CDP-X3000/X3000ES

SERVICE MANUAL

AEP Model
UK Model
E Model
Chinese Model

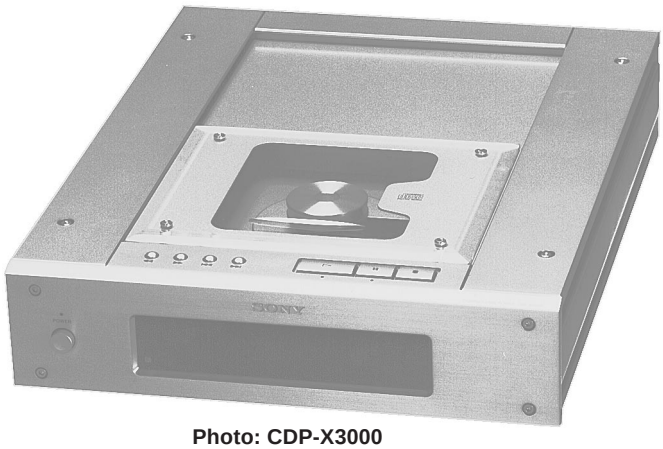


Photo: CDP-X3000

Model Name Using Similar Mechanism	NEW
Base Unit Type	BU-14B
Optical Pick-up Type	KSS-213B/S-N

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.

Wavelength 780 – 790 nm

Frequency response 2 Hz to 20 kHz ± 0.3 dB

Dynamic range More than 100 dB

Channel separation More than 100 dB

Harmonic distortion Less than 0.003%

Outputs

	Jack type	Output level	Load impedance
LINE OUT	Phono jacks	2 V (at 50 kilohms)	Over 10 kilohm
DIGITAL OUT (COAXIAL)	Coaxial output connector	0.5 Vp-p (75 ohms)	75 ohms
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 18 W

Dimensions (approx.) (w/h/d) 280 × 90 × 400 mm ($11\ ^1/_8 \times 3\ ^5/_8 \times 15\ ^3/_4$ in.) incl. projecting parts

Mass (approx.) 6 kg (13 lbs 4 oz)

Supplied accessories

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

Design and specifications are subject to change without notice.

COMPACT DISC PLAYER

MICROFILM

SONY®

TABLE OF CONTENTS

1. SERVICING NOTES

1-1. Writing Focus/Tracking Auto Gain Data 3
1-2. AF Mode 3
1-3. ADJ Mode 4
1-4. CLV-S Mode 4

2. GENERAL 5

3. DISASSEMBLY 10

4. ELECTRICAL ADJUSTMENTS 14

5. DIAGRAMS

5-1. IC Pin Function Description 16
5-2. Printed Wiring Boards – Servo Section – 22
5-3. Schematic Diagram – Servo Section – 25
5-4. Schematic Diagram – Audio Section – 29
5-5. Printed Wiring Boards – Audio Section – 34
5-6. Printed Wiring Boards – Power Section – 39
5-7. Schematic Diagram – Power Section – 41
5-8. Schematic Diagram – Control Section – 43
5-9. Printed Wiring Boards – Control Section – 45

6. EXPLODED VIEWS 52

7. ELECTRICAL PARTS LIST 56

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.

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

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic break-down 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 waveforms is output three times.

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 the 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.

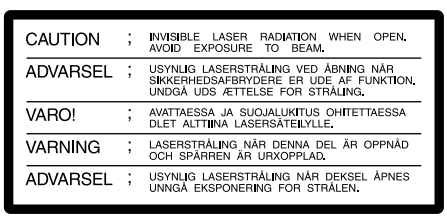
CAUTION

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

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

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

The following caution label is located inside the unit.

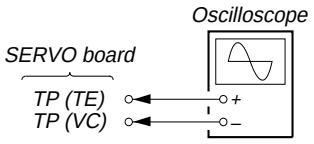


SECTION 1
SERVICING NOTES

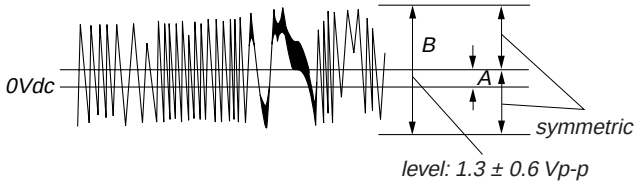
1-1. WRITING FOCUS/TRACKING AUTO GAIN DATA

In general for the CD players that use a digital servo IC, the focus/tracking gain is automatically adjusted each time a disc is changed. In this set, the gain in test disc (YEDS-18) has been written to a nonvolatile memory (IC803: X24C01S) on the Display Board, and therefore the gain is not readjusted even if a disc is changed.
Accordingly, always write auto gain data when replacing the Servo Board, IC803 on Display Board, or optical pick-up.

1) Connect CN805 ① pin (IN/OUT SW) and ⑥ pin (GND) on Display Board.
   Under this condition, the set will operate even when the disc lid is open (or Key Board is not connected).
2) Connect TP (ADJ: CN105 ③ pin) on Servo Board to GND, and TP (VC: CN108 ② Pin) to TP3 (TEI: IC105 ㉗ pin) with lead wires respectively.
3) Connect an oscilloscope to TP (TE: CN108 ① pin).



4) Insert the test disc (YEDS-18), turn on POWER switch, and play fifth music with ▷ (PLAY) and AMS Keys on the Remocon.
5) Adjust RV101 so that the waveform on oscilloscope is verticolly symmetric with respect to the A [Vdc], and also its level is 1.3 ± 0.6 Vp-p.



   At this time, A/B × 100 = ± 22 (%) or less
6) The auto gain data are written when a lead wire between TP (ADJ: CN105 ③ pin) and GND is removed.

Note: If the POWER switch was turned on without connecting TP (ADJ) to the GND, auto gain data are not written to the memory even if a disc is inserted, but the previous data saved in the memory are used as focus/tracking data.

1-2. AF MODE

With the TP (AFJ: CN105 ② Pin) connected to the GND on Servo Board, turn on the POWER switch, and the AF mode is activated and the following checking can be made.

1-2-1. FL tube check

All tubes turn on, then if ▷ button is pressed, the display will be as shown below. (Segment ON 1)

(Segment ON 1)

IF ▮▮ button is pressed, the display will be as shown below. (Segment ON 2)

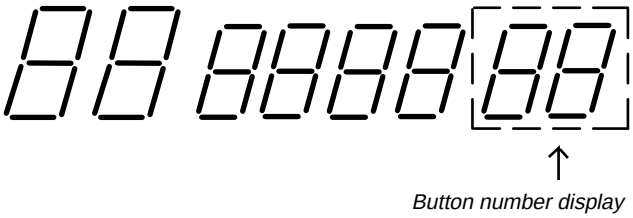
	2		4	
6		8		10
	12		14	
16		18		20

(Segment ON 2)

If STOP ■ is pressed, all tubes turn on again.

1-2-2. key check

All buttons are assigned with numbers respectively
If a button is pressed, the number is counted up and the button number is displayed.



Button number display

Button name	Button number display
▶▶I	88
I◀◀	01
▶▶	02
◀◀	03
PLAY ▷	Segment ON 1
II	Segment ON 2
■	All ON

1-2-3. Remocon check

Press [▷] button on the Remocon, and " [▷] "on FL tube turns on. If any other buttons are pressed, all tubes will turn off.

1-3. ADJ MODE

With CN105 ③ pin connected to ① pin on the Servo Board, turn on the POWER switch, and the ADJ mode is activated where the following operation is executed.

- GFS, even if low continuously during playing, will cause nothing.
- High speed servo is disabled during an access.
- Gain of focus servo and spindle servo is not lowered.
- Manual operation and measurement for servo system are enabled. (For detailed operation method, see the button function table in ADJ mode.)

1-4. CLV-S MODE

Connect TP1(ADJ) to the GND after turning on the POWER switch, and the spindle servo becomes CLV-S mode during playing.

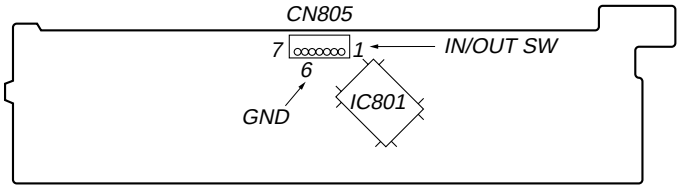
Button function table in ADJ mode

With the [TIME] key, the jitter value display mode is activated after all music remaining mode.
The number buttons have the functions as listed below.

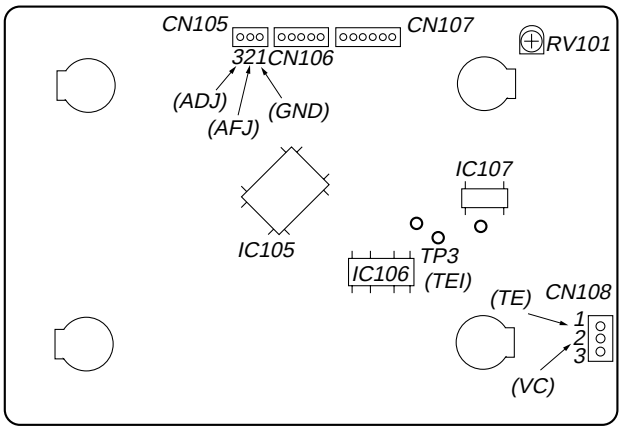
Functions of number buttons (on Remocon attached)

Buttons	Functions
1	Increase focus bias by 8 steps
2	Adjust focus bias to the center
3	Turn off tracking servo and sled servo
4	Initialize auto gain
5	Turn off focus servo
6	Decrease focus bias by 8 steps
7	Readjust focus bias there
8	Turn on tracking servo and sled servo
10	Return auto focus bias to start point

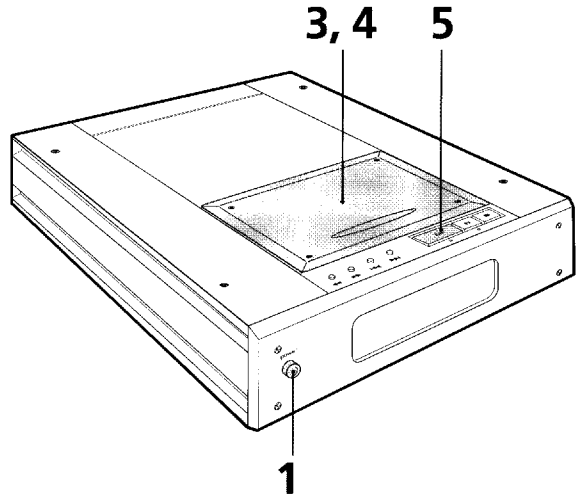
[DISPLAY BOARD] – Conductor Side –



[SERVO BOARD] – Conductor Side –



Playing a CD



- **See pages 4 – 5 for the hookup information.**

If you turn on the player with a CD in the player
Playback starts about 10 seconds after the power is turned on. If you connect a commercially available timer, you can start playing a CD any time you want. To start playback even more quickly, press ❚❚ or ▷ while "PAUSE" blinks.

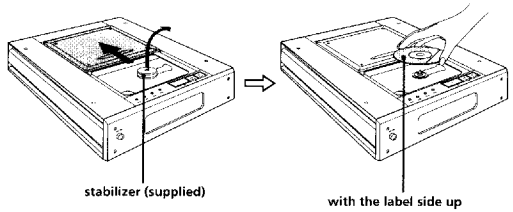
Notes

- In step 3, do not place more than one CD at a time. If you do so, you may damage the discs and/or the player.
- Do not touch the lens inside when you place or take out a CD.

1 Press POWER to turn on the player.

2 Turn on the amplifier and select the CD player.

3 Open the disc lid with your hand, take out the stabilizer, and place a CD.



About the stabiliser
Place the stabiliser with the hole facing down.

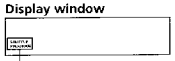
Notes

- Be sure to use the supplied stabiliser. If you use any other stabiliser, you may damage the player.
- Place the CD, then place the stabiliser on the CD.
- Do not place the floppy discs, MDs or cassette tapes near the spindle. The spindle includes a built-in magnet that can damage these and other susceptible items.

You can also start playback by pressing ▷ and then close the disc lid.

If play doesn't start from the first track
1 Press CONTINUE on the remote repeatedly until "SHUFFLE" or "PROGRAM" disappears from the display.
2 Press ▷.

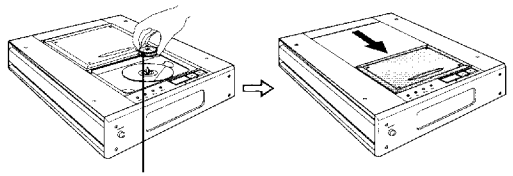
Display window



These indicators will disappear when pressing CONTINUE.

If you open the disc lid while playing a disc, the player stops playing.

4 Place the stabilizer on the CD, and then close the disc lid with your hand.

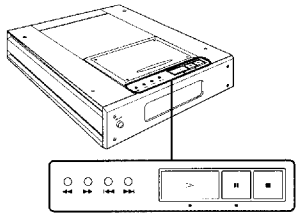


Place the supplied stabilizer on the CD. (Be careful not to place the stabilizer upside-down.)

5 Press ▷.
The ▷ indicator lights, and playing starts from the first track.
Adjust the volume on the amplifier.

To stop playback

Press ■.

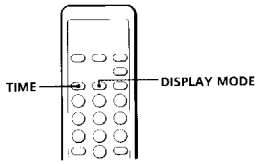


When you want to	Press
Pause	❚❚
Resume play after pause	❚❚ or ▷
Go to the next track	▶▶❙
Go back to the preceding track	❙◀◀
Go forward quickly in a track	▶▶
Go backwards quickly in a track	◀◀

This section is extracted from instruction manual.

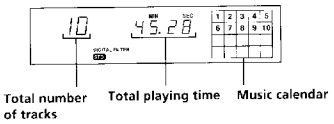
Using the Display

You can check information about the disc using the display.



Checking the total number and playing time of the tracks

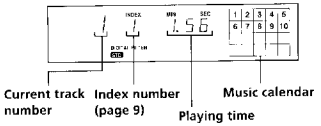
Press TIME on the remote in stop mode.
The display shows the total number of tracks and total playing time.



This information also appears when you close the disc lid.
While in Shuffle Play mode ("SHUFFLE" appears in the display; see page 11), a one-second access time blank is added between each track. This increase is automatically added to the total playing time in the display.
If the disc has more than 20 tracks, the tracks over 20 do not appear on the music calendar.

Display information while playing a disc

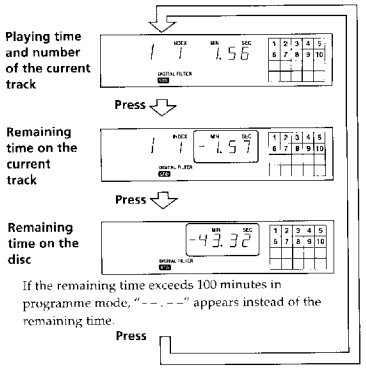
While playing a disc, the display shows the current track number, index number, playing time and the music calender.



The track numbers in the music calendar disappear after they are played.

Checking the remaining time

Press TIME on the remote while playing a disc.
Each time you press TIME, the display changes as shown in the chart below.



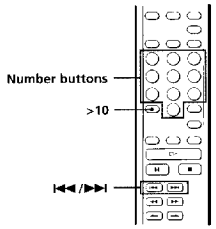
If the remaining time exceeds 100 minutes in programme mode, "– –, – –" appears instead of the remaining time.

Turning off the indications in the display

Press DISPLAY MODE on the remote.
Each time you press DISPLAY MODE on the remote while playing a disc, the display turns off and on alternately.
Even when the display is turned off, the display turns on if you pause or stop play. When you resume play, the display turns off again.
Each time you press DISPLAY MODE before playing a disc, "dISP OFF" and "dISP On" appear alternately.

Locating a Specific Track

You can quickly locate any track while playing a disc by using the ⏮ / ⏭ (AMS: Automatic Music Sensor) buttons or the number buttons on the remote.

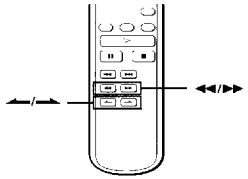


To locate	Press
The next or succeeding tracks (AMS)	⏭ repeatedly during playback until you find the track
The current or preceding tracks (AMS)	⏮ repeatedly during playback until you find the track
A specific track directly (Direct music selection)	Number button of the track

To directly locate tracks numbered over 10
Press >10 on the remote first, then the corresponding number buttons. To enter "0," use button 10.
Example: To play track number 30
Press >10 first, then 3 and 10.

Locating a Particular Point in a Track

You can also locate a particular point in a track while playing a disc.



To locate a point	Press
While monitoring the sound	▶▶ (forward) or ◀◀ (backward) and hold down until you find the point
Quickly by observing the display in pause mode	◀◀/▶▶ and hold down until you find the point. You will not hear the sound during the operation.
Using an index (only for indexed discs)	—/— on the remote repeatedly in playback or pause mode until you find the point

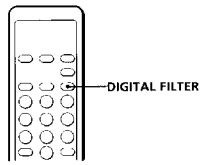
What is an index?
It is a number that divides a track or a disc into sections, enabling you to easily locate a desired point. You can determine if a disc uses indexes by its packaging.

Note
If "┐┐" appears in the display, the disc has reached the end while you were pressing ▶▶. Press ◀◀ or ⏮ to go back.

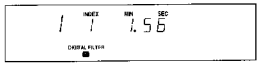
Customizing the Sound of Your Music (Digital Filter Function)

By selecting the type of filter you want, you can adjust the sound to match your system, your speakers, etc. This player has four types of filters: "STD (Standard)," "1," "2" and "3."

Types of Digital Filter	Sound image
STD (Standard)	• wide ranging • ample spatial representation
1	• clear • smooth sound reproduction
2	• high clarity • strength
3	• warm • deep



Press DIGITAL FILTER repeatedly until the display shows the digital filter number you want.



Each time you press DIGITAL FILTER, the display changes as follows:

STD → 1 → 2 → 3

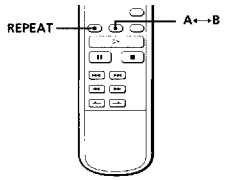
Note

The Digital Filter function primarily changes characteristics outside the audible frequency. They cannot affect changes within the audible frequency such as those provided by the tone controls of the amplifier. Therefore, with certain combinations of hardware and software, there may be no noticeable effect after switching the filter.

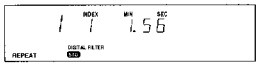
The selected digital filter number is stored in memory even if you turn off the power.

Playing Tracks Repeatedly

You can play tracks repeatedly in any play mode.



Press REPEAT on the remote while playing a disc. "REPEAT" appears in the display. The player repeats the tracks as follows:



When the disc is played in	The player repeats
Continuous Play (page 6)	All the tracks
Shuffle Play (page 11)	All the tracks in random orders
Programme Play (page 12)	The same programme

To cancel Repeat Play

Press REPEAT repeatedly until "REPEAT" disappears from the display.

Repeating the current track

You can repeat only the current track.

While the track you want is being played, press REPEAT on the remote repeatedly until "REPEAT 1" appears in the display.

To cancel the repeating the current track

Press REPEAT.

Repeating a Specific Portion (A↔B Repeat)

You can play a specific portion in a track repeatedly. This might be useful when you want to memorize lyrics.
Note that you cannot repeat a section that extends between two tracks.

1 While playing a disc, press A↔B on the remote at the point you want to start from (point A).
"A-" of "REPEAT A-" flashes in the display.

2 When you reach the end point (point B), press A↔B again.
"REPEAT A-B" appears. The player plays this specific portion repeatedly.

To cancel A↔B Repeat

Press REPEAT.

Setting a new starting point

You can move the portion being repeated ahead by changing the starting point.

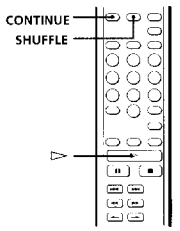
1 Press A↔B while the player is repeating the specific portion.
The end point (point B) becomes the new starting point (point A). "A-" of "REPEAT A-" flashes in the display.
2 When you reach the end point (point B), press A↔B again.
"REPEAT A-B" appears. The player repeats between the new starting and end points.

You can start again from point A at any time

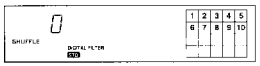
Press ▷ during A↔B Repeat.

Playing in Random Order (Shuffle Play)

You can have the player "shuffle" the tracks and play them in a random order.



1 Press SHUFFLE on the remote.
"SHUFFLE" and the music calendar appear in the display.



2 Press ▷ to start Shuffle Play.
The "🔀" indication appears while the player is "shuffling" the tracks.

To cancel Shuffle Play

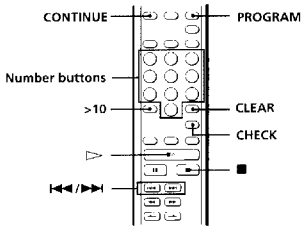
Press CONTINUE on the remote.

You can start Shuffle Play while playing

Press SHUFFLE on the remote, and Shuffle Play starts from the current track.

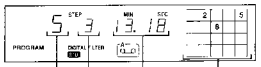
Creating Your Own Programme (Programme Play)

You can arrange the order of the tracks on a disc and create your own programme. The programme can contain up to 24 tracks.



1 Press PROGRAM on the remote.
"PROGRAM" appears in the display.

2 Press the number buttons for the tracks you want to programme in the order you want.
Example: To programme the tracks 2, 8 and 5
Press the number buttons in the order 2, 8 and 5.



To select a track with a number over 10
Use >10 button (see page 9).

If you've made a mistake
Press CLEAR, then press the correct number button.

3 Press ▷ to start Programme Play.

To cancel Programme Play
Press CONTINUE on the remote.

When tracks, which aren't numerically consecutive on the disc, are programmed consecutively (i.e. 2, 8, 5, etc.)
A one-second access time blank is added between the tracks.

The programme remains even after the Programme Play ends
When you press ▷, you can play the same programme again.

You can check the total playing time while programming using the remote (Programme Edit)
To select a track, press I◄◄ or ►►I and check the total playing time. Then press PROGRAM to confirm your selection.

Notes

- "– –.– –" appears instead of the total playing time in the display when it exceeds 100 minutes.
- "FULL" appears in the display when you try to add a track to a programme which already contains 24 tracks.
- When the power is turned off, programmed tracks are deleted, and the play mode returns to the continuous play mode.

Checking the track order

You can check your programme before or after you start playing.

Press CHECK.
Each time you press this button, the display shows the track number in the programmed order and the total playing time. After the last track in the programme, the display shows "End" and returns to the original display. If you check the order after you start playing, the display shows only the remaining track numbers.

