

# Service Manual

**COMPACT**  
**disc**  
**DIGITAL AUDIO**

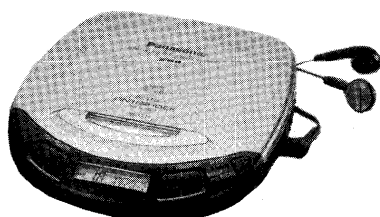
**MASH**<sup>\*</sup>  
multi-stage noise shaping

※ • MASH is a trademark of NTT.

Portable CD Player

## SL-S318

## SL-S320



**SL-S318**



**SL-S320**

**Colour (S) ... Silver Type**

### Areas

E ..... Europe.  
EB ..... Great Britain.  
EG ..... Germany.  
GC ..... Asia, Latin America,  
Middle East and Africa.  
GN ..... Oceania.

### Areas of Every Model

SL-S318 ..... (E) Area only  
SL-S320 ..... (E,EB,EG,GC,GN)

**Traverse Deck: RAE0142Z Mechanism Series**

## Specifications

### Audio

**No. of channels:** 2 channels (left and right, stereo)  
**Output voltage:** 0.6 V(50 kohm) diameter 3.5 stereo mini jack  
**Frequency response:** 20—20,000 Hz (+0.5 dB, -1.5 dB)  
**S/N:** More than 94 dB\*  
**Wow and flutter:** Below measurable limit  
**DA converter:** 1 bit, MASH\*  
**Headphones output level:** Max. 9 mW+9 mW/16 ohm (variable)  
stereo mini jack diameter 3.5  
**Digital filter:** 8 times over sampling

### Signal Format

**Correction system:** Technics New  
Super Decoding Algorithm

### Pickup

**Type:** One beam  
**Light source:** Semiconductor laser  
**Wavelength:** 780 nm  
**Lens:** Glass pressed lens

### Playing time

(When used in hold mode, at 25 degree temperature and on flat and stable surface.)

**Batteries used:** Extra anti-shock OFF/ON

**Panasonic Alkaline dry cell batteries(LR6, 2pcs.)** : Approx. 10h / 8.5h

### Rechargeable batteries

**RFKFP3GAVE2S (When rechargeable 5 hours.)** : Approx. 5.5h / 5.0h

**SH-CDB8D (When rechargeable 3 hours.)** : Approx. 3.0h / 2.5h

The above battery charge retention period totals apply when measured using a cycle of 4 hours of play followed by 15 hours of suspended operation.

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

### General

**Operation temperature range:** 0 — 40 degree  
**Rechargeable temperature range:** 5 — 40 degree  
**Power supply:** DC 4.5 V  
**Power consumption (Extra anti-shock OFF/ON)**  
**AC adaptor;** 5.5W/5.7W  
**Battery (DC 3V);** 0.6W/0.7W  
**When recharging;** 3.3W  
**Dimensions :** 128(Wide)/28.0(High)/144(Depth)mm  
**Weight:** 265 g (with batteries)  
220 g (without batteries)

\*These specifications were measured in the Extra anti-shock OFF mode.

**Note:** Specifications are subject to change without notice.

Weight and dimensions are approximate.

### ⚠ 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®

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## Precaution of Laser Diode

**CAUTION:** This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pickup lens.  
Wave length: 780 nm  
Maximum output radiation power from pickup: 100  $\mu$ W/VDE

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

1. Do not disassemble the optical pickup 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 pickup lens for a long time.

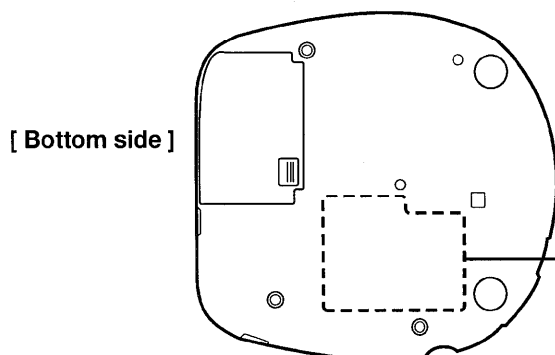
**ACHTUNG:** Dieses Produkt enthält eine Laserdioden. Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Lasereinheit abgestrahlt.

Wellenlänge: 780 nm  
Maximale Strahlungsleistung der Lasereinheit: 100  $\mu$ W/VDE

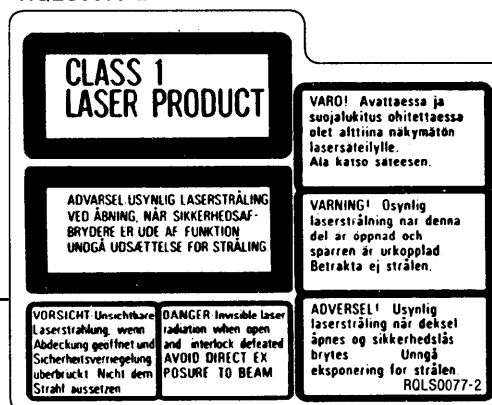
Die Strahlung an der Lasereinheit ist ungefährlich, wenn folgende Punkte beachtet werden:

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

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



RQLS0077-2

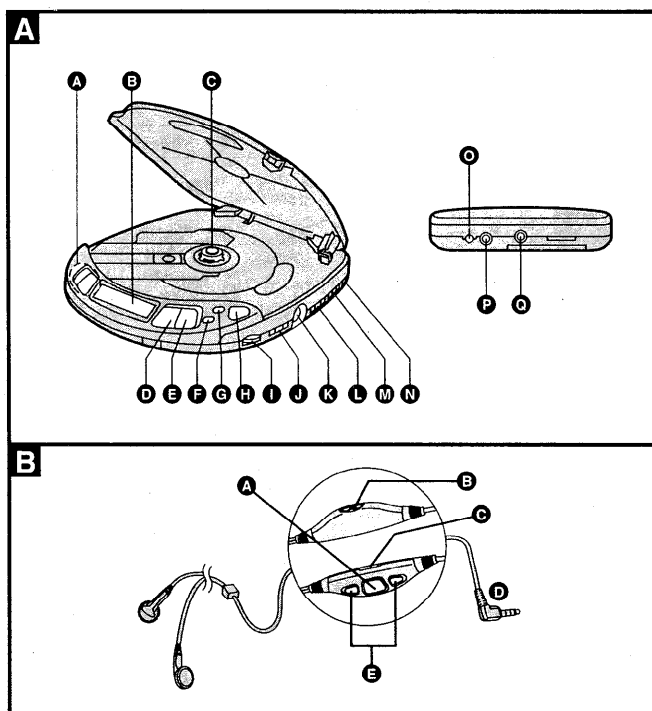


## Accessories

- **SL-S318 (E)**  
Stereo earphones with remote controller (RFEV133P-KS) ..... 1pc.
- **SL-S320 (E, EB, EG, GC, GN)**  
For (E, EG) areas: AC adaptor (RFEA401E-3S) ..... 1pc.  
For (EB) area: AC adaptor (RFEA404B-1W) ..... 1pc.

- For (GC) area: AC adaptor (RFEA403Z-S) ..... 1pc.
- For (GN) area: AC adaptor (RFEA403A-S) ..... 1pc.
- Stereo earphones with remote controller (RFEV133P-KS) ..... 1pc.
- Rechargeable battery ass'y (RFKFP3GAVE2S) ..... 1pc.
- Battery carrying case (RFKNLS370-K) ..... 1pc.

## Location of Controls



### Portable CD player

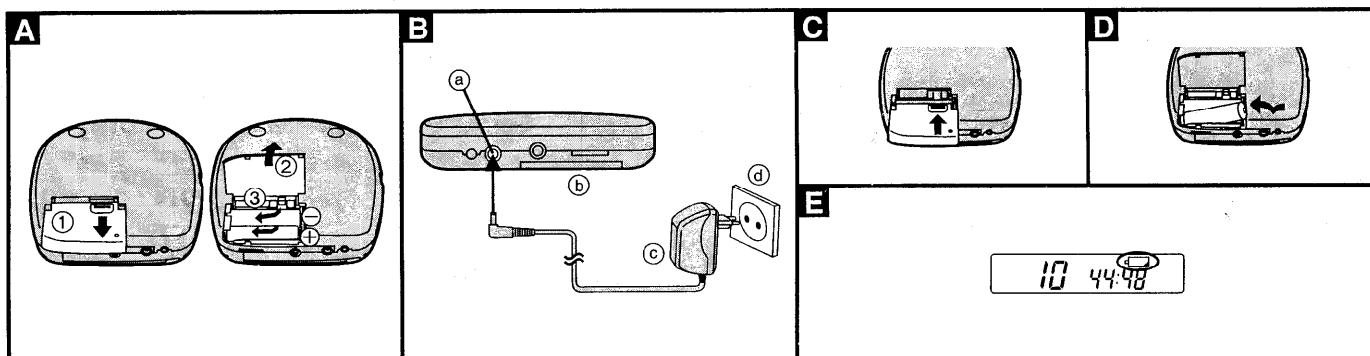
- A** Skip/search buttons (◀, ▶, •SKIP •SEARCH)
- B** Display
- C** Push button (PUSH)
- D** Play/pause button (▶ ||)
- E** Stop/operation off button (■, POWER OFF)
- F** Memory/recall button (MEMORY/RECALL)
- G** Repeat button (REPEAT)
- H** Open button (OPEN)
- I** Headphones volume control (VOLUME)
- J** XBS selector (XBS)
- K** Headphones jack (◻)  $\phi$  3.5 16  $\Omega$
- L** Play mode selector (RESUME, NORMAL, RANDOM)
- M** Hold switch (HOLD)

- N** Extra anti-shock switch (EXTRA ANTI-SHOCK)
- O** Out jack (OUT)
- P** DC in jack (DC IN 4.5 V  $\diamond$   $\square$   $\diamond$ )
- Q** Hole for car insulator mounting screw

### Stereo earphones with remote controller

- A** Play/stop/off button
- B** Volume control (VOLUME)
- C** Hold switch (HOLD)
- D** Plug
- E** Skip/search buttons (–, +)

## Power Supply Preparations



Refer to the specifications (Cover page) for information on operating times when using rechargeable batteries or dry-cell batteries.

### Using rechargeable batteries

Obtain the optional rechargeable batteries for SL-S318.

Make sure to recharge the batteries before using them. The unit cannot be used to charge rechargeable batteries other than those specifically designed for it.

#### For Continental Europe:

- Supplied batteries (P-3GAVE)
- Optional batteries (P-3GAVE/2B, SH-CDB8D)

#### For others:

- Supplied batteries (P-3GAVT)
- Optional batteries (P-3GAVT/2B, SH-CDB8D)

### Recharging procedure

- 1** Insert the special rechargeable batteries into the unit.

- 2** Connect the AC adaptor.

- A** DC IN jack (DC IN 4.5 V  $\diamond$   $\square$   $\diamond$ )
- B** Back panel of the unit
- C** AC adaptor
- D** AC power outlet

#### Note

The configuration of the AC adaptor differs according to the area.

(For areas except Continental Europe.)

The AC voltage is different according to the area. Be sure to set the proper voltage in your area before use. (For details, please refer to page 1.)

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

#### Notes

- It takes approximately 5 hours to fully recharge the supplied rechargeable batteries.
- 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 the AC adaptor while recharging the batteries, but it will lengthen the recharging time.

### If the battery lid compartment comes loose

Slide the lid back into place horizontally.

### Removing batteries

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

### 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.

### Using the AC adaptor

Be sure to obtain the AC adaptor (RFEA401E-3S), available as an optional accessory for SL-S318.

### Connect the AC adaptor supplied.

Refer to "Using rechargeable batteries" for connection instructions.

#### 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.

### 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.

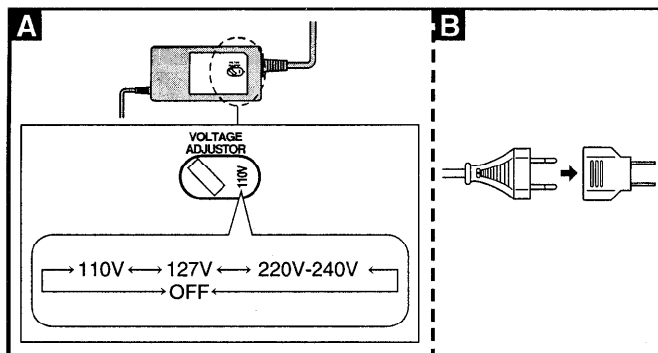
#### Notes

- 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

Be sure to obtain the car adaptor (SH-CDC9), available as an optional accessory for SL-S318 and SL-S320. The car adaptor can be used to recharge the unit's batteries while in the car.



### AC adaptor

#### Before use

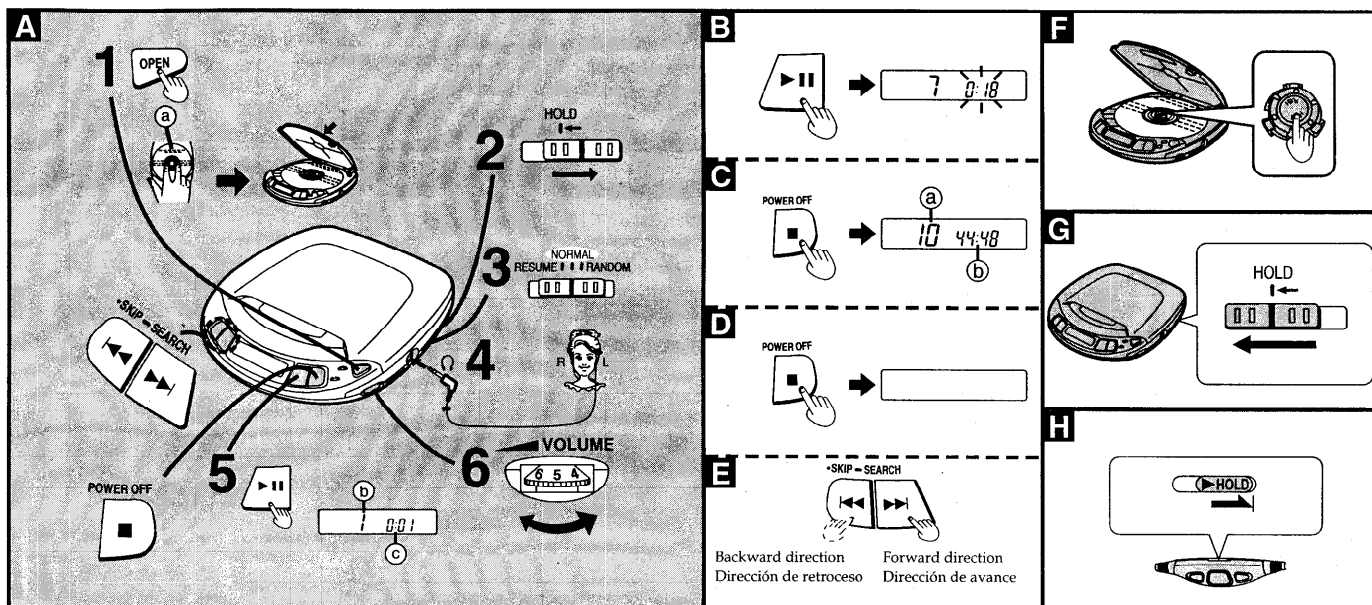
Make sure the preset voltage of your AC adaptor fits to your local voltage before plugging it into the AC power outlet. If it doesn't, turn the AC line-voltage selector with a screwdriver so that it corresponds to your local voltage. (If the voltage adjustor is switched to OFF, the AC adaptor is effectively disconnected from the AC power outlet.) **A**

If the power plug will not fit your socket, use the power plug adaptor. **B**

#### How to use the AC adaptor

To connect the AC adaptor, refer to "Power Supply Preparations" (Page 3).

## Sequential Play



### Following steps 1–6. **A**

- a** Label side up
- b** Track number in play
- c** Elapsed playing time of each track
- Play stops automatically when all the tracks have been played.

• If the unit has been connected to the car audio system, adjust the volume level between 4 and 6 on the unit, then adjust the volume level on the system.

#### To pause play **B**

Press during play

#### To stop play **C**

Press during play **Stop mode**

- a** Total number of tracks
- b** Total playing time

#### To turn off the unit **D**

Press during stop mode **Off mode**

#### Skip forward/backward (skip function) **E**

Press during play

#### Rapid forward/backward (search function) **F**

Press and hold during play.

