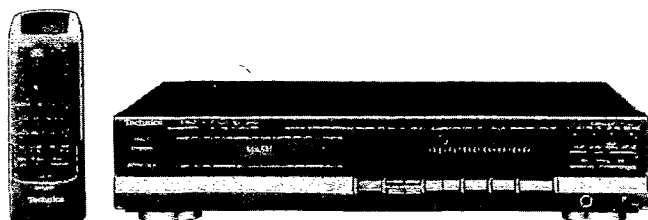


Service Manual

Compact Disc Player

SL-PG440A

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


Colour

(K) Black Type

Area

Suffix for Model No.	Area	Colour
(E)	Europe	(K)
(EB)	Great Britain	
(EG)	Germany and Italy	

*

- 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.

SL-PG320A TRAVERSE DECK SERIES (RAD0301-1)

SPECIFICATIONS

(DIN 45 500)

■ Audio

No. of channels	2 (left and right, stereo)
Frequency response	2–20,000 Hz, ± 0.5 dB
Output voltage	2 V (at 0 dB)
Dynamic range	98 dB
S/N	100 dB
Harmonic distortion	0.0022% (1 kHz, 0 dB)
Total harmonic distortion	0.0035% (1 kHz, 0 dB)
Wow and flutter	Below measurable limit
DA converter	MASH (1 bit)
Output impedance	600 Ω
Load impedance	More than 10 k Ω
Headphone output level	15 mW max. 32 Ω (adjustable)

■ Pickup

Wavelength	780 nm
Laser Power	No hazardous radiation is emitted (with safety protection)

■ General

Power consumption	10 W
Power supply	AC 50/60 Hz, 230–240 V
Dimensions (W×H×D)	430×92×290 mm
Weight	3.6 kg

Note:

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

Technics

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HANDLING PRECAUTIONS FOR TRAVERSE DECK

The laser diode in the traverse deck (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 traverse deck (optical pickup).

●Handling of traverse deck (optical pickup)

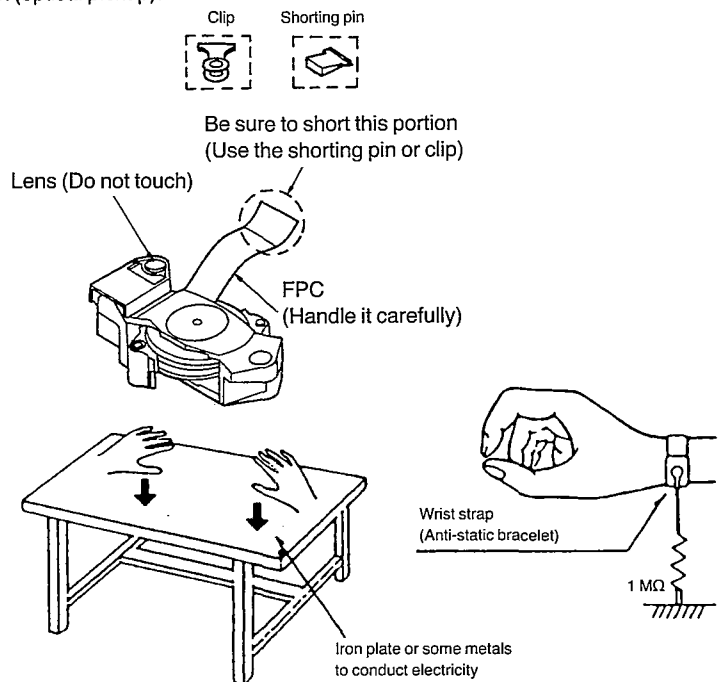
1. Do not subject the traverse deck (optical pickup) to static electricity as it is extremely sensitive to electrical shock.
2. To prevent the breakdown of the laser diode, an anti-static shorting pin is inserted into the flexible board (FPC board). When removing or connecting the short pin, finish the job in as short time as possible.
3. Take care not to apply excessive stress to the flexible board (FPC board).

●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 traverse deck (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 traverse deck (optical pickup).



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: 780 nm

Maximum output radiation power from pick up: 100 μ W/VDE

Laser radiation from the pick up unit 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.

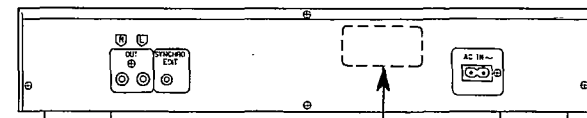
ACHTUNG: Dieses produkt enthält eine laserdiode. Im eingeschalteten zustand wird unsichtbare laserstrahlung von der lasereinheit abgestrahlt.

Wellenlänge: 780 nm

Maximale strahlungsleistung der lasereinheit: 100 μ 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.



**CLASS 1
LASER PRODUCT**

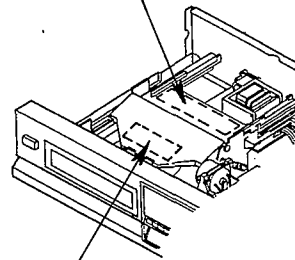
**LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT**

VARO!
AVATTAESSA JA SUOJALUKITUS
OHITETTAESSA OLET ALTTIINA
NÄKYMÄTÖN LASERSÄTEILYLLE.
ÄLÄ KATSO SÄTEESIN.

VARNING
OSYNLIG LASERSTRÅLNING NÄR
DENNA DEL ÄR ÖPPNAD OCH
SPÄRREN ÄR URKOPPLAD.
BETRAKTA EJ STRÅLEN.

ADVERSEL
USYNLIG LASERSTRÅLNING NÄR
DEKSEL ÄPNES OG SIKKERHEDSLÅS
BRYTES. UNNGÅ EKSPONERING FOR
STRÅLEN.

RQLS0074



ADVARSEL: USYNLIG LASERSTRÅLNING
VED ÅBNING, NÅR SIKKERHEDSAF-
BRYDERE ER UDE AF FUNKTION.
UNDGÅ UDSÆTTELSE FOR STRÅLING.

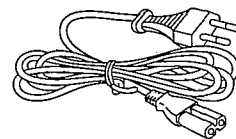
VORSICHT
Unsichtbare
Laserstrahlung, wenn
Abdeckung geöffnet.
Nicht dem Strahl
aussetzen.

RQLS0022

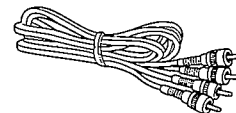
■ ACCESSORIES

Note:

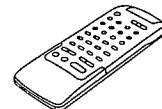
The configuration of the AC power supply cord differs according to area.



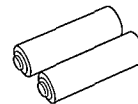
AC power supply cord
for (E) and (EG) areas...(RJA0018-1K) 1



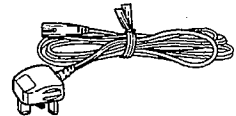
Stereo connection cable
(SJP2249-3) 1



Remote control transmitter
(EUR642100) 1



UM-4, (AAA, R03) 2
for Remote control transmitter

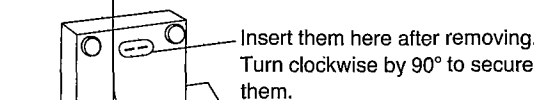
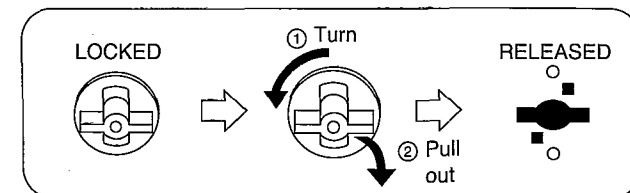


for (EB) area...(VJA0733) 1

■ INSTALLATION

Before placement

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



Insert them here after removing.
Turn clockwise by 90° to secure them.

Soft cloth or similar material
(to prevent scratches)

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.

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 place (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 it is not subjected to any strong bumps.

Always remove the 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.



■ CAUTION FOR AC MAINS LEAD (For United Kingdom)

("EB" area code model only)

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.

A 5-ampere fuse is fitted in this plug.

Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5-ampere and that it is approved by ASTA or BSI to BS1362. Check for the ASTA mark  or the BSI mark  on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.

If you lose the fuse cover the plug must not be used until a replacement cover is obtained.

A replacement fuse cover can be purchased from your local dealer.

CAUTION!

IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.

THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13-AMPERE SOCKET.

If a new plug is to be fitted please observe the wiring code as shown below.

If in any doubt please consult a qualified electrician.

IMPORTANT


The wires in this mains lead are coloured in accordance with the following code:

Blue: Neutral, Brown: Live.

As these colours may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured Blue must be connected to the terminal which is marked with the letter N or coloured Black or Blue.

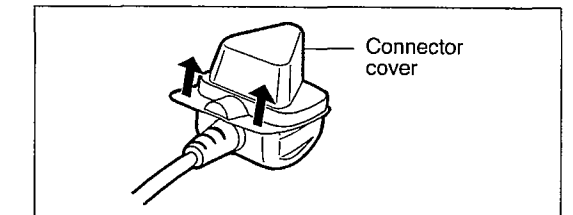
The wire which is coloured Brown must be connected to the terminal which is marked with the letter L or coloured Brown or Red.

WARNING: DO NOT CONNECT EITHER WIRE TO THE EARTH TERMINAL WHICH IS MARKED WITH THE LETTER E, BY THE EARTH SYMBOL  OR COLOURED GREEN OR GREEN/YELLOW.

THIS PLUG IS NOT WATERPROOF—KEEP DRY.

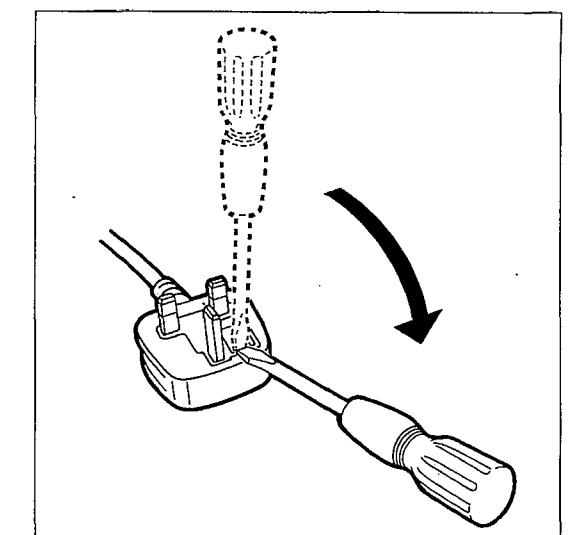
Before use

Remove the connector cover as follows.

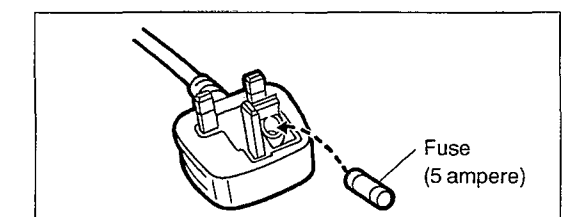


How to replace the fuse

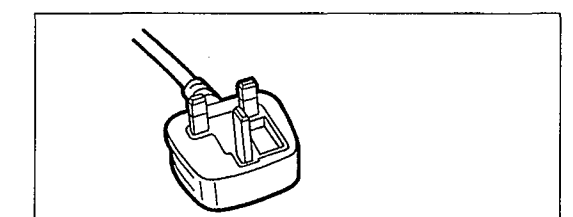
1. Open the fuse cover with a screwdriver.



2. Replace the fuse.



3. Close the fuse cover.



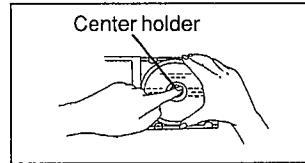
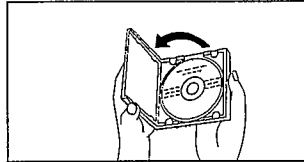
■ CONCERNING COMPACT DISCS

Only compact discs having this mark can be used with this unit.

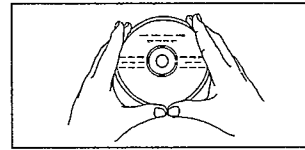
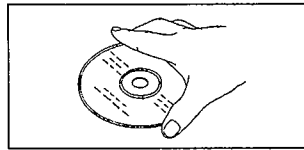


Handling precautions

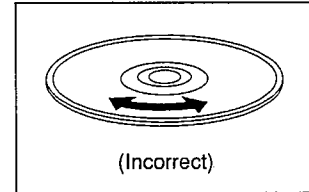
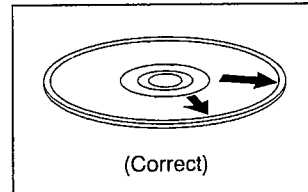
To open the case, gently press the sides of the top, holding the top at both sides.



- To remove the disc from the case, press the center holder and lift the disc, holding by the edges.
- To return the disc to the case, insert the disc with label facing up and press downward at the center.
- Hold compact discs by the edges so the surface is not soiled with fingerprints. Fingerprints, dirt and scratches can cause skipping and distortion.



- Do not use record cleaning sprays, benzine, thinner, static electricity prevention liquids or any other solvent.
- If the surface is soiled, wipe gently with a soft, damp (water only) cloth.
- Always move the cloth directly outward from the center of the disc, not in a circular motion as with standard phonograph records.



- If the disc is brought from a cold to a warm environment, moisture may form on the disc. Wipe this off with a soft, dry, lint-free cloth before using the disc.
- Do not write on the label side with a ball-point pen or other writing instrument.

Storage precautions

Be sure to store discs in their cases to protect them from dust, scratches and warping.

Do not place or store discs in the following places:

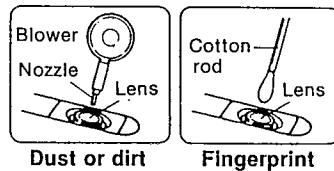
- 1) Locations exposed to direct sunlight.
- 2) Humid or dusty locations.
- 3) Locations directly exposed to a heat outlet or heating appliance.
- 4) In the glove compartment or rear ledge of an automobile.

■ 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.



