

# Service Manual

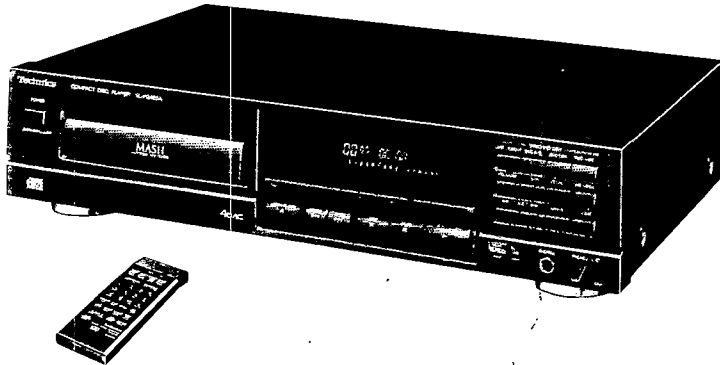
Compact Disc Player

## SL-PG420A

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

Colour

(K) ... Black Type



Area

Suffix for Model No.	Area	Colour
(E)	Continental Europe.	(K)
(EB)	Great Britain.	
(EG)	F.R. Germany & Italy.	

## SPECIFICATIONS

### Audio

No. of channels	2 (left and right, stereo)
Frequency response	2-20,000 Hz, $\pm 0.5$ dB
Output voltage	2 V (at 0 dB)
Dynamic range	96 dB
S/N ratio	100 dB
Harmonic distortion	0.003% (1 kHz, 0 dB)
Total harmonic distortion	0.005% (1 kHz, 0 dB)
Wow and flutter	Below measurable limit
DA converter	MASH (4 DAC)
Output impedance	Approx. 600 $\Omega$
Load impedance	More than 10 k $\Omega$
Headphone output level	15 mW max. 32 $\Omega$ (adjustable)

### Pickup

Wavelength	780 nm
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### General

Power supply	AC 50/60 Hz, 230 V-240 V
Power consumption	10 W
Dimensions (W×H×D)	430×103×283 mm
Weight	3.6 kg

### Note:

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

- 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.

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### \* TECHNICAL INFORMATION

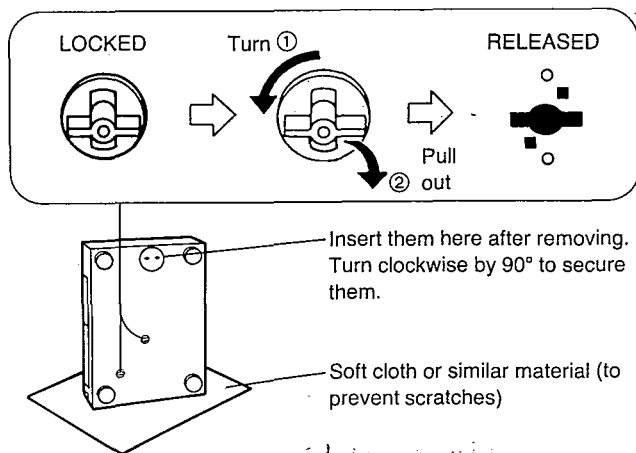
- \* This technical information is located on pp 49~56 of the SL-PJ46A Service Manual (Order No. AD8902036C2). Therefore, refer to that Service Manual.

# Technics

## ■ PLACEMENT

### Before placement

Two transport security devices are secured to prevent the optical pickup from damage during transport. Be sure to release them before use.



#### Note:

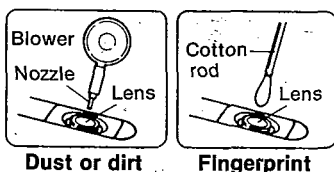
When transporting the unit, be sure to remove the compact disc from inside the unit. And replace the transport security devices again following the reverse order not to damage the optical pickup.

## ■ 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.

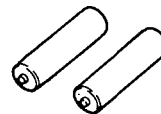
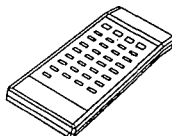
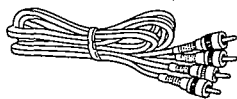
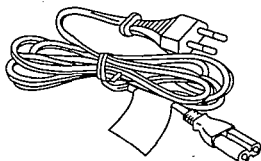


#### • To remove fingerprint

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.

## ■ ACCESSORIES

- AC power supply cord... 1 pc.  
[RJA0018-K (E, EG)]  
[SJA193 (EB)]
- Stereo connection cable.. 1 pc.  
(SJP2249-3)
- Remote control transmitter  
(EUR64798)..... 1 pc.
- Batteries ..... 2 pcs.  
Use two UM-4,  
"AAA" (R03) size  
(1.5V) batteries.



Note: Configuration of AC power supply cord differs according to area.

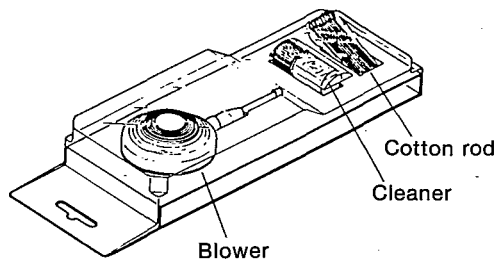
### Notes of placement

- This unit is a precision instrument. Be sure to place it on a flat surface.
- Avoid places such as the following:
  - Near any equipment or device that generates strong magnetism.
  - On any heat-generating equipment or device, or in any place where the temperature is high (35°C or higher).
  - Extremely cold places (5°C or below).
  - Near a tuner or TV (It may cause noise in the broadcast, or disturbance of the TV picture.)
- When carrying or storing the unit, handle it with care so that it is not subjected to any strong bumps. Always remove the compact disc before storing the unit for any period of time.
- To avoid problems due to vibration.
  - Do not place a book or similar object under this unit.
  - Do not route the connection cables (of this or other units) across the operation panel, across the top, or under the unit.

#### 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)



## ■ PRECAUTION OF LASER DIODE

**CAUTION:** This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pick up lens.

Wave length: 780nm

Maximum output radiation power from pick up: 100 $\mu$ W/VDE

Laser radiation from the pick up lens is safety level, but be sure the followings:

1. Do not disassemble the optical pick up unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pick up lens for a long time.

**ACHTUNG:** Dieses Produkt enthält eine Laserdiode. Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Lasereinheit abgestrahlt.

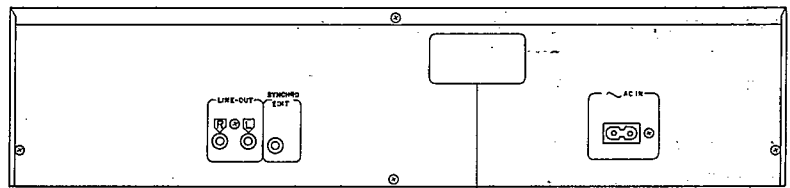
Wellenlänge: 780 nm

Maximale Strahlungsleistung der Lasereinheit: 100  $\mu$ W/VDE

Die Strahlung an der Lasereinheit ist ungefährlich, wenn folgende Punkte beachtet werden:

1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefährlich ist.
2. Den werkseitig justierten Einstellregler der Lasereinheit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlinse blicken.
4. Nicht über längere Zeit in die Fokussierlinse blicken.

**ADVARSEL:** I dette a apparat anvendes laser.



SQWD7

**CLASS 1  
LASER PRODUCT**  
SQWD7

RQLS0060

**VARO!** Avattaessa ja suojalukitus ohitettaessa olet alltiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

**WARNING!** Osynlig laserstrålning när denna del är öppen och spårren är urkopplad. Betrakta ej strålen.

RQLS0060

Obs:

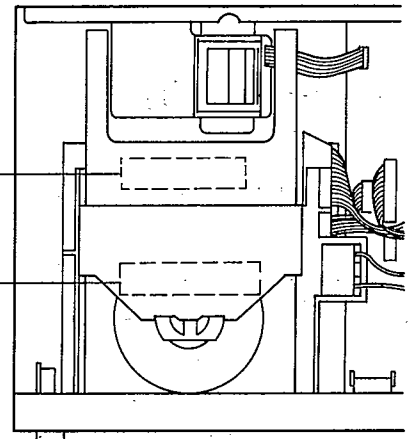
Apparaten innehåller laser Komponent av höger laserklass än klass 1.

RQLS0022

**ADVARSEL:** USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSÅFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.

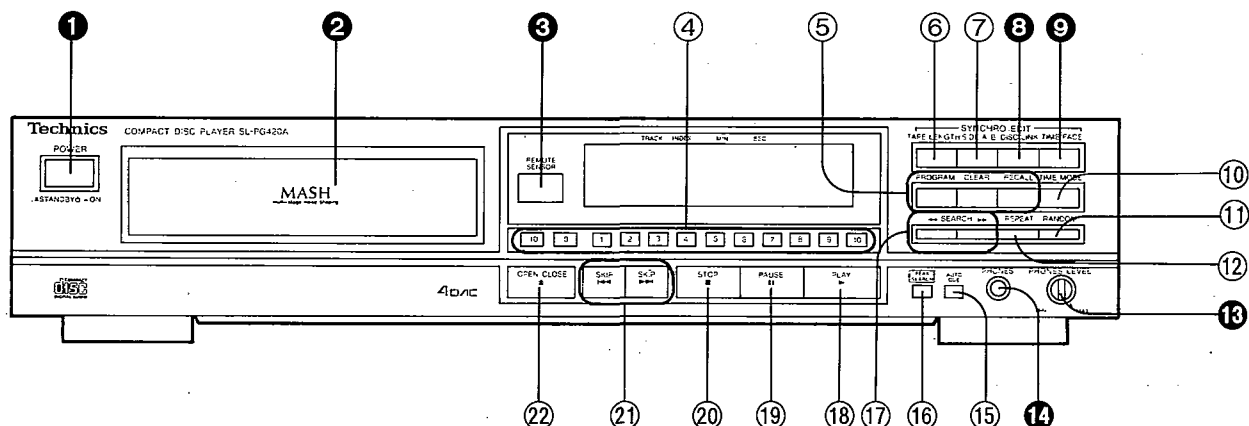
**VORSICHT-**Unsichtbare Laserstrahlung, wenn Abdeckung geöffnet. Nicht dem Strahl aussetzen.

RQLS0022



## LOCATION OF CONTROLS

The functions indicated by the black numbers (with white background, ④ etc.) can also be activated using the remote control transmitter.



### Control section

#### ① Power "STANDBY $\odot$ /ON" switch (POWER $\blacksquare$ STANDBY $\odot$ $\blacksquare$ ON)

This switch switches ON and OFF the secondary circuit power only. The unit is in the "standby" condition when this switch is set to the STANDBY  $\odot$  position. Regardless of the switch setting, the primary circuit is always "live" as long as the power cord is connected to an electrical outlet.

#### ② Disc tray

#### ③ Remote control signal sensor (REMOTE SENSOR)

#### ④ Numeric buttons (>10, 0, 1~10)

#### ⑤ Buttons for program function

##### • Program button (PROGRAM)

Pressing this button initiates the program play mode. You can then enter specific tracks using the numeric buttons.

##### • Clear button (CLEAR)

Each pressing this button makes one track cleared from the programmed sequence.

##### • Recall button (RECALL)

This button can be used to display the contents of the programmed track sequence for confirmation.

#### ⑥ Edit tape length button (TAPE LENGTH)

When compact discs are to be recorded to tape, this button can be used to calculate the number of tracks that can be recorded on each side of the tape, depending on the length of the cassette tape to be used, so that as little tape as possible is wasted.

#### ⑦ Tape-side select button (SIDE A/B)

When recording compact discs to tape, this button can be used to check the number of tracks and amount of tape left over for side A or B.

#### ⑧ Disc link button (DISC LINK)

This button can be used for edit recording from several discs.

#### ⑨ Time fade button (TIME FADE)

Pressing this button in the pause or stop mode causes the fade-out function to work at the specified time.

Pressing this button in the edit mode causes the fade-out function to work at the end of the tape when the added track exceeds the remaining time of the tape.

#### ⑩ Time mode select button (TIME MODE)

#### ⑪ Random play button (RANDOM)

This button can be used to play the tracks on a disc in a random sequence.

#### ⑫ Repeat button (REPEAT)

#### ⑬ Headphones volume control (PHONES LEVEL)

Avoid listening to music at high volume levels for extended periods of time.

#### ⑭ Headphones jack (PHONES)

#### ⑮ Auto cue button (AUTO CUE)

Pressing this button enables the unit to stop at the beginning of every track and switch to the play standby mode.

#### ⑯ Peak level search button (PEAK SEARCH)

Pressing this button enables the unit to search out the "peak signal" locations in tracks on a disc so as to adjust the suitable recording level on the cassette deck.

#### ⑰ Search buttons ( $\lll$ SEARCH $\ggg$ )

These buttons can be used to move rapidly forward or backward on the disc during play. The search speed is slow when the button is pressed at first and becomes faster if the button is pressed and held continuously.

#### ⑱ Play button ( $\blacktriangleright$ PLAY)

#### ⑲ Pause button ( $\parallel$ PAUSE)

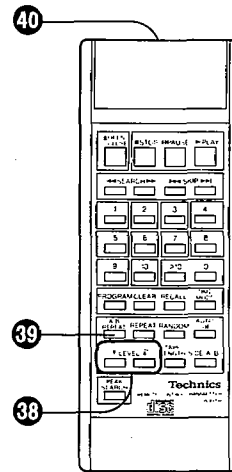
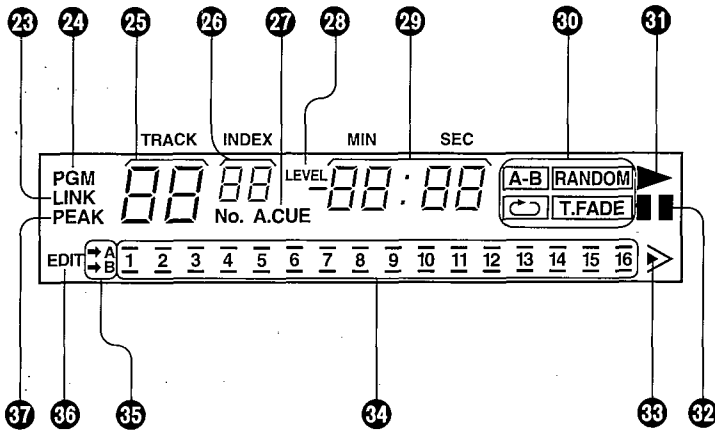
#### ⑳ Stop button ( $\blacksquare$ STOP)

This button can be used to stop disc play, as well as to cancel the various play modes.

#### ㉑ Skip buttons ( $\lll$ SKIP, $\ggg$ SKIP)

These buttons can be used to skip by track in the forward or reverse direction.

#### ㉒ Disc tray open/close button ( $\blacktriangle$ OPEN/CLOSE)



Unnumbered buttons on the remote control transmitter function identically to their corresponding parts on the unit.

**Indicators section**

- 23 Disc link indicator (LINK)
- 24 Program indicator (PGM)
- 25 Track number display (TRACK)
- 26 Index/program number display (INDEX, No.)
- 27 Auto cue indicator (A. CUE)
- 28 Level indicator (LEVEL)  
This indicator lights when the output level is attenuated by the remote control.
- 29 Time display (MIN, SEC)
- 30 Operation indicators  
The following indicators light during their respective operations.  

