

- Standby indicator
 - Auto cue indicator
 - Time mode indicator
 - Emphasis indicator
- When using remote control unit:
- dB display
 - Level indicator
 - Music scan indicator
 - Remote control indicator

■ Headphones:

Output level: 100 mW max. (variable)
Impedance: 32 Ω
Plug: 1/4 inch stereo

■ General

Power supply: For U.S.A. and Canada:
AC 60Hz, 120V
For United Kingdom and
Australia: AC 240V, 50Hz
For Continental Europe:
AC 220V, 50Hz
For others:
AC 110~127/220~240V, 50/60Hz

Power consumption: 29 W
Output voltage: 2 V (at 0 dB)*
Output impedance: About 200 Ω
Load impedance: More than 10 k Ω

Dimensions (W×D×H): 43×38×16.8 cm
(16-15/16"×14-3/32"×6-5/8")
When disc compartment is open.
23 cm (9-1/16") height
14.5 kg (32 lbs)

Weight:

■ Infrared remote control unit

Remote control buttons: Basic buttons: 7
Program buttons: 12
Time mode select buttons: 2
Index button: 1
Music scan button: 1
Repeat button: 1
Asterisk button: 1
Digital volume attenuation
buttons: 2

**Dimensions
(W×H×D):**

Batteries: 6.4×15.5×1.8 cm
UM-3 "AA" batteries or IEC R6
or equivalent (1.5 V×2)
Weight: 140 g (0.3 lb.)
(including batteries)

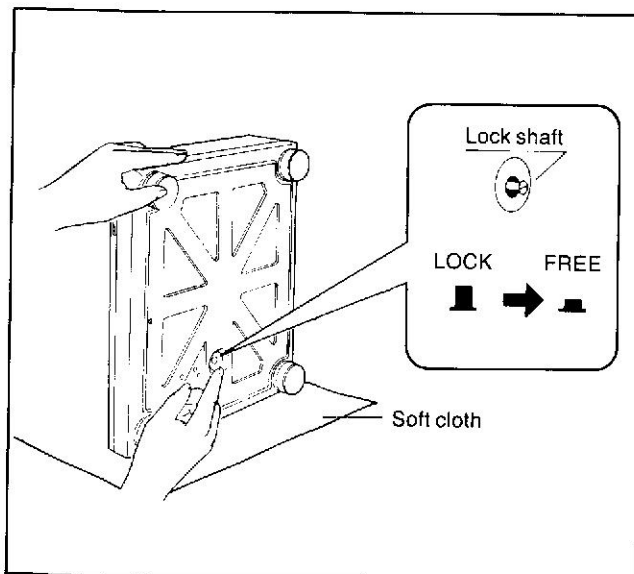
Specifications are subject to change without notice for further improvement.
Weight and dimensions are approximate.

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■ BEFORE USING THIS UNIT

1. Place a soft cloth under the unit to protect it from scratches.
2. Press the lock shaft on the bottom panel to the in (FREE) position (■ → ■).



NOTE:

IF THE UNIT IS TRANSPORTED AGAIN, PERFORM THE FOLLOWING STEPS:

- 1) Remove the disc from the holder.
- 2) Pull the lock shaft to the out (LOCK) position (□ → ■).

CAUTION:

Do not transport the unit without locking the lock shaft.
SEVERE DAMAGE WILL RESULT.

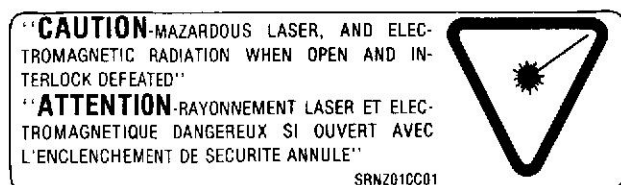
■ PRECAUTION OF LASER DIODE

Caution: This product utilizes a laser diode.
ADVARSEL: I dette a apparat anvendes laser.

• Use of caution labels

Note: ○ Mark is used, × Mark is not used.

Areas	SRNZ010C01	SRNZ010S01	SRNZ010S02	SRNZ050S01
[MC]	○	×	×	×
[E], [EK], [XL], [EG], [EB], [EH], [EF], [Ei], [XA], [XB]	×	○	○	○

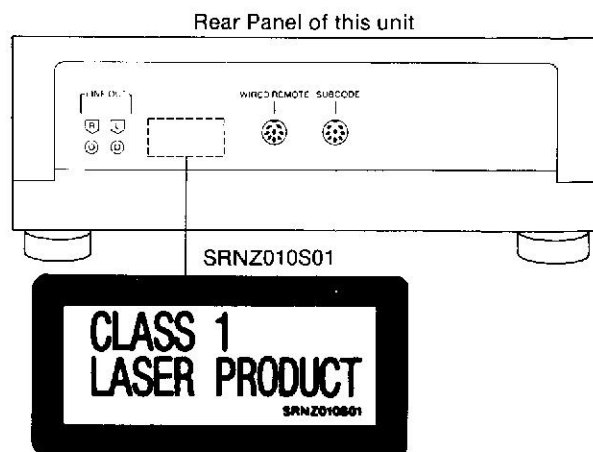


ADVARSEL-Der vil udstråles osynlig laser når apparatet åbnes og aflåsningsmekanismen frigøres. UNDGÅAT BLIVE UDSET FOR LASERBESTRÅLING.

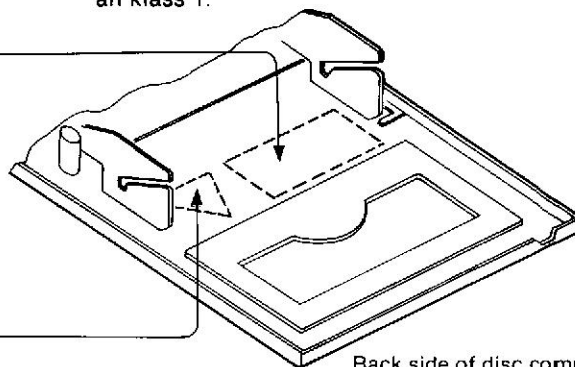
DANGER-Invisible laser radiation when open and interlock defeated. AVOID DIRECT EXPOSURE

SRNZ050S01

VAROITUS! Laite sisältää laserdiodin, joka lähettää näkymätöntä silmille vaarallista lasersäteilyä



Obs:
 Apparaten innehåller laser Komponent av höger laserklass än klass 1.



■ SAFETY PRECAUTION

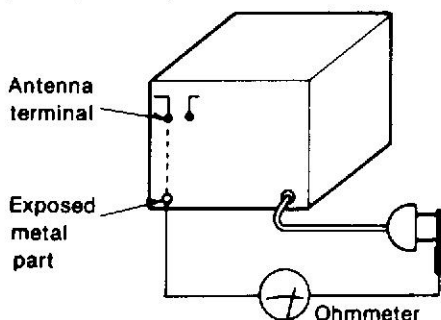
(This "safety precaution" is applied only in U.S.A.)

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

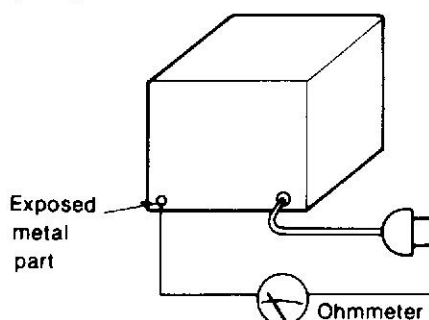
• INSULATION RESISTANCE TEST

1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between 3MΩ and 5.2MΩ to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.



Resistance = 3MΩ—5.2MΩ

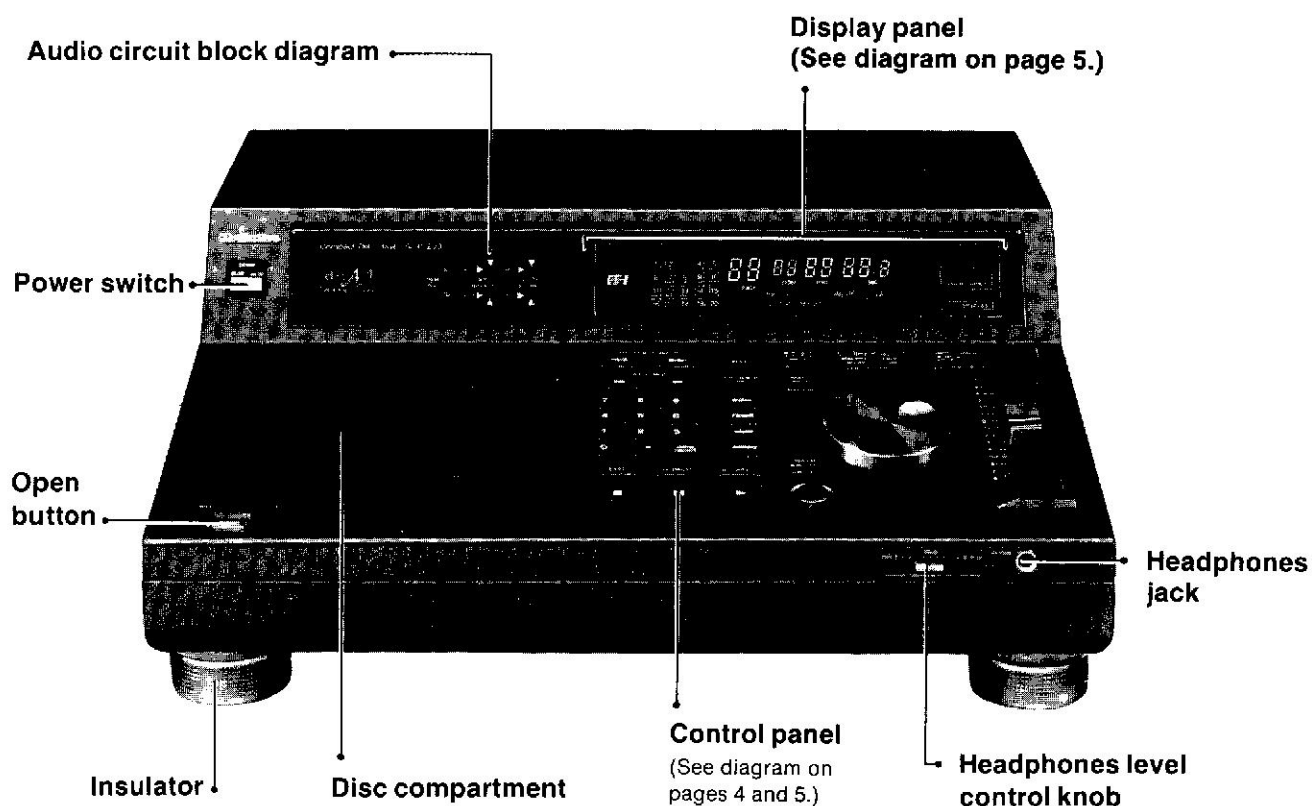


Resistance = Approx ∞

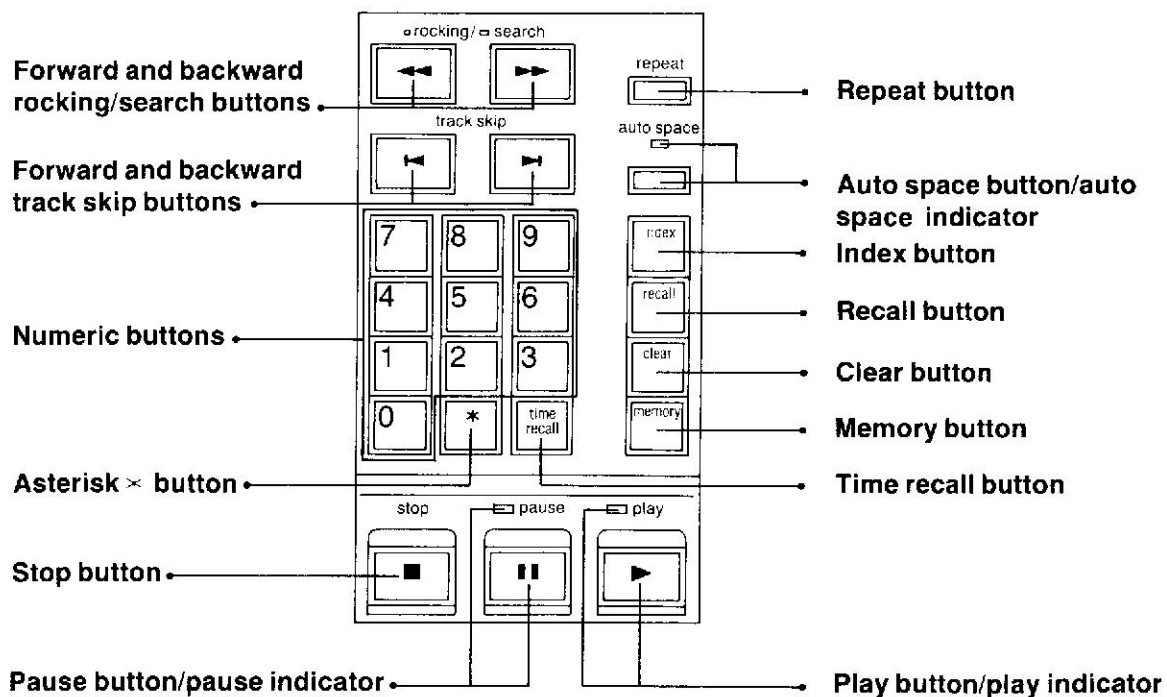
4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

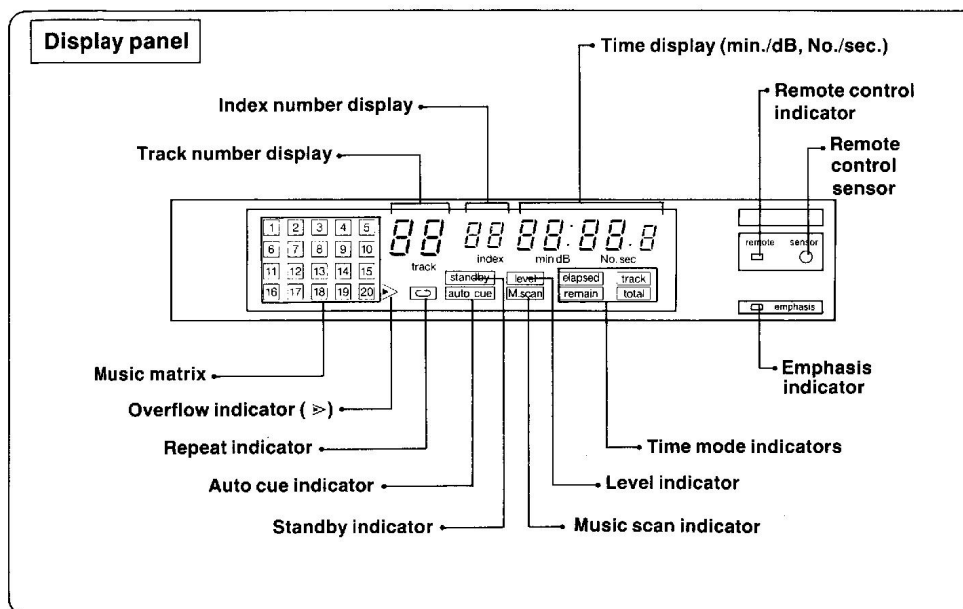
■ LOCATION OF CONTROLS

Front panel

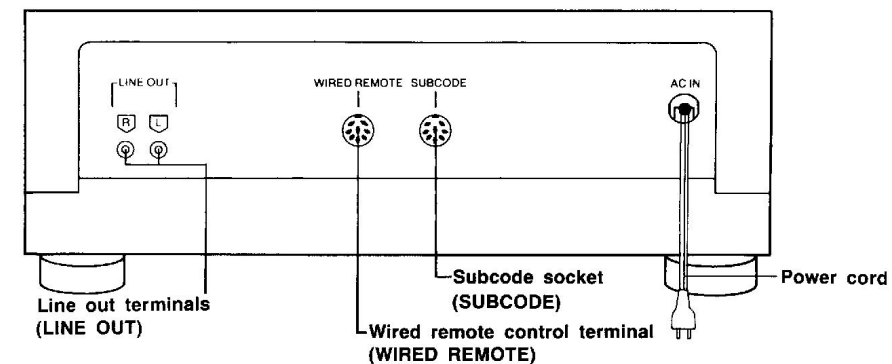


Control panel



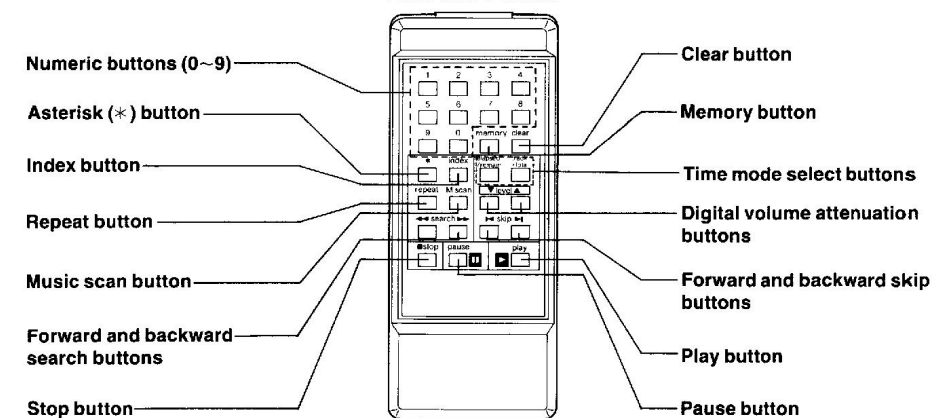


Rear panel

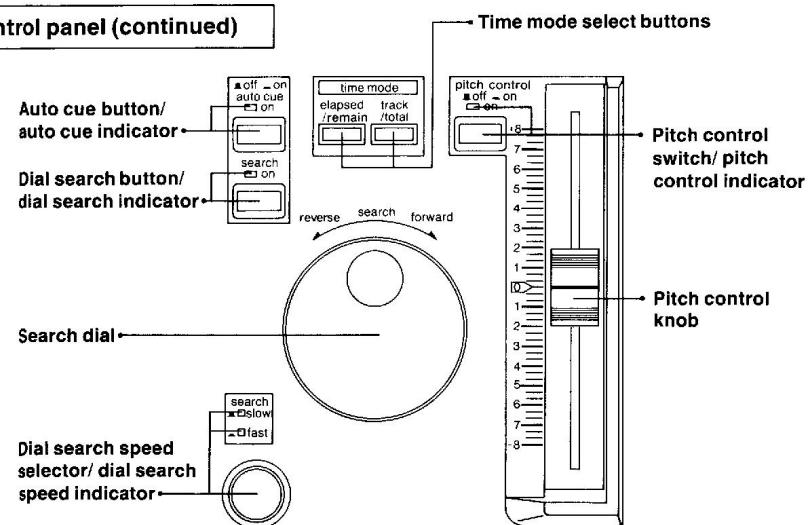


Remote control

EUR64185.... U.S.A. and Canada
EUR64186.... Others



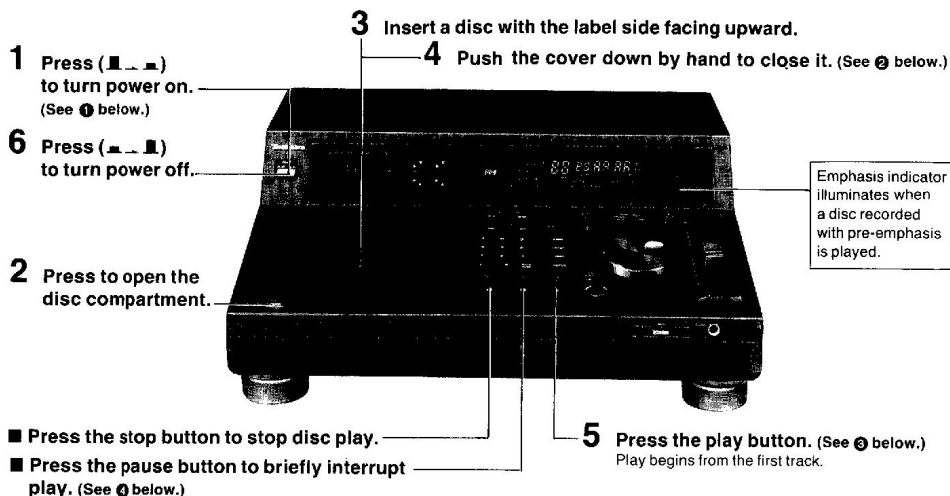
Control panel (continued)



Playing a disc

1 Automatic play

■ To play a disc from the first track to the end of the disc.



- Press the stop button to stop disc play.
- Press the pause button to briefly interrupt play. (See 4 below.)

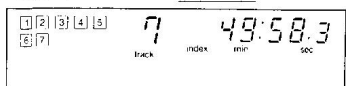
1 When power is turned on, the display panel illuminates as shown below:



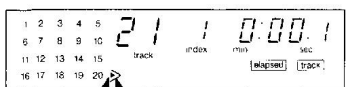
After about 5 seconds or after the disc compartment has been opened the display panel shows the following:



2 After inserting the disc and closing the cover the disc will begin to rotate. After the total number of tracks, and total playing time are displayed, the player switches to the stop mode.



If a disc has more than 20 tracks the overflow indicator illuminates, and when the 21st track is played the overflow indicator flashes on and off.



illuminates Flashes on and off during play

■ Remove the disc from the disc holder and turn off the power if the player is not to be used again for a while.

2 Random access play

■ Starting disc play from a specific place on the disc.

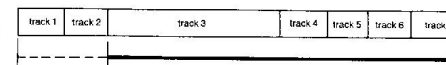
■ From this page onward the following basic operations are omitted:

- Power on/off
- Disc compartment open/close
- Interrupting play
- Stopping play

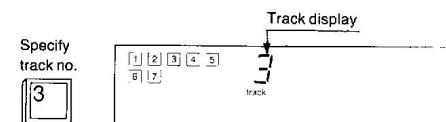
■ Press the buttons in the order shown by the arrows.

2-1. To start disc play from a specific track

■ For example, to play from the beginning of track 3 to the end of the disc.

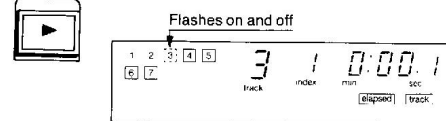


•The display below shows track 3 is specified.



•When the play button is pressed, play begins from track 3.

•The border of the track being played flashes on and off.

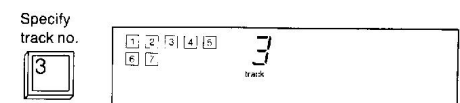
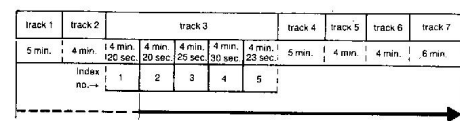


•The player switches to the stop mode when play has finished.

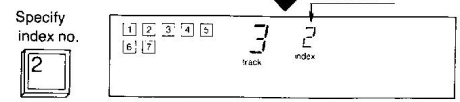
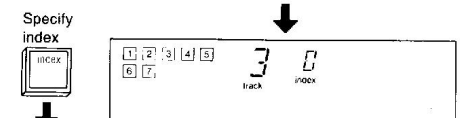
2-2. To play a disc from a specific index

(This is possible only on discs having indexes.)