Fingerprint

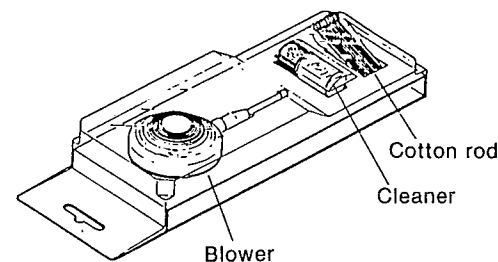
• To remove fingerprint

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

Cautions:

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

Lens cleaning kit (Part No. : SZZP1038C)

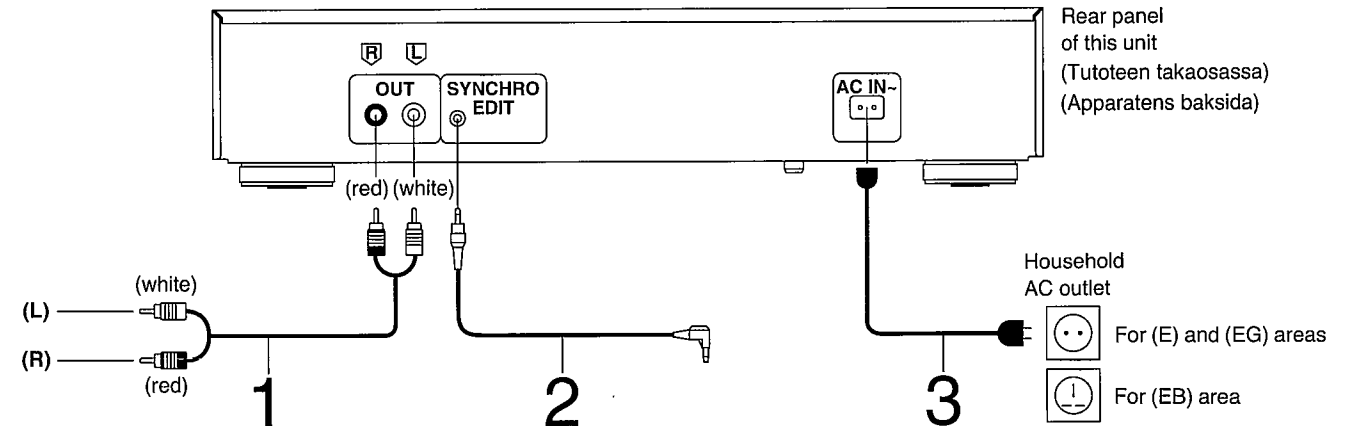


■ CONNECTIONS

Before making connections, be sure that the power of this unit and all other system components is first turned off. See the operating instructions of the amplifier or the cassette deck for details.

Note:

The configuration of the AC outlet and AC power supply cord differs according to area.



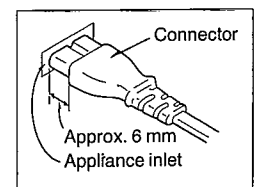
- 1 Connect the stereo connection cable (included) to the "CD" or "AUX" terminals of the amplifier.

- 2 Connect the synchro edit cable (included with the cassette deck) to the "SYNCHRO EDIT" terminal of the Technics cassette deck.

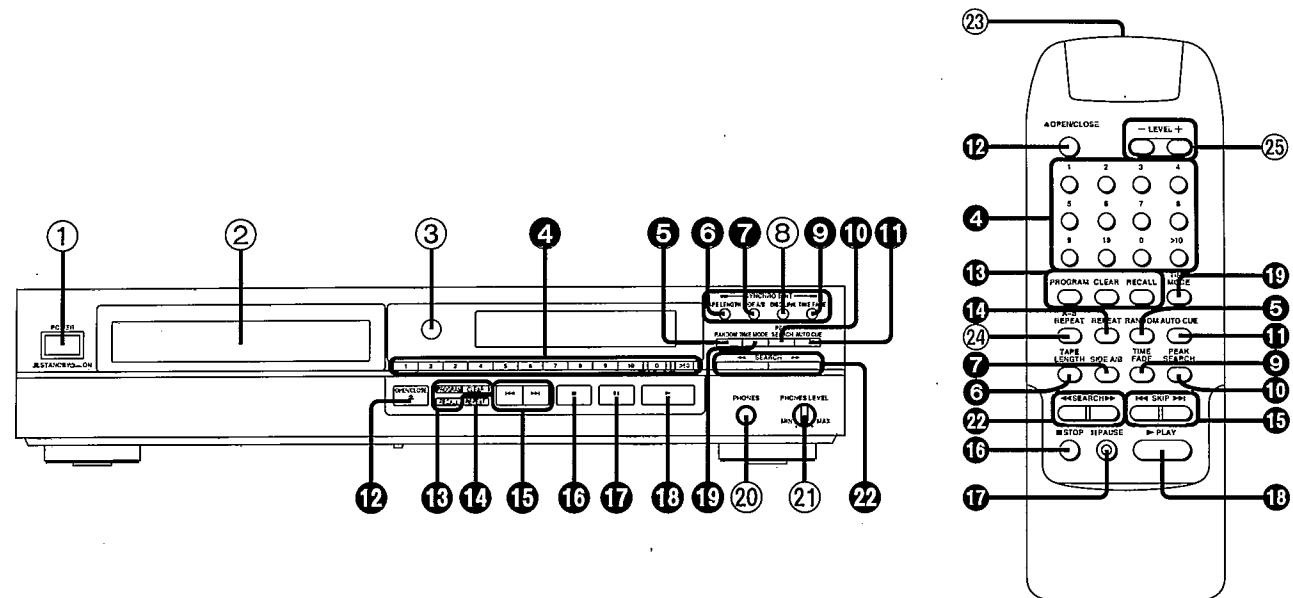
- 3 Connect the AC power supply cord (included) to the "AC OUTLET" of the amplifier or the household AC outlet.

Insertion of Connector

Even when the connector is perfectly inserted, depending on the type of inlet used, the front part of the connector may jut out as shown in the drawing. However there is no problem using the unit.




■ LOCATION OF CONTROLS




Control section








Numbers with black background (for example ④) indicate functions available on the remote control.

① Power “STANDBY /ON” switch (POWER, STANDBY 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  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 (SENSOR)
- ④ Numeric buttons (1–10, 0, >10)
- ⑤ Random play button (RANDOM)
- ⑥ Tape length button (TAPE LENGTH)
- ⑦ Tape side select button (SIDE A/B)
- ⑧ Disc link button (DISC LINK)
- ⑨ Time fade button (TIME FADE)
- ⑩ Peak search button (PEAK SEARCH)
- ⑪ Auto cue button (AUTO CUE)
- ⑫ Disc tray open/close button
( OPEN/CLOSE)

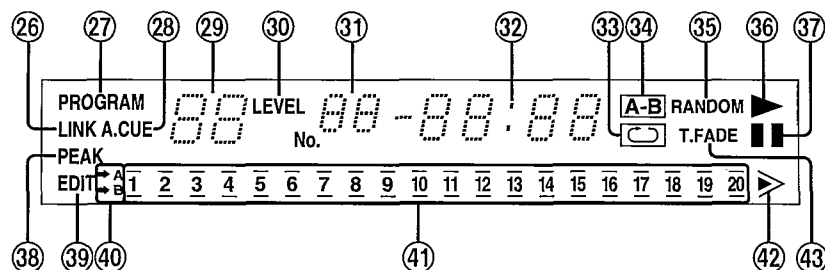
- ⑬ Buttons for program function
 - Program button (PROGRAM)
 - Clear button (CLEAR)
 - Recall button (RECALL)




- ⑭ Repeat button (REPEAT)
- ⑮ Skip buttons (, )
- ⑯ Stop button ()
- ⑰ Pause button ()
- ⑱ Play button ()
- ⑲ Time mode select button (TIME MODE)
- ⑳ Headphones jack (PHONES) (Ø6, 32Ω)
- ㉑ Headphones volume control
(PHONES LEVEL)
- ㉒ Search buttons (, SEARCH )

Remote control section

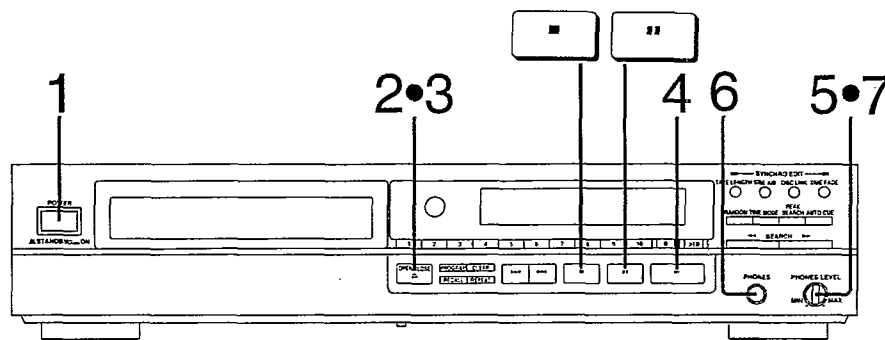
- ㉓ Remote control transmission window
- ㉔ A-B repeat button (A-B REPEAT)
- ㉕ Level control buttons (– LEVEL +)

Display section



- ②⑥ Disc link indicator (LINK)
- ②⑦ Program indicator (PROGRAM)
- ②⑧ Auto cue indicator (A.CUE)
- ②⑨ Track number display
- ③⑩ Level control indicator (LEVEL)
- ③① Index/program sequence display
- ③② Time display
- ③③ Repeat indicator ()
- ③④ A-B repeat indicator ()
- ③⑤ Random play indicator (RANDOM)
- ③⑥ Play indicator ()
- ③⑦ Pause indicator ()
- ③⑧ Peak search indicator (PEAK)
- ③⑨ Compact disc edit indicator (EDIT)
- ④⑩ Tape side indicator (, )
- ④① Track number indicator (, )
- ④② “Over” mark ()
- ④③ Time fade/fade out indicator (T.FADE)

■ BASIC OPERATING PROCEDURE



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

If there is a disc in the disc tray, play will start from the first track.

2 Press open/close button **▲** to open the disc tray and insert a disc.

(Also available from the remote control)

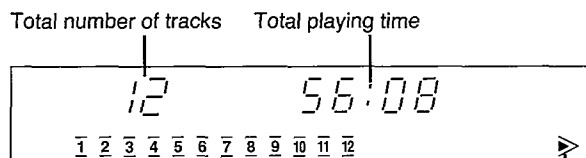
Label must face upward.



Before attempting to use the remote control transmitter to open the disc tray, make sure that there are no obstructions in front of the unit.

3 Press open/close button **▲** again to close the disc tray.

(Also available from the remote control)



Lights when the total number of tracks exceeds 21

To stop disc play

(Also available from the remote control)

Press stop button **■**.



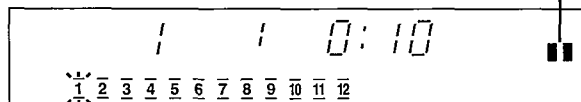
To temporarily stop disc play

(Also available from the remote control)

Press pause button **||**.



Pause indicator



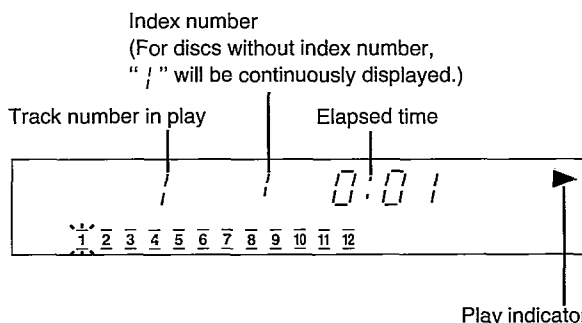
Press play button **▶** to resume play.

• The total playing time displayed includes the silent sections between tracks. For this reason, it may be a few seconds longer than the playing time indicated on the disc.

• You can skip this step and press play button **▶**. The disc tray will be automatically closed and then play will start from the first track.

4 Press play button **▶**.

(Also available from the remote control)



The unit stops automatically when the last track finishes playing.

How to use headphones

5 Reduce the headphones volume level.

6 Connect the headphones to the headphones jack.

Plug type: Stereo large plug

PHONES



Headphones
(not included)

7 Adjust the volume.

Avoid listening for prolonged periods of time to prevent hearing damage.

DISASSEMBLY INSTRUCTIONS

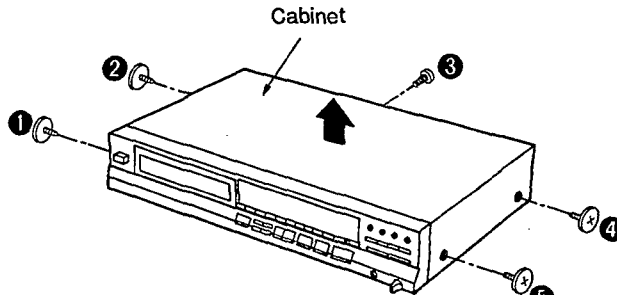
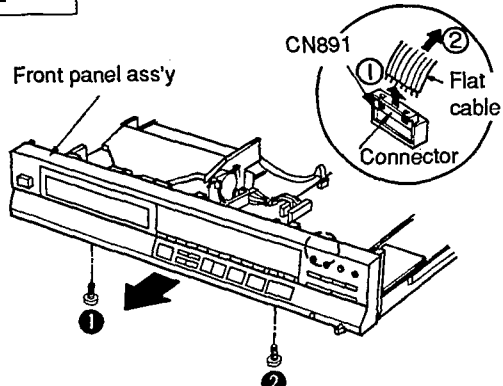
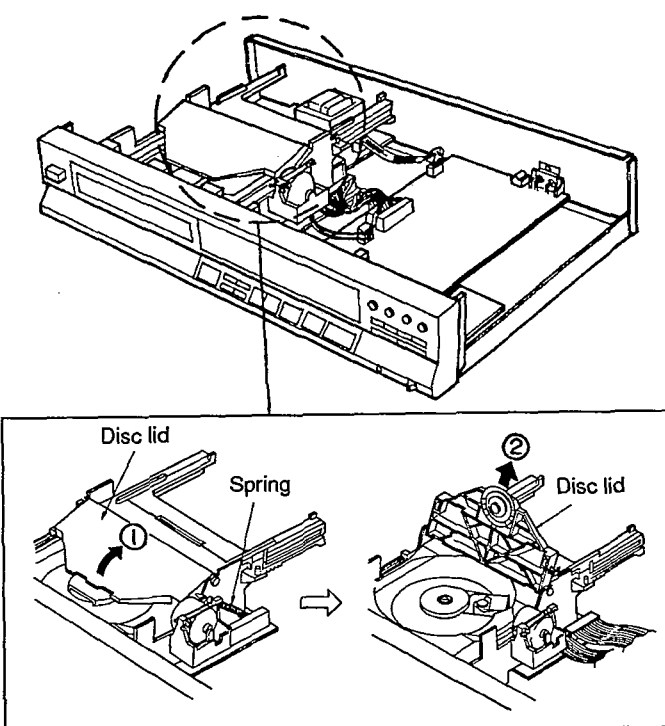
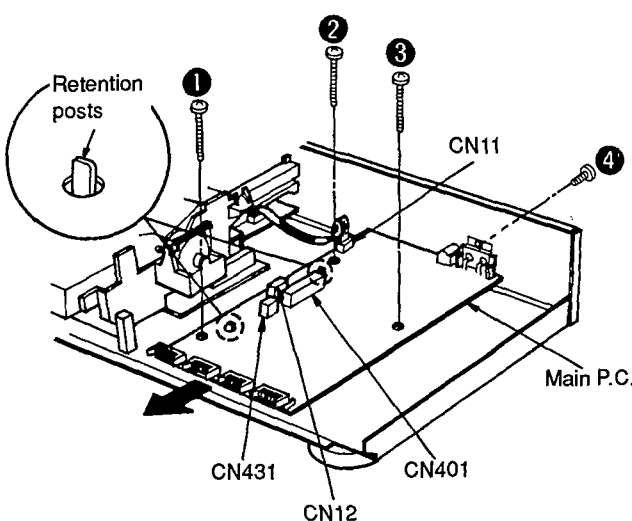
Warning: This product uses a laser diode. Refer to caution statements on page 2.

