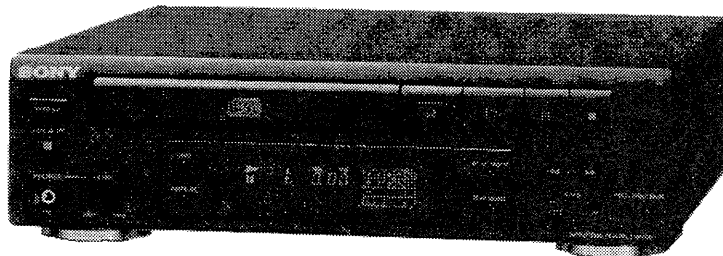


CDP-S35

SERVICE MANUAL

*E Model
Tourist Model*



Model Name Using Similar Mechanism	MCE-S50
CD Mechanism Type	CDM14M-5BD20
Base Unit Name	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 98 dB
Dynamic range	More than 98 dB
Harmonic distortion	Less than 0.005%
Channel separation	More than 93 dB

Outputs

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

General

Power requirements	110 V - 120 V or 220 V - 240 V AC, adjustable, 50/60 Hz
Power consumption	10 W
Dimensions (approx.) (w/h/d)	280 x 82.5 x 285 mm incl. projecting parts
Mass (approx.)	2.2 kg

Supplied accessories

- Audio cord (2 phono plugs - 2 phono plugs) (1)
- Remote commander (remote) (1)
- Sony SUM-3 (NS) batteries (2)

Design and specification are subject to change without notice.



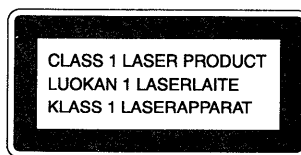
COMPACT DISC PLAYER
SONY®

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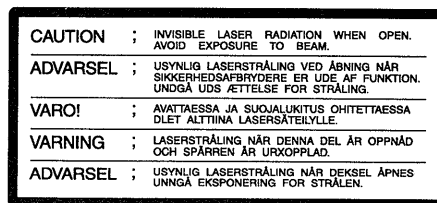
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Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

For customers in Europe



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



This caution label is located inside the unit.

CAUTION

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

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK Δ OR DOTTED LINE WITH MARK Δ 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.

SECTION 1

SERVICING NOTES

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

The laser diode in the optical pick-up block may suffer electrostatic 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.

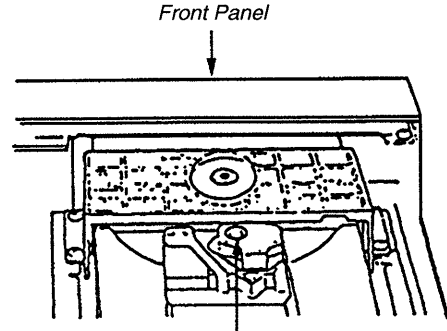
The flexible board is easily damaged and should be handled with care.

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 more than 30 cm away from the objective lens.

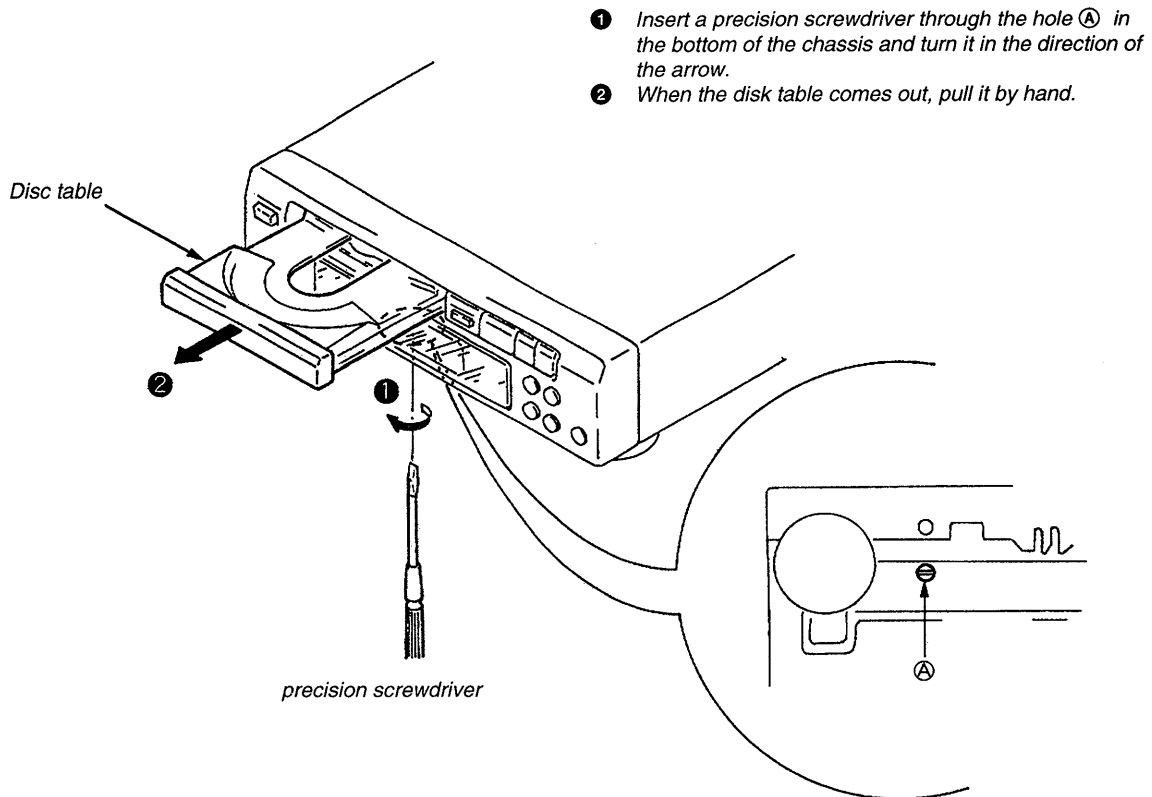
LASER DIODE & FOCUS SEARCH OPERATION CHECK

1. Turn POWER switch on with no disc inserted and disc table closed.
2. Confirm that the following operation is performed while observing the objecting lens.



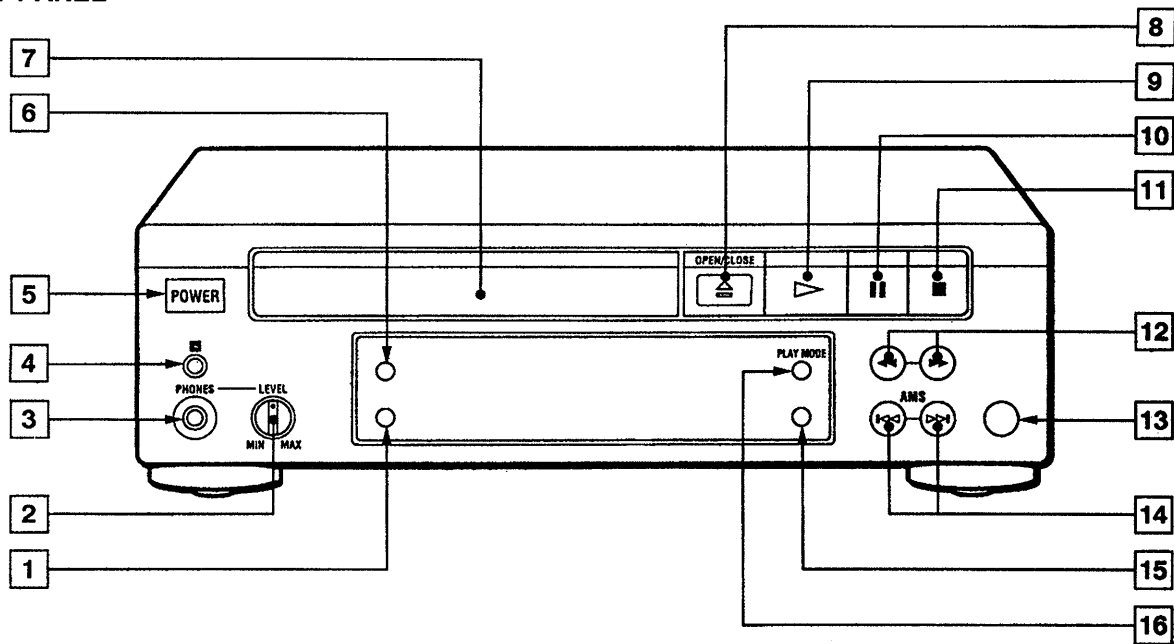
- ① Confirm that laser is spread.
- ② Up and down motion of the objective lens.(3 times) .

● Disc table getting out procedure on the power supply is OFF



SECTION 2 GENERAL

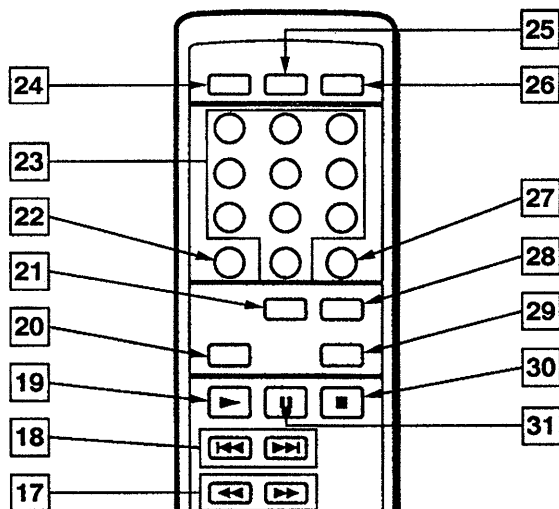
FRONT PANEL



- 1 REPEAT button
- 2 LEVEL (phones) control
- 3 PHONES jack
- 4 Remote sensor
- 5 POWER switch
- 6 TIME button
- 7 Disc table
- 8 OPEN/CLOSE button

- 9 play button
- 10 pause button
- 11 stop button
- 12 fast forward, rewind buttons
- 13 EDIT/TIME FADE button
- 14 AMS buttons
- 15 PEAK SEARCH button
- 16 PLAY MODE button

REMOTE (RM-D320)



- 17 fast forward, rewind buttons
- 18 AMS buttons
- 19 play button
- 20 REPEAT buttons
- 21 TIME button
- 22 >10 button
- 23 Numeric (1-9) button
- 24 CONTINUE button
- 25 SHUFFLE button
- 26 PROGRAM button
- 27 CLEAR button
- 28 CHECK button
- 29 FADER button
- 30 stop button
- 31 pause button

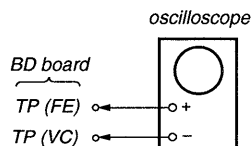
SECTION 3 ADJUSTMENTS

CD SECTION

Note :

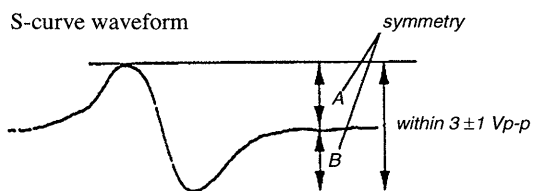
1. CD Block basically constructed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use the oscilloscope with more than $10M\Omega$ impedance.
4. Clean an object lens by an applicator with neutral detergent when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

S-Curve Check



Procedure :

1. Connect oscilloscope to test point TP (FE) on BD board.
2. Connect between test point TP (FEI) and TP (VC) by lead wire.
3. Turned Power switch on.
4. 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.)
5. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within $3 \pm 1V_{p-p}$.



