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 (λ = 780 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 ± 0.5 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 × 95 × 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

MICROFILM

SONY

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

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

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

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 UDS ÆTTELSE FOR STRÅLING.
VARO!	;	AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA LASERSÄTEILYLLE.
VARNING	;	LASERSTRÅLING NÄR DENNA DEL ÄR OPPNÅD OCH SPÄRREN ÄR URXOPPLAD.
ADVARSEL	;	USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGÅ 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 ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

TABLE OF CONTENTS

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

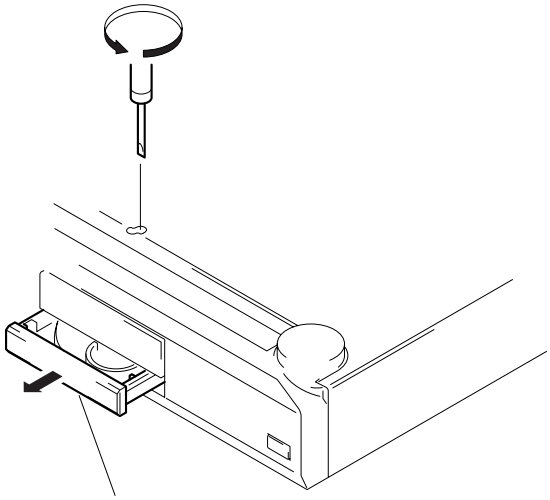
- Abbreviation
  EE : East European model

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.*



Pull out disc table

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.

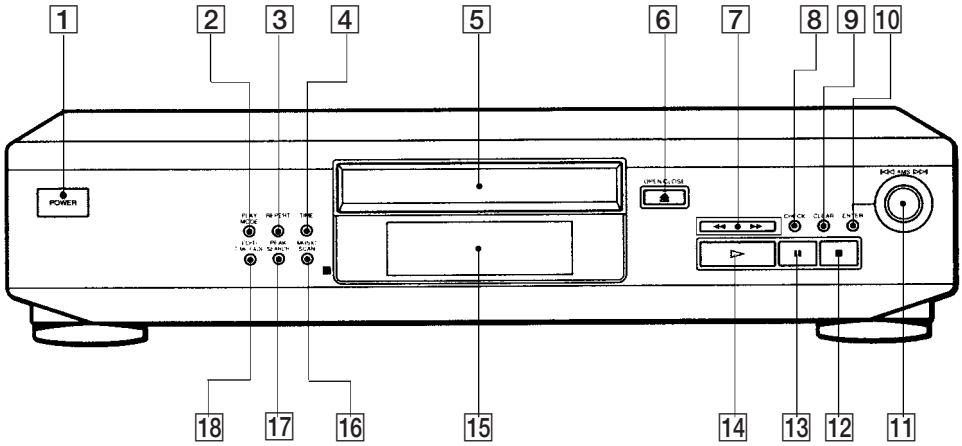
LASER DIODE AND FOCUS SEARCH OPERATION CHECK

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 ◀◀/▶▶ 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

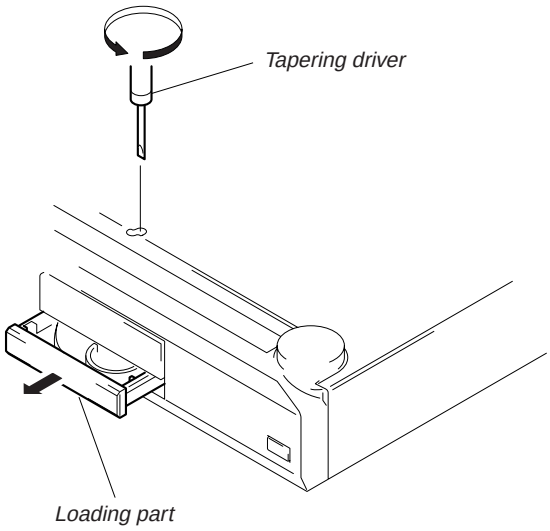
* AMS is the abbreviation for Automatic Music Sensor.

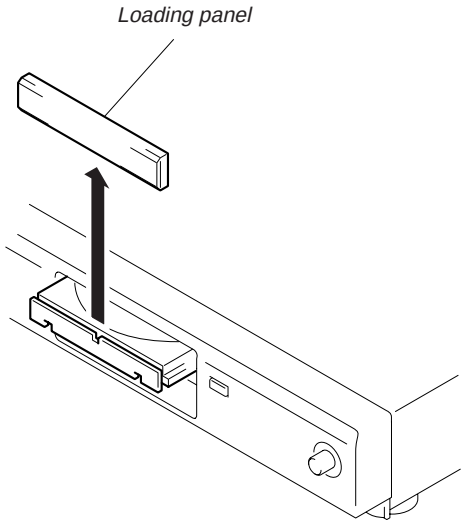
SECTION 3
DISASSEMBLY

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

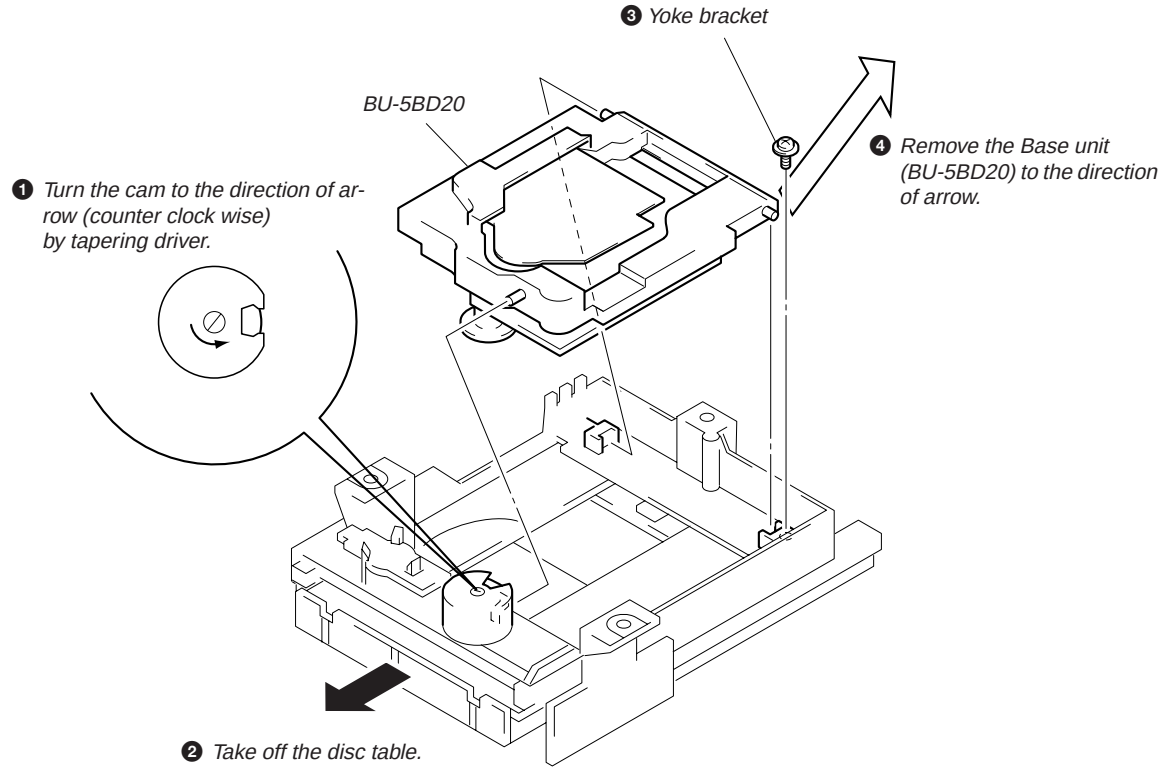
3-1. FRONT PANEL

- 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)

(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.

Display of counting *Display of button 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 Operrations 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

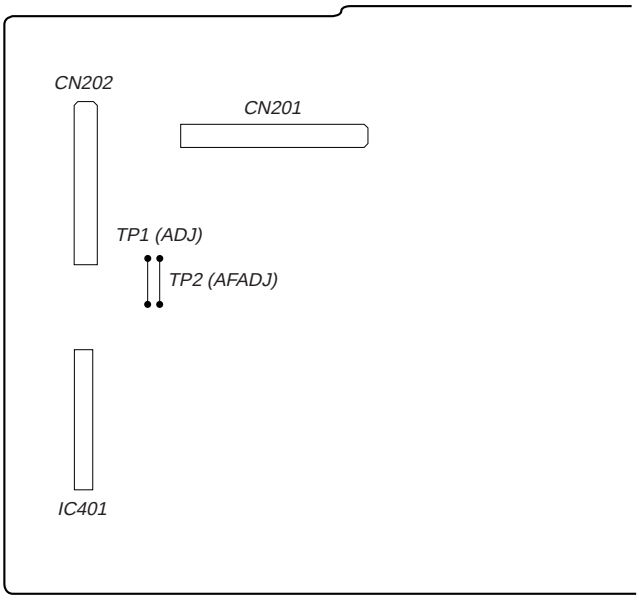
The jitter value display mode can be set after the all-music remaining number mode using the TIME button.