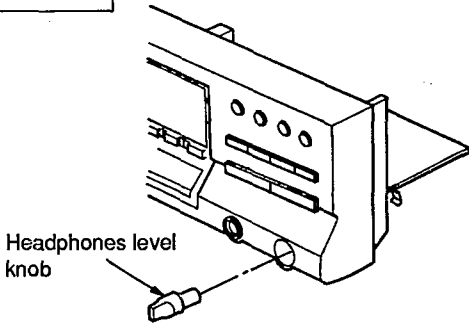
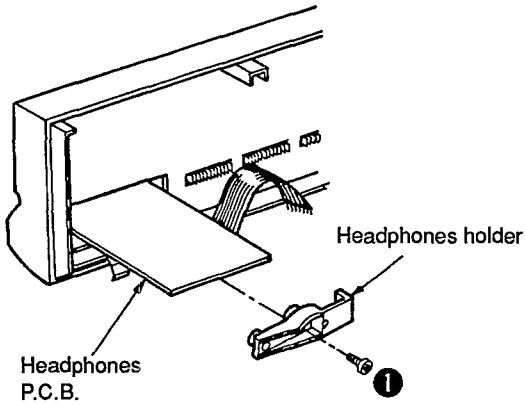
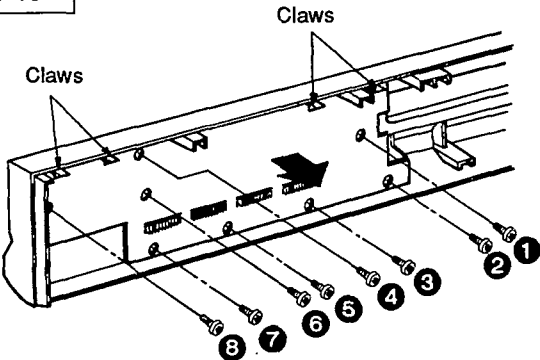
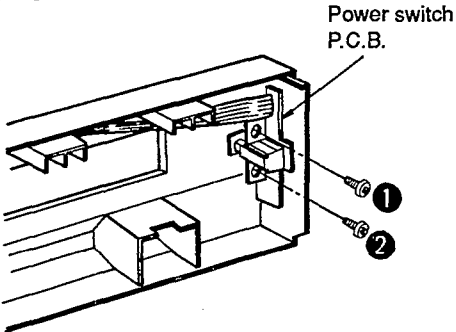
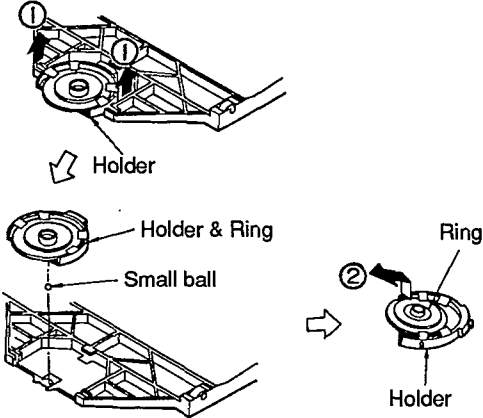
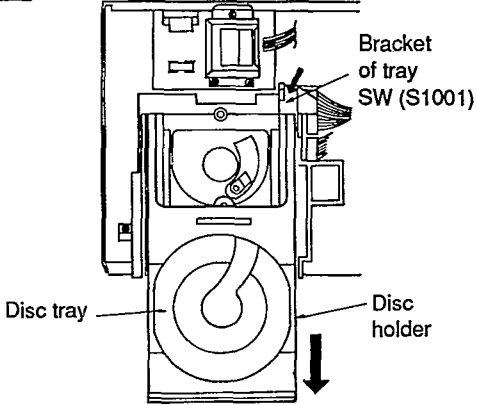
ACHTUNG: Die Lasereinheit nicht zerlegen.

Die Lasereinheit darf nur gegen eine vom Hersteller spezifizierte Einheit ausgetauscht werden.

"ATTENTION SERVICER" Some chassis components may have sharp edges. Be careful when disassembling and servicing.

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

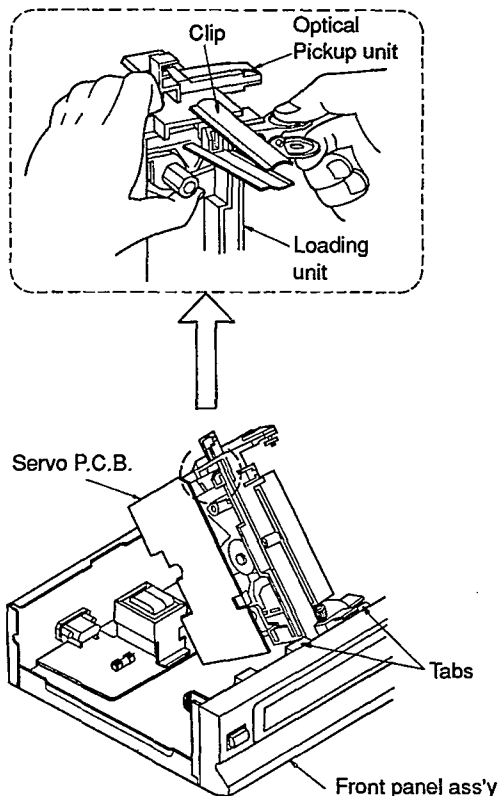
Ref. No. 1	Removal of the cabinet	Ref. No. 2	Removal of the front panel ass'y
Procedure 1	 <ol style="list-style-type: none"> 1. Remove the 5 screws (1~5). 2. Remove the cabinet in the direction of arrow. 	Procedure 1→2	 <ol style="list-style-type: none"> 1. Remove the 1 connector (CN891). 2. Remove the 2 screws (1, 2). 3. Remove the front panel ass'y in the direction of arrow.
Ref. No. 3	Removal of the disc lid	Ref. No. 4	Removal of the main P.C.B.
Procedure 1→3	<ol style="list-style-type: none"> 1. Remove the spring. 2. Move the disc lid in the direction of arrow ① and pull out this in the direction of arrow ②. 	Procedure 1→4	 <ol style="list-style-type: none"> 1. Remove the 4 connectors (CN11, CN12, CN401, CN431). 2. Remove the 4 screws (1~4). 3. Lift the main P.C.B. off the retention posts on the chassis. 4. Remove the main P.C.B. in the direction of arrow.

Ref. No. 5	Removal of the headphones P.C.B.	<div data-bbox="181 232 651 555">  <p>Headphones level knob</p> </div> <div data-bbox="925 143 1452 546">  <p>Headphones holder</p> <p>Headphones P.C.B.</p> </div> <div data-bbox="134 595 497 622"> 1. Pull out the headphones level knob. </div> <div data-bbox="852 568 1190 622"> 2. Remove the 1 screw (①). 3. Remove the headphones holder. </div>	
Ref. No. 6	Removal of the operation P.C.B.	Ref. No. 7	Removal of the power switch P.C.B.
Procedure 1→2→5→6		Procedure 1→2→7	
<div data-bbox="220 792 762 1151">  <p>Claws</p> </div> <div data-bbox="134 1173 443 1223"> 1. Remove the 8 screws (①~⑧). 2. Release the 4 claws. </div>		<div data-bbox="963 806 1420 1137">  <p>Power switch P.C.B.</p> </div> <div data-bbox="836 1196 1142 1223"> • Remove the 2 screws (①, ②). </div>	
Ref. No. 8	Removal of the holder and ring	Ref. No. 9	Removal of the disc holder
Procedure 1→3→8		Procedure 1→2→3→9	
<div data-bbox="236 1429 721 1845">  <p>Holder</p> <p>Holder & Ring</p> <p>Small ball</p> <p>Ring</p> <p>Holder</p> </div> <div data-bbox="134 1895 593 1948"> 1. Pull out the holder in the direction of arrow ①. 2. Remove the ring in the direction of arrow ②. </div> <div data-bbox="134 1975 616 2002"> Caution: Be sure to handle the small ball carefully. </div>		<div data-bbox="970 1406 1449 1809">  <p>Bracket of tray SW (S1001)</p> <p>Disc tray</p> <p>Disc holder</p> </div> <div data-bbox="836 1841 1391 2002"> 1. Pull the disc holder slowly in the direction of arrow until the disc tray comes up. 2. Pull the disc holder until it stops. 3. Push the bracket of tray SW (S1001) in the direction of arrow. 4. Pull out the disc holder further to remove it. </div>	

Ref. No. 10	Removal of the loading motor	<div data-bbox="295 197 678 548"> </div> <div data-bbox="778 331 842 387" style="text-align: center;"> </div> <div data-bbox="901 179 1372 504"> </div> <div data-bbox="108 566 347 600" style="margin-top: 10px;"> 1. Remove the drive belt. </div> <div data-bbox="813 515 1364 600" style="margin-top: 10px;"> 2. Release the clamping spring. 3. Unsolder the 2 terminals of the lead wire of the loading motor. </div>	
Ref. No. 11	Removal of the loading unit	Ref. No. 12	Removal of the servo P.C.B.
<div data-bbox="108 712 244 768" style="margin-bottom: 10px;"> Procedure 1→2→3→11 </div> <div data-bbox="116 739 762 1220"> </div> <div data-bbox="108 1261 654 1373" style="margin-top: 10px;"> 1. Pull the disc holder slowly in the direction of arrow until the disc tray comes up. 2. Remove the 3 screws (①~③). 3. Remove the 3 connectors (CN12, CN401, CN431). </div>		<div data-bbox="794 712 970 768" style="margin-bottom: 10px;"> Procedure 1→2→3→9→12 </div> <div data-bbox="869 750 1452 1153"> </div> <div data-bbox="813 1182 1380 1373" style="margin-top: 10px;"> 1. Remove the 4 screws (①~④) with 2.0mm allen wrench (SZZP1101C). 2. Remove the FPC board (CN101) from the optical pickup. 3. Remove the 1 connector (CN102) of the turntable motor. Caution: To prevent the breakdown of the laser diode, antistatic shorting pin is inserted into the FPC board. </div>	
Ref. No. 13	Removal of the optical pickup unit	Ref. No. 14	Removal of the power supply P.C.B.
<div data-bbox="108 1485 252 1574" style="margin-bottom: 10px;"> Procedure 1→2→3→9→11→12→13 </div> <div data-bbox="159 1523 710 1915"> </div> <div data-bbox="108 1933 654 2011" style="margin-top: 10px;"> 1. Remove the 4 screws (①~④) with 2.0mm allen wrench (SZZP1101C). 2. Remove the FPC board from the optical pickup. </div>		<div data-bbox="818 1485 946 1552" style="margin-bottom: 10px;"> Procedure 1→14 </div> <div data-bbox="917 1523 1420 1892"> </div> <div data-bbox="813 1955 1149 2011" style="margin-top: 10px;"> 1. Remove the 4 screws (①~④). 2. Remove the 1 connector (CN11). </div>	

■ CHECKING OF THE SERVO P.C.B.

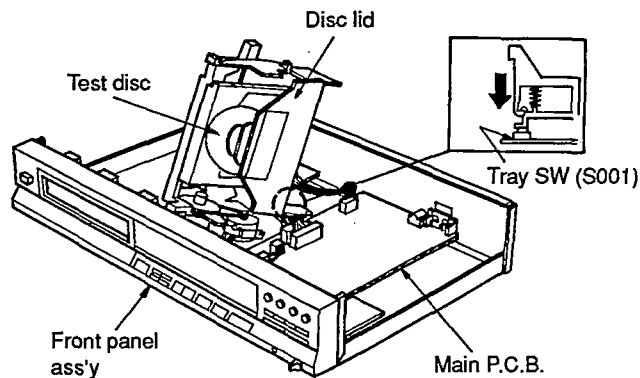
1. Remove the cabinet (see Ref. No. 1 of the disassembly instructions).
2. Remove the disc lid and disc holder (see Ref. No. 3 and No. 9 of the same).
3. Remove the loading unit (see Ref. No. 11 of the same).
4. When checking the soldered surface of the servo P.C.B. and replacing the parts, do as shown 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.

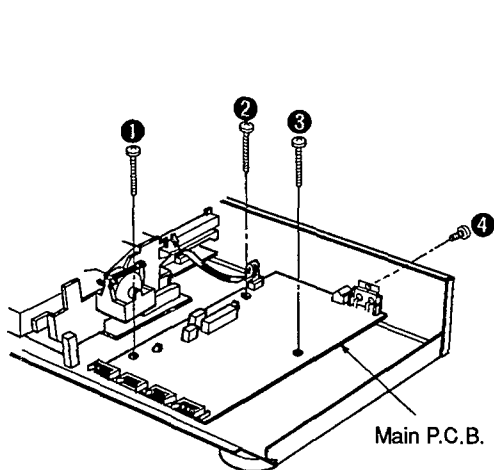
Note: If the test disc fails to rotate, press the tray switch again.



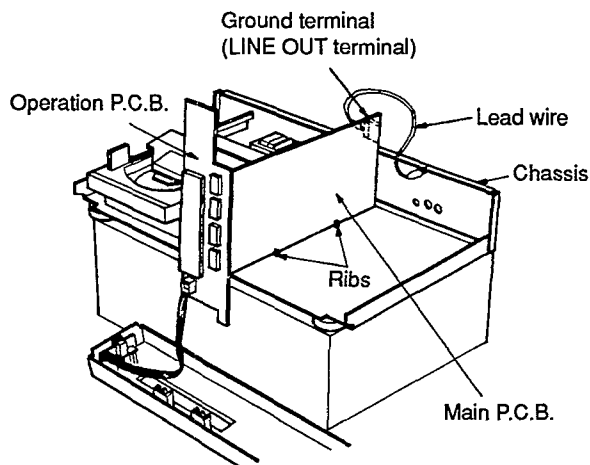
Note: Put on the loading unit on the tabs of the front panel ass'y.
(Fixed loading unit)
Hold the loading unit and the optical pickup unit with a clip.
(Fixed optical pickup unit)
Secure the optical pickup assembly with a clip. (Otherwise the clammer will interfere with the disc, restricting turntable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

■ CHECKING OF THE MAIN P.C.B.