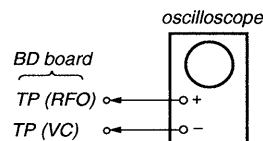
6. After check, remove the lead wire connected in step 2.

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.

Adjustment Location : BD board. (see page 6)

RF Level Check

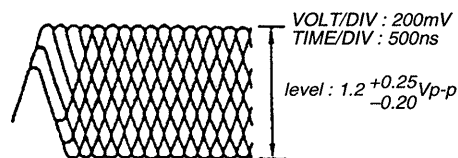


Procedure :

1. Connect oscilloscope to test point TP (RFO) 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 RF signal level is correct or not.

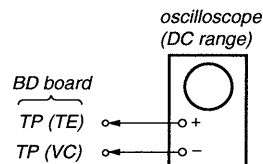
Note :

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



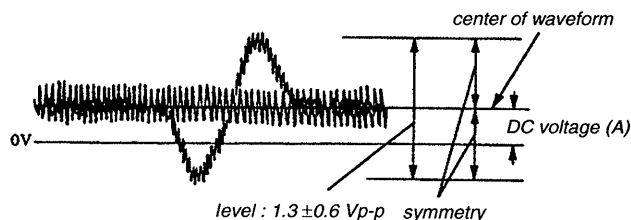
Adjustment Location : BD board. (see page 6)

E-F Balance (1 track jump) Check

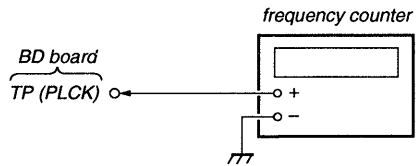


1. Connect oscilloscope to test point TP (TE) and TP (VC) on BD board.
2. Turn Power switch ON.
3. Put disc (YEDS-18) in to play the number five track.
4. Press the **11** button. (This is 1 track jump mode).
5. Check the waveform level of (B) , and the DC voltage (A) at the center of the traverse waveform with an oscilloscope. Find the values and verify at this time that waveforms $A/B \times 100 = \pm 20\%$ or less.

1 track jump waveform



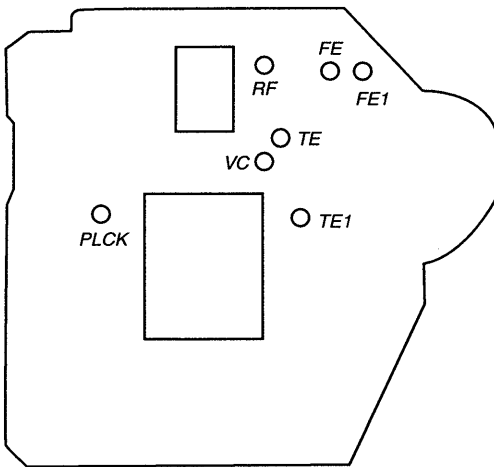
RF PLL freerun frequency Check



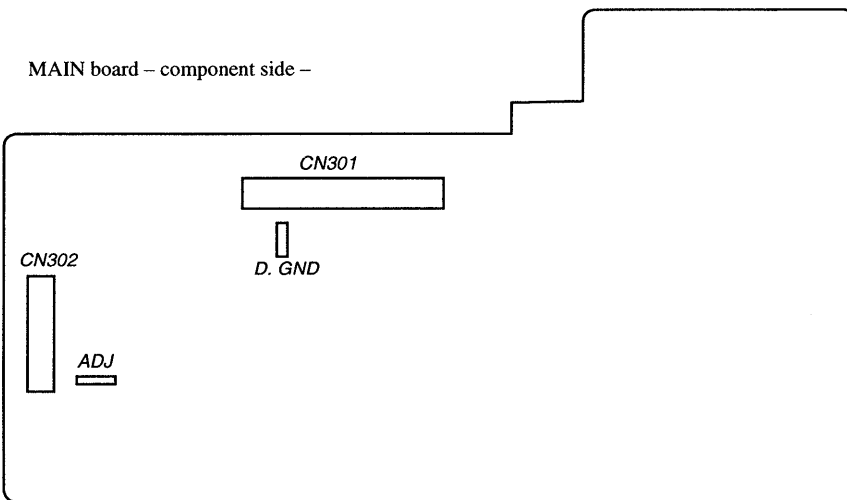
1. Connect frequency counter to test point TP (PLCK) .
2. Turn Power switch ON.
3. Put disc (YEDS-18) in to play the number five track.
Confirm that reading on frequency counter is 4.3218MHz.

Adjustment Location :

BD board – side A–



MAIN board – component side –



SECTION 4

EXPLANATION OF IC TERMINALS

IC101 CXD2545Q

Pin No.	Pin name	I/O	Description
1	SRON	O	Not used (Open).
2	SRDR	O	SLED drive output.
3	SFON	O	Not used (Open).
4	TFDR	O	TRAKING drive output.
5	TRON	O	Not used (Open).
6	TRDR	O	Not used (Open).
7	TFON	O	Not used (Open).
8	FFDR	O	FOCUS drive output.
9	FRON	O	Not used (Open).
10	FRDR	O	FOCUS drive output.
11	FFON	O	Not used (Open).
12	VCOO	O	Not used (Open).
13	VCOI	I	Not used (Connect to ground).
14	TEST	I	Not used (Connect to ground).
15	DVss	—	Not used (Connect to ground).
16	TES2	I	Not used (Connect to ground).
17	TES3	I	Not used (Connect to ground).
18	PDO	O	Not used (Open).
19	VPCO	O	Not used (Open).
20	VCKI	I	Not used (Connect to ground).
21	AVD2	—	Power supply for analog. (+5V)
22	IGEN	I	Power supply for operation amplifier.
23	AVS2	—	Ground terminal for analog.
24	ADIO	I	Not used (Open).
25	RFC	O	Not used (Open).
26	RFDC	I	RF signal input terminal.
27	TE	I	Tracking error signal input terminal.
28	SE	I	Sled error signal input terminal.
29	FE	I	Focus error signal input terminal.
30	VC	I	Center voltage input terminal.
31	FILO	O	Filter output terminal to master PLL.
32	FILI	I	Filter input terminal from master PLL.
33	PCO	O	CHARGE-PUMP output terminal to master PLL.
34	CLTV	I	Control voltage input terminal from master VCO.
35	AVS1	—	Ground terminal for analog.
36	RFAC	I	EFM signal input terminal.
37	BIAS	I	Current constant input terminal from asymmetry circuit.
38	ASYI	I	Comparater voltage input terminal from asymmetry circuit.
39	ASYO	O	EMF fullswing output terminal.
40	AVD1	—	Power supply for analog. (+5V)

Pin No.	Pin name	I/O	Description
41	DVDD	–	Power supply for digital. (+5V)
42	ASYE	I	Asymmetry circuit ON/OFF.
43	PSSL	I	Not used (Connect to ground).
44	WDCK	O	WORD clock output terminal.
45	LRCK	O	LR clock output terminal.
46	DATA	O	DA16 output : PSSL=1, 48-bit slot serial data : PSSL=0.
47	BCLK	O	DA15 output : PSSL=1, 48-bit slot serial data : PSSL=0.
48	64 DATA	O	Not used (Open).
49	64 BCLK	O	Not used (Open).
50	64 LRCK	O	Not used (Open).
51	GTOP	O	Not used (Open).
52	XUGF	O	Not used (Open).
53	XPLCK	O	Not used (Open).
54	GFS	O	DA08 output : PSSL=1, GFS output : PSSL=0.
55	RFCK	O	Not used (Open).
56	C2PO	O	Not used (Open).
57	XRAOF	O	Not used (Open).
58	MNT3	O	Not used (Open).
59	MNT2	O	Not used (Open).
60	MNT1	O	Not used (Open).
61	MNT0	O	Not used (Open).
62	XTAI	I	System clock input.
63	XTAO	O	Not used (Open).
64	XTSL	I	System clock select terminal (Connect to ground).
65	DVSS	–	Digital ground terminal.
66	FSTI	I	2/3 divider input terminal from 62,63 pin.
67	FSTO	O	2/3 divider output terminal to 62,63 pin.
68	FSOF	O	Not used (Open).
69	C16M	O	Not used (Open).
70	MD2	I	Digital output ON/OFF control terminal (Connect to +5V).
71	DOUT	O	Digital output terminal.
72	EMPH	O	Not used (Open).
73	WFCK	O	Not used (Open).
74	SCOR	O	Sub-code SYNC output.
75	SBSO	O	Not used (Open).
76	EXCK	I	Not used (Connect to ground).
77	SUBQ	O	SUB-Q 80-bit output.
78	SQCK	I	Clock input terminal from SQSO readout.
79	MUTE	I	Muting signal input.
80	SENS	O	SENS output.

Pin No.	Pin name	I/O	Description
81	XRST	I	System reset terminal.
82	DIRC	I	1- track jump mode input (connect to +5V)
83	SCLK	I	SENS serial data readout clock terminal.
84	DFSW	I	DFCT detect terminal (connect to ground).
85	ATSK	I	Antishock input terminal (connect to ground) .
86	DATA	I	Serial data input from CPU.
87	XLAT	I	Latch input from CPU.
88	CLOCK	I	Serial data transfer clock input from CPU.
89	COUT	O	Not used (Open).
90	DVDD	–	Power supply for digital (+5V).
91	MIRR	O	MIRROR signal output.
92	DFCT	O	DEFECT signal output.
93	FOK	O	FOCUS OK output.
94	FSW	O	Not used (Open).
95	MON	O	Not used (Open).
96	MDP	O	Savo control output to spindle motor.
97	MDS	O	Not used (Open).
98	LOCK	O	Not used (Open).
99	SSTP	I	Disc inner track detect terminal.
100	SFDR	O	Sled drive output terminal.