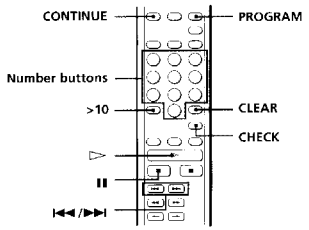
Changing the track order

You can change your programme before you start playing.

To	You need to
Erase a track	Press CHECK until the track you want to erase appears in the display, then press CLEAR
Erase the last track in the programme	Press CLEAR in stop mode. Each time you press the button, the last track will be cleared.
Add tracks to the end of the programme	Press the number buttons of the tracks to be added
Change the whole programme completely	Hold down CLEAR until "ALL CLr" appears in the display. Create a new programme following the programming procedure.

Recording Your Own Programme

You can record the programme you've created on a tape, DAT or MD. The programme can contain up to 24 tracks.
By inserting a pause during programming, you can divide the programme into two for recording on both sides of a tape.



1 Create your programme (for side A when recording on a tape) while checking the total playing time indicated in the display.
Follow Steps 1 and 2 in "Creating Your Own Programme" on page 12.
The A indication appears in the display.

2 When you record on both sides of the tape, press II to insert a pause.
The "P" and A indications appear in the display and the playing time is reset to "0.00."
When you record on one side of the tape or on a DAT or MD, skip this step and go to Step 4.

A pause is counted as one track
You can programme up to 23 tracks when you insert a pause.

3 Repeat Step 1 to create the programme for side B.

4 Start recording on the deck and then press ▷ on the player.
When you record on both sides of the tape, the player pauses at the end of the programme for side A.

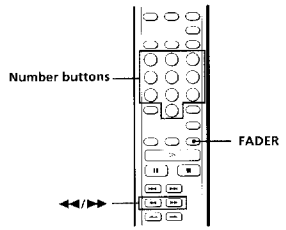
5 When you record on side B, reverse the tape and press II or ▷ on the player to resume playing.

You can check the total playing time while programming (Programme Edit)
This feature helps you find the last track that will fit on one side of the tape.
1 Press PROGRAM on the remote.
"PROGRAM" appears in the display.
2 Press I◄◄ or ►►I until the track you want to programme appears in the display.
The total playing time including the selected track appears in the display and the step number of the programme flashes.
3 Press PROGRAM on the remote to confirm your selection.
4 Repeat Steps 2 and 3 to programme other tracks.

To check and change your programme
See page 12.
" A " appears while checking the programme for side A and " B " while checking the programme for side B.

Fading In or Out

You can manually fade in or out to prevent tracks from starting or ending abruptly.
Note that you cannot use this effect when using the DIGITAL OUT connections.



To	Press FADER
Start play fading in	in pause mode. "▶II" in [FADE] flashes and play fades in.
End play fading out	when you want to start fading out. "II▶" in [FADE] flashes. The play fades out and the player pauses.

Changing the fading time

You can change the fading time from 2 to 10 seconds before fading in or out. If you don't change it, fading lasts for 5 seconds.

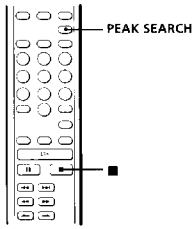
1 Press FADER on the remote before you start playing.
"5 SEC" appears and "[FADE]" flashes in the display.

2 Press the number button (2~10) to specify the fading time.
(Or press ◀◀ or ▶▶ repeatedly until desired time is displayed.)

Note
The fading time is reset to 5 seconds when you turn off the player.

Useful Tips for Recording

Using these functions makes recording CDs more convenient.



Adjusting the Recording Level (Peak Search)

The player locates the highest level among the tracks to be recorded to let you adjust the recording level before you start recording.

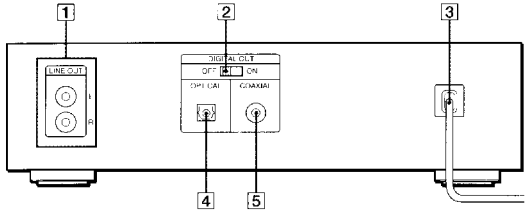
1 Before you start playing, press PEAK SEARCH on the remote.
"PEAK" flashes in the display and the player repeats the portion of the highest level for about four seconds.

2 Adjust the recording level on the deck.

3 Press ■ on the player to stop Peak Search.
"PEAK" disappears from the display.

Note
The portion with the highest level may differ every time you try the adjustment on the same disc. The difference is, however, so slight that you should not have any problem in adjusting the recording level precisely.

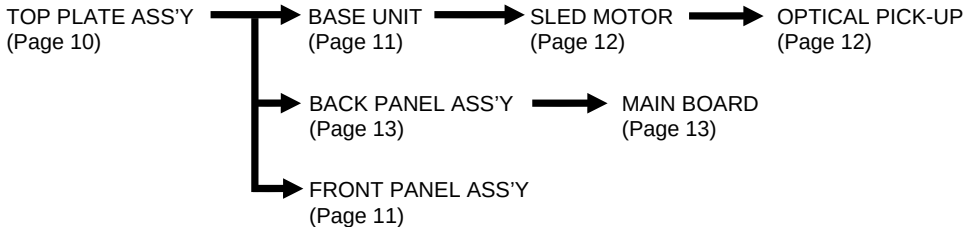
Refer to the pages in parenthesis for details.



1 LINE OUT (5)
2 DIGITAL OUT ON/OFF switch (5)
3 Mains lead
4 DIGITAL OUT OPTICAL (5)
5 DIGITAL OUT COAXIAL (5)

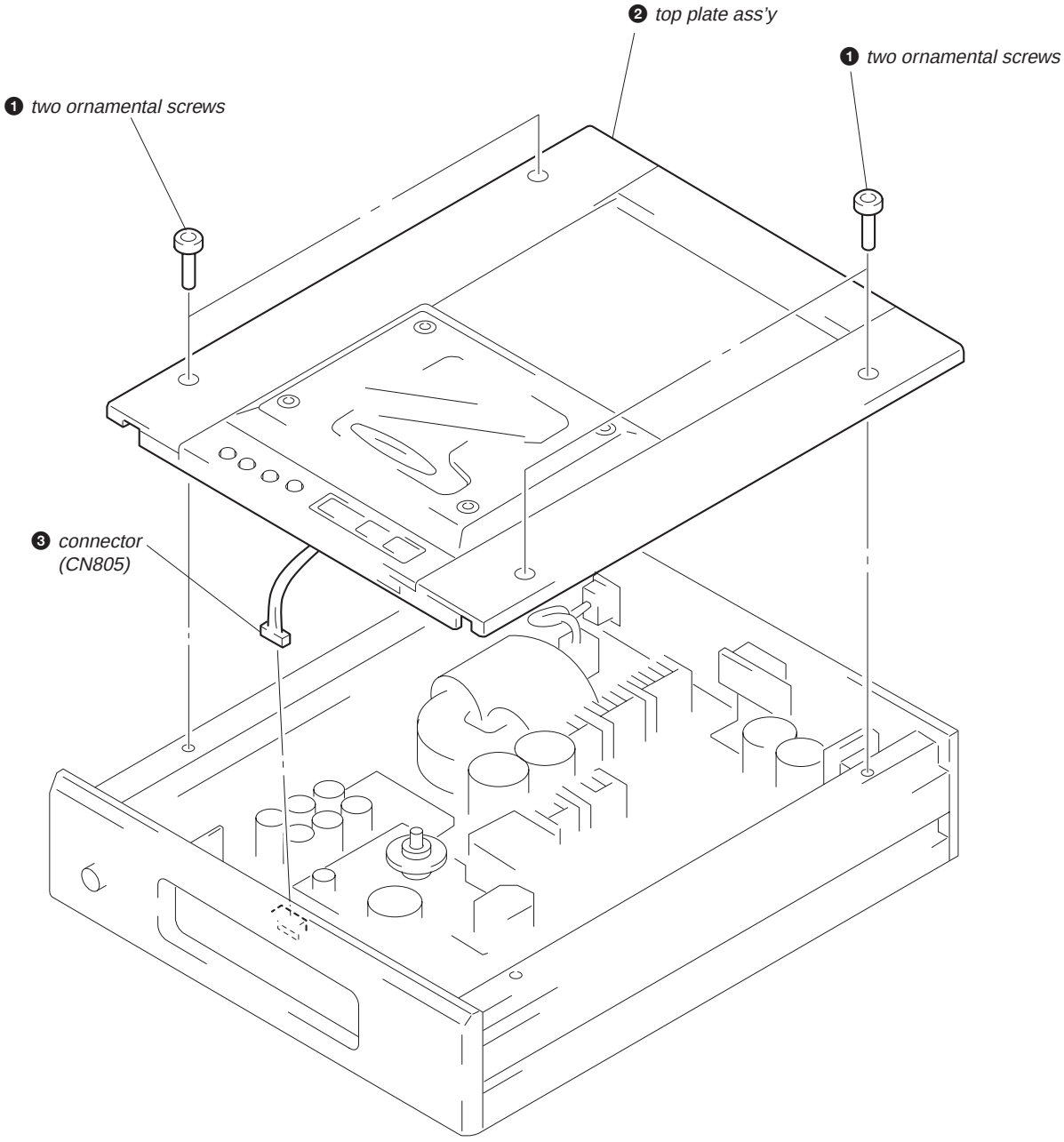
SECTION 3
DISASSEMBLY

• This set can be disassembled in the order shown below.

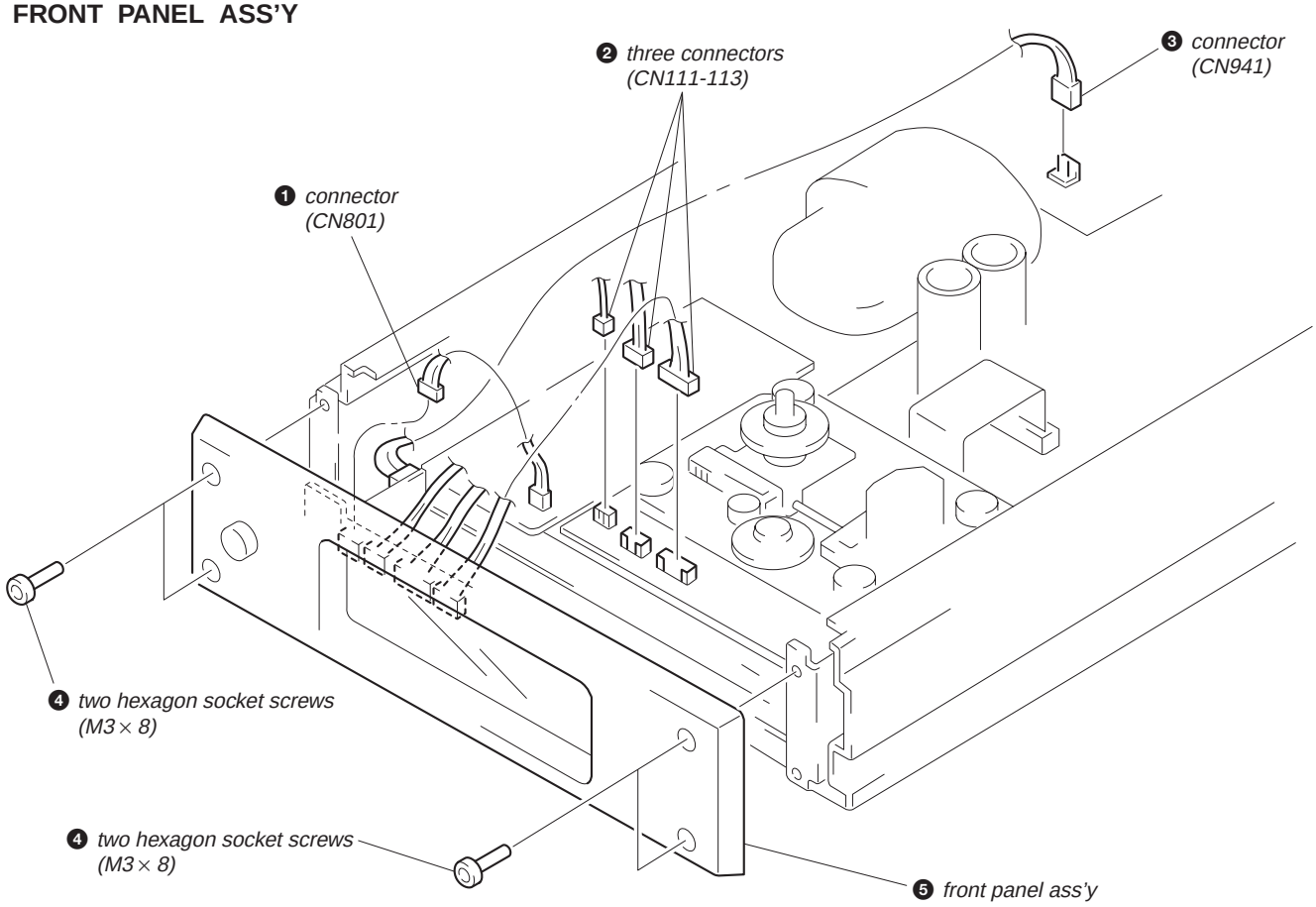


Note: Follow the disassembly procedure in the numerical order given.

