

CDP-XE210/XE310

SERVICE MANUAL

AEP Model
UK Model



Photo: CDP-XE310

Model Name Using Similar Mechanism	CDP-XE200/XE300
CD Mechanism Type	CDM14-5BD20
Base Unit Type	BU-5BD20
Optical Pick-up Type	KSS-213BA/F-NP

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 100 dB
Dynamic range	More than 98 dB
Harmonic distortion	Less than 0.0045%
Channel separation	More than 95 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

General

Power requirements	220 V - 230 V AC, 50/60 Hz
Power consumption	10 W
Dimensions (approx.) (w/h/d)	430 \times 95 \times 290 mm incl. projecting parts
Mass (approx.)	2.9 kg

Supplied accessories

- Audio cord (2 phono plugs - 2 phono plugs) (1)
- Remote commander (remote) (CDP-XE310 only) (1)
- Sony SUM-3 (NS) batteries (CDP-XE310 only) (2)

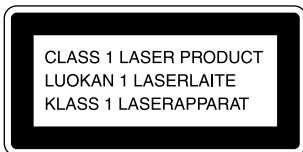
Design and specifications are subject to change without notice.

COMPACT DISC PLAYER

SONY[®]



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



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	: INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
ADVARSEL	: USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARO!	: AVATTAESSA JA SUOJALUKITUS OHITETTAESSA DLET ALTIINNA LASERSÄTELYLLE.
VARNING	: LASERSTRÅLING NÅR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URÖPPPLAD.
ADVARSEL	: USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNGÅ EKSPONERING FOR STRÅLEN.

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

Notes on chip component replacement

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

Flexible Circuit Board Repairing

- Keep the temperature of soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK \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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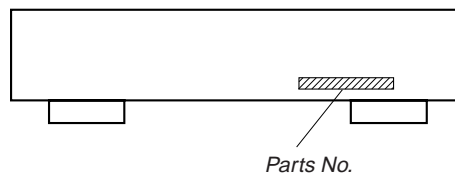
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MODEL IDENTIFICATION

– BACK PANEL –



PARTS No.	MODEL	PRODUCT COUNTRY
XE210: 4-988-712-0 □	AEP, EE, CIS	FRANCE
XE210: 4-988-712-1 □	UK	FRANCE
XE310: 4-988-712-2 □	AEP, EE, CIS	FRANCE
XE310: 4-988-712-3 □	UK	FRANCE
XE210: 4-988-712-4 □	AEP, EE, CIS	HUNGARY
XE210: 4-979-971-5 □	AEP, EE, CIS	HUNGARY
XE210: 4-988-712-5 □	UK	HUNGARY
XE210: 4-979-971-6 □	UK	HUNGARY
XE310: 4-988-712-6 □	AEP, EE, CIS	HUNGARY
XE310: 4-979-971-7 □	AEP, EE, CIS	HUNGARY
XE310: 4-988-712-7 □	UK	HUNGARY
XE310: 4-979-971-8 □	UK	HUNGARY

- Abbreviation
EE : East European model

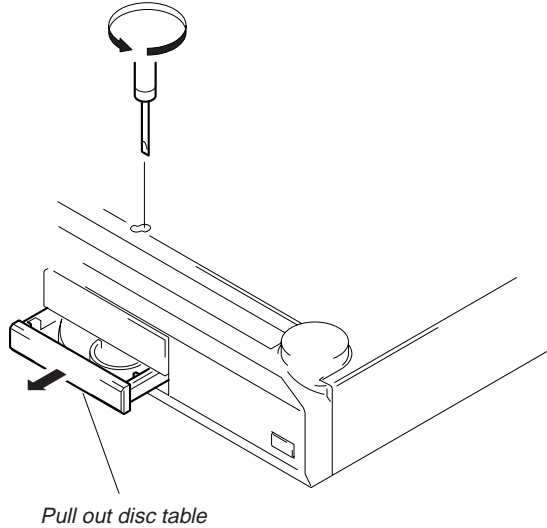
SECTION 1

SERVICING NOTE

HOW TO OPEN THE DISC TRAY WHEN POWER SWITCH TURNS OFF

Insert a tapering driver into the aperture of the unit bottom, and turn in the direction of arrow.

* To close the disc table, turn the driver in the reverse direction.



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.

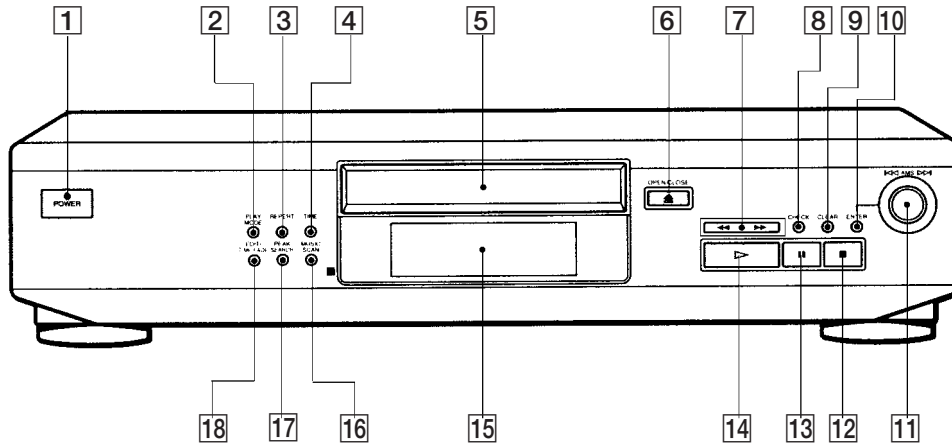
LASER DIODE AND FOCUS SEARCH OPERATION CHECK

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

SECTION 2 GENERAL

LOCATION OF PARTS AND CONTROLS

Front Panel



- 1 POWER switch
- 2 PLAY MODE button
- 3 REPEAT button
- 4 TIME button
- 5 Disc tray
- 6 OPEN/CLOSE button
- 7 FAST FORWARD/REVERSE button
- 8 CHECK button
- 9 CLEAR button
- 10 ENTER button

- 11 AMS* knob
- 12 (stop) button
- 13 (pause) button
- 14 (play) button
- 15 Display window
- 16 MUSIC SCAN button
- 17 PEAK SEARCH button
- 18 EDIT/TIME FADE button

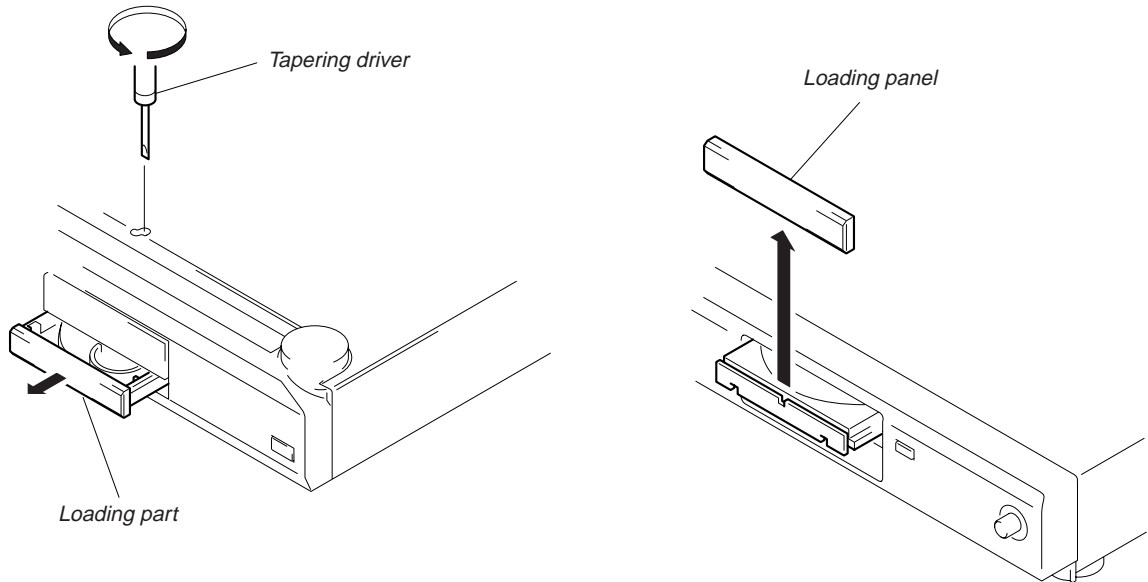
* AMS is the abbreviation for Automatic Music Sensor.

SECTION 3 DISASSEMBLY

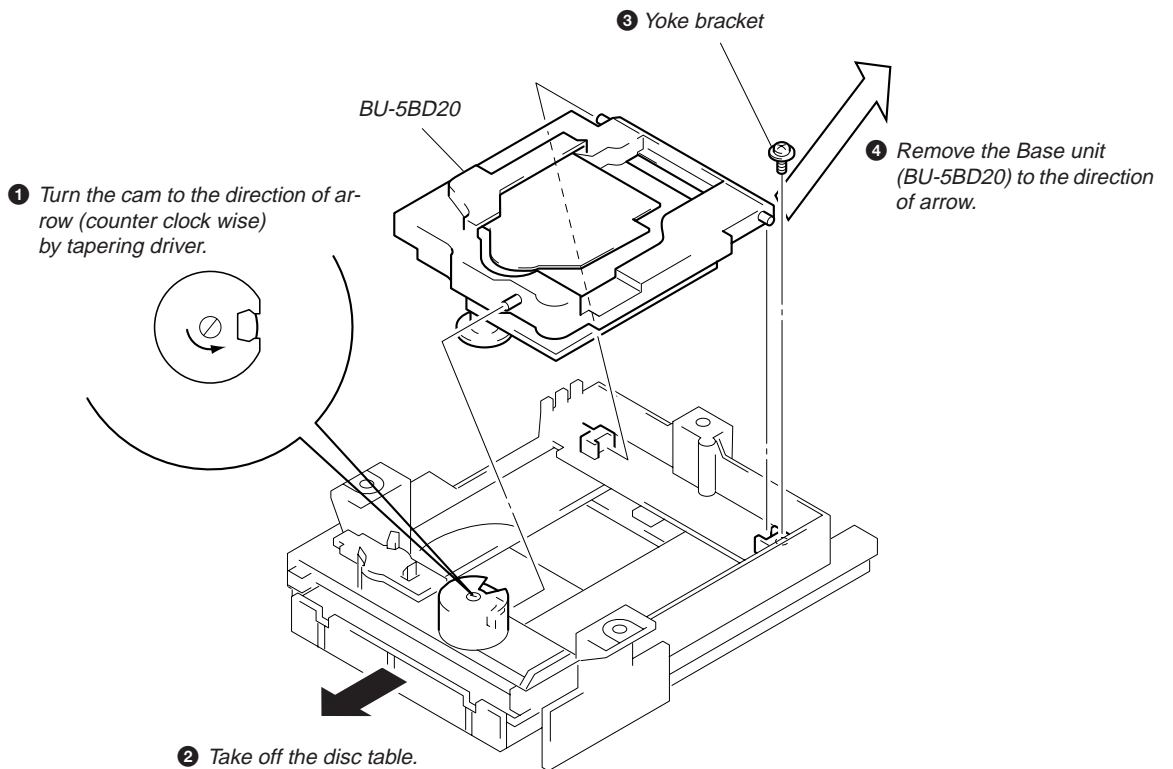
Note : Follow the disassembly procedure in the numerical order given.

3-1. FRONT PANEL

- In order to remove the front panel block when the power supply does not turn on, rotate the cam with tapering driver as the figure shows, and the loading part will be moved. Then pull out the loading part by your hand to remove the loading panel as the figure shows. After that take out the front panel block.



3-2. BASE UNIT (BU-5BD20)



SECTION 4 TEST MODE

4-1. AF MODE

The following checks can be performed in the AF mode, which is set by connecting the TP2 (AFADJ) terminal on MAIN board to the Ground and turning on the power.

• FL tube check

After all segments light up, when the ▷ button is pressed continuously, the following will be displayed. (Partial lighting 1)



When the ■ button is pressed continuously, the following will be displayed. (partial lighting 2)

	2		4	
6		8		10
	12		14	
16		18		20

(Partial lighting 2)

When the OPEN/CLOSE ⇄ button is pressed continuously, all will light up again.

• Key check

All buttons have corresponding button numbers. When a button is pressed, the counter will count up and display the button's number. However, the counter will only count to "12". It will not count for buttons already pressed once, but will display the button's number.



