

# CDP-CX220

## SERVICE MANUAL

*US Model  
Canadian Model  
AEP Model  
UK Model  
E Model  
Australian Model*



Model Name Using Similar Mechanism	CDP-CX250
CD Mechanism Type	CDM-40B
Base Unit Type	KSM-213BKN/M-N
Optical Pick-up Type	KSS-213B/S-N

### SPECIFICATIONS

#### Compact disc player

Laser	Semiconductor laser ( $\lambda = 780 \text{ nm}$ ) Emission duration: continuous
Laser output	Max 44.6 $\mu\text{W}$ * * This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up block with 7 mm aperture.
Frequency response	20 Hz to 20 kHz $\pm 0.5 \text{ dB}$
Signal-to-noise ratio	More than 105 dB
Dynamic range	More than 98 dB
Harmonic distortion	Less than 0.0045%
Channel separation	More than 97 dB

#### Outputs

	Jack type	Maximum output level	Load impedance
LINE OUT	Phono Jacks	2V (at 50 kilohms)	Over 10 kilohms
DIGITAL OUT (OPTICAL)	Optical output connector	-18 dBm	Wave length: 660 nm

#### General

##### Power requirements

Where purchased	Power requirements
USA/Canada	120 V AC, 60 Hz
Australia	240 V AC, 50/60 Hz
Europe	220 V - 230 V AC, 50/60 Hz
Other countries	110 V - 120 V or 220 V - 240 V AC, adjustable, 50/60 Hz

Power consumption	12 W
Dimensions (approx.) (w/h/d)	When the front cover is closed 430 $\times$ 200 $\times$ 480 mm (17 $\times$ 7 $\frac{7}{8}$ $\times$ 19 in.) incl. projecting parts

Mass (approx.)	9.5 kg (21 lbs)
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#### Supplied accessories

- Audio cord (2 phono plugs - 2 phono plugs) (1)
- Remote commander (remote) (1)
- Sony SUM-3 (NS) batteries (2)
- CD booklet holders (2) and label (1)

Design and specifications are subject to change without notice.

## COMPACT DISC PLAYER



# SONY®

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### MODEL IDENTIFICATION — BACK PANEL —



PART No.

PART No.	MODEL
4-998-525-0□	US model
4-998-525-1□	Canadian model
4-998-525-2□	AEP, AED UK model
4-998-525-4□	Singapore model
4-998-525-5□	E model
4-998-525-6□	Australian model

- Abbreviation  
AED: North European

#### CAUTION

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

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

CLASS 1 LASER PRODUCT  
LUOKAN 1 LASERLAITE  
KLASS 1 LASERAPPARAT

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

#### (Except for the customers in the United States and Canada)

The following caution label is located inside the unit.



#### For the customers in Canada

#### CAUTION

TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED AC PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

# 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

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)

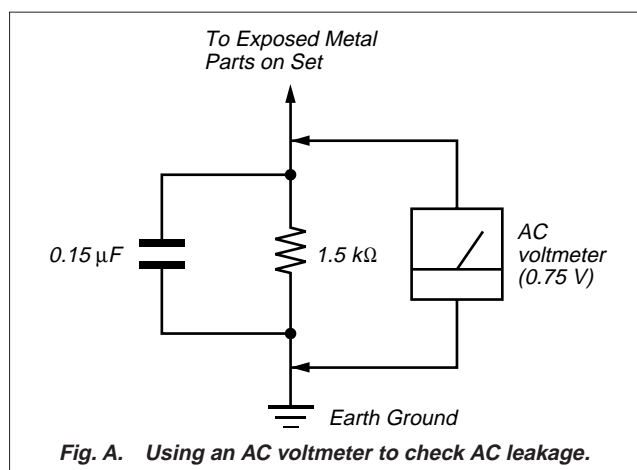


Fig. A. Using an AC voltmeter to check AC leakage.

### 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.

### LASER DIODE AND FOCUS SEARCH OPERATION CHECK

Carry out the "S curve check" in "CD section adjustment" and check that the S curve waveform is output repeatedly.

### 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.




## CD-TEXT TEST DISC

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

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

To check, perform the following procedure.

### Checking Method:

1. Turn ON the power, set the disc on the disc table with the side labeled as “test disc” as the right side, close the front cover, and chuck the disc.
2. Press the  button and play back the disc.
3. The following will be displayed on the fluorescent indicator tube.  
Display : 1kHz/0 dB/ L&R
4. Press the  and  buttons to switch the track. The text data of each track will be displayed.  
For details of the displayed contents for each track, refer to “Table 1 : CD-TEXT TEST DISC TEXT Data Contents” and “Table 2 : CD-TEXT TEST DISC Recorded Contents and Display”.

### Restrictions in CD-TEXT Display

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

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

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

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

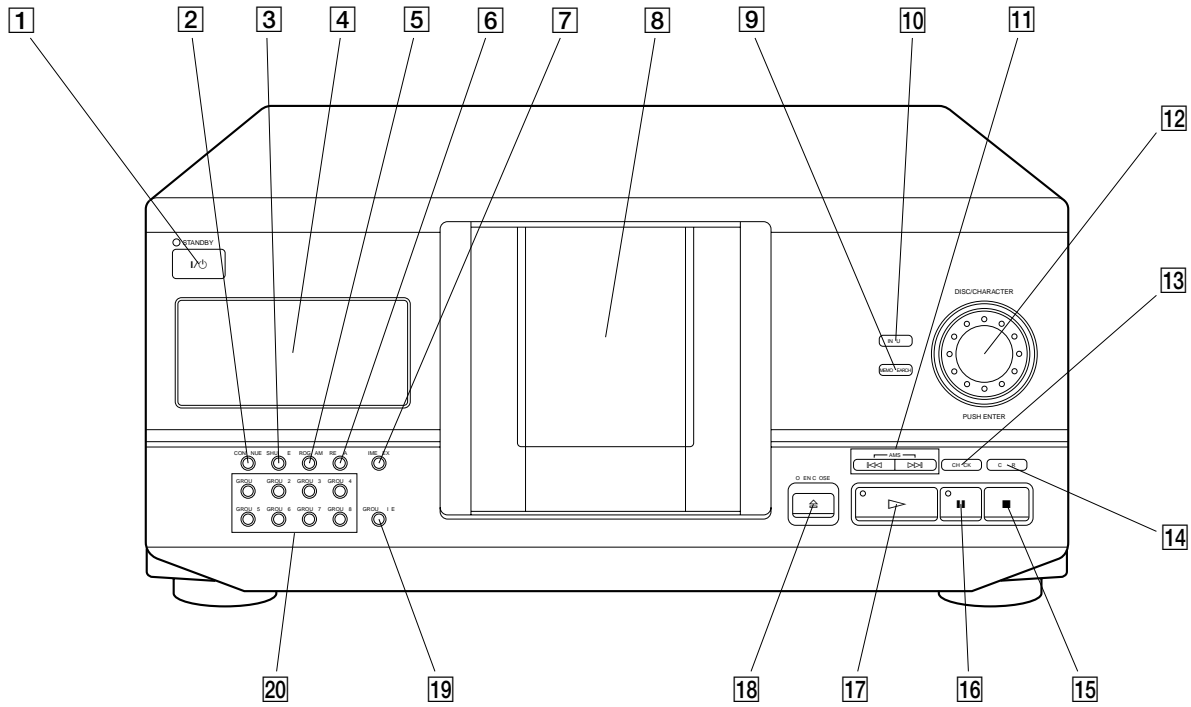
**Table 2:** CD-TEXT TEST DISC Recorded Contents and Display  
(In this unit, some special characters cannot be displayed. This is no a fault.)

TRACK No.	Recorded Contents	Display
42	! " # \$ % & ' (21h to 27h)1kHz 0dB L&R	← All the same
43	( ) * + , - . / (28h to 2Fh)	← All the same
44	0 1 2 3 4 5 6 7 (30h to 37Fh)	← All the same
45	8 9 : ; < = > ? (38h to 3Fh)	← All the same
46	@ A B C D E F G (40h to 47Fh)	← All the same
47	H I J K L M N O (48h to 4Fh)	← All the same
48	P Q R S T U V W (50h to 57Fh)	P Q R S T U V W (50h to 57h)
49	X Y Z [ ¥ ] ^ _ (58h to 5Fh)	X Y Z [ \ ] ^ _ (58....
50	` a b c d e f g (60h to 67Fh)	` a b c d e f g (60h to 67h)
51	h i j k l m n o (68h to 6Fh)	← All the same
52	p q r s t u v w (70h to 77Fh)	p q r s t u v w (70h to 77h)
53	x y z {   } ~ ■ (78h to 7Fh)	x y z {   } ~ ■ (78....
54	▣ i ¢ £ ¤ ¥ ¦ § (A0h to A7h) 8859-1	i ¢ £ ¤ ¥ ¦ § (A0.... ▣ is not displayed
55	♪ ©ª « ¬ ® ¯ (A8h to AFh)	♪ (A8.... ©ª « ¬ ® ¯ are not displayed
56	• ± ² ³ ´ μ ¶ • (B0h to B7h)	´ μ • (B0.... • ± ² ³ ¶ are not displayed
57	† † ° » ¼ ½ ¾ ¿ (B8h to BFh)	† ¿ (B8.... † ° » ¼ ½ ¾ are not displayed
58	À Á Â Ã Ä Å Æ Ç (C0h to C7Fh)	À Á Â Ã Ä Å Æ Ç (C0h to C7h)
59	È É Ê Ë Ì Í Î (C8h to CFh)	← All the same
60	Ð Ñ Ò Ó Ô Õ Ö × (D0h to D7Fh)	Ð Ñ Ò Ó Ô Õ Ö × (D0h to D7h)
61	Ø Ù Ú Û Ü Ý Þ ß (D8h to DFh)	⊕ Ù Ú Û Ü Ý Þ ß (D8....
62	à á â ã ä å æ ç (E0h to E7h)	à á â ã ä å æ ç (E0h to E7h)
63	è é ê ë ì í î (E8h to EFh)	← All the same
64	đ ñ ò ó ô õ ö ÷ (F0h to F7Fh)	đ ñ ò ó ô õ ö ÷ (F0h to F7h)
65	ø ù ú û ü ý þ ÿ (F8h to FFFh)	ø ù ú û ü ý þ ÿ (F8h to FFh)
66	No.66	← All the same
67	No.67	← All the same
to	to	to
99	No.99	← All the same

## SECTION 2 GENERAL

### LOCATION OF PARTS AND CONTROLS

#### Front Panel



1 I/⏻ (power switch) button

2 CONTINUE button

3 SHUFFLE button

4 Display window

5 PROGRAM button

6 REPEAT button

7 TIME/TEXT button

8 Front cover

9 MEMO SEARCH button

10 INPUT button

11 ◀▶ buttons

12 JOG dial (DISC/CHARACTER/PUSH ENTER knob)

13 CHECK button

14 CLEAR button

15 ■ button

16 || button

17 ▷ button

18 ☰ (OPEN/CLOSE) button

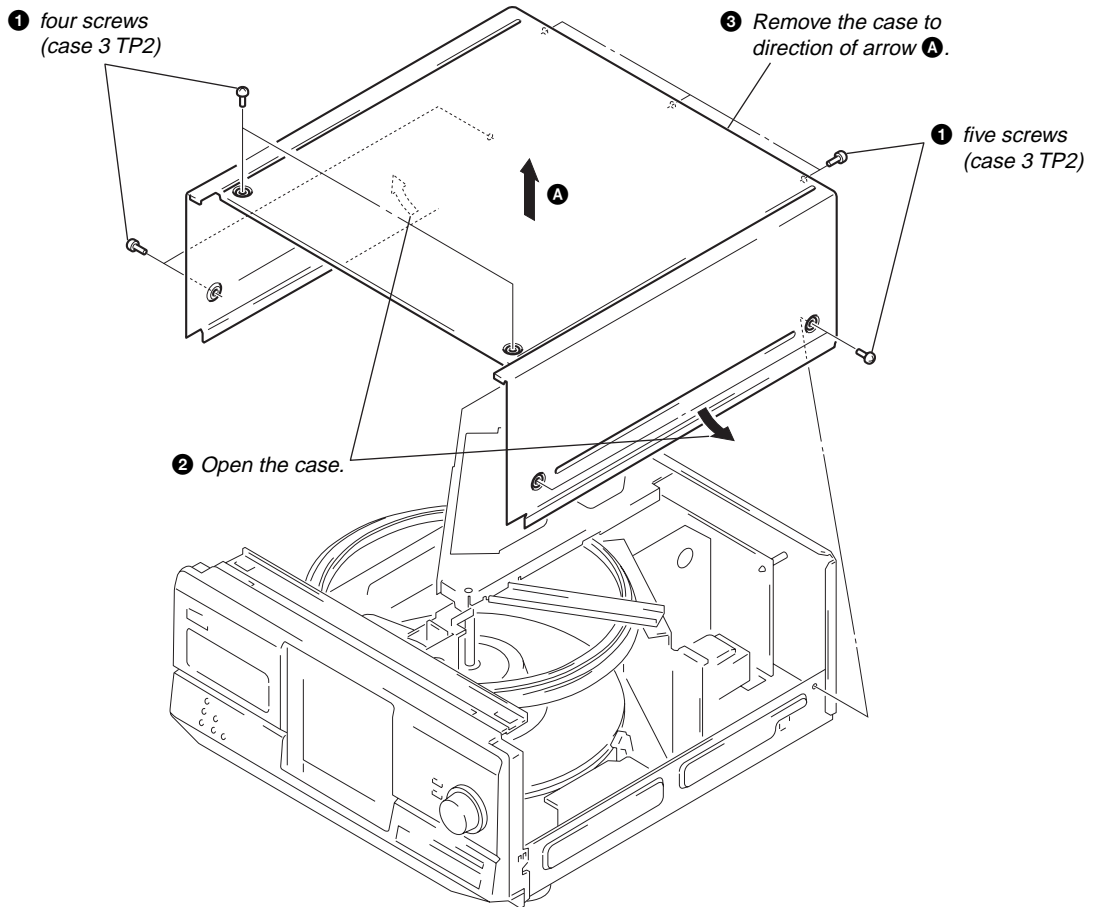
19 GROUP FILE button

20 GROUP 1 – 8 buttons

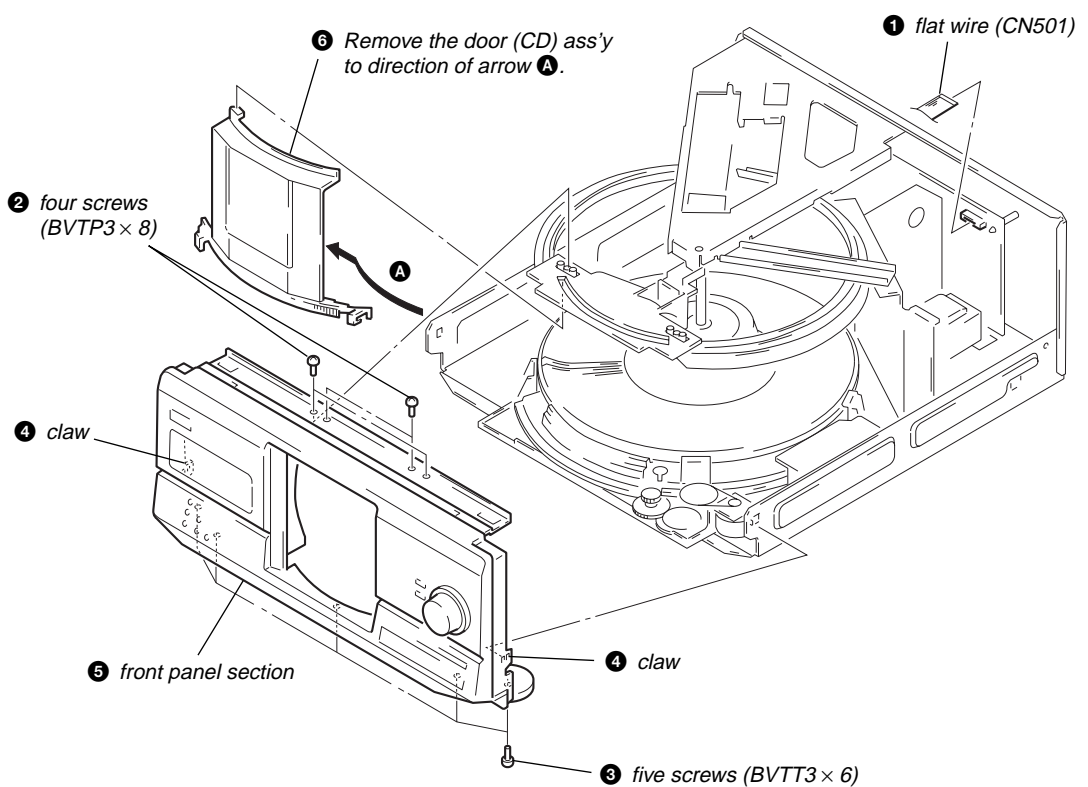
## SECTION 3 DISASSEMBLY

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

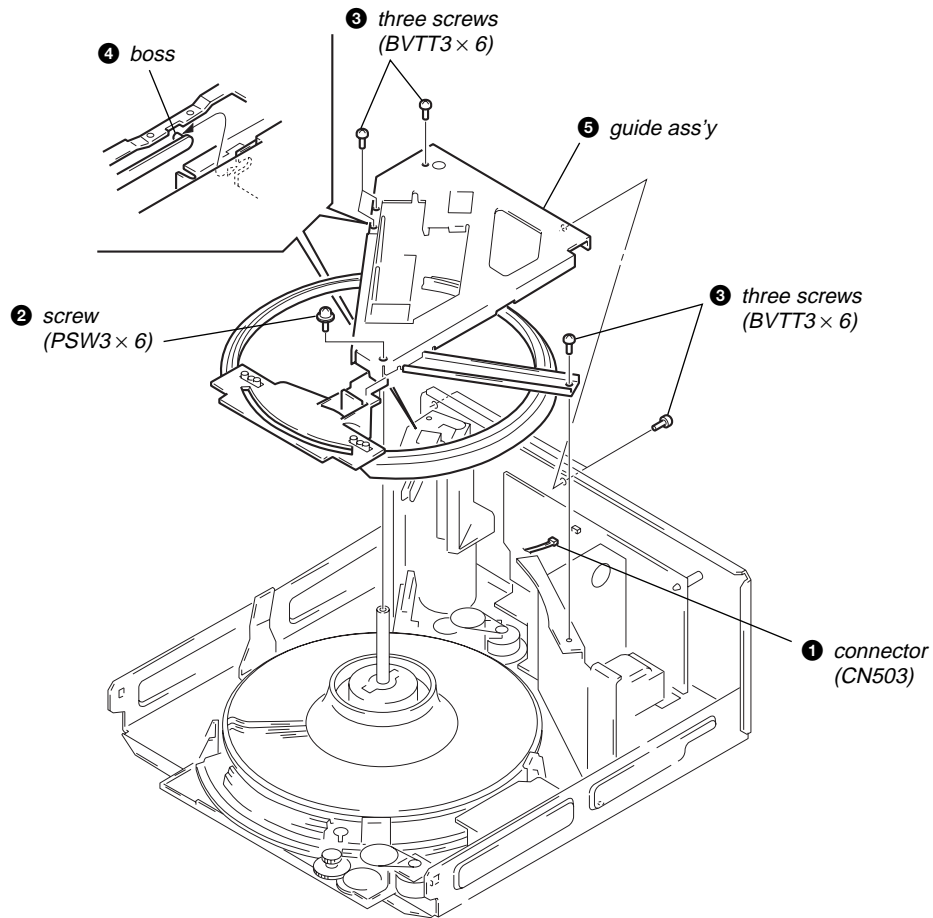
### CASE



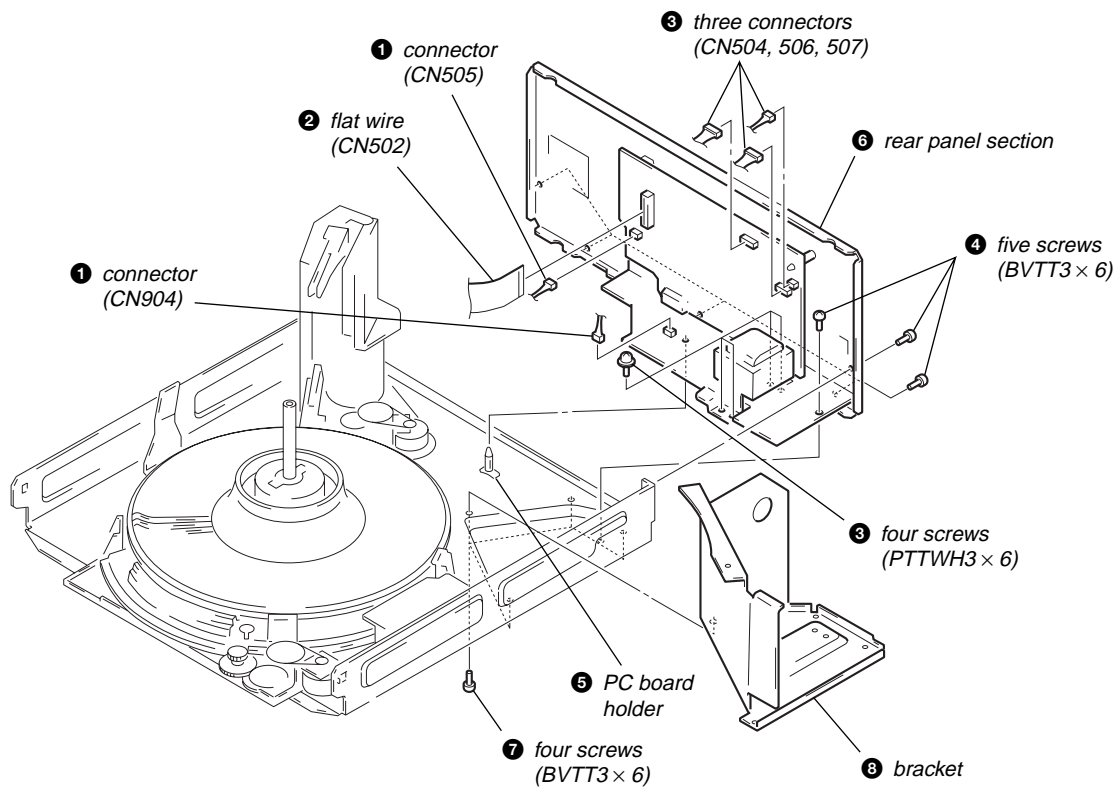
### FRONT PANEL SECTION



## GUIDE ASS'Y

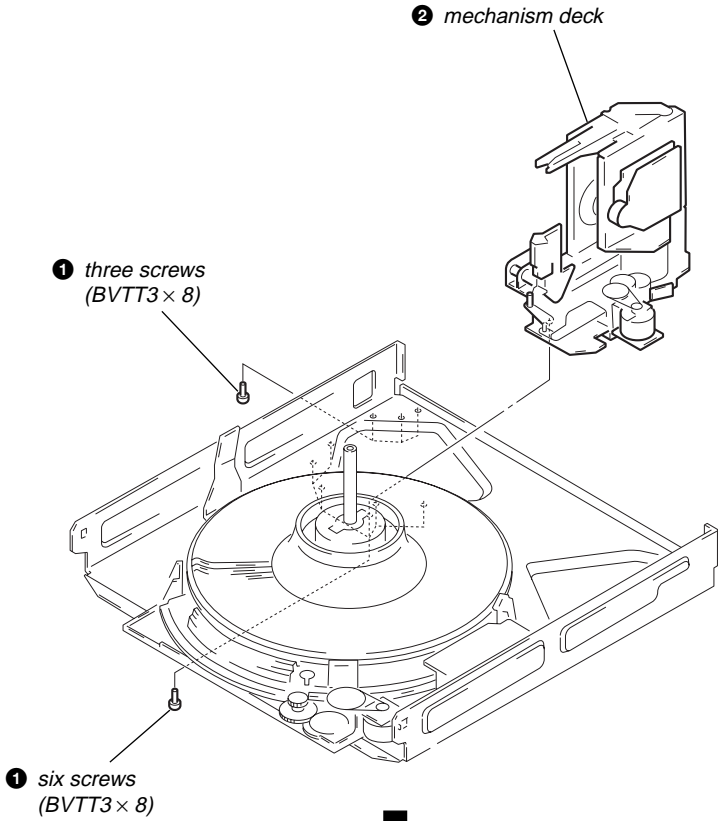


## REAR PANEL SECTION

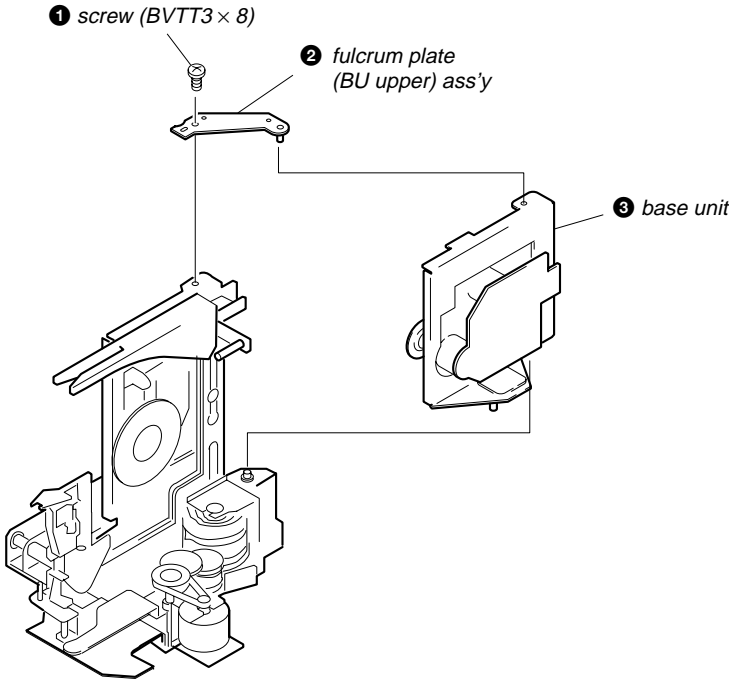




**MECHANISM DECK**







**BASE UNIT**




## SECTION 4 TEST MODE

### DISPLAY CHECK MODE

With the power turned off (standby state), press the  button while pressing the  (pause) button.

All FL segments and grids light up together with the  (play),  (pause), and standby LEDs.

At the same time, the GROUP LEDs are scanned one by one.

**Note:** To exit this mode, press the  (stop) button.

### ADJ MODE

1. Turn ON the power of the unit, set disc to disc table, and perform chucking.
2. Disconnect the power supply plug from the outlet.
3. To set ADJ mode, connect the test point (TP: ADJ) of the MAIN board to Ground, and connect the power supply plug to the outlet.

The power will turn on automatically, and the first track will be played.

In this mode, table rotation and loading operations are not performed because it is taken that the disc has already been chucked.

**Note:** The same operations are also performed in the following when the test point (TP: ADJ) is connected to Ground after turning on the power.

