

CDP-EX880/MS717

SERVICE MANUAL

Self Diagnostics
Supported model



AEP Model

UK Model

CDP-EX880

E Model

Tourist Model

CDP-MS717

CDP-EX880/MS717 are the CD player section in DHC-EX880MD/MD717.

Photo: CDP-MS717

Model Name Using Similar Mechanism	HCD-MD515
CD Mechanism Type	CDM48B-5BD29
Base Unit Type	BU-5BD29
Optical Pick-up Type	KSS-213BA/F-NP

SPECIFICATIONS

System	Compact disc and digital audio system
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	2 Hz to 20 kHz ($\pm 0.5 \text{ dB}$)
CD OPTICAL DIGITAL OUT (Square optical connector jack, rear panel)	
Dimensions (w/h/d) incl. projecting parts and controls:	Approx. 280 x 125 x 350 mm
Mass	Approx. 3.9 kg

Design and specifications are subject to change without notice.

COMPACT DISC PLAYER



SONY[®]

SELF DIAGNOSTIC FUNCTION

This set can display the error history using the self diagnostic function.

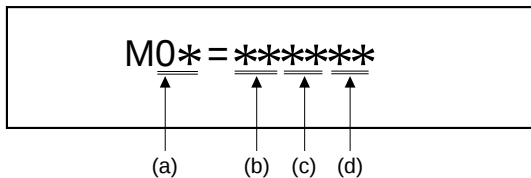
1. OPERATING THE DISPLAYED HISTORYS

1. Press the **DISC SKIP** button, **CLEAR** button, and **PROGRAM** button simultaneously and enter the test mode.
2. Press the **PROGRAM** button, and mechanical error count and the count of "NO DISC" that optical system judged are displayed.
3. Under this condition press the buttons in Table 1, and the respective operations are executed as listed below.

Table 1.

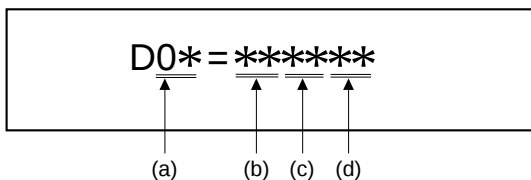
Button	Function
CD 1	Mechanical error cord from latest one to last ten are displayed each time this button is pressed. (*1)
CD 2	The reasons of "NO DISC" from latest one to last ten are displayed each time this button is pressed. (*2)
≡ (CD 1)	Reset the count of mechanical error.
≡ (CD 2)	Reset the count of "NO DISC".

(*1) Mechanical error code



- (a) The number of Mechanical error.
Latest one "00" to last ten "09"
(Turn the **◀◀ SELECTOR ▶▶** dial and change the error No.)
- (b) "FF" : Mechanical error, when mechanical initialize to completion.
Others: Mechanical error in the midst of mechanical initialize.
- (c) "4*" : Mechanical error in the midst of mechanical initialize, when sub tray set into the stocker.
"5*" : Mechanical error in the midst of mechanical initialize, when sub tray take out to the stocker.
- (d) "2*" : Mechanical error in the midst of elevator moving.

(*2) NO DISC error code



- (a) The number of NO DISC error.
Latest one "00" to last ten "09"
(Turn the **◀◀ SELECTOR ▶▶** dial and change the error No.)
- (b) "01": Focus error
"02": GFS error
"03": Set up error
- (c) "00": NO DISC error (Does not chucking retry)
"02": NO DISC error (Chucking retry to completion)

- (d) The status, when judged NO DISC error.
"3*" : Stop
"4*" : Set up
"5*" : TOC read
"6*" : Access
"7*" : Play
"8*" : Pause
"9*" : Manual search (Play)
"A*" : Manual search (Pause)

SECTION 1

SERVICING NOTES

TABLE OF CONTENTS

SELF DIAGNOSTIC FUNCTION	2
1. SERVICING NOTES	3
2. GENERAL	7
3. DISASSEMBLY	8
4. TEST MODE	13
5. ELECTRICAL ADJUSTMENTS	13
6. DIAGRAMS	
6-1. Schematic Diagram – BD Section –	16
6-2. Printed Wiring Board – BD Section –	19
6-3. Printed Wiring Boards – MAIN Section –	21
6-4. Schematic Diagram – MAIN Section –	23
6-5. Schematic Diagram – PANEL Section –	27
6-6. Printed Wiring Boards – PANEL Section –	31
6-7. IC Pin Function Description	37
7. EXPLODED VIEWS	40
8. ELECTRICAL PARTS LIST	44

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 waveforms is output three times.

Notes on chip component replacement

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

Flexible Circuit Board Repairing

- Keep the temperature of 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.

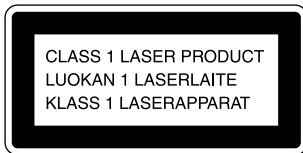
SAFETY-RELATED COMPONENT WARNING!!

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

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.



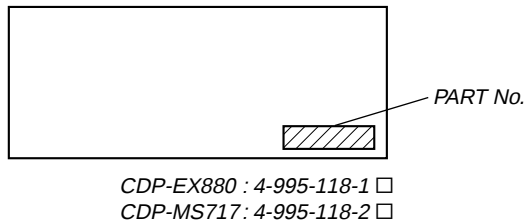
Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

The following caution label is located inside the unit.



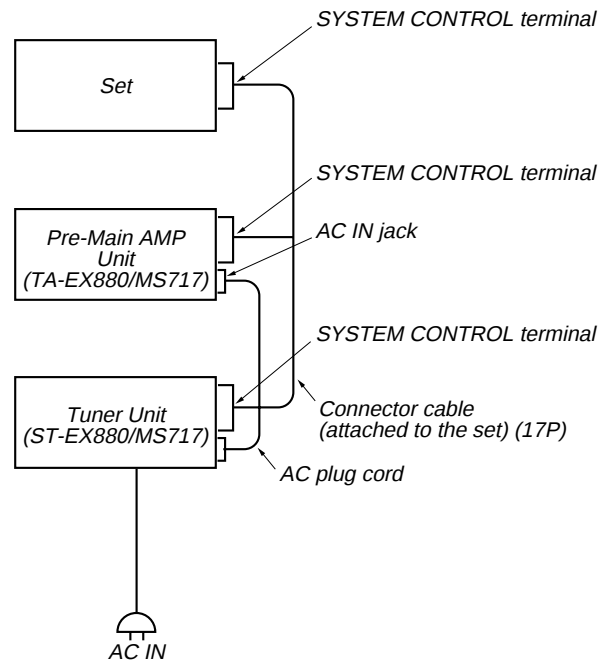
MODEL IDENTIFICATION

– Back Panel –



POWER SUPPLY DURING SERVICING

- As this set has not own power supply, it does not operate independently. Therefore, during servicing, connect it to the Pre-Main amplifier Unit (TA-EX880/MS717) of DHC-EX880MD/MD717. Also, connect the Tuner Unit (ST-EX880/MS717) because the POWER switch is not provided to the Pre-Main amplifier Unit (TA-EX880/MS717).

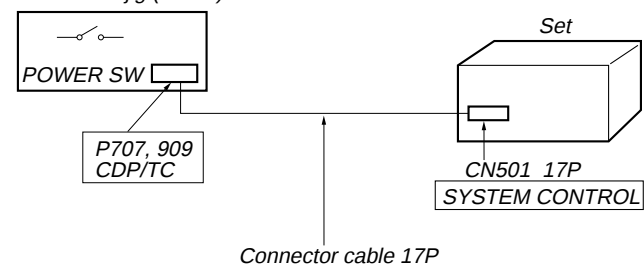


If TA-EX880/MS717 and ST-EX880/MS717 are not available, use the Power Feed Jig (PFJ-1).

In this case, turn on the POWER switch on the Power Feed Jig, then press **■** button and **CLEAR** button on the set simultaneously, so that the power is supplied.

Connection:

Power feed jig (PFJ-1)



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 to the disc table 1 with the “test disc” label facing up, 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. Rotating  SELECTOR  knob, select 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.

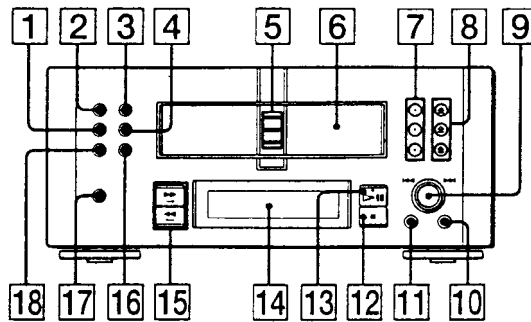
Table 2: CD-TEXT TEST DISC Recorded Contents and Display

(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	(A0.... All not displayed
55	♪ © ª « ¬ ® ¯ (A8h to AFh)	(A8.... All not displayed
56	• ± ² ³ ´ µ ¶ • (B0h to B7h)	(B0.... All not displayed
57	† † ° » ¼ ½ ¾ ¿ (B8h to BFh)	(B8.... All not displayed
58	À Á Â Ã Ä Å Æ Ç (C0h to C7Fh)	A A A A A A C (C0.... Æ is not displayed
59	È É Ê Ë Ì Í Î Ï (C8h to CFh)	E E E E I I I I (C8
60	Ð Ñ Ò Ó Ô Õ Ö × (D0h to D7Fh)	D N O O O O O (D0.... × is not displayed
61	Ø Ù Ú Û Ü Ý Þ ß (D8h to DFh)	O U U U U Y (D8.... Þ ß are not displayed
62	à á â ã ä å æ ç (E0h to E7Fh)	a a a a a a c (E0.... æ is not displayed
63	è é ê ë ì í î ï (E8h to FFh)	e e e e i i i i (E8....
64	ð ñ ò ó ô õ ö ÷ (F0h to F7Fh)	d n o o o o o (F0.... ÷ is not displayed
65	ø ù ú û ü ý þ ÿ (F8h to FFFh)	o u u u u y y (F8.... þ is not displayed
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 CONTROLS

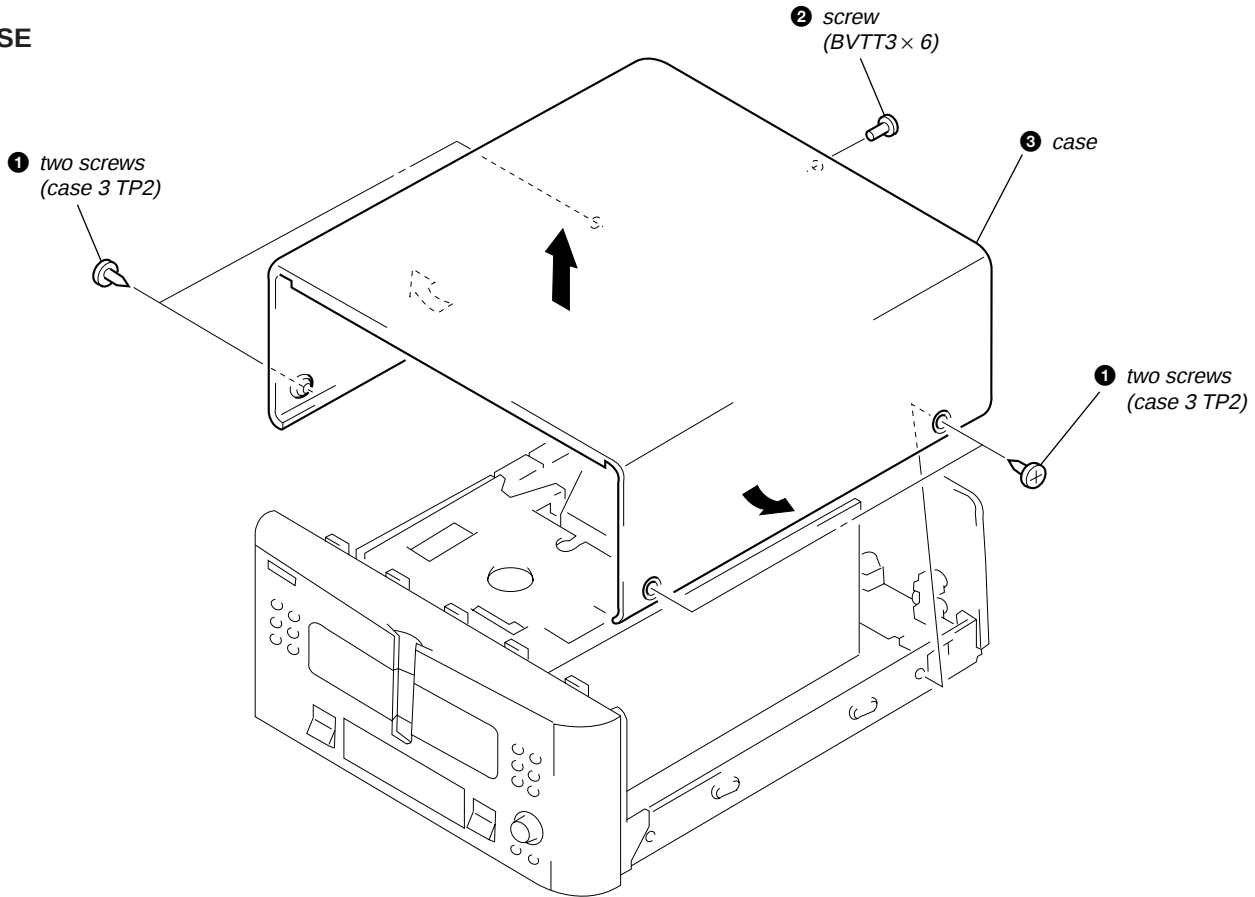


- | | |
|--|--------------------------------|
| 1 SHUFFLE button | 10 ENTER/YES button |
| 2 CONTINUE button | 11 MENU/NO button |
| 3 DISC SKIP button | 12 ■ button (Stop play) |
| 4 REPEAT button | 13 ▷ button |
| 5 CD1-3 indicator | 14 DISPLAY |
| 6 CD DISC TRAY | 15 ◀◀ ← button |
| 7 CD1-3 button | ▶▶ → button |
| 8 ≡ button (The disc tray open/close) | 16 CLEAR button |
| 9 SELECTOR (◀◀/▶▶) CONTROL | 17 DISPLAY button |
| | 18 PROGRAM button |