Button	Button No. Displayed	Button	Button No. Displayed
TIME	23	▶▶	15
REPEAT	22	◀◀	16
PLAY MODE	21	OPEN/ CLOSE ⇄	All lit
⏸	10		
ENTER	12	PLAY ▷	Partial lighting 1
CLEAR	13	STOP ■	Partial lighting 2
CHECK	14		

• Remote commander check

When the ▷ button of the remote commander is pressed, the "▷" lights up. All go off when the other buttons are pressed.

4-2. ADJ MODE

The following operations are performed in the ADJ mode, which is set by connecting the TP1 (ADJ) terminal to the Ground and turning on the power.

- During playback, there is no problem even if the GFS is continuously LOW.
- High speed search is prohibited during access.
- During playback, the gain of focus servo and spindle servo does not decrease.
- Servo related manual operations and measurement can be performed.
(For details of operations, refer to Table of Key Operations in ADJ Mode.)

4-3. CLV-S MODE

The spindle servo for playback sets into the CLV-S mode when the TP1 (ADJ) terminal is connected to Ground after turning on the power.

TABLE OF BUTTON OPERATIONS IN ADJ MODE

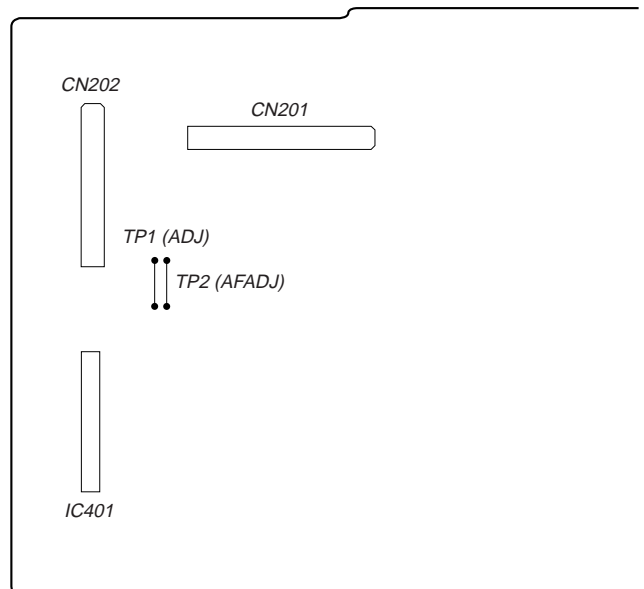
The jitter value display mode can be set after the all-music remaining number mode using the TIME button.

The functions of the number buttons are shown in the following table.

FUNCTIONS OF NUMBER BUTTONS (With the general remote commander)

Button	Function
1	Focus bias 8-step up
2	Middle of focus bias up/down turning point
3	Tracking servo, sled servo off
4	Auto gain initialization
5	Focus servo off
6	Focus bias 8-step down
7	Immediate readjustment of focus bias
8	Tracking servo, sled servo on
10	Auto focus bias start point

[MAIN BOARD] — Component Side —

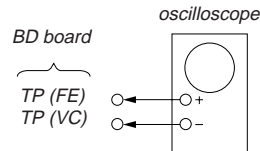


SECTION 5 ELECTRICAL BLOCK CHECKING

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 10MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

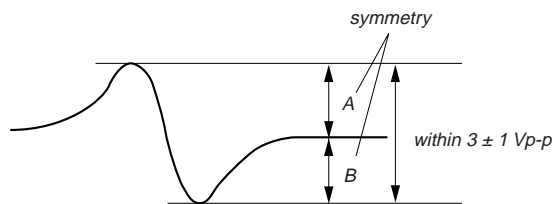
S Curve Check



Procedure :

1. Connect oscilloscope to test point TP (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 the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3 ± 1 V_{p-p}.

S-curve waveform

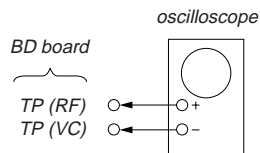


6. After check, remove the lead wire connected in step 2.

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



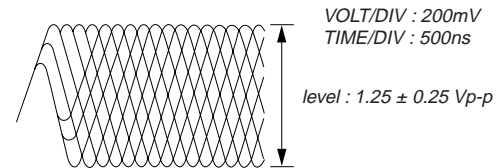
Procedure :

1. Connect oscilloscope to test point TP (RF) on BD board.
2. Turn 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.

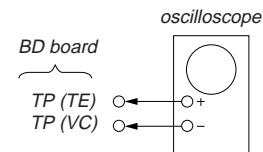
Note:

A clear RF signal waveform means that the shape “◊” can be clearly distinguished at the center of the waveform.

RF signal waveform



E-F Balance (1 Track Jump) Check (Without remote commander)



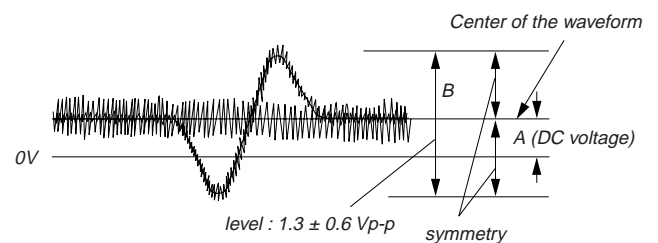
Procedure :

1. Connect oscilloscope to test point TP (TE) on BD board.
2. Turn Power switch on.
3. Put disc (YEDS-18) in to play the number five track.
4. Press the “■ (Pause)” button. (Becomes the 1 track jump mode)
5. Check the level B of the oscilloscope's waveform and the A (DC voltage) of the center of the Traverse waveform.

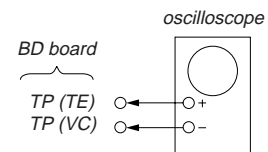
Confirm the following :

$$A/B \times 100 = \text{less than } \pm 22\%$$

1 track jump waveform



E-F Balance Check (With remote commander)

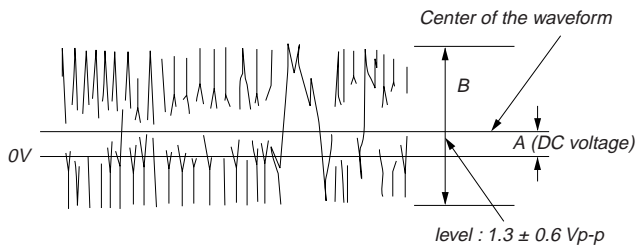


Procedure :

1. Connect the test point TP1 (ADJ) on MAIN board to the ground with a lead wire on main board.
2. Connect oscilloscope to test point TP (TE) on BD board.
3. Turn the Power switch on to set the ADJ mode.
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.)

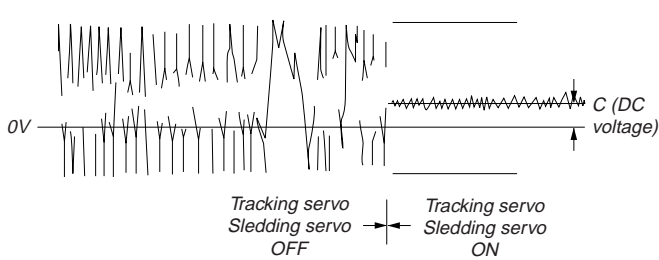
6. Check the level B of the oscilloscope's waveform and the A (DC voltage) of the center of the Traverse waveform.
 Confirm the following :
 $A/B \times 100 = \text{less than } \pm 22\%$

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

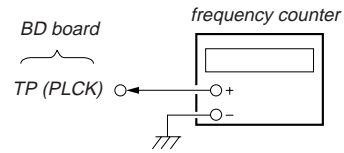


8. Disconnect the lead wire of TP1 (ADJ) connected in step 1.

RF PLL Free-run Frequency Check

Procedure :

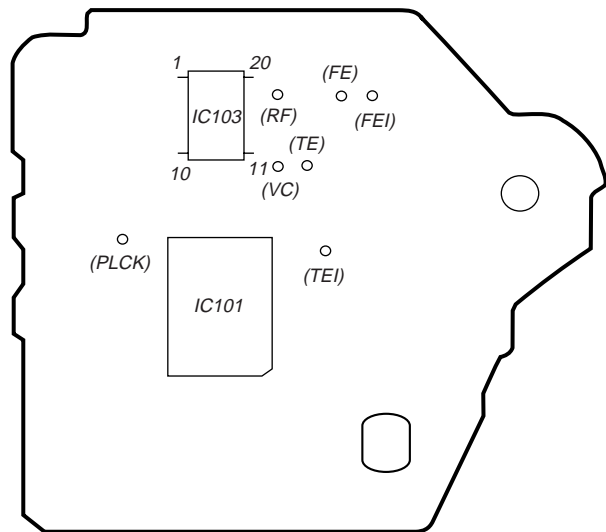
1. Connect frequency counter to test point (PLCK) with lead wire.



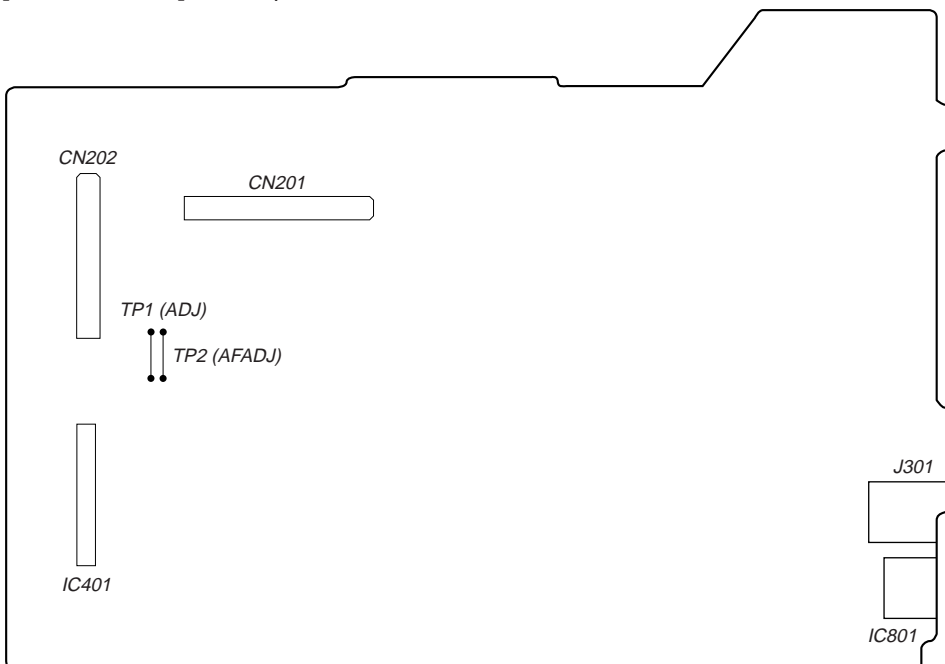
2. Turn Power switch on.
3. Put the disc (YEDS-18) in to play the number five track.
 Confirm that reading on frequency counter is 4.3218MHz.