- Direct search (movement of sledding motor) is not performed during accessing
- Ignored even when GFS becomes L
- Ignored even when the Q data cannot be read
- Focus gain does not decrease
- Spindle gain does not decrease
- Servo related settings can be set manually and checked (Refer to ADJ Mode Special Functions Table)

### ADJ Mode Special Functions Table

(The buttons shown with ( ) function by using the supplied remote commander only)

Button	Button Number or Display
CONTINUE	Servo average display Displays VC, FE, RF, TE and traverse in hexadecimal numbers
SHUFFLE	Focus bias display Each time this is pressed, the focus bias is switched between 1 and 2 1 Bias actually set    Optimum bias    Minimum jitter 2 U: Upper aliasing bias    L: Lower aliasing bias
PROGRAM	Auto gain display Displays focus, tracking, sledding in hexadecimal numbers
GROUP 1 (1)	Increases the focus bias in 8 steps.
GROUP 2 (2)	Sets the focus bias in the middle of aliasing.
GROUP 3 (3)	Turns off the tracking and sledding servo
GROUP 4 (4)	Returns the auto gain to the initial value (30)
GROUP 5 (5)	Turns off the focus servo
GROUP 6 (6)	Decreases the focus bias in 8 steps.
GROUP 7 (7)	Re-adjusts the focus bias
GROUP 8 (8)	Turns on the tracking and sledding servo
(9)	Switches the focus servo gain between normal and down FG. norm: normal, FG. down: down
(10/0)	Sets the focus bias to 0 (no bias) Next, displays the jitter measured at the focus bias set
CHECK	S-curve observation mode
CLEAR	Automatic eccentric measurement The results of measurement is displayed in mm directly.

### KEY AND FLUORESCENT DISPLAY TUBE CHECK MODE

1. Connect the test point (TP:AFADJ) of the MAIN board to the Ground, and insert the power plug to the outlet to set this mode. First, the external SRAM is checked, and if abnormal, "SRAM NG" is displayed.

If OK, the following steps are performed.

#### \* Fluorescent Display Tube Check Mode

The whole fluorescent display tube lights up when the connection in step 1 is made.

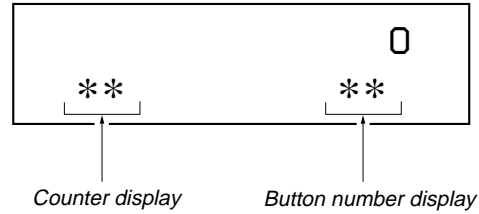
#### \* Key Check Mode

This mode is set when a button is pressed after the whole fluorescent display tube lights.








All buttons have a button number.

When a button is pressed, the counter display is counted up, and the number of that button is displayed.

However, the counter display will only count up to 26, but the number of buttons pressed will always be displayed.



### Buttons and Corresponding Button Numbers

Button	Button Number or Display
CLEAR	3
CHECK	4
 (AMS)	5
 (AMS)	6
PUSH ENTER	7
 (OPEN/CLOSE)	9
INPUT	10
MEMO SEARCH	11
	18
TIME/TEXT	19
GROUP FILE	20
GROUP 8	21
GROUP 7	22
GROUP 6	23
GROUP 5	24
REPEAT	27
PROGRAM	28
SHUFFLE	29
CONTINUE	30
GROUP 4	31
GROUP 3	32
GROUP 2	33
GROUP 1	34
	All lit (LED lit)
	Partial lighting 1 (LED lit)
	Partial lighting 2
DISC/ CHARACTER	Partial lighting 3 <ul style="list-style-type: none"> <li>• When the jog dial is rotated to the right, the GROUP LEDs light up in the order of 1 → 2..8 → 2nd → 1.</li> <li>• When the jog dial is rotated to the left, the GROUP LEDs light up in the order of 8 → 7..1 → 2nd → 8.</li> </ul>

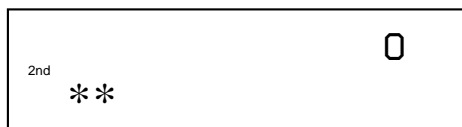
**Partial lighting 1**



**Partial lighting 2**



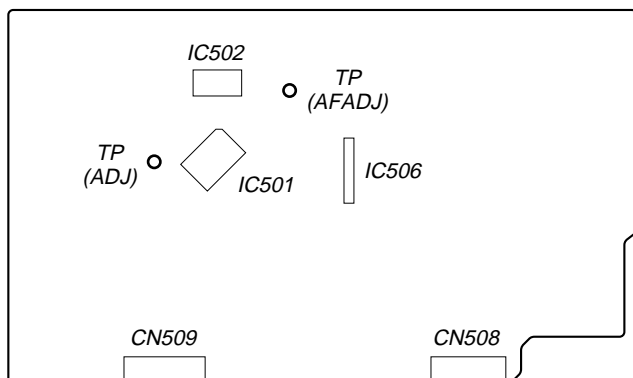
**Partial lighting 3**



\*: Counter displayed

**Test Points Location:**

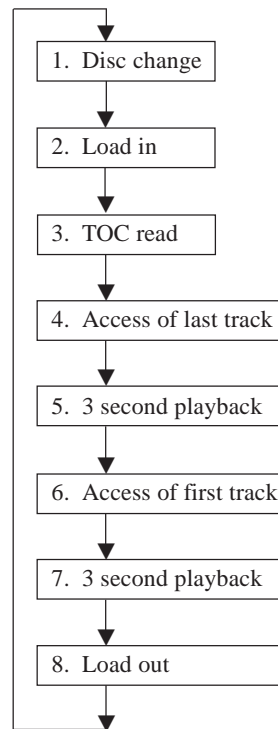
**[MAIN BOARD]** – Component Side –



**AGING MODE**

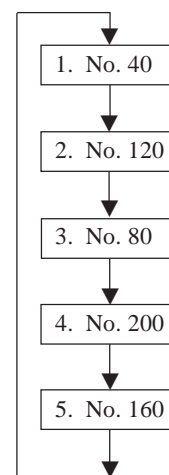
- Mode which repeatedly changes and plays back discs automatically in the unit.
- It will repeat aging as long as no errors occur.
- If an error occurs during aging, it will stop all servos, motors, etc. instantaneously, display the error number, and stop operations. However, the stopping conditions differ according to whether the unit is equipped with the “self-protection function during errors” described later.  
The function serves to maintain the state of the unit when errors occur.

**Sequence of Aging Mode**



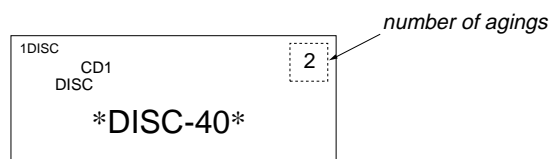
**Order of Disc Change**

(1 cycle takes 3 minutes)








**Special Functions in Aging Mode**

1. Disc setting mode:  
5 discs are set before setting the aging mode. This mode makes the setting of these discs more easy.
2. Self protection function during errors:  
Function which voluntarily corrects errors which occur during normal operations by retries.  
If this function is not provided, all operations will be stopped without retiring. It is suitable for checking errors with low reproducibility.  
If this function is provided, and errors can be corrected by retries, aging will be continued without stopping.
3. Aging cycle count function:  
Functions which displays the number of agings carried out on the Fluorescent indicator tube in numbers. One aging cycle consists of five discs.



## Aging Method

1. Change the **COMMAND MODE** switch (S901) on set to **CD1**.
2. Turn ON the power of the unit. Open the front cover.
3. Press the **AGING START** button of the remote commander for aging mode (J-2501-123-A).
4. When the disc set mode is set, the  and  LEDs blink.
5. Rotate the JOG dial. The slits (No. 40, 80, 120, 160, 200) for setting the discs will come forward. Insert the discs into these slits. Do not set the discs in other slits.
6. Set whether the self-protection function during errors is equipped with the unit. Press the **REPEAT** button. If "REPEAT" is displayed on the Fluorescent indicator tube, it means the function is provided. If "REPEAT" is not displayed, it means the function is not provided.
7. Press the  button.
8. The  LED blinks, the aging mode is set, and aging is started.
9. The aging cycle lasts 3 minutes. If errors occur during aging, the error number will be displayed on the Fluorescent indicator tube. (Refer to the following table for the details of the errors.)
10. Aging will be repeated as long as no errors occur.
11. After each aging cycle, the number displayed on the Fluorescent indicator tube will increase.
12. To end aging, press the  button

## Error Display

120      Err01

Disc number      Error code

## Error code

Code number	Name	Contents
Err 01	DISC sensor check 1	No disc in the specified slit
Err 02	DISC sensor check 2	Disc in other slits
Err 03	Table operation check 1	Table motor current over
Err 04	Table operation check 2	No table sensor input
Err 05	Loading operation check 1	Load in timeover
Err 06	Loading operation check 2	Load out timeover
Err *1	BU related check 1	Access timeover
Err *2	BU related check 2	High speed search NG
Err *3	BU related check 3	Q data read error
Err *4	BU related check 4	BU operation (from focus search to until signal can be read) timeover
Err *5	BU related check 5	GFS monitor error
Err *6	BU related check 6	Focus cannot be imposed by focus search
Err *7	BU related check 7	Auto focus bias adjustment cannot be performed

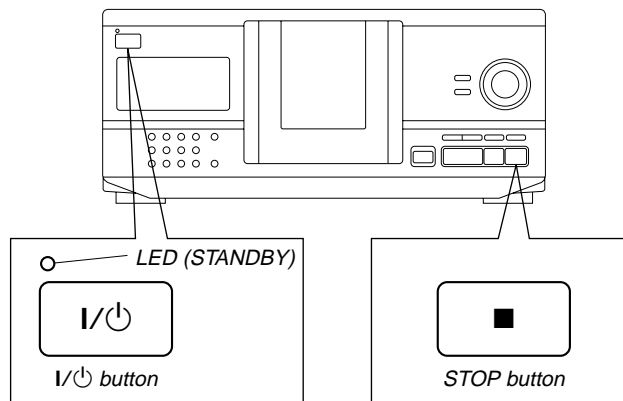
The \* numbers mean the following according to the state of the unit during aging

- 2 : From checking to end of TOC read
- 3 : From end of TOC read to end of last track playback
- 4 : From end of last track playback to end of first track playback

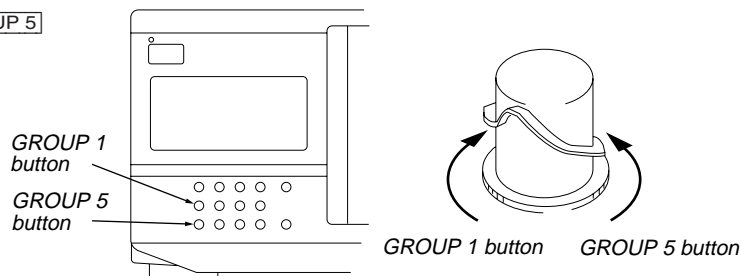
## SECTION 5 MECHANICAL ADJUSTMENTS

Perform the following steps before carrying out adjustments.

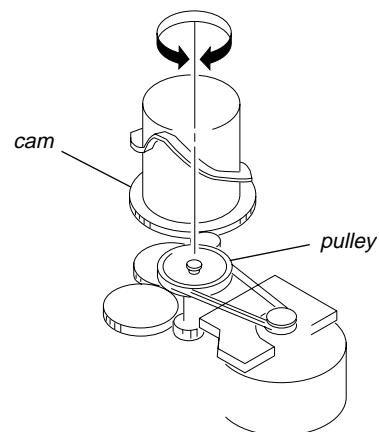
1. Turn ON the power of the unit, set disc to disc table No. 92, and perform chucking.
2. Turn OFF the power.
3. Remove the case.
4. While pressing the **STOP** button, turn ON the **I/⏻** button. The test mode is set.
5. The **I/⏻** button LED (STANDBY) starts blinking. (Test mode)



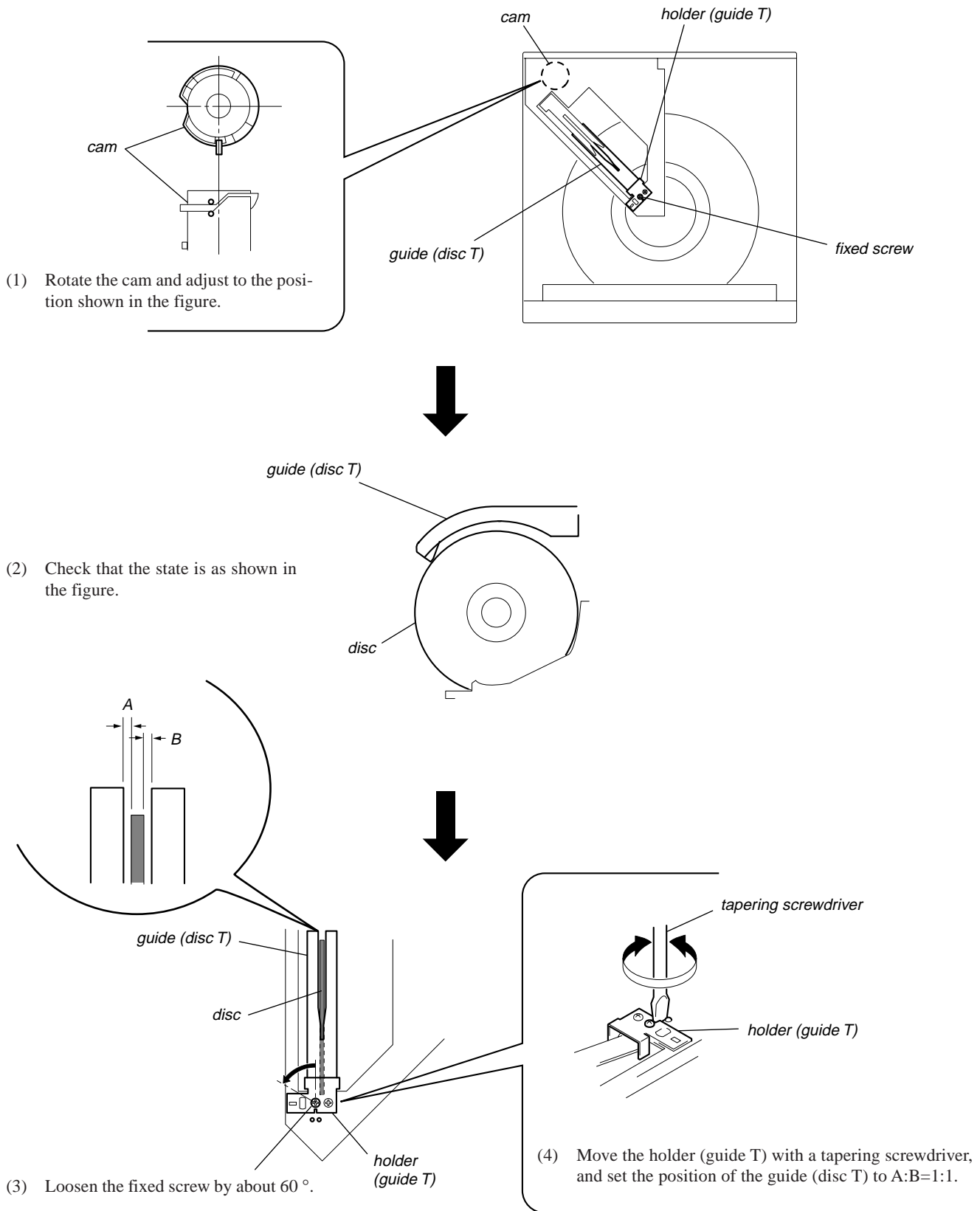
**Note 1:** The cam will start rotating when the **GROUP 1** or **GROUP 5** button is pressed continuously in the test mode.




**Note 2:** If the power cannot be supplied, the cam can be rotated by rotating the pulley with your finger.



## GUIDE (DISC T) ALIGNMENT

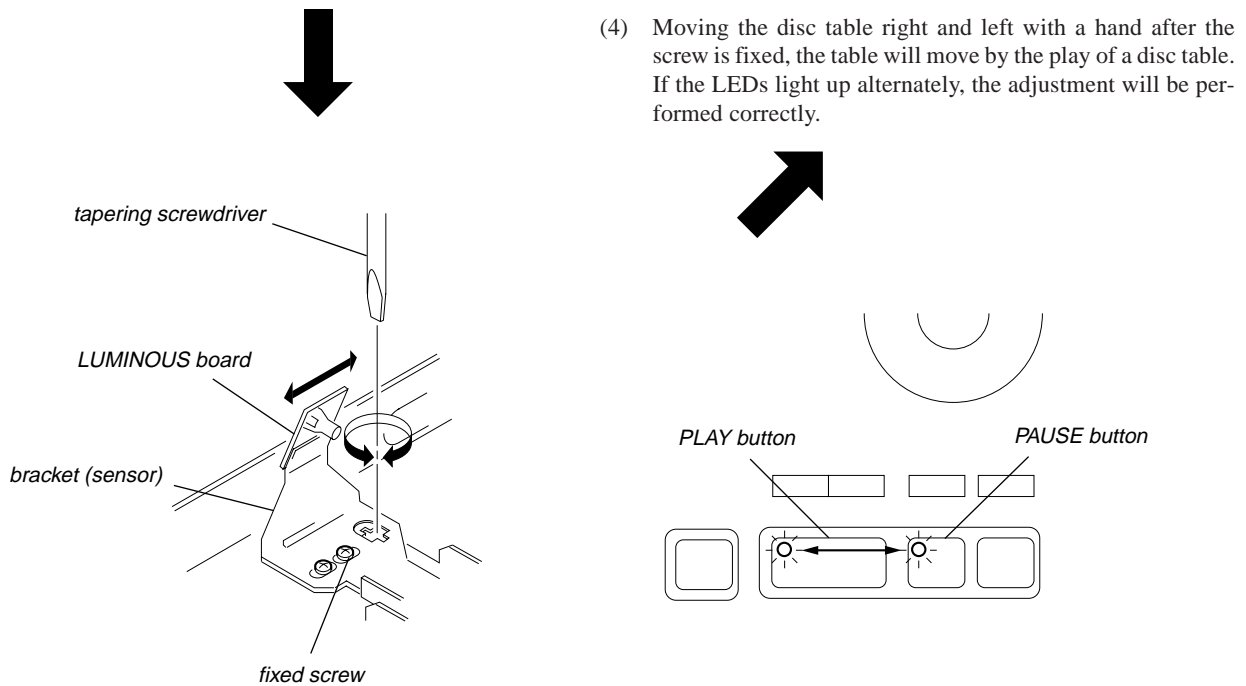
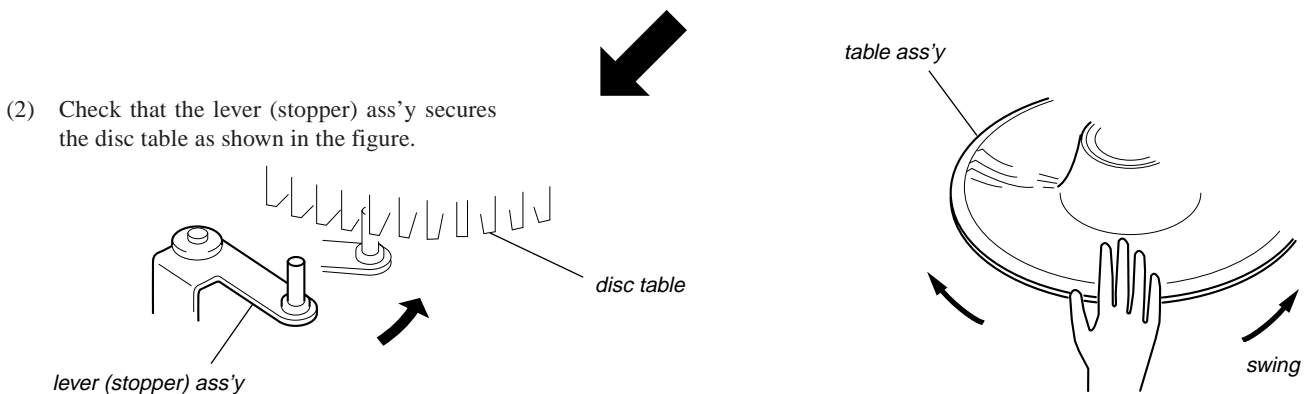
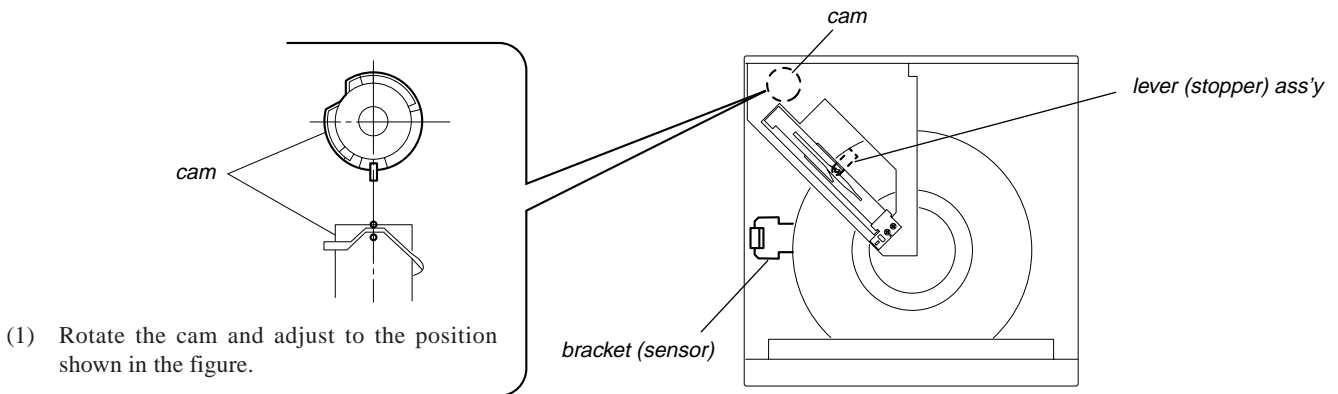


## HOLDER (DISC A2) ALIGNMENT

- 
- (1) Rotate the cam and adjust to the position shown in the figure.
- (2) Check that the state is as shown in the figure.
- (3) After applying suitable locking compound to the  part, rotate the thrust screw until the holder (Disc A2) comes to the center of the disc.

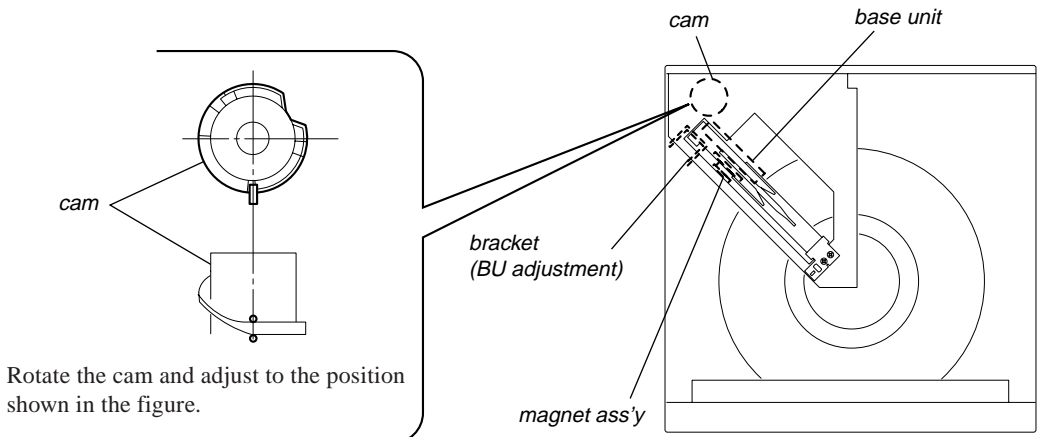
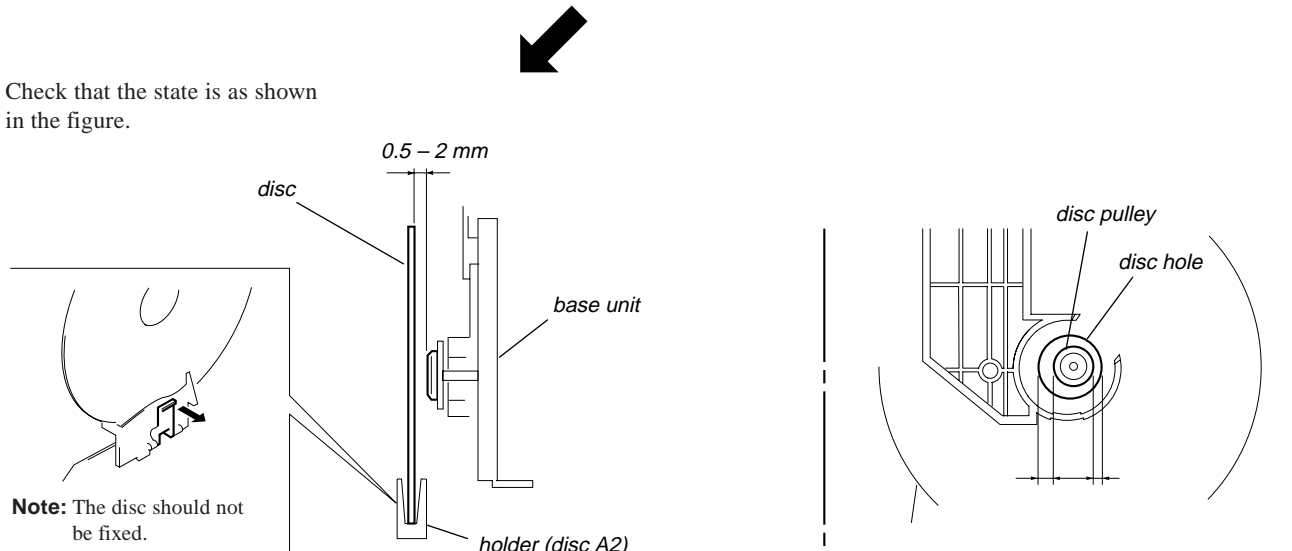
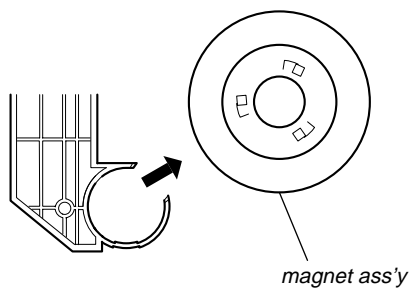
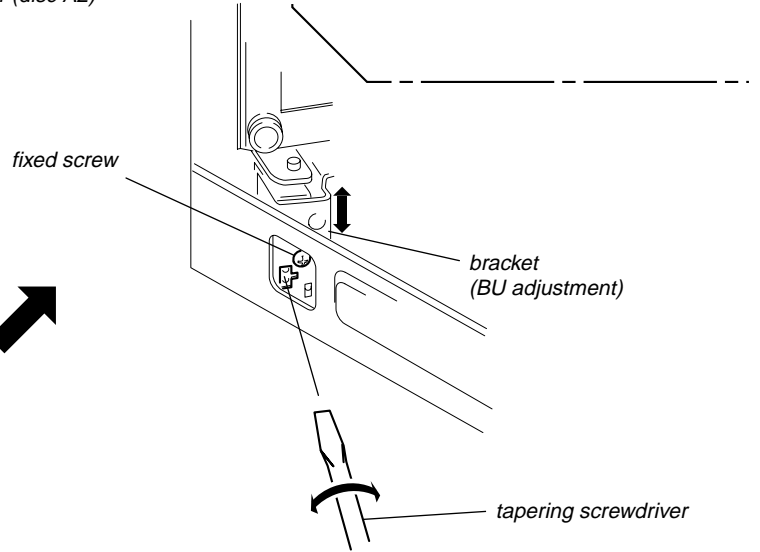
## SENSOR ALIGNMENT

Perform this adjustment after the “holder (disc A2) adjustment”.  
If the disc table swings to the left and right just before the disc is chucked, perform the following adjustment.