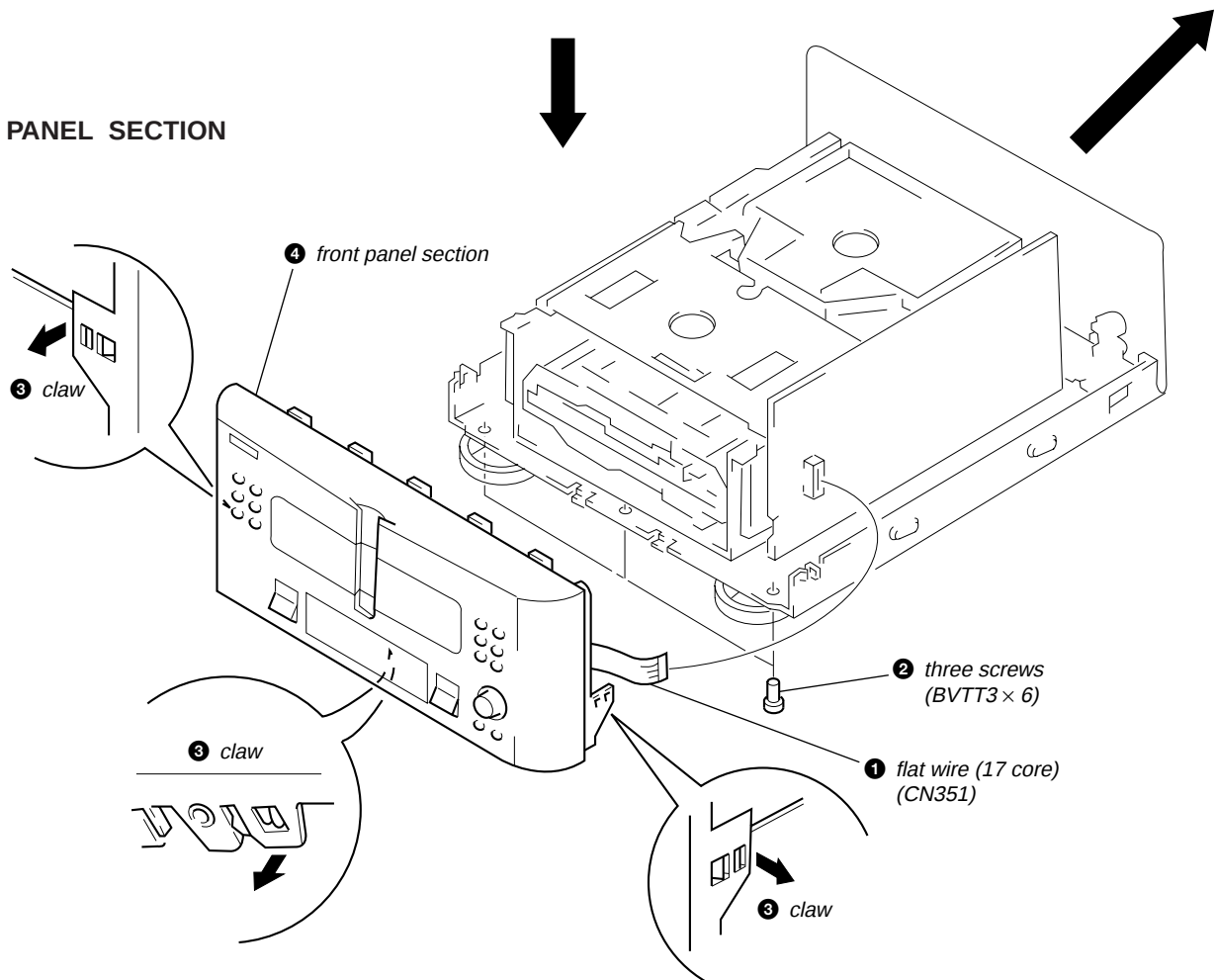
SECTION 3 DISASSEMBLY

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

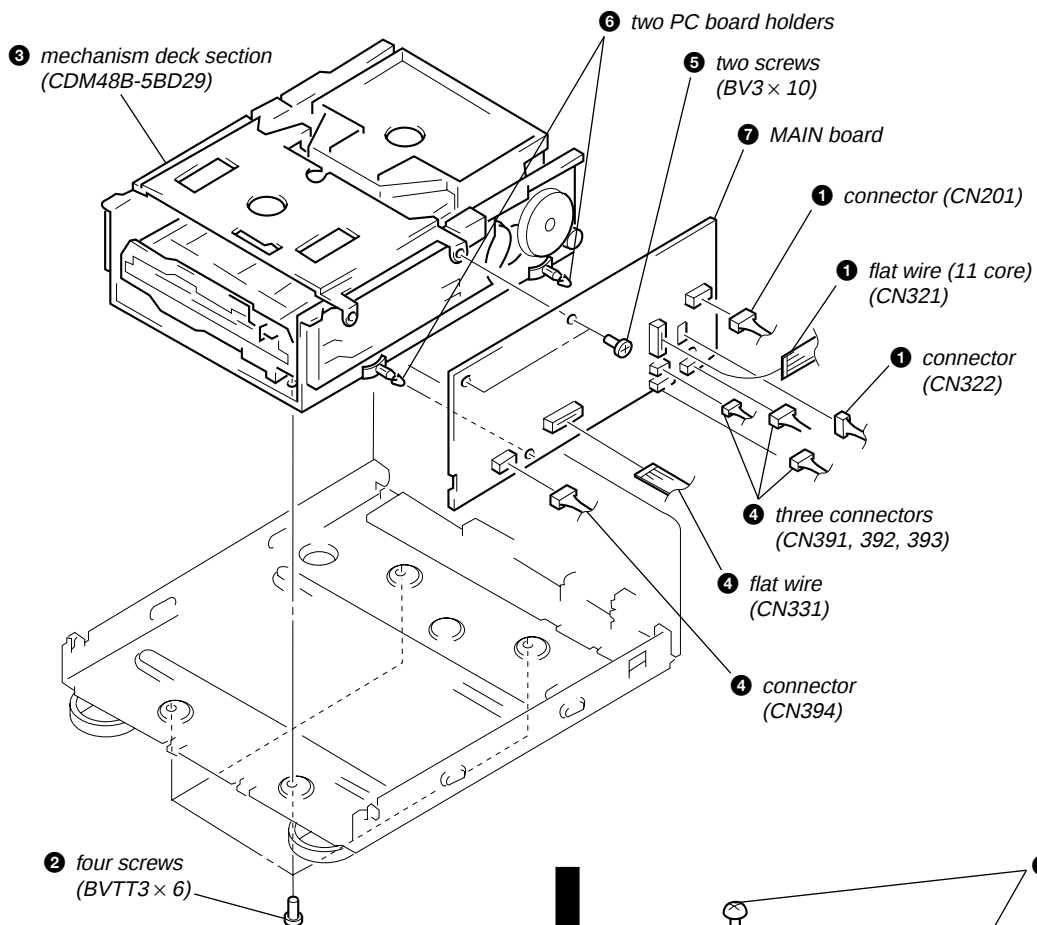
CASE



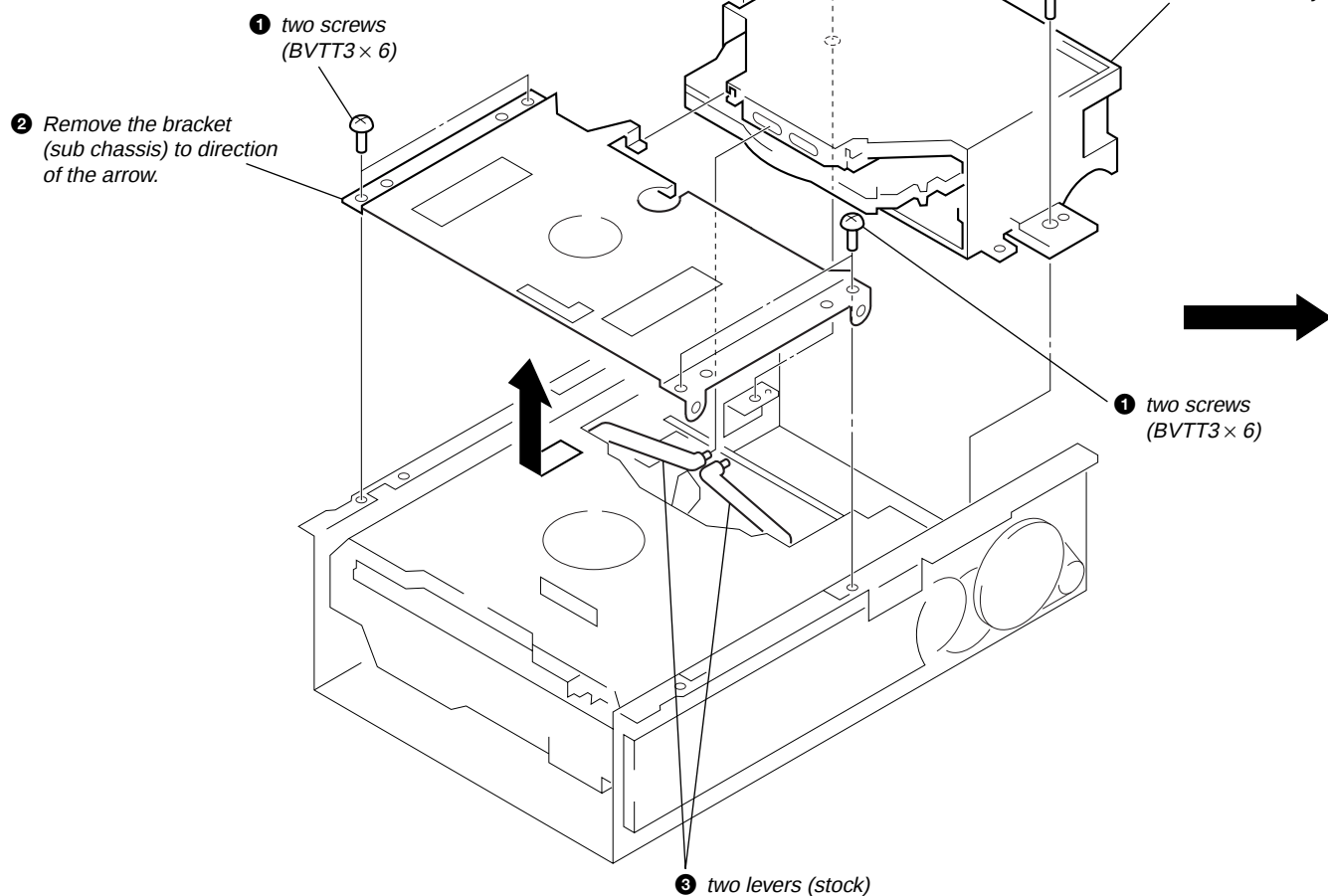
FRONT PANEL SECTION



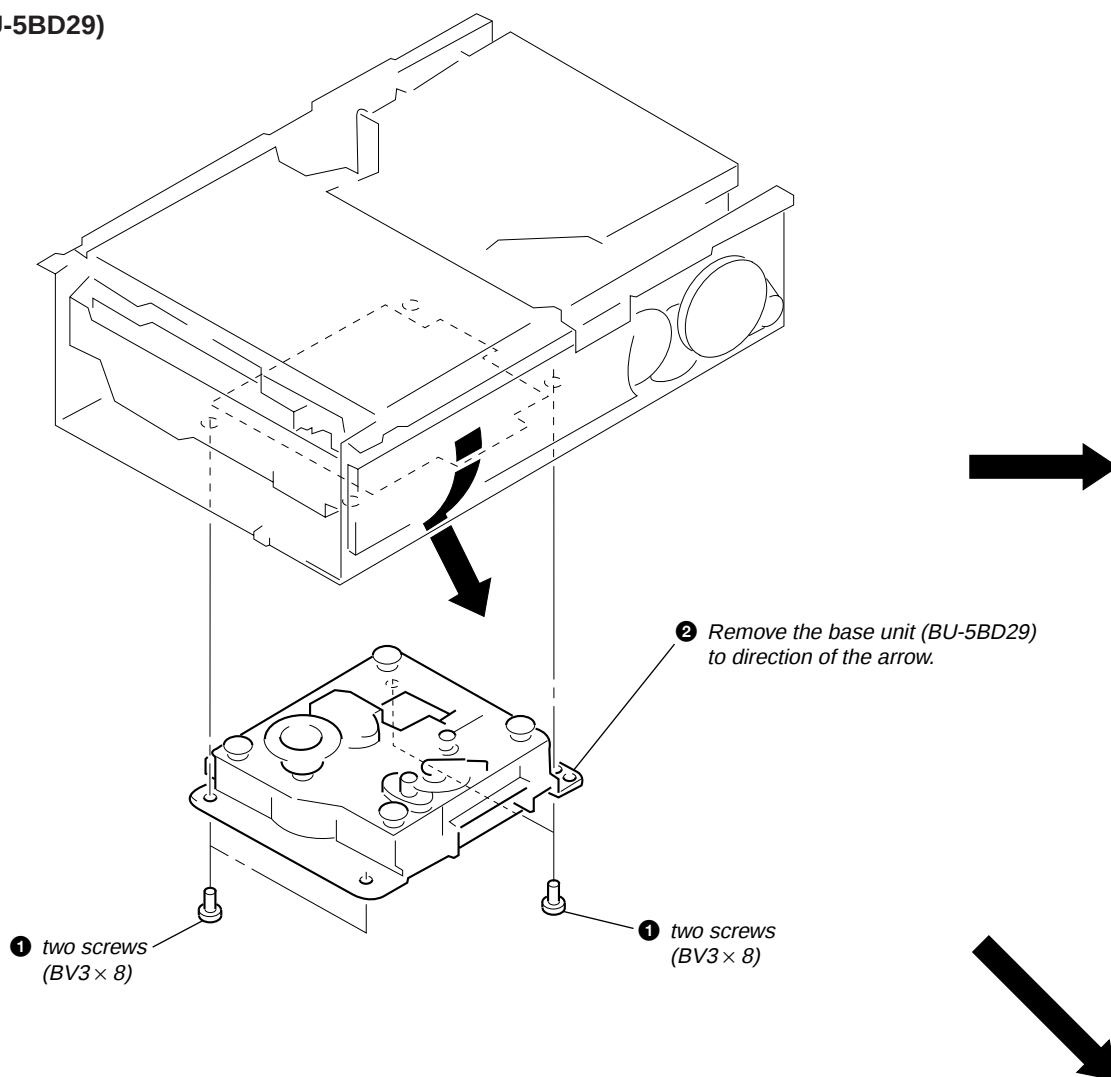
MECHANISM DECK SECTION (CDM48B-5BD29) , MAIN BOARD



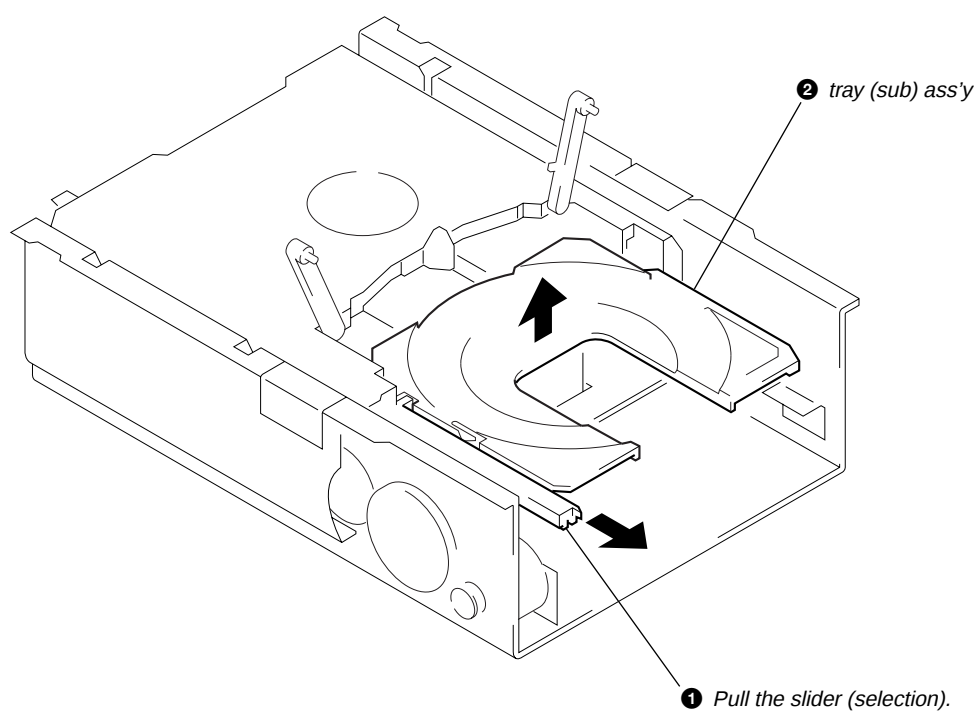
STOCKER ASS'Y



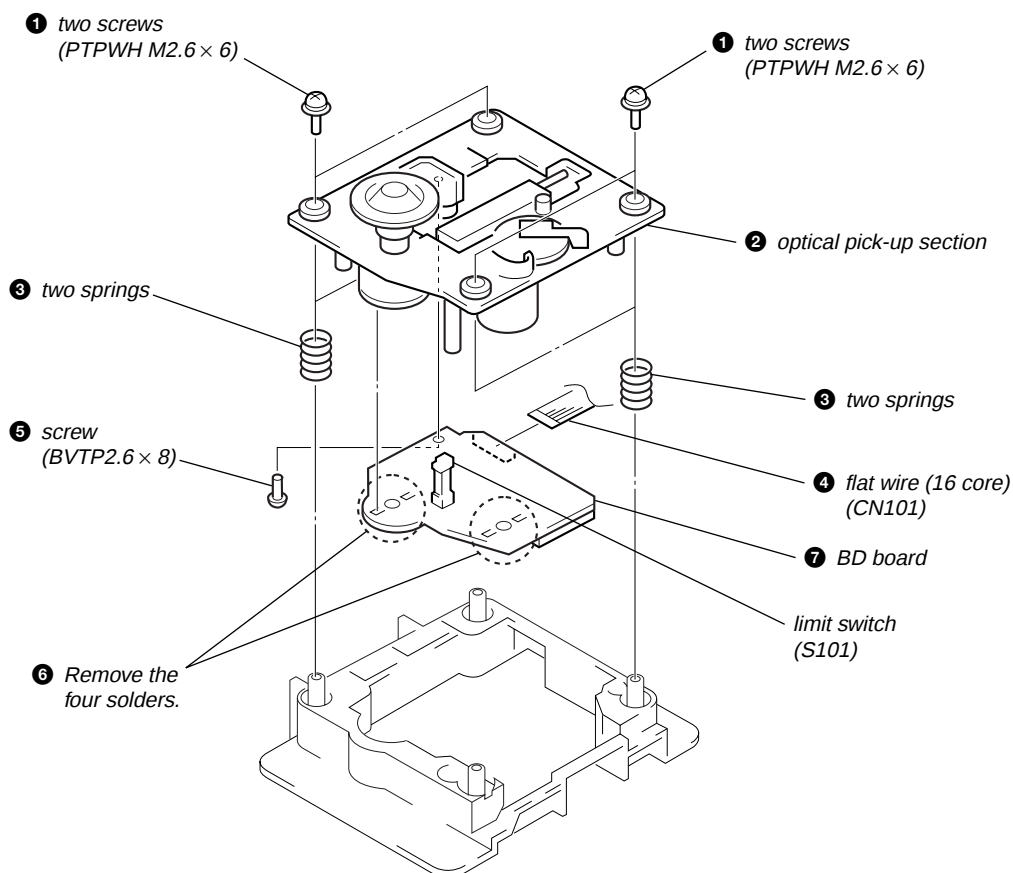
BASE UNIT (BU-5BD29)



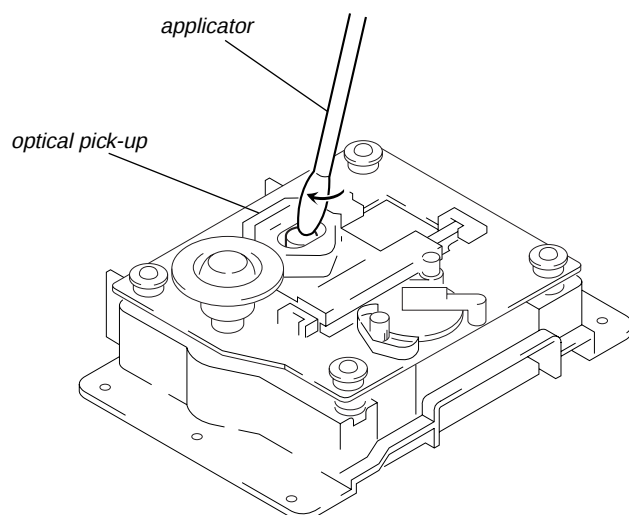
TRAY (SUB) ASS'Y



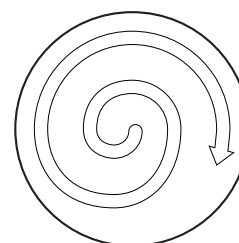
BD BOARD



OPTICAL PICK-UP CLEANING

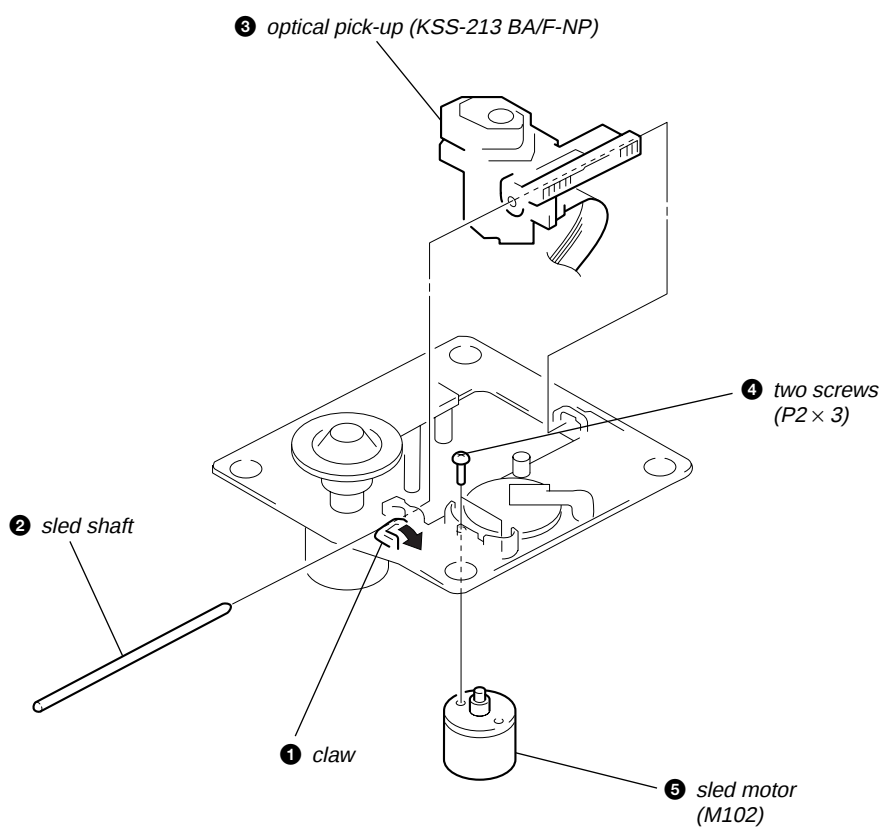


- Note 1:** In cleaning the lens, do not apply an excessive force. As the optical pick-up is vulnerable, application of excessive force could damage the lens holder.
- Note 2:** In cleaning, do not use a cleaner other than exclusive cleaning liquid (KK-91 or isopropyl alcohol).
- Note 3:** Wipe the objective lens spirally from center toward outside. (See Figure A)