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

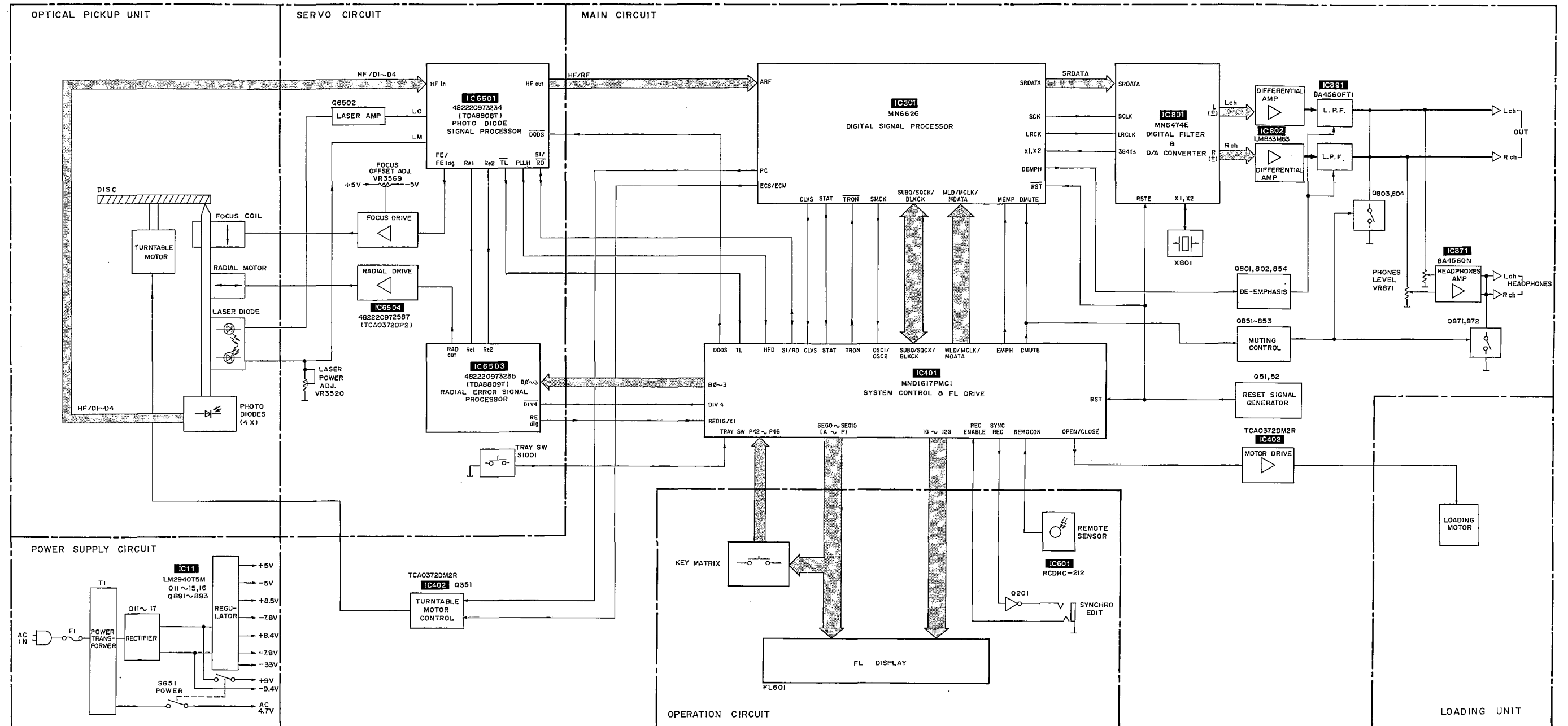


1. Remove the cabinet (see Ref. No. 1 of the disassembly instructions).
2. Remove the front panel ass'y (see Ref. No.2 of the same).
3. Remove the operation P.C.B. (see Ref. No.6 of the same).
4. Remove the 4 screws (1~4).



5. Reinstall the operation P.C.B. to the main P.C.B.
6. Connect the main P.C.B. ground terminal (LINE OUT terminal) to the chassis with a lead wire.

■ BLOCK DIAGRAM



SCHEMATIC DIAGRAM

(Parts list on pages 35, 36, 41, 42.)

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

Notes:

- S601~612 : Numeric (>10, 0, 1~10) switches.
 - S601: 0, S602: 1, S603: 2,
 - S604: 3, S605: 4, S606: 5,
 - S607: >10, S608: 10, S609: 9,
 - S610: 8, S611: 7, S612: 6
- S613 : Play (▶) PLAY switch.
- S614 : Skip (◀◀) SKIP switch.
- S615 : Search (◀◀) switch.
- S616 : Program (PROGRAM) switch.
- S617 : Disc link (DISC LINK) 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.
- S635 : Auto cue (AUTO CUE) switch.
- S651 : Power "STANDBY ◊ ON" (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 1 kHz, L+R, 0 dB), 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.

Part No.	Production Part No.	Supply Part No.
IC11	LM2940T5M	LM2940T5
IC891	BA4560FT1	SVIBA4560FT1

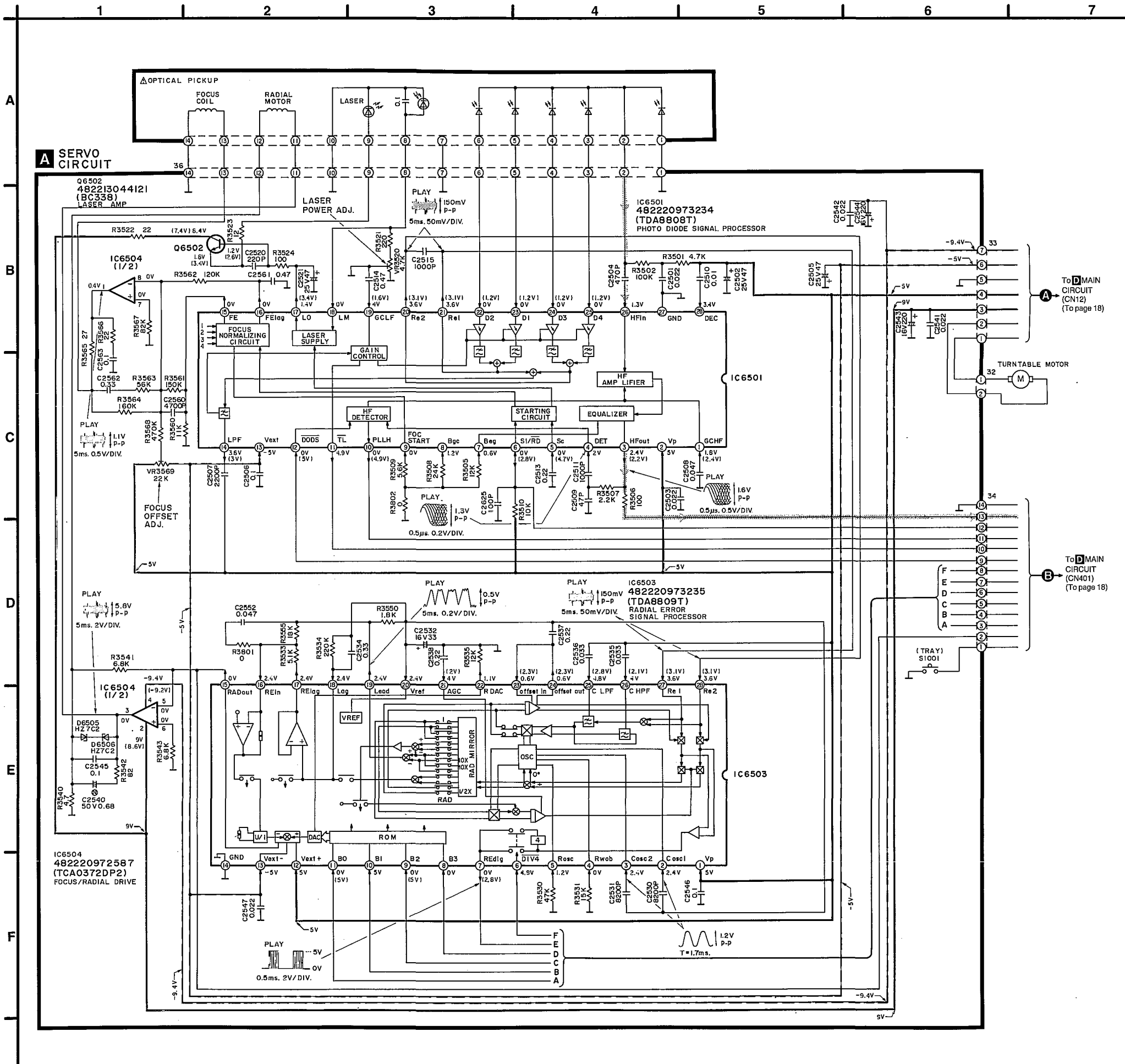
- : Positive voltage lines
- : Negative voltage lines
- : Audio signal lines.

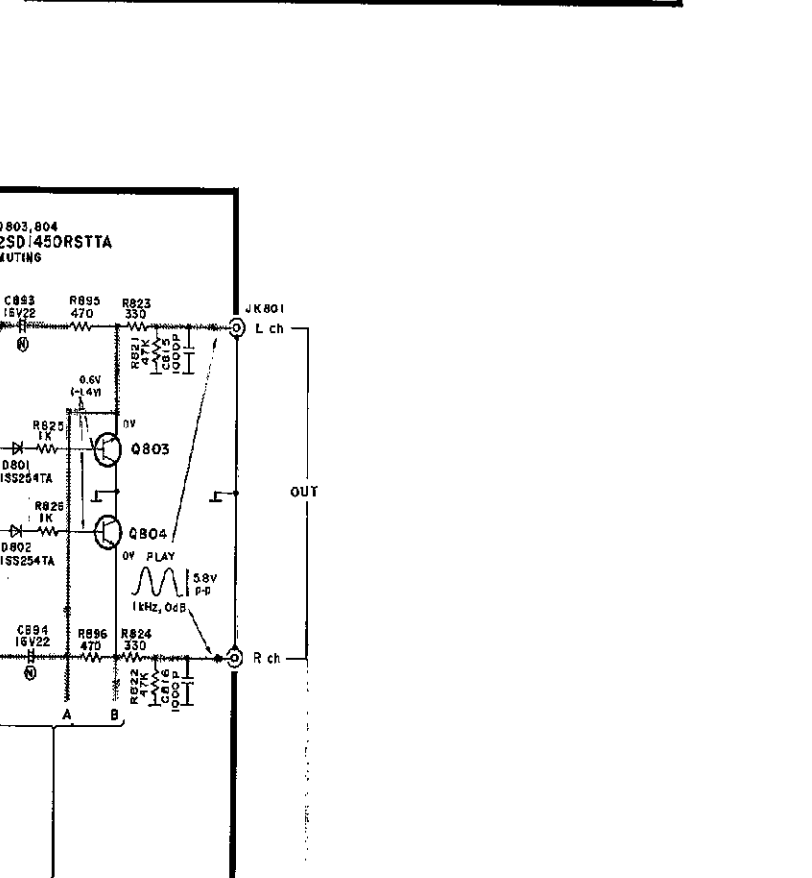
Caution!

- 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.

