

MDS-DRE1

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model



U.S. and foreign patents licensed from Dolby Laboratories Licensing Corporation.

Model Name Using Similar Mechanism	MDS-JA3ES
MD Mechanism Type	MDM-2CR
Base Unit Name	MBU-2B
Optical Pick-up Name	KMS-210A/J-N

SPECIFICATIONS

System	MiniDisc digital audio system
Disc	MiniDisc
Laser	Semiconductor laser ($\lambda = 780 \text{ nm}$) Emission duration: continuous
Laser output	MAX 44.6 μW * * This output is the value measured at a distance of 200mm from the objective lens surface on the Optical Pick-up Block with 7mm aperture.
Recording/Playback Time	74 min. maximum (when using MDW-74)
Revolutions (CLV)	400 r/min to 900 r/min
Error correction	Advanced Cross Interleave Reed Solomon Code (ACIRC)
Sampling frequency	44.1 kHz

Coding	Adaptive Transform Acoustic Coding (ATRAC)
Method of Transformation	EFM
Number of channels	2 channel (stereo)
Frequency Response	5 ~ 20,000 Hz $\pm 0.5 \text{ Hz}$
Signal-to-Noise Ratio	Greater than 96 dB (during playback)

Inputs

LINE (ANALOG) IN	Jack type: Phono jacks Impedance: 47 kilohms Rated Input: 500 mVrms Min. Input: 125 mVrms
DIGITAL OPTICAL IN	Jack type: Square optical connector jack

Optical wave length: 660 nm
Rated Input: -
Min. Input: -

DIGITAL COAXIAL IN

Jack type: Phono jacks
Impedance: 75 ohms
Rated Input: 0.5Vp-p $\pm 20\%$
Min. Input: -

FOOT SW REC/PAUSE

Jack type: Standard monaural jack
Impedance: -
Rated Input: -
Min. Input: -

FOOT SW PLAY/PAUSE

Jack type: Standard monaural jack
Impedance: -
Rated Input: -
Min. Input: -

- Continued on next page -

MINIDISC RECORDER/PLAYER



SONY®

Outputs

PHONES Jack type: Standard stereo jack
Voltage: 28 mW
Impedance: 32 ohms

LINE (ANALOG) OUT

Jack type: Phono Jacks
Voltage: 2Vrms
(at 50 kilohms)
Impedance: greater than
10 kilohms

Other

Power requirements

Where purchased	Power requirements
U.S.A. and Canada	120 V AC, 60 Hz
Continental Europe and UK	220-230 V AC, 50/60 Hz

Power consumption

28 W

Dimensions 300 × 121 × 356 mm
(11⁷/₈ × 4⁷/₈ × 14¹/₈ in.)
including projecting parts
and controls

Mass (Approx.) 4.1 kg (9 lb 1 oz)

Supplied accessories

AC Power cord (1)
Operating Instructions (1)

Design and specifications are subject
to change without notice.

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SAFETY-RELATED COMPONENT WARNING!!

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

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE \triangle SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SECTION 1 SERVICING NOTES

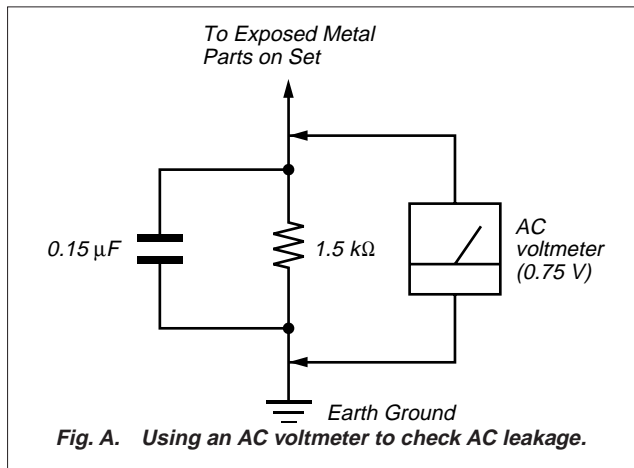
SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer: Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

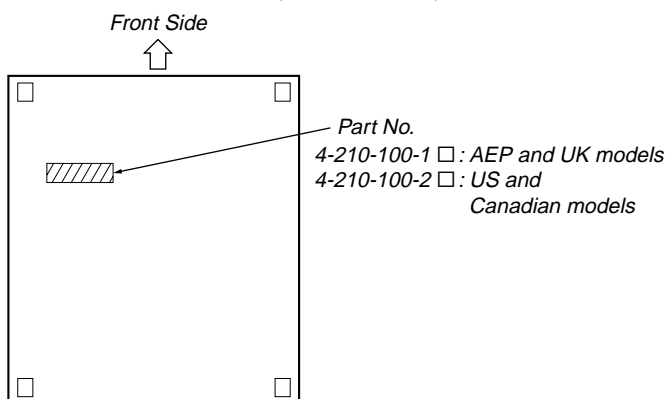
The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes.). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)



MODEL IDENTIFICATION

— LOWER SIDE CABINET (BOTTOM VIEW) —



CAUTION

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

ADVARSEL!

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

ADVARSEL

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

VARNING

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

VAROITUS

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

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.

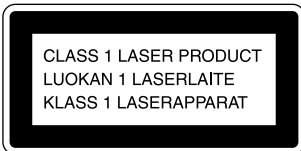
NOTES ON LASER DIODE EMISSION CHECK

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.

CAUTION

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

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



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

The following caution label is located inside the unit.



Flexible Circuit Board Repairing

- Keep the temperature of the 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.

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.

FORCED RESET

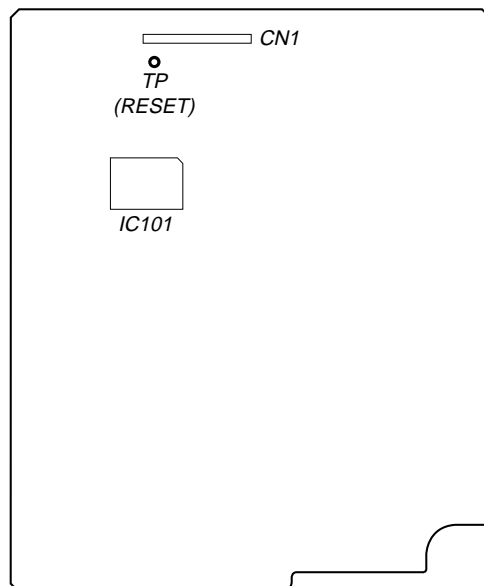
The system microprocessor can be reset in the following way.

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

Method 1:

Set TP (RESET) of the DIGITAL board to ground momentarily.

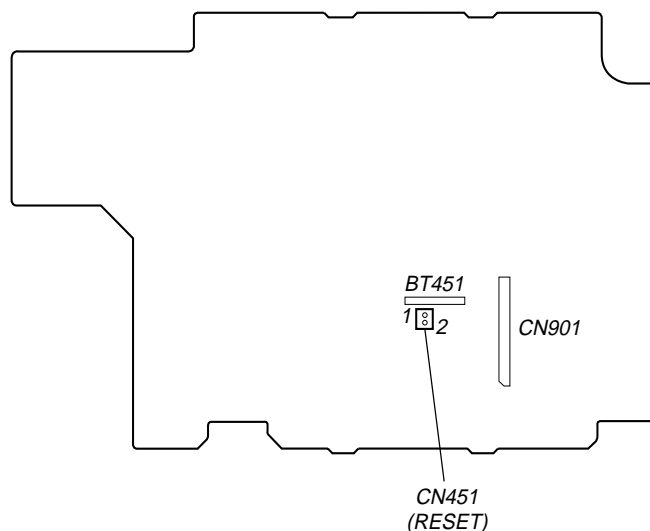
[DIGITAL board] (Side A)



Method 2:

Disconnect the power plug, and short-circuit CN451 of the POWER board with a pair of tweezers, etc.

[POWER board] (Component Side)



RETRY CAUSE DISPLAY MODE

- In this test mode, the causes for retry of the unit during recording can be displayed on the fluorescent display tube. This is useful for locating the faulty part of the unit.
- The retry cause, number of retries, and number of retry errors are displayed. Each is displayed in hexadecimal number.

Method:

1. Load a recordable disc whose contents can be erased into the unit.
2. Press the [STOP] button, [EJECT] button, [PAD1] button simultaneously.
3. Press the [REC] button, and start recording.
4. The ## value increases with each retry. If an error occurs after a retry, the @@ count will also increase.
5. To exit the test mode, press the [POWER] button.

Fig. 1 Reading the Test Mode Display

R.T s * * c # # e @ @

Fluorescent Display Tube Signs

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

All three displays above are in hexadecimal numbers.

Reading the Retry Cause Display

Hexadecimal	Higher Bits				Lower Bits				Hexa- decimal	Cause of Retry	Occurring conditions
	8	4	2	1	8	4	2	1			
Bit	b7	b6	b5	b4	b3	b2	b1	b0			
Binary	0	0	0	0	0	0	0	1	01	shock *1	When more than 3.5 shocks are detected
	0	0	0	0	0	0	1	0	02	ader5	When ADER was counted more than five times continuously
	0	0	0	0	0	1	0	0	04	Discontinuous address	When ADIP address is not continuous
	0	0	0	0	1	0	0	0	08	(Not used)	(Not used)
	0	0	0	1	0	0	0	0	10	FCS incorrect	When not in focus
	0	0	1	0	0	0	0	0	20	IVR rec error	When ABCD signal level exceeds the specified range
	0	1	0	0	0	0	0	0	40	Spindle is slow	When spindle rotation is detected as slow
	1	0	0	0	0	0	0	0	80	Access fault	When access operation is not performed normally

*1 Some displays are not used depending on the microprocessor version.

Reading the Display:

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

Example

When 42 is displayed:

Higher bit : 4 = 0100 → b6

Lower bit : 2 = 0010 → b1

In this case, the retry cause is combined of “spindle is slow” and “ader5”.

When A2 is displayed:

Higher bit : A = 1010 → b7+b5

Lower bit : 2 = 0010 → b1

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

Hexadecimal → Binary Conversion Table

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

Reference:

In this test mode, when the **PLAY/PAUSE** button is pressed, and the disc is played back, the “PLAYBACK MODE” is set. The display becomes as shown in Fig. 2. The playback mode is not used in particular during servicing.



Fig. 2 Display during Playback Mode

▲ : Parts No. (Name of area named on TOC)

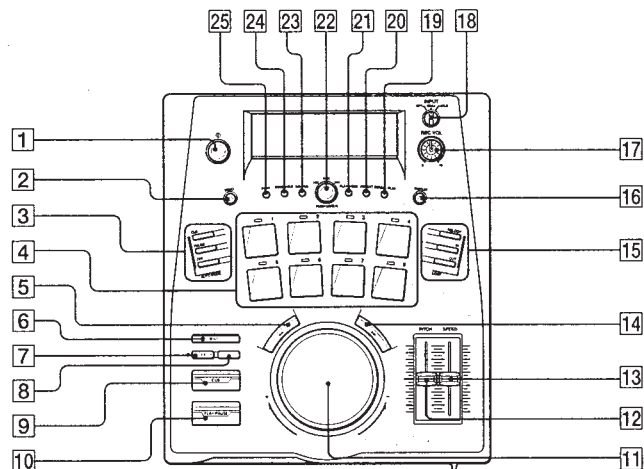
△△△△△ : Address (Physical address on disc)

■ : Track mode (Copyright information of each part, information on copyright, etc.)

NAMES AND FUNCTIONS OF PARTS

Controls

- 1 **⏻ (Power) switch (11, 23)**
Press to turn the power of this unit on or off.
- 2 **UNDO button (35)**
Cancels the previous edit operation and restores the MD data to its former state.
- 3 **AUTO MODE buttons (14)**
Use to set the unit to pause automatically before playing a track.
AUTO CUE
Sets unit to skip over the blank space at the beginning of each track and pause just before the sound begins.
AUTO PAUSE
Sets unit to pause at the beginning of each track.
AUTO OFF
Cancels the auto modes.
- 4 **Pads / pad indicators (11, 13)**
- When the pad indicators are green:
Press to start playback from the beginning of the respective track. To switch between different groups of tracks, press BANK.
 - When the pad indicators are red:
Press to start playback from the previously assigned cue point. To assign cue points, see "Assigning Cue Points to Pads" on page 13.
- 5 **⏮ button (12)**
Hold down for fast reverse.
- 6 **● REC button (23, 24, 25)**
- Press during stop to enter the record standby mode.
 - Press during playback or pause to enter backtrack recording standby mode.
 - Press during recording to manually mark a track number.
- 7 **REC PAUSE button / indicator (24, 25)**
- Press during record pause or backtrack recording standby mode to start recording.
 - Press during (normal) recording to pause.
- The indicator blinks during the record pause or backtrack recording standby mode.
- 8 **STOP button (12, 24)**
Press to stop playback or recording.
- 9 **CUE button / indicator (12)**
Press to return to and pause at the last cue point (the last point where playback was started).
Lights when paused at cue point.



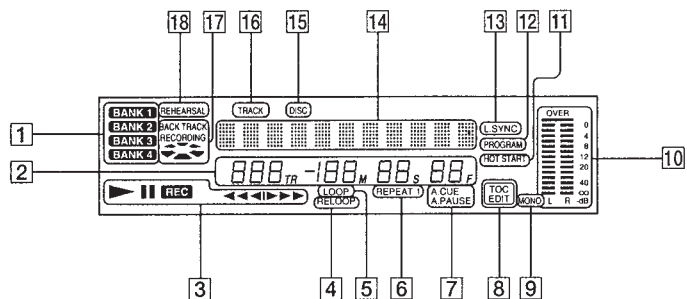
- 10 **PLAY/PAUSE button / indicator (12)**
- Press during stop or pause to start playback.
 - Press during playback to pause.
- Lights during playback, blinks during pause.
- 11 **Scrub dial (13)**
- Turn during playback to change the playback speed.
 - Turn during pause to play the MD in sync with the dial movement.
 - Turn while holding CUE to adjust the cue point.
- 12 **PITCH slider (15)**
Adjusts the pitch.
- 13 **SPEED slider (15)**
Adjusts the speed.
- 14 **▶▶ button (12)**
Hold down for fast forward.
- 15 **LOOP buttons (16)**
- RELOOP button**
Press after exiting the loop to return to the start point of the memorized loop and resume looping.
- LOOP IN button**
Press to set the loop start point.
- LOOP OUT button**
Press to set the loop end point and start looping.
Press during the loop to exit.
- 16 **DISPLAY button (18, 33)**
Press to switch the information shown in the display. Each press changes the display mode as follows:
- Remaining time** : The counter displays the time remaining on the current track.
 - Elapsed time** : The counter displays the time elapsed on the current track.
- When the play mode is set to Program or Hot Start, the following is also possible:
- Playback track** : The numbers of the programmed or hot start tracks are shown in the title area and the track being played blinks. The counter displays the time remaining on the current track.
- 17 **REC VOL knob (24)**
Use to adjust the level of the signal input from the LINE IN jacks during analog recording. This function only operates when INPUT is set to "ANLG."
- 18 **INPUT switch (23)**
Use to select the input jack for the recording program source.
- 19 **SINGLE PLAY button (15, 19)**
- Press to set the unit to stop automatically after each track.
 - Press during repeat playback to select one of the following repeat modes:
 - Single repeat (repeats the current track).
 - Disc repeat (repeats all tracks on the disc).

(continued)

Controls

- 20 **REPEAT button (19)**
Press to enable repeat playback. Press again to cancel.
- 21 **PLAY MODE button (16, 20)**
Press to change the play mode. Each press changes the play mode as follows:
- Normal play**
 - Program play (PROGRAM)** : Pressing PLAY/PAUSE plays tracks in the previously programmed order.
 - Hot start play (HOT START)** : Pressing a pad starts playback quicker than normal. One track can be assigned to each pad.
- 22 **AMS (⏮/▶▶) knob**
- Turn to skip to the beginning of the next or previous track.
 - When using the Edit or Setup Menus, turn to display or adjust the desired parameter (etc.), then push to enter.
- 23 **EDIT/NO button**
- Press to cancel selected operation.
 - Press to enter or exit the Edit or Setup Menus. For a list of the parameters available in the Edit and Setup Menus, see the charts on page 40.
- 24 **ENTER/YES button**
- Press to execute selected operation.
 - Press when the TOC indicator is lit to write the TOC data to the MD and finalize recording or editing.
- 25 **BANK button (12)**
Press repeatedly to switches the group (BANK) of tracks assigned to the pads.

Display



1 BANK indicators (12)

Light to display the current group (BANK) of tracks assigned to the pads.

2 Track number and counter display

- During playback or recording, it displays the track number and track time. The track time blinks when there are less than 10 seconds left on the track during playback.
- During stop, it displays the total number of tracks and the disc time.

3 Status indicators

Light to display the current state of operation. (Playback, record, pause, etc.)

4 RELOOP indicator (16)

Lights to indicate that a loop has been memorized.

5 LOOP indicator (16)

Blinks when a loop is being set. Lights when looping.

6 REPEAT indicators (19)

- Light during repeat playback. "REPEAT" lights when set to repeat the entire disc. "REPEAT 1" lights when set to repeat just one track.
- "1" lights when the unit is set to stop automatically after each track.

7 Auto mode indicators (14)

Light during auto mode playback.

- "A.CUE" lights when the unit is set to skip over the blank space at the beginning of each track and pause just before the sound begins (AUTO CUE).
- "A.PAUSE" lights when the unit is set to pause at the beginning of each track (AUTO PAUSE).

8 TOC indicators (23, 27)

- "TOC" lights to indicate the presence of TOC data that has not been written to the disc. "TOC" blinks when writing the TOC data.
- "TOC EDIT" lights during edit operations.

9 MONO indicator

Lights during playback of monaural audio signals. (This unit is not capable of recording in monaural.)

10 Level meters

Display the audio signal levels during playback and recording.

11 HOT START indicator (16)

Lights when the unit is set to the Hot Start play mode.

12 PROGRAM indicator (20)

Lights when the unit is set to the Program play mode.

13 L.SYNC indicator (24)

Lights when the unit is set to assign track numbers automatically during analog recording.

14 Name display

Displays disc and track names, Edit Menu parameters, and Setup Menu parameters (etc.).

15 DISC indicator

Lights when the disc name (etc.) is shown in the name display.

16 TRACK indicator

Lights when the track name (etc.) is shown in the name display.

17 BACK TRACK RECORDING indicators (25)

"BACK TRACK RECORDING" lights and the disc image rotates during backtrack recording.

When you stop recording, the indicator blinks as the unit writes the recorded information to the disc. If the disc image starts rotating faster and the indicator blinks during recording, stop using the pad, scrub dial, and loop functions until the disc image slows down and the indicator lights steadily. Continuing to use these functions may cause the unit to stop recording.

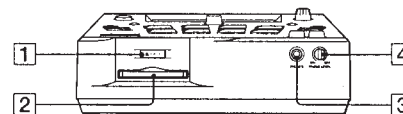
18 REHEARSAL display (28)

Lights during rehearsal playback.

Names and Functions of Parts

Input and Output Jacks

Front panel



1 EJECT button (12)

Press during stop to eject the disc.

If there is TOC data that has not yet been written to the MD (if the TOC indicator is lit), the unit writes the TOC data to the MD before it is ejected.

2 Disc slot (11, 23)

Insert an MD into this slot.

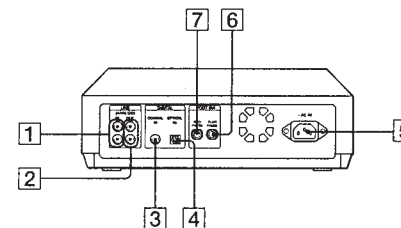
3 PHONES jack

This is a standard phone jack for connecting stereo headphones.

4 PHONE LEVEL knob

Use to adjust the headphone volume.

Rear panel



1 LINE (ANALOG) IN jacks (5)

Use to input analog signals from other components.

2 LINE (ANALOG) OUT jacks (5)

Use to output analog signals to other components.

3 DIGITAL COAXIAL IN jack (5)

Connect a digital coaxial cable to input digital signals from other components.

4 DIGITAL OPTICAL IN jack (5)

Connect a digital optical cable to input digital signals from other components.

5 AC IN jack (5)

Connect the power cord.

6-7 FOOT SW jacks

Use to connect a SONY FS-A8 foot switch (sold separately).

6 PLAY/PAUSE jack

Connect an external foot switch (etc.) to be used in place of the PLAY/PAUSE button.

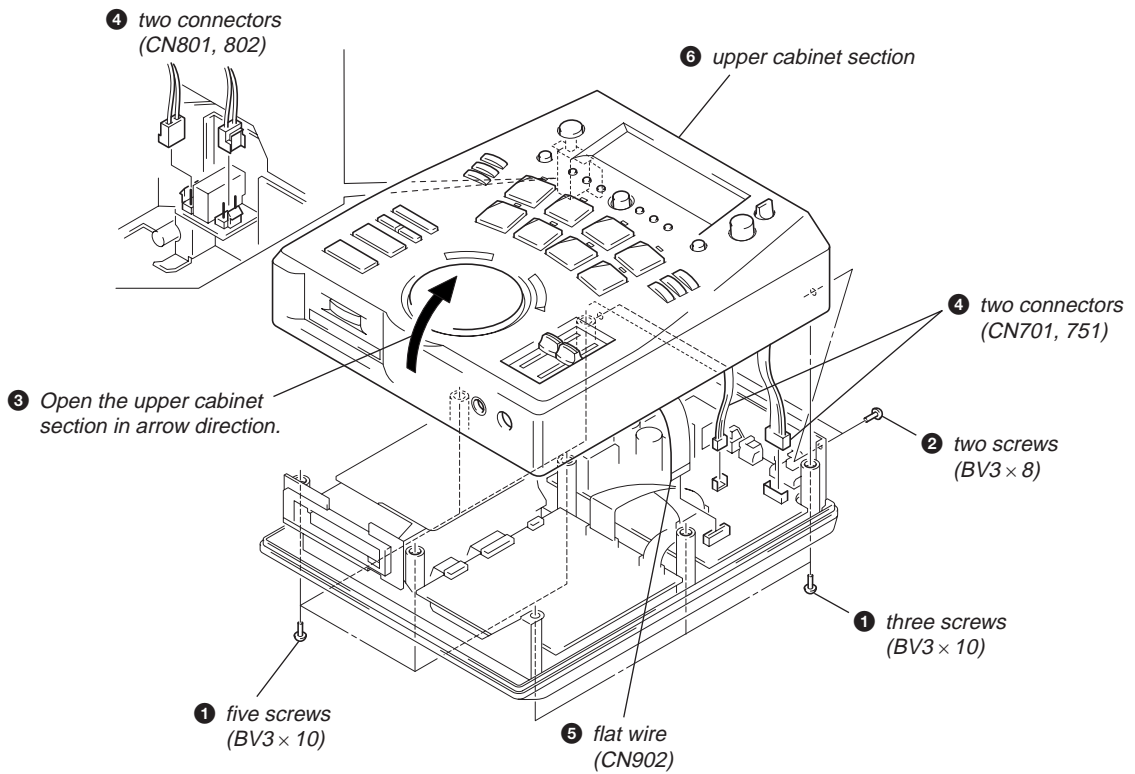
7 REC/PAUSE jack

Connect an external foot switch (etc.) to be used in place of the REC PAUSE button.

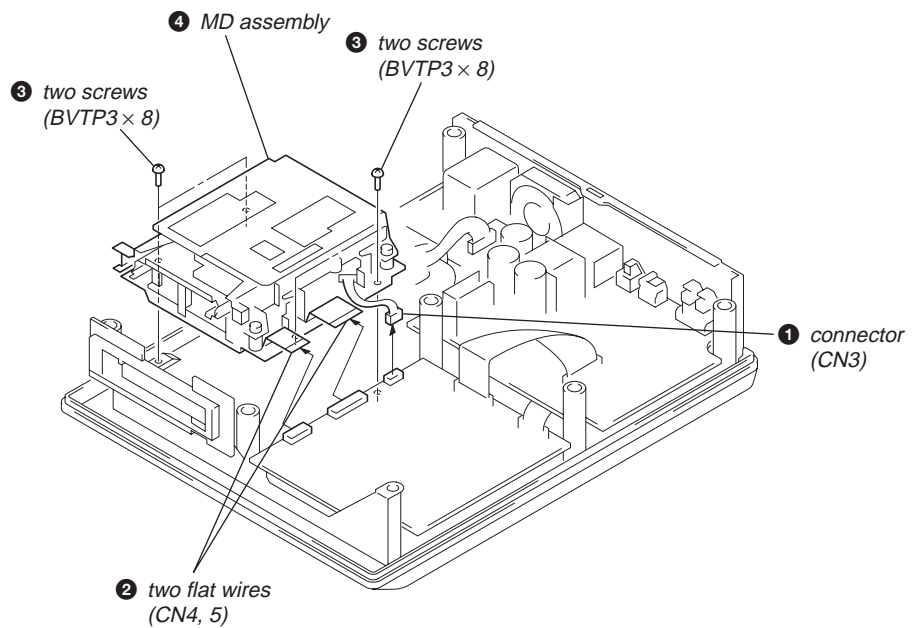
SECTION 3 DISASSEMBLY

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

UPPER CABINET SECTION

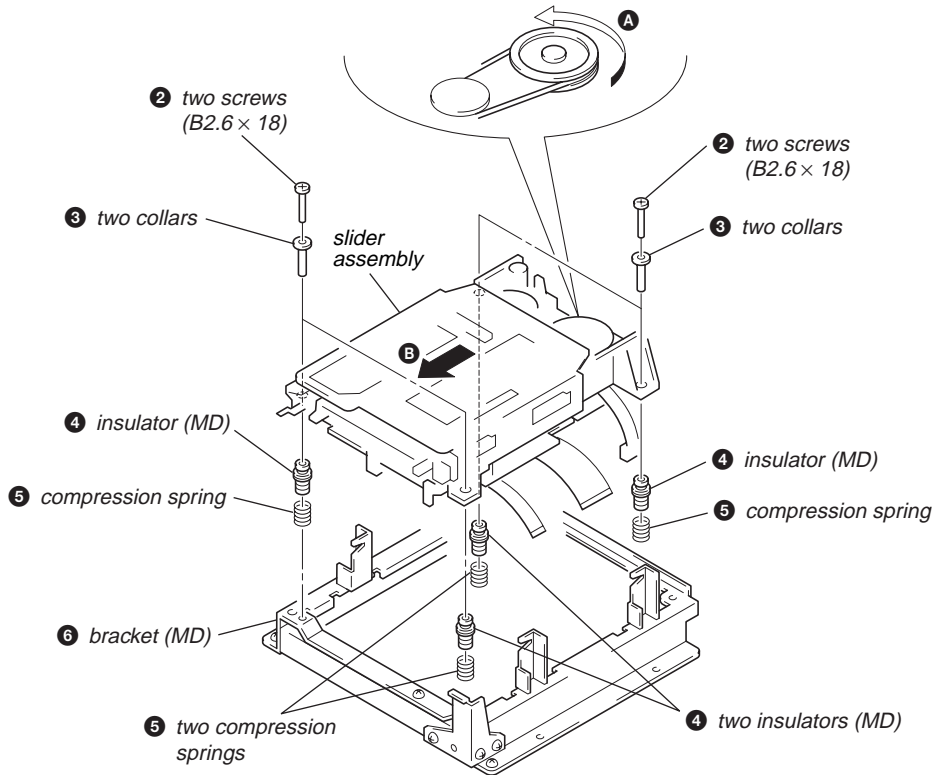


MD ASSEMBLY

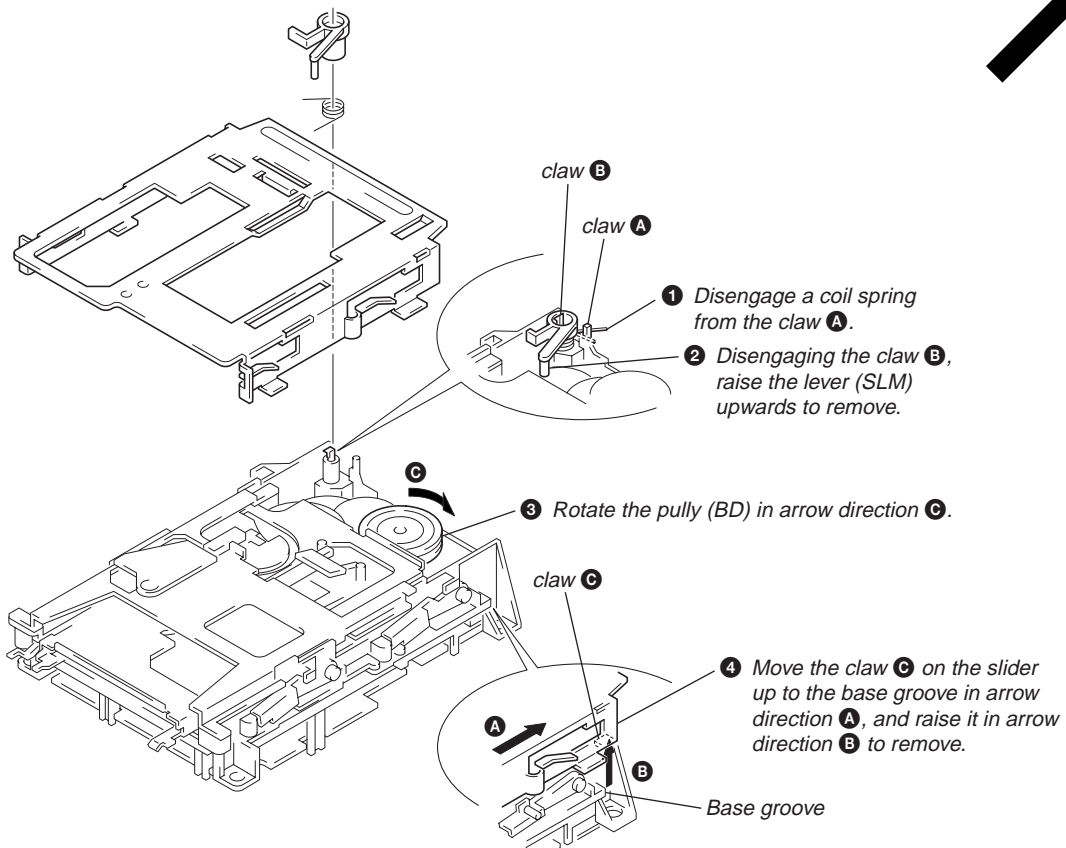


BRACKET (MD)

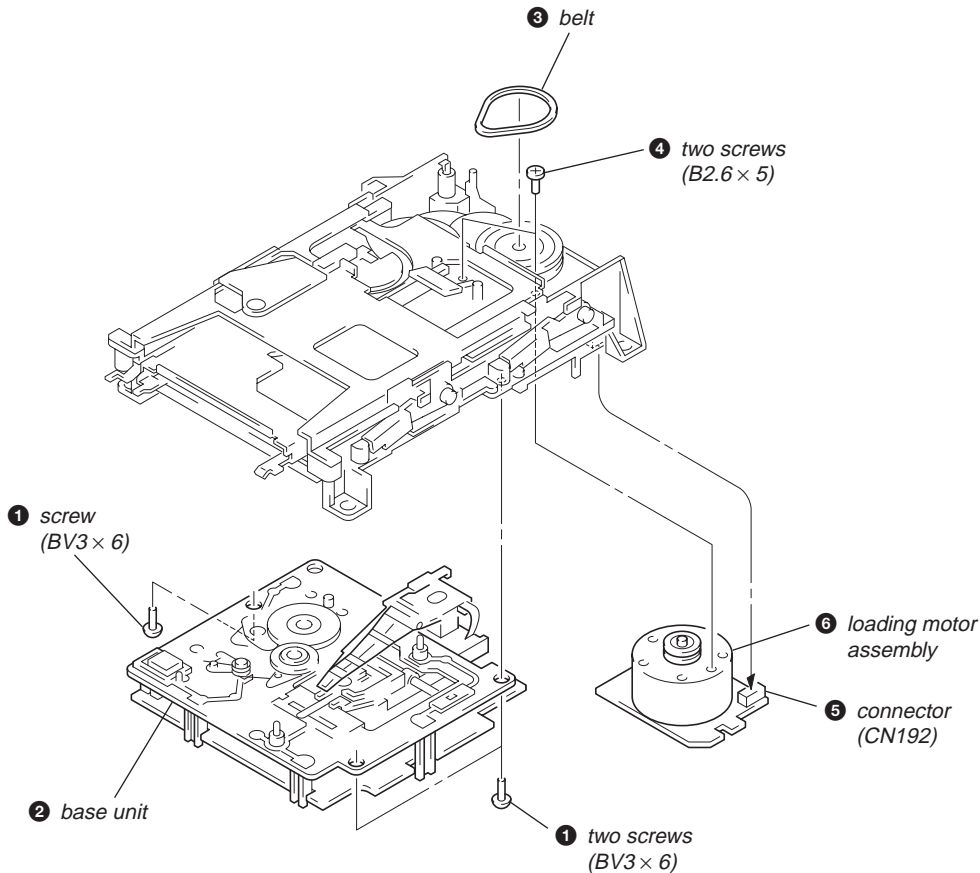
- 1 Rotate the pulley (BD) in arrow direction **A** and move the slider assembly in arrow direction **B**.



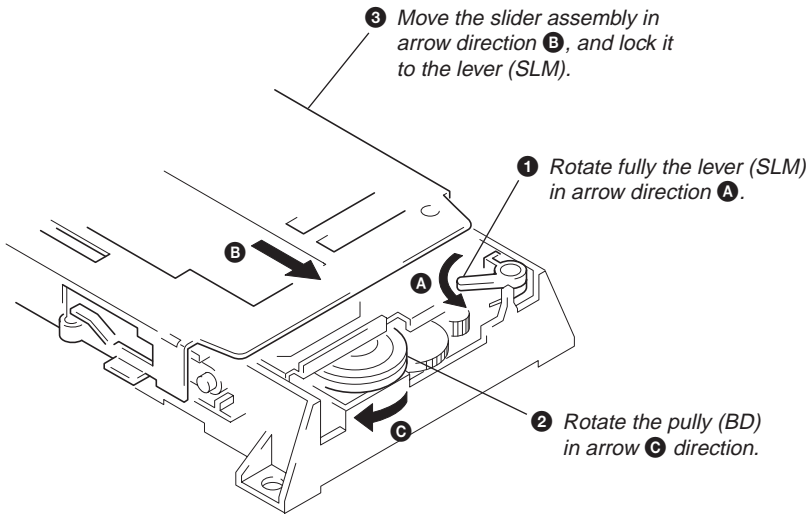
SLIDER (M) ASSEMBLY



BASE UNIT AND LOADING MOTOR ASSEMBLY



SLIDER ASSEMBLY MOUNTING



SECTION 4 TEST MODE

4-1. Setting the Test Mode

Press **[Ⓜ]** (POWER) switch while pressing the **[AMS]** knob to turn POWER ON.

4-2. Exiting the Test Mode

Press the **[REPEAT]** button. Unplug the power plug from an outlet.

4-3. Basic Operations of the Test Mode

All operations are performed using the **[AMS]** knob, **[ENTER/YES]** button, and **[EDIT/NO]** button. The functions of these buttons are as follows.

Function	Contents
[AMS] knob	Changes parameters and modes
[ENTER/YES] button	Proceeds onto the next step. Finalizes input.
[EDIT/NO] button	Returns to previous step. Stops operations.

4-4. Selecting the Test Mode

Eight test modes are selected by turning the **[AMS]** knob.

Display	Contents
TEMP ADJUS	Temperature compensation offset adjustment
LDPWR ADJUS	Laser power adjustment
EFBAL ADJUS	Traverse adjustment
FBIAS ADJUS	Focus bias adjustment
FBIAS CHECK	Focus bias check
CPLAY MODE	Continuous playback mode
CREC MODE	Continuous recording mode
EEP MODE	Non-volatile memory mode *

For detailed description of each adjustment mode, refer to 5. Electrical Adjustments.

If a different adjustment mode has been selected by mistake, press the **[EDIT/NO]** button to exit from it.

* The EEP MODE is not used in servicing. If set accidentally, press the **[EDIT/NO]** button immediately to exit it.

4-4-1. Operating the Continuous Playback Mode

1. Entering the continuous playback mode

- ① Set the disc in the unit (either MO or CD). (MO: Recordable disc, CD: Disc for playback only)
- ② Rotate the **[AMS]** knob and display “CPLAY MODE”.
- ③ Press the **[ENTER/YES]** button to change the display to “CPLAY IN”.
- ④ When access completes, the display changes to “C1 = □□□□ AD = □□”.

Note: The “□□” displayed are arbitrary numbers.

2. Changing the parts to be played back

- ① Press the **[ENTER/YES]** button during continuous playback to change the display to “CPLAY MID”, “CPLAY OUT”.
When pressed another time, the parts to be played back can be changed.
- ② When access completes, the display changes to “C1 = □□□□ AD = □□”.

Note: The “□□” displayed are arbitrary numbers.

3. Ending the continuous playback mode

- ① Press the **[EDIT/NO]** button. The display will change to “CPLAY MODE”.
- ② Press the **[EJECT]** button and remove the disc.

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

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

4-4-2. Operating the Continuous Recording Mode

1. Entering the continuous recording mode
 - ① Set the MO disc in the unit.
 - ② Rotate the [AMS] knob and display “CREC MODE”.
 - ③ Press the [ENTER/YES] button to change the display to “CREC IN”.
 - ④ When access completes, the display changes to “CREC (0000)” and **REC** lights up.

Note : The “0” displayed are arbitrary numbers.
2. Changing the parts to be recorded
 - ① When the [ENTER/YES] button is pressed during continuous recording, the display changes to “CREC MID”, “CREC OUT” and **REC** goes off.
When pressed another time, the parts to be recorded can be changed.
 - ② When access completes, the display changes to “CREC (0000)” and **REC** lights up.

Note : The “0” displayed are arbitrary numbers.
3. Ending the continuous recording mode
 - ① Press the [EDIT/NO] button. The display changes to “CREC MODE” and **REC** goes off.
 - ② Press the [EJECT] button and remove the disc.