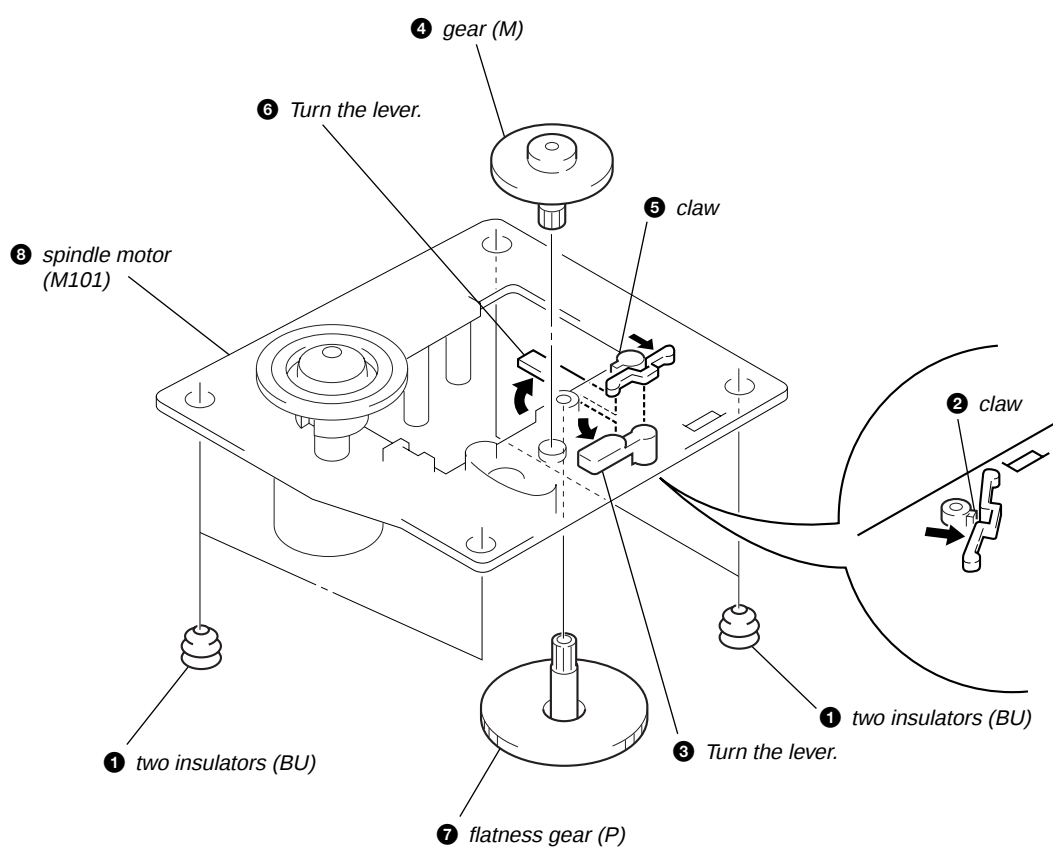


(Figure A)

OPTICAL PICK-UP (KSS-213BA/F-NP) , SLED MOTOR (M102)



SPINDLE MOTOR (M101)



SECTION 4 TEST MODE

• AGING MODE

- How to Enter AGING Mode
 - Insert a disc into the CD player.
(Multiple discs can be inserted *1)
 - With the set turned on, press  button,  button, and  (CD2) button simultaneously, and the AGING mode is set.
(*1): The AGING mode is active only to the trays where discs exist.
- How to Exit from AGING Mode
Turn off the Power, and normal operation becomes ready.
- Operation sequence in AGING Mode
An example of operation sequence where discs exist at CD1 and CD3 is shown below.
 - Tray 1 open/close
 - Tray 3 open/close
 - CD1 TOC read
 - CD1 last track search
 - CD3 TOC read
 - CD3 last track search
 Hence, 1) – 6) are repeated.

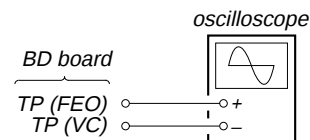
SECTION 5 ELECTRICAL ADJUSTMENTS

Notes:

- CD Block basically constructed to operated without adjustment. Therefore, check each item in order given.
- Use YEDS-18 disc (Part No.: 3-702-101-01) unless otherwise indicated.
- Use the oscilloscope with more than 10 MΩ impedance.
- Clean an object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

1. S-Curve CHECK

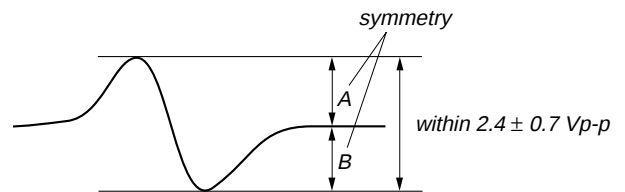
Connection:



Procedure:

- Connect the oscilloscope to TP (FEO) and TP (VC) on BD board.
- Connect the TP (FOK) and TP (GND) with lead wire.
- Turned power switch on.
- Put disc (YEDS-18) in and turned power switch on again and actuate the focus search. (actuate the focus search when disc table is moving in and out.)
- Confirm that the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 2.4 ± 0.7 Vp-p.

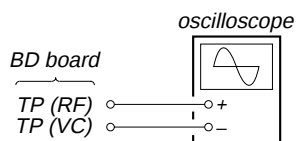
S-curve waveform



- After check, remove the lead wire connected in step 2.
- Note:**
- Try to measure several times to make sure that 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.

2. RF LEVEL CHECK

Connection:

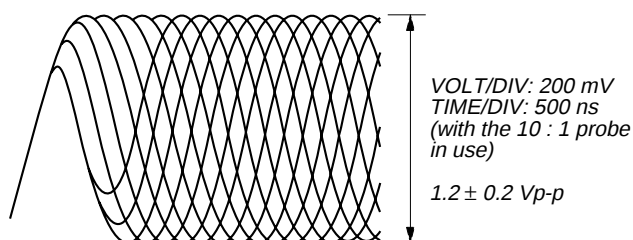


Procedure:

1. Connect the oscilloscope to TP (RF) and TP (VC) on BD board.
2. Turned power switch on.
3. Put disc (YEDS-18) in and press the button.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

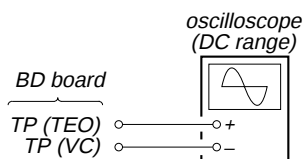
Note: Clear RF signal waveform means that the shape “◇” can be clearly distinguished at the center of the waveform.

RF signal waveform



3. E-F BALANCE (TRAVERSE) CHECK

Connection:

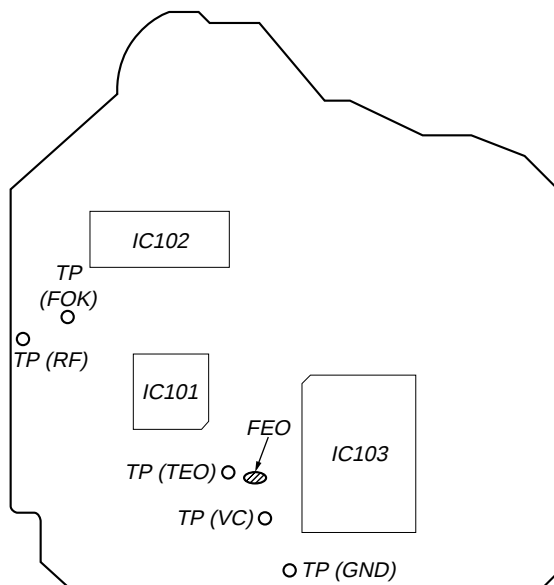


Procedure:

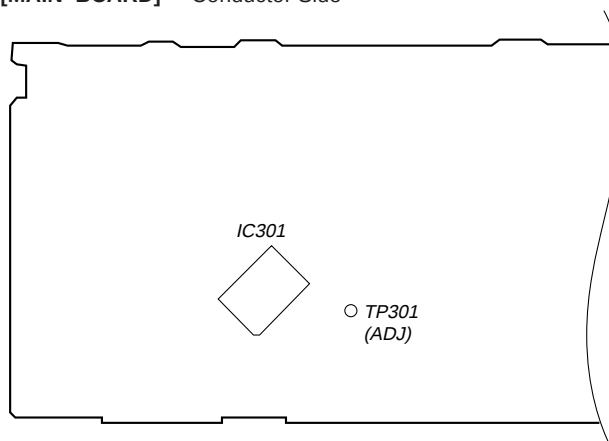
1. Solder a lead wire to the TP301 (ADJ) on the MAIN board.
2. Connect the oscilloscope to TP (TEO) and TP (VC) on BD board.
3. Turned power switch on.
4. Connect the lead wire connected in 1, to the ground.
5. Put disc (YEDS-18) in and press the button.
6. Press the **DISPLAY** button. (Tracking servo and sled servo are turned off.)
7. Confirm that the oscilloscope waveform is symmetrical on the top and bottom in relation to 0 Vdc, and check this level.
8. Release the lead wire.

Adjustment Location :