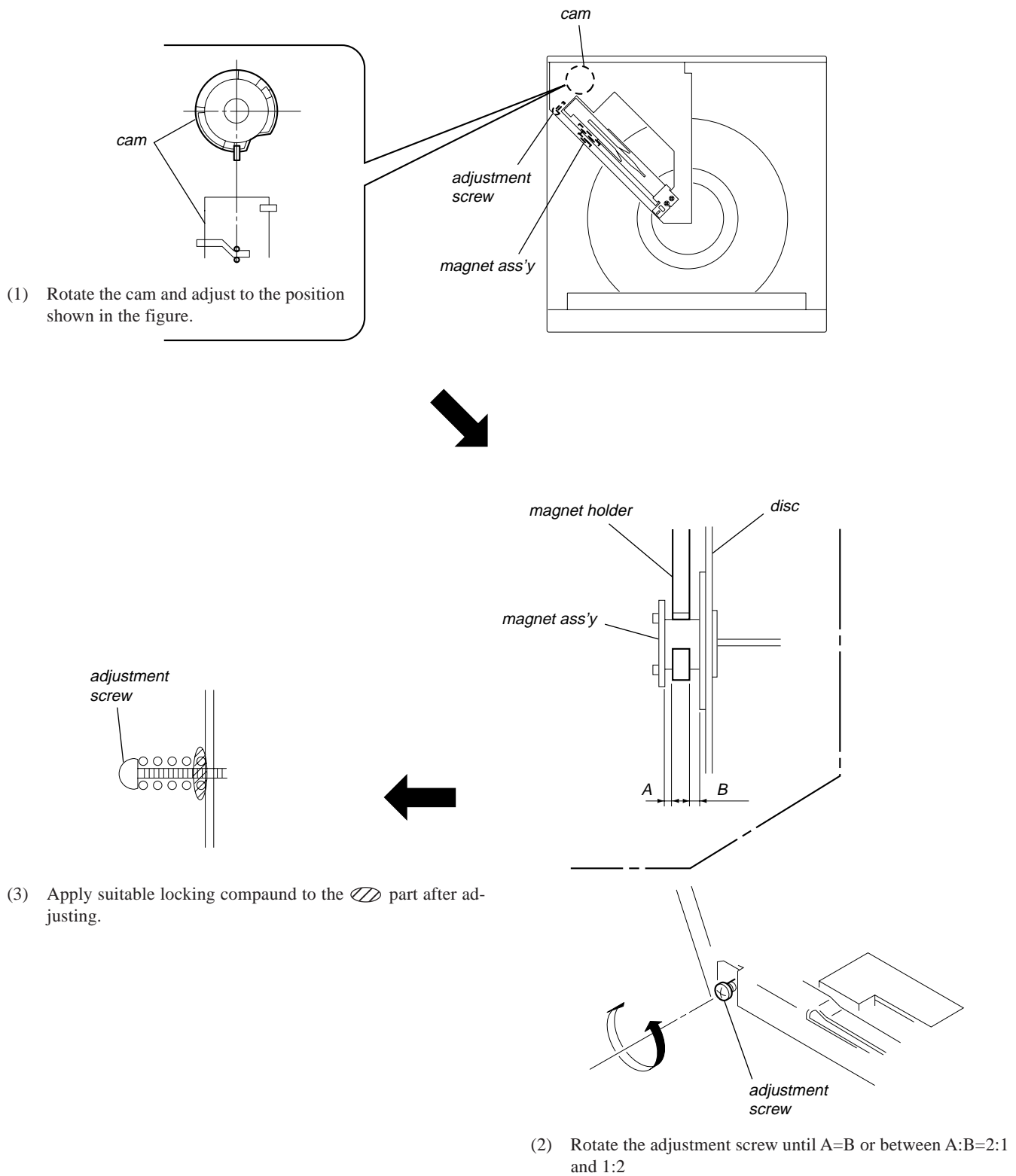




## PULLY AND DISC CENTER HOLE ALIGNMENT

- (1) Rotate the cam and adjust to the position shown in the figure.
- 
- (2) Check that the state is as shown in the figure.
- 
- Note:** The disc should not be fixed.
- (3) Remove the Magnet ass'y.
- 
- (4) Loosen the fixed screw by 60° to 90°, and move and adjust the bracket (BU adjustment) up and down using a tapering screwdriver so that the positions of the disc hole and disc pulley become A=B or between A:B=2:1 and 1:2.
- 

## MAGNET ASS'Y ALIGNMENT

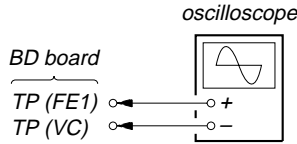


# SECTION 6 ELECTRICAL ADJUSTMENTS

**Note:**

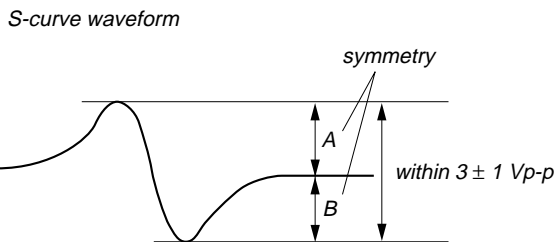
1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than 10MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal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

**S-Curve Check**



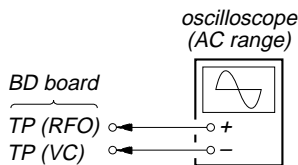
**Procedure :**

1. Connect oscilloscope to test point TP (FE1) on BD board.
2. Connect test point TP (ADJ) on MAIN board to ground with lead wire.
3. Turn  $\left[ \text{I/O} \right]$  button on to set the ADJ mode.
4. Put disc (YEDS-18) in and playback.  
Press the  $\left[ \text{CHECK} \right]$  button.
5. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within  $3 \pm 1$  Vp-p.



6. After check, remove the lead wire connected in step 2.
- Note:**
- Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.
  - Take sweep time as long as possible and light up the brightness to obtain best waveform.

**RF Level Check**

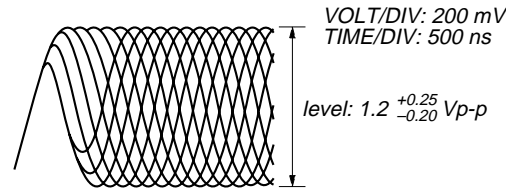


**Procedure :**

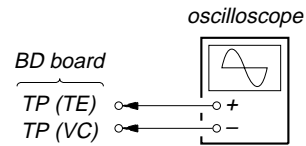
1. Connect oscilloscope to test point TP (RFO) on BD board.
2. Turn  $\left[ \text{I/O} \right]$  button on.
3. Put disc (YEDS-18) in to play the number five track.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

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

RF signal waveform



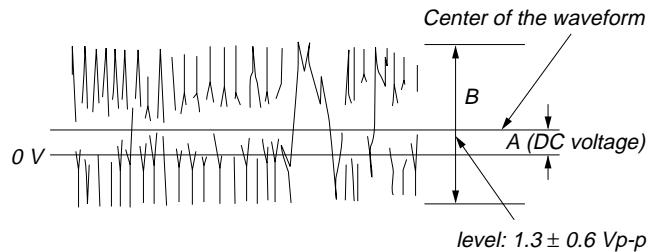
**E-F Balance Check**



**Procedure :**

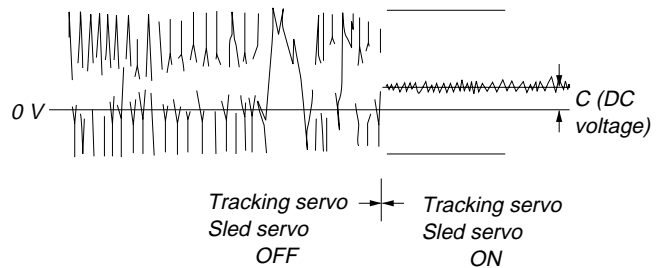
1. Connect oscilloscope to test point TP (TE) on BD board.
2. Connect the test point TP (ADJ) on MAIN board to the ground with a lead wire.
3. Turn the  $\left[ \text{I/O} \right]$  button on to set the ADJ mode.
4. Put disc (YEDS-18) in to play the number five track.
5. Press the  $\left[ \text{GROUP 3} \right]$  button. (The tracking servo and the sliding servo are turned OFF.)
6. Check the level B of the oscilloscope's waveform and the A (DC voltage) of the center of the Traverse waveform.  
Confirm the following :  
 $A/B \times 100 = \text{less than } \pm 22\%$

Traverse waveform



7. Press the  $\left[ \text{GROUP 8} \right]$  button. (The tracking servo and sliding servo are turned ON.) Confirm the C (DC voltage) is almost equal to the A (DC voltage) is step 6.

Traverse waveform

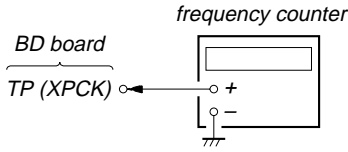


8. Disconnect the lead wire of TP (ADJ) connected in step 1.

## RF PLL Free-run Frequency Check

### Procedure :

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



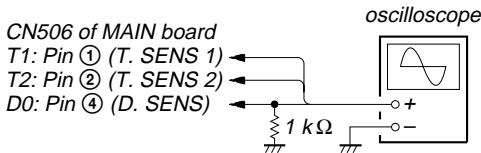
2. Turn  $\left[ \text{I/O} \right]$  button on.
3. Put the disc (YEDS-18) in to play the number five track.  
Confirm that reading on frequency counter is 4.3218MHz.

## Disc Sensor Adjustment

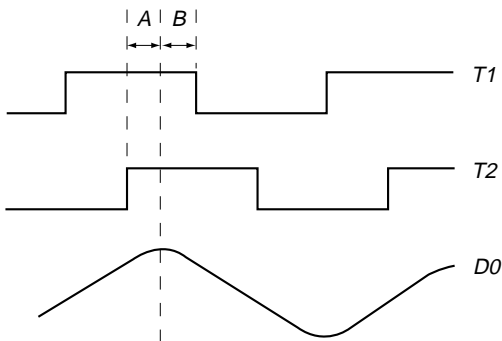
Perform this adjustment after completing all adjustments of the mechanism section.

If not performed accurately, the presence of the disc may not be detected properly.

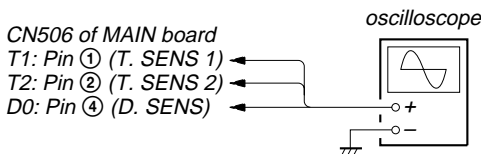
### Connection 1:



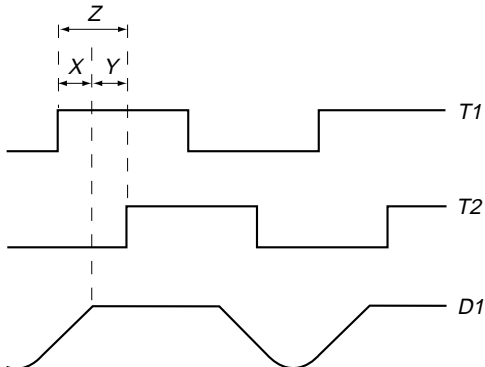
### Waveform 1:



### Connection 2:

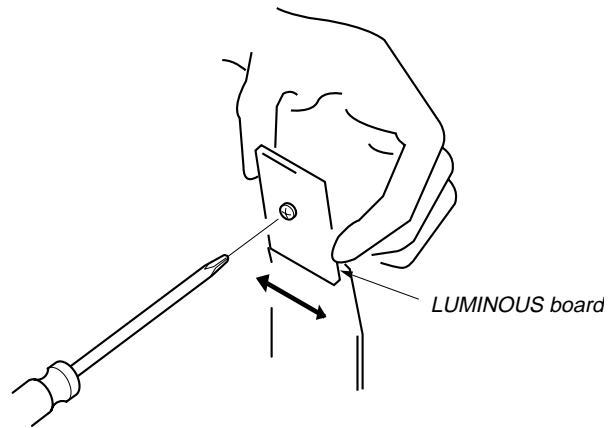


### Waveform 2



### Procedure:

1. Connect the oscilloscope to Pins ①, ②, and ④ of CN506 of the MAIN board. Also connect a 1 kΩ resistor to Pin ④ at the same time. (Connection 1)
2. Check that no discs are loaded in the unit, and press the  $\left[ \text{I/O} \right]$  button while pressing the  $\left[ \text{INPUT} \right]$  button.
3. The rotary table will continue rotating in the clockwise direction.
4. Observe the waveform at that time on the oscilloscope.
5. Loosen the screw securing the LUMINOUS board slightly.
6. Slide the LUMINOUS board to the left and right so that the peak of the D0 waveform is at the center between the descending point of the T1 waveform and ascending point of the T2 waveform. (Waveform 1) After adjusting, apply locking compound.



7. Disconnect the resistor connected to Pin ④ of CN506 of the MAIN board. (Connection 2)
8. Observe the waveform on the oscilloscope. (Waveform 2)
9. Adjust RV501 of the MAIN board so that the waveform on the oscilloscope satisfies the following adjustment value.
10. After the adjustment, load a disc only in slit 1, close the front cover, and press the  $\left[ \text{I/O} \right]$  button to turn off the power.
11. Press the  $\left[ \text{I/O} \right]$  button while pressing the  $\left[ \text{PUSH ENTER} \right]$  button to turn on the power.
12. If the rotary table makes round, and "YES" is displayed on the fluorescent indicator tube after it stops, it means that the adjustment has been performed properly.

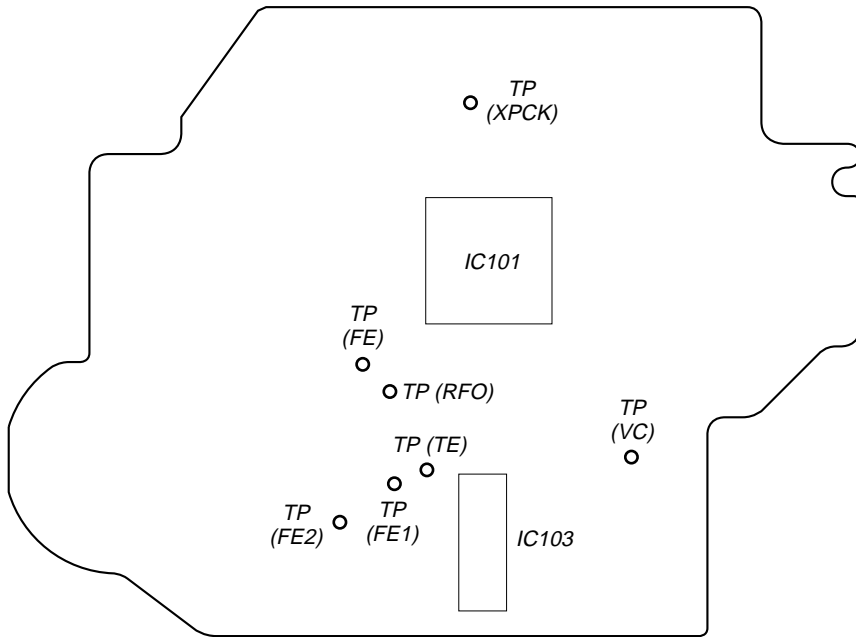
### Adjustment value:

At the shoulder part of waveform D1, T1 becomes H and T2 becomes L, and at the same time, the Y width must not be smaller than 1/4 of the Z width.

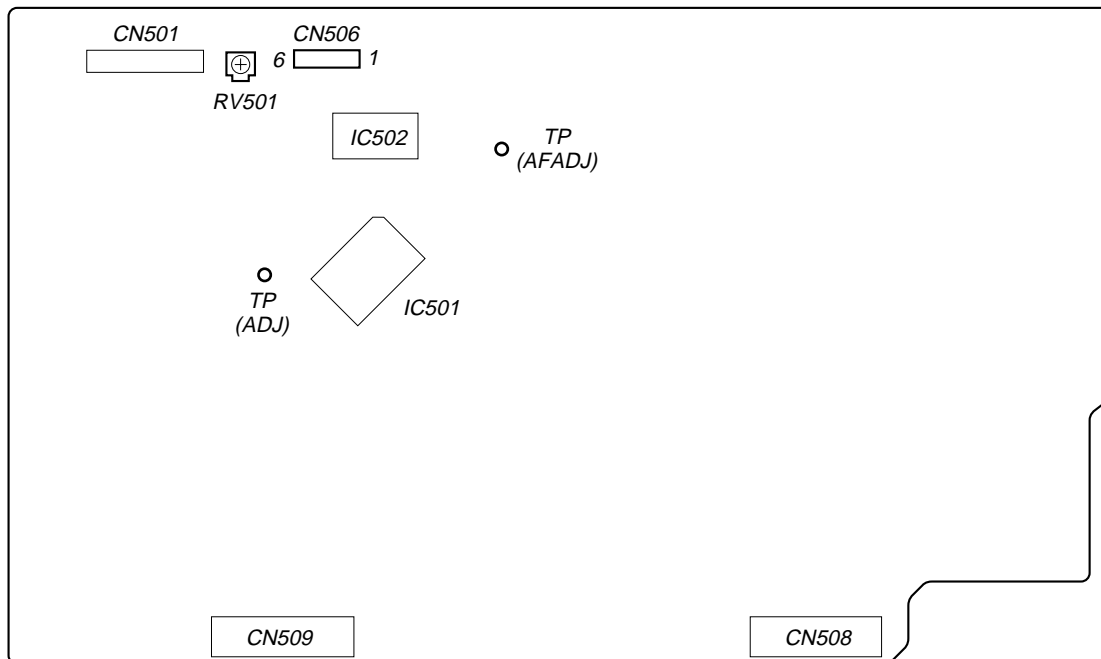
In order to satisfy this value more easily, adjust so that X=Y approximately and observe the deviation of the waveform.

**Adjustment Location:**

**[BD BOARD] – Side B –**

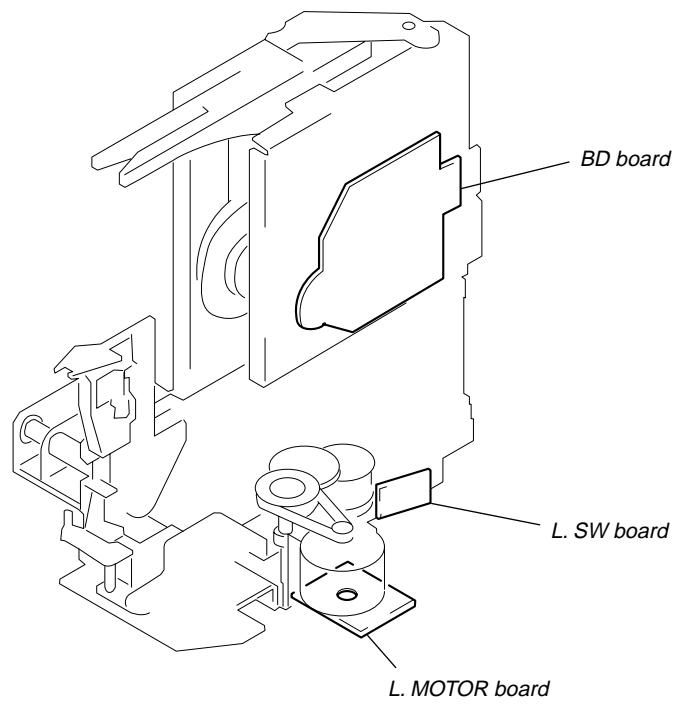
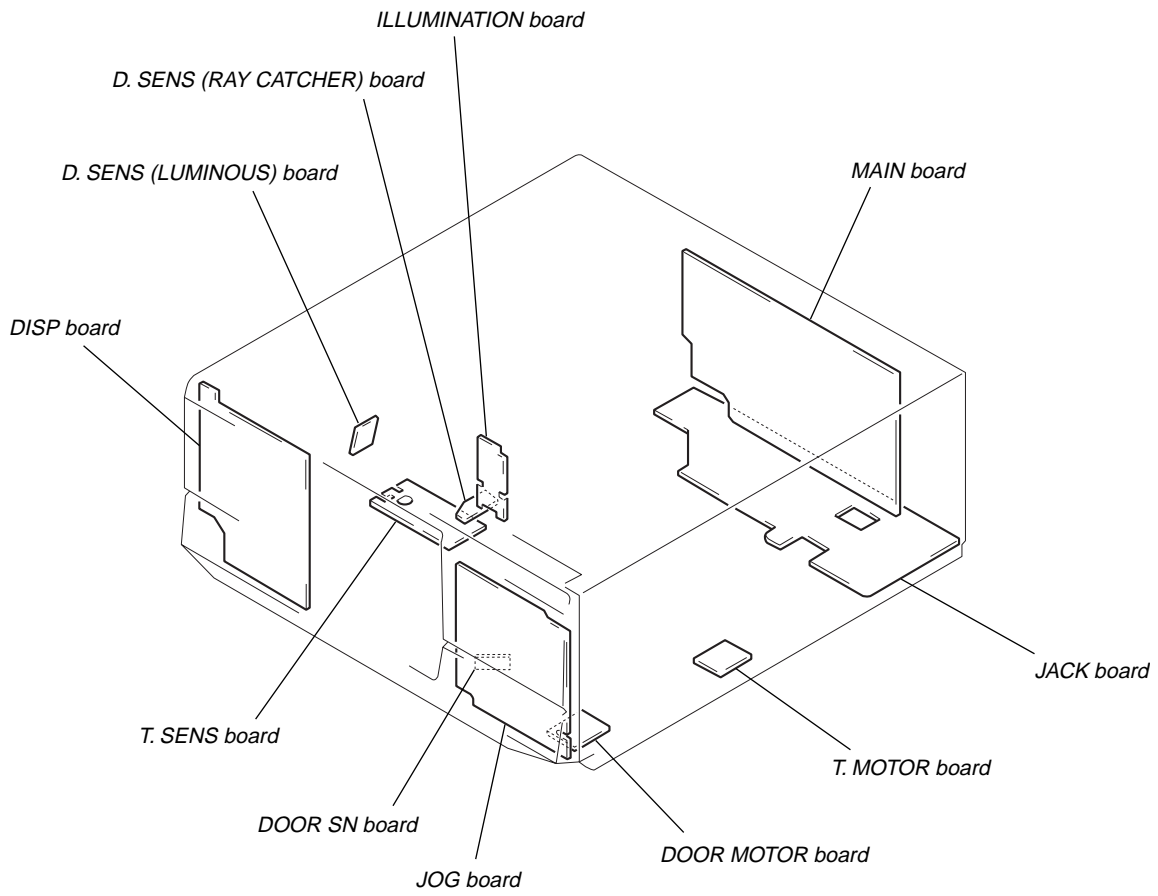


**[MAIN BOARD] – Component Side –**



# SECTION 7 DIAGRAMS

## • Circuit Boards Location



## 7-1. NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

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

### Note on Schematic Diagram:

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

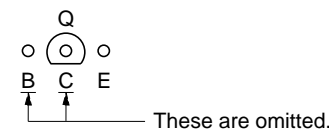
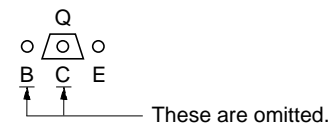
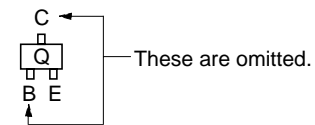
**Note:**  
The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety.  
Replace only with part number specified.

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

- $\text{B}+$  : B+ Line.
- $\text{B}-$  : B- Line.
- $\square$  : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.  
no mark: PLAY
- Voltages are taken with a VOM (Input impedance 10 M $\Omega$ ).  
Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.  
Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  - $\Rightarrow$  : CD
  - $\Rightarrow$  : digital out
- Abbreviation
  - AED : North European
  - AUS : Australian model.
  - CND : Canadian model.
  - E2 : 120 V AC Area in E model.
  - E3 : 240 V AC Area in E model.
  - SP : Singapore model.

### Note on Printed Wiring Boards:

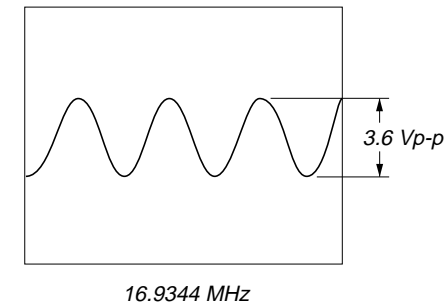
- $\circ$  : parts extracted from the component side.
- $\text{---}$  : parts extracted from the conductor side.
- $\Delta$  : internal component.
- $\text{---}$  : Pattern from the side which enables seeing.
- $\text{---}$  : Solder bridge.
- $\text{---}$  : Indication of transistor.