- During program play (see page 5), these buttons are used to skip forward or back through the programmed sequence of tracks.

- During random play (see page 5), 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 (see page 5), search operation is limited to the current track only.

### Removing discs **F**

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.

#### For your reference:

##### "no d i s c" indication

This indication appears for about 30 seconds if the **▶ ||** button is pressed when no disc is loaded in the unit or if the disc is not completely seated.

##### "o p e n" indication

This indication appears for about 10 minutes when the cover is opened. (However, the indication does not appear when the unit is powered off.)

#### Auto power off function

If the unit is left in stop or paused status for approximately 10 minutes, the unit powers itself off automatically in order to prevent the battery from running down.

## Accidental Operation Prevention Function

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

### The misoperation prevention 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 accidental operation prevention function

Set HOLD to the HOLD position. **G**

The unit and the stereo earphones with remote control have HOLD switches, each of which works independently. **H**

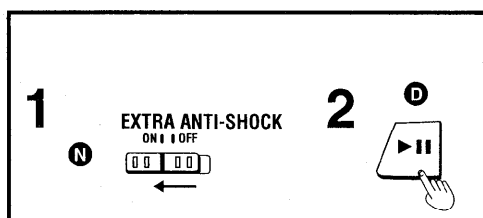
#### "h o l d" Indication

When the unit is in hold status, pressing any operation button (other than the OPEN button) causes the indication "h o l d" to appear on the display.

#### When the unit is powered off

The "h o l d" indication appears only when the **▶ ||** button is pressed.

## Extra Digital Sound Shock Protector



Following steps 1–2.

This function minimizes sound interruption when vibrations are encountered by utilizing audio data that has been stored ahead of time (up to approximately 3 seconds' worth).

### Notes

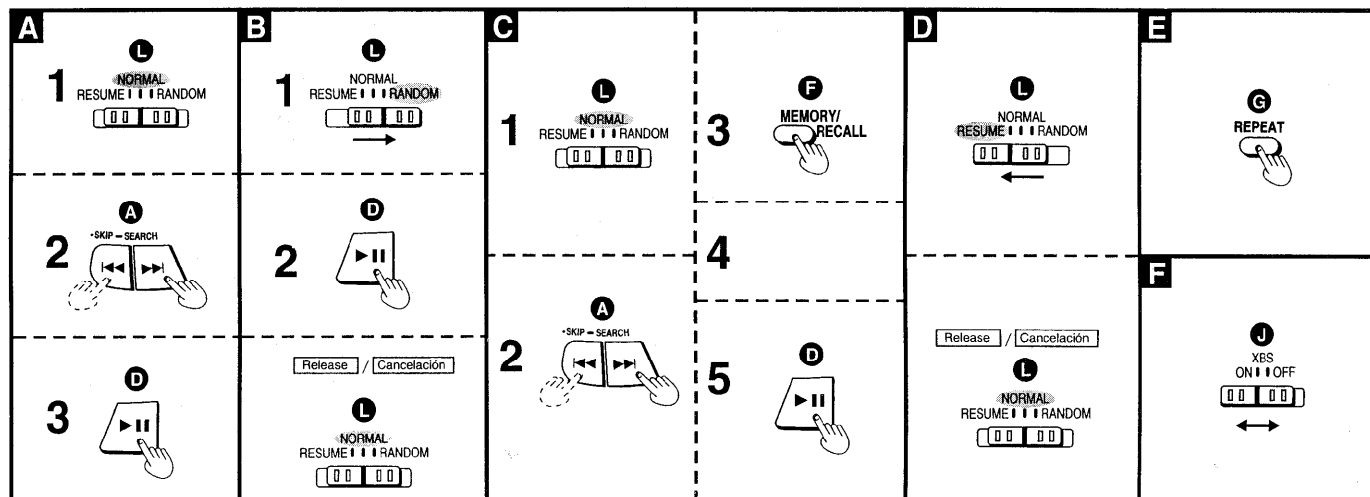
- The position of the anti-shock/extra anti-shock slider can be changed during play, but this may cause a slight interruption in the sound because the disc's rotational speed changes.
- During anti-shock/extra anti-shock operation, the disc rotates at a higher rate than usual in order to collect extra audio data. This may cause the batteries to run out faster and could result in a slight increase in disc rotation noise.

M.RESERVE indicator status	Unit body status	Play status (audio data status)
A	Stable	Normal (plenty of data is stored)
B	Bump encountered	Normal (stored data is used)
C	Bumping stops	Normal (data again starts to be stored)
C	Bumps continue repeatedly	Sound is interrupted (data buffer empty)

### Using the unit with an audio system

The anti-shock/extra anti-shock uses digital signal compression technology. It is recommended that the anti-shock/extra anti-shock be kept in the OFF position if the unit is connected to a home audio system.

## Other Play Methods



The letters such as **A** in the various illustrations refer to the descriptions in the "Location of Controls" section (see page 4).

### Skip play

The disc plays from the specific track through to the end, then play stops automatically.

**Preparation:** Put unit in stop mode.  
(See page 4.)

### Following steps 1–3.

In step 2, select the desired track.

### Random play

### Following steps 1–2.

#### 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.

### Program play

Up to 24 tracks can be entered in the programmed sequence.

**Preparation:** Put unit in stop mode.  
(See page 4.)

### 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.)

**In step 4, repeat steps 2 and 3 to program all the desired tracks.**

### ■ To program the same track in the sequence more than once

After step 3, press MEMORY/RECALL the desired number of times.

### ■ If "f" is displayed

No more tracks may be added to the sequence.

### ■ To confirm the contents of the programmed sequence

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.

### Resume play

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.

#### For your reference:

- If the RESUME, NORMAL, RANDOM (play mode selector) 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.

### Repeat function

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

#### 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.)

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**

### Changing the sound quality

#### XBS ON:

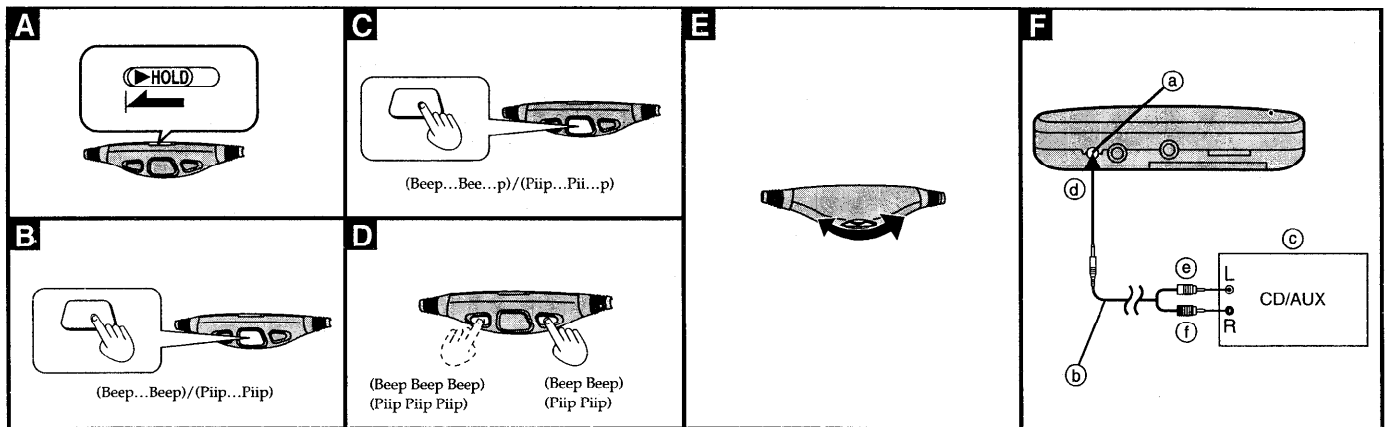
Select this setting to boost the low-range response.

#### OFF:

Select this setting to turn off the XBS function.

#### Note

The sound quality setting does not affect the output from the OUT (analog output) jack.



## Using the Remote Controller

The remote controller can be operated regardless of the hold mode of the unit

### Operation confirmation beep

When an operation button is pressed, a confirmation beep sounds. Refer to the explanations in parentheses ( ) in the illustration above, etc., for information on the different types of confirmation beeps that sound.

### How to use the remote controller

#### Preparation:

Release the remote controller from the hold mode.

#### To start play

Press once during off or stop mode.

#### To stop play

Press once during play.

#### To turn off the unit

Press and hold during play or stop mode.

### Skip forward/backward

Press during play

**+: Forward direction**

**-: Backward direction**

### Rapid forward/backward

Press and hold during play.

### To adjust the volume

When adjusting the volume using the remote controller, position the volume control on the unit to between 4 and 6.

## Using the Unit with Optional Accessories

### Using the unit with an audio system

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.

When using active speakers or other speakers, ensure that they have an input impedance of 1 kΩ or less.

- 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-CDM9A/SH-CDM10A)

**Connect the car stereo cassette adaptor to the unit's headphone 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 mounting kit (SH-CDF7)
- Car adaptor (SH-CDC9)

#### Note

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

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

## Cautions

### Rechargeable batteries

- **For Continental Europe:**  
Only the P-3GAVE, P-3GAVE/2B, SH-CDB8D batteries can be recharged.
- **For others:**  
Only the P-3GAVT, P-3GAVT/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.

### 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:

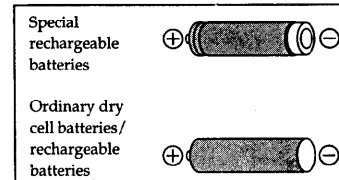
For Continental Europe:

**P-3GAVE/2B, SH-CDB8D (set of 2)**

For others:

**P-3GAVT/2B, SH-CDB8D (set of 2)**

For details, check with your dealer.



(For Continental Europe)

#### Notice about the rechargeable battery

The battery is designated recyclable. Please follow your local recycling regulations.

### 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.

### 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.

## Troubleshooting Guide

First, consult the table below. If the problem persists, contact the dealer from whom you purchased the unit.

Problem	Check this
Cannot close cover.	Is the disc properly secured in place?
Cannot play discs.	<ul style="list-style-type: none"> <li>• Is the unit in hold status?</li> <li>• Is the disc properly secured in place?</li> <li>• Is there moisture condensation on the lens? (Wait for about an hour and then try again.)</li> </ul>
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 switch) slider in the NORMAL position?
Cannot hear music—too noisy.	<ul style="list-style-type: none"> <li>• Is the earphone plug inserted all the way?</li> <li>• Is the plug dirty?</li> </ul>
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.)

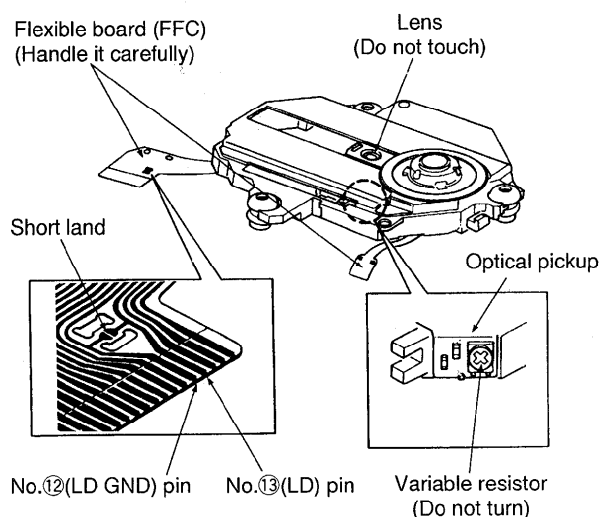
## Handling Precautions for Traverse Deck

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. The short land between the No. ⑫ (LD GND) and No. ⑬ (LD) pins on the flexible board (FFC) is shorted with a solder build-up to prevent damage to the laser diode. To connect to the PC board, be sure to open by removing the solder build-up, and finish the work quickly.
3. Take care not to apply excessive stress to the flexible board (FFC).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

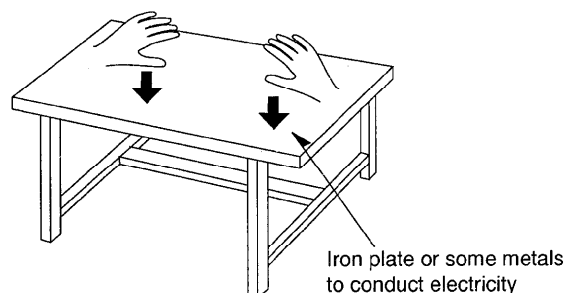
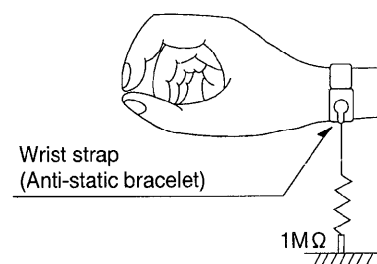


### Grounding for electrostatic breakdown prevention

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

#### Caution:

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

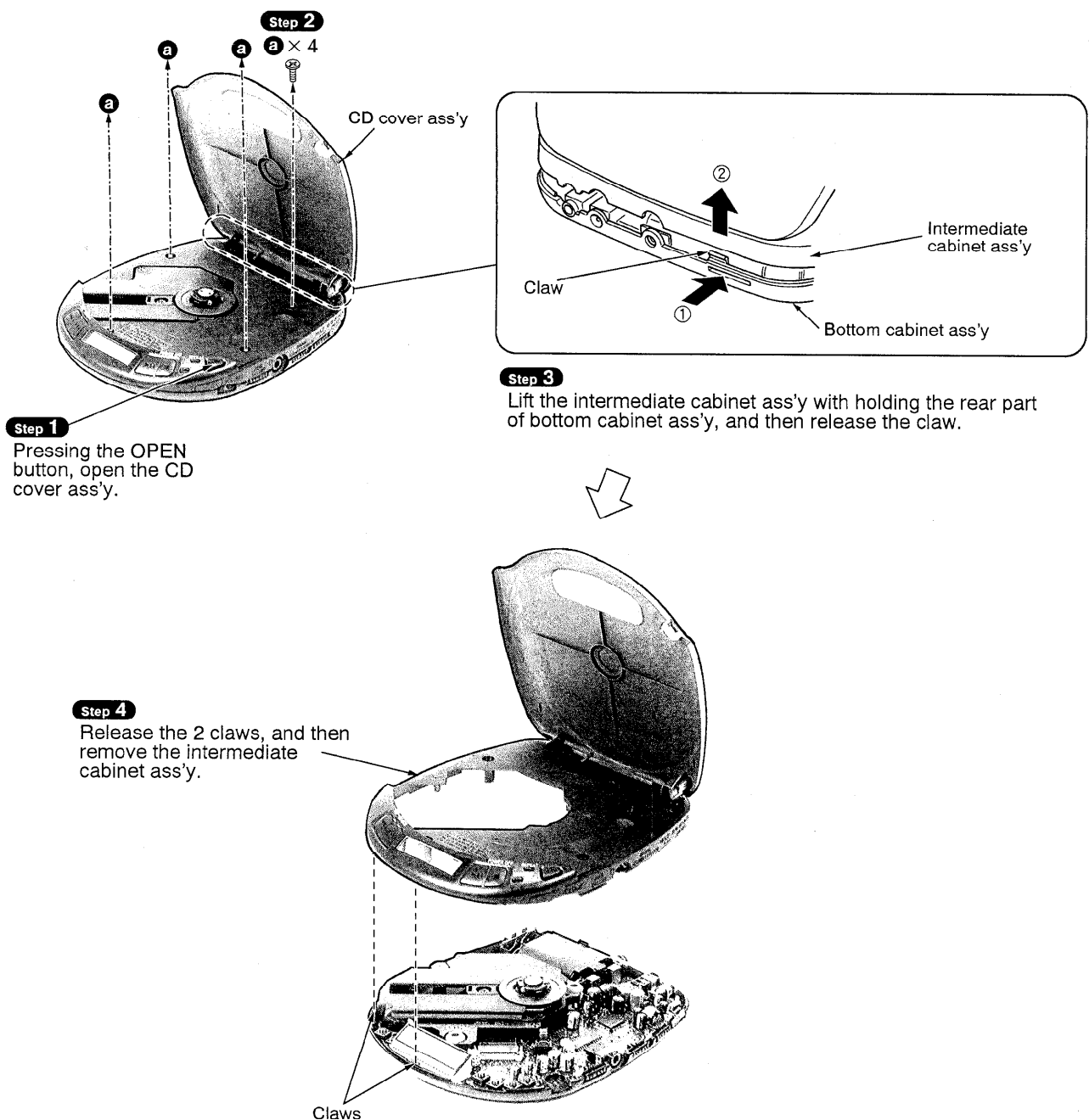


## ■ Operation Checks and Main Component Replacement Procedures

- 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.
  4. The pictures show model SL-S320.

