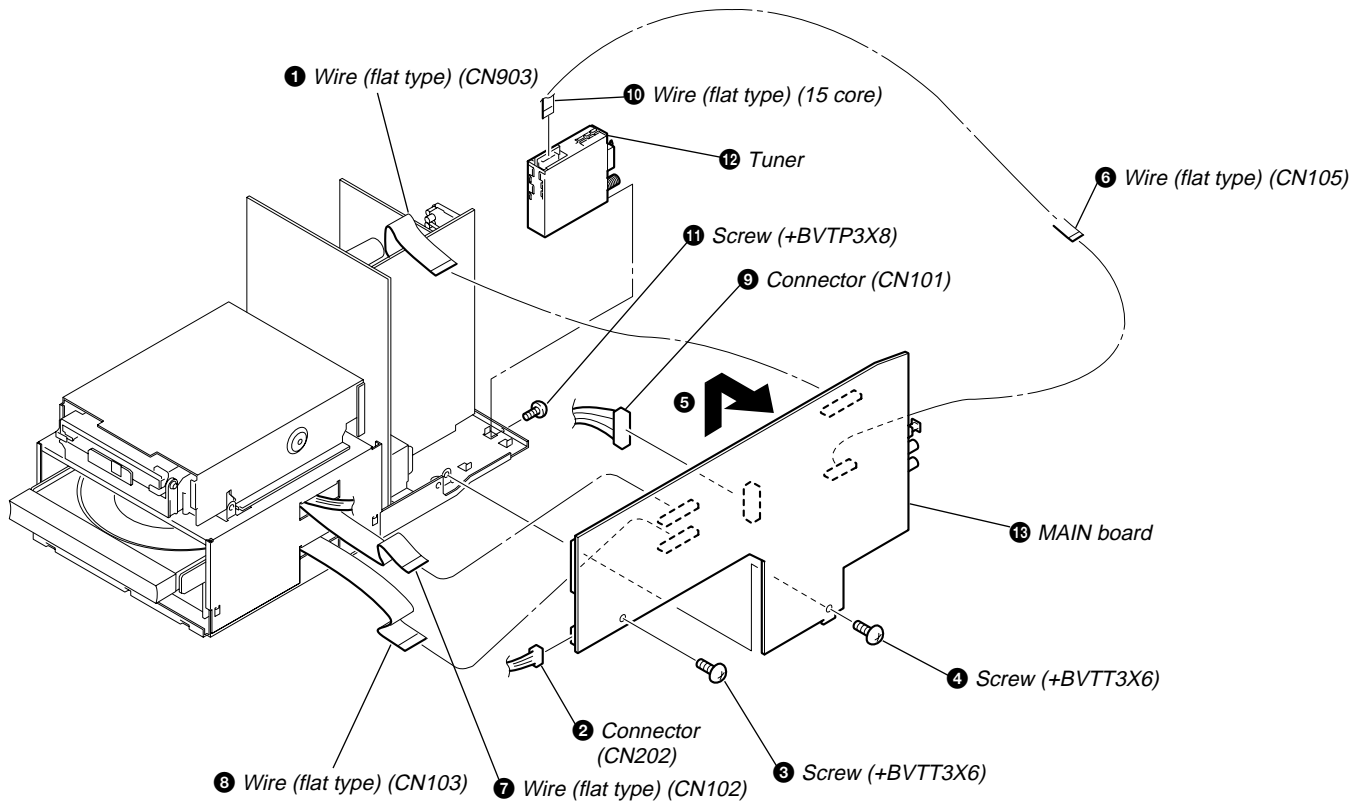
## 3-3. PANEL BOARD, BL BOARD, JACK BOARD



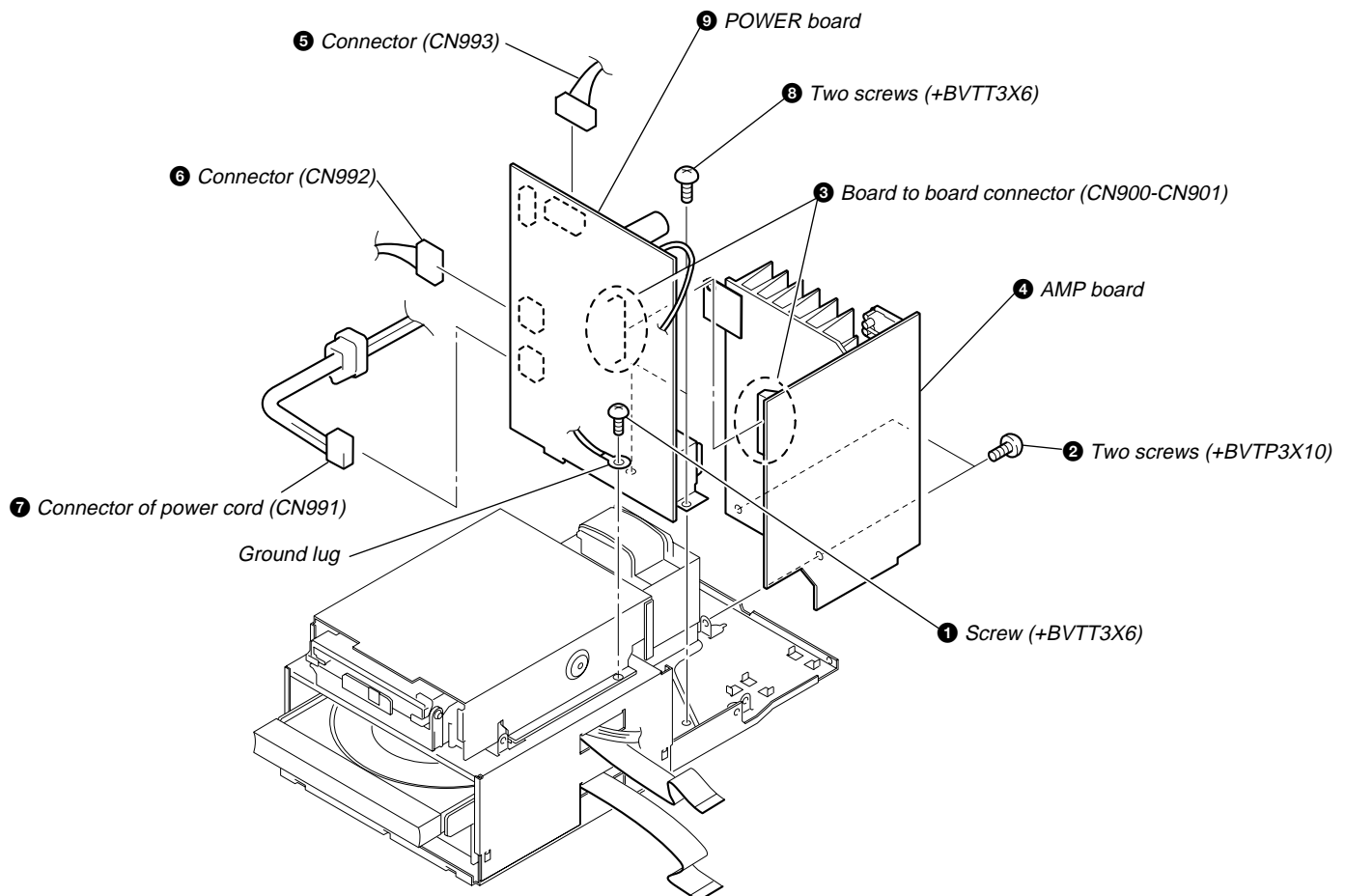
## 3-4. TC BOARD, MECHANISM DECK



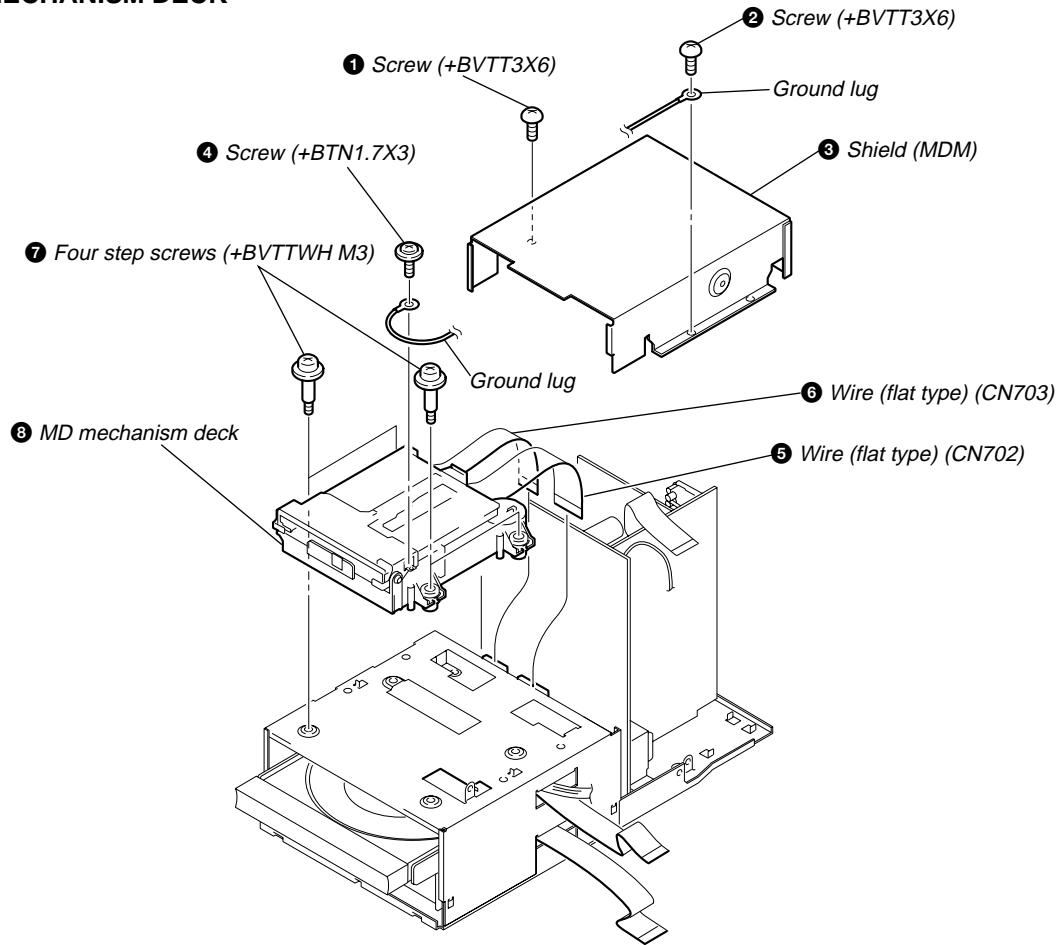
3-5. MAIN BOARD, TUNER



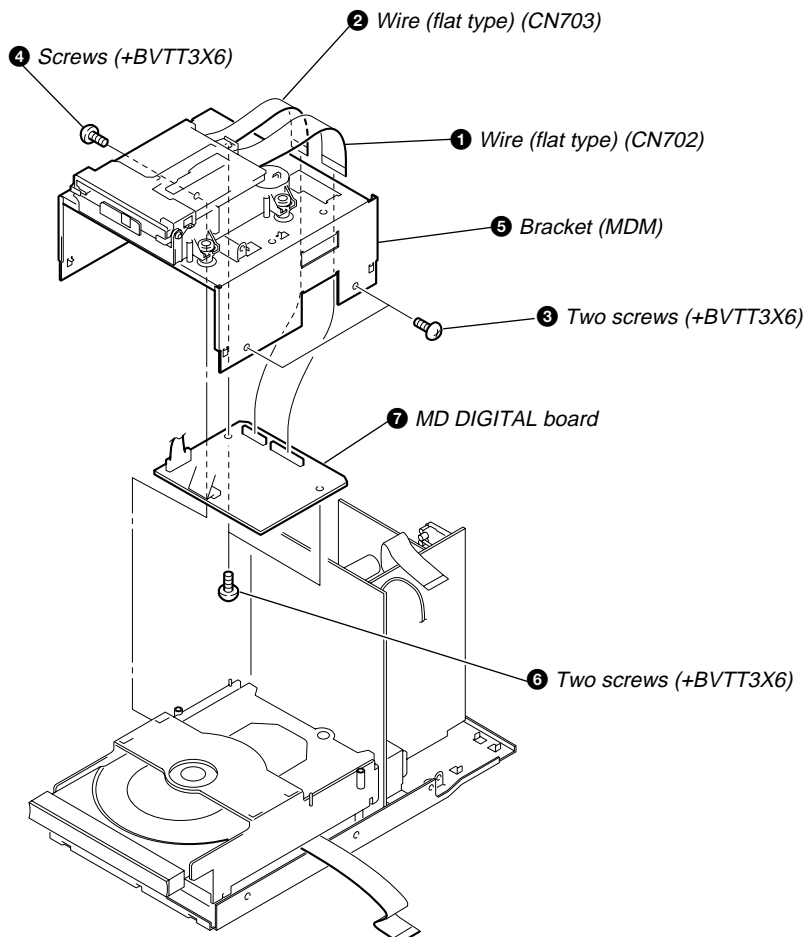
3-6. AMP BOARD, POWER BOARD



## 3-7. MD MECHANISM DECK

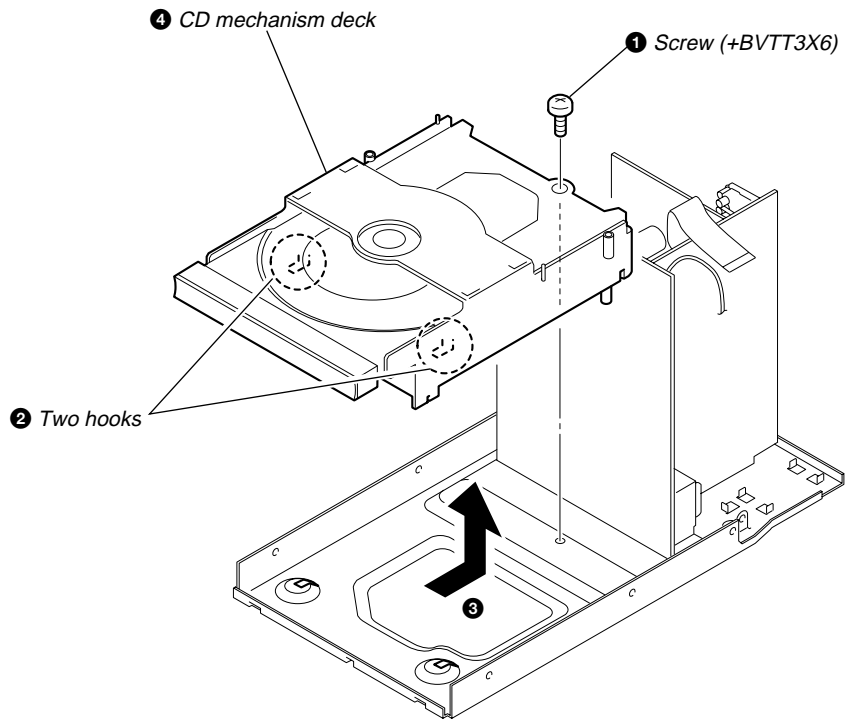


## 3-8. MD DIGITAL BOARD

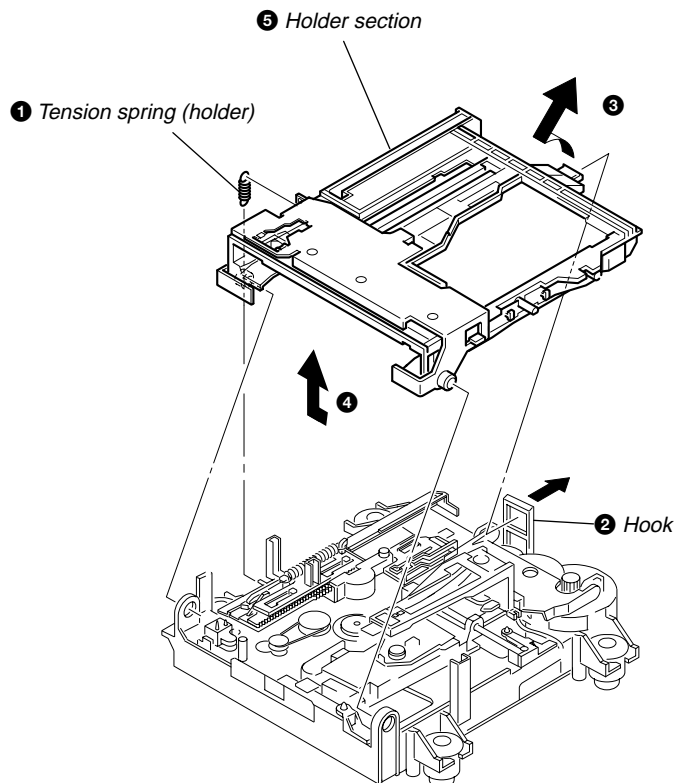




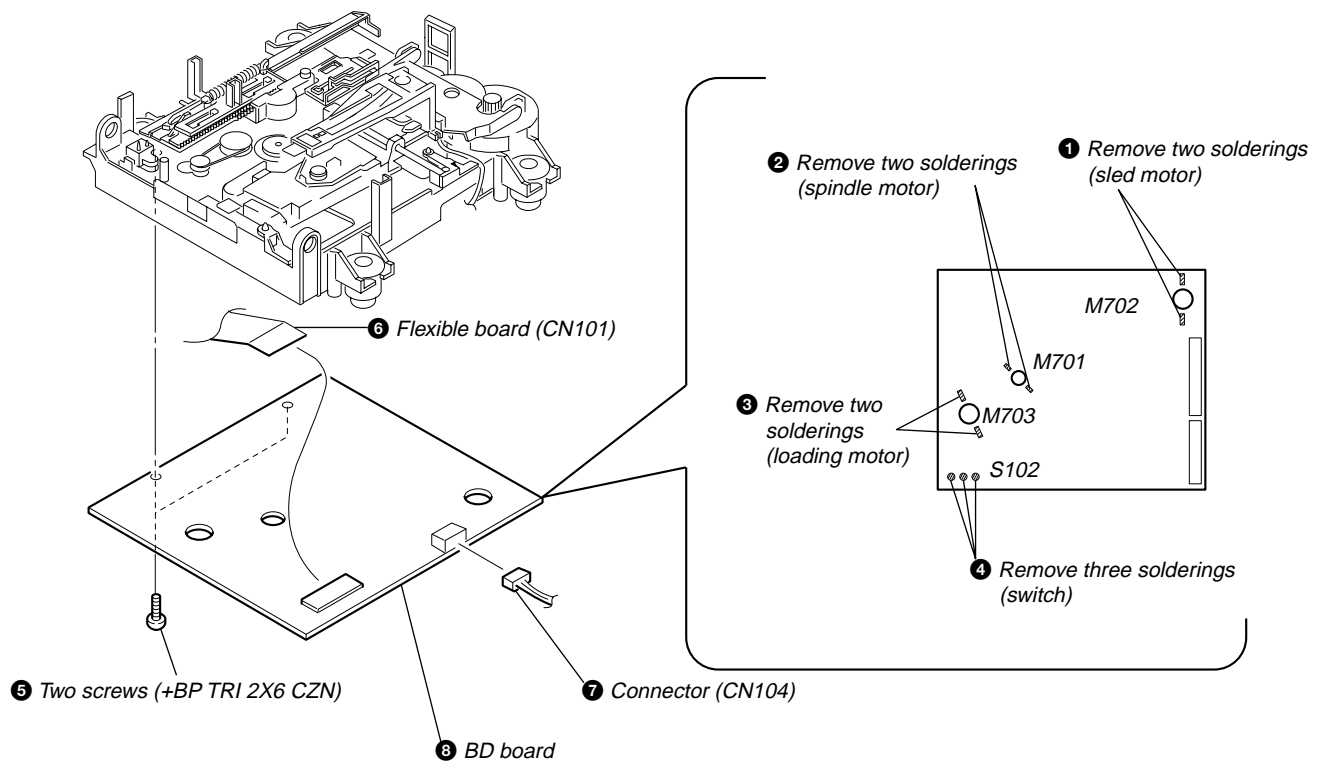
3-9. CD MECHANISM DECK



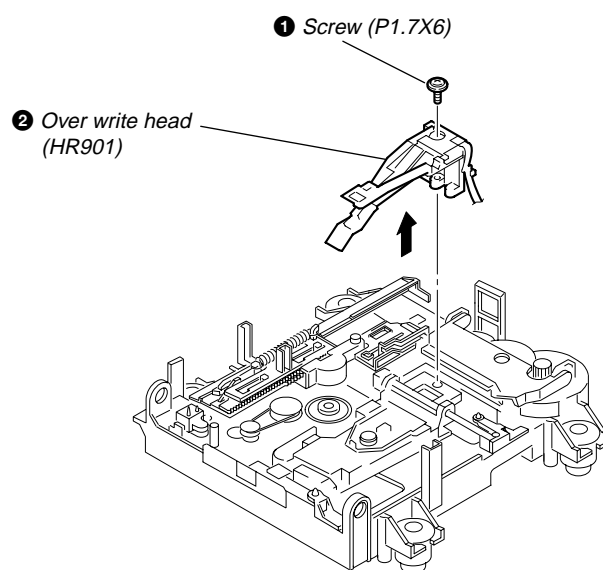
3-10. HOLDER SECTION



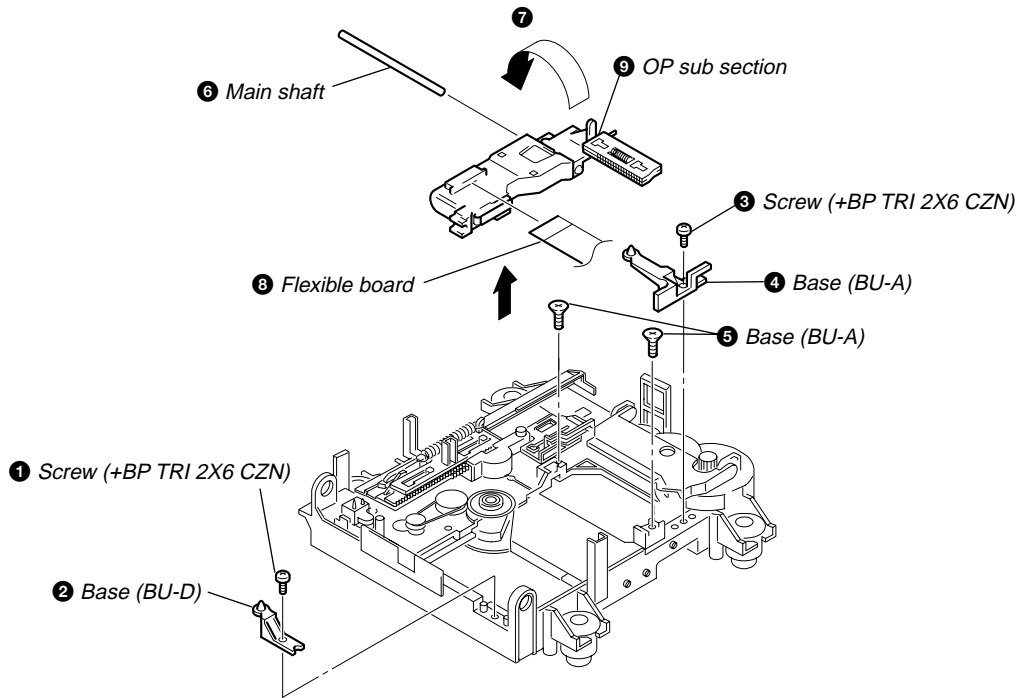
## 3-11. BD BOARD



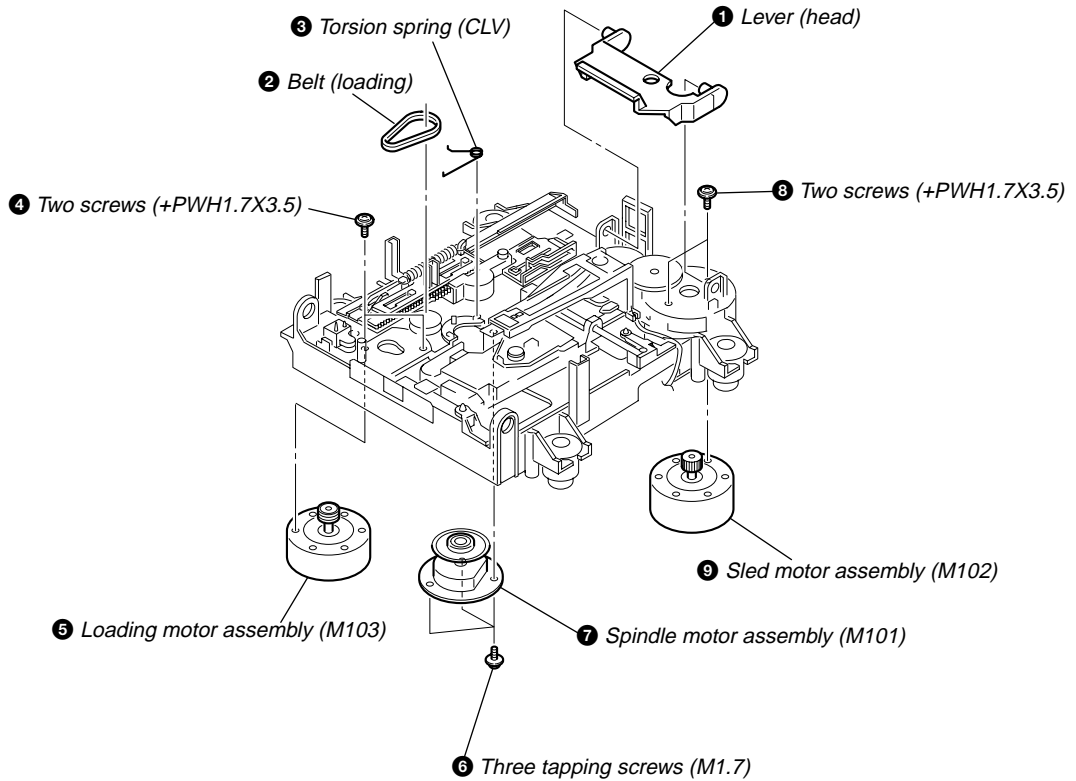
## 3-12. OVER WRITE HEAD (HR901)



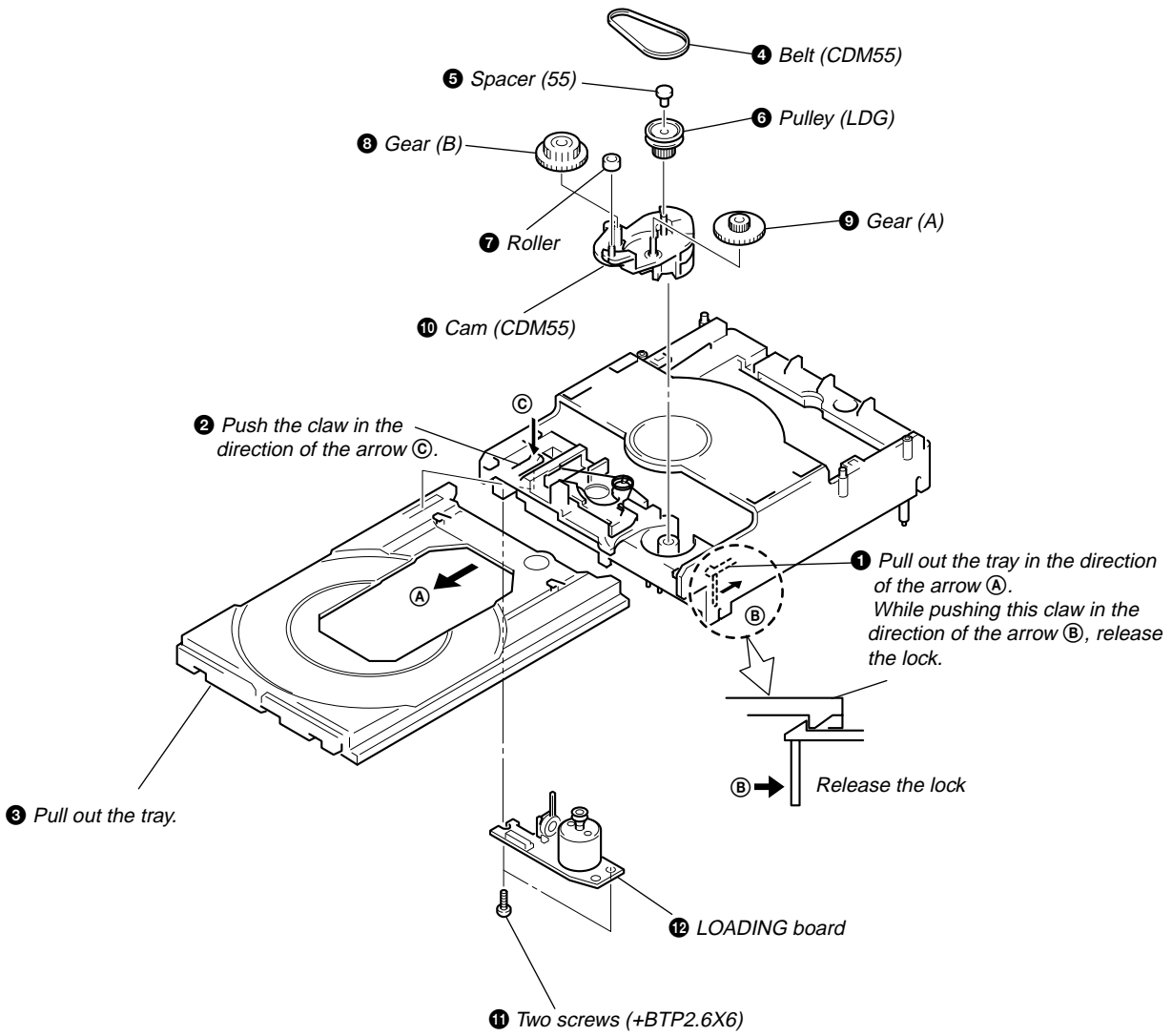
3-13. OP SUB SECTION



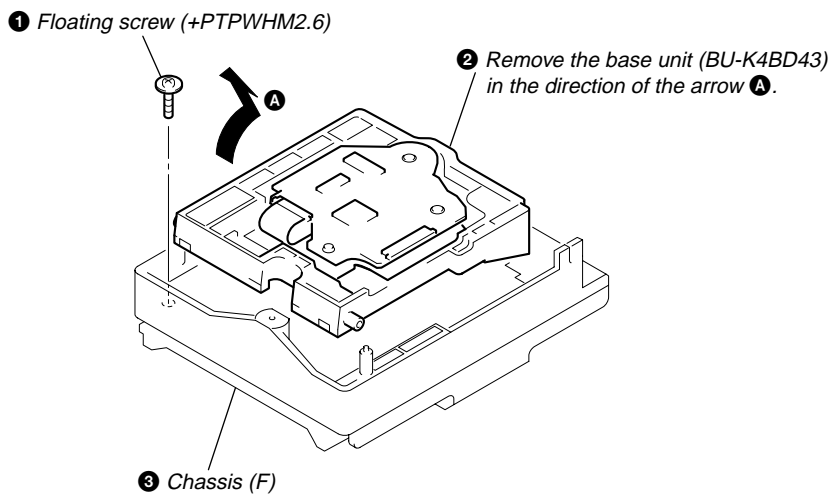
3-14. LOADING MOTOR ASSEMBLY, SPINDLE MOTOR ASSEMBLY, SLED MOTOR ASSEMBLY



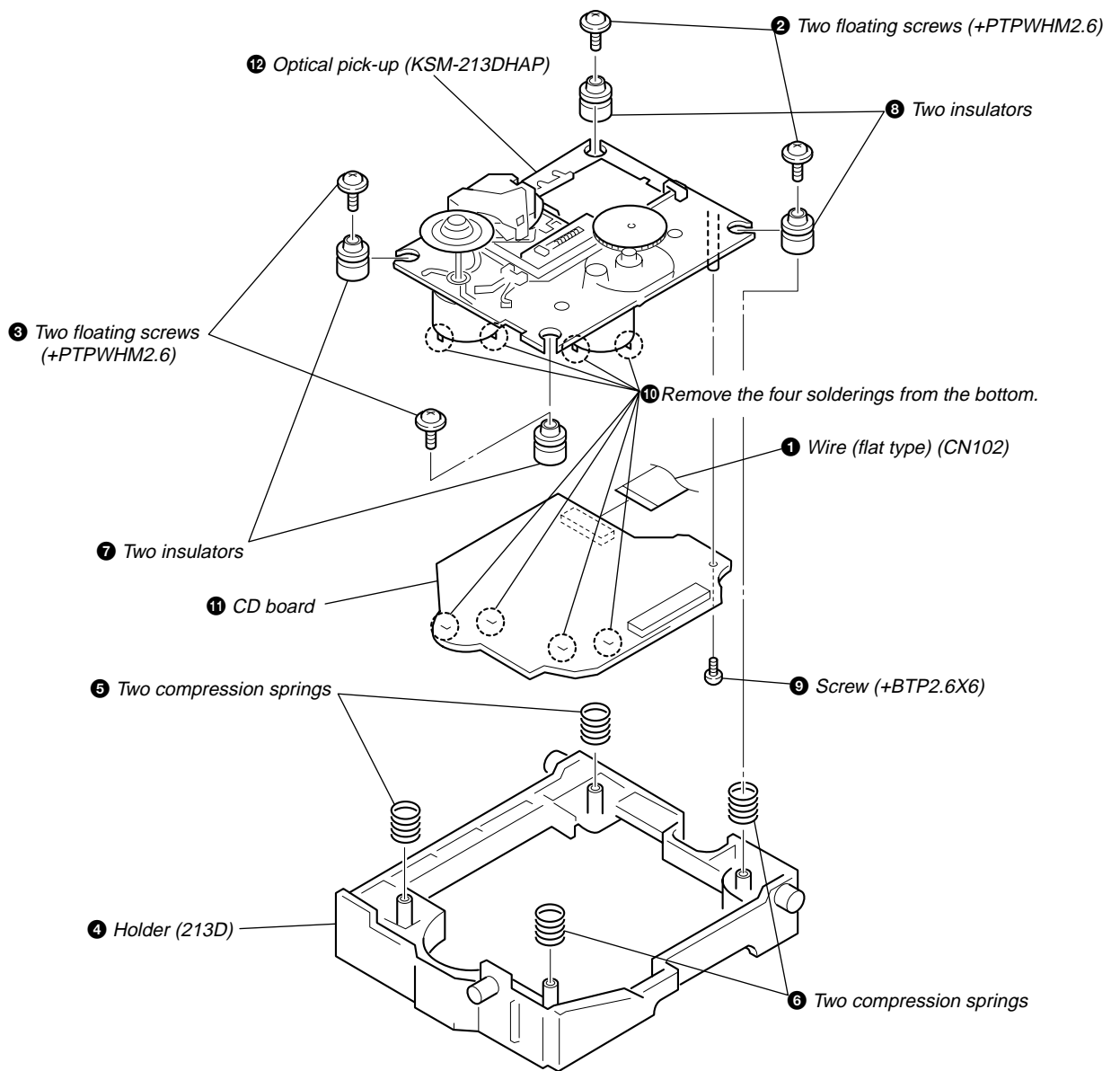
3-15. CAM (CDM55), LOADING BOARD



3-16. BASE UNIT (BU-K4BD43)



3-17. CD BOARD, CD OPTICAL PICK-UP (KSM-213DHAP)



## SECTION 4 TEST MODE

**Note 1:** About “R”

As this unit has only a few buttons, some operations require the use of remote commander (RM-SM100E/provided with unit) 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 test mode is not entered properly.

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

**[STR TEST MODE]****1. Cold Reset**

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

**Procedure:**

- Press [I/⏻] button to turn the power on.
- Press three buttons [■], [ENTER/START] and [I/⏻] simultaneously.
- The memory is reset, the power turns off and the DEMO program starts.

**2. Panel Test Mode**

- This mode is used to check the software version, LCD, LED and keyboard.

**Procedure:**

- Press three buttons [■], [ENTER/START] and [FUNCTION] simultaneously.
- LEDs and LCD are all turned on.

**2-1. Version check**

- When entering the software version display mode, press [REPEAT] button. The model name (“M100”) and destination are displayed.
- Each time [REPEAT] button is pressed, the display changes MC, GC, CD, CDD, CDMA, CDMA, BDA, BDB, ST, TA, TM, TC and MD (returns to MC) in this order, and returns to the top of the version display.
- When [REC MODE] button is pressed while the version numbers are being displayed, year, month and day of the software creation appear. When [REC MODE] button is pressed again, the display returns to the software version display. When [REPEAT] button is pressed while year, month and day of the software creation are being displayed, the year, month and day of creation of the software versions are displayed in the same order of version display.

**2-2. Key check**

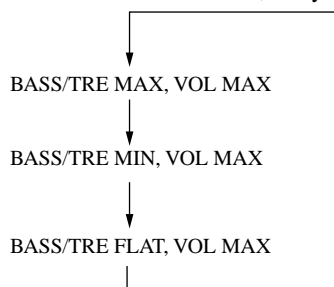
- Press [PLAYMODE] button, and the key check mode is activated. In the key check mode, the LCD displays “K 0 J 0 V 0”. Each time a button is pressed, “K 0” value increases. However, once a button is pressed, it is no longer taken into account. It is end at “K21J 0V 0”
- To exit from this mode, press three buttons in the same manner as step 1, or disconnect the power cord.

**3. Common Test Mode****Procedure:**

- Press [I/⏻] button to turn the power on.
- Press three buttons [■], [ENTER/START] and [TAPE ◀▶] simultaneously.
- The set goes to the key test mode and the [MD] and [TAPE] segments flash.

**3-1. Amp Test Mode**

- In the common test mode, every time you press [BASS/TRE “R”] button, the following items changes in the order as shown below.



- When [VOLUME +] button or [VOLUME + “R”] button is pressed, VOLUME goes MAX.
- When [VOLUME -] button or [VOLUME - “R”] button is pressed, VOLUME goes MIN.
- To exit from this mode, press [I/⏻] button and disconnect the power cord.

**3-2. Tape Test**

- Check the set is in the common test mode.
- Insert a recordable cassette tape.
- Play back the recorded MD.
- Press [● TAPE] button.
- Select the recording direction with [TAPE ◀▶] button.
- Press [|| TAPE] button to start recording.
- When [◀◀ “R”] or [▶▶ “R”] button against the tape recording direction is pressed, the tape returns to the recording started point and the set starts playback.
- To exit from this mode, press [I/⏻] button and disconnect the power cord.

#### 4. CD Ship Mode (Setting the Position for Transportation)

1. Press **I/⏻** button to turn the power on.
2. Press **FUNCTION** to change the function to “CD”.
3. Press three buttons **■**, **ENTER/START** and **CD ▶||** simultaneously.
4. The CD mechanism goes to the transportation mode.
5. When “LOCK” is displayed, disconnect the power cord.
6. The lock is released when the power turns on next.

#### 5. Ship Mode (Setting the Position for Transportation)

This mode is the combination of CD SHIP mode and Cold reset.  
In this mode, the MD reset is not activated.

1. Press **I/⏻** button to turn the power on.
2. Press three buttons **■**, **ENTER/START** and **MD ▶||** simultaneously.
3. When “LOCK” is displayed, disconnect the power cord.
4. The lock is released when the power turns on next.

### 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) (C35)
- Laser power check mode (LDPWR CHECK) (C13)
- Laser power adjustment mode (LDPWR ADJUST) (C04)
- Comparison with initial Iop value written in nonvolatile memory (Iop Compare) (C27)
- Write current Iop value in read nonvolatile memory using microprocessor (Iop NV Save) (C06)
- Traverse (MO) check (EF MO CHECK) (C14)
- Traverse (MO) adjustment (EF MO ADJUST) (C07)
- When pressing the **● MD** button.