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

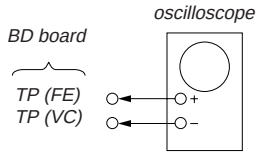
[MAIN BOARD] — Component Side —



SECTION 5
ELECTRICAL BLOCK CHECKING

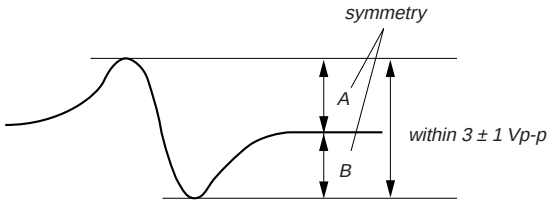
Note:
1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than 10MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when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

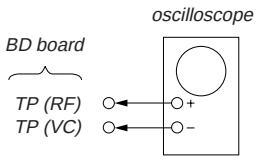
S-curve waveform



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.

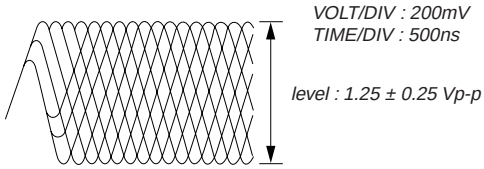
RF Level Check



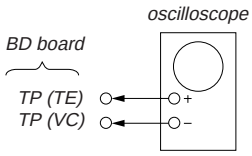
Procedure :
1. Connect oscilloscope to test point TP (RF) on BD board.
2. Turn Power switch on.
3. Put disc (YEDS-18) in to play the number five track.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note:
A clear RF signal waveform means that the shape "◊" can be clearly distinguished at the center of the waveform.

RF signal waveform

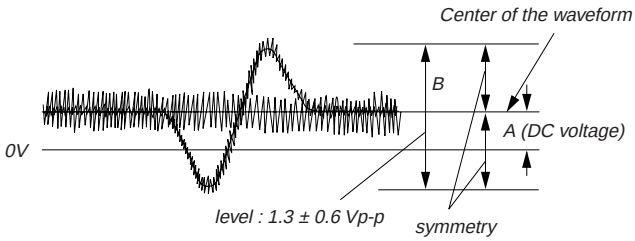


E-F Balance (1 Track Jump) Check (Without remote commander)

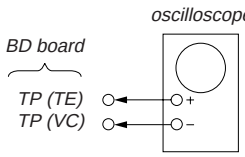


Procedure :
1. Connect oscilloscpe to test point TP (TE) on BD board.
2. Turn Power switch on.
3. Put disc (YEDS-18) in to play the number five track.
4. Press the "▮▮ (Pause)" button. (Becomes the 1 track jump mode)
5. Check the level B of the oscilliscope's waveform and the A (DC voltage) of the center of the Traverse waveform.
   Confirm the following :
   A/B x 100 = less than ± 22%

1 track jump waveform

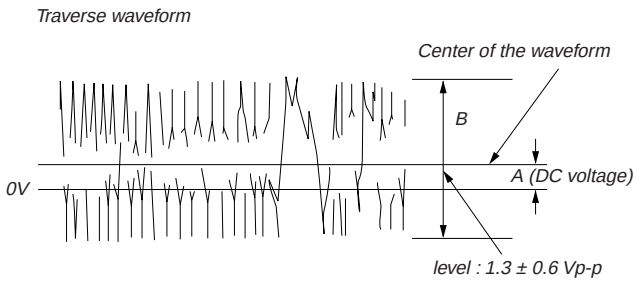


E-F Balance Check (With remote commander)

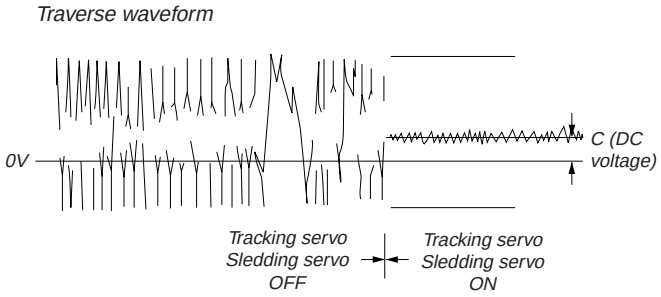


Procedure :
1. Connect the test point TP1 (ADJ) on MAIN board to the ground with a lead wire on main board.
2. Connect oscilloscpe to test point TP (TE) on BD board.
3. Turn the Power switch on to set the ADJ mode.
4. Put disc (YEDS-18) in to play the number five track.
5. Press the "3" button. (The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

6. Check the level B of the oscilliscope's waveform and the A (DC voltage) of the center of the Traverse waveform.
   Confirm the following :
   A/B x 100 = less than ± 22%



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.

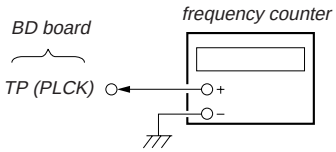


8. Disconnect the lead wire of TP1 (ADJ) connected in step 1.

RF PLL Free-run Frequency Check

Procedure :

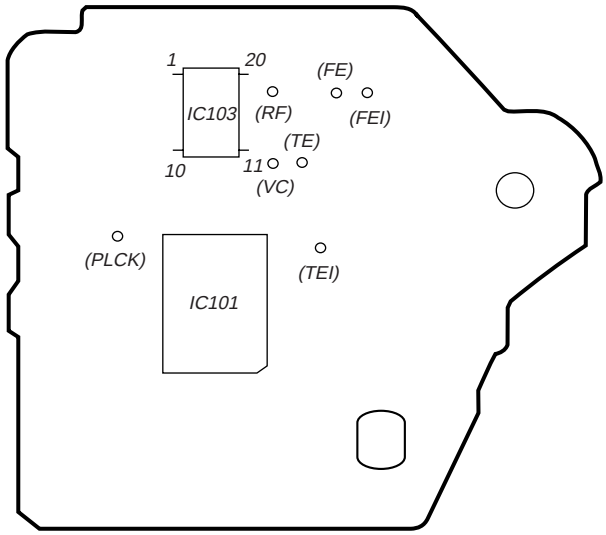
1. Connect frequency counter to test point (PLCK) with lead wire.



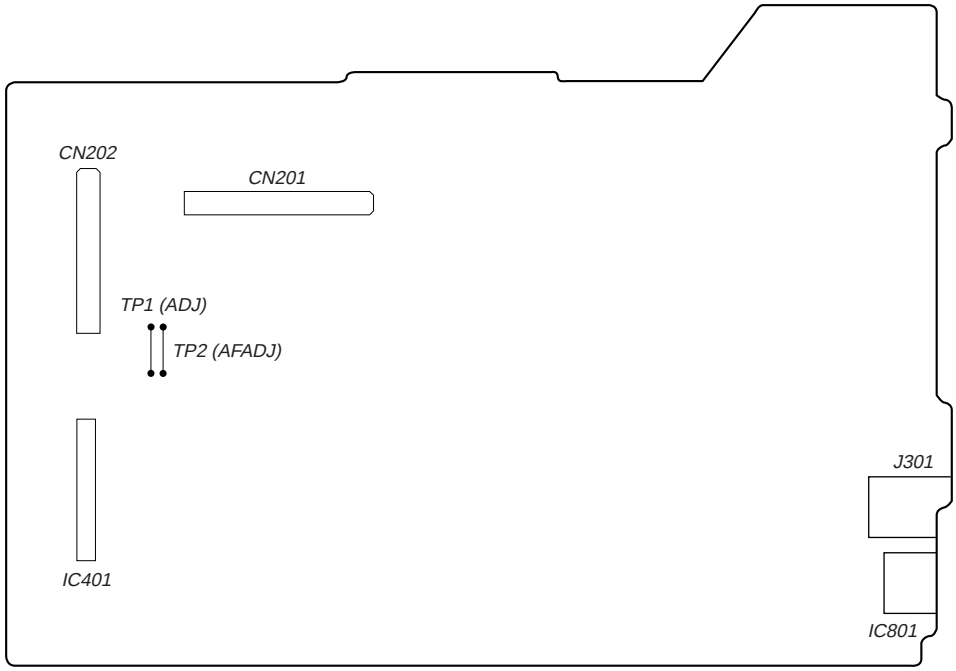
2. Turn Power switch on.
3. Put the disc (YEDS-18) in to play the number five track.
   Confirm that reading on frequency counter is 4.3218MHz.

