ORDER NO. AD9803065C2

Service Manual

Portable CD Player

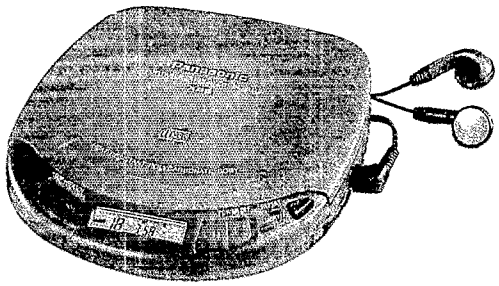
SL-S112

COMPACT disc DIGITAL AUDIO

MASH* multi-stage noise shaping

Colour
(H) ..... Gray Type
(A) ..... Blue Type
(S) ..... Silver Type

Areas
(E) ..... Europe.
(EG)..... Germany.



Traverse Deck: RAE0144Z Mechanism Series

Specifications

Audio

No. of channels:	2 channels (left and right, stereo)
Frequency response:	20 to 20,000 Hz (+0.5 dB to –1.5 dB)
Output voltage:	0.6 V (50 kΩ) Stereo mini jack, diameter 3.5
S/N:	more than 94 dB
Wow and flutter:	Below measurable limit
DA converter:	1 bit, MASH *
Headphone output level:	Max. 9 mW+9 mW/16 Ω (adjustable) Stereo mini jack, diameter 3.5

Pickup

Light source:	Semiconductor laser
Wavelength:	780 nm

General

Operational temperature range:	0°C – 40°C
Rechargeable temperature range:	5°C – 40°C
Power supply:	DC 4.5 V
Power consumption:	
Using AC adaptor;	5.5 W

Playing time:
(When used in hold mode, at 25°C temperature and on flat and stable surface)

2 Alkaline batteries	About 10 hours
Optional rechargeable batteries	P-3GAVE/2B: About 5.5 hours SH-CD8D: About 3.0 hours

The play time may be less depending on the operating conditions.

Recharging time:	
P-3GAVE/2B;	About 5 hours
SH-CBD8D;	About 3 hours
Dimensions (W × H × D):	128 × 28.0 × 144 mm
Weight:	265 g with batteries 220 g without batteries

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

* MASH is a trademark of NTT.

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic®

■ Contents

■ Accessories

•Stereo earphones
(RFEV317P-KS) ..... 1pc.

CAUTION:
THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

■ 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 μW/VDE

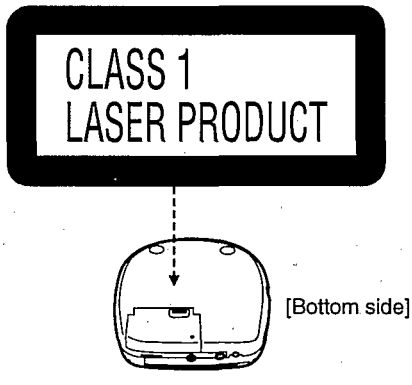
Laser radiation from the pick up unit is safety level, but be sure the followings:

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

ACHTUNG: Dieses produkt enthält eine laserdiode. Im eingeschalteten zustand wird unsichtbare laserstrahlung von der lasereinheit adgestrahit.
Wellenlänge: 780 nm
Maximale strahlungsleistung der laserinhelt: 100 μW/VDE

Die strahlung an der lasereinheit ist ungefährlich, wenn folgende punkte beachtet werden:

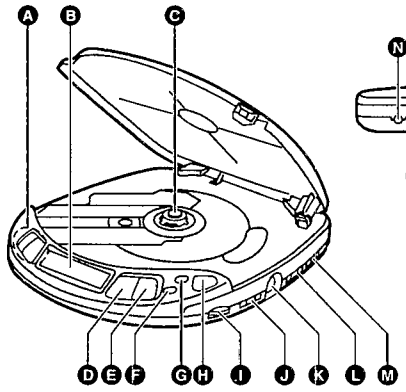
1. Die lasereinheit nicht zerlegen, da die strahlung an der freigelegten laserdiode gefähriich ist.
2. Den werksseitig justierten einstellregler der lasereinreit nicht verstellen.
3. Nicht mit optischen instrumenten in die fokussierlinse blicken.
4. Nicht über längere zeit in die fokussierlinse blicken.



[Bottom side]

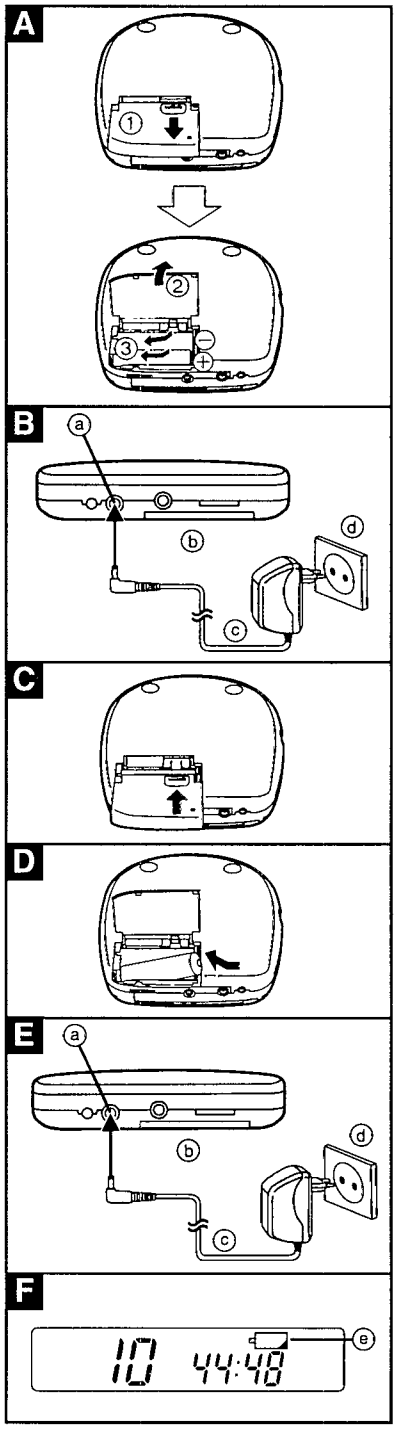
DANGER	INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK DEFEATED. AVOID DIRECT EXPOSURE TO BEAM.	(Inside of product)
ADVARSEL	USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.	(Indersiden at apparatet)
VARO!	AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTÖNTÄ LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.	(Tuotteen sisällä)
VARNING	OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STARÅLEN.	(Apparatens insida)
ADVARSEL	USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.	(Produktets innside)
VORSICHT	UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET UND SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT. NICHT DEM STRAHL AUSSETZEN.	(Im Inneren des Gerätes)

■ Location of Controls



Ⓐ Skip/search buttons (⏮, ⏭ •SKIP ▬ SEARCH)
Ⓑ Display
Ⓒ CD release button (PUSH)
Ⓓ Play/pause button (▶ ❚❚)
Ⓔ Stop/operation off button (■, POWER OFF)
Ⓕ Memory/recall button (MEMORY/RECALL)
Ⓖ Repeat button (REPEAT)
Ⓗ Open button (OPEN)
Ⓘ Headphones volume control (VOLUME)
Ⓙ XBS selector (XBS)
Ⓚ Headphones jack (∩)
Ⓛ Play mode selector (RESUME, NORMAL, RANDOM)
Ⓜ Hold switch (HOLD)
Ⓝ Out jack (OUT)
Ⓞ DC in jack (⟐-Ⓒ-⟐ DC IN 4.5 V)
Ⓟ Hole for car insulator mounting screw

■ Power Supply Preparations



Using rechargeable batteries (not included)

Obtain the optional rechargeable batteries.
Make sure to recharge the batteries before using them.
The unit cannot be used to charge rechargeable batteris other than those specifically designed for it.
•Optional batteries (P-3GAVE/2B, SH-CDB8D)

Recharging procedure

1 Insert the special rechargeable batteries into the unit. A

2 Connect the AC adaptor. B

ⓐ DC IN jack (⟐-Ⓒ-⟐ DC IN 4.5 V)
ⓑ Back panel of the unit
ⓒ AC adaptor
ⓓ AC power outlet

AC adaptor is not included in some countries.
Be sure to obtain the AC adaptor, available as an optional accessories.
•For United Kingdom (RFEA403B-S)
•For others (RFEA401E-3S)

3 When recharging is complete, unplug the AC adaptor from the power outlet and the DC IN jack.

Notes

•Rechargeable batteries have a service life of approximately 300 charge-discharge cycles. If the operating time on one full charge becomes noticeably shorter than it used to be, the battery has reached the end of its service life and should be replaced.
•The AC adaptor and rechargeable batteries may become warm while recharging is in progress. This is not a malfunction.
•You can operate the unit with AC adaptor while recharging the batteries, but it will lengthen the recharging time.

If the battery lid compartment comes loose C

Slide the lid back into place horizontally.

Removing batteries D

Push up on the battery in the direction indicated by the arrow. Then lift it out.

Using the AC adaptor

Connect the AC adaptor supplied. E

ⓐ DC IN jack (⟐-Ⓒ-⟐ DC IN 4.5 V)
ⓑ Back panel of the unit
ⓒ AC adaptor
ⓓ AC power outlet

AC adaptor is not included in some countries.
Be sure to obtain the AC adaptor, available as an optional accessories.
•For United Kingdom (RFEA403B-S)
•For others (RFEA401E-3S)

Note

The unit is in the standby condition when the AC adaptor is connected. The primary circuit is always "live" as long as the AC adaptor is connected to an electrical outlet.

Using dry-cell batteries (not included)

After disconnecting the AC adaptor, insert two LR6 (UM-3) alkaline batteries.
The procedure for inserting and removing dry-cell batteries is identical to that for rechargeable batteries.

Battery indicator F

ⓔ Battery indicator
This indicator flashes on and off when the batteries are almost out of power. Power is cut off completely a short while later.
Rechargeable batteries: Recharge batteries.
Dry-cell batteries: Replace batteries with new ones.

Notes

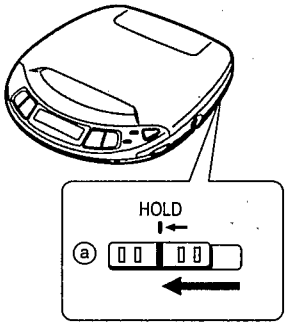
•The length of time the unit will continue to operate between when the battery indicator starts flashing and when the power is cut off differs depending on the type of batteries used.
•The battery indicator may not flash if rechargeable batteries, other than those designated by Panasonic, are used.

Using the car adaptor (not included)

Be sure to obtain the car adaptor (SH-CDC9), available as an optional accessory. The car adaptor can be used to recharge the unit's batteries while in the car.

If the unit malfunctions or freezes during use, then disconnect the power sources (the AC adaptor and batteries).
Re-connect the power source and continue operation.

■ Hold Function



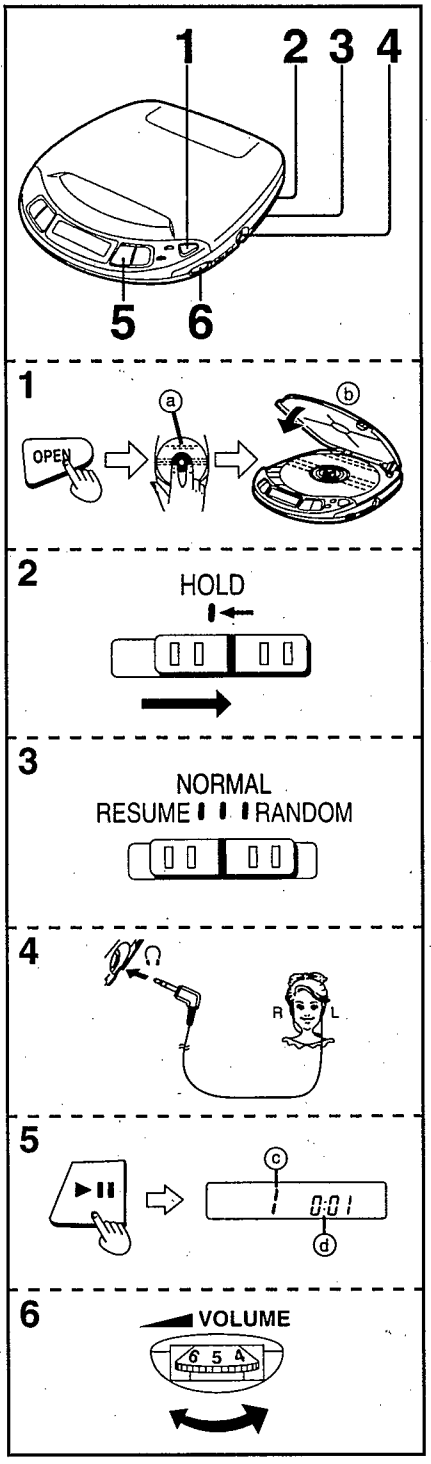
This function causes the unit to ignore short, accidental button presses. (The disc lid can still be opened and closed.)

The HOLD function prevents the following:
- Powering on the unit accidentally (which can cause the batteries to go dead).
- Play being cut off unexpectedly in the middle of a selection.

To use the HOLD function
Set HOLD to the HOLD position.
ⓐ HOLD mode

"hold" Indication
When the unit is in hold status, pressing any button (other than the OPEN button) causes the indication "hold" to appear on the display.
When the unit is powered off
The "hold" indication appears only when the ▶ ❚❚ button is pressed.

■ Sequential Play



Using rechargeable batteries (not included)

Obtain the optional rechargeable batteries.
Make sure to recharge the batteries before using them.
The unit cannot be used to charge rechargeable batteris other than those specifically designed for it.
- Optional batteries (P-3GAVE/2B, SH-CDB8D)

Recharging procedure

1 Insert the special rechargeable batteries into the unit. A

2 Connect the AC adaptor. B
ⓐ DC IN jack (⟐—C—⟐ DC IN 4.5 V)
ⓑ Back panel of the unit
ⓒ AC adaptor
ⓓ AC power outlet

AC adaptor is not included in some countries.
Be sure to obtain the AC adaptor, available as an optional accessories.
- For United Kingdom (RFEA403B-S)
- For others (RFEA401E-3S)

3 When recharging is complete, unplug the AC adaptor from the power outlet and the DC IN jack.

Notes
- Rechargeable batteries have a service life of approximately 300 charge-discharge cycles. If the operating time on one full charge becomes noticeably shorter than it used to be, the battery has reached the end of its service life and should be replaced.
- The AC adaptor and rechargeable batteries may become warm while recharging is in progress. This is not a malfunction.
- You can operate the unit with AC adaptor while recharging the batteries, but it will lengthen the recharging time.

If the battery lid compartment comes loose C
Slide the lid back into place horizontally.

Removing batteries D
Push up on the battery in the direction indicated by the arrow. Then lift it out.

To pause play A
Press during play.
Press again to resume play.

To stop play Stop mode **B**
Press during play.
ⓐ Total number of tracks
ⓑ Total playing time

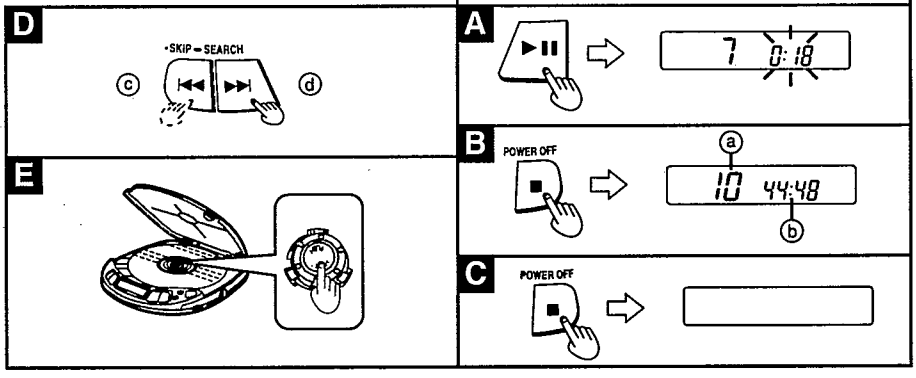
To turn off the unit Off mode **C**
Press during stop mode.