#### 2. SETTING THE TEST MODE

- Procedure :**
1. Press the **I/⏻** button to turn the power on.
  2. Press three buttons of **■**, **REC MODE**, and **FUNCTION** 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

Press the **REPEAT** button twice and **I/⏻** button to turn the power off, the set goes to the standby mode.

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

All operations are performed using the **◀◀ “R”**, **▶▶ “R”**, **ENTER/YES “R”**, **MENU/NO “R”** and **REC MODE** buttons.  
The functions of these buttons are as follows.

Function name	Function
<b>◀◀ “R”</b> , <b>▶▶ “R”</b> buttons	Changes parameters and modes
<b>ENTER/YES “R”</b> button	Proceeds onto the next step. Finalizes input
<b>MENU/NO “R”</b> button	Returns to previous step. Stops operations
<b>REC MODE</b> button	Selects the sub menu

## 5. SELECTING THE TEST MODE

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

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

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

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

If used, the unit may not operate normally.






If the [Develop] group is set accidentally, press the **MENU/NO “R”** button immediately to exit the [Develop] group.



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

- For details of each adjustment mode, refer to “Section 5 Electrical Adjustments”.
- If a different mode has been selected by mistake, press the **MENU/NO “R”** button to release that mode.
- Modes with (×) in the Mark column are not used for servicing and therefore are not described in detail. If these modes are set accidentally, press the **MENU/NO “R”** button to release the mode immediately.








### 5-1. Operating the Continuous Playback Mode

1. Entering the continuous playback mode
  - (1) Set the disc in the unit. (Whichever recordable discs or discs for playback only are available)
  - (2) Press the  "R" or  "R" button to display "CPLAY 1MODE" (C34).
  - (3) Press the  button to change the display to "CPLAY 1MID".
  - (4) When access completes, the display changes to "C =  AD = .

**Note:** The numbers " displayed show you error rates and ADER.
2. Changing the parts to be played back
  - (1) Press the  button during continuous playback to change the display as below.  
 "CPLAY 1MID" → "CPLAY 1OUT" → "CPLAY 1IN"

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






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



**Note:** The numbers " displayed show you error rates and ADER.
3. Ending the continuous playback mode
  - (1) Press the  button. The display will change to "CPLAY 1MODE" (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  button to change the display to "CREC 1MID".
  - (4) When access completes, the display changes to "CREC 1()" and " lights up.

**Note:** The numbers " displayed shows you the recording position addresses.
2. Changing the parts to be recorded
  - (1) When the  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. " goes off.

  - (2) When access completes, the display changes to "CREC 1()" and " lights up.

**Note:** The numbers " displayed shows you the recording position addresses.
3. Ending the continuous recording mode
  - (1) Press the  button. The display changes to "CREC 1MODE" (C35) and " 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  button can be used to stop recording anytime.

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

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

## 6. FUNCTIONS OF OTHER BUTTONS

Function	Contents
MD 	Sets continuous playback when this is pressed in the STOP state. When this is pressed during continuous playback, tracking power servo turns ON/OFF.
	Stops continuous playback and continuous recording
	The sled moves to the outer circumference only when this is pressed
	The sled moves to the inner circumference only when this is pressed
PLAY MODE/DIRECTION	Switches the spindle servo mode (CLV S ↔ CLV A)
REC MODE	Switches the pits or grooves each time the button is pressed
MD 	Ejects the disc
REPEAT	Releases the test mode
CLEAR"R"	Clears the setting of pits and groove, and judges pits and groove again.
 MD	When it is pressed while servo is turning on, the recording starts from present position.

## 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 **ENTER/YES "R"** button. If "LDPWR ミチエツク" is displayed, it means that the laser power check has not been performed. In this case, perform the laser power check and Iop Compare (C27), and then repeat from step 1.
2. If a disc is in the mechanical deck, it will be ejected forcibly. "DISC IN" will be displayed in this case. Load a test disc (MDW-74/GA-1) which can be recorded.
3. If a disc is loaded at step 2, the check will start automatically.
4. When "XX CHECK" is displayed, the item corresponding to XX will be performed. When "06 CHECK" completes, the disc loaded at step 2 will be ejected. "DISC IN" will be displayed. Load the check disc (TDYS-1).
5. When the disc is loaded in step 4, the check will automatically be resumed from "07 CHECK".
6. After completing to "12 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.

## SECTION 5 ELECTRICAL ADJUSTMENTS

**DECK SECTION**

**0 dB=0.775V**

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

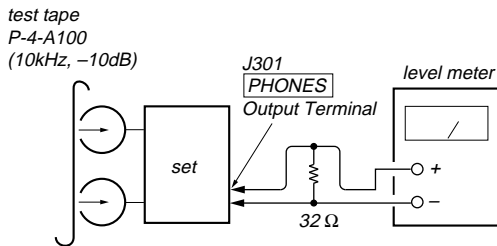
Tape	Signal	Used for
P-4-A100	10 kHz, -10 dB	Azimuth Adjustment
WS-48B	3 kHz, 0 dB	Tape Speed Adjustment
P-4-L300	315 Hz, 0 dB	Level Adjustment

**Note:** Standard Volume Point is -10 dBs at PHONES Output Level (32Ω load resistance) during playback P-4-L300 Test Tape. (DSG OFF, TREBLE/BASS CENTER)

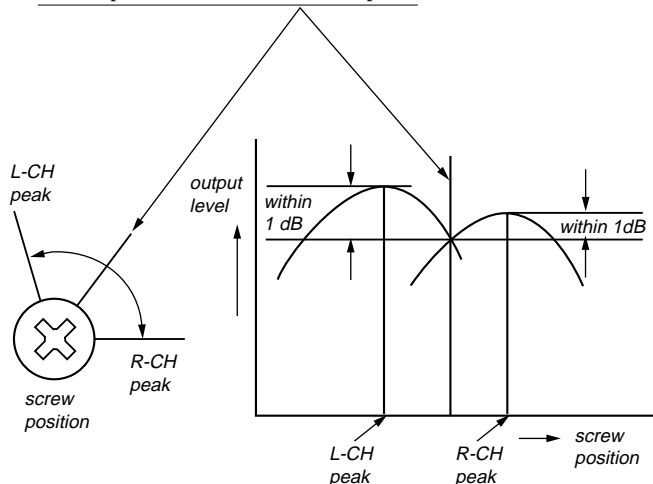
**Record/Playback Head Azimuth Adjustment**

**Procedure:**

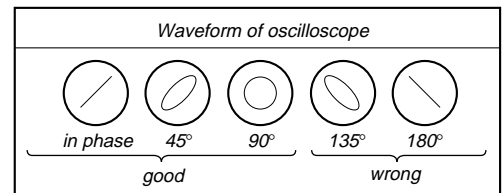
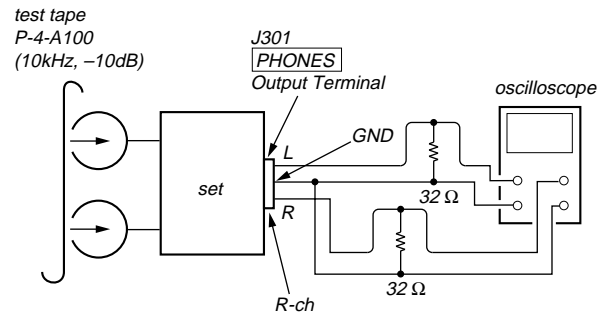
1. Mode : Playback



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

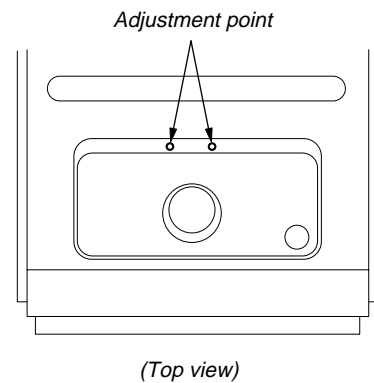


3. Mode: Playback



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

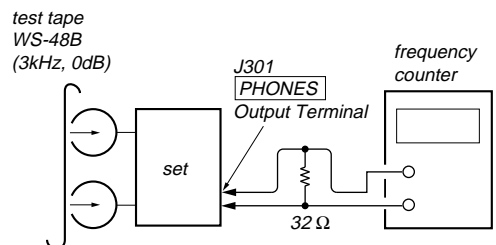
**Adjustment Location:**



**Tape Speed Check**

**Procedure:**

1. MODE : Playback.



2. Insert the WS-48B into deck.
3. Press the [▶] button of deck.
4. Check the reading of frequency counter becomes 3000 ± 90 Hz.

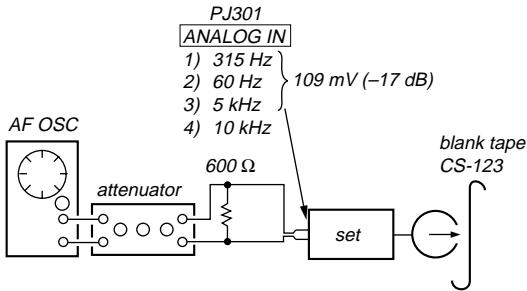
**Sample Value of Wow and flutter**

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

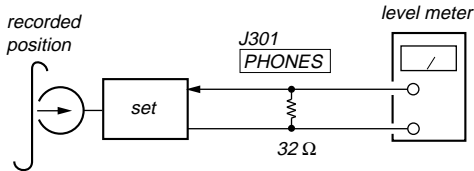
## Record Level Check

### Procedure:

1. Press **FUNCTION** button to select ANALOG IN.
2. Insert a tape into deck, press the **TAPE** button, and then press the **TAPE** button to start recording.
3. Mode: Record



4. Mode: Playback



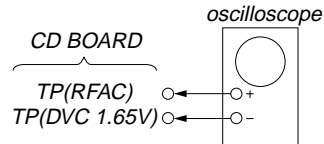
5. The playback output level should be  $-2 \pm 4$  dBs (60 Hz),  $-1 \pm 4$  dBs (8 kHz) and  $-3 \pm 4$  dBs (10 kHz) compared with 315Hz playback level.

## CD SECTION

### Note :

1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than  $10M\Omega$  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.

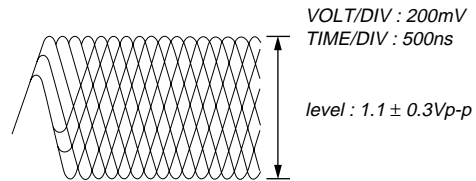
## RF Level Check



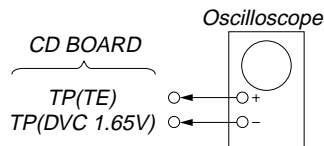
### Procedure :

1. Connect oscilloscope to TP (RFAC).
2. Turn the power on.
3. Load a disc (YEDS-18) and playback.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

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

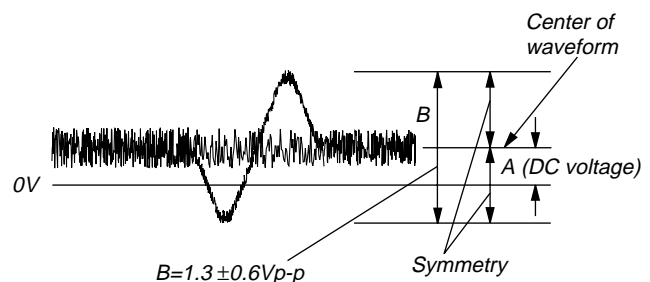


## E-F Balance (1 Track jump) Check



### Procedure:

1. Connect oscilloscope to TP (TE) and TP (DVC 1.65V).
2. Turn the power on.
3. Load a disc (YEDS-18) and playback the number five track.
4. Press the **▶||** button. (Becomes the 1track jump mode.)
5. Confirm that the level B and A (DC voltage) on the oscilloscope waveform.

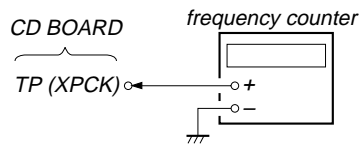


Specification level:  $\frac{A}{1.3 \pm 0.6Vp-p} \times 100 = \text{less than } \pm 22\%$

### RF PLL Free-run Frequency

#### Procedure :

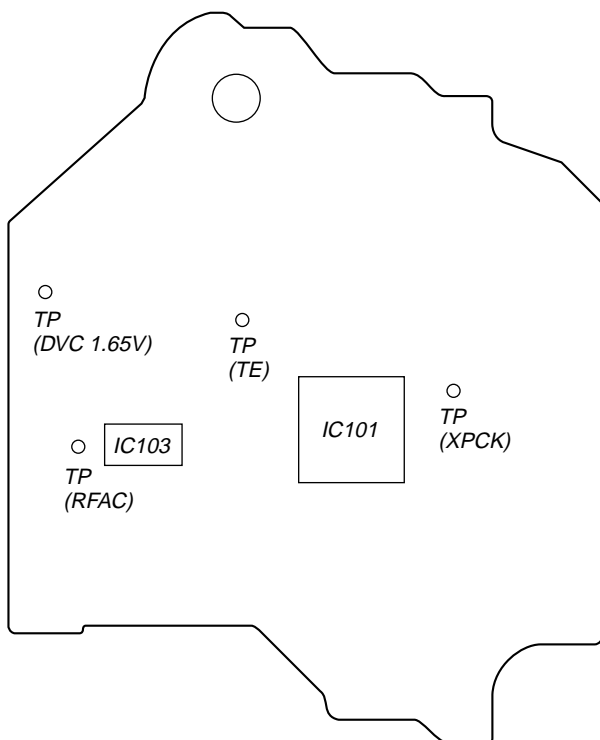
1. Connect frequency counter to TP (XPCK) with lead wire.



2. Turn the power on.
3. Put the disc (YEDS-18) in to play the number five track.  
Confirm that reading on frequency counter is 4.3218MHz.

#### Test Point Location :

[CD BOARD] — SIDE B —



## MD SECTION

### Note 1: About "R"

As this unit has only a few buttons, some operations require the use of remote commander (RM-SM100E/provided with unit) buttons. These operations are indicated as "R" in this manual.

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

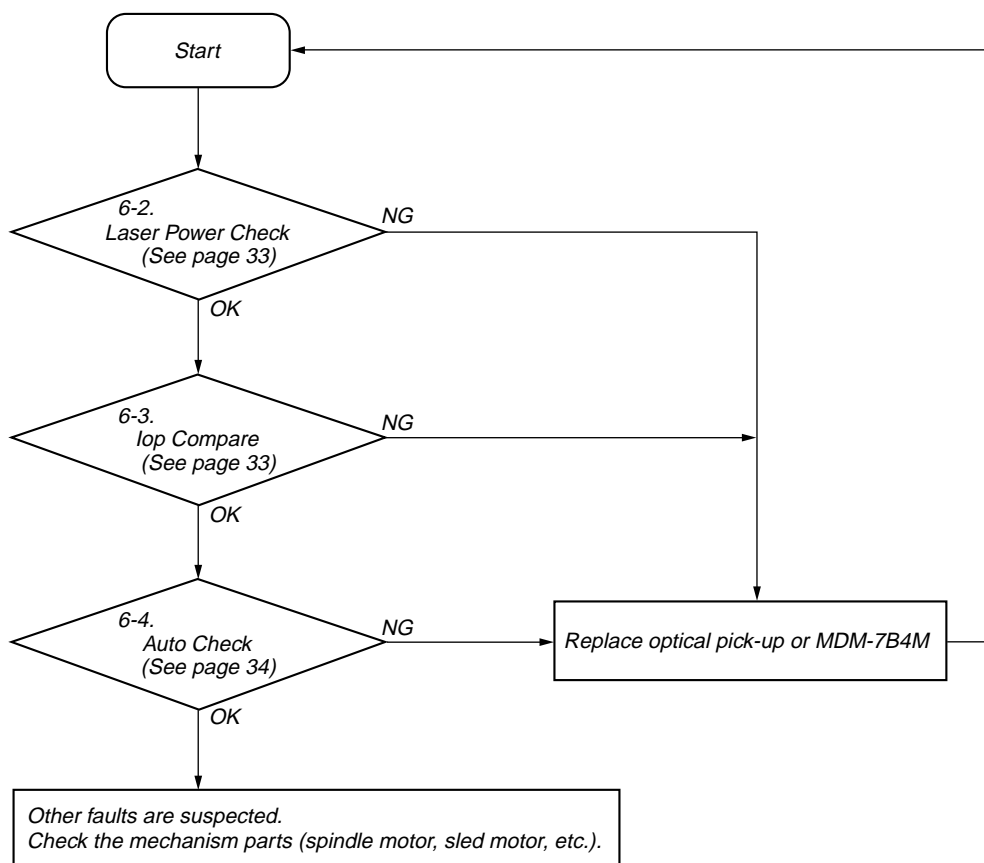
### Note 2: Incorrect operations may be performed if the MD test mode is not entered properly.

In this case, press the [L/⏻] 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



Flow Chart for Adjustment

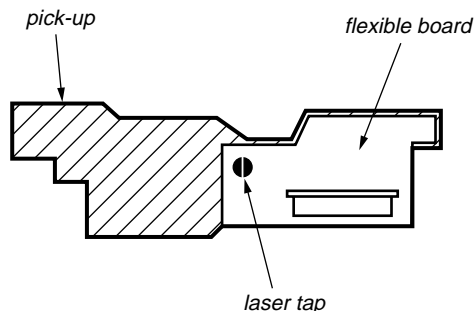


## 2. PRECAUTIONS FOR CHECKING LASER DIODE EMISSION

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-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 using it. Before disconnecting the connector, desolder first. Before connecting the connector, be careful not to remove the solder. Also take adequate measures to prevent damage by static electricity. Handle the flexible board with care as it breaks easily.



**Optical pick-up flexible board**

## 4. PRECAUTIONS FOR ADJUSTMENTS

- When replacing the following parts, perform the adjustments and checks with ○ in the order shown in the following table.
- Set the MD test mode when performing adjustments. After completing the adjustments, exit the MD test mode. Perform the adjustments and checks in "Group Service" of the MD test mode.
- Perform the adjustments to be needed in the order shown.
- Use the following tools and measuring devices.
  - Check Disc (TDYS-1) (Part No. : 4-963-646-01)
  - Test Disk (MDW-74/GA-1) (Part No. : 4-229-747-01)
  - Laser power meter LPM-8001 (Part No. : J-2501-046-A) or MD Laser power meter 8010S (Part No. : J-2501-145-A)\*1
  - Oscilloscope (Measure after performing CAL of prove.)
  - Digital voltmeter
  - Thermometer
  - Jig for checking BD board waveform (Part No. : J-2501-196-A)

- When observing several signals on the oscilloscope, etc., make sure that VC and ground do not connect inside the oscilloscope. (VC and ground will become short-circuited.)
- Using the above jig enables the waveform to be checked without the need to solder. (Refer to Servicing Notes on page 8.)
- As the disc used will affect the adjustment results, make sure that no dusts nor fingerprints are attached to it.

### \*1 Laser power meter

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

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

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



**5. USING THE CONTINUOUSLY RECORDED DISC**

- \* This disc is used in focus bias adjustment and error rate check. The following describes how to create a continuous recording disc.
- 1. Insert a disc (blank disc) commercially available.
- 2. Press the [◀◀ “R”] or [▶▶ “R”] button and display “CREC 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 7).

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

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

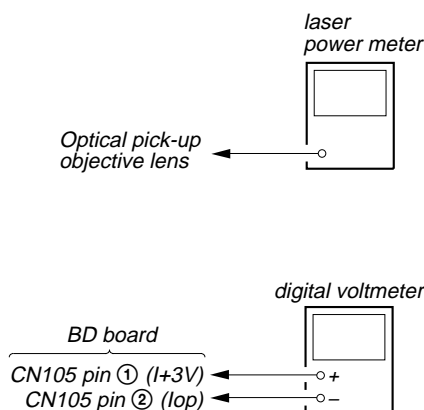
**Procedure:**

- 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 checking, check the Iop value of the optical pick-up. (Refer to 8. Recording and Displaying the Iop Information (see page 36)

**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 [◀◀] button or [▶▶] 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 “L 0.9mW\$” (C13). Check that the reading of the laser power meter becomes specified value.
- 4. Press the [ENTER/YES “R”] button once more and display “L 7.0mW\$”. Check that the reading the laser power meter and digital volt meter satisfy the specified value.

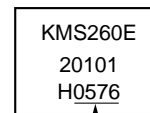
**Specified Value:**

Laser power meter reading :

L 0.9 mW	0.80 to 0.96 mW
L 7.0 mW	6.80 to 7.20 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 “L 0.7mW\$” and “L 6.2mW\$”. Nothing needs to be performed here.

**Checking Location:** BD board (see page 40)

**6-3. Iop Compare**

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

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

**Procedure:**

- 1. 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 **ENTER/YES "R"** button. If "LDPWR ミチエック" 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 step 1.
2. If a disc is in the mechanical deck, it will be ejected forcibly. "DISC IN" will be displayed in this case. Load a test disc (MDW-74/GA-1) which can be recorded.
3. If a disc is loaded at step 2, the check will start automatically.
4. When "XX CHECK" is displayed, the item corresponding to XX will be performed.  
When "06 CHECK" completes, the disc loaded at step 2 will be ejected. "DISC IN" will be displayed. Load the check disc (TDYS-1).
5. When the disc is loaded in the step 4, the check will automatically be resumed from "07 CHECK".
6. After completing to "12 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

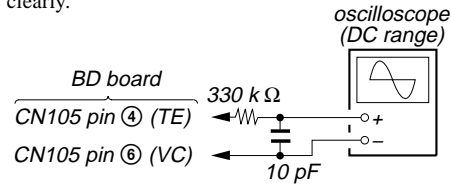
All the following checks are performed by the Auto Check mode. They therefore need not be performed in normal operation.

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

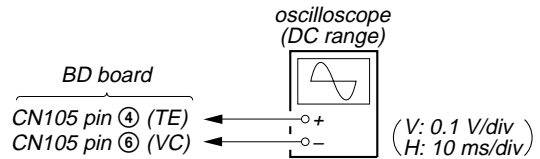
## 6-6. Traverse Check

**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.



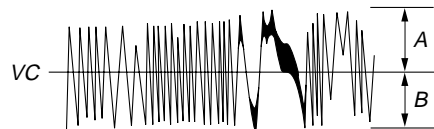
### Connection:



### Procedure:

1. Connect an oscilloscope to CN105 pin ④ (TE) and CN105 pin ⑥ (VC) on the BD board.
2. Load a disc (any available on the market). (Refer to Note 1)
3. Press the **▶▶** button to move the optical pick-up outside the pit.
4. Press the **◀◀ "R"** or **▶▶ "R"** button to display "EF MO CHECK"(C14).
5. Press the **ENTER/YES "R"** button to display "EFB = MO-R".  
(Laser power READ power/Focus servo ON/tracking servo OFF/spindle (S) servo ON)
6. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not press the **◀◀ "R"** or **▶▶ "R"** button.  
(Read power traverse checking)

### Traverse Waveform

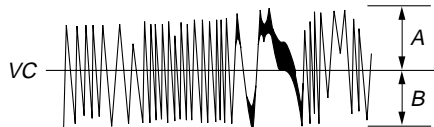


Specified value : Below 10% offset value

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

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

### Traverse Waveform



Specified value : Below 10% offset value

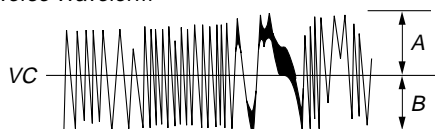
$$\text{Offset value (\%)} = \frac{|A - B|}{2(A + B)} \times 100$$

9. Press the **ENTER/YES "R"** button to display "EFB =  $\square\square$  MO-P".

Then, the optical pick-up moves to the pit area automatically and servo is imposed.

10. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not press the **◀◀ "R"** or **▶▶ "R"** button.

Traverse Waveform



Specified value : Below 10% offset value

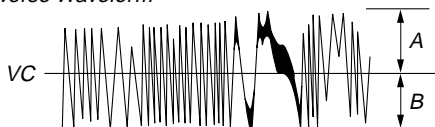
$$\text{Offset value (\%)} = \frac{|A - B|}{2(A + B)} \times 100$$

11. Press the **ENTER/YES "R"** button to display "EF MO CHECK" (C14).

The disc stops rotating automatically.

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

Traverse Waveform



Specified value : Below 10% offset value

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

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

**Checking Location:** BD board (see page 40)

## 6-7. Focus Bias Check

Change the focus bias and check the focus tolerance amount.

### Procedure:

1. Load the test disc (MDW-74/GA-1).
2. Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY 1MODE" (C34).
3. Press the **ENTER/YES "R"** button to display "CPLAY 1MID".
4. Press the **MENU/NO "R"** button when "C =  $\square\square\square$  AD =  $\square\square$ " is displayed.
5. Press the **◀◀ "R"** or **▶▶ "R"** button to display "FBIAS CHECK" (C16).
6. Press the **ENTER/YES "R"** button to display " $\square\square\square/\square\square$  c =  $\square\square$ ".  
 The first four digits indicate the C error rate, the two digits after [/] indicate ADER, and the 2 digits after [c =] indicate the focus bias value.
7. Press the **ENTER/YES "R"** button to display " $\square\square\square/\square\square$  b =  $\square\square$ ".  
 Check that the C error is about 220 and ADER is below 2.
8. Press the **ENTER/YES "R"** button to display " $\square\square\square/\square\square$  a =  $\square\square$ ".  
 Check that the C error is about 220 and ADER is below 2.
9. Press the **MENU/NO "R"** button, then press the **▲ MD** button and take out the test disc.

## 6-8. C PLAY Check

### MO Error Rate Check

#### Procedure:

1. Load the test disc (MDW-74/GA-1).
2. Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY 1MODE" (C34).
3. Press the **ENTER/YES "R"** button to display "CPLAY 1MID".
4. The display changes to "C =  $\square\square\square$  AD =  $\square\square$ ".
5. If the C error rate is below 20, check that ADER is 00.
6. Press the **MENU/NO "R"** button to stop playback, then press the **▲ MD** button and take out the test disc.

### CD Error Rate Check

#### Procedure:

1. Load the check disc (TDYS-1).
2. Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY 1MODE" (C34).
3. Press the **ENTER/YES "R"** button to display "CPLAY 1MID".
4. The display changes to "C =  $\square\square\square$  AD =  $\square\square$ ".
5. Check that the C error rate is below 20.
6. Press the **MENU/NO "R"** button to stop playback, then press the **▲ MD** button and take out the check disc.

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

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

### Procedure:

1. Load a recordable disc (blank disc).
2. Press the **◀◀ "R"** or **▶▶ "R"** button to display "CREC 1MODE" (C35).
3. Press the **ENTER/YES "R"** button to display "CREC 1MID".
4. When recording starts, lights up "**MD**" and display "CREC 1 @@@@" (@@@@ is the address).
5. About 1 minute later, press the **MENU/NO "R"** button to stop continuous recording.
6. Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY 1MODE" (C34).
7. Press the **ENTER/YES "R"** button to display "CPLAY 1MID".
8. "C =  $\square\square\square$  AD =  $\square\square$ " will be displayed.
9. Check that the C error becomes below 20 and the AD error below 2.
10. Press the **MENU/NO "R"** button to stop playback, then press the **▲ MD** button and take out the disc.

**7. INITIAL SETTING OF ADJUSTMENT VALUE**

**Note:**

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

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

For details of the initial setting, refer to "4. Precautions for Adjustments" (See page 32) and execute the initial setting before the adjustment as required.

**Procedure:**

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

**8. RECORDING AND DISPLAYING THE Iop INFORMATION**

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

**Recording Procedure:**

1. Press the **◀◀ "R"** or **▶▶ "R"** button to display "Iop Write" (C05), and press the **ENTER/YES "R"** button.
2. The display becomes "Ref=@@@.@" (@ is an arbitrary number) and the numbers which can be changed will blink.
3. Input the Iop value on the optical pick-up label.  
To select the number: Press the **◀◀ "R"** or **▶▶ "R"** button.  
To select the digit: Press the **REC MODE** button.
4. When the **ENTER/YES "R"** button is pressed, the display becomes "Measu=@@@.@" (@ is an arbitrary number).
5. As the adjustment results are recorded for the step 4 value. Leave it as it is and press the **ENTER/YES "R"** button.
6. "Complete!!" will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become "Iop Write" (C05).

**Display Procedure:**

1. Press the **◀◀ "R"** or **▶▶ "R"** button to display "Iop Read"(C26).
2. Press the **ENTER/YES "R"** button.
3. "@@.@/###.#" is displayed and the recorded contents are displayed.  
@@.@ indicates the Iop value on the optical pick-up label.  
###.# indicates the Iop value after adjustment
4. To end, press the **MENU/NO "R"** button to display "Iop Read" (C26).

**9. TEMPERATURE COMPENSATION OFFSET ADJUSTMENT**

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

**Note:**

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

**Procedure:**

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

**Specified Value:**

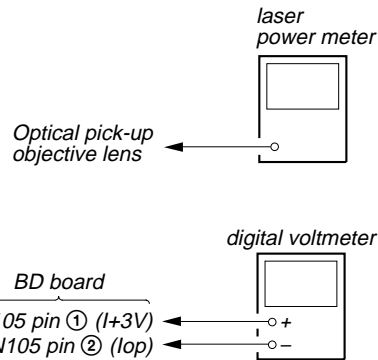
The "TEMP = [ ]" should be within "E0 - EF", "F0 - FF", "00 - 0F", "10 - 1F" and "20 - 2F".

**10. LASER POWER ADJUSTMENT**

Before starting adjustment;

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

**Connection:**



**Procedure:**

1. Insert the laser power meter probe into the disk insertion slot and set it on top of the objective lens of the optical pick-up. (When it cannot be set properly, press the **◀◀** button or **▶▶** button to move the optical pick-up)  
Connect the digital voltmeter to CN105 pin ① (I+3V) and CN105pin ② (Iop) on the BD 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 "L 0.9 mW \$ [ ]".
4. Press the **◀◀ "R"** or **▶▶ "R"** button until the laser power meter reading matches with the specified value. Press the **ENTER/YES "R"** button after setting the range knob of the laser power meter to 10mW, and save the adjustment results. ("LD SAVE \$ [ ]" will be displayed for a moment)
5. Then "L 7.0 mW \$ [ ]" 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.

**Note:** Do not perform the emission with 7.0 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 “L 0.9mW\$  
⏏”. Check that the reading of the laser power meter matches with the specified value.
- Press the **ENTER/YES “R”** button once more to display “L 7.0mW\$  
⏏”. Check that the reading the laser power meter and digital voltmeter satisfy the specified value.  
Note down the digital voltmeter reading value.

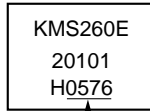
**Specified Value:**

Laser power meter reading :

SPECIFIED VALUE	L 0.9 mW	0.80 to 0.96 mW
	L 7.0 mW	6.90 to 7.10 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 the **REC MODE** button.
- When the **ENTER/YES “R”** button is pressed, “Complete!” will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become “Iop Write” (C05).

**Note:** After step 4, each time the **ENTER/YES “R”** button is pressed, the display will be switched to “L 0.7mW\$  
⏏”, “L 6.2mW\$  
⏏” Nothing needs to be performed here.

**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.

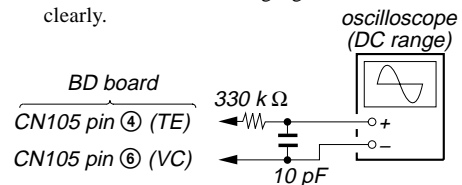
**Procedure:**

- 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 =⏏save?”, 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=⏏save?”, press the **ENTER/YES “R”** button.
- When “Complete!” is displayed, it means that Iop NV saving has been completed.

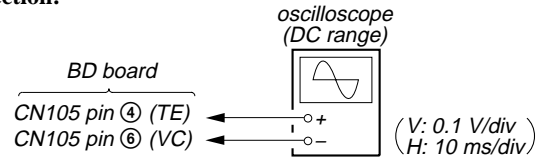
**12. TRAVERSE ADJUSTMENT**

**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.



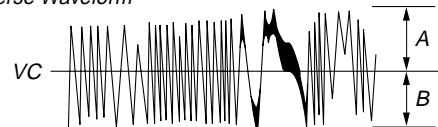
**Connection:**



**Procedure:**

- Connect an oscilloscope to CN105 pin 4 (TE) and CN105 pin 6 (VC) on the BD board.
- Load a disc (any available on the market). (Refer to Note 1)
- Press the **▶▶** button to move the optical pick-up outside the pit.
- Press the **◀◀ “R”** or **▶▶ “R”** button to display “EF MO ADJUST” (C07).
- 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)
- 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

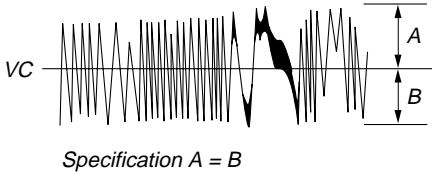


Specification A = B

- 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).

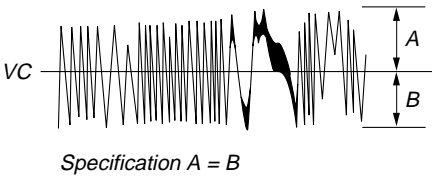
- Press the **◀◀ "R"** or **▶▶ "R"** button so that the waveform of the oscilloscope becomes the specified value.  
(When the **◀◀ "R"** or **▶▶ "R"** button is pressed, the **EFB =** changes and the waveform changes) In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.  
(Write power traverse adjustment)

Traverse Waveform



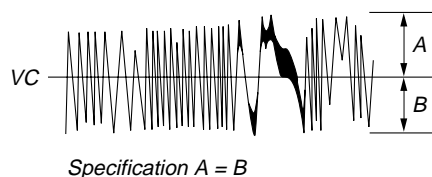
- Press the **ENTER/YES "R"** button, and save the adjustment results in the non-volatile memory. ("EFB = SAVE" will be displayed for a moment)
- "EFB = MO-P" will be displayed.  
The optical pick-up moves to the pit area automatically and servo is imposed.
- Press the **◀◀ "R"** or **▶▶ "R"** button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



- 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.
- Press the **▲ MD** button and take out the disc.
- Load the check disc (TDYS-1).
- Press the **◀◀ "R"** or **▶▶ "R"** button to display "EF CD ADJUST" (C08).
- Press the **ENTER/YES "R"** button to display "EFB = CD".  
Servo is imposed automatically.
- 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



- 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.
- Press the **▲ MD** button and take out the check disc.

**Adjustment Location:** BD board (see page 40)

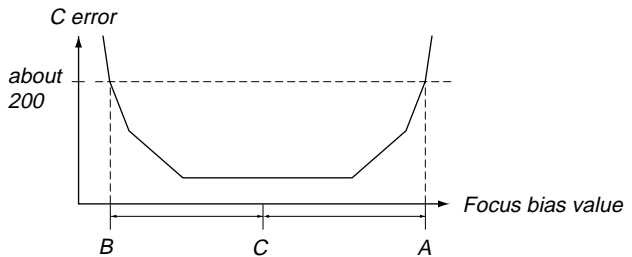
### 13. FOCUS BIAS ADJUSTMENT

**Procedure:**

- Load the check disc (MDW-74/GA-1).
- Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY1 MODE" (C34).
- Press the **ENTER/YES "R"** button to display "CPLAY1 MID".
- Press the **MENU/NO "R"** button when "C = AD = " is displayed.
- Press the **◀◀ "R"** or **▶▶ "R"** button to display "FBIAS ADJUST" (C09).
- Press the **ENTER/YES "R"** button to display "a = T".  
The first four digits indicate the C error rate, the two digits after "/" indicate ADER, and the 2 digits after "a =" indicate the focus bias value.
- Press the **▶▶ "R"** button and find the focus bias value at which the C error rate becomes about 200 (refer to Note 2).
- Press the **ENTER/YES "R"** button to display "b = T".
- Press the **◀◀ "R"** button and find the focus bias value at which the C error rate becomes about 200.
- Press the **ENTER/YES "R"** button to display "c = T".
- Check that the C error rate is below 20 and ADER is 00. Then press the **ENTER/YES "R"** button.
- If the "C" in "C - - (C)" 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.
- Press the **▲ MD** button and take out the disc.

**Note 1:** The relation between the C 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 C 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 "CPLAY1 MODE" (C34).
3. Press the **ENTER/YES "R"** button twice and display "CPLAY1 MID".
4. The display changes to "C =  AD = ".
5. Check that the C 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 33))
2. Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY1 MODE" (C34).
3. Press the **ENTER/YES "R"** button to display "CPLAY1 MID".
4. The display changes to "C =  AD = ".
5. If the C 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 33))
2. Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY1 MODE" (C34).
3. Press the **ENTER/YES "R"** button twice to display "CPLAY1 MID".
4. Press the **MENU/NO "R"** button when "C =  AD = " is displayed.
5. Press the **◀◀ "R"** or **▶▶ "R"** button to display "FBIAS CHECK" (C16).
6. Press the **ENTER/YES "R"** button to display "/  c = ". The first four digits indicate the C error rate, the two digits after "/" indicate ADER, and the 2 digits after "c =" indicate the focus bias value.
7. Press the **ENTER/YES "R"** button and display "/  b = ".  
Check that the C error is below 220 and ADER is below 2.
8. Press the **ENTER/YES "R"** button and display "/  a = ".  
Check that the C error is below 220 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 C error and ADER are above other than the specified value at points a (step 8. in the above) or b (step 7. in the above), the focus bias adjustment may not have been carried out properly. Adjust perform the beginning again.

## 16. AUTO GAIN CONTROL OUTPUT LEVEL ADJUSTMENT

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

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

### 16-1. CD Auto Gain Control Output Level Adjustment

#### Procedure:

1. Load the check disc (TDYS-1).
2. Press the **◀◀◀ "R"** or **▶▶▶ "R"** button to display "AG Set (CD)" (C11).
3. When the **ENTER/YES "R"** button is pressed, the adjustment will be performed automatically.  
"Complete!" will then be displayed momentarily when the value is recorded in the non-volatile memory, after which the display changes to "AG Set (CD)" (C11).
4. Press the **▲ MD** button and take out the check disc.

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

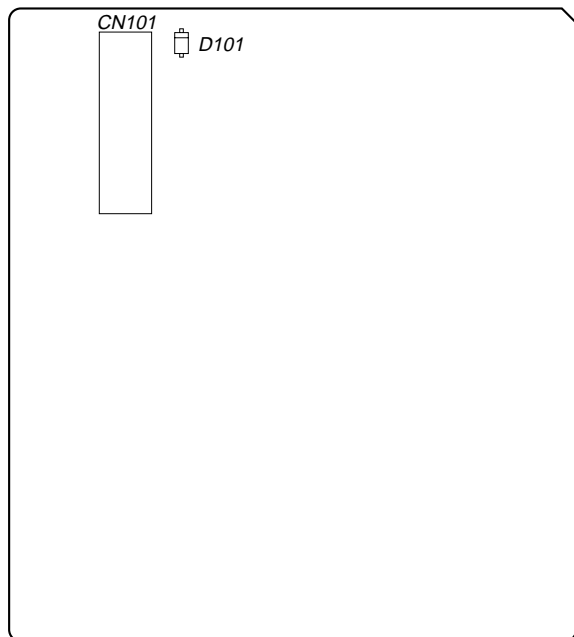
#### Procedure:

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

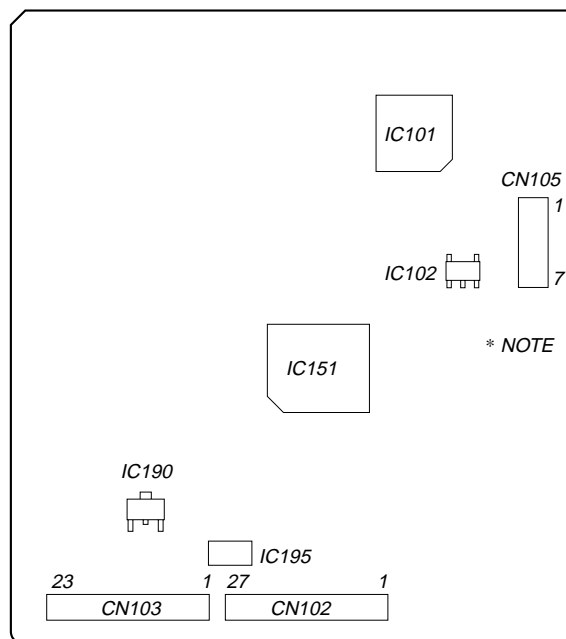
# HCD-M10

## Adjustment and checking Location:

– BD BOARD (Side A) –



– BD BOARD (Side B) –





**Note:** It is useful to use the jig for checking the waveform. (Refer to Servicing Notes on page 8)






## SECTION 6 DIAGRAMS

**THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.**  
(In addition to this, the necessary note is printed in each block.)

