ORDER No. AD9902006C3

Service Manual

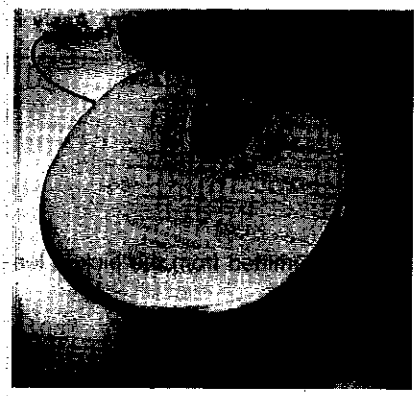
Portable CD Player

COMPACT disc DIGITAL AUDIO

MASH multi-stage noise shaping

※ • MASH is a trademark of NTT.

SL-SX410



Colour

(S).....Silver Type

Area

GH.....Hong Kong

Specification

■ **Audio**

No. of channels:	2 (left and right, stereo)
Frequency response:	20 to 20,000 Hz (+0.5dB, -1.5dB)
Output voltage:	0.6 V (50kΩ)
S/N:	More than 96 dB*
Wow and flutter:	Below measurable limit
DA converter:	1 bit, MASH
Headphones output level:	Max. 9mW+9mW/16Ω (variable)

■ **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**

Power source	**Anti-shock off/on**
When using AC adaptor	2.8W/3.0W
When recharging:	Approx. 5.4W

● **Play time**

(When used in hold mode, at 25°C, on a flat, stable surface)

Batteries used	**ANTI-SHOCK off/on**
2 Alkaline batteries (LR6)	About 21h/About 27h
2 Alkaline batteries (LR03)	About 8.5h/About 11h
Rechargeable batteries	About 5.5h/About 7h
4 Alkaline batteries	About 32h/About 41h
2 Rechargeable and 2 Alkaline batteries	About 27h/About 34h

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

Recharging time:	About 3h
Dimensions (WxHxD):	128x21.5x131 mm
Weight:	191g (with batteries)
	169g (without batteries)

*These specifications were measured in the 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®

CONTENTS

1 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 µW/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 enthalt eine Laserdiode. Im eingeschalteten Zustand wird unsichtbare Leserstrahlung von der Lasereinheit abgestrahlt.

Wellenlage: 780 nm

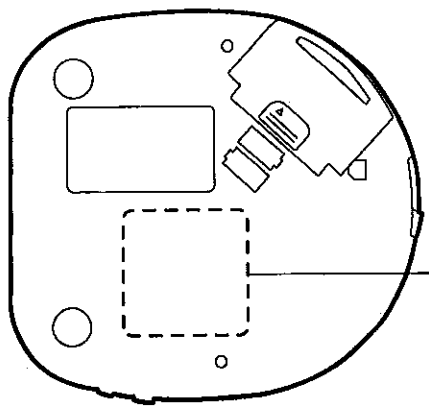
Maximale Strahlungsleistung der Lasereinheit: 100 µW/VDE

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

1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefahrlich ist.
2. Den werkseitig justierten Einstellregler der Lasereinhit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlines blicken.
4. Nicht uber langere Zeit in die Fokussierlines blicken.

ADVARSEL: I dette a apparat anvendes laser.

[Bottom side]



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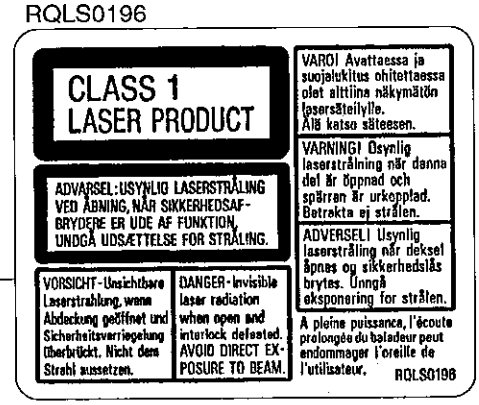
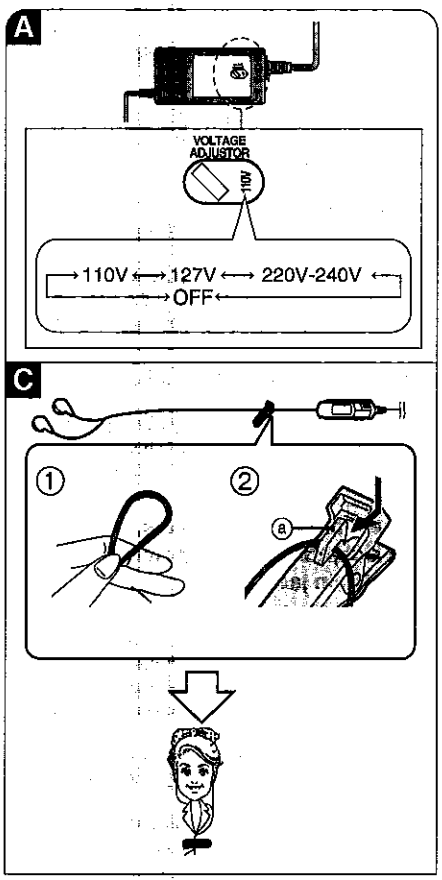
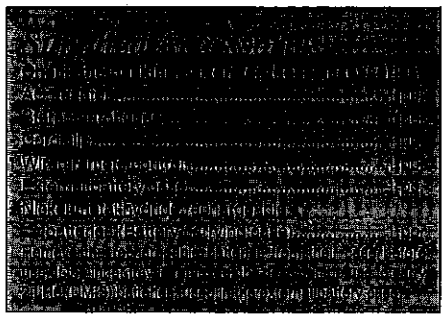


2 Operating Instructions





AC adaptor

Before use

Make sure the voltage of the AC adaptor suits 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 supply in your area is 115 V or 120 V, please set VOLTAGE ADJUSTOR as follows:

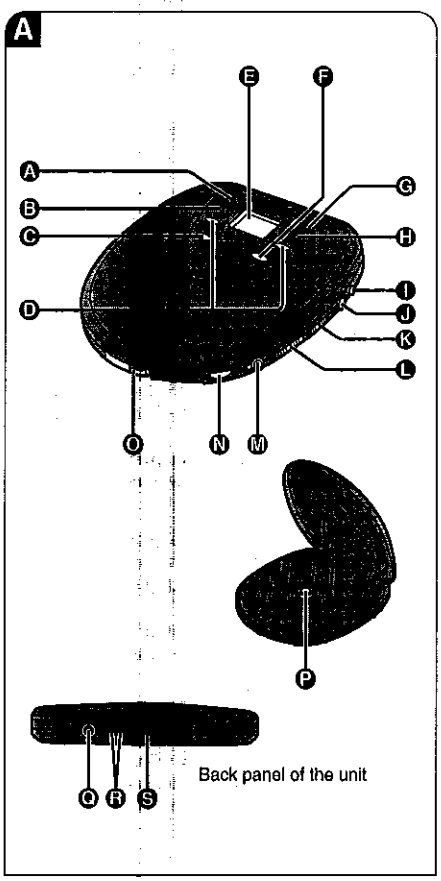
- For 115 V: set to 110 V
- For 120 V: set to 127 V

Attaching the cord clip C

① **Loosely loop the earphone cord.**
② **Fit it firmly into the clip's holder.**
ⓐ Holder

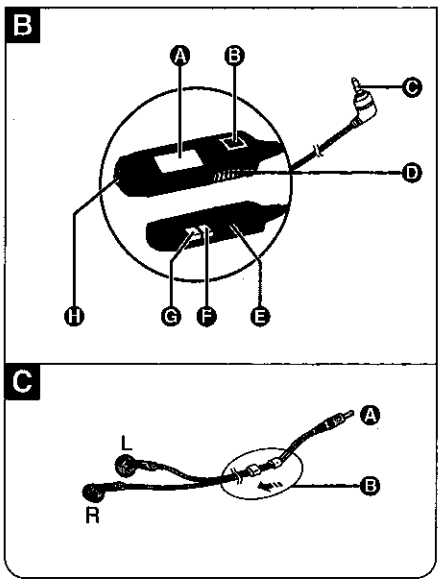
Use the clip to keep the cord from tangling.

> Do not slide the clip up and down the cord as this may damage the cord.



Portable CD player A

- **Ⓐ EQ button (EQ)**
- **Ⓑ Memory/recall button (MEMORY/RECALL)**
- **Ⓒ Stop/operation off button (■, POWER OFF)**
- **Ⓓ Skip/search buttons (|◀◀, ▶▶| ◀◀, ▶▶)**
- **Ⓔ Display**
- **Ⓕ Play/pause button (▶ ❚❚)**
- **Ⓖ Anti-shock button (A.SHOCK)**
- **Ⓗ Repeat button (REPEAT)**
- **Ⓘ Out jack (OUT)**
- **Ⓙ Optical digital out jack (OPT OUT)**
- **Ⓚ Hold switch (HOLD)**
- **Ⓛ Play mode selector (RESUME, NORMAL, RANDOM)**
- **Ⓜ Headphone jack (∩)**
- **Ⓝ Headphones volume control (VOLUME)**
- **Ⓞ Open switch (OPEN)**
- **Ⓟ CD release button (PUSH)**
- **Ⓠ DC in jack (⟐-ⓒ-⟐ DC IN 4.5 V)**
- **Ⓡ Connection terminal for external battery case**
- **Ⓢ Hole for car insulator mounting screw/external battery case**

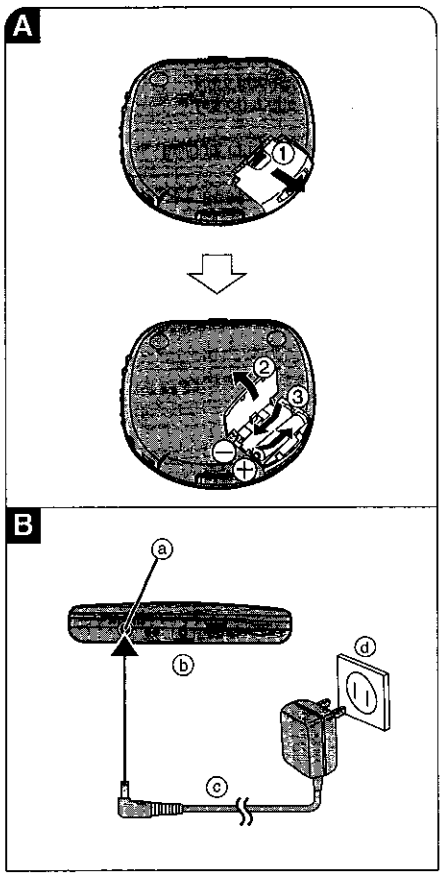


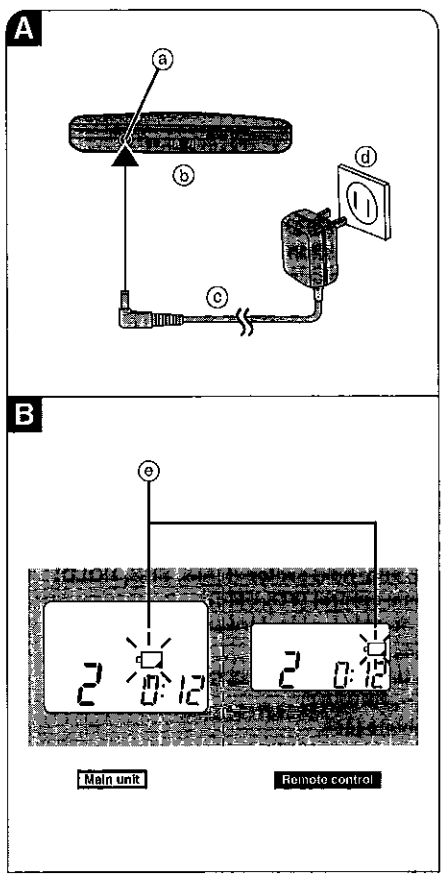
Wired remote control B

- **Ⓐ Display**
- **Ⓑ Play/stop/off button**
- **Ⓒ Plug**
- **Ⓓ Main, sub, hold switch (MAIN, SUB, HOLD)**
- **Ⓔ Volume control (VOLUME)**
- **Ⓕ Fast forward, skip forward/equalizer button (+, EQ)**
- **Ⓖ Fast backward, skip backward/repeat button (−, REPEAT)**
- **Ⓗ Earphone jack**

Stereo earphones C

- **Ⓐ Plug**
- **Ⓑ Slider**





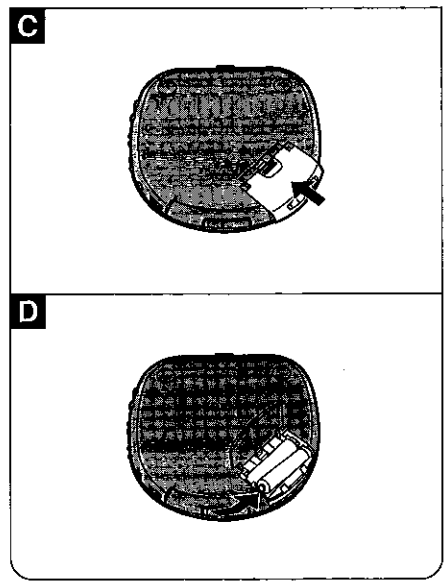
Power supply Preparations

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

Using rechargeable batteries

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.

- Supplied batteries (HHR4AHBA1 or HHR4AHEBA1)
- Optional batteries (HHR-4AHT/2B)



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

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

(For areas except China and Hong Kong)
The AC voltage is different according to the area. Be sure to set the proper voltage in your area before use.

When recharging starts, the "C" charging indicator flashes on and off on the display.
When the rechargeable batteries are fully recharged, the charging indicator disappears. (It takes approximately 3 hours to fully recharge the supplied rechargeable batteries.)

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

Note

- 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.
- Recharging may only be performed when the unit is powered off. (It is not possible to recharge the batteries while playing a CD.)
- The AC adaptor and rechargeable batteries may become warm while recharging is in progress. This is not a malfunction.

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.

Power supply Preparations

Using the AC adaptor

Connect the AC adaptor supplied. A

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

Note

- The configuration of the AC adaptor differs according to the area.
- 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 LR03 (UM-4) alkaline batteries.

The procedure for inserting and removing dry-cell batteries is identical to that for rechargeable batteries.

Battery indicator B

ⓔ 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.

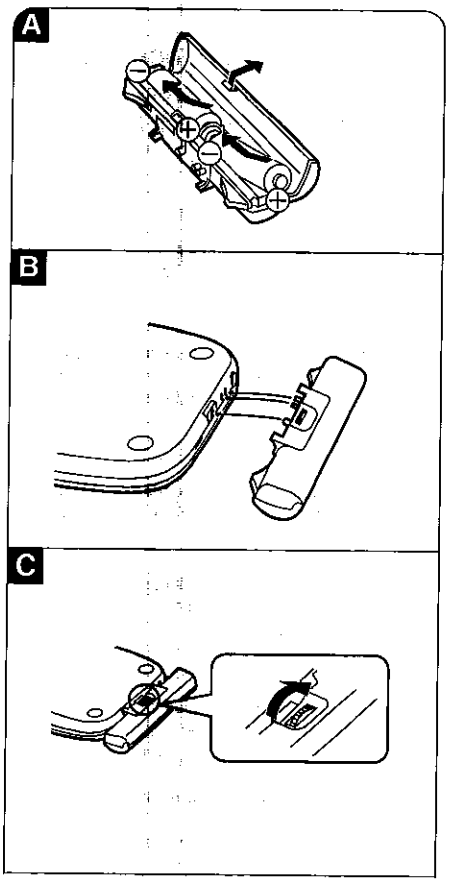
Rechargeable batteries: Recharge batteries.
Dry-cell batteries: Replace batteries with new ones.

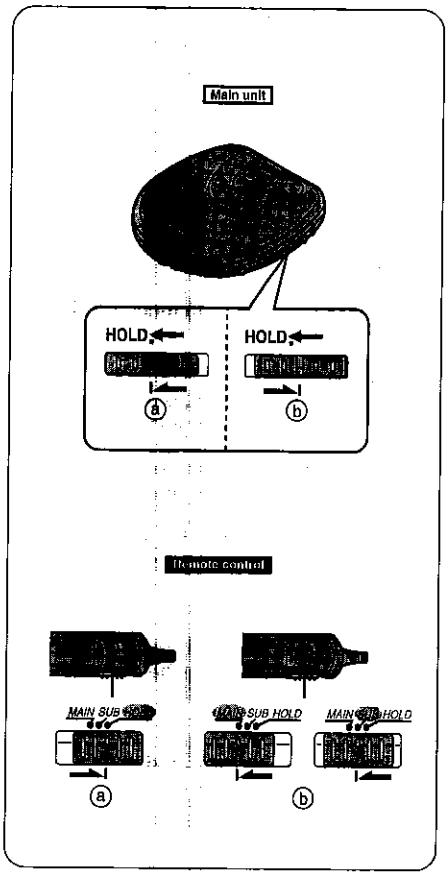
Note

- 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 be displayed 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.