IC201 CXP82612-025Q (SYSTEM CONTROL, FL DRIVE)

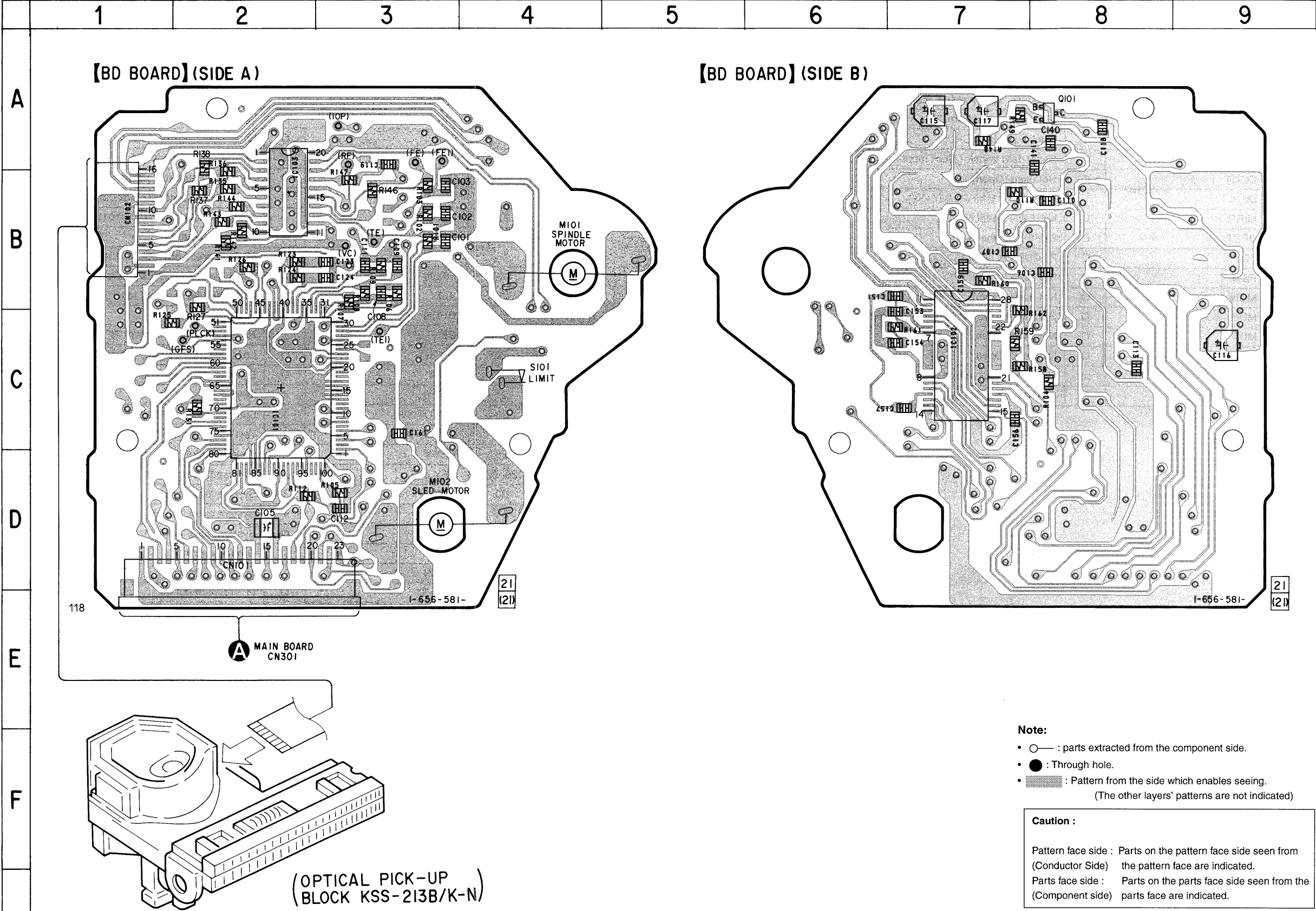
Pin No.	Pin name	I/O	Description
1	TIMER	I	Not used (connect to +5V).
2	RM	I	Remotecontrol signal input.
3	+5V	I	Connect to +5V.
4-6	OPEN	—	Not used (Open).
7	PGML	O	Latch output to digital filter (IC301).
8	CLK	O	Serial data transfer clock output to IC101 and IC301.
9	SENSE	I	SENSE input from IC101.
10	DATA	O	Serial data output to IC101 and IC103.
11	SQCK	O	Q-data readout serial clock output to IC101.
12	SUBQ	I	Q-data serial input from IC101.
13	OPEN	—	Not used (Open).
14	AMUTE	O	Muting control output to IC101.
15	LDON	O	Laser diode ON/OFF signal output.
16	XLT	O	Command latch output to IC101.
17,18	OPEN	—	Not used (Open).
19	CENTER	I	Return focus bias center. "H"
20	LDOUT	O	Loading motor control. "H" : Loading out
21	LDIN	O	Loading motor control. "H" : Loading in
22	KEY 0	I	Keydata input.
23	IN/OUT SW	I	Loading in/out switch input.
24	ADJ/AF ADJ	I	Test mode input. Normal : "H"
25	KEY 1	I	Keydata input.
26-29	KEY 2-5	I	Not used. (Connect to +5V)
30	RST	I	System reset input.
31	EXTAL	I	System clock. (4MHz)
32	XTAL	O	System clock. (4MHz)
33	Vss	—	Ground terminal.
34-41	OPEN	—	Not used (Open).
42-62	S21-S1	O	FL segment output.
63-67	1G-5G	O	FL digit output.
68	OPEN	—	Not used (Open).
69,70	6G,7G	O	FL digit output.
71	VFDP (-30V)	—	FL power supply (-30V).
72	VDD (+5V)	I	Power supply (+5V).
73-77	+5V	I	Not used. (Connect to +5V)
78	SCOR	I	SCOR input from IC101.
79	SEL 2 (L)	I	Not used. (Connect to ground)
80	SEL 3 (L)	I	Not used. (Connect to ground)

SECTION 5
DIAGRAMS

5-1. PRINTED WIRING BOARDS (BD SECTION)

● SEMICONDUCTOR
LOCATION

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



Note:

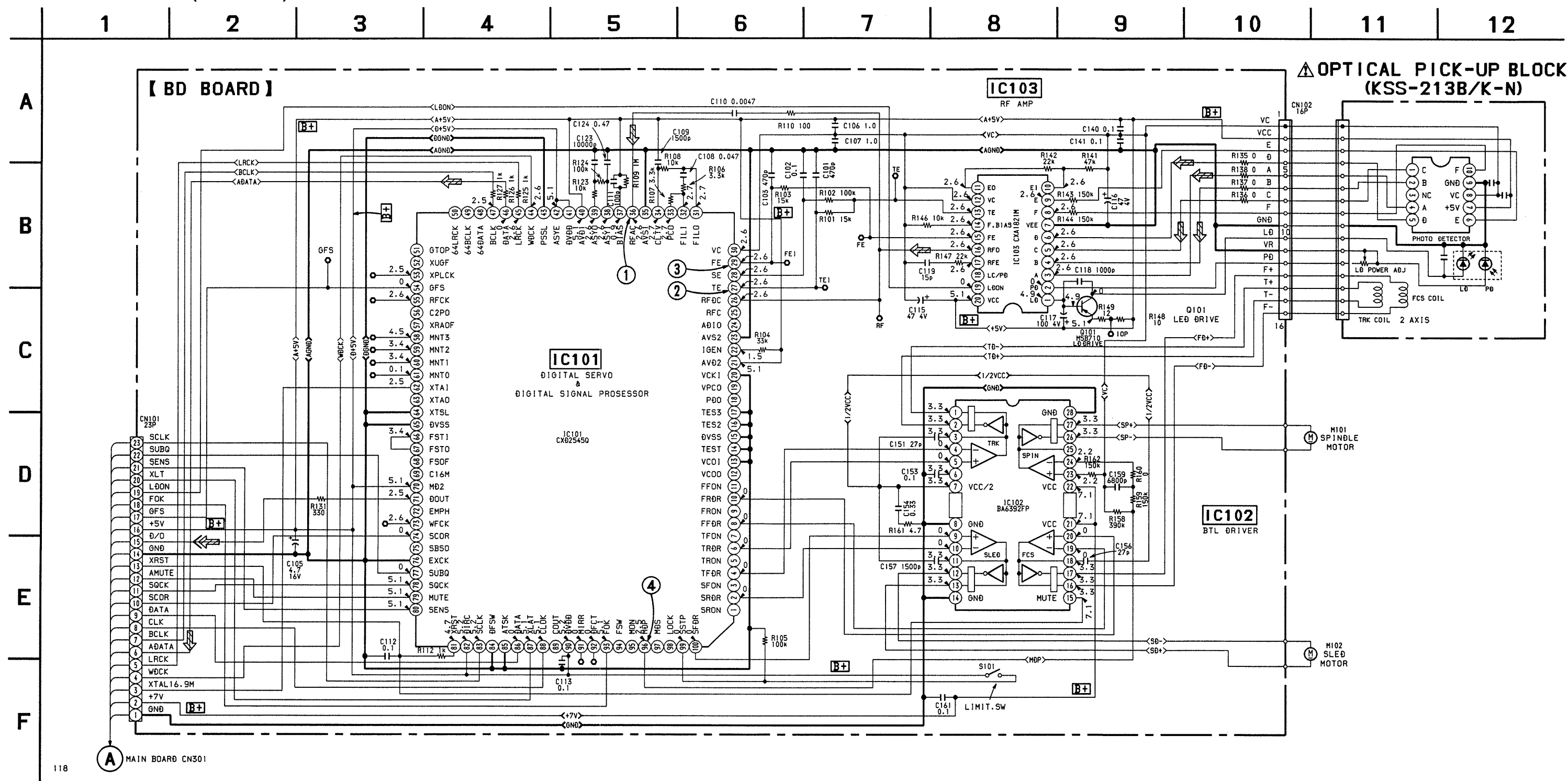
- : parts extracted from the component side.
- : Through hole.
- ▨ : Pattern from the side which enables seeing.
(The other layers' patterns are not indicated)

Caution :