**Note on Schematic Diagram:**

- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF}$ :  $\mu\mu\text{F}$
- 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.
- $\Delta$  : internal component.
-  : fusible resistor.
-  : panel designation.

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

-  : B+ Line.
-  : B- Line.
-  : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- Voltages are taken with a VOM (Input impedance 10 M $\Omega$ ). Voltage variations may be noted due to normal production tolerances.

**CD board**

- No mark: CD
- BD/MD DIGITAL board
- No mark: MD
- ( ) : MD PB
- < > : MD REC

**TC board**

- No mark: REC
- ( ) : PB

**Others**

- No mark: FM
- ( ) : CD
- < > : MD

- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.

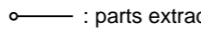
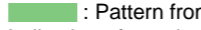
**Signal path.**

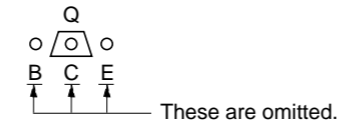
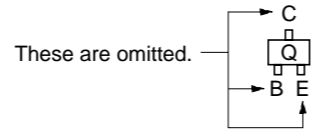
-  : FM
-  : CD (ANALOG)
-  : CD (DIGITAL)
-  : PB (MD)
-  : REC (MD)
-  : DIGITAL IN (OPTICAL)
-  : PB (TAPE)
-  : REC (TAPE)

**Abbreviation**

- HK : Hong Kong model
- SP : Singapore model
- KR : Korea model
- AUS : Australian model

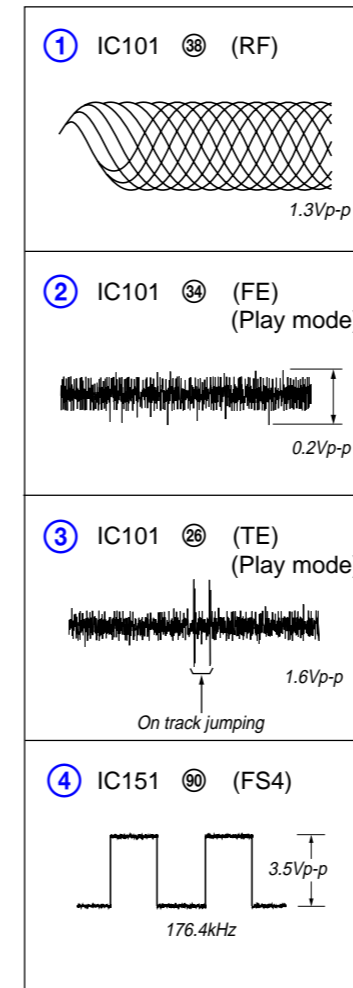
**Note on Printed Wiring Boards:**

-  : parts extracted from the component side.
-  : Pattern from the side which enables seeing.
- Indication of transistor.

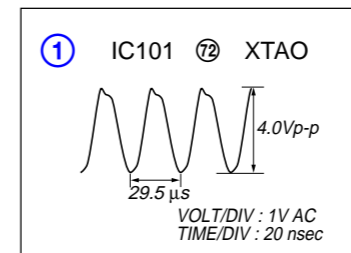


**● WAVEFORMS**

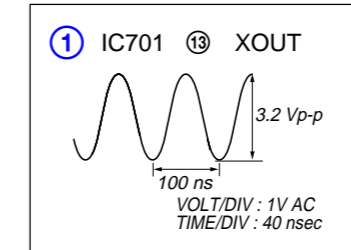
**- BD BOARD -**



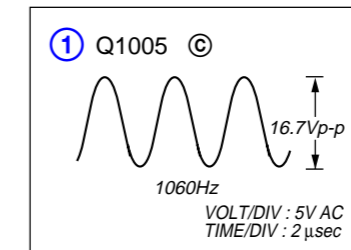
**- CD BOARD -**



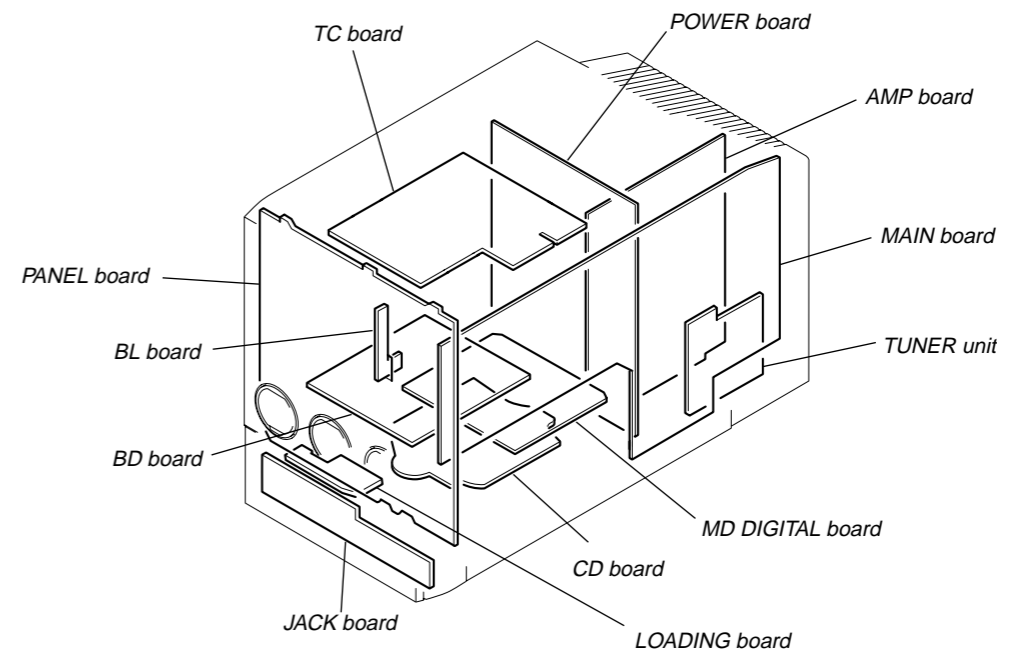
**- MD DIGITAL BOARD -**

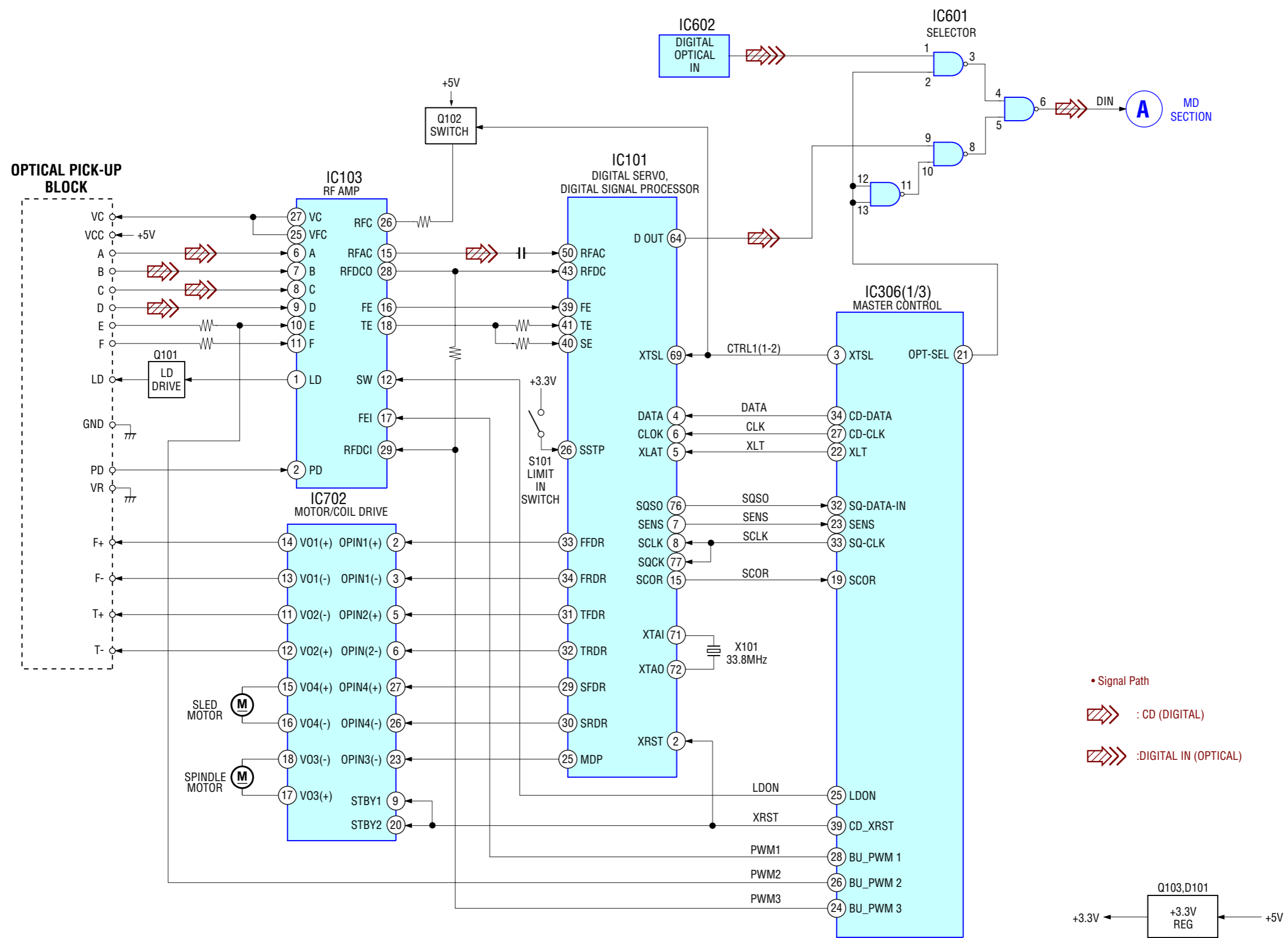


**- TC BOARD -**

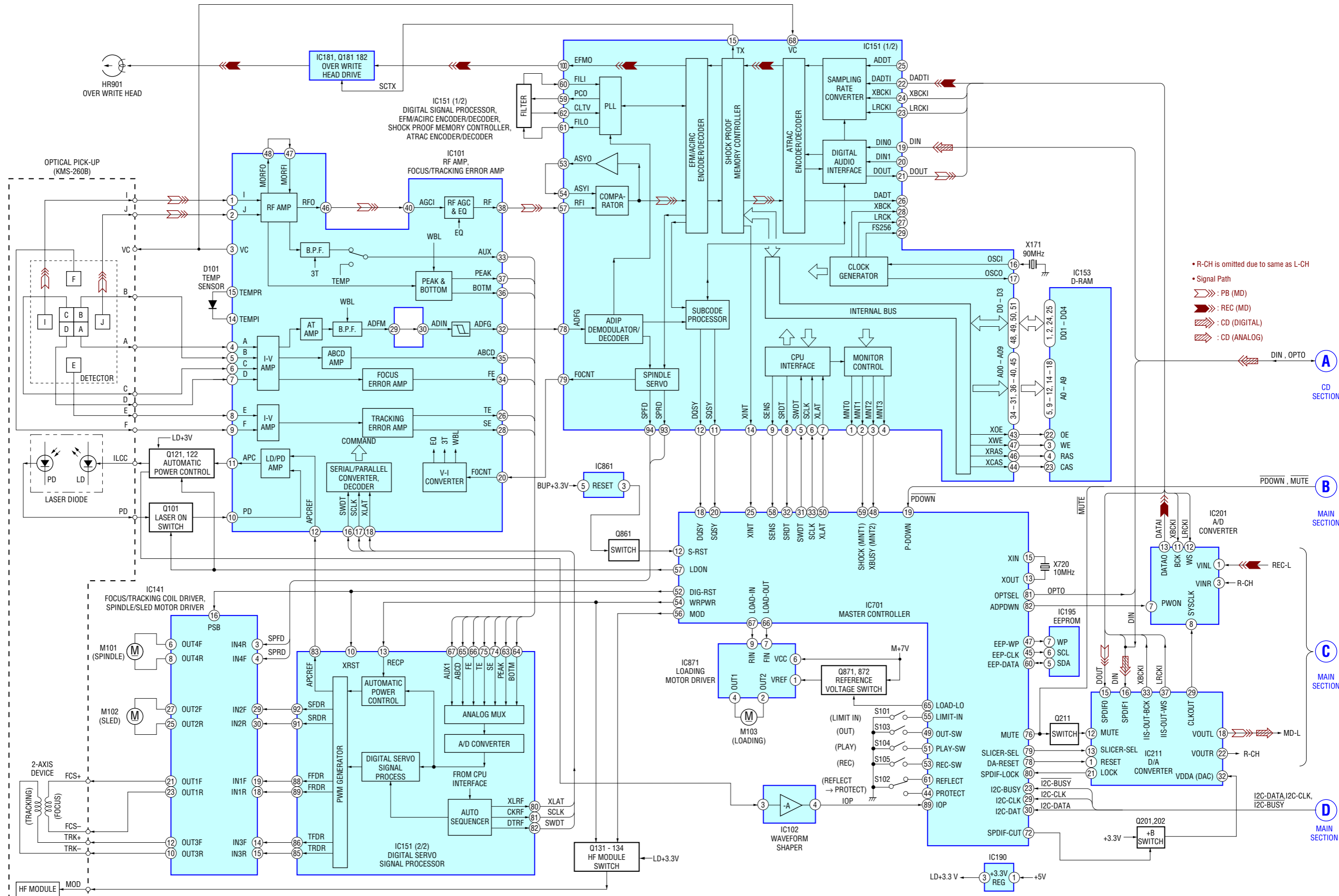


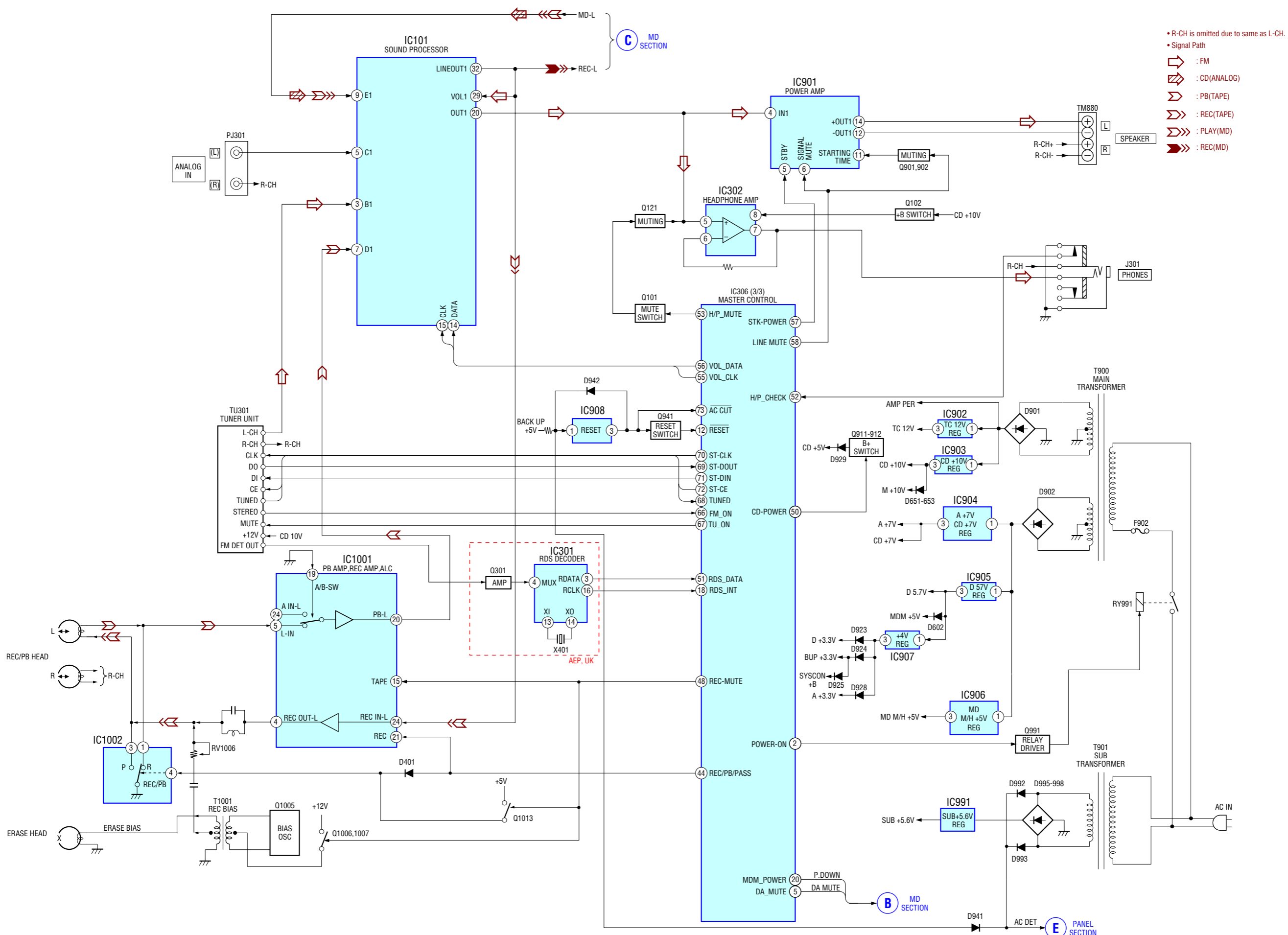
**6-1. CIRCUIT BOARDS LOCATION**





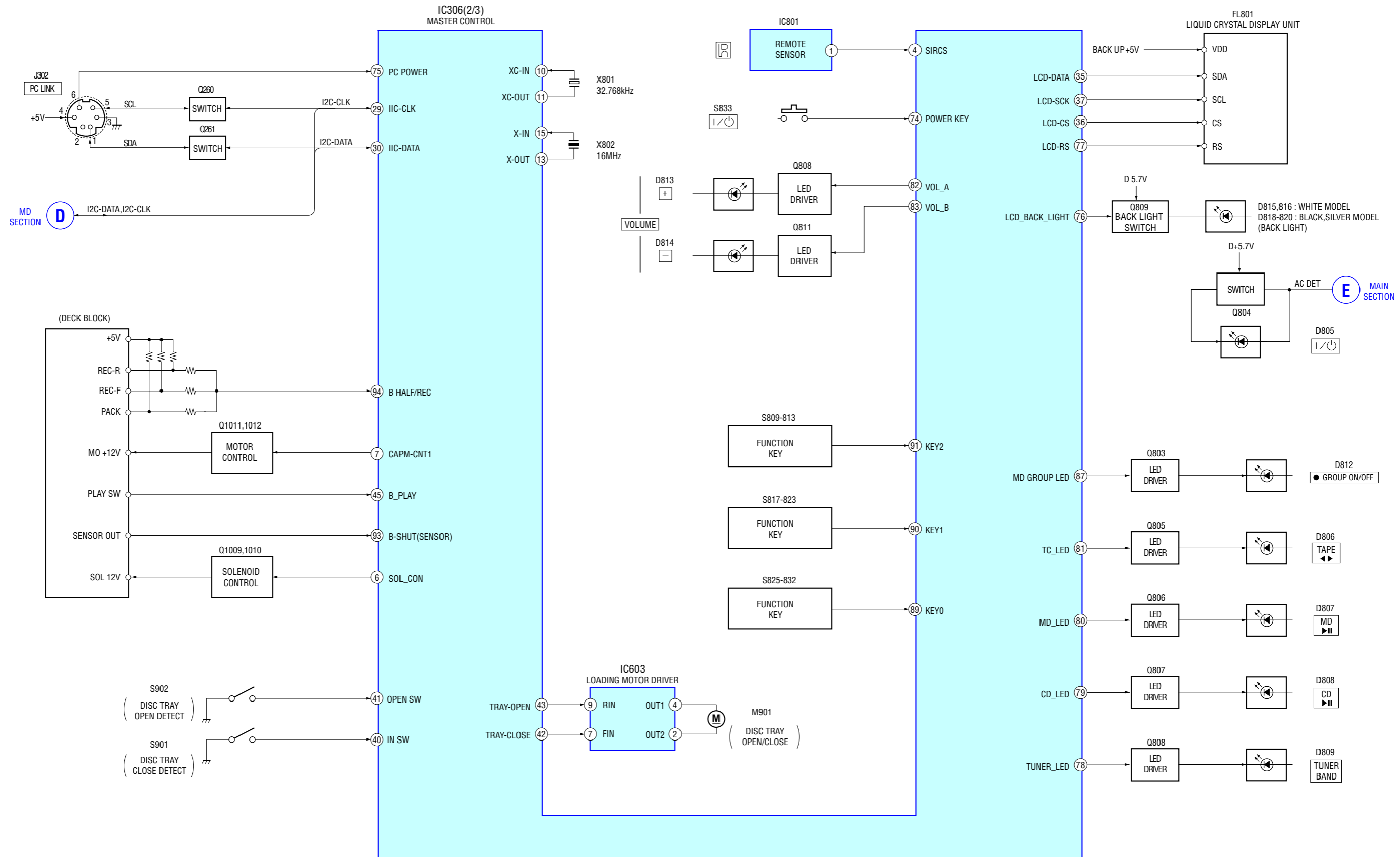
BLOCK DIAGRAM – MD SECTION –

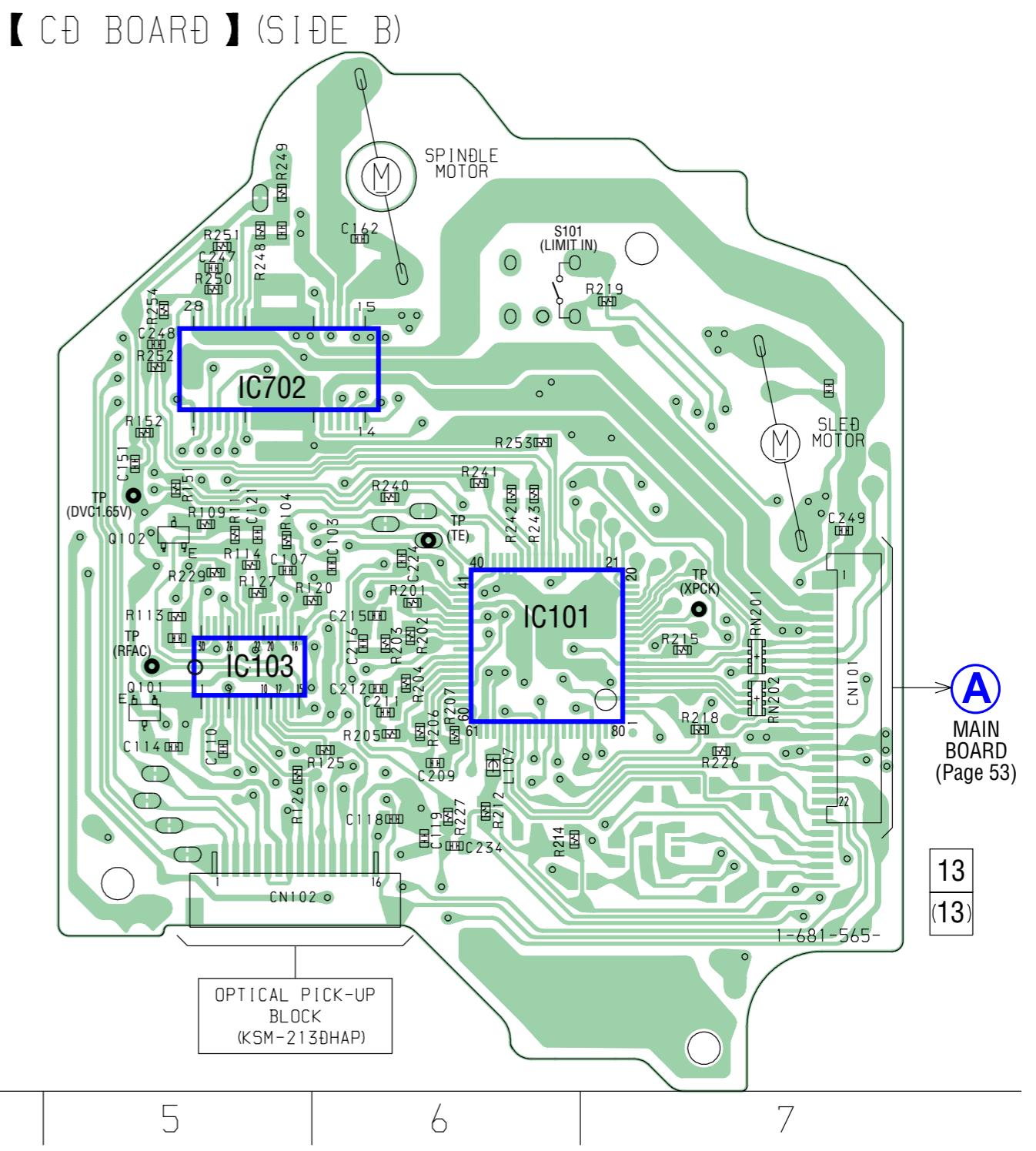
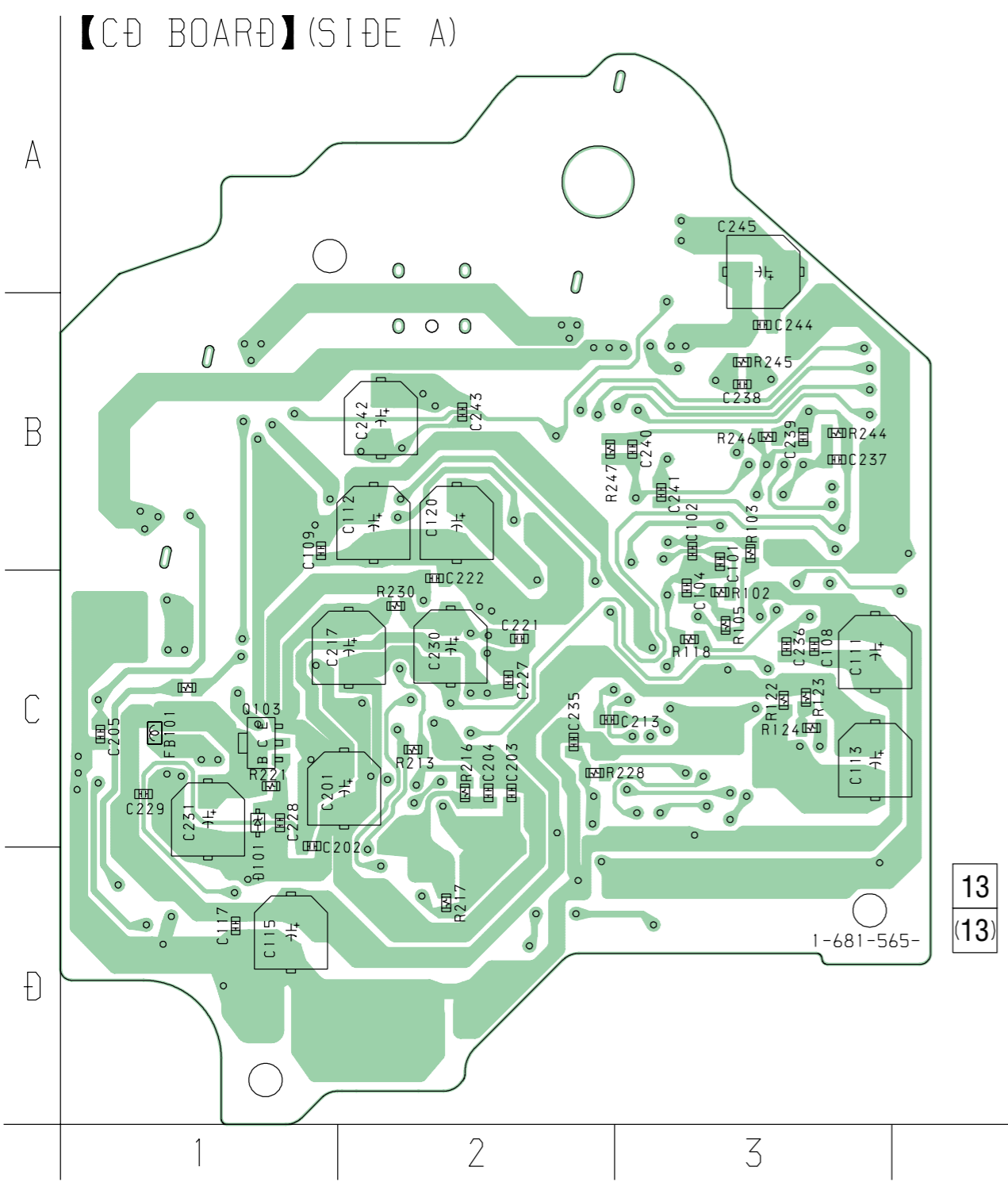




- R-CH is omitted due to same as L-CH.
- Signal Path
- ◀ : FM
- ◀◀ : CD (ANALOG)
- ◀◀◀ : PB (TAPE)
- ◀◀◀◀ : REC (TAPE)
- ◀◀◀◀◀ : PLAY (MD)
- ◀◀◀◀◀◀ : REC (MD)

BLOCK DIAGRAM – PANEL SECTION –

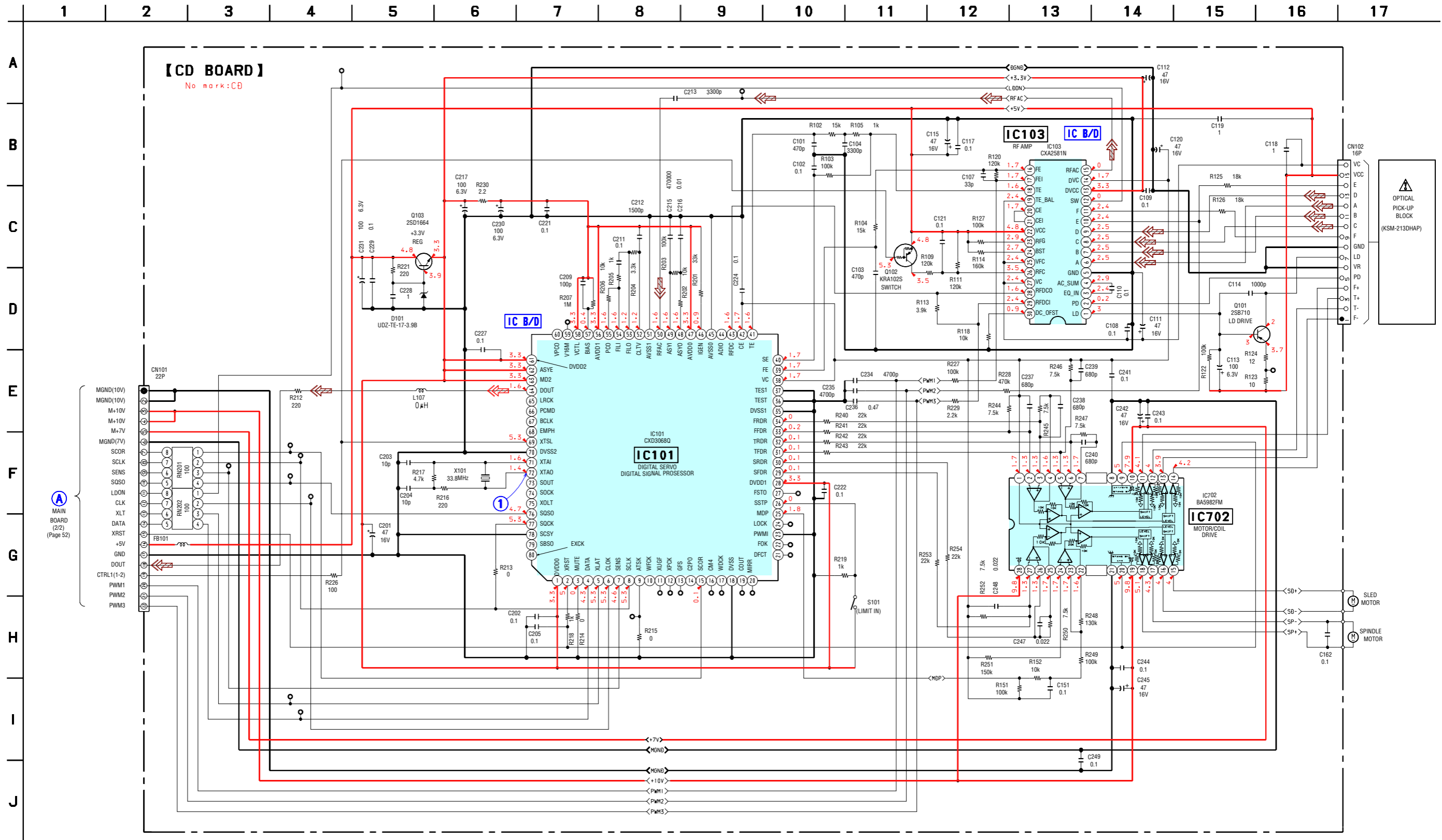


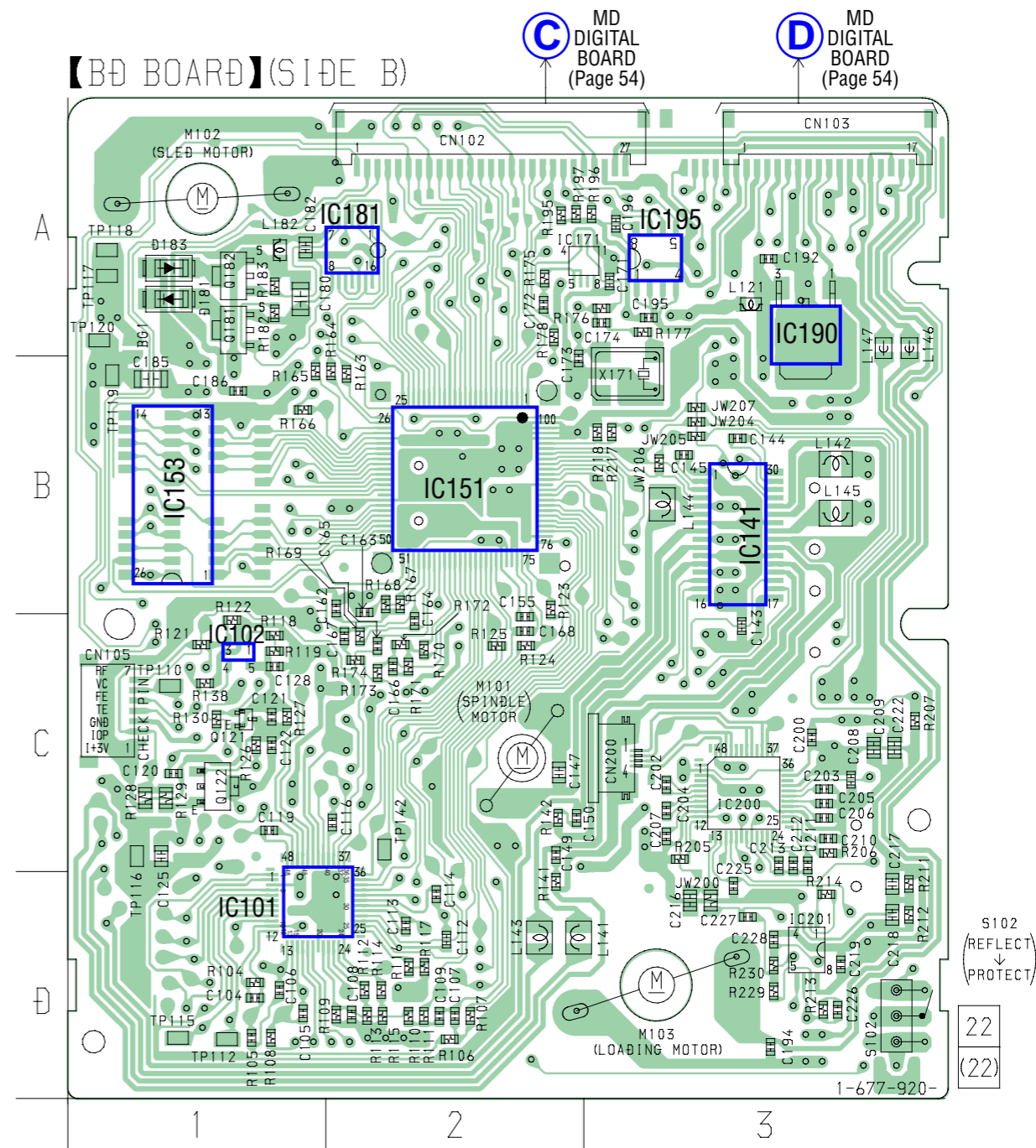
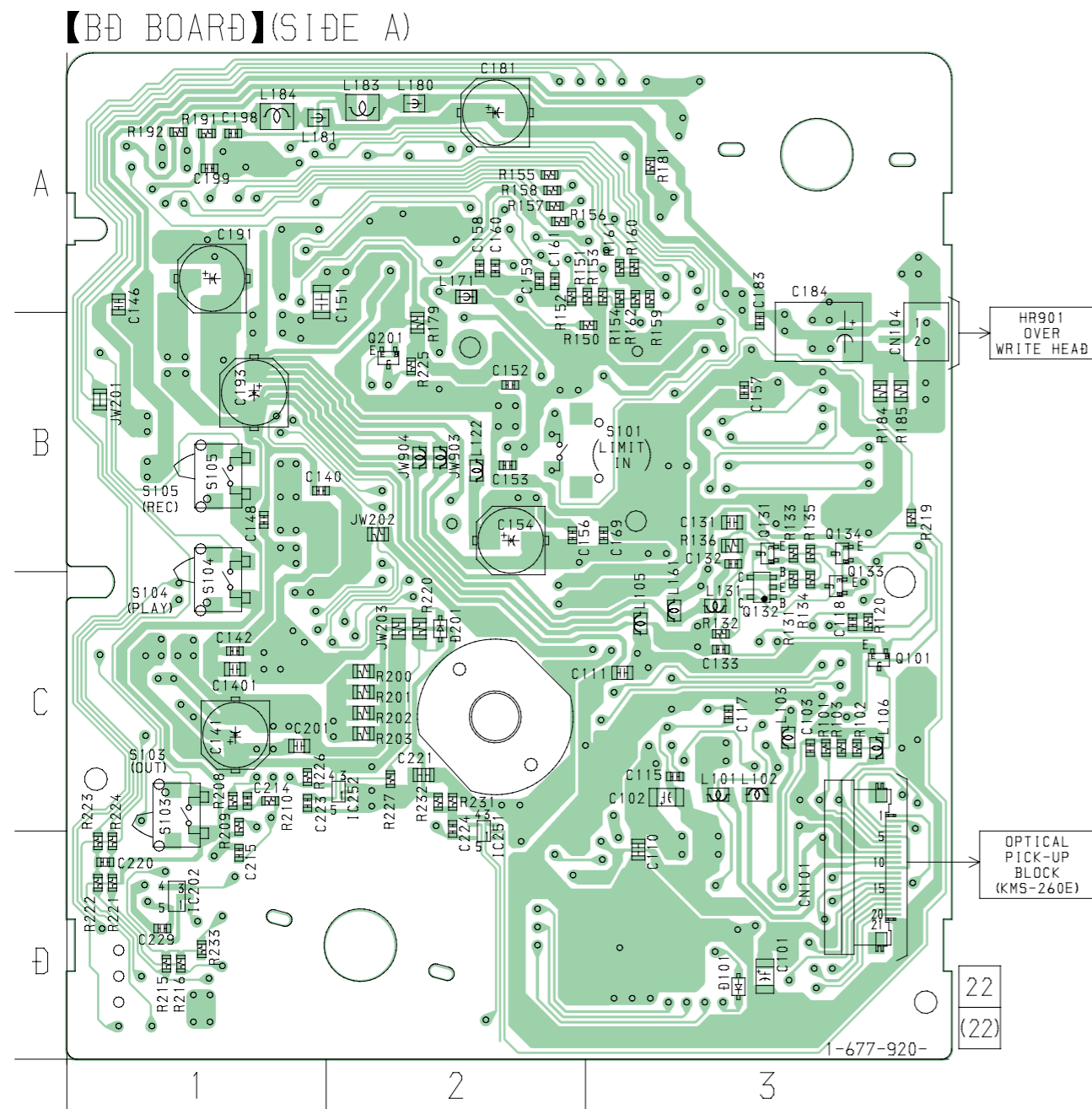


• Semiconductor Location

Ref. No.	Location
D101	C-1
IC101	C-6
IC103	C-5
IC702	B-5
Q101	C-5
Q102	B-5
Q103	C-1

6-4. SCHEMATIC DIAGRAM – CD BOARD – • See page 41 for Waveforms. • See page 70 for IC Block Diagrams.





