HCD-CL5MD

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model

Ver 1.0 2001. 02

Self Diagnosis Supported model

HCD-CL5MD is the tuner, deck, CD, MD and amplifier section in CHC-CL5MD.

This stereo system is equipped with the Dolby* B-type noise reduction system.
* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol ⧈ are trademarks of the Dolby Laboratories Licensing Corporation.

CD SECTION	Model Name Using Similar Mechanism	NEW
	CD Mechanism Type	CDM63B
	Base Unit Type	BU-30BD61
	Optical Pick-up Type	A-MAX.3
MD SECTION	Model Name Using Similar Mechanism	HCD-ZX50MD
	MD Mechanism Type	MDM-7B
	Optical Pick-up Type	KMS-260B/K1NP
TAPE DECK SECTION	Model Name Using Similar Mechanism	NEW
	Tape Transport Mechanism Type	TCM-230ASR41CL

SPECIFICATIONS

Amplifier section

AEP model:
DIN power output (Rated): 40 + 40 watts (6 ohms at 1 kHz, DIN)
Continuous RMS power output (Reference): 50 + 50 watts (6 ohms at 1 kHz, 10% THD)
Music power output (Reference): 95 + 95 watts (6 ohms at 1 kHz, 10% THD)
Other models:
DIN power output (Rated): 40 + 40 watts (6 ohms at 1 kHz, DIN)
Continuous RMS power output (Reference): 50 + 50 watts (6 ohms at 1 kHz, 10% THD)
Inputs
VIDEO (AUDIO) IN (phono jacks): voltage 250 mV, impedance 47 kilohms
CD DIGITAL IN (Supported sampling frequencies: 32 kHz, 44.1 kHz and 48 kHz)
Outputs
PHONES (stereo minijack): accepts headphones of 8 ohms or more.
SPEAKER: accepts impedance of 6 to 16 ohms.

CD player section

System: Compact disc and digital audio system
Laser: Semiconductor laser (λ=780 nm) Emission duration: continuous
Laser output: Max. 44.6 µW* * This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block with 7 mm aperture.
Frequency response: 20 Hz – 20 kHz (±0.5 dB)

— Continued on next page —

MICRO HiFi COMPONENT SYSTEM

9-929-583-11
2001B1600-1
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Sony Corporation
Audio Entertainment Group
General Engineering Dept.

SONY®

MD deck section

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

Tape deck section

Recording system: 4-track 2-channel stereo
Frequency response: 40 – 13,000 Hz (±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)
Aerial: FM lead aerial
Aerial terminals: 75 ohms unbalanced
Intermediate frequency: 10.7 MHz
AM tuner section
Tuning range
AEP 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
AEP model: 230 V AC, 50/60 Hz
Australian and New Zealand models: 230 – 240 V AC, 50/60 Hz
Other models: 120 V, 220 V, 230 – 240 V AC, 50/60 Hz
Adjustable with voltage selector
Power consumption
AEP model: 100 watts
0.5 watts (at the Power Saving Mode)
Other models: 100 watts
Dimensions (w/h/d) incl. projecting parts and controls
Amplifier/Tuner/Tape/MD/CD section: Approx. 215 × 285 × 421 mm
Speaker: Approx. 210 × 285 × 260 mm
Mass
Amplifier/Tuner/Tape/MD/CD section: Approx. 8.6kg

Design and specifications are subject to change without notice.

SELF-DIAGNOSIS FUNCTION

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

Self-diagnosis display

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

C11/Protected

The MD is protected against erasure.

➔Remove the MD and slide the tab to close the slot (Refer to Operating Instruction on page 17).

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 (Refer to Operating Instruction on page 27).

C41/Cannot Copy

The sound source is a copy of a commercially available music software, or you tried to record a CD-R (Recordable CD).

➔The Serial Copy Management System prevents making a digital copy (Refer to Operating Instruction on page 48). You cannot record a CD-R.

E0001/MEMORY NG

There is an error in the internal data that the system needs in order to operate.

➔Consult your nearest Sony dealer.

E0101/LASER NG

There is a problem with the optical pickup.

➔The optical pickup may have failed. Consult your nearest Sony dealer.

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

Note: Perform the self-diagnosis function in the "error history display mode" in the test mode. The following describes the least required procedure. Be careful not to enter other modes by mistake. If other modes are entered accidentally, press the MENU/NO button to exit the mode.

1. Connect the mains lead to the mains while pressing the DIMMER, FUNCTION, and ■ buttons together, then release the DIMMER, FUNCTION, and ■ buttons simultaneously. While the test mode is set. "[Check]" will be displayed.
2. Move I◄◄ /►►I left and right to display "[Service]" and press the ENTER/YES button.
3. Move I◄◄ /►►I left and right to display "Err Display".
4. Press the ENTER/YES button to enter the error history mode. "op rec tm" will be displayed.
5. Select the item to be displayed or executed using I◄◄ /►►I .
6. Press the REC MODE button to display the selected item.
7. Press the REC MODE button another time to return to step 4.
8. Pressing the MENU/NO button displays "Err Display" and exits the error history display mode.
9. To exit the test mode, press the REPEAT button. This sets the standby state and ends the test mode.

ITEMS OF ERROR HISTORY MODE ITEMS AND CONTENTS

Selecting the Test Mode

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

Table of Error Codes

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

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SECTION 1
SERVICING NOTES

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

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

FOR CD

NOTES ON LASER DIODE EMISSION CHECK

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

FOR MD

NOTES ON LASER DIODE EMISSION CHECK

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

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

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

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

CAUTION : INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.
ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSAETTELSE FOR STRÅLING.
VORSICHT : UNSICHTBARE LASERSTRAHLUNG. WENN ABDECKUNG GEÖFFNET UND SICHEREITSVERRIEGELUNG ÜBERBRÜCKT. NICHT DEM STRAHL AUSSETZEN.
VARO! : AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
VARNING : OSYNLING LASERSTRÅLING NÄR 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!

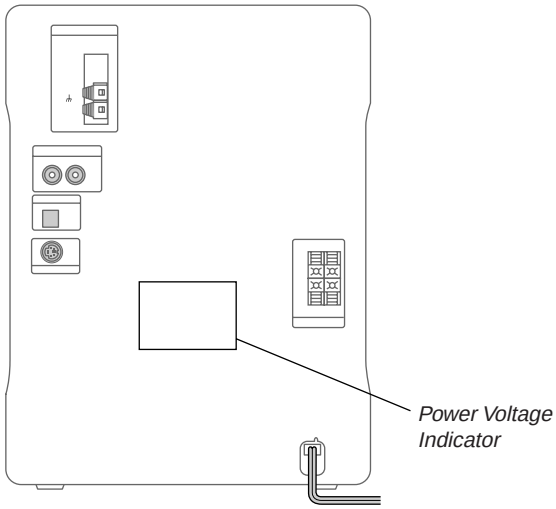
This caution label is located inside the unit.

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.

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

MODEL IDENTIFICATION
– Back Panel –



Model	Power Voltage Incdication
AEP, UK models	AC: 230 V 50/60 Hz 100 W
Australian model	AC: 230 – 240V 50/60 Hz 100 W
Other models	AC: 120 V, 220 V, 230 – 240V 50/60 Hz 100 W

To inspect the printed circuit boards, use the following jigs.

• Extension jig to inspect the DIGITAL board
Jig for extension between DIGITAL board CN1001 and MAIN board CN701 Part code number: J-2501-019-A 1 pc 25 pins with 1.25 mm
• Extension jig to inspect the BD (CD) board (RELAY board)
Jig for extension between RELAY board CN2 and MAIN board CN201 Part code number: J-2501-019-A 1 pc 25 pins with 1.25 mm

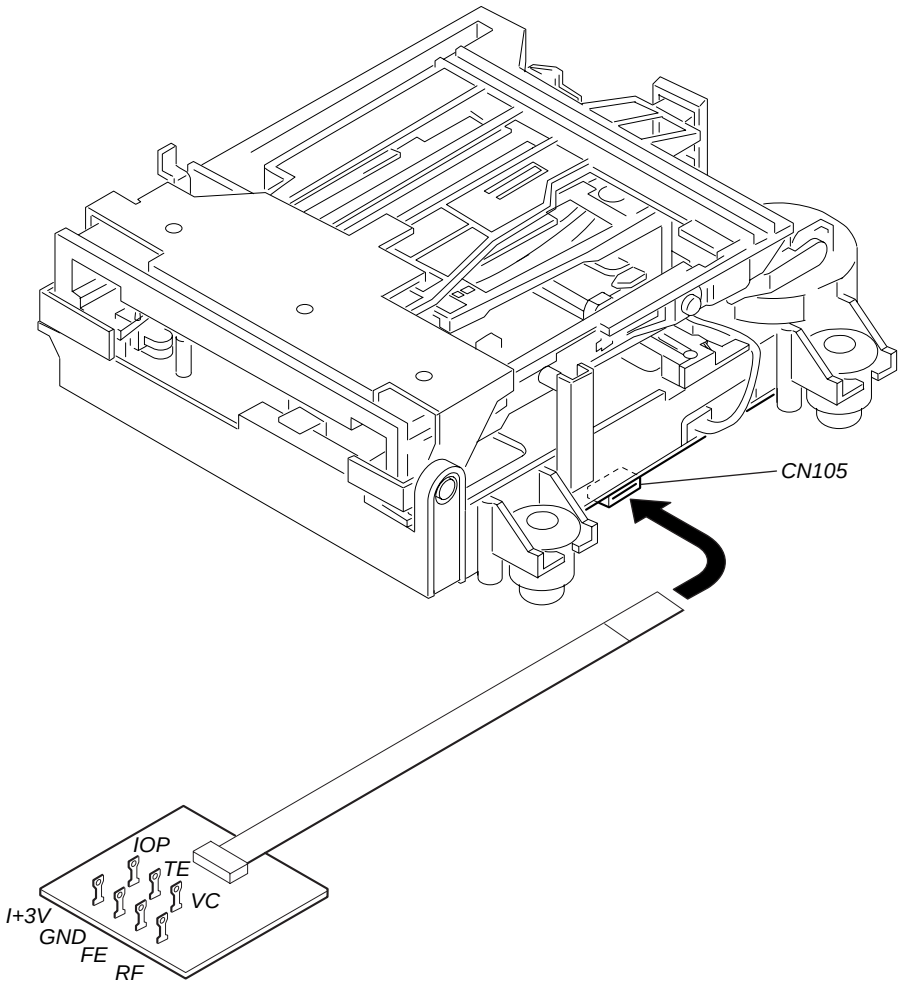
SAFETY-RELATED COMPONENT WARNING!!

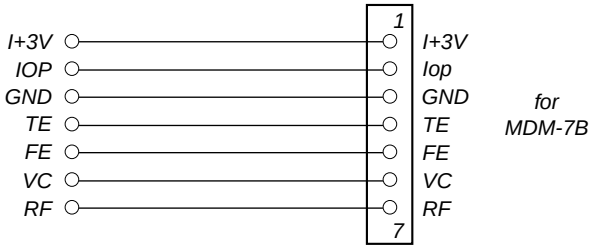
COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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.

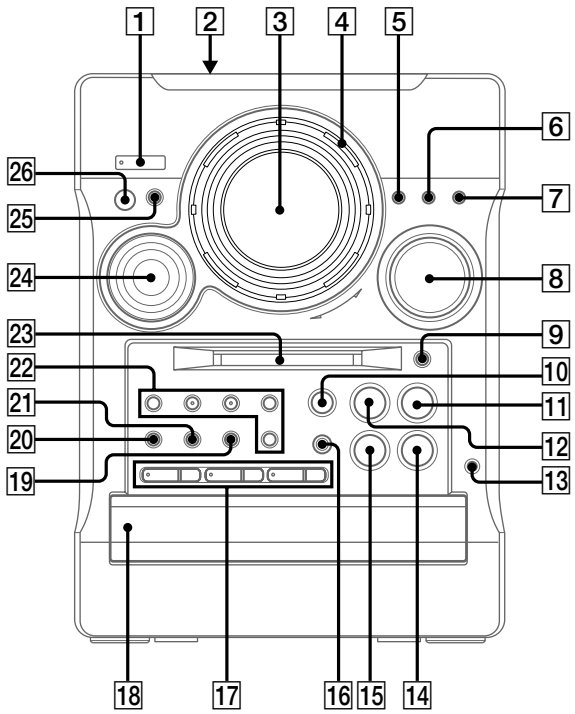
GND : Ground
I+3V : For measuring IOP (Check the deterioration of the optical pick-up laser)
IOP : For measuring IOP (Check the deterioration of the optical pick-up laser)
TE : TRK error signal (Traverse adjustment)
VC : Reference level for checking the signal
RF : RF signal (Check jitter)
FE : Focus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

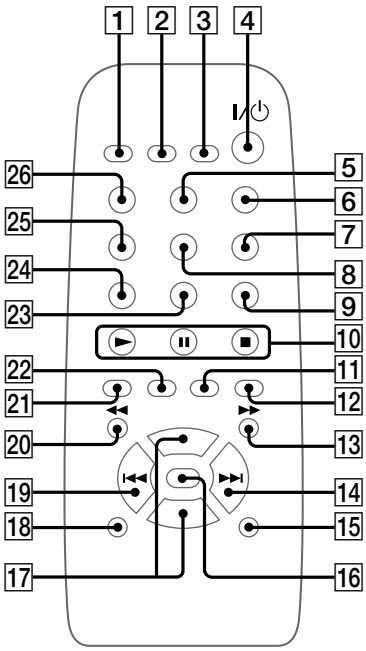




SECTION 2
GENERAL

This section is extracted from instruction manual.





BASS/TREBLE 24 (40)
CD 1 – 3 17 (11)
CD 1 – 3 ⏏ 17 (9)
CD disc tray 18 (9)
CD ►II 12 (9)
DIMMER 5 (7)
DISPLAY 25 (8, 12, 16)
Display window 3
ENTER/START 22 (17, 38)
ENTER/YES 7 (8, 11, 15, 20, 25, 34, 42)
FUNCTION 16 (9, 14, 17, 25, 37)
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Remote sensor 26
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STEREO/MONO 19 (35)
SYNCHRO MODE 22 (17)
Tape deck lid 2 (37)
TAPE REC PAUSE/START 22 (39)
TAPE ◄► 15 (37)
TUNER/BAND 11 (34)
VOLUME 8

BUTTON DESCRIPTIONS

I/⏻ 1
I◄◄ /►►I 4
⏏ 9
■ 10
◄◄/►► 24
+/– 24

CHECK 8 (11, 15)
CLEAR 12 (11, 15)
CLOCK/TIMER SELECT 2 (42)
CLOCK/TIMER SET 3 (8, 42)
DBFB 26 (40)
DIMMER 23 (7)
DISC SKIP 9 (10)
DISPLAY 18 (8, 12, 16)
ENTER/YES 11 (8, 11, 15, 20, 25, 34, 42)
FUNCTION 15 (9, 14, 17, 25, 37)
GROOVE 16 (40)
MENU/NO 21 (24)
MUSIC MENU 6 (41)
NAME EDIT/CHARACTER 22 (12, 25, 36)
REPEAT 7 (10, 14)
SCROLL 25 (13, 26)
SLEEP 1 (41)
SURROUND 5 (40)
TUNER/BAND 24 (34)
VOL +/– 17

BUTTON DESCRIPTIONS

I/⏻ 4
► 10
■ 10
II 10
►► 13
►►I 14
I◄◄ 19
◄◄ 20

Setting the time

1 **Turn on the system.**

2 **Press CLOCK/TIMER SET on the remote.**
Proceed to step 5 when you set the clock for the first time.

3 **Turn I◀◀ / ▶▶I (or press I◀◀ or ▶▶I on the remote) to select "CLOCK SET?".**

4 **Press ENTER/YES.**

5 **Turn I◀◀ / ▶▶I (or press I◀◀ or ▶▶I on the remote) to set the hour.**

6 **Press ENTER/YES or ▶▶.**
The minute indication flashes.

7 **Turn I◀◀ / ▶▶I (or press I◀◀ or ▶▶I on the remote) to set the minute.**

8 **Press ENTER/YES.**
The clock starts working.

If you made a mistake

Press ◀◀ or ▶▶ repeatedly until the incorrect item flashes, then set it again.

To change the preset time

Start over from step 1.

Saving the power in standby mode

Press DISPLAY repeatedly when the system is off. Each time you press the button, the system switches cyclically as follows:
Demonstration → Clock display → Power Saving Mode

To cancel the Power Saving Mode

Press DISPLAY once to show the demonstration, twice to show the clock display

Tip

I/⏻ indicator lights up even in the Power Saving Mode.

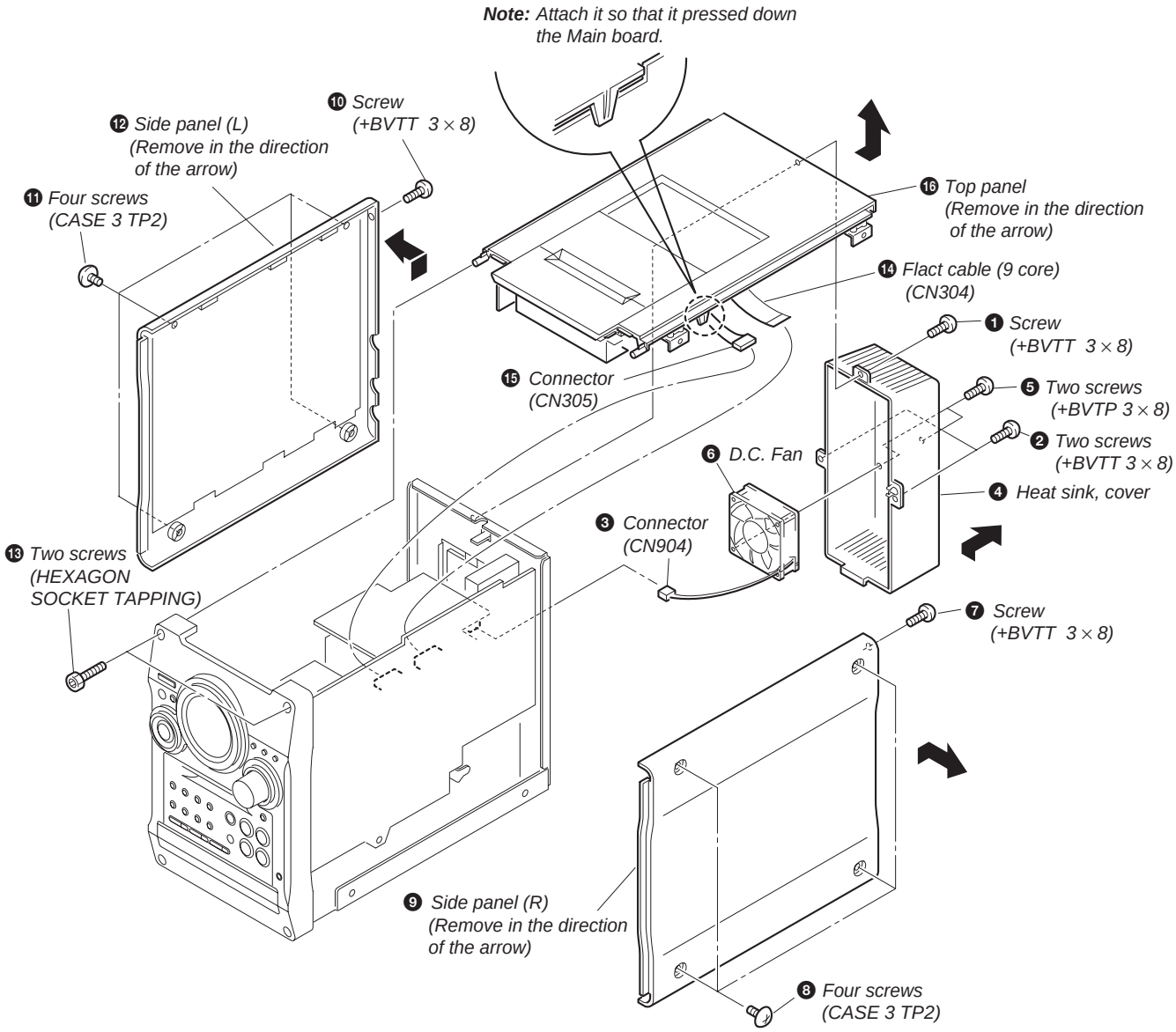
SECTION 3
DISASSEMBLY

• The equipment can be removed using the following procedure.

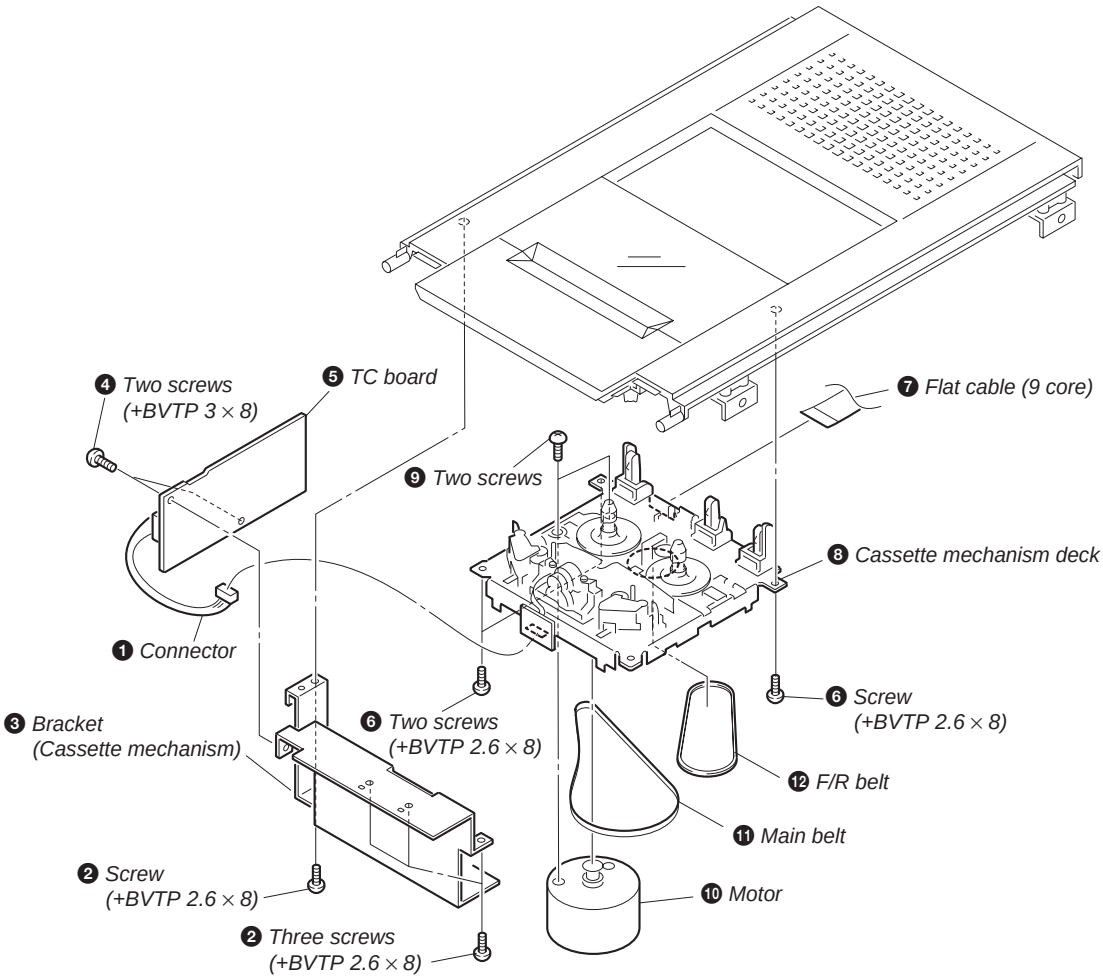
Set
↓
Top panel, Side panel
↓
- *Cassette mechanism*
- *Front panel* → *Panel board* → *MD mechanism* → *Over light head (HR901), BD (MD) board* → *Holder assy* → *Loading motor assy (M103)* → *Sled motor assy (M102)* → *MD optical pick-up (KMS-260B/K1NP)* → *Spindle motor assy*
- *Back panel, Main board*
  - *Amp board, Power transformer*
  - *CD mechanism* → *Relay board* → *CD base unit (BU-30BD61)*
    - *CD optical pick-up (A-MAX.3)* → *BD (CD) board*
    - *Driver board* → *Fitting base (stabilizer) assy, Tray assy* → *Tray sensor board* → *Slider (loading), Gear (slider)* → *Stocker assy* → *Disc sensor board* → *IN OUT SW board* → *Motor assy (M721), Motor board*

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

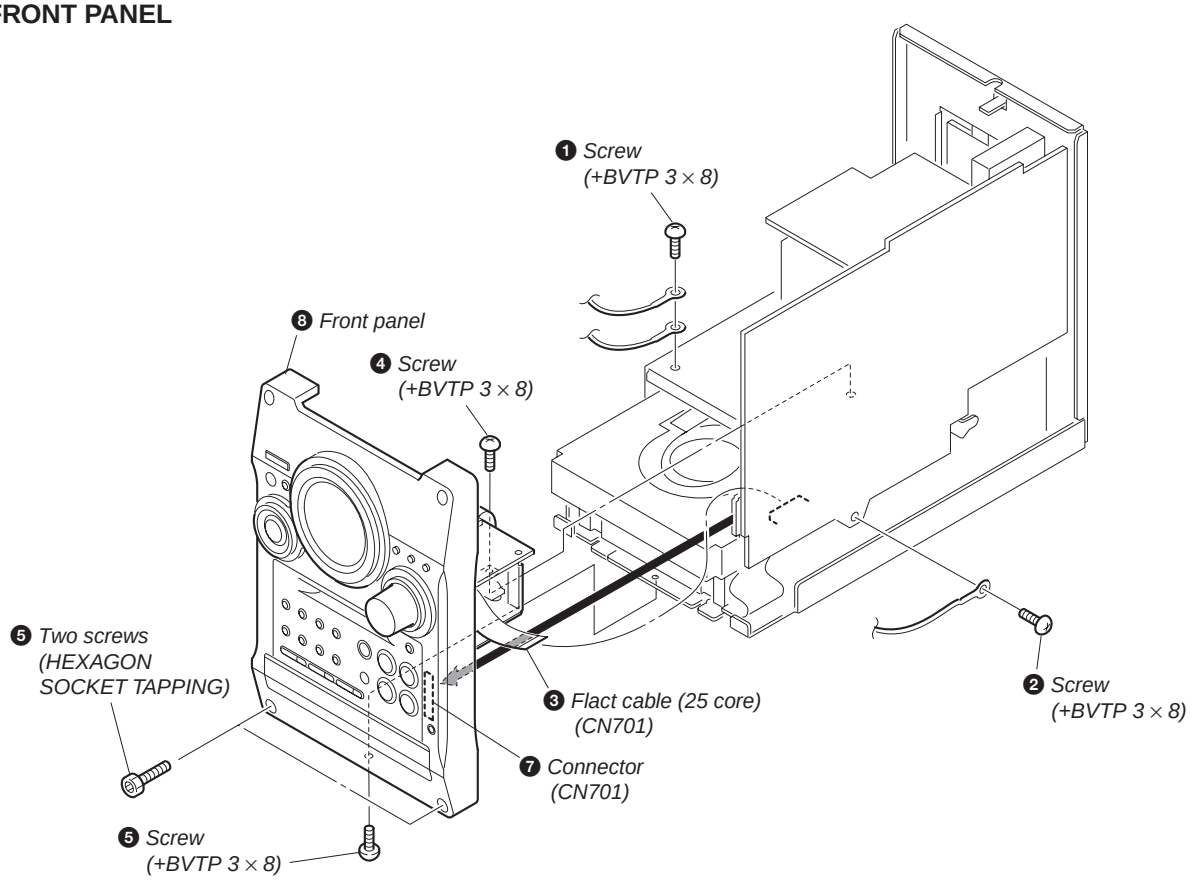
3-1. TOP PANEL, SIDE PANEL



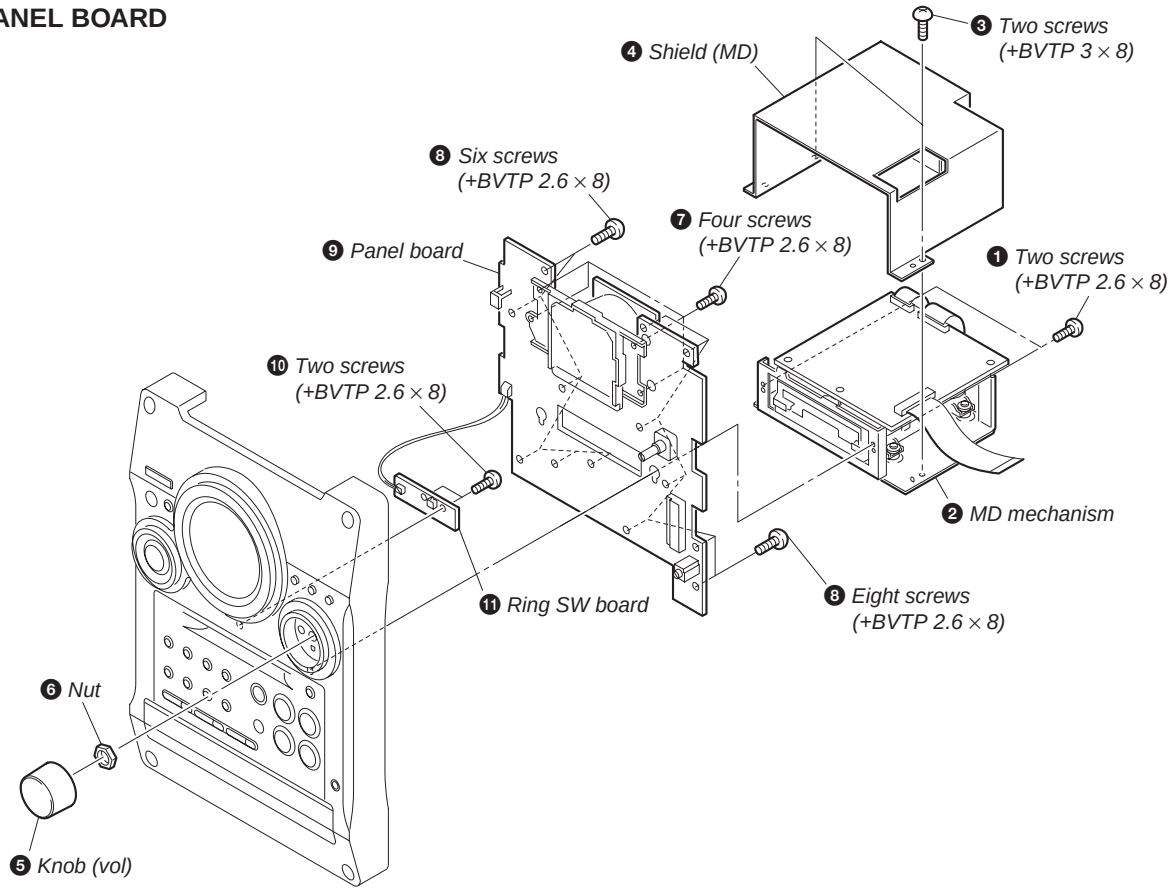
3-2. CASSETTE MECHANISM



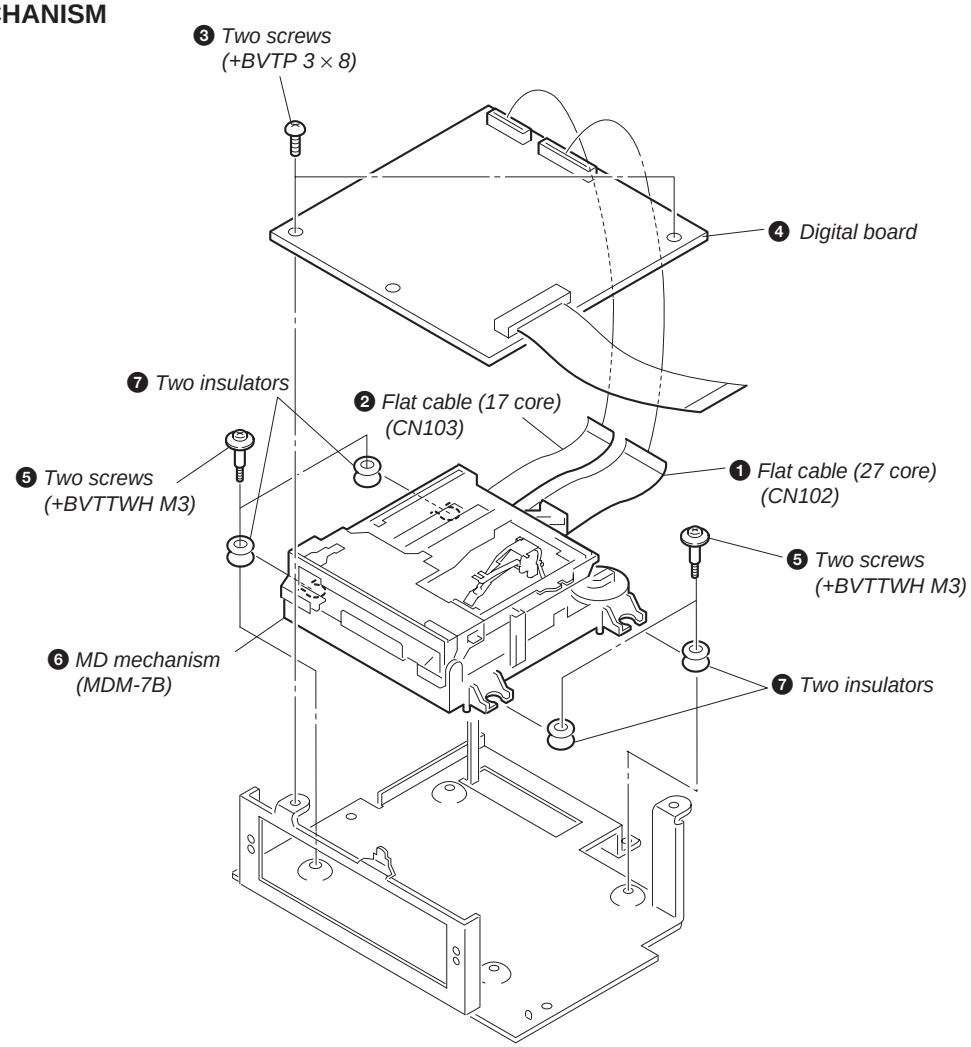
3-3. FRONT PANEL



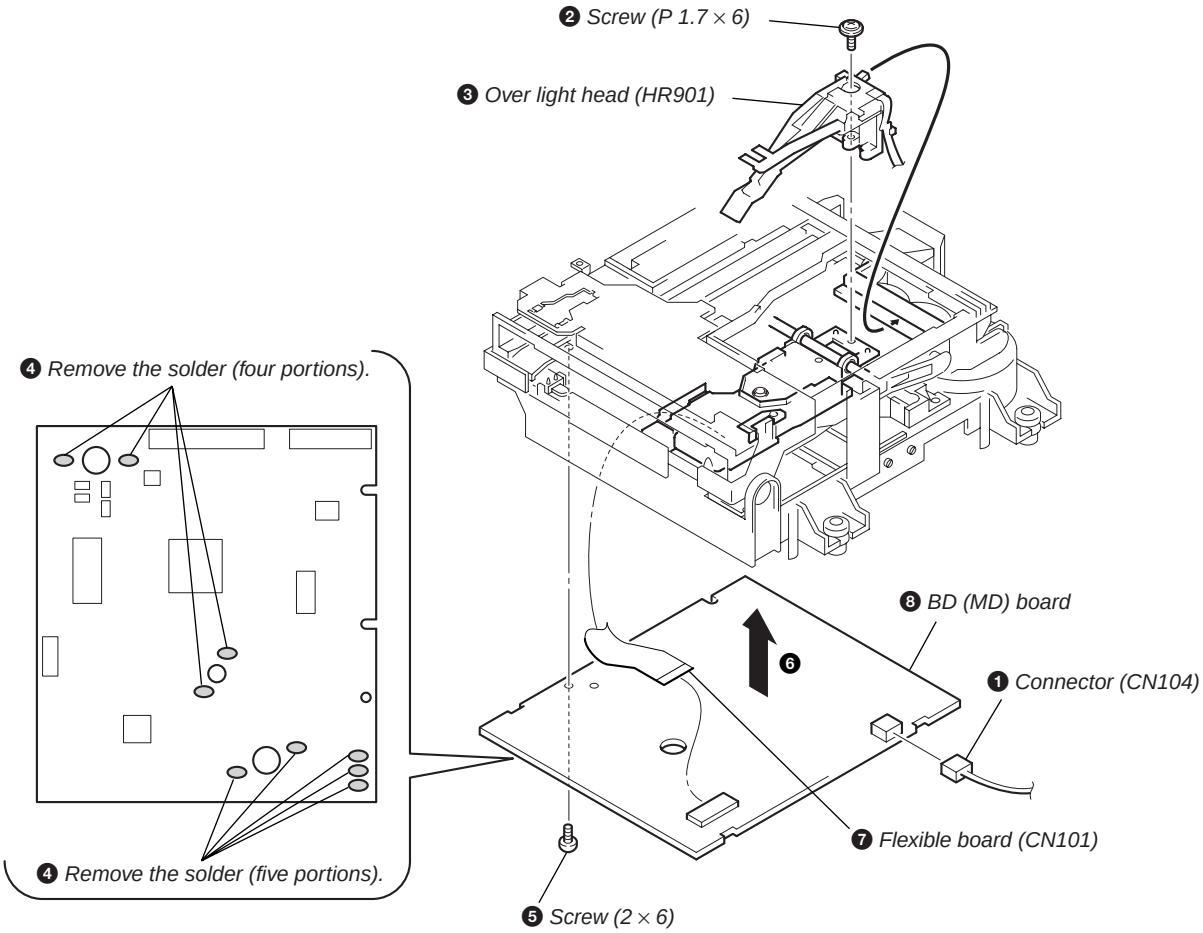
3-4. PANEL BOARD



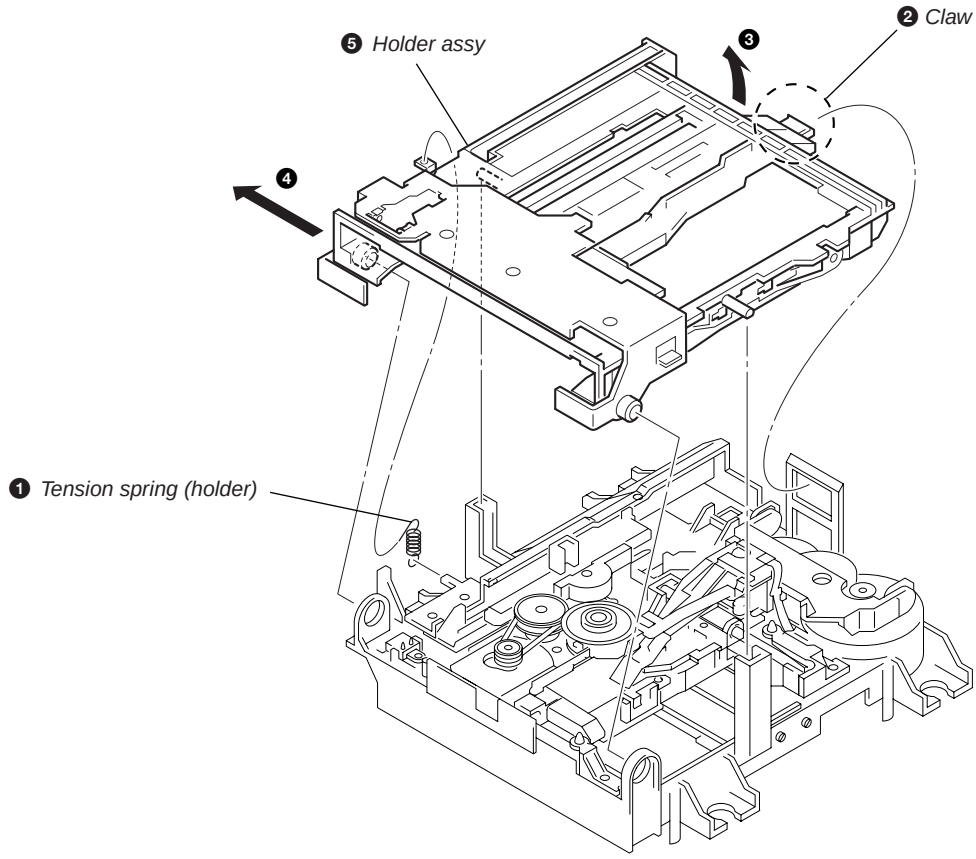
3-5. MD MECHANISM



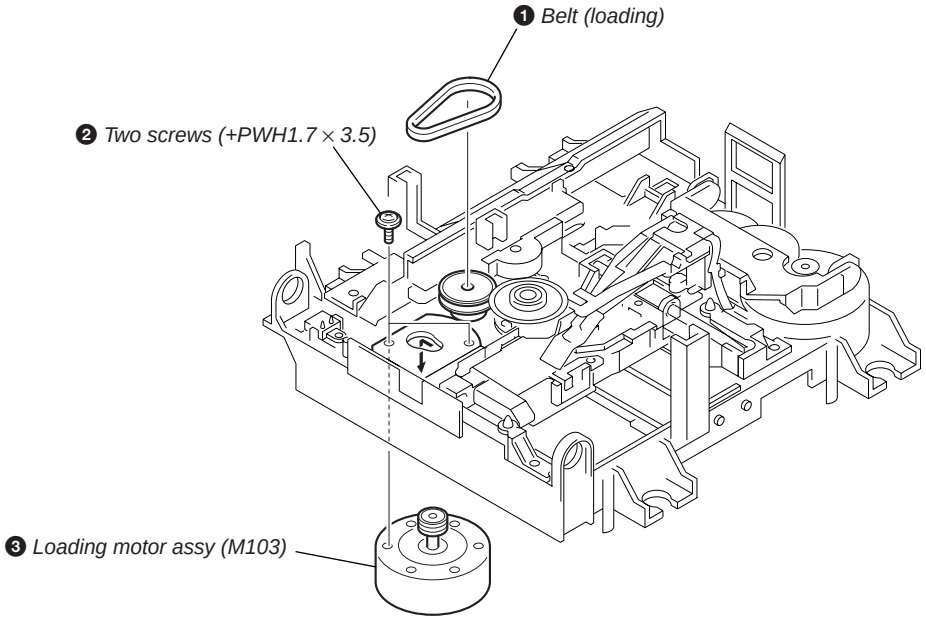
3-6. OVER LIGHT HEAD (HR901), BD (MD) BOARD



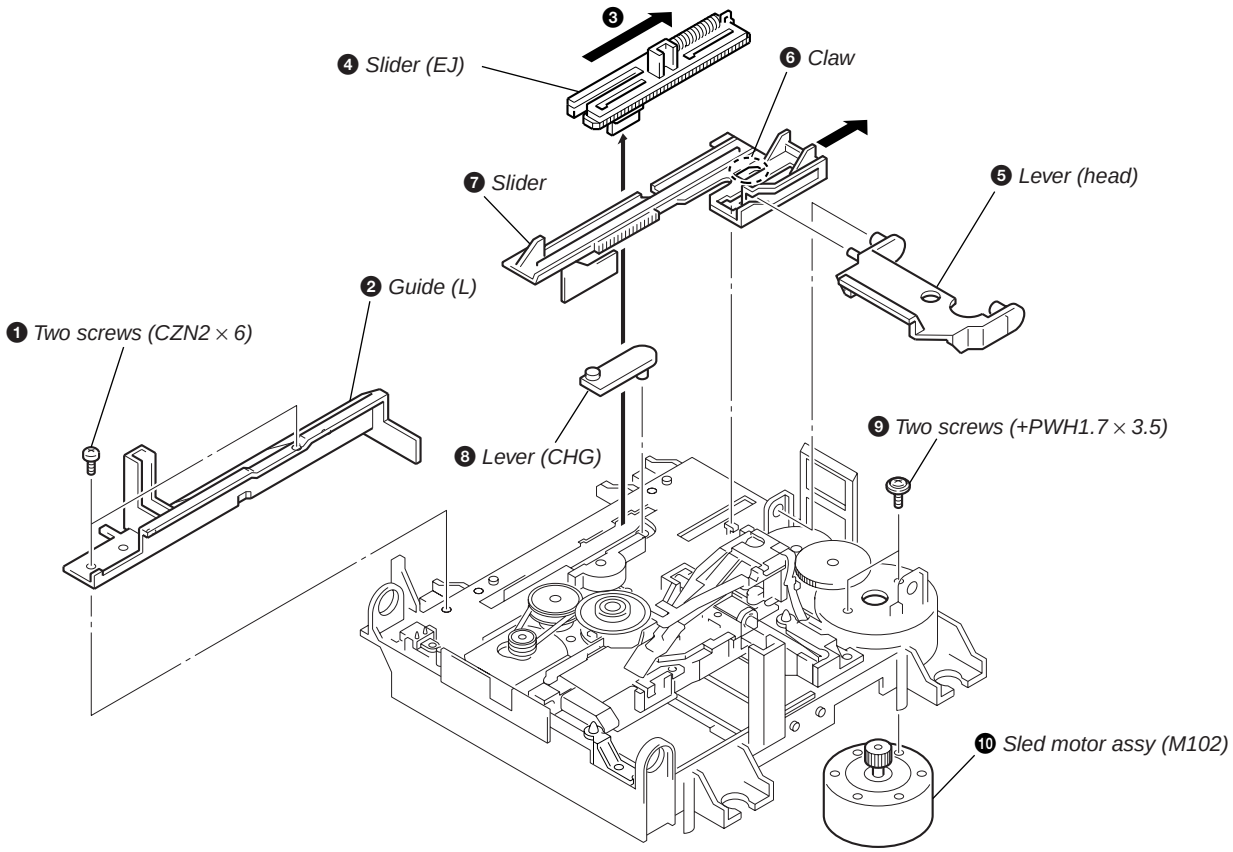
3-7. HOLDER ASSY



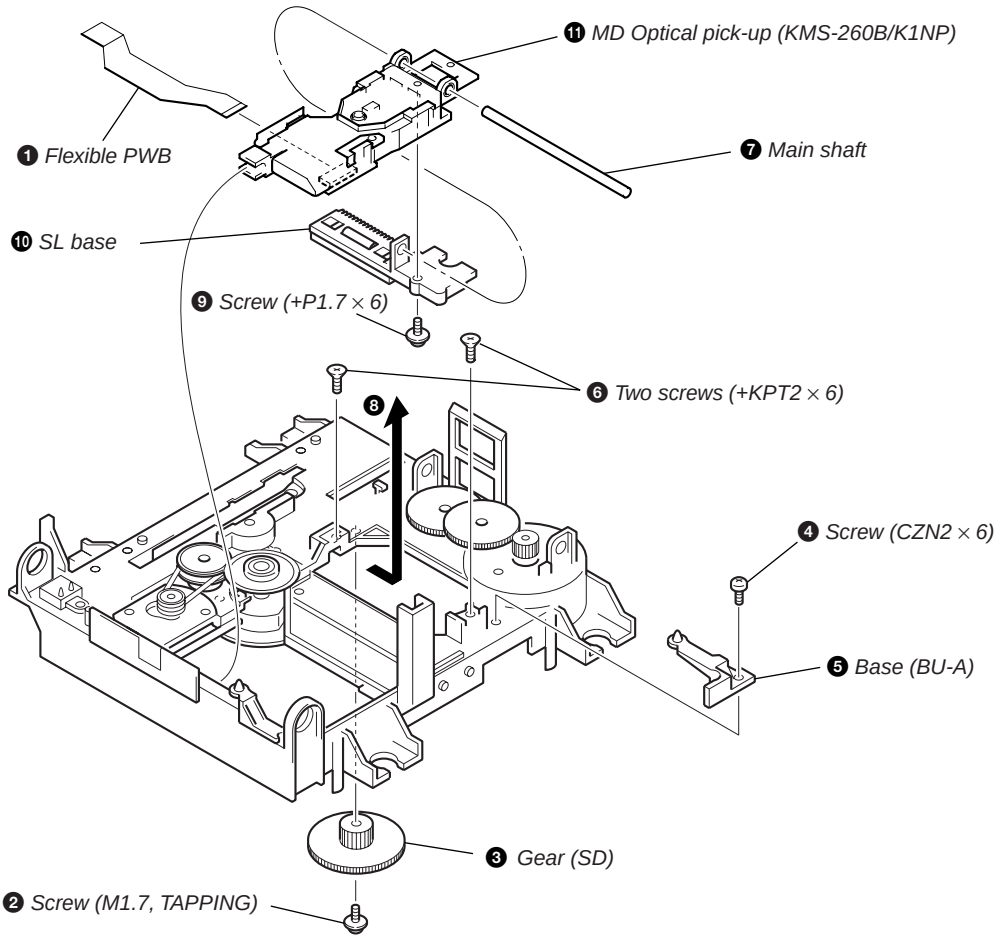
3-8. LOADING MOTOR ASSY (M103)



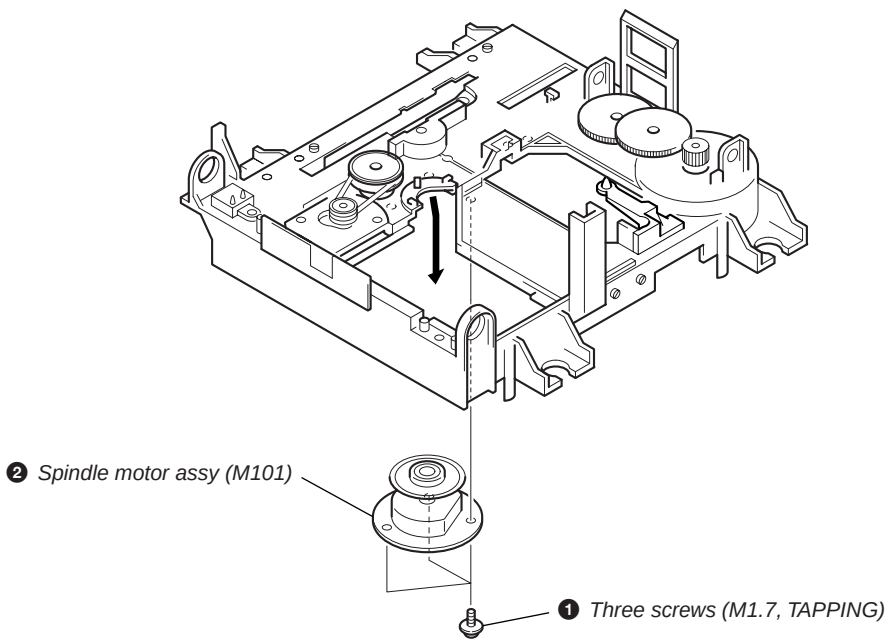
3-9. SLED MOTOR ASSY (M102)



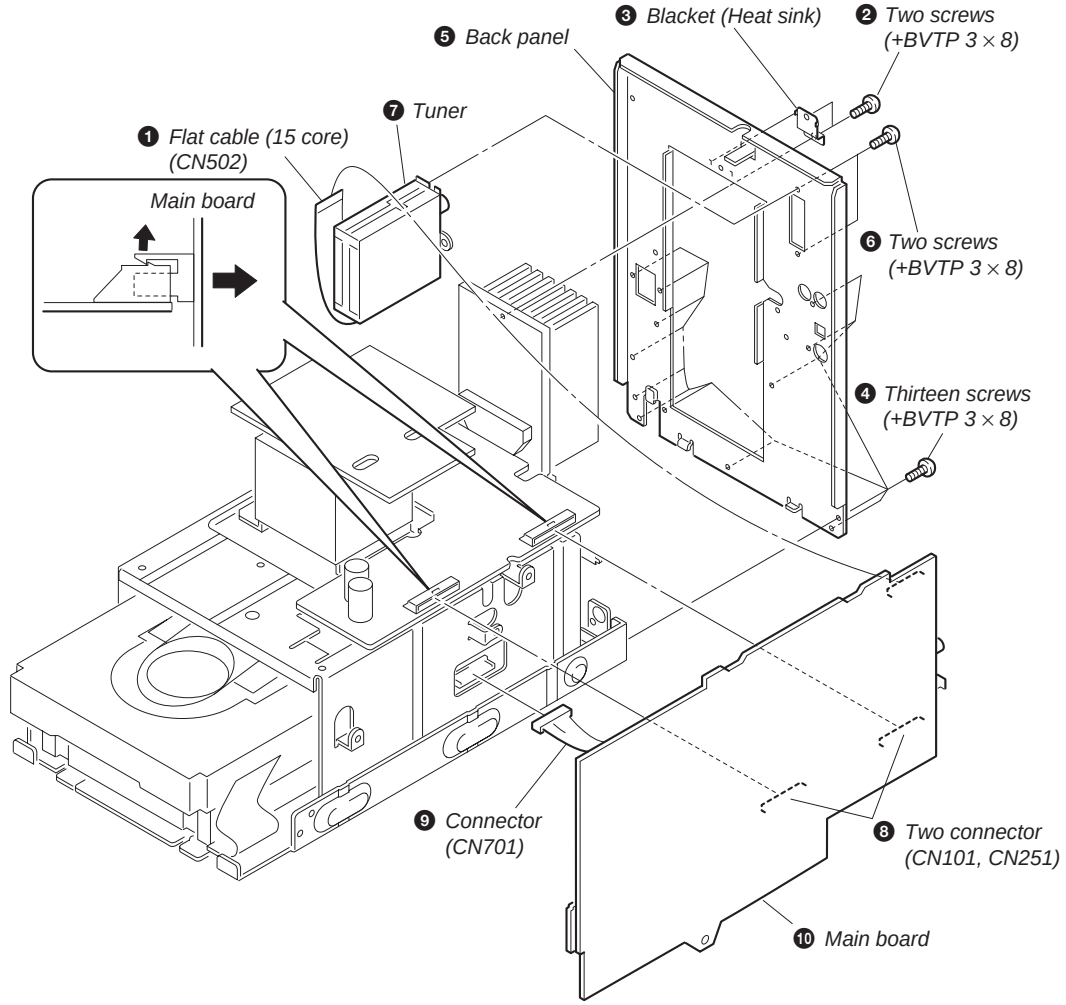
3-10. MD OPTICAL PICK-UP (KMS-260B/K1NP)