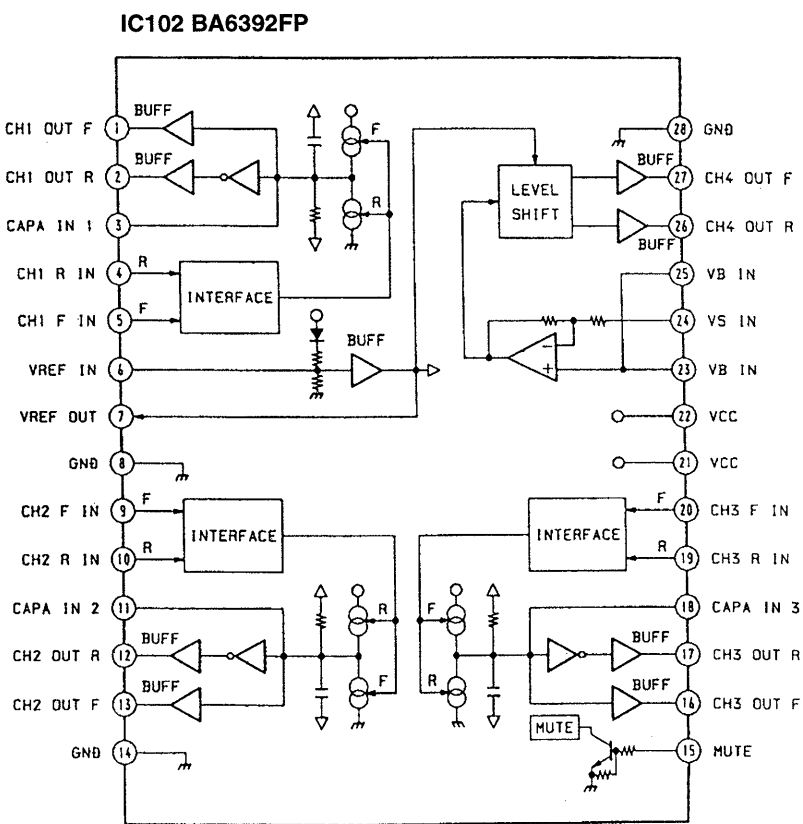
Pattern face side : Parts on the pattern face side seen from
(Conductor Side) the pattern face are indicated.

Parts face side : Parts on the parts face side seen from the
(Component side) parts face are indicated.

5-2. SCHEMATIC DIAGRAM (BD SECTION)



● IC BLOCK DIAGRAM

**Note :**

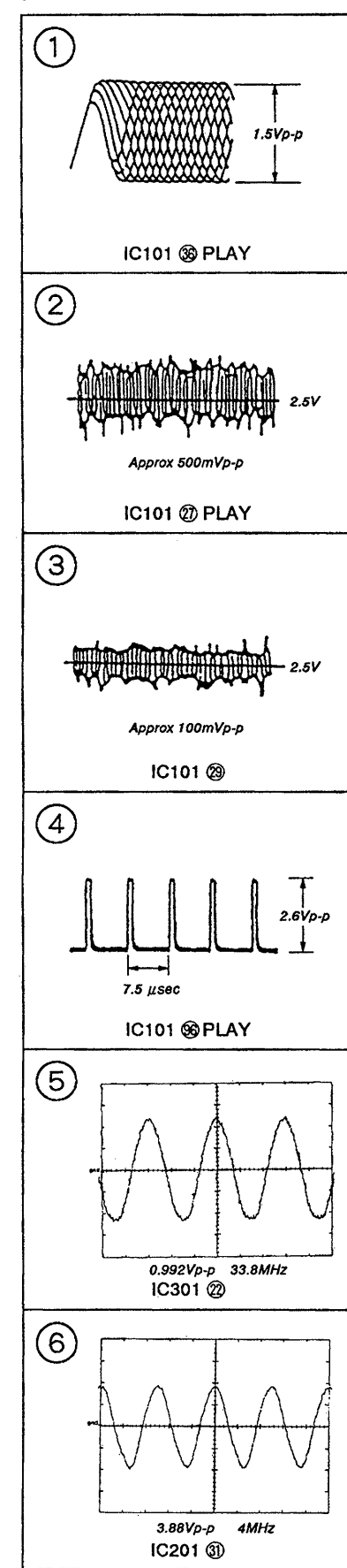
- All capacitors are in μF unless otherwise noted. pF : μF 50V or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}$ W or less unless otherwise specified.

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

- B+**: B+ Line
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
- no mark : STOP
- () : PLAY

- 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

● WAVEFORMS



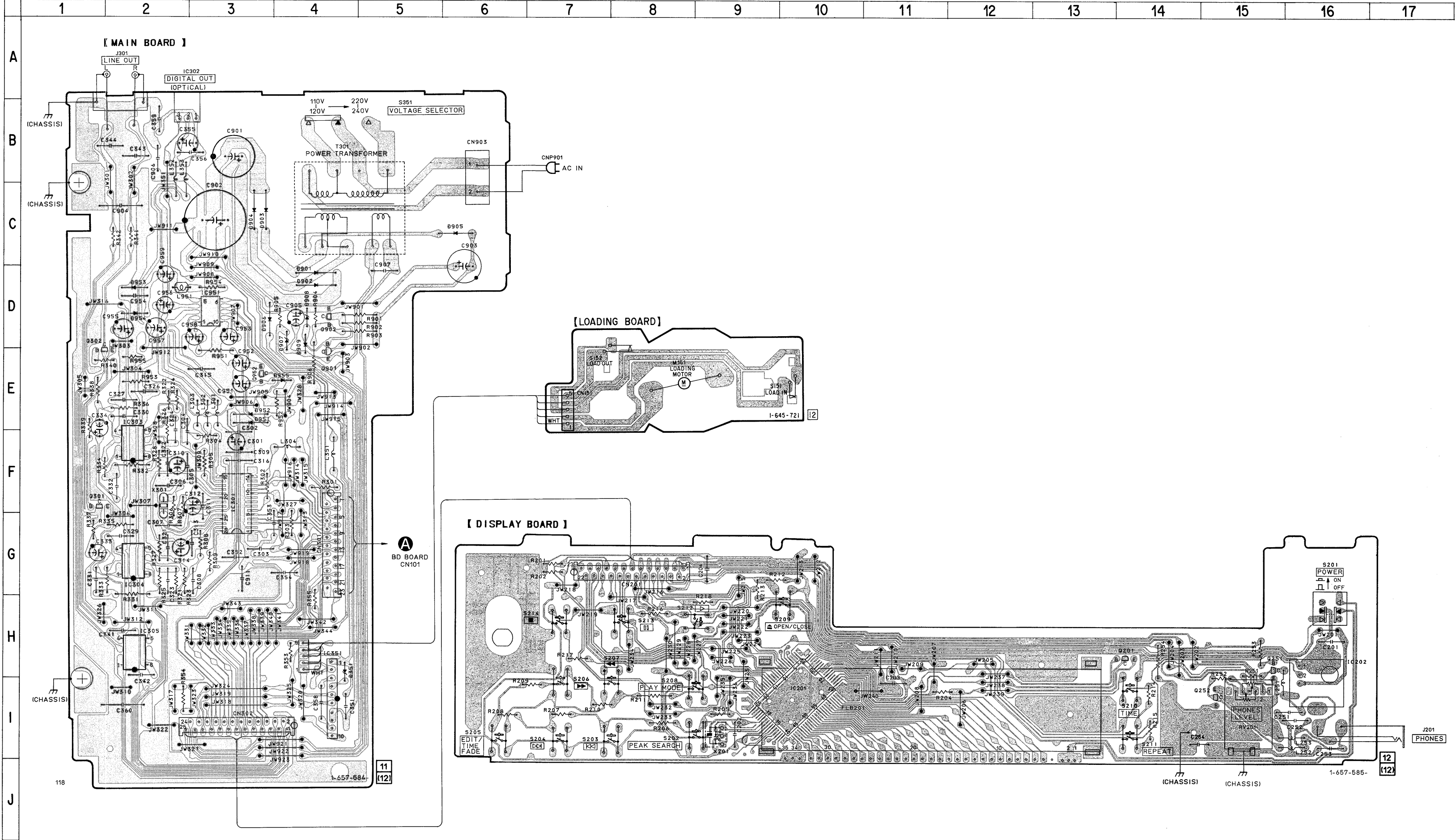
5-3. PRINTED WIRING BOARDS (MAIN SECTION)

● SEMICONDUCTOR LOCATION

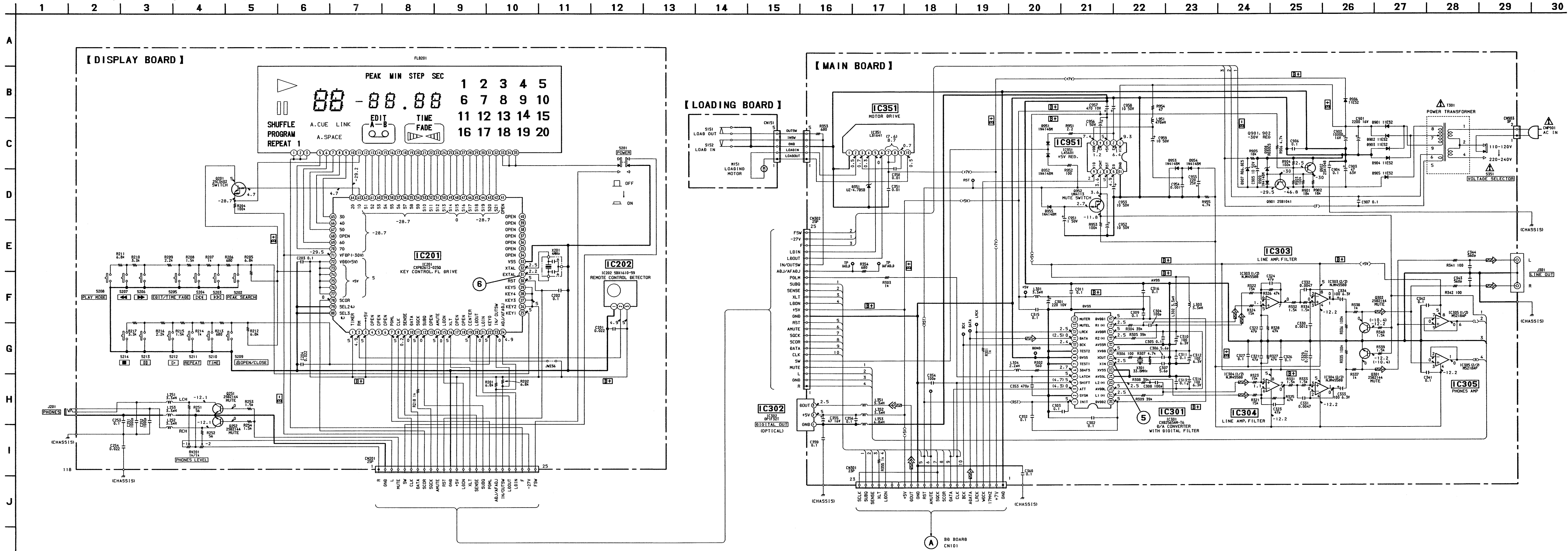
Ref. No.	Location
D351	H - 4
D901	D - 4
D902	D - 4
D903	C - 3
D904	C - 3
D905	C - 6
D906	D - 3
D907	D - 4
D908	D - 4
D909	D - 4
D951	E - 3
D952	E - 3
D953	D - 2
D954	D - 2
D955	E - 4
IC201	I - 10
IC202	H - 16
IC301	F - 3
IC302	B - 2
IC303	F - 2
IC304	G - 2
IC305	H - 2
IC351	I - 4
IC951	D - 3
Q201	H - 14
Q251	H - 15
Q252	I - 15
Q301	F - 1
Q302	E - 1
Q901	E - 4
Q902	D - 4
Q952	E - 3