<b>A-B</b>	: Peak level search
<b>A-B</b>	: A-B repeat play (remote control operation)
<b>RANDOM</b>	: Random play
	: Repeat play
<b>T. FADE</b>	: Time fade (fade-out)

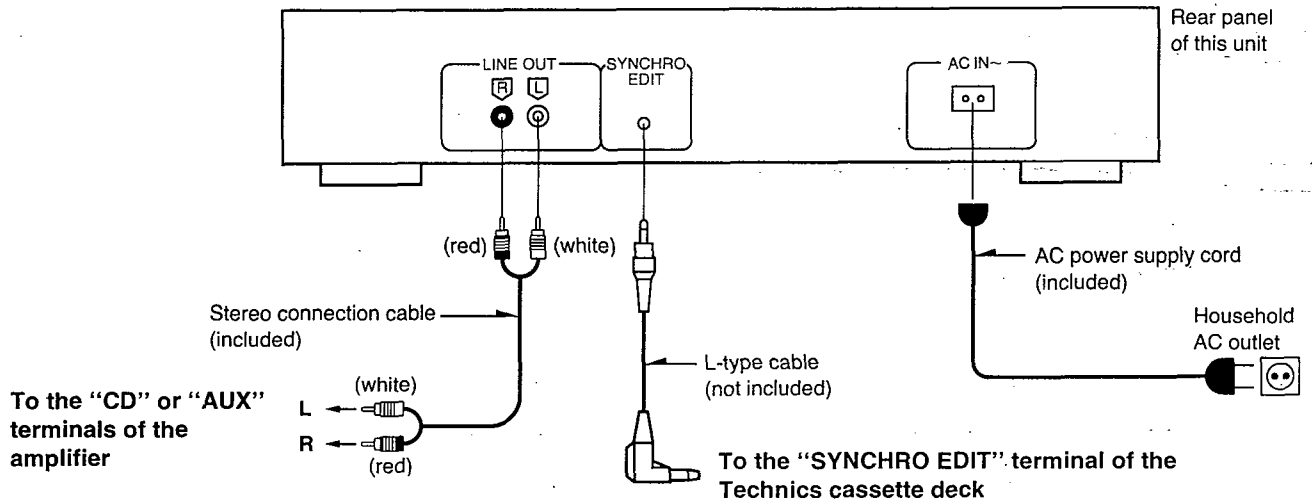
- 31 Play indicator (▶)
- 32 Pause indicator (||)
- 33 "Over" mark ( > )  
This indicator lights if the total number of tracks on the disc is 17 or more.
- 34 Track number indicator (1-16)
- 35 Tape side indicator (→ A, → B)
- 36 Compact disc edit indicator (EDIT)
- 37 Peak level search indicator (PEAK)

**Remote control transmitter**

- 38 Level buttons (▼ LEVEL ▲)  
These buttons can be used to adjust output level (from 0 dB to -12 dB).
- 39 A-B repeat button (A-B REPEAT)  
This button can be used to play the portion of a disc between two points (A and B) chosen by you.
- 40 Remote control signal transmission window

**CONNECTIONS**

Turn all components off before making connections.

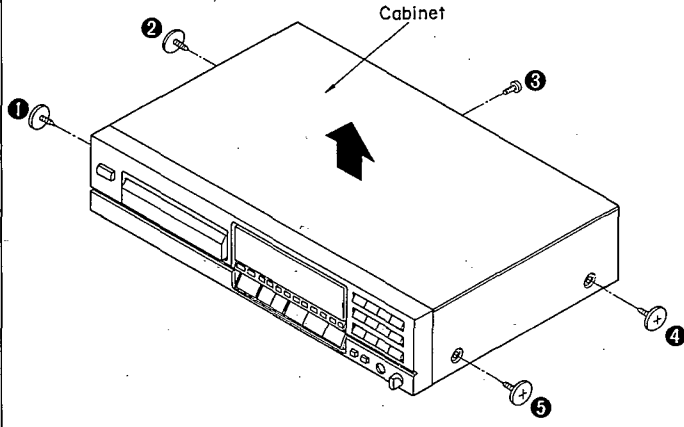
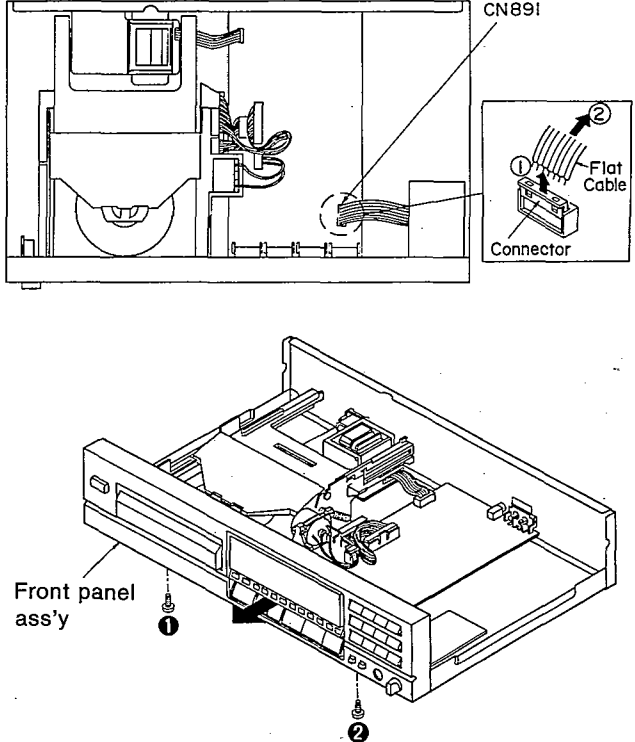
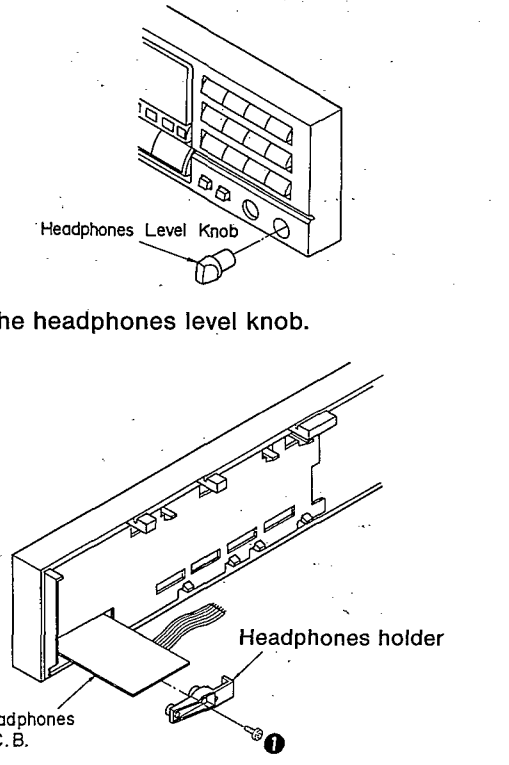
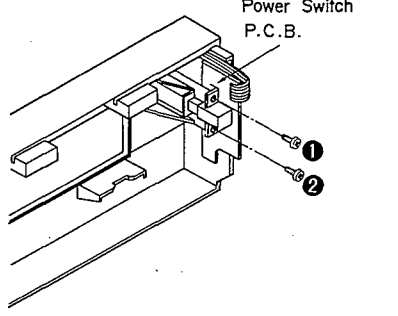


# DISASSEMBLY INSTRUCTIONS

**Warning:** This product uses a laser diode. Refer to caution statements on page 3.

**ACHTUNG:** •Die lasereinheit nicht zerlegen.  
•Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

\*This CD player is equipped with FPC boards, so handle them with care during disassembly and reassembly.

<p><b>Ref. No. 1</b></p> <p><b>Removal of the cabinet</b></p>	<p><b>Ref. No. 2</b></p> <p><b>Removal of the front panel ass'y</b></p>
<p><b>Procedure 1</b></p>  <p>• Remove the 5 screws (1~5).</p>	<p><b>Procedure 1→2</b></p>  <ol style="list-style-type: none"> <li>1. Remove the 1 flat cable (CN891).</li> <li>2. Remove the 2 screws (1, 2).</li> <li>3. Remove the front panel ass'y in the direction of the arrow.</li> </ol>
<p><b>Ref. No. 3</b></p> <p><b>Removal of the headphones P.C.B.</b></p>	<p><b>Ref. No. 4</b></p> <p><b>Removal of the power switch P.C.B.</b></p>
<p><b>Procedure 1→2→3</b></p>  <ol style="list-style-type: none"> <li>1. Pull out the headphones level knob.</li> <li>2. Remove the 1 screw (1).</li> <li>3. Remove the headphones holder.</li> </ol>	<p><b>Procedure 1→2→4</b></p>  <p>• Remove the 2 screws (1, 2).</p>

Ref. No. 5	<b>Removal of the operation P.C.B.</b>
Procedure 1→2→3→5	
<ol style="list-style-type: none"> <li>1. Remove the 4 screws (①~④).</li> <li>2. Release the 8 claws.</li> <li>3. Remove the operation P.C.B. in the direction of the arrow.</li> <li>4. Remove the 1 flat cable (CN615).</li> </ol>	

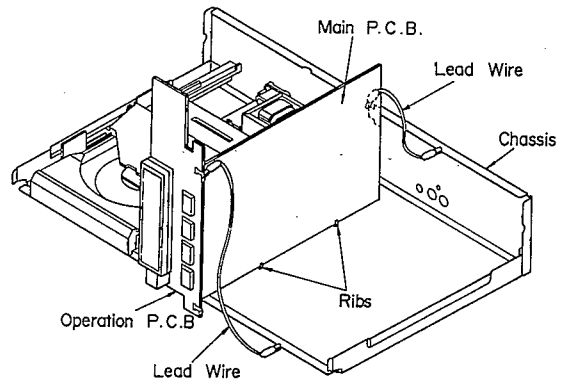
Ref. No. 7	<b>Removal of the disc lid</b>
Procedure 1→7	
<ol style="list-style-type: none"> <li>1. Remove the spring.</li> <li>2. Move the disc lid in the direction of the arrow (A) and pull out this in the direction of the arrow (B).</li> </ol>	

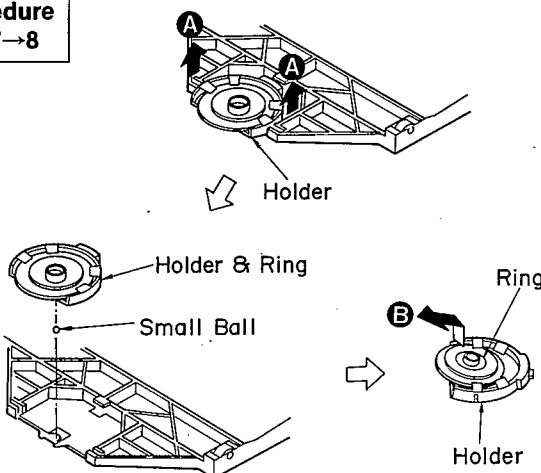
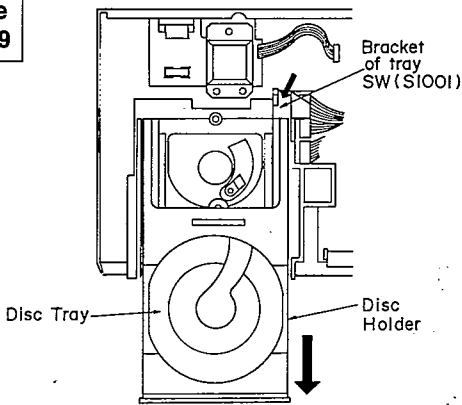
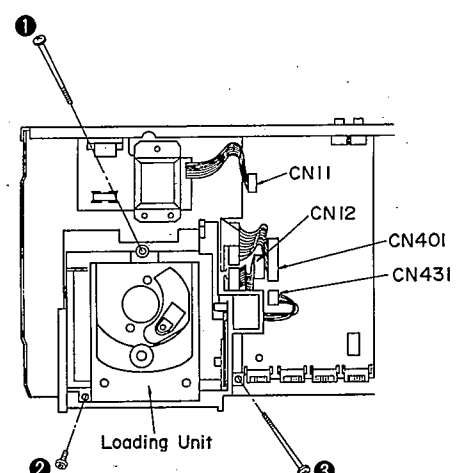
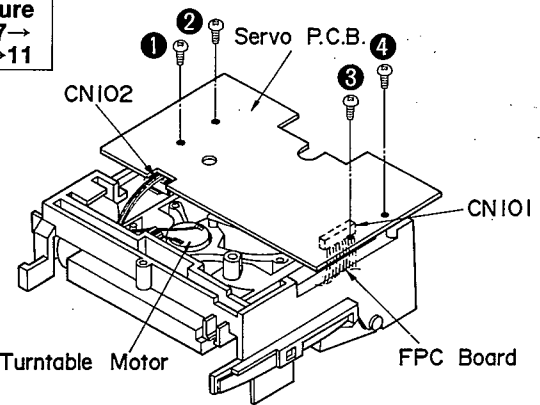
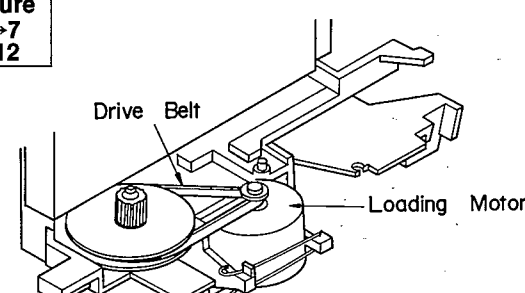
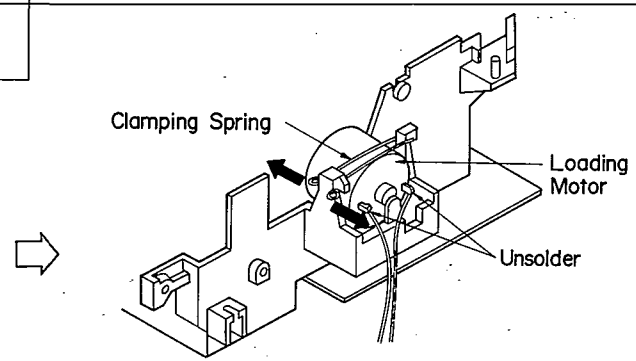
Ref. No. 6	<b>Removal of the main P.C.B.</b>
Procedure 1→2→3 →5→6	
<ol style="list-style-type: none"> <li>1. Remove the 4 screws (①~④).</li> <li>2. Remove the 3 connectors (CN12, CN401, CN431).</li> <li>3. Remove the 1 flat cable (CN11).</li> <li>4. Lift the main P.C.B. off the retention posts on the chassis.</li> <li>5. Remove the main P.C.B. in the direction of the arrow.</li> </ol>	

**How to check the main P.C.B.**

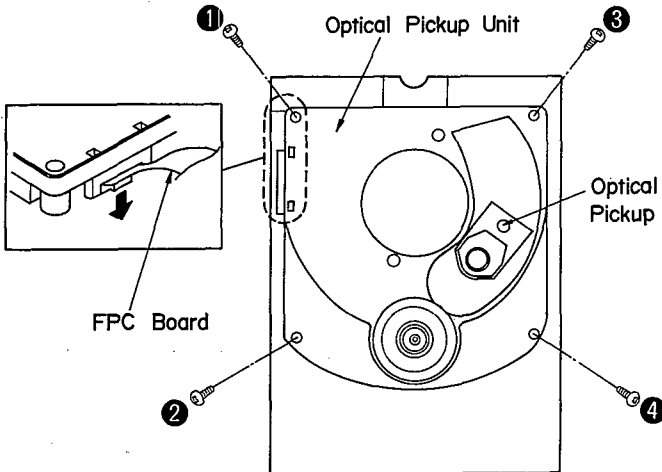
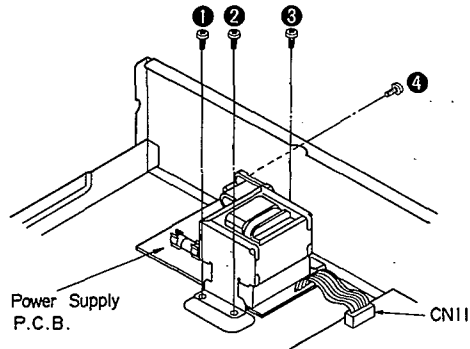
When checking the soldered surface of the main P.C.B. and replacing the parts, do as shown below.

1. Don't remove the connectors (CN12, CN401, CN431) and flat cable (CN11).
2. Connect the main P.C.B. ground terminal (LINE OUT terminal) to the chassis with a lead wire.
3. Connect the operation P.C.B. ground terminal to the chassis with a lead wire.