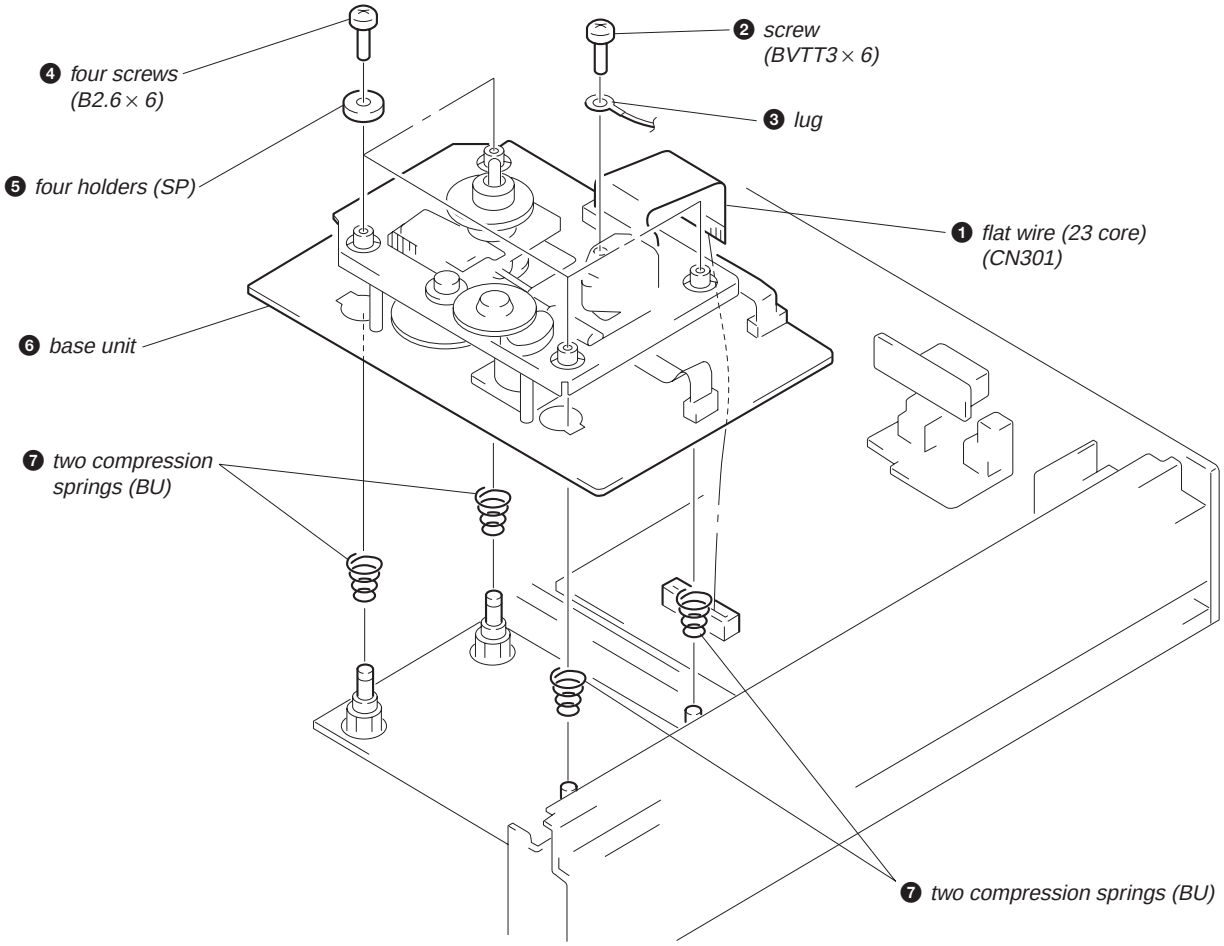
TOP PLATE ASS'Y



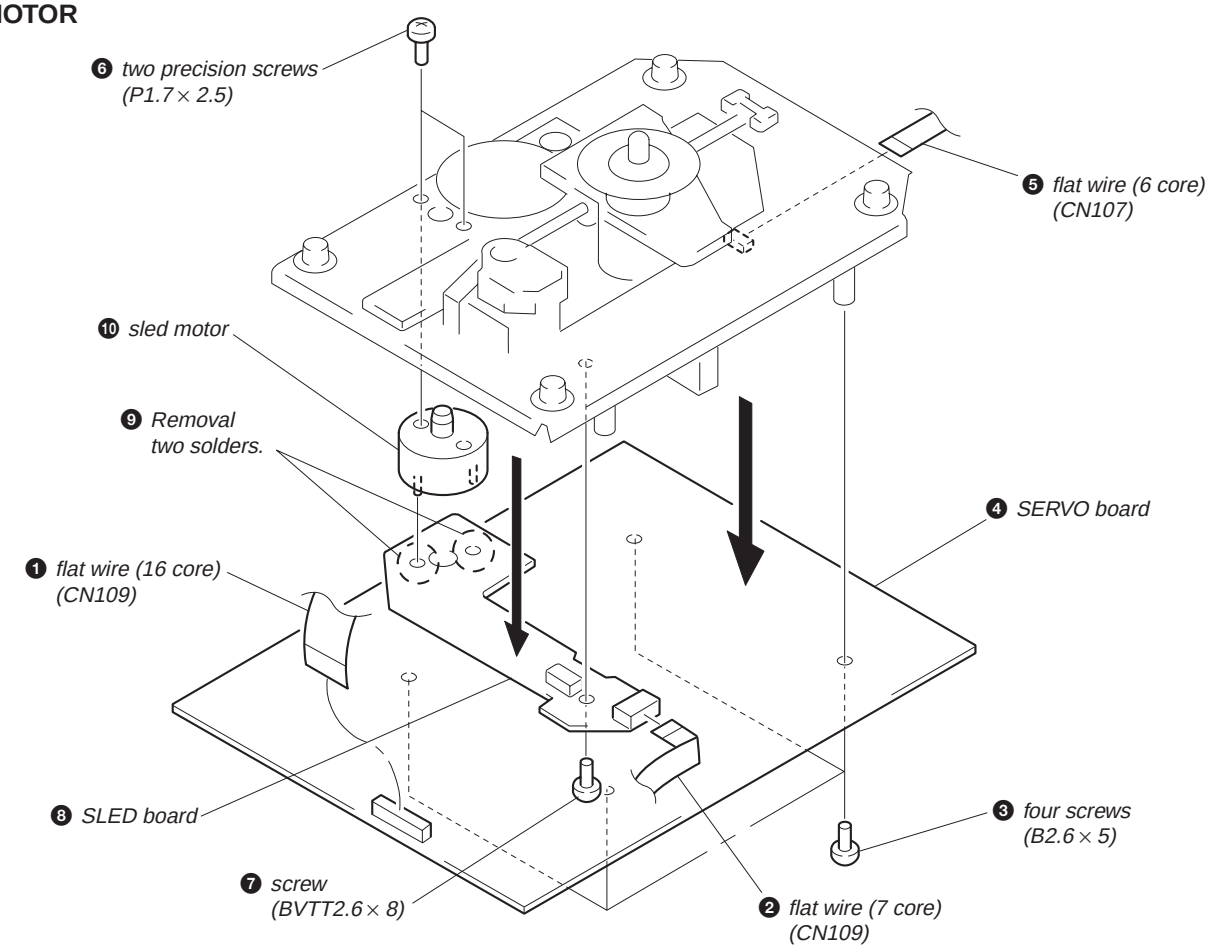
FRONT PANEL ASS'Y



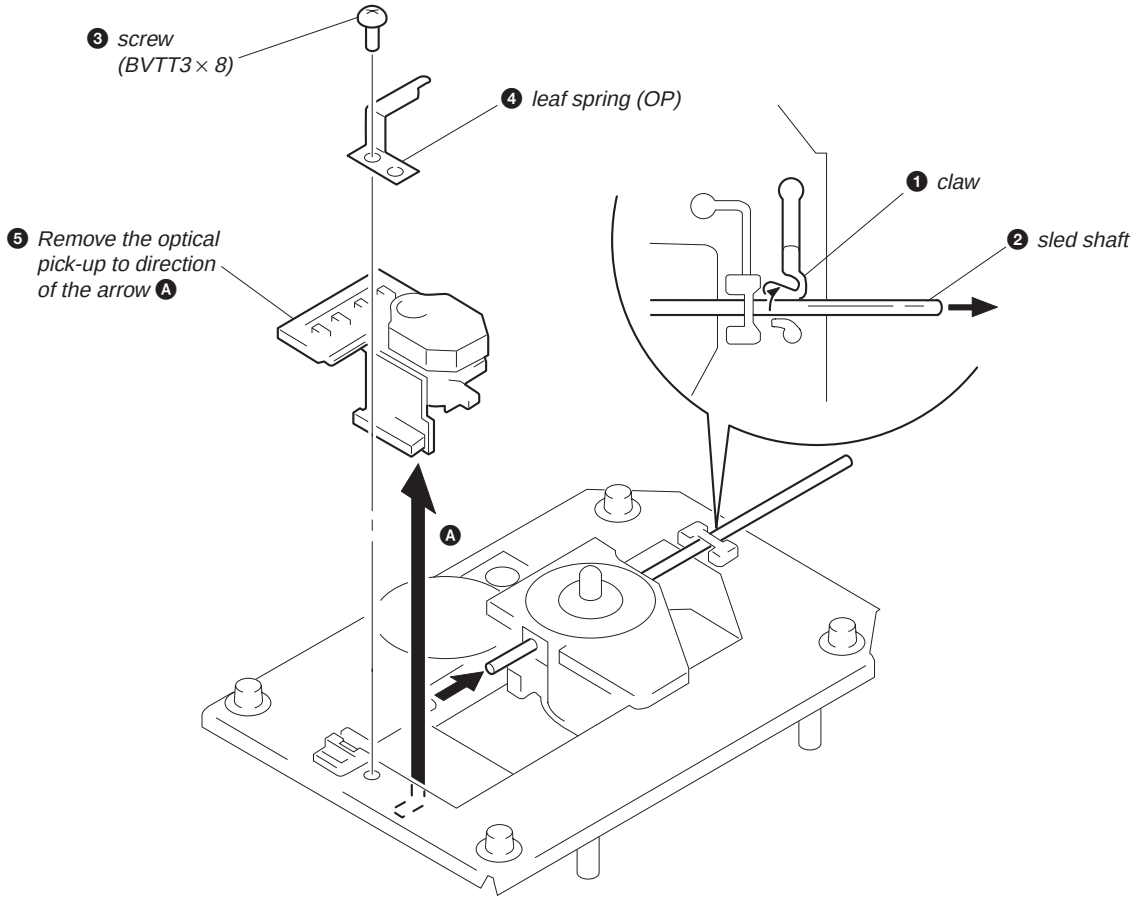
BASE UNIT



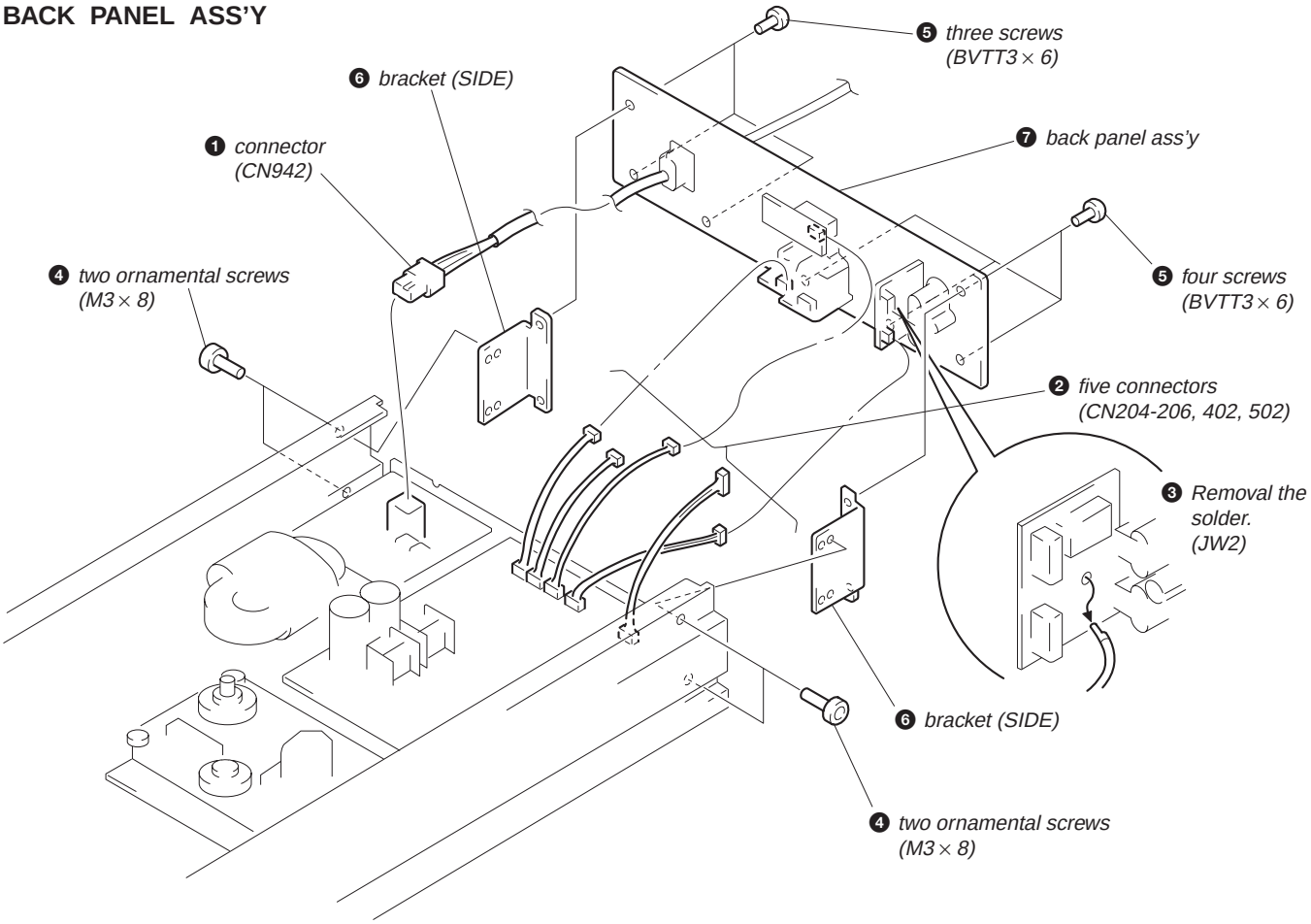
SLED MOTOR



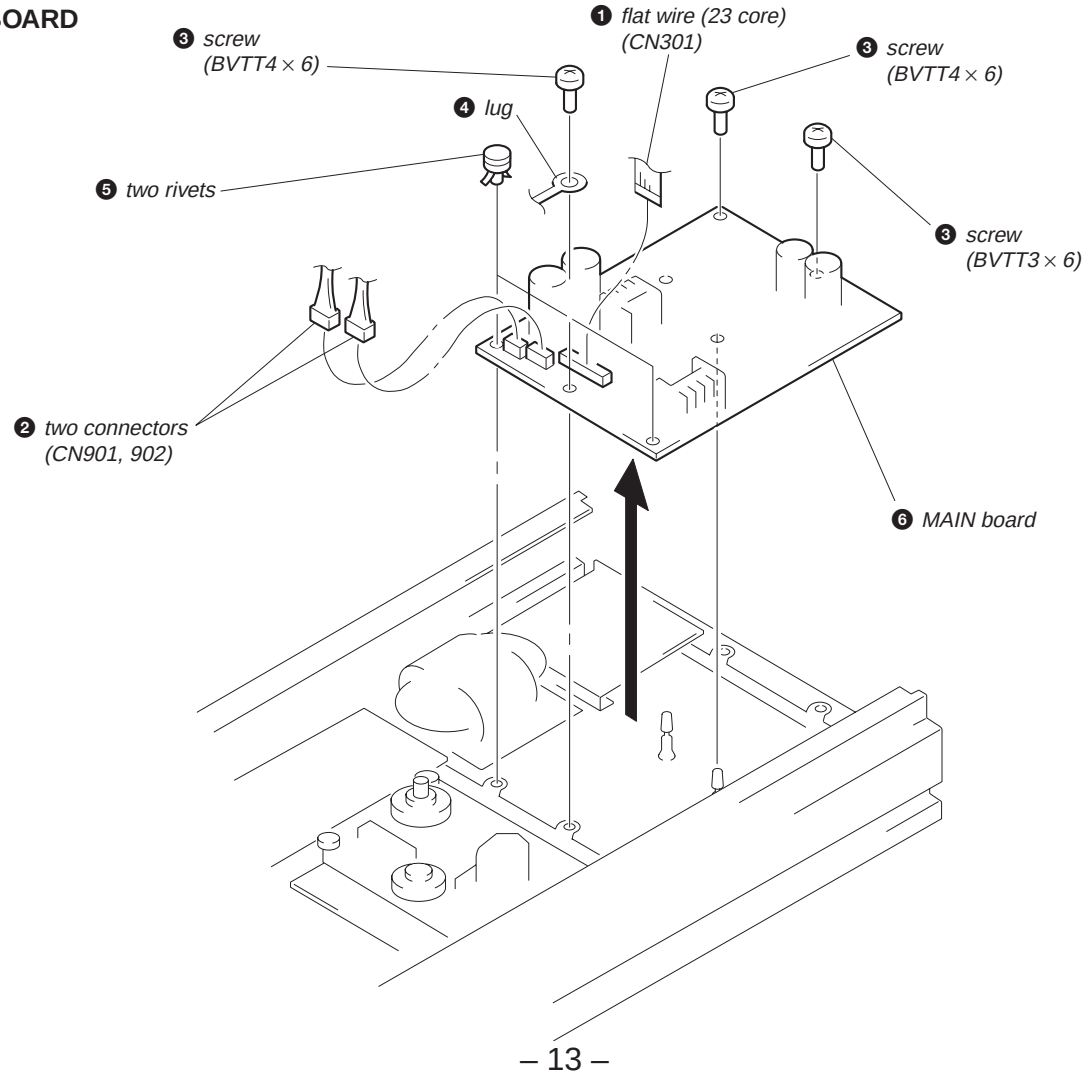
OPTICAL PICK-UP



BACK PANEL ASS'Y



MAIN BOARD

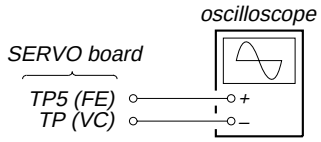


SECTION 4
ELECTRICAL ADJUSTMENTS

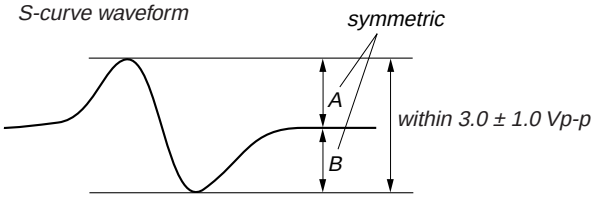
Note:
1. CD block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (Part No.: 3-702-101-01) unless otherwise indicated.
3. Use the oscilloscope with more than 10 MΩ impedance.
4. Clean an object lens by an applicator with netural detegeent when the signal level is low than specified value with the following checks.

S-Curve Check

Connection



Procedure:
1. Connect an oscilloscope to TP5 (FE: IC107 ⑮ pin) on SERVO board.
2. Connect TP4 (FEI: IC105 ㉙ pin) and TP (VC: CN108 ②) pin) on Servo board with a lead wire.
3. With the disc (YEDS-18) loaded, turn ON the POWER switch to execute focus searching.
4. In such a case, confirm the symmetry and level (p-p value) of the waveform (S-curve) on the oscilloscope.

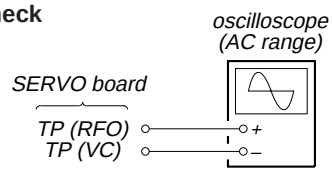


5. After check, remove the lead wire connected in step 2.

Note: • Try to measure several times to make sure that the ratio of A: B or B: A is more than 10: 7.
• Take sweep time as long as possible and light up the brightness to obtain best waveform

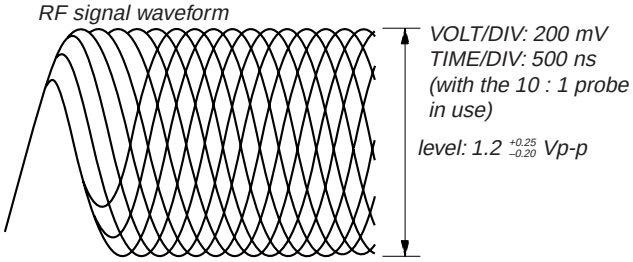
RF Level Check

Connection:



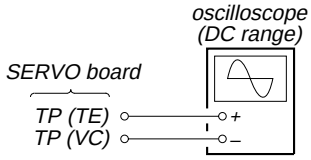
Procedure:
1. Connect an oscilloscope to the TP (RFO: CN108 ③ pin)
2. Turn ON the POWER switch.
3. Load the disc (YEDS-18), and play the 5th music with ▷ (PLAY) and AMS Keys.
4. Confirm that a waveform and RF level on the oscilloscope are proper.

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

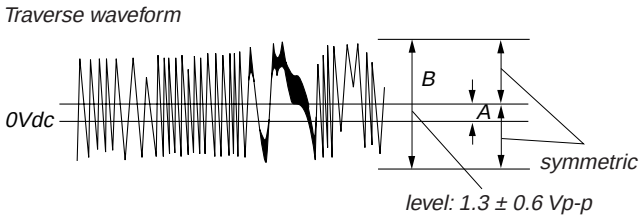


E-F Balance (Traverse) Check

Connection:



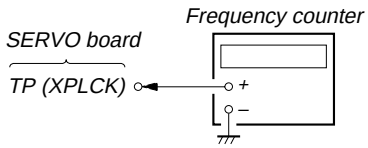
Procedure:
1. Connect TP (ADJ: CN105 ③ pin) on Servo Board to GND, and TP3 (TEI: IC105 ㉗ pin) to TP (VC: CN108 ②) pin) with lead wires respectively.
2. Connect on oscilloscope to TP (TE: CN108 ①) pin).
3. Turn ON the POWER switch.
4. Load the disc (YEDS-18) and press ▷ (PLAY) button.
5. Confirm that a waveform on oscilloscope is vertically symmetric to A[Vdc], and also its level is proper.



At this time, A/B × 100 = ± 22 (%) or less

6. After check, remove the lead wire connected in step 1.

RF PLL Free-run Frequency Check



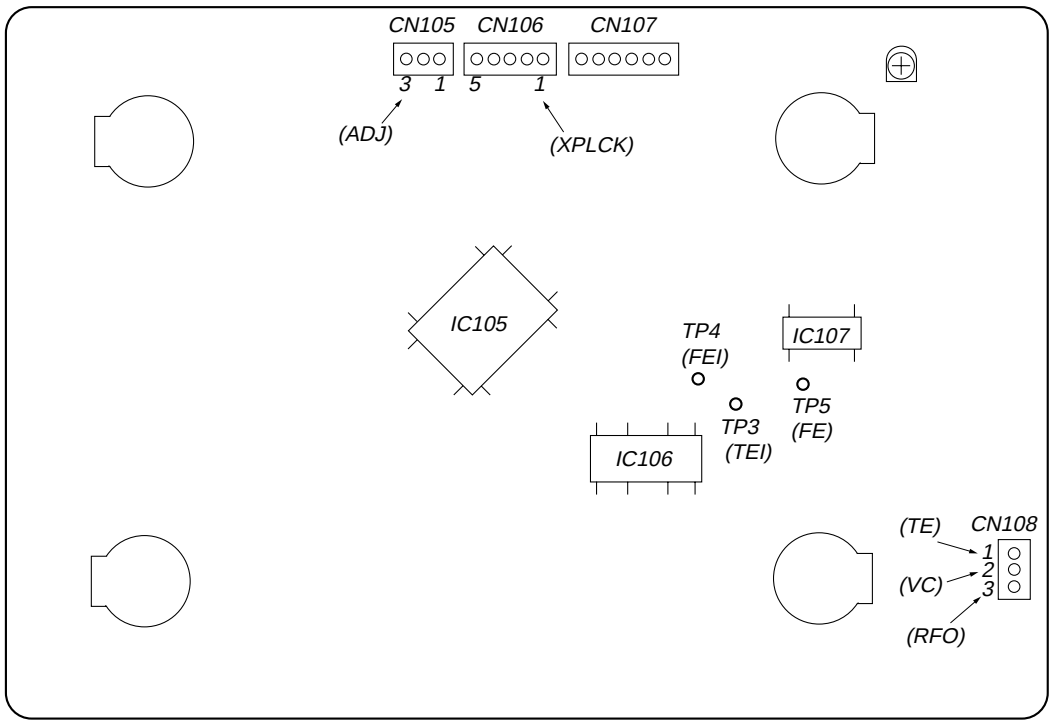
1. Connect a frequency counter to the TP (XPLCK: CN106 ①) pin).
2. Turn ON the POWER switch.
3. Load the disc (YEDS-18) and press ▷ (PLAY) button. Confirm that the frequency at TP (XPLCK) is 4.3218MHz.

FOCUS/TRACKING AUTO GAIN DATA SETTING

Refer to 1-1. Writing focus/tracking auto gain data on page 3.

Adjustment Location:

[SERVO BOARD] – Conductor Side –



SECTION 5
DIAGRAMS

5-1. IC PIN FUNCTION DESCRIPTION

- **SERVO BOARD IC105 CXD2545Q**
  (DIGITAL SIGNAL PROCESSOR, FOCUS/TRACKING/SLED SERVO, EFM COMPARATOR)

Pin No.	Pin Name	I/O	Function
1	SRON	O	Sled servo drive PWM signal output terminal Not used (open)
2	SRDR	O	Sled servo drive PWM signal (–) output to the BA6297AFP (IC106)
3	SFON	O	Sled servo drive PWM signal output terminal Not used (open)
4	TFDR	O	Tracking servo drive PWM signal (–) output to the BA6297AFP (IC106)
5	TRON	O	Tracking servo drive PWM signal output terminal Not used (open)
6	TRDR	O	Tracking servo drive PWM signal (+) output to the BA6297AFP (IC106)
7	TFON	O	Tracking servo drive PWM signal output terminal Not used (open)
8	FFDR	O	Focus servo drive PWM signal (+) output to the BA6297AFP (IC106)
9	FRON	O	Focus servo drive PWM signal output terminal Not used (open)
10	FRDR	O	Focus servo drive PWM signal (–) output to the BA6297AFP (IC106)
11	FFON	O	Focus servo drive PWM signal output terminal Not used (open)
12	VCOO	O	Oscillator circuit output terminal for analog PLL of the playback EFM Not used (open)
13	VCOI	I	Oscillator circuit input terminal for analog PLL of the playback EFM Not used (fixed at “L”)
14	TEST	I	Input terminal for the test (fixed at “L”)
15	DVSS	—	Ground terminal (digital system)
16	TES2	I	Input terminal for the test (fixed at “L”)
17	TES3	I	Input terminal for the test (fixed at “L”)
18	PDO	O	Charge-pump output terminal for analog PLL of the playback EFM Not used (open)
19	VPCO	O	PLL charge-pump output terminal for the variable pitch Not used (open)
20	VCKI	I	Clock signal input from external VCO for the variable pitch Not used (fixed at “L”)
21	AVD2	—	Power supply terminal (+5V) (analog system)
22	IGEN	I	Power supply terminal (+5V) (for operational amplifier)
23	AVS2	—	Ground terminal (analog system)
24	(ADIO)ADII	I	Input terminal for the A/D converter Not used (open)
25	(RFAC)ADIO	O	Output terminal of the operational amplifier Not used (open)
26	RFDC	I	RF signal (DC level) input terminal for the digital servo process
27	TE	I	Tracking error signal input from the RF amplifier in optical pick-up
28	SE	I	Sled error signal input from the RF amplifier in optical pick-up
29	FE	I	Focus error signal input from the RF amplifier in optical pick-up
30	VC	I	Middle point voltage (+2.5V) input from the RF amplifier in optical pick-up
31	FILO	O	Filter output terminal for master clock of the playback master PLL
32	FILI	I	Filter input terminal for master clock of the playback master PLL
33	PCO	O	Phase comparison output terminal for master clock of the playback EFM master PLL
34	CLTV	I	Internal VCO control voltage input of the playback master PLL
35	AVS1	—	Ground terminal (analog system)
36	RFAC	I	RF signal (AC level) input terminal for the EFM demodulator
37	BIAS	I	Constant current input terminal of the playback EFM asymmetry circuit
38	ASYI	I	Playback EFM asymmetry comparator voltage input terminal
39	ASYO	O	Playback EFM full-swing output terminal
40	AVD1	—	Power supply terminal (+5V) (analog system)
41	DVDD	—	Power supply terminal (+5V) (digital system)
42	ASYE	I	Playback EFM asymmetry circuit on/off selection input terminal (fixed at “H”)
43	PSSL	I	Audio data output mode selection input terminal (fixed at “L”)

