Service Manual

COMPACT disc DIGITAL AUDIO **DIGITAL** **MASH**※
multi-stage noise shaping

Multi Compact Disc Player
SL-PD627

Colour

(K)... Black Type

Area

Suffix for Model No.	Area	Colour
(P)	U.S.A.	(K)
(PC)	Canada.	

※ • Technics (or Panasonic) developed the world's first MASH type DAC and ADC. MASH technology was invented by NTT (LSI Labs).
• MASH is a trademark of NTT.

NEW MECHANISM SERIES (RAE0201-1)

SPECIFICATIONS

■ Audio
No. of channels	2 (left and right, stereo)
Frequency response	2–20,000 Hz, ±1 dB
Output voltage	2 V (at 0 dB)
Dynamic range	92 dB
S/N ratio	100 dB
Total harmonic distortion	0.009% (1 kHz, 0 dB)
Wow and flutter	Below measurable limit
DA converter	MASH (1 bit)
Output impedance	Approx. 1 kΩ
Load impedance	More than 10 kΩ

■ Pickup
Wavelength	780 nm

■ General
Power consumption	13 W
Power supply	AC 120 V, 60 Hz
Dimensions (W×H×D)	430×130×401 mm
	(16¹⁵/₁₆″×5⅛″×15²⁵/₃₂″)
Weight	5.0 kg
	(11.0 lb.)

Note:
Specifications are subject to change without notice. Weight and dimensions are approximate.

■ CONTENTS

Technics

■PRECAUTION OF LASER DIODE

CAUTION: This unit utilizes a class 1 laser. Invisible laser radiation is emitted from the optical pickup lens when the unit is turned on:
1. Do not look directly into the pickup lens.
2. Do not use optical instruments to look at the pickup lens.
3. Do not adjust the preset variable resistor on the optical pickup.
4. Do not disassemble the optical pickup unit.
5. If the optical pickup is replaced, use the manufactures specified replacement pickup only.
6. Use of control or adjustments or performance of procedures other than those specified herin may result in hazardous radiation exposure.

■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.

(Fig. A)
Resistance = 3MΩ—5.2MΩ

(Fig. B)
Resistance = Approx ∞
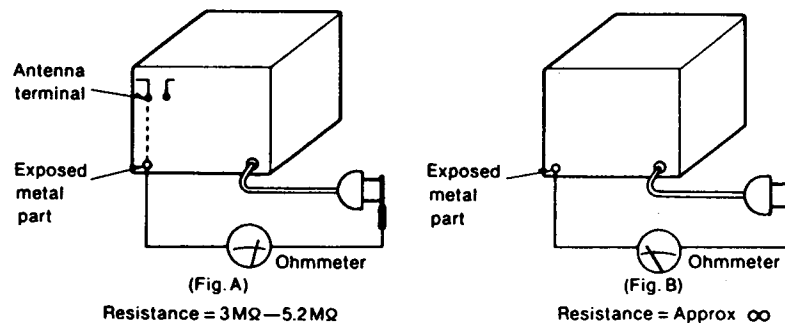
4. If the measurement is outside the specified limits, there is a possibilty of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

■ACCESSORIES
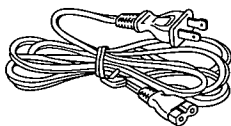
AC power supply cord .... 1 pc.
[(SJA172-1).......... (P)]
[SJA172 .... (PC)]
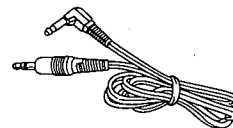
Remote control cable
(SJP2257T) .... 1 pc.
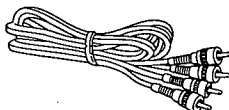
Stereo connection cable
(SJP2249-3)....................................... 1 pc.

■ LOCATION OF CONTROLS AND COMPONENTS
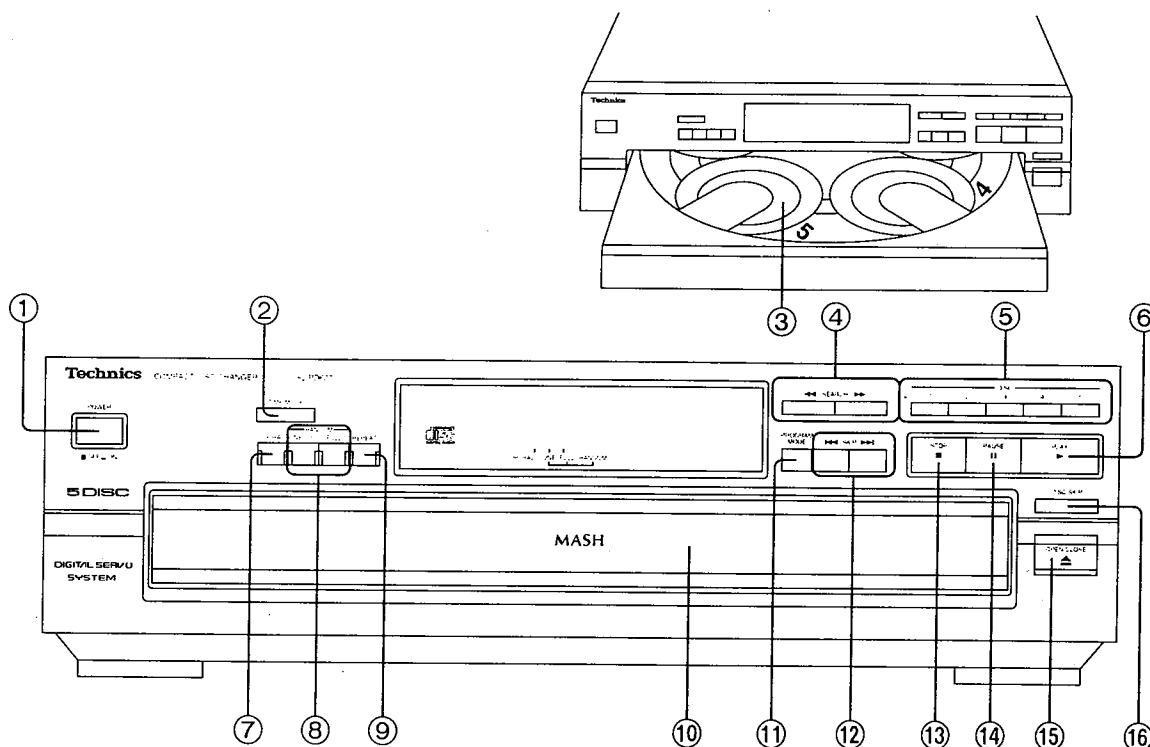
Control section

① **Power switch (POWER)**
Press (■_■) to switch the power on.
Press again (■_■) to switch the power off.

② **Time mode button (TIME MODE)**
Use to select the desired time mode. Each time you press the button, the display information will change as follows.
1. Track number and its elapsed play time of the current track.
2. Track number and remaining time of the current track.
3. Total track numbers and playing time of the current disc.
4. Total elapsed play time of the current disc.

③ **Disc trays (1–5)**
You can load up to five discs, one disc per one tray.

④ **Search buttons (◄◄ SEARCH ►►)**
Press to move forward and backward through the tracks on the disc.

⑤ **Disc buttons (DISC 1–5)**
Use to select the desired disc.

⑥ **Play button (► PLAY)**

⑦ **Spiral button (SPIRAL)**
Press to play the first tracks on all the loaded discs in sequence, followed by the second tracks on all the discs, and so on.

⑧ **Random buttons (RANDOM)**
● **One disc random button (ONE DISC)**
Press to activate one disc random play. The changer will choose a disc and play all the tracks in random sequence, and choose next disc, and so on.

● **Full random button (FULL)**
Press to activate full random play. The changer will select the sequence to be played from all of the loaded discs, in an exclusively random manner.

⑨ **Repeat button (REPEAT)**
Press to activate the repeat function.

⑩ **Loading drawer**
You can load and unload discs when this drawer is open.

⑪ **Program mode button (PROGRAM MODE)**
Use to select either the sequential play or program play mode. The mode changes each time you press the button. The sequential play mode is automatically selected when the power is switched on.

⑫ **Skip buttons (I◄◄ SKIP ►►I)**
Use to skip to the beginning of the track.

⑬ **Stop button (■ STOP)**

⑭ **Pause button (II PAUSE)**

⑮ **Loading drawer open/close button (▲ OPEN/CLOSE)**

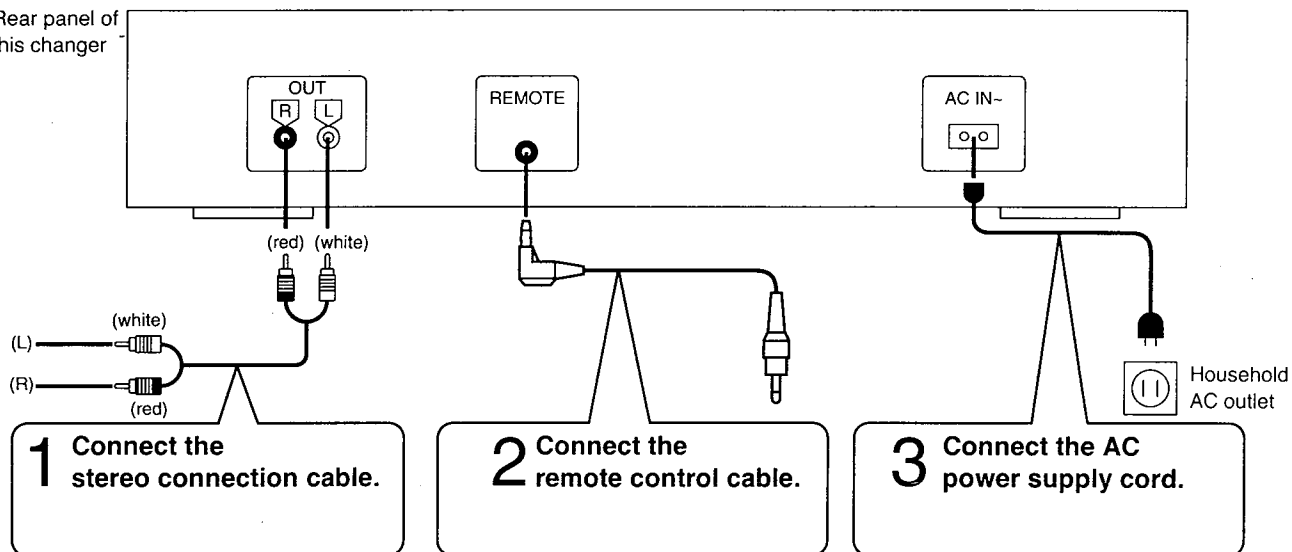⑯ **Disc skip button (DISC SKIP)**
Use to rotate the disc tray.

⑰ ⑱ ⑲ ⑳

◀1▶ ◀2▶ ◀3▶ ◀4▶ ◀5▶   ⌐□□ -□□:□□
PGM ▼ ▼ ▼ ⟲   ‖▶   DISC └─┘ TRACK No.   MIN   SEC

㉑ ㉒ ㉓ ㉔ ㉕

Fig. 1   ▼ ▼ ▼
              ¦ ¦ ¦
          SPIRAL ONE FULL RANDOM
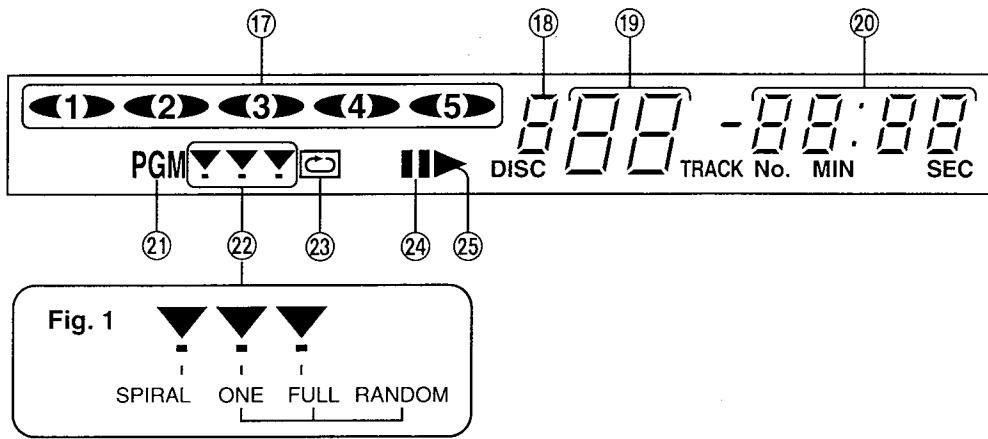
Display section

⑰ **Disc indicators (◀1▶ ~ ◀5▶)**
The indicator corresponding to the playing disc flashes.
In the program play mode, programmed disc indicators will illuminate.

⑱ **Disc number display**
Shows the number (1–5) of the current disc.

⑲ **Track number display**
Shows the number (up to 99) of the current track.

⑳ **Time/program sequence display**
Shows the elapsed playing time of the track in play.
Also shows the program sequence in the program play mode.

㉑ **Program play indicator (PGM)**
Lights in the program play mode.

㉒ **Play mode indicators (▼▼▼) (Fig. 1)**
Each indicator points to the following play modes:
SPIRAL: Spiral play
ONE: One disc random play
FULL: Full random play

㉓ **Repeat indicator (⟲)**
Lights when the repeat function is activated.

㉔ **Pause indicator (‖)**
Lights in the pause mode.

㉕ **Play indicator (▶)**
Lights in the play mode.

■ CONNECTIONS

Before connecting the changer to your audio system, be sure that the power of the changer and all other system components are turned off.

Rear panel of this changer

OUT   R   L   REMOTE   AC IN~

(red) (white)

(white)
(L) ───
(R) ───
(red)

Household
AC outlet

1 Connect the stereo connection cable.

2 Connect the remote control cable.

3 Connect the AC power supply cord.

1 Connect the stereo connection cable (included) to CD or AUX terminals of the amplifier or the receiver.

2 To operate with the remote control, connect the remote control cable (included) to the REMOTE CONTROL OUT terminal of Technics component.

3 Connect the power supply cord (included) to the household AC outlet (AC 120 V, 60 Hz) or to AC OUTLET of Technics component.

The operations such as play, stop, skip etc. can be operated by remote control included with Technics receiver or the component system. For details, refer to the operating instructions of the receiver or the system to be used.

■ BEFORE MOVING

CAUTION:

Before moving this changer to another location, be sure that no discs were left in the changer and that the changer was not switched off while in the play mode.

Failure to do so will expose the compact discs and the changer to the risk of severe damage.
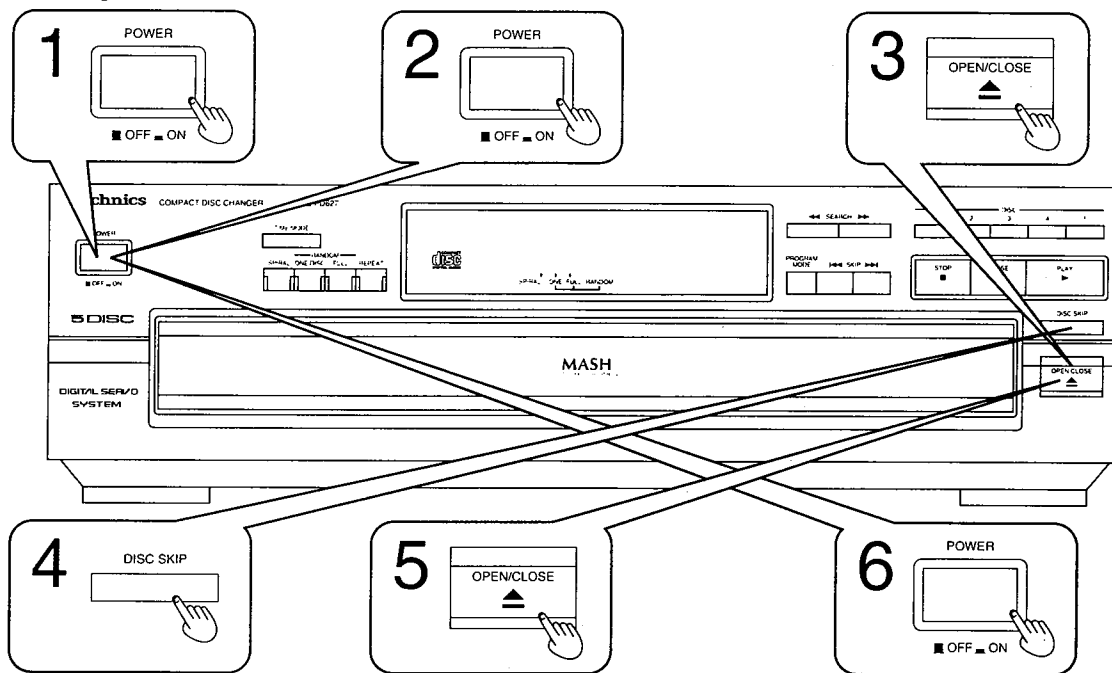
1 **Press POWER to switch off the power.**

2 **Press POWER to switch on the power.**

3 **Press OPEN/CLOSE to open the loading drawer.**

4 **Press DISC SKIP to rotate the disc trays and remove the discs from all disc trays.**

5 **Press OPEN/CLOSE to close the loading drawer.**

6 **Press POWER to switch off the power.**

If you have pressed a wrong button by mistake, return to step 1.

■ BASIC OPERATING PROCEDURE

1 POWER
■ OFF ▪ ON

2 OPEN·CLOSE
▲

3 Load the disc(s) on the disc tray(s).

Technics COMPACT DISC CHANGER   SL-PD627

5 DISC

MASH

DIGITAL SERVO
SYSTEM

4 OPEN/CLOSE
▲

5 PLAY
►

DISC SKIP
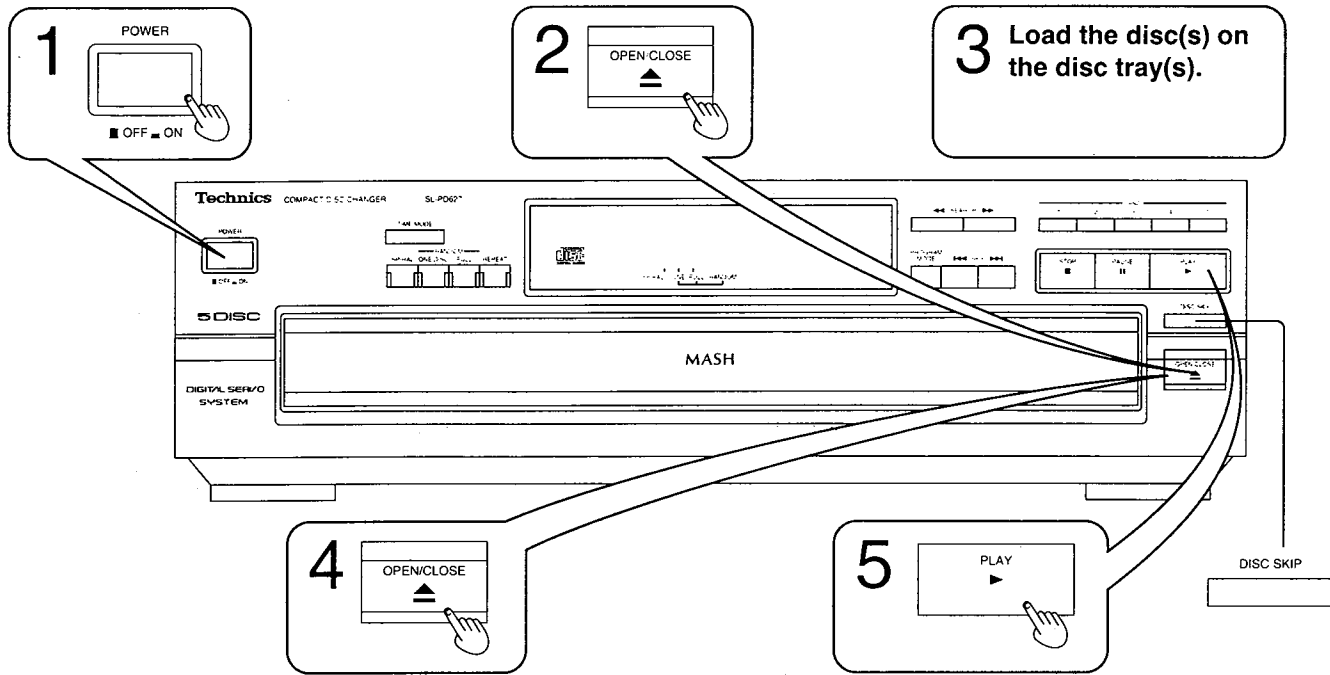
1 **Press POWER to switch on the power.**

2 **Press OPEN/CLOSE to open the loading drawer.**

3 **Load the disc(s) on the disc trays(s).**
Do not load 3″ (8 cm) and 5″ (12 cm) discs on the same disc tray.