Note:

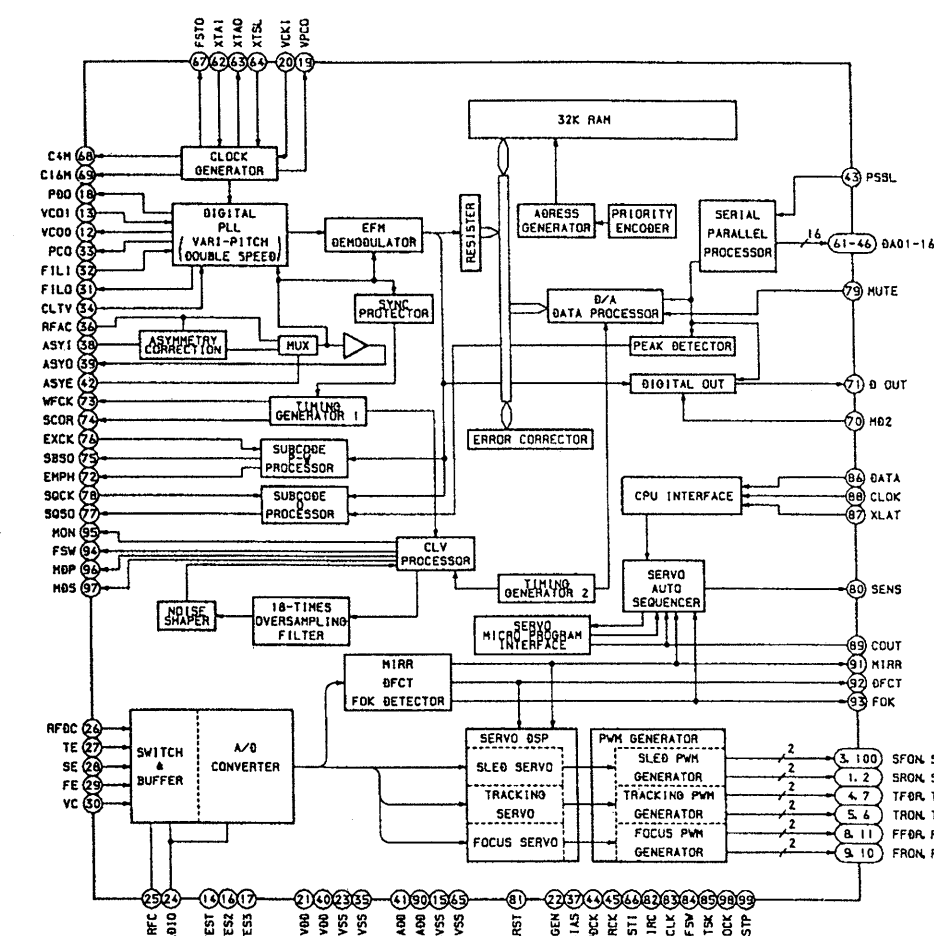
- — : parts extracted from the component side.
- : Pattern on the side which is seen.



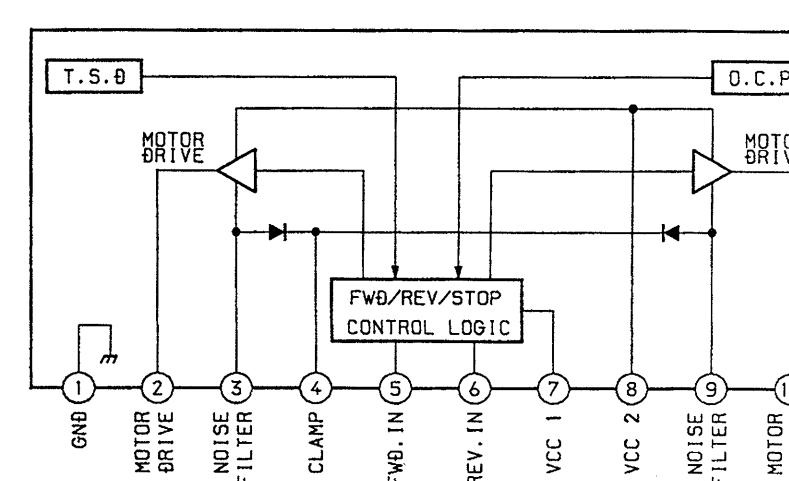
- Refer to page 15 for Waveforms



- IC BLOCK DIAGRAMS

IC301 CXD2565AM

IC351 LB1641



Note :

- All capacitors are in μF unless otherwise noted. pF : μF 50WV 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.
- Δ : internal component.

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

- **[B +]** : B+ Line
- **[B -]** : B- Line
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
- no mark : STOP
() : PLAY
- Voltages are taken with a VOM (Input impedance 10M Ω).
- 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.
-  : CD
-  : digital out

SECTION 6
EXPLODED VIEWS

NOTE :

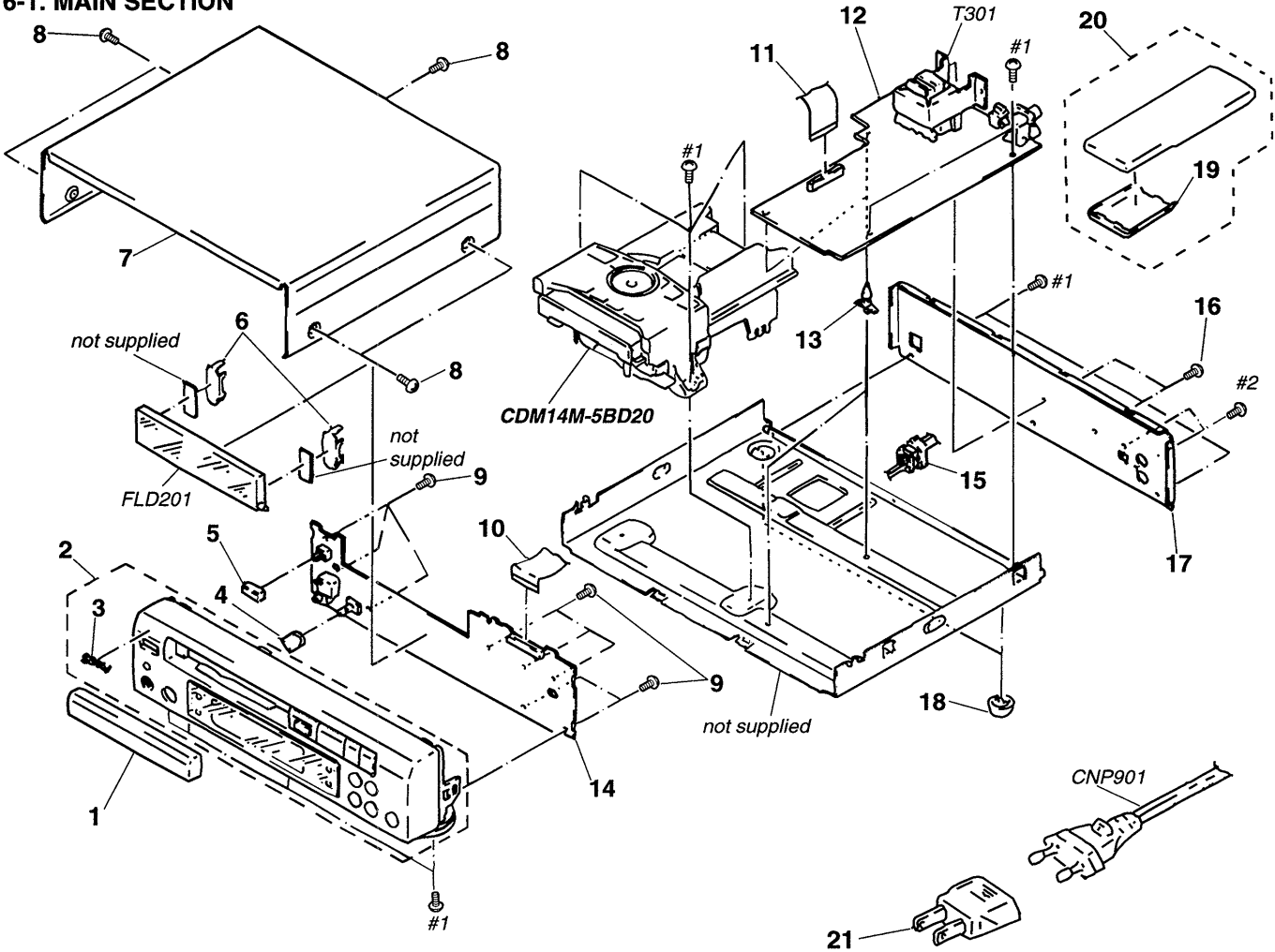
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked “ * ” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- 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
JE : Tourist