Adjustment Location :

[BD BOARD] — Side A —

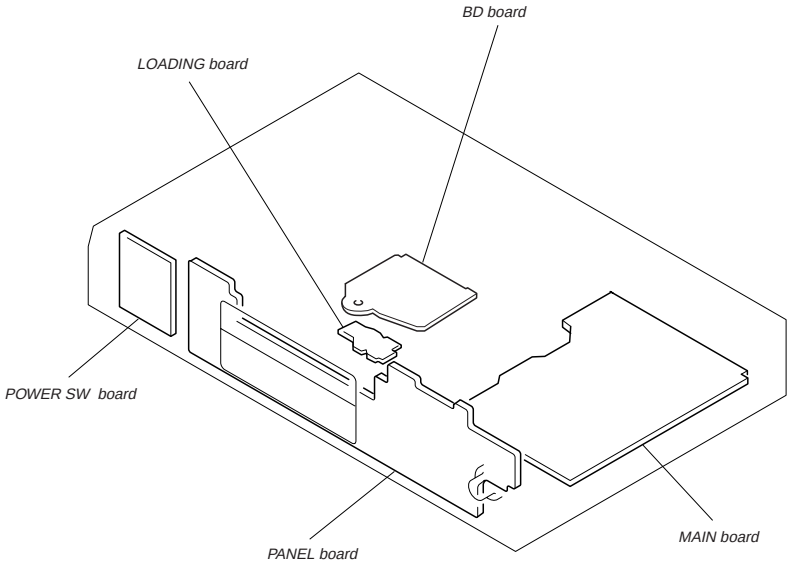


[MAIN BOARD] — Component Side —



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 : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.

Note : The components identified by mark ⚠ or dotted line with mark ⚠ 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 10MΩ). 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**

① 1.3Vp-p
(PLAY)
IC101 ㊱ RFAC

② 2.5V
APPROX 500mVp-p
(PLAY)
IC101 ㉗ TE

③ 2.5V
APPROX 200mVp-p
(PLAY)
IC101 ㉙ FE

④ 2.6Vp-p
7.5 μsec
(PLAY)
IC101 ㊾ MDP

⑤ 4.2Vp-p
16.9344MHz
IC201 ⑥ 384FS

⑥ 5Vp-p
2.1MHz
IC201 ⑩ BCK

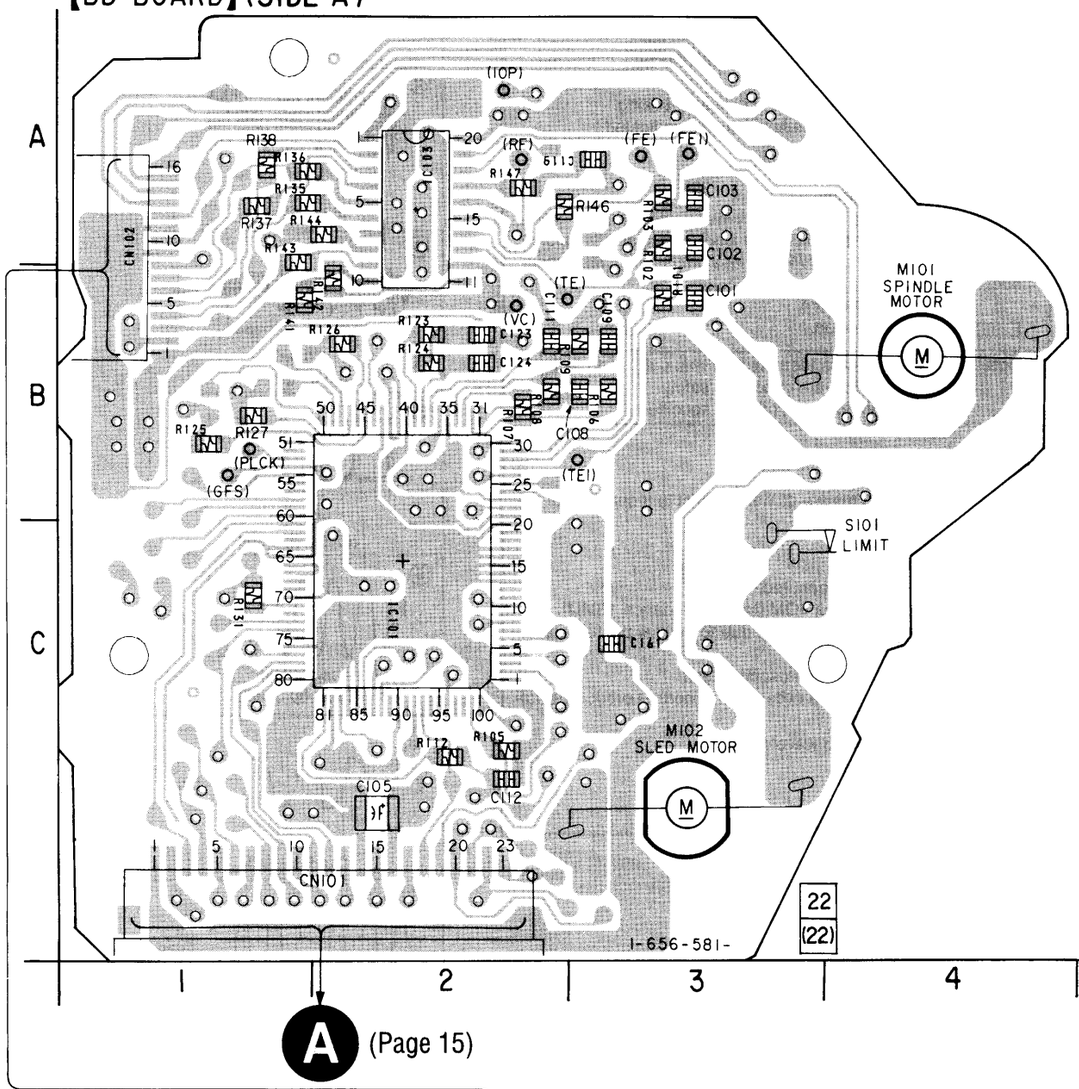
⑦ 3Vp-p
33MHz
IC201 ㉑ XOUT

⑧ 4.2Vp-p
4MHz
IC501 ㉛ EXTAL

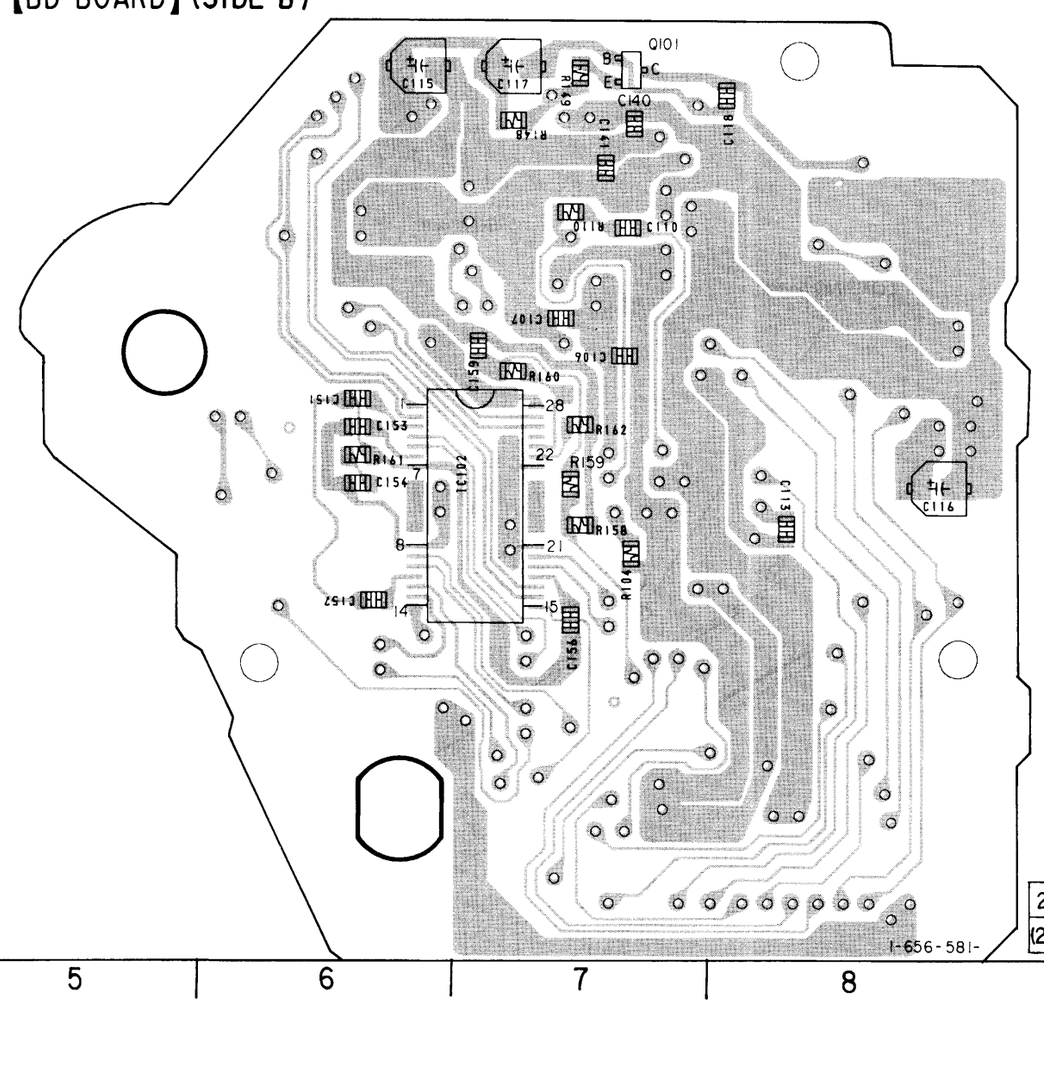
6-2. PRINTED WIRING BOARD — BD SECTION —

• See page 9 for Circuit Boards Location.