<p>Ref. No. 8</p>	<p><b>Removal of the holder and ring</b></p>	<p>Ref. No. 9</p>	<p><b>Removal of the disc holder</b></p>
<p>Procedure 1→7→8</p>	 <ol style="list-style-type: none"> <li>1. Pull out the holder in the direction of the arrow (A).</li> <li>2. Remove the ring in the direction of the arrow (B).</li> </ol> <p><b>Caution:</b> Be sure to handle the small ball carefully.</p>	<p>Procedure 1→2→7→9</p>	 <ol style="list-style-type: none"> <li>1. Pull the disc holder slowly in the direction of the arrow until the disc tray comes up.</li> <li>2. Pull the disc holder until it stops.</li> <li>3. Push the bracket of tray SW (S1001) in the direction of the arrow.</li> <li>4. Pull out the disc holder further to remove it.</li> </ol>
<p>Ref. No. 10</p>	<p><b>Removal of the loading unit</b></p>	<p>Ref. No. 11</p>	<p><b>Removal of the servo P.C.B.</b></p>
<p>Procedure 1→2→7 →9→10</p>	 <ol style="list-style-type: none"> <li>1. Remove the 3 screws (1~3).</li> <li>2. Remove the 3 connectors (CN12, CN401, CN431).</li> </ol>	<p>Procedure 1→2→7→ 9→10→11</p>	 <ol style="list-style-type: none"> <li>1. Remove the 4 screws (1~4).</li> <li>2. Remove the FPC board (CN101) from the optical pickup.</li> <li>3. Remove the 1 connector (CN102) of the turntable motor.</li> </ol> <p><b>Caution:</b> To prevent the breakdown of the laser diode, antistatic shorting pin is inserted into the FPC board.</p>
<p>Ref. No. 12</p>	<p><b>Removal of the loading motor</b></p>		
<p>Procedure 1→2→7 →9→12</p>	 <ol style="list-style-type: none"> <li>1. Remove the drive belt.</li> </ol>	 <ol style="list-style-type: none"> <li>2. Release the clamping spring.</li> <li>3. Unsolder the 2 terminals of the lead wire of the loading motor.</li> </ol>	



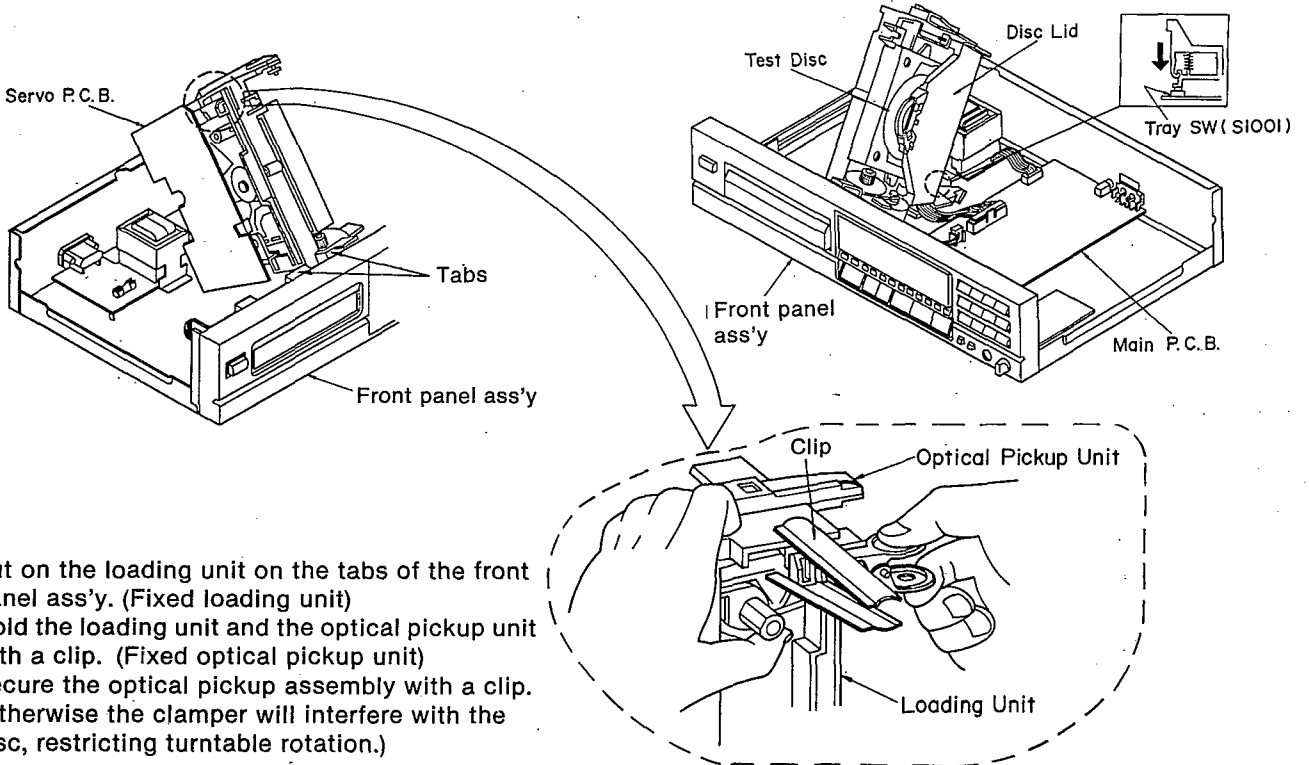
Ref. No. 13	Removal of the optical pickup unit	Ref. No. 14	Removal of the power supply P.C.B.
<b>Procedure</b> 1→2→7→9→ 10→11→13	 <ol style="list-style-type: none"> <li>1. Remove the 4 screws (①~④).</li> <li>2. Remove the FPC board from the optical pickup.</li> </ol>	<b>Procedure</b> 1→14	 <ol style="list-style-type: none"> <li>1. Remove the 4 screws (①~④).</li> <li>2. Remove the 1 connector (CN11).</li> </ol>

## ■ CHECKING OF THE SERVO P.C.B.

1. Remove the cabinet (see Ref. No. 1 of the disassembly instructions).
2. Remove the disc lid and disc holder (see Ref. No. 7 and No. 9 of the same).
3. Remove the loading unit (see Ref. No. 10 of the same).
4. When checking the soldered surface of the servo P.C.B. and replacing the parts, do as shown below.

### (To play a disc)

1. Place the test disc.
  2. Reinstall the disc lid to the loading unit.
  3. Turn "ON" the power switch of the player.
  4. Push the bracket of tray SW (S1001) in the direction of the arrow and release it.
- Note:** If the test disc fails to rotate, press the tray switch again.

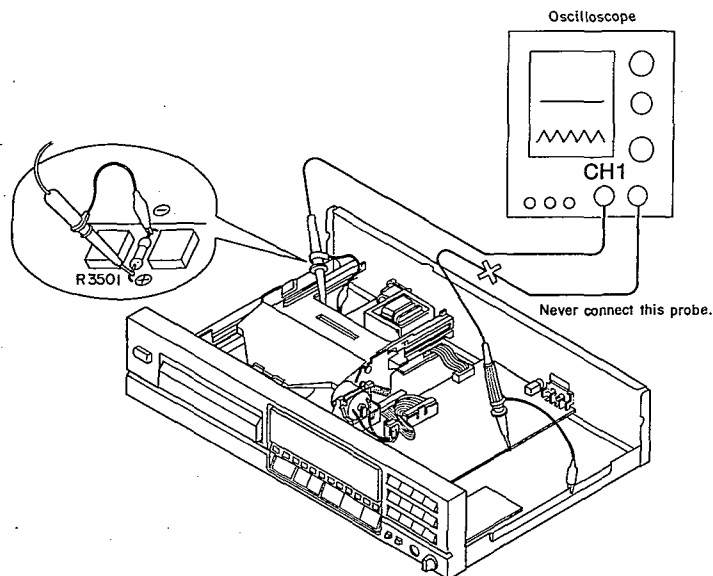


**Note:** Put on the loading unit on the tabs of the front panel ass'y. (Fixed loading unit)  
 Hold the loading unit and the optical pickup unit with a clip. (Fixed optical pickup unit)  
 Secure the optical pickup assembly with a clip. (Otherwise the clammer will interfere with the disc, restricting turntable rotation.)

## MEASUREMENTS AND ADJUSTMENTS

### Caution:

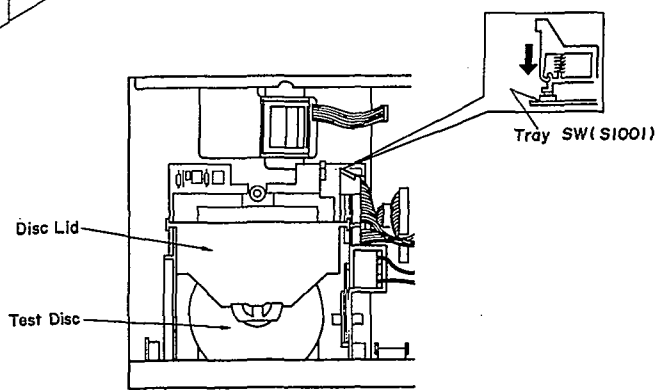
1. It is very dangerous to look at or touch the laser beam. (Laser radiation is invisible.)  
With the unit turned "on", laser radiation is emitted from the pickup lens.  
Avoid exposure to the laser beam, especially when performing adjustments.
2. During laser power or focus offset adjustment, never connect the other probe to the unit.  
(Otherwise the unit's power supply will sustain damage.)



### PREPARATION

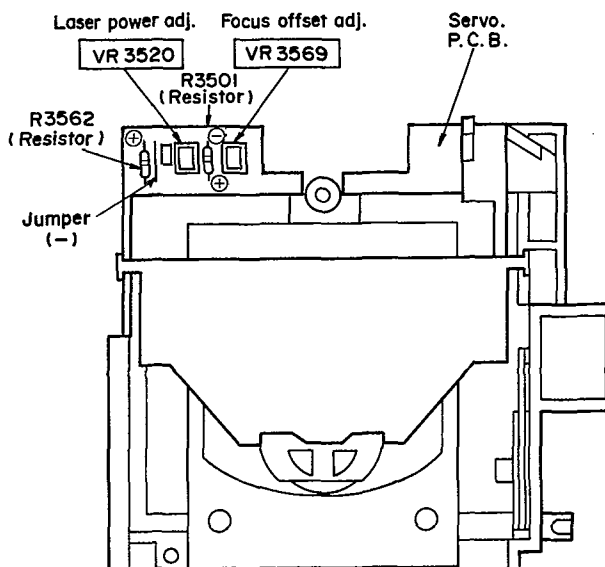
1. Remove the cabinet (see Ref No. 1 of the disassembly instructions).
2. Remove the disc holder (see Ref No. 9 of the same).
3. Place the test disc on the turntable.
4. Turn "ON" the power switch at the player.
5. Push the bracket of tray SW (S1001) in the direction of the arrow and release it.

**Note:** If the test disc fails to rotate, press the tray switch again.



### ADJUSTMENT POINTS

#### • Servo P.C.B.



## Measuring Instruments

- \* Playability test disc (SZZP1054C).
- \* Normal disc (Ordinary musical program disc).

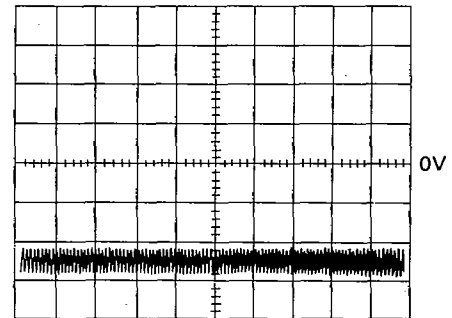
- \* Dual-beam oscilloscope with bandwidth of 30MHz or better (with EXT trigger and 1:1 probe).

### (1) LASER POWER ADJUSTMENT

1. Connect the oscilloscope's CH1 probe across (+) and (-) of **R3501** (Resistor) on the servo P.C.B.
2. Switch the player power ON, and play track No. 1 on the test disc (SZZP1054C).
3. Adjust **VR3520** so that the voltage is  $-50 \pm 2\text{mV}$ .

#### Oscilloscope setting:

VOLT .....20mV  
 SWEEP .....0.2msec.  
 INPUT .....DC

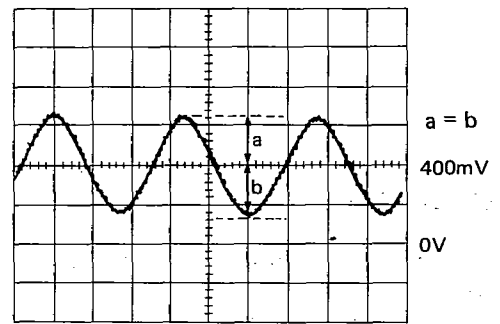


### (2) FOCUS OFFSET ADJUSTMENT

1. Connect the oscilloscope's CH1 probe across **R3562** (Resistor) (+) and **Jumper** (-) on the servo P.C.B.
2. Switch the player power ON, and play track No. 1 on the test disc (SZZP1054C).
3. Adjust **VR3569** until the signal amplitude become in the center of **400mV**.

#### Oscilloscope setting:

VOLT .....200mV  
 SWEEP .....5msec.  
 INPUT .....DC



### (3) 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 search operation (in both the forward and reverse directions).

#### \* 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).

#### \* Playability check by test disc

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.

## ■ TERMINAL FUNCTION OF IC'S

### • IC6501 (482220973234/TDA8808T): Photo diode signal processor

Pin No.	Mark	I/O Division	Function
1	GCHF	I	Gain control input of HF amplifier. Current output from HF amplitude detector
2	Vp	I	Positive supply voltage
3	HFout	O	HF amplifier and equalizer voltage output
4	DET	I	HF detector voltage input
5	Sc	I	Starting up capacitor input
6	Si/RD	I/O	On/off control (start input); ready signal output (starting up procedure successful)
7	Beg	I	Equalizer reference current input
8	Bgc	I	DC and LF gain control reference current input
9	FOC START	I	Focus normalizing circuit starting current
10	PLLH	O	PLL on hold output
11	TL	O	Track loss output
12	DODS	I	Drop out detector suppression input
13	Vext	I	Negative supply connection for FE and FEIag output stage; also substrate connection
14	LPF	O	Low pass filter for Iret, used in track loss (TL) detector and LF gain control

Pin No.	Mark	I/O Division	Function
15	FE	O	Current output of normalized, switched focus error signal
16	FEIag	O	Current output of switched focus error signal, intended for lag network
17	LO	O	Laser amplifier current output
18	LM	I	Laser monitor diode input
19	GCLF	I	Gain control input for AC and LF amplifiers. Current output from LF amplitude detector
20	Re2	O	Summation of amplified currents from D3 and D4
21	Re1	O	Summation of amplified currents from D1 and D2
22, 23	D1, D2	I	Current inputs to DC and LF photo diode amplifier
24, 25	D3, D4	I	Current inputs to DC and LF photo diode amplifier
26	HFin	I	Current input to HF amplifier
27	GND	—	Ground connection of device
28	DEC	I	Decoupling input (internal bypass)

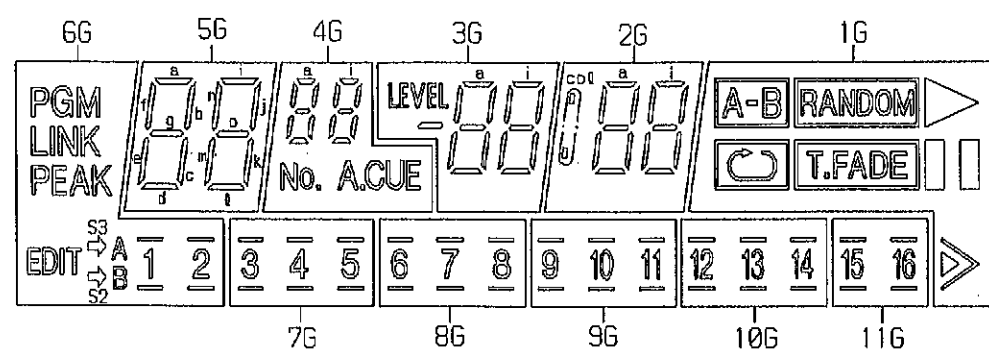
### • IC6503 (482220973235/TDA8809T): Radial error signal processor

Pin No.	Mark	I/O Division	Function
1	Vp	I	Positive supply voltage
2	Cosc1	I	Frequency setting capacitors for oscillator
3	Cosc2		
4	Rwob	I	Wobble generator input
5	Rosc	I	Biasing resistor for oscillator frequency and internal amplitude
6	DIV4	I	Radial error digital signal divided by four
7	REdig	O	Digital output of sign (Re2 - Re1)
8	B3	I	Input control bits for off-, catch-, play-status and DAC output current
9	B2		
10	B1		
11	B0		
12	Vext (+)	I	Positive external voltage input
13	Vext (-)	I	Negative external voltage input (also substrate connection)
14	GND	—	GND terminal
15	RADout	O	Current output of amplified (Re2 - Re1) input currents
16	REin	I	Radial error input
17	REIag	O	Voltage output of integrated (Re2 - Re1) input currents

Pin No.	Mark	I/O Division	Function
18	Lag	I	Connection of integrator capacitor for (Re1 - Re2) input currents
19	Lead	O	Lead output
20	Vref	I	Internal reference voltage output
21	AGC	I	Gain control input for radial error signal
22	RDAC	O	Biasing resistor for current output for track jumping (3 1/2 bits)
23	offset in	I	Offset control input for radial offset
24	offset off	O	Offset control output for radial offset
25	CLPF	I	Low-pass filter for Re1 and Re2, used for radial offset control
26	CHPF	I	High-pass filter for Re1 and Re2, used for radial offset control
27	Re1	I	Input for amplified currents from photo diodes D1 and D2
28	Re2	I	Input for amplified currents from photo diodes D3 and D4

INTERNAL CONNECTION OF FL

Grid connection diagram



Anode connection table

Table with 11 columns (P1-P16) and 11 rows (11G-1G) showing anode connections for various controls like EDIT, STOP, REPEAT, CLEAR, etc.