Adjustment Location :

[BD BOARD] — Side A —

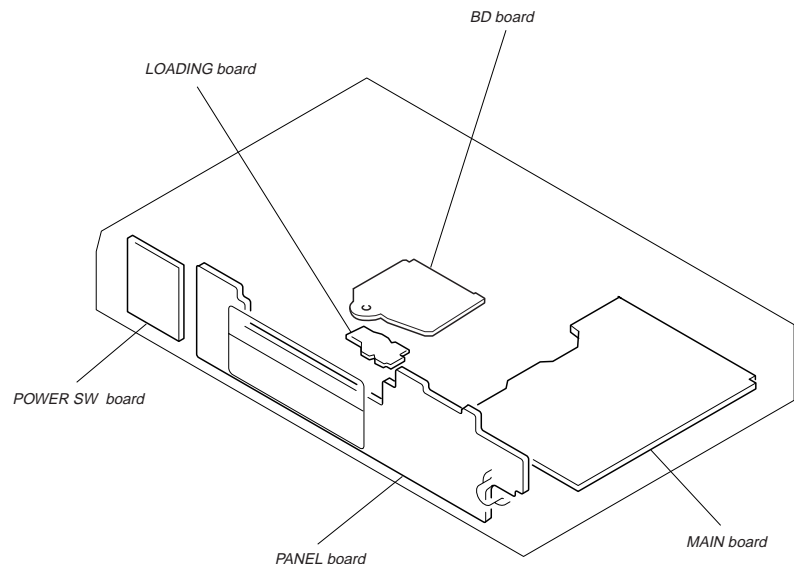


[MAIN BOARD] — Component Side —



**SECTION 6
DIAGRAMS**

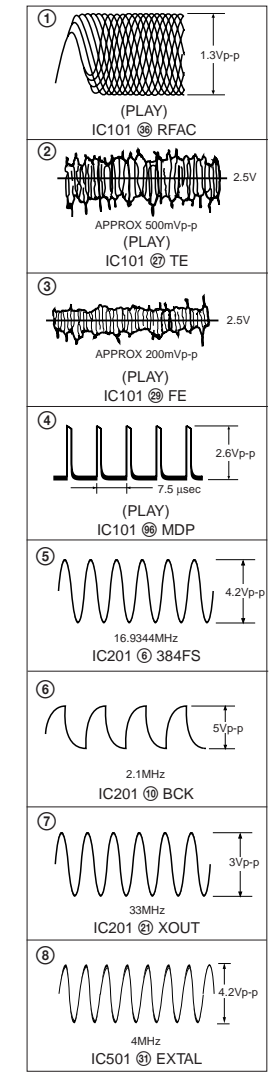
6-1. CIRCUIT BOARDS LOCATION



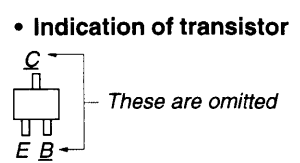
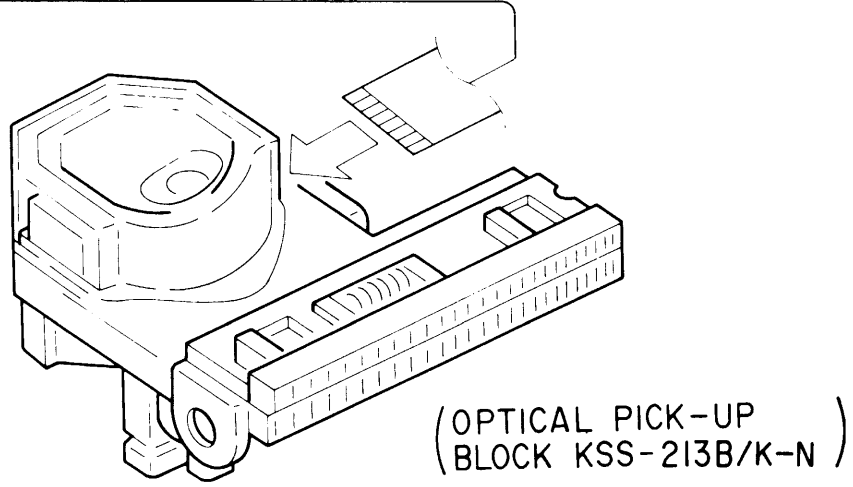
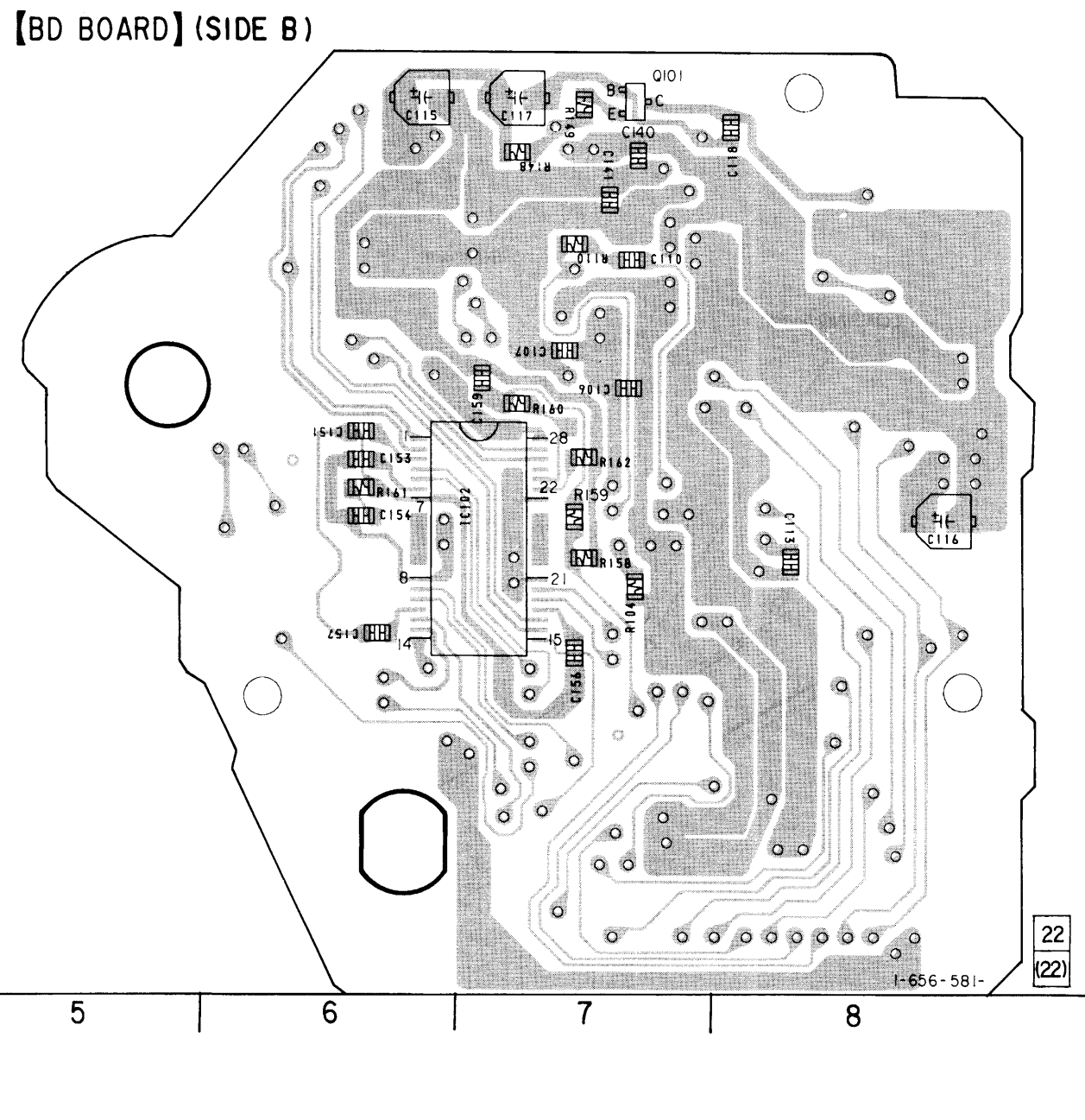
THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

- **Printed wiring boards.**
 - —: 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.)
 - **Schematic diagrams.**
 - 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 1/4W or less unless otherwise specified.
 - Δ : internal component.
 - □ : panel designation.
- Note :** The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.
- **B+** : B+ Line
 - **B-** : B- Line
 - Voltage and waveforms are dc with respect to ground under no-signal conditions.
no mark : STOP
() : PLAY
* : can not be measured.
 - Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
 - Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
 - Circled numbers refer to waveforms.
 - Signal path.
⚡ : CD
⚡ : digital out

• **Waveforms**



6-2. PRINTED WIRING BOARD — BD SECTION —
 • See page 9 for Circuit Boards Location.

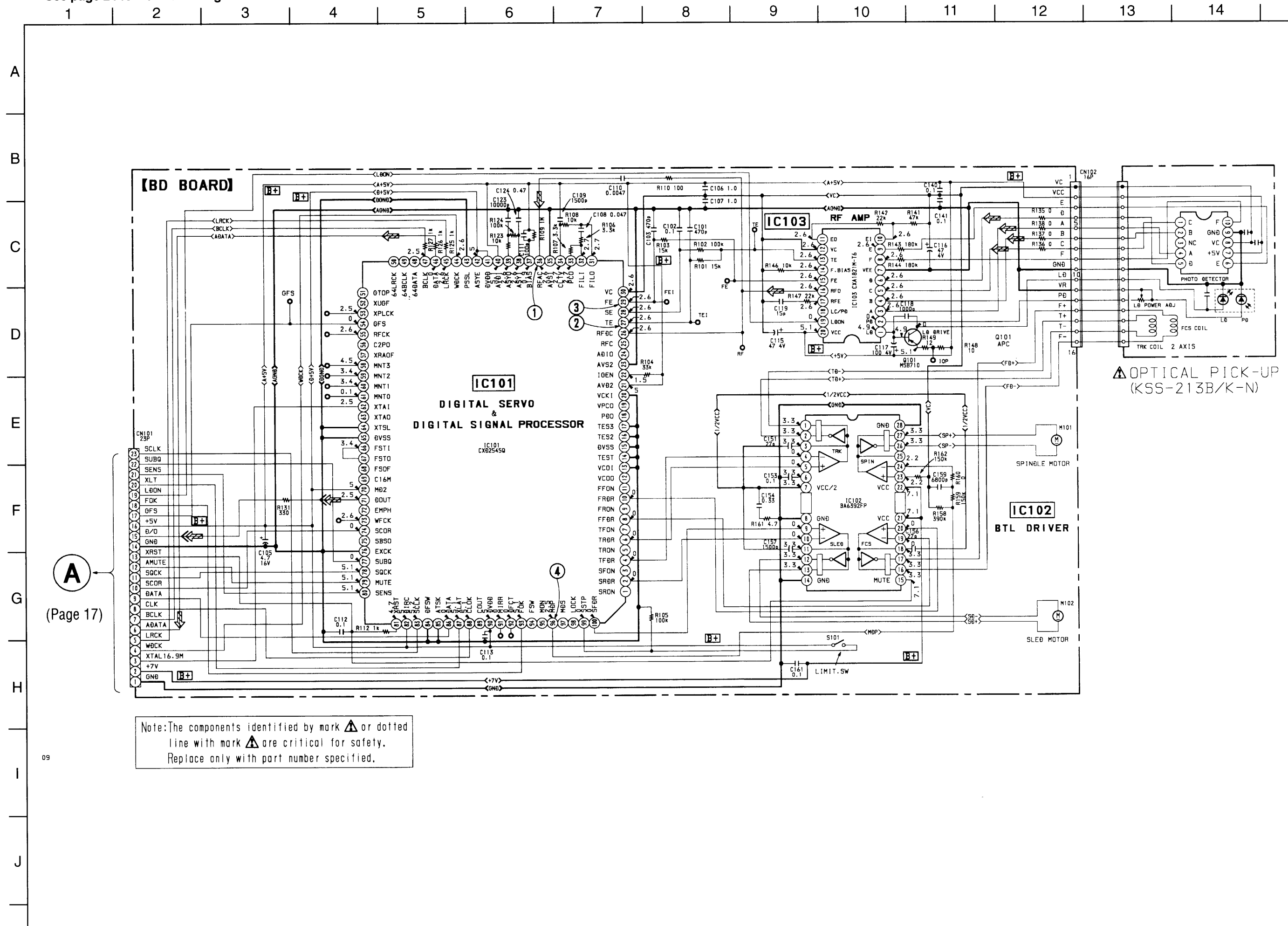


• Semiconductor Location

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

6-3. SCHEMATIC DIAGRAM — BD SECTION —

- See page 10 for Waveforms.
- See page 24 for IC Block Diagrams.