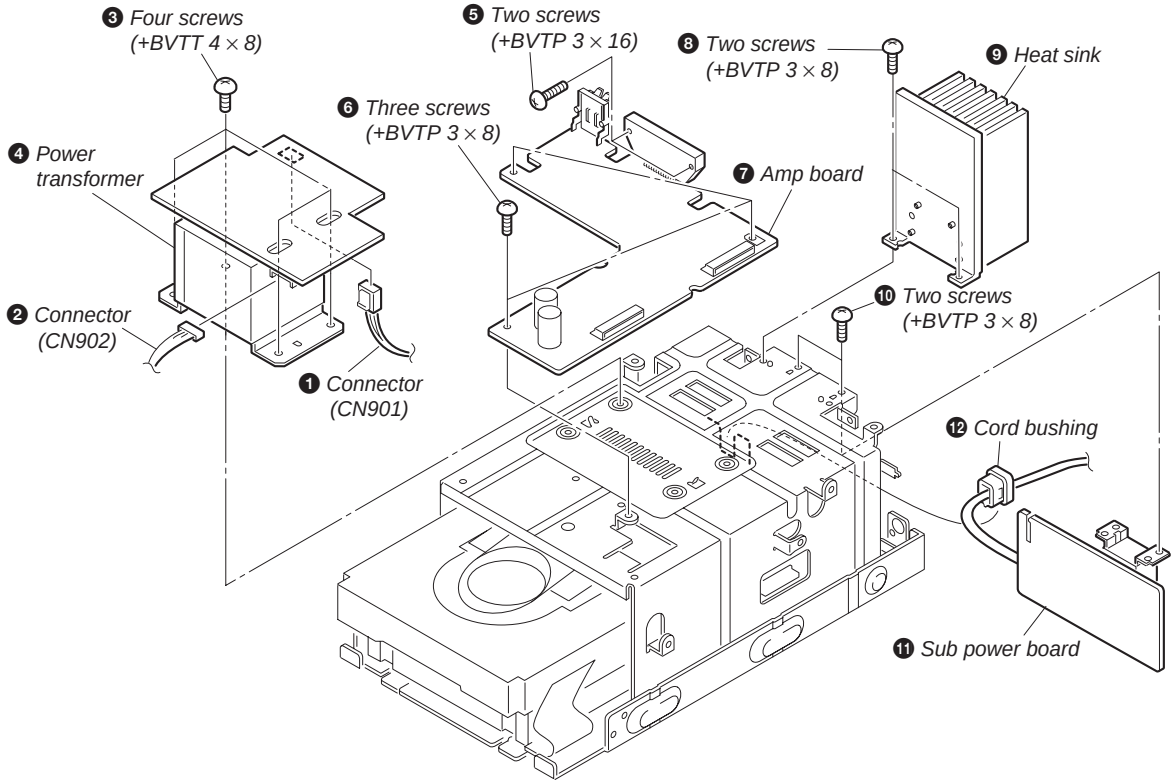
3-11. SPINDLE MOTOR ASSY



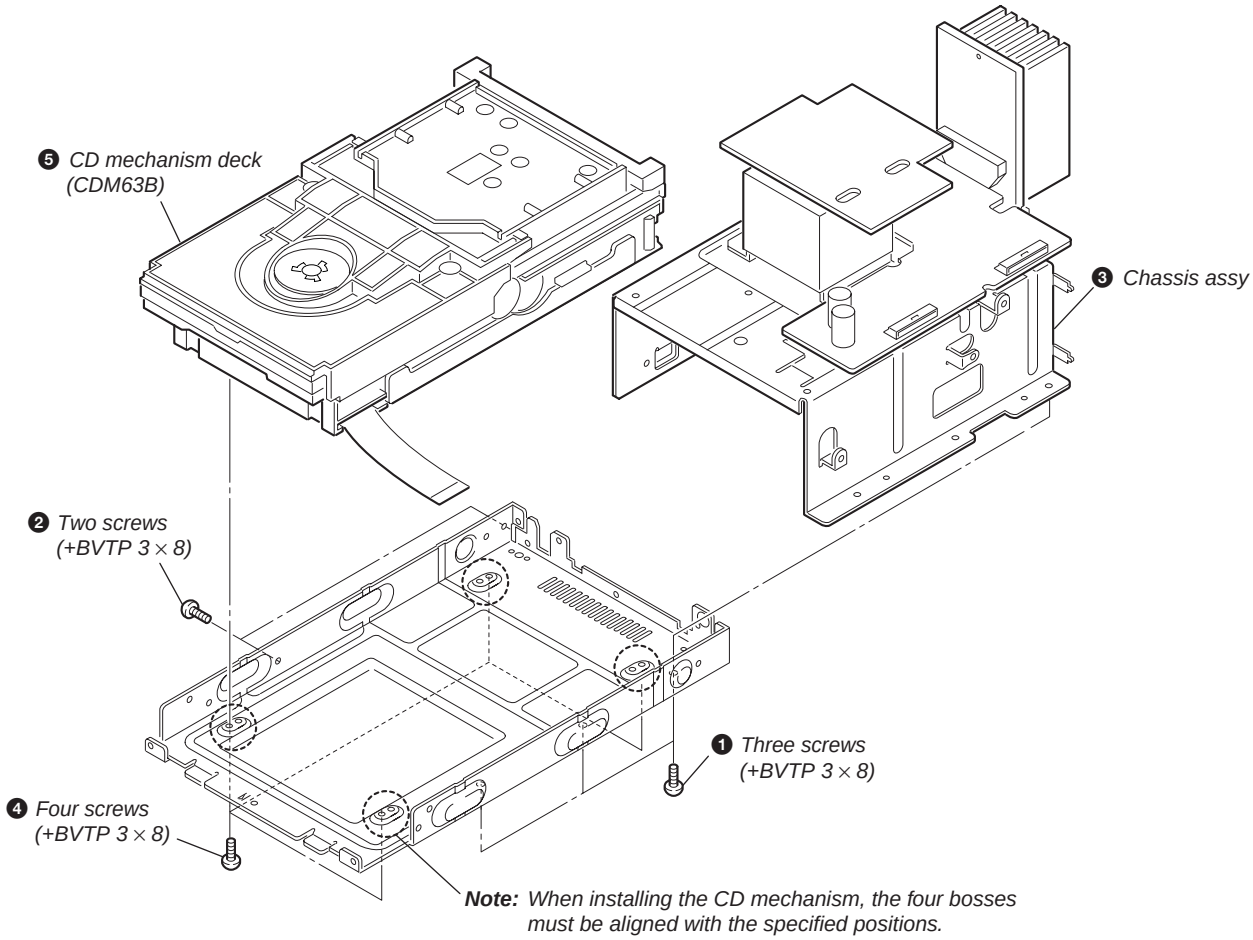
3-12. BACK PANEL, MAIN BOARD



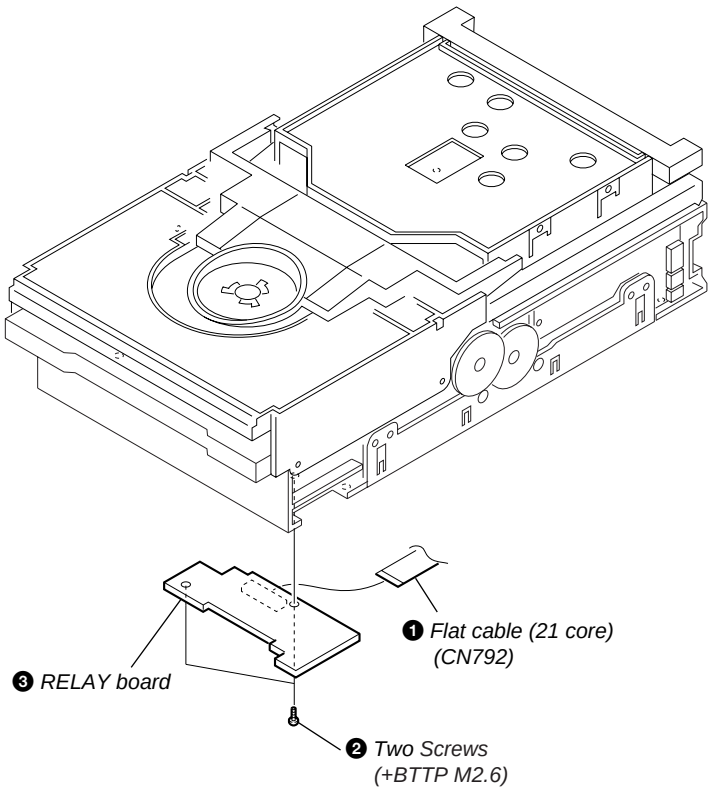
3-13. AMP BOARD, POWER TRANSFORMER



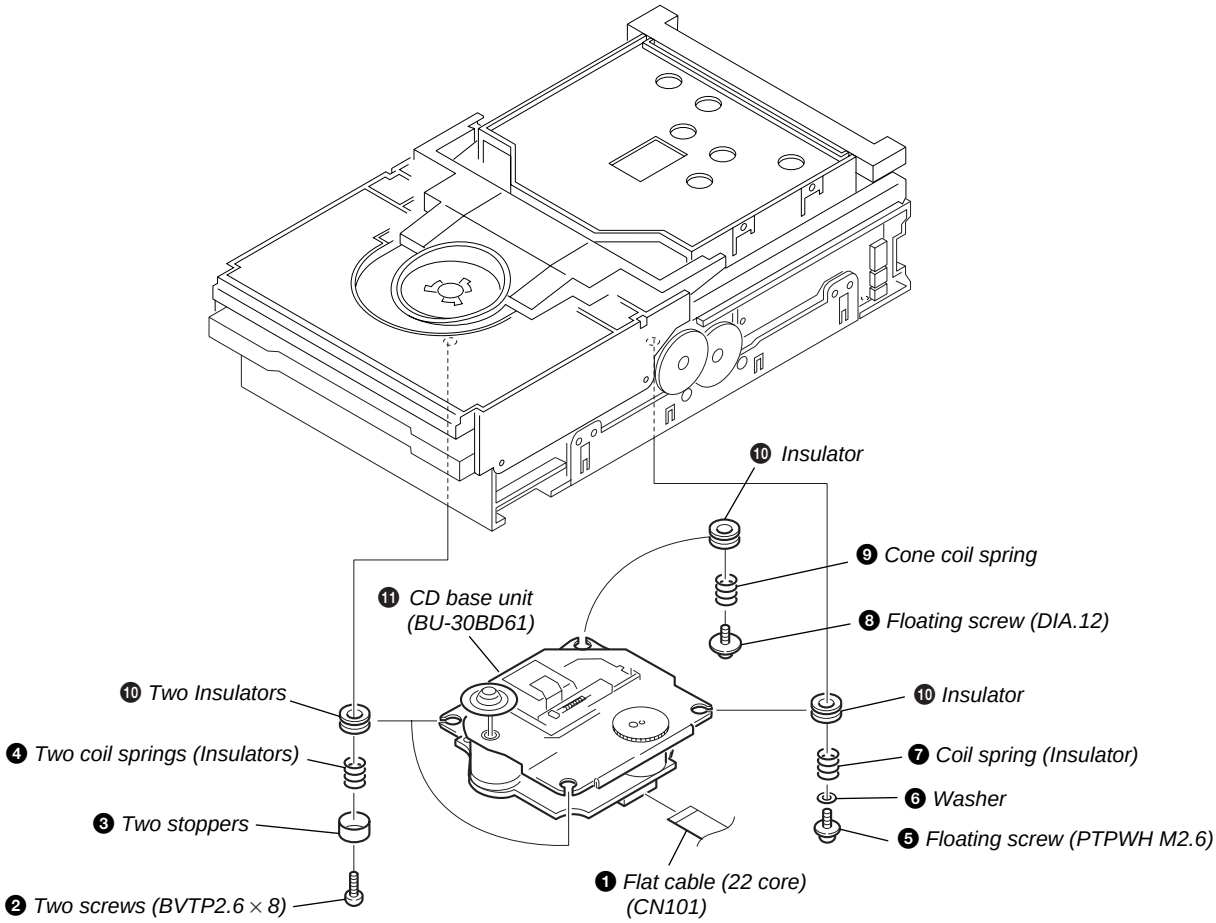
3-14. CD MECHANISM



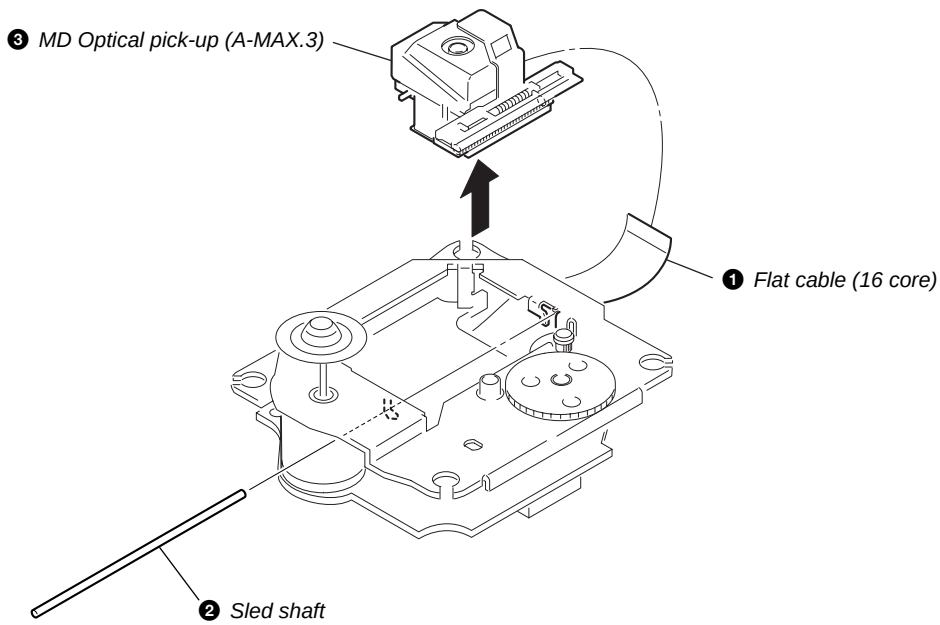
3-15. RELAY BOARD



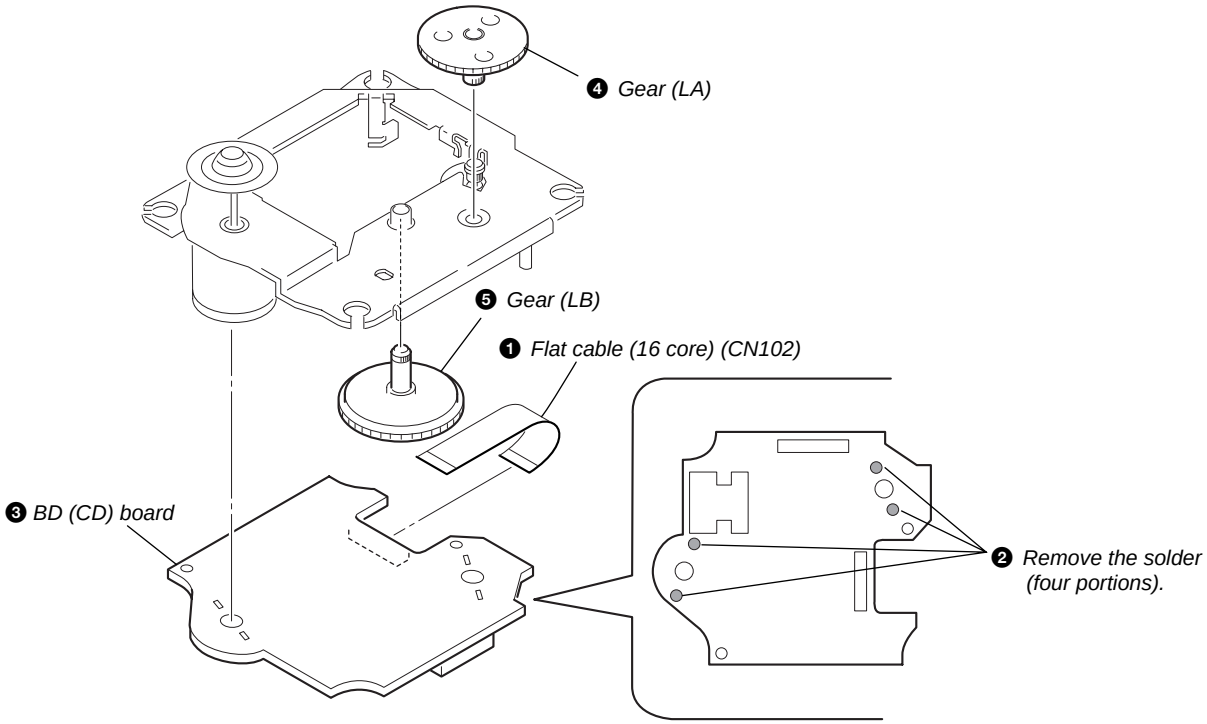
3-16. CD BASE UNIT (BU-30BD61)



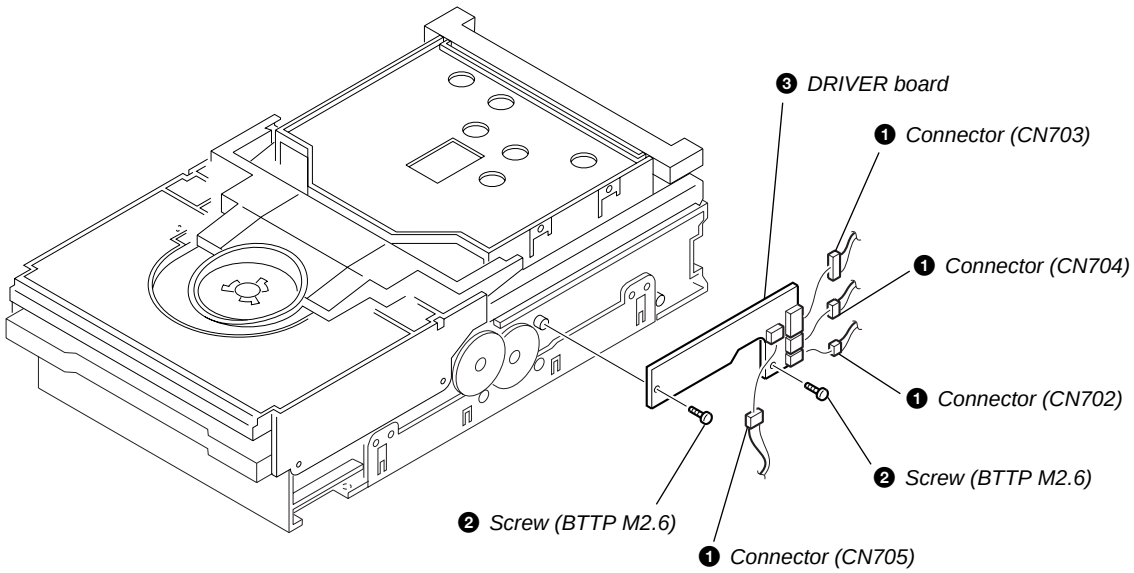
3-17. CD OPTICAL PICK-UP (A-MAX.3)



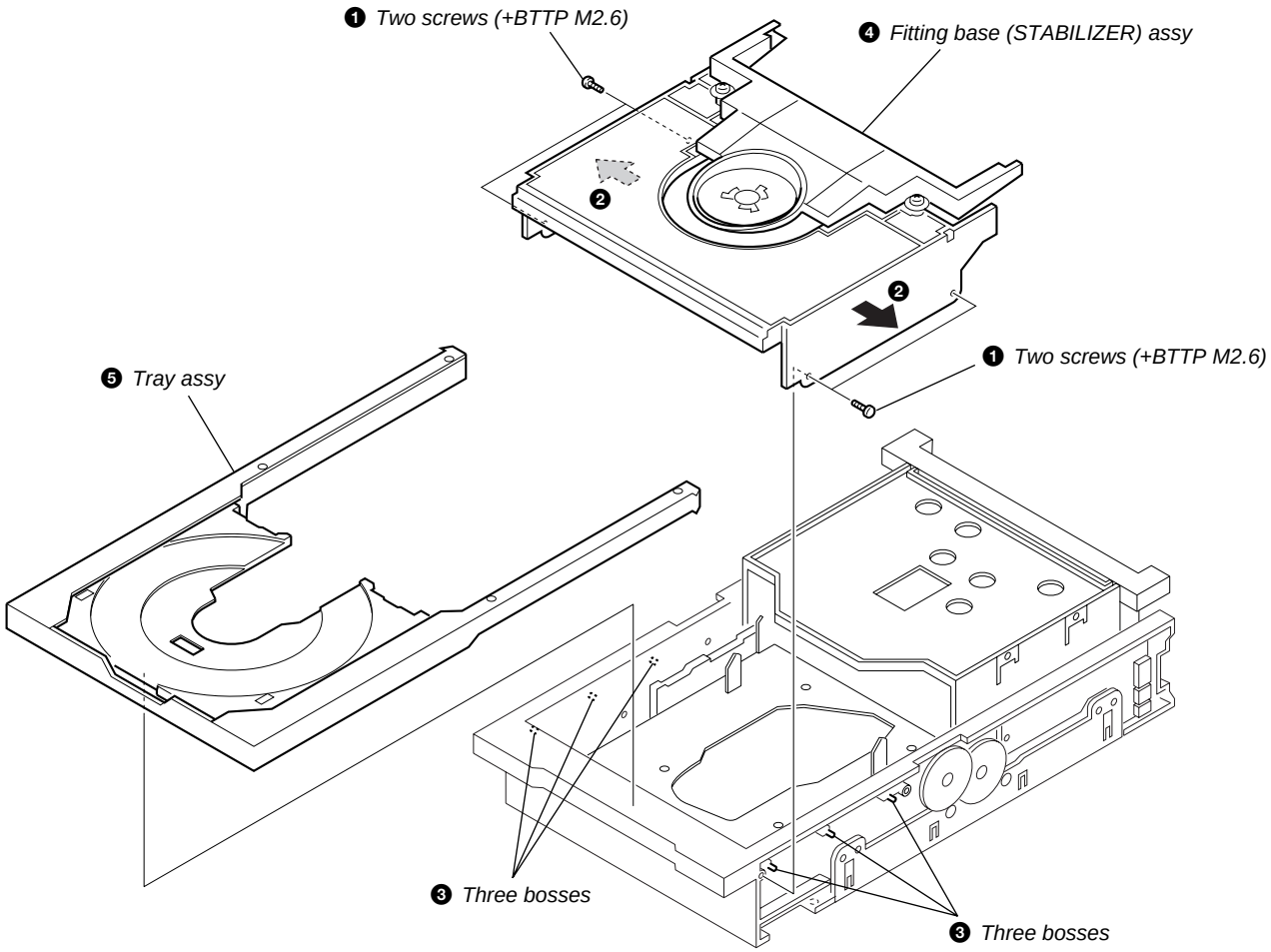
3-18. BD (CD) BOARD



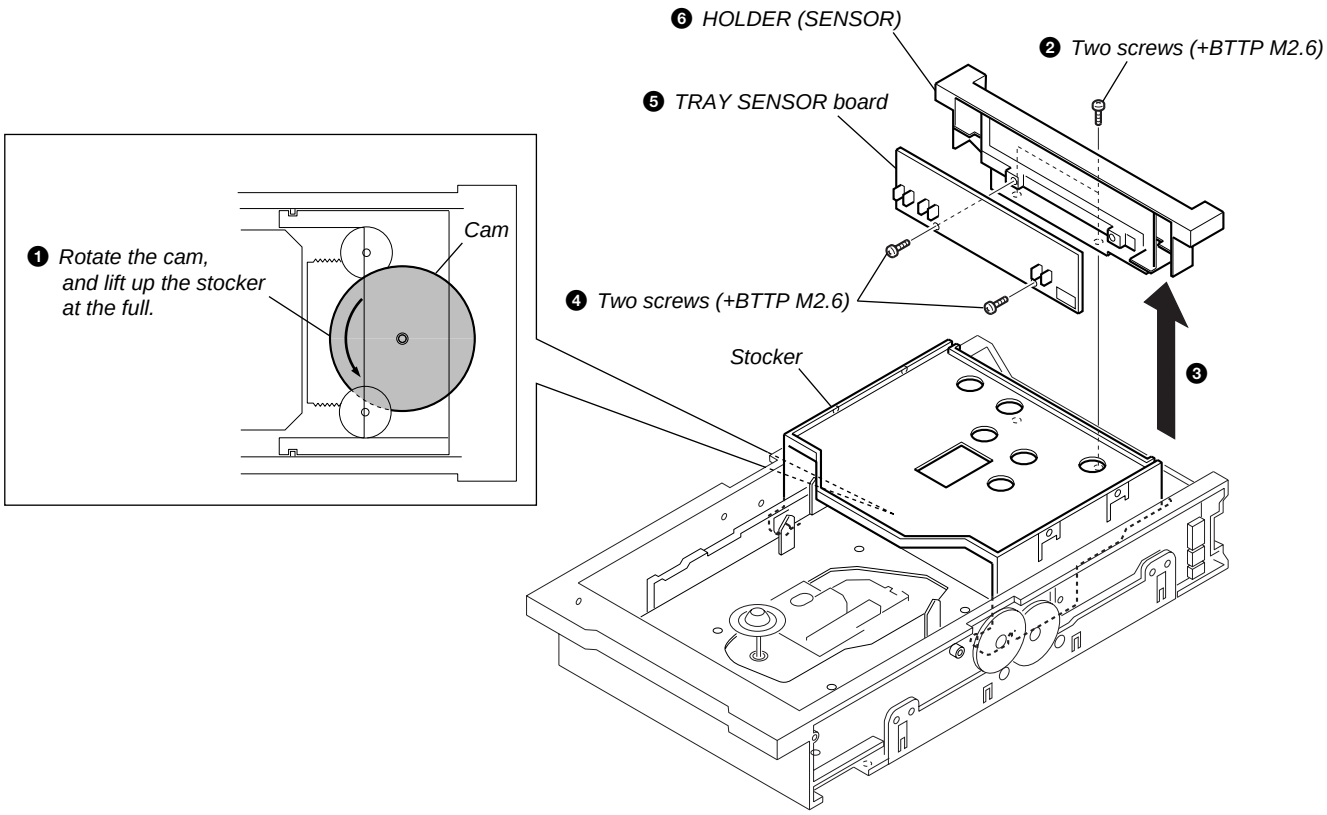
3-19. DRIVER BOARD



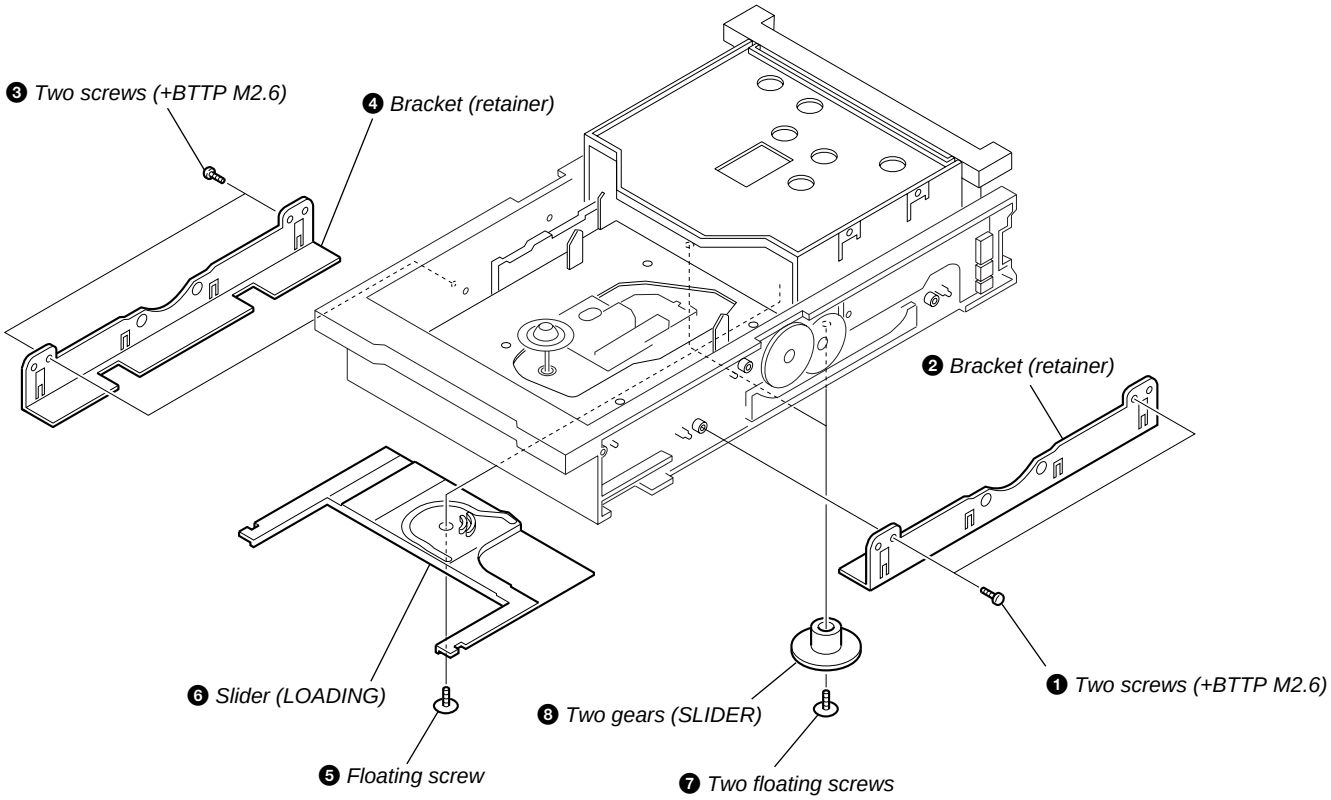
3-20. FITTING BASE (STABILIZER) ASSY, TRAY ASSY



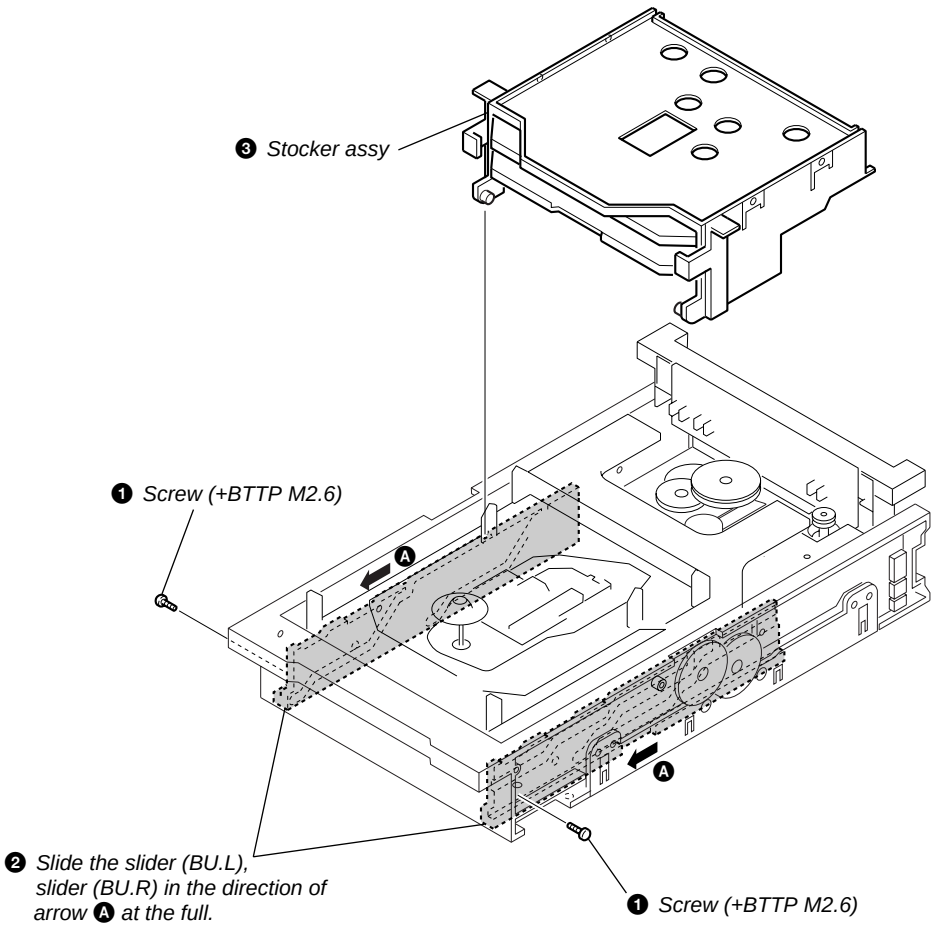
3-21. TRAY SENSOR BOARD



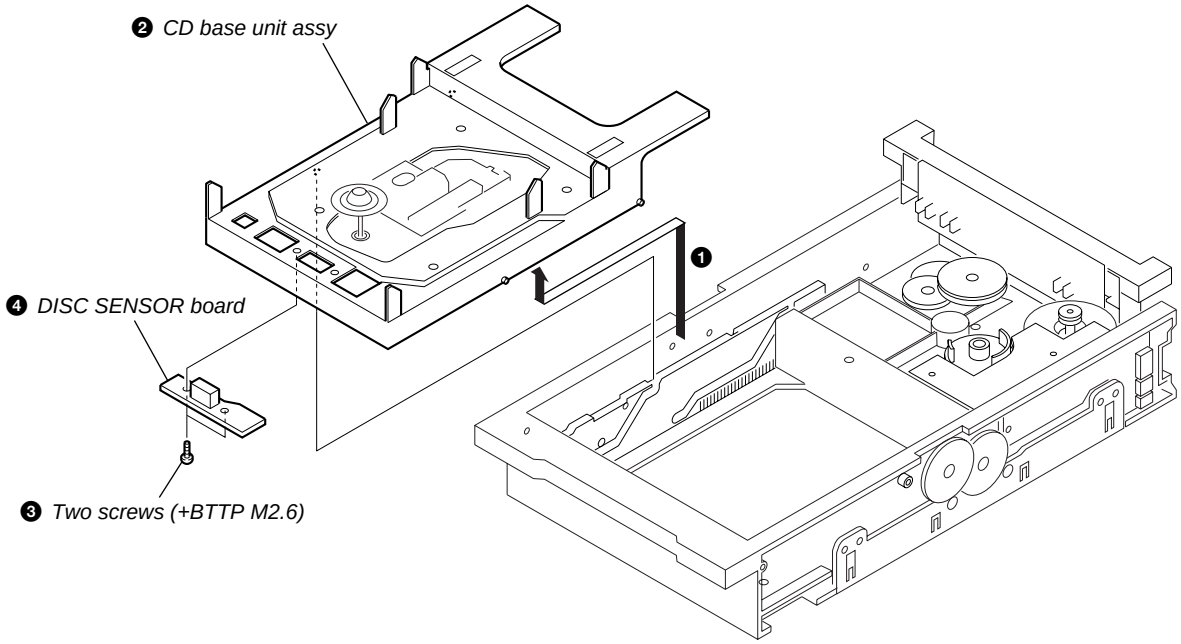
3-22. SLIDER (LOADING), GEAR (SLIDER)



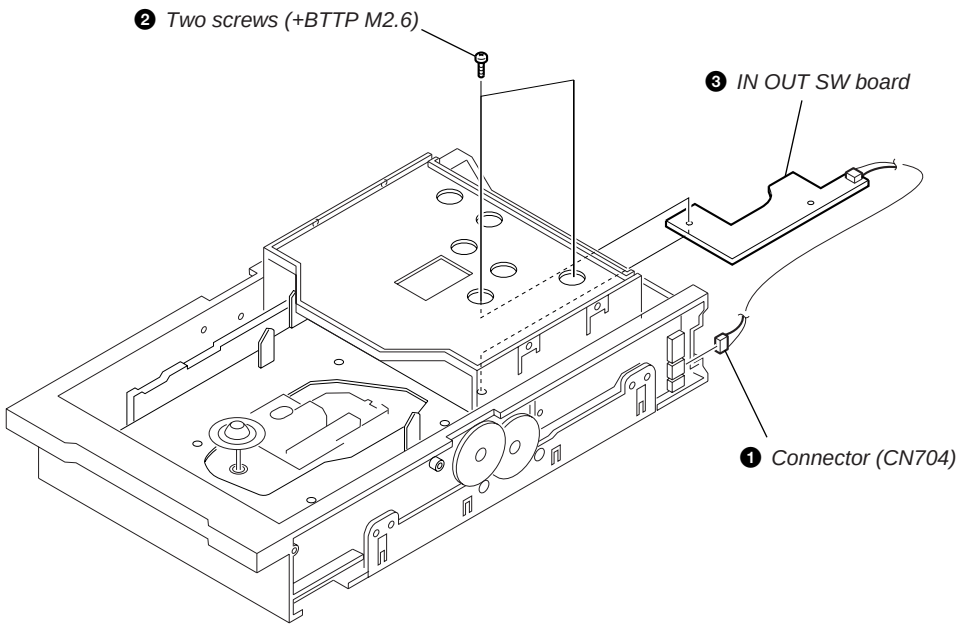
3-23. STOCKER ASSY



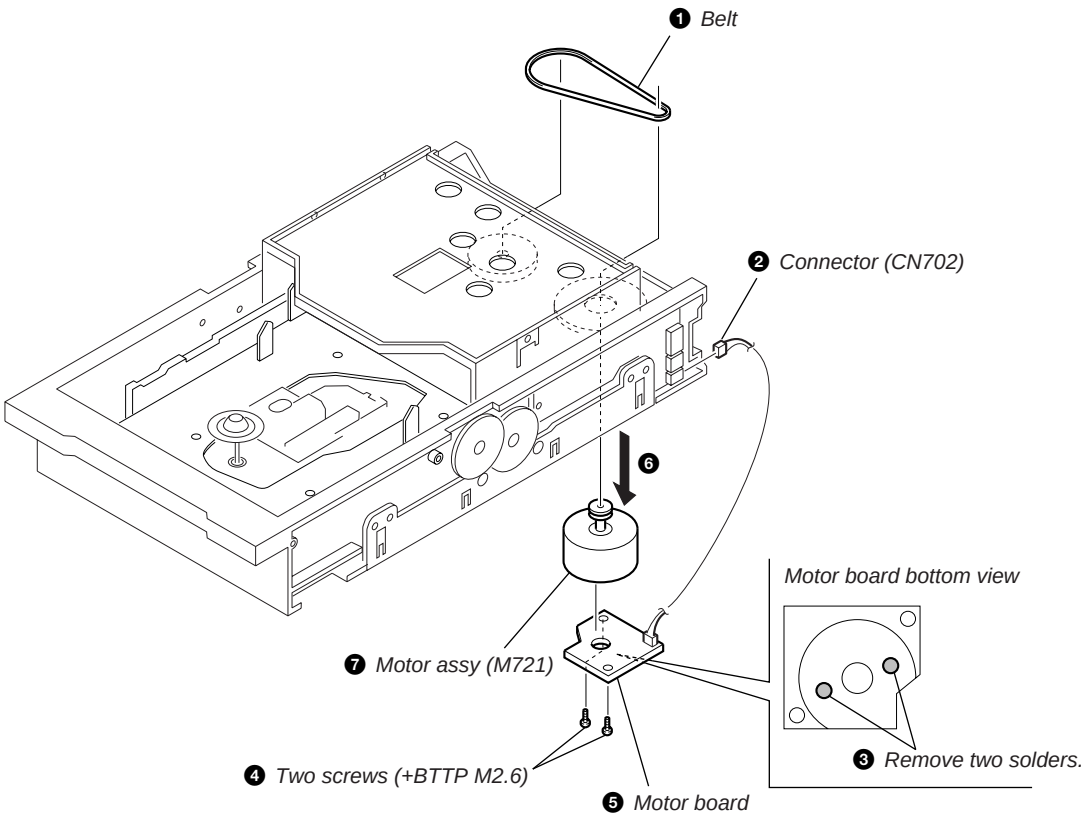
3-24. DISC SENSOR BOARD



3-25. IN OUT SW BOARD



3-26. MOTOR ASSY (M721), MOTOR BOARD



SECTION 4
TEST MODE

[CD Ship Mode]

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

Procedure:

1. Press I/⏻ button to turn the set ON.
2. Press CD 1 button and FUNCTION button simultaneously.
3. After the "STANDBY" display blinks six times, a message "LOCK" is displayed on the fluorescent indicator tube, and the CD ship mode is set.

[GC Test Mode]

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

Procedure:

1. Press three buttons ■, DISPLAY, and CD 2 simultaneously.
2. LEDs and fluorescent indicator tube are all turned on.
3. When you want to enter the software version display mode, press CD 1. The model number and destination are displayed.
4. Each time CD 1 is pressed, the display changes starting from MC version, GC version, CD version, CDD version, CDM version, BD version, ST version, TA version, TM version, TC version and MD version in this order, and returns to the model number and destination display.
5. Press CD 2 button, and the key check mode is activated.
6. In the key check mode, the fluorescent indicator tube 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.
   "V 0" value increases like 1, 2, 3 ... if rotating VOLUME knob in "+" direction, or it decreases like 0, 9, 8 ... if rotating in "–" direction.
7. Also when CD 3 is pressed after lighting of all LEDs and FL tubes, value of VACS appears.
8. To exit from this mode, press three buttons in the same manner as step 1, or disconnect the power cord.

[MC Test Mode]

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

Procedure:

1. Press the I/⏻ button to turn on the set.
2. Press the three buttons of ■, DISPLAY and CD 3 simultaneously.
3. The "VOLUME" segment flashes.
4. Every pressing of BASS/TREBLE △ changes the displays in the order of "GEQ MIN"→"GEQ FLAT"→"GEQ MAX"→"GEQ MIN"
5. When the VOLUME control knob is turned clockwise even slightly, the sound volume increases to its maximum and a message "VOLUME MAX" appears for two seconds, then the display returns to the original display.
6. When the VOLUME control knob is turned counter-clockwise even slightly, the sound volume decreases to its minimum and a message "VOLUME MIN" appears for two seconds, then the display returns to the original display.
7. In the test mode, the default-preset channel is called even when the TUNER is selected and an attempt is made to call the preset channel that has been stored in memory, by operating the Shuttle knob. (It means that the memory is cleared.)
8. When a tape is inserted in Deck B and recording is started, the input source function selects VIDEO automatically.
9. When ■ button is pressed to stop recording, the Tape (Deck) B is selected and tape is rewound using the ◀◀ button, tape is rewound, tape is stops at around the record-starting position and playback of the recorded portion of the tape is started. If PAUSE is inserted even once during recording, tape is rewound to the position around the PAUSE position and is played back.
10. The cold reset is enforced at the same time.

[CD Service Mode]

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

Procedure:

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

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

[CD Ship (Memory Clear) Mode]

• Set the CD ship mode and set the default setup when shipped from the factory at the next AC power on.

Procedure:

1. Press I/⏻ button to turn the set ON.
2. Select the function "CD ".
3. Press three buttons ■, FUNCTION and CD 1 simultaneously.
4. After the "STANDBY" display blinks six times, a message "LOCK" is displayed on the fluorescent indicator tube, and the CD ship mode is set.

[CD/MD/TAPE Repeat 5 Times Limit Release Mode]

• 5 times limit of repeating CD/MD/TAPE is released.

Procedure:

1. Press I/⏻ button to turn the set ON.
2. Press three buttons ■, FUNCTION and CD 1⏏.
3. 5 times limit of repeating CD/MD/TAPE is released.
4. Cold reset is performed at power off.

4-1. PRECAUTIONS FOR USE OF TEST MODE

- As loading related operations will be performed regardless of the test mode operations being performed, be sure to check that the disc is stopped before setting and removing it.
  Even if the ⏏ 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 MENU/NO button, and press the ⏏ button after the disc stops rotating.

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

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

4-2. SETTING THE TEST MODE

The following are two methods of entering the test mode.

Procedure: Connect the mains lead to the mains while pressing the DIMMER, FUNCTION, and ■ buttons together, then release the DIMMER, FUNCTION, and ■ buttons simultaneously.
When the test mode is set, "[Check]" will be displayed. Move I◀◀/▶▶I to switch 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 button, immediately to exit the [Develop] group.

4-3. EXITING THE TEST MODE

Press the REPEAT button. The disc is ejected when loaded, and "Initialize" display blinks, and the STANDBY state is set.

4-4. BASIC OPERATIONS OF THE TEST MODE

Operate using the I◀◀/▶▶I, ENTER/YES button, REC MODE button, MENU/NO button.

Function name	Function
MENU/NO button	Cancel or move to top hierarchy
ENTER/YES button	Set
I◀◀/▶▶I (Left or Right)	Select
REC MODE button	Set submenu

4-5. SELECTING THE TEST MODE

There are 26 types of test modes as shown below. The groups can be switched by moving [I◄◄/►►I] . After selecting the group to be used, press the [ENTER/YES] button. After setting a certain group, move the multi-stick to switche between these modes.
Refer to “Group” in the table for details selected.
All adjustments and checks during servicing can be performed in the test mode in the Service group.

NOTE: Do not use the test mode in the [Develop] group.
If used, the unit may not operate normally.
If the [Develop] group is set accidentally, press the [MENU/NO] 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 ADJUS	C03	Temperature compensation offset adjustment			◯
LDPWR ADJUS	C04	Laser power adjustment			◯
Iop Write	C05	Iop data writing			◯
Iop NV Save	C06	Writes current Iop value in read nonvolatile memory using microprocessor			◯
EF MO ADJUS	C07	Traverse (MO) adjustment			◯
EF CD ADJUS	C08	Traverse (CD) adjustment			◯
FBIAS ADJUS	C09	Focus bias adjustment			◯
AG Set (MO)	C10	Focus, tracking gain adjustment (MO)			◯
AG Set (CD)	C11	Focus, tracking gain adjustment (CD)			◯
TEMP CHECK	C12	Temperature compensation offset check		◯	◯
LDPWR CHECK	C13	Laser power check		◯	◯
EF MO CHECK	C14	Traverse (MO) check		◯	◯
EF CD CHECK	C15	Traverse (CD) check		◯	◯
FBIAS CHECK	C16	Focus bias check		◯	◯
ScurveCHECK	C17	S-curve check	×	◯	
VERIFYMODE	C18	Nonvolatile memory check	×	◯	
DETRK CHECK	C19	Detrack check	×	◯	
0920 CHECK	C25	Most circumference check	×	◯	
Iop Read	C26	Iop data display		◯	◯
Iop Compare	C27	Comparison with initial Iop value written in nonvolatile memory		◯	◯
ADJ CLEAR	C28	Initialization of nonvolatile memory for adjustment values			◯
INFORMATION	C31	Display of microprocessor version, etc.		◯	◯
CPLAY1MODE	C34	Continuous playback mode		◯	◯
CREC 1MODE	C35	Continuous recording mode		◯	◯

- For details of each adjustment mode, refer to “6. Electrical Adjustments”.
  For details of “Err Display”, refer to “Self-Diagnosis Function” on page 3.
- If a different mode has been selected by mistake, press the [MENU/NO] button, to exit that mode.
- Modes with (X) in the Mark column are not used for servicing and therefore are not described in detail. If these modes are set accidentally, press the [MENU/NO] button, to exit the mode immediately.

4-5-1. Operating the Continuous Playback Mode

1. Entering the continuous playback mode
   ① Set the disc in the unit. (Whichever recordable discs or discs for playback only are available.)
   ② Move [I◄◄ /►►I] and display "CPLAY1MODE"(C34).
   ③ Press the [ENTER/YES] button to change the display to "CPLAY1MID".
   ④ When access completes, the display changes to "C = □□□□ AD = □□".
   Note : The numbers "□" displayed show you error rates and ADER.
2. Changing the parts to be played back
   ① Press the [ENTER/YES] button during continuous playback to change the display as below.
   "CPLAY1MID" → "CPLAY1OUT" → "CPLAY1IN"
   When pressed another time, the parts to be played back can be moved.
   ② When access completes, the display changes to "C = □□□□ AD = □□".
   Note : The numbers "□" displayed show you error rates and ADER.
3. Ending the continuous playback mode
   ① Press the [MENU/NO] button. The display will change to "CPLAY1MODE"(C34).
   ② To remove the disc, press the [⏏] button.
   Note : The playback start addresses for IN, MID, and OUT are as follows.
   IN 40h cluster
   MID 300h cluster
   OUT 700h cluster

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

1. Entering the continuous recording mode
   ① Set a recordable disc in the unit.
   ② Move [I◄◄ /►►I] and display "CREC 1MODE" (C35).
   ③ Press the [ENTER/YES] button to change the display to "CREC 1MID".
   ④ When access completes, the display changes to "CREC1 (□□□□)" and **REC** lights up.
   Note : The numbers "□" displayed shows you the recording position addresses.
2. Changing the parts to be recorded
   ① When the [ENTER/YES] button is pressed during continuous recording, the display changes as below.
   "CREC 1MID" → "CREC 1OUT" → "CREC 1IN"
   When pressed another time, the parts to be recorded can be changed. **REC** goes off.
   ② When access completes, the display changes to "CREC 1(□□□□)" and **REC** lights up.
   Note : The numbers "□" displayed shows you the recording position addresses.
3. Ending the continuous recording mode
   ① Press the [MENU/NO] button. The display changes to "CREC 1MODE" (C35) and **REC** goes off.
   ② To remove the disc, press the [⏏] button.
   Note 1 : The recording start addresses for IN, MID, and OUT are as follows.
   IN 40h cluster
   MID 300h cluster
   OUT 700h cluster
   Note 2 : Press the [MENU/NO] 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.

4-6. FUNCTIONS OF OTHER BUTTONS

Function	Contents
PLAY	Sets continuous playback when pressed in the STOP state. When pressed during continuous playback, the tracking servo turns ON/OFF.
MD ▷II	Stops continuous playback and continuous recording.
▷▷ (FF)	The sled moves to the outer circumference only when this is pressed.
◁◁ (FR)	The sled moves to the inner circumference only when this is pressed.
PLAY MODE	Switches the spindle servo mode (CLV S ⟷ CLV A).
EJECT	Ejects the disc.
REPEAT	Exits the test mode. (When No disc)

4-7. MEANINGS OF OTHER DISPLAYS

Display	Contents	
	When Lit	When Off
LP2	Servo ON	Servo OFF
LP4	Tracking servo OFF	Tracking servo ON
(LED)	Recording mode ON	Recording mode OFF
SYNC	CLV low speed mode	CLV normal mode
LEVEL-SYNC	ABCD adjustment completed	
OVER	Tracking offset cancel ON	Tracking offset cancel OFF
TOC	Tracking auto gain OK	
REPEAT	Focus auto gain OK	
X1	CLV S	CLV A
MONO	CLV LOCK	CLV UNLOCK

4-8. AUTOMATIC SELF-DIAGNOSIS FUNCTION

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

Procedure

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

When “CHECK ALL OK” is displayed, it means that the optical pick-up is normal. Check the operations of the other spindle motor, thread motor, etc.
When displayed as “NG:xxxx”, it means that the optical pick-up is faulty. In this case, replace the optical pick-up.

4-9. INFORMATION

Display the software version.

Procedure

1. If displayed as “INFORMATION”, press the ENTER/YES button.
2. The software version will be displayed.
3. Press the MENU/NO button is lit to end this mode.

4-10. WHEN MEMORY NG IS DISPLAYED

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

Procedure

1. Set the test mode. (Refer to 4-2.)
2. Normally a message for selecting the test mode will be displayed. However if the nonvolatile memory is abnormal, the following will be displayed. “INIT EEP?”
3. Press the ■ button and ⏏ button together.
4. Move I◀◀ /▶▶I and select MDM-7B.
5. Press the REC MODE button. If the nonvolatile memory is successfully overwritten, the normal test mode will be set and a message to select the test mode will be displayed.

SECTION 5
MECHANICAL ADJUSTMENTS

Precaution

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

Torque Measurement

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

SECTION 6
ELECTRICAL ADJUSTMENTS

DECK SECTION **0 dB=0.775V**

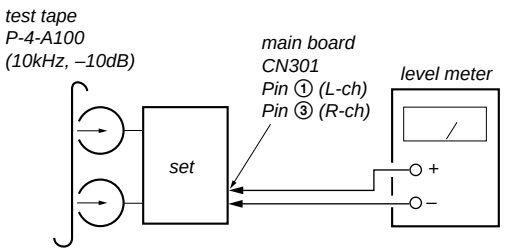
1. Demagnetize the record/playback head with a head demagnetizer.
2. Do not use a magnetized screwdriver for the adjustments.
3. After the adjustments, apply suitable locking compound to the parts adjusted.
4. The adjustments should be performed with the rated power supply voltage unless otherwise noted.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

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

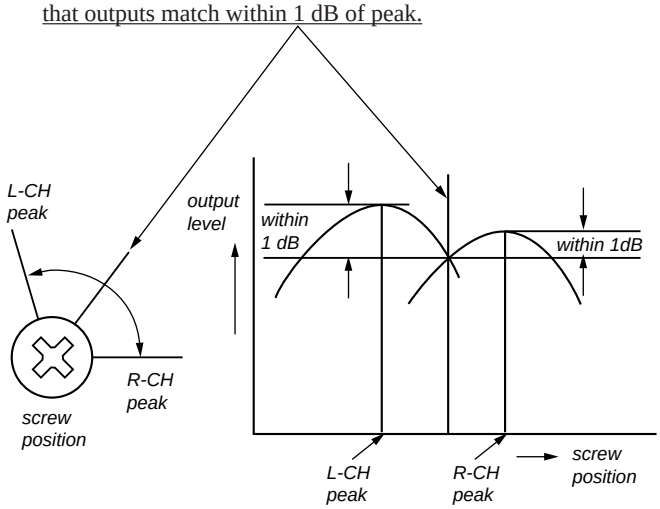
Record/Playback Head Azimuth Adjustment

Procedure:

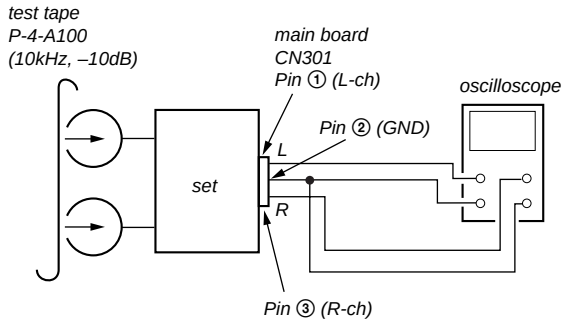
1. Mode : Playback

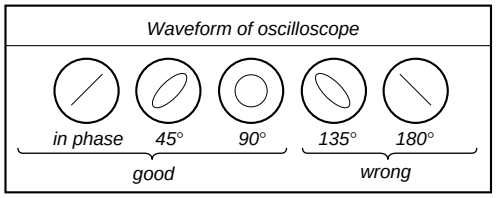


2. Turn the adjustment screw and check output peaks. If the peaks do not match for L-CH and R-CH, turn the adjustment screw so that outputs match within 1 dB of peak.



3. Mode: Playback





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

Adjustment Location: Record/Playback/Erase Head

Tape Speed Check

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

Procedure:
With the power turned ON, press the ■ button, ENTER/YES button, and DISC 3 button simultaneously.
(The "VOLUME" on the fluorescent display tube will blink while in the test mode.)
To exit the test mode, press the I/⏻ button.

1. Insert the WS-48B into deck.
2. Press the ◀▶ button of deck.
3. Check the reading of frequency counter becomes 3000 ± 15 Hz.