■ For example, to play from the beginning of index 2 of track 3 to the end of the disc.

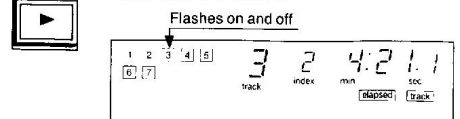


•When playing discs having only one track, remember to enter track number 1, then specify the index number.



•Index numbers up to 99 can be specified.

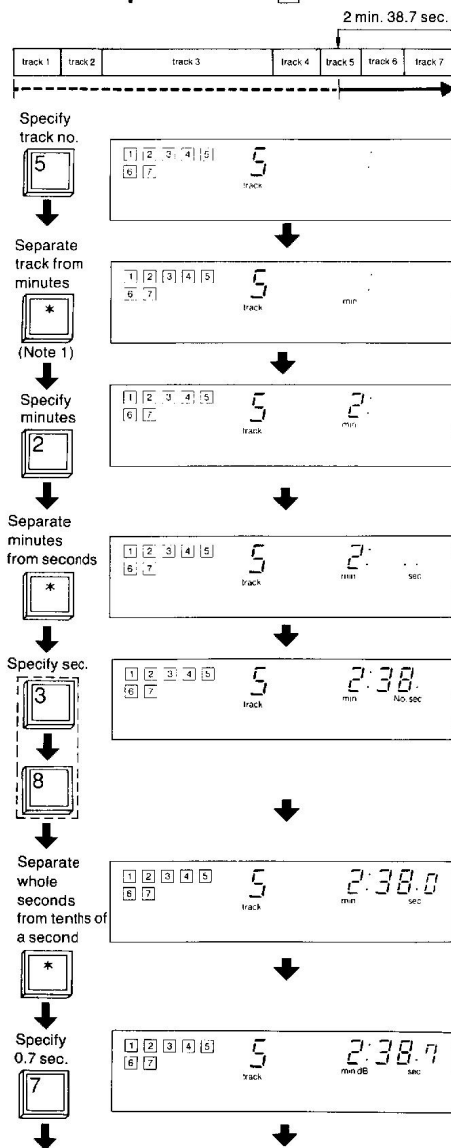
•When the play button is pressed, disc play begins from index 2 of track 3.



•When the end of the disc is reached, the player switches to the stop mode.

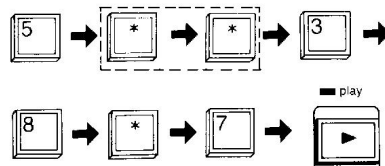
2-3. To play a disc from a specific starting time

- For example, to play from the 2 min. 38.7 sec. point of track 5.



- When the play button is pressed, disc play begins from the 2 min. 38.7 sec. point of track 5.

Note 1)
When no minutes are to be specified, for example, if play is to begin at the 38.7 sec. point of track 5, press the numeric button "0" or press the asterisk button twice in a row, as shown below.



- An already specified time will be cancelled when a new time is entered or the clear button is pressed.
- If the starting time is specified while the unit is in the pause mode, press the pause button once and then press the play button to resume play. Not pressing the pause button will cause a short delay before sound is heard.

Restarting play from the same point of time (By means of starting time confirmation.)

- Press the time recall button during play.
- The starting time is shown for about 20 seconds on the display panel. During that time play continues.



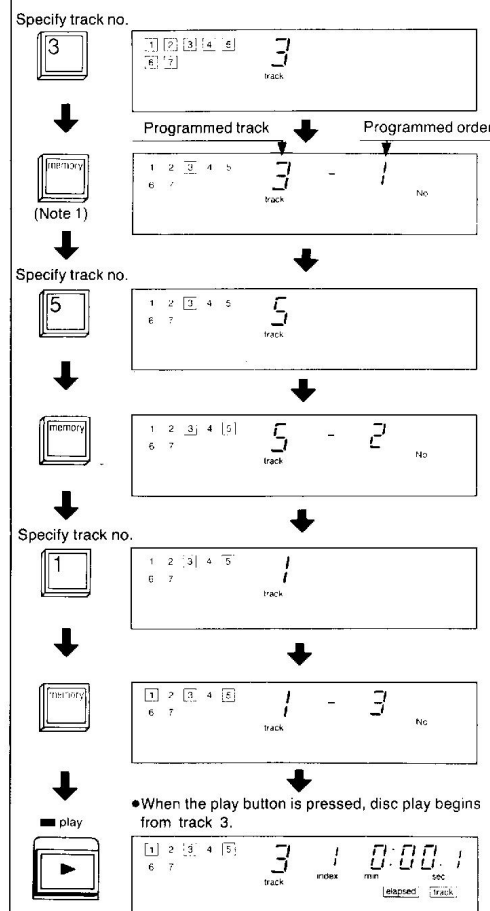
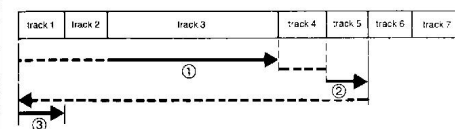
- If the play button is pressed during that time, play begins again from the location indicated on the display.

3 Program play

Using the program play function a maximum of 20 selections can be programmed in any sequence.
Index numbers can not be programmed.

3-1. Track program play (in any order)

- For example, to play track 3, track 5 and track 1 in that order.

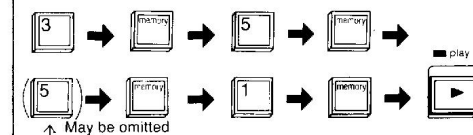


Note 1) E (error) will be displayed momentarily if a track number not on the disc is specified.
If more than 20 selections are entered "F" (full) is shown in the display panel and no further selections can be programmed.

- If an incorrect entry is made while the unit is in the stop mode, pressing the clear button will cancel the last program entry.

However, if the clear button is pressed during disc play or in the pause mode, all memory contents are cleared and disc play continues from the current point to the end of the disc (memory clear function).

- Programming two tracks in a row.
For example, if tracks 3-5-5-1 are programmed in that order, press the memory button twice, as shown below. The double numeric button operation may be abbreviated.



- After a track has been played its border goes out.
- The player switches to the stop mode when the last programmed track has been played.

4 Pitch control

This function allows fine adjustment of pitch (up to $\pm 8\%$).

1. Press the pitch control switch to "on".
The pitch control indicator illuminates.

2. Slide the pitch control knob upward or downward to the desired setting.

- When not using this function, press the pitch control switch again to release it (off).

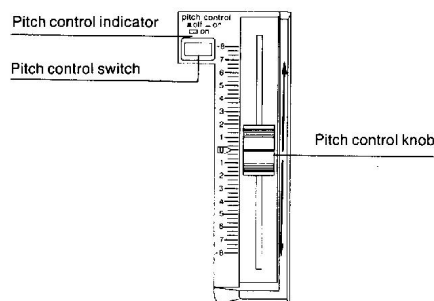
Note:

In the center position (0) a "click" can be perceived. This position is the 0% standard pitch.

The +5.9% position is a half tone sharp ($\sharp$).

The -5.6% position is a half tone flat ($\flat$).

- When the pitch has been changed, the elapsed or remaining playing time readings will differ from the actual times by the amount of pitch adjustment.



5 Skip play

(Skip play can be performed when the player is in the play or pause mode.)

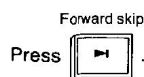
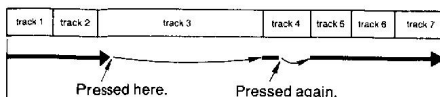
This function allows quick access to the beginning of a track.

Note: Index skip play is not possible.

Forward skip

- The pickup skips the same number of tracks as the number of times the button is pressed.
- During automatic play, the pickup skips to the beginning of the next track each time the button is pressed.
- During program play or program repeat play, the pickup skips to the beginning of the next programmed track each time the button is pressed.
- While watching the track number display, press the forward skip button until the desired track has been located.

- **Example:** To advance to the beginning of the fourth track and then to the beginning of the fifth track while listening to the third track.

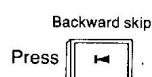
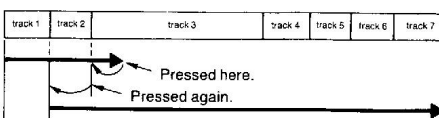


Backward skip

- During automatic play, the pickup skips to the beginning of the current track. If pressed again quickly, the pickup skips to the beginning of the previous track.
- During program play (repeat function not activated), the pickup skips backward only to the beginning of the current track.
- During program repeat play, the pickup skips to the beginning of the current track. If pressed again quickly, the pickup skips to the beginning of the previous programmed track.
- The pickup skips the same number of tracks as the number of times the button is pressed.
- While watching the track number display, press the backward skip button until the desired track has been located.

Remember that for backward skip, the present track is included in the count.

- **Example:** To return to the beginning of the third track and then to the beginning of the second track, while listening to the third track.

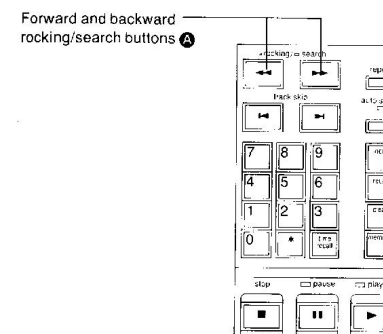


6 Search play (forward/backward)

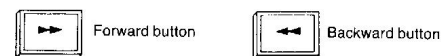
(Search play can be performed when the player is in the play or in the pause mode.)

This function allows search to any desired point on the disc.

A Search play using the forward and backward rocking/search buttons (Button search)



Depending on how these buttons are pressed, search with three different speeds is possible.



- 1 Press one of these buttons momentarily to move the pickup by one pit-track (one disc rotation). This allows very fine rocking search.
- 2 When one of these buttons is held down, the pickup will move slowly at first.
- 3 When one of these buttons is held down for more than about 3 seconds, the pickup will move rapidly.

- Release the button when the desired point has been reached (as shown by the display).

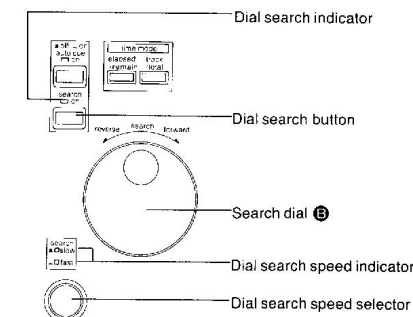
- If these buttons are pressed during play, sound can be heard during the search operation.

During steps 2 and 3, the output level is decreased by -12 dB (1/4) compared with the normal level.

About rocking search

When two or more CD players are used at a time, as often happens in a studio for example, fade-in and fade-out of the units have to be timed exactly. The rocking search function is useful for this because it permits movement of the pickup across one pit-track (at inner diameter in about 0.13 second) each time either button is pressed momentarily.

B Search play using the search dial (Dial search)



- Usually no sound can be heard while the unit is in the pause mode. However, if the dial search button is in the "on" position, sound can also be heard during the pause mode.

- Dial search can be performed at two different speeds depending upon the position (slow and fast).

- If the search dial is turned clockwise the pickup performs forward search, and if it is turned counterclockwise, the pickup performs backward search. However, when the dial search button is not in the "on" position and the dial search indicator (■) is not illuminated, dial search is not possible.

- 1 Press the dial search button "on".
The dial search indicator (■) illuminates.
The dial search speed indicator (■) for "slow" or "fast" illuminates also.
- 2 Press the dial search speed selector to change the selected search speed.

- Perform search while watching the display panel or listening to the sound from the disc.
The sound level is not reduced during dial search.

Notes:

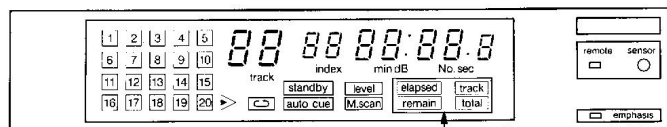
- The search speed changes according to the speed at which the search dial is turned. However, you can not force the pickup to search faster or slower than its predetermined limits.
- When dial search is performed with the unit in the play mode, the normal play speed of the pickup is added to (forward search) or subtracted from (backward search) the dial search speed.

7 Time mode display function

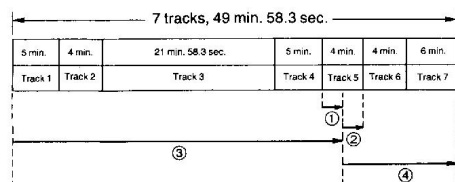
(During play or in the pause mode.)

- The appropriate time mode indicators illuminate to show which time mode display has been selected.
- Pressing the elapsed/remain button will change the mode from elapsed time to remaining time or vice versa.

- Pressing the track/total button will change the mode from track time to total (disc or programmed) time or vice versa.
- When changing the time display mode, use the time mode indicators to confirm selection of the desired time display mode.



- For example, if the time mode select button is pressed when playing a disc of 49 min. 58.3 sec. at a point 2 min. 10 sec. after the beginning of track 5:



	Illuminated time mode indicators	Time display	Display panel
1		Elapsed playing time from the beginning of the current track.	
2		Remaining playing time of the current track.	
3		Playing time from the beginning of the first track. • During program play, the total remaining programmed playing time is displayed.	
4		Disc remaining playing time. • During program play, the total elapsed programmed playing time is displayed.	

Note:

- During random access play, skip play and search play, the total time from the beginning of the first track is displayed in mode 3. (This is not an actual elapsed playing time.)
- Tracks skipped during program play are not included in the elapsed playing time.

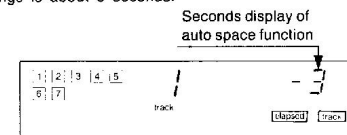
8 Auto space function

Auto space function

When this function is activated, a silent interval of 3 seconds is created between all tracks.

This 3 seconds interval occurs instead of, not in addition to, any pause interval recorded on the disc.

- Press the auto space button.
Auto space indicator (■) on the display panel illuminates.
- The following diagram shows the silent interval between all songs is about 3 seconds.



- At the beginning of each track -3, -2 and then -1 is displayed.
- Press this button again to cancel the auto space function.
The auto space indicator (■) goes out.

Notes:

When the auto cue function is used together with auto space the auto space indicator illuminates, but only the auto cue function operates.

9 Auto cue function (automatic standby)

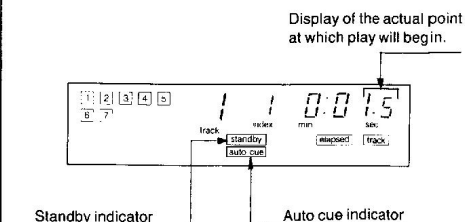
Auto cue function

At the beginning of each track on most discs, a silent interval of about one second is recorded. Therefore, when play is started from 0 min. 00 sec, music is not heard immediately. When the auto cue function is activated, the unit automatically detects the beginning of the music on each track and then switches to standby mode. When play is started from this point (by pressing the play button) music is heard immediately.

- 1 Press the auto cue button (■).
The auto cue indicator (■) above the button and the auto cue indicator on the display panel illuminate.
- 2 Press the play button.
The standby indicator on the display panel illuminates and the unit switches to the standby mode.
- 3 To start disc play, press the play button.
The next track will begin immediately.
The standby indicator will go out, but both auto cue indicators will remain illuminated.

Notes:

- In this mode, the unit will switch to standby at the beginning of each track. It is therefore necessary to press the play button to resume play at the beginning of every track.
- This function can also be used during program play. The unit will then switch to standby at the beginning of each programmed track.
- The illustration below shows that the unit is in the standby mode at the beginning of the music portion of track 1.



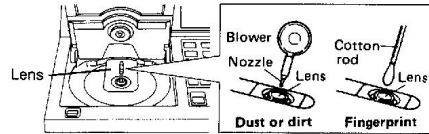
- If the auto cue button is pressed during play, this function is activated at the beginning of the next track.
- When not using this function, press the auto cue button again to release it (■). The standby and both auto cue indicators will go out.

■ CLEANING OF LENS

If the lens is stained causing sound skip or operation failure, open the top cover by pressing the open button, and clean the lens.

● To remove dust or dirt

Blow the lens with the blower provided in the cleaning kit to remove dust or dirt.



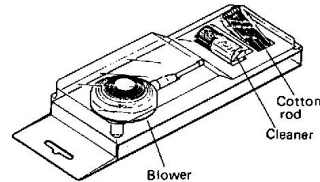
● To remove fingerprint

If the blower is not enough, moisten the cotton rod with the lens cleaner solution and wipe the lens with it from center of the lens to outside.

Cautions:

- Do not directly apply the cleaner solution to the lens. Do not apply too much solution to the cotton rod or otherwise the solution will flow into the player.
- Wipe the lens carefully. Do not give too much stress to the lens or otherwise it may scratch the lens or cause optical pickup trouble.
- If the solution should be too much applied, wipe the lens with a dry cotton rod.

Lens cleaning kit (Part No. : SZZP1038C)

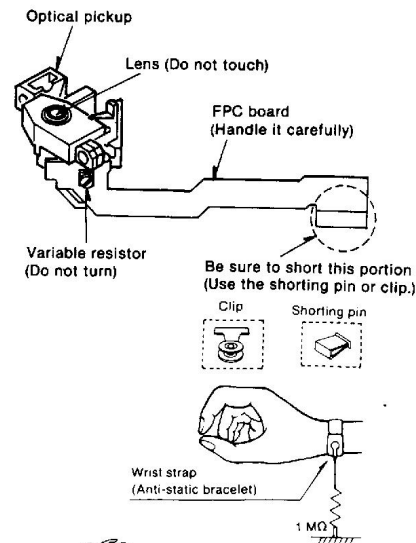


■ HANDLING PRECAUTIONS FOR OPTICAL PICKUP

The laser diode in the optical pickup may break down due to potential difference caused by static electricity of clothes or human body. So, be careful of electrostatic breakdown during repair of the optical pickup.

● Handling of optical pickup

- Do not give excessive shock to the optical pickup because it is of extremely precise structure.
- To prevent the breakdown of the laser diode, an anti-static shorting pin is inserted into the flexible board. (FPC board)
When removing or connecting the short pin, finish the job in as short time as possible.
- Take care not to apply excessive stress to the flexible board. (FPC board)
- Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

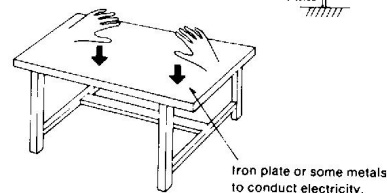


● Grounding for electrostatic breakdown prevention

- Human body grounding
Use the anti-static wrist strap to relieve the static electricity from your body.
- Work table grounding
Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.

Caution:

The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the optical pickup.



■ DISASSEMBLY INSTRUCTIONS

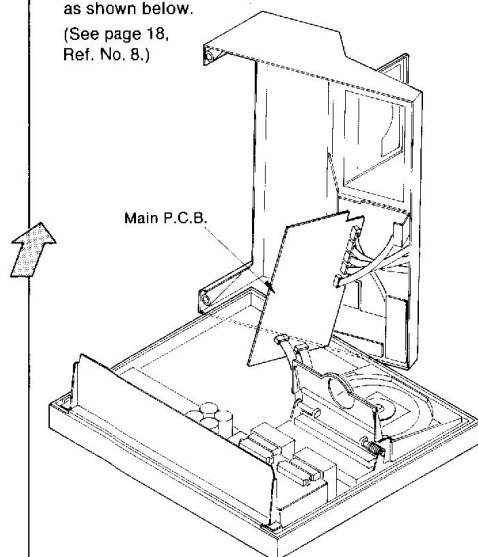
● Cautions for laser diode light emission

In this unit, the compact disc information is read by the laser beam diffused from the laser diode in the optical pickup. It is dangerous to directly look at the laser beam or to let it touch your body. During the normal operation of this unit, the laser diode will not emit light unless the disc holder is closed and S101 (laser ON/OFF switch) is turned ON. When servicing the unit, note that the laser diode emits lights if power switch is turned on with S101 ON.

● This unit uses FPC and care should be taken during assembly and disassembly.

Ref. No.	How to remove the front panel and check the main unit
1	Procedure 1 1. Remove the 5 setscrews. 2. Lift the front panel and pull out the power switch connector (CN1). 3. Remove the lead wire (headphone, pitch control VR) from its holder on the front panel. Cut off the lead wire clasper.
	4. Check the main unit as shown in the figure below. Note: When checking the main unit power on. a. Pull out the connector CN451 on the laser switch control P.C.B. and short it with a clip. b. Remove the disc clasper magnet. (See page 18, Ref. No. 6.) c. Place a disc on the disc tray, and then, place the disc clasper magnet on it. d. Connect CN1 on the power P.C.B. with the lead wire. Caution regarding laser radiation It is extremely dangerous to look at or touch laser radiation. Care must be taken when handling to prevent radiation exposure.

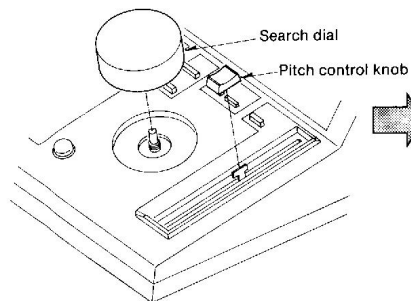
5. Otherwise, remove the main circuit P.C.B., and check as shown below.
(See page 18, Ref. No. 8.)



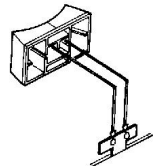
Ref. No. 3 How to remove the operation buttons

Procedure
1 + 2 + 3

1. Pull out the search dial and pitch control knob.



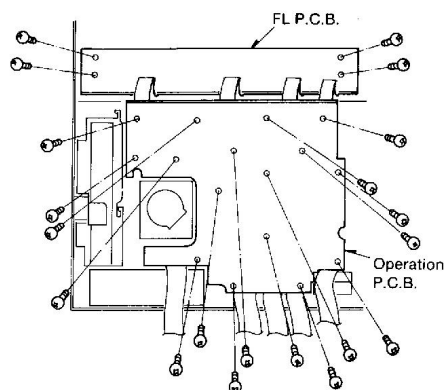
Note: When replacing the pitch control knob, it must be properly aligned.
(See figure below.)



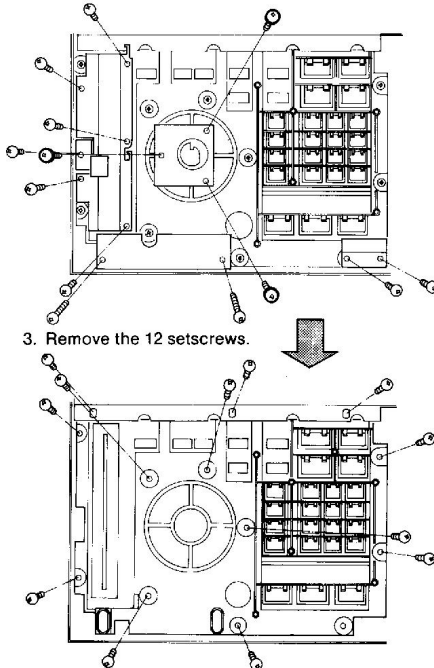
Ref. No. 2 How to remove the operation P.C.B. and FL P.C.B.

Procedure
1 + 2

- Remove the 20 setscrews.