The number (1–5) on the disc tray indicates the disc number.

Label
must face
upward.

Carousel

After loading discs on the two disc trays at the front position, press DISC SKIP to move the carousel. A different two disc trays will be at the front position.

Note:
Do not touch the carousel nor the loading drawer while it is moving.
Do not turn the tray forcibly by hand because it may fail to operate normally.

4 **Press OPEN/CLOSE again to close the loading drawer.**

You can skip this step by pressing PLAY.
The loading drawer will be closed automatically then play will start.

Do not attempt to close the drawer by hand. Be sure to press OPEN/CLOSE.

5 **Press PLAY.**

CAUTION:
Do not move this changer with a compact disc inside the unit. If a disc comes off the disc tray, it might be scratched or the changer might become incapable of playing. Refer to page 21 before moving the unit.
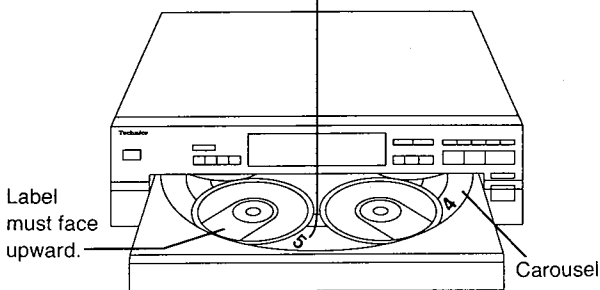
■ HANDLING PRECAUTIONS FOR OPTICAL PICKUP

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.

Clip   Shorting pin

Be sure to short this position
(Use the shoring pin or clip.)

● Handling of optical pickup

1. Do not subject the optical pickup to static electricity as it is extremely sensitive to electrical shock.
2. To prevent the breakdown of the laser diode, an antistatic 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.
3. Take care not to apply excessive stress to the flexible board (FPC board).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

Optical pickup
Lens (Do not touch)

FPC board
(Handle it carefully)

Variable resistor (Do not turn)

● Grounding for electrostatic breakdown prevention

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

Wrist strap
(Anti-static bracelet)

1MΩ

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.

Iron plate or some metals
to conduct electricity
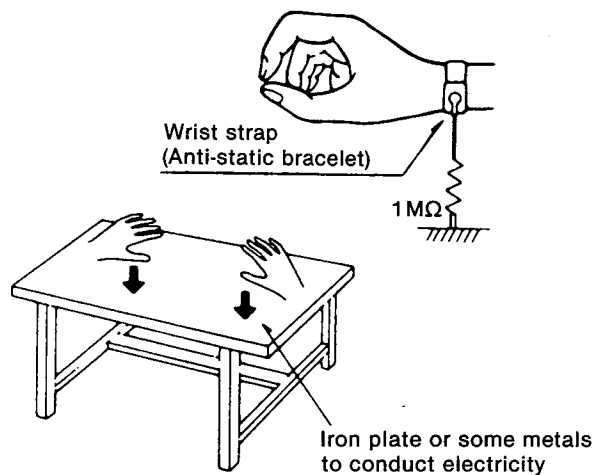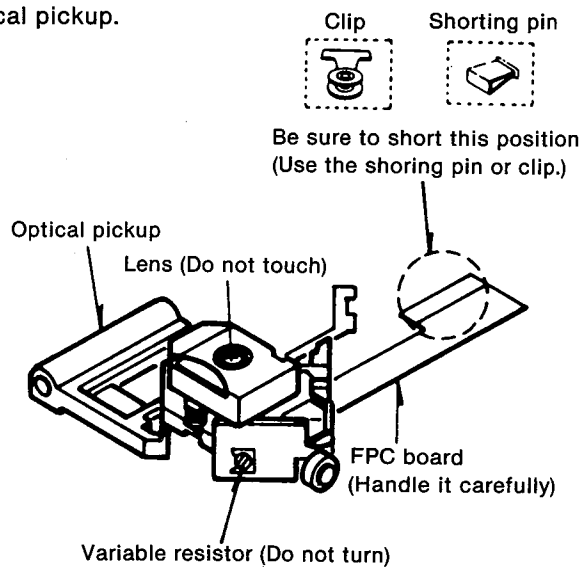
■ INSTRUCTIONS FOR TRAVERSE OIL (Part No. SZZ0L31)

The container contains 6g (approx. 3ml) of oil.
One application (one shaft) uses 0.05ml of oil.

How to Use

(1) Remove the guide shaft in the traverse deck from the optical pickup and clean off any dust from the guide shaft.
(2) Apply one drop of the SZZ0L31 to the tip of the guide shaft.
(3) Hold the guide shaft so that its oiled end touches the optical pickup and insert it into the bearing while rotating it slowly.
(4) After securing the guide shaft, move the optical pickup by hand several times to the left and right to distribute the oil on the guide shaft.

Optical pickup

Guide shaft
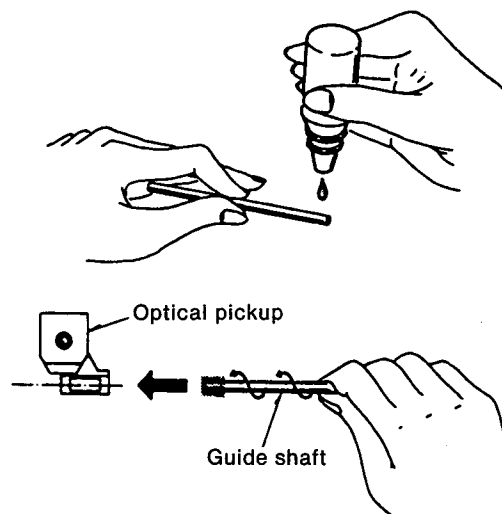
■ DISASSEMBLY INSTRUCTIONS

Warning: This product uses a laser diode.   Refer to caution statements on page 2.

Ref. No. 1	Removal of the cabinet
Procedure 1	

1. Remove the 6 screws (❶～❻).
2. Remove the cabinet in the direction of arrow.

Ref. No. 3	Removal of the tray ass'y
Procedure 1→2→3	**Note:** Be sure the close position to remove the tray ass'y.
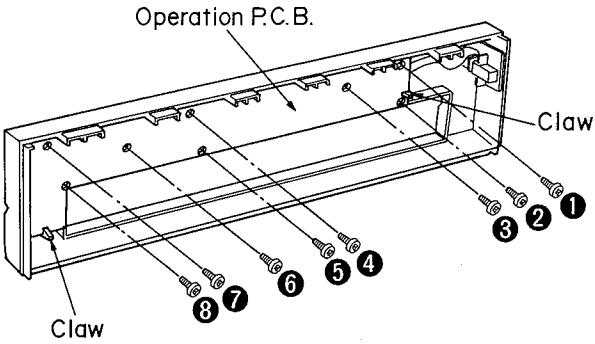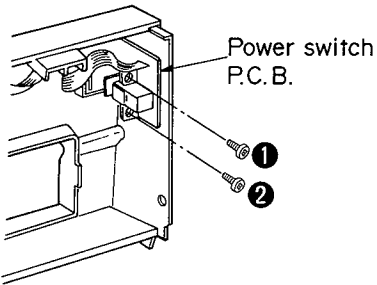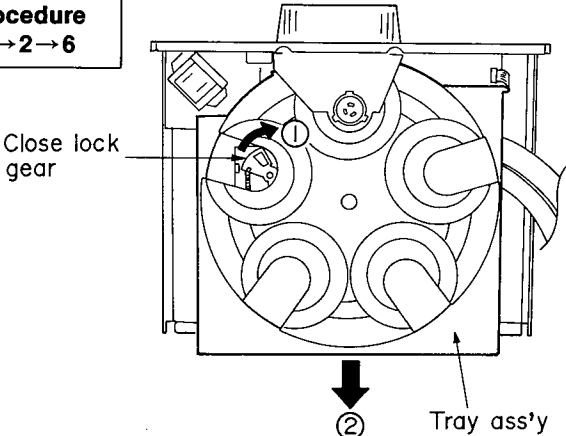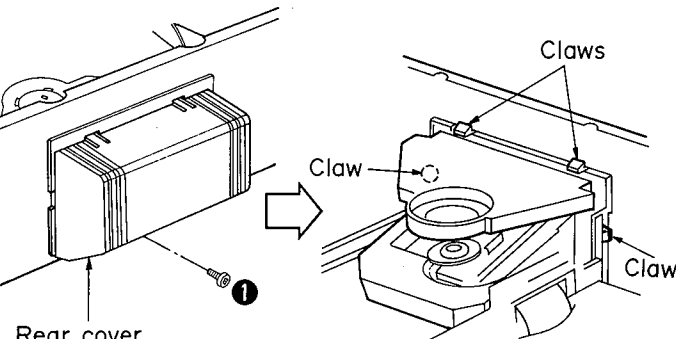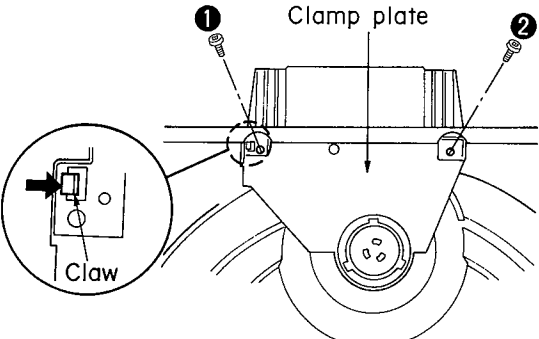
1. Keep the close lock gear pressed in the direction of arrow ① and move the tray ass'y in the direction of arrow ②.
2. Fit the claw of the tray ass'y in the claw of the tray base guide (L).

3. Remove the tray ass'y in the direction of arrow ③ by pressing the claw of the tray ass'y with a screw driver or another suitable object.

Ref. No. 2	Removal of the front panel ass'y
Procedure 1→2	

■ **Note on installation**
Connect the FPC board with the blue line upward.

1. Pull out the FPC board.
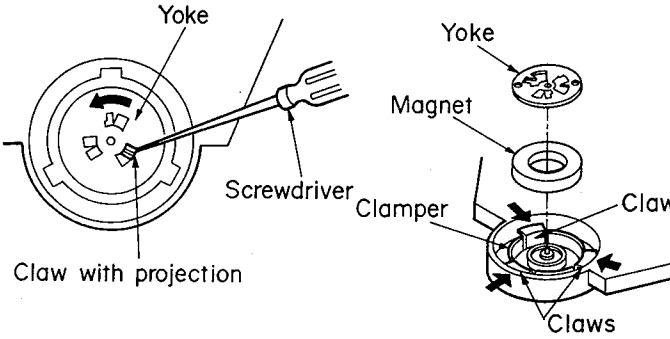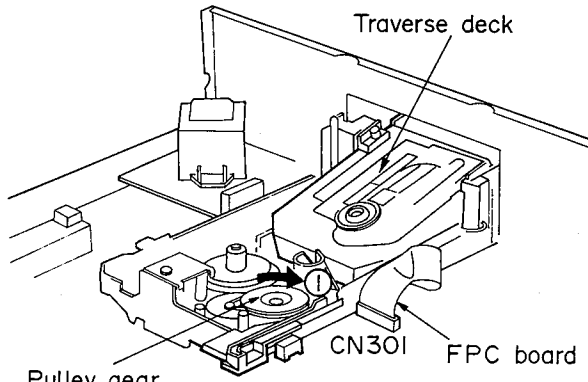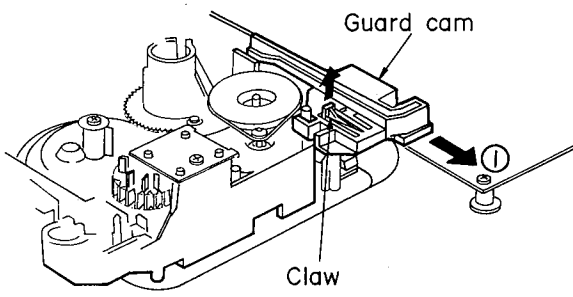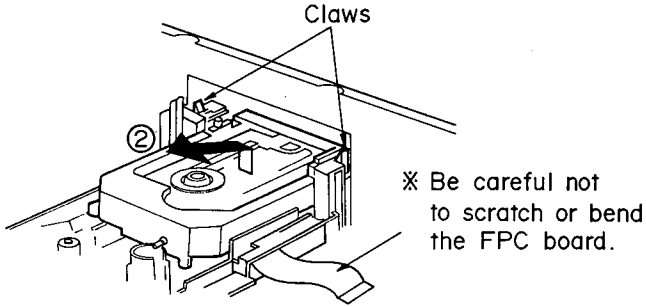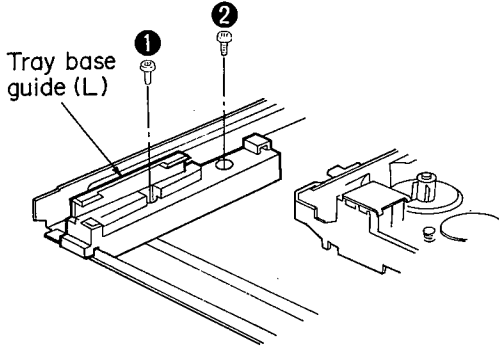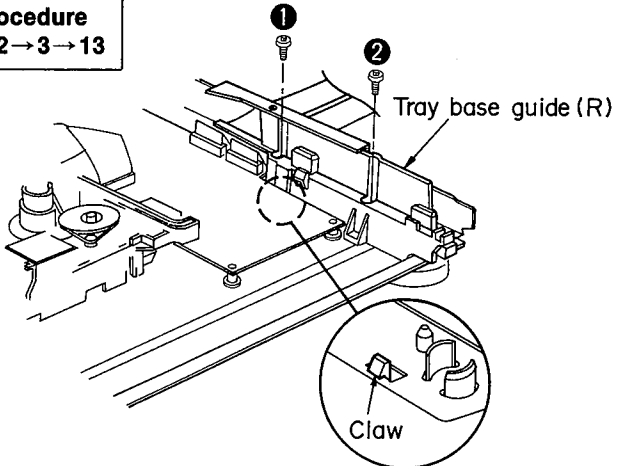
2. Remove the 3 screws (❶～❸).
3. Pull the front panel ass'y in both directions of arrow ① to unlock it from the projection of the chassis ass'y.
4. Remove the front panel ass'y in the direction of arrow ②.
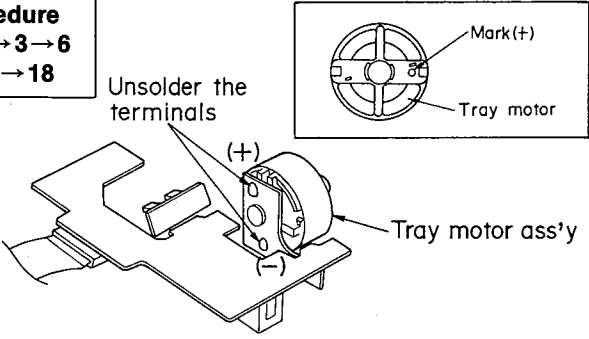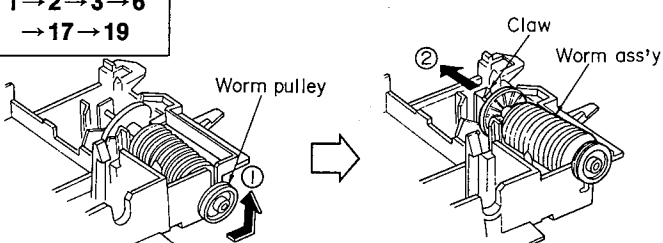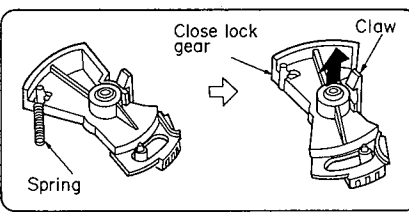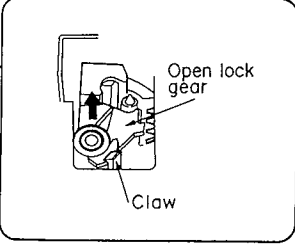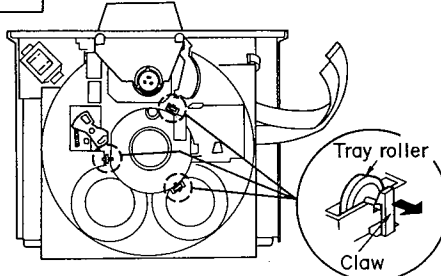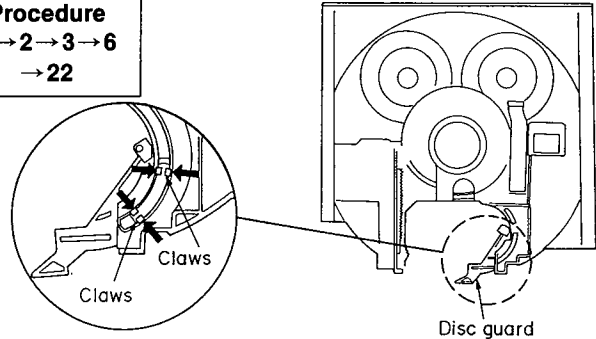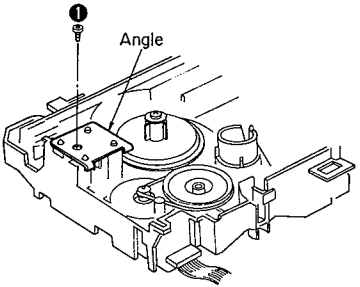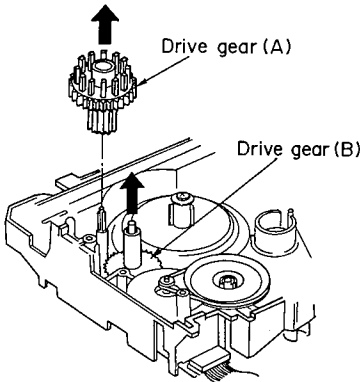
4. Raise the left side of the tray ass'y in the direction of arrow ④ and remove the claw on the right side.
5. Pull out the FPC board

Ref. No. 4	Removal of the operation P.C.B.	Ref. No. 5	Removal of the power switch P.C.B.

Procedure
1→2→4

Operation P.C.B.
Claw
Claw

1. Remove the 8 screws (❶~❽).
2. Release the 2 claws.

Procedure
1→2→5

Power switch P.C.B.

• Remove the 2 screws (❶, ❷).

Ref. No. 6	Removal of the rotary tray

Procedure
1→2→6

Close lock gear
Tray ass'y

Spring
Washer
Rotary tray

1. Keep the close lock gear pressed in the direction of arrow ① and move the tray ass'y in the direction of arrow ②.

2. Remove the 1 screw (❶).
3. Remove the spring and washer.
4. Remove the rotary tray in the direction of arrow ③.

Ref. No. 7	Removal of the rear cover	Ref. No. 8	Removal of the clamp plate

Procedure
1→7

Claws
Claw
Claw
Rear cover

1. Remove the 1 screw (❶).
2. Release the 4 claws.

Procedure
1→8

Clamp plate
Claw

1. Remove the 2 screws (❶, ❷).
2. Release the 1 claw.

Ref. No. 9	Removal of the clamper ass'y (yoke, magnet and clamper)	Ref. No. 10	Removal of the traverse deck

Procedure
1→8→9

Yoke

Yoke

Magnet

Screwdriver Clamper

Claw

Claw with projection

Claws

1. While lifting the claw with a screwdriver, rotate yoke in the direction of arrow and remove the yoke and magnet.
2. Release the 3 claws of the clamper.