### 1. Checking for the P.C.B.

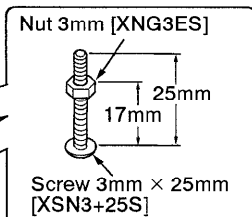
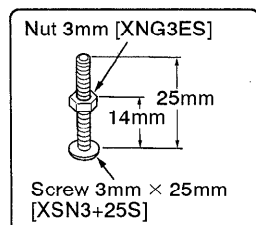
〈Checking for the P.C.B. (Component side)〉



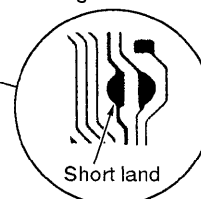


**NOTE**

- 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.

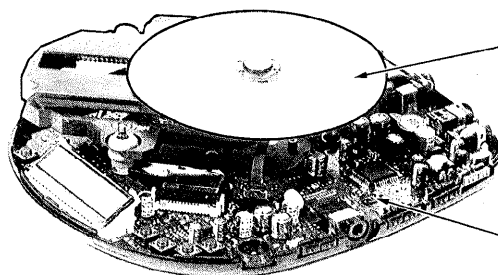
**Step 5**

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. (Component side) as shown below.

**Step 7**

Put the disc (8cm).

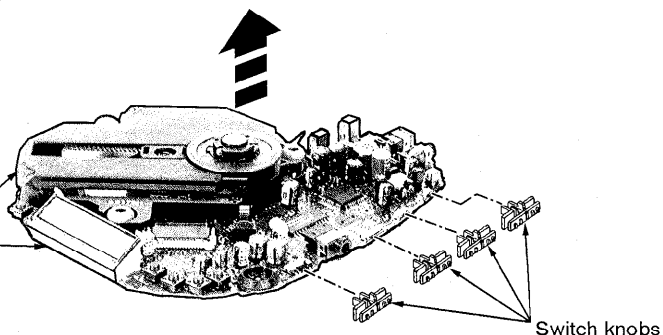
**NOTE**

After checking, unsolder the short land to open circuit.

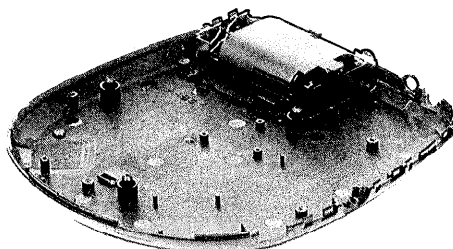
〈Checking for the P.C.B. (Solder side)〉

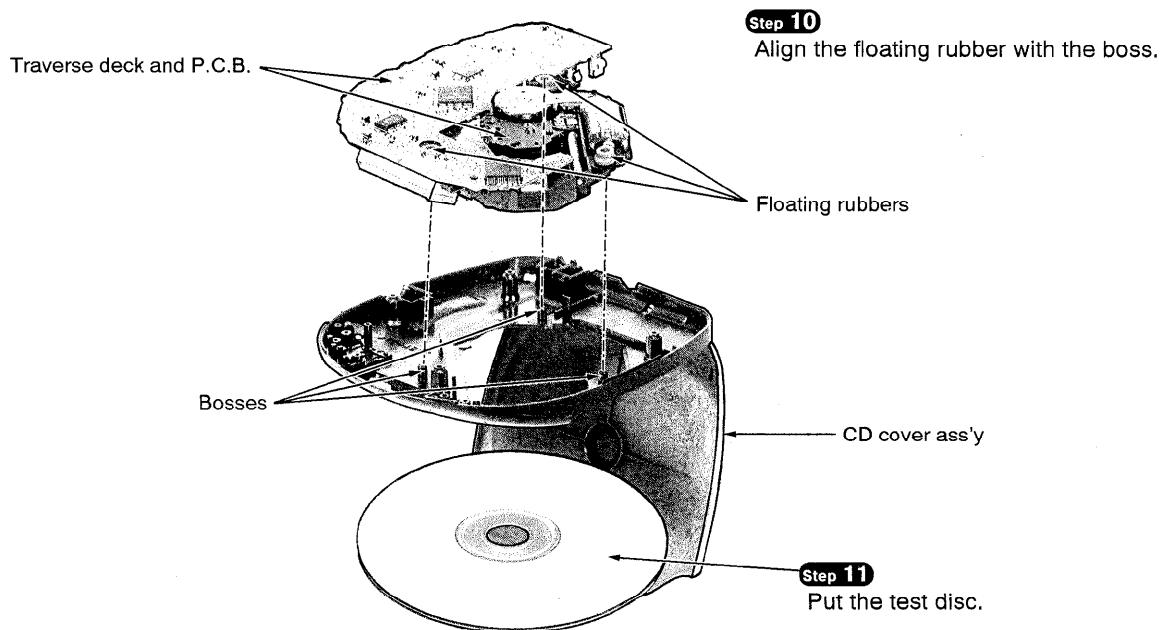
**Step 9**

Remove the traverse deck and P.C.B..

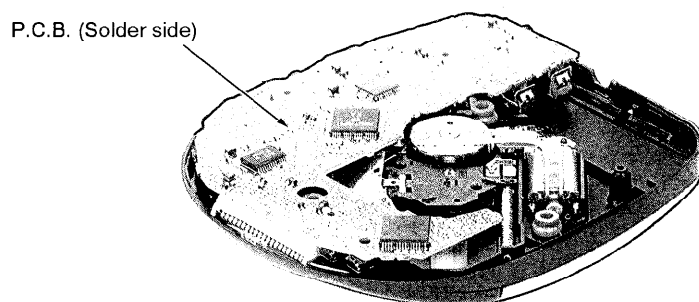
**Step 8**

Remove the 4 switch knobs.





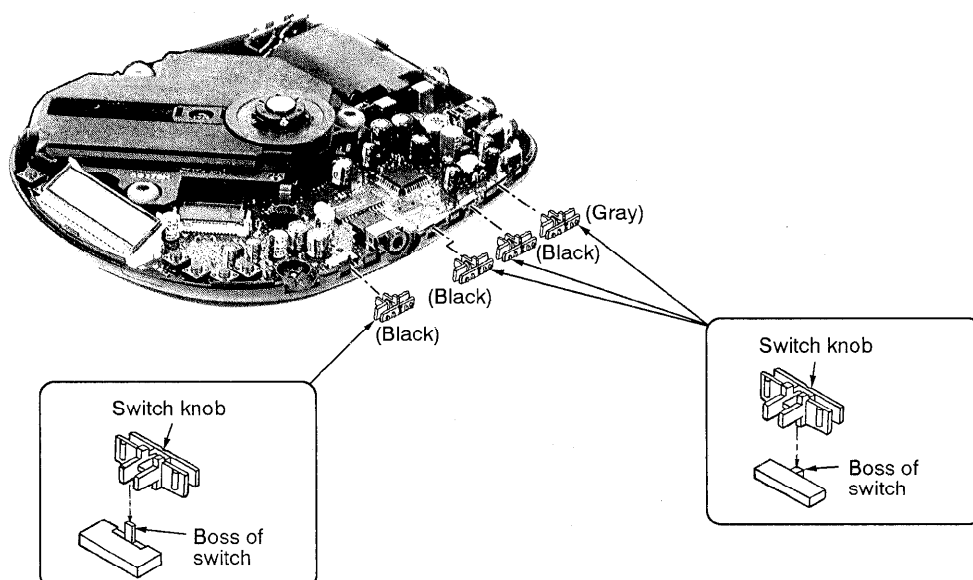
• Check the P.C.B. (Solder side) as shown below.



**NOTE**

After checking, unsolder the short land to open circuit.

**Notice for installation of switch knobs**



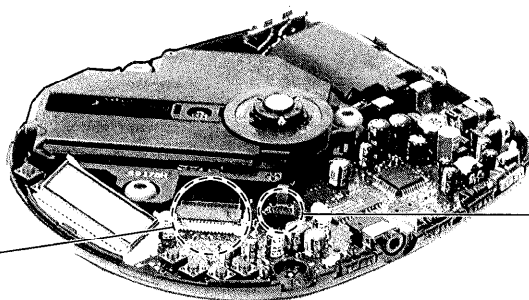
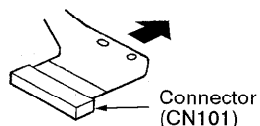
## 2. Replacement for the traverse deck

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

### Step 1

Pull out the FFC from connector (CN101).

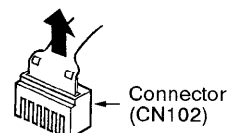
FFC  
(From the optical pickup)



### Step 2

Pull out the FFC from connector (CN102).

FFC  
(From the motors)



### NOTE

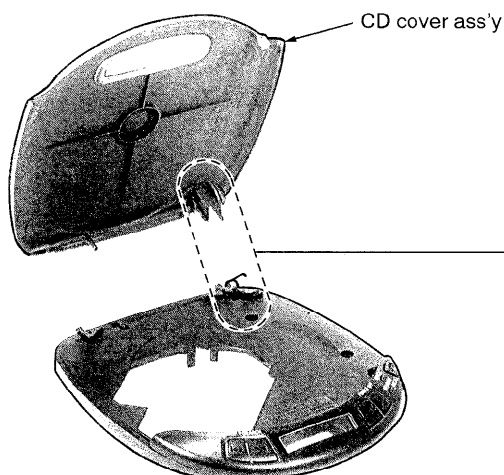
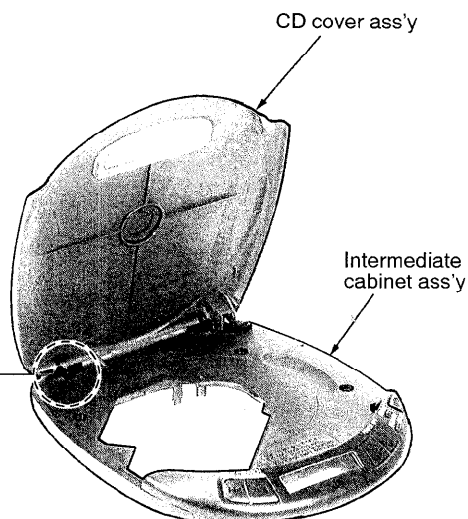
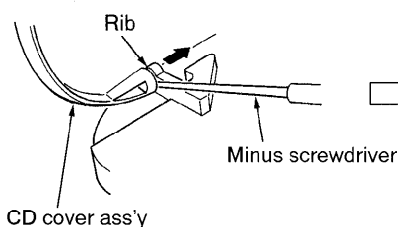
Solder the point between pin ⑫ (LD GND) and pin ⑬ (LD) of FFC board.  
(Refer to "Handling Precautions for Traverse Deck" on page 7.)

## 3. Replacement for the CD cover ass'y

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

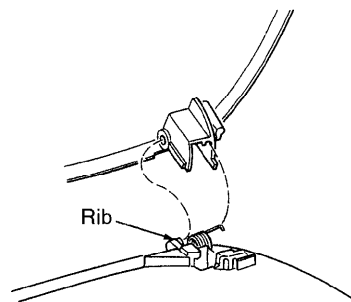
### Step 1

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



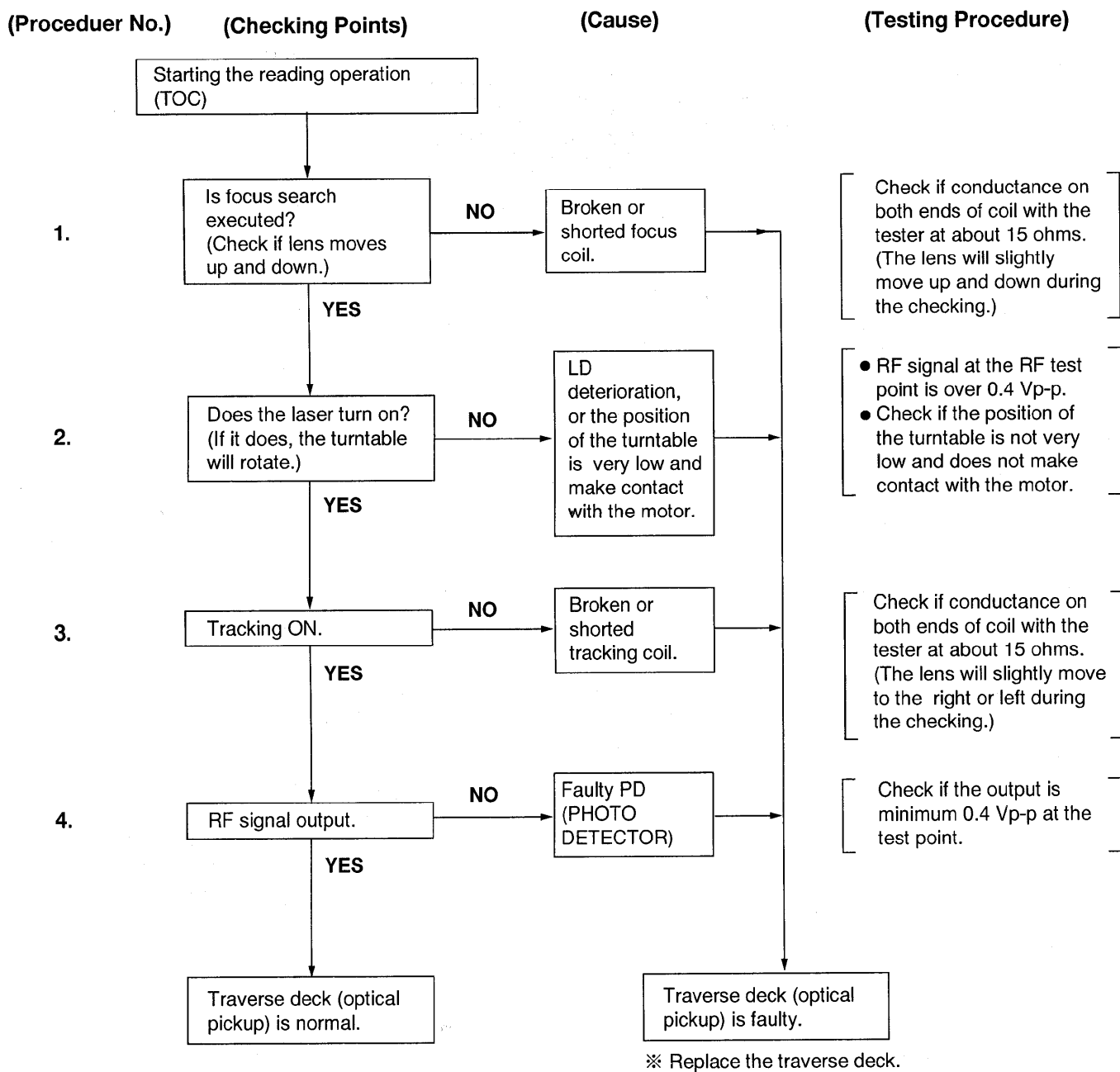
### Step 2

Then release the other rib 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.



※ Replace the traverse deck.

- Check electrical circuit.
- Check for flaws on disc or if it is warped 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.