Pin connection

Table mapping PIN NO. to CONNECTION for pins 1 through 16.

NOTE: 1) F1,F2 --- Filament
2) NP ----- No pin
3) 1G~11G --- Grid

SCHEMATIC DIAGRAM

(Parts list on pages 30, 31, 36, 37.)

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

Notes:

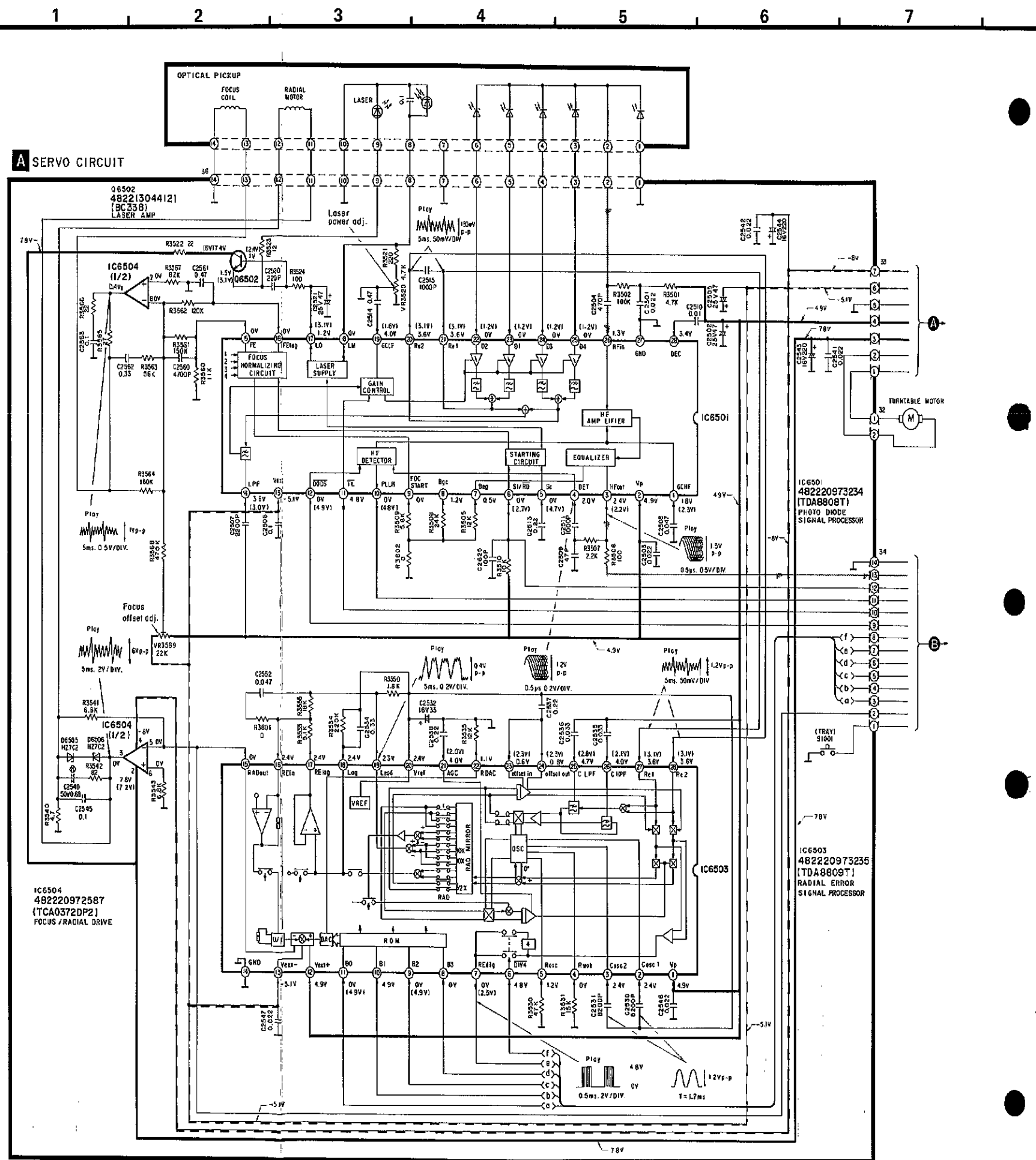
- S601~612 : Numeric (>10, 0, 1~10) switches.
•S613 : Play (▶) PLAY switch.
•S614 : Skip (◀◀) SKIP switch.
•S615 : Search (◀◀) switch.
•S616 : Program (PROGRAM) switch.
•S617 : Disc link (DISC LINK) switch.
•S618 : Auto cue (AUTO CUE) switch.
•S619 : Stop (■) STOP switch.
•S620 : Skip (▶▶) SKIP switch.
•S621 : Search (▶▶) switch.
•S622 : Recall (RECALL) switch.
•S623 : Tape-side select (SIDE A/B) switch.
•S624 : Random play (RANDOM) switch.
•S625 : Time fade (TIME FADE) switch.
•S626 : Disc tray open/close (▲ OPEN/CLOSE) switch.
•S627 : Pause (■) PAUSE switch.
•S628 : Repeat (REPEAT) switch.
•S629 : Clear (CLEAR) switch.
•S630 : Edit tape length (TAPE LENGTH) switch.
•S631 : Time mode select (TIME MODE) switch.
•S632 : Peak level search (PEAK SEARCH) switch.
•S651 : Power "STANDBY & ION" (POWER) switch in "on" position.
•S1001 : Tray (OPEN/CLOSE) switch.
•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 Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
•The supply part number is described alone in the replacement parts list.

Table with 3 columns: Part No., Production Part No., Supply Part No. (IC11, IC802, 803)

lines.
: 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 pins of IC or LSI with fingers directly.



IC301 (MN6626): Digital signal processor

Table with 4 columns: Pin No., Mark, I/O Division, Function. Lists pins 1 through 38 for the digital signal processor.

Table with 4 columns: Pin No., Mark, I/O Division, Function. Lists pins 39 through 64 for the digital signal processor.

• IC401 (MN1871617PMC): System control & FL drive

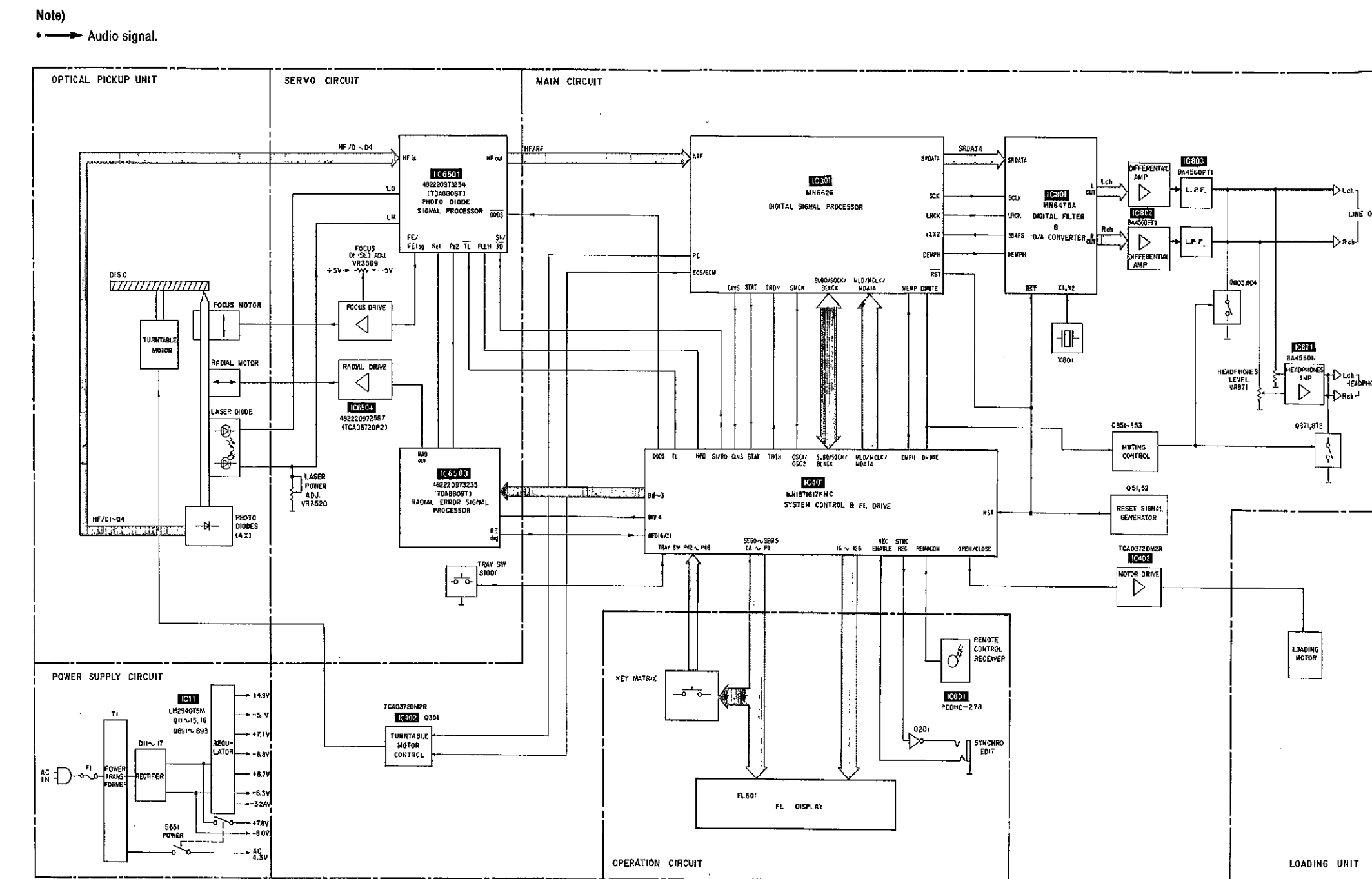
Pin No.	Mark	I/O Division	Function
1	VDD	I	Power supply terminal
2	OSC2	I	System clock input (f=4.2336MHz)
3	OSC1	I	
4	YSS	—	GND terminal
5	XI	I	Radial error digital signal
6	XO	O	Not Used, open
7	P47	I	
8	P46	I	Key return signal
12	P42	I	
13	SYNC REC	O	Synchro rec control
14	REC ENABLE	I	
15	P37	—	Not used, open and connected to terminal
18	P34	—	
19	P33	—	Not used, open and connected to terminal
20	P32	—	
21	P31	—	
22	P30	—	
23	P27	—	
24	OPEN/CLOSE	O	Loading motor control signal
25	DMUTE	O	Muting output ("H": MUTE)
26	SI/RD	I/O	On/off control and ready signal
27	B3	O	Control bits for off, catch, play-status and DAC output current
30	B0	O	
31	REMOCON	I	Remote control signal
32	REDIG	I	Radial error digital signal
33	MDATA	O	Command data signal
34	MCLK	O	Command clock signal
35	MLD	O	Command load signal ("L": LOAD)
36	TL	I	Track loss input
37	RST	I	Reset terminal
38	SQCK	O	Sub-code Q register clock
39	SUBQ	I	Sub-code Q data
40	TRAY SW	I	Disc holder open/close det. terminal
41	BLKCK	I	Sub-code block clock (f=75Hz)
42	DODS	O	Drop-out detect signal
43	STAT	I	Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQCK)
44	P95	—	Not used, open
45	CLVS	I	Spindle servo phase synchro signal ("H": CLV, "L": Rough servo)
46	TRON	O	Tracking servo ON signal ("L": ON)
47	DIV4	O	Radial error digital signal divided by four
48	EMPH	O	Emphasis signal
49	HFD	I	PLL on hold input
50	CM	—	Not used, connected to GND
51	130Hz	—	Not used, open
52	VPP	I	Power supply terminal for FL drive
53	16G	—	Not used, open
56	13G	—	
57	12G	O	FL digit signal
68	1G	O	
69	A/SEGO	O	FL segment signal and key scan signal
84	P/SEGP	O	

• IC801 (MN6475A): 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	SRTATA	I	Serial data output (MSB first)
4	COT 1	I	Test terminal (Ordinary: L)
5	COT 2	I	
6	TEST	I	
7	D. VDD	I	Digital power supply terminal
8	X2	O	Clock terminal (f=33.8688MHz)
9	X1	I	
10	D. VSS	—	Digital GND terminal
11	AVDD/L	I	Analog power supply terminal (1)
12	L OUT	O	Analog signal output (1)

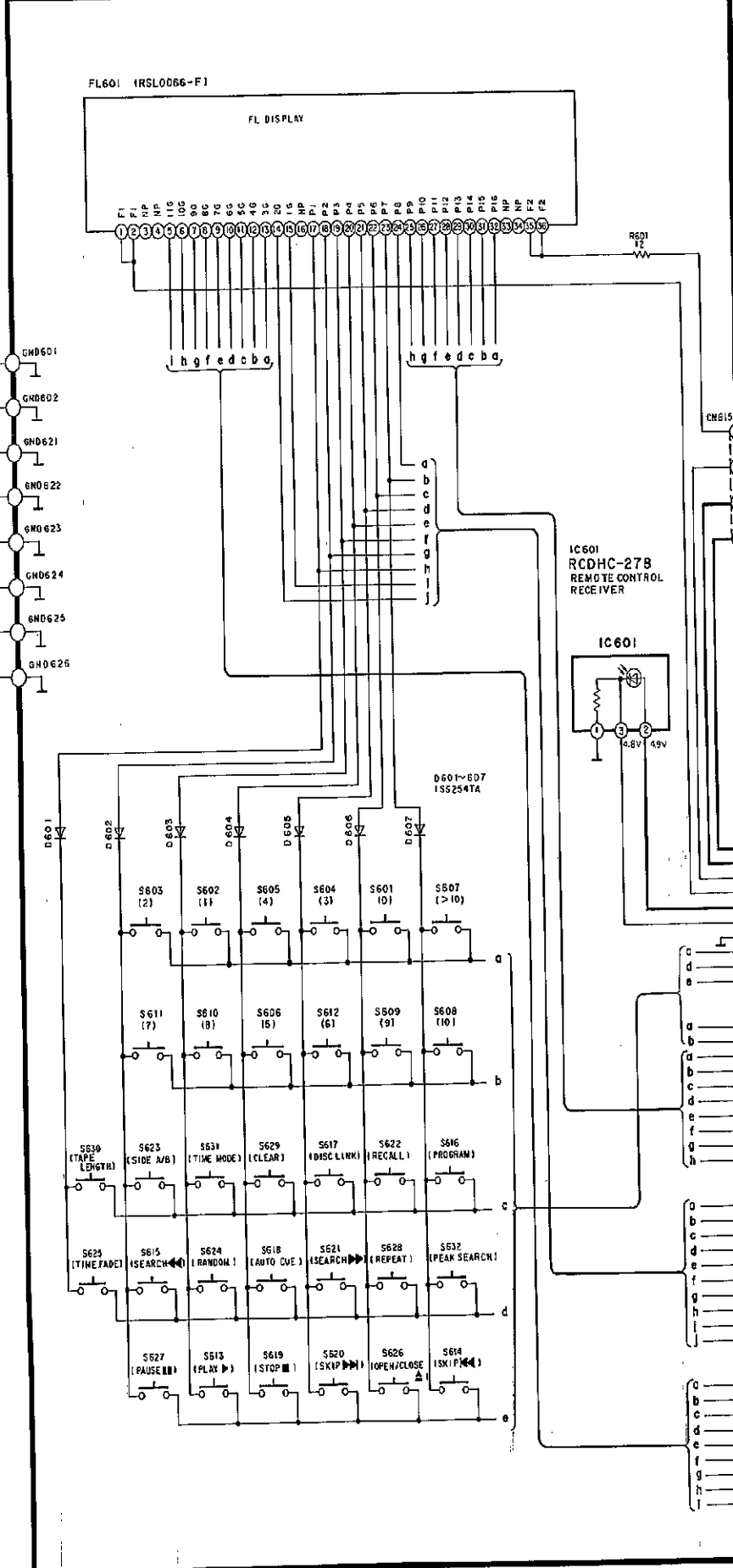
Pin No.	Mark	I/O Division	Function
13	AVSS/L	—	Analog GND terminal
14	AVSS/R	—	Analog GND terminal
15	R OUT	O	Analog signal output (2)
16	AVDD/R	I	Analog power supply terminal (2)
17	/RST	I	Reset signal input (Active: L)
18	PWM	O	PWM output (TP: "H": output, "L": High impedance)
19	TP	I	Test terminal (ordinary: 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 384FS terminal
23	384FS	O	384fs (16.9344MHz) signal output
24	768FS	O	768fs (33.8688MHz) signal output (Not used, open)