• Semiconductor Location SIDE A

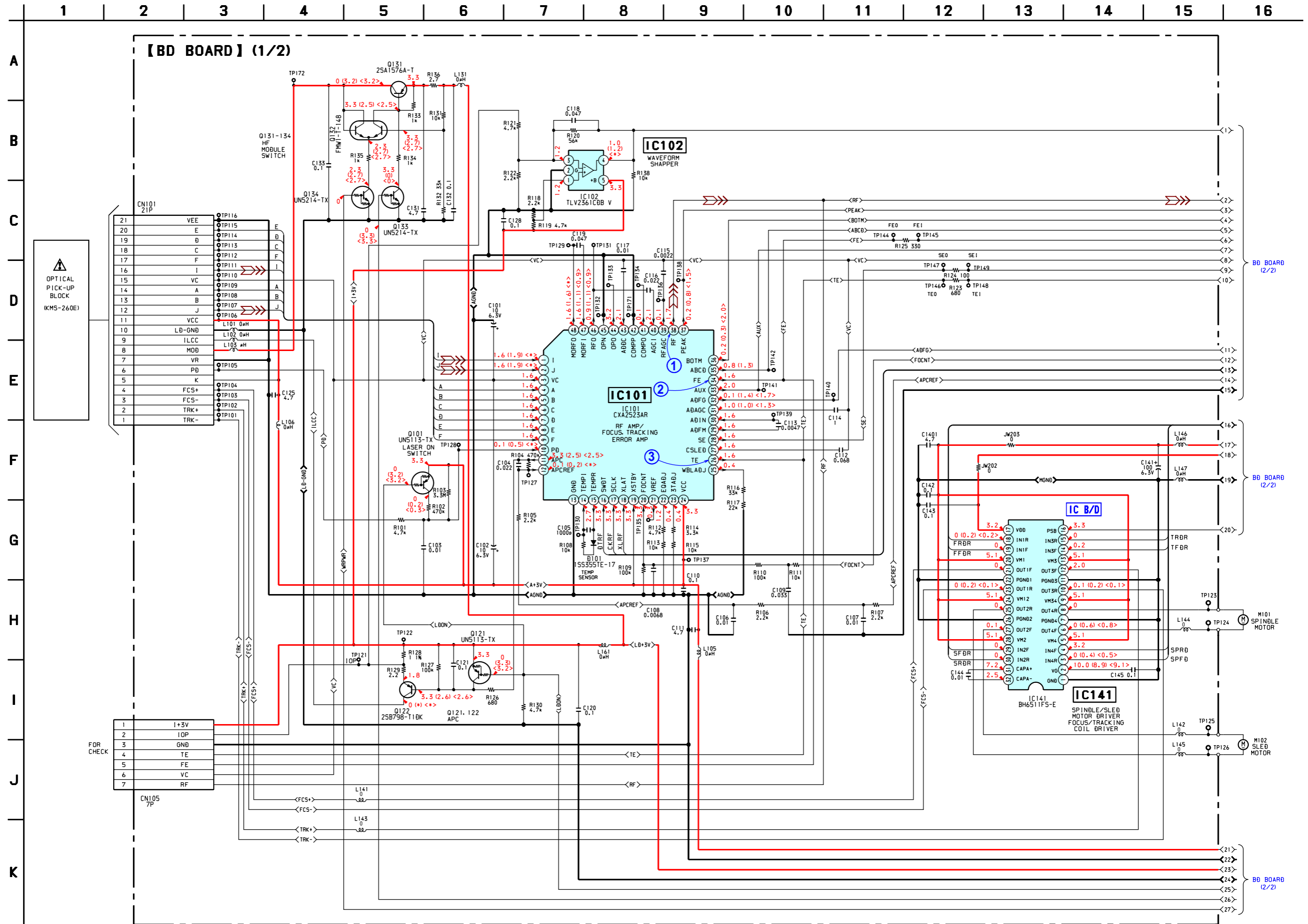
Ref. No.	Location
D101	D-3
Q101	C-3
Q131	B-3
Q132	C-3
Q133	C-3
Q134	B-3

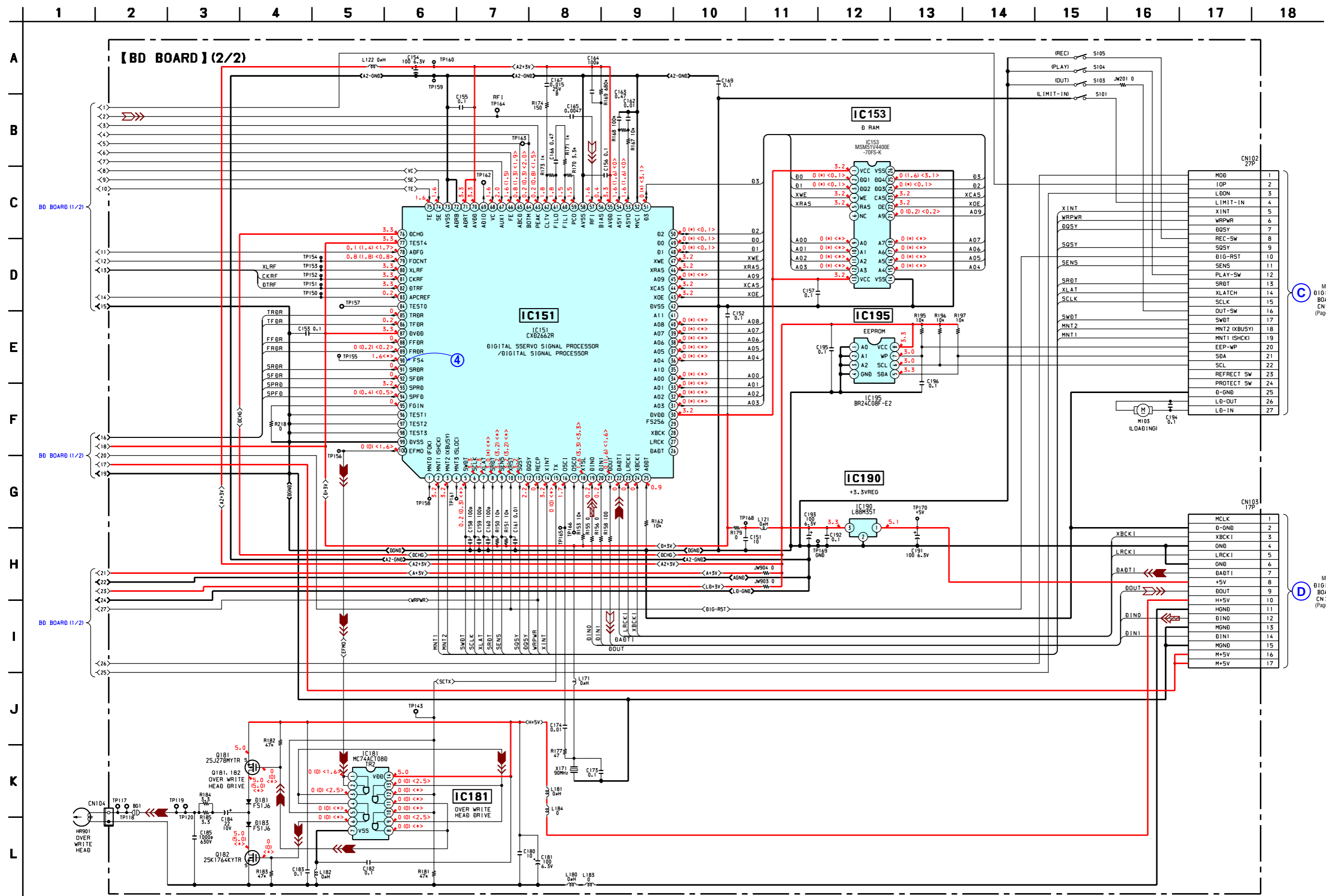
• Semiconductor Location SIDE B

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



6-6. SCHEMATIC DIAGRAM – BD BOARD (1/2) – • See page 41 for Waveforms. • See page 63 for IC Pin Function Description. • See page 70 for IC Block Diagrams.

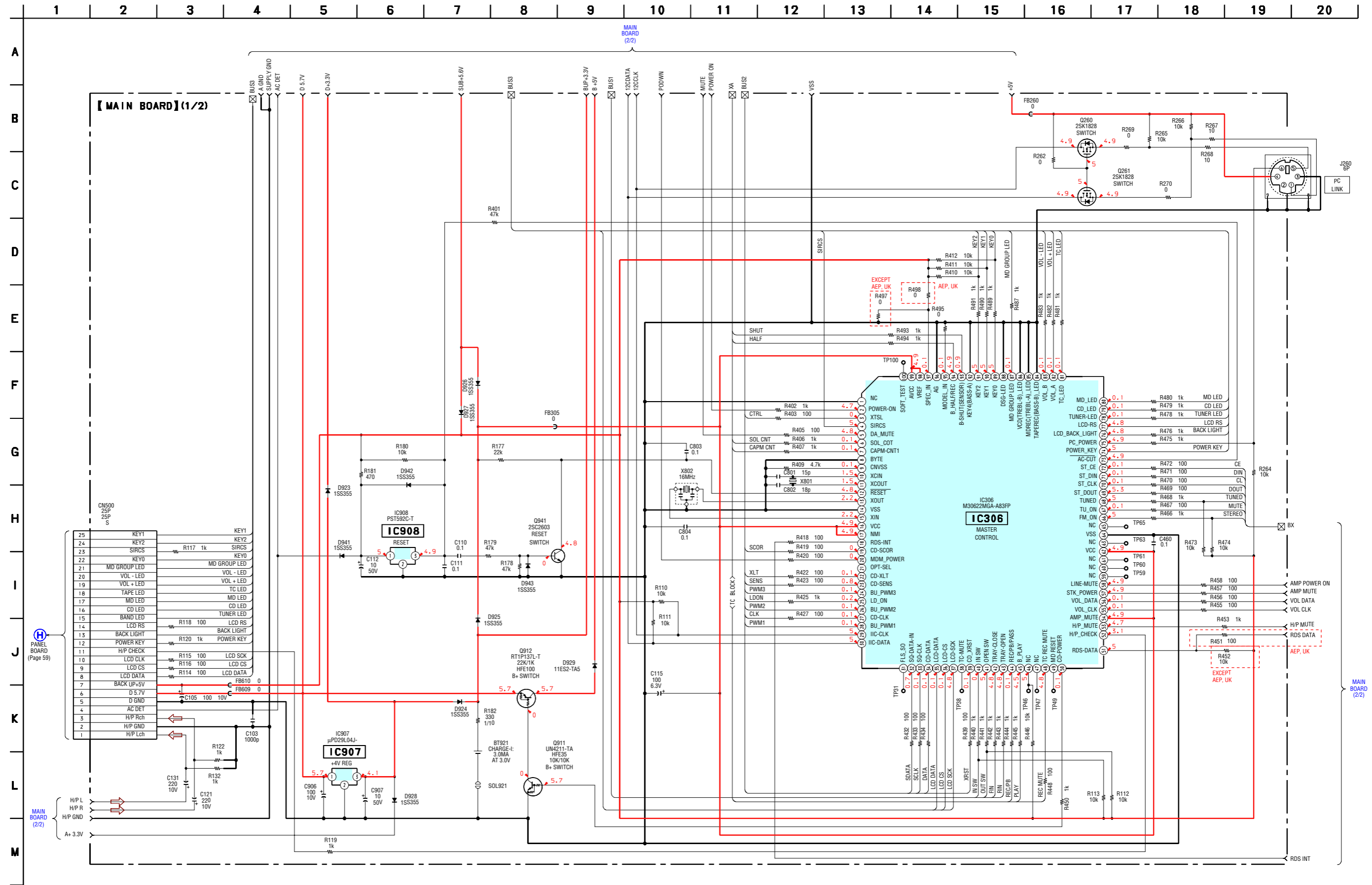


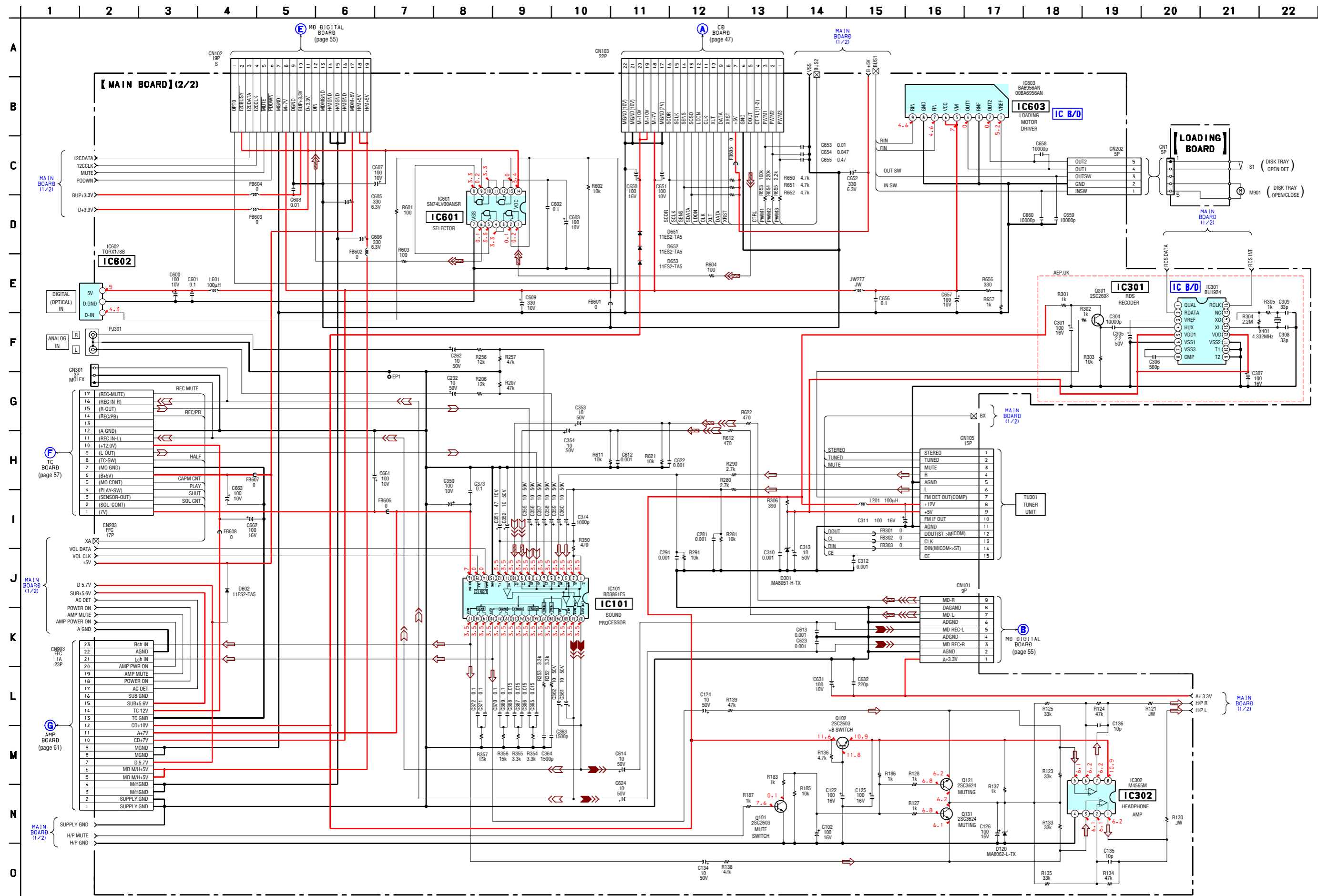


MD DIGITAL BOARD CN702 (Page 55)

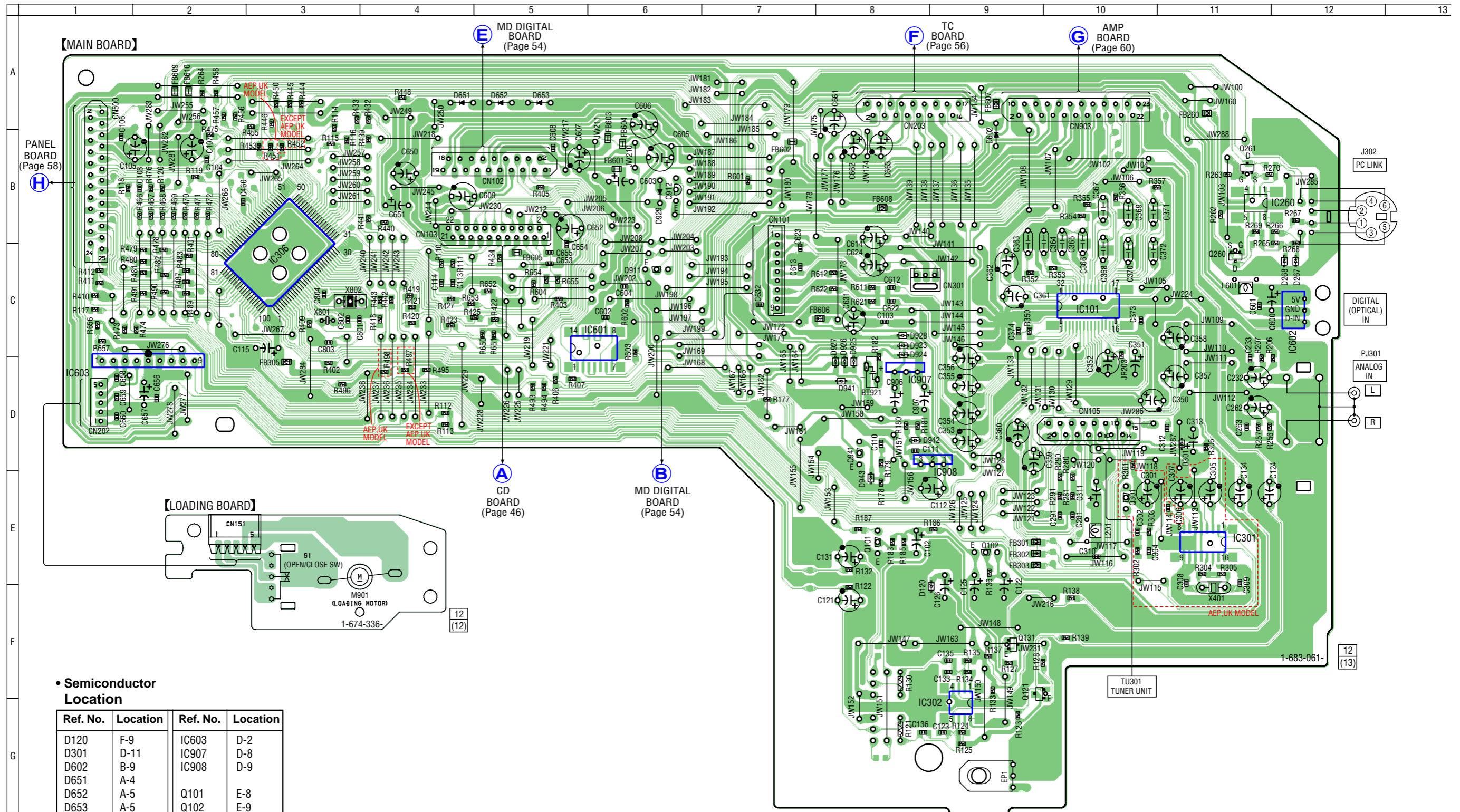
MD DIGITAL BOARD CN703 (Page 55)

6-8. SCHEMATIC DIAGRAM – MAIN BOARD (1/2) – • See page 66 for IC Pin Function Description.





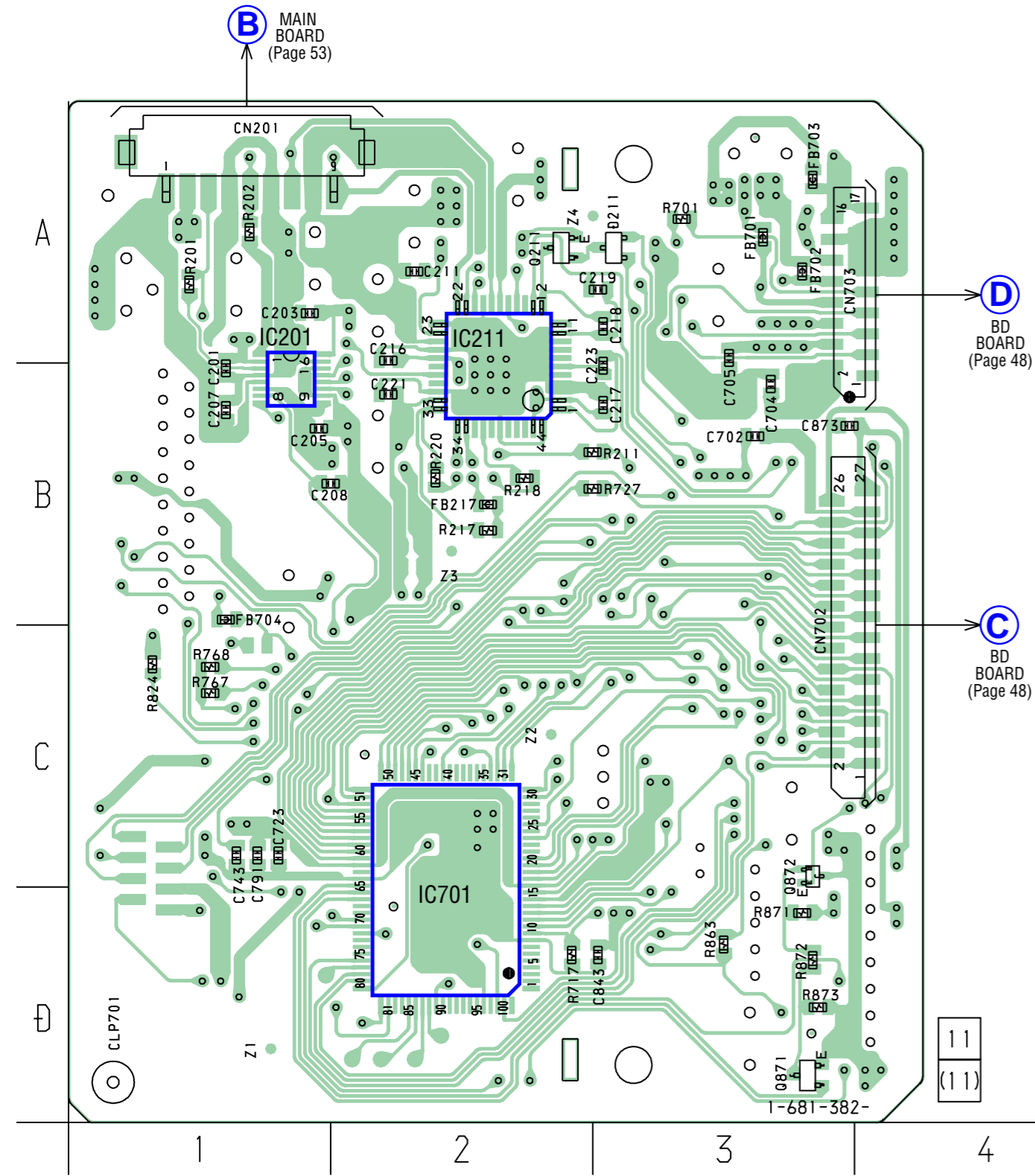
6-10. PRINTED WIRING BOARDS – MAIN BOARD, LOADING BOARD – • See page 41 for Circuit Boards Location.



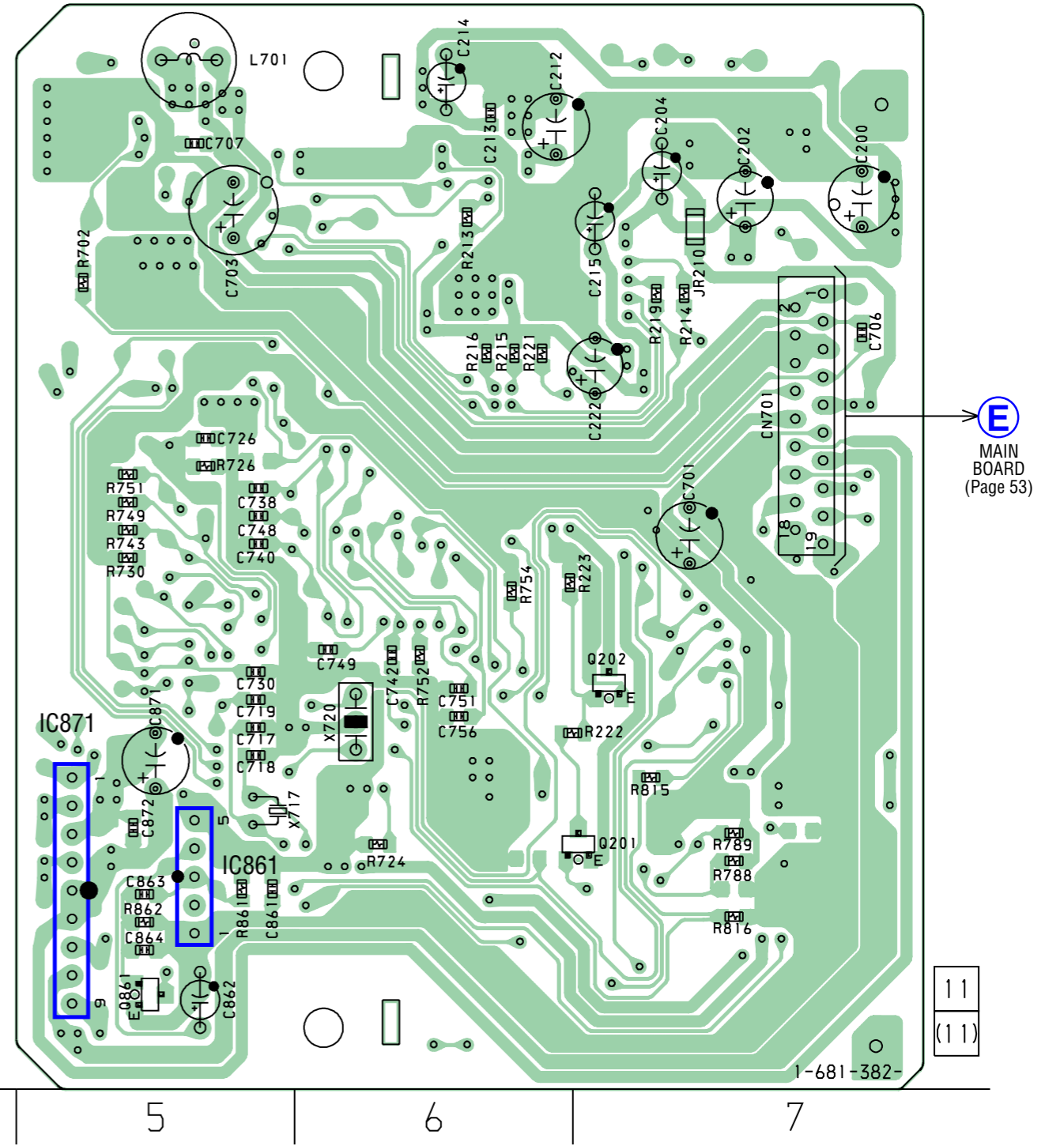
• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D120	F-9	IC603	D-2
D301	D-11	IC907	D-8
D602	B-9	IC908	D-9
D651	A-4		
D652	A-5	Q101	E-8
D653	A-5	Q102	E-9
D923	C-8	Q121	F-9
D924	C-8	Q131	F-9
D925	C-8	Q260	C-11
D926	C-8	Q261	B-11
D927	C-8	Q301	E-10
D928	C-8	Q911	C-6
D929	B-6	Q912	B-6
D941	D-8	Q941	D-8
D942	D-8		
D943	E-8		
IC101	C-10		
IC301	E-11		
IC302	G-9		
IC306	C-3		
IC601	C-6		
IC602	C-12		

【MD DIGITAL BOARD】(SIDE A)



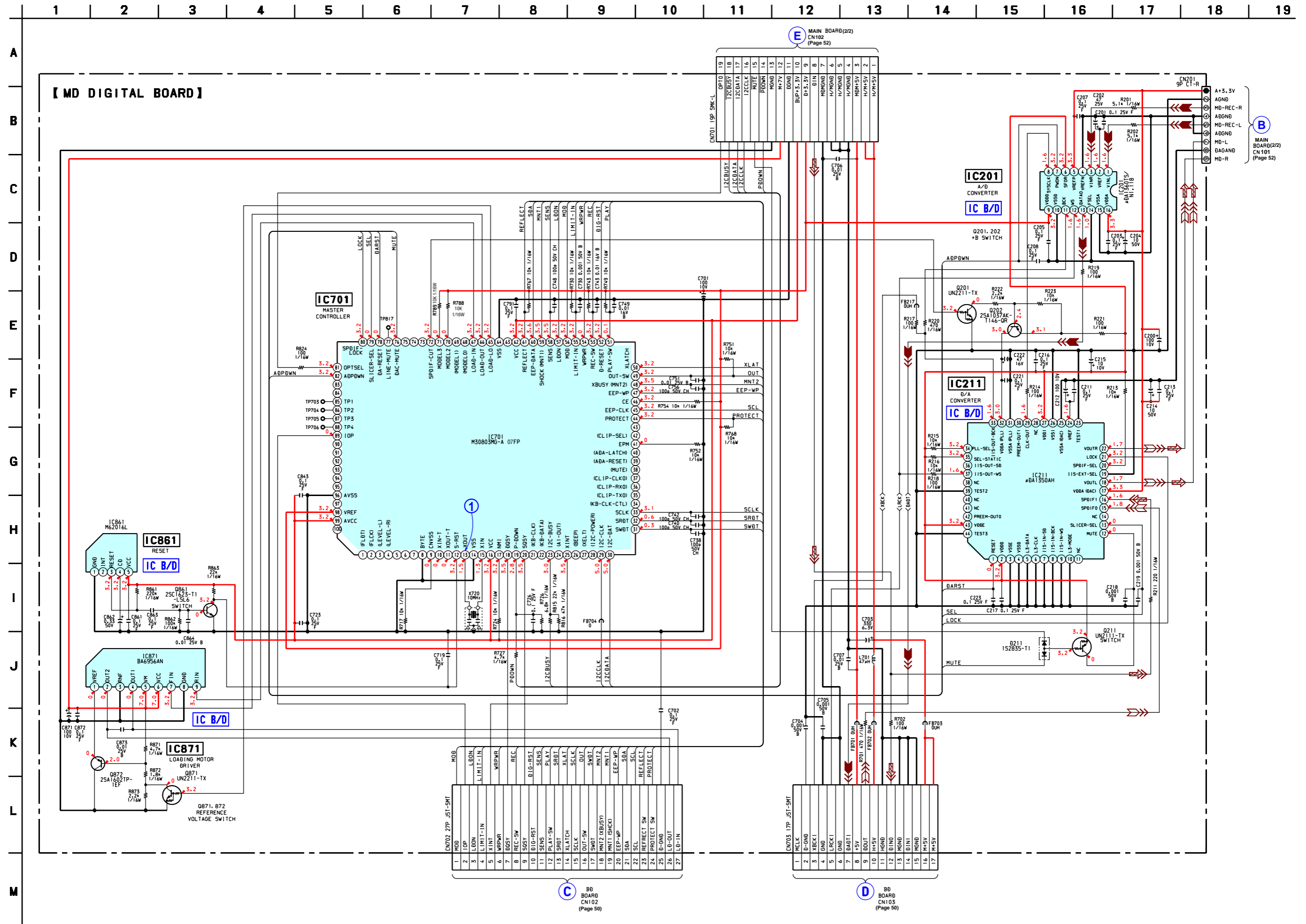
【MD DIGITAL BOARD】(SIDE B)

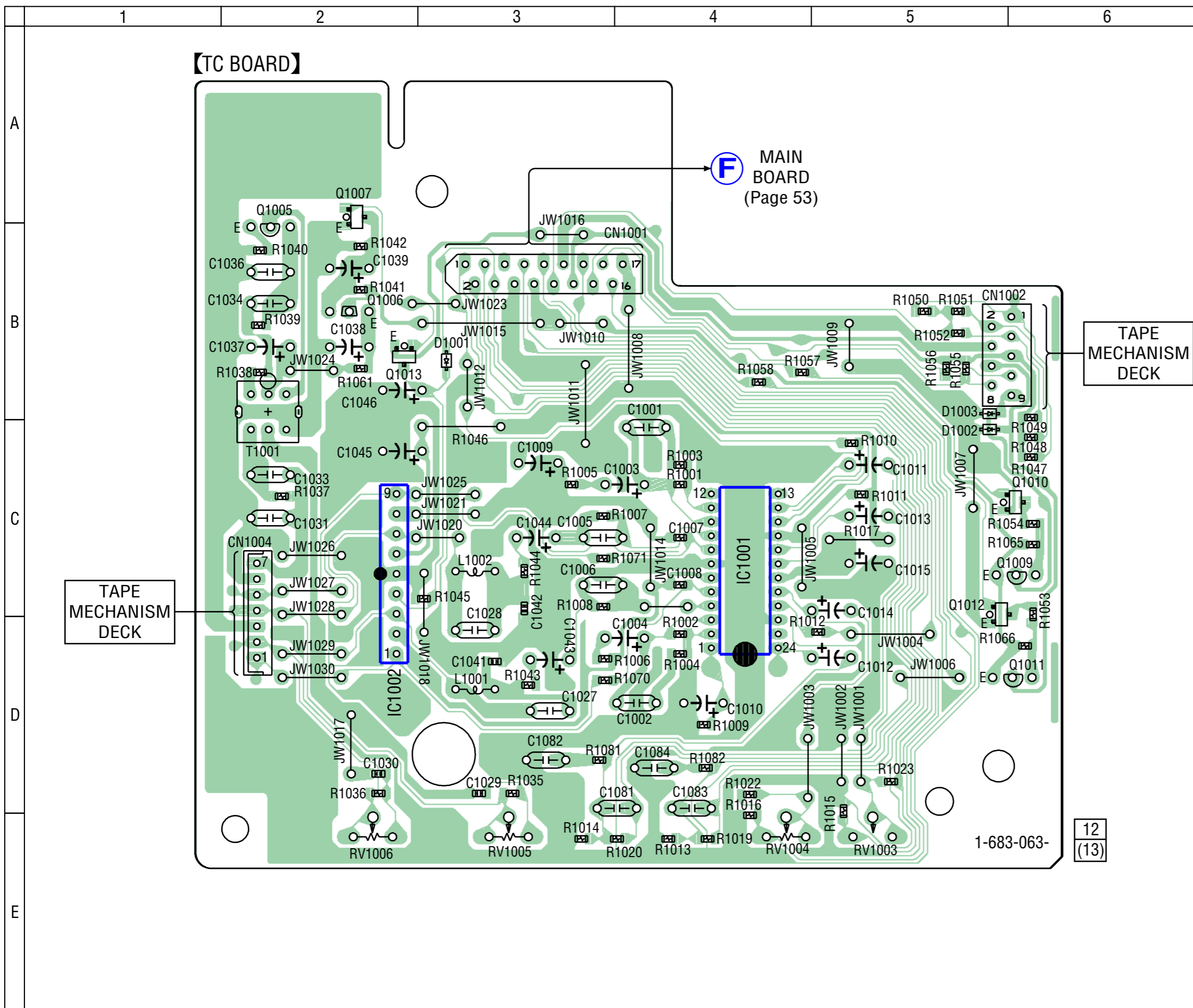


• Semiconductor Location

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

6-12. SCHEMATIC DIAGRAM – MD DIGITAL BOARD – • See page 41 for Waveforms. • See page 68 for IC Pin Function Description. • See page 71 for IC Block Diagrams.