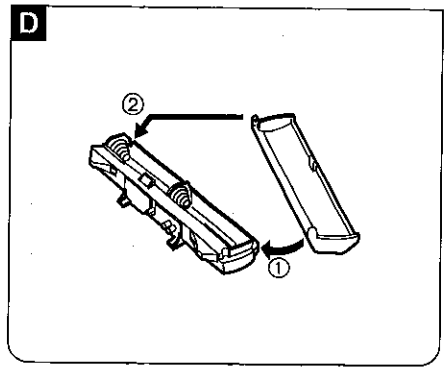
Using the external battery case

The external battery case allows you to extend the maximum playing time of the unit by loading an additional two LR6 (UM-3) alkaline batteries.

1 Open the cover of the external battery case and insert the batteries. A
Insert the end marked (–) first.

2 Mount the external battery case on the unit body. B
Insert the protrusions on the external battery case into the 3 indentations in the unit body.

3 Secure in place with the screw. C
Reverse the above procedure to remove the external battery case.



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

ⓐ HOLD mode
ⓑ Release

The unit and wired remote control have HOLD function, each of which works independently.

"hold"/"HOLD" indication

Main unit
When the unit is in hold status, pressing any 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.

Remote control
When the remote control is in hold status, pressing any button causes the indication "HOLD" to appear on the display.
When the unit is powered off, the "HOLD" indication appears only when the play/stop/off button is pressed.

For your reference:

- The player can be powered by the batteries in the external battery case alone no batteries need to be loaded in the player.
- The maximum playing time will differ depending on the type of batteries (rechargeable/dry-cell) loaded in the unit body.

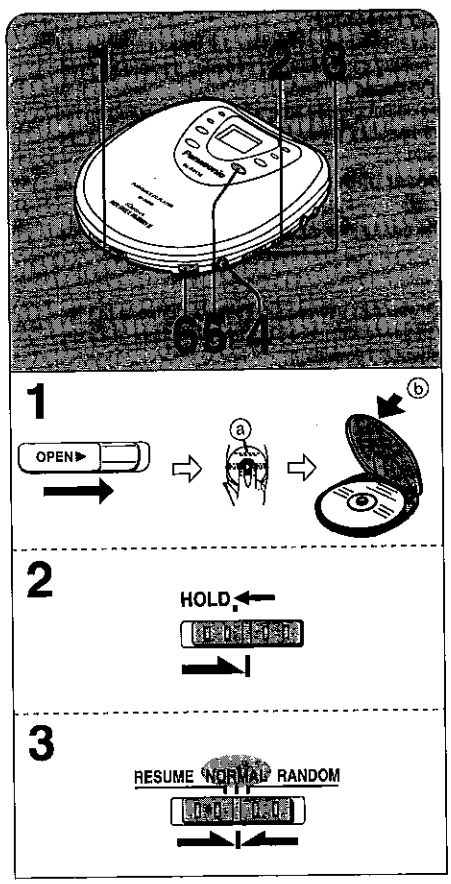
If the cover of the external battery case comes loose: D

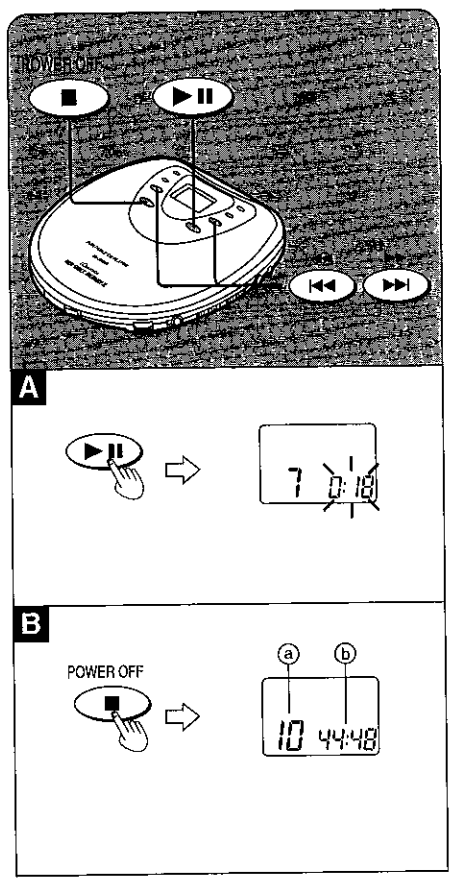
Insert the protrusions into the holes on either end of the lid.

Note

- Though you can use rechargeable batteries in the external battery case, it does not recharge them. (Use dry cell batteries if possible.)
- If rechargeable batteries and dry-cell batteries are used together, make sure to use fully charged rechargeable batteries and new dry-cell batteries.
- When using four dry-cell batteries, do not mix new and old batteries.

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.



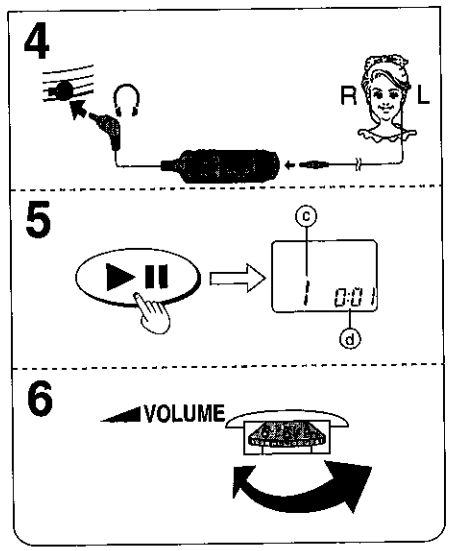


Sequential Play

Basic Play

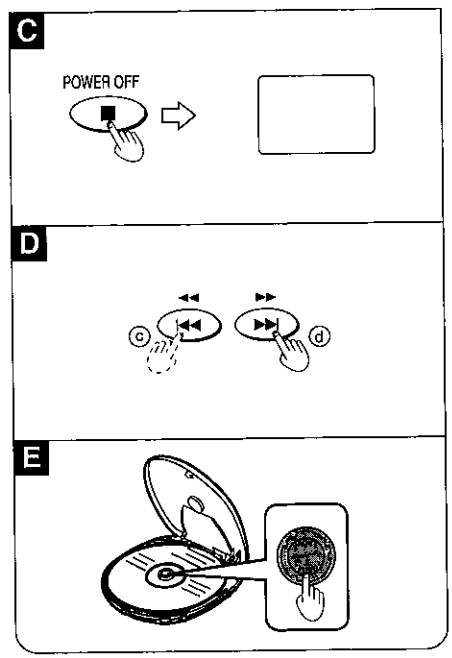
1 Slide [OPEN] to open the lid, and insert the disc.

ⓐ Label must face upward.
Press the area near the center hole of the disc until it clicks into position.
ⓑ Close the lid.



Sequential Play Basic Play

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



2 Release the hold mode.

3 Set play mode selector to [NORMAL].

4 Connect the wired remote control and the stereo earphones to the [🎧] jack.
(Plug in firmly.)

5 Press [▶ ❚❚].
Play now starts.
ⓒ Track number in play
ⓓ Elapsed playing time of each track
Play stops automatically when all the tracks have been played.

6 Adjust the volume level.
(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.)

For your reference:

"no dISC" indication
This indication appears for about 30 seconds if [▶ ❚❚] is pressed when no disc is loaded in the unit or if the disc is not completely seated.

"OPEN" 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.
(If no disc is loaded in the unit, it powers itself off in about 30 seconds.)

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

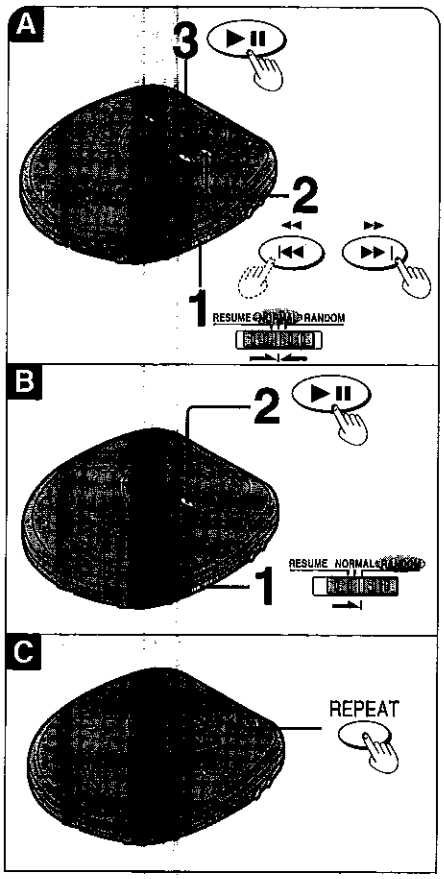
To turn off the unit Off mode C
Press during stop mode.

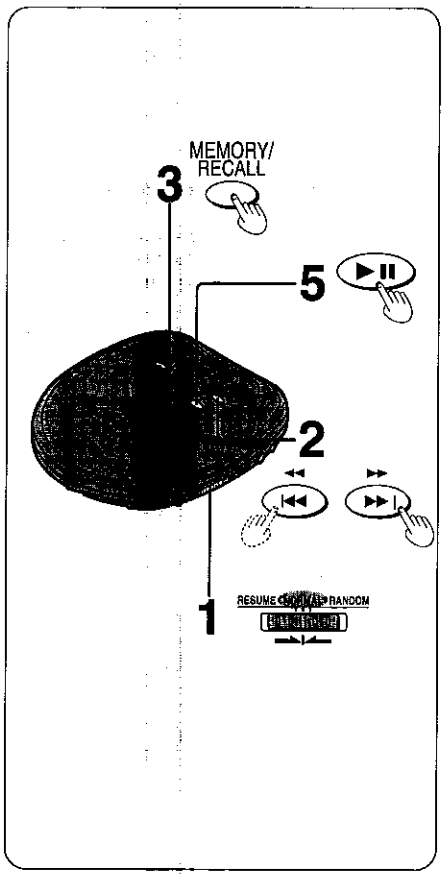
Skip forward/backward (skip function) D
Press during play.
ⓒ Backward direction
ⓓ Forward direction

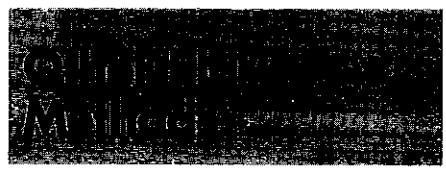
Rapid forward/backward (search function) D
Press and hold during play.
ⓒ Backward direction
ⓓ Forward direction
- During program play, these buttons are used to skip forward or back through the programmed sequence of tracks.
- During random play, the skip buttons cannot be used to skip back to tracks 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.







Skip play A

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

Preparation: Put unit in stop mode.

Follow steps 1–3.

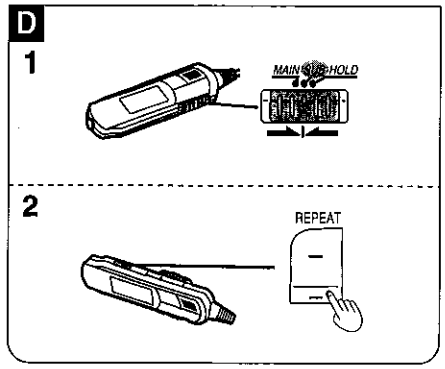
In step 2, select the desired track.

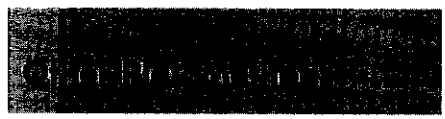
Random play B

Follow steps 1–2.

To cancel the random mode

Set play mode selector to [NORMAL].





Program play

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

Preparation: Put unit in stop mode.

Follow steps 1–5.

1. **Set play mode selector to [NORMAL].**
2. **Select the desired track.**
3. **Register in sequence.**
   (The indication "M" and the programmed sequence appear on the display panel.)
4. **Repeat step 2 and 3 to program all the desired tracks.**
5. **Press [▶ II].**

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

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

■ **If "$\mathcal{F}$" is displayed**

No more tracks may 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].

For your reference:

- It is also possible to press [▶▶|] 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.

Repeat function C

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 ——— (back to start)

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.)

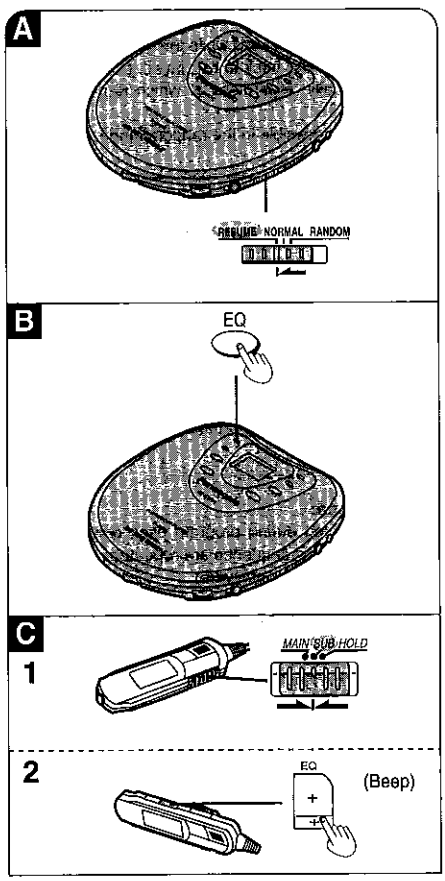
Remote control D

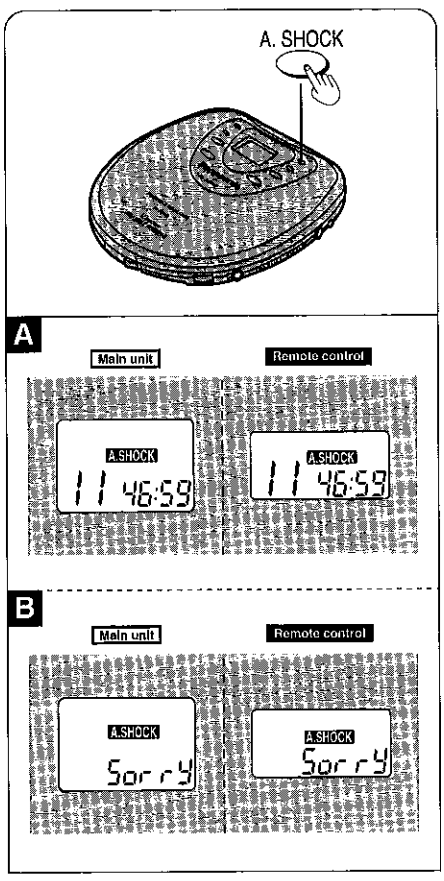
1. **Set the switch to [SUB].**
2. **Press [–, REPEAT] while disc is playing or when unit is in stop status.**
   The setting is switched in the sequence indicated below each time [–, REPEAT] is pressed.

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

Note

When the [–, REPEAT] is operated, the sound will be interrupted for an instant. This is normal and not indicative of a malfunction.





Other Play Methods

Resume play A

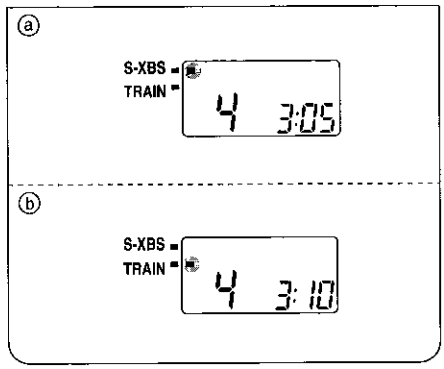
This function allows you to listen from the beginning of the track where play stopped because the unit was powered off (or switched to stop status). It is useful when listening to CDs in the car, etc.

To cancel the resume mode

Set play mode selector to [NORMAL].

For your reference:

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



Anti-Shock Function

Anti-shock works by reading audio data and storing it in memory (up to 10 seconds worth). The unit then fills in interruptions caused by bumps and vibrations with data from the memory. This unit also incorporates a powerful anti-shock mechanism that prevents skipping caused when play speed is changed by swinging of the unit.

Press [A.SHOCK] during play or stop mode.

The indicator appears on the display panel. A

When bumps continue repeatedly

The indicator appears on the display and sound is interrupted. B

To cancel anti-shock function

Press [A.SHOCK] again.