Skip forward/backward (skip function) D
Press during play.
ⓒ Backward direction
ⓓ Forward direction

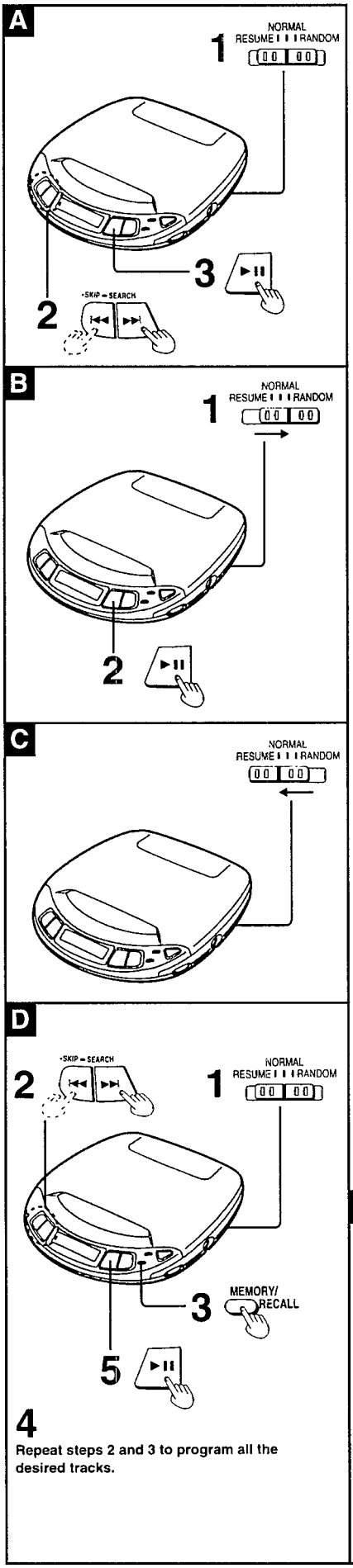
Rapid forward/backward (search function) D
Press and hold during play.
ⓒ Backward direction
ⓓ Forward direction
- During program play, these buttons are used to skip forward or back through the programmed sequence of tracks.
- During random play, the skip buttons cannot be used to skip back to tracks that were played previously in the random sequence.
- During program play, random play or 1 track repeat play, search operation is limited to the current track only.

Removing discs E
After the disc has stopped rotating, press the PUSH button to release the disc. (To protect the disc, never open the cover while it is playing.)

Note
Never insert foreign objects into the unit body.



■ Other Play Methods



Skip play A

The disc plays from the specific track through to the end, then play stops automatically.
Preparation: Put unit in stop mode.
Following steps 1–3.
In step 2, select the desired track.

Random play B

Following steps 1–2.

To cancel the random mode
Set play mode selector to NORMAL.

For your reference:
- It is also possible to press the ▶▶| button while the unit is in stop status to change the first track to be played. (All tracks are played eventually, regardless of which is played first.)
- Program play is not possible in the random mode.

Resume play C

This function allows you to listen from the beginning to the track where play stopped because the unit was powered off (or switched to stop status). It is useful when listening to CDs in the car, etc.

To cancel the resume mode
Set play mode selector to NORMAL.

For your reference:
- If the RESUME, NORMAL, RANDOM (play mode) slider is put in the RESUME position, the all-repeat function will be activated automatically as soon as the unit is powered on.
- If power is cut off near the end of a track (power off status), playback may resume from the beginning of the next track in some cases.
- If the unit is powered off while a disc was playing and then a new disc is inserted, play will begin from the middle of the new disc because the unit remembers the position where play stopped on the previous disc.

Program play D

Up to 24 tracks can be entered in the programmed sequence.
Preparation: Put unit in stop mode.
Following steps 1–5.
In step 2, select the desired track.
In step 3, register in sequence.
(The indication "M" and the programmed sequence appear on the display panel.)

■ To program the same track in the sequence more than once
After step 3, press MEMORY/RECALL the desired number of times.

■ If "ʃ" is displayed
No more tracks can be added to the sequence.

■ To confirm the contents of the program
Press MEMORY/RECALL while the disc is playing. (The number of the programmed tracks appear on the display panel in sequence.)

■ To delete the entire programmed sequence
Press ■, POWER OFF.

Repeat function E

Press REPEAT while disc is playing or when unit is in stop status.

The setting is switched in the sequence indicated below each time REPEAT is pressed.

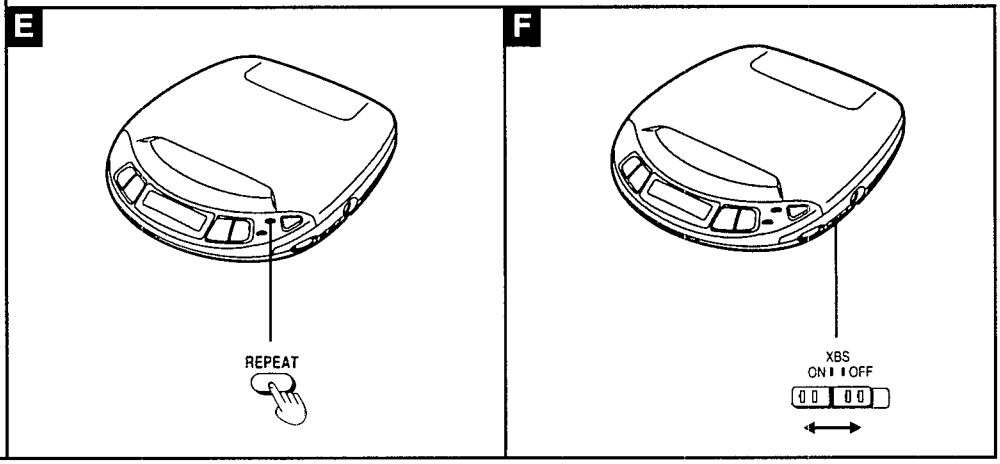
1-track repeat (1 ↻)
One track is repeated.
↓
All-track repeat (ALL ↻)
All the tracks on the disc are repeated.
↓
Cancel

For your reference:
If REPEAT is pressed during program play, only the tracks in the programmed sequence are repeated.
(The indication "ALL" is not displayed.)

Changing the sound quality F

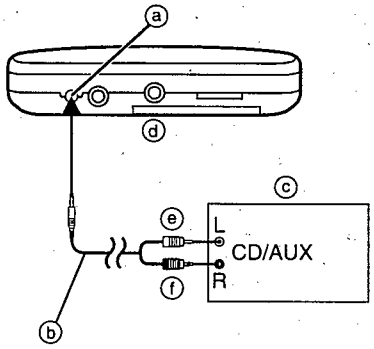
XBS ON:
Select this setting to boost the low-range response.
OFF:
Select this setting to turn off the XBS function.

Note
This function is not available when using the OUT jack.



■ Using the Unit with Optional Accessories

A



Using the unit with an audio system

A

Using the stereo connection cable (not included), you can hear CDs on your audio system.

- Connect the cable to the amplifier after turning off its power.
- Do not connect the cable to the PHONO jacks on the amplifier.
- Obtain the optional connecting cable if the amplifier comes with mini-phone jacks.
- Adjust the volume level on the amplifier.

ⓐ OUT jack
ⓑ Stereo connection cable (not included)
ⓒ Amplifier
ⓓ Back panel of the unit
ⓔ (White)
ⓕ (Red)

Using the unit with a car audio system stereo

Items to be purchased

For connection to the car audio system:

- Car stereo cassette adaptor (SH-CDM10A)

Connect the car stereo cassette adaptor to the unit's headphones jack. (When doing this, keep the unit's VOLUME control at a setting between 4 and 6.)

For securing the unit and connecting the power supply:

- Car adaptor (SH-CDC9)
- Car mounting kit (SH-CDF7)

Note

It may not be possible to use the unit with some types of car stereos owing to restrictions imposed by the construction of the car stereo cassette adaptor.

For further details, refer to the instructions of the part concerned.

■ Caution

Rechargeable batteries

- Only the P-3GAVE/2B, SH-CDB8D batteries can be recharged.
- If the power delivered by the batteries lasts for a very short time after recharging, it means that the batteries' service life is over. Do not use them any more.
- Recharging already charged batteries will shorten their service life.
- When recharging batteries for the first time or when they have not been used for a long period of time, the play time may be shorter than usual. In a case like this, repeatedly recharge and discharge the batteries. This will restore them to their regular state.
- Do not allow any metal objects to touch the terminals of rechargeable batteries since this may cause short-circuiting which is dangerous.

Dry cell batteries/rechargeable batteries

To prevent damage to the batteries and electrolyte leakage, heed the following points.

- Align the ⊕ and ⊖ polarities properly when inserting the batteries.
- Do not mix different types or makes of batteries or old and new batteries.
- Remove the batteries if you do not plan to use the unit for a long period of time.
- Do not throw batteries into a fire, and do not short-circuit, disassemble or subject them to excessive heat.
- Do not attempt to recharge dry cell batteries.
- Do not peel off the plastic covering on the rechargeable batteries. Short-circuiting may occur which is dangerous.

Carrying dry cell batteries/ rechargeable batteries around

When putting dry cell or rechargeable batteries in a pocket or bag, ensure that no other metal objects such as a necklace are placed together with them. Contact with metal may cause short-circuiting which, in turn, may cause a fire.
Be absolutely sure to carry the rechargeable batteries in the battery carrying case.

Precautions for Listening with the Headphones or Earphones

- Do not play your headphones or earphones at a high volume. Hearing experts advise against continuous extended play.
- If you experience a ringing in your ears, reduce volume or discontinue use.
- Do not use while operating a motorized vehicle. It may create a traffic hazard and is illegal in many areas.
- You should use extreme caution or temporarily discontinue use in potentially hazardous situations.
- Even if your headphones or earphones is an open-air type designed to let you hear outside sounds, don't turn up the volume so high that you can't hear what's around you.

AC adaptor

- Handle the AC adaptor carefully. Improper handling is dangerous.
  - Do not touch it with wet hands.
  - Do not place heavy objects on top of it.
  - Do not forcibly bend it.
- Be sure to connect only the AC adaptor provided with the unit.
- Disconnect the AC adaptor from the power outlet if the unit is not going to be used for a long time.

Unit

No altering or remodeling
This can cause malfunctioning.
No dropping or strong impacts
This may damage the unit.
Locations to be avoided
Avoid using the unit in the following locations since they can cause malfunctioning.
1. Bathrooms and other moisture-prone places.
2. Warehouses and other dusty places
3. Very hot places near heating appliances, etc.

Do not leave the unit exposed to direct sunlight for long periods of time
This may deform or discolor the cabinet and may also cause malfunctioning.

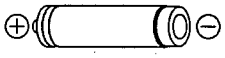
When driving a car

In the interest of traffic safety, do not operate the unit while driving.

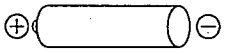
When purchasing rechargeable batteries

As a safety precaution, the portable CD players made by Panasonic have a construction designed to make it impossible to recharge ordinary batteries.
To use rechargeable batteries, be absolutely sure to purchase the rechargeable Ni-Cd batteries designed especially for this unit.
Special rechargeable Ni-Cd batteries:
P-3GAVE/2B, SH-CDB8D (set of 2)
For details, check with your dealer.

Special rechargeable batteries



Ordinary dry cell batteries/ rechargeable batteries



Notice about the rechargeable battery
The battery is designated recyclable.
Please follow your local recycling regulations.

■ Troubleshooting Guide

Problem	Check this
Cannot close cover.	Is the disc properly secured in place?
Cannot play discs.	• Is the unit in hold status? • Is the disc properly secured in place? • Is there moisture condensation on the lens? (Wait for about an hour and then try again.)
Cannot remove disc.	Did you press the PUSH button to release the disc?
Tracks on disc do not play in order, starting with the first track.	Is the RESUME, NORMAL, RANDOM (play mode) slider in the NORMAL position?
Cannot hear music —too noisy.	• Has earphones plug been inserted as far as it will go? • Is earphones plug dirty?
TV picture is distorted. **Radio reception is noisy.**	Are you using the unit body too near a TV or tuner? (If the TV or tuner is connected to a simple indoor antenna, connect it to an outdoor antenna.)

■ 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).

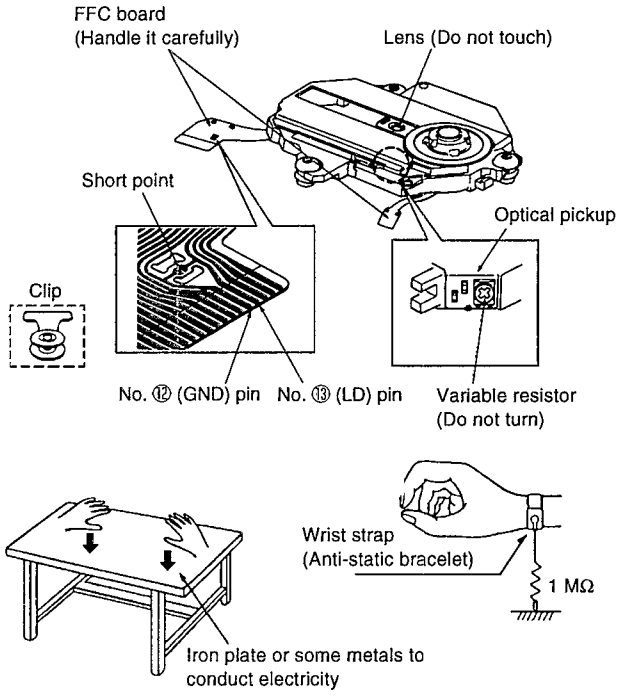
• Handling of traverse deck (optical pickup)

1. Do not subject the traverse deck (optical pickup) to static electricity as it is extremely sensitive to electrical shock.
2. To protect the laser diode against electrostatic breakdown, short the flexible board (FFC board) with a clip or similar object.
3. Take care not to apply excessive stress to the flexible board (FFC board).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

• 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 conducive 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).



Caution when Replacing the Traverse Deck:
The traverse deck has a short point shorted with solder to protect the laser diode against electrostatic breakdown. Be sure to remove the solder from the short point before making connections.

■ Operation Checks and Component Replacement Procedures

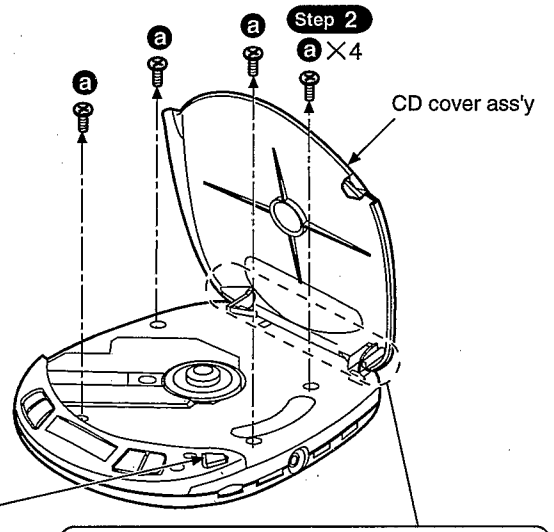
NOTE **1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.**

2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.

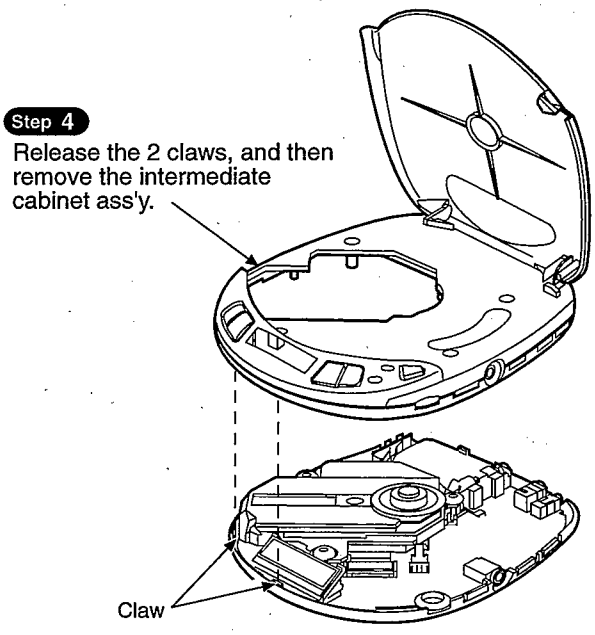
3. [ ] indicates parts No.