A
(Page 17)

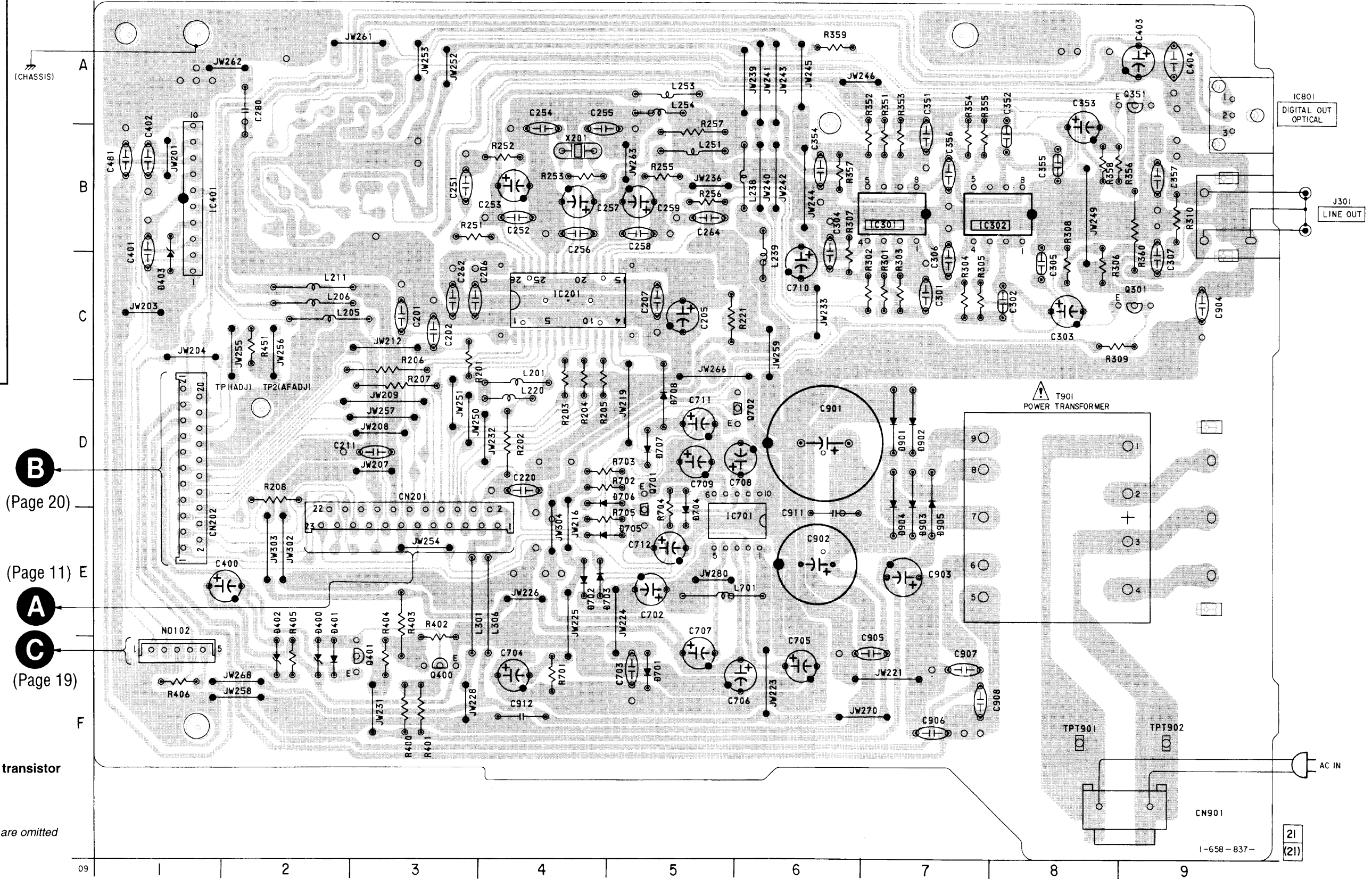
Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

6-4. PRINTED WIRING BOARD — MAIN SECTION —
 • See page 9 for Circuit Boards Location.

• Semiconductor Location

Ref. No.	Location
D400	E-2
D401	E-2
D402	E-2
D403	C-1
D701	F-5
D702	E-4
D703	E-4
D704	D-5
D705	E-5
D706	D-5
D707	D-5
D708	D-5
D901	D-7
D902	D-7
D903	E-7
D904	E-7
D905	E-7
IC201	C-4
IC301	B-7
IC302	B-8
IC401	B-1
IC701	E-6
IC801	A-10
Q301	C-9
Q351	A-9
Q400	F-3
Q401	F-3
Q701	D-5
Q702	D-6

[MAIN BOARD]




B
(Page 20)

(Page 11) **E**

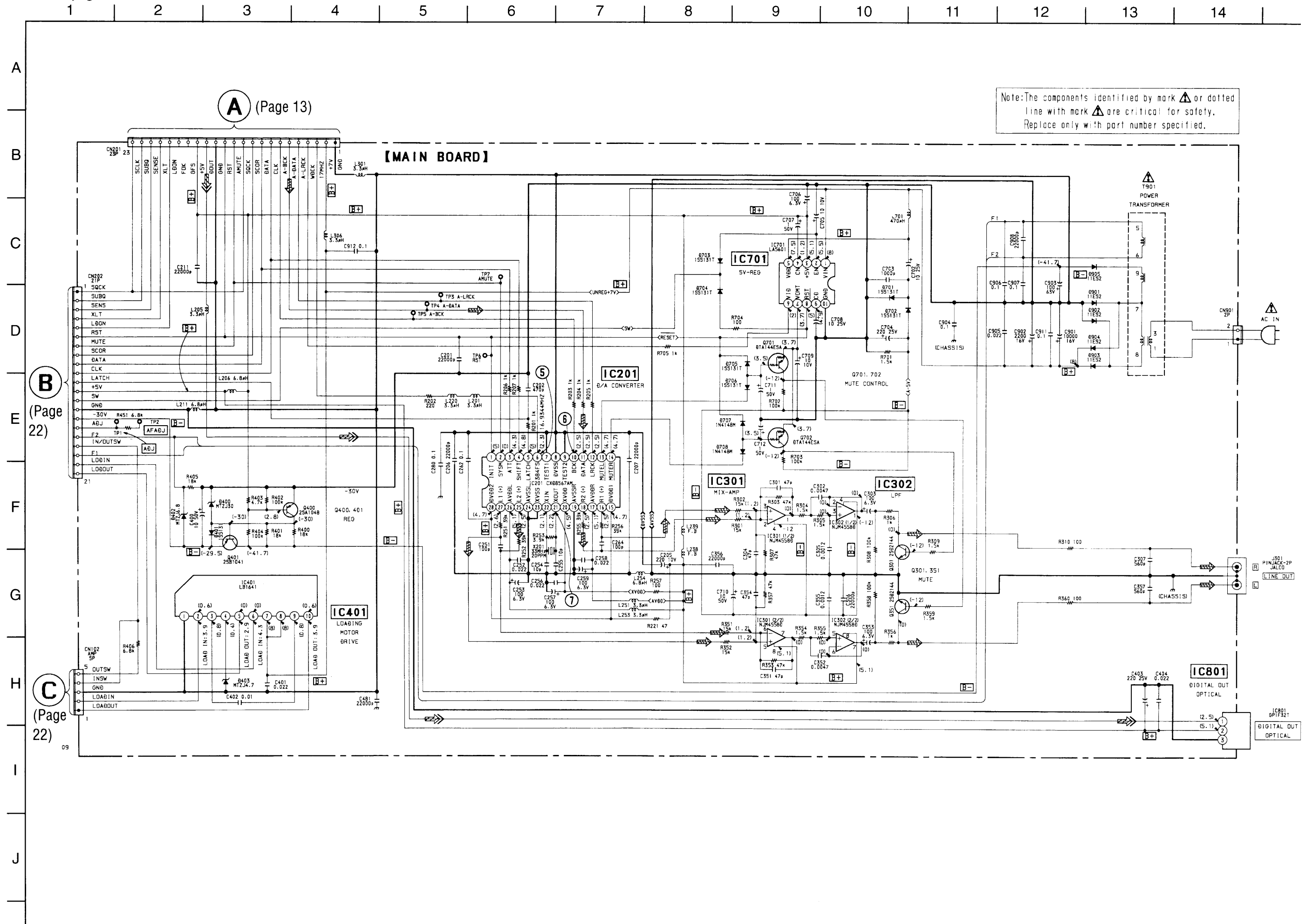
A

C
(Page 19)

• Indication of transistor

 These are omitted

6-5. SCHEMATIC DIAGRAM — MAIN SECTION —

• See page 10 for Waveforms.



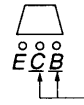
Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

6-6. PRINTED WIRING BOARD — PANEL SECTION —

• See page 9 for Circuit Boards Location.

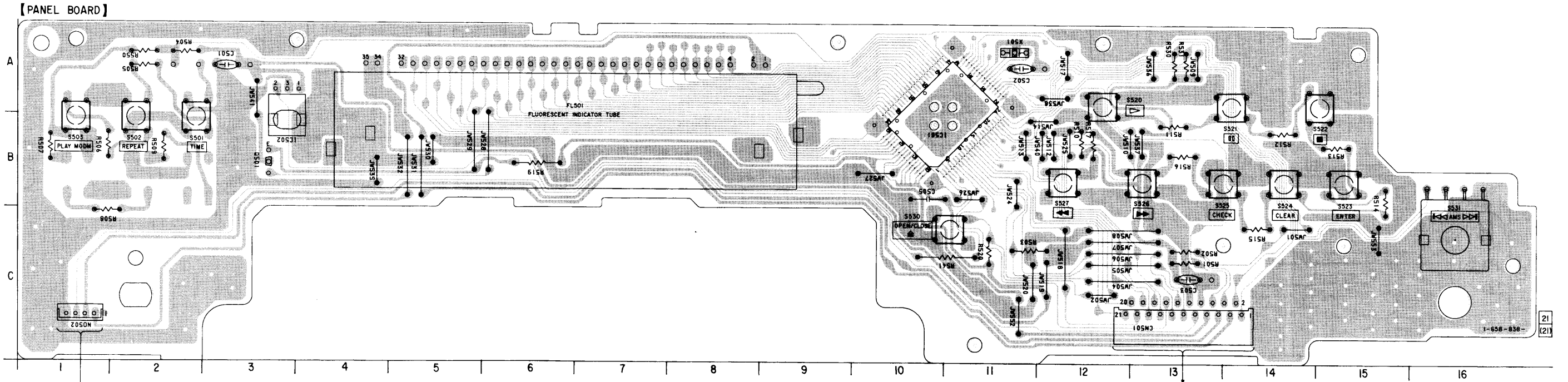
• Semiconductor Location

• Indication of transistor Location

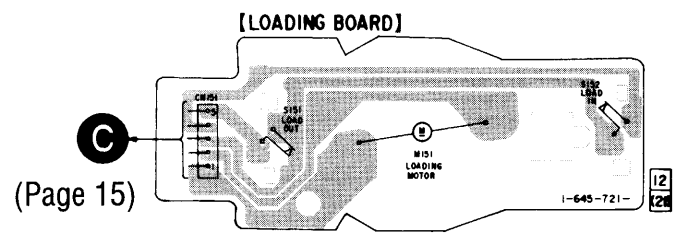
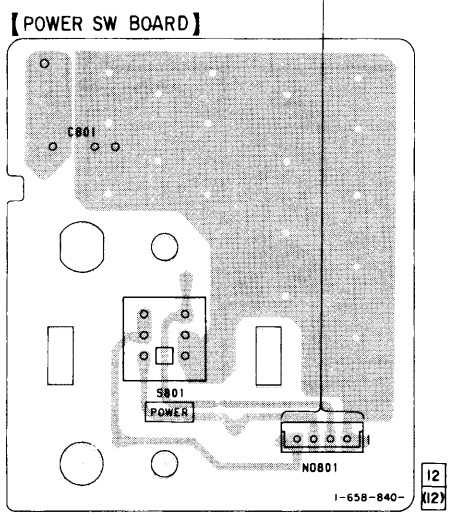