[BD BOARD] – Side B –

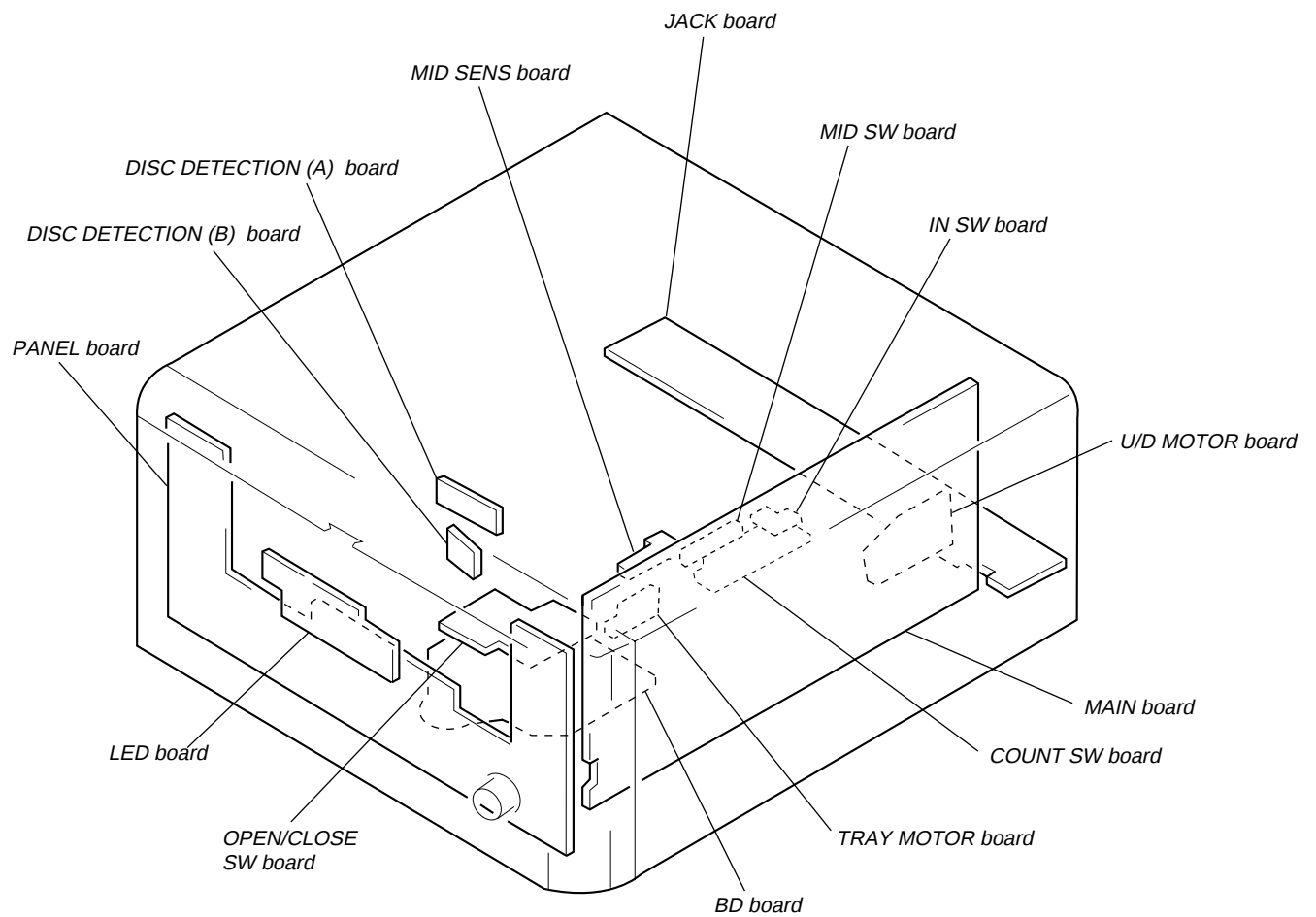


[MAIN BOARD] – Conductor Side –



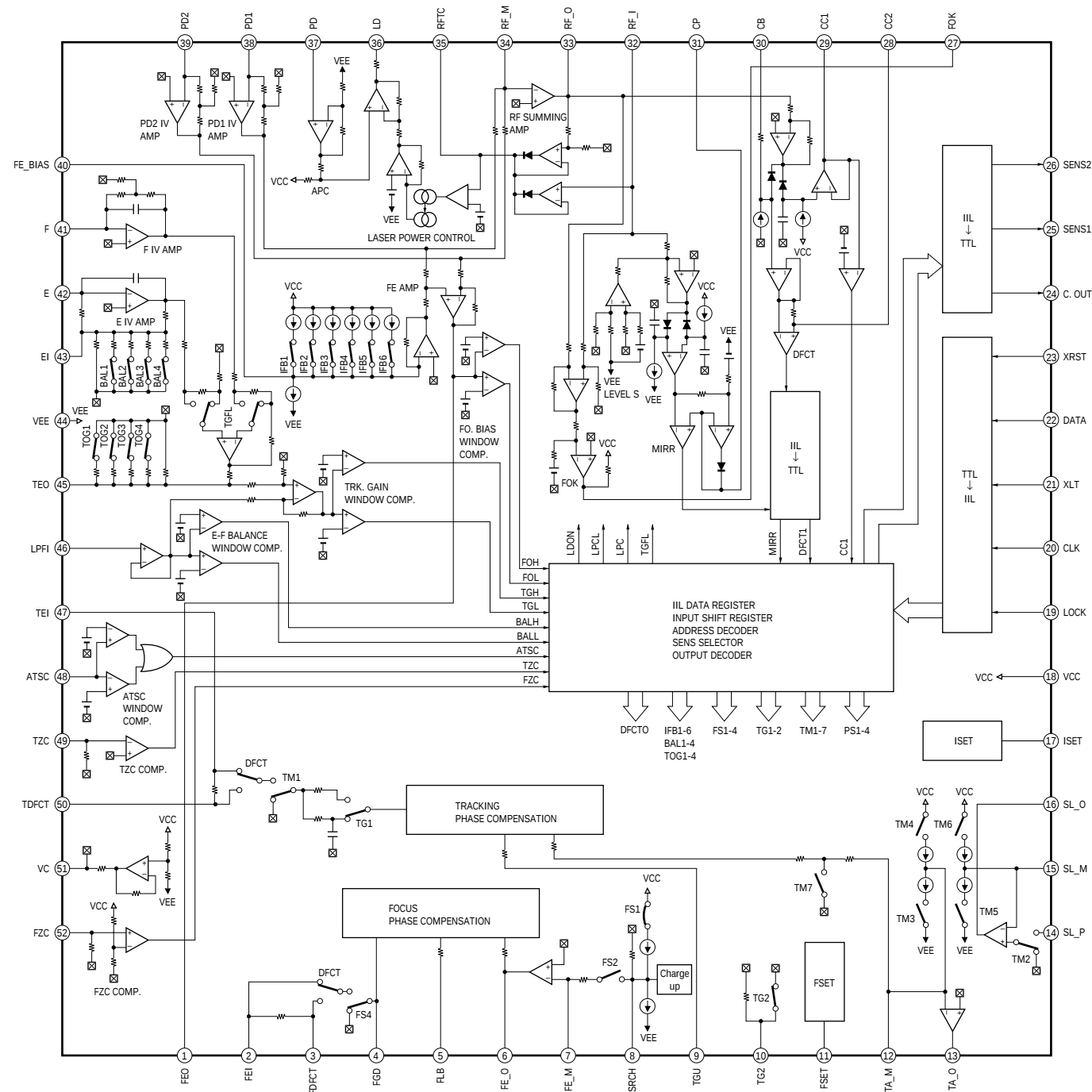
SECTION 6 DIAGRAMS

• Circuit Boards Location

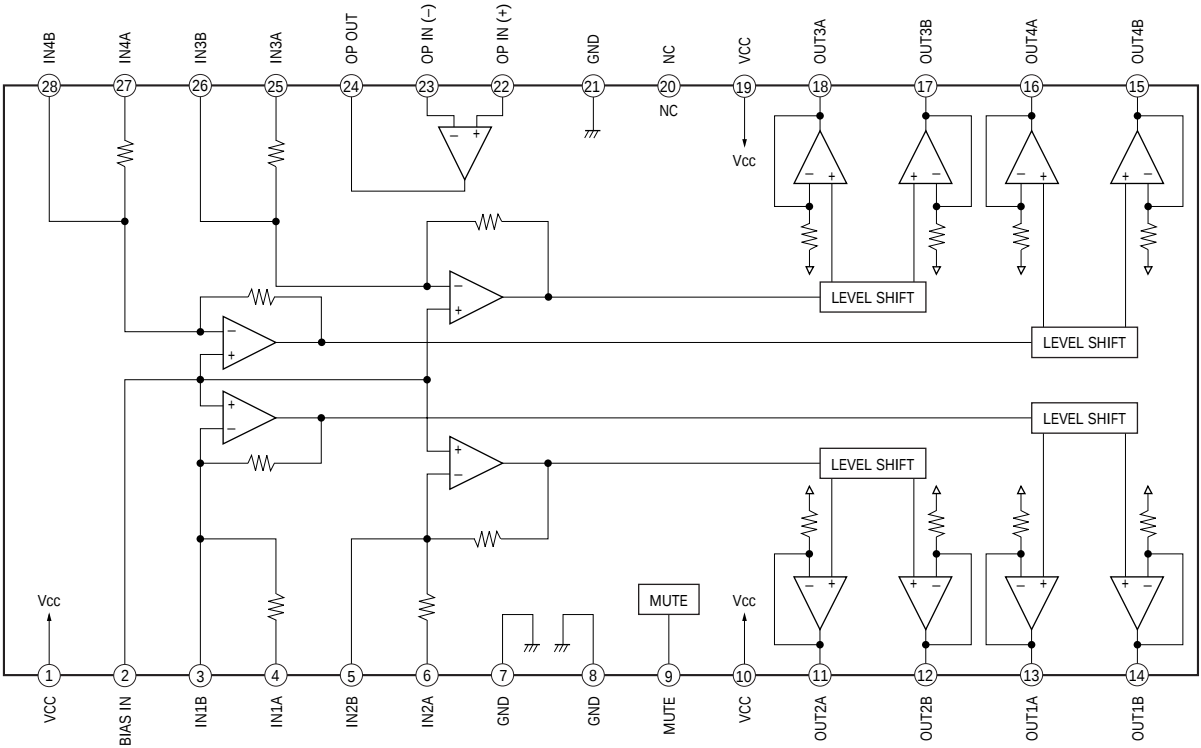


• IC Block Diagrams
– BD Board –

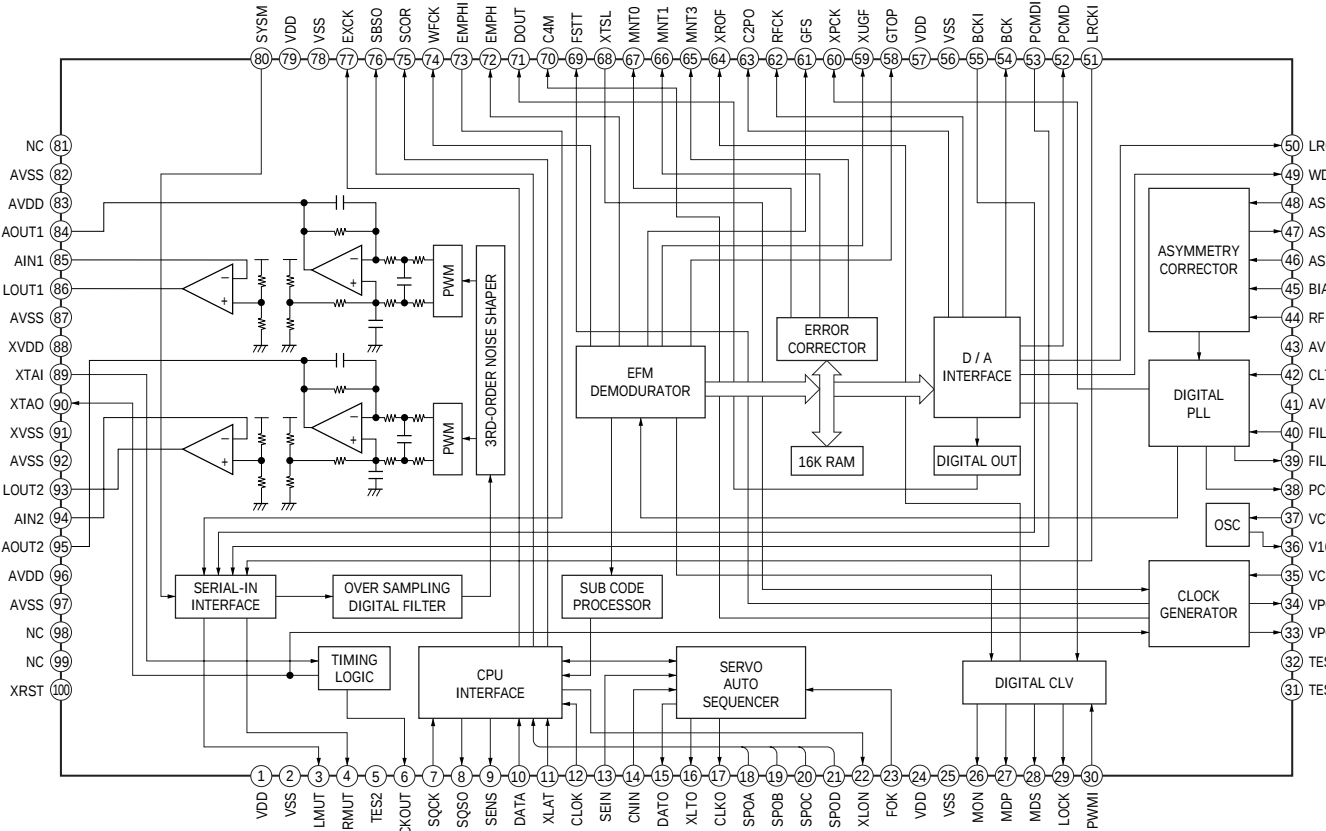
IC101 CXA1992AR



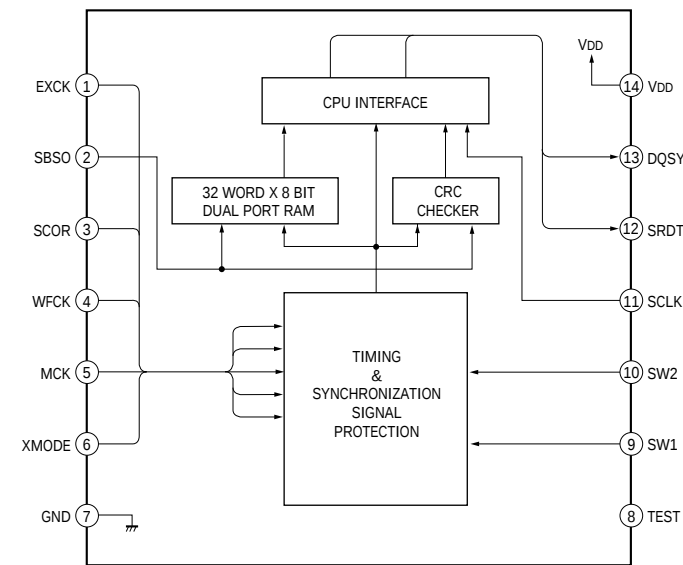
IC102 BA5941FP-E2



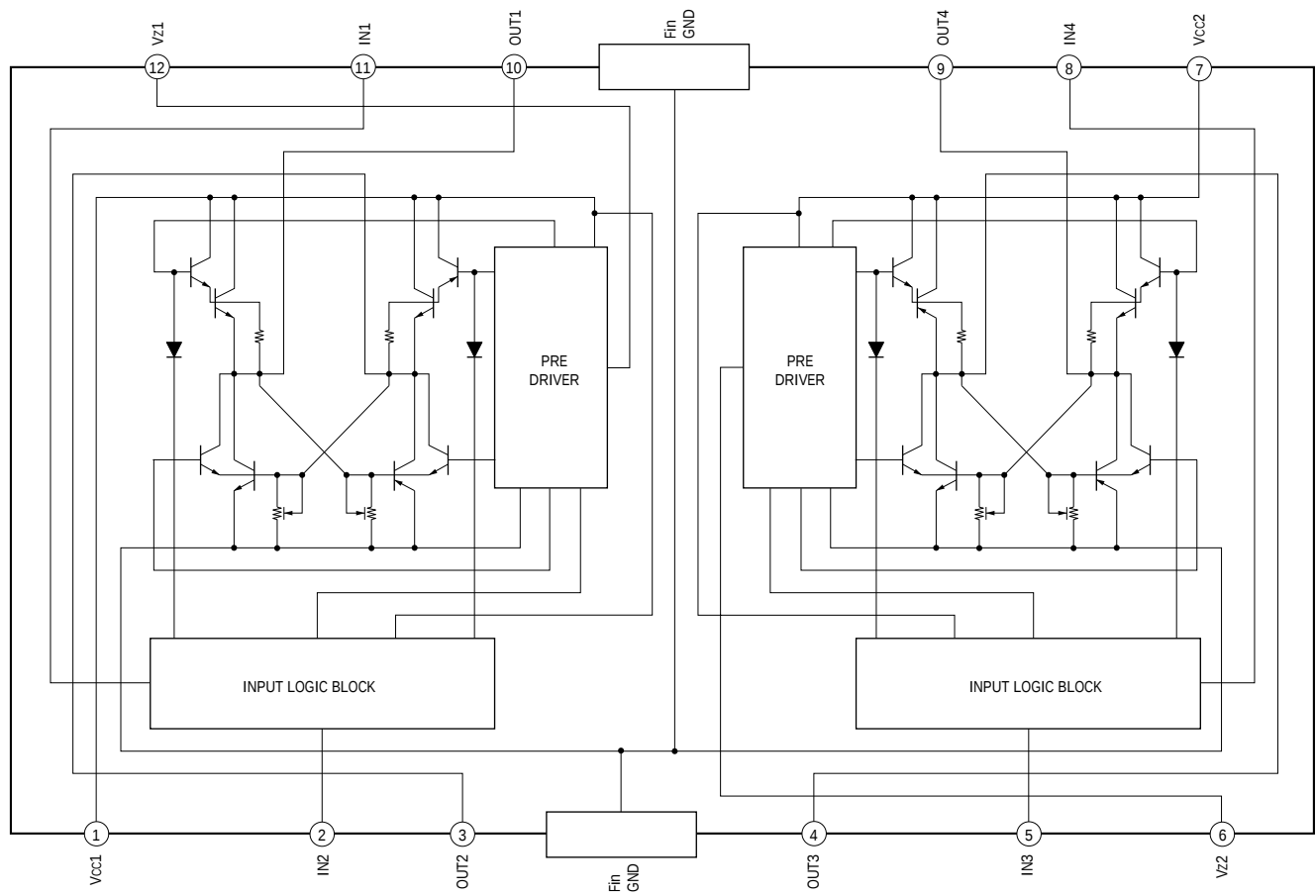
IC103 CXD2519Q



IC104 LC89170M-TLM

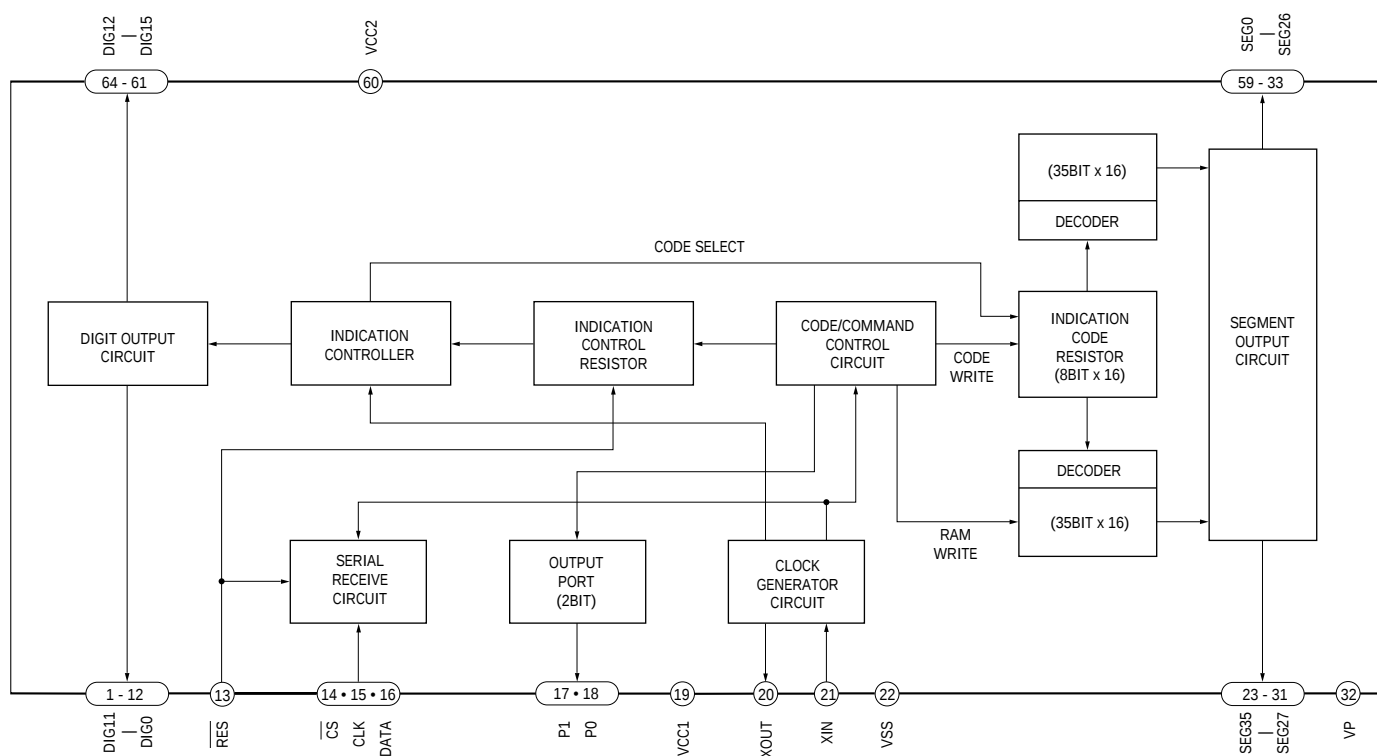


–MAIN Board –
IC371 LB1648

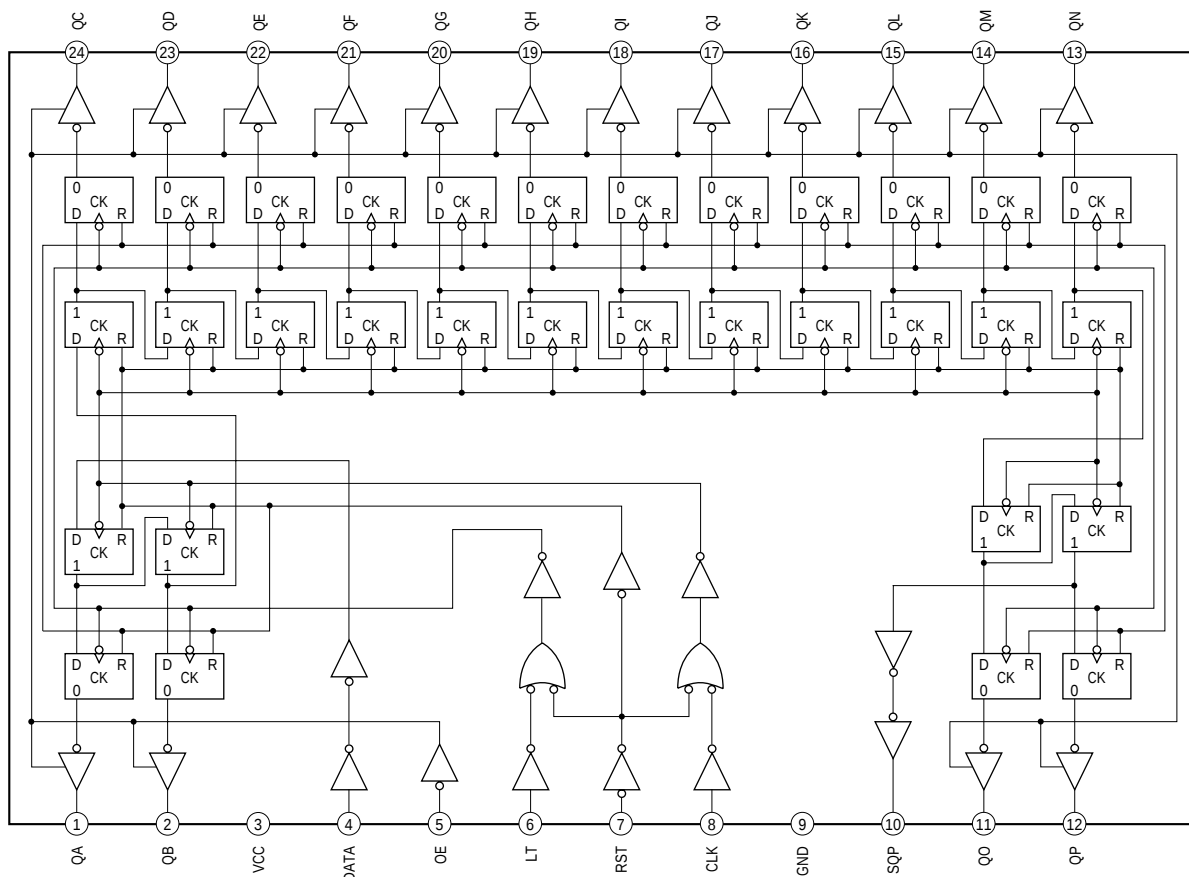


– PANEL Board –

IC601 M66004M8FP



IC602 M66310FP



6-7. IC PIN FUNCTION DESCRIPTION

• MAIN BOARD IC301 μ PD784215GF-516-3BA (SYSTEM CONTROLLER)