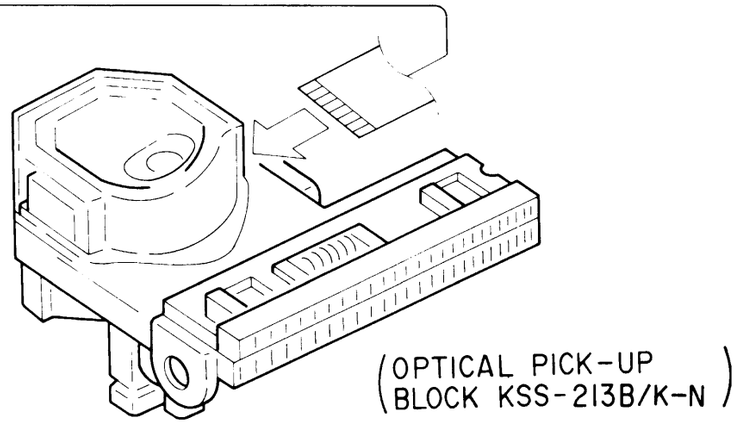
【BD BOARD】(SIDE A)



【BD BOARD】(SIDE B)

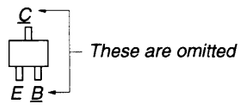


A (Page 15)



09

• **Indication of transistor**

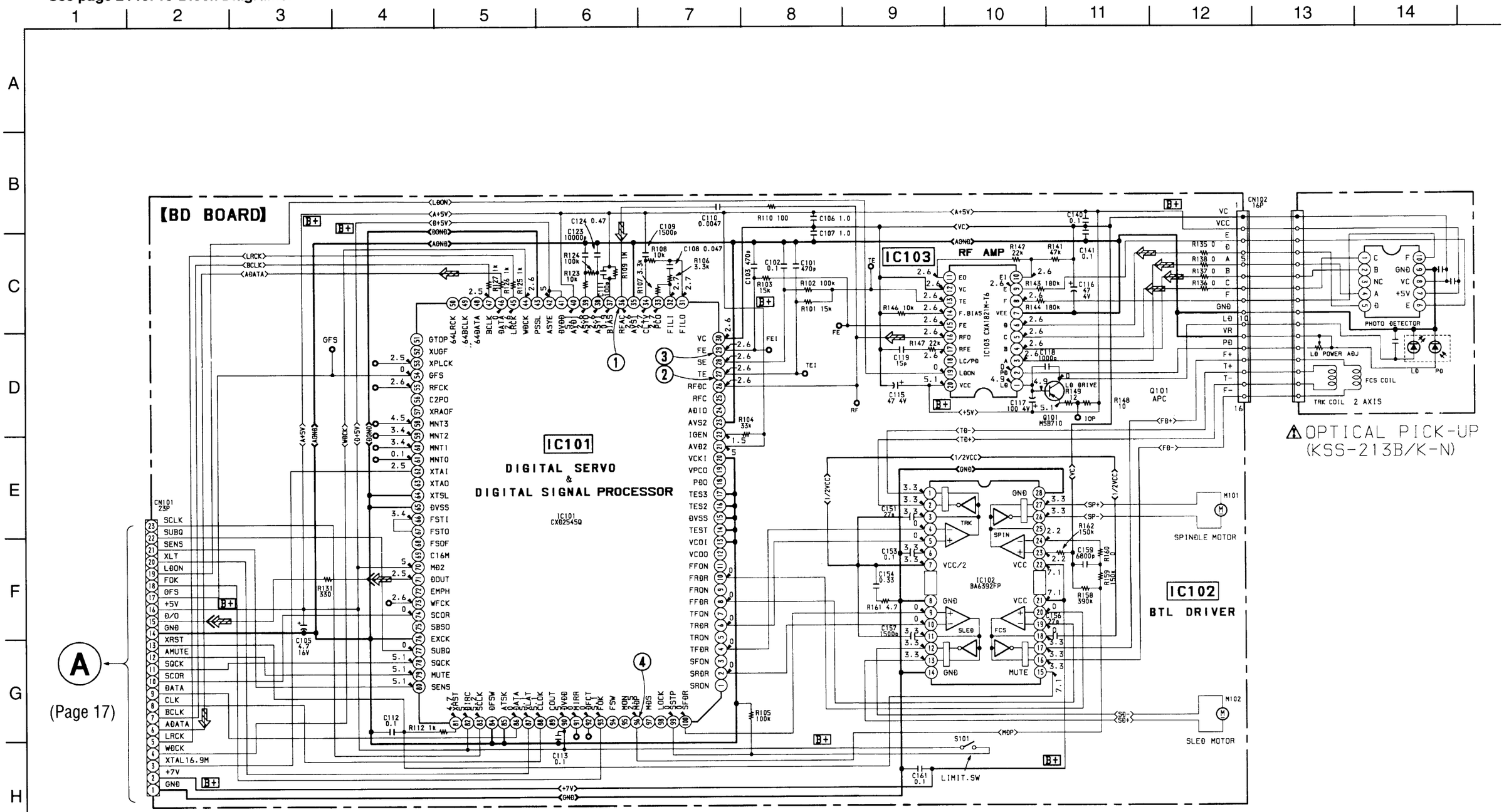


• **Semiconductor Location**

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.**



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

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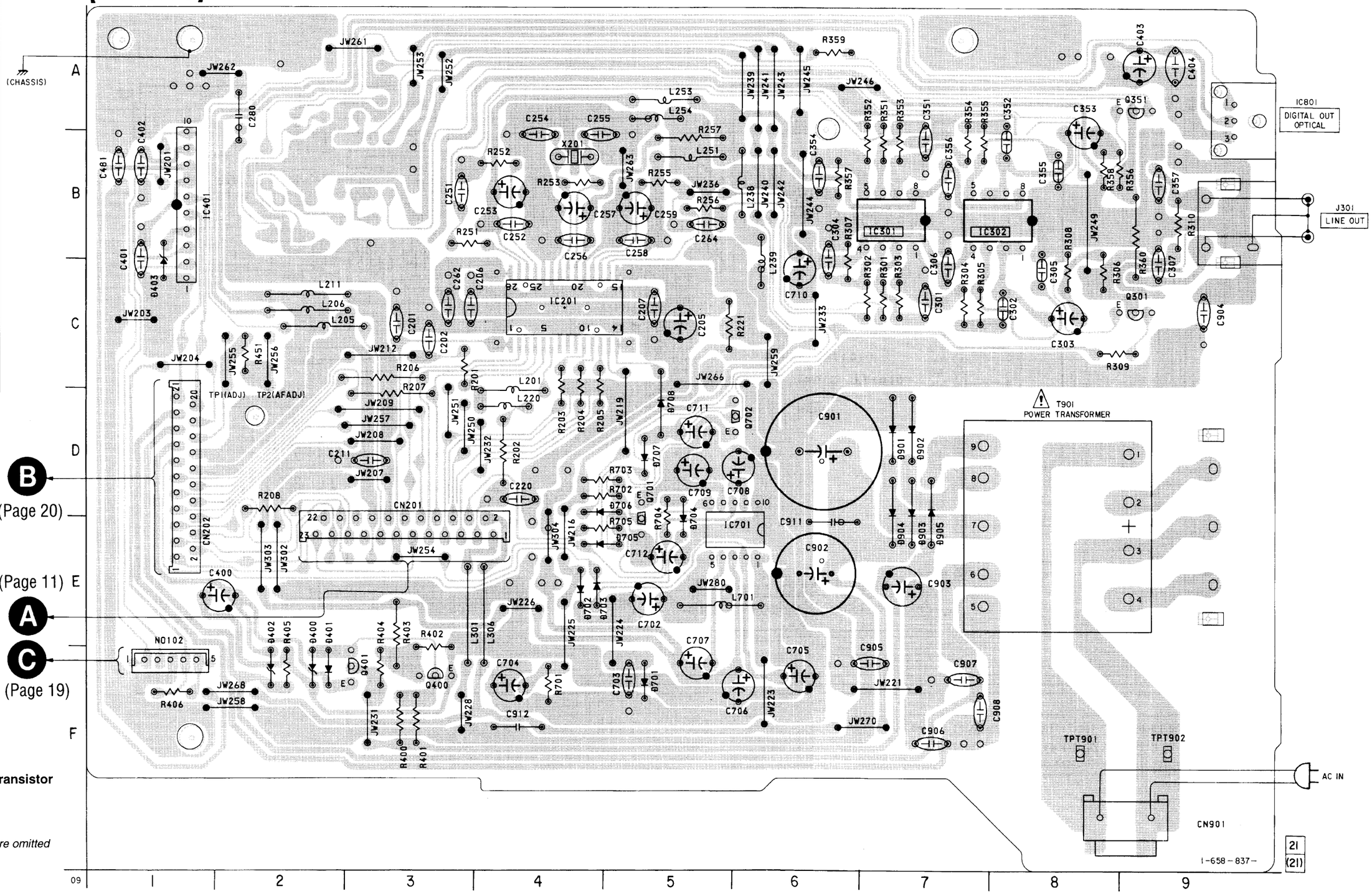
6-4. PRINTED WIRING BOARD — MAIN SECTION —

• See page 9 for Circuit Boards Location.