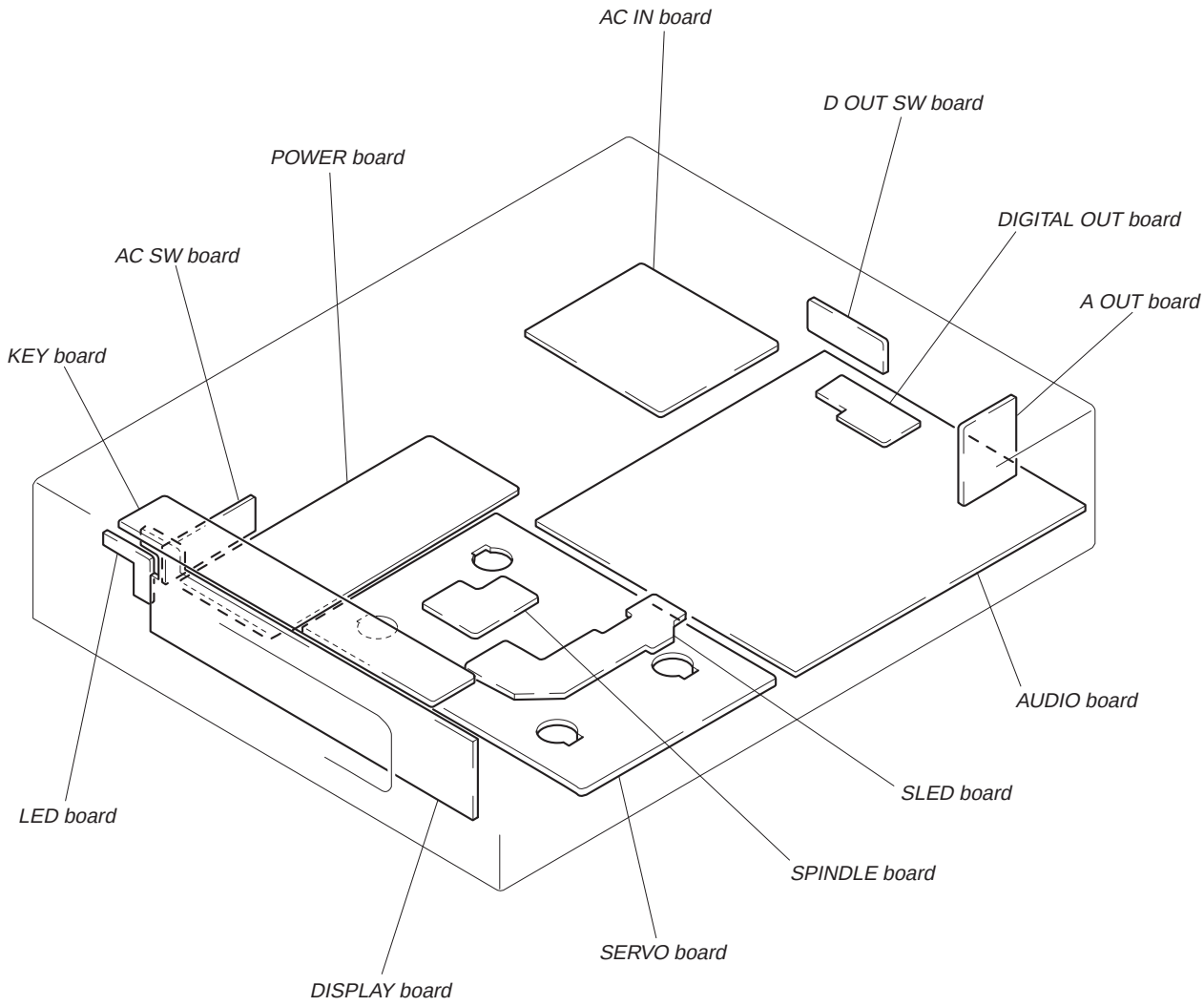
Pin No.	Pin Name	I/O	Function
44	WDCK	O	Word clock signal (88.2 kHz) output terminal Not used (open)
45	LRCK	O	L/R sampling clock signal (44.1 kHz) output to the CXD8595Q (IC301)
46	DATA	O	DA16 output when PSSL="H", 48-bit slot serial data output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Serial data output to the CXD8595Q (IC301)
47	BCLK	O	DA15 output when PSSL="H", 48-bit slot bit clock signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Bit clock signal (2.8224 MHz) output to the CXD8595Q (IC301)
48	64 DATA	O	DA14 output when PSSL="H", 64-bit slot serial data output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
49	64 BCLK	O	DA13 output when PSSL="H", 64-bit slot bit clock signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
50	64 LRCK	O	DA12 output when PSSL="H", 64-bit slot L/R sampling clock signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
51	GTOP	O	DA11 output when PSSL="H", GTOP signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
52	XUGF	O	DA10 output when PSSL="H", XUGF signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
53	XPLCK	O	DA09 output when PSSL="H", XPLCK signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L")
54	GFS	O	DA08 output when PSSL="H", GFS (guard frame sync) signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L")
55	RFCK	O	DA07 output when PSSL="H", RFCK (read frame clock) signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L")
56	C2PO	O	DA06 output when PSSL="H", C2PO signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
57	XRAOF	O	DA05 output when PSSL="H", XRAOF (RAM over flow) signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
58	MNT3	O	DA04 output when PSSL="H", MNT3 (monitor 3) signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L")
59	MNT2	O	DA03 output when PSSL="H", MNT2 (monitor 2) signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L")
60	MNT1	O	DA02 output when PSSL="H", MNT1 (monitor 1) signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L")
61	MNT0	O	DA01 output when PSSL="H", MNT0 (monitor 0) signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L")
62	XTAI	I	System clock input terminal (16 MHz)
63	XTAO	O	System clock output terminal (16 MHz) Not used (open)
64	XTSL	I	System clock selection input terminal (fixed at "L")
65	DVSS	—	Ground terminal (digital system)
66	FSTI	I	2/3 divider input terminal of pins ㊷ (XATI) and ㊸ (XTAO)
67	FSTO	O	2/3 divider output terminal of pins ㊷ (XATI) and ㊸ (XTAO)
68	(FSOF)C4M	O	4.2336 MHz clock signal output terminal Not used (open)
69	C16M	O	16.9344 MHz clock signal output terminal Not used (open)
70	MD2	I	Digital out on/off control terminal
71	DOUT	O	Digital signal (for coaxial out and optical out) output terminal
72	EMPH	O	Emphasis control signal output terminal Not used (open)
73	WFCK	O	Write frame clock signal output terminal
74	SCOR	O	Sub-code sync (S0+S1) detection signal output to the system control (IC801)

Pin No.	Pin Name	I/O	Function
75	SBSO	O	Sub-code P-W serial data output terminal Not used (open)
76	EXCK	I	Sub-code P-W serial data reading clock signal input terminal Not used (fixed at “L”)
77	SUBQ	O	Sub-code Q data signal output to the system control (IC801)
78	SQCK	I	Sub-code Q data reading clock signal input from the system control (IC801)
79	MUTE	I	Mute signal input from the system control (IC801)
80	SENS	O	Internal status (SENSE) signal output to the system control (IC801)
81	$\overline{\text{XRST}}$	I	System reset signal input from the reset signal generator (IC103) “L”: reset For several hundreds msec. after the power supply rises, “L” is input, then it changes to “H”
82	DIRC	I	1-track jump mode input terminal Not used (fixed at “H”)
83	SCLK	I	Sense serial data reading clock signal input from the system control (IC801)
84	DFSW	I	Defect on/off select signal input terminal Not used (fixed at “L”)
85	ATSK	I	Input terminal for the anti-shock Not used (fixed at “L”)
86	DATA	I	Serial data input from the system control (IC801)
87	XLAT	I	Serial data latch pulse signal input from the system control (IC801)
88	CLOK	I	Serial data transfer clock signal input from the system control (IC801)
89	COUT	O	Track number count signal output terminal Not used (open)
90	DVDD	—	Power supply terminal (+5V) (digital system)
91	MIRR	O	Mirror detection signal output terminal Not used (open)
92	DFCT	O	Defect signal output terminal Not used (open)
93	FOK	O	Focus OK signal output terminal Not used (open)
94	FSW	O	Selection signal output terminal of the output filter for spindle motor Not used (open)
95	MON	O	Spindle motor on/off control signal output terminal Not used (open)
96	MDP	O	Spindle servo control signal output terminal
97	MDS	O	Spindle servo control signal output terminal Not used (open)
98	LOCK	O	GFS is sampled by 460 Hz “H” output when GFS is “H” Not used (open)
99	SSTP	I	Detection input from the sled limit-in detect switch (S151) The optical pick-up is inner position when “H”
100	SFDR	O	Sled servo drive PWM signal (+) output to the BA6297AFP (IC106)

• **DISPLAY BOARD IC801 CXP82316-083Q (SYSTEM CONTROL, FLUORESCENT INDICATOR TUBE DRIVER)**

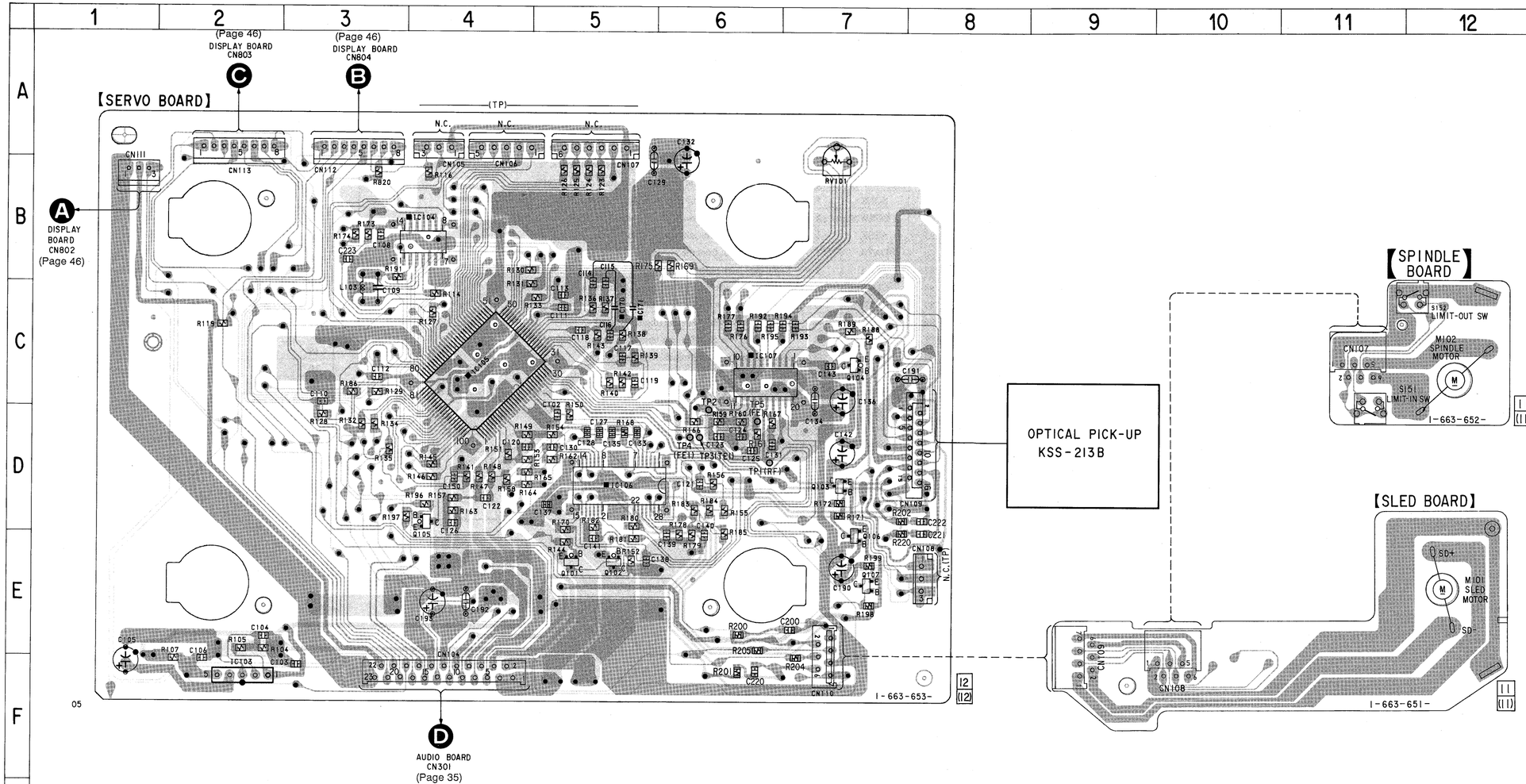
Pin No.	Pin Name	I/O	Function
1	TIMER	I	Not used (fixed at "H")
2	RM (BUSIN)	I	Remote control signal input from the remote control receiver (IC802) (AU BUS input)
3	+ 5V	I	Not used (fixed at "H")
4	OPEN	–	Not used (open)
5	OPEN	–	Not used (open)
6	(BUSOUT)	O	AU BUS output (open)
7	PGML	O	Program Latch signal output to digital filter CXD8595Q (IC301)
8	CLK	O	Serial data transfer clock signal output to the CXD2545Q (IC105) and CXD8595Q (IC301)
9	SENSE	I	Internal status (SENSE) signal input from the CXD2545Q (IC105)
10	DATA	O	Serial data output to the CXD2545Q (IC105) and CXD8595Q (IC301)
11	SQCK	O	Sub-code Q data reading clock signal output to the CXD2545Q (IC105)
12	SUBQ	I	Sub-code Q data signal input from the CXD2545Q (IC105)
13	OPEN	–	Not used (open)
14	AMUTE	O	Anolog muting control signal output "H": mute
15	LDON	O	Laser diode on/off selection signal output to the RF amplifier in optical pick-up
16	XLT	O	Serial data latch pulse signal output to the CXD2545Q (IC105)
17	RVLED	I	Detection input from the sled limit-out detect switch (S152) The optical pick-up is outer position when "L"
18	RV+	O	Volume up control signal output
19	RV–	O	Volume down control signal output
20	LDOUT	O	❚❚ LED (D802) drive signal output terminal "H": LED on
21	LDIN	O	▶ LED (D801) drive signal output terminal "H": LED on
22, 23	KEY0, 1	I	Key data input terminal (A/D input) "L": on
24	KEY2	I	Key data input terminal (A/D input) "L": on Not used (open)
25	KEY3	I	Connected to the ㉙ pin
26, 27	KEY4, 5	I	Key data input terminal (A/D input) "L" on Not used (open)
28	ADJ/AFADJ	I	Pin for test mode "L": Test mode
29	IN/OUT SW	I	Detection input from the loading in/out detect switch (S808)
30	RST	I	System reset signal input from the reset signal generator (IC103) "L": reset For several hundreds msec. after the power supply rises, "L" is input, then it changes to "H"
31	EXTAL	I	Main system clock input terminal (4 MHz)
32	XTAL	O	Main system clock output terminal (4 MHz)
33	VSS	–	Ground terminal
34 - 41	OPEN	–	Not used (open)
42 - 62	S21 - S1	O	FL segment output
63 - 70	1G - 8G	O	FL grid output
71	(–30V) VFDP	–	–30 V pin for FL display tube
72	(+ 5V) VDD	–	Power supply terminal (+5V)
73	–	–	Not used (fixed at "H")
74	SEL1	–	Not used (fixed at "L")
75	–	–	Not used (fixed at "L")
76	DACRST	O	Reset signal output to CXD2562Q (IC302)
77	AMUTE	O	Analog mute signal output "H" mute on
78	SCOR	I	Sub-code sync (S0 + S1) detection signal input from the CXD2545Q (IC101)
79, 80	SEL2, 3	–	Not used (fixed at "L")

• **Circuit Boards Location**



• **Semiconductor Location**

Ref. No.	Location
IC103	F-2
IC104	B-4
IC105	C-4
IC106	D-5
IC107	C-6
Q101	E-5
Q102	E-5
Q103	D-7
Q104	C-7
Q105	D-4
Q106	E-7
Q107	E-7

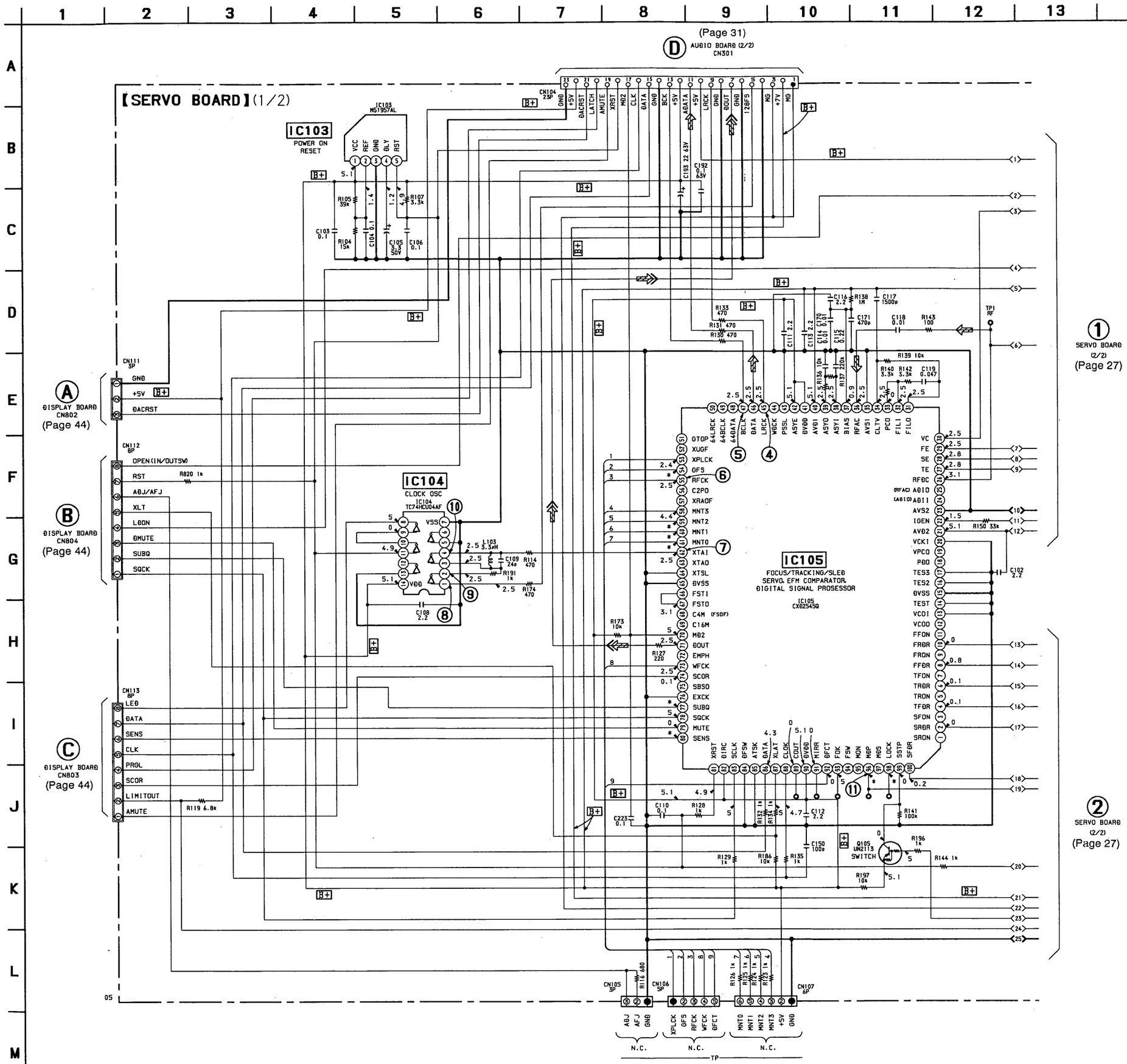


Note on Printed Wiring Board:

- ——○—— : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- ● : Through hole.
- : Pattern of the rear side.
- ▨ : Pattern from the side which enables seeing.

5-3. SCHEMATIC DIAGRAM – SERVO Section –

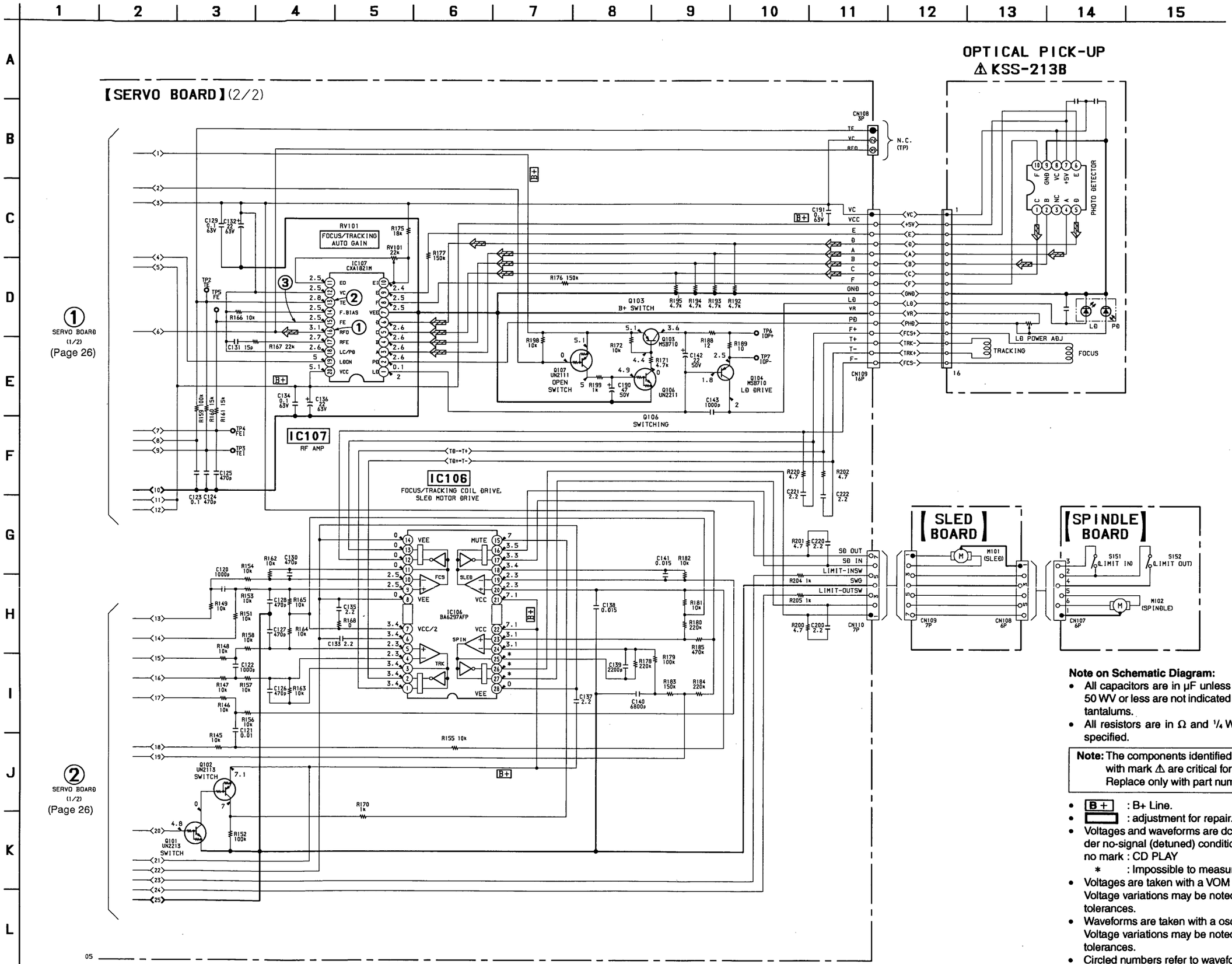
• See page 37 for Waveforms. • See page 48 for IC Block Diagrams. • See page 16 to 18 for IC Pin Function Description.



Note on Schematic Diagram:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- B+ : B+ Line.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : CD PLAY
  * : Impossible to measure
- Voltages are taken with a VOM (Input impedance 10 MΩ). 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

• See page 37 for Waveforms. • See page 49 for IC Block Diagrams.



Note on Schematic Diagram:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.