Optical digital out jack cannot be used when the anti-shock function is on.

Note

- The [A.SHOCK] setting can be changed during play, but this may cause a slight interruption in the sound because the disc's rotation speed changes.
- During the anti-shock operation, the disc rotates at a higher rate than usual in collecting extra audio data. This could result in a slight increase in disc rotation noise.
- 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.

Changing the sound quality B

Press [EQ] while disc is playing or when unit is in stop status.

The setting is switched in the sequence indicated below each time [EQ] is pressed.

S-XBS ← ↓ TRAIN ↓ Cancel ←

S-XBS:
Select this setting to boost the low-range response.
TRAIN:
Select this setting to avoid annoying other passengers with noise from your earphones while riding on the train, or to reduce fatigue when listening for a long period of time.

Note

The sound quality setting does not affect the output from the [OPT OUT] (optical digital output) jack.

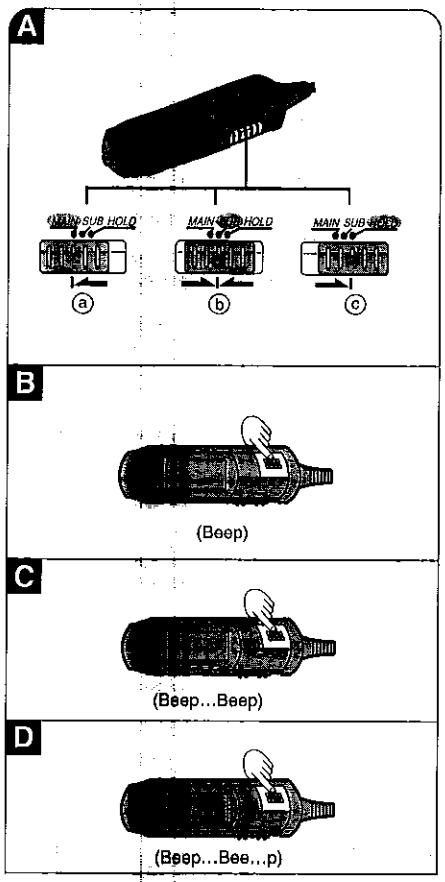
Remote control C

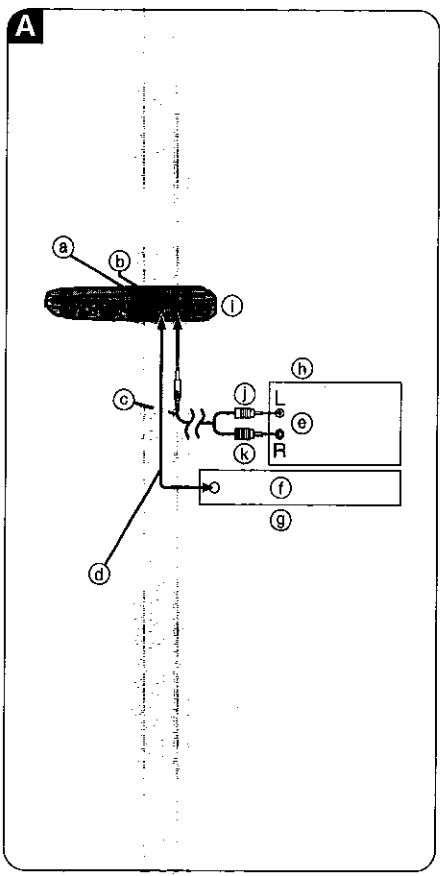
1. **Set the switch to [SUB].**
2. **Press [+, EQ] while disc is playing or when unit is in stop status.**
   The setting is switched in the sequence indicated below each time [+, EQ] is pressed.

ⓐ S-XBS ← ↓ ⓑ TRAIN ↓ Cancel ←

Listening to sound with the unit connected to an audio system

The anti-shock function incorporates digital signal compression technology. It is recommended that the anti-shock function be canceled if the unit is connected to a home audio system.





Using the remote control

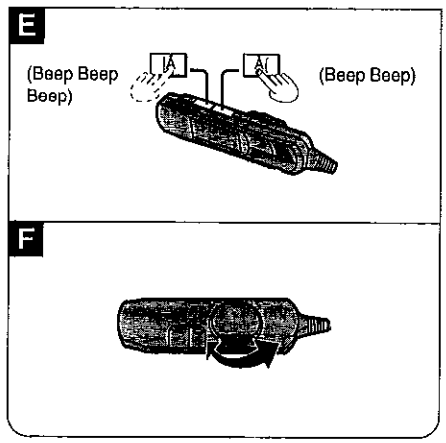
■ Before using the remote control A

The function of the remote control depends on the position of the switch

ⓐ **When switched to [MAIN]:**
Basic operation can be performed.

ⓑ **When switched to [SUB]:**
The repeat function can be controlled.
Sound quality can be changed.

ⓒ **When switched to [HOLD]:**
The hold function is on. (Release hold function before use.)



■ Operation confirmation tones

This tone sounds when a button on the remote control is pressed. Refer to the parentheses in the illustration for the different types of confirmation tones.

Basic operation

Preparation:
Set the switch to [MAIN].

To start play B
Press once during off or stop mode.

To stop play C
Press once during play.

To turn off the unit D
Press and hold during play or stop mode.

Skip forward/backward E
Press during play.

+: Forward direction

−: Backward direction

Rapid forward/backward E
Press and hold during play.

To adjust the volume F
When adjusting the volume using the remote control, **position the volume control on the unit to between 4 and 6.**

Other operations

Controlling the repeat function with the remote control

Changing sound quality with the remote control

Using the unit with an audio system A

Using a stereo connection cable (not included), you can listen to 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.

ⓐ [OPT OUT] jack
ⓑ [OUT] jack
ⓒ Stereo connection cable (not included)
ⓓ Optical cable (not included)
ⓔ To CD or AUX terminals
ⓕ To optical digital in jack
ⓖ MD recorder etc. ⓗ Amplifier
ⓘ Side panel of the unit
ⓙ (White) ⓚ (Red)

Note

- Sound quality changes when S-XBS or TRAIN is selected, but volume is reduced by approximately fifty percent.
- To use the player with an optical cable, use the AC adaptor and check that the anti-shock function is off. Operation is not possible when rechargeable batteries or dry cell batteries are used to power the player.

Using the unit with a car audio stereo system

Items to be purchased

For connection to the car audio system:
Car stereo cassette adaptor (SH-CDM10A)

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 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

- Only the HHR4AHBA1, HHR4AHEBA1, HHR-4AHT/2B 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.
- 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.

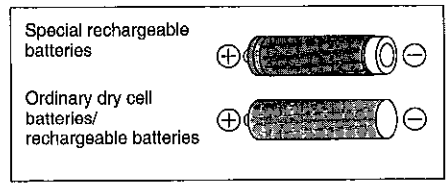
Do not leave the unit exposed to direct sunlight for long periods of time.
This may deform or discolor the cabinet and may also cause malfunctioning.

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 batteries designed especially for this unit.
Special Nickel-metal hydride rechargeable batteries: HHR-4AHT/2B (set of 2)
For details, check with your dealer.



Troubleshooting Guide

Before requesting service for this unit, check the chart below for a possible cause of the problem you are experiencing. Some simple checks or a minor adjustment on your part may eliminate the problem and restore proper operation. If you are in doubt about some of the check points, or if the remedies indicated in the chart do not solve the problem, refer to the directory of Authorized Service Centers (enclosed with this unit) to locate a convenient service center, or consult your dealer for instructions.

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 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) selector in the [NORMAL] position?
Cannot hear music—too noisy.	• Has earphones and the wired remote control plug been inserted as far as it will go? • Are the plugs dirty? (Wipe away dirt on plug)
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.)

Maintenance

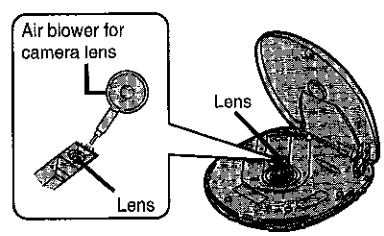
Maintaining the unit

Wipe the unit with a soft cloth. Remove stubborn dirt using a cloth which has been dipped in water or soapy water and wrung out, and then wipe dry.

- If you intend to use a chemical cleaning cloth, read its directions first.
- Do not use alcohol or paint thinners.

Maintaining the lens

Open the lid and clean the lens as shown in the figure.
Use a cotton swab to gently wipe off any finger-prints.
Recommended product: Lens cleaner kit (SZZP1038C)



3 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).

3.1. Handling the traverse deck (optical pickup)

1. The traverse deck (optical pickup) is an extremely high-precision construction and must not be subjected to impact, excessive vibration, or other types of rough handling.
2. In order to prevent static electricity damage to the laser diode, use a short pin or similar tool to short the optical pickup's flexible circuit boards after they have been disconnected from the main circuit board.
3. Handle the flexible circuit boards with care; excessive force could cause them to be broken.
4. Do not turn the pre-set variable resistor (for adjustment of the laser power); it has been adjusted at the factory. (as shown in **Fig. 1**)

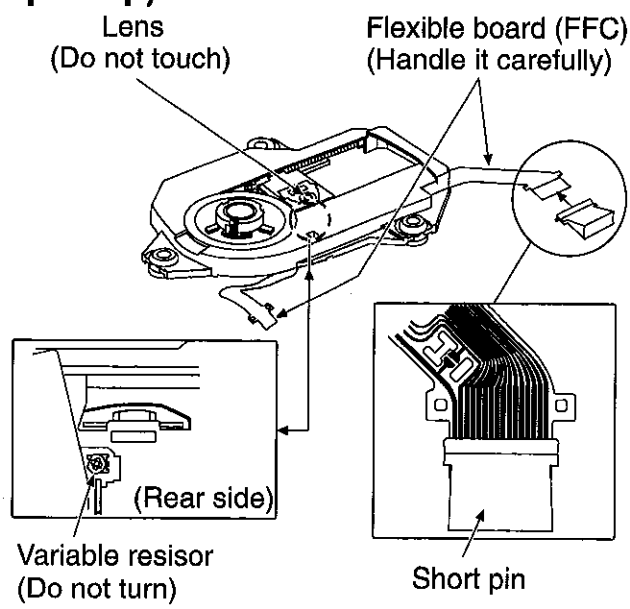


Fig. 1

3.2. 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. (as shown in **Fig. 2**)

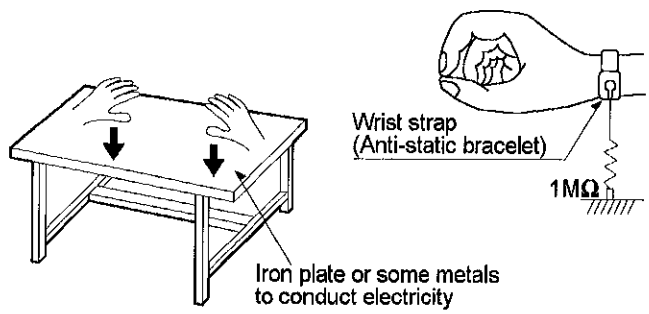


Fig. 2

Caution:

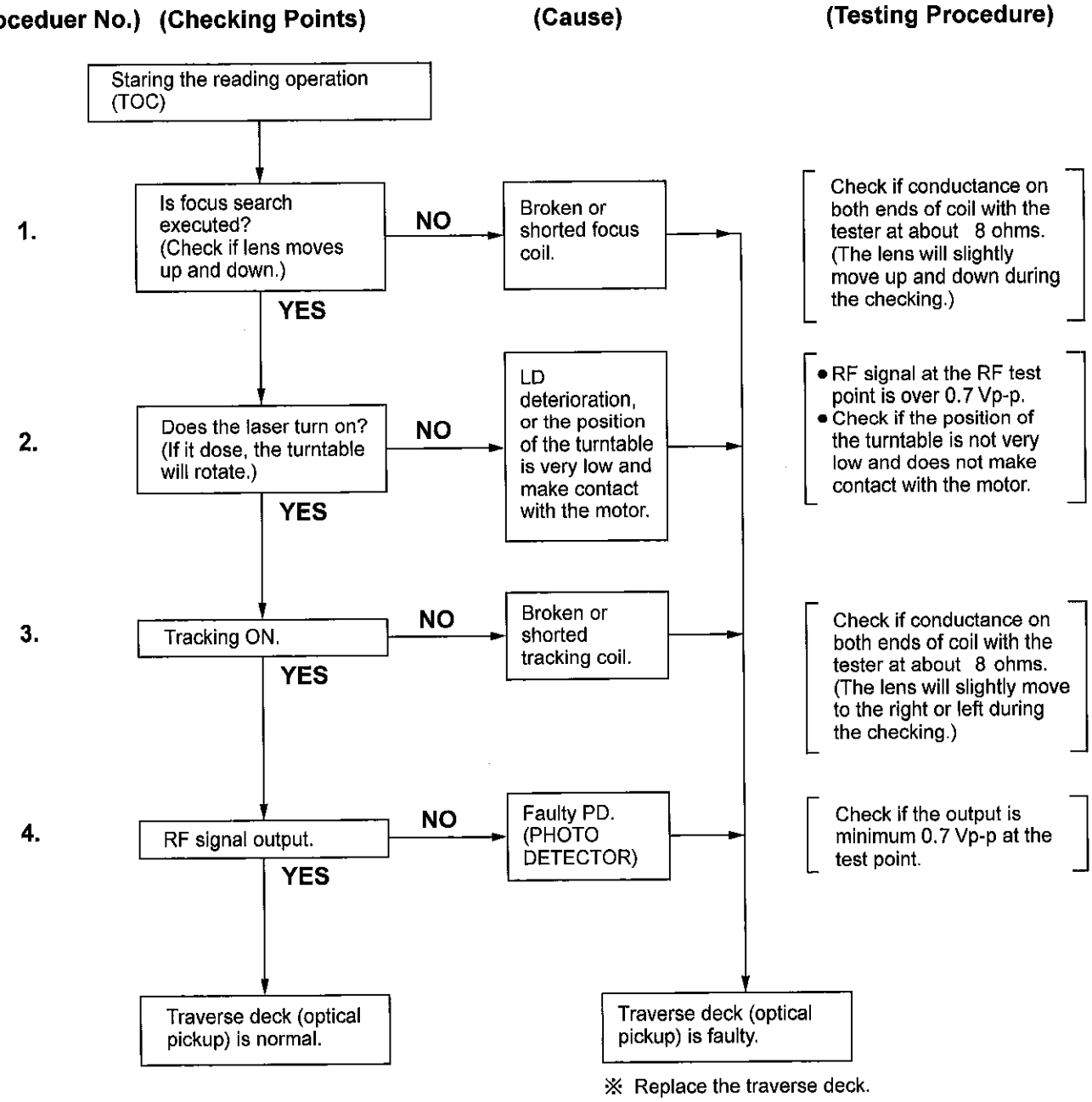
The static electricity of your clothes will not be grounded through the wrist strap.

So, take care not to let your clothes touch the traverse deck (optical pickup).

4 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 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

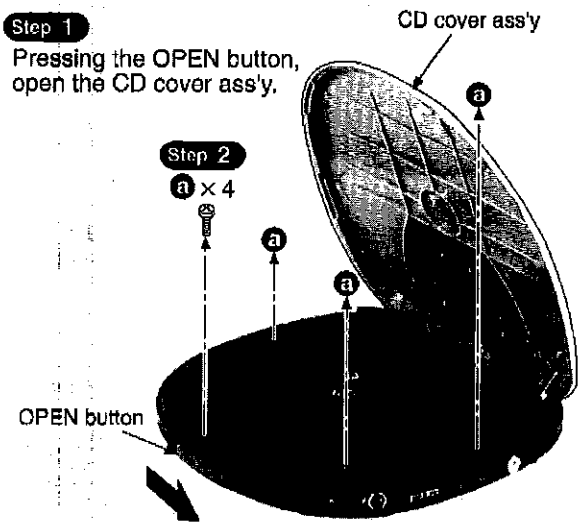
1. Play the 0.7 mm black dot and the 0.7 mm wedge on the playability test disc (SZZP1054C) and verify that no sound skip or noise occurs.
2. play the middle tracks of the uneven test disc (SZZP1056C) and verify that no sound skip or noise occurs.

