

CDP-C450Z/CE505

SERVICE MANUAL

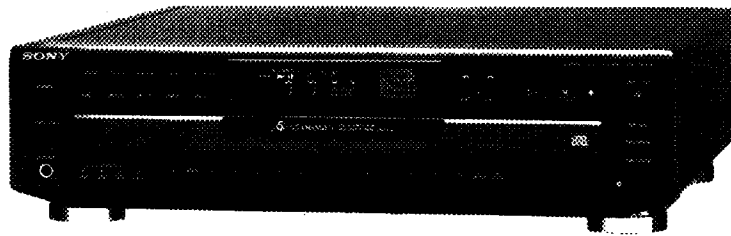


Photo : CDP-CE505

US Model
CDP-C450Z/CE505
Canadian Model
AEP Model
E Model
Australian Model
Chinese Model
CDP-CE505

Model Name Using Similar Mechanism	CDP-C250Z/C350Z/CE305/CE405
CD Mechanism Type	CDM27A2-5BD20
Base Unit Type	BU-5BD20
Optical Pick-up Type	KSS-213B/K-N

SPECIFICATIONS

Compact Disc Player

Laser	Semiconductor laser ($\lambda = 780 \text{ nm}$)
	Emission duration: continuous
Laser output	Max 44.6 μW *
	*This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up block with 7 mm aperture.
Frequency response	2 Hz to 20 kHz $\pm 0.5 \text{ dB}$
Signal-to-noise ratio	More than 107 dB
Dynamic range	More the 98 dB
Harmonic distortion	Less than 0.0035%
Channel separation	More than 100 dB

Output

	Jack type	Maximum output level	Load impedance
LINE OUT	Phono jacks	2V (at 50 kilohms)	Over 10 kilohms
DIGITAL OUT (OPTICAL)	Optical output connector	-18dBm	Wave length : 660nm
PHONES	Stereo phone jack	10mW	32 ohms

General

Power requirements

Where purchased	Power requirements
US, Canadian	120V AC, 60 Hz
AEP, German	220-230V AC, 50/60 Hz
Australian	240V AC, 50/60 Hz
E	110-120V, 220-240V adjustable, 50/60 Hz
Chinese	220-240V AC, 50 Hz

Power consumption	14W
Dimensions (approx.) (w/h/d)	430 $\times$ 120 $\times$ 385 mm (17 $\times$ 4 3/4 $\times$ 15 1/4 in.) incl. projecting parts
Mass (approx.)	5.6 kg (12 lbs 6 oz)

Supplied accessories

Audio cord (2 phono plugs-2 phono plugs) (1)
Remote commander (remote)
Sony SUM-3 (NS) batteries
AC plug adaptor (1) (E model only)

Design and specifications are subject to change without notice.



COMPACT DISC PLAYER
SONY®

CAUTION

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

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

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

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

CAUTION	: INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
ADVARSEL	: USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSÅFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARO!	: AVIETTÄSSÄ JA SUOJALUKITUS OHITETTÄESSÄ OLET ALTIINA LASERSÄTELYLLE.
VARNING	: LASERSTRÅLING NÅR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD.
ADVARSEL	: USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNER UENINGA EKSPONERING FOR STRÅLEN.

This caution label is located inside the unit.

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.

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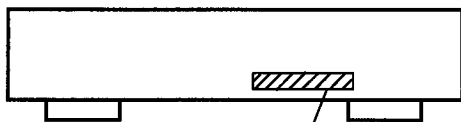
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ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

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.

MODEL IDENTIFICATION

— BACK PANEL —



4-978-488-1□: CDP-C450Z
4-979-363-0□: CDP-CE505 (US model)
4-979-363-1□: CDP-CE505 (Canadian model)
4-979-363-2□: CDP-CE505 (AEP, German model)
4-979-363-3□: CDP-CE505 (Australian model)
4-979-363-4□: CDP-CE505 (E model)
4-979-363-5□: CDP-CE505 (Chinese model)

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

The laser diode in the optical pick-up block may suffer electrostatic breakdown because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.

During repair, pay attention to electrostatic breakdown 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.

SAFETY CHECK-OUT

(US model only)

After correcting the original service problem, perform the following safety checks 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 2V AC range are suitable. (See Fig. A)

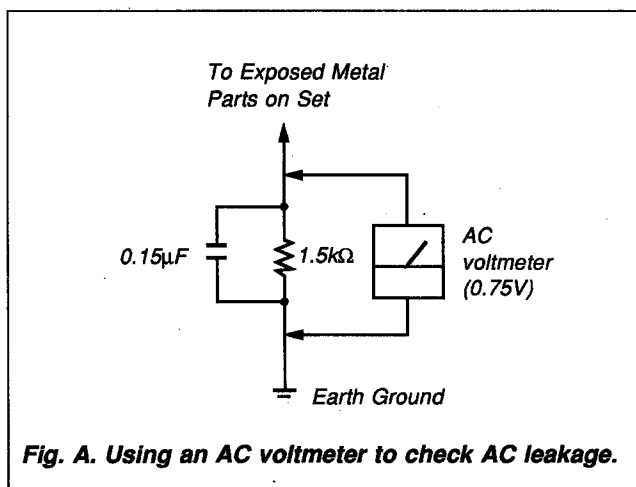
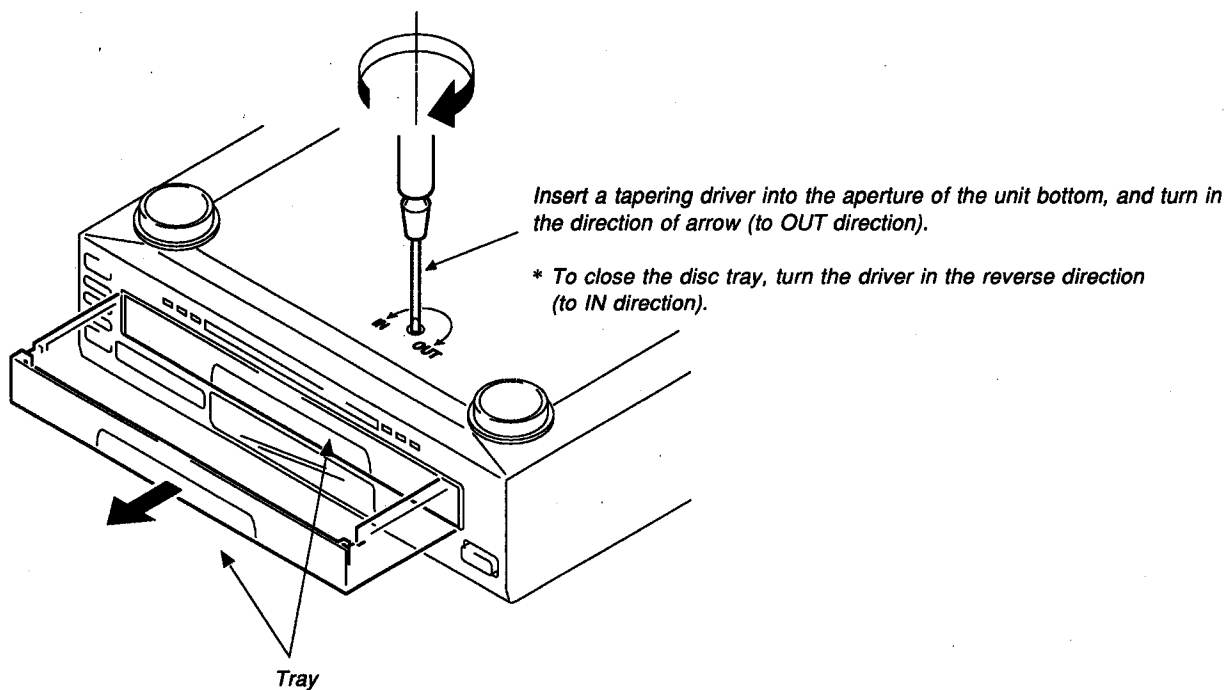


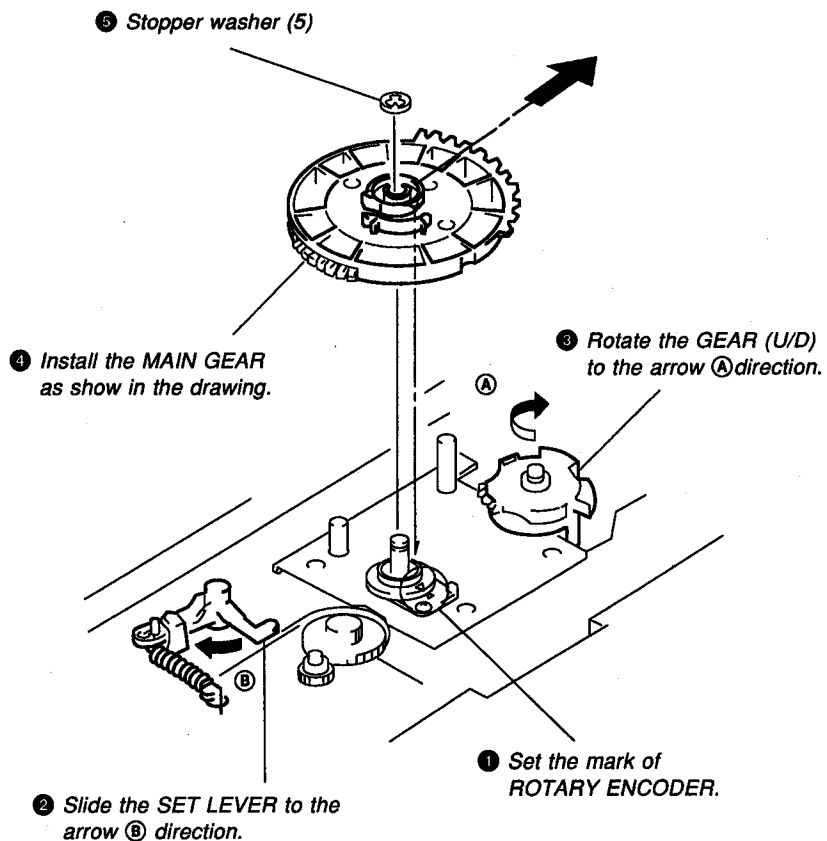
Fig. A. Using an AC voltmeter to check AC leakage.

SECTION 1 SERVICE NOTE

HOW TO OPEN THE DISC TRAY WHEN POWER SWITCH TURNS OFF



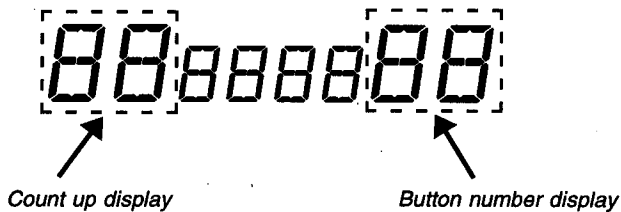
NOTE FOR MAIN GEAR INSTALLATION



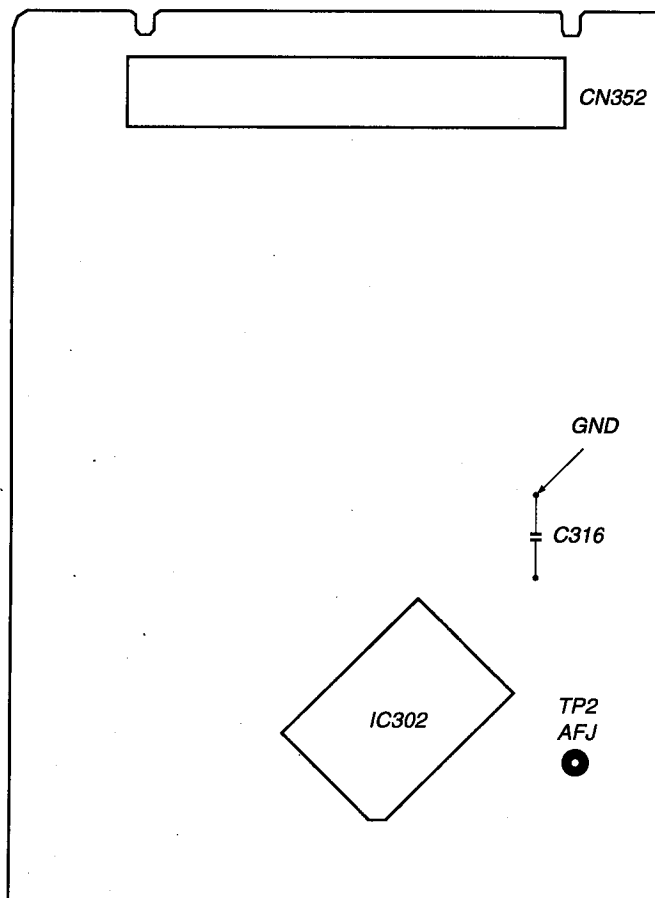
TEST MODE

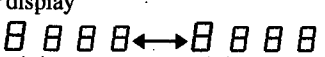
[Fluorescent Indicator Tube Full Lighting and Key Check Mode]

1. Connect the test point TP2 (AFJ) of the main board to GND.
2. Turn on the power switch.
3. The fluorescent indicator tubes will light up fully.
4. Set the key check mode by pressing any button.
In the key check mode, each time a button is pressed, the count up display will count up. However, the display will not count up for buttons that have already been pressed once.
The number of the button pressed will be displayed in the indicator, only while the button is being pressed.
5. To exit the test mode, disconnect the power plug from the outlet.



[MAIN BOARD] (Conductor Side)



Button	Button number display																				
1	06																				
2	32																				
3	31																				
4	30																				
5	29																				
6	28																				
7	27																				
8	00																				
9	01																				
10	02																				
>10	03																				
EDIT/TIME FADE	04																				
PEAK SEARCH	05																				
DISC CHECK	34																				
EX-CHANGE	33																				
DISC SKIP	36																				
OPEN/CLOSE 	37																				
	44																				
	43																				
AMS 	41																				
AMS 	42																				
REPEAT	14																				
CLEAR	13																				
CHECK	12																				
PROGRAM	11																				
SHUFFLE	10																				
CONTINUE	09																				
DISC 1	19																				
DISC 2	20																				
DISC 3	17																				
DISC 4	16																				
DISC 5	15																				
MUSIC CLIP A	21																				
MUSIC CLIP B	22																				
MUSIC CLIP C	23																				
MUSIC CLIP D	24																				
FILE	25																				
ERASE	26																				
TIME	18																				
	Fluorescent indicator fully lit.																				
	Even and odd numbers of music calendar light up alternately <table><tr><td>1</td><td>3</td><td>5</td><td>2</td><td>4</td></tr><tr><td>7</td><td>9</td><td>6</td><td>8</td><td>10</td></tr><tr><td>11</td><td>13</td><td>15</td><td>12</td><td>14</td></tr><tr><td>17</td><td>19</td><td>16</td><td>18</td><td>20</td></tr></table>	1	3	5	2	4	7	9	6	8	10	11	13	15	12	14	17	19	16	18	20
1	3	5	2	4																	
7	9	6	8	10																	
11	13	15	12	14																	
17	19	16	18	20																	
	Alternate lighting on 7-segment display 																				