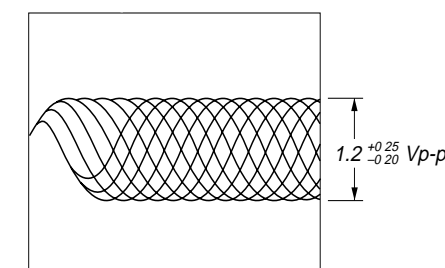
## • Waveforms

### – BD Section –

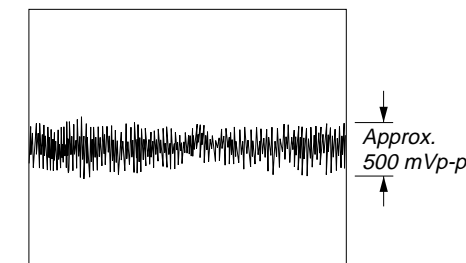
① IC101 ⑥⑥ (XTAI)



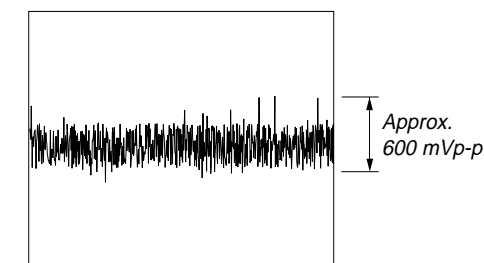
② IC101 ⑤① (RFAC)  
500 mV/DIV, 1  $\mu\text{s}$ /DIV



③ IC101 ④① (TE)  
200 mV/DIV, 1  $\mu\text{s}$ /DIV

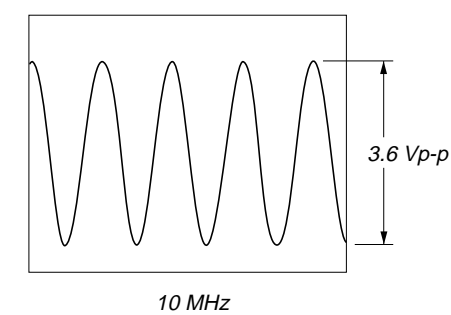


④ IC101 ③⑨ (FE)  
200 mV/DIV, 10  $\mu\text{s}$ /DIV



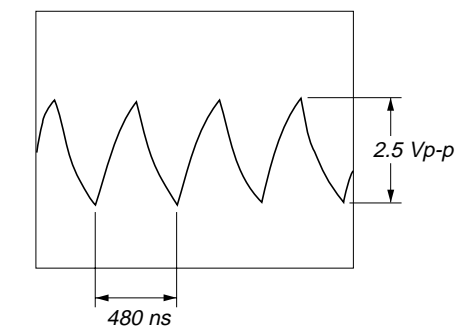
### – MAIN Section –

① IC501 ③① (EXTAL)



### – PANEL Section –

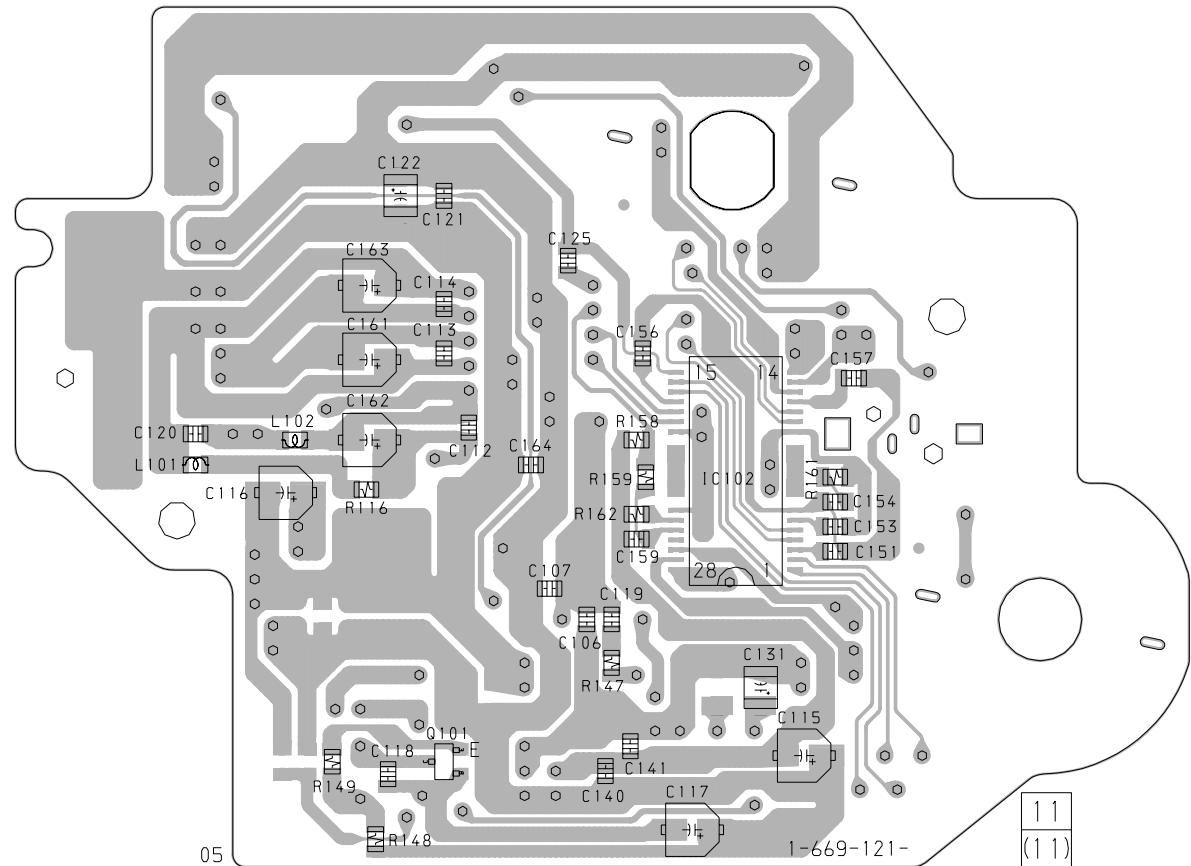
① IC701 ⑥⑥ (OSC0)



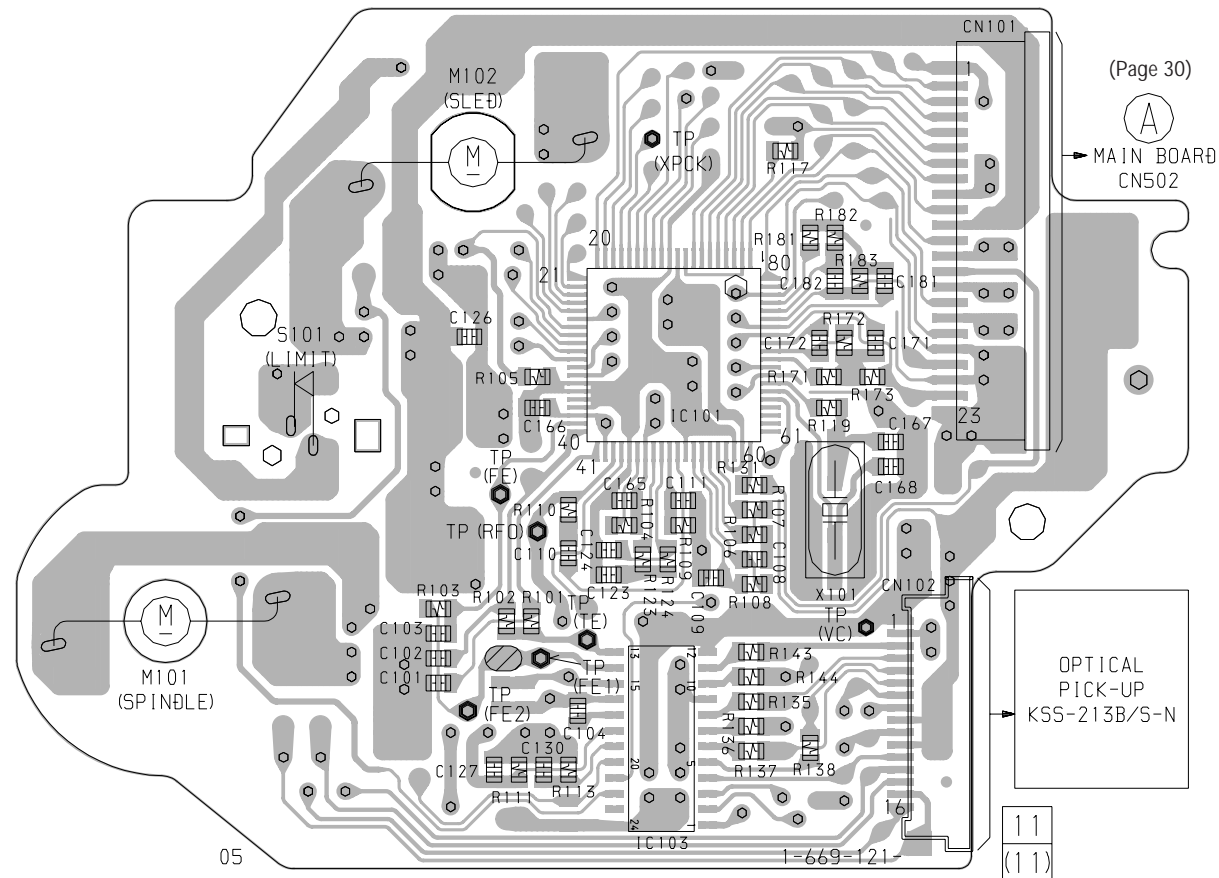
7-2. PRINTED WIRING BOARD – BD Section –

• See page 22 for Circuit Boards Location.

【BD BOARD】(SIDE A)



【BD BOARD】(SIDE B)



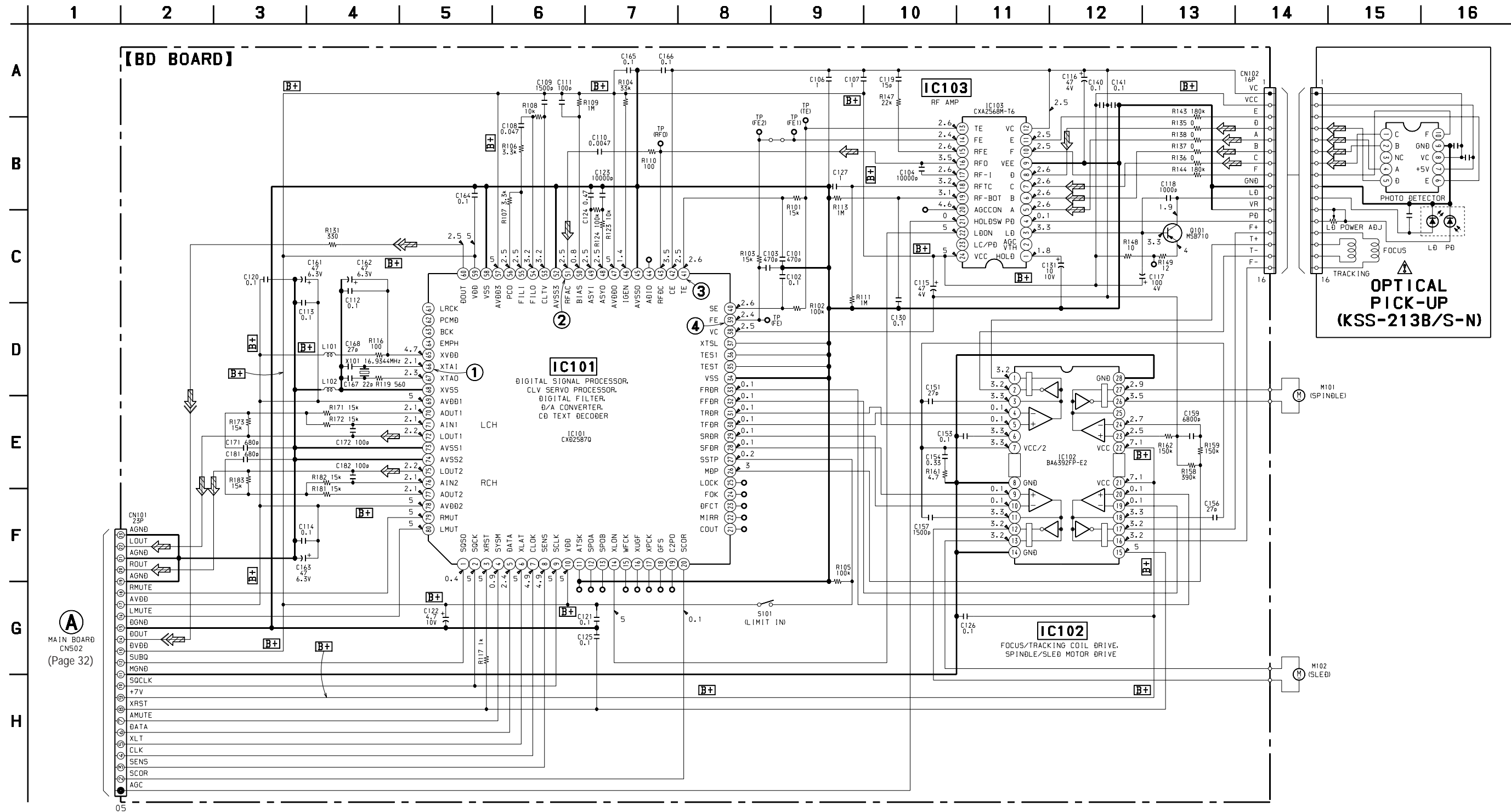
(Page 30)  
A  
MAIN BOARD  
CN502

OPTICAL  
PICK-UP  
KSS-213B/S-N



7-3. SCHEMATIC DIAGRAM – BD Section –

• See page 24 for Waveforms. • See page 44 for IC Block Diagrams.



**A**  
MAIN BOARD  
CN502  
(Page 32)

- no mark: PLAY
- Signal path.
- ◀ : CD
- ◀◀ : digital out

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

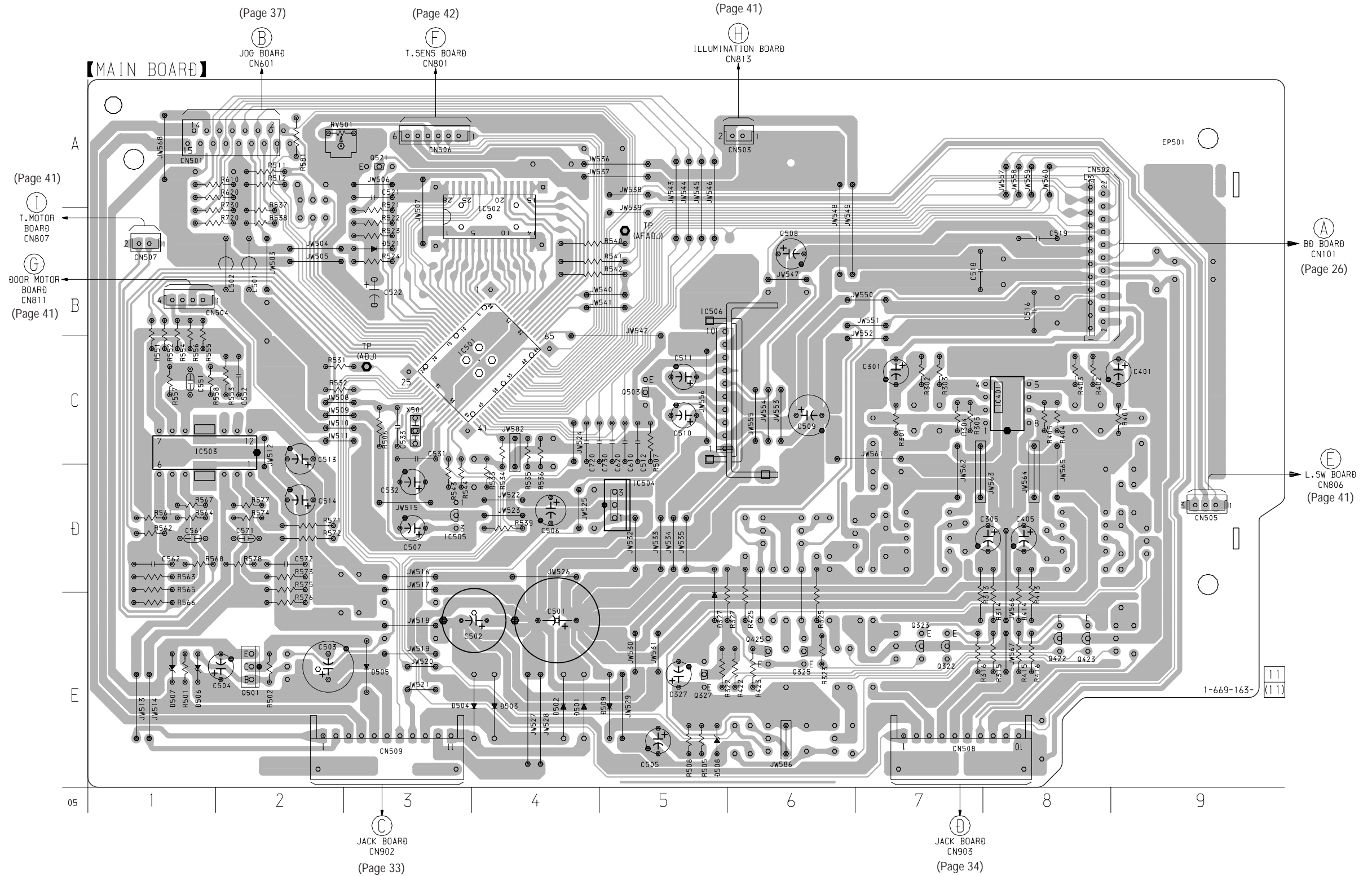
**Note:**  
Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

7-4. PRINTED WIRING BOARD – MAIN Section –

• See page 22 for Circuit Boards Location.

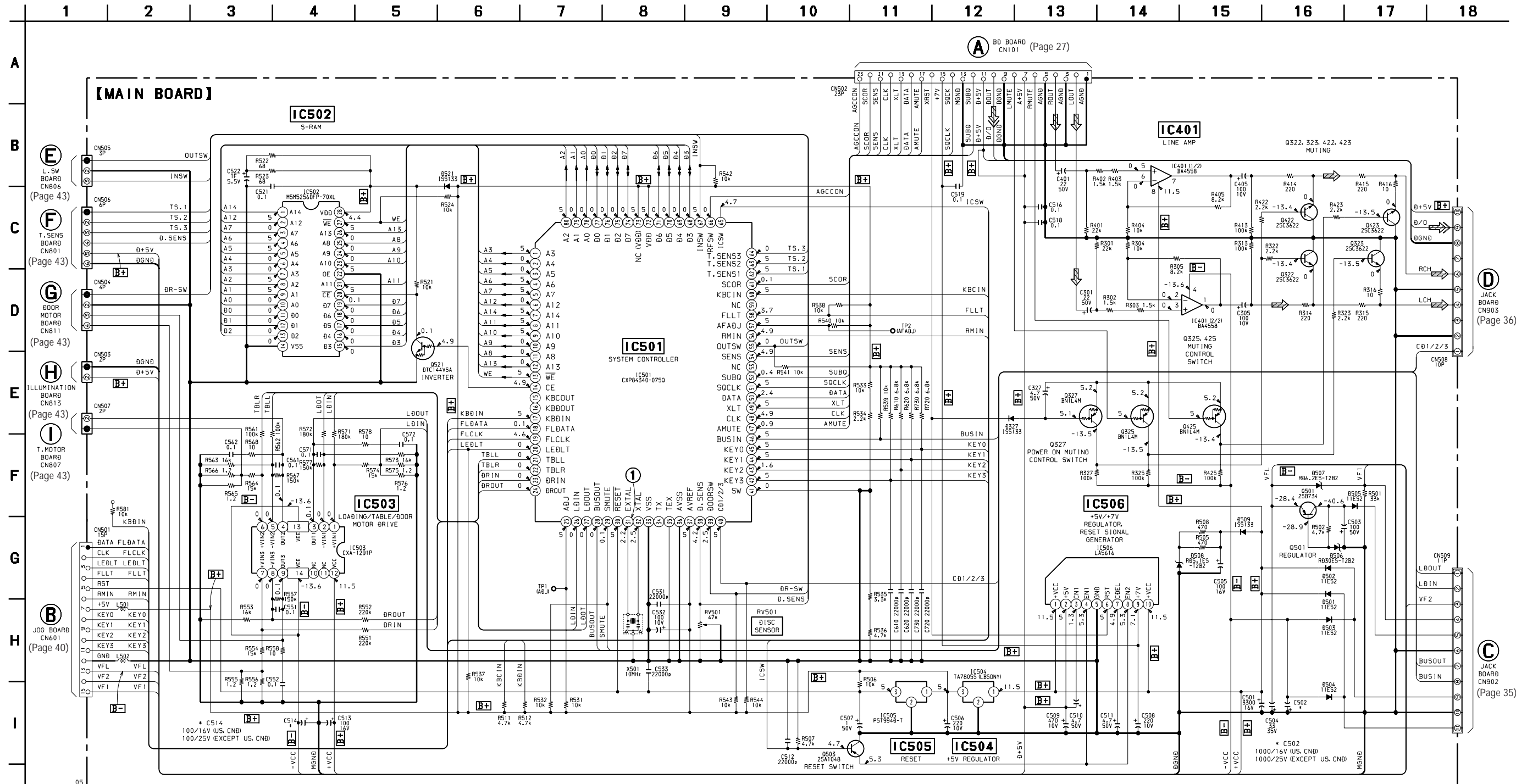
• Semiconductor Location

Ref. No.	Location
D327	E-5
D501	E-4
D502	E-4
D503	E-4
D504	E-4
D505	E-3
D506	E-1
D507	E-1
D508	E-5
D509	E-5
D521	B-3
IC401	C-8
IC501	C-3
IC502	B-4
IC503	C-1
IC504	D-5
IC505	D-3
IC506	C-5
Q322	E-7
Q323	E-7
Q325	E-6
Q327	E-5
Q422	E-8
Q423	E-8
Q425	E-6
Q501	E-2
Q503	C-5
Q521	A-3



7-5. SCHEMATIC DIAGRAM – MAIN Section –

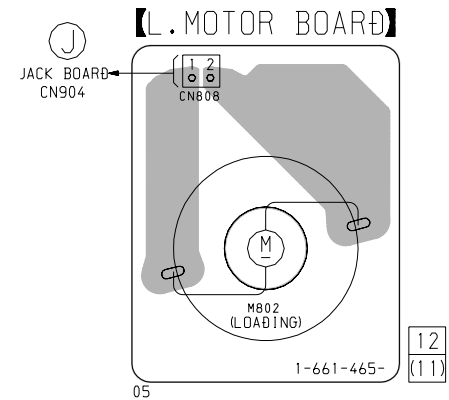
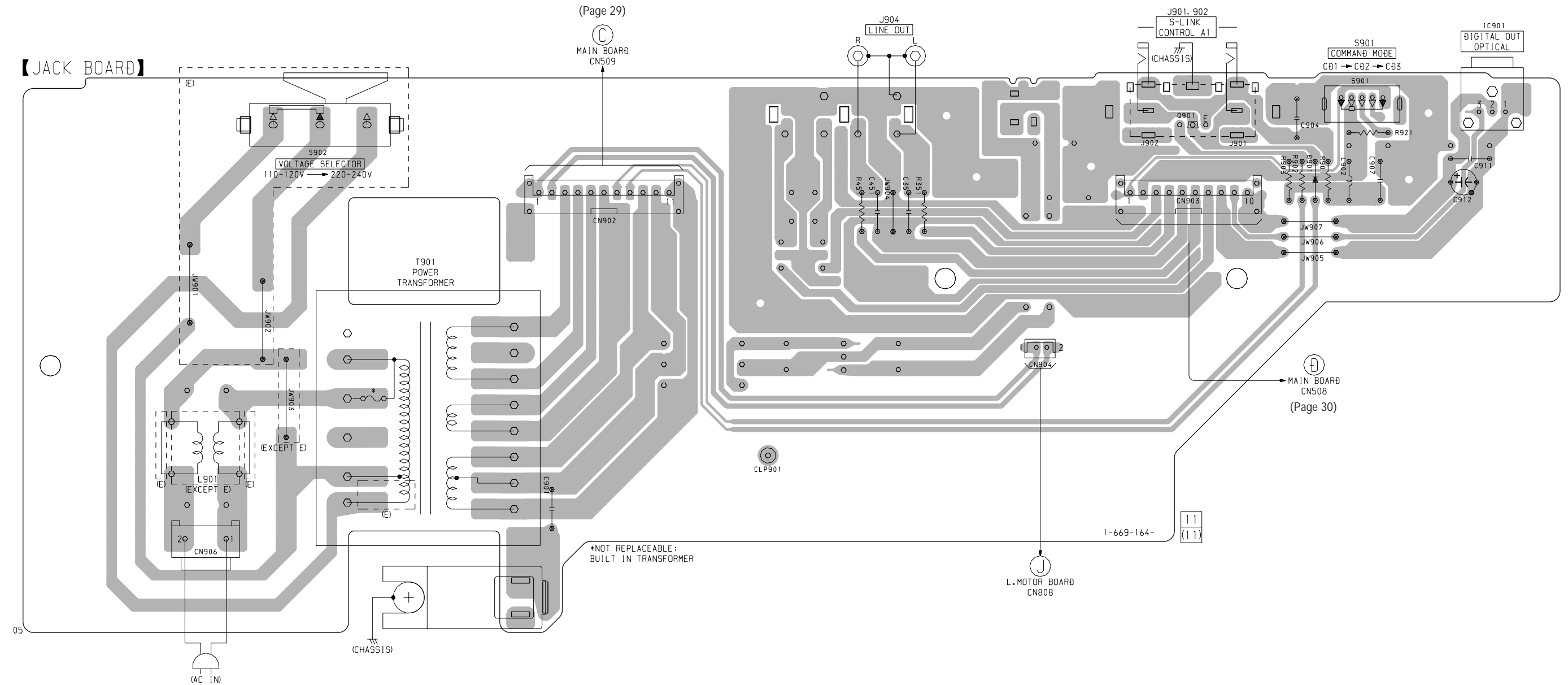
• See page 24 for Waveforms. • See page 45 for IC Block Diagrams.



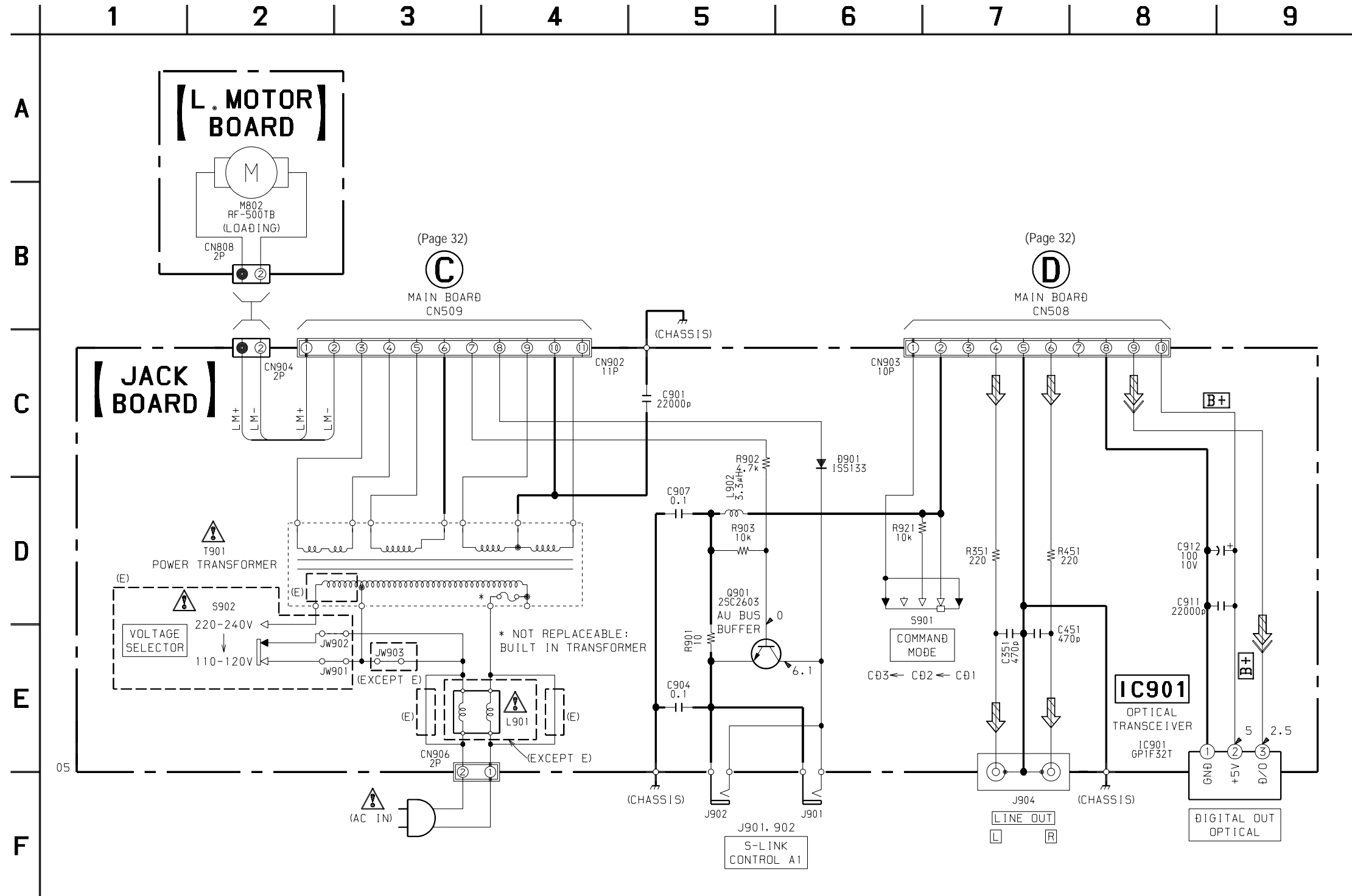
- no mark: PLAY
- Signal path.
- ◻ : CD
- ◻◻ : digital out

7-6. PRINTED WIRING BOARDS – JACK Section –

• See page 22 for Circuit Boards Location.