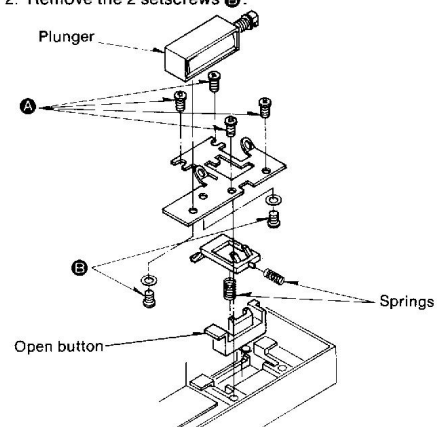
2. Remove the 13 setscrews. Remove the search volume, pitch control volume, headphone P.C.B. and the 2 metal pieces which hold the panel.



Ref. No. 4 How to remove the open button and plunger

Procedure
1 + 4

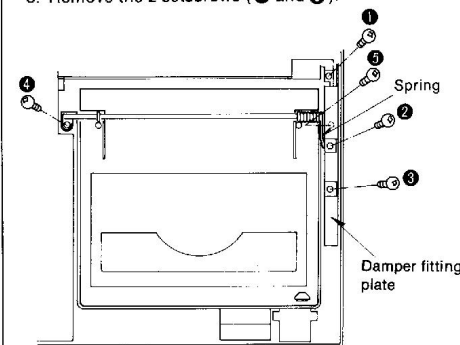
- Remove the 4 setscrews (A).
- Remove the 2 setscrews (B).



Ref. No. 5 How to remove the disc compartment panel

Procedure
1 + 5

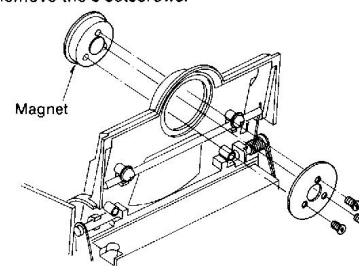
- Remove the spring from the damper fitting plate.
- Remove the 3 setscrews (1-3). Remove the damper fitting plate.
- Remove the 2 setscrews (4 and 5).



Ref. No. 6 How to remove the disc clamber magnet

Procedure
1 + 6

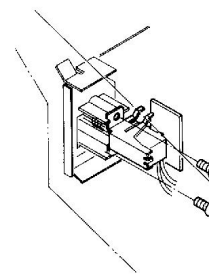
- Remove the 3 setscrews.



Ref. No. 7 How to remove the power switch

Procedure
1 + 7

- Remove the 2 setscrews.



Ref. No. 8 How to remove the audio P.C.B. and main P.C.B.

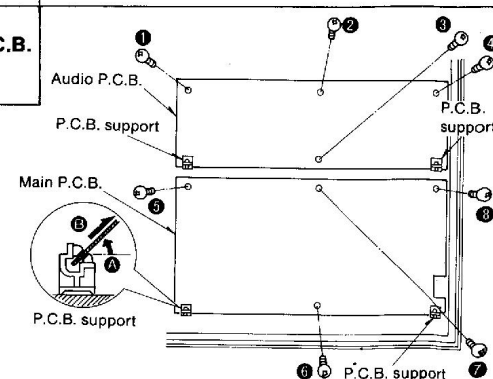
Procedure
1 + 8

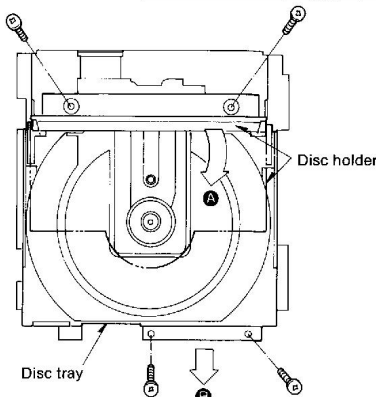
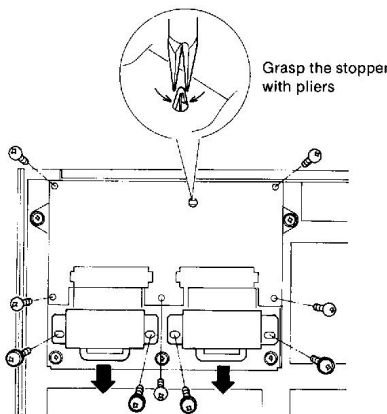
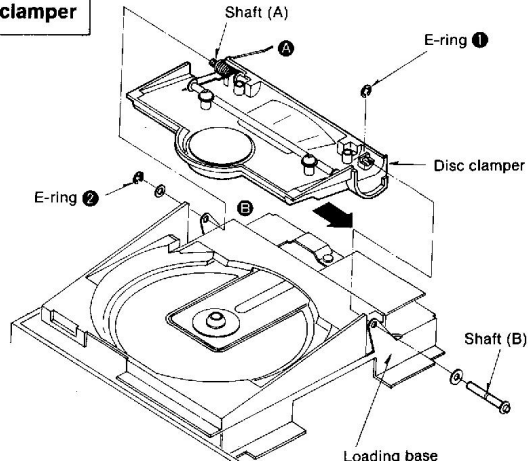
- Audio P.C.B.**

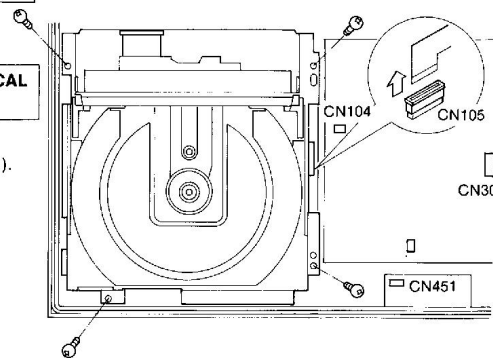
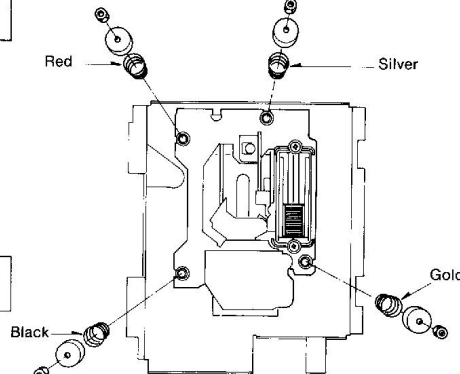
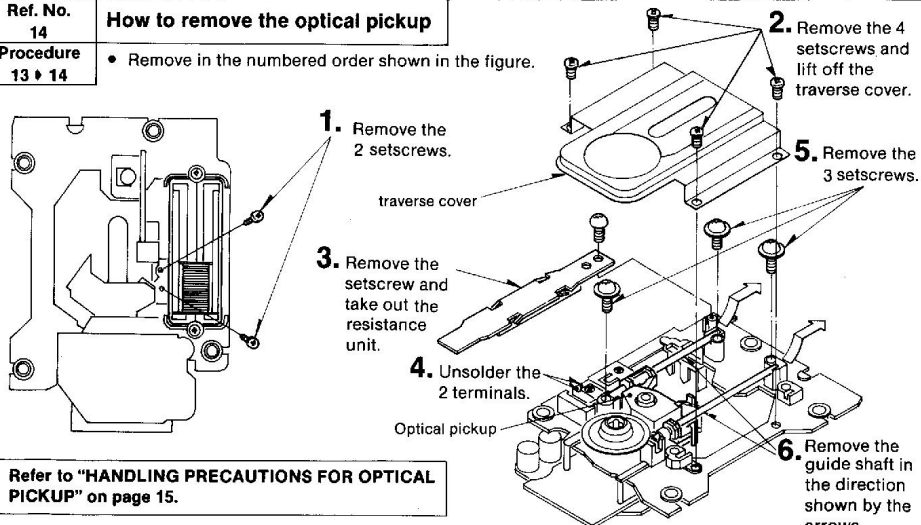
- Remove the 4 setscrews (1-4).
- Remove the P.C.B. from its supports (arrows A-B).

- Main P.C.B.**

- Remove the 4 setscrews (5-8).
- Remove the P.C.B. from its supports (arrows A-B).



Ref. No. 9	How to remove the disc tray	
Procedure 1 → 9	1. Remove the 4 setscrews. 2. Lower the disc holder as shown by arrow A. 3. Remove the disc tray in the direction indicated by arrow B.	
Ref. No. 10	How to remove the power transformer	
Procedure 1 → 10	1. Remove the 9 setscrews. 2. Remove the stopper on the power P.C.B. with pliers. 3. Pull off the power transformer in the direction indicated by the arrows.	
Ref. No. 11	How to remove the disc clasper	
Procedure 1 → 11	1. Remove the 2 E-rings (1 and 2). 2. Pull out the shaft (B). 3. Remove the disc clasper in the direction shown by the arrow. To install 1. Hook part ④ of the clamp spring on part ⑤ of the loading base. 2. Insert the shaft (A) into the hole of the loading base, and place E-ring ②. 3. Insert the shaft (B) into the hole of the loading base, and place E-ring ①.	

Ref. No. 12	How to remove the traverse unit assembly	
Procedure 1 → 12	Refer to "HANDLING PRECAUTIONS FOR OPTICAL PICKUP" on page 15. 1. Remove the 4 setscrews. 2. Remove the 3 connectors (CN104, CN303, CN451). 3. Remove the flexible board (CN105). Note: To prevent damage to the laser diode, insert the shorting pin into the flexible board.	
Ref. No. 13	How to remove the traverse deck	
Procedure 12 → 13	1. Remove the 4 nuts. Note: The 4 springs are different colors and must be reinstalled in their original positions.	
Ref. No. 14	How to remove the optical pickup	
Procedure 13 → 14	1. Remove in the numbered order shown in the figure.	

Refer to "HANDLING PRECAUTIONS FOR OPTICAL PICKUP" on page 15.

RESISTORS AND CAPACITORS

Notes: * Important safety notice:

Components identified by Δ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

* Bracketed indications in Ref. No. columns specify the area.

Parts without these indications can be used for all areas.

Numbering System of Resistor

Example

ERD	25	F	J	102
Type	Wattage	Shape	Tolerance	Value
ERX	2	AN	J	471
Type	Wattage	Shape	Tolerance	Value
				47x10 ¹ (ohm)

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity
ECEA	50	M		330
Type	Voltage	Peculiarity		Value
				(33x10 ⁶ microfarad)

Resistor Type	Wattage	Tolerance
ERD : Carbon	10 : 1/8W	J : $\pm 5\%$
ERG : Metal Oxide	12 : 1/2W	F : $\pm 1\%$
ERX : Metal Film	25 : 1/4W	G : $\pm 2\%$
ERQ : Fuse Type Metal	1A : 1W	K : $\pm 10\%$
ERD L : Carbon (chip)	18 : 1/8W	
ERG K : Metal Film (chip)	S2 : 1/4W	
ERC : Solid	S1 : 1/2W	
	2F : 1/4W	
	50 : 1/2W	
	2A : 2W	

Capacitor Type	Voltage	Tolerance
ECE : Electrolytic	0J : 6.3V	C : $\pm 0.25\text{pF}$
ECCO : Ceramic	1A : 10V	J : $\pm 5\%$
ECKD : Ceramic	1C : 16V	K : $\pm 10\%$
ECQM : Polyester	1E : 25V	Z : $\pm 80\%$
	1H : 50V	-20%
ECQP : Polypropylene	1V : 35V	P : $\pm 100\%$
	50 : 50V	-0%
ECG : Ceramic	05 : 50V	M : $\pm 20\%$
ECEA000N : Non Polar	2H : 500V	
	2A : 100V	D : $\pm 0.5\text{pF}$
QCU : Ceramic (Chip Type)	1 : 100V	G : $\pm 2\%$
ECUX : Ceramic (Chip Type)	KC : 400V AC	
ECF : Semiconductor	KC : 125VAC (UL)	
EECW : Liquid electrolyte double layer capacitor	1J : 63V	

Ref. No.	Part No.	Part Code	Ref. No.	Part No.	Part Code	Ref. No.	Part No.	Part Code
RESISTORS								
R11	ERD2TJ822	001 152 2455 0	R143	ERD2TJ474	001 152 2443 4	R334	ERD2TJ884	001 152 2451 4
R12	ERD2TJ472	001 152 2362 4	R144	ERD2TJ223	001 152 2432 7	R335	ERD2TJ472	001 152 2362 4
R13, R14	Δ ERD2TJ151	001 152 2426 5	R145	ERD2TJ224	001 152 2433 6	R336	ERD2TJ272	001 152 2354 4
R15, R16	Δ ERD2TJ151	001 152 2426 5	R146	ERD2TJ473	001 152 2363 3	R351	ERD2TJ102	001 152 2346 4
R101	ERD2TJ392	001 152 2439 0	R147	ERD2TJ223	001 152 2432 7	R352	ERD2TJ474	001 152 2443 4
R102	ERD2TJ392	001 152 2353 5	R148	ERD2TJ473	001 152 2363 3	R353, R354	ERD2TJ472	001 152 2362 4
R103	ERD2TJ273	001 152 2436 3	R149, R150	ERD2TJ222	001 152 2353 5	R355	ERD2TJ332	001 152 2357 1
R104	ERD2TJ273	001 152 2432 7	R151	ERD2TJ392	001 152 2439 0	R356	ERD2TJ272	001 152 2354 4
R105	ERD2TJ182	001 152 2352 6	R152	ERD2TJ101	001 152 2421 0	R357	ERD2TJ188	001 152 2429 2
R106	ERD2TJ473	001 152 2363 3	R153	ERD2TJ103	001 152 2347 3	R358, R359	ERD2TJ104	001 152 2348 2
R107	ERD2TJ274	001 152 2437 2	R154	ERD2TJ392	001 152 2439 0	R360, R361	ERD2TJ222	001 152 2353 5
R109, R110	ERD2TJ473	001 152 2363 3	R155	ERD2TJ101	001 152 2421 0	R362, R363	ERD2TJ103	001 152 2348 2
R111, R112	ERD2TJ274	001 152 2437 2	R156	ERD2TJ223	001 152 2432 7	R364, R365	ERD2TJ103	001 152 2347 3
R113, R114	ERD2TJ473	001 152 2363 3	R157	ERD2TJ473	001 152 2363 3	R366	ERD2TJ274	001 152 2437 2
R115	ERD2TJ102	001 152 2346 4	R158	ERD2TJ883	001 152 2450 5	R367	ERD2TJ823	001 152 2456 9
R116	ERD2TJ472	001 152 2362 4	R159	ERD2TJ272	001 152 2354 4	R368	ERD2TJ473	001 152 2363 3
R117	ERD2TJ270	001 152 2434 5	R160, R161	ERD2TJ102	001 152 2346 4	R369	ERD2TJ121	001 152 2349 1
R118	ERD2TJ393	001 152 2352 8	R162, R163	ERD2TJ102	001 152 2346 4	R370	ERD2TJ331	001 152 2356 2
R119	ERD2TJ101	001 152 2421 0	R164	ERD2TJ822	001 152 2455 0	R372	ERD2TJ221	001 152 2431 8
R120	ERD2TJ270	001 152 2434 5	R165	ERD2TJ882	001 152 2365 1	R373	ERD2TJ391	001 152 2350 6
R121	ERD2TJ393	001 152 2352 8	R166, R167	ERD2TJ222	001 152 2353 5	R374	ERD2TJ881	001 152 2449 8
R122	ERD2TJ153	001 152 2361 7	R168	ERD2TJ882	001 152 2355 1	R375	ERD2TJ220	001 152 2430 9
R123	ERD2TJ101	001 152 2421 0	R169	ERD2TJ823	001 152 2455 0	R376	ERD2TJ101	001 152 2421 0
R124	ERD2TJ103	001 152 2347 3	R170	ERD2TJ222	001 152 2438 1	R401	ERD2TJ104	001 152 2348 2
R125	ERD2TJ104	001 152 2348 2	R171	ERD2TJ823	001 152 2432 7	R402, R403	ERD2TJ222	001 152 2353 5
R126	ERD2TJ152	001 152 2350 8	R172, R173	ERD2TJ472	001 152 2362 4	R404, R405	ERD2TJ222	001 152 2353 5
R127	ERD2TJ882	001 152 2365 1	R174	ERD2TJ154	001 152 2427 4	R406	ERD2TJ105	001 152 2422 9
R128	ERD2TJ153	001 152 2351 7	R175	ERD2TJ120	001 152 3146 6	R407, R408	ERD2TJ474	001 152 2443 4
R129	ERD2TJ224	001 152 2433 6	R176	ERD2TJ471	001 152 2361 5	R409, R410	ERD2TJ472	001 152 2362 4
R130	ERD2TJ122	001 152 2423 8	R177	ERD2TJ881	001 152 2449 8	R411, R412	ERD2TJ103	001 152 2347 3
R131, R132	ERD2TJ333	001 152 2358 0	R178	ERD2TJ270	001 152 2434 5	R413, R414	ERD2TJ103	001 152 2347 3
R133	ERD2TJ102	001 152 2346 4	R179	ERD2TJ472	001 152 2362 4	R415	ERD2TJ472	001 152 2362 4
R134	ERD2TJ392	001 152 2439 0	R301	ERD2TJ822	001 152 2455 0	R419, R420	ERD2TJ223	001 152 2432 7
R135	ERD2TJ102	001 152 2346 4	R303	ERD2TJ474	001 152 2443 4	R421, R422	ERD2TJ223	001 152 2432 7
R136	ERD2TJ182	001 152 2352 6	R304, R305	ERD2TJ223	001 152 2432 7	R423, R424	ERD2TJ223	001 152 2432 7
R137	ERD2TJ881	001 152 2449 8	R306	ERD2TJ152	001 152 2350 8	R425, R426	ERD2TJ223	001 152 2432 7
R138	ERD2TJ153	001 152 2351 7	R307	ERD2TJ102	001 152 2346 4	R427	ERD2TJ223	001 152 2432 7
R139	ERD2TJ223	001 152 2432 7	R308	ERD2TJ103	001 152 2347 3	R428	ERD2TJ392	001 152 2439 0
R140	ERD2TJ821	001 152 2454 1	R309	ERD2TJ104	001 152 2348 2	R429, R430	ERD2TJ472	001 152 2362 4
R141	ERD2TJ333	001 152 2358 0	R311	ERD2TJ103	001 152 2347 3	R431, R432	ERD2TJ472	001 152 2362 4
R142	ERD2TJ222	001 152 2353 5	R312	ERD2TJ122	001 152 2423 8	R433	ERD2TJ472	001 152 2362 4
			R331	ERD2TJ102	001 152 2346 4	R434	ERD2TJ332	001 152 2357 1
			R332, R333	ERD2TJ101	001 152 2421 0	R435	ERD2TJ103	001 152 2347 3

Ref. No.	Part No.	Part Code	Ref. No.	Part No.	Part Code	Ref. No.	Part No.	Part Code
R436, R437	ERDS2TJ101	001 152 2421 0	C106	ECQM1H224KVW	001 106 5164 6	C356	RCBS1C472MXY	
R438	ERDS2TJ883	001 152 2450 5	C107, C108	ECEA1HKNR22B		C357, C358	RCBS1H100JCY	001 103 5563 0
R439	ERDS2TJ333	001 152 2358 0	C109	ECEA1HNR22SE		C359, C360	RCBS1C103MY	001 103 8060 6
R440	ERDS2TJ103	001 152 2347 3	C110	ECQM1H122KVW		C361, C362	RCBS1C103MY	001 103 8060 6
R444, R445	ERDS2TJ153	001 152 2351 7	C111	ECQM1H473JZ	001 106 0810 9	C363, C364	RCBS1C103MY	001 103 8060 6
R446	ERDS2TJ153	001 152 2351 7	C112	ECFR1H104ZFM	001 108 0794 2	C365	RCBS1C103MY	001 103 8060 6
R447, R451	ERDS2TJ103	001 152 2347 3	C113	ECQM1H153KV3	001 106	C366	ECEA1HND101S	001 120 0354 0
R452	ERDS2TJ102	001 152 2346 4	C114	ECEA1HNR3GS	001 120 0358 6	C367	RCBS1H220JLY	001 103 5601 1
R454	ERDS2TJ472	001 152 2362 4	C115	ECFR1H104ZFM	001 108 0794 2	C368	RCBS1H101KBY	001 103 5659 4
R455	ERDS2TJ224	001 152 2433 6	C116	ECQM1H153KV3	001 106	C369	RCBS1H102KBY	001 103 5671 0
R456	ERDS2TJ101	001 152 2421 0	C117	ECQM1H104KV3		C370	RCBS1H271KBY	001 103 5611 9
R457	ERDS2TJ223	001 152 2432 7	C118	ECQM1H104JZ	001 106 0675 8			
R458	ERDS2TJ472	001 152 2362 4	C119	ECEA1HNR3GS	001 120 0358 6	C401	ECFR1H104ZFM	001 108 0794 2
R460	ERDS2TJ101	001 152 2421 0	C120	ECEA1HNR3GS	001 120 0337 1	C402	ECKD1H103PF	001 103 1449 7
R501	ERJ8GEXK1R5	001 151 6260 8	C121	ECKD1H182KBS		C403	ECFR1H104ZFM	001 108 0794 2
R502	ERJ8GEXK1R5		C122	ECKD1H822KB	001 103 1582 1	C404	ECEA1H470	001 120 3125 9
R503	ERJ8GEXJ223	001 151 5530 6	C123	ECQM1H333KVW		C405, C406	ECKR1H103ZFS	
R601, R602	ERDS2TJ471	001 152 2361 5	C124	ECCD1H221K	001 103 0698 7	C407, C408	ECKR1H103ZFS	
R603, R604	ERDS2TJ471	001 152 2361 5	C125	ECEA1H4010	001 120 2842 1	C409	ECEA1C10100	001 120 2905 3
R605	ERDS2TJ471	001 152 2361 5	C126	ECEA1H4220	001 120 4670 5	C410	ECCD1H220KC	001 103 0494 6
R607	ERDS2TJ331	001 152 2356 2	C127	ECKD1H881K	001 103 1580 5	C412	ECEA1C10100	001 120 2905 3
R608	ERDS2TJ151	001 152 2426 5	C128	ECKD1H103PF	001 103 1449 7	C414	ECEA1C10100	001 120 2829 8
R609	ERDS2TJ181	001 152 2428 3	C129, C130	ECCD1H221K	001 103 0698 7	C415, C416	ECBS1H102KBY	001 103 3504 9
R610, R611	ERDS2TJ471	001 152 2361 5	C131, C132	ECKD1H102KB	001 103 1414 8	C417	ECBS1H102KBY	001 103 3504 9
R612	ERDS2TJ473	001 152 2363 3	C133	ECFR1H104ZFM	001 108 0794 2	C420	ECEA1C10220	001 120 4670 5
R801, R802	ERD2TJ272	001 152 2354 4	C134	ECEA1H4010	001 120 2842 1	C451	ECKR1H103ZFS	
R803, R804	ERD2TJ272	001 152 2354 4	C135	ECEA1H4010	001 120 0340 6	C452	ECEA1HNR2S	001 120 0356 8
R821, R822	ERD2TJ1G10R0	001 151 4827 9	C136	ECCD1H220KC	001 103 0494 6	C455	ECEA1C10100	001 120 2905 3
R823, R824	ERD2TJ1G33R0	001 151 4828 8	C138	ECKD1H881K	001 103 1580 5	C501	ECCEV1EV330	001 120 5624 7
R825, R826	ERD2TJ1G1001	001 151 3320 5	C140, C141	ECKD1H102KB	001 103 1414 8	C502	ECCEV1H010	001 120 5625 6
R827, R828	ERD2TJ1G3301	001 151 3338 5	C142, C143	ECEA1C10100	001 120 2905 3	C504	GR426B27K32Z	001 103 7125 0
R829, R830	ERD2TJ1G1004		C144	ECEA1H470	001 120 3125 9	C506	GR426B152K50	001 120 5625 5
R831, R832	ERD2TJ1G10R0	001 151 4827 9	C145	ECKR1H103ZFS		C507	GR426B104Z2S	
R833, R834	ERD2TJ1G33R0	001 151 4828 8	C146	ECEA1H4010	001 120 2905 9	C511, C512	ECEA1EN470S	001 120 2394 4
R835, R836	ERD2TJ1G1001	001 151 3320 5	C148	ECKR1H103ZFS		C513	ECEA1EN470S	001 120 2394 4
R837, R838	ERD2TJ1G3301	001 151 3338 5	C149, C150	ECQM1H333JZ	001 106 0779 1	C801, C802	Δ ARP1V332M	001 120 5666 7
R839, R840	FSR25TJ101T2	001 152 6552 4	C151	ECQM1H102JZ	001 106 0661 4	C805, C806	ARA1A1470MOT	001 120 5663 0
R845, R846	ERD2S2TJ104	001 152 2348 2	C152	ECQM1H153KV3	001 106	C807, C808	ARP1V332M	001 120 5666 7
R851, R852	ERD2S2TJ392	001 152 2439 0	C153	ECEA1J5221	001 120 2925 9	C811, C812	ARA1A1470MOT	001 120 5663 0
R853, R854	ERD2S2TJ103	001 152 2436 3	C154	ECKD1H881K	001 103 1580 5	C813, C814	REC1E4710M	001 120 5953 4
R855, R856	ERD2S2TJ121	001 152 2439 1	C155	ECKD1H222KB	001 103 1454 2	C815, C816	ARA1H010MOT	001 120 5684 3
R857, R861	ERGT1ANR20	001 151 0091 1	C156	ECFFH104ZFM	001 108 0906 2	C817	Δ ECKR1H103ZFS	
R861, R862	FSR25TJ470T2		C157	ECKR1H220KS		C821	ECEA1H470	001 120 3125 9
R863, R864	FSR25TJ470T2		C158	ECFFH104ZFM	001 108 0980 9	C822	ECKR1H103ZFS	
R865, R866	ERD2S2TJ103	001 152 2347 3	C301	ECEA1HNR2S	001 120 0358 6	C833, C834	ARA1C331NM	001 120 5665 8
CAPACITORS			C302, C306	ECFR1H104ZFM	001 108 0794 2	C835, C836	ARA1C331NM	001 120 5665 8
C1	Δ ECKDCK103PF2	001 103 3734 7	C307	ECFR1H104ZFM	001 108 0794 2	C827, C828	CCQ5293N1JCF	001 106 4821 0
C11	ECEA1HU101	001 120 3252 3	C308	ECKD1H471KB	001 103 1551 0	C829, C830	CCQ529103JCD	001 106 5208 1
C12, C13	ECEA1AU221	001 120 3131 1	C309, C310	ECFFH104ZFM	001 108 0906 2	C831, C832	ARA1C1221NM	001 120 5664 9
C14, C15	ECEA1AU100	001 120 2905 3	C311	ECFR1H104ZFM	001 108 0794 2	C833, C834	ARA1C221NM	001 120 5664 9
C16, C17	ECEA1J5221	001 120 2925 9	C312	ECEA1HNR2S	001 120 0358 6	C835, C836	ARA1C1010M	001 120 5643 4
C18, C19	Δ ECEA1C1022	001 120 3074 3	C331	ECQV1H474JZ3		C839	RCBP1012JZ	001 106 1069 0
C22	ECKR1H103ZFS		C332	ECEA1H470	001 120 3125 9	C840, C841	RCBP1220COT	001 120 5015 6
C23, C24	ECEA1H104KV3	001 120 2907 1	C333	ECKD1H103PF	001 103 1449 7	C851, C852	ECKD1H103PF	001 103 1449 7
C25, C26	ECEA1C10100	001 120 2905 3	C335, C336	ECEA1EJ471	001 120 2829 8	C853	ECCEA1H04ZFM	001 108 0906 2
C101	ECQM1H104KV3		C351, C352	RCBS1C103MY	001 103 8060 6	C854	ECEA1C10331	001 120 3200 5
C103	ECEA1HNR2S	001 120 0356 8	C353	RCBS1C472MXY		C855	ECFR1H104ZFM	001 108 0906 2
C104	ECQM1H103JZ	001 106 0667 8	C354	ECCD1H220JUS		C856	ECEA1C1031	001 120 3200 5
			C355	ECCD1H330JUS		C891, C892	ARP1V102JZ	001 106 1069 0