■ BLOCK DIAGRAM

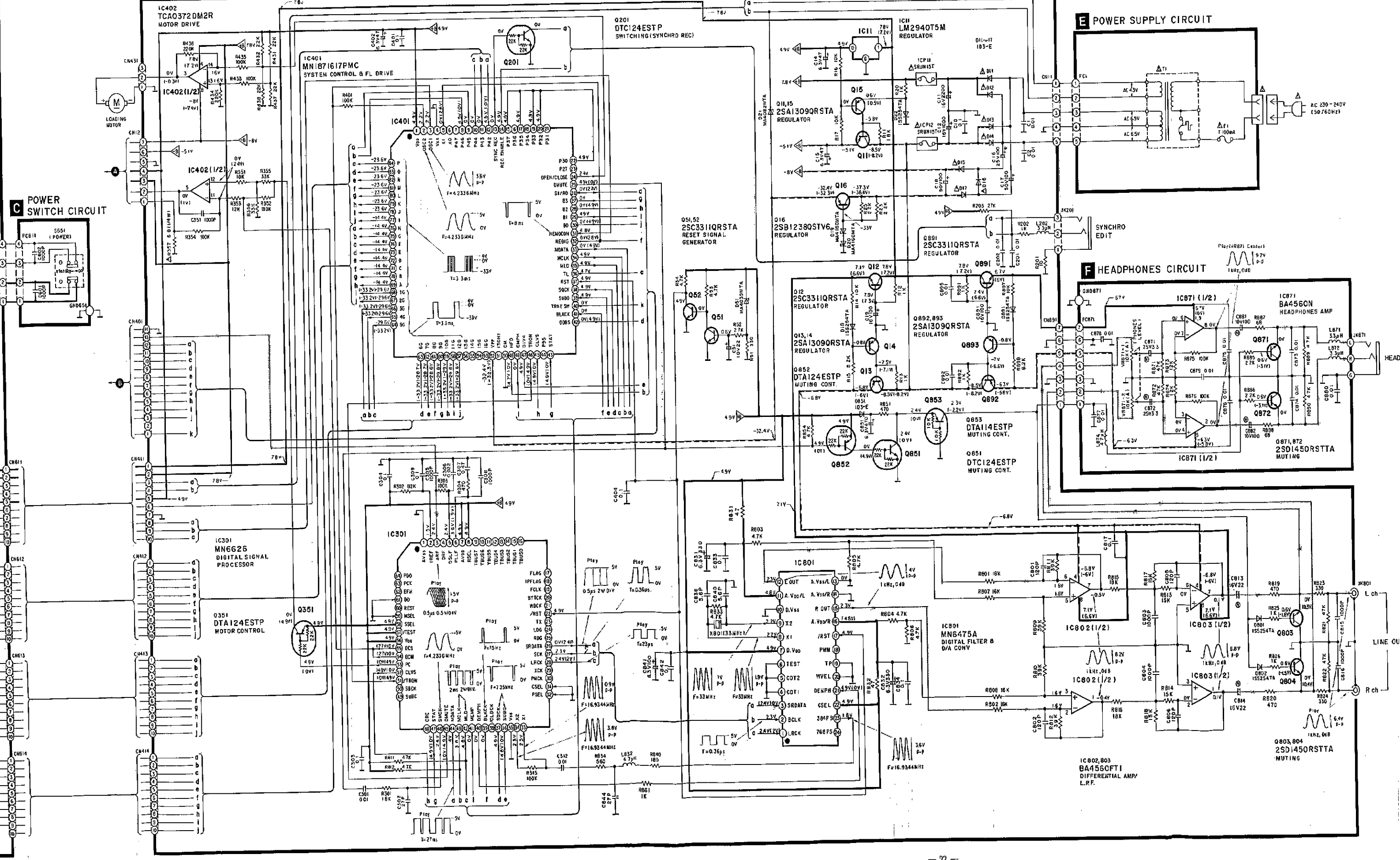


- |  |  |   |  |
|--|--|---|--|
| <p>RAD out : Current output of integrated (Re2-Re1) input currents.</p> <p>B0~B3 : Control bits for radial circuit.</p> <p>DODS : Drop out detect signal.</p> <p>D1~D4 : Photodiode currents.</p> <p>FE : Focus error signal.</p> <p>FE lag : Focus error signal for LAG network.</p> <p>HF out : HF amplifier and equalizer voltage output.</p> <p>HF in : HF current input.</p> <p>LM : Laser monitor diode input.</p> <p>LO : Laser amplifier current output.</p> <p>Re1 : Radial error signal 1 (summation of amplified currents D3 and D4).</p> <p>Re2 : Radial error signal 2 (summation of amplified currents D1 and D2).</p> | <p>RE dig : Radial error digital.</p> <p>RE dig (X1) : Radial error signal for LAG network.</p> <p>RE lag : Radial error signal for LAG network.</p> <p>SI/RD : On/off control for laser supply and focus circuit.</p> <p>TL : Track loss signal.</p> <p>Div4 : Radial error digital divided by four.</p> <p>HF/RF/ARF : RF (Audio) signal.</p> <p>TRAY SW : Disc holder open/close det. terminal.</p> <p>CLVS : Spindle servo phase synchro signal.</p> <p>STAT : Status command for CRC etc.</p> <p>DMUTE : Data mute command.</p> <p>MDATA : Mode control data.</p> <p>MLD : Load command for mode control data (Active Low).</p> | <p>P42~46 : Key return signal.</p> <p>1G~12G : FL digit signal.</p> <p>SEGO~15 : FL segment signal and key scan signal.</p> <p>MCLK : Data clock for MDATA.</p> <p>SUBQ : Sub-code Q data.</p> <p>CLDCK : Data frame clock (7.35KHz).</p> <p>BLKCK : Sub-code Q data block clock (75Hz).</p> <p>SQCK : Sub-code Q register clock.</p> <p>RST : Reset command (Active Low).</p> <p>TRON : Tracking servo ON command (Active Low).</p> <p>ECS/ECM : Turntable motor drive signal.</p> <p>PC : Turntable motor ON command (Active Low).</p> <p>SMCK : System clock (4.2336MHz).</p> <p>(OSC1/OSC2)</p> | <p>LRCK : L/R data discrimination clock (88.2KHz).</p> <p>SRDATA : Serial data output (MSB first).</p> <p>SKCK : Serial bit clock (2.82MHz).</p> <p>(BCLK)</p> <p>DEMPH : De-emphasis command (Active High).</p> <p>SYNC REC/ : Synchro rec control.</p> <p>REC ENABLE : Remote control signal.</p> <p>REMOCON : Remote control signal.</p> <p>384fs/X1, X2 : 384fs (16.9344MHz) signal.</p> <p>L OUT : Lch data signal.</p> <p>R OUT : Rch data signal.</p> <p>OPEN/CLOSE : Loading motor control signal.</p> |
|--|--|---|--|

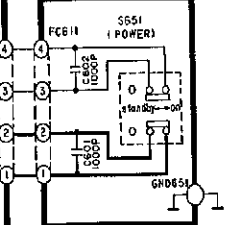
B OPERATION CIRCUIT



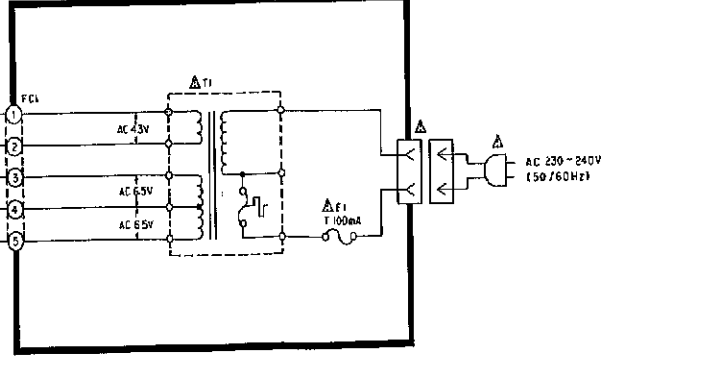
D MAIN CIRCUIT



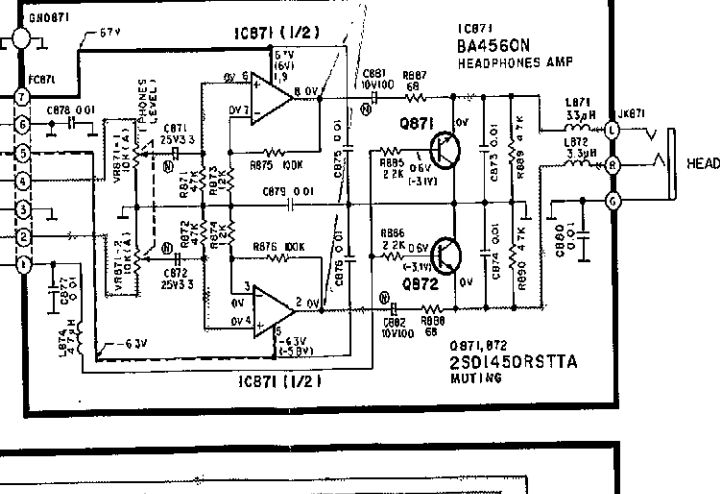
C POWER SWITCH CIRCUIT



E POWER SUPPLY CIRCUIT



F HEADPHONES CIRCUIT



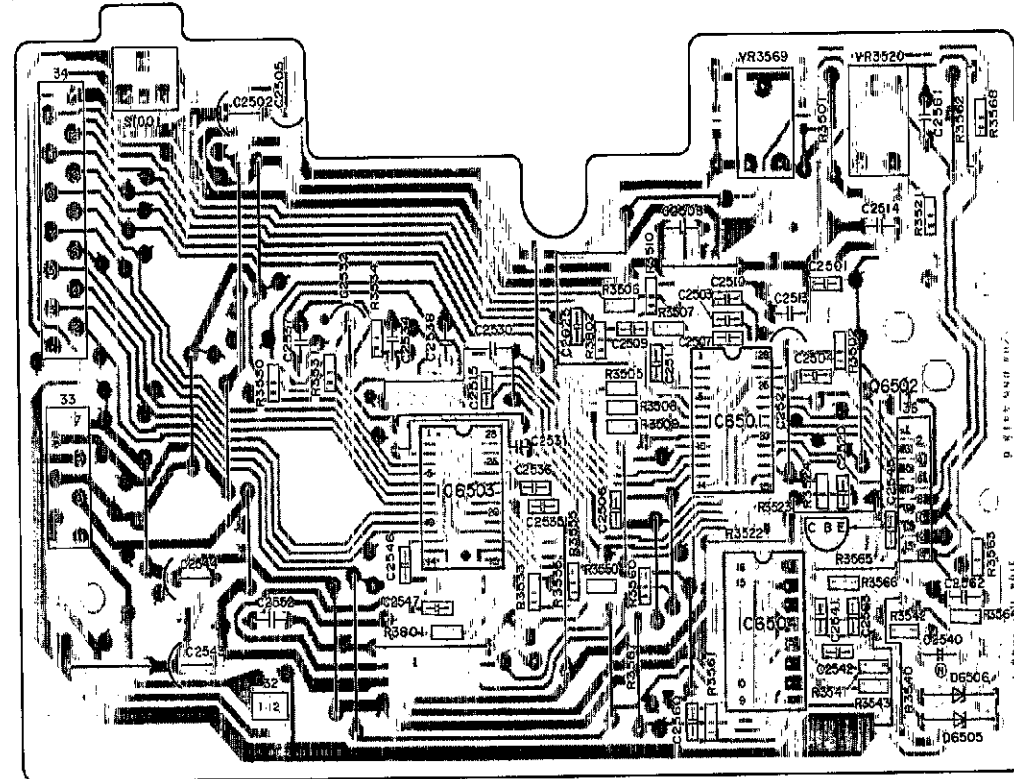
TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

BA4580FT1	RCDHC-278	TCA0372DM2R
482220973234 (TDA8808T)	482220973235 (TDA8609T)	482220972587 (TCA0372DP2)
MN6475A	MN6626	MN187167PMC
BA4560N	LM2940T5M	2SA1308QRSTA
1. Vin	2. GND	3. Vout
2SA1308QRSTA	2SC3311QRSTA	2SD1450RSTTA
1SS254TA	DTA114ESTP	DTA124ESTP
Cathode	Anode	Anode
2SB1238QSTV6	482213044121 (BC338)	MA4180MTA
4B2213081101 (HZ7C2)	MA4039MTA	MA4082MTA
Cathode	Anode	Anode
1D3-E	MA4039MTA	MA4082MTA
Cathode	Anode	Anode

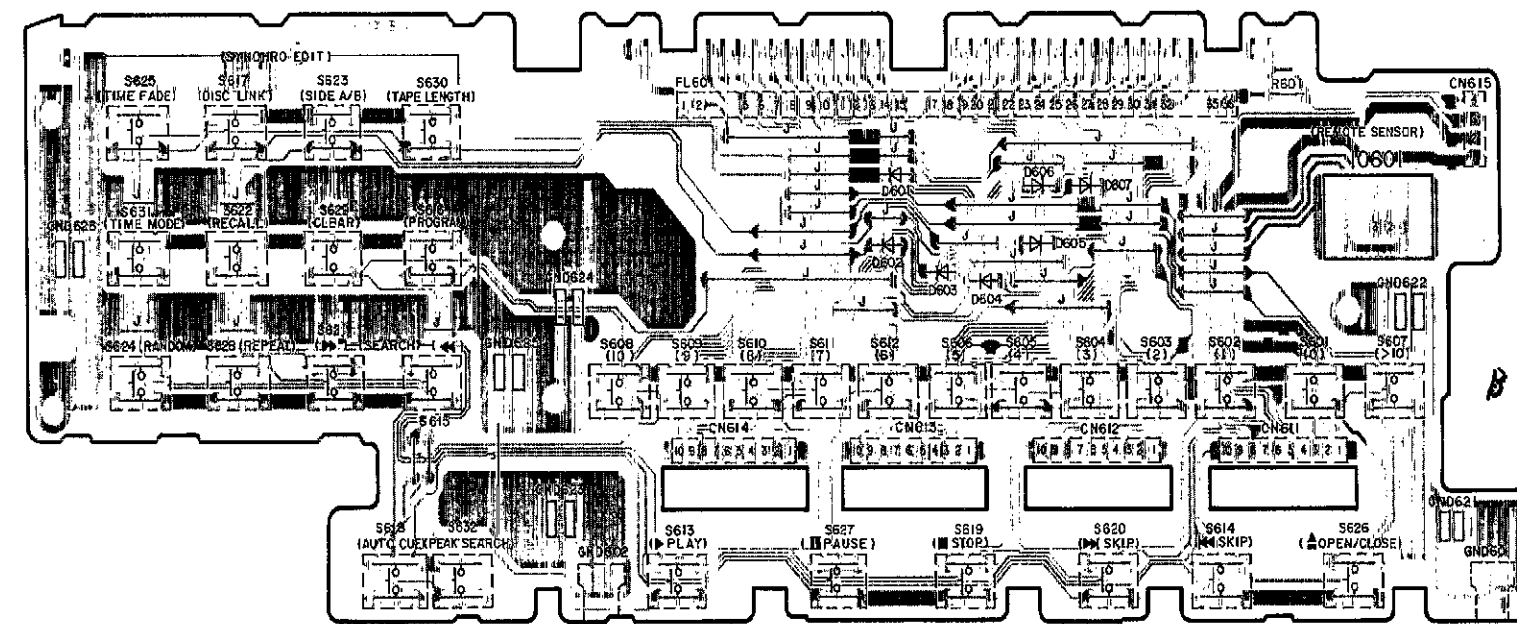


PRINTED CIRCUIT BOARDS

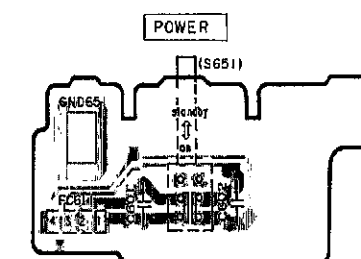
A SERVO P.C.B.



