

CDP-XE520

SERVICE MANUAL

AEP Model
UK Model



Photo: BLACK model

Model Name Using Similar Mechanism	NEW
CD Mechanism Type	CDM14FL-5BD25
Base Unit Type	BU-5BD25
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
PHONES	Stereo phone jack	10 mW	32 ohms

General

Power requirements	220 V - 230 V AC, 50/60 Hz
Power consumption	11 W
Dimensions (approx.) (w/h/d)	430 $\times$ 95 $\times$ 290 mm (17 $\times$ 3 3/4 $\times$ 11 1/2 in.) incl. projecting parts
Mass (approx.)	3.2 kg (7 lbs 1 oz)

Supplied accessories

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

Design and specifications are subject to change without notice.



COMPACT DISC PLAYER

SONY®

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

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

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

CAUTION : INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED, AVOID EXPOSURE TO BEAM.
ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSÆTTELSE FOR STRÅLING.
VORSICHT : UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET UND SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT, NICHT DEM STRAHL AUSSETZEN.
VARO! : AVATTAESSA JA SUOJALUKITUS OHITETTASSA OLET ALT-TINA NÄKYMÄTTÖMÄLLE LASERSÄTEYLLE. ÄLÄ KATSO SÄTEESEEN.
VARNING : OSYNLIG LASERSTRÅLING NÅR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD, BETRÄKTA EJ STRÅLEN.
ADVARSEL : USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES, UNNGÅ EKSPONERING FOR STRÅLEN.
VIGYÁZAT! : A BURKOLAT NYITÁSAKOR LÁTHATATLAN LÉZERSUGÁRVESZÉLY! KERÜLJE A BESUGÁRZÁST!

The following caution label is located inside of the unit.

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

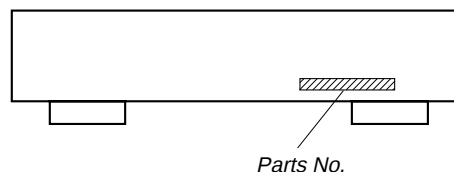
- Keep the temperature of soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

TABLE OF CONTENTS

1. SERVICING NOTE	3
2. GENERAL	4
3. DISASSEMBLY	
3-1. Front Panel	5
3-2. Base Unit (BU-5BD29C)	5
4. TEST MODE	6
5. ELECTRICAL BLOCK CHECKING	8
6. DIAGRAMS	
6-1. Circuit Boards Location	10
6-2. Printed Wiring Board – CD Section –	11
6-3. Schematic Diagram – CD Section –	13
6-4. Printed Wiring Board – Main Section –	15
6-5. Schematic Diagram – Main Section –	17
6-6. Printed Wiring Board – Panel Section –	19
6-7. Schematic Diagram – Panel Section –	21
6-8. IC Pin Functions	23
6-9. IC Block Diagrams	29
7. EXPLODED VIEWS	
7-1. Main Section	32
7-2. CD Mechanism Section (CDM14FL-5BD29C)	33
7-3. Base Unit Section (BU-5BD29C)	34
8. ELECTRICAL PARTS LIST	35

MODEL IDENTIFICATION

— BACK PANEL —



PARTS No.	MODEL
4-996-568-0□	XE520 : AEP, North European, East European
4-996-568-1□	XE520 : UK

SAFETY-RELATED COMPONENT WARNING !!

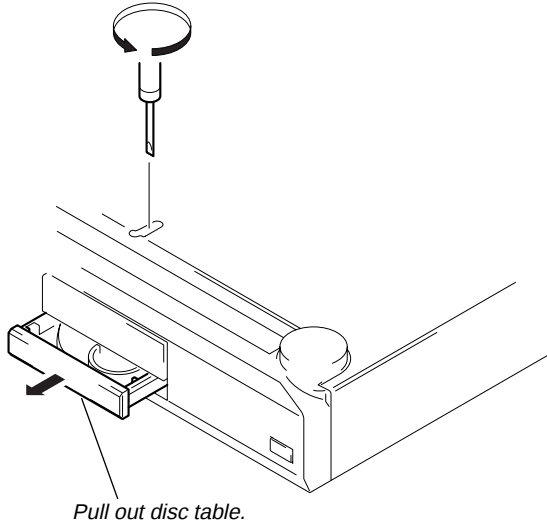
COMPONENTS IDENTIFIED BY MARK OR DOTTED LINE WITH MARK ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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 continuously.

CD-TEXT TEST DISC

This unit is able to display the TEXT data (character information) written in the CD on its fluorescent indicator tube.

The CD-TEXT TEST DISC (TGCS-313: J-2501-126-A) is used for checking the display.

To check, perform the following procedure.

Procedure:

1. Turn ON the power and set the test disc.
2. Press the  button and play back the disc.
3. The following will be displayed on the fluorescent indicator tube.
Display : 1kHz/0 dB/-----
4. Rotate the  knob to switch the track. The text data of each track will be displayed.

Restrictions in CD-TEXT Display

In this unit, some special characters will not be displayed properly. These will be displayed as a space or a character resembling it. For details, refer to “Table 2 : CD-TEXT DISC Recorded Contents and Display”.

Table 1 : CD-TEXT TEST DISC TEXT Data Contents (TRACKS No. 1 to 41:Normal Characters)

TRACK No.	Displayed Contents	TRACK No.	Displayed Contents
1	1kHz/0dB/L&R	22	1kHz/-90dB/L&R
2	20Hz/0dB/L&R	23	Infinity Zero w/o emphasis//L&R
3	40Hz/0dB/L&R	24	Infinity Zero with emphasis//L&R
4	100Hz/0dB/L&R	25	400Hz+7kHz(4:1)/0dB/L&R
5	200Hz/0dB/L&R	26	400Hz+7kHz(4:1)/-10dB/L&R
6	500Hz/0dB/L&R	27	19kHz+20kHz(1:1)/0dB/L&R
7	1kHz/0dB/L&R	28	19kHz+20kHz(1:1)/-10dB/L&R
8	5kHz/0dB/L&R	29	100Hz/0dB/L*
9	7kHz/0dB/L&R	30	1kHz/0dB/L*
10	10kHz/0dB/L&R	31	10kHz/0dB/L*
11	16kHz/0dB/L&R	32	20kHz/0dB/L*
12	18kHz/0dB/L&R	33	100Hz/0dB/R*
13	20kHz/0dB/L&R	34	1kHz/0dB/R*
14	1kHz/0dB/L&R	35	10kHz/0dB/R*
15	1kHz/-1dB/L&R	36	20kHz/0dB/R*
16	1kHz/-3dB/L&R	37	100Hz Squer Wave//L&R
17	1kHz/-6dB/L&R	38	1kHz Squer Wave//L&R
18	1kHz/-10dB/L&R	39	1kHz w/emphasis/-0.37dB/L&R
19	1kHz/-20dB/L&R	40	5kHz w/emphasis/-4.53dB/L&R
20	1kHz/-60dB/L&R	41	16kHz w/emphasis/-9.04dB/L&R
21	1kHz/-80dB/L&R		

NOTE : The contents of Track No. 1 to 41 are the same as those of the current TEST DISC-their titles are displayed.

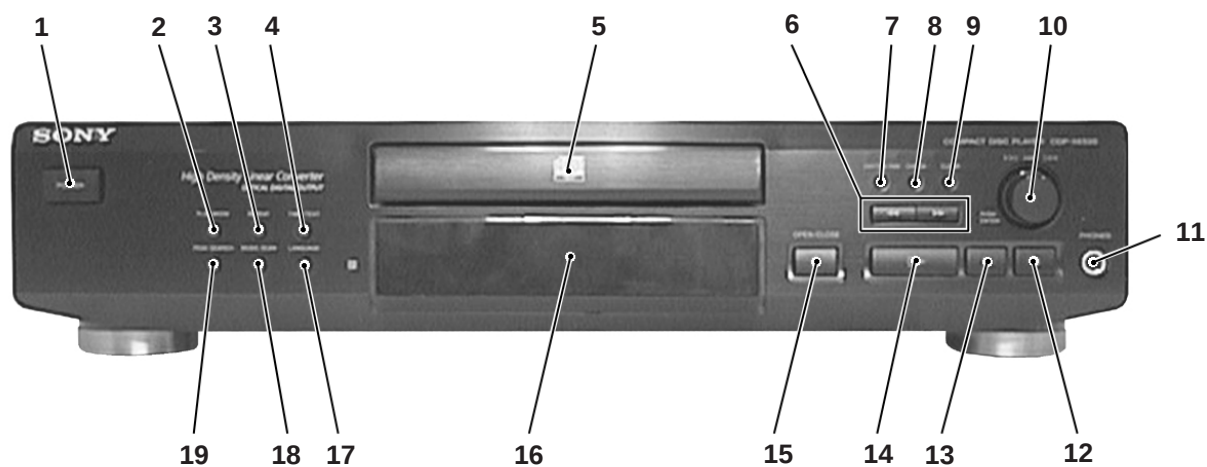
However, only 8 digits are displayed, and the 9th digit onwards are displayed as “-----”.

Table 2: CD-TEXT TEST DISC Recorded Contents and Display
(In this unit, some special characters cannot be displayed. This is no a fault.)

TRACK No.	Recorded contents	Display
42	! " # \$ % & ' (21h to 27h)1kHz 0dB L&R	: ... ! " # \$ % & are not displayed
43	() * + , - . / (28h to 2Fh)	() * + - / ... , . are not displayed
44	0 1 2 3 4 5 6 7 (30h to 37h)	0 1 2 3 4 5 6 7 ...
45	8 9 : ; < = > ? (38h to 3Fh)	8 9 = ? ... : ; < > are not displayed
46	@ A B C D E F G (40h to 47h)	A B C D E F G ... @ is not displayed
47	H I J K L M N O (48h to 4Fh)	H I J K L M N O ...
48	P Q R S T U V W (50h to 57h)	P Q R S T U V W ...
49	X Y Z [\] ^ _ (58h to 5Fh)	X Y Z [/] ^ _ ...
50	` a b c d e f g (60h to 57h)	` A B C D E F G ...
51	h i j k l m n o (68h to 6Fh)	H I J K L M N O ...
52	p q r s t u v w (70h to 77h)	P Q R S T U V W ...
53	x y z { } ~ ■ (78h to 7Fh)	X Y Z ... { } ~ ■ are not displayed
54	■ i ¢ £ ¤ ¥ ¦ § (A0h to A7h) 8859-1	... ■ i ¢ £ ¤ ¥ ¦ § are not displayed
55	 ©  «  ®  (A8h to AFh)	   ...  ©  «  ®  are not displayed
56	 ± ² ³ ´ µ ¶ · (B0h to B7h)	 ± ´ ... ² ³ µ ¶ · are not displayed
57	    » ¼ ½ ¾ ¿ (B8h to BFh)	¿ ...     » ¼ ½ ¾ are not displayed
58	À Á Â Ã Ä Å Æ Ç (C0h to C7h)	À Á Â Ã Ä Å ... Æ Ç are not displayed
59	È É Ê Ë Ì Í Î Ï (C8h to CFh)	È É Ê Ë Ì Í Î Ï ...
60	Ð Ñ Ò Ó Ô Õ Ö × (D0h to C7h)	Ñ Ò Ó Ô Õ Ö ... Ð × are not displayed
61	Ø Ù Ú Û Ü Ý Þ ß (D8h to DFh)	Ù Ú Û Ü Ý ... Ø Þ ß are not displayed
62	à á â ã ä å æ ç (E0h to E7h)	À Á Â Ã Ä Å ... æ ç are not displayed
63	è é ê ë ì í î ï (E8h to FFh)	È É Ê Ë Ì Í Î Ï ...
64	          (F0h to F7h)	        ...           are not displayed
65	ø ù ú û ü ý þ ÿ (F8h to FFh)	Ù Ú Û Ü Ý ... ø þ ÿ are not displayed
66	No.66	← All the same
67	No.67	← All the same
to	to	to
99	No.99	← All the same

SECTION 2 GENERAL

Front Panel



LOCATION OF PARTS AND CONTROLS

- 1 I/⏻ switch
- 2 PLAY MODE button
- 3 REPEAT button
- 4 TIME/TEXT button
- 5 Disc tray
- 6 ◀▶, ▶▶ button
- 7 EDIT/TIME FADE button
- 8 CHECK button
- 9 CLEAR button
- 10 AMS knob (PUSH ENTER)
- 11 PHONE jack
- 12 ■ (stop) button
- 13 || (pause) button
- 14 ▷ (play) button
- 15 ⚙ OPEN CLOSE button
- 16 Window display
- 17 LANGUAGE button
- 18 MUSIC SCAN button
- 19 PEAK SEARCH button

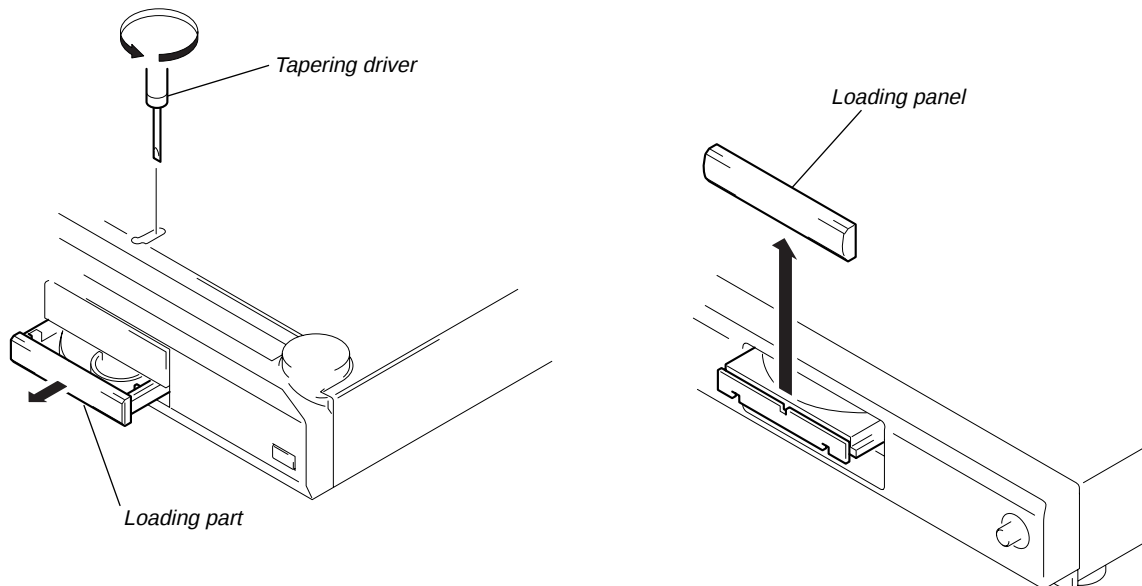
* AMS is the abbreviation for Automatic Music Sensor.