REPLACEMENT PARTS LIST

Notes: * Important safety notice:

Components identified by Δ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

* Bracketed indications in Ref. No. columns specify the area.

Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
INTEGRATED CIRCUITS				DIODES			
IC11	Δ AN78M05	001 060 4137 4	I.C.	D11	Δ SVDS1WB40	001 032 7473 7	RECTIFIER
IC12	Δ AN78N05	001 060 8714 7	I.C.	D12	Δ SVD1SR35200A	001 032 3551 4	RECTIFIER
IC13	Δ AN78N12	001 060 4121 4	I.C.	D13	MA4082M	001 032 4955 6	DIODE
IC14	AN79L12	001 060 9072 4	I.C.	D14	MA4330L	001 032 7228 8	DIODE
IC101	AN8370S	001 060 8299 8	I.C.	D15, D16	MA4082M	001 032 4955 6	DIODE
IC102, IC103	AN6554NS	001 060 4860 4	I.C.	D17, D18	Δ SVD1SR35200A	001 032 3551 4	RECTIFIER
IC104	AN6552S	001 060 7386 7	I.C.	D101, D102	MA165	001 032 0494 0	DIODE
IC105	AN6914S	001 060 3238 2	I.C.	D103, D104	MA165	001 032 0494 0	DIODE
IC106	SV1UPD4053BC	001 060 4885 5	I.C.	D105, D106	MA4082M	001 032 4955 6	DIODE
IC301	EH0GA1243	001 061 3036 7	I.C.	D351	MA4051-H	001 032 5891 1	DIODE
IC302	HN6517S	001 061 3042 9	I.C.	D352	MA165	001 032 0494 0	DIODE
IC303	HN6518A	001 061 3043 8	I.C.	D353	SVOKV1230223	001 032 9293 5	DIODE
IC304	HN4416S-12	001 060 9746 5	I.C.	D354, D401	MA165	001 032 0494 0	DIODE
IC331	AN6914	001 060 3237 5	I.C.	D402, D403	MA165	001 032 0494 0	DIODE
IC351, IC352	HN74HC04S	001 061 3232 5	I.C.	D404, D405	MA165	001 032 0494 0	DIODE
IC353	HN74HC74S	001 060 7634 0	I.C.	D406, D407	MA165	001 032 0494 0	DIODE
IC354	HN74HC00S	001 060 7089 3	I.C.	D408, D409	MA165	001 032 0494 0	DIODE
IC355	AN6554NS	001 060 7085 7	I.C.	D451	MA165	001 032 0494 0	DIODE
IC401	HN15261PDK	001 061 3159 7	I.C.	D501	MA153	001 032 0489 7	DIODE
IC402	HN1550PDM	001 061 3230 7	I.C.	D601, D602	MA165	001 032 0494 0	DIODE
IC403	HN1280-R	001 060 8869 5	I.C.	D603, D604	MA165	001 032 0494 0	DIODE
IC501	AN8290S	001 061 3034 9	I.C.	D605, D606	MA165	001 032 0494 0	DIODE
IC601	SV1BX1438M	001 061 3235 2	I.C.	D607, D608	MA165	001 032 0494 0	DIODE
IC601	SV1BX1438E	001 061 3671 6	I.C.	D609, D610	MA165	001 032 0494 0	DIODE
EXCEPT (M, MC)				D611, D612	MA165	001 032 0494 0	DIODE
IC801	Δ AN78M15	001 060 4532 7	I.C.	D613, D614	MA165	001 032 0494 0	DIODE
IC802	Δ AN78N15	001 060 8715 6	I.C.	D615	MA165	001 032 0494 0	DIODE
IC803	Δ AN78M15	001 060 4532 7	I.C.	D616, D617	SVGLB74VR3HL	001 032 9300 9	LED
IC804	AN79N15	001 060 8715 6	I.C.	D618, D619	SVGLB74VR3HL	001 032 9300 9	LED
IC805	AN78M12	001 060 4333 2	I.C.	D620, D621	SVGLB74VR3HL	001 032 9300 9	LED
IC806	AN79N12	001 060 8663 1	I.C.	D622	SVGLB74MG3HL	001 032 7888 8	LED
IC821	HN51005PDM	001 061 3231 6	I.C.	D623	SVGLB74DU3HL	001 032 7185 2	LED
IC822, IC823	SV1PCM5AKP-M	001 061 3644 9	I.C.	D624, D625	SVGLB74VR3HL	001 032 9300 9	LED
IC824, IC825	SV1UPD4053BC	001 060 4885 5	I.C.	D626	MA165	001 032 0494 0	DIODE
IC826, IC827	SV1MS288P	001 060 9725 0	I.C.	D801, D802	Δ SVDS1WB40	001 032 7473 7	RECTIFIER
IC828, IC829	HN65532DD	001 061 3161 3	I.C.	D803, D804	Δ SVD1SR35200A	001 032 3551 4	RECTIFIER
IC830, IC831	SV1AL079	001 061 3234 3	I.C.	D805, D806	MA4054-MTA	001 032 9513 8	DIODE
IC851	SV1NJM4558SA	001 061 0445 6	I.C.	D807, D808	MA4054-MTA	001 032 9513 8	DIODE
TRANSISTORS				D821, D822	MA165	001 032 0494 0	DIODE
Q11	2SA1309Q	001 030 4058 0	TRANSISTOR	D831	MA165	001 032 0494 0	DIODE
Q12	Δ 2SD973	001 030 1944 1	TRANSISTOR	HALL ELEMENTS			
Q13	Δ 2SB793-QRS	001 030 2765 7	TRANSISTOR	H501, H502	QH-001	001 036 0010 2	HALL ELEMENT
Q101	Δ 2SD1055	001 030 4872 8	TRANSISTOR	VARIABLE RESISTORS			
Q102	Δ 2SB822	001 030 0781 6	TRANSISTOR	VR101	EVND3AA00B53	001 180 2644 9	5K Ω (B)
Q103	Δ 2SD1055	001 030 4872 8	TRANSISTOR				
Q104	Δ 2SB822	001 030 0781 6	TRANSISTOR				
Q105	Δ 2SD1055	001 030 4872 8	TRANSISTOR				
Q106	Δ 2SB822	001 030 0781 6	TRANSISTOR				
Q107	2SK301	001 030 2428 2	TRANSISTOR				
Q108	UN4212	001 030 3019 1	TRANSISTOR				
Q109	2SA1309Q	001 030 4058 0	TRANSISTOR				
Q110	2SC2021	001 030 4276 2	TRANSISTOR				
Q111	UN4212	001 030 3019 1	TRANSISTOR				
Q201, Q231	UN4112	001 030 3018 2	TRANSISTOR				
Q351	2SK301	001 030 2428 2	TRANSISTOR				
Q401	UN4214	001 030 4836 3	TRANSISTOR				
Q402	2SA1309Q	001 030 4058 0	TRANSISTOR				
Q403, Q404	UN4214	001 030 4836 3	TRANSISTOR				
Q405, Q406	2SC3311-Q	001 030 2336 7	TRANSISTOR				
Q407	2SC3311-Q	001 030 2336 7	TRANSISTOR				
Q408, Q409	2SA1309Q	001 030 4058 0	TRANSISTOR				
Q410	2SA1309Q	001 030 4058 0	TRANSISTOR				
Q411	UN4114	001 030 4832 6	TRANSISTOR				

Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
VR102, VR103	EVND3AA00B14	001 180 2642 1	10K Ω (B)	T2	Δ SLT54JU3A	001 202 8479 1	POWER TRANSFORMER
VR104	EVND3AA00B53	001 180 2644 9	5K Ω (B)	COMPONENT COMBINATIONS			
VR105	EVND3AA00B14	001 180 2642 1	10K Ω (B)	C20, C21	Δ RXAF103Z22EY	001 230 0547 0	0.01 μ F X 2
VR106	EVND3AA00B53	001 180 2644 9	5K Ω (B)	C803, C804	Δ RXAF103Z22EY	001 230 0547 0	0.01 μ F X 2
VR501	EVND3AA00B13	001 180 3553 2	1K Ω (B)	C809, C810	Δ RXAF103Z22EY	001 230 0547 0	0.01 μ F X 2
VR502	SV5D2	003 439 2047 2	20K Ω (B)	OSCILLATORS			
VR503	EWANA1X05A15	001 174 8134 8	100K Ω (A)	X351	SVQ16CKSS	001 250 1471 7	16.3044MHZ
VR501	EWXAR27025B	001 174 8853 8	SEARCH DIAL	COILS AND TRANSFORMERS			
COILS AND TRANSFORMERS				L1, L2	Δ SLQX400-D	001 210 7020 0	COIL
L1, L2	Δ SLQX400-D	001 210 7020 0	COIL	EXCEPT (M, MC)			
L101	ELEPH2R2MA	001 211 2463 2	COIL	FL501	SADD4	001 080 0329 2	DISPLAY
L201, L202	SLQDSP33R3K		COIL	FUSES			
(EG) ONLY				F1	Δ XBA1F09NU14	002 380 0307 9	125V, 800mA
L203, L204	SLQDSP33R3K		COIL	F1	Δ XBA2C04TBOS		250V, 1400mA
(EG) ONLY				EXCEPT (M, MC)			
L205, L206	SLQDSP33R3K		COIL	F2	Δ XBA2C016TBOS	002 380 1470 5	250V, 1160mA
(EG) ONLY				EXCEPT (M, MC)			
L301	ELEPH3R3KA		COIL	SWITCHES			
L351	SL005B1-T	001 211 3312 2	COIL	S1	Δ ESB8249V	003 435 5877 0	POWER
L352	ELEPH1R2MA	001 211 0821 4	COIL	S2	Δ SPD5H0W0251	003 438 1067 7	VOLTAGE SELECTOR
L501	NL45321100K2	001 211 3218 9	COIL	EXCEPT (M, MC)			
L651	ELEPH1R2MA	001 210 8983 4	COIL	S101	Δ SSPD4-1	003 434 1042 6	OPEN/CLOSE DET.
(M, MC)				S801, S802	EVQQS405K	003 435 2832 5	OPERATION
L851	SLQDSP33R3K		COIL	S803, S804	EVQQS405K	003 435 2832 5	OPERATION
EXCEPT (M, MC)				S805, S806	EVQQS405K	003 435 2832 5	OPERATION
L853	ELEPH1R2MA	001 210 8983 4	COIL	S807, S808	EVQQS405K	003 435 2832 5	OPERATION
(M, MC)				S809, S810	EVQQS405K	003 435 2832 5	OPERATION
L852	SLQDSP33R3K		COIL	S611, S612	EVQQS405K	003 435 2832 5	OPERATION
EXCEPT (M, MC)				S613, S614	EVQQS405K	003 435 2832 5	OPERATION
L853	ELEPH1R2MA	001 210 8983 4	COIL	S615, S616	EVQQS405K	003 435 2832 5	OPERATION
(M, MC)				S617, S618	EVQQS405K	003 435 2832 5	OPERATION
L853	SLQDSP33R3K		COIL	S619, S620	EVQQS405K	003 435 2832 5	OPERATION
EXCEPT (M, MC)				S621, S622	EVQQS405K	003 435 2832 5	OPERATION
T1	Δ SLT54JE4TE	001 202 8478 2	POWER TRANSFORMER	S623, S624	EVQQS405K	003 435 2832 5	OPERATION
EXCEPT (M, MC)				S625, S626	EVQQS405K	003 435 2832 5	OPERATION
T1	Δ SLT54JU4A	001 202 8480 8	POWER TRANSFORMER	S627	EVQQS405K	003 435 2832 5	OPERATION
(M, MC)				S628, S629	ESB6471	003 435 4966 0	OPERATION
T2	Δ SLT54JE53E		POWER TRANSFORMER	S630, S631	ESB6471	003 435 4966 0	OPERATION
EXCEPT (M, MC)				RELAYS			
				RLY801, RLY802	SFDY65A237P	003 450 2713 4	RELAY
				RLY801	SFDY65A237P	003 450 2713 4	RELAY

Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
FRONT PANEL				24	SBCD2330MB0A	016 702 6774 1	BUTTON
1	SGWLP1200-KM	016 840 7149 5	FRONT PANEL ASS'Y	25	SBCD2330MB0A	016 702 6783 0	BUTTON
1-1	SHRD58	016 652 0654 7	CORD CLAMPER	26	SBCD400	016 702 6812 2	BUTTON
2	SKKLP1200-KM	016 840 7215 2	PANEL ASS'Y	27	SUW50-1	016 650 5276 5	PLATE
2-1	SGUD120	016 842 1506 8	PANEL	28	SUWLP1200-KM	016 650 5283 6	DISPLAY PANEL ASS'Y
2-2	SHGLP1200-KM	016 653 1130 3	RUBBER ASS'Y	30	SGKDT330ZK0A	016 846 3527 5	FRAME, POWER SWITCH
3	SUXD33	016 634 0134 0	SHAFT	31	SPKTO15X26	017 702 0066 8	BUTTON, POWER SWITCH
4	SUSD37-1	016 726 0857 1	SPRING	32	SHW011	016 643 0996 1	SPACER
5	SMND8	016 632 1831 8	FRAME, OPEN BUTTON	33	SGUD118	016 842 1507 7	FILTER
6	SGD801	016 653 1098 6	RUBBER	36	SLQD1-2	003 455 0376 4	PLUNGER
7	SBCD2330MB0A	016 702 6772 3	OPEN BUTTON	SCREWS, WASHERS AND NUTS			
8	SUSD53-1	016 726 0863 3	SPRING	N1	XYN24C5	005 500 1291 6	SCREW
9	SUSD36-1	016 726 0872 2	SPRING	N2	XTV346JF2	005 501 0890 8	SCREW
10	SUW37-1	016 650 5288 1	PLATE	N3	XQX24-AF4FZ	005 500 7761 3	SCREW
11	SDG09-1	016 745 0209 0	HOOK	N4	XUC3FY	005 512 0137 3	E-RING
12	SSD8	003 439 2082 9	TERMINAL, OPEN/CLOSE DET.	N5	XYN45E	005 503 0595 2	SCREW
13	SUWLP1200KM1	016 650 5290 7	CLAMPING PLATE ASS'Y	N6	XTV346GFR	005 501 4635 5	SCREW
13-1	SHGD80	016 653 1098 5	RUBBER	N7	XQX26C-J4FZ	005 500 7782 2	SCREW
14	SGUD26	016 745 0205 4	GEAR	N8	XSN26-3F3	005 500 7763 1	SCREW
15	SUW33	016 650 5270 1	BRACKET	N9	XWA2BFZ	005 513 1234 4	WASHER
16	SHRD36	016 652 0653 0	GEAR	N10	XTV346JFZ	005 501 0919 2	SCREW
17	SBZLP1200-KM	016 630 1774 0	OPERATION BASE ASS'Y	N11	XTW346JFZ	005 501 3054 4	SCREW
18	SRDJHL15401	003 400 6583 0	HEADPHONES JACK	N12	XTV24G	005 501 0919 3	SCREW
19	SGKDT331ZK0A	016 846 3504 9	PANEL	N13	SRX0301G01	005 500 5557 0	SCREW
20	SHRD25	016 652 0651 2	SPACER	N14	XTV346JFZ	005 501 4633 3	SCREW
21	SBCD40MB0A	016 700 1827 2	KNOB, HEADPHONES VOLUME	N16	XTW46HFFZ	005 501 2995 5	SCREW
22	SBD08-1	016 700 1334 3	KNOB, PITCH CONTROL	N20	SNE2125-1	005 500 5732 2	SCREW
23	SBNDT0MB0A	016 700 1340 5	DIAL, SEARCH				

Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
CABINET AND CHASSIS							
41	SKUD7	016 802 2056 3	BOTTOM BOARD	57	SHR127	016 645 0037 9	SPACER, AC CORD
42	SGXD130ZYDA	016 846 3563 5	RUBBER	EXCEPT (XA) (PA, PE, PC)			
43	SGXD1310ZYDA	016 846 3570 2	RUBBER	58	QFC12JSM	003 430 0928 5	AC CORD
44	SGXD1300ZYDA	016 846 3571 1	RUBBER	[E.K.]			
47	SKLD2-Z	016 828 0317 7	INSULATOR ASS'Y	58	RJA52Y	003 430 3514 9	AC CORD
48	SKUD8	016 802 2055 4	BOTTOM COVER	[XA, PA, PE] (PC)			
49	SMLD3-1	016 601 0579 9	CUSHION RUBBER	58	SJAG23	003 430 1056 4	AC CORD
50	SHRD39	016 652 0660 1	SPACER	[XL]			
51	SHRD33	016 652 0652 1	SUPPORTER, P.C. BOARD	58	SJA139-3	003 430 2575 2	AC CORD
52	SHE185	016 918 0330 9	SPACER	[E, EG, EB, EH] (EF, E)			
53	SGPD500KY1A	016 840 7181 5	REAR PANEL	58	SJA174	003 430 4312 5	AC CORD
(M)	SGPD500KY2A	016 840 7193 1	REAR PANEL	[M, MC]			
(E)	SGPD500KY3A	016 840 7192 2	REAR PANEL	58	SJA182	003 430 5035 3	AC CORD
(XA)	SGPLP1200KEG	016 840 7234 9	REAR PANEL	[XB]			
53	SGPLP1200KEK	016 840 7230 1	REAR PANEL ASS'Y	60	SHGD61	016 653 1107 2	SPACER
(EG)	SGPLP1200KEK	016 840 7230 1	REAR PANEL ASS'Y	61	SHRD62	016 652 0704 6	CORD CLAMPER
(E.K.)	SGPLP1200KMC	016 840 7269 4	REAR PANEL ASS'Y	SCREWS, WASHERS AND NUTS			
(M.C.)	SGPLP1200KPA	016 840 7291 0	REAR PANEL ASS'Y	N1	XTW414QFZ	005 501 4636 4	SCREW
(PA, PE, PC)	SGPLP1200KXL	016 840 7292 9	REAR PANEL ASS'Y	N2	XTV314QFZ	005 501 1144 1	SCREW
(XL, EB, EH) (EF, E, I, XB)				N3	XTBS34FFZ	005 501 3429 3	SCREW
54	SJS805	003 400 1889 1	SOCKET (8 PIN)	N4	SRXG016N01	005 500 5657 0	SCREW
55	SJS8401	003 403 6359 1	SOCKET (5 PIN)	N5	XTV316JFR	005 501 4634 6	SCREW
56	SJFD5	003 410 7771 8	LINE OUT TERMINAL	N6	SNSD17	016 643 0384 5	SCREW
57	RHR111	015 645 0221 9	SPACER, AC CORD	N7	XSB4125FZ	005 500 7168 4	SCREW
(XA, PA, PE) (PC)				N8	SNNW6-1	016 643 0982 7	WASHER
				N9	XTW348TFZ	005 501 2326 5	SCREW
				N10	XTW348TFR	005 501 2602 2	SCREW