Sample Value of Wow and flutter

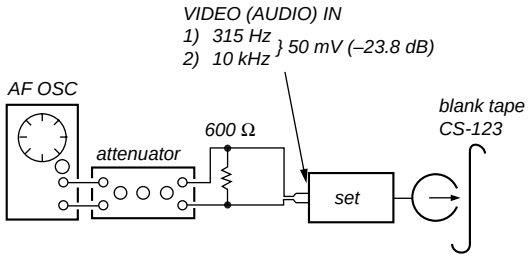
W.RMS (JIS) less than 0.3%
(test tape: WS-48B)

Record Bias Adjustment

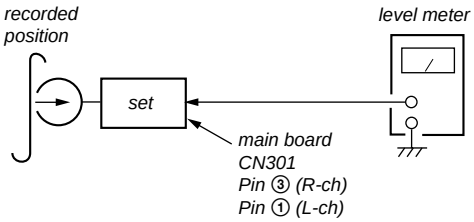
Procedure:

INTRODUCTION
When set to the test mode performed in **Tape Speed Adjustment**, when the tape is rewound after recording, the "REC memory mode" which rewinds only the recorded portion and playback is set.
This "REC memory mode" is convenient for performing this adjustment. During recording, the input signal FUNCTION will automatically switch to VIDEO.
(After recording, press the ◀◀ button without stopping will return to the position where recording was started.)

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



4. Mode: Playback

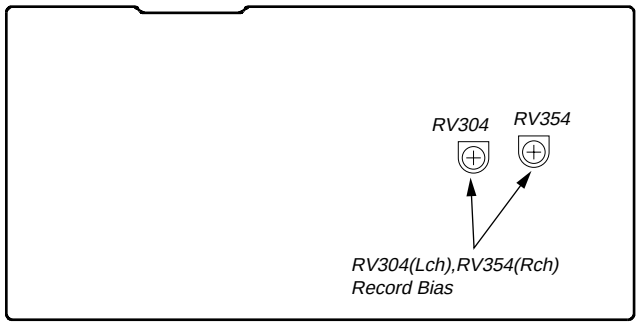


5. Confirm playback the signal recorded in step 2 become adjustment level as follows.
   If these levels do not adjustment level, adjust the RV304 (L-CH) and RV354 (R-CH) on the TC board to repeat steps 3 and 4.

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

Adjustment Location:

[TC BOARD]

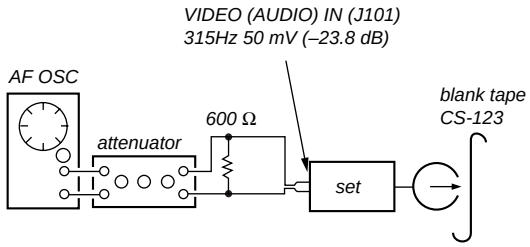


Record Level Adjustment

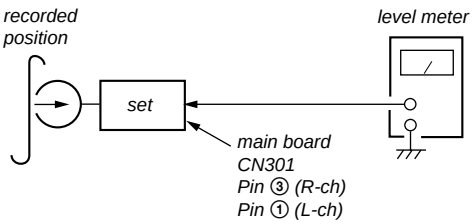
Procedure:

INTRODUCTION
When set to the test mode performed in **Tape Speed Adjustment**, when the tape is rewound after recording, the "REC memory mode" which rewinds only the recorded portion and playback is set.
This "REC memory mode" is convenient for performing this adjustment. During recording, the input signal FUNCTION will automatically switch to VIDEO.
(After recording, press the ◀◀ button without stopping will return to the position where recording was started.)

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



4. Mode: Playback

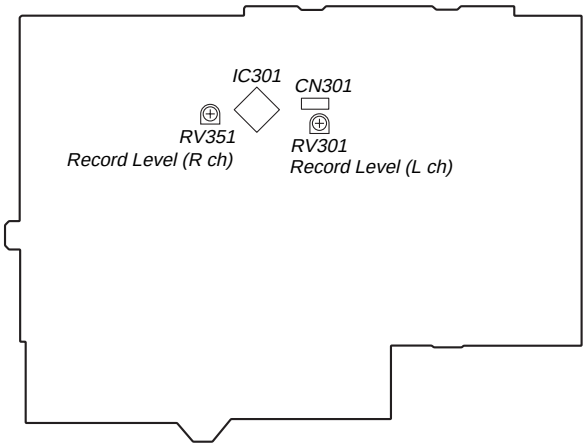


5. Confirm playback the signal recorded in step 2 become adjustment level as follows.
   If these levels do not adjustment level, adjust the RV301 (L-CH) and RV351 (R-CH) on the MAIN board to repeat steps 3 and 4.

Adjustment level:
CN301 playback level: 47.2 to 53.0 mV (–24.3 to –23.3 dB)

Adjustment Location:

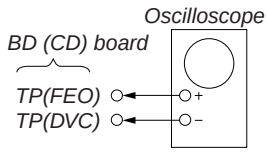
[MAIN BOARD]



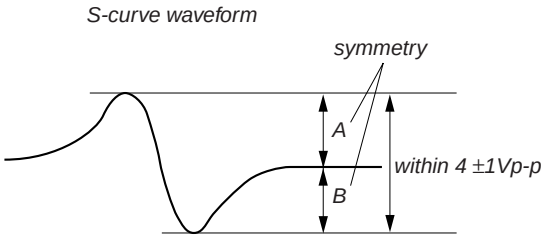
CD SECTION

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

S-Curve Check



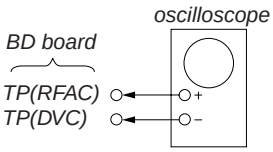
Procedure :
1. Connect oscilloscope to TP (FEO).
2. Connect between TP (FEI) and TP (VC) by lead wire.
3. Turn Power switch on.
4. Load a disc (YEDS-18) and actuate the focus search. (In consequence of open and close the disc tray, actuate the focus search)
5. Confirm that the oscilloscope waveform (S-curve)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



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

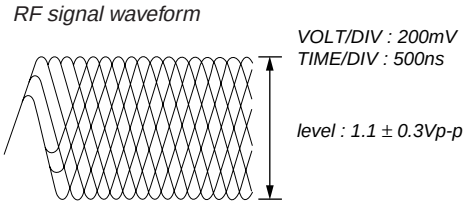
Note :
- Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.
- Take sweep time as long as possible and light up the brightness to obtain best waveform.

RF Level Check

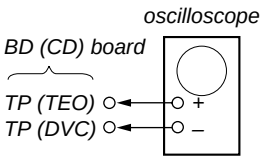


Procedure :
1. Connect oscilloscope to TP (RFAC).
2. Turned Power switch on.
3. Load a disc (YEDS-18) and playback.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.
5. Measure the RFDC in the same way.

Note: Clear RF signal waveform means that the shape "◊" can be clearly distinguished at the center of the waveform.

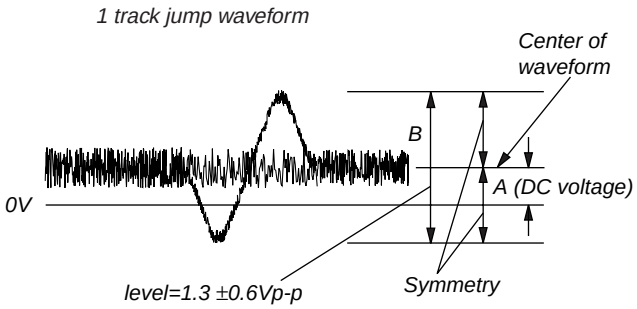


E-F Balance (1 Track jump) Check



Procedure:

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



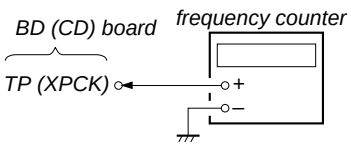
Specification level: $\frac{A}{B}$ x 100=less than ±22%

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

RF PLL Free-run Frequency

Procedure :

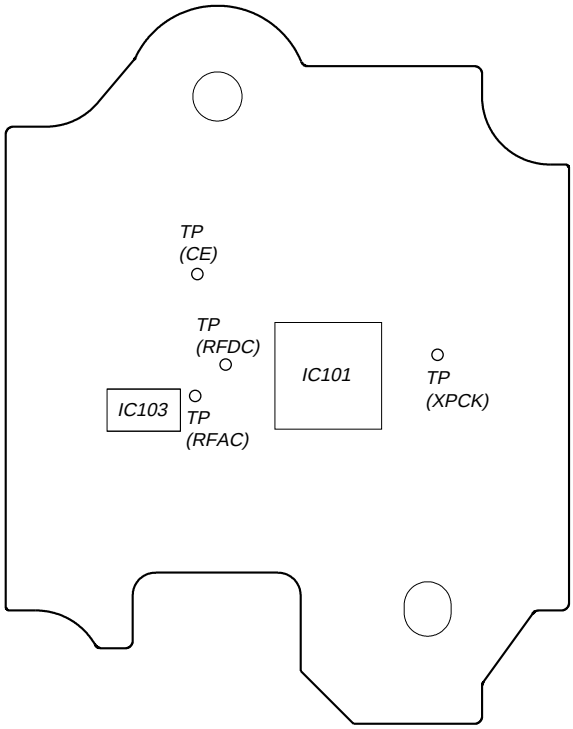
1. Connect frequency counter to test point (XPCK) with lead wire.



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

Adjustment Location :

[BD (CD) BOARD] — SIDE B —

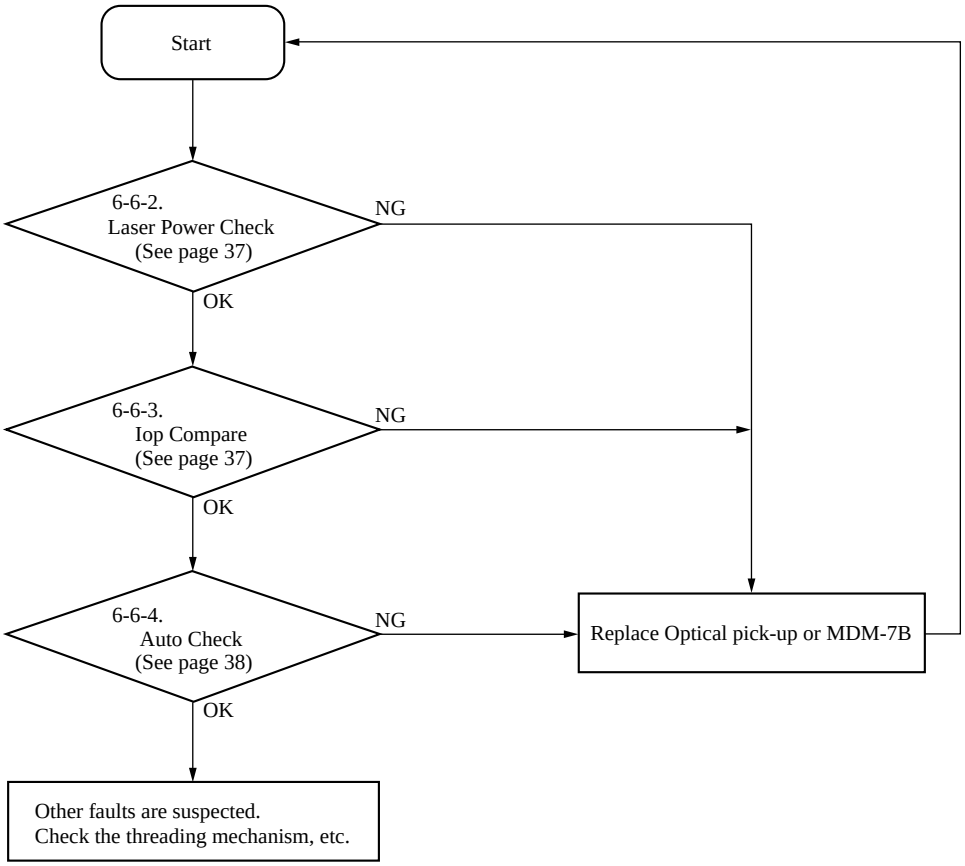


MD SECTION

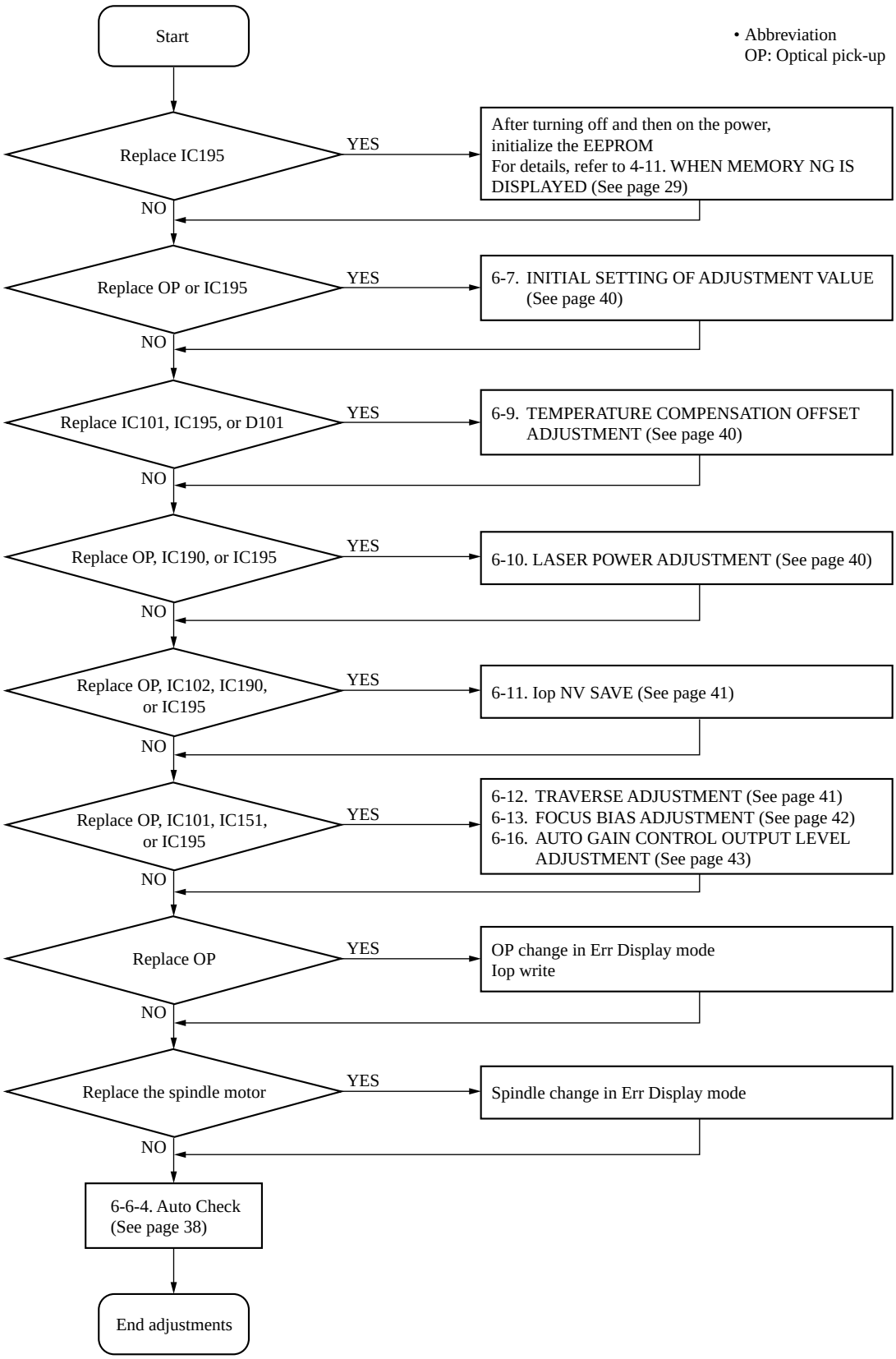
6-1. PARTS REPLACEMENT AND ADJUSTMENT

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

Check before replacement



Adjustment flow

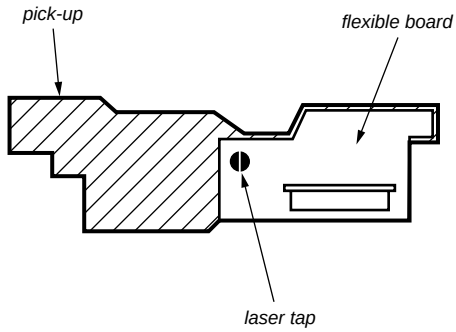


6-2. PRECAUTIONS FOR CHECKING LASER DIODE EMISSION

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

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

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



Optical pick-up flexible board

6-4. PRECAUTIONS FOR ADJUSTMENTS

1) When replacing the following parts, perform the adjustments and checks with ◯ in the order shown in the following table.
2) Set the test mode when performing adjustments.
   After completing the adjustments, exit the test mode.
   Perform the adjustments and checks in "group S" of the test mode.
3) Perform the adjustments to be needed in the order shown.
4) Use the following tools and measuring devices.
   - Check Disc (MD) TDYS-1
     (Parts No. 4-963-646-01)
   - Test Disk (MDW-74/GA-1) (Parts No. 4-229-747-01)
   - Laser power meter LPM-8001 (Parts No. J-2501-046-A)

   or

     MD Laser power meter 8010S (Parts No. J-2501-145-A)
   - Oscilloscope (Measure after performing CAL of prove.)
   - Digital voltmeter
   - Thermometer
   - Jig for checking BD (MD) board waveform
     (Parts No. : J-2501-196-A)
5) When observing several signals on the oscilloscope, etc., make sure that VC and ground do not connect inside the oscilloscope.
   (VC and ground will become short-circuited.)
6) Using the above jig enables the waveform to be checked without the need to solder.
   (Refer to Servicing Note on page 8.)
7) As the disc used will affect the adjustment results, make sure that no dusts nor fingerprints are attached to it.

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

6-5. USING THE CONTINUOUSLY RECORDED DISC

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

1. Insert a disc (blank disc) commercially available.
2. Move [I◀◀ /▶▶I] and display "CREC 1MODE"(C35).
3. Press the [ENTER/YES] button again to display "CREC 1MID". Display "CREC (0300)" and start to recording.
4. Complete recording within 5 minutes.
5. Press the [MENU/NO] button and stop recording.
6. Press the [⏏] 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.

6-6. CHECKS PRIOR TO REPAIRS

These checks are performed before replacing parts according to "approximate specifications" to determine the faulty locations.

6-6-1. Temperature Compensation Offset Check

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

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

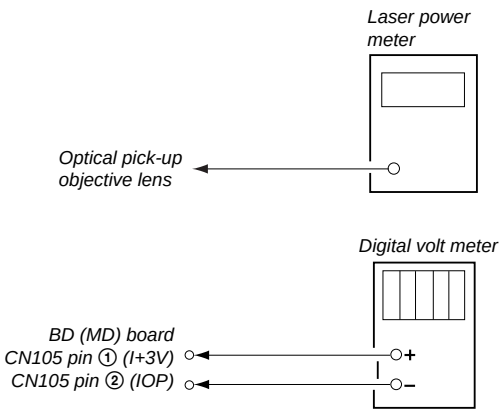
Checking Procedure:

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

6-6-2. Laser Power Check

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

Connection :



Checking Procedure:

1. Set the laser power meter on the objective lens of the optical pick-up. (If cannot set properly, press the [◀◀] or [▶▶] button and move the optical pick-up.)
   Connect the digital volt meter to CN105 pin ① (I+3V) and CN105 pin ② (IOP).
2. Then, move [I◀◀ /▶▶I] and display "LDPWR CHECK" (C13).
3. Press the [ENTER/YES] button once and display "LD 0.9 mW $ ⬚". Check that the reading of the laser power meter become 0.84 to 0.92 mW.
4. Press the [ENTER/YES] button once more and display " LD 7.0 mW $ ⬚". Check that the reading the laser power meter and digital volt meter satisfy the specified value.

Specified Value :

Laser power meter reading : 7.0 ± 0.2 mW

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

(Optical pick-up label)

KMS260B
20101
H0576

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

Iop = 57.6 mA in this case
Iop (mA) = Digital voltmeter reading (mV)/1 (Ω)

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

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

6-6-3. Iop Compare

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

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

Procedure

1. Move [I◀◀ /▶▶I] to display "Iop Compare"(C27).
2. Press the [ENTER/YES] 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] button to end.

6-6-4. Auto Check

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

Procedure

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

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

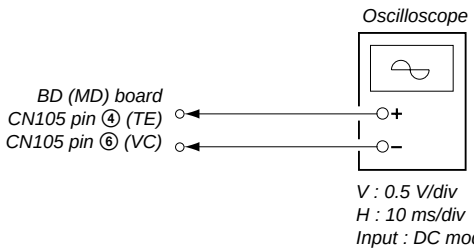
6-6-5. Other Checks

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

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

6-6-6. Traverse Check

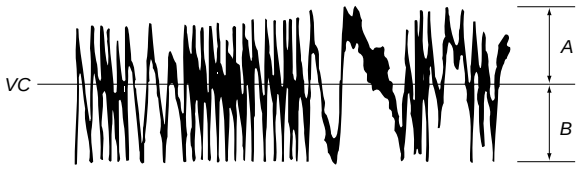
Connection :



Checking Procedure:

1. Connect an oscilloscope to CN105 pin ④ (TE) and CN105 pin ⑥ (VC) of the BD (MD) board.
2. Load a test disc (MDW-74/GA-1). (Refer to Note 1.)
3. Press the ▶▶ button, and move the optical pick-up outside the pit.
4. Move I◀◀ /▶▶I and display "EF MO CHECK"(C14).
5. Press the ENTER/YES button and display "EFB = ⬚ MO-R". (Laser power READ power/Focus servo ON/tracking servo OFF/ spindle (S) servo ON)
6. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not move I◀◀ /▶▶I .
   (Read power traverse checking)

(Traverse Waveform)

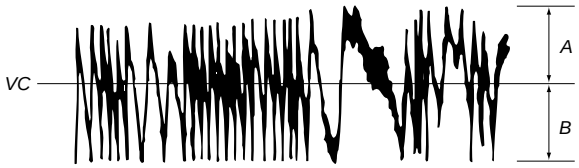


Specified value : Below 10% offset value

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

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

(Traverse Waveform)



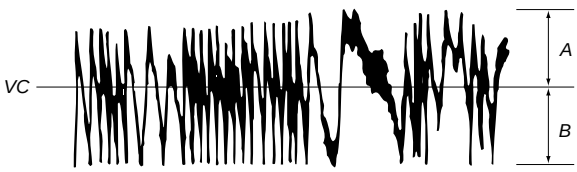
Specified value : Below 10% offset value

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

9. Press the ENTER/YES button display "EFB = ⬚ MO-P". Then, the optical pick-up moves to the pit area automatically and servo is imposed.

10. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not move I◀◀ /▶▶I .

(Traverse Waveform)



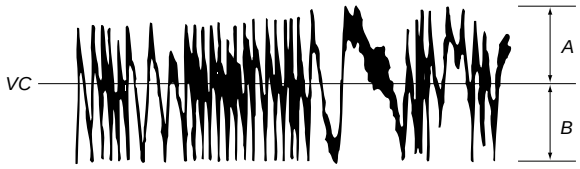
Specified value : Below 10% offset value

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

11. Press the ENTER/YES button display "EF MO CHECK" (C14).
    The disc stops rotating automatically.
12. Press the ⏏ button and remove the disc.
13. Load the check disc (MD) TDYS-1.
14. Move I◀◀ /▶▶I and display "EF CD CHECK" (C15).
15. Press the ENTER/YES button and display "EFB = ⬚ CD". Servo is imposed automatically.

16. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not move [I◀◀/▶▶I] .

(Traverse Waveform)



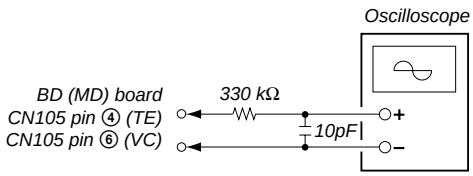
Specified value : Below 10% offset value

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

17. Press the [ENTER/YES] button and display "EF CD CHECK" (C15).
18. Press the [⏏] button and remove the check disc (MD) TDYS-1.

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

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



6-6-7. Focus Bias Check

Change the focus bias and check the focus tolerance amount.

Checking Procedure :

1. Load a continuously recorded test disc (MDW-74/GA-1). (Refer to "6-5. Using the Continuously Recorded Disc".)
2. Move [I◀◀/▶▶I] and display "CPLAY1MODE"(C34).
3. Press the [ENTER/YES] button and display "CPLAY1MID".
4. Press the [MENU/NO] button, when "C = □□□□ AD = □□" is displayed.
5. Move [I◀◀/▶▶I] and display "FBIAS CHECK"(C16).
6. Press the [ENTER/YES] button and display " □□□□/□□ c = □□". The first four digits indicate the C1 error rate, the two digits after [/] indicate ADER, and the 2 digits after [c =] indicate the focus bias value.
   Check that the C1 error is below 20 and ADER is below 2.
7. Press the [ENTER/YES] button and display " □□□□/□□ b = □□". Check that the C1 error is below 100 and ADER is below 2.
8. Press the [ENTER/YES] button and display " □□□□/□□ a = □□". Check that the C1 error is below 100 and ADER is below 2.
9. Press the [MENU/NO] button, next press the [⏏] button, and remove the test disc.

6-6-8. C PLAY Check

MO Error Rate Check

Checking Procedure :

1. Load a continuously recorded test disc (MDW-74/GA-1). (Refer to "6-5. Using the Continuously Recorded Disc".)
2. Move [I◀◀/▶▶I] and display "CPLAY1MODE"(C34).
3. Press the [ENTER/YES] button and display "CPLAY1MID".
4. The display changes to "C1 = □□□□ AD = □□".
5. If the C1 error rate is below 20, check that ADER is 00.
6. Press the [MENU/NO] button, stop playback, press the [⏏] button, and test disc.

CD Error Rate Check

Checking Procedure :

1. Load a check disc (MD) TDYS-1.
2. Move [I◀◀/▶▶I] and display "CPLAY1MODE"(C34).
3. Press the [ENTER/YES] button twice and display "CPLAY1 MID".
4. The display changes to "C1 = □□□□ AD = □□".
5. Check that the C1 error rate is below 20.
6. Press the [MENU/NO] button, stop playback, press the [⏏] button, and the test disc.

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

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

Checking Procedure :

1. Insert a recordable test disc (MDW-74/GA-1) into the unit.
2. Move [I◀◀/▶▶I] to display "CREC 1MODE"(C35).
3. Press the [ENTER/YES] button to display the "CREC 1MID".
4. When recording starts, " **REC** " is displayed, this becomes "CREC (@@@@)" (@@@@ is the address), and recording starts.
5. About 1 minute later, press the [MENU/NO] button to stop continuous recording.
6. Move [I◀◀/▶▶I] to display "CPLAY1MODE"(C34).
7. Press the [ENTER/YES] button to display "CPLAY1MID".
8. "C1 = □□□□ AD = □□" will be displayed.
9. Check that the C1 error becomes below 20 and the AD error below 2.
10. Press the [MENU/NO] button to stop playback, and press the [⏏] button and remove the disc.

6-7. INITIAL SETTING OF ADJUSTMENT VALUE

Note:
Mode which sets the adjustment results recorded in the non-volatile memory to the initial setting value. However the results of the temperature compensation offset adjustment will not change to the initial setting value.
If initial setting is performed, perform all adjustments again excluding the temperature compensation offset adjustment.
For details of the initial setting, refer to "6-4. Precautions on Adjustments" and execute the initial setting before the adjustment as required.

Setting Procedure :
1. Move [I◀◀/▶▶I] to display "ADJ CLEAR" (C28).
2. Press the [ENTER/YES] button. "Complete!" will be displayed momentarily and initial setting will be executed, after which "ADJ CLEAR" (C28) will be displayed.

6-8. RECORDING AND DISPLAYING THE Iop INFORMATION

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

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

Display Procedure :
1. Move [I◀◀/▶▶I] to display "Iop Read"(C26).
2. Press the [ENTER/YES] button.
2. "@@.@/##.#" is displayed and the recorded contents are displayed.
   @@.@ indicates the Iop value labeled on the pick-up.
   ##.# indicates the Iop value after adjustment
3. To end, press the [MENU/NO] button or press the [REC MODE] button and display "Iop Read" (C26).

6-9. TEMPERATURE COMPENSATION OFFSET ADJUTMENT

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

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

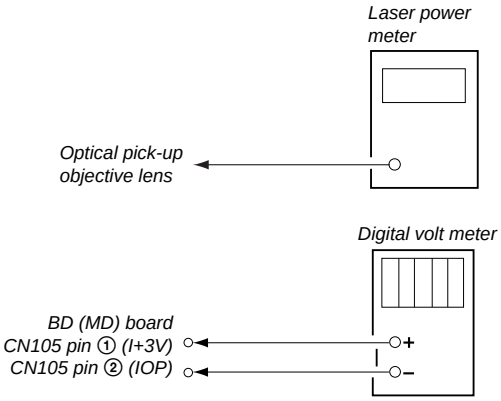
Adjusting Procedure :
1. Move [I◀◀/▶▶I] and display "TEMP ADJUS" (C03).
2. Press the [ENTER/YES] button and select the "TEMP ADJUS" (C03) mode.
3. "TEMP = ▯▯ [OK]" and the current temperature data will be displayed.
4. To save the data, press the [ENTER/YES] button.
   When not saving the data, press the [MENU/NO] button.
5. When the [ENTER/YES] button is pressed, "TEMP = ▯▯ SAVE" will be displayed and turned back to "TEMP ADJUS" (C03) display then. Pressing the [MENU/NO] button displays "TEMP ADJUS" (C03) immediately.

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

6-10. LASER POWER ADJUSTMENT

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

Connection :



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

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

7. Then, move I◄◄/►►I and display “LDPWR CHECK” (C13).
8. Press the ENTER/YES button once and display “LD 0.9 mW $ □”. Check that the reading of the laser power meter become 0.85 to 0.91 mW.
9. Press the ENTER/YES button once more and display “LD 7.0 mW $ □”. Check that the reading the laser power meter and digital volt meter satisfy the specified value.
   Note down the digital voltmeter reading value.

Specified Value :

Laser power meter reading : 7.0 ± 0.2 mW
Digital voltmeter reading : Optical pick-up displayed value ± 10%

(Optical pick-up label)

KMS260B
20101
H0576

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

Iop = 57.6 mA in this case
Iop (mA) = Digital voltmeter reading (mV)/1 (Ω)

10. Press the MENU/NO button and display “LDPWR CHECK” (C13) and stop the laser emission.
    (The MENU/NO button is effective at all times to stop the laser emission.)
11. Move I◄◄/►►I to display “Iop Write”(C05).
12. Press the ENTER/YES button. When the display becomes Ref=@@@.@ (@ is an arbitrary number), press the ENTER/YES button to display “Measu=@@@.@” (@ is an arbitrary number).
13. The numbers which can be changed will blink. Input the Iop value noted down at step 9.
    To select the number : Move I◄◄/►►I .
    To select the digit : Press the REC MODE button.
14. When the ENTER/YES button is pressed, “Complete!” will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become “Iop Write” (C05).

Note 1: After step 4, each time the ENTER/YES button is pressed, the display will be switched between “LD 0.7 mW $ □”, “LD 6.2 mW $ □”, and “LD Wp $ □”. Nothing needs to be performed here.

6-11. Iop NV SAVE

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

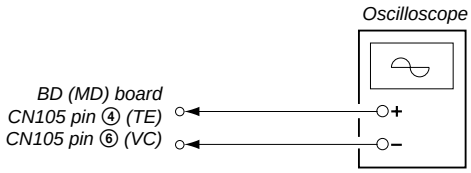
Note: Perform this function with the optical pick-up set at room temperature.

Procedure

1. Move I◄◄/►►I to display “Iop NV Save” (C06).
2. Press the ENTER/YES button and display “Iop [stop]”.
3. After the display changes to “Iop =xxsave?”, press the ENTER/YES button.
4. After “Complete!” is displayed momentarily, the display changes to “Iop 7.0 mW”.
5. After the display changes to “Iop=yysave?”, press the ENTER/YES button.
6. When “Complete!” is displayed, it means that Iop NV saving has been completed.

6-12. TRAVERSE ADJUSTMENT

Connection :

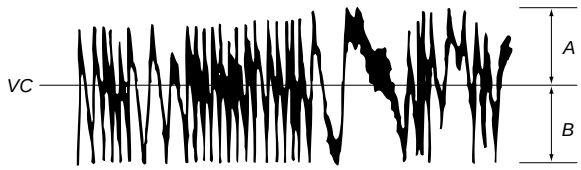


V : 0.5 V/div
H : 10 ms/div
Input : DC mode

Adjusting Procedure :

1. Connect an oscilloscope to CN105 pin ④ (TE) and CN105 pin ⑥ (VC) of the BD board.
2. Load a test disc (MDW-74/GA-1). (Refer to Note 1.)
3. Press the ►► button and move the optical pick-up outside the pit.
4. Move I◄◄/►►I and display “EF MO ADJUS” (C14).
5. Press the ENTER/YES button and display “EFB = □ MO-R”. (Laser power READ power/Focus servo ON/tracking servo OFF/spindle (S) servo ON)
6. Move I◄◄/►►I so that the waveform of the oscilloscope becomes the specified value.
   (When I◄◄/►►I is moved, the □ of “EFB= □” changes and the waveform changes.) In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.
   (Read power traverse adjustment)

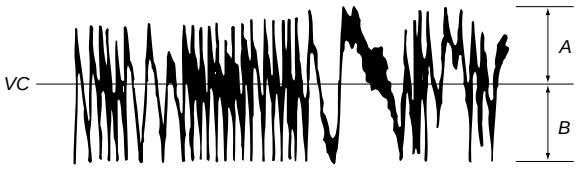
(Traverse Waveform)



Specification A = B

7. Press the ENTER/YES button and save the result of adjustment to the non-volatile memory (“EFB = □ SAVE” will be displayed for a moment. Then “EFB = □ MO-W” will be displayed).
8. Move I◄◄/►►I so that the waveform of the oscilloscope becomes the specified value.
   (When I◄◄/►►I is moved, the □ of “EFB- □ MO-W” changes and the waveform changes.) In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.
   (Write power traverse adjustment)

(Traverse Waveform)

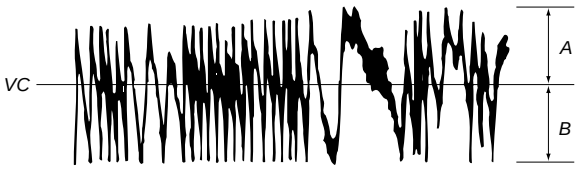


Specification A = B

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

11. Move [I◀◀ /▶▶I] until the waveform of the oscilloscope moves closer to the specified value.
    In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.

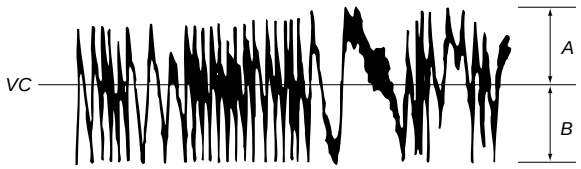
(Traverse Waveform)



Specification A = B

12. Press the [ENTER/YES] button, and save the adjustment results in the non-volatile memory. ("EFB = □□ SAVE" will be displayed for a moment.)
    Next "EF MO ADJUS" (C07) is displayed. The disc stops rotating automatically.
13. Press the [⏏] button and remove the disc.
14. Load the check disc (MD) TDYS-1.
15. Move [I◀◀ /▶▶I] and display "EF CD ADJUS" (C08).
16. Press the [ENTER/YES] button and display "EFB = □□ CD". Servo is imposed automatically.
17. Move [I◀◀ /▶▶I] so that the waveform of the oscilloscope moves closer to the specified value.
    In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.

(Traverse Waveform)

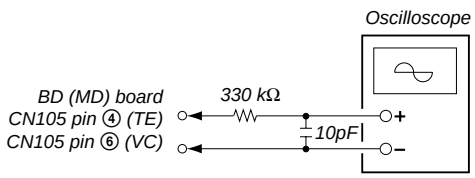


Specification A = B

18. Press the [ENTER/YES] button, display "EFB = □□ SAVE" for a moment and save the adjustment results in the non-volatile memory.
    Next "EF CD ADJUS" (C08) will be displayed.
19. Press the [⏏] button and remove the check disc (MD) TDYS-1.

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

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



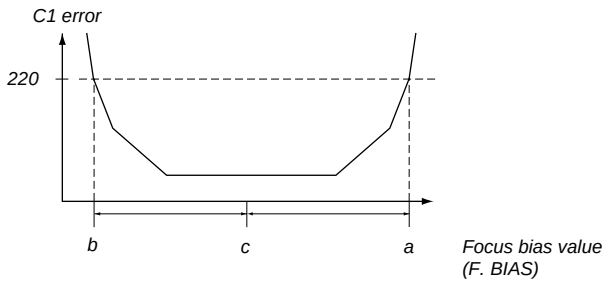
6-13. FOCUS BIAS ADJUSTMENT

Adjusting Procedure :

1. Load a test disk (MDW-74/GA-1).
2. Move [I◀◀ /▶▶I] and display "CPLAY1MODE"(C34).
3. Press the [ENTER/YES] button and display "CPLAY1MID".
4. Press the [MENU/NO] button when "C1 = □□□□ AD = □□" is displayed.
5. Move [I◀◀ /▶▶I] and display "FBIAS ADJUS"(C09).
6. Press the [ENTER/YES] button and display " □□□□/□□ a = □□". The first four digits indicate the C1 error rate, the two digits after [/] indicate ADER, and the 2 digits after [a =] indicate the focus bias value.
7. Move [I◀◀ /▶▶I] in the right direction and find the focus bias value at which the C1 error rate becomes 220 (Refer to Note 2).
8. Press the [ENTER/YES] button and display " □□□□/□□ b = □□".
9. Move [I◀◀ /▶▶I] in the left direction and find the focus bias value at which the C1 error rate becomes 220.
10. Press the [ENTER/YES] button and display " □□□□/□□ c = □□".
11. Check that the C1 error rate is below 20 and ADER is 00. Then press the [ENTER/YES] button.
12. If the "(□□" in "□□ - □□ - □□ (□□" is above 20, press the [ENTER/YES] button.
    If below 20, press the [MENU/NO] button and repeat the adjustment from step 2.
13. Press the [⏏] button and remove the test disc.

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

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



6-14. ERROR RATE CHECK

6-14-1. CD Error Rate Check

Checking Procedure :

1. Load a check disc (MD) TDYS-1.
2. Move [I◄◄ /►►I] and display "CPLAY1MODE" (C34).
3. Press the [ENTER/YES] button and display "CPLAY1 MID".
4. The display changes to "C1 = □□□□ AD = □□".
5. Check that the C1 error rate is below 20.
6. Press the [MENU/NO] button, stop playback, press the [⏏] button, and remove the test disc.

6-14-2. MO Error Rate Check

Checking Procedure :

1. Load a continuously recorded test disc (MDW-74/GA-1). (Refer to "6-5. Using the Continuously Recorded Disc".)
2. Move [I◄◄ /►►I] and display "CPLAY1MODE" (C34).
3. Press the [ENTER/YES] button and display "CPLAY1MID".
4. The display changes to "C1 = □□□□ AD = □□".
5. If the C1 error rate is below 20, check that ADER is 00.
6. Press the [MENU/NO] button, stop playback, press the [⏏] button, and remove the test disc.

6-15. FOCUS BIAS CHECK

Change the focus bias and check the focus tolerance amount.

Checking Procedure :

1. Load a continuously recorded test disc (MDW-74/GA-1). (Refer to "6-5. Using the Continuously Recorded Disc".)
2. Move [I◄◄ /►►I] and display "CPLAY1 MODE"(C34).
3. Press the [ENTER/YES] button and display "CPLAY1 MID".
4. Press the [MENU/NO] button when "C1 = □□□□ AD = □□" is displayed.
5. Move [I◄◄ /►►I] and display "FBIAS CHECK"(C16).
6. Press the [ENTER/YES] button and display " □□□□/□□ c = □□". The first four digits indicate the C1 error rate, the two digits after [/] indicate ADER, and the 2 digits after [c =] indicate the focus bias value. Check that the C1 error is below 20 and ADER is below 2.
7. Press the [ENTER/YES] button and display " □□□□/□□ b = □□". Check that the C1 error is below 100 and ADER is below 2.
8. Press the [ENTER/YES] button and display " □□□□/□□ a = □□". Check that the C1 error is below 100 and ADER is below 2
9. Press the [MENU/NO] button, next press the [⏏] button and remove the continuously recorded disc.

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

6-16. AUTO GAIN CONTROL OUTPUT LEVEL ADJUSTMENT

Be sure to perform this adjustment when the Optical pick-up is replaced.
If the adjustment results becomes "Adjust NG!", the Optical pick-up may be faulty or the servo system circuits may be abnormal.

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

Adjusting Procedure :

1. Insert the check disc (MD) TDYS-1.
2. Move [I◄◄ /►►I] to display "AG Set (CD)" (C11).
3. When the [ENTER/YES] 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 [⏏] button and remove the disc.

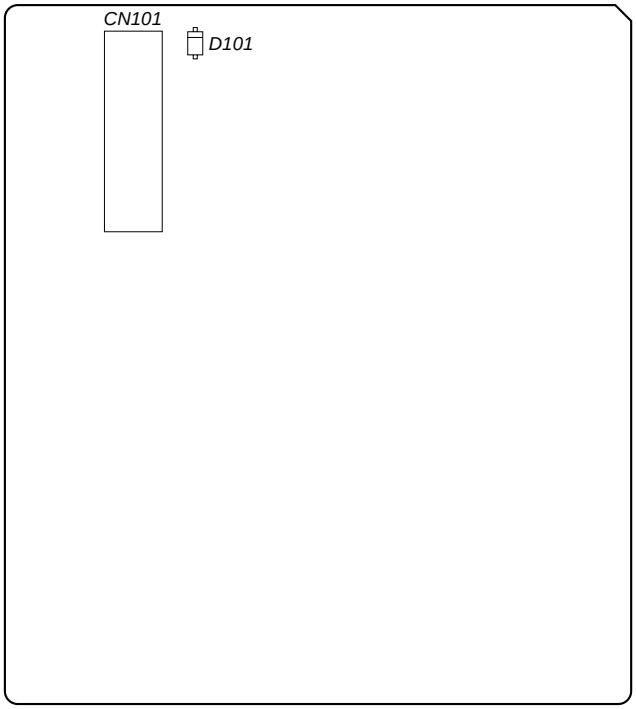
6-16-2. MO Auto Gain Control Output Level Adjustment

Adjusting Procedure :

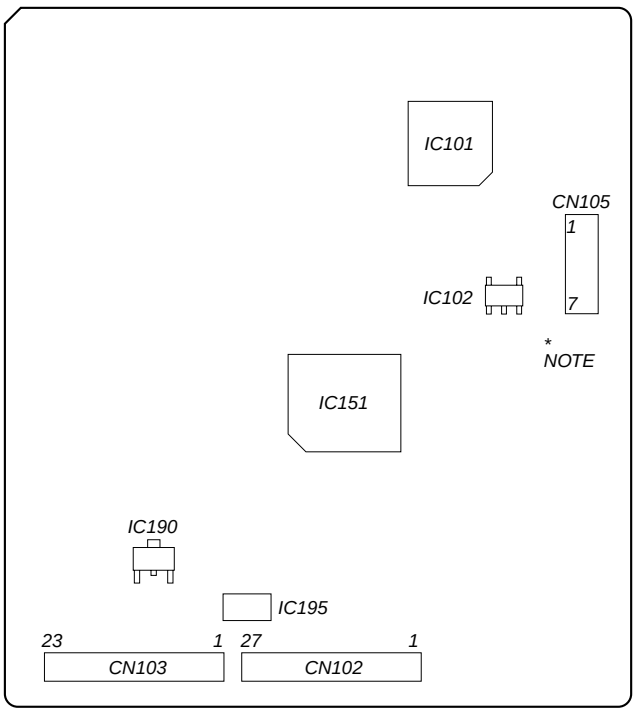
1. Insert the reference disc (MDW-74/GA-1) for recording.
2. Move [I◄◄ /►►I] to display "AG Set (MO)" (C10).
3. When the [ENTER/YES] button is pressed, the adjustment will be performed automatically.
   "Complete!" will then be displayed momentarily when the value is recorded in the non-volatile memory, after which the display changes to "AG Set (MO)" (C10).
4. Press the [⏏] button and remove the disc.

6-17. ADJUSTING POINTS AND CONNECTING POINTS

[BD (MD) BOARD] (SIDE A)



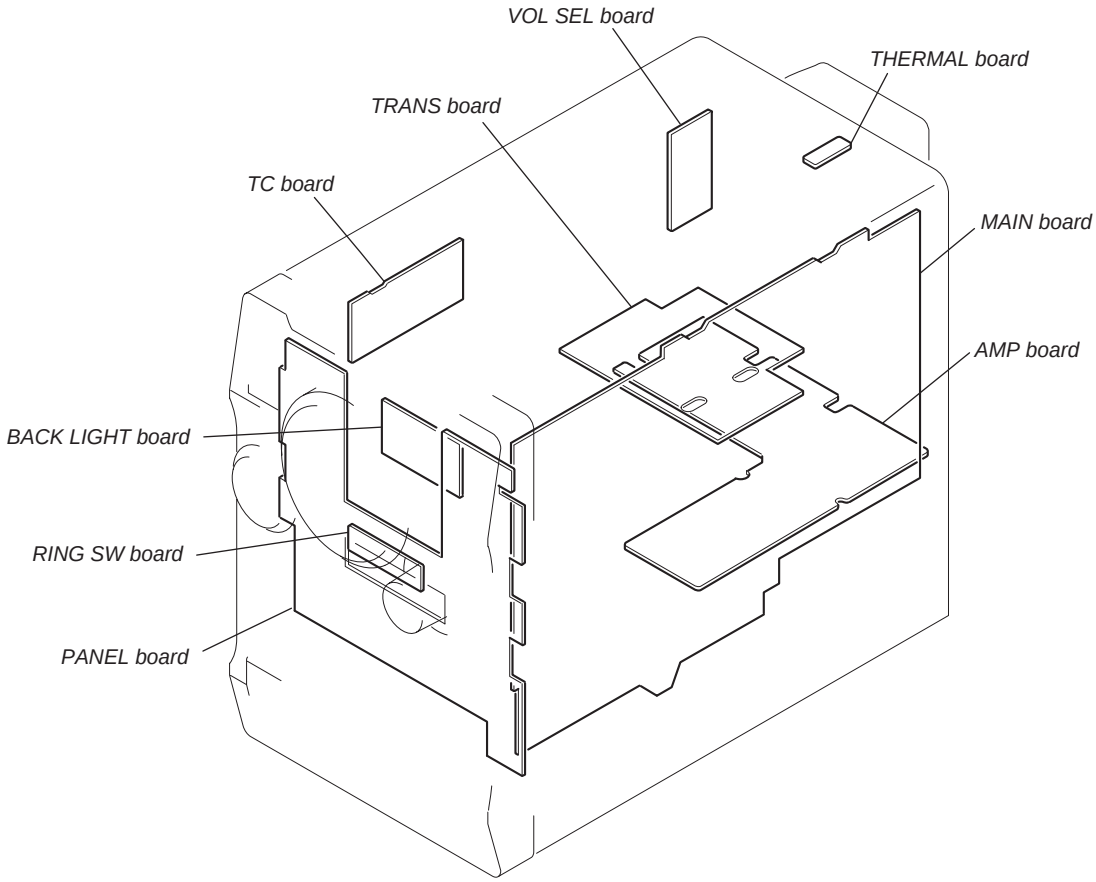
[BD (MD) BOARD] (SIDE B)

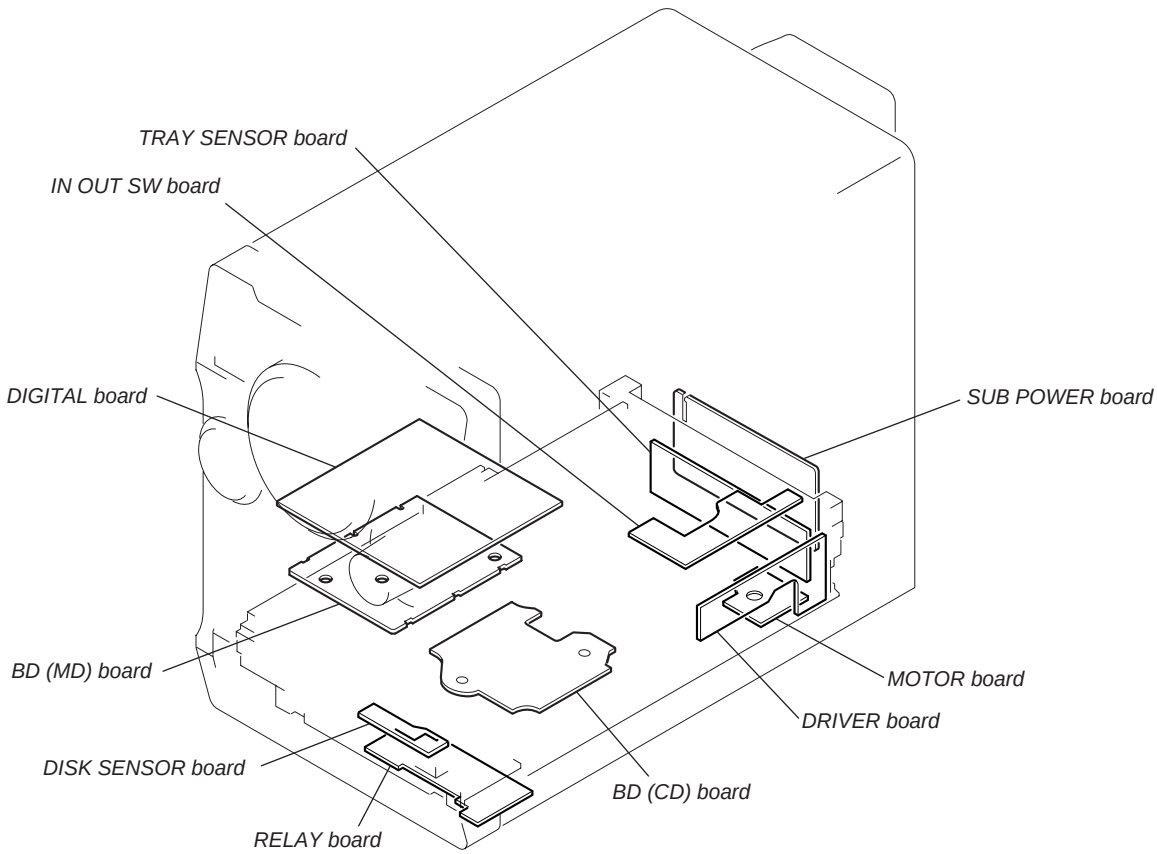


NOTE: It is useful to use the jig. for checking the waveform. (Refer to Servicing Note on page 8.)

SECTION 7
DIAGRAMS

7-1. CIRCUIT BOARDS LOCATION





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

For schematic diagrams.

Note:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ 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 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  - : FM
  - : PB
  - : REC
  - : CD (Analog)
  - : CD (Digital)
  - : DIGITAL IN (Optical)
  - : MD (PB)
  - : MD (REC)
- Abbreviation
  AUS : Australian model
  HK : Hong Kong model

For printed wiring boards.