Procedure
1→2→3→7
→8→10

Traverse deck

Pulley gear

CN30I   FPC board

1. Rotate the pulley gear in the direction of arrow ① until the traverse deck comes up.
2. Pull out the FPC board (CN301).

Ref. No. 11	Removal of the guard cam

Procedure
1→2→3→11

Guard cam

Claw

1. Release the 1 claw and then remove the guard cam in the direction of arrow ①.

Claws

※ Be careful not to scratch or bend the FPC board.

3. Release the 2 claws.
4. Remove the traverse deck in the direction of arrow ②.

Ref. No. 12	Removal of the tray base guide (L)	Ref. No. 13	Removal of the tray base guide (R)

Procedure
1→2→3→12

Tray base guide (L)

❶ ❷

• Remove the 2 screws (❶, ❷).

Procedure
1→2→3→13

❶

❷

Tray base guide (R)

Claw

(Bottom side)

1. Remove the 2 screws (❶, ❷).
2. Release the 1 claw.

Ref. No. 14	Removal of the main P.C.B.

Procedure
1→2→3→11
→13→14

1. Remove the 4 screws (❶~❹).
2. Lift the main P.C.B. off the retention posts on the chassis.
3. Remove the 2 flat cable (CN11, CN404).
4. Pull out the FPC board (CN301).
5. Remove the main P.C.B. in the direction of arrow.

❶ ❷ ❸ ❹
Main P.C.B.
CN404
CN 11
FPC board (CN301)
Retention posts

Ref. No. 15	Removal of the mechanism base ass'y	Ref. No. 16	Removal of the power supply P.C.B.

Procedure
1→2→3→7
→8→10→11
→15

Mechanism base ass'y
❶ ❷
❸ CN404 ❹

1. Remove the 1 flat cable (CN404).
2. Remove the 4 screws (❶~❹).

Procedure
1→2→3→7
→8→10→11
→15→16

❶ ❷ ❸
CN701
Power supply P.C.B.

1. Remove the 1 flat cable (CN701).
2. Remove the 3 screws (❶~❸).

Ref. No. 17	Removal of the worm base and senser P.C.B.

Procedure
1→2→3→6
→17

❶ ❷
Claw
Claw
Worm base

Senser P.C.B.
Claws
Claw
Belt

1. Remove the 2 screws (❶, ❷).
2. Release the 2 claws and then remove the worm base in the direction of arrow ①.

3. Remove the belt.
4. Release the 3 claws.

Ref. No. 18	Removal of the tray motor ass'y

Procedure
1→2→3→6
→17→18

Unsolder the terminals

Mark(+)
Tray motor
(+)
Tray motor ass'y
(−)

• Unsolder the terminals of the tray motor ass'y

Ref. No. 19	Removal of the worm ass'y

Procedure
1→2→3→6
→17→19

Worm pulley
Claw
Worm ass'y
②
①

1. Raise the pulley in the direction of arrow ①.
2. Remove the worm ass'y by pressing the claw in the direction of arrow ②.

Ref. No. 20	Removal of the close lock gear and open lock gear

Procedure
1→2→6→20

Close lock gear
Claw
Spring

Open lock gear
Claw

1. Remove the spring.
2. Release the claw and then remove the close lock gear in the direction of arrow.

■ Open lock gear
• Release the claw and then remove the open lock gear in the direction of arrow.

Ref. No. 21	Removal of the tray roller

Procedure
1→2→6→21

Tray roller
Claw

• Release the claw in the direction of arrow.

Ref. No. 22	Removal of the disc guard

Procedure
1→2→3→6
→22

Claws
Claws
Disc guard

• Release the 2 pairs of claws in the direction of arrow.

Ref. No. 23	Removal of the drive gear (A) and drive gear (B)

Procedure
1→2→3→23

❶
Angle

Drive gear (A)
Drive gear (B)

1. Remove the 1 screw (❶).
2. Remove the angle.

3. Remove the drive gear (A) and drive gear (B).

Ref. No. 24	Removal of the pulley gear

Procedure
1→2→3→24

Claws

Pulley gear

Belt

1. Remove the belt.
2. Release the 2 claws and then remove the pulley gear in the direction of arrow.

Ref. No. 26	Removal of the loading motor P.C.B.

Procedure
1→2→3→7
→8→10→11
→15→26

Belt

1. Remove the belt.

Claw

2. Remove the 3 screws (❶~❸).
3. Release the 1 claw.

Loading motor P.C.B.
(+)
(−)
Unsolder the terminals
Loading motor

Mark(+)
Loading motor (1)

4. Unsolder the terminals of the loading motor.

Ref. No. 25	Removal of the drive cam, elevation cam and reduction gear

Procedure
1→2→3→23
→24→25

❶ ❷ ❸

1. Remove the 3 screws (❶~❸).

Drive cam
Elevation cam
Reduction gear

2. Remove the drive cam, elevation cam and reduction gear.

Ref. No. 27	Remval of the servo P.C.B.

Procedure
1→2→3→7
→8→10→27

1. Remove the 3 screws (❶~❸).
2. Unsolder the 2 terminals of spindle motor.
3. Remove the FPC board from the optical pickup.

Servo P.C.B.
❶
Connector (CN101)
FPC board
Unsolder the terminals
❸ ❷

Caution: To prevent the breakdown of the laser diode, antistatic shorting pin is inserted into the FPC board.

FPC board
Shorting pin

— 13 —

Ref. No. 28	Removal of the optical pickup
Procedure 1→2→3→7 →8→10→27 →28	**Refer to the handling precautions for optical pickup and instructions for traverse oil (See page 7).**

1. Remove the 2 screws (❶, ❷).
2. Unsolder the 2 terminals and the 2 screws (❸, ❹).

Caution: Take care not to touch the brush terminal.

Unsolder the terminals

Optical pickup

Brush terminal
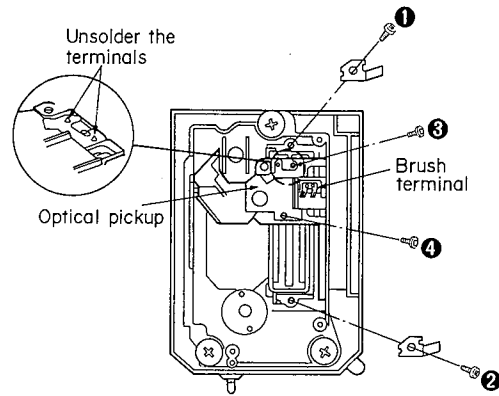
Ref. No. 29	Removal of the spindle motor
Procedure 1→2→3→7 →8→10→27 →29	

1. Loosen the screw (❶) by using a 1.27mm allen wrench and remove the turntable.
2. Remove the 2 screws (❷, ❸).

Caution:
1. Turntable height adjustment is necessary any time the turntable or spindle motor is replaced.
2. The (+) terminal of the spindle motor is indicated by the red mark.

Adjustment of turntable height

1. Insert a 0.9mm clearance gauge (RZZ0297) between the turntable and loading base as shown in the figure.
2. Tighten the turntable set-screw by using a 1.27mm allen wrench.

Caution:

Refer to turntable height adjustment (See page 25).

Turntable

(+) Terminal
Red mark
Spindle motor

Turntable
0.9mm clearance gauge (RZZ0297)
0.9 mm
Spindle motor
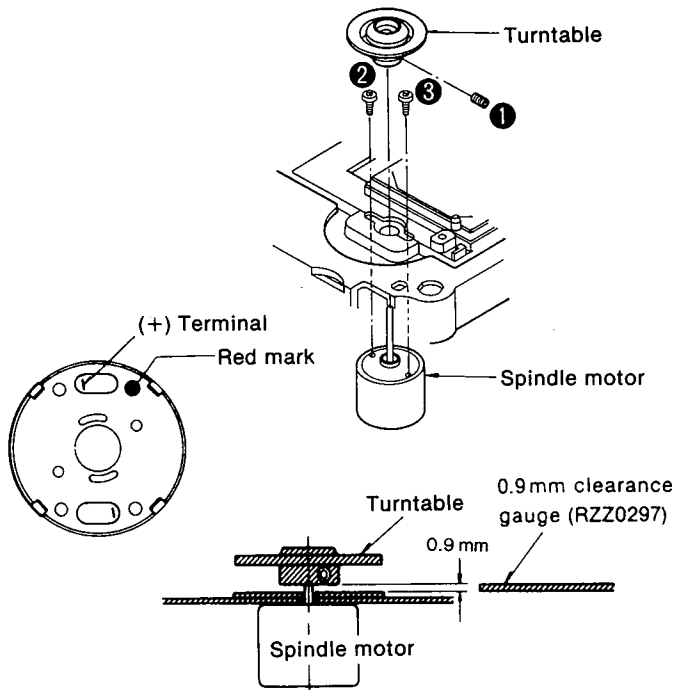
● **Installation of the elevation cam and drive cam**

1. Align the drive cam, the marking (▲) on the elevation cam, and the rib on the mechanism base ass'y.
2. Check that hole Ⓐ on the drive cam and the notch on the elevation cam are aligned in a straight line.

Rib
Marking

Elevation cam

Drive cam

Mechanism base ass'y   Hole Ⓐ   Notch
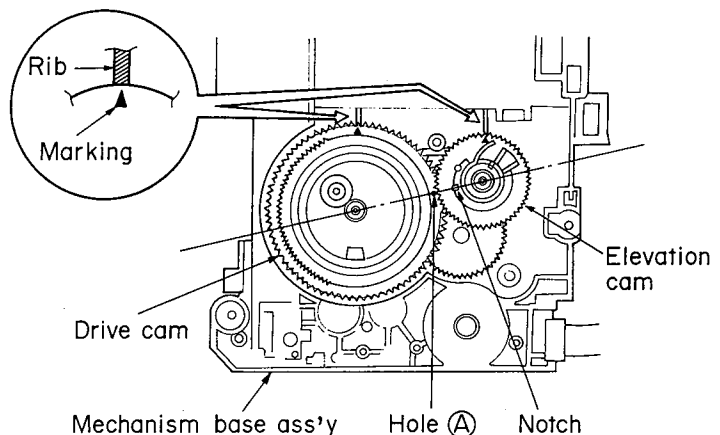
• Installation of the worm ass'y

When installing the worm ass'y onto the worm base, move the washer located between the worm and pulley next to the worm.

Worm ass'y

Worm

Pully

Washer

Worm base
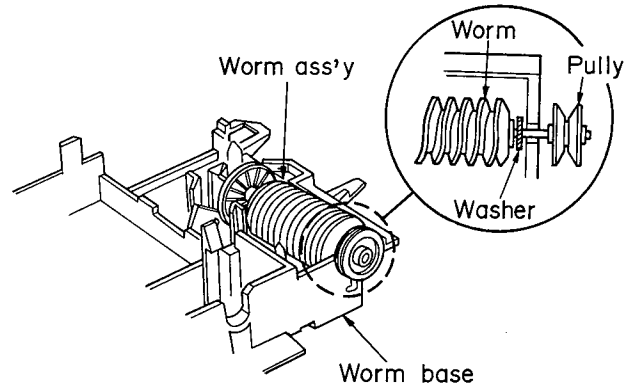
• Installation of the traverse deck

1. Position the elevation cam as shown in the figure on the right.
2. When the traverse deck is mounted on the mechanism base ass'y, check that the pin of the sub base ass'y is positioned at the slanted part of the rib on the elevation cam.

Traverse deck

Mechanism base ass'y

Sub base ass'y

Pin

Elevation cam

Sub base ass'y

Elevation cam
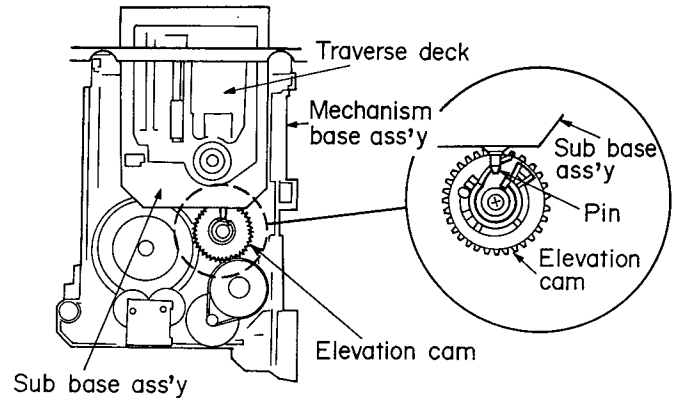
• Installation of the tray ass'y

1. Attach the FPC board to the connector (CN403).
2. Fit the claws on the right side of the tray ass'y underneath the claws on the tray base guide (R).
3. Fit pin of the disc guard into groove of the guard cam.
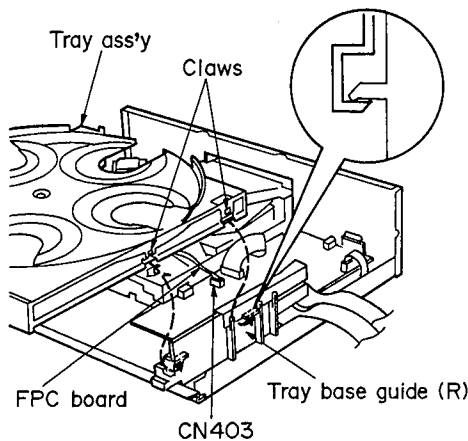
4. Fit the limiter claw on the tray ass'y between the teeth of the drive gear (A).
5. Align the claws on the left side of the tray ass'y with the claws on the tray base guide (L) and push the tray ass'y until the claws catch.
6. After installing the tray ass'y, check that it moves smoothly.

Tray ass'y

Claws

FPC board

Tray base guide (R)

CN403

Limiter claw

Drive gear (A)

Groove of the guard cam

Pin of the disc guard

Claws

Claws Tray base guide (L)

Tray ass'y
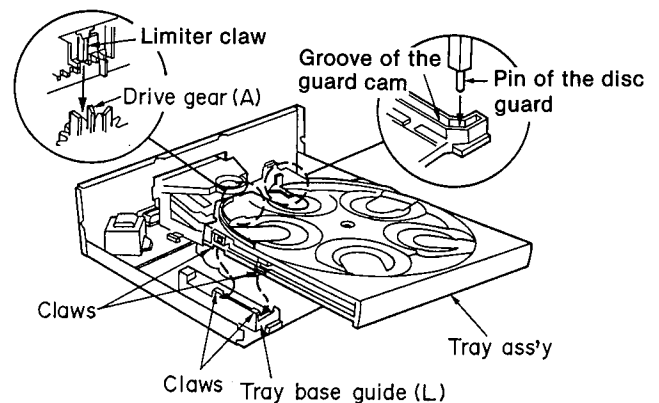
• Notes on the installation of the FPC board for the front panel ass'y

1. With its blue line facing up, fully insert the FPC board until the foil is no longer exposed.
2. Insert the short FPC board first and then insert the long FPC board over it.

Blue line

Long FPC board.

Short FPC board.

CN601   CN602

Front panel ass'y
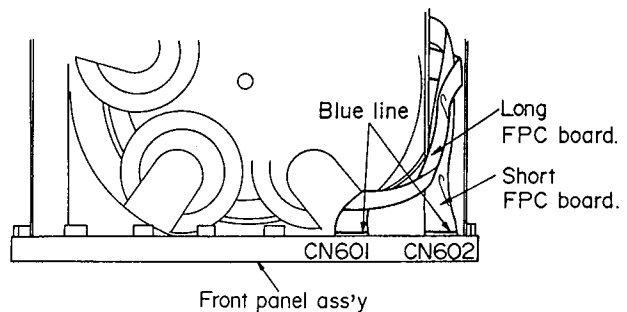
■ HOW TO CHECK THE MAIN AND SERVO P.C.B.

● Check the main P.C.B.

Fig. 1

Main P.C.B.
Retention posts

Fig. 3

Ground terminal
Lead wire
Power switch
Disc I
Stop
Play
Rib
Main P.C.B.

Fig. 2

Clamper ass'y
Test disc
Traverse deck
FPC board
CN602
CN602
Pulley gear
Operation P.C.B.

1. Rotate the pulley gear in the direction of arrow until traverse deck comes up.
2. Place the test disc and secure it by using the clamper ass'y.
3. Connect the 2 FPC board (CN601, CN602) as shown in Fig. 2.
4. Remove the 4 screws (❶~❹) as shown in Fig. 1.
5. Lift the main P.C.B. off the retention post on the chassis.
6. Set up the main P.C.B.
7. Connect the main P.C.B. ground terminal (line out terminal) to the chassis ass'y with a lead wire.

How to play the disc

8. Set the unit in the test mode as follows:
   (hold the `play`, `stop` and `disc 1` keys (3 keys) on and set the power switch to ON.)
9. Press the `play` key and play the test disc.
10. When checking the soldered surface of the main P.C.B., do as shown in Fig. 3.

● Check the servo P.C.B.

When checking the servo P.C.B., place the traverse deck sideways.
There are two ways (A) & (B) of securing the traverse deck as shown below.

(A) Securing the traverse deck to the chassis ass'y.

FPC board of servo P.C.B.
Change the FPC board.
Traverse deck
Hole
Ⓐ
Ⓑ
Chassis ass'y
FPC board To CN601 CN602

Fig. 4

CN402
CN301
CN602
CN601
CN401
Clamper ass'y
Test disc
CN102
Front panel ass'y
[Place the front panel ass'y on the right side of the unit.]

Fig. 5

— 16 —

Fig. 6

1. Connect the FPC boards as shown in Fig. 5.
   [Between CN401 and CN601]
   [Between CN402 and CN602]
   [Between CN102 and CN301]
   Replace the FPC board for the servo P.C.B. (between CN102 and CN301) with the FPC board on the main P.C.B. (between CN401 and CN601 or between CN402 and CN602). (Reference the arrows in Fig. 4.)

(B) Securing the traverse deck to the mechanism base ass'y.

(The traverse deck cannot be secured unless)
(the rear panel has been removed.)
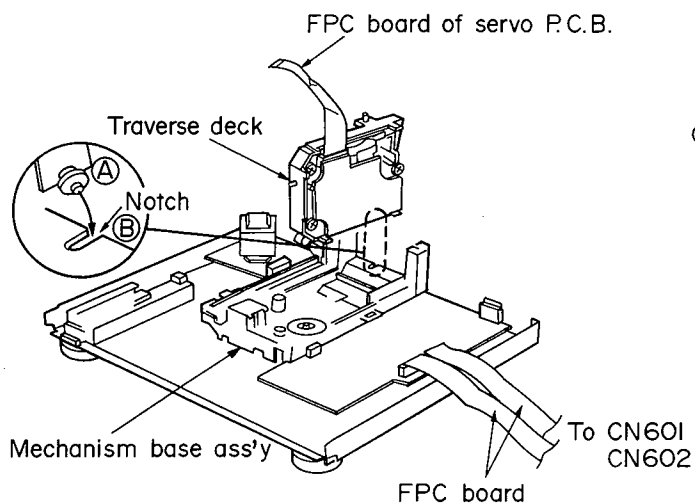
Fig. 7
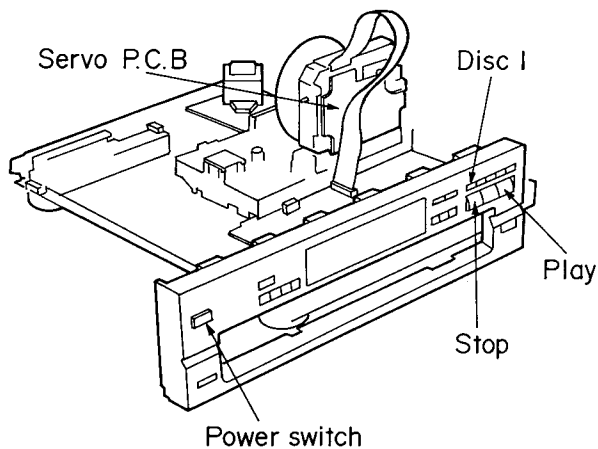
Fig. 9

Notes:

- The FPC board cannot be connected because it is too short when the traverse deck is secured sideways. Replace it with the long FPC board.
- After completing the check, restore the replaced FPC boards to their original positions.