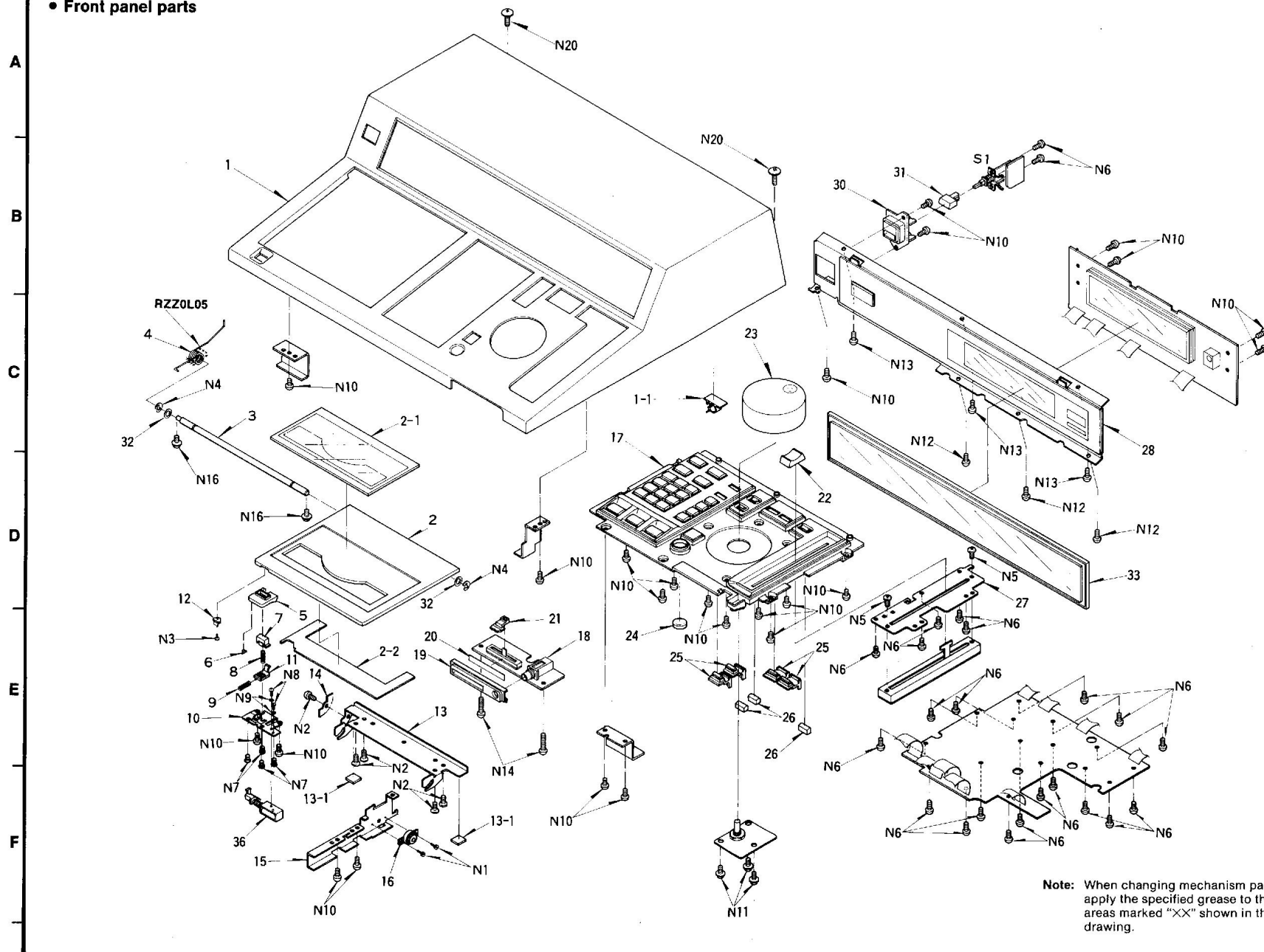
Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
TRAVERS DECK							
1	S1RLP1200-KM	016 632 1819 4	DISC TRAY ASS'Y	29	SHGD53	016 653 1090 4	CUSHION RUBBER
1-1	SHSD15	016 643 0885 4	SHEET	30	SHRD3	016 652 0559 7	SPRING HOLDER
2	SUWLP1200KM2	016 650 5291 6	BASE ASS'Y	31	SKPD830	003 483 1207 8	SPINDLE P.C.B
3	S1RLP1200KM1	016 652 0675 4	CLAMPER ASS'Y	32	SOWD2	016 846 3479 6	SPACER
3-1	SRGCD07ND4	017 653 0359 1	RUBBER	33	SUSD39-1	016 726 0868 0	SPRING (GOLD)
4	SUWLP1200-KM	003 453 0338 0	MAGNET ASS'Y	34	SUSD54-1	016 726 0861 5	SPRING (SILVER)
5	SRUP050N45	017 745 0087 4	PLATE	35	SUSD55-1	016 726 0862 4	SPRING (BLACK)
6	SUXD30	016 641 0256 0	SHAFT	36	SUSD56-1	016 726 0865 1	SPRING (RED)
7	SUXD31	016 641 0255 1	SHAFT	SCREWS, WASHERS AND NUTS			
8	SUSD40	016 726 0874 0	SPRING	N1	XYN2+C4	005 503 0548 9	SCREW
9	SUWD45-1	016 650 5315 5	SPACER	N2	XTW348TFZ	005 501 2326 5	SCREW
10	SHRD13	016 643 0356 2	SPACER	N3	XTV3412JFZ	005 501 0847 1	SCREW
11	Δ	001 271 0632 3	OPTICAL PICKUP ASS'Y	N4	XTN2348FZ	005 501 4631 9	SCREW
12	EWSTBK400Q53	001 230 2544 5	RESISTANCE UNIT	N5	XTV348JFZ	005 501 0819 2	SCREW
13	SUXD25	016 634 0124 2	SHAFT	N6	XUC2FT	005 512 0126 6	E-RING
14	SUXD39	016 634 0137 7	SHAFT	N7	XUC3FY	005 512 0137 3	E-RING
15	SHRD40	016 652 0670 9	SPACER	N8	SFXGQ06N01	005 500 4983 3	SCREW
16	SHGD47	016 653 1070 8	HOLDER	N9	SNSD10	005 500 5575 8	SCREW
17	EWSL04A00000	016 631 0044 6	SPACER	N10	XQN174A6	005 500 4300 2	SCREW
18	SORD10E	001 211 3219 8	COIL	N11	XYN2+C4	005 503 0548 9	SCREW
19	SODY9	016 634 0125 1	YOKE	N12	XTV3410G	005 501 0826 6	SCREW
20	SODY8E	016 634 0128 8	YOKE	N13	XTV348BFN	005 501 0888 2	SCREW
21	S1SD9	016 630 1778 6	TRAVERSE BASE	N14	XKE26D5	005 500 5095 2	SCREW
22	SOMLP1200-KM	016 740 0118 7	ROTOR ASS'Y	N15	XTN2+4G	005 501 2780 5	SCREW
23	SDD14-E	016 766 0210 0	TURNABLE	N16	SNSD9	016 726 0765 4	SCREW
24	SRQA010N04	017 726 0412 8	SPRING	N17	XTV3414G	005 501 0851 5	SCREW
25	SDD15	016 745 0208 1	RING	N18	XNG29H	005 507 1598 5	NUT
26	SGXLP1200-KM	016 846 3566 0	TRAVERSE BASE COVER ASS'Y	N19	XWE3AB	005 513 4815 7	WASHER
27	SHRD41	016 652 0677 2	LOCK SHAFT	N20	XTN234G	005 501 4632 8	SCREW
28	SHRD42	016 652 0668 3	KNOB, LOCK SHAFT	N21	SHMD13	016 643 0995 2	SPACER

Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
PACKINGS							
P1	SPND174	016 971 4879 0	CARTON BOX	A1	SQU0151-1	016 983 4975 5	INSTRUCTION BOOK
(EF)	SPND89	016 971 4718 6	CARTON BOX	[XL, EF, EG] (XA)			
P1	SPND90	016 971 4786 4	CARTON BOX	A1	SQULP1200-KE	016 983 4877 6	INSTRUCTION BOOK
EXCEPT [MC, EF]				[E, EB, EH]			
P1	SPND90	016 971 4786 4	CARTON BOX	A1	SQULP1200KMC	016 983 4860 5	INSTRUCTION BOOK
[MC]				[MC]			
P2	SPSD57	016 977 3083 0	PAD	A1	SQULP1200KPA	016 983 4917 5	INSTRUCTION BOOK
P3	SPSD58	016 977 3084 9	PAD	[PA, PE, PC]			
P4	XZB60X65A01	016 978 0510 1	POLYETHYLENE BAG	A1	SQULP1200KXB	016 983 4916 6	INSTRUCTION BOOK
P5	SRHZJ02N01	017 978 0097 5	PROTECTION COVER	[XB]			
P6	SFYF23A35	017 978 0084 0	POLYETHYLENE BAG	A2	SFDHMD302	003 492 5453 3	LINE OUT CORD
P8	SPSD14	016 977 2843 0	PROTECTION SHEET	A3	RJP120ZBS-H	003 402 1437 9	PLUG
ACCESSORIES				[XA, PA, PE] (PC, XB) ONLY			
A1	SQU0114	016 983 4879 4	INSTRUCTION BOOK	A4	UM-3NE		BATTERY
(E.K.)	SQU0115	016 983 4918 4	INSTRUCTION BOOK	EXCEPT [M, MC]			
A1	SQU0149	016 983 4862 3	INSTRUCTION BOOK	A4	UM-3NEP		BATTERY
(E.I.)				[M, MC]			
A1				(M)			

Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
INTEGRATED CIRCUITS				EXCEPT [M, MC]			
IC1001	MN6030B	001 060 6133 0	I.C.	C1002	ECKD1H101KB	001 103 1412 0	CERAMIC, 50V, 100PF
EXCEPT [M, MC]				[M, MC]			
IC1001	MN6030CA	001 060 8758 5	I.C.	C1002	ECKD1H121KB	001 103 1456 9	CERAMIC, 50V, 120PF
EXCEPT [M, MC]				EXCEPT [M, MC]			
TRANSISTORS				C1003	ECEAQJK101	001 120 0136 8	ELECTROLYTIC, 6.3V, 100μF
Q1001	UN1201	001 030 5092 4	TRANSISTOR	REMOTE CONTROL TRANSMITTER			
DIODES				101	UR64PP259	016 840 7312 2	PANEL
D1001	LN66-S	001 032 3730 5	LED	102	UR64CS119C	016 802 2114 0	TOP COVER
D1002, D1003	MA154WK	001 032 3491 1	DIODE	103	UR64SB125	016 851 2458 6	PLATE
D1004, D1005	MA154WK	001 032 3491 1	DIODE	104	UR64T123A	016 702 6323 4	BUTTON
D1006, D1007	MA154WA	001 032 3490 2	DIODE	105	UR64CT122	016 633 1011 9	RUBBER SWITCH
OSCILLATOR				106	UR64CS120C	016 802 2113 1	BOTTOM COVER
X1001	CSB420PB1	001 030 0133 9	420 KHZ	107	URLJLB126BN	016 852 1069 6	LABEL
EXCEPT [M, MC]				[M, MC]			
X1001	CSB456EB1	001 241 0002 7	455 KHZ	107	UR64LB126BP	016 852 1068 7	LABEL
EXCEPT [M, MC]				[M, MC]			
RESISTORS				108	UR64EC121C	016 820 0589 5	BATTERY COVER
R1001	ERDS2TJ1R0	001 152 2419 4	CARBON, 1/4W, 1Ω	109	UR64TD127	003 413 1407 4	TERMINAL ⊕
CAPACITORS				110	UR64TD128	003 413 1408 3	TERMINAL ⊖
C1001	ECKD1H101KB	001 103 1412 0	CERAMIC, 50V, 100PF	111	UR64TD101	003 413 1406 5	TERMINAL
[M, MC]				SCREWS, WASHERS AND NUTS			
C1001	ECKD1H471KB	001 103 1551 0	CERAMIC, 50V, 470PF	N100	XTS26+12GFZ	005 501 3122 9	SCREW

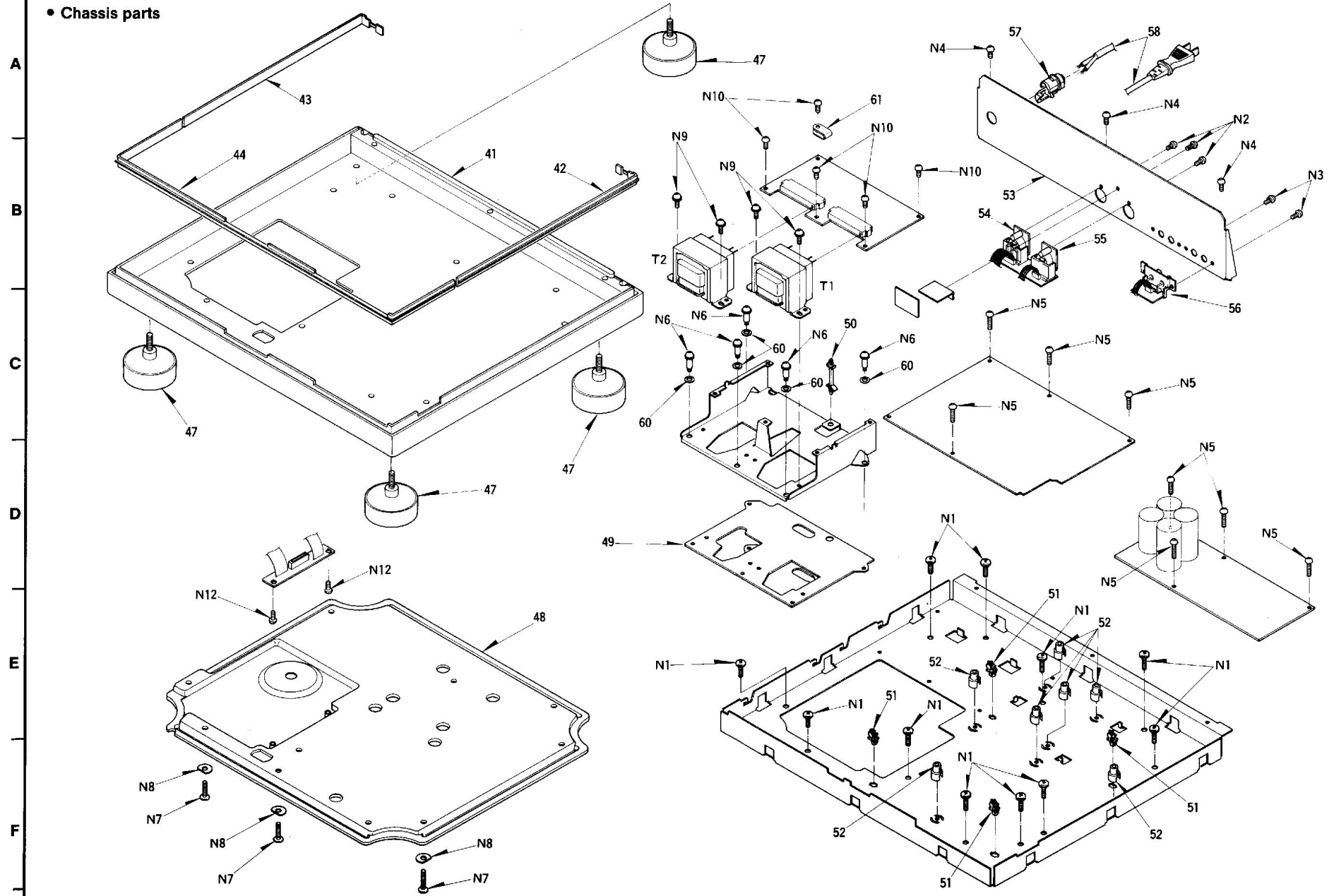
■ EXPLODED VIEWS

• Front panel parts

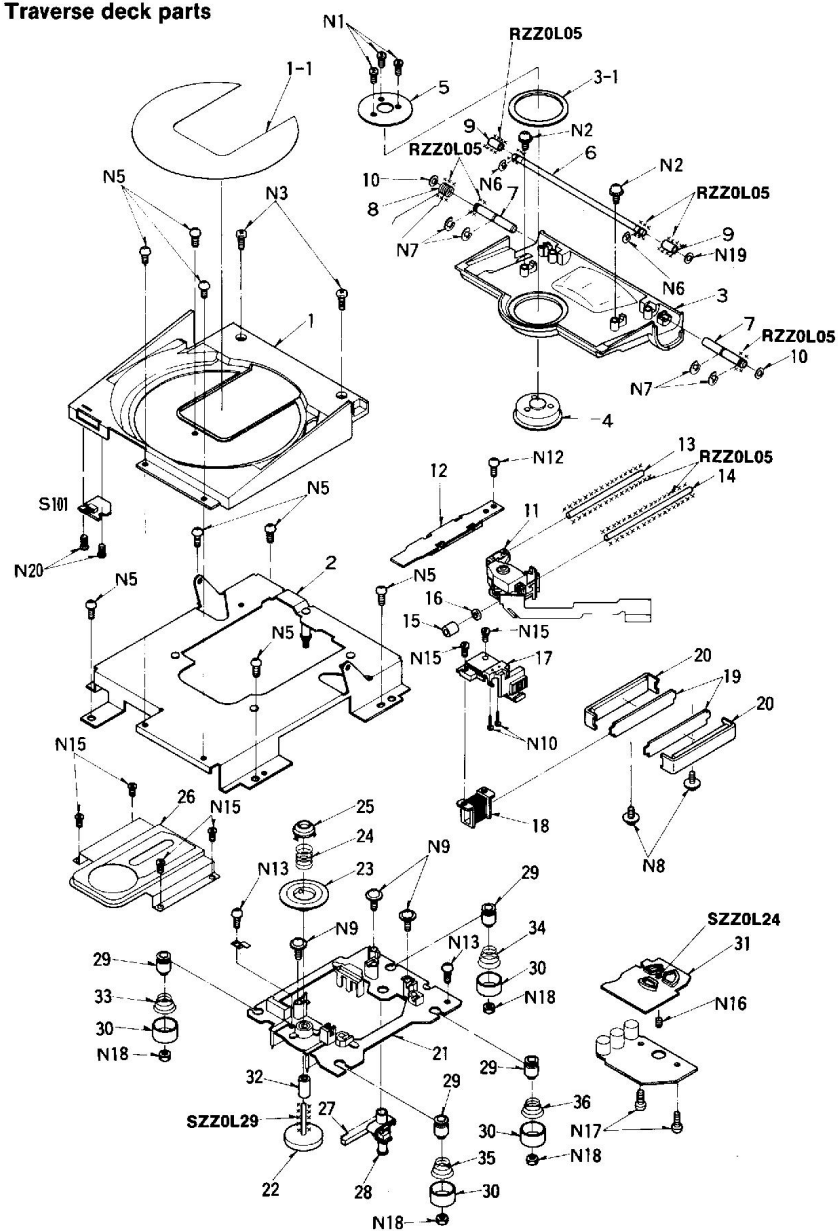


Note: When changing mechanism parts, apply the specified grease to the areas marked "XX" shown in the drawing.

• Chassis parts

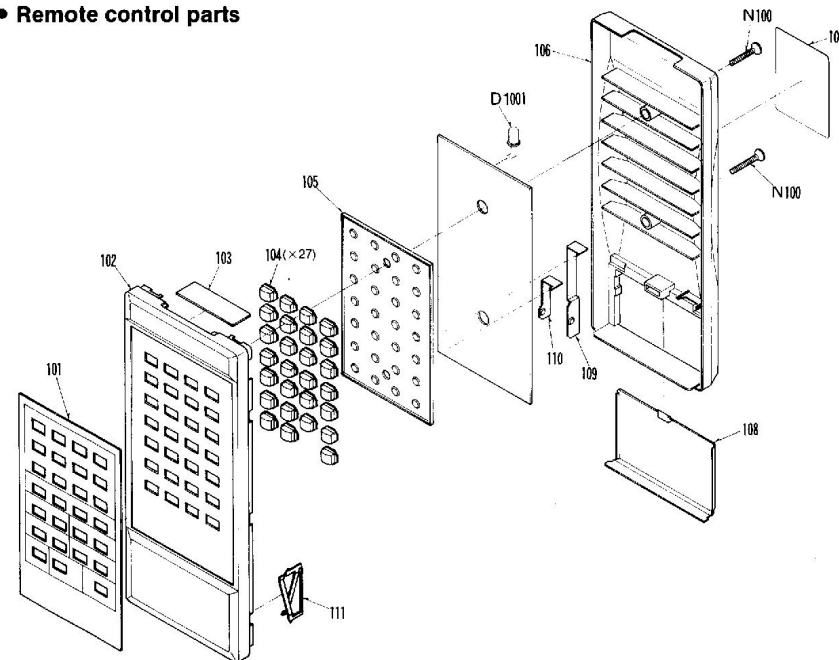


• Traverse deck parts

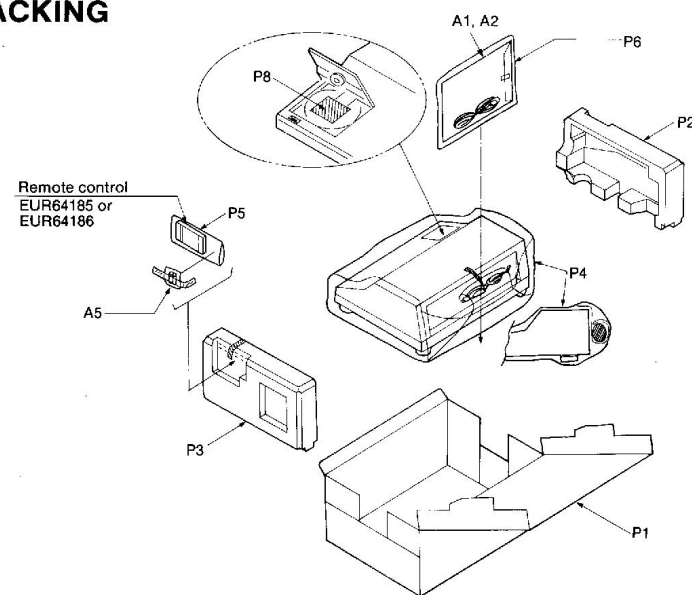


Note: When changing mechanism parts, apply the specified grease to the areas marked "X" shown in the drawing.

• Remote control parts



■ PACKING



■ HOW TO REPLACE IC'S (Small outline type)

Replacing procedure		Cautions
1	Reduce the amount of solder on each pin of the integrated circuit by use of a solder sucker. (Example) H-130	- Recommended tool - Special soldering iron - H605M and H-130. - H605E and H-130. - Do not touch the soldering iron to the area for a long time. It may otherwise cause removal of the print foil. - When shifting the pin upward, do the job quickly while the solder is melting. If the solder is hard, it may cause removal or breakage of the print foil. - When using a pencil type soldering iron. - Completely remove the solder from each IC pin by use of solder sucker. - Raise each pin by means of an eyelet, hold the pliers then remove IC package from P.C.B.
2	Melt the solder on the pin (one electrode) with the soldering iron.	
3	While the solder is melting, shift the pin upward by the soldering iron to remove it from the foil.	
4	Remove each pin from the foil according to the above-mentioned procedure.	