7-7. SCHEMATIC DIAGRAM – JACK Section –

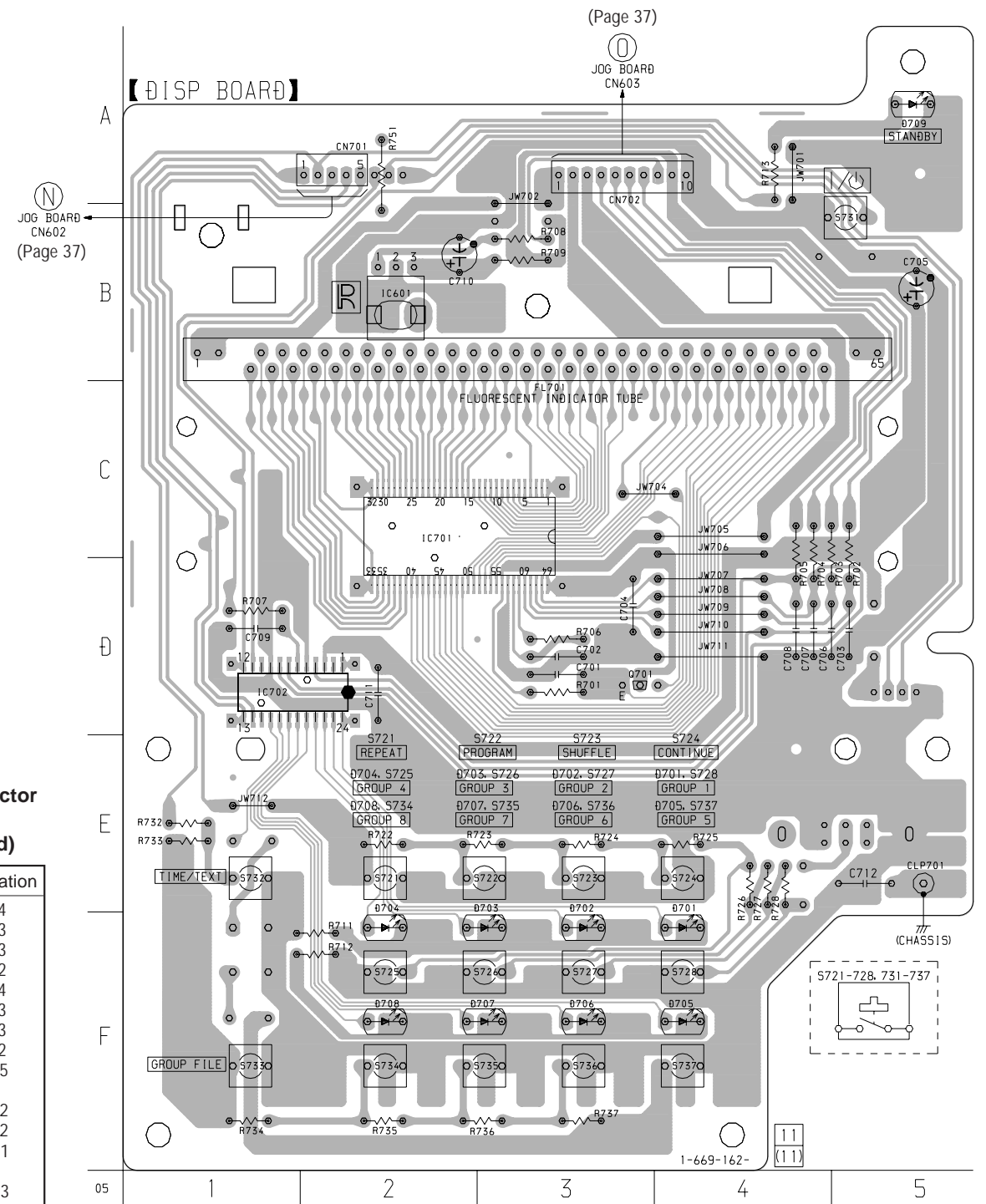
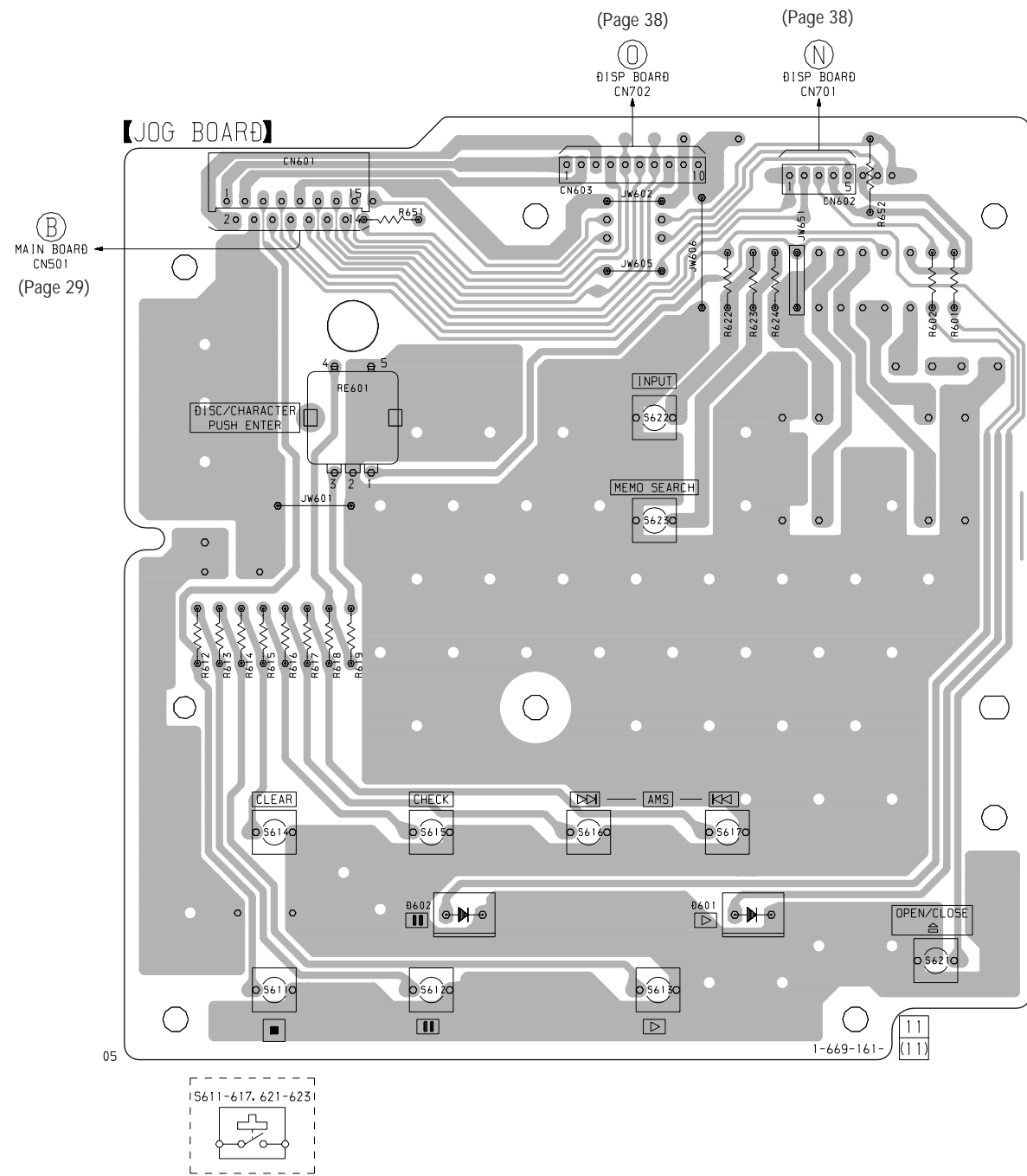


- no mark: PLAY
- Signal path.
- ▨ : CD
- ▨▨ : digital out

<p><b>Note:</b> The components identified by mark <math>\Delta</math> or dotted line with mark <math>\Delta</math> are critical for safety. Replace only with part number specified.</p>	<p><b>Note:</b> Les composants identifiés par une marque <math>\Delta</math> sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.</p>
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7-8. PRINTED WIRING BOARDS – PANEL Section –

• See page 22 for Circuit Boards Location.

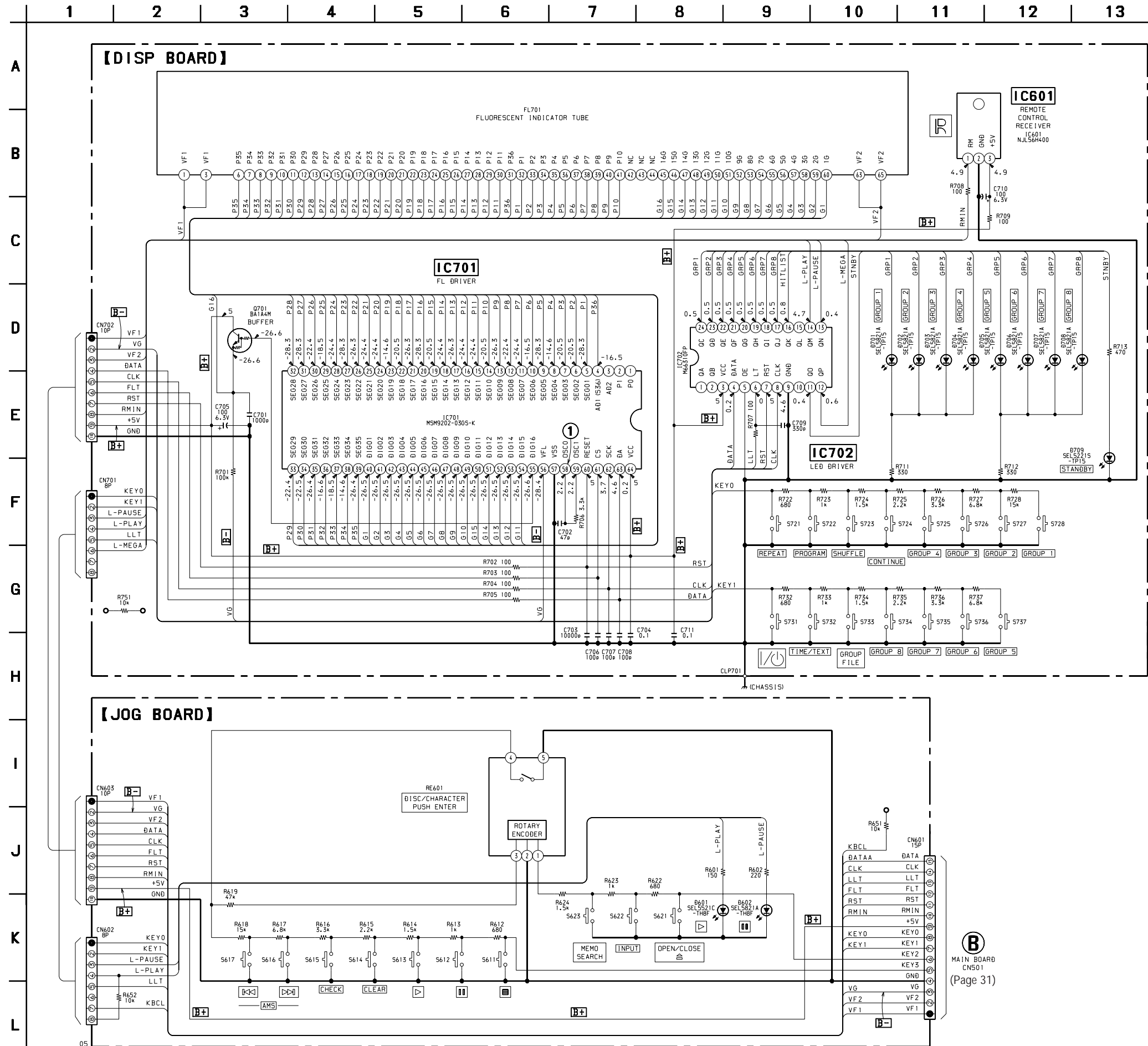


• Semiconductor Location (DISP Board)

Ref. No.	Location
D701	F-4
D702	F-3
D703	F-3
D704	F-2
D705	F-4
D706	F-3
D707	F-3
D708	F-2
D709	A-5
IC601	B-2
IC701	C-2
IC702	D-1
Q701	D-3

7-9. SCHEMATIC DIAGRAM - PANEL Section -

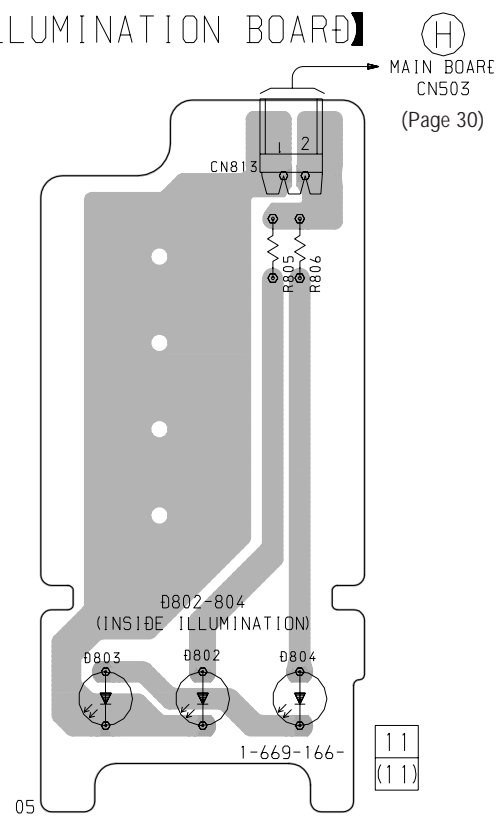
• See page 24 for Waveforms. • See page 46 for IC Block Diagrams.



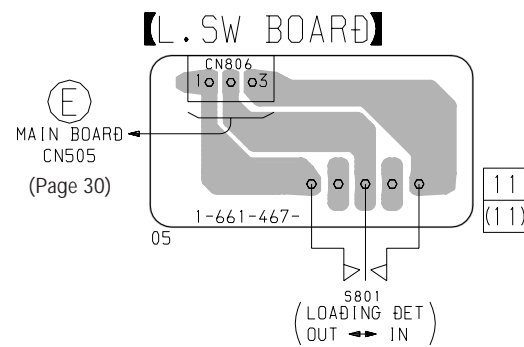
7-10. PRINTED WIRING BOARDS – SENSOR/MOTOR Section –

• See page 22 for Circuit Boards Location.