Note 1: The recording start addresses for IN, MID, and OUT are as follows.
 IN 40h cluster
 MID 300h cluster
 OUT 700h cluster

Note 2: The [EDIT/NO] button can be used to stop recording anytime.

Note 3: During the test mode, the erasing-protection tab will not be detected. Therefore be careful not to set the continuous recording mode when a disc not to be erased is set in the unit.

Note 4: Do not perform continuous recording for long periods of time above 5 minutes.

Note 5: During continuous recording, be careful not to apply vibration.

4-4-3. Non-Volatile Memory Mode (EEP MODE)

This mode reads and writes the contents of the non-volatile memory. It is not used in servicing. If set accidentally, press the [EDIT/NO] button immediately to exit it.

4-5. Functions of Other buttons

Function	Contents
PLAY/PAUSE	Sets continuous playback when pressed in the STOP state. When pressed during continuous playback, the tracking servo turns ON/OFF.
STOP	Stops continuous playback and continuous recording.
▶▶	The sled moves to the outer circumference only when this is pressed.
◀◀	The sled moves to the inner circumference only when this is pressed.
● REC	Turns recording ON/OFF when pressed during continuous playback.
BANK	Switches between the pit and groove modes when pressed.
PLAY MODE	Switches the spindle servo mode (CLVS and A).
DISPLAY	Switches the display when pressed. Returns to previous step. Stops operations.

Note: The erasing-protection tab is not detected during the test mode. Recording will start regardless of the position of the erasing-protection tab when the [●REC] button is pressed.

4-6. Test Mode Displays

Each time the **DISPLAY** button is pressed, the display changes in the following order.

MODE display → Error rate display → Address display

1. MODE display

Displays “TEMP ADJUS”, “CPLAY MODE”, etc.

2. Error rate display

Error rates are displayed as follows.

C1 = 0000 AD = 0000

C1 = : Indicates C1 error

AD = : Indicates ADER

3. Address display

Addresses are displayed as follows.

“h = 0000 s = 0000” (MO pit and CD)

“h = 0000 a = 0000” (MO groove)

h = : Header address

s = : SUBQ address

a = : ADIP address

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

4-7. Meanings of Other Displays

Display	Contents		
	Light	Off	Blinking
▷	During continuous playback	STOP	
II	Tracking servo OFF	Tracking servo ON	
REC	Recording mode ON	Recording mode OFF	
CLOCK	CLV LOCK	CLV UNLOCK	
TRACK	Pit	Groove	
DISC	High reflection	Low reflection	
DATE	CLV-S	CLV-A	
A. PAUSE	ABCD adjustment completed		
A – B	(Focus auto gain successful Tracking auto gain successful)		(Focus auto gain successful Tracking auto gain failed)

4-8. Precautions for Use of Test Mode

- ① 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 **EJECT** 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.
Always press the **EDIT/NO** button first before pressing the **EJECT** button.
- ② The erasing-protection tab is not detected in the test mode. Therefore, when modes which output the recording laser power such as continuous recording mode and traverse adjustment mode, etc. are set, the recorded contents will be erased regardless of the position of the tab. When using a disc that is not to be erased in the test mode, be careful not to enter the continuous recording mode and traverse adjustment mode.

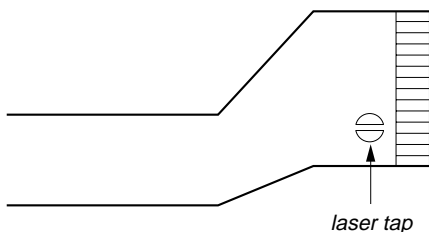
SECTION 5 ELECTRICAL ADJUSTMENTS

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.

Precautions for Use of optical pick-up (KMS-210A)

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

- Abbreviation
MO: Recordable disc
CD: Disc for playback only

Precautions for Adjustments

1) When replacing the following parts, perform the adjustments and checks with ○ in the order shown in the following table.

	Optical Pick-up	BD Board		
		IC171	D101	IC101, IC121, IC191
1. Temperature compensation offset adjustment	×	○	○	○
2. Laser power adjustment	○	×	×	○
3. Traverse adjustment	○	○	×	○
4. Focus bias adjustment	○	○	×	○
5. Error rate check	○	○	×	○

- 2) Set the test mode when performing adjustments. After completing the adjustments, exit the test mode.
- 3) Perform the adjustments in the order shown.
- 4) Use the following tools and measuring devices.
 - Check Disc (MD) TDYS-1 (Parts No. 4-963-646-01)
 - Laser power meter LPM-8001 (Parts No. J-2501-046-A) or MD Laser power meter 8010S (Parts No. J-2501-145-A)
 - Oscilloscope
 - Digital voltmeter
 - Thermometer
- 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.)

Laser power meter

When performing laser power checks and adjustment (electrical adjustment), use of the new MD laser power meter 8010S (J-2501-145-A) instead of the conventional laser power meter is convenient.

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

Creating 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 MO disc (blank disc) commercially available.
2. Rotate the **[AMS]** knob and display "CREC MODE".
3. Press the **[ENTER/YES]** button and display "CREC IN".
4. Press the **[ENTER/YES]** button again to display "CREC MID". "CREC (0300)" is displayed for a moment and recording starts.
5. Complete recording within 5 minutes.
6. Press the **[EDIT/NO]** button and stop recording .
7. Press the **[EJECT]** button and remove the MO disc.

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

Note:

- Be careful not to apply vibration during continuous recording.

Temperature Compensation Offset Adjustment

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

Note:

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

Adjusting Method:

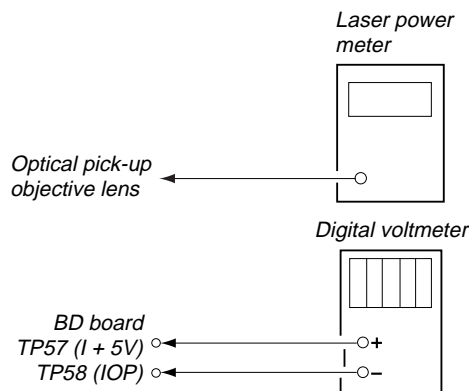
1. Rotate the [AMS] knob and display “TEMP ADJUS”.
2. Press the [ENTER/YES] button and select the “TEMP ADJUS” mode.
3. “TEMP = 000” and the current temperature data will be displayed.
4. To save the data, press the [ENTER/YES] button. When not saving the data, press the [EDIT/NO] button.
5. When the [ENTER/YES] button is pressed, “TEMP = 000 SAV” will be displayed for some time, followed by “TEMP ADJUS”. When the [EDIT/NO] button is pressed, “TEMP ADJUS” will be displayed.

Specifications:

The “TEMP = 000” should be within “E0 - EF”, “F0 - FF”, “00 - 0F”, “10 - 1F” and “20 - 2F”.

Laser Power Adjustment

Connection:



Adjusting Method:

1. Set the laser power meter on the objective lens of the optical pick-up. (When it cannot be set properly, press the [◀] button or [▶] button and move the optical pick-up.) Connect the digital volt meter to TP58 (IOP) and TP57 (I+5V).
2. Rotate the [AMS] knob and display “LDPWR ADJUS”. (Laser power : For adjustment)
3. Press the [ENTER/YES] button twice and display “LD \$ 4B = 3.5 mW”.
4. Adjust RV102 of the BD board so that the reading of the laser power meter becomes $3.4 \pm_{-0}^{0.1}$ mW.
5. Press the [ENTER/YES] button and display “LD \$ 96 = 7.0 mW”. (Laser power: MO writing)
6. Check that the laser power meter and digital voltmeter readings satisfy the specified value.

Specification:

Laser power meter reading: 7.0 ± 0.3 mW

Digital voltmeter reading: Optical pickup displayed value $\pm 10\%$

(Optical pickup label)



$I_{op} = 82.5$ mA in this case

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

7. Press the [ENTER/YES] button and display “LD \$ 0F = 0.7 mW”. (Laser power: MO reading)
8. Check that the laser power meter at this time satisfies the specified value.

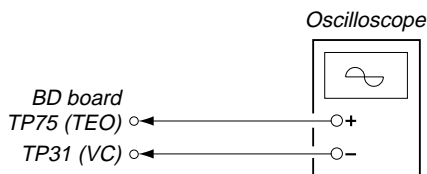
Specification:

Laser power meter reading: $0.70 \pm_{-0.1}^{0.05}$ mW

9. Press the [EDIT/NO] button and display “LDPWR ADJUS”, and stop laser emission. (The [EDIT/NO] button is effective at all times to stop the laser emission.)

Traverse Adjustment

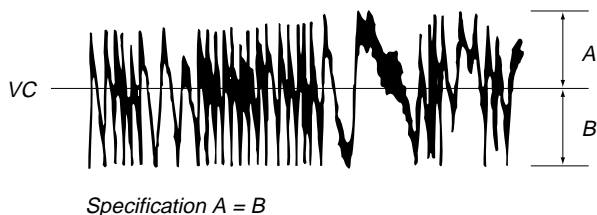
Connection:



Adjusting method:

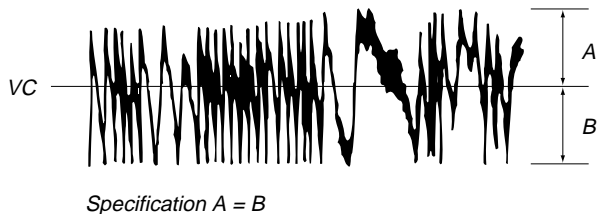
1. Connect an oscilloscope to TP75 (TEO) and TP31 (VC) of the BD board.
2. Load a MO disc (any available on the market). (Refer to Note 1)
3. Press the **◀▶** button or **▶▶** button and move the optical pick-up outside the pit.
4. Rotate the **AMS** knob and display "EFBAL ADJUS".
5. Press the **ENTER/YES** button and display "EFBAL MO-W". (Laser power WRITE power/Focus servo ON/tracking servo OFF/spindle (S) servo ON)
6. Adjust RV101 of the BD board so that the waveform of the oscilloscope becomes the specified value. (MO groove write power traverse adjustment)

(Traverse Waveform)



7. Press the **ENTER/YES** button and display "EFB = \$ ◻ MO-R". (Laser power: MO reading)
8. Rotate the **AMS** knob so that the waveform of the oscilloscope becomes the specified value. (When the **AMS** knob is rotated, the ◻ of "EFB = \$ ◻" changes and the waveform changes.) In this adjustment, waveform varies at intervals of approx. 3%. Adjust the waveform so that the specified value is satisfied as much as possible. (MO groove read power traverse adjustment)

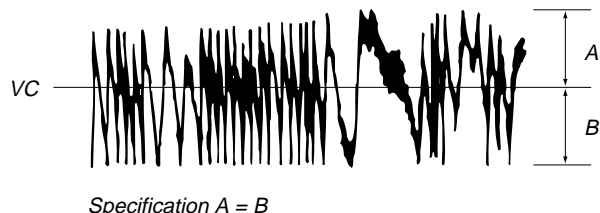
(Traverse Waveform)



9. Press the **ENTER/YES** button, display "EFB = \$ ◻ SAV" for a moment and save the adjustment results in the non-volatile memory. Next "EFBAL MO-P" is displayed.
10. Press the **ENTER/YES** button and display "EFB = \$ ◻ MO-P". The optical pick-up moves to the pit area automatically and servo is imposed.

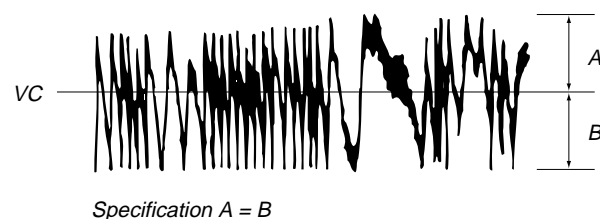
11. Rotate the **AMS** knob until the waveform of the oscilloscope moves closer to the specified value. In this adjustment, waveform varies at intervals of approx. 3%. Adjust the waveform so that the specified value is satisfied as much as possible.

(Traverse Waveform)



12. Press the **ENTER/YES** button, display "EFB = \$ ◻ SAV" for a moment and save the adjustment results in the non-volatile memory. Next "EFBAL CD" is displayed. The disc stops rotating automatically.
13. Press the **EJECT** button and remove the MO disc.
14. Load the check disc (MD) TDYS-1.
15. Press the **ENTER/YES** button and display "EFB = \$ ◻ CD". Servo is imposed automatically.
16. Rotate the **AMS** knob so that the waveform of the oscilloscope moves closer to the specified value. In this adjustment, waveform varies at intervals of approx. 3%. Adjust the waveform so that the specified value is satisfied as much as possible.

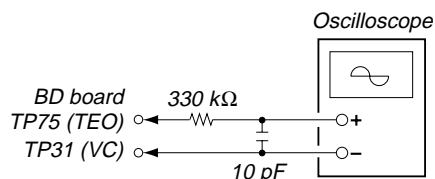
(Traverse Waveform)



17. Press the **ENTER/YES** button, display "EFB = \$ ◻ SAV" for a moment and save the adjustment results in the non-volatile memory. Next "EFBAL ADJUS" is displayed.
18. Press the **EJECT** button and remove the test disc TDYS-1.

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

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



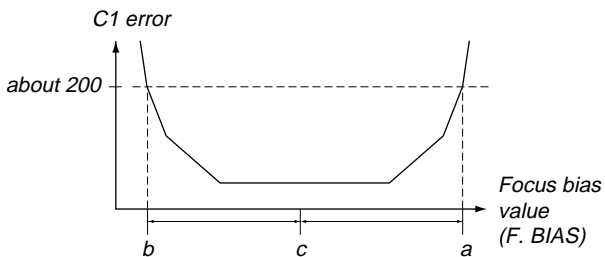
Focus Bias Adjustment

Adjusting Method:

1. Load a continuously recorded disc (Refer to “Page 15 Creating Continuously Recorded Disc”).
2. Rotate the **[AMS]** knob and display “CPLAY MODE”.
3. Press the **[ENTER/YES]** button twice and display “CPLAY MID”.
4. Press the **[EDIT/NO]** button when “C1 = 0000 AD = 00” is displayed.
5. Rotate the **[AMS]** knob and display “FBIAS ADJUS”.
6. Press the **[ENTER/YES]** button and display “0000/00 a = 00”. 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. Rotate the **[AMS]** knob in the clockwise direction and find the focus bias value at which the C1 error rate becomes about 200 (Refer to Note 2).
8. Press the **[ENTER/YES]** button and display “0000/00 b = 00”.
9. Rotate the **[AMS]** knob in the counterclockwise direction and find the focus bias value at which the C1 error rate becomes about 200.
The C1 error rate at this time should be almost same as the value set in step 7.
10. Press the **[ENTER/YES]** button and display “0000/00 c = 00”.
11. Check that the C1 error rate is below 50 and ADER is 00. Then press the **[ENTER/YES]** button.
12. If the “(00)” in “00 - 00 - 00 (00)” is above 20, press the **[ENTER/YES]** button.
If below 20, press the **[EDIT/NO]** button and repeat the adjustment from step 2 again.
13. Press the **[EDIT/NO]** button and press the **[EJECT]** button to remove the continuously recorded disc.

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

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



Error Rate Check CD Error Rate Check

Checking Method:

1. Load a check disc (MD) TDYS-1.
2. Rotate the **[AMS]** knob and display “CPLAY MODE”.
3. Press the **[ENTER/YES]** button twice and display “CPLAY MID”.
4. “C1 = 0000 AD = 00” is displayed.
5. Check that the C1 error rate is below 20.
6. Press the **[EDIT/NO]** button, stop playback, press the **[EJECT]** button, and remove the check disc.

MO Error Rate Check

Checking Method:

1. Load a continuously recorded disc (Refer to “Page 15 Creating Continuously Recorded Disc”).
2. Rotate the **[AMS]** knob and display “CPLAY MODE”.
3. Press the **[ENTER/YES]** button twice and display “CPLAY MID”.
4. “C1 = 0000 AD = 00” is displayed.
5. If the C1 error rate is below 50, check that ADER is 00.
6. Press the **[EDIT/NO]** button, stop playback, press the **[EJECT]** button, and remove the continuously recorded disc.

Focus Bias Check

Change the focus bias and check the focus tolerance amount.

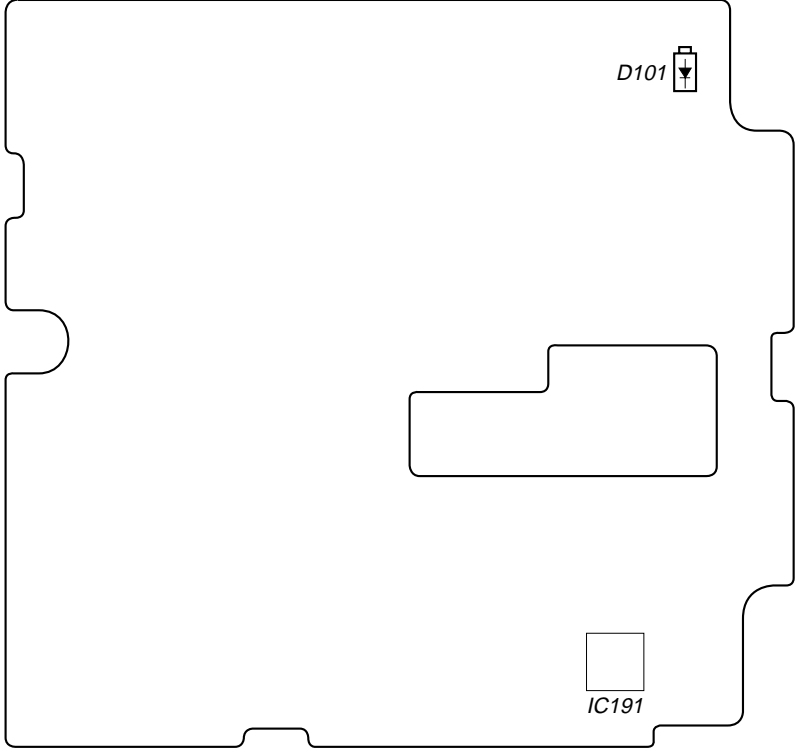
Checking Method:

1. Load a continuously recorded disc (Refer to “Page 15 Creating Continuously Recorded Disc”).
2. Rotate the **[AMS]** knob and display “CPLAY MODE”.
3. Press the **[ENTER/YES]** button twice and display “CPLAY MID”.
4. Press the **[EDIT/NO]** button when “C1 = 0000 AD = 00” is displayed.
5. Rotate the **[AMS]** knob and display “FBIAS CHECK”.
6. Press the **[ENTER/YES]** button and display “0000/00 c = 00”. The first four digits indicate the C1 error rate, the two digits after [/] indicate ADER, and the 2 digits after [c =] indicate the focus bias value.
Check that the C1 error is below 50 and ADER is 00.
7. Press the **[ENTER/YES]** button and display “0000/00 b = 00”. Check that the C1 error is not below about 200 and ADER is not above 00 every time.
8. Press the **[ENTER/YES]** button and display “0000/00 a = 00”. Check that the C1 error is not below about 200 and ADER is not above 00 every time.
9. Press the **[EDIT/NO]** button, next press the **[EJECT]** button, and remove the continuously recorded disc.

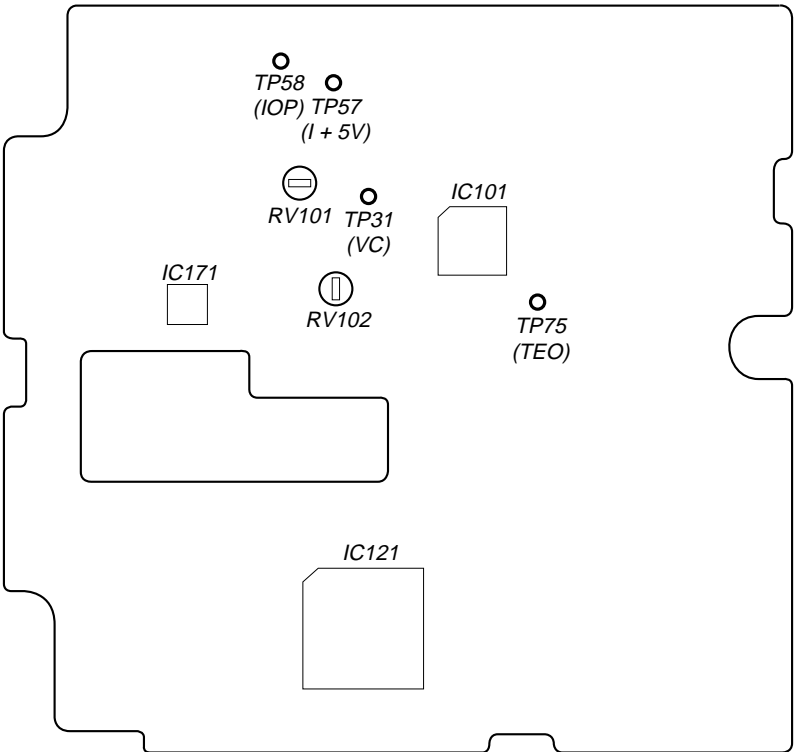
Note 1: If the C1 error and ADER are above 00 at points a or b, the focus bias adjustment may not have been carried out properly. Adjust perform the beginning again.

Adjusting Points and Connecting Points

[BD Board] (Side A)

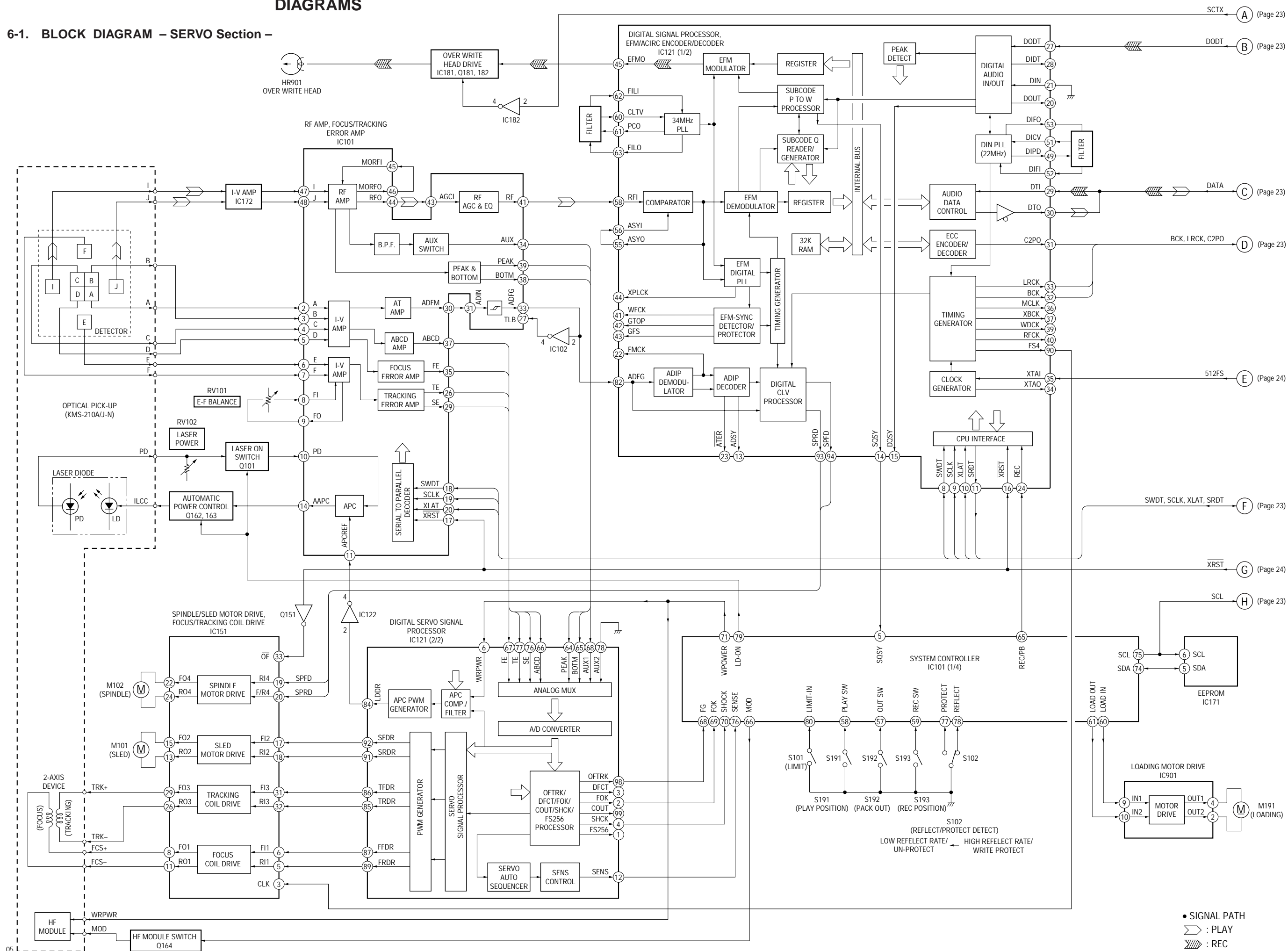


[BD Board] (Side B)



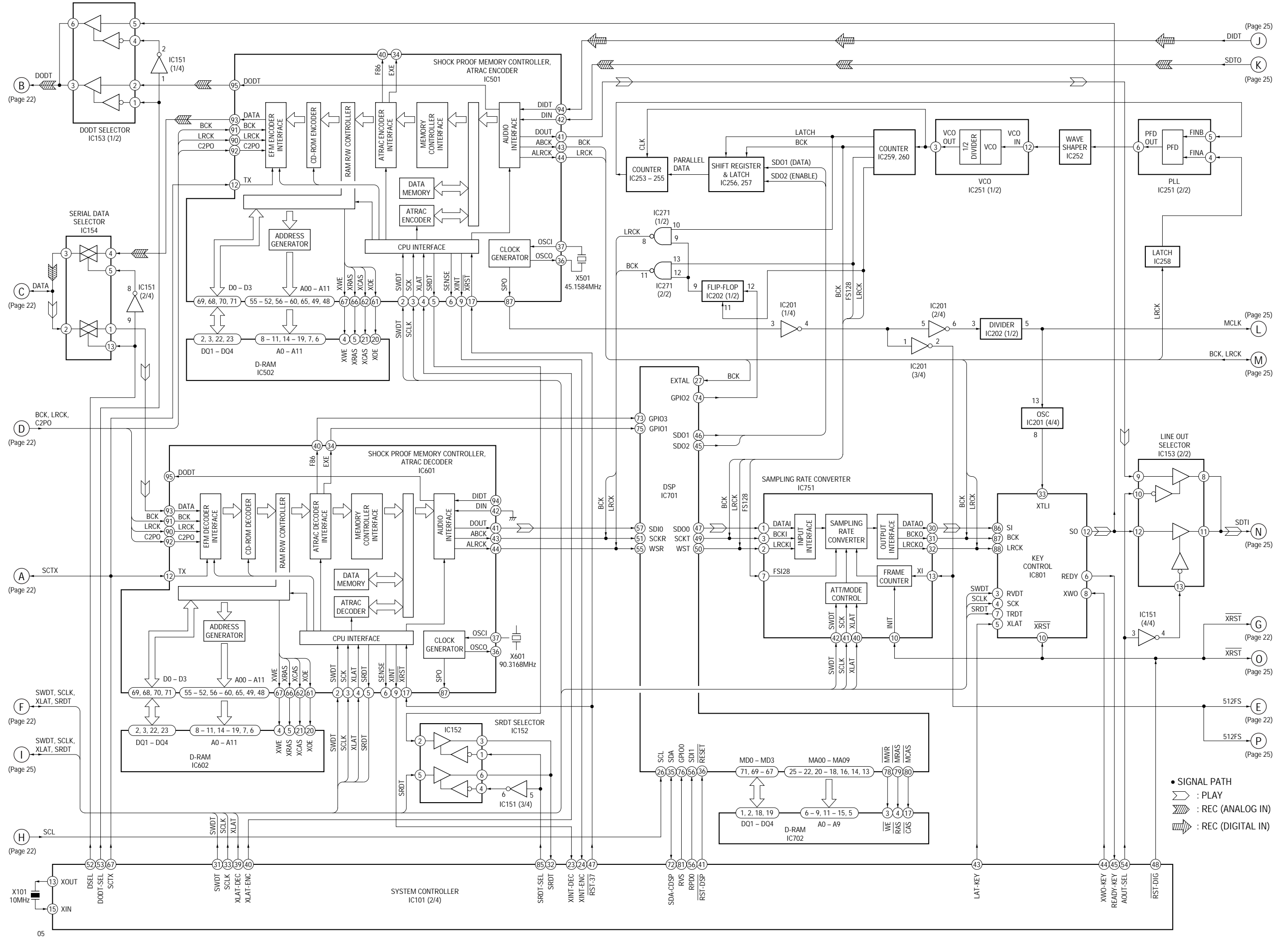
SECTION 6
DIAGRAMS

6-1. BLOCK DIAGRAM - SERVO Section -

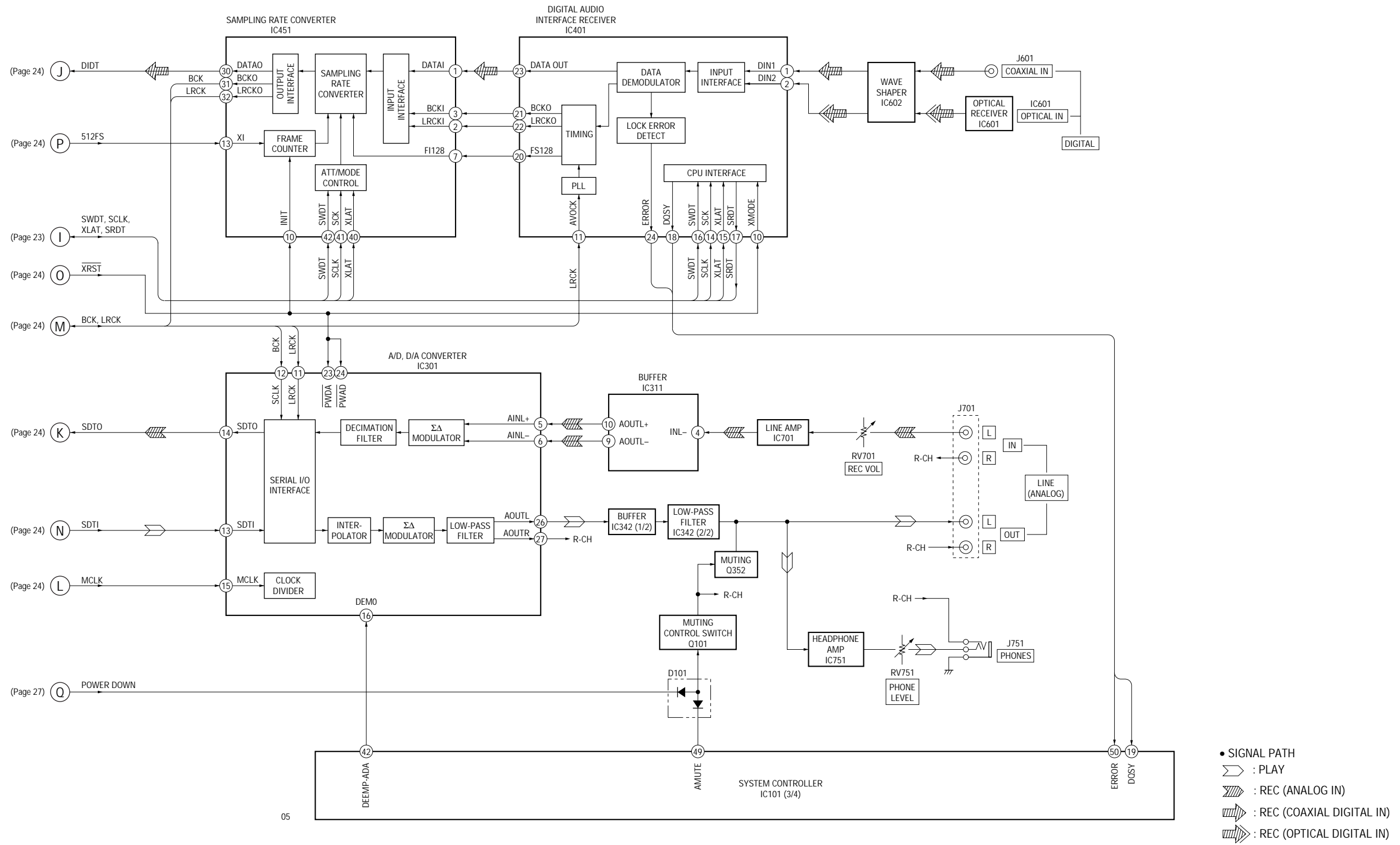


• SIGNAL PATH
 ▷ : PLAY
 ▨ : REC

6-2. BLOCK DIAGRAM – MAIN Section (1/2) –

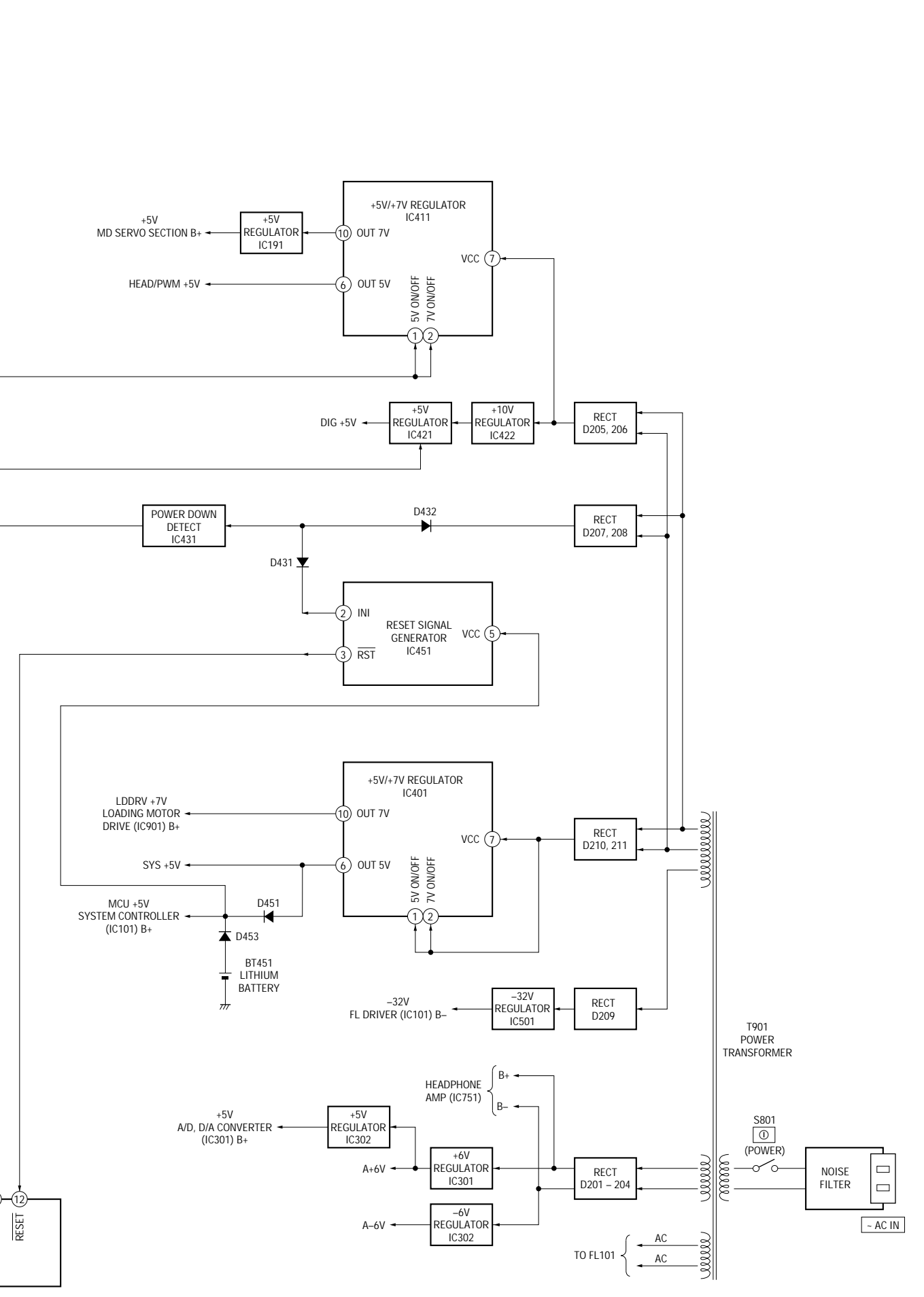
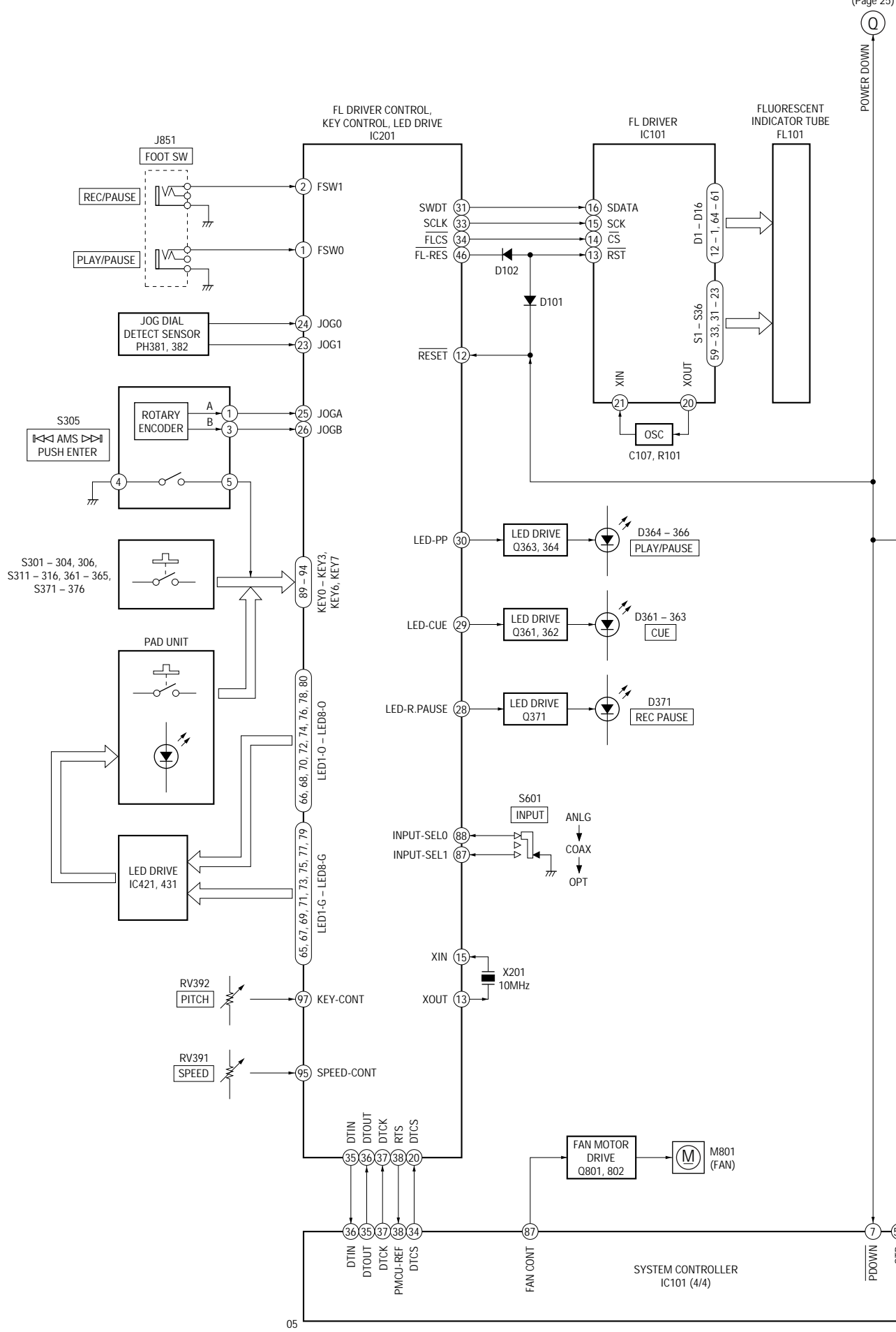


6-3. BLOCK DIAGRAM – MAIN Section (2/2) –

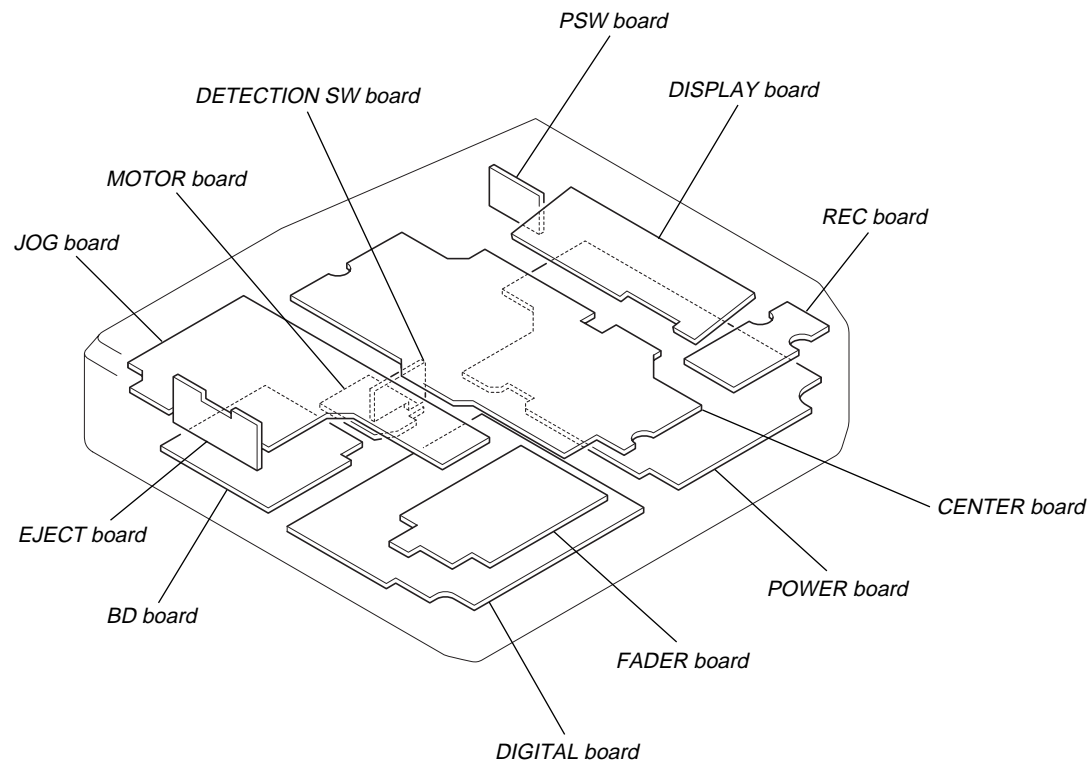


6-4. BLOCK DIAGRAM – DISPLAY/KEY/POWER SUPPLY Section –

(Page 25)



• Circuit Boards Location



6-5. NOTES FOR PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

(In addition to this, the necessary note is printed in each block)

Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF: μpF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $1/4\text{ W}$ or less unless otherwise specified.
- % : indicates tolerance.
- Δ : internal component.
- : nonflammable resistor.
- : panel designation.