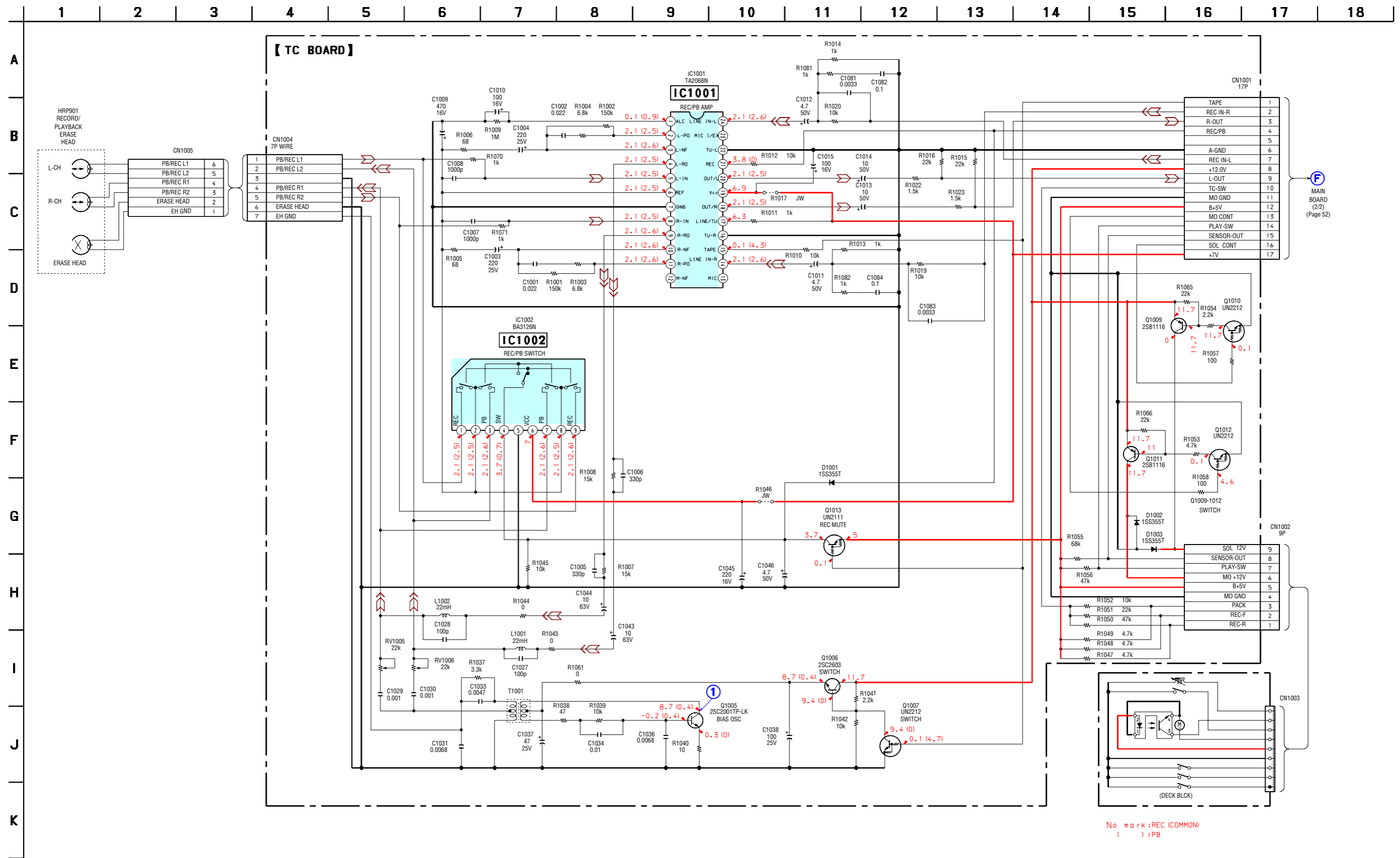


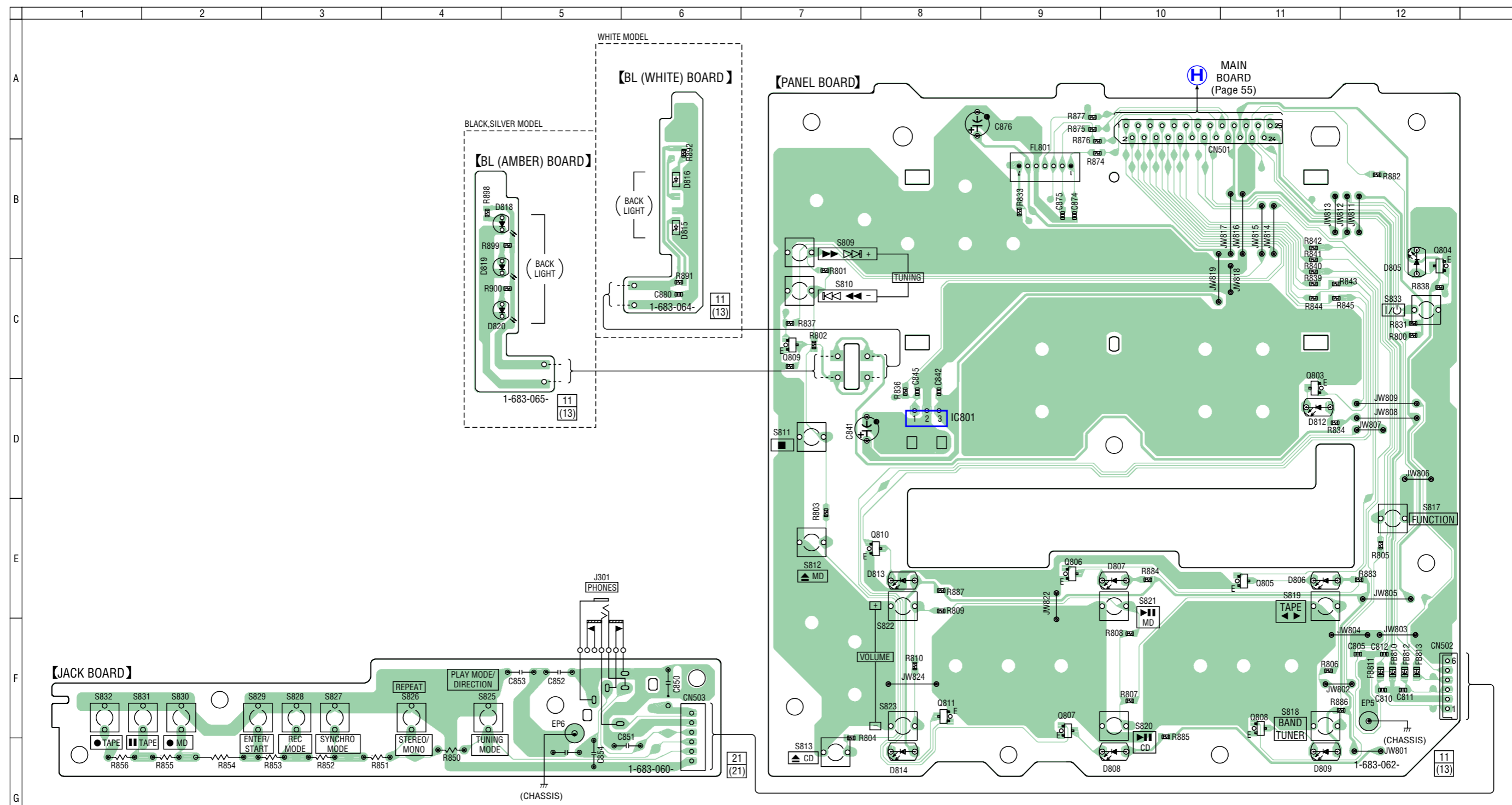
• Semiconductor Location

Ref. No.	Location
D1001	B-3
D1002	C-5
D1003	B-5
IC1001	C-4
IC1002	D-2
Q1005	A-2
Q1006	B-2
Q1007	A-2
Q1009	C-6
Q1010	C-6
Q1011	D-6
Q1012	C-5
Q1013	B-2



6-14. SCHEMATIC DIAGRAM - TC BOARD - See page 41 for Waveforms.

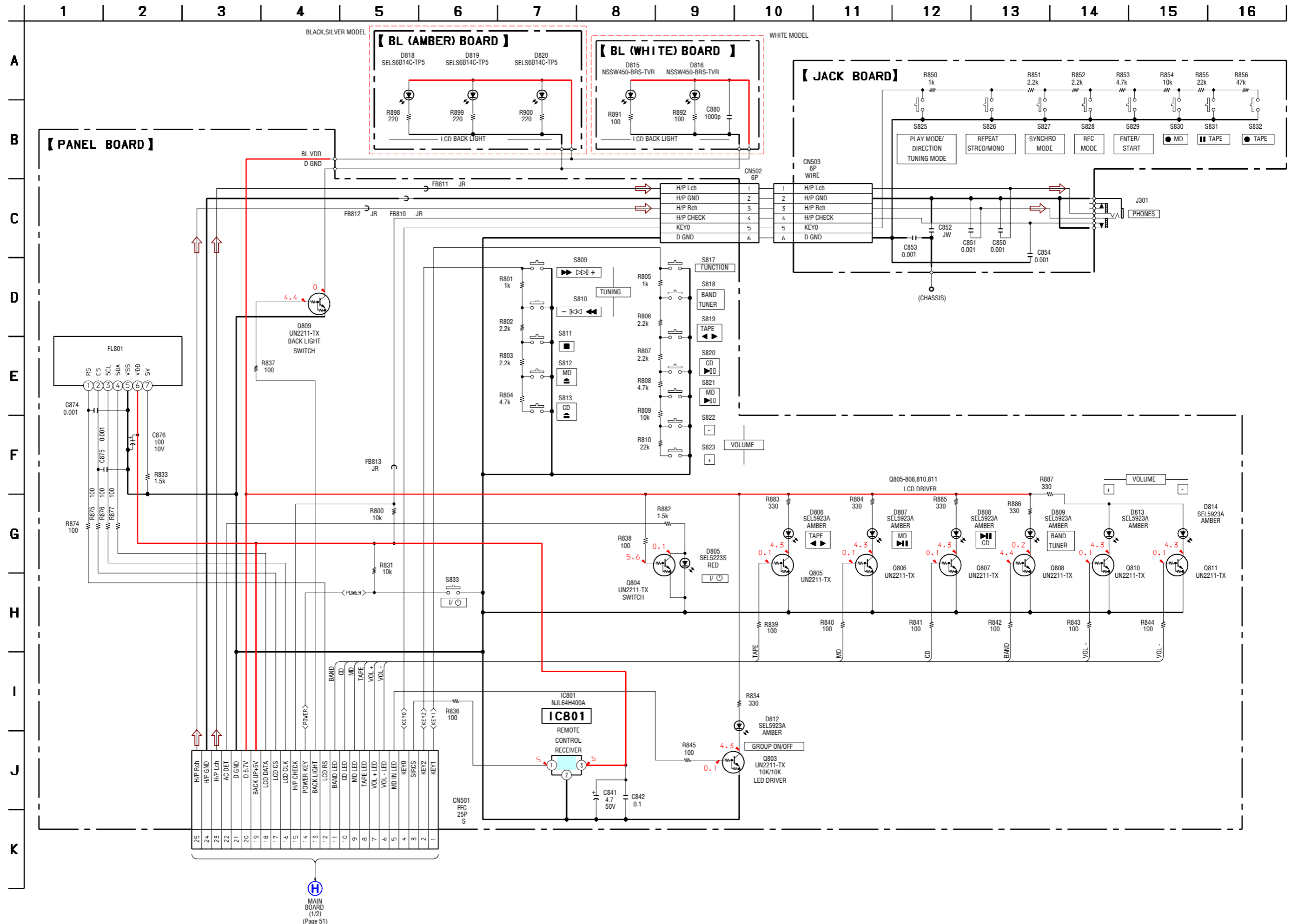




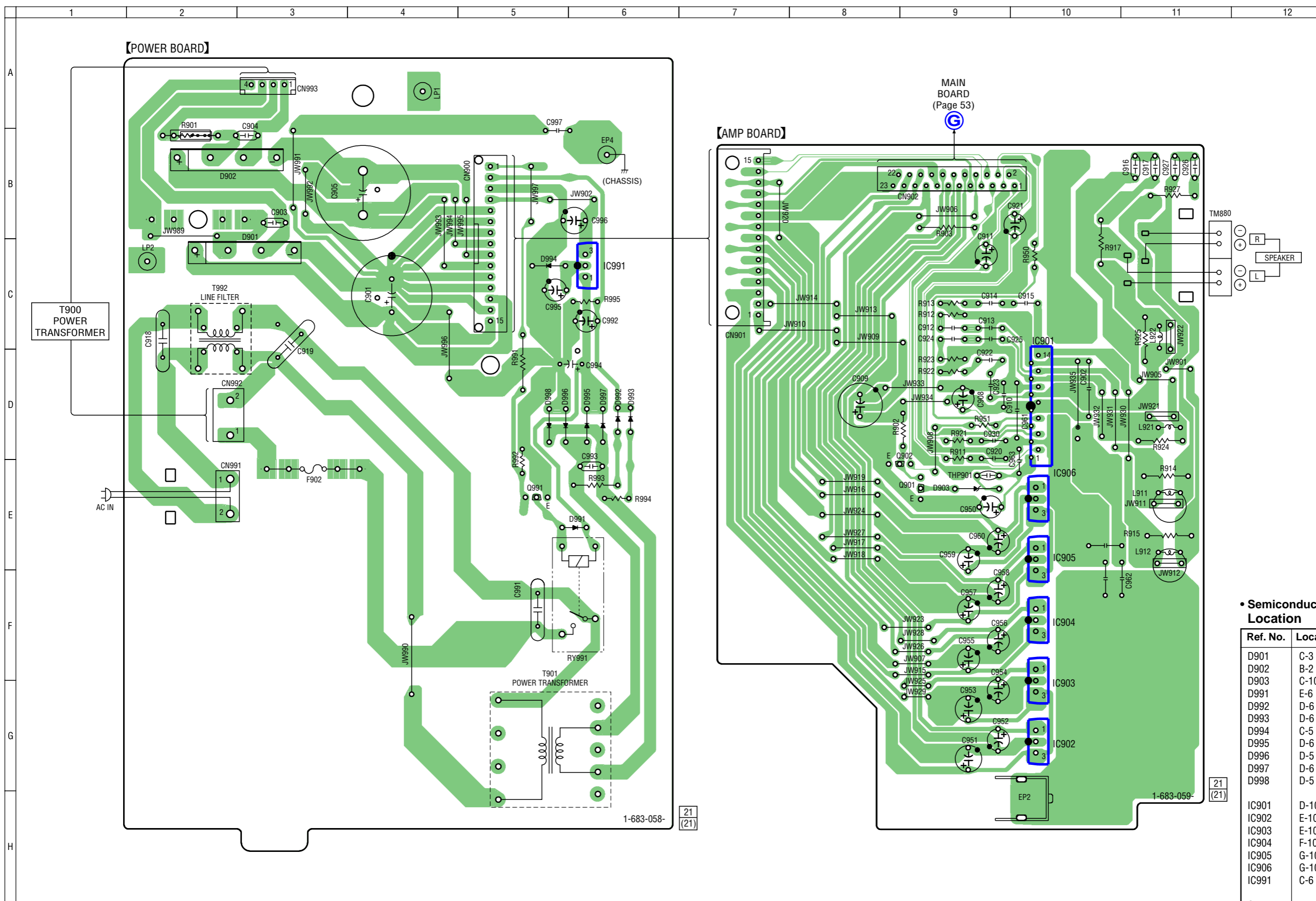
• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D805	C-12	Q803	D-11
D806	E-11	Q804	C-12
D807	E-10	Q805	E-11
D808	G-10	Q806	E-9
D809	G-11	Q807	F-9
D812	D-12	Q808	F-11
D813	E-8	Q809	C-7
D814	G-8	Q810	E-8
D815	B-6	Q811	F-8
D816	B-6		
D818	B-5		
D819	C-5		
D820	C-5		
IC801	D-7		

6-16. SCHEMATIC DIAGRAM – PANEL BOARD, BL (AMBER), BL (WHITE), JACK BOARD –



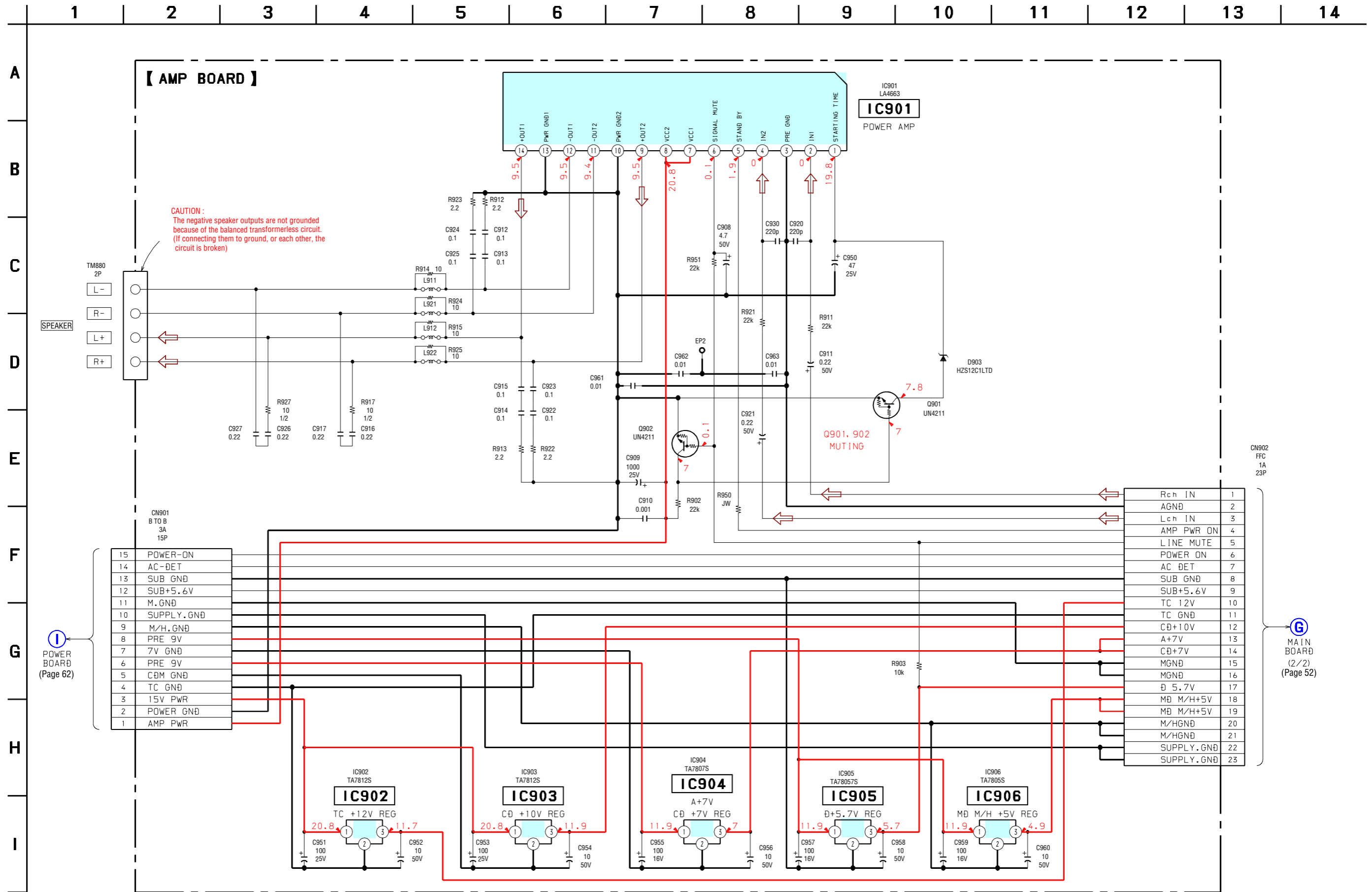
MAIN BOARD (1/2) (Page 51)

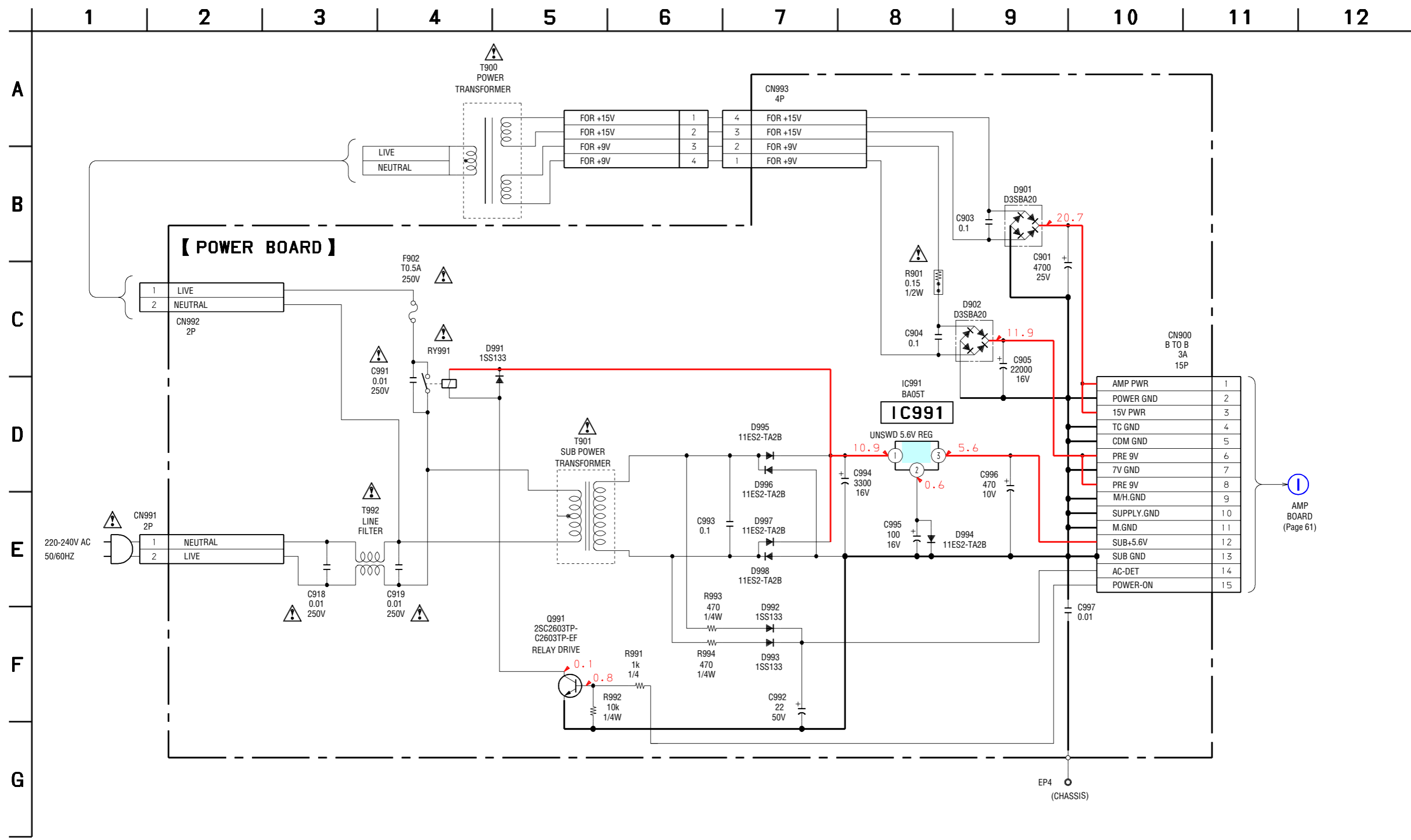


• Semiconductor Location

Ref. No.	Location
D901	C-3
D902	B-2
D903	C-10
D991	E-6
D992	D-6
D993	D-6
D994	C-5
D995	D-6
D996	D-5
D997	D-6
D998	D-5
IC901	D-10
IC902	E-10
IC903	E-10
IC904	F-10
IC905	G-10
IC906	G-10
IC991	C-6
Q901	E-9
Q902	E-9
Q991	E-5

6-18. SCHEMATIC DIAGRAM – AMP BOARD –





## 6-20. IC PIN FUNCTION DESCRIPTION

## • IC101 CXA2523AR RF AMPLIFIER (BD BOARD)

Pin No.	Pin Name	I/O	Description
1	I	I	I-V converted RF signal I input
2	J	I	I-V converted RF signal J input
3	VC	O	Middle point voltage (+1.5V) generation output
4 to 9	A to F	I	Signal input from the optical pick-up detector
10	PD	I	Light amount monitor input
11	APC	O	Laser APC output
12	APCREF	I	Reference voltage input for setting laser power
13	GND	—	Ground
14	TEMPI	I	Temperature sensor connection
15	TEMPR	O	Reference voltage output for the temperature sensor
16	SWDT	I	Serial data input from the CXD2662R
17	SCLK	I	Serial clock input from the CXD2662R
18	XLAT	I	Latch signal input from the CXD2662R "L": Latch
19	XSTBY	I	Stand by signal input "L": Stand by
20	F0CNT	I	Center frequency control voltage input of BPF22, BPF3T, EQ from the CXD2662R
21	VREF	O	Reference voltage output (Not used)
22	EQADJ	I/O	Center frequency setting pin for the internal circuit EQ
23	3TADJ	I/O	Center frequency setting pin for the internal circuit BPF3T
24	Vcc	—	+3V power supply
25	WBLADJ	I/O	Center frequency setting pin for the internal circuit BPF22
26	TE	O	Tracking error signal output to the CXD2662R
27	CSLED	—	External capacitor connection pin for the sled error signal LPF
28	SE	O	Sled error signal output to the CXD2662R
29	ADFM	O	FM signal output of ADIP
30	ADIN	I	ADIP signal comparator input ADFM is connected with AC coupling
31	ADAGC	—	External capacitor connection pin for AGC of ADIP
32	ADFG	O	ADIP duplex signal output to the CXD2662R
33	AUX	O	I3 signal/temperature signal output to the CXD2662R (Switching with a serial command)
34	FE	O	Focus error signal output to the CXD2662R
35	ABCD	O	Light amount signal output to the CXD2662R
36	BOTM	O	RF/ABCD bottom hold signal output to the CXD2662R
37	PEAK	O	RF/ABCD peak hold signal output to the CXD2662R
38	RF	O	RF equalizer output to the CXD2662R
39	RFAGC	—	External capacitor connection pin for the RF AGC circuit
40	AGCI	I	Input to the RF AGC circuit The RF amplifier output is input with AC coupling
41	COMPO	O	User comparator output (Not used)
42	COMPP	I	User comparator input (Fixed at "L")
43	ADDC	I/O	External capacitor pin for cutting the low band of the ADIP amplifier
44	OPO	O	User operation amplifier output (Not used)
45	OPN	I	User operation amplifier inversion input (Fixed at "L")
46	RFO	O	RF amplifier output
47	MORFI	I	Groove RF signal is input with AC coupling
48	MORFO	O	Groove RF signal output

## • Abbreviation

APC: Auto Power Control

AGC: Auto Gain Control

## • IC151 CXD2662R DIGITAL SIGNAL PROCESSOR, DIGITAL SERVO SIGNAL PROCESSOR (BD BOARD)

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

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



Pin No.	Pin Name	I/O	Description
58	AVSS	—	Ground (Analog)
59	PCO	O (3)	Phase comparison output for the recording/playback EFM master PLL
60	FILI	I (A)	Filter input for the recording/playback EFM master PLL
61	FILO	O (A)	Filter output for the recording/playback EFM master PLL
62	CLTV	I (A)	Internal VCO control voltage input for the recording/playback EFM master PLL
63	PEAK	I (A)	Light amount signal peak hold input from the CXA2523AR
64	BOTM	I (A)	Light amount signal bottom hold input from the CXA2523AR
65	ABCD	I (A)	Light amount signal input from the CXA2523AR
66	FE	I (A)	Focus error signal input from the CXA2523AR
67	AUX1	I (A)	Auxiliary A/D input
68	VC	I (A)	Middle point voltage (+1.5V) input from the CXA2523AR
69	ADIO	O (A)	Monitor output of the A/D converter input signal (Not used)
70	AVDD	—	+3V power supply (Analog)
71	ADRT	I (A)	A/D converter operational range upper limit voltage input (Fixed at "H")
72	ADRB	I (A)	A/D converter operational range lower limit voltage input (Fixed at "L")
73	AVSS	—	Ground (Analog)
74	SE	I (A)	Sled error signal input from the CXA2523AR
75	TE	I (A)	Tracking error signal input from the CXA2523AR
76	DCHG	I (A)	Connected to +3V power supply
77	APC	I (A)	Error signal input for the laser digital APC (Fixed at "L")
78	ADFG	I (S)	ADIP duplex FM signal input from the CXA2523AR (22.05 ± 1 kHz)
79	F0CNT	O	Filter f0 control output to the CXA2523AR
80	XLRF	O	Control latch output to the CXA2523AR
81	CKRF	O	Control clock output to the CXA2523AR
82	DTRF	O	Control data output to the CXA2523AR
83	APCREF	O	Reference PWM output for the laser APC
84	TEST0	O	PWM output for the laser digital APC (Not used)
85	TRDR	O	Tracking servo drive PWM output (-)
86	TFDR	O	Tracking servo drive PWM output (+)
87	DVDD	—	+3V power supply (Digital)
88	FFDR	O	Focus servo drive PWM output (+)
89	FRDR	O	Focus servo drive PWM output (-)
90	FS4	O	176.4 kHz clock signal output (X'tal) (Not used)
91	SRDR	O	Sled servo drive PWM output (-)
92	SFDR	O	Sled servo drive PWM output (+)
93	SPRD	O	Spindle servo drive PWM output (-)
94	SPFD	O	Spindle servo drive PWM output (+)
95	FGIN	I (S)	Test input (Fixed at "L")
96 to 98	TEST1 to TEST3	I	
99	DVSS	—	Ground (Digital)
100	EFMO	O	EFM output when recording

- Abbreviation

EFM: Eight to Fourteen Modulation

PLL : Phase Locked Loop

VCO: Voltage Controlled Oscillator

## • IC306 M30622MGA-A83FP MASTER CONTROL (MAIN BOARD)

Pin No.	Pin Name	I/O	Description
1	NC	—	Not used (ground)
2	POWER-ON	O	Power relay ON/OFF signal output (H=ON,L=OFF)
3	XTSL	O	XTSL signal output for CXD3068Q
4	SIRCS	I	Remote control receiver data signal input
5	DA_MUTE	O	D/A (MD) muting control signal output
6	SOL_COT	O	Solenoid(TC) control signal output (H=ON,L=OFF)
7	CAPM-CNT1	O	Capstan motor control signal output (H=REV,L=FWD,L=STOP)
8	BYTE	—	Not used (ground)
9	CNVSS	—	Connected ground
10	XCIN	I	Sub clock input (32.768kHz)
11	XCOUT	O	Sub clock output (32.768kHz)
12	RESET	I	System reset signal input
13	XOUT	O	Main system clock output (16MHz)
14	VSS	—	Ground
15	XIN	I	Main system clock input (16MHz)
16	VCC	—	Power supply (+5V)
17	NMI	I	Not used (connected to Vcc)
18	RDS-INT	I	RDS interrupt signal input
19	CD-SCOR	I	CD Q-data request signal input
20	MDM_POWER	O	MD P-DOWN control signal output
21	OPT-SEL	O	Optical select signal output
22	CD-XLT	O	CD latch signal output
23	CD-SENS	I	CD sense signal input
24	BU_PWM3	O	BU PWM3 signal output
25	LD_ON	O	CD LD ON signal output
26	BU_PWM2	O	BU PWM2 signal output
27	CD-CLK	O	CD clock signal output
28	BU_PWM1	O	BU PWM1 signal output
29	IIC_CLK	O	IIC clock signal output
30	IIC_DATA	O	IIC data signal output
31	FLS_SO	—	Not used (open)
32	SQ-DATA-IN	I	CD SQ data signal input
33	SQ-CLK	O	CD SQ clock signal output
34	CD-DATA	O	CD data signal output
35	LCD-DATA	O	LCD data signal output
36	LCD-CS	O	LCD CS signal output
37	LCD-SCK	O	LCD clock signal output
38	TC-MUTE	O	Tape deck line muting signal output (H=ON,L=OFF)
39	CD_XRST	O	CD reset signal output
40	IN SW	I	Tray close detect signal input
41	OPEN SW	I	Tray open detect signal input
42	TRAY-CLOSE	O	Loading motor control signal output
43	TRAY-OPEN	O	Loading motor control signal output
44	REC/PB/PASS	O	REC/PB/PASS select signal output
45	B_PLAY	I	B deck play signal input
46	NC	—	Not used (Fixed at "H")
47	NC	—	Not used
48	TC REC MUTE	O	TC REC muting ON/OFF signal output
49	MD RESET	O	MD reset signal output
50	CD-POWER	O	CD power control signal output (H=ON,L=OFF)
51	RDS-DATA	I	RDS data signal input

Pin No.	Pin Name	I/O	Description
52	H/P_CHECK	I	Headphone detect signal input
53	H/P_MUTE	O	Headphone muting control signal output
54	AMP_MUTE	O	Power amplifier muting control signal output (L=ON,H=OFF)
55	VOL_CLK	O	Volume clock signal output
56	VOL_DATA	O	Volume data signal output
57	STK_POWER	O	Power amplifier ON/OFF signal output (H=ON,L=OFF)
58	LINE-MUTE	O	Line muting control signal output (H=ON,L=OFF)
59	NC	—	Not used
60	NC	—	Not used
61	NC	—	Not used
62	VCC	—	Power supply (+5V)
63	NC	—	Not used
64	VSS	—	Ground
65	NC	—	Not used
66	FM_ON	O	FM ON/OFF signal output (H=ON,L=OFF)
67	TU_ON	O	Tuner power ON/OFF signal output (H=ON,L=OFF)
68	TUNED	I	TUNED detect signal input
69	ST_DOUT	I	Tuner data signal input
70	ST_CLK	O	Tuner clock output
71	ST_DIN	O	Tuner data signal output
72	ST_CE	O	Tuner chip enable output
73	$\overline{\text{AC-CNT}}$	I	Reset signal input
74	POWER_KEY	I	Power key detect signal input
75	PC_POWER	I	PC power detect signal input for PC LINK
76	LCD_BACK_LIGHT	O	LCD back light LED control signal output
77	LCD-RS	O	LCD reset signal output
78	TUNER-LED	O	Tuner LED control signal output
79	CD_LED	O	CD LED control signal output
80	MD_LED	O	MD LED control signal output
81	TC_LED	O	TC LED control signal output
82	VOL_A	I	Volume signal input from rotary encoder
83	VOL_B	I	Volume signal input from rotary encoder
84	TAPE REC	O	TAPE REC LED control signal output
85	MD REC	O	MD REC LED control signal output
86	TREBLE-B	I	TREBLE signal input from rotary encoder
87	MD_GROUP_LED	O	MD GROUP LED control signal output
88	DSG-LED	O	DSG LED control signal output
89	KEY0	I	Key input signal from function switch
90	KEY1	I	Key input signal from function switch
91	KEY2	I	Key input signal from function switch
92	KEY3	I	Key input signal from function switch
93	B-SHUT(SENSOR)	I	B deck reel pulse signal input
94	B_HALF/REC	I	B deck half detect signal input
95	MODEL_IN	I	Model input
96	AG	—	Analog ground
97	SPEC_IN	I	Version select input
98	VREF	—	Analog voltage reference
99	AVCC	—	Analog power supply
100	SOFT_TEST	O	Soft check output (open)

## • IC701 M30803MG-A07FP SYSTEM CONTROL (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	—	—	Not used
6	—	—	Not used
7	—	—	Not used
8	BYTE	I	Data bus changed input (Connected to ground)
9	CNVSS	I	Selects processor mode (Connected to ground)
10	XIN-T	I	Sub clock input (32kHz)
11	XOUT-T	O	Sub clock output (32kHz)
12	S-RST	I	System reset input
13	XOUT	O	Main clock output (10MHz)
14	VSS	—	Ground
15	XIN	I	Main clock input (10MHz)
16	VCC	I	Power supply
17	NMI	I	Fixed at H (Pull-up)
18	DQSY	I	Digital in sync input (Record system)
19	P-DOWN	I	Power down detection input (L: Power down)
20	SQSY	I	ADIP (MO)sync or sub code Q (PIT) sync input from CXD1662R (Playback system)
21	(KB-CLK)	—	Not used
22	(KB-DATA)	—	Not used
23	I2C-BUSY	O	I2C cable connect check (L: Active)
24	(A1-OUT)	—	Not used
25	XINT	I	Interrupt status input from CXD2662R
26	(BEEP)	—	Not used
27	(XELT)	—	Not used
28	(I2C-POWER)	—	Not used
29	I2C-CLK	I/O	I2C serial clock input/output
30	I2C-DAT	I/O	I2C serial data input/output
31	SWDT	O	Writing data signal output to the serial bus
32	SRDT	I	Reading data signal input from the serial bus
33	SCLK	O	Clock signal output to the serial bus
34	(KB-CLK-CTL)	—	Not used
35	(CLIP-TX0)	—	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 claw detection input from the protection detection switch (H: Protect)
45	EEP-CLK	O	Clock output to EEP-ROM
46	CE	I	Fixed at H (Pull-up)
47	EEP-WP	O	EEP-ROM write protect signal output (L: Enable to write)
48	XBUSY(MNT2)	I	Busy signal input from CXD2662R
49	OUT-SW	I	Detection signal input from the loading out detection switch
50	XLATCH	O	Latch signal output to DSP IC
51	PLAY-SW	I	Detection signal input from the playback position detection switch (L: Play)

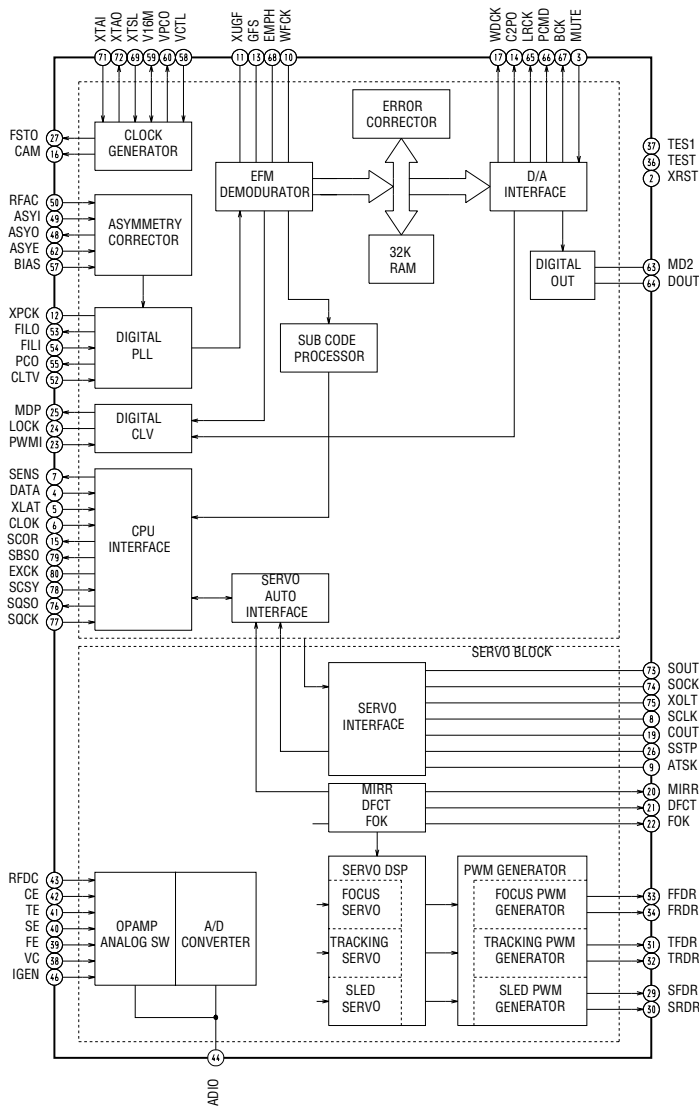
Pin No.	Pin Name	I/O	Description
52	D-RESET	O	Digital reset signal output to CXD2662R and Motor driver
53	REC-SW	I	Detection signal input from the recording position detection switch (L: Record)
54	WRPWR	O	Write power ON/OFF output (L:OFF, H: ON)
55	LIMIT-IN	I	Detection signal input from the limit switch (L: Sled limit in, H: Sled limit out)
56	MOD	O	Modulation signal output to 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 CXD2662R
59	SHOCK (MNT1)	I	Track jump signal input from CXD2662R
60	EEP-DATA	I/O	Data input/output to/from EEP-ROM
61	REFLECT	I	Detection signal input from the reflect detection switch (L: Low reflection rate)
62	VCC	—	Power supply (+3.3V)
63	—	—	Not used
64	VSS	—	Ground
65	LOAD-LO	O	Voltage control signal output to loading motor (L: High voltage, H: Low voltage)
66	LOAD-OUT	O	Loading motor control signal (H: Out)
67	LOAD-IN	O	Loading motor control signal (H: In)
68	(MODEL0)	—	Not used
69	(MODEL1)	—	Not used
70	MODEL2	I	Model setting input
71	MODEL3	I	Model setting input
72	SPDIF-CUT	O	Power supply for PLL control signal output to D/A converter
73	—	—	Not used
74	—	—	Not used
75	—	—	Not used
76	DAC-MUTE	O	Muting signal output to D/A converter
77	LINE-MUTE	—	Not used
78	DA-RESET	O	Reset signal output to D/A converter
79	SLICER-SEL	O	IEC958 input select signal output to D/A converter
80	SPDIF-LOCK	I	Lock signal input from D/A converter
81	OPTSEL	O	Optical input select signal output
82	ADPDWN	O	Power control signal output to A/D converter
83	—	—	Not used
84	—	—	Not used
85	TP1	—	Not used
86	TP2	—	Not used
87	TP3	—	Not used
88	TP4	—	Not used
89	IOP	—	Not used
90	—	—	Not used
91	—	—	Not used
92	—	—	Not used
93	—	—	Not used
94	—	—	Not used
95	—	—	Not used
96	AVSS	—	Ground (Analogue)
97	—	—	Not used
98	VREF	I	Reference voltage input
99	AVCC	—	Power supply (Analogue)
100	—	—	Not used