SECTION 3 DISASSEMBLY

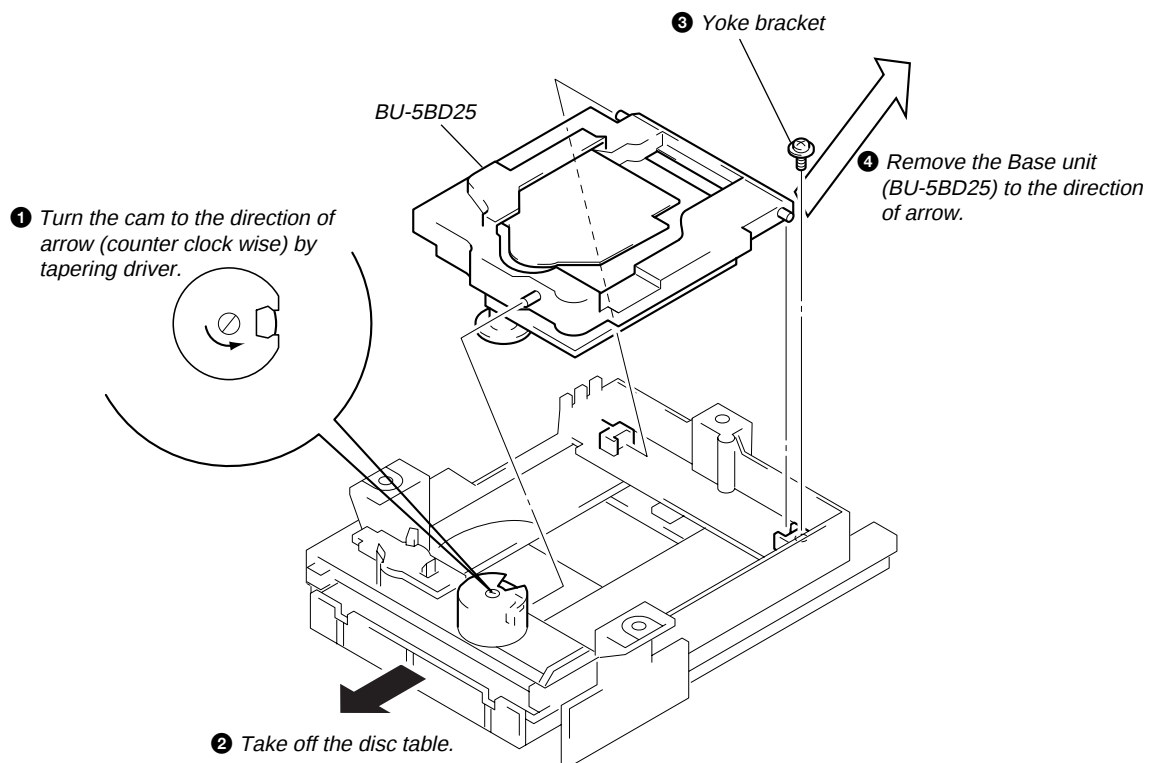
Note : Follow the disassembly procedure in the numerical order given.

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-5BD25)



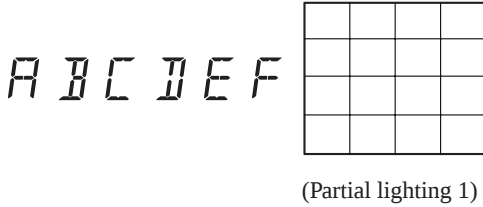
SECTION 4 TEST MODE

4-1. AF MODE

The following checks can be performed in the AF mode, which is set by connecting the JW617 (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, the following will be displayed. (Partial lighting 1)

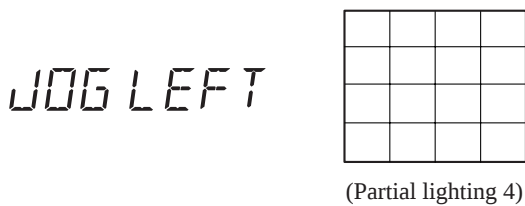
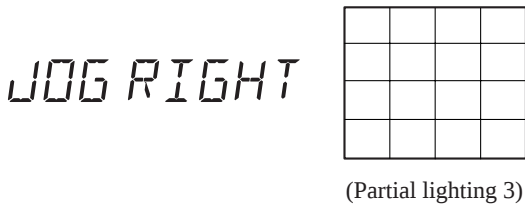


When the  button is pressed, the following will be displayed. (partial lighting 2)

	2		4	
6		8		10
	12		14	
16		18		20

(Partial lighting 2)

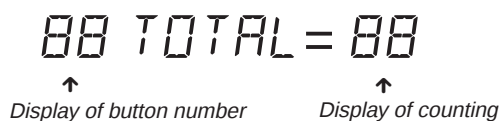
The display will light up as follows (partial lighting 3) when the  << AMS >>  knob is rotated to the right, and as follows (partial lighting 4) when rotated to the left.



When the  button is pressed, 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 "16". It will not count for buttons already pressed once, but will display the button's number.



Button	Button No. Displayed	Button	Button No. Displayed
LANGUAGE	0		11
MUSIC SCAN	1		12
PEAK SEARCH	2		18
PLAY MODE	3	ENTER (AMS)	20
REPEAT	4	OPEN/	All lit
TIME/TEXT	5	CLOSE 	
CLEAR	8	PLAY 	Partial lighting 1
CHECK	9	STOP 	Partial lighting 2
EDIT/ TIME FADE	10		

• Remote commander check

When buttons other than the  button are pressed when the whole display is lit, the display will change to partial lighting 2. When the "<>" button is pressed, the display will light up as follows.



4-2. ADJ MODE

The following operations are performed in the ADJ mode, which is set by connecting the JW613 (ADJ) terminal to the Ground and turning on the power.

Table of Button Operations in ADJ Mode

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

Function of Number Buttons (With the General Remote Commander)

Button	Function
4	Tracking servo, sled servo off
9	Tracking servo, sled servo on
11	S curve continuous output check mode

* **NOTE** : Other buttons are not used for servicing and should not be pressed without a reason.

4-3. AGING MODE

This unit is equipped with an aging mode to check operations of the mechanism deck.

- When faults occur:

Aging stops, and the state when aging stopped is displayed on the fluorescent display tube.

- When no fault has occurred:

Aging is continued repeatedly.

Aging method 1

(When using the aging mode remote controller (J-2501-123-A)):

1. Press the  button and turn ON the power.
2. Set the disc on the tray.
3. Press the  button of the aging remote controller.
4. Aging starts and the message shown in Fig. 1 is displayed on the fluorescent display tube.
5. To end, press the  button.

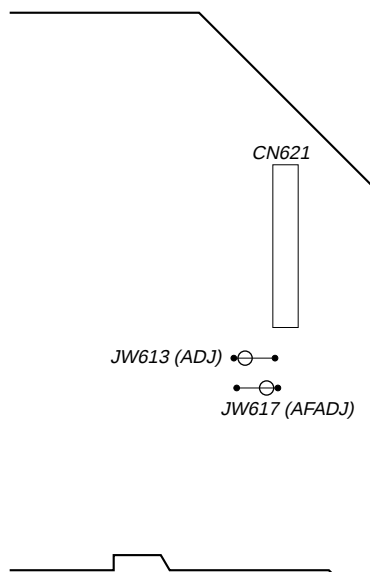
Aging method 2 (When no aging mode remote controller):

1. Press the  button and turn ON the power.
2. Set the disc on the tray.
3. Press the  OPEN/CLOSE button,  button, and  MUSIC SCAN button at the same time. (If these buttons are not pressed at the same time, nothing performs.)
4. Aging starts and the message shown in Fig. 1 is displayed on the fluorescent display tube.
5. To end, press the  button.

Fig. 1 Message in Aging Mode

Code No.	State	Display when normal	Display when abnormal
0	Load in	AGING-0	ERROR-0
1	Access to TOC	AGING-1	ERROR-1
2	Access to last track	AGING-2	ERROR-2
3	Playback of last track (3 seconds)	Counter display	ERROR-3
4	Access to first track	AGING-4	ERROR-4
5	Playback of first track (3 seconds)	Counter display	ERROR-5
6	Load out	AGING-6	ERROR-6

[MAIN BOARD] – Component Side –

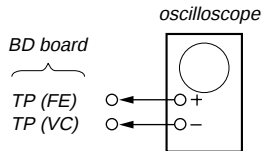


SECTION 5 ELECTRICAL BLOCK CHECKING

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 10M Ω 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.

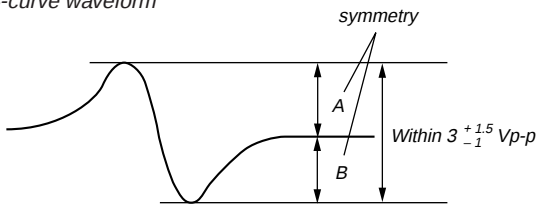
S Curve Check (With general remote commander)



Procedure :

1. Connect oscilloscope to test point TP (FE) on BD board.
2. Connect the test point JW613 (ADJ) on MAIN board to the ground with a lead wire.
3. Turn Power switch on.
4. Put disc (YEDS-18) in press (play) button.
5. When the **[11]** button of the remote commander is pressed, the S curve will be output continuously.
6. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within $3^{+1.5}_{-1}$ Vp-p.

S-curve waveform

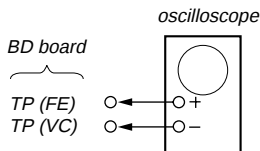


7. After check, remove the lead wire connected in step 2.

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.

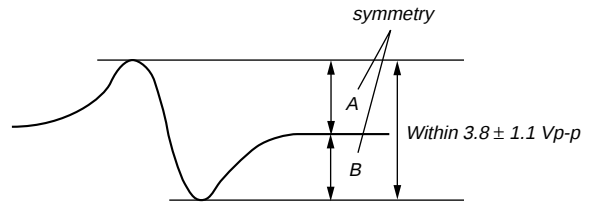
S Curve Check (Without general remote commander)



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. Connect both ends of TP R151 of the BD board to the lead wire.
4. Turn Power switch on.
5. Put disc (YEDS-18) in and actuate the focus search. (actuate the focus search when disc table is moving in and out.)
6. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3.8 ± 1 Vp-p.

S-curve waveform

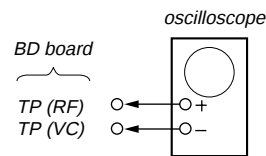


7. After check, remove the lead wire connected in step 2 and 3.

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



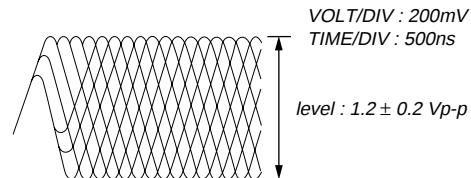
Procedure :

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.

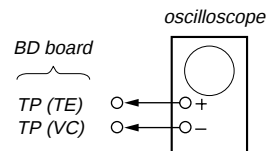
Note:

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

RF signal waveform



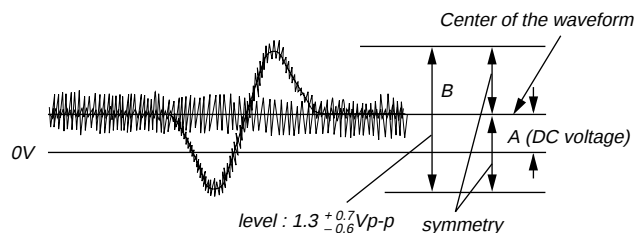
E-F Balance (1 Track Jump) Check (Without general remote commander)



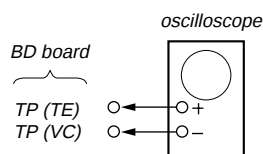
Procedure :

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



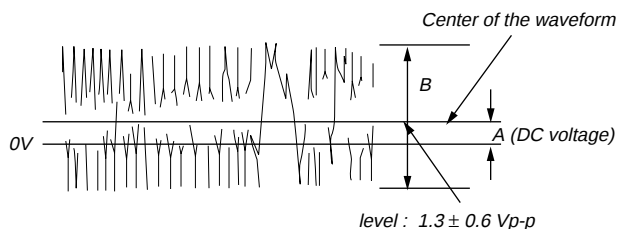
E-F Balance Check (With general remote commander)



Procedure :

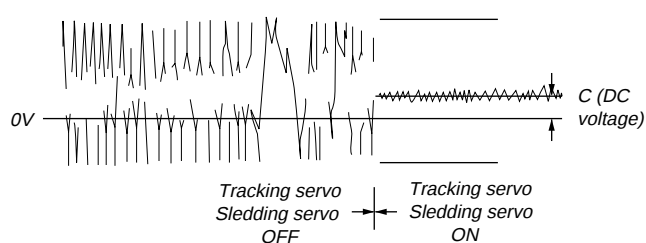
1. Connect the test point JW613 (ADJ) on MAIN board to the ground with a lead wire on main board.
2. Connect oscilloscope to test point TP (TE) on BD board.
3. Turn the Power switch on to set the ADJ mode.
4. Put disc (YEDS-18) in to play the number five track.
5. Press the [4] button. (The tracking 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 [9] 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.

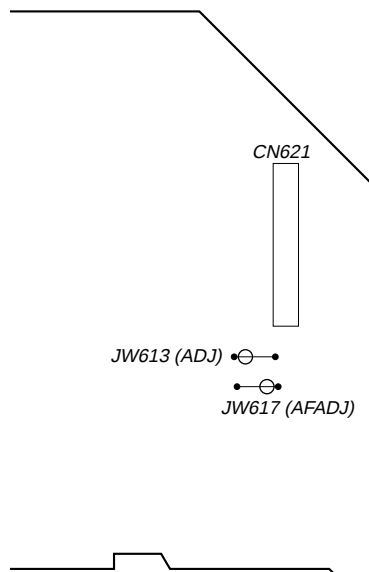
Traverse waveform



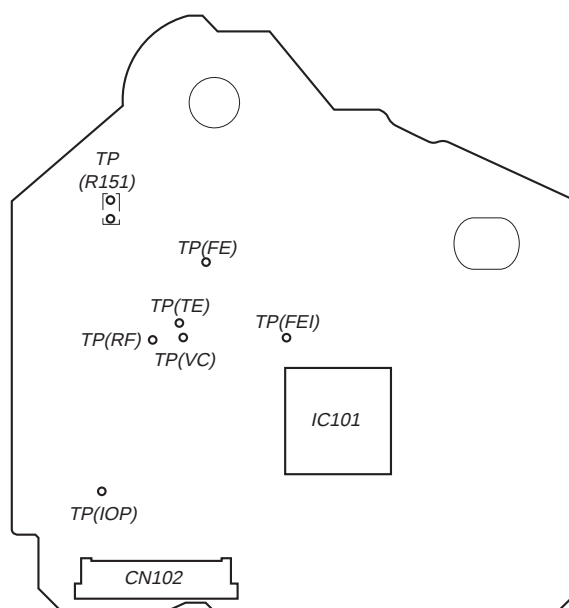
8. Disconnect the lead wire of JW613 (ADJ) connected in step 1.