5 Operation Checks and Component Replacement Procedures

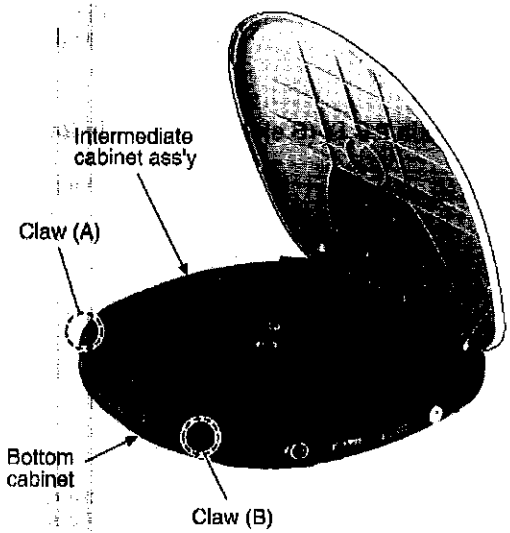
1. **This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.**
2. **For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.**
3. **[ ] indicates parts No.**

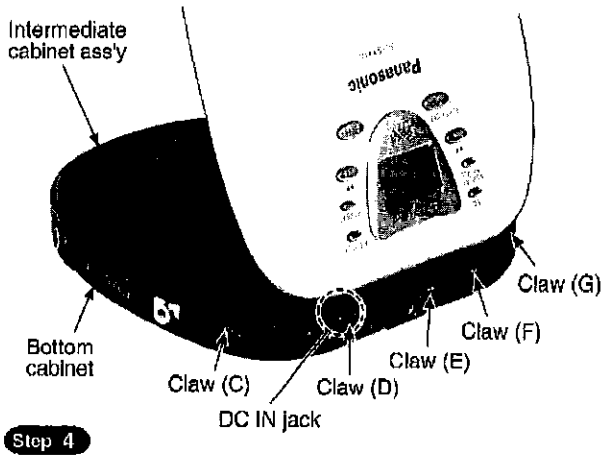
5.1 Checking for the main P.C.B. (A side)

Step 1
Pressing the OPEN button, open the CD cover ass'y.



Step 3
Spread the clearance between the bottom cabinet and intermediate cabinet ass'y manually.



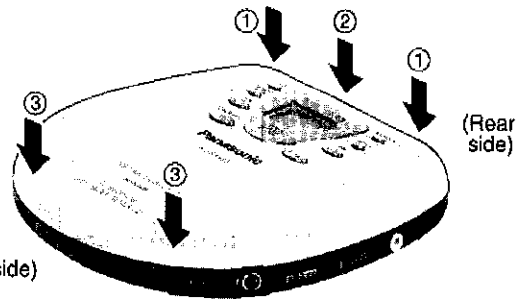


Step 4
Open the clearance between the bottom cabinet and intermediate cabinet ass'y, and then release the claw (C) to claw (G) in turn.

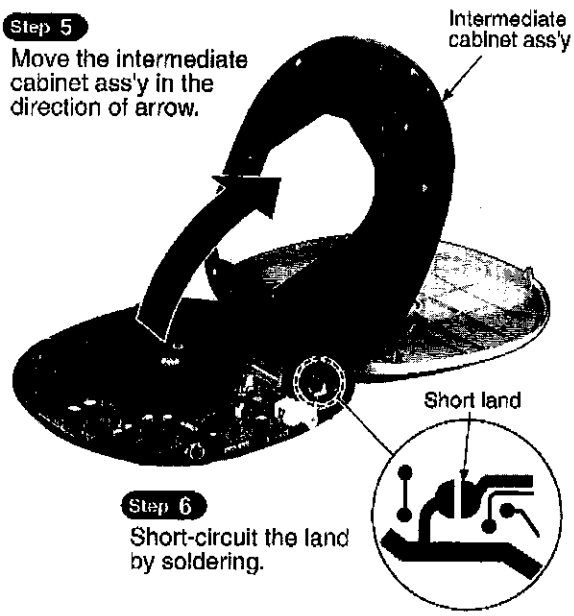
NOTE
Take care not to break the DC IN Jack provided with intermediate cabinet.

■ CD cover ass'y and intermediate reassembly procedure

① Fit together right side and left side of rear part. (Either right or left side)
② Fit together the center of rear part.
③ Fit together the right and left of front part. (Either right or left side)



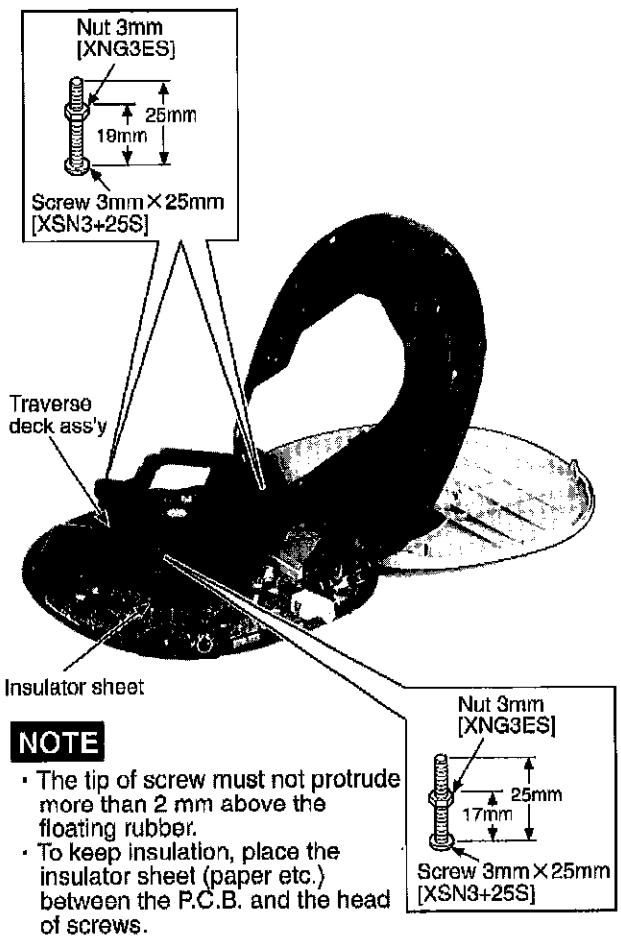
Step 5
Move the intermediate cabinet ass'y in the direction of arrow.



Step 6
Short-circuit the land by soldering.

Step 7

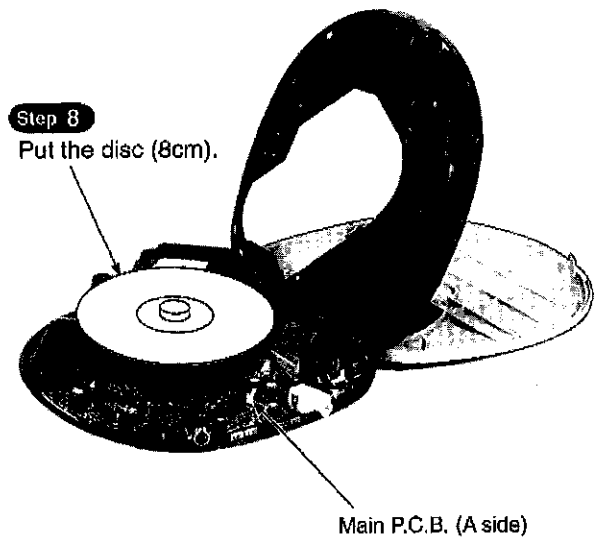
Sustain the traverse deck ass'y with the floating rubber inserted screws and nuts as shown below.



NOTE

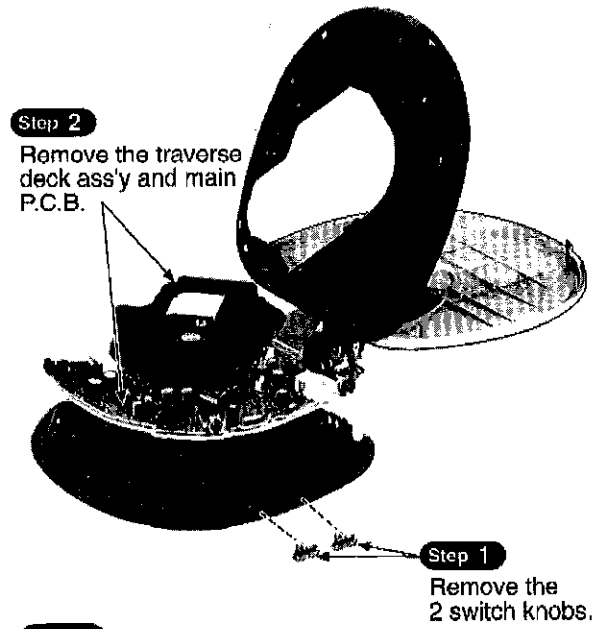
- The tip of screw must not protrude more than 2 mm above the floating rubber.
- To keep insulation, place the insulator sheet (paper etc.) between the P.C.B. and the head of screws.

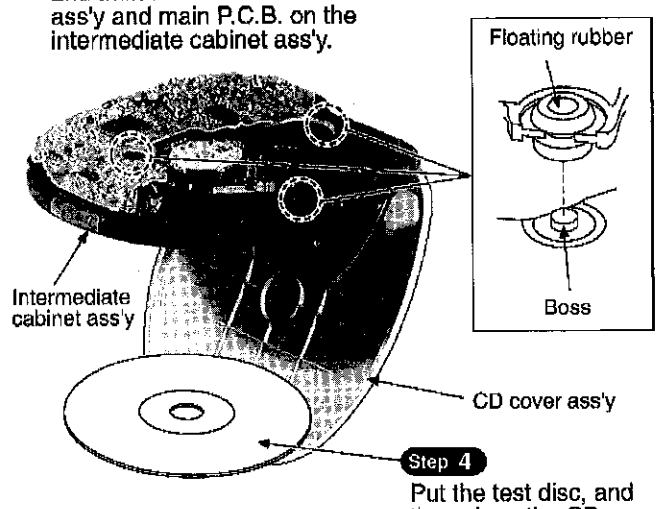
- **Check the main P.C.B. (A side) as shown below.**



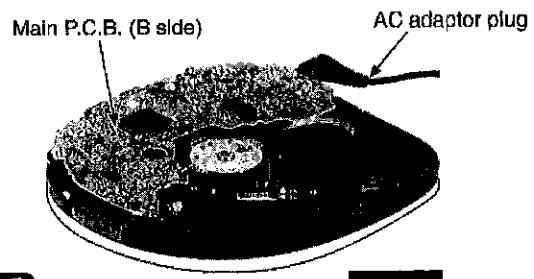
5.2 Checking for the main P.C.B. (B side)

- Follow the Step 1 ~ Step 6 of the item 5.1 in checking for the main P.C.B. (A side).





- **Check the main P.C.B. (B side) as shown below.**



Step 5

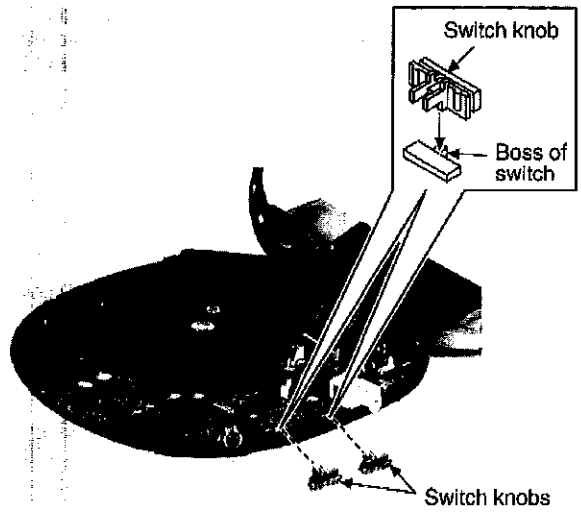
Insert the AC adaptor plug into the DC IN jack, and then apply the power.

NOTE

After checking, unsolder the short land to open circuit.

Notice for installation of switch knobs

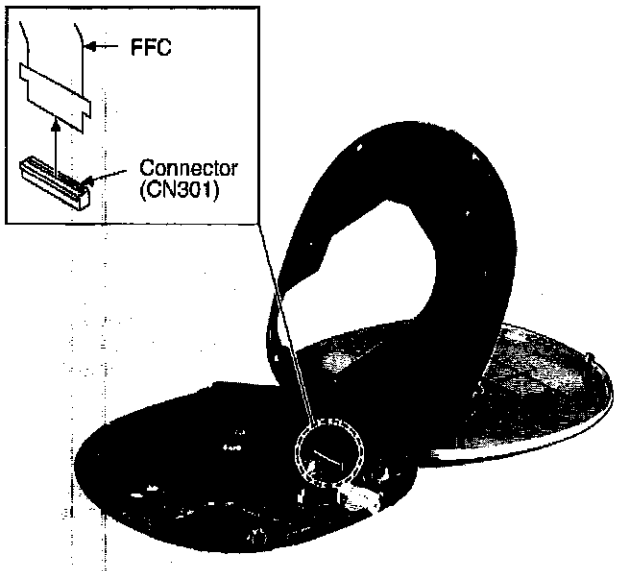
- Make sure the bosses of switch are fit in the switch knobs.



5.3 Replacement for the CD cover ass'y and LCD

- Follow the Step 1 ~ Step 5 of the item 5.1 in checking for the main P.C.B. (A side).
- **Two types of model are supplied : Model type A and model type B.**

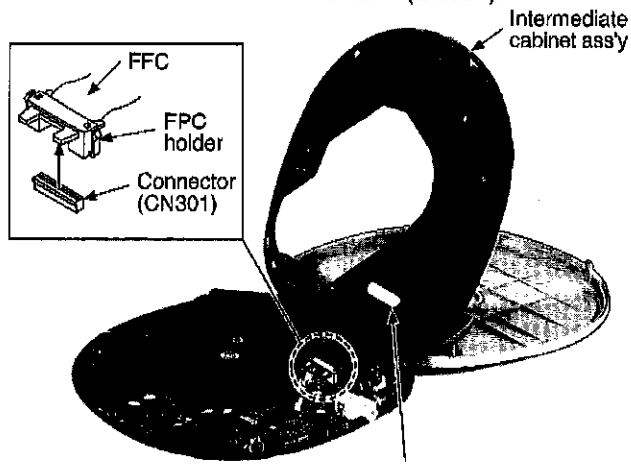
〈Model type A : Not equipped with FPC holder〉



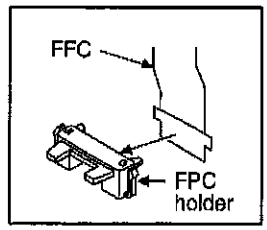
Step 1
Pull out the FFC from connector (CN301).

〈Model type B : Equipped with FPC holder〉

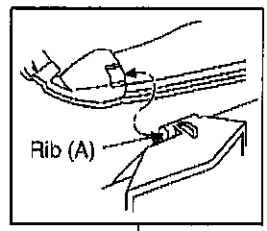
Step 1-1
Pull out the FFC from connector (CN301).



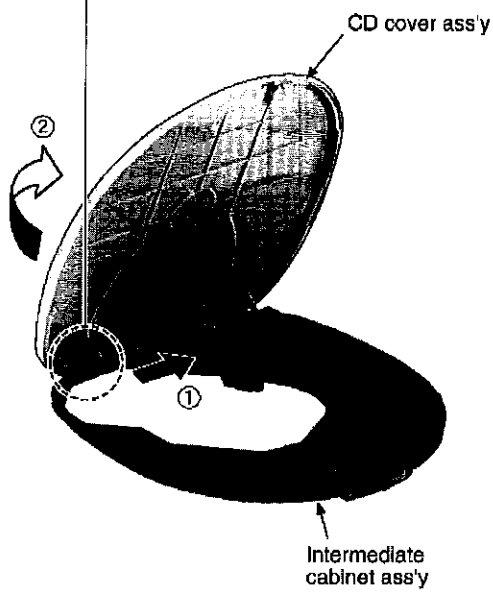
※ The intermediate cabinet ass'y of model type B has a hole for FPC holder.



Step 1-2
Remove the FPC holder from the FFC.