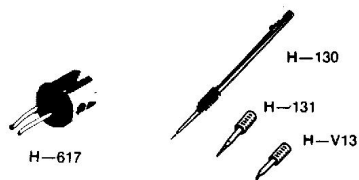
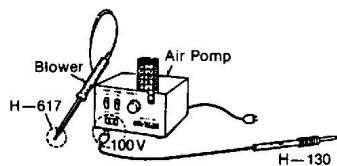
* Special soldering iron

(Refer to Technical Information, ORDER NO. GAD84125486T1)...For U.S.A. and Canada
(Refer to Technical Information, ORDER NO. GAD84115476T8)...For others

• H-605 Spot Heater (hot-air solder iron)

This device that uses hot air to melt solder was developed to remove Flat-Package ICs, RHCs and chip parts.

- H-605M (For 120V power source)
- H-605E (For 200V/220V/240V power source)



• H-617 Twin Nozzle (for spot heater)

Special nozzle for the removal of RHCs and chip resistors. (Nozzle diameter: 1.0mm x 2)

• H-130 Slim Pencil Solder Iron

An ultrasmall ceramic heater solder iron is extremely handy for soldering chip parts, RHCs, ICs etc., to high-density circuit boards.

Features:

- Rated power: 100V, 15W
- Max. temp.: 400°C
- Heater: ceramic (long life)
- Insulation resistance: 100MΩ
- Length: 178mm
- Weight: 18g (not including cord)

• H-131, H-V13 Cap Bits

Solder tip for the slim pencil Solder Iron is composed of a bit holder and a corrosion resistance solder tip. Permits changing of solder tips even while still hot.

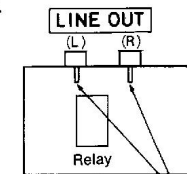
- Solder tip: 0.3mm

■ MEASUREMENTS AND ADJUSTMENTS

Caution:

It is very dangerous to look at or touch the laser beam. (Laser radiation is invisible.) With the unit turned "on", laser radiation is emitted from the pick-up lens. Be careful during adjustments in particular.

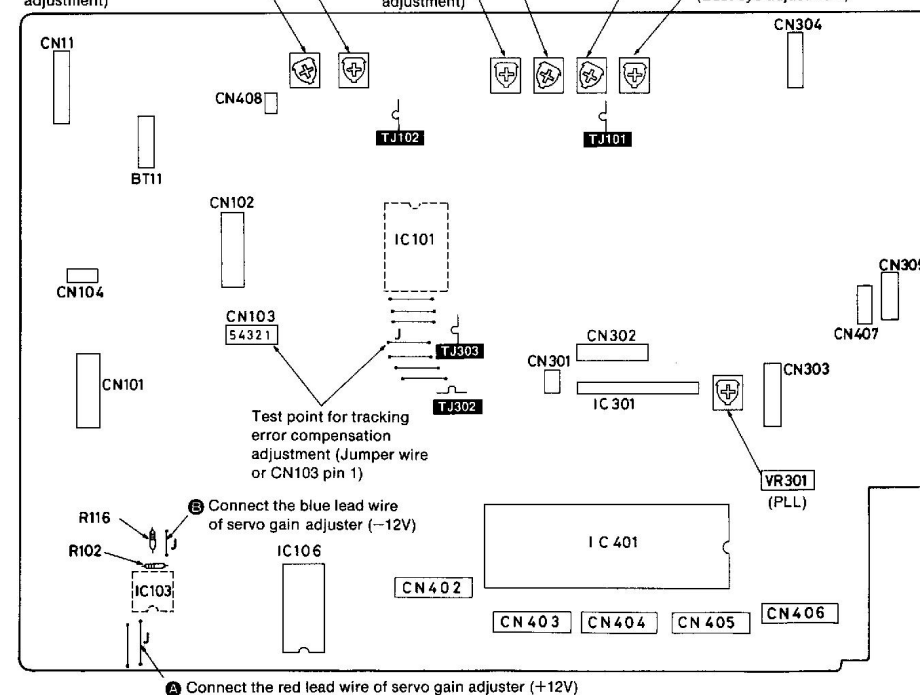
• Line out P.C.B.



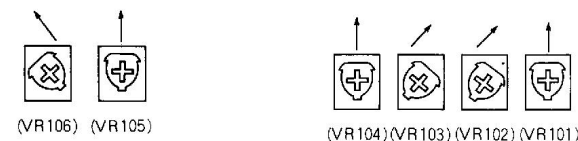
PLL adjustment test point

ADJUSTMENT POINTS

- Main P.C.B.
 - (Focus offset adjustment) VR105
 - (Tracking offset adjustment) VR103
 - (Tracking gain adjustment) VR102
 - (Tracking error compensation adjustment) VR106
 - (Focus gain adjustment) VR104
 - (Best eye adjustment) VR101



TEMPORARY SETTING OF EACH VR



ELECTRICAL ADJUSTMENT

Equipment used

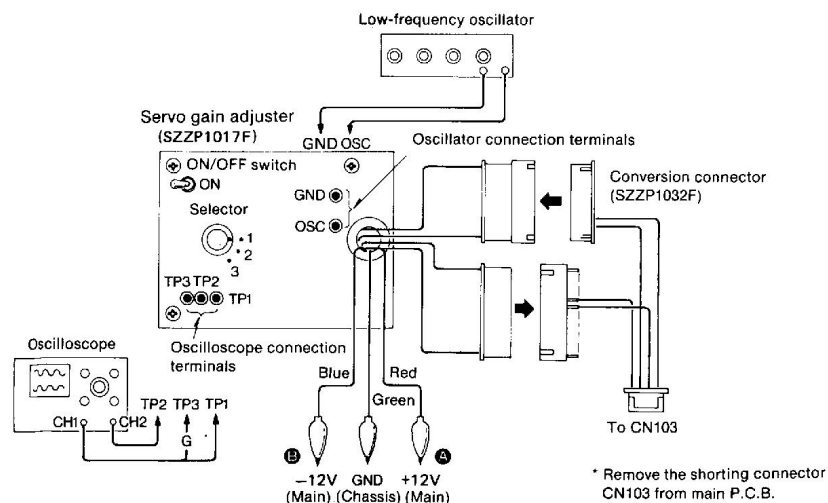
- Servo gain adjuster (SZZP1017F)
- Test discs:
 - Test disc (SZZP1014F)
 - Inspection test disc (SZZP1054C)
 - Uneven disc (SZZP1056C)
 - Black band disc (SZZP1057C)

- Ordinary disc
- Two-channel oscilloscope (with trigger) of 30 MHz or over
- Low-frequency oscillator
- Conversion connector (SZZP1032F)

Adjustment Procedure

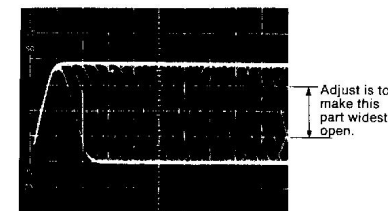
Step 1: Remove the front panel.	Page 16	Step 7: Temporary adjustment of focus and tracking offset	Page 37
Step 2: Connect the servo gain adjuster.	Page 35	Step 8: Focus offset adjustment	Page 37
Step 3: Temporary setting of each VR.	Page 34	Step 9: Tracking offset adjustment	Page 38
Step 4: Best eye (PD balance) adjustment	Page 36	Step 10: Tracking error compensation adjustment	Page 38
Step 5: Focus gain adjustment	Page 36	Step 11: PLL adjustment	Page 38
Step 6: Tracking gain adjustment	Page 36	Step 12: Check of play operation after adjustment	Page 39

Servo Gain Adjuster and Its Connection



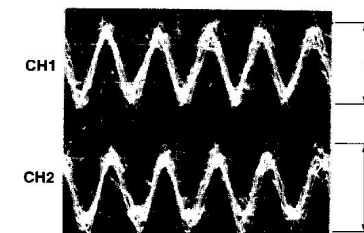
BEST EYE (PD BALANCE) ADJUSTMENT

1. Connect CH1 of the oscilloscope to **TJ302 (+)** and **TJ303 (-)** of the main P.C.B.
Oscilloscope setting: VOLT 500 mV
 SWEEP 0.5 μ sec.
 INPUT AC
2. Turn "on" the power switch and play the **0.5 mm black spot** of the test disc (SZZP1014F or SZZP1054C).
3. Adjust **VR101** so that the eye pattern of the RF signal is widest open.



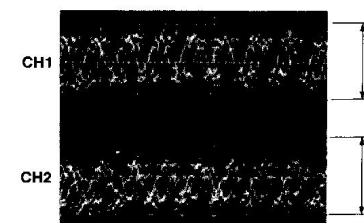
FOCUS GAIN ADJUSTMENT

1. Adjust the low-frequency oscillator to **750 Hz** frequency and **150 mVp-p** output voltage, and connect it to **OSC** and **GND** of servo gain adjuster.
2. Connect CH1 and CH2 of the oscilloscope to **TP1** and **TP2** of the servo gain adjuster (**TP3 to ground**).
Oscilloscope setting: VOLT 100 mV (both channels)
 SWEEP 1 msec.
 INPUT DC
3. Set the servo gain selector switch to "2". (Set the ON-OFF switch to "on".)
4. Turn "on" the power switch and play the test disc (SZZP1014F or SZZP1054C).
5. With the selector set to "1" a 750 Hz signal appears on the oscilloscope. Then adjust **VR104** so that the waveform amplitudes on both channels are equal to each other.



TRACKING GAIN ADJUSTMENT

1. Adjust the low-frequency oscillator to **1.2 kHz** frequency and **150 mVp-p** output voltage. Connect to **OSC** and **GND** of servo gain adjuster.
2. Connect CH1 and CH2 of the oscilloscope to TP1 and TP2 of the servo gain adjuster (TP3 to ground).
Oscilloscope setting: VOLT 100 mV (both channels)
 SWEEP 1 msec.
 INPUT DC
3. Set the servo gain selector switch to "2". (Set the ON-OFF switch to "on".)
4. Turn "on" the power switch and play the test disc (SZZP1014F or SZZP1054C).
5. With the selector set to "3", a 1.2 kHz signal appears on the oscilloscope. Then adjust **VR102** so that the waveform amplitudes on both channels are equal to each other.
6. The servo gain adjuster is not necessary for other adjustments, so discount the adjuster, and insert the short connector of **CN103** to the original position.



TEMPORARY ADJUSTMENT OF FOCUS AND TRACKING OFFSET

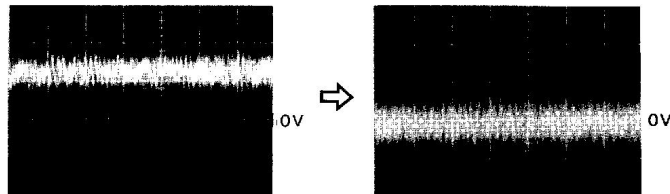
(Temporary adjustment of focus offset)

1. Connect CH1 of the oscilloscope to **TJ102** (+) and chassis (-) of the main P.C.B.

Oscilloscope setting:

VOLT 100 mV
SWEEP 5 msec.
INPUT DC

2. Turn "on" the power switch and play the test disc (SZZP1057C).
3. After reading TOC, set the mode to "stop".
4. Adjust **VR105** so that the DC level shown on the oscilloscope is at the ground level (0 V).



(Temporary adjustment of tracking offset)

1. Connect CH1 of the oscilloscope to **TJ101** (+) and chassis (-) of the main P.C.B.

Oscilloscope setting:

VOLT 100 mV
SWEEP 5 msec.
INPUT DC

2. Turn "on" the power switch and play the test disc (SZZP1057C).
3. After reading TOC, set the mode to "stop".
4. Adjust **VR103** so that the DC level shown on the oscilloscope is at the ground level (0V).

FOCUS OFFSET ADJUSTMENT

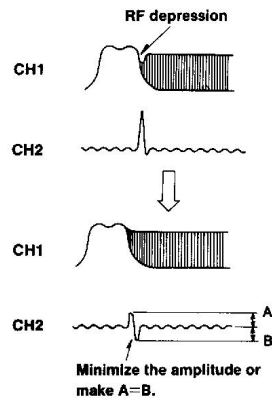
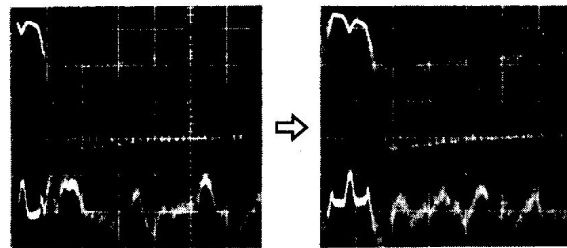
1. Connect CH1 of the oscilloscope to **TJ302** (+) and **TJ303** (-) of the main P.C.B. Connect CH2 to **TJ102** (+) and **TJ303** (-).

Oscilloscope setting:

VOLT 500 mV (CH1)
100 mV (CH2)
SWEEP 0.5 msec.
INPUT AC (CH1)
DC (CH2)

MODE NORM (Trigger on CH1)

2. Turn "on" the power and play **Track No. 9** (0.5 mm black spot) of the test disc (SZZP1057C).
3. Trigger so that the waveform as shown appears on the oscilloscope, and adjust **VR105** to minimize the RF depression on CH1 and the wave amplitude on CH2.



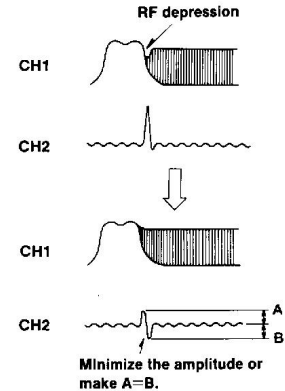
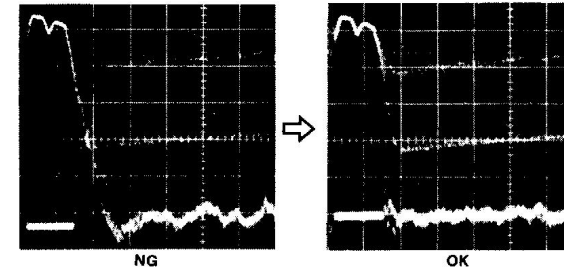
TRACKING OFFSET ADJUSTMENT

1. Connect CH1 of the oscilloscope to **TJ302** (+) and **TJ303** (-) of the main P.C.B. Connect CH2 to **TJ101** and **TJ303**.

Oscilloscope setting:

VOLT 500 mV (CH1)
100 mV (CH2)
SWEEP 0.5 msec.
INPUT AC (CH1)
DC (CH2)
MODE NORM (Trigger on CH1)

2. Turn "on" the power and play **Track No. 9** (0.5 mm black spot) of the test disc (SZZP1057C).
3. Trigger so that the waveform as shown appears on the oscilloscope, and adjust **VR103** to minimize the RF depression on CH1 and the wave amplitude on CH2.



TRACKING ERROR COMPENSATION ADJUSTMENT

1. Connect CH1 of the oscilloscope to the tracking error compensation test point (+) and chassis (-).
2. Turn "on" the power switch and play **Track No. 1** of the test disc (SZZP1014F or SZZP1054C).

Oscilloscope setting:

VOLT 500 mV
SWEEP 1 msec.
INPUT DC

3. Check the waveform on the oscilloscope and adjust **VR106** so that the waveform at DC level is 0±5 mV.

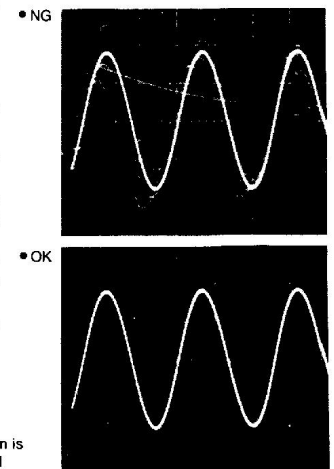
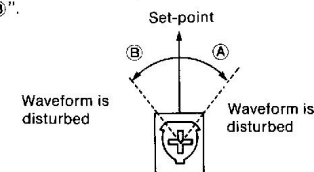
PLL ADJUSTMENT

1. Connect CH1 of the oscilloscope to the **line out terminal** (+) and chassis (-).

Oscilloscope setting:

VOLT 1 V
SWEEP 1 msec.
INPUT DC

2. Turn "on" the power and play **Track No. 7** (0.5 mm black spot) of the test disc (SZZP1054C).
3. Adjust **VR301** while observing the oscilloscope and set it in the middle of the range where the waveform is stable.
 - (A) Slowly turn VR301 clockwise and observe the point at which the waveform on the oscilloscope begins to be disturbed as shown in NG.
 - (B) Slowly turn VR301 counterclockwise and observe the point at which the waveform on the oscilloscope begins to be disturbed.
 - (C) Set VR301 in the middle between the points observed in above 2 steps "(A) and (B)".



CHECK OF PLAY OPERATION AFTER ADJUSTMENT

• Skip search check

1. Play an ordinary disc.
2. Push the skip button to check the skip search (both in forward and reverse modes).

• Manual search check

1. Play an ordinary disc.
2. Push the manual search button to check that manual search can be smoothly made at low and high speeds (both in forward and reverse modes).

• Check for defects

1. Play black spot portion of the test disc to check that there is no sound skip or noise.
2. Play the fingerprint portion of the test disc to check that there is no sound skip or noise.

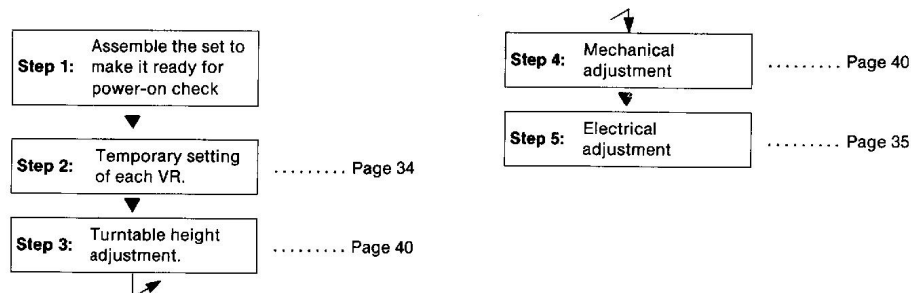
OPTICAL PICKUP ADJUSTMENT

Equipment used

- Two-channel oscilloscope (with trigger) of 30 MHz or over.
- Test disc (SZZP1014F, SZZP1054C, SZZP1056C).
- Hexagonal wrench (SZZP1044C)

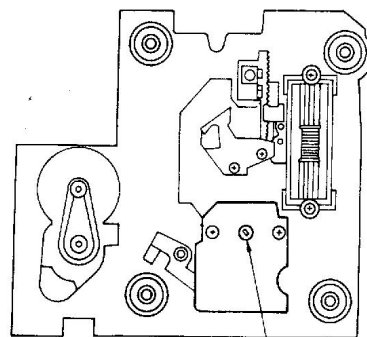
Adjustment Procedure

*If the optical pickup is replaced, adjust it following the procedure below.



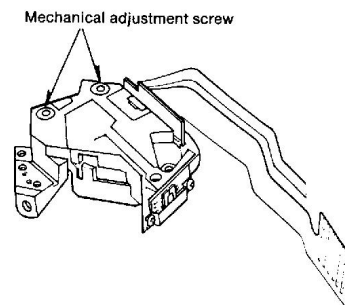
Adjustment Points

• Traverse unit (rear side)



Turntable height adjustment screw

• Optical pickup



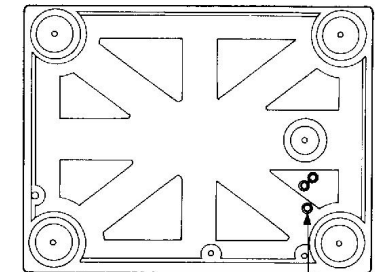
Mechanical adjustment screw

TURNTABLE HEIGHT ADJUSTMENT

1. Connect CH1 of the oscilloscope to **TJ102** (+) and chassis (-) of main P.C.B.

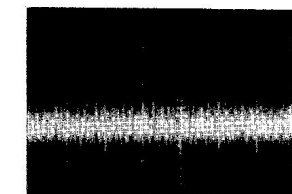
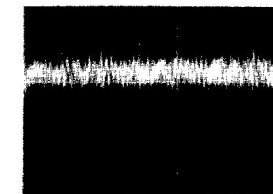
Oscilloscope setting: VOLT 100 mV
SWEEP 5 msec.
INPUT DC

2. Set the DC ground level of the oscilloscope.
3. Turn "on" the power switch and play the test disc (SZZP1014F or SZZP1054C).
4. Turn the adjusting screw so that the voltage at the waveform center of the oscilloscope is 0 ± 50 mV. (As shown in the figure at right, adjust the screw on the bottom panel using a screwdriver (-).)
5. After the adjustment, apply screw-lock paint (RZZOL01) to the adjusting screw.



Front

Adjusting screw hole

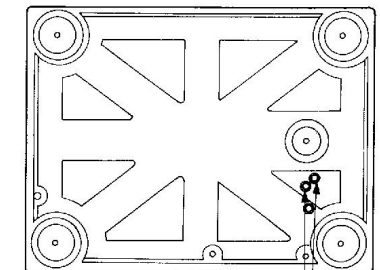


MECHANICAL ADJUSTMENT

1. Connect CH1 of the oscilloscope to **TJ302** (+) and **TJ303** (-) of the main P.C.B.

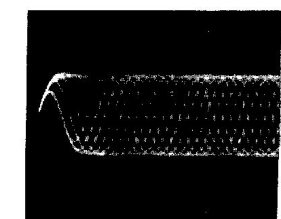
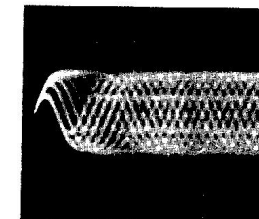
Oscilloscope setting: VOLT 500 mV
SWEEP 0.5 μ sec.
INPUT AC

2. Turn "on" the power switch and play **Track No. 9** of the test disc (SZZP1056C). If any track other than No. 9 is played back, this adjustment cannot be made.
3. Alternately turn the 2 optical pickup adjusting screws with the hexagonal wrench (SZZP1044C) so that the vertical fluctuation of RF signal is minimized and the eye pattern most open.
4. After the adjustment, apply screw-lock paint (RZZOL01) to the adjusting screw.