Adjustment Location :

[MAIN BOARD] – Component Side –

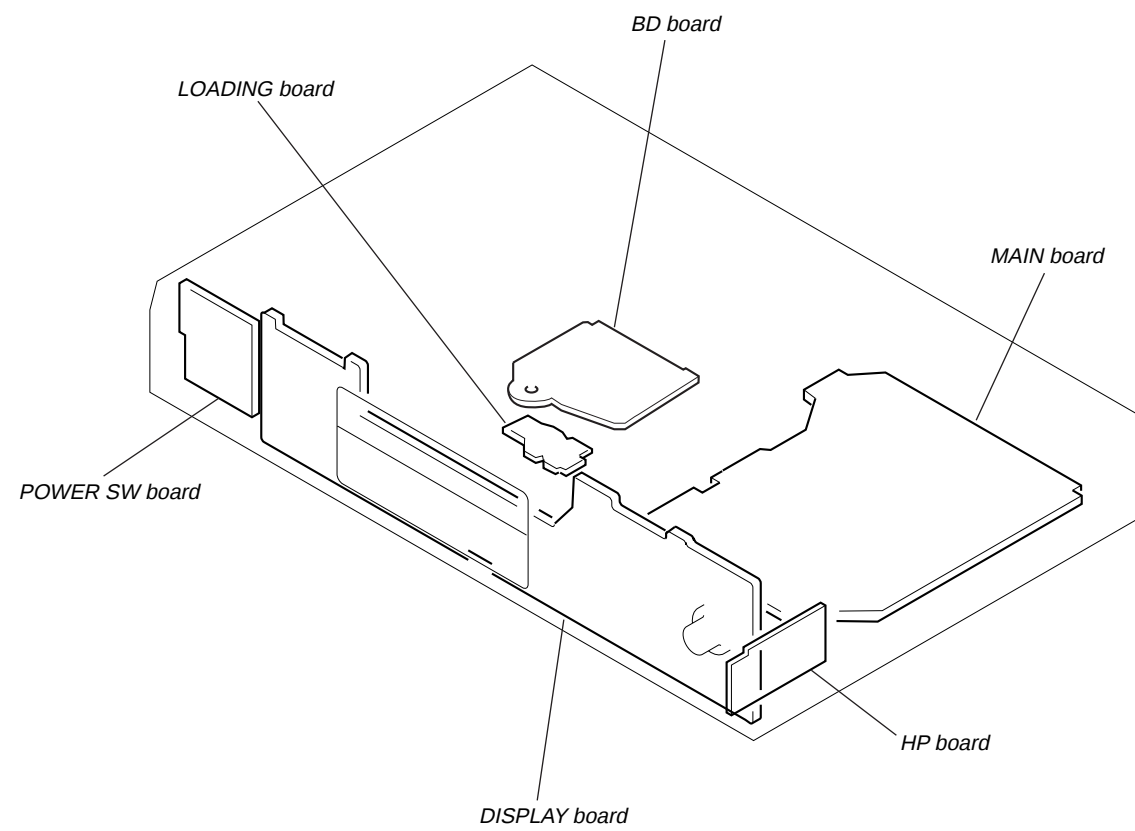


[BD BOARD] – Side A –



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.)

For schematic diagrams.

Note:

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

- $\text{B}+$: B+ Line.
- $\text{B}-$: B- Line.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) 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

For printed wiring boards.

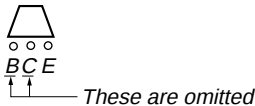
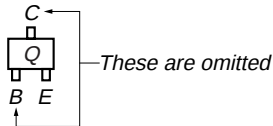
Note:

- $\circ$: parts extracted from the component side.
- --- : parts extracted from the conductor side.
- $\blacksquare$: parts mounted on the conductor side.
- $\circ$: Through hole.
- --- : Pattern from the side which enables seeing. (The other layers' patterns are not indicated.)

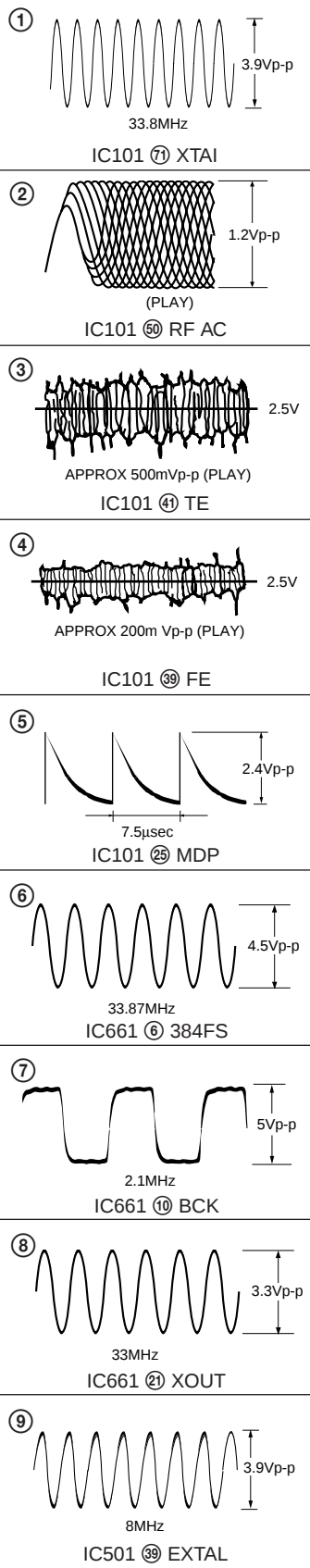
Caution:

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

• Indication of transistor



WAVEFORMS





- **Semiconductor Location**

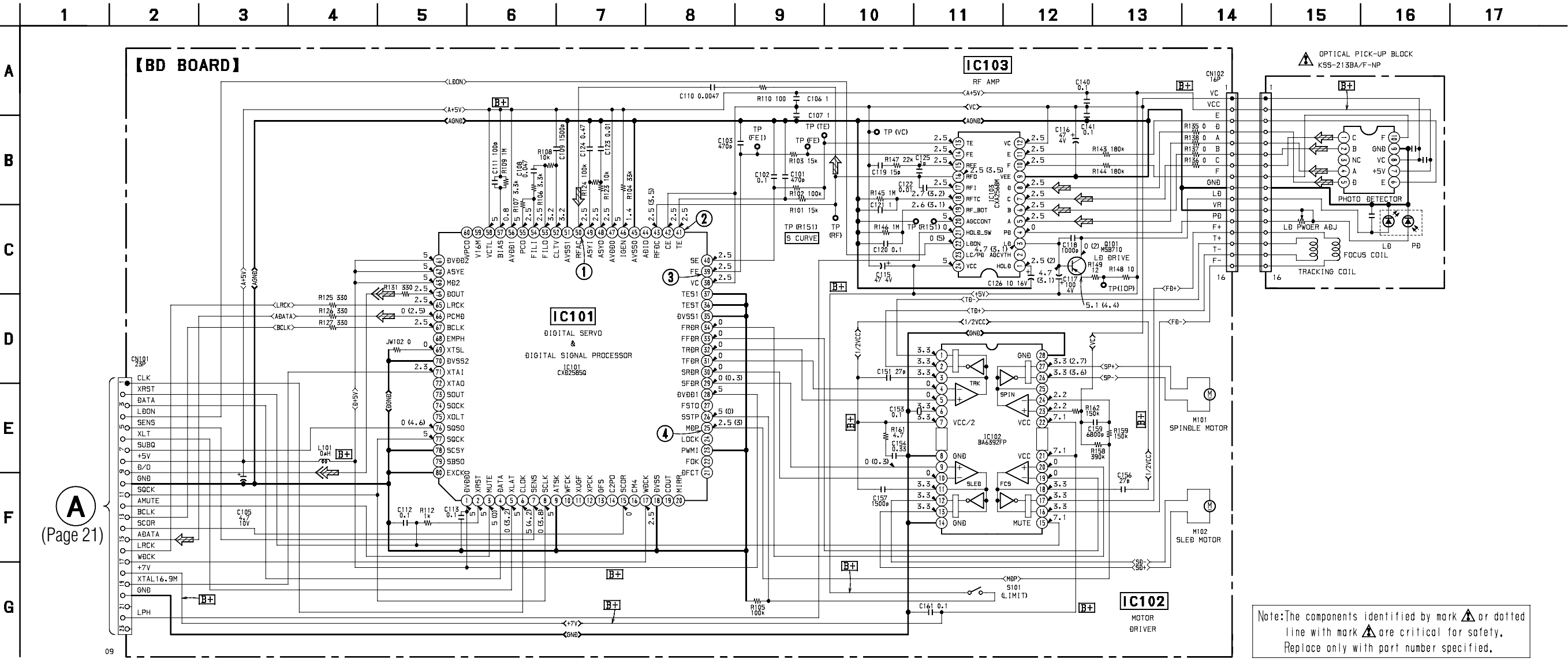
Ref. No.	Location
IC102	B-2
Q101	C-3



Ref. No.	Location
IC101	C-2
IC103	C-1

6-3. SCHEMATIC DIAGRAM – BD SECTION –

- See page 14 for Waveforms.
- See page 28 for IC Pin Functions.
- See page 32 for IC Block Diagrams.

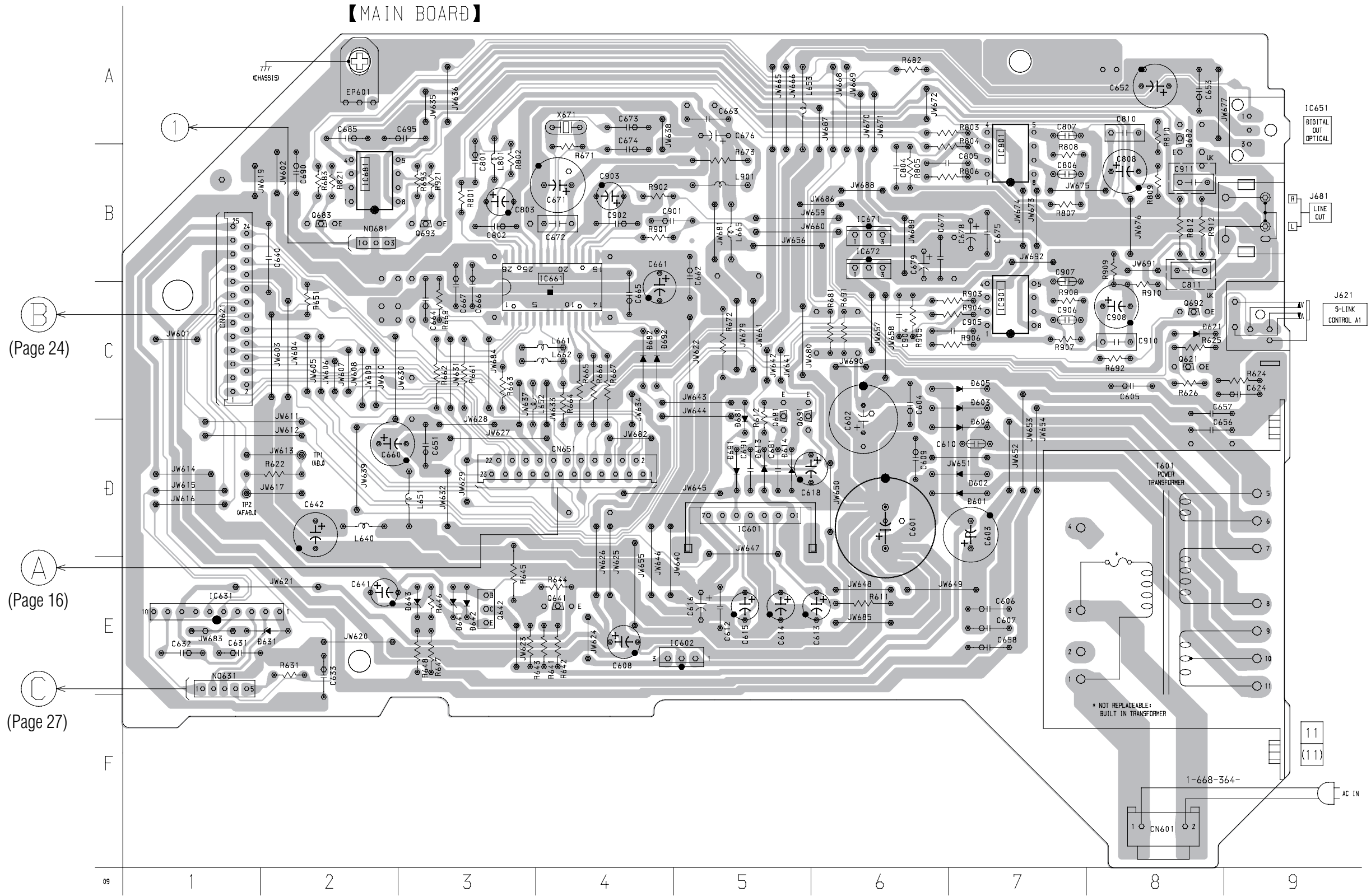


A
(Page 21)

6-4. PRINTED WIRING BOARD – MAIN SECTION –
• See page 13 for Circuit Boards Location.