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

Note:
Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

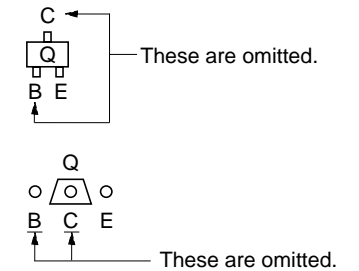
- : B+ Line.
- : B- Line.
- : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
no mark : STOP
() : PLAY
<< >> : REC
* : Impossible to measure
- Voltages are taken with a VOM (Input impedance 10 M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
 : PLAY
 : REC (ANALOG IN)
 : REC (DIGITAL IN)
 : REC (COAXIAL DIGITAL IN)
 : REC (OPTICAL DIGITAL IN)

Note on Printed Wiring Board:

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

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

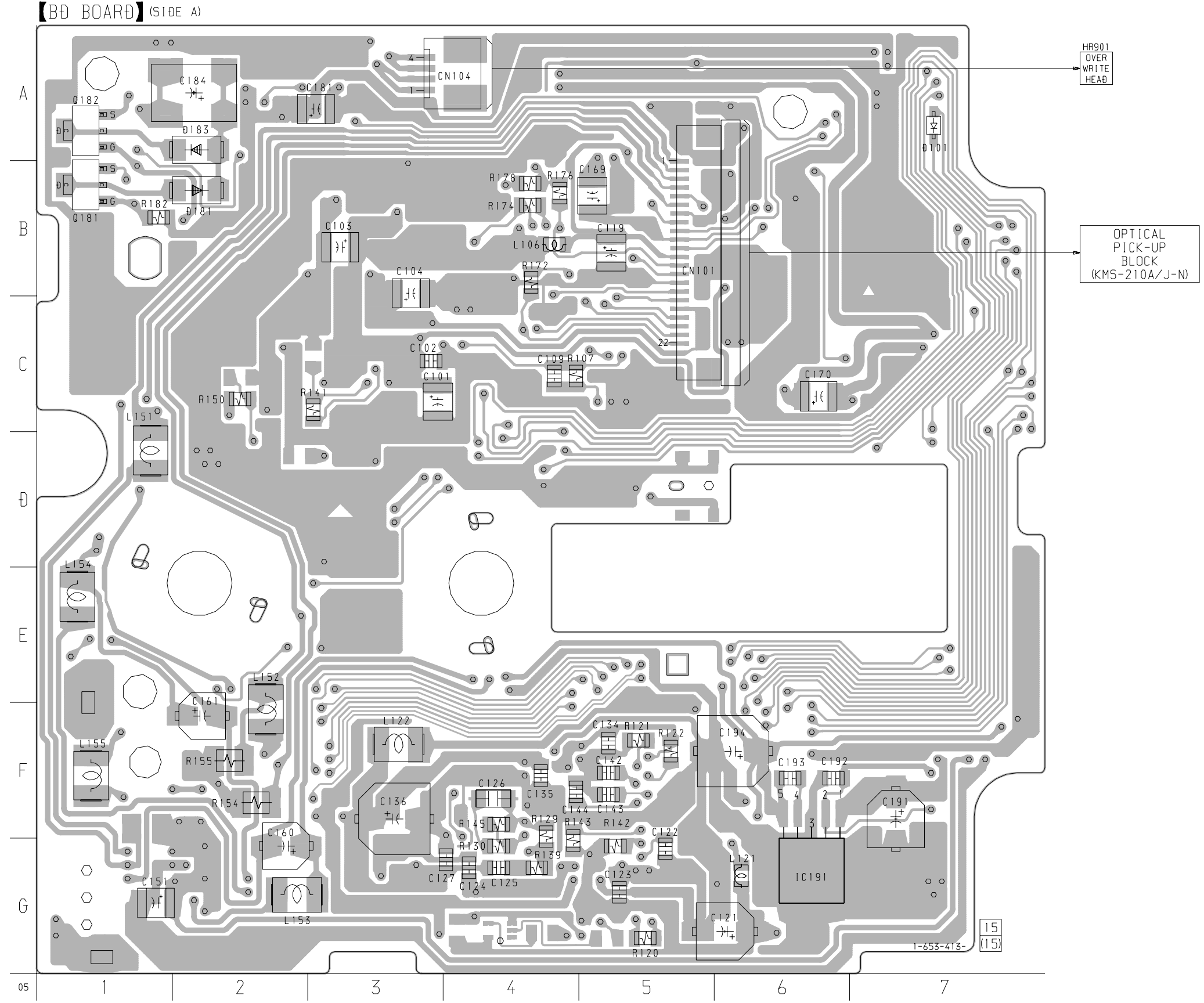
• Indication of transistor.



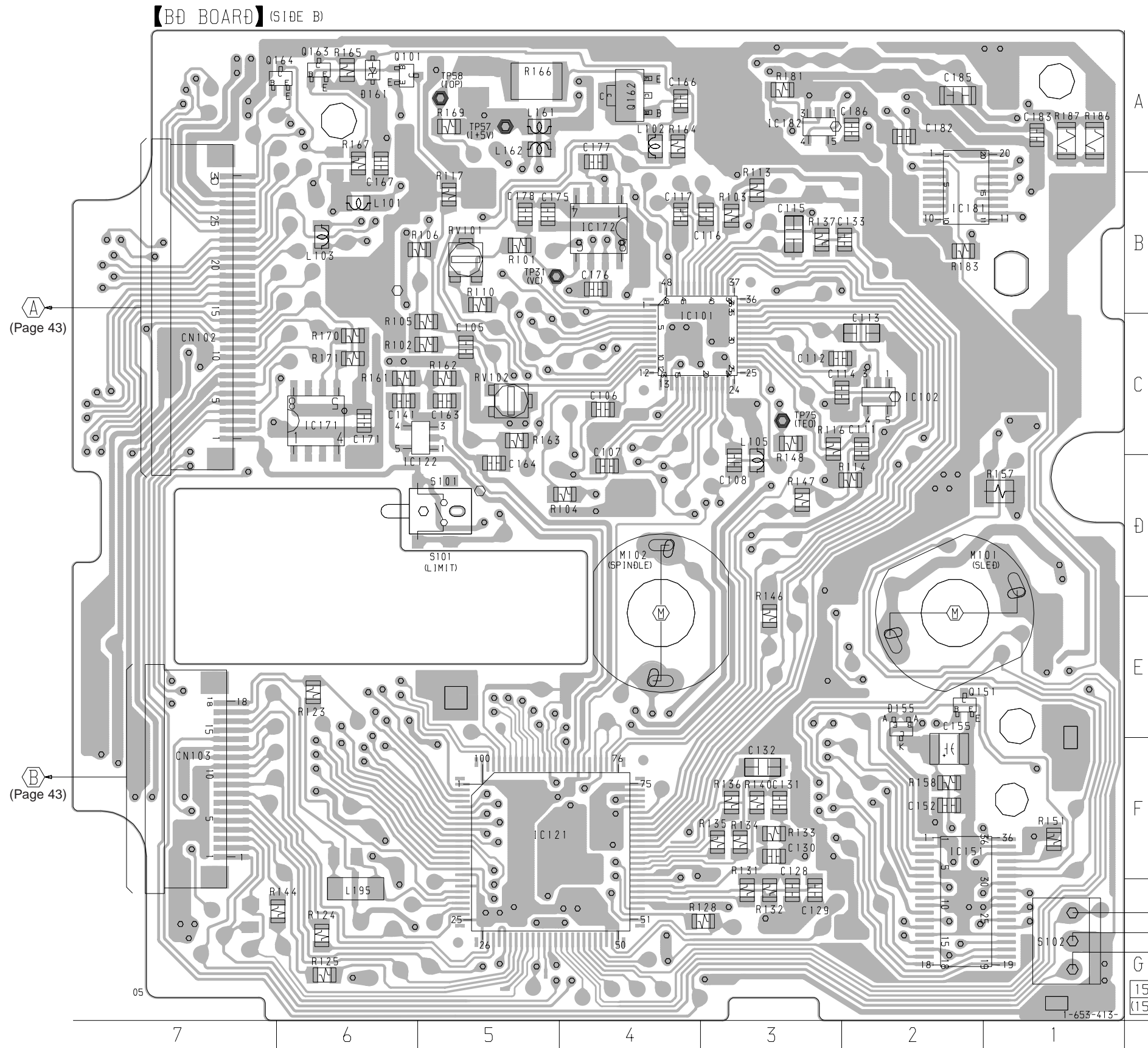
6-6. PRINTED WIRING BOARD – BD Board (SIDE A) – • See page 29 for Circuit Boards Location.

• Semiconductor Location

Ref. No.	Location
D101	A-7
D181	B-2
D183	A-2
IC191	G-6
Q181	B-1
Q182	A-1

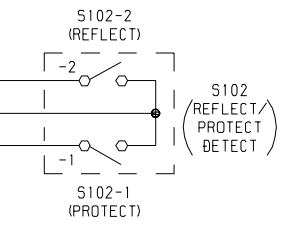


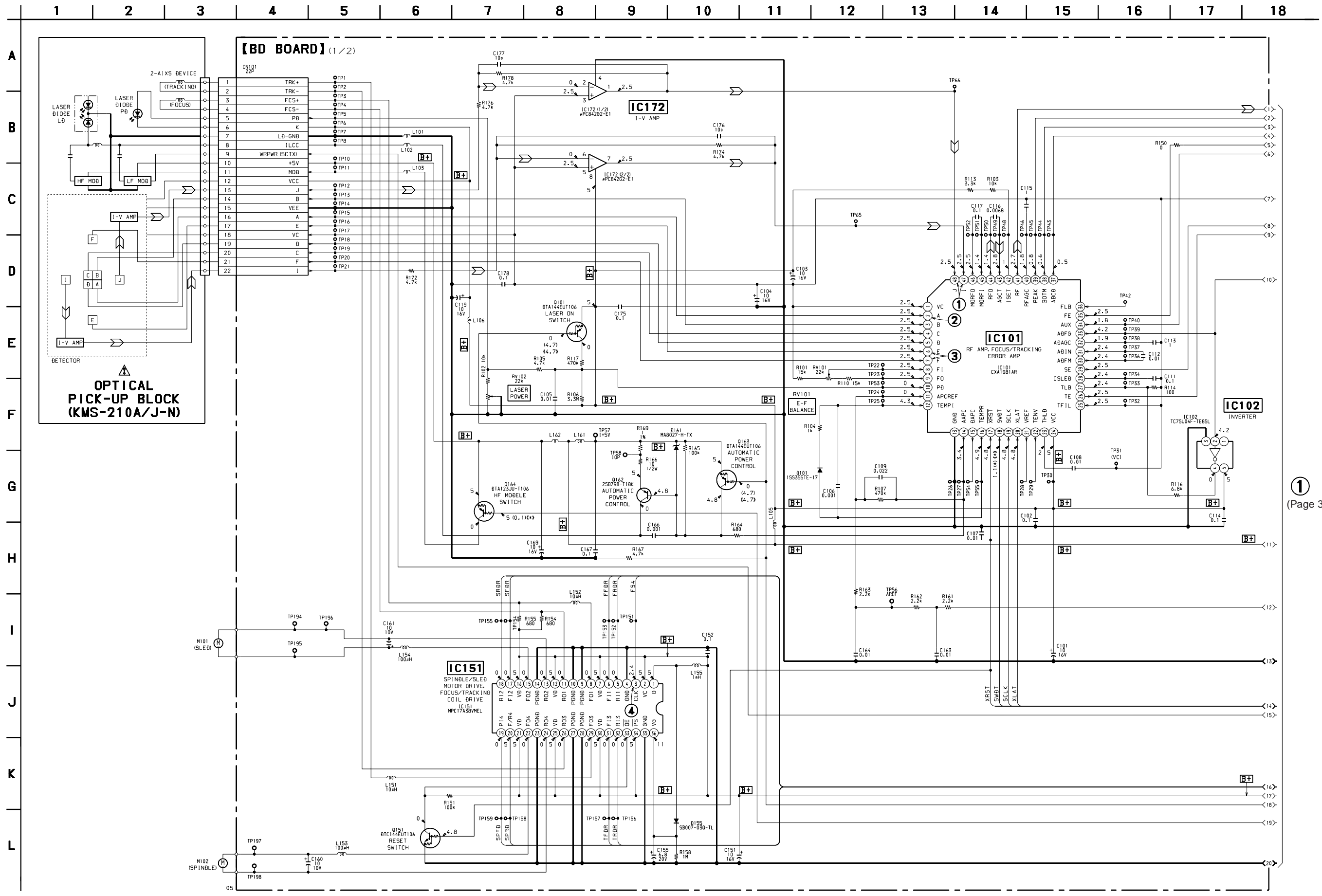
6-7. PRINTED WIRING BOARD – BD Board (SIDE B) – • See page 29 for Circuit Boards Location.



• Semiconductor Location

Ref. No.	Location
D155	E-2
D161	A-6
IC101	C-4
IC102	C-2
IC121	F-5
IC122	C-5
IC151	G-2
IC171	C-6
IC172	B-4
IC181	B-2
IC182	A-3
Q101	A-6
Q151	E-2
Q162	A-4
Q163	A-6
Q164	A-6



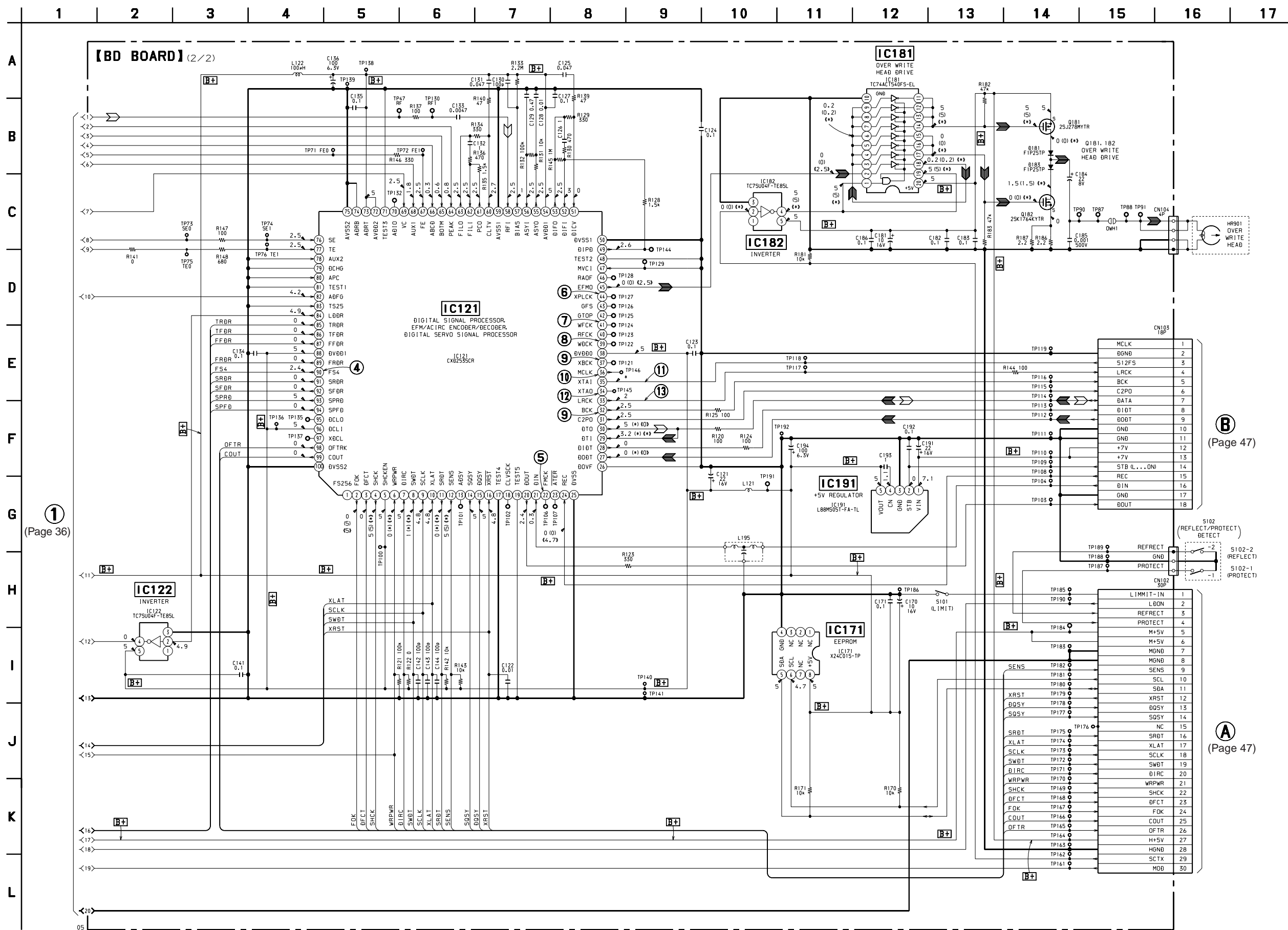


① (Page 37)

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

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

6-9. SCHEMATIC DIAGRAM – BD Section (2/2) – • See page 67 for Waveforms. • See page 70 for IC Block Diagrams.

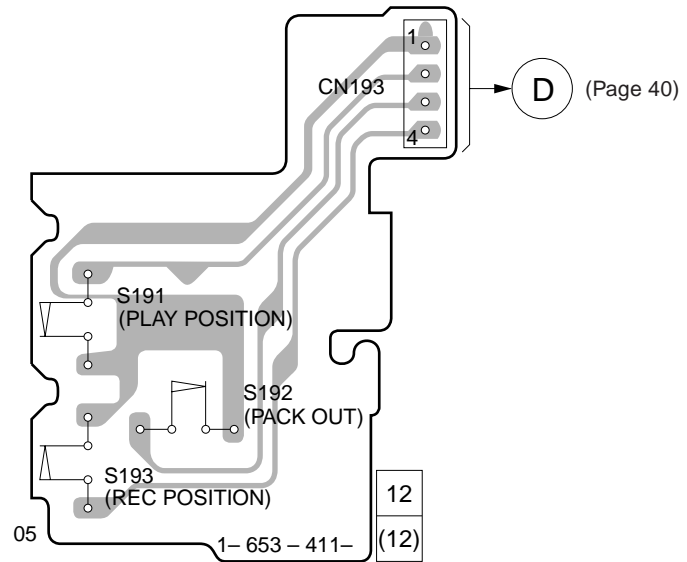


1 (Page 36)

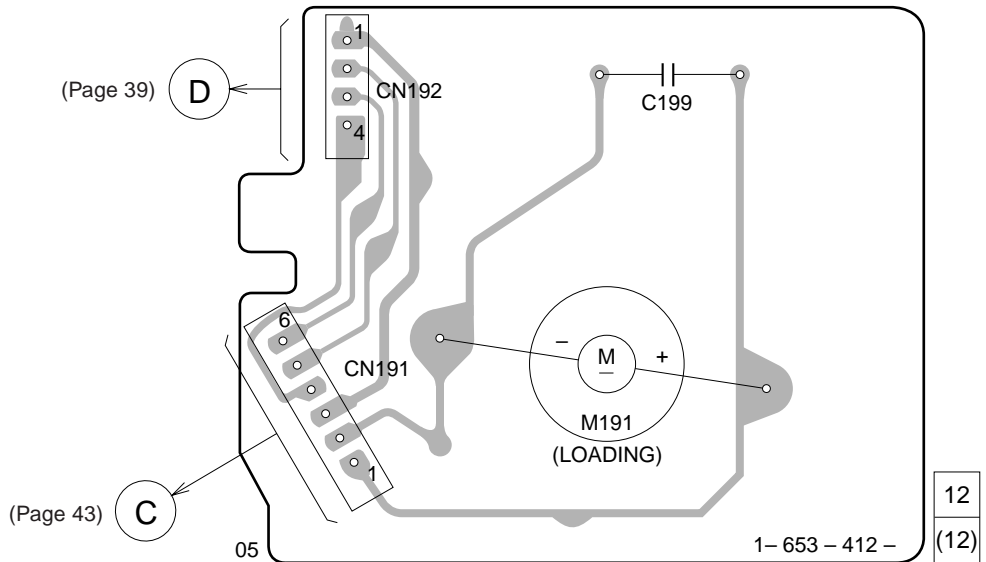
B (Page 47)

A (Page 47)

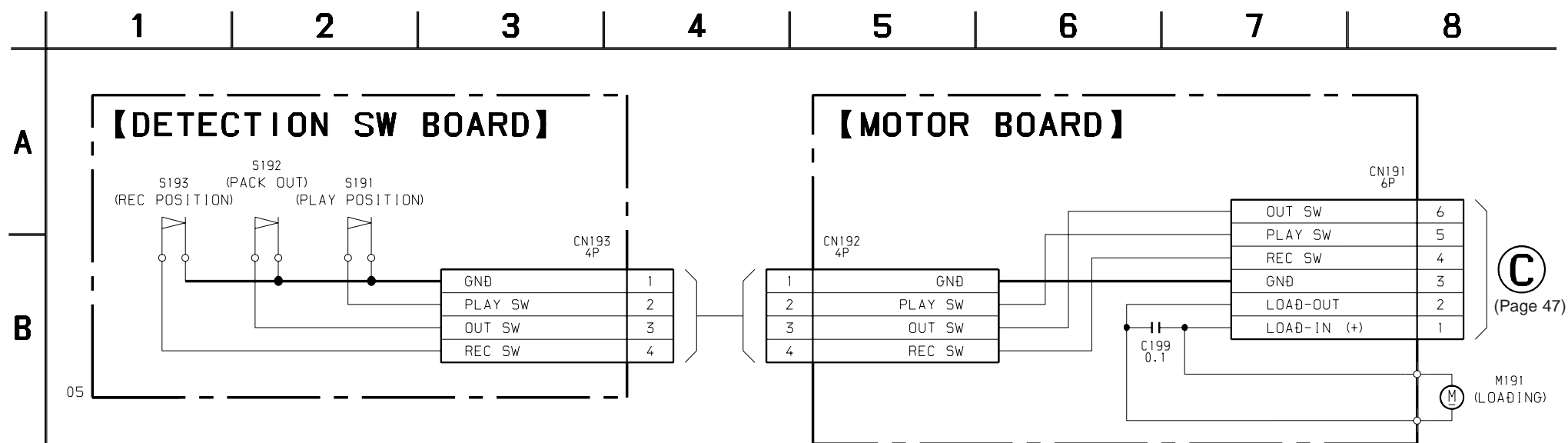
【DETECTION SW BOARD】



【MOTOR BOARD】



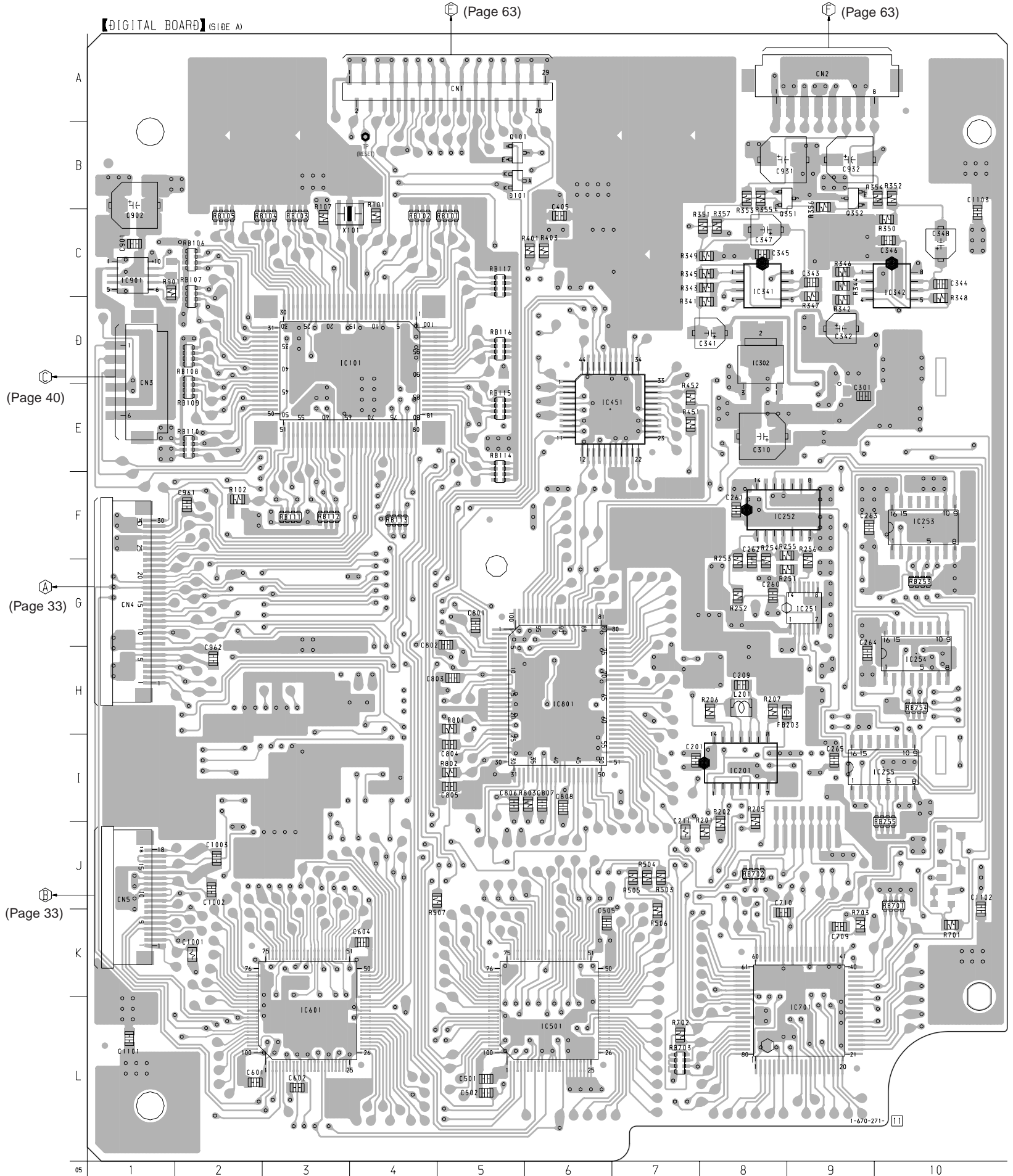
6-11. SCHEMATIC DIAGRAM – DETECTION SW/MOTOR Section –



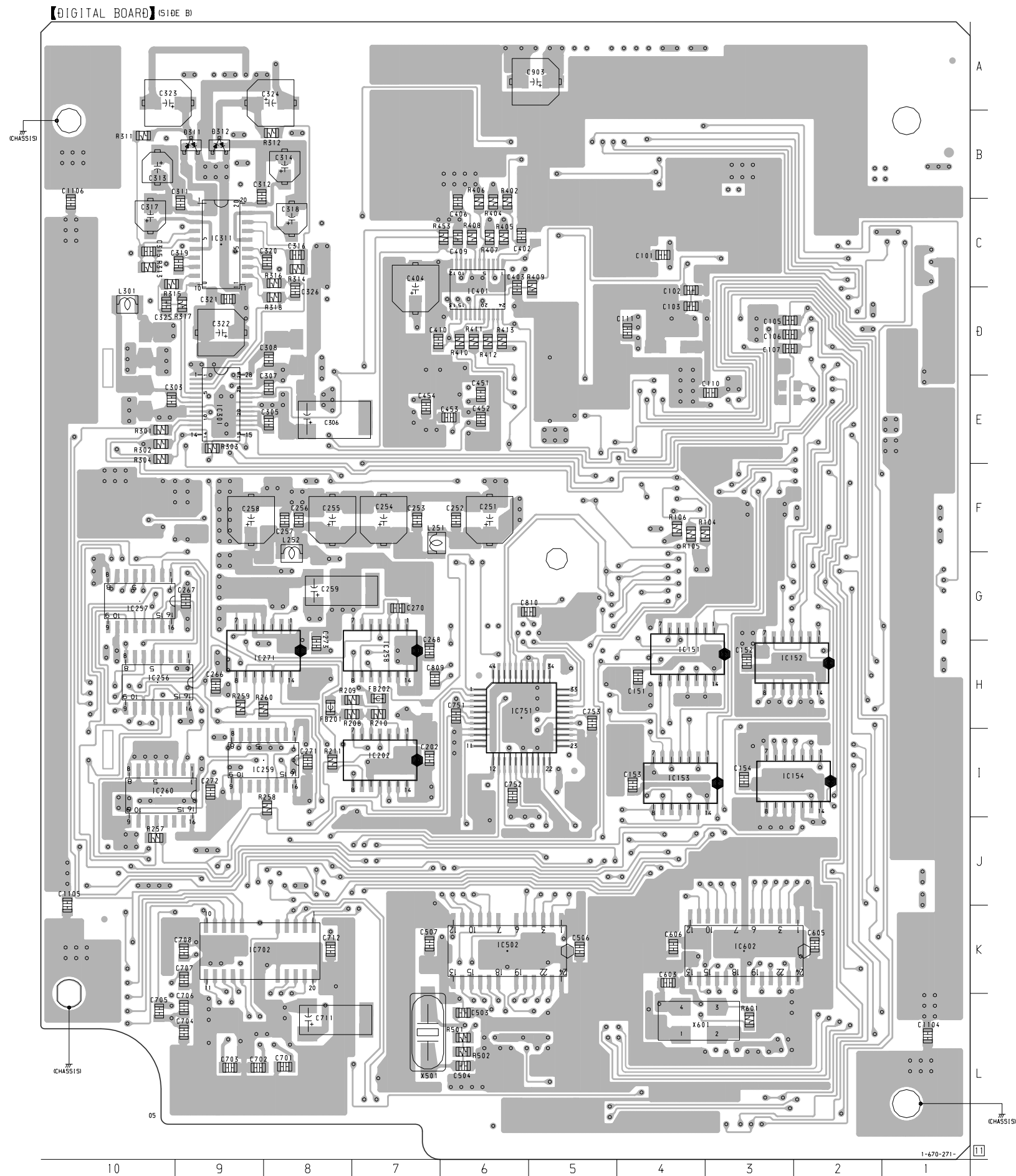
6-12. PRINTED WIRING BOARD – DIGITAL Board (SIDE A) – • See page 29 for Circuit Boards Location.

• Semiconductor Location

Ref. No.	Location
D101	B-5
IC101	D-4
IC201	I-8
IC251	G-9
IC252	F-8
IC253	F-10
IC254	H-10
IC255	I-10
IC302	D-8
IC341	C-8
IC342	C-10
IC451	E-6
IC501	L-6
IC601	L-3
IC701	L-9
IC801	H-6
IC901	C-1
Q101	B-5
Q351	B-8
Q352	B-9



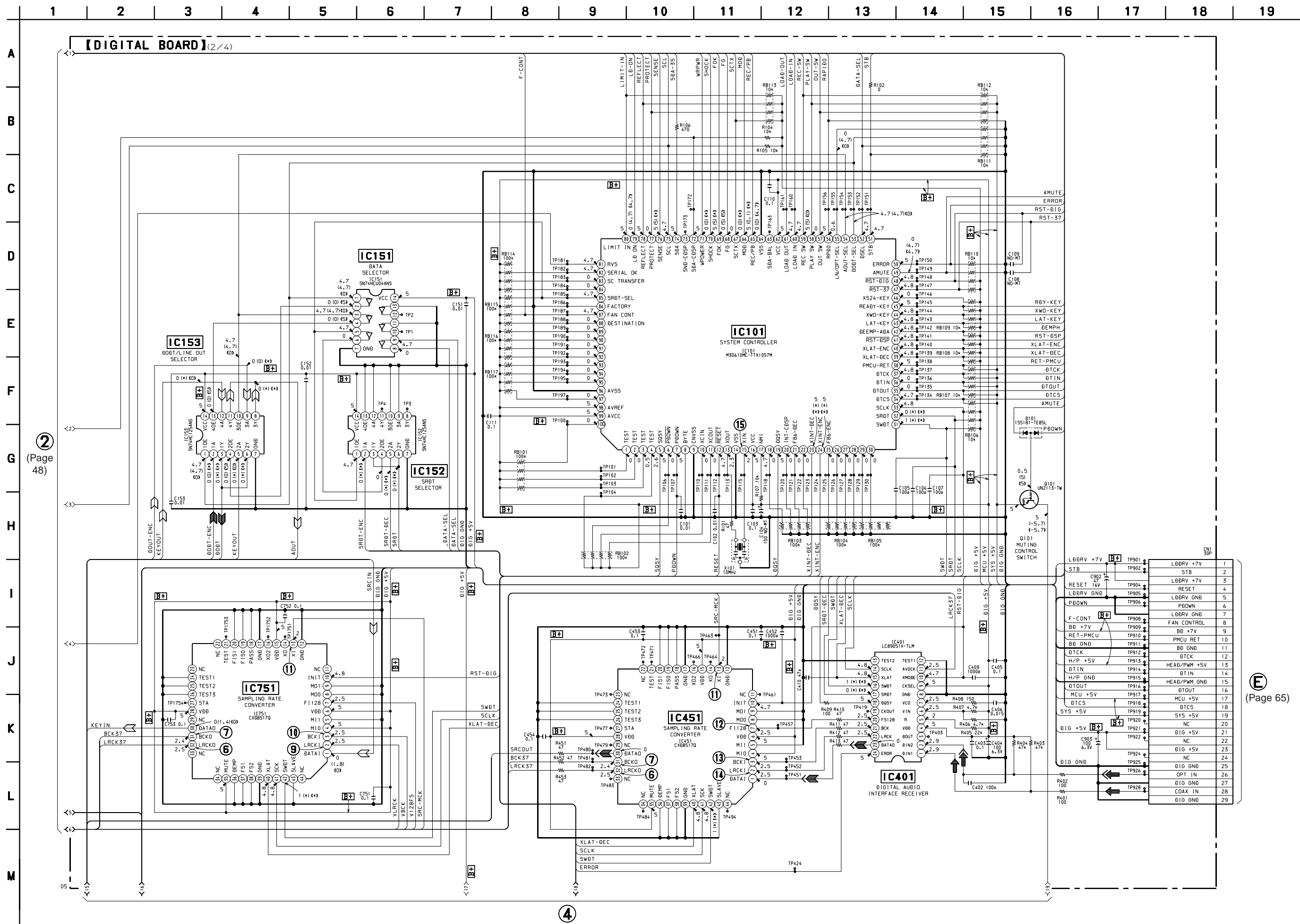
6-13. PRINTED WIRING BOARD – DIGITAL Board (SIDE B) – • See page 29 for Circuit Boards Location.