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

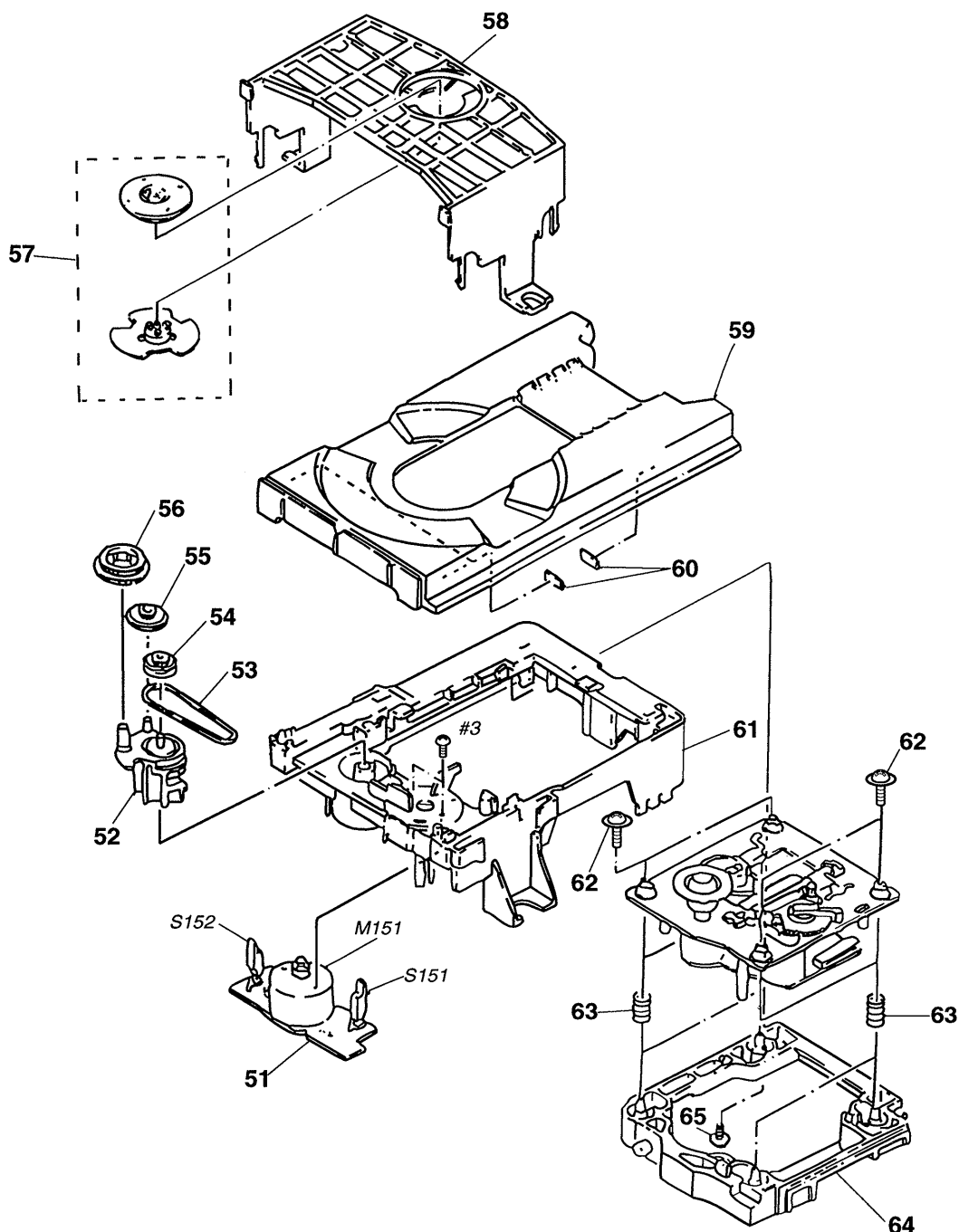
6-1. MAIN SECTION



Ref. No.	Part No.	Description	Remark
1	4-974-994-01	PANEL, LOADING	
2	X-4946-178-1	PANEL ASSY, FRONT	
3	4-942-567-01	EMBLEM (NO.4), SONY	
4	4-961-259-01	KNOB (VOL)	
5	4-975-058-01	BUTTON (POWER)	
* 6	4-961-264-01	HOLDER (FL.TUBE 3.5)	
* 7	4-969-922-71	CASE	
8	3-704-366-01	SCREW (CASE) (M3X8)	
9	4-951-620-01	SCREW (2.6X8), +BVTP	
10	1-775-487-11	WIRE (FLAT TYPE) (25 CORE)	
11	1-776-059-11	WIRE (FLAT TYPE) (23 CORE)	
* 12	A-4699-151-A	MAIN BOARD, COMPLETE	
13	4-943-687-01	HOLDER, PC BOARD	

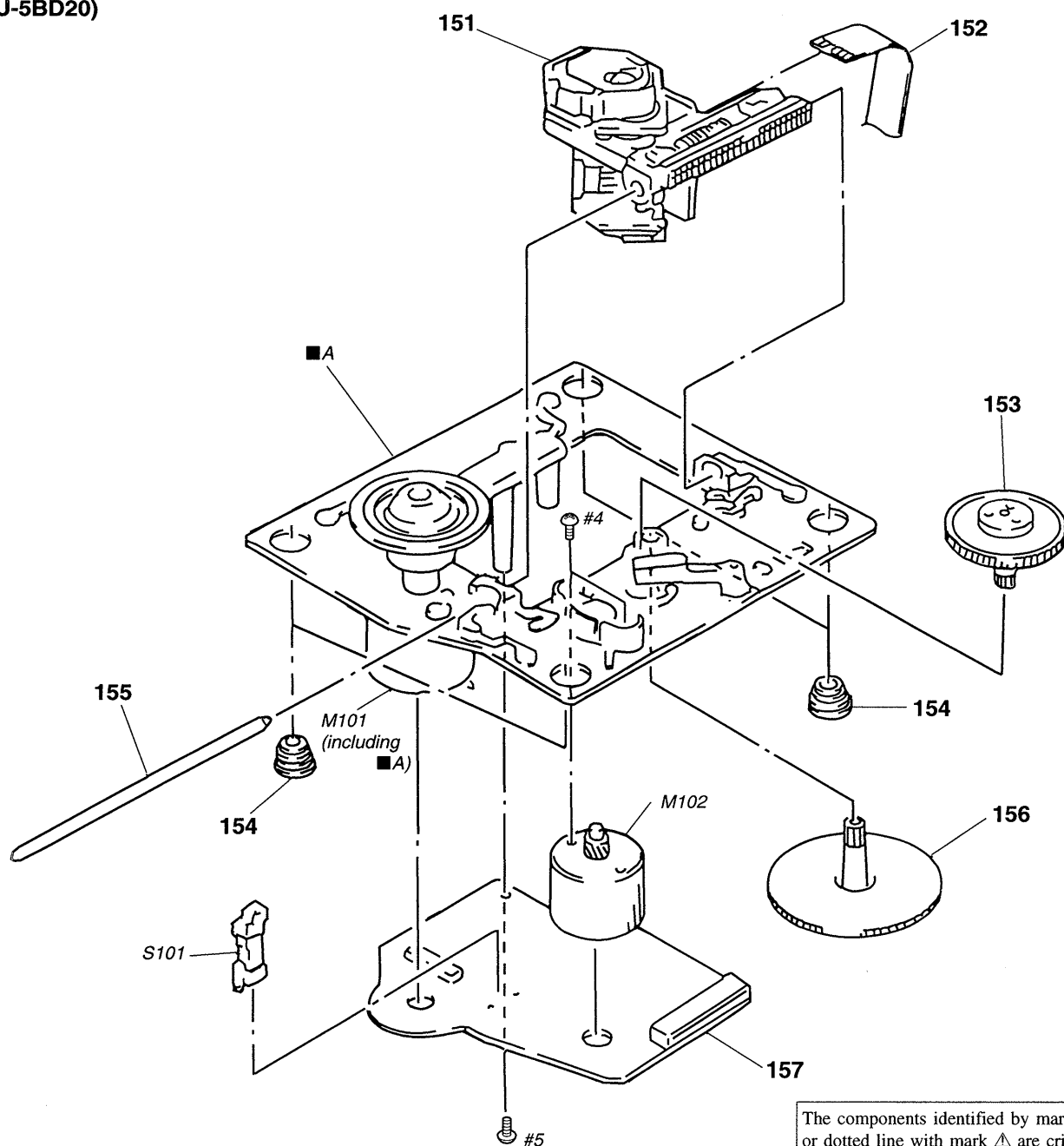
Ref. No.	Part No.	Description	Remark
* 14	A-4673-552-A	DISPLAY BOARD, COMPLETE	
* 15	3-703-244-00	BUSHING (2104), CORD	
16	2-383-566-00	SCREW	
* 17	4-974-996-11	PANEL, BACK (E)	
* 17	4-974-996-21	PANEL, BACK (JE)	
18	4-965-822-01	FOOT	
19	4-962-615-01	COVER, BATTERY (FOR RM-D320)	
20	1-467-316-11	REMOTE COMMANDER (RM-D320)	
Δ 21	1-569-008-11	ADAPTOR, CONVERSION 2P	
Δ CNP901	1-575-651-21	CORD, POWER	
FLD201	1-519-753-21	INDICATOR TUBE, FLUORESCENT	
Δ T301	1-426-622-11	TRANSFORMER, POWER	

6-2. MD SECTION (CMD14M-5BD20)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* 51	1-645-721-11	LOADING BOARD		60	4-925-315-31	DAMPER	
52	4-933-109-01	CAM		61	4-933-111-01	CHASSIS (MD)	
53	4-927-649-01	BELT		62	4-933-134-01	SCREW (+PTWH M2.6X6)	
54	4-927-651-01	PULLEY (S)		63	4-959-996-01	SPRING (932), COMPRESSION	
55	4-967-268-01	GEAR (C)		64	4-933-129-01	HOLDER (BU)	
56	4-933-107-01	GEAR (PL)		* 65	4-917-583-21	BRACKET, YOKE	
57	1-452-538-11	MAGNET		M151	A-4604-363-A	MOTOR (L) ASSY (LOADING)	
58	4-933-110-41	HOLDER (MG)		S151	1-572-086-11	SWITCH, LEAF (LOAD IN)	
59	4-961-487-01	TABLE, DISK		S152	1-572-086-11	SWITCH, LEAF (LOAD OUT)	

6-3. OPTICAL PICK-UP 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.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
Δ 151	8-848-367-11	OPTICAL PICK-UP KSS-213B/K-N		156	4-917-564-01	GEAR (P), FLATNESS	
152	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)		* 157	A-4673-509-A	BD BOARD, COMPLETE	
153	4-917-567-01	GEAR (M)		M101	X-4917-523-3	BASE (OUTSERT) ASSY (SPINDLE)	
154	4-951-940-01	INSULATOR (BU)		M102	X-4917-504-1	MOTMOR ASSY (SLED)	
155	4-917-565-01	SHAFT, SLED		S101	1-572-085-11	SWITCH, LEAF (LIMIT SW)	

SECTION 7

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, -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