Front

Adjusting screws



■ TERMINAL FUNCTION OF LSI

● MN6617S (Digital Signal Processing: EFM Decoder, Error Correction, CLV Servo)

Pin No.	Mark	I/O Devision	Function	Pin No.	Mark	I/O Devision	Function
1	BLKCK	O	Sub-code block (Q data) clock (75 Hz)	34	FCLV	O	Synchronizing detection signal (Not used)
2	CLDCK	O	Sub-code frame (Q data) clock (7.35 kHz)	35	IPSEL	O	Interpolation flag for each byte (Not used)
3	SUBQ	O	Sub-code (Q data) output	36	IPBYTE	I/O	Interpolation prohibited (Not used, connected to GND)
4	CRC	O	Sub-code (Q data) CRC check (Not used, open)	37	FLAG5	O	C2 decoder correction flag 3 (Not used)
5	RST	I	Reset signal input (reset at "L")	38	FLAG4	O	C2 decoder correction flag 2 (Not used)
6	MLD	I	Command load input	39	FLAG3	O	C2 decoder correction flag 1 (Not used)
7	MCLK	I	Command clock input	40	FLAG2	O	C1 decoder correction flag 2 (Not used)
8	MDATA	I	Command data input	41	FLAG1	O	C1 decoder correction flag 1 (Not used)
9	DMUTE	I	Muting control (Not used, connected to GND)	42	FLCK0	O	Crystal frame clock
10	TRON	I	Tracking servo ON signal (tracking servo ON at "L")	43 50	D7 D0	I/O	16 K RAM data output
11	STAT	O	Processing condition (CRC, OTC, CLVOK, TT STOP) output	51	RAMOE	O	16 K RAM OE signal
12	SMCK	O	Clock output (4.2336 MHz)	52	RAMWE	O	16 K RAM WE signal
13	PMCK	O	Pitch control clock output	53 63	RAMA 0 RAMA10	O	16 K RAM address signal (RAMA0: LSB, RAMA10: MSB)
14	ITC	I	Track counter input signal	64	PC	O	Spindle motor ON signal (ON at "L")
15	TEST	I	Test mode selection (Not used, connected to +5V)	65	EC	O	Spindle motor drive signal
16	X2	O	Clock output	66	FG	I	Spindle motor FG signal input (Not used, open)
17	X1	I	Clock input	67	VCNT	—	(Not used, connected to GND)
18	SEL	I	DA output parallel/serial selection (serial at "L")	68	REXT	—	(Not used, connected to GND)
19	LDG/WDC	O	L channel deglitch signal/serial data word clock	69	VDD	I	Power supply (+5V)
20	RDG	O	Clock signal output for spindle motor control	70	PD	—	(Not used, open)
21	DEMPH	O	De-emphasis ON signal (de-emphasis ON at "H")	71	PCKO	—	(Not used, open)
22	IPFLAG	O	Interpolation flag (interpolation at "H")	72	PCK	I	PLL extract clock input
23	FLAG0	O	Error flag (error at "H")	73	VDD	I	Power supply (connected to +5V)
24	FLAG6	O	16 K RAM address reset signal (reset at "H")	74	EFM	I	EFM signal input (PLL)
25	XCK	O	Clock (16.9344 MHz) output	75	SFR	I	EFM signal input (DSL)
26	SRDATA	O	Serial data output (MSB first)	76	DO	I	Drop-out signal (Drop-out at "H")
27	SRDATA	O	Serial data output (LSB first)	77	CLVS	O	11T servo OK signal (OK at "H")
28	SRCK	O	Serial data beat clock	78	FPC	O	PLL frequency comparison signal
29	WDCK	O	Serial data word clock (Not used)	79	BSSEL	O	PLL frequency in take operation signal
30	BYTCK	O	Serial data byte clock (Not used)	80	SRFO	—	(Not used, open)
31	GND	I	GND terminal	81	NSRF	—	(Not used, open)
32	R/L	O	R/L signal	82	RF	—	(Not used, open)
33	RESY	O	Resynchronizing signal	83	SUBC	O	Sub-code serial output data
				84	SBCK	I	Clock for sub-code serial output

● MN6618A (Digital Filter)

Pin No.	Mark	I/O Devision	Function	Pin No.	Mark	I/O Devision	Function
1	NC	—	Not connected	22	NC	—	Not connected
2	D012	O	16-bit data output (Not used, open)	23	MCLK	I	Command clock input
3	D011	O	16-bit data output (Not used, open)	24	MLD	I	Command load input
4	D010	O	16-bit data output (Not used, open)	25	NC	—	Not connected
5	GND	I	GND terminal	26	RST	I	Reset signal input (reset at "L")
6	D09	O	16-bit data output (Not used, open)	27	NC	—	Not connected
7	NC	—	Not connected	28	LRCK	I	L/R channel changeover signal
8	D08	O	16-bit data output (Not used, open)	29	NC	—	Not connected
9	D07	O	16-bit data output (Not used, open)	30	SFT	I	Serial data input clock
10	NC	—	Not connected	31	SIN	I	Serial data input
11	NC	—	Not connected	32	NC	—	Not connected
12	D06	O	16-bit data output (Not used, open)	33	X OUT	O	Clock output (Not used)
13	D05	O	16-bit data output (Not used, open)	34	X IN	I	Clock input (16.9344 MHz)
14	D04	O	16-bit data output (Not used, open)	35	OSEL	I	DA output parallel/serial changeover (Serial at "H")
15	LRCK	O	Clock output	36	LOGL	O	L channel deglitch signal
16	NC	—	Not connected	37	RDGL	O	R channel deglitch signal
17	NC	—	Not connected	38	VDD	I	Power supply (connected to +5V)
18	D02/ WDCK	O	16-bit data output/clock output (Not used, open)	39	D015	O	16-bit data output (MSB) (Not used, open)
19	D01/ SRCK	O	16-bit data output/serial data output beat clock	40	D014	O	16-bit data output (Not used, open)
20	D00/SRDATA	O	16-bit data output/serial data output	41	NC	—	Not connected
21	MDATA	I	Command data input	42	D013	O	16-bit data output (Not used, open)

● AN8290S (Spindle Motor Drive)

Pin No.	Mark	I/O Devision	Function	Pin No.	Mark	I/O Devision	Function
1	GND	I	Minimum potential of IC control. (In this unit, it is connected to VEE [-8.0V])	13	NC	I	Not used in this unit.
2	DCR	I	Standard voltage of FAI, PC, CLK. (In this unit, it is connected to 2.5V.)	14	NC	I	
3	FAI	I	Torque command filter amp. input. (Normal rotation command when FAI < DCR.)	15	H2-	I	Negative output of Hall element is input.
4	FAO	O	Filter amp. output.	16	H2+	I	Positive output of Hall element is input.
5	DI	I	Absolute value circuit input.	17	H1-	I	Negative output of Hall element is input.
6	LPF	I	Capacitor terminal for low pass filter of current feedback loop.	18	H1+	I	Positive output of Hall element is input.
7	A1	O	Drive signal output.	19	HSW	I	Bias switch of Hall element. (OFF when PC > DCR)
8	A2	O		20	HB	I	Bias power of Hall element.
9	A3	O		21	VCC	I	Power input for IC control.
10	PGND	I	Minimum potential of IC power. (In this unit, it is connected to VEE [-8.0V])	22	PC	I	Power control. (Power down mode when PC > DCR)
11	CS	I	Drive current detection resistor terminal.	23	CLK	I	Clock input. (DCR standard, operated at the edge of rise.)
12	PVCC	I	Power input for IC power.	24	TC	I	Triangular wave generation capacitor terminal.

• AN8370S (Optical Servo Control)

Pin No.	Mark	I/O Devision	Function	Pin No.	Mark	I/O Devision	Function
1	VEE	I	Power supply (connected to -5V)	23	CNT2	I	Control input (TRON : Tracking servo ON signal)
2	LSA	I	Phase difference input (A)	24	CNT3	I	Control input (KICKF : Kick direction [forward] command)
3	GND	I	GND terminal	25	CNT4	I	Control input (KICKR : Kick direction [reverse] command)
4	LSB	I	Phase difference input (B)	26	F-LOCK	O	Focus lock signal output
5	APC	O	Auto laser power control output	27	C-FBDO	O	Capacitor connection for inversion RF high speed detection
6	TEOUT	O	Tracking error signal output	28	C-SBDO	O	Capacitor connection for inversion RF low speed detection
7	TEG	I	Tracking error gain adjusting input	29	C-SBRT	O	Capacitor connection for non-inversion RF low speed detection
8	TE	I	Phase difference-voltage conversion	30	C-FBRT	O	Capacitor connection for non-inversion RF high speed detection
9	TE	I	Phase difference-voltage conversion	31	RF OUT	O	RF signal output
10	APC -	O	Laser power inversion input	32	BDO	O	Drop-out detection output
11	C-MEM	I	Capacitor connection for phase difference memory	33	RFIN	I	RF signal input
12	APC +	I	Laser power non-inversion input	34	S-OUT	O	Focus search signal output
13	VREF	O	Reference current generation	35	C-LW	I	Capacitor connection for triangular wave generation
14	SENSE	O	Selector output (track-crossed)	36	FE-OUT	O	Focus error signal output
15	HIN	I	Tracking hold circuit input	37	FE-G	I	Focus error gain adjusting input
16	HOUT	O	Tracking hold circuit output	38	FE-REF	I	Focus error comparison voltage generation
17	SPCNT	O	Track-cross speed control output	39	PDB	I	Photo detector current input (B)
18	C-MSP	I	Track-cross reference speed setting capacitor connection	40	IVB	O	Current/voltage conversion output (B)
19	C-AF	I	Auto focus timer capacitor connection	41	IVA	O	Current/voltage conversion output (A)
20	KICK R/F	O	Track kick signal output	42	PDA	I	Photo detector current input (A)
21	VCC	I	Power supply (connected to +5V)				
22	CNT1	I	Control input (FOON : Focus servo ON signal)				

• EHDGA1243 (Data Slice and PLL)

Pin No.	Mark	I/O Devision	Function	Pin No.	Mark	I/O Devision	Function
1	PCK	O	Clock output extracted from SRF	9	VA	I	VCO free ran frequency adjusting current input
2	EFM	O	EFM signal output synchronized with PCK	10	VR	I	Resistor connection for VCO oscillation frequency
3	D-GND	I	GND terminal (digital system)	11	VEE	I	Power supply (connected to -5V)
4	SRF	O	RF signal output data-sliced into digital value	12	VC1	I	Capacitor connection for VCO oscillator frequency
5	SLC	I	Slice level control signal input	13	VC2	I	Capacitor connection for VCO oscillator frequency
6	DO	O	Drop-out detection pulse output	14	A-GND	I	GND terminal (analog system)
7	FPC	I	Frequency comparison error signal input	15	RF	I	RF signal input
8	VCC	I	Power supply (connected to +5V)				

• MN15261PDK (System Control and FL Drive)

Pin No.	Mark	Signal	I/O Devision	Function	Pin No.	Mark	Signal	I/O Devision	Function
1	VSS	GND	I	GND terminal	26	P31	CNT3	O	Optical servo IC control signal (KICKF : Kick direction [Forward] command)
2	XO	—	O	Not used (Open)	27	P32	CNT2	O	Optical servo IC control signal (TRON : Tracking servo)
3	X1	SENSE	I	Optical servo condition input	28	P33	CNT1	O	Optical servo IC control signal (FOON : Focus servo)
4	P00	AS-LED	O	Auto space LED drive	29	P40	START	I	Key input strobe and processing status input from signal processing LSI traverse position detection.
5	P01	M DATA	O	Command data output	30	P41	COMP	O	TOC read control (ON at "L")
6	P02	MCLK	O	Command clock output	31	P42	FLOCK	I	Optical servo condition (focus) input
7	P03	MLD	O	Command load output	32	P43	SENSE	I	Optical servo condition (track cross) input
8	P10	φ0	I	Search dial control	33	PE0	M.RLY	O	Muting control
9	P11	φ1	I	Search dial control	34	PE1	FRST	O	Auto cue control
10	P12	FADER.S	I	Fader start signal input	35	P60	PLAY	O	Play LED drive
11	P13	CUEDET	I	Auto cue ON signal input	36	P61	PAUSE	O	Pause LED drive
12	SYNC	—	O	Not used (Open)	37	DAC	DAC	O	Traverse servo control
13	RST	RESET	I	Reset signal input (reset at "L")	38	VPP	—	I	FL drive power supply (connected to -33V)
14	IRQ	BLKCK	I	Sub-code block (Q data) clock (75 Hz) input	39 / 52	D0 / DD	—	O	FL grid signal and key scan signal
15	P50 / P53	KEY	I	Key scan input	53 / 61	S8 / S0	—	O	FL anode signal
19	SBT	CLDCK	I	Sub-code frame clock (7.35 kHz)	62	OSC2	—	I	Clock terminal
20	SBD	SUBQ	I	Sub-code Q data input	63	OSC1	—	I	Clock input
21	P20	SEEK	O	Traverse servo control	64	VDD	—	I	Power supply (connected to +5V)
22	P21	PLC	O	Plunger drive					
23	P22	REV	O	Traverse reverse command signal					
24	P23	FWD	O	Traverse forward command signal					
25	P30	CNT4	O	Optical servo IC control signal (KICKR : Kick direction [Reverse] command)					

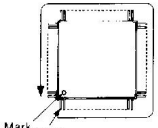
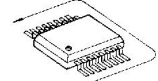
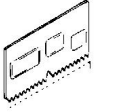
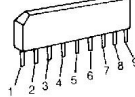
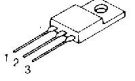
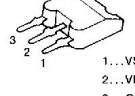
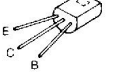
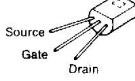
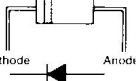
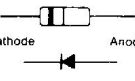
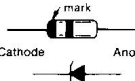
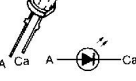
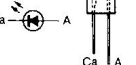
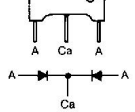
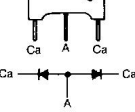
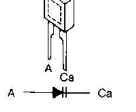
• MN1550PDM (Remote Control Signal Processing)

Pin No.	Mark	Signal	I/O Devision	Function	Pin No.	Mark	Signal	I/O Devision	Function
1	VDD	—	I	Power supply (connected to +5V)	9	P31	—	O	Remote control LED drive
2	OSC1	SMCK	I	Clock input	10 / 13	P13 / P0	Data	I	Key strobe
3	OSC2	—	—	Not used, open	14 / 17	P03 / P00	Data		
4	P22	—	—	Not used, open	18	VSS	GND	I	GND terminal
5	RST	RESET	I	Reset signal input					
6	P21	—	—	Not used, open					
7	P20	—	I	Remote control signal input					
8	IRQ	—	I	Program enable/de-enable control					

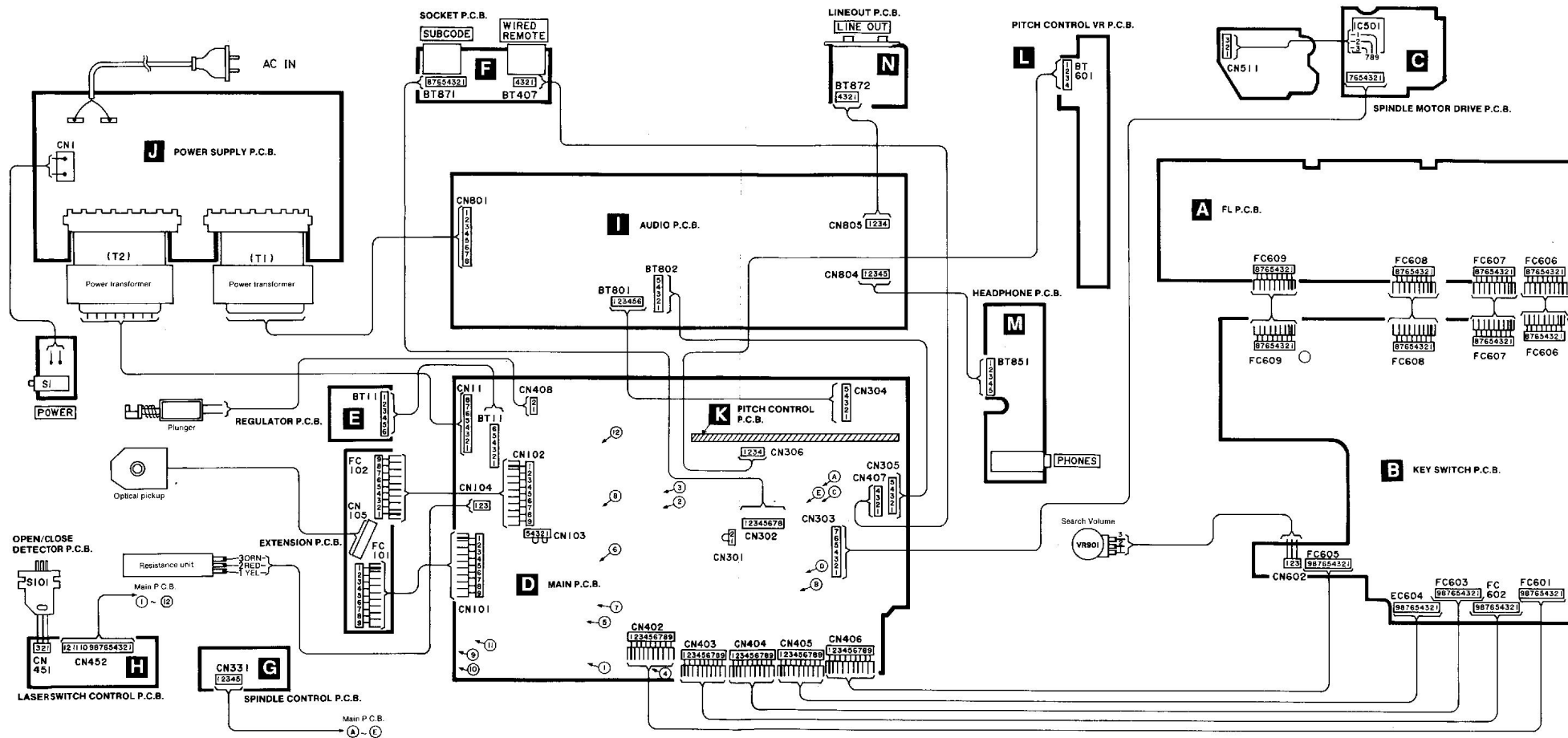
● MN51005PDN (Digital Signal Processing, Serial/Parallel Converter)

Pin No.	Mark	Signal	I/O Devision	Function	Pin No.	Mark	Signal	I/O Devision	Function
1 ↓ 6	B1L ↓ B6L	DATA	O	L-channel parallel data output	41 ↓ 42	NC	—	—	Not connected
7	NC	—	—	Not connected	43	B12R	DATA	O	R-channel parallel data output
8	VDD	—	I	Power supply (+5V)	44 ↓ 46	NC	—	—	Not connected
9	VSS	GND	I	GND terminal	47	B13R	DATA	O	R-channel parallel data output
10	NC	—	—	Not connected	48	B14R	DATA	O	R-channel parallel data output
11	NC	—	—	Not connected	49	NC	—	—	Not connected
12 ↓ 16	B7L ↓ B11L	DATA	O	L-channel parallel data output	50	B15R	DATA	O	R-channel parallel data output
17	NC	—	—	Not connected	51	B16R	DATA	O	R-channel parallel data output
18	NC	—	—	Not connected	52	DEG	—	O	Degitch signal output
19 ↓ 22	B12L ↓ B15L	DATA	O	L-channel parallel data output	53	AQOUT	—	O	Auto cue control
23	NC	—	—	Not connected	54	AQRST	—	I	Auto cue control
24	VSS	GND	I	GND terminal	55	NC	—	—	Not connected
25	VDD	—	I	Power supply (+5V)	56	VDD	—	I	Power supply (+5V)
26	B16L	DATA	O	L-channel parallel data output	57	VSS	GND	I	GND terminal
27 ↓ 37	B1R ↓ B11R	DATA	O	R-channel parallel data output	58	PHASE	—	I	Phase change control
38	NC	—	—	Not connected	59	NC	—	—	Not connected
39	VDD	—	I	Power supply (+5V)	60	NC	—	—	Not connected
40	VSS	GND	I	GND terminal	61	SRDATA	DATA	I	Serial data input
					62	SRCLK	CLOCK	I	Serial data input clock
					63	LRCK	CLOCK	I	16-bit latch clock
					64	RDG	CLOCK	I	8-bit shift register clock

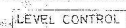
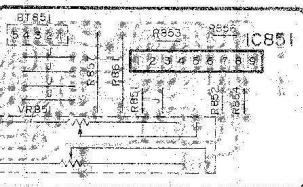
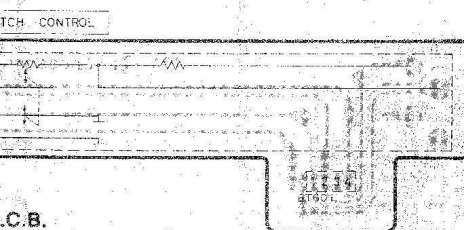
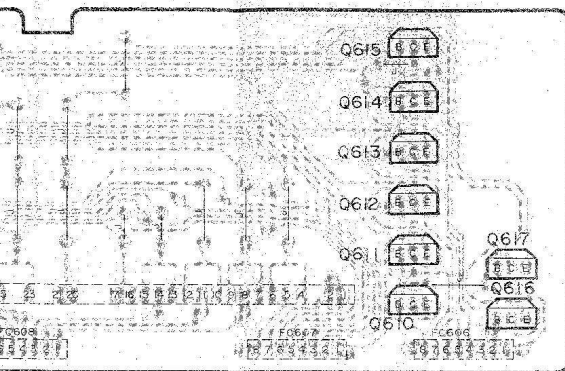
■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

AN6914 SVIM5238P NJM5532DD SVIUPD4053BC SVIPCM54KP-M MN15261PDK	8 pin 16 pin 28 pin 64 pin	 No. 1	AN6552S AN6914S AN6554NS MN74HC04S MN74HC74S MN74HC00S MN1550PDM MN4416S-12 AN8290S AN8370S	8 pin 14 pin 18 pin 24 pin 42 pin	EHDGA1243  1514 13-----1
MN6618A MN51005PDN MN6617S	42 pin 64 pin 84 pin	 Mark No. 1	 No. 1	SVIAL079...10 pin 	
SVINJM4556SA 	AN78M05 AN78M15 AN78M12 	AN79N05 AN79N12 AN79N15 	AN79L12 		
AN78N12 AN78N15 	MN1280-R  1...VSS 2...VDD 3...OUT	2SD1055 2SB822 2SD638 2SC2021 2SD973 2SB793 	UN4114 2SC3311Q 2SA1309Q UN4212 UN4214 UN4112 UN1231 		
2SD892 	2SK301  Source Gate Drain	SVD1SR35200A  Cathode Anode	SVDS1WB40 SVDS1WBAK20 		
MA165  Cathode Anode	MA4082M MA4330L MA4054-MTA  Cathode Anode	LN66-S  A Ca A Ca	SVGLB74VR3HL SVGLB74MG3HL SVGLB74DU3HL  Ca A Ca A		
MA154WA  A Ca A Ca	MA154WK  Ca A Ca Ca	SVDKV1230Z23  A Ca Ca			

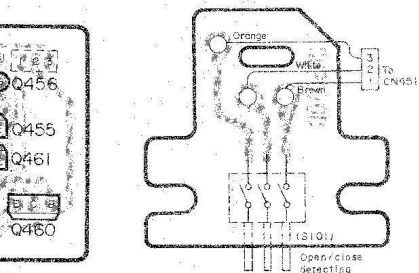
■ PRINTED CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM



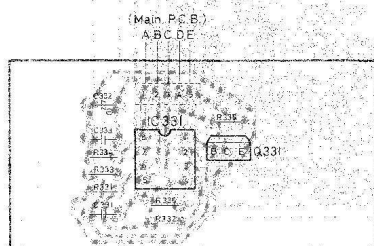
B OPERATION P.C.B.



- Laser switch P.C.B.