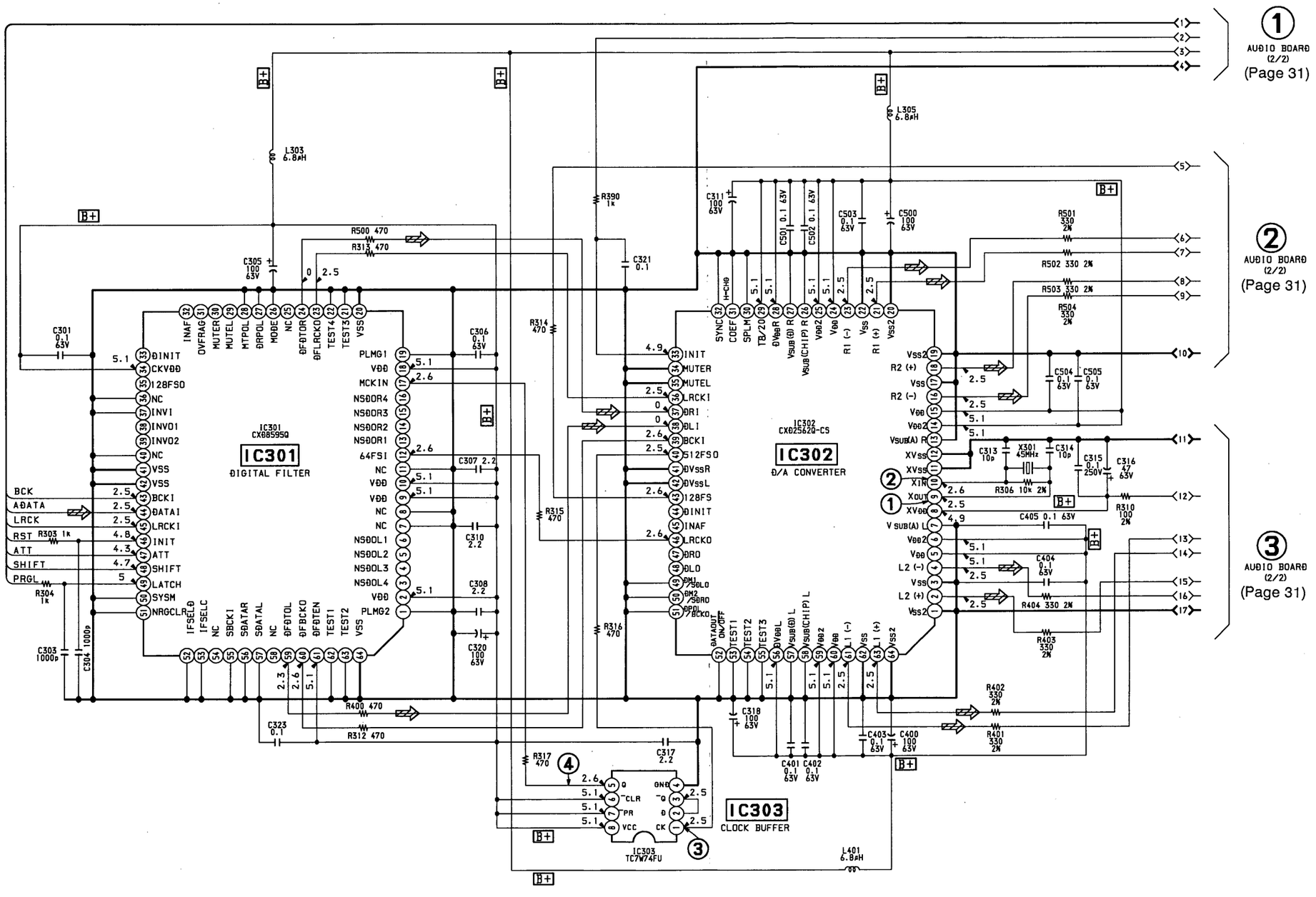
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- B+ : B+ Line.
- ▭ : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : CD PLAY
  * : Impossible to measure
- Voltages are taken with a VOM (Input impedance 10 MΩ). 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

5-4. SCHEMATIC DIAGRAM – AUDIO Section –

• See page 47 for Waveforms. • See page 49 for IC Block Diagrams. • See page 33 for Note on Schematic Diagram.

【AUDIO BOARD】 (1/2)



• See page 50 for IC Block Diagrams. • See page 33 for Note on Schematic Diagram.

【AUDIO BOARD】(2/2)

D SERVO BOARD (1/2) (Page 25) CN104

G POWER BOARD (Page 41) CN603

1 AUDIO BOARD (1/2) (Page 30)

2 AUDIO BOARD (1/2) (Page 30)

3 AUDIO BOARD (1/2) (Page 30)

IC501 CURRENT PULSE D/A CONVERTER

IC401 CURRENT PULSE D/A CONVERTER

IC502 DE-EMPHASIS

IC503 MIX AMP

IC402 DE-EMPHASIS

IC403 MIX AMP

IC201 DIGITAL OUT SWITCH

IC901 +12V REG.

IC902 -12V REG.

IC903 +5V REG.

IC904 -7V REG.

IC905 +5V REG.

IC906 +7V REG.

IC907 +5V REG.

H DIGITAL OUT BOARD CN205 (Page 33)

I DIGITAL OUT BOARD CN204 (Page 33)

J D OUT SW BOARD CN204 (Page 33)

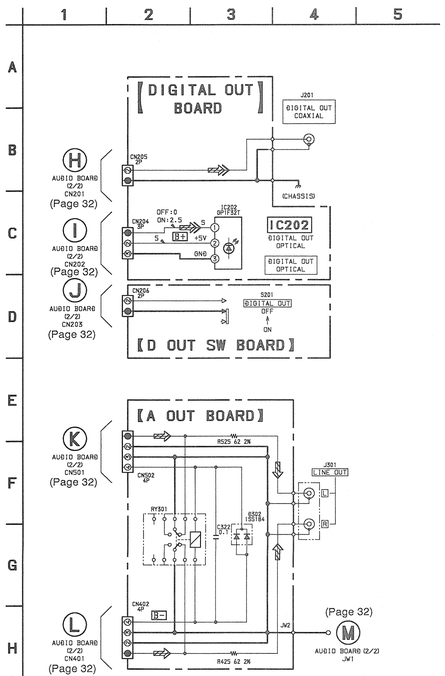
F POWER BOARD CN604 (Page 41)

K A OUT BOARD CN502 (Page 33)

M A OUT BOARD JW2 (Page 33)

L A OUT BOARD CN402 (Page 33)

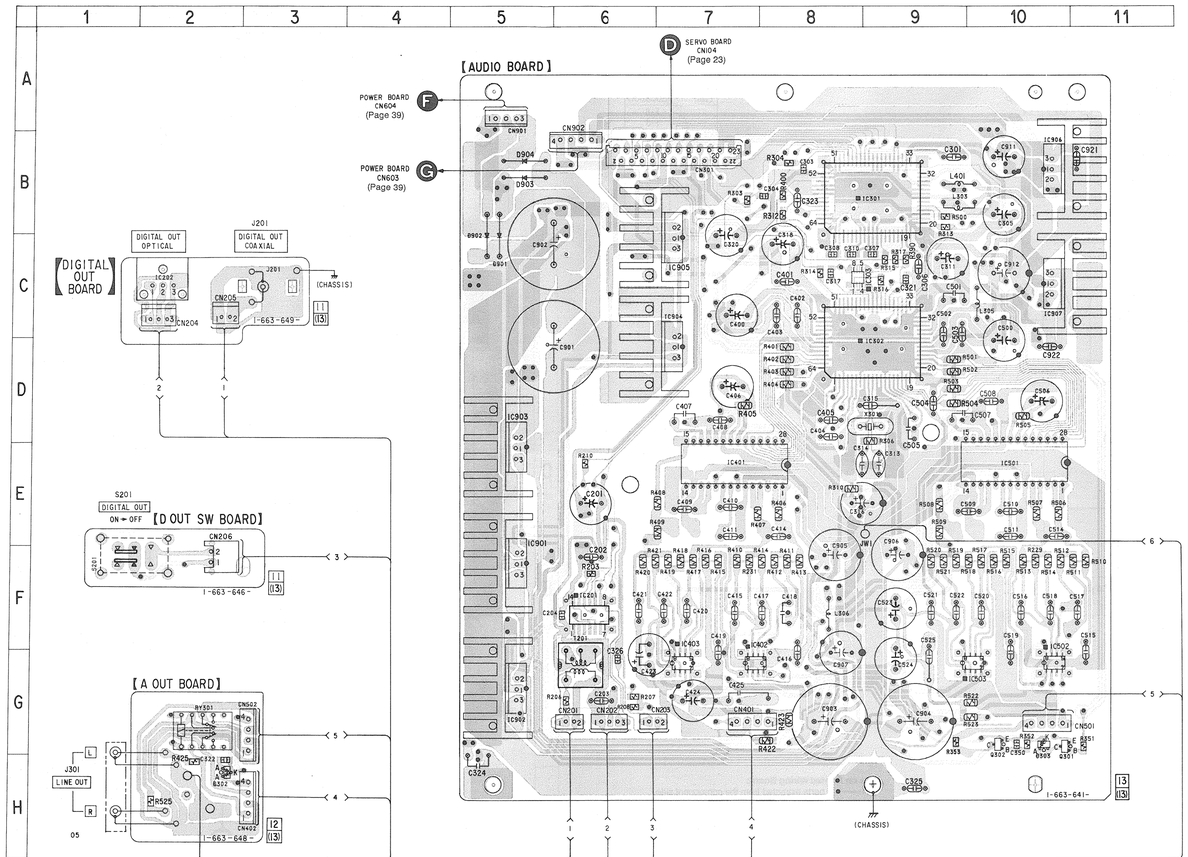
Q301, 302 MUTE SWITCH



Note on Schematic Diagram:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- % : indicates tolerance.
- ▭ : panel designation.
- B+ : B+ Line.
- B− : B− Line.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : CD PLAY
- Voltages are taken with a VOM (Input impedance 10 MΩ). 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

5-5. PRINTED WIRING BOARDS – AUDIO Section – • See page 21 for Circuit Boards Location.



• Semiconductor Location

Ref. No.	Location
D302	H-2
D303	G-10
D901	C-5
D902	B-5
D903	B-5
D904	B-5
IC201	F-6
IC202	C-2
IC301	B-8
IC302	C-8
IC303	C-8
IC401	E-7
IC402	G-7
IC403	G-7
IC501	E-10
IC502	G-10
IC503	G-9
IC901	E-5
IC902	G-5
IC903	D-5
IC904	C-7
IC905	C-7
IC906	B-10
IC907	C-10
Q301	G-10
Q302	G-10

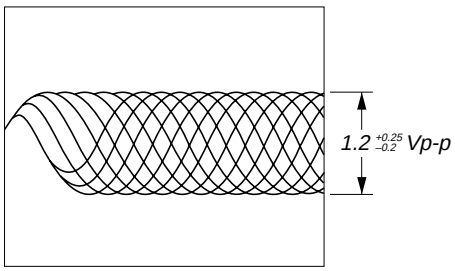
Note on Printed Wiring Board:

- ○——○ : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- ● : Through hole.
- ▨ : Pattern of the rear side.
- ▨ : Pattern from the side which enables seeing.

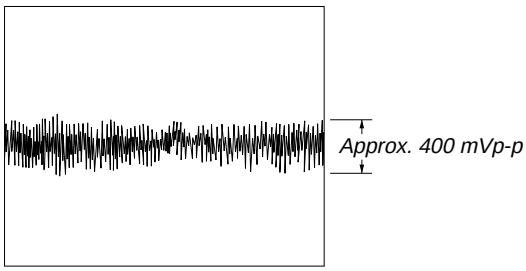
• **Waveforms**

– SERVO Section –

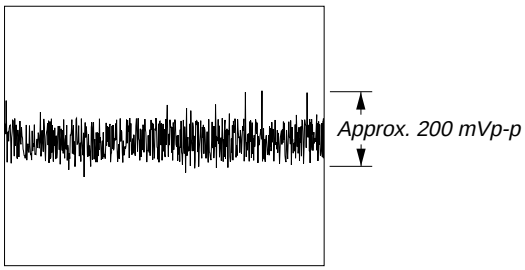
❶ IC107 ⑯ (RFO) 200 mV/DIV, 500 nsec/DIV



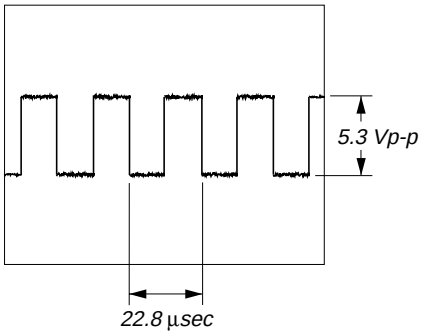
❷ IC107 ⑬ (TE) 200 mV/DIV, 100 µsec/DIV



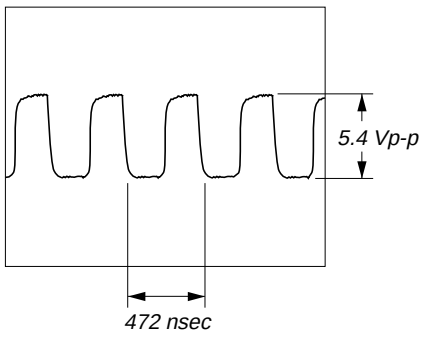
❸ IC107 ⑮ (FE) 200 mV/DIV, 50 nsec/DIV



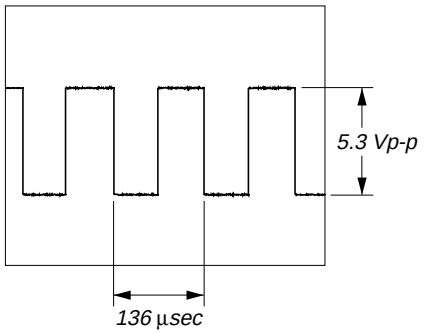
❹ IC105 ㊺ (LRCK)



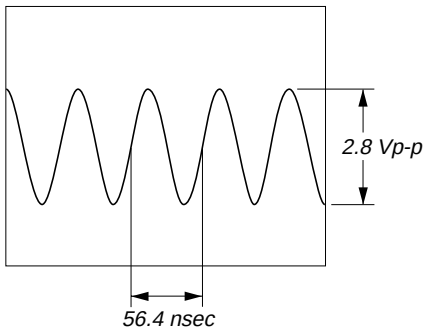
❺ IC105 ㊼ (BCLK)



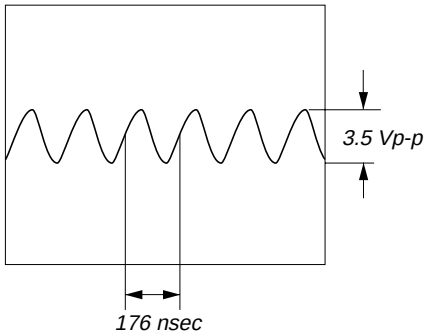
❻ IC105 ㊺ (RFCK)



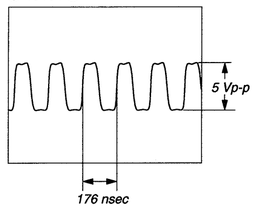
❼ IC105 ㊷ (XTAI)



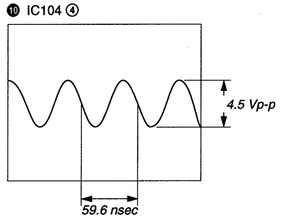
❽ IC104 ①



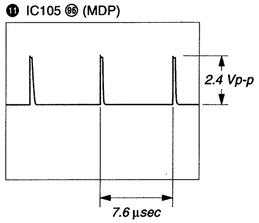
⑨ IC104 ②



⑩ IC104 ④



⑪ IC105 ㊽ (MDP)



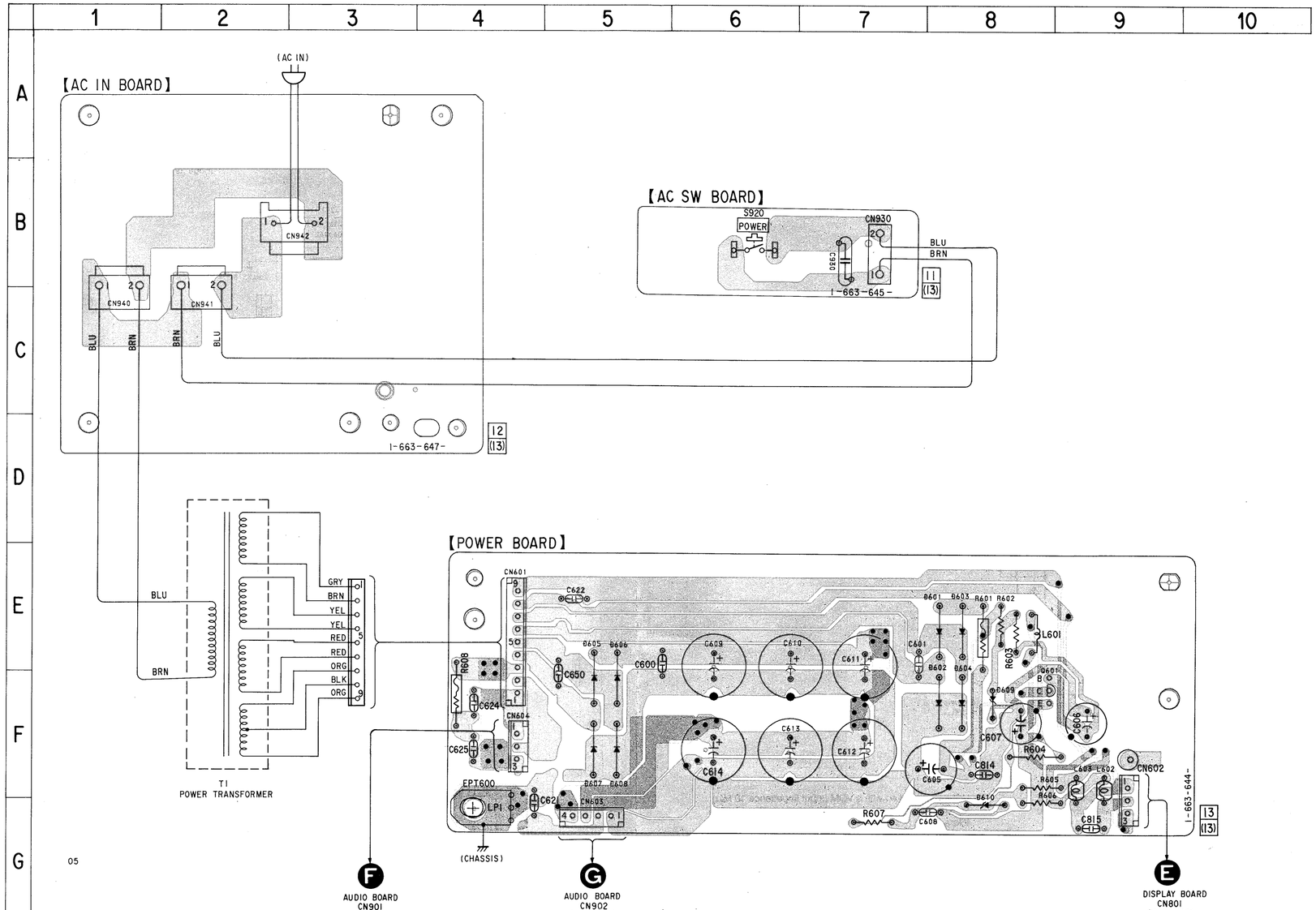
• Semiconductor Location

Ref. No.	Location
D601	E-8
D602	F-8
D603	E-8
D604	F-8
D605	F-5
D606	F-5
D607	F-5
D608	F-5
D609	F-8
D610	G-8
Q601	F-8

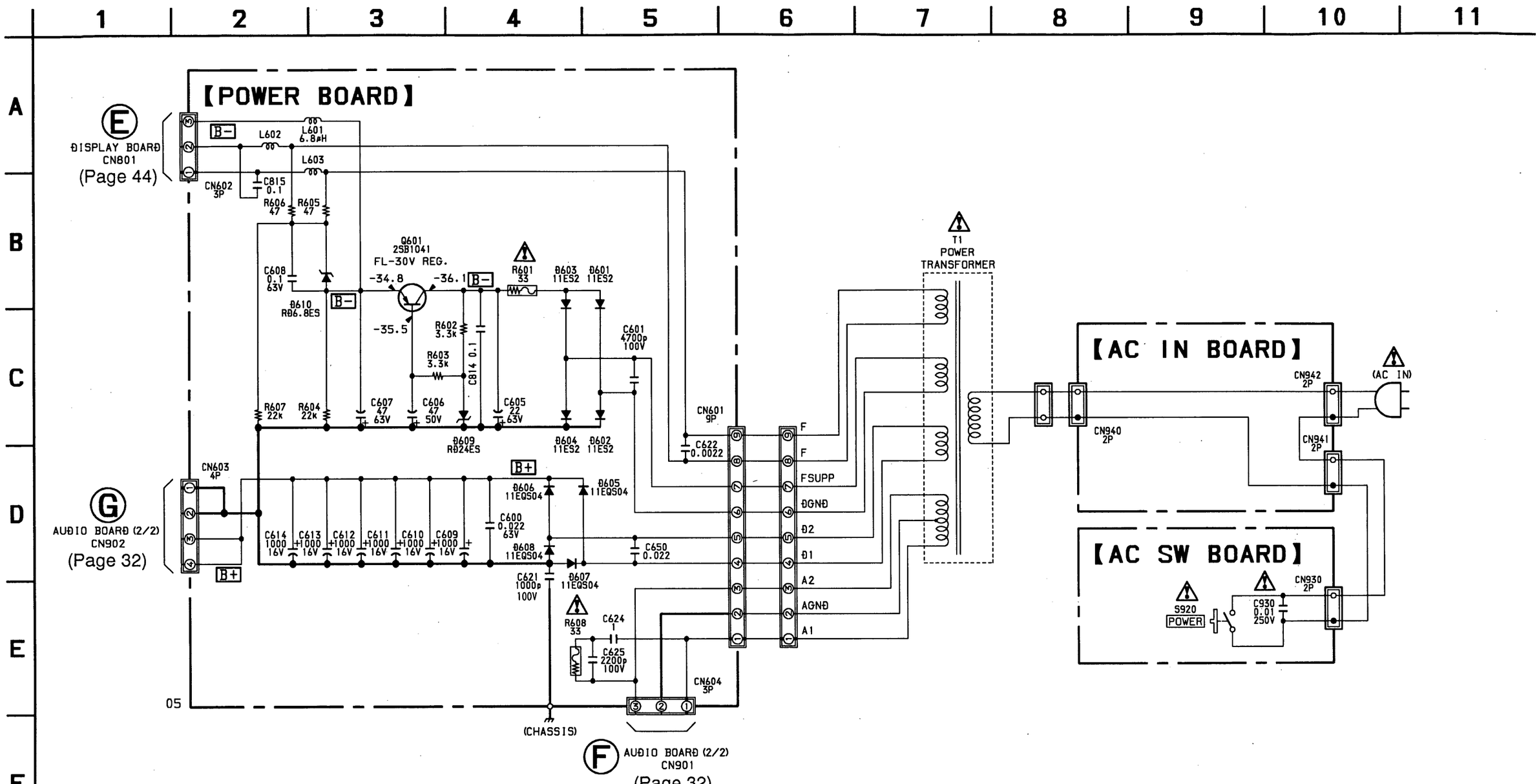
Note on Printed Wiring Board:

- ○——● : parts extracted from the component side.
- ● : Through hole.
- ▨ : Pattern of the rear side.
- ▩ : Pattern from the side which enables seeing.