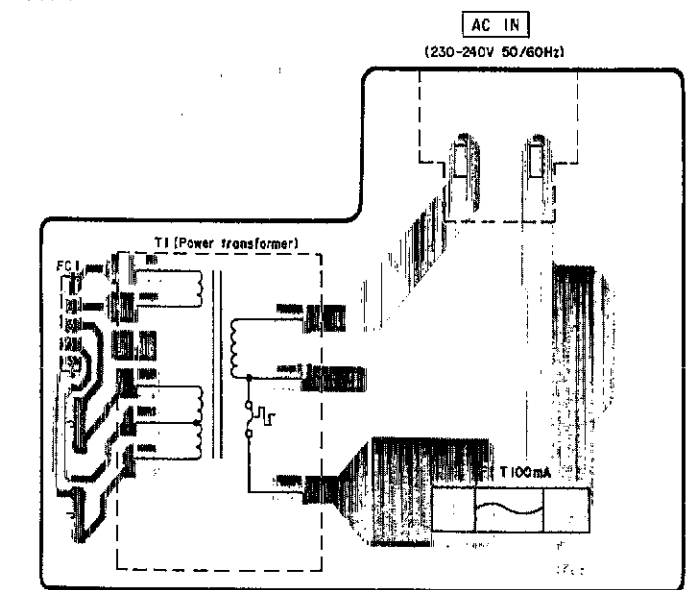
B OPERATION P.C.B.



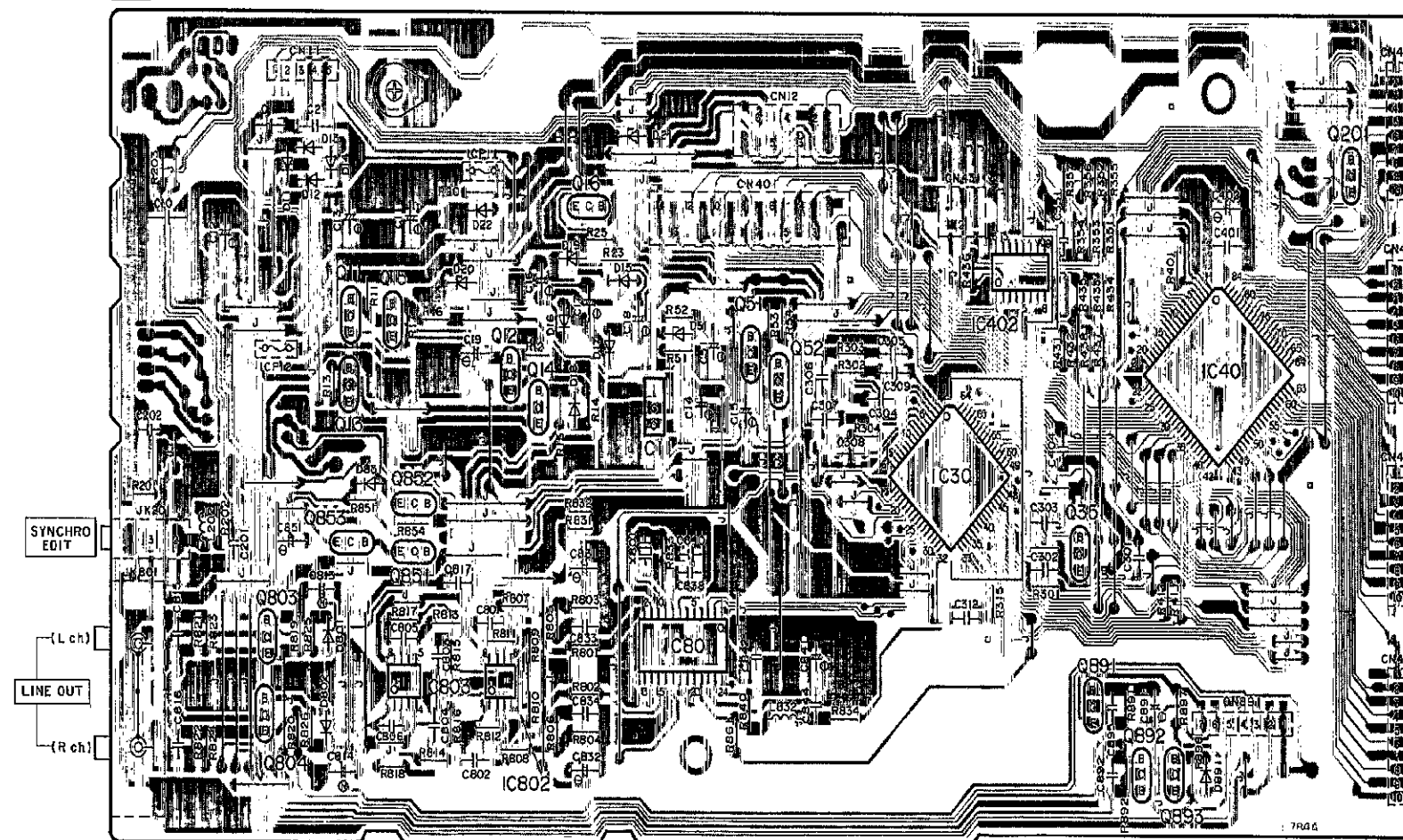
C POWER SWITCH P.C.B.



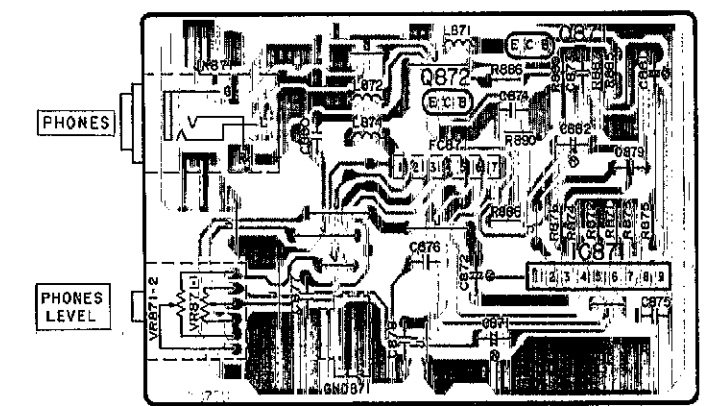
E POWER SUPPLY P.C.B.



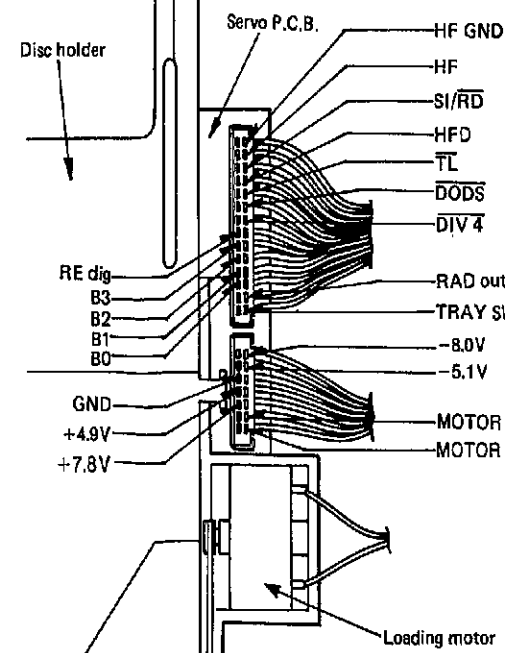
D MAIN P.C.B.



F HEADPHONES P.C.B.



Note: Use connector pins to check servo circuit voltages and waveforms.

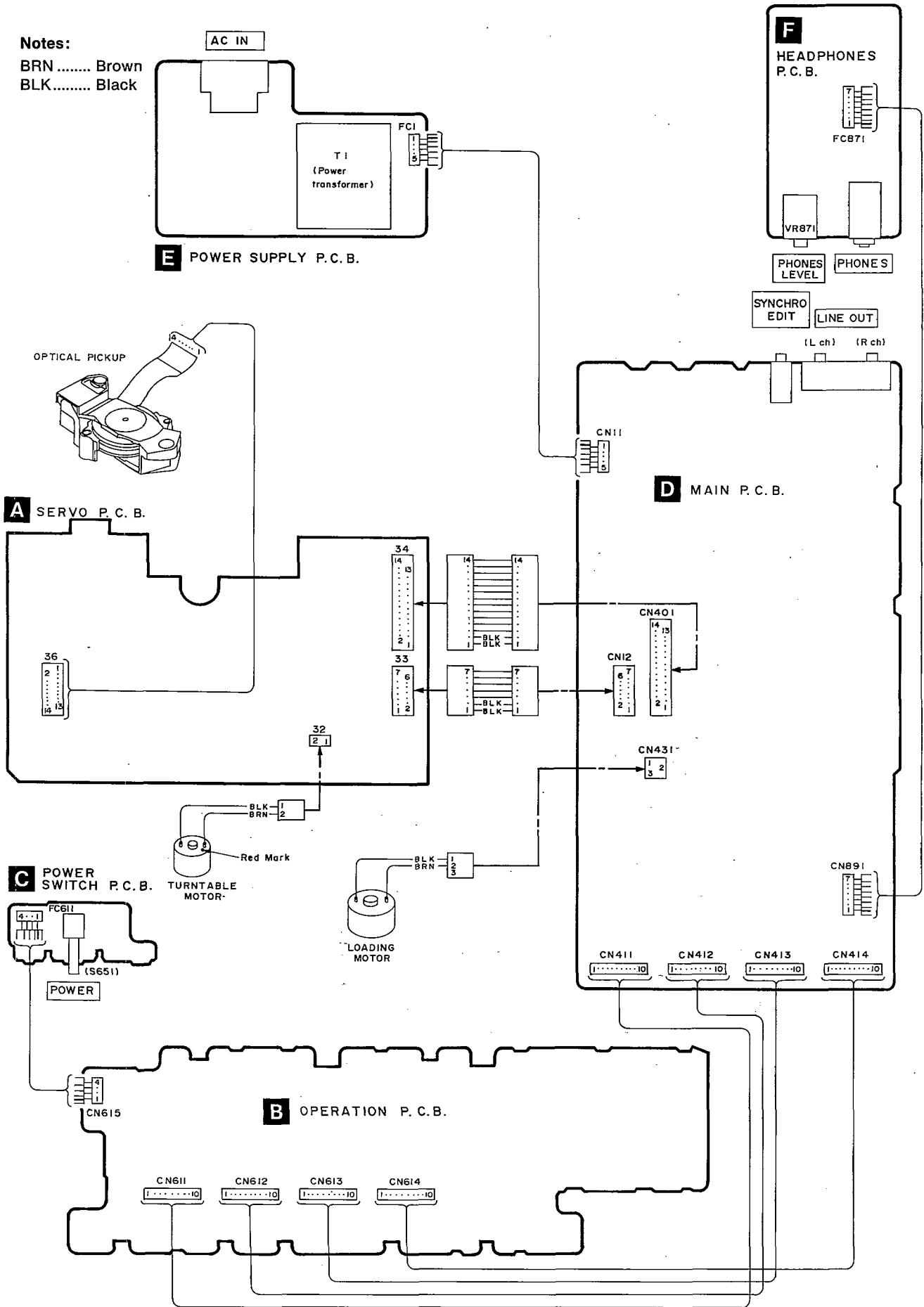




# WIRING CONNECTION DIAGRAM

**Notes:**

BRN ..... Brown  
 BLK ..... Black



# REPLACEMENT PARTS LIST

**Notes:** \* Important safety notice:

 Components identified by  $\Delta$  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.

\* Remote Control Ass'y: Supply period for three years from termination of production.

 \*  $\overline{\text{MB}}$  Indicates in Remarks columns parts that are supplied by MBV.

\* Warning: This product uses a laser diode. Refer to caution statements on page 3.

\* ACHTUNG: Die lasereinheit nicht zerlegen.

Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

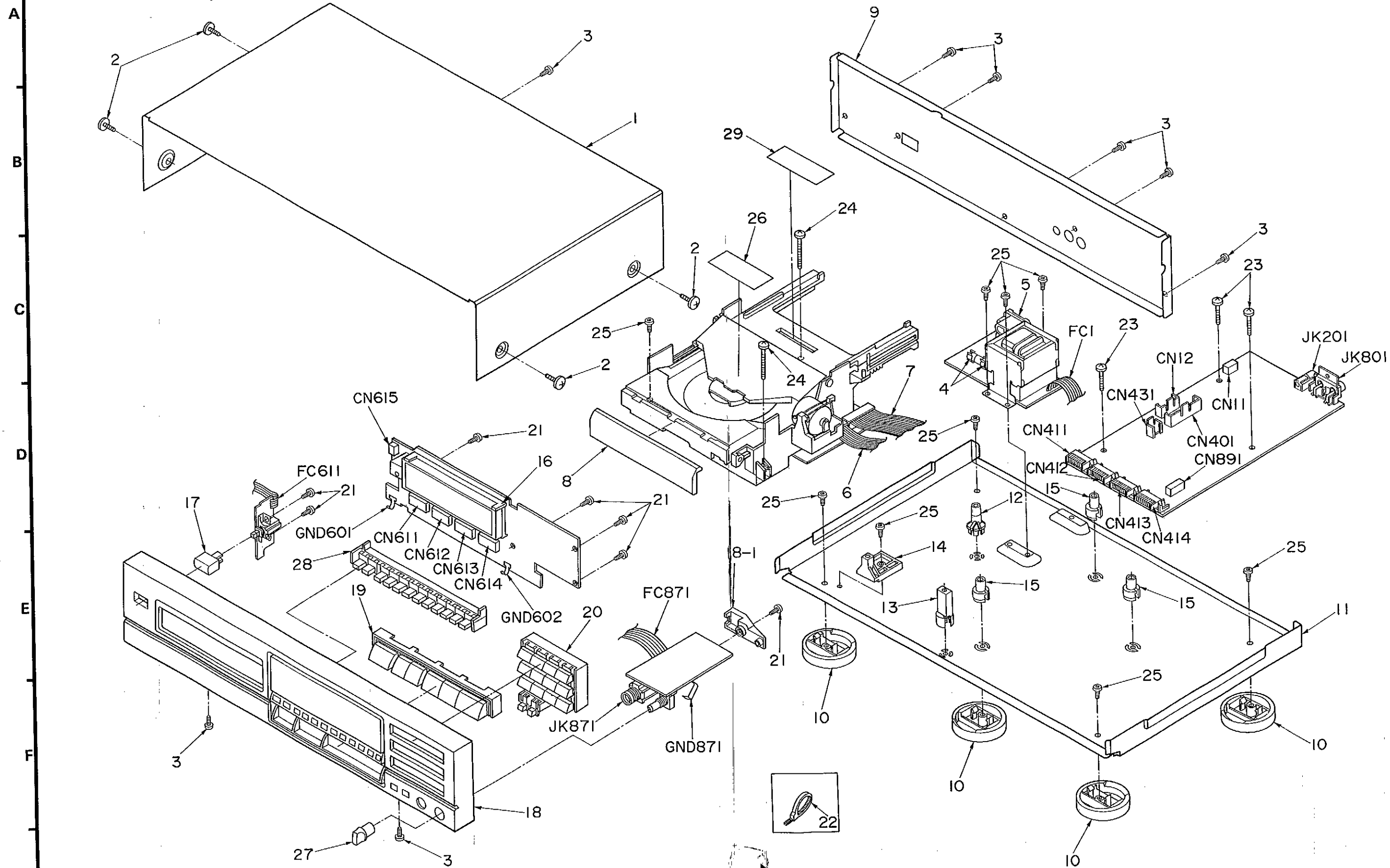
Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)		ICP11, 12	SRUN15	IC PROTECTOR	$\Delta$
						VARIABLE RESISTOR(S)	
IC11	LM2940T5	IC, REGULATOR					
IC301	MN6626	IC, DIGITAL SIGNAL PROCESSOR		VR871	EVJCB0F02A14	V. R, HEADPHONES LEVEL	
IC401	MN1871617PMC	IC, SYSTEM CONTROL&FL. DRIVE	$\overline{\text{MB}}$				
IC402	TCA0372DM2R	IC, MOTOR DRIVE				COIL(S)	
IC601	RCDHC-278	IC, REMOTE CONTROL RECEIVER					
IC801	MN6475A	IC, DIGITAL FILTER&D/A CONV.		L202	RLQZN3R3KL-D	COIL	$\overline{\text{MB}}$
IC802, 803	SVIBA4560FT1	IC, DIFFER. AMP/L. P. F.		L832	RLQZN4R7KL-D	COIL	
IC871	BA4560N	IC, HEADPHONES AMP		L871, 872	RLQZN3R3KL-D	COIL	$\overline{\text{MB}}$
		TRANSISTOR(S)		L874	RLQZN4R7KL-D	COIL	
Q11	2SA1309A-R	TRANSISTOR				TRANSFORMER(S)	
Q12	2SC3311A-Q	TRANSISTOR					
Q13-15	2SA1309A-R	TRANSISTOR					
Q16	2SB1238QSTV6	TRANSISTOR		T1	RTP1K4E013	TRANSFORMER	$\overline{\text{MB}}$ $\Delta$
Q51, 52	2SC3311A-Q	TRANSISTOR					
Q201	DTC124EST	TRANSISTOR				OSCILLATOR(S)	
Q351	DTA124ESTP	TRANSISTOR					
Q803, 804	2SD1450RTA	TRANSISTOR		X801	RSXA33M8J01T	OSCILLATOR	$\overline{\text{MB}}$
Q851	DTC124EST	TRANSISTOR					
Q852	DTA124ESTP	TRANSISTOR				DISPLAY TUBE	
Q853	DTA114ESTP	TRANSISTOR					
Q871, 872	2SD1450RTA	TRANSISTOR		FL601	RSL0066-F	DISPLAY TUBE	$\overline{\text{MB}}$
Q891	2SC3311A-Q	TRANSISTOR				FUSE(S)	
Q892, 893	2SA1309A-R	TRANSISTOR					
		DIODE(S)		F1	XBA2C01TBO	FUSE 250V T100mA	$\Delta$
D11-17	1D3-E	DIODE	$\overline{\text{MB}}$ $\Delta$				
D18	1SS254TA	DIODE				SWITCH(ES)	
D19, 20	MA4160M	DIODE					
D21	MA4082MTA	DIODE		S601	EVQPCA05R	SW, NUMERIC 0	$\overline{\text{MB}}$
D22	1SS254TA	DIODE		S602	EVQPCA05R	SW, NUMERIC 1	$\overline{\text{MB}}$
D51	MA4039MTA	DIODE		S603	EVQPCA05R	SW, NUMERIC 2	$\overline{\text{MB}}$
D601-607	1SS254TA	DIODE		S604	EVQPCA05R	SW, NUMERIC 3	$\overline{\text{MB}}$
D801, 802	1SS254TA	DIODE		S605	EVQPCA05R	SW, NUMERIC 4	$\overline{\text{MB}}$
D851	1D3-E	DIODE	$\overline{\text{MB}}$	S606	EVQPCA05R	SW, NUMERIC 5	$\overline{\text{MB}}$
D891	1SS254TA	DIODE		S607	EVQPCA05R	SW, NUMERIC >10	$\overline{\text{MB}}$
		IC PROTECTOR(S)		S608	EVQPCA05R	SW, NUMERIC 10	$\overline{\text{MB}}$
				S609	EVQPCA05R	SW, NUMERIC 9	$\overline{\text{MB}}$
				S610	EVQPCA05R	SW, NUMERIC 8	$\overline{\text{MB}}$