SECTION 2 GENERAL

Identifying the Parts

Front Panel

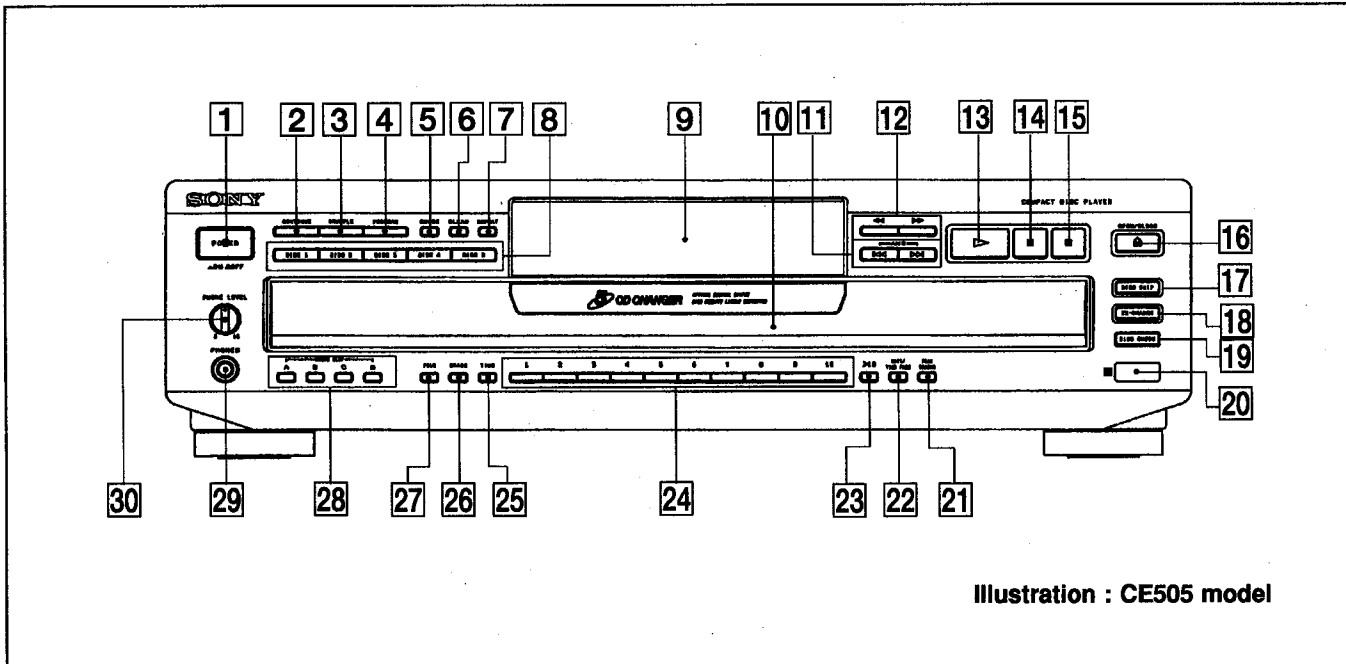


Illustration : CE505 model

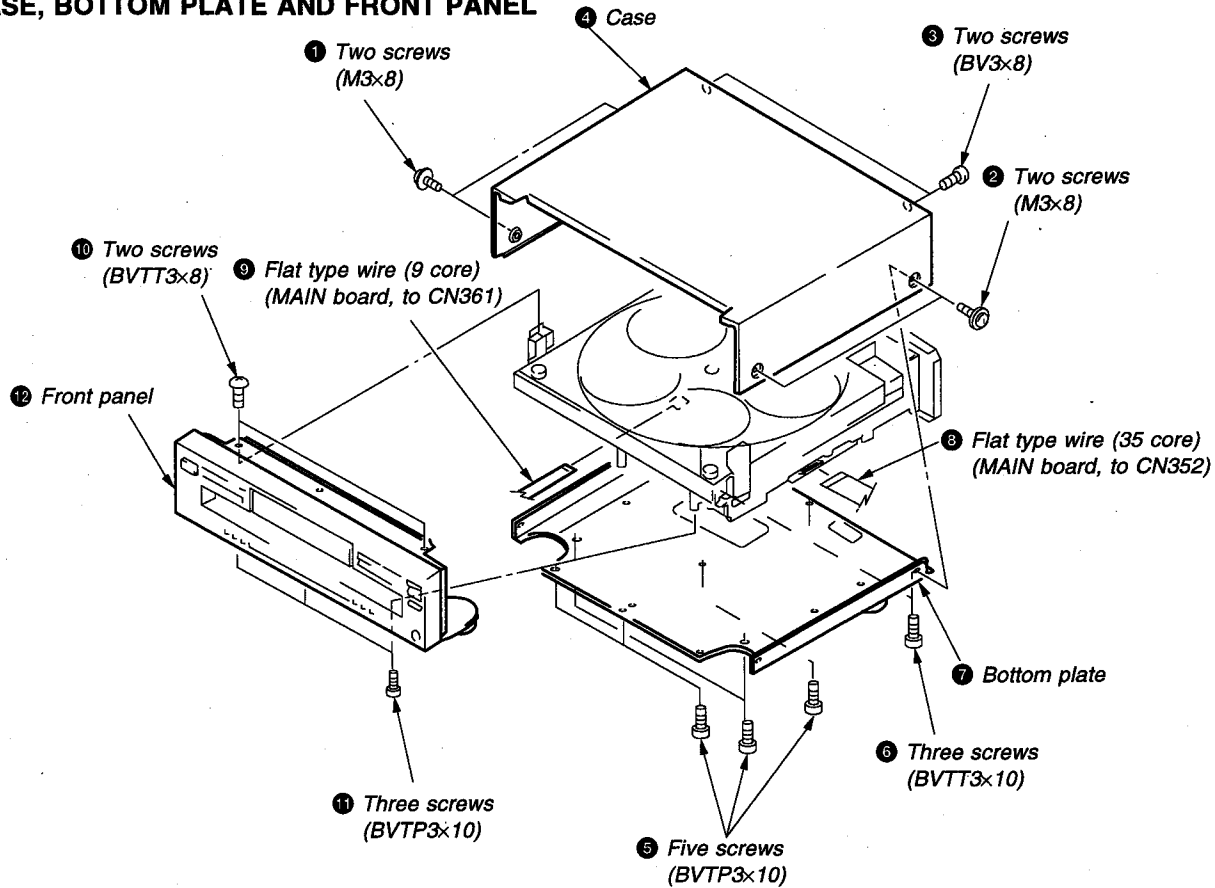
- | | |
|--|---|
| 1 POWER switch | 16 $\triangle$ OPEN/CLOSE button |
| 2 CONTINUE button | 17 DISC SKIP button |
| 3 SHUFFLE button | 18 EX-CHANGE button |
| 4 PROGRAM button | 19 DISC CHECK button (CDP-CE505 only) |
| 5 CHECK button | 20 Remote sensor |
| 6 CLEAR button | 21 PEAK SEARCH button (CDP-CE505 only) |
| 7 REPEAT button | 22 EDIT/TIME FADE button (CDP-CE505 only) |
| 8 DISC 1-5 buttons | 23 >10 (over 10) button |
| 9 Display window | 24 Numeric (1-10) buttons |
| 10 Disc tray | 25 TIME button |
| 11 $\ll\ll/\gg\gg$ (AMS*) buttons | 26 ERASE button |
| 12 $\ll\ll/\gg\gg$ (manual search) buttons | 27 FILE button |
| 13 $\triangleright$ (play) button | 28 MUSIC CLIP button |
| 14 $\parallel$ (pause) button | 29 PHONES jack |
| 15 $\blacksquare$ (stop) button | 30 PHONES LEVEL control |

* AMS is the abbreviation for Automatic Music Sensor.

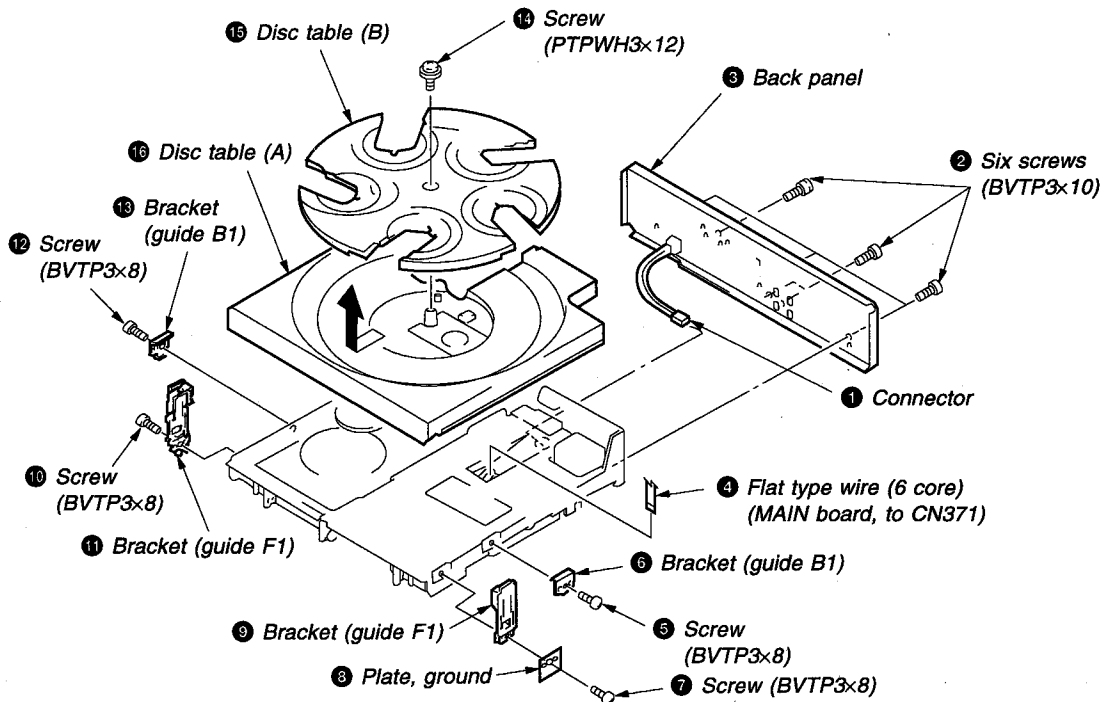
SECTION 3 DISASSEMBLY

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

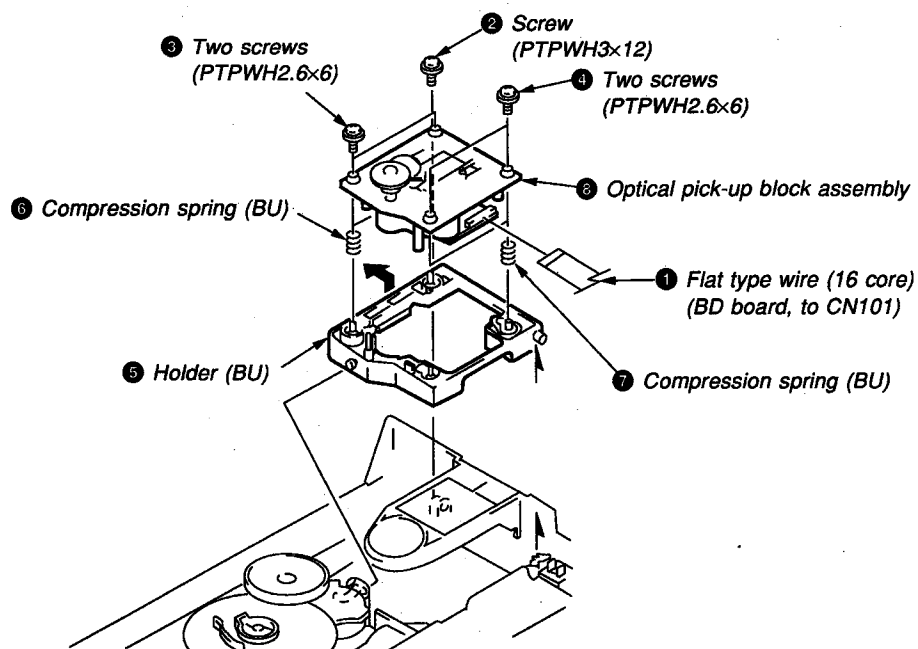
3-1. CASE, BOTTOM PLATE AND FRONT PANEL



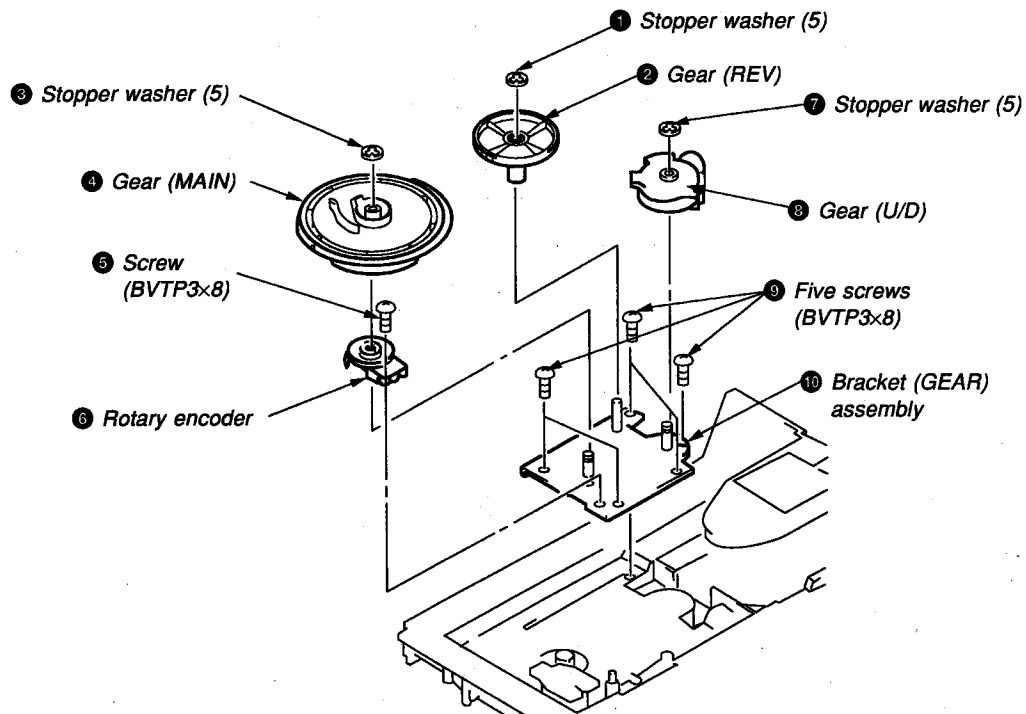
3-2. BACK PANEL AND DISC TABLE



3-3. OPTICAL PICK-UP BLOCK ASSEMBLY



3-4. BRACKET (GEAR) ASSEMBLY



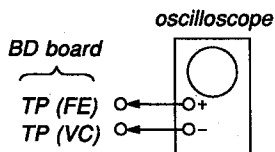
Note : As for the installation of the main gear, refer to "Note for MAIN GAER installation" on page 4.

SECTION 4 ELECTRICAL BLOCK CHECKING

Note :

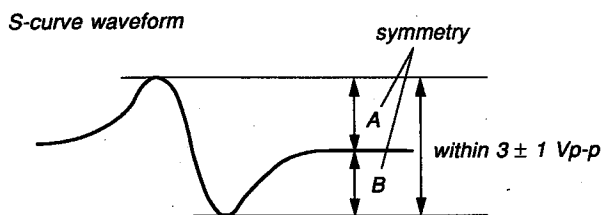
1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than $10M\Omega$ impedance.
4. Clean the object lens using an applicator with neutral detergent when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

S Curve Check



Procedure :

1. Connect oscilloscope to test point TP (FE) on BD board.
2. Connect between test point TP (FEI) and TP (VC) by lead wire.
3. Turn Power switch on.
4. Put disc (YEDS-18) in and turn Power switch on again and actuate the focus search. (actuate the focus search when disc table is moving in and out.)
5. Check if the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3 ± 1 Vp-p.

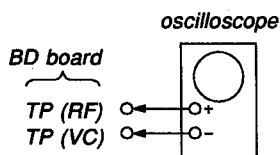


6. After check, remove the lead wire connected in step 2.

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

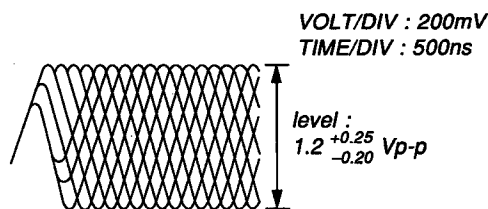


Procedure :

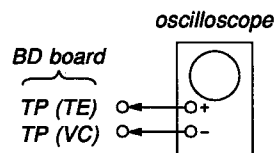
1. Connect oscilloscope to test point TP (RF) on BD board.
2. Turned Power switch on.
3. Put disc (YEDS-18) in to play the number five track.
4. Confirm that oscilloscope waveform is clear and check if RF signal level is correct or not.

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

RF signal waveform



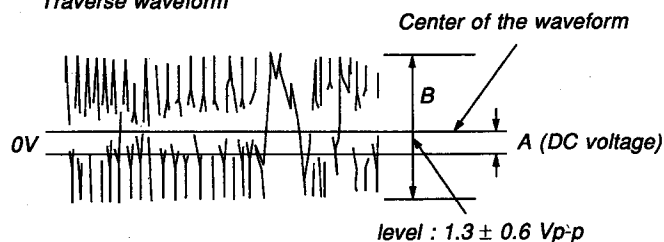
E-F Balance Check



Procedure :

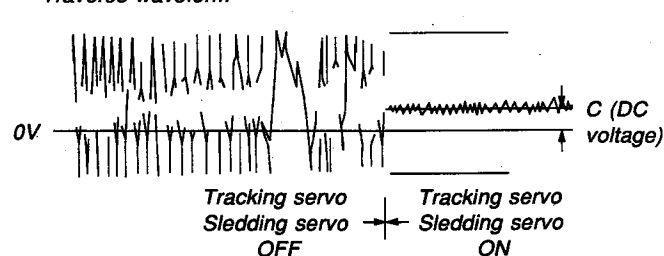
1. Connect test point TP1 (ADJ) to ground with a lead wire on MAIN board.
2. Connect oscilloscope to test point TP (TE) on BD board.
3. Turned Power switch on.
4. Put disc (YEDS-18) in to play the number five track.
5. Press the "3" button. (The tracking servo and the sledding servo are turned OFF.)
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 "8" button. (The tracking servo and sledding 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 F
Procedure
1. Connect

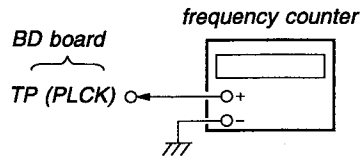
2. Turned
3. Put the
Confirm

[MAIN B

RF PLL Free-run Frequency Check

Procedure :

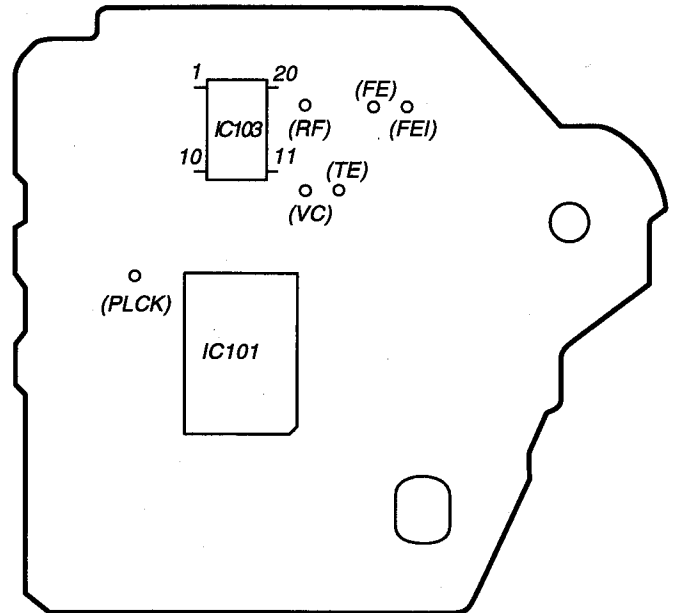
1. Connect frequency counter to test point (PLCK) with lead wire.