5-6. PRINTED WIRING BOARDS – POWER Section – • See page 21 for Circuit Boards Location.



5-7. SCHEMATIC DIAGRAM – POWER Section –



Note on Schematic Diagram:

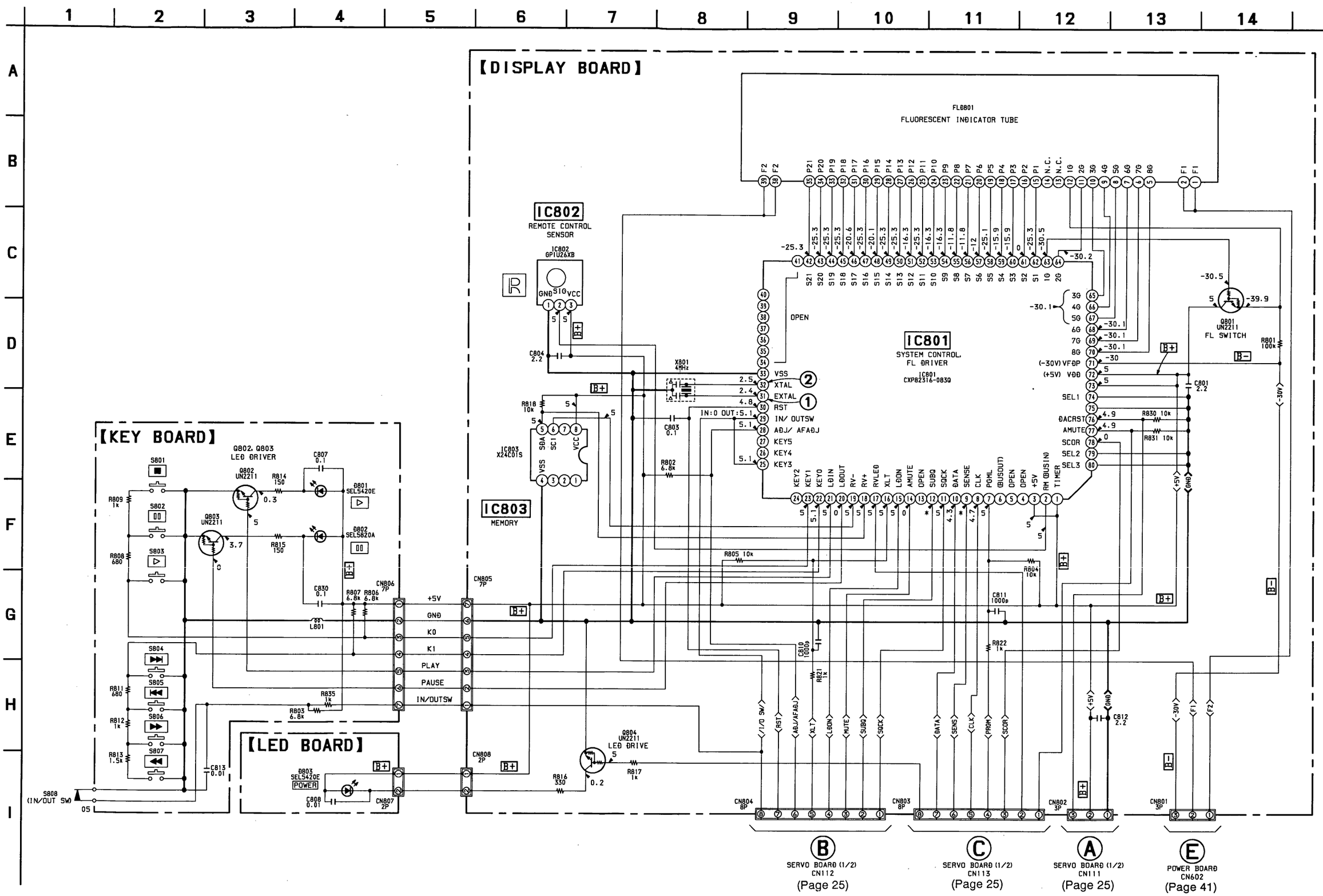
- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- : fusible resistor.
- : panel designation.

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

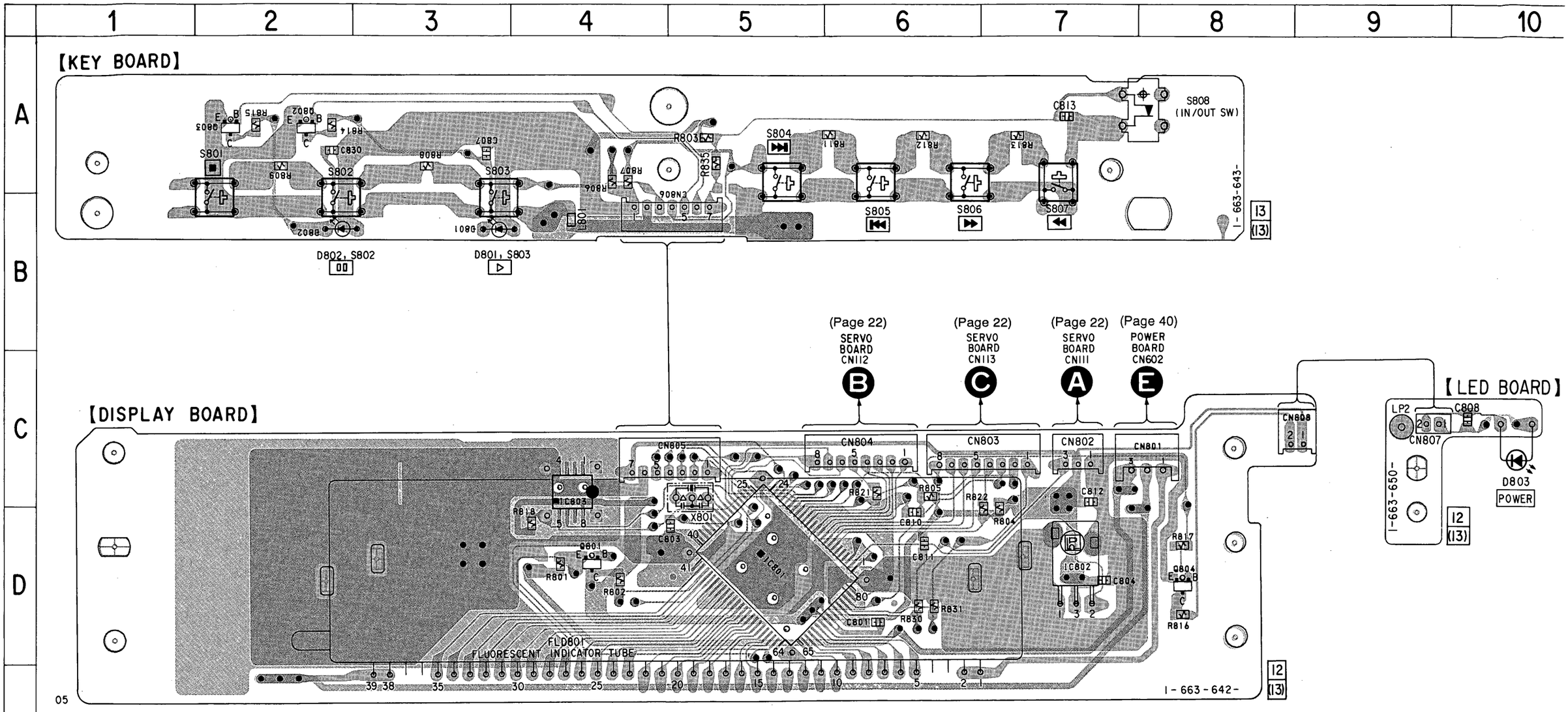
- B+ : B+ Line.
- B– : B– Line.
- Voltages are dc with respect to ground under no-signal (detuned) conditions.
  no mark : CD PLAY
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.

5-8. SCHEMATIC DIAGRAM – CONTROL Section –

• See page 47 for Waveforms. • See page 19 for IC Pin Function Description.



5-9. PRINTED WIRING BOARDS – CONTROL Section – • See page 21 for Circuit Boards Location.



Note on Schematic Diagram:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.
- B+ : B+ Line.
- B− : B− Line.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : CD PLAY
  * : Impossible to measure
- Voltages are taken with a VOM (Input impedance 10 MΩ). 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.

• Semiconductor Location

Ref. No.	Location
D801	B-3
D802	B-2
D803	C-10
IC801	D-5
IC802	D-7
IC803	C-4
Q801	D-4
Q802	A-2
Q803	A-2
Q804	D-8

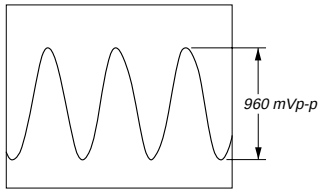
Note on Printed Wiring Board:

- ○——— : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- ● : Through hole.
- △ : internal component.
- ○ ▒▒ : Pattern of the rear side.
- ▒▒ : Pattern from the side which enables seeing.

• **Waveforms**

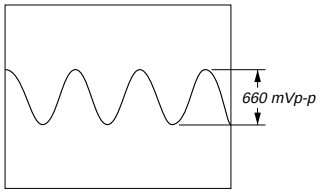
– AUDIO Section –

❶ IC302 ⑨ (XOUT)



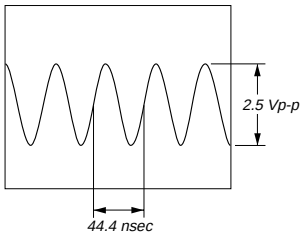
45 MHz

❷ IC302 ⑩ (XIN)

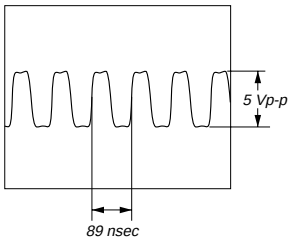


45 MHz

❸ IC303 ① (CK)

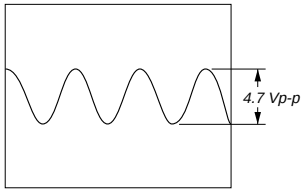


❹ IC303 ⑤ (Q)



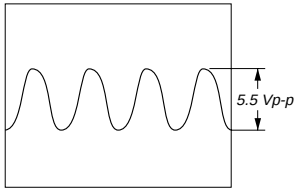
– CONTROL Section –

❶ IC801 ㉛ (EXTAL)



4 MHz

❷ IC801 ㉜ (XTAL)

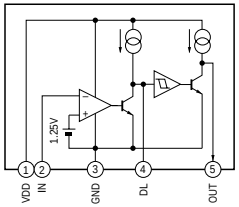


4 MHz

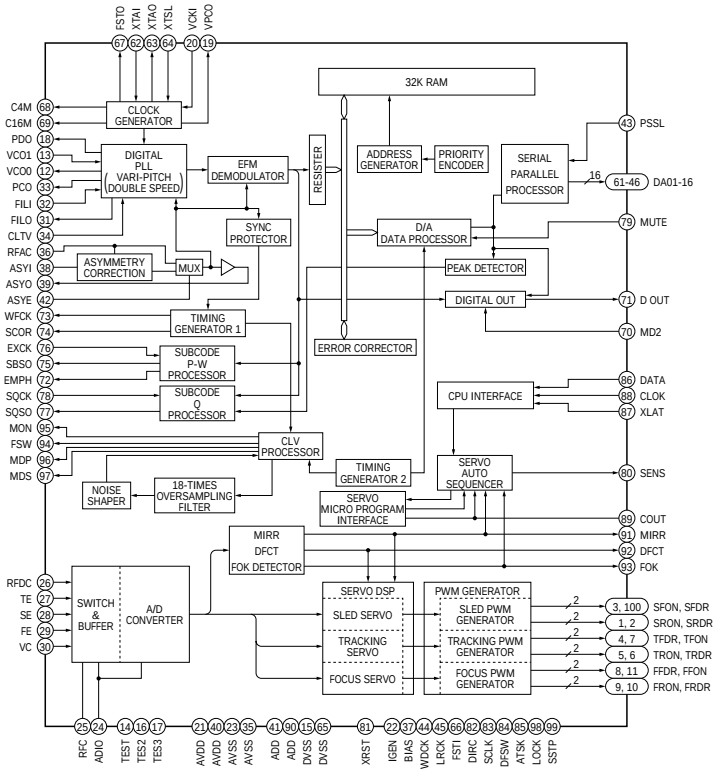
• **IC Block Diagrams**

– SERVO Section –

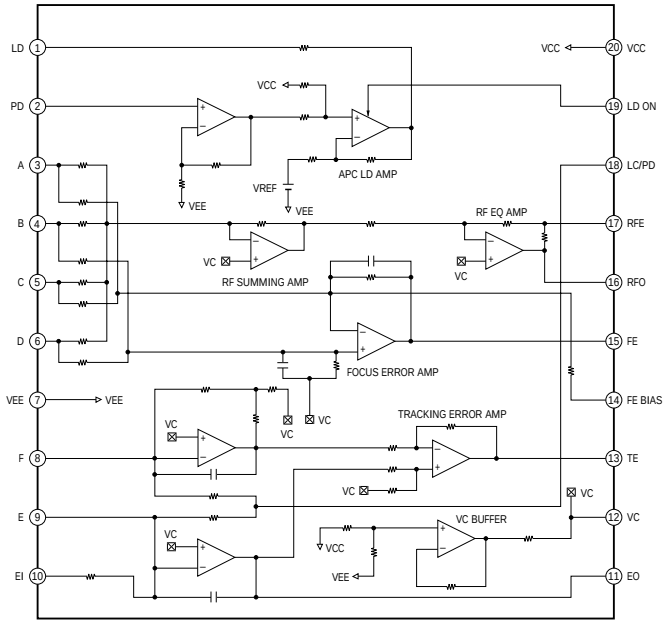
IC103 M51957AL



IC105 CXD2545Q

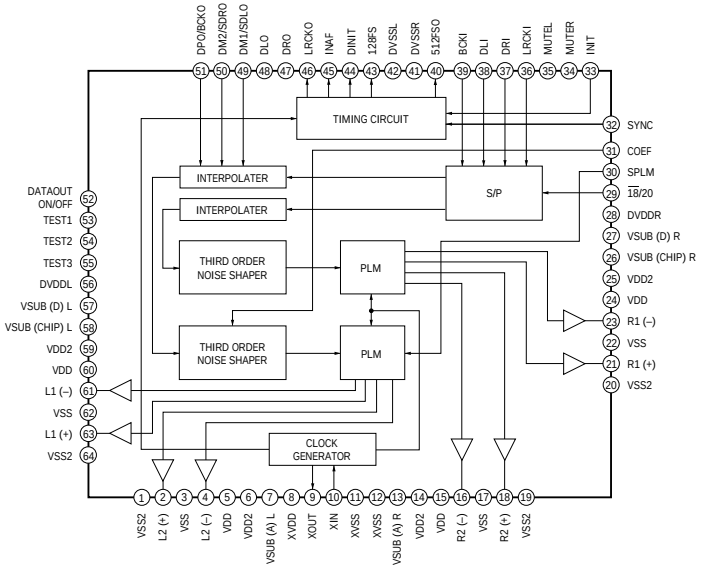


IC107 CXA1821M-T6

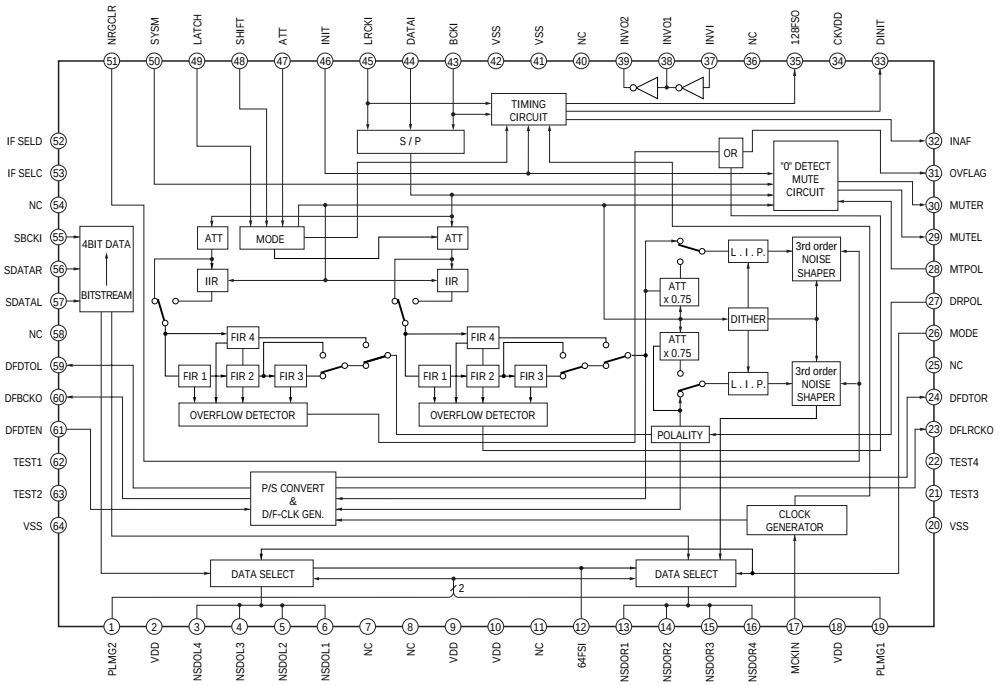


– AUDIO Section –

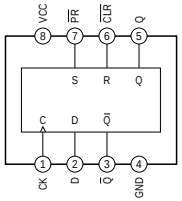
IC302 CXD2562Q-CS



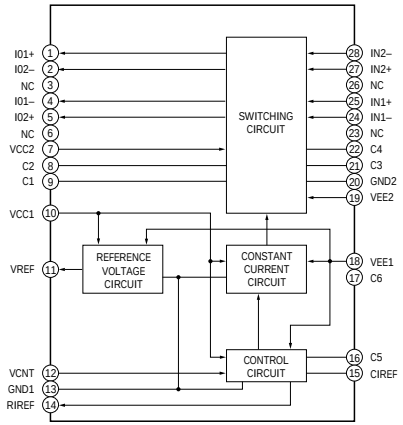
IC301 CXD8595Q



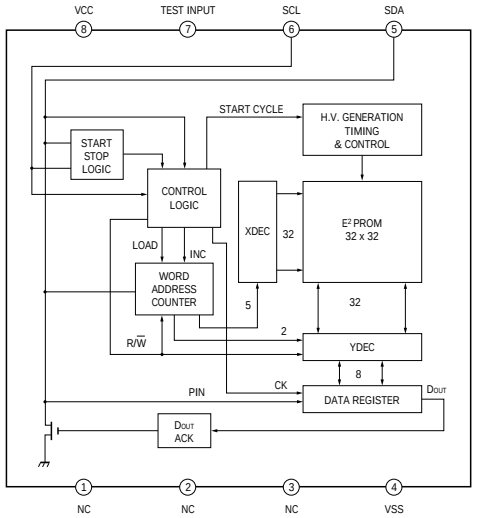
IC303 TC7W74FU



IC401, 501 CXA8042AS



– CONTROL Section –
IC803 X24C01S

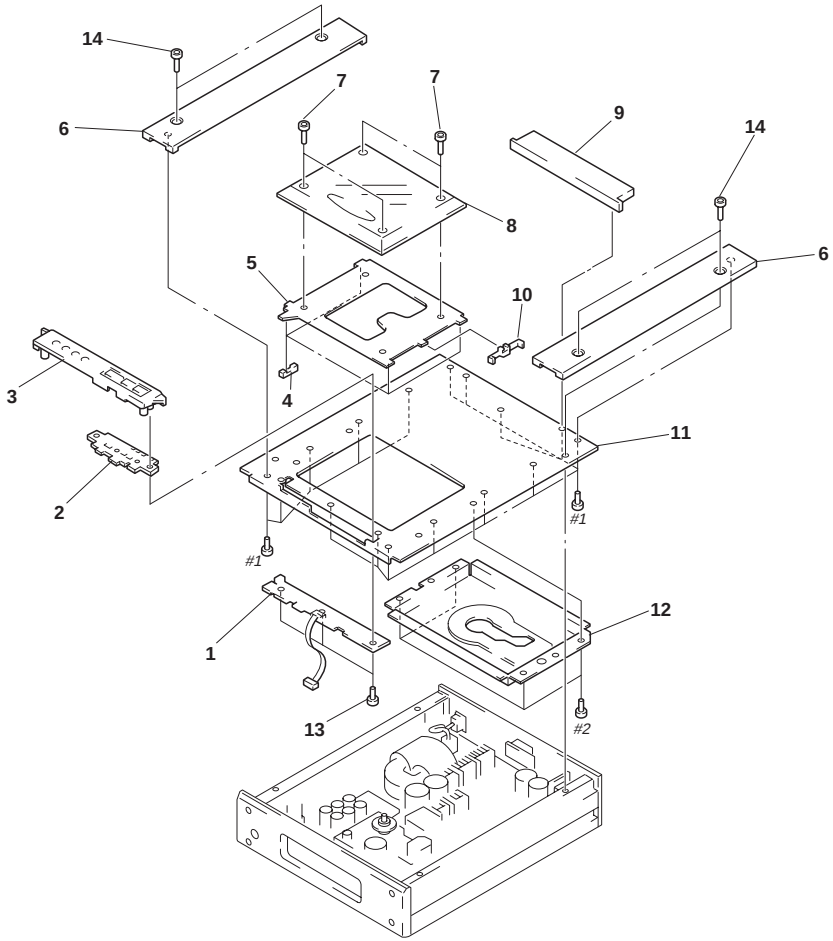


SECTION 6
EXPLODED VIEWS

NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearrance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- 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 is given in the last of the electrical parts list.