SL-PG440A

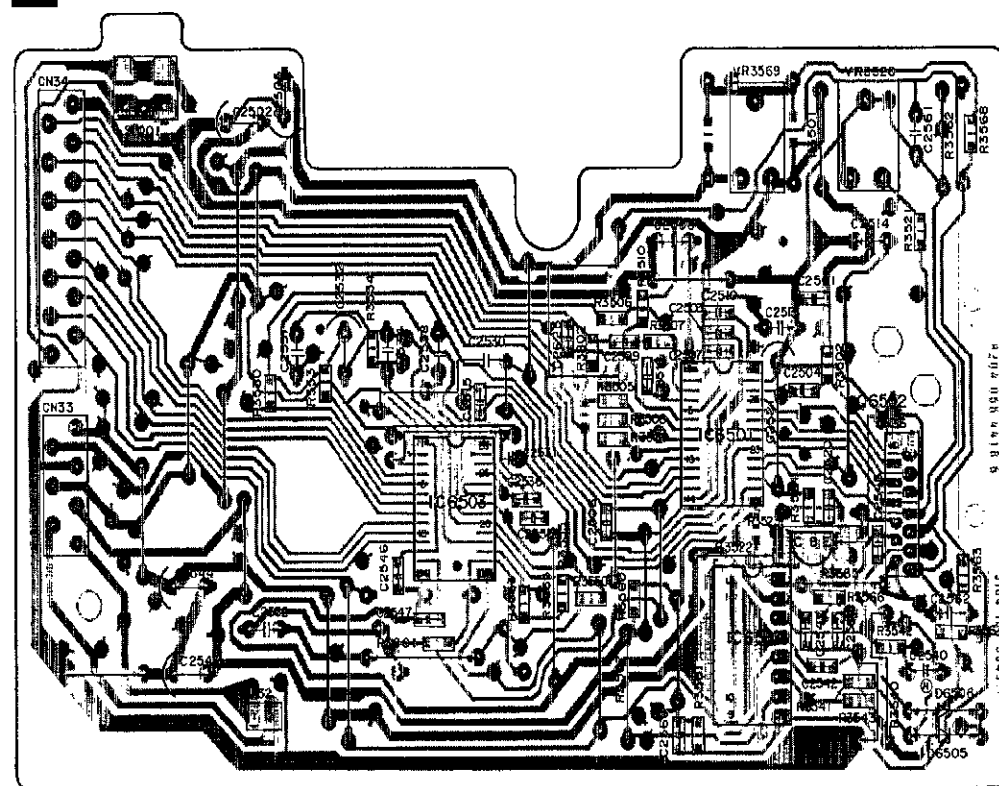
SL-PG440A



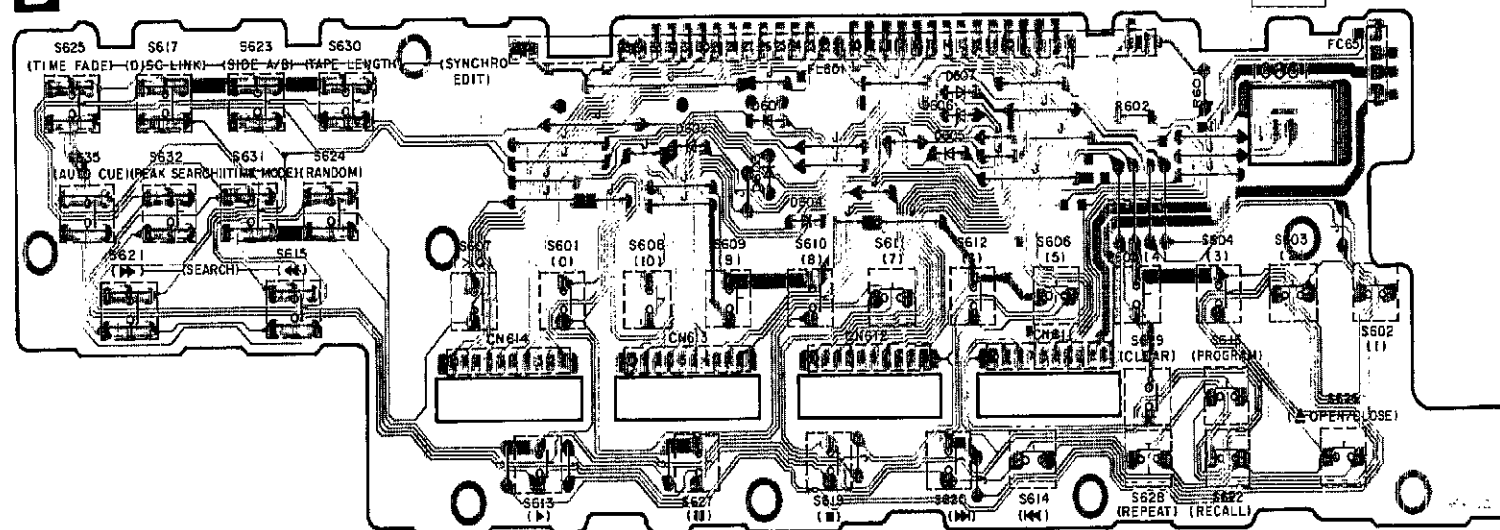


PRINTED CIRCUIT BOARD DIAGRAM

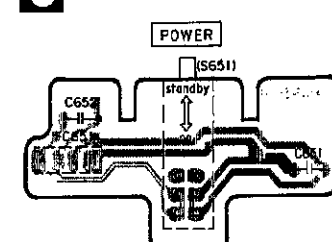
A SERVO P.C.B. (310 411 802 431)



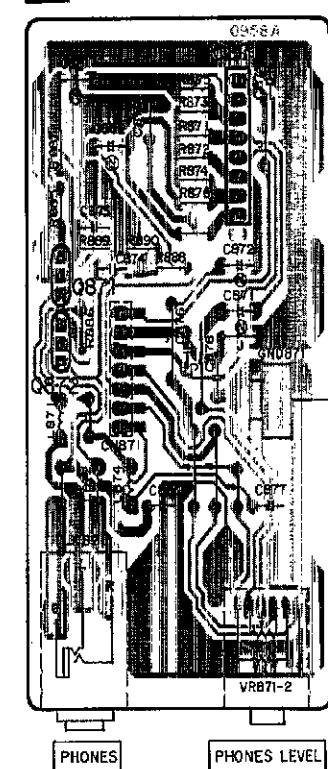
B OPERATION P.C.B. (REP1540A-S)



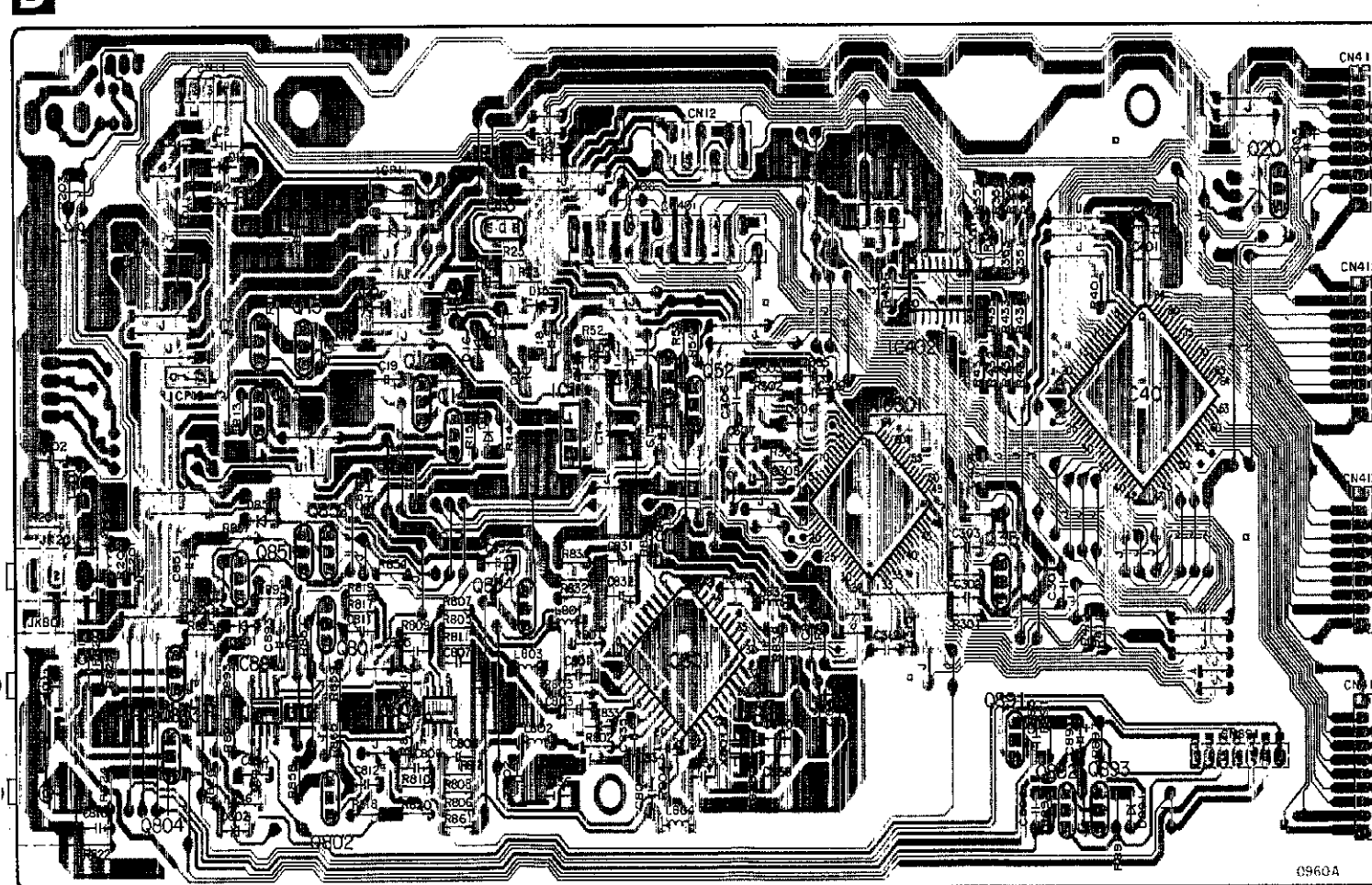
C POWER SWITCH P.C.B. (REP1540A-S)



F HEADPHONES P.C.B. (REP1537A-S)



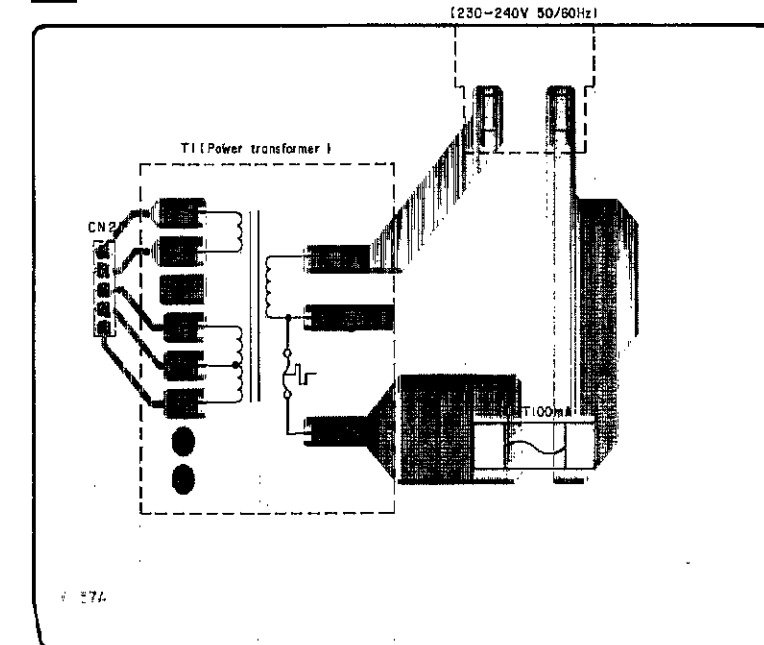
D MAIN P.C.B. (REP1532B-M)



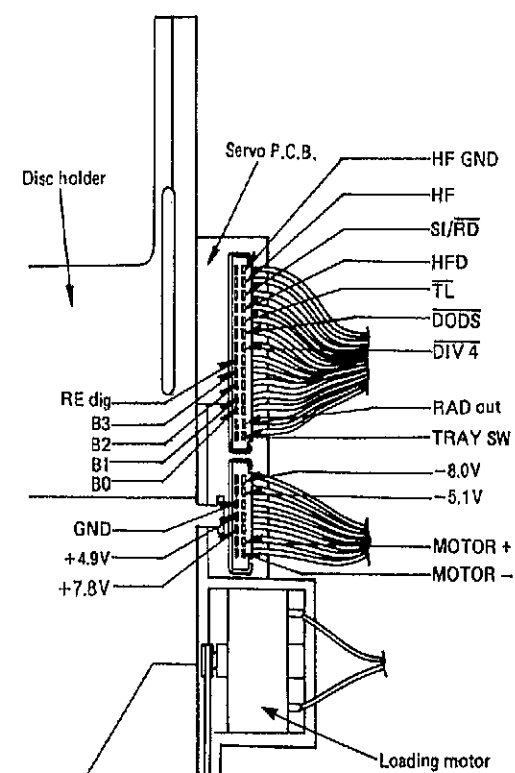
Terminal guide of IC's, transistors and diodes

BA4560FT1	No. 1	LM633M63 TCA0372DM2R	8 Pin 16 Pin	482220973234 (TDA3808T) 482220973235 (TDA3809T)
482220972587 (TCA0372DP2)	No. 1	MN6474E MN6626 MND1617PMC1	42 Pin 64 Pin 84 Pin	BA4560N LM2940T5M
RCDHC-212	2SA1309QRSTA 2SC3311QRSTA 2SD1450RSTTA	DTA114ESTP DTA124ESTP DTC124ESTP	2SB1238QSTV6	
482213044121 (BC338)	1SS254TA 1D3-E	MA4039MTA MA4082MTA	MA4160MTA 482213061101 (HZ7C2)	

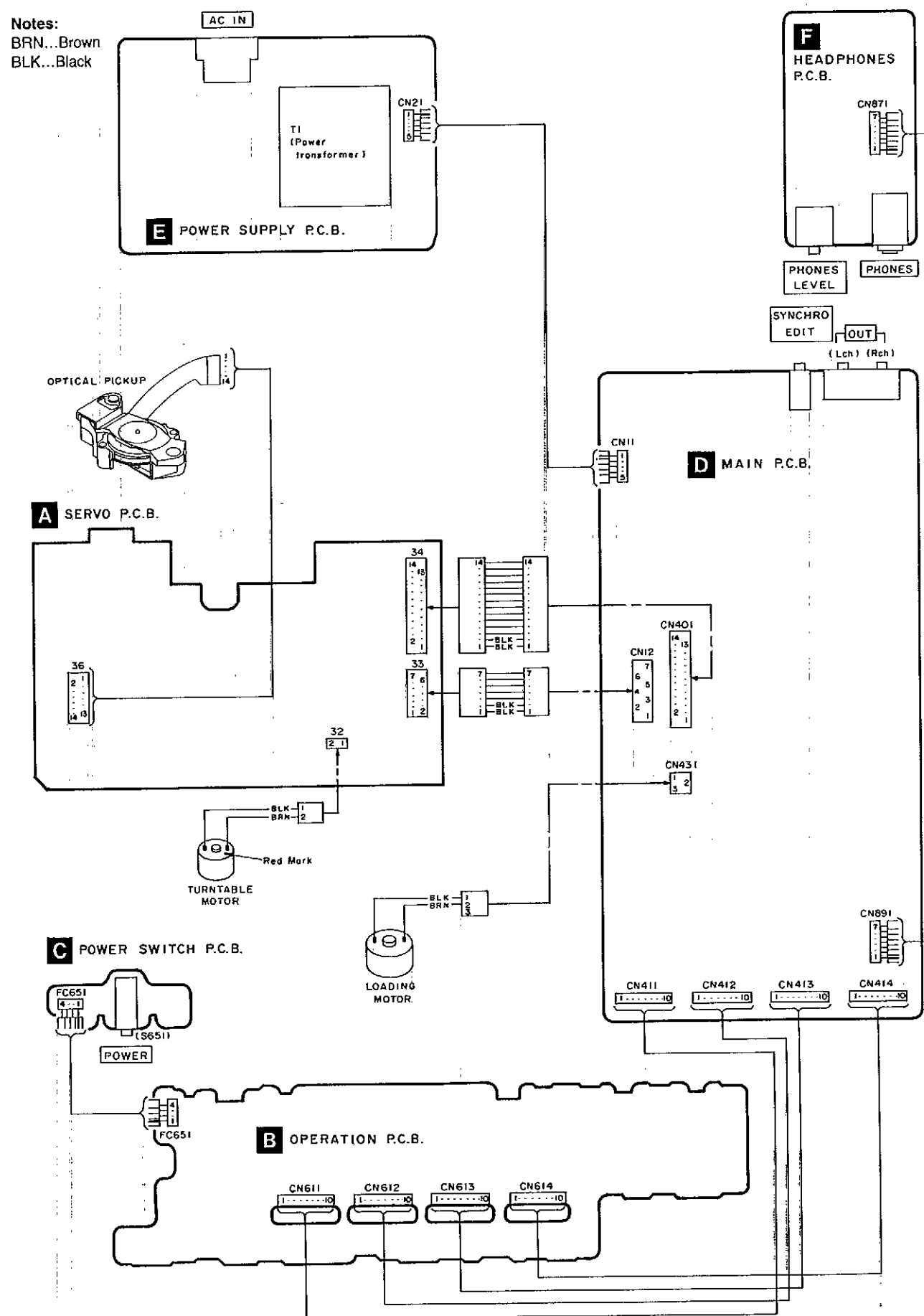
E POWER SUPPLY P.C.B. (REP1536A-P)