• Semiconductor
Location

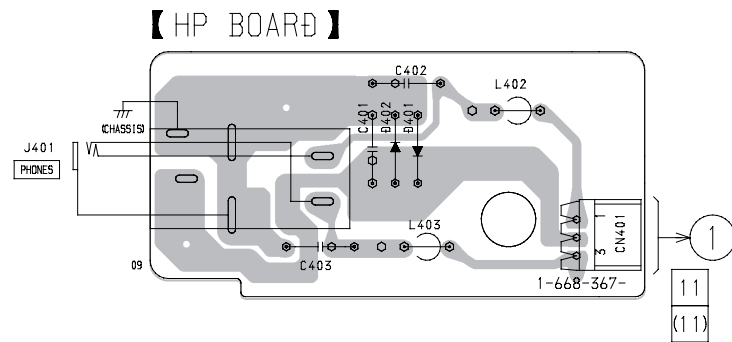
Ref. No.	Location
D601	D-7
D602	D-7
D603	C-7
D604	D-7
D605	C-7
D613	D-5
D614	D-5
D621	C-8
D631	E-2
D641	E-3
D642	E-3
D643	E-3
D681	C-5
D682	C-4
D691	D-5
D692	C-4
IC601	D-5
IC602	E-5
IC631	E-1
IC651	A-9
IC661	C-4
IC671	B-6
IC672	B-6
IC681	B-2
IC801	B-7
IC901	C-7
Q621	C-8
Q641	E-4
Q642	E-3
Q681	C-5
Q682	A-8
Q683	B-2
Q691	C-5
Q692	C-8
Q693	B-3



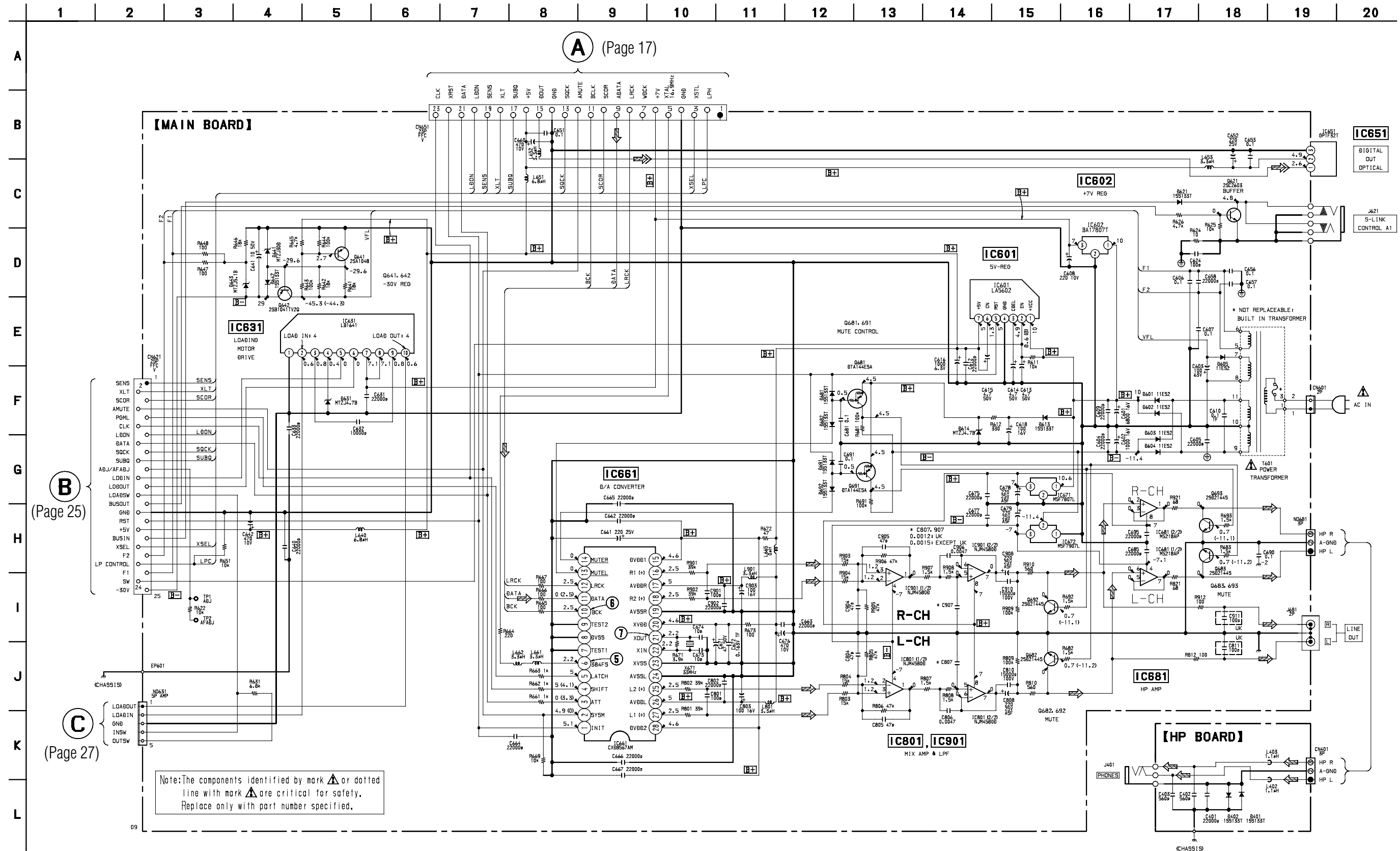
(Page 24)

(Page 16)

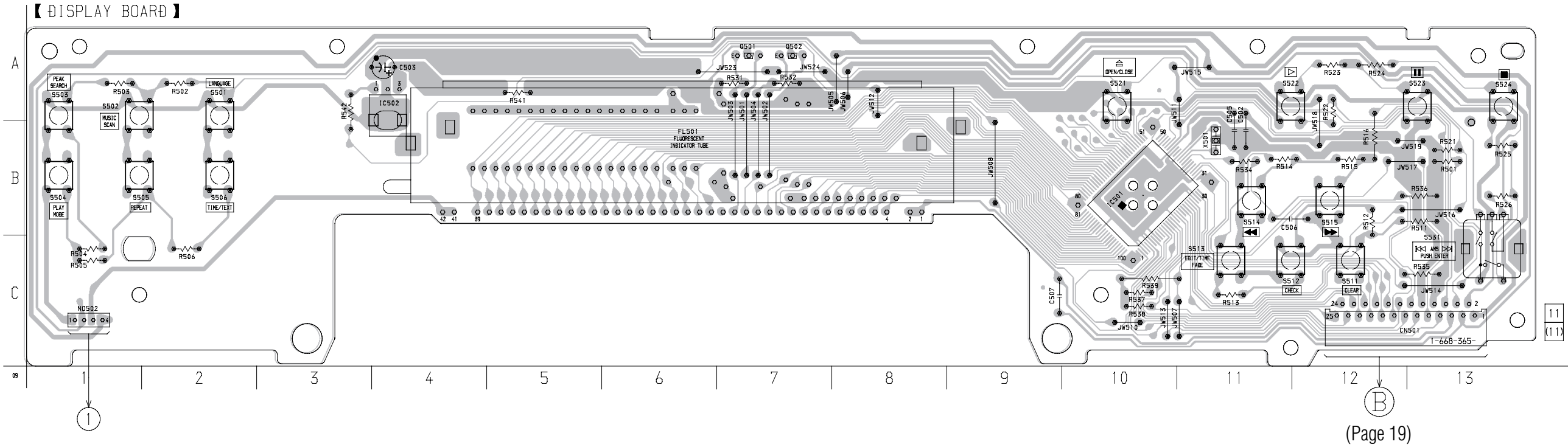
(Page 27)



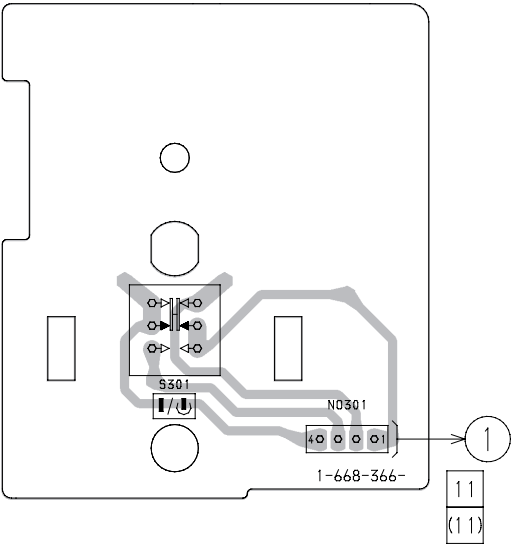
6-5. SCHEMATIC DIAGRAM – MAIN SECTION –
• See page 34 for IC Block Diagrams.



6-6. PRINTED WIRING BOARD – DISPLAY SECTION –
• See page 13 for Circuit Boards Location.



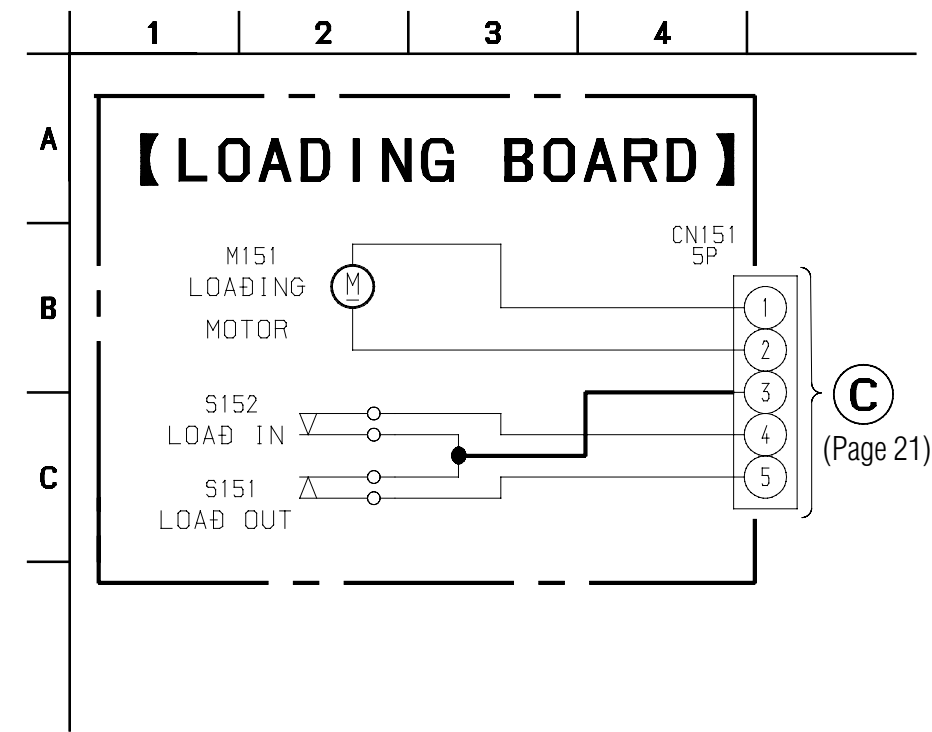
【 POWER SW BOARD 】



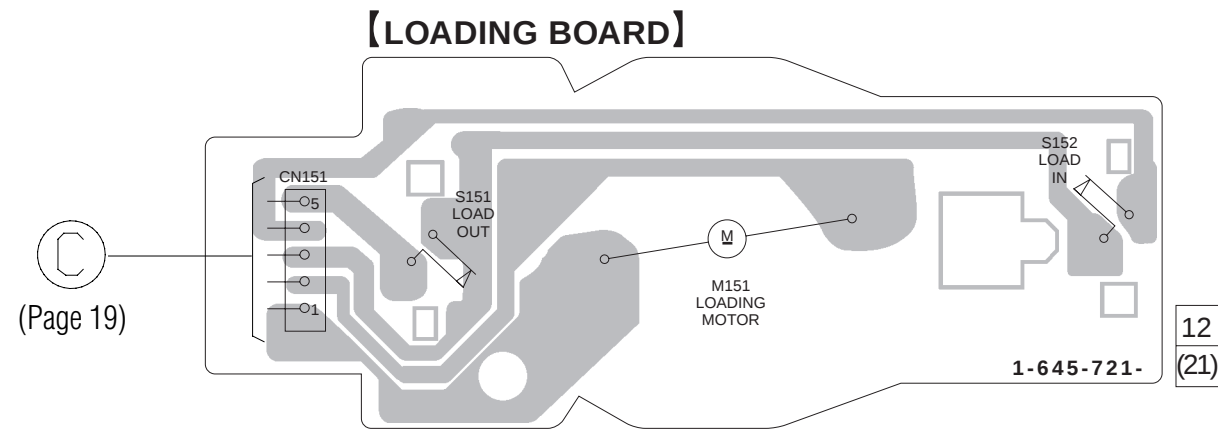
• Semiconductor
Location

Ref. No.	Location
IC501	B-10
IC502	A-4
Q501	A-7
Q502	A-7

6-8. SCHEMATIC DIAGRAM – LOADING MOTOR SECTION –



6-9. PRINTED WIRING BOARD – LOADING MOTOR SECTION –
• See page 13 for Circuit Boards Location.



6-10. IC PIN FUNCTIONS

• IC101 DIGITAL SIGNAL PROCESSOR (CXD2585Q)

Pin No.	Pin Name	I/O	Function
1	DVDD	–	Digital power supply
2	XRST	I	System reset “L” : reset
3	MUTE	I	Muting input “H” : mute
4	DATA	I	Serial data input, supplied from CPU
5	XLAT	I	Latch input, supplied from CPU
6	CLOK	I	Serial data transfer clock input, supplied from CPU
7	SENS	O	SENS signal output to CPU
8	SCLK	I	SENS serial data read-out clock input
9	ATSK	I	Input pin for anti-shock (Connected to ground)
10	WFCK	O	WFCK output (Not used)
11	XUGF	O	Not used
12	XPCK	O	Not used
13	GFS	O	Not used
14	C2PO	O	Not used
15	SCOR	O	Sub-code sync output
16	CM4	O	4.2336 MHz output (Not used)
17	WDCK	O	Word clock output ($f = 2Fs$)
18	DVSS	–	Digital ground
19	COUT	I/O	Numbers of track counted signal input/output (Not used)
20	MIRR	I/O	Mirror signal input/output
21	DFCT	I/O	Defect signal input/output
22	FOK	I/O	Focus OK input/output
23	PWMI	I	Spindle motor external control input (Connected to ground)
24	LOCK	I/O	GFS is sampled by 460 Hz. H when GFS is H (Not used)
25	MDP	O	Output to control spindle motor servo
26	SSTP	I	Input signal to detect disc inner most track
27	FSTO	O	2/3 divider output of pin 71
28	DVDD1	–	Digital power supply
29	SFDR	O	Sled drive output
30	SRDR	O	Sled drive output
31	TFDR	O	Tracking drive output
32	TRDR	O	Tracking drive output
33	FFDR	O	Focus drive output
34	FRDR	O	Focus drive output
35	DVSS1	–	Digital ground
36	TEST	I	TEST pin connected normally to ground
37	TES1	I	TEST pin connected normally to ground
38	VC	I	Center voltage input pin
39	FE	I	Focus error signal input
40	SE	I	Sled error signal input