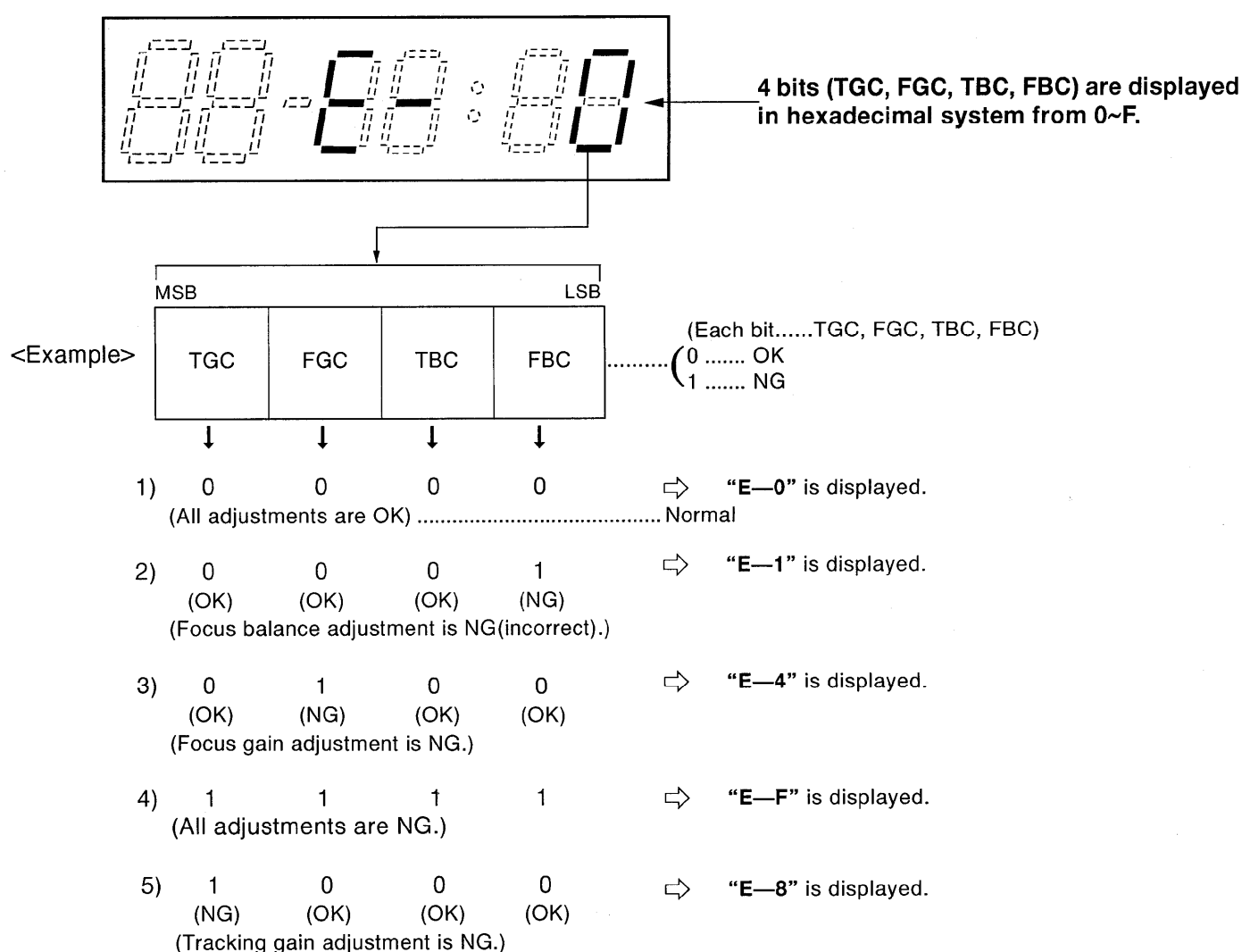
## ■ Automatic Adjustment Results Display Function (Self-check Function)

On this unit (SL-S318/S320), 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 ◀◀ (SKIP/SEARCH) and ▶▶ (SKIP/SEARCH) Buttons simultaneously and hold them, and additionally press the ▶/|| (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)



**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.
- (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).
- (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.
- (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.

## ■ Measurements and Adjustments

**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.

### ● 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

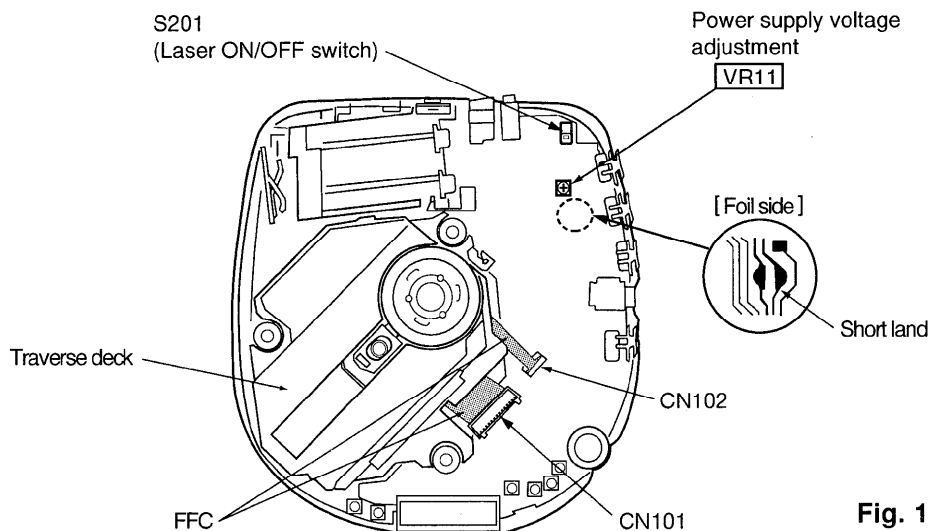
Short-circuit the lands of the laser ON/OFF switch (S201) by soldering them. It turns “ON” position. (Refer to below **Fig. 1** or printed circuit board and wiring connection diagram for short land location on page 20.)

**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 on page 20.

2. Take care to connect CN101 and CN102, as shown in **Fig.1**.



**Fig. 1**

**(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.  
(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 **3.10 ~ 3.14 V**, 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 (SZZP1056C) and verify that no sound skip or noise occurs.

**• Automatic adjustment**

On our conventional type portable CD player, there were mounted 6 semi-fixed controls for each adjustment. Since the SL-S318/S320 servo circuit is equipped with an automatic adjusting circuit, these controls are removed from SL-S318/S320.

**On conventional portable CD player**

Use for Old Servo IC (AN8373SE2, AN8374SE2)

1. Tracking Offset Adjustment VR (TOC) ☐
2. Focus Offset Adjustment VR (FOC) ☐
3. Tracking Gain Adjustment VR (TGC) ☐
4. Focus Gain Adjustment VR (FGC) ☐
5. Tracking Balance Adjustment VR (TBC) ☐
6. Focus Balance Adjustment VR (FBC) ☐

Total 6 Adjustment VRs

➔ Non Adjustment

➔ Automatic Adjusting Circuit

➔ No Adjustment VR

**On SL-S318/S320**

Use for New Servo IC (AN8837SBE1, MN662746RPK1)

Although all discs are manufactured according to the same specifications, their characteristics are not always precisely the same because they are produced by different manufacturers in various lots, or have different warp etc.

SL-S318/S320 automatically controls the servo circuit to obtain optimum performance according to any disc's characteristics. Therefore, no malfunction occurs because of mis-adjustment.

## ■ Outline of 10 - Second Sound Keeper Technique Used for Prevention of Sound from Skipping

**1. Conventional Shockproofing Technique**

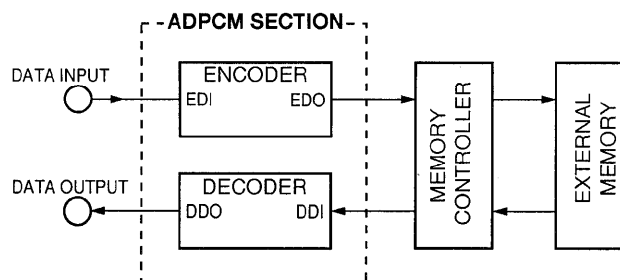
Input information read out of the CD at double speed is demodulated, stored in the memory, and while sound-marking signal is supplied at normal speed from the memory to the D/A converter, the residual data is accumulated in the memory.

If reaccess to the break point is accomplished before the memory becomes empty, apparent playback sound is entirely kept free from breaking even when information pauses due to vibration, etc. It was necessary to use the 4M bit memory for securing the accumulation time of about 10 seconds.

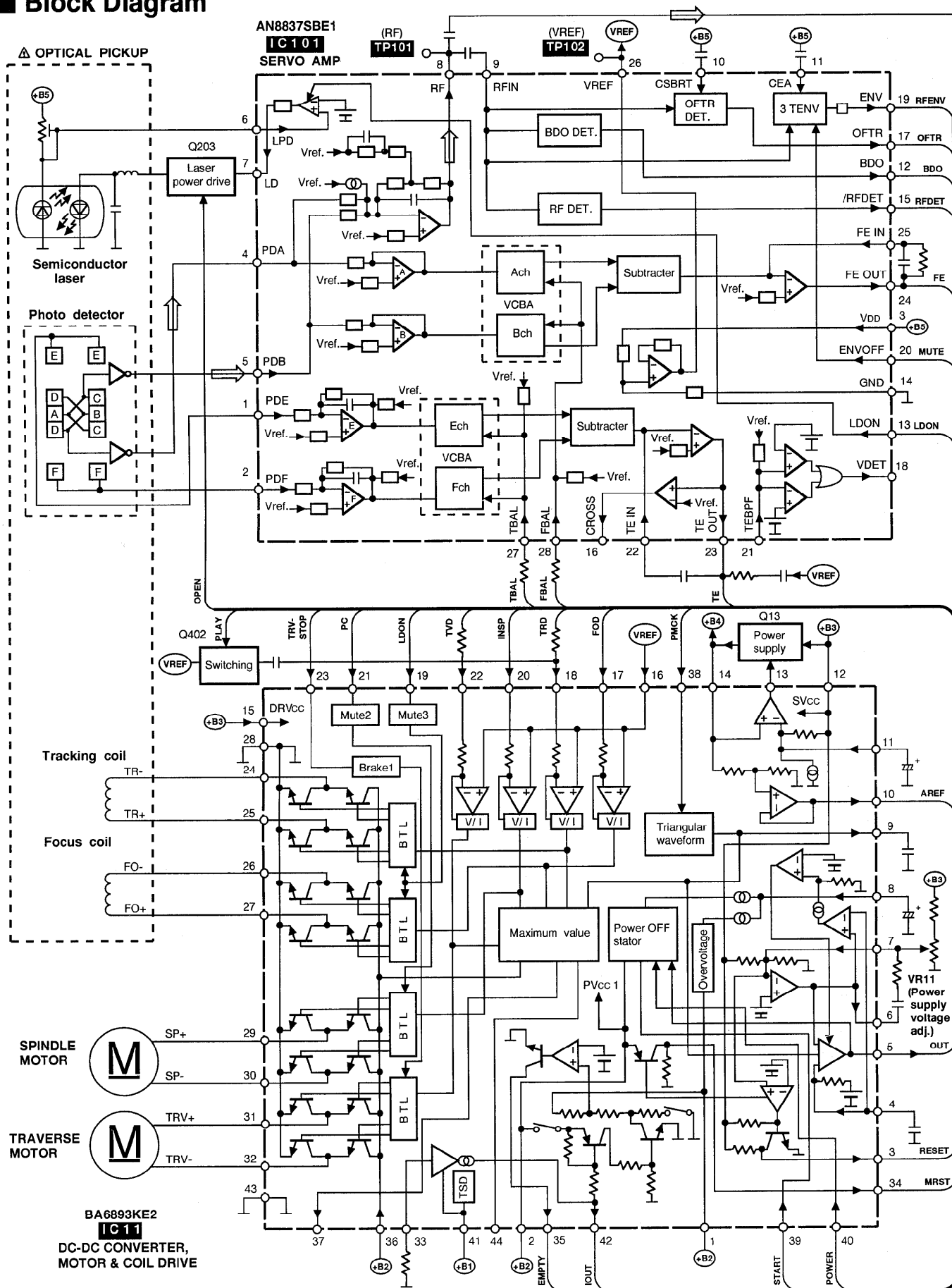
The data compression technique has conducted to reduction of required memory capacity from 4M bits to 1M bit for securing the accumulation time equivalent to the conventional.

**2. Compression-shockproofing****[Outline]**

Fig. 1 is a block diagram showing the compression-shockproofing mechanism, the difference of which from the conventional mechanism is as follows: Input information read out at double speed undergoes data compression (16 bits → 4 bits) by the encoder in the ADPCM (Adaptive Difference PCM) and stored in the external memory; the stored memory information undergoes data elongation (4 bits → 16 bits) by the decoder in the ADPCM and supplied at normal speed to the D/A converter.