Pin No.	Pin Name	I/O	Function
1, 2	NC	O	Not used (open)
3	$\overline{\text{LED LAT}}$	O	Serial data latch pulse output to the LED driver (IC602) “L” active
4	$\overline{\text{DRV CS}}$	O	Chip select signal output to the fluorescent indicator tube driver (IC601) “L” active
5	$\overline{\text{RE}}$	O	Data read enable signal output to the S-RAM (IC315) “L” active
6	$\overline{\text{WE}}$	O	Data write enable signal output to the S-RAM (IC315) “L” active
7	$\overline{\text{DRV RST}}$	O	Reset signal output to the fluorescent indicator tube driver (IC601) and LED driver (IC602) “L”: reset
8	NC	O	Not used (open)
9	VDD	—	Power supply terminal (+5V)
10	$\overline{\text{BD RST}}$	O	Reset signal output to the BD section “L”: reset
11	$\overline{\text{BD PWR}}$	O	Power on/off control signal output for the BD section power supply “L”: power on Not used (open)
12, 13	NC	O	Not used (open)
14	$\overline{\text{LD OUT}}$	O	Motor control signal output to the loading motor driver (IC371) “L” active *1
15	$\overline{\text{LD IN}}$	O	Motor control signal output to the loading motor driver (IC371) “L” active *1
16	$\overline{\text{STK DW}}$	O	Motor control signal output to the elevator up/down motor driver (IC371) “L” active *2
17	$\overline{\text{STK UP}}$	O	Motor control signal output to the elevator up/down motor driver (IC371) “L” active *2
18	$\overline{\text{OUT SW}}$	I	Detection input from the disc tray open/close detect switch (SW505) “L”: disc tray is open, “H”: disc tray is close
19	$\overline{\text{IN SW}}$	I	Detection input from the disc tray open/close detect switch (SW505) “L”: disc tray is close, “H”: disc tray is open
20	$\overline{\text{STK SW}}$	I	Detection input from the stocker switch (SW501) “L”: when sub tray is completely set into the stoker
21	$\overline{\text{MID SW}}$	I	Detection input from the mid switch (SW504) “L”: when sub tray is at the position where it between removed tray and set into the stoker
22	TEST	I	Input terminal for the test (fixed at “L” in this set)
23	$\overline{\text{INIT SW}}$	I	Detection input from the init switch (SW502) “L”: when disc tray is at the position where it can be play
24	$\overline{\text{CNT SW}}$	I	Detection input from the count switch (SW503) “L”: when elevator is at the position where it each sub tray stock position
25	$\overline{\text{PANEL SW}}$	I	Detection input from the CD tray open/close detect switch (S671) “L”: CD panel close, “H”: CD panel open
26	(GND)	I	Not used (fixed at “L”)
27	$\overline{\text{ADJ}}$	I	Input terminal for the CD test mode setting “L”: test mode, normally: “H”
28	$\overline{\text{AMUTE}}$	O	Analog line muting on/off control signal output terminal “L”: line muting on
29	DATA	O	Serial data output to the CXD2519Q (IC103) in BD section
30	CLK	O	Serial data transfer clock signal output to the CXD2519Q (IC103) in BD section
31	$\overline{\text{XLT}}$	O	Serial data latch pulse output to the CXD2519Q (IC103) in BD section “L” active
32	BUSCLK	I	Bus data reading clock signal input for the system control bus
33 to 36	BUSD0 to BUSD3	I/O	Two-way data bus with the system control bus
37	VDD	—	Power supply terminal (+5V)
38	X2	O	Main system clock output terminal (12.5 MHz)

*1 Loading motor (M502) control

Terminal \ Function	IN	OUT	BRAKE	RUN IDLE
$\overline{\text{LD IN}}$ (pin ⑮)	“L”	“H”	“H”	“L”
$\overline{\text{LD OUT}}$ (pin ⑭)	“H”	“L”	“H”	“L”

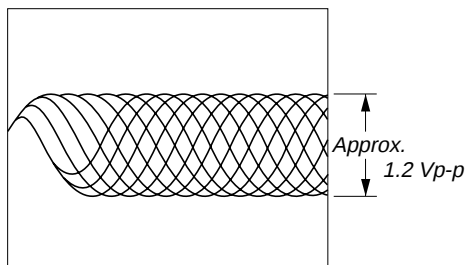
*2 Elevator up/down motor (M501) control

Terminal \ Function	UP	DOWN	BRAKE	RUN IDLE
$\overline{\text{STK UP}}$ (pin ⑰)	“L”	“H”	“H”	“L”
$\overline{\text{STK DW}}$ (pin ⑯)	“H”	“L”	“H”	“L”

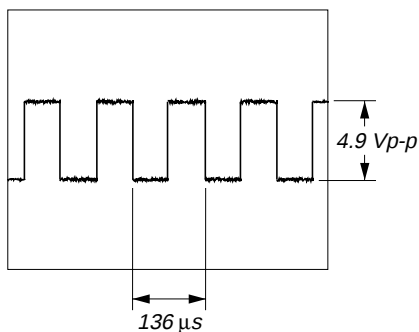
Pin No.	Pin Name	I/O	Function
39	X1	I	Main system clock input terminal (12.5 MHz)
40	VSS	—	Ground terminal
41	XT2	O	Sub system clock output terminal Not used (open)
42	XT1	I	Sub system clock input terminal Not used (fixed at “L”)
43	$\overline{\text{RESET}}$	I	System reset signal input from the reset signal generator (IC311) “L”: reset For several hundreds msec. after the power supply rises, “L” is input, then it changes to “H”
44	BUSCLK	O	Bus data transfer clock signal output for the system control bus
45	$\overline{\text{BUSBSY}}$	I/O	Busy signal in/out terminal for the system control bus
46	SCOR	I	Subcode sync (S0+S1) detection signal input from the CXD2519Q (IC103) in BD section
47	DQSY	I	Data read enable signal input from the CD text decoder (IC104) in BD section
48	NC	O	Not used (open)
49	JOG0	I	Jog dial pulse (0) input from the rotary encoder (S661) (for SELECTOR)
50	JOG1	I	Jog dial pulse (1) input from the rotary encoder (S661) (for SELECTOR)
51	AVDD	—	Power supply terminal (+5V) (for A/D converter)
52	AVREF0	I	Reference voltage (+5V) input terminal (for A/D converter)
53	KEY0	I	Key input terminal (A/D input) (S611 to S613, S616 and S618) CD1 to CD3, REPEAT, CLEAR keys input
54	KEY1	I	Key input terminal (A/D input) (S621 to S623, S626 to S628) △ (CD1 to CD3), MENU/NO, ENTER/YES, DISC SKIP keys input
55	KEY2	I	Key input terminal (A/D input) (S631 to S638) ▷◁, ■, ◀▶, ▶▶, DISPLAY, CONTINUE, SHUFFLE, PROGRAM keys input
56	SELECT0 (CDTEXT)	I	Input terminal for the Japanese letter in function setting “L”: input possible (fixed at “H” in this set)
57	SELECT1 (MECHA MODEL)	I	Input terminal for the separate/complete type setting of CD section and other sections “L”: separate type, “H”: complete type (fixed at “L” in this set)
58	DISC SNS	I	Detection input from the disc in detect sensor (Q501) “H”: disc in
59	MID SNS	I	Detection input from the disc tray close detect sensor (IC501) “H”: disc tray is closed
60	(GND)	I	Not used (fixed at “L”)
61	AVSS	—	Ground terminal (for A/D converter)
62	TEST	I	Input terminal for the test (fixed at “L” in this set)
63	NC	O	Not used (open)
64	AVREF1	I	Reference voltage (+5V) input terminal (for D/A converter)
65	SRDT	I	Serial data input from the CD text decoder (IC104) in BD section
66	NC	O	Not used (open)
67	SCLK	O	Serial data transfer clock signal output to the CD text decoder (IC104) in BD section
68	SUBQ	I	Subcode Q data input from the CXD2519Q (IC103) in BD section
69	NC	O	Not used (open)
70	SQCLK	O	Subcode Q data reading clock signal output to the CXD2519Q (IC103) in BD section
71	XMODE	O	Reset/power down mode setting signal output to the CD text decoder (IC104) in BD section
72	SENSE2	I	Internal status monitor input from the CXA1992AR (IC101) in BD section
73	SENSE	I	Internal status monitor input from the CXD2519Q (IC103) in BD section
74	DRV DAT	O	Serial data output to the fluorescent indicator tube driver (IC601) and LED driver (IC602)
75	DRV CLK	O	Serial data transfer clock signal output to the fluorescent indicator tube driver (IC601) and LED driver (IC602)
76 to 83	A0 to A7	O	Address signal output to the S-RAM (IC315)
84 to 91	D0 to D7	I/O	Two-way data bus with the S-RAM (IC315)
92 to 98	A8 to A14	O	Address signal output to the S-RAM (IC315)
99	NC	O	Not used (open)
100	VSS	—	Ground terminal

• Waveforms
– BD Board –

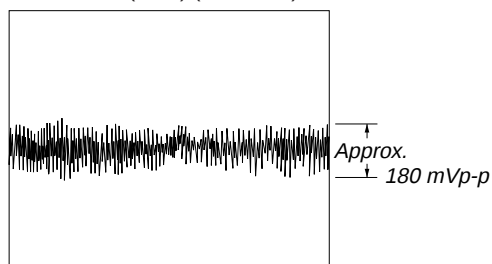
① IC101 ③③ (RF O) (CD PLAY)



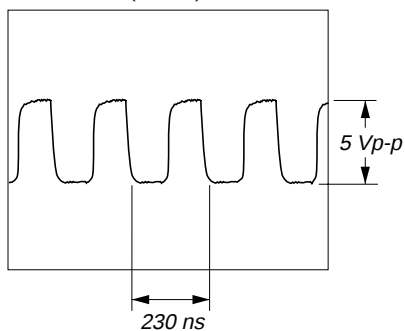
⑤ IC103 ⑥② (RFCK)



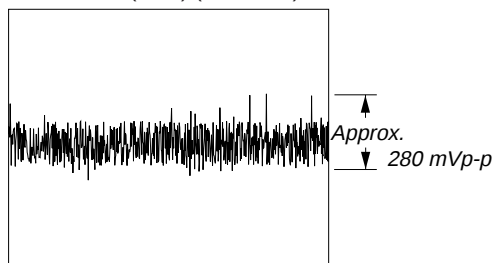
② IC101 ④⑤ (TEO) (CD PLAY)



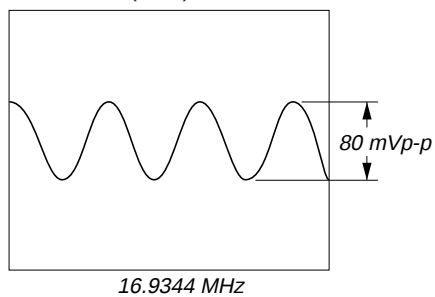
⑥ IC103 ⑥⑩ (XPCK)



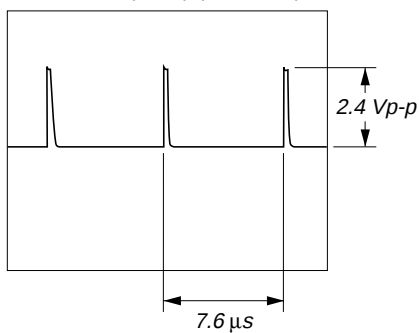
③ IC101 ① (FEO) (CD PLAY)



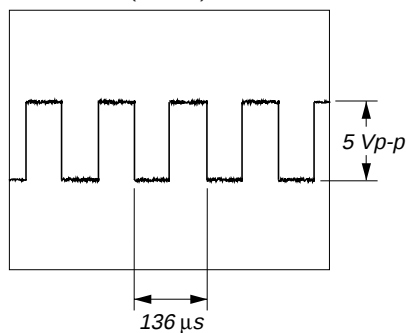
⑦ IC103 ⑥⑨ (XTAI)



④ IC103 ②⑦ (MDP) (CD PLAY)

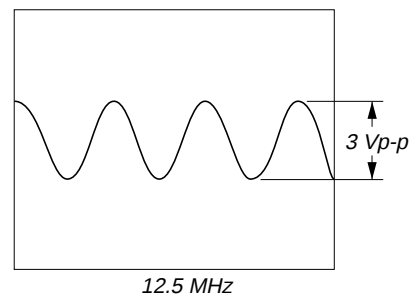


⑧ IC103 ⑦④ (WFCK)



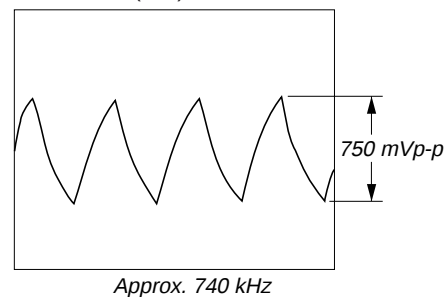
– MAIN Board –

① IC103 ③⑨ (X1)

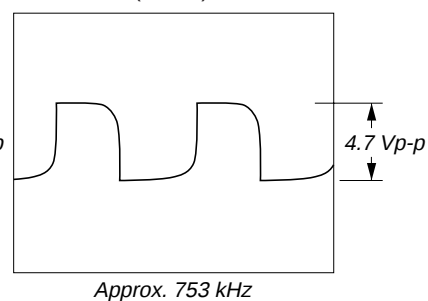


– PANEL Board –

① IC601 ②① (XIN)



② IC601 ②⑩ (XOUT)



SECTION 7

EXPLODED VIEWS

NOTE:

- XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
Example:
KNOB, BALANCE (WHITE) . . . (RED)

↑

↑

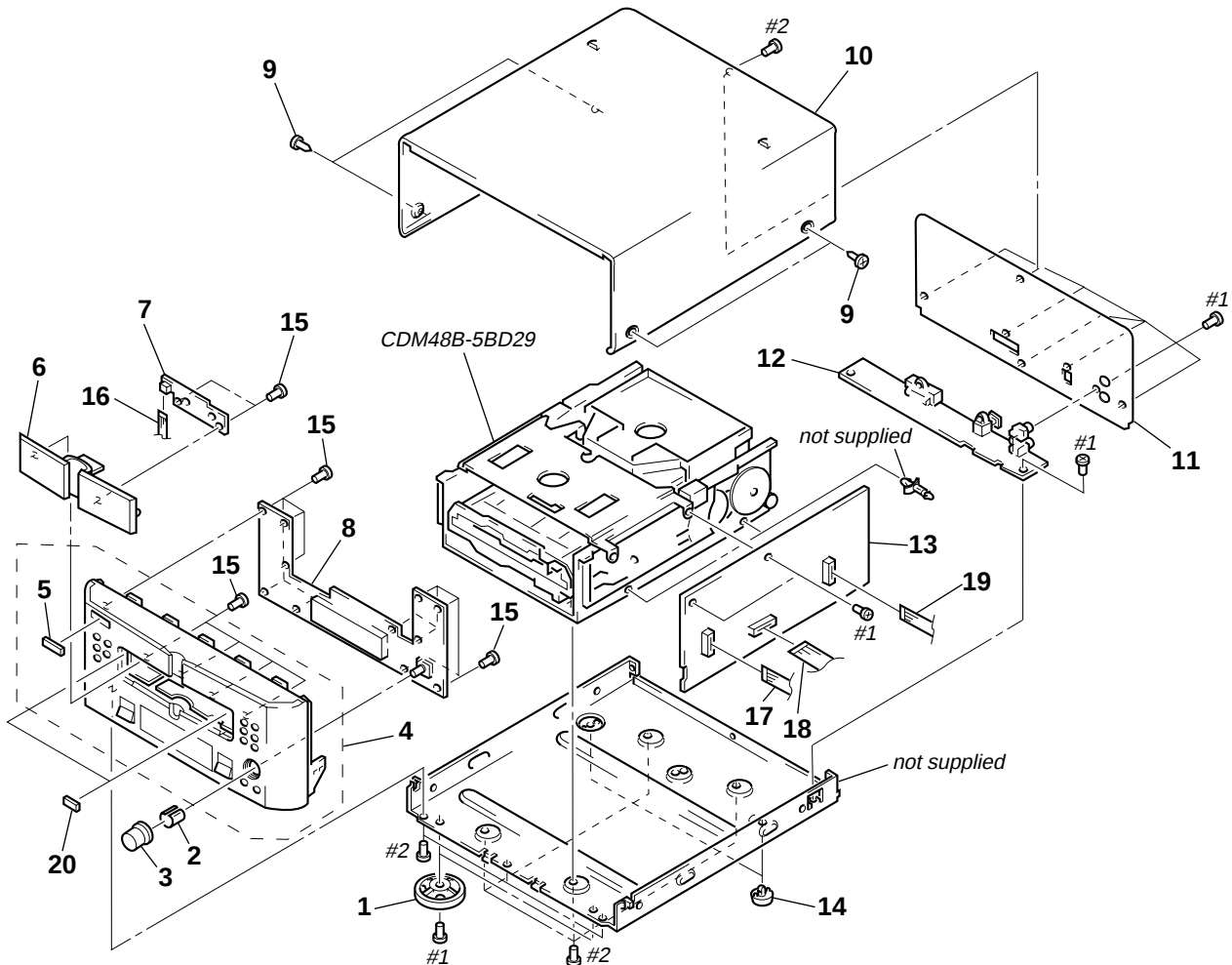
Parts Color

Cabinet's Color

- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of the electrical parts list.