• Abbreviation
GFS : Guarded Frame Sync

Pin No.	Pin Name	I/O	Function
41	TE	I	Tracking error signal input
42	CE	I	Center servo analog input
43	RFDC	I	RF signal input
44	ADIO	O	Test pin (Not used)
45	AVSS0	–	Analog ground
46	IGEN	I	Stabilized current input for operational amplifiers
47	AVDD0	–	Analog power supply
48	ASYO	O	EFM full swing output
49	ASYI	I	Asymmetry compare voltage input
50	RFAC	I	EFM signal input
51	AVSS1	–	Analog ground
52	CLTV	I	Control voltage input for master VCO1
53	FILO	O	Filter output for master PLL
54	FILI	I	Filter input for master PLL
55	PCO	O	Charge-pump output for master PLL
56	AVDD1	–	Analog power supply
57	BIAS	I	Asymmetry circuit constant current input
58	VCTL	I	VCO2 control voltage input for wide band EFM PLL (Connected to VDD)
59	V16M	I/O	VCO2 oscillator input/output for wide band EFM PLL (Not used)
60	VPCO	O	Charge-pump output for wide band EFM PLL (Not used)
61	DVDD2	–	Digital power supply
62	ASYE	I	Asymmetry circuit ON/OFF input “L” OFF, “H” : ON (Connected to VDD)
63	MD2	I	Digital-out ON/OFF control input (Connected to VDD)
64	DOUT	O	Digital-out output pin
65	LRCK	O	D/A interface LR clock output ($f = F_s$)
66	PCMD	O	D/A interface serial data output
67	BCLK	O	D/A interface bit clock output
68	EMPH	O	Playback disc output in emphasis mode (Not used)
69	XTSL	I	X'tal selection input (Connected to ground)
70	DVSS2	–	Digital ground
71	XTAI	I	X'tal oscillator circuit input
72	XTAO	O	X'tal oscillator circuit output (Not used)
73	SOUT	O	Serial data output in servo block (Not used)
74	SOCK	O	Serial data read clock output in servo block (Not used)
75	XOLT	O	Serial data latch output in servo block (Not used)
76	SQSO	O	Sub-Q 80-bit and PCM peak level data output (CD text data output)
77	SQCK	I	Clock input for SQSO read-out
78	SCSY	I	Connected to ground
79	SBSO	O	Sub-P through Sub-W serial output (Not used)
80	EXCK	I	Clock input for SBSO read-out (Connected to ground)

- Abbreviation
EFM : Eight to Fourteen Modulation
PLL : Phase Locked Loop

• IC501 SYSTEM CONTROL (CXP82832-006Q)

Pin No.	Pin Name	I/O	Function
1	13G	O	FL grid signal output
2	14G	O	FL grid signal output
3	NC	–	Connected to VDD
4	+5V	–	Power supply (+5V)
5	SCOR	I	Sub code sync input
6, 7	VDD	–	Power supply
8	RMIN	I	Remote control signal input
9	VDD	–	Power supply (+5V)
10, 11	X	–	Not used (Open)
12	LD OUT	O	Loading motor control
13	LD IN	O	Loading motor control
14	SENS	I	Sense signal input
15	XLT	O	Serial latch output
16	AMUTE	O	Audio mute output
17	PGML	O	Digital filter latch output
18	SENSOR. IN	–	Connected to VDD
19	BUSOUT	O	CONTROL-A1 transmission output
20	BUSIN	I	CONTROL-A1 receive input
21	SENSOR. SW	–	Not used (Open)
22	CLK	O	Serial clock output
23	LDON	O	Optical pick-up laser diode control output
24	DATA	O	Serial data output
25	SQCK	O	Subcode Q data readout clock output
26	SUBQ	I	Subcode Q data input
27	VDD (+5V)	–	Power supply (+5V)
28	AVREF	I	Analog reference voltage input
29	KEY 0	I	Key input
30	KEY 1	I	Key input
31	KEY 2	I	Key input
32	FILTER. SW	–	Connected to ground
33	ADJ/AFADJ	I	Test mode terminal
34	LOADSW	O	Load in/out select control output
35	MODEL. SEL1	–	Model select pin (Connected to ground)
36	MODEL. SEL2	–	Model select pin (Connected to ground)
37	AVSS	–	Analog ground
38	$\overline{\text{RST}}$	I	Reset signal input
39	EXTAL	I	8 MHz clock input
40	XTAL	I	8 MHz clock output

• Abbreviation

FL : Fluorescent indicator tube

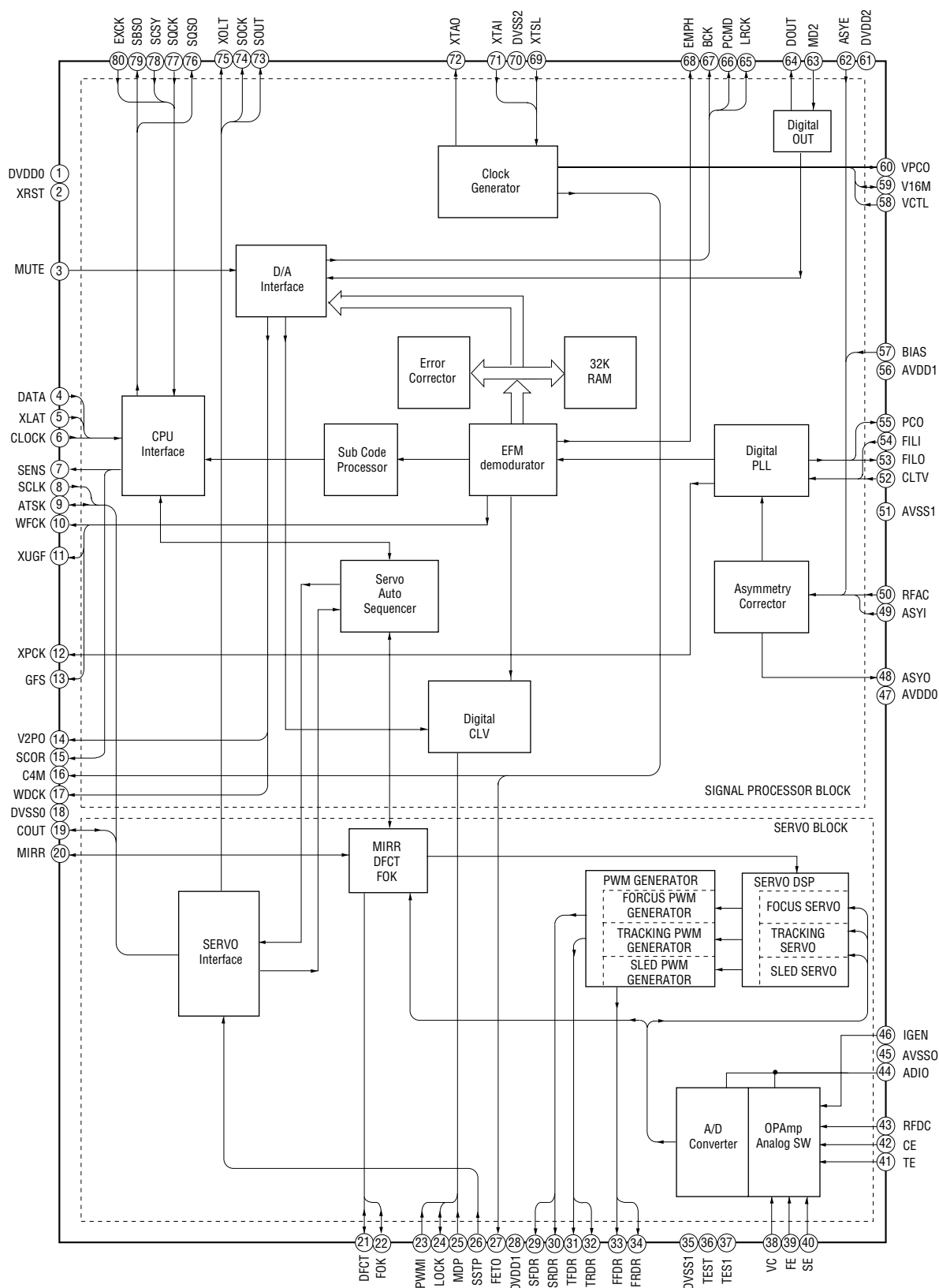
Pin No.	Pin Name	I/O	Function
41	VSS	–	Ground
42	TX	–	Not used
43	TEX	–	Connected to ground
44	VDD (+5V)	–	Power supply (+5V)
45	VFDP (–30V)	–	Pull down voltage (–30V)
46	XSEL	O	Not used
47	—	–	Not used
48	LP CONTROL	O	LP control hold output
49 to 66	OPEN	–	Not used
67 to 87	S21 to S1	O	FL segment signal output
88	1G	O	FL grid signal output
89	VDD (+5V)	–	Power supply (+5V)
90 to 100	2G to 12G	O	FL grid signal output

- Abbreviation
FL : Fluorescent indicator tube

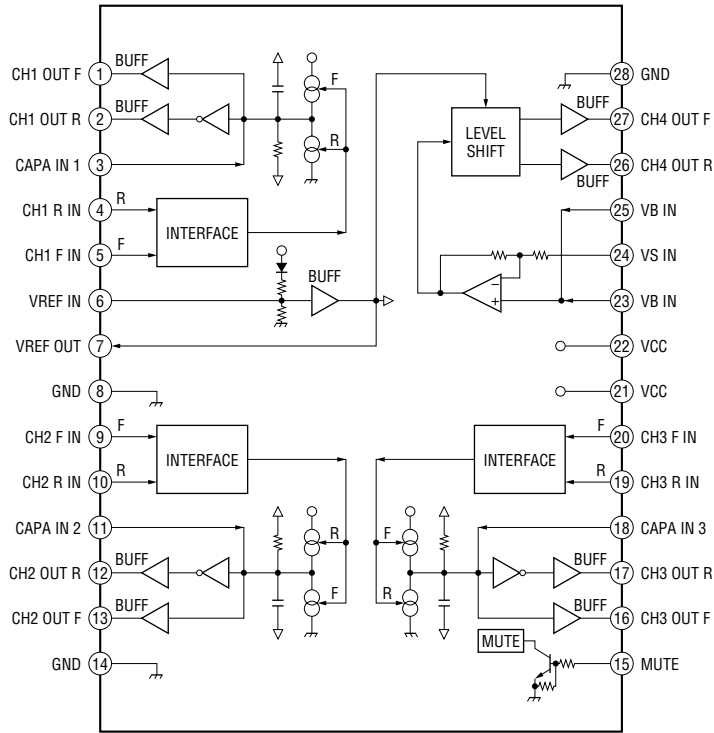
6-11. IC BLOCK DIAGRAMS

• BD section

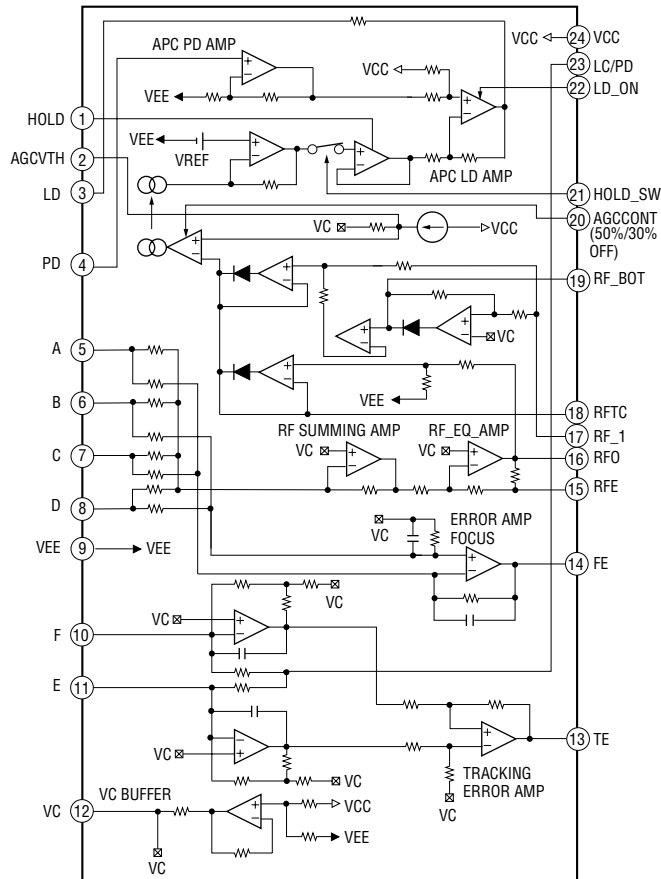
IC101 CXD2585Q



IC102 BA6392FP

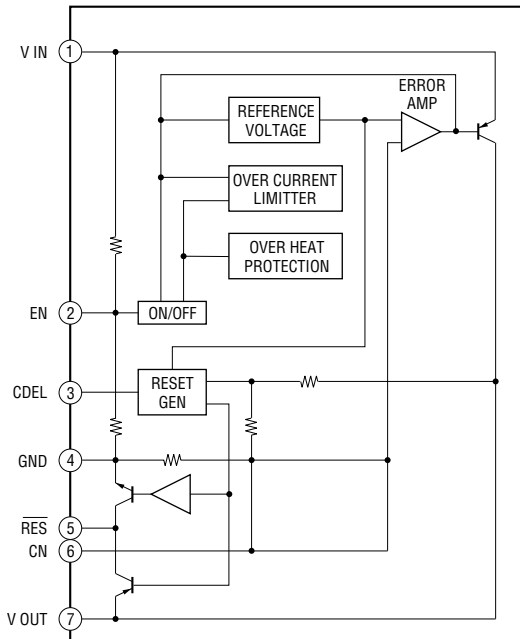


IC103 CXD2568M

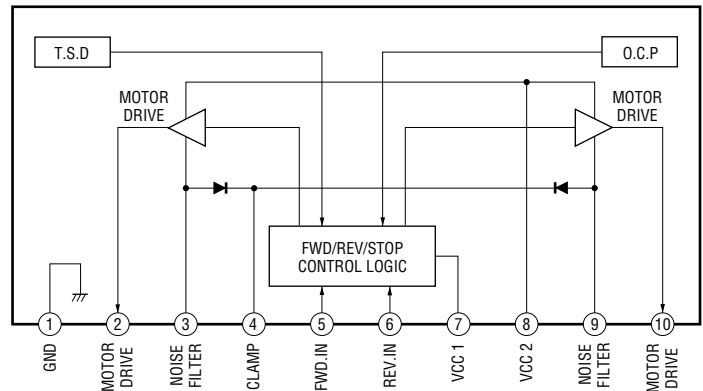


• Main section

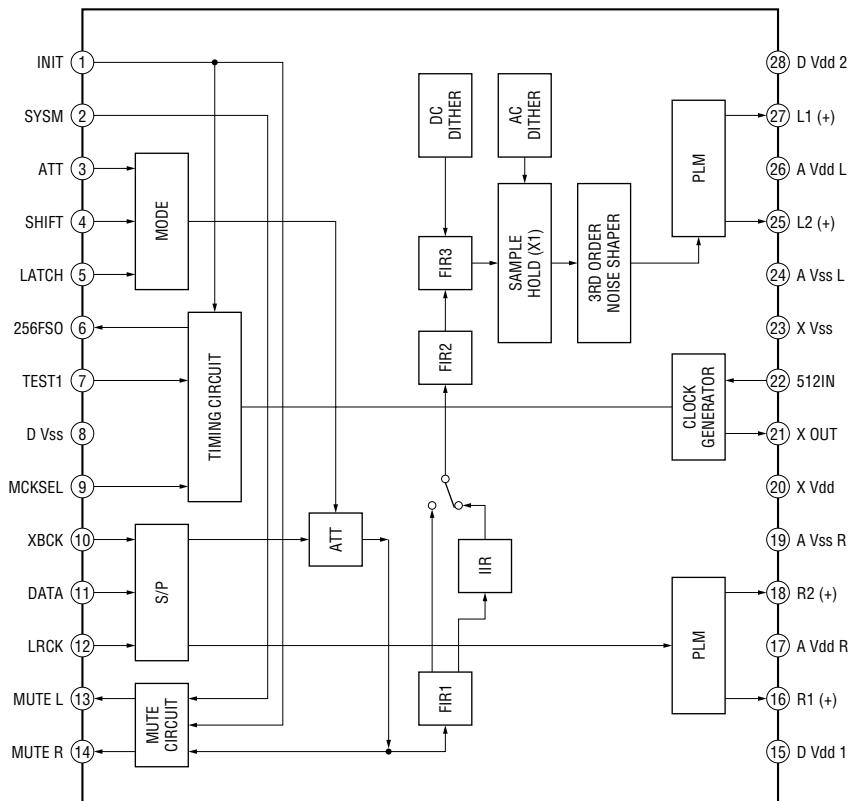
IC601 LA5602



IC631 LB1641



IC661 CXD8567AM



SECTION 7 EXPLODED VIEWS

NOTE:

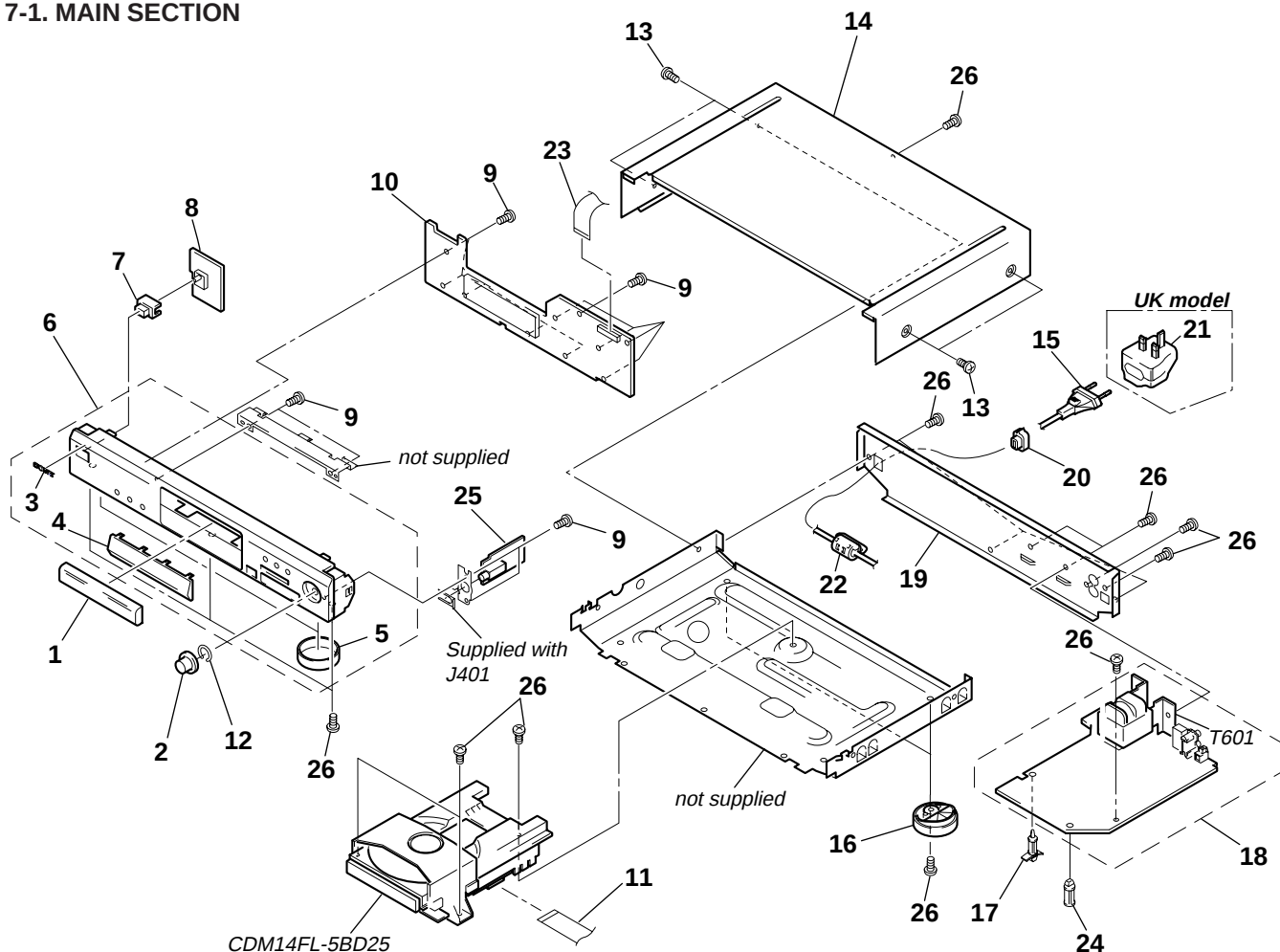
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Color Indication of Appearance Parts Example:
KNOB, BALANCE (WHITE)

↑
Cabinets color

- 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
AED : North European model

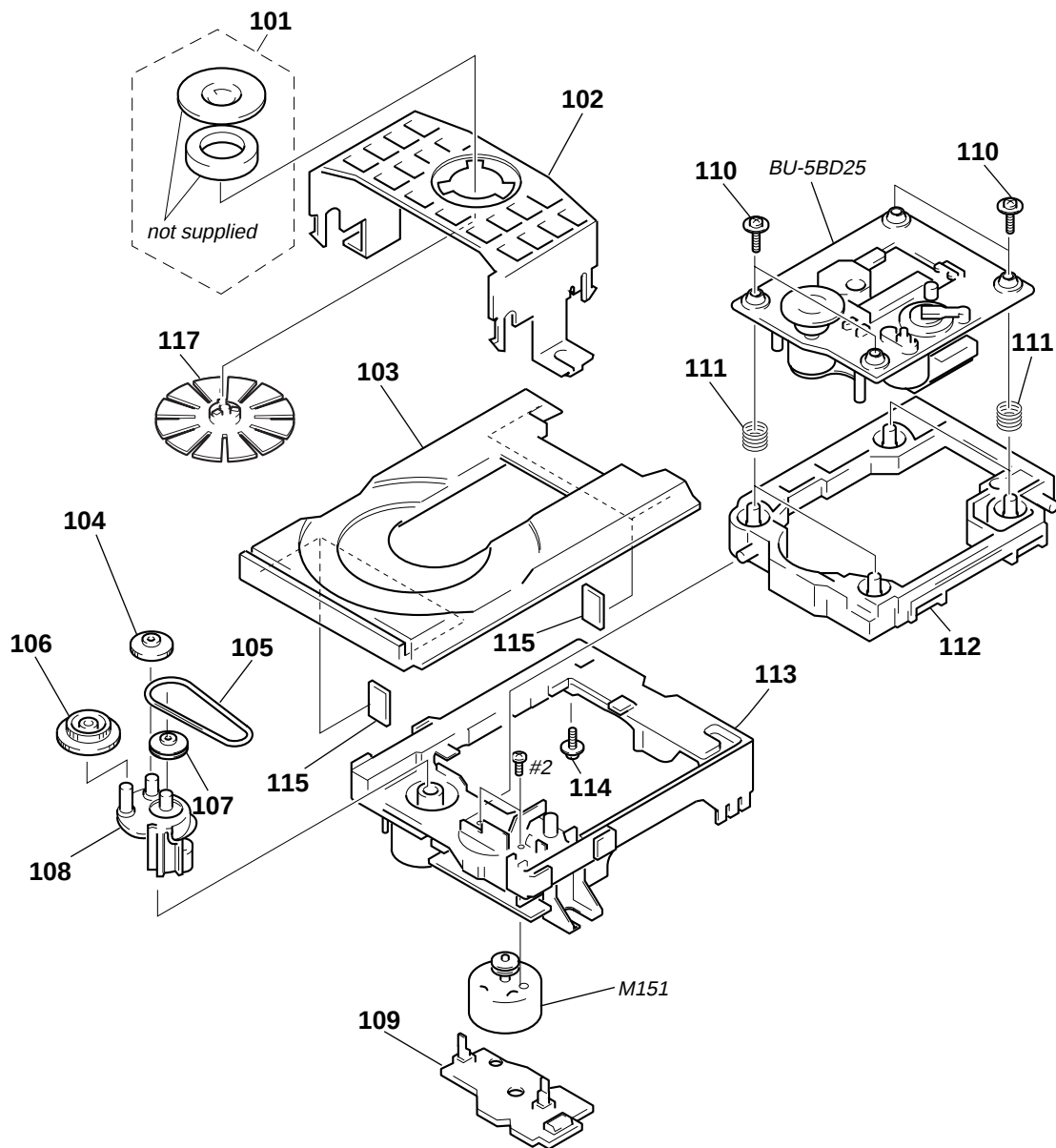
The components identified by mark $\triangle$ or dotted line with mark $\triangle$ are critical for safety. Replace only with part number specified.

7-1. MAIN SECTION



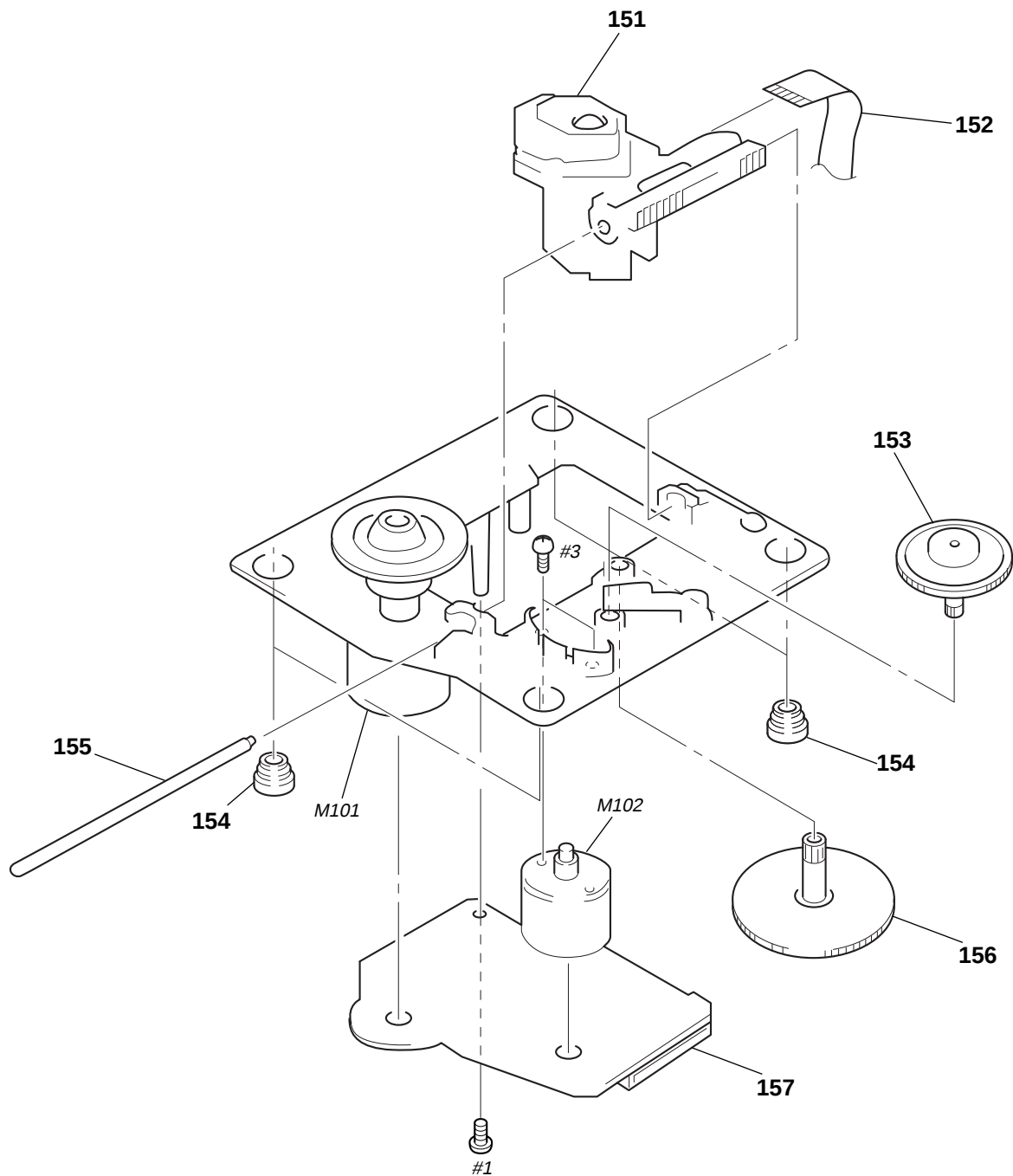
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	4-996-562-11	PANEL, LOADING (BLACK)		* 14	4-978-901-21	CASE (408226)(BLACK)	
1	4-996-562-21	PANEL, LOADING (SILVER)		* 14	4-978-901-81	CASE (408226)(SILVER)	
2	4-996-687-21	KNOB (AMS)(BLACK)		$\triangle$ 15	1-575-651-21	CORD, POWER	
2	4-996-687-31	KNOB (AMS)(SILVER)		16	X-3371-436-1	FOOT ASSY (F50150S)(SILVER)	
3	4-996-698-21	EMBLEM, SONY		16	X-4947-207-1	FOOT ASSY (F50150S)(BLACK)	
4	4-996-560-01	WINDOW (FL)		* 17	4-954-051-51	HOLDER, PC BOARD	
5	4-977-593-01	RING (DIA. 50), ORNAMENTAL		18	A-4724-001-A	MAIN BOARD, COMPLETE	
6	X-4949-425-1	PANEL ASSY, FRONT (BLACK)		* 19	4-996-568-01	PANEL, BACK (AEP,AED,EE)	
6	X-4949-426-1	PANEL ASSY, FRONT (SILVER)		* 19	4-996-568-11	PANEL, BACK (UK)	
7	4-977-589-71	BUTTON (POWER)(BLACK)		20	4-966-267-11	BUSHING (FBS001), CORD	
7	4-977-589-81	BUTTON (POWER)(SILVER)		$\triangle$ 21	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (UK)	
* 8	1-668-366-11	POWER SW BOARD		22	1-500-386-11	FILTER, CLAMP (FERRITE CORE)	
9	4-951-620-01	SCREW (2.6X8), +BVTP		23	1-773-210-11	WIRE (FLAT TYPE) (25 CORE)	
* 10	A-4699-990-A	DISPLAY BOARD, COMPLETE		* 24	3-349-025-41	HOLDER, PC BOARD	
11	1-776-100-11	WIRE (FLAT TYPE) (23 CORE)		* 25	1-668-367-11	HP BOARD	
12	3-354-981-01	SPRING (SUS), RING		26	4-974-510-01	SCREW (+BV 3X8 B)(UK)	
13	3-710-901-01	SCREW, TAPPING (SILVER)(AEP)		26	7-685-649-79	SCREW +BVTP 3X8 TYPE2 N-S (EXCEPT UK)	
13	3-710-901-11	SCREW, TAPPING (BLACK)(AEP,AED,EE)		$\triangle$ T601	1-431-696-11	TRANSFORMER, POWER	
13	4-999-877-01	SCREW (CASE)(UK)					