1. Checking for the P.C.B.

〈Checking for the P.C.B. (A side)〉

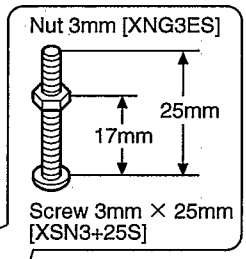


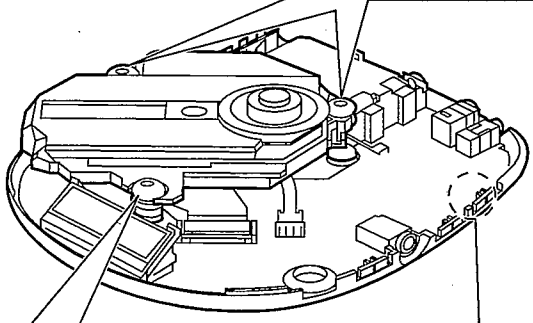
Step 3
Lift the intermediate cabinet ass'y with holding the rear part of bottom cabinet ass'y, and then release the claw.

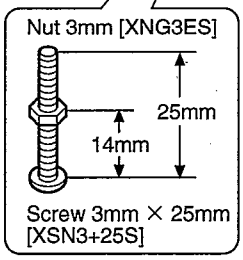


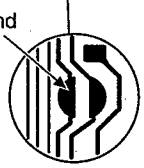
NOTE

- After checking, unsolder the short land to open circuit.
- The tip of screw must not protrude above the floating rubber.
- To keep insulation, place the insulator sheet (paper etc.) between the P.C.B. and the head of screws.





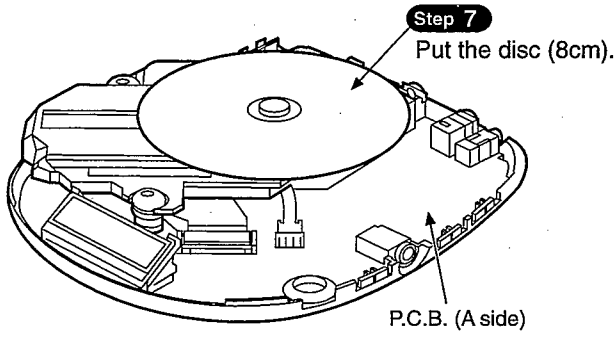




Step 5
Short-circuit the land by soldering.

Step 6
Sustain the traverse deck with the floating rubber inserted screws and nuts as shown above.

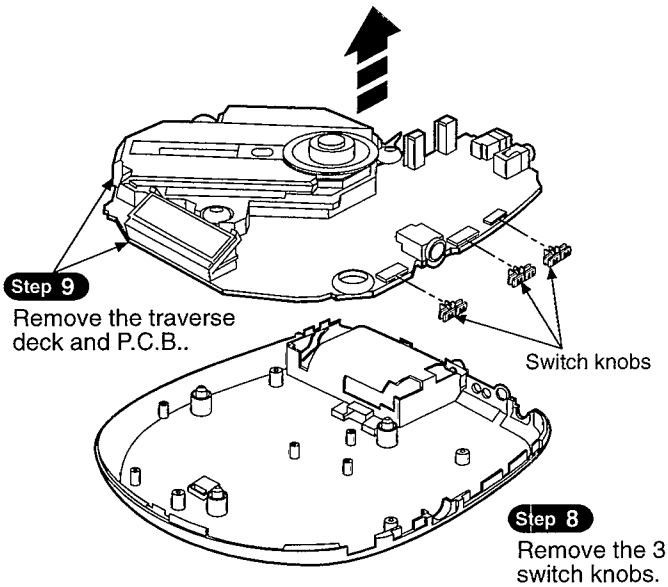
• Check the P.C.B. (A side) as shown below.

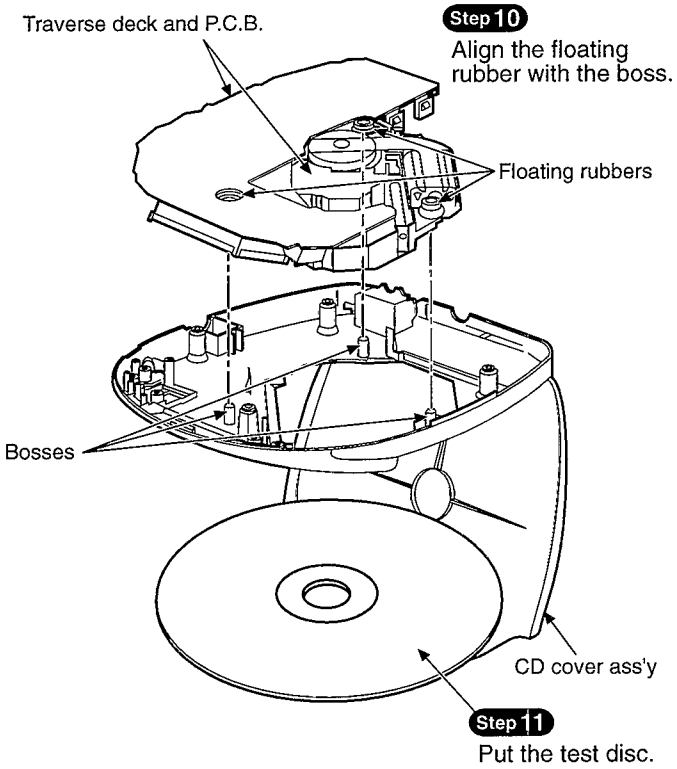


NOTE

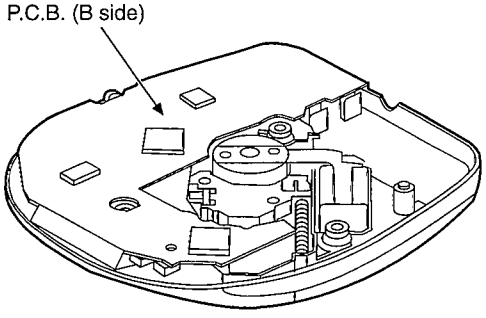
After checking, unsolder the short land to open circuit.

〈Checking for the P.C.B. (B side)〉





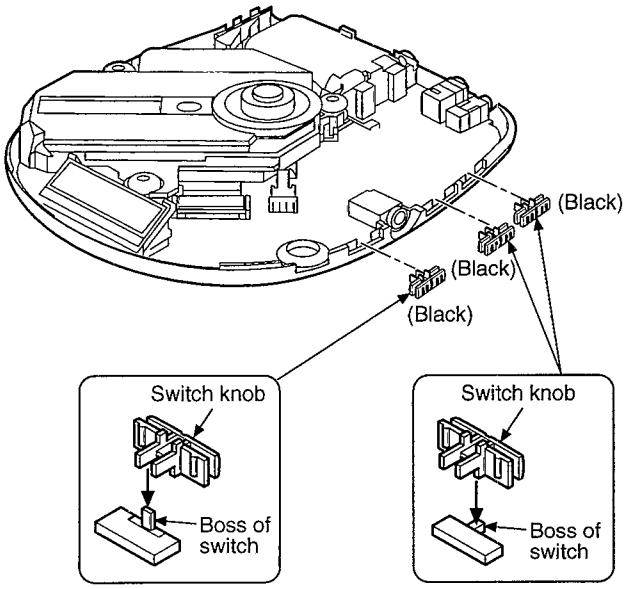
· Check the P.C.B. (B side) as shown below.



NOTE

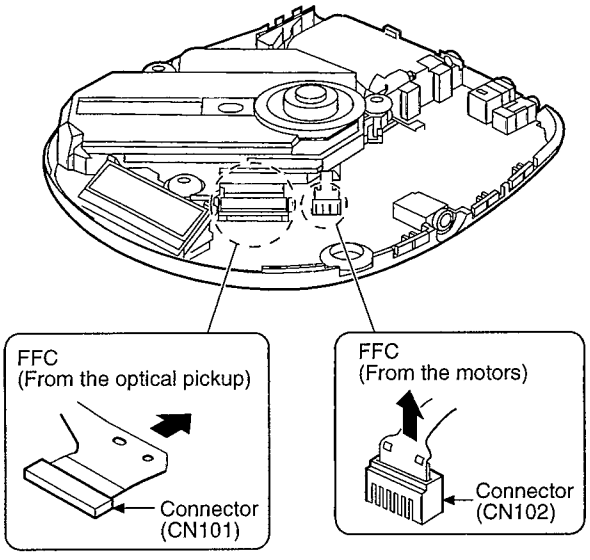
After checking, unsolder the short land to open circuit.

Notice for installation of switch knobs



2. Replacement for the traverse deck

· Follow the Step 1 ~ Step 4 in item 1 on page 9.



Step 1
Pull out the FFC from connector (CN101).

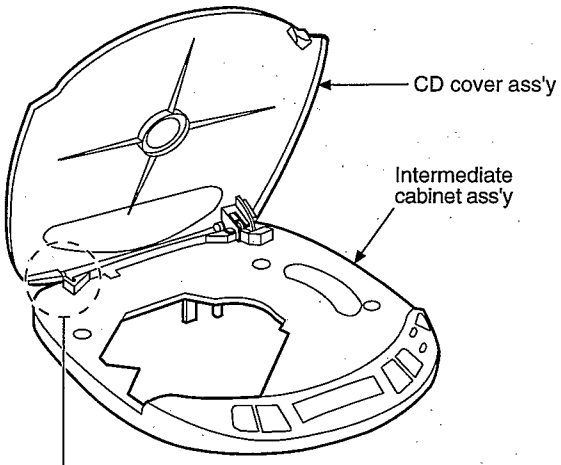
Step 2
Pull out the FFC from connector (CN102).

NOTE

Solder the point between pin ⑫ (LD GND) and pin ⑬ (LD) of FFC board.
(Refer to "Handling Precautions for Traverse Deck" on page 7.)

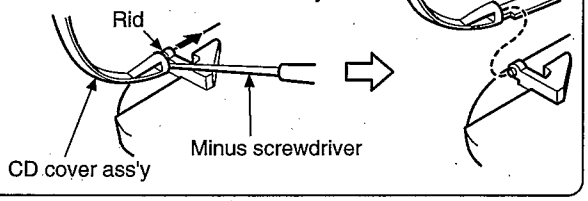
3. Replacement for the CD cover ass'y

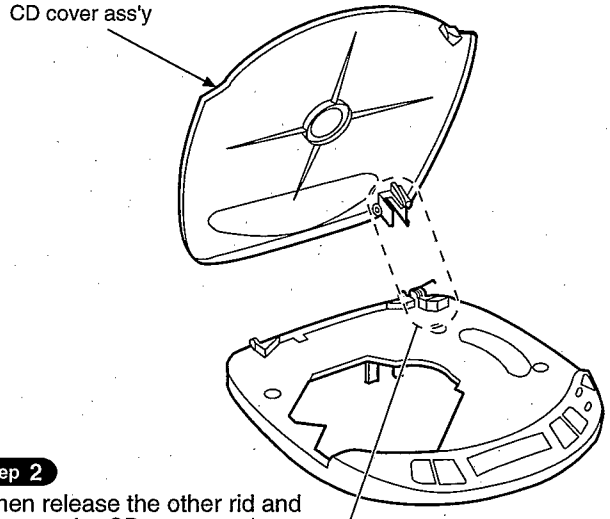
· Follow the Step 1 ~ Step 4 in item 1 on page 8.



Step 1

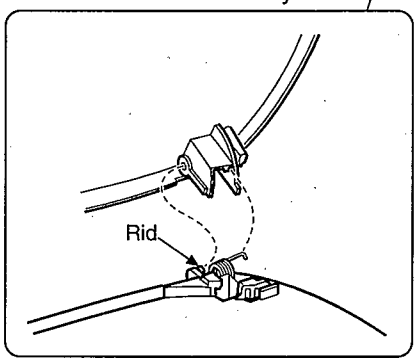
Push the rid in the direction of arrow with thin tip of minus screwdriver, and then remove the CD cover ass'y.





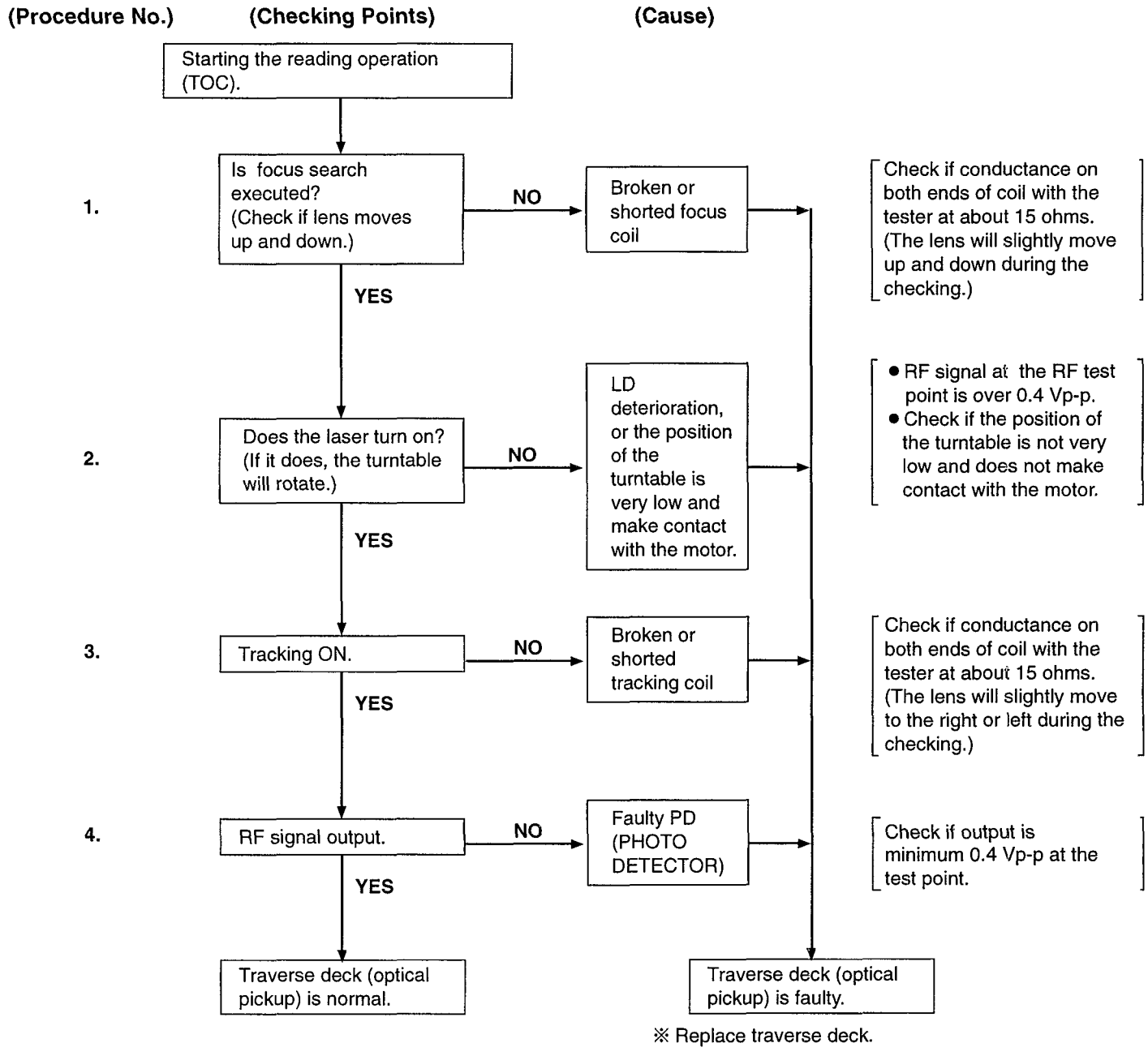
Step 2

Then release the other rid and remove the CD cover ass'y.