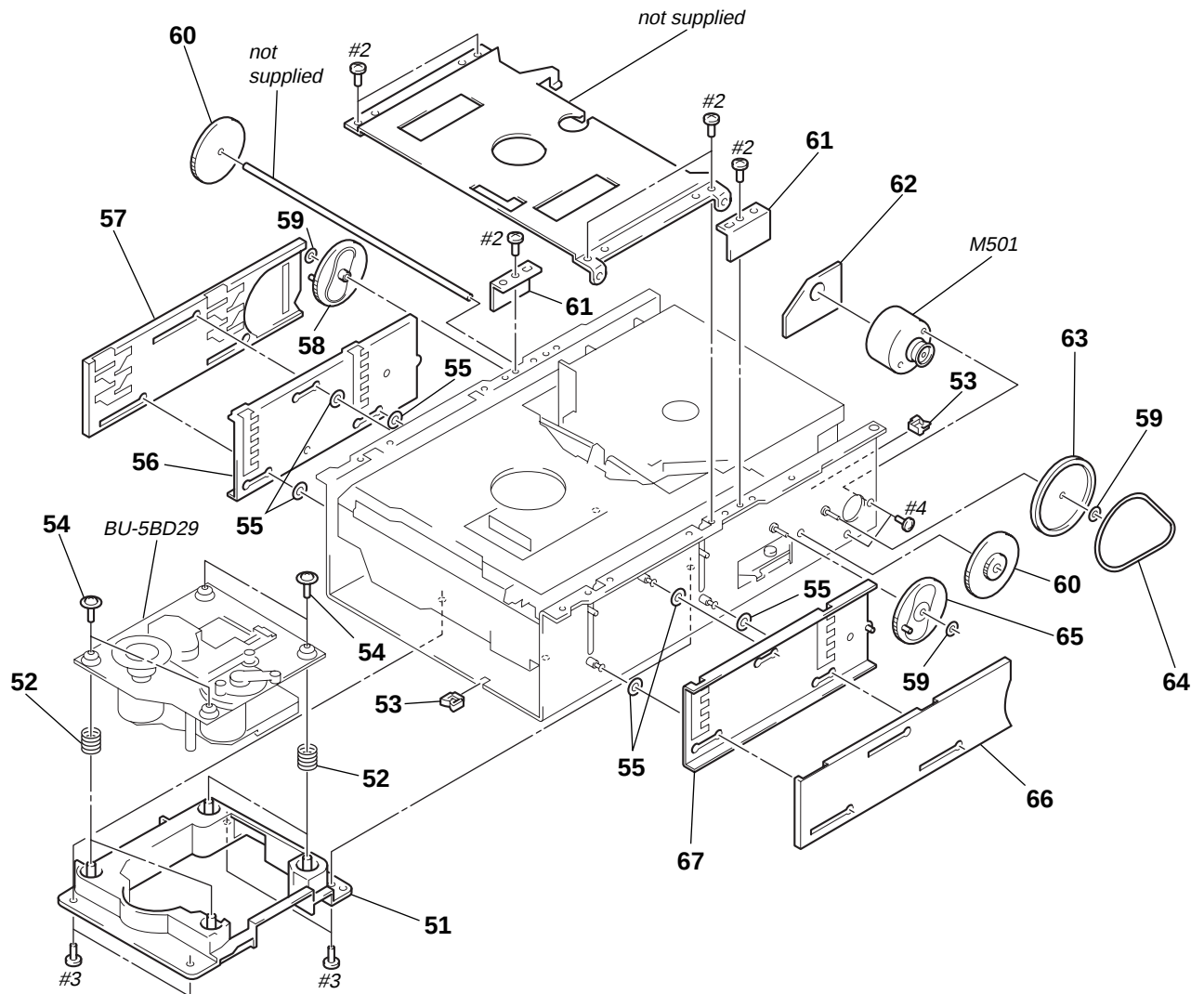
The components identified by mark  or dotted line with mark  are critical for safety.
Replace only with part number specified.

(1) MAIN SECTION



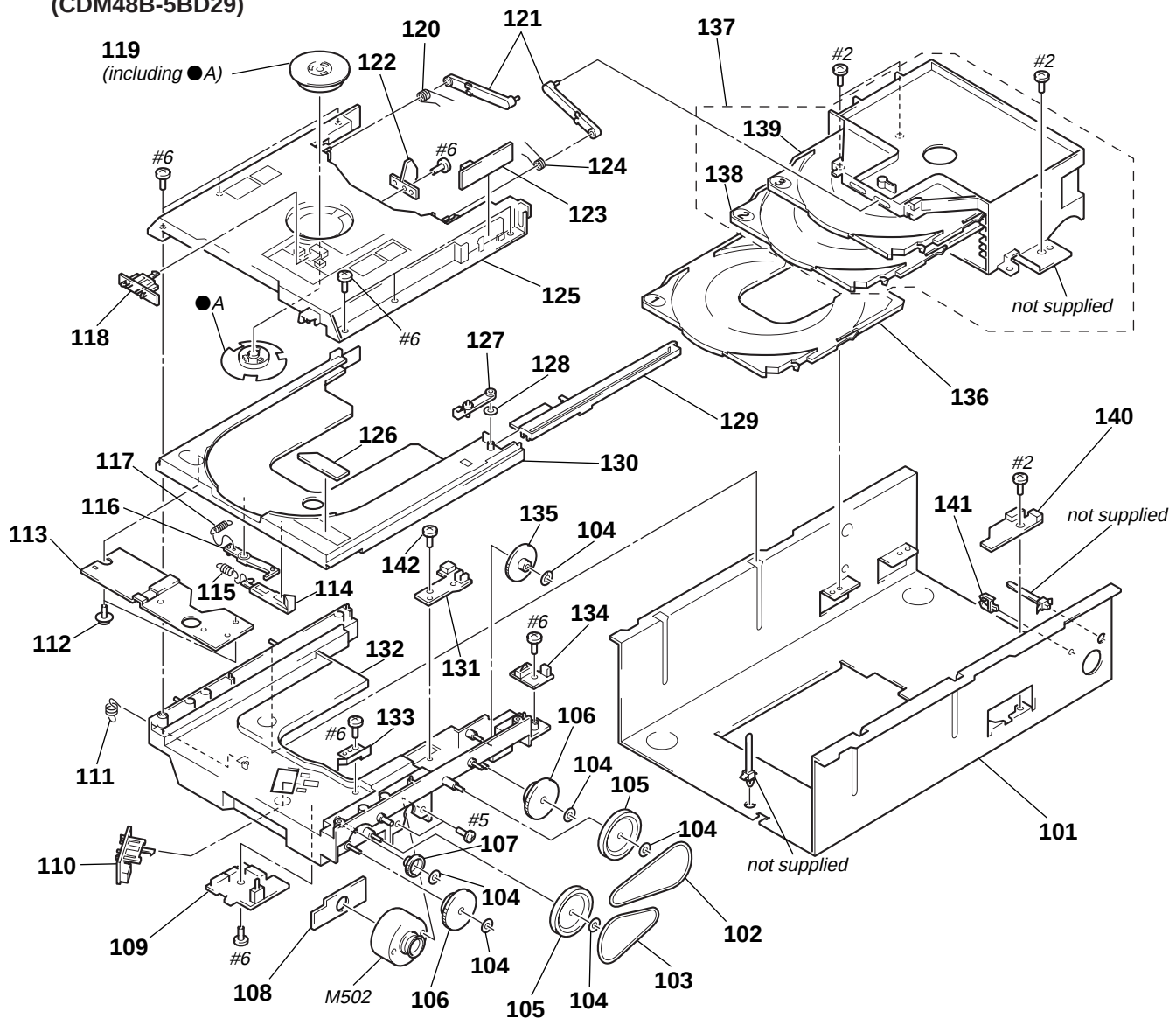
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	4-977-699-11	LEG (F)		* 11	4-995-118-21	PANEL (CD), BACK (MS717)	
2	4-988-161-01	SPRING, RING		* 12	1-667-598-16	JACK BOARD	
3	4-995-074-01	KNOB (JOG)		* 13	A-4724-092-A	MAIN BOARD, COMPLETE	
4	X-4949-032-1	PANEL ASSY, FRONT		14	4-965-822-01	FOOT	
5	4-962-708-01	EMBLEM (4-A), SONY		15	4-951-620-41	SCREW (2.6), +BVTP	
6	X-4949-035-1	LID ASSY		16	1-783-102-11	WIRE (FLAT TYPE) (5 CORE)	
* 7	1-667-599-11	LED BOARD		17	1-783-104-11	WIRE (FLAT TYPE) (17 CORE)	
* 8	A-4724-093-A	PANEL BOARD, COMPLETE		18	1-783-105-11	WIRE (FLAT TYPE) (23 CORE)	
9	3-363-099-01	SCREW (CASE 3 TP2)		19	1-783-103-11	WIRE (FLAT TYPE) (11 CORE)	
10	4-977-698-11	CASE		20	4-989-453-01	CUSHION (LID)	
* 11	4-995-118-11	PANEL (CD), BACK (EX880)					

(2) MECHANISM DECK SECTION-1
(CDM48B-5BD29)



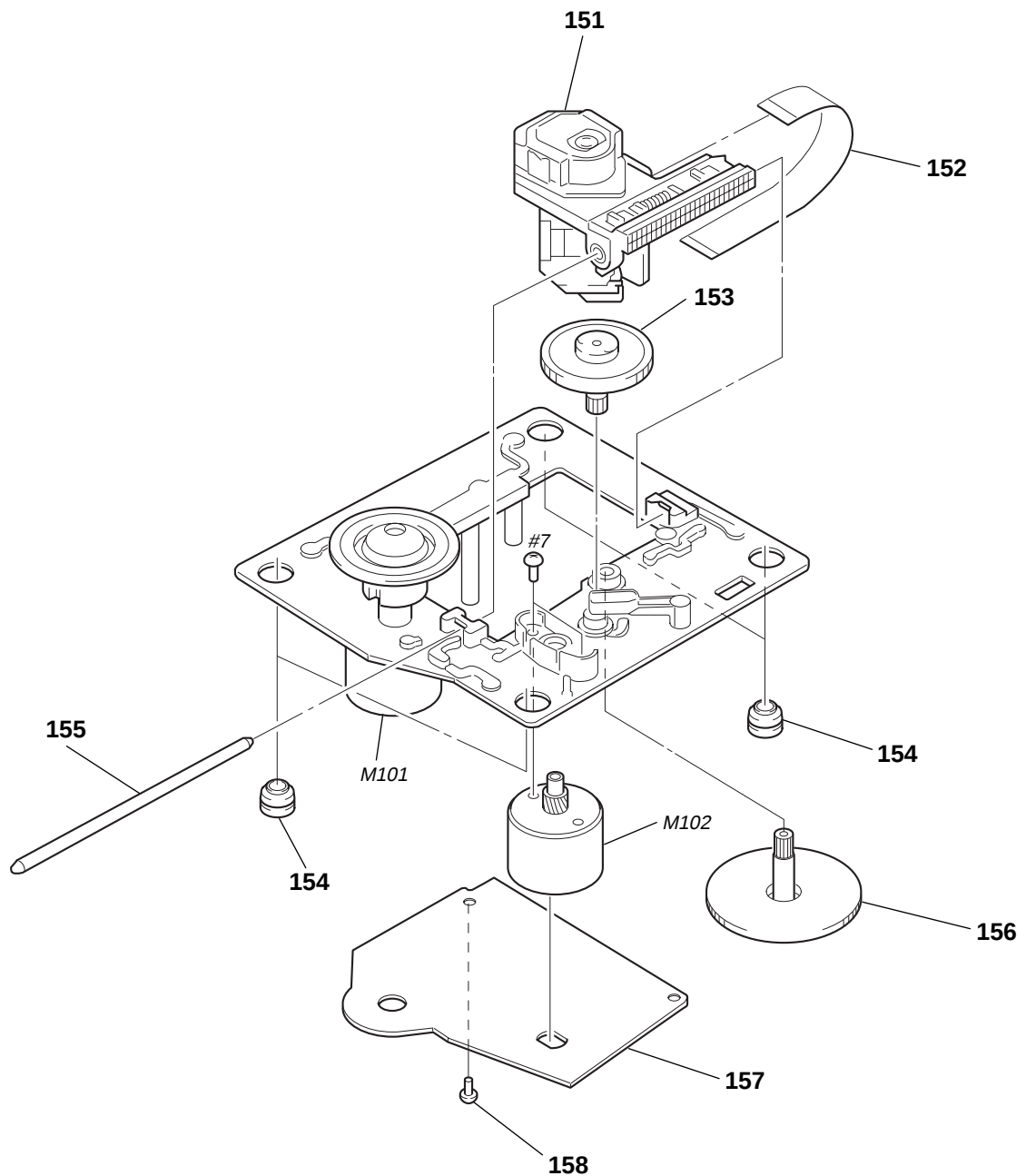
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* 51	4-993-146-01	HOLDER, BU		60	4-964-466-01	GEAR (JOINT)	
52	4-948-503-01	SPRING (BU), COMPRESSION		* 61	4-967-875-01	REINFORCEMENT (PLATE CAM)	
53	3-383-699-01	CLAMP (EDGE)		* 62	1-651-396-11	U/D MOTOR BOARD	
54	4-985-672-01	SCREW (+PTPWH M2.6), FLOATING		63	4-964-487-01	PULLEY (U/D)	
55	4-965-882-01	SPACER		64	4-996-408-01	BELT (U/D)	
56	X-4948-778-1	SLIDER (DRIVING CAM L) ASSY		65	4-964-467-01	GEAR (CAM R)	
* 57	4-993-104-01	CAM (L), PLATE		* 66	4-993-105-01	CAM (R), PLATE	
58	4-964-468-01	GEAR (CAM L)		67	X-4948-779-1	SLIDER (DRIVING CAM R) ASSY	
59	4-957-798-01	WASHER, STOPPER		M501	X-4949-299-1	MOTOR ASSY (CDM48 U/D)	
							(ELEVATOR UP/DOWN)

(3) MECHANISM DECK SECTION-2
(CDM48B-5BD29)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* 101	X-4948-784-1	CHASSIS ASSY, SUB		* 123	1-651-392-11	MID SW BOARD	
102	4-964-476-01	BELT (R)		124	4-964-484-01	SPRING (LEVER R), TORSION	
103	3-319-030-01	BELT (MIDWAY)		125	4-964-492-01	BASE (MAGNET), FITTING	
104	4-957-798-01	WASHER, STOPPER		126	4-972-864-11	EMBLEM (MAIN TRAY)	
105	4-964-465-01	PULLEY (TRAY)		127	X-4944-659-1	LEVER (GOOSENECK) ASSY	
106	4-964-464-01	GEAR (DECELERATION)		128	3-701-439-21	WASHER	
107	4-964-462-01	GEAR (TRAY F)		129	4-964-455-01	SLIDER (SELECTION)	
* 108	1-651-391-11	TRAY MOTOR BOARD		130	4-964-453-01	TRAY (MAIN)	
* 109	1-651-394-11	OPEN/CLOSE SW BOARD		* 131	1-651-393-11	MID SENS BOARD	
* 110	1-651-399-11	DISC DETECTION (B) BOARD		132	X-4944-557-1	BASE (TRAY) ASSY, FITTING	
111	4-996-098-01	SPRING (L), TENSION		133	4-967-196-01	SPRING (CLICK), LEAF	
112	4-933-134-01	SCREW (+PTPWH M2.6X6)		* 134	1-651-395-11	IN SW BOARD	
* 113	4-964-473-02	BRACKET (LEVER RETAINER)		135	4-964-463-01	GEAR (TRAY R)	
114	4-964-458-01	SLIDER (CLICK)		136	X-4944-823-1	TRAY (SUB NO. 1) ASSY	
115	4-964-481-01	SPRING (A), TENSION		137	A-4672-428-A	STOCKER ASSY	
116	4-964-459-01	LEVER (STOPPER)		138	X-4944-824-1	TRAY (SUB NO. 2) ASSY	
117	4-964-482-01	SPRING (B), TENSION		139	X-4944-825-1	TRAY (SUB NO. 3) ASSY	
* 118	1-651-398-11	DISC DETECTION (A) BOARD		* 140	1-651-397-11	COUNT SW BOARD	
119	1-452-719-11	MAGNET ASSY		141	4-962-113-01	CLAMP	
120	4-964-485-01	SPRING (LEVER L), TORSION		142	4-951-620-01	SCREW (2.6X8), +BVTP	
* 121	4-964-460-01	LEVER (STOCK)		M502	X-4944-463-1	MOTOR ASSY (LOADING)	
122	4-993-145-01	STOPPER					

(4) BASE UNIT SECTION
(BU-5BD29)



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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
Δ 151	8-848-379-31	OPTICAL PICK-UP KSS-213BA/F-NP		156	4-917-564-01	GEAR (P), FLATNESS	
152	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)		* 157	A-4699-295-A	BD BOARD, COMPLETE	
153	4-917-567-01	GEAR (M)		158	4-951-620-01	SCREW (2.6X8), +BVTP	
154	4-951-940-01	INSULATOR (BU)		M101	X-4917-523-4	MOTOR ASSY (SPINDLE)	
155	4-917-565-01	SHAFT, SLED		M102	X-4917-504-1	MOTOR ASSY (SLED)	

SECTION 8 ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX 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.