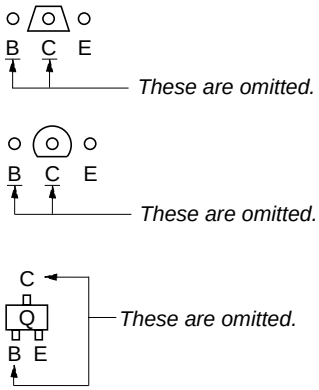
Note:

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

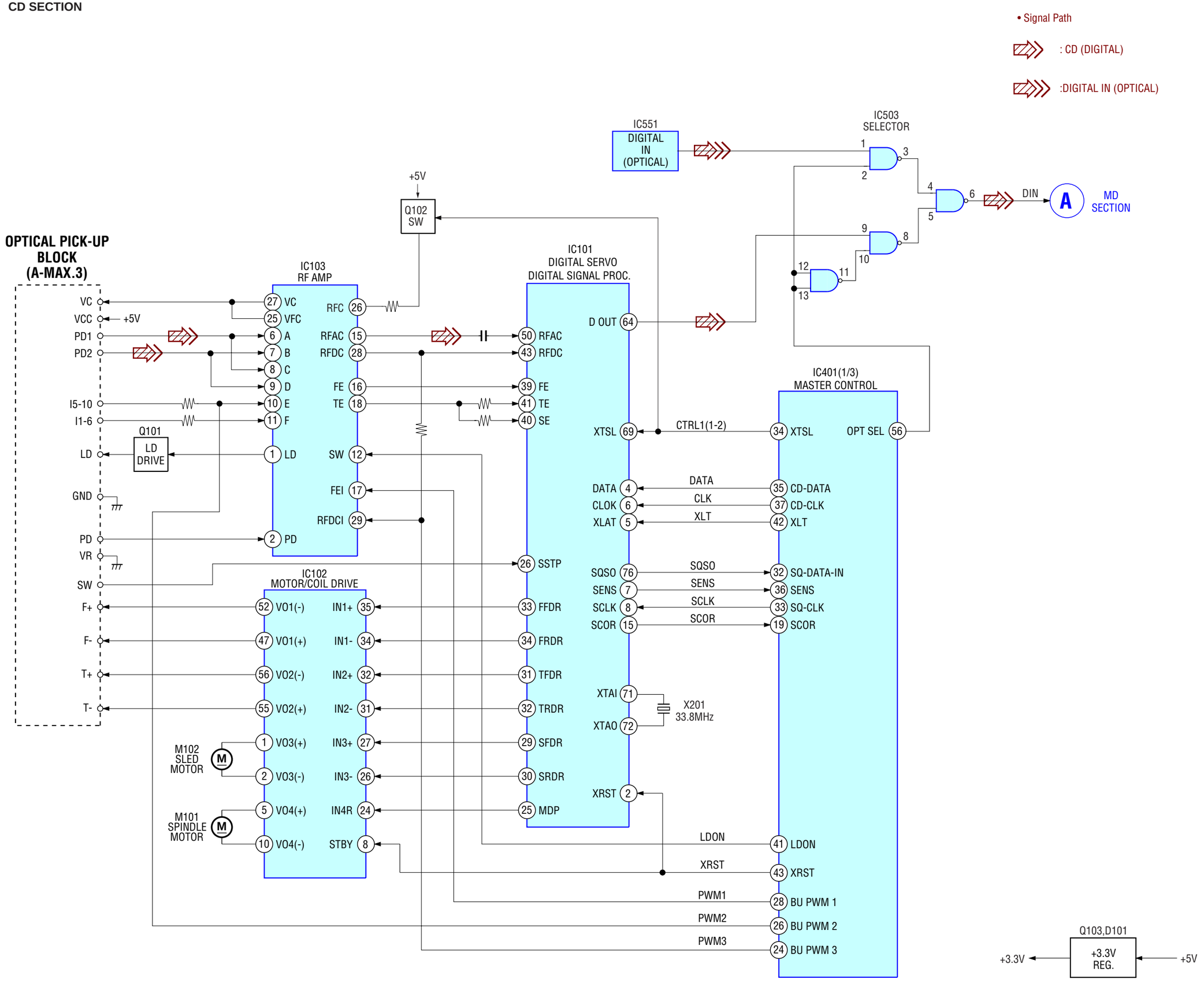
Caution:

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

- **Indication of transistor**

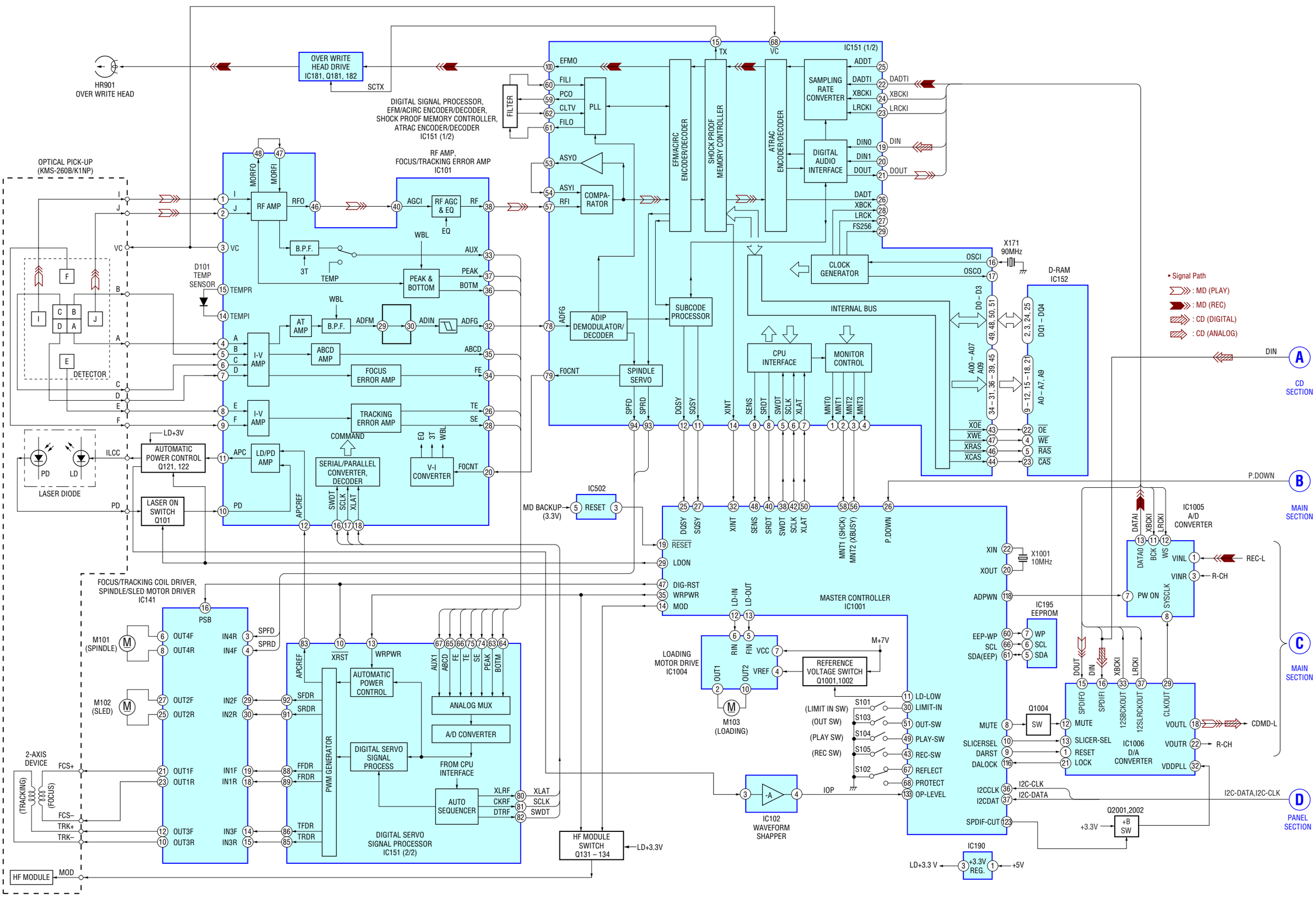


7-2. BLOCK DIAGRAMS
CD SECTION

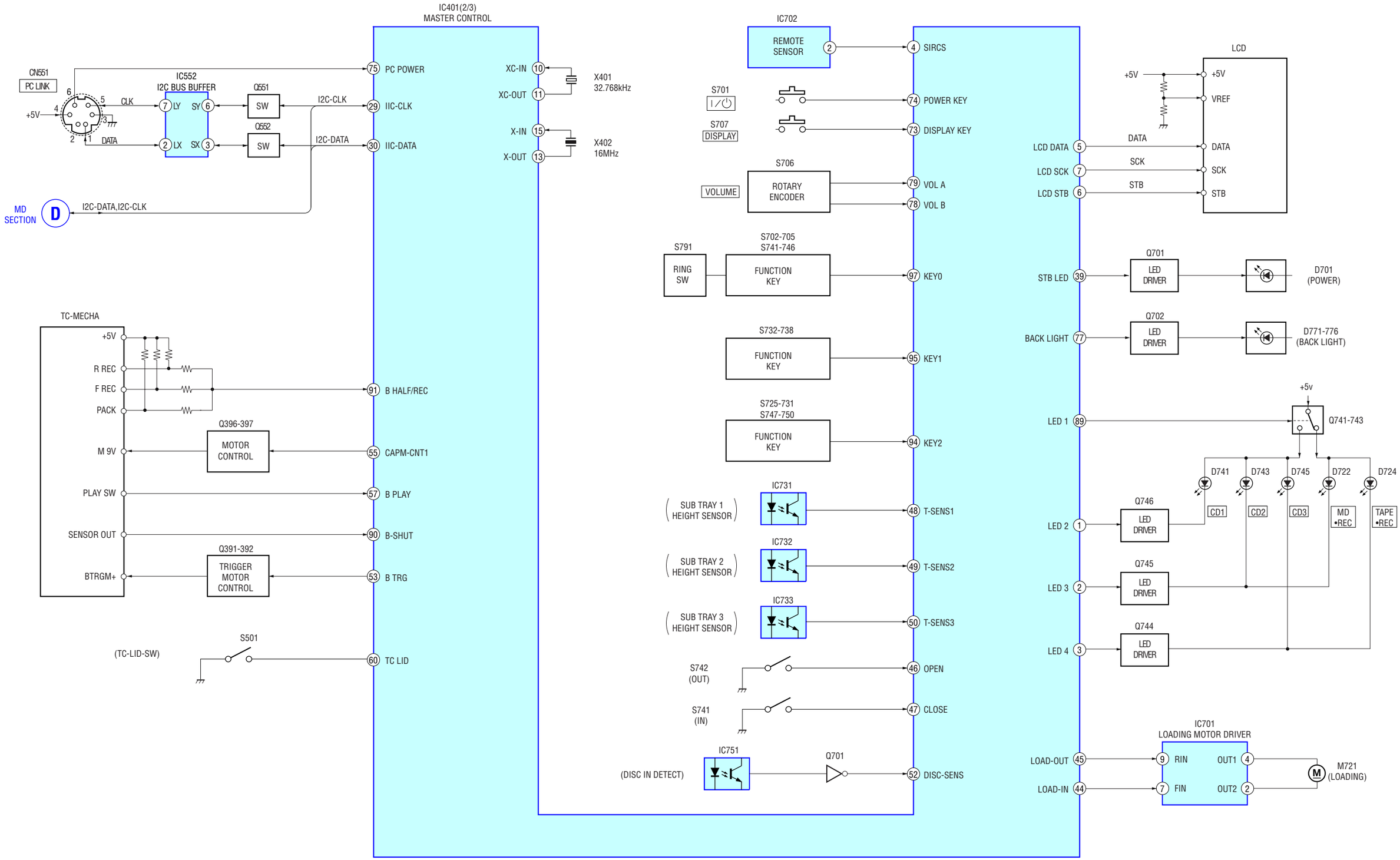


HCD-CL5MD

MD SECTION

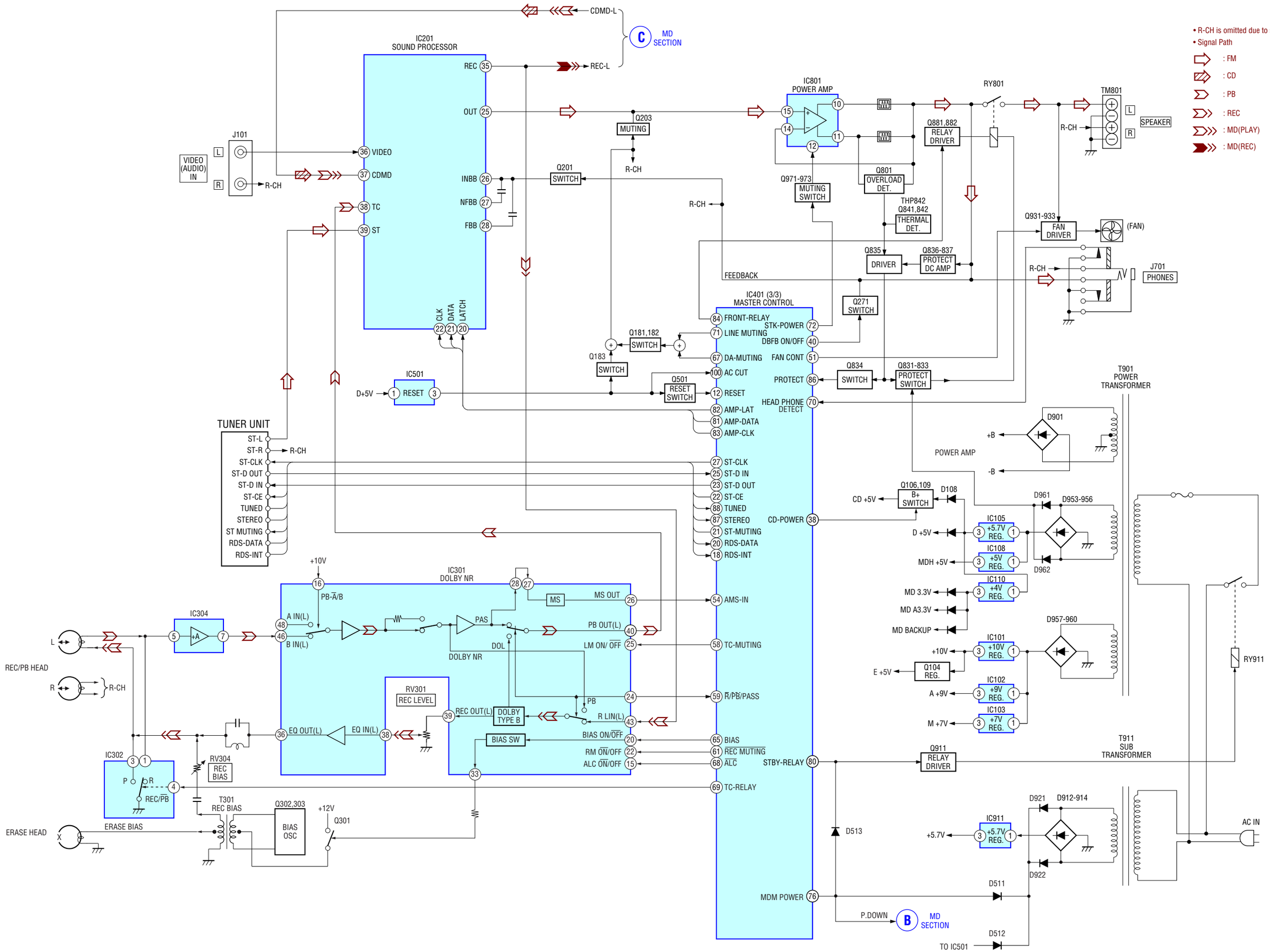


SYSCON SECTION



HCD-CL5MD

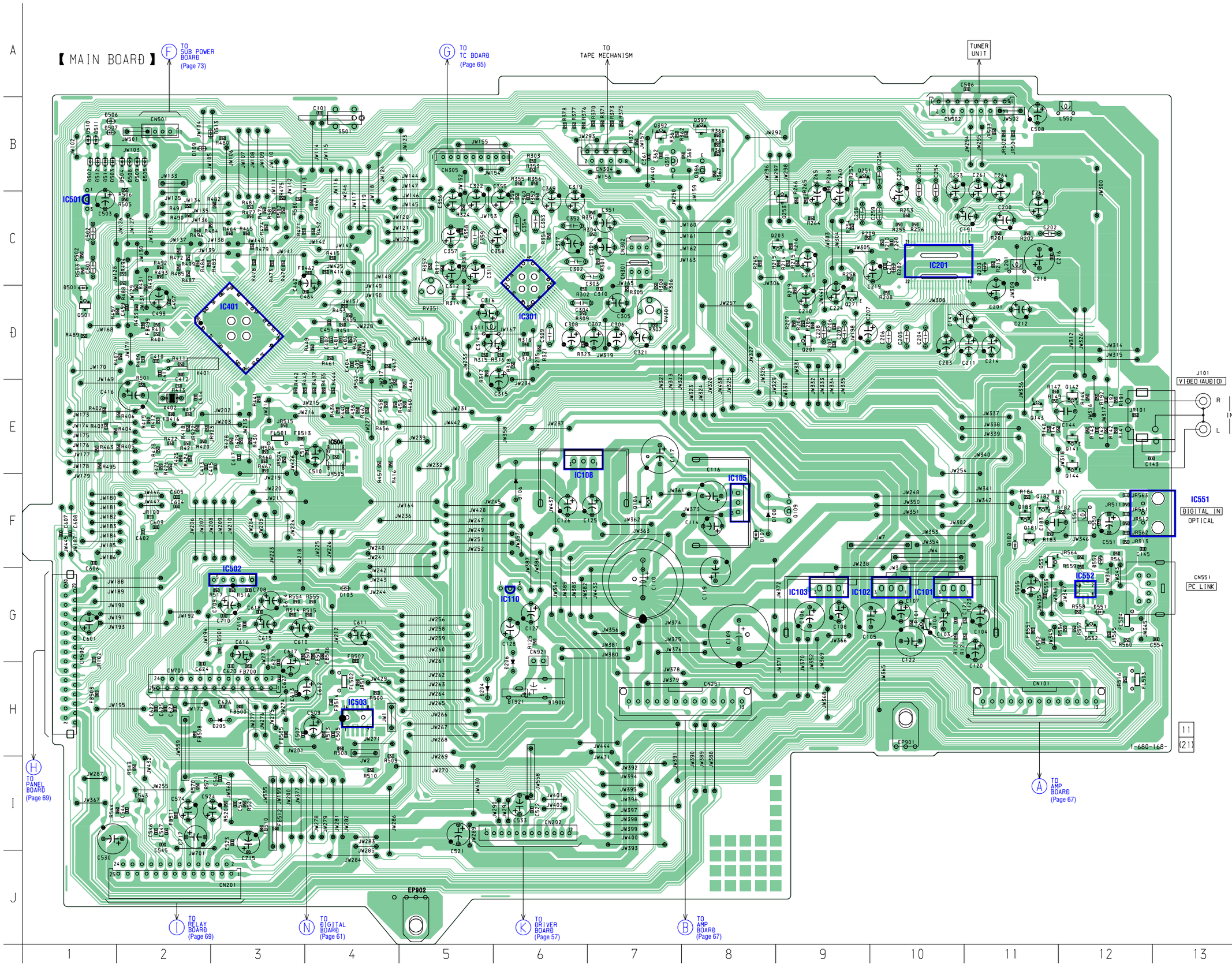
MAIN SECTION



7-3. PRINTED WIRING BOARD MAIN SECTION

• See page 45 for Circuit Boards Location.

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

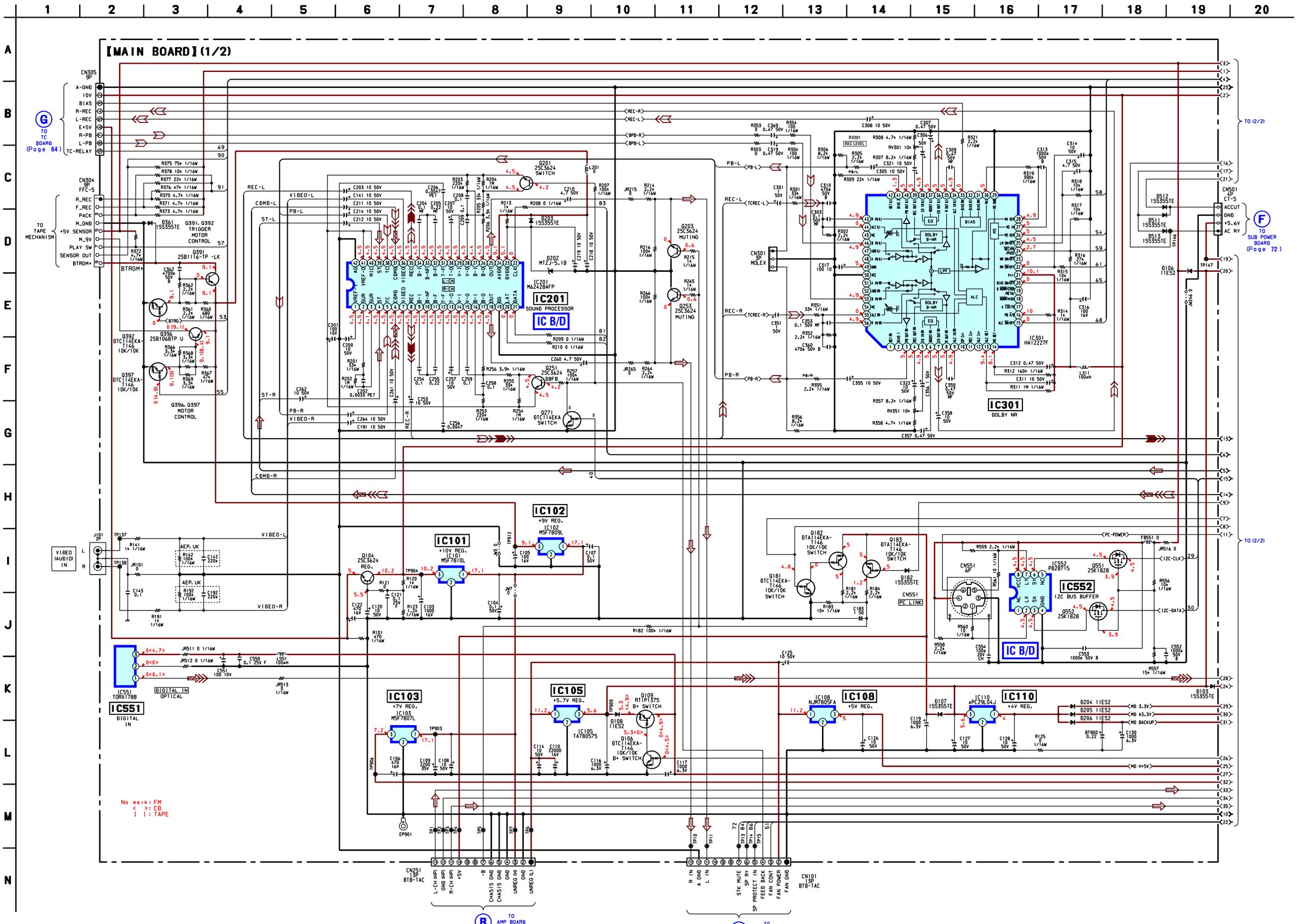


• **Semiconductor Location**

Ref. No.	Location
D103	G-4
D106	F-6
D107	F-8
D108	F-8
D182	F-11
D202	C-10
D203	C-11
D204	H-5
D205	H-3
D206	G-6
D501	D-1
D502	B-1
D504	B-2
D505	B-2
D506	B-1
D507	B-1
D508	B-2
D509	B-2
D511	B-1
D512	B-1
D513	B-3
D514	B-1
IC101	G-10
IC102	G-10
IC103	G-9
IC105	F-8
IC108	E-6
IC110	G-6
IC201	C-10
IC301	D-6
IC401	D-3
IC501	C-1
IC502	G-3
IC503	H-4
IC551	F-13
IC552	G-12
Q104	G-10
Q106	F-7
Q109	F-9
Q181	F-11
Q182	F-11
Q183	F-11
Q201	D-9
Q203	C-9
Q251	B-9
Q253	C-9
Q271	D-9
Q391	B-7
Q392	B-7
Q396	B-8
Q397	B-8
Q501	D-1
Q551	F-11
Q552	G-12

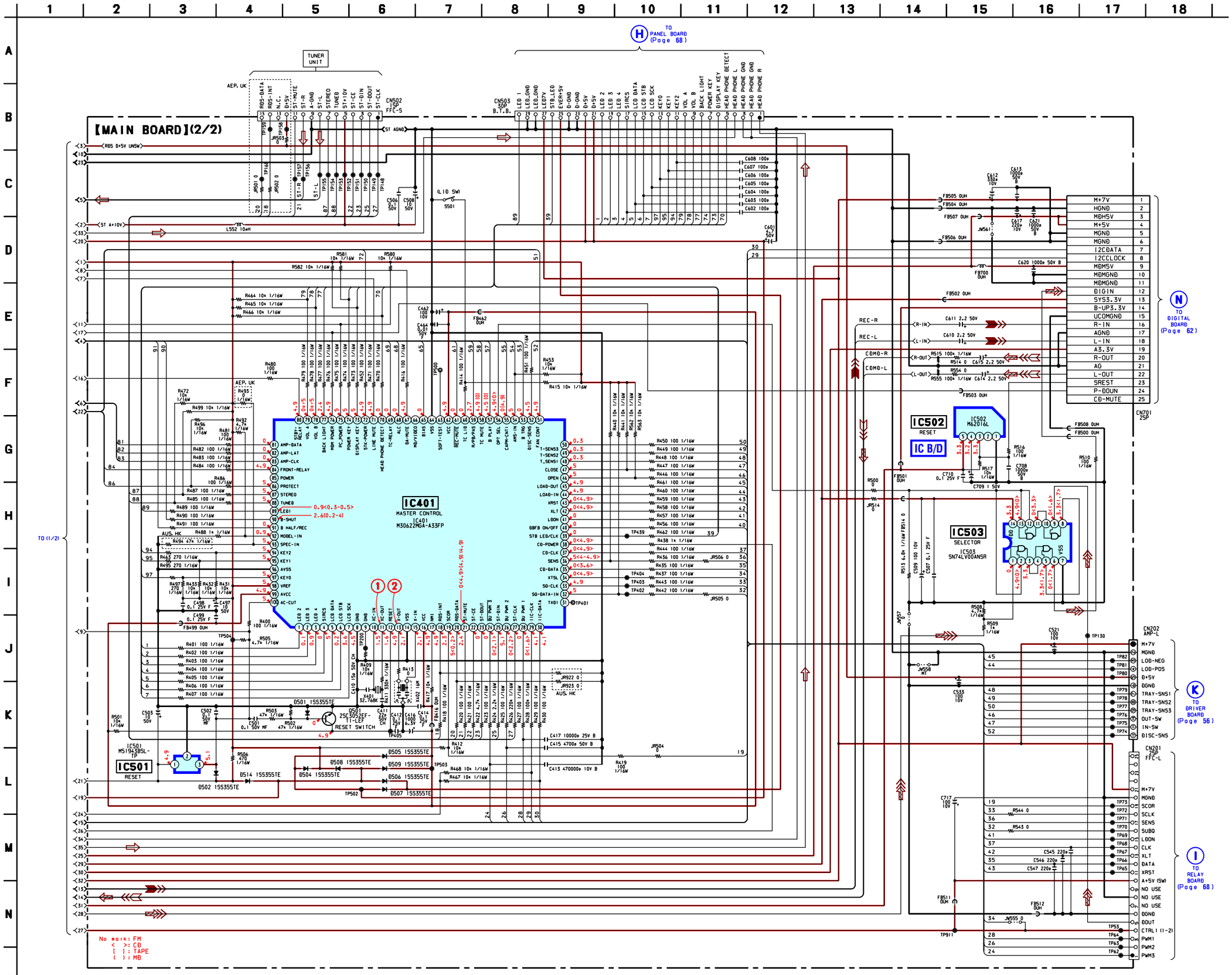
7-4. SCHEMATIC DIAGRAM MAIN SECTION (1/2)

• See page 85 for IC Block Diagrams.



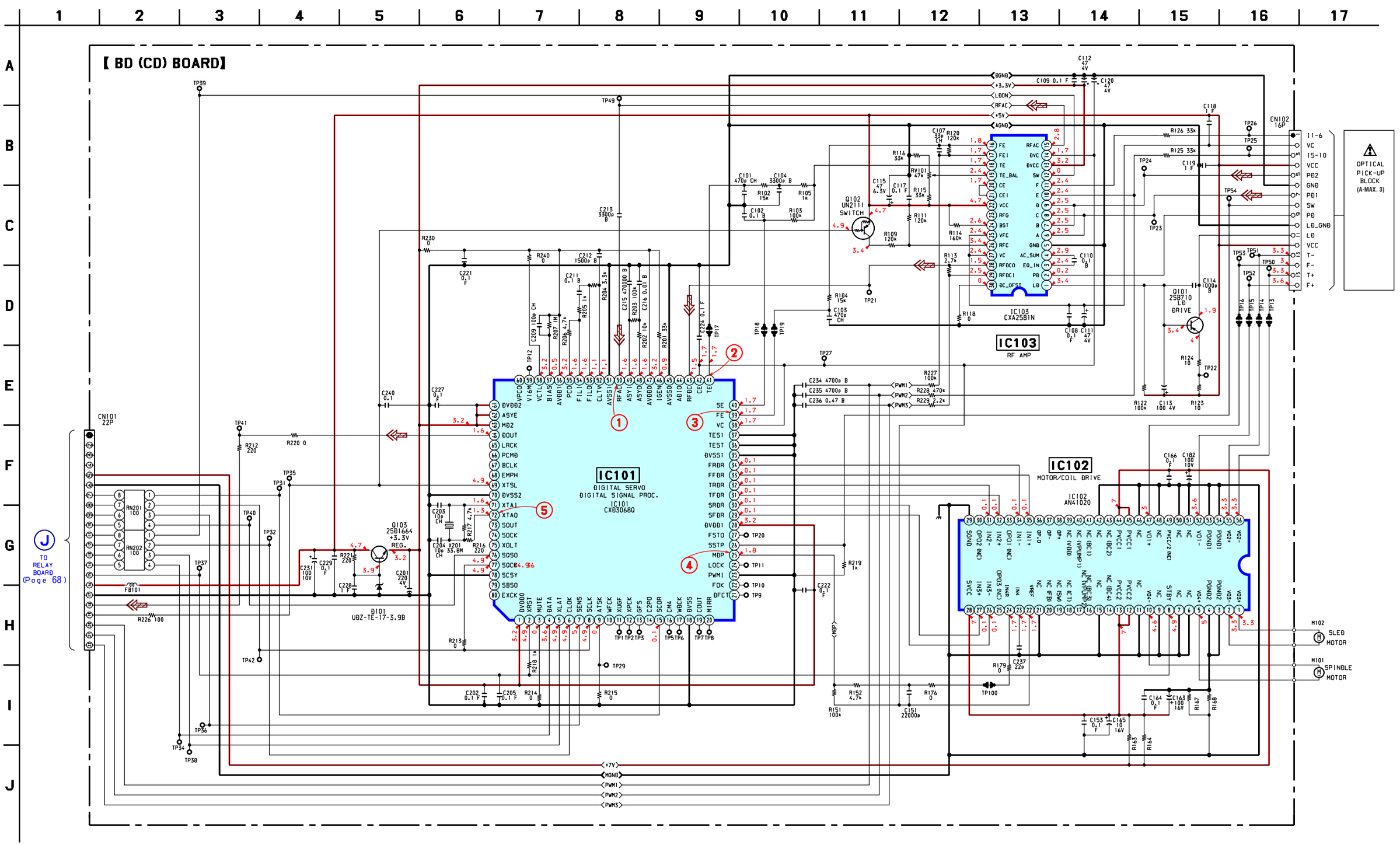
7-5. SCHEMATIC DIAGRAM MAIN SECTION (2/2)

- See page 74 for Wavefoms.
- See page 83 for IC Pin Function Description.
- See page 85 for IC Block Diagrams.



7-6. SCHEMATIC DIAGRAM CD SECTION

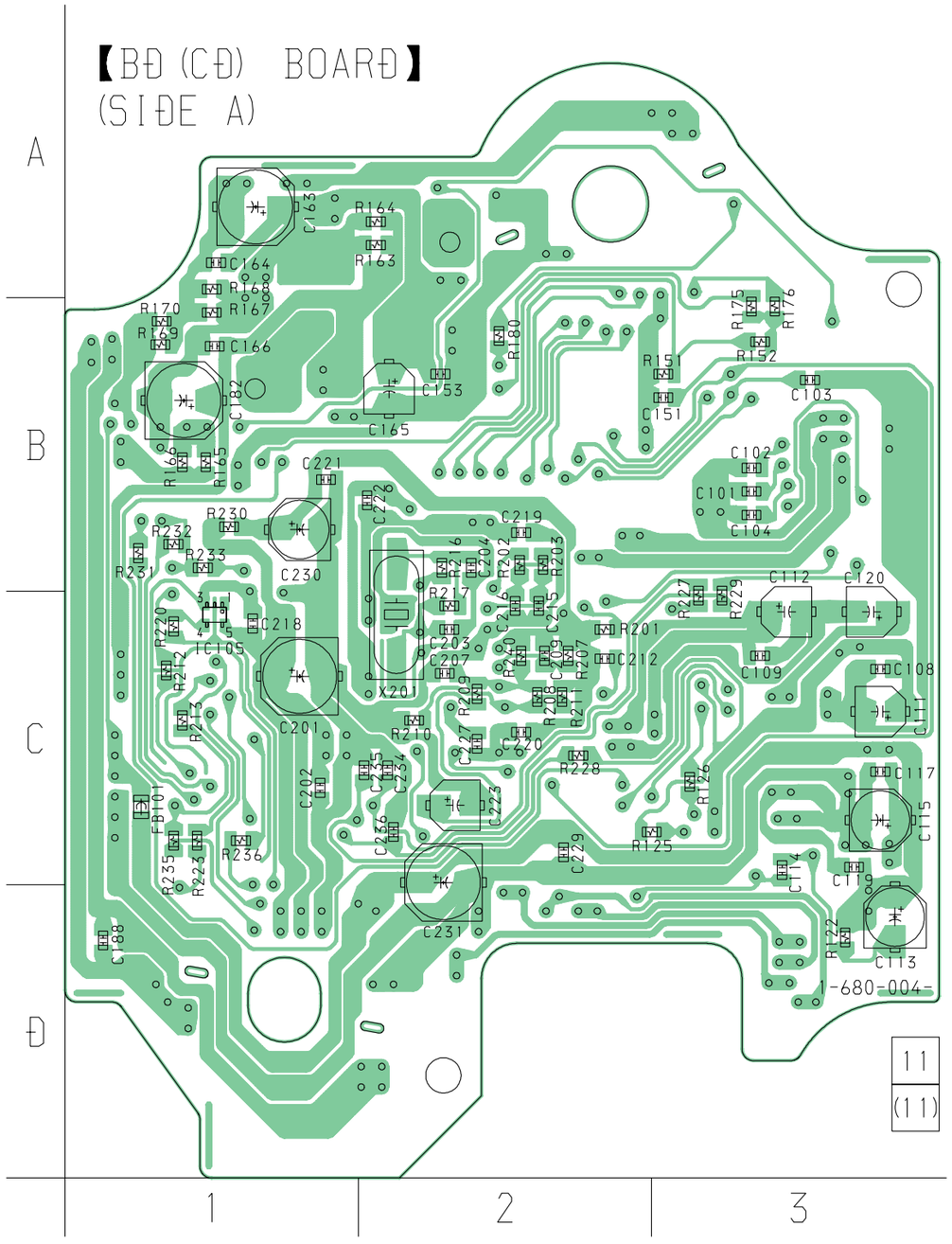
• See page 74 for Wavefoms.
• See page 75 for IC Pin Function Description.

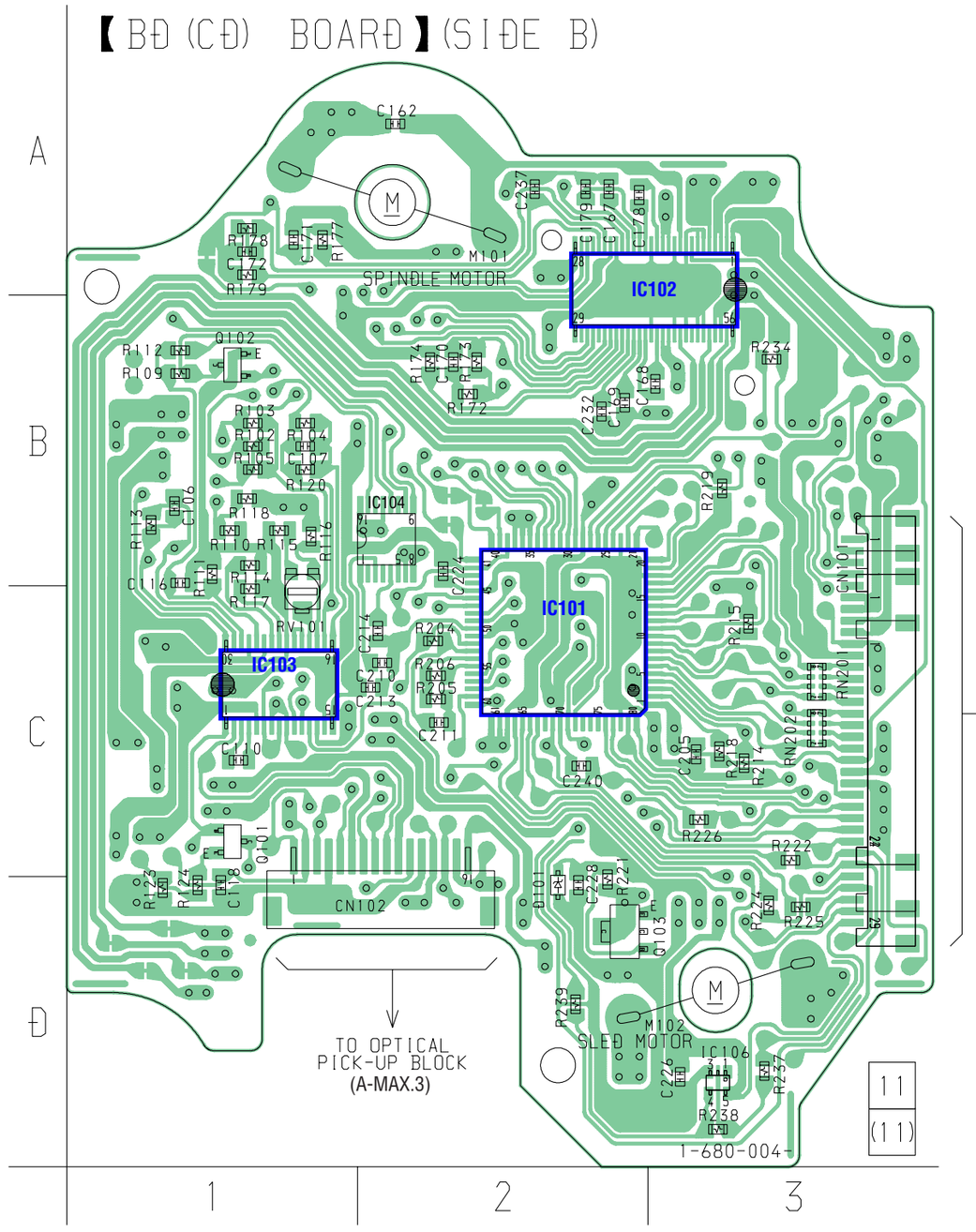


7-7. PRINTED WIRING BOARD CD SECTION

• See page 45 for Circuit Boards Location.

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



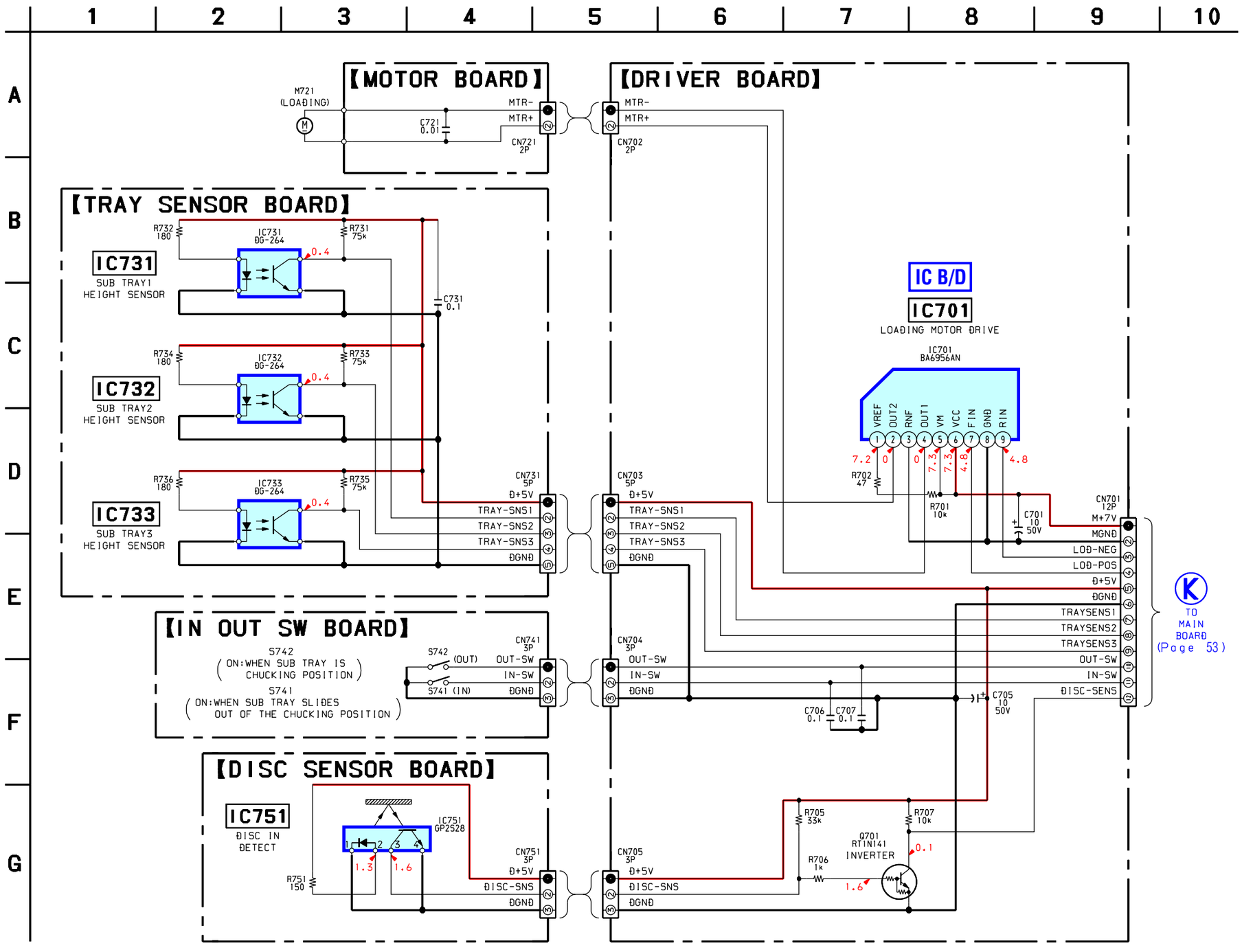


• **Semiconductor Location**

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

7-8. SCHEMATIC DIAGRAM DRIVER SECTION

• See page 86 for IC Block Diagrams.

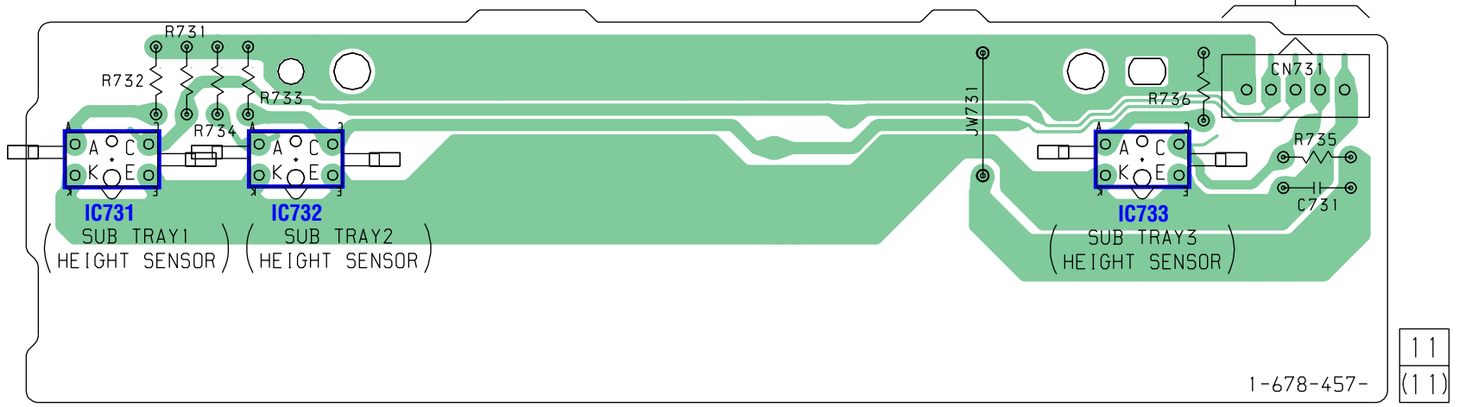


7-9. PRINTED WIRING BOARD DRIVER SECTION

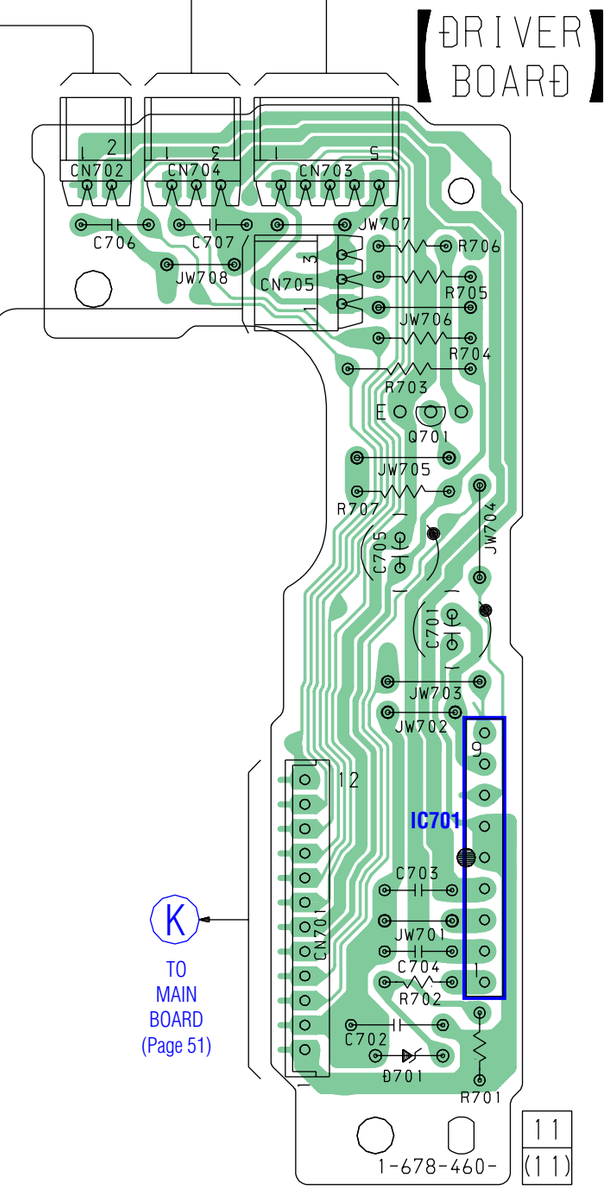
• See page 45 for Circuit Boards Location.

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

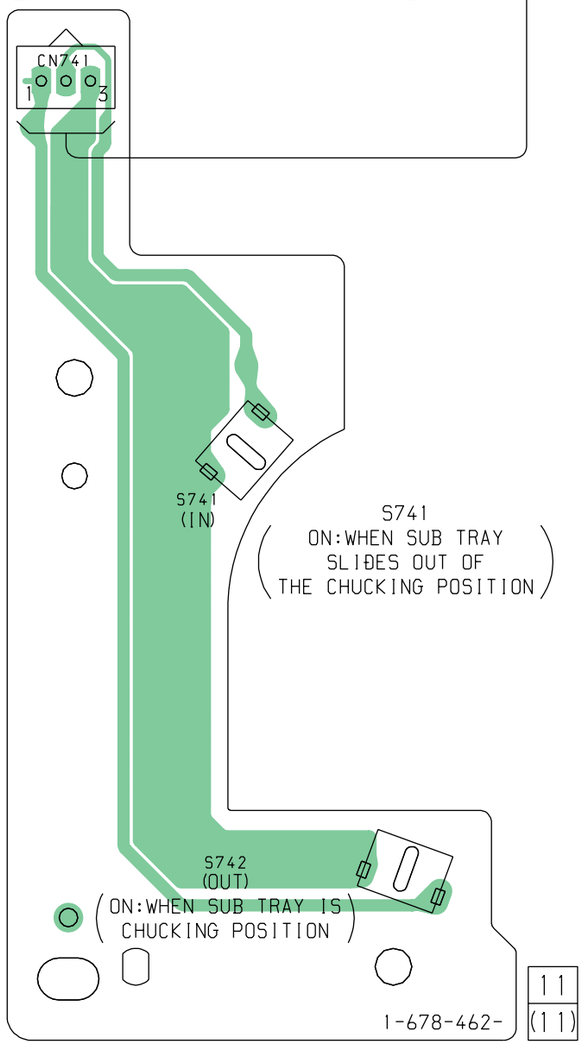
【TRAY SENSOR BOARD】



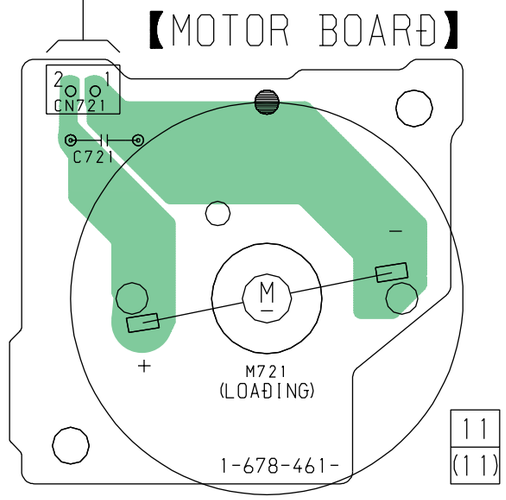
【DRIVER BOARD】



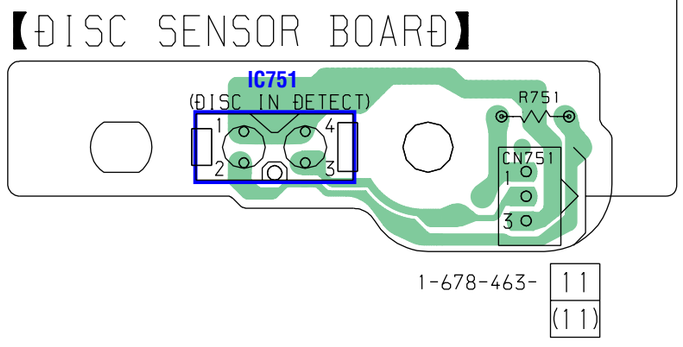
【IN OUT SW BOARD】



【MOTOR BOARD】

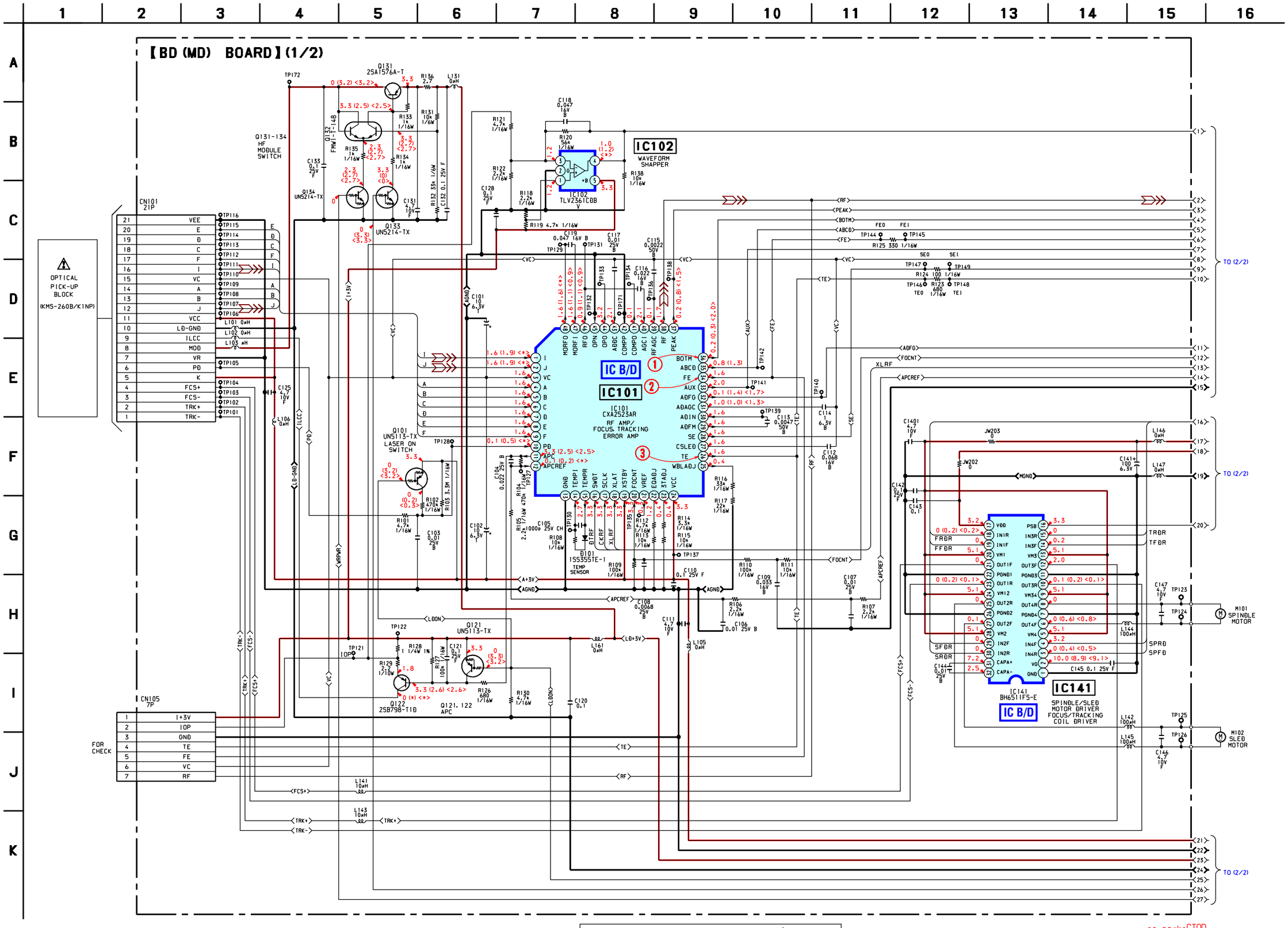


【DISC SENSOR BOARD】



7-10. SCHEMATIC DIAGRAM MD SECTION (1/2)

- See page 74 for Wavefoms.
- See page 77 for IC Pin Function Description.
- See page 86, 87 for IC Block Diagrams.