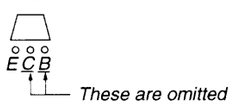
• Semiconductor Location

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】



• Indication of transistor



These are omitted

6-5. SCHEMATIC DIAGRAM — MAIN SECTION —

• See page 10 for Waveforms.

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

【MAIN BOARD】

A (Page 13)

B (Page 22)

C (Page 22)

IC201 D/A CONVERTER

IC701 5V-REG

IC301 MIX-AMP

IC302 LPF

IC401 LOADING MOTOR DRIVE

IC801 DIGITAL OUT OPTICAL

Q400, 401 REG

Q701, 702 MUTE CONTROL

Q301, 351 MUTE

T901 POWER TRANSFORMER

J301 PINJACK-2P JALCO LINE OUT

CN901 2P AC IN

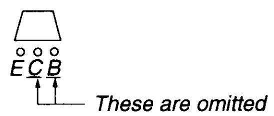
6-6. PRINTED WIRING BOARD — PANEL SECTION —

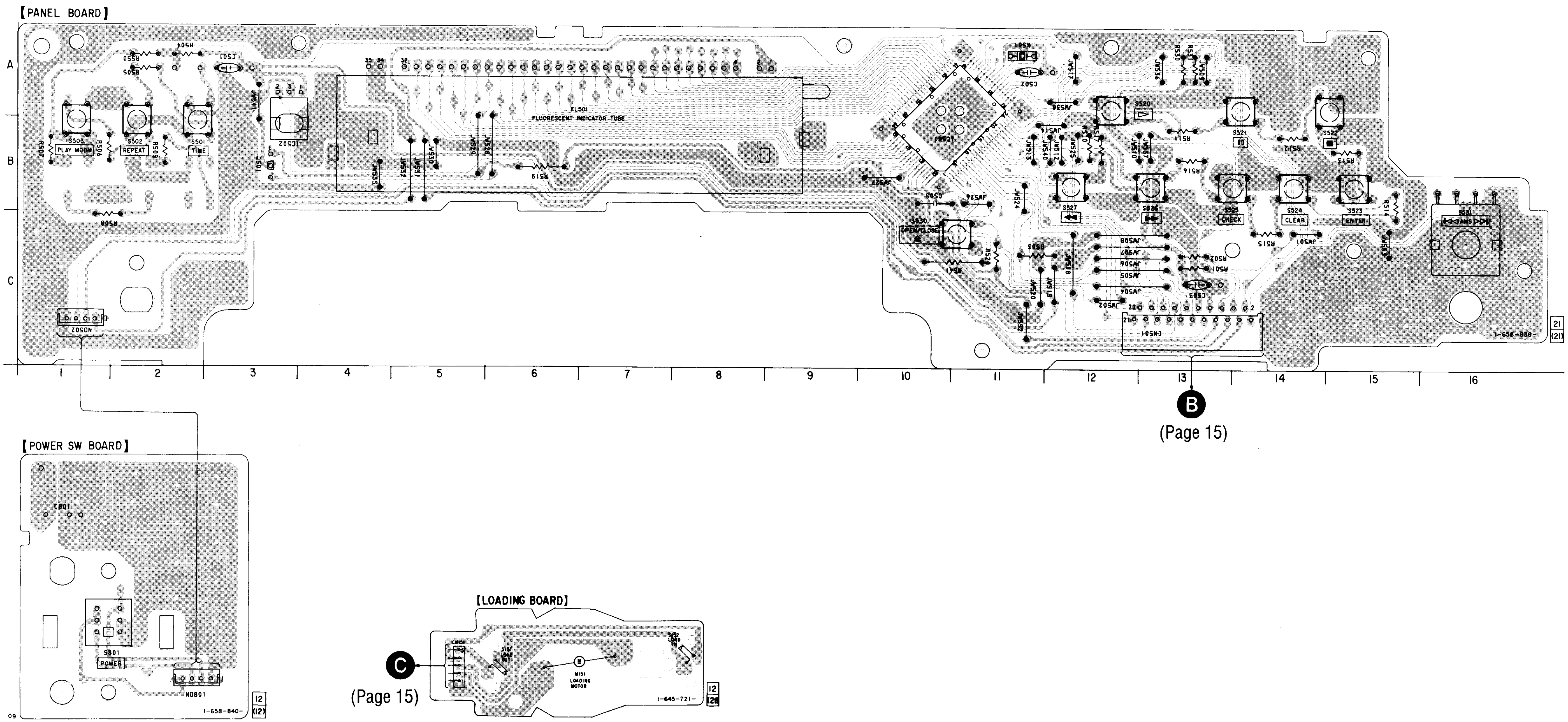
• See page 9 for Circuit Boards Location.

• **Semiconductor Location**

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

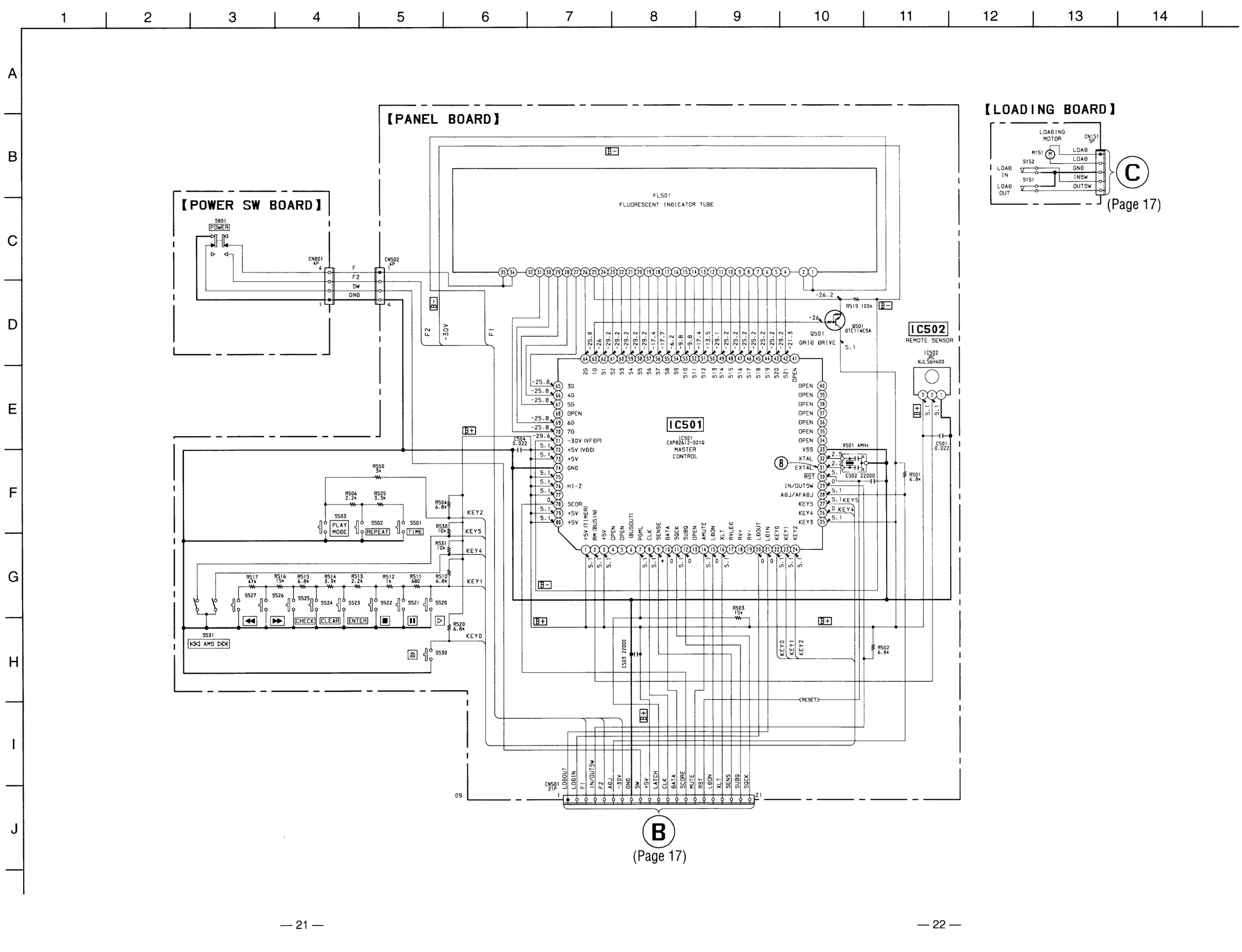
• **Indication of transistor**





6-7. SCHEMATIC DIAGRAM — PANEL SECTION —

• See page 10 for Waveforms.