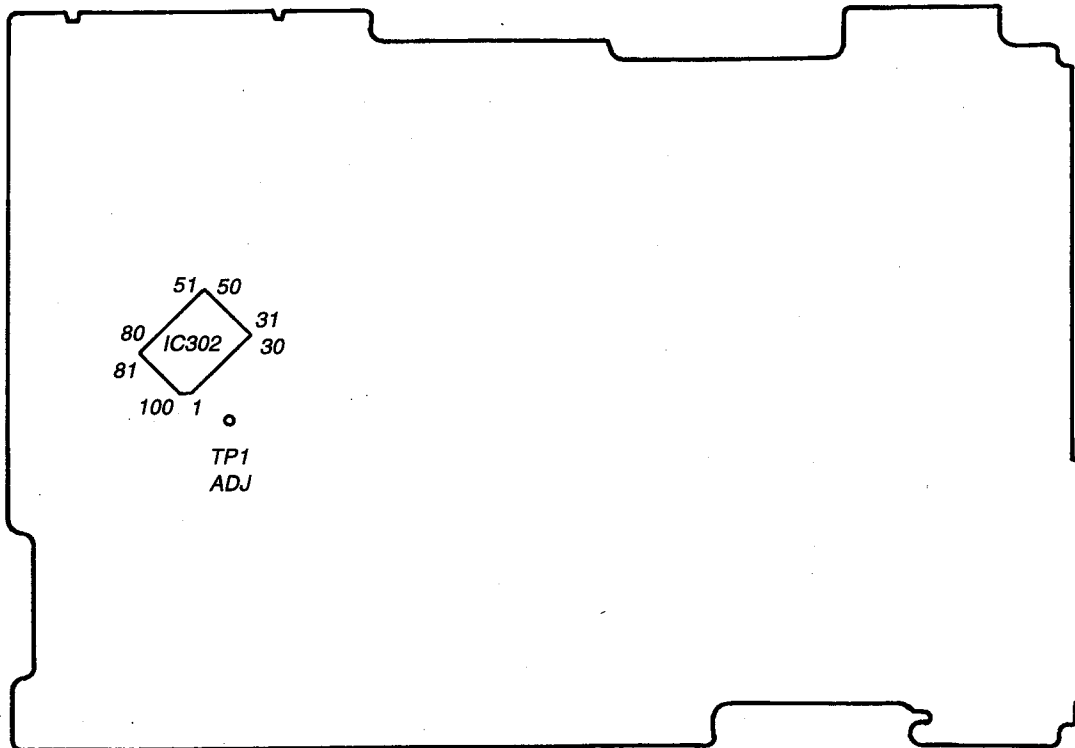
2. Turned Power switch on.
3. Put the disc (YEDS-18) in to play the number five track.
Confirm that reading on frequency counter is 4.3218MHz.

Adjustment Location :

[BD BOARD] — Conductor Side —



[MAIN BOARD] — Conductor Side —



SECTION 5 DIAGRAMS

5-1. IC PIN FUNCTIONS

• IC101 DIGITAL SIGNAL PROCESSOR (CXD2545Q)

Pin No.	Pin Name	I/O	Function
1	SRON	O	Sled drive output (Not used)
2	SRDR	O	Sled drive output
3	SFON	O	Sled drive output (Not used)
4	TFDR	O	Tracking drive output
5	TRON	O	Tracking drive output (Not used)
6	TRDR	O	Tracking drive output
7	TFON	O	Tracking drive output (Not used)
8	FFDR	O	Focus drive output
9	FRON	O	Focus drive output (Not used)
10	FRDR	O	Focus drive output
11	FFON	O	Focus drive output (Not used)
12	VCOO	O	VCO output for analog EFM PLL (Not used)
13	VCOI	I	VCO output for analog EFM PLL (Ground)
14	TEST	I	TEST pin connected normally to Ground
15	DVss	—	Digital Ground
16	TES2	I	TEST pin connected normally to Ground
17	TES3	I	TEST pin connected normally to Ground
18	PDO	O	Charge-pump output for analog EFM PLL (Not used)
19	VPCO	O	Charge-pump output for variable pitch PLL (Not used)
20	VCKI	I	Clock input from variable pitch external VCO (Ground)
21	AVD2	—	Analog power supply
22	IGEN	I	Power supply pin for operational amplifiers
23	AVS2	—	Analog Ground
24	ADIO	I	(Not used)
25	RFC	O	(Not used)
26	RFDC	I	RF signal input
27	TE	I	Tracking error signal input
28	SE	I	Sled error signal input
29	FE	I	Focus error signal input
30	VC	I	Center voltage input pin
31	FILO	O	Filter output for master PLL
32	FILI	I	Filter input for master PLL
33	PCO	O	Charge-pump output for master PLL
34	CLTV	I	Control voltage input for master VCO
35	AVS1	—	Analog Ground
36	RFAC	I	EFM signal input
37	BIAS	I	Asymmetry circuit constant current input
38	ASYI	I	Asymmetry compare voltage input
39	ASYO	O	EFM full swing output
40	AVD1	—	Analog power supply

• Abbreviation

EFM: Eight to Fourteen Modulation

PLL: Phase Locked Loop

Pin No.	
41	I
42	A
43	I
44	V
45	I
46	I
47	I
48	C
49	C
50	C
51	C
52	Z
53	Z
54	C
55	I
56	C
57	Z
58	
59	
60	
61	
62	
63	
64	
65	
66	
67	
68	
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80	

• Abbreviation

WFCK: W

Pin No.	Pin Name	I/O	Function
41	DVDD	–	Digital power supply
42	ASYE	I	Asymmetry circuit ON/OFF
43	PSSL	I	Audio data output mode selection input
44	WDCK	O	48-bit slot D/A interface. Word clock.
45	LRCK	O	48-bit slot D/A interface. LR clock.
46	DATA	O	DA 16 output when PSSL=1.48-bit slot serial data when PSSL=0
47	BCLK	O	DA 15 output when PSSL=1.48-bit slot data when PSSL=0
48	64DATA	O	DA 14 output when PSSL=1.64-bit slot data when PSSL=0 (Not used)
49	64BCLK	O	DA 13 output when PSSL=1.64-bit slot data when PSSL=0 (Not used)
50	64LRCK	O	DA 12 output when PSSL=1.64-bit slot data when PSSL=0 (Not used)
51	GTOP	O	DA 11 output when PSSL=1.GTOP output when PSSL=0 (Not used)
52	XUGF	O	DA 10 output when PSSL=1.XUGF output when PSSL=0 (Not used)
53	XPLCK	O	DA 09 output when PSSL=1.XPLCK output when PSSL=0
54	GFS	O	DA 08 output when PSSL=1.GFS output when PSSL=0
55	PFCK	O	DA 07 output when PSSL=1.RFCK output when PSSL=0
56	C2PO	O	DA 06 output when PSSL=1.C2PO output when PSSL=0 (Not used)
57	XRAOF	O	DA 05 output when PSSL=1.XRAOF output when PSSL=0
58	MNT3	O	DA 04 output when PSSL=1.MNT3 output when PSSL=0
59	MNT2	O	DA 03 output when PSSL=1.MNT2 output when PSSL=0
60	MNT1	O	DA 02 output when PSSL=1.MNT1 output when PSSL=0
61	MNT0	O	DA 01 output when PSSL=1.MNT0 output when PSSL=0
62	XTAI	I	X'tal oscillator circuit input
63	XTAO	O	X'tal oscillator circuit output (Not used)
64	XTSL	I	X'tal selection input pin (Ground)
65	DVss	–	Digital Ground
66	FSTI	I	2/3 divider output of pins 62, 63
67	FSTO	O	2/3 divider output of pins 62, 63
68	FSOF	O	(Not used)
69	C16M	O	16.9344 MHz output (Not used)
70	MD2	I	Digital-out ON/OFF control pin (+5V)
71	DOUT	O	Digital-out output pin
72	EMPH	O	Playback disc output in emphasis mode (Not used)
73	WFCK	O	WFCK output
74	SCOR	O	Sub-code sync output
75	SBSO	O	Sub-P through Sub-W serial output (Not used)
76	EXCK	I	Clock input for SBS0 read-out (Ground)
77	SUBQ	O	Sub-Q 80-bit output
78	SQCK	I	Muting selection pin
79	MUTE	I	SENS output
80	SENS	O	System reset

- Abbreviation
WFCK: Wirte Frame Check

Pin No.	Pin Name	I/O	Function
81	XRST	I	System reset
82	DIRC	I	Used in 1-track jump mode (+5v)
83	SCLK	I	SENS serial data read-out clock
84	DFSW	I	Defect selection pin (Ground)
85	ATSK	I	Input pin for anti-shock (Ground)
86	DATA	I	Serial data input, supplied from CPU
87	XLAT	I	Latch input, supplied from CPU
88	CLOCK	I	Serial data transfer clock input, supplied from CPU
89	COUT	O	Numbers of track counted signal output (Not used)
90	DVDD	–	Digital power supply
91	MIRR	O	Mirror signal output
92	DFCT	O	Defect signal output
93	FOK	O	Focus OK output
94	FSW	O	Output to select spindle motor output filter (Not used)
95	MON	O	Output to control ON/OFF of spindle motor (Not used)
96	NDP	O	Output to control spindle motor servo
97	MDS	O	Output to control spindle motor servo (Not used)
98	LOCK	O	GFS is sampled by 460 Hz. H when GFS is H (Not used)
99	SSTP	I	Input signal to detect disc inner most track
100	SFDR	O	Sled drive output

- Abbreviation
GFS: Guard Frame Sync

• IC302 SYSTEM CONTROL (CXP82224-042Q)

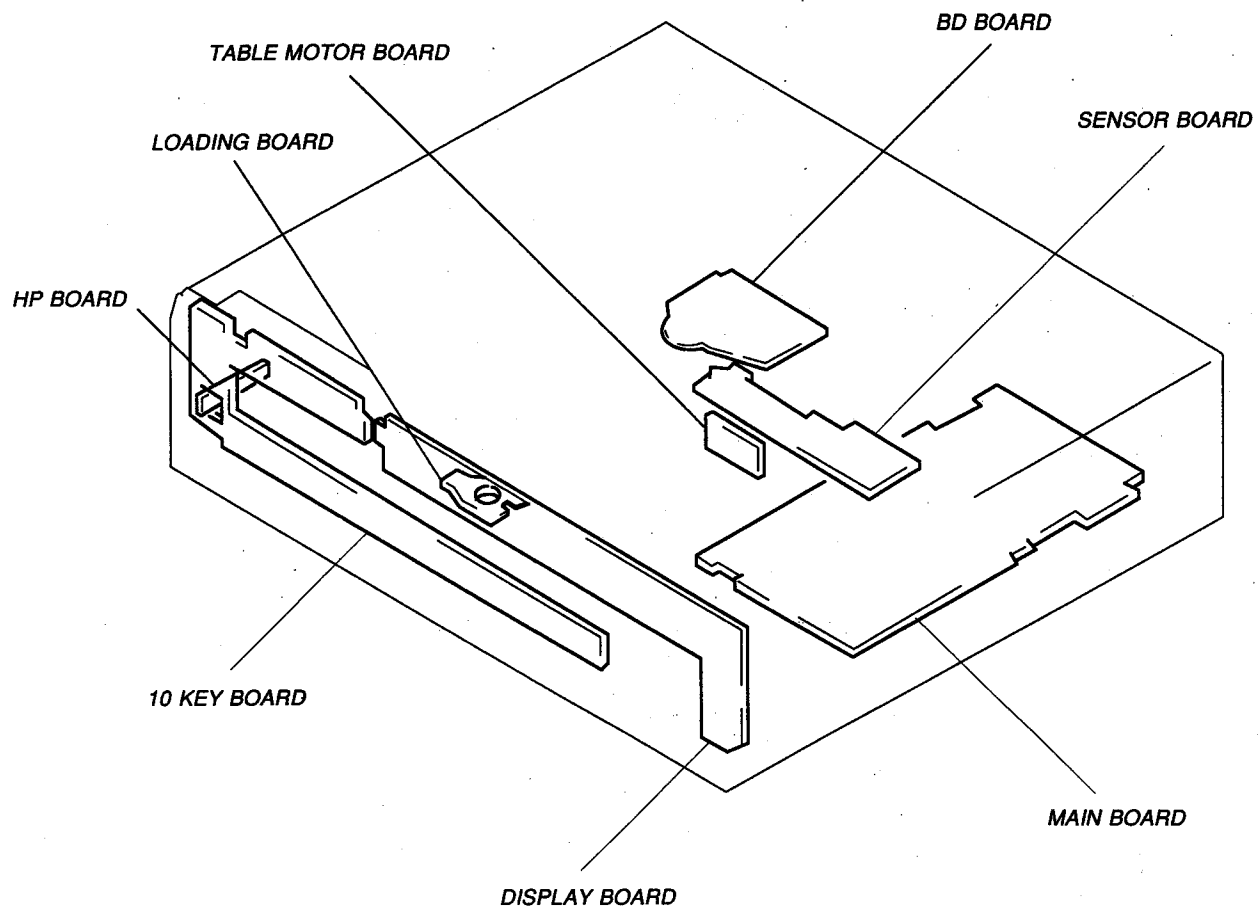
Pin No.	Pin Name	I/O	Function
1	SENSE	I	SENSE signal input pin.
2	SCOR	I	Subcode Q data readout timing signal input pin.
3	BSIN	I	Control A signal input pin.
4	RM IN	I	Remote control signal input pin.
5	ADJ	I	Test mode pin. Normally: "H"
6	XLT	O	Serial data latch signal output pin.
7	LDON	O	Optical pick-up laser diode control pin. ON: "H"
8	T.SENS	I	Slit sensor of disc table input pin.
9	PRGL	O	Latch signal output pin to digital filter IC.
10	CLK	O	Serial clock output pin to BD.
11	A MUTE	O	Analog muting control signal output pin.
12	DATA	O	Serial data output pin.
13	SQCK	O	Subcode Q data readout clock output pin.
14	SUBQ	I	Subcode Q data input pin.
15	SCLK	O	Internal register of SSP/DSP readout clock output pin.
16 to 19	LED A to D	O	LED drive signal output pin.
20	BSOUT	I	Control A signal output pin.
21	WE	O	Read/write timing output pin.
22	A12	O	S-RAM address control output pin.
23	AFADJ	—	Test mode pin. Normally: "H"
24 to 26	S1 to S3	—	Loading encoder input pin.
27	FB. MODE	I	Disc table feeling and stop precision fine adjustment pin.
28	LDOUT	O	} Loading motor control pin.
29	LDIN	O	
30	TBLR	O	} Table motor control pin.
31	TBLL	O	
32 to 36	KEY1 to KEY5	I	Key input pin. (A/D)
37	P. MODE	I	Not used.
38	RST	I	Reset signal input pin.
39	EXTAL	I	10MHz clock input pin.
40	XTAL	O	10MHz clock output pin.
41	Vss	—	Ground
42	TX	—	} Not used.
43	TEX	—	
44	V-LEVEL	I	Volume level input pin. (Not used.)
45	—	—	Not used.
46	AVREF	I	Reference voltage input pin of A/D conversion.
47	AVss	—	Ground
48 to 59	A0 to A11	O	S-RAM address control output pin.
60 to 79	S1 to S20	O	FL segment output pin.

• Abbreviation

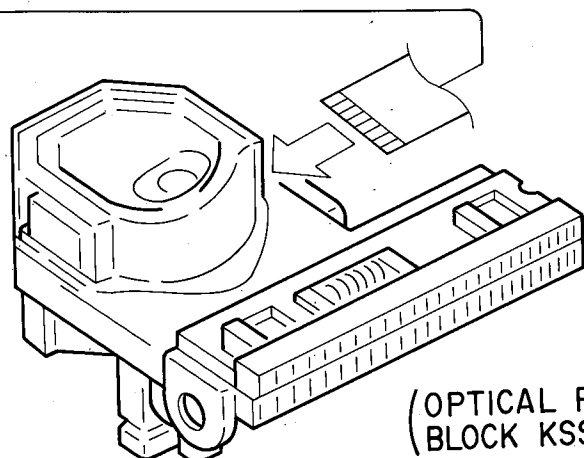
FL: Fluorescent indicator tube

Pin No.
80 to 8
88
89
90
91
92 to 9
100

5-2. CIRCUIT BOARDS LOCATION



- See page 16 for Circuit Boards Location.



(OPTICAL PICK-UP
BLOCK KSS-213B/K-N)

Ref. No.	Location
IC101	C-2
IC102	C-7
IC103	B-2
Q101	A-8

-  : parts extracted from the component side.
-  : parts extracted from the conductor side.
-  : Through hole.
-  : Pattern from the side which enable seeing.
(The other layer's patterns are not indicated.)

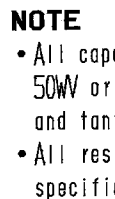


DIAGRAM — BD SECTION —
for IC Pin Functions. (IC101)
for IC Block Diagrams.