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

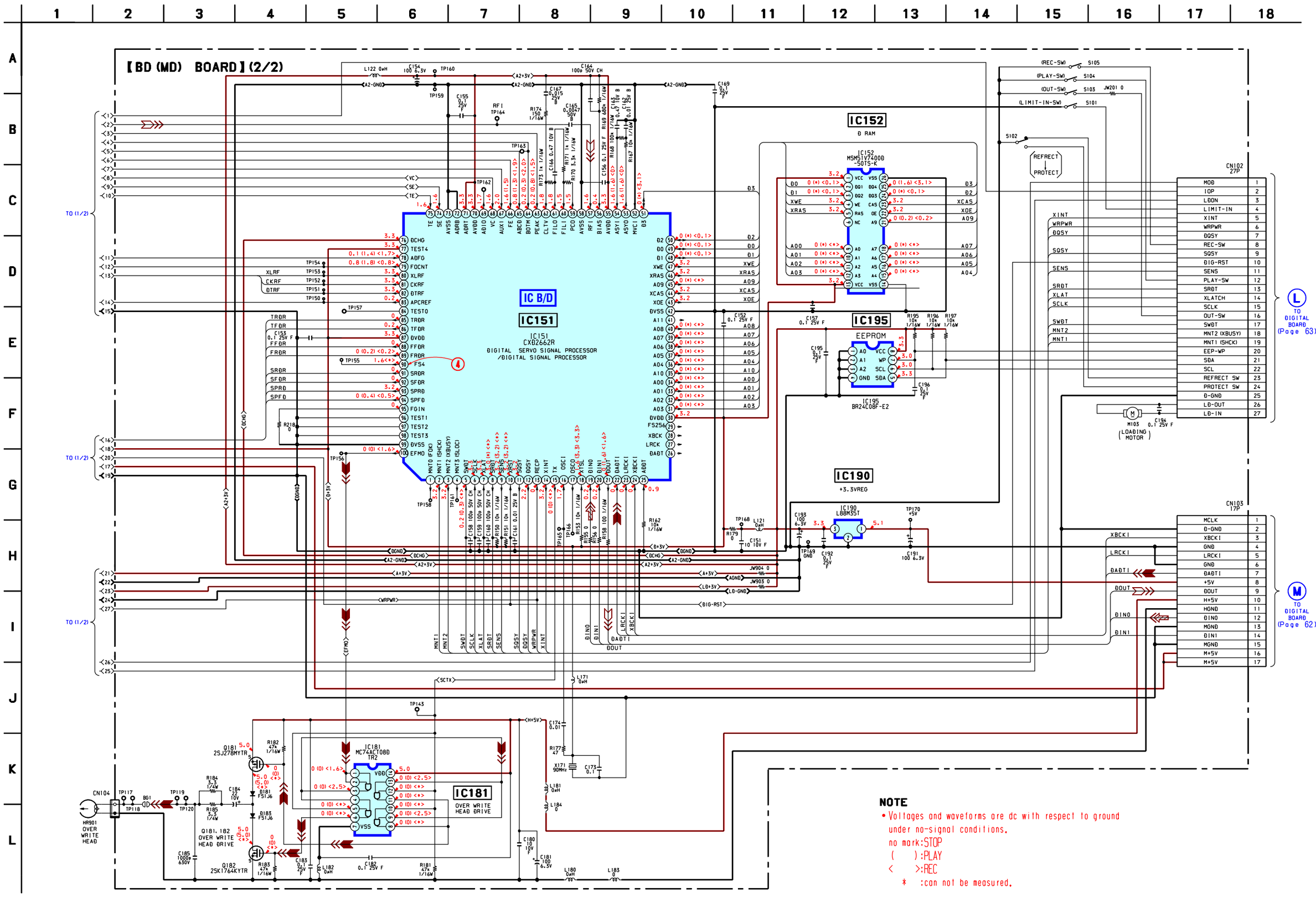
NOTE

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

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

7-11. SCHEMATIC DIAGRAM MD SECTION (2/2)

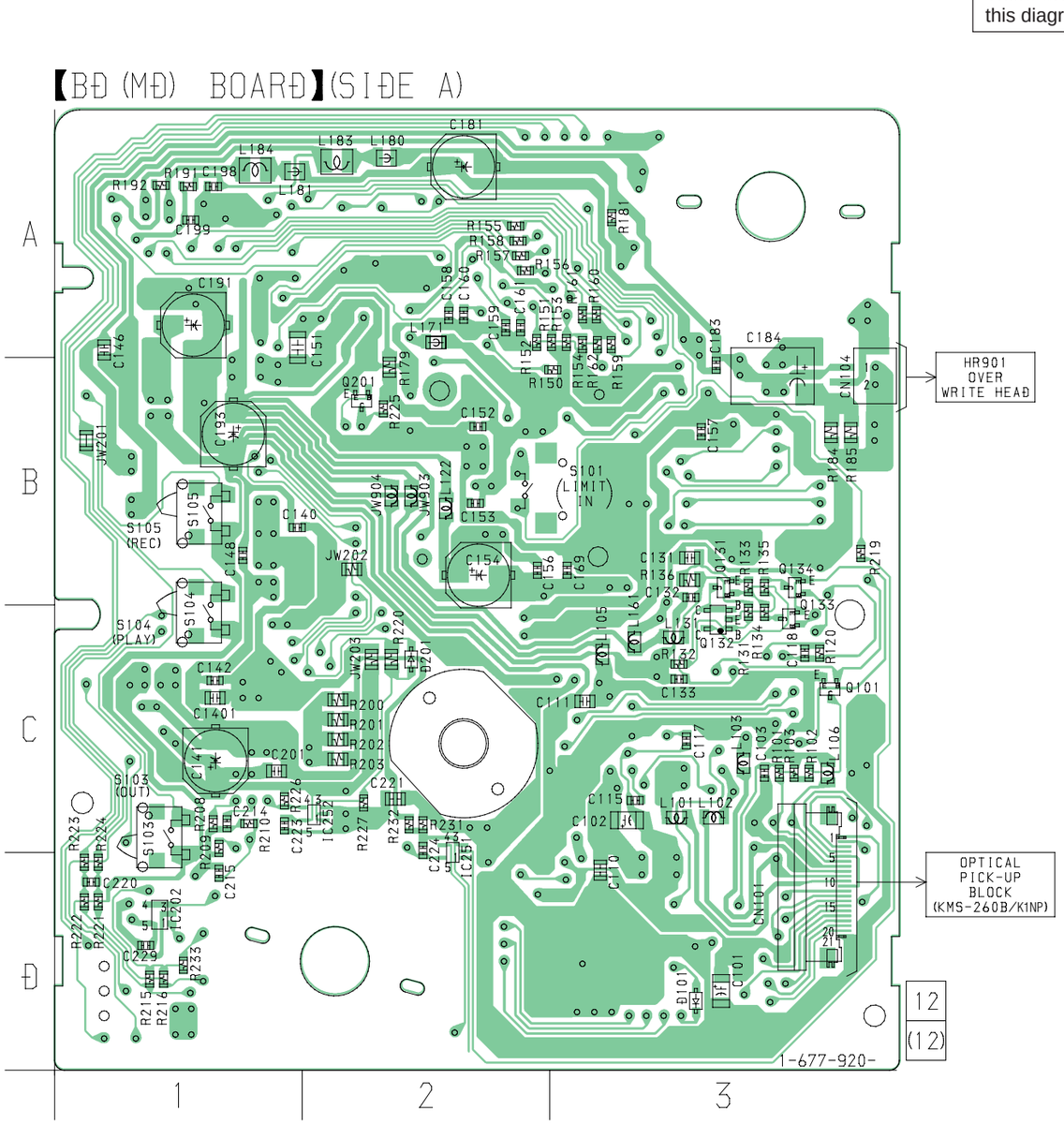
- See page 74 for Wavefoms.
- See page 78 for IC Pin Function Description.
- See page 87 for IC Block Diagrams.

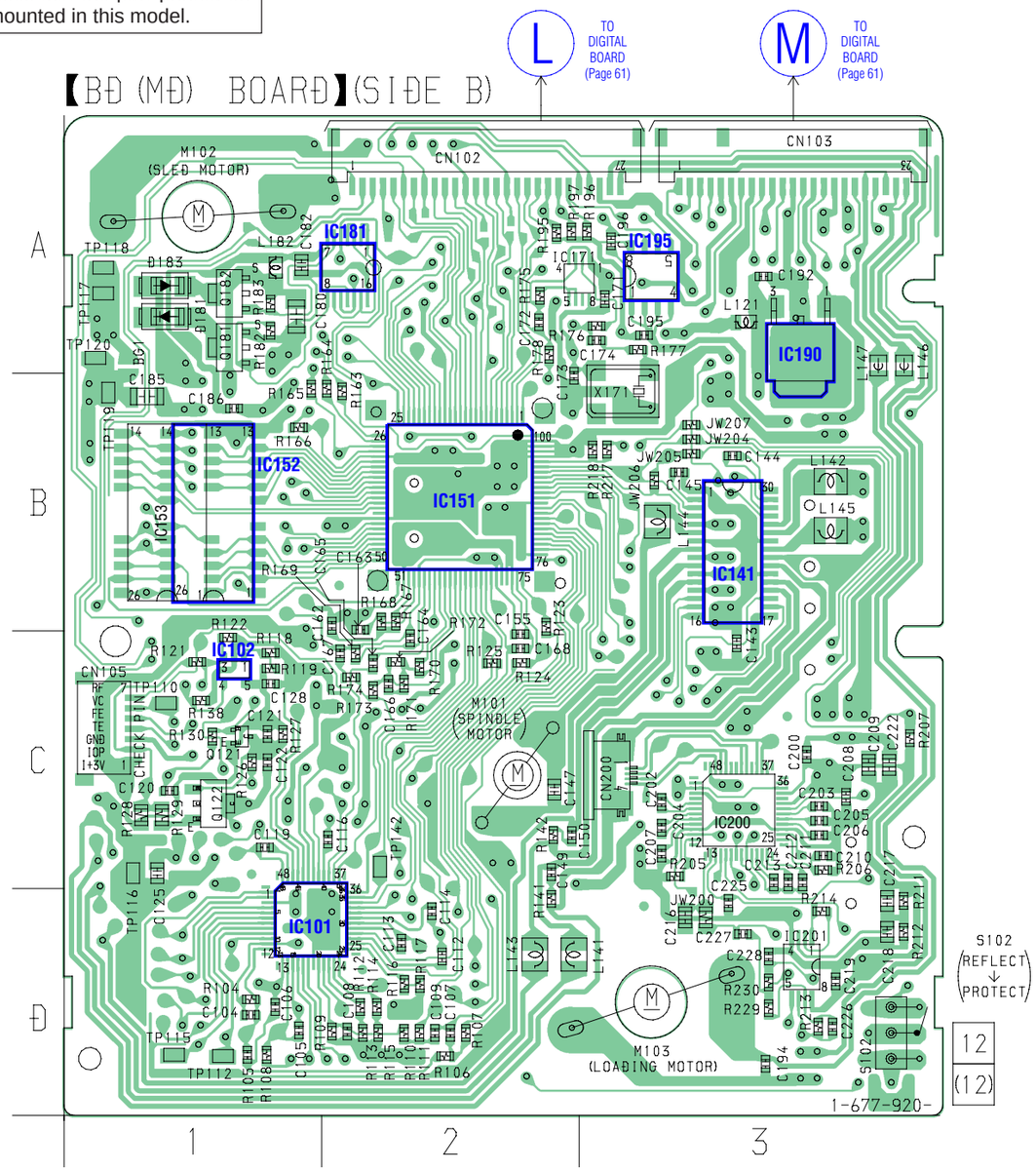


7-12. PRINTED WIRING BOARD MD SECTION

• See page 45 for Circuit Boards Location.

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





• **Semiconductor Location**

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

• **Semiconductor Location**

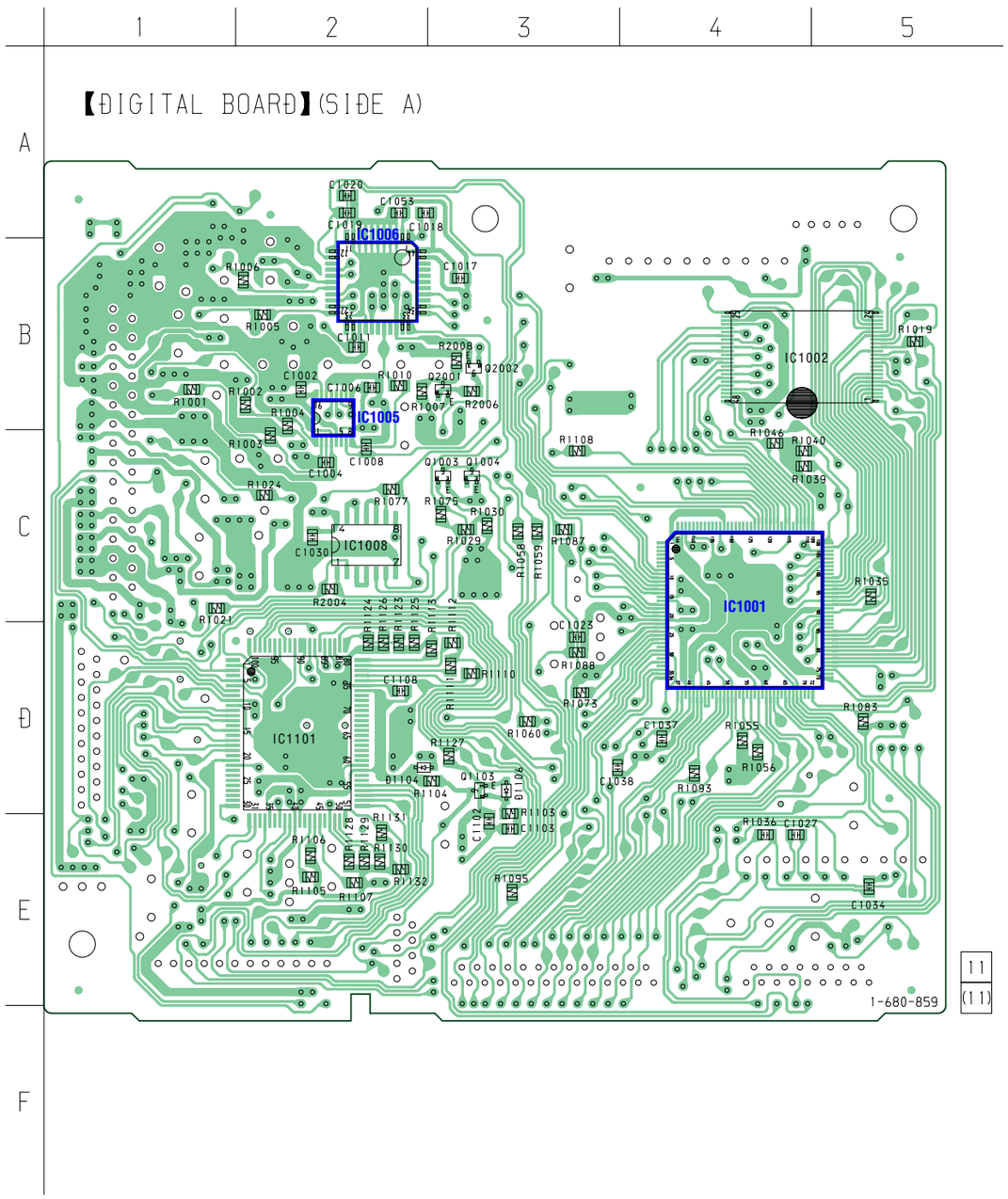
Ref. No.	Location	Ref. No.	Location
D181	A-1	IC181	A-2
D183	A-1	IC190	A-3
		IC195	A-3
IC101	D-1		
IC102	C-1	Q121	C-1
IC141	B-3	Q122	C-1
IC151	B-2	Q181	A-1
IC152	B-1	Q182	A-1

7-13. PRINTED WIRING BOARD DIGITAL SECTION

• See page 45 for Circuit Boards Location.

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

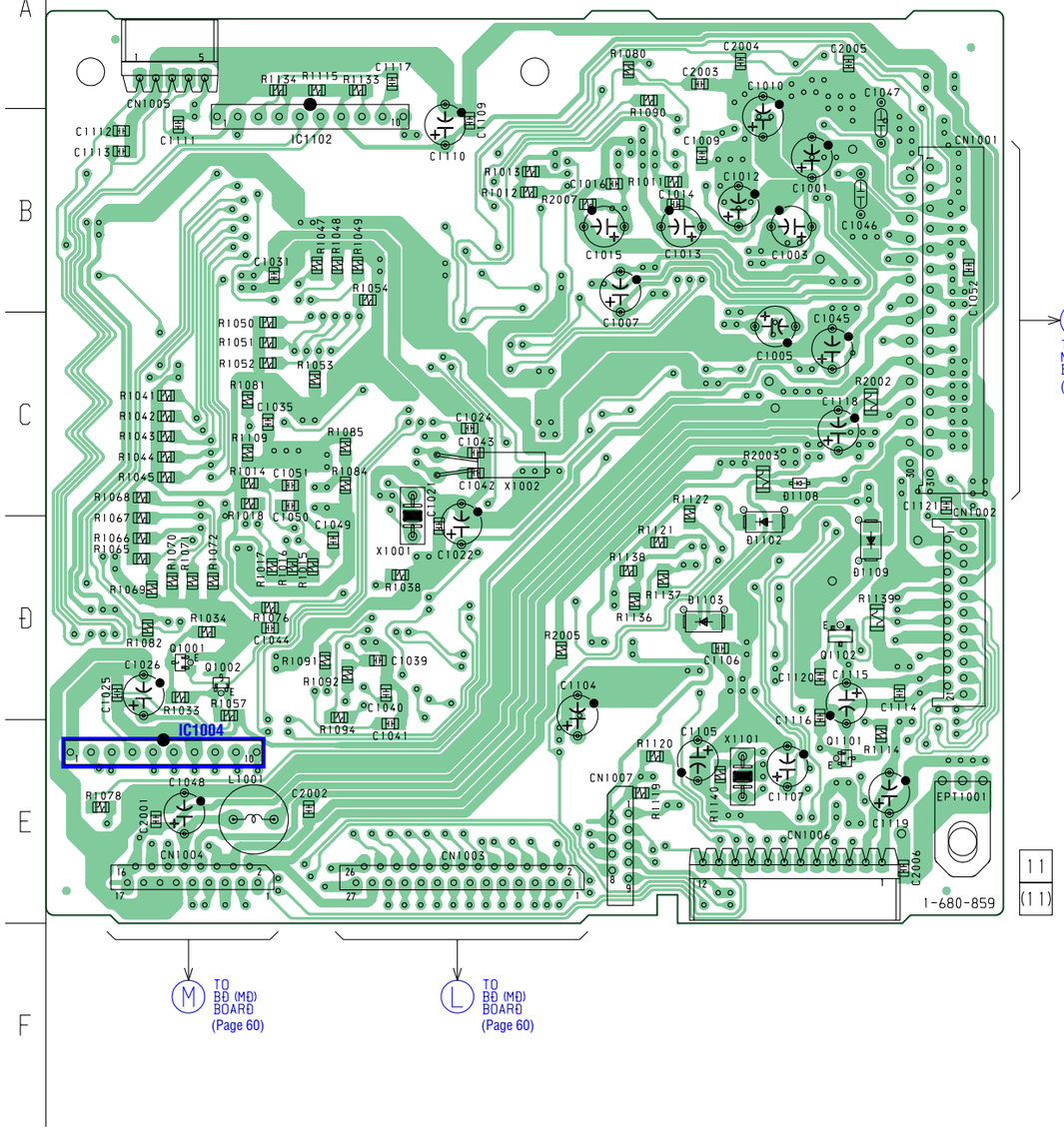
【DIGITAL BOARD】(SIDE A)



• **Semiconductor Location**

Ref. No.	Location
IC1001	C-4
IC1005	B-2
IC1006	B-2
Q1004	C-3
Q2001	B-3
Q2002	B-3

【DIGITAL BOARD】(SIDE B)

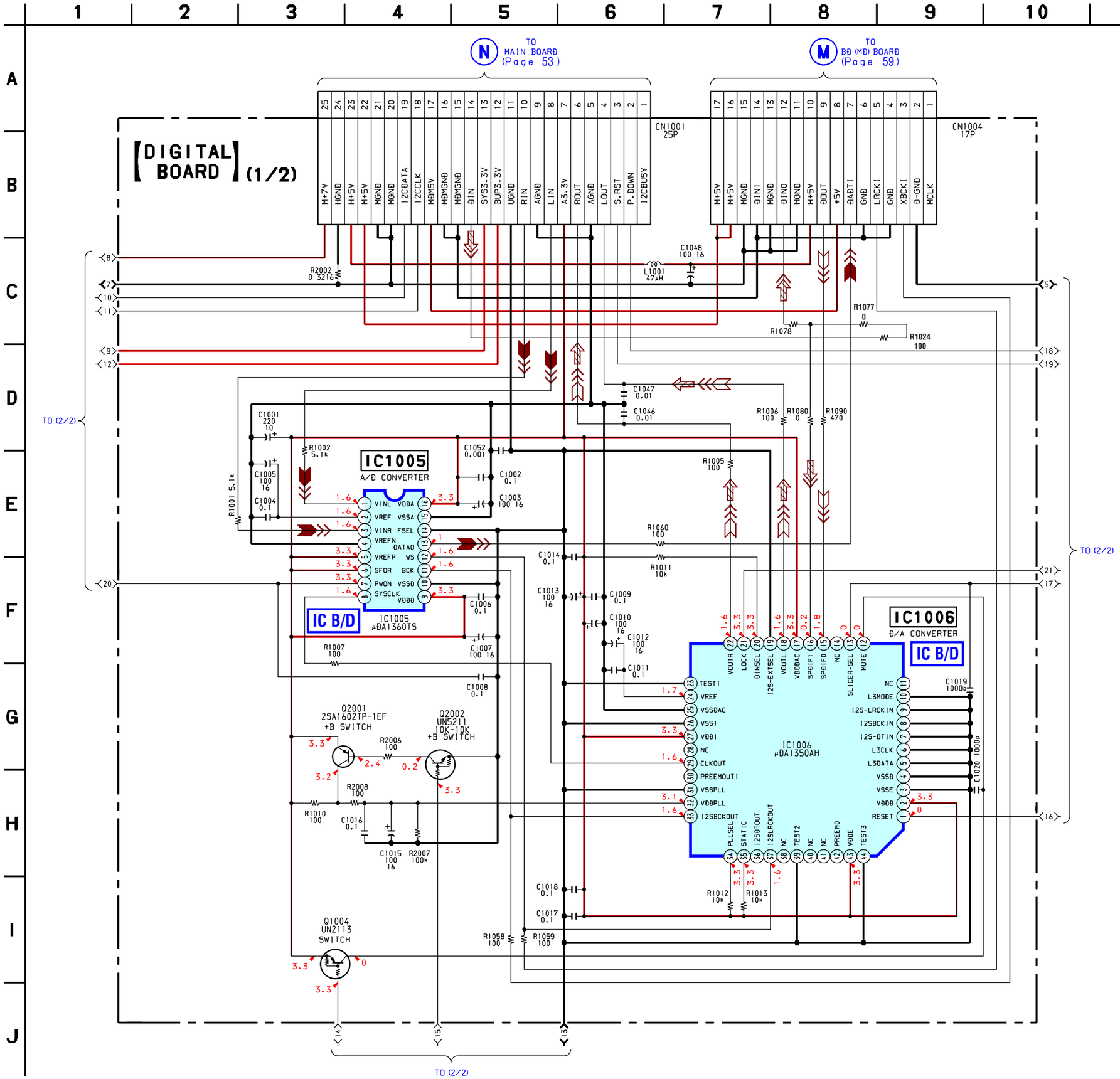


• **Semiconductor Location**

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

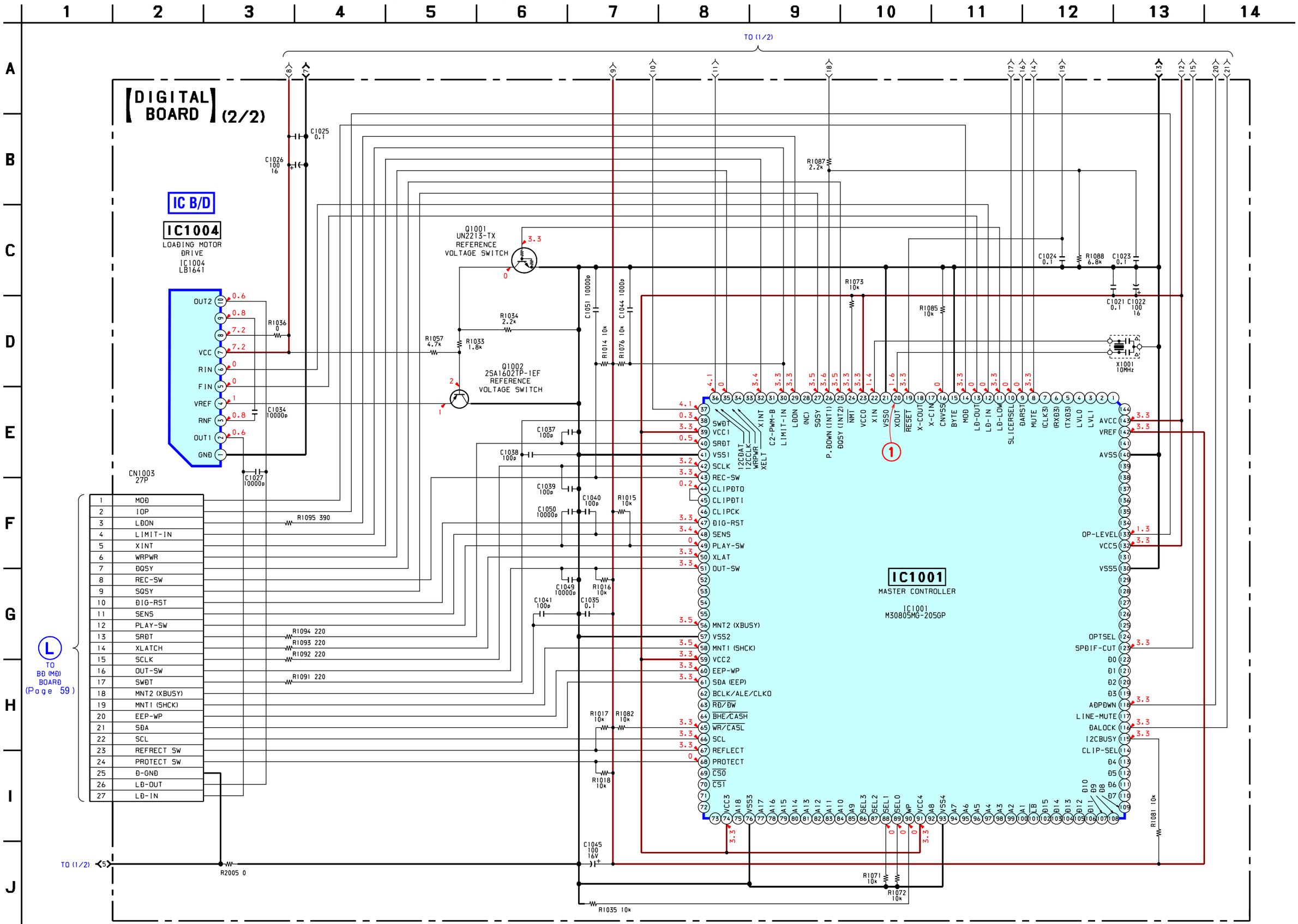
7-14. SCHEMATIC DIAGRAM DIGITAL SECTION (1/2)

• See page 88 for IC Block Diagrams.



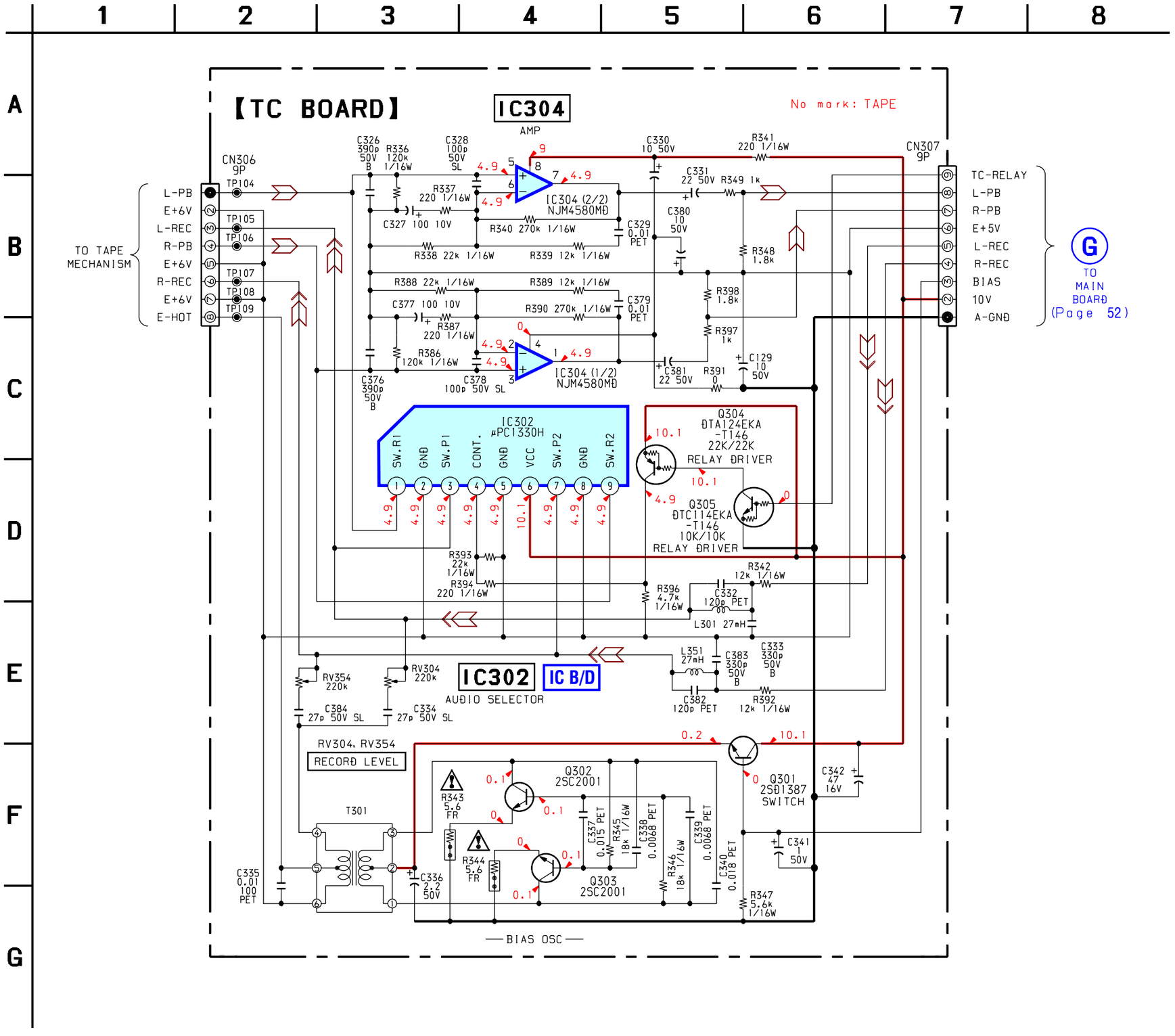
7-15. SCHEMATIC DIAGRAM DIGITAL SECTION (2/2)

- See page 74 for Wavefoms.
- See page 81 for IC Pin Function Description.
- See page 88 for IC Block Diagrams.



7-16. SCHEMATIC DIAGRAM TC SECTION

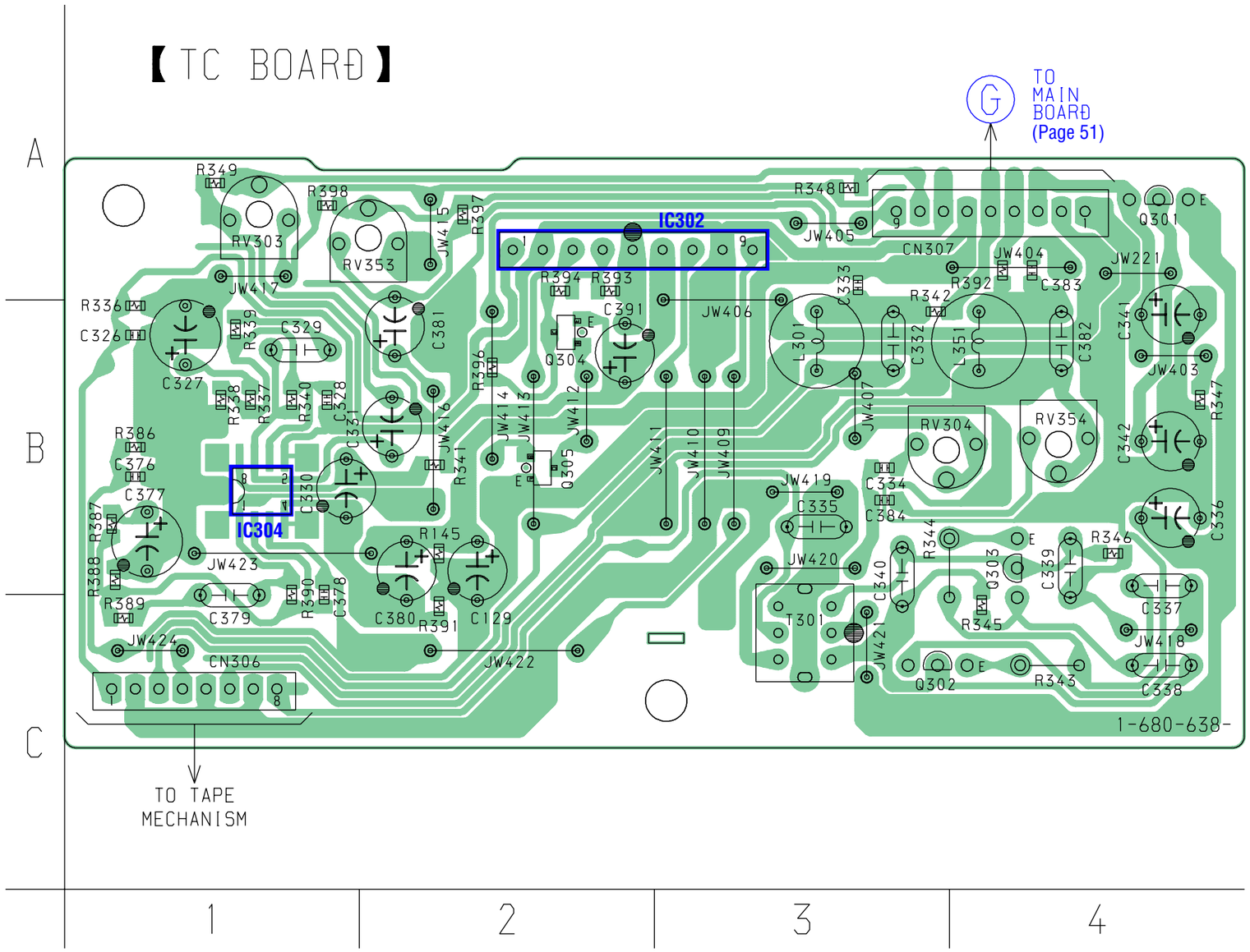
• See page 88 for IC Block Diagrams.



7-17. PRINTED WIRING BOARD TC SECTION

• See page 45 for Circuit Boards Location.

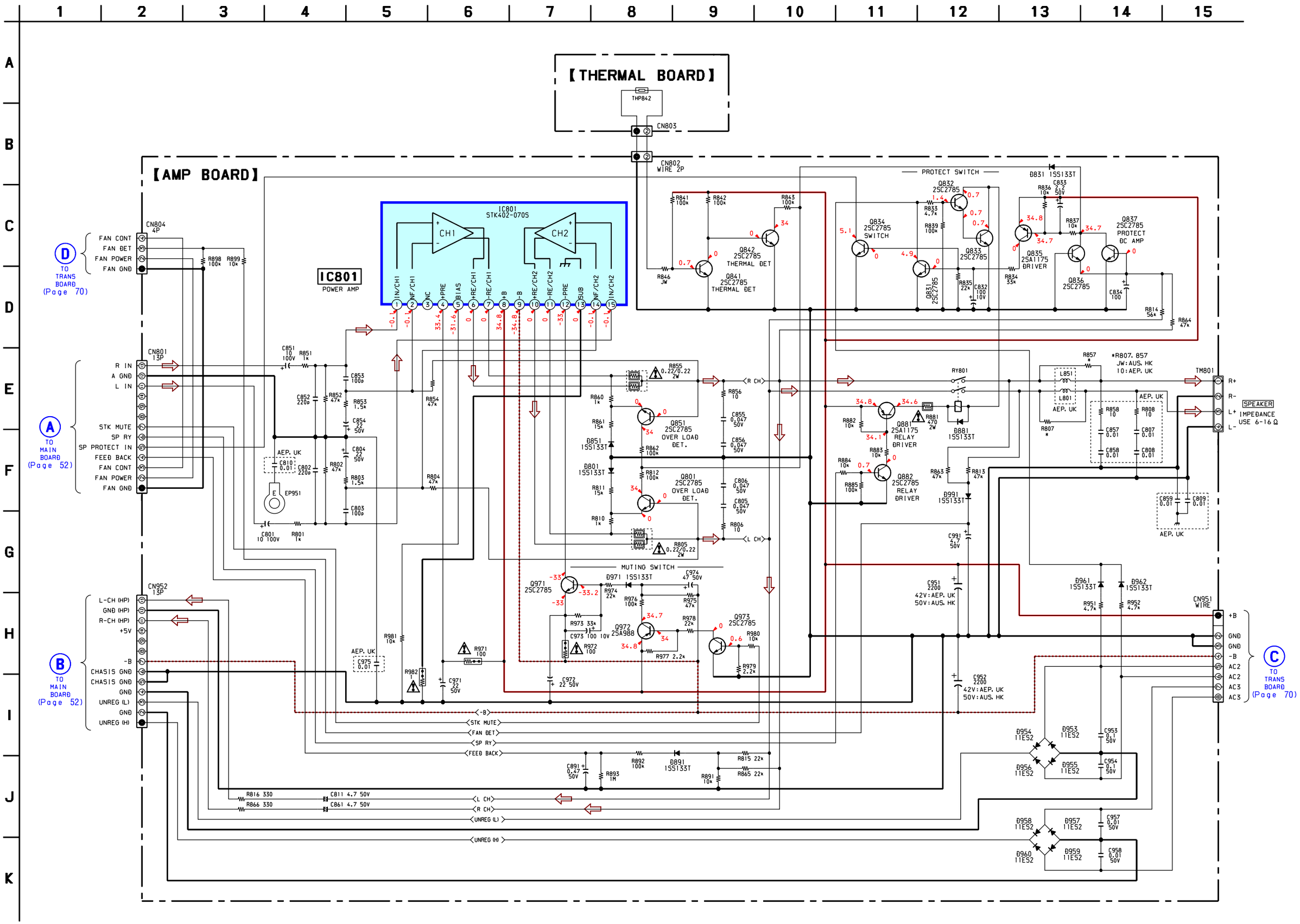
There are a few cases that the part printed on this diagram isn't mounted in this model.



• **Semiconductor Location**

Ref. No.	Location
IC302	A-3
IC304	B-1
Q301	A-4
Q302	C-3
Q303	B-4
Q304	B-2
Q305	B-2

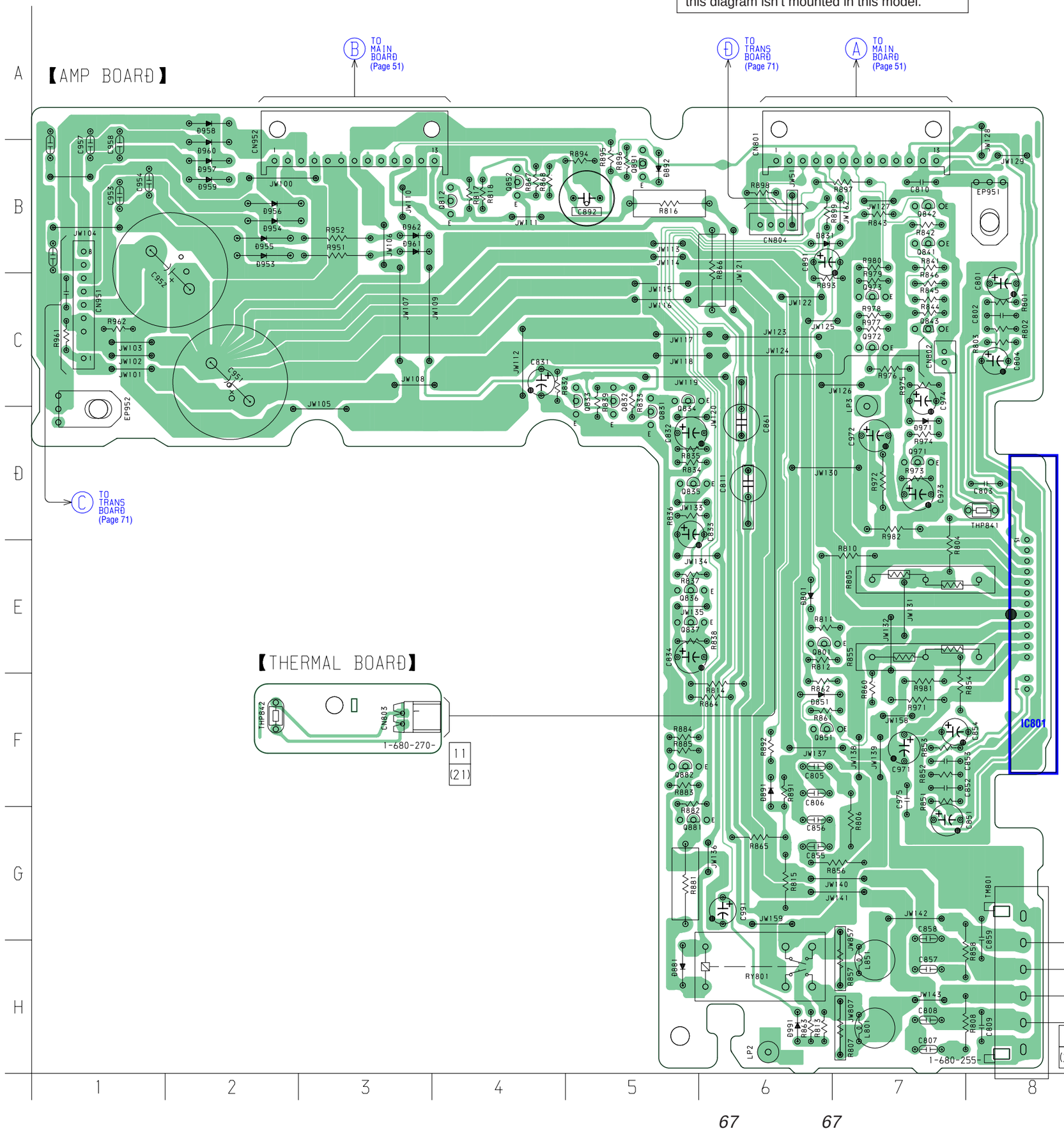
7-18. SCHEMATIC DIAGRAM AMP SECTION



7-19. PRINTED WIRING BOARD AMP SECTION

• See page 45 for Circuit Boards Location.

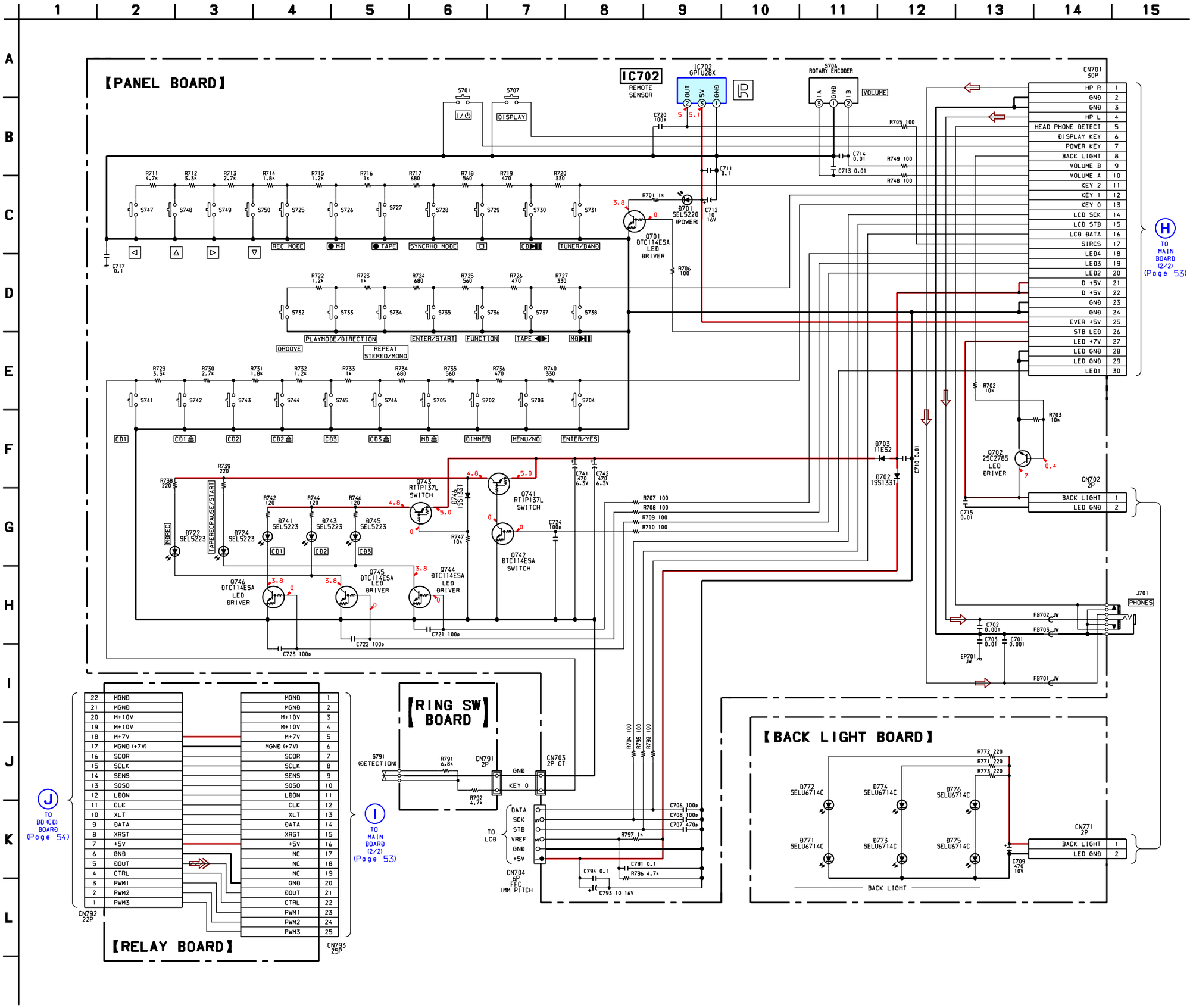
There are a few cases that the part printed on this diagram isn't mounted in this model.



• **Semiconductor Location**

Ref. No.	Location
D801	E-6
D831	B-7
D851	F-6
D881	H-5
D891	F-6
D953	B-2
D954	B-2
D955	B-2
D956	B-2
D957	B-2
D958	A-2
D959	B-2
D960	B-2
D961	B-3
D962	B-3
D971	D-7
D991	H-6
IC801	F-8
Q801	E-6
Q831	D-5
Q832	C-5
Q833	C-5
Q834	C-5
Q835	D-5
Q836	E-5
Q837	E-5
Q841	B-7
Q842	B-7
Q851	F-6
Q881	G-5
Q882	F-5
Q971	D-7
Q972	C-7
Q973	C-7

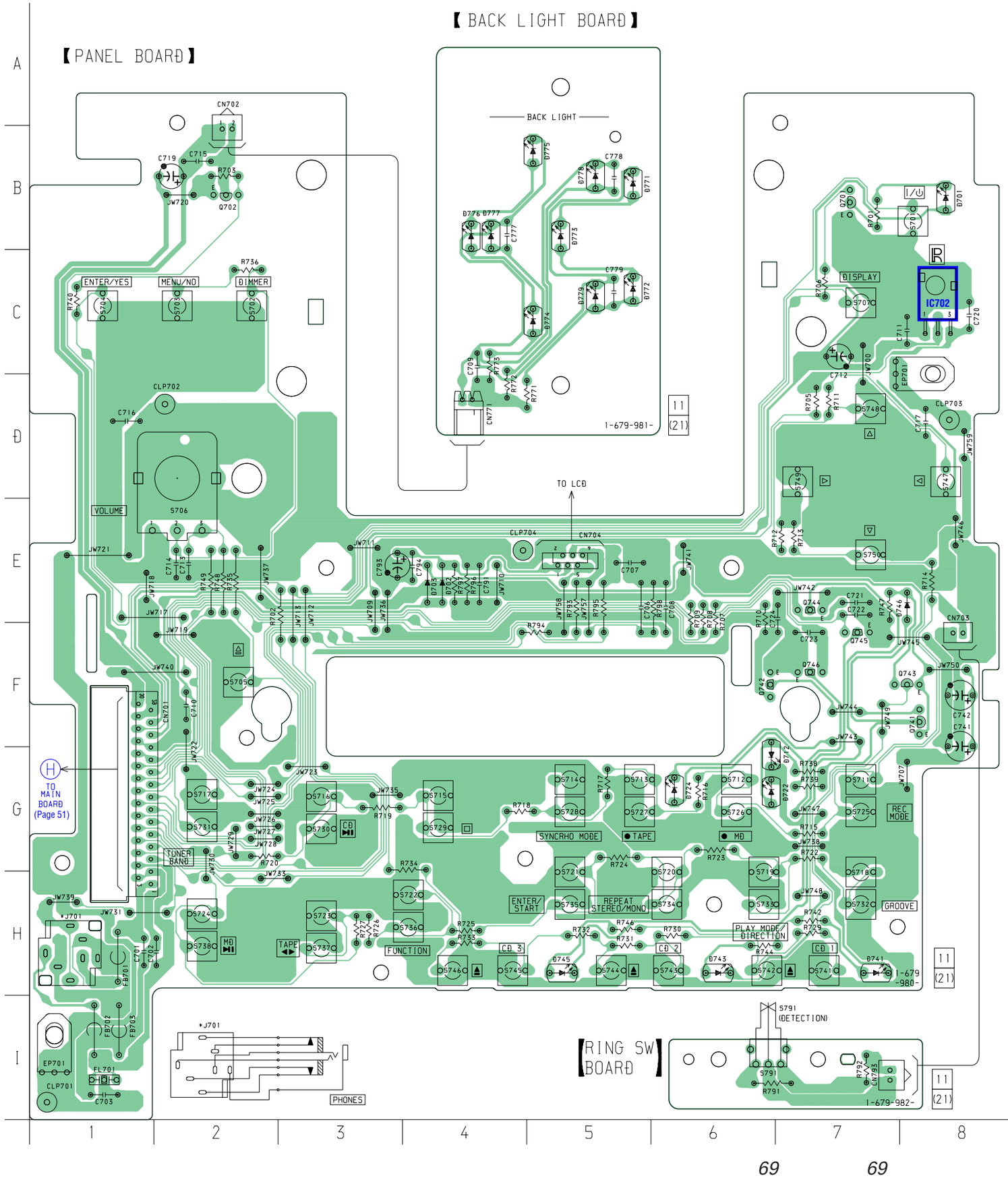
7-20. SCHEMATIC DIAGRAM PANEL SECTION



7-21. PRINTED WIRING BOARD PANEL SECTION

• See page 45 for Circuit Boards Location.

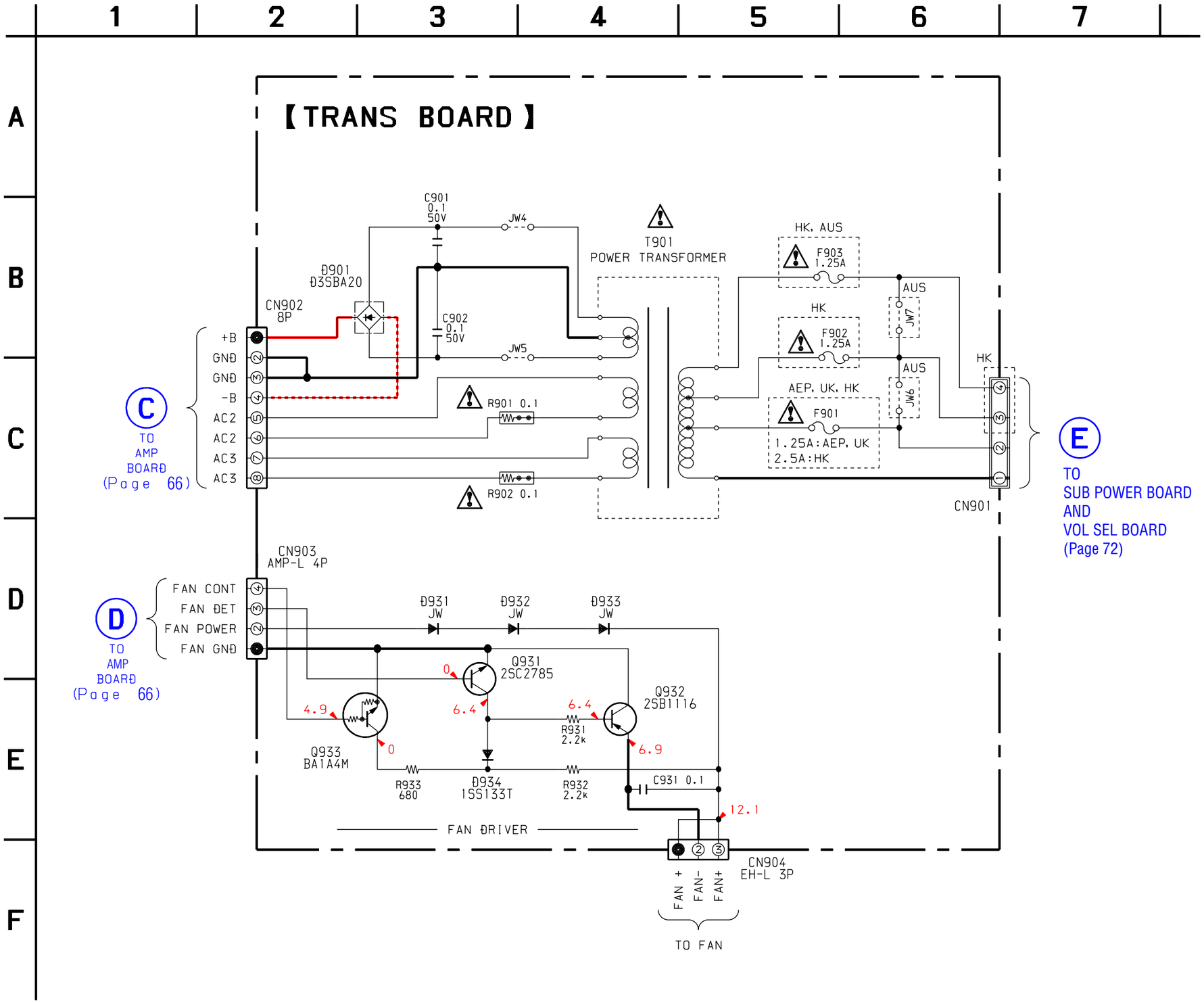
There are a few cases that the part printed on this diagram isn't mounted in this model.



• **Semiconductor Location**

Ref. No.	Location
D701	B-8
D702	E-4
D703	E-4
D722	G-6
D724	G-6
D741	H-7
D743	H-6
D745	H-5
D746	E-8
D771	B-5
D772	C-5
D773	B-5
D774	C-5
D775	B-5
D776	B-4
IC702	C-8
Q701	B-7
Q702	B-2
Q741	F-8
Q742	F-6
Q743	F-8
Q744	E-7
Q745	F-7
Q746	F-7

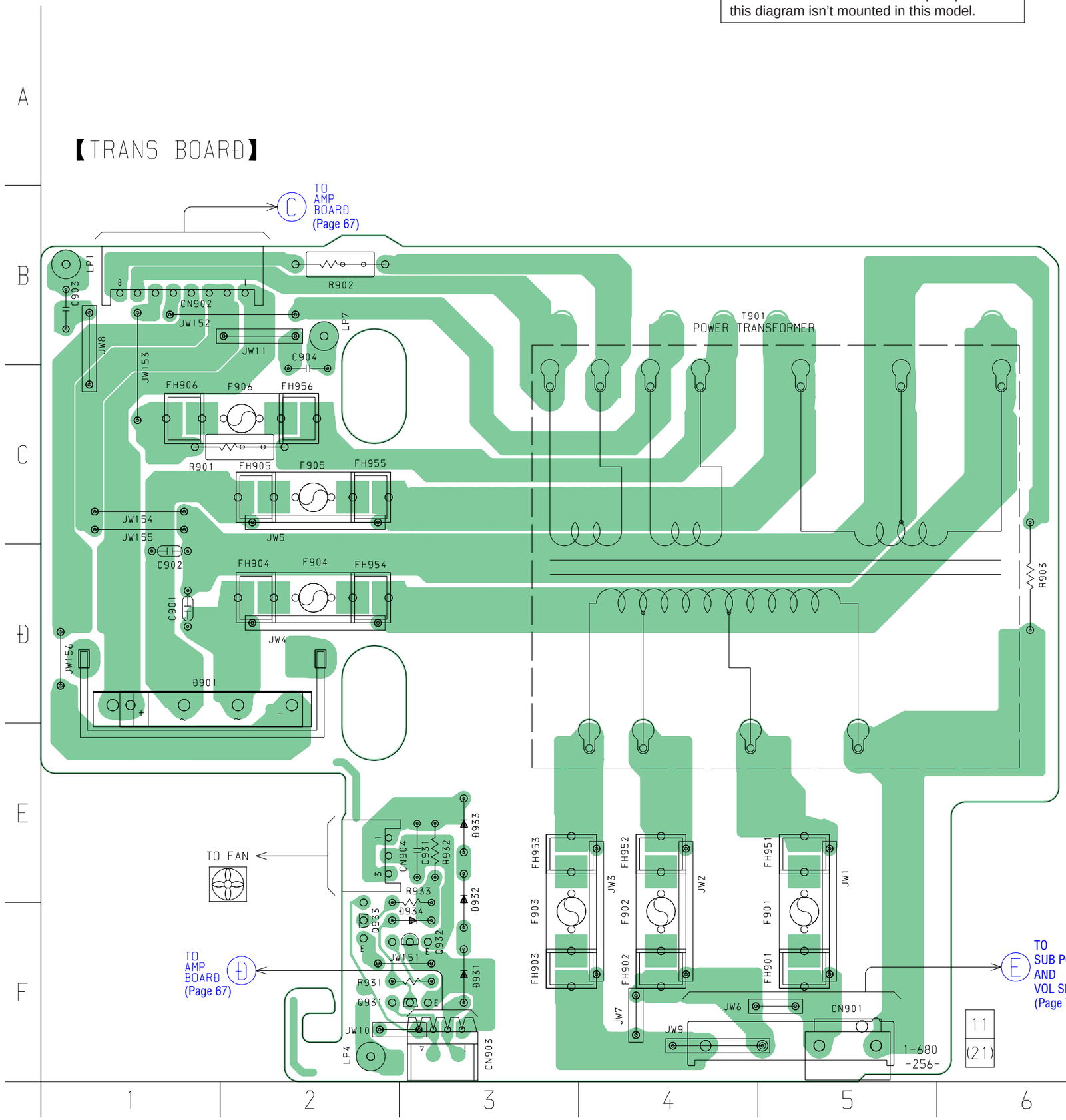
7-22. SCHEMATIC DIAGRAM TRANS SECTION



7-23. PRINTED WIRING BOARD TRANS SECTION

• See page 45 for Circuit Boards Location.