■ Checking the Operation Problems on the Traverse Deck (Optical Pickup)

Make sure to follow the procedures below to check the operation problems of the traverse deck (optical pickup) before replacing it. Replace the traverse deck only after the problem is identified.



- Check electrical circuit.
- Check for flaws on disc or if it is wrapped or not centered.
- **Check the operations described below on the traverse deck after replacing it.**

* 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).

* Checking Playability

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

■ Automatic Adjustment Results Display Function (Self-check Function)

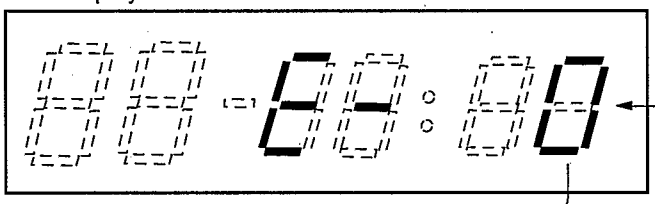
On the unit (SL-S112), each automatic adjustment result are displayed on the LCD. This function is convenient to check or identify which automatic adjustment circuit is incorrect. The followings are the contents of the automatic adjustment result displays (self-check function).

• How to display automatic adjustment results

1. Load the test disc (SZZP1054C).
2. Press the I◄◄ (SKIP/SEARCH) and ►►I (SKIP/SEARCH) Buttons simultaneously and hold them, and additionally press the ►/II (PLAY/PAUSE) Button.
3. Press the ■ (STOP/POWER OFF) Button once.
4. An automatic adjustment result is displayed on the LCD.

• Display of automatic adjustment results (self-check function)

LCD Display



4 bits (TGC, FGC, TBC, FBC) are displayed in hexadecimal system from 0 ~ F.

<Example>

MSB			LSB
TGC	FGC	TBC	FBC

(Each bit ... TGC,FGC,TBC,FBC)
0 ... OK
1 ... NG

1) 0 0 0 0 ⇨ "E—0" is displayed.
(All adjustments are OK.) ..... Normal

2) 0 0 0 1 ⇨ "E—1" is displayed.
(OK) (OK) (OK) (NG)
(Focus balance adjustment is NG (incorrect).)

3) 0 1 0 0 ⇨ "E—4" is displayed.
(OK) (NG) (OK) (OK)
(Focus gain adjustment is NG.)

4) 1 1 1 1 ⇨ "E—F" is displayed.
(All adjustments is NG.)

5) 1 0 0 0 ⇨ "E—8" is displayed.
(NG) (OK) (OK) (OK)
(Tracking gain adjustment is NG.)

Note: If any other disc than the test disc (SZZP1054C) is used, an "E—8" may be displayed.

<Example> Follow the below steps when "E—1" is displayed.
(Cause: Focus balance (FBC) is set beyond the limit.)
• Check if
(1) the waveform or voltage of the focus servo circuit is correct, and
(2) the optical pickup returns to the normal state by exchanging the traverse deck.

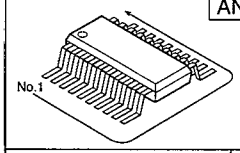
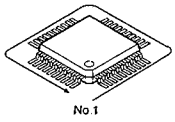
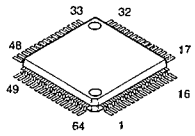
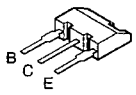
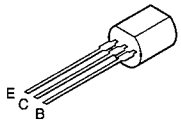
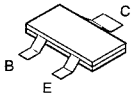
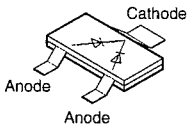
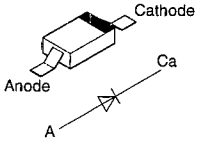
Follow the below steps when "E—4" is displayed.
(Cause: Focus gain (FGC) is set beyond the limit.)
• Check if
(1) the waveform or voltage of the focus servo circuit is correct,
(2) the focus coil of the optical pickup is correct (around 15 ohms), and
(3) the optical pickup returns to the normal state by exchanging the traverse deck.

Follow the below steps when "E—F" is displayed.
(Cause: All adjustments (TGC,FGC,TBC,FBC) are set beyond the limit.)
• Check if
(1) the optical pickup returns to the normal state by exchanging the traverse deck, and
(2) the waveform or voltage of the servo IC's(IC101,501) are correct.

Note:
It is not always necessary to exchange the traverse deck when an error message is displayed.
Be sure to check if the circuit is defective or not before exchanging the traverse deck.

Note:
If any other disc than the test disc (SZZP1054C) is used, an error message may be displayed. This is not a malfunction.

■ Type Illustration of IC's, Transistors and Diodes

NJU7082AME1 8PIN AN8839SBE1 28PIN 	AN8789FBEB 44PIN MNG746RPK1AL 80PIN 	SC440303CFU 	2SD2074HWRST 
2SD1302STTA 	2SD1450STTA 	 2SD1328TX DTA114YUA106 DTC114TUA106 DTC144TUA106 MSB709RST1	M1MA141WKT1 	MA110TX 

■ Schematic Diagram

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

Notes:

- S201: Laser ON/OFF switch in "OFF" position.
  (It turns "ON" with disc holder closed.)
- S202: Rest detector in "OFF" position.
  (It turns "ON" when optical pickup comes to innermost periphery.)
- S301: Memory/recall (MEMORY/RECALL) switch.
- S302: Repeat (REPEAT) switch.
- S303, 304: Skip/search (I◄◄ •SKIP/ ▬ SEARCH ►►I) switches.
  (S303: I◄◄ , S304: ►►I)
- S305: Stop/power off (■ POWER OFF) switch.
- S306: Play/pause (► ❚❚) switch.
- S307: Play mode selector (MODE) in "RANDOM" position.
  (RANDOM↔NORMAL↔RESUME)
- S308: Hold (HOLD) switch in "ON" position.
- S701: XBS Selector (XBS) switch in "OFF" position.
- VR11: Power supply voltage adjustment VR.
- VR701-1, VR701-2: Volume control VR.

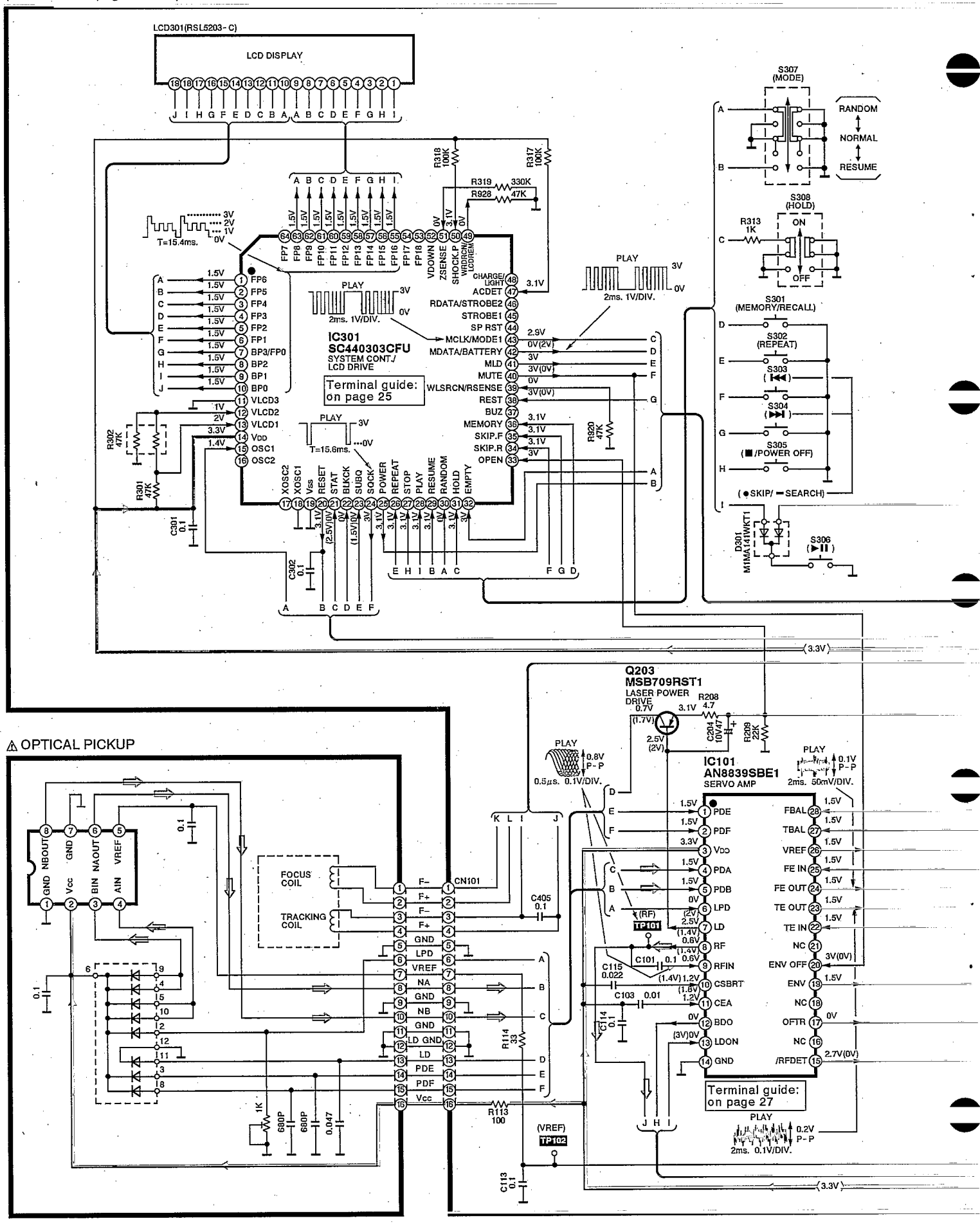
- The voltage value and waveforms are the reference voltage of this measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of GND terminal (DC IN Jack). Accordingly, there may arise some errors in the voltage values and waveforms depending upon the internal impedance of the tester or measuring unit.
- The parenthesized is the voltage for test disc (1kHz, L+R, 0 dB) in play mode, and the other, for no disc in stop mode.
- AC adaptor is used for power supply.
- Signal line
  ⇨ : Positive voltage line.
  ⇨ : Audio signal line.
- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety. Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.

Caution!

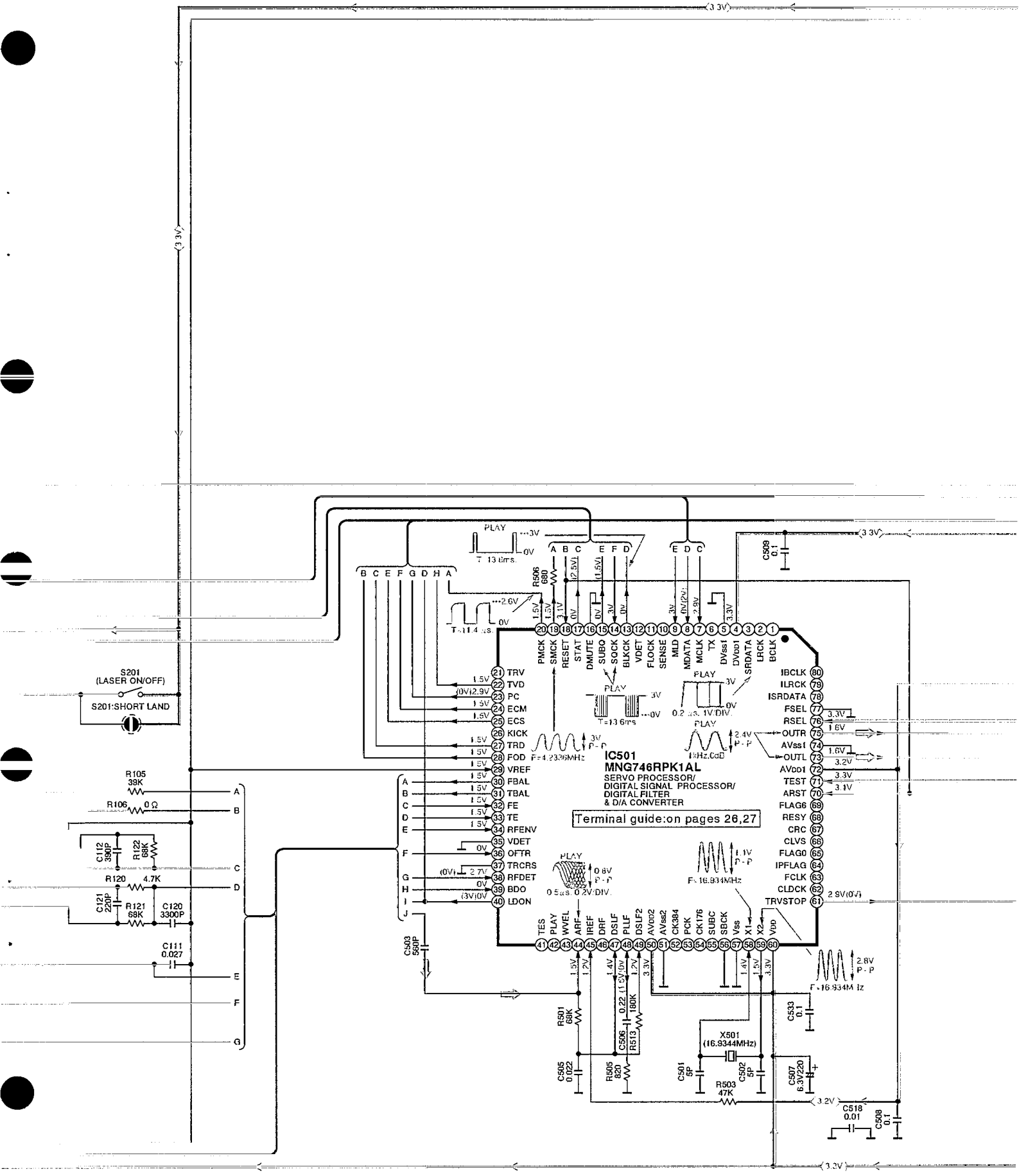
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

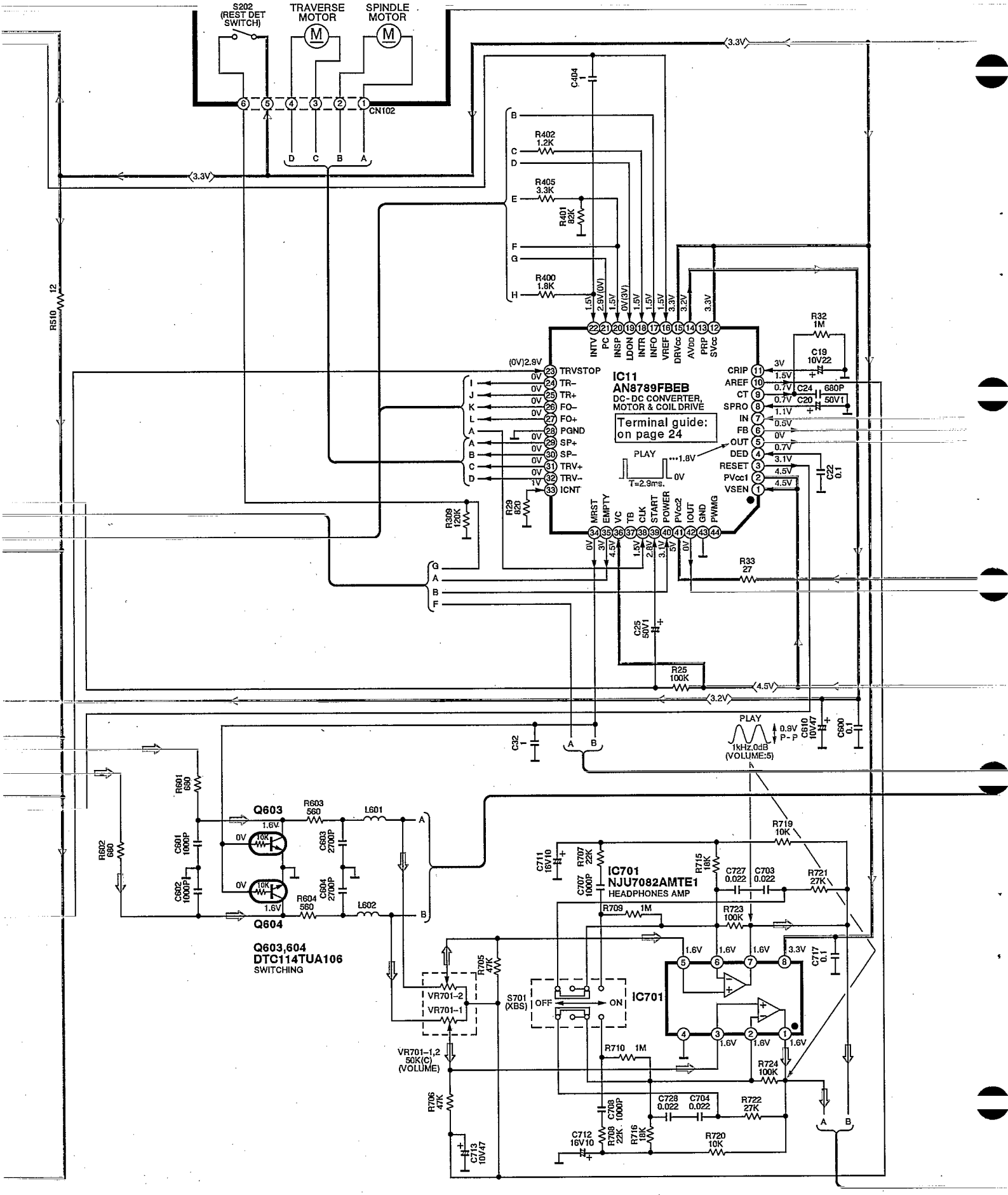
- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the pins of IC or LSI with fingers directly.