2

3

4

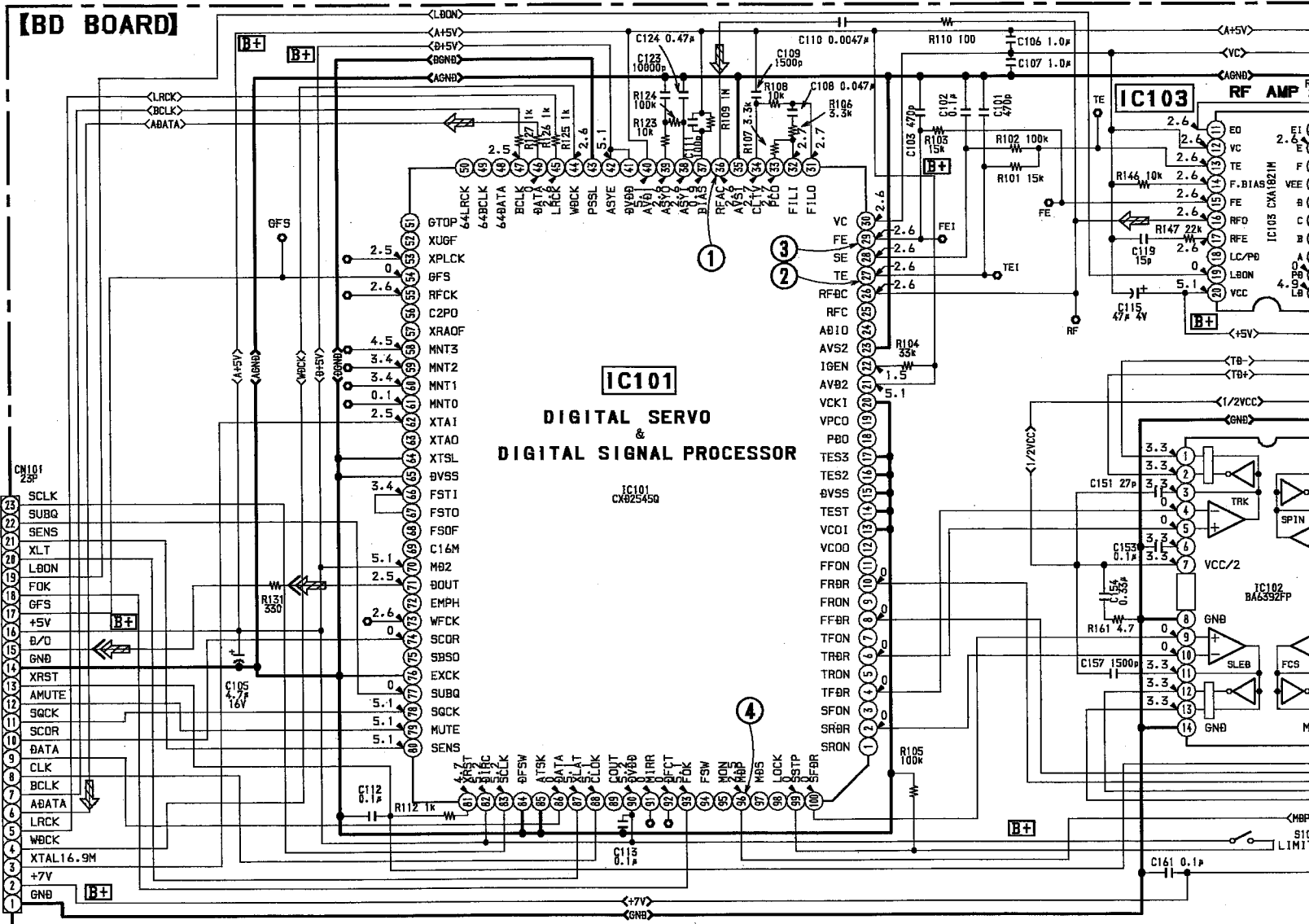
5

6

7

8

[BD BOARD]



NOTE

- All capacitors are in μF unless otherwise noted. $\text{pF}:\mu\text{F}$ 50W or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $1/4\text{W}$ or less unless otherwise specified.

Note:

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

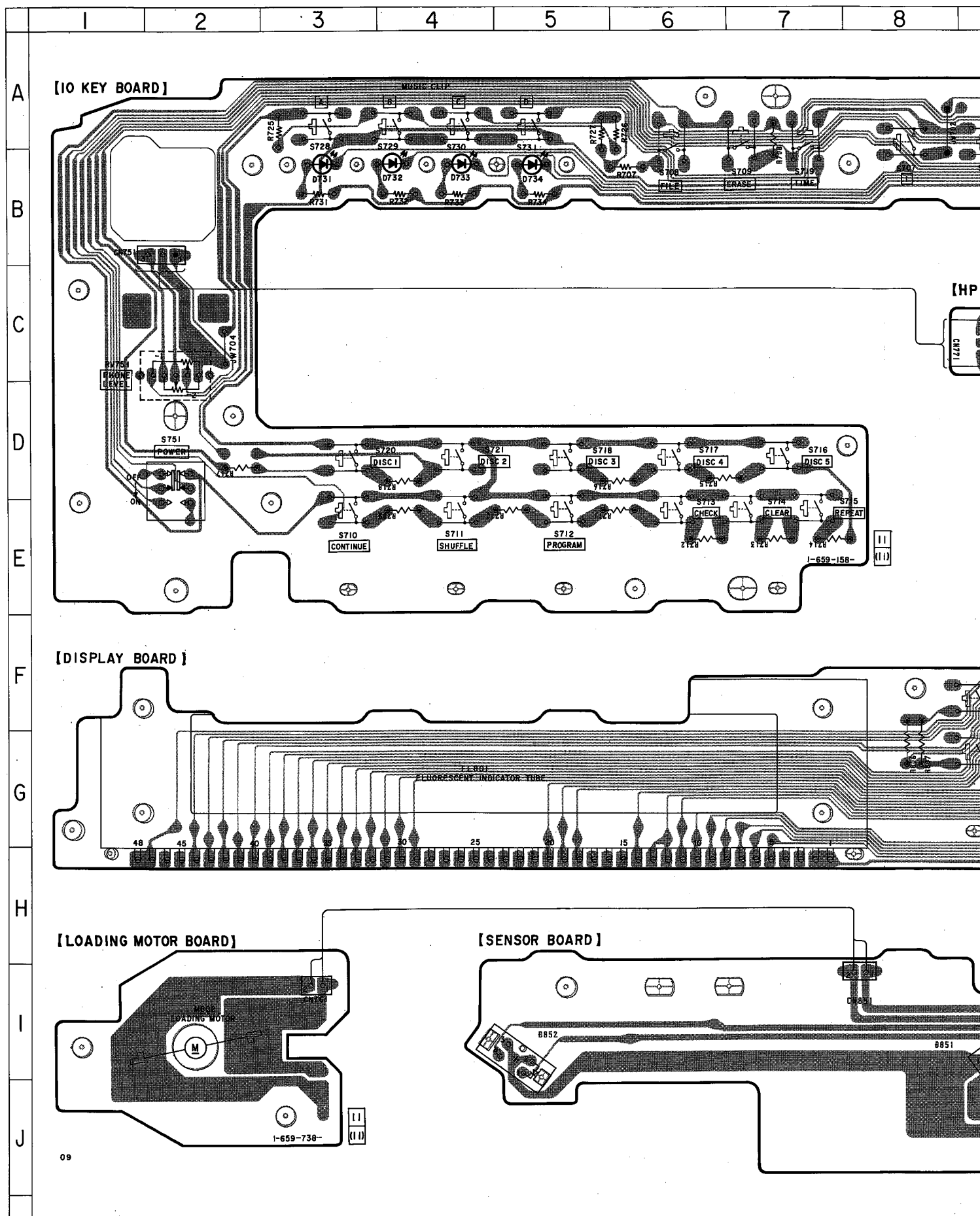
Note:

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

- **[B+]** : B+ Line.
- Voltages and waveforms under no-signal condition. no mark: STOP
- Voltages are taken with Voltage variations in tolerance.
- Waveforms are taken with Voltage variations in tolerance.
- Circled numbers refer

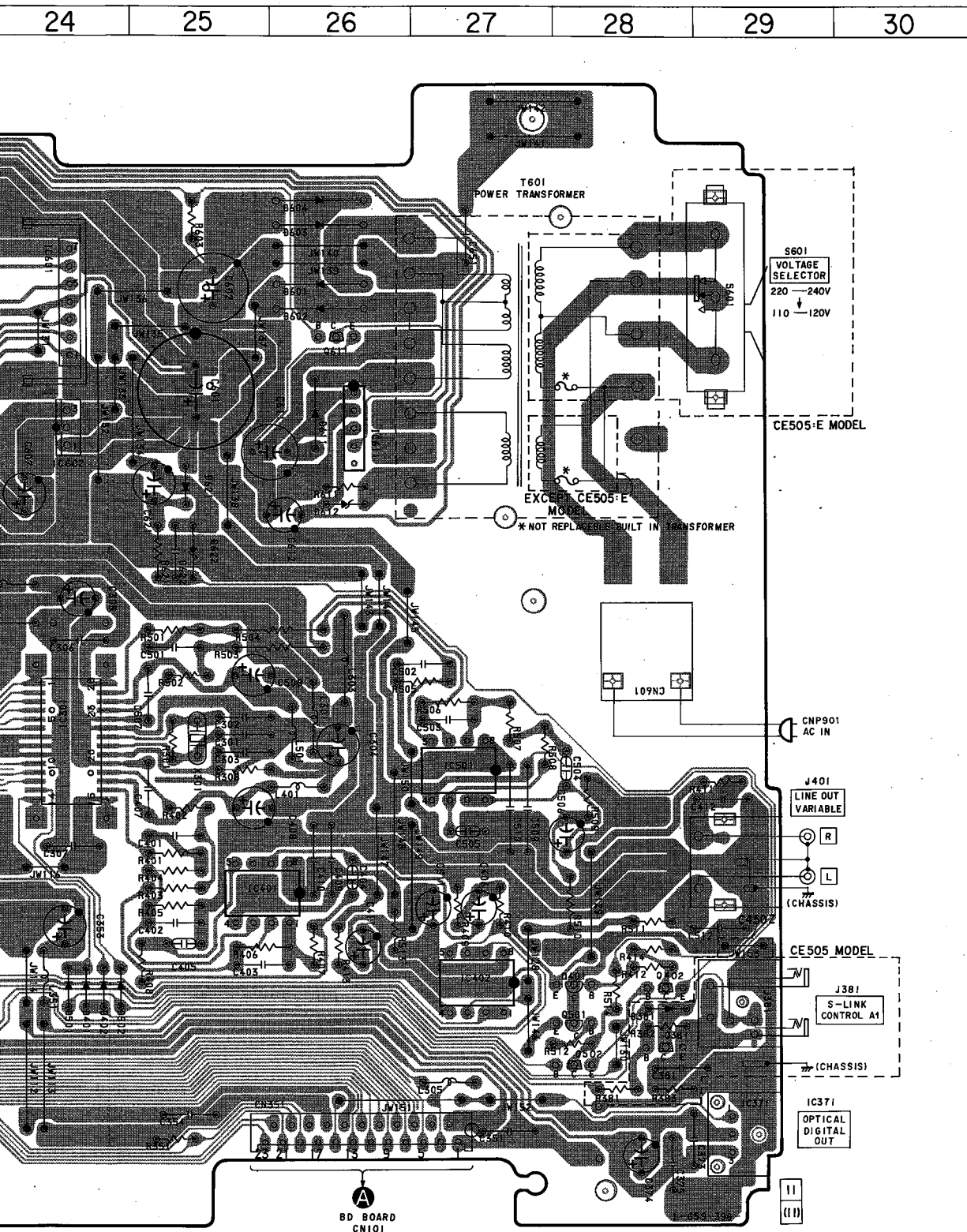
5-5. PRINTED WIRING BOARD — MAIN SECTION —

- See page 16 for Circuit Boards Location.



Note:

- — : parts extracted from the component side.
- — : parts extracted from the conductor side.
- Δ : Internal component.
- ■ : Pattern from the side which enable seeing.



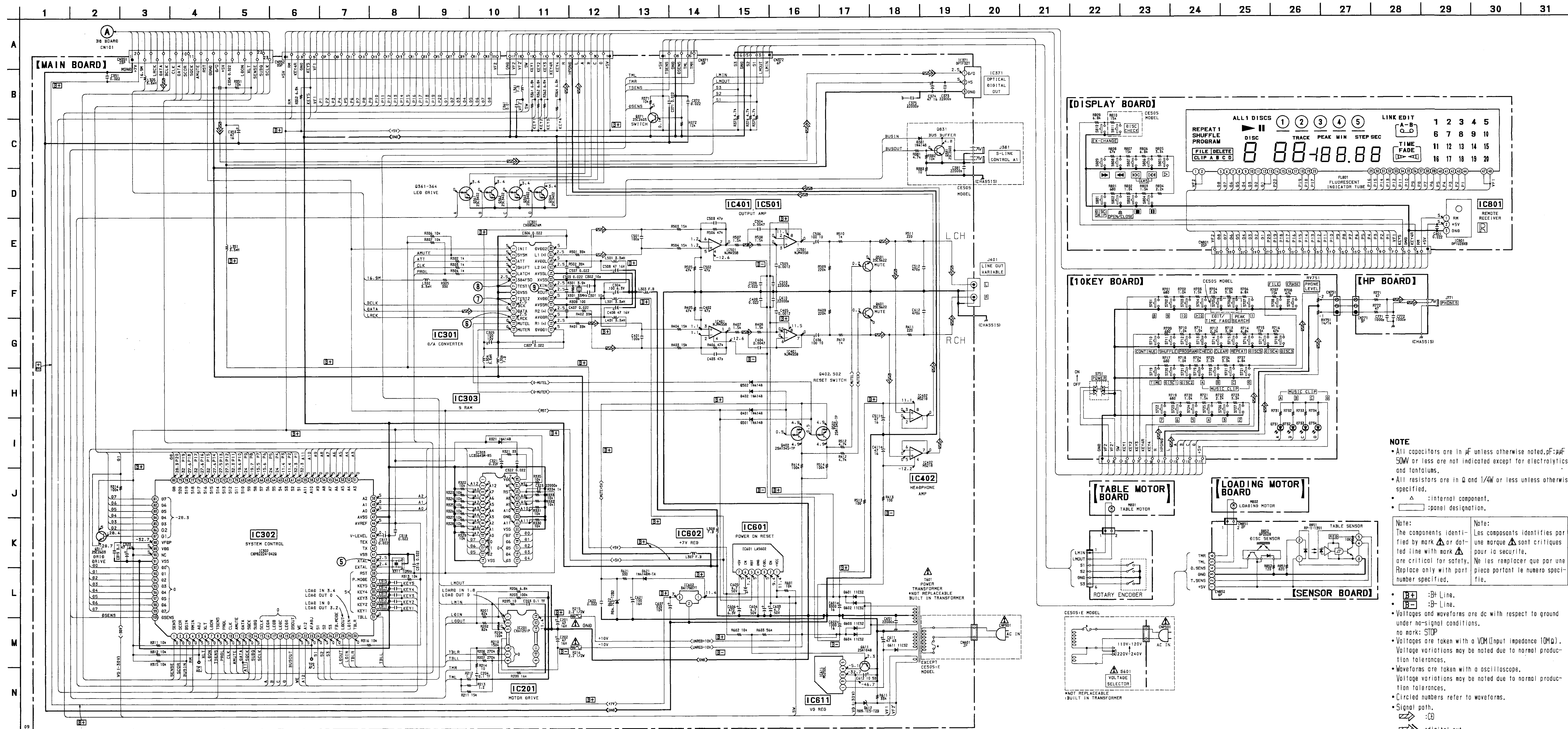
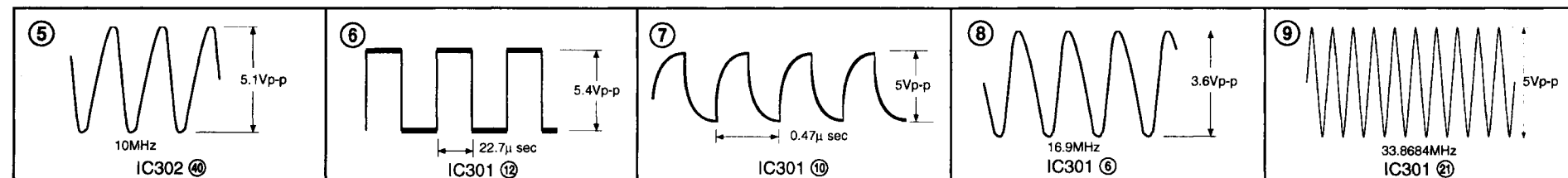
• Semiconductor Location

Ref. No.	Location
D321	H-20
D381	H-28
D401	G-24
D402	G-24
D501	G-24
D502	G-25
D601	B-26
D602	B-26
D603	B-26
D604	B-26
D611	C-26
D612	D-26
D621	D-25
D622	D-25
D731	B-3
D732	B-4
D733	B-4
D734	B-5
D851	I-9
D852	I-5
IC201	D-22
IC301	F-24
IC302	E-20
IC303	F-19
IC371	H-29
IC401	G-26
IC402	G-27
IC501	F-27
IC601	B-24
IC602	C-24
IC611	C-26
IC801	D-14
Q311	E-19
Q361	H-19
Q362	H-19
Q363	I-19
Q364	I-19
Q371	E-22
Q381	H-28
Q401	G-28
Q402	G-28
Q501	H-28
Q502	H-28
Q611	C-26

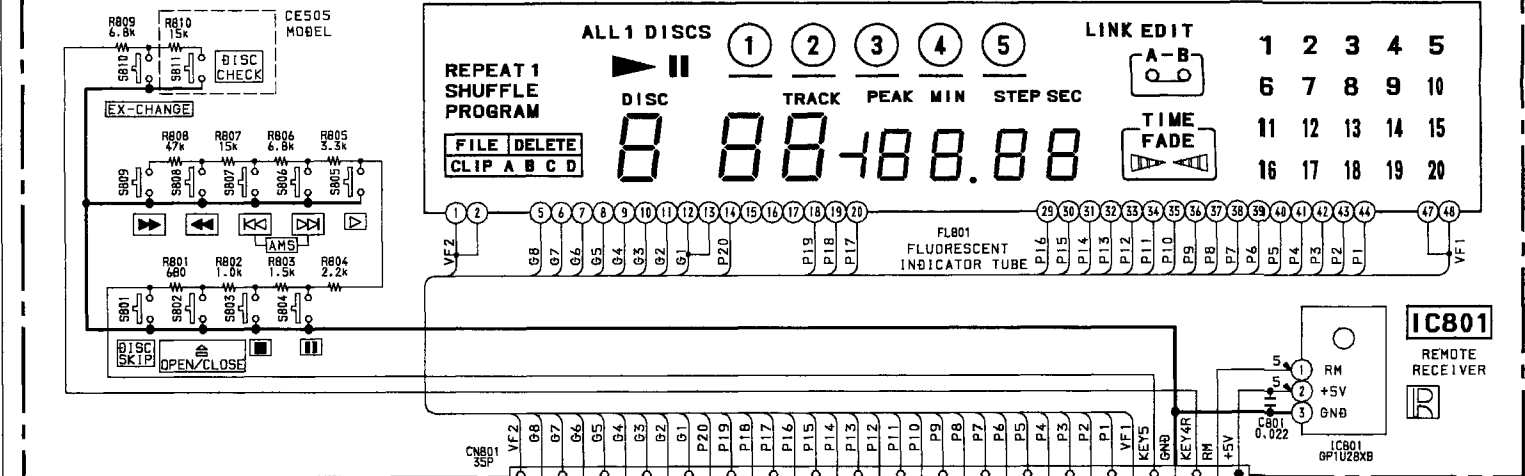
5-6. SCHEMATIC DIAGRAM — MAIN SECTION —

- See page 14 for IC Pin Functions. (IC302)
- See page 29 for IC Block Diagrams.