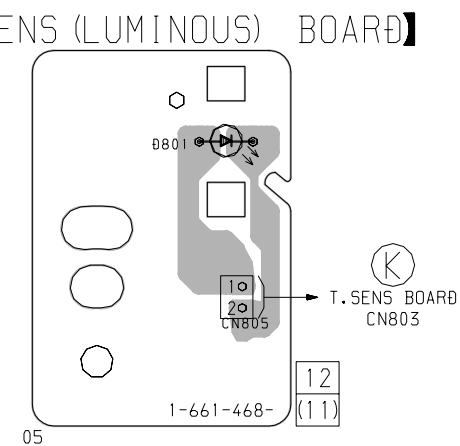
【ILLUMINATION BOARD】



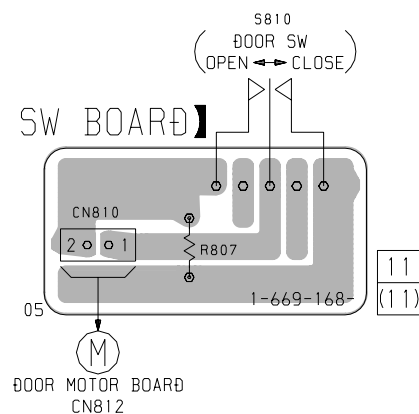
【L. SW BOARD】



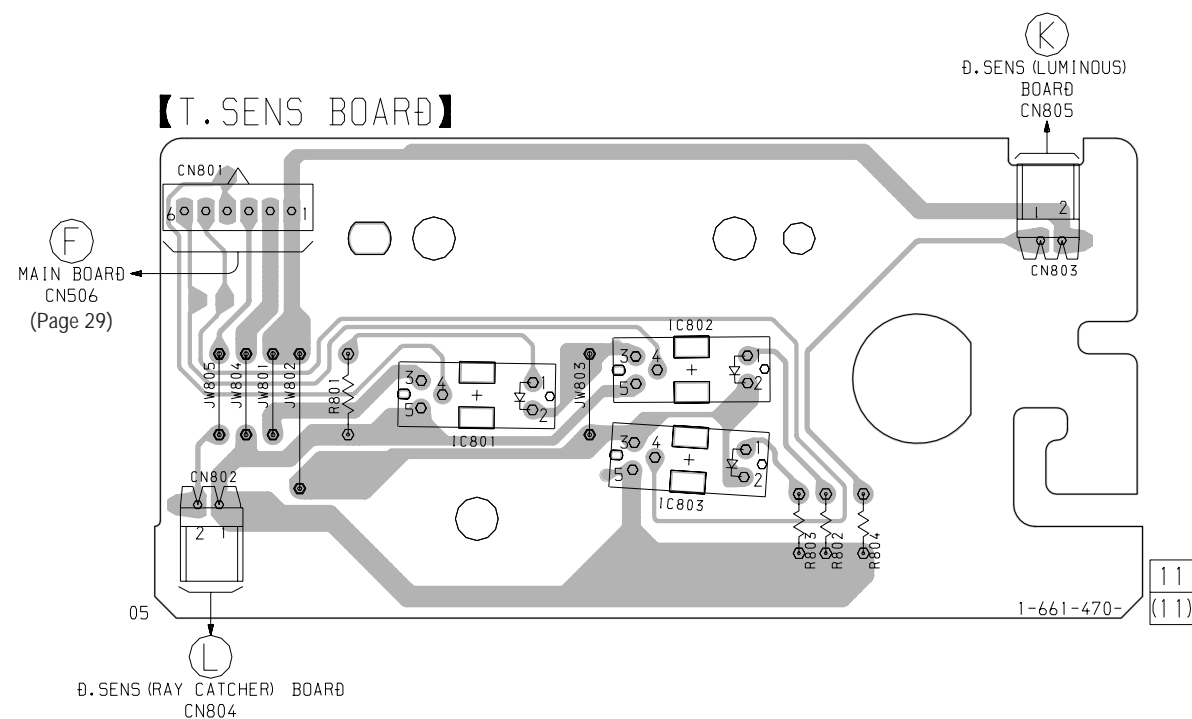
【D. SENS (LUMINOUS) BOARD】



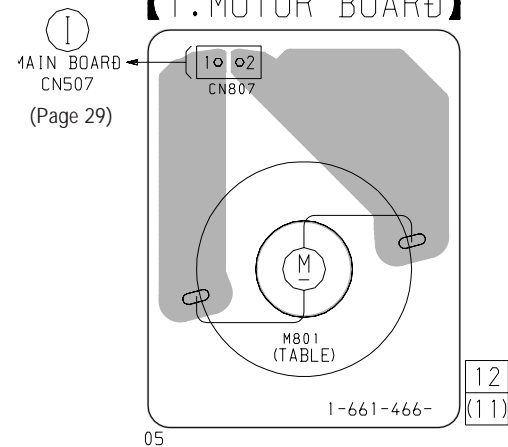
【DOOR SW BOARD】



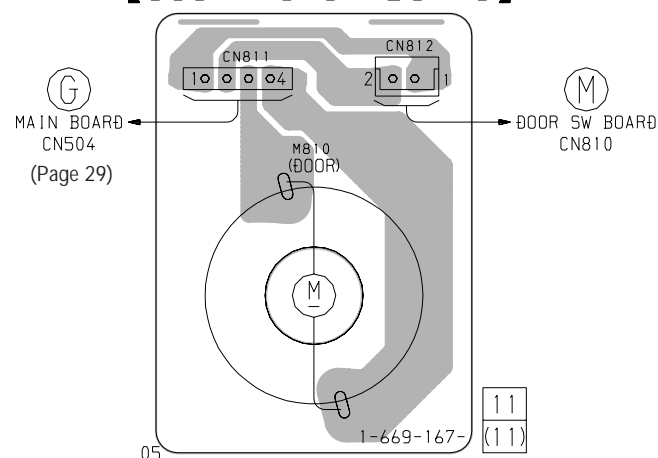
【T. SENS BOARD】



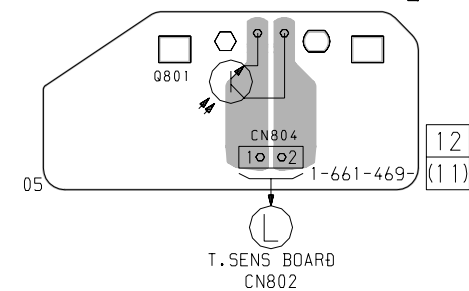
【T. MOTOR BOARD】



【DOOR MOTOR BOARD】

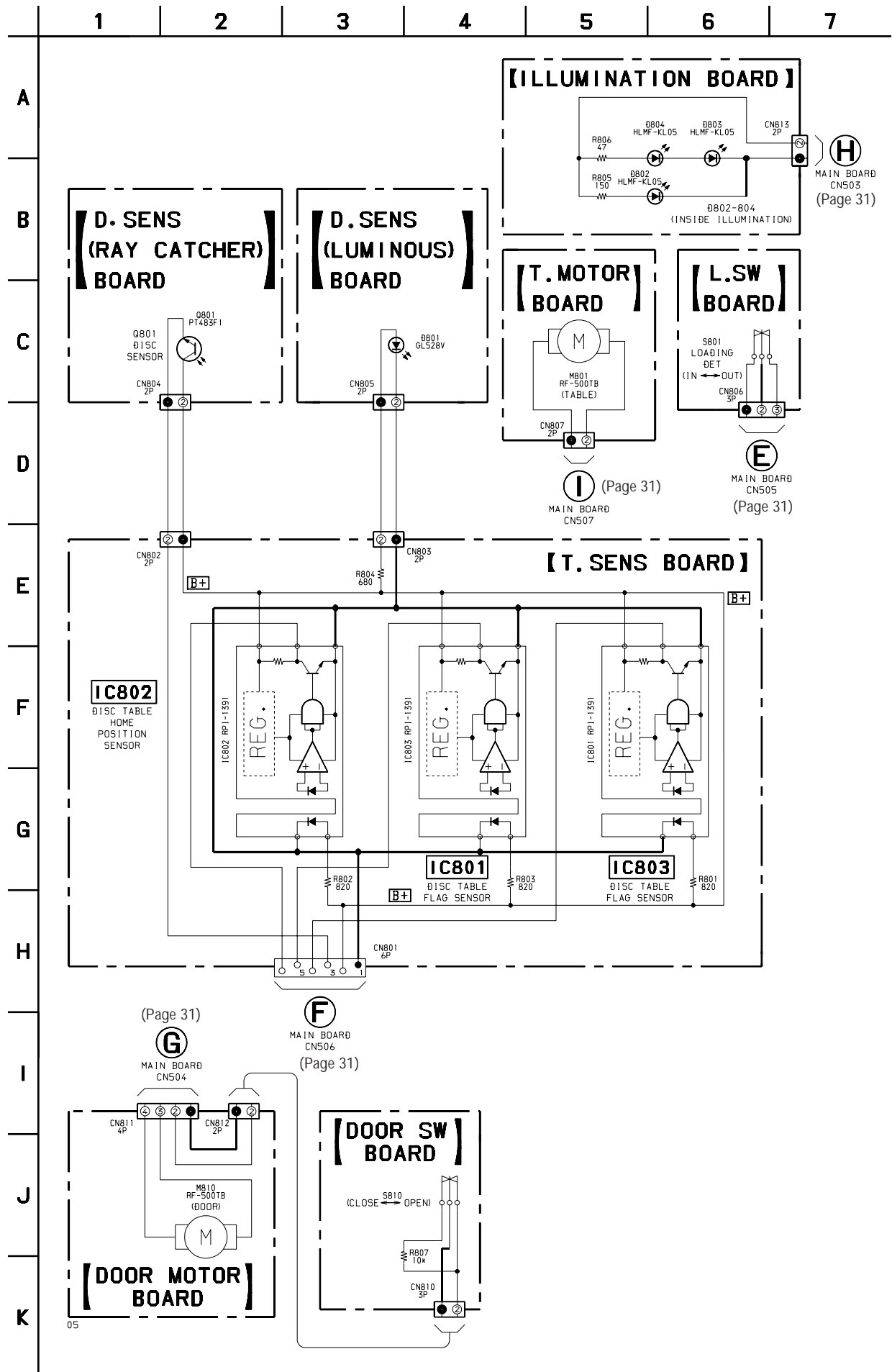


【D. SENS (RAY CATCHER) BOARD】



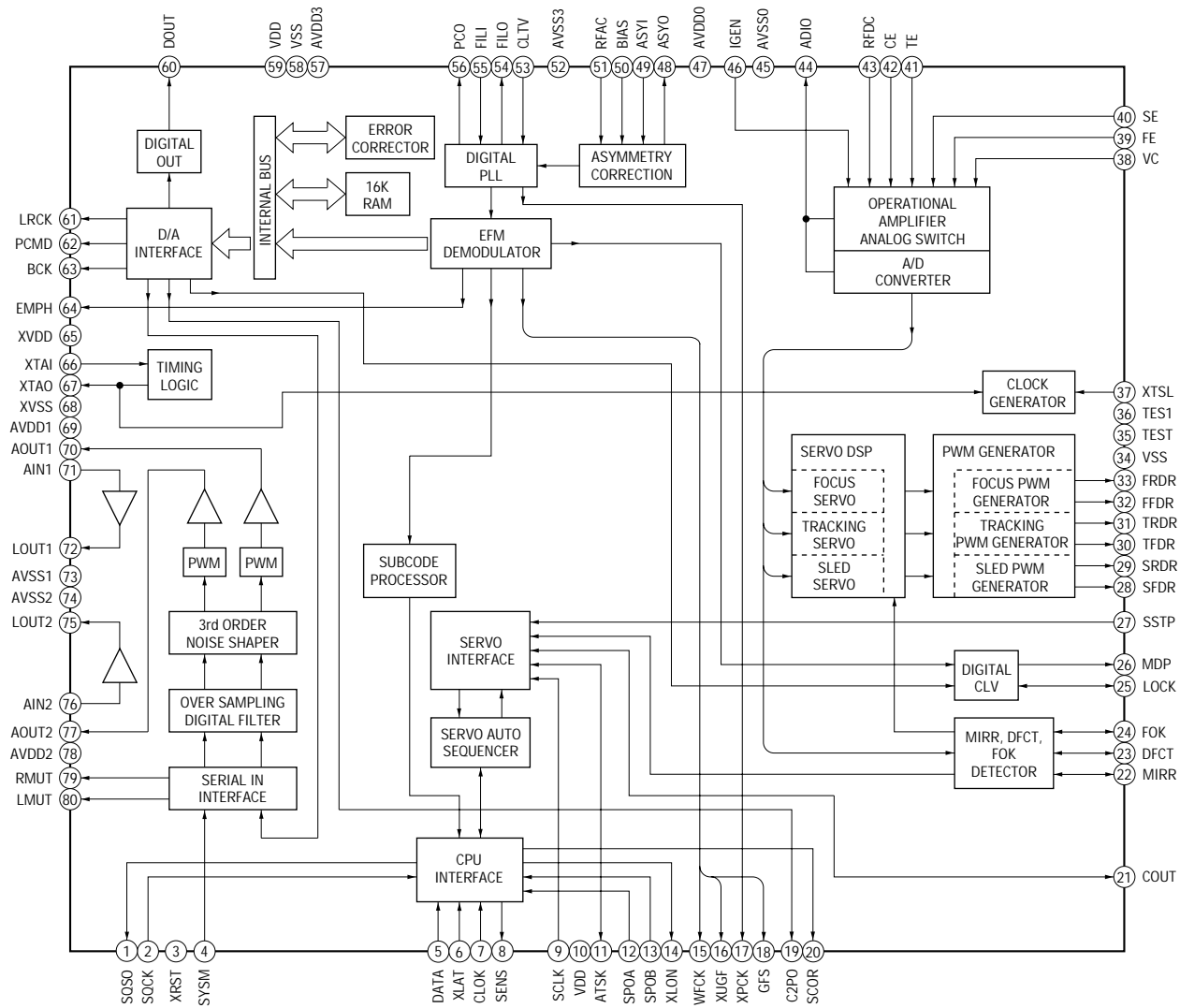


7-11. SCHEMATIC DIAGRAM – SENSOR/MOTOR Section –

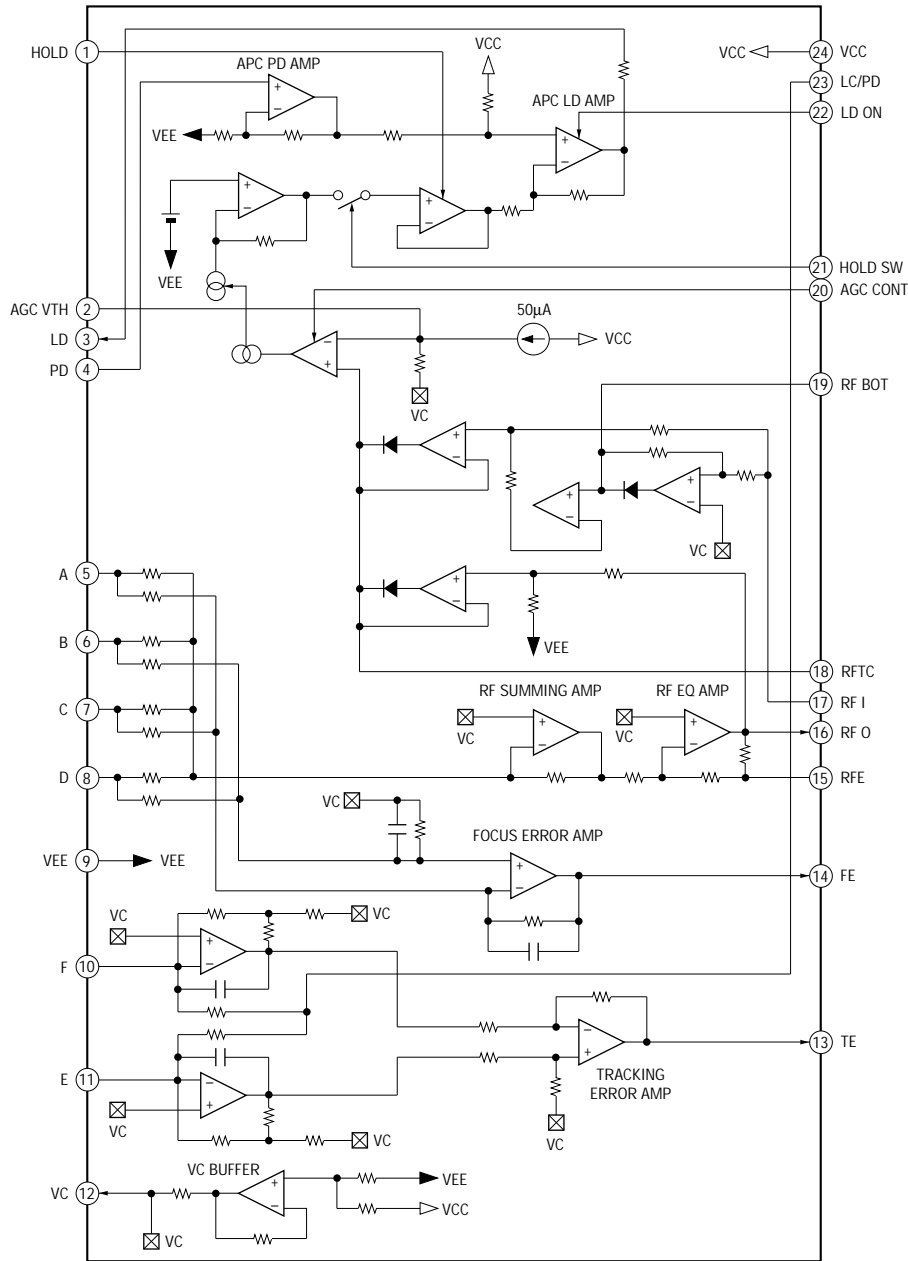


• IC Block Diagrams  
– BD Board –

IC101 CXD2587Q

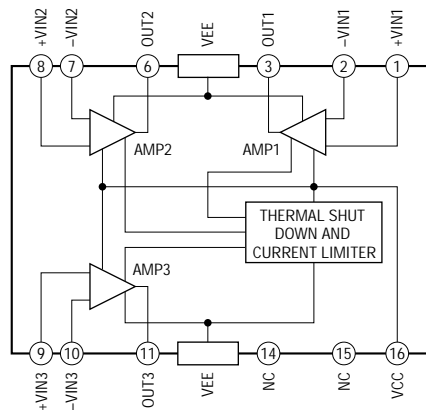


**IC103 CXA2568M-T6**

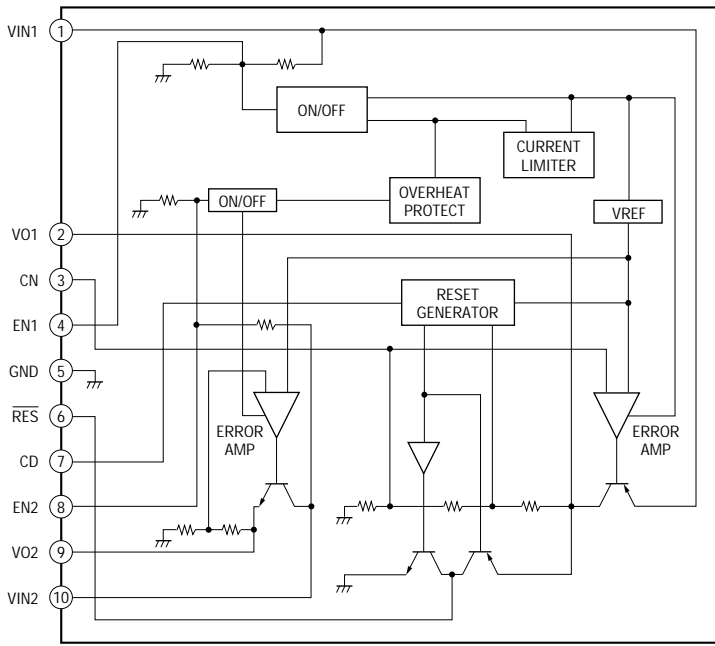


**- MAIN Board -**

**IC503 CXA1291P**

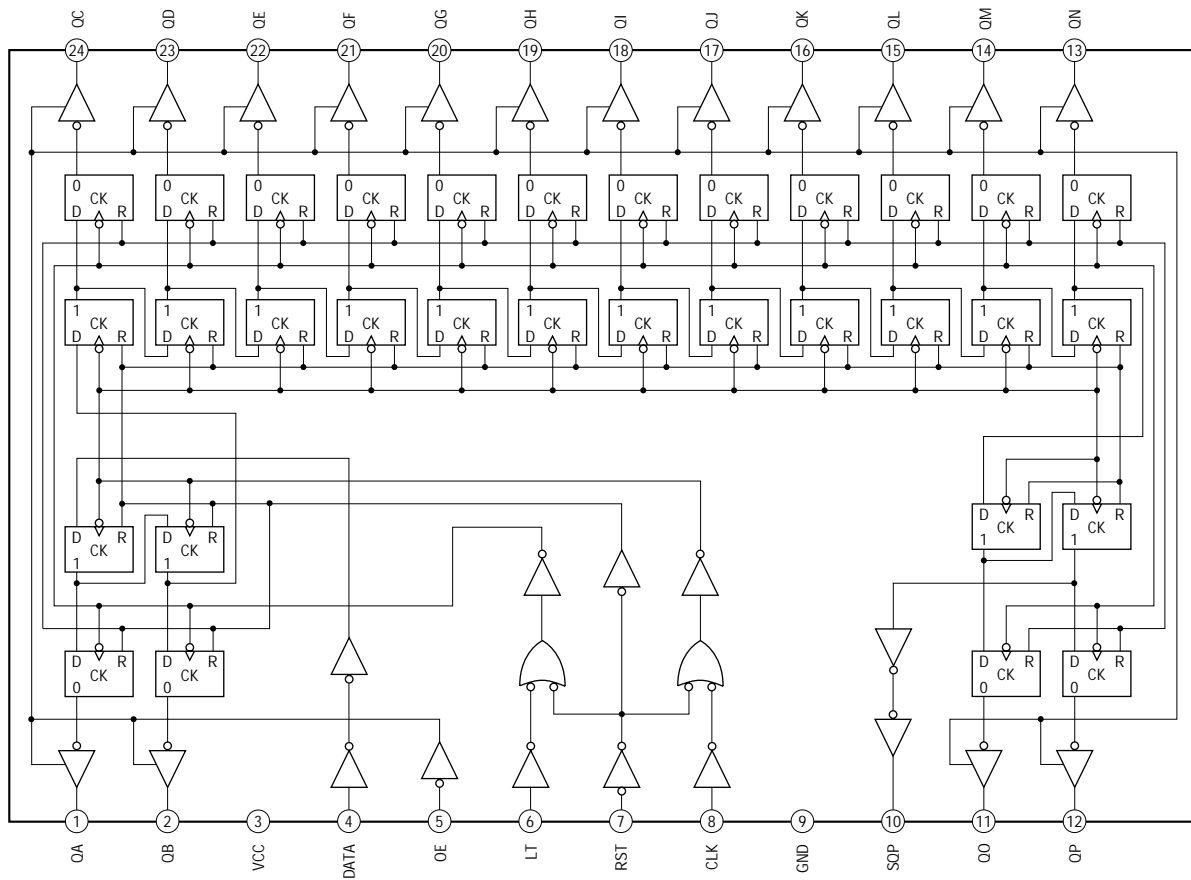


**IC506 LA5616**



**- DISP Board -**

**IC702 M66310FP**



## 7-12. IC PIN FUNCTION DESCRIPTION

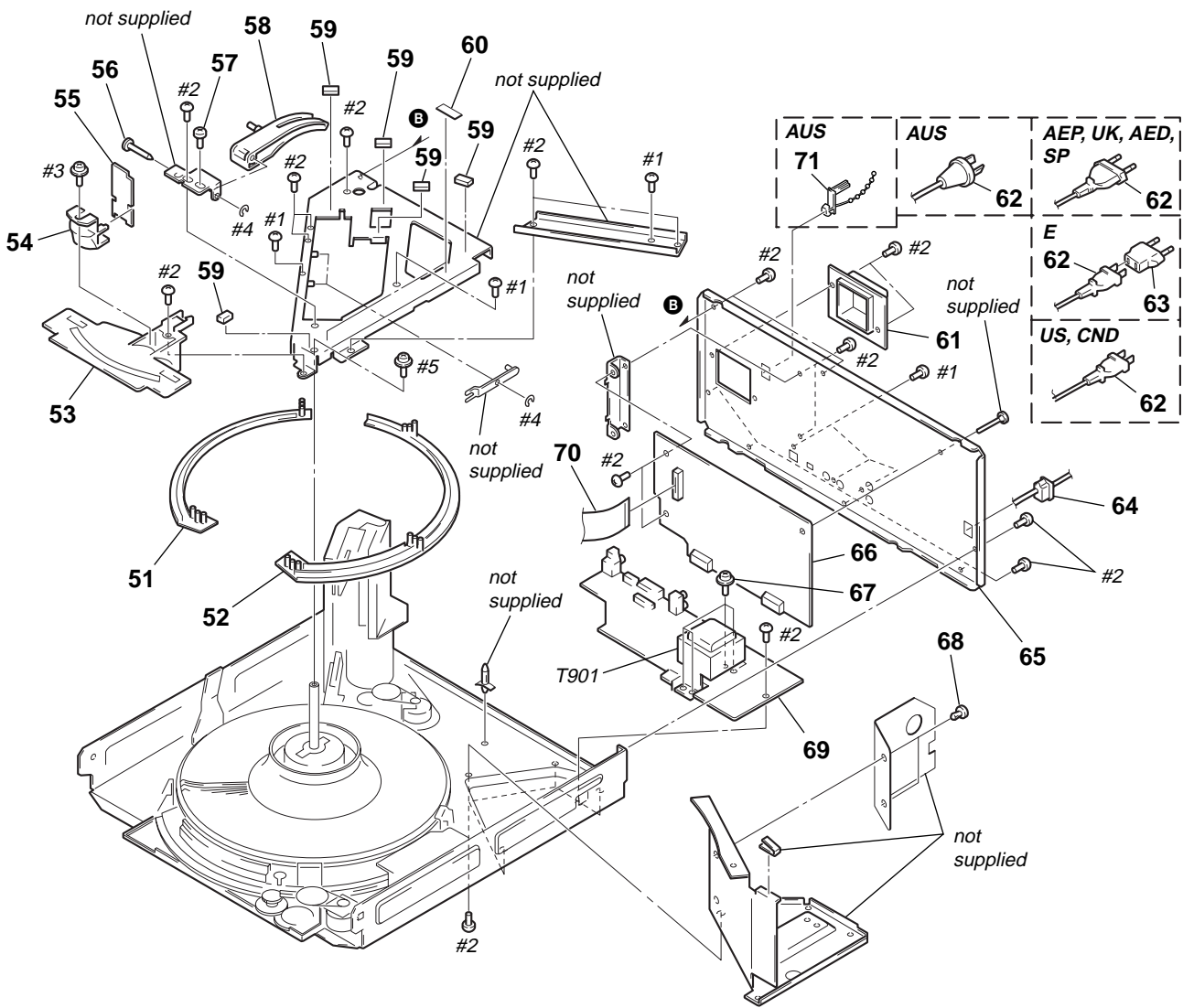
### • MAIN BOARD IC501 CXP84340-075Q (SYSTEM CONTROLLER)

Pin No.	Pin Name	I/O	Function
1 to 5	A3 to A7	O	Address signal output to the static RAM (IC502)
6	A12	O	
7	A14	O	
8 to 11	A11 to A8	O	
12	A13	O	
13	$\overline{\text{WE}}$	O	Data write enable signal output to the static RAM (IC502) “L” active
14	CE	O	Chip enable signal output to the static RAM (IC502) “H” active
15	KBCOUT	O	Serial data transfer clock signal output terminal Not used (open)
16	KBDOUT	O	Serial data output terminal Not used (open)
17	KBDIN	I	Serial data input terminal Not used (open)
18	FLDATA	O	Serial data output to the FL driver (IC701) and LED driver (IC702)
19	FLCLK	O	Serial data transfer clock signal output to the FL driver (IC701) and LED driver (IC702)
20	LEDLT	O	Serial data latch pulse output to the LED driver (IC702) “L” active
21	TBLL	O	Table motor drive signal (counterclockwise) output to the CXA1291P (IC503) “H” active
22	TBLR	O	Table motor drive signal (clockwise) output to the CXA1291P (IC503) “H” active
23	DRIN	O	Door motor drive signal (door close) output to the CXA1291P (IC503) “H” active
24	DROUT	O	Door motor drive signal (door open) output to the CXA1291P (IC503) “H” active
25	ADJ	I	Setting terminal for the test mode “L”: ADJ mode, Normally: fixed at “H”
26	LDIN	O	Loading motor drive signal (load-in direction) output to the CXA1291P (IC503) “H” active
27	LDOUT	O	Loading motor drive signal (load-out direction) output to the CXA1291P (IC503) “H” active
28	BUSOUT	O	Sircs remote control signal output for the S-LINK CONTROL A1 “H” active
29	SMUTE	O	Muting on/off control signal output terminal “H” active Not used (pull up)
30	$\overline{\text{RESET}}$	I	System reset signal input from the reset signal generator (IC505) “L”: reset For several hundreds msec. after the power supply rises, “L” is input, then it changes to “H”
31	EXTAL	I	Main system clock input terminal (10 MHz)
32	XTAL	O	Main system clock output terminal (10 MHz)
33	VSS	—	Ground terminal
34	TX	O	Sub system clock output terminal Not used (open)
35	TEX	I	Sub system clock input terminal Not used (fixed at “L”)
36	AVSS	—	Ground terminal (for A/D converter)
37	AVREF	I	Reference voltage (+5V) input terminal (for A/D converter)
38	D.SENS	I	Inputs the disc sensor (Q801) detection signal (A/D input)
39	DOORSW	I	Door open/close detect switch (S810) input (A/D input) “L”: open
40	CD1/2/3	I	COMMAND MODE switch (S901) input terminal (A/D input) “L”: CD1, “H”: CD3 (CD2: center voltage input)
41	SW	I	Destination setting terminal (A/D input) Fixed at “L” in this set
42	KEY3	I	Key input terminal (A/D input) ■, ■■, ▷, CLEAR, CHECK, ▷▷ AMS, ◀◀ AMS, PUSH ENTER keys input and rotary encoder jog dial pulse input (S611 to 617 and RE601)
43	KEY2	I	Key input terminal (A/D input) ≙ OPEN/CLOSE, INPUT, MEMO SEARCH keys input and rotary encoder jog dial pulse input (S621 to 623 and RE601)
44	KEY1	I	Key input terminal (A/D input) I/⌂, TIME/TEXT, GROUP FILE, GROUP 8/7/6/5 keys input (S731 to 737)
45	KEY0	I	Key input terminal (A/D input) REPEAT, PROGRAM, SHUFFLE, CONTINUE, GROUP 4/3/2/1 keys input (S721 to 728)
46	BUSIN	I	Sircs remote control signal input for the S-LINK CONTROL A1 “L” active
47	AMUTE	O	Muting on/off control signal output to the CXD2587Q (IC101) “H”: muting on

Pin No.	Pin Name	I/O	Function
48	CLK	O	Command serial data transfer clock signal output to the CXD2587Q (IC101)
49	XLT	O	Command latch pulse output to the CXD2587Q (IC101) "L" active
50	DATA	O	Command serial data output to the CXD2587Q (IC101)
51	SQCLK	O	SENS serial data reading clock and subcode Q data reading clock signal output to the CXD2587Q (IC101)
52	SUBQ	I	Subcode Q data input from the CXD2587Q (IC101)
53	NC	O	Not used (open)
54	SENS	I	Internal status monitor input from the CXD2587Q (IC101) "H" active
55	OUTSW	I	Inputs the loading in/out detect switch (S801) detection signal "L" active
56	RMIN	I	Remote control signal input from the remote control receiver (IC601) "L" active
57	AFADJ	I	Setting terminal for the test mode "L": AFADJ mode, Normally: fixed at "H"
58	FLLT	O	Serial data latch pulse output to the FL driver (IC701) "L" active
59	NC	O	Not used (open)
60	KBCIN	O	Serial data transfer clock signal output terminal Not used (open)
61	SCOR	I	Subcode sync (S0+S1) detection signal input from the CXD2587Q (IC101) "H" active
62	T.SENS1	I	Disc table flag detect sensor (IC802) input terminal
63	T.SENS2	I	Disc table flag detect sensor (IC803) input terminal
64	T.SENS3	I	Disc table home position detect sensor (IC801) input terminal
65	ICSW	O	Enable signal output to the LA5616 (IC506) Used for the BD section reset "H" active
66	RFSW	O	RF AGC hold control signal output to the CXA2568M (IC103) "H" active
67	INSW	I	Inputs the loading in/out detect switch (S801) detection signal "L" active
68 to 71	D3 to D6	I/O	Two-way data bus with the static RAM (IC502)
72	VDD	—	Power supply terminal (+5V)
73	NC (VDD)	—	Not used (connected to power supply (+5V) line)
74	D7	I/O	Two-way data bus with the static RAM (IC502)
75 to 77	D2 to D0	I/O	Two-way data bus with the static RAM (IC502)
78 to 80	A0 to A2	O	Address signal output to the static RAM (IC502)



(2) GUIDE ASSY, REAR PANEL SECTION



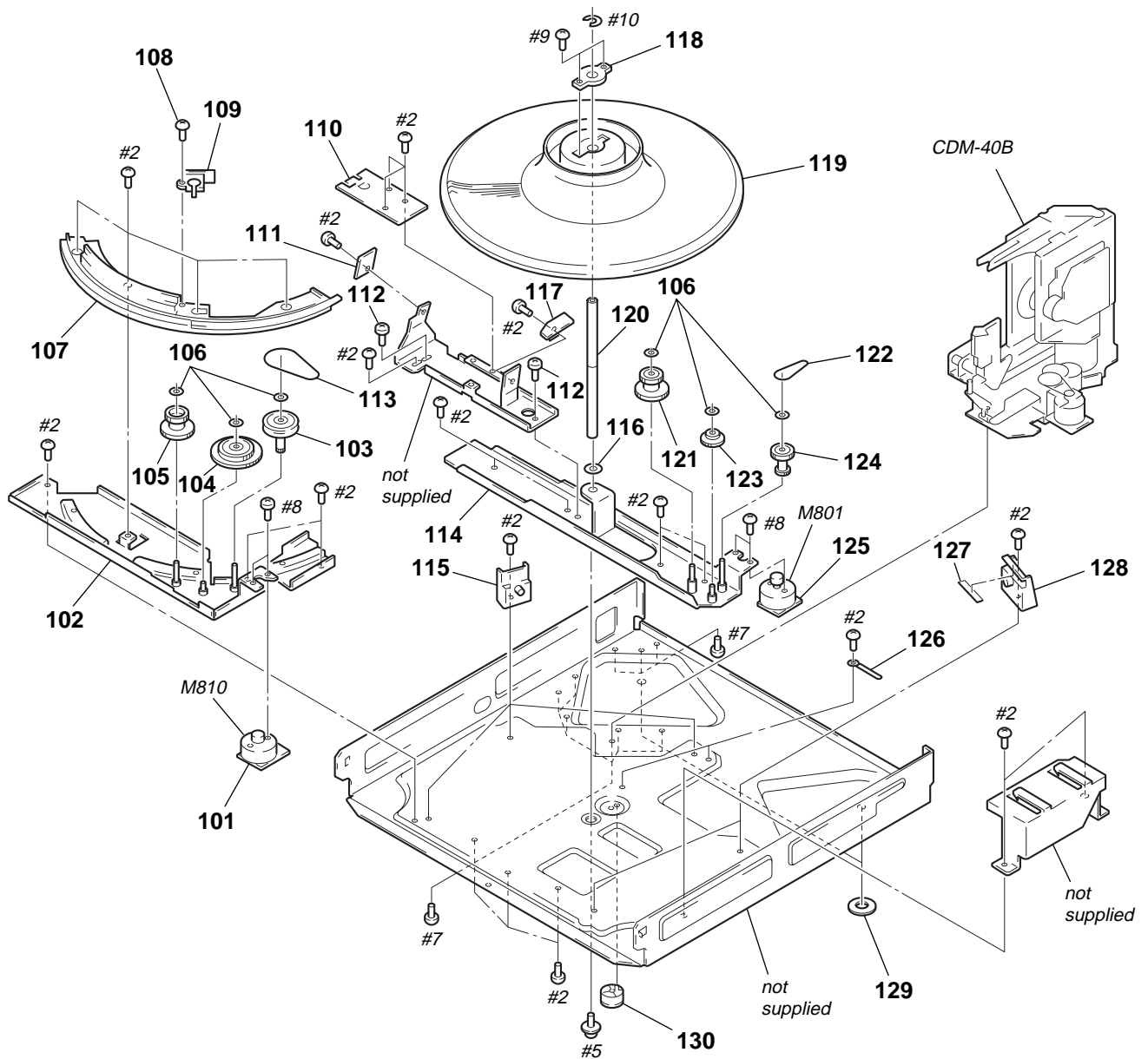
The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety. Replace only with part number specified.