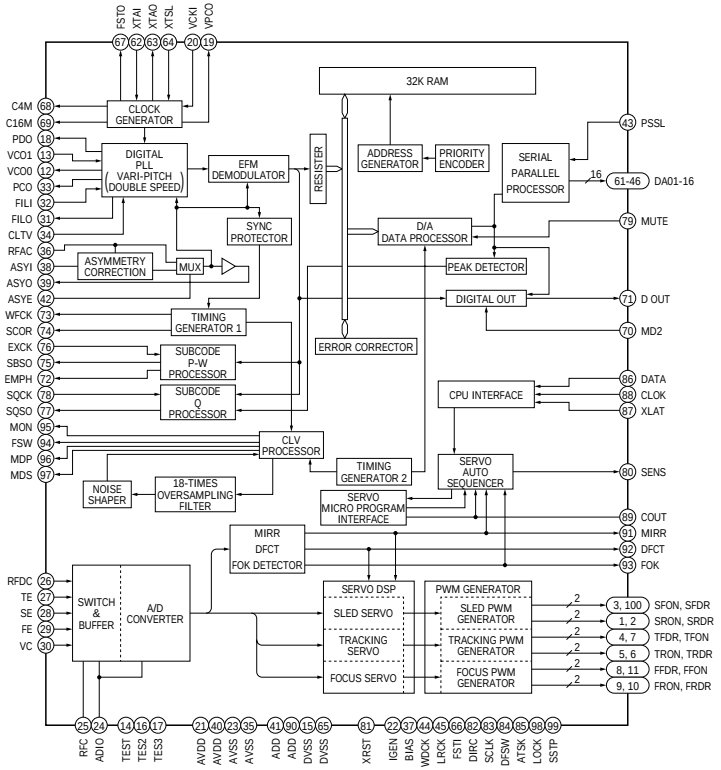
6-8. IC PIN FUNCTION

• IC501 CXP82612-021Q (MASTER CONTROL)

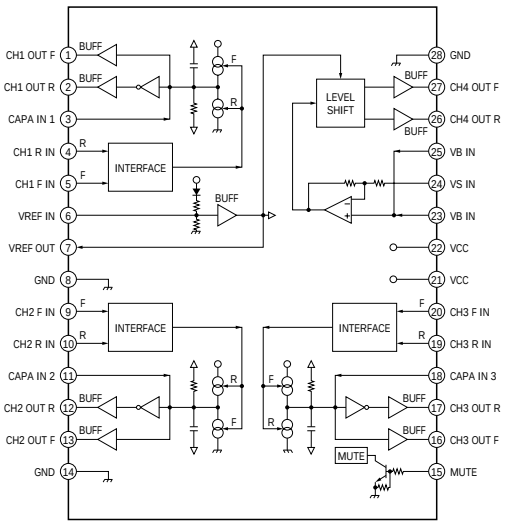
Pin No.	Pin Name	I/O	Function
1	+5V (TIMER)	–	Connected to +5V
2	RM (BUS 1N)	I	Audio bus input
3	+5V	–	Connected to +5V
4	OPEN	–	Not used
5	OPEN	–	Not used
6	(BUSOUT)	–	Not used
7	PGML	O	Latch signal output to digital filter (IC201)
8	CLK	O	Serial clock output
9	SENSE	I	SENSE signal input
10	DATA	O	Serial 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	$\overline{RST}$	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