(P.C.Board:on pages 18,19)

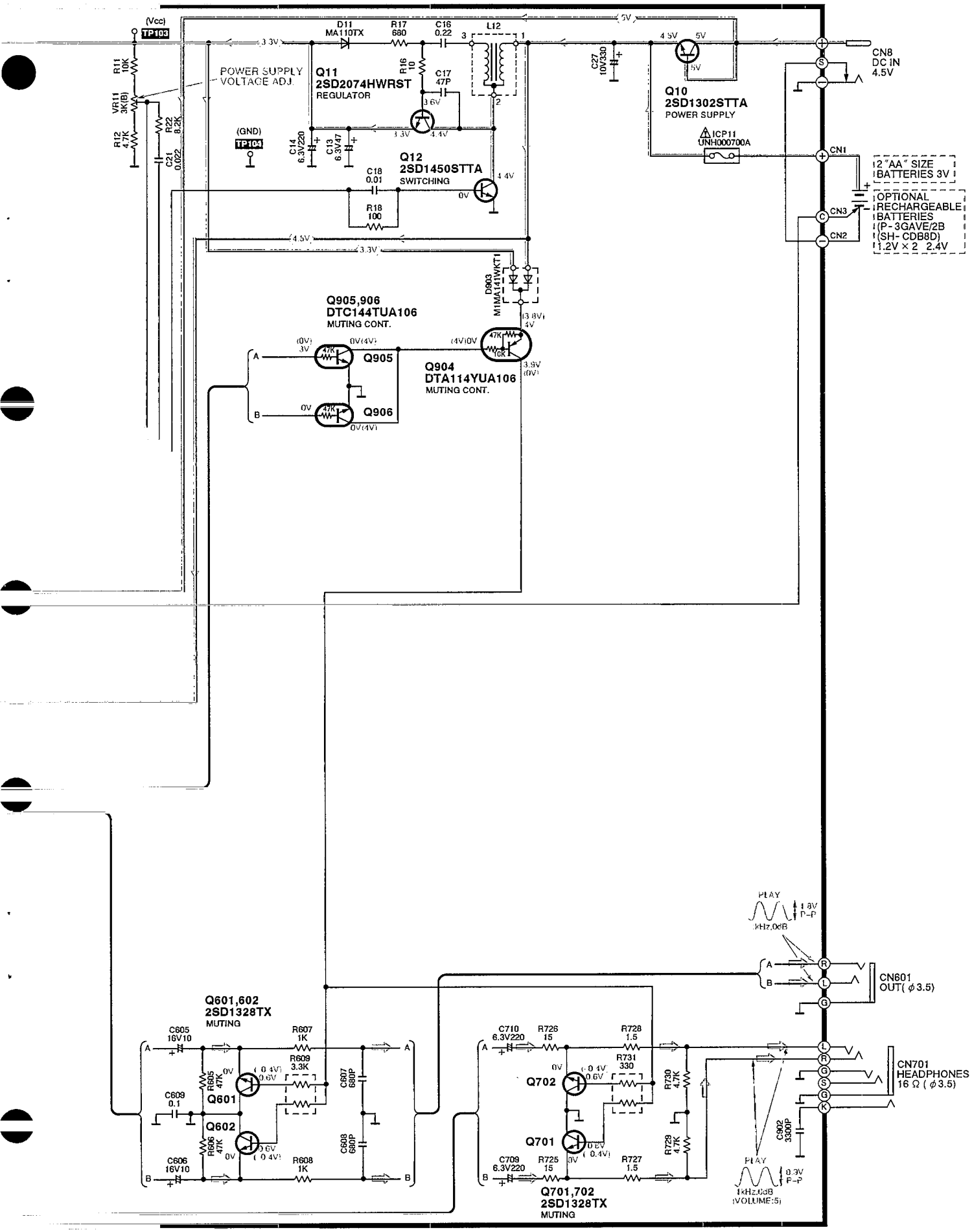


: Positive voltage line : Audio signal line



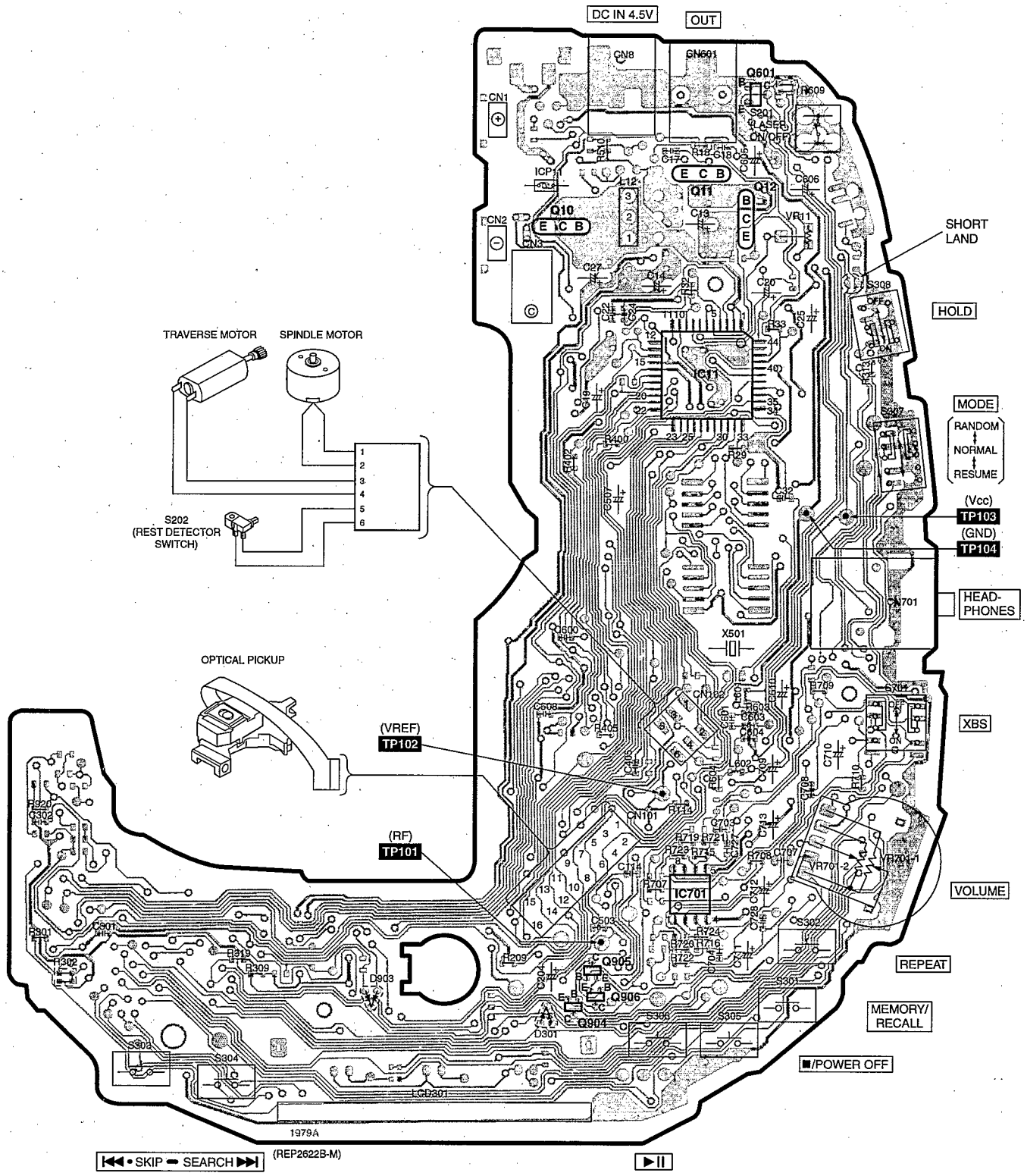

S202
(REST DET SWITCH)
TRAVERSE MOTOR
SPINDLE MOTOR
CN102
IC11
AN8789FBEB
DC-DC CONVERTER, MOTOR & COIL DRIVE
Terminal guide: on page 24
TRVSTOP
TR-
TR+
FO-
FO+
PGND
SP+
SP-
TRV+
TRV-
ICNT
CRIP
AREF
CT
SPRO
IN
FB
OUT
DED
RESET
PVcc1
VSEN
INTV
PC
INSP
LDON
INTR
INFO
VREF
DRVcc
AVDD
PRP
SVcc
MRST
EMPTY
VC
TB
CLK
START
POWER
PVcc2
IOUT
GND
PWMG
PLAY
T=2.9ms.
1kHz,0dB
(VOLUME:5)
Q603
Q604
Q603,604
DTC114TUA106
SWITCHING
IC701
NJU7082AMTE1
HEADPHONES AMP
S701
(XBS)
OFF
ON
VR701-1,2
50K(C)
(VOLUME)
VR701-2
VR701-1

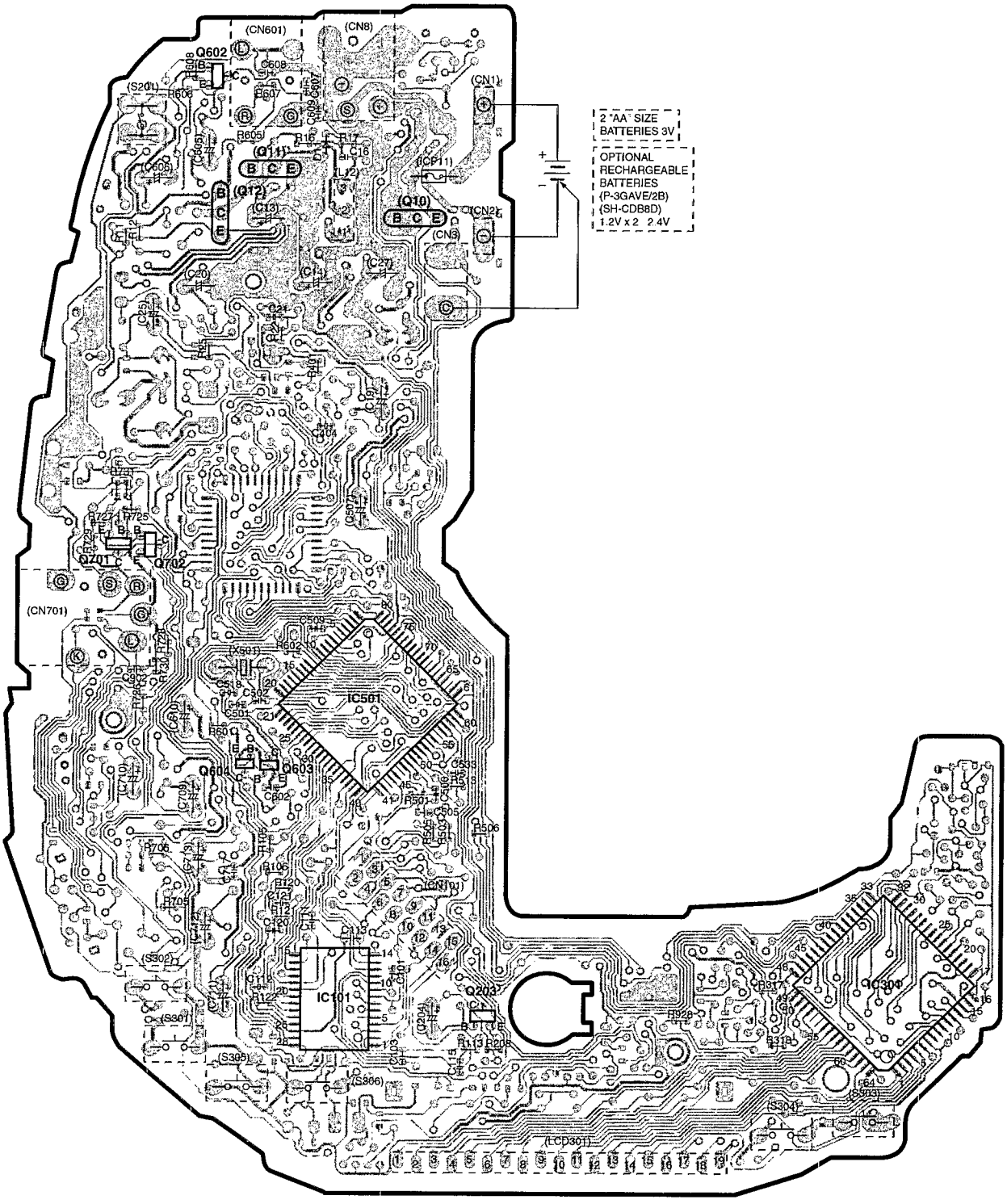
: Positive voltage line : Audio signal line



■ Printed Circuit Board and Wiring Connection Diagram

• This circuit board diagram may be modified at any time with the development of new technology.




2 "AA" SIZE BATTERIES 3V
OPTIONAL RECHARGEABLE BATTERIES (P-3GAVE/2B) (SH-CDB8D) 1.2V x 2 2.4V
(CN601)
(CN8)
(CN1)
(CN2)
(CN3)
(CN701)
(CN101)
Q602
Q603
Q604
Q701
Q702
Q203
(Q11)
(Q12)
(Q10)
IC501
IC101
IC304
(LCP11)
(LCD301)
(S201)
(S302)
(S303)
(S304)
(S305)
(S306)
(S307)

■ Measurements and Adjustments

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

• Measuring instruments and special tools

- **Test discs**
  1. Playability test disc (SZZP1054C)
  2. Uneven test disc (SZZP1056C)
- Musical program disc (ordinary)
- DC voltmeter
- Lead wire (for test points)

• Test short land

Short-circuit the lands of the laser ON/OFF switch (S201) by soldering them. It turns "ON" position. (Refer to below **Fig. 1.** or printed circuit board and wiring connection diagram for short land location on page 18.)

Note: Remove the solders from the lands after adjustment.

• Adjustment point

Notes: 1. Please refer to the printed circuit board and wiring connection diagram for test point locations.
2. Take care to connect CN101 (as shown in **Fig.1**).