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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* 51	4-982-802-01	RING (A)		* 65	4-998-525-01	PANEL, BACK (US)	
* 52	4-982-803-01	RING (B)		* 65	4-998-525-11	PANEL, BACK (CND)	
53	4-998-506-01	GUIDE (DOOR. T)		* 65	4-998-525-21	PANEL, BACK (AEP, UK, AED)	
54	4-999-182-01	ILLUMINATOR		* 65	4-998-525-41	PANEL, BACK (SP)	
* 55	1-669-166-11	ILLUMINATION BOARD		* 65	4-998-525-51	PANEL, BACK (E)	
56	4-982-870-01	SHAFT (GUIDE FULCRUM)		* 65	4-998-525-61	PANEL, BACK (AUS)	
57	3-356-601-11	SCREW, STEP		* 66	A-4724-022-A	MAIN BOARD, COMPLETE (US, CND)	
58	4-982-862-01	GUIDE (DISC T)		* 66	A-4724-031-A	MAIN BOARD, COMPLETE (EXCEPT US, CND)	
59	4-985-553-11	CUSHION		67	4-886-821-11	SCREW, S TIGHT, +PTTWH 3X6	
* 60	3-378-434-01	CUSHION, SARANET		68	4-053-543-01	RIVET, NYLON	
* 61	4-982-807-01	COVER (FFC)		* 69	1-669-164-11	JACK BOARD	
$\triangle$ 62	1-575-042-21	CORD, POWER (US, CND)		70	1-773-183-11	WIRE (FLAT TYPE) (23 CORE)	
$\triangle$ 62	1-575-651-21	CORD, POWER (AEP, UK, AED, SP)		71	4-956-370-12	BAND, PLUG FIXED (AUS)	
$\triangle$ 62	1-696-027-11	CORD, POWER (E)		$\triangle$ T901	1-431-759-11	TRANSFORMER, POWER (US, CND)	
$\triangle$ 62	1-696-845-11	CORD, POWER (AUS)		$\triangle$ T901	1-431-760-11	TRANSFORMER, POWER (AEP, UK, AED, SP, AUS)	
$\triangle$ 63	1-569-007-11	ADAPTOR, CONVERSION 2P (E)		$\triangle$ T901	1-431-761-11	TRANSFORMER, POWER (E)	
* 64	3-703-244-00	BUSHING (2104), CORD (EXCEPT E)					
64	3-703-571-11	BUSHING (S) (4516), CORD (E)					

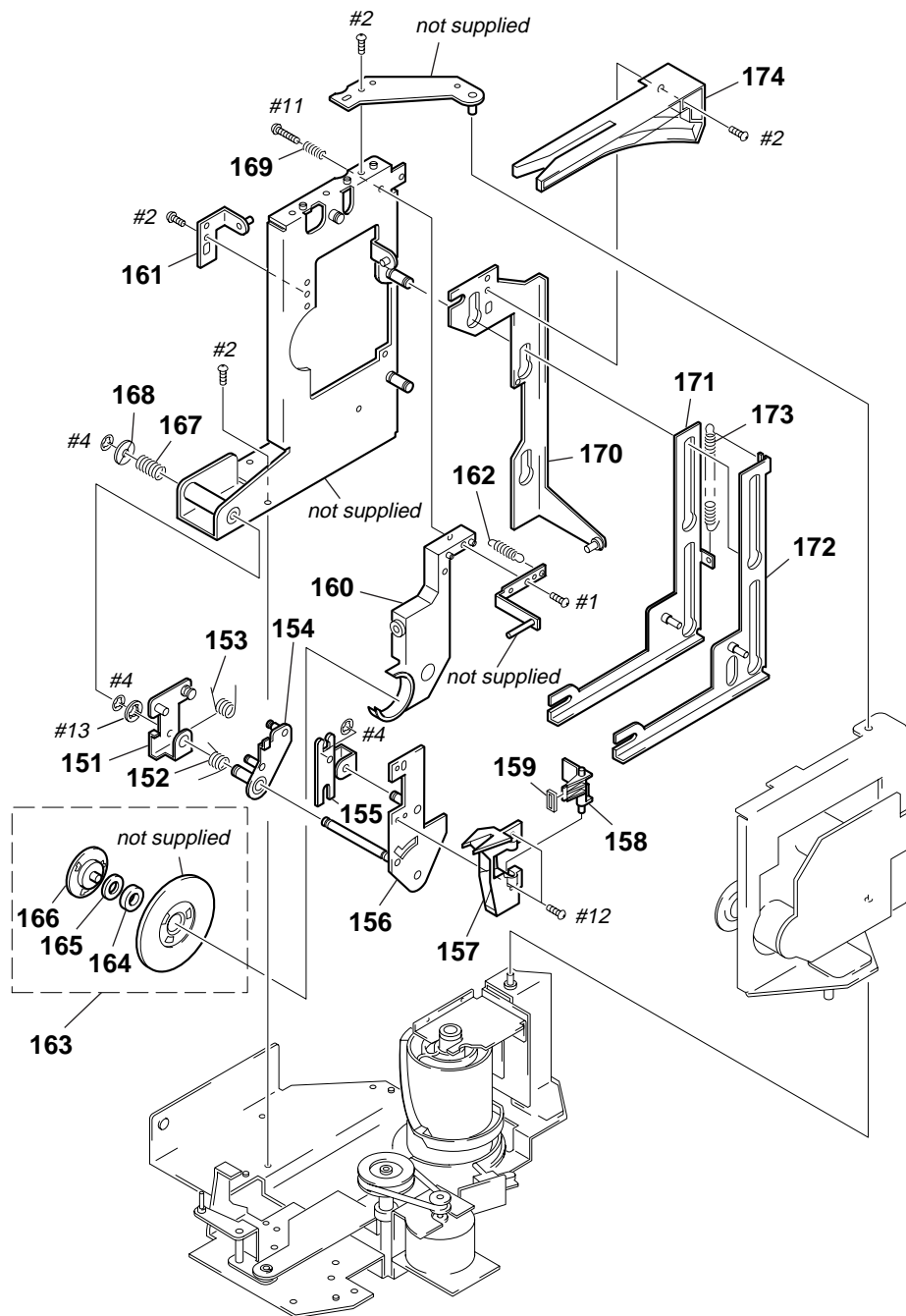


### (3) CHASSIS SECTION



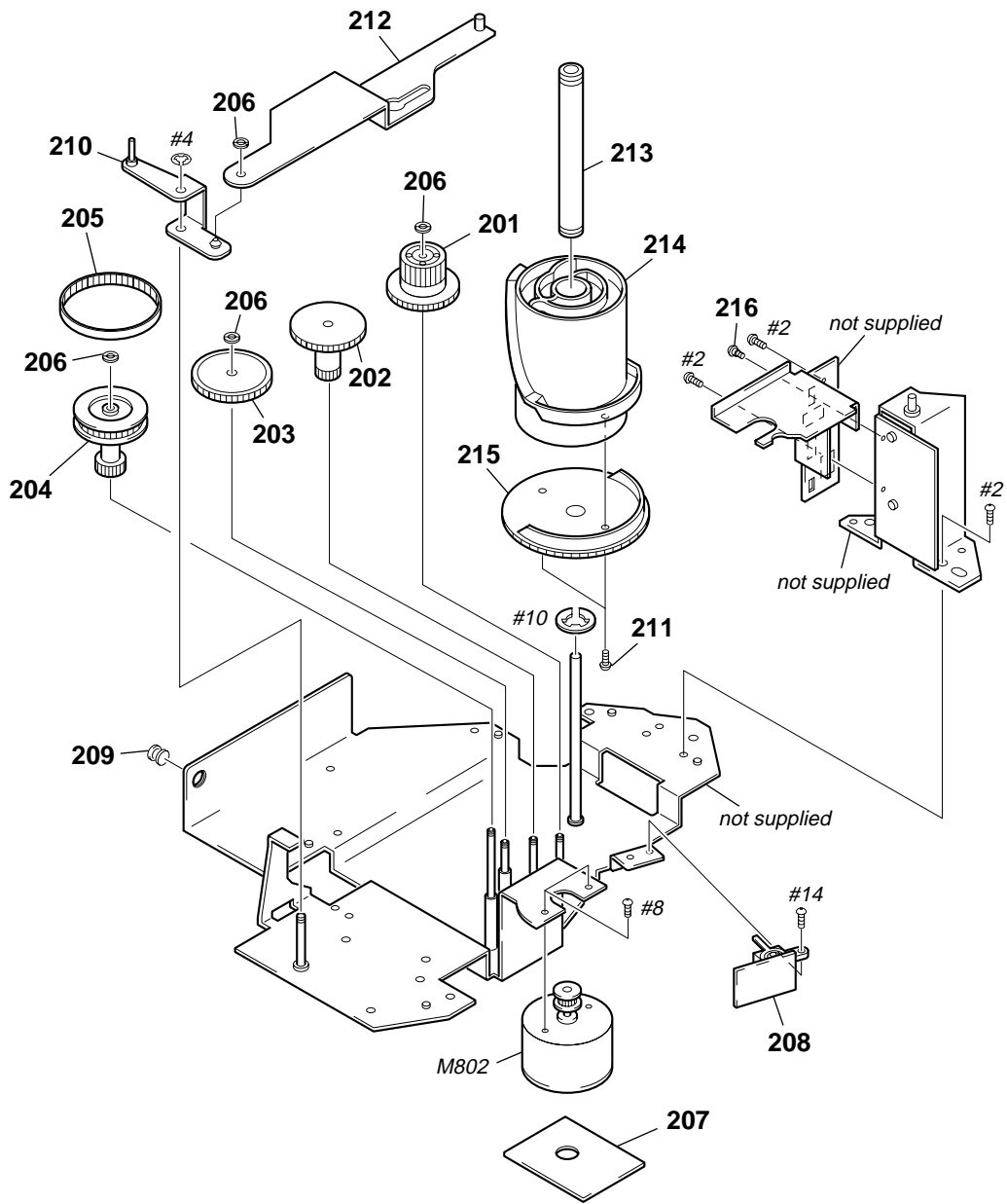
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* 101	1-669-167-11	DOOR MOTOR BOARD		* 117	1-661-469-11	D. SENS (RAY CATCHER) BOARD	
* 102	X-4949-615-1	BRACKET (GEAR) ASSY		118	4-976-471-01	BEARING (TABLE)	
103	4-998-510-01	GEAR (PULLEY)		119	X-4947-231-1	TABLE (200) ASSY	
104	4-998-509-01	GEAR (CENTER)		120	4-982-892-01	SHAFT (CENTER)	
105	4-998-508-01	GEAR (DOOR)		121	4-982-891-01	GEAR (TABLE)	
106	3-325-697-21	WASHER		122	4-962-822-01	BELT (TIMING)	
107	4-998-507-01	GUIDE (DOOR.B)		123	4-982-893-01	GEAR (CENTER 2)	
108	4-951-620-01	SCREW (2.6X8), +BVTP		124	X-4947-607-1	GEAR (PULLEY) ASSY	
* 109	1-669-168-11	DOOR SW BOARD		* 125	1-661-466-11	T. MOTOR BOARD	
* 110	1-661-470-11	T. SENS BOARD		126	3-703-397-01	STOPPER, WIRING	
* 111	1-661-468-11	D. SENS (LUMINOUS) BOARD		127	4-985-574-01	SPACER (ROLLER)	
112	3-356-601-11	SCREW, STEP		128	X-4947-229-1	HOLDER (ROLLER) ASSY	
113	4-210-030-01	BELT (42X1)		129	4-983-279-01	CUSHION (RF)	
114	X-4947-230-2	BRACKET (TABLE) ASSY		130	4-931-169-01	FOOT	
115	X-4947-606-1	HOLDER (ROLLER 2) ASSY		M801	A-4604-847-A	MOTOR ASSY (TABLE)	
116	3-701-446-21	WASHER, 8		M810	X-4950-062-1	DOOR MOTOR ASSY	

**(4) MECHANISM DECK SECTION-1  
(CDM-40B)**



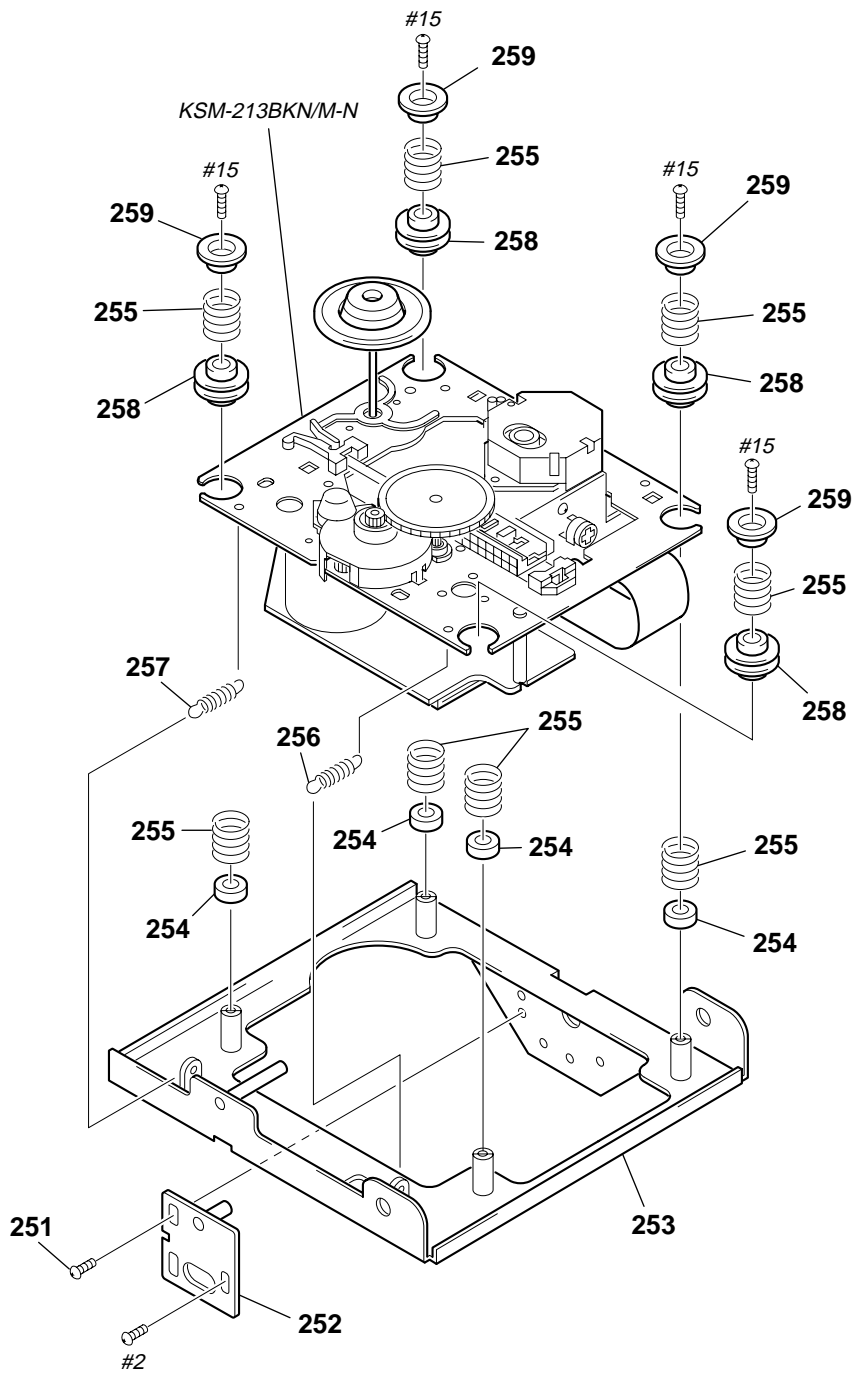
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
151	X-4947-241-1	LEVER (C) ASSY		163	A-4672-092-A	MAGNET ASSY	
152	4-982-882-01	SPRING (LIMITTER), TORSION		164	3-366-559-02	MAGNET (CHUCK)	
153	4-982-881-01	SPRING (HOLDER), TORSION		165	4-960-633-01	YOKE (MAGNET)	
154	X-4947-239-1	LIMITTER (A) ASSY		166	4-960-632-11	PULLEY (B)	
155	4-982-853-01	LEVER (B)		167	4-983-319-01	SPRING (THRUST), COMPRESSION	
156	X-4947-240-1	LEVER (A) ASSY		* 168	4-976-456-01	WASHER (STOPPER)	
157	4-988-143-01	HOLDER (DISC A2)		169	3-938-588-01	SPRING, COMPRESSION	
158	4-982-855-01	HOLDER (DISC B)		170	X-4947-242-1	SLIDER (C) ASSY	
159	4-982-856-01	PAD		171	X-4947-238-1	SLIDER (B) ASSY	
160	4-976-458-01	HOLDER (MAGNET)		172	X-4947-237-1	SLIDER (A) ASSY	
161	X-4946-326-1	HOLDER (CLAMP) ASSY		173	4-982-880-01	SPRING (SLIDER A), TENSION	
162	4-983-777-01	SPRING (MG), TENSION		* 174	4-982-863-01	GUIDE (DISC P)	

(5) MECHANISM DECK SECTION-2  
(CDM-40B)



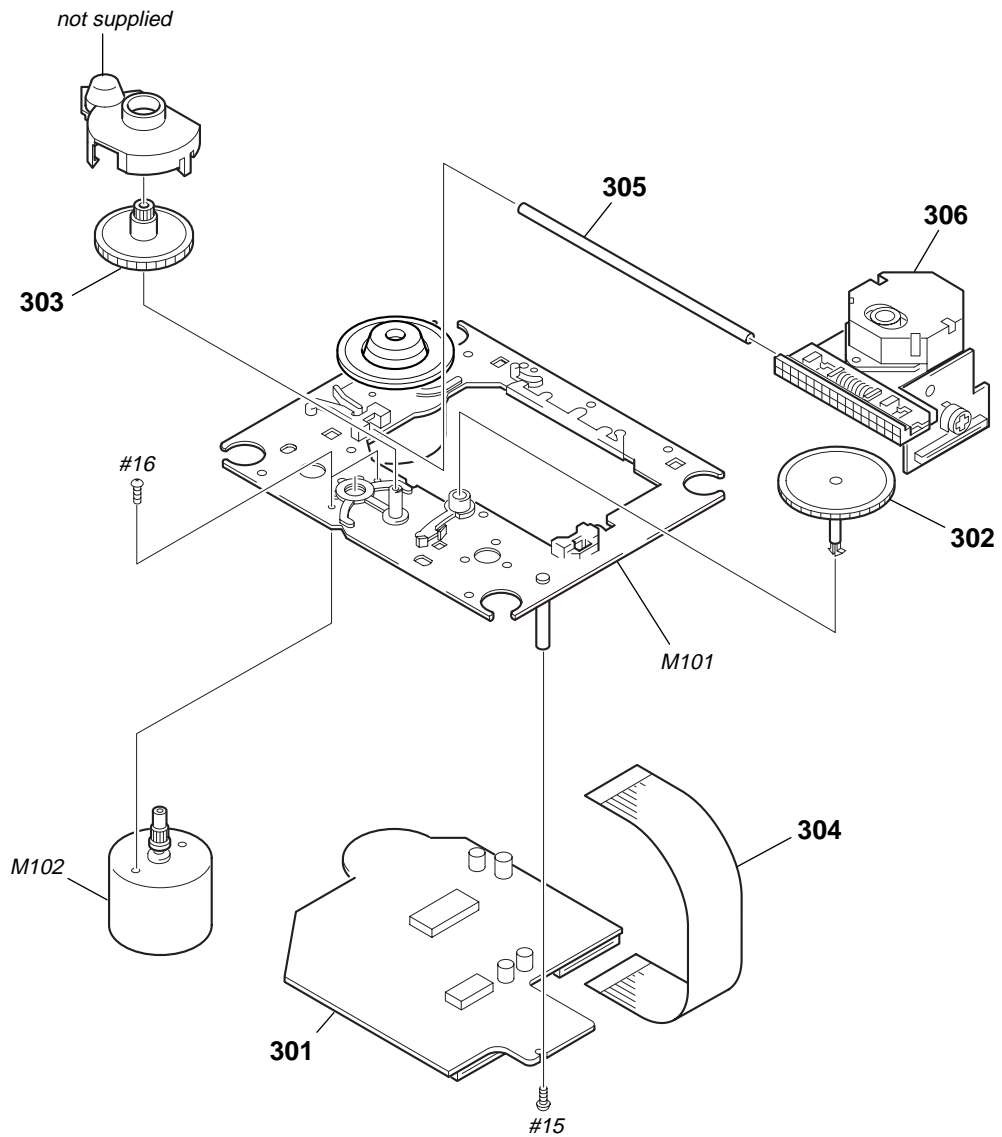
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
201	4-976-465-01	GEAR (LOADING 1)		210	X-4947-227-1	LEVER (STOPPER) ASSY	
202	4-976-466-01	GEAR (LOADING 2)		211	4-951-291-01	SCREW	
203	4-982-893-01	GEAR (CENTER 2)		212	X-4947-234-1	SLIDER (LOCK) ASSY	
204	X-4947-607-1	GEAR (PULLEY) ASSY		213	4-982-857-01	BEARING (CAM)	
205	4-982-867-01	BELT (TIMING)		214	4-982-860-01	CAM (A)	
206	3-325-697-21	WASHER		215	4-982-861-01	CAM (B)	
* 207	1-661-465-11	L. MOTOR BOARD		216	3-356-601-11	SCREW, STEP	
* 208	1-661-467-11	L. SW BOARD		M802	A-4604-847-A	MOTOR ASSY (LOADING)	
209	3-489-073-00	SCREW, THRUST					

(6) MECHANISM DECK SECTION-3  
(CDM-40B)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
251	3-356-601-11	SCREW, STEP		256	4-982-872-01	SPRING (F-2), TENSION	
252	X-4947-244-1	SLIDER (BU ADJUSTMENT) ASSY		257	4-982-871-01	SPRING (F-1), TENSION	
253	X-4947-243-1	HOLDER (BU) ASSY		258	4-982-858-01	DAMPER	
254	4-982-859-01	HOLDER (DAMPER)		259	4-960-617-01	CAP (F)	
255	4-982-878-01	SPRING (F), COMPRESSION					

**(7) OPTICAL PICK-UP SECTION  
(KSM-213BKN/M-N)**



<p>The components identified by mark <math>\triangle</math> or dotted line with mark <math>\triangle</math> are critical for safety. Replace only with part number specified.</p>	<p>Les composants identifiés par une marque <math>\triangle</math> 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
* 301	A-4724-029-A	BD BOARD, COMPLETE		305	2-626-908-01	SHAFT, SLED	
302	2-626-907-01	GEAR (A)		$\triangle$ 306	8-848-379-31	OPTICAL PICK-UP KSM-213BKN/M-N	
303	2-627-003-02	GEAR (B) (RP)		M101	X-2626-234-1	T. T CHASSIS ASSY (MG) (K) (SPINDLE)	
304	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)		M102	X-2625-769-1	MOTOR GEAR ASSY (MB) (PP) (SLED)	

## SECTION 9 ELECTRICAL PARTS LIST

## NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX 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:  $\mu$ , for example:  
uA. . . :  $\mu$ A. . .      uPA. . . :  $\mu$ PA. . .  
uPB. . . :  $\mu$ PB. . .    uPC. . . :  $\mu$ PC. . .  
uPD. . . :  $\mu$ PD. . .
- CAPACITORS  
uF:  $\mu$ F
- COILS  
uH:  $\mu$ H
- Abbreviation  
AED : North European  
AUS : Australian  
CND : Canadian  
SP : Singapore

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

Les composants identifiés par une marque  $\Delta$  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-4724-029-A	BD BOARD, COMPLETE *****		C163	1-126-205-11	ELECT CHIP 47uF	20% 6.3V
		< CAPACITOR >		C164	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C101	1-163-005-11	CERAMIC CHIP 470PF	10% 50V	C165	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C102	1-163-038-00	CERAMIC CHIP 0.1uF	25V	C166	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C103	1-163-005-11	CERAMIC CHIP 470PF	10% 50V	C167	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C104	1-164-232-11	CERAMIC CHIP 0.01uF	50V	C168	1-163-237-11	CERAMIC CHIP 27PF	5% 50V
C106	1-164-346-11	CERAMIC CHIP 1uF	16V	C171	1-163-137-00	CERAMIC CHIP 680PF	5% 50V
C107	1-164-346-11	CERAMIC CHIP 1uF	16V	C172	1-163-251-11	CERAMIC CHIP 100PF	5% 50V
C108	1-163-035-00	CERAMIC CHIP 0.047uF	50V	C181	1-163-137-00	CERAMIC CHIP 680PF	5% 50V
C109	1-163-145-00	CERAMIC CHIP 0.0015uF	5% 50V	C182	1-163-251-11	CERAMIC CHIP 100PF	5% 50V
C110	1-163-017-00	CERAMIC CHIP 0.0047uF	5% 50V			< CONNECTOR >	
C111	1-163-251-11	CERAMIC CHIP 100PF	5% 50V	CN101	1-770-072-11	CONNECTOR, (LIF (NON-ZIF)) FFC23P	
C112	1-163-038-00	CERAMIC CHIP 0.1uF	25V	CN102	1-777-937-11	CONNECTOR, FFC/FPC 16P	
C113	1-163-038-00	CERAMIC CHIP 0.1uF	25V			< IC >	
C114	1-163-038-00	CERAMIC CHIP 0.1uF	25V	IC101	8-752-386-85	IC CXD2587Q	
C115	1-126-607-11	ELECT CHIP 47uF	20% 4V	IC102	8-759-455-91	IC BA6392FP-E2	
C116	1-126-607-11	ELECT CHIP 47uF	20% 4V	IC103	8-752-085-51	IC CXA2568M-T6	
C117	1-126-209-11	ELECT CHIP 100uF	20% 4V			< COIL >	
C118	1-163-275-11	CERAMIC CHIP 0.001uF	5% 50V	L101	1-414-234-11	INDUCTOR CHIP 0uH	
C119	1-163-231-11	CERAMIC CHIP 15PF	5% 50V	L102	1-414-234-11	INDUCTOR CHIP 0uH	
C120	1-163-038-00	CERAMIC CHIP 0.1uF	25V			< TRANSISTOR >	
C121	1-163-038-00	CERAMIC CHIP 0.1uF	25V	Q101	8-729-010-08	TRANSISTOR MSB710-R	
C122	1-135-155-21	TANTALUM CHIP 4.7uF	10% 16V			< RESISTOR >	
C123	1-164-232-11	CERAMIC CHIP 0.01uF	50V	R101	1-216-077-00	METAL CHIP 15K	5% 1/10W
C124	1-164-005-11	CERAMIC CHIP 0.47uF	25V	R102	1-216-097-00	RES, CHIP 100K	5% 1/10W
C125	1-163-038-00	CERAMIC CHIP 0.1uF	25V	R103	1-216-077-00	METAL CHIP 15K	5% 1/10W
C126	1-163-038-00	CERAMIC CHIP 0.1uF	25V	R104	1-216-085-00	METAL CHIP 33K	5% 1/10W
C127	1-109-982-11	CERAMIC CHIP 1uF	10% 10V	R105	1-216-097-00	RES, CHIP 100K	5% 1/10W
C130	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V	R106	1-216-061-00	METAL CHIP 3.3K	5% 1/10W
C131	1-135-216-11	TANTALUM CHIP 10uF	20% 10V	R107	1-216-061-00	METAL CHIP 3.3K	5% 1/10W
C140	1-163-038-00	CERAMIC CHIP 0.1uF	25V	R108	1-216-073-00	METAL CHIP 10K	5% 1/10W
C141	1-163-038-00	CERAMIC CHIP 0.1uF	25V	R109	1-216-121-00	RES, CHIP 1M	5% 1/10W
C151	1-163-237-11	CERAMIC CHIP 27PF	5% 50V	R110	1-216-025-00	RES, CHIP 100	5% 1/10W
C153	1-163-038-00	CERAMIC CHIP 0.1uF	25V	R111	1-216-121-00	RES, CHIP 1M	5% 1/10W
C154	1-164-336-11	CERAMIC CHIP 0.33uF	25V	R113	1-216-121-00	RES, CHIP 1M	5% 1/10W
C156	1-163-237-11	CERAMIC CHIP 27PF	5% 50V	R116	1-216-025-00	RES, CHIP 100	5% 1/10W
C157	1-163-145-00	CERAMIC CHIP 0.0015uF	5% 50V				
C159	1-163-019-00	CERAMIC CHIP 0.0068uF	10% 50V				
C161	1-126-205-11	ELECT CHIP 47uF	20% 6.3V				
C162	1-126-205-11	ELECT CHIP 47uF	20% 6.3V				