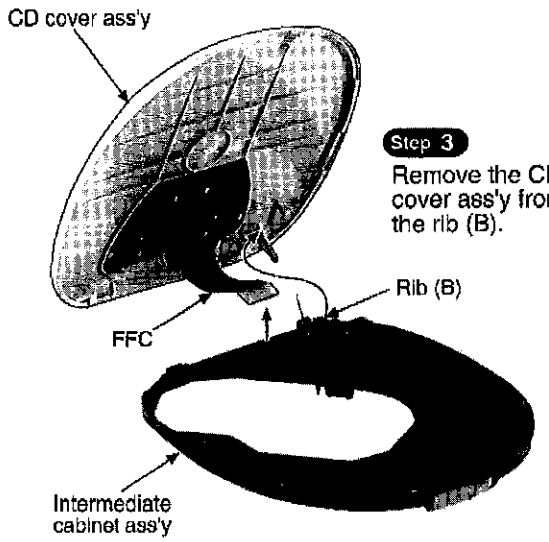


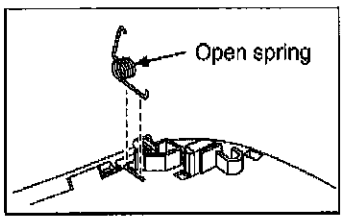
Step 2
Bend the intermediate cabinet ass'y in the direction of arrow ①, and then release the CD cover ass'y from the rib (A)



Step 4

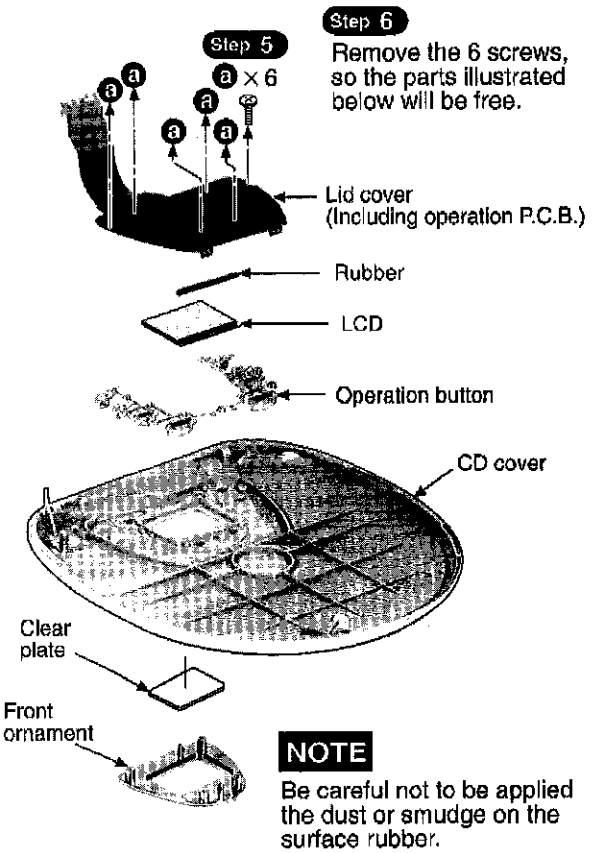
Draw the FFC from the intermediate cabinet ass'y. (Take care not to damage the FFC.)





NOTE

Take care not lose the open spring.



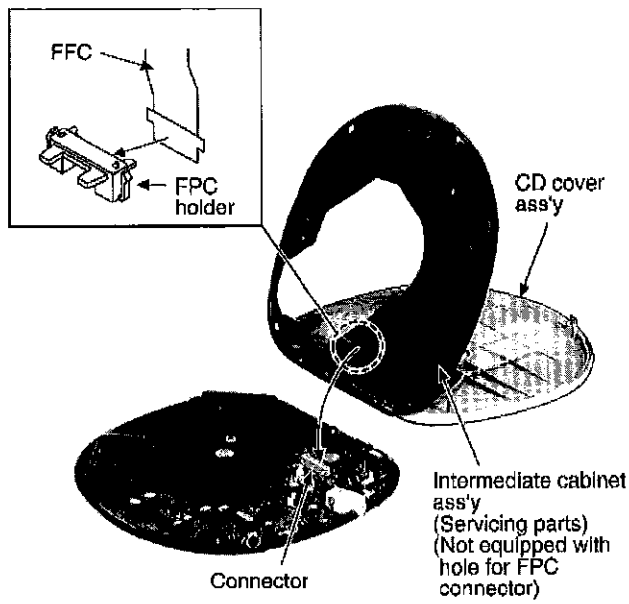
NOTE

Be careful not to be applied the dust or smudge on the surface rubber.

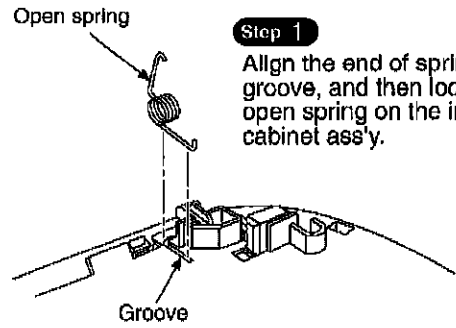
Installation of CD cover ass'y

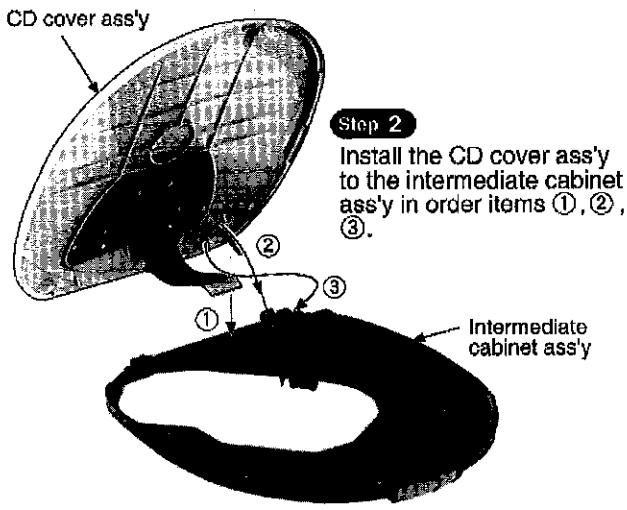
Notice for intermediate cabinet ass'y replacement

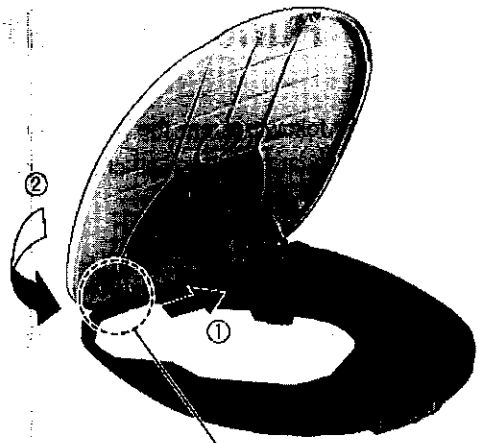
For servicing parts, the intermediate cabinet ass'y is only supplied with that of model type A. For servicing the model type B, in case of installing the CD cover ass'y to the intermediate cabinet ass'y of model type A, remove the FPC holder from the FFC, and then connect the FFC to the connector (CN301).

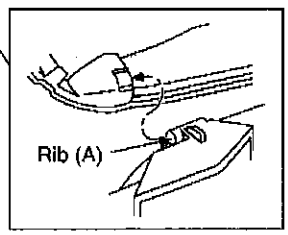


(Installation of CD cover ass'y)





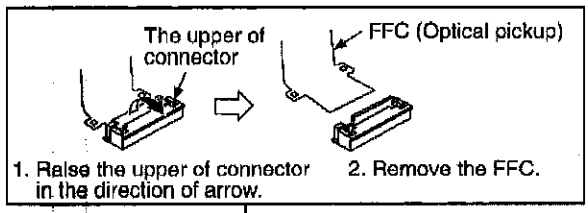




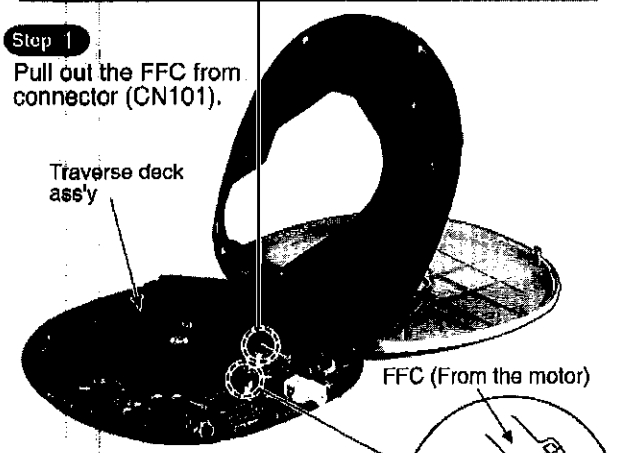
Step 3
Bend the intermediate cabinet ass'y in the direction of arrow ①, and then align the CD cover ass'y with the rib (A).

5.4 Replacement for the traverse deck ass'y

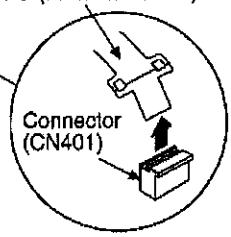
- Follow the Step 1 ~ Step 5 of the item 5.1 in checking for the main P.C.B. (A side).



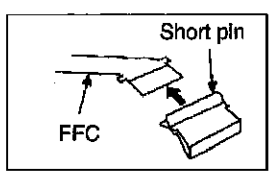
Step 1
Pull out the FFC from connector (CN101).



Step 2
Pull out the FFC from connector (CN401).



NOTE
Insert a short pin into the traverse deck's FFC.
(Refer to "Handling Precautions for Traverse Deck".)



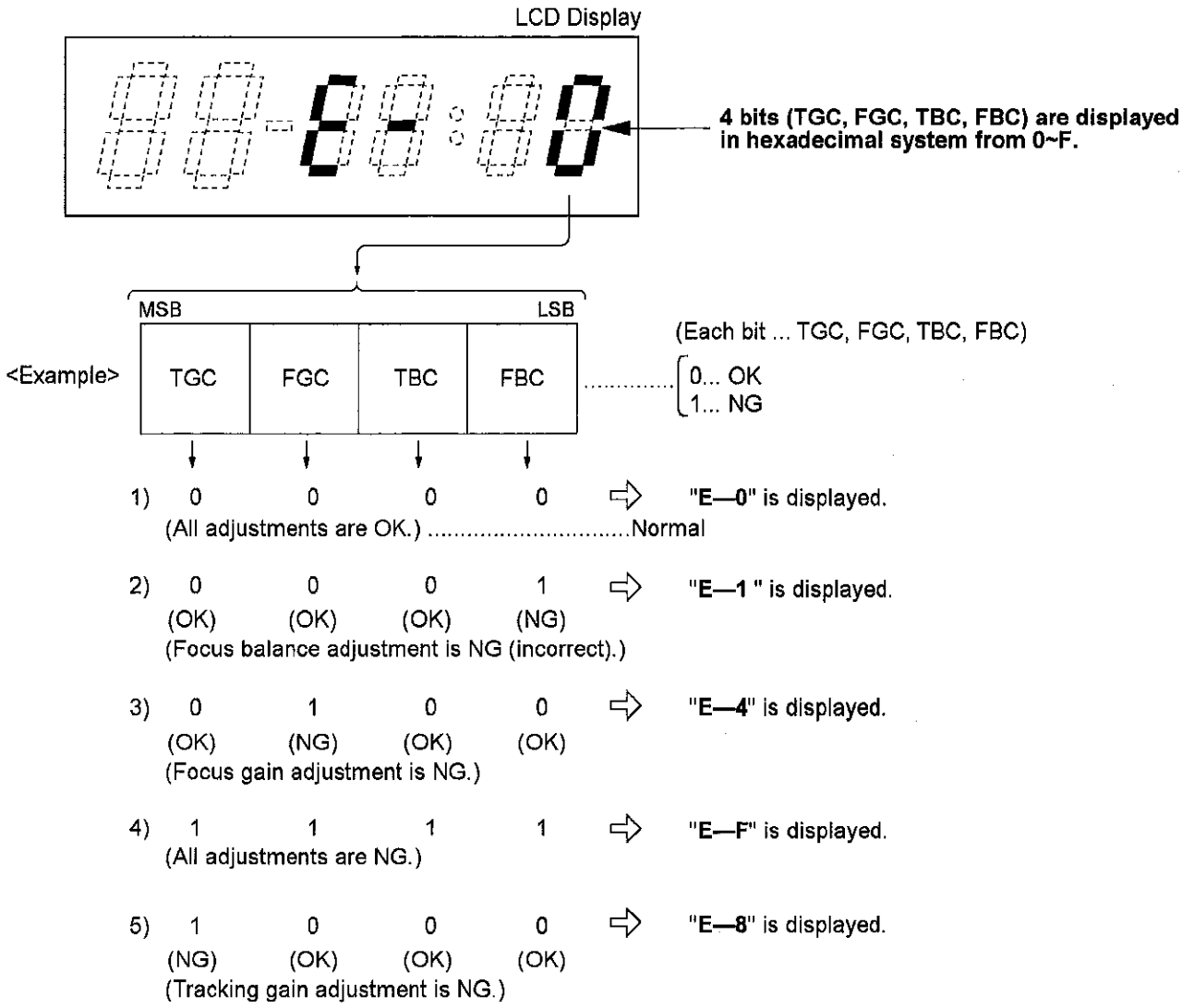
6 Automatic Adjustment Results Display Function (Self-check Function)

On this unit(SL-SX410/SX460/SX510), each automatic adjustment results 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).

6.1. 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.

6.2. 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 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.

7 Measurements and Adjustments

Warning:

This product uses a laser diode. Refer to caution statements.

ACHTUNG:

- Die lasereinheit nicht zerlegen.
- Die lasereinheit darf nur gegen ein 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 (SW201) by soldering them. It turns "ON" position. (Refer to below **Fig. 3** or printed circuit board and wiring connection diagram for short land location on page 32.)

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 and CN401. (as shown in **Fig. 3**).

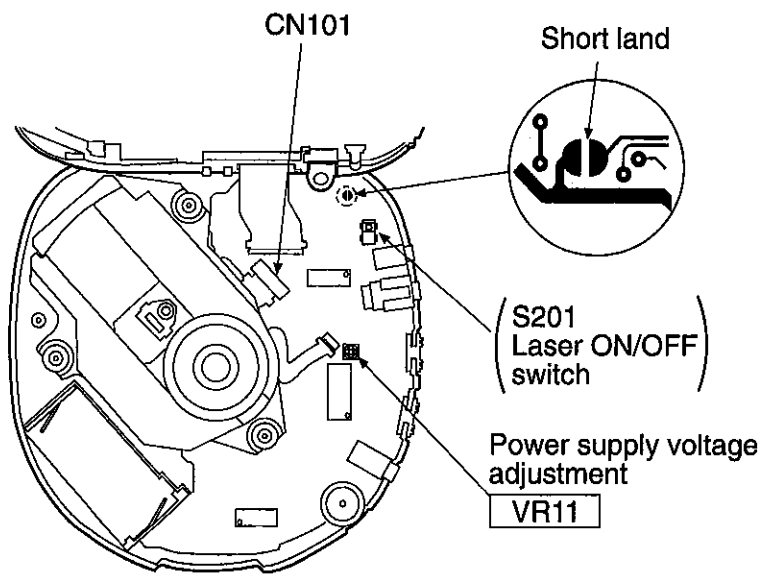


Fig. 3

7.1. POWER SUPPLY VOLTAGE ADJUSTMENT

1. Connect the DC voltmeter to VDD(+) and 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 **2.45 +/- 0.02V**, as shown in **Fig. 3.**

7.2. 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 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.

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

8.1. 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.

8.2. Compression-shockproofing [Outline]

Fig. 4 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.

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

All-inclusive Block Diagram

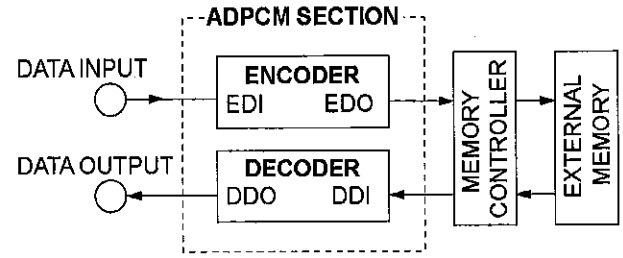


Fig. 4

9 Schematic Diagram Notes

9.1. Schematic Diagram Notes

Notes:

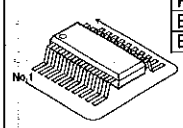
- S201 : Laser ON/OFF switch in "OFF" position. (It turns "ON" with disc holder closed.)
- S202 : Rest detector in "OFF" position. (It turns "ON" when optical pickup comes to innermost periphery.)
- S309 : Play mode selector (MODE) in "NORMAL" position. (RANDOM ⇔ NORMAL ⇔ RESUME)
- S310 : Hold (HOLD) switch in "OFF" position.
- S801 : Play/pause (▶/❚❚) switch.
- S802 : Stop/power off (■/ POWER OFF) switch.
- S803,: Skip/search (▶▶❙/▶▶ , ❙◀◀/◀◀) switches.
- S804 [S803: ADVANCE, S804: GO BACK]
- S805 : Repeat (REPEAT) switch.
- S806 : Memory/recall (MEMORY/RECALL) switch.
- S807 : EQ selector (TRAIN/S-XBS/OFF) in "OFF" position.
- S808 : 10 sec. Anti-shock (ANTI-SHOCK MEMORY II) switch in "OFF" position.
- VR11 : Power supply voltage adjustment.
- VR701-1, 2 : Headphones volume (VOLUME) control.
- 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.
  The supply part number is described alone in the replacement parts.
- ▬▶: +B lines.
- ⟹: CD playback signal lines.
- 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:
  *AC adaptor is used for power supply.
  *Set the headphones VR(VR701) to center position(No.5).
  *Set the hold lock and ANTI-SHOCK MEMORYII 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.