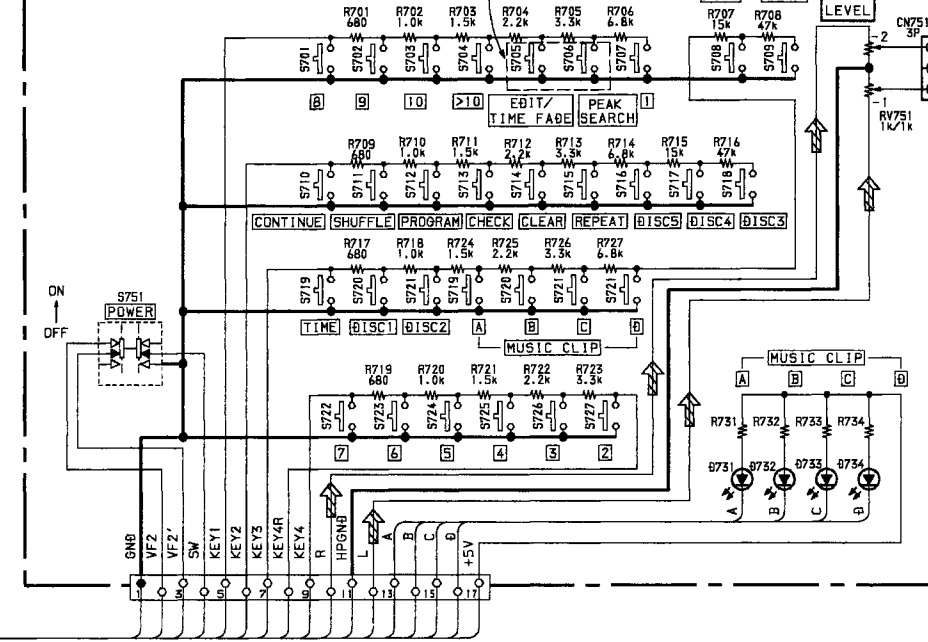
• Waveforms



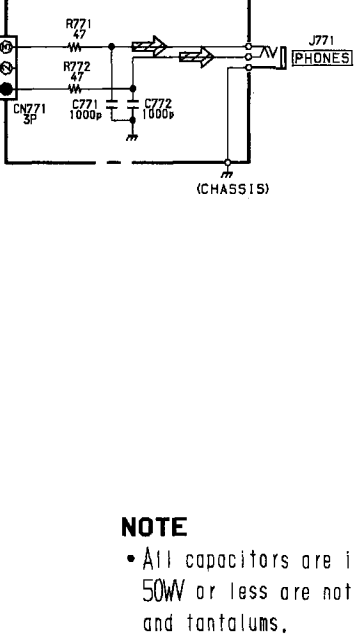
[DISPLAY BOARD]



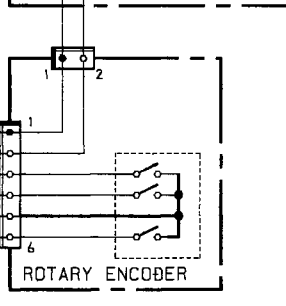
[10KEY BOARD]



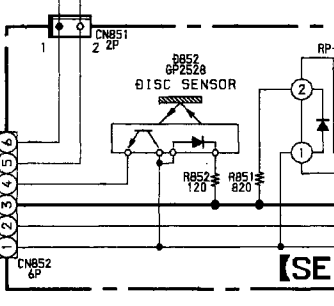
[HP BOARD]



[TABLE MOTOR BOARD]



[LOADING MOTOR BOARD]



[SENSOR BOARD]



NOTE

- All capacitors are in μF unless otherwise noted. $\text{pF} = \mu\text{F} \times 10^{-6}$.
- All resistors are in Ω and $1/\text{W}$ or less unless otherwise specified.
- $\triangle$: internal component.
- $\square$: panel designation.

Note:

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

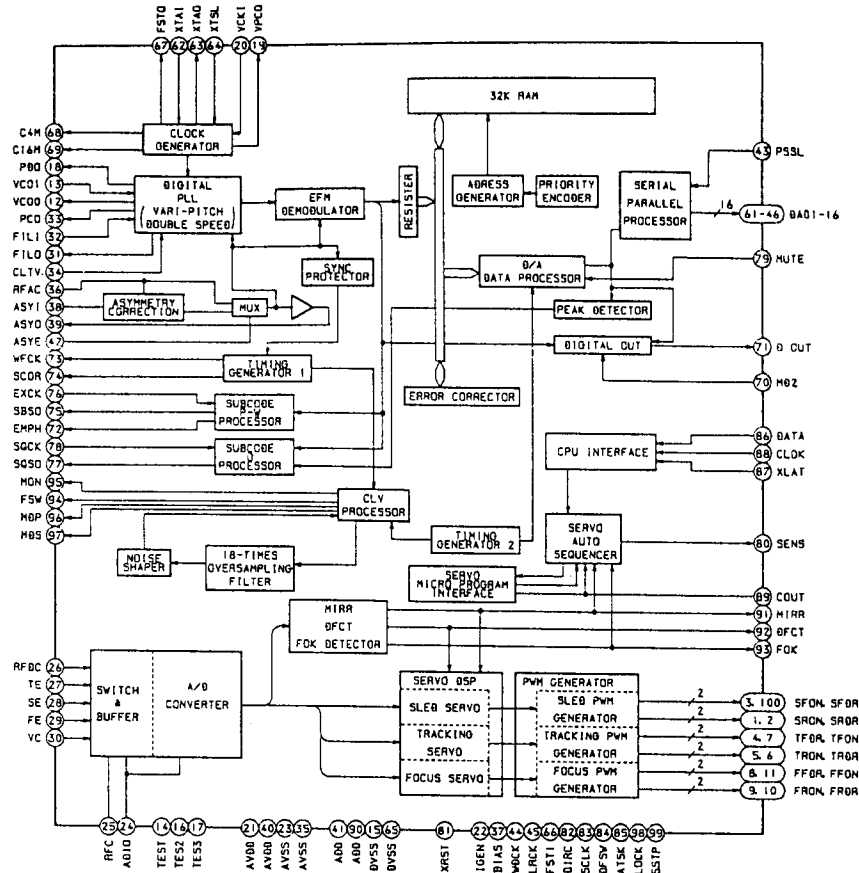
Note:

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

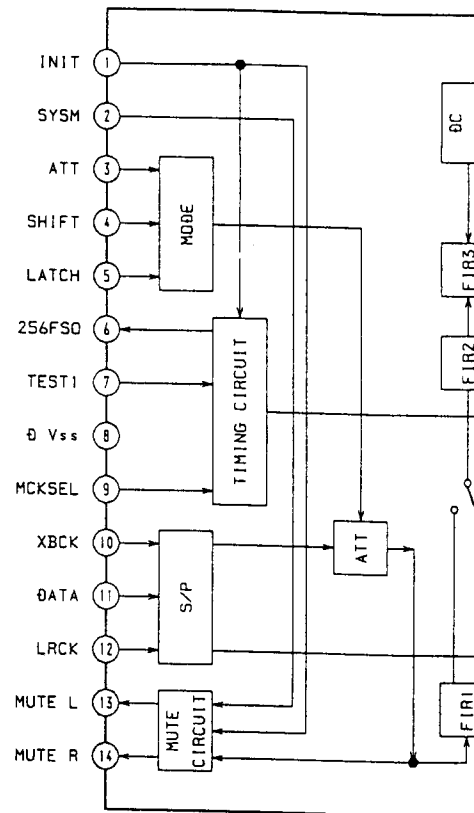
- $\square$: B+ Line.
- $\square$: B- Line.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
- no mark: STOP.
- Voltages are taken with a VOM (input impedance $10\text{M}\Omega$). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with an oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
- $\Rightarrow$: CD.
- $\Rightarrow$: digital out.

5-7. IC BLOCK DIAGRAMS

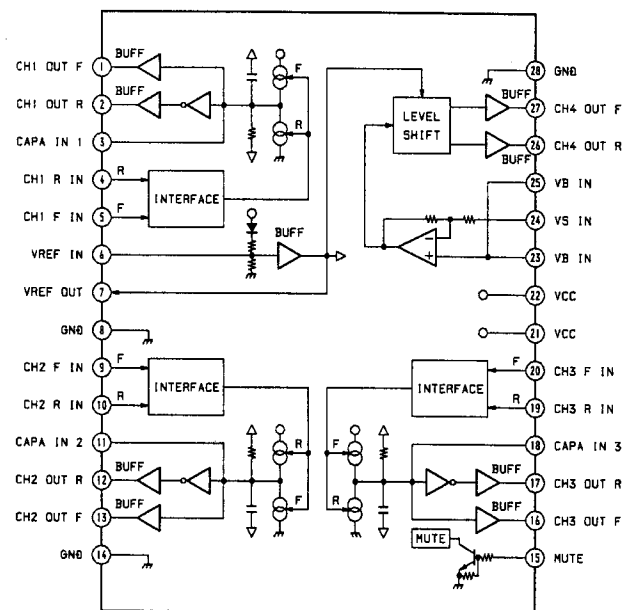
IC101 CXA2545Q



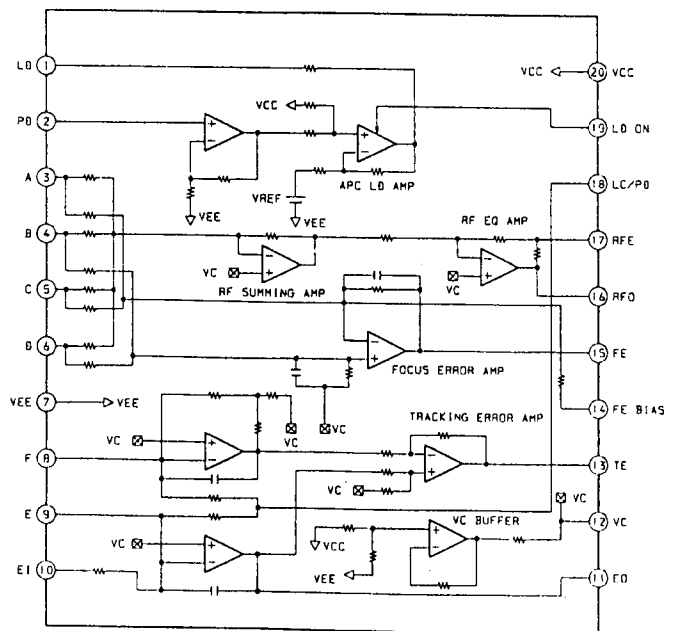
IC301 CXD8567AM



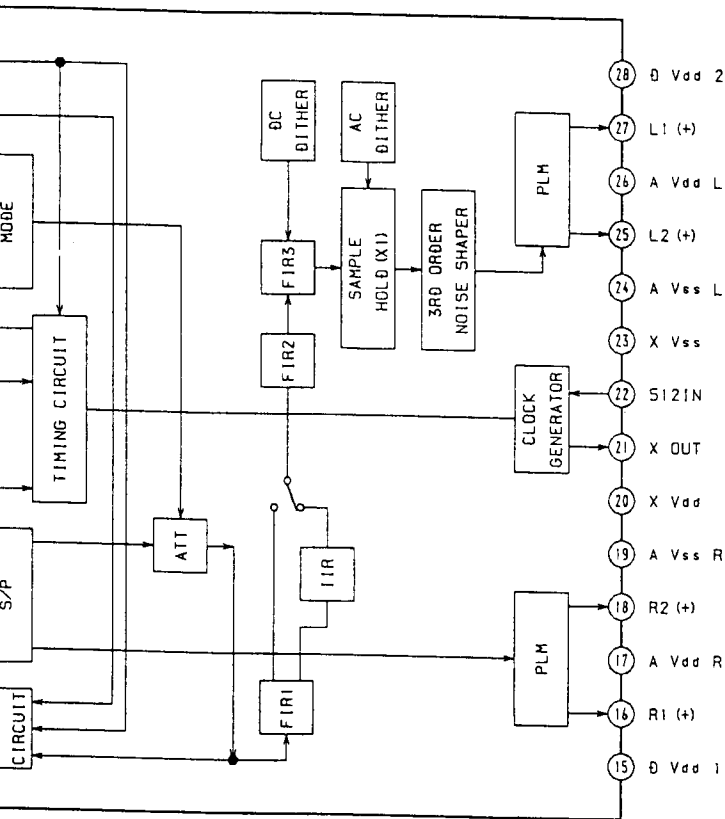
IC102 BA6392FP



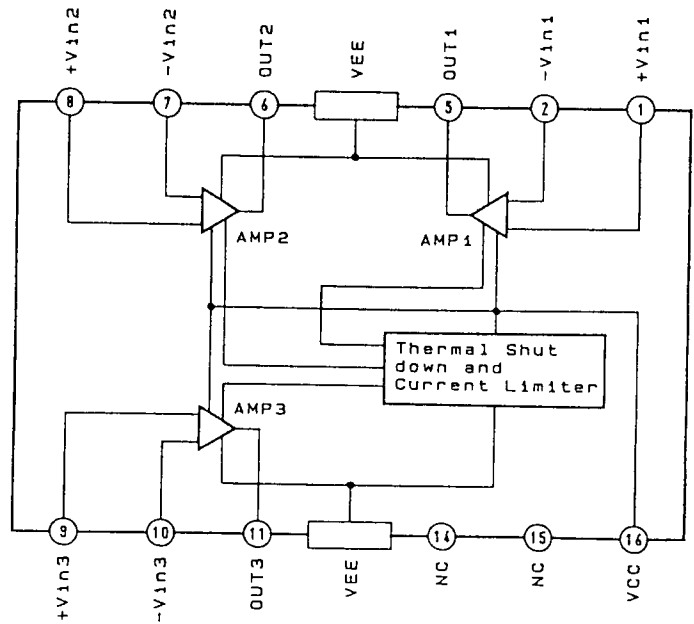
IC103 CXA1821M



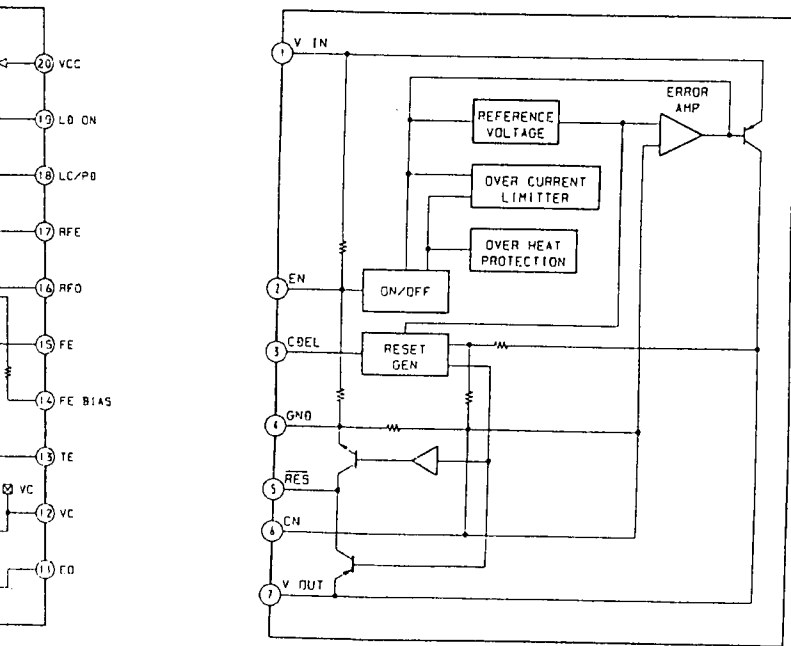
CXD8567AM



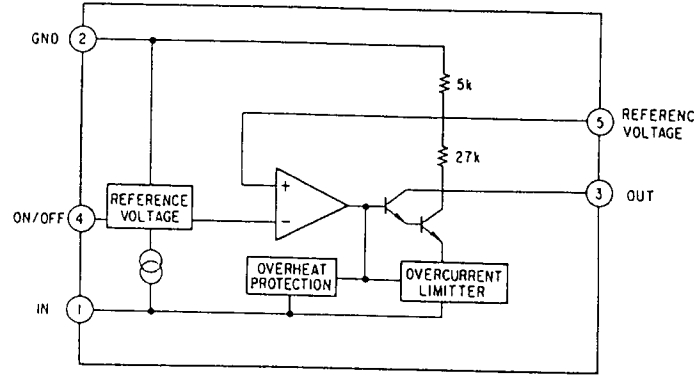
IC201 CXA1291P



IC601 LA5602



IC611 M5293L



SECTION 6 EXPLODED VIEWS

NOTE:

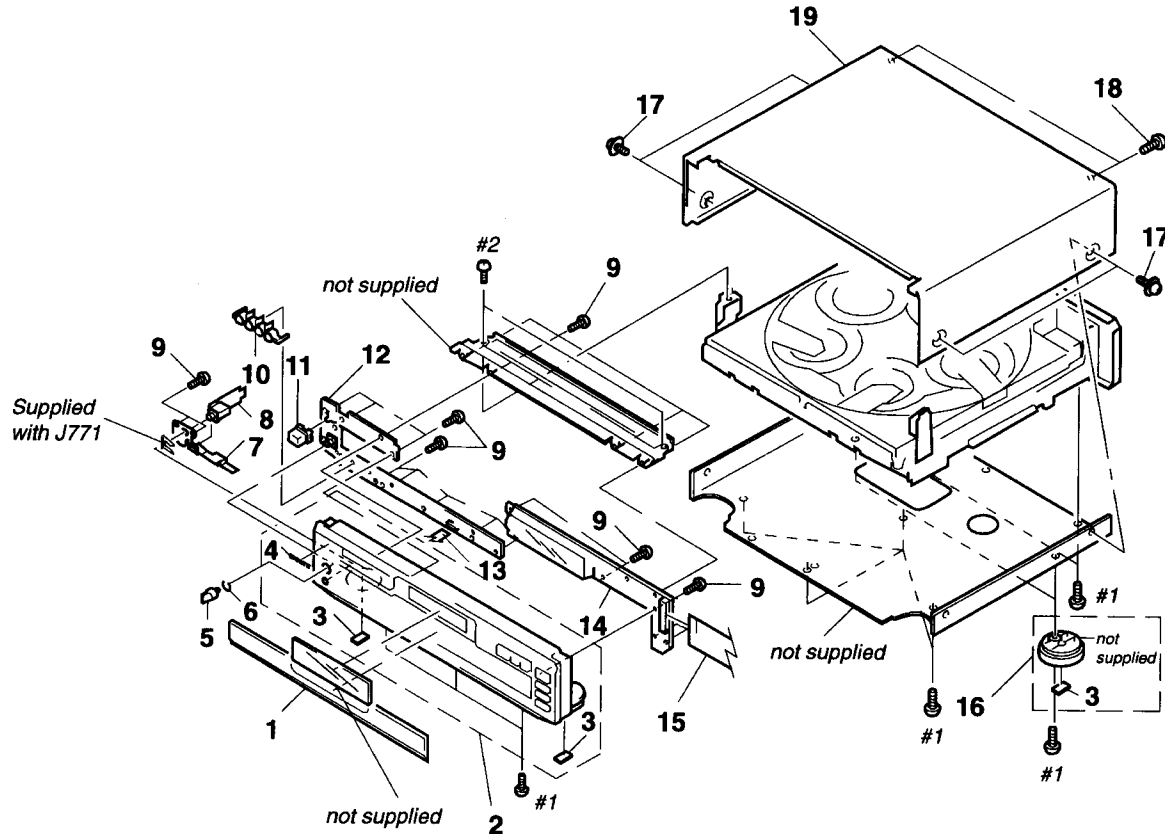
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are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

- Abbreviation
CND: Canadian model
G: German model
AUS: Australian model
CH: Chinese model

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

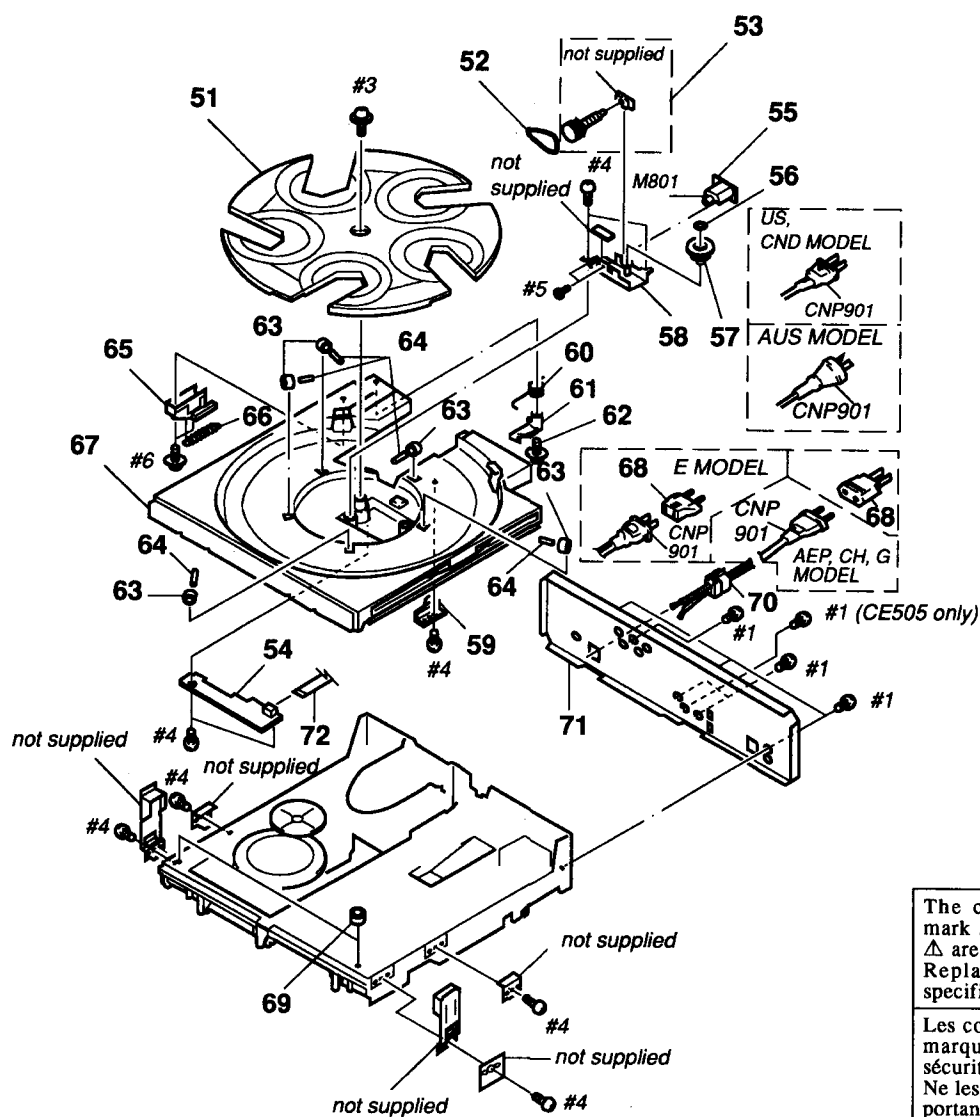
Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

6-1. FRONT PANEL AND CASE SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	4-978-488-11	PANEL, LOADING		11	4-977-589-01	BUTTON (POWER)	
2	X-4946-647-1	PANEL ASSY, FRONT (CE505:US,CND)		* 12	A-4673-811-A	10 KEY BOARD, COMPLETE (CE505)	
2	X-4946-648-1	PANEL ASSY, FRONT (CE505:AEP,G,E,AUS,CH)		* 12	A-4673-955-A	10 KEY BOARD, COMPLETE (C450Z)	
2	X-4946-963-1	PANEL ASSY, FRONT (C450Z)		13	1-776-239-11	WIRE (FLAT TYPE)(17 CORE)	
3	4-978-398-01	CUSHION		* 14	A-4673-812-A	DISPLAY BOARD, COMPLETE (CE505)	
4	4-963-404-21	EMBLEM (5-A), SONY		* 14	A-4673-956-A	DISPLAY BOARD, COMPLETE (C450Z)	
5	4-979-091-01	KNOB (VOL)		15	1-776-125-11	WIRE (FLAT TYPE)(35 CORE)	
6	4-948-469-01	SPRING, RING (CE505)		16	X-4946-618-1	FOOT ASSY (C450Z/CE505:US,CND)	
* 7	4-979-090-01	BRACKET (HP)		16	X-4946-641-1	FOOT ASSY (CE505:AEP,G,E,AUS,CH)	
* 8	1-659-159-11	HP BOARD		17	3-704-366-01	SCREW (CASE)(M3X8)	
9	4-951-620-01	SCREW (2.6X8), +BVTP		18	3-703-685-21	SCREW (+BV 3X8)	
* 10	4-979-089-01	HOLDER (LED)		* 19	4-978-492-11	CASE	

6-2. BACK PANEL AND DISC TABLE SECTION

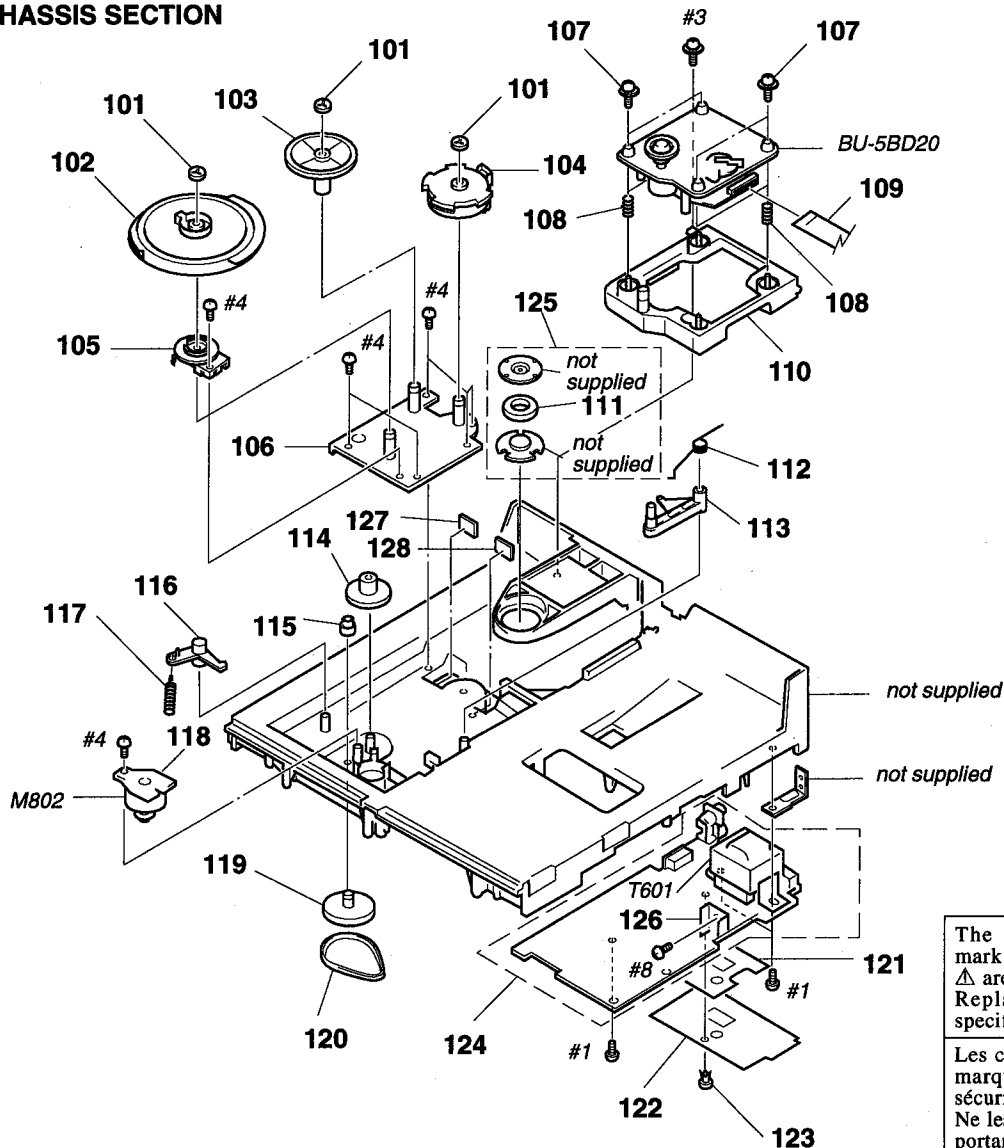


The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	4-957-299-11	TABLE (B), DISC		Δ 68	1-569-008-11	ADAPTER, CONVERSION 2P (CE505:CH)	
52	4-957-304-01	BELT (RM)		* 69	4-951-619-01	CUSHION (A)	
53	X-4943-479-1	GEAR (ROTARY A) ASSY		* 70	3-703-244-00	BUSHING (2104), CORD (C450Z/CE505:US,CND,AEP,G,AUS,CH)	
* 54	1-659-737-11	SENSOR BOARD		* 70	3-703-571-11	BUSHING (S)(4516), CORD (CE505:E)	
* 55	1-647-364-11	TABLE MOTOR BOARD		* 71	4-978-490-91	PANEL, BACK (C450Z)	
56	3-325-697-01	WASHER		* 71	4-979-363-01	PANEL, BACK (CE505:US)	
57	4-957-284-01	GEAR (ROTARY B)		* 71	4-979-363-11	PANEL, BACK (CE505:CND)	
58	X-4943-477-1	BRACKET (RM) ASSY		* 71	4-979-363-21	PANEL, BACK (CE505:AEP,G)	
59	X-4943-480-1	BRACKET (ROLLER D) ASSY		* 71	4-979-363-31	PANEL, BACK (CE505:AUS)	
60	4-957-293-01	SPRING (RACK RELEASE)		* 71	4-979-363-41	PANEL, BACK (CE505:E)	
61	4-957-291-01	LEVER (RACK RELEASE)		* 71	4-979-363-51	PANEL, BACK (CE505:CH)	
62	4-957-868-01	SCREW (+PTPWH 2.6X20)		72	1-751-052-11	WIRE (FLAT TYPE)(6 CORE)	
63	X-4924-457-1	ROLLER ASSY		M801	A-4660-525-A	MOTOR ASSY, ROTARY (TABLE)	
64	4-934-376-01	SHAFT (ROLLER)		Δ CNP901	1-558-943-61	CORD, POWER (CE505:E)	
65	4-957-292-01	SLIDER (RACK)		Δ CNP901	1-575-651-21	CORD, POWER (CE505:AEP,G,CH)	
66	4-957-294-01	SPRING (D.T), TENSION		Δ CNP901	1-590-926-11	CORD, POWER (C450Z/CE505:US,CND)	
67	4-957-298-01	TABLE (A), DISC		Δ CNP901	1-696-845-11	CORD, POWER (CE505:AUS)	
Δ 68	1-569-007-11	ADAPTER, CONVERSION 2P (CE505:E)					

6-3. CHASSIS SECTION

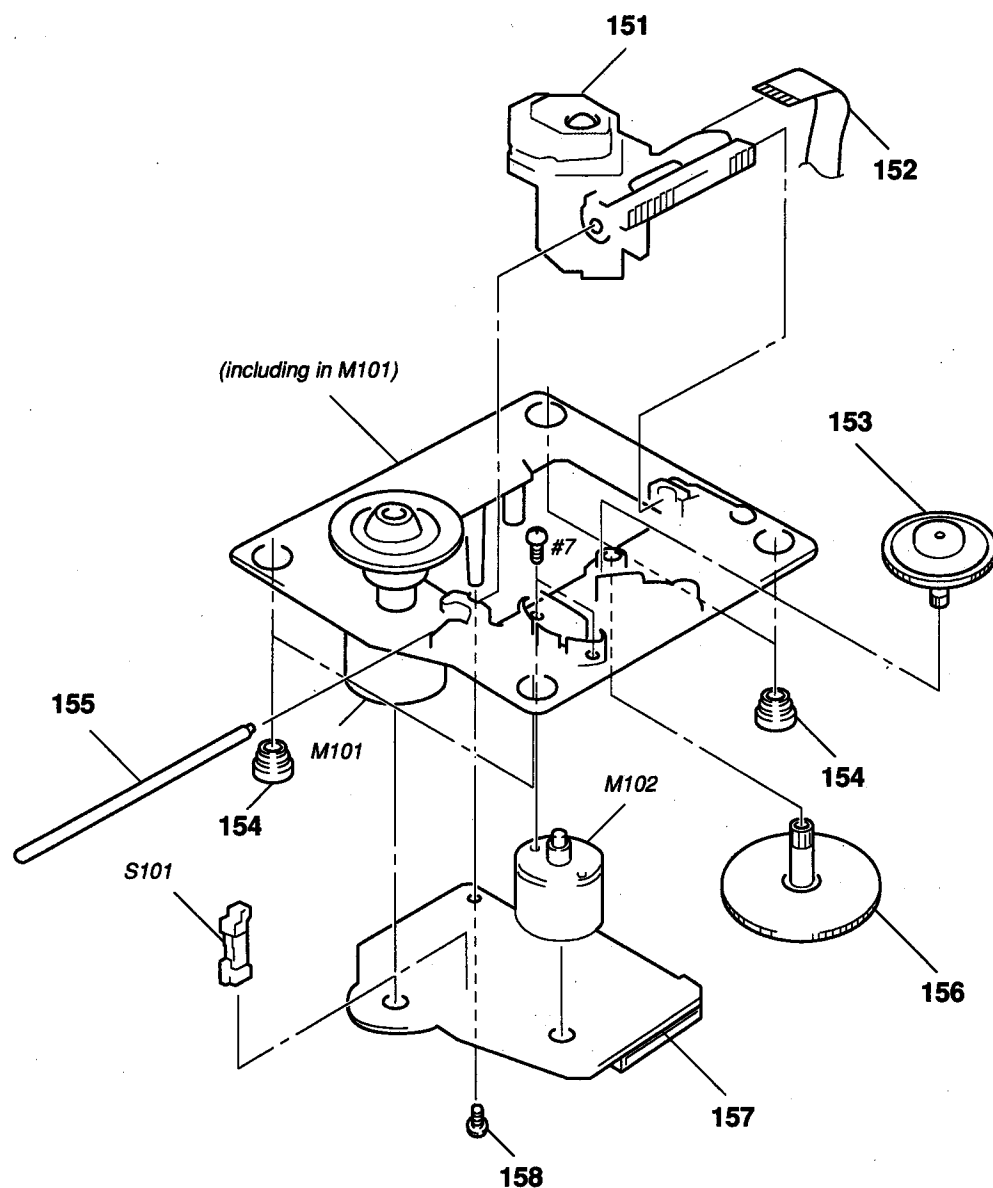


The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	4-957-283-01	WASHER (5), STOPPER		119	X-4941-529-1	PULLEY ASSY	
102	4-957-288-01	GEAR (MAIN)		120	4-944-490-01	BELT (TIMING)	
103	4-957-287-01	GEAR (REV)					
104	4-957-286-01	GEAR (U/D)		* 121	4-957-555-11	SHEET, INSULATING (CE505:AEP,G,E,AUS,CH)	
105	1-466-996-11	ENCODER, ROTARY		* 122	4-957-556-11	SHEET, INSULATING (CE505:AEP,G,E,AUS,CH)	
				123	3-531-576-11	RIVET (CE505:AEP,G,E,AUS,CH)	
106	X-4946-195-1	BRACKET (GEAR) ASSY		* 124	A-4673-813-A	MAIN BOARD, COMPLETE (CE505:US,CND)	
107	4-933-134-01	SCREW (+PTPWH M2.6X6)		* 124	A-4673-815-A	MAIN BOARD, COMPLETE (CE505:AEP,G,AUS,CH)	
108	4-948-503-01	SPRING (BU), COMPRESSION					
109	1-765-443-11	WIRE (FLAT TYPE)(23 CORE)		* 124	A-4673-816-A	MAIN BOARD, COMPLETE (CE505:E)	
110	4-957-289-12	HOLDER (BU)		* 124	A-4673-957-A	MAIN BOARD, COMPLETE (C450Z)	
				* 125	A-4660-652-A	MAGNET ASSY	
111	1-452-538-41	MAGNET		* 126	4-922-525-01	HEAT SINK	
112	4-957-281-01	SPRING (LOCK LEVER)		* 127	4-981-731-01	CUSHION (U/D)	
113	4-957-279-01	LEVER, LOCK					
114	4-957-303-01	GEAR (LOADING C)		* 128	4-981-731-11	CUSHION (U/D)	
115	4-934-375-01	GEAR (LOADING B)		M802	A-4660-914-A	MOTOR ASSY, LOADING (LOADING)	
				Δ T601	1-423-830-11	TRANSFORMER, POWER (C450Z/CE505:US,CND)	
116	4-957-285-01	LEVER, SET		Δ T601	1-429-394-11	TRANSFORMER, POWER (CE505:AEP,G,AUS,CH)	
117	4-962-087-01	SPRING (S), TENSION		Δ T601	1-429-395-11	TRANSFORMER, POWER (CE505:E)	
* 118	1-659-738-11	LOADING BOARD					