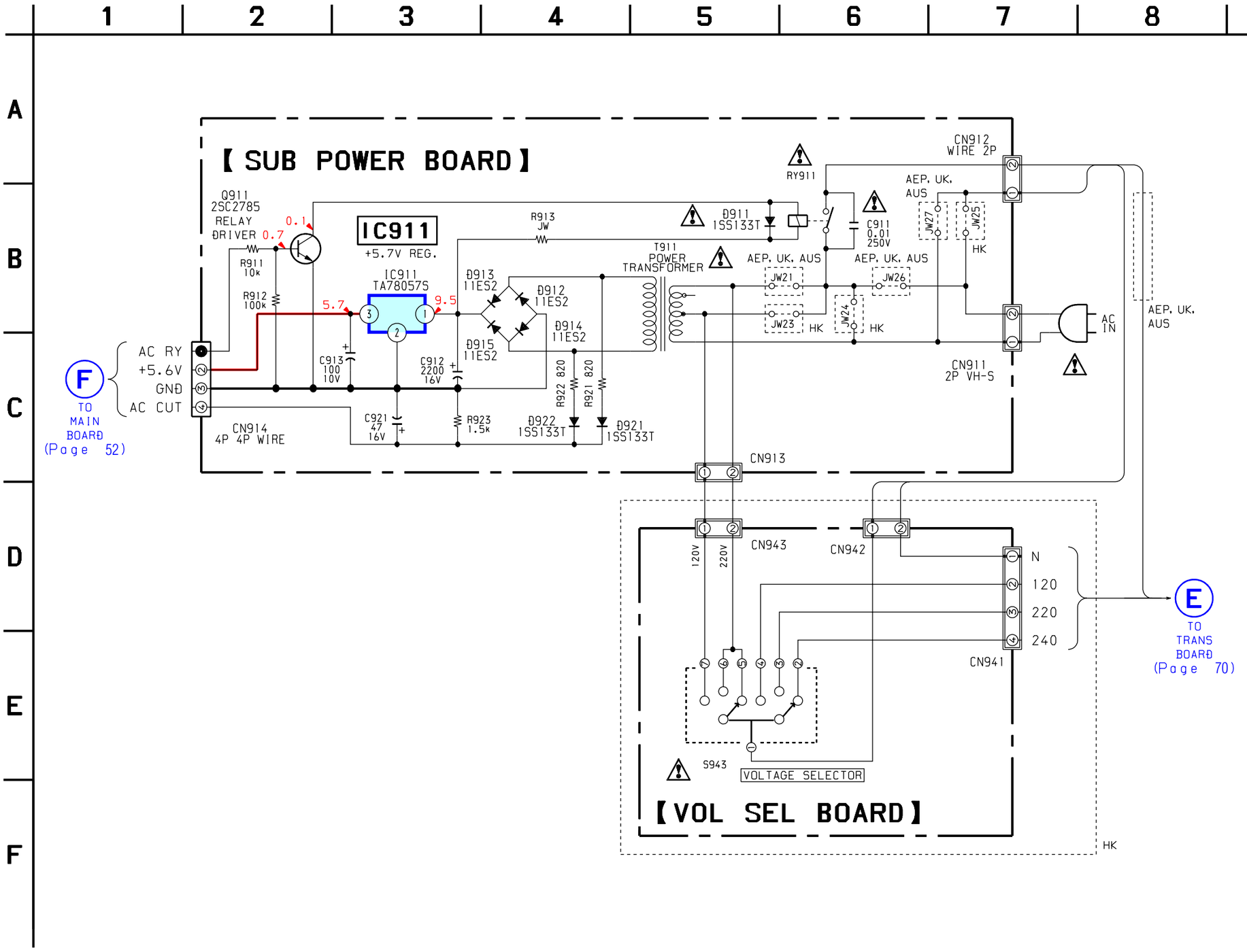
There are a few cases that the part printed on this diagram isn't mounted in this model.



• **Semiconductor Location**

Ref. No.	Location
D901	D-1
D934	F-3
Q931	F-3
Q932	F-3
Q933	F-2

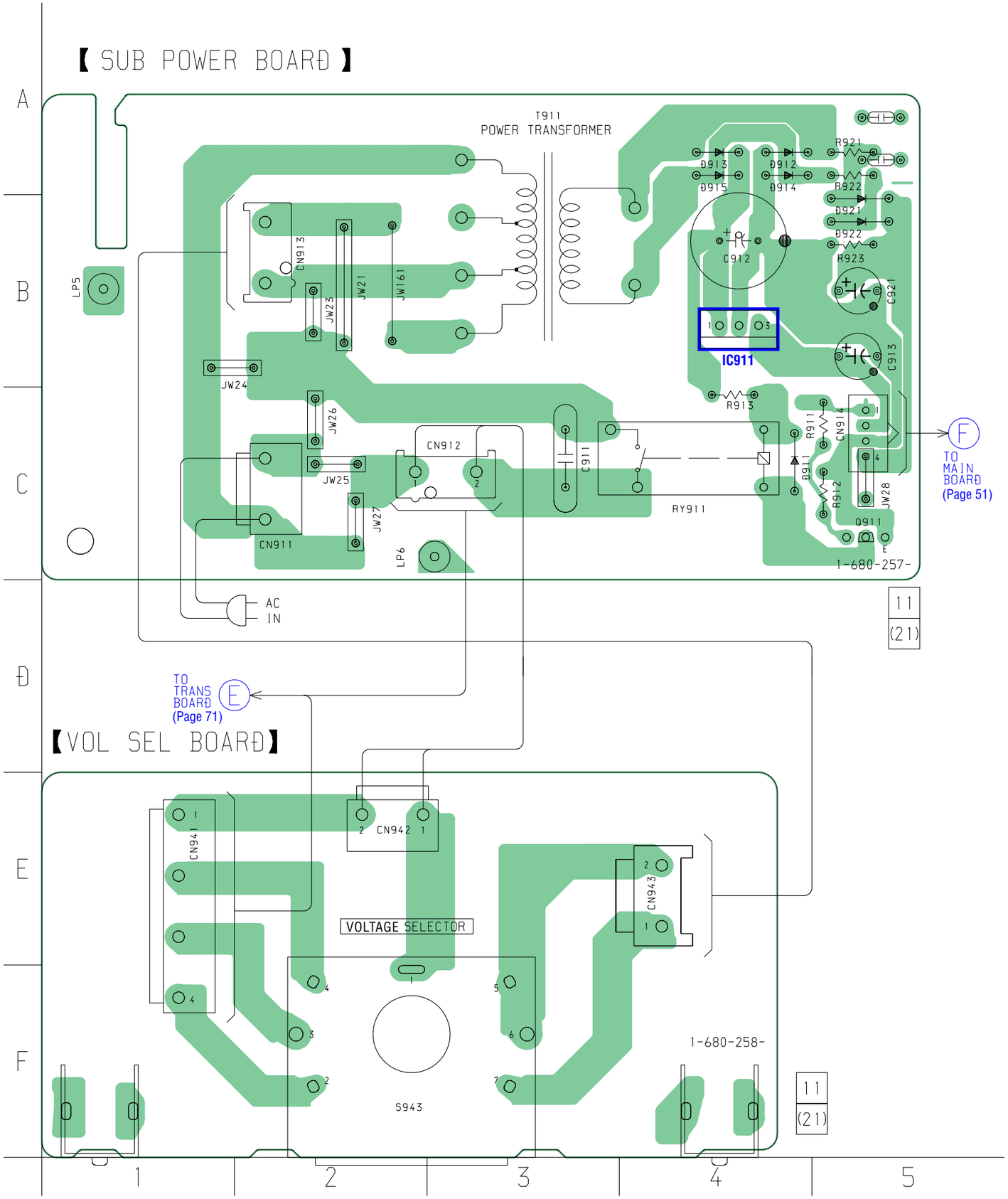
7-24. SCHEMATIC DIAGRAM POWER SECTION



7-25. PRINTED WIRING BOARD POWER SECTION

• See page 45 for Circuit Boards Location.

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



• **Semiconductor Location**

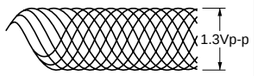
Ref. No.	Location
D911	C-4
D912	A-4
D913	A-4
D914	A-4
D915	A-4
D921	A-5
D922	B-5
IC911	B-4
Q911	C-5

HCD-CL5MD

• WAVEFORMS

– BD (MD) SECTION –

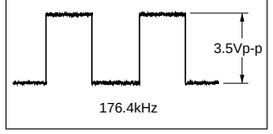
① IC101 ㊱ (RF)



② IC101 ㉞ (FE)
(Play mode)

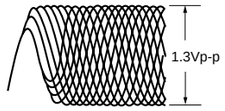
③ IC101 ㉖ (TE)
(Play mode)

④ IC151 ㊿ (FS4)



– BD (CD) SECTION –

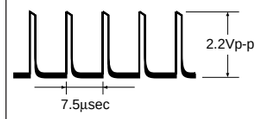
① IC101 ㊿
RFAC



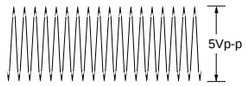
② IC101 ㊶
TE

③ IC101 ㊴
FE

④ IC101 ㉕
MDP

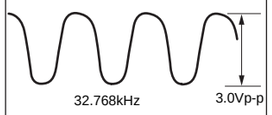


⑤ IC101 ㉒
XTAO

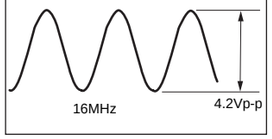


– MAIN SECTION –

① IC401 ⑪

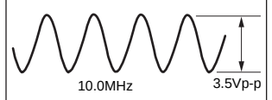


② IC401 ⑬



– MD DIGITAL SECTION –

① IC1001 ⑳
XOUT



7-26. IC PIN FUNCTIONS

• IC101 DIGITAL SIGNAL PROCESSOR (CXD3068Q) (BD (CD) Board)

Pin No.	Pin Name	I/O	Function
1	DVDD0	—	Digital power supply
2	XRST	I	System reset
3	MUTE	I	Muting selection pin
4	DATA	I	Serial data input, supplied from CPU
5	XLAT	I	Latch input, supplied from CPU
6	CLOK	I	Serial data transfer clock input, supplied from CPU
7	SENS	O	SENS output
8	SCLK	I	SENS serial data read-out clock
9	ATSK	I/O	Input pin for anti-shock (Ground)
10	WFCK	O	WFCK (Write Frame Clock) output (Not used)
11	XUGF	O	XUGF output (Not used)
12	XPCK	O	XPCK output (Not used)
13	GFS	O	GFS output (Not used)
14	C2P0	O	C2PO output
15	SCOR	O	Sub-code sync output
16	CM4	O	4.2336MHz output (Not used)
17	WDCK	O	48-bit slot D/A interface word clock (Not used)
18	DVSS	—	Digital ground
19	COUT	O	Numbers of track counted signal output (Not used)
20	MIRR	O	Mirror signal output (Not used)
21	DFCT	O	Defect signal output (Not used)
22	FOK	O	Focus OK output (Not used)
23	PWM1	I	(Not used)
24	LOCK	I/O	GFS in sampled by 460Hz (Not used)
25	MDP	O	Output to control spindle motor servo
26	SSTP	I	Input signal to detect disc inner most trak
27	FST0	O	2/3 divider output (Not used)
28	DVDD1	—	Digital power supply
29	SFDR	O	Sled drive output
30	SRDR	O	
31	TFDR	O	Tracking drive output
32	TRDR	O	
33	FFDR	O	Focus drive output
34	FRDR	O	
35	DVSS1	—	Digital ground
36	TEST	I	TEST pin connected normally ground
37	TES1	I	
38	VC	I	Center voltage input
39	FE	I	FOCUS error signal input
40	SE	I	Sled error signal input

Pin No.	Pin Name	I/O	Function
41	TE	I	Tracking error signal input
42	CE	I	Center servo analog input
43	RFDC	I	RF signal input
44	ADI0	O	Test pin (Not used)
45	AVSS0	—	Analog ground
46	IGEN	I	Power supply pin operational amplifiers
47	AVDD	—	Analog power supply
48	ASYO	O	EFM full swing output
49	ASYI	I	Asymmetry comparate voltage input
50	RFAC	I	EFM signal input
51	AVSS1	—	Analog ground
52	CLTV	I	Control voltage input for master VCO
53	FILO	O	Filter output for master PLL
54	FILI	I	Filter input for master PLL
55	PCO	O	Charge-pump output for master PLL
56	AVDD1	—	Analog power supply
57	BIAS	I	Asymmetry circuit constant current input
58	VCTL	I	Control voltage input for variable pitch PLL
59	V16M	I/O	16.9344MHz output (Not used)
60	VPCO	O	Charge-pump output for variable pitch PLL (Not used)
61	DVDD2	—	Digital power supply
62	ASYE	I	Asymmetry circuit ON/OFF (Connected to +5V.)
63	MD2	I	Digital-out ON/OFF control (Connected to +5V.)
64	DOUT	O	Digital-out output
65	LRCK	O	48-bit slot D/A interface, LR clock output
66	PCMD	O	48-bit slot D/A interface, Serial deta output
67	BCLK	O	48-bit slot D/A interface, bit clock output
68	EMPH	O	Playback disc output in emphasis mode (Not used)
69	XTSL	I	X’tal selection input pin
70	DVSS2	—	Digital ground
71	XTAI	I	X’tal oscillator circuit input
72	XTAO	O	X’tal oscillator circuit output (Not used)
73	SOUT	O	(Not used)
74	SOCK	O	
75	XOCT	O	
76	SQSO	O	Sub-Q serial output
77	SQCK	I	Clock input for SQSO read-out
78	SCSY	I	Sub-code input
79	SBSO	O	Sub-P through Sub-W serial output (Not used)
80	EXCR	I	Clock input for SBSO read-out

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

Pin No.	Pin Name	I/O	Function
1	I	I	I-V converted RF signal I input
2	J	I	I-V converted RF signal J input
3	VC	O	Middle point voltage (+1.5V) generation output
4 to 9	A to F	I	Signal input from the optical pick-up detector
10	PD	I	Light amount monitor input
11	APC	O	Laser APC output
12	APCREF	I	Reference voltage input for setting laser power
13	GND	—	Ground
14	TEMPI	I	Temperature sensor connection
15	TEMPR	O	Reference voltage output for the temperature sensor
16	SWDT	I	Serial data input from the CXD2662R
17	SCLK	I	Serial clock input from the CXD2662R
18	XLAT	I	Latch signal input from the CXD2662R “L”: Latch
19	XSTBY	I	Stand by signal input “L”: Stand by
20	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 (MD) BOARD)

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

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

Pin No.	Pin Name	I/O	Function
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
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 f_0 control output to the CXA2523AR
80	XLRF	O	Control latch output to the CXA2523AR
81	CKRF	O	Control clock output to the CXA2523AR
82	DTRF	O	Control data output to the CXA2523AR
83	APCREF	O	Reference PWM output for the laser APC
84	TEST0	O	PWM output for the laser digital APC (Not used)
85	TRDR	O	Tracking servo drive PWM output (–)

• Abbreviation
EFM: Eight to Fourteen Modulation
PLL : Phase Locked Loop
VCO: Voltage Controlled Oscillator

Pin No.	Pin Name	I/O	Function
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

• IC1001 M30805MG-205GP SYSTEM CONTROL (DIGITAL BOARD)

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

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

• IC401 M30622MGA-A33FP MASTER CONTROL (MAIN BOARD)

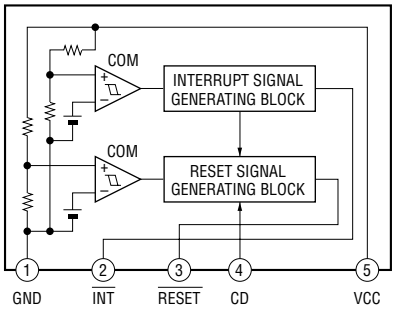
Pin No.	Pin Name	I/O	Description
1	LED 2	O	LED control signal output
2	LED 3	O	LED control signal output
3	LED 4	O	LED control signal output
4	SIRCS	I	Remote control receiver data signal input
5	LCD DATA	O	LCD DATA signal output
6	LCD STB	O	LCD STB signal output
7	LCD SCK	O	LCD SCK signal output
8	N.C.	–	Connected to ground
9	N.C.	–	Connected to ground
10	XC-IN	I	Sub clock input
11	XC-OUT	O	Sub clock output
12	RESET	I	System reset input
13	X-OUT	O	Main system clock output
14	VSS	–	Ground
15	X-IN	I	Main system clock input
16	VCC	–	Power supply (+5V)
17	NMI	–	Not used (connected to Vcc)
18	RDS-INT	I	RDS interrupt signal input
19	SCOR	I	CD Q-data signal input
20	RDS-DATA	I	RDS data signal input
21	ST-MUTING	O	Tuner muting signal output
22	ST-CE	O	Tuner chip enable output
23	ST-DOUT	O	Tuner data signal output
24	BU PWM 3	O	BU PWM 3 signal output
25	ST-DIN	I	Tuner data signal input
26	BU PWM 2	O	BU PWM 2 signal output
27	ST-CLK	O	Tuner clock signal output
28	BU PWM 1	O	BU PWM 1 signal output
29	IIC-CLK	O	IIC SCL output
30	IIC-DATA	O	IIC SDA output
31	N.C.	–	Not used
32	SQ-DATA-IN	I	CD SQ data input
33	SQ-CLK	O	CD SQ clock output
34	XTSL	O	XTSL signsl output for IC101
35	CD-DATA	O	CD data signal output
36	SENS	I	BD condition signal input
37	CD-CLK	O	CD clock signal output
38	CD-POWER	O	CD power control signal output (H=ON,L=OFF)
39	STB LED/CLK	O	Standby LED ON/OFF signal output/Test point (clock check)
40	DBFB ON/OFF	O	DBFB control signal output (L=ON,H=OFF)
41	LDON	O	LDON signsl output for IC103
42	XLT	O	CD LAT signal output
43	XRST	O	CD reset signal output
44	LOAD-IN	O	Loading motor control signal output
45	LOAD-OUT	O	Loading motor control signal output
46	OPEN	I	Tray open detect signal input
47	CLOSE	I	Tray close detect signal input
48	T-SENS1	I	CD table detect signal input
49	T-SENS2	I	CD table detect signal input
50	T-SENS3	I	CD table detect signal input

Pin No.	Pin Name	I/O	Description
51	FAN CNT	O	Fan control signal output
52	DISC-SENS	I	Detection input signal from DISC SENSOR BOARD
53	B TRG	O	B deck trigger control signal output
54	AMS-IN	I	AMS signal input (L=ON,H=OFF)
55	CAPM-CNT1	O	Capstan motor REV/FWD/STOP control signal output
56	OPT SEL	O	Optical select signal output
57	B PLAY	I	B deck play detect signal input
58	TC-MUTING	O	Tape deck line muting signal output (H=ON,L=OFF)
59	R/PB/PAS	I	REC/PB/PAS select signal input (L=REC,Z=PB,H=PAS)
60	TC LID	I	TC lid detect signal input
61	REC-MUTING	O	REC MUTING ON/OFF signal output (L=ON,H=OFF)
62	VCC	–	Power supply (+5V)
63	SOFT-TEST	O	Test point (soft check out)
64	VSS	–	Ground
65	BIAS	O	BIAS ON/OFF signal output (H=ON,L=OFF)
66	MD/VIDEO	O	Not used
67	DA-MUTING	O	DA muting control signal output
68	ALC	O	ALC ON/OFF signal output (L=ON,H=OFF)
69	TC-RELAY	O	Tape deck relay ON/OFF signal output (H=ON,L=OFF)
70	HEAD PHONE DETECT	I	HEAD PHONE detect signal input
71	LINE-MUTING	O	LINE muting ON/OFF signal output (H=ON,L=OFF)
72	STK-POWER	O	Power amplifier ON/OFF signal output (H=ON,L=OFF)
73	DISPLAYKEY	I	Display key detect signal input
74	POWER KEY	I	Power key detect signal input
75	PC_POWER	I	PC power detect signal from PC LINK
76	MDM POWER	O	MD P-DOWN control signal output
77	BACK LIGHT	O	Back light LED control signal output
78	VOL B	I	Volume signal input from rotary encoder
79	VOL A	I	Volume signal input from rotary encoder
80	STBY-RELAY	O	Standby relay ON/OFF signal output
81	AMP-DATA	O	DATA signal output for sound processor
82	AMP-LAT	O	LAT signal output for sound processor
83	AMP-CLK	O	CLK signal output for sound processor
84	FRONT-RELAY	O	Front speaker relay ON/OFF signal output (H=ON,L=OFF)
85	N.C.	–	Not used
86	PROTECT	I	Speaker protect ON/OFF signal input (L=ON,H=OFF)
87	STEREO	I	STEREO detect signal input (L=ON,H=OFF)
88	TUNED	I	TUNED detect signal input (L=ON,H=OFF)
89	LED 1	O	LED control signal output
90	B-SHUT	I	B deck reel pulse signal input
91	B HALF/REC	I	B deck half detect signal input
92	MODEL -IN	I	MODEL input
93	SPEC-IN	I	Version select input
94	KEY2	I	Key input signal from function key
95	KEY1	I	Key input signal from function key
96	AVSS	–	Analog ground
97	KEY0	I	Key input signal from function key
98	VREF	O	Analog reference voltage
99	AVCC	–	Analog power supply
100	AC-CUT	I	AC_CUT ON/OFF check (L=ON,H=OFF)

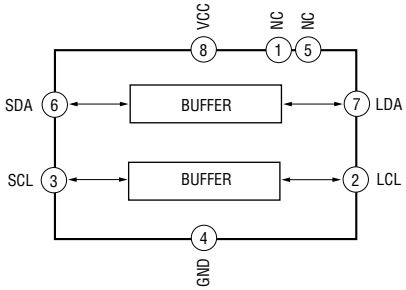
7-27. IC BLOCK DIAGRAMS

– MAIN BOARD –

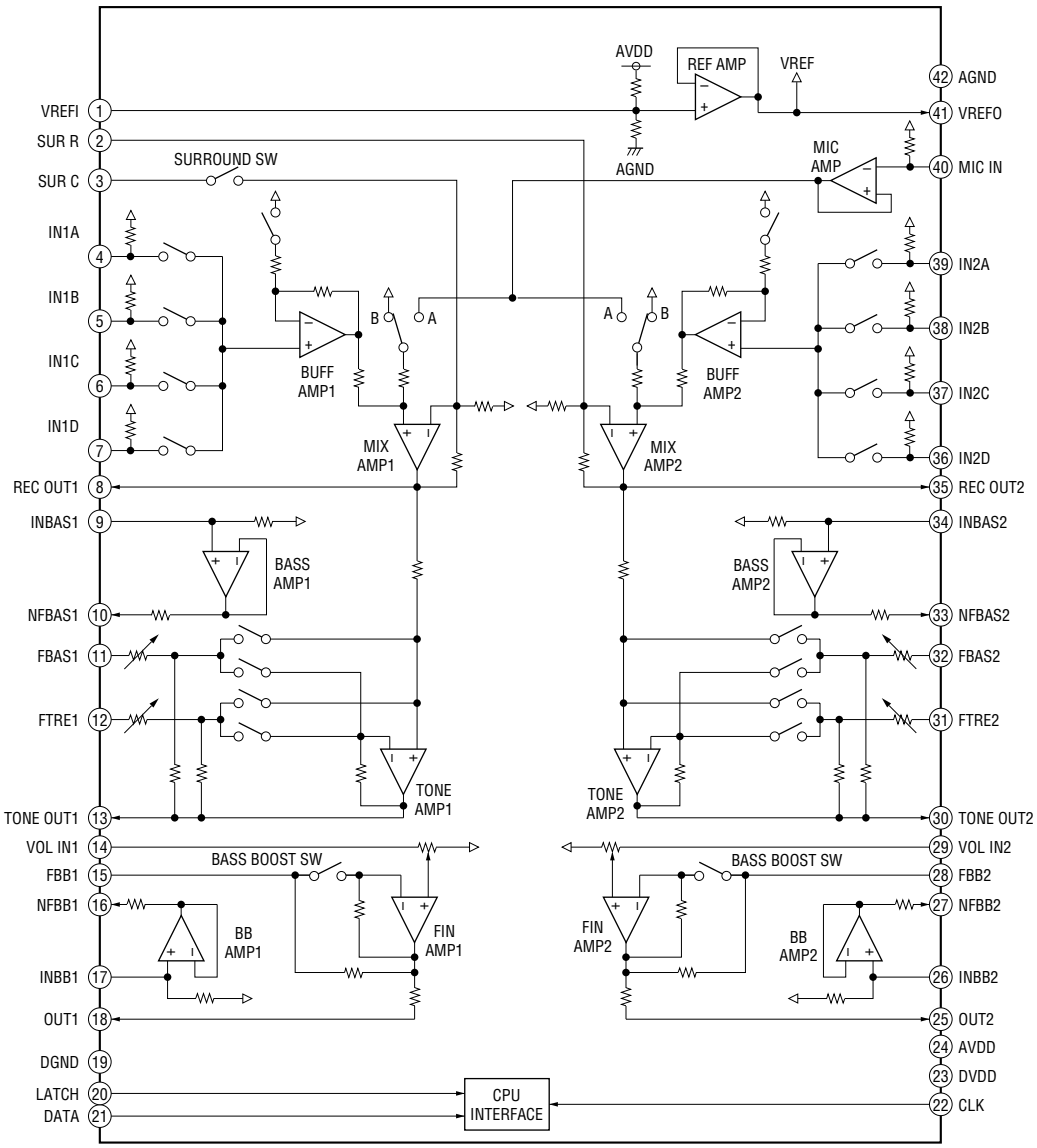
IC502 M62016L



IC552 P82B715TD.118

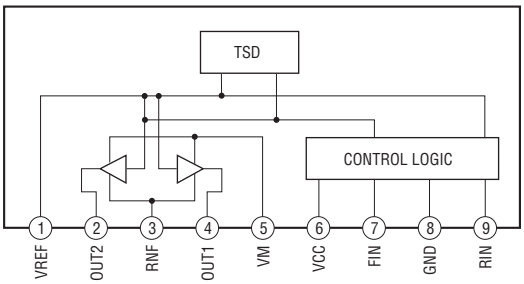


IC201 M62428AFP600C



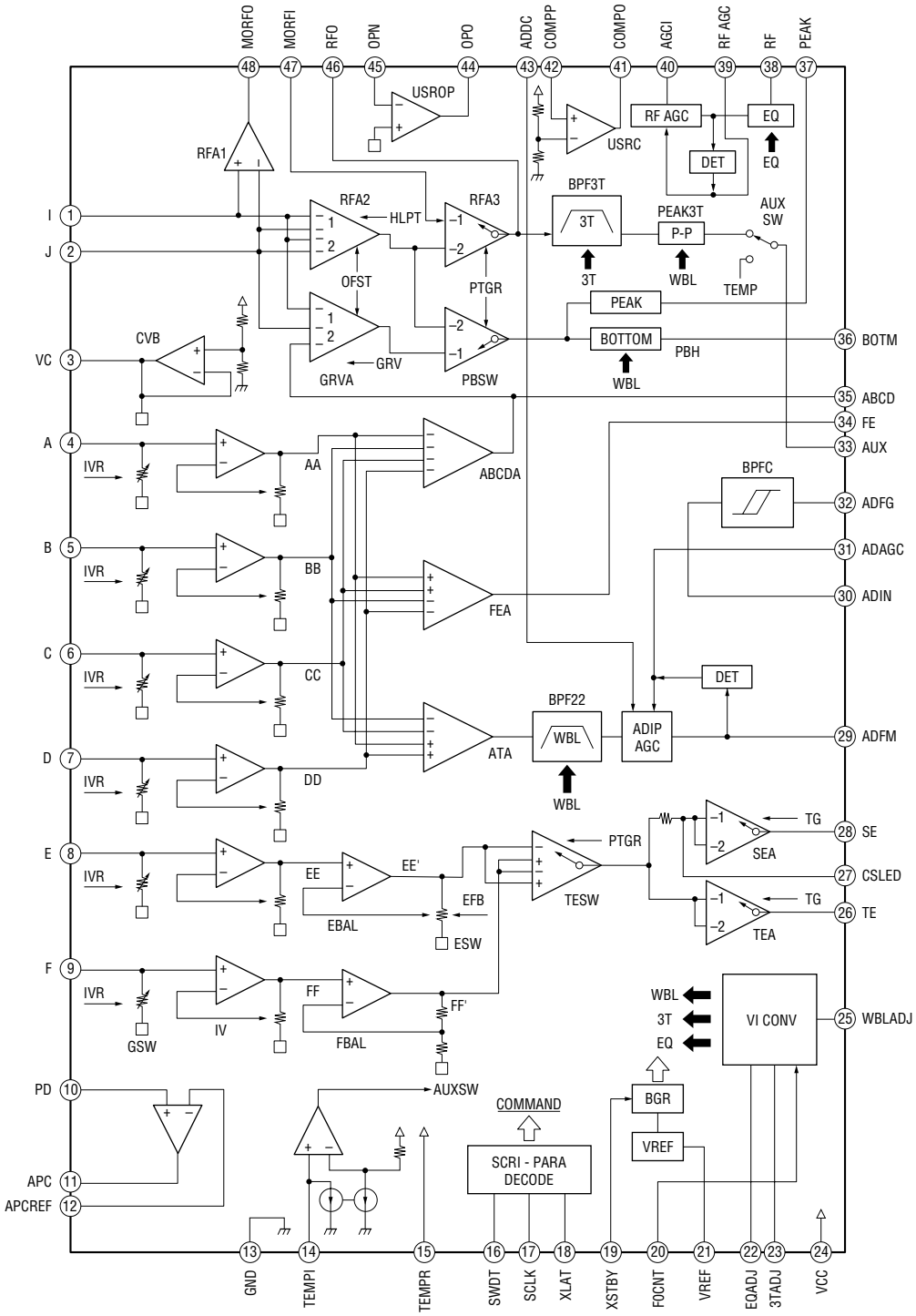
– DRIVER BOARD –

IC701 BA6956AN

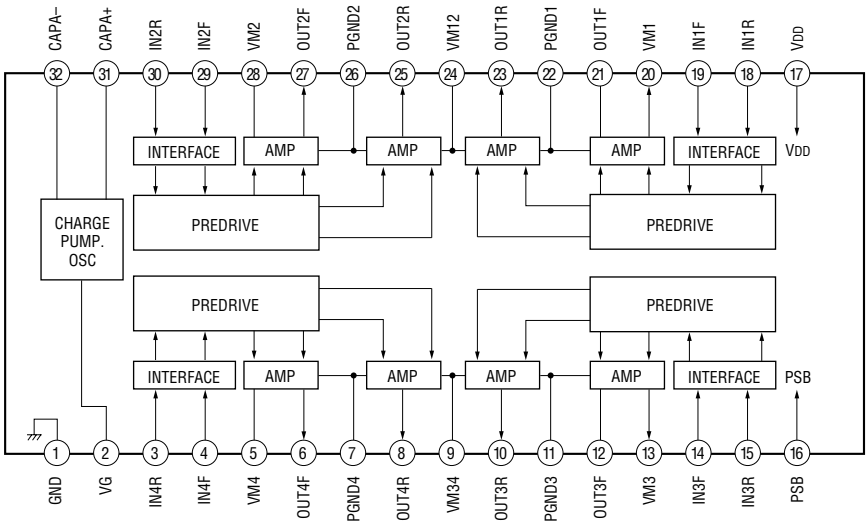


– BD (MD) BOARD –

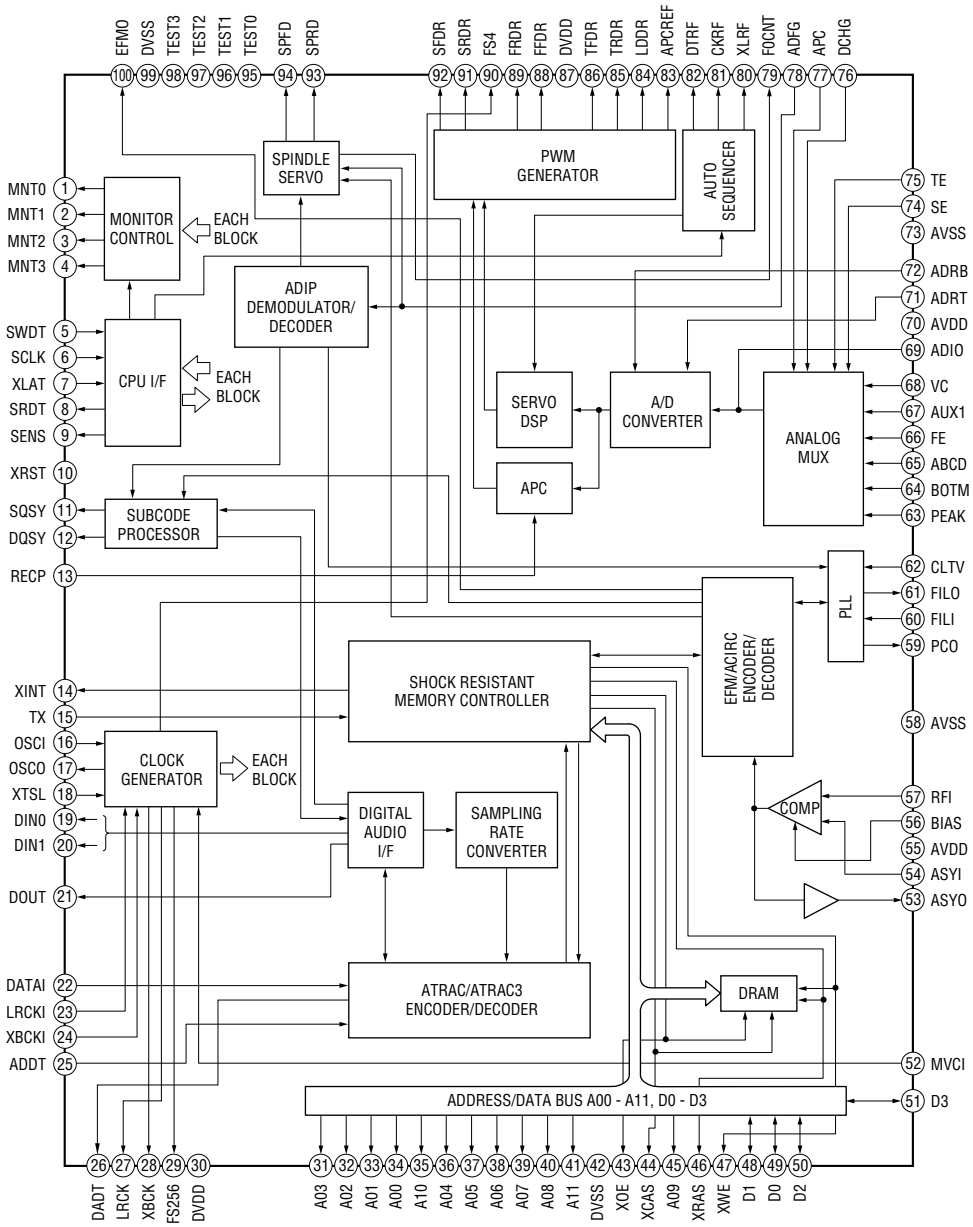
IC101 CXA2523AR



IC141 BH6511FS-E2

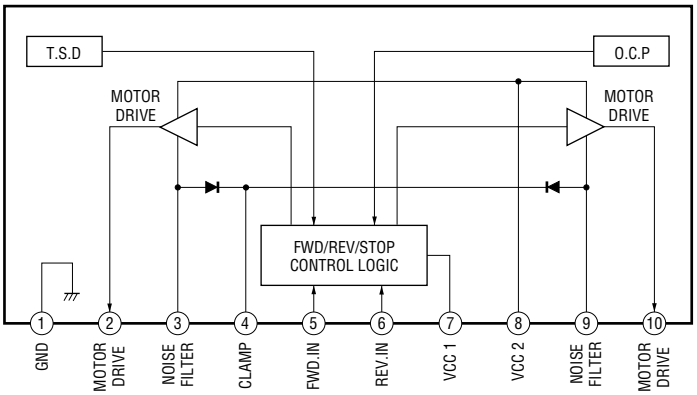


IC151 CXD2662R

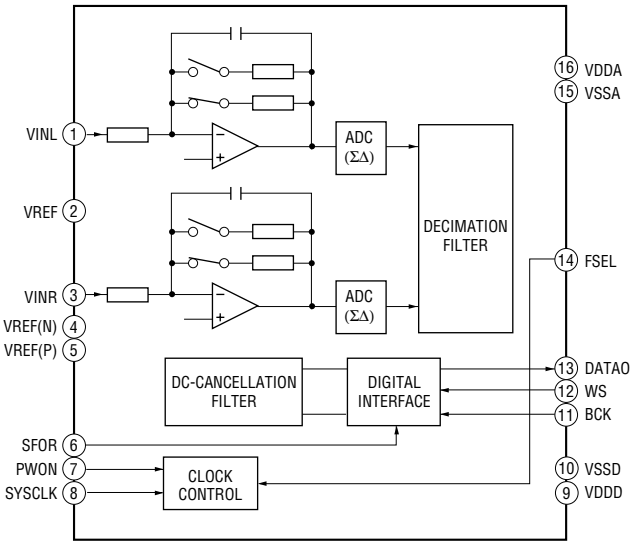


– DIGITAL BOARD –

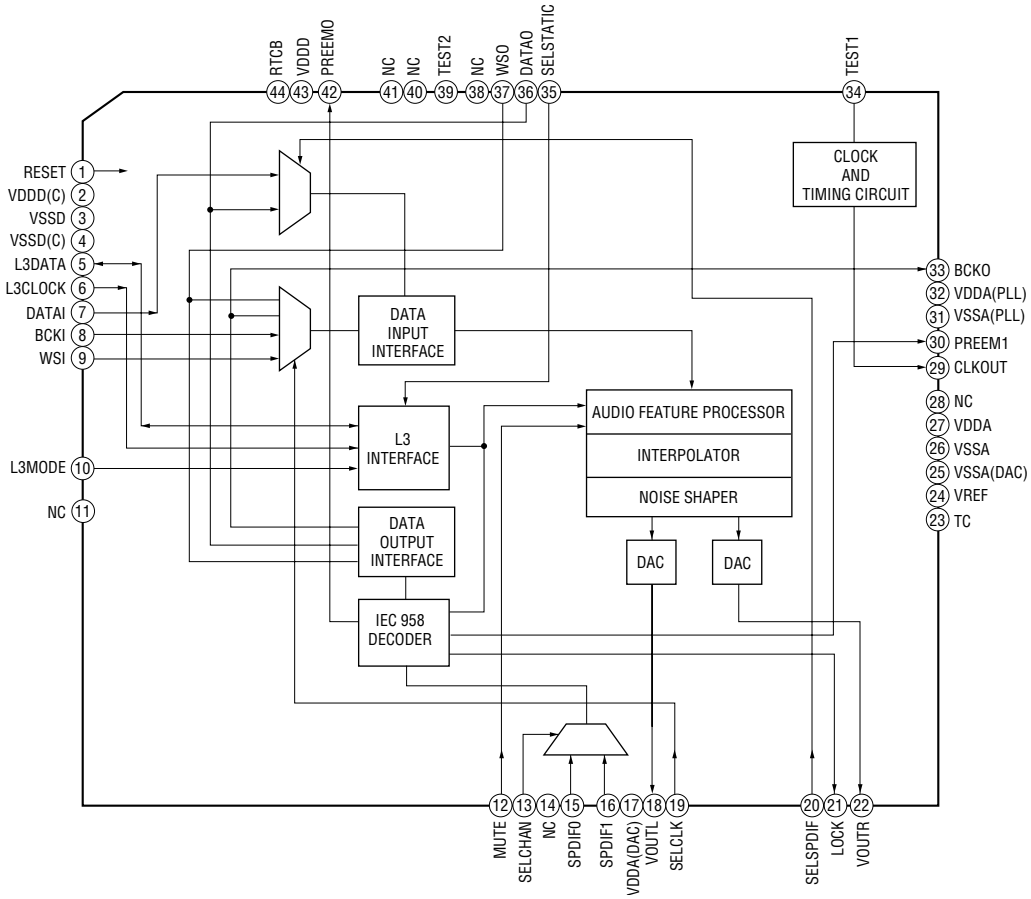
IC1004 LB1641



IC1005 UDA1360TS

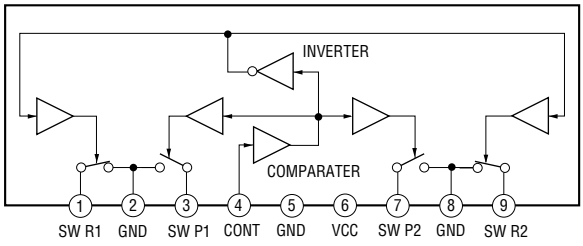


IC1006 UDA1350AH



– TC BOARD –

IC302 uPC1330HA

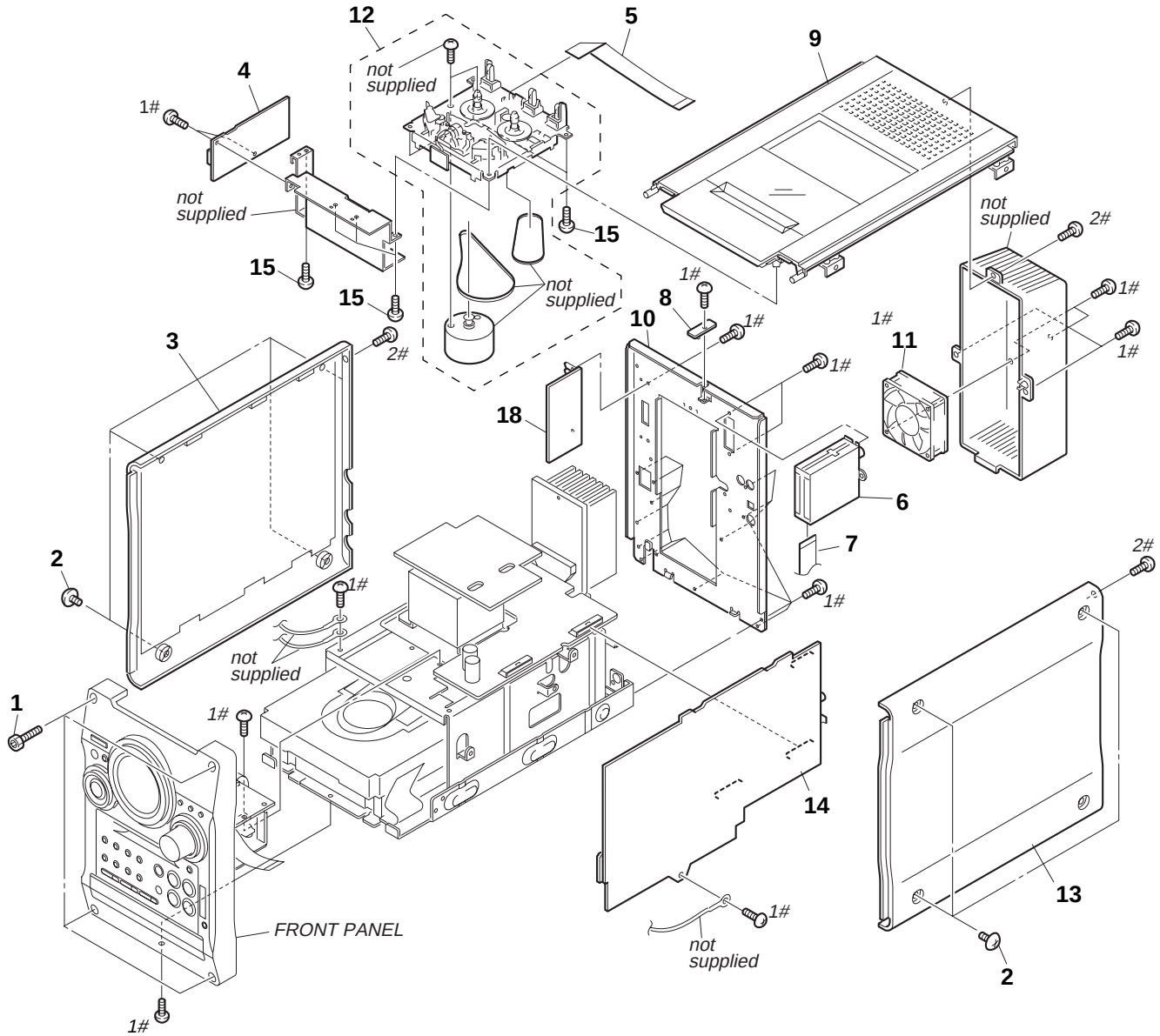


SECTION 8
EXPLODED VIEWS

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

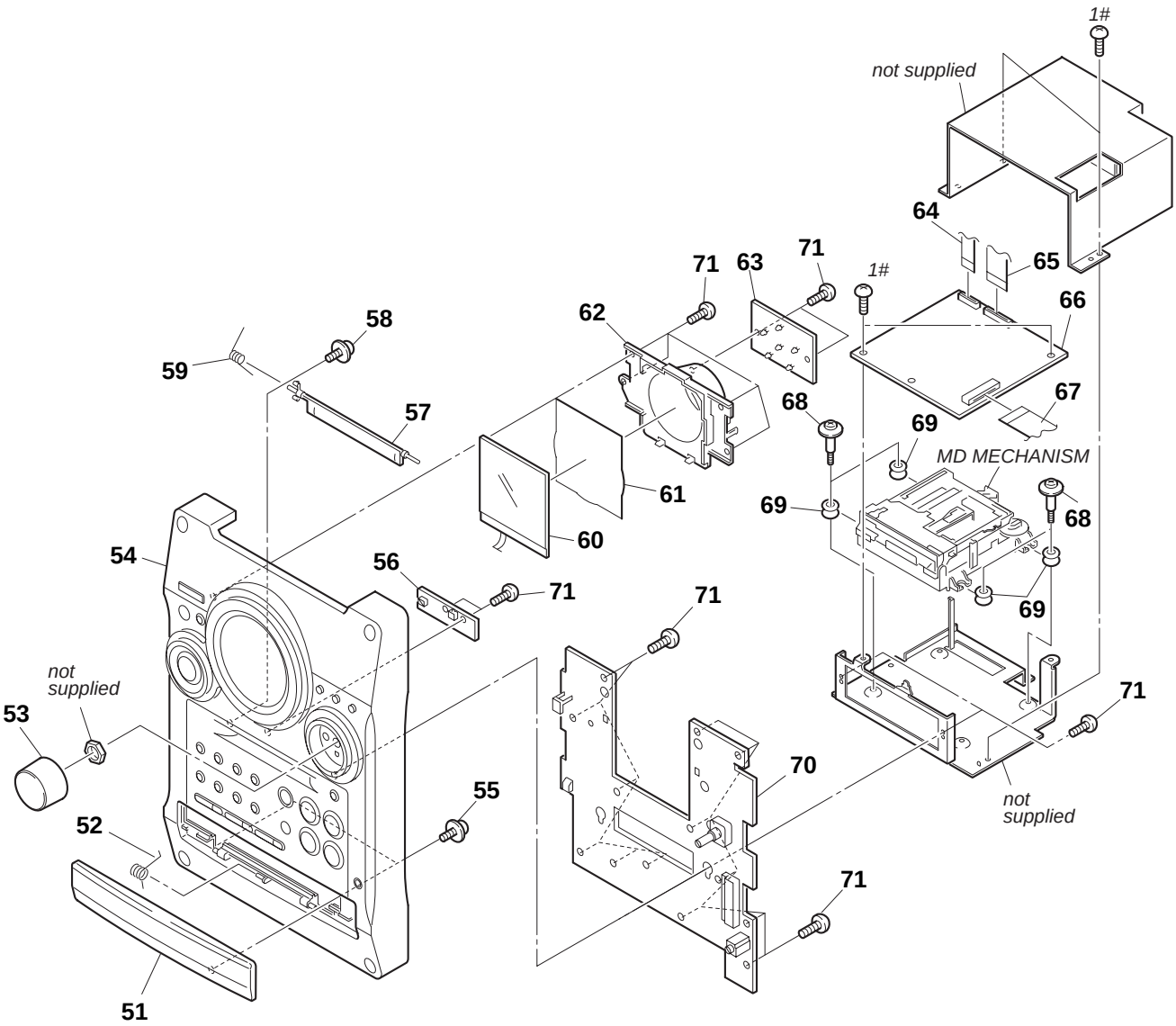
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

8-1. SIDE PANEL, BACK PANEL SECTION



Ref. No.	Part No.	Description	Remarks
1	4-232-226-01	SCREW, HEXAGON SOCKET TAPPING	
2	3-363-099-11	SCREW (CASE 3 TP2)	
3	4-231-649-01	PANEL (L), SIDE	
4	A-4476-076-A	TC BOARD, COMPLETE	
5	1-769-910-11	WIRE (FLAT TYPE) (9 CORE)	
6	1-693-529-11	TUNER	
7	1-769-944-11	WIRE (FLAT TYPE) (11 CORE) (AUS,HK)	
7	1-773-008-11	WIRE (FLAT TYPE) (15 CORE) (AEP,UK)	
8	1-680-270-11	THERMAL BOARD	
9	X-4953-318-1	PANEL ASSY, TOP	
10	4-231-677-41	PANEL, BACK (AEP,UK)	
10	4-231-677-51	PANEL, BACK (AUS)	
10	4-231-677-61	PANEL, BACK (HK)	
11	1-763-072-11	FAN, DC	
12	A-2100-929-A	TAPE MECHANISM UNIT (TCM-230ASR41CL)	
13	4-231-650-01	PANEL (R), SIDE	
14	A-4475-470-A	MAIN BOARD, COMPLETE (AEP,UK)	
14	A-4475-488-A	MAIN BOARD, COMPLETE (AUS,HK)	
15	4-951-620-01	SCREW (2.6X8), +BVTP	
18	1-680-258-11	VOL SEL BOARD (HK)	

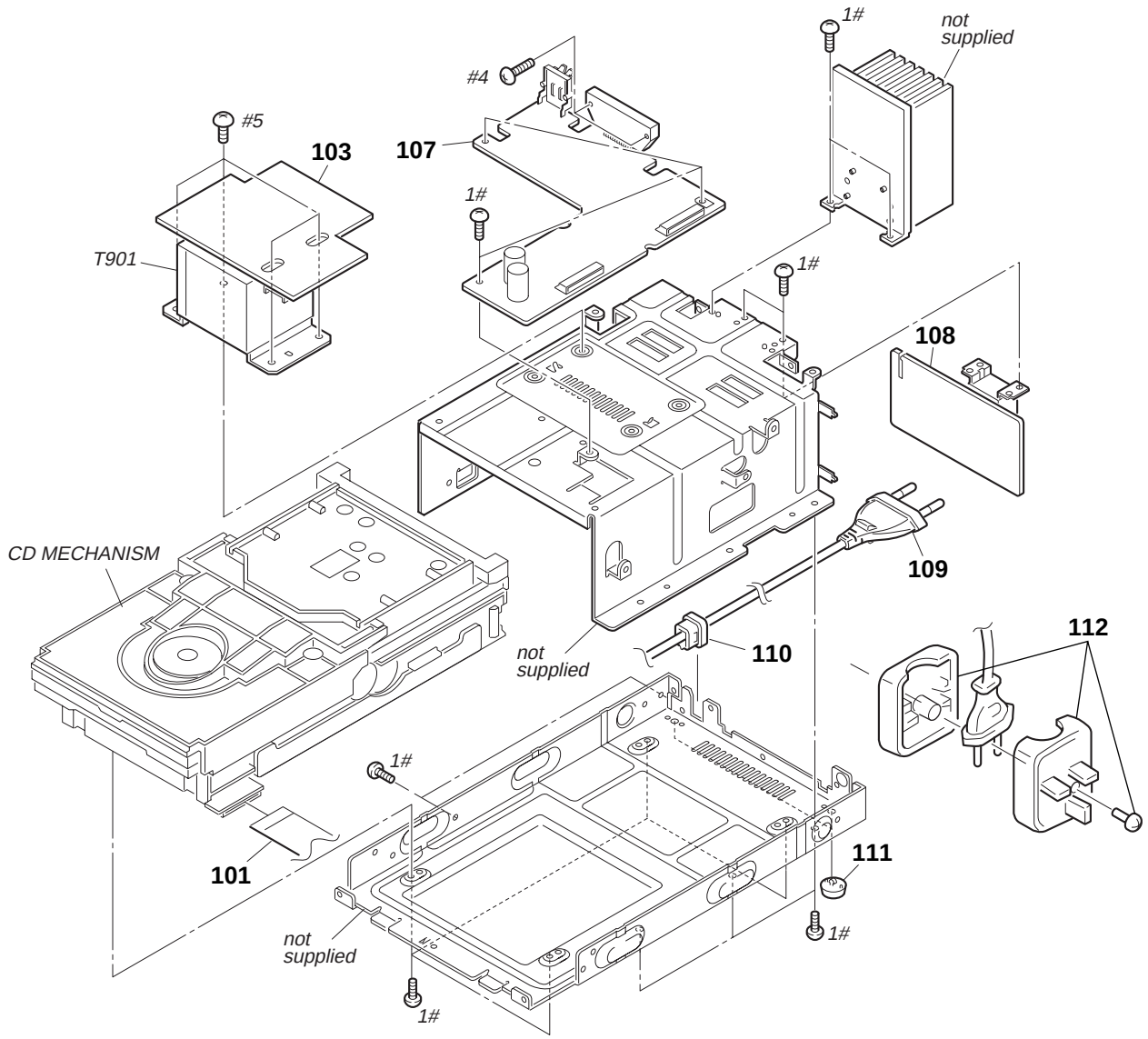
8-2. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remarks
51	4-231-633-01	LID (CD)	
52	4-231-670-01	SPRING (CD)	
53	4-231-646-01	KNOB, VOLUME	
54	X-4953-323-1	PANEL ASSY, FRONT (AEP,UK)	
54	X-4953-350-1	PANEL ASSY, FRONT (AUS,HK)	
55	4-933-134-41	SCREW (+PTPWH 2.6X5)	
56	1-679-982-11	RING SW BOARD	
57	4-228-335-01	LID (MD)	
58	4-231-113-01	SCREW (1.7X3), BTN	
59	4-228-323-01	SPRING (MD)	
60	1-804-260-11	DISPLAY PANEL, LIQUID CRYSTAL	