2. Insert part Ⓐ of the traverse deck into hole Ⓑ of the chassis ass'y as shown in Fig. 4.

How to play the disc

3. Set the unit in the test mode as follows:
   (hold the **play**, **stop** and **disc 1** keys (3 keys) on and set the power switch to ON.)
4. Press the **play** key and play the test disc.
5. When checking the soldered surface of the servo P.C.B., do as shown in Fig. 6.
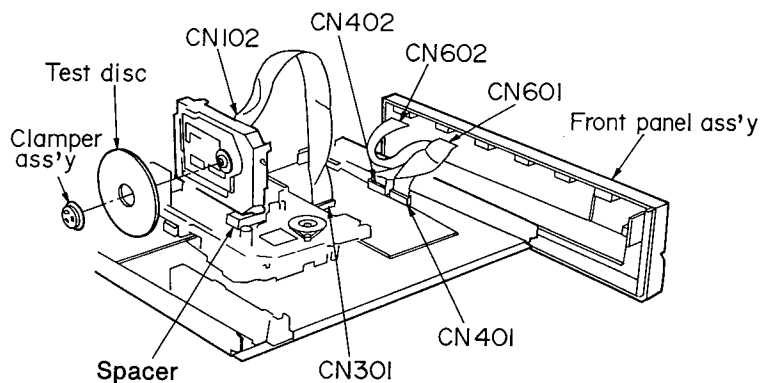
Fig. 8

1. Connect the FPC boards in the same manner as described in (A) above.
2. Insert part Ⓐ of the traverse deck into notch Ⓑ of the mechanism base ass'y as shown in Fig. 7.
3. Install the spacer so that the traverse deck is horizontal as shown in Fig. 8.

How to play the disc

4. Set the unit in the test mode as follows:
   (hold the **play**, **stop** and **disc 1** keys (3 keys) on and set the power switch to ON.)
5. Press the **play** key and play the test disc.
6. When checking the soldered surface of the servo P.C.B., do as shown in Fig. 9.

■OPERATING THE UNIT WITHOUT THE FRONT PANEL ASS'Y (OPERATING P.C.B. AND KEYS)

The main operations of the unit can be performed by shorting jumper wires on the main P.C.B. even if the FPC board from the control panel is not connected to the main P.C.B.

(When bent the jumper wire, pay attention not to cut it.)

Servo P.C.B.

J103
J104
J107
J237
J114
J322 J324

Main P.C.B.

Use a screwdriver to bend the jumper wire.

Screwdriver

Jumper wire

Clip
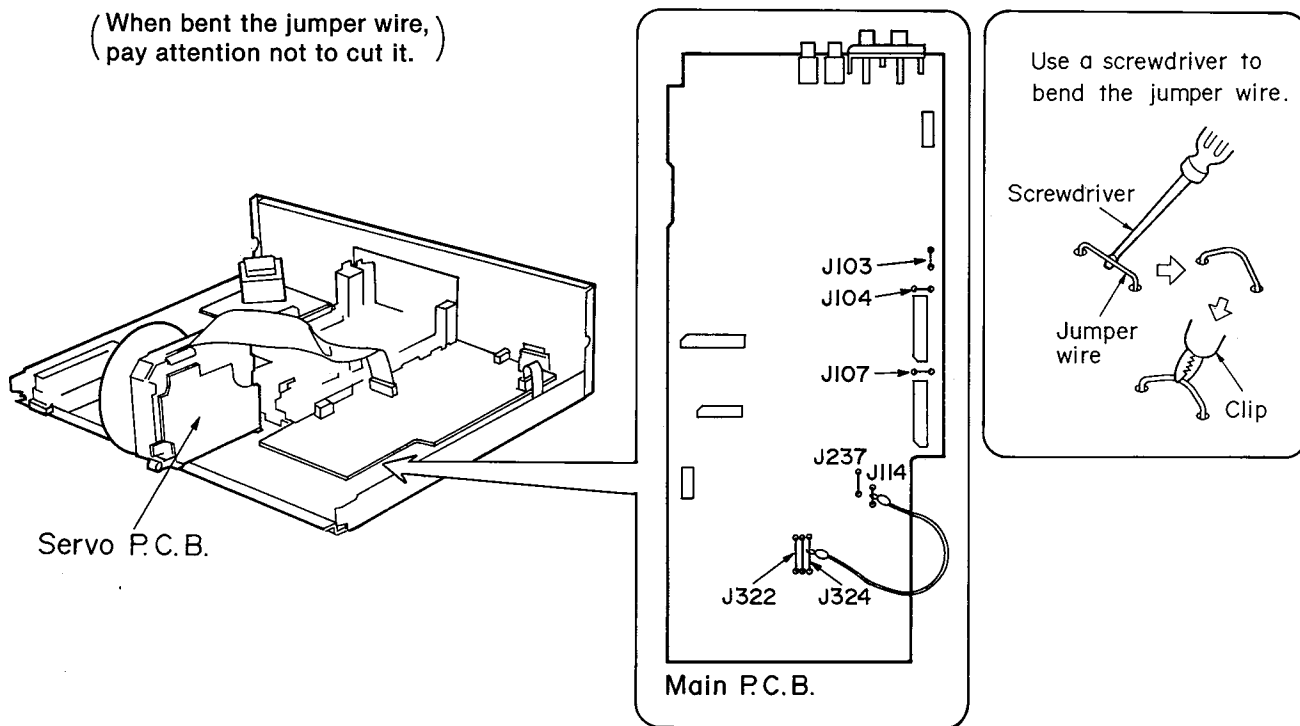
Fig. 1

1. Short the jumpers on the main P.C.B.
   a. J324−J114 (equivalent to pressing the PLAY key)
   b. J322−J114 (equivalent to pressing the STOP key)
   c. J324−J237 (equivalent to pressing the DISC 1 key)
2. Shorting J103 to J104 turns the power ON.
3. After turning on the power, open the 3 shorted jumpers (a to c) in 1.
4. Momentarily short the jumpers shown below as needed. (Fig. 1)
   • To PLAY, short J324 to J114 (equivalent to pressing the PLAY key)
   • To FWD, short J322 to J107 (equivalent to pressing the ▶▶I SKIP key)
   • To REW, short J324 to J107 (equivalent to pressing the I◀◀ SKIP key)
   • To STOP, short J322 to J114 (equivalent to pressing the STOP key)
5. The operations for the 4 modes above can be performed.

■DISPLAY FUNCTION OF AUTOMATICALLY-ADJUSTED RESULTS (SELF-CHECK FUNCTION)

The unit contains a function which displays the result of the automatically adjustment of the servo circuits (tracking, forcus servo, etc.) as an error code on the FL display.
The error code display serves as a repair guide showing the automatically adjustment circuit is at fault. The procedures for displaying the error codes are given below.

• Procedures to display the error code

(1) Procedure to display the error code before disassembly (finished unit)
1. When the POWER key is pressed while holding down the STOP (■), PAUSE (II) and PLAY (▶) keys simultaneously, the FL display illuminates, release the power turns on.
2. When the FL display illuminates, release the STOP (■), PAUSE (II) and PLAY (▶) keys.
3. Press the OPEN/CLOSE (▲) key to open the disc tray and load the test disc (SZZP1054C).
4. Press the PLAY (▶) key to start the play operation.
5. After the time display appears, press the TIME MODE key twice to display the error code. (e.g. **E-0**)
6. The error code display can be used as a repair guide showing which servo circuit is at fault.
   (See Error Code Based Troubleshooting.)
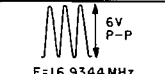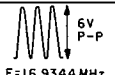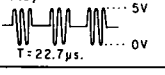
(2) Procedure to display the error code when disassembled
1. Prepare the unit as described in "How to Check the Servo P.C.B." on page 16.
2. Press the POWER key while holding down the STOP (■), PLAY (▶) and DISC 1 keys simultaneously.
3. When the FL display illuminates, release the STOP (■), PLAY (▶) and DISC 1 keys.
4. Load the test disc (SZZP1054C) on the turntable and secure it with the clamper ass'y.
5. Perform steps 4 and 5 in section (1) above.
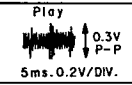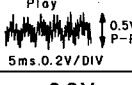
• Error code based troubleshooting

※ The unit is satisfactory if the error code is **E-0** of **E-2**.
※ Before testing, check that the test disc is free of scratches and dirt and optical pickup is clean.

FL error code display	Symptom	Probable cause	Signal to check		Normal the values of voltage and waveform	
			Signal name	Location	PLAY	STOP
E-1	Incomplete focus, tracking or offset adjustment	1. Data transfer with IC401 2. IC102 setup condition	MDATA	IC102 ㉗ pin	Play ⎍⎍⎍ ···5V 0V T=13.2ms.	0V
			MCLK	IC102 ㉘ pin	Play ⎍⎍⎍ 5V	4.9V
			MLD	IC102 ㉙ pin	···0V T=13.2ms.	
			SENSE	IC102 ㉚ pin	0V	4.9V
			/RST	IC102 ㉝ pin	4.6V	4.6V
			XI	IC102 ㉞ pin	⋀⋀⋀ 6V P-P F=16.9344MHz	⋀⋀⋀ 6V P-P F=16.9344MHz
E-3 E-5 E-7 E-9 E-B E-D E-F	Disc cannot be played reliably.	1. Scratched or dirty disc 2. Focus and tracking servo circuits 3. Spindle drive circuit 4. Optical pickup	FE	IC102 ⑩ pin	Play 0.3V P-P 5ms.0.2V/DIV.	2.5V
			TE	IC102 ⑨ pin	Play 0.5V P-P 5ms.0.2V/DIV	2.5V
			FOD	IC102 ⑳ pin	Play ···5V	2.5V
			TRD	IC102 ㉑ pin	···0V T=22.7μs.	
			KICK	IC102 ㉒ pin	2.5V	2.5V
			VR1	IC102 ⑫ pin	3.9V	3.9V
			VR2	IC102 ⑪ pin	0.9V	0.9V
			/FLOCK	IC102 ㉛ pin	0V	4.9V
			/RF DET	IC102 ③ pin	0V	4.7V
			RF	TJ101	Play 0.5V P-P 0.5μs.2V/DIV.	2.5V
			STAT	IC301 ㊼ pin	4.9V	0V

FL error code display	Symptom	Probable cause	Signal to check		Normal the values of voltage and waveform	
			Signal name	Location	PLAY	STOP
E-4 E-6	Incomplete focus gain adjustment	1. Scratched or dirty disc 2. Focus servo circuit 3. Optical pickup	FE	IC102 ⑩ pin	Play 0.3V P–P 5ms.0.2V/DIV.	2.5V
			VR1	IC102 ⑫ pin	3.9V	3.9V
			VR2	IC102 ⑪ pin	0.9V	0.9V
			OFT	IC102 ⑤ pin	0V	4.7V
			/TLOCK	IC102 ㉜ pin	0V	4.9V
E-8 E-A ※ See note	Incomplete tracking gain adjustment	1. Scratched or dirty disc 2. Tracking servo circuit 3. Optical pickup	TE	IC102 ⑨ pin	Play 0.5V P–P 5ms.0.2V/DIV	2.5V
			VR1	IC102 ⑫ pin	3.9V	3.9V
			VR2	IC102 ⑪ pin	0.9V	0.9V
			OFT	IC102 ⑤ pin	0V	4.7V
			/TLOCK	IC102 ㉜ pin	0V	4.9V
E-C E-E	See error codes E-4, E-6, E-8 and E-A	See error codes E-4, E-6, E-8 and E-A	FE	IC102 ⑩ pin	Play 0.3V P–P 5ms.0.2V/DIV.	2.5V
			TE	IC102 ⑨ pin	Play 0.5V P–P 5ms.0.2V/DIV	2.5V
			VR1	IC102 ⑫ pin	3.9V	3.9V
			VR2	IC102 ⑪ pin	0.9V	0.9V
			OFT	IC102 ⑤ pin	0V	4.7V
			/TLOCK	IC102 ㉜ pin	0V	4.9V

※ **Note:** For a unit showing error code **E-8** or **E-A**, check the error code several times. If error code **E-0** or **E-2** appears, the unit can be assumed to be satisfactory.

■ DIGITAL SERVO SYSTEM

The newly-developed digital servo system is adopted in the servo circuit of the unit's CD player instead of the ordinary analog servo system.

1. The diagrams shown below represent differences between the analog servo and digital servo systems. The HEAD AMP. output signals (i.e., focus error and tracksing error output signals) are analog. These analog signals are converted to the 8-bit digital signals through the MN6650. The MN6650 performs the following adjustments automatically; focus offset, tracking offset, focus gain, tracking gain, and tracking balance adjustments. The outputs from the MN6650 such as the focus coil driving signal, tracking coil driving signal, and traverse motor driving signal are converted to analog signals again and sent to the coils and motor to perform proper servo control for a disc.

ANALOG SERVO SYSTEM

6 VRs require adjustment

DIGITAL SERVO SYSTEM

Only 1 VR requires adjustment (best eye adjustment)
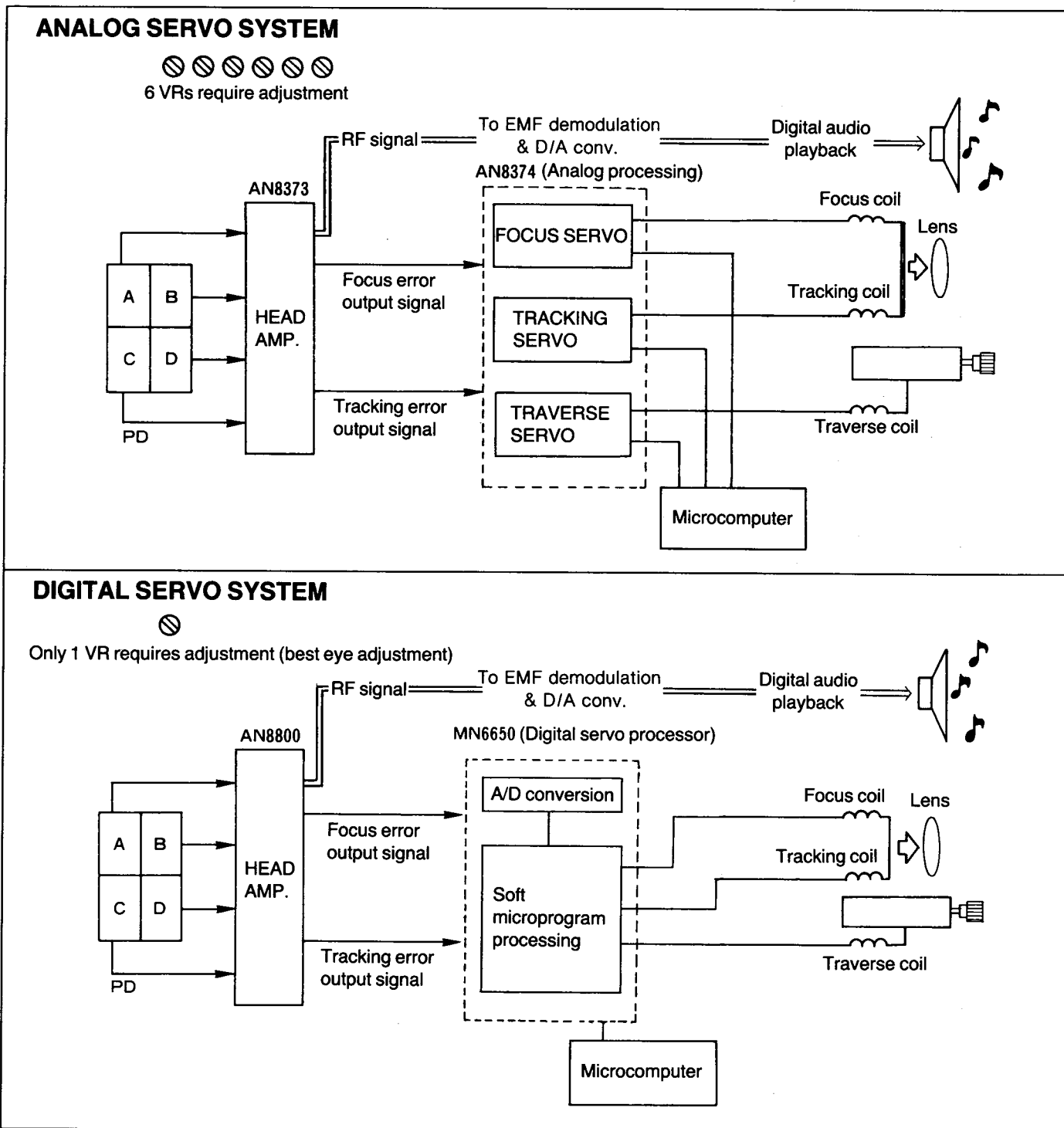
2. The servo processor IC MN6650 of the newly-developed digital servo circuit automatically performs the following adjustments which were originally adjusted manually in the conventional analog servo circuit:
(1) Focus offset, (2) Tracking offset, (3) Focus gain, (4) Tracking gain, and (5) Tracking balance. Therefore, you do not have to perform the above-mentioned electrical adjustments. The unit optimizes the servo for each loaded disc.
[You must perform the best eye (PD balance) adjustment manually.]

The following flow chart shows the sequence of automatic adjustments.

●Flow chart on automatic adjustment sequence

```
                    ┌──────────────────────┐
                    (        START         )
                    └──────────┬───────────┘
                               ▼
                    ┌──────────────────────┐
                    ( Focus search operation: ON )
                    └──────────┬───────────┘
                               ▼
                    ┌──────────────────────┐
                    │ Focus offset adjustment │
                    └──────────┬───────────┘
                               ▼
                    ┌──────────────────────┐
                    │ Tracking offset adjustment │
                    └──────────┬───────────┘
                               ▼
                    ┌──────────────────────┐
                    │ Temporary adjustment of focus gain │
                    └──────────┬───────────┘
                               ▼
                    ┌──────────────────────┐
                    ( Spindle motor starts rotation )
                    └──────────┬───────────┘
                               ▼
              No  ◄─────◇ Does focus pull in? ◇
                               │ Yes
                               ▼
                    ( Focus servo operation: ON
                      Tracking servo operation: ON )
                               ▼
                    │ Temporary adjustment of tracking gain │
                               ▼
                    │ Tracking balance adjustment │
                               ▼
              No  ◄─────◇ Does tracking pull in? ◇
                               │ Yes
                               ▼
                    │ Fine adjustment of focus gain │
                               ▼
                    │ Fine adjustment tracking gain │
                               ▼
                    (        END         )
```

Approx. 2.5 sec.

*Because the microcomputer precisely performs automatic adjustments as shown in the flow chart, it will take approx. 5 seconds to finish reading TOC data if a used disc is eccentric one or its surface is warped.

No CD playback

Does the test disc rotate? — NO → Remove the test disc → Press the play key → Does lens make vertical movements?

Does the test disc rotate? — YES → Check if TOC reading is performed.

Check if TOC reading is performed. — YES → Does "PLAY" appear on the display?