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

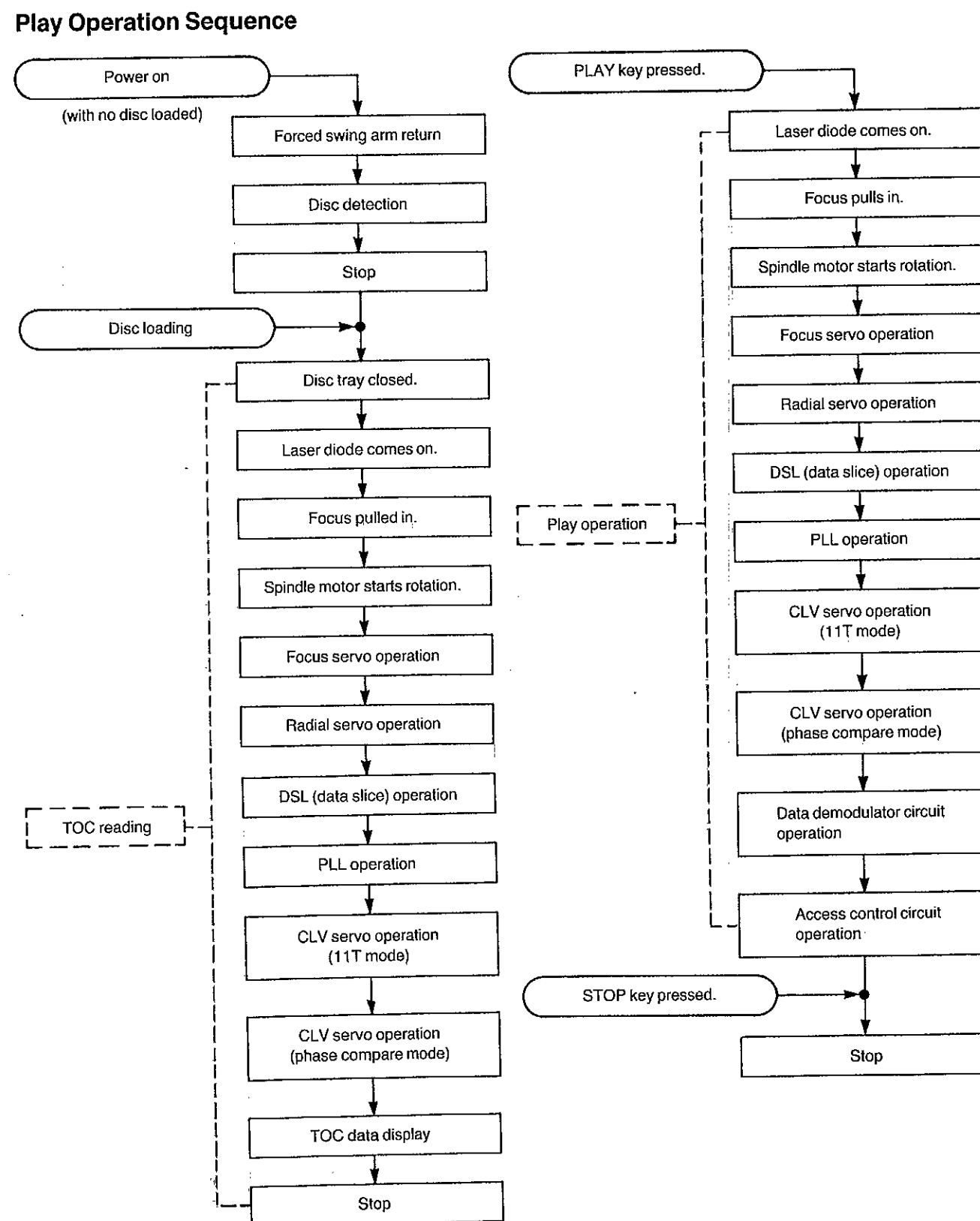


■ WIRING CONNECTION DIAGRAM

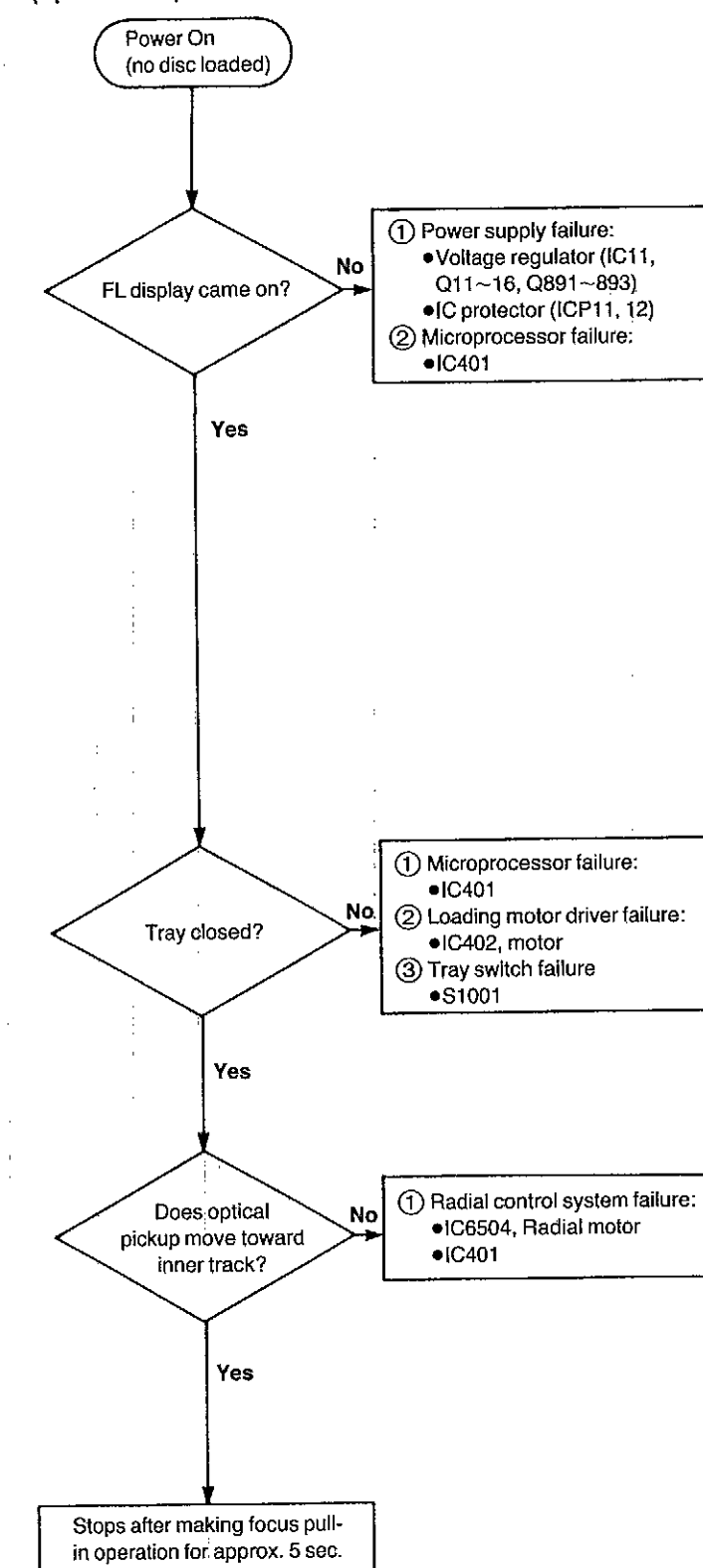


■ TROUBLESHOOTING GUIDE

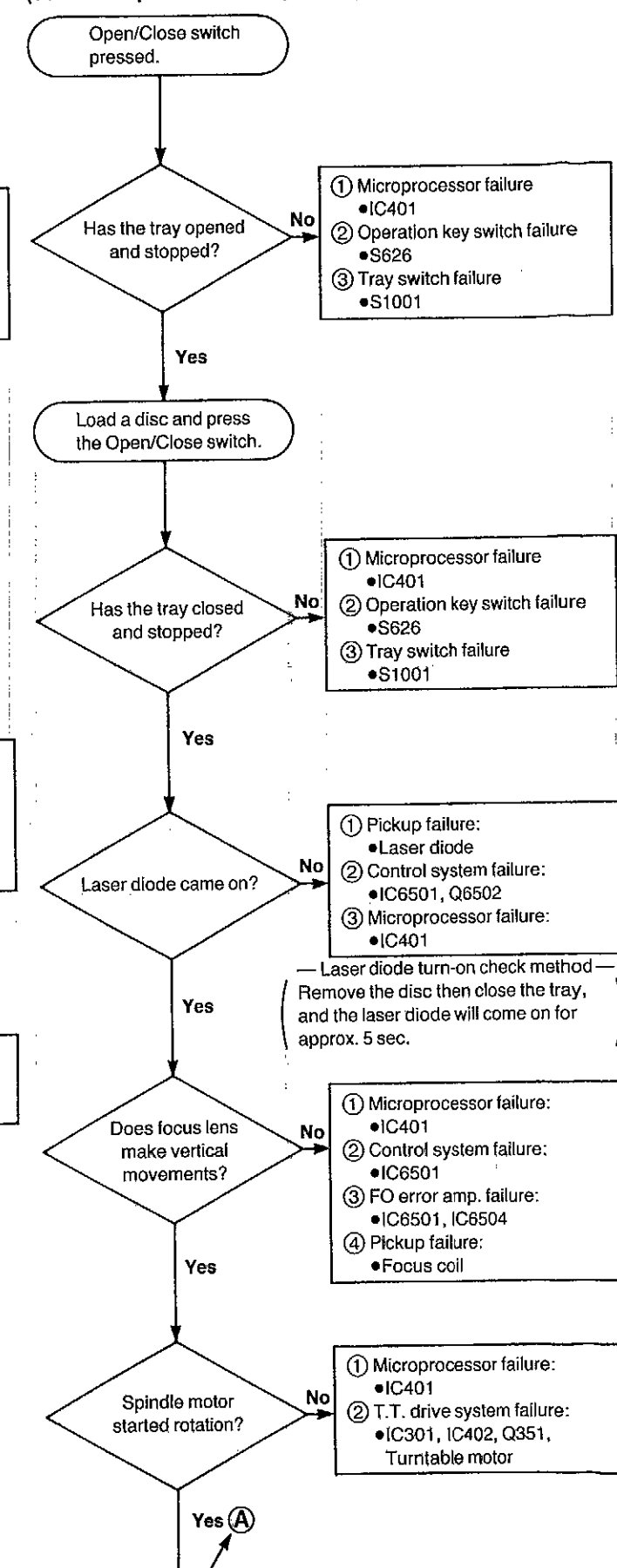
SL-PG440A Operation Sequence Check Sheet

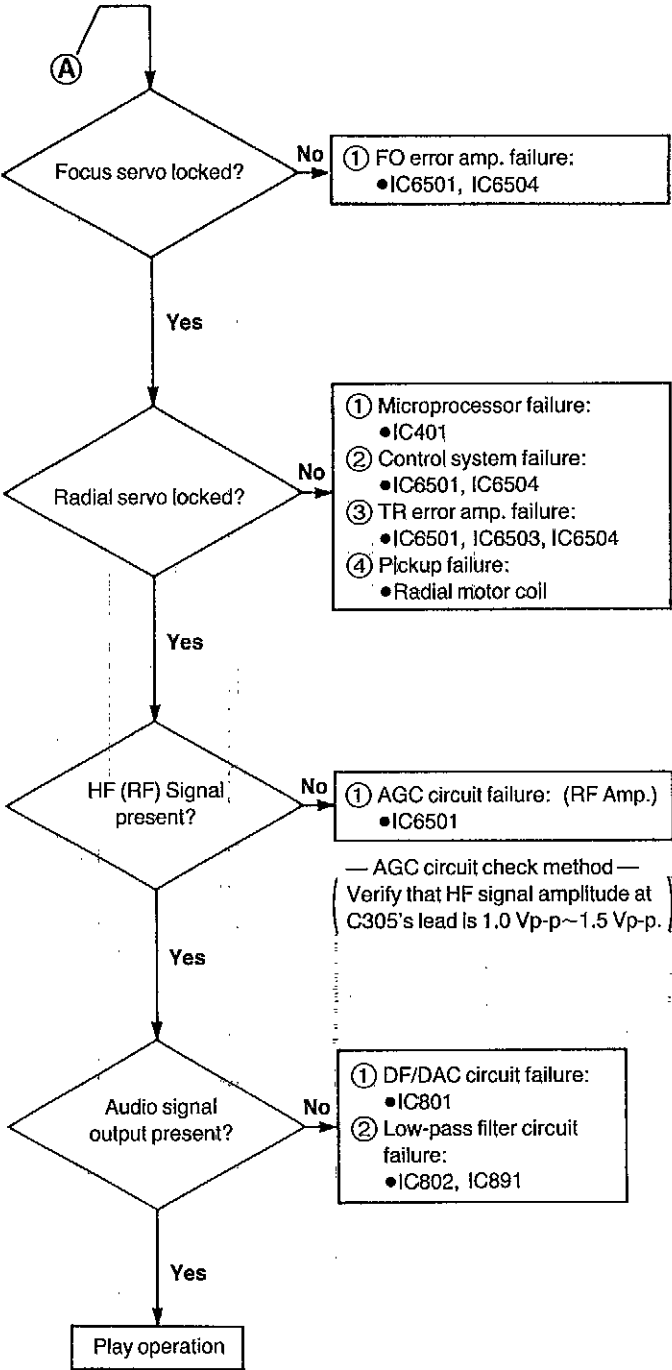


(Operation Sequence Just After Power On)



(TOC Read Operation-PLAY Operation)