These are omitted

Ref. No.	Location
IC501	B-10
IC502	B-3
Q501	B-3

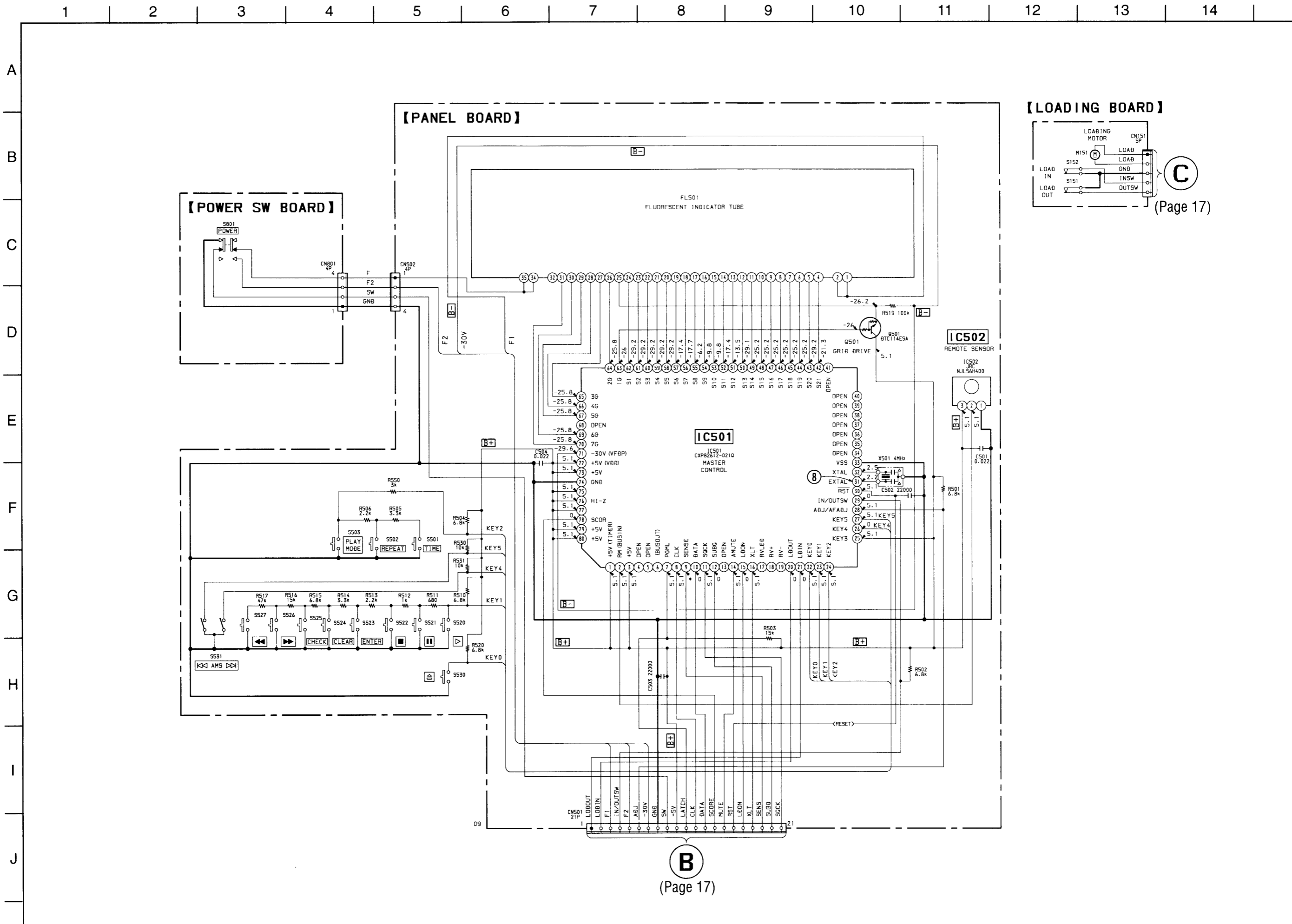


B
(Page 15)

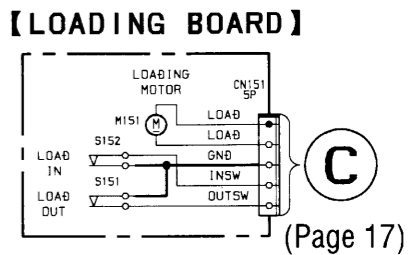


6-7. SCHEMATIC DIAGRAM — PANEL SECTION —

• See page 10 for Waveforms.



(Page 17)



(Page 17)

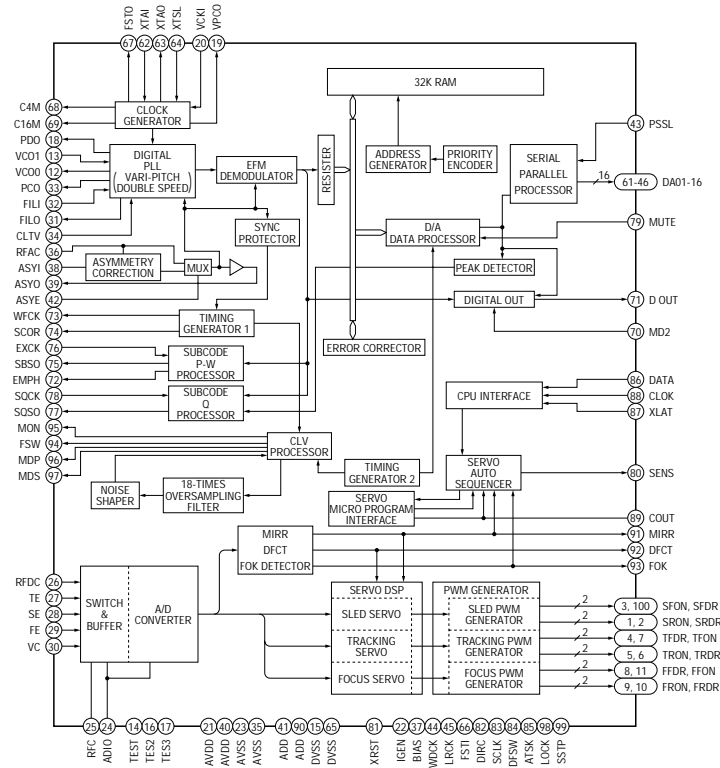
6-8. IC PIN FUNCTION

• IC501 CXP82612-021Q (MASTER CONTROL)

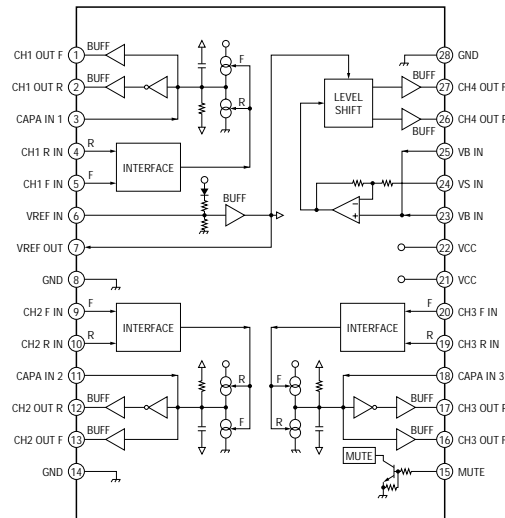
Pin No.	Pin Name	I/O	Function
1	+5V (TIMER)	-	Connected to +5V
2	RM (BUS 1N)	I	Audio bus input
3	+5V	-	Connected to +5V
4	OPEN	-	Not used
5	OPEN	-	Not used
6	(BUSOUT)	-	Not used
7	PGML	O	Latch signal output to digital filter (IC201)
8	CLK	O	Serial clock output
9	SENSE	I	SENSE signal input
10	DATA	O	Serial data output
11	SQCK	O	Read out clock output for subcode Q data
12	SUBQ	I	Subcode Q data input
13	OPEN	-	Not used
14	AMUTE	O	Analog muting control signal output
15	LDON	O	Optical pick-up laser diode control output
16	XLT	O	Serial data latch signal output
17	RVLED	-	Not used
18	RV+	-	Not used
19	RV-	-	Not used
20	LDOUT	O	Loading motor control signal output
21	LDIN	I	Loading motor control signal input
22	KEY0	I	Key input (S503)
23	KEY1	I	Key input (S520-S527)
24	KEY2	I	Key input (S501-S503)
25	KEY3	-	Not used (Fixed at "H")
26,27	KEY4,KEY5	I	Key input (S531)
28	ADJ/AFADJ	-	ADJ/AFJ test pin
29	IN/OUTSW	I	Loading IN/OUT switch input
30	RST	I	Reset signal input
31	EXTAL	I	Clock input (4MHz)
32	XTAL	O	Clock output (4MHz)
33	VSS	-	Ground
34-41	OPEN	-	Not used
42-62	S21-S1	O	FL segment output
63-67	1G-5G	O	FL grid output
68	OPEN	-	Not used
69,70	6G, 7G	O	FL grid output
71	-30V (VFDP)	-	-30V power supply for FL display tube
72	+5V (VDD)	-	+5V power supply
73	+5V	-	+5V power supply
74	GND	-	Ground
75	-	-	Not used (Fixed at "H")
76	HI-Z	-	Not used (Fixed at "H")
77	-	-	Not used (Fixed at "H")
78	SCOR	I	Read out timing signal input for subcode Q data
79,80	+5V	-	Connected to +5V