Check if TOC reading is performed. — NO

Does "PLAY" appear on the display? — No access → Playing time appear on the display

Does "PLAY" appear on the display? — No access / No output → Below 700 mV or no output → Check output at pin ⑬ of CN102

Are there outputs at pins ①, ② and ③ of IC801? — NG → ① LRCK, ② BCLK, ③ SRDATA } OK

Are there outputs at pins ①, ② and ③ of IC801? → Is pin ④ of IC301 at "HIGH" or "LOW"? — "H" → Check IC401

Is pin ④ of IC301 at "HIGH" or "LOW"? — "L" → IC301 failure

Are there outputs at pins ① and ⑦ of IC802? — NO → IC801 or IC802 failure

Are there outputs at pins ① and ⑦ of IC802? — OK → Check waveform between IC802 and JK801

Check output at pin ⑬ of CN102 — At about 1 Vp-p

Is pin ㉒ of IC301 at "HIGH" or "LOW"? — "H" → Is there an output at pin ㉒ of IC102? — OK → R114 failure

Is there an output at pin ㉒ of IC102? — NG / "H" → IC102 failure

Is pin ㉒ of IC301 at "HIGH" or "LOW"? — "L" → Is pin ㉖ of IC102 at "HIGH" or "LOW"? — "H" → IC301 failure

Is pin ㉖ of IC102 at "HIGH" or "LOW"? — "L" → Is pin ③ of CN102 at "HIGH" or "LOW"?

Is pin ③ of CN102 at "HIGH" or "LOW"? — "L"

Does lens make vertical movements? — YES → Does laser diode come on?

Does lens make vertical movements? — NO → Are there outputs at pins ⑪ and ⑫ of IC103?

Does laser diode come on? — YES → Load the test disc

Does laser diode come on? — NO → Measure voltage across R101.

Load the test disc → (1) Hold the play, stop and disc 1 keys (3 keys) on and set the power switch to ON. (2) Press the play key and play the test disc.

Measure voltage across R101. — Above 0.5 V → Optical pickup failure

Measure voltage across R101. — Below 0.5 V → Measure voltage between ⑧ and ⑤ of Q101.

Measure voltage between ⑧ and ⑤ of Q101. — Above 0.6 V → Q101 or optical pickup is defective.

Measure voltage between ⑧ and ⑤ of Q101. — Below 0.6 V → IC101 failure

Check pin ④ of IC101 — Remains at "H" → Check pin ④ of CN102

Check pin ④ of IC101 — Changes from "H" to "L"

Check pin ④ of CN102 — Remains at "H" → IC301 or IC351 failure

Check pin ④ of CN102 — Changes from "H" to "L". → IC102 failure

Check pin ⑭ of IC101. — Upper and lower amplitudes of waveform are equal. → IC102 failure

Check pin ⑭ of IC101. — No waveform or upper and lower amplitudes are not equal. → IC101 failure

No waveform or upper and lower amplitudes are not equal. → Optical pickup failure

Are there outputs at pins ⑪ and ⑫ of IC103? — OK → Optical pickup failure

Are there outputs at pins ⑪ and ⑫ of IC103? — NG → Is there an output at pin ㉙ of IC102?

Is there an output at pin ㉙ of IC102? — NG → IC102 failure

Is there an output at pin ㉙ of IC102? — OK → IC103 failure

■ MEASUREMENTS AND ADJUSTMENTS

Warning: This product uses a laser diode. Refer to caution statements on page 2.

Caution: During adjustment, never connect CH-2 probe's GND to any place for it may short V-Ref. line. (Connect CH-1 probe's GND to specified TP, described in each section.)

Measuring Instruments and Special Tools

* Test discs
1. Playability test disc (SZZP1054C)
2. Uneven test disc (SZZP1056C)
* Musical program disc (ordinary)
* Dual-beam oscilloscope with bandwidth of 30MHz or better (with EXT. trigger and 1:1 probe).

* Allen wrench (M2.0) (SZZP1101C)
* Allen wrench (M1.27)
* 0.9mm clearance gauge (RZZ0297)
* Filter
* Lock paint (RZZ0L01)

PREPARATION

1. Remove the cabinet and front panel ass'y (refer to "disassembly instructions" Ref. No. 1, 2).
2. Set the power switch to ON and press the open/close Key to close the loading drawer.
3. Press the play key and when the traverse deck reaches it's height position, set the power switch to OFF.
4. Remove the tray ass'y (refer to "disassembly instructions" Ref. No. 3).
5. Remove the clamp plate, yoke, magnet and clamper ass'y. (refer to "disassembly instructions" Ref. No. 8, 9).
6. Place the test disc and secure it by using clamper ass'y. (Refer to Fig. 1)
7. Set the unit in the test mode as follows: (hold the [play], [stop] and [disc 1] keys (3 keys) on and set the power switch to ON.
8. Press the [play] key and play the test disc.
9. Follow the adjustment procedure.
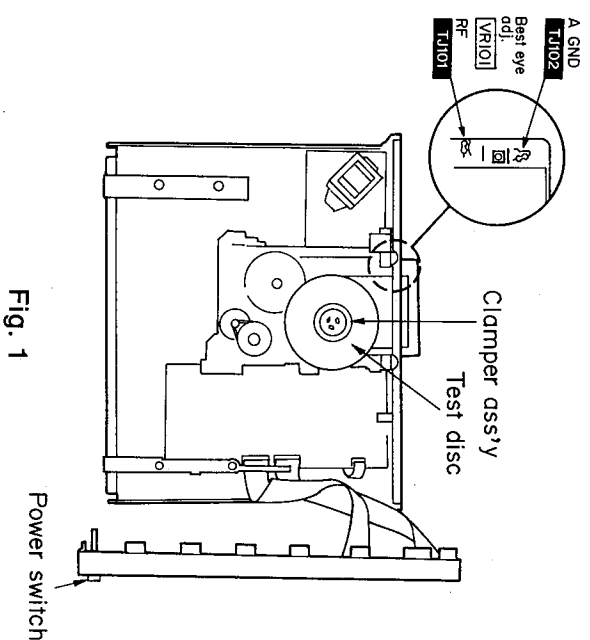
Adjusting Procedure
* If you have replaced the optical pickup, spindle motor, or turntable, do the following adjustment:

(1) TURNTABLE HEIGHT ADJUSTMENT
1. Insert the 0.9mm clearance gauge (RZZ0297) between the turntable and the loading base. (Refer to Fig. 2).
2. Tighten the turntable retention screw with the 1.27mm allen wrench.
3. Connect the oscilloscope's CH. 1 probe across [TP1] (+) and [TP2] (−) terminal via a filter (Refer to Fig. 3).

Note: For the connection of oscilloscope's CH.1 probe to servo P.C.B. on foil side, refer to fig. 3.

Oscilloscope setting: VOLT.................500mV
Input coupling.......DC
SWEEP................5ms.

4. Adjust oscilloscope's DC zero balance.
5. Switch the play power ON, and play the test disc oscilloscope.
6. Measure the voltage amplitude of the signal on the oscilloscope.

7. Adjust the height until the voltage is 0±1.0V. If the voltage exceeds +1.0V, lower turntable. If the voltage is below −1.0V, elevate the turn table.
Note: Mesure the voltage as 0V as possible.

Fig. 1

Fig. 2

Fig. 3

Clamper ass'y · Test disc · Power switch · Turn table · 0.9mm · Clearance gauge (RZZ0297) · Spindle motor · Filter · 10kΩ · 1μF · IC103 (AN377N) · TP1 · TP2 · Servo P.C.B. (Soldered surface) · GND · HOT · Probe (Oscilloscope) · A GND · TJ101 · Best eye adj. · VR101 · RF · TJ102
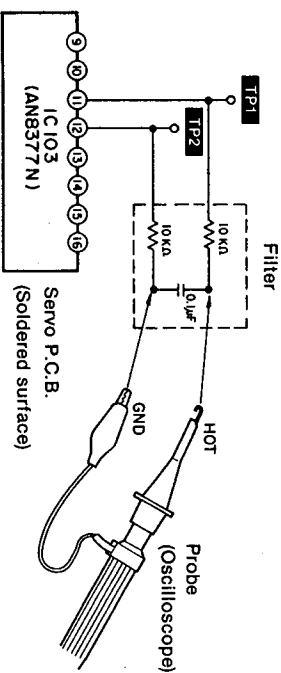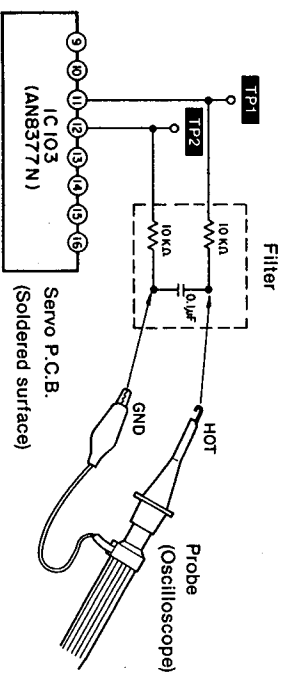
(2) MECHANICAL ADJUSTMENT
1. Connect the oscilloscope's CH. 1 probe across [TJ101] (+) and [TJ102] (GND) on the servo P.C.B. (Refer to Fig. 4 on page 19).
Oscilloscope setting: VOLT.................100mV
Input coupling.......AC
SWEEP................0.5μs.

2. Switch the player power ON, and play track 7 on the test disc (SZZP1056C). (Playing any other track will prevent the HEX screws from being accessed.)
3. Leave the player in play mode and place it as shown Fig. 3 on page 19.
4. Alternately adjust the two HEX screws with the 2.0mm allen wrench (SZZP1101C) until the vertical fluctuation of RF signal is minimized and the eye pattern is most stretched. (Refer to Fig. 4)
5. After completing the adjustment, lock the HEX screws with lock paint (RZZ0L01).

Fig. 4 — Allen wrench. Range adjustable with a allen wrench.

Optical pickup. Mechanical adjustment screws.

※ Most stretched eye pattern.

Fig. 5
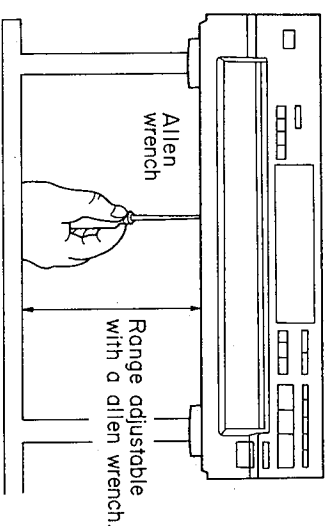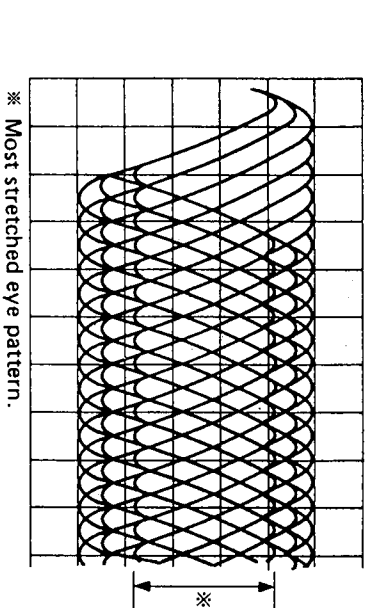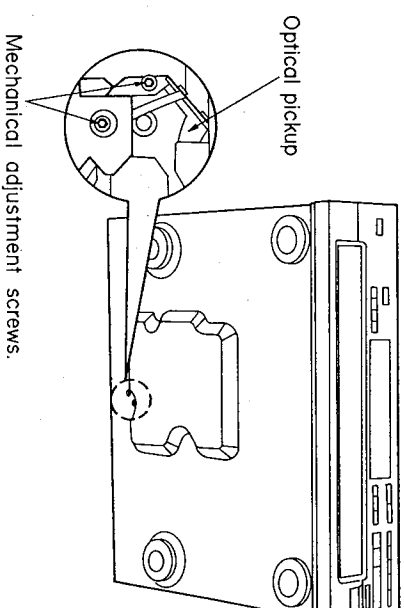
(3) BEST EYE (PD BALANCE) ADJUSTMENT
1. Connect the oscilloscope's CH. 1 probe across [TJ101] (+) and [TJ102] (GND) on the servo P.C.B. (Refer to Fig. 4 on page 19).
Oscilloscope setting: VOLT.................100mV
Input coupling.......AC
SWEEP................0.5μs.

2. Switch the player power ON, and play the 1kHz signal (track 1) on the test disc (SZZP1054C).
3. Adjust VR101 until the vertical fluctuation of RF signal is minimized and the eye pattern is most stretched. (Refer to Fig. 5)
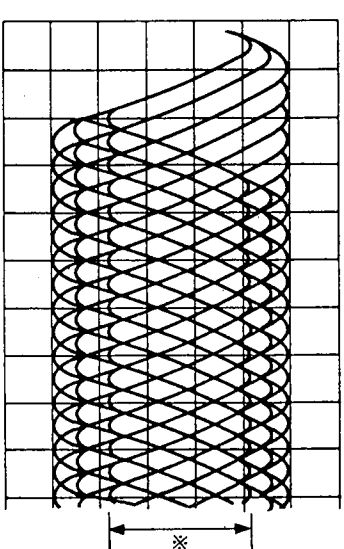
※ Most stretched eye pattern.

(4) CHECK OF PLAY OPERATION AFTER ADJUSTMENT

* **Checking Skip Search**
1. Play an ordinary musical program disc.
2. Press the skip button to check for normal skip operation (in both the forward and reverse directions).

* **Checking Playability**
1. Play the 0.7mm black dot and the 0.7mm wedge on the playability test disc (SZZP1054C) and verify that no sound skip or noise occurs.
2. Play the middle tracks of the uneven test disc (SZZP1056C) and verify that no sound skip or noise occurs.

* **Checking Manual Search**
1. Play an ordinary musical program disc.
2. Press the manual search button to check for smooth manual search operations at either low or high speed (in both the forward and reverse directions).

■TERMINAL FUNCTION OF IC'S

• IC101 (AN8800SCE2): Servo amp

Pin No.	Mark	I/O Division	Function
1	LDG	I	APC loop gain select
2	LDP	I	APC monitor PD polarity select (Not used, open)
3	LD	O	Laser power auto control output
4	LPD	I	LD power monitor PD signal
5	GND	—	GND terminal
6	LDON	I	LD APC ON/OFF ("H": ON, "L": OFF)
7	AMP I	I	RF signal (X30 amp)
8	AMP O	O	RF signal (X30 amp)
9	RF IN	I	RF AGC signal input
10	RF EQ	—	GND terminal
11	C. AGC	I	AGC detection capacitor input
12	ARF	O	RF signal output
13	C. SBDO	I	Dropout detection capacitor input
14	RF DET	O	RF detection signal ("L": detecting)
15	BDO	O	Dropout detection output
16	V$_{CC}$	I	Power supply terminal
17	SDO	O	Dropout detection pulse output
18	VAD+	O	Power supply terminal for A/D converter (+)
19	VREF	O	Reference voltage output
20	VAD−	O	Power supply terminal for A/D converter (−)
21	OFTR	O	Off track detection ("H": det.)

Pin No.	Mark	I/O Division	Function
22	PLAY	I	Play signal ("H": ON, "L": OFF)
23	WVEL	I	Double velocity ("H": double, "L": single)
24	TES	I	Tracking error shunt ("H": shunt, "L": output)
25	PTO	O	Potentio amp output
26	PTI	I	Potentio amp input
27	PBO	O	Potentio buffer output
28	POT	I	Potentio buffer input
29	CROSS	O	Tracking error zero cross output
30	TE	O	Tracking error signal
31	TE BAL	I	Oscillation det. signal
32	TBAL	I	Tracking balance adj. input
33	VDET	O	Oscillation det. signal ("H": det.)
34	FE	O	Focusing error signal
35	FBL 2	I	Focusing balance 2
36	FBL 1	I	Focusing balance 1
37	V$_{CC}$	I	Power supply terminal
38	GND	—	GND terminal
39	PDBD	I	Photo detector Bch input with delay
40	PDA	I	Photo detector Ach input without delay
41	PDB	I	Photo detector Ach input with delay
42	PDAD	I	Photo detector Bch input without delay

• IC102 (MN6650A): Digital servo processor

Pin No.	Mark	I/O Division	Function
1	TES	O	Tracking error shunt signal ("H": shunt)
2	PLAY	O	Play signal ("H": play)
3	/RFDET	I	RF det. signal ("L": det.)
4	DO	I	Dropout signal ("H": dropout)
5	OFT	I	Off track signal ("H": off track)
6	ARF	I	RF signal input
7	WVEL	O	Double velocity status signal ("H": double)
8	PBO	I	Potensio buffer signal (analog input)
9	TE	I	Tracking error signal (analog input)
10	FE	I	Focus error signal (analog input)
11	VR2	I	Reference voltage for A/D (Low)
12	VR1	I	Reference voltage for A/D (High)
13	LDON	O	Laser power control ("H": ON)
14	V_{SS}	—	GND terminal
15	AV_{SS}	—	GND terminal
16	AV_{DD}	I	Power supply terminal
17	V_{DD}	I	Power supply terminal
18	TRV	O	Traverse servo control output
19	TVD	O	Traverse drive signal output
20	FOD	O	Focus drive signal output
21	TRD	O	Tracking drive signal output

Pin No.	Mark	I/O Division	Function
22	KICK	O	Kick pulse output
23	/TEST	I	Test terminal
24	V_{SS}	—	GND terminal
25	CLVS	I	Spindle servo phase synchro signal ("H": CLV, "L": Rough servo)
26	/TRON	O	Tracking servo ON signal ("L": ON)
27	MDATA	I	Command data signal
28	MCLK	I	Command clock signal
29	MLD	I	Command load signal ("L": LOAD)
30	SENSE	O	Sense signal
31	/FLOCK	O	Optical servo condition (focus) output
32	/TLOCK	O	Optical servo condition (tracking) output
33	/RST	I	Reset signal ("L": reset)
34	XI	I	Clock input (f=16.9344 MHz)
35 � 38	T0 ⸕ T3	O	Test terminal (Ordinaly: open)
39 ⸕ 41	T4 ⸕ T6	I	Test terminal (Ordinaly: L)
42	VDET	I	Oscillation det. signal ("H": det.)
43	TBAL	O	Tracking balance adj. output
44	TRCRS	I	Track cross signal input

• IC103 (AN8377N): Traverse motor drive

Pin No.	Mark	I/O Division	Function
1	P V$_{CC}$	I	Drive power supply
2	V$_{CC}$	I	Power supply terminal
3	TB	O	External transistor base driving output
4	VMON	O	Voltage output (connected to GND)
5	TVD1	I	Traverse error signal input
6	FD1	I	Focus error signal input
7	TD1	I	Tracking error signal input
8	VREF	I	Reference voltage input

Pin No.	Mark	I/O Division	Function
9	TD−	O	Non-inverting output of focus driver
10	TD+	O	Inverting output of focus driver
11	FD−	O	Non-inverting output of tracking driver
12	FD+	O	Inverting output of tracking driver
13	TVD−	O	Non-inverting output of traverse driver
14	TVD+	O	Inverting output of driver
15	RESET	O	Releset signal output (Not used, open)
16	PC	I	PC input (connect to GND)

• IC801 (MN6475A-T1): Digital filter & D/A converter

Pin No.	Mark	I/O Division	Function
1	LRCK	I	L/R discriminating signal
2	BCLK	I	Serial bit clock input
3	SRDATA	I	Serial data output (MSB first)
4	COT 1		
5	COT 2	I	Test terminal (Ordinaly: L)
6	TEST		
7	V$_{DD}$	I	Digital power supply terminal
8	X2	O	
9	X1	I	Clock terminal (F=33.8688 MHz)
10	DV$_{SS}$	—	Digital GND terminal
11	DV$_{DD}$ L	I	Analog power supply terminal 1
12	OUT. L	O	Analog signal output 1
13	AV$_{SS}$ L	—	Analog GND terminal
14	AV$_{SS}$ R		

Pin No.	Mark	I/O Division	Function
15	OUT. R	O	Analog signal output 2
16	AV$_{DD}$ R	I	Analog power supply terminal 2
17	/RST	I	Reset signal input (Active: L)
18	PWM	O	PWM output (TP..."H": output "L": High impedance) (Not used, open)
19	TP	I	Test terminal (ordinaly: L)
20	WVEL	I	Double velocity ("H": double, "L": single)
21	DEMPH	I	Digital de -emphasis ON/OFF ("H": ON)
22	CSEL	I	Clock frequency select of CK 192 (Not used, connected to GND)
23	1972FS	O	192fs (8.4672 MHz) signal output (Not used, open)
24	384FS	O	Clock output terminal (384 FS=16.9344 MHz)