• Semiconductor Location

Ref. No.	Location
D311	B-9
D312	B-9
IC151	H-4
IC152	H-2
IC153	I-4
IC154	I-2
IC202	I-7
IC256	H-10
IC257	G-10
IC258	H-7
IC259	I-8
IC260	I-10
IC271	H-8
IC301	E-9
IC311	C-9
IC401	D-6
IC502	K-6
IC602	K-3
IC702	K-9
IC751	H-6

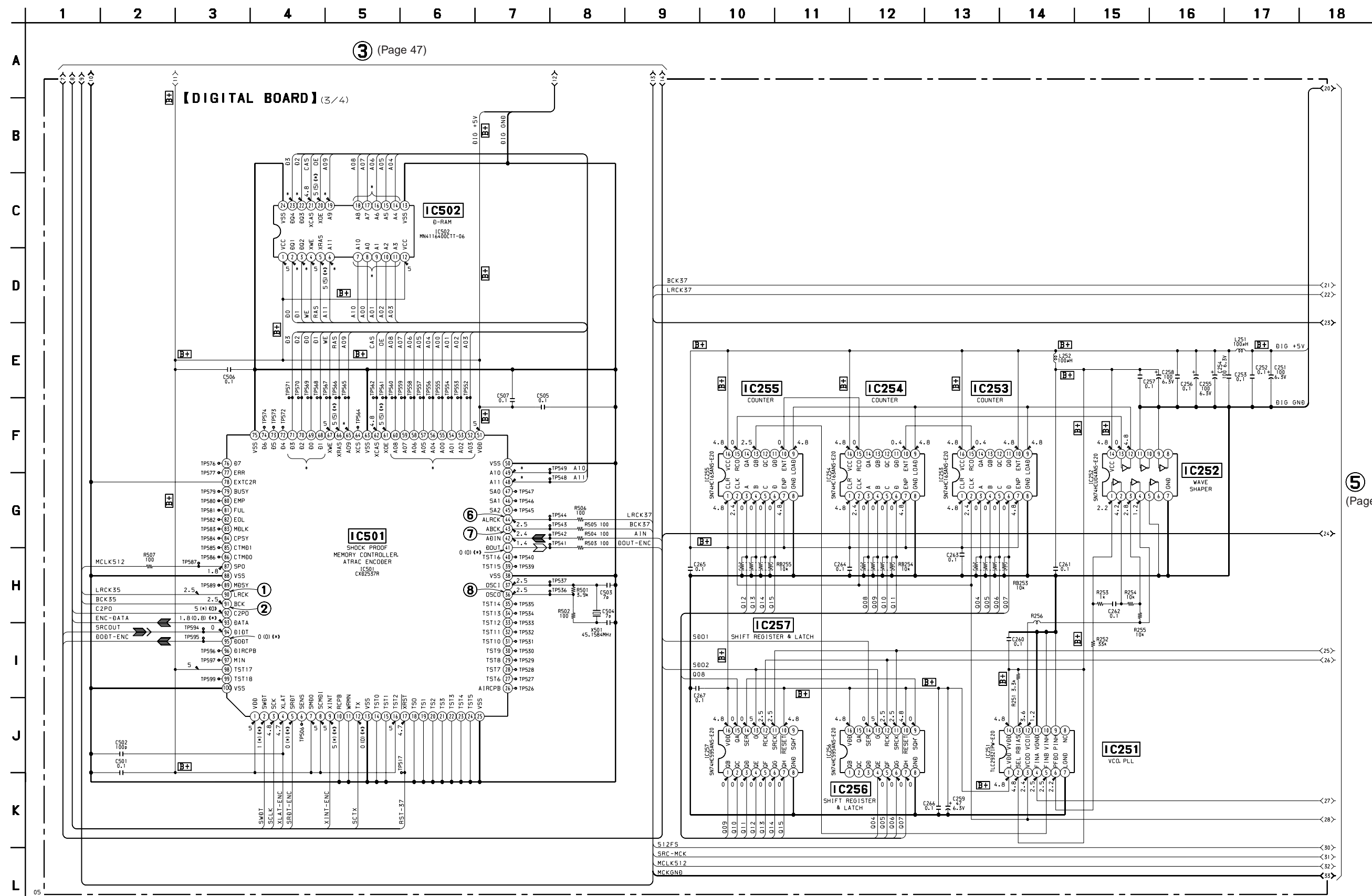
6-15. SCHEMATIC DIAGRAM – DIGITAL Section (2/4) – • See page 68 for Waveforms. • See page 71 for IC Block Diagrams.



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(Page 53)

(Page 65)

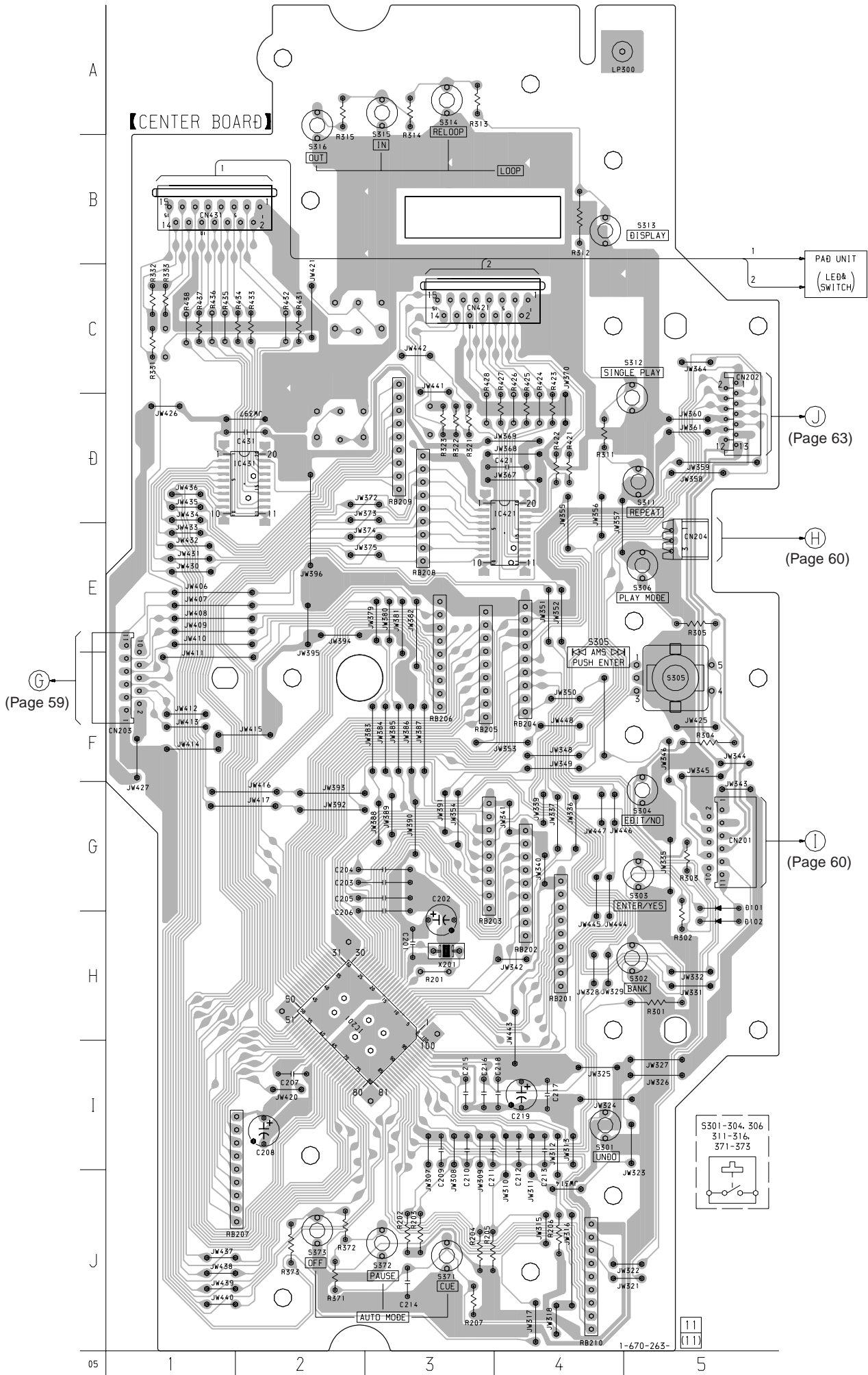


3 (Page 47)

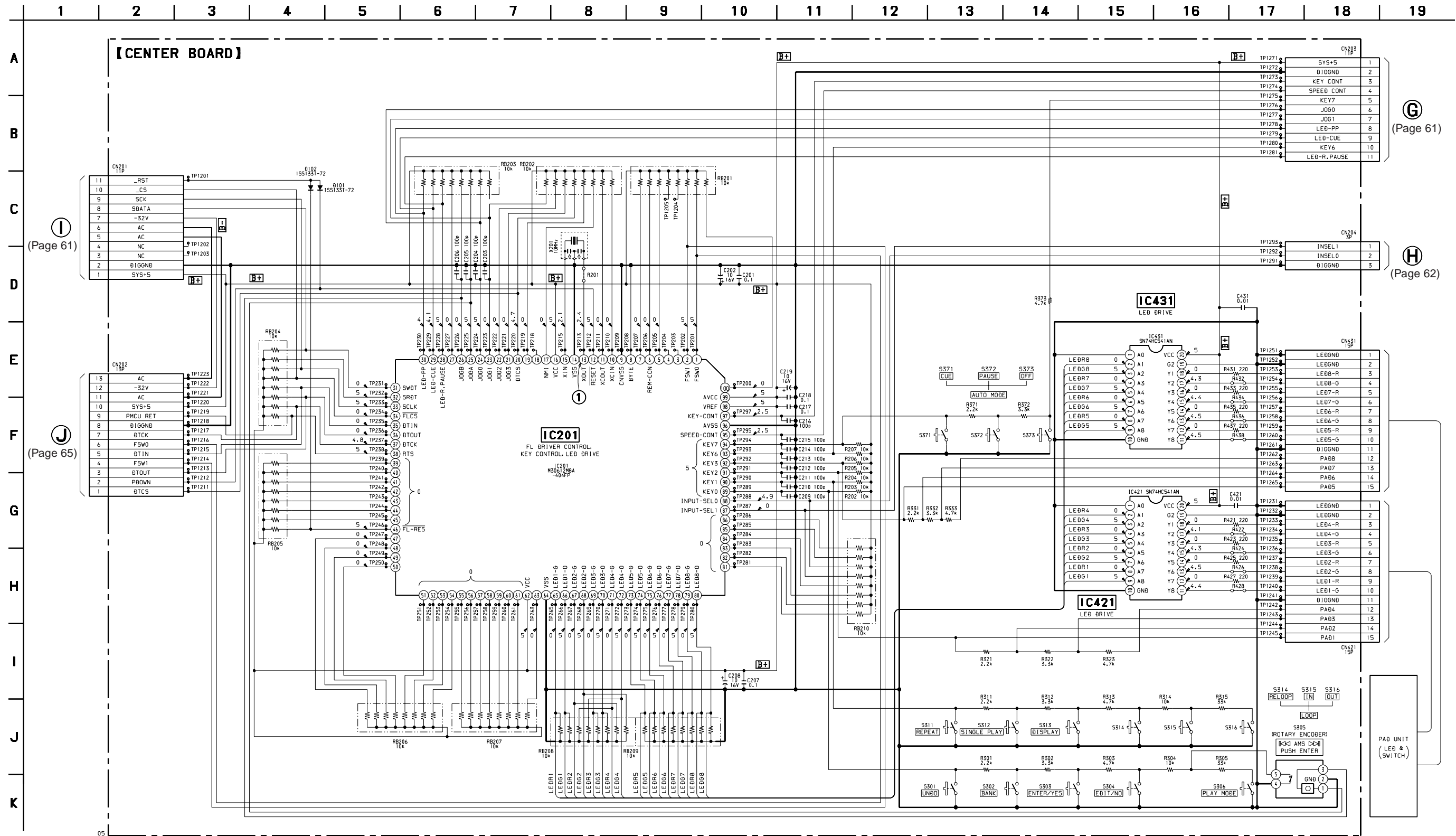
5 (Page 53)

• Semiconductor Location

Ref. No.	Location
D101	G-5
D102	H-5
IC201	H-2
IC421	E-4
IC431	D-2



6-19. SCHEMATIC DIAGRAM – PANEL Section (1) – • See page 69 for Waveform. • See page 75 for IC Block Diagram.



(Page 61)

(Page 62)

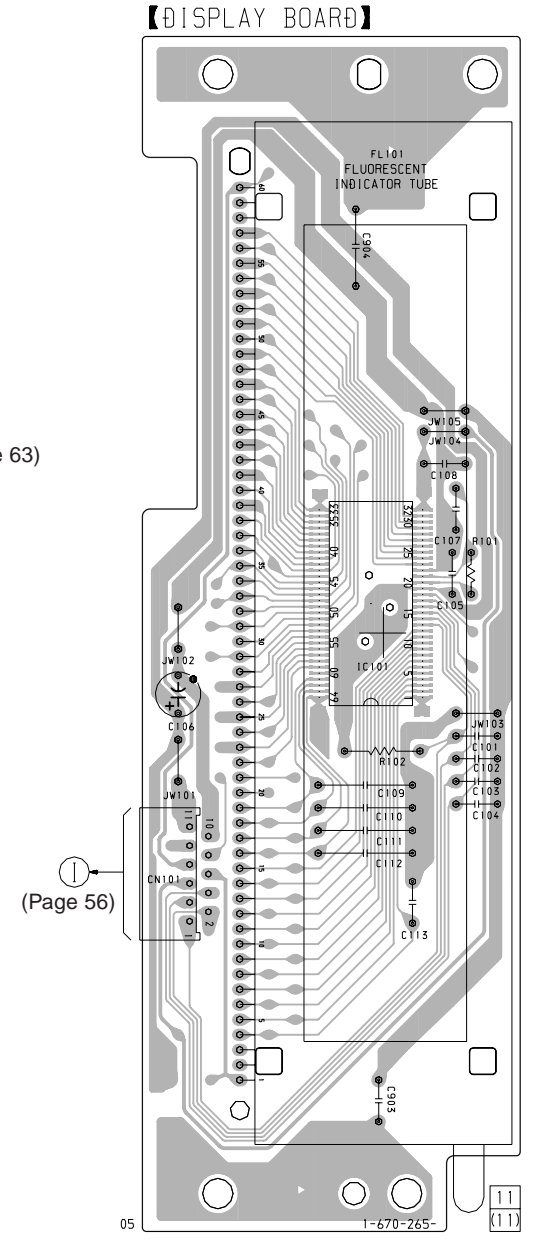
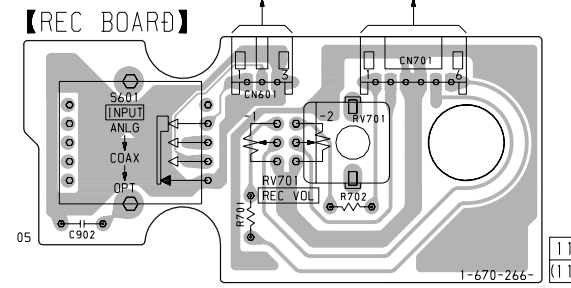
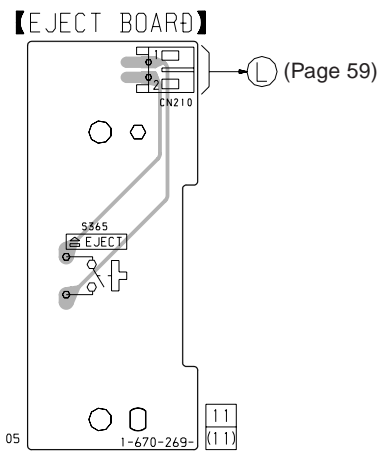
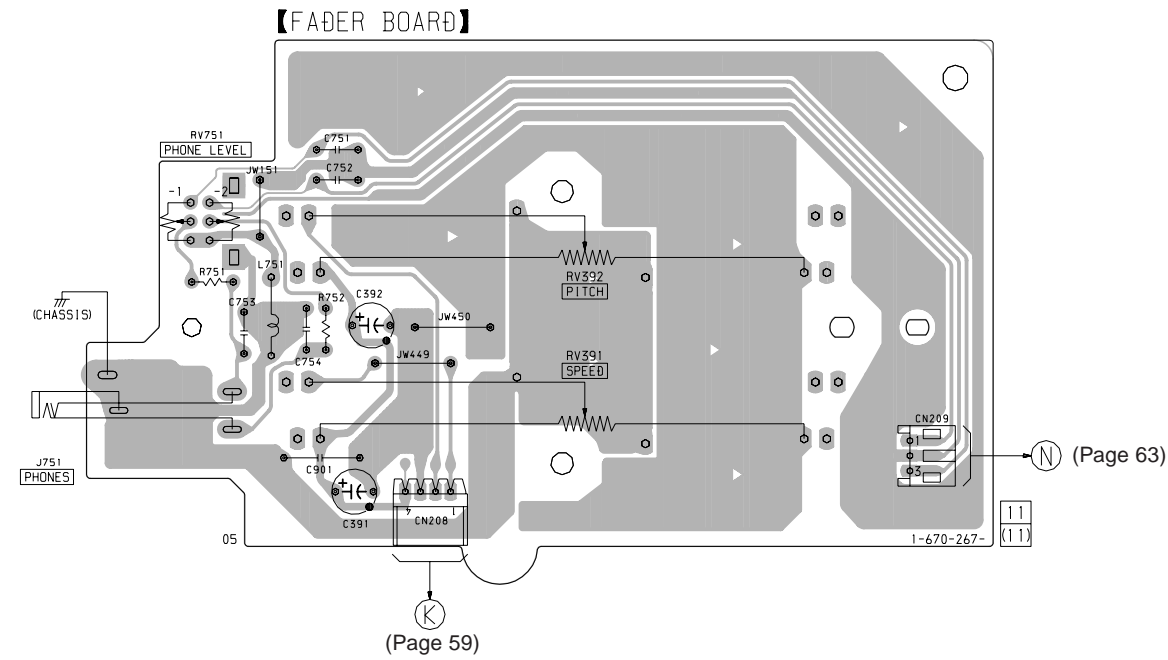
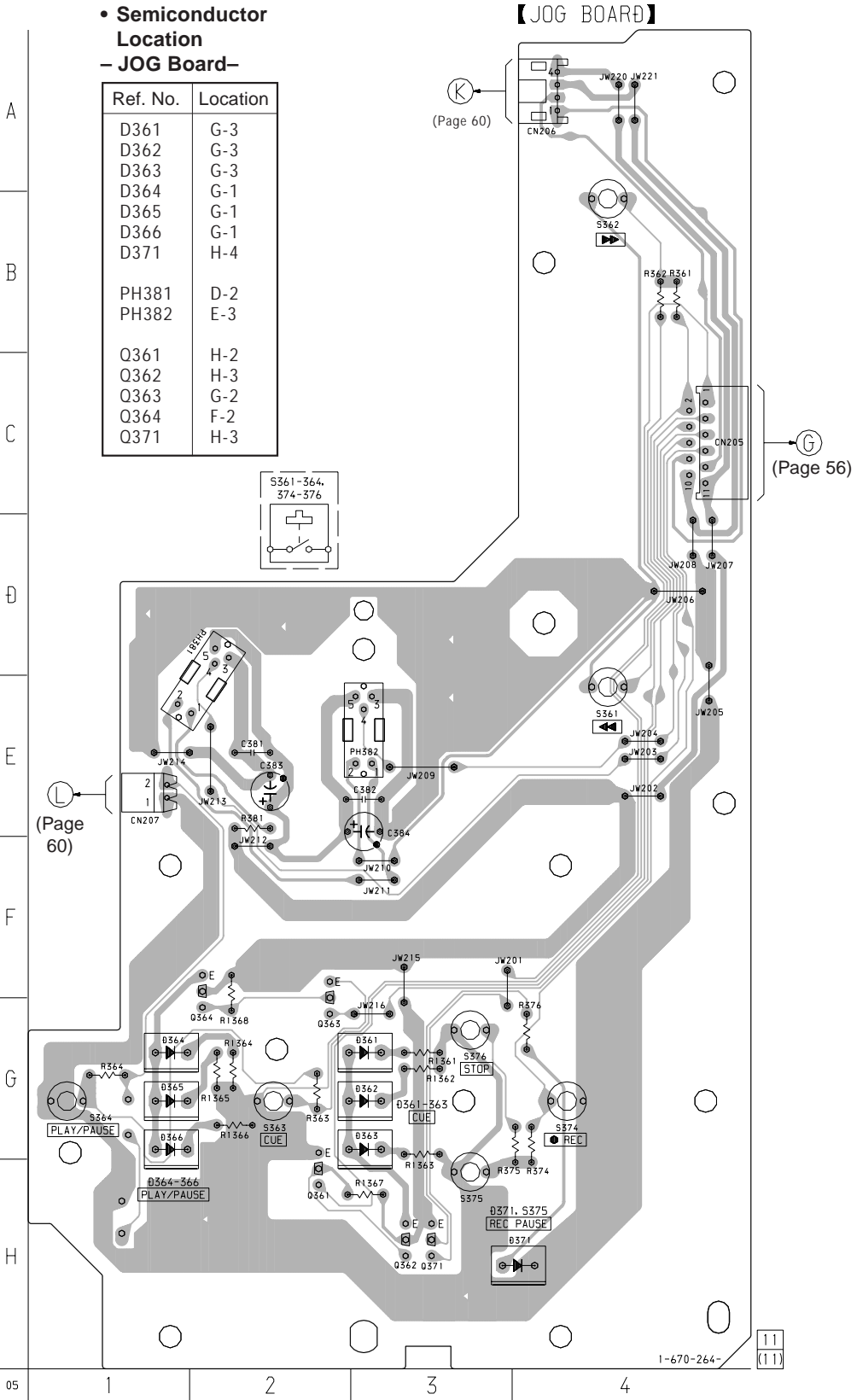
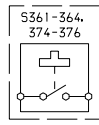
(Page 61)

(Page 65)

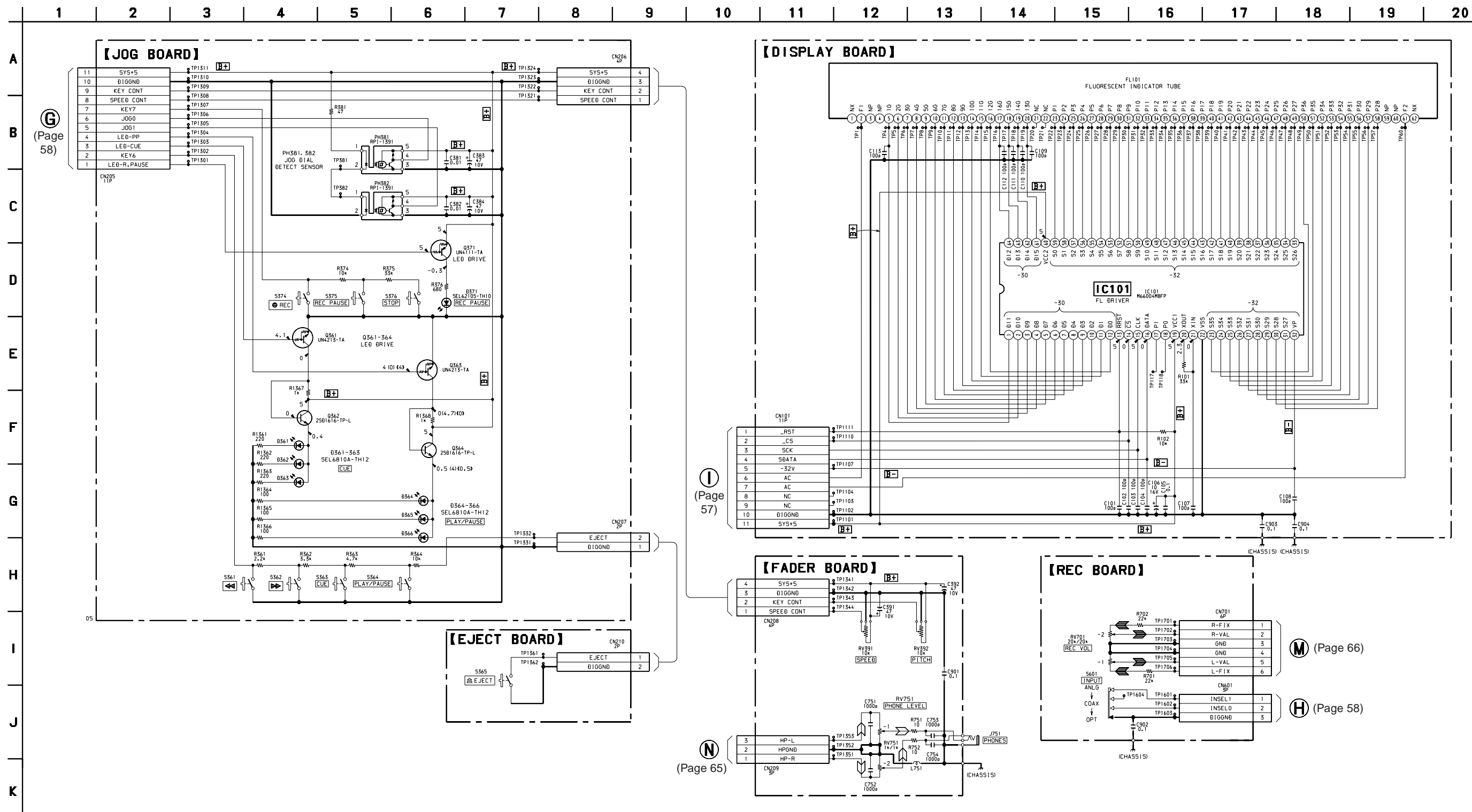
6-20. PRINTED WIRING BOARDS – PANEL Section (2) – • See page 29 for Circuit Boards Location.

• Semiconductor Location – JOG Board–

Ref. No.	Location
D361	G-3
D362	G-3
D363	G-3
D364	G-1
D365	G-1
D366	G-1
D371	H-4
PH381	D-2
PH382	E-3
Q361	H-2
Q362	H-3
Q363	G-2
Q364	F-2
Q371	H-3



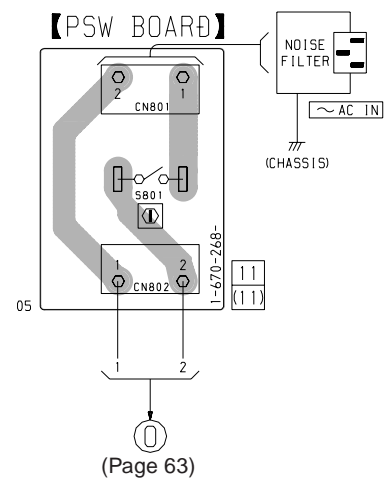
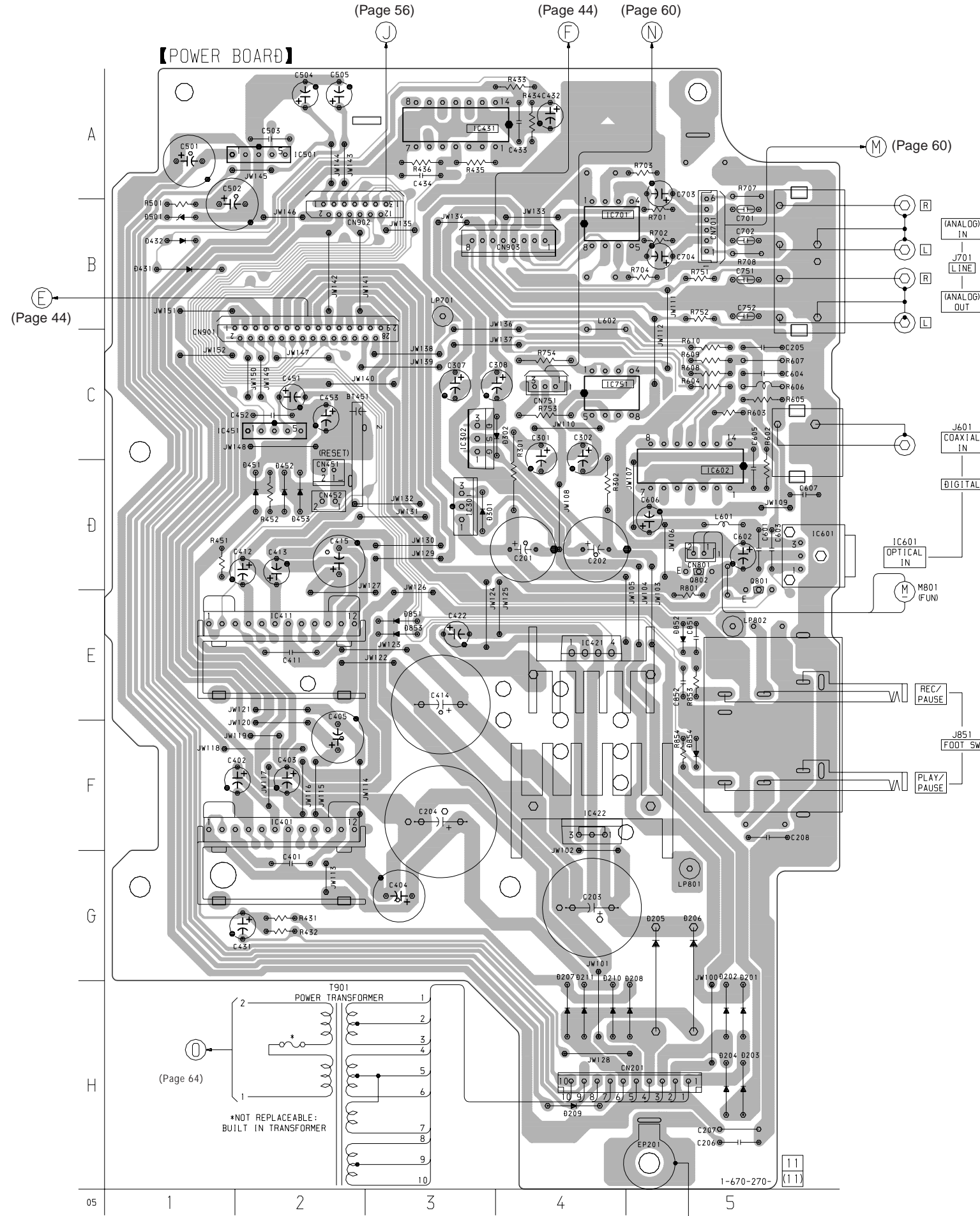
6-21. SCHEMATIC DIAGRAM – PANEL Section (2) – • See page 76 for IC Block Diagram.



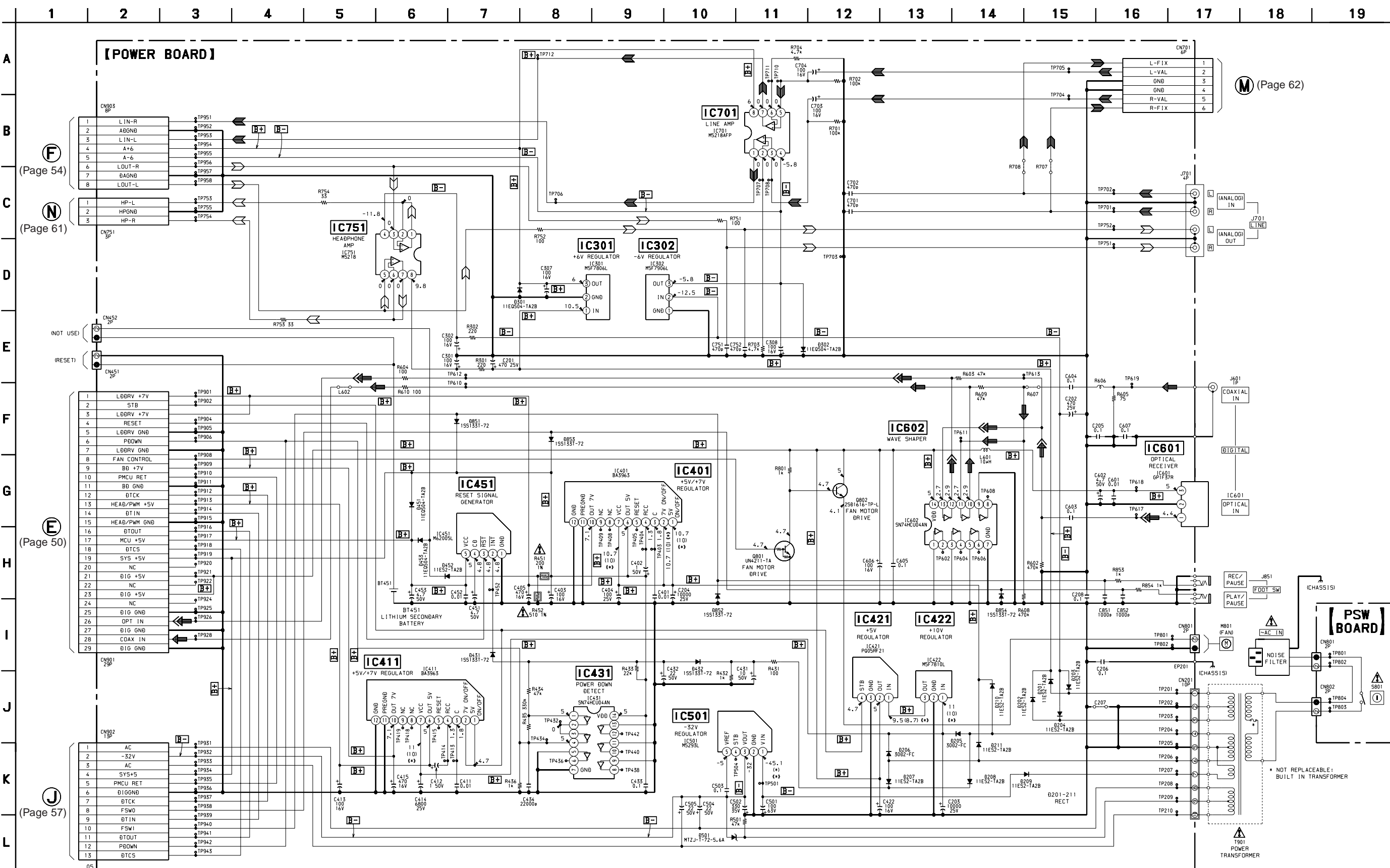
6-22. PRINTED WIRING BOARDS – POWER Section – • See page 29 for Circuit Boards Location.

• Semiconductor Location – POWER Board–

Ref. No.	Location
D201	H-5
D202	H-5
D203	H-5
D204	H-5
D205	G-5
D206	G-5
D207	H-4
D208	H-5
D209	H-4
D210	H-4
D211	H-4
D301	D-3
D302	C-4
D431	B-1
D432	B-1
D451	D-2
D452	D-2
D453	D-2
D501	B-1
D851	E-3
D852	E-5
D853	E-3
D854	F-5
IC301	D-3
IC302	C-3
IC401	F-2
IC411	E-2
IC421	E-4
IC422	F-4
IC431	A-3
IC451	C-2
IC501	A-2
IC601	D-5
IC602	D-5
IC701	B-4
IC751	C-4
Q801	D-5
Q802	D-5



6-23. SCHEMATIC DIAGRAM – POWER Section – • See page 70 for IC Block Diagrams.