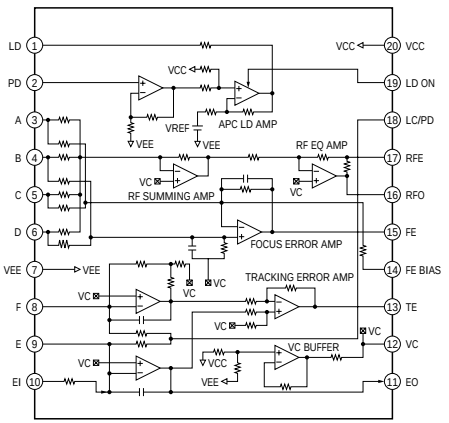
IC101 CXD2545Q



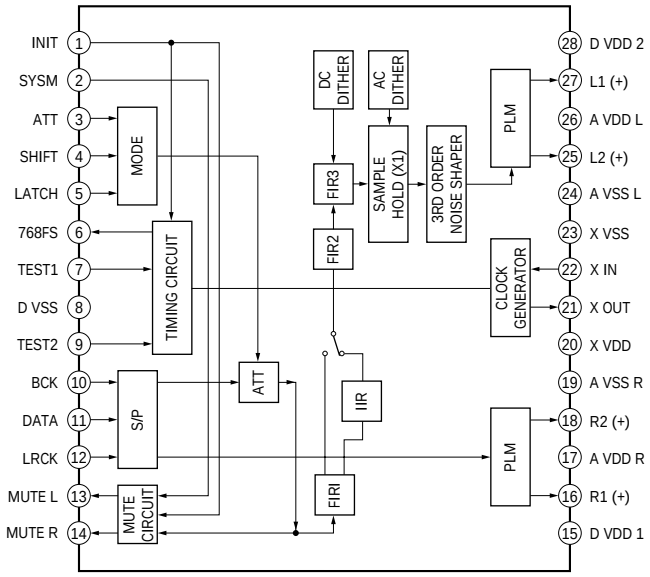
IC102 BA6392FP



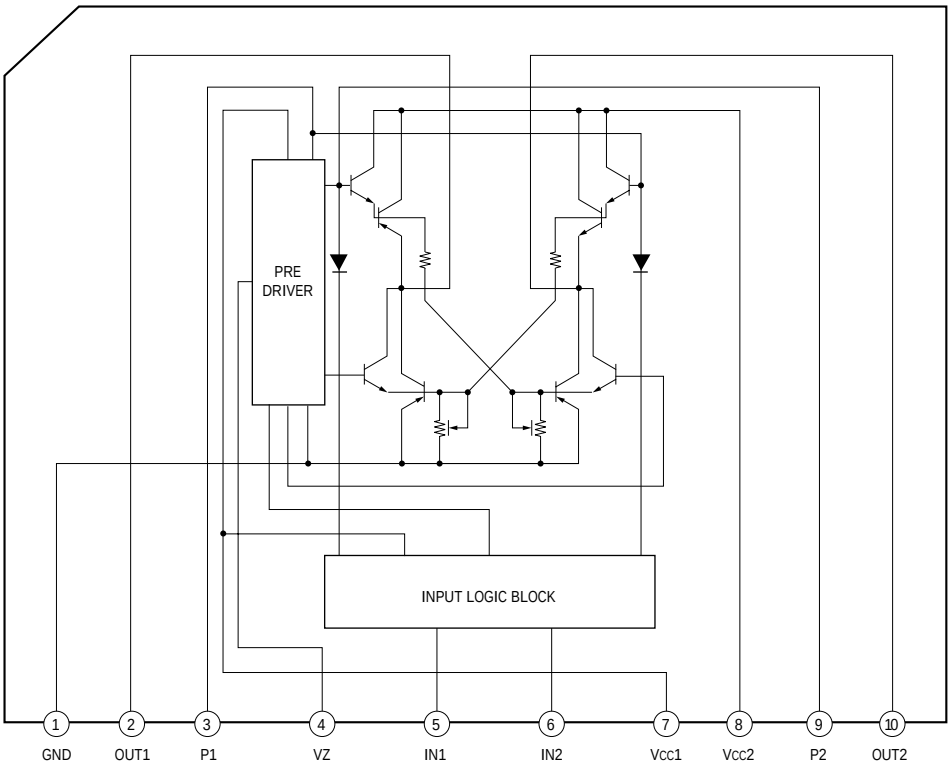
IC103 CXA1821M-T6



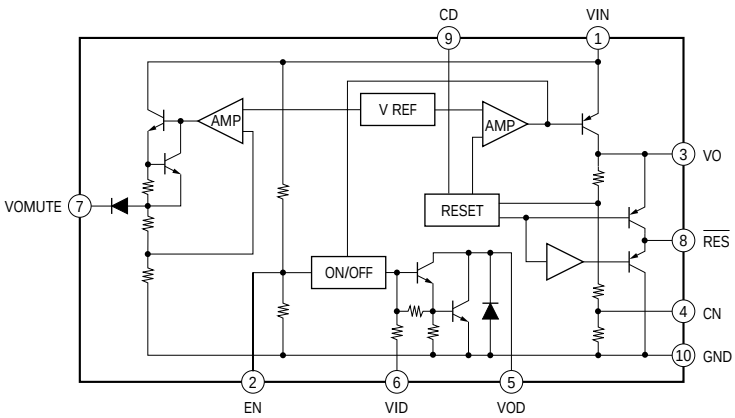
IC201 CXD2565M



IC401 LB1641



IC701 LA5601

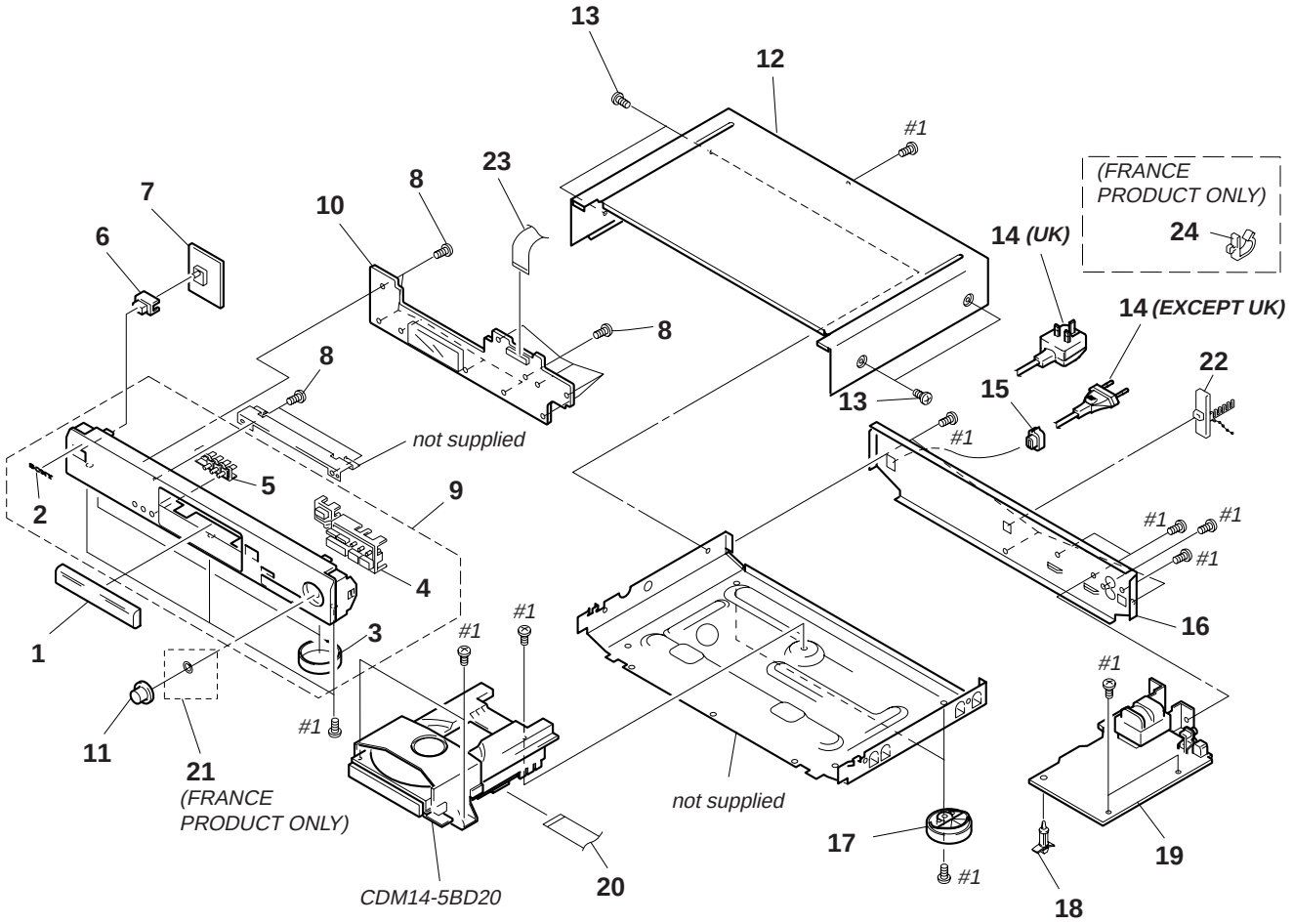


SECTION 7
EXPLODED VIEWS

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 ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

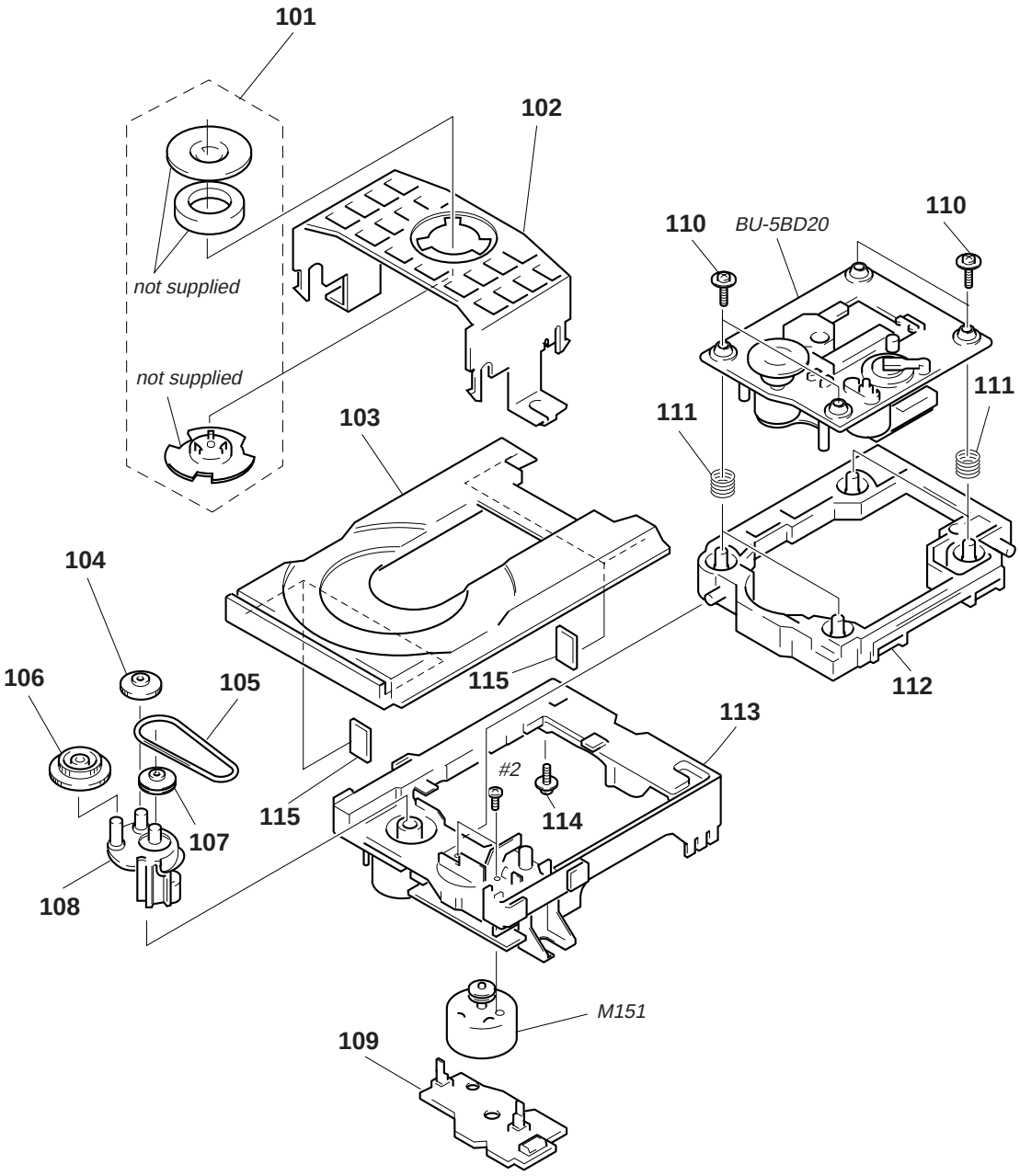
7-1. MAIN SECTION



Ref. No.	Part No.	Description	Remark
1	4-977-588-51	PANEL, LOADING (XE210)	
1	4-977-588-61	PANEL, LOADING (XE310)	
2	4-963-404-21	EMBLEM (5-A), SONY	
3	4-977-593-01	RING (DIA. 50), ORNAMENTAL	
4	4-977-583-01	BUTTON (PLAY)	
5	4-977-584-21	BUTTON (TIME)	
6	4-977-589-01	BUTTON (POWER)	
* 7	1-658-840-21	POWER SW BOARD	
8	4-951-620-01	SCREW (2.6X8), +BVTP	
9	X-4947-866-1	PANEL ASSY, FRONT (XE210)	
9	X-4947-867-1	PANEL ASSY, FRONT (XE310)	
* 10	A-4699-465-A	PANEL BOARD, COMPLETE	
11	4-977-590-01	KNOB (AMS)(FRANCE PRODUCT)	
11	4-986-500-01	KNOB (AMS)(HUNGARY PRODUCT)	
* 12	4-978-901-21	CASE (408226)	
13	3-363-099-01	SCREW (CASE 3 TP2)	
⚠14	1-575-651-21	CORD, POWER (EXCEPT UK)	
⚠14	1-696-907-11	CORD, POWER (UK)	
15	4-966-267-11	BUSHING (FBS001), CORD	