• IC301 (MN6626): Digital signal processor

Pin No.	Mark	I/O Division	Function
1	AVSS	—	GND terminal
2	IREF	I	Reference current input
3	ARF	I	RF signal input
4	DRF	I	DSL bias terminal (Not used, open)
5	DSLF	I/O	DSL loop filter sterminal
6	PLLF	I/O	PLL loop filter terminal
7	AVDD	I	Power supply terminal
8	RSEL	I	RF signal polarity setting terminal (Not used, connected to VDD)
9 〜 16	TBUS7 〜 TBUS0	O	Test terminal
17	FLAG	O	Flag terminal (Not used, open)
18	IPFLAG	O	Interpolation flag terminal (Not used, open)
19	FCLK	O	Crystal frame clock (Not used, open)
20	BYTCK	O	Byte clock (Not used, open)
21	WDCK	O	Word clock (Not used, open)
22	/RST	I	Reset terminal
23	TX	O	Digital audio signal (Not used, open)
24	LDG	O	Lch deglitch signal (Not used, open)
25	RDG	O	Rch deglitch signal (Not used, open)
26	SRDATA	O	Serial data output (MSB first)
27	SCK	O	Serial bit clock output
28	LRCK	O	L/R discriminating signal
29	XCK	O	Crystal OSC terminal (f=16.9344 MHz) (Not used, open)
30	PMCK	O	Frequency division clock signal (Not used, open) $(f=\frac{1}{192}\times CK=88.2\,kHz)$
31	CSEL	I	Test terminal (Connected to GND)
32	PSEL	I	
33	X1	I	Crystal OSC terminal (f=16.9344 MHz)
34	X2	O	Crystal OSC terminal (f=16.9344 MHz) (Not used, open)
35	VSS	—	GND terminal
36	SUBQ	O	Sub-code Q data
37	SQCK	I	Sub-code Q register clock
38	/CLDCK	O	Sub-code frame clock (f=735 kHz) (Not used, open)
39	BLKCK	O	Sub-code block clock (f=75 Hz)
40	DEMPH	O	De-emphasis ON signal ("H": ON)
41	MEMP	I	Emphasis signal
42	MLD	I	Command load signal ("L": LOAD)
43	MCLK	I	Command clock signal
44	MDATA	I	Command data signal
45	D MUTE	I	Muting input ("H": MUTE)
46	SMCK	O	System clock (f=4.2336 MHz)
47	STAT	O	Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQOK)
48	CRC	O	Sub-code CRC check terminal ("H": OK, "L" NG) (Not used, open)
49	SUBC	O	Sub-code serial output data (Not used, open)
50	SBCK	I	Sub-code serial output clock (Not used, open)
51	/TRON	I	Tracking servo ON signal ("L": ON)
52	CLVS	O	Turntable servo phase synchro signal ("H": CLV, "L": Rough servo)
53	PC	O	Turntable motor ON signal ("L": ON)
54	ECM	O	Turntable motor drive signal (Forced mode)
55	ECS	O	Turntable motor drive signal (Servo error signal)
56	VDD	I	Power supply terminal
57	/TEST	I	Test terminal (Normal: "H")
58	SSEL	I	"SUBQ" terminal mode select ("H": Q code buffer)
59	MSEL	I	"SMCK" terminal frequency select ("L": SMCK=4.2336 MHz)
60	RESY	O	Re-synchronizing signal of frame sync. (Not used, open)
61	DO	I	Drop-out detection signal ("H": Drop-out)
62	EFM	O	EFM signal (Not used, open)
63	PCK	O	PLL extract clock (f=4.3218 MHz) (Not used, open)
64	PDO	O	Phase comparated signal of EFM and PCK (Not used, open)

• IC401 (MN187164PME1): System control & FL drive

Pin No.	Mark	I/O Division	Function
1 ∫ 7	S7 ∫ S1	O	FL segment signal
8	V_PP	I	Power supply terminal
9	V_DD		
10	OSC2	I	(Not used, open)
11	OSC1	I	Clock input terminal (4.2336 MHz)
12	V_SS	—	GND terminal
13	XI	I	(Not used, connected to GND)
14	XO	O	(Not used, open)
15	SYNC	O	Synchro edit control signal (Not used, open)
16	REC. E	I	Synchro edit control signal
17	LOAD	O	Motor control signal
18	TURN		
19	DIRECT		
20	DISC	I	Disc det. terminal
21	/TLOCK	I	Optical servo condition (tracking) input
22	STAT	I	Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQOK)
23	REMOCON	I	Remote control signal
24	SPEED	I	Loading motor speed sensor signal
25	PWM	O	Motor control signal
26	SENSE	I	Sense signal

Pin No.	Mark	I/O Division	Function
27	DMUTE	O	Muting control signal
28	/FLOCK	I	Optical servo condition (focus) input
29	/RESET	I	Reset signal input
30	MCLK	O	Command clock signal
31	MLD	O	Command load signal ("L": LOAD)
32	MDATA	O	Command data signal
33	SQCK	O	Sub-code Q register clock
34	SUBQ	I	Sub-code Q data
35	BLKCK	I	Sub-code block (f=75 Hz)
36	NC	—	Not connected
37	CM	—	Not used, connected to GND
38 ∫ 45	KEYIN8 ∫ KEYIN1	I	Key return signal
46 ∫ 54	G1 ∫ G9	O	FL grid signal
55	/RESET	O	Reset signal for servo
56	OPEN	I	Open detect terminal
57	KEYOUT5	—	(Not used, open)
58 ∫ 61	KEYOUT4 ∫ KEYOUT1	O	Key scan signal
62 ∫ 64	S10 ∫ S8	O	FL segment signal

■INTERNAL CONNECTION OF FL

• Grid connection diagram

• Anode connection table

	1G	2G	3G	4G	5G	6G	7G	8G	9G
P1	◁1▷ (1)	▷	a	a	a	a	a	a	a
P2	◁2▷ (2)	‖	b	b	b	b	b	b	b
P3	◁3▷ (3)	DELETE	c	c	c	c	c	c	c
P4	◁4▷ (4)	EDIT	d	d	d	d	d	d	d
P5	◁5▷ (5)	⟲	e	e	e	e	e	e	e
P6	1	S3	f	f	f	f	f	f	f
P7	2	S2	g	g	g	g	g	g	g
P8	3	S1	DISC	–	TRACK	⊖	MIN	–	SEC
P9	4	PGM	/	–	–	No.	°	–	–
P10	5	···	–	–	–	–	~	–	–

• Pin connection

PIN NO.	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	F1	F1	NP	NP	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	NC	NC	NP	NP	NP	NP	NP	NP	NP	NP	NP	NC	NC	NC	9G	8G	7G	6G	5G	4G	3G	2G	1G	NP	NP	F2	F2	

NOTE 1) F1,F2 --- Filament
2) NP ------ No pin
3) NC ------ No connection
4) 1G~9G --- Grid

SERVO CIRCUIT

OPTICAL PICKUP

MN6475A-T1
IC801
DIGITAL FILTER & D/A CONVERTER

6 19

S/P converter

Digital de-emphasis

Times oversampling digital filter

MASH logics

LR selector

PWM logics (L)

PWM logics (R)

Timing generator

BA4558FTI
IC802 (1/2)
L.P.F.

12

BA4558FTI
IC802 (1/2)
L.P.F.

15

Q801,802
Muting drive

○ L ch

LINE OUT

○ R ch

21   24 17 23 22 20   8   9

(384FS) /RST (+B)

X801
(16.9344MHz)

Q851~853
Muting control

Q472,473
Remote control drive

REMOTE CONTROL

Q451
Reset signal generator

BA4558FTI
IC351 (1/2)

FL601
FL DISPLAY

1~7   62~64   46   54
S1 ~ SI0   G1 ~ G9

(-B) (+B)
8   9
VPP   VDD

23
REMOCON

MNI87164PMEI
IC401
M CONTROL & FL DRIVE

TURN LOAD DIRECT PWM   SPEED   KEYIN 8 (POSITION)   DISC   OPEN   KEYIN I KEYIN7   KEYOUT I KEYOUT 4

18   17   19   25   24   38   20   56   45   39   61   58

BAI0393FT2
IC481

Comparator
(Disc tray speed control)

Q402
Switching

Q401
Switching

down   up

(-B)

S552
(OPEN)

S551
(UP/DOWN)

KEY MATRIX

D501
(SPEED SENSOR)
D502
(POSITION SENSOR)
D503
(DISC SENSOR)

Note:

→ Digital/audio signal

■SCHEMATIC DIAGRAM (Parts list on pages 48, 49, 55, 56.)

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

Note:
- S551 : Up/down det. switch.
- S552 : Open det. switch.
- S601 : Spiral (SPIRAL) switch.
- S602 : One disc random (ONE DISC) switch.
- S603 : Full random (FULL) switch.
- S604 : Repeat (REPEAT) switch.
- S605 : Time mode (TIME MODE) switch.
- S608, 609 : Search (SEARCH) switches.
  [S608: ◀◀, S609: ▶▶]
- S610~614 : Disc (DISC 1~5) switches.
  [S610: 1, S611: 2, S612: 3, S613: 4, S614: 5]
- S615 : Program mode (PROGRAM MODE) switch.
- S616, 617 : Skip (SKIP) switches.
  [S616: I◀◀, S617: ▶▶I]
- S618 : Disc skip (DISC SKIP) switch.
- S619 : Loading drawer open/close
  (▲ OPEN/CLOSE) switch.
- S620 : Stop (■ STOP) switch.
- S621 : Pause (II PAUSE) switch.
- S622 : Play (▶ PLAY) switch.
- S624 : Power (POWER) switch in "on" position.
- The voltage value and waveforms 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.

- Important safety notice:
  Components identified by △ mark have special characteristics important for safety. When replacing and of these components, use only manufacturer's specified parts.
- The supply part number is described alone in the replacement parts.

Part No.	Production Part No.	Supply Part No.
IC11	LM2940T5M	LM2940T5
IC102	MN6650A	MN6650
IC351, 802	BA4558FT1	SVIBA4558F

- ━━━━ / ━ ━ ━ ━ : Positive voltage lines and negative voltage lines.
  ∞∞∞∞∞∞≫ : audio signal lines.

Caution!
IC and LSI are sensitive to static ellectricity.
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 pins of IC or LSI with fingers directly.

• Terminal guide of IC's, transistors and diodes

BA4558FT1 BA10393FT2	MN6475A-T1 24 Pin / AN8800SCE2 42 Pin	TC7SU04FT85R	AN8377N	BA6247N

| MN6650A 44 Pin / MN6626 64 Pin / MN187164PME1 64 Pin | LM2940T5M 1. Vin 2. GND 3. Vout | 1SS254TA SVD1SR35200V | | 2SA1547QTV2 2SB1238QSTV6 2SB1240QRTV6 2SD1862QRTV6 |

| 2SC3311QRSTA 2SA1309QRSTA 2SD1450RSTTA UN4112TA UN4212TA UN4215TA | | MTZJ4R3BTA MTZJ6R2BTA MTZJ8R2CTA MTZJ9R1CTA MTZJ10CTA MTZJ27DTA | RSQGP1S53V | RPR-363A |
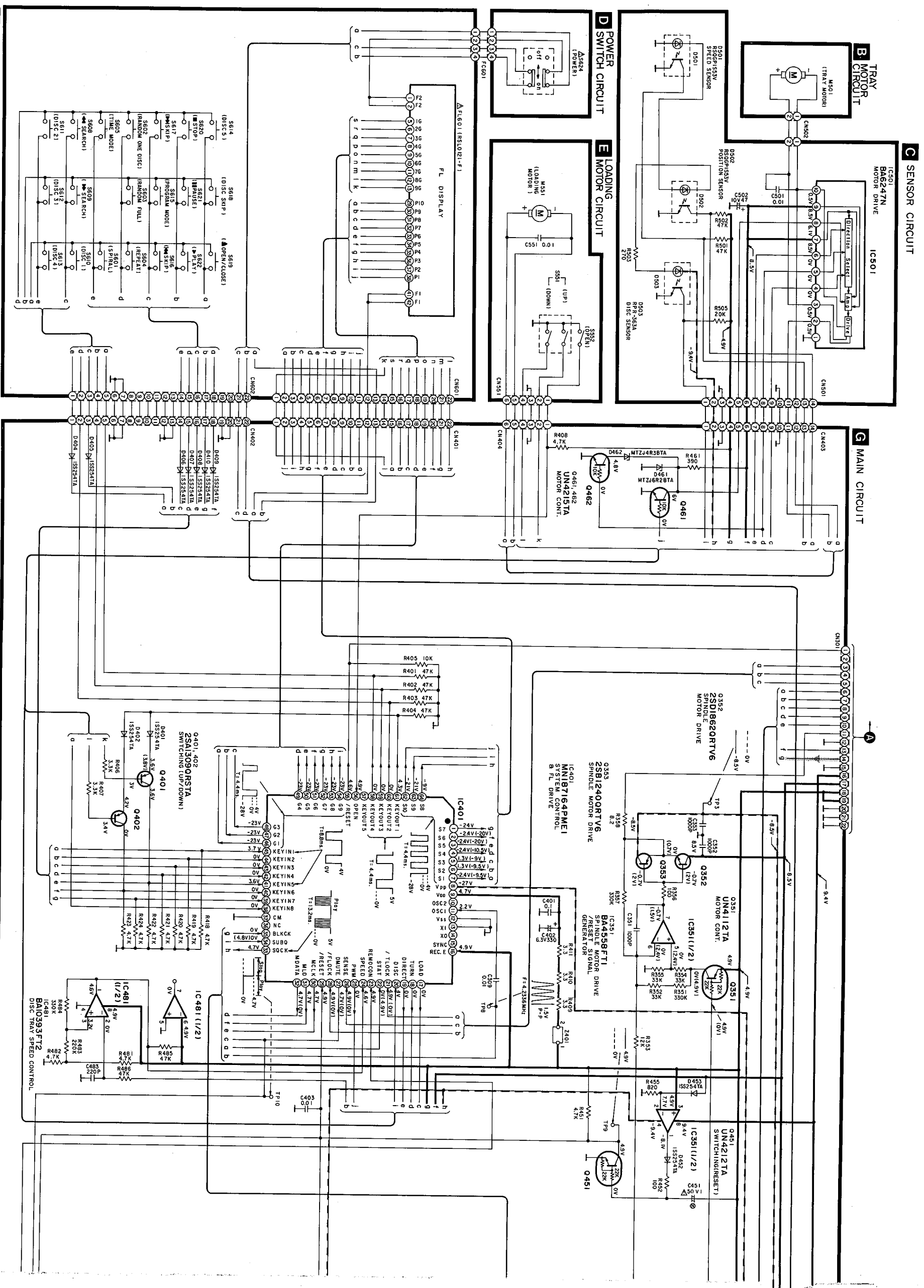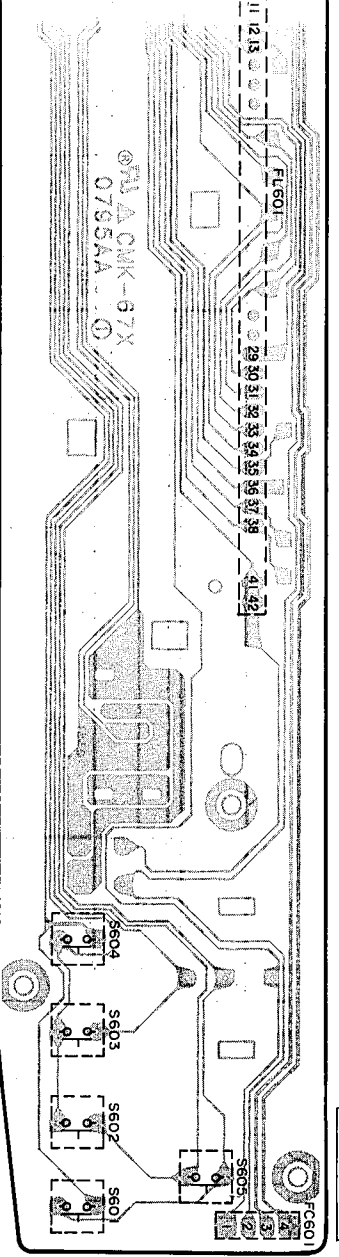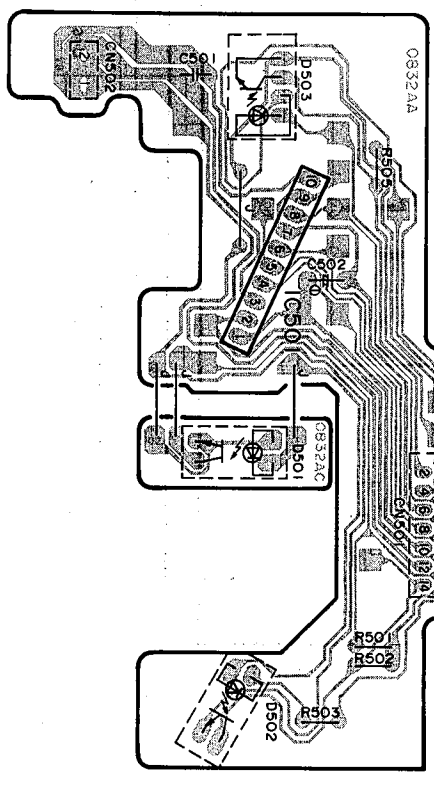
D POWER SWITCH P.C.B.
(REP1274A-S)
0795AB-1
POWER
(S624)
FC601

H POWER SUPPLY P.C.B.
(REP1359A-P)
AC IN
(120V 60Hz)
JK701
CN701
PT701 (Power Transformer)
0885A
L702
L701

E LOADING MOTOR P.C.B.
(REP1340A-N)
CN551
C551
LOADING MOTOR M551
S551
S552
0831A-1

C SENSOR P.C.B.
(REP1341A-N)
0832AA
D503
D501
R501
R502
R503
D502

B TRAY MOTOR P.C.B.
(REP1341A-N)
M501 (TRAY MOTOR)
CN502
0832AB

IC301
IC401
IC481
Q404
Q402 Q403
R403 R402 R401
R406 R404
R422 R424 R419 R418
D409 D408 D407 D406 D405 D404
CN404
R306
R485 R484 R483 R482
R405
R408
R409
C401 C402 C403
TP6