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
S611	EVQPCA05R	SW, NUMERIC 7	[MB]			<SERVO P. C. B. >	
S612	EVQPCA05R	SW, NUMERIC 6	[MB]			INTEGRATED CIRCUIT (S)	
S613	EVQPCA05R	SW, PLAY	[MB]				
S614	EVQPCA05R	SW, SKIP (B)	[MB]	IC6501	482220973234	I. C, PHOTO DIODE S. P.	[MB]
S615	EVQPCA05R	SW, SEARCH (B)	[MB]	IC6503	482220973235	I. C, RADIAL ERROR S. P.	[MB]
S616	EVQPCA05R	SW, PROGRAM	[MB]	IC6504	482220972587	I. C, FOCUS/RADIAL DRIVE	[MB]
S617	EVQPCA05R	SW, LINK	[MB]				
S618	EVQPCA05R	SW, AUTO CUE	[MB]			TRANSISTOR (S)	
S619	EVQPCA05R	SW, STOP	[MB]				
S620	EVQPCA05R	SW, SKIP (F)	[MB]	Q6502	482213044121	TRANSISTOR	[MB]
S621	EVQPCA05R	SW, SEARCH (F)	[MB]				
S622	EVQPCA05R	SW, RECALL	[MB]			DIODE (S)	
S623	EVQPCA05R	SW, SIDE A/B	[MB]				
S624	EVQPCA05R	SW, RANDOM	[MB]	D6505	482213030861	DIODE	[MB]
S625	EVQPCA05R	SW, TIME FADE	[MB]	D6506	482213030861	DIODE	[MB]
S626	EVQPCA05R	SW, OPEN/CLOSE	[MB]				
S627	EVQPCA05R	SW, PAUSE	[MB]			VARIABLE RESISTOR (S)	
S628	EVQPCA05R	SW, REPEAT	[MB]				
S629	EVQPCA05R	SW, CLEAR	[MB]	VR3520	482210110685	V. R, LASER POWER ADJ.	[MB]
S630	EVQPCA05R	SW, EDIT TAPE LENGTH	[MB]	VR3569	482210011193	V. R, FOCUS OFFSET ADJ.	[MB]
S631	EVQPCA05R	SW, TIME MODE	[MB]				
S632	EVQPCA05R	SW, PEAK SEARCH	[MB]			SWITCH	
S651	RSP2B010	SW, POWER					
		CONNECTOR (S) & SOCKET (S)		S1001	482227612523	SW, TRAY	[MB]
CN11	RJS1A6605	CONNECTOR (5P)					
CN12	RJT001H007	CONNECTOR (7P)	[MB]				
CN401	RJT001H014	CONNECTOR (14P)	[MB]				
CN411-414	RJU003K010M1	SOCKET (10P)					
CN431	RJT001H003	CONNECTOR (3P)	[MB]				
CN611-614	RJT003K010M1	CONNECTOR (10P)					
CN615	RJS1A6604	CONNECTOR (4P)					
CN891	RJS1A6607	CONNECTOR (7P)	[MB]				
		JACK (S)					
JK201	RJJ33T01	SYNCHRO EDIT					
JK801	RJH3201N	LINE OUT					
JK871	QJAD455ZC	HEADPHONES					
		EARTH CONTACT (S)					
GND601, 602	SUSD144	EARTH CONTACT					
GND871	RMC0075	EARTH CONTACT	[MB]				
		FLAT CABLE (S)					
FC1	RWJ1805100KX	FLAT CABLE (5P)	[MB]				
FC611	RWJ1804200XX	FLAT CABLE (4P)	[MB]				
FC871	RWJ1807130KX	FLAT CABLE (7P)	[MB]				

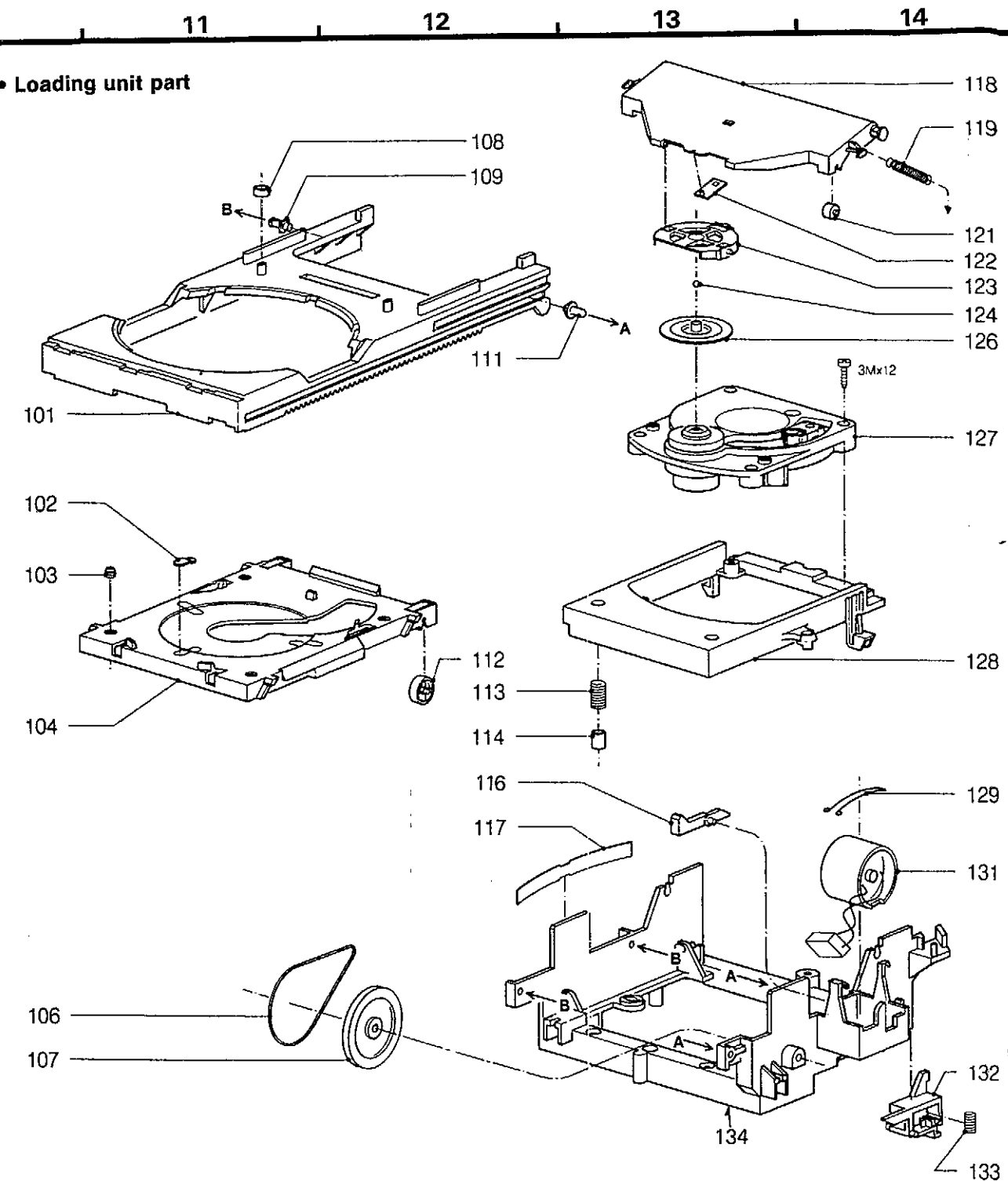
Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS		119	482249232883	SPRING, TENSION	[MB]
				121	482252890639	ROLLER	[MB]
				122	482246692257	PLATE	[MB]
1	RKM0152-K	CABINET	[MB]	123	482240261207	HOLDER	[MB]
2	SNE2129-1	SCREW		124	482252040177	SMALL BALL	[MB]
3	XTBS3+8JFZ1	SCREW		126	482253080503	RING, PRESSURE	[MB]
4	EYF52BC	FUSE HOLDER		127	482269130209	OPTICAL PICKUP UNIT	[MB]
5	SJS9236	AC INLET	△	128	482240261196	SUPPORT	[MB]
6	REX0007	CONNECTOR ASS' Y(7P)	[MB]	129	482249263746	CLAMPING SPRING	[MB]
7	REX0285	CONNECTOR ASS' Y(14P)	[MB]	131	482236120998	LOADING MOTOR	[MB]
8	RGK0467-K	TRAY ORNAMENT	[MB]	132	482240250244	BRACKET	[MB]
9	RFKHLPG420AE	REAR PANEL ASS' Y	(E, EG) [MB]	133	482249251935	SPRING, COMPRES.	[MB]
9	RFKHPG420AEB	REAR PANEL ASS' Y	(EB) [MB]	134	482270112729	CHASSIS	[MB]
10	RKA0040B	FOOT	[MB]				
11	RMK0077A	CHASSIS	[MB]			PACKING MATERIAL	
12	RMRO020	SPACER(A)	[MB]				
13	RMRO021	SPACER(B)	[MB]	P1	RPG1137	PACKING CASE	[MB]
14	RMRO573-K	SPACER(C)	[MB]	P2	RPN0429-1	CUSHION	[MB]
15	RMRO377	P. C. B. SUPPORT	[MB]	P3	RMRO024	LOCK SHAFT	[MB]
16	RMRO556-K	FL. HOLDER	[MB]	P4	RQCA0059	LOCK CAUTION SHEET	[MB]
17	RGU0030	POWER BUTTON		P5	XZB60X65A01Z	PROTECTION BAG (UNIT)	
18	RFKGLPG420AE	FRONT PANEL ASS' Y	[MB]	P6	XZB23X35C03	PROTECTION BAG (F. B.)	[MB]
18-1	RMRO378	HEADPHONES HOLDER	[MB]	P7	XZB26X17C03	PROTECTION BAG (CORD)	
19	RGU0467A-K2	MAIN BUTTON					
20	RGU0468-K2	SUB KEY BUTTON				ACCESSORIES	
21	XTBS26+8J	SCREW					
22	SHR328	FASTNER		A1	RFKSLPG420AE	INSTRUCTION MANUAL ASS' Y	(E) [MB]
23	XTB3+20JFZ	SCREW		A1	RQT1388-B	INSTRUCTION MANUAL	(EB) [MB]
24	XTB3+35JFZ	SCREW		A1	RQT1389-D	INSTRUCTION MANUAL	(EG) [MB]
25	XTB3+8JFZ	SCREW		A2	RJA0018-K	AC POWER SUPPLY CORD	(E, EG) △
26	RQLS0022	LASER CAUTION LABEL	[MB]	A2	SJA193	AC POWER SUPPLY CORD	(EB) △
27	RGW0048	H. P. VOLUME KNOB		A3	RQA0013	WARRANTY CARD	
28	RGU0278B-K3	TEN KEY BUTTON	[MB]	A4	RQCB0169	SERVICENTER LIST	
29	RQLS0060	LASER CAUTION LABEL	[MB]	A5	SJP2249-3	STEREO CONNECTION CABLE	
		LOADING UNIT PARTS		A6	EUR64798	REMOTE CONTROL TRANSMITTER	
				A6-1	UR64EC804	BATTERY COVER	
101	482244450603	DISC HOLDER	[MB]				
102	482232550176	GROMMET, CABLE	[MB]				
103	482232550177	GROMMET, CABLE	[MB]				
104	482246692251	DISC TRAY	[MB]				
106	482235810115	DRIVE BELT	[MB]				
107	482252232359	WHEEL, GEAR	[MB]				
108	482253251518	RING, RUBBER	[MB]				
109	482240261081	GUIDE	[MB]				
111	482240261132	GUIDE	[MB]				
112	482252890638	ROLLER	[MB]				
113	482249251902	SPRING, COMPRES.	[MB]				
114	482246661587	FOAM	[MB]				
116	482240261107	LEVER	[MB]				
117	482249263659	SPRING, BLADE	[MB]				
118	482244460568	DISC LID	[MB]				

**EXPLODED VIEWS**

• Cabinet and chassis parts



• Loading unit part

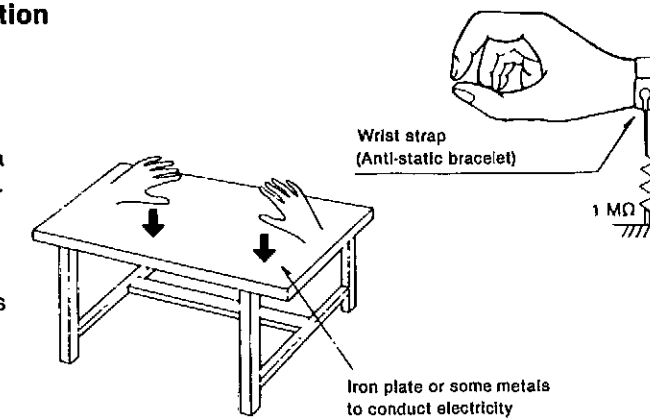


• Grounding for electrostatic breakdown prevention

1. Human body grounding  
Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table 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.