Ref. No.	Part No.	Description	Remark
* 16	4-988-712-01	PANEL, BACK (XE210:AEP,EE,CIS) (FRANCE PRODUCT)	
* 16	4-988-712-11	PANEL, BACK (XE210:UK)(FRANCE PRODUCT)	
* 16	4-988-712-21	PANEL, BACK (XE310:AEP,EE,CIS) (FRANCE PRODUCT)	
* 16	4-988-712-31	PANEL, BACK (XE310:UK)(FRANCE PRODUCT)	
* 16	4-979-971-51	PANEL, BACK (XE210:AEP,EE,CIS) (HUNGARY PRODUCT)	
* 16	4-979-971-61	PANEL, BACK (XE210:UK)(HUNGARY PRODUCT)	
* 16	4-979-971-71	PANEL, BACK (XE310:AEP,EE,CIS) (HUNGARY PRODUCT)	
* 16	4-979-971-81	PANEL, BACK (XE310:UK)(HUNGARY PRODUCT)	
17	X-4947-207-1	FOOT ASSY (F50150S)	
* 18	4-954-051-51	HOLDER, PC BOARD	
* 19	A-4699-464-A	MAIN BOARD, COMPLETE	
20	1-776-100-11	WIRE (FLAT TYPE)(23 CORE)	
21	3-354-981-01	SPRING (SUS), RING (FRANCE PRODUCT)	
22	4-956-370-02	BAND, PLUG FIXED (UK)	
23	1-776-099-11	WIRE (FLAT TYPE)(21 CORE)	
* 24	4-949-235-01	HOOK (EXCEPT UK)(FRANCE PRODUCT)	

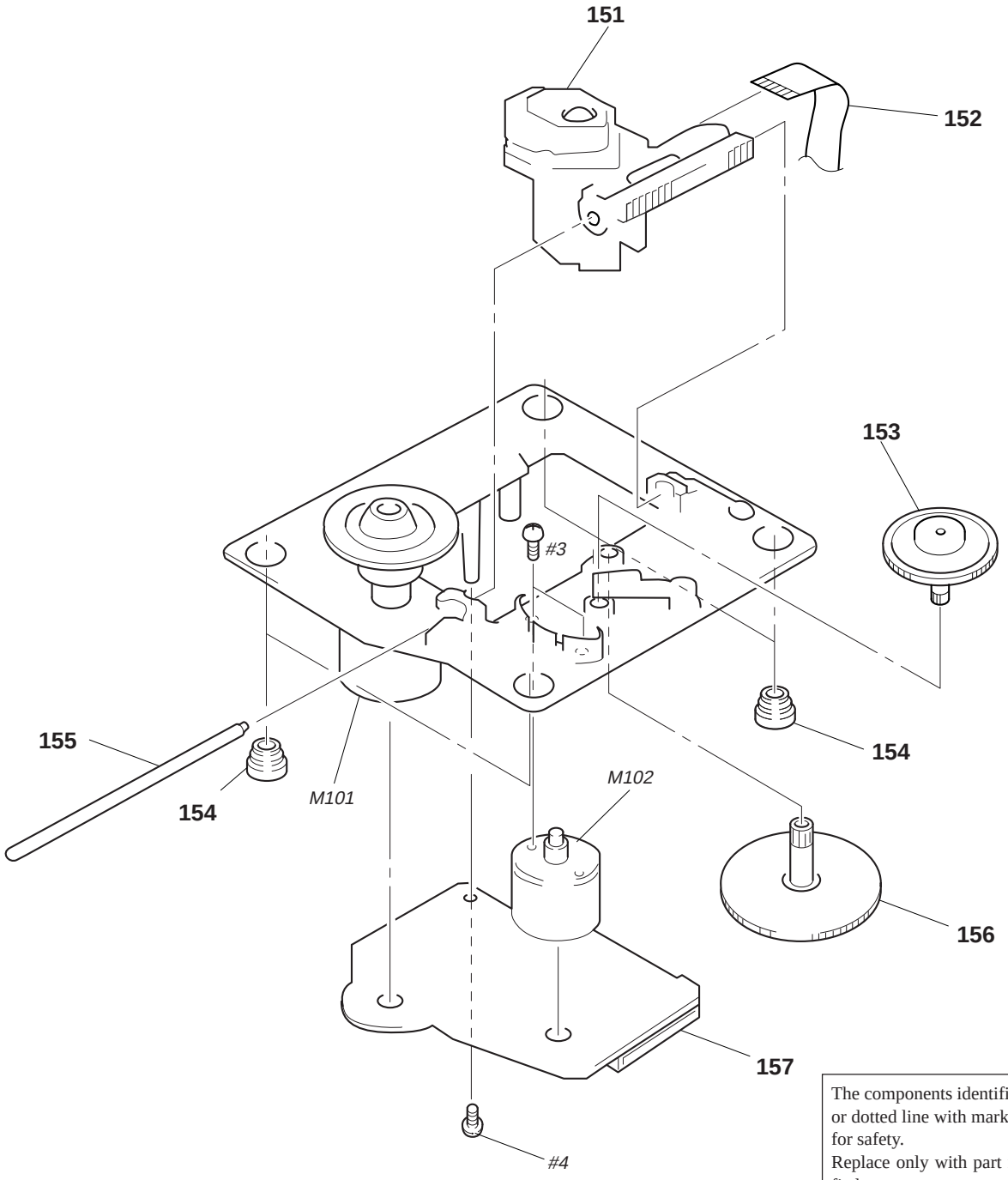
7-2. MECHANISM DECK SECTION (CDM14-5BD20)



Ref. No.	Part No.	Description	Remark
* 101	1-452-538-11	MAGNET	
102	4-933-110-41	HOLDER (MG)	
103	4-933-112-11	TABLE, DISC	
104	4-967-268-01	GEAR (C)	
105	4-927-649-01	BELT	
106	4-933-107-01	GEAR (PL)	
107	4-927-651-01	PULLEY (S)	
108	4-933-109-01	CAM	
* 109	1-645-721-11	LOADING BOARD	

Ref. No.	Part No.	Description	Remark
110	4-933-134-01	SCREW +PTPWH M2.6X6	
111	4-959-996-01	SPRING (932), COMPRESSION	
112	4-933-129-01	HOLDER (BU)	
113	4-933-111-11	CHASSIS (MD)	
* 114	4-917-583-21	BRACKET, YOKE	
115	4-925-315-31	DAMPER	
M151	A-4604-363-A	MOTOR (L) ASSY	

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



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
⚠151	8-848-379-31	OPTICAL PICK UP BLOCK KSS-213BA/F-NP	
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	
* 157	A-4673-511-A	BD BOARD, COMPLETE	
M101	X-4917-523-4	MOTOR ASSY (SPINDLE)	
M102	X-4917-504-1	MOTOR ASSY (SLED)	

SECTION 8
ELECTRICAL PARTS LIST

BD **LOADING**

Note:

The components identified by mark ⚠ or dotted line with mark ⚠ 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
*	A-4673-511-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, (LIF(NON-ZIF)) FFC23P			
CN102	1-770-014-11	CONNECTOR, FFC/FPC 16P			
		< IC >			
IC101	8-752-369-78	IC CXD2545Q			
IC102	8-759-176-09	IC BA6392FP			
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	1-216-103-00	METAL CHIP	180K	5%	1/10W
R144	1-216-103-00	METAL CHIP	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)			
**********					
*	1-645-721-11	LOADING BOARD			
		**********			
		< CONNECTOR >			
* CN151	1-568-943-11	PIN, CONNECTOR 5P			
		< SWITCH >			
S151	1-572-086-11	SWITCH, LEAF (LOAD OUT)			
S152	1-572-086-11	SWITCH, LEAF (LOAD IN)			
**********					

MAIN

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

Ref. No.	Part No.	Description			Remark
Q351	8-729-922-37	TRANSISTOR 2SD2144S			
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

Ref. No.	Part No.	Description			Remark
		< TRANSFORMER >			
⚠T901	1-423-979-11	TRANSFORMER, POWER			
		< VIBRATOR >			
X201	1-579-834-11	VIBRATOR, CRYSTAL (33MHz)			
**********					
*	A-4699-465-A	PANEL BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
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
		< CONNECTOR >			
* CN501	1-568-864-11	SOCKET, CONNECTOR 21P			
		< FLUORESCENT INDICATOR >			
FL501	1-517-297-31	INDICATOR TUBE, FLUORESCENT			
		< IC >			
IC501	8-752-869-51	IC CXP82612-021Q			
IC502	8-759-459-84	IC NJL56H400			
		< TRANSISTOR >			
Q501	8-729-029-67	TRANSISTOR DTC114ESA-TP			
		< RESISTOR >			
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
		< SWITCH >			
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 ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

PANEL | POWER SW

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 (I◁◁ AMS ▷▷I)	
		< 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	

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Replace only with part number specified.

9-960-906-11

Sony Corporation
Home A&V Products Company

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