6-4. BASE UNIT SECTION (BU-5BD20)



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

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

Ref. No.	Part No.	Description
Δ 151	8-848-367-11	OPTICAL PICK UP KSS-213B/K-N
152	1-769-069-11	WIRE (FLAT TYPE)(16 CORE)
153	4-917-567-21	GEAR (M)
154	4-951-940-01	INSULATOR (BU)
155	4-917-565-01	SHAFT, SLED
156	4-917-564-01	GEAR (P), FLATNESS

Ref. No.	Part No.	Description
157	A-4673-509-A	BD BOARD, COMPLETE
158	4-951-620-01	SCREW (2.6X8), +BVTP
M101	X-4917-523-3	MOTOR ASSY (SPINDLE)
M102	X-4917-504-1	MOTOR ASSY (SLED)
S101	1-572-085-11	SWITCH, LEAF (LIMIT)

SECTION 7 ELECTRICAL PARTS LIST

10 KEY

Note:

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

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

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

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

Ref. No.	Part No.	Description	Remark				Ref. No.	Part No.	Description	Remark			
*	A-4673-955-A	10 KEY BOARD, COMPLETE (C450Z)	*****				R724	1-249-419-11	CARBON	1.5K	5%	1/4W	F
							R725	1-249-421-11	CARBON	2.2K	5%	1/4W	F
*	A-4673-811-A	10 KEY BOARD, COMPLETE (CE505)	*****				R726	1-249-423-11	CARBON	3.3K	5%	1/4W	F
							R727	1-249-427-11	CARBON	6.8K	5%	1/4W	F
		< CONNECTOR >					R731	1-249-407-11	CARBON	150	5%	1/4W	F
* CN701	1-568-836-11	SOCKET, CONNECTOR 17P					R732	1-249-407-11	CARBON	150	5%	1/4W	F
		< DIODE >					R733	1-249-407-11	CARBON	150	5%	1/4W	F
D731	8-719-303-02	DIODE SEL2510C-D (MUSIC CLIP A)					R734	1-249-407-11	CARBON	150	5%	1/4W	F
D732	8-719-303-02	DIODE SEL2510C-D (MUSIC CLIP B)							< VARIABLE RESISTOR >				
D733	8-719-303-02	DIODE SEL2510C-D (MUSIC CLIP C)					RV751	1-223-535-11	RES, VAR, CARBON 1K/1K (PHONE LEVEL)				
D734	8-719-303-02	DIODE SEL2510C-D (MUSIC CLIP D)							< SWITCH >				
		< RESISTOR >					S701	1-554-303-21	SWITCH, TACTILE (8)				
R701	1-249-415-11	CARBON	680	5%	1/4W	F	S702	1-554-303-21	SWITCH, TACTILE (9)				
R702	1-249-417-11	CARBON	1K	5%	1/4W	F	S703	1-554-303-21	SWITCH, TACTILE (10)				
R703	1-249-419-11	CARBON	1.5K	5%	1/4W	F	S704	1-554-303-21	SWITCH, TACTILE (>10)				
R704	1-249-421-11	CARBON	2.2K	5%	1/4W	F	S705	1-554-303-21	SWITCH, TACTILE (EDIT/TIME FADE)(CE505)				
R705	1-249-423-11	CARBON	3.3K	5%	1/4W	F	S706	1-554-303-21	SWITCH, TACTILE (PEAK SEARCH)(CE505)				
R706	1-249-427-11	CARBON	6.8K	5%	1/4W	F	S707	1-554-303-21	SWITCH, TACTILE (1)				
R707	1-249-431-11	CARBON	15K	5%	1/4W		S708	1-554-303-21	SWITCH, TACTILE (FILE)				
R708	1-249-437-11	CARBON	47K	5%	1/4W		S709	1-554-303-21	SWITCH, TACTILE (ERASE)				
R709	1-249-415-11	CARBON	680	5%	1/4W	F	S710	1-554-303-21	SWITCH, TACTILE (CONTINUE)				
R710	1-249-417-11	CARBON	1K	5%	1/4W	F	S711	1-554-303-21	SWITCH, TACTILE (SHUFFLE)				
R711	1-249-419-11	CARBON	1.5K	5%	1/4W	F	S712	1-554-303-21	SWITCH, TACTILE (PROGRAM)				
R712	1-249-421-11	CARBON	2.2K	5%	1/4W	F	S713	1-554-303-21	SWITCH, TACTILE (CHECK)				
R713	1-249-423-11	CARBON	3.3K	5%	1/4W	F	S714	1-554-303-21	SWITCH, TACTILE (CLEAR)				
R714	1-249-427-11	CARBON	6.8K	5%	1/4W	F	S715	1-554-303-21	SWITCH, TACTILE (REPEAT)				
R715	1-249-431-11	CARBON	15K	5%	1/4W		S716	1-554-303-21	SWITCH, TACTILE (DISC 5)				
R716	1-249-437-11	CARBON	47K	5%	1/4W		S717	1-554-303-21	SWITCH, TACTILE (DISC 4)				
R717	1-249-415-11	CARBON	680	5%	1/4W	F	S718	1-554-303-21	SWITCH, TACTILE (DISC 3)				
R718	1-249-417-11	CARBON	1K	5%	1/4W	F	S719	1-554-303-21	SWITCH, TACTILE (TIME)				
R719	1-249-415-11	CARBON	680	5%	1/4W	F	S720	1-554-303-21	SWITCH, TACTILE (DISC 1)				
R720	1-249-417-11	CARBON	1K	5%	1/4W	F	S721	1-554-303-21	SWITCH, TACTILE (DISC 2)				
R721	1-249-419-11	CARBON	1.5K	5%	1/4W	F	S722	1-554-303-21	SWITCH, TACTILE (7)				
R722	1-249-421-11	CARBON	2.2K	5%	1/4W	F	S723	1-554-303-21	SWITCH, TACTILE (6)				
R723	1-249-423-11	CARBON	3.3K	5%	1/4W	F	S724	1-554-303-21	SWITCH, TACTILE (5)				
							S725	1-554-303-21	SWITCH, TACTILE (4)				

Ref. No.	Part No.	Description	Remark
S726	1-554-303-21	SWITCH, TACTILE (3)	
S727	1-554-303-21	SWITCH, TACTILE (2)	
S728	1-554-303-21	SWITCH, TACTILE (MUSIC CLIP A)	
S729	1-554-303-21	SWITCH, TACTILE (MUSIC CLIP B)	
S730	1-554-303-21	SWITCH, TACTILE (MUSIC CLIP C)	
S731	1-554-303-21	SWITCH, TACTILE (MUSIC CLIP D)	
S751	1-554-118-00	SWITCH, PUSH (1 KEY)(POWER)	

A-4673-509-A BD BOARD, COMPLETE

< CAPACITOR >

C101	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C102	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C103	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C105	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V
C106	1-164-346-11	CERAMIC CHIP	1uF		16V
C107	1-164-346-11	CERAMIC CHIP	1uF		16V
C108	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C109	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C110	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C111	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C112	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C113	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C115	1-126-607-11	ELECT CHIP	47uF	20%	4V
C116	1-126-607-11	ELECT CHIP	47uF	20%	4V
C117	1-126-209-11	ELECT	100uF	20%	4V
C118	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C119	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C123	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C124	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C140	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C141	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C151	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C153	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C154	1-164-336-11	CERAMIC CHIP	0.33uF		25V
C156	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C157	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C159	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C161	1-163-038-91	CERAMIC CHIP	0.1uF		25V

< CONNECTOR >

CN101	1-770-072-11	CONNECTOR, FFC 23P
CN102	1-770-014-11	CONNECTOR, FFC/FPC 16P

< IC >

IC101	8-752-369-78	IC CXD2545Q
IC102	8-759-176-09	IC BA6392FP

Ref. No.	Part No.	Description	Remark
IC103	8-752-072-45	IC CXA1821M-T6	
< TRANSISTOR >			
Q101	8-729-010-08	TRANSISTOR MSB710-R	
< RESISTOR >			
R101	1-216-077-00	METAL CHIP	15K 5% 1/10W
R102	1-216-097-91	METAL GLAZE	100K 5% 1/10W
R103	1-216-077-00	METAL CHIP	15K 5% 1/10W
R104	1-216-085-00	METAL CHIP	33K 5% 1/10W
R105	1-216-097-91	METAL GLAZE	100K 5% 1/10W
R106	1-216-061-00	METAL CHIP	3.3K 5% 1/10W
R107	1-216-061-00	METAL CHIP	3.3K 5% 1/10W
R108	1-216-073-00	METAL CHIP	10K 5% 1/10W
R109	1-216-121-91	METAL GLAZE	1M 5% 1/10W
R110	1-216-025-91	METAL GLAZE	100 5% 1/10W
R112	1-216-049-91	METAL GLAZE	1K 5% 1/10W
R123	1-216-073-00	METAL CHIP	10K 5% 1/10W
R124	1-216-097-91	METAL GLAZE	100K 5% 1/10W
R125	1-216-049-91	METAL GLAZE	1K 5% 1/10W
R126	1-216-049-91	METAL GLAZE	1K 5% 1/10W
R127	1-216-049-91	METAL GLAZE	1K 5% 1/10W
R131	1-216-037-00	METAL CHIP	330 5% 1/10W
R135	1-216-295-91	CONDUCTOR, CHIP(2012)	
R136	1-216-295-91	CONDUCTOR, CHIP(2012)	
R137	1-216-295-91	CONDUCTOR, CHIP(2012)	
R138	1-216-295-91	CONDUCTOR, CHIP(2012)	
R141	1-216-089-91	METAL GLAZE	47K 5% 1/10W
R142	1-216-081-00	METAL CHIP	22K 5% 1/10W
R143	1-216-103-91	METAL GLAZE	180K 5% 1/10W
R144	1-216-103-91	METAL GLAZE	180K 5% 1/10W
R146	1-216-073-00	METAL CHIP	10K 5% 1/10W
R147	1-216-081-00	METAL CHIP	22K 5% 1/10W
R148	1-216-001-00	METAL CHIP	10 5% 1/10W
R149	1-216-003-11	METAL GLAZE	12 5% 1/10W
R158	1-216-111-91	METAL GLAZE	390K 5% 1/10W
R159	1-216-101-00	METAL CHIP	150K 5% 1/10W
R160	1-216-295-91	CONDUCTOR, CHIP(2012)	
R161	1-216-308-00	METAL CHIP	4.7 5% 1/10W
R162	1-216-101-00	METAL CHIP	150K 5% 1/10W
< SWITCH >			
S101	1-572-085-11	SWITCH, LEAF (LIMIT)	

DISPLAY
HP
LOADING
MAIN

Ref. No.	Part No.	Description	Remark
*	A-4673-812-A	DISPLAY BOARD, COMPLETE (CE505) *****	
*	A-4673-956-A	DISPLAY BOARD, COMPLETE (C450Z) *****	
		< CAPACITOR >	
C801	1-161-494-00	CERAMIC 0.022uF	25V
		< CONNECTOR >	
CN801	1-764-411-11	PIN, CONNECTOR (PC BOARD) 35P	
		< FLUORESCENT INDICATOR >	
FL801	1-517-504-11	INDICATOR TUBE, FLUORESCENT	
		< IC >	
IC801	8-759-339-53	IC GP1U28XB	
		< RESISTOR >	
R801	1-249-415-11	CARBON 680 5% 1/4W	F
R802	1-249-417-11	CARBON 1K 5% 1/4W	F
R803	1-249-419-11	CARBON 1.5K 5% 1/4W	F
R804	1-249-421-11	CARBON 2.2K 5% 1/4W	F
R805	1-249-423-11	CARBON 3.3K 5% 1/4W	F
R806	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R807	1-249-431-11	CARBON 15K 5% 1/4W	
R808	1-247-871-11	CARBON 47K 5% 1/4W	
R809	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R810	1-249-431-11	CARBON 15K 5% 1/4W	(CE505)
		< SWITCH >	
S801	1-554-303-21	SWITCH, TACTILE (DISC SKIP)	
S802	1-554-303-21	SWITCH, TACTILE (△ OPEN/CLOSE)	
S803	1-554-303-21	SWITCH, TACTILE (■)	
S804	1-554-303-21	SWITCH, TACTILE (□)	
S805	1-554-303-21	SWITCH, TACTILE (▷)	
S806	1-554-303-21	SWITCH, TACTILE (▷▷), AMS)	
S807	1-554-303-21	SWITCH, TACTILE (◁◁), AMS)	
S808	1-554-303-21	SWITCH, TACTILE (◁◁)	
S809	1-554-303-21	SWITCH, TACTILE (▷▷)	
S810	1-554-303-21	SWITCH, TACTILE (EX-CHANGE)	
S811	1-554-303-21	SWITCH, TACTILE (DISC CHECK)(CE505)	

Ref. No.	Part No.	Description	Remark
*	1-659-159-11	HP BOARD *****	
		< CAPACITOR >	
C771	1-162-294-31	CERAMIC 0.001uF	10% 50V
C772	1-162-294-31	CERAMIC 0.001uF	10% 50V
		< CONNECTOR >	
* CN771	1-568-941-11	PIN, CONNECTOR 3P	
		< JACK >	
J771	1-568-519-41	JACK, LARGE TYPE (PHONES)	
		< RESISTOR >	
R771	1-249-401-11	CARBON 47 5% 1/4W	F
R772	1-249-401-11	CARBON 47 5% 1/4W	F

*	1-659-738-11	LOADING BOARD *****	
		< MOTOR >	
M802	A-4660-914-A	MOTOR ASSY, LOADING (LOADING)	

*	A-4673-813-A	MAIN BOARD, COMPLETE(CE505:US,CND) *****	
*	A-4673-815-A	MAIN BOARD, COMPLETE(CE505:AEP,G,AUS,CH) *****	
*	A-4673-816-A	MAIN BOARD, COMPLETE(CE505:E) *****	
*	A-4673-957-A	MAIN BOARD, COMPLETE(C450Z) *****	
*	4-922-525-01	HEAT SINK	
	7-685-871-01	SCREW +BVTT 3X6 (S)	
		< CAPACITOR >	
C201	1-104-664-11	ELECT 47uF	20% 16V
C202	1-104-664-11	ELECT 47uF	20% 16V
C203	1-136-165-00	FILM 0.1uF	5% 50V
C204	1-136-165-00	FILM 0.1uF	5% 50V
C301	1-162-199-31	CERAMIC 10PF	5% 50V
C302	1-162-199-31	CERAMIC 10PF	5% 50V
C303	1-161-494-00	CERAMIC 0.022uF	25V
C304	1-126-177-11	ELECT 100uF	20% 10V
C305	1-124-443-00	ELECT 100uF	20% 10V
C306	1-161-494-00	CERAMIC 0.022uF	25V

MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C307	1-161-494-00	CERAMIC	0.022uF	25V	C511	1-104-664-11	ELECT 47uF 20% 16V
C311	1-161-494-00	CERAMIC	0.022uF	25V	C512	1-162-290-31	CERAMIC 470PF 10% 50V
C312	1-161-494-00	CERAMIC	0.022uF	25V	C601	1-126-944-11	ELECT 3300uF 20% 16V
C313	1-161-494-00	CERAMIC	0.022uF	25V	C602	1-126-942-61	ELECT 1000uF 20% 16V
C314	1-161-494-00	CERAMIC	0.022uF	25V	C603	1-126-963-11	ELECT 4.7uF 20% 50V
C315	1-161-494-00	CERAMIC	0.022uF	25V	C604	1-126-963-11	ELECT 4.7uF 20% 50V
C316	1-161-494-00	CERAMIC	0.022uF	25V	C605	1-126-963-11	ELECT 4.7uF 20% 50V
C317	1-161-494-00	CERAMIC	0.022uF	25V	C606	1-126-941-11	ELECT 470uF 20% 6.3V
C318	1-161-494-00	CERAMIC	0.022uF	25V	C607	1-104-666-11	ELECT 220uF 20% 10V
C319	1-164-159-11	CERAMIC	0.1uF	50V	C611	1-124-918-11	ELECT 47uF 20% 63V
C320	1-104-664-11	ELECT	47uF	20% 16V	C612	1-124-907-11	ELECT 10uF 20% 50V
C321	1-104-905-11	CAPACITOR	0.22F	5.5V	C621	1-104-665-11	ELECT 100uF 20% 16V
C322	1-161-494-00	CERAMIC	0.022uF	25V	C622	1-161-494-00	CERAMIC 0.022uF 25V
C323	1-161-494-00	CERAMIC	0.022uF	25V	C651	1-161-494-00	CERAMIC 0.022uF 25V
C351	1-161-494-00	CERAMIC	0.022uF	25V	< CONNECTOR >		
C353	1-124-589-11	ELECT	47uF	20% 16V	CN351	1-750-640-11	CONNECTOR, FFC/FPC 23P
C354	1-161-494-00	CERAMIC	0.022uF	25V	CN352	1-764-411-11	PIN, CONNECTOR (PC BOARD) 35P
C361	1-162-306-11	CERAMIC	0.01uF	30% 16V	CN361	1-568-860-11	SOCKET, CONNECTOR 17P
C371	1-161-494-00	CERAMIC	0.022uF	25V	* CN371	1-568-825-11	SOCKET, CONNECTOR 6P
C372	1-161-494-00	CERAMIC	0.022uF	25V	* CN601	1-573-047-11	PIN, CONNECTOR (PC BOARD) 2P
C373	1-161-494-00	CERAMIC	0.022uF	25V	< DIODE >		
C374	1-104-664-11	ELECT	47uF	20% 16V	D321	8-719-987-63	DIODE 1N4148M
C375	1-161-494-00	CERAMIC	0.022uF	25V	D381	8-719-987-63	DIODE 1N4148M (CE505)
C381	1-161-494-00	CERAMIC	0.022uF	25V	D401	8-719-987-63	DIODE 1N4148M
C401	1-162-282-31	CERAMIC	100PF	10% 50V	D402	8-719-987-63	DIODE 1N4148M
C402	1-162-215-31	CERAMIC	47PF	5% 50V	D501	8-719-987-63	DIODE 1N4148M
C403	1-162-215-31	CERAMIC	47PF	5% 50V	D502	8-719-987-63	DIODE 1N4148M
C404	1-130-479-00	MYLAR	0.0047uF	5% 50V	D601	8-719-200-82	DIODE 11ES2
C404	1-137-368-11	FILM	0.0047uF	5% 50V	D602	8-719-200-82	DIODE 11ES2
C405	1-130-472-00	MYLAR	0.0012uF	5% 50V	D603	8-719-200-82	DIODE 11ES2
C405	1-137-433-11	FILM	0.0012uF	5% 50V	D604	8-719-200-82	DIODE 11ES2
C406	1-124-443-00	ELECT	100uF	20% 10V	D611	8-719-200-82	DIODE 11ES2
C407	1-161-494-00	CERAMIC	0.022uF	25V	D612	8-719-923-60	DIODE MTZJ-T-77-9.1A
C408	1-124-589-11	ELECT	47uF	20% 16V	D621	8-719-987-63	DIODE 1N4148M
C409	1-161-494-00	CERAMIC	0.022uF	25V	D622	8-719-010-34	DIODE UZ-4.7BSC
C410	1-161-494-00	CERAMIC	0.022uF	25V	< IC >		
C411	1-104-664-11	ELECT	47uF	20% 16V	IC201	8-759-821-32	IC CXA1291P
C412	1-162-290-31	CERAMIC	470PF	10% 50V	IC301	8-759-362-47	IC CXD8567AM
C501	1-162-282-31	CERAMIC	100PF	10% 50V	IC302	8-752-871-31	IC CXP82224-042Q
C502	1-162-215-31	CERAMIC	47PF	5% 50V	IC303	8-759-397-04	IC LC3564SM-85
C503	1-162-215-31	CERAMIC	47PF	5% 50V	IC371	8-749-921-12	IC GP1F32T (OPTICAL DIGITAL OUT)
C504	1-130-479-00	MYLAR	0.0047uF	5% 50V	IC401	8-759-634-51	IC M5218AP
C504	1-137-368-11	FILM	0.0047uF	5% 50V	IC402	8-759-634-51	IC M5218AP
C505	1-130-472-00	MYLAR	0.0012uF	5% 50V	IC501	8-759-634-51	IC M5218AP
C505	1-137-433-11	FILM	0.0012uF	5% 50V	IC601	8-759-061-65	IC LA5602
C506	1-124-443-00	ELECT	100uF	20% 10V	IC602	8-749-011-78	IC BA17807T
C507	1-161-494-00	CERAMIC	0.022uF	25V	IC611	8-759-633-42	IC M5293L
C508	1-124-589-11	ELECT	47uF	20% 16V			
C509	1-161-494-00	CERAMIC	0.022uF	25V			
C510	1-161-494-00	CERAMIC	0.022uF	25V			

Ref. No.	Part No.	Description	Remark
< JACK >			
J381	1-774-726-11	JACK (SMALL TYPE)(S-LINK CONTROL A1)(CE505)	
J401	1-770-719-11	JACK, PIN 2P (VARIABLE LINE OUT)	
< COIL >			
L301	1-410-503-11	INDUCTOR 3.3uH	
L302	1-410-503-11	INDUCTOR 3.3uH	
L303	1-412-473-21	INDUCTOR 0uH	
L304	1-410-503-11	INDUCTOR 3.3uH	
L305	1-410-503-11	INDUCTOR 3.3uH	
L306	1-412-473-21	INDUCTOR 0uH	
L307	1-412-473-21	INDUCTOR 0uH	
L308	1-412-473-21	INDUCTOR 0uH	
L351	1-410-503-11	INDUCTOR 3.3uH	
L361	1-412-473-21	INDUCTOR 0uH	
L401	1-410-503-11	INDUCTOR 3.3uH	
L501	1-410-503-11	INDUCTOR 3.3uH	
< TRANSISTOR >			
Q311	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q361	8-729-029-67	TRANSISTOR DTC114ESA-TP	
Q362	8-729-029-67	TRANSISTOR DTC114ESA-TP	
Q363	8-729-029-67	TRANSISTOR DTC114ESA-TP	
Q364	8-729-029-67	TRANSISTOR DTC114ESA-TP	
Q371	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q381	8-729-119-78	TRANSISTOR 2SC2785-HFE (CE505)	
Q401	8-729-141-26	TRANSISTOR 2SC3622A-LK	
Q402	8-729-029-56	TRANSISTOR DTA144ESA-TP	
Q501	8-729-141-26	TRANSISTOR 2SC3622A-LK	
Q502	8-729-029-56	TRANSISTOR DTA144ESA-TP	
Q611	8-729-119-76	TRANSISTOR 2SA1175-HFE	
< RESISTOR >			
R201	1-249-440-11	CARBON 82K 5%	1/4W
R202	1-249-440-11	CARBON 82K 5%	1/4W
R203	1-249-441-11	CARBON 100K 5%	1/4W
R204	1-249-441-11	CARBON 100K 5%	1/4W
R205	1-249-393-11	CARBON 10 5%	1/4W F
R206	1-249-427-11	CARBON 6.8K 5%	1/4W F
R207	1-247-889-00	CARBON 270K 5%	1/4W
R208	1-247-889-00	CARBON 270K 5%	1/4W
R209	1-247-860-11	CARBON 16K 5%	1/4W
R210	1-247-883-00	CARBON 150K 5%	1/4W
R211	1-249-431-11	CARBON 15K 5%	1/4W
R212	1-249-382-11	CARBON 1.2 5%	1/6W F
R213	1-249-382-11	CARBON 1.2 5%	1/6W F
R214	1-249-393-11	CARBON 10 5%	1/4W F
△ R215	1-212-942-00	FUSIBLE 2.2 5%	1/2W F
△ R216	1-212-942-00	FUSIBLE 2.2 5%	1/2W F

Ref. No.	Part No.	Description	Remark
R301	1-249-424-11	CARBON 3.9K 5%	1/4W F
R302	1-249-417-11	CARBON 1K 5%	1/4W F
R303	1-249-417-11	CARBON 1K 5%	1/4W F
R304	1-249-417-11	CARBON 1K 5%	1/4W F
R305	1-249-411-11	CARBON 330 5%	1/4W
R306	1-249-429-11	CARBON 10K 5%	1/4W
R307	1-249-429-11	CARBON 10K 5%	1/4W
R308	1-247-807-31	CARBON 100 5%	1/4W
R311	1-249-429-11	CARBON 10K 5%	1/4W
R312	1-249-429-11	CARBON 10K 5%	1/4W
R313	1-249-429-11	CARBON 10K 5%	1/4W
R314	1-249-441-11	CARBON 100K 5%	1/4W
R315	1-249-429-11	CARBON 10K 5%	1/4W
R316	1-249-429-11	CARBON 10K 5%	1/4W
R321	1-249-399-11	CARBON 33 5%	1/4W F
R322	1-249-429-11	CARBON 10K 5%	1/4W
R323	1-249-429-11	CARBON 10K 5%	1/4W
R324	1-249-429-11	CARBON 10K 5%	1/4W
R325	1-249-429-11	CARBON 10K 5%	1/4W
R326	1-249-429-11	CARBON 10K 5%	1/4W
R327	1-249-429-11	CARBON 10K 5%	1/4W
R328	1-249-429-11	CARBON 10K 5%	1/4W
R329	1-249-429-11	CARBON 10K 5%	1/4W
R330	1-249-429-11	CARBON 10K 5%	1/4W
R331	1-249-429-11	CARBON 10K 5%	1/4W
R332	1-249-429-11	CARBON 10K 5%	1/4W
R333	1-249-429-11	CARBON 10K 5%	1/4W
R334	1-249-417-11	CARBON 1K 5%	1/4W F
R335	1-249-429-11	CARBON 10K 5%	1/4W
R351	1-249-429-11	CARBON 10K 5%	1/4W
R352	1-249-427-11	CARBON 6.8K 5%	1/4W F
R361	1-249-427-11	CARBON 6.8K 5%	1/4W F
R362	1-249-427-11	CARBON 6.8K 5%	1/4W F
R363	1-249-427-11	CARBON 6.8K 5%	1/4W F
R364	1-249-427-11	CARBON 6.8K 5%	1/4W F
R371	1-249-429-11	CARBON 10K 5%	1/4W
R372	1-249-430-11	CARBON 12K 5%	1/4W
R373	1-249-425-11	CARBON 4.7K 5%	1/4W F
R374	1-249-425-11	CARBON 4.7K 5%	1/4W F
R375	1-249-425-11	CARBON 4.7K 5%	1/4W F
R381	1-249-425-11	CARBON 4.7K 5%	1/4W F
R382	1-249-429-11	CARBON 10K 5%	1/4W (CE505)
R383	1-249-393-11	CARBON 10 5%	1/4W F (CE505)
R401	1-249-436-11	CARBON 39K 5%	1/4W
R402	1-249-436-11	CARBON 39K 5%	1/4W
R403	1-249-431-11	CARBON 15K 5%	1/4W
R404	1-249-431-11	CARBON 15K 5%	1/4W
R405	1-249-437-11	CARBON 47K 5%	1/4W

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

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

MAIN	SENSOR	TABLE MOTOR
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Ref. No.	Part No.	Description	Remark
R406	1-249-437-11	CARBON 47K 5%	1/4W
R407	1-249-419-11	CARBON 1.5K 5%	1/4W F
R408	1-249-419-11	CARBON 1.5K 5%	1/4W F
R409	1-247-887-00	CARBON 220K 5%	1/4W
R410	1-249-417-11	CARBON 1K 5%	1/4W F
R411	1-249-409-11	CARBON 220 5%	1/4W F
R412	1-249-425-11	CARBON 4.7K 5%	1/4W F
R413	1-247-807-31	CARBON 100 5%	1/4W
R414	1-249-441-11	CARBON 100K 5%	1/4W
R501	1-249-436-11	CARBON 39K 5%	1/4W
R502	1-249-436-11	CARBON 39K 5%	1/4W
R503	1-249-431-11	CARBON 15K 5%	1/4W
R504	1-249-431-11	CARBON 15K 5%	1/4W
R505	1-249-437-11	CARBON 47K 5%	1/4W
R506	1-249-437-11	CARBON 47K 5%	1/4W
R507	1-249-419-11	CARBON 1.5K 5%	1/4W F
R508	1-249-419-11	CARBON 1.5K 5%	1/4W F
R509	1-247-887-00	CARBON 220K 5%	1/4W
R510	1-249-417-11	CARBON 1K 5%	1/4W F
R511	1-249-409-11	CARBON 220 5%	1/4W F
R512	1-249-425-11	CARBON 4.7K 5%	1/4W F
R513	1-247-807-31	CARBON 100 5%	1/4W
R514	1-249-441-11	CARBON 100K 5%	1/4W
R601	1-249-429-11	CARBON 10K 5%	1/4W
R602	1-249-429-11	CARBON 10K 5%	1/4W
R603	1-249-438-11	CARBON 56K 5%	1/4W
R611	1-249-435-11	CARBON 33K 5%	1/4W
R621	1-249-411-11	CARBON 330 5%	1/4W
< SWITCH >			
△ S601	1-572-675-11	SWITCH, POWER VOLTAGE CHANGE (CE505:E)	
< VIBRATOR >			
X301	1-579-834-11	VIBRATOR, CRYSTAL (33MHz)	
X311	1-579-175-11	VIBRATOR, CERAMIC (10MHz)	

*	1-659-737-11	SENSOR BOARD	*****
< CONNECTOR >			
CN851	1-573-383-11	PIN, CONNECTOR (PC BOARD) 2P	
CN852	1-750-243-11	SOCKET, CONNECTOR 6P	
< DIODE >			
D851	8-749-924-18	DIODE PHOTO INTERRUPTER RPI-1391	
D852	8-749-924-30	DIODE PHOTO REFLECTOR GP2S28	

Ref. No.	Part No.	Description	Remark
< RESISTOR >			
R851	1-249-416-11	CARBON 820 5%	1/4W F
R852	1-249-406-11	CARBON 120 5%	1/4W F

*	1-647-364-11	TABLE MOTOR BOARD	*****
< MOTOR >			
M801	A-4660-525-A	MOTOR ASSY, ROTARY (TABLE)	

MISCELLANEOUS			

13	1-776-239-11	WIRE (FLAT TYPE)(17 CORE)	
15	1-776-125-11	WIRE (FLAT TYPE)(35 CORE)	
△ 68	1-569-007-11	ADAPTER, CONVERSION 2P (CE505:E)	
△ 68	1-569-008-11	ADAPTER, CONVERSION 2P (CE505:CH)	
72	1-751-052-11	WIRE (FLAT TYPE)(6 CORE)	
105	1-466-996-11	ENCODER, ROTARY	
109	1-765-443-11	WIRE (FLAT TYPE)(23 CORE)	
111	1-452-538-41	MAGNET	
△ 151	8-848-367-11	OPTICAL PICK UP KSS-213B/K-N	
152	1-769-069-11	WIRE (FLAT TYPE)(16 CORE)	
△ CNP901	1-558-943-61	CORD, POWER (CE505:E)	
△ CNP901	1-575-651-21	CORD, POWER (CE505:AEP,G,CH)	
△ CNP901	1-590-926-11	CORD, POWER (C450Z/CE505:US,CND)	
△ CNP901	1-696-845-11	CORD, POWER (CE505:AUS)	
M101	X-4917-523-3	MOTOR ASSY (SPINDLE)	
M102	X-4917-504-1	MOTOR ASSY (SLED)	
M801	A-4660-525-A	MOTOR ASSY, ROTARY (TABLE)	
M802	A-4660-914-A	MOTOR ASSY, LOADING (LOADING)	
S101	1-572-085-11	SWITCH, LEAF (LIMIT)	
△ T601	1-423-830-11	TRANSFORMER, POWER (C450Z/CE505:US,CND)	
△ T601	1-429-394-11	TRANSFORMER, POWER (CE505:AEP,G,AUS,CH)	
△ T601	1-429-395-11	TRANSFORMER, POWER (CE505:E)	

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Ref. No.	Part No.	Description	Remark
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ACCESSORIES & PACKING MATERIALS

1-473-531-11	REMOTE COMMANDER (RM-DC51)		
1-558-271-11	CORD, CONNECTION (AUDIO 108cm)		
1-777-241-11	CORD, CONNECTION (CONTROL A1 1m)		
		(CE505:CND)	

3-810-585-11	MANUAL, INSTRUCTION		
	(ENGLISH, FRENCH, SPANISH, SWEDISH, CHINESE)		
		(CE505:CND, AEP, G, E, CH)	

3-810-585-21	MANUAL, INSTRUCTION (ENGLISH)		
		(C450Z/CE505:US, AUS)	

3-810-585-31	MANUAL, INSTRUCTION		
	(GERMAN, DUTCH, PORTUGUESE, ITALIAN)		
		(CE505:AEP, G)	

*	4-979-552-01	CUSHION (FRONT)	
*	4-979-553-01	CUSHION (REAR)	
*	4-979-555-01	INDIVIDUAL CARTON	
		(CE505:US, CND, AEP, G, AUS)	
*	4-981-353-01	INDIVIDUAL CARTON (CE505:E, CH)	
*	4-981-605-01	INDIVIDUAL CARTON (C450Z)	
	4-983-956-01	COVER, BATTERY (For RM-DC51)	

HARDWARE LIST

#1	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S
#2	7-682-548-04	SCREW +BVTT 3X8 (S)
#3	7-685-648-79	SCREW (M3X12), TAPPING
#4	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S
#5	7-621-772-00	SCREW +B 2X3
#6	7-685-134-19	SCREW +PTPWH 2.6X8 (TYPE2)
#7	7-621-255-15	SCREW +P 2X3
#8	7-685-871-01	SCREW +BVTT 3X6 (S)