Ref. No.	Part No.	Description	Remarks
61	4-231-637-01	SHEET, DIFFUSION	
62	4-231-636-01	HOLDER, LCD	
63	1-679-981-11	BACK LIGHT BOARD	
64	1-775-152-11	WIRE (FLAT TYPE) (17 CORE)	
65	1-775-237-11	WIRE (FLAT TYPE) (27 CORE)	
66	A-4476-086-A	DIGITAL BOARD, COMPLETE	
67	1-773-207-11	WIRE (FLAT TYPE) (25 CORE)	
68	4-228-643-11	SCREW (+BVTTWH M3), STEP	
69	4-228-689-01	INSULATOR\	
70	A-4475-468-A	PANEL BOARD, COMPLETE	
71	4-951-620-01	SCREW (2.6X8), +BVTP	

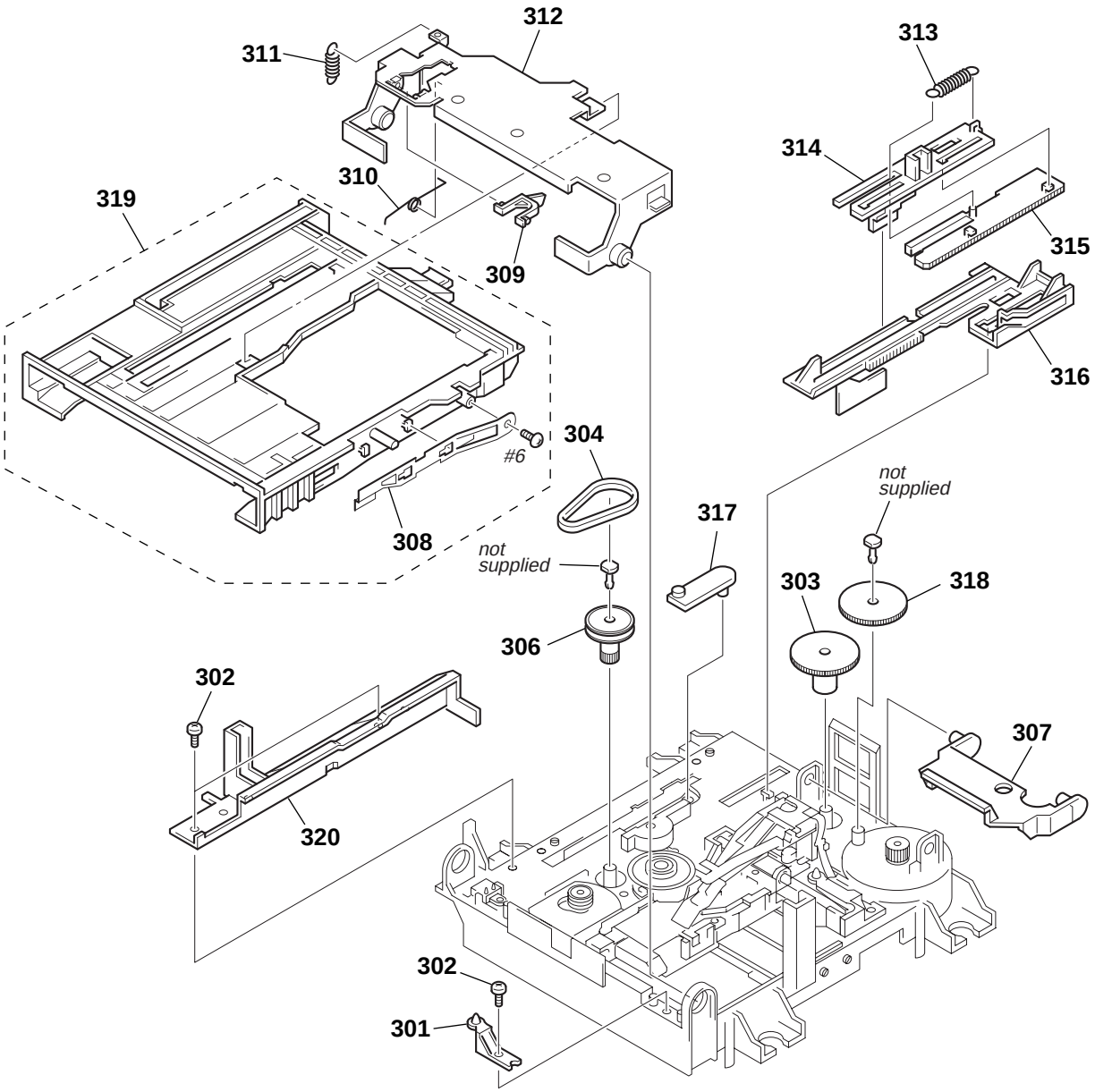
8-3. CHASSIS SECTION



Ref. No.	Part No.	Description	Remarks
101	1-773-214-11	WIRE (FLAT TYPE) (25 CORE)	
103	1-680-256-11	TRANS BOARD	
107	A-4475-465-A	AMP BOARD, COMPLETE (AEP,UK)	
107	A-4475-485-A	AMP BOARD, COMPLETE (AUS,HK)	
108	1-680-257-11	SUB POWER BOARD	
⚠109	1-575-651-11	CORD, POWER (AEP,HK)	
⚠109	1-783-203-11	CORD, POWER (AUS)	
⚠109	1-790-226-11	CORD, POWER (UK)	
* 110	3-703-244-00	BUSHING (2104), CORD	
111	4-965-822-01	FOOT	
⚠112	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (HK)	
⚠T901	1-435-833-11	TRANSFORMER, POWER (AEP,UK)	
⚠T901	1-435-834-11	TRANSFORMER, POWER (AUS,HK)	

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

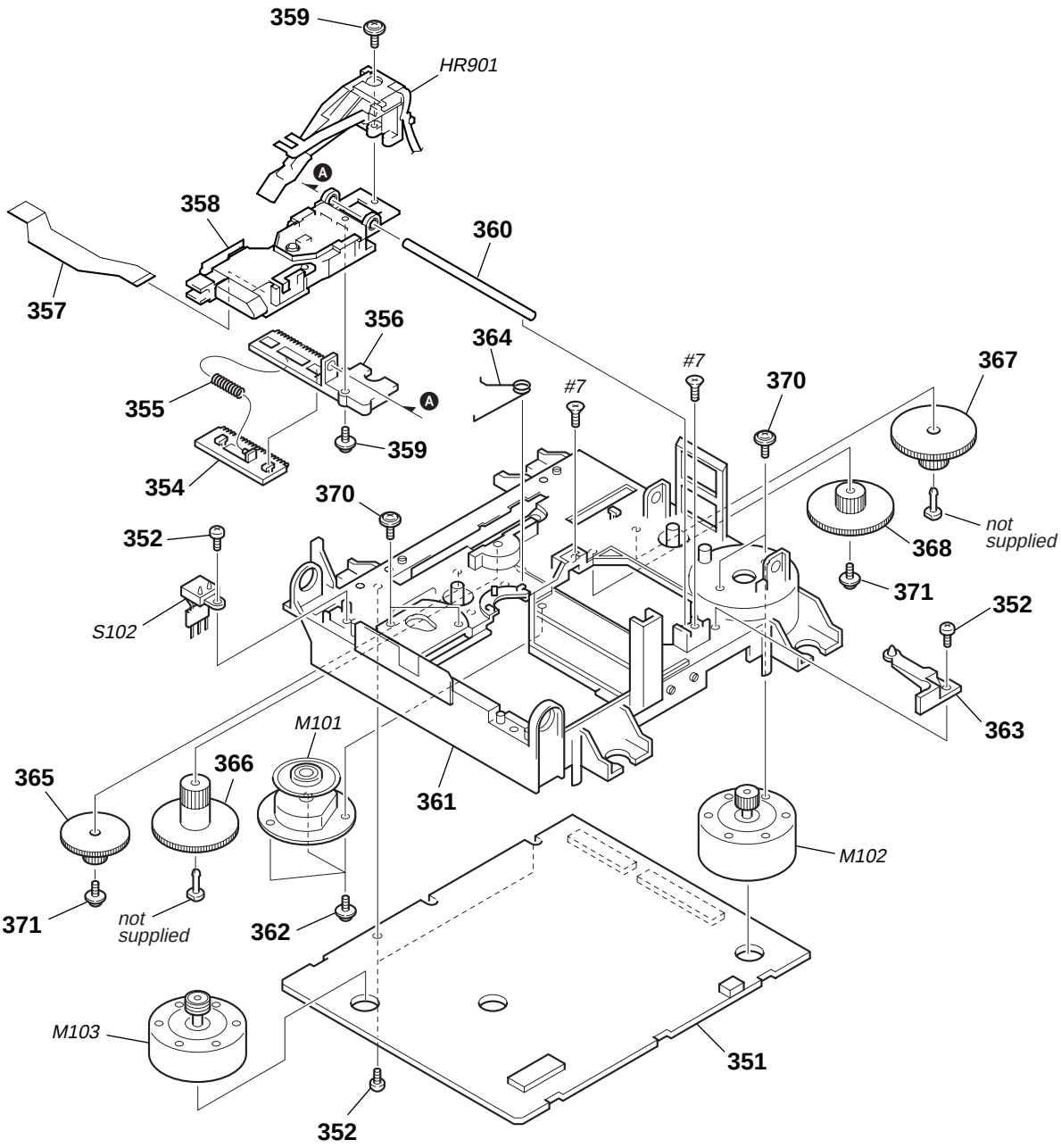
8-4. MD MECHANISM DECK SECTION-1



Ref. No.	Part No.	Description	Remarks
* 301	4-996-267-01	BASE (BU-D)	
302	4-231-319-01	SCREW (2X6) CZN, +B (P) TRI	
303	4-227-007-01	GEAR (SB)	
304	4-227-025-01	BELT (LOADING)	
306	4-227-002-01	GEAR, PULLEY	
307	4-226-999-01	LEVER (HEAD)	
308	X-4952-665-1	SPRING (SHT) ASSY, LEAF	
309	A-4672-990-A	LOCK (HOLDER)	
310	4-229-533-01	SPRING (STOPPER), TORSION	
311	4-227-012-01	SPRING (HOLDER), TENSION	

Ref. No.	Part No.	Description	Remarks
312	4-227-190-02	PLATE (HOLDER) ASSY, RETAINER	
313	4-227-013-01	SPRING (EJ), TENSION	
314	4-226-995-01	SLIDER (EJ)	
315	4-226-996-01	LIMITTER (EJ)	
316	4-226-997-04	SLIDER	
317	4-226-998-01	LEVER (CHG)	
318	4-227-006-01	GEAR (SA)	
319	A-4735-075-A	HOLDER ASSY	
320	4-226-994-01	GUIDE (L)	

8-5. MD MECHANISM DECK SECTION-2

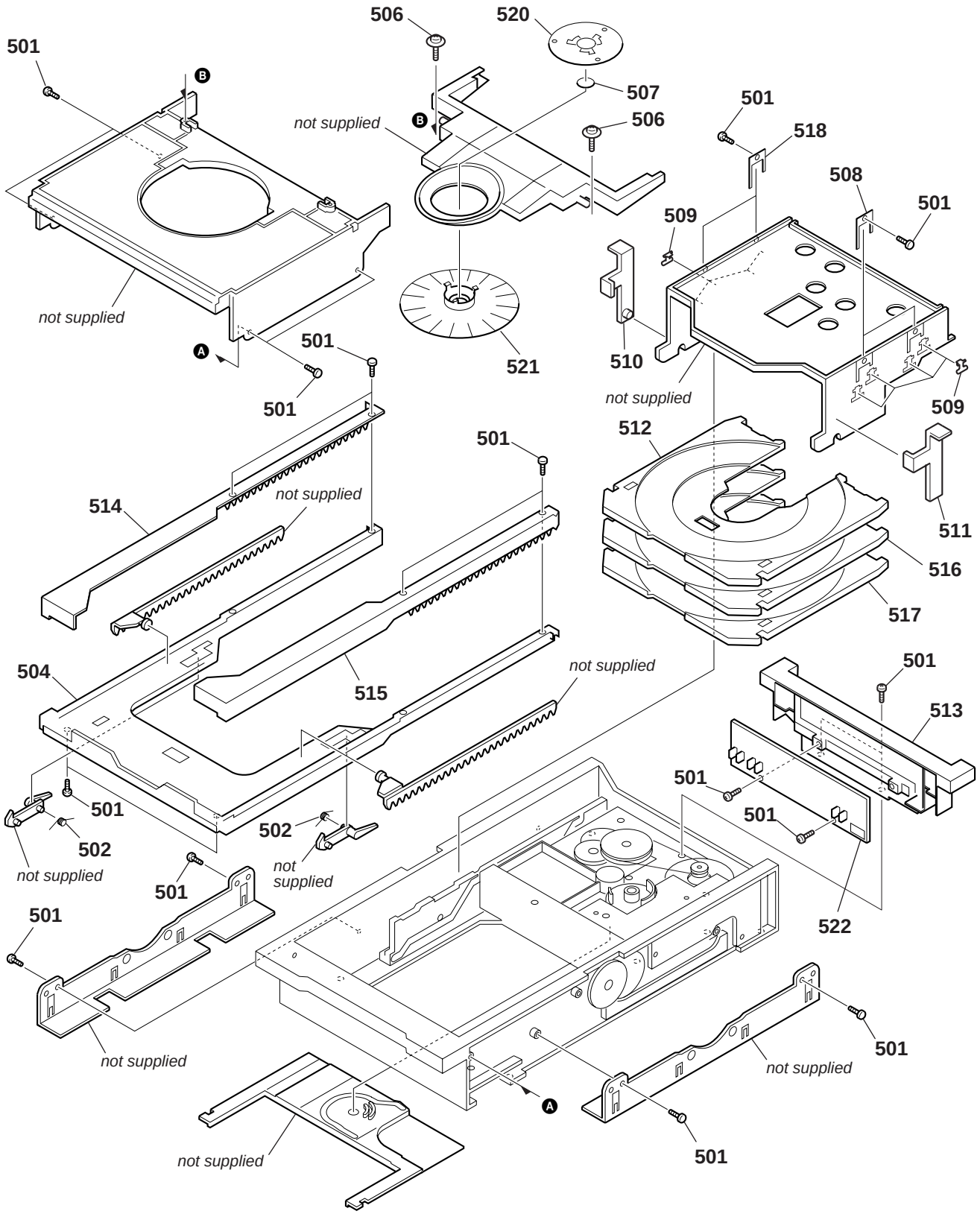


Ref. No.	Part No.	Description	Remarks
351	A-4725-473-A	BD(MD)BOARD, COMPLETE	
352	4-231-319-01	SCREW (2X6) CZN, +B (P) TRI	
354	4-226-993-01	RACK	
355	4-227-014-01	SPRING (RACK), COMPRESSION	
356	4-226-992-01	BASE, SL	
357	1-678-514-11	PWB, FLEXIBLE	
⚠358	A-4672-541-A	MD OPTICAL PICK-UP(KMS-260B/K1NP)	
359	4-988-560-01	SCREW (+P 1.7X6)	
360	4-996-265-01	SHAFT, MAIN	
361	4-226-989-01	CHASSIS	
362	3-372-761-01	SCREW (M1.7), TAPPING	
363	4-226-990-01	BASE (BU-A)	

Ref. No.	Part No.	Description	Remarks
364	4-227-023-01	SPRING (SPINDLE), TORSION	
365	4-227-004-01	GEAR (LC)	
366	4-227-005-01	GEAR (LD)	
367	4-227-008-01	GEAR (SC)	
368	4-227-009-01	GEAR (SD)	
370	4-232-270-01	SCREW (1.7X3.5), +PWH	
371	3-372-761-01	SCREW (M1.7), TAPPING	
HR901	1-500-670-11	HEAD, OVER LIGHT	
S102	1-771-957-11	SWITCH, PUSH (2 KEY)	
M101	A-4672-898-A	MOTOR ASSY, SPINDLE	
M102	A-4735-076-A	MOTOR ASSY, SLED	
M103	A-4735-074-A	MOTOR ASSY, LOADING	

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

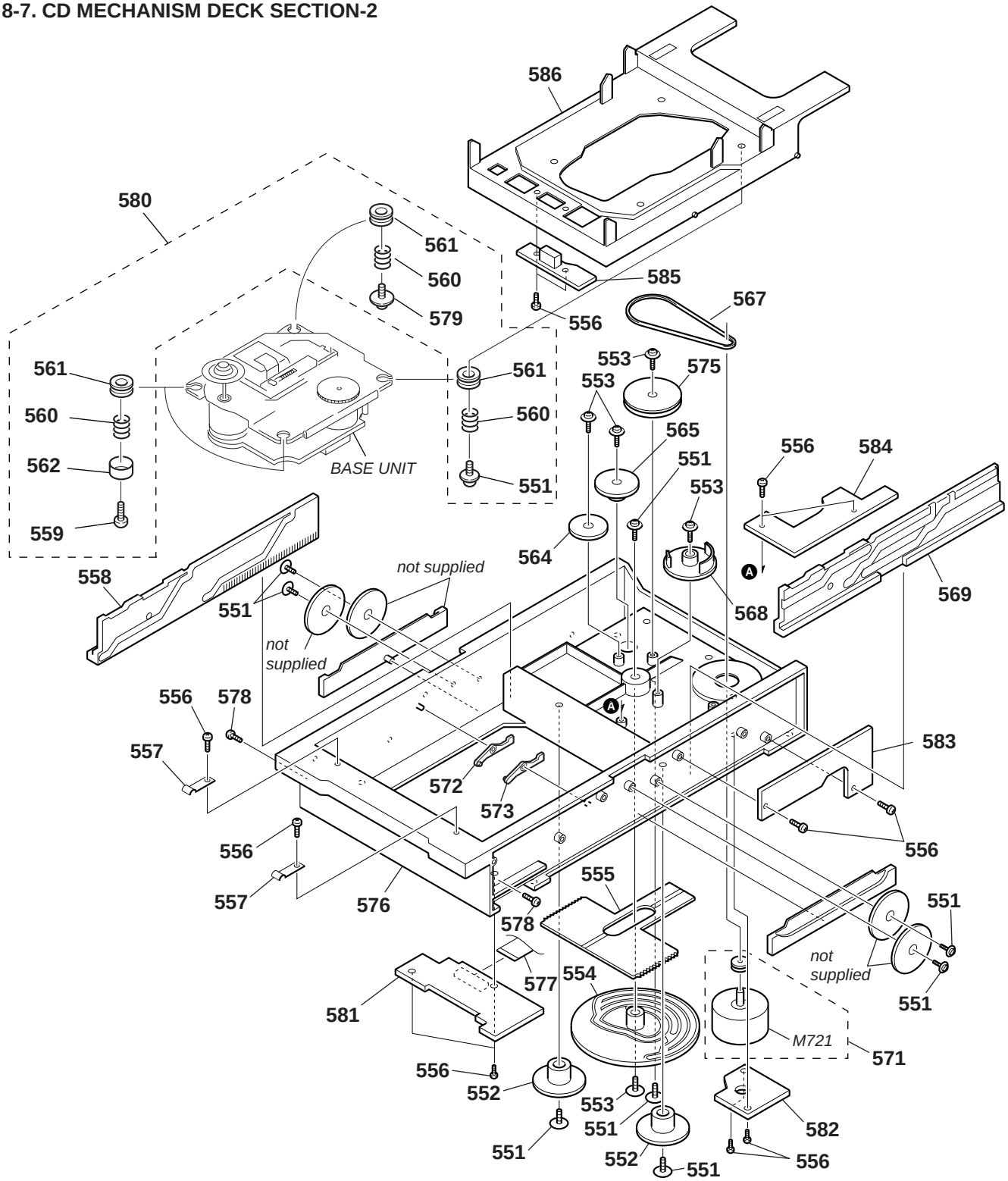
8-6. CD MECHANISM DECK SECTION-1



Ref. No.	Part No.	Description	Remarks
501	4-218-253-01	SCREW (M2.6), +BTTP	
502	4-228-995-01	SPRING (L), TORSION	
504	4-228-972-01	TRAY (MAIN)	
506	4-985-672-01	SCREW (+PTPWH M2.6), FLOATING	
507	4-228-414-01	BRACKET (YOKE)	
508	4-228-980-01	SPRING (STOCKER), LEAF	
509	4-228-981-01	STOPPER (TRAY)	
510	4-228-963-01	SLIDER (STOCKER.L)	
511	4-228-964-01	SLIDER (STOCKER.R)	
512	4-228-970-01	TRAY (SUB)	

Ref. No.	Part No.	Description	Remarks
513	4-229-001-01	HOLDER (SENSOR)	
514	4-228-978-01	COVER (TRAY.R)	
515	4-228-975-01	COVER (TRAY.L)	
516	4-228-970-11	TRAY (SUB)	
517	4-228-970-21	TRAY (SUB)	
518	4-234-423-01	SPRING (STOCKER L), LEAF	
520	4-231-971-01	PULLEY (30B), CHUCKING	
521	X-4953-307-1	PULLEY (A) ASSY, CHUCKING	
522	1-678-457-11	TRAY SENSOR BOARD	

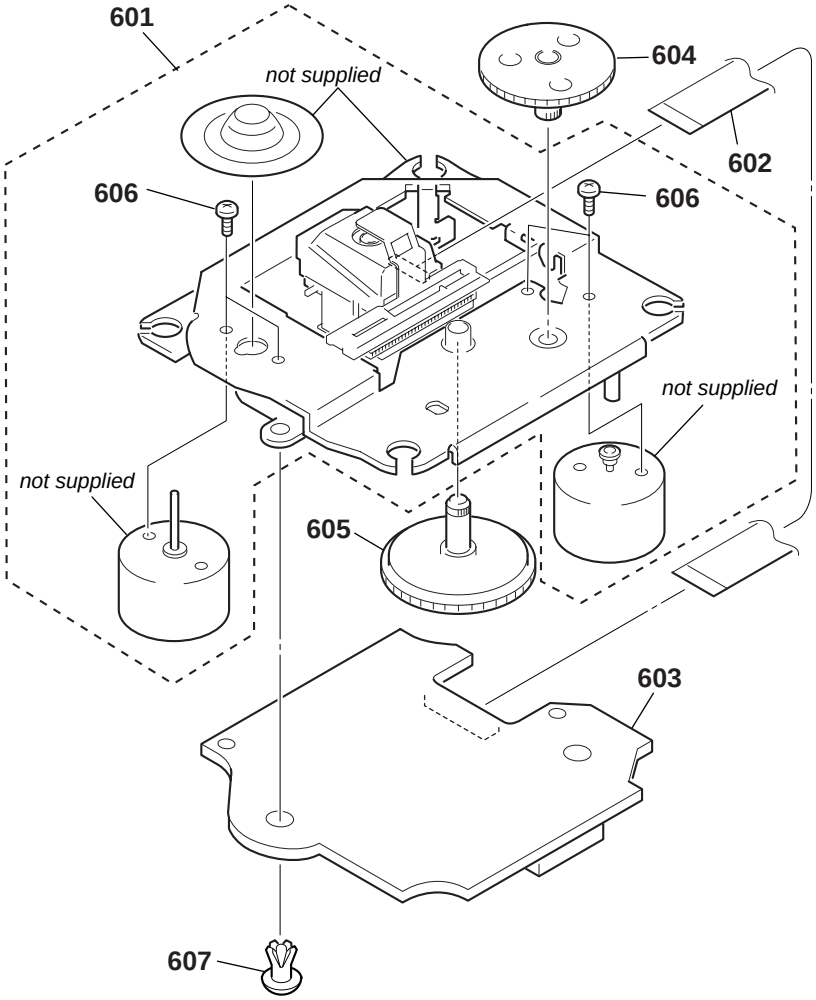
8-7. CD MECHANISM DECK SECTION-2



Ref. No.	Part No.	Description	Remarks
551	4-985-672-01	SCREW (+PTPWH M2.6), FLOATING	
552	4-229-002-02	GEAR (SLIDER)	
553	4-218-254-21	SCREW (M2.6), +PTPWH	
554	4-228-971-01	CAM	
555	4-228-974-02	RACK (CENTER)	
556	4-218-253-61	SCREW (M2.6), +BTTP	
557	4-228-969-02	SPRING (TABLE), LEAF	
558	4-228-977-01	SLIDER (BU.L)	
559	4-951-620-01	SCREW (2.6X8), +BVTP	
560	4-227-045-11	SPRING (INSULATOR), COIL	
561	4-231-451-01	INSULATOR (BU-30)	
562	4-231-151-01	STOPPER (BU)	
564	4-228-985-01	GEAR (PULLEY)	
565	4-228-997-02	GEAR (CAM)	
567	4-228-968-01	BELT	
568	4-228-998-01	GEAR (DETECTION)	
569	4-228-976-01	SLIDER (BU.R)	

Ref. No.	Part No.	Description	Remarks
571	X-4952-971-2	MOTOR ASSY	
572	4-228-999-02	LEVER (MAIN.L)	
573	4-229-000-02	LEVER (MAIN.R)	
575	4-229-003-01	PULLEY	
576	4-228-988-01	CHASSIS	
577	1-757-574-11	WIRE (FLAT TYPE) (22 CORE)	
578	4-218-253-71	SCREW (M2.6), +BTTP	
579	4-227-899-01	SCREW (DIA. 12), FROATING	
580	A-4412-659-A	CDM HIGH SPEED ASSY	
581	1-680-269-11	RELAY BOARD	
582	1-678-461-11	MOTOR BOARD	
583	1-678-460-11	DRIVER BOARD	
584	1-678-462-11	IN OUT SW BOARD	
585	1-678-463-11	DISK SENSOR BOARD	
586	4-231-517-03	HOLDER (BU30)	
M721	1-541-632-12	MOTOR, DC	

8-8. BASE UNIT SECTION



Ref. No.	Part No.	Description	Remarks
⚠601	A-4735-059-A	CD OPTICAL PICK-UP (A-MAX.3)	
602	1-782-817-11	WIRE (FLAT TYPE) (16 CORE)	
603	A-4725-528-A	BD(CD)BOARD, COMPLETE	
604	4-233-831-01	GEAR (LA)	
605	4-233-832-01	GEAR (LB)	
606	7-627-853-28	SCREW, PRECISION +P 2X3 TYPE3	
607	3-531-576-11	RIVET	

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

SECTION 9
ELECTRICAL PARTS LIST

AMP

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

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

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

Ref. No.	Part No.	Description			Remarks
	A-4475-465-A	AMP BOARD, COMPLETE (AEP,UK)			
		**********			
	A-4475-485-A	AMP BOARD, COMPLETE (AUS,HK)			
		**********			
		< CAPACITOR >			
C801	1-126-964-11	ELECT	10uF	20.00%	50V
C802	1-162-286-31	CERAMIC	220PF	10%	50V
C803	1-162-282-31	CERAMIC	100PF	10%	50V
C804	1-126-965-11	ELECT	22uF	20.00%	50V
C805	1-136-161-00	FILM	0.047uF	5.00%	50V
C806	1-136-161-00	FILM	0.047uF	5.00%	50V
C807	1-136-153-00	FILM	0.01uF	5%	50V (AEP,UK)
C808	1-136-153-00	FILM	0.01uF	5%	50V (AEP,UK)
C809	1-162-306-11	CERAMIC	0.01uF	30.00%	16V (AEP,UK)
C810	1-162-306-11	CERAMIC	0.01uF	30.00%	16V (AEP,UK)
C811	1-107-713-11	ELECT	4.7uF	20.00%	50V
C832	1-104-665-11	ELECT	100uF	20.00%	10V
C833	1-126-961-11	ELECT	2.2uF	20.00%	50V
C834	1-104-665-11	ELECT	100uF	20.00%	10V
C851	1-126-964-11	ELECT	10uF	20.00%	50V
C852	1-162-286-31	CERAMIC	220PF	10%	50V
C853	1-162-282-31	CERAMIC	100PF	10%	50V
C854	1-126-965-11	ELECT	22uF	20.00%	50V
C855	1-136-161-00	FILM	0.047uF	5.00%	50V
C856	1-136-161-00	FILM	0.047uF	5.00%	50V
C857	1-136-153-00	FILM	0.01uF	5%	50V (AEP,UK)
C858	1-136-153-00	FILM	0.01uF	5%	50V (AEP,UK)
C859	1-162-306-11	CERAMIC	0.01uF	30.00%	16V (AEP,UK)
C861	1-107-713-11	ELECT	4.7uF	20.00%	50V
C891	1-126-959-11	ELECT	0.47uF	20.00%	50V
C951	1-137-844-11	ELECT	2200uF	20%	42V (AEP,UK)
C951	1-135-832-11	ELECT	2200uF	20%	50V (AUS,HK)
C952	1-137-844-11	ELECT	2200uF	20%	42V (AEP,UK)
C952	1-135-832-11	ELECT	2200uF	20%	50V (AUS,HK)
C953	1-136-165-00	FILM	0.1uF	5.00%	50V
C954	1-136-165-00	FILM	0.1uF	5.00%	50V
C957	1-136-153-00	FILM	0.01uF	5%	50V
C958	1-136-153-00	FILM	0.01uF	5%	50V
C971	1-126-965-11	ELECT	22uF	20.00%	50V
C972	1-126-965-11	ELECT	22uF	20.00%	50V
C973	1-104-665-11	ELECT	100uF	20.00%	10V
C974	1-126-967-11	ELECT	47uF	20.00%	50V
C975	1-162-306-11	CERAMIC	0.01uF	30.00%	16V (AEP,UK)
C991	1-126-963-11	ELECT	4.7uF	20.00%	50V
		< CONNECTOR >			
CN801	1-778-982-21	CONNECTOR, BOARD TO BOARD 13P			
CN952	1-778-982-21	CONNECTOR, BOARD TO BOARD 13P			
		< DIODE >			
D801	8-719-911-19	DIODE 1SS133T-72			
D831	8-719-911-19	DIODE 1SS133T-72			
D851	8-719-911-19	DIODE 1SS133T-72			
D881	8-719-911-19	DIODE 1SS133T-72			
D891	8-719-911-19	DIODE 1SS133T-72			
D953	8-719-024-99	DIODE 11ES2-NTA2B			
D954	8-719-024-99	DIODE 11ES2-NTA2B			
D955	8-719-024-99	DIODE 11ES2-NTA2B			
D956	8-719-024-99	DIODE 11ES2-NTA2B			
D957	8-719-024-99	DIODE 11ES2-NTA2B			
D958	8-719-024-99	DIODE 11ES2-NTA2B			
D959	8-719-024-99	DIODE 11ES2-NTA2B			
D960	8-719-024-99	DIODE 11ES2-NTA2B			
D961	8-719-911-19	DIODE 1SS133T-72			
D962	8-719-911-19	DIODE 1SS133T-72			
D971	8-719-911-19	DIODE 1SS133T-72			
D991	8-719-911-19	DIODE 1SS133T-72			
		< EARTH >			
* EP951	1-537-738-21	TERMINAL, EARTH			
		< IC >			
IC801	8-749-016-93	IC STK402-070S			
		< COIL >			
L801	1-420-872-00	COIL, AIR-CORE (AEP,UK)			
L851	1-420-872-00	COIL, AIR-CORE (AEP,UK)			

AMP | BACK LIGHT

Ref. No.	Part No.	Description			Remarks
		< TRANSISTOR >			
Q801	8-729-119-78	TRANSISTOR	2SC2785TP-HFE		
Q831	8-729-119-78	TRANSISTOR	2SC2785TP-HFE		
Q832	8-729-119-78	TRANSISTOR	2SC2785TP-HFE		
Q833	8-729-119-78	TRANSISTOR	2SC2785TP-HFE		
Q834	8-729-119-78	TRANSISTOR	2SC2785TP-HFE		
Q835	8-729-119-76	TRANSISTOR	2SA1175TP-HFE		
Q836	8-729-119-78	TRANSISTOR	2SC2785TP-HFE		
Q837	8-729-119-78	TRANSISTOR	2SC2785TP-HFE		
Q841	8-729-119-78	TRANSISTOR	2SC2785TP-HFE		
Q842	8-729-119-78	TRANSISTOR	2SC2785TP-HFE		
Q851	8-729-119-78	TRANSISTOR	2SC2785TP-HFE		
Q881	8-729-119-76	TRANSISTOR	2SA1175TP-HFE		
Q882	8-729-119-78	TRANSISTOR	2SC2785TP-HFE		
Q971	8-729-119-78	TRANSISTOR	2SC2785TP-HFE		
Q972	8-729-140-82	TRANSISTOR	2SA988TP-PAFAEA		
Q973	8-729-119-78	TRANSISTOR	2SC2785TP-HFE		
		< RESISTOR >			
R801	1-249-417-11	CARBON	1K	5% 1/4W F	
R802	1-249-437-11	CARBON	47K	5% 1/4W	
R803	1-249-419-11	CARBON	1.5K	5% 1/4W F	
R804	1-249-437-11	CARBON	47K	5% 1/4W	
⚠R805	1-233-352-11	ENCAPSULATED COMPONENT			
R806	1-260-076-11	CARBON	10	5% 1/2W	
R807	1-260-076-11	CARBON	10	5% 1/2W (AEP,UK)	
R808	1-260-076-11	CARBON	10	5% 1/2W (AEP,UK)	
R810	1-249-417-11	CARBON	1K	5% 1/4W F	
R811	1-249-431-11	CARBON	15K	5% 1/4W	
R812	1-249-441-11	CARBON	100K	5% 1/4W	
R813	1-249-437-11	CARBON	47K	5% 1/4W	
R814	1-249-438-11	CARBON	56K	5% 1/4W	
R815	1-249-433-11	CARBON	22K	5% 1/4W	
R816	1-215-889-00	METAL OXIDE	330	5% 2W	
R833	1-249-425-11	CARBON	4.7K	5% 1/4W F	
R834	1-249-435-11	CARBON	33K	5% 1/4W	
R835	1-249-433-11	CARBON	22K	5% 1/4W	
R836	1-249-429-11	CARBON	10K	5% 1/4W	
R837	1-249-429-11	CARBON	10K	5% 1/4W	
R839	1-249-441-11	CARBON	100K	5% 1/4W	
R841	1-249-441-11	CARBON	100K	5% 1/4W	
R842	1-249-441-11	CARBON	100K	5% 1/4W	
R843	1-249-441-11	CARBON	100K	5% 1/4W	
R851	1-249-417-11	CARBON	1K	5% 1/4W F	
R852	1-249-437-11	CARBON	47K	5% 1/4W	
R853	1-249-419-11	CARBON	1.5K	5% 1/4W F	
R854	1-249-437-11	CARBON	47K	5% 1/4W	
⚠R855	1-233-352-11	ENCAPSULATED COMPONENT			
R856	1-260-076-11	CARBON	10	5% 1/2W	
R857	1-260-076-11	CARBON	10	5% 1/2W (AEP,UK)	
R858	1-260-076-11	CARBON	10	5% 1/2W (AEP,UK)	
R860	1-249-417-11	CARBON	1K	5% 1/4W F	
R861	1-249-431-11	CARBON	15K	5% 1/4W	
R862	1-249-441-11	CARBON	100K	5% 1/4W	
R863	1-249-437-11	CARBON	47K	5% 1/4W	
R864	1-249-437-11	CARBON	47K	5% 1/4W	
R865	1-249-433-11	CARBON	22K	5% 1/4W	
R866	1-215-889-00	METAL OXIDE	330	5% 2W	
⚠R881	1-215-890-11	METAL OXIDE	470	5% 2W	
R882	1-249-429-11	CARBON	10K	5% 1/4W	
R883	1-249-429-11	CARBON	10K	5% 1/4W	
R884	1-249-429-11	CARBON	10K	5% 1/4W	
R885	1-249-441-11	CARBON	100K	5% 1/4W	
R891	1-249-429-11	CARBON	10K	5% 1/4W	
R892	1-249-441-11	CARBON	100K	5% 1/4W	
R893	1-247-903-00	CARBON	1M	5% 1/4W	
R898	1-249-441-11	CARBON	100K	5% 1/4W	
R899	1-249-429-11	CARBON	10K	5% 1/4W	
R951	1-249-425-11	CARBON	4.7K	5% 1/4W F	
R952	1-249-425-11	CARBON	4.7K	5% 1/4W F	
⚠R971	1-212-881-11	FUSIBLE	100	5% 1/4W	
⚠R972	1-212-881-11	FUSIBLE	100	5% 1/4W	
R973	1-249-435-11	CARBON	33K	5% 1/4W	
R974	1-249-433-11	CARBON	22K	5% 1/4W	
R975	1-249-437-11	CARBON	47K	5% 1/4W	
R976	1-249-441-11	CARBON	100K	5% 1/4W	
R977	1-249-421-11	CARBON	2.2K	5% 1/4W F	
R978	1-249-433-11	CARBON	22K	5% 1/4W	
R979	1-249-421-11	CARBON	2.2K	5% 1/4W F	
R980	1-249-429-11	CARBON	10K	5% 1/4W	
R981	1-249-429-11	CARBON	10K	5% 1/4W	
⚠R982	1-202-972-61	FUSIBLE	1	5% 1/4W	
		< RELAY >			
RY801	1-515-920-11	RELAY (24V)			
		< TERMINAL >			
TM801	1-694-677-11	TERMINAL BOARD (4P) (SPEAKER)			
**********					
	1-679-981-11	BACK LIGHT BOARD			
		**********			
		< CAPACITOR >			
C709	1-126-935-11	ELECT	470uF	20.00% 10V	
		< CONNECTOR >			
CN771	1-506-481-11	PIN, CONNECTOR 2P			
		< DIODE >			
D771	8-719-075-50	DIODE SELS6B14C-TP6 (BACK LIGHT)			
D772	8-719-075-50	DIODE SELS6B14C-TP6 (BACK LIGHT)			
D773	8-719-075-50	DIODE SELS6B14C-TP6 (BACK LIGHT)			
D774	8-719-075-50	DIODE SELS6B14C-TP6 (BACK LIGHT)			
D775	8-719-075-50	DIODE SELS6B14C-TP6 (BACK LIGHT)			
D776	8-719-075-50	DIODE SELS6B14C-TP6 (BACK LIGHT)			
		< RESISTOR >			
R771	1-249-409-11	CARBON	220	5% 1/4W F	
R772	1-249-409-11	CARBON	220	5% 1/4W F	
R773	1-249-409-11	CARBON	220	5% 1/4W F	
**********					

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

Ref. No.	Part No.	Description			Remarks
	A-4725-528-A	BD(CD) BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C102	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C103	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C104	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C107	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C108	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C109	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C110	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C111	1-126-607-11	ELECT CHIP	47uF	20%	4V
C112	1-126-607-11	ELECT CHIP	47uF	20%	4V
C113	1-126-209-11	ELECT CHIP	100uF	20.00%	4V
C114	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C115	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C117	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C118	1-115-156-11	CERAMIC CHIP	1uF		10V
C119	1-115-156-11	CERAMIC CHIP	1uF		10V
C120	1-126-607-11	ELECT CHIP	47uF	20%	4V
C151	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C153	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C164	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C165	1-124-779-00	ELECT CHIP	10uF	20%	16V
C166	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C182	1-128-995-11	ELECT CHIP	100uF	20%	10V
C201	1-126-246-11	ELECT CHIP	220uF	20%	4V
C202	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C203	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C204	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C205	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C209	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C211	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C212	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C213	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C215	1-107-823-11	CERAMIC CHIP	0.47uF	10.00%	16V
C216	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C221	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C222	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C224	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C227	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C228	1-115-156-11	CERAMIC CHIP	1uF		10V
C229	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C231	1-128-995-11	ELECT CHIP	100uF	20%	10V
C234	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C235	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C236	1-107-823-11	CERAMIC CHIP	0.47uF	10.00%	16V
C237	1-162-919-11	CERAMIC CHIP	22PF		50V
C240	1-163-038-11	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
CN101	1-784-873-21	CONNECTOR,FFC(LIF(NON-ZIF))22P			
CN102	1-794-424-11	CONNECTOR, FCC/FPC 16P			
		< DIODE >			
D101	8-719-422-12	DIODE UDZ-TE-17-3.9B			

Ref. No.	Part No.	Description			Remarks
		< FERRITE BEAD >			
FB101	1-500-445-11	FERRITE	0uH		
		< IC >			
IC101	8-752-408-73	IC CXD3068Q			
IC102	8-759-713-70	IC AN41020A			
IC103	8-752-089-74	IC CXA2581N-T4			
		< TRANSISTOR >			
Q101	8-729-010-08	TRANSISTOR	MSB710-RT1		
Q102	8-729-424-08	TRANSISTOR	UN2111-TX		
Q103	8-729-920-85	TRANSISTOR	2SD1664-T100-QR		
		< RESISTOR >			
R102	1-216-077-00	RES-CHIP	15K	5%	1/10W
R103	1-216-097-11	RES-CHIP	100K	5%	1/10W
R104	1-216-077-00	RES-CHIP	15K	5%	1/10W
R105	1-216-049-11	RES-CHIP	1K	5%	1/10W
R109	1-216-099-00	METAL CHIP	120K	5%	1/10W
R111	1-216-099-00	METAL CHIP	120K	5%	1/10W
R113	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R114	1-218-745-11	RES-CHIP	160K	5%	1/16W
R115	1-216-085-00	METAL CHIP	33K	5%	1/10W
R116	1-216-085-00	METAL CHIP	33K	5%	1/10W
R118	1-216-295-11	SHORT	0		
R120	1-216-099-00	METAL CHIP	120K	5%	1/10W
R122	1-216-097-11	RES-CHIP	100K	5%	1/10W
R123	1-216-001-00	METAL CHIP	10	5%	1/10W
R124	1-216-001-00	METAL CHIP	10	5%	1/10W
R125	1-216-085-00	METAL CHIP	33K	5%	1/10W
R126	1-216-085-00	METAL CHIP	33K	5%	1/10W
R151	1-216-097-11	RES-CHIP	100K	5%	1/10W
R152	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R163	1-216-295-11	SHORT	0		
R164	1-216-295-11	SHORT	0		
R167	1-216-295-11	SHORT	0		
R168	1-216-295-11	SHORT	0		
R176	1-216-295-11	SHORT	0		
R179	1-216-295-11	SHORT	0		
R201	1-216-085-00	METAL CHIP	33K	5%	1/10W
R202	1-216-073-00	METAL CHIP	10K	5%	1/10W
R203	1-216-097-11	RES-CHIP	100K	5%	1/10W
R204	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R205	1-216-049-11	RES-CHIP	1K	5%	1/10W
R206	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R207	1-216-121-11	RES-CHIP	1M	5%	1/10W
R212	1-216-033-00	METAL CHIP	220	5%	1/10W
R213	1-216-295-11	SHORT	0		
R214	1-216-295-11	SHORT	0		
R215	1-216-295-11	SHORT	0		
R216	1-216-033-00	METAL CHIP	220	5%	1/10W
R217	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R218	1-216-049-11	RES-CHIP	1K	5%	1/10W
R219	1-216-049-11	RES-CHIP	1K	5%	1/10W
R220	1-216-295-11	SHORT	0		
R221	1-216-033-00	METAL CHIP	220	5%	1/10W
R226	1-216-025-11	RES-CHIP	100	5%	1/10W
R227	1-216-097-11	RES-CHIP	100K	5%	1/10W
R228	1-216-113-00	METAL CHIP	470K	5%	1/10W

BD (CD) BD (MD)

Ref. No.	Part No.	Description			Remarks
R229	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R230	1-216-295-11	SHORT	0		
R240	1-216-295-11	SHORT	0		
		< NETWORK >			
RN201	1-233-576-11	RES, CHIP NETWORK 100			
RN202	1-233-576-11	RES, CHIP NETWORK 100			
		< VARIABLE RESISTOR >			
RV101	1-223-997-21	RES, CARBON ADJ VAR 47K			
		< VIBRATOR >			
X201	1-767-518-11	VIBRATOR, CRYSTAL 33.8MHz			
**********					
	A-4725-473-A	BD(MD)BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V
C102	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V
C103	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C104	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C105	1-115-416-11	CERAMIC CHIP	0.001uF	5.00%	25V
C106	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C107	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C108	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C109	1-164-677-11	CERAMIC CHIP	0.033uF	10.00%	16V
C110	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C111	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C112	1-110-563-11	CERAMIC CHIP	0.068uF	10.00%	16V
C113	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C114	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C115	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C116	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C117	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C118	1-165-176-11	CERAMIC CHIP	0.047uF	10.00%	16V
C119	1-165-176-11	CERAMIC CHIP	0.047uF	10.00%	16V
C120	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C121	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C125	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C128	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C131	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C132	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C133	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C141	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C142	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C143	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C144	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C145	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C146	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C147	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C151	1-117-370-11	CERAMIC CHIP	10uF		10V
C152	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C153	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C154	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C155	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C156	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C157	1-164-156-11	CERAMIC CHIP	0.1uF		25V

Ref. No.	Part No.	Description			Remarks
C158	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C159	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C160	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C161	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C162	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C163	1-125-891-11	CERAMIC CHIP	0.47uF	10.00%	10V
C164	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C165	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C166	1-125-891-11	CERAMIC CHIP	0.47uF	10.00%	10V
C167	1-164-245-11	CERAMIC CHIP	0.015uF	10.00%	25V
C169	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C173	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C174	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C180	1-117-370-11	CERAMIC CHIP	10uF		10V
C181	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C182	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C183	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C184	1-117-970-11	ELECT CHIP	22uF	20.00%	10V
C185	1-131-872-11	CERAMIC CHIP	1000PF	10%	630V
C191	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C192	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C193	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C194	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C195	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C196	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1401	1-117-720-11	CERAMIC CHIP	4.7uF		10V
		< CONNECTOR >			
CN101	1-766-833-21	CONNECTOR, FFC/FPC (ZIF) 21P			
CN102	1-784-835-21	CONNECTOR,FFC(LIF(NON-ZIF))27P			
CN103	1-784-869-21	CONNECTOR,FFC(LIF(NON-ZIF))17P			
* CN104	1-580-055-21	PIN, CONNECTOR (SMD) 2P			
CN105	1-784-859-21	CONNECTOR, FFC(LIF(NON-ZIF))7P			
		< DIODE >			
D101	8-719-988-61	DIODE 1SS355TE-17			
D181	8-719-080-81	DIODE FS1J6			
D183	8-719-080-81	DIODE FS1J6			
		< IC >			
IC101	8-752-080-95	IC CXA2523AR			
IC102	8-759-473-51	IC TLV2361CDBV			
IC141	8-759-430-25	IC BH6511FS-E2			
IC151	8-752-404-64	IC CXD2662R			
IC152	8-759-599-51	IC MSM51V17400D-50TS-K			
IC181	8-759-481-17	IC MC74ACT08DTR2			
IC190	8-759-677-64	IC L88M35T			
IC195	8-759-640-41	IC BR24C08F-E2			
		< COIL >			
L101	1-500-245-11	FERRITE	0uH		
L102	1-500-245-11	FERRITE	0uH		
L103	1-500-245-11	FERRITE	0uH		
L105	1-414-235-11	FERRITE	0uH		
L106	1-500-245-11	FERRITE	0uH		
L121	1-500-245-11	FERRITE	0uH		
L122	1-500-245-11	FERRITE	0uH		
L131	1-500-245-11	FERRITE	0uH		
L141	1-412-029-11	INDUCTOR CHIP	10uH		
L142	1-412-032-11	INDUCTOR CHIP	100uH		

Ref. No.	Part No.	Description			Remarks
L143	1-412-029-11	INDUCTOR CHIP	10uH		
L144	1-412-032-11	INDUCTOR CHIP	100uH		
L145	1-412-032-11	INDUCTOR CHIP	100uH		
L146	1-469-855-21	FERRITE	0uH		
L147	1-469-855-21	FERRITE	0uH		
L161	1-500-245-11	FERRITE	0uH		
L171	1-500-245-11	FERRITE	0uH		
L180	1-469-855-21	FERRITE	0uH		
L181	1-469-855-21	FERRITE	0uH		
L182	1-500-245-11	FERRITE	0uH		
L183	1-216-296-11	SHORT	0		
L184	1-216-296-11	SHORT	0		
		< TRANSISTOR >			
Q101	8-729-403-35	TRANSISTOR	UN5113-TX		
Q121	8-729-403-35	TRANSISTOR	UN5113-TX		
Q122	8-729-101-07	TRANSISTOR	2SB798-T1DK		
Q131	8-729-026-53	TRANSISTOR	2SA1576A-T106-QR		
Q132	8-729-903-10	TRANSISTOR	FMW1-T-148		
Q133	8-729-402-93	TRANSISTOR	UN5214-TX		
Q134	8-729-402-93	TRANSISTOR	UN5214-TX		
Q181	8-729-018-75	TRANSISTOR	2SJ278MYTR		
Q182	8-729-017-65	TRANSISTOR	2SK1764KYTR		
		< RESISTOR >			
R101	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R102	1-216-853-11	METAL CHIP	470K	5%	1/16W
R103	1-216-863-11	RES-CHIP	3.3M	5%	1/16W
R104	1-216-853-11	METAL CHIP	470K	5%	1/16W
R105	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R106	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R107	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R108	1-216-833-11	METAL CHIP	10K	5%	1/16W
R109	1-216-845-11	METAL CHIP	100K	5%	1/16W
R110	1-216-845-11	METAL CHIP	100K	5%	1/16W
R111	1-216-833-11	METAL CHIP	10K	5%	1/16W
R112	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R113	1-216-833-11	METAL CHIP	10K	5%	1/16W
R114	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R115	1-216-833-11	METAL CHIP	10K	5%	1/16W
R116	1-216-839-11	METAL CHIP	33K	5%	1/16W
R117	1-216-837-11	METAL CHIP	22K	5%	1/16W
R118	1-218-855-11	METAL CHIP	2.2K	0.5%	1/16W
R119	1-218-863-11	METAL CHIP	4.7K	0.5%	1/16W
R120	1-218-889-11	METAL CHIP	56K	0.5%	1/16W
R121	1-218-863-11	METAL CHIP	4.7K	0.5%	1/16W
R122	1-218-855-11	METAL CHIP	2.2K	0.5%	1/16W
R123	1-216-819-11	METAL CHIP	680	5%	1/16W
R124	1-216-809-11	METAL CHIP	100	5%	1/16W
R125	1-216-815-11	METAL CHIP	330	5%	1/16W
R126	1-216-819-11	METAL CHIP	680	5%	1/16W
R127	1-216-845-11	METAL CHIP	100K	5%	1/16W
R128	1-219-724-11	METAL CHIP	1	1%	1/4W
R129	1-216-298-00	METAL CHIP	2.2	5%	1/10W
R130	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R131	1-216-833-11	METAL CHIP	10K	5%	1/16W
R132	1-216-839-11	METAL CHIP	33K	5%	1/16W
R133	1-216-821-11	METAL CHIP	1K	5%	1/16W
R134	1-216-821-11	METAL CHIP	1K	5%	1/16W
R135	1-216-821-11	METAL CHIP	1K	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R136	1-216-302-00	METAL CHIP	2.7	5%	1/10W
R138	1-216-833-11	METAL CHIP	10K	5%	1/16W
R150	1-216-833-11	METAL CHIP	10K	5%	1/16W
R151	1-216-833-11	METAL CHIP	10K	5%	1/16W
R153	1-216-833-11	METAL CHIP	10K	5%	1/16W
R155	1-216-864-11	SHORT	0		
R156	1-216-864-11	SHORT	0		
R158	1-216-809-11	METAL CHIP	100	5%	1/16W
R162	1-216-833-11	METAL CHIP	10K	5%	1/16W
R167	1-216-833-11	METAL CHIP	10K	5%	1/16W
R168	1-216-845-11	METAL CHIP	100K	5%	1/16W
R169	1-216-855-11	METAL CHIP	680K	5%	1/16W
R170	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R171	1-216-821-11	METAL CHIP	1K	5%	1/16W
R173	1-216-821-11	METAL CHIP	1K	5%	1/16W
R174	1-216-811-11	METAL CHIP	150	5%	1/16W
R177	1-216-805-11	METAL CHIP	47	5%	1/16W
R179	1-216-295-11	SHORT	0		
R181	1-216-841-11	METAL CHIP	47K	5%	1/16W
R182	1-216-841-11	METAL CHIP	47K	5%	1/16W
R183	1-216-841-11	METAL CHIP	47K	5%	1/16W
R184	1-220-942-11	METAL CHIP	3.3	1%	1/4
R185	1-220-942-11	METAL CHIP	3.3	1%	1/4
R195	1-216-833-11	METAL CHIP	10K	5%	1/16W
R196	1-216-833-11	METAL CHIP	10K	5%	1/16W
R197	1-216-833-11	METAL CHIP	10K	5%	1/16W
R218	1-216-864-11	SHORT	0		
		< SWITCH >			
S101	1-762-596-21	SWITCH, PUSH (1 KEY) (LIMIT IN SW)			
S102	1-771-957-11	SWITCH, PUSH (2 KEY) (REFRECT PROTECT)			
S103	1-771-956-21	SWITCH, PUSH (1 KEY) (OUT SW)			
S104	1-771-955-21	SWITCH, PUSH (1 KEY) (PLAY SW)			
S105	1-771-955-21	SWITCH, PUSH (1 KEY) (REC SW)			
		< VIBRATOR >			
X171	1-781-569-21	OSCILLATOR, CRYSTAL 90MHz			
**********					
	A-4476-086-A	DIGITAL BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C1001	1-126-934-11	ELECT	220uF	20.00%	10V
C1002	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1003	1-126-933-11	ELECT	100uF	20.00%	16V
C1004	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1005	1-126-933-11	ELECT	100uF	20.00%	16V
C1006	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1007	1-126-933-11	ELECT	100uF	20.00%	16V
C1008	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1009	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1010	1-126-933-11	ELECT	100uF	20.00%	16V
C1011	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1012	1-126-933-11	ELECT	100uF	20.00%	16V
C1013	1-126-933-11	ELECT	100uF	20.00%	16V
C1014	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1015	1-126-933-11	ELECT	100uF	20.00%	16V