(F) (Page 54)

(N) (Page 61)

(E) (Page 50)

(J) (Page 57)

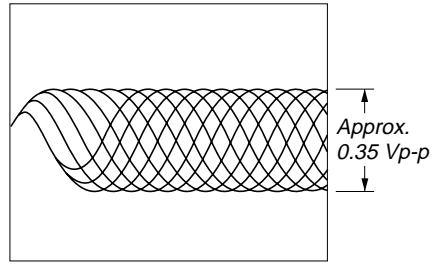
(M) (Page 62)

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

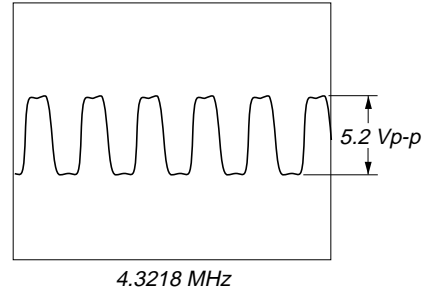
Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

• Waveforms
– BD Board –

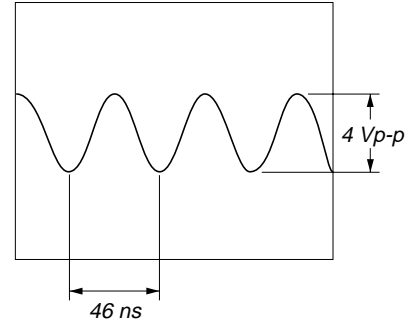
1 IC101 ④⑦, ④⑧ (I, J) (Play mode)



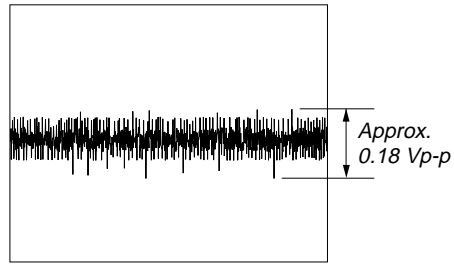
6 IC121 ④④ (XPLCK)



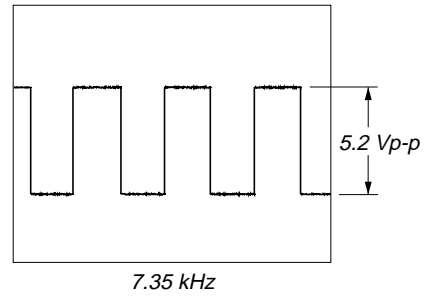
11 IC121 ③⑤ (XTAI)



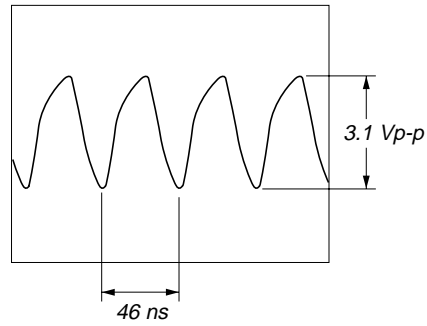
2 IC101 ② (A) (Play mode)



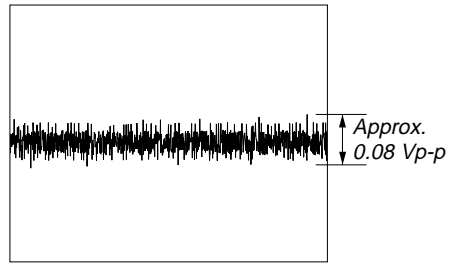
7 IC121 ④① (WFCK)



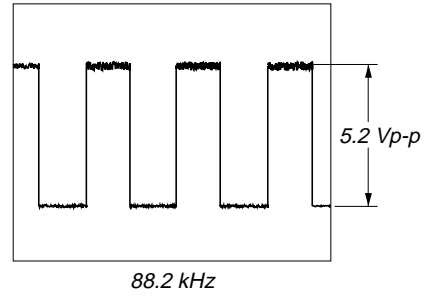
12 IC121 ③④ (XTAO)



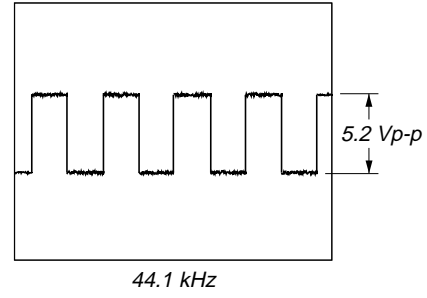
3 IC101 ⑥, ⑦ (E, F) (Play mode)



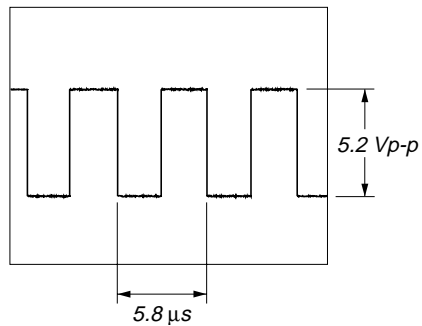
8 IC121 ③⑨ (WDCK)



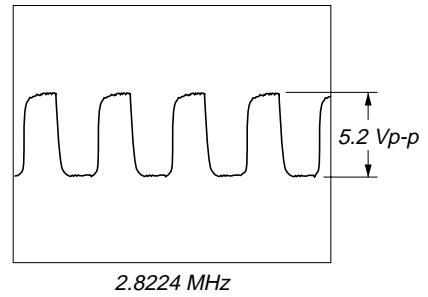
13 IC121 ③③ (LRCK)



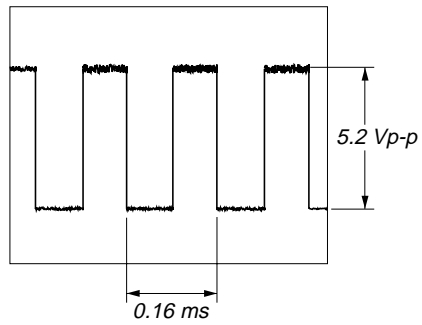
4 IC121 ③⑩ (FS4), IC151 ③ (CLK)



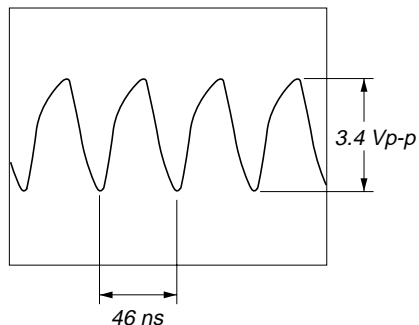
9 IC121 ③② (BCK), ③⑦ (XBCK)



5 IC121 ②② (FMCK)

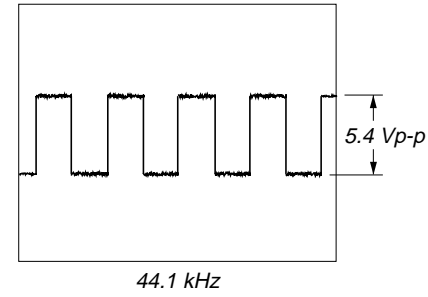


10 IC121 ③⑥ (MCLK)

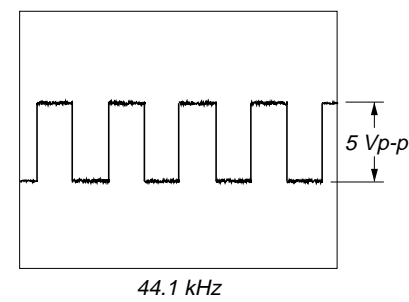


– DIGITAL Board –

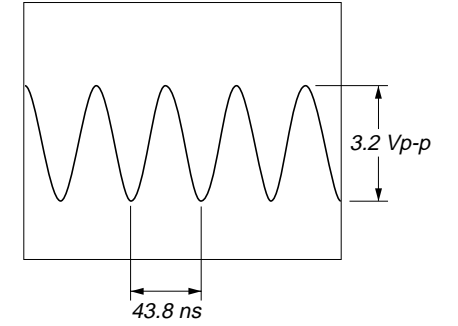
1 IC501 ③⑩ (LRCK), IC601 ③⑩ (LRCK)



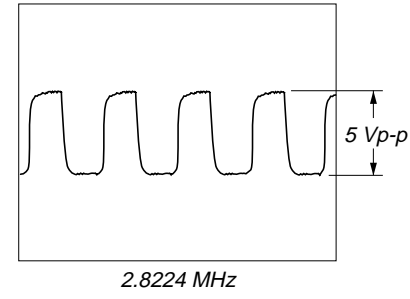
6 IC451 ③② (LRCKO), IC501 ④④ (ALRCK), IC751 ③② (LRCKO), IC801 ③⑧ (LRCK)



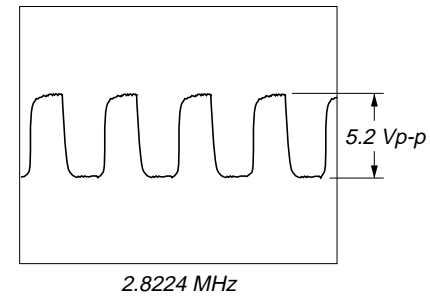
11 IC451 ③③ (XI), IC751 ③③ (XI)



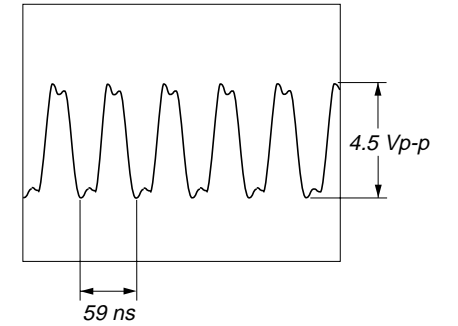
2 IC501 ③① (BCK), IC601 ③① (BCK)



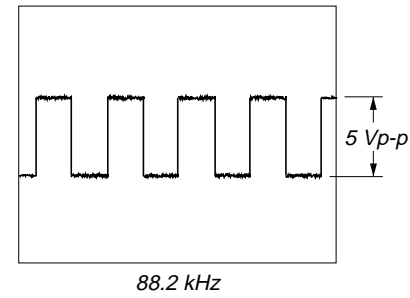
7 IC451 ③① (BCKO), IC501 ④③ (ABCK), IC701 ②⑦ (EXTAL), IC751 ③① (BCKO), IC801 ③⑦ (BCK)



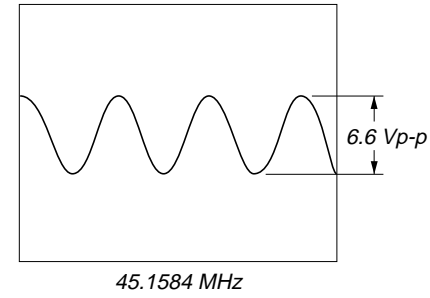
12 IC451 ⑦ (FI128)



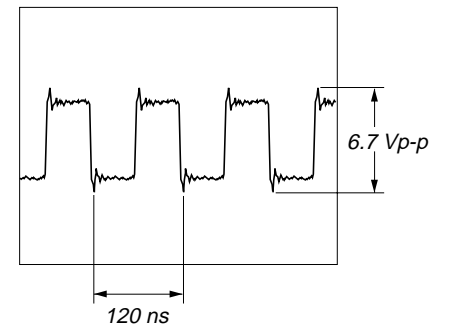
3 IC601 ④④ (ALRCK), IC701 ③⑤ (WSR)



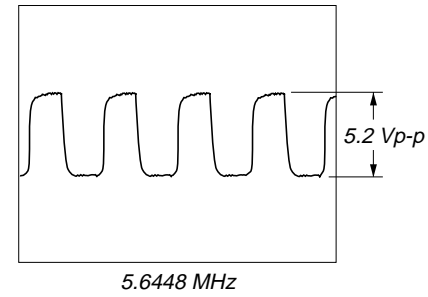
8 IC501 ③⑥ (OSCO)



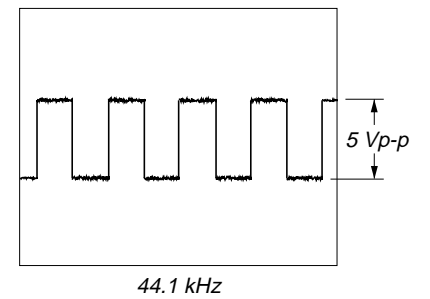
13 IC451 ③ (BCKI)



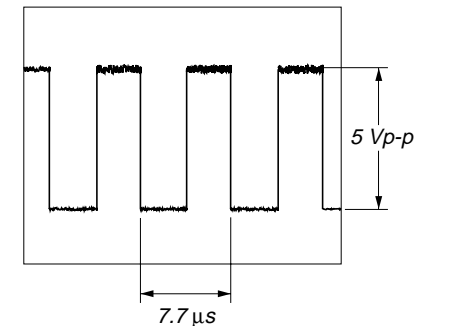
4 IC601 ④③ (ABCK), IC701 ③① (SCKR)



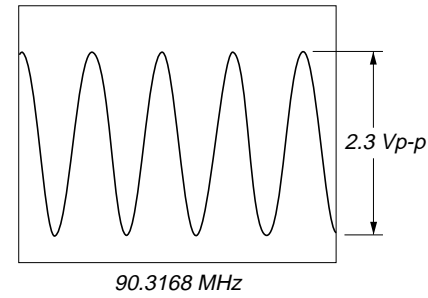
9 IC701 ③⑤ (WST), IC751 ② (LRCKI)



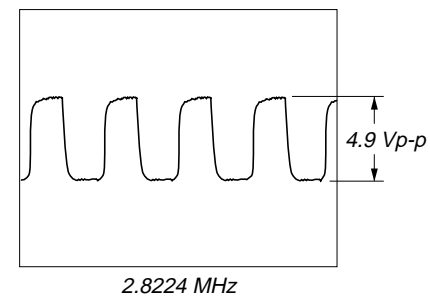
14 IC451 ② (LRCKI)



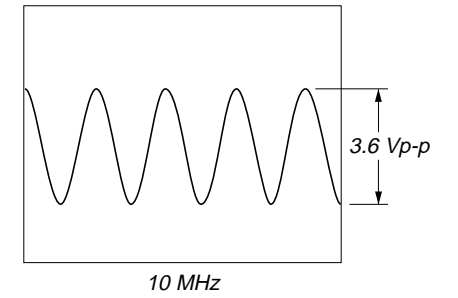
5 IC601 ③⑦ (OSCI)



10 IC701 ④③ (SCKT), IC751 ③ (BCKI)

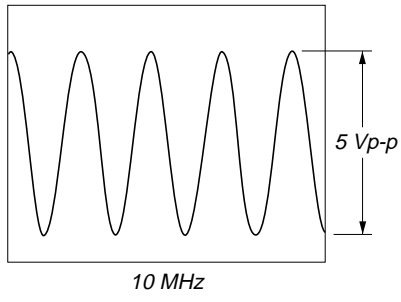


15 IC101 ③⑤ (XIN)



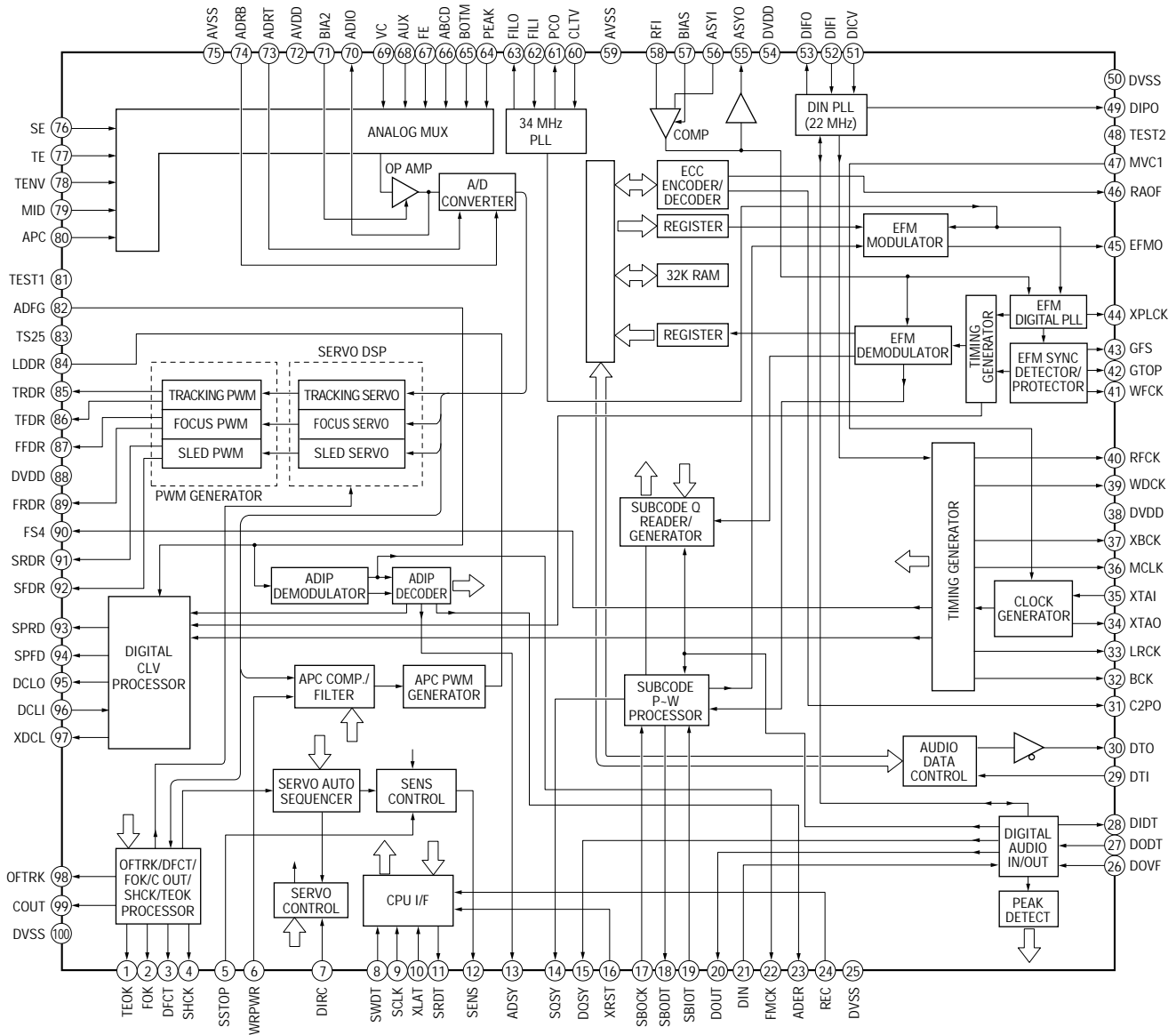
– CENTER Board –

① IC201 ⑬ (XOUT)

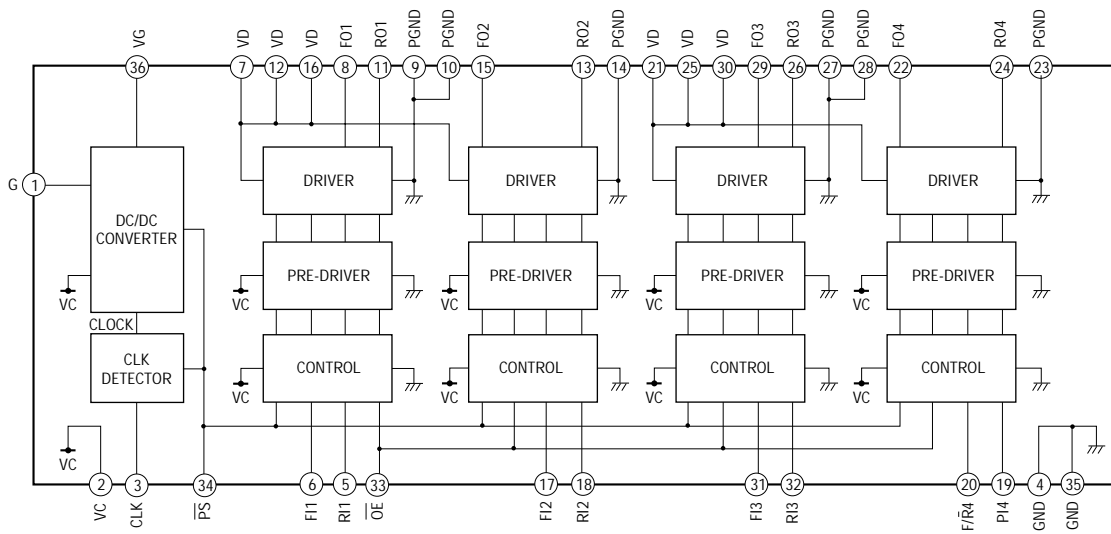


• IC Block Diagrams
– BD Board –

IC121 CXD2535CR

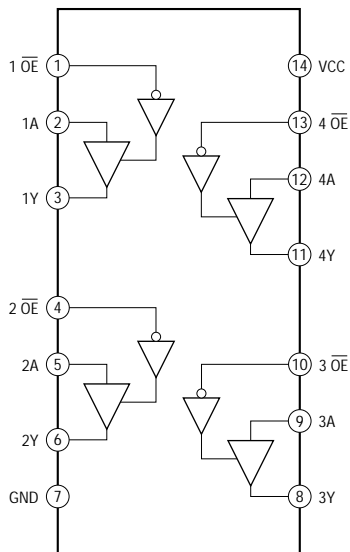


IC151 MPC17A38VMEL

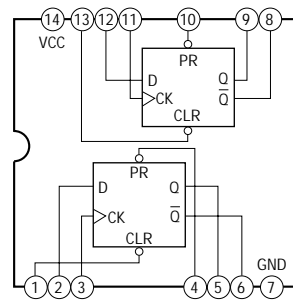


- DIGITAL Board -

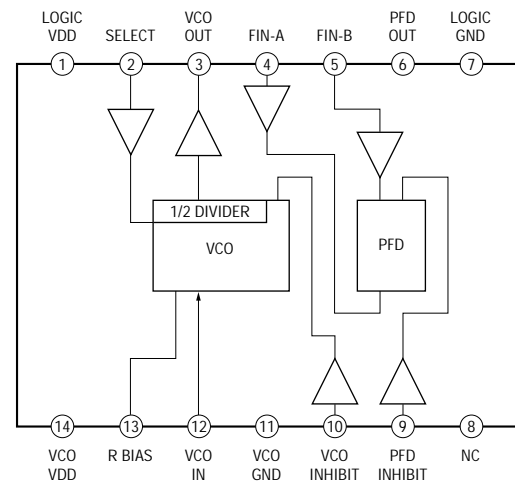
IC152, 153 SN74HC125ANS



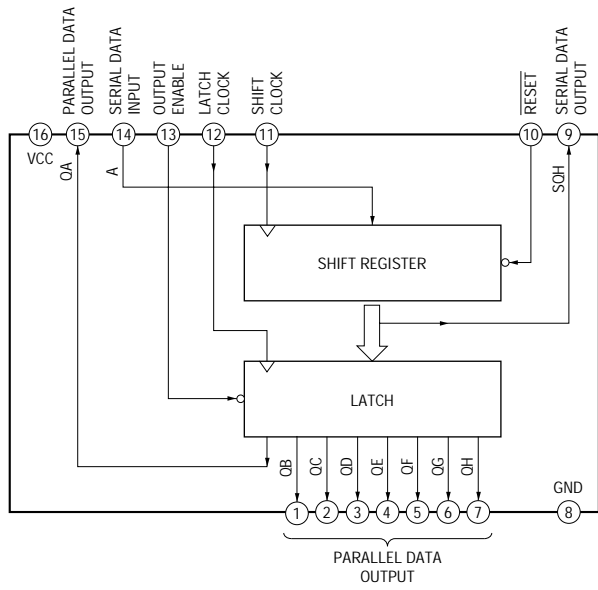
IC202, 258 SN74HC74ANS



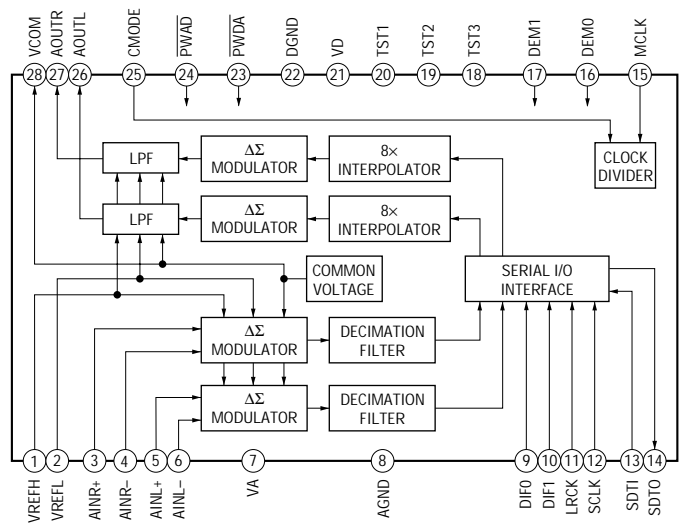
IC251 TLC2932IPW



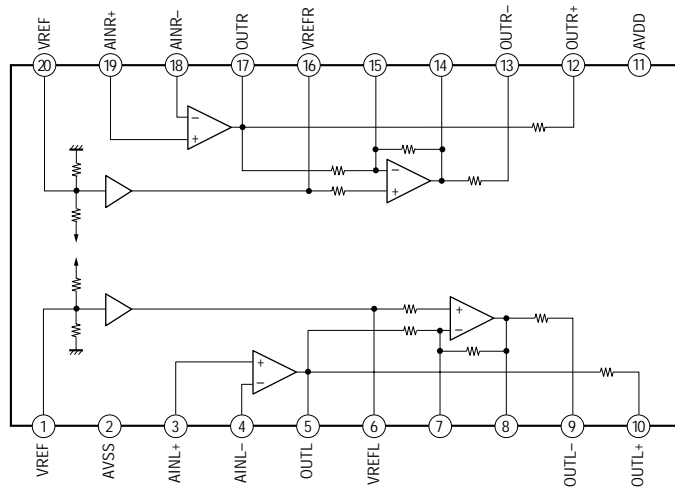
IC256, 257 SN74HC595ANS



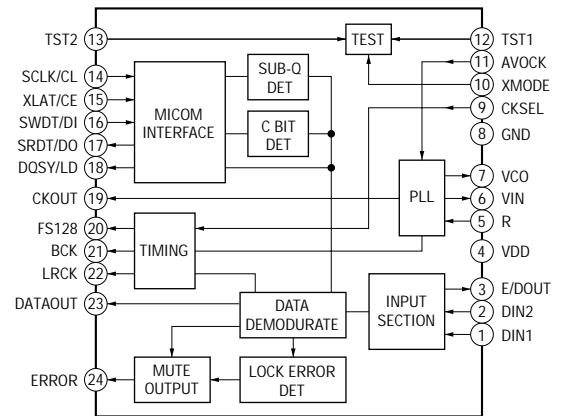
IC301 AK4520A-VF-E2



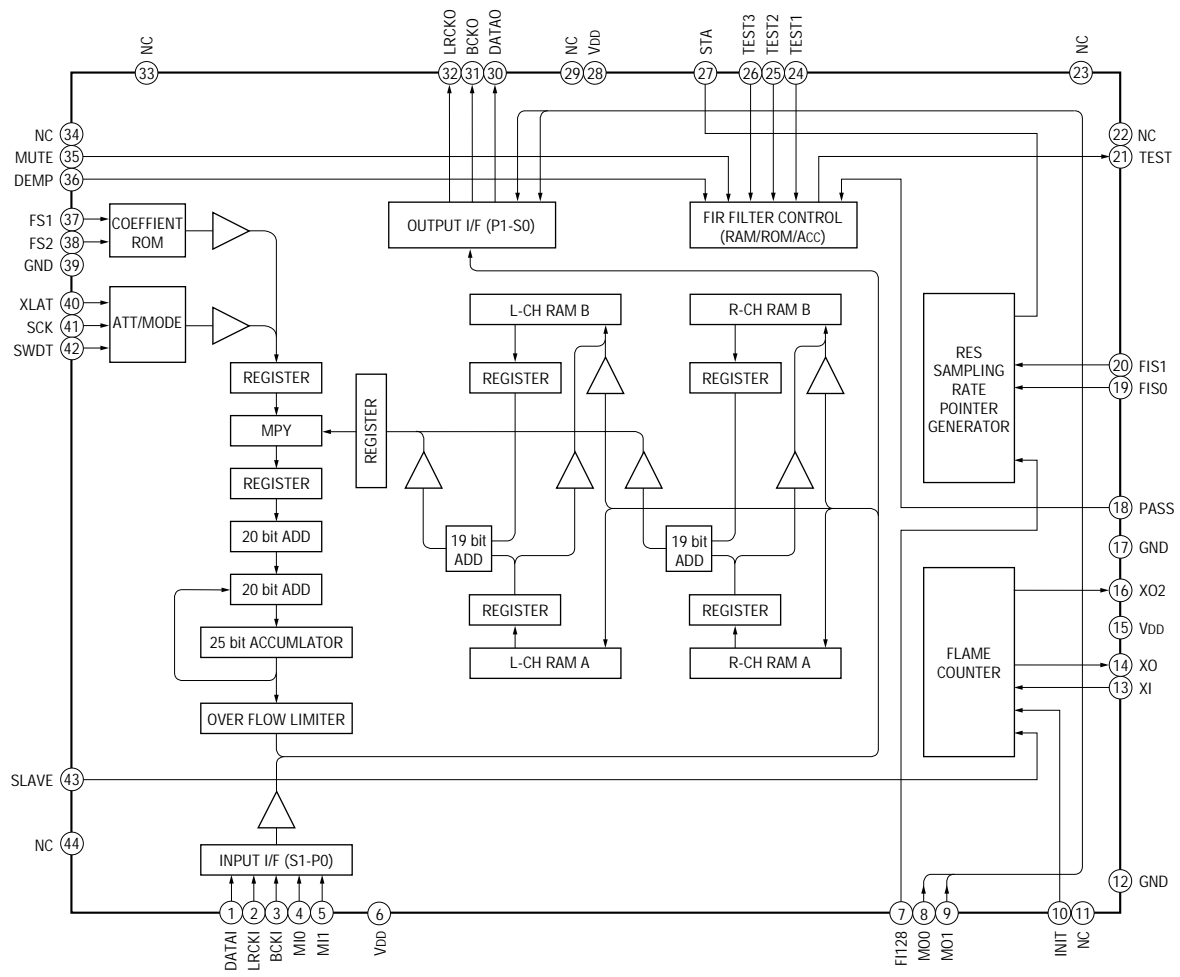
IC311 CXA8054M



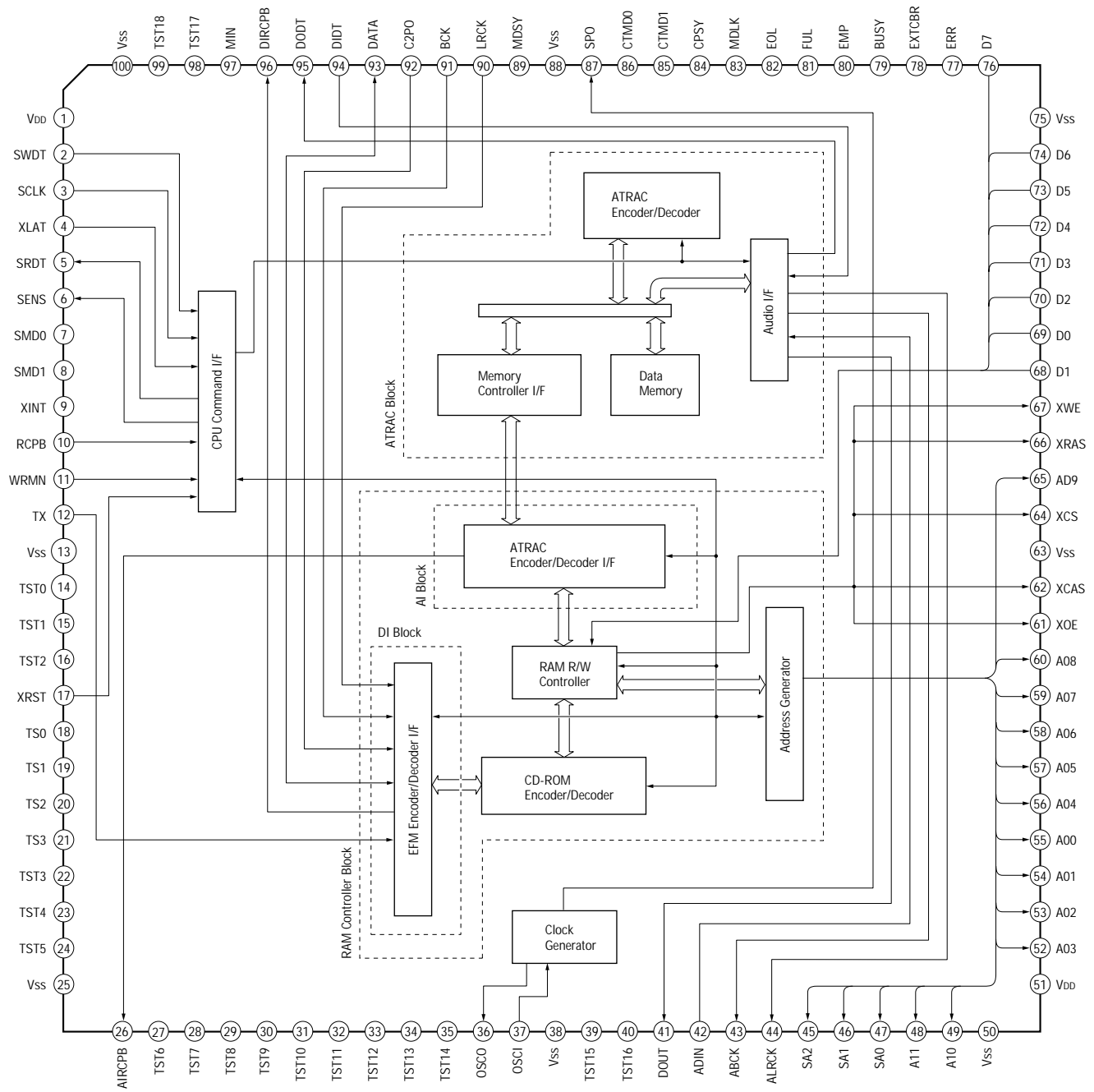
IC401 LC89051V-TLM



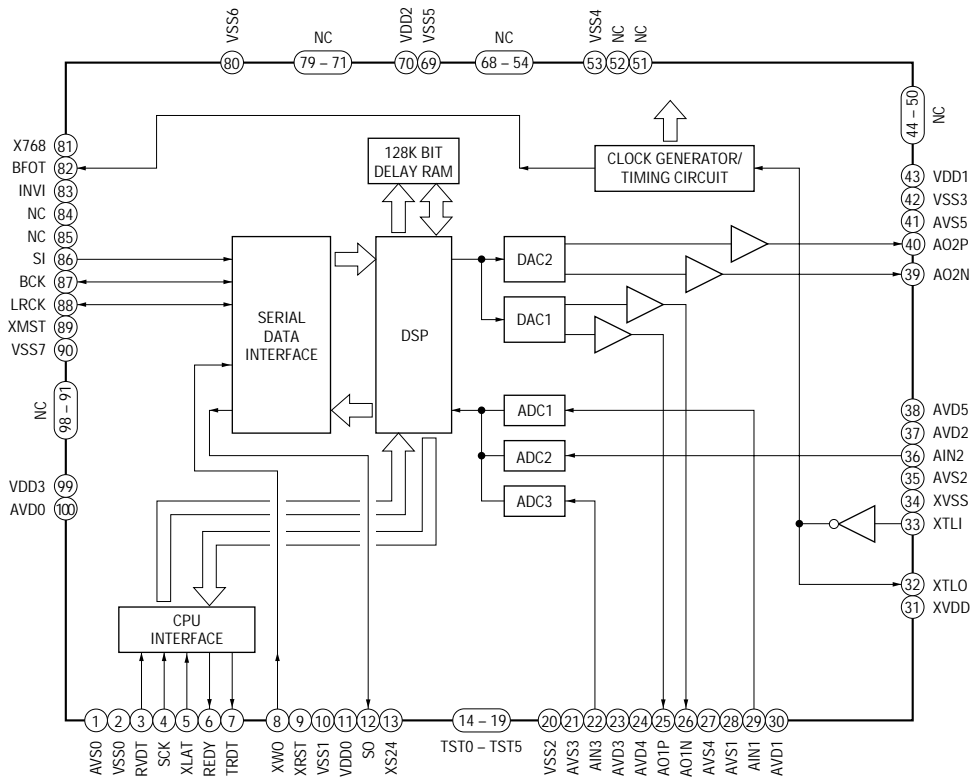
IC451, 751 CXD8517Q



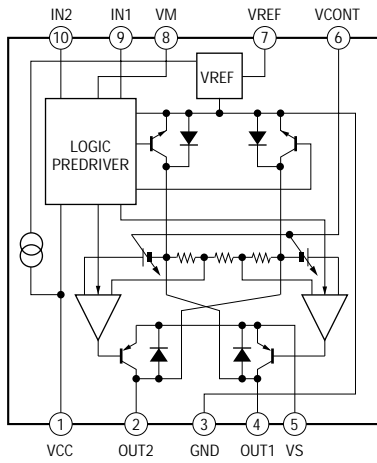
IC501, 601 CXD2537R



IC801 CXD2720Q

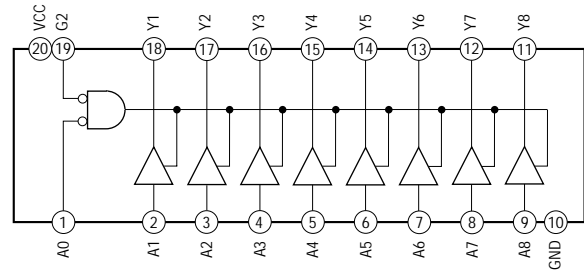


IC901 LB1830M-S-TE-L



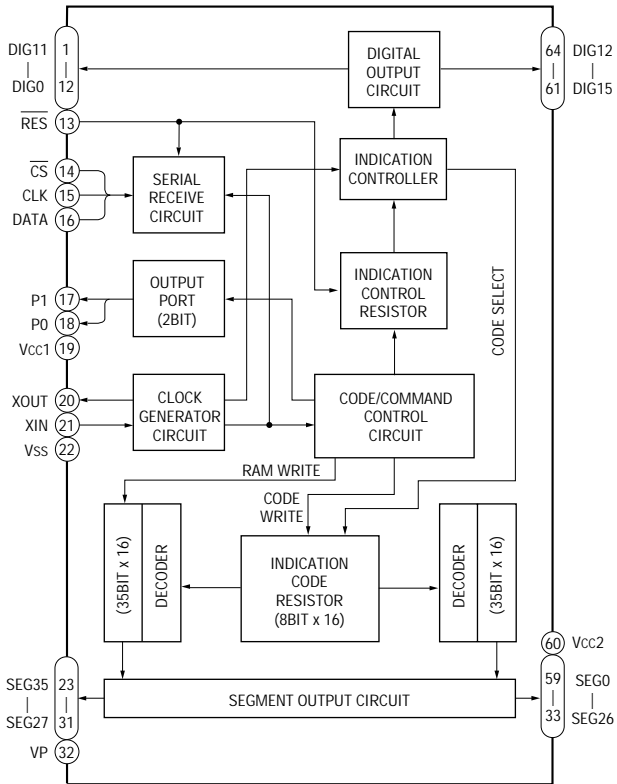
- CENTER Board -

IC421, 431 SN74HC541ANS



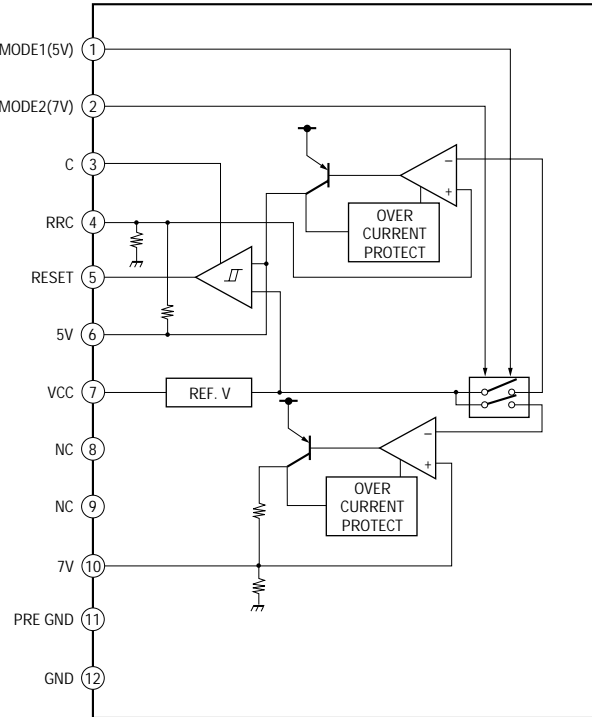
– DISPLAY Board –

IC101 M66004M8FP

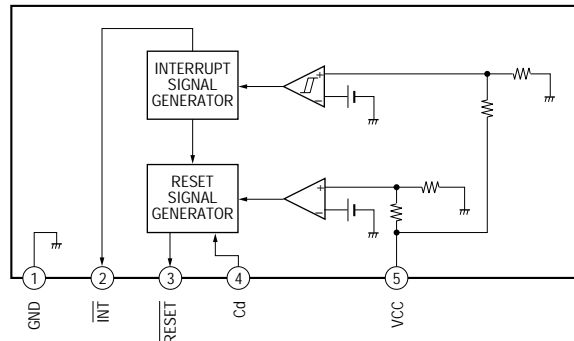


– POWER Board –

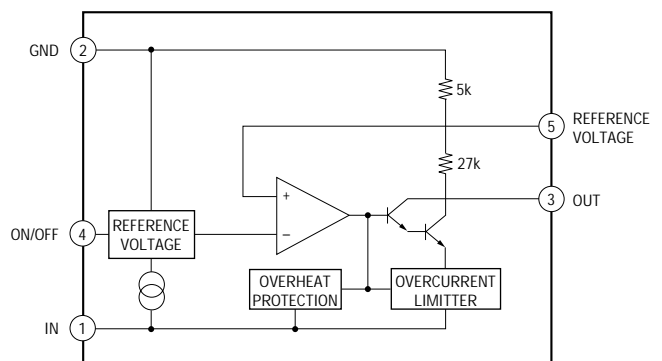
IC401, 411 BA3963



IC451 M62005L



IC501 M5293L



6-24. IC PIN FUNCTION DESCRIPTION

• BD BOARD IC101 CXA1981AR (RF AMP, FOCUS/TRACKING ERROR AMP)