Caution!!

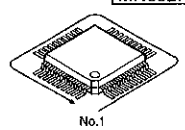
- IC and LSI are sensitive to static electricity.
- Secondary trouble can be prevented by taking care during repair.
- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the pins of IC or LSI with fingers directly.

9.2. Type Illustration of IC´s, Transistors and Diodes

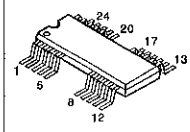
NJU7082BVTE1	8PIN
AN8839NSBE1	28PIN
RS10002E2	40PIN
BH6522FVE2	40PIN
BA6966FVE2	20PIN



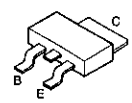
SC440323CFU	64PIN
MN662782RPT1	80PIN

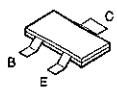


MNA4400T10T



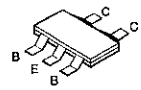
2SB1182TLPQR



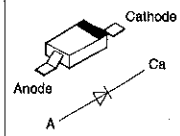


MSB709RST1 DTA114YUA106
2SB1218ATX DTC114EUA106
2SD1328TX DTC144TUA106
2SD1819ATX UN5213TX

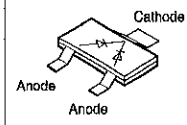
XN1210TX
XN1215TX



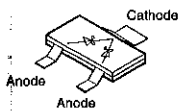
MA111TX



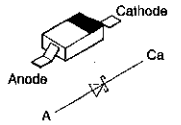
MA142WKTX



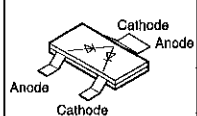
MA741WKTX



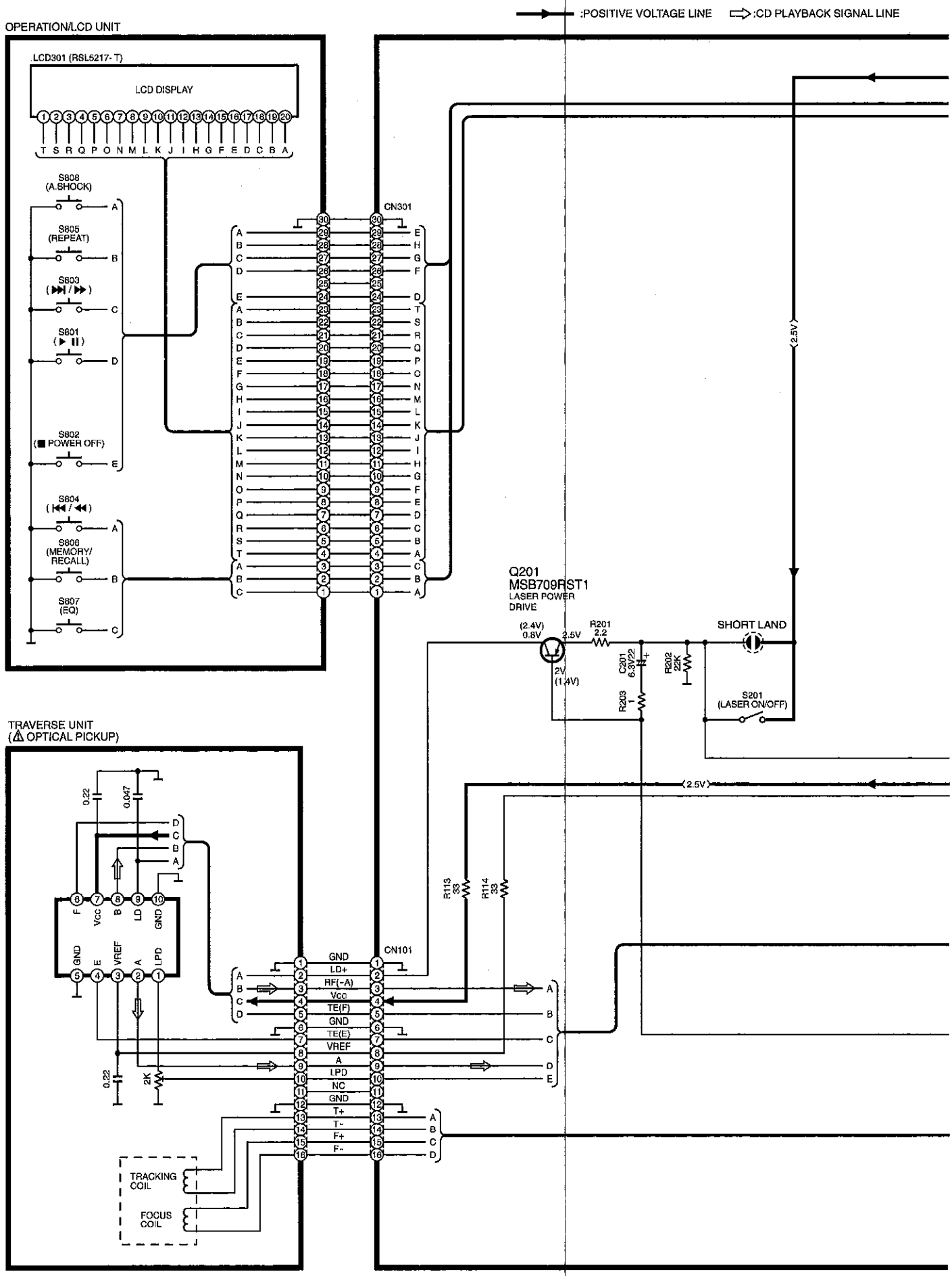
MA1070400L



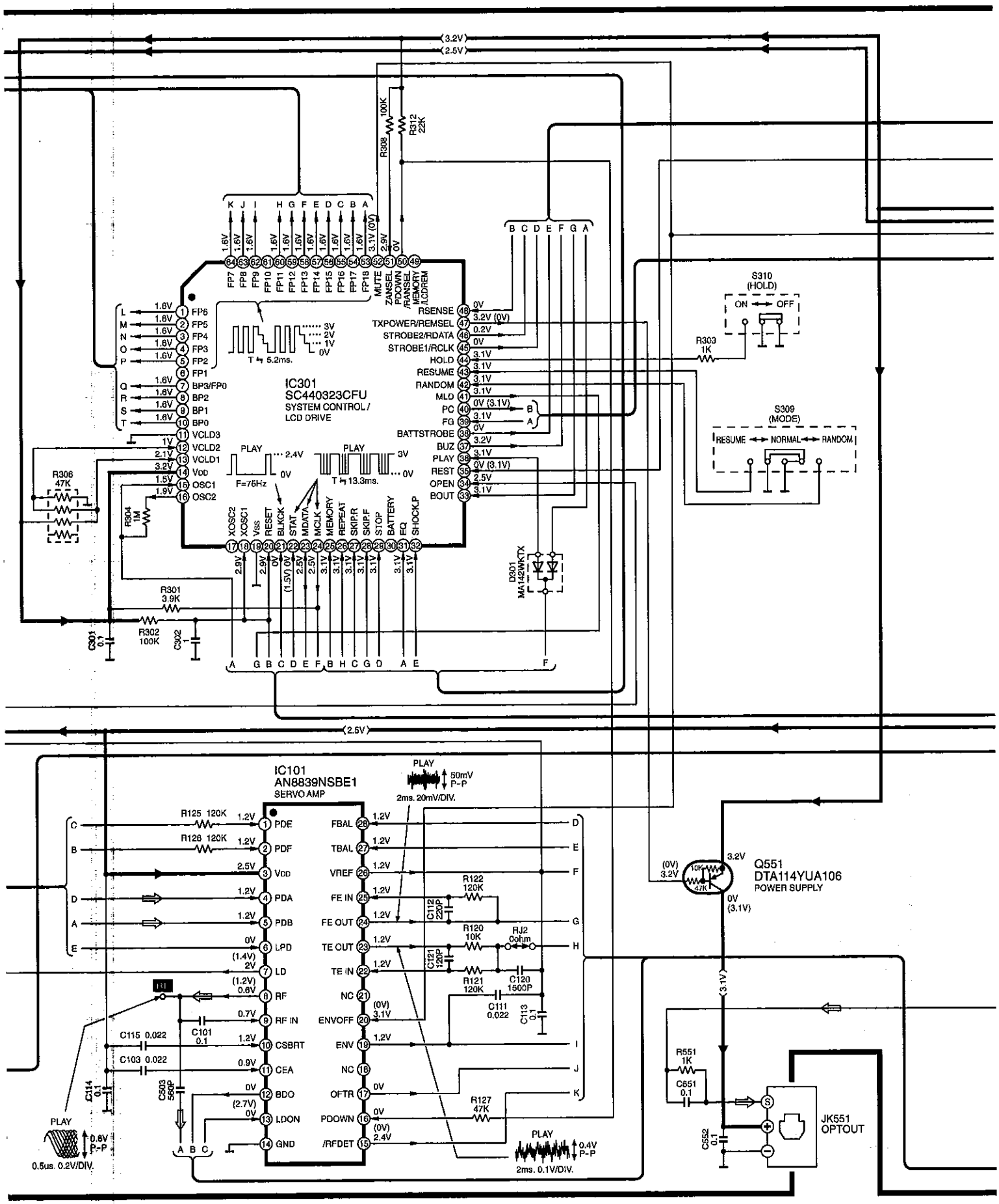
MA143TX