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

Ref. No.	Part No.	Description					Remark	Ref. No.	Part No.	Description					Remark
*	A-4699-295-A	BD BOARD, COMPLETE						C167	1-163-121-00	CERAMIC CHIP	150PF	5%	50V		
		*****						C168	1-163-137-00	CERAMIC CHIP	680PF	5%	50V		
		< CAPACITOR >						C169	1-163-121-00	CERAMIC CHIP	150PF	5%	50V		
C101	1-126-607-11	ELECT CHIP	47uF	20%	4V		C170	1-163-099-00	CERAMIC CHIP	18PF	5%	50V			
C102	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V		C171	1-163-237-11	CERAMIC CHIP	27PF	5%	50V			
C103	1-164-346-11	CERAMIC CHIP	1uF		16V		C173	1-163-038-00	CERAMIC CHIP	0.1uF		25V			
C105	1-163-038-00	CERAMIC CHIP	0.1uF		25V		C174	1-163-038-00	CERAMIC CHIP	0.1uF		25V			
C106	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V		C175	1-163-038-00	CERAMIC CHIP	0.1uF		25V			
C107	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V		C176	1-163-038-00	CERAMIC CHIP	0.1uF		25V			
C108	1-164-232-11	CERAMIC CHIP	0.01uF		50V		C177	1-163-038-00	CERAMIC CHIP	0.1uF		25V			
C109	1-164-232-11	CERAMIC CHIP	0.01uF		50V		C178	1-163-038-00	CERAMIC CHIP	0.1uF		25V			
C110	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V		C179	1-163-038-00	CERAMIC CHIP	0.1uF		25V			
C111	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V		C180	1-163-038-00	CERAMIC CHIP	0.1uF		25V			
C112	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V		C181	1-126-205-11	ELECT CHIP	47uF	20%	6.3V			
C113	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V		C182	1-126-393-11	ELECT CHIP	33uF	20%	10V			
C114	1-164-005-11	CERAMIC CHIP	0.47uF		25V		C183	1-124-778-00	ELECT CHIP	22uF	20%	6.3V			
C115	1-126-607-11	ELECT CHIP	47uF	20%	4V		C185	1-164-232-11	CERAMIC CHIP	0.01uF		50V			
C116	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V		C188	1-163-235-11	CERAMIC CHIP	22PF	5%	50V			
C117	1-164-005-11	CERAMIC CHIP	0.47uF		25V		C189	1-163-235-11	CERAMIC CHIP	22PF	5%	50V			
C118	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V		< CONNECTOR >								
C119	1-163-038-00	CERAMIC CHIP	0.1uF		25V		CNU101	1-770-014-11	CONNECTOR, FFC/FPC 16P						
C120	1-124-779-00	ELECT CHIP	10uF	20%	16V		CNU102	1-770-072-11	CONNECTOR,(LIF(NON-ZIF))FFC23P						
C121	1-163-038-00	CERAMIC CHIP	0.1uF		25V		< FERRITE BEAD >								
C122	1-164-232-11	CERAMIC CHIP	0.01uF		50V		FB101	1-414-234-11	INDUCTOR CHIP	0uH					
C123	1-163-038-00	CERAMIC CHIP	0.1uF		25V		FB103	1-414-234-11	INDUCTOR CHIP	0uH					
C124	1-126-607-11	ELECT CHIP	47uF	20%	4V		< IC >								
C125	1-164-232-11	CERAMIC CHIP	0.01uF		50V		IC101	8-752-080-62	IC	CXA1992AR					
C126	1-163-038-00	CERAMIC CHIP	0.1uF		25V		IC102	8-759-429-32	IC	BA5941FP-E2					
C127	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V		IC103	8-752-380-64	IC	CXD2519Q					
C128	1-163-135-00	CERAMIC CHIP	560PF	5%	50V		IC104	8-759-428-57	IC	LC89170M-TLM					
C129	1-163-038-00	CERAMIC CHIP	0.1uF		25V		< SHORT CHIP >								
C130	1-164-336-11	CERAMIC CHIP	0.33uF		25V		JW102	1-216-295-00	SHORT (CHIP) 0						
C131	1-164-346-11	CERAMIC CHIP	1uF		16V		JW104	1-216-295-00	SHORT (CHIP) 0						
C140	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V		< TRANSISTOR >								
C154	1-163-235-11	CERAMIC CHIP	22PF	5%	50V		Q101	8-729-010-08	TRANSISTOR MSB710-RT1						
C161	1-164-005-11	CERAMIC CHIP	0.47uF		25V										
C162	1-164-232-11	CERAMIC CHIP	0.01uF		50V										
C163	1-163-117-00	CERAMIC CHIP	100PF	5%	50V										
C164	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V										
C165	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V										
C166	1-163-137-00	CERAMIC CHIP	680PF	5%	50V										

BD		COUNT SW		DISC DETECTION (A)		DISC DETECTION (B)				IN SW	
Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
		< RESISTOR >									
R102	1-216-001-00	METAL CHIP	10	5%	1/10W	R181	1-216-025-00	RES,CHIP	100	5%	1/10W
R104	1-216-093-00	METAL CHIP	68K	5%	1/10W	R182	1-216-025-00	RES,CHIP	100	5%	1/10W
R105	1-216-088-00	METAL CHIP	43K	5%	1/10W	R183	1-216-025-00	RES,CHIP	100	5%	1/10W
R106	1-216-088-00	METAL CHIP	43K	5%	1/10W	R184	1-216-025-00	RES,CHIP	100	5%	1/10W
R107	1-216-088-00	METAL CHIP	43K	5%	1/10W						
R108	1-216-088-00	METAL CHIP	43K	5%	1/10W	R185	1-216-025-00	RES,CHIP	100	5%	1/10W
R109	1-216-093-00	METAL CHIP	68K	5%	1/10W	R187	1-216-033-00	METAL CHIP	220	5%	1/10W
R114	1-216-101-00	METAL CHIP	150K	5%	1/10W	R188	1-216-037-00	METAL CHIP	330	5%	1/10W
R115	1-216-101-00	METAL CHIP	150K	5%	1/10W	R190	1-216-097-00	RES,CHIP	100K	5%	1/10W
R116	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	R191	1-216-105-00	RES,CHIP	220K	5%	1/10W
								< SWITCH >			
R117	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	S101	1-572-085-11	SWITCH, LEAF (LIMIT)			
R118	1-216-063-00	RES,CHIP	3.9K	5%	1/10W			< VIBRATOR >			
R119	1-216-085-00	METAL CHIP	33K	5%	1/10W						
R120	1-216-089-00	RES,CHIP	47K	5%	1/10W	X101	1-767-408-21	VIBRATOR, CRYSTAL (16.9344MHz)			
R121	1-216-114-00	RES,CHIP	510K	5%	1/10W	*****					
R122	1-216-097-00	RES,CHIP	100K	5%	1/10W	*	1-651-397-11	COUNT SW BOARD			
R123	1-216-099-00	METAL CHIP	120K	5%	1/10W			*****			
R124	1-216-091-00	METAL CHIP	56K	5%	1/10W			< SWITCH >			
R125	1-216-069-00	METAL CHIP	6.8K	5%	1/10W						
R126	1-216-063-00	RES,CHIP	3.9K	5%	1/10W	SW502	1-692-193-11	SWITCH, PUSH (1 KEY) (INIT)			
						SW503	1-572-126-11	SWITCH, PUSH (1 KEY) (COUNT)			
R127	1-216-089-00	RES,CHIP	47K	5%	1/10W	*****					
R128	1-216-098-00	METAL CHIP	110K	5%	1/10W						
R129	1-216-025-00	RES,CHIP	100	5%	1/10W	*	1-651-398-11	DISC DETECTION (A) BOARD			
R130	1-216-079-00	METAL CHIP	18K	5%	1/10W			*****			
R131	1-216-079-00	METAL CHIP	18K	5%	1/10W			< LED >			
R132	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	D501	8-719-029-95	LED TLN117-B			
R133	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	*****					
R134	1-216-065-00	RES,CHIP	4.7K	5%	1/10W						
R135	1-216-065-00	RES,CHIP	4.7K	5%	1/10W	*	1-651-399-11	DISC DETECTION (B) BOARD			
R136	1-216-073-00	METAL CHIP	10K	5%	1/10W			*****			
								< CONNECTOR >			
R137	1-216-065-00	RES,CHIP	4.7K	5%	1/10W						
R138	1-216-025-00	RES,CHIP	100	5%	1/10W	* CN510	1-568-941-11	PIN, CONNECTOR 3P			
R156	1-216-081-00	METAL CHIP	22K	5%	1/10W			< PHOTO TRANSISTOR >			
R157	1-216-069-00	METAL CHIP	6.8K	5%	1/10W						
R158	1-216-001-00	METAL CHIP	10	5%	1/10W	Q501	8-729-018-23	PHOTO TRANSISTOR TPS626-B			
								< RESISTOR >			
R159	1-216-121-00	RES,CHIP	1M	5%	1/10W						
R161	1-216-097-00	RES,CHIP	100K	5%	1/10W	R502	1-249-425-11	CARBON	4.7K	5%	1/4W
R162	1-216-073-00	METAL CHIP	10K	5%	1/10W	*****					
R163	1-216-121-00	RES,CHIP	1M	5%	1/10W	*	1-651-395-11	IN SW BOARD			
R164	1-216-061-00	METAL CHIP	3.3K	5%	1/10W			*****			
								< CONNECTOR >			
R165	1-216-049-11	RES,CHIP	1K	5%	1/10W						
R166	1-216-073-00	METAL CHIP	10K	5%	1/10W						
R167	1-216-081-00	METAL CHIP	22K	5%	1/10W						
R168	1-216-073-00	METAL CHIP	10K	5%	1/10W	* CN502	1-568-951-11	PIN, CONNECTOR 2P			
R169	1-216-079-00	METAL CHIP	18K	5%	1/10W			< SWITCH >			
R170	1-216-081-00	METAL CHIP	22K	5%	1/10W						
R171	1-216-073-00	METAL CHIP	10K	5%	1/10W	SW501	1-692-193-11	SWITCH, PUSH (1 KEY) (STOCKER)			
R172	1-216-079-00	METAL CHIP	18K	5%	1/10W	*****					
R173	1-216-025-00	RES,CHIP	100	5%	1/10W						
R174	1-216-033-00	METAL CHIP	220	5%	1/10W						
R175	1-216-025-00	RES,CHIP	100	5%	1/10W						
R176	1-216-025-00	RES,CHIP	100	5%	1/10W						
R177	1-216-025-00	RES,CHIP	100	5%	1/10W						
R178	1-216-025-00	RES,CHIP	100	5%	1/10W						
R179	1-216-025-00	RES,CHIP	100	5%	1/10W						
R180	1-216-025-00	RES,CHIP	100	5%	1/10W						

Ref. No.	Part No.	Description	Remark			
*	1-667-598-16	JACK BOARD				

		< CAPACITOR >				
C501	1-136-153-00	FILM	0.01uF	5%	50V	
C502	1-136-153-00	FILM	0.01uF	5%	50V	
C503	1-164-159-11	CERAMIC	0.1uF		50V	
C504	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C507	1-104-665-11	ELECT	100uF	20%	10V	
C508	1-164-159-11	CERAMIC	0.1uF		50V	
C509	1-164-159-11	CERAMIC	0.1uF		50V	
C511	1-162-282-31	CERAMIC	100PF	10%	50V	
C512	1-162-282-31	CERAMIC	100PF	10%	50V	
C513	1-162-282-31	CERAMIC	100PF	10%	50V	
C514	1-162-282-31	CERAMIC	100PF	10%	50V	
C515	1-162-282-31	CERAMIC	100PF	10%	50V	
C516	1-162-282-31	CERAMIC	100PF	10%	50V	
C521	1-136-177-00	FILM	1uF	5%	50V	
C522	1-136-177-00	FILM	1uF	5%	50V	
C523	1-164-159-11	CERAMIC	0.1uF		50V	
C554	1-162-294-31	CERAMIC	0.001uF	10%	50V	
< CONNECTOR >						
CN501	1-569-624-21	SOCKET, CONNECTOR 17P	(SYSTEM CONTROL)			
CN502	1-770-965-11	PIN, CONNECTOR (PCB)(V TYPE)5P				
* CN503	1-568-830-11	SOCKET, CONNECTOR 11P				
CN504	1-770-963-11	PIN, CONNECTOR (PCB)(V TYPE)3P				
CN508	1-690-880-41	LEAD (WITH CONNECTOR)				
< DIODE >						
D501	8-719-200-82	DIODE 11ES2-TA2B				
D502	8-719-200-82	DIODE 11ES2-TA2B				
D503	8-719-200-82	DIODE 11ES2-TA2B				
D504	8-719-200-82	DIODE 11ES2-TA2B				
< IC >						
IC501	8-749-923-04	IC TOTX178	(CD DIGITAL OPTICAL, DIGITAL OUT)			
< JACK >						
J501	1-770-272-11	JACK, PIN 2P (CD OUT, ANALOG)				
< COIL >						
L502	1-412-473-21	INDUCTOR 0uH				
L504	1-412-473-21	INDUCTOR 0uH				
L505	1-412-473-21	INDUCTOR 0uH				
L506	1-412-473-21	INDUCTOR 0uH				
L507	1-412-473-21	INDUCTOR 0uH				
< TRANSISTOR >						
Q501	8-729-422-57	TRANSISTOR UN4111-TA				
Q502	8-729-900-80	TRANSISTOR UN4211-TA				
< RESISTOR >						
R501	1-249-421-11	CARBON 2.2K	5%	1/4W		
R551	1-249-421-11	CARBON 2.2K	5%	1/4W		
R561	1-249-429-11	CARBON 10K	5%	1/4W		

Ref. No.	Part No.	Description	Remark		
R562	1-249-429-11	CARBON	10K	5%	1/4W
R563	1-249-429-11	CARBON	10K	5%	1/4W
R564	1-249-429-11	CARBON	10K	5%	1/4W
R565	1-249-429-11	CARBON	10K	5%	1/4W
R566	1-249-429-11	CARBON	10K	5%	1/4W
R591	1-247-807-31	CARBON	100	5%	1/4W

*	1-667-599-11	LED BOARD *****			
< CONNECTOR >					
* CN711	1-568-848-11	SOCKET, CONNECTOR 5P			
< LED >					
D711	8-719-046-39	LED SEL5821A-TP15 (CD 1, STOCK)			
D712	8-719-046-39	LED SEL5821A-TP15 (CD 2, STOCK)			
D713	8-719-046-39	LED SEL5821A-TP15 (CD 3, STOCK)			

*	A-4724-092-A	MAIN BOARD, COMPLETE *****			
7-685-871-01	SCREW +BVTT 3X6 (S)				
< CAPACITOR >					
C201	1-126-937-11	ELECT	4700uF	20%	16V
C202	1-126-933-11	ELECT	100uF	20%	16V
C203	1-126-967-11	ELECT	47uF	20%	10V
C204	1-126-937-11	ELECT	4700uF	20%	16V
C211	1-126-960-11	ELECT	1uF	20%	50V
C212	1-126-933-11	ELECT	100uF	20%	16V
C221	1-126-936-11	ELECT	3300uF	20%	16V
C222	1-164-159-11	CERAMIC	0.1uF		50V
C223	1-124-360-00	ELECT	1000uF	20%	16V
C231	1-126-968-11	ELECT	100uF	20%	50V
C232	1-126-968-11	ELECT	100uF	20%	50V
C234	1-126-965-11	ELECT	22uF	20%	50V
C235	1-164-159-11	CERAMIC	0.1uF		50V
C241	1-111-082-11	ELECT	100uF	20%	35V
C242	1-111-082-11	ELECT	100uF	20%	35V
C243	1-126-970-11	ELECT	330uF	20%	50V
C244	1-126-970-11	ELECT	330uF	20%	50V
C245	1-162-306-11	CERAMIC	0.01uF	20%	16V
C251	1-126-025-11	ELECT	330uF	20%	16V
C252	1-126-025-11	ELECT	330uF	20%	16V
C253	1-126-023-11	ELECT	100uF	20%	25V
C254	1-126-023-11	ELECT	100uF	20%	25V
C255	1-162-306-11	CERAMIC	0.01uF	20%	16V
C256	1-162-306-11	CERAMIC	0.01uF	20%	16V
C301	1-104-665-11	ELECT	100uF	20%	10V
C302	1-164-159-11	CERAMIC	0.1uF		50V
C303	1-164-159-11	CERAMIC	0.1uF		50V
C304	1-136-177-00	FILM	1uF	5%	50V
C311	1-126-960-11	ELECT	1uF	20%	50V
C312	1-162-306-11	CERAMIC	0.01uF	20%	16V
C315	1-107-791-11	DOUBLE LAYER	0.33F		5.5V
C316	1-164-159-11	CERAMIC	0.1uF		50V
C318	1-126-933-11	ELECT	100uF	20%	16V