● Abbreviation

JE : Tourist

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-4673-509-A	BD BOARD, COMPLETE *****					< IC >		
		< CAPACITOR >			IC101	8-752-369-78	IC CXD2545Q		
C101	1-163-005-11	CERAMIC CHIP 470PF	10%	50V	IC102	8-759-176-09	IC BA6392FP		
C102	1-163-038-91	CERAMIC CHIP 0.1uF		25V	IC103	8-752-072-45	IC CXA1821M-T6		
C103	1-163-005-11	CERAMIC CHIP 470PF	10%	50V			< TRANSISTOR >		
C105	1-135-155-21	TANTALUM CHIP 4.7uF	10%	16V	Q101	8-729-010-08	TRANSISTOR MSB710-R		
C106	1-164-346-11	CERAMIC CHIP 1uF		16V			< RESISTOR >		
C107	1-164-346-11	CERAMIC CHIP 1uF		16V	R101	1-216-077-00	METAL CHIP 15K	5%	1/10W
C108	1-163-035-00	CERAMIC CHIP 0.047uF		50V	R102	1-216-097-91	METAL GLAZE 100K	5%	1/10W
C109	1-163-145-00	CERAMIC CHIP 0.0015uF	5%	50V	R103	1-216-077-00	METAL CHIP 15K	5%	1/10W
C110	1-163-017-00	CERAMIC CHIP 0.0047uF	5%	50V	R104	1-216-085-00	METAL CHIP 33K	5%	1/10W
C111	1-163-251-11	CERAMIC CHIP 100PF	5%	50V	R105	1-216-097-91	METAL GLAZE 100K	5%	1/10W
C112	1-163-038-91	CERAMIC CHIP 0.1uF		25V	R106	1-216-061-00	METAL CHIP 3.3K	5%	1/10W
C113	1-163-038-91	CERAMIC CHIP 0.1uF		25V	R107	1-216-061-00	METAL CHIP 3.3K	5%	1/10W
C115	1-126-607-11	ELECT CHIP 47uF	20%	4V	R108	1-216-073-00	METAL CHIP 10K	5%	1/10W
C116	1-126-607-11	ELECT CHIP 47uF	20%	4V	R109	1-216-121-91	METAL GLAZE 1M	5%	1/10W
C117	1-126-209-11	ELECT 100uF	20%	4V	R110	1-216-025-91	METAL GLAZE 100	5%	1/10W
C118	1-163-275-11	CERAMIC CHIP 0.001uF	5%	50V	R112	1-216-049-91	METAL GLAZE 1K	5%	1/10W
C119	1-163-231-11	CERAMIC CHIP 15PF	5%	50V	R123	1-216-073-00	METAL CHIP 10K	5%	1/10W
C123	1-164-232-11	CERAMIC CHIP 0.01uF		50V	R124	1-216-097-91	METAL GLAZE 100K	5%	1/10W
C124	1-164-005-11	CERAMIC CHIP 0.47uF		25V	R125	1-216-049-91	METAL GLAZE 1K	5%	1/10W
C140	1-163-038-91	CERAMIC CHIP 0.1uF		25V	R126	1-216-049-91	METAL GLAZE 1K	5%	1/10W
C141	1-163-038-91	CERAMIC CHIP 0.1uF		25V	R127	1-216-049-91	METAL GLAZE 1K	5%	1/10W
C151	1-163-237-11	CERAMIC CHIP 27PF	5%	50V	R131	1-216-037-00	METAL CHIP 330	5%	1/10W
C153	1-163-038-91	CERAMIC CHIP 0.1uF		25V	R135	1-216-295-00	METAL CHIP 0	5%	1/10W
C154	1-164-336-11	CERAMIC CHIP 0.33uF		25V	R136	1-216-295-00	METAL CHIP 0	5%	1/10W
C156	1-163-237-11	CERAMIC CHIP 27PF	5%	50V	R137	1-216-295-00	METAL CHIP 0	5%	1/10W
C157	1-163-145-00	CERAMIC CHIP 0.0015uF	5%	50V	R138	1-216-295-00	METAL CHIP 0	5%	1/10W
C159	1-163-019-00	CERAMIC CHIP 0.0068uF	10%	50V	R141	1-216-089-91	METAL GLAZE 47K	5%	1/10W
C161	1-163-038-91	CERAMIC CHIP 0.1uF		25V	R142	1-216-081-00	METAL CHIP 22K	5%	1/10W
		< CONNECTOR >			R143	1-216-103-00	METAL CHIP 180K	5%	1/10W
CN101	1-770-072-11	CONNECTOR, FFC 23P			R144	1-216-103-00	METAL CHIP 180K	5%	1/10W
CN102	1-770-014-11	CONNECTOR, FFC/FPC 16P							
					R146	1-216-073-00	METAL CHIP 10K	5%	1/10W
					R147	1-216-081-00	METAL CHIP 22K	5%	1/10W

BD

DISPLAY

LOADING

Ref. No.	Part No.	Description	Remark
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	1-216-295-00	METAL CHIP 0 5%	1/10W
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 SW)

* A-4673-552-A DISPLAY BOARD, COMPLETE

* 4-961-264-01 HOLDER (FL TUBE 3.5)

< CAPACITOR >

C201	1-161-494-00	CERAMIC 0.022uF	25V
C202	1-164-159-21	CERAMIC 0.1uF	50V
C203	1-164-159-21	CERAMIC 0.1uF	50V
C204	1-161-494-00	CERAMIC 0.022uF	25V
C251	1-162-294-31	CERAMIC 0.001uF 10%	50V
C252	1-162-294-31	CERAMIC 0.001uF 10%	50V
C253	1-164-159-21	CERAMIC 0.1uF	50V
C254	1-161-494-00	CERAMIC 0.022uF	25V

< CONNECTOR >

* CN201 1-568-867-11 SOCKET, CONNECTOR 25P

< FLUORESCENT INDICATOR >

FLD201 1-519-753-21 INDICATOR TUBE, FLUORESCENT

< IC >

IC201 8-752-865-57 IC CXP82612-025Q
IC202 8-741-810-59 IC SBX1810-59

< JACK >

J201 1-750-925-11 JACK (SMALL TYPE) (PHONES)

< COIL >

L251 1-410-322-11 INDUCTOR 3.3uH
L252 1-410-322-11 INDUCTOR 3.3uH
L253 1-410-322-11 INDUCTOR 3.3uH

< TRANSISTOR >

Q201 8-729-900-80 TRANSISTOR DTC114ES
Q251 8-729-922-37 TRANSISTOR 2SD2144S-UVW
Q252 8-729-922-37 TRANSISTOR 2SD2144S-UVW

Ref. No.	Part No.	Description	Remark
		< RESISTOR >	

R201 1-249-427-11 CARBON 6.8K 5% 1/4W
R202 1-249-427-11 CARBON 6.8K 5% 1/4W
R204 1-249-441-11 CARBON 100K 5% 1/4W
R205 1-249-427-11 CARBON 6.8K 5% 1/4W
R206 1-249-415-11 CARBON 680 5% 1/4W

R207 1-249-417-11 CARBON 1K 5% 1/4W
R208 1-249-419-11 CARBON 1.5K 5% 1/4W
R209 1-249-421-11 CARBON 2.2K 5% 1/4W
R210 1-249-423-11 CARBON 3.3K 5% 1/4W
R211 1-249-427-11 CARBON 6.8K 5% 1/4W

R212 1-249-427-11 CARBON 6.8K 5% 1/4W
R213 1-249-415-11 CARBON 680 5% 1/4W
R214 1-249-417-11 CARBON 1K 5% 1/4W
R215 1-249-419-11 CARBON 1.5K 5% 1/4W
R216 1-249-421-11 CARBON 2.2K 5% 1/4W

R217 1-249-423-11 CARBON 3.3K 5% 1/4W
R218 1-249-417-11 CARBON 1K 5% 1/4W
R251 1-249-402-11 CARBON 56 5% 1/4W
R252 1-249-402-11 CARBON 56 5% 1/4W
R253 1-249-419-11 CARBON 1.5K 5% 1/4W

R254 1-249-419-11 CARBON 1.5K 5% 1/4W

< VARIABLE RESISTOR >

RV201 1-223-535-11 RES, VAR, CARBON 1K/1K (PHONES LEVEL)

< SWITCH >

S201 1-554-118-00 SWITCH, PUSH (1 KEY) (POWER)
S202 1-554-303-21 SWITCH, TACTILE (PEAK SEARCH)
S203 1-554-303-21 SWITCH, TACTILE (I<<<I)
S204 1-554-303-21 SWITCH, TACTILE (I>>>I)
S205 1-554-303-21 SWITCH, TACTILE (EDIT/TIME FADE)

S206 1-554-303-21 SWITCH, TACTILE (I>>>I)
S207 1-554-303-21 SWITCH, TACTILE (<<<I)
S208 1-554-303-21 SWITCH, TACTILE (PLAY MODE)
S209 1-554-303-21 SWITCH, TACTILE (OPEN/CLOSE)
S210 1-554-303-21 SWITCH, TACTILE (TIME)

S211 1-554-303-21 SWITCH, TACTILE (REPEAT)
S212 1-554-303-21 SWITCH, TACTILE (I>>I)
S213 1-554-303-21 SWITCH, TACTILE (I||I)
S214 1-554-303-21 SWITCH, TACTILE (I■I)

< VIBRATOR >

X201 1-577-358-21 VIBRATOR, CERAMIC (4MHz)

* 1-645-721-11 LOADING BOARD

< CONNECTOR >

* CN151 1-568-943-11 PIN, CONNECTOR 5P

LOADING

MAIN

Ref. No.	Part No.	Description	Remark			
< MOTOR >						
M151	A-4604-363-A	MOTOR (L) ASSY (LOADING)				
< SWITCH >						
S151	1-572-086-11	SWITCH, LEAF (LOAD IN)				
S152	1-572-086-11	SWITCH, LEAF (LOAD OUT)				