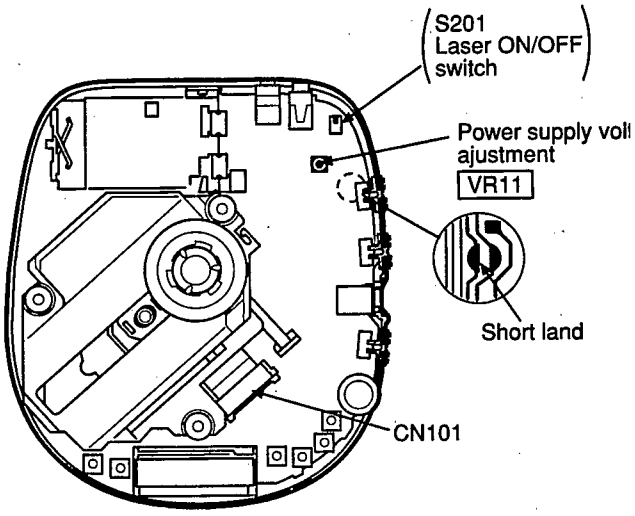


Fig. 1

• Adjustment procedure

(1) POWER SUPPLY VOLTAGE ADJUSTMENT

1. Connect the DC voltmeter to **TP103** (VCC) (+) and **TP104** (GND) on the P.C.B.
2. Connect the AC adaptor cord to the DC (IN) port and move the PLAY switch to the ON position. Anti-shock is set in OFF position. (Use a new dry cell battery or a rechargeable battery that is full charged.)
3. Insert the test disc, and switch the player power ON.
4. Adjust **VR11** on the P.C.B.at **3.12 ± 0.02V**,as shown in Fig.1.

(2) CHECK OF PLAY OPERATION

*** 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 backward directions).

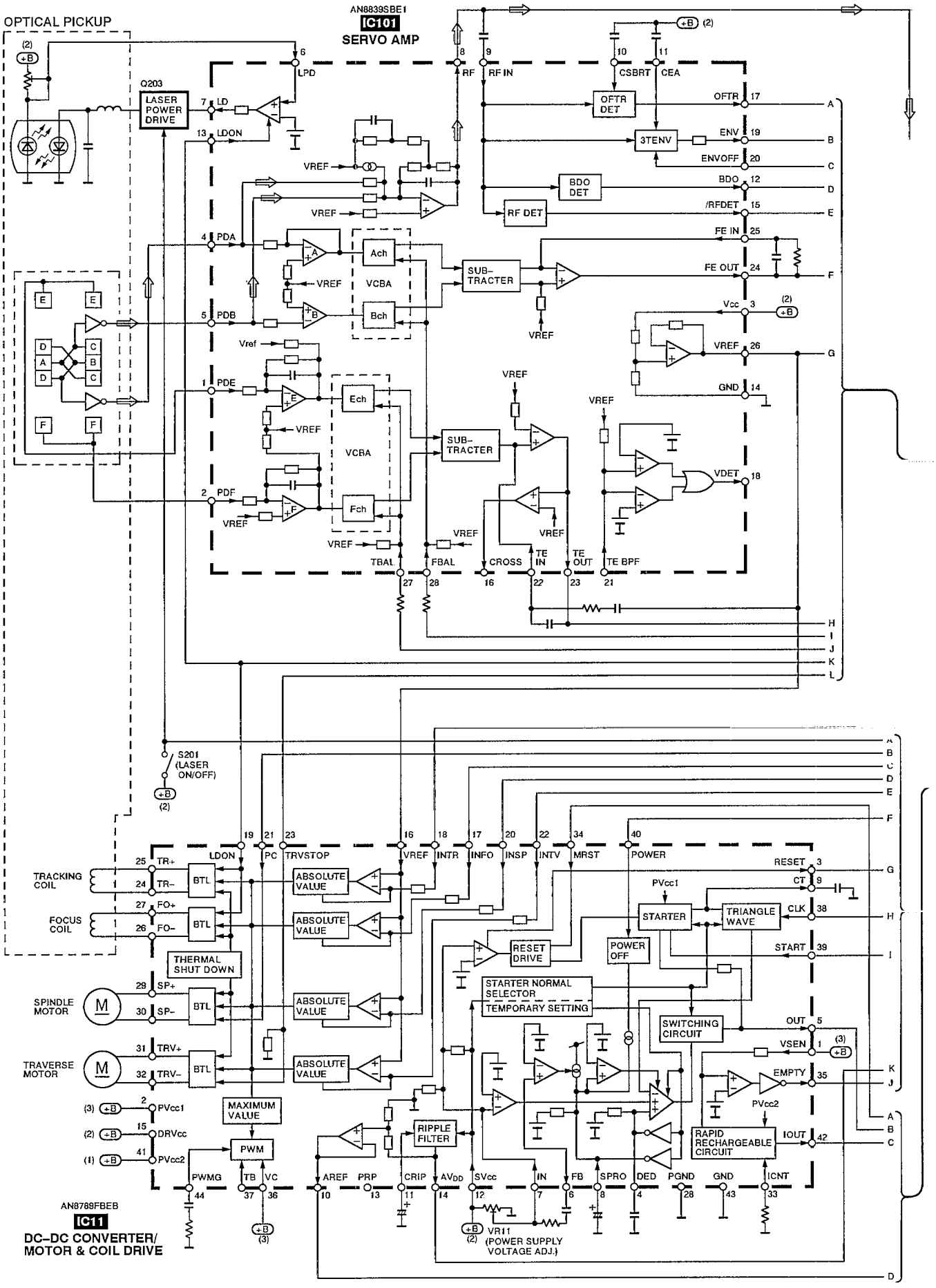
*** Checking Manual Search**

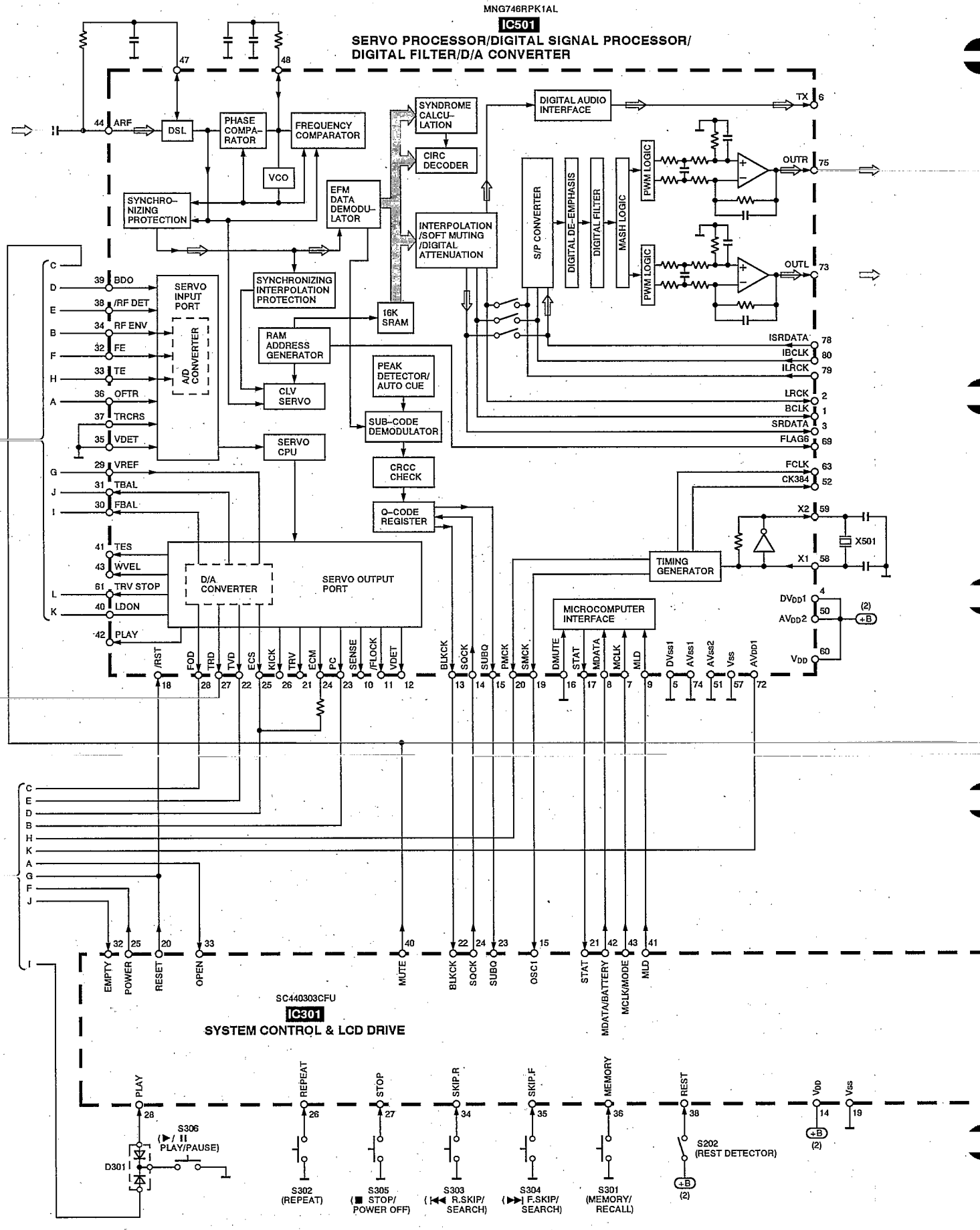
1. Play an ordinary musical program disc.
2. Press the manual search button to check for smooth manual search operations at either low or high speed (in both the forward and backward directions).

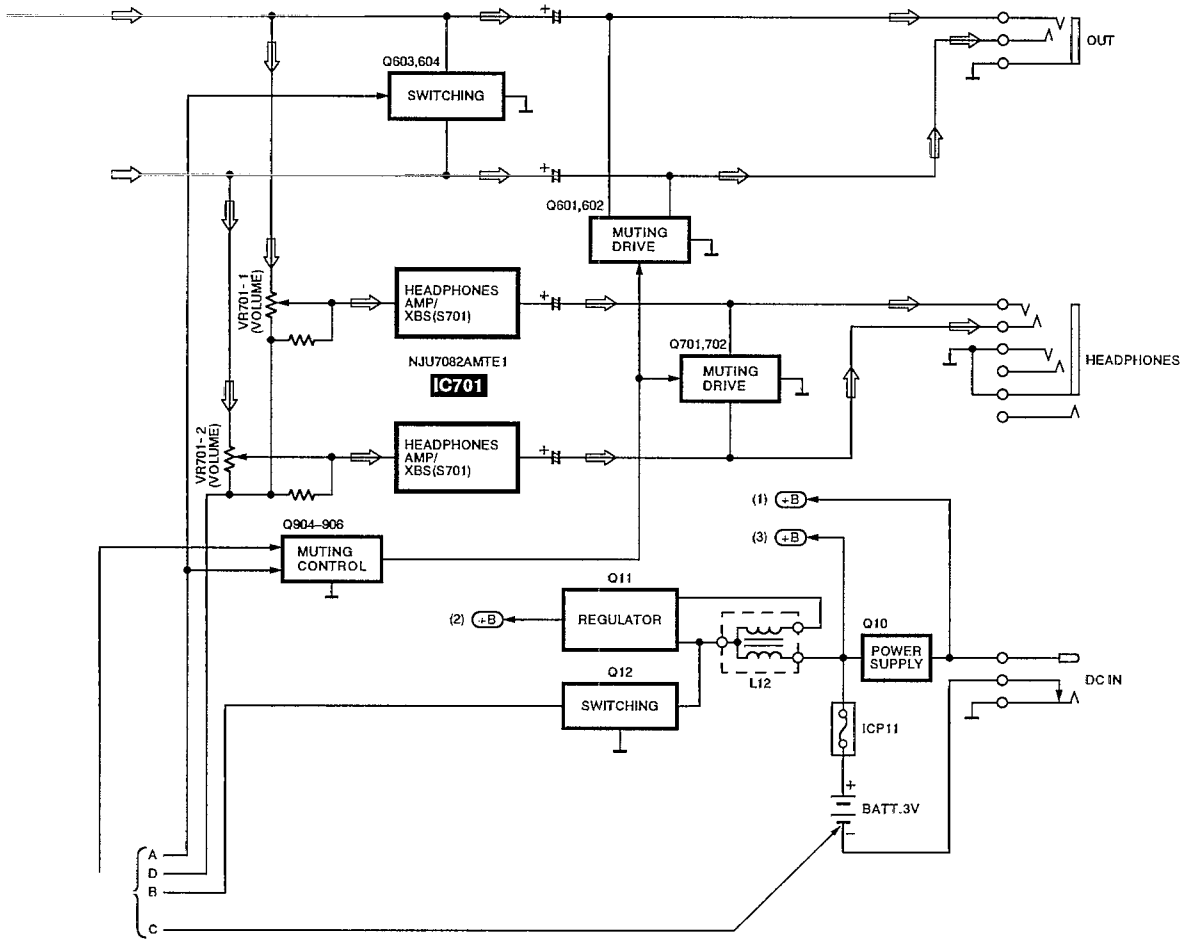
*** Checking Playability**

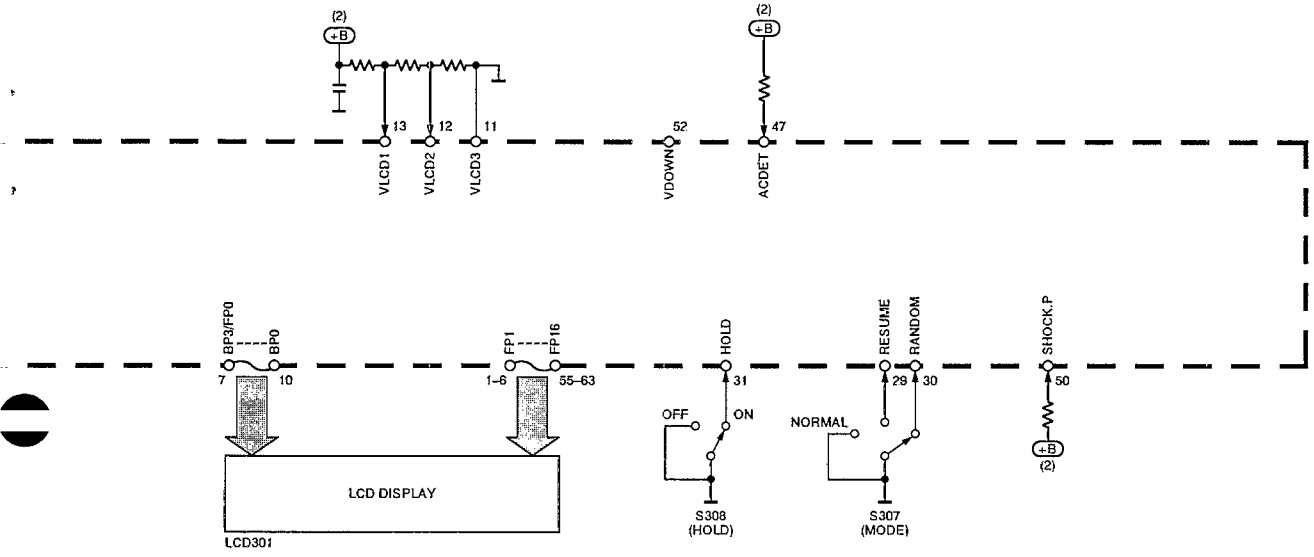
1. Play the 0.7 mm black dot and the 0.7 mm wedge on the playability test disc (SZZP1054C) and verify that no sound skip or noise occurs.
2. Play the middle tracks of the uneven test disc (SZZ1056C) and verify that no sound skip or noise occurs.