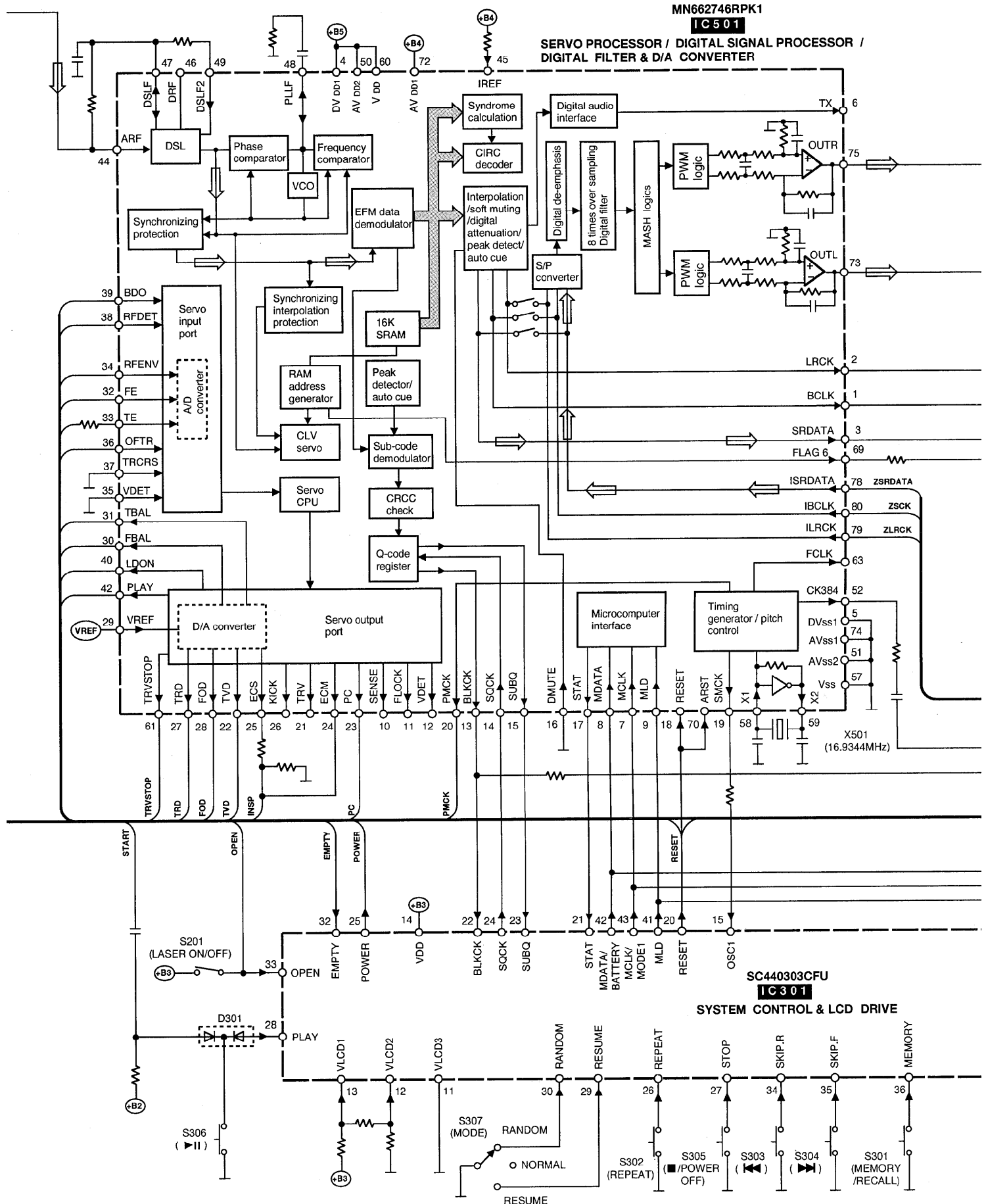
**All-inclusive Block Diagram**

## ■ Block Diagram

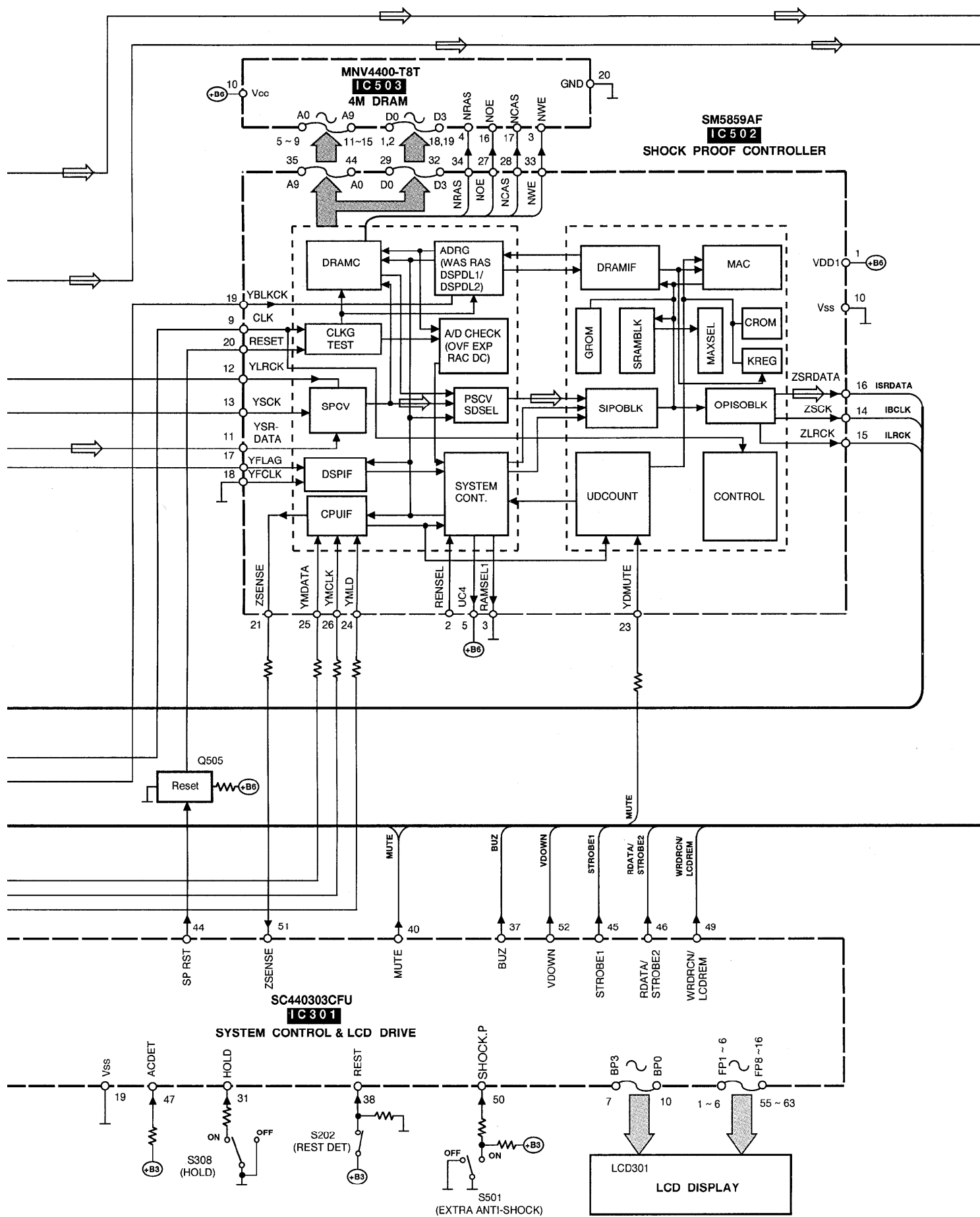




● Signal line    ➡ : Audio signal



• Signal line     $\Rightarrow$  : Audio signal

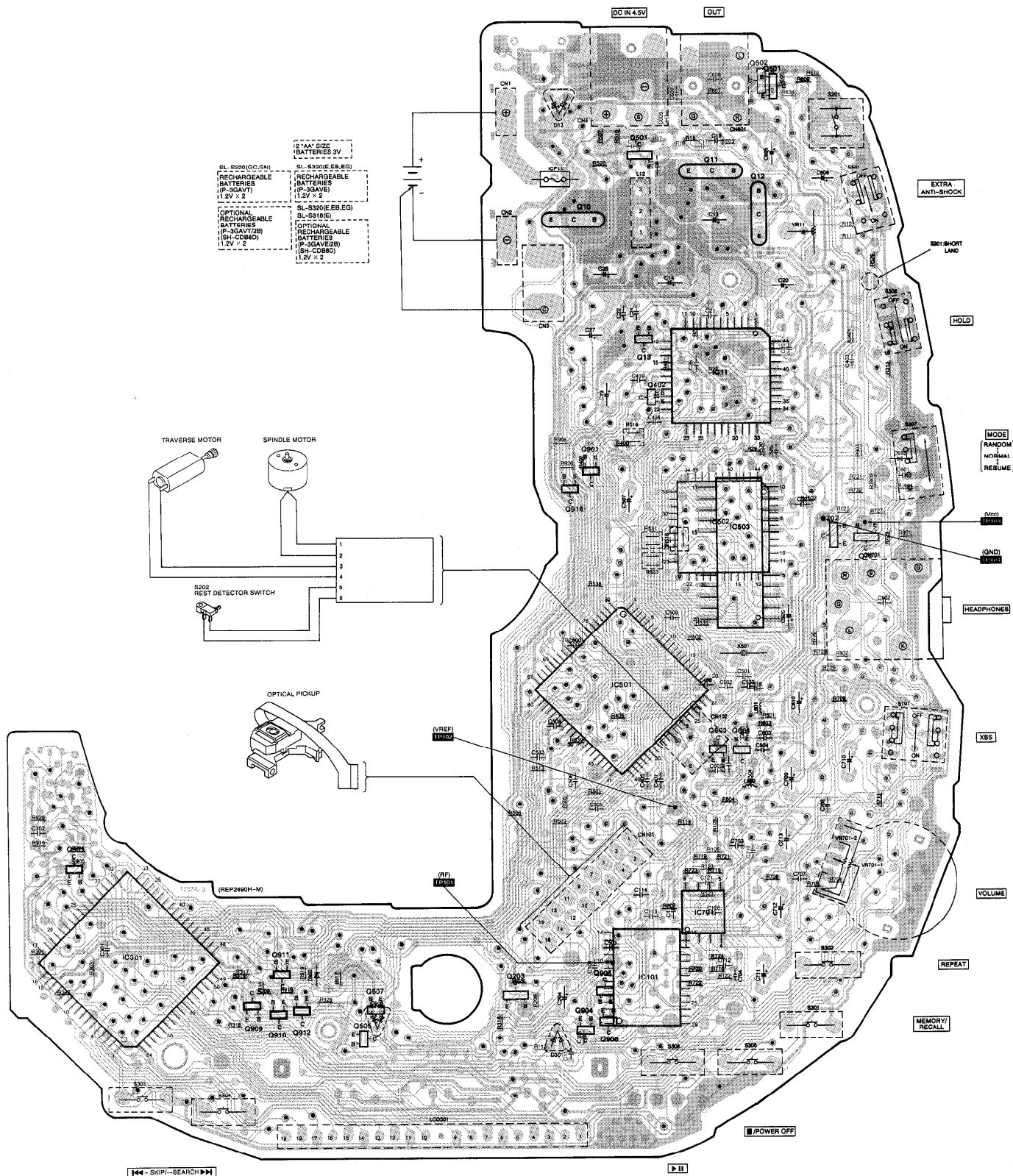




## Printed Circuit Board and Wiring Connection Diagram

### Notes:

- In this printed circuit board diagram, the parts and foil patterns on the board facing toward you are printed in black. The opposite side is printed in blue.
- The “●” and “●” marks denote the connection points of double-faced foil patterns (through holes) on both sides of the printed circuit board.
- This printed circuit board diagram may be modified at any time with the development of new technology.





## ■ Schematic Diagram (See parts list on pages 32, 33.)


(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** : Skip/search (▶▶ / ▶▶, ◀◀ / ◀◀) switches.
- **S304** : [S303: GO BACK, S304: ADVANCE]
- **S305** : Stop/operation 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.
- **S501** : Extra anti-shock (EXTRA ANTI-SHOCK) switch in "OFF" position.
- **S701** : XBS selector (XBS) in "OFF" position.
- **VR11** : Power supply voltage adjustment.
- **VR701-1, 2** : Headphones volume (VOLUME) control.
- 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.

### ● Measurement conditions:

- \* Set the HOLD and EXTRA ANTI-SHOCK switches to ON.
- \* The parenthesized is the voltage for test disc (1 kHz, L + R, 0 dB) in play mode, and the other, for no disc in stop mode.
- \* AC adaptor is used for power supply.

●  : Positive voltage lines.

●  : Audio signal lines.

### ● Important safety notice:

Components identified by  $\Delta$  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.

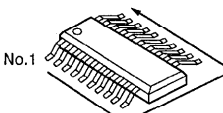
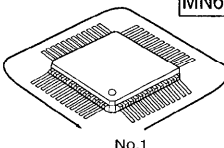
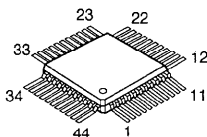
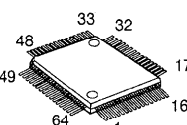
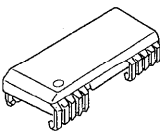
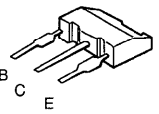
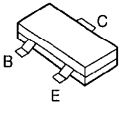
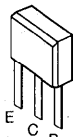
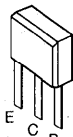
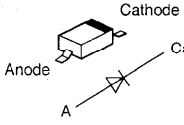
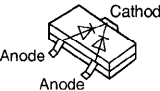
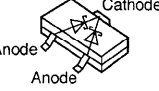
### Caution!

IC and LSI are sensitive to static electricity.

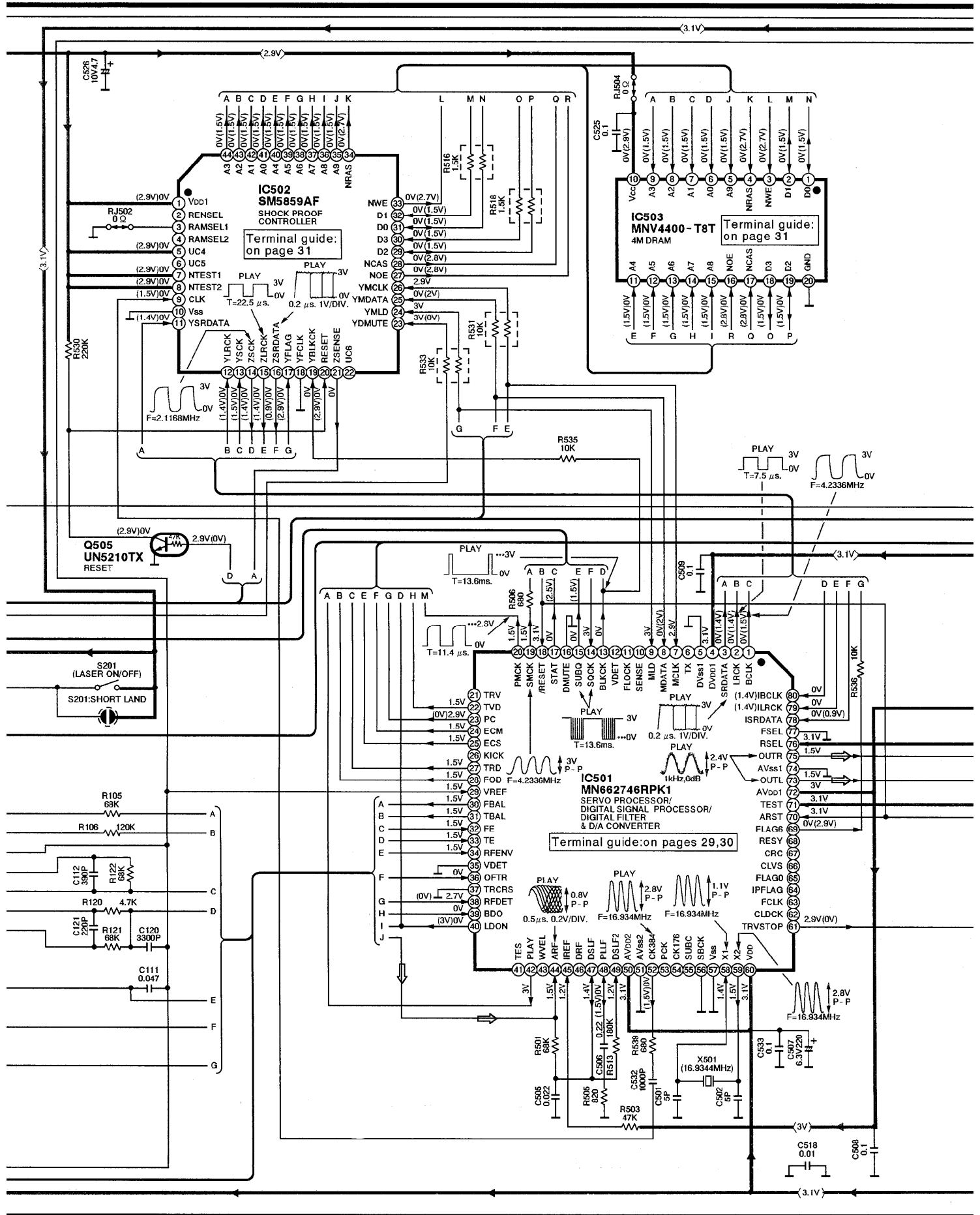
Secondary trouble can be prevented by taking care during repair.

- 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.

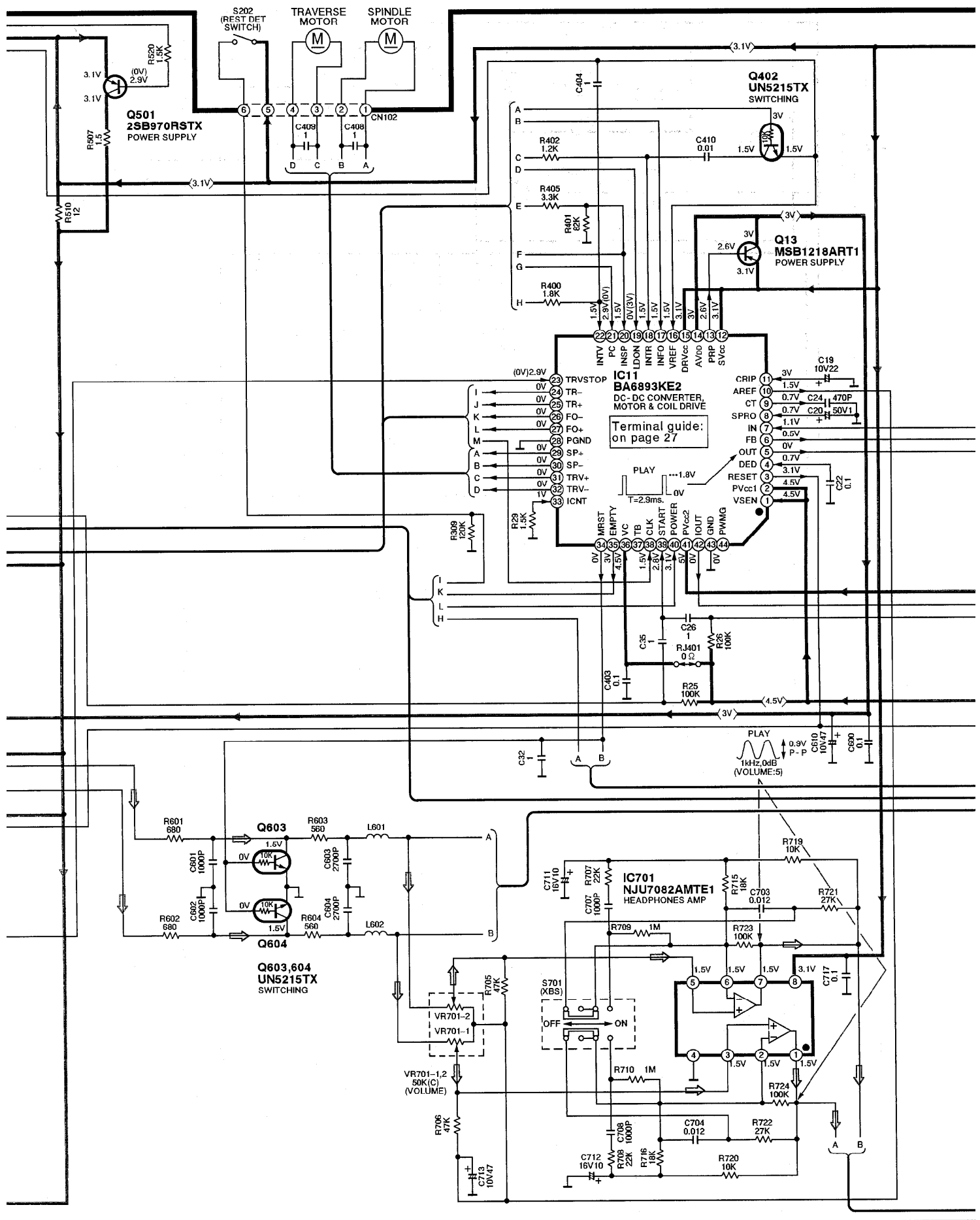
## ■ Type Illustration of IC's, Transistors and Diodes