6-9. IC BLOCK DIAGRAMS

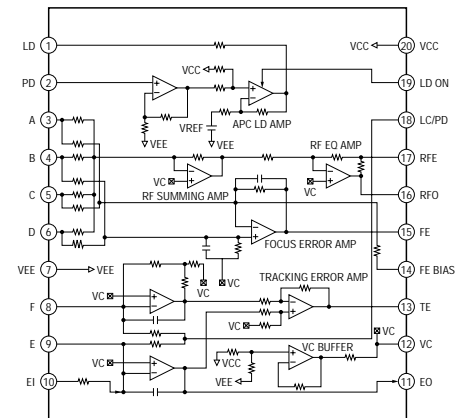
IC101 CXD2545Q



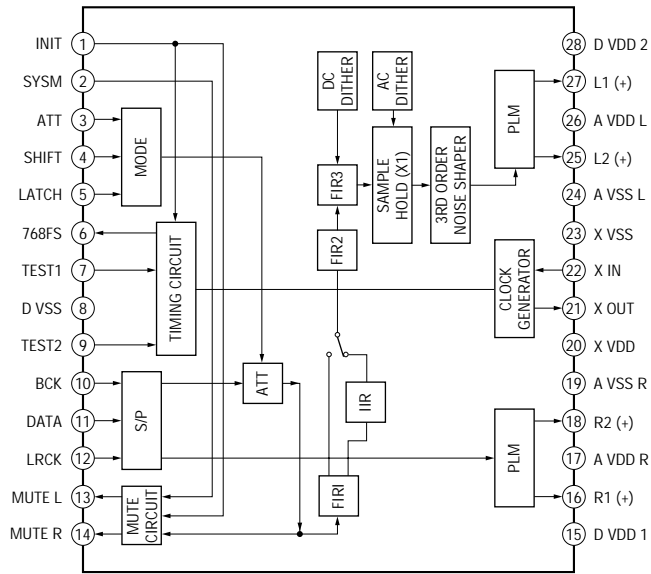
IC102 BA6392FP



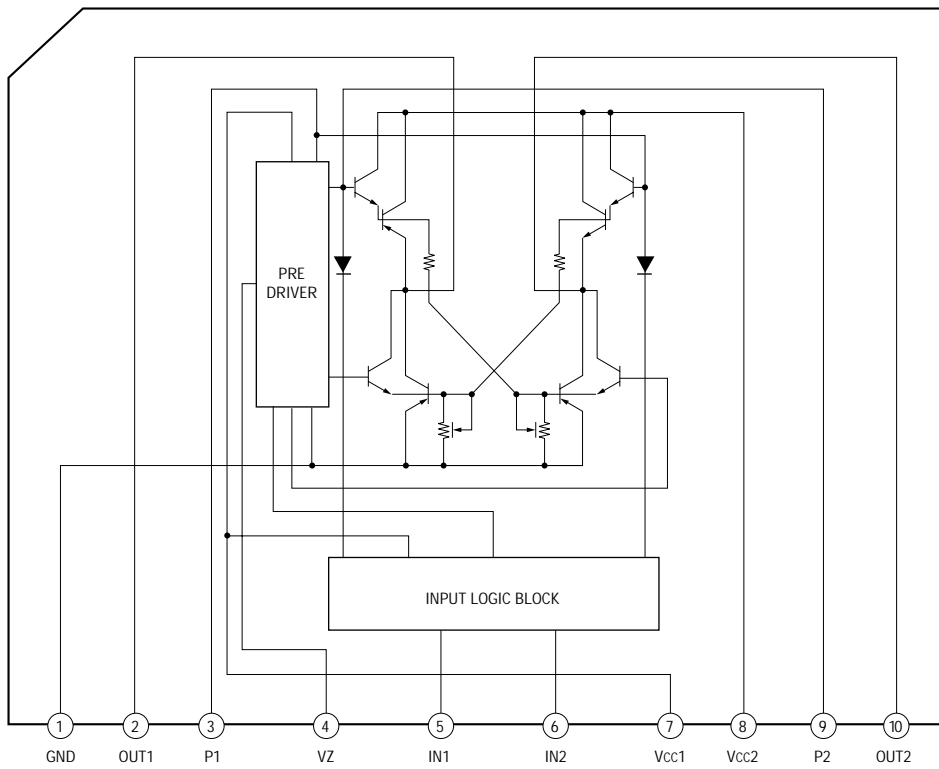
IC103 CXA1821M-T6



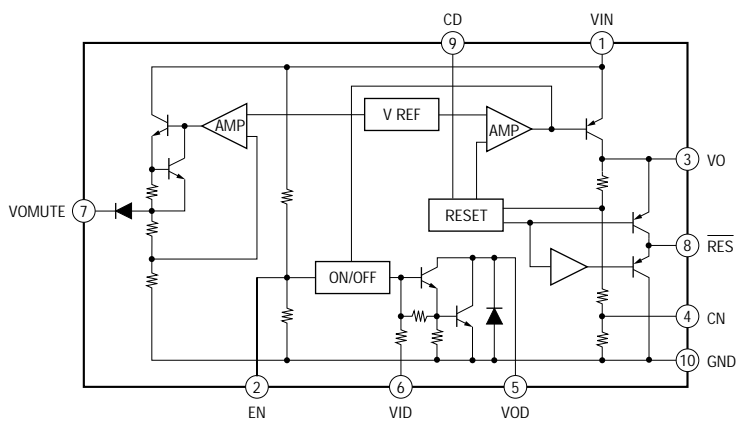
IC201 CXD2565M



IC401 LB1641



IC701 LA5601



SECTION 7 EXPLODED VIEWS

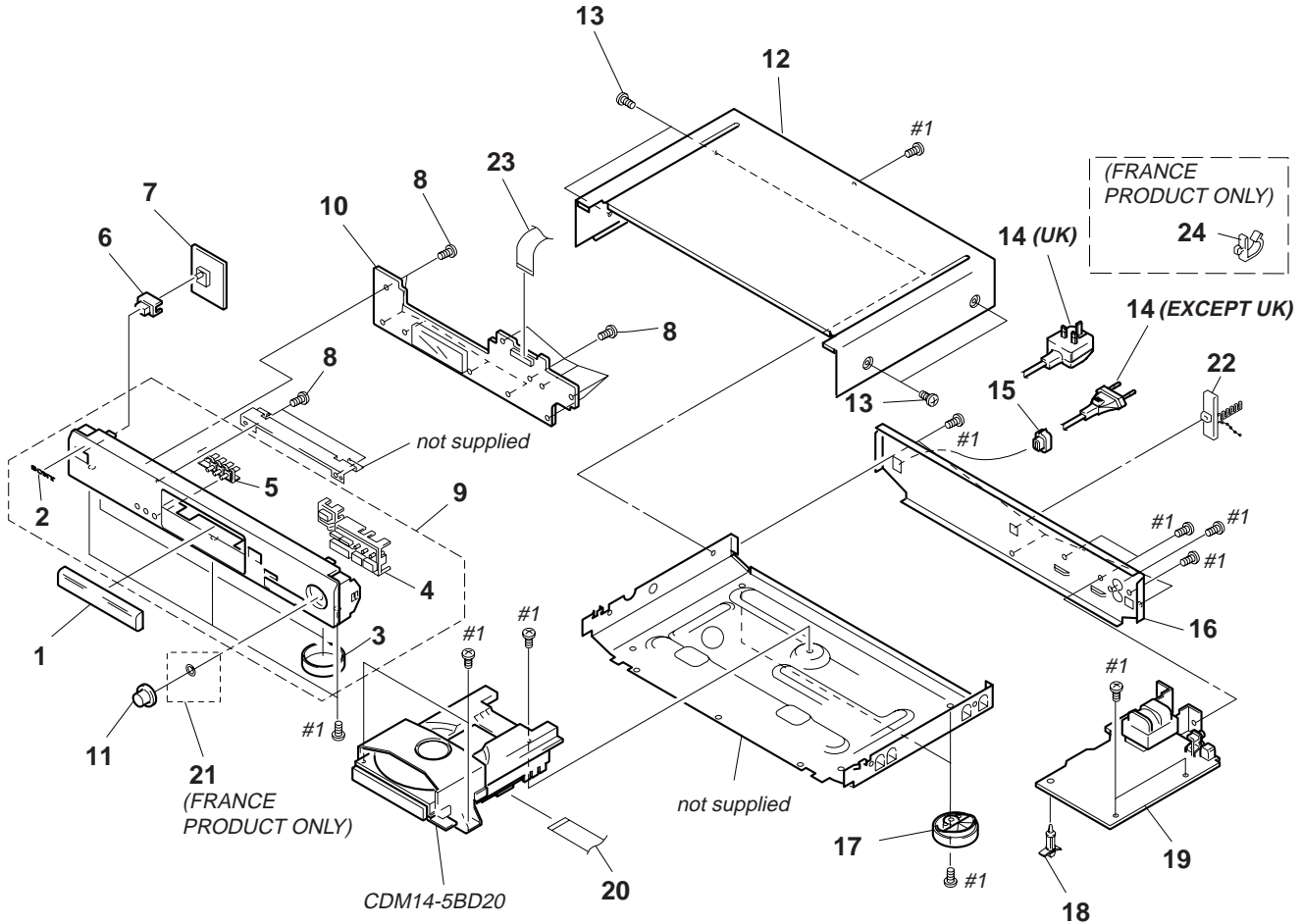
NOTE:

- 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
EE: East European model

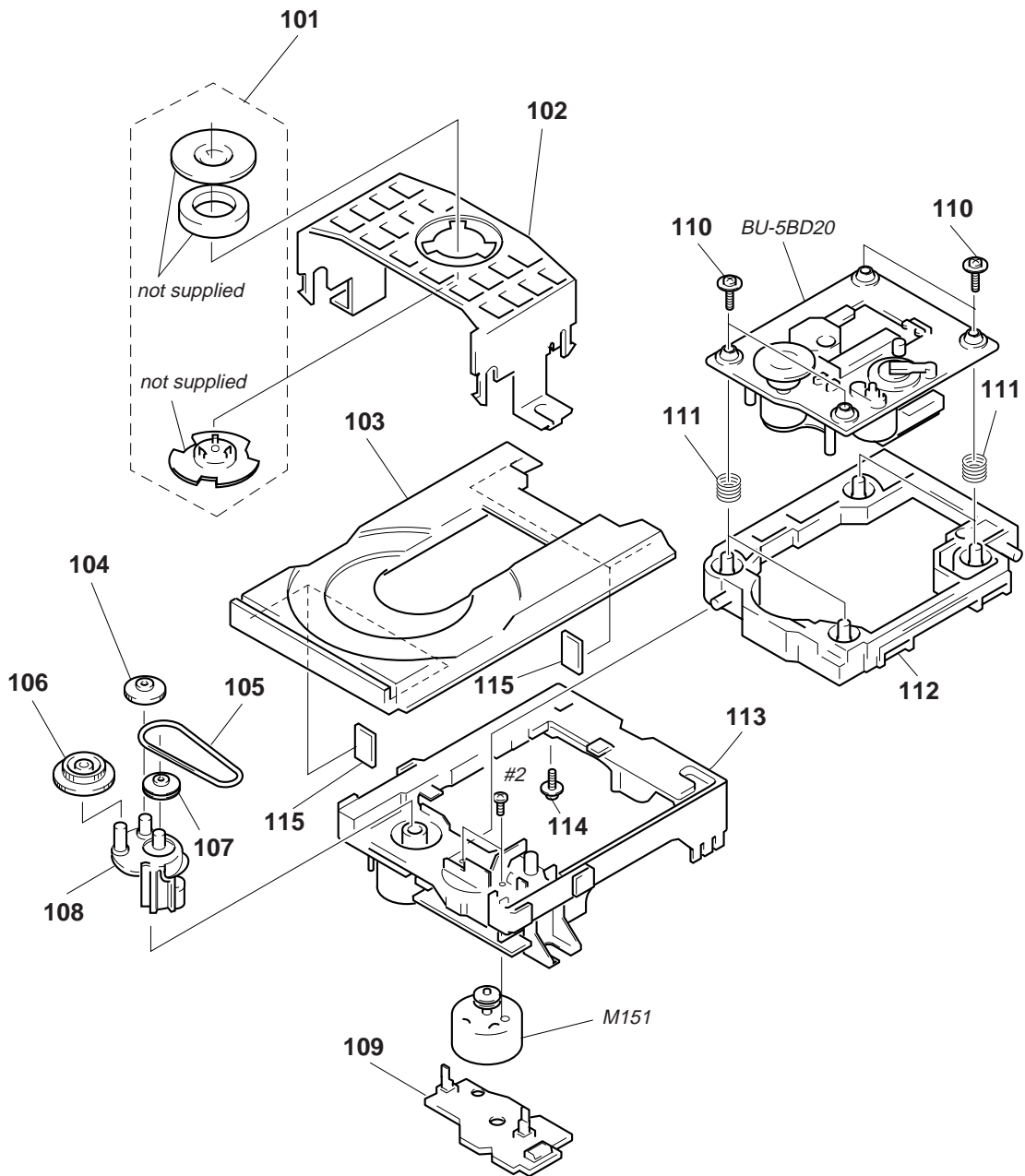
The components identified by mark \triangle or dotted line with mark \triangle are critical for safety.
Replace only with part number specified.

7-1. MAIN SECTION



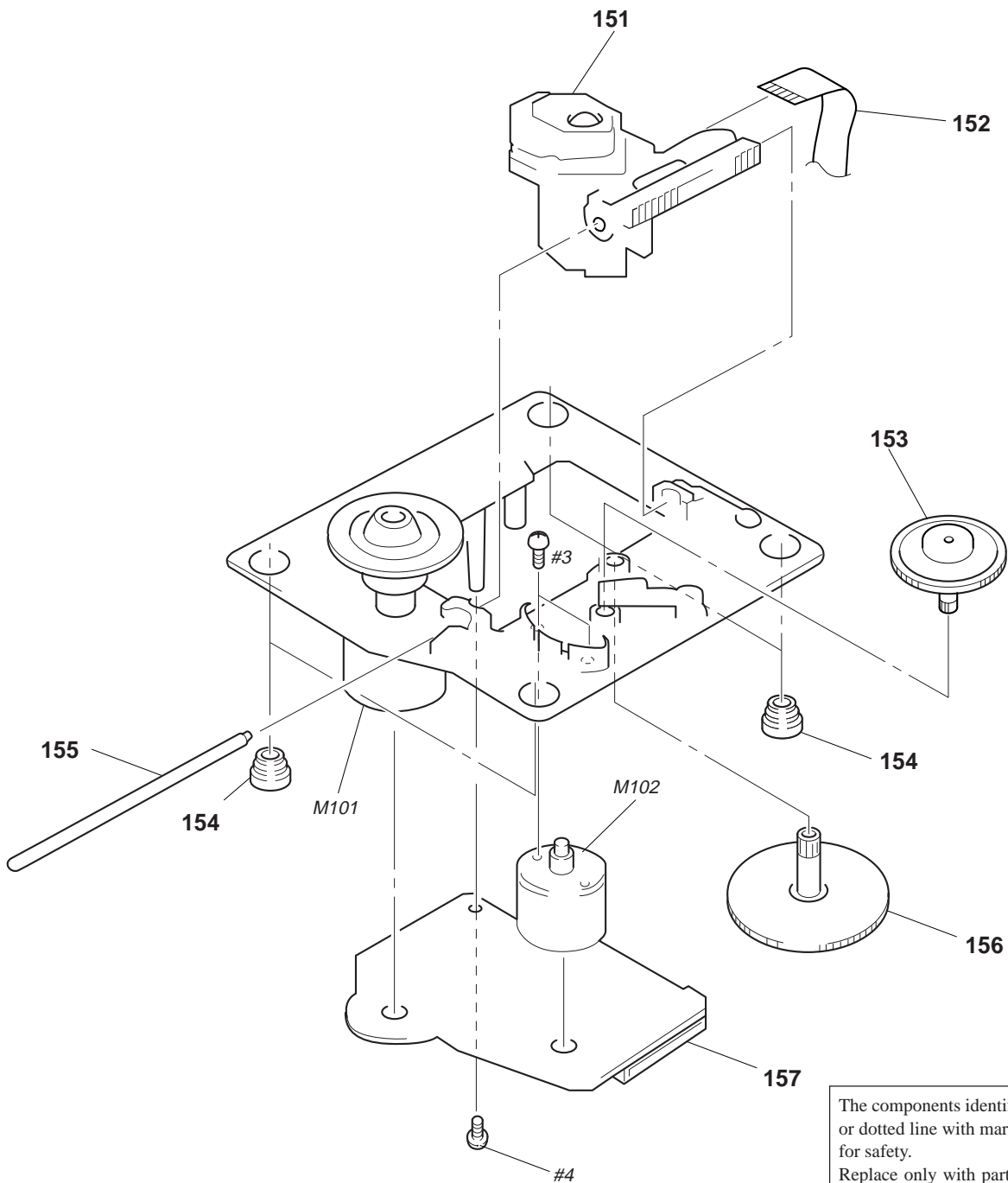
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	4-977-588-51	PANEL, LOADING (XE210)		* 16	4-988-712-01	PANEL, BACK (XE210:AEP,EE,CIS)	
1	4-977-588-61	PANEL, LOADING (XE310)				(FRANCE PRODUCT)	
2	4-963-404-21	EMBLEM (5-A), SONY		* 16	4-988-712-11	PANEL, BACK (XE210:UK)(FRANCE PRODUCT)	
3	4-977-593-01	RING (DIA. 50), ORNAMENTAL		* 16	4-988-712-21	PANEL, BACK (XE310:AEP,EE,CIS)	
4	4-977-583-01	BUTTON (PLAY)				(FRANCE PRODUCT)	
5	4-977-584-21	BUTTON (TIME)		* 16	4-988-712-31	PANEL, BACK (XE310:UK)(FRANCE PRODUCT)	
6	4-977-589-01	BUTTON (POWER)		* 16	4-979-971-51	PANEL, BACK (XE210:AEP,EE,CIS)	
* 7	1-658-840-21	POWER SW BOARD				(HUNGARY PRODUCT)	
8	4-951-620-01	SCREW (2.6X8), +BVTP		* 16	4-979-971-61	PANEL, BACK (XE210:UK)(HUNGARY PRODUCT)	
9	X-4947-866-1	PANEL ASSY, FRONT (XE210)		* 16	4-979-971-71	PANEL, BACK (XE310:AEP,EE,CIS)	
						(HUNGARY PRODUCT)	
9	X-4947-867-1	PANEL ASSY, FRONT (XE310)		* 16	4-979-971-81	PANEL, BACK (XE310:UK)(HUNGARY PRODUCT)	
* 10	A-4699-465-A	PANEL BOARD, COMPLETE		17	X-4947-207-1	FOOT ASSY (F50150S)	
11	4-977-590-01	KNOB (AMS)(FRANCE PRODUCT)		* 18	4-954-051-51	HOLDER, PC BOARD	
11	4-986-500-01	KNOB (AMS)(HUNGARY PRODUCT)		* 19	A-4699-464-A	MAIN BOARD, COMPLETE	
* 12	4-978-901-21	CASE (408226)		20	1-776-100-11	WIRE (FLAT TYPE)(23 CORE)	
13	3-363-099-01	SCREW (CASE 3 TP2)		21	3-354-981-01	SPRING (SUS), RING (FRANCE PRODUCT)	
\triangle 14	1-575-651-21	CORD, POWER (EXCEPT UK)		22	4-956-370-02	BAND, PLUG FIXED (UK)	
\triangle 14	1-696-907-11	CORD, POWER (UK)		23	1-776-099-11	WIRE (FLAT TYPE)(21 CORE)	
15	4-966-267-11	BUSHING (FBS001), CORD		* 24	4-949-235-01	HOOK (EXCEPT UK)(FRANCE PRODUCT)	