REPEAT
RANDOM
SPIRAL
FULL (ONE DISC)
TIME MODE
S604
S603
S602
S605
FC601

— 45 —
— 46 —
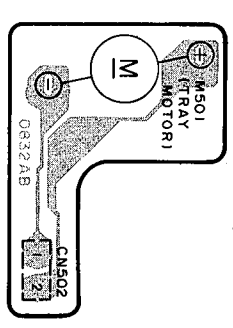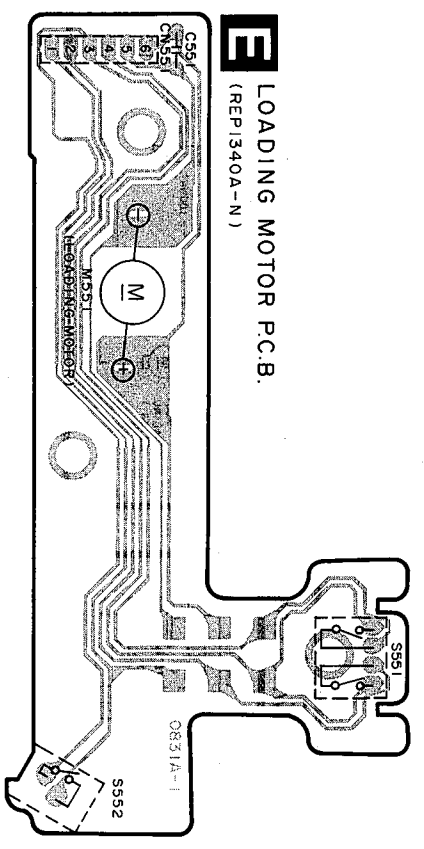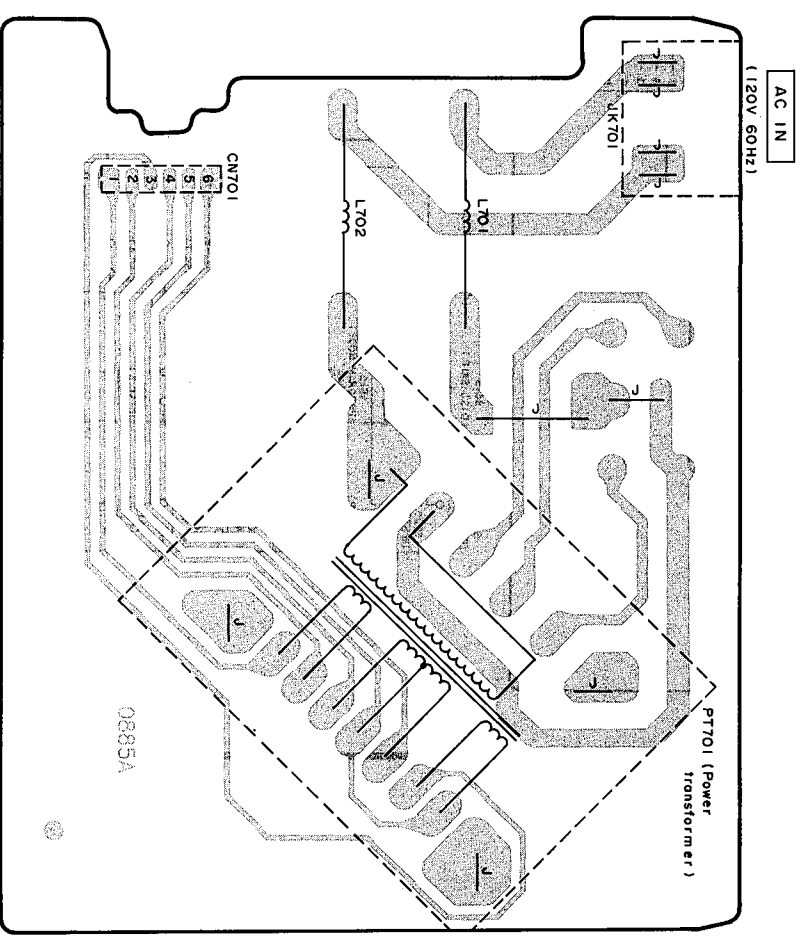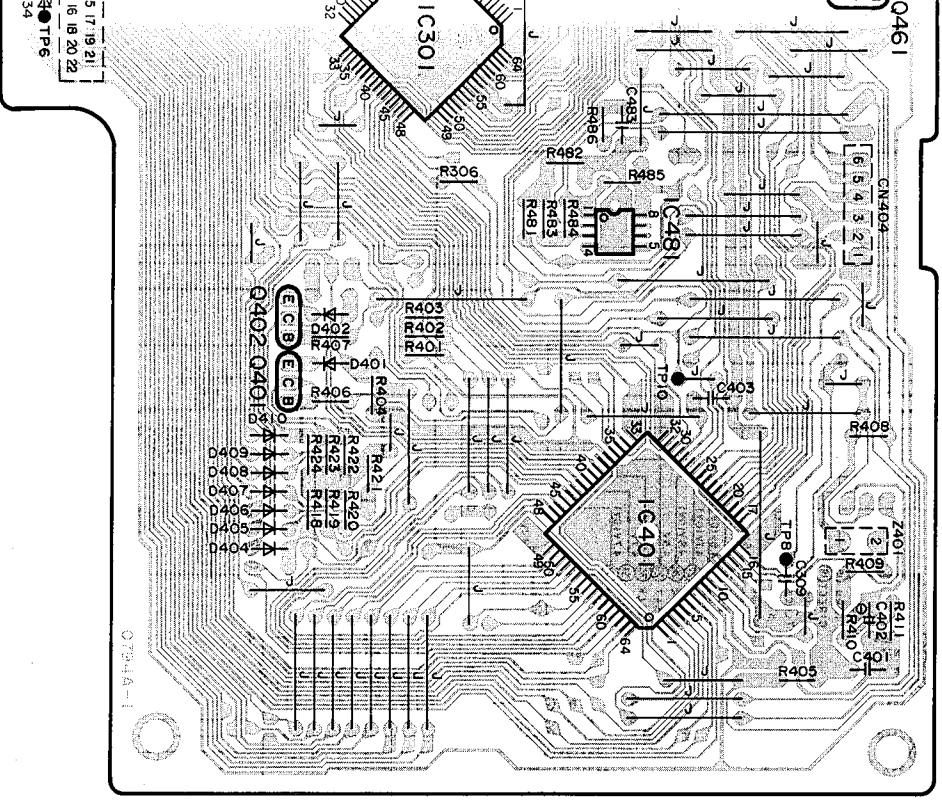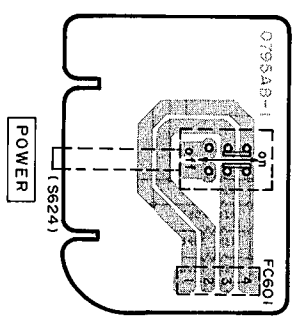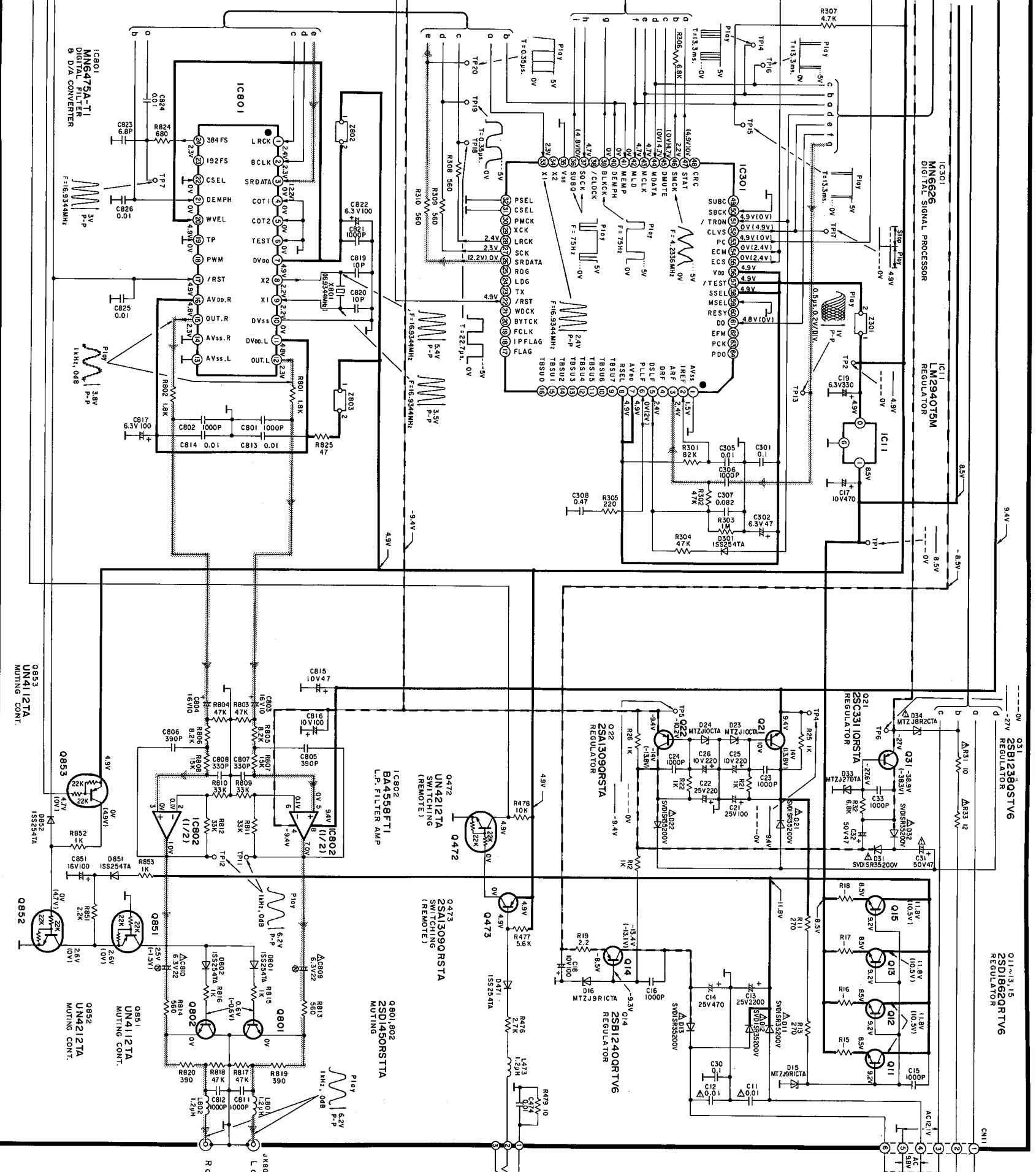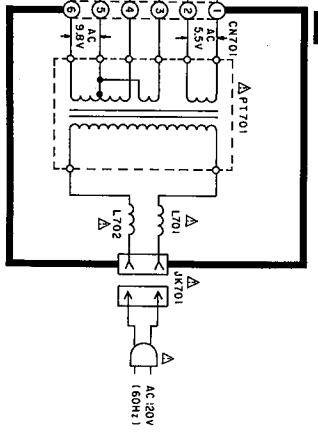
SL-PD627 SL-PD627

A (REP0766) SERVO P.C.B.

G (REP1273H-M) MAIN P.C.B.

F (REP1274A-S) OPERAT,

■WIRING CONNECTION DIAGRAM

AC IN

PT701
(Power transformer)

CN701

H POWER SUPPLY P. C. B.

REMOTE   OUTPUT

CN11

G MAIN P. C. B.

CN402

CN301

CN401

CN403

OPTICAL PICKUP

A SERVO P. C. B.

CN404

CN101

C SENSOR P. C. B.

CN501

Resistance Unit

CN102

SPINDLE
MOTOR

CN502

CN502

Red Mark

B TRAY
MOTOR
P. C. B.

E LOADING MOTOR P. C. B.

CN551

POWER
SWITCH
P. C. B.

FC601

F OPERATION P. C. B.

CN601

CN602

D

FC601

(S624)

POWER

■REPLACEMENT PARTS LIST

Notes : • Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
• The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.) Parts without these indications can be used for all areas.
* Warning: This product uses a laser diode. Refer to caution statements on page 2.

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
				D301	1SS254TA	DIODE	
		INTEGRATED CIRCUIT(S)		D401, 402	1SS254TA	DIODE	
				D404-410	1SS254TA	DIODE	
IC11	LM2940T5	IC, REGULATOR		D452, 453	1SS254TA	DIODE	
IC101	AN8800SCE2	IC, SERVO AMP		D461	MTZJ6R2BTA	DIODE	
IC102	MN6650	IC, DIGITAL SERVO PROCESSOR		D462	MTZJ4R3BTA	DIODE	
IC103	AN8377N	IC, COIL DRIVE		D471	1SS254TA	DIODE	
IC104	TC7SU04FT85R	IC, BUFFER AMP		D501, 502	RSQGP1S53V	DIODE	
IC301	MN6626	IC, DIGITAL SIGNAL PROCESSOR		D503	RPR-363A	DIODE	
IC351	SVIBA4558F	IC, SPINDLE MOTOR CONTROL		D801, 802	1SS254TA	DIODE	
IC401	MN187164PME1	IC, SYSTEM CONTROL&FL DRIVE		D851, 852	1SS254TA	DIODE	
IC481	BA10393FT2	IC, DISC TRAY SPEED CONTROL					
IC501	BA6247N	IC, MOTOR DRIVE				VARIABLE RESISTOR(S)	
IC801	MN6475A-T1	IC, DIGITAL FILTER&D/A CONV.					
IC802	SVIBA4558F	IC, L. P. F.		VR101	EVND3AA00B14	V. R, BEST EYE ADJUSTMENT	
		TRANSISTOR(S)				COIL(S)	
Q11-13	2SD1862QRTV6	TRANSISTOR		L101	RLB0003	COIL	
Q14	2SB1240-P	TRANSISTOR		L102	RELJHC6R8KTD	COIL	
Q15	2SD1862QRTV6	TRANSISTOR		L473	ELEXT1R2KA9	COIL	
Q21	2SC3311A-Q	TRANSISTOR		L701, 702	SLQX400-D	COIL	⚠
Q22	2SA1309A-R	TRANSISTOR		L801, 802	ELEXT1R2KA9	COIL	
Q31	2SB1238QSTV6	TRANSISTOR					
Q101	2SA1547QTV2	TRANSISTOR				TRANSFORMER	
Q351	UN4112	TRANSISTOR					
Q352	2SD1862QRTV6	TRANSISTOR		PT701	RTP1K4C011	POWER TRANSFORMER	⚠
Q353	2SB1240-P	TRANSISTOR					
Q401, 402	2SA1309A-R	TRANSISTOR				COMPONENT COMBINATION(S)	
Q451	UN4212TA	TRANSISTOR					
Q461, 462	UN4215	TRANSISTOR		Z301	BL02RN2R62T4	COMBINATION PART	
Q472	UN4212TA	TRANSISTOR		Z401	BL02RN2R62T4	COMBINATION PART	
Q473	2SA1309A-R	TRANSISTOR		Z802, 803	BL02RN2R62T4	COMBINATION PART	
Q801, 802	2SD1450RTA	TRANSISTOR					
Q851	UN4112	TRANSISTOR				OSCILLATOR(S)	
Q852	UN4212TA	TRANSISTOR					
Q853	UN4112	TRANSISTOR		X101	RSXZ16M9M01T	OSCILLATOR(16. 9344MHz)	
				X801	RSXZ16M9M01T	OSCILLATOR(16. 9344MHz)	
		DIODE(S)					
						DISPLAY TUBE(S)	
D11-13	SVD1SR35200A	DIODE	⚠				
D15, 16	MTZJ9R1CTA	DIODE		FL601	RSL0121-F	DISPLAY TUBE	⚠
D21, 22	SVD1SR35200A	DIODE	⚠				
D23, 24	MTZJ10CTA	DIODE				SWITCH(ES)	
D31, 32	SVD1SR35200A	DIODE	⚠				
D33	MTZJ27DTA	DIODE		S551	RSH2A001-2	SW, UP/DOWN DETECTOR	
D34	MTZJ8R2CTA	DIODE	⚠	S552	RSH1A017-U	SW, OPEN DETECTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
S601	EVQ21405R	SW, SPIRAL	
S602	EVQ21405R	SW, ONE DISC(RANDOM)	
S603	EVQ21405R	SW, FULL(RANDOM)	
S604	EVQ21405R	SW, REPEAT	
S605	EVQ21405R	SW, TIME MODE	
S608	EVQ21405R	SW, R. SEARCH	
S609	EVQ21405R	SW, F. SEARCH	
S610	EVQ21405R	SW, DISC1	
S611	EVQ21405R	SW, DISC2	
S612	EVQ21405R	SW, DISC3	
S613	EVQ21405R	SW, DISC4	
S614	EVQ21405R	SW, DISC5	
S615	EVQ21405R	SW, PROGRAM MODE	
S616	EVQ21405R	SW, R. SKIP	
S617	EVQ21405R	SW, F. SKIP	
S618	EVQ21405R	SW, DISC SKIP	
S619	EVQ21405R	SW, OPEN/CLOSE	
S620	EVQ21405R	SW, STOP	
S621	EVQ21405R	SW, PAUSE	
S622	EVQ21405R	SW, PLAY	
S624	SSH1230	SW, POWER	⚠
		CONNECTOR(S) & SOCKET(S)	
CN11	RJS1A6606	CONNECTOR(6P)	
CN101	SJSD1727-1	CONNECTOR(17P)	
CN102	SJSD2227-1	CONNECTOR(22P)	
CN301	RJS1A6822	CONNECTOR(22P)	
CN401,402	RJS1A6822	CONNECTOR(22P)	
CN403	RJS1A6814	CONNECTOR(14P)	
CN404	RJS1A6606	CONNECTOR(6P)	
CN501	RJS1A6714	CONNECTOR(14P)	
CN502	RJR0094	SOCKET(2P)	
CN551	SJT30644-H	CONNECTOR(6P)	
CN601,602	RJS1A6222	CONNECTOR(22P)	
CN701	SJT30643-V	CONNECTOR(6P)	
		FLAT CABLE(S)	
FC601	REZ0455-1	FLAT CABLE(4P)	
		JACK(S)	
JK472	RJJ33TR01	REMOTE CONTROL	
JK701	SJSD16	AC INLET	⚠
JK801	RJH3201N	LINE OUT	
		MAGNET RESISTER ELEMENT	
RA1	EWS7M0A00Q53	RESISTANCE UNIT	