**BD**

**D. SENS (LUMINOUS)**

**D. SENS (RAY CATCHER)**

**DISP**

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R117	1-216-049-11	RES, CHIP	1K 5% 1/10W	C703	1-162-306-11	CERAMIC 0.01uF 20%	16V
R119	1-216-043-00	RES, CHIP	560 5% 1/10W	C704	1-164-159-11	CERAMIC 0.1uF	50V
R123	1-216-073-00	METAL CHIP	10K 5% 1/10W	C705	1-124-584-00	ELECT 100uF 20%	10V
R124	1-216-097-00	RES, CHIP	100K 5% 1/10W	C706	1-162-282-31	CERAMIC 100PF 10%	50V
R131	1-216-037-00	METAL CHIP	330 5% 1/10W	C707	1-162-282-31	CERAMIC 100PF 10%	50V
R135	1-216-295-00	SHORT	0	C708	1-162-282-31	CERAMIC 100PF 10%	50V
R136	1-216-295-00	SHORT	0	C709	1-162-288-31	CERAMIC 330PF 10%	50V
R137	1-216-295-00	SHORT	0	C710	1-124-584-00	ELECT 100uF 20%	10V
R138	1-216-295-00	SHORT	0	C711	1-164-159-11	CERAMIC 0.1uF	50V
R143	1-216-103-00	METAL CHIP	180K 5% 1/10W	C712	1-164-159-11	CERAMIC 0.1uF	50V
R144	1-216-103-00	METAL CHIP	180K 5% 1/10W			< LEAD PIN >	
R147	1-216-081-00	METAL CHIP	22K 5% 1/10W				
R148	1-216-001-00	METAL CHIP	10 5% 1/10W	* CLP701	1-690-880-31	LEAD (WITH CONNECTOR)	
R149	1-216-003-11	RES, CHIP	12 5% 1/10W			< LED >	
R158	1-216-111-00	METAL CHIP	390K 5% 1/10W	D701	8-719-046-39	LED SEL5821A-TH15 (GROUP 1)	
R159	1-216-101-00	METAL CHIP	150K 5% 1/10W	D702	8-719-046-39	LED SEL5821A-TH15 (GROUP 2)	
R161	1-216-308-00	METAL CHIP	4.7 5% 1/10W	D703	8-719-046-39	LED SEL5821A-TH15 (GROUP 3)	
R162	1-216-101-00	METAL CHIP	150K 5% 1/10W	D704	8-719-046-39	LED SEL5821A-TH15 (GROUP 4)	
R171	1-216-077-00	METAL CHIP	15K 5% 1/10W	D705	8-719-046-39	LED SEL5821A-TH15 (GROUP 5)	
R172	1-216-077-00	METAL CHIP	15K 5% 1/10W	D706	8-719-046-39	LED SEL5821A-TH15 (GROUP 6)	
R173	1-216-077-00	METAL CHIP	15K 5% 1/10W	D707	8-719-046-39	LED SEL5821A-TH15 (GROUP 7)	
R181	1-216-077-00	METAL CHIP	15K 5% 1/10W	D708	8-719-046-39	LED SEL5821A-TH15 (GROUP 8)	
R182	1-216-077-00	METAL CHIP	15K 5% 1/10W	D709	8-719-046-44	LED SEL5221S (STANDBY)	
R183	1-216-077-00	METAL CHIP	15K 5% 1/10W			< FLUORESCENT INDICATOR TUBE >	
		< SWITCH >		FL701	1-517-756-11	INDICATOR TUBE, FLUORESCENT	
S101	1-572-085-11	SWITCH, LEAF (LIMIT)				< IC >	
		< VIBRATOR >		IC601	8-749-014-66	IC NJL56H400	
X101	1-767-408-41	VIBRATOR, CRYSTAL (16.9344MHz)		IC701	8-759-498-92	IC MSM9202-03GS-K	
		*****		IC702	8-759-183-47	IC M66310FP	
*	1-661-468-11	D.SENS (LUMINOUS) BOARD	*****			< TRANSISTOR >	
*	4-976-473-01	HOLDER (LED-S)		Q701	8-729-900-80	TRANSISTOR DTC114ES	
		< DIODE >				< RESISTOR >	
D801	8-719-055-84	DIODE GL-528VS1		R701	1-249-441-11	CARBON 100K 5%	1/4W
		*****		R702	1-247-807-31	CARBON 100 5%	1/4W
*				R703	1-247-807-31	CARBON 100 5%	1/4W
	1-661-469-11	D.SENS (RAY CATCHER) BOARD	*****	R704	1-247-807-31	CARBON 100 5%	1/4W
*				R705	1-247-807-31	CARBON 100 5%	1/4W
	4-985-300-01	HOLDER (P-T)		R706	1-247-843-11	CARBON 3.3K 5%	1/4W
		< PHOTO TRANSISTOR >		R707	1-247-807-31	CARBON 100 5%	1/4W
Q801	8-729-926-31	PHOTO TRANSISTOR PT483F1S		R708	1-247-807-31	CARBON 100 5%	1/4W
		*****		R709	1-247-807-31	CARBON 100 5%	1/4W
*	A-4724-027-A	DISP BOARD, COMPLETE (US, CND)		R711	1-249-411-11	CARBON 330 5%	1/4W
*	A-4724-033-A	DISP BOARD, COMPLETE (EXCEPT US, CND)	*****	R712	1-249-411-11	CARBON 330 5%	1/4W
				R713	1-249-413-11	CARBON 470 5%	1/4W
*	4-982-811-01	HOLDER (FL)		R722	1-249-415-11	CARBON 680 5%	1/4W
		< CAPACITOR >		R723	1-249-417-11	CARBON 1K 5%	1/4W
C701	1-162-294-31	CERAMIC 0.001uF 10%	50V	R724	1-249-419-11	CARBON 1.5K 5%	1/4W
C702	1-162-215-31	CERAMIC 47PF 5%	50V	R725	1-249-421-11	CARBON 2.2K 5%	1/4W
				R726	1-247-843-11	CARBON 3.3K 5%	1/4W
				R727	1-249-427-11	CARBON 6.8K 5%	1/4W
				R728	1-249-431-11	CARBON 15K 5%	1/4W
				R732	1-249-415-11	CARBON 680 5%	1/4W

<b>DISP</b>	<b>DOOR MOTOR</b>	<b>DOOR SW</b>	<b>ILLUMINATION</b>	<b>JACK</b>
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Ref. No.	Part No.	Description			Remark
R733	1-249-417-11	CARBON	1K	5%	1/4W
R734	1-249-419-11	CARBON	1.5K	5%	1/4W
R735	1-249-421-11	CARBON	2.2K	5%	1/4W
R736	1-247-843-11	CARBON	3.3K	5%	1/4W
R737	1-249-427-11	CARBON	6.8K	5%	1/4W
R751	1-249-429-11	CARBON	10K	5%	1/4W
< SWITCH >					
S721	1-572-184-11	SWITCH, KEYBOARD (REPEAT)			
S722	1-572-184-11	SWITCH, KEYBOARD (PROGRAM)			
S723	1-572-184-11	SWITCH, KEYBOARD (SHUFFLE)			
S724	1-572-184-11	SWITCH, KEYBOARD (CONTINUE)			
S725	1-572-184-11	SWITCH, KEYBOARD (GROUP 4)			
S726	1-572-184-11	SWITCH, KEYBOARD (GROUP 3)			
S727	1-572-184-11	SWITCH, KEYBOARD (GROUP 2)			
S728	1-572-184-11	SWITCH, KEYBOARD (GROUP 1)			
S731	1-572-184-11	SWITCH, KEYBOARD (I/Ⓢ)			
S732	1-572-184-11	SWITCH, KEYBOARD (TIME/TEXT)			
S733	1-572-184-11	SWITCH, KEYBOARD (GROUP FILE)			
S734	1-572-184-11	SWITCH, KEYBOARD (GROUP 8)			
S735	1-572-184-11	SWITCH, KEYBOARD (GROUP 7)			
S736	1-572-184-11	SWITCH, KEYBOARD (GROUP 6)			
S737	1-572-184-11	SWITCH, KEYBOARD (GROUP 5)			
*****					
*	1-669-167-11	DOOR MOTOR BOARD			
*****					
< CONNECTOR >					
* CN812	1-568-951-11	PIN, CONNECTOR 2P			
*****					
*	1-669-168-11	DOOR SW BOARD			
*****					
< RESISTOR >					
R807	1-249-429-11	CARBON	10K	5%	1/4W
< SWITCH >					
S810	1-571-300-21	SWITCH, ROTARY (DOOR SW)			
*****					
*	1-669-166-11	ILLUMINATION BOARD			
*****					
< CONNECTOR >					
CN813	1-506-481-11	PIN, CONNECTOR 2P			
< LED >					
D802	8-719-059-65	LED HLMF-KL05 (INSIDE ILLUMINATION)			
D803	8-719-059-65	LED HLMF-KL05 (INSIDE ILLUMINATION)			
D804	8-719-059-65	LED HLMF-KL05 (INSIDE ILLUMINATION)			
< RESISTOR >					
R805	1-249-407-11	CARBON	150	5%	1/4W
R806	1-249-401-11	CARBON	47	5%	1/4W
*****					

Ref. No.	Part No.	Description			Remark
*	1-669-164-11	JACK BOARD			
*****					
*	4-962-200-11	PLATE (TR), GROUND			
< CAPACITOR >					
C351	1-162-290-31	CERAMIC	470PF	10%	50V
C451	1-162-290-31	CERAMIC	470PF	10%	50V
C901	1-161-494-00	CERAMIC	0.022uF		25V
C904	1-164-159-11	CERAMIC	0.1uF		50V
C907	1-164-159-11	CERAMIC	0.1uF		50V
C911	1-161-494-00	CERAMIC	0.022uF		25V
C912	1-126-052-11	ELECT	100uF	20%	10V
< CONNECTOR >					
CN902	1-569-497-11	SOCKET, CONNECTOR 11P			
* CN903	1-569-496-11	SOCKET, CONNECTOR 10P			
* CN904	1-568-951-11	PIN, CONNECTOR 2P			
CN906	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P			
< DIODE >					
D901	8-719-911-19	DIODE 1SS119			
< IC >					
IC901	8-749-921-12	IC GP1F32T (DIGITAL OUT OPTICAL)			
< JACK >					
* J901	1-764-188-11	JACK (SMALL TYPE) (DIA. 3.5)			
(S-LINK CONTROL A1)					
* J902	1-764-188-11	JACK (SMALL TYPE) (DIA. 3.5)			
(S-LINK CONTROL A1)					
J904	1-770-719-11	JACK, PIN 2P (LINE OUT)			
< LINE FILTER >					
△L901	1-421-915-11	FILTER, LINE (EXCEPT E)			
< COIL >					
L902	1-410-503-11	INDUCTOR 3.3uH			
< TRANSISTOR >					
Q901	8-729-620-05	TRANSISTOR 2SC2603-EF			
< RESISTOR >					
R351	1-215-405-00	METAL	220	1%	1/4W
R451	1-215-405-00	METAL	220	1%	1/4W
R901	1-249-393-11	CARBON	10	5%	1/4W
R902	1-249-425-11	CARBON	4.7K	5%	1/4W
R903	1-249-429-11	CARBON	10K	5%	1/4W
R921	1-249-429-11	CARBON	10K	5%	1/4W
< SWITCH >					
S901	1-762-910-11	SWITCH, SLIDE (COMMAND MODE)			
△S902	1-572-675-11	SWITCH, POWER VOLTAGE CHANGE			
(VOLTAGE SELECTOR) (E)					

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**JACK**

**JOG**

**L.MOTOR**

**L.SW**

**MAIN**

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
		< TRANSFORMER >					
△ T901	1-431-759-11	TRANSFORMER, POWER (US, CND)		*	1-661-467-11	L.SW BOARD *****	
△ T901	1-431-760-11	TRANSFORMER, POWER (AEP, AED, UK, SP, AUS)				< SWITCH >	
△ T901	1-431-761-11	TRANSFORMER, POWER (E)		S801	1-571-300-21	SWITCH, ROTARY (LOADING DET)	
*****				*****			
*	1-669-161-11	JOG BOARD *****		*	A-4724-022-A	MAIN BOARD, COMPLETE (US, CND)	
		< CONNECTOR >		*	A-4724-031-A	MAIN BOARD, COMPLETE (EXCEPT US, CND) *****	
* CN601	1-569-306-11	SOCKET, CONNECTOR (L TYRE) 15P			7-685-871-01	SCREW +BVTT 3X6 (S)	
		< LED >				< CAPACITOR >	
D601	8-719-046-40	LED SEL5521C-TH8F (▷)		C301	1-126-233-11	ELECT 22uF 20%	50V
D602	8-719-046-38	LED SEL5821A-TH8F (■)		C305	1-126-052-11	ELECT 100uF 20%	10V
		< RESISTOR >		C327	1-126-163-11	ELECT 4.7uF 20%	50V
R601	1-249-407-11	CARBON 150 5% 1/4W		C401	1-126-233-11	ELECT 22uF 20%	50V
R602	1-249-409-11	CARBON 220 5% 1/4W		C405	1-126-052-11	ELECT 100uF 20%	10V
R612	1-249-415-11	CARBON 680 5% 1/4W		C501	1-128-489-11	ELECT 3300uF 20%	16V
R613	1-249-417-11	CARBON 1K 5% 1/4W		C502	1-124-360-00	ELECT 1000uF 20%	16V
R614	1-249-419-11	CARBON 1.5K 5% 1/4W					(US, CND)
R615	1-249-421-11	CARBON 2.2K 5% 1/4W		C502	1-126-027-11	ELECT 1000uF 20%	25V
R616	1-247-843-11	CARBON 3.3K 5% 1/4W					(EXCEPT US, CND)
R617	1-249-427-11	CARBON 6.8K 5% 1/4W		C503	1-124-122-11	ELECT 100uF 20%	50V
R618	1-249-431-11	CARBON 15K 5% 1/4W		C504	1-126-021-11	ELECT 33uF 20%	35V
R619	1-249-437-11	CARBON 47K 5% 1/4W		C505	1-126-052-11	ELECT 100uF 20%	16V
R622	1-249-415-11	CARBON 680 5% 1/4W		C506	1-126-101-11	ELECT 100uF 20%	16V
R623	1-249-417-11	CARBON 1K 5% 1/4W		C507	1-126-044-11	ELECT 1uF 20%	50V
R624	1-249-419-11	CARBON 1.5K 5% 1/4W		C508	1-126-101-11	ELECT 100uF 20%	16V
R651	1-249-429-11	CARBON 10K 5% 1/4W		C509	1-124-997-11	ELECT 470uF 20%	10V
R652	1-249-429-11	CARBON 10K 5% 1/4W		C510	1-126-163-11	ELECT 4.7uF 20%	50V
		< ROTARY ENCODER >		C511	1-126-163-11	ELECT 4.7uF 20%	50V
RE601	1-475-543-11	ENCODER, ROTARY (DISC/CHARACTER PUSH ENTER)		C512	1-161-494-00	CERAMIC 0.022uF	25V
		< SWITCH >		C513	1-126-052-11	ELECT 100uF 20%	16V
S611	1-572-184-11	SWITCH, KEYBOARD (■)		C514	1-126-023-11	ELECT 100uF 20%	25V
S612	1-572-184-11	SWITCH, KEYBOARD (■)		C516	1-164-159-11	CERAMIC 0.1uF	50V
S613	1-572-184-11	SWITCH, KEYBOARD (▷)		C518	1-164-159-11	CERAMIC 0.1uF	50V
S614	1-572-184-11	SWITCH, KEYBOARD (CLEAR)		C519	1-164-159-11	CERAMIC 0.1uF	50V
S615	1-572-184-11	SWITCH, KEYBOARD (CHECK)		C521	1-164-159-11	CERAMIC 0.1uF	50V
S616	1-572-184-11	SWITCH, KEYBOARD (▷⇨, AMS)		C522	1-110-489-11	CAPACITOR 1F	5.5V
S617	1-572-184-11	SWITCH, KEYBOARD (⇨⇩, AMS)		C531	1-161-494-00	CERAMIC 0.022uF	25V
S621	1-572-184-11	SWITCH, KEYBOARD (⇨, OPEN/CLOSE)		C532	1-126-052-11	ELECT 100uF 20%	10V
S622	1-572-184-11	SWITCH, KEYBOARD (INPUT)		C533	1-161-494-00	CERAMIC 0.022uF	25V
S623	1-572-184-11	SWITCH, KEYBOARD (MEMO SEARCH)		C551	1-136-165-00	FILM 0.1uF 5%	50V
*****				C552	1-164-159-11	CERAMIC 0.1uF	50V
*	1-661-465-11	L.MOTOR BOARD *****		C561	1-136-165-00	FILM 0.1uF 5%	50V
*****				C562	1-164-159-11	CERAMIC 0.1uF	50V
		< CONNECTOR >		C571	1-136-165-00	FILM 0.1uF 5%	50V
				C572	1-164-159-11	CERAMIC 0.1uF	50V
				C610	1-161-494-00	CERAMIC 0.022uF	25V
				C620	1-161-494-00	CERAMIC 0.022uF	25V
				C720	1-161-494-00	CERAMIC 0.022uF	25V
				C730	1-161-494-00	CERAMIC 0.022uF	25V
						< CONNECTOR >	
				CN501	1-569-321-11	SOCKET, CONNECTOR 15P	
				CN502	1-568-742-11	SOCKET, CONNECTOR 23P	

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**MAIN**

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* CN503	1-568-951-11	PIN, CONNECTOR 2P		R323	1-249-421-11	CARBON 2.2K 5%	1/4W
CN504	1-506-469-11	PIN, CONNECTOR 4P		R325	1-249-441-11	CARBON 100K 5%	1/4W
CN505	1-506-468-11	PIN, CONNECTOR 3P		R327	1-249-441-11	CARBON 100K 5%	1/4W
* CN506	1-568-955-11	PIN, CONNECTOR 6P		R401	1-215-453-00	METAL 22K 1%	1/4W
* CN507	1-568-951-11	PIN, CONNECTOR 2P		R402	1-215-425-00	METAL 1.5K 1%	1/4W
* CN508	1-569-505-11	PIN, CONNECTOR 10P		R403	1-215-425-00	METAL 1.5K 1%	1/4W
* CN509	1-569-506-11	PIN, CONNECTOR 11P		R404	1-215-445-00	METAL 10K 1%	1/4W
< DIODE >				R405	1-215-443-00	METAL 8.2K 1%	1/4W
D327	8-719-911-19	DIODE 1SS119		R413	1-215-469-00	METAL 100K 1%	1/4W
D501	8-719-024-99	DIODE 11ES2-NTA2B		R414	1-215-405-00	METAL 220 1%	1/4W
D502	8-719-024-99	DIODE 11ES2-NTA2B		R415	1-215-405-00	METAL 220 1%	1/4W
D503	8-719-024-99	DIODE 11ES2-NTA2B		R416	1-249-393-11	CARBON 10 5%	1/4W
D504	8-719-024-99	DIODE 11ES2-NTA2B		R422	1-249-421-11	CARBON 2.2K 5%	1/4W
D505	8-719-024-99	DIODE 11ES2-NTA2B		R423	1-249-421-11	CARBON 2.2K 5%	1/4W
D506	8-719-110-72	DIODE RD30ESB2		R425	1-249-441-11	CARBON 100K 5%	1/4W
D507	8-719-109-93	DIODE RD6.2ESB2		R501	1-249-435-11	CARBON 33K 5%	1/4W
D508	8-719-109-85	DIODE RD5.1ES-B2		R502	1-249-425-11	CARBON 4.7K 5%	1/4W
D509	8-719-911-19	DIODE 1SS119		R505	1-249-413-11	CARBON 470 5%	1/4W
D521	8-719-911-19	DIODE 1SS119		R506	1-249-429-11	CARBON 10K 5%	1/4W
< IC >				R507	1-249-425-11	CARBON 4.7K 5%	1/4W
IC401	8-759-145-58	IC uPC4558C		R508	1-249-413-11	CARBON 470 5%	1/4W
IC501	8-752-892-41	IC CXP84340-075Q		R511	1-249-425-11	CARBON 4.7K 5%	1/4W
IC502	8-759-463-99	IC M5M5256DFP-70XL		R512	1-249-425-11	CARBON 4.7K 5%	1/4W
IC503	8-759-821-32	IC CXA1291P		R521	1-249-429-11	CARBON 10K 5%	1/4W
IC504	8-759-094-53	IC TA7805S		R522	1-249-403-11	CARBON 68 5%	1/4W
IC505	8-759-256-72	IC PST994D		R523	1-249-403-11	CARBON 68 5%	1/4W
IC506	8-759-330-29	IC LA5616		R524	1-249-429-11	CARBON 10K 5%	1/4W
< COIL >				R531	1-249-429-11	CARBON 10K 5%	1/4W
L501	1-412-473-21	INDUCTOR 0uH		R532	1-249-429-11	CARBON 10K 5%	1/4W
L502	1-412-473-21	INDUCTOR 0uH		R533	1-249-429-11	CARBON 10K 5%	1/4W
< TRANSISTOR >				R534	1-249-421-11	CARBON 2.2K 5%	1/4W
Q322	8-729-141-26	TRANSISTOR 2SC3622A-LK		R535	1-247-843-11	CARBON 3.3K 5%	1/4W
Q323	8-729-141-26	TRANSISTOR 2SC3622A-LK		R536	1-249-425-11	CARBON 4.7K 5%	1/4W
Q325	8-729-900-65	TRANSISTOR DTA144ES		R537	1-249-429-11	CARBON 10K 5%	1/4W
Q327	8-729-900-65	TRANSISTOR DTA144ES		R538	1-249-429-11	CARBON 10K 5%	1/4W
Q422	8-729-141-26	TRANSISTOR 2SC3622A-LK		R539	1-249-429-11	CARBON 10K 5%	1/4W
Q423	8-729-141-26	TRANSISTOR 2SC3622A-LK		R540	1-249-429-11	CARBON 10K 5%	1/4W
Q425	8-729-900-65	TRANSISTOR DTA144ES		R541	1-249-429-11	CARBON 10K 5%	1/4W
Q501	8-729-140-97	TRANSISTOR 2SB734-34		R542	1-249-429-11	CARBON 10K 5%	1/4W
Q503	8-729-119-76	TRANSISTOR 2SA1175-HFE		R543	1-249-429-11	CARBON 10K 5%	1/4W
Q521	8-729-030-08	TRANSISTOR DTC144VSA-TP		R544	1-249-429-11	CARBON 10K 5%	1/4W
< RESISTOR >				R545	1-249-429-11	CARBON 10K 5%	1/4W
R301	1-215-453-00	METAL 22K 1%	1/4W	R551	1-247-887-00	CARBON 220K 5%	1/4W
R302	1-215-425-00	METAL 1.5K 1%	1/4W	R552	1-247-887-00	CARBON 220K 5%	1/4W
R303	1-215-425-00	METAL 1.5K 1%	1/4W	R553	1-247-860-11	CARBON 16K 5%	1/4W
R304	1-215-445-00	METAL 10K 1%	1/4W	R554	1-249-431-11	CARBON 15K 5%	1/4W
R305	1-215-443-00	METAL 8.2K 1%	1/4W	R555	1-249-382-11	CARBON 1.2 5%	1/6W
R313	1-215-469-00	METAL 100K 1%	1/4W	R556	1-249-382-11	CARBON 1.2 5%	1/6W
R314	1-215-405-00	METAL 220 1%	1/4W	R557	1-247-883-00	CARBON 150K 5%	1/4W
R315	1-215-405-00	METAL 220 1%	1/4W	R558	1-249-393-11	CARBON 10 5%	1/4W
R316	1-249-393-11	CARBON 10 5%	1/4W	R561	1-249-441-11	CARBON 100K 5%	1/4W
R322	1-249-421-11	CARBON 2.2K 5%	1/4W	R562	1-249-441-11	CARBON 100K 5%	1/4W
				R563	1-247-860-11	CARBON 16K 5%	1/4W
				R564	1-249-431-11	CARBON 15K 5%	1/4W
				R565	1-249-382-11	CARBON 1.2 5%	1/6W
				R566	1-249-382-11	CARBON 1.2 5%	1/6W
				R567	1-247-883-00	CARBON 150K 5%	1/4W
				R568	1-249-393-11	CARBON 10 5%	1/4W
				R571	1-247-885-00	CARBON 180K 5%	1/4W

Ref. No.	Part No.	Description	Remark
R572	1-247-885-00	CARBON	180K 5% 1/4W
R573	1-247-860-11	CARBON	16K 5% 1/4W
R574	1-249-431-11	CARBON	15K 5% 1/4W
R575	1-249-382-11	CARBON	1.2 5% 1/6W
R576	1-249-382-11	CARBON	1.2 5% 1/6W
R577	1-247-883-00	CARBON	150K 5% 1/4W
R578	1-249-393-11	CARBON	10 5% 1/4W
R581	1-249-429-11	CARBON	10K 5% 1/4W
R610	1-249-427-11	CARBON	6.8K 5% 1/4W
R620	1-249-427-11	CARBON	6.8K 5% 1/4W
R720	1-249-427-11	CARBON	6.8K 5% 1/4W
R730	1-249-427-11	CARBON	6.8K 5% 1/4W
< VARIABLE RESISTOR >			
RV501	1-241-787-11	RES, ADJ, CARBON 47K	
< VIBRATOR >			
X501	1-579-175-11	VIBRATOR, CERAMIC (10MHZ)	
*****			
*	1-661-466-11	T.MOTOR BOARD	*****
*****			
*	1-661-470-11	T.SENS BOARD	*****
< CONNECTOR >			
CN802	1-506-481-11	PIN, CONNECTOR 2P	
CN803	1-506-481-11	PIN, CONNECTOR 2P	
< PHOTO INTERRUPTER >			
IC801	8-749-924-18	PHOTO INTERRUPTER RPI-1391	
IC802	8-749-924-18	PHOTO INTERRUPTER RPI-1391	
IC803	8-749-924-18	PHOTO INTERRUPTER RPI-1391	
< RESISTOR >			
R801	1-249-416-11	CARBON	820 5% 1/4W
R802	1-249-416-11	CARBON	820 5% 1/4W
R803	1-249-416-11	CARBON	820 5% 1/4W
R804	1-249-415-11	CARBON	680 5% 1/4W
*****			
MISCELLANEOUS			
*****			
8	1-783-364-11	WIRE (FLAT TYPE) (15 CORE)	
△ 62	1-575-042-21	CORD, POWER (US, CND)	
△ 62	1-575-651-21	CORD, POWER (AEP, UK, AED, SP)	
△ 62	1-696-027-11	CORD, POWER (E)	
△ 62	1-696-845-11	CORD, POWER (AUS)	
△ 63	1-569-007-11	ADAPTOR, CONVERSION 2P (E)	
70	1-773-183-11	WIRE (FLAT TYPE) (23 CORE)	
304	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)	
△ 306	8-848-379-31	OPTICAL PICK-UP KSM-213BKN/M-N	
M101	X-2626-234-1	T. T CHASSIS ASSY (MG) (K) (SPINDLE)	
M102	X-2625-769-1	MOTOR GEAR ASSY (MB) (PP) (SLED)	
M801	A-4604-847-A	MOTOR ASSY (TABLE)	
M802	A-4604-847-A	MOTOR ASSY (LOADING)	

Ref. No.	Part No.	Description	Remark
M810	X-4950-062-1	DOOR MOTOR ASSY	
△ T901	1-431-759-11	TRANSFORMER, POWER (US, CND)	
△ T901	1-431-760-11	TRANSFORMER, POWER (AEP, UK, AED, SP, AUS)	
△ T901	1-431-761-11	TRANSFORMER, POWER (E)	
*****			
*****			
HARDWARE LIST			
*****			
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#2	7-685-871-01	SCREW +BVTT 3X6 (S)	
#3	7-685-134-19	SCREW +PTPWH 2.6X8 (TYPE2)	
#4	7-624-106-04	STOP RING 3.0, TYPE -E	
#5	7-682-947-01	SCREW +PSW 3X6	
#6	7-682-547-04	SCREW +BV 3X6, S TIGHT	
#7	7-685-872-09	SCREW +BVTT 3X8 (S)	
#8	7-621-775-00	SCREW +B 2.6X3	
#9	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	
#10	7-624-111-04	STOP RING 7.0, TYPE -E	
#11	7-682-552-09	SCREW +B 3X16	
#12	7-621-772-20	SCREW +B 2X5	
#13	7-624-109-04	STOP RING 5.0, TYPE -E	
#14	7-621-775-20	SCREW +B 2.6X5	
#15	7-621-772-30	SCREW +B 2X6	
#16	7-621-255-15	SCREW +P 2X3	
*****			
ACCESSORIES & PACKING MATERIALS			
*****			
1-475-654-11	REMOTE COMMANDER (RM-DX220)		
1-558-271-11	CORD, CONNECTION (AUDIO) 1.5m		
1-777-172-11	CORD, CONNECTION (CONTROL A1) 1m		(CND)
3-810-765-11	MANUAL, COMMONNESS INSTRUCTION (ENGLISH) (US, AUS)		
3-810-765-21	MANUAL, COMMONNESS INSTRUCTION (ENGLISH, FRENCH, GERMAN, SPANISH, DUTCH, SWEDISH, ITALIAN, PORTUGUESE, CHINESE) (CND, AEP, UK, AED, E, SP)		
3-862-563-11	MANUAL, INSTRUCTION (ENGLISH) (US, AUS)		
3-862-563-21	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH) (CND, AEP, UK, E, SP)		
3-862-563-31	MANUAL, INSTRUCTION (GERMAN, DUTCH, ITALIAN, PORTUGUESE) (AEP, UK)		
3-862-563-41	MANUAL, INSTRUCTION (SWEDISH, DANISH, FINNISH) (AED)		
3-862-563-51	MANUAL, INSTRUCTION (CHINESE) (E, SP)		
4-981-643-01	COVER, BATTERY (for RM-DX220)		
4-984-086-01	BOOKLET (100)		

The components identified by mark △ or dotted line with △ 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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