RESISTORS & CAPACITORS

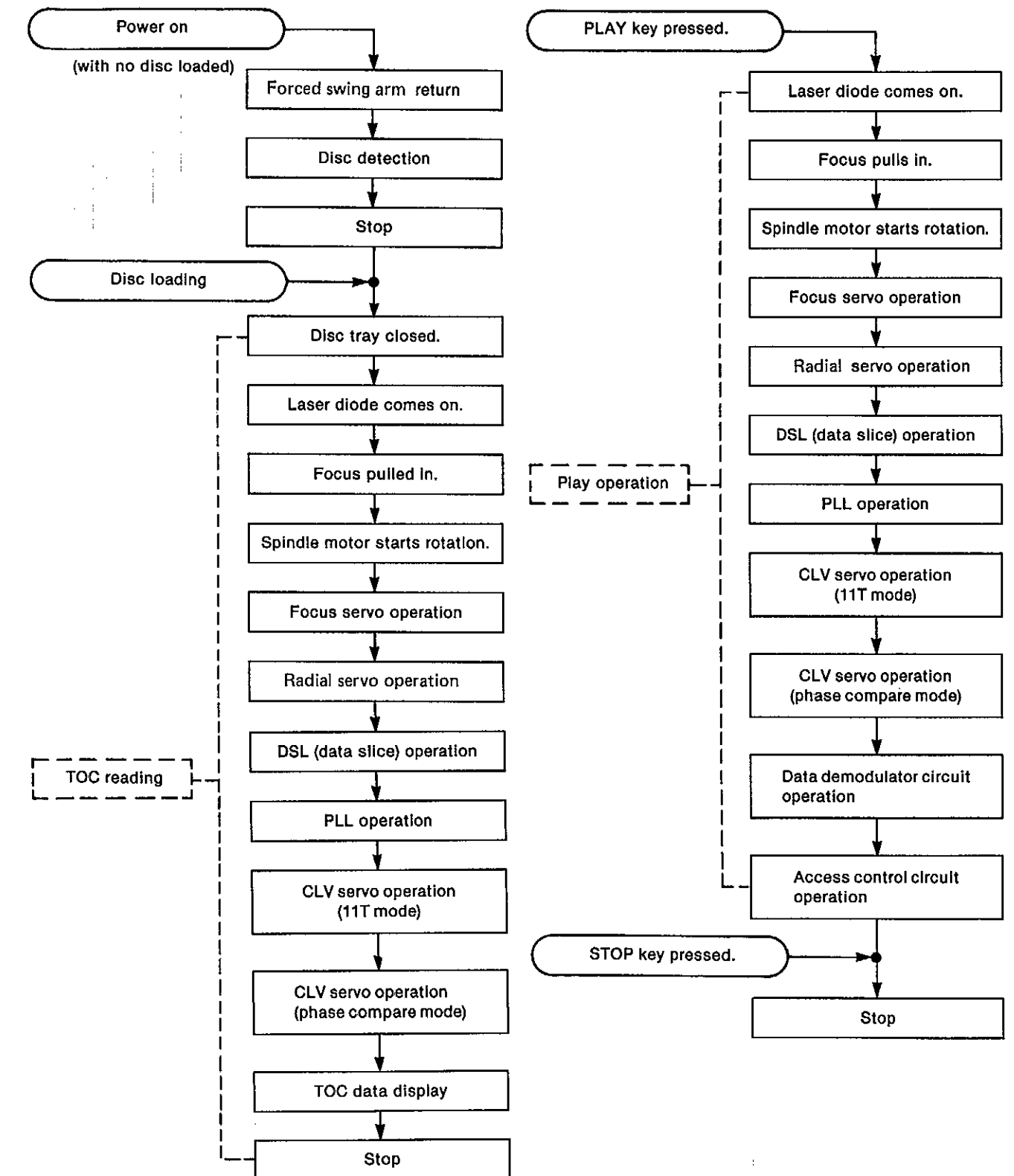
Notes : \* Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)  
 \* Resistance values are in ohms, unless specified otherwise, 1K=1,000(OHM) , 1M=1,000K(OHM)  
 \* [MB] Indicates in Remarks column parts that are supplied by MBV.

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
RESISTORS								
R11	ERDS2TJ182	1/4W 1.8K	R833	ERDS2TJ472	1/4W 4.7K	C831, 832	ECEAJU331B	6.3V 330U
R12, 13	ERDS2TJ102	1/4W 1K	R834	ERDS2TJ561	1/4W 560	C833, 834	ECFR1E104ZF5	25V 0.1U
R14	ERDS2TJ103	1/4W 10K	R840	ERDS2TJ181T	1/4W 180	C838	ECBT1H5R6K5	50V 5.6P
R15	ERDS2TJ822	1/4W 8.2K	R851	ERDS2TJ471	1/4W 470	C840	ECBT1H5R6K5	50V 5.6P
R16, 17	ERDS2TJ103	1/4W 10K	R854	ERDS2TJ472	1/4W 4.7K	C841	ECEAJKA101B	6.3V 100U
R20	ERDS2TJ102	1/4W 1K	R861	ERDS2TJ102	1/4W 1K	C842	ECFR1E104ZF5	25V 0.1U
R23	ERDS2TJ222	1/4W 2.2K	R871, 872	ERDS2TJ473	1/4W 47K	C844	ECBT1H270J5	50V 27P
R25	ERDS2TJ222	1/4W 2.2K	R873, 874	ERDS2TJ123	1/4W 12K	C851	ECEAJU471	6.3V 470U
R51	ERDS2TJ331	1/4W 330	R875, 876	ERDS2TJ104	1/4W 100K	C871, 872	ECEA1EK93R3B	25V 3.3U
R52	ERDS2TJ272T	1/4W 2.7K	R885, 886	ERDS2TJ222	1/4W 2.2K	C873, 874	ECQB1H103NF3	50V 0.01U
R53, 54	ERDS2TJ472	1/4W 4.7K	R887, 888	ERDS2TJ680T	1/4W 68	C875-880	ECBT1C103NS5	16V 0.01U
R201	ERDS2TJ100	1/4W 10	R889, 890	ERDS2TJ472	1/4W 4.7K	C881, 882	ECEAJAN101B	10V 100U
R202	ERDS2TJ102	1/4W 1K	R891, 892	ERDS2TJ102	1/4W 1K	C891	ECEAJKA101B	16V 100U
R203	ERDS2TJ273	1/4W 27K	R897	ERDS2TJ103	1/4W 10K	C892	ECBT1C103NS5	16V 0.01U
R301	ERDS2TJ182	1/4W 1.8K	R898	ERDS2TJ822	1/4W 8.2K	C895	ECBT1C103NS5	16V 0.01U
R302	ERDS2TJ823T	1/4W 82K	CAPACITORS					
R303	ERDS2TJ104	1/4W 100K	C1, 2	ECFTD103KXL	50V 0.01U	R3501	482205024702	1/8W 4.7K [MB]
R304	ERDS2TJ471	1/4W 470	C10	ECFR1E104ZF5	25V 0.1U	R3502	482205110104	1/8W 100K [MB]
R315	ERDS2TJ104	1/4W 100K	C11	ECA1C222B	16V 2200P	R3505	482205110123	1/4W 12K [MB]
R351	ERDS2TJ103	1/4W 10K	C12	ECEAJC0102	16V 1000U	R3506	482205110101	1/8W 100 [MB]
R352	ERDS2TJ104	1/4W 100K	C14, 15	ECEAJKA470B	6.3V 47U	R3507	482205120222	1/8W 2.2K [MB]
R353	ERDS2TJ123	1/4W 12K	C16	ECEAJEU101	25V 100U	R3508	482205110243	1/4W 24K [MB]
R354	ERDS2TJ104	1/4W 100K	C17, 18	ECEAJHJ101	50V 100U	R3509	482205110562	1/8W 5.6K [MB]
R355, 356	ERDS2TJ333	1/4W 33K	C19	ECEAJKA101B	16V 100U	R3510	482205110103	1/8W 10K [MB]
R357	ERDS2TJ688	1/4W 6.8 Δ	C51	ECEAJKA220B	10V 22U	R3521	482205110221	1/8W 220 [MB]
R401	ERDS2TJ104	1/4W 100K	C201, 202	ECBT1C103NS5	16V 0.01U	R3522	482205210229	1/3W 22 [MB]
R411, 412	ERDS2TJ472	1/4W 4.7K	C301	ECBT1C103NS5	16V 0.01U	R3523	482205210129	1/3W 12 [MB]
R431, 432	ERDS2TJ223	1/4W 22K	C302	ECBT1H270J5	50V 27P	R3524	482205110101	1/8W 100 [MB]
R433	ERDS2TJ104	1/4W 100K	C303, 304	ECFR1E104ZF5	25V 0.1U	R3530	482205110473	1/4W 47K [MB]
R434	ERDS2TJ224T	1/4W 220K	C305	ECBT1H102K85	50V 1000P	R3531	482205110153	1/4W 15K [MB]
R435	ERDS2TJ104	1/4W 100K	C306	ECFR1E223K8	25V 0.022U	R3533	482205110152	1/4W 5.1K [MB]
R436	ERDS2TJ224T	1/4W 220K	C307	ECQV1H474J23	50V 0.47U	R3534	482205110224	1/8W 220K [MB]
R437, 438	ERDS2TJ223	1/4W 22K	C308	ECBT1H102K85	50V 1000P	R3535	482205021203	3/5W 12K [MB]
R601	ERDS2TJ120T	1/4W 12	C309	ECFR1E104ZF5	25V 0.1U	R3540	482205024708	3/5W 4.7 [MB]
R801, 802	ERDS2TJ163T	1/4W 16K	C312	ECBT1C103NS5	16V 0.01U	R3541	482205110682	1/4W 6.8K [MB]
R803-806	ERDS2TJ472	1/4W 4.7K	C351	ECBT1H102K85	50V 1000P	R3542	482205110829	1/8W 82 [MB]
R807, 808	ERDS2TJ163T	1/4W 16K	C401	ECFR1E104ZF5	25V 0.1U	R3543	482205110682	1/8W 6.8K [MB]
R809-812	ERDS2TJ393	1/4W 39K	C402	ECEAJKA470B	6.3V 47U	R3550	482205110182	1/4W 1.8K [MB]
R813, 814	ERDS2TJ153	1/4W 15K	C404	ECFR1E104ZF5	25V 0.1U	R3555	482205110183	1/4W 18K [MB]
R815, 816	ERDS2TJ183T	1/4W 18K	C601, 602	ECBT1H102K85	50V 1000P	R3560	482211191494	1/8W 11K [MB]
R817, 818	ERDS2TJ153	1/4W 15K	C801, 802	ECBT1H121K85	50V 120P	R3561	482205110154	1/4W 150K [MB]
R819, 820	ERDS2TJ471	1/4W 470	C803, 804	ECBT1H102K85	50V 1000P	R3562	482205021204	3/5W 120K [MB]
R821, 822	ERDS2TJ473	1/4W 47K	C805, 806	ECBT1H121K85	50V 120P	R3563	482205110563	1/8W 56K [MB]
R823, 824	ERDS2TJ331	1/4W 330	C813, 814	ECEAJKN220B	16V 22U	R3564	482211191495	1/8W 160K [MB]
R825, 826	ERDS2TJ102	1/4W 1K	C815, 816	ECBT1H102K85	50V 1000P	R3565	482205210279	1/3W 27 [MB]
R831, 832	ERDS2TJ470	1/4W 47	C817	ECFR1E104ZF5	25V 0.1U	R3566	482205110229	1/8W 22 [MB]
						R3567	482205028203	1/8W 82K [MB]

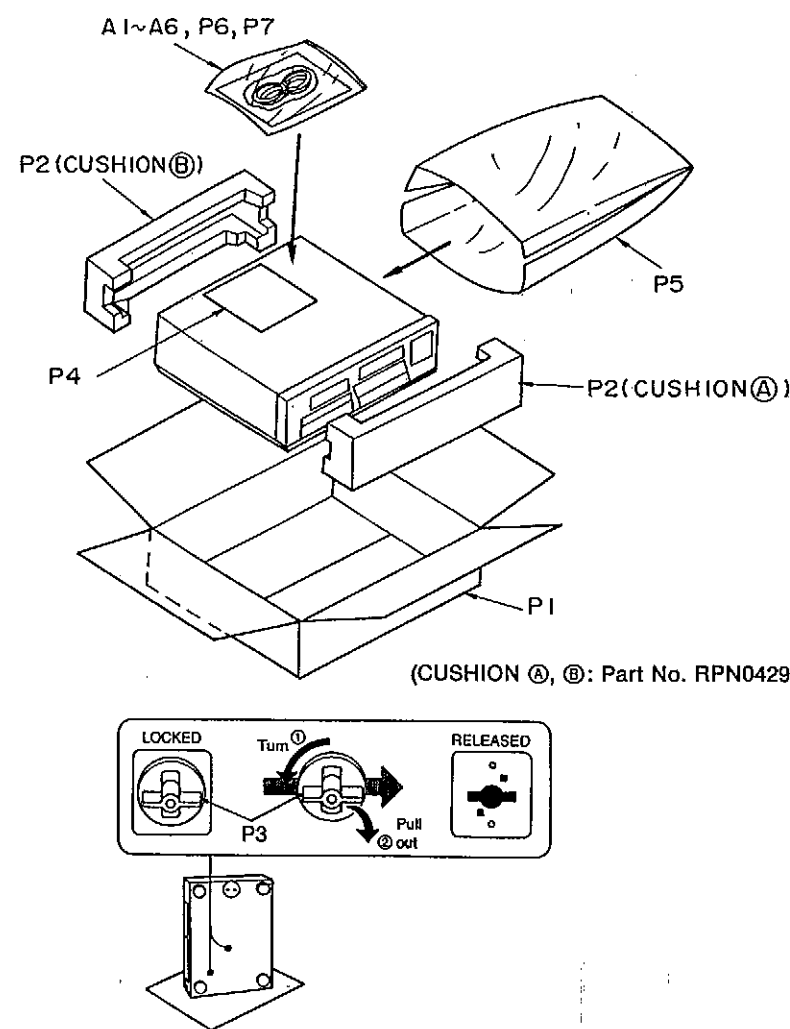
TROUBLESHOOTING GUIDE

SL-PG420A Operation Sequence Check Sheet

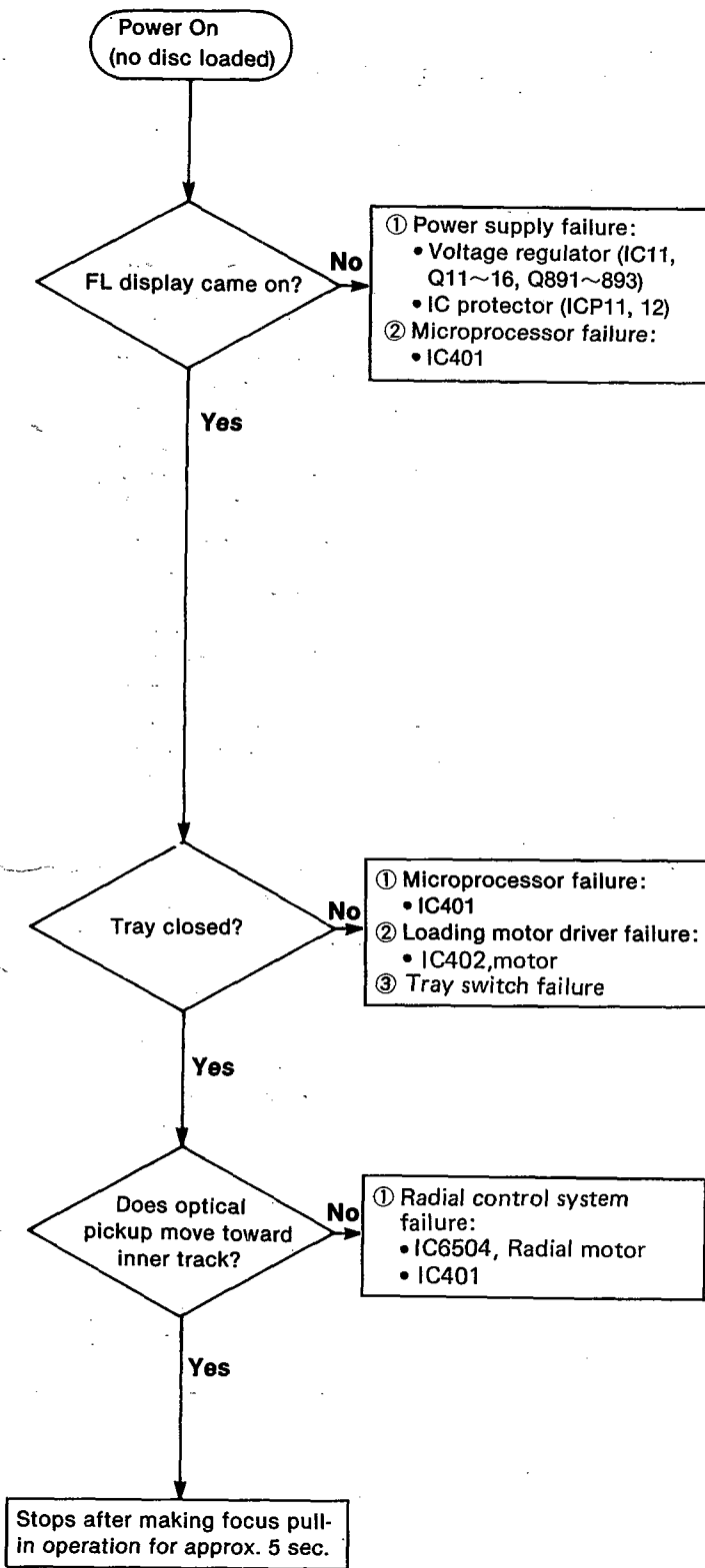
Play Operation Sequence



PACKING



(Operation Sequence Just After Power On)



(TOC Read Operation-PLAY Operation)