7-2. CD MECHANISM SECTION (CDM14FL-5BD25)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	1-452-925-21	MAGNET ASSY		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	4-995-814-01	TABLE (FL), 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)		117	4-993-142-11	PULLEY (L), PRESS	
108	4-933-109-01	CAM		M151	A-4672-207-A	MOTOR (L) ASSY (LOADING)	
* 109	1-645-721-11	LOADING BOARD					

7-3. BASE UNIT SECTION (BU-5BD25)



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	Ref. No.	Part No.	Description	Remark
△ 151	8-848-379-31	OPTICAL PICK-UP KSS-213BA/F-NP		156	4-917-564-01	GEAR (P), FLATNESS	
152	1-769-069-11	WIRE (FLAT TYPE)(16 CORE)		* 157	A-4699-969-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

Note:

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 name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
All resistors are in ohms
METAL: Metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F : nonflammable
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA...: μ PA..., uPB...: μ PB...,
uPC...: μ PC..., uPD...: μ PD...
- CAPACITORS
uF : μ F
- COILS
uH : μ H
- Abbreviation
EE : East European model
AED : North European model

Ref. No.	Part No.	Description	Remark				Ref. No.	Part No.	Description	Remark			
*	A-4699-969-A	BD BOARD, COMPLETE *****							< JUMPER RESISTOR >				
		< CAPACITOR >					JW102	1-216-295-91	SHORT 0				
									< COIL >				
C101	1-163-005-11	CERAMIC CHIP 470PF	10%	50V					L101	1-414-234-11	INDUCTOR CHIP 0uH		
C102	1-163-038-91	CERAMIC CHIP 0.1uF		25V							< MOTOR >		
C103	1-163-005-11	CERAMIC CHIP 470PF	10%	50V					M101	X-4917-523-4	MOTOR ASSY (SPINDLE)		
C105	1-135-155-21	TANTALUM CHIP 4.7uF	10%	16V					M102	X-4917-504-1	MOTOR ASSY (SLED)		
C106	1-164-346-11	CERAMIC CHIP 1uF		16V							< TRANSISTOR >		
C107	1-164-346-11	CERAMIC CHIP 1uF		16V					Q101	8-729-010-08	TRANSISTOR MSB710-R		
C108	1-163-035-00	CERAMIC CHIP 0.047uF		50V							< RESISTOR >		
C109	1-163-145-00	CERAMIC CHIP 0.0015uF	5%	50V					R101	1-216-077-00	METAL CHIP 15K	5%	1/10W
C110	1-163-017-00	CERAMIC CHIP 0.0047uF	5%	50V					R102	1-216-097-91	RES,CHIP 100K	5%	1/10W
C111	1-163-251-11	CERAMIC CHIP 100PF	5%	50V					R103	1-216-077-00	METAL CHIP 15K	5%	1/10W
C112	1-163-038-91	CERAMIC CHIP 0.1uF		25V					R104	1-216-085-00	METAL CHIP 33K	5%	1/10W
C113	1-163-038-91	CERAMIC CHIP 0.1uF		25V					R105	1-216-097-91	RES,CHIP 100K	5%	1/10W
C115	1-126-607-11	ELECT CHIP 47uF	20%	4V					R106	1-216-061-00	METAL CHIP 3.3K	5%	1/10W
C116	1-126-607-11	ELECT CHIP 47uF	20%	4V					R107	1-216-061-00	METAL CHIP 3.3K	5%	1/10W
C117	1-126-209-11	ELECT CHIP 100uF	20%	4V					R108	1-216-073-00	METAL CHIP 10K	5%	1/10W
C118	1-163-275-11	CERAMIC CHIP 0.001uF	5%	50V					R109	1-216-121-91	RES,CHIP 1M	5%	1/10W
C119	1-163-231-11	CERAMIC CHIP 15PF	5%	50V					R110	1-216-025-91	RES,CHIP 100	5%	1/10W
C120	1-164-004-11	CERAMIC CHIP 0.1uF	10%	25V					R112	1-216-049-91	RES,CHIP 1K	5%	1/10W
C121	1-109-982-11	CERAMIC CHIP 1uF	10%	10V					R123	1-216-073-00	METAL CHIP 10K	5%	1/10W
C122	1-164-232-11	CERAMIC CHIP 0.01uF		50V					R124	1-216-097-91	RES,CHIP 100K	5%	1/10W
C123	1-164-232-11	CERAMIC CHIP 0.01uF		50V					R125	1-216-037-00	METAL CHIP 330	5%	1/10W
C124	1-164-005-11	CERAMIC CHIP 0.47uF		25V					R126	1-216-037-00	METAL CHIP 330	5%	1/10W
C125	1-163-217-11	CERAMIC CHIP 1PF	0.25PF	50V					R127	1-216-037-00	METAL CHIP 330	5%	1/10W
C126	1-135-216-11	TANTALUM CHIP 10uF	20%	10V					R131	1-216-037-00	METAL CHIP 330	5%	1/10W
C140	1-163-038-91	CERAMIC CHIP 0.1uF		25V					R135	1-216-295-91	SHORT 0		
C141	1-163-038-91	CERAMIC CHIP 0.1uF		25V					R136	1-216-295-91	SHORT 0		
C151	1-163-237-11	CERAMIC CHIP 27PF	5%	50V					R137	1-216-295-91	SHORT 0		
C153	1-163-038-91	CERAMIC CHIP 0.1uF		25V					R138	1-216-295-91	SHORT 0		
C154	1-164-336-11	CERAMIC CHIP 0.33uF		25V					R143	1-216-103-00	METAL CHIP 180K	5%	1/10W
C156	1-163-237-11	CERAMIC CHIP 27PF	5%	50V					R144	1-216-103-00	METAL CHIP 180K	5%	1/10W
C157	1-163-145-00	CERAMIC CHIP 0.0015uF	5%	50V					R145	1-216-121-91	RES,CHIP 1M	5%	1/10W
C159	1-163-019-00	CERAMIC CHIP 0.0068uF	10%	50V					R146	1-216-121-91	RES,CHIP 1M	5%	1/10W
C161	1-163-038-91	CERAMIC CHIP 0.1uF		25V					R147	1-216-081-00	METAL CHIP 22K	5%	1/10W
		< CONNECTOR >							R148	1-216-001-00	METAL CHIP 10	5%	1/10W
CN101	1-770-072-11	CONNECTOR,(LIF(NON-ZIF))FFC23P							R149	1-216-003-11	RES,CHIP 12	5%	1/10W
CN102	1-777-937-11	CONNECTOR, FFC/FPC 16P							R158	1-216-111-00	METAL CHIP 390K	5%	1/10W
		< IC >							R159	1-216-101-00	METAL CHIP 150K	5%	1/10W
IC101	8-752-389-34	IC CXD2585Q							R161	1-216-308-00	METAL CHIP 4.7	5%	1/10W
IC102	8-759-455-91	IC BA6392FP-E2											
IC103	8-752-085-51	IC CXA2568M-T6											

BD

DISPLAY

HP

LOADING

Ref. No.	Part No.	Description				Remark	Ref. No.	Part No.	Description				Remark
R162	1-216-101-00	METAL CHIP	150K	5%	1/10W		R539	1-249-429-11	CARBON	10K	5%	1/4W	
		< SWITCH >					R541	1-247-807-31	CARBON	100	5%	1/4W	
							R542	1-247-807-31	CARBON	100	5%	1/4W	
S101	1-572-085-11	SWITCH, LEAF (LIMIT)							< SWITCH >				

*	A-4699-990-A	DISPLAY BOARD, COMPLETE					S501	1-554-303-21	SWITCH, TACTILE (LANGUAGE)				
		*****					S502	1-554-303-21	SWITCH, TACTILE (MUSIC SCAN)				
		< CAPACITOR >					S503	1-554-303-21	SWITCH, TACTILE (PEAK SEARCH)				
							S504	1-554-303-21	SWITCH, TACTILE (PLAY MODE)				
							S505	1-554-303-21	SWITCH, TACTILE (REPEAT)				
C502	1-164-159-21	CERAMIC	0.1uF		50V		S506	1-554-303-21	SWITCH, TACTILE (TIME/TEXT)				
C503	1-124-584-00	ELECT	100uF	20%	10V		S511	1-554-303-21	SWITCH, TACTILE (CLEAR)				
C505	1-164-159-21	CERAMIC	0.1uF		50V		S512	1-554-303-21	SWITCH, TACTILE (CHECK)				
C506	1-164-159-21	CERAMIC	0.1uF		50V		S513	1-554-303-21	SWITCH, TACTILE (EDIT/TIME FADE)				
C507	1-161-494-00	CERAMIC	0.022uF		25V		S514	1-554-303-21	SWITCH, TACTILE (◀▶)				
		< CONNECTOR >					S515	1-554-303-21	SWITCH, TACTILE (▶▶)				
							S521	1-554-303-21	SWITCH, TACTILE (≡ OPEN/CLOSE)				
* CN501	1-568-867-11	SOCKET, CONNECTOR 25P					S522	1-554-303-21	SWITCH, TACTILE (▷)				
		< FLUORESCENT INDICATOR >					S523	1-554-303-21	SWITCH, TACTILE (■)				
							S524	1-554-303-21	SWITCH, TACTILE (■)				
FL501	1-517-740-11	INDICATOR TUBE, FLUORESCENT					S531	1-475-543-11	ENCODER, ROTARY (I<<I AMS ▷▷I)				
		< IC >							< VIBRATOR >				
IC501	8-752-892-35	IC CXP82832-006Q					X501	1-579-125-11	VIBRATOR, CERAMIC (8MHz)				
IC502	8-749-014-66	IC NJL56H400					*****						
		< TRANSISTOR >					*	1-668-367-11	HP BOARD				

Q501	8-729-029-66	TRANSISTOR DTC114ESA						< CAPACITOR >					
Q502	8-729-029-66	TRANSISTOR DTC114ESA											
		< RESISTOR >											
R501	1-249-427-11	CARBON	6.8K	5%	1/4W	F		C401	1-161-494-00	CERAMIC	0.022uF	25V	
R502	1-249-415-11	CARBON	680	5%	1/4W	F		C402	1-162-291-31	CERAMIC	560PF	10%	50V
R503	1-249-417-11	CARBON	1K	5%	1/4W	F		C403	1-162-291-31	CERAMIC	560PF	10%	50V
R504	1-249-419-11	CARBON	1.5K	5%	1/4W	F			< CONNECTOR >				
R505	1-249-421-11	CARBON	2.2K	5%	1/4W	F	* CN401	1-568-941-11	PIN, CONNECTOR 3P				
									< DIODE >				
R506	1-247-843-11	CARBON	3.3K	5%	1/4W			D401	8-719-991-33	DIODE 1SS133T-77			
R511	1-249-427-11	CARBON	6.8K	5%	1/4W	F		D402	8-719-991-33	DIODE 1SS133T-77			
R512	1-249-415-11	CARBON	680	5%	1/4W	F			< JACK >				
R513	1-249-417-11	CARBON	1K	5%	1/4W	F		J401	1-770-307-11	JACK (LARGE TYPE)(PHONES)			
R514	1-249-419-11	CARBON	1.5K	5%	1/4W	F			< COIL >				
								L402	1-410-397-21	FERRITE BEAD INDUCTOR			
R515	1-249-421-11	CARBON	2.2K	5%	1/4W	F		L403	1-410-397-21	FERRITE BEAD INDUCTOR			
R516	1-247-843-11	CARBON	3.3K	5%	1/4W		*****						
R521	1-249-427-11	CARBON	6.8K	5%	1/4W	F	*	1-645-721-11	LOADING BOARD				
R522	1-249-415-11	CARBON	680	5%	1/4W	F		*****					
R523	1-249-417-11	CARBON	1K	5%	1/4W	F		< CONNECTOR >					
R524	1-249-419-11	CARBON	1.5K	5%	1/4W	F		* CN151	1-568-943-11	PIN, CONNECTOR 5P			
R525	1-249-421-11	CARBON	2.2K	5%	1/4W	F							
R526	1-247-843-11	CARBON	3.3K	5%	1/4W								
R531	1-249-441-11	CARBON	100K	5%	1/4W								
R532	1-249-441-11	CARBON	100K	5%	1/4W								
R534	1-249-417-11	CARBON	1K	5%	1/4W	F			< CONNECTOR >				
R535	1-249-429-11	CARBON	10K	5%	1/4W								
R536	1-249-427-11	CARBON	6.8K	5%	1/4W	F							
R537	1-249-429-11	CARBON	10K	5%	1/4W								
R538	1-249-429-11	CARBON	10K	5%	1/4W								

LOADING

MAIN

Ref. No.	Part No.	Description	Remark		
< SWITCH >					
S151	1-572-086-11	SWITCH, LEAF (LOAD OUT)			
S152	1-572-086-11	SWITCH, LEAF (LOAD IN)			