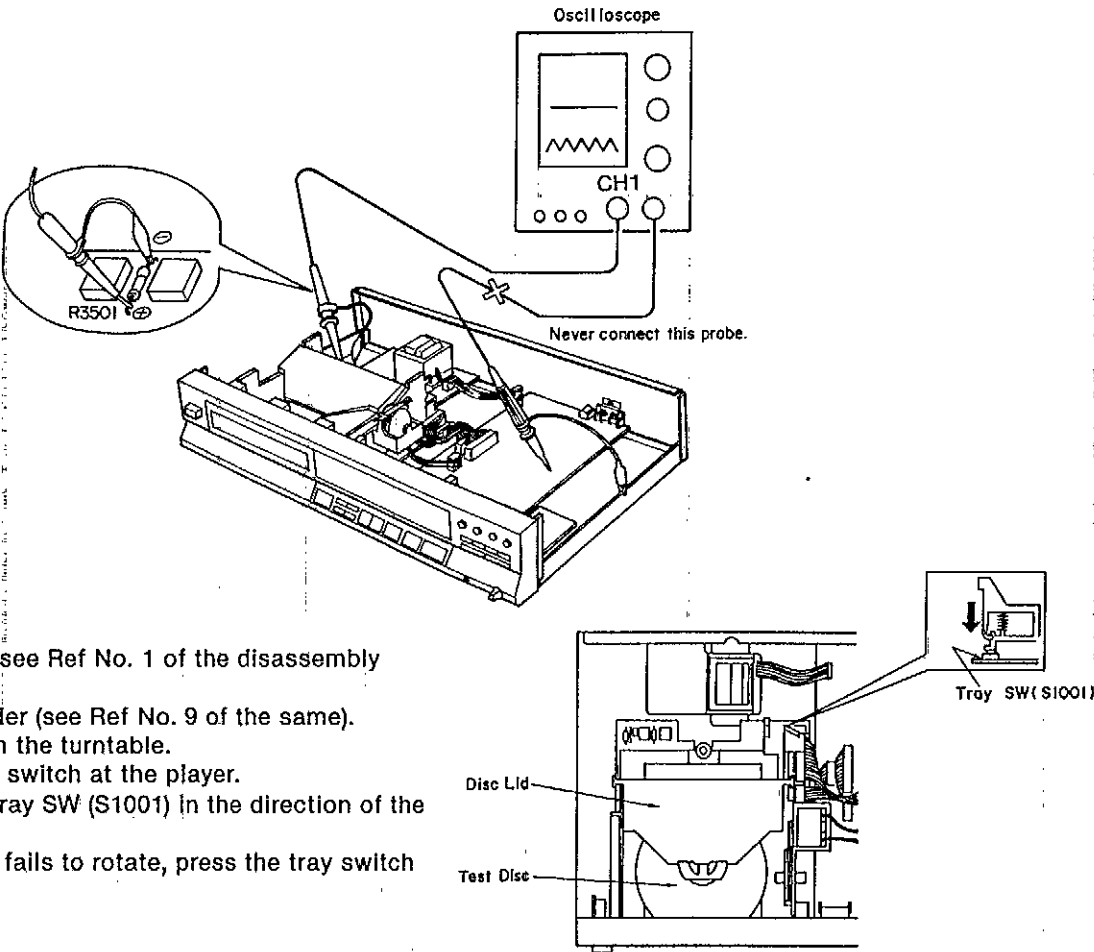




MEASUREMENTS AND ADJUSTMENTS

Caution:

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

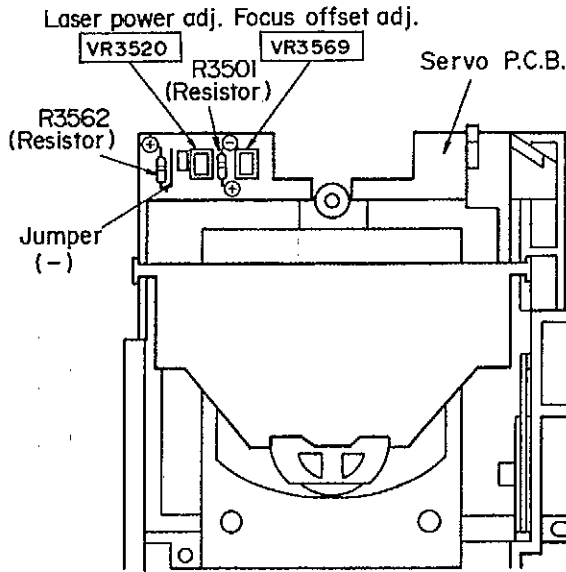


PREPARATION

- Remove the cabinet (see Ref No. 1 of the disassembly instructions).
 - Remove the disc holder (see Ref No. 9 of the same).
 - Place the test disc on the turntable.
 - Turn "ON" the power switch at the player.
 - 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).

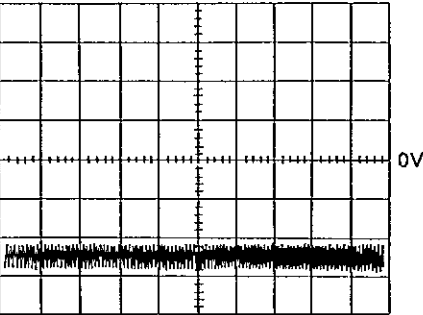
* Dual-beam oscilloscope with bandwidth of 30MHz or better (with EXT trigger and 1:1 probe).

(1) LASER POWER ADJUSTMENT

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

Oscilloscope setting:

VOLT20mV
SWEEP0.2msec.
INPUTDC

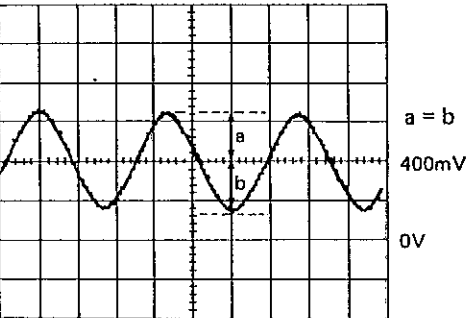


(2) FOCUS OFFSET ADJUSTMENT

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

Oscilloscope setting:

VOLT200mV
SWEEP5msec.
INPUTDC



(3) CHECK OF PLAY OPERATION AFTER ADJUSTMENT

* Checking Skip Search

- Play an ordinary musical program disc.
- Press the skip button to check for normal skip search operation (in both the forward and reverse directions).

* Playability check by test disc

- 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.

* Checking Manual Search

- Play an ordinary musical program disc.
- 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

• 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 FElag 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	FElag	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	Biassing 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	RElag	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	Biassing resistor for current output for track jumping (3½ 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

• 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	DSLIF	I/O	DSL loop filter terminal
6	PLLIF	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
18	IPFLAG	O	Interpolation flag terminal
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) $(f = \frac{1}{192} \times CK = 88.2 \text{ kHz})$
31	CSEL	I	Test terminal (Connected to GND)
32	PSEL		
33	X1	I	Crystal OSC terminal (f=16.9344 MHz)
34	X2	O	
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=7.35 kHz) (Not used, open)

Pin No.	Mark	I/O Division	Function
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) (Not used, connected to GND)
60	RESY	O	Re-synchronizing signal of frame sync. (Not used, open)
61	DO	I	Drop-out detection signal ("H": Drop-out) (Not used, connected to GND)
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 (MND1617PMC2): 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		
4	VSS	—	GND terminal
5	XI	I	Radial error digital signal
6	XO	O	Not Used, open
7	P47	I	
8 } 12	P46 } P42	I	Key return signal
13	SYNC REC	O	Synchro rec control
14	REC ENABLE	I	
15 } 18	P37 } P34	—	Not used, open and connected to terminal
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 } 30	B3 } B0	O	Control bits for off-, catch-, play-status and DAC output current
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)

Pin No.	Mark	I/O Division	Function
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, SQOK)
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 } 56	16G } 13G	—	Not used, open
57 } 68	12G } 1G	O	FL digit signal
69 } 84	A/SEGO } P/SEGP	O	FL segment signal and key scan signal

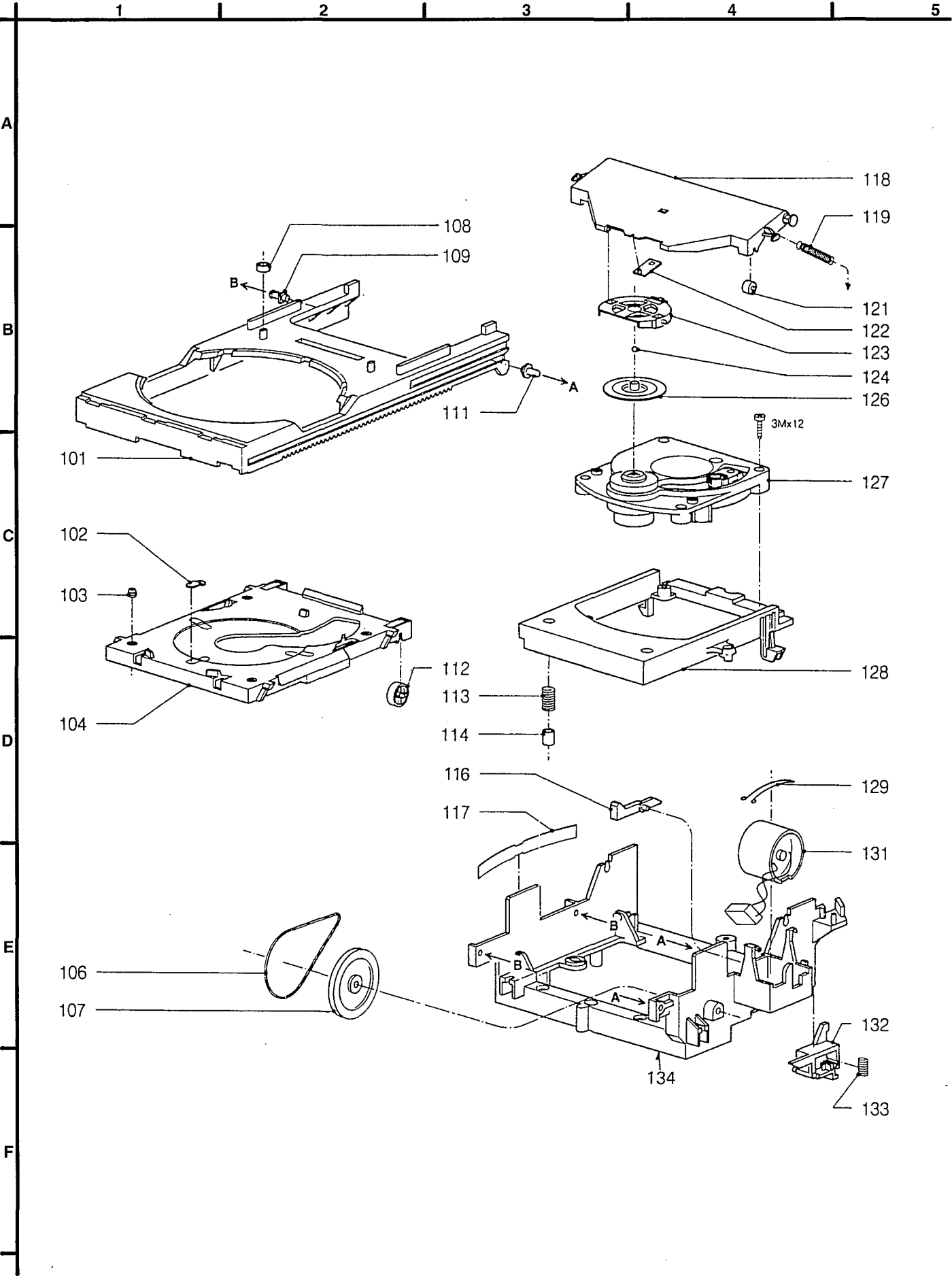
●IC801 (MN6474E): Digital filter and D/A converter

Pin No.	Mark	I/O Division	Function
1	MLD	I	Command load input (load: L) (Not used, connected to VDD)
2	RSTB	I	Reset terminal
3	IE	I	Not used, connected to GND
4	TP1	—	TEST terminal
5	TP2	—	
6	TEST1	I	TEST terminal 1 (connected to GND)
7	TEST2	I	TEST terminal 2 (connected to GND)
8	NC	—	Not connected
9	NC	—	Not connected
10	AVDD4	I	Power supply terminal
11	OUTL (—)	O	Lch data output, (—) terminal
12	AVSS4	—	GND terminal
13	AVSS3	—	GND terminal
14	OUTL (+)	O	Lch data output, (+) terminal
15	AVDD3	I	Power supply terminal
16	NC	—	Not connected
17	AVDD2	I	Power supply terminal
18	OUTR (+)	O	Rch data output, (+) terminal
19	AVSS2	—	GND terminal (analog system)
20	AVSS1	—	GND terminal (analog system)
21	OUTR (—)	O	Rch data output, (—) terminal
22	AVDD1	I	Power supply terminal
23	DVDD1	I	Power supply terminal

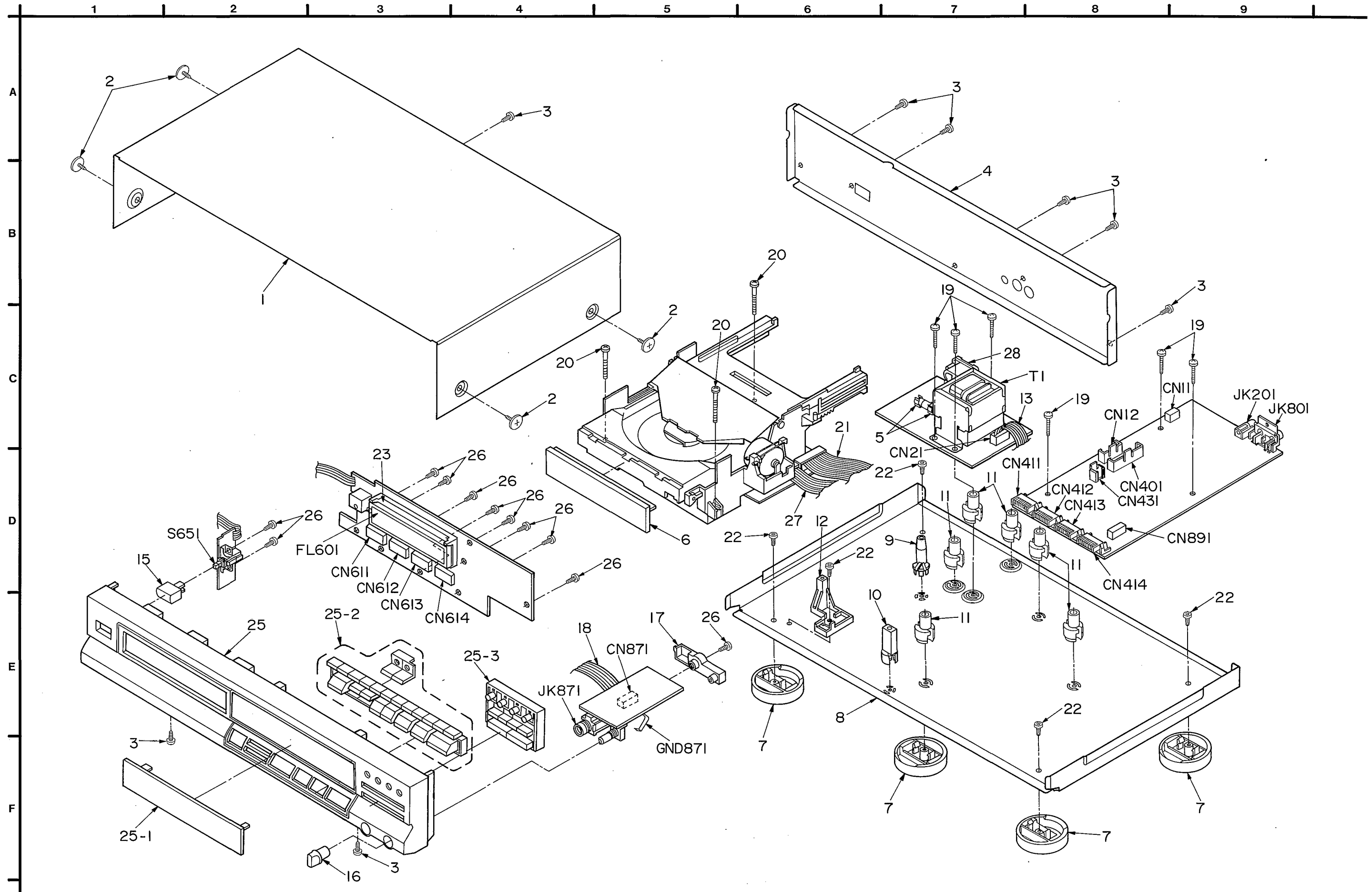
Pin No.	Mark	I/O Division	Function
24	DVSS1	—	GND terminal (digital system)
25	X2	O	Crystal OSC terminal (33 MHz)
26	X1	I	
27	NC	—	Not connected
28	DVDD2	I	Power supply terminal
29	DVSS2	—	GND terminal (digital system)
30	NSUB	I	Sub-strate terminal (Not used, connected to VDD)
31	ZFLGB	O	Zero input detector terminal (Not used, open)
32	192fs	O	192fs (8.4672 MHz) (Not used, open)
33	LRPOL	I	LR clock selector (Not used, connected to VDD)
34	LRCLK	I	LR discrimination signal input
35	BCLK	I	Serial bit clock input
36	SRDATA	I	Serial data input (MSB first)
37	DVSS3	—	GND terminal (digital system) (Not used, open)
38	DVDD	I	Power supply terminal
39	384fs	O	384fs (16.9344 MHz) output
40	PD	I	Power down terminal (Not used, connected to GND)
41	MDATA	I	Mode control data (Not used, connected to VDD)
42	MCLK	I	Data clock for MDATA (not used, connected to VDD)