Pin No.	Pin Name	I/O	Function
1	VC	O	Middle point voltage (+2.5V) generation output terminal
2 to 7	A to F	I	Signal input from the optical pick-up detector
8	FI	I	Operational input for the F signal
9	FO	O	Operational output for the F signal
10	PD	I	Light amount monitor input from the optical pick-up block laser diode
11	APCREF	I	Reference voltage input terminal for setting laser power
12	TEMPI	I	Connected to the temperature sensor
13	GND	—	Ground terminal
14	AAPC	O	Laser amplifier output terminal to the automatic power control circuit
15	DAPC	O	Not used (open)
16	TEMPR	O	Output terminal for a temperature sensor reference voltage
17	XRST	I	Reset signal input from the system controller (IC101) “L”: reset
18	SWDT	I	Writing serial data input from the system controller (IC101)
19	SCLK	I	Serial data transfer clock signal input from the system controller (IC101)
20	XLAT	I	Serial data latch pulse signal input from the system controller (IC101)
21	VREF	O	Reference voltage output terminal Not used (open)
22	TENV	O	Not used (open)
23	THLD	I	Connected to the external capacitor for set the internal circuit
24	VCC	—	Power supply terminal (+5V)
25	TFIL	I	Connected to the external capacitor for set the internal circuit
26	TE	O	Tracking error signal output to the CXD2535CR (IC121)
27	TLB	I	Adder signal input of the tracking error
28	CSLED	I	Connected to the external capacitor for low-pass filter of the sled error signal
29	SE	O	Sled error signal output to the CXD2535CR (IC121)
30	ADFM	O	FM signal output of the ADIP
31	ADIN	I	Receives a ADIP FM signal in AC coupling
32	ADAGC	I	Connected to the external capacitor for ADIP AGC
33	ADFG	O	ADIP duplex signal (22.05 kHz \pm 1 kHz) output to the CXD2535CR (IC121)
34	AUX	O	Auxiliary signal (I ₃ signal/temperature signal) output to the CXD2535CR (IC121)
35	FE	O	Focus error signal output to the CXD2535CR (IC121)
36	FLB	I	Adder signal input of the focus error Not used (open)
37	ABCD	O	Light amount signal (ABCD) output to the CXD2535CR (IC121)
38	BOTM	O	Light amount signal (RF/ABCD) bottom hold output to the CXD2535CR (IC121)
39	PEAK	O	Light amount signal (RF/ABCD) peak hold output to the CXD2535CR (IC121)
40	RFAGC	I	Connected to the external capacitor for RF auto gain control circuit
41	RF	O	Playback EFM RF signal output to the CXD2535CR (IC121)
42	ISET	I	Connected to the external capacitor for set the internal circuit 22 kHz, BPF center frequency
43	AGCI	I	Receives a RF signal in AC coupling
44	RFO	O	RF signal output terminal
45	MORFI	I	Receives a MO RF signal in AC coupling
46	MORFO	O	MO RF signal output terminal
47	I	I	I-V converted RF signal I input from the optical pick-up block detector
48	J	I	I-V converted RF signal J input from the optical pick-up block detector

• **BD BOARD IC121 CXD2535CR**
(DIGITAL SIGNAL PROCESSOR, DIGITAL SERVO PROCESSOR, EFM/ACIRC ENCODER/DECODER)

Pin No.	Pin Name	I/O	Function
1	FS256	O	Clock signal (11.2896 MHz) output terminal (MCLK system) Not used (open)
2	FOK	O	Focus OK signal output to the system controller (IC101) “H” is output when focus is on (“L”: NG)
3	DFCT	O	Defect on/off selection signal output terminal Not used
4	SHCK	O	Track jump detection signal output to the system controller (IC101)
5	SHCKEN	I	Track jump detect enable input terminal Fixed at “H” in this set
6	WRPWR	I	Laser power selection signal input from the system controller (IC101) “L”: playback mode, “H”: recording mode
7	DIRC	I	Not used (fixed at “H”)
8	SWDT	I	Writing serial data input from the system controller (IC101)
9	SCLK	I	Serial data transfer clock signal input from the system controller (IC101)
10	XLAT	I	Serial data latch pulse signal input from the system controller (IC101)
11	SRDT	O	Reading serial data output to the system controller (IC101)
12	SENS	O (3)	Internal status (SENSE) output to the system controller (IC101)
13	ADSY	O	ADIP sync signal output terminal Not used (open)
14	SQSY	O	Subcode Q sync (SCOR) output to the system controller (IC101) “L” is output every 13.3 msec Almost all, “H” is output
15	DQSY	O	Digital In U-bit CD format subcode Q sync (SCOR) output terminal “L” is output every 13.3 msec Almost all, “H” is output Not used (open)
16	XRST	I	Reset signal input from the system controller (IC101) “L”: reset
17	TEST4	I	Input terminal for the test (fixed at “L”)
18	CLVSCK	O	System clock signal output of the CLV Not used (open)
19	TEST5	I	Input terminal for the test (fixed at “L”)
20	DOUT	O	Digital audio signal output terminal when playback mode (for digital optical out/digital coaxial out) Not used
21	DIN	I	Digital audio signal input terminal when recording mode (for digital optical in/digital coaxial in) Not used (fixed at “L”)
22	FMCK	O	FM demodulation clock signal output of the ADIP Not used (open)
23	ATER	O	ADIP CRC flag output terminal Error present when “H” output Not used (open)
24	REC	I	Recording/playback selection signal input from the system controller (IC101) “L”: playback mode, “H”: recording mode
25	DVSS	—	Ground terminal (digital system)
26	DOVF	I	Validity flag input for the digital audio output Fixed at “L” in this set
27	DODT	I	Serial data input from the ATRAC encoder (IC501)
28	DIDT	O	Serial data output terminal Not used
29	DTI	I	Recording audio data input from the ATRAC encoder (IC501)
30	DTO	O (3)	Playback audio data output to the ATRAC decoder (IC601)
31	C2PO	O	C2PO signal (indicate output of the data error status) output to the ATRAC encoder (IC501) and ATRAC decoder (IC601) Playback mode: C2PO (“H”), Digital recording mode: digital in validity flag, Analog recording mode: “L”
32	BCK	O	Serial in/out data bit clock signal (2.8224 MHz) output to the ATRAC encoder (IC501) and ATRAC decoder (IC601) (MCLK system)
33	LRCK	O	L/R sampling clock signal (44.1 kHz) output to the ATRAC encoder (IC501) and ATRAC decoder (IC601) (MCLK system)
34	XTAO	O	System clock signal (512Fs=22.5792 MHz) output terminal Not used (open)
35	XTAI	I	System clock signal (512Fs=22.5792 MHz) input from the ATRAC encoder (IC501)

* 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
36	MCLK	O	MCLK clock signal (22.5792 MHz) output terminal Not used (open)
37	XBCK	O	Invert output of the BCK (pin ②) Not used (open)
38	DVDD0	—	Power supply terminal (+5V) (digital system)
39	WDCK	O	Word clock signal (88.2 kHz) output terminal (MCLK system) Not used (open)
40	RFCK	O	Read frame clock signal (7.35 kHz) output terminal (MCLK system) Not used (open)
41	WFCK	O	Write frame clock signal (7.35 kHz) output terminal (EFM decoder PLL system when playback mode, EFM encoder PLL system when recording mode) Not used (open)
42	GTOP	O	GTOP signal output terminal Open the playback EFM sync protection window when “H” output Not used (open)
43	GFS	O	Guard frame sync signal output terminal The GFS signal becomes “H” when the playback EFM frame sync and interpolation protection timing match “L”: NG, “H”: OK Not used (open)
44	XPLCK	O	EFM decoder PLL clock signal (98Fs=4.3218 MHz) output terminal PLL is made for XPLCK so that changes in the reversion and falling edge of the EFM PLL clock and the EFM signal match Not used (open)
45	EFMO	O	EFM signal output terminal when recording mode
46	RAOF	O	Internal RAM overflow detect signal output terminal (monitor output of decoder) RAOF is a signal generated when the RAM exceeds the ±4 jitter margin Not used (open)
47	MVCI	I	Oscillation input of the digital in PLL Not used (fixed at “L”)
48	TEST2	I	Input terminal for the test (fixed at “L”)
49	DIPD	O (3)	Phase comparison output of the digital in PLL Internal VCO (frequency: low → “H”), External VCO (frequency low → “L”)
50	DVSS1	—	Ground terminal (digital system)
51	DICV	I (A)	Internal VCO control voltage input of the digital in PLL
52	DIFI	I (A)	Internal VCO filter input of the digital in PLL
53	DIFO	O (A)	Internal VCO filter output of the digital in PLL
54	AVDD1	—	Power supply terminal (+5V) (analog system)
55	ASYO	O	Playback EFM full-swing output terminal (“L”=VSS, “H”=VDD)
56	ASYI	I (A)	Playback EFM asymmetry comparator voltage input terminal
57	BIAS	I (A)	Playback EFM asymmetry circuit constant current input terminal
58	RFI	I (A)	Playback EFM RF signal input from the CXA1981AR (IC101)
59	AVSS1	—	Ground terminal (analog system)
60	CLTV	I (A)	Internal VCO control voltage input for master clock of the decoder PLL
61	PCO	O (3)	Phase comparison output for master clock of the decoder PLL
62	FILI	I (A)	Filter input for master clock of the decoder PLL
63	FILO	O (3)	Filter output for master clock of the decoder PLL
64	PEAK	I (A)	Light amount signal (RF/ABCD) peak hold input from the CXA1981AR (IC101)
65	BOTM	I (A)	Light amount signal (RF/ABCD) bottom hold input from the CXA1981AR (IC101)
66	ABCD	I (A)	Light amount signal (ABCD) input from the CXA1981AR (IC101)
67	FE	I (A)	Focus error signal input from the CXA1981AR (IC101)
68	AUX1	I (A)	Auxiliary signal (I3 signal/temperature signal) input from the CXA1981AR (IC101)
69	VC	I (A)	Middle point voltage (+2.5V) input from the CXA1981AR (IC101)
70	ADIO	O (A)	Monitor output of the A/D converter input signal Not used (open)
71	TEST3	I (A)	Input terminal for the test (fixed at “L”)
72	AVDD2	—	Power supply terminal (+5V) (analog system)
73	ADRT	I (A)	A/D converter operational range upper limit voltage input terminal (fixed at “H” in this set)
74	ADRB	I (A)	A/D converter operational range lower limit voltage input terminal (fixed at “L” in this set)
75	AVSS2	—	Ground terminal (analog system)
76	SE	I (A)	Sled error signal input from the CXA1981AR (IC101)

* 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
77	TE	I (A)	Tracking error signal input from the CXA1981AR (IC101)
78	AUX2	I (A)	Auxiliary signal input terminal Not used (fixed at "L")
79	DCHG	I (A)	Connected to the ground
80	APC	I (A)	Error signal input for the laser automatic power control Not used (fixed at "L")
81	TEST1	I	Input terminal for the test (fixed at "L")
82	ADFG	I	ADIP duplex FM signal (22.05 kHz \pm 1 kHz) input from the CXA1981AR (IC101) (TTL schmidt input)
83	TS25	I	Input terminal for the test (fixed at "L")
84	LDDR	O	Laser automatic power control signal output to the CXA1981AR (IC101)
85	TRDR	O	Tracking servo drive PWM signal (-) output to the MPC17A38VMEL (IC151)
86	TFDR	O	Tracking servo drive PWM signal (+) output to the MPC17A38VMEL (IC151)
87	FFDR	O	Focus servo drive PWM signal (+) output to the MPC17A38VMEL (IC151)
88	DVDD1	—	Power supply terminal (+5V) (digital system)
89	FRDR	O	Focus servo drive PWM signal (-) output to the MPC17A38VMEL (IC151)
90	FS4	O	Clock signal (176.4 kHz) output to the MPC17A38VMEL (IC151) (MCLK system)
91	SRDR	O	Sled servo drive PWM signal (-) output to the MPC17A38VMEL (IC151)
92	SFDR	O	Sled servo drive PWM signal (+) output to the MPC17A38VMEL (IC151)
93	SPRD	O	Spindle servo drive PWM signal (-) output to the MPC17A38VMEL (IC151)
94	SPFD	O	Spindle servo drive PWM signal (+) output to the MPC17A38VMEL (IC151)
95	DCLO	O	Not used (open)
96	DCLI	I	Not used (fixed at "H")
97	XDCL	O	Not used (open)
98	OFTRK	O	Spindle motor FG detection signal output to the system controller (IC101)
99	COUT	O	Traverse count signal output terminal Not used (open)
100	DVSS2	—	Ground terminal (digital system)

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

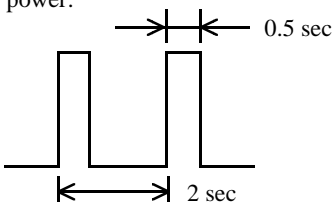
• **CENTER BOARD IC201 M30612M8A-404FP**
(FLUORESCENT INDICATOR TUBE DRIVE CONTROLLER, KEY CONTROLLER, LED DRIVER)

Pin No.	Pin Name	I/O	Function
1	FSW0	I	Foot switch (PLAY/PAUSE) input terminal
2	FSW1	I	Foot switch (REC/PAUSE) input terminal
3, 4	—	O	Not used (open)
5	—	I	Not used (fixed at “H”)
6	REM-CON	I	Not used (fixed at “H”)
7	—	I	Not used (fixed at “H”)
8	BYTE	I	External data bus line byte selection signal input “L”: 16 bit, “H”: 8 bit (fixed at “L”)
9	CNVSS	—	Ground terminal
10	XCIN	I	Sub system clock input terminal (32.768 kHz) Not used (fixed at “H”)
11	XCOUT	O	Sub system clock output terminal (32.768 kHz) Not used (pull up)
12	<u>RESET</u>	I	System reset signal input terminal “L”: reset For several hundreds msec. after the power supply rises, “L” is input, then it changes to “H”
13	XOUT	O	Main system clock output terminal (10 MHz)
14	VSS	—	Ground terminal
15	XIN	I	Main system clock input terminal (10 MHz)
16	VCC	—	Power supply terminal (+5V)
17	NMI	I	Non-maskable interrupt input terminal (fixed at “H” in this set)
18	—	O	Not used (open)
19	—	I	Not used (fixed at “H”)
20	DTCS	I	Chip select signal input from the system controller (IC101)
21	JOG3	I	Not used (fixed at “H”)
22	JOG2	I	Not used (fixed at “H”)
23	JOG1	I	Jog dial detect sensor (PH382 side) input terminal
24	JOG0	I	Jog dial detect sensor (PH381 side) input terminal
25	JOGA	I	Jog dial pulse input from the rotary encoder (S305 $\llcorner\llcorner$ AMS $\gg\gg$) (A phase input)
26	JOGB	I	Jog dial pulse input from the rotary encoder (S305 $\llcorner\llcorner$ AMS $\gg\gg$) (B phase input)
27	—	I	Not used (fixed at “H”)
28	LED-R.PAUSE	O	LED drive signal output of the REC PAUSE LED (D371) “L”: LED on
29	LED-CUE	O	LED drive signal output of the CUE LED (D361 to 363) “L”: LED on
30	LED-PP	O	LED drive signal output of the PLAY/PAUSE LED (D364 to 366) “L”: LED on
31	SWDT	O	Serial data output to the fluorescent indicator tube driver (IC101)
32	SRDT	I	Not used (fixed at “H”)
33	SCLK	O	Serial data transfer clock signal output to the fluorescent indicator tube driver (IC101)
34	<u>FLCS</u>	O	Chip select signal output to the fluorescent indicator tube driver (IC101)
35	DTIN	O	Serial data output to the system controller (IC101)
36	DTOUT	I	Serial data input from the system controller (IC101)
37	DTCK	I	Serial data transfer clock signal input from the system controller (IC101)
38	RTS	O	RTS (request to send) output to the system controller (IC101)
39 to 45	—	I	Not used (fixed at “H”)
46	<u>FL-RES</u>	O	Reset signal output to the fluorescent indicator tube driver (IC101) “L”: reset
47 to 61	—	I	Not used (fixed at “H”)
62	VCC	—	Power supply terminal (+5V)
63	—	I	Not used (fixed at “H”)
64	VSS	—	Ground terminal
65	LED1-G	O	LED drive signal output of the pad indicator “L”: LED on
66	LED1-O	O	

Pin No.	Pin Name	I/O	Function
67	LED2-G	O	LED drive signal output of the pad indicator "L": LED on
68	LED2-O	O	
69	LED3-G	O	
70	LED3-O	O	
71	LED4-G	O	
72	LED4-O	O	
73	LED5-G	O	
74	LED5-O	O	
75	LED6-G	O	
76	LED6-O	O	
77	LED7-G	O	
78	LED7-O	O	
79	LED8-G	O	
80	LED8-O	O	
81 to 86	—	I	Not used (fixed at "H")
87	INPUT-SEL1	I	INPUT switch (S601) input terminal "L": optical input, "H": analog/coaxial input
88	INPUT-SEL0	I	INPUT switch (S601) input terminal "L": analog input, "H": optical/coaxial input
89	KEY0	I	Key input terminal (A/D input) S301 to S306 (UNDO, BANK, ENTER/YES, EDIT/NO, PUSH ENTER, PLAY MODE keys input)
90	KEY1	I	Key input terminal (A/D input) S311 to S316 (REPEAT, SINGLE PLAY, DISPLAY, RELOOP, LOOP IN, LOOP OUT keys input)
91	KEY2	I	Key input terminal (A/D input) Key input from the pad unit (PAD1 to PAD4)
92	KEY3	I	Key input terminal (A/D input) Key input from the pad unit (PAD5 to PAD8)
93	KEY6	I	Key input terminal (A/D input) S361 to S365 (◀◀, ▶▶, CUE, PLAY/PAUSE, ⏏ EJECT keys input)
94	KEY7	I	Key input terminal (A/D input) S371 to S376 (AUTO MODE CUE/PAUSE/OFF, ● REC, REC PAUSE, STOP keys input)
95	SPEED-CONT	I	SPEED control volume input terminal (RV391)
96	AVSS	—	Ground terminal (for A/D converter)
97	KEY-CONT	I	PITCH control volume input terminal (RV392)
98	AVREF	I	Reference voltage (+5V) input terminal (for A/D converter)
99	AVCC	—	Power supply terminal (+5V) (for A/D converter)
100	—	I	Not used (fixed at "H")

• DIGITAL BOARD IC101 M30610MC-TTX1057M (SYSTEM CONTROLLER)

Pin No.	Pin Name	I/O	Function
1, 2	TEST	O	Not used (pull up)
3, 4	TEST	I	Not used (fixed at "H")
5	SQSY	I	Subcode Q sync (SCOR) input from the CXD2535CR (IC121) "L" is input every 13.3 msec Almost all, "H" is input
6	—	O	Not used (pull up)
7	$\overline{\text{PDOWN}}$	I	Power down detection signal input terminal "L": power down, normally: "H"
8	BYTE	I	External data bus line byte selection signal input "L": 16 bit, "H": 8 bit (fixed at "L")
9	CNVSS	—	Ground terminal
10	XCIN	I	Sub system clock input terminal (32.768 kHz) Not used (fixed at "H")
11	XCOUT	O	Sub system clock output terminal (32.768 kHz) Not used (pull up)
12	$\overline{\text{RESET}}$	I	System reset signal input from the reset signal generator (IC451) "L": reset For several hundreds msec. after the power supply rises, "L" is input, then it changes to "H"
13	XOUT	O	Main system clock output terminal (10 MHz)
14	VSS	—	Ground terminal
15	XIN	I	Main system clock input terminal (10 MHz)
16	VCC	—	Power supply terminal (+5V)
17	NMI	I	Non-maskable interrupt input terminal (fixed at "H" in this set)
18	—	O	Not used (pull down)
19	DQSY	I	Digital In U-bit CD format subcode Q sync (SCOR) input from the digital audio interface receiver (IC401) "L" is input every 13.3 msec Almost all, "H" is input
20	INT-CDSP	I	Not used (fixed at "L")
21	F86-DEC	O	Not used (pull down)
22	—	O	Not used (pull down)
23	XINT-DEC	I	Interrupt status input from the ATRAC decoder (IC601)
24	XINT-ENC	I	Interrupt status input from the ATRAC encoder (IC501)
25	F86-ENC	O	Not used (pull down)
26 to 30	—	O	Not used (pull down)
31	SWDT	O	Writing data output to the CXA1981AR (IC101), CXD2535CR (IC121), digital audio interface receiver (IC401), sampling rate converter (IC451, 751), ATRAC encoder (IC501), ATRAC decoder (IC601) and CXD2720Q (IC801)
32	SRDT	I	Reading data input from the CXD2535CR (IC121), digital audio interface receiver (IC401), ATRAC decoder (IC601) and CXD2720Q (IC801)
33	SCLK	O	Serial data transfer clock signal output to the CXA1981AR (IC101), CXD2535CR (IC121), digital audio interface receiver (IC401), sampling rate converter (IC451, 751), ATRAC encoder (IC501), ATRAC decoder (IC601) and CXD2720Q (IC801)
34	DTCS	O	Chip select signal output to the fluorescent indicator tube drive controller (IC201)
35	DTOUT	O	Serial data output to the fluorescent indicator tube drive controller (IC201)
36	DTIN	I	Serial data input from the fluorescent indicator tube drive controller (IC201)
37	DTCK	O	Serial data transfer clock signal output to the fluorescent indicator tube drive controller (IC201)
38	PMCU-RET	I	CTS (clear to send) input from the fluorescent indicator tube drive controller (IC201)
39	XLAT-DEC	O	Serial data latch pulse output to the CXA1981AR (IC101), CXD2535CR (IC121), digital audio interface receiver (IC401), sampling rate converter (IC451, 751) and ATRAC decoder (IC601)
40	XLAT-ENC	O	Serial data latch pulse output to the ATRAC encoder (IC501)
41	$\overline{\text{RST-DSP}}$	O	Reset signal output to the DSP (IC701) "L": reset
42	DEEMP-ADA	O	Emphasis control signal output to the A/D, D/A converter (IC301)
43	LAT-KEY	O	Serial data latch pulse output to the CXD2720Q (IC801)
44	XWO-KEY	O	XWO output to the CXD2720Q (IC801)

Pin No.	Pin Name	I/O	Function
45	READY-KEY	I	Ready status input from the CXD2720Q (IC801)
46	XS24-KEY	O	Not used (pull up)
47	RST-37	O	Reset signal output to the ATRAC encoder (IC501) and ATRAC decoder (IC601) "L": reset
48	RST-DIG	O	Reset signal output to the CXA1981AR (IC101), CXD2535CR (IC121), MPC17A38VMEL (IC151), A/D, D/A converter (IC301), digital audio interface receiver (IC401), sampling rate converter (IC451, 751) and CXD2720Q (IC801) "L": reset
49	AMUTE	O	Analog line muting on/off control signal output terminal "L": muting on
50	ERROR	I	SRC error detection signal input from the digital audio interface receiver (IC401) "H": error
51	STB	O	Strobe control signal output to the power supply circuit "L": standby mode, "H": power on
52	DSEL	O	Selection signal output to the serial data selector (IC154) "L": ATRAC decoder (IC601), "H": ATRAC encoder (IC501)
53	DODT-SEL	O	Selection signal output to the DODT selector (IC153) "L": ATRAC encoder (IC501), "H": CXD2720Q (IC801)
54	AOUT-SEL	O	Selection signal output to the line out selector (IC153) "L": ATRAC encoder (IC501), "H": ATRAC decoder (IC601)
55	LN/OPT-SEL	O	Not used (pull down)
56	RPD0	O	Serial data output to the DSP (IC701)
57	OUT SW	I	Detection input from the disc out switch (S192) "L": open position
58	PLAY SW	I	Detection input from the playback position switch (S191) "L": playback position
59	REC SW	I	Detection input from the recording position switch (S193) "L": recording position
60	LOAD IN	O	Loading motor (M191) drive signal output to the motor driver (IC901) "L" active *1
61	LOAD OUT	O	
62	VCC	—	Power supply terminal (+5V)
63	SDA-BAL	O	Not used (open)
64	VSS	—	Ground terminal
65	REC/PB	O	Recording/playback selection signal output to the CXD2535CR (IC121) "L": playback mode, "H": recording mode
66	MOD	O	Laser modulation select signal output to the HF module switch circuit Playback power: "H", Stop: "L", Recording power: 
67	SCTX	O	Recording data output enable signal output to the ATRAC encoder (IC501), ATRAC decoder (IC601) and overwrite head driver (IC181) Writing data transmission timing output (Also serves as the magnetic head on/off output)
68	FG	I	Spindle motor FG detection signal input from the CXD2535CR (IC121)
69	FOK	I	Focus OK signal input from the CXD2535CR (IC121) "H" is input when focus is on ("L": NG)
70	SHOCK	I	Track jump detection signal input from the CXD2535CR (IC121)

*1 Loading motor (M191) control

Terminal	Mode	LOADING	EJECT	BRAKE	RUN IDLE
	LOAD IN (pin ⑥)		"L"	"H"	"L"
LOAD OUT (pin ⑦)		"H"	"L"	"L"	"H"

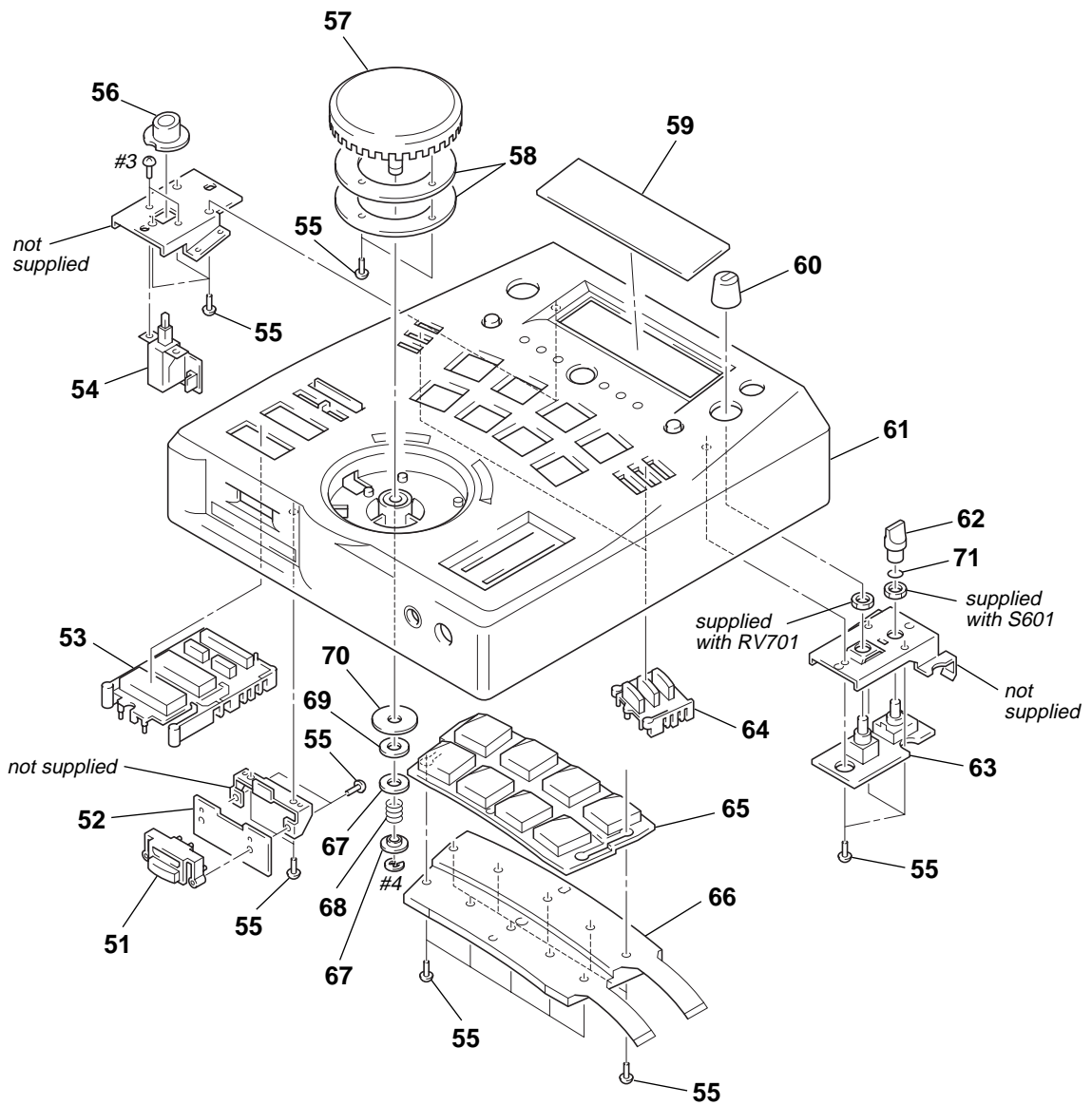
Pin No.	Pin Name	I/O	Function
71	WPOWER	O	Laser power select signal output to the CXD2535CR (IC121) and HF module switch circuit “L”: playback mode, “H”: recording mode
72	SDA-CDSP	I/O	Two-way data bus with the DSP (IC701)
73	SND-CDSP	O	Not used (open)
74	SDA	I/O	Two-way data bus with the EEPROM (IC171)
75	SCL	O	Serial clock signal output to the EEPROM (IC171) and DSP (IC701)
76	SENSE	I	Internal status monitor input from the CXD2535CR (IC121)
77	PROTECT	I	Rec-proof claw detect input from the protect detect switch (S102) “H”: write protect
78	REFLECT	I	Detection input from the disc reflection rate detect switch (S102) “L”: high reflection rate disc, “H”: low reflection rate disc
79	LD-ON	O	Laser diode on/off selection signal output to the automatic power control circuit “H”: laser on
80	LIMIT-IN	I	Detection input from the sled limit-in detect switch (S101) The optical pick-up is inner position when “L”
81	RVS	O	Playback direction control signal output to the DSP (IC701) “L”: RVS, “H”: FWD
82	SERIAL OK	O	Communicate information output terminal “L”: NG, “H”: OK Not used (pull up)
83	SC TRANSFER	O	Sector transfer information output of the CXD2537R (IC501, IC601) “H”: transfer Not used (pull up)
84	—	O	Not used (pull up)
85	SRDT-SEL	O	Selection signal output to the SRDT selector (IC152) “L”: ATRAC encoder (IC501), “H”: ATRAC decoder (IC601)
86	FACTORY	I	Market/factory mode selection signal input terminal “L”: market, “H”: factory Fixed at “L” in this set
87	FAN CONT	O	Fan motor (M801) drive signal output terminal “L”: motor on, “H”: low speed
88	DESTINATION	I	Setting terminal for the destination Fixed at “H” in this set
89 to 95	—	O	Not used (pull up)
96	AVSS	—	Ground terminal (for A/D converter)
97	—	O	Not used (pull up)
98	AVREF	I	Reference voltage (+5V) input terminal (for A/D converter)
99	AVCC	—	Power supply terminal (+5V) (for A/D converter)
100	—	O	Not used (pull up)

• DIGITAL BOARD IC701 DSP56004FJ66 (DSP)

Pin No.	Pin Name	I/O	Function
1	G $\overline{\text{NDA}}$	—	Ground terminal (for EMI control output buffer)
2	MCS0	O	Chip select signal output terminal Not used (open)
3 to 5	MA15 to MA13	O	Address signal output terminal Not used (open)
6	VCCA	—	Power supply terminal (+5V) (for EMI address output buffer and EMI control output buffer)
7	MA12	O	Address signal output terminal Not used (open)
8	G $\overline{\text{NDA}}$	—	Ground terminal (for EMI address output buffer)
9	VCCQ	—	Power supply terminal (+5V) (for internal logic)
10	G $\overline{\text{NDQ}}$	—	Ground terminal (for internal logic)
11, 12	MA11, MA10	O	Address signal output terminal Not used (open)
13, 14	MA09, MA08	O	Address signal output to the D-RAM (IC702)
15	G $\overline{\text{NDA}}$	—	Ground terminal (for EMI address output buffer)
16	MA07	O	Address signal output to the D-RAM (IC702)
17	VCCA	—	Power supply terminal (+5V) (for EMI address output buffer and EMI control output buffer)
18 to 20	MA06 to MA04	O	Address signal output to the D-RAM (IC702)
21	G $\overline{\text{NDA}}$	—	Ground terminal (for EMI address output buffer)
22 to 25	MA03 to MA00	O	Address signal output to the D-RAM (IC702)
26	SCL	I	Serial clock signal input from the system controller (IC101)
27	EXTAL	I	System clock signal input terminal Bit clock signal input in this set
28	VCCQ	—	Power supply terminal (+5V) (for internal logic)
29	G $\overline{\text{NDQ}}$	—	Ground terminal (for internal logic)
30	PINIT	I	PLL initialize terminal Not used (fixed at “L”)
31	G $\overline{\text{NDP}}$	—	Ground terminal (for PLL system)
32	PCAP	—	Connected to capacitor (for PLL filter)
33	VCCP	—	Power supply terminal (+5V) (for PLL system)
34	G $\overline{\text{NDS}}$	—	Ground terminal (for SAI, SHI and ONCE output buffer)
35	SDA	I/O	Two-way data bus with the system controller (IC101)
36	RESET	I	System reset signal input from the system controller (IC101) “L”: reset
37	MODA/ $\overline{\text{IRQA}}$	I	Mode selection terminal Fixed at “H” in this set
38	MODB/ $\overline{\text{IRQB}}$	I	
39	MODC/ $\overline{\text{NMI}}$	I	
40	VCCS	—	Power supply terminal (+5V) (for SAI, SHI and ONCE output buffer)
41, 42	HA0, HA2	I	Not used (fixed at “L”)
43	HREQ	I	Not used (fixed at “H”)
44	G $\overline{\text{NDS}}$	—	Ground terminal (for SAI, SHI and ONCE output buffer)
45	SDO2	O	Enable control signal output to the shift register and latch (IC256, 257)
46	SDO1	O	Serial data output to the shift register and latch (IC256, 257)
47	SDO0	O	Playback serial data output to the CXD8517Q (IC751)
48	VCCS	—	Power supply terminal (+5V) (for SAI, SHI and ONCE output buffer)
49	SCKT	O	Bit clock signal output to the CXD8517Q (IC751)
50	WST	O	L/R sampling clock signal output to the CXD8517Q (IC751)
51	SCKR	I	Bit clock signal input from the CXD2537R (IC601)
52	G $\overline{\text{NDQ}}$	—	Ground terminal (for internal logic)
53	VCCQ	—	Power supply terminal (+5V) (for internal logic)
54	G $\overline{\text{NDS}}$	—	Ground terminal (for SAI, SHI and ONCE output buffer)
55	WSR	I	L/R sampling clock signal input from the CXD2537R (IC601)
56	SDII	I	Serial data input from the system controller (IC101)