■ Block Diagram




MNG746RPK1AL
IC501
SERVO PROCESSOR/DIGITAL SIGNAL PROCESSOR/
DIGITAL FILTER/D/A CONVERTER
ARF
DSL
PHASE COMPA-RATOR
FREQUENCY COMPARATOR
VCO
SYNCHRO-NIZING PROTECTION
EFM DATA DEMODU-LATOR
SYNDROME CALCU-LATION
CIRC DECODER
INTERPOLATION /SOFT MUTING /DIGITAL ATTENUATION
DIGITAL AUDIO INTERFACE
S/P CONVERTER
DIGITAL DE-EMPHASIS
DIGITAL FILTER
MASH LOGIC
PWM LOGIC
OUTR
OUTL
SERVO INPUT PORT
A/D CONVERTER
BDO
/RF DET
RF ENV
FE
TE
OFTR
TRCRS
VDET
SYNCHRONIZING INTERPOLATION PROTECTION
16K SRAM
RAM ADDRESS GENERATOR
CLV SERVO
SERVO CPU
PEAK DETECTOR/ AUTO CUE
SUB-CODE DEMODULATOR
CRCC CHECK
Q-CODE REGISTER
VREF
TBAL
FBAL
TES
WVEL
TRV STOP
LDON
PLAY
D/A CONVERTER
SERVO OUTPUT PORT
TIMING GENERATOR
X501
MICROCOMPUTER INTERFACE
ISRDATA
IBCLK
ILRCK
LRCK
BCLK
SRDATA
FLAG
FCLK
CK384
/RST
FOD
TRD
TVD
ECS
KICK
TRV
ECM
PC
SENSE
/FLOCK
VDET
BLKCK
SQCK
SUBQ
PMCK
SMCK
DMUTE
STAT
MDATA
MCLK
MLD
SC440303CFU
IC301
SYSTEM CONTROL & LCD DRIVE
EMPTY
POWER
RESET
OPEN
MUTE
OSC1
MDATA/BATTERY
MCLK/MODE
PLAY
REPEAT
STOP
SKIP-R
SKIP-F
MEMORY
REST
S306
PLAY/PAUSE
D301
S302
(REPEAT)
S305
STOP/
POWER OFF)
S303
R.SKIP/
SEARCH)
S304
F.SKIP/
SEARCH)
S301
(MEMORY/
RECALL)
S202
(REST DETECTOR)


OUT
Q603,604
SWITCHING
Q601,602
MUTING DRIVE
VR701-1 (VOLUME)
HEADPHONES AMP/ XBS(S701)
NJU7082AMTE1
IC701
Q701,702
MUTING DRIVE
HEADPHONES
VR701-2 (VOLUME)
HEADPHONES AMP/ XBS(S701)
(1) +B
(3) +B
Q904-906
MUTING CONTROL
Q11
(2) +B
REGULATOR
Q10
POWER SUPPLY
L12
Q12
SWITCHING
DC IN
ICP11
BATT.3V
A
D
B
C


(2) +B
13
12
11
VLCD1
VLCD2
VLCD3
52
VDOWN
(2) +B
47
ACDET
BP3/FP0
BP0
7
10
FP1
FP16
1-6
55-63
LCD DISPLAY
LCD301
HOLD
31
OFF
ON
S308 (HOLD)
RESUME
RANDOM
29
30
NORMAL
S307 (MODE)
SHOCK.P
50
+B
(2)

■ Terminal Function of IC's

• IC11 (AN8789FBEB): DC-DC Converter / Motor & Coil Drive

Pin No.	Terminal Name	I/O	Function
1	VSEN	I	Empty detect input terminal
2	PVCC1	I	Power supply terminal
3	RESET	O	Reset signal input terminal
4	DED	I	Deduction time signal input terminal
5	OUT	O	DC/DC converter output terminal
6	FB	O	Error amp output terminal
7	IN	I	Error amp input terminal
8	SPRO	I	Short protection signal input terminal
9	CT	O	Trianglar wave output terminal
10	AREF	O	1/2 AVDD signal output terminal
11	CRIP	I	Ripple removal capacitor terminal
12	SVCC	I	Power supply terminal
13	PRP	–	Not used, open
14	AVDD	O	Ripple filter output terminal
15	DRVCC	I	Power supply terminal
16	VREF	I	Reference voltage input terminal
17	INFO	I	Focus coil driver input terminal
18	INTR	I	Tracking coil driver input terminal
19	LDON	I	Driver ON/OFF control terminal
20	INSP	I	Spindle motor driver input terminal
21	PC	I	Driver ON/OFF control terminal
22	INTV	I	Traverse motor driver input terminal

Pin No.	Terminal Name	I/O	Function
23	TRVSTOP	I	Driver ON/OFF control terminal
24	TR-	O	Trcking coil driver output terminal
25	TR+	O	Trcking coil driver output terminal
26	FO-	O	Focus coil driver output terminal
27	FO+	O	Focus coil driver output terminal
28	PGND	–	GND terminal
29	SP+	O	Spindle motor driver output terminal
30	SP–	O	Spindle motor driver output terminal
31	TRV+	O	Traverse motor driver output terminal
32	TRV–	O	Traverse motor driver output terminal
33	ICNT	I	Charge current setting terminal
34	MRST	O	Muting reset output terminal
35	EMPTY	O	Enpty detect output terminal
36	VC	I	Not used, connected to PVCC1
37	TB	–	Not used, open
38	CLK	I	Clock input terminal
39	START	I	Oscillation start input terminal
40	POWER	I	Power ON/OFF signal input terminal
41	PVCC2	I	Power supply terminal
42	IOUT	O	Charge / Battery detect output terminal
43	GND	–	GND terminal
44	PWMG	–	Not used, open

● IC301 (SC44302CFU): System Control / LCD Drive

Pin No.	Terminal Name	I/O	Function
1~6	FP6~FP1	O	LCD segment signal output terminal
7	BP3/FP0		
8~10	BP2~BP0		
11~13	VLCD3~VLCD1	I	LCD voltage control input terminal (Pin No.11 : connected to GND)
14	VDD	I	Power supply treminal
15	OSC1	I	Main system clock input treminal
16	OSC2	–	Not used, open
17	XOSC2	–	Not used, open
18	XOSC1	–	Not used, connected to GND
19	VSS	–	GND terminal
20	RESET	O	Reset signal input terminal
21	STAT	I	Status sihnal input terminal (CRC,CUE,CLVS,TT STOP,FCLV,SQOK)
22	BLKCK	I	Sub-code block clock input terminal (f=75Hz with nomal play)
23	SUBQ	I	Sub-code Q data input terminal
24	SQCK	O	Sub-code Q register clock signai output terminal
25	POWER	O	Power ON/OFF signal output terminal
26	REPEAT	I	REPEAT key input terminal
27	STOP	I	STOP key input terminal
28	PLAY	I	PLAY key input terminal
29	RESUME	I	RESUME switch input terminal
30	RANDOM	I	RANDOM switch input terminal
31	HOLD	I	HOLD switch input terminal
32	EMPTY	I	Empty detect input terminal

Pin No.	Terminal Name	I/O	Function
33	OPEN	I	CD cover open detection terminal ("L" : open)
34	SKIP.R	I	SKIP/SERCH.R key input terminal
35	SKIP.F	I	SKIP/SERCH.F key input terminal
36	MEMORY	I	MEMORY key input terminal
37	BUZ	–	Not used, open
38	REST	I	REST (innermost position) detect input terminal
39	WLSRCN/ RSENSE	I	Connected to GND via.resister
40	MUTE	O	Muting signal output terminal ("H" : mute)
41	MLD	O	Command load signal output terminal ("L" : load)
42	MDATA/ BATTERY	O	Command data signal output terminal
43	MCLK/ MODE1	O	Command clock signal output terminal
44	SP RST	–	Not used, open
45	STROBE1	–	Not used, open
46	RDATA/ STROBE2	–	Not used, open
47	ACDET	I	Power detect input terminal
48	CHARGE/ LIGHT	–	Not used, open
49	WRDRCN/ LCDREM	O	Connected to GND via.resister
50	SHOCK.P	I	SHOCK.P key input terminal
51	ZSENSE	I	Sense signal input terminal
52	VDOWN	–	Not used, open
53,54	FP18,FP17	–	Not used, open
55~63	FP16~FP8	O	LCD segment signal output terminal
64	FP7	–	Not used, open

• IC501 (MNG746RPK1AL): Servo Processor / Digital Signal Processor / Digital Filter & D/A Converter

Pin No.	Terminal Name	I/O	Function
1	BCLK	–	Serial bit clock output terminal (Not used, open)
2	LRCK	–	L/R discriminating signal output terminal (Not used, open)
3	SRDATA	–	Serial data signal output terminal (Not used, open)
4	DVDD1	I	Power supply terminal
5	DVSS1	–	GND terminal
6	TX	–	Not used, open
7	MCLK	I	Command clock signal input terminal
8	MDATA	I	Command data signal input terminal
9	MLD	I	Command load signal input ("L" : load)
10	SENSE	–	Not used, open
11	FLOCK	–	Not used, open
12	VDET	–	Not used, open
13	BLKCK	O	Sub-code block clock output terminal (f=75Hz)
14	SQCK	I	Sub-code Q resister clock input terminal
15	SUBQ	O	Sub-code Q code output terminal
16	DMUTE	–	Not used, connected to GND
17	STAT	O	Status siganal output terminal (CRC,CUE,CLVS,TTSTOP,FCLV,SQCK)
18	RESET	I	Reset signal input terminal ("L" : reset)
19	SMCK	O	System clock output terminal (f=4.236MHz)
20	PMCK	O	Frequency division clock signal output terminal (f=1/1.92xck=88.2kHz)
21	TRV	–	Not used, open
22	TVD	O	Traverse data siganl output terminal
23	PC	O	Spindle motor drive signal ("L" : ON)
24	ECM	O	Spindle motor drive signal (Forced mode)
25	ECS	O	Spindle motor drive signal (Servo error signal)
26	KICK	–	Not used, open
27	TRD	O	Tracking drive signal output terminal
28	FOD	O	Focus drive signal output terminal
29	VREF	I	Reference voltage input terminal
30	FBAL	O	Focus balance adjustment output terminal
31	TBAL	O	Tracking balance adjustment output terminal
32	FE	I	Focus error signal input terminal
33	TE	I	Tracking error signal input terminal
34	RFENV	I	RF envelope signal input terminal

Pin No.	Terminal Name	I/O	Function
35	VDET	–	Not used, connected to GND
36	OFTR	I	Off track signal input ("H" : off track)
37	TRCRS	–	Not used, connected to GND
38	RFDET	I	RF detection signal input ("L" : detection)
39	BDO	I	Dropout detection signal input ("L" : dropout)
40	LDON	O	Lser power control signal output ("H" : ON)
41	TES	–	Not used, open
42	PLAY	–	Not used, open
43	WVEL	–	Not used, open
44	ARF	I	RF signal input terminal
45	IREF	I	Reference current input terminal
46	DRF	–	Not used, open
47	DSLF	I/O	DSL loop filter input/output terminal
48	PLLF	I/O	PLL loop filter input/output terminal
49	DSLF2	I	VCO loop filter input terminal
50	AVDD2	I	Power suplly terminal
51	AVSS2	–	GND terminal
52	CK384	–	Not used, open
53	PCK	–	Not used, open
54	CK176	–	Not used, open
55	SUBC	–	Not used, open
56	SBCK	–	Not used, connected to GND
57	VSS	–	GND terminal
58	X1	I	Crystal oscillator input (f=16.9344MHz)
59	X2	O	Crystal oscillator output (f=16.9344MHz)
60	VDD	I	Power supply terminal
61	TRVSTOP	O	Driver ON/OFF control signal output terminal
62	CLDCK	–	Not used, open
63	FCLK	–	Not used, open
64	IPFLAG	–	Not used, open
65	FLAG0	–	Not used, open
66	CLVS	–	Not used, open
67	CRC	–	Not used, open
68	RESY	–	Not used, open

Pin No.	Terminal Name	I/O	Function
69	FLAG6	–	Not used, open
70	ARST	I	Reset signal input terminal
71	TEST	I	Test terminal ("H" : nomal)
72	AVDD1	I	Power suplly terminal
73	OUTL	O	Lch audio signal output terminal
74	AVSS1	–	GND terminal
75	OUTR	O	Rch audio signal output terminal
76	RSEL	–	Not used, connected to Vcc
77	FSEL	–	Not used, connected to GND
78	ISRDATA	–	Serial data signal input terminal (Not used, open)
79	ILRCK	–	L/R discriminating signal input terminal (Not used, open)
80	IBCLK	–	Serial bit clock input signal (Not used, open)

• IC101 (AN8839SBE1): Servo Amp

Pin No.	Terminal Name	I/O	Function
1	PDE	I	Tracking signal input terminal (1)
2	PDF	I	Tracking signal input terminal (2)
3	VDD	I	Power supply terminal
4	PDA	I	Focus signal input terminal (1)
5	PDB	I	Focus signal input terminal (2)
6	LPD	I	APC amp input terminal
7	LD	O	APC amp output terminal
8	RF	O	RF summing output terminal
9	RF IN	I	RF signal input terminal
10	CSBRT	I	Capacitor connection terminal for OFTR
11	CEA	I	Capacitor connection terminal for H.P.F. amp
12	BDO	O	Dropout signal output terminal ("H" : Dropout)
13	LDON	I	APC control input terminal
14	GND	–	GND terminal
15	/RFDET	O	RF det. signal output terminal ("L" : Det.)
16	NC	–	Not used, open
17	OFTR	O	Off track signal output terminal ("H" : Off track)
18	NC	–	Not used, open
19	ENV	O	RF envelope signal output terminal
20	ENV OFF	I	ENV control input terminal
21	NC	–	Not used, open
22	TE IN	I	Tracking error amp input terminal
23	TE OUT	O	Tracking error amp output terminal
24	FE OUT	O	Focus error amp output terminal
25	FE IN	I	Focus error amp input terminal
26	VREF	O	Reference voltage output terminal
27	TBAL	I	Tracking balance signal input terminal
28	FBAL	I	Focus balance signal input terminal

■ Replacement Parts List

Notes: * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.
* ALL parts are supplied by MESA.
* The "IA, IB, IC" marks in Remarks indicate language of instruction manual.
IA : English, Spanish, Swedish
IB : German, Italian, French
IC : Dutch, Danish, Russian
This item is not attached to marchandise, but it is supplied as a replacement parts. (Ref. No. "A8")