*	A-4724-001-A	MAIN BOARD, COMPLETE			

	7-685-871-01	SCREW +BVTT 3X6 (S)			
< CAPACITOR >					
C601	1-128-547-11	ELECT	6800uF	20%	16V
C602	1-126-767-11	ELECT	1000uF	20%	16V
C603	1-128-576-11	ELECT	100uF	20%	63V
C604	1-161-494-00	CERAMIC	0.022uF		25V
C605	1-161-494-00	CERAMIC	0.022uF		25V
C606	1-164-159-21	CERAMIC	0.1uF		50V
C607	1-164-159-21	CERAMIC	0.1uF		50V
C608	1-126-934-11	ELECT	220uF	20%	10V
C609	1-161-494-00	CERAMIC	0.022uF		25V
C610	1-136-165-00	FILM	0.1uF	5%	50V
C612	1-161-494-00	CERAMIC	0.022uF		25V
C613	1-126-963-11	ELECT	4.7uF	20%	50V
C614	1-126-963-11	ELECT	4.7uF	20%	50V
C615	1-126-963-11	ELECT	4.7uF	20%	50V
C616	1-126-916-11	ELECT	1000uF	20%	6.3V
C618	1-126-933-11	ELECT	100uF	20%	16V
C624	1-162-282-31	CERAMIC	100PF	10%	50V
C631	1-161-494-00	CERAMIC	0.022uF		25V
C632	1-162-306-11	CERAMIC	0.01uF	20%	16V
C633	1-161-494-00	CERAMIC	0.022uF		25V
C640	1-161-494-00	CERAMIC	0.022uF		25V
C641	1-126-964-11	ELECT	10uF	20%	50V
C642	1-126-925-11	ELECT	470uF	20%	10V
C651	1-164-159-21	CERAMIC	0.1uF		50V
C652	1-104-666-11	ELECT	220uF	20%	25V
C653	1-164-159-21	CERAMIC	0.1uF		50V
C656	1-164-159-21	CERAMIC	0.1uF		50V
C657	1-164-159-21	CERAMIC	0.1uF		50V
C658	1-161-494-00	CERAMIC	0.022uF		25V
C660	1-126-925-11	ELECT	470uF	20%	10V
C661	1-104-666-11	ELECT	220uF	20%	25V
C662	1-161-494-00	CERAMIC	0.022uF		25V
C663	1-161-494-00	CERAMIC	0.022uF		25V
C664	1-161-494-00	CERAMIC	0.022uF		25V
C665	1-161-494-00	CERAMIC	0.022uF		25V
C666	1-161-494-00	CERAMIC	0.022uF		25V
C667	1-161-494-00	CERAMIC	0.022uF		25V
C671	1-128-200-11	ELECT	47uF	20%	50V
C672	1-136-850-11	FILM	0.1uF	5%	63V
C673	1-162-199-31	CERAMIC	10PF	5%	50V
C674	1-162-199-31	CERAMIC	10PF	5%	50V
C675	1-161-494-00	CERAMIC	0.022uF		25V
C676	1-126-925-11	ELECT	470uF	20%	10V
C677	1-161-494-00	CERAMIC	0.022uF		25V
C678	1-126-024-11	ELECT	220uF	20%	25V
C679	1-126-024-11	ELECT	220uF	20%	25V

Ref. No.	Part No.	Description	Remark		
C681	1-164-159-21	CERAMIC	0.1uF		50V
C685	1-161-494-00	CERAMIC	0.022uF		25V
C690	1-164-159-21	CERAMIC	0.1uF		50V
C691	1-164-159-21	CERAMIC	0.1uF		50V
C695	1-161-494-00	CERAMIC	0.022uF		25V
C801	1-162-282-31	CERAMIC	100PF	10%	50V
C802	1-161-494-00	CERAMIC	0.022uF		25V
C803	1-126-933-11	ELECT	100uF	20%	16V
C804	1-162-215-31	CERAMIC	47PF	5%	50V
C805	1-162-215-31	CERAMIC	47PF	5%	50V
C806	1-130-479-00	MYLAR	0.0047uF	5%	50V
C807	1-130-472-00	MYLAR	0.0012uF	5%	50V (UK)
C807	1-130-473-00	MYLAR	0.0015uF	5%	50V
				(AEP,AED,EE)	
C808	1-126-024-11	ELECT	220uF	20%	25V
C810	1-136-802-11	FILM	0.015uF	5%	100V
C811	1-136-808-11	FILM	100PF	5%	100V
				(UK)	
C901	1-162-282-31	CERAMIC	100PF	10%	50V
C902	1-161-494-00	CERAMIC	0.022uF		25V
C903	1-126-933-11	ELECT	100uF	20%	16V
C904	1-162-215-31	CERAMIC	47PF	5%	50V
C905	1-162-215-31	CERAMIC	47PF	5%	50V
C906	1-130-479-00	MYLAR	0.0047uF	5%	50V
C907	1-130-472-00	MYLAR	0.0012uF	5%	50V (UK)
C907	1-130-473-00	MYLAR	0.0015uF	5%	50V
				(AEP,AED,EE)	
C908	1-126-024-11	ELECT	220uF	20%	25V
C910	1-136-802-11	FILM	0.015uF	5%	100V
C911	1-136-808-11	FILM	100PF	5%	100V
				(UK)	
< CONNECTOR >					
CN601	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P			
* CN621	1-568-841-11	SOCKET, CONNECTOR 25P			
* CN651	1-568-839-11	SOCKET, CONNECTOR 23P			
< DIODE >					
D601	8-719-200-82	DIODE	11ES2		
D602	8-719-200-82	DIODE	11ES2		
D603	8-719-200-82	DIODE	11ES2		
D604	8-719-200-82	DIODE	11ES2		
D605	8-719-200-82	DIODE	11ES2		
D613	8-719-815-85	DIODE	1S1585		
D613	8-719-991-33	DIODE	1SS133T-77		
D614	8-719-921-40	DIODE	MTZJ-4.7C		
D621	8-719-815-85	DIODE	1S1585		
D621	8-719-991-33	DIODE	1SS133T-77		
D631	8-719-921-40	DIODE	MTZJ-4.7C		
D641	8-719-982-22	DIODE	MTZJ-30D		
D642	8-719-815-85	DIODE	1S1585		
D642	8-719-991-33	DIODE	1SS133T-77		
D643	8-719-109-85	DIODE	RD5.1ES-B2		
D681	8-719-815-85	DIODE	1S1585		
D681	8-719-991-33	DIODE	1SS133T-77		
D682	8-719-815-85	DIODE	1S1585		
D682	8-719-991-33	DIODE	1SS133T-77		
D691	8-719-815-85	DIODE	1S1585		

Ref. No.	Part No.	Description	Remark				Ref. No.	Part No.	Description	Remark			
D691	8-719-991-33	DIODE 1SS133T-77					R646	1-249-432-11	CARBON 18K	5%	1/4W		
D692	8-719-815-85	DIODE 1S1585					R647	1-247-807-31	CARBON 100	5%	1/4W		
D692	8-719-991-33	DIODE 1SS133T-77					R648	1-247-807-31	CARBON 100	5%	1/4W		
< GROUND PLATE >							R651	1-249-429-11	CARBON 10K	5%	1/4W		
EP601	1-537-770-21	TERMINAL BOARD, GROUND					R661	1-249-417-11	CARBON 1K	5%	1/4W	F	
							R662	1-249-417-11	CARBON 1K	5%	1/4W	F	
							R663	1-249-417-11	CARBON 1K	5%	1/4W	F	
			< IC >				R664	1-247-815-91	CARBON 220	5%	1/4W		
IC601	8-759-061-65	IC LA5602					R665	1-247-807-31	CARBON 100	5%	1/4W		
IC602	8-749-011-78	IC BA17807T					R666	1-247-807-31	CARBON 100	5%	1/4W		
IC631	8-759-822-09	IC LB1641					R667	1-247-807-31	CARBON 100	5%	1/4W		
IC651	8-749-921-12	IC GP1F32T (DIGITAL OUT OPTICAL)					R669	1-249-429-11	CARBON 10K	5%	1/4W		
IC661	8-759-362-47	IC CXD8567AM					R671	1-249-424-11	CARBON 3.9K	5%	1/4W	F	
IC671	8-759-604-86	IC M5F7807L					R672	1-249-401-11	CARBON 47	5%	1/4W	F	
IC672	8-759-604-90	IC M5F7907L					R673	1-247-807-31	CARBON 100	5%	1/4W		
IC681	8-759-634-51	IC M5218AP					R681	1-249-441-11	CARBON 100K	5%	1/4W		
IC801	8-759-710-59	IC NJM4580D-D					R682	1-249-419-11	CARBON 1.5K	5%	1/4W	F	
IC901	8-759-710-59	IC NJM4580D-D					R683	1-249-419-11	CARBON 1.5K	5%	1/4W	F	
< JACK >							R691	1-249-441-11	CARBON 100K	5%	1/4W		
J621	1-774-726-11	JACK (S-LINK CONTROL A1)					R692	1-249-419-11	CARBON 1.5K	5%	1/4W	F	
J681	1-770-719-11	JACK, PIN 2P (LINE OUT)					R693	1-249-419-11	CARBON 1.5K	5%	1/4W	F	
< COIL >							R801	1-249-436-11	CARBON 39K	5%	1/4W		
							R802	1-249-436-11	CARBON 39K	5%	1/4W		
L640	1-410-507-11	INDUCTOR 6.8uH					R803	1-249-431-11	CARBON 15K	5%	1/4W		
L651	1-410-507-11	INDUCTOR 6.8uH					R804	1-249-431-11	CARBON 15K	5%	1/4W		
L652	1-410-322-11	INDUCTOR 3.3uH					R805	1-249-437-11	CARBON 47K	5%	1/4W		
L653	1-410-322-11	INDUCTOR 3.3uH					R806	1-249-437-11	CARBON 47K	5%	1/4W		
L661	1-410-322-11	INDUCTOR 3.3uH					R807	1-249-419-11	CARBON 1.5K	5%	1/4W	F	
							R808	1-249-419-11	CARBON 1.5K	5%	1/4W	F	
L662	1-410-322-11	INDUCTOR 3.3uH					R809	1-249-441-11	CARBON 100K	5%	1/4W		
L665	1-412-473-41	INDUCTOR 0uH					R810	1-249-414-11	CARBON 560	5%	1/4W	F	
L801	1-410-322-11	INDUCTOR 3.3uH					R812	1-247-807-31	CARBON 100	5%	1/4W		
L901	1-410-322-11	INDUCTOR 3.3uH					R821	1-249-403-11	CARBON 68	5%	1/4W	F	
< TRANSISTOR >							R901	1-249-436-11	CARBON 39K	5%	1/4W		
Q621	8-729-620-05	TRANSISTOR 2SC2603-EF					R902	1-249-436-11	CARBON 39K	5%	1/4W		
Q641	8-729-119-76	TRANSISTOR 2SA1175-HFE					R903	1-249-431-11	CARBON 15K	5%	1/4W		
Q642	8-729-041-38	TRANSISTOR 2SB1241TV2Q					R904	1-249-431-11	CARBON 15K	5%	1/4W		
Q681	8-729-029-56	TRANSISTOR DTA144ESA					R905	1-249-437-11	CARBON 47K	5%	1/4W		
Q682	8-729-922-37	TRANSISTOR 2SD2144S					R906	1-249-437-11	CARBON 47K	5%	1/4W		
							R907	1-249-419-11	CARBON 1.5K	5%	1/4W	F	
Q683	8-729-922-37	TRANSISTOR 2SD2144S					R908	1-249-419-11	CARBON 1.5K	5%	1/4W	F	
Q691	8-729-029-56	TRANSISTOR DTA144ESA					R909	1-249-441-11	CARBON 100K	5%	1/4W		
Q692	8-729-922-37	TRANSISTOR 2SD2144S					R910	1-249-414-11	CARBON 560	5%	1/4W	F	
Q693	8-729-922-37	TRANSISTOR 2SD2144S											
< RESISTOR >							R912	1-247-807-31	CARBON 100	5%	1/4W		
							R921	1-249-403-11	CARBON 68	5%	1/4W	F	
R611	1-249-429-11	CARBON 10K	5%	1/4W	< TRANSFORMER >								
R612	1-249-411-11	CARBON 330	5%	1/4W									
R622	1-249-429-11	CARBON 10K	5%	1/4W									
R624	1-249-393-11	CARBON 10	5%	1/4W	F	T601	1-431-696-11	TRANSFORMER, POWER					
R625	1-249-429-11	CARBON 10K	5%	1/4W	< VIBRATOR >								
R626	1-249-425-11	CARBON 4.7K	5%	1/4W	F	X671	1-579-834-11	VIBRATOR, CRYSTAL (33MHz)					
R631	1-249-427-11	CARBON 6.8K	5%	1/4W	F	*****							
R641	1-249-432-11	CARBON 18K	5%	1/4W									
R642	1-249-432-11	CARBON 18K	5%	1/4W									
R643	1-249-441-11	CARBON 100K	5%	1/4W									
R644	1-249-441-11	CARBON 100K	5%	1/4W									
R645	1-249-425-11	CARBON 4.7K	5%	1/4W	F								

POWER SW

Ref. No.	Part No.	Description	Remark
*	1-668-366-11	POWER SW BOARD *****	
		< SWITCH >	
△ S301	1-554-118-00	SWITCH, PUSH (1 KEY)(I/⏻)	

		MISCELLANEOUS *****	
11	1-776-100-11	WIRE (FLAT TYPE) (23 CORE)	
△ 15	1-575-651-21	CORD, POWER	
△ 21	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (UK)	
22	1-500-386-11	FILTER, CLAMP (FERRITE CORE)	
23	1-773-210-11	WIRE (FLAT TYPE) (25 CORE)	
101	1-452-925-21	MAGNET ASSY	
△ 151	8-848-379-31	OPTICAL PICK-UP KSS-213BA/F-NP	
152	1-769-069-11	WIRE (FLAT TYPE)(16 CORE)	
M101	X-4917-523-4	MOTOR ASSY (SPINDLE)	
M102	X-4917-504-1	MOTOR ASSY (SLED)	
M151	A-4672-207-A	MOTOR (L) ASSY (LOADING)	
△ T601	1-431-696-11	TRANSFORMER, POWER	

		ACCESSORIES & PACKING MATERIALS *****	
	1-473-720-11	REMOTE COMMANDER (RM-DX50)	
	1-558-271-11	CORD, CONNECTION (AUDIO, 108cm)	
	3-810-765-72	MANUAL,COMMONNESS INSTRUCTION (ENGLISH,FRENCH,GERMAN,SPANISH,DUTCH, ITALIAN,PORTUGUESE)	
	3-810-765-82	MANUAL,COMMONNESS INSTRUCTION (SWEDISH,DANISH,FINNISH)	
	3-810-765-92	MANUAL,COMMONNESS INSTRUCTION (ENGLISH,POLISH,RUSSIAN)	
	3-861-618-11	MANUAL, INSTRUCTION (ENGLISH,FRENCH,SPANISH)	
	3-861-618-21	MANUAL, INSTRUCTION (GERMAN,DUTCH,ITALIAN,PORTUGUESE)	
	3-861-618-31	MANUAL, INSTRUCTION (SWEDISH,DANISH,FINNISH)	
	3-861-618-41	MANUAL, INSTRUCTION (ENGLISH,POLISH,RUSSIAN)	
	3-861-618-51	MANUAL, INSTRUCTION (HUNGARIAN)	
	3-861-618-61	MANUAL, INSTRUCTION (CZECH)	
	3-861-618-81	MANUAL, INSTRUCTION (GREEK)	
	3-948-574-01	SHEET, PROTECTION	
	4-983-956-01	COVER, BATTERY (FOR RM-DX50)	

		***** HARDWARE LIST *****	
#1	7-685-134-19	SCREW +BVT 2.6X8 TYPE2 N-S	
#2	7-621-775-10	SCREW +B 2.6X4	
#3	7-621-255-15	SCREW +P 2X3	

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