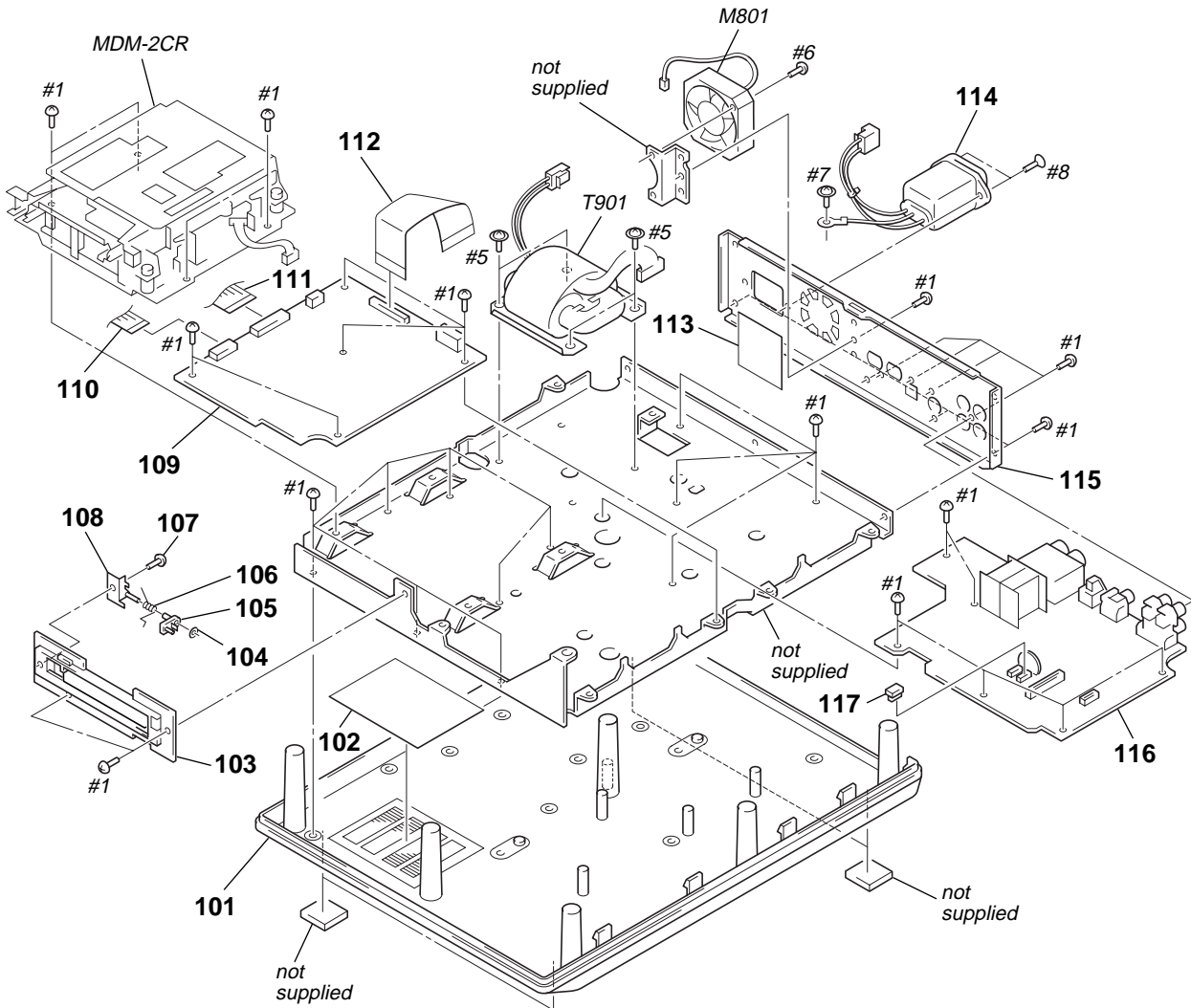
Pin No.	Pin Name	I/O	Function
57	SDI0	I	Playback serial data input from the CXD2537R (IC601)
58	DSO	O	Debug serial data output terminal Not used (pull up)
59	DSI/OS0	I	Debug serial data input terminal Not used (fixed at "L")
60	DSCK/OS1	I/O	Debug serial clock signal in/out terminal Not used (fixed at "L")
61	$\overline{\text{DR}}$	I	Debug request signal input terminal Not used (fixed at "H")
62 to 65	MD7 to MD4	I/O	Two-way data bus with the external memory Not used (open)
66	GNDD	—	Ground terminal (for EMI data bus and GPIO output buffer)
67 to 69	MD3 to MD1	I/O	Two-way data bus with the D-RAM (IC702)
70	VCCD	—	Power supply terminal (+5V) (for EMI data bus and GPIO output buffer)
71	MD0	I/O	Two-way data bus with the D-RAM (IC702)
72	GNDD	—	Ground terminal (for EMI data bus and GPIO output buffer)
73	GPIO3	I	ATRAC block 11.6 msec timing signal input from the CXD2537R (IC601)
74	GPIO2	O	Latch control signal output of the BCK and LRCK signals
75	GPIO1	I	ATRAC interface data EXE signal input from the CXD2537R (IC601)
76	GPIO0	I	Playback direction control signal input from the system controller (IC101) "L": RVS, "H": FWD
77	$\overline{\text{MRD}}$	O	Data read strobe signal output of the external memory "L" active Not used (open)
78	$\overline{\text{MWR}}$	O	Data write strobe signal output to the D-RAM (IC702) "L" active
79	$\overline{\text{MRAS}}$	O	Row address strobe signal output to the D-RAM (IC702) "L" active
80	$\overline{\text{MCAS}}$	O	Column address strobe signal output to the D-RAM (IC702) "L" active

(2) UPPER SIDE CABINET SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	4-210-109-01	BUTTON (EJECT)		62	4-950-189-51	KNOB (A) (VOL)	
* 52	A-4724-210-A	EJECT BOARD, COMPLETE		* 63	A-4724-207-A	REC BOARD, COMPLETE	
53	X-4950-070-1	BUTTON (PLAY) ASSY		64	4-210-108-01	BUTTON (LOOP)	
* 54	A-4724-208-A	PSW BOARD, COMPLETE		65	4-210-102-01	PAD, RUBBER	
55	4-951-620-01	SCREW (2.6X8), +BVTP		66	X-4950-068-1	SHEET ASSY, MEMBRANE (PAD UNIT)	
56	4-210-113-01	KNOB (POWER)		67	4-210-127-01	COLLAR	
57	4-210-105-01	TURN TABLE		68	4-210-129-01	SPRING, COMPRESSION	
58	4-210-126-01	WEIGHT		69	4-210-130-01	FELT	
59	4-210-117-01	PLATE, INDICATION		70	4-211-472-01	BRACKET (FELT)	
60	4-210-115-01	KNOB (REC)		71	4-214-060-01	SPRING	
61	X-4950-069-1	CABINET ASSY, UPPER SIDE					

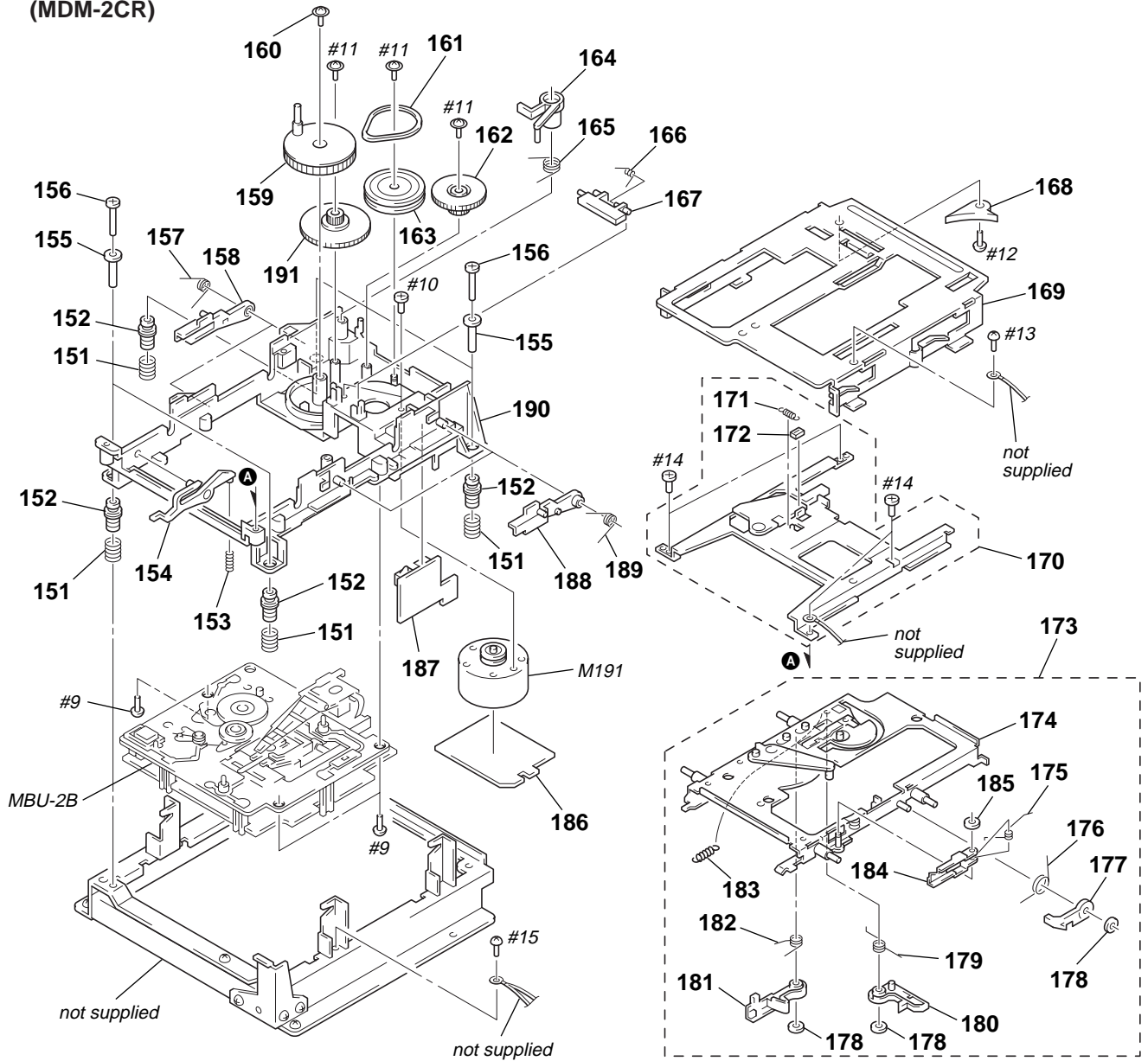
(3) LOWER SIDE CABINET SECTION



<p>The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.</p>	<p>Les composants identifiés par une marque \triangle sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.</p>
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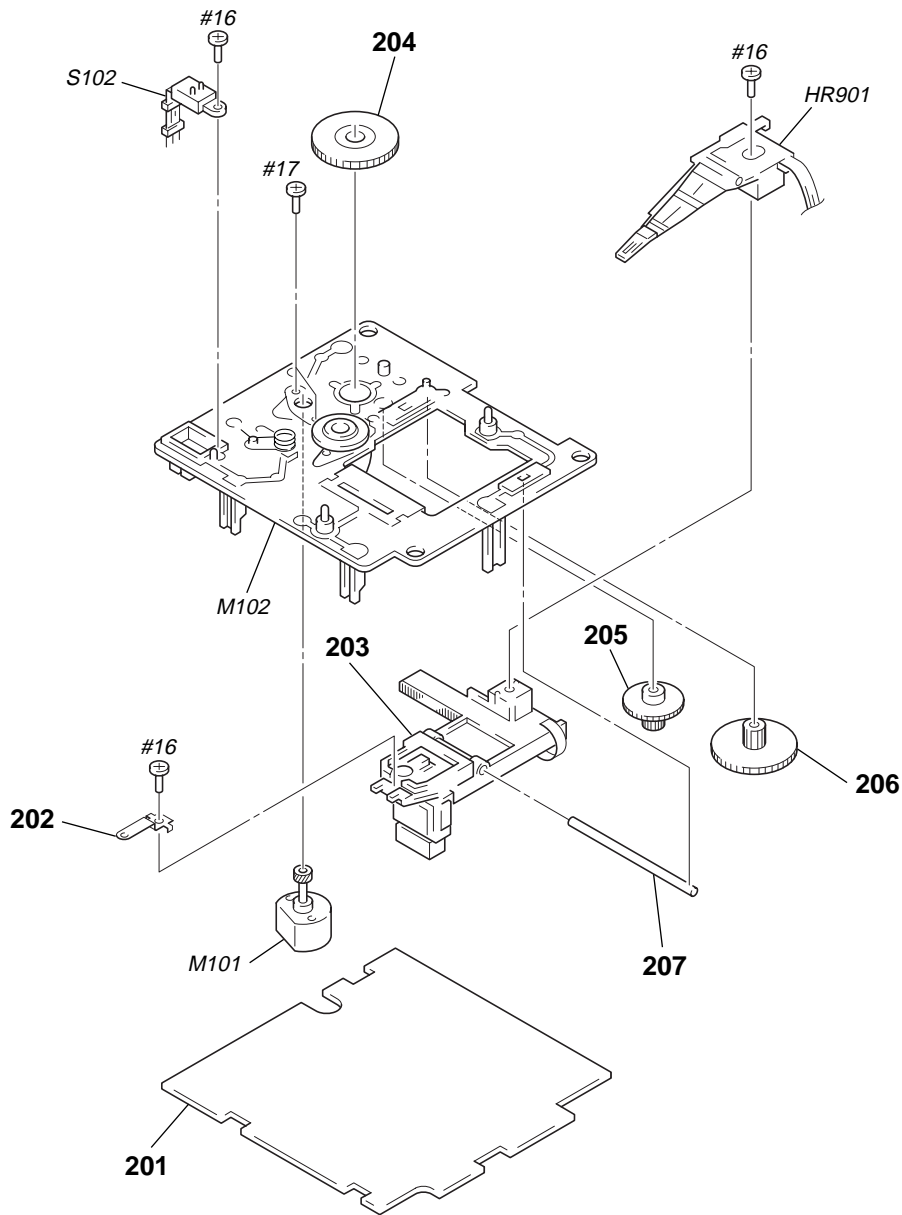
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* 101	4-210-100-11	CABINET, LOWER SIDE (AEP, UK)		111	1-790-030-11	WIRE (FLAT TYPE) (30 CORE)	
* 101	4-210-100-21	CABINET, LOWER SIDE (US, Canadian)		112	1-790-032-11	WIRE (FLAT TYPE) (29 CORE)	
102	4-210-131-01	NET (A), DUST PROTECTION		113	4-210-132-01	NET (B), DUST PROTECTION	
103	X-4950-071-1	HOLDER (LID) ASSY		\triangle 114	1-785-425-11	INLET, AC (3P)	
104	3-681-678-00	WASHER, SLIT		* 115	4-210-104-01	PANEL, BACK	
105	4-969-213-01	LEVER (LID)		* 116	A-4724-213-A	POWER BOARD, COMPLETE (US, Canadian)	
106	4-969-215-01	SPRING, TORSION		* 116	A-4724-217-A	POWER BOARD, COMPLETE (AEP, UK)	
107	4-951-620-01	SCREW (2.6X8), +BVTP		117	1-569-972-21	SOCKET, SHORT 2P	
108	X-4945-242-1	BRACKET (LEVER LID) ASSY		\triangle T901	1-431-933-11	TRANSFORMER, POWER (US, Canadian)	
* 109	A-4724-211-A	DIGITAL BOARD, COMPLETE (US, Canadian)		\triangle T901	1-431-934-11	TRANSFORMER, POWER (AEP, UK)	
* 109	A-4724-215-A	DIGITAL BOARD, COMPETE (AEP, UK)		M801	1-698-851-11	FAN, DC	
110	1-790-031-11	WIRE (FLAT TYPE) (18 CORE)					

**(4) MECHANISM DECK SECTION
(MDM-2CR)**



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
151	4-967-673-01	SPRING, COMPRESSION		172	4-983-110-01	CUSHION (LVO)	
152	4-967-671-01	INSULATOR (MD)		173	A-4672-071-B	HOLDER ASSY, COMPLETE	
153	4-970-710-01	SPRING, COMPRESSION		174	X-4947-136-2	HOLDER ASSY	
154	4-979-400-01	LEVER (DOOR)		175	4-967-646-01	SPRING (SHT), TORSION	
155	4-983-100-01	COLLAR (DAMPER)		176	4-982-099-01	SPRING (LOCK), TORSION	
156	4-972-910-01	SCREW (2.6X18), +B		177	4-982-040-01	LEVER (LOCK)	
157	4-967-668-01	SPRING (UDL), TORSION		178	4-968-919-01	WASHER, STOPPER	
158	4-967-667-01	LEVER (UDL)		179	4-983-106-02	SPRING (LM), TORSION	
159	X-4945-069-1	CAM ASSY		180	4-967-639-01	LEVER (LM)	
160	4-933-134-01	SCREW (+PTPWH M2.6X6)		181	4-967-641-01	LEVER (L)	
161	4-967-656-01	BELT (BD)		182	4-967-642-01	SPRING (L), TORSION	
162	4-977-609-01	GEAR (BD-A)		183	4-971-743-02	SPRING, TENSION	
163	4-977-608-01	PULLEY (BD)		184	4-967-645-01	LEVER (SHT)	
164	4-967-637-01	LEVER (SLM)		185	4-968-919-11	WASHER, STOPPER	
165	4-984-426-01	SPRING (SLM), TORSION		* 186	1-653-412-11	MOTOR BOARD	
166	4-968-273-01	SPRING (OWH), TORSION		* 187	1-653-411-11	DETECTION SW BOARD	
167	4-968-272-01	LEVER (OWH)		188	4-967-669-01	LEVER (UDR)	
168	4-991-727-01	STOPPER (SLD)		189	4-967-670-01	SPRING (UDR), TORSION	
* 169	X-4946-349-1	SLIDER (M) ASSY		190	4-977-777-01	BASE (BD)	
170	A-4672-087-A	BRACKET (LVO) ASSY		191	4-977-610-01	GEAR (BD-B)	
171	4-967-664-05	SPRING, TENSION		M191	A-4660-646-A	MOTOR (LOADING) ASSY	

**(5) BASE UNIT SECTION
(MBU-2B)**



<p>The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.</p>	<p>Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.</p>
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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* 201	A-4673-809-A	BD BOARD, COMPLETE		207	4-967-678-01	SHAFT (OP)	
202	4-967-679-01	SPRING (OP), LEAF		HR901	1-500-175-21	HEAD, OVER LIGHT (RF322-74A)	
Δ 203	8-583-009-12	OPTICAL PICK-UP KMS-210A/J-N		M101	A-4660-651-A	MOTOR (SLED) ASSY	
204	4-967-675-01	GEAR (SL-A)		M102	A-4660-650-A	CHASSIS ASSY, BU (SPINDLE)	
205	4-967-676-01	GEAR (SL-B)		S102	1-762-148-11	SWITCH, PUSH (2 KEY)	
206	4-967-677-01	GEAR (SL-C)				(REFLECT/PROTECT DETECT)	

SECTION 8 ELECTRICAL PARTS LIST

BD

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 and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
All resistors are in ohms.
METAL: Metal-film resistor.
METAL OXIDE: Metal oxide-film resistor.
F: nonflammable

- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
In each case, u: μ , for example:
uA. . . : μ A. . . uPA. . . : μ PA. . .
uPB. . . : μ PB. . . uPC. . . : μ PC. . .
uPD. . . : μ PD. . .
- CAPACITORS
uF: μ F
- COILS
uH: μ H

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

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-4673-809-A	BD BOARD, COMPLETE *****		C152	1-163-038-00	CERAMIC CHIP 0.1uF	25V
		< CAPACITOR >		C155	1-104-916-11	TANTALUM CHIP 6.8uF 20%	20V
C101	1-104-913-11	TANTALUM CHIP 10uF	20% 16V	C160	1-104-601-11	ELECT CHIP 10uF 20%	10V
C102	1-163-038-00	CERAMIC CHIP 0.1uF	25V	C161	1-104-601-11	ELECT CHIP 10uF 20%	10V
C103	1-104-913-11	TANTALUM CHIP 10uF	20% 16V	C163	1-163-021-11	CERAMIC CHIP 0.01uF 10%	50V
C104	1-104-913-11	TANTALUM CHIP 10uF	20% 16V	C164	1-163-021-11	CERAMIC CHIP 0.01uF 10%	50V
C105	1-163-021-11	CERAMIC CHIP 0.01uF	10% 50V	C166	1-163-275-11	CERAMIC CHIP 0.001uF 5%	50V
C106	1-163-275-11	CERAMIC CHIP 0.001uF	5% 50V	C167	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C107	1-163-021-11	CERAMIC CHIP 0.01uF	10% 50V	C169	1-104-913-11	TANTALUM CHIP 10uF 20%	16V
C108	1-163-021-11	CERAMIC CHIP 0.01uF	10% 50V	C170	1-104-913-11	TANTALUM CHIP 10uF 20%	16V
C109	1-163-037-11	CERAMIC CHIP 0.022uF	10% 25V	C171	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C111	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V	C175	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C112	1-163-021-11	CERAMIC CHIP 0.01uF	10% 50V	C176	1-163-227-11	CERAMIC CHIP 10PF 0.5PF	50V
C113	1-107-682-11	CERAMIC CHIP 1uF	10% 16V	C177	1-163-227-11	CERAMIC CHIP 10PF 0.5PF	50V
C114	1-163-038-00	CERAMIC CHIP 0.1uF	25V	C178	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C115	1-107-682-11	CERAMIC CHIP 1uF	10% 16V	C181	1-104-913-11	TANTALUM CHIP 10uF 20%	16V
C116	1-163-019-00	CERAMIC CHIP 0.0068uF	10% 50V	C182	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C117	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V	C183	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C119	1-104-913-11	TANTALUM CHIP 10uF	20% 16V	C184	1-107-836-11	ELECT CHIP 22uF 20%	8V
C121	1-126-395-11	ELECT 22uF	20% 16V	C185	1-164-611-11	CERAMIC CHIP 0.001uF 10%	500V
C122	1-163-021-11	CERAMIC CHIP 0.01uF	10% 50V	C186	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C123	1-163-038-00	CERAMIC CHIP 0.1uF	25V	C191	1-126-395-11	ELECT 22uF 20%	16V
C124	1-163-038-00	CERAMIC CHIP 0.1uF	25V	C192	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C125	1-104-760-11	CERAMIC CHIP 0.047uF	10% 50V	C193	1-164-346-11	CERAMIC CHIP 1uF	16V
C126	1-107-682-11	CERAMIC CHIP 1uF	10% 16V	C194	1-126-206-11	ELECT CHIP 100uF 20%	6.3V
C127	1-163-038-00	CERAMIC CHIP 0.1uF	25V			< CONNECTOR >	
C128	1-163-021-11	CERAMIC CHIP 0.01uF	10% 50V	CN101	1-766-508-11	CONNECTOR, FFC/FPC (ZIF) 22P	
C129	1-107-823-11	CERAMIC CHIP 0.47uF	10% 16V	CN102	1-766-510-21	CONNECTOR, FFC/FPC 30P	
C130	1-163-251-11	CERAMIC CHIP 100PF	5% 50V	CN103	1-766-509-21	CONNECTOR, FFC/FPC 18P	
C131	1-104-760-11	CERAMIC CHIP 0.047uF	10% 50V	CN104	1-766-898-21	HOUSING, CONNECTOR (PC BOARD) 4P	
C132	1-107-682-11	CERAMIC CHIP 1uF	10% 16V			< DIODE >	
C133	1-163-017-00	CERAMIC CHIP 0.0047uF	5% 50V	D101	8-719-988-62	DIODE 1SS355	
C134	1-163-038-00	CERAMIC CHIP 0.1uF	25V	D155	8-719-031-17	DIODE 1SS322-TE85L	
C135	1-163-038-00	CERAMIC CHIP 0.1uF	25V	D161	8-719-421-15	DIODE MA8027-L	
C136	1-126-206-11	ELECT CHIP 100uF	20% 6.3V	D181	8-719-033-60	DIODE F1P2STP	
C141	1-163-038-00	CERAMIC CHIP 0.1uF	25V	D183	8-719-033-60	DIODE F1P2STP	
C142	1-163-251-11	CERAMIC CHIP 100PF	5% 50V			< IC >	
C143	1-163-251-11	CERAMIC CHIP 100PF	5% 50V	IC101	8-752-072-68	IC CXA1981AR	
C144	1-163-251-11	CERAMIC CHIP 100PF	5% 50V	IC102	8-759-243-19	IC TC7SU04F	
C151	1-104-913-11	TANTALUM CHIP 10uF	20% 16V				

BD CENTER

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
IC121	8-752-378-79	IC CXD2535CR		R132	1-216-097-00	RES, CHIP 100K 5%	1/10W
IC122	8-759-243-19	IC TC7SU04F		R133	1-216-129-00	METAL CHIP 2.2M 5%	1/10W
IC151	8-759-179-60	IC MPC17A38VMEL		R134	1-216-037-00	METAL CHIP 330 5%	1/10W
IC171	8-759-504-12	IC X24C01S		R135	1-216-053-00	METAL CHIP 1.5K 5%	1/10W
IC172	8-759-149-73	IC uPC842G2		R136	1-216-041-00	METAL CHIP 470 5%	1/10W
IC181	8-759-095-65	IC TC74ACT540FS		R137	1-216-025-00	RES, CHIP 100 5%	1/10W
IC182	8-759-243-19	IC TC7SU04F		R139	1-216-017-00	RES, CHIP 47 5%	1/10W
IC191	8-759-822-99	IC L88MS05T-FA		R140	1-216-017-00	RES, CHIP 47 5%	1/10W
< COIL >				R141	1-216-295-00	SHORT 0	
L101	1-414-234-22	INDUCTOR CHIP 0uH		R142	1-216-073-00	METAL CHIP 10K 5%	1/10W
L102	1-414-234-22	INDUCTOR CHIP 0uH		R143	1-216-073-00	METAL CHIP 10K 5%	1/10W
L103	1-414-234-22	INDUCTOR CHIP 0uH		R144	1-216-025-00	RES, CHIP 100 5%	1/10W
L105	1-414-234-22	INDUCTOR CHIP 0uH		R145	1-216-121-00	RES, CHIP 1M 5%	1/10W
L106	1-414-234-22	INDUCTOR CHIP 0uH		R146	1-216-037-00	METAL CHIP 330 5%	1/10W
L121	1-414-234-22	INDUCTOR CHIP 0uH		R147	1-216-025-00	RES, CHIP 100 5%	1/10W
L122	1-412-039-51	INDUCTOR CHIP 100uH		R148	1-216-045-00	METAL CHIP 680 5%	1/10W
L151	1-412-622-51	INDUCTOR 10uH		R150	1-216-295-00	SHORT 0	
L152	1-412-622-51	INDUCTOR 10uH		R151	1-216-097-00	RES, CHIP 100K 5%	1/10W
L153	1-412-039-51	INDUCTOR CHIP 100uH		R154	1-220-262-11	RES, CHIP 680 5%	1/4W
L154	1-412-039-51	INDUCTOR CHIP 100uH		R155	1-220-262-11	RES, CHIP 680 5%	1/4W
L155	1-410-980-51	INDUCTOR CHIP 1mH		R158	1-216-121-00	RES, CHIP 1M 5%	1/10W
L161	1-414-234-11	INDUCTOR CHIP 0uH		R161	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
L162	1-414-234-11	INDUCTOR CHIP 0uH		R162	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
L195	1-233-316-21	FILTER, CHIP EMI		R163	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
< TRANSISTOR >				R164	1-216-045-00	METAL CHIP 680 5%	1/10W
Q101	8-729-905-12	TRANSISTOR DTA144EU		R165	1-216-097-00	RES, CHIP 100K 5%	1/10W
Q151	8-729-029-14	TRANSISTOR DTC144EUA-T106		R166	1-220-250-11	RES, CHIP 10 5%	1/2W
Q162	8-729-101-07	TRANSISTOR 2SB798-DL		R167	1-216-065-00	RES, CHIP 4.7K 5%	1/10W
Q163	8-729-905-12	TRANSISTOR DTA144EU		R169	1-219-724-11	METAL CHIP 1 1%	1/4W
Q164	8-729-924-19	TRANSISTOR DTA123JU		R170	1-216-073-00	METAL CHIP 10K 5%	1/10W
Q181	8-729-018-75	FET 2SJ278MY		R171	1-216-073-00	METAL CHIP 10K 5%	1/10W
Q182	8-729-017-65	FET 2SK1764KY		R172	1-216-065-00	RES, CHIP 4.7K 5%	1/10W
< RESISTOR >				R174	1-216-065-00	RES, CHIP 4.7K 5%	1/10W
R101	1-216-077-00	METAL CHIP 15K 5%	1/10W	R176	1-216-065-00	RES, CHIP 4.7K 5%	1/10W
R102	1-216-073-00	METAL CHIP 10K 5%	1/10W	R178	1-216-065-00	RES, CHIP 4.7K 5%	1/10W
R103	1-216-073-00	METAL CHIP 10K 5%	1/10W	R181	1-216-073-00	METAL CHIP 10K 5%	1/10W
R104	1-216-049-11	RES, CHIP 1K 5%	1/10W	R182	1-216-089-00	RES, CHIP 47K 5%	1/10W
R105	1-216-065-00	RES, CHIP 4.7K 5%	1/10W	R183	1-216-089-00	RES, CHIP 47K 5%	1/10W
R106	1-216-133-00	METAL CHIP 3.3M 5%	1/10W	R186	1-216-134-00	METAL CHIP 2.2 5%	1/8W
R107	1-216-113-00	METAL CHIP 470K 5%	1/10W	R187	1-216-134-00	METAL CHIP 2.2 5%	1/8W
R110	1-216-077-00	METAL CHIP 15K 5%	1/10W	< VARIABLE RESISTOR >			
R113	1-216-061-00	METAL CHIP 3.3K 5%	1/10W	RV101	1-241-396-11	RES, ADJ, METAL GLAZE 22K	
R114	1-216-025-00	RES, CHIP 100 5%	1/10W	RV102	1-241-396-11	RES, ADJ, METAL GLAZE 22K	
R116	1-216-069-00	METAL CHIP 6.8K 5%	1/10W	< SWITCH >			
R117	1-216-113-00	METAL CHIP 470K 5%	1/10W	S101	1-572-467-61	SWITCH, PUSH (1 KEY) (LIMIT)	
R120	1-216-025-00	RES, CHIP 100 5%	1/10W	*****			
R121	1-216-097-00	RES, CHIP 100K 5%	1/10W	*	A-4724-204-A	CENTER BOARD, COMPLETE	
R122	1-216-295-00	SHORT 0		*****			
R123	1-216-037-00	METAL CHIP 330 5%	1/10W	< CAPACITOR >			
R124	1-216-025-00	RES, CHIP 100 5%	1/10W	C201	1-164-159-11	CERAMIC 0.1uF 50V	
R125	1-216-025-00	RES, CHIP 100 5%	1/10W	C202	1-104-396-11	ELECT 10uF 20% 16V	
R128	1-216-053-00	METAL CHIP 1.5K 5%	1/10W	C203	1-162-282-31	CERAMIC 100PF 10% 50V	
R129	1-216-037-00	METAL CHIP 330 5%	1/10W	C204	1-162-282-31	CERAMIC 100PF 10% 50V	
R130	1-216-041-00	METAL CHIP 470 5%	1/10W	C205	1-162-282-31	CERAMIC 100PF 10% 50V	
R131	1-216-073-00	METAL CHIP 10K 5%	1/10W				

CENTER

DETECTION SW

Ref. No.	Part No.	Description	Remark
C206	1-162-282-31	CERAMIC 100PF	10% 50V
C207	1-164-159-11	CERAMIC 0.1uF	50V
C208	1-104-396-11	ELECT 10uF	20% 16V
C209	1-162-282-31	CERAMIC 100PF	10% 50V
C210	1-162-282-31	CERAMIC 100PF	10% 50V
C211	1-162-282-31	CERAMIC 100PF	10% 50V
C212	1-162-282-31	CERAMIC 100PF	10% 50V
C213	1-162-282-31	CERAMIC 100PF	10% 50V
C214	1-162-282-31	CERAMIC 100PF	10% 50V
C215	1-162-282-31	CERAMIC 100PF	10% 50V
C216	1-162-282-31	CERAMIC 100PF	10% 50V
C217	1-164-159-11	CERAMIC 0.1uF	50V
C218	1-164-159-11	CERAMIC 0.1uF	50V
C219	1-104-396-11	ELECT 10uF	20% 16V
C421	1-162-306-11	CERAMIC 0.01uF	20% 16V
C431	1-162-306-11	CERAMIC 0.01uF	20% 16V
< CONNECTOR >			
CN201	1-784-641-11	CONNECTOR, BOARD TO BOARD 11P	
CN202	1-779-203-11	CONNECTOR, FCC/FPC 13P	
CN203	1-784-642-11	CONNECTOR, BOARD TO BOARD 11P	
* CN204	1-568-941-11	PIN, CONNECTOR 3P	
CN421	1-691-648-11	SOCKET, CONNECTOR 15P	
CN431	1-691-648-11	SOCKET, CONNECTOR 15P	
< DIODE >			
D101	8-719-911-19	DIODE 1SS119	
D102	8-719-911-19	DIODE 1SS119	
< IC >			
IC201	8-759-537-87	IC M30612M8A-404FP	
IC421	8-759-926-77	IC SN74HC541ANS	
IC431	8-759-926-77	IC SN74HC541ANS	
< RESISTOR >			
R202	1-249-429-11	CARBON 10K	5% 1/4W
R203	1-249-429-11	CARBON 10K	5% 1/4W
R204	1-249-429-11	CARBON 10K	5% 1/4W
R205	1-249-429-11	CARBON 10K	5% 1/4W
R206	1-249-429-11	CARBON 10K	5% 1/4W
R207	1-249-429-11	CARBON 10K	5% 1/4W
R301	1-249-421-11	CARBON 2.2K	5% 1/4W
R302	1-247-843-11	CARBON 3.3K	5% 1/4W
R303	1-249-425-11	CARBON 4.7K	5% 1/4W
R304	1-249-429-11	CARBON 10K	5% 1/4W
R305	1-249-435-11	CARBON 33K	5% 1/4W
R311	1-249-421-11	CARBON 2.2K	5% 1/4W
R312	1-247-843-11	CARBON 3.3K	5% 1/4W
R313	1-249-425-11	CARBON 4.7K	5% 1/4W
R314	1-249-429-11	CARBON 10K	5% 1/4W
R315	1-249-435-11	CARBON 33K	5% 1/4W
R321	1-249-421-11	CARBON 2.2K	5% 1/4W
R322	1-247-843-11	CARBON 3.3K	5% 1/4W
R323	1-249-425-11	CARBON 4.7K	5% 1/4W
R331	1-249-421-11	CARBON 2.2K	5% 1/4W
R332	1-247-843-11	CARBON 3.3K	5% 1/4W
R333	1-249-425-11	CARBON 4.7K	5% 1/4W

Ref. No.	Part No.	Description	Remark
R371	1-249-421-11	CARBON 2.2K	5% 1/4W
R372	1-247-843-11	CARBON 3.3K	5% 1/4W
R373	1-249-425-11	CARBON 4.7K	5% 1/4W
R421	1-249-409-11	CARBON 220	5% 1/4W
R423	1-249-409-11	CARBON 220	5% 1/4W
R425	1-249-409-11	CARBON 220	5% 1/4W
R427	1-249-409-11	CARBON 220	5% 1/4W
R431	1-249-409-11	CARBON 220	5% 1/4W
R433	1-249-409-11	CARBON 220	5% 1/4W
R435	1-249-409-11	CARBON 220	5% 1/4W
R437	1-249-409-11	CARBON 220	5% 1/4W
< CONPOSITION CIRCUIT BLOCK >			
RB201	1-231-410-00	RESISTOR BLOCK 10K	
RB202	1-231-410-00	RESISTOR BLOCK 10K	
RB203	1-231-410-00	RESISTOR BLOCK 10K	
RB204	1-231-410-00	RESISTOR BLOCK 10K	
RB205	1-231-410-00	RESISTOR BLOCK 10K	
RB206	1-231-410-00	RESISTOR BLOCK 10K	
RB207	1-231-410-00	RESISTOR BLOCK 10K	
RB208	1-231-410-00	RESISTOR BLOCK 10K	
RB209	1-231-410-00	RESISTOR BLOCK 10K	
RB210	1-231-410-00	RESISTOR BLOCK 10K	
< SWITCH >			
S301	1-762-875-21	SWITCH, KEYBOARD (UNDO)	
S302	1-762-875-21	SWITCH, KEYBOARD (BANK)	
S303	1-762-875-21	SWITCH, KEYBOARD (ENTER/YES)	
S304	1-762-875-21	SWITCH, KEYBOARD (EDIT/NO)	
S305	1-475-543-11	ENCODER, ROTARY (◀◀ AMS ▶▶ , PUSH ENTER)	
S306	1-762-875-21	SWITCH, KEYBOARD (PLAY MODE)	
S311	1-762-875-21	SWITCH, KEYBOARD (REPEAT)	
S312	1-762-875-21	SWITCH, KEYBOARD (SINGLE PLAY)	
S313	1-762-875-21	SWITCH, KEYBOARD (DISPLAY)	
S314	1-762-875-21	SWITCH, KEYBOARD (LOOP RELOOP)	
S315	1-762-875-21	SWITCH, KEYBOARD (LOOP IN)	
S316	1-762-875-21	SWITCH, KEYBOARD (LOOP OUT)	
S371	1-762-875-21	SWITCH, KEYBOARD (AUTO MODE CUE)	
S372	1-762-875-21	SWITCH, KEYBOARD (AUTO MODE PAUSE)	
S373	1-762-875-21	SWITCH, KEYBOARD (AUTO MODE OFF)	
< VIBRATOR >			
X201	1-579-175-11	VIBRATOR, CERAMIC (10MHz)	