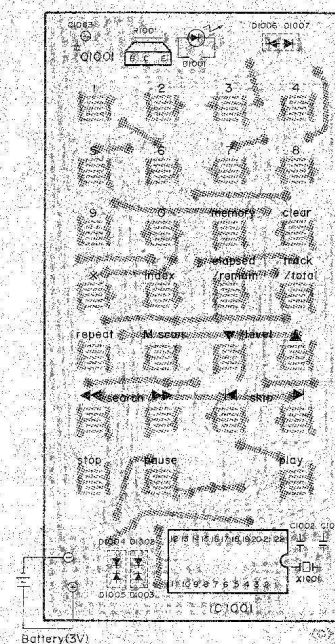
G SPINDLE CONTROL P.C.B.



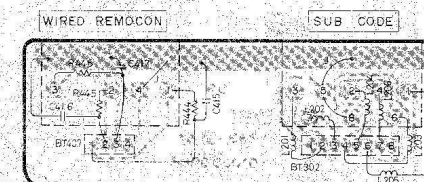
- Extension P.C.B.



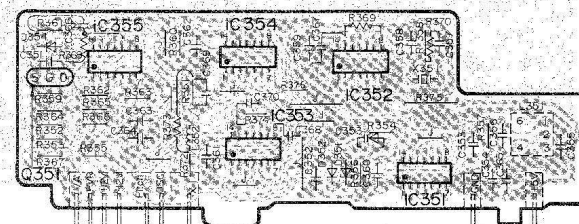
- Remote Control Unit



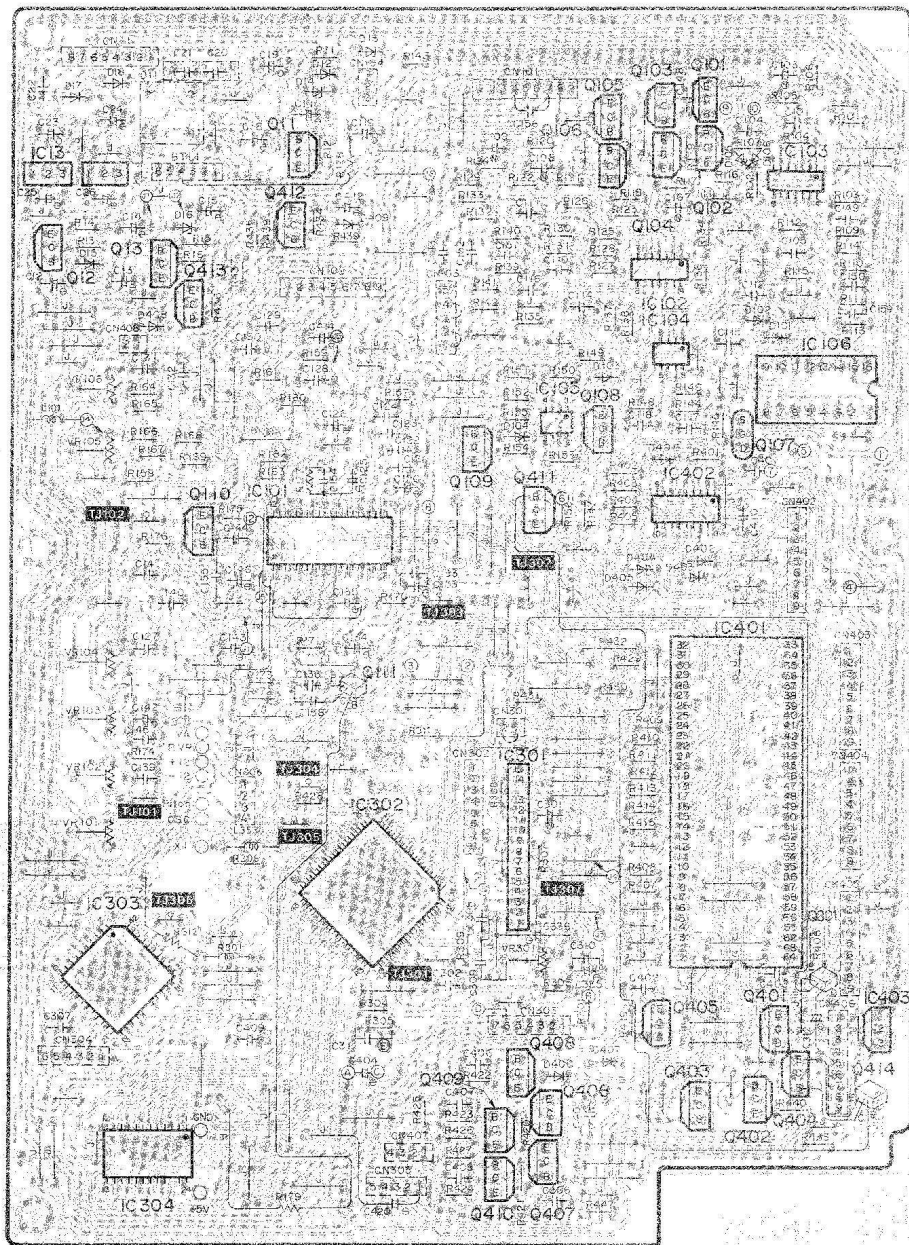
F SOCKET P.C.B.



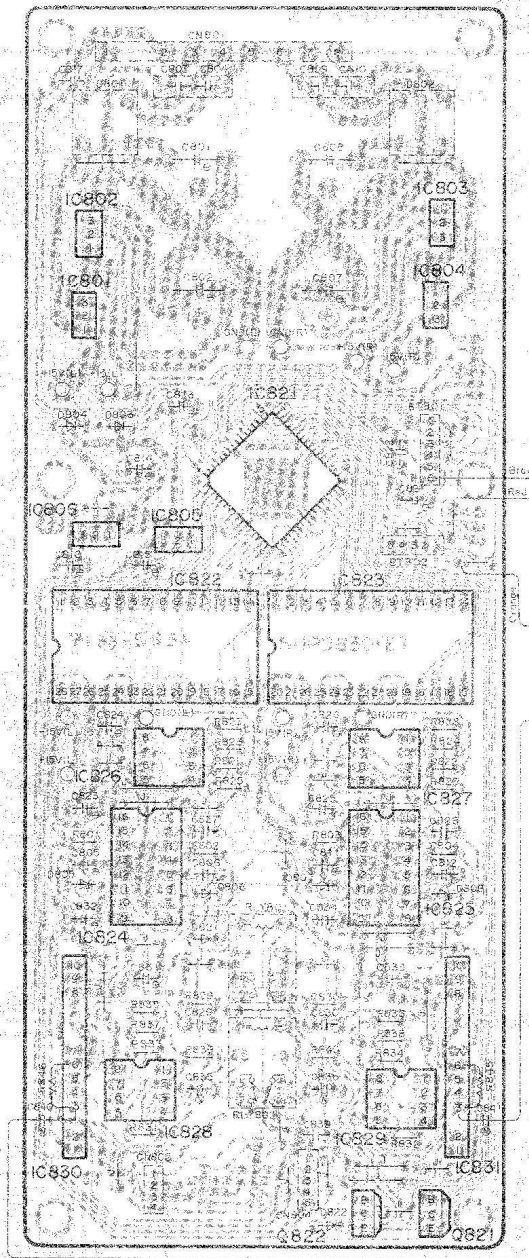
K PITCH CONTROL P.C.B.



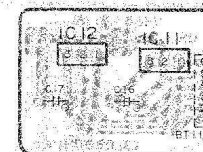
D MAIN P.C.B.



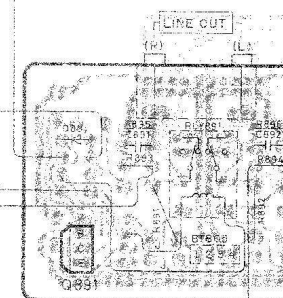
I AUDIO P.C.B.



E REGULATOR P.C.B.



N LINE OUT P.C.B.



J PO

■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

1. **S1** : Power switch in "on" position.
2. **S2** : Voltage selector switch. (Except U.S.A. and Canada)
3. **S101** : Laser switch (Disc compartment open/close detection)
4. **S601** : Time mode (elapsed/remain) select switch
5. **S602** : Time mode (track/total) select switch
6. **S603-611, 614** : Numeric switch (0-9)
7. **S612** : Index switch
8. **S613** : Auto space switch
9. **S615** : Asterisk switch
10. **S616** : Recall switch
11. **S617** : Clear switch
12. **S618** : Memory switch
13. **S619, 620** : Backward and forward track skip switch
14. **S621** : Time recall switch
15. **S622, 623** : Backward and forward rocking/search switch
16. **S624** : Pause switch
17. **S625** : Repeat switch
18. **S626** : Play switch
19. **S627** : Stop switch
20. **S628** : Pitch control switch.
21. **S629** : Auto cue switch
22. **S630** : Dial search switch
23. **S631** : Dial search speed selector switch
24. The voltage value and waveform are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis. Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.
* The parenthesized are the values of voltage generated during playing (Test disc 1kHz, L+R, 0dB), others are voltage values in stop mode.

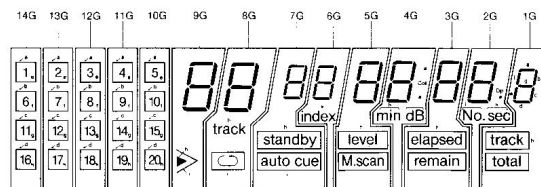
25. Important safety notice:
Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
26. --- : Positive voltage lines and negative voltage lines.
 --- : Audio signal lines.

Caution!

- IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.
- Cover the parts boxes made of plastics with aluminum foil.
 - Ground the soldering iron.
 - Put a conductive mat on the work table.
 - Do not touch the legs of IC or LSI with the fingers directly.

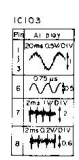
■ Internal connection of FL601

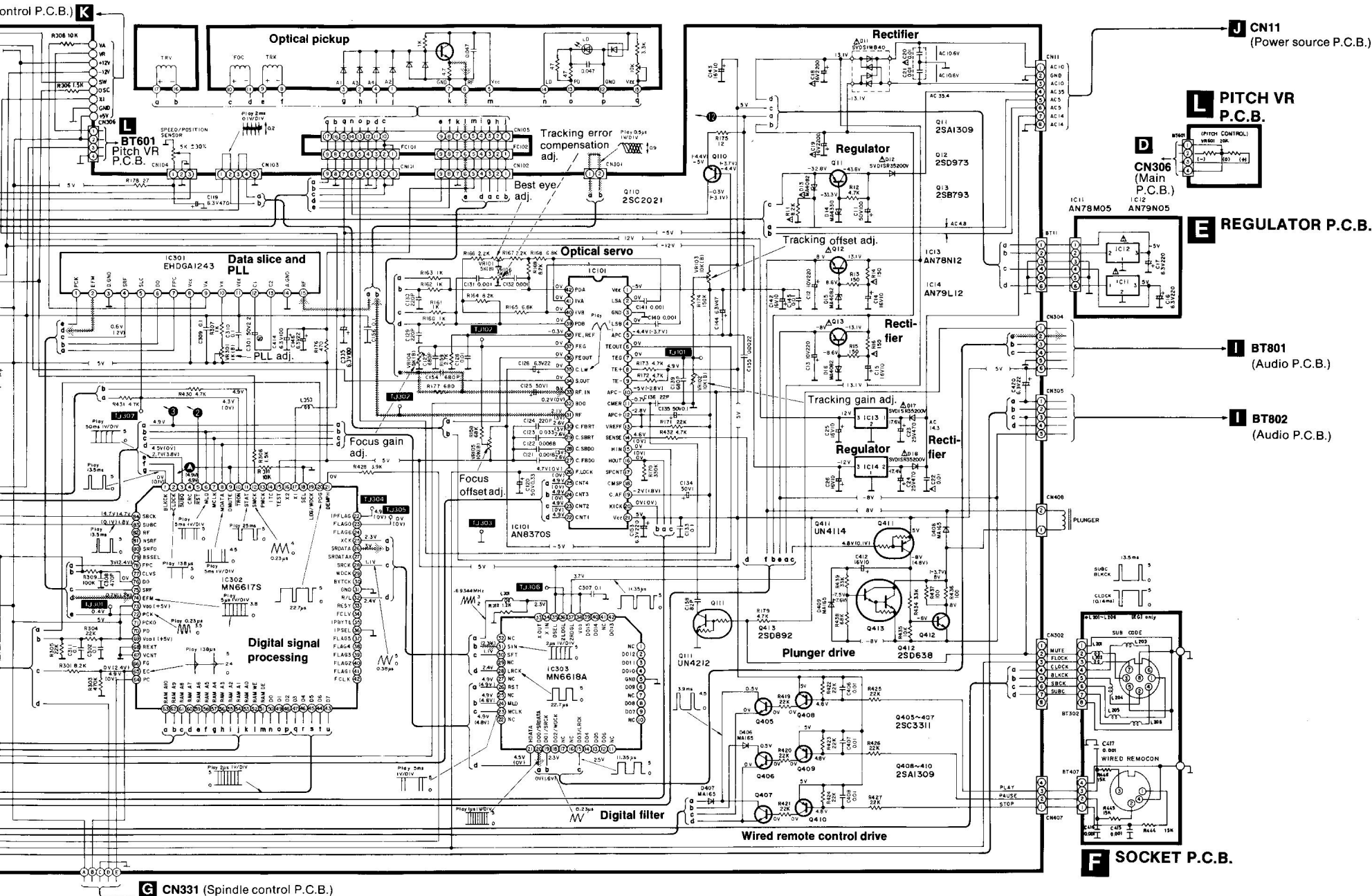
• Grid connection diagram

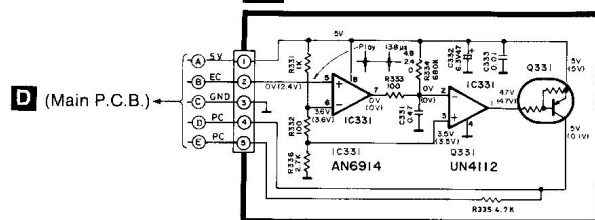
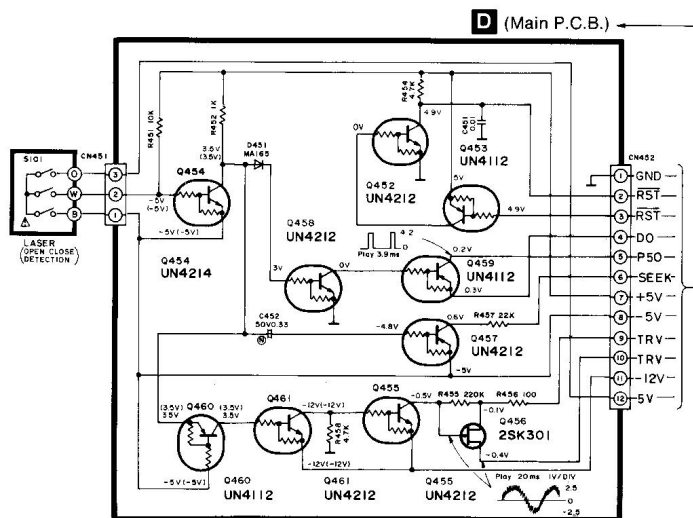


• Anode connection table

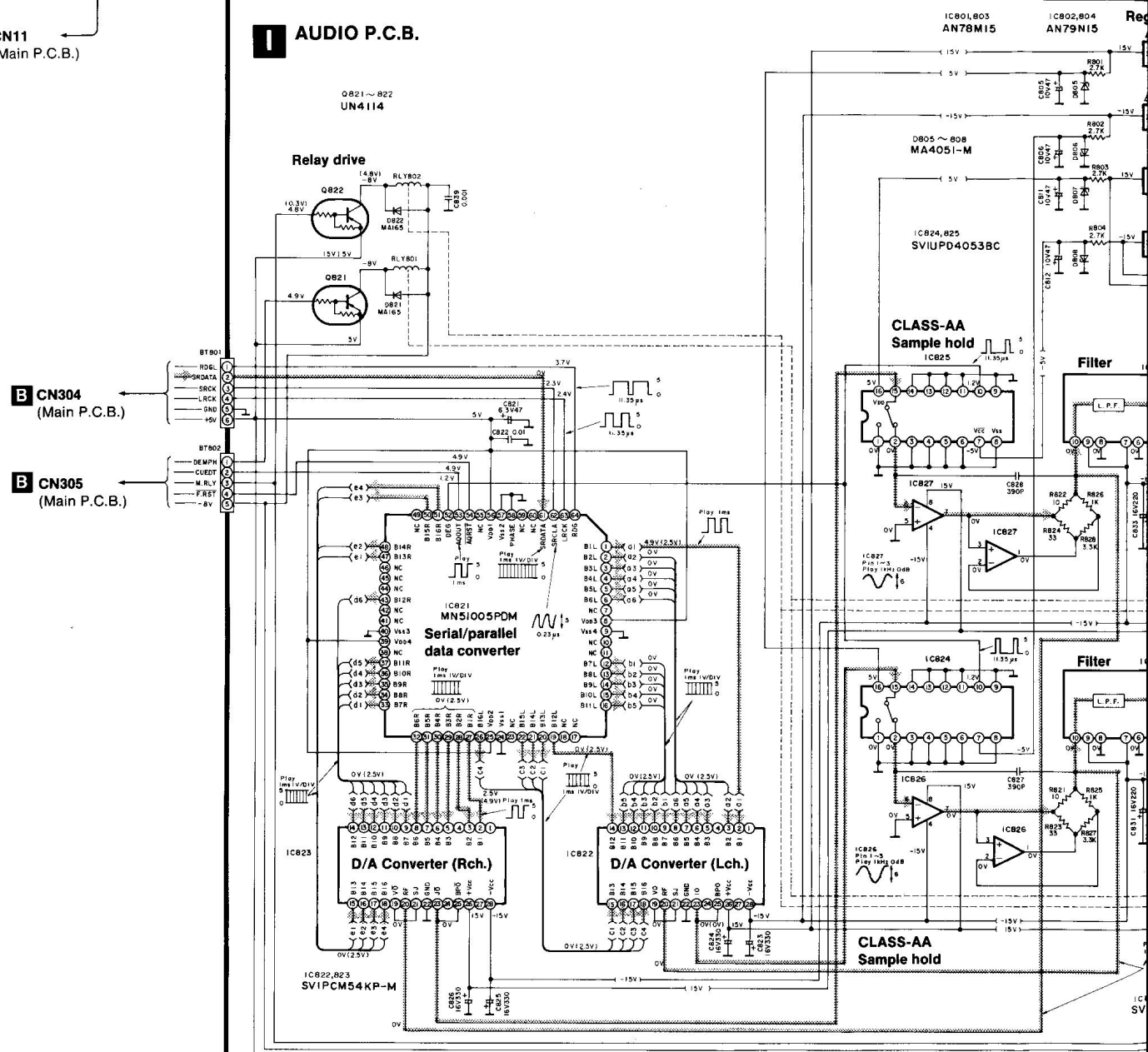
	14G	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
a		1	2	3	4	5	a	a	a	a	a	a	a	a
b	6			7	8	9	b	b	b	b	b	b	b	b
c	10	11	12	13	14	15	c	c	c	c	c	c	c	c
d	16	17	18	19	20		d	d	d	d	d	d	d	d
e	1	2	3	4	5	e	e	e	e	e	e	e	e	e
f	6	7	8	9	10	f	f	f	f	f	f	f	f	f
g	11	12	13	14	15	g	g	g	g	g	g	g	g	g
h	16	17	18	19	20	track standby auto cut	index	level	min. cut	elapsed	sec. diff	total		
i						>	M scan	dB	remain					

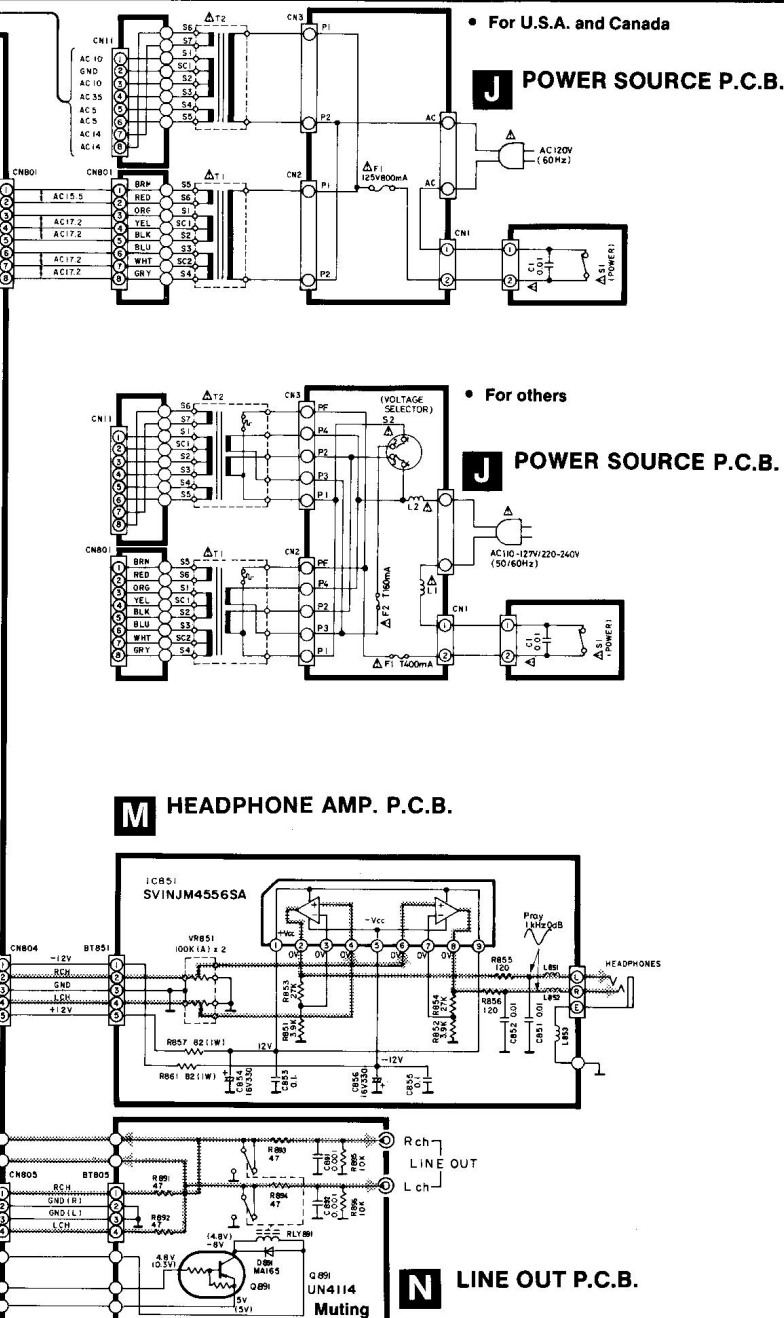




G SPINDLE CONTROL P.C.B.**H LASER SWITCH CONTROL P.C.B.**

AUDIO P.C.B.





- **For U.S.A. and Canada**

POWER SOURCE P.C.B.

- **Product for MC only**

FUSE REPLACEMENT

 Symbol located near the fuse indicates fast operating type. For continued protection against fire hazard, replace with same type fuse. Refer to the symbol for fuse rating.

FUSIBLE REPLACEMENT

 Le symbole qui se trouve près du fusible signifie un fusible à action rapide. Pour une protection continue contre les risques d'incendie, n'utiliser que des fusibles du même type. Se rapporter au symbole pour la valeur des fusibles.

- **For others**

POWER SOURCE P.C.B.

M HEADPHONE AMP. P.C.B.

N LINE OUT P.C.B.

■ BLOCK DIAGRAM