<div style="display: flex; justify-content: space-between;"> <div> <b>NJU7082AMTE1</b> 8PIN  <b>AN8837SBE1</b> 28PIN         </div> <div>  </div> </div>		<div style="display: flex; justify-content: space-between;"> <div> <b>SM5859AF</b> 44PIN  <b>MN662746RPK1</b> 80PIN         </div> <div>  </div> </div>		<b>BA6893KE2</b> 	<b>SC440303CFU</b> 
<b>MNV4400-T8T</b> 	<b>2SD2074HWRST</b> 	<b>2SB970RSTX</b> <b>2SD1328RSTTX</b> <b>2SD1819QRSTX</b> 	<b>DTA114YUA106</b> <b>MSB1218ART1</b> <b>MSB709RST1</b> <b>UN5215TX</b> <b>UN5210TX</b> <b>UN511NTX</b> 	<b>2SD1302STTA</b> <b>2SD1450STTA</b> 	<b>MA110TX</b> 
<b>M1MA141WKT1</b> 	<b>RB411DT146</b> 				

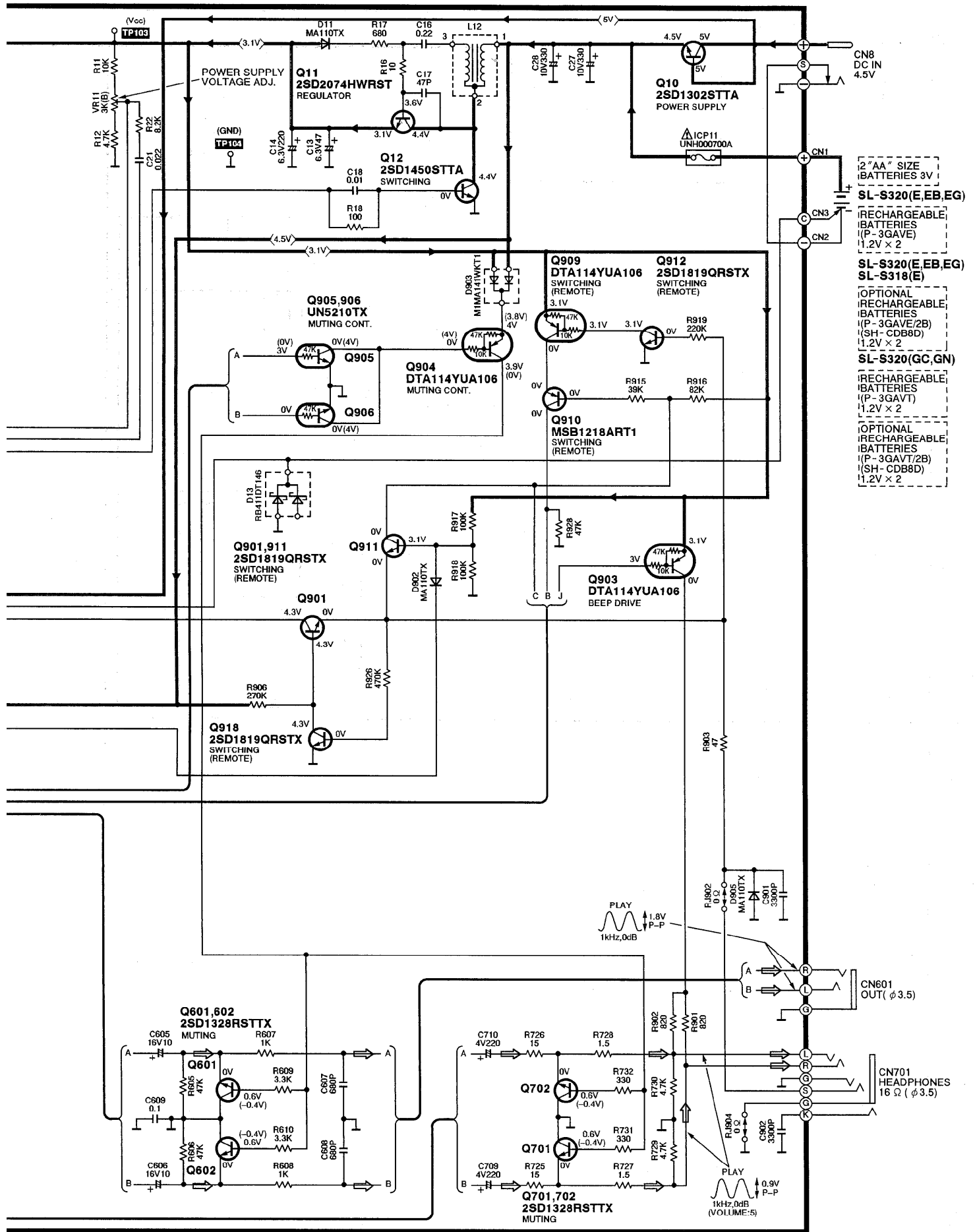








● → : Audio signal lines.



## ■ Terminal Function of IC's

### ● IC11 (BA6893KE2): DC-DC converter, motor & coil drive

Pin No.	Mark	I/O Division	Function
1	VSEN	I	Battery voltage monitor terminal
2	PVcc	I	Battery power supply input terminal
3	RESET	O	Reset signal output terminal
4	DED	I	Dead time setting terminal
5	OUT	O	Boost transistor drive output terminal
6	FB	O	Error amp output terminal
7	IN	I	Error amp input terminal
8	SPRO	I	Short protect setting input terminal
9	CT	O	Triangle wave oscillator output terminal
10	AREF	O	Audio reference output terminal
11	CRIP	I	Ripple filter smoothing terminal
12	SVcc	I	Power supply input terminal for control circuit
13	PRP	O	Transistor drive output terminal for ripple filter
14	AVDD	O	Power supply output terminal for ripple filter
15	DRVcc	I	Pre-driver power supply input terminal
16	VRFF	I	Reference voltage input terminal
17	INFO	I	Focus coil drive input terminal
18	INTR	I	Tracking coil drive input terminal
19	LDON	I	Laser ON/OFF drive input terminal
20	INSP	I	Spindle motor drive input terminal
21	PC	I	Spindle motor drive ON/OFF input terminal
22	INTV	I	Traverse motor drive input terminal

Pin No.	Mark	I/O Division	Function
23	TRVSTOP	I	Traverse motor drive ON/OFF input terminal
24	TR-	O	Tracking coil drive output terminal
25	TR+		
26	FO-	O	Focus coil drive output terminal
27	FO+		
28	PGND	—	Power section GND terminal
29	SP+	O	Spindle motor drive output terminal
30	SP-		
31	TRV+	O	Traverse motor drive output terminal
32	TRV-		
33	ICNT	I	Rechargeable current setting terminal
34	MRST	O	Muting reset output terminal
35	EMPTY	O	Empty detect output terminal
36	VC	I	Power supply input terminal
37	TB	—	PWM transistor drive output terminal (Not used, open)
38	CLK	I	External clock synch. input terminal
39	START	I	Boost DC/DC converter starting input terminal
40	POWER	I	Boost DC/DC converter OFF input terminal
41	PVcc2	I	Rechargeable circuit power supply input terminal
42	IOUT	O	Empty detect level select output terminal
43	GND	—	Pre-section GND terminal
44	PWMG	—	PWM phase compensating input terminal (Not used, open)

## ● IC301 (SC440303CFU): System control / LCD drive

Pin No.	Mark	I/O Division	Function
1 └ 6	FP6 └ FP1	O	LCD segment signal output terminal
7	BP3/FP0		
8 └ 10	BP2 └ BP0		
11 └ 13	VLCD3 └ VLCD1	I	Voltage control input terminal
14	V <sub>DD</sub>	I	Power supply terminal
15	OSC1	I	Main system clock input terminal
16	OSC2	—	Not used, open
17	XOSC2	—	Not used, open
18	XOSC1	—	Not used, connected to GND
19	V <sub>SS</sub>	—	GND terminal
20	RESET	O	Reset signal output terminal
21	STAT	I	Status signal input (CRC, CUE, CLVS, TT STOP, FCLV, SQOK)
22	BLKCK	I	Sub-code block clock (F=75Hz with normal play)
23	SUBQ	I	Sub-code Q data input terminal
24	SQCK	O	Sub-code Q register clock signal output terminal
25	POWER	O	Power On/Off signal output terminal
26	REPEAT	I	Key switch(REPEAT) input terminal
27	STOP	I	Key switch(STOP) input terminal
28	PLAY	I	Key switch(PLAY/PAUSE) input terminal
29	RESUME	I	Key switch(RESUME) input terminal
30	RANDOM	I	Key switch(RANDOM) input terminal
31	HOLD	I	Key switch(HOLD) input terminal
32	EMPTY	I	Empty detect input terminal

Pin No.	Mark	I/O Division	Function
33	OPEN	I	Disc holder open det. terminal ("L" with open)
34	SKIP. R	I	Key switch input terminal (SKIP/SEARCH. R)
35	SKIP. F	I	Key switch input terminal (SKIP/SEARCH. F)
36	MEMORY	I	Key switch(MEMORY) input terminal
37	BUZ	O	Beep control signal output terminal
38	REST	I	Rest det. input terminal
39	WLSRCN/ RSENSE	I	Remote control signal input terminal. (Not used, connected to resistor)
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	O	Reset signal output terminal for shock proof controller IC
45	STROBE1	O	Remote control data signal output terminal
46	RDATA/ STROBE2		
47	ACDET	I	Power det. input terminal
48	CHARGE/ LIGHT	—	Not used, open
49	WRDRCN/ LCDREM	O	Remote control signal output terminal
50	SHOCK. P	I	Key switch(EXTRA ANTI-SHOCK) input terminal
51	ZSENSE	I	Sense signal input terminal
52	VDOWN	O	Power supply control output terminal
53 └ 54	FP18 └ FP17	—	Not used, open
55 └ 63	FP16 └ FP8	O	LCD segment signal output terminal
64	FP7	—	Not used, open

**● IC101 (AN8837SBE1): Servo amp.**

Pin No.	Mark	I/O Division	Function
1	PDE	I	Tracking signal input terminal (1)
2	PDF	I	Tracking signal input terminal (2)
3	V <sub>DD</sub>	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

Pin No.	Mark	I/O Division	Function
15	/RFDET	O	RF det. signal output terminal ("L" : Det.)
16	CROSS	—	Not used, open
17	OFTR	O	Off track signal output terminal ("H" : Off track)
18	VDET	—	Not used, open
19	ENV	O	RF envelope signal output terminal
20	ENV OFF	I	ENV control input terminal
21	TEBPF	—	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

**● IC501 (MN662746RPK1) : Servo processor / digital signal processor / digital filter & D/A converter**

Pin No.	Mark	I/O Division	Function
1	BCLK	O	Serial bit clock output
2	LRCK	O	L/R discriminating signal output
3	SRDATA	O	Serial data signal output
4	DVDD1	I	Power supply (digital circuit) terminal
5	DVss1	—	GND (digital circuit) terminal
6	TX	—	Digital audio interface signal (Not used, open)
7	MCLK	I	Command clock signal
8	MDATA	I	Command data signal
9	MLD	I	Command load signal ("L" : LOAD)
10	SENSE	O	Sense signal (OFT, FESL, NACEND, NAJEND, POSAD, SFG) (Not used, open)
11	FLOCK	O	Optical servo condition (focus) ("L" : lead-in) (Not used, open)
12	VDET	—	Not used, open

Pin No.	Mark	I/O Division	Function
13	BLKCK	O	Sub-code block clock (f=75Hz)
14	SQCK	I	Sub-code Q register clock
15	SUBQ	O	Sub-code Q code
16	DMUTE	—	Muting input ("H" : MUTE) (Not used, connected to GND)
17	STAT	O	Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQCK)
18	/RESET	I	Reset signal ("L" : reset)
19	SMCK	O	System clock (f=4.2336MHz)
20	PMCK	O	Frequency division clock signal (f=1/1.92×ck=88.2kHz)
21	TRV	—	Traverse servo control (Not used, open)
22	TVD	O	Traverse drive signal
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)

Pin No.	Mark	I/O Division	Function
26	KICK	—	Kick pulse output (Not used, open)
27	TRD	O	Tracking drive signal output
28	FOD	O	Focus drive signal output
29	VREF	I	D/A drive output (TVD, ECS, TRD, FOD, FBAL, TBAL) normal voltage input terminal
30	FBAL	O	Focus balance adj. output
31	TBAL	O	Tracking balance adj. output
32	FE	I	Focus error signal (analog input)
33	TE	I	Tracking error signal (analog input)
34	RFENV	I	RF envelope signal
35	VDET	—	Oscillation det. signal ("H" : det) (Not used, connected to GND)
36	OFTR	I	Off track signal ("H" : Off track)
37	TRCRS	—	Track cross signal input (Not used, connected to GND)
38	RFDET	I	RF detection signal ("L" : detection)
39	BDO	I	Dropout detection signal ("H" : dropout)
40	LDON	O	Laser power control ("H" : ON)
41	TES	O	Tracking error shunt output ("H" : dropout) (Not used, open)
42	PLAY	O	Play signal ("H" : play)
43	WVEL	O	Double velocity status signal ("H" : double) (Not used, open)
44	ARF	I	RF signal input
45	IREF	I	Reference current input
46	DRF	—	DSL bias terminal (Not used, open)
47	DSLIF	I/O	DSL loop filter terminal
48	PLLIF	I/O	PLL loop filter terminal
49	DSLIF2	I	VCO loop filter terminal
50	AVDD2	I	Power supply (analog circuit) terminal (2)
51	AVSS2	—	GND (analog circuit) terminal
52	CK384	O	384fs (16.9344MHz) output
53	PCK	—	PLL extract clock (f=4.3218MHz) (Not used, open)
54	CK176	—	Not used, open

Pin No.	Mark	I/O Division	Function
55	SUBC	—	Sub-code serial output data (Not used, open)
56	SBCK	—	Sub-code serial input clock (Not used, connected to GND)
57	VSS	—	GND terminal
58	X1	I	Crystal oscillator input terminal (f=16.9344MHz)
59	X2	O	Crystal oscillator output terminal (f=16.9344MHz)
60	VDD	I	Power supply terminal
61	TRVSTOP	O	Traverse motor stop control terminal
62	CLDCK	—	Sub-code frame clock signal (f CLDCK=7.35kHz: Normal) (Not used, open)
63	FCLK	—	Crystal frame clock signal [f FCLK=7.35kHz: 2 speed(14.7kHz)] (Not used, open)
64	IPFLAG	—	Interpolation flag terminal (Not used, open)
65	FLAG0	—	Flag terminal (Not used, open)
66	CLVS	—	Turntable servo phase synchro signal ("H": CLV, "L": Rough servo) (Not used, open)
67	CRC	—	Sub-code CRC check terminal ("H": OK, "L": NG) (Not used, open)
68	RESY	—	Not used, open
69	FLAG6	O	Flag terminal
70	ARST	I	Reset signal input terminal
71	TEST	I	Test terminal (Normal : "H")
72	AVDD1	I	Power supply (analog circuit) terminal (1)
73	OUTL	O	Lch audio signal
74	AVSS1	—	GND (analog circuit) terminal (1)
75	OUTR	O	Rch audio signal
76	RSEL	I	Polarity direction control terminal of RF signal (Not used, connected to power supply)
77	FSEL	—	Frequency control terminal of crystal oscillator (Not used, connected to GND)
78	ISRDATA	I	Serial data signal input
79	ILRCK	I	L/R discriminating signal input
80	IBCLK	I	Serial bit clock input