* 1-653-411-11	DETECTION SW BOARD	*****	
< CONNECTOR >			
CN193	1-770-010-21	CONNECTOR, BOARD TO BOARD 4P	
< SWITCH >			
S191	1-762-149-11	SWITCH, PUSH (1 KEY) (PLAY POSITION)	
S192	1-762-149-11	SWITCH, PUSH (1 KEY) (PACK OUT)	
S193	1-762-149-11	SWITCH, PUSH (1 KEY) (REC POSITION)	

DIGITAL

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-4724-211-A	DIGITAL BOARD, COMPLETE (US, Canadian)		C318	1-126-395-11	ELECT	22uF 20% 16V
*	A-4724-215-A	DIGITAL BOARD, COMPLETE (AEP, UK)		C319	1-163-125-00	CERAMIC CHIP	220PF 5% 50V

		< CAPACITOR/SHORT >					
C101	1-163-021-11	CERAMIC CHIP	0.01uF 10% 50V	C320	1-163-125-00	CERAMIC CHIP	220PF 5% 50V
C102	1-163-021-11	CERAMIC CHIP	0.01uF 10% 50V	C321	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C103	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C322	1-126-204-11	ELECT CHIP	47uF 20% 16V
C105	1-163-251-11	CERAMIC CHIP	100PF 5% 50V	C323	1-126-204-11	ELECT CHIP	47uF 20% 16V
C106	1-163-251-11	CERAMIC CHIP	100PF 5% 50V	C324	1-126-204-11	ELECT CHIP	47uF 20% 16V
C107	1-163-251-11	CERAMIC CHIP	100PF 5% 50V	C325	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V
C110	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C326	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V
C111	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C341	1-126-395-11	ELECT	22uF 20% 16V
C151	1-163-021-11	CERAMIC CHIP	0.01uF 10% 50V	C342	1-126-395-11	ELECT	22uF 20% 16V
C152	1-163-021-11	CERAMIC CHIP	0.01uF 10% 50V	C343	1-163-017-00	CERAMIC CHIP	0.0047uF 5% 50V
C153	1-163-021-11	CERAMIC CHIP	0.01uF 10% 50V	C344	1-163-017-00	CERAMIC CHIP	0.0047uF 5% 50V
C154	1-163-021-11	CERAMIC CHIP	0.01uF 10% 50V	C345	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V
C201	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C346	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V
C202	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C347	1-126-395-11	ELECT	22uF 20% 16V
C209	1-163-235-11	CERAMIC CHIP	22PF 5% 50V	C348	1-126-395-11	ELECT	22uF 20% 16V
C211	1-216-295-00	SHORT	0	C402	1-163-251-11	CERAMIC CHIP	100PF 5% 50V
C251	1-126-206-11	ELECT CHIP	100uF 20% 6.3V	C403	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C252	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C404	1-126-206-11	ELECT CHIP	100uF 20% 6.3V
C253	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C405	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C254	1-126-206-11	ELECT CHIP	100uF 20% 6.3V	C406	1-163-023-00	CERAMIC CHIP	0.015uF 5% 50V
C255	1-126-206-11	ELECT CHIP	100uF 20% 6.3V	C409	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V
C256	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C410	1-163-243-11	CERAMIC CHIP	47PF 5% 50V
C257	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C451	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C258	1-126-206-11	ELECT CHIP	100uF 20% 6.3V	C452	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V
C259	1-119-765-11	ELECT	47uF 20% 6.3V	C453	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C260	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C454	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C261	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C501	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C262	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C502	1-163-251-11	CERAMIC CHIP	100PF 5% 50V
C263	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C503	1-163-224-11	CERAMIC CHIP	7PF 0.25PF 50V
C264	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C504	1-163-224-11	CERAMIC CHIP	7PF 0.25PF 50V
C265	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C505	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C266	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C506	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C267	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C507	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C268	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C601	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C269	1-163-251-11	CERAMIC CHIP	100PF 5% 50V	C602	1-163-251-11	CERAMIC CHIP	100PF 5% 50V
C270	1-163-251-11	CERAMIC CHIP	100PF 5% 50V	C603	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C271	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C604	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C272	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C605	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C273	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C606	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C301	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C701	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C303	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C702	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C305	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C703	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C306	1-119-765-11	ELECT	47uF 20% 6.3V	C704	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C307	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V	C705	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V
C308	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C706	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C310	1-126-204-11	ELECT CHIP	47uF 20% 16V	C707	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V
C311	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C708	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C312	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C709	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C313	1-126-395-11	ELECT	22uF 20% 16V	C710	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C314	1-126-395-11	ELECT	22uF 20% 16V	C711	1-119-765-11	ELECT	47uF 20% 6.3V
C315	1-163-231-11	CERAMIC CHIP	15PF 5% 50V	C712	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C316	1-163-231-11	CERAMIC CHIP	15PF 5% 50V	C751	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C317	1-126-395-11	ELECT	22uF 20% 16V	C752	1-163-038-00	CERAMIC CHIP	0.1uF 25V
				C753	1-163-038-00	CERAMIC CHIP	0.1uF 25V
				C801	1-163-251-11	CERAMIC CHIP	100PF 5% 50V

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C802	1-163-251-11	CERAMIC CHIP 100PF	5%	50V	IC259	8-759-232-74 IC TC74HC163AF	
C803	1-163-038-00	CERAMIC CHIP 0.1uF		25V	IC260	8-759-232-74 IC TC74HC163AF	
C804	1-163-038-00	CERAMIC CHIP 0.1uF		25V	IC271	8-759-927-72 IC TL1591CP	
C805	1-163-038-00	CERAMIC CHIP 0.1uF		25V	IC301	8-759-471-38 IC AK4520A-VF-E2	
C806	1-163-038-00	CERAMIC CHIP 0.1uF		25V	IC302	8-759-533-85 IC L88M05T-FA-TL	
C807	1-163-038-00	CERAMIC CHIP 0.1uF		25V	IC311	8-759-352-59 IC CXA8054M	
C808	1-163-038-00	CERAMIC CHIP 0.1uF		25V	IC341	8-759-636-55 IC M5218AFP	
C809	1-163-038-00	CERAMIC CHIP 0.1uF		25V	IC342	8-759-636-55 IC M5218AFP	
C810	1-163-038-00	CERAMIC CHIP 0.1uF		25V	IC401	8-759-444-20 IC LC89051V-TLM	
C901	1-163-038-00	CERAMIC CHIP 0.1uF		25V	IC451	8-759-326-71 IC CXD8517Q	
C902	1-126-204-11	ELECT CHIP 47uF	20%	16V	IC501	8-752-381-28 IC CXD2537R	
C903	1-126-206-11	ELECT CHIP 100uF	20%	6.3V	IC502	8-759-533-67 IC MN4116400CTT-06	
C931	1-126-206-11	ELECT CHIP 100uF	20%	6.3V	IC601	8-752-381-28 IC CXD2537R	
C932	1-126-206-11	ELECT CHIP 100uF	20%	6.3V	IC602	8-759-533-67 IC MN4116400CTT-06	
C961	1-163-038-00	CERAMIC CHIP 0.1uF		25V	IC701	8-759-533-68 IC DSP56004FJ66	
C962	1-163-038-00	CERAMIC CHIP 0.1uF		25V	IC702	8-759-329-31 IC MSM514400CSJADR1-K	
C1001	1-216-295-00	SHORT 0			IC751	8-759-326-71 IC CXD8517Q	
C1002	1-163-038-00	CERAMIC CHIP 0.1uF		25V	IC801	8-752-377-43 IC CXD2720Q	
C1003	1-163-038-00	CERAMIC CHIP 0.1uF		25V	IC901	8-759-481-19 IC LB1830M-S-TE-L	
C1101	1-163-038-00	CERAMIC CHIP 0.1uF		25V			
C1102	1-163-038-00	CERAMIC CHIP 0.1uF		25V			
C1103	1-163-038-00	CERAMIC CHIP 0.1uF		25V			
C1104	1-163-038-00	CERAMIC CHIP 0.1uF		25V			
C1105	1-163-038-00	CERAMIC CHIP 0.1uF		25V			
C1106	1-163-038-00	CERAMIC CHIP 0.1uF		25V			
		< CONNECTOR >					
CN1	1-778-957-11	CONNECTOR, FFC/FPC 29P					
* CN2	1-770-153-11	PIN, CONNECTOR (PC BOARD) 8P					
* CN3	1-770-154-11	PIN, CONNECTOR (PC BOARD) 6P					
CN4	1-766-510-21	CONNECTOR, FFC/FPC 30P					
CN5	1-766-509-21	CONNECTOR, FFC/FPC 18P					
		< DIODE >					
D101	8-719-820-05	DIODE 1SS181					
D311	8-719-800-76	DIODE 1SS226					
D312	8-719-800-76	DIODE 1SS226					
		< FERRITE BEAD >					
FB201	1-414-235-22	INDUCTOR, FERRITE BEAD					
FB202	1-414-235-22	INDUCTOR, FERRITE BEAD					
FB203	1-414-235-22	INDUCTOR, FERRITE BEAD					
		< IC >					
IC101	8-759-537-88	IC M30610MC-TTX1057M					
IC151	8-759-269-92	IC SN74HCU04ANS-E20					
IC152	8-759-926-05	IC SN74HC125ANS					
IC153	8-759-926-05	IC SN74HC125ANS					
IC154	8-759-008-67	IC MC14066BF					
IC201	8-759-269-92	IC SN74HCU04ANS-E20					
IC202	8-759-925-90	IC SN74HC74ANS					
IC251	8-759-295-09	IC TLC2932IPW					
IC252	8-759-269-92	IC SN74HCU04ANS-E20					
IC253	8-759-232-74	IC TC74HC163AF					
IC254	8-759-232-74	IC TC74HC163AF					
IC255	8-759-232-74	IC TC74HC163AF					
IC256	8-759-268-29	IC SN74HC595ANS					
IC257	8-759-268-29	IC SN74HC595ANS					
IC258	8-759-925-90	IC SN74HC74ANS					
		< COIL >					
L201	1-410-369-11	INDUCTOR CHIP 1uH					
L251	1-412-064-11	INDUCTOR CHIP 100uH					
L252	1-412-064-11	INDUCTOR CHIP 100uH					
L301	1-412-064-11	INDUCTOR CHIP 100uH					
		< TRANSISTOR >					
Q101	8-729-424-18	TRANSISTOR UN2113-TX					
Q351	8-729-023-22	TRANSISTOR 2SD2114K					
Q352	8-729-023-22	TRANSISTOR 2SD2114K					
		< RESISTOR/FERRITE BEAD >					
R101	1-216-017-00	RES, CHIP 47	5%	1/10W			
R102	1-216-295-00	SHORT 0					
R104	1-216-073-00	METAL CHIP 10K	5%	1/10W			
R105	1-216-073-00	METAL CHIP 10K	5%	1/10W			
R106	1-216-041-00	METAL CHIP 470	5%	1/10W			
R107	1-216-073-00	METAL CHIP 10K	5%	1/10W			
R201	1-216-025-00	RES, CHIP 100	5%	1/10W			
R202	1-216-025-00	RES, CHIP 100	5%	1/10W			
R205	1-216-025-00	RES, CHIP 100	5%	1/10W			
R206	1-216-049-11	RES, CHIP 1K	5%	1/10W			
R207	1-216-025-00	RES, CHIP 100	5%	1/10W			
R208	1-216-025-00	RES, CHIP 100	5%	1/10W			
R209	1-216-025-00	RES, CHIP 100	5%	1/10W			
R210	1-216-025-00	RES, CHIP 100	5%	1/10W			
R211	1-216-025-00	RES, CHIP 100	5%	1/10W			
R251	1-216-061-00	METAL CHIP 3.3K	5%	1/10W			
R252	1-216-085-00	METAL CHIP 33K	5%	1/10W			
R253	1-216-049-11	RES, CHIP 1K	5%	1/10W			
R254	1-216-073-00	METAL CHIP 10K	5%	1/10W			
R255	1-216-073-00	METAL CHIP 10K	5%	1/10W			
R256	1-414-235-22	INDUCTOR, FERRITE BEAD					
R257	1-216-025-00	RES, CHIP 100	5%	1/10W			
R258	1-216-025-00	RES, CHIP 100	5%	1/10W			
R259	1-216-017-00	RES, CHIP 47	5%	1/10W			
R260	1-216-017-00	RES, CHIP 47	5%	1/10W			
R301	1-216-017-00	RES, CHIP 47	5%	1/10W			

DIGITAL

DISPLAY

Ref. No.	Part No.	Description	Quantity	Unit	Remark
R302	1-216-017-00	RES, CHIP	47	5%	1/10W
R303	1-216-017-00	RES, CHIP	47	5%	1/10W
R304	1-216-017-00	RES, CHIP	47	5%	1/10W
R311	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R312	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R313	1-216-065-00	RES, CHIP	4.7K	5%	1/10W
R314	1-216-065-00	RES, CHIP	4.7K	5%	1/10W
R315	1-216-037-00	METAL CHIP	330	5%	1/10W
R316	1-216-037-00	METAL CHIP	330	5%	1/10W
R317	1-216-037-00	METAL CHIP	330	5%	1/10W
R318	1-216-037-00	METAL CHIP	330	5%	1/10W
R341	1-216-073-00	METAL CHIP	10K	5%	1/10W
R342	1-216-073-00	METAL CHIP	10K	5%	1/10W
R343	1-216-081-00	METAL CHIP	22K	5%	1/10W
R344	1-216-081-00	METAL CHIP	22K	5%	1/10W
R345	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R346	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R347	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R348	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R349	1-216-105-00	RES, CHIP	220K	5%	1/10W
R350	1-216-105-00	RES, CHIP	220K	5%	1/10W
R351	1-216-045-00	METAL CHIP	680	5%	1/10W
R352	1-216-045-00	METAL CHIP	680	5%	1/10W
R353	1-216-037-00	METAL CHIP	330	5%	1/10W
R354	1-216-037-00	METAL CHIP	330	5%	1/10W
R355	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R356	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R357	1-216-105-00	RES, CHIP	220K	5%	1/10W
R401	1-216-025-00	RES, CHIP	100	5%	1/10W
R402	1-216-025-00	RES, CHIP	100	5%	1/10W
R403	1-216-089-00	RES, CHIP	47K	5%	1/10W
R404	1-216-089-00	RES, CHIP	47K	5%	1/10W
R405	1-216-081-00	METAL CHIP	22K	5%	1/10W
R406	1-216-065-00	RES, CHIP	4.7K	5%	1/10W
R407	1-216-065-00	RES, CHIP	4.7K	5%	1/10W
R408	1-216-029-00	METAL CHIP	150	5%	1/10W
R409	1-216-025-00	RES, CHIP	100	5%	1/10W
R410	1-216-017-00	RES, CHIP	47	5%	1/10W
R411	1-216-017-00	RES, CHIP	47	5%	1/10W
R412	1-216-017-00	RES, CHIP	47	5%	1/10W
R413	1-216-017-00	RES, CHIP	47	5%	1/10W
R451	1-216-017-00	RES, CHIP	47	5%	1/10W
R452	1-216-017-00	RES, CHIP	47	5%	1/10W
R453	1-216-017-00	RES, CHIP	47	5%	1/10W
R501	1-216-063-00	RES, CHIP	3.9K	5%	1/10W
R502	1-216-025-00	RES, CHIP	100	5%	1/10W
R503	1-216-025-00	RES, CHIP	100	5%	1/10W
R504	1-216-025-00	RES, CHIP	100	5%	1/10W
R505	1-216-025-00	RES, CHIP	100	5%	1/10W
R506	1-216-025-00	RES, CHIP	100	5%	1/10W
R507	1-216-025-00	RES, CHIP	100	5%	1/10W
R601	1-216-033-00	METAL CHIP	220	5%	1/10W
R701	1-216-295-00	SHORT	0		
R702	1-216-025-00	RES, CHIP	100	5%	1/10W
R703	1-216-073-00	METAL CHIP	10K	5%	1/10W
R801	1-216-073-00	METAL CHIP	10K	5%	1/10W
R802	1-216-073-00	METAL CHIP	10K	5%	1/10W
R803	1-216-073-00	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description	Quantity	Unit	Remark
R901	1-216-295-00	SHORT	0		
< CONPOSITION CIRCUIT BLOCK >					
RB101	1-236-907-11	NETWORK RESISTOR (CHIP)	100K		
RB102	1-236-907-11	NETWORK RESISTOR (CHIP)	100K		
RB103	1-236-907-11	NETWORK RESISTOR (CHIP)	100K		
RB104	1-236-907-11	NETWORK RESISTOR (CHIP)	100K		
RB105	1-236-907-11	NETWORK RESISTOR (CHIP)	100K		
RB106	1-236-908-11	NETWORK RESISTOR (CHIP)	10K		
RB107	1-236-908-11	NETWORK RESISTOR (CHIP)	10K		
RB108	1-236-908-11	NETWORK RESISTOR (CHIP)	10K		
RB109	1-236-908-11	NETWORK RESISTOR (CHIP)	10K		
RB110	1-236-908-11	NETWORK RESISTOR (CHIP)	10K		
RB111	1-236-908-11	NETWORK RESISTOR (CHIP)	10K		
RB112	1-236-908-11	NETWORK RESISTOR (CHIP)	10K		
RB113	1-236-908-11	NETWORK RESISTOR (CHIP)	10K		
RB114	1-236-907-11	NETWORK RESISTOR (CHIP)	100K		
RB115	1-236-907-11	NETWORK RESISTOR (CHIP)	100K		
RB116	1-236-907-11	NETWORK RESISTOR (CHIP)	100K		
RB117	1-236-907-11	NETWORK RESISTOR (CHIP)	100K		
RB253	1-236-908-11	NETWORK RESISTOR (CHIP)	10K		
RB254	1-236-908-11	NETWORK RESISTOR (CHIP)	10K		
RB255	1-236-908-11	NETWORK RESISTOR (CHIP)	10K		
RB701	1-236-908-11	NETWORK RESISTOR (CHIP)	10K		
RB702	1-236-908-11	NETWORK RESISTOR (CHIP)	10K		
RB703	1-236-908-11	NETWORK RESISTOR (CHIP)	10K		
< VIBRATOR >					
X101	1-767-510-11	VIBRATOR, CERAMIC (10MHz)			
X501	1-760-841-11	VIBRATOR, CRYSTAL (45.1584MHz)			
X601	1-767-229-11	OSCILLATOR, CRYSTAL (90.3168MHz)			

*	A-4724-202-A	DISPLAY BOARD, COMPLETE			

	2-389-320-01	CUSHION			
*	4-971-854-01	HOLDER (FL)			
< CAPACITOR >					
C101	1-162-282-31	CERAMIC	100PF	10%	50V
C102	1-162-282-31	CERAMIC	100PF	10%	50V
C103	1-162-282-31	CERAMIC	100PF	10%	50V
C104	1-162-282-31	CERAMIC	100PF	10%	50V
C105	1-164-159-11	CERAMIC	0.1uF		50V
C106	1-104-396-11	ELECT	10uF	20%	16V
C107	1-162-282-31	CERAMIC	100PF	10%	50V
C108	1-162-282-31	CERAMIC	100PF	10%	50V
C109	1-162-282-31	CERAMIC	100PF	10%	50V
C110	1-162-282-31	CERAMIC	100PF	10%	50V
C111	1-162-282-31	CERAMIC	100PF	10%	50V
C112	1-162-282-31	CERAMIC	100PF	10%	50V
C113	1-162-282-31	CERAMIC	100PF	10%	50V
C903	1-164-159-11	CERAMIC	0.1uF		50V
C904	1-164-159-11	CERAMIC	0.1uF		50V
< CONNECTOR >					
CN101	1-784-642-11	CONNECTOR, BOARD TO BOARD 11P			

DISPLAY**EJECT****FADER****JOG**

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
		< FLUORESCENT INDICATOR TUBE >		C384	1-124-589-11	ELECT 47uF 20%	16V
FL101	1-517-776-11	INDICATOR TUBE, FLUORESCENT				< CONNECTOR >	
		< IC >		CN205	1-784-641-11	CONNECTOR, BOARD TO BOARD 11P	
IC101	8-759-297-23	IC M66004M8FP		CN207	1-506-481-11	PIN, CONNECTOR 2P	
		< RESISTOR >				< DIODE >	
R101	1-249-435-11	CARBON 33K 5%	1/4W	D361	8-719-313-50	LED SEL6810A-TH12 (CUE)	
R102	1-249-429-11	CARBON 10K 5%	1/4W	D362	8-719-313-50	LED SEL6810A-TH12 (CUE)	
*****				D363	8-719-313-50	LED SEL6810A-TH12 (CUE)	
*	A-4724-210-A	EJECT BOARD, COMPLETE		D364	8-719-018-46	LED SEL3510C-CD (PLAY/PAUSE)	
		*****		D365	8-719-018-46	LED SEL3510C-CD (PLAY/PAUSE)	
		< SWITCH >				< PHOTO INTERRUPTER >	
S365	1-762-875-21	SWITCH, KEYBOARD (≡ EJECT)		D366	8-719-018-46	LED SEL3510C-CD (PLAY/PAUSE)	
*****				D371	8-719-313-43	LED SEL6210S-TH10 (REC PAUSE)	
*	A-4724-214-A	FADER BOARD, COMPLETE (US, Canadian)				< PHOTO INTERRUPTER >	
*	A-4724-218-A	FADER BOARD, COMPLETE (AEP, UK)		PH381	8-749-924-18	PHOTO INTERRUPTER RPI-1391	
		*****		PH382	8-749-924-18	PHOTO INTERRUPTER RPI-1391	
		< CAPACITOR >				< TRANSISTOR >	
C391	1-124-589-11	ELECT 47uF 20%	16V	Q361	8-729-030-02	TRANSISTOR DTC144ESA	
C392	1-124-589-11	ELECT 47uF 20%	16V	Q362	8-729-116-85	TRANSISTOR 2SD1616-TP-L	
C751	1-162-294-31	CERAMIC 0.001uF 10%	50V	Q363	8-729-030-02	TRANSISTOR DTC144ESA	
C752	1-162-294-31	CERAMIC 0.001uF 10%	50V	Q364	8-729-116-85	TRANSISTOR 2SD1616-TP-L	
C753	1-162-294-31	CERAMIC 0.001uF 10%	50V	Q371	8-729-422-57	TRANSISTOR UN4111	
		< CONNECTOR >				< RESISTOR >	
* CN208	1-568-942-11	PIN, CONNECTOR 4P		R361	1-249-421-11	CARBON 2.2K 5%	1/4W
		< JACK >		R362	1-247-843-11	CARBON 3.3K 5%	1/4W
J751	1-770-306-11	JACK (LARGE TYPE) (PHONES)		R363	1-249-425-11	CARBON 4.7K 5%	1/4W
		< COIL >		R364	1-249-429-11	CARBON 10K 5%	1/4W
L751	1-412-473-21	INDUCTOR (SMALL TYPE) 0uH		R374	1-249-429-11	CARBON 10K 5%	1/4W
		< RESISTOR >				< RESISTOR >	
R751	1-249-393-11	CARBON 10 5%	1/4W	R375	1-249-435-11	CARBON 33K 5%	1/4W
R752	1-249-393-11	CARBON 10 5%	1/4W	R376	1-249-415-11	CARBON 680 5%	1/4W
		< VARIABLE RESISTOR >		R381	1-249-401-11	CARBON 47 5%	1/4W
RV391	1-225-653-11	RES, VAR 10K (SPEED)		R1361	1-249-409-11	CARBON 220 5%	1/4W
RV392	1-225-653-11	RES, VAR 10K (PITCH)		R1362	1-249-409-11	CARBON 220 5%	1/4W
RV751	1-225-329-11	RES, VAR, CARBON 1K/1K (PHONE LEVEL)				< RESISTOR >	
*****				R1363	1-249-409-11	CARBON 220 5%	1/4W
*	A-4724-206-A	JOG BOARD, COMPLETE		R1364	1-247-807-31	CARBON 100 5%	1/4W
		*****		R1365	1-247-807-31	CARBON 100 5%	1/4W
		< CAPACITOR >		R1366	1-247-807-31	CARBON 100 5%	1/4W
C381	1-162-306-11	CERAMIC 0.01uF 20%	16V	R1367	1-249-417-11	CARBON 1K 5%	1/4W
C382	1-162-306-11	CERAMIC 0.01uF 20%	16V			< SWITCH >	
C383	1-124-589-11	ELECT 47uF 20%	16V	S361	1-762-875-21	SWITCH, KEYBOARD (◀◀)	
				S362	1-762-875-21	SWITCH, KEYBOARD (▶▶)	
				S363	1-762-875-21	SWITCH, KEYBOARD (CUE)	
				S364	1-762-875-21	SWITCH, KEYBOARD (PLAY/PAUSE)	
				S374	1-762-875-21	SWITCH, KEYBOARD (● REC)	
				S375	1-762-875-21	SWITCH, KEYBOARD (REC PAUSE)	
				S376	1-762-875-21	SWITCH, KEYBOARD (STOP)	
*****				*****			

MOTOR

POWER

Ref. No.	Part No.	Description	Remark
*	1-653-412-11	MOTOR BOARD *****	
		< CAPACITOR >	
C199	1-164-159-11	CERAMIC 0.1uF	50V
		< CONNECTOR >	
* CN191	1-568-944-11	PIN, CONNECTOR 6P	
CN192	1-770-011-41	CONNECTOR, BOARD TO BOARD 4P	

*	A-4724-213-A	POWER BOARD, COMPLETE (US, Canadian)	
*	A-4724-217-A	POWER BOARD, COMPLETE (AEP, UK) *****	
		< CONNECTOR >	
	7-685-872-09	SCREW +BVTT 3X8 (S)	
		< BATTERY >	
BT451	1-528-887-11	BATTERY, LITHIUM SECONDARY	
		< CAPACITOR >	
C201	1-124-701-51	ELECT 470uF 20%	25V
C202	1-124-701-51	ELECT 470uF 20%	25V
C203	1-111-235-61	ELECT 10000uF 20%	25V
C204	1-111-235-61	ELECT 10000uF 20%	25V
C205	1-164-159-11	CERAMIC 0.1uF	50V
C206	1-164-159-11	CERAMIC 0.1uF	50V
C208	1-164-159-11	CERAMIC 0.1uF	50V
C301	1-126-933-11	ELECT 100uF 20%	16V
C302	1-126-933-11	ELECT 100uF 20%	16V
C307	1-126-933-11	ELECT 100uF 20%	16V
C308	1-126-933-11	ELECT 100uF 20%	16V
C401	1-162-306-11	CERAMIC 0.01uF 20%	16V
C402	1-126-960-11	ELECT 1uF 20%	50V
C403	1-126-933-11	ELECT 100uF 20%	16V
C404	1-104-665-11	ELECT 100uF 20%	25V
C405	1-126-935-11	ELECT 470uF 20%	16V
C411	1-162-306-11	CERAMIC 0.01uF 20%	16V
C412	1-126-960-11	ELECT 1uF 20%	50V
C413	1-126-933-11	ELECT 100uF 20%	16V
C414	1-126-946-11	ELECT 6800uF 20%	25V
C415	1-126-935-11	ELECT 470uF 20%	16V
C422	1-126-933-11	ELECT 100uF 20%	16V
C431	1-126-964-11	ELECT 10uF 20%	50V
C432	1-126-965-11	ELECT 22uF 20%	50V
C433	1-164-159-11	CERAMIC 0.1uF	50V
C434	1-161-494-00	CERAMIC 0.022uF	25V
C451	1-126-963-11	ELECT 4.7uF 20%	50V
C452	1-162-306-11	CERAMIC 0.01uF 20%	16V
C453	1-126-963-11	ELECT 4.7uF 20%	50V
C501	1-128-576-11	ELECT 100uF 20%	63V
C502	1-126-950-11	ELECT 330uF 20%	35V
C503	1-164-159-11	CERAMIC 0.1uF	50V
C504	1-126-965-11	ELECT 22uF 20%	50V
C505	1-126-965-11	ELECT 22uF 20%	50V
C601	1-162-306-11	CERAMIC 0.01uF 20%	16V
C602	1-126-963-11	ELECT 4.7uF 20%	50V
C603	1-164-159-11	CERAMIC 0.1uF	50V

Ref. No.	Part No.	Description	Remark
C604	1-164-159-11	CERAMIC 0.1uF	50V
C605	1-164-159-11	CERAMIC 0.1uF	50V
C606	1-126-933-11	ELECT 100uF 20%	16V
C607	1-164-159-11	CERAMIC 0.1uF	50V
C701	1-130-467-00	MYLAR 470PF 5%	50V
C702	1-130-467-00	MYLAR 470PF 5%	50V
C703	1-126-933-11	ELECT 100uF 20%	16V
C704	1-126-933-11	ELECT 100uF 20%	16V
C751	1-130-467-00	MYLAR 470PF 5%	50V
C752	1-130-467-00	MYLAR 470PF 5%	50V
C851	1-162-294-31	CERAMIC 0.001uF 10%	50V
C852	1-162-294-31	CERAMIC 0.001uF 10%	50V
		< CONNECTOR >	
CN201	1-564-513-11	PLUG, CONNECTOR 10P	
* CN451	1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P	
CN452	1-568-683-11	PIN, CONNECTOR (PC BAORD) 2P	
* CN701	1-568-955-11	PIN, CONNECTOR 6P	
CN751	1-506-468-11	PIN, CONNECTOR 3P	
* CN801	1-568-951-11	PIN, CONNECTOR 2P	
CN901	1-770-657-11	CONNECTOR, FFC/FPC 29P	
CN902	1-770-165-11	CONNECTOR, FFC/FPC 13P	
		< DIODE >	
D201	8-719-200-82	DIODE 11ES2	
D202	8-719-200-82	DIODE 11ES2	
D203	8-719-200-82	DIODE 11ES2	
D204	8-719-200-82	DIODE 11ES2	
D205	8-719-230-02	DIODE 30DF2	
D206	8-719-230-02	DIODE 30DF2	
D207	8-719-200-82	DIODE 11ES2	
D208	8-719-200-82	DIODE 11ES2	
D209	8-719-200-82	DIODE 11ES2	
D210	8-719-200-82	DIODE 11ES2	
D211	8-719-200-82	DIODE 11ES2	
D301	8-719-210-21	DIODE 11EQS04	
D302	8-719-210-21	DIODE 11EQS04	
D431	8-719-911-19	DIODE 1SS119	
D432	8-719-911-19	DIODE 1SS119	
D451	8-719-210-21	DIODE 11EQS04	
D452	8-719-200-82	DIODE 11ES2	
D453	8-719-210-21	DIODE 11EQS04	
D501	8-719-947-20	DIODE MTZJ-T-72-5.6A	
D851	8-719-911-19	DIODE 1SS119	
D852	8-719-911-19	DIODE 1SS119	
D853	8-719-911-19	DIODE 1SS119	
D854	8-719-911-19	DIODE 1SS119	
		< GROUND PLATE >	
* EP201	4-870-539-00	PLATE, GROUND	
		< IC >	
IC301	8-759-604-84	IC M5F7806L	
IC302	8-759-604-85	IC M5F7906L	
IC401	8-759-274-37	IC BA3963	
IC411	8-759-274-37	IC BA3963	
IC421	8-759-513-71	IC PQ05RF21	

Ref. No.	Part No.	Description	Remark
IC422	8-759-604-32	IC M5F7810	
IC431	8-759-917-18	IC SN74HCU04AN	
IC451	8-759-327-15	IC M62005L	
IC501	8-759-633-42	IC M5293L	
IC601	8-759-430-27	IC GP1F37R (DIGITAL OPTICAL IN)	
IC602	8-759-917-18	IC SN74HCU04AN	
IC701	8-759-634-51	IC M5218AP	
IC751	8-759-634-51	IC M5218AP	
< JACK >			
J601	1-784-431-11	JACK, PIN 1P (DIGITAL COAXIAL IN)	
J701	1-784-429-11	JACK, PIN 4P (LINE (ANALOG) IN, OUT)	
J851	1-563-363-11	JACK, LARGE TYPE 2P (FOOT SW PLAY/PAUSE, REC/PAUSE)	
< COIL >			
L601	1-410-509-11	INDUCTOR 10uH	
< TRANSISTOR >			
Q801	8-729-900-80	TRANSISTOR DTC114ES	
Q802	8-729-116-85	TRANSISTOR 2SD1616-TP-L	
< RESISTOR/COIL >			
R301	1-249-409-11	CARBON 220 5% 1/4W	
R302	1-249-409-11	CARBON 220 5% 1/4W	
R431	1-247-807-31	CARBON 100 5% 1/4W	
R432	1-249-417-11	CARBON 1K 5% 1/4W	
R433	1-249-433-11	CARBON 22K 5% 1/4W	
R434	1-249-437-11	CARBON 47K 5% 1/4W	
R435	1-247-891-00	CARBON 330K 5% 1/4W	
R436	1-249-417-11	CARBON 1K 5% 1/4W	
△R451	1-215-404-00	METAL 200 1% 1/4W F	
△R452	1-215-414-00	METAL 510 1% 1/4W F	
R501	1-249-437-11	CARBON 47K 5% 1/4W	
R602	1-247-895-00	CARBON 470K 5% 1/4W	
R603	1-249-437-11	CARBON 47K 5% 1/4W	
R604	1-247-807-31	CARBON 100 5% 1/4W	
R605	1-247-804-11	CARBON 75 5% 1/4W	
R606	1-412-473-21	INDUCTOR (SMALL TYPE) 0uH	
R608	1-247-895-00	CARBON 470K 5% 1/4W	
R609	1-249-437-11	CARBON 47K 5% 1/4W	
R610	1-247-807-31	CARBON 100 5% 1/4W	
R701	1-249-441-11	CARBON 100K 5% 1/4W	
R702	1-249-441-11	CARBON 100K 5% 1/4W	
R703	1-249-425-11	CARBON 4.7K 5% 1/4W	
R704	1-249-425-11	CARBON 4.7K 5% 1/4W	
R751	1-247-807-31	CARBON 100 5% 1/4W	
R752	1-247-807-31	CARBON 100 5% 1/4W	
R753	1-249-399-11	CARBON 33 5% 1/4W	
R754	1-249-399-11	CARBON 33 5% 1/4W	
R801	1-249-417-11	CARBON 1K 5% 1/4W	
R853	1-249-417-11	CARBON 1K 5% 1/4W	
R854	1-249-417-11	CARBON 1K 5% 1/4W	

Ref. No.	Part No.	Description	Remark
*	A-4724-208-A	PSW BOARD, COMPLETE *****	
< CONNECTOR >			
CN801	1-564-321-00	PIN, CONNECTOR 2P	
* CN802	1-564-321-21	PIN, CONNECTOR 2P	
< SWITCH >			
△S801	1-572-267-21	SWITCH, PUSH (AC POWER)(1 KEY) (Ⓛ (POWER))	

*	A-4724-207-A	REC BOARD, COMPLETE *****	
< CAPACITOR >			
C902	1-164-159-11	CERAMIC 0.1uF 50V	
< RESISTOR >			
R701	1-249-433-11	CARBON 22K 5% 1/4W	
R702	1-249-433-11	CARBON 22K 5% 1/4W	
< VARIABLE RESISTOR >			
RV701	1-223-762-11	RES, VAR, CARBON 20K/20K (REC VOL)	
< SWITCH >			
S601	1-572-679-11	SWITCH, ROTARY (INPUT)	

MISCELLANEOUS *****			
9	1-790-033-11	WIRE (FLAT TYPE) (13 CORE)	
66	X-4950-068-1	SHEET ASSY, MEMBRANE (PAD UNIT)	
110	1-790-031-11	WIRE (FLAT TYPE) (18 CORE)	
111	1-790-030-11	WIRE (FLAT TYPE) (30 CORE)	
112	1-790-032-11	WIRE (FLAT TYPE) (29 CORE)	
△114	1-785-425-11	INLET, AC (3P)	
117	1-569-972-21	SOCKET, SHORT 2P	
△203	8-583-009-12	OPTICAL PICK-UP KMS-210A/J-N	
HR901	1-500-175-21	HEAD, OVER LIGHT (RF322-74A)	
M101	A-4660-651-A	MOTOR (SLED) ASSY	
M102	A-4660-650-A	CHASSIS ASSY, BU (SPINDLE)	
M191	A-4660-646-A	MOTOR (LOADING) ASSY	
M801	1-698-851-11	FAN, DC	
S102	1-762-148-11	SWITCH, PUSH (2 KEY) (REFLECT/PROTECT DETECT)	
△T901	1-431-933-11	TRANSFORMER, POWER (US, Canadian)	
△T901	1-431-934-11	TRANSFORMER, POWER (AEP, UK)	

***** HARDWARE LIST *****			
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 TT(B)	
#2	7-685-647-79	SCREW +BVTP 3X10 TYPE2 TT(B)	
#3	7-682-547-09	SCREW +B 3X6	
#4	7-624-108-04	RING, RETAINING E-4	

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.
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MDS-DRE1

Ref. No.	Part No.	Description	Remark
#5	7-685-903-31	SCREW +PTPWH 3X10 (TYPE2)	
#6	7-685-876-09	SCREW +BVTT 3X16 (S)	
#7	7-682-961-01	SCREW +PSW 4X8	
#8	7-685-247-19	SCREW +KTP 3X10 TYPE2 NON-SLIT	
#9	7-685-645-79	SCREW +BVTP 3X6 TYPE2 N-S	
#10	7-621-775-20	SCREW +B 2.6X5	
#11	7-685-902-11	SCREW +PWH 2.6X6	
#12	7-685-850-04	SCREW +BVTT 2X3 (S)	
#13	7-685-781-09	SCREW +PTT 2X4 (S)	
#14	7-685-104-19	SCREW +P 2X6 TYPE2 NON-SLIT	
#15	7-685-860-04	SCREW +BVTT 2.6X4 (S)	
#16	7-685-105-19	TPG +P 2X8, TYPE 2, NON-SLIT	
#17	7-627-852-08	SCREW,PRECISION +P 1.7X2.5	

ACCESSORIES & PACKING MATERIALS

△	1-551-812-11	CORD, POWER (US, Canadian)
△	1-590-910-11	CORD SET, POWER (AEP, UK)
	3-864-522-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, GERMAN)

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

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.