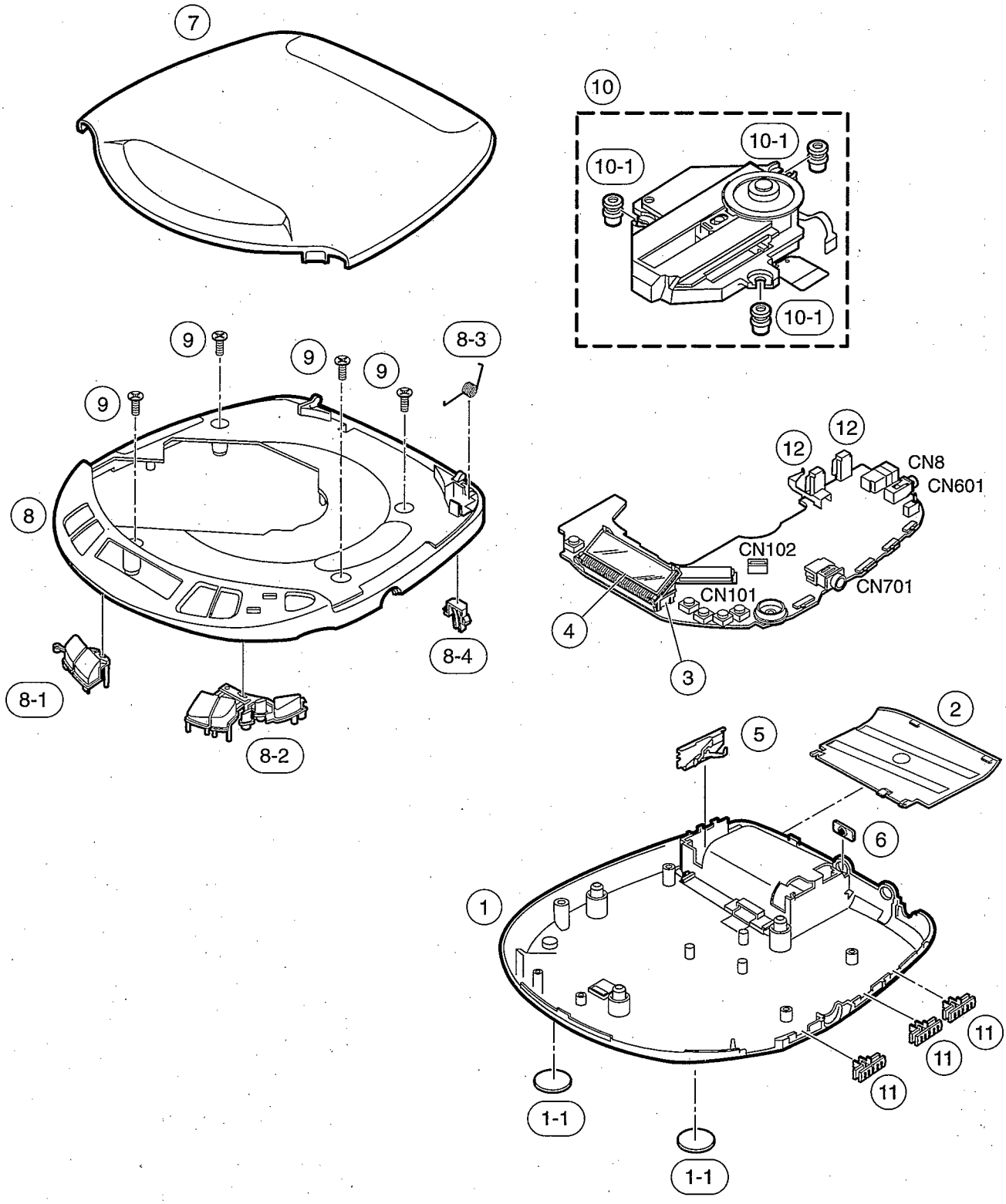
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	RFKJLS112E-S	BOTTOM CABINET ASS'Y	1	(E)
1	RFKJLS112EGS	BOTTOM CABINET ASS'Y	1	(EG)
1-1	RKA0063-K	FOOT	2	
2	RKK0102-K	BATTERY COVER	1	
3	RJF0030	LCD HOLDER	1	
4	RSL5203-C	LCD(LCD301)	1	
5	RJC93020	BATTERY TERMINAL	1	
6	RMA0677	FIXER	1	
7	RYF0441H-A	CD COVER ASS'Y	1	(A)
7	RYF0441H-H	CD COVER ASS'Y	1	(H)
7	RYF0441H-S	CD COVER ASS'Y	1	(S)
8	RYK0718-K	MIDDLE CABINET UNIT	1	
8-1	RGU1495-K	BUTTON, SKIP/SEARCH	1	
8-2	RGU1494-K	BUTTON, PLAY/STOP	1	
8-3	RME0241	SPRING	1	
8-4	RML0472	STOPPER	1	
9	XTN17+6GFZ	SCREW	4	
10	RAE0144Z	TRAVERSE UNIT	1	
10-1	RMG0449-H	FLOATING RUBBER	2	
11	RGV0200-K	KNOB, XBS/HOLD	3	
12	RJC93015-1	BATTERY TERMINAL	2	
PCB1	REP2622B-M	P.C.B.ASSY	1	
A1	RFEV317P-KS	STEREO EARPHONE	1	
⚠ A2	RFEA401E-3S	AC ADAPTOR	1	
A3	RQA0117	WARRANTY CARD	1	
A4	RQCB0169	SERVICE CENTER LIST	1	
A5	RQT4338-E	INSTRUCTION MANUAL	1	<IA>
A6	RQT4340-D	INSTRUCTION MANUAL	1	<IB>
A7	RQT4341-H	INSTRUCTION MANUAL	1	(EG)<IC>
A8	RKB2052A-0	EAR PADS	1	
C13	RCE0JSC470IX	6.3V 47U	1	
C14	RCE0JKA221IG	6.3V 220U	1	
C16	ECUVNA224KBV	10V 0.22U	1	
C17	ECUV1H470KCV	50V 47P	1	
C18	ECUV1E103KBV	25V 0.01U	1	
C19	ECEA1AKA220I	10V 22U	1	
C20	ECEA1HKA010I	50V 1U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C21	ECUV1C223KBV	16V 0.022U	1	
C22	ECUZNC104ZFV	16V 0.1U	1	
C24	ECUV1H681KBV	50V 680P	1	
C25	ECEA1HKA010I	50V 1U	1	
C27	RCE1AMT331IV	10V 330U	1	
C32	ECUVNA105ZFV	10V 1U	1	
C101	ECUV1C104KBV	16V 0.1U	1	
C103	ECUV1E103KBV	25V 0.01U	1	
C111	ECUV1C273KBV	16V 0.027U	1	
C112	ECUV1H391KBV	50V 390P	1	
C113	ECUVNE104ZFN	25V 0.1U	1	
C114	ECUZNC104ZFV	16V 0.1U	1	
C115	ECUV1C223KBV	16V 0.022U	1	
C120	ECUV1H332KBV	50V 3300P	1	
C121	ECUV1H221KBV	50V 220P	1	
C204	RCE1AKA470IG	10V 47U	1	
C301,02	ECUZNC104ZFV	16V 0.1U	2	
C404	ECUVNA105ZFV	10V 1U	1	
C405	ECUV1C104KBV	16V 0.1U	1	
C501,02	ECUV1H050CCV	50V 5P	2	
C503	ECUV1H561KBV	50V 560P	1	
C505	ECUV1C223KBV	16V 0.022U	1	
C506	ECUVNA224KBV	10V 0.22U	1	
C507	RCE0JKA221IG	6.3V 220U	1	
C508,09	ECUZNC104ZFV	16V 0.1U	2	
C518	ECUV1E103KBV	25V 0.01U	1	
C533	ECUZNC104ZFV	16V 0.1U	1	
C600	ECUZNC104ZFV	16V 0.1U	1	
C601,02	ECUV1H102KBV	50V 1000P	2	
C603,04	ECUV1H272KBV	50V 2700P	2	
C605,06	ECEA1CKA100I	16V 10U	2	
C607,08	ECUV1H681KBV	50V 680P	2	
C609	ECUZNC104ZFV	16V 0.1U	1	
C610	RCE1AKA470IG	10V 47U	1	
C703,04	ECUV1C223KBV	16V 0.022U	2	
C707	ECUV1H102KBN	50V 1000P	1	
C708	ECUV1H102KBV	50V 1000P	1	
C709,10	ECA0JAK221XH	6.3V 220U	2	
C711,12	ECEA1CPK100I	16V 10U	2	
C713	RCE1AKA470IG	10V 47U	1	
C717	ECUZNC104ZFV	16V 0.1U	1	
C727,28	ECUV1C223KBV	16V 0.022U	2	
C902	ECUV1H332KBV	50V 3300P	1	
CN1,N2	RJC93015-1	BATTERY TERMINAL	2	
CN3	RJH5104	RECHARGE.BATT.TERMINAL	1	
CN8	RJJ43K09-C	JACK,DC IN	1	
CN101	RJS2A4716M1	CONNECTOR(16P)	1	
CN102	RJS2A5106T1	CONNECTOR(6P)	1	
CN601	RJJD3S5ZA-C	JACK,LINE OUT	1	
CN701	RJJ33TK07-C	JACK,HEADPHONE	1	
D11	MA110TX	DIODE	1	
D301	M1MA141WKT1	DIODE	1	
D903	M1MA141WKT1	DIODE	1	
IC11	AN8789FBEB	IC	1	
IC101	AN8839SBE1	IC	1	
IC301	SC440303CFU	IC	1	
IC501	MNG746RPK1AL	IC	1	
IC701	NJU7082AMTE1	IC	1	
⚠ ICP11	UNH000700A	IC PROTECTOR	1	
L12	RLZ0028T-M	COIL,SWITCHING	1	
L601,02	RLBV121AV-I	COIL,CHOKE	2	
P1	RPK1040	GIFT BOX	1	(H)
P1	RPK1041	GIFT BOX	1	(A)
P1	RPK1076	GIFT BOX	1	(S)
P2	RPQ0753	SPACER	1	
P3	RPQ0836	PAD	1	
P4	RPF0046	POLYETHYLENE COVER	1	
P5	RPF0111	PROTECTION COVER	1	

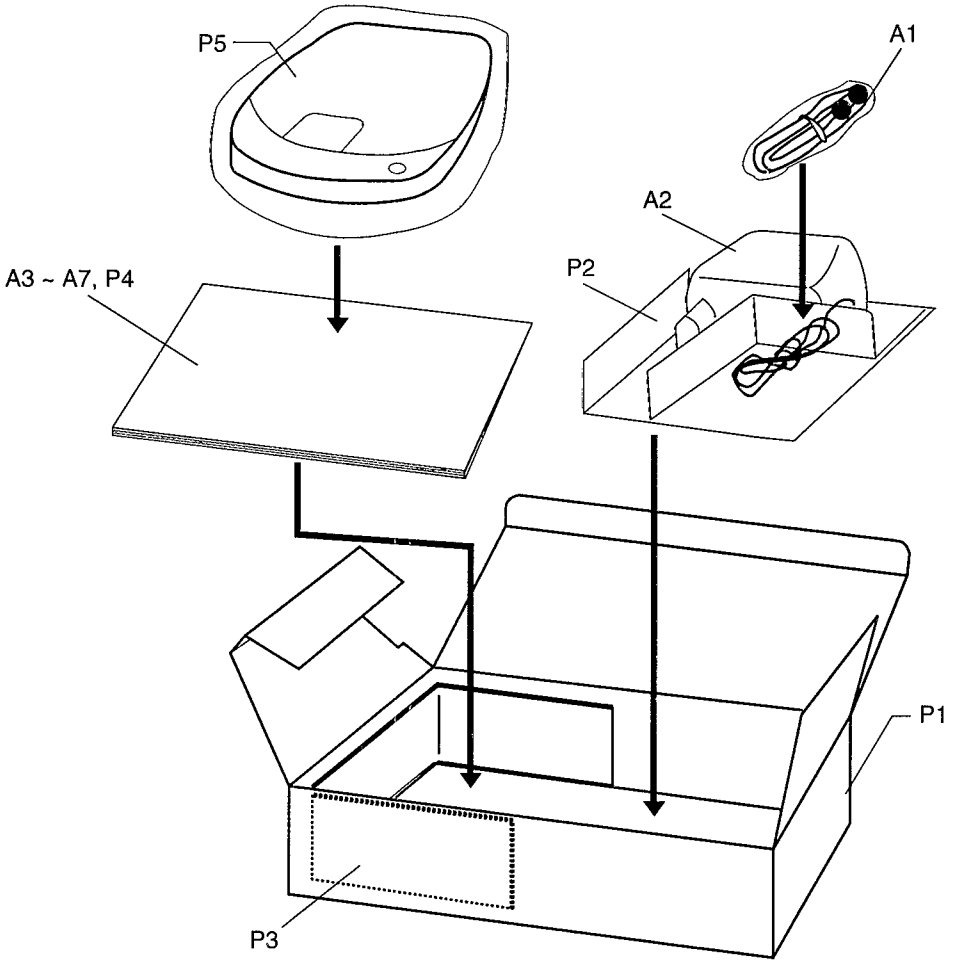
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
Q10	2SD1302STTA	TRANSISTOR	1	
Q11	2SD2074HWRST	TRANSISTOR	1	
Q12	2SD1450STTA	TRANSISTOR	1	
Q203	MSB709RST1	TRANSISTOR	1	
Q601,02	2SD1328TX	TRANSISTOR	2	
Q603,04	DTC114TUA106	TRANSISTOR	2	
Q701,02	2SD1328TX	TRANSISTOR	2	
Q904	DTA114YUA106	TRANSISTOR	1	
Q905,06	DTC144TUA106	TRANSISTOR	2	
R11	ERJ3GEYJ103Z	1/16W 10K	1	
R12	ERJ3GEYJ472V	1/16W 4.7K	1	
R16	ERJ3GEYJ100V	1/16W 10	1	
R17	ERJ3GEYJ681V	1/16W 680	1	
R18	ERJ3GEYJ101V	1/16W 100	1	
R22	ERJ3GEYJ822V	1/16W 8.2K	1	
R25	ERJ3GEYJ104Z	1/16W 100K	1	
R29	ERJ3GEYJ821V	1/16W 820	1	
R32	ERJ3GEYJ105V	1/16W 1M	1	
R33	ERJ3GEYJ270V	1/16W 27	1	
R105	ERJ3GEYJ393V	1/16W 39K	1	
R106	ERJ3GEY0R00V	1/16W 0	1	
R113	ERJ3GEYJ101V	1/16W 100	1	
R114	ERJ3GEYJ330V	1/16W 33	1	
R120	ERJ3GEYJ472V	1/16W 4.7K	1	
R121,22	ERJ3GEYJ683V	1/16W 68K	2	
R208	ERJ3GEYJ4R7V	1/16W 4.7	1	
R209	ERJ3GEYJ223V	1/16W 22K	1	
R301	ERJ3GEYJ473V	1/16W 47K	1	
R302	EXBV4V473JV	1/16W 47K	1	
R309	ERJ3GEYJ124V	1/16W 120K	1	
R313	ERJ3GEYJ102Z	1/16W 1K	1	
R317,18	ERJ3GEYJ104Z	1/16W 100K	2	
R319	ERJ3GEYJ334V	1/16W 330K	1	
R400	ERJ3GEYJ182V	1/16W 1.8K	1	
R401	ERJ3GEYJ823V	1/16W 82K	1	
R402	ERJ3GEYJ122V	1/16W 1.2K	1	
R405	ERJ3GEYJ332V	1/16W 3.3K	1	
R501	ERJ3GEYJ683V	1/16W 68K	1	
R503	ERJ3GEYJ473V	1/16W 47K	1	
R505	ERJ3GEYJ821V	1/16W 820	1	
R506	ERJ3GEYJ681V	1/16W 680	1	
R510	ERJ3GEYJ120V	1/16W 12	1	
R513	ERJ3GEYJ184V	1/16W 180K	1	
R601,02	ERJ3GEYJ681V	1/16W 680	2	
R603,04	ERJ3GEYJ561V	1/16W 560	2	
R605,06	ERJ3GEYJ473V	1/16W 47K	2	
R607,08	ERJ3GEYJ102Z	1/16W 1K	2	
R609	EXBV4V332JV	1/16W 3.3K	1	
R705,06	ERJ3GEYJ473V	1/16W 47K	2	
R707,08	ERJ3GEYJ223V	1/16W 22K	2	
R709,10	ERJ3GEYJ105V	1/16W 1M	2	
R715,16	ERJ3GEYJ183V	1/16W 18K	2	
R719,20	ERJ3GEYJ103Z	1/16W 10K	2	
R721,22	ERJ3GEYJ273V	1/16W 27K	2	
R723,24	ERJ3GEYJ104Z	1/16W 100K	2	
R725,26	ERJ3GEYJ150V	1/16W 15	2	
R727,28	ERJ3GEYJ1R5V	1/16W 1.5	2	
R729,30	ERJ3GEYJ472V	1/16W 4.7K	2	
R731	EXBV4V331JV	1/16W 330	1	
R920	ERJ3GEYJ473V	1/16W 47K	1	
R928	ERJ3GEYJ473V	1/16W 47K	1	
S201	ESE11SV6	SW,LASER ON/OFF	1	
S301-06	EVQ11G05R	SW,PUSH	6	
S307	RSS3A007-1A	SW,MODE	1	
S308	RSS2A010-1A	SW,HOLD	1	
S701	RSS2B028-A	SW,XBS	1	
VR11	RRN3A05B33WL	VR,VOLTAGE ADJ.	1	
VR701	EVUTUFB11C54	VR,VOLUME	1	
X501	RSXZ16M9M01T	OSCILLATOR	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks

■ Cabinet Parts Location



■ Packaging



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