## ● IC502 (SM5859AF) : Shock proof controller

Pin No.	Mark	I/O Division	Function
1	VDD1	I	Power supply terminal
2	RENSEL	—	Key input terminal (ANTI-SHOCK MEMORY) (Not used, open)
3	RAMSEL1	—	Key input terminal (Not used, connected to GND)
4	RAMSEL2	—	Not used, open
5	UC4	I	Sound quality/sound field control terminal (Not used, connected to power supply)
6	UC5	—	Sound quality/sound field control terminal (Not used, open)
7	NTEST1	I	Test terminal
8	NTEST2		
9	CLK	I	Clock signal input (f=16.9344MHz)
10	Vss	—	GND terminal
11	YSRDATA	I	Serial data input terminal
12	YLRCK	I	L/R clock input terminal
13	YSCK	I	Serial bit clock input terminal
14	ZSCK	O	Serial bit clock output terminal
15	ZLRCK	O	L/R clock output terminal
16	ZSRDATA	O	Serial data output terminal
17	YFLAG	I	RAM over-flow flag terminal

Pin No.	Mark	I/O Division	Function
18	YFCLK	—	Crystal frame clock input terminal (Not used, connected to GND)
19	YBLKCK	I	Sub-cord block clock input terminal
20	RESET	I	Reset input terminal
21	ZSENSE	O	Microcomputer states output terminal
22	UC6	—	Not used, open
23	YDMUTE		Mute input terminal
24	YMLD	I	Microcomputer latch clock input terminal
25	YMDATA	I	Microcomputer serial data input terminal
26	YMCLK	I	Microcomputer shift clock input terminal
27	NOE	O	D-RAM output enable terminal
28	NCAS	O	D-RAM column address strobe terminal
29 30	D2 D3	I/O	D-RAM data input/output terminal
31 32	D0 D1		
33	NWE	O	D-RAM write enable terminal
34	NRAS	O	D-RAM low address strobe terminal
35 40	A9 A4	O	D-RAM address output terminal
41 44	A0 A3		


## ● IC503 (MNV4400-T8T) : 4M DRAM

Pin No.	Mark	I/O Division	Function
1	D0	I/O	Data input/output terminal
2	D1	I/O	Data input/output terminal
3	NWE	I	Write enable terminal
4	NRAS	I	Low address strobe terminal
5	A9	I	Address input terminal
6	A0	I	Address input terminal
7 8 9	A1 A2 A3	I	Address input terminal

Pin No.	Mark	I/O Division	Function
10	Vcc	I	Power supply terminal
11 15	A4 A8	I	Address input terminal
16	NOE	I	Output enable terminal
17	NCAS	I	Column address strobe terminal
18	D3	I/O	Data input/ output terminal
19	D2	I/O	Data input/ output terminal
20	GND	—	GND terminal

## ■ Replacement Parts List (Electrical)

**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 manufacturer's specified parts shown in the parts list.
- \* The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.) Parts without these indications can be used for all areas.
- \* Warning: This product uses a laser diode. Refer to caution statements on page 2.
- \* [M] indicates in Remarks columns parts that are supplied by MESA.

Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)	
IC11	BA6893KE2	IC	[M]
IC101	AN8837SBE1	IC	[M]
IC301	SC440303CFU	IC	[M]
IC501	MN662746RPK1	IC	[M]
IC502	SM5859AF	IC	[M]
IC503	MNV4400-T8T	IC	[M]
IC701	NJU7082AMTE1	IC	[M]
		TRANSISTOR(S)	
Q10	2SD1302STTA	TRANSISTOR	[M]
Q11	2SD2074HWRST	TRANSISTOR	[M]
Q12	2SD1450STTA	TRANSISTOR	[M]
Q13	MSB1218ART1	TRANSISTOR	[M]
Q203	MSB709RST1	TRANSISTOR	[M]
Q402	UN5215TX	TRANSISTOR	[M]
Q501	2SB970RSTX	TRANSISTOR	[M]
Q505	UN5210TX	TRANSISTOR	[M]
Q507	UN511NTX	TRANSISTOR	[M]
Q601, 602	2SD1328QRSTX	TRANSISTOR	[M]
Q603, 604	UN5215TX	TRANSISTOR	[M]
Q701, 702	2SD1328QRSTX	TRANSISTOR	[M]
Q901	2SD1819QRSTX	TRANSISTOR	[M]
Q903, 904	DTA114YUA106	TRANSISTOR	[M]
Q905, 906	UN5210TX	TRANSISTOR	[M]
Q909	DTA114YUA106	TRANSISTOR	[M]
Q910	MSB1218ART1	TRANSISTOR	[M]
Q911, 912	2SD1819QRSTX	TRANSISTOR	[M]
Q918	2SD1819QRSTX	TRANSISTOR	[M]
		DIODE(S)	
D11	MA110TX	DIODE	[M]
D13	RB411DT146	DIODE	[M]
D301	M1MA141WKT1	DIODE	[M]
D902	MA110TX	DIODE	[M]
D903	M1MA141WKT1	DIODE	[M]
D905	MA110TX	DIODE	[M]
		IC PROTECTOR(S)	
ICP11	UNHD00700A	IC PROTECTOR	[M] Δ
		VARIABLE RESISTOR(S)	
VR11	EVNDXAA00B33	V. R	[M]
VR701	EVUTUFB11C54	V. R	[M]
		COIL(S)	
L12	RLZ0028T-0	COIL	[M]
L601, 602	RLBV102V-Y	COIL	[M]
		OSCILLATOR(S)	
X501	RSXZ16M9M01T	OSCILLATOR	[M]
		LCD(S)	
LCD301	RSL5174-C	LCD	[M]
		SWITCH(ES)	
S201	ESE11SV6	SW	[M]
S202	ESE11HS4	SW	[M]
S301-306	EVQ21405R	SW	[M]
S307	RSS3A007-1A	SW	[M]
S308	RSS2A010-1A	SW	[M]
S501	RSS2A010-1A	SW	[M]
S701	RSS2B028 A	SW	[M]
		CONNECTOR(S) AND JACK(S)	
CN1	RJC93015-1	BATTERY TERMINAL(+)	[M]
CN2	RJC93015-1	BATTERY TERMINAL(-)	[M]
CN3	RJH5104	RECHARGEABLE BATT. TERMINAL	[M]
CN8	RJJ43K09-C	DC IN JACK	[M]
CN101	RJS2A4716M1	CONNECTOR(16P)	[M]
CN102	RJS2A5106T1	CONNECTOR(6P)	[M]
CN601	RJJD3S5ZB-C	OUT JACK	[M]
CN701	RJJ36T02-C	HEADPHONES JACK	[M]

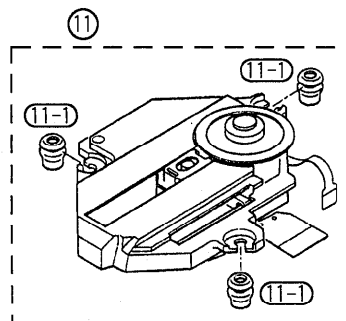
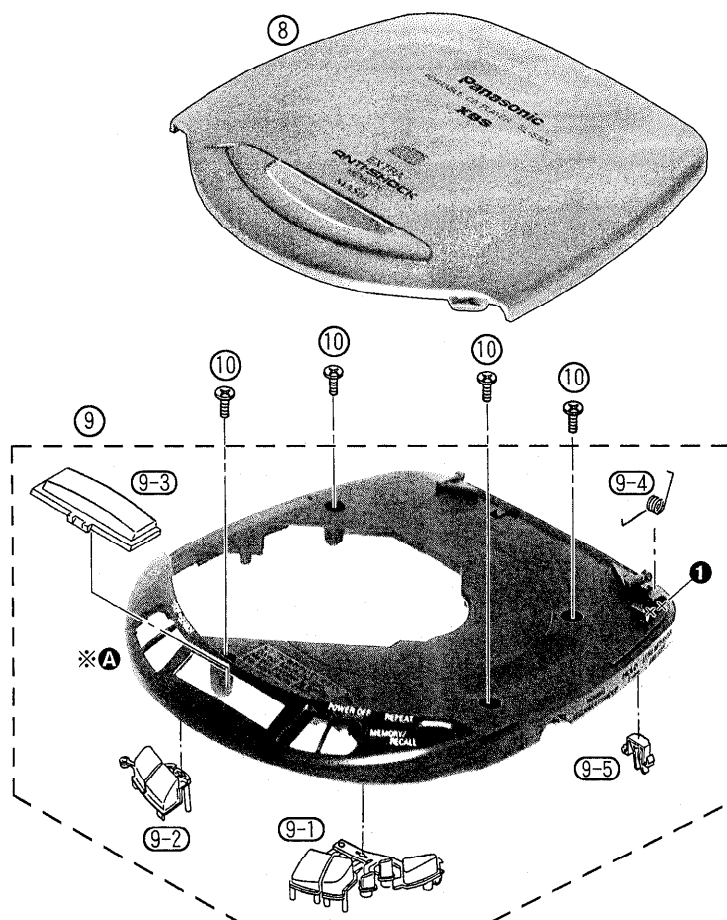


## Resistors and Capacitors

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

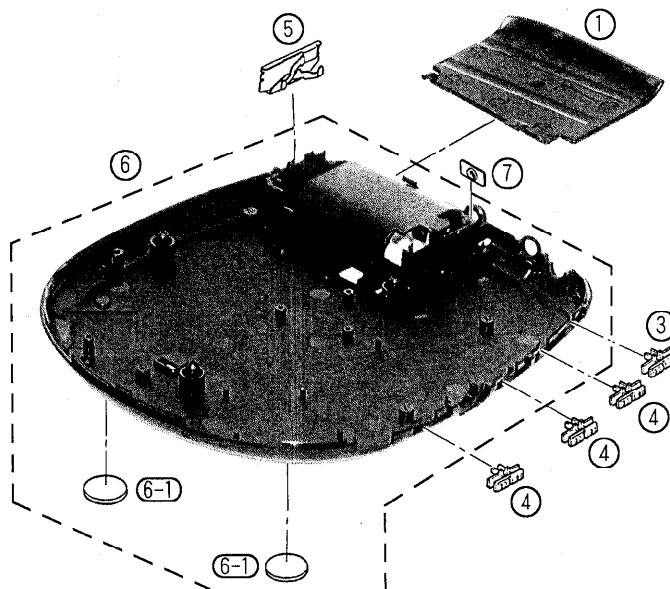
Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
		RESISTORS	R607, 608	ERJ3GEYJ102Z	1/16W 1K [M]	C35	ECUVNC105ZFN	16V 1U [M]
			R609, 610	ERJ3GEYJ332V	1/16W 3.3K [M]	C101	ECUV1C104KBV	16V 0.1U [M]
			R705, 706	ERJ3GEYJ473V	1/16W 47K [M]	C103	ECUV1C223KBV	16V 0.022U [M]
R11	ERJ3GEYJ103Z	1/16W 10K [M]	R707, 708	ERJ3GEYJ223V	1/16W 22K [M]	C111	ECUVNC473KBV	16V 0.047U [M]
R12	ERJ3GEYJ472V	1/16W 4.7K [M]	R709, 710	ERJ3GEYJ105V	1/16W 1M [M]	C112	ECUV1H391KBV	50V 390P [M]
R16	ERJ3GEYJ100V	1/16W 10 [M]	R715, 716	ERJ3GEYJ183V	1/16W 18K [M]	C113	ECUVNE104ZFN	25V 0.1U [M]
R17	ERJ3GEYJ681V	1/16W 680 [M]	R719, 720	ERJ3GEYJ103Z	1/16W 10K [M]	C114	ECUVNC104ZFN	16V 0.1U [M]
R18	ERJ3GEYJ101V	1/16W 100 [M]	R721, 722	ERJ3GEYJ273V	1/16W 27K [M]	C115	ECUV1C223KBV	16V 0.022U [M]
R22	ERJ3GEYJ822V	1/16W 8.2K [M]	R723, 724	ERJ3GEYJ104Z	1/16W 100K [M]	C120	ECUV1H332KBV	50V 3300P [M]
R25, 26	ERJ3GEYJ104Z	1/16W 100K [M]	R725, 726	ERJ3GEYJ150V	1/16W 15 [M]	C121	ECUV1H221KBV	50V 220P [M]
R29	ERJ3GEYJ152V	1/16W 1.5K [M]	R727, 728	ERJ3GEYJ1R5V	1/16W 1.5 [M]	C204	RCE1AKA4701G	10V 47U [M]
R105	ERJ3GEYJ683V	1/16W 68K [M]	R729, 730	ERJ3GEYJ472V	1/16W 4.7K [M]	C301, 302	ECUVNC104ZFN	16V 0.1U [M]
R106	ERJ3GEYJ124V	1/16W 120K [M]	R731, 732	ERJ3GEYJ331V	1/16W 330 [M]	C403	ECUVNC104ZFN	16V 0.1U [M]
R113	ERJ3GEYJ101V	1/16W 100 [M]	R901, 902	ERJ3GEYJ821V	1/16W 820 [M]	C404	ECUVNC105ZFN	16V 1U [M]
R114	ERJ3GEYJ330V	1/16W 33 [M]	R903	ERJ3GEYJ470V	1/16W 47 [M]	C405	ECUV1C104KBV	16V 0.1U [M]
R120	ERJ3GEYJ472V	1/16W 4.7K [M]	R904	ERJ3GEYJ123V	1/16W 12K [M]	C407	ECUVNC104ZFN	16V 0.1U [M]
R121, 122	ERJ3GEYJ683V	1/16W 68K [M]	R905	ERJ3GEYJ393V	1/16W 39K [M]	C408, 409	ECUVNC105ZFN	16V 1U [M]
R208	ERJ3GEYJ477V	1/16W 4.7 [M]	R906	ERJ6GEYJ274V	1/10W 270K [M]	C410	ECUV1E103KBV	25V 0.01U [M]
R209	ERJ3GEYJ223V	1/16W 22K [M]	R915	ERJ3GEYJ393V	1/16W 39K [M]	C501, 502	ECUV1H050CCV	50V 5P [M]
R301-303	ERJ3GEYJ473V	1/16W 47K [M]	R916	ERJ3GEYJ823V	1/16W 82K [M]	C503	ECUV1H561KBV	50V 560P [M]
R309	ERJ3GEYJ124V	1/16W 120K [M]	R917, 918	ERJ3GEYJ104Z	1/16W 100K [M]	C505	ECUV1C223KBV	16V 0.022U [M]
R313	ERJ3GEYJ102Z	1/16W 1K [M]	R919	ERJ3GEYJ224V	1/16W 220K [M]	C506	ECUVNC224KBN	16V 0.22U [M]
R316	ERJ3GEYJ102Z	1/16W 1K [M]	R920	ERJ3GEYJ473V	1/16W 47K [M]	C507	RCE0JKA2211G	6.3V 220U [M]
R317, 318	ERJ3GEYJ104Z	1/16W 100K [M]	R926	ERJ3GEYJ474V	1/16W 470K [M]	C508, 509	ECUVNC104ZFN	16V 0.1U [M]
R319	ERJ3GEYJ334V	1/16W 330K [M]	R928	ERJ3GEYJ473V	1/16W 47K [M]	C518	ECUV1E103KBV	25V 0.01U [M]
R400	ERJ3GEYJ182V	1/16W 1.8K [M]			CHIP JUMPER(S)	C525	ECUVNC104ZFN	16V 0.1U [M]
R401	ERJ3GEYJ823V	1/16W 82K [M]				C526	RCST1AY475RE	10V 4.7U [M]
R402	ERJ3GEYJ122V	1/16W 1.2K [M]				C532	ECUV1H102KBN	50V 1000P [M]
R405	ERJ3GEYJ332V	1/16W 3.3K [M]	RJ401	ERJ3GEYOR00V	CHIP JUMPER[M]	C533	ECUVNC104ZFN	16V 0.1U [M]
R501	ERJ3GEYJ683V	1/16W 68K [M]	RJ502	ERJ3GEYOR00V	CHIP JUMPER[M]	C600	ECUVNC104ZFN	16V 0.1U [M]
R503	ERJ3GEYJ473V	1/16W 47K [M]	RJ504	ERJ3GEYOR00V	CHIP JUMPER[M]	C601, 602	ECUV1H102KBV	50V 1000P [M]
R505	ERJ3GEYJ821V	1/16W 820 [M]	RJ902	ERJ3GEYOR00V	CHIP JUMPER[M]	C603, 604	ECUV1H272KBV	50V 2700P [M]
R506	ERJ3GEYJ681V	1/16W 680 [M]	RJ904	ERJ3GEYOR00V	CHIP JUMPER[M]	C605, 606	ECEA1CKA100I	16V 10U [M]
R507	ERJ3GEYJ1R5V	1/16W 1.5 [M]				C607, 608	ECUV1H681KBV	50V 680P [M]
R510	ERJ3GEYJ120V	1/16W 12 [M]			CAPACITORS	C609	ECUVNC104ZFN	16V 0.1U [M]
R513	ERJ3GEYJ184V	1/16W 180K [M]				C610	RCE1AKA4701G	10V 47U [M]
R516	EXBV4V152JV	1/32W 1.5K [M]	C13	RCE0JSC4701X	6.3V 47U [M]	C703, 704	ECUV1E123KBV	25V 0.012U [M]
R518	EXBV4V152JV	1/32W 1.5K [M]	C14	RCE0JKA2211G	6.3V 220U [M]	C707	ECUV1H102KBN	50V 1000P [M]
R520	ERJ3GEYJ152V	1/16W 1.5K [M]	C16	ECUVNC224KBN	16V 0.22U [M]	C708	ECUV1H102KBV	50V 1000P [M]
R526	ERJ3GEYJ102Z	1/16W 1K [M]	C17	ECUV1H470KCV	50V 47P [M]	C709, 710	ECEA0GPK221I	4V 220U [M]
R530	ERJ3GEYJ224V	1/16W 220K [M]	C18	ECUV1E103KBV	25V 0.01U [M]	C711, 712	ECEA1CPK100I	16V 10U [M]
R531	EXBV4V103JV	1/32W 10K [M]	C19	ECEA1AKA220I	10V 22U [M]	C713	RCE1AKA4701G	10V 47U [M]
R533	EXBV4V103JV	1/32W 10K [M]	C20	ECEA1HKA010I	50V 1U [M]	C717	ECUVNC104ZFN	16V 0.1U [M]
R535	ERJ6GEYJ103V	1/10W 10K [M]	C21	ECUV1C223KBV	16V 0.022U [M]	C901, 902	ECUV1H332KBV	50V 3300P [M]
R536	ERJ3GEYJ103Z	1/16W 10K [M]	C22	ECUVNC104ZFN	16V 0.1U [M]			
R539	ERJ3GEYJ681V	1/16W 680 [M]	C24	ECUV1H471KBV	50V 470P [M]			
R601, 602	ERJ3GEYJ681V	1/16W 680 [M]	C26	ECUVNC105ZFN	16V 1U [M]			
R603, 604	MCRO3PZHJ561	1/16W 560 [M]	C27, 28	RCE1AMT331IV	10V 330U [M]			
R605, 606	ERJ3GEYJ473V	1/16W 47K [M]	C32	ECUVNC105ZFN	16V 1U [M]			