# HCD-M10

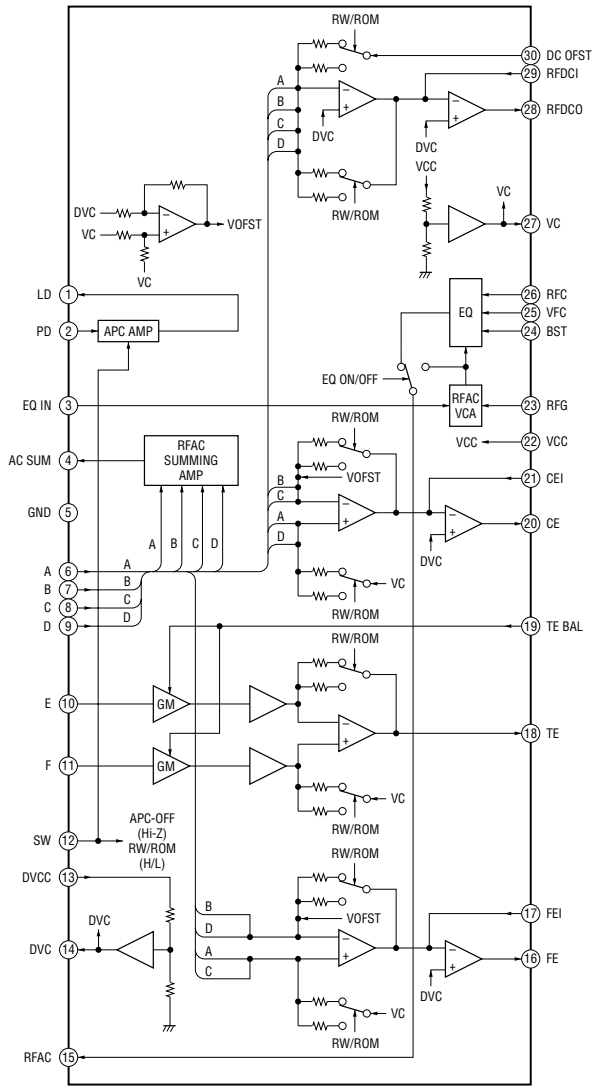
## • IC BLOCK DIAGRAMS

### – CD BOARD –

#### IC101 CXD3068Q

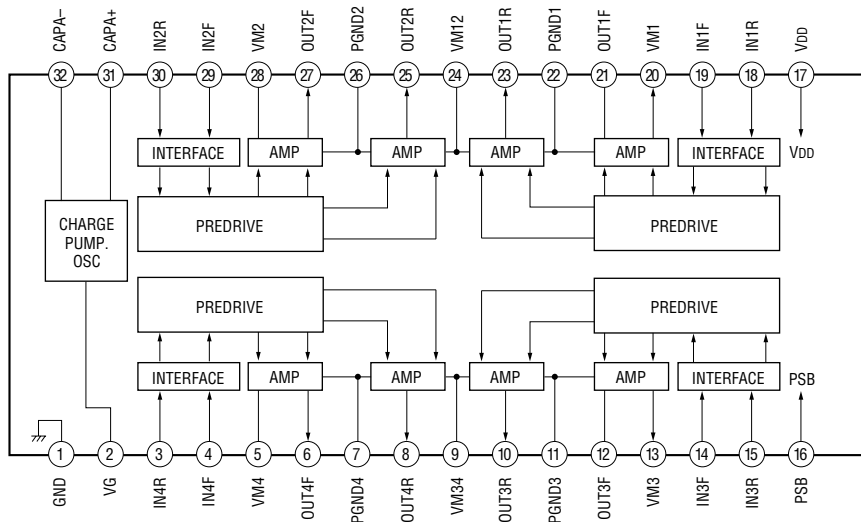


#### IC103 CXA2581N-T4

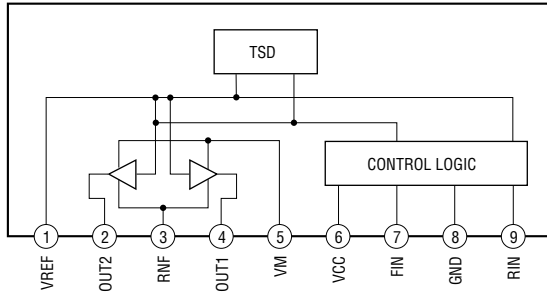


### – BD BOARD –

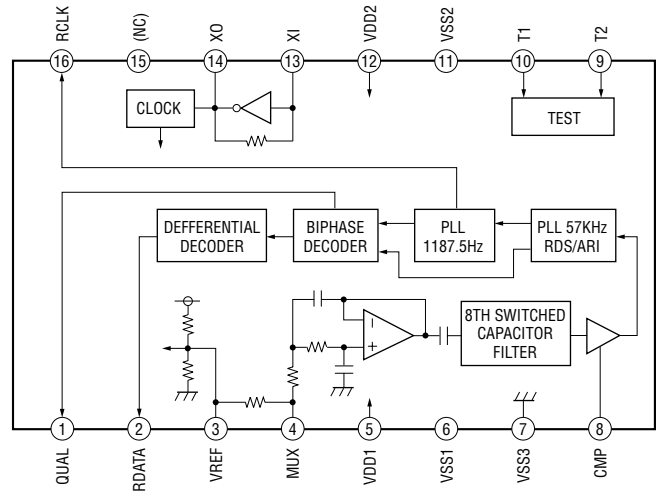
#### IC141 BH6519FS-E2



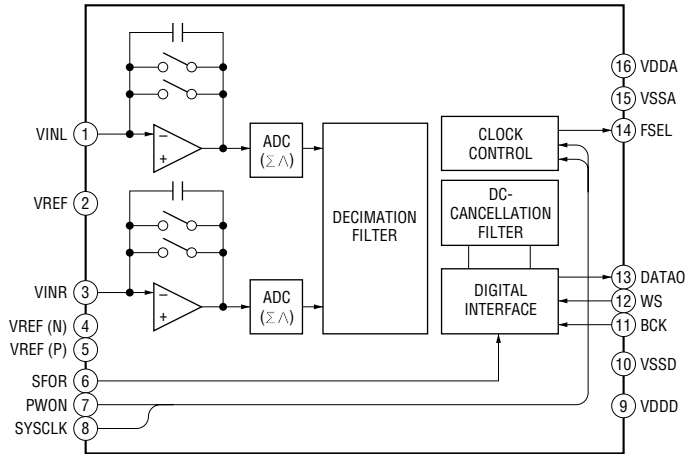
**- MAIN BOARD, MD DIGITAL BOARD -**  
**IC603 BA6956AN (MAIN BOARD)**  
**IC871 BA6956AN (MD DIGITAL BOARD)**



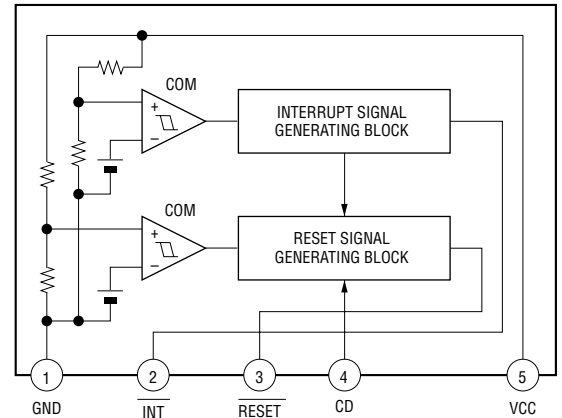
**- MAIN BOARD -**  
**IC301 BU1924F**



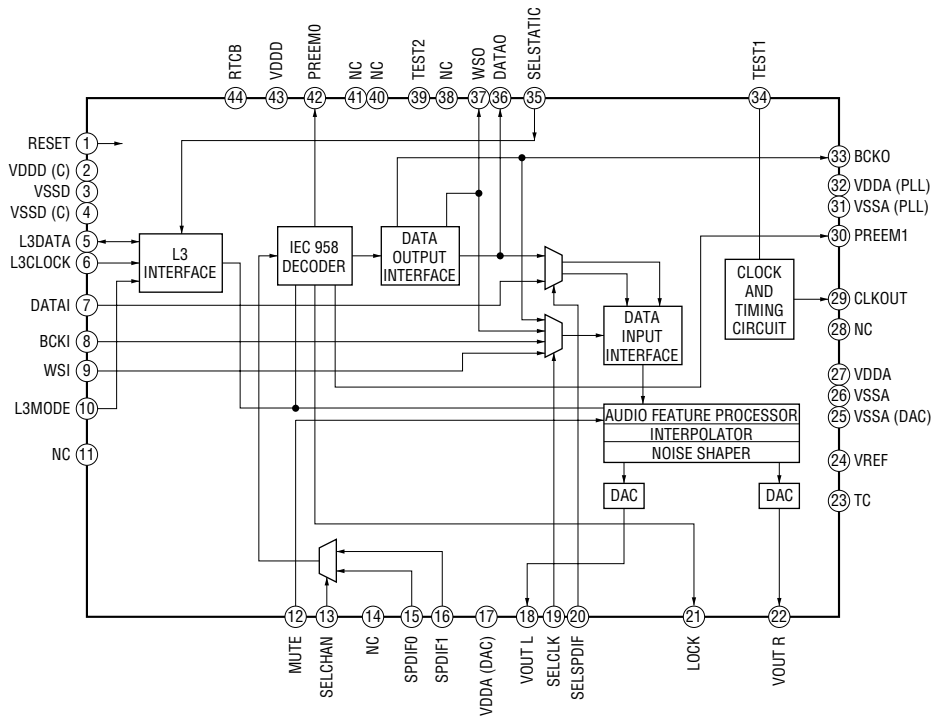
**- MD DIGITAL BOARD -**  
**IC201  $\mu$ DA1360TS/N1.118**



**IC861 M62016L**



**IC211  $\mu$ DA1350AH**



## SECTION 7 EXPLODED VIEWS

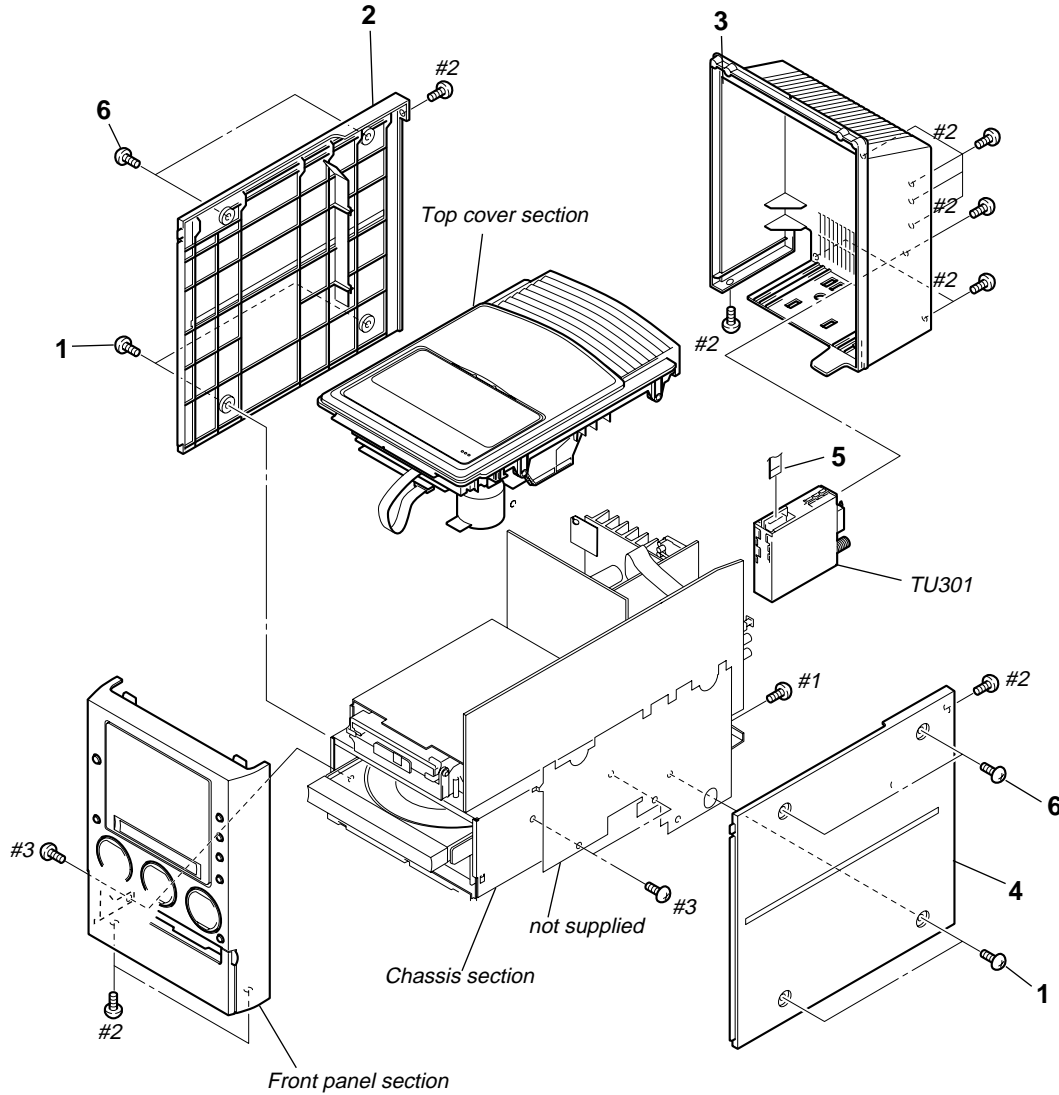
**NOTE:**

- -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  
 HK : Hong Kong model  
 SP : Singapore model  
 KR : Korea model  
 AUS : Australian model
  - Color Indication of Appearance Parts Example:  
 KNOB, BALANCE (WHITE) . . . (RED)
- ↑
↑  
 Parts of Color    Cabinet's Color

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

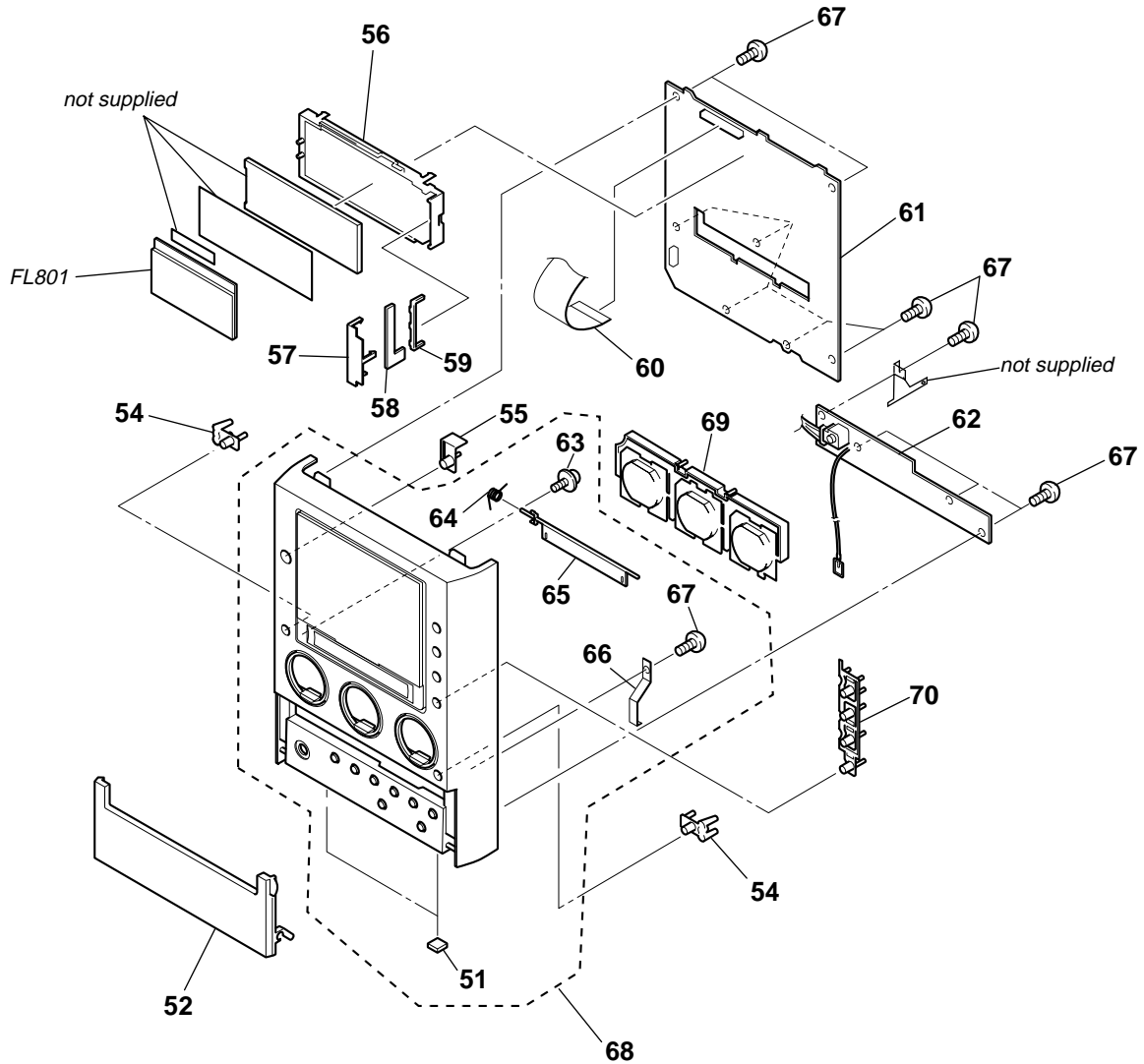
**7-1. CASE SECTION**



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
1	3-363-099-11	SCREW (CASE 3 TP2)		4	4-236-672-01	CASE (R) (WHITE)	
2	4-236-671-01	CASE (L) (WHITE)		4	4-236-672-11	CASE (R) (SILVER)	
2	4-236-671-11	CASE (L) (SILVER)		4	4-236-672-21	CASE (R) (BLACK)	
2	4-236-671-21	CASE (L) (BLACK)		5	1-773-004-11	WIRE (FLAT TYPE) (15 CORE)	
3	4-236-684-21	PANEL, BACK (WHITE,SILVER) (AEP,UK)		6	3-363-099-81	SCREW (CASE 3 TP2)	
3	4-236-684-32	PANEL, BACK (BLACK) (AEP,UK)		TU301	1-693-473-21	TUNER	
3	4-236-684-41	PANEL, BACK (HK,SP)		#1	7-685-646-71	SCREW +BVTP 3X8 TYPE2 IT-3	
3	4-236-684-61	PANEL, BACK (KR)		#2	7-685-647-91	SCREW +BVTP 3X10 TYPE2 TT(B)	
3	4-236-684-71	PANEL, BACK (AUS)		#3	7-685-781-01	SCREW +BVTP 3X6 (S)	

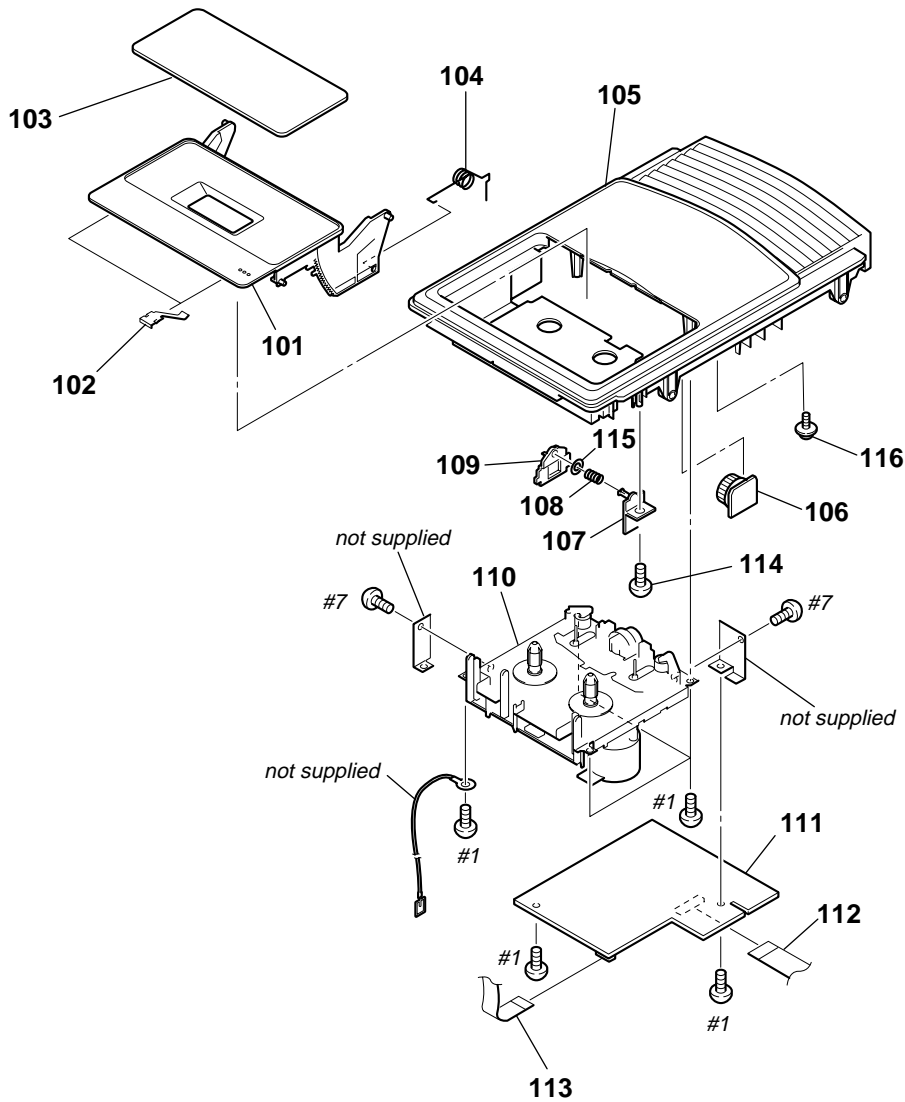


7-2. FRONT PANEL SECTION



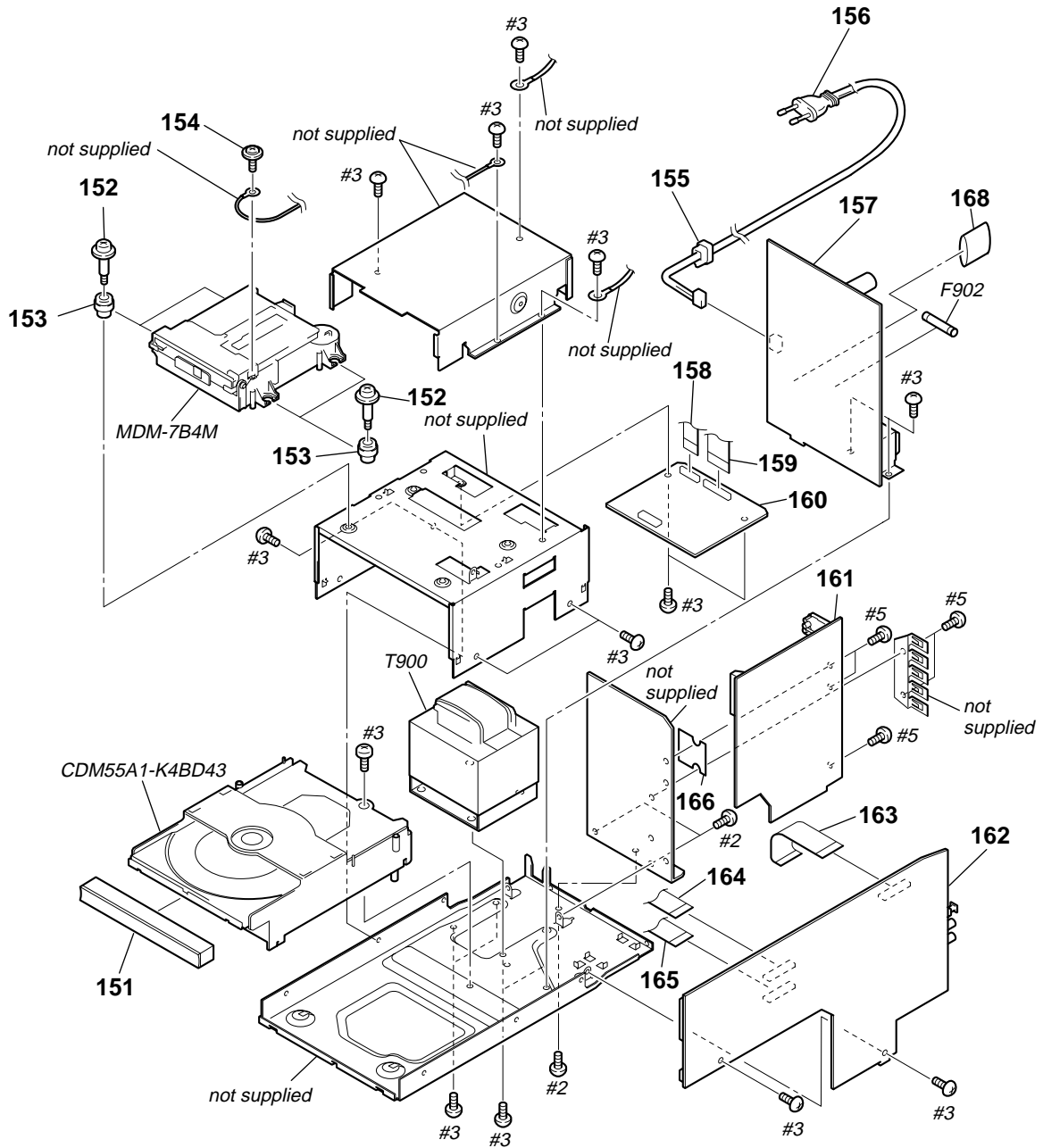
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
51	4-239-731-01	FOOT (FELT)		63	4-985-672-31	SCREW (+PTPWH M2.6), FLOATING	
52	4-236-664-01	LID (REC) (WHITE)		64	4-231-954-01	SPRING (LID MD), TORSION	
52	4-236-664-11	LID (REC) (SILVER)		65	4-231-949-21	LID (MD)	
52	4-236-664-21	LID (REC) (BLACK)		66	4-236-665-01	SPRING (LID REC), LEAF	
54	4-236-655-01	BUTTON (FUNCTION) (WHITE)		67	4-951-620-01	SCREW (2.6X8), +BVTP	
54	4-236-655-12	BUTTON (FUNCTION) (SILVER)		68	X-4954-559-5	PANEL ASSY/S, FRONT(AEP,UK: SILVER)	
54	4-236-655-21	BUTTON (FUNCTION) (BLACK)		68	X-4954-560-5	PANEL ASSY/S, FRONT (EXCEPT AEP,UK: SILVER)	
55	X-4954-199-1	BUTTON (POWER) ASSY/W (WHITE)		68	X-4954-561-4	PANEL ASSY/W, FRONT (EXCEPT AEP,UK,AUS: WHITE)	
55	X-4954-200-2	BUTTON (POWER) ASSY/S (SILVER)		68	X-4954-673-4	PANEL ASSY/W, FRONT (AEP,UK,AUS: WHITE)	
55	X-4954-201-1	BUTTON (POWER) ASSY/B (BLACK)		68	X-4954-674-4	PANEL ASSY/B, FRONT (AEP,UK: BLACK)	
56	4-236-667-01	HOLDER (LCD)		69	X-4954-202-2	BUTTON (PLAY) ASSY/W (WHITE)	
57	4-236-668-01	LID (LCD)		69	X-4954-203-2	BUTTON (PLAY) ASSY/S (SILVER)	
58	1-683-064-11	BL (WHITE) BOARD (WHITE)		69	X-4954-204-1	BUTTON (PLAY) ASSY/B (BLACK)	
58	1-683-065-11	BL (AMBER) BOARD (BLACK,SILVER)		70	4-236-654-01	BUTTON (TUNING) (WHITE)	
59	4-236-669-01	SPACER (LCD)		70	4-236-654-12	BUTTON (TUNING) (SILVER)	
60	1-773-217-11	WIRE (FLAT TYPE) (25 CORE)		70	4-236-654-21	BUTTON (TUNING) (BLACK)	
61	A-4728-616-A	PANEL BOARD, COMPLETE (AEP,UK)		FL801	1-804-557-11	DISPLAY PANEL, LIQUID CRYSTAL	
61	A-4728-622-A	PANEL BOARD, COMPLETE (EXCEPT AEP,UK)					
62	1-683-060-21	JACK BOARD					

7-3. TOP COVER SECTION



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
101	4-236-674-05	LID (TC) (WHITE)		107	4-224-116-01	BRACKET (PUSH)	
101	4-236-674-15	LID (TC) (SILVER)		108	4-224-117-11	SPRING (PUSH), COMPRESSION	
101	4-236-674-25	LID (TC) (BLACK)		109	4-236-678-01	CATCHER, PUSH	
102	4-236-677-01	SPRING (TC), LEAF					
103	4-236-675-01	WINDOW (TC) (WHITE)		110	1-796-101-21	DECK, MECH	
103	4-236-675-11	WINDOW (TC) (SILVER)		111	A-4728-617-A	TC BOARD, COMPLETE (AEP,UK)	
103	4-236-675-21	WINDOW (TC) (BLACK)		111	A-4728-623-A	TC BOARD, COMPLETE (EXCEPT AEP,UK)	
104	4-236-676-01	SPRING (TC), TORSION COIL		112	1-773-051-11	WIRE (FLAT TYPE) (17 CORE)	
105	4-236-673-01	CASE (T) (WHITE)		113	1-769-904-11	WIRE (FLAT TYPE) (9 CORE)	
105	4-236-673-11	CASE (T) (SILVER)		114	4-951-620-01	SCREW (2.6X8), +BVTP	
105	4-236-673-21	CASE (T) (BLACK)		115	3-701-439-11	WASHER	
106	4-224-104-41	DAMPER		116	4-933-134-11	SCREW (+PTPWH M2.6X8)	
				#1	7-685-646-71	SCREW +BVTP 3X8 TYPE2 IT-3	
				#7	7-685-861-01	SCREW +BVTT 2.6X5 (S)	

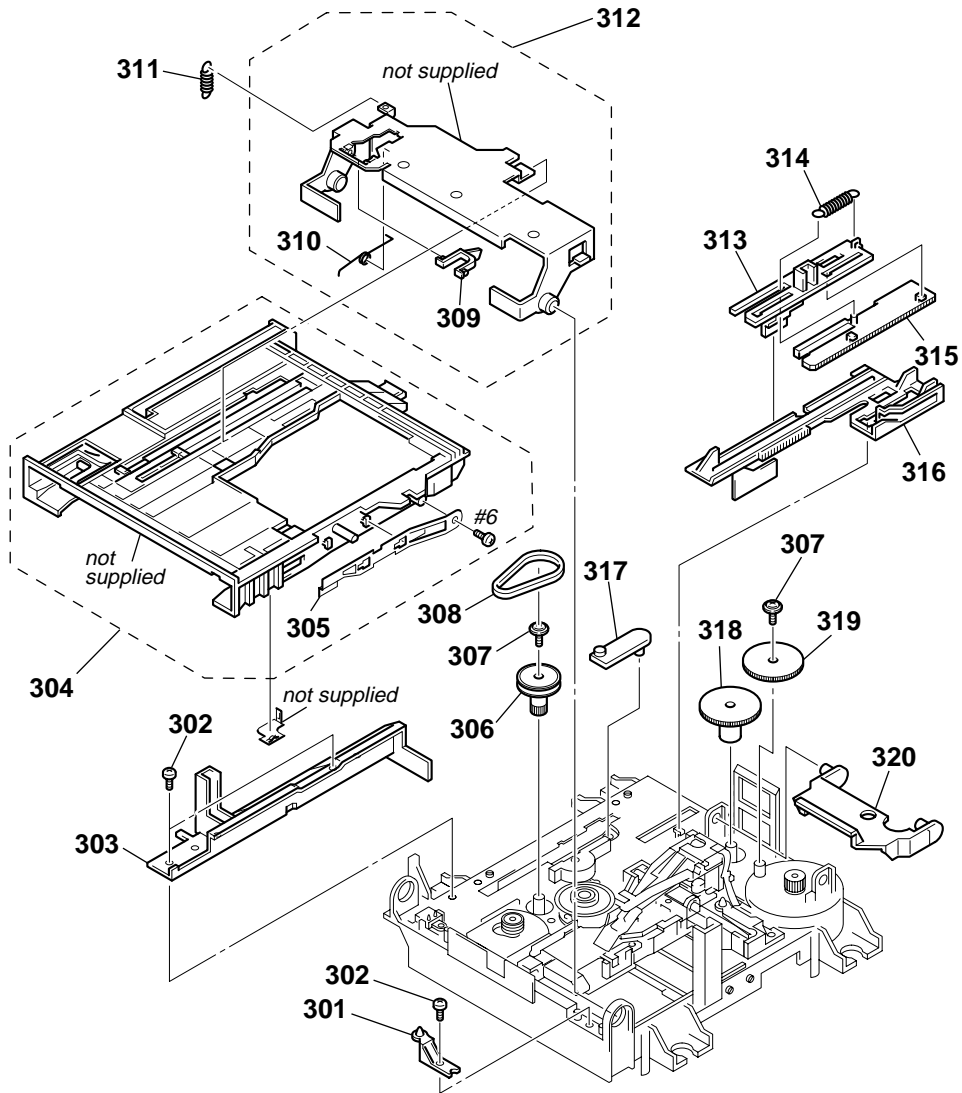
7-4. CHASSIS SECTION



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
151	4-236-670-01	PANEL, LOADING (WHITE)		161	A-4727-748-A	AMP BOARD, COMPLETE (AEP,UK)	
151	4-236-670-11	PANEL, LOADING (SILVER)		161	A-4728-621-A	AMP BOARD, COMPLETE (EXCEPT AEP,UK)	
151	4-236-670-21	PANEL, LOADING (BLACK)		162	A-4727-749-A	MAIN BOARD, COMPLETE (AEP,UK)	
152	4-228-643-01	SCREW (+BVTTWH M3), STEP		162	A-4728-625-A	MAIN BOARD, COMPLETE (EXCEPT AEP,UK)	
153	4-231-555-01	INSULATOR		* 163	1-773-177-11	WIRE (FLAT TYPE) (23 CORE)	
154	4-231-113-01	SCREW (1.7X3), BTN		164	1-773-123-11	WIRE (FLAT TYPE) (19 CORE)	
155	3-703-244-00	BUSHING (2104), CORD		165	1-823-468-11	WIRE (FLAT TYPE) (22 CORE)	
△ 156	1-769-079-11	CORD, POWER (KR)		166	4-237-248-01	SHEET, INSULATING	
△ 156	1-775-787-61	CORD, POWER (EXCEPT KR,AUS)		* 168	4-374-846-01	COVER, CAPACITOR, CAP TYPE	
△ 156	1-696-845-11	CORD, POWER (AUS)		△ F902	1-532-389-31	FUSE T0.5A 250V	
157	A-4727-747-A	POWER BOARD, COMPLETE (AEP,UK)		△ T900	1-437-548-11	TRANSFORMER, POWER	
157	A-4728-620-A	POWER BOARD, COMPLETE (EXCEPT AEP,UK)		#2	7-685-647-91	SCREW +BVTP 3X10 TYPE2 TT(B)	
158	1-792-830-11	WIRE (FLAT TYPE) (17 CORE)		#3	7-685-871-01	SCREW +BVTT 3X6 (S)	
159	1-792-829-11	WIRE (FLAT TYPE) (27 CORE)		#5	7-685-650-91	SCREW +BVTP 3X16 TYPE2 TT(B)	
160	A-4727-745-A	MD DIGITAL BOARD, COMPLETE					

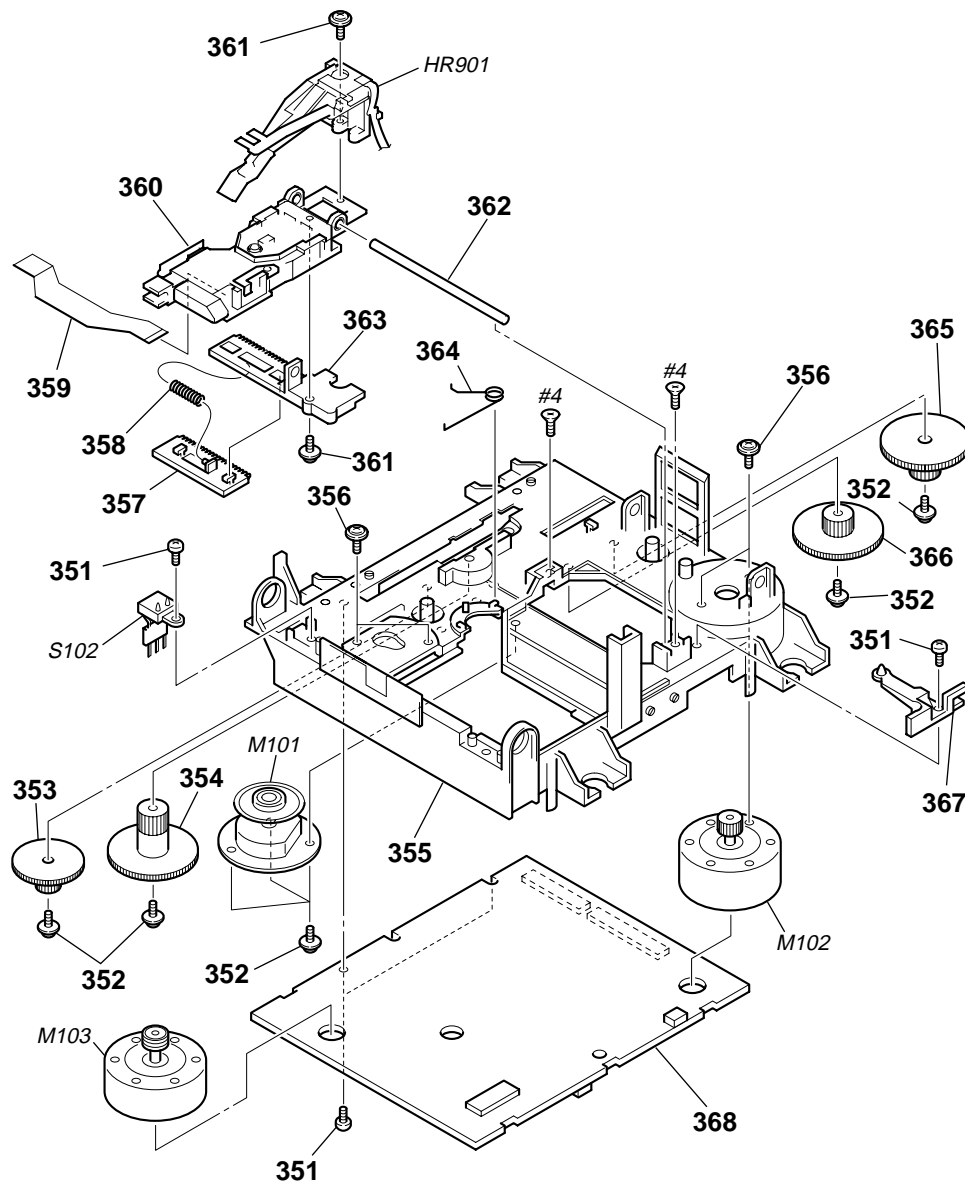
The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