DIGITAL DISK SENSOR

Ref. No.	Part No.	Description			Remarks
C1016	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1017	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1018	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1019	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C1020	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C1021	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1022	1-126-933-11	ELECT	100uF	20.00%	16V
C1023	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1024	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1025	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1026	1-126-933-11	ELECT	100uF	20.00%	16V
C1027	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C1034	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C1035	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1037	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C1038	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C1039	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C1040	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C1041	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C1044	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C1045	1-126-933-11	ELECT	100uF	20.00%	16V
C1046	1-136-153-00	FILM	0.01uF	5%	50V
C1047	1-136-153-00	FILM	0.01uF	5%	50V
C1048	1-126-933-11	ELECT	100uF	20.00%	16V
C1049	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C1050	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C1051	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C1052	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
		< CONNECTOR >			
CN1001	1-784-786-11	CONNECTOR, FFC 25P			
CN1003	1-779-295-11	CONNECTOR,FFC(LIF(NON-ZIF))27P			
CN1004	1-779-285-11	CONNECTOR,FFC(LIF(NON-ZIF))17P			
		< IC >			
IC1001	8-759-828-80	IC M30805MG-205GP			
IC1004	8-759-822-09	IC LB1641			
IC1005	8-759-675-78	IC UDA1360TS			
IC1006	8-759-675-77	IC UDA1350AH			
		< COIL >			
L1001	1-412-533-21	INDUCTOR	47uH		
		< TRANSISTOR >			
Q1001	8-729-402-42	TRANSISTOR	UN5213-TX		
Q1002	8-729-602-36	TRANSISTOR	2SA1602TP-1EF		
Q1004	8-729-403-35	TRANSISTOR	UN5113-TX		
Q2001	8-729-602-36	TRANSISTOR	2SA1602TP-1EF		
Q2002	8-729-015-76	TRANSISTOR	UN5211-TX		
		< RESISTOR >			
R1001	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R1002	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R1005	1-216-025-11	RES-CHIP	100	5%	1/10W
R1006	1-216-025-11	RES-CHIP	100	5%	1/10W
R1007	1-216-025-11	RES-CHIP	100	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R1010	1-216-025-11	RES-CHIP	100	5%	1/10W
R1011	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1012	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1013	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1014	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1015	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1016	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1017	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1018	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1024	1-216-041-00	METAL CHIP	470	5%	1/10W
R1033	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R1034	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R1035	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1036	1-216-295-11	SHORT	0		
R1057	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R1058	1-216-025-11	RES-CHIP	100	5%	1/10W
R1059	1-216-025-11	RES-CHIP	100	5%	1/10W
R1060	1-216-025-11	RES-CHIP	100	5%	1/10W
R1071	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1072	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1073	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1076	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1077	1-216-295-11	SHORT	0		
R1078	1-216-295-11	SHORT	0		
R1080	1-216-295-11	SHORT	0		
R1081	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1082	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1085	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1087	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R1088	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R1090	1-216-041-00	METAL CHIP	470	5%	1/10W
R1091	1-216-033-00	METAL CHIP	220	5%	1/10W
R1092	1-216-033-00	METAL CHIP	220	5%	1/10W
R1093	1-216-033-00	METAL CHIP	220	5%	1/10W
R1094	1-216-033-00	METAL CHIP	220	5%	1/10W
R1095	1-216-039-00	METAL CHIP	390	5%	1/10W
R2002	1-216-296-11	SHORT	0		
R2005	1-216-295-11	SHORT	0		
R2006	1-216-025-11	RES-CHIP	100	5%	1/10W
R2007	1-216-097-11	RES-CHIP	100K	5%	1/10W
R2008	1-216-025-11	RES-CHIP	100	5%	1/10W
		< VIBRATOR >			
X1001	1-579-175-11	VIBRATOR, CERAMIC 10MHz			
**********					
	1-678-463-11	DISK SENSOR BOARD			
		**********			
		< IC >			
IC751	8-749-924-30	PHOTO REFLECTOR GP2S28			
		< RESISTOR >			
R751	1-249-407-11	CARBON	150	5%	1/4W F
**********					

Ref. No.	Part No.	Description			Remarks
	1-678-460-11	DRIVER BOARD			
		**********			
		< CAPACITOR >			
C701	1-124-261-00	ELECT	10uF	20%	50V
C705	1-124-261-00	ELECT	10uF	20%	50V
C706	1-164-159-11	CERAMIC	0.1uF		50V
C707	1-164-159-11	CERAMIC	0.1uF		50V
		< CONNECTOR >			
CN701	1-785-324-11	PIN, CONNECTOR (STRAIGHT) 12P			
CN702	1-785-328-11	PIN, CONNECTOR (LIGHT ANGRE)2P			
CN703	1-785-331-11	PIN, CONNECTOR (LIGHT ANGLE)5P			
CN704	1-785-329-11	PIN, CONNECTOR (LIGHT ANGLE)3P			
CN705	1-785-329-21	PIN, CONNECTOR (LIGHT ANGLE)3P			
		< IC >			
IC701	8-759-598-69	IC BA6956AN			
		< TRANSISTOR >			
Q701	8-729-029-66	TRANSISTOR	RT1N141S-TP		
		< RESISTOR >			
R701	1-249-429-11	CARBON	10K	5%	1/4W
R702	1-249-401-11	CARBON	47	5%	1/4W F
R705	1-249-435-11	CARBON	33K	5%	1/4W
R706	1-249-417-11	CARBON	1K	5%	1/4W F
R707	1-249-429-11	CARBON	10K	5%	1/4W
**********					
	1-678-462-11	IN OUT SW BOARD			
		**********			
		< SWITCH >			
S741	1-771-821-11	SWITCH, PUSH (1 KEY) (IN)			
S742	1-771-821-11	SWITCH, PUSH (1 KEY) (OUT)			
**********					
	A-4475-470-A	MAIN BOARD, COMPLETE (AEP,UK)			
		**********			
	A-4475-488-A	MAIN BOARD, COMPLETE (AUS,HK)			
		**********			
	7-685-646-79	SCREW +BVTP	3X8	TYPE2 N-S	
		< CAPACITOR >			
C103	1-126-767-11	ELECT	1000uF	20.00%	16V
C104	1-126-956-11	ELECT	0.1uF	20.00%	50V
C105	1-126-933-11	ELECT	100uF	20.00%	16V
C106	1-126-935-11	ELECT	470uF	20.00%	16V
C107	1-126-956-11	ELECT	0.1uF	20.00%	50V
C108	1-126-964-11	ELECT	10uF	20.00%	50V
C109	1-126-953-11	ELECT	2200uF	20.00%	35V
C110	1-115-364-11	ELECT	22000uF	20.00%	16V
C114	1-126-964-11	ELECT	10uF	20.00%	50V
C116	1-126-916-11	ELECT	1000uF	20.00%	6.3V
C117	1-126-916-11	ELECT	1000uF	20.00%	6.3V
C119	1-126-916-11	ELECT	1000uF	20.00%	6.3V
C120	1-126-964-11	ELECT	10uF	20.00%	50V
C121	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C122	1-126-935-11	ELECT	470uF	20.00%	16V

Ref. No.	Part No.	Description			Remarks
C125	1-126-964-11	ELECT	10uF	20.00%	50V
C126	1-126-964-11	ELECT	10uF	20.00%	50V
C127	1-126-964-11	ELECT	10uF	20.00%	50V
C128	1-126-964-11	ELECT	10uF	20.00%	50V
C130	1-126-916-11	ELECT	1000uF	20.00%	6.3V
C141	1-126-964-11	ELECT	10uF	20.00%	50V
C142	1-162-960-11	CERAMIC CHIP	220PF	10%	50V (AEP,UK)
C143	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C183	1-109-889-11	ELECT	1uF	20.00%	50V
C191	1-126-964-11	ELECT	10uF	20.00%	50V
C192	1-162-960-11	CERAMIC CHIP	220PF	10%	50V (AEP,UK)
C200	1-126-964-11	ELECT	10uF	20.00%	50V
C201	1-104-665-11	ELECT	100uF	20.00%	10V
C202	1-130-477-00	MYLAR	0.0033uF	5%	50V
C203	1-126-964-11	ELECT	10uF	20.00%	50V
C204	1-136-165-00	FILM	0.1uF	5.00%	50V
C205	1-136-169-00	FILM	0.22uF	5.00%	50V
C206	1-130-479-00	MYLAR	0.0047uF	5%	50V
C207	1-126-964-11	ELECT	10uF	20.00%	50V
C208	1-136-165-00	FILM	0.1uF	5.00%	50V
C209	1-136-165-00	FILM	0.1uF	5.00%	50V
C210	1-126-963-11	ELECT	4.7uF	20.00%	50V
C211	1-126-964-11	ELECT	10uF	20.00%	50V
C212	1-126-964-11	ELECT	10uF	20.00%	50V
C214	1-126-964-11	ELECT	10uF	20.00%	50V
C218	1-126-964-11	ELECT	10uF	20.00%	50V
C219	1-126-964-11	ELECT	10uF	20.00%	50V
C253	1-126-964-11	ELECT	10uF	20.00%	50V
C254	1-136-165-00	FILM	0.1uF	5.00%	50V
C255	1-136-169-00	FILM	0.22uF	5.00%	50V
C256	1-130-479-00	MYLAR	0.0047uF	5%	50V
C257	1-126-964-11	ELECT	10uF	20.00%	50V
C258	1-136-165-00	FILM	0.1uF	5.00%	50V
C259	1-136-165-00	FILM	0.1uF	5.00%	50V
C260	1-126-963-11	ELECT	4.7uF	20.00%	50V
C261	1-126-964-11	ELECT	10uF	20.00%	50V
C262	1-126-964-11	ELECT	10uF	20.00%	50V
C264	1-126-964-11	ELECT	10uF	20.00%	50V
C301	1-126-960-11	ELECT	1uF	20.00%	50V
C303	1-136-165-00	FILM	0.1uF	5.00%	50V
C305	1-126-964-11	ELECT	10uF	20.00%	50V
C306	1-126-960-11	ELECT	1uF	20.00%	50V
C307	1-126-959-11	ELECT	0.47uF	20.00%	50V
C308	1-126-964-11	ELECT	10uF	20.00%	50V
C309	1-137-194-81	FILM	0.47uF	5.00%	50V
C310	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C311	1-126-964-11	ELECT	10uF	20.00%	50V
C312	1-126-959-11	ELECT	0.47uF	20.00%	50V
C313	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C314	1-126-964-11	ELECT	10uF	20.00%	50V
C315	1-126-963-11	ELECT	4.7uF	20.00%	50V
C316	1-126-933-11	ELECT	100uF	20.00%	16V
C317	1-104-665-11	ELECT	100uF	20.00%	10V
C319	1-126-959-11	ELECT	0.47uF	20.00%	50V
C321	1-126-964-11	ELECT	10uF	20.00%	50V

MAIN

Ref. No.	Part No.	Description			Remarks
C322	1-126-964-11	ELECT	10uF	20.00%	50V
C351	1-126-960-11	ELECT	1uF	20.00%	50V
C353	1-136-165-00	FILM	0.1uF	5.00%	50V
C355	1-126-964-11	ELECT	10uF	20.00%	50V
C356	1-126-960-11	ELECT	1uF	20.00%	50V
C357	1-126-959-11	ELECT	0.47uF	20.00%	50V
C358	1-126-964-11	ELECT	10uF	20.00%	50V
C359	1-137-194-11	FILM	0.47uF	5.00%	50V
C360	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C362	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C369	1-126-959-11	ELECT	0.47uF	20.00%	50V
C410	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C411	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C412	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C413	1-125-891-11	CERAMIC CHIP	0.47uF	10.00%	10V
C414	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C415	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C416	1-126-916-11	ELECT	1000uF	20.00%	6.3V
C417	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C462	1-104-665-11	ELECT	100uF	20.00%	10V
C464	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C497	1-126-964-11	ELECT	10uF	20.00%	50V
C498	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C499	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C501	1-136-165-00	FILM	0.1uF	5.00%	50V
C502	1-136-165-00	FILM	0.1uF	5.00%	50V
C503	1-126-964-11	ELECT	10uF	20.00%	50V
C506	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C507	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C508	1-126-964-11	ELECT	10uF	20.00%	50V
C509	1-104-665-11	ELECT	100uF	20.00%	10V
C521	1-126-382-11	ELECT	100uF	20.00%	10V
C533	1-126-382-11	ELECT	100uF	20.00%	10V
C545	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C546	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C547	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C550	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C551	1-104-665-11	ELECT	100uF	20.00%	10V
C552	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C553	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C554	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C601	1-126-963-11	ELECT	4.7uF	20.00%	50V
C602	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C603	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C604	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C605	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C606	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C607	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C608	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C610	1-126-961-11	ELECT	2.2uF	20.00%	50V
C611	1-126-961-11	ELECT	2.2uF	20.00%	50V
C612	1-126-924-11	ELECT	330uF	20.00%	10V
C613	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C614	1-126-961-11	ELECT	2.2uF	20.00%	50V
C615	1-126-961-11	ELECT	2.2uF	20.00%	50V
C617	1-126-934-11	ELECT	220uF	20.00%	10V
C620	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C621	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C708	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C709	1-126-960-11	ELECT	1uF	20.00%	50V
C710	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C717	1-126-382-11	ELECT	100uF	20.00%	10V
		< CONNECTOR >			
CN101	1-778-981-21	CONNECTOR, BOARD TO BOARD 13P			
CN201	1-784-747-11	CONNECTOR, FFC 25P			
CN251	1-778-981-21	CONNECTOR, BOARD TO BOARD 13P			
* CN301	1-568-449-11	HOUSING, CONNECTOR(PC BOARD)3P			
CN304	1-568-828-11	CONNECTOR, FFC 9P			
* CN305	1-568-936-11	PIN, CONNECTOR 9P			
CN501	1-506-469-11	PIN, CONNECTOR 4P			
CN502	1-784-776-11	CONNECTOR, FFC 15P (AEP,UK)			
CN502	1-568-830-11	CONNECTOR, FFC 11P (AUS,HK)			
CN503	1-793-766-11	CONNECTOR, BOARD TO BOARD 30P			
CN551	1-774-136-11	CONNECTOR, ROUND TYPE 6P			
CN701	1-784-786-11	CONNECTOR, FFC 25P			
		< DIODE >			
D103	8-719-988-61	DIODE 1SS355TE-17			
D106	8-719-083-89	DIODE 11ES2N-TB5			
D107	8-719-988-61	DIODE 1SS355TE-17			
D108	8-719-083-89	DIODE 11ES2N-TB5			
D182	8-719-988-61	DIODE 1SS355TE-17			
D202	8-719-976-99	DIODE DTZ-TT11-5.1B			
D203	8-719-988-61	DIODE 1SS355TE-17			
D204	8-719-083-89	DIODE 11ES2N-TB5			
D205	8-719-083-89	DIODE 11ES2N-TB5			
D206	8-719-083-89	DIODE 11ES2N-TB5			
D361	8-719-988-61	DIODE 1SS355TE-17			
D501	8-719-988-61	DIODE 1SS355TE-17			
D502	8-719-988-61	DIODE 1SS355TE-17			
D504	8-719-988-61	DIODE 1SS355TE-17			
D505	8-719-988-61	DIODE 1SS355TE-17			
D506	8-719-988-61	DIODE 1SS355TE-17			
D507	8-719-988-61	DIODE 1SS355TE-17			
D508	8-719-988-61	DIODE 1SS355TE-17			
D509	8-719-988-61	DIODE 1SS355TE-17			
D511	8-719-988-61	DIODE 1SS355TE-17			
D512	8-719-988-61	DIODE 1SS355TE-17			
D513	8-719-988-61	DIODE 1SS355TE-17			
D514	8-719-988-61	DIODE 1SS355TE-17			
		< EARTH >			
* EP901	1-537-738-21	TERMINAL, EARTH			
		< FERRITE BEAD >			
FB416	1-414-772-11	FERRITE	0uH		
FB462	1-414-772-11	FERRITE	0uH		
FB499	1-414-772-11	FERRITE	0uH		
FB500	1-414-772-11	FERRITE	0uH		
FB501	1-414-772-11	FERRITE	0uH		
FB502	1-414-772-11	FERRITE	0uH		
FB503	1-414-772-11	FERRITE	0uH		
FB504	1-414-772-11	FERRITE	0uH		
FB505	1-414-772-11	FERRITE	0uH		
FB506	1-414-772-11	FERRITE	0uH		

Ref. No.	Part No.	Description		Remarks
FB507	1-414-772-11	FERRITE	0uH	
FB508	1-414-772-11	FERRITE	0uH	
FB511	1-414-772-11	FERRITE	0uH	
FB512	1-414-772-11	FERRITE	0uH	
FB514	1-414-772-11	FERRITE	0uH	
FB551	1-216-864-91	SHORT	0	
FB700	1-414-772-11	FERRITE	0uH	
		< IC >		
IC101	8-759-604-32	IC	M5F7810L	
IC102	8-759-701-59	IC	AN7809	
IC103	8-759-604-86	IC	M5F7807L	
IC105	8-759-158-62	IC	TA78057S	
IC108	8-759-039-69	IC	uPC7805AHF	
IC110	8-759-686-72	IC	uPC29L04J-T	
IC201	8-759-494-40	IC	M62428AFP600C	
IC301	8-759-652-80	IC	HA12227F	
IC401	8-759-697-74	IC	M30622MGA-A33FP	
IC501	8-759-635-63	IC	M51943BSL-TP	
IC502	8-759-481-02	IC	M62016L	
IC503	8-759-548-57	IC	SN74LV00ANSR	
IC551	8-749-923-05	TORX178B		
IC552	8-759-549-80	IC	P82B715TD.118	
		< JACK >		
J101	1-770-272-11	JACK, PIN 2P (VIDEO(AUDIO)IN)		
		< JUMPER RESISTOR >		
JR101	1-216-864-11	SHORT	0	
JR215	1-216-864-11	SHORT	0	
JR265	1-216-864-11	SHORT	0	
JR501	1-216-864-11	SHORT	0 (AEP,UK)	
JR502	1-216-864-11	SHORT	0 (AEP,UK)	
JR503	1-216-864-11	SHORT	0 (AEP,UK)	
JR504	1-216-864-11	SHORT	0	
JR505	1-216-864-11	SHORT	0	
JR506	1-216-864-11	SHORT	0	
JR511	1-216-864-11	SHORT	0	
JR512	1-216-864-11	SHORT	0	
JR513	1-216-864-11	SHORT	0	
JR514	1-216-864-11	SHORT	0	
JR516	1-216-864-11	SHORT	0	
JR922	1-216-864-11	SHORT	0 (AUS,HK)	
JR923	1-216-864-11	SHORT	0 (AUS,HK)	
		< COIL >		
L201	1-216-864-11	SHORT	0	
L311	1-410-393-11	INDUCTOR CHIP	100uH	
L551	1-410-393-11	INDUCTOR CHIP	100uH	
L552	1-410-381-11	INDUCTOR CHIP	10uH	
		< TRANSISTOR >		
Q104	8-729-107-43	TRANSISTOR	2SC3624-T1L1718	
Q106	8-729-900-53	TRANSISTOR	DTC114EKA-T146	
Q109	8-729-049-79	TRANSISTOR	RT1P137S-TP	
Q181	8-729-900-53	TRANSISTOR	DTC114EKA-T146	
Q182	8-729-027-23	TRANSISTOR	DTA114EKA-T146	

Ref. No.	Part No.	Description		Remarks
Q183	8-729-027-23	TRANSISTOR	DTA114EKA-T146	
Q201	8-729-107-43	TRANSISTOR	2SC3624-T1L1718	
Q203	8-729-107-43	TRANSISTOR	2SC3624-T1L1718	
Q251	8-729-107-43	TRANSISTOR	2SC3624-T1L1718	
Q253	8-729-107-43	TRANSISTOR	2SC3624-T1L1718	
Q271	8-729-900-53	TRANSISTOR	DTC114EKA-T146	
Q391	8-729-140-04	TRANSISTOR	2SB1116-TP-LK	
Q392	8-729-900-53	TRANSISTOR	DTC114EKA-T146	
Q396	8-729-116-57	TRANSISTOR	2SB1068TP-K	
Q397	8-729-900-53	TRANSISTOR	DTC114EKA-T146	
Q501	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF	
Q551	8-729-025-28	TRANSISTOR	2SK1828TE85L	
Q552	8-729-025-28	TRANSISTOR	2SK1828TE85L	
		< RESISTOR >		
R101	1-216-817-11	METAL CHIP	470 5% 1/16W	
R120	1-216-821-11	METAL CHIP	1K 5% 1/16W	
R121	1-216-864-11	SHORT	0	
R123	1-216-822-11	METAL CHIP	1.2K 5% 1/16W	
R125	1-216-864-11	SHORT	0	
R141	1-216-821-11	METAL CHIP	1K 5% 1/16W	
R142	1-216-845-11	METAL CHIP	100K 5% 1/16W	
R181	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	
R182	1-216-845-11	METAL CHIP	100K 5% 1/16W	
R183	1-216-833-11	METAL CHIP	10K 5% 1/16W	
R184	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	
R191	1-216-821-11	METAL CHIP	1K 5% 1/16W	
R192	1-216-845-11	METAL CHIP	100K 5% 1/16W	
R201	1-216-839-11	METAL CHIP	33K 5% 1/16W	
R202	1-216-857-11	METAL CHIP	1M 5% 1/16W	
R203	1-216-849-11	METAL CHIP	220K 5% 1/16W	
R204	1-216-857-11	METAL CHIP	1M 5% 1/16W	
R205	1-216-839-11	METAL CHIP	33K 5% 1/16W	
R206	1-216-828-11	METAL CHIP	3.9K 5% 1/16W	
R207	1-216-845-11	METAL CHIP	100K 5% 1/16W	
R208	1-216-864-11	SHORT	0	
R209	1-216-864-11	SHORT	0	
R210	1-216-864-11	SHORT	0	
R213	1-216-821-11	METAL CHIP	1K 5% 1/16W	
R214	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	
R215	1-216-821-11	METAL CHIP	1K 5% 1/16W	
R216	1-216-845-11	METAL CHIP	100K 5% 1/16W	
R253	1-216-849-11	METAL CHIP	220K 5% 1/16W	
R254	1-216-857-11	METAL CHIP	1M 5% 1/16W	
R255	1-216-839-11	METAL CHIP	33K 5% 1/16W	
R256	1-216-828-11	METAL CHIP	3.9K 5% 1/16W	
R257	1-216-845-11	METAL CHIP	100K 5% 1/16W	
R264	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	
R265	1-216-821-11	METAL CHIP	1K 5% 1/16W	
R266	1-216-845-11	METAL CHIP	100K 5% 1/16W	
R301	1-216-839-11	METAL CHIP	33K 5% 1/16W	
R302	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	
R303	1-216-864-11	SHORT	0	
R304	1-216-809-11	METAL CHIP	100 5% 1/16W	
R305	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	
R306	1-216-832-11	METAL CHIP	8.2K 5% 1/16W	
R307	1-216-832-11	METAL CHIP	8.2K 5% 1/16W	
R308	1-216-829-11	METAL CHIP	4.7K 5% 1/16W	
R309	1-216-837-11	METAL CHIP	22K 5% 1/16W	
R311	1-216-857-11	METAL CHIP	1M 5% 1/16W	

MAIN

Ref. No.	Part No.	Description			Remarks
R312	1-218-745-11	RES-CHIP	160K	5%	1/16W
R314	1-216-821-11	METAL CHIP	1K	5%	1/16W
R315	1-216-833-11	METAL CHIP	10K	5%	1/16W
R316	1-216-838-11	METAL CHIP	27K	5%	1/16W
R317	1-216-833-11	METAL CHIP	10K	5%	1/16W
R318	1-216-833-11	METAL CHIP	10K	5%	1/16W
R319	1-216-852-11	METAL CHIP	390K	5%	1/16W
R321	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R351	1-216-839-11	METAL CHIP	33K	5%	1/16W
R352	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R353	1-216-864-91	SHORT	0		
R354	1-216-809-11	METAL CHIP	100	5%	1/16W
R355	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R356	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R357	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R358	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R360	1-216-819-11	METAL CHIP	680	5%	1/16W
R361	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R362	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R366	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R367	1-216-841-11	METAL CHIP	47K	5%	1/16W
R368	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R369	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R370	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R371	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R372	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R373	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R375	1-218-296-11	RES-CHIP	75K	5%	1/16W
R376	1-216-841-11	METAL CHIP	47K	5%	1/16W
R377	1-216-837-11	METAL CHIP	22K	5%	1/16W
R378	1-216-833-11	METAL CHIP	10K	5%	1/16W
R400	1-216-809-11	METAL CHIP	100	5%	1/16W
R401	1-216-809-11	METAL CHIP	100	5%	1/16W
R402	1-216-809-11	METAL CHIP	100	5%	1/16W
R403	1-216-809-11	METAL CHIP	100	5%	1/16W
R404	1-216-809-11	METAL CHIP	100	5%	1/16W
R405	1-216-809-11	METAL CHIP	100	5%	1/16W
R406	1-216-809-11	METAL CHIP	100	5%	1/16W
R407	1-216-809-11	METAL CHIP	100	5%	1/16W
R409	1-216-833-11	METAL CHIP	10K	5%	1/16W
R411	1-216-851-11	METAL CHIP	330K	5%	1/16W
R412	1-216-833-11	METAL CHIP	10K	5%	1/16W
R413	1-216-864-91	SHORT	0		
R414	1-216-809-11	METAL CHIP	100	5%	1/16W
R415	1-216-833-11	METAL CHIP	10K	5%	1/16W
R416	1-216-809-11	METAL CHIP	100	5%	1/16W
R417	1-216-833-11	METAL CHIP	10K	5%	1/16W
R418	1-216-809-11	METAL CHIP	100	5%	1/16W
R419	1-216-809-11	METAL CHIP	100	5%	1/16W
R420	1-216-809-11	METAL CHIP	100	5%	1/16W
R421	1-216-809-11	METAL CHIP	100	5%	1/16W
R422	1-216-809-11	METAL CHIP	100	5%	1/16W
R423	1-216-809-11	METAL CHIP	100	5%	1/16W
R424	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R425	1-216-809-11	METAL CHIP	100	5%	1/16W
R426	1-216-849-11	METAL CHIP	220K	5%	1/16W
R427	1-216-809-11	METAL CHIP	100	5%	1/16W
R428	1-216-845-11	METAL CHIP	100K	5%	1/16W
R429	1-216-809-11	METAL CHIP	100	5%	1/16W
R430	1-216-809-11	METAL CHIP	100	5%	1/16W
R431	1-216-833-11	METAL CHIP	10K	5%	1/16W
R432	1-216-833-11	METAL CHIP	10K	5%	1/16W
R433	1-216-833-11	METAL CHIP	10K	5%	1/16W
R435	1-216-809-11	METAL CHIP	100	5%	1/16W
R436	1-216-809-11	METAL CHIP	100	5%	1/16W
R437	1-216-809-11	METAL CHIP	100	5%	1/16W
R438	1-216-821-11	METAL CHIP	1K	5%	1/16W
R440	1-216-833-11	METAL CHIP	10K	5%	1/16W
R441	1-216-833-11	METAL CHIP	10K	5%	1/16W
R442	1-216-809-11	METAL CHIP	100	5%	1/16W
R443	1-216-809-11	METAL CHIP	100	5%	1/16W
R444	1-216-809-11	METAL CHIP	100	5%	1/16W
R446	1-216-809-11	METAL CHIP	100	5%	1/16W
R447	1-216-809-11	METAL CHIP	100	5%	1/16W
R448	1-216-809-11	METAL CHIP	100	5%	1/16W
R449	1-216-809-11	METAL CHIP	100	5%	1/16W
R450	1-216-809-11	METAL CHIP	100	5%	1/16W
R451	1-216-809-11	METAL CHIP	100	5%	1/16W
R452	1-216-809-11	METAL CHIP	100	5%	1/16W
R453	1-216-833-11	METAL CHIP	10K	5%	1/16W
R456	1-216-809-11	METAL CHIP	100	5%	1/16W
R457	1-216-809-11	METAL CHIP	100	5%	1/16W
R458	1-216-809-11	METAL CHIP	100	5%	1/16W
R459	1-216-809-11	METAL CHIP	100	5%	1/16W
R460	1-216-809-11	METAL CHIP	100	5%	1/16W
R461	1-216-809-11	METAL CHIP	100	5%	1/16W
R462	1-216-809-11	METAL CHIP	100	5%	1/16W
R463	1-216-814-11	METAL CHIP	270	5%	1/16W
R464	1-216-833-11	METAL CHIP	10K	5%	1/16W
R465	1-216-833-11	METAL CHIP	10K	5%	1/16W
R466	1-216-833-11	METAL CHIP	10K	5%	1/16W
R467	1-216-833-11	METAL CHIP	10K	5%	1/16W
R468	1-216-833-11	METAL CHIP	10K	5%	1/16W
R470	1-216-809-11	METAL CHIP	100	5%	1/16W
R471	1-216-809-11	METAL CHIP	100	5%	1/16W
R472	1-216-833-11	METAL CHIP	10K	5%	1/16W
R473	1-216-809-11	METAL CHIP	100	5%	1/16W
R474	1-216-809-11	METAL CHIP	100	5%	1/16W
R475	1-216-809-11	METAL CHIP	100	5%	1/16W
R476	1-216-809-11	METAL CHIP	100	5%	1/16W
R477	1-216-809-11	METAL CHIP	100	5%	1/16W
R478	1-216-809-11	METAL CHIP	100	5%	1/16W
R479	1-216-809-11	METAL CHIP	100	5%	1/16W
R480	1-216-809-11	METAL CHIP	100	5%	1/16W
R481	1-216-809-11	METAL CHIP	100	5%	1/16W
R482	1-216-809-11	METAL CHIP	100	5%	1/16W
R483	1-216-809-11	METAL CHIP	100	5%	1/16W
R484	1-216-809-11	METAL CHIP	100	5%	1/16W
R485	1-216-809-11	METAL CHIP	100	5%	1/16W
R486	1-216-809-11	METAL CHIP	100	5%	1/16W
R487	1-216-809-11	METAL CHIP	100	5%	1/16W
R488	1-216-821-11	METAL CHIP	1K	5%	1/16W
R489	1-216-809-11	METAL CHIP	100	5%	1/16W
R490	1-216-809-11	METAL CHIP	100	5%	1/16W
R491	1-216-809-11	METAL CHIP	100	5%	1/16W
R492	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R493	1-216-864-11	SHORT	0 (AEP,UK)		
R494	1-216-864-11	SHORT	0 (AUS,HK)		
R495	1-216-814-11	METAL CHIP	270	5%	1/16W
R496	1-216-833-11	METAL CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R497	1-216-814-11	METAL CHIP	270	5%	1/16W
R499	1-216-833-11	METAL CHIP	10K	5%	1/16W
R500	1-216-864-11	SHORT	0		
R501	1-216-833-11	METAL CHIP	10K	5%	1/16W
R502	1-216-841-11	METAL CHIP	47K	5%	1/16W
R503	1-216-841-11	METAL CHIP	47K	5%	1/16W
R505	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R506	1-216-817-11	METAL CHIP	470	5%	1/16W
R508	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R509	1-216-821-11	METAL CHIP	1K	5%	1/16W
R510	1-216-809-11	METAL CHIP	100	5%	1/16W
R513	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R514	1-216-864-11	SHORT	0		
R515	1-216-845-11	METAL CHIP	100K	5%	1/16W
R516	1-216-809-11	METAL CHIP	100	5%	1/16W
R517	1-216-833-11	METAL CHIP	10K	5%	1/16W
R543	1-216-864-11	SHORT	0		
R544	1-216-864-11	SHORT	0		
R554	1-216-864-11	SHORT	0		
R555	1-216-845-11	METAL CHIP	100K	5%	1/16W
R556	1-216-833-11	METAL CHIP	10K	5%	1/16W
R557	1-216-835-11	METAL CHIP	15K	5%	1/16W
R558	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R559	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R560	1-216-797-11	METAL CHIP	10	5%	1/16W
R561	1-216-797-11	METAL CHIP	10	5%	1/16W
R562	1-216-833-11	METAL CHIP	10K	5%	1/16W
R563	1-216-833-11	METAL CHIP	10K	5%	1/16W
R580	1-216-833-11	METAL CHIP	10K	5%	1/16W
R581	1-216-833-11	METAL CHIP	10K	5%	1/16W
R582	1-216-833-11	METAL CHIP	10K	5%	1/16W
		< VARIABLE RESISTOR >			
RV301	1-241-764-11	RES, ADJ, CARBON 10K			
RV351	1-241-764-11	RES, ADJ, CARBON 10K			
		< SWITCH >			
S501	1-771-264-11	SWITCH, PUSH(DETECTION)(1 KEY)			
		< VIBRATOR >			
X401	1-567-098-41	VIBRATOR, CRYSTAL 32.768kHz			
X402	1-781-107-21	VIBRATOR, SERAMIC 16MHz			
**********					
	1-678-461-11	MOTOR BOARD			
		**********			
		< CAPACITOR >			
C721	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
**********					
	A-4475-468-A	PANEL BOARD, COMPLETE			
		**********			
C701	1-162-294-31	CERAMIC	0.001uF	10%	50V
C702	1-162-294-31	CERAMIC	0.001uF	10%	50V
C703	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C706	1-162-282-31	CERAMIC	100PF	10%	50V
C707	1-162-290-31	CERAMIC	470PF	10%	50V

Ref. No.	Part No.	Description			Remarks
C708	1-162-282-31	CERAMIC	100PF	10%	50V
C710	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C711	1-164-159-11	CERAMIC	0.1uF		50V
C712	1-126-791-11	ELECT	10uF	20.00%	16V
C713	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C714	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C715	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C720	1-162-282-31	CERAMIC	100PF	10%	50V
C721	1-162-282-31	CERAMIC	100PF	10%	50V
C722	1-162-282-31	CERAMIC	100PF	10%	50V
C723	1-162-282-31	CERAMIC	100PF	10%	50V
C724	1-162-282-31	CERAMIC	100PF	10%	50V
C741	1-119-941-91	ELECT	470uF	20.00%	6.3V
C742	1-119-941-91	ELECT	470uF	20.00%	6.3V
C791	1-164-159-11	CERAMIC	0.1uF		50V
C793	1-126-791-11	ELECT	10uF	20.00%	16V
C794	1-164-159-11	CERAMIC	0.1uF		50V
		< CONNECTOR >			
CN701	1-793-767-11	CONNECTOR, BOARD TO BOARD 30P			
CN703	1-568-951-11	PIN, CONNECTOR 2P			
CN704	1-580-471-11	SOCKET, CONNECTOR 6P			
		< DIODE >			
D701	8-719-812-44	DIODE SEL5220S-TP15			
D702	8-719-911-19	DIODE 1SS133T-72			
D703	8-719-024-99	DIODE 11ES2-NTA2B			
D722	8-719-058-04	DIODE SEL5223S-TP15			
D724	8-719-058-04	DIODE SEL5223S-TP15			
D741	8-719-057-97	DIODE SEL5923A-TP15			
D743	8-719-057-97	DIODE SEL5923A-TP15			
D745	8-719-057-97	DIODE SEL5923A-TP15			
D746	8-719-911-19	DIODE 1SS133T-72			
		< EARTH >			
* EP701	1-537-738-21	TERMINAL, EARTH			
* EP702	1-537-738-21	TERMINAL, EARTH			
		< IC >			
IC702	8-749-011-05	IC GP1U28X			
		< JACK >			
J701	1-691-293-21	JACK (PHONES)			
		< TRANSISTOR >			
Q701	8-729-029-66	TRANSISTOR	DTC114ESA-TP		
Q702	8-729-119-78	TRANSISTOR	2SC2785TP-HFE		
Q741	8-729-049-79	TRANSISTOR	RT1P137S-TP		
Q742	8-729-029-66	TRANSISTOR	DTC114ESA-TP		
Q743	8-729-049-79	TRANSISTOR	RT1P137S-TP		
Q744	8-729-029-66	TRANSISTOR	DTC114ESA-TP		
Q745	8-729-029-66	TRANSISTOR	DTC114ESA-TP		
Q746	8-729-029-66	TRANSISTOR	DTC114ESA-TP		

PANEL **RELAY** **RING SW** **SUB POWER**

Ref. No.	Part No.	Description			Remarks
		< RESISTOR >			
R701	1-249-417-11	CARBON	1K	5%	1/4W F
R702	1-249-429-11	CARBON	10K	5%	1/4W
R703	1-249-429-11	CARBON	10K	5%	1/4W
R705	1-247-807-31	CARBON	100	5%	1/4W
R706	1-247-807-31	CARBON	100	5%	1/4W
R707	1-247-807-31	CARBON	100	5%	1/4W
R708	1-247-807-31	CARBON	100	5%	1/4W
R709	1-247-807-31	CARBON	100	5%	1/4W
R710	1-247-807-31	CARBON	100	5%	1/4W
R711	1-249-425-11	CARBON	4.7K	5%	1/4W F
R712	1-247-843-11	CARBON	3.3K	5%	1/4W
R713	1-249-422-11	CARBON	2.7K	5%	1/4W F
R714	1-249-420-11	CARBON	1.8K	5%	1/4W F
R715	1-249-418-11	CARBON	1.2K	5%	1/4W F
R716	1-249-417-11	CARBON	1K	5%	1/4W F
R717	1-249-415-11	CARBON	680	5%	1/4W F
R718	1-249-414-11	CARBON	560	5%	1/4W F
R719	1-249-413-11	CARBON	470	5%	1/4W F
R720	1-249-411-11	CARBON	330	5%	1/4W
R722	1-249-418-11	CARBON	1.2K	5%	1/4W F
R723	1-249-417-11	CARBON	1K	5%	1/4W F
R724	1-249-415-11	CARBON	680	5%	1/4W F
R725	1-249-414-11	CARBON	560	5%	1/4W F
R726	1-249-413-11	CARBON	470	5%	1/4W F
R727	1-249-411-11	CARBON	330	5%	1/4W
R729	1-247-843-11	CARBON	3.3K	5%	1/4W
R730	1-249-422-11	CARBON	2.7K	5%	1/4W F
R731	1-249-420-11	CARBON	1.8K	5%	1/4W F
R732	1-249-418-11	CARBON	1.2K	5%	1/4W F
R733	1-249-417-11	CARBON	1K	5%	1/4W F
R734	1-249-415-11	CARBON	680	5%	1/4W F
R735	1-249-414-11	CARBON	560	5%	1/4W F
R736	1-249-413-11	CARBON	470	5%	1/4W F
R738	1-249-409-11	CARBON	220	5%	1/4W F
R739	1-249-409-11	CARBON	220	5%	1/4W F
R740	1-249-411-11	CARBON	330	5%	1/4W
R742	1-249-406-11	CARBON	120	5%	1/4W F
R744	1-249-406-11	CARBON	120	5%	1/4W F
R746	1-249-406-11	CARBON	120	5%	1/4W F
R748	1-247-807-31	CARBON	100	5%	1/4W
R749	1-247-807-31	CARBON	100	5%	1/4W
R793	1-247-807-31	CARBON	100	5%	1/4W
R794	1-247-807-31	CARBON	100	5%	1/4W
R795	1-247-807-31	CARBON	100	5%	1/4W
R796	1-249-425-11	CARBON	4.7K	5%	1/4W F
R797	1-249-417-11	CARBON	1K	5%	1/4W F
		< SWITCH >			
S701	1-762-875-21	SWITCH, KEYBOARD (POWER)			
S702	1-762-875-21	SWITCH, KEYBOARD (DIMMER)			
S703	1-762-875-21	SWITCH, KEYBOARD (MENU/NO)			
S704	1-762-875-21	SWITCH, KEYBOARD (ENTER/YES)			
S705	1-762-875-21	SWITCH, KEYBOARD (MD EJECT)			
S706	1-473-392-11	ENCODER, ROTARY (VOLUME)			
S707	1-762-875-21	SWITCH, KEYBOARD (DISPLAY)			
S725	1-762-875-21	SWITCH, KEYBOARD (REC MODE)			
S726	1-762-875-21	SWITCH, KEYBOARD (REC MD)			
S727	1-762-875-21	SWITCH, KEYBOARD (REC TAPE)			
S728	1-762-875-21	SWITCH, KEYBOARD (SYNCRHO MODE)			
S729	1-762-875-21	SWITCH, KEYBOARD (STOP)			
S730	1-762-875-21	SWITCH, KEYBOARD (CD PLAY)			
S731	1-762-875-21	SWITCH, KEYBOARD (TUNER/BAND)			
S732	1-762-875-21	SWITCH, KEYBOARD (GROOVE)			
S733	1-762-875-21	SWITCH, KEYBOARD (PLAY MODE/DIRECTION)			
S734	1-762-875-21	SWITCH, KEYBOARD (REPEAT STEREO/MONO)			
S735	1-762-875-21	SWITCH, KEYBOARD (ENTER/START)			
S736	1-762-875-21	SWITCH, KEYBOARD (FUNCTION)			
S737	1-762-875-21	SWITCH, KEYBOARD (TAPE PLAY)			
S738	1-762-875-21	SWITCH, KEYBOARD (MD PLAY)			
S741	1-762-875-21	SWITCH, KEYBOARD (CD1)			
S742	1-762-875-21	SWITCH, KEYBOARD (CD1 EJECT)			
S743	1-762-875-21	SWITCH, KEYBOARD (CD2)			
S744	1-762-875-21	SWITCH, KEYBOARD (CD2 EJECT)			
S745	1-762-875-21	SWITCH, KEYBOARD (CD3)			
S746	1-762-875-21	SWITCH, KEYBOARD (CD3 EJECT)			
S747	1-762-875-21	SWITCH, KEYBOARD (LEFT)			
S748	1-762-875-21	SWITCH, KEYBOARD (UP)			
S749	1-762-875-21	SWITCH, KEYBOARD (RIGHT)			
S750	1-762-875-21	SWITCH, KEYBOARD (DOWN)			
**********					
	1-680-269-11	RELAY BOARD			
		**********			
		< CONNECTOR >			
CN792	1-784-873-21	CONNECTOR,FFC(LIF(NON-ZIF))22P			
CN793	1-793-311-11	CONNECTOR,FFC(LIF(NON-ZIF))25P			
**********					
	1-679-982-11	RING SW BOARD			
		**********			
		< RESISTOR >			
R791	1-249-427-11	CARBON	6.8K	5%	1/4W F
R792	1-249-425-11	CARBON	4.7K	5%	1/4W F
		< SWITCH >			
S791	1-786-084-11	SWITCH, DETECTION			
**********					
	1-680-257-11	SUB POWER BOARD			
		**********			
		< CAPACITOR >			
⚠C911	1-113-925-11	CERAMIC	0.01uF	20.00%	250V
C912	1-126-768-11	ELECT	2200uF	20.00%	16V
C913	1-124-584-00	ELECT	100uF	20%	10V
C921	1-124-589-11	ELECT	47uF	20%	16V
		< CONNECTOR >			
CN911	1-564-321-00	PIN, CONNECTOR 2P			
		< DIODE >			
⚠D911	8-719-911-19	DIODE 1SS133T-72			
D912	8-719-024-99	DIODE 11ES2-NTA2B			
D913	8-719-024-99	DIODE 11ES2-NTA2B			
D914	8-719-024-99	DIODE 11ES2-NTA2B			
D915	8-719-024-99	DIODE 11ES2-NTA2B			

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

Ref. No.	Part No.	Description				Remarks
D921	8-719-911-19	DIODE 1SS133T-72				
D922	8-719-911-19	DIODE 1SS133T-72				
		< IC >				
IC911	8-759-158-62	IC TA78057S				
		< TRANSISTOR >				
Q911	8-729-119-78	TRANSISTOR	2SC2785TP-HFE			
		< RESISTOR >				
R911	1-249-429-11	CARBON	10K	5%	1/4W	
R912	1-249-441-11	CARBON	100K	5%	1/4W	
R921	1-249-416-11	CARBON	820	5%	1/4W	F
R922	1-249-416-11	CARBON	820	5%	1/4W	F
R923	1-249-419-11	CARBON	1.5K	5%	1/4W	F
		< RELAY >				
⚠RY911	1-755-276-11	RELAY, POWER				
		< TRANSFORMER >				
⚠T911	1-435-850-11	TRANSFORMER, POWER (AEP,UK)				
⚠T911	1-435-851-11	TRANSFORMER, POWER (AUS,HK)				
**********						
	A-4476-076-A	TC BOARD, COMPLETE				
		**********				
		< CAPACITOR >				
C129	1-126-964-11	ELECT	10uF	20.00%	50V	
C326	1-164-392-11	CERAMIC CHIP	390PF	10.00%	50V	
C327	1-104-665-11	ELECT	100uF	20.00%	10V	
C328	1-162-953-11	CERAMIC CHIP	100PF	5%	50V	
C329	1-130-483-00	MYLAR	0.01uF	5%	50V	
C330	1-126-964-11	ELECT	10uF	20.00%	50V	
C331	1-126-965-11	ELECT	22uF	20.00%	50V	
C332	1-137-427-11	MYLAR	120PF	5.00%	50V	
C333	1-162-961-11	CERAMIC CHIP	330PF	10%	50V	
C334	1-162-946-11	CERAMIC CHIP	27PF	5%	50V	
C335	1-137-150-11	MYLAR	0.01uF	5.00%	100V	
C336	1-126-961-11	ELECT	2.2uF	20.00%	50V	
C337	1-130-485-00	MYLAR	0.015uF	5%	50V	
C338	1-130-481-00	MYLAR	0.0068uF	5%	50V	
C339	1-130-481-00	MYLAR	0.0068uF	5%	50V	
C340	1-130-486-00	MYLAR	0.018uF	10%	50V	
C341	1-126-960-11	ELECT	1uF	20.00%	50V	
C342	1-104-664-11	ELECT	47uF	20.00%	16V	
C376	1-164-392-11	CERAMIC CHIP	390PF	10.00%	50V	
C377	1-104-665-11	ELECT	100uF	20.00%	10V	
C378	1-162-953-11	CERAMIC CHIP	100PF	5%	50V	
C379	1-130-483-00	MYLAR	0.01uF	5%	50V	
C380	1-126-964-11	ELECT	10uF	20.00%	50V	
C381	1-126-965-11	ELECT	22uF	20.00%	50V	
C382	1-137-427-11	MYLAR	120PF	5.00%	50V	
C383	1-162-961-11	CERAMIC CHIP	330PF	10%	50V	
C384	1-162-946-11	CERAMIC CHIP	27PF	5%	50V	
		< IC >				
IC302	8-759-143-54	IC uPC1330HA				
IC304	8-759-656-83	IC NJM4580MD-TE				

Ref. No.	Part No.	Description				Remarks
		< COIL >				
L301	1-410-780-11	INDUCTOR	27MH			
L351	1-410-780-11	INDUCTOR	27MH			
		< TRANSISTOR >				
Q301	8-729-801-93	TRANSISTOR	2SD1387-34-TP			
Q302	8-729-142-46	TRANSISTOR	2SC2001TP-LK			
Q303	8-729-142-46	TRANSISTOR	2SC2001TP-LK			
Q304	8-729-027-31	TRANSISTOR	DTA124EKA-T146			
Q305	8-729-900-53	TRANSISTOR	DTC114EKA-T146			
		< RESISTOR >				
R336	1-216-846-11	METAL CHIP	120K	5%	1/16W	
R337	1-216-813-11	METAL CHIP	220	5%	1/16W	
R338	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R339	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R340	1-216-850-11	METAL CHIP	270K	5%	1/16W	
R341	1-216-813-11	METAL CHIP	220	5%	1/16W	
R342	1-216-834-11	METAL CHIP	12K	5%	1/16W	
⚠R343	1-219-787-17	FUSIBLE	5.6	5%	1/4W	
⚠R344	1-219-787-17	FUSIBLE	5.6	5%	1/4W	
R345	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R346	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R347	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R348	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R349	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R386	1-216-846-11	METAL CHIP	120K	5%	1/16W	
R387	1-216-813-11	METAL CHIP	220	5%	1/16W	
R388	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R389	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R390	1-216-850-11	METAL CHIP	270K	5%	1/16W	
R391	1-216-864-11	SHORT	0			
R392	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R393	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R394	1-216-813-11	METAL CHIP	220	5%	1/16W	
R396	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R397	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R398	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
		< VARIABLE RESISTOR >				
RV304	1-241-768-11	RES, ADJ, CARBON 220K				
RV354	1-241-768-11	RES, ADJ, CARBON 220K				
		< TRANSFORMER >				
T301	1-423-980-11	TRANSFORMER, BIAS OSCILLATION				
**********						
	1-680-270-11	THERMAL BOARD				
		**********				
		< CONNECTOR >				
CN803	1-568-951-11	PIN, CONNECTOR 2P				
		< THERMISTOR(POSITIVE) >				
THP842	1-807-796-11	THERMISTOR				
**********						

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TRANS | TRAY SENSOR | VOL SEL

Ref. No.	Part No.	Description			Remarks
	1-680-256-11	TRANS BOARD			
		**********			
	1-533-217-31	HOLDER, FUSE			
		< CAPACITOR >			
C901	1-136-165-00	FILM	0.1uF	5.00%	50V
C902	1-136-165-00	FILM	0.1uF	5.00%	50V
C931	1-164-159-11	CERAMIC	0.1uF		50V
		< CONNECTOR >			
CN901	1-564-321-00	PIN, CONNECTOR 2P (AEP,UK,AUS)			
* CN902	1-564-523-11	PLUG, CONNECTOR 8P			
* CN903	1-568-942-11	PIN, CONNECTOR 4P			
* CN904	1-564-518-11	PLUG, CONNECTOR 3P			
		< DIODE >			
D901	8-719-028-23	DIODE D3SBA20-4101			
D934	8-719-911-19	DIODE 1SS133T-72			
		< FUSE >			
⚠F901	1-533-466-11	FUSE, GLASS TUBE (DIA. 5)1.25A/250V			(AEP,UK)
⚠F901	1-533-469-11	FUSE, GLASS TUBE (DIA. 5)2.5A/250V (HK)			
⚠F902	1-533-466-11	FUSE, GLASS TUBE (DIA. 5)1.25A/250V (HK)			
⚠F903	1-533-466-11	FUSE, GLASS TUBE (DIA. 5)1.25A/250V			(HK,AUS)
		< TRANSISTOR >			
Q931	8-729-119-78	TRANSISTOR	2SC2785TP-HFE		
Q932	8-729-140-04	TRANSISTOR	2SB1116-TP-LK		
Q933	8-729-900-80	TRANSISTOR	BA1A4M-TP		
		< RESISTOR >			
⚠R901	1-219-119-81	FUSIBLE	0.1	5%	1/4W
⚠R902	1-219-119-81	FUSIBLE	0.1	5%	1/4W
R931	1-249-421-11	CARBON	2.2K	5%	1/4W F
R932	1-249-421-11	CARBON	2.2K	5%	1/4W F
R933	1-249-415-11	CARBON	680	5%	1/4W F
**********					
	1-678-457-11	TRAY SENSOR BOARD			
		**********			
		< CAPACITOR >			
C731	1-164-159-11	CERAMIC	0.1uF		50V
		< IC >			
IC731	8-749-081-01	PHOTO SENSOR DG-264			
IC732	8-749-081-01	PHOTO SENSOR DG-264			
IC733	8-749-081-01	PHOTO SENSOR DG-264			
		< RESISTOR >			
R731	1-247-876-11	CARBON	75K	5%	1/4W
R732	1-249-408-11	CARBON	180	5%	1/4W F
R733	1-247-876-11	CARBON	75K	5%	1/4W
R734	1-249-408-11	CARBON	180	5%	1/4W F
R735	1-247-876-11	CARBON	75K	5%	1/4W
R736	1-249-408-11	CARBON	180	5%	1/4W F
**********					

Ref. No.	Part No.	Description	Remarks
	1-680-258-11	VOL SEL BOARD (HK)	
		**********	
		< CONNECTOR >	
CN941	1-568-106-11	PIN, CONNECTOR 4P	
CN942	1-564-321-00	PIN, CONNECTOR 2P	
CN943	1-774-108-11	PIN, CONNECTOR (PC BOARD)	
		< SWITCH >	
⚠S943	1-786-055-11	SELECTOR, VOLTAGE (VOLTAGE SLECTOR)	
**********			
		MISCELLANEOUS	
		**********	
5	1-769-910-11	WIRE (FLAT TYPE) (9 CORE)	
6	1-693-529-11	TUNER	
7	1-769-944-11	WIRE (FLAT TYPE) (11 CORE) (AUS,HK)	
7	1-773-008-11	WIRE (FLAT TYPE) (15 CORE) (AEP,UK)	
11	1-763-072-11	FAN, DC	
60	1-804-260-11	DISPLAY PANEL, LIQUID CRYSTAL	
64	1-775-152-11	WIRE (FLAT TYPE) (17 CORE)	
65	1-775-237-11	WIRE (FLAT TYPE) (27 CORE)	
67	1-773-207-11	WIRE (FLAT TYPE) (25 CORE)	
101	1-773-214-11	WIRE (FLAT TYPE) (25 CORE)	
⚠109	1-777-071-81	CORD, POWER (AEP,HK)	
⚠109	1-783-203-11	CORD, POWER (AUS)	
⚠109	1-790-226-11	CORD, POWER (UK)	
⚠112	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (HK)	
357	1-678-514-11	PWB, FLEXIBLE	
577	1-757-574-11	WIRE (FLAT TYPE) (22 CORE)	
602	1-782-817-11	WIRE (FLAT TYPE) (16 CORE)	
⚠T901	1-435-833-11	TRANSFORMER, POWER (AEP,UK)	
⚠T901	1-435-834-11	TRANSFORMER, POWER (AUS,HK)	
HR901	1-500-670-11	HEAD, OVER LIGHT	
S102	1-771-957-11	SWITCH, PUSH (2 KEY)	
M721	1-541-632-12	MOTOR, DC	
**********			
		**********	
		HARDWARE LIST	
		**********	

#1	7-685-646-79	SCREW +BVTP	3X8	TYPE2 N-S
#2	7-685-872-09	SCREW +BVTT	3X8	(S)
#4	7-685-650-79	SCREW +BVTP	3X16	TYPE2 N-S
#5	7-685-881-09	SCREW +BVTT	4X8	(S)
#6	7-685-850-04	SCREW +BVTT	2X3	(S)
#7	7-685-204-19	SCREW +KTP	2X6	TYPE2 NON-SLIT

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MEMO

REVISION HISTORY

Clicking the version allows you to jump to the revised page.
Also, clicking the version at the upper right on the revised page allows you to jump to the next revised page.

Ver.	Date	Description of Revision
1.0	2001.02	New