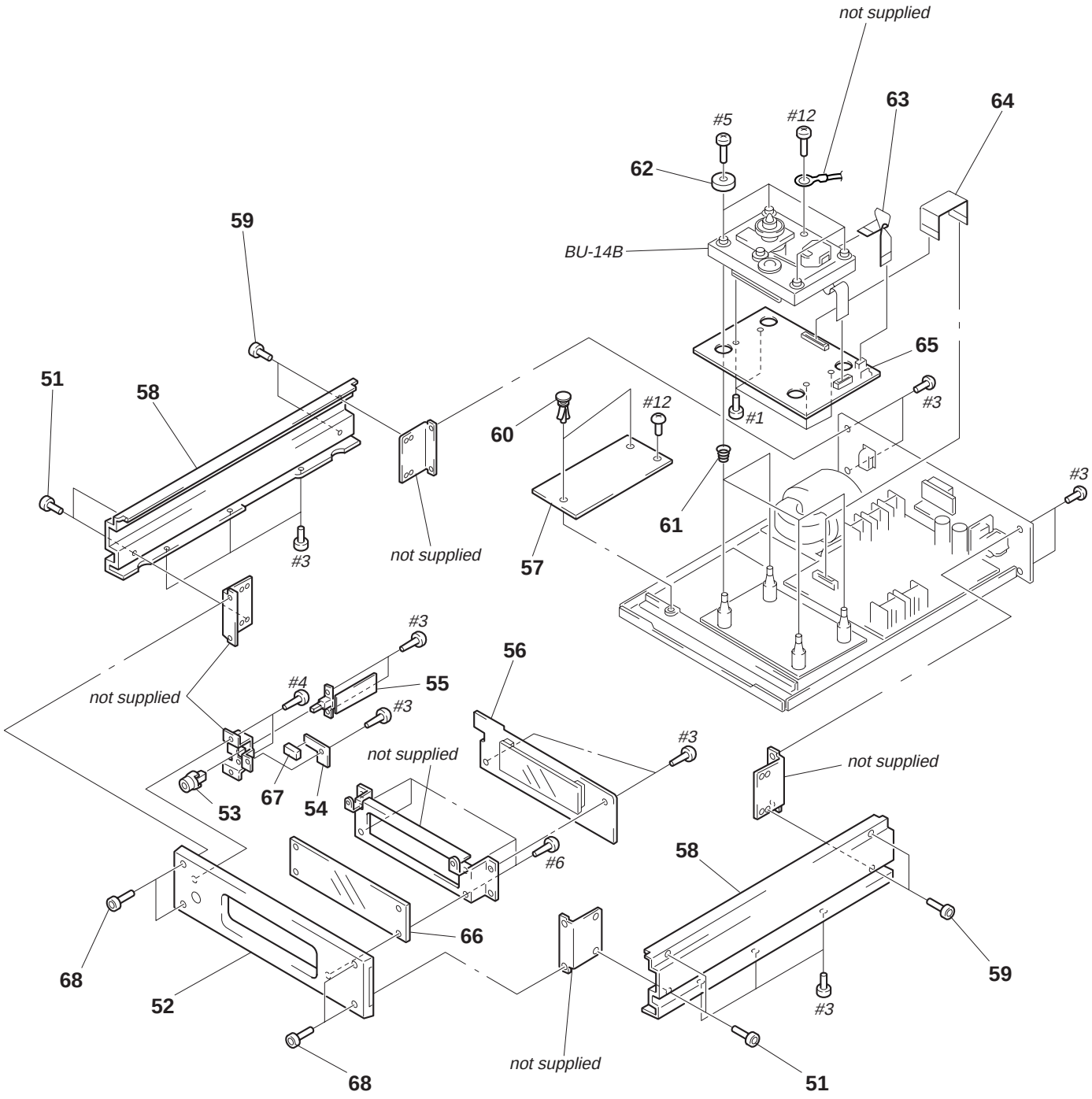
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

(1) TOP PLATE SECTION



Ref. No.	Part No.	Description	Remark
* 1	A-4699-306-A	KEY BOARD, COMPLETE	
2	4-988-644-01	SHEET (LED)	
3	X-4947-750-1	PANEL (PLAY) ASSY	
4	4-979-030-01	SLIDER	
5	4-979-039-01	HOLDER (R)	
* 6	4-986-468-01	PANEL (TOP)	
7	4-960-910-21	SCREW, ORNAMENTAL (M3X8)	
8	4-979-028-01	WINDOW, DISK	
* 9	4-986-477-01	PANEL (STOP)	
10	4-979-045-01	SLIDER (B)	
* 11	4-986-467-01	BRACKET (TOP)	
* 12	4-986-479-01	BRACKET (BU)	
13	4-951-620-01	SCREW (2.6X8), +BVTP	
14	4-960-910-11	SCREW, ORNAMENTAL	

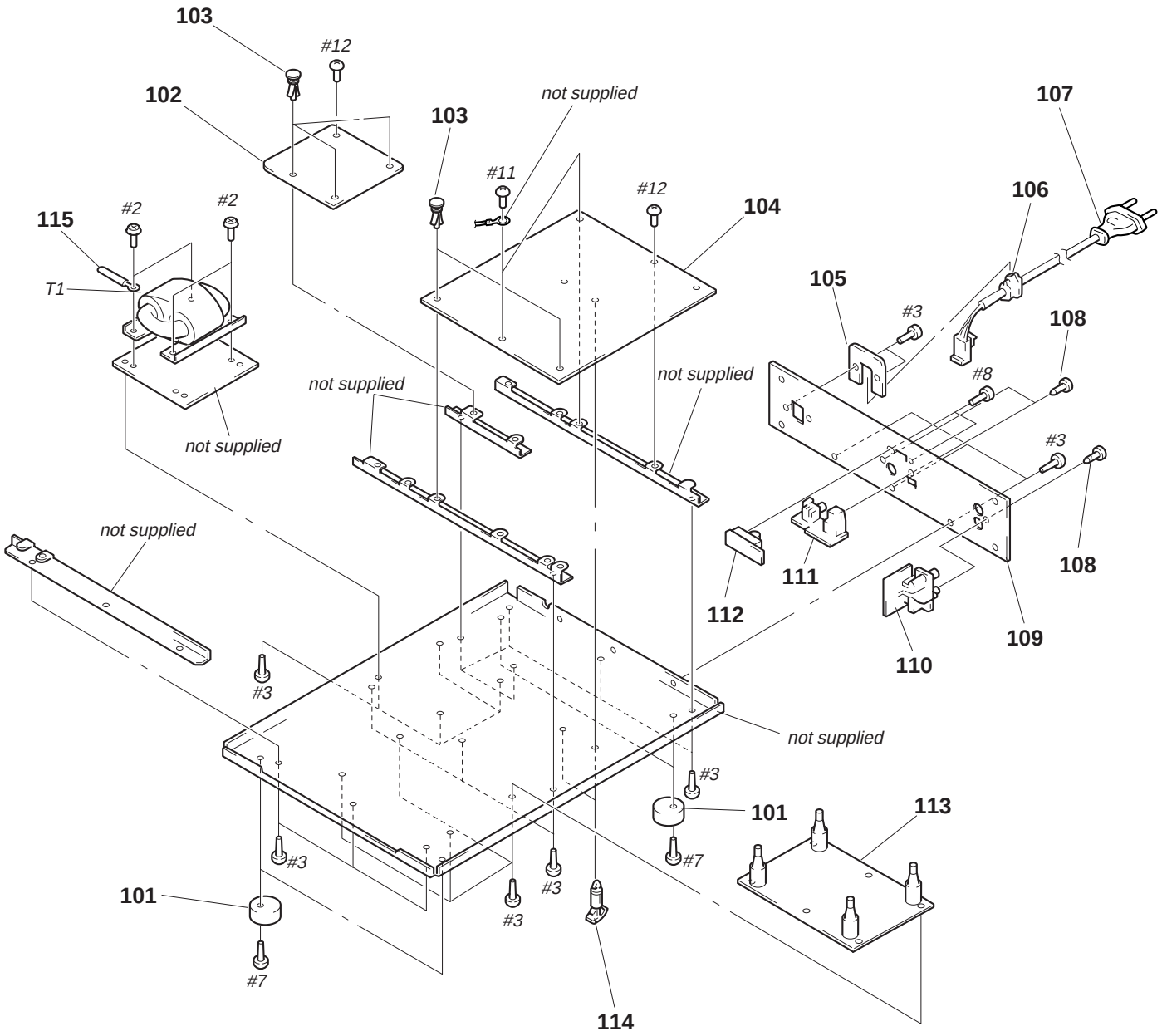
(2) FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
51	4-960-910-11	SCREW, ORNAMENTAL	
52	X-4947-749-1	PANEL ASSY, FRONT (X3000)	
52	X-4948-705-1	PANEL ASSY, FRONT (X3000ES)	
53	X-4947-759-1	BUTTON ASSY, POWER	
* 54	1-663-650-12	LED BOARD	
* 55	1-663-645-11	AC SW BOARD	
* 56	A-4699-304-A	DISPLAY BOARD, COMPLETE	
* 57	1-663-644-13	POWER BOARD	
* 58	4-986-466-01	BRACKET (SIDE)	
59	4-960-910-21	SCREW, ORNAMENTAL (M3X8)	

Ref. No.	Part No.	Description	Remark
60	3-531-576-11	RIVET	
61	4-986-497-01	SPRING (BU), COMPRESSION	
* 62	4-943-119-01	HOLDER (SP)	
63	1-777-923-11	WIRE (FLAT TYPE) (7 CORE)	
64	1-777-924-11	WIRE (FLAT TYPE) (23 CORE)	
* 65	A-4699-302-A	SERVO BOARD, COMPLETE	
66	4-986-473-01	PLATE, INDICATION	
67	4-988-643-01	COVER (LED)	
68	4-988-742-11	SCREW (M3X8), HEXAGON SOCKET	

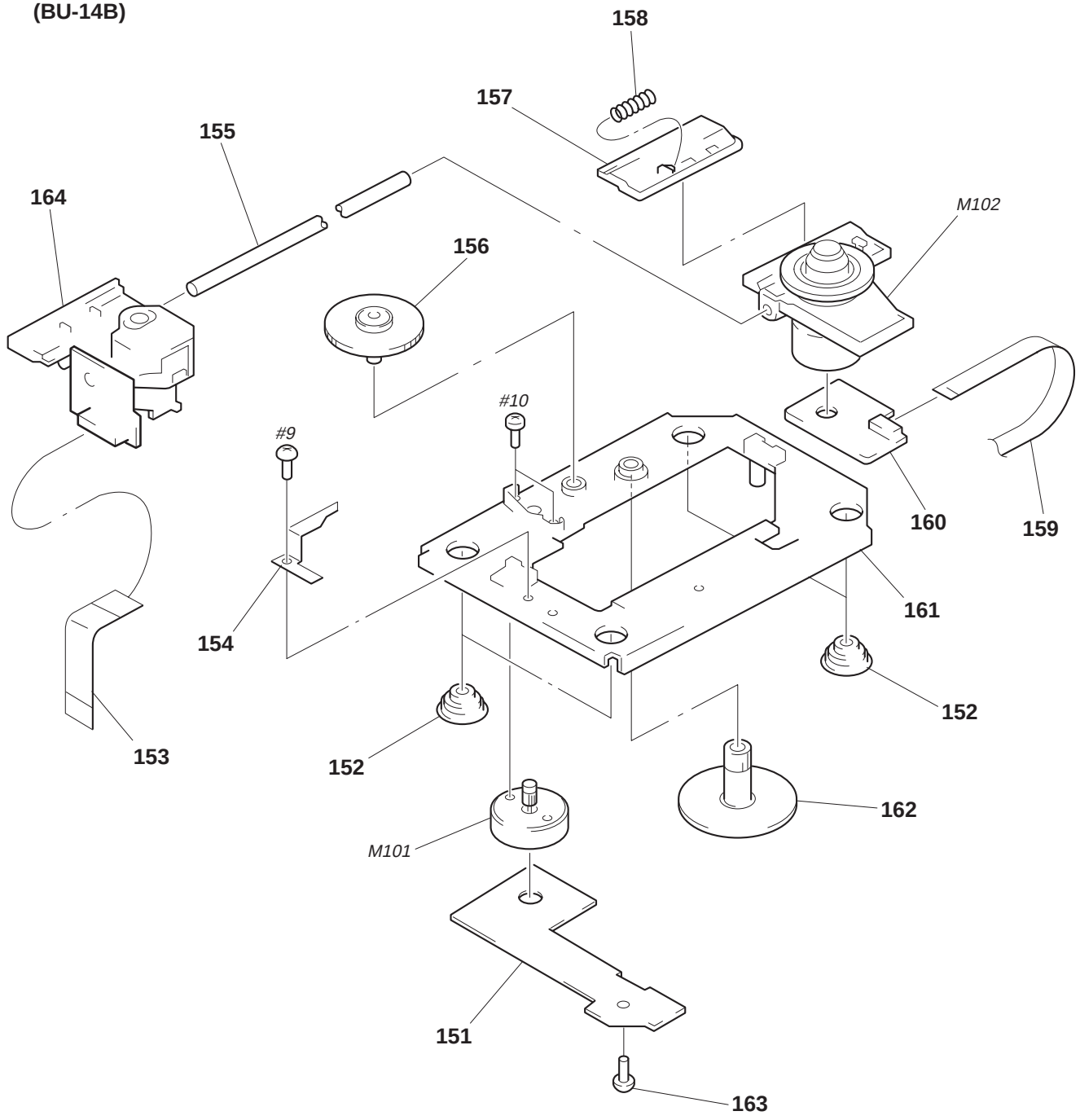
(3) CHASSIS, BACK PANEL SECTION



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
101	X-4947-892-1	FOOT ASSY	
* 102	1-663-647-12	AC IN BOARD	
103	3-531-576-11	RIVET	
* 104	A-4699-299-A	AUDIO BOARD, COMPLETE	
* 105	4-923-873-01	BRACKET, CORD STOPPER	
* 106	3-703-244-00	BUSHING (2104), CORD	
⚠107	1-558-568-21	CORD, POWER	
108	3-704-515-21	SCREW (BV/RING)	
* 109	4-986-471-11	PANEL, BACK (X3000)	
* 109	4-986-471-21	PANEL, BACK (X3000ES)	
* 110	1-663-648-12	A OUT BOARD	
* 111	1-663-649-11	DIGITAL OUT BOARD	
* 112	1-663-646-11	D OUT SW BOARD	
113	X-4947-757-1	BASE (BU) ASSY	
* 114	4-988-736-01	HOLDER (PCB)	
115	3-703-397-01	STOPPER, WIRING	
⚠T1	1-431-227-11	TRANSFORMER, POWER	

(4) BASE UNIT (BU-14B)



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	1-663-651-11	SLED BOARD	
152	4-951-940-01	INSULATOR (BU)	
153	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)	
* 154	4-977-924-01	SPRING (OP), LEAF	
155	4-977-923-01	SHAFT, SLED	
156	4-977-921-01	GEAR (B), FLAT	
157	4-977-926-01	RACK, SLIDE	
158	4-977-925-01	SPRING (SLIDE BASE), COMPRESSION	
159	1-777-741-11	WIRE (FLAT TYPE) (6 CORE)	
* 160	1-663-652-11	SPINDLE BOARD	
* 161	4-977-918-01	BASE (OUTSERT)	
162	4-977-920-01	GEAR (C), FLAT	
163	4-951-620-01	SCREW (2.6X8), +BVTP	
⚠164	8-848-379-31	OPTICAL PICK-UP KSS-213B/S-N	
M101	X-4947-303-1	MOTOR ASSY (SLED)	
M102	X-4948-273-1	MOTOR ASSY (SPINDLE)	

A OUT | AC IN | AC SW | AUDIO

SECTION 7
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH

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.

Ref. No.	Part No.	Description			Remark
*	1-663-648-12	A OUT BOARD			
		**********			
		< CAPACITOR >			
C322	1-163-038-00	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
* CN402	1-564-507-11	PLUG, CONNECTOR 4P			
* CN502	1-564-507-11	PLUG, CONNECTOR 4P			
		< DIODE >			
D302	8-719-801-78	DIODE 1SS184			
		< JACK >			
J301	1-770-483-11	JACK, PIN (LINE OUT)			
		< RESISTOR >			
R425	1-259-908-11	CARBON MELF	62	2%	1/8W
R525	1-259-908-11	CARBON MELF	62	2%	1/8W
		< RELAY >			
RY301	1-755-062-11	RELAY			
**********					
*	1-663-647-12	AC IN BOARD			
		**********			
		< CONNECTOR >			
CN940	1-564-321-00	PIN, CONNECTOR 2P			
CN941	1-564-321-00	PIN, CONNECTOR 2P			
CN942	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P			
**********					
*	1-663-645-11	AC SW BOARD			
		**********			
		< CAPACITOR >			
⚠C930	1-113-925-11	CERAMIC	0.01uF	20%	250V
		< SWITCH >			
⚠S920	1-572-267-51	SWITCH, PUSH (AC POWER) (1 KEY)			(POWER)
**********					

Ref. No.	Part No.	Description			Remark
*	A-4699-299-A	AUDIO BOARD, COMPLETE			
		**********			
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 SLIT			
		< CAPACITOR >			
C201	1-124-699-11	ELECT	220uF	20%	25V
C202	1-136-850-11	FILM	0.1uF	5%	63V
C203	1-136-850-11	FILM	0.1uF	5%	63V
C204	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C301	1-136-850-11	FILM	0.1uF	5%	63V
C303	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C304	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C305	1-128-201-11	ELECT	100uF	20%	63V
C306	1-136-850-11	FILM	0.1uF	5%	63V
C307	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C308	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C310	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C311	1-128-201-11	ELECT	100uF	20%	63V
C313	1-102-947-00	CERAMIC	10PF	5%	50V
C314	1-102-947-00	CERAMIC	10PF	5%	50V
C315	1-117-775-41	FILM	0.1uF	10%	250V
C316	1-128-200-11	ELECT	47uF	20%	63V
C317	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C318	1-128-201-11	ELECT	100uF	20%	63V
C320	1-128-201-11	ELECT	100uF	20%	63V
C321	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C323	1-136-850-11	FILM	0.1uF	5%	63V
C324	1-136-813-11	FILM	680PF	5%	100V
C325	1-136-813-11	FILM	680PF	5%	100V
C326	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C350	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C400	1-128-201-11	ELECT	100uF	20%	63V
C401	1-136-850-11	FILM	0.1uF	5%	63V
C402	1-136-850-11	FILM	0.1uF	5%	63V
C403	1-136-850-11	FILM	0.1uF	5%	63V
C404	1-136-850-11	FILM	0.1uF	5%	63V
C405	1-136-850-11	FILM	0.1uF	5%	63V
C406	1-128-200-11	ELECT	47uF	20%	63V
C407	1-136-850-11	FILM	0.1uF	5%	63V
C408	1-136-850-11	FILM	0.1uF	5%	63V
C409	1-136-850-11	FILM	0.1uF	5%	63V
C410	1-136-850-11	FILM	0.1uF	5%	63V
C411	1-136-850-11	FILM	0.1uF	5%	63V
C414	1-130-973-00	FILM	0.022uF	5%	63V

Ref. No.	Part No.	Description			Remark
C415	1-130-892-00	FILM	0.015uF	5%	63V
C416	1-130-892-00	FILM	0.015uF	5%	63V
C417	1-136-818-11	FILM	0.0047uF	5%	100V
C418	1-136-818-11	FILM	0.0047uF	5%	100V
C419	1-136-252-00	FILM	0.0015uF	5%	100V
C420	1-136-252-00	FILM	0.0015uF	5%	100V
C421	1-136-818-11	FILM	0.0047uF	5%	100V
C422	1-136-814-11	FILM	0.001uF	5%	100V
C423	1-128-200-11	ELECT	47uF	20%	63V
C424	1-128-200-11	ELECT	47uF	20%	63V
C425	1-117-775-21	FILM	0.1uF	10%	250V
C500	1-128-201-11	ELECT	100uF	20%	63V
C501	1-136-850-11	FILM	0.1uF	5%	63V
C502	1-136-850-11	FILM	0.1uF	5%	63V
C503	1-136-850-11	FILM	0.1uF	5%	63V
C504	1-136-850-11	FILM	0.1uF	5%	63V
C505	1-136-850-11	FILM	0.1uF	5%	63V
C506	1-128-200-11	ELECT	47uF	20%	63V
C507	1-136-850-11	FILM	0.1uF	5%	63V
C508	1-136-850-11	FILM	0.1uF	5%	63V
C509	1-136-850-11	FILM	0.1uF	5%	63V
C510	1-136-850-11	FILM	0.1uF	5%	63V
C511	1-136-850-11	FILM	0.1uF	5%	63V
C514	1-130-973-00	FILM	0.022uF	5%	63V
C515	1-130-892-00	FILM	0.015uF	5%	63V
C516	1-130-892-00	FILM	0.015uF	5%	63V
C517	1-136-818-11	FILM	0.0047uF	5%	100V
C518	1-136-818-11	FILM	0.0047uF	5%	100V
C519	1-136-252-00	FILM	0.0015uF	5%	100V
C520	1-136-252-00	FILM	0.0015uF	5%	100V
C521	1-136-818-11	FILM	0.0047uF	5%	100V
C522	1-136-814-11	FILM	0.001uF	5%	100V
C523	1-128-200-11	ELECT	47uF	20%	63V
C524	1-128-200-11	ELECT	47uF	20%	63V
C525	1-117-775-21	FILM	0.1uF	10%	250V
C901	1-128-205-11	ELECT	1000uF	20%	63V
C902	1-128-205-11	ELECT	1000uF	20%	63V
C903	1-128-204-11	ELECT	470uF	20%	63V
C904	1-128-204-11	ELECT	470uF	20%	63V
C905	1-128-201-11	ELECT	100uF	20%	63V
C906	1-128-201-11	ELECT	100uF	20%	63V
C907	1-128-201-11	ELECT	100uF	20%	63V
C911	1-128-201-11	ELECT	100uF	20%	63V
C912	1-128-201-11	ELECT	100uF	20%	63V
C921	1-130-973-00	FILM	0.022uF	5%	63V
C922	1-136-818-11	FILM	0.0047uF	5%	100V
		< CONNECTOR >			
CN301	1-568-742-11	SOCKET, CONNECTOR 23P			
CN901	1-564-506-11	PLUG, CONNECTOR 3P			
* CN902	1-564-507-11	PLUG, CONNECTOR 4P			
		< DIODE >			
D303	8-719-402-02	DIODE MA3091M-TX			
D901	8-719-210-21	DIODE 11EQS04			
D902	8-719-210-21	DIODE 11EQS04			
D903	8-719-210-21	DIODE 11EQS04			
D904	8-719-210-21	DIODE 11EQS04			