## ■ Cabinet Parts Location



※ Please ordering assembly parts (RYK0718D-K) when changing **A** parts.

Note : The pictures show model SL-S320.



The parts enclosed in the dotted boxes are supplied as a block assembly. Therefore, they are not supplied separately except parts indicated with Ref. No.

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

Ref. No.	Part No.
①	RFKXPG671

# Replacement Parts List (Cabinet, Packing, Accessories and Grease or Jig/Tool)

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

 Components identified by  $\Delta$  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 manufacturer's specified parts shown in the parts list.

\* The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)

Parts without these indications can be used for all areas.

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

\* [M] indicates in Remarks columns parts that are supplied by MESA.

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS		A2	RFEA403Z-S	AC ADAPTOR	[M] (GC) $\Delta$
				A2	RFEA403A-S	AC ADAPTOR	[M] (GN) $\Delta$
				A3	RFEV133P-KS	STEREO EARPHONES WITH R. C.	[M]
1	RKK0102-K	BATTERY COVER	[M]	A4	RQA0117	WARRANTY CARD	[M] (E, EB, EG)
2	RJF0029	LCD HOLDER	[M]	A4	RQX7433ZA	WARRANTY CARD	[M] (GN)
3	RGV0200-H	EXTRA ANTI-SHOCK KNOB	[M]	A5	RQCB0169	SERVICENTER LIST	[M]
4	RGV0200-K	XBS/PLAY MODE/HOLD KNOB	[M]	A6	RFKFP3GAVE2S	RECHARGEABLE BATTERY ASS'Y	[M]
5	RJC93020	COMMON BATTERY TERMINAL	[M]	A6-1	RFKNLS370-K	BATTERY CARRYING CASE	[M]
6	RFKJLS320E-S	BOTTOM CABINET ASS'Y	[M] SL-S320 (E, EG) ONLY	A7*	RKB205ZA-0	EAR PADS	[M]
6	RFKJLS320EBS	BOTTOM CABINET ASS'Y	[M] SL-S320 (EB) ONLY	A8	SJP5213-2	POWER PLUG ADAPTOR	[M] (GC) $\Delta$
6	RFKJLS320GCS	BOTTOM CABINET ASS'Y	[M] SL-S320 (GC) ONLY			<SL-S318 ONLY>	
6	RFKJLS320GNS	BOTTOM CABINET ASS'Y	[M] SL-S320 (GN) ONLY			PACKING MATERIAL	
6	RFKJLS318E-S	BOTTOM CABINET ASS'Y	[M] SL-S318 ONLY				
6-1	RKA0063-K	FOOT	[M]	P1	RPK0910	PACKING CASE	[M]
7	RMA0677	REAR ORNAMENT	[M]	P2	RPQ0752	PAD	[M]
8	RYF0443D-S	CD COVER ASS'Y	[M] SL-S320 ONLY	P3	RPF0046	PROTECTION BAG (F. B.)	[M]
8	RYF0443G-S	CD COVER ASS'Y	[M] SL-S318 ONLY	P4	RPF0111	PROTECTION BAG (UNIT)	[M]
9	RYK0718D-K	INTERMEDIATE CABINET ASS'Y	[M]			ACCESSORIES	
9-1	RGU1494-K	OPERATION BUTTON (A)	[M]				
9-2	RGU1495-K	OPERATION BUTTON (B)	[M]	A1	RQT3749-E	INSTRUCTION MANUAL	[M] <IA>
9-3	RKWO495-Q	LCD PANEL	[M]	A1	RQT3750-R	INSTRUCTION MANUAL	[M] <IB>
9-4	RME0241	OPEN SPRING	[M]	A1	RQT3751-D	INSTRUCTION MANUAL	[M] <ID>
9-5	RML0472	STOPPER ANGLE	[M]	A1	RQT3752-H	INSTRUCTION MANUAL	[M] <IE>
10	XTN17-6GFZ	SCREW	[M]	A1	RQT3983-J	INSTRUCTION MANUAL	[M] <IF>
11	RAE0142Z	TRAVERSE DECK	[M] $\Delta$	A2	RFEV133P-KS	STEREO EARPHONES WITH R. C.	[M]
11-1	RMG0449-H	FLOATING RUBBER	[M]	A3	RQA0117	WARRANTY CARD	[M]
		<SL-S320 ONLY>		A4	RQCB0169	SERVICENTER LIST	[M]
		PACKING MATERIAL		A5*	RKB205ZA-0	EAR PADS	[M]
						<GREASE OR JIG/TOOL>	
P1	RPK0856	PACKING CASE	[M]			TEST DISC	
P2	RPQ0753	PAD	[M] (E, EB, EG, GN)	SA1	SZZP1054C	PLAYABILITY TEST DISC	[M]
P2	RPQ0683	PAD	[M] (GC)	SA2	SZZP1056C	UNEVEN TEST DISC	[M]
P3	RPF0046	PROTECTION BAG (F. B.)	[M]			GREASE	
P4	RPF0111	PROTECTION BAG (UNIT)	[M]				
		ACCESSORIES		SA3	RFKXPG671	MOLYCOAT GREASE PG671	[M]
A1	RQT3749-E	INSTRUCTION MANUAL	[M] (E, GC) <IA>			<PRINTED CIRCUIT BOARDS	
A1	RQT3750-R	INSTRUCTION MANUAL	[M] (E) <IB>			ASS'Y>	
A1	RQT3747-B	INSTRUCTION MANUAL	[M] (EB, GN) <IC>	PCB1	REP2490H-M	MAIN P. C. B. ASS'Y	[M] <RTL>
A1	RQT3751-D	INSTRUCTION MANUAL	[M] (EG) <ID>				
A1	RQT3752-H	INSTRUCTION MANUAL	[M] (EG) <IE>				
A1	RQT3983-J	INSTRUCTION MANUAL	[M] (EG) <IF>				
A1	RQT3748-K	INSTRUCTION MANUAL	[M] (GC) <IG>				
A2	RFEA401E-3S	AC ADAPTOR	[M] (E, EG) $\Delta$				
A2	RFEA404B-1W	AC ADAPTOR	[M] (EB) $\Delta$				

**Notes:** • “<I> ~ <I>” marks in Remarks indicate language of instruction manual.

[ <IA>: English/ Spanish, <IB>: Russian/ Swedish, <IC>: English, <ID>: German/ Italy, <IE>: French/ Dutch, <IF>: Danish, <IG>: Chinese ]

- \*: This item is not attacked merchandise, but it is supplied as a replacement part.
- The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.

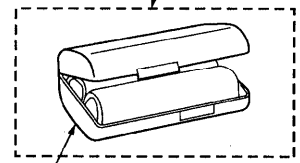
### ■ Supply of Rechargeable Battery Ass'y as Replacement Parts (SL-S320 only)

Please take note of the following points relating to Battery Carrying Case to be used for protection of Rechargeable Battery Ass'y from shorting.

### Replacement Parts:

- Rechargeable Battery Ass'y (RFKFP3GAVE2S) to be supplied will be provided with Battery Carrying Case (RFKNLS370-K).
- No replacement parts will be supplied for Rechargeable Battery Ass'y without Battery Carrying Case.
- Replacement parts will be supplied for Battery Carrying Case (RFKNLS370-K) without Rechargeable Battery Ass'y.
- To your customers, delivery Rechargeable Battery Ass'y together with Battery Carrying Case to prevent shorting accidents that may occur when Rechargeable Battery Ass'y is carried about without Battery Carrying Case.

Rechargeable Battery Ass'y  
(Rechargeable Batteries with Carrying Case)  
(RFKFP3GAVE2S) /

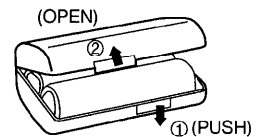


Battery Carrying Case (RFKNLS370-K)

## ■ Caution in Use of Rechargeable Battery Ass'y (SL-S320 only)

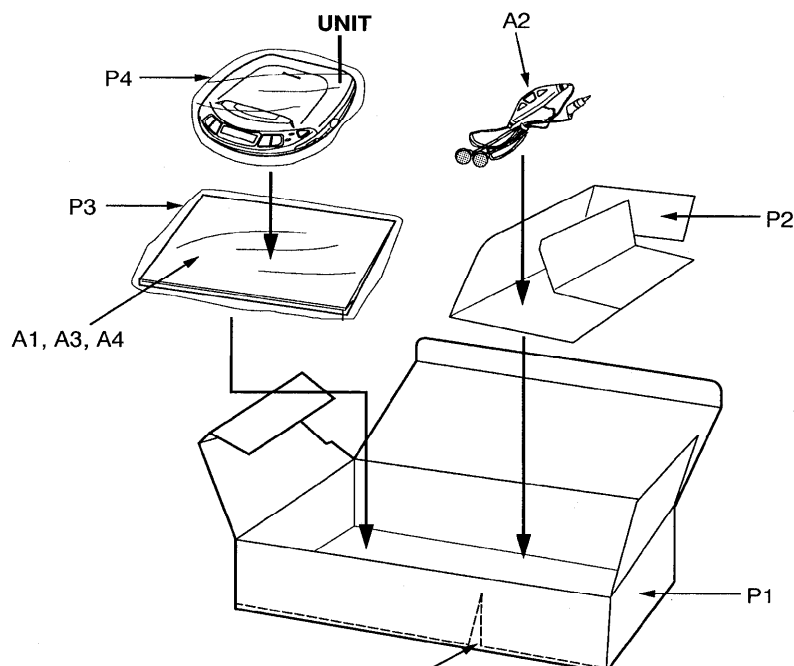
- Take Rechargeable Battery Ass'y out of Battery Carrying Case and use it.
- Be sure to carry Rechargeable Battery Ass'y in this Battery Carrying Case.

If not, it may either heat or ignite by shorting with a metal.



## ■ Packaging

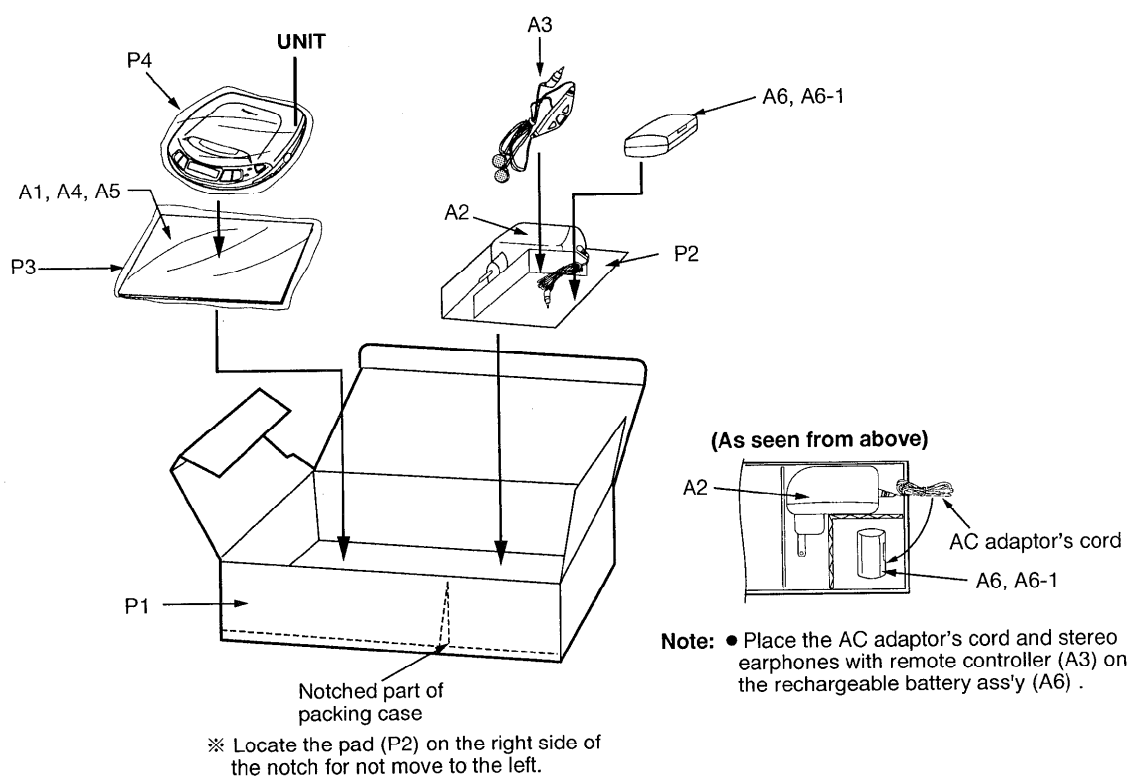
- For SL-S318 (E) only



Notched part of  
packing case

※ Locate the pad (P2) on the right side of the notch for not move to the left.

● For SL-S320 (E, EB, EG, GN) only



● For SL-S320 (GC) only