7-2. MECHANISM DECK SECTION (CDM14-5BD20)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* 101	1-452-538-11	MAGNET		110	4-933-134-01	SCREW +PTPWH M2.6X6	
102	4-933-110-41	HOLDER (MG)		111	4-959-996-01	SPRING (932), COMPRESSION	
103	4-933-112-11	TABLE, DISC		112	4-933-129-01	HOLDER (BU)	
104	4-967-268-01	GEAR (C)		113	4-933-111-11	CHASSIS (MD)	
105	4-927-649-01	BELT		* 114	4-917-583-21	BRACKET, YOKE	
106	4-933-107-01	GEAR (PL)		115	4-925-315-31	DAMPER	
107	4-927-651-01	PULLEY (S)					
108	4-933-109-01	CAM		M151	A-4604-363-A	MOTOR (L) ASSY	
* 109	1-645-721-11	LOADING BOARD					

7-3. BASE UNIT SECTION (BU-5BD20)



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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
\triangle 151	8-848-379-31	OPTICAL PICK UP BLOCK KSS-213BA/F-NP		156	4-917-564-01	GEAR (P), FLATNESS	
152	1-769-069-11	WIRE (FLAT TYPE)(16 CORE)		* 157	A-4673-511-A	BD BOARD, COMPLETE	
153	4-917-567-21	GEAR (M)		M101	X-4917-523-4	MOTOR ASSY (SPINDLE)	
154	4-951-940-01	INSULATOR (BU)		M102	X-4917-504-1	MOTOR ASSY (SLED)	
155	4-917-565-01	SHAFT, SLED					

SECTION 8 ELECTRICAL PARTS LIST

BD

LOADING

Note:

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

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.
- 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
EE: East European model

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-4673-511-A	BD BOARD, COMPLETE *****		R103	1-216-077-00	METAL CHIP 15K	5% 1/10W
		< CAPACITOR >		R104	1-216-085-00	METAL CHIP 33K	5% 1/10W
C101	1-163-005-11	CERAMIC CHIP 470PF	10% 50V	R105	1-216-097-91	METAL GLAZE 100K	5% 1/10W
C102	1-163-038-91	CERAMIC CHIP 0.1uF	25V	R106	1-216-061-00	METAL CHIP 3.3K	5% 1/10W
C103	1-163-005-11	CERAMIC CHIP 470PF	10% 50V	R107	1-216-061-00	METAL CHIP 3.3K	5% 1/10W
C105	1-135-155-21	TANTALUM CHIP 4.7uF	10% 16V	R108	1-216-073-00	METAL CHIP 10K	5% 1/10W
C106	1-164-346-11	CERAMIC CHIP 1uF	16V	R109	1-216-121-91	METAL GLAZE 1M	5% 1/10W
C107	1-164-346-11	CERAMIC CHIP 1uF	16V	R110	1-216-025-91	METAL GLAZE 100	5% 1/10W
C108	1-163-035-00	CERAMIC CHIP 0.047uF	50V	R112	1-216-049-91	METAL GLAZE 1K	5% 1/10W
C109	1-163-145-00	CERAMIC CHIP 0.0015uF	5% 50V	R123	1-216-073-00	METAL CHIP 10K	5% 1/10W
C110	1-163-017-00	CERAMIC CHIP 0.0047uF	5% 50V	R124	1-216-097-91	METAL GLAZE 100K	5% 1/10W
C111	1-163-251-11	CERAMIC CHIP 100PF	5% 50V	R125	1-216-049-91	METAL GLAZE 1K	5% 1/10W
C112	1-163-038-91	CERAMIC CHIP 0.1uF	25V	R126	1-216-049-91	METAL GLAZE 1K	5% 1/10W
C113	1-163-038-91	CERAMIC CHIP 0.1uF	25V	R127	1-216-049-91	METAL GLAZE 1K	5% 1/10W
C115	1-126-607-11	ELECT CHIP 47uF	20% 4V	R131	1-216-037-00	METAL CHIP 330	5% 1/10W
C116	1-126-607-11	ELECT CHIP 47uF	20% 4V	R135	1-216-295-91	CONDUCTOR, CHIP (2012)	
C117	1-126-209-11	ELECT 100uF	20% 4V	R136	1-216-295-91	CONDUCTOR, CHIP (2012)	
C118	1-163-275-11	CERAMIC CHIP 0.001uF	5% 50V	R137	1-216-295-91	CONDUCTOR, CHIP (2012)	
C119	1-163-231-11	CERAMIC CHIP 15PF	5% 50V	R138	1-216-295-91	CONDUCTOR, CHIP (2012)	
C123	1-164-232-11	CERAMIC CHIP 0.01uF	50V	R141	1-216-089-91	METAL GLAZE 47K	5% 1/10W
C124	1-164-005-11	CERAMIC CHIP 0.47uF	25V	R142	1-216-081-00	METAL CHIP 22K	5% 1/10W
C140	1-163-038-91	CERAMIC CHIP 0.1uF	25V	R143	1-216-103-00	METAL CHIP 180K	5% 1/10W
C141	1-163-038-91	CERAMIC CHIP 0.1uF	25V	R144	1-216-103-00	METAL CHIP 180K	5% 1/10W
C151	1-163-237-11	CERAMIC CHIP 27PF	5% 50V	R146	1-216-073-00	METAL CHIP 10K	5% 1/10W
C153	1-163-038-91	CERAMIC CHIP 0.1uF	25V	R147	1-216-081-00	METAL CHIP 22K	5% 1/10W
C154	1-164-336-11	CERAMIC CHIP 0.33uF	25V	R148	1-216-001-00	METAL CHIP 10	5% 1/10W
C156	1-163-237-11	CERAMIC CHIP 27PF	5% 50V	R149	1-216-003-11	METAL GLAZE 12	5% 1/10W
C157	1-163-145-00	CERAMIC CHIP 0.0015uF	5% 50V	R158	1-216-111-91	METAL GLAZE 390K	5% 1/10W
C159	1-163-019-00	CERAMIC CHIP 0.0068uF	10% 50V	R159	1-216-101-00	METAL CHIP 150K	5% 1/10W
C161	1-163-038-91	CERAMIC CHIP 0.1uF	25V	R160	1-216-295-91	CONDUCTOR, CHIP (2012)	
		< CONNECTOR >		R161	1-216-308-00	METAL CHIP 4.7	5% 1/10W
CN101	1-770-072-11	CONNECTOR, (LIF(NON-ZIF)) FFC23P		R162	1-216-101-00	METAL CHIP 150K	5% 1/10W
CN102	1-770-014-11	CONNECTOR, FFC/FPC 16P				< SWITCH >	
		< IC >		S101	1-572-085-11	SWITCH, LEAF (LIMIT)	
IC101	8-752-369-78	IC CXD2545Q		*****			
IC102	8-759-176-09	IC BA6392FP		*	1-645-721-11	LOADING BOARD	
IC103	8-752-072-45	IC CXA1821M-T6				*****	
		< TRANSISTOR >				< CONNECTOR >	
Q101	8-729-010-08	TRANSISTOR MSB710-R		* CN151	1-568-943-11	PIN, CONNECTOR 5P	
		< RESISTOR >				< SWITCH >	
R101	1-216-077-00	METAL CHIP 15K	5% 1/10W	S151	1-572-086-11	SWITCH, LEAF (LOAD OUT)	
R102	1-216-097-91	METAL GLAZE 100K	5% 1/10W	S152	1-572-086-11	SWITCH, LEAF (LOAD IN)	

MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-4699-464-A	MAIN BOARD, COMPLETE *****		C906	1-164-159-21	CERAMIC 0.1uF	50V
		< CAPACITOR >		C907	1-164-159-21	CERAMIC 0.1uF	50V
C201	1-161-494-00	CERAMIC 0.022uF	25V	C908	1-161-494-00	CERAMIC 0.022uF	25V
C202	1-162-290-31	CERAMIC 470PF 10%	50V	C911	1-164-159-21	CERAMIC 0.1uF	50V
C205	1-104-666-11	ELECT 220uF 20%	25V	C912	1-164-159-21	CERAMIC 0.1uF	50V
C206	1-161-494-00	CERAMIC 0.022uF	25V			< CONNECTOR >	
C207	1-161-494-00	CERAMIC 0.022uF	25V	* CN201	1-568-839-11	SOCKET, CONNECTOR 23P	
				CN202	1-568-838-11	SOCKET, CONNECTOR 21P	
C211	1-161-494-00	CERAMIC 0.022uF	25V	CN901	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P	
C251	1-162-282-31	CERAMIC 100PF 10%	50V			< DIODE >	
C252	1-161-494-00	CERAMIC 0.022uF	25V	D400	8-719-982-22	DIODE MTZJ-30D	
C253	1-126-933-11	ELECT 100uF 20%	16V	D401	8-719-815-85	DIODE 1S1585	
C254	1-162-199-31	CERAMIC 10PF 5%	50V	D402	8-719-109-97	DIODE RD6.8ES-B2	
				D403	8-719-010-34	DIODE UZ-4.7BSC	
C255	1-162-199-31	CERAMIC 10PF 5%	50V	D701	8-719-815-85	DIODE 1S1585	
C256	1-161-494-00	CERAMIC 0.022uF	25V				
C257	1-126-933-11	ELECT 100uF 20%	16V	D702	8-719-815-85	DIODE 1S1585	
C258	1-161-494-00	CERAMIC 0.022uF	25V	D703	8-719-815-85	DIODE 1S1585	
C259	1-126-933-11	ELECT 100uF 20%	16V	D704	8-719-815-85	DIODE 1S1585	
				D705	8-719-815-85	DIODE 1S1585	
C262	1-164-159-21	CERAMIC 0.1uF	50V	D706	8-719-815-85	DIODE 1S1585	
C264	1-162-282-31	CERAMIC 100PF 10%	50V				
C280	1-164-159-21	CERAMIC 0.1uF	50V	D707	8-719-815-85	DIODE 1S1585	
C301	1-162-215-31	CERAMIC 47PF 5%	50V	D708	8-719-815-85	DIODE 1S1585	
C302	1-130-479-00	MYLAR 0.0047uF 5%	50V	D901	8-719-200-82	DIODE 11ES2	
				D902	8-719-200-82	DIODE 11ES2	
C303	1-126-933-11	ELECT 100uF 20%	16V	D903	8-719-200-82	DIODE 11ES2	
C304	1-162-215-31	CERAMIC 47PF 5%	50V				
C305	1-130-472-00	MYLAR 0.0012uF 5%	50V	D904	8-719-200-82	DIODE 11ES2	
C306	1-161-494-00	CERAMIC 0.022uF 30%	25V	D905	8-719-200-82	DIODE 11ES2	
C307	1-162-291-31	CERAMIC 560PF 10%	50V			< IC >	
				IC201	8-759-362-47	IC CXD8567AM	
C351	1-162-215-31	CERAMIC 47PF 5%	50V	IC301	8-759-634-51	IC M5218AP	
C352	1-130-479-00	MYLAR 0.0047uF 5%	50V	IC302	8-759-634-51	IC M5218AP	
C353	1-126-933-11	ELECT 100uF 20%	16V	IC401	8-759-822-09	IC LB1641	
C354	1-162-215-31	CERAMIC 47PF 5%	50V	IC701	8-759-821-93	IC LA5601	
C355	1-130-472-00	MYLAR 0.0012uF 5%	50V				
				IC801	8-749-921-12	IC GP1F32T (DIGITAL OPTICAL OUT)	
C356	1-161-494-00	CERAMIC 0.022uF 30%	25V			< JACK >	
C357	1-162-291-31	CERAMIC 560PF 10%	50V	J301	1-770-719-11	JACK, PIN 2P (LINE OUT)	
C400	1-126-964-11	ELECT 10uF 20%	50V			< COIL >	
C401	1-161-494-00	CERAMIC 0.022uF	25V	L201	1-410-322-11	INDUCTOR 3.3uH	
C402	1-162-306-11	CERAMIC 0.01uF 20%	16V	L205	1-410-322-11	INDUCTOR 3.3uH	
				L206	1-410-507-11	INDUCTOR 6.8uH	
C403	1-104-666-11	ELECT 220uF 20%	25V	L211	1-410-507-11	INDUCTOR 6.8uH	
C404	1-161-494-00	CERAMIC 0.022uF	25V	L220	1-410-322-11	INDUCTOR 3.3uH	
C481	1-161-494-00	CERAMIC 0.022uF 30%	25V				
C702	1-126-964-11	ELECT 10uF 20%	50V	L238	1-412-473-41	INDUCTOR 0uH	
C703	1-162-294-31	CERAMIC 0.001uF 10%	50V	L239	1-412-473-41	INDUCTOR 0uH	
				L251	1-410-322-11	INDUCTOR 3.3uH	
C704	1-104-666-11	ELECT 220uF 20%	25V	L253	1-410-322-11	INDUCTOR 3.3uH	
C705	1-126-964-11	ELECT 10uF 20%	50V	L254	1-410-507-11	INDUCTOR 6.8uH	
C706	1-126-933-11	ELECT 100uF 20%	16V				
C707	1-124-903-11	ELECT 1uF 20%	50V	L701	1-408-429-00	INDUCTOR 470uH	
C708	1-126-964-11	ELECT 10uF 20%	50V			< TRANSISTOR >	
				Q301	8-729-922-37	TRANSISTOR 2SD2144S	
C709	1-126-964-11	ELECT 10uF 20%	50V				
C710	1-126-964-11	ELECT 10uF 20%	50V				
C711	1-124-903-11	ELECT 1uF 20%	50V				
C712	1-124-903-11	ELECT 1uF 20%	50V				
C901	1-126-939-11	ELECT 10000uF 20%	16V				
C902	1-126-768-11	ELECT 2200uF 20%	16V				
C903	1-128-576-11	ELECT 100uF 20%	63V				
C904	1-164-159-21	CERAMIC 0.1uF	50V				
C905	1-161-494-00	CERAMIC 0.022uF	25V				

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
Q351	8-729-922-37	TRANSISTOR	2SD2144S			< TRANSFORMER >	
Q400	8-729-119-76	TRANSISTOR	2SA1175-HFE				
Q401	8-729-019-65	TRANSISTOR	2SB1041T103				
Q701	8-729-029-56	TRANSISTOR	DTA144ESA				
Q702	8-729-029-56	TRANSISTOR	DTA144ESA				
		< RESISTOR >					
R201	1-249-417-11	CARBON	1K	5%	1/4W	F	
R202	1-247-815-91	CARBON	220	5%	1/4W		
R203	1-249-417-11	CARBON	1K	5%	1/4W	F	
R204	1-249-417-11	CARBON	1K	5%	1/4W	F	
R205	1-249-417-11	CARBON	1K	5%	1/4W	F	
R206	1-249-417-11	CARBON	1K	5%	1/4W	F	
R207	1-249-417-11	CARBON	1K	5%	1/4W	F	
R208	1-249-417-11	CARBON	1K	5%	1/4W	F	
R221	1-249-401-11	CARBON	47	5%	1/4W	F	
R251	1-249-436-11	CARBON	39K	5%	1/4W		
R252	1-249-436-11	CARBON	39K	5%	1/4W		
R253	1-249-424-11	CARBON	3.9K	5%	1/4W	F	
R255	1-249-436-11	CARBON	39K	5%	1/4W		
R256	1-249-436-11	CARBON	39K	5%	1/4W		
R257	1-247-807-31	CARBON	100	5%	1/4W		
R301	1-249-431-11	CARBON	15K	5%	1/4W		
R302	1-249-431-11	CARBON	15K	5%	1/4W		
R303	1-215-461-00	METAL	47K	1%	1/4W		
R304	1-249-419-11	CARBON	1.5K	5%	1/4W	F	
R305	1-249-419-11	CARBON	1.5K	5%	1/4W	F	
R306	1-249-417-11	CARBON	1K	5%	1/4W	F	
R307	1-249-437-11	CARBON	47K	5%	1/4W		
R308	1-249-441-11	CARBON	100K	5%	1/4W		
R309	1-249-419-11	CARBON	1.5K	5%	1/4W	F	
R310	1-247-807-31	CARBON	100	5%	1/4W		
R351	1-249-431-11	CARBON	15K	5%	1/4W		
R352	1-249-431-11	CARBON	15K	5%	1/4W		
R353	1-215-461-00	METAL	47K	1%	1/4W		
R354	1-249-419-11	CARBON	1.5K	5%	1/4W	F	
R355	1-249-419-11	CARBON	1.5K	5%	1/4W	F	
R356	1-249-417-11	CARBON	1K	5%	1/4W	F	
R357	1-249-437-11	CARBON	47K	5%	1/4W		
R358	1-249-441-11	CARBON	100K	5%	1/4W		
R359	1-249-419-11	CARBON	1.5K	5%	1/4W	F	
R360	1-247-807-31	CARBON	100	5%	1/4W		
R400	1-249-432-11	CARBON	18K	5%	1/4W		
R401	1-249-432-11	CARBON	18K	5%	1/4W		
R402	1-249-441-11	CARBON	100K	5%	1/4W		
R403	1-249-425-11	CARBON	4.7K	5%	1/4W	F	
R404	1-249-441-11	CARBON	100K	5%	1/4W		
R405	1-249-432-11	CARBON	18K	5%	1/4W		
R406	1-249-427-11	CARBON	6.8K	5%	1/4W	F	
R451	1-249-427-11	CARBON	6.8K	5%	1/4W	F	
R701	1-249-419-11	CARBON	1.5K	5%	1/4W	F	
R702	1-249-441-11	CARBON	100K	5%	1/4W		
R703	1-249-441-11	CARBON	100K	5%	1/4W		
R704	1-247-807-31	CARBON	100	5%	1/4W		
R705	1-249-417-11	CARBON	1K	5%	1/4W	F	
		< TRANSFORMER >					
		< VIBRATOR >					
		< RESISTOR >					
		< CAPACITOR >					
		< CONNECTOR >					
		< FLUORESCENT INDICATOR >					
		< IC >					
		< TRANSISTOR >					
		< RESISTOR >					
		< SWITCH >					

* A-4699-465-A PANEL BOARD, COMPLETE *****

C501	1-161-494-00	CERAMIC	0.022uF	25V
C502	1-161-494-00	CERAMIC	0.022uF	25V
C503	1-161-494-00	CERAMIC	0.022uF	25V
C505	1-161-494-00	CERAMIC	0.022uF	25V

* CN501 1-568-864-11 SOCKET, CONNECTOR 21P

FL501 1-517-297-31 INDICATOR TUBE, FLUORESCENT

IC501	8-752-869-51	IC	CXP82612-021Q
IC502	8-759-459-84	IC	NJL56H400

Q501 8-729-029-67 TRANSISTOR DTC114ESA-TP

R501	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R502	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R503	1-249-431-11	CARBON	15K	5%	1/4W	
R504	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R505	1-247-843-11	CARBON	3.3K	5%	1/4W	

R506	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R510	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R511	1-249-415-11	CARBON	680	5%	1/4W	F
R512	1-249-417-11	CARBON	1K	5%	1/4W	F
R513	1-249-419-11	CARBON	1.5K	5%	1/4W	F

R514	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R515	1-247-843-11	CARBON	3.3K	5%	1/4W	
R516	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R517	1-249-431-11	CARBON	15K	5%	1/4W	
R519	1-249-441-11	CARBON	100K	5%	1/4W	

R520	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R530	1-249-429-11	CARBON	10K	5%	1/4W	
R531	1-249-429-11	CARBON	10K	5%	1/4W	
R541	1-247-807-31	CARBON	100	5%	1/4W	
R550	1-247-842-11	CARBON	3K	5%	1/4W	

S501	1-554-303-21	SWITCH, TACTILE (TIME)
S502	1-554-303-21	SWITCH, TACTILE (REPEAT)
S503	1-554-303-21	SWITCH, TACTILE (PLAY MODE)
S520	1-554-303-21	SWITCH, TACTILE (▷)

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

CDP-XE210/XE310

PANEL	POWER SW
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Ref. No.	Part No.	Description	Remark
S521	1-554-303-21	SWITCH, TACTILE (■)	
S522	1-554-303-21	SWITCH, TACTILE (■)	
S523	1-554-303-21	SWITCH, TACTILE (ENTER)	
S524	1-554-303-21	SWITCH, TACTILE (CLEAR)	
S525	1-554-303-21	SWITCH, TACTILE (CHECK)	
S526	1-554-303-21	SWITCH, TACTILE (▶▶)	
S527	1-554-303-21	SWITCH, TACTILE (◀◀)	
S530	1-554-303-21	SWITCH, TACTILE (OPEN/CLOSE ☰)	
S531	1-473-452-11	ENCODER, ROTARY (◀◀◀ AMS ▶▶▶)	
< VIBRATOR >			
X501	1-577-082-11	VIBRATOR, CERAMIC (4MHz)	

*	1-658-840-21	POWER SW BOARD *****	
< SWITCH >			
S801	1-554-118-00	SWITCH, PUSH (1 KEY)(POWER)	

MISCELLANEOUS *****			
△ 14	1-575-651-21	CORD, POWER (EXCEPT UK)	
△ 14	1-696-907-11	CORD, POWER (UK)	
20	1-776-100-11	WIRE (FLAT TYPE)(23 CORE)	
23	1-776-099-11	WIRE (FLAT TYPE)(21 CORE)	
* 101	1-452-538-11	MAGNET	
△ 151	8-848-379-31	OPTICAL PICK UP BLOCK KSS-213BA/F-NP	
152	1-769-069-11	WIRE (FLAT TYPE)(16 CORE)	
M101	X-4917-523-4	MOTOR ASSY (SPINDLE)	
M102	X-4917-504-1	MOTOR ASSY (SLED)	
M151	A-4604-363-A	MOTOR (L) ASSY	

ACCESSORIES & PACKING MATERIALS *****			
1-467-880-11	REMOTE COMMANDER (RM-D420)(XE310)		
1-558-271-11	CORD, CONNECTION (AUDIO, 108cm)		
3-858-571-11	MANUAL, INSTRUCTION (ENGLISH,FRENCH,SPANISH)(AEP,UK)		
3-858-571-21	MANUAL, INSTRUCTION (GERMAN,DUTCH,ITALIAN,PORTUGUESE)(AEP)		
3-858-571-31	MANUAL, INSTRUCTION (SWEDISH,DANNISH,FINISH)(AEP)		
3-858-571-41	MANUAL, INSTRUCTION (ENGLISH,POLISH,RUSSIAN)(EE,CIS)		
4-962-615-01	COVER, BATTERY (For RM-D420)(XE310)		

Ref. No.	Part No.	Description	Remark
***** HARDWARE LIST *****			
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#2	7-621-775-10	SCREW +B 2.6X4	
#3	7-621-255-15	SCREW +P 2X3	
#4	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S	

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