LOADING UNIT PARTS LOCATION

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET PARTS		121	482252890639	ROLLER	[MB]
				122	482246692257	PLATE	[MB]
				123	482240261207	HOLDER	[MB]
1	RKM0098-K	CABINET	[MB]	124	482252040177	SMALL BALL	[MB]
2	SNE2129-1	SCREW		126	482253080503	RING, PRESSURE	[MB]
3	XTBS3+8JFZ1	SCREW		127	482269130209	OPTICAL PICKUP UNIT	[MB]
4	RFKHLPG440AE	REAR PANEL ASS'Y	(E, EG) [MB]	128	482240261196	SUPPORT	[MB]
4	RFKHLPG440AB	REAR PANEL ASS'Y	(EB) [MB]	129	482249263746	CLAMPING SPRING	[MB]
5	EYF52BC	FUSE HOLDER		131	482236120998	LOADING MOTOR	[MB]
6	RGK0499-K	TRAY LID	[MB]	132	482240250244	BRACKET	[MB]
7	RKA0040B	FOOT	[MB]	133	482249251935	SPRING, COMPRES.	[MB]
8	RMK0178	BOTTOM BOARD	[MB]	134	482270112729	CHASSIS	[MB]
9	RMRO020	SPACER(A)	[MB]			PACKING MATERIALS	
10	RMRO021	SPACER(B)	[MB]				
11	RMRO377	PCB SUPPORT					
12	RMRO573-K1	SPACER(C)	[MB]	P1	RPG1376	PACKING CASE	[MB]
13	RWJ6405130XX	FLAT CABLE(5P)	[MB]	P2	RPNO647	CUSHION	[MB]
15	RGU0030	BUTTON, POWER		P3	RMRO024	LOCK SHAFT	[MB]
16	RGW0048	KNOB, H. P. VOLUME		P4	XZB26X17C03	PROTECTION BAG (TRANSMITT)	
17	RMRO610-K	H. P. PCB HOLDER	[MB]	P5	XZB23X35C03	PROTECTION BAG (F. B.)	
18	RWJ1807100XX	FLAT CABLE (7P)	[MB]	P6	XZB60X65A01Z	PROTECTION BAG	
19	XTB3+20JFZ	SCREW				ACCESSORIES	
20	XTB3+35JFZ	SCREW					
21	REX0285	FLAT CABLE (14P)	[MB]	A1	EUR642100	REMOTE CONTROL TRANSMITTER	[MB]
22	XTB3+8JFZ	SCREW		A1-1	UR64EC1326	BATTERY COVER	[MB]
23	RMRO659-K	FL HOLDER	[MB]	A2	RJA0018-1K	AC POWER SUPPLY CORD	△ (E, EG)
25	RYP0402Z-K	FRONT PANEL ASS'Y	[MB]	A2	VJA0733	AC POWER SUPPLY CORD	△ (EB)
25-1	RKWO245A-R	FL PANEL	[MB]	A3	RQA0013	WARRANTY CARD	
25-2	RGU0807-K	BUTTON, PLAY etc.	[MB]	A4	RQCB0169	SERVICE CENTER LIST	
25-3	RGU0808-K	BUTTON, DISC LINK etc.	[MB]	A5	RFKSLPG440AE	INSTRUCTIONS MANUAL	(E) [MB]
26	XTBS26+8J	SCREW		A5	RFKSLPG440AG	INSTRUCTIONS MANUAL	(EG) [MB]
27	REX0007	FLAT CABLE (7P)	[MB]	A5	RQT1681-B	INSTRUCTIONS MANUAL	(EB) [MB]
28	SJS9236	AC INLET	△	A6	SJP2249-3	STEREO CONNECTION CABLE	
		LOADING UNIT PARTS		A7	RQCA0059	LOCK CAUTION SHEET	[MB]
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]				
119	482249232883	SPRING, TENSION	[MB]				



CABINET PARTS LOCATION



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
		RESISTORS	R837, 838	ERDS2TJ100	1/4W 10	C811, 812	ECQV1H683JM3	50V 0.068U
			R840	ERDS2TJ101	1/4W 100	C815, 816	ECBT1H102KB5	50V 1000P
			R851	ERDS2TJ471	1/4W 470	C817	ECFR1E104ZF5	25V 0.1U
R11	ERDS2TJ182	1/4W 1.8K	R854	ERDS2TJ472	1/4W 4.7K	C831	ECFR1E104ZF5	25V 0.1U
R12, 13	ERDS2TJ102	1/4W 1K	R857, 858	ERDS2TJ222	1/4W 2.2K	C832	ECEA0JU331B	6.3V 330U
R14	ERDS2TJ103	1/4W 10K	R859, 860	ERDS2TJ105T	1/4W 1M	C833	ECFR1E104ZF5	25V 0.1U
R15	ERDS2TJ822	1/4W 8.2K	R861	ERDS2TJ102	1/4W 1K	C834	ECEA0JU331B	6.3V 330U
R16, 17	ERDS2TJ103	1/4W 10K	R871, 872	ERDS2TJ473	1/4W 47K	C835-837	ECFR1E104ZF5	25V 0.1U
R20	ERDS2TJ102	1/4W 1K	R873, 874	ERDS2TJ123	1/4W 12K	C838	ECBT1H5R6K5	50V 5.6P
R23	ERDS2TJ222	1/4W 2.2K	R875, 876	ERDS2TJ104	1/4W 100K	C840	ECBT1H5R6K5	50V 5.6P
R25	ERDS2TJ222	1/4W 2.2K	R885, 886	ERDS2TJ222	1/4W 2.2K	C841	ECEA0JKA101B	6.3V 100U
R51	ERDS2TJ331	1/4W 330	R887, 888	ERDS2TJ680T	1/4W 68	C842	ECFR1E104ZF5	25V 0.1U
R52	ERDS2TJ272T	1/4W 2.7K	R889, 890	ERDS2TJ472	1/4W 4.7K	C844	ECBT1H270J5	50V 27P
R53, 54	ERDS2TJ472	1/4W 4.7K	R891, 892	ERDS2TJ102	1/4W 1K	C845	ECFR1E104ZF5	25V 0.1U
R201	ERDS2TJ100	1/4W 10	R893, 894	ERDS2TJ472	1/4W 4.7K	C851	ECEA0JU471	6.3V 470U
R202	ERDS2TJ102	1/4W 1K	R895, 896	ERDS2TJ471	1/4W 470	C852	ECEA1CKA100B	16V 10U
R203	ERDS2TJ273	1/4W 27K	R897	ERDS2TJ103	1/4W 10K	C871, 872	ECEA1EKN3R3B	25V 3.3U
R301	ERDS2TJ182	1/4W 1.8K	R898	ERDS2TJ822	1/4W 8.2K	C873, 874	ECQB1H103JF3	50V 0.01U
R302	ERDS2TJ823T	1/4W 82K			CAPACITORS	C875-880	ECBT1C103NS5	16V 0.01U
R303	ERDS2TJ104	1/4W 100K				C881, 882	ECEA1AN101XB	10V 100U
R304	ERDS2TJ471	1/4W 470				C891	ECEA1CKA101B	16V 100U
R315	ERDS2TJ104	1/4W 100K	C1, 2	ECFTD103KXL	50V 0.01U	C892	ECBT1C103NS5	16V 0.01U
R351	ERDS2TJ103	1/4W 10K	C10	ECFR1E104ZF5	25V 0.1U	C893, 894	ECEA1CKN220B	16V 22U
R352	ERDS2TJ104	1/4W 100K	C11	ECA1CM222B	16V 2200U Δ	C895	ECBT1C103NS5	16V 0.01U
R353	ERDS2TJ123	1/4W 12K	C12	ECEA1CU102	16V 1000U Δ			
R354	ERDS2TJ104	1/4W 100K	C14, 15	ECEA0JKA470B	6.3V 47U			<SERVO P. C. B. >
R355, 356	ERDS2TJ333	1/4W 33K	C16	ECEA1EU101	25V 100U			RESISTORS
R357	ERD25FJ6R8	1/4W 6.8 Δ	C17, 18	ECEA1HU101	50V 100U			
R401	ERDS2TJ104	1/4W 100K	C19	ECEA1CKA101B	16V 100U	R3501	482205024702	1/8W 4.7K [MB]
R411, 412	ERDS2TJ472	1/4W 4.7K	C51	ECEA1AKA220B	10V 22U	R3502	482205110104	1/8W 100K [MB]
R431, 432	ERDS2TJ223	1/4W 22K	C201, 202	ECBT1C103NS5	16V 0.01U	R3505	482205110123	1/4W 12K [MB]
R433	ERDS2TJ104	1/4W 100K	C301	ECBT1C103NS5	16V 0.01U	R3506	482205110101	1/8W 100 [MB]
R434	ERDS2TJ224T	1/4W 220K	C302	ECBT1H270J5	50V 27P	R3507	482205120222	1/8W 2.2K [MB]
R435	ERDS2TJ104	1/4W 100K	C303, 304	ECFR1E104ZF5	25V 0.1U	R3508	482205110243	1/4W 24K [MB]
R436	ERDS2TJ224T	1/4W 220K	C305	ECBT1H102KB5	50V 1000P	R3509	482205110562	1/8W 5.6K [MB]
R437, 438	ERDS2TJ223	1/4W 22K	C306	ECFR1E223KB	25V 0.022U	R3510	482205110103	1/8W 10K [MB]
R601, 602	ERDS2TJ100	1/4W 10	C307	ECQV1H474JM3	50V 0.47U	R3521	482205110221	1/8W 220 [MB]
R801-804	ERDS2TJ330	1/4W 33	C308	ECBT1H102KB5	50V 1000P	R3522	482205210229	1/3W 22 [MB]
R805-808	ERDS2TJ433	1/4W 43K	C309	ECFR1E104ZF5	25V 0.1U	R3523	482205210129	1/3W 12 [MB]
R809-812	ERDS2TJ563	1/4W 56K	C312	ECBT1C103NS5	16V 0.01U	R3524	482205110101	1/8W 100 [MB]
R815, 816	ERDS2TJ472	1/4W 4.7K	C351	ECBT1H102KB5	50V 1000P	R3530	482205110473	1/4W 47K [MB]
R817, 818	ERDS2TJ221	1/4W 220	C401	ECFR1E104ZF5	25V 0.1U	R3531	482205110153	1/4W 15K [MB]
R819, 820	ERDS2TJ511	1/4W 510	C402	ECEA0JKA470B	6.3V 47U	R3533	482205110152	1/4W 5.1K [MB]
R821, 822	ERDS2TJ473	1/4W 47K	C404	ECFR1E104ZF5	25V 0.1U	R3534	482205110224	1/8W 220K [MB]
R823, 824	ERDS2TJ331	1/4W 330	C405	ECEA0JKA470B	6.3V 47U	R3535	482205021203	3/5W 12K [MB]
R825, 826	ERDS2TJ102	1/4W 1K	C406	ECBT1H102KB5	50V 1000P	R3540	482205024708	3/5W 4.7 [MB]
R831, 832	ERDS2TJ470	1/4W 47	C651, 652	ECBT1H102KB5	50V 1000P	R3541	482205110682	1/4W 6.8K [MB]
R833	ERDS2TJ472	1/4W 4.7K	C801-804	ECQV1H683JM3	50V 0.068U	R3542	482205110829	1/8W 82 [MB]
R834	ERDS2TJ102	1/4W 1K	C805-808	ECBT1H121KB5	50V 120P	R3543	482205110682	1/8W 6.8K [MB]

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
R3550	482205110182	1/4W 1.8K [MB]	C2560	482212231784	50V 4700P [MB]
R3555	482205110183	1/4W 18K [MB]	C2561	482212151252	63V 0.47U [MB]
R3560	482211191494	1/8W 11K [MB]	C2562	532212142661	63V 0.33U [MB]
R3561	482205110154	1/4W 150K [MB]	C2563	482212233496	63V 0.1U [MB]
R3562	482205021204	3/5W 120K [MB]	C2625	482212231765	50V 100P [MB]
R3563	482205110563	1/8W 56K [MB]			
R3564	482211191495	1/8W 160K [MB]			
R3565	482205210279	1/3W 27 [MB]			
R3566	482205110229	1/8W 22 [MB]			
R3567	482205028203	1/8W 82K [MB]			
R3568	482205110474	1/4W 470K [MB]			
		CHIP JUMPER (S)			
R3801	482205110008	JUMPER [MB]			
R3802	482205110008	JUMPER [MB]			
		CAPACITORS			

PACKAGING