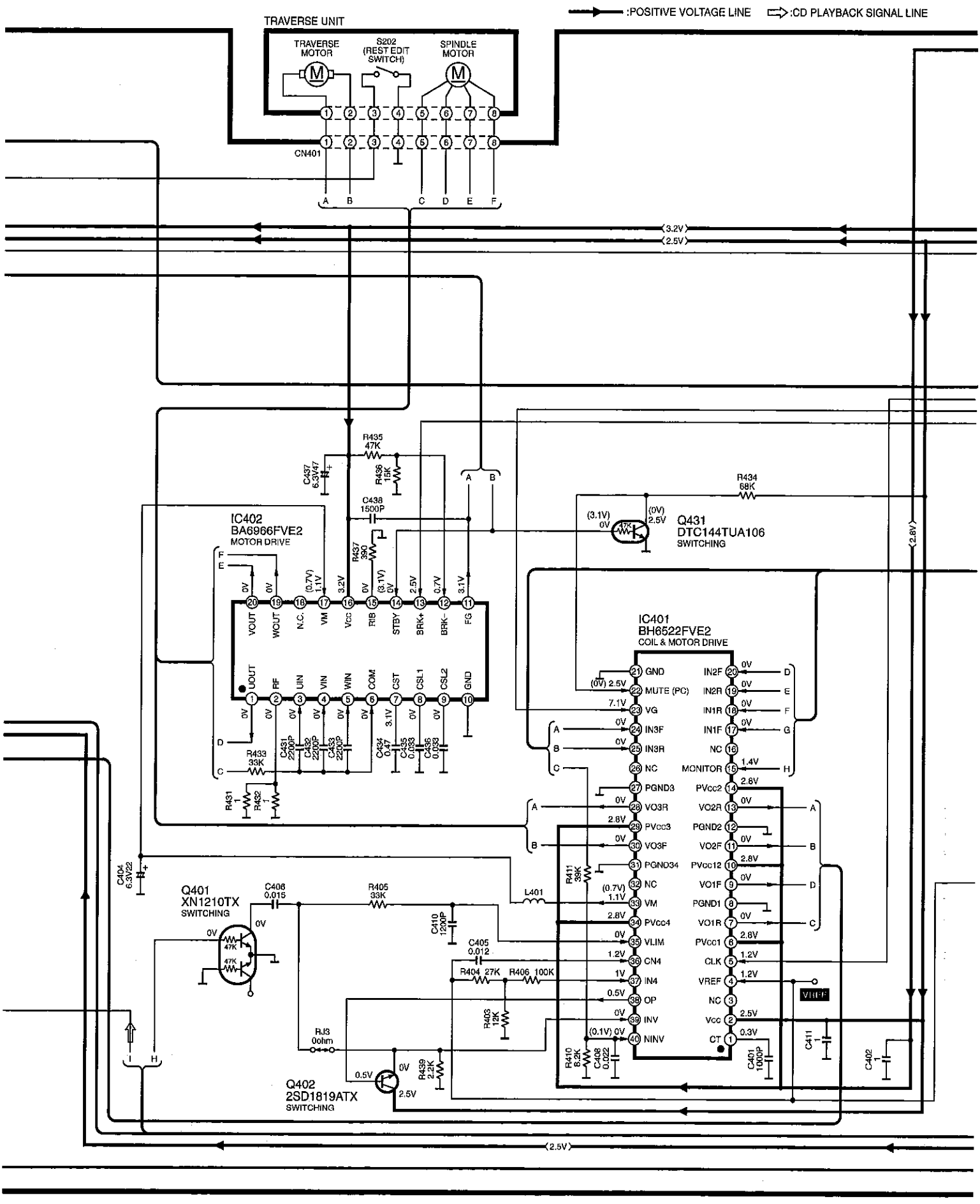


10 Schematic Diagram

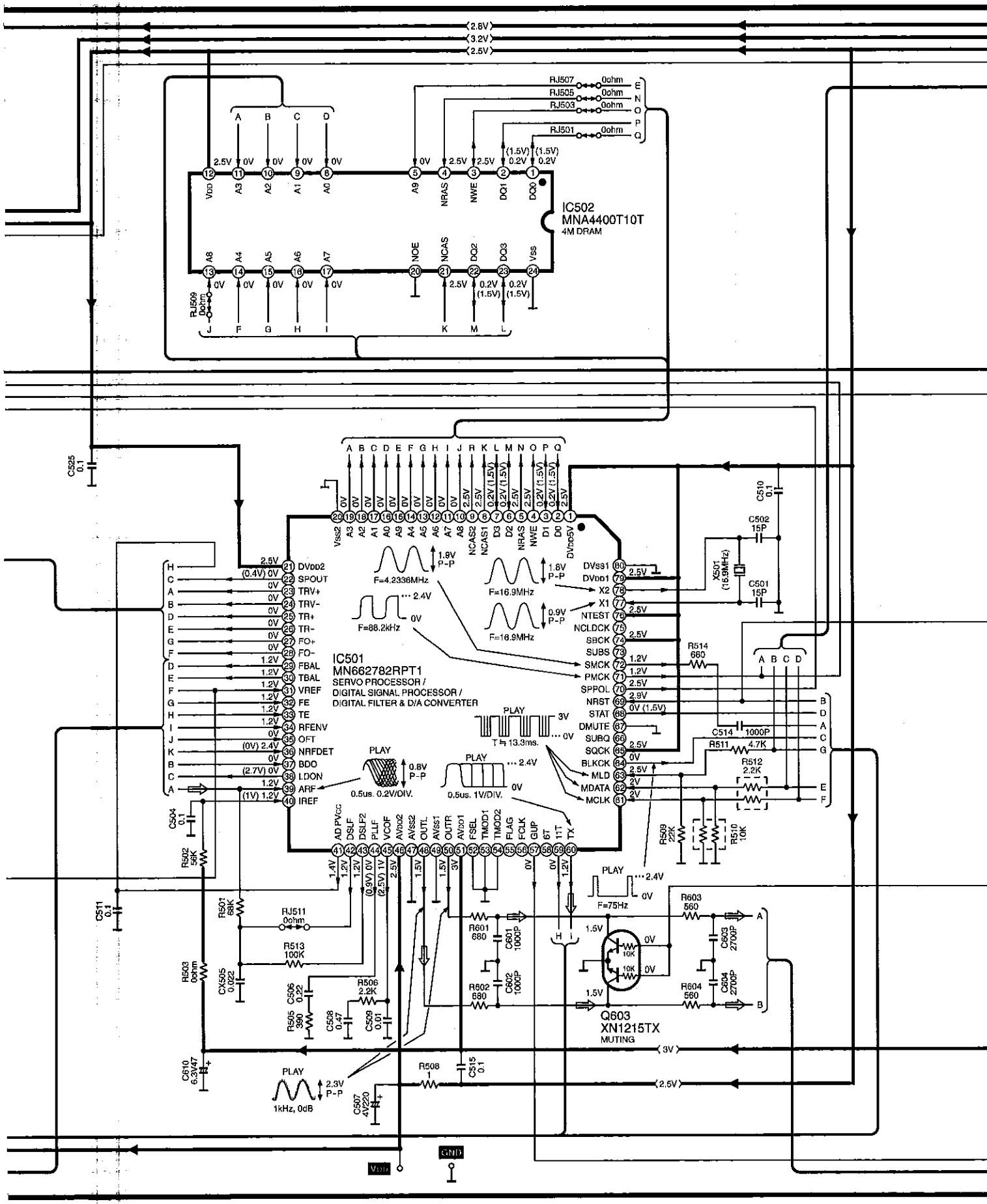


:POSITIVE VOLTAGE LINE :CD PLAYBACK SIGNAL LINE

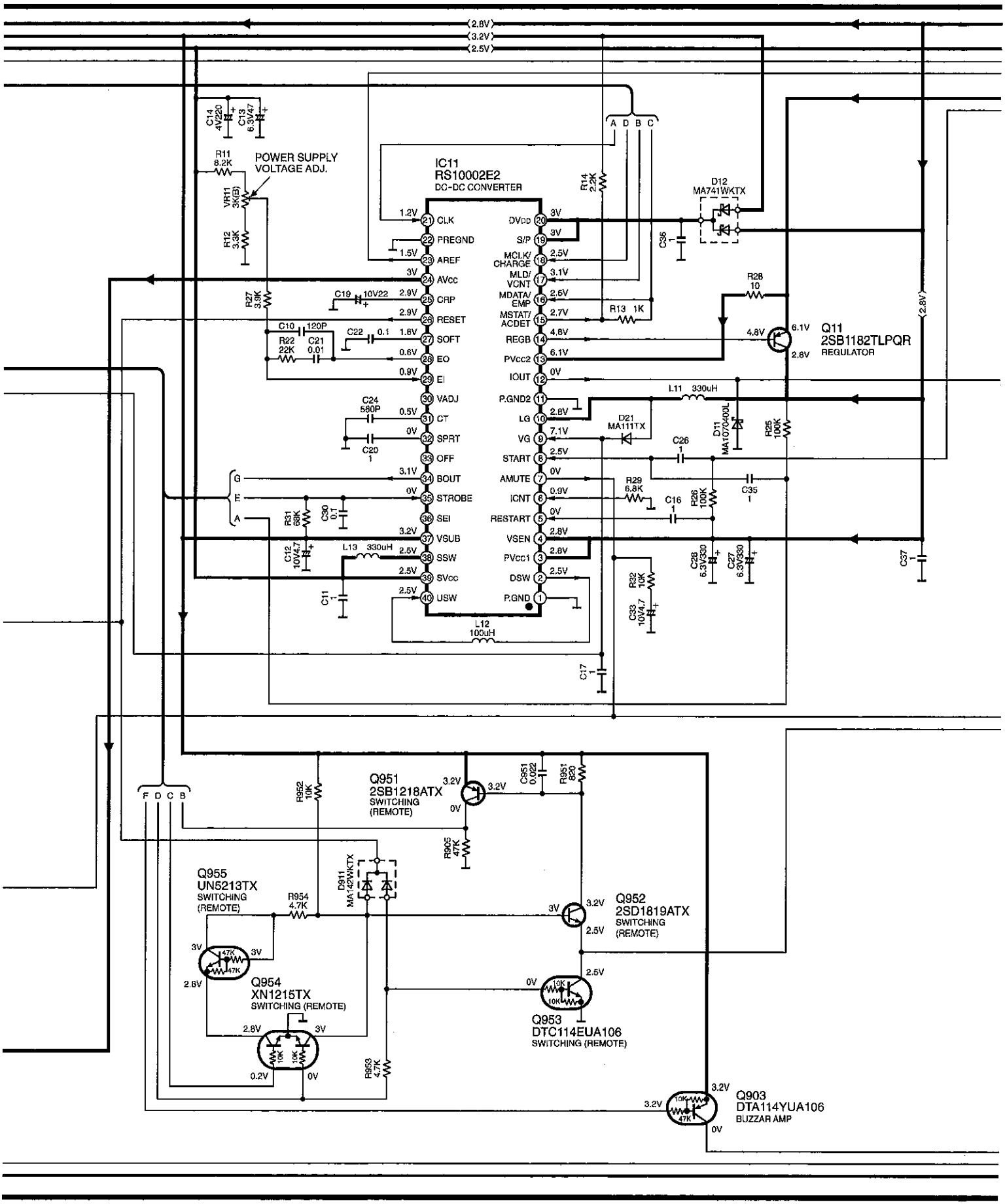


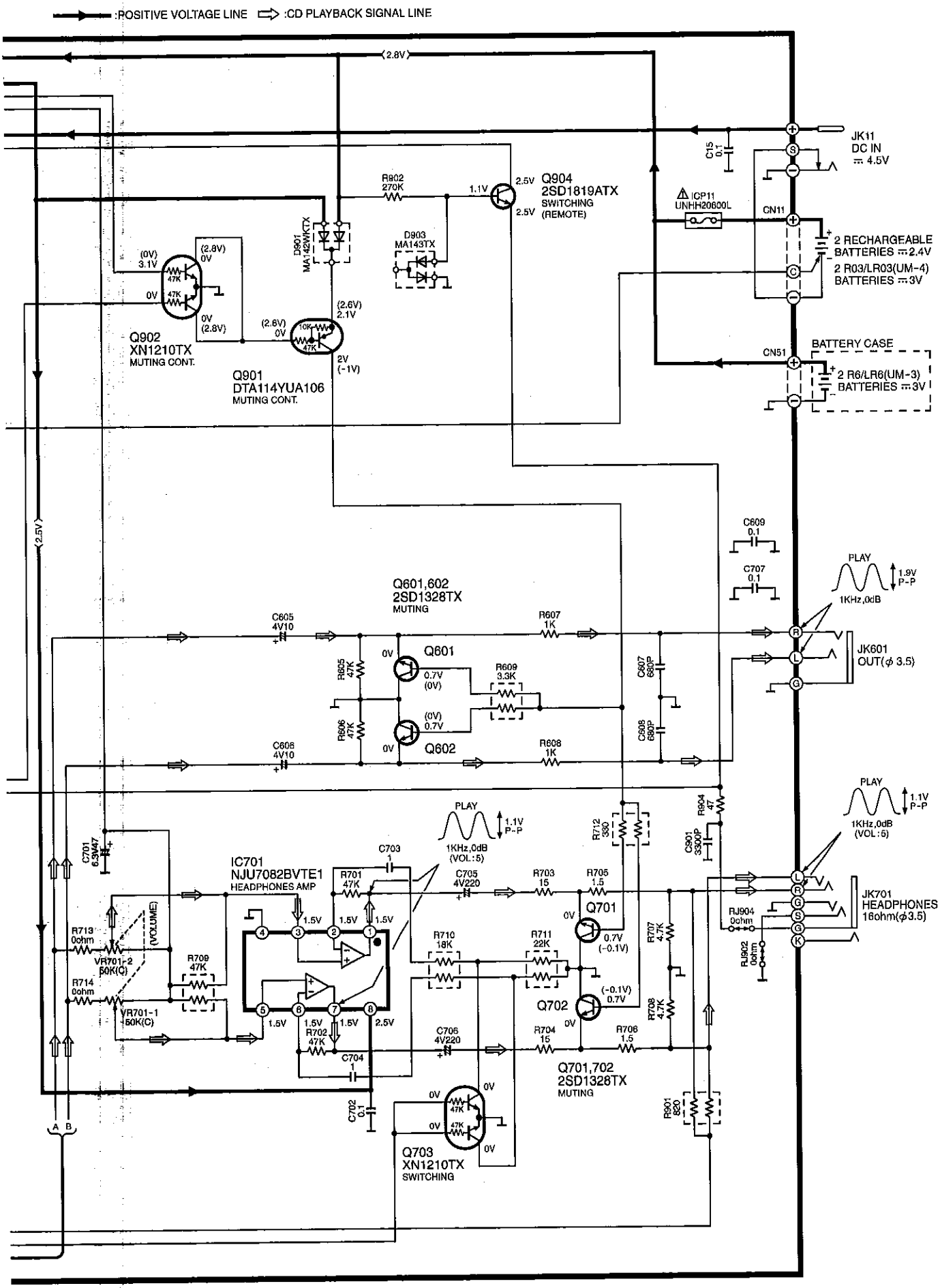

:POSITIVE VOLTAGE LINE
:CD PLAYBACK SIGNAL LINE
TRAVERSE UNIT
TRAVERSE MOTOR
S202 (REST EDIT SWITCH)
SPINDLE MOTOR
CN401
3.2V
2.5V
IC402
BA6966FVE2
MOTOR DRIVE
VOUT
WOUT
N.C.
VM
Vcc
RIB
STBY
BRK+
BRK-
FG
UOUT
RF
UIN
VIN
WIN
COM
CST
CSL1
CSL2
GND
Q431
DTC144TUA106
SWITCHING
IC401
BH6522FVE2
COIL & MOTOR DRIVE
GND
MUTE (PC)
VG
IN3F
IN3R
NC
PGND3
VO3R
PVcc3
VO3F
PGND34
NC
VM
PVcc4
VLIM
CN4
IN4
OP
INV
NINV
IN2F
IN2R
IN1R
IN1F
NC
MONITOR
PVcc2
VO2R
PGND2
VO2F
PVcc12
VO1F
PGND1
VO1R
PVcc1
CLK
VREF
NC
Vcc
CT
VREF
Q401
XN1210TX
SWITCHING
Q402
2SD1819ATX
SWITCHING
L401
R435 47K
R436 15K
C437 6.3V47
C438 1500P
R437 390
R434 68K
R433 33K
R431 1
R432 1
C431 2200P
C432 2200P
C433 2200P
C434 0.47
C435 0.033
C436 0.033
C404 6.3V22
C406 0.015
R405 33K
C410 1200P
C405 0.012
R404 27K
R406 100K
R403 12K
RJ3 0ohm
R439 2.2K
R411 39K
R410 6.2K
C408 0.022
C401 1000P
C411 1
C402 1