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
C327	1-162-282-31	CERAMIC	100PF	10%	50V						
C334	1-164-159-11	CERAMIC	0.1uF		50V			< IC >			
C335	1-164-159-11	CERAMIC	0.1uF		50V	IC201	8-759-158-62	IC TA78057S			
C336	1-164-159-11	CERAMIC	0.1uF		50V	IC211	8-759-604-86	IC M5F7807L			
C343	1-162-290-31	CERAMIC	470PF	10%	50V	IC221	8-759-231-53	IC M5F7805L			
C345	1-162-290-31	CERAMIC	470PF	10%	50V	IC301	8-759-530-09	IC uPD784215GF-516-3BA			
C347	1-164-159-11	CERAMIC	0.1uF		50V	IC311	8-759-256-72	IC PST994D-T			
C348	1-124-997-11	ELECT	470uF	20%	10V	IC315	8-759-463-99	IC M5M5256DFP-70XL			
C349	1-162-306-11	CERAMIC	0.01uF	20%	16V	IC371	8-759-277-68	IC LB1648			
C371	1-126-960-11	ELECT	1uF	20%	50V	IC401	8-759-711-35	IC NJM4580D			
C372	1-162-306-11	CERAMIC	0.01uF	20%	16V						
C401	1-126-059-11	ELECT	10uF	20%	50V			< COIL >			
C402	1-124-721-11	ELECT	10uF	20%	50V	L302	1-410-509-61	INDUCTOR 10uH			
C403	1-130-479-00	MYLAR	0.0047uF	5%	50V	L315	1-410-521-11	INDUCTOR 100uH			
C404	1-130-473-00	MYLAR	0.0015uF	5%	50V	L333	1-408-105-00	INDUCTOR 1uH			
C451	1-126-059-11	ELECT	10uF	20%	50V						
C452	1-124-721-11	ELECT	10uF	20%	50V			< TRANSISTOR >			
C453	1-130-479-00	MYLAR	0.0047uF	5%	50V	Q231	8-729-140-97	TRANSISTOR 2SB734-T-34			
C454	1-130-473-00	MYLAR	0.0015uF	5%	50V	Q232	8-729-119-76	TRANSISTOR 2SA1115TP-EF			
C661	1-162-301-11	CERAMIC	0.0015uF	30%	16V	Q311	8-729-030-02	TRANSISTOR UN4213-TA			
C662	1-162-301-11	CERAMIC	0.0015uF	30%	16V	Q401	8-729-141-30	TRANSISTOR 2SC3623ATP-LK			
						Q451	8-729-141-30	TRANSISTOR 2SC3623ATP-LK			
		< CONNECTOR >				Q491	8-729-900-65	TRANSISTOR UN4113-TA			
CN201	1-770-965-11	PIN, CONNECTOR (PCB)(V TYPE)5P									
* CN321	1-568-830-11	SOCKET, CONNECTOR 11P						< RESISTOR >			
CN322	1-770-963-11	PIN, CONNECTOR (PCB)(V TYPE)3P									
* CN331	1-568-839-11	SOCKET, CONNECTOR 23P				R231	1-249-421-11	CARBON 2.2K	5%	1/4W	
* CN351	1-568-836-11	SOCKET, CONNECTOR 17P				R232	1-249-393-11	CARBON 10	5%	1/4W	
						R241	1-249-437-11	CARBON 47K	5%	1/4W	
* CN391	1-568-951-11	PIN, CONNECTOR 2P				R242	1-249-413-11	CARBON 470	5%	1/4W	
CN392	1-506-468-11	PIN, CONNECTOR 3P				R243	1-249-413-11	CARBON 470	5%	1/4W	
* CN393	1-564-706-21	PIN, CONNECTOR (SMALL TYPE) 4P									
* CN394	1-564-710-11	PIN, CONNECTOR (SMALL TYPE) 8P				R244	1-249-391-11	CARBON 6.8	5%	1/4W	
						R245	1-249-391-11	CARBON 6.8	5%	1/4W	
		< CONPOSITION CIRCUIT BLOCK >				R251	1-260-091-11	CARBON 220	5%	1/2W	
CP301	1-234-141-11	CIRCUIT BLOCK, COMPOSITION (100PF)				R252	1-260-091-11	CARBON 220	5%	1/2W	
						R301	1-249-429-11	CARBON 10K	5%	1/4W	
		< DIODE >				R302	1-249-429-11	CARBON 10K	5%	1/4W	
D201	8-719-200-82	DIODE 11ES2-TA2B				R311	1-249-429-11	CARBON 10K	5%	1/4W	
D202	8-719-200-82	DIODE 11ES2-TA2B				R315	1-247-807-31	CARBON 100	5%	1/4W	
D221	8-719-200-82	DIODE 11ES2-TA2B				R317	1-249-441-11	CARBON 100K	5%	1/4W	
D222	8-719-200-82	DIODE 11ES2-TA2B				R318	1-249-441-11	CARBON 100K	5%	1/4W	
D231	8-719-200-82	DIODE 11ES2-TA2B									
						R319	1-249-429-11	CARBON 10K	5%	1/4W	
D232	8-719-200-82	DIODE 11ES2-TA2B				R321	1-247-807-31	CARBON 100	5%	1/4W	
D233	8-719-986-64	DIODE HZS30-3LTA				R322	1-247-807-31	CARBON 100	5%	1/4W	
D241	8-719-069-67	DIODE RD5.1F-T7				R323	1-247-807-31	CARBON 100	5%	1/4W	
D251	8-719-200-82	DIODE 11ES2-TA2B				R324	1-247-807-31	CARBON 100	5%	1/4W	
D252	8-719-200-82	DIODE 11ES2-TA2B									
						R325	1-247-807-31	CARBON 100	5%	1/4W	
D253	8-719-200-82	DIODE 11ES2-TA2B				R326	1-247-807-31	CARBON 100	5%	1/4W	
D254	8-719-200-82	DIODE 11ES2-TA2B				R331	1-247-807-31	CARBON 100	5%	1/4W	
D301	8-719-200-82	DIODE 11ES2-TA2B				R332	1-247-807-31	CARBON 100	5%	1/4W	
D315	8-719-911-19	DIODE 1SS133T-72				R333	1-249-417-11	CARBON 1K	5%	1/4W	
D371	8-719-109-85	DIODE MTZJ-T-72-5.1B									
						R334	1-247-807-31	CARBON 100	5%	1/4W	
						R335	1-247-807-31	CARBON 100	5%	1/4W	
D373	8-719-982-11	DIODE MTZJ-T-72-4.3B				R336	1-247-807-31	CARBON 100	5%	1/4W	
D381	8-719-911-19	DIODE 1SS133T-72				R337	1-247-807-31	CARBON 100	5%	1/4W	
						R338	1-247-807-31	CARBON 100	5%	1/4W	
		< GROUND TERMINAL BOARD >									
EB352	1-537-771-21	TERMINAL BOARD, GROUND				R339	1-247-807-31	CARBON 100	5%	1/4W	
						R341	1-247-807-31	CARBON 100	5%	1/4W	

MAIN	MID SENS	MID SW	OPEN/CLOSE SW	PANEL
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Ref. No.	Part No.	Description	Remark
R342	1-247-807-31	CARBON	100 5% 1/4W
R343	1-247-807-31	CARBON	100 5% 1/4W
R344	1-247-807-31	CARBON	100 5% 1/4W
R345	1-249-429-11	CARBON	10K 5% 1/4W
R351	1-247-807-31	CARBON	100 5% 1/4W
R352	1-247-807-31	CARBON	100 5% 1/4W
R353	1-247-807-31	CARBON	100 5% 1/4W
R354	1-247-807-31	CARBON	100 5% 1/4W
R355	1-247-807-31	CARBON	100 5% 1/4W
R356	1-247-807-31	CARBON	100 5% 1/4W
R357	1-247-807-31	CARBON	100 5% 1/4W
R358	1-247-807-31	CARBON	100 5% 1/4W
R359	1-247-807-31	CARBON	100 5% 1/4W
R360	1-247-807-31	CARBON	100 5% 1/4W
R361	1-247-807-31	CARBON	100 5% 1/4W
R375	1-249-409-11	CARBON	220 5% 1/4W
R376	1-249-409-11	CARBON	220 5% 1/4W
R381	1-249-429-11	CARBON	10K 5% 1/4W
R382	1-249-429-11	CARBON	10K 5% 1/4W
R383	1-249-429-11	CARBON	10K 5% 1/4W
R384	1-249-429-11	CARBON	10K 5% 1/4W
R385	1-249-429-11	CARBON	10K 5% 1/4W
R386	1-249-429-11	CARBON	10K 5% 1/4W
R391	1-247-807-31	CARBON	100 5% 1/4W
R392	1-247-807-31	CARBON	100 5% 1/4W
R393	1-247-807-31	CARBON	100 5% 1/4W
R394	1-247-807-31	CARBON	100 5% 1/4W
R395	1-247-807-31	CARBON	100 5% 1/4W
R396	1-247-807-31	CARBON	100 5% 1/4W
R397	1-247-807-31	CARBON	100 5% 1/4W
R398	1-247-807-31	CARBON	100 5% 1/4W
R399	1-249-411-11	CARBON	330 5% 1/4W
R401	1-249-441-11	CARBON	100K 5% 1/4W
R402	1-249-441-11	CARBON	100K 5% 1/4W
R403	1-249-421-11	CARBON	2.2K 5% 1/4W
R404	1-249-421-11	CARBON	2.2K 5% 1/4W
R407	1-249-417-11	CARBON	1K 5% 1/4W
R451	1-249-441-11	CARBON	100K 5% 1/4W
R452	1-249-441-11	CARBON	100K 5% 1/4W
R453	1-249-421-11	CARBON	2.2K 5% 1/4W
R454	1-249-421-11	CARBON	2.2K 5% 1/4W
R457	1-249-417-11	CARBON	1K 5% 1/4W
R491	1-247-887-00	CARBON	220K 5% 1/4W
R492	1-247-887-00	CARBON	220K 5% 1/4W
R611	1-247-843-11	CARBON	3.3K 5% 1/4W
R621	1-247-843-11	CARBON	3.3K 5% 1/4W
R631	1-247-843-11	CARBON	3.3K 5% 1/4W
R661	1-249-425-11	CARBON	4.7K 5% 1/4W
R662	1-249-425-11	CARBON	4.7K 5% 1/4W
< VIBRATOR >			
X301	1-767-661-11	VIBRATOR, CERAMIC (12.5MHz)	

*	1-651-393-11	MID SENS BOARD	*****
	4-964-461-02	HOLDER (SENSOR)	

Ref. No.	Part No.	Description	Remark
< PHOTO INTERRUPTER >			
IC501	8-729-020-74	PHOTO INTERRUPTER GP1S24	

*	1-651-392-11	MID SW BOARD	*****
< CONNECTOR >			
CN503	1-506-481-11	PIN, CONNECTOR 2P	
< SWITCH >			
SW504	1-692-193-11	SWITCH, PUSH (1 KEY) (MID)	

*	1-651-394-11	OPEN/CLOSE SW BOARD	*****
< CONNECTOR >			
CN512	1-506-481-11	PIN, CONNECTOR 2P	
* CN514	1-568-941-11	PIN, CONNECTOR 3P	
< RESISTOR >			
R503	1-249-408-11	CARBON	180 5% 1/4W
R504	1-249-435-11	CARBON	33K 5% 1/4W
< SWITCH >			
SW505	1-571-300-21	SWITCH, ROTARY	
(TRAY OPEN/CLOSE DETECT)			

*	A-4724-093-A	PANEL BOARD, COMPLETE	*****
< CAPACITOR >			
C601	1-126-796-11	ELECT	22uF 20% 50V
C602	1-126-177-11	ELECT	100uF 20% 10V
C603	1-164-159-11	CERAMIC	0.1uF 50V
C604	1-164-159-11	CERAMIC	0.1uF 50V
C605	1-162-306-11	CERAMIC	0.01uF 20% 16V
C606	1-162-282-31	CERAMIC	100PF 10% 50V
C607	1-164-159-11	CERAMIC	0.1uF 50V
C608	1-164-159-11	CERAMIC	0.1uF 50V
C609	1-162-282-31	CERAMIC	100PF 10% 50V
C610	1-162-282-31	CERAMIC	100PF 10% 50V
C611	1-162-282-31	CERAMIC	100PF 10% 50V
C617	1-136-176-00	FILM	0.82uF 5% 50V
C618	1-136-171-00	FILM	0.33uF 5% 50V
C621	1-162-288-31	CERAMIC	330PF 10% 50V
C622	1-162-282-31	CERAMIC	100PF 10% 50V
C623	1-162-282-31	CERAMIC	100PF 10% 50V
C624	1-162-282-31	CERAMIC	100PF 10% 50V
C625	1-162-282-31	CERAMIC	100PF 10% 50V
C626	1-162-282-31	CERAMIC	100PF 10% 50V
C627	1-162-282-31	CERAMIC	100PF 10% 50V
C628	1-162-282-31	CERAMIC	100PF 10% 50V

PANEL

TRAY MOTOR

U/D MOTOR

Ref. No.	Part No.	Description	Remark
C629	1-162-282-31	CERAMIC 100PF 10% 50V	
C630	1-162-282-31	CERAMIC 100PF 10% 50V	
C631	1-162-282-31	CERAMIC 100PF 10% 50V	
C632	1-162-282-31	CERAMIC 100PF 10% 50V	
C633	1-162-282-31	CERAMIC 100PF 10% 50V	
C634	1-162-282-31	CERAMIC 100PF 10% 50V	
C635	1-162-282-31	CERAMIC 100PF 10% 50V	
C641	1-164-159-11	CERAMIC 0.1uF 50V	
< CONNECTOR >			
* CN601	1-568-836-11	SOCKET, CONNECTOR 17P	
CN602	1-770-514-31	CONNECTOR, FFC/FPC 5P	
< LED >			
D641	8-719-056-13	LED SML79423C-TP15 (CD 1, SELECT/STOCK)	
D642	8-719-056-13	LED SML79423C-TP15 (CD 2, SELECT/STOCK)	
D643	8-719-056-13	LED SML79423C-TP15 (CD 3, SELECT/STOCK)	
D644	8-719-056-13	LED SML79423C-TP15 (▷◻◻)	
D645	8-719-046-43	LED SEL5421E-TP15 (CONTINUE)	
D646	8-719-046-43	LED SEL5421E-TP15 (SHUFFLE)	
D647	8-719-046-43	LED SEL5421E-TP15 (PROGRAM)	
< FLUORESCENT INDICATOR TUBE >			
FL601	1-517-707-11	INDICATOR TUBE, FLUORESCENT	
< IC >			
IC601	8-759-297-23	IC M66004M8FP	
IC602	8-759-183-47	IC M66310FP	
< COIL >			
L601	1-410-521-11	INDUCTOR 100uH	
< RESISTOR >			
R601	1-247-807-31	CARBON 100 5% 1/4W	
R602	1-247-807-31	CARBON 100 5% 1/4W	
R603	1-247-807-31	CARBON 100 5% 1/4W	
R604	1-247-807-31	CARBON 100 5% 1/4W	
R605	1-247-807-31	CARBON 100 5% 1/4W	
R606	1-249-432-11	CARBON 18K 5% 1/4W	
R612	1-249-413-11	CARBON 470 5% 1/4W	
R613	1-249-415-11	CARBON 680 5% 1/4W	
R614	1-249-417-11	CARBON 1K 5% 1/4W	
R615	1-249-419-11	CARBON 1.5K 5% 1/4W	
R616	1-249-421-11	CARBON 2.2K 5% 1/4W	
R617	1-249-425-11	CARBON 4.7K 5% 1/4W	
R618	1-249-430-11	CARBON 12K 5% 1/4W	
R622	1-249-413-11	CARBON 470 5% 1/4W	
R623	1-249-415-11	CARBON 680 5% 1/4W	
R624	1-249-417-11	CARBON 1K 5% 1/4W	
R625	1-249-419-11	CARBON 1.5K 5% 1/4W	
R626	1-249-421-11	CARBON 2.2K 5% 1/4W	
R627	1-249-425-11	CARBON 4.7K 5% 1/4W	
R628	1-249-430-11	CARBON 12K 5% 1/4W	
R632	1-249-413-11	CARBON 470 5% 1/4W	

Ref. No.	Part No.	Description	Remark
R633	1-249-415-11	CARBON 680 5% 1/4W	
R634	1-249-417-11	CARBON 1K 5% 1/4W	
R635	1-249-419-11	CARBON 1.5K 5% 1/4W	
R636	1-249-421-11	CARBON 2.2K 5% 1/4W	
R637	1-249-425-11	CARBON 4.7K 5% 1/4W	
R638	1-249-430-11	CARBON 12K 5% 1/4W	
R641	1-249-409-11	CARBON 220 5% 1/4W	
R642	1-249-409-11	CARBON 220 5% 1/4W	
R643	1-249-409-11	CARBON 220 5% 1/4W	
R644	1-249-409-11	CARBON 220 5% 1/4W	
R645	1-249-407-11	CARBON 150 5% 1/4W	
R647	1-249-409-11	CARBON 220 5% 1/4W	
R648	1-249-409-11	CARBON 220 5% 1/4W	
R649	1-249-409-11	CARBON 220 5% 1/4W	
R651	1-249-407-11	CARBON 150 5% 1/4W	
R652	1-249-407-11	CARBON 150 5% 1/4W	
R653	1-249-407-11	CARBON 150 5% 1/4W	
R654	1-249-407-11	CARBON 150 5% 1/4W	
R671	1-249-429-11	CARBON 10K 5% 1/4W	
< SWITCH >			
S611	1-762-875-21	SWITCH, KEYBOARD (CD 1)	
S612	1-762-875-21	SWITCH, KEYBOARD (CD 2)	
S613	1-762-875-21	SWITCH, KEYBOARD (CD 3)	
S616	1-762-875-21	SWITCH, KEYBOARD (REPEAT)	
S618	1-762-875-21	SWITCH, KEYBOARD (CLEAR)	
S621	1-762-875-21	SWITCH, KEYBOARD (△, CD 1)	
S622	1-762-875-21	SWITCH, KEYBOARD (△, CD 2)	
S623	1-762-875-21	SWITCH, KEYBOARD (△, CD 3)	
S626	1-762-875-21	SWITCH, KEYBOARD (MENU/NO)	
S627	1-762-875-21	SWITCH, KEYBOARD (ENTER/YES)	
S628	1-762-875-21	SWITCH, KEYBOARD (DISC SKIP)	
S631	1-762-875-21	SWITCH, KEYBOARD (▷◻◻)	
S632	1-762-875-21	SWITCH, KEYBOARD (■)	
S633	1-762-875-21	SWITCH, KEYBOARD (◀◀ ←)	
S634	1-762-875-21	SWITCH, KEYBOARD (▶▶ →)	
S635	1-762-875-21	SWITCH, KEYBOARD (DISPLAY)	
S636	1-762-875-21	SWITCH, KEYBOARD (CONTINUE)	
S637	1-762-875-21	SWITCH, KEYBOARD (SHUFFLE)	
S638	1-762-875-21	SWITCH, KEYBOARD (PROGRAM)	
S661	1-475-421-11	ENCODER, ROTARY (I◀◀ SELECTOR ▶▶I)	
S671	1-572-126-11	SWITCH, PUSH (1 KEY) (DOOR CLOSE DETECT)	

* 1-651-391-11	TRAY MOTOR BOARD	*****	
< CAPACITOR >			
C502	1-164-159-11	CERAMIC 0.1uF 50V	

* 1-651-396-11	U/D MOTOR BOARD	*****	
< CAPACITOR >			
C501	1-164-159-11	CERAMIC 0.1uF 50V	

Ref. No.	Part No.	Description	Remark
MISCELLANEOUS			

16	1-783-102-11	WIRE (FLAT TYPE) (5 CORE)	
17	1-783-104-11	WIRE (FLAT TYPE) (17 CORE)	
18	1-783-105-11	WIRE (FLAT TYPE) (23 CORE)	
19	1-783-103-11	WIRE (FLAT TYPE) (11 CORE)	
119	1-452-719-11	MAGNET ASSY	
△ 151	8-848-379-31	OPTICAL PICK-UP KSS-213BA/F-NP	
152	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)	
M101	X-4917-523-4	MOTOR ASSY (SPINDLE)	
M102	X-4917-504-1	MOTOR ASSY (SLED)	
M501	X-4949-299-1	MOTOR ASSY (CDM48 U/D)	
		(ELEVATOR UP/DOWN)	
M502	X-4944-463-1	MOTOR ASSY (LOADING)	

HARDWARE LIST			

#1	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	
#2	7-685-871-01	SCREW +BVTT 3X6 (S)	
#3	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#4	7-621-775-00	SCREW +B 2.6X3	
#5	7-621-773-86	SCREW +B 2.6X4	
#6	7-685-534-14	SCREW +BTP 2.6X8 TYPE2 N-S	
#7	7-621-255-15	SCREW +P 2X3	

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