7-5. MD MECHANISM DECK SECTION-1 (MDM-7B4M)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
* 301	4-996-267-01	BASE (BU-D)		312	A-4680-638-B	RETAINER COMPLETE ASSY	
302	4-231-319-01	SCREW (2X6) CZN, +B (P) TRI		313	4-226-995-01	SLIDER (EJ)	
303	4-226-994-01	GUIDE (L)		314	4-227-013-01	SPRING (EJ), TENSION	
304	A-4735-075-B	HOLDER ASSY		315	4-226-996-01	LIMITTER (EJ)	
305	X-4952-665-1	SPRING (SHT) ASSY, LEAF		316	4-226-997-04	SLIDER	
306	4-227-002-01	GEAR, PULLEY		317	4-226-998-01	LEVER (CHG)	
307	3-372-761-01	SCREW (M1.7), TAPPING		318	4-227-007-01	GEAR (SB)	
308	4-227-025-01	BELT (LOADING)		319	4-227-006-01	GEAR (SA)	
309	A-468-063-8A	LOCK (HOLDER)		320	4-226-999-01	LEVER (HEAD)	
310	4-229-533-02	SPRING (STOPPER), TORSION		#6	7-685-850-04	SCREW +BVTT 2X3 (S)	
311	4-231-118-01	SPRING (HOLDER), TENSION					

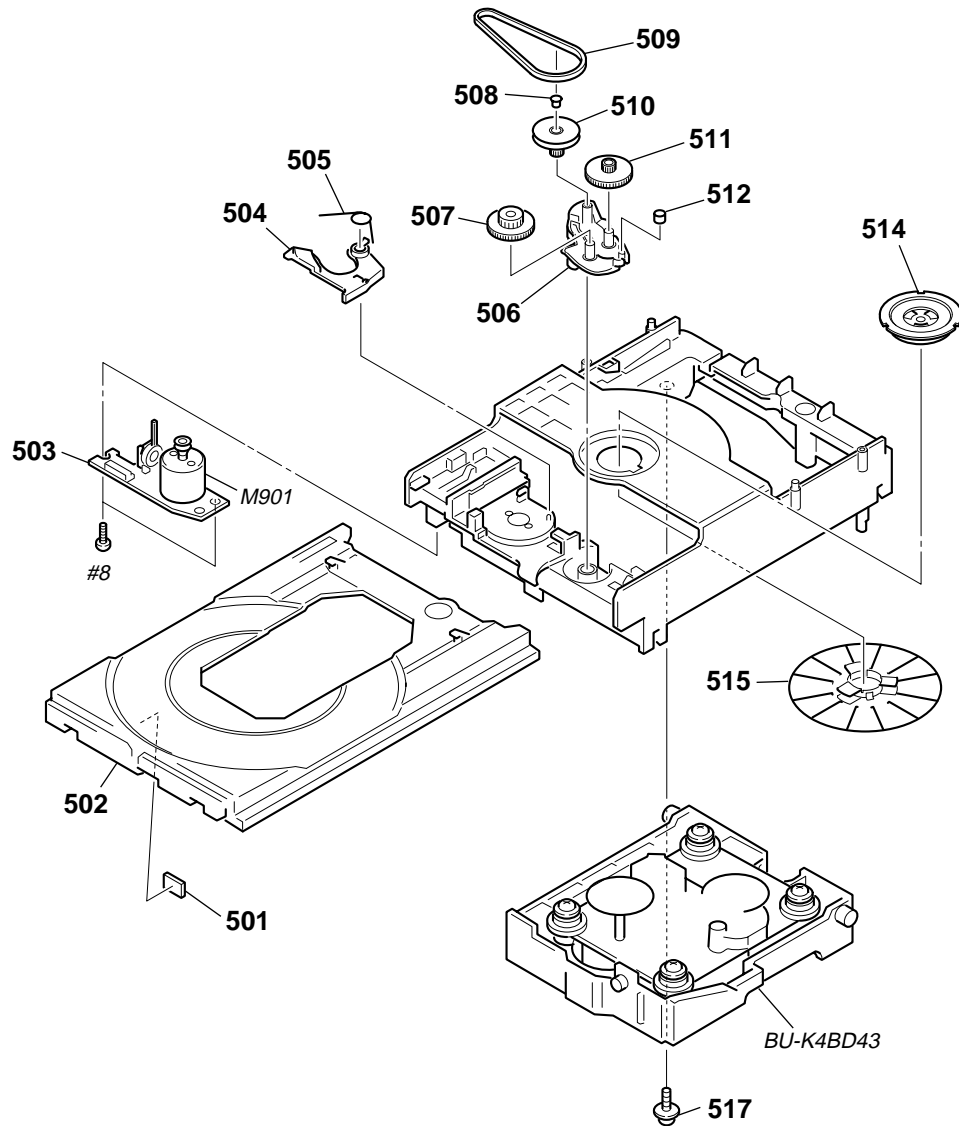
7-6. MD MECHANISM DECK-2 (MDM-7B4M)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
351	4-231-319-01	SCREW (2X6) CZN, +B (P) TRI		363	4-226-992-01	BASE, SL	
352	3-372-761-01	SCREW (M1.7), TAPPING		364	4-230-716-01	SPRING (SPDL), TORSION	
353	4-227-008-01	GEAR (SC)		365	4-227-004-01	GEAR (LC)	
354	4-227-009-01	GEAR (SD)		366	4-227-005-01	GEAR (LD)	
355	4-226-989-01	CHASSIS		367	4-226-990-04	BASE (BU-A)	
356	4-232-270-01	SCREW (1.7X3.5), +PWH		368	A-4726-344-A	BD BOARD, COMPLETE	
357	4-226-993-01	RACK		HR901	1-500-670-22	HEAD, OVER LIGHT	
358	4-227-014-01	SPRING (RACK), COMPRESSION		M101	A-4735-757-A	MOTOR ASSY, SPINDLE	
359	1-678-514-11	PWB, FLEXIBLE		M102	A-4735-076-A	MOTOR ASSY, SLED	
△360	A-4672-541-A	DEVICE, MINIDISK KMS-260E/Z-NP		M103	A-4735-074-A	MOTOR ASSY, LOADING	
361	4-988-560-01	SCREW (+P 1.7X6)		S102	1-771-957-11	SWITCH, PUSH (2 KEY)	
362	4-996-265-01	SHAFT, MAIN		#4	7-685-204-19	SCREW +KTP 2X6 TYPE2 NON-SLIT	

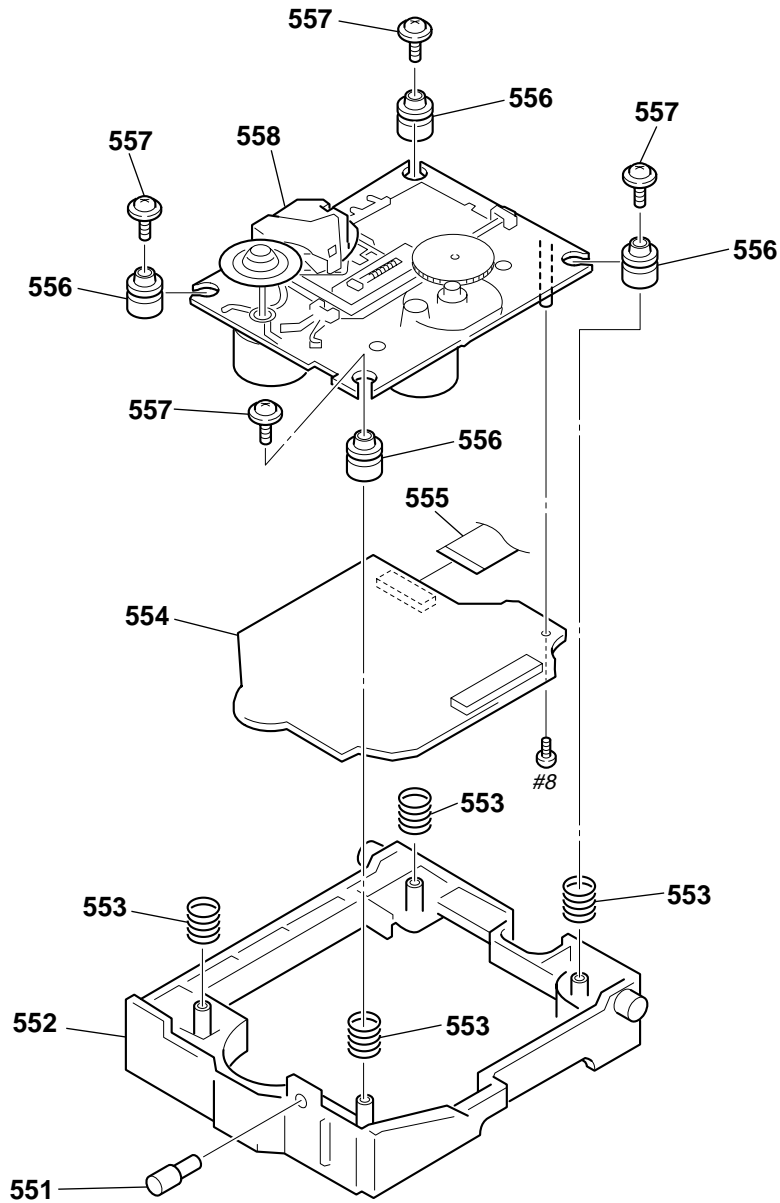
The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

## 7-7. CD MECHANISM DECK-1 (CDM55A1-K4BD43)



<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>
501	4-925-315-31	DAMPER		510	4-220-234-01	PULLEY (LDG)	
502	4-224-894-01	TRAY		511	4-220-237-01	GEAR (A)	
503	1-674-336-12	LOADING BOARD		512	4-221-815-01	ROLLER	
504	4-220-229-01	LEVER (SW)		514	A-4735-082-A	MAGNET ASSY	
505	4-220-239-01	SPRING, TORSION		515	A-4735-081-A	PULLEY (AT-55F) ASSY	
506	4-220-233-01	CAM (CDM55)		517	4-985-672-01	SCREW (+PTPWHM2.6), FLOATING	
507	4-220-238-01	GEAR (B)		M901	A-4735-337-A	MOTOR (LD) ASSY	
508	4-227-598-01	SPACER (55)		#8	7-685-533-19	SCREW +BTP 2.6X6 TYPE2 N-S	
509	4-221-816-01	BELT (CDM55)					

7-8. CD MECHANISM DECK-2 (BU-K4BD43)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
551	4-229-358-01	SHAFT (BU21)		556	4-229-005-21	INSULATOR	
552	4-231-780-01	HOLDER (213D)		557	4-985-672-01	SCREW (+PTPWHM2.6), FLOATING	
553	4-229-004-01	SPRING, COMPRESSION		△ 558	A-4735-357-A	DEVICE, OPTICAL KSM213DHAP/Z-NP	
554	A-4728-686-A	CD BOARD, COMPLETE		#8	7-685-533-19	SCREW +BTP 2.6X6 TYPE2 N-S	
555	1-823-145-11	WIRE, PARALLEL (FFC) (16 CORE)					

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

**SECTION 8  
ELECTRICAL PARTS LIST**

**NOTE:**

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- **RESISTORS**  
All resistors are in ohms.  
METAL: metal-film resistor  
METAL OXIDE: Metal Oxide-film resistor  
F: nonflammable

- **CAPACITORS:**  
uF:  $\mu$ F
- **COILS**  
uH:  $\mu$ H
- **SEMICONDUCTORS**  
In each case, u:  $\mu$ , for example:  
uA...:  $\mu$ A... , uPA... ,  $\mu$ PA... ,  
uPB... ,  $\mu$ PB... , uPC... ,  $\mu$ PC... ,  
uPD... ,  $\mu$ PD...  
• **Abbreviation**  
HK : Hong Kong model  
SP : Singapore model  
KR : Korea model  
AUS: Australian model

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

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

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
	A-4727-748-A	AMP BOARD, COMPLETE (AEP,UK)				< DIODE >	
	A-4728-621-A	AMP BOARD, COMPLETE (EXCEPT AEP,UK)					
		*****		D903	8-719-935-70	DIODE HZS11B2LTD	
		< CAPACITOR >				< IC >	
C908	1-126-963-11	ELECT	4.7uF 20% 50V	IC901	6-702-093-01	IC LA4663N	
C909	1-126-942-61	ELECT	1000uF 20% 25V	IC902	8-759-231-58	IC TA7812S	
C910	1-162-294-31	CERAMIC	0.001uF 10% 50V	IC903	8-759-231-58	IC TA7812S	
C911	1-126-957-11	ELECT	0.22uF 20% 50V	IC904	8-759-071-48	IC TA7807S	
C912	1-127-888-21	CERAMIC	0.1uF 10% 50V	IC905	8-759-158-62	IC TA78057S	
C913	1-127-888-21	CERAMIC	0.1uF 10% 50V	IC906	8-759-231-53	IC TA7805S	
C914	1-127-888-21	CERAMIC	0.1uF 10% 50V			< COIL >	
C915	1-127-888-21	CERAMIC	0.1uF 10% 50V	L911	1-422-009-13	COIL, AIR-CORE	
C916	1-136-169-00	FILM	0.22uF 5% 50V	L912	1-422-009-13	COIL, AIR-CORE	
C917	1-136-169-00	FILM	0.22uF 5% 50V	L921	1-422-009-13	COIL, AIR-CORE	
C920	1-162-286-21	CERAMIC	220PF 10% 50V	L922	1-422-009-13	COIL, AIR-CORE	
C921	1-126-957-11	ELECT	0.22uF 20% 50V			< TRANSISTOR >	
C922	1-127-888-21	CERAMIC	0.1uF 10% 50V	Q901	8-729-900-80	TRANSISTOR DTC114ES	
C923	1-127-888-21	CERAMIC	0.1uF 10% 50V	Q902	8-729-900-80	TRANSISTOR DTC114ES	
C924	1-127-888-21	CERAMIC	0.1uF 10% 50V			< RESISTOR >	
C925	1-127-888-21	CERAMIC	0.1uF 10% 50V	R902	1-249-433-11	CARBON 22K 5% 1/4W	
C926	1-136-169-00	FILM	0.22uF 5% 50V	R903	1-249-429-11	CARBON 10K 5% 1/4W	
C927	1-136-169-00	FILM	0.22uF 5% 50V	R911	1-249-433-11	CARBON 22K 5% 1/4W	
C930	1-162-286-21	CERAMIC	220PF 10% 50V	R912	1-249-385-11	CARBON 2.2 5% 1/6W F	
C950	1-126-947-11	ELECT	47uF 20% 25V	R913	1-249-385-11	CARBON 2.2 5% 1/6W F	
C951	1-104-665-11	ELECT	100uF 20% 25V	R914	1-260-076-11	CARBON 10 5% 1/2W	
C952	1-126-964-11	ELECT	10uF 20% 50V	R915	1-260-076-11	CARBON 10 5% 1/2W	
C953	1-104-665-11	ELECT	100uF 20% 25V	R917	1-260-076-11	CARBON 10 5% 1/2W	
C954	1-126-964-11	ELECT	10uF 20% 50V	R921	1-249-433-11	CARBON 22K 5% 1/4W	
C955	1-126-933-11	ELECT	100uF 20% 16V	R922	1-249-385-11	CARBON 2.2 5% 1/6W F	
C956	1-126-964-11	ELECT	10uF 20% 50V	R923	1-249-385-11	CARBON 2.2 5% 1/6W F	
C957	1-126-933-11	ELECT	100uF 20% 16V	R924	1-260-076-11	CARBON 10 5% 1/2W	
C958	1-126-964-11	ELECT	10uF 20% 50V	R925	1-260-076-11	CARBON 10 5% 1/2W	
C959	1-126-933-11	ELECT	100uF 20% 16V	R927	1-260-076-11	CARBON 10 5% 1/2W	
C960	1-126-964-11	ELECT	10uF 20% 50V	R951	1-249-433-11	CARBON 22K 5% 1/4W	
C961	1-127-876-21	CERAMIC	0.01uF 10% 50V			< RELAY >	
C962	1-127-876-21	CERAMIC	0.01uF 10% 50V	RY991	1-755-276-11	RELAY, POWER	
C963	1-127-876-21	CERAMIC	0.01uF 10% 50V				
		< CONNECTOR >					
* CN901	1-770-732-11	CONNECTOR, BOARD TO BOARD 15P					
CN902	1-784-784-11	CONNECTOR, FFC 23P					



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
		< THERMISTOR >					
THP901	1-807-796-11	THERMISTOR		C166	1-125-891-11	CERAMIC CHIP 0.47uF 10%	10V
				C167	1-164-245-11	CERAMIC CHIP 0.015uF 10%	25V
				C169	1-164-156-11	CERAMIC CHIP 0.1uF	25V
				C173	1-164-156-11	CERAMIC CHIP 0.1uF	25V
		< TERMINAL BOARD >					
TM880	1-816-048-11	TERMINAL BOARD (SPEAKERS)		C174	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
*****				C180	1-117-370-11	CERAMIC CHIP 10uF	10V
	A-4726-344-A	BD BOARD, COMPLETE		C181	1-126-206-11	ELECT CHIP 100uF 20%	6.3V
		*****		C182	1-163-038-00	CERAMIC CHIP 0.1uF	25V
				C183	1-164-156-11	CERAMIC CHIP 0.1uF	25V
		< CAPACITOR >					
C101	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C184	1-117-970-11	ELECT CHIP 22uF 20%	10V
C102	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C185	1-131-872-11	CERAMIC CHIP 1000PF 10%	630V
C103	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C191	1-126-206-11	ELECT CHIP 100uF 20%	6.3V
C104	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V	C192	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C105	1-115-416-11	CERAMIC CHIP 0.001uF	5% 25V	C193	1-126-206-11	ELECT CHIP 100uF 20%	6.3V
C106	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C194	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C107	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C195	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C108	1-162-969-11	CERAMIC CHIP 0.0068uF	10% 25V	C196	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C109	1-164-677-11	CERAMIC CHIP 0.033uF	10% 16V	C1401	1-117-720-11	CERAMIC CHIP 4.7uF	10V
C110	1-163-038-00	CERAMIC CHIP 0.1uF	25V			< CONNECTOR >	
C111	1-117-720-11	CERAMIC CHIP 4.7uF	10V	CN101	1-766-833-21	CONNECTOR, FFC/FPC (ZIF) 21P	
C112	1-110-563-11	CERAMIC CHIP 0.068uF	10% 16V	CN102	1-784-835-21	CONNECTOR, FFC(LIF(NON-ZIF))27P	
C113	1-162-968-11	CERAMIC CHIP 0.0047uF	10% 50V	CN103	1-784-869-21	CONNECTOR, FFC(LIF(NON-ZIF))17P	
C114	1-125-837-11	CERAMIC CHIP 1uF	10% 6.3V	* CN104	1-580-055-21	PIN, CONNECTOR (SMD) 2P	
C115	1-162-966-11	CERAMIC CHIP 0.0022uF	10% 50V	CN105	1-784-859-21	CONNECTOR, FFC(LIF(NON-ZIF))7P	
C116	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V			< DIODE >	
C117	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	D101	8-719-988-61	DIODE 1SS355TE-17	
C118	1-165-176-11	CERAMIC CHIP 0.047uF	10% 16V	D181	8-719-080-81	DIODE FS1J6	
C119	1-165-176-11	CERAMIC CHIP 0.047uF	10% 16V	D183	8-719-080-81	DIODE FS1J6	
C120	1-164-156-11	CERAMIC CHIP 0.1uF	25V			< IC >	
C121	1-164-156-11	CERAMIC CHIP 0.1uF	25V	IC101	8-752-080-95	IC CXA2523AR	
C125	1-117-720-11	CERAMIC CHIP 4.7uF	10V	IC102	8-759-473-51	IC TLV2361CDBV	
C128	1-164-156-11	CERAMIC CHIP 0.1uF	25V	IC141	8-759-836-79	IC BH6519FS-E2	
C131	1-117-720-11	CERAMIC CHIP 4.7uF	10V	IC151	8-752-404-64	IC CXD2662R	
C132	1-164-156-11	CERAMIC CHIP 0.1uF	25V	IC153	8-759-671-27	IC MSM51V4400D-10TSK-FS	
C133	1-164-156-11	CERAMIC CHIP 0.1uF	25V	IC181	8-759-481-17	IC MC74ACT08DTR2	
C141	1-126-206-11	ELECT CHIP 100uF	20% 6.3V	IC190	8-759-677-64	IC L88M35T	
C142	1-164-156-11	CERAMIC CHIP 0.1uF	25V	IC195	8-759-640-41	IC BR24C08F-E2	
C143	1-164-156-11	CERAMIC CHIP 0.1uF	25V			< JUMPER RESISTOR >	
C144	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	JW201	1-216-295-00	SHORT 0	
C145	1-164-156-11	CERAMIC CHIP 0.1uF	25V	JW202	1-216-295-00	SHORT 0	
C151	1-117-370-11	CERAMIC CHIP 10uF	10V	JW203	1-216-295-00	SHORT 0	
C152	1-164-156-11	CERAMIC CHIP 0.1uF	25V	JW903	1-216-295-00	SHORT 0	
C153	1-164-156-11	CERAMIC CHIP 0.1uF	25V	JW904	1-216-295-00	SHORT 0	
C154	1-126-206-11	ELECT CHIP 100uF	20% 6.3V			< COIL >	
C155	1-164-156-11	CERAMIC CHIP 0.1uF	25V	L101	1-500-245-11	FERRITE 0uH	
C156	1-164-156-11	CERAMIC CHIP 0.1uF	25V	L102	1-500-245-11	FERRITE 0uH	
C157	1-164-156-11	CERAMIC CHIP 0.1uF	25V	L103	1-500-245-11	FERRITE 0uH	
C158	1-162-927-11	CERAMIC CHIP 100PF	5% 50V	L105	1-414-235-11	FERRITE 0uH	
C159	1-162-927-11	CERAMIC CHIP 100PF	5% 50V	L106	1-500-245-11	FERRITE 0uH	
C160	1-162-927-11	CERAMIC CHIP 100PF	5% 50V	L121	1-500-245-11	FERRITE 0uH	
C161	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	L122	1-500-245-11	FERRITE 0uH	
C162	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	L131	1-500-245-11	FERRITE 0uH	
C163	1-125-891-11	CERAMIC CHIP 0.47uF	10% 10V	L141	1-216-296-11	SHORT 0	
C164	1-162-927-11	CERAMIC CHIP 100PF	5% 50V	L142	1-216-296-11	SHORT 0	
C165	1-162-968-11	CERAMIC CHIP 0.0047uF	10% 50V				



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
		< DIODE >					
D815	8-719-079-49	DIODE NSSW450-BRS-TV		C239	1-115-412-11	CERAMIC CHIP 680PF 5%	25V
D816	8-719-079-49	DIODE NSSW450-BRS-TV		C240	1-115-412-11	CERAMIC CHIP 680PF 5%	25V
		< RESISTOR >		C241	1-164-360-11	CERAMIC CHIP 0.1uF	16V
R891	1-216-025-11	RES-CHIP 100 5%	1/10W	C242	1-126-204-11	ELECT CHIP 47uF 20%	16V
R892	1-216-025-11	RES-CHIP 100 5%	1/10W	C243	1-164-360-11	CERAMIC CHIP 0.1uF	16V
*****				C244	1-164-360-11	CERAMIC CHIP 0.1uF	16V
A-4728-686-A CD BOARD, COMPLETE				C245	1-126-204-11	ELECT CHIP 47uF 20%	16V
*****				C247	1-164-227-11	CERAMIC CHIP 0.022uF 10%	25V
		< CAPACITOR >		C248	1-164-227-11	CERAMIC CHIP 0.022uF 10%	25V
C101	1-164-315-11	CERAMIC CHIP 470PF 5%	50V	C249	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C102	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V			< CONNECTOR >	
C103	1-164-315-11	CERAMIC CHIP 470PF 5%	50V	CN101	1-784-873-21	CONNECTOR,FFC(LIF(NON-ZIF))22P	
C104	1-162-967-11	CERAMIC CHIP 0.0033uF 10%	50V	CN102	1-794-424-11	CONNECTOR, FCC/FPC 16P	
C107	1-162-921-11	CERAMIC CHIP 33PF 5%	50V			< DIODE >	
				D101	8-719-056-77	DIODE UDZ-TE-17-3.9B	
C108	1-164-360-11	CERAMIC CHIP 0.1uF	16V			< FERRITE BEADS >	
C109	1-164-360-11	CERAMIC CHIP 0.1uF	16V	FB101	1-500-445-21	FERRITE 0UH	
C110	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V			< IC >	
C111	1-126-204-11	ELECT CHIP 47uF 20%	16V	IC101	8-752-408-73	IC CXD3068Q	
C112	1-126-204-11	ELECT CHIP 47uF 20%	16V	IC103	8-752-089-74	IC CXA2581N-T4	
C113	1-126-206-11	ELECT CHIP 100uF 20%	6.3V	IC702	8-759-640-22	IC BA5982FM	
C114	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V			< COIL >	
C115	1-126-204-11	ELECT CHIP 47uF 20%	16V	L107	1-500-445-21	FERRITE 0uH	
C117	1-164-360-11	CERAMIC CHIP 0.1uF	16V			< TRANSISTOR >	
C118	1-115-156-11	CERAMIC CHIP 1uF	10V	Q101	8-729-049-31	TRANSISTOR 2SB710A-RTX	
C119	1-115-156-11	CERAMIC CHIP 1uF	10V	Q102	8-759-068-54	TRANSISTOR KRA102S	
C120	1-126-204-11	ELECT CHIP 47uF 20%	16V	Q103	8-729-920-85	TRANSISTOR 2SD1664-T100-QR	
C121	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V			< RESISTOR >	
C151	1-162-968-11	CERAMIC CHIP 0.0047uF 10%	50V	R102	1-216-835-11	METAL CHIP 15K 5%	1/16W
C162	1-164-360-11	CERAMIC CHIP 0.1uF	16V	R103	1-216-845-11	METAL CHIP 100K 5%	1/16W
C201	1-126-204-11	ELECT CHIP 47uF 20%	16V	R104	1-216-835-11	METAL CHIP 15K 5%	1/16W
C202	1-164-360-11	CERAMIC CHIP 0.1uF	16V	R105	1-216-821-11	METAL CHIP 1K 5%	1/16W
C203	1-162-915-11	CERAMIC CHIP 10PF 0.5PF	50V	R109	1-216-846-11	METAL CHIP 120K 5%	1/16W
C204	1-162-915-11	CERAMIC CHIP 10PF 0.5PF	50V	R111	1-216-846-11	METAL CHIP 120K 5%	1/16W
C205	1-164-360-11	CERAMIC CHIP 0.1uF	16V	R113	1-216-828-11	METAL CHIP 3.9K 5%	1/16W
C209	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	R114	1-218-745-11	RES-CHIP 160K 5%	1/10W
C211	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V	R118	1-216-833-11	METAL CHIP 10K 5%	1/16W
C212	1-162-965-11	CERAMIC CHIP 0.0015uF 10%	50V	R120	1-216-846-11	METAL CHIP 120K 5%	1/16W
C213	1-162-967-11	CERAMIC CHIP 0.0033uF 10%	50V	R122	1-216-845-11	METAL CHIP 100K 5%	1/16W
C215	1-125-891-11	CERAMIC CHIP 0.47uF 10%	10V	R123	1-216-797-11	METAL CHIP 10 5%	1/16W
C216	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	R124	1-216-798-11	RES-CHIP 12 5%	1/10W
C217	1-126-206-11	ELECT CHIP 100uF 20%	6.3V	R125	1-216-836-11	METAL CHIP 18K 5%	1/16W
C221	1-164-360-11	CERAMIC CHIP 0.1uF	16V	R126	1-216-836-11	METAL CHIP 18K 5%	1/16W
C222	1-164-360-11	CERAMIC CHIP 0.1uF	16V	R127	1-216-845-11	METAL CHIP 100K 5%	1/16W
C224	1-164-360-11	CERAMIC CHIP 0.1uF	16V	R151	1-216-833-11	METAL CHIP 10K 5%	1/16W
C227	1-164-360-11	CERAMIC CHIP 0.1uF	16V	R152	1-216-841-11	METAL CHIP 47K 5%	1/16W
C228	1-115-156-11	CERAMIC CHIP 1uF	10V	R201	1-216-839-11	METAL CHIP 33K 5%	1/16W
C229	1-164-360-11	CERAMIC CHIP 0.1uF	16V	R202	1-216-833-11	METAL CHIP 10K 5%	1/16W
C230	1-126-206-11	ELECT CHIP 100uF 20%	6.3V	R203	1-216-845-11	METAL CHIP 100K 5%	1/16W
C231	1-126-206-11	ELECT CHIP 100uF 20%	6.3V	R204	1-216-827-11	METAL CHIP 3.3K 5%	1/16W
C234	1-162-968-11	CERAMIC CHIP 0.0047uF 10%	50V				
C235	1-162-968-11	CERAMIC CHIP 0.0047uF 10%	50V				
C236	1-125-891-11	CERAMIC CHIP 0.47uF 10%	10V				
C237	1-115-412-11	CERAMIC CHIP 680PF 5%	25V				
C238	1-115-412-11	CERAMIC CHIP 680PF 5%	25V				

# HCD-M10

CD	JACK	LOADING	MAIN
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Ref. No.	Part No.	Description		Remarks
R205	1-216-821-11	METAL CHIP	1K	5% 1/16W
R206	1-216-833-11	METAL CHIP	10K	5% 1/16W
R207	1-216-857-11	METAL CHIP	1M	5% 1/16W
R212	1-216-813-11	METAL CHIP	220	5% 1/16W
R213	1-216-864-11	METAL CHIP	0	5% 1/16W
R214	1-216-864-11	METAL CHIP	0	5% 1/16W
R215	1-216-864-11	METAL CHIP	0	5% 1/16W
R216	1-216-813-11	METAL CHIP	220	5% 1/16W
R217	1-216-829-11	METAL CHIP	4.7K	5% 1/16W
R218	1-216-821-11	METAL CHIP	1K	5% 1/16W
R219	1-216-821-11	METAL CHIP	1K	5% 1/16W
R221	1-216-813-11	METAL CHIP	220	5% 1/16W
R226	1-216-809-11	METAL CHIP	100	5% 1/16W
R227	1-216-845-11	METAL CHIP	100K	5% 1/16W
R228	1-216-853-11	METAL CHIP	470K	5% 1/16W
R229	1-216-825-11	METAL CHIP	2.2K	5% 1/16W
R230	1-216-789-11	METAL CHIP	2.2	5% 1/16W
R240	1-216-837-11	METAL CHIP	22K	5% 1/16W
R241	1-216-837-11	METAL CHIP	22K	5% 1/16W
R242	1-216-837-11	METAL CHIP	22K	5% 1/16W
R243	1-216-837-11	METAL CHIP	22K	5% 1/16W
R244	1-218-344-11	RES-CHIP	7.5K	5% 1/10W
R245	1-218-344-11	RES-CHIP	7.5K	5% 1/10W
R246	1-218-344-11	RES-CHIP	7.5K	5% 1/10W
R247	1-218-344-11	RES-CHIP	7.5K	5% 1/10W
R248	1-218-332-11	RES-CHIP	130K	5% 1/10W
R249	1-216-845-11	METAL CHIP	100K	5% 1/16W
R250	1-218-344-11	RES-CHIP	7.5K	5% 1/10W
R251	1-216-847-11	METAL CHIP	150K	5% 1/16W
R252	1-218-344-11	RES-CHIP	7.5K	5% 1/10W
R253	1-216-837-11	METAL CHIP	22K	5% 1/16W
R254	1-216-837-11	METAL CHIP	22K	5% 1/16W
< NETWORK RESISTOR >				
RN201	1-233-576-11	RES, CHIP NETWORK 100		
RN202	1-233-576-11	RES, CHIP NETWORK 100		
< SWITCH >				
S101	1-771-853-11	SWITCH, DETECTION (LIMIT IN)		
< VIBRATOR >				
X101	1-767-518-11	VIBRATOR, CRYSTAL (33.8MHz)		
*****				
	1-683-060-21	JACK BOARD		
*****				
< CAPACITOR >				
C850	1-127-888-21	CERAMIC	0.1uF	10% 50V
C851	1-127-888-21	CERAMIC	0.1uF	10% 50V
C853	1-162-294-31	CERAMIC	0.001uF	10% 50V
C854	1-162-294-31	CERAMIC	0.001uF	10% 50V
< JACK >				
J301	1-764-106-21	JACK (PHONES)		

Ref. No.	Part No.	Description		Remarks
< RESISTOR >				
R850	1-249-417-11	CARBON	1K	5% 1/4W F
R851	1-249-421-11	CARBON	2.2K	5% 1/4W F
R852	1-249-421-11	CARBON	2.2K	5% 1/4W F
R853	1-249-425-11	CARBON	4.7K	5% 1/4W F
R854	1-249-429-11	CARBON	10K	5% 1/4W
R855	1-249-433-11	CARBON	22K	5% 1/4W
R856	1-249-437-11	CARBON	47K	5% 1/4W
< SWITCH >				
S825	1-762-875-21	SWITCH, KEYBOARD (PLAY MODE/DIRECTION,TUNING MODE) (EXCEPT AEP,UK)		
S825	1-571-760-11	SWITCH, KEY BOARD (PLAY MODE/DIRECTION,TUNING MODE) (AEP,UK)		
S826	1-762-875-21	SWITCH, KEYBOARD (REPEAT,STEREO/MONO) (EXCEPT AEP,UK)		
S826	1-571-760-11	SWITCH, KEY BOARD (REPEAT,STEREO/MONO) (AEP,UK)		
S827	1-762-875-21	SWITCH, KEYBOARD (SYNCHRO MODE) (EXCEPT AEP,UK)		
S827	1-571-760-11	SWITCH, KEY BOARD (SYNCHRO MODE) (AEP,UK)		
S828	1-762-875-21	SWITCH, KEYBOARD (REC MODE) (EXCEPT AEP,UK)		
S828	1-571-760-11	SWITCH, KEY BOARD (REC MODE)(AEP,UK)		
S829	1-762-875-21	SWITCH, KEYBOARD (ENTER/START) (EXCEPT AEP,UK)		
S829	1-571-760-11	SWITCH, KEY BOARD (ENTER/START)(AEP,UK)		
S830	1-762-875-21	SWITCH, KEYBOARD (● MD)(EXCEPT AEP,UK)		
S830	1-571-760-11	SWITCH, KEY BOARD (● MD) (AEP,UK)		
S831	1-762-875-21	SWITCH, KEYBOARD (■ TAPE)(EXCEPT AEP,UK)		
S831	1-571-760-11	SWITCH, KEY BOARD (■ TAPE)(AEP,UK)		
S832	1-762-875-21	SWITCH, KEYBOARD (● TAPE)(EXCEPT AEP,UK)		
S832	1-571-760-11	SWITCH, KEY BOARD (● TAPE) (AEP,UK)		
*****				
	1-674-336-12	LOADING BOARD		
*****				
< CONNECTOR >				
* CN151	1-568-943-11	PIN, CONNECTOR 5P		
< SWITCH >				
S1	1-786-203-11	SWITCH, LEVER (SLIDE) (TRAY OPEN)		
*****				
	A-4727-749-A	MAIN BOARD, COMPLETE (AEP,UK)		
	A-4728-625-A	MAIN BOARD, COMPLETE (EXCEPT AEP,UK)		
*****				
< BATTERY >				
BT921	1-528-938-11	BATTERY, LITHIUM ION SECONDARY		
< CAPACITOR >				
C102	1-126-933-11	ELECT	100uF	20% 16V
C103	1-163-009-11	CERAMIC CHIP	0.001uF	10% 50V

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C105	1-104-665-11	ELECT	100uF 20% 10V	C374	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C110	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V	C460	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C111	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V	C600	1-104-665-11	ELECT 100uF 20% 10V	
C112	1-126-964-11	ELECT	10uF 20% 50V	C601	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C115	1-124-584-00	ELECT	100uF 20% 10V	C602	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C121	1-126-934-11	ELECT	220uF 20% 10V	C603	1-104-665-11	ELECT 100uF 20% 10V	
C122	1-126-933-11	ELECT	100uF 20% 16V	C605	1-126-924-11	ELECT 330uF 20% 6.3V	
C124	1-126-964-11	ELECT	10uF 20% 50V	C606	1-126-924-11	ELECT 330uF 20% 6.3V	
C125	1-126-933-11	ELECT	100uF 20% 16V	C607	1-104-665-11	ELECT 100uF 20% 10V	
C126	1-126-933-11	ELECT	100uF 20% 16V	C608	1-163-021-11	CERAMIC CHIP 0.01uF 10% 50V	
C131	1-126-934-11	ELECT	220uF 20% 10V	C609	1-126-924-11	ELECT 330uF 20% 10V	
C134	1-126-964-11	ELECT	10uF 20% 50V	C612	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C135	1-163-093-00	CERAMIC CHIP	10PF 5% 50V	C613	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C136	1-163-093-00	CERAMIC CHIP	10PF 5% 50V	C614	1-126-964-11	ELECT 10uF 20% 50V	
C232	1-126-964-11	ELECT	10uF 20% 50V	C622	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C262	1-126-964-11	ELECT	10uF 20% 50V	C623	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C281	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V	C624	1-126-964-11	ELECT 10uF 20% 50V	
C291	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V	C631	1-104-665-11	ELECT 100uF 20% 10V	
C301	1-126-933-11	ELECT	100uF 20% 16V (AEP,UK)	C632	1-163-001-11	CERAMIC CHIP 220PF 10% 50V	
C304	1-163-021-11	CERAMIC CHIP	0.01uF 10% 50V (AEP,UK)	C650	1-126-933-11	ELECT 100uF 20% 16V	
C305	1-126-961-11	ELECT	2.2uF 20% 50V (AEP,UK)	C651	1-104-665-11	ELECT 100uF 20% 10V	
C306	1-163-006-11	CERAMIC CHIP	560PF 10% 50V	C652	1-126-924-11	ELECT 330uF 20% 6.3V	
C307	1-126-933-11	ELECT	100uF 20% 16V (AEP,UK)	C653	1-163-021-11	CERAMIC CHIP 0.01uF 10% 50V	
C308	1-163-239-11	CERAMIC CHIP	33PF 5% 50V (AEP,UK)	C654	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C309	1-163-239-11	CERAMIC CHIP	33PF 5% 50V (AEP,UK)	C655	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	
C310	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V	C656	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C311	1-126-933-11	ELECT	100uF 20% 16V	C657	1-124-584-00	ELECT 100uF 20% 10V	
C312	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V	C658	1-163-021-11	CERAMIC CHIP 0.01uF 10% 50V	
C313	1-126-964-11	ELECT	10uF 20% 50V	C659	1-163-021-11	CERAMIC CHIP 0.01uF 10% 50V	
C350	1-104-665-11	ELECT	100uF 20% 10V	C660	1-163-021-11	CERAMIC CHIP 0.01uF 10% 50V	
C351	1-126-947-11	ELECT	47uF 20% 10V	C661	1-104-665-11	ELECT 100uF 20% 10V	
C352	1-126-964-11	ELECT	10uF 20% 50V	C662	1-126-933-11	ELECT 100uF 20% 16V	
C353	1-126-964-11	ELECT	10uF 20% 50V	C663	1-104-665-11	ELECT 100uF 20% 10V	
C354	1-126-964-11	ELECT	10uF 20% 50V	C801	1-163-231-11	CERAMIC CHIP 15PF 5% 50V	
C355	1-126-964-11	ELECT	10uF 20% 50V	C802	1-163-233-11	CERAMIC CHIP 18PF 5% 50V	
C356	1-126-964-11	ELECT	10uF 20% 50V	C803	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C357	1-126-964-11	ELECT	10uF 20% 50V	C804	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C358	1-126-964-11	ELECT	10uF 20% 50V	C906	1-104-665-11	ELECT 100uF 20% 10V	
C359	1-126-964-11	ELECT	10uF 20% 50V	C907	1-126-964-11	ELECT 10uF 20% 50V	
C360	1-126-964-11	ELECT	10uF 20% 50V			< CONNECTOR >	
C361	1-126-964-11	ELECT	10uF 20% 50V	CN101	1-785-321-11	PIN, CONNECTOR (STRAIGHT) 9P	
C362	1-126-964-11	ELECT	10uF 20% 50V	CN102	1-784-780-11	CONNECTOR, FFC 19P	
C363	1-137-365-11	MYLAR	0.0015uF 5% 50V	CN103	1-779-290-11	CONNECTOR,FFC(LIF(NON-ZIF))22P	
C364	1-137-365-11	MYLAR	0.0015uF 5% 50V	CN105	1-784-776-11	CONNECTOR, FFC 15P	
C365	1-136-155-00	FILM	0.015uF 5% 50V	CN202	1-785-331-11	PIN, CONNECTOR (LIGHT ANGLE)5P	
C366	1-136-155-00	FILM	0.015uF 5% 50V			< DIODE >	
C367	1-136-155-00	FILM	0.015uF 5% 50V	CN203	1-784-778-11	CONNECTOR, FFC 17P	
C368	1-136-155-00	FILM	0.015uF 5% 50V	* CN301	1-568-449-11	HOUSING, CONNECTOR(PC BOARD)3P	
C369	1-136-165-00	FILM	0.1uF 5% 50V	CN500	1-784-786-11	CONNECTOR, FFC 25P	
C370	1-136-165-00	FILM	0.1uF 5% 50V	CN903	1-784-784-11	CONNECTOR, FFC 23P	
C371	1-136-165-00	FILM	0.1uF 5% 50V			< DIODE >	
C372	1-136-165-00	FILM	0.1uF 5% 50V	D120	8-719-422-62	DIODE MA8062-L-TX	
C373	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V	D301	8-719-422-43	DIODE MA8051-H	
				D602	8-719-200-82	DIODE 11ES2	
				D651	8-719-200-82	DIODE 11ES2	
				D652	8-719-200-82	DIODE 11ES2	
				D653	8-719-200-82	DIODE 11ES2	