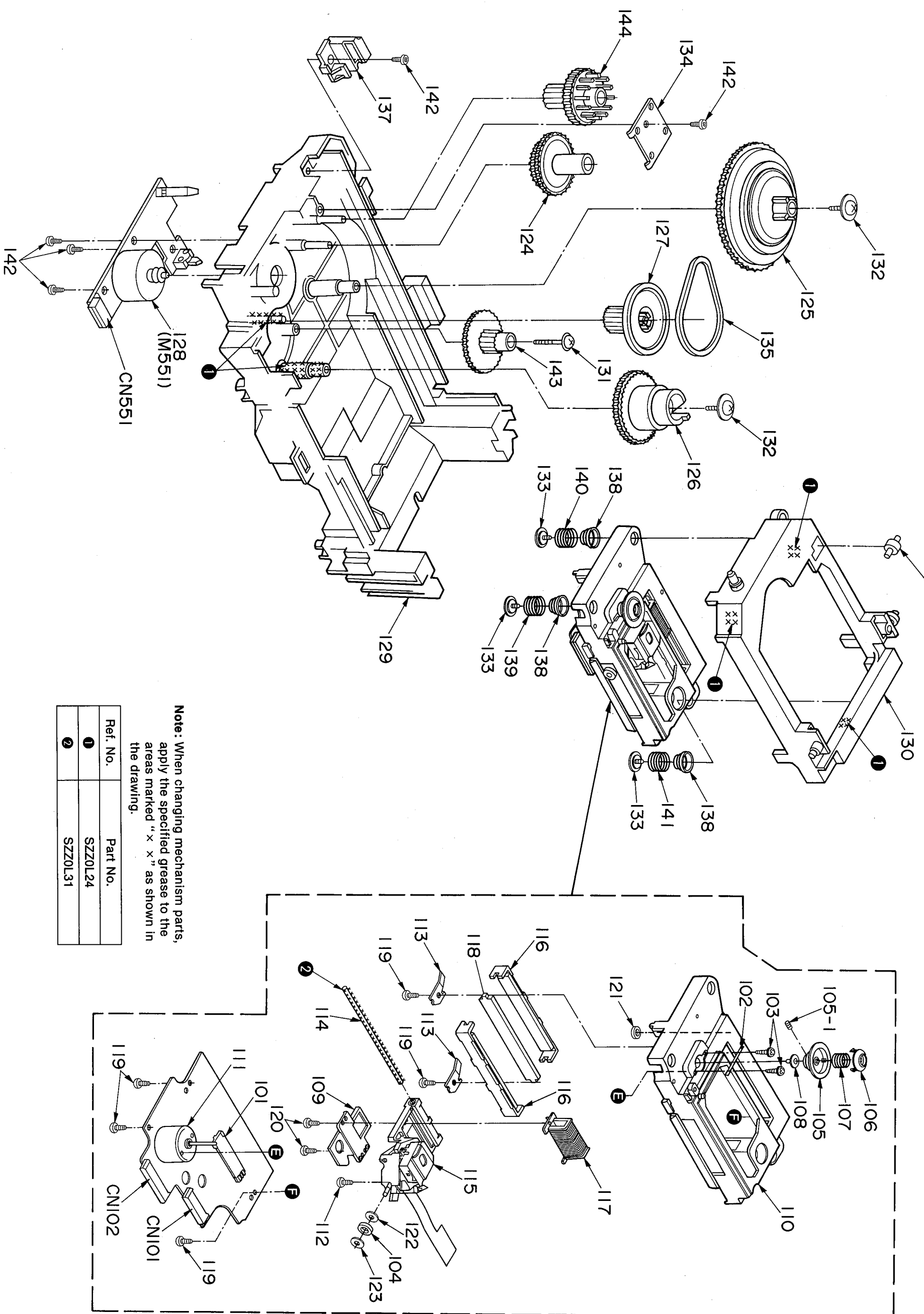| Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS	
1	RKM0193-K	CABINET	
2	SNE2129-3	SCREW	
3	XTBS3+8JFZ1	SCREW	
4	RDG0198	OPEN LOCK GEAR	
5	RDG0199	CLOSE LOCK GEAR	
6	REZ0397-1	FPC BOARD(22P)	
7	REZ0474	FPC BOARD(22P)	
8	REZ0475	FPC BOARD(22P)	
9	REZ0476	FPC BOARD(14P)	
10	REZ0477	FLAT CABLE(6P)	
11	REZ0478	FLAT CABLE(6P)	
12	RGR0140A-A	REAR PANEL	
13	RGT0007	ROTARY TRAY	
14	RHW81001-1	WASHER	
15	RKQ0089	P.C.B. SUPPORT	
16	RKQ0104	REAR COVER	
17	RMB0255	SPRING(DISC TRAY)	
18	RME0111-1	SPRING(LOCK GEAR)	
19	RFKJLPD627PK	CHASSIS ASS'Y	
19-1	RKA0053-A	FOOT	
20	RMR0540-K	TRAY BASE GUIDE(L)	
21	RMR0541-K1	TRAY BASE GUIDE(R)	
22	RMR0549-W	DISC GUARD	
23	RMR0551-W	GUARD CAM	
24	RMR0575-W	SLIDER(B)	
25	RMR0577-W	ROLLER	
26	RMR0544-W	CLAMP PLATE	
27	SIRD51-1	CLAMPER	
28	SOMD4	MAGNET	
29	SOYD2	YOKE	
30	RDV0024	BELT	
31	RMN0174	SENSOR HOLDER	
32	RMR0547-K	WORM BASE	
33	RXG0026	WORM ASS'Y	
34	REM0026	TRAY MOTOR ASS'Y(M501)	
35	RXQ0227-2	TRAY ASS'Y	
36	RMN0172	FL HOLDER	
37	RFKGLPD627PK	FRONT PANEL ASS'Y	
37-1	RGK0470	FRONT ORNAMENT PLATE	
38	RGU0030	POWER BUTTON	
39	RGU0726	MAIN BUTTON	
40	RGU0727	SUB BUTTON	
41	XTB26+8J	SCREW	
42	XTB3+10JFZ	SCREW	
43	XTB3+20J	SCREW	
44	XYES3+BJ10	SCREW	
45	SHRD162	CORD HOLDER	
46	RMA0606	GUIDE PLATE(R)	
47	XTWS3+10Q	SCREW	
48	XTB3+8JFZ	SCREW	

■REPLACEMENT PARTS LIST

Notes : ＊Important safety notice:
   Components identified by △ mark have special characteristics important for safety.When replacing any of these components use only manufacturer's specified parts.
＊The parenthesized indications in the Remarks columns specify the areas.(Refer to the cover page for area.)
   Parts without these indications can be used for all areas.
＊Warning: This product uses a laser diode. Refer to caution statements on page 2.

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
				144	RDG0195	DRIVE GEAR(A)	
		TRAVERSE DECK					
						PACKING MATERIAL	
101	SJED10	POTENTIOMETER HOLDER					
102	RME0115	SIDE PRESSURE SPRING		P1	RPG1167	PACKING CASE	
103	RMQ0299	SCREW		P2	RPN0597	CUSHION	
104	RMR0463	ROLLER		P3	XZB60X65A01Z	PROTECTION BAG(UNIT)	
105	SD0D28-2E	TURNTABLE ASS'Y		P4	XZB24X34C04	PROTECTION BAG(ACCESSORY)	
105-1	XXE26D5	SCREW		P5	XZB26X17C03	PROTECTION BAG(CORD)	
106	SD0D29-2	TURNTABLE RING		P6	RPQ0164	PAD	
107	SRQA010N04	TURNTABLE SPRING					
108	RXQ0232	SIDE PRESSURE PULLEY				ACCESSORIES	
109	SHRD176-E	BRUSH HOLDER					
110	SISD22-7	TRAVERSE BASE		A1	RQT1453-P	INSTRUCTION MANUAL	(P)
111	SJGDRF310T-2	SPINDLE MOTOR		A1	RFKSLPD627PC	INST. MANUAL ASS'Y	(PC)
112	SNSD31	SCREW		A2	SQX7179	WARRANTY CARD	(P)
113	SUWD112-2	SHAFT HOLDER		A2	SQX7183	WARRANTY CARD	(PC)
114	SUXD123-1	GUIDE SHAFT		A3	SQX9129-1	SERVICENTER LIST	(P)
115	S0AD70A	OPTICAL PICKUP		A4	SJA172-1	AC POWER SUPPLY CORD	(P)△
116	RFKNLPC363P	YOKE(A) ASS'Y		A4	SJA172	AC POWER SUPPLY CORD	(PC)△
117	SORD46-E	COIL ASS'Y		A5	SJP2249-3	STEREO CONNECTION CABLE	
118	S0YD22-1	YOKE(B)		A6	SJP2257T	REMOTE CONTROL CABLE	
119	XTB3+10G	SCREW					
120	SNSD39	SCREW					
121	SHGD148	STOPPER RUBBER					
122	SHWD33	WASHER					
123	SHWD34	WASHER					
124	RDG0196	DRIVE GEAR(B)					
125	RDK0017	DRIVE CAM					
126	RDK0018	ELEVATION CAM					
127	RDP0050	PULLEY GEAR					
128	RXQ0252	LOADING MOTOR ASS'Y(M551)					
129	RXQ0250	MECHANISM BASE ASS'Y					
130	RXQ0251	SUB BASE ASS'Y					
131	RHD30029	SCREW					
132	RHD30030	SCREW					
133	RHD30031	SCREW					
134	RMA0581	REINFORCING PLATE					
135	RMG0268-K	BELT					
136	RMR0564-W2	ROLLER(A)					
137	RMR0565-W1	SLIDER					
138	SHGD153-1	FLOATING RUBBER					
139	SUSD136-3	FLOATING SPRING(A)					
140	SUSD137-1	FLOATING SPRING(B)					
141	SUSD145-1	FLOATING SPRING(C)					
142	XTB3+10JFZ	SCREW					
143	RDG0194	SLOWING DOWN GEAR					

■ TRAVERSE DECK PARTS LOCATION
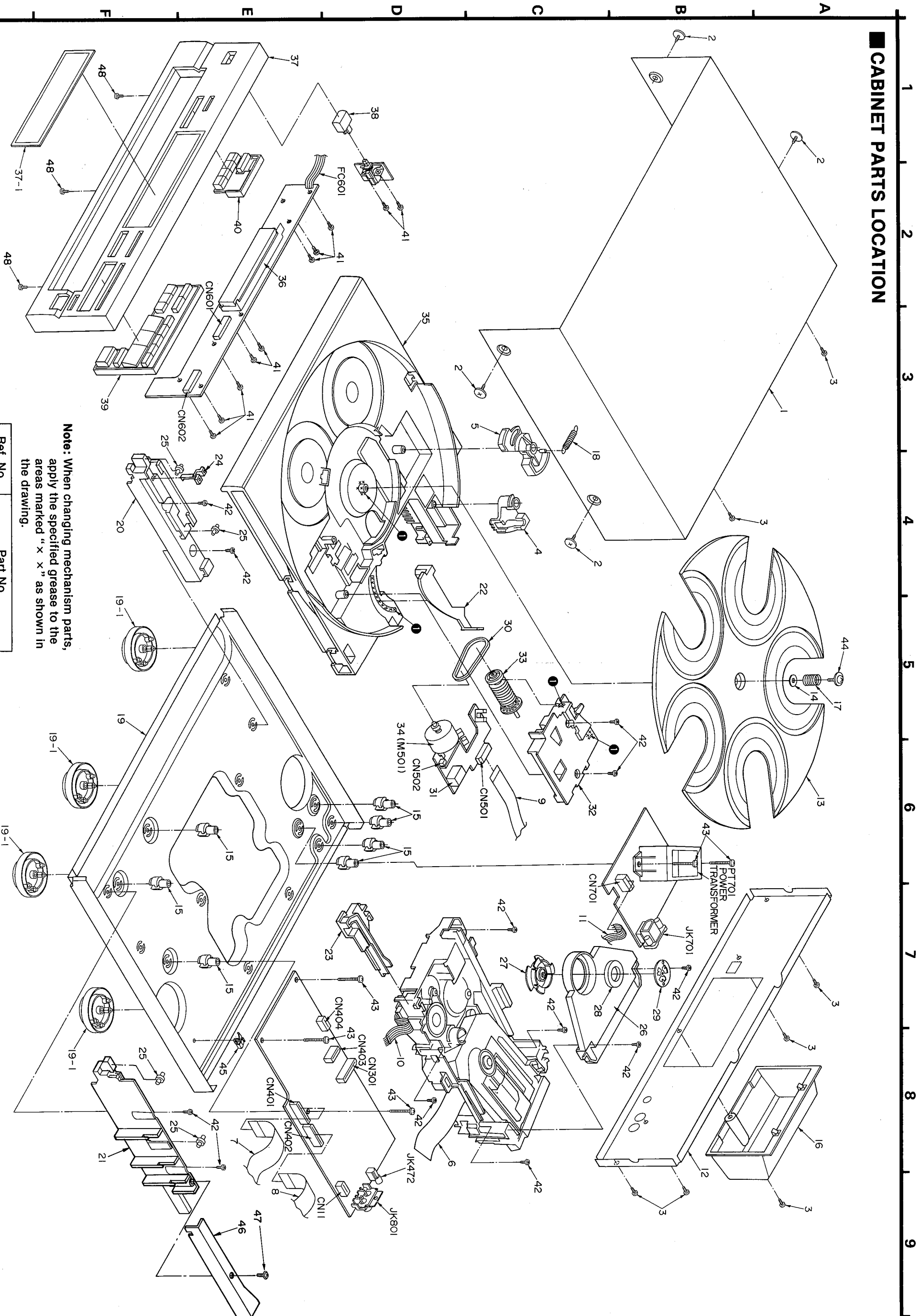
Note: When changing mechanism parts, apply the specified grease to the areas marked "× ×" as shown in the drawing.

Ref. No.	Part No.
❶	SZZ0L24
❷	SZZ0L31

SL-PD627

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

Ref. No.	Part No.
❶	SZZ0L24

■RESISTORS & CAPACITORS

Notes : * Capacity values are in microfarads (uF) unless specified otherwise,P=Pico-farads(pF) F=Farads(F)
* Resistance values are in ohms,unless specified otherwise,1K=1,000(OHM) , 1M=1,000k(OHM)

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
			R408	ERDS2TJ472	1/4W 4.7K	C25, 26	ECEA1AKA221Q	10V 220U
		RESISTORS	R409-411	ERDS2TJ3R3T	1/4W 3.3	C30	ECFR1E104ZF5	25V 0.1U
			R418-424	ERDS2TJ472	1/4W 4.7K	C31	ECA1HM470B	50V 47U ⚠
R11	ERDS2TJ271	1/4W 270	R451	ERDS2TJ472	1/4W 4.7K	C32	ECA1HM470B	50V 47U
R12	ERDS2TJ102	1/4W 1K	R452	ERDS2TJ101	1/4W 100	C33	ECBT1H102KB5	50V 1000P
R13	ERDS2TJ271	1/4W 270	R455	ERDS2TJ821	1/4W 820	C101	ECEA0JKA220	6.3V 22U
R15-18	ERDS2TJ1R0	1/4W 1.0	R461	ERDS2TJ391	1/4W 390	C102	ECEA1HKS010	50V 1U
R19	ERDS2TJ2R2T	1/4W 2.2	R476	ERDS2TJ272T	1/4W 2.7K	C103	ECA0JKF101I	6.3V 100U
R21, 22	ERDS2TJ102	1/4W 1K	R477	ERDS2TJ562	1/4W 5.6K	C105	ECEA0JKS470	6.3V 47U
R25, 26	ERDS2TJ102	1/4W 1K	R478	ERDS2TJ103	1/4W 10K	C110	ECEA1CSN4R7I	16V 4.7U ⚠
R31	ERDS2TJ100	1/4W 10 ⚠	R479	ERDS2TJ100	1/4W 10	C111	ECUV1C393KBN	16V 0.039U
R32	ERDS2TJ682T	1/4W 6.8K	R481, 482	ERDS2TJ472	1/4W 4.7K	C112	ECUV1H392KBN	50V 3900P
R33	ERDS2TJ120T	1/4W 12 ⚠	R483	ERDS2TJ224T	1/4W 220K	C113, 114	ECUV1C224KBM	16V 0.22U
R101	ERJ6GEYJ120V	1/10W 12	R484	ERDS2TJ334	1/4W 330K	C115	ECUV1H331KBN	50V 330P
R102	ERJ6GEYJ122V	1/10W 1.2K	R485, 486	ERDS2TJ473	1/4W 47K	C116, 117	ECEA0JKA470I	6.3V 47U
R103	ERJ6GEYJ823	1/10W 82K	R501, 502	ERDS2TJ473	1/4W 47K	C118, 119	ECUV1C104ZFN	16V 0.1U
R104	ERJ6GEYJ471V	1/10W 470	R503	ERDS2TJ271	1/4W 270	C120	ECUV1H122KBN	50V 1200P
R105	ERJ6GEYJ104V	1/10W 100K	R505	ERDS2TJ203T	1/4W 20K	C121	ECUV1C105ZFM	16V 1U
R106	ERJ6GEYJ223V	1/10W 22K	R801, 802	ERDS2TJ182	1/4W 1.8K	C122	ECUV1E103KBN	25V 0.01U
R107	ERJ6GEYJ153V	1/10W 15K	R803, 804	ERDS2TJ473	1/4W 47K	C123	ECUV1C104ZFN	16V 0.1U
R108	ERJ6GEYJ223V	1/10W 22K	R805, 806	ERDS2TJ822	1/4W 8.2K	C124	ECA0JKF101I	6.3V 100U
R109	ERJ6GEYJ122V	1/10W 1.2K	R807, 808	ERDS2TJ153	1/4W 15K	C125	ECEA1CKS470I	16V 47U
R110, 111	ERJ6GEYJ102V	1/10W 1K	R809-812	ERDS2TJ333	1/4W 33K	C126	ECEA0JKS470	6.3V 47U
R112	ERJ6GEYJ333V	1/10W 33K	R813, 814	ERDS2TJ561	1/4W 560	C127, 128	ECUV1E153KBN	25V 0.015U
R113	ERJ6GEYJ103V	1/10W 10K	R815, 816	ERDS2TJ102	1/4W 1K	C129	ECEA1HSN010I	50V 1U ⚠
R114	ERJ6GEYJ473V	1/10W 47K	R817, 818	ERDS2TJ473	1/4W 47K	C130	ECEA1CSN100I	16V 10U ⚠
R115	ERJ6GEYJ471V	1/10W 470	R819, 820	ERDS2TJ391	1/4W 390	C131	ECEA1HKS010	50V 1U
R116	ERJ6GEYJ220	1/10W 22	R824	ERDS2TJ681	1/4W 680	C132	ECUV1H681KBN	50V 680P
R117	ERJ6GEYJ103V	1/10W 10K	R825	ERDS2TJ470	1/4W 47	C133	ECEA0JKS470	6.3V 47U
R118-120	ERJ6GEYJ102V	1/10W 1K	R851	ERDS2TJ222	1/4W 2.2K	C134	ECUV1H222KBN	50V 2200P
R121	ERJ6GEYJ562V	1/10W 5.6K	R852, 853	ERDS2TJ102	1/4W 1K	C135	ECEA1EKS330I	25V 33U
R301	ERDS2TJ823T	1/4W 82K				C136	ECUV1C104ZFN	16V 0.1U
R302	ERDS2TJ473	1/4W 47K			CHIP JUMPER(S)	C138	ECUV1C224KBM	16V 0.22U
R303	ERDS2TJ105T	1/4W 1M				C139	ECUV1E103KBN	25V 0.01U
R304	ERDS2TJ473	1/4W 47K	RJ101	ERJ6GEY0R00V	CHIP JUMPER	C140, 141	ECUV1H270KCN	50V 27P
R305	ERDS2TJ221	1/4W 220	TJ101, 102	ERD25V0R00T	CHIP JUMPER	C142	ECUV1H271KN	50V 270P
R306	ERDS2TJ682T	1/4W 6.8K				C301	ECFR1E104ZF5	25V 0.1U
R307	ERDS2TJ472	1/4W 4.7K			CAPACITORS	C302	ECEA0JKA470B	6.3V 47U
R308-310	ERDS2TJ561	1/4W 560				C305	ECBT1C103NS5	16V 0.01U
R351	ERDS2TJ334	1/4W 330K	C11, 12	ECBT1E103ZF	25V 0.01U ⚠	C306	ECBT1H102KB5	50V 1000P
R352	ERDS2TJ333	1/4W 33K	C13	ECEA1EU222B	25V 2200U	C307	ECQV1H823JZ	50V 0.082U
R353	ERDS2TJ123	1/4W 12K	C14	ECA1EM471B	25V 470U	C308	ECQV1H474JZ3	50V 0.47U
R354, 355	ERDS2TJ333	1/4W 33K	C15, 16	ECBT1H102KB5	50V 1000P	C309	ECBT1C103NS5	16V 0.01U
R356	ERDS2TJ101	1/4W 100	C17	ECEA1AU471	10V 470U	C351-353	ECBT1H102KB5	50V 1000P
R357	ERDS2TJ334	1/4W 330K	C18	ECEA1AKA101B	10V 100U	C401	ECBT1H104ZF5	50V 0.1U
R358	ERDS2TJ8R2T	1/4W 8.2	C19	ECEA0JKA331Q	6.3V 330U	C402	ECEA0JKA331Q	6.3V 330U
R401-404	ERDS2TJ473	1/4W 47K	C21	ECA1EM101B	25V 100U	C403	ECBT1E103ZF	25V 0.01U
R405	ERDS2TJ103	1/4W 10K	C22	ECEA1EU221	25V 220U	C451	ECEA1HKN010B	50V 1U ⚠
R406, 407	ERDS2TJ332	1/4W 3.3K	C23, 24	ECBT1H102KB5	50V 1000P	C474	ECBT1C103NS5	16V 0.01U

Ref. No.	Part No.	Values & Remarks						
C483	ECBT1H221KB5	50V 220P						
C501	ECBT1C103NS5	16V 0.01U						
C502	ECEA1AKA470E	10V 47U						
C551	ECBT1C103NS5	16V 0.01U						
C801, 802	ECBT1H102KB5	50V 1000P						
C803, 804	ECEA1CKA100B	16V 10U						
C805, 806	ECCR1H391J5	50V 390P						
C807, 808	ECCR1H331J5	50V 330P						
C809, 810	ECEA0JKN220B	6.3V 22U ⚠						
C811, 812	ECBT1H102KB5	50V 1000P						
C813, 814	ECBT1C103NS5	16V 0.01U						
C815	ECEA1AKA470B	10V 47U						
C816	ECEA1AKA101B	10V 100U						
C817	ECEA0JKA101B	6.3V 100U						
C819, 820	ECBT1H100JC5	50V 10P						
C821	ECBT1H102KB5	50V 1000P						
C822	ECEA0JKA101B	6.3V 100U						
C823	ECBT1H6R8K5	50V 6.8P						
C824-826	ECBT1C103NS5	16V 0.01U						
C851	ECA1CM101B	16V 100U						

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