*	A-4699-151-A	MAIN BOARD, COMPLETE	*****			
< CAPACITOR >						
C301	1-104-666-11	ELECT	220uF	20%	10V	
C302	1-164-159-21	CERAMIC	0.1uF		50V	
C303	1-164-159-21	CERAMIC	0.1uF		50V	
C304	1-162-282-31	CERAMIC	100PF	10%	50V	
C305	1-164-159-21	CERAMIC	0.1uF		50V	
C306	1-162-196-31	CERAMIC	5.6PF	10%	50V	
C307	1-162-196-31	CERAMIC	5.6PF	10%	50V	
C308	1-162-282-31	CERAMIC	100PF	10%	50V	
C309	1-164-159-21	CERAMIC	0.1uF		50V	
C310	1-126-968-11	ELECT	100uF	20%	6.3V	
C311	1-164-159-21	CERAMIC	0.1uF		50V	
C312	1-126-968-11	ELECT	100uF	20%	6.3V	
C313	1-164-159-21	CERAMIC	0.1uF		50V	
C314	1-126-968-11	ELECT	100uF	20%	6.3V	
C315	1-164-159-21	CERAMIC	0.1uF		50V	
C316	1-164-159-21	CERAMIC	0.1uF		50V	
C321	1-162-215-31	CERAMIC	47PF	5%	50V	
C322	1-162-215-31	CERAMIC	47PF	5%	50V	
C323	1-162-215-31	CERAMIC	47PF	5%	50V	
C324	1-162-215-31	CERAMIC	47PF	5%	50V	
C326	1-164-159-21	CERAMIC	0.1uF		50V	
C327	1-164-159-21	CERAMIC	0.1uF		50V	
C329	1-164-736-31	CERAMIC	0.0012uF	10%	50V	
C330	1-164-736-31	CERAMIC	0.0012uF	10%	50V	
C331	1-162-600-11	CERAMIC	0.0047uF	30%	16V	
C332	1-162-600-11	CERAMIC	0.0047uF	30%	16V	
C333	1-126-968-11	ELECT	100uF	20%	6.3V	
C334	1-126-968-11	ELECT	100uF	20%	6.3V	
C341	1-164-159-21	CERAMIC	0.1uF		50V	
C342	1-164-159-21	CERAMIC	0.1uF		50V	
C343	1-162-291-31	CERAMIC	560PF	10%	50V	
C344	1-162-291-31	CERAMIC	560PF	10%	50V	
C351	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C352	1-164-159-21	CERAMIC	0.1uF		50V	
C353	1-162-290-31	CERAMIC	470PF	10%	50V	
C354	1-162-282-31	CERAMIC	100PF	10%	50V	
C355	1-104-664-11	ELECT	47uF	20%	16V	
C356	1-164-159-21	CERAMIC	0.1uF		50V	
C358	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C359	1-164-159-21	CERAMIC	0.1uF		50V	

Ref. No.	Part No.	Description	Remark		
C360	1-164-159-21	CERAMIC	0.1uF		50V
C901	1-124-556-11	ELECT	2200uF	20%	16V
C902	1-107-887-11	ELECT	10000uF	20%	16V
C903	1-124-918-11	ELECT	47uF	20%	63V
C904	1-164-159-21	CERAMIC	0.1uF		50V
C905	1-124-907-11	ELECT	10uF	20%	50V
C906	1-164-159-21	CERAMIC	0.1uF		50V
C907	1-164-159-21	CERAMIC	0.1uF		50V
C911	1-164-159-21	CERAMIC	0.1uF		50V
C951	1-124-903-11	ELECT	1uF	20%	50V
C952	1-124-907-11	ELECT	10uF	20%	50V
C953	1-124-907-11	ELECT	10uF	20%	50V
C954	1-162-294-31	CERAMIC	0.001uF	10%	50V
C955	1-124-120-11	ELECT	220uF	20%	25V
C956	1-124-903-11	ELECT	1uF	20%	50V
C957	1-124-472-11	ELECT	470uF	20%	10V
C958	1-124-907-11	ELECT	10uF	20%	50V
C959	1-124-907-11	ELECT	10uF	20%	50V
< CONNECTOR >					
* CN301	1-568-839-11	SOCKET, CONNECTOR 23P			
* CN302	1-568-841-11	SOCKET, CONNECTOR 25P			
CN903	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P			
< DIODE >					
D351	8-719-010-33	DIODE	UZ-4.7BSB		
D901	8-719-200-82	DIODE	11ES2		
D902	8-719-200-82	DIODE	11ES2		
D903	8-719-200-82	DIODE	11ES2		
D904	8-719-200-82	DIODE	11ES2		
D905	8-719-200-82	DIODE	11ES2		
D906	8-719-200-82	DIODE	11ES2		
D907	8-719-109-98	DIODE	RD6.8ES-B3		
D908	8-719-110-72	DIODE	RD30ESB2		
D909	8-719-987-63	DIODE	1N4148M		
D951	8-719-987-63	DIODE	1N4148M		
D952	8-719-987-63	DIODE	1N4148M		
D953	8-719-987-63	DIODE	1N4148M		
D954	8-719-987-63	DIODE	1N4148M		
D955	8-719-987-63	DIODE	1N4148M		
< IC >					
IC301	8-752-367-61	IC	CXD2565AM		
IC302	8-749-921-12	IC	GP1F32T (DIGITAL OUT)		
IC303	8-759-634-51	IC	M5218AP		
IC304	8-759-634-51	IC	M5218AP		
IC305	8-759-634-51	IC	M5218AP		
IC351	8-759-822-09	IC	LB1641		
IC951	8-759-821-93	IC	LA5601		
< JACK >					
J301	1-750-679-21	JACK, PIN 2P (LINE OUT)			

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
< COIL >						R903	1-249-441-11	CARBON	100K	5%	1/4W
L301	1-410-322-11	INDUCTOR	3.3uH			R904	1-249-441-11	CARBON	100K	5%	1/4W
L302	1-410-322-11	INDUCTOR	3.3uH			R905	1-249-432-11	CARBON	18K	5%	1/4W
L303	1-410-322-11	INDUCTOR	3.3uH			R906	1-249-425-11	CARBON	4.7K	5%	1/4W
L304	1-410-501-11	INDUCTOR	2.2uH			R951	1-249-385-11	CARBON	2.2	5%	1/6W
L351	1-410-322-11	INDUCTOR	3.3uH			R952	1-247-807-31	CARBON	100	5%	1/4W
						R953	1-249-441-11	CARBON	100K	5%	1/4W
L352	1-410-322-11	INDUCTOR	3.3uH			R954	1-249-401-11	CARBON	47	5%	1/4W
L353	1-410-507-11	INDUCTOR	6.8uH			R955	1-249-425-11	CARBON	4.7K	5%	1/4W
L951	1-408-429-00	INDUCTOR	470uH								
< TRANSISTOR >						< SWITCH >					
Q301	8-729-922-37	TRANSISTOR	2SD2144S-UVW			△ S351	1-572-675-11	SWITCH, POWER VOLTAGE CHANGE	(VOLTAGE SELECTOR)		
Q302	8-729-922-37	TRANSISTOR	2SD2144S-UVW								
Q901	8-729-019-64	TRANSISTOR	2SB1041			< TRANSFORMER >					
Q902	8-729-119-76	TRANSISTOR	2SA1175-HFE			△ T301	1-426-622-11	TRANSFORMER, POWER			
Q952	8-729-900-65	TRANSISTOR	DTA144ES			< VIBRATOR >					
< RESISTOR >						X301	1-579-834-11	VIBRATOR, CRYSTAL (33.8688MHz)	*****		
R301	1-249-417-11	CARBON	1K	5%	1/4W	MISCELLANEOUS					
R302	1-249-414-11	CARBON	560	5%	1/4W	*****					
R303	1-249-417-11	CARBON	1K	5%	1/4W	10	1-775-487-11	WIRE (FLAT TYPE) (25 CORE)			
R304	1-249-436-11	CARBON	39K	5%	1/4W	11	1-776-059-11	WIRE (FLAT TYPE) (23 CORE)			
R305	1-249-436-11	CARBON	39K	5%	1/4W	△ 21	1-569-008-11	ADAPTOR, CONVERSION 2P			
R306	1-247-807-31	CARBON	100	5%	1/4W	57	1-452-538-11	MAGNET			
R307	1-249-425-11	CARBON	4.7K	5%	1/4W	△ 151	8-848-367-11	OPTICAL PICK-UP KSS-213B/K-N			
R308	1-249-436-11	CARBON	39K	5%	1/4W	152	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)			
R309	1-249-436-11	CARBON	39K	5%	1/4W	△ CNP901	1-575-651-21	CORD, POWER			
R321	1-249-431-11	CARBON	15K	5%	1/4W	FLD201	1-519-753-21	INDICATOR TUBE, FLUORESCENT			
R322	1-249-431-11	CARBON	15K	5%	1/4W	M101	X-4917-523-3	BASE (OUTSERT) ASSY (SPINDLE)			
R323	1-249-431-11	CARBON	15K	5%	1/4W	M102	X-4917-504-1	MOTMOR ASSY (SLED)			
R324	1-249-431-11	CARBON	15K	5%	1/4W	M151	A-4604-363-A	MOTOR (L) ASSY (LOADING)			
R325	1-249-437-11	CARBON	47K	5%	1/4W	S101	1-572-085-11	SWITCH, LEAF (LIMIT SW)			
R326	1-249-437-11	CARBON	47K	5%	1/4W	S151	1-572-086-11	SWITCH, LEAF (LOAD IN)			
R327	1-249-437-11	CARBON	47K	5%	1/4W	S152	1-572-086-11	SWITCH, LEAF (LOAD OUT)			
R328	1-249-437-11	CARBON	47K	5%	1/4W	△ T301	1-426-622-11	TRANSFORMER, POWER			
R331	1-249-419-11	CARBON	1.5K	5%	1/4W	*****					
R332	1-249-419-11	CARBON	1.5K	5%	1/4W						
R333	1-249-419-11	CARBON	1.5K	5%	1/4W						
R334	1-249-419-11	CARBON	1.5K	5%	1/4W						
R335	1-249-441-11	CARBON	100K	5%	1/4W						
R336	1-249-441-11	CARBON	100K	5%	1/4W						
R337	1-249-417-11	CARBON	1K	5%	1/4W						
R338	1-249-417-11	CARBON	1K	5%	1/4W						
R339	1-249-419-11	CARBON	1.5K	5%	1/4W						
R340	1-249-419-11	CARBON	1.5K	5%	1/4W						
R341	1-247-807-31	CARBON	100	5%	1/4W						
R342	1-247-807-31	CARBON	100	5%	1/4W						
R353	1-249-415-11	CARBON	680	5%	1/4W						
R354	1-249-415-11	CARBON	680	5%	1/4W						
R355	1-249-417-11	CARBON	1K	5%	1/4W						
R901	1-249-432-11	CARBON	18K	5%	1/4W						
R902	1-249-432-11	CARBON	18K	5%	1/4W						

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

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

	1-467-316-11	REMOTE COMMANDER (RM-D320)	
	1-558-271-11	CORD, CONNECTION	
	3-800-364-01	MANUAL, INSTRUCTION (JE) (JAPANESE)	
	3-800-364-11	MANUAL, INSTRUCTION (E,JE)	
		(ENGLISH,FRENCH,SPANISH,CHINESE)	
	4-962-615-01	COVER, BATTERY (FOR RM-D320)	
*	4-983-346-01	CUSHION (FRONT)	
*	4-983-347-01	CUSHION (REAR)	
*	4-983-719-01	INDIVIDUAL CARTON	

HARDWARE LIST			

#1	7-682-548-04	SCREW +BVTT 3X8 (S)	
#2	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#3	7-621-775-10	SCREW +B 2.6X4	
#4	7-621-255-15	SCREW +P 2X3	
#5	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S	