Ref. No.	Part No.	Description			Remark
		< IC >			
IC201	8-759-925-76	IC SN74HC08ANS			
IC301	8-759-442-42	IC CXD8595Q			
IC302	8-759-454-42	IC CXD2562Q-CS			
IC303	8-759-083-94	IC TC7W74FU			
IC401	8-759-371-51	IC CXA8042AS			
IC402	8-759-296-74	IC AD712JR-REEL			
IC403	8-759-296-74	IC AD712JR-REEL			
IC501	8-759-371-51	IC CXA8042AS			
IC502	8-759-296-74	IC AD712JR-REEL			
IC503	8-759-296-74	IC AD712JR-REEL			
IC901	8-759-231-58	IC TA7812S			
IC902	8-759-245-86	IC TA7912S			
IC903	8-759-231-53	IC TA7805S			
IC904	8-759-604-90	IC M5F7907L			
IC905	8-759-231-53	IC TA7805S			
IC906	8-759-604-86	IC M5F7807L			
IC907	8-759-231-53	IC TA7805S			
		< COIL >			
L303	1-414-518-21	INDUCTOR	6.8uH		
L305	1-414-518-21	INDUCTOR	6.8uH		
L306	1-414-518-21	INDUCTOR	6.8uH		
L401	1-414-518-21	INDUCTOR	6.8uH		
		< TRANSISTOR >			
Q301	8-729-421-19	TRANSISTOR UN2213			
Q302	8-729-424-08	TRANSISTOR UN2111			
		< RESISTOR >			
R203	1-216-019-00	METAL CHIP	56	5%	1/10W
R206	1-216-021-00	METAL CHIP	68	5%	1/10W
R207	1-216-073-00	METAL CHIP	10K	5%	1/10W
R208	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R210	1-216-025-00	METAL GLAZE	100	5%	1/10W
R229	1-259-990-11	CARBON MELF	390	2%	1/8W
R231	1-259-990-11	CARBON MELF	390	2%	1/8W
R303	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R304	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R306	1-260-008-11	CARBON MELF	10K	2%	1/8W
R310	1-259-983-11	CARBON MELF	100	2%	1/8W
R312	1-216-041-00	METAL CHIP	470	5%	1/10W
R313	1-216-041-00	METAL CHIP	470	5%	1/10W
R314	1-216-041-00	METAL CHIP	470	5%	1/10W
R315	1-216-041-00	METAL CHIP	470	5%	1/10W
R316	1-216-041-00	METAL CHIP	470	5%	1/10W
R317	1-216-041-00	METAL CHIP	470	5%	1/10W
R351	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R352	1-216-025-00	METAL GLAZE	100	5%	1/10W
R353	1-216-001-00	METAL CHIP	10	5%	1/10W
R390	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R400	1-216-041-00	METAL CHIP	470	5%	1/10W
R401	1-259-989-11	CARBON MELF	330	2%	1/8W
R402	1-259-989-11	CARBON MELF	330	2%	1/8W
R403	1-259-989-11	CARBON MELF	330	2%	1/8W
R404	1-259-989-11	CARBON MELF	330	2%	1/8W
R405	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R406	1-259-971-11	CARBON MELF	10	2%	1/8W
R407	1-259-971-11	CARBON MELF	10	2%	1/8W

Ref. No.	Part No.	Description			Remark
R408	1-259-987-11	CARBON MELF	220	2%	1/8W
R409	1-259-989-11	CARBON MELF	330	2%	1/8W
R410	1-259-971-11	CARBON MELF	10	2%	1/8W
R411	1-259-990-11	CARBON MELF	390	2%	1/8W
R412	1-259-981-11	CARBON MELF	68	2%	1/8W
R413	1-259-971-11	CARBON MELF	10	2%	1/8W
R414	1-259-981-11	CARBON MELF	68	2%	1/8W
R415	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R416	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R417	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R418	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R419	1-259-995-11	CARBON MELF	1K	2%	1/8W
R420	1-259-995-11	CARBON MELF	1K	2%	1/8W
R421	1-259-995-11	CARBON MELF	1K	2%	1/8W
R422	1-260-028-11	CARBON MELF	470K	2%	1/8W
R423	1-259-971-11	CARBON MELF	10	2%	1/8W
R500	1-216-041-00	METAL CHIP	470	5%	1/10W
R501	1-259-989-11	CARBON MELF	330	2%	1/8W
R502	1-259-989-11	CARBON MELF	330	2%	1/8W
R503	1-259-989-11	CARBON MELF	330	2%	1/8W
R504	1-259-989-11	CARBON MELF	330	2%	1/8W
R505	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R506	1-259-971-11	CARBON MELF	10	2%	1/8W
R507	1-259-971-11	CARBON MELF	10	2%	1/8W
R508	1-259-987-11	CARBON MELF	220	2%	1/8W
R509	1-259-989-11	CARBON MELF	330	2%	1/8W
R510	1-259-971-11	CARBON MELF	10	2%	1/8W
R511	1-259-990-11	CARBON MELF	390	2%	1/8W
R512	1-259-981-11	CARBON MELF	68	2%	1/8W
R513	1-259-971-11	CARBON MELF	10	2%	1/8W
R514	1-259-981-11	CARBON MELF	68	2%	1/8W
R515	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R516	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R517	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R518	1-259-999-11	CARBON MELF	2.2K	2%	1/8W
R519	1-259-995-11	CARBON MELF	1K	2%	1/8W
R520	1-259-995-11	CARBON MELF	1K	2%	1/8W
R521	1-259-995-11	CARBON MELF	1K	2%	1/8W
R522	1-260-028-11	CARBON MELF	470K	2%	1/8W
R523	1-259-971-11	CARBON MELF	10	2%	1/8W
R525	1-259-908-91	CARBON MELF	62	2%	1/8W
		< COIL >			
T201	1-409-594-11	COIL (WITH CORE)			
		< VIBRATOR >			
X301	1-579-161-11	VIBRATOR, CRYSTAL (45MHz)			
**********					
*	1-663-646-11	D OUT SW BOARD			
		**********			
		< CONNECTOR >			
CN206	1-506-481-11	PIN, CONNECTOR 2P			
		< SWITCH >			
S201	1-571-083-31	SWITCH, SLIDE (DIGITAL OUT)			
**********					

Ref. No.	Part No.	Description			Remark
*	1-663-649-11	DIGITAL OUT BOARD			
		**********			
		< CONNECTOR >			
* CN204	1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P			
* CN205	1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
		< IC >			
IC202	8-749-921-12	IC GP1F32T (DIGITAL OUT OPTICAL)			
		< JACK >			
J201	1-770-905-21	JACK, PIN 1P (DIGITAL OUT COAXIAL)			
**********					
*	A-4699-304-A	DISPLAY BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C801	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C803	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C804	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C810	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C811	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C812	1-164-505-11	CERAMIC CHIP	2.2uF		16V
		< CONNECTOR >			
* CN801	1-564-518-11	PLUG, CONNECTOR 3P			
* CN802	1-564-719-11	PIN, CONNECTOR (SMALL TYPE) 3P			
* CN803	1-564-724-11	PIN, CONNECTOR (SMALL TYPE) 8P			
* CN804	1-564-724-11	PIN, CONNECTOR (SMALL TYPE) 8P			
CN805	1-564-723-11	PIN, CONNECTOR (SMALL TYPE) 7P			
CN808	1-506-481-11	PIN, CONNECTOR 2P			
		< FLUORECENT INDICATOR >			
FLD801	1-517-604-11	INDICATOR TUBE, FLUORESCENT			
		< IC >			
IC801	8-752-884-94	IC CXP82316-083Q			
IC802	8-759-373-59	IC GP1U26XB			
IC803	8-759-504-12	IC X24C01S			
		< TRANSISTOR >			
Q801	8-729-421-22	TRANSISTOR UN2211			
Q804	8-729-421-22	TRANSISTOR UN2211			
		< RESISTOR >			
R801	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R802	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R804	1-216-073-00	METAL CHIP	10K	5%	1/10W
R805	1-216-073-00	METAL CHIP	10K	5%	1/10W
R816	1-216-037-00	METAL CHIP	330	5%	1/10W
R817	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R818	1-216-073-00	METAL CHIP	10K	5%	1/10W
R821	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R822	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R830	1-216-073-00	METAL CHIP	10K	5%	1/10W
R831	1-216-073-00	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remark
		< VIBRATOR >			
X801	1-577-358-21	VIBRATOR, CERAMIC (4MHz)			
**********					
*	A-4699-306-A	KEY BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C807	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C813	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C830	1-163-038-00	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
CN806	1-506-486-11	PIN, CONNECTOR 7P			
		< LED >			
D801	8-719-032-86	LED SEL5420E (▷)			
D802	8-719-032-98	LED SEL5820A (▯▯)			
		< COIL >			
L801	1-414-234-11	INDUCTOR, FERRITE BEAD			
		< TRANSISTOR >			
Q802	8-729-421-22	TRANSISTOR UN2211			
Q803	8-729-421-22	TRANSISTOR UN2211			
		< RESISTOR >			
R803	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R806	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R807	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R808	1-216-045-00	METAL CHIP	680	5%	1/10W
R809	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R811	1-216-045-00	METAL CHIP	680	5%	1/10W
R812	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R813	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R814	1-216-029-00	METAL CHIP	150	5%	1/10W
R815	1-216-029-00	METAL CHIP	150	5%	1/10W
R835	1-216-049-11	METAL GLAZE	1K	5%	1/10W
		< SWITCH >			
S801	1-554-303-21	SWITCH, TACTILE (■)			
S802	1-554-303-21	SWITCH, TACTILE (▯▯)			
S803	1-554-303-21	SWITCH, TACTILE (▷)			
S804	1-554-303-21	SWITCH, TACTILE (▶▶I)			
S805	1-554-303-21	SWITCH, TACTILE (I◀◀)			
S806	1-554-303-21	SWITCH, TACTILE (▶▶)			
S807	1-554-303-21	SWITCH, TACTILE (◀◀)			
S808	1-762-010-11	SWITCH, LEVER (IN/OUT SW)			
**********					

Ref. No.	Part No.	Description			Remark
*	1-663-650-12	LED BOARD			
		*********			
		< CAPACITOR >			
C808	1-164-232-11	CERAMIC CHIP	0.01uF		50V
		< LED >			
D803	8-719-032-86	LED SEL5420E (POWER)			
**********					
*	1-663-644-13	POWER BOARD			
		**********			
		< CAPACITOR >			
C600	1-130-973-00	FILM	0.022uF	5%	63V
C601	1-136-818-11	FILM	0.0047uF	5%	100V
C605	1-128-198-11	ELECT	22uF	20%	63V
C606	1-124-724-11	ELECT	47uF	20%	50V
C607	1-128-200-11	ELECT	47uF	20%	63V
C608	1-136-850-11	FILM	0.1uF	5%	63V
C609	1-124-689-11	ELECT	1000uF	20%	16V
C610	1-124-689-11	ELECT	1000uF	20%	16V
C611	1-124-689-11	ELECT	1000uF	20%	16V
C612	1-124-689-11	ELECT	1000uF	20%	16V
C613	1-124-689-11	ELECT	1000uF	20%	16V
C614	1-124-689-11	ELECT	1000uF	20%	16V
C621	1-136-814-11	FILM	1000P	5%	100V
C622	1-106-351-00	MYLAR	2200PF	5%	200V
C624	1-104-645-11	CERAMIC	1uF	20%	50V
C625	1-136-816-11	FILM	0.0022uF	5%	100V
C650	1-130-973-00	FILM	0.022uF	5%	63V
C814	1-136-850-11	FILM	0.1uF	5%	63V
C815	1-136-850-11	FILM	0.1uF	5%	63V
		< CONNECTOR >			
* CN601	1-564-512-11	PLUG, CONNECTOR 9P			
CN602	1-564-506-11	PLUG, CONNECTOR 3P			
* CN603	1-564-507-11	PLUG, CONNECTOR 4P			
* CN604	1-564-506-11	PLUG, CONNECTOR 3P			
		< 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	8-719-210-21	DIODE 11EQS04			
D606	8-719-210-21	DIODE 11EQS04			
D607	8-719-210-21	DIODE 11EQS04			
D608	8-719-210-21	DIODE 11EQS04			
D609	8-719-110-63	DIODE RD24ES-B3			
D610	8-719-109-98	DIODE RD6.8ES-B3			

POWER SERVO

Ref. No.	Part No.	Description			Remark
		< COIL >			
L601	1-414-512-21	INDUCTOR 6.8uH			
L602	1-424-122-11	FILTER, NOISE			
L603	1-424-122-11	FILTER, NOISE			
		< TRANSISTOR >			
Q601	8-729-019-65	TRANSISTOR 2SB1041T103			
		< RESISTOR >			
⚠R601	1-212-869-00	FUSIBLE	33	5%	1/4W F
R602	1-247-843-11	CARBON	3.3K	5%	1/4W
R603	1-247-843-11	CARBON	3.3K	5%	1/4W
R604	1-249-433-11	CARBON	22K	5%	1/4W
R605	1-249-401-11	CARBON	47	5%	1/4W
R606	1-249-401-11	CARBON	47	5%	1/4W
R607	1-249-433-11	CARBON	22K	5%	1/4W
⚠R608	1-212-869-00	FUSIBLE	33	5%	1/4W F
**********					
*	A-4699-302-A	SERVO BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C102	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C103	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C104	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C105	1-126-046-11	ELECT	3.3uF	20%	50V
C106	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C108	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C109	1-162-208-31	CERAMIC	24PF	5%	50V
C110	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C111	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C112	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C113	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C114	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C115	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C116	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C117	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C118	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C119	1-104-760-11	CERAMIC CHIP	0.047uF	10%	50V
C120	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C121	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C122	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C123	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C124	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C125	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C126	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C127	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C128	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C129	1-136-850-11	FILM	0.1uF	5%	63V
C130	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C131	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C132	1-128-198-11	ELECT	22uF	20%	63V
C133	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C134	1-136-850-11	FILM	0.1uF	5%	63V

Ref. No.	Part No.	Description			Remark
C135	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C136	1-128-198-11	ELECT	22uF	20%	63V
C137	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C138	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C139	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C140	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C141	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C142	1-126-049-11	ELECT	22uF	20%	50V
C143	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C150	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C170	1-162-300-31	CERAMIC	0.01uF	20%	16V
C171	1-162-290-31	CERAMIC	470PF	10%	50V
C190	1-124-724-11	ELECT	47uF	20%	50V
C191	1-136-850-11	FILM	0.1uF	5%	63V
C192	1-136-850-11	FILM	0.1uF	5%	63V
C193	1-128-198-11	ELECT	22uF	20%	63V
C200	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C220	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C221	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C222	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C223	1-163-038-00	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
CN104	1-568-742-11	SOCKET, CONNECTOR 23P			
CN105	1-564-506-11	PLUG, CONNECTOR 3P			
* CN108	1-564-506-11	PLUG, CONNECTOR 3P			
CN110	1-568-439-11	SOCKET, CONNECTOR 7P			
* CN111	1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P			
* CN112	1-564-710-11	PIN, CONNECTOR (SMALL TYPE) 8P			
* CN113	1-564-710-11	PIN, CONNECTOR (SMALL TYPE) 8P			
		< IC >			
IC103	8-759-636-16	IC M51957AL			
IC104	8-759-233-64	IC TC74HCU04AF			
IC105	8-752-369-78	IC CXD2545Q			
IC106	8-759-071-79	IC BA6297AFP			
IC107	8-752-072-45	IC CXA1821M-T6			
		< COIL >			
L103	1-414-510-21	INDUCTOR 3.3uH			
		< TRANSISTOR >			
Q101	8-729-421-19	TRANSISTOR UN2213			
Q102	8-729-424-18	TRANSISTOR UN2113-TX			
Q103	8-729-010-08	TRANSISTOR MSB710-R			
Q104	8-729-010-08	TRANSISTOR MSB710-R			
Q105	8-729-424-18	TRANSISTOR UN2113-TX			
Q106	8-729-421-22	TRANSISTOR UN2211			
Q107	8-729-424-08	TRANSISTOR UN2111			
		< RESISTOR >			
R104	1-216-077-00	METAL CHIP	15K	5%	1/10W
R105	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R107	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R114	1-216-041-00	METAL CHIP	470	5%	1/10W

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
R116	1-216-045-00	METAL CHIP	680	5%	1/10W
R119	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R123	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R124	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R125	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R126	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R127	1-216-033-00	METAL CHIP	220	5%	1/10W
R128	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R129	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R130	1-216-041-00	METAL CHIP	470	5%	1/10W
R131	1-216-041-00	METAL CHIP	470	5%	1/10W
R132	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R133	1-216-041-00	METAL CHIP	470	5%	1/10W
R134	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R135	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R136	1-216-073-00	METAL CHIP	10K	5%	1/10W
R137	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R138	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R139	1-216-073-00	METAL CHIP	10K	5%	1/10W
R140	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R141	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R142	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R143	1-216-025-00	METAL GLAZE	100	5%	1/10W
R144	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R145	1-216-073-00	METAL CHIP	10K	5%	1/10W
R146	1-216-073-00	METAL CHIP	10K	5%	1/10W
R147	1-216-073-00	METAL CHIP	10K	5%	1/10W
R148	1-216-073-00	METAL CHIP	10K	5%	1/10W
R149	1-216-073-00	METAL CHIP	10K	5%	1/10W
R150	1-216-085-00	METAL CHIP	33K	5%	1/10W
R151	1-216-073-00	METAL CHIP	10K	5%	1/10W
R152	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R153	1-216-073-00	METAL CHIP	10K	5%	1/10W
R154	1-216-073-00	METAL CHIP	10K	5%	1/10W
R155	1-216-073-00	METAL CHIP	10K	5%	1/10W
R156	1-216-073-00	METAL CHIP	10K	5%	1/10W
R157	1-216-073-00	METAL CHIP	10K	5%	1/10W
R158	1-216-073-00	METAL CHIP	10K	5%	1/10W
R159	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R160	1-216-077-00	METAL CHIP	15K	5%	1/10W
R161	1-216-077-00	METAL CHIP	15K	5%	1/10W
R162	1-216-073-00	METAL CHIP	10K	5%	1/10W
R163	1-216-073-00	METAL CHIP	10K	5%	1/10W
R164	1-216-073-00	METAL CHIP	10K	5%	1/10W
R165	1-216-073-00	METAL CHIP	10K	5%	1/10W
R166	1-216-073-00	METAL CHIP	10K	5%	1/10W
R167	1-216-081-00	METAL CHIP	22K	5%	1/10W
R168	1-216-295-00	CONDUCTOR, CHIP (2012)			
R170	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R171	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R172	1-216-073-00	METAL CHIP	10K	5%	1/10W
R173	1-216-073-00	METAL CHIP	10K	5%	1/10W
R174	1-216-041-00	METAL CHIP	470	5%	1/10W
R175	1-216-079-00	METAL CHIP	18K	5%	1/10W
R176	1-216-101-00	METAL CHIP	150K	5%	1/10W
R177	1-216-101-00	METAL CHIP	150K	5%	1/10W
R178	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R179	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R180	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R181	1-216-073-00	METAL CHIP	10K	5%	1/10W
R182	1-216-073-00	METAL CHIP	10K	5%	1/10W
R183	1-216-101-00	METAL CHIP	150K	5%	1/10W
R184	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R185	1-216-113-00	METAL CHIP	470K	5%	1/10W
R186	1-216-073-00	METAL CHIP	10K	5%	1/10W
R188	1-216-003-11	METAL GLAZE	12	5%	1/10W
R189	1-216-001-00	METAL CHIP	10	5%	1/10W
R191	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R192	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R193	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R194	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R195	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R196	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R197	1-216-073-00	METAL CHIP	10K	5%	1/10W
R198	1-216-073-00	METAL CHIP	10K	5%	1/10W
R199	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R200	1-216-308-00	METAL GLAZE	4.7	5%	1/10W
R201	1-216-308-00	METAL GLAZE	4.7	5%	1/10W
R202	1-216-308-00	METAL GLAZE	4.7	5%	1/10W
R204	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R205	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R220	1-216-308-00	METAL GLAZE	4.7	5%	1/10W
R820	1-216-049-11	METAL GLAZE	1K	5%	1/10W
		< VARIABLE RESISTOR >			
RV101	1-238-601-11	RES, ADJ, CARBON 22K			
**********					
*	1-663-651-11	SLED BOARD			
		**********			
		< CONNECTOR >			
* CN108	1-568-849-11	SOCKET, CONNECTOR 6P			
* CN109	1-568-850-11	SOCKET, CONNECTOR 7P			
**********					
*	1-663-652-11	SPINDLE BOARD			
		**********			
		< CONNECTOR >			
CN107	1-691-065-31	HOUSING, CONNECTOR 6P			
		< SWITCH >			
S151	1-571-958-11	SWITCH, PUSH (1 KEY) (LIMIT IN)			
S152	1-571-958-11	SWITCH, PUSH (1 KEY) (LIMIT OUT)			
**********					

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS	
		**********	
63	1-777-923-11	WIRE (FLAT TYPE) (7 CORE)	
64	1-777-924-11	WIRE (FLAT TYPE) (23 CORE)	
⚠107	1-558-568-21	CORD, POWER	
153	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)	
159	1-777-741-11	WIRE (FLAT TYPE) (6 CORE)	
⚠164	8-848-379-31	OPTICAL PICK-UP KSS-213B/S-N	
M101	X-4947-303-1	MOTOR ASSY (SLED)	
M102	X-4948-273-1	MOTOR ASSY (SPINDLE)	
⚠T1	1-431-227-11	TRANSFORMER, POWER	
**********			
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-132-19	SCREW +BTP 2.6X5 TYPE2 N-S	
#2	7-685-870-01	SCREW +BVTT 3X5 (S)	
#3	7-685-871-09	SCREW +BVTT 3X6 (S)	
#4	7-621-775-08	SCREW +P 2.6X3	
#5	7-621-773-95	SCREW +B 2.6X6	
#6	7-621-770-67	SCREW +P 2.6X6	
#7	7-685-874-09	SCREW +BVTT 3X12 (S)	
#8	7-621-775-10	SCREW +P 2.6X4	
#9	7-685-872-09	SCREW +BVTT 3X8 (S)	
#10	7-627-852-07	SCREW, PRECISION +P 1.7X2.5	
#11	7-685-880-09	SCREW +BVTT 4X6 (S)	
#12	7-685-871-01	SCREW +BVTT 3X6 (S)	
**********			
		ACCESSORIES & PACKING MATERIALS	
		**********	
	1-473-943-11	REMOTE COMMANDER (RM-DX3000)	
	1-558-271-11	CORD, CONNECTION (AUDIO PIN CORD)	
	3-858-684-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, PORTUGUESE, CHINESE) (X3000ES)	
	3-858-684-21	MANUAL, INSTRUCTION (GERMAN, ITALIAN, DUTCH, SWEDISH) (X3000ES)	
	4-981-643-01	COVER, BATTERY (for RM-DX3000)	
	X-4947-761-1	STABILIZER ASSY	

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

Sony Corporation
Home A&V Products Company

97D0559-1
Printed in Japan
Published by General Engineering Dept. (Shibaura)