# HCD-M10

## MAIN

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
D923	8-719-988-61	DIODE 1SS355TE-17		Q131	8-729-107-43	TRANSISTOR 2SC3624-L18	
D924	8-719-988-61	DIODE 1SS355TE-17		Q260	8-729-025-28	TRANSISTOR 2SK1828	
D925	8-719-988-61	DIODE 1SS355TE-17					
D926	8-719-988-61	DIODE 1SS355TE-17		Q261	8-729-025-28	TRANSISTOR 2SK1828	
				Q301	8-729-620-05	TRANSISTOR 2SC2603-EF (AEP,UK)	
D927	8-719-988-61	DIODE 1SS355TE-17		Q911	8-729-900-80	TRANSISTOR DTC114ES	
D928	8-719-988-61	DIODE 1SS355TE-17		Q912	8-729-040-20	TRANSISTOR RT1P137L-TP	
D929	8-719-200-82	DIODE 11ES2		Q941	8-729-620-05	TRANSISTOR 2SC2603-EF	
D941	8-719-988-61	DIODE 1SS355TE-17					
D942	8-719-988-61	DIODE 1SS355TE-17				< RESISTOR >	
				R110	1-216-073-00	RES-CHIP 10K 5%	1/10W
D943	8-719-988-61	DIODE 1SS355TE-17		R111	1-216-073-00	RES-CHIP 10K 5%	1/10W
		< TERMINAL BOARD >		R112	1-216-073-00	RES-CHIP 10K 5%	1/10W
EP1	1-537-770-21	TERMINAL BOARD, GROUND		R113	1-216-073-00	RES-CHIP 10K 5%	1/10W
		< FERRITE BEADS >		R114	1-216-025-11	RES-CHIP 100 5%	1/10W
FB260	1-216-295-00	SHORT 0		R115	1-216-025-11	RES-CHIP 100 5%	1/10W
FB301	1-216-295-00	SHORT 0		R116	1-216-025-11	RES-CHIP 100 5%	1/10W
FB302	1-216-295-00	SHORT 0		R117	1-216-049-11	RES-CHIP 1K 5%	1/10W
FB303	1-216-295-00	SHORT 0		R118	1-216-025-11	RES-CHIP 100 5%	1/10W
FB305	1-216-295-00	SHORT 0		R119	1-216-049-11	RES-CHIP 1K 5%	1/10W
FB601	1-216-295-00	SHORT 0		R120	1-216-049-11	RES-CHIP 1K 5%	1/10W
FB602	1-216-295-00	SHORT 0		R122	1-216-049-11	RES-CHIP 1K 5%	1/10W
FB603	1-216-295-00	SHORT 0		R123	1-216-085-00	RES-CHIP 33K 5%	1/10W
FB604	1-216-295-00	SHORT 0		R124	1-216-089-00	RES-CHIP 47K 5%	1/10W
FB605	1-216-295-00	SHORT 0		R125	1-216-085-00	RES-CHIP 33K 5%	1/10W
FB606	1-216-295-00	SHORT 0		R127	1-216-049-11	RES-CHIP 1K 5%	1/10W
FB607	1-216-295-00	SHORT 0		R128	1-216-049-11	RES-CHIP 1K 5%	1/10W
FB608	1-216-295-00	SHORT 0		R132	1-216-049-11	RES-CHIP 1K 5%	1/10W
FB609	1-216-295-00	SHORT 0		R133	1-216-085-00	RES-CHIP 33K 5%	1/10W
FB610	1-216-295-00	SHORT 0		R134	1-216-089-00	RES-CHIP 47K 5%	1/10W
		< IC >		R135	1-216-085-00	RES-CHIP 33K 5%	1/10W
IC101	6-700-261-01	IC BD3861FS		R136	1-216-065-00	RES-CHIP 4.7K 5%	1/10W
IC301	8-759-560-51	IC BU1924F (AEP,UK)		R137	1-216-049-11	RES-CHIP 1K 5%	1/10W
IC302	8-759-710-97	IC NJM4565M(TE2)		R138	1-216-089-00	RES-CHIP 47K 5%	1/10W
IC306	6-801-380-01	IC M30622MGA-A83FP		R139	1-216-089-00	RES-CHIP 47K 5%	1/10W
IC601	8-759-548-57	IC SN74LV00ANSR		R177	1-216-081-00	METAL CHIP 22K 5%	1/10W
IC602	8-749-923-05	IC TORX178B		R178	1-216-089-00	RES-CHIP 47K 5%	1/10W
IC603	8-759-598-69	IC BA6956AN		R179	1-216-089-00	RES-CHIP 47K 5%	1/10W
IC907	8-759-686-72	IC uPC29L04J-T		R180	1-216-073-00	RES-CHIP 10K 5%	1/10W
IC908	8-759-637-58	IC PST592C-T		R181	1-216-041-00	METAL CHIP 470 5%	1/10W
		< JACK >		R182	1-216-037-00	METAL CHIP 330 5%	1/10W
J260	1-774-136-11	CONNECTOR, ROUND TYPE 6P (PC LINK)		R183	1-216-049-11	RES-CHIP 1K 5%	1/10W
		< COIL >		R185	1-216-073-00	RES-CHIP 10K 5%	1/10W
L201	1-410-393-11	INDUCTOR CHIP 100uH		R186	1-216-049-11	RES-CHIP 1K 5%	1/10W
L601	1-410-393-11	INDUCTOR CHIP 100uH		R187	1-216-049-11	RES-CHIP 1K 5%	1/10W
		< PIN JACK >		R206	1-216-075-00	METAL CHIP 12K 5%	1/10W
PJ301	1-764-767-21	JACK, PIN 2P (ANALOG OUT)		R207	1-216-089-00	RES-CHIP 47K 5%	1/10W
		< TRANSISTOR >		R256	1-216-075-00	METAL CHIP 12K 5%	1/10W
Q101	8-729-620-05	TRANSISTOR 2SC2603-EF		R257	1-216-089-00	RES-CHIP 47K 5%	1/10W
Q102	8-729-620-05	TRANSISTOR 2SC2603-EF		R262	1-216-295-00	SHORT 0	
Q121	8-729-107-43	TRANSISTOR 2SC3624-L18		R264	1-216-073-00	RES-CHIP 10K 5%	1/10W
				R265	1-216-073-00	RES-CHIP 10K 5%	1/10W
				R266	1-216-073-00	RES-CHIP 10K 5%	1/10W
				R267	1-216-001-00	METAL CHIP 10 5%	1/10W
				R268	1-216-001-00	METAL CHIP 10 5%	1/10W
				R269	1-216-295-00	SHORT 0	
				R270	1-216-295-00	SHORT 0	
				R280	1-216-059-00	METAL CHIP 2.7K 5%	1/10W

MAIN

MD DIGITAL

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R281	1-216-073-00	RES-CHIP	10K 5% 1/10W	R458	1-216-025-11	RES-CHIP	100 5% 1/10W
R290	1-216-059-00	METAL CHIP	2.7K 5% 1/10W	R466	1-216-049-11	RES-CHIP	1K 5% 1/10W
R291	1-216-073-00	RES-CHIP	10K 5% 1/10W	R467	1-216-025-11	RES-CHIP	100 5% 1/10W
R301	1-216-049-11	RES-CHIP	1K 5% 1/10W (AEP,UK)	R468	1-216-049-11	RES-CHIP	1K 5% 1/10W
R302	1-216-049-11	RES-CHIP	1K 5% 1/10W (AEP,UK)	R469	1-216-025-11	RES-CHIP	100 5% 1/10W
R303	1-216-073-00	RES-CHIP	10K 5% 1/10W (AEP,UK)	R470	1-216-025-11	RES-CHIP	100 5% 1/10W
R304	1-216-129-00	METAL CHIP	2.2M 5% 1/10W (AEP,UK)	R471	1-216-025-11	RES-CHIP	100 5% 1/10W
R305	1-216-049-11	RES-CHIP	1K 5% 1/10W (AEP,UK)	R472	1-216-025-11	RES-CHIP	100 5% 1/10W
R306	1-216-039-00	METAL CHIP	390 5% 1/10W	R473	1-216-073-00	RES-CHIP	10K 5% 1/10W
R350	1-216-041-00	METAL CHIP	470 5% 1/10W	R474	1-216-073-00	RES-CHIP	10K 5% 1/10W
R352	1-216-061-00	RES-CHIP	3.3K 5% 1/10W	R475	1-216-049-11	RES-CHIP	1K 5% 1/10W
R353	1-216-061-00	RES-CHIP	3.3K 5% 1/10W	R476	1-216-049-11	RES-CHIP	1K 5% 1/10W
R354	1-216-061-00	RES-CHIP	3.3K 5% 1/10W	R478	1-216-049-11	RES-CHIP	1K 5% 1/10W
R355	1-216-061-00	RES-CHIP	3.3K 5% 1/10W	R479	1-216-049-11	RES-CHIP	1K 5% 1/10W
R356	1-216-077-00	RES-CHIP	15K 5% 1/10W	R480	1-216-049-11	RES-CHIP	1K 5% 1/10W
R357	1-216-077-00	RES-CHIP	15K 5% 1/10W	R481	1-216-049-11	RES-CHIP	1K 5% 1/10W
R401	1-216-089-00	RES-CHIP	47K 5% 1/10W	R482	1-216-049-11	RES-CHIP	1K 5% 1/10W
R402	1-216-049-11	RES-CHIP	1K 5% 1/10W	R483	1-216-049-11	RES-CHIP	1K 5% 1/10W
R403	1-216-025-11	RES-CHIP	100 5% 1/10W	R487	1-216-049-11	RES-CHIP	1K 5% 1/10W
R405	1-216-025-11	RES-CHIP	100 5% 1/10W	R489	1-216-049-11	RES-CHIP	1K 5% 1/10W
R406	1-216-049-11	RES-CHIP	1K 5% 1/10W	R490	1-216-049-11	RES-CHIP	1K 5% 1/10W
R407	1-216-049-11	RES-CHIP	1K 5% 1/10W	R491	1-216-049-11	RES-CHIP	1K 5% 1/10W
R409	1-216-065-00	RES-CHIP	4.7K 5% 1/10W	R493	1-216-049-11	RES-CHIP	1K 5% 1/10W
R410	1-216-073-00	RES-CHIP	10K 5% 1/10W	R494	1-216-049-11	RES-CHIP	1K 5% 1/10W
R411	1-216-073-00	RES-CHIP	10K 5% 1/10W	R495	1-216-295-00	SHORT	0
R412	1-216-073-00	RES-CHIP	10K 5% 1/10W	R497	1-216-295-00	SHORT	0 (EXCEPT AEP,UK)
R418	1-216-025-11	RES-CHIP	100 5% 1/10W	R498	1-216-295-00	SHORT	0 (AEP,UK)
R419	1-216-025-11	RES-CHIP	100 5% 1/10W	R601	1-216-025-11	RES-CHIP	100 5% 1/10W
R420	1-216-025-11	RES-CHIP	100 5% 1/10W	R602	1-216-073-00	RES-CHIP	10K 5% 1/10W
R421	1-216-049-11	RES-CHIP	1K 5% 1/10W	R603	1-216-025-11	RES-CHIP	100 5% 1/10W
R422	1-216-025-11	RES-CHIP	100 5% 1/10W	R604	1-216-025-11	RES-CHIP	100 5% 1/10W
R423	1-216-025-11	RES-CHIP	100 5% 1/10W	R611	1-216-073-00	RES-CHIP	10K 5% 1/10W
R425	1-216-049-11	RES-CHIP	1K 5% 1/10W	R612	1-216-041-00	METAL CHIP	470 5% 1/10W
R427	1-216-025-11	RES-CHIP	100 5% 1/10W	R621	1-216-073-00	RES-CHIP	10K 5% 1/10W
R432	1-216-025-11	RES-CHIP	100 5% 1/10W	R622	1-216-041-00	METAL CHIP	470 5% 1/10W
R433	1-216-025-11	RES-CHIP	100 5% 1/10W	R650	1-216-065-00	RES-CHIP	4.7K 5% 1/10W
R434	1-216-025-11	RES-CHIP	100 5% 1/10W	R651	1-216-065-00	RES-CHIP	4.7K 5% 1/10W
R439	1-216-025-11	RES-CHIP	100 5% 1/10W	R652	1-216-065-00	RES-CHIP	4.7K 5% 1/10W
R440	1-216-049-11	RES-CHIP	1K 5% 1/10W	R653	1-216-097-11	RES-CHIP	100K 5% 1/10W
R441	1-216-049-11	RES-CHIP	1K 5% 1/10W	R654	1-216-105-00	RES-CHIP	220K 5% 1/10W
R442	1-216-049-11	RES-CHIP	1K 5% 1/10W	R655	1-216-057-00	METAL CHIP	2.2K 5% 1/10W
R443	1-216-049-11	RES-CHIP	1K 5% 1/10W	R656	1-216-037-00	METAL CHIP	330 5% 1/10W
R444	1-216-049-11	RES-CHIP	1K 5% 1/10W	R657	1-216-049-11	RES-CHIP	1K 5% 1/10W
R445	1-216-049-11	RES-CHIP	1K 5% 1/10W	< VIBRATOR >			
R446	1-216-073-00	RES-CHIP	10K 5% 1/10W	X401	1-579-900-21	VIBRATOR, CRYSTAL (4.332MHz) (AEP,UK)	
R448	1-216-025-11	RES-CHIP	100 5% 1/10W	X801	1-567-098-41	VIBRATOR, CRYSTAL (32.768kHz)	
R450	1-216-049-11	RES-CHIP	1K 5% 1/10W	X802	1-781-107-21	VIBRATOR, CERAMIC (16MHz)	
R451	1-216-025-11	RES-CHIP	100 5% 1/10W (AEP,UK)	*****			
R452	1-216-073-00	RES-CHIP	10K 5% 1/10W (EXCEPT AEP,UK)	A-4727-745-A	MD DIGITAL BOARD, COMPLETE	*****	
R453	1-216-049-11	RES-CHIP	1K 5% 1/10W	< CAPACITOR >			
R455	1-216-025-11	RES-CHIP	100 5% 1/10W	C200	1-124-584-00	ELECT	100uF 20% 10V
R456	1-216-025-11	RES-CHIP	100 5% 1/10W	C201	1-164-156-11	CERAMIC CHIP	0.1uF 25V
R457	1-216-025-11	RES-CHIP	100 5% 1/10W	C202	1-124-589-11	ELECT	47uF 20% 16V
				C203	1-164-156-11	CERAMIC CHIP	0.1uF 25V
				C204	1-124-261-00	ELECT	10uF 20% 50V
				C205	1-164-156-11	CERAMIC CHIP	0.1uF 25V

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## MD DIGITAL

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks	
C207	1-164-156-11	CERAMIC CHIP	0.1uF	25V		< IC >		
C208	1-164-156-11	CERAMIC CHIP	0.1uF	25V				
C211	1-164-156-11	CERAMIC CHIP	0.1uF	25V	IC201	8-759-675-78	IC UDA1360TS/N1.118	
C212	1-124-584-00	ELECT	100uF	20%	10V	IC211	8-759-675-77	IC UDA1350AH
C213	1-164-156-11	CERAMIC CHIP	0.1uF	25V	IC701	6-801-355-01	IC M30803MG-A07FP	
C214	1-124-261-00	ELECT	10uF	20%	50V	IC861	8-759-481-02	IC M62016L
C215	1-124-261-00	ELECT	10uF	20%	50V	IC871	8-759-598-69	IC BA6956AN
C216	1-164-156-11	CERAMIC CHIP	0.1uF	25V		< JUMPER RESISTOR >		
C217	1-164-156-11	CERAMIC CHIP	0.1uF	25V				
C218	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	JR210	1-216-296-11	SHORT 0
C219	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V		< COIL >	
C221	1-164-156-11	CERAMIC CHIP	0.1uF	25V				
C222	1-124-589-11	ELECT	47uF	20%	16V	L701	1-412-533-21	INDUCTOR 47uH
C223	1-164-156-11	CERAMIC CHIP	0.1uF	25V			< TRANSISTOR >	
C701	1-124-584-00	ELECT	100uF	20%	10V	Q201	8-729-421-22	TRANSISTOR UN2211
C702	1-164-156-11	CERAMIC CHIP	0.1uF	25V		Q202	8-729-026-49	TRANSISTOR 2SA1037AK-T146-R
C703	1-126-245-11	ELECT	330uF	20%	6.3V	Q211	8-729-424-08	TRANSISTOR UN2111
C704	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	Q861	8-729-120-28	TRANSISTOR 2SC1623-L5L6
C705	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	Q871	8-729-421-22	TRANSISTOR UN2211
C706	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	Q872	8-729-602-36	TRANSISTOR 2SA1602-F
C707	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V		< RESISTOR >	
C719	1-164-156-11	CERAMIC CHIP	0.1uF	25V				
C723	1-164-156-11	CERAMIC CHIP	0.1uF	25V				
C726	1-164-156-11	CERAMIC CHIP	0.1uF	25V				
C730	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	R201	1-218-272-11	RES-CHIP 5.1K 5% 1/10W
C738	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	R202	1-218-272-11	RES-CHIP 5.1K 5% 1/10W
C740	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	R211	1-216-813-11	METAL CHIP 220 5% 1/16W
C742	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	R213	1-216-833-11	METAL CHIP 10K 5% 1/16W
C743	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	R214	1-216-809-11	METAL CHIP 100 5% 1/16W
C748	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	R215	1-216-833-11	METAL CHIP 10K 5% 1/16W
C749	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	R216	1-216-833-11	METAL CHIP 10K 5% 1/16W
C751	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	R217	1-216-809-11	METAL CHIP 100 5% 1/16W
C756	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	R218	1-216-809-11	METAL CHIP 100 5% 1/16W
C791	1-164-156-11	CERAMIC CHIP	0.1uF	25V		R219	1-216-809-11	METAL CHIP 100 5% 1/16W
C843	1-164-156-11	CERAMIC CHIP	0.1uF	25V		R220	1-216-817-11	METAL CHIP 470 5% 1/16W
C861	1-164-156-11	CERAMIC CHIP	0.1uF	25V		R221	1-216-809-11	METAL CHIP 100 5% 1/16W
C862	1-115-869-11	ELECT	0.33uF	20%	50V	R222	1-216-825-11	METAL CHIP 2.2K 5% 1/16W
C863	1-164-156-11	CERAMIC CHIP	0.1uF	25V		R223	1-216-833-11	METAL CHIP 10K 5% 1/16W
C864	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	R701	1-216-817-11	METAL CHIP 470 5% 1/16W
C871	1-124-584-00	ELECT	100uF	20%	10V	R702	1-216-809-11	METAL CHIP 100 5% 1/16W
C872	1-164-156-11	CERAMIC CHIP	0.1uF	25V		R717	1-216-833-11	METAL CHIP 10K 5% 1/16W
C873	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	R724	1-216-833-11	METAL CHIP 10K 5% 1/16W
		< CONNECTOR >				R726	1-218-867-11	RES-CHIP 6.8K 5% 1/10W
CN201	1-790-669-21	PIN, CONNECTOR (PC BOARD) 9P				R727	1-216-829-11	METAL CHIP 4.7K 5% 1/16W
CN701	1-784-741-11	CONNECTOR, FFC 19P				R730	1-216-833-11	METAL CHIP 10K 5% 1/16W
CN702	1-784-384-11	CONNECTOR, FFC/FPC 27P				R743	1-216-833-11	METAL CHIP 10K 5% 1/16W
CN703	1-784-376-11	CONNECTOR, FFC/FPC 17P				R749	1-216-833-11	METAL CHIP 10K 5% 1/16W
		< DIODE >				R751	1-216-833-11	METAL CHIP 10K 5% 1/16W
D211	8-719-104-34	DIODE 1S2836				R752	1-216-833-11	METAL CHIP 10K 5% 1/16W
		< FERRITE BEADS >				R754	1-216-833-11	METAL CHIP 10K 5% 1/16W
FB217	1-469-116-21	FERRITE	0UH			R767	1-216-833-11	METAL CHIP 10K 5% 1/16W
FB701	1-469-324-21	FERRITE	0UH			R768	1-216-833-11	METAL CHIP 10K 5% 1/16W
FB702	1-469-324-21	FERRITE	0UH			R786	1-216-833-11	METAL CHIP 10K 5% 1/16W
FB703	1-469-324-21	FERRITE	0UH			R787	1-216-833-11	METAL CHIP 10K 5% 1/16W
FB704	1-216-864-11	METAL CHIP	0	5%	1/16W	R815	1-216-833-11	METAL CHIP 10K 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



**MD DIGITAL**

**PANEL**

**POWER**

Ref. No.	Part No.	Description	Remarks
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-4728-616-A	PANEL BOARD, COMPLETE (AEP,UK)	
	A-4728-622-A	PANEL BOARD, COMPLETE (EXCEPT AEP,UK)	
*****			
< CAPACITOR >			
C841	1-126-963-11	ELECT 4.7uF 20%	50V
C842	1-165-319-11	CERAMIC CHIP 0.1uF	50V
C874	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V
C875	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V
C876	1-104-665-11	ELECT 100uF 20%	10V
< CONNECTOR >			
CN501	1-784-786-11	CONNECTOR, FFC 25P	
CN502	1-785-318-11	PIN, CONNECTOR (STRAIGHT) 6P	
< DIODE >			
D805	8-719-058-04	DIODE SEL5223S-TP15	
D806	8-719-057-97	DIODE SEL5923A-TP15	
D807	8-719-057-97	DIODE SEL5923A-TP15	
D808	8-719-057-97	DIODE SEL5923A-TP15	
D809	8-719-057-97	DIODE SEL5923A-TP15	
D812	8-719-057-97	DIODE SEL5923A-TP15	
D813	8-719-057-97	DIODE SEL5923A-TP15	
D814	8-719-057-97	DIODE SEL5923A-TP15	
< FERRITE BEADS >			
FB811	1-216-295-00	SHORT 0	
FB812	1-216-295-00	SHORT 0	
FB813	1-216-295-00	SHORT 0	
< IC >			
IC801	8-759-827-70	IC NJL64H400A-1	
< TRANSISTOR >			
Q803	8-729-421-22	TRANSISTOR UN2211	
Q804	8-729-421-22	TRANSISTOR UN2211	
Q805	8-729-421-22	TRANSISTOR UN2211	
Q806	8-729-421-22	TRANSISTOR UN2211	
Q807	8-729-421-22	TRANSISTOR UN2211	
Q808	8-729-421-22	TRANSISTOR UN2211	
Q809	8-729-421-22	TRANSISTOR UN2211	
Q810	8-729-421-22	TRANSISTOR UN2211	
Q811	8-729-421-22	TRANSISTOR UN2211	
< RESISTOR >			
R800	1-216-073-00	RES-CHIP 10K 5%	1/10W
R801	1-216-049-11	RES-CHIP 1K 5%	1/10W
R802	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R803	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R804	1-216-065-00	RES-CHIP 4.7K 5%	1/10W

Ref. No.	Part No.	Description	Remarks
R805	1-216-049-11	RES-CHIP 1K 5%	1/10W
R806	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R807	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R808	1-216-065-00	RES-CHIP 4.7K 5%	1/10W
R809	1-216-073-00	RES-CHIP 10K 5%	1/10W
R810	1-216-081-00	METAL CHIP 22K 5%	1/10W
R831	1-216-073-00	RES-CHIP 10K 5%	1/10W
R833	1-216-053-00	METAL CHIP 1.5K 5%	1/10W
R834	1-216-037-00	METAL CHIP 330 5%	1/10W
R836	1-216-025-11	RES-CHIP 100 5%	1/10W
R837	1-216-025-11	RES-CHIP 100 5%	1/10W
R838	1-216-025-11	RES-CHIP 100 5%	1/10W
R839	1-216-025-11	RES-CHIP 100 5%	1/10W
R840	1-216-025-11	RES-CHIP 100 5%	1/10W
R841	1-216-025-11	RES-CHIP 100 5%	1/10W
R842	1-216-025-11	RES-CHIP 100 5%	1/10W
R843	1-216-025-11	RES-CHIP 100 5%	1/10W
R844	1-216-025-11	RES-CHIP 100 5%	1/10W
R845	1-216-025-11	RES-CHIP 100 5%	1/10W
R874	1-216-025-11	RES-CHIP 100 5%	1/10W
R875	1-216-025-11	RES-CHIP 100 5%	1/10W
R876	1-216-025-11	RES-CHIP 100 5%	1/10W
R877	1-216-025-11	RES-CHIP 100 5%	1/10W
R882	1-216-053-00	METAL CHIP 1.5K 5%	1/10W
R883	1-216-037-00	METAL CHIP 330 5%	1/10W
R884	1-216-037-00	METAL CHIP 330 5%	1/10W
R885	1-216-037-00	METAL CHIP 330 5%	1/10W
R886	1-216-037-00	METAL CHIP 330 5%	1/10W
R887	1-216-037-00	METAL CHIP 330 5%	1/10W
< SWITCH >			
S809	1-762-875-21	SWITCH, KEYBOARD (▶▶ ▶▶ +)	
S810	1-762-875-21	SWITCH, KEYBOARD (- ◀◀ ◀◀)	
S811	1-762-875-21	SWITCH, KEYBOARD (■)	
S812	1-762-875-21	SWITCH, KEYBOARD (▲ MD)	
S813	1-762-875-21	SWITCH, KEYBOARD (▲ CD)	
S817	1-762-875-21	SWITCH, KEYBOARD (FUNCTION)	
S818	1-762-875-21	SWITCH, KEYBOARD (BAND TUNER)	
S819	1-762-875-21	SWITCH, KEYBOARD (TAPE ◀▶)	
S820	1-762-875-21	SWITCH, KEYBOARD (▶▶ CD)	
S821	1-762-875-21	SWITCH, KEYBOARD (MD ▶▶)	
S822	1-762-875-21	SWITCH, KEYBOARD (VOLUME +)	
S823	1-762-875-21	SWITCH, KEYBOARD (VOLUME -)	
S833	1-762-875-21	SWITCH, KEYBOARD (I/Ⓞ)	
*****			
	A-4727-747-A	POWER BOARD, COMPLETE (AEP,UK)	
	A-4728-620-A	POWER BOARD, COMPLETE (EXCEPT AEP,UK)	
*****			
	1-533-293-11	FUSE HOLDER	
< CAPACITOR >			
C901	1-128-548-11	ELECT 4700uF 20%	25V
C903	1-136-165-00	FILM 0.1uF 5%	50V
C904	1-136-165-00	FILM 0.1uF 5%	50V
C905	1-135-933-11	ELECT 22000uF 20%	16V
△C918	1-113-925-11	CERAMIC 0.01uF 20%	250V
△C919	1-113-925-11	CERAMIC 0.01uF 20%	250V

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

# HCD-M10

POWER

TC

Ref. No.	Part No.	Description	Remarks
△ C991	1-113-925-11	CERAMIC	0.01uF 20% 250V
C992	1-126-965-11	ELECT	22uF 20% 50V
C993	1-136-165-00	FILM	0.1uF 5% 50V
C994	1-126-936-11	ELECT	3300uF 20% 16V
C995	1-126-933-11	ELECT	100uF 20% 16V
C996	1-126-935-11	ELECT	470uF 20% 10V
C997	1-127-876-21	CERAMIC	0.01uF 10% 50V
< CONNECTOR >			
CN900	1-766-956-11	CONNECTOR, BOARD TO BOARD 15P	
* CN991	1-580-230-31	PIN, CONNECTOR (PC BOARD) 2P	
* CN992	1-695-044-11	PIN, CONNECTOR 2P	
CN993	1-564-507-11	PLUG, CONNECTOR 4P	
< DIODE >			
D901	8-719-500-56	DIODE D3SBA20	
D902	8-719-500-56	DIODE D3SBA20	
D991	8-719-991-33	DIODE 1SS133T-77	
D992	8-719-991-33	DIODE 1SS133T-77	
D993	8-719-991-33	DIODE 1SS133T-77	
D994	8-719-200-82	DIODE 11ES2	
D995	8-719-200-82	DIODE 11ES2	
D996	8-719-200-82	DIODE 11ES2	
D997	8-719-200-82	DIODE 11ES2	
D998	8-719-200-82	DIODE 11ES2	
< FUSE >			
△ F902	1-532-389-31	FUSE T0.5A 250V	
< IC >			
IC991	8-759-450-47	IC BA05T	
< TRANSISTOR >			
Q991	8-729-620-05	TRANSISTOR 2SC2603-EF	
< RESISTOR >			
△ R901	1-240-877-11	FUSIBLE	0.15 5% 1/2W
R991	1-249-417-11	CARBON	1K 5% 1/4W F
R992	1-249-429-11	CARBON	10K 5% 1/4W
R993	1-249-413-11	CARBON	470 5% 1/4W F
R994	1-249-413-11	CARBON	470 5% 1/4W F
< RELAY >			
△ RY991	1-755-276-11	RELAY, POWER	
< TRANSFORMER >			
△ T901	1-437-550-11	TRANSFORMER, POWER	
△ T992	1-419-625-11	COIL, LINE FILTER	
*****			
A-4728-617-A	TC BOARD, COMPLETE (AEP,UK)		
A-4728-623-A	TC BOARD, COMPLETE (EXCEPT AEP,UK)		
*****			
< CAPACITOR >			
C1001	1-104-995-11	MYLAR	0.022uF 5% 200V
C1002	1-104-995-11	MYLAR	0.022uF 5% 200V
C1003	1-104-666-11	ELECT	220uF 20% 25V

Ref. No.	Part No.	Description	Remarks
C1004	1-104-666-11	ELECT	220uF 20% 25V
C1007	1-163-275-11	CERAMIC CHIP	0.001uF 5% 50V
C1008	1-163-275-11	CERAMIC CHIP	0.001uF 5% 50V
C1009	1-126-935-11	ELECT	470uF 20% 16V
C1010	1-126-933-11	ELECT	100uF 20% 16V
C1011	1-126-963-11	ELECT	4.7uF 20% 50V
C1012	1-126-963-11	ELECT	4.7uF 20% 50V
C1013	1-126-964-11	ELECT	10uF 20% 50V
C1014	1-126-964-11	ELECT	10uF 20% 50V
C1015	1-126-933-11	ELECT	100uF 20% 16V
C1027	1-137-381-11	MYLAR	0.0001uF 5% 100V
C1028	1-137-381-11	MYLAR	0.0001uF 5% 100V
C1029	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V
C1030	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V
C1031	1-110-498-11	FILM	0.0068uF 5% 100V
C1033	1-137-391-11	MYLAR	0.0047uF 5% 100V
C1034	1-137-150-11	MYLAR	0.01uF 5% 100V
C1036	1-130-481-00	MYLAR	0.0068uF 5% 50V
C1037	1-126-947-11	ELECT	47uF 20% 25V
C1038	1-104-665-11	ELECT	100uF 20% 25V
C1043	1-128-582-11	ELECT	10uF 20% 63V
C1044	1-128-582-11	ELECT	10uF 20% 63V
C1045	1-126-934-11	ELECT	220uF 20% 16V
C1046	1-126-963-11	ELECT	4.7uF 20% 50V
C1081	1-137-367-11	MYLAR	0.0033uF 5% 50V
C1082	1-130-495-00	MYLAR	0.1uF 5% 50V
C1083	1-137-367-11	MYLAR	0.0033uF 5% 50V
C1084	1-130-495-00	MYLAR	0.1uF 5% 50V
< CONNECTOR >			
CN1001	1-784-778-11	CONNECTOR, FFC 17P	
CN1002	1-784-731-11	CONNECTOR, FFC 9P	
< DIODE >			
D1001	8-719-988-61	DIODE 1SS355TE-17	
D1002	8-719-988-61	DIODE 1SS355TE-17	
D1003	8-719-988-61	DIODE 1SS355TE-17	
< IC >			
IC1001	8-759-264-71	IC TA2068N	
IC1002	8-759-508-69	IC BA3126N	
< COIL >			
L1001	1-410-779-21	INDUCTOR	22mH
L1002	1-410-779-21	INDUCTOR	22mH
< TRANSISTOR >			
Q1005	8-729-142-46	TRANSISTOR 2SC2001-LK	
Q1006	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q1007	8-729-424-59	TRANSISTOR UN2212	
Q1009	8-729-140-04	TRANSISTOR 2SB1116A-L	
Q1010	8-729-424-59	TRANSISTOR UN2212	
Q1011	8-729-140-04	TRANSISTOR 2SB1116A-L	
Q1012	8-729-424-59	TRANSISTOR UN2212	
Q1013	8-729-424-08	TRANSISTOR UN2111	

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

< RESISTOR >

R1001	1-216-101-00	METAL CHIP	150K	5%	1/10W
R1002	1-216-101-00	METAL CHIP	150K	5%	1/10W
R1003	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R1004	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R1005	1-216-021-00	METAL CHIP	68	5%	1/10W
R1006	1-216-021-00	METAL CHIP	68	5%	1/10W
R1007	1-216-077-00	RES-CHIP	15K	5%	1/10W
R1008	1-216-077-00	RES-CHIP	15K	5%	1/10W
R1009	1-216-121-11	RES-CHIP	1M	5%	1/10W
R1010	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1011	1-216-049-11	RES-CHIP	1K	5%	1/10W
R1012	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1013	1-216-049-11	RES-CHIP	1K	5%	1/10W
R1014	1-216-049-11	RES-CHIP	1K	5%	1/10W
R1015	1-216-081-00	METAL CHIP	22K	5%	1/10W
R1016	1-216-081-00	METAL CHIP	22K	5%	1/10W
R1019	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1020	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1022	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R1023	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R1037	1-216-061-00	RES-CHIP	3.3K	5%	1/10W
R1038	1-216-017-00	RES-CHIP	47	5%	1/10W
R1039	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1040	1-216-001-00	METAL CHIP	10	5%	1/10W
R1041	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R1042	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1043	1-216-295-00	SHORT	0		
R1044	1-216-295-00	SHORT	0		
R1045	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1047	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R1048	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R1049	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R1050	1-216-089-00	RES-CHIP	47K	5%	1/10W
R1051	1-216-081-00	METAL CHIP	22K	5%	1/10W
R1052	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1053	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R1054	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R1055	1-216-093-00	RES-CHIP	68K	5%	1/10W
R1056	1-216-089-00	RES-CHIP	47K	5%	1/10W
R1057	1-216-025-11	RES-CHIP	100	5%	1/10W
R1058	1-216-025-11	RES-CHIP	100	5%	1/10W
R1061	1-216-295-00	SHORT	0		
R1065	1-216-081-00	METAL CHIP	22K	5%	1/10W
R1066	1-216-081-00	METAL CHIP	22K	5%	1/10W
R1070	1-216-049-11	RES-CHIP	1K	5%	1/10W
R1071	1-216-049-11	RES-CHIP	1K	5%	1/10W
R1081	1-216-049-11	RES-CHIP	1K	5%	1/10W
R1082	1-216-049-11	RES-CHIP	1K	5%	1/10W

< VARIABLE RESISTOR >

RV1005	1-225-943-21	RES, ADJ 22K (REC LEVEL R-CH)
RV1006	1-225-943-21	RES, ADJ 22K (REC LEVEL L-CH)

< TRANSFORMER >

T1001	1-433-372-11	TRANSFORMER, BIAS OSCILLATION
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MISCELLANEOUS

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△	1-569-008-21	ADAPTOR, CONVERSION 2P (SP)
△	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (HK, UK)
5	1-773-004-11	WIRE (FLAT TYPE) (15 CORE)
60	1-773-217-11	WIRE (FLAT TYPE) (25 CORE)
112	1-773-051-11	WIRE (FLAT TYPE) (17 CORE)
113	1-769-904-11	WIRE (FLAT TYPE) (9 CORE)
△ 156	1-769-079-11	CORD, POWER (KR)
△ 156	1-775-787-61	CORD, POWER (EXCEPT KR,AUS)
△ 156	1-696-845-11	CORD, POWER (AUS)
158	1-792-830-11	WIRE (FLAT TYPE) (17 CORE)
159	1-792-829-11	WIRE (FLAT TYPE) (27 CORE)
* 163	1-773-177-11	WIRE (FLAT TYPE) (23 CORE)
164	1-773-123-11	WIRE (FLAT TYPE) (19 CORE)
165	1-823-468-11	WIRE (FLAT TYPE) (22 CORE)
359	1-678-514-11	PWB, FLEXIBLE
△ 360	A-4672-541-A	DEVICE, MINIDISK KMS-260E/Z-NP
555	1-823-145-11	WIRE, PARALLEL (FFC) (16 CORE)
△ 558	A-4735-357-A	DEVICE, OPTICAL KSM213DHAP/Z-NP
△ F902	1-532-389-31	FUSE T0.5A 250V
FL801	1-804-557-11	DISPLAY PANEL, LIQUID CRYSTAL
HR901	1-500-670-22	HEAD, OVER LIGHT
M101	A-4735-757-A	MOTOR ASSY, SPINDLE
M102	A-4735-076-A	MOTOR ASSY, SLED
M103	A-4735-074-A	MOTOR ASSY, LOADING
M901	A-4735-337-A	MOTOR (LD) ASSY
S102	1-771-957-11	SWITCH, PUSH (2 KEY)
△ T900	1-437-548-11	TRANSFORMER, POWER
TU301	1-693-473-41	TUNER

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