:POSITIVE VOLTAGE LINE :CD PLAYBACK SIGNAL LINE

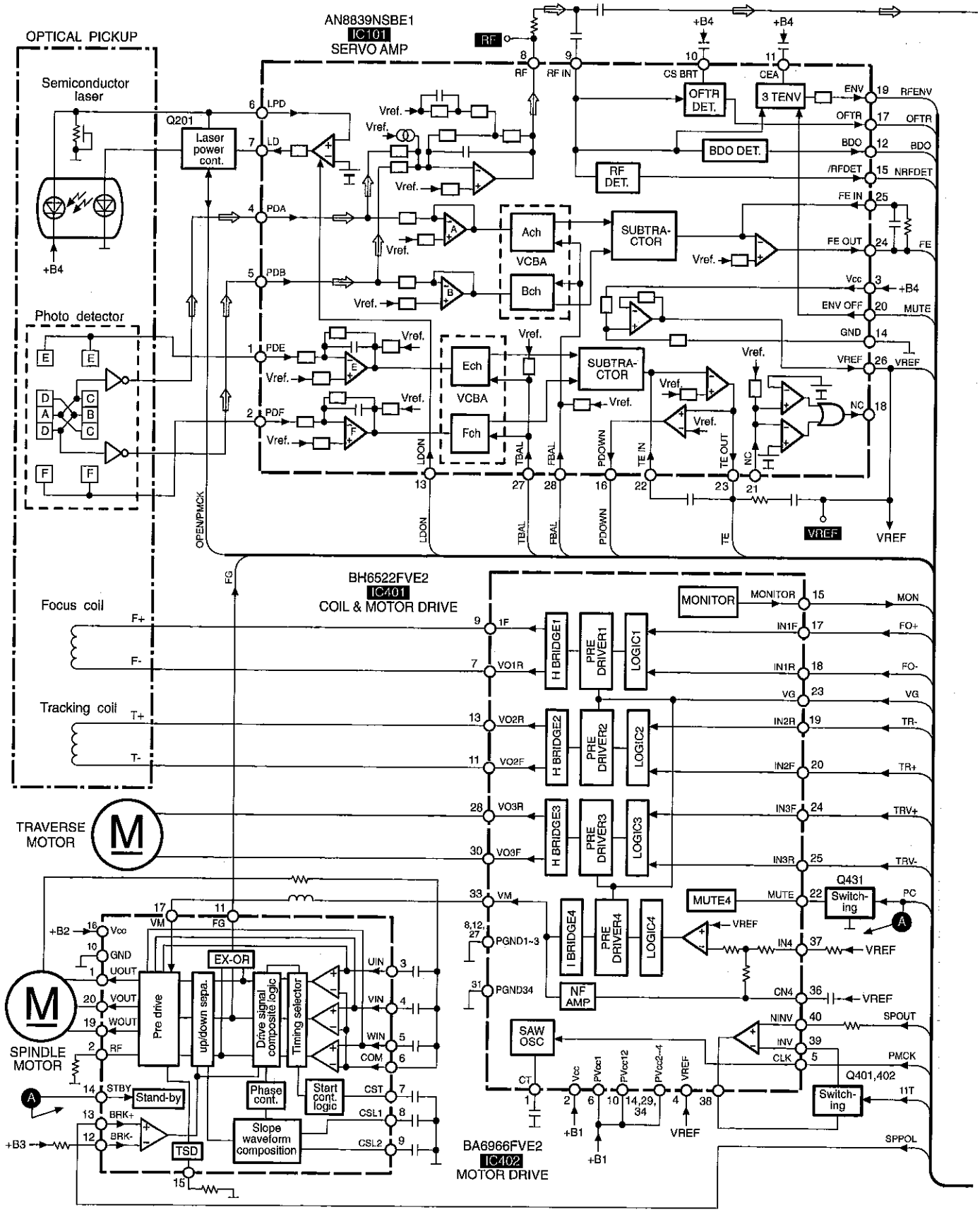


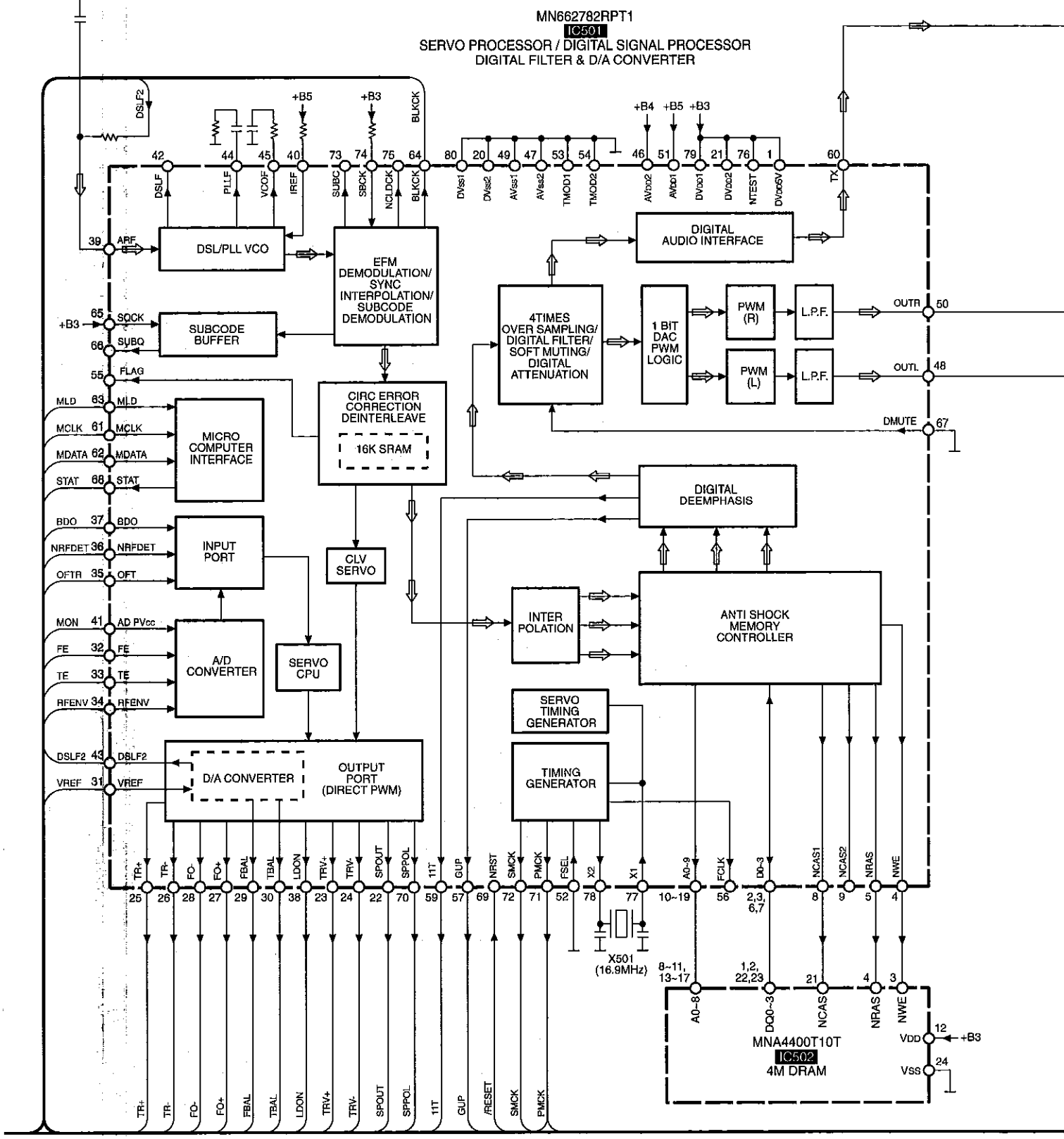
:POSITIVE VOLTAGE LINE

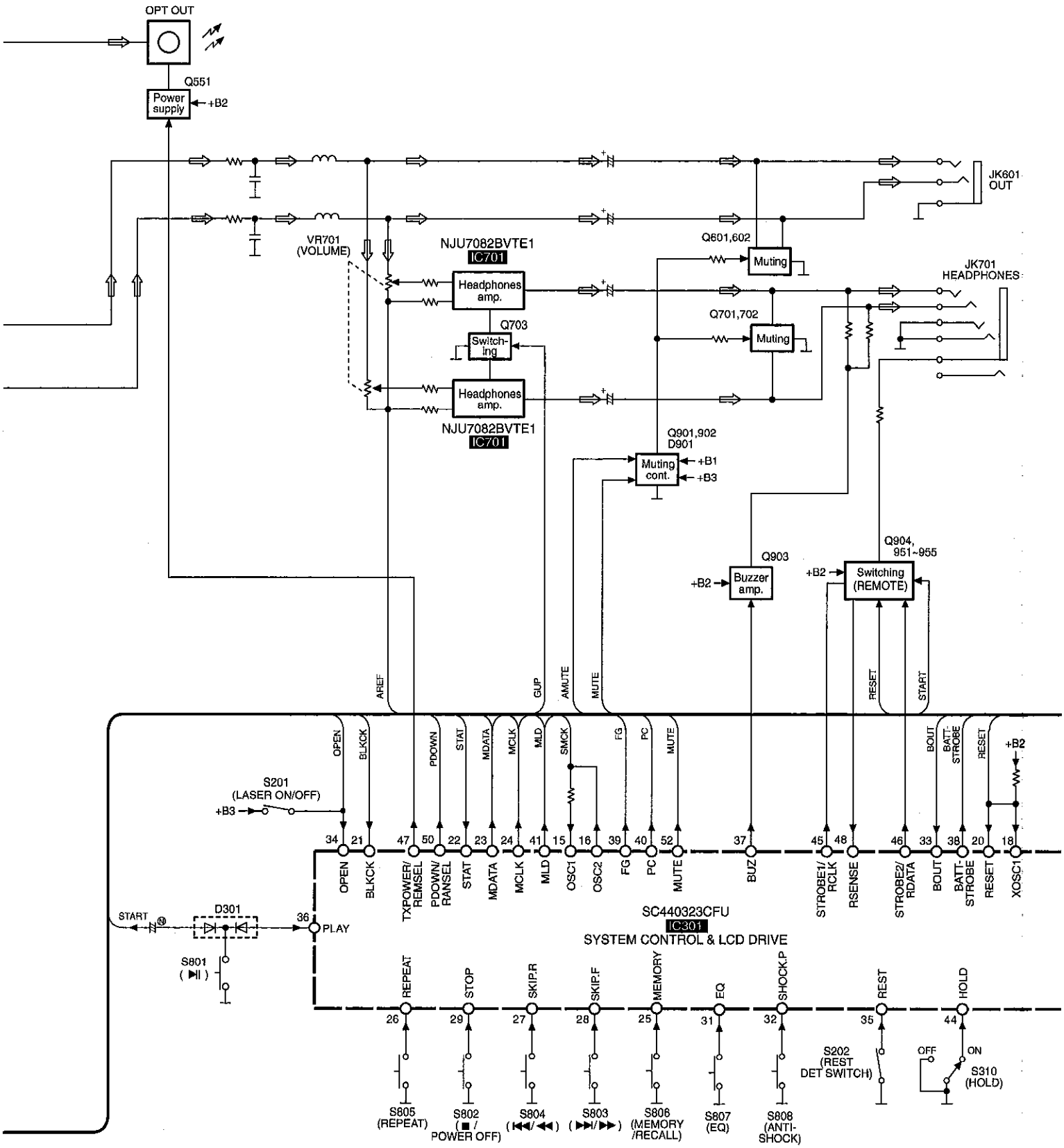


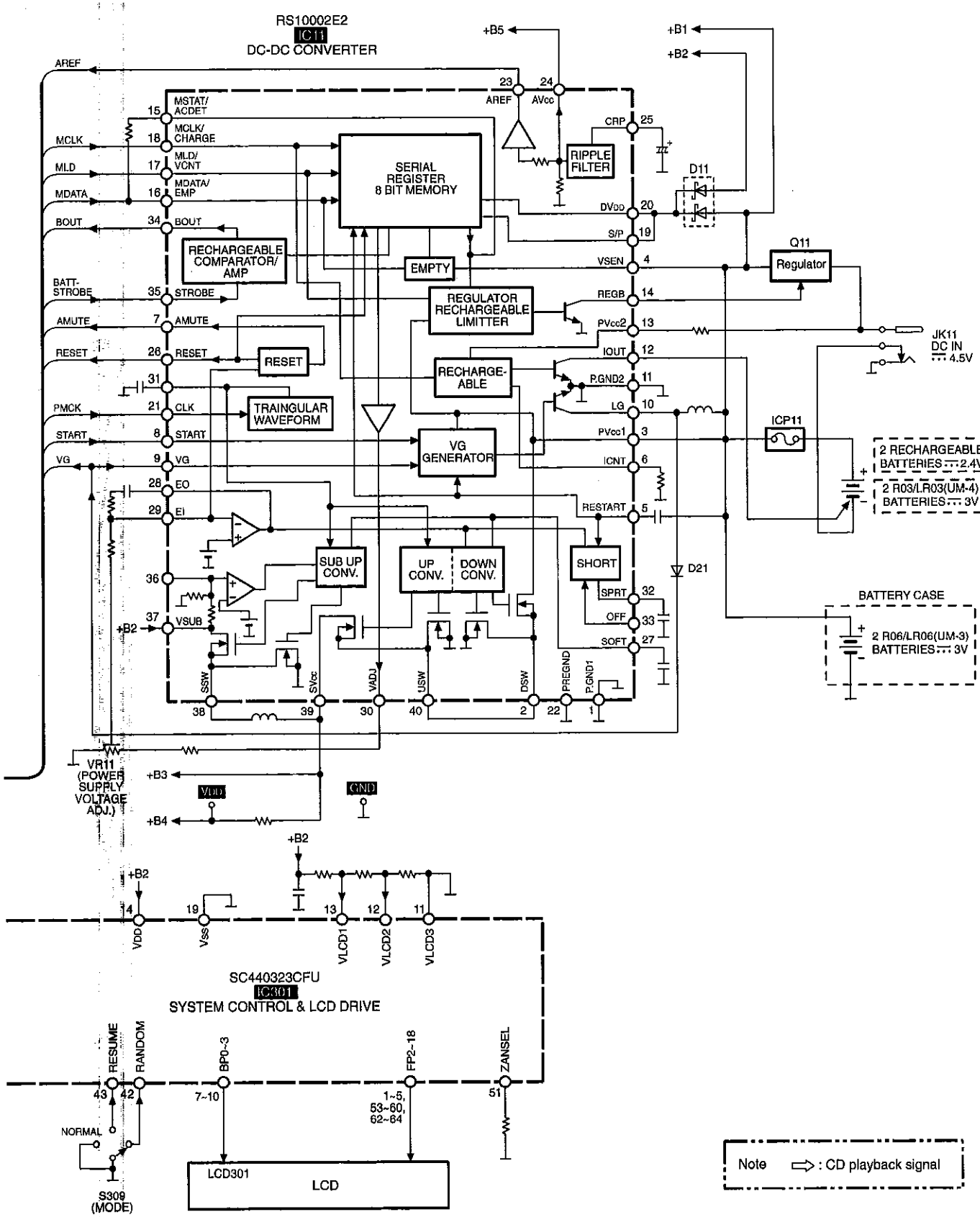

:ROSITIVE VOLTAGE LINE
:CD PLAYBACK SIGNAL LINE
2.8V
2.5V
JK11
DC IN
4.5V
C15
0.1
CP11
UNHH20600L
CN11
2 RECHARGEABLE
BATTERIES 2.4V
2 R03/LR03(UM-4)
BATTERIES 3V
CN51
BATTERY CASE
2 R6/LR6(UM-3)
BATTERIES 3V
R902
270K
Q904
2SD1819ATX
SWITCHING
(REMOTE)
D901
MA142WKTX
D903
MA143TX
Q902
XN1210TX
MUTING CONT.
Q901
DTA114YUA106
MUTING CONT.
C609
0.1
C707
0.1
PLAY
1.9V
P-P
1KHz,0dB
Q601,602
2SD1328TX
MUTING
C605
4V10
R607
1K
Q601
R605
47K
R609
3.3K
C607
680P
JK601
OUT(φ3.5)
R606
47K
Q602
C606
4V10
R608
1K
C608
680P
PLAY
1.1V
P-P
1KHz,0dB
(VOL:5)
R904
47
C901
3300P
C701
6.3V47
IC701
NJU7082BVTE1
HEADPHONES AMP
C703
1
R701
47K
C705
4V220
R703
15
R705
1.5
R712
330
Q701
JK701
HEADPHONES
16ohm(φ3.5)
RJ904
0ohm
RJ902
0ohm
R713
0ohm
VR701-2
50K(C)
(VOLUME)
R709
47K
R714
0ohm
VR701-1
50K(C)
R710
18K
R711
22K
Q702
R707
4.7K
R708
4.7K
R702
47K
C704
1
C706
4V220
R704
15
R706
1.5
Q701,702
2SD1328TX
MUTING
C702
0.1
Q703
XN1210TX
SWITCHING
R901
820
A
B

11 Block Diagram

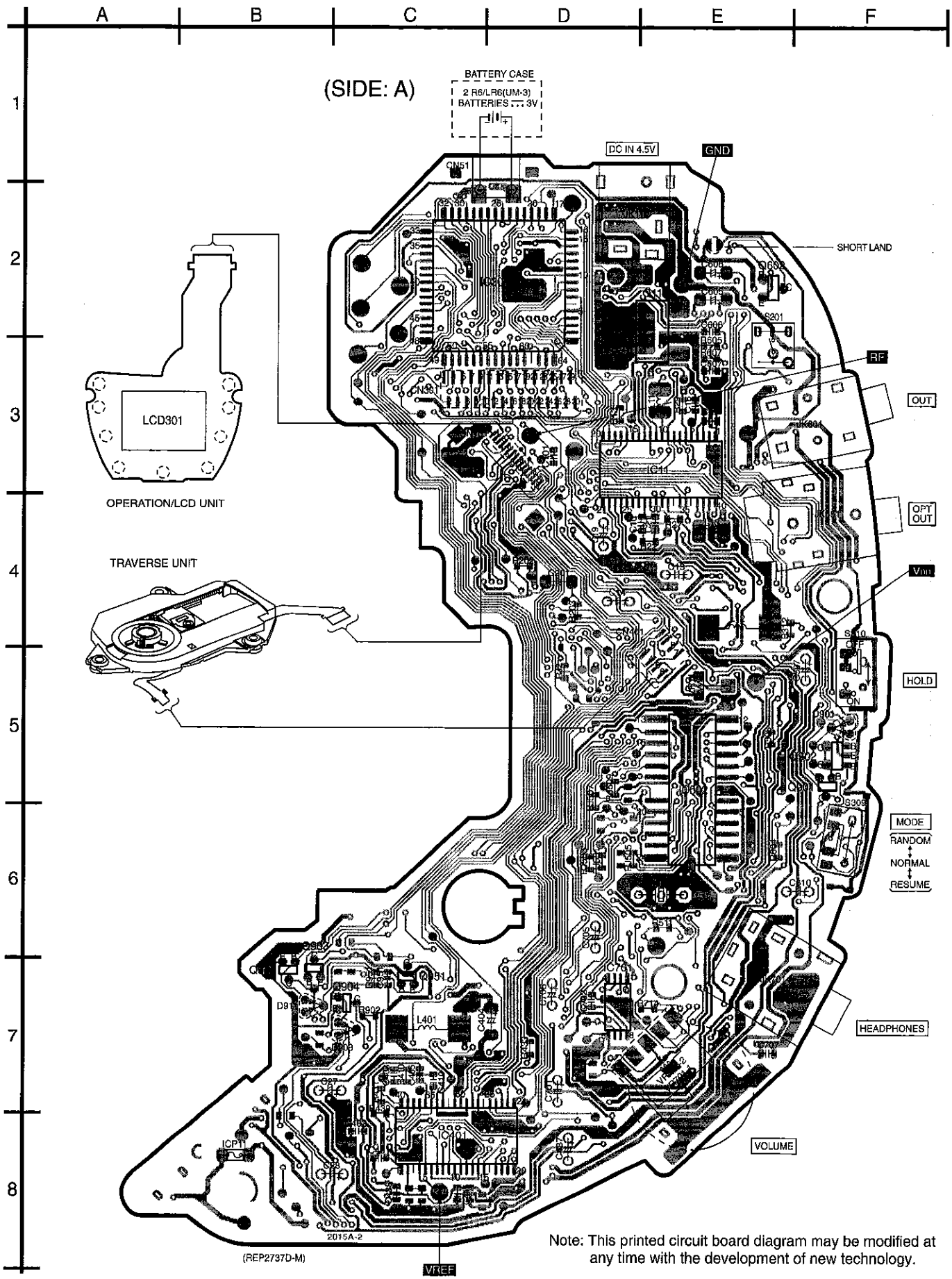



MN662782RPT1
IC501
SERVO PROCESSOR / DIGITAL SIGNAL PROCESSOR
DIGITAL FILTER & D/A CONVERTER
DSLF2
+B5
+B3
BLKCK
+B4
+B5
+B3
42 DSLF
44 PLLF
45 VCOF
40 IREF
73 SUBC
74 SBCK
75 NCLDCK
64 BLKCK
80 DVss1
20 DVss2
49 AVss1
47 AVss2
53 TMOD1
54 TMOD2
46 AVDD2
51 AVDD1
79 DVDD1
21 DVDD2
76 NTEST
1 DVcc5V
60 TX
39 ARF
DSL/PLL VCO
EFM DEMODULATION/ SYNC INTERPOLATION/ SUBCODE DEMODULATION
DIGITAL AUDIO INTERFACE
65 SOCK
66 SUBQ
SUBCODE BUFFER
55 FLAG
4TIMES OVER SAMPLING/ DIGITAL FILTER/ SOFT MUTING/ DIGITAL ATTENUATION
1 BIT DAC PWM LOGIC
PWM (R)
PWM (L)
L.P.F.
L.P.F.
OUTR 50
OUTL 48
DMUTE 67
63 MLD
61 MCLK
62 MDATA
68 STAT
MICRO COMPUTER INTERFACE
CIRC ERROR CORRECTION DEINTERLEAVE
16K SRAM
DIGITAL DEEMPHASIS
37 BDO
36 NRFDET
35 OFT
INPUT PORT
CLV SERVO
INTER POLATION
ANTI SHOCK MEMORY CONTROLLER
41 AD PVcc
32 FE
33 TE
34 RFENV
A/D CONVERTER
SERVO CPU
SERVO TIMING GENERATOR
43 DSLF2
31 VREF
D/A CONVERTER
OUTPUT PORT (DIRECT PWM)
TIMING GENERATOR
TR+ 25
TR- 26
FO- 28
FO+ 27
FBAL 29
TBAL 30
LDON 38
TRV+ 23
TRV- 24
SPOUT 22
SPPOL 70
11T 59
GUP 57
NRST 69
SMCK 72
PMCK 71
FSEL 52
X2 78
X1 77
A0~9 10~19
FCLK 56
D0~3 2,3, 6,7
NCAS1 8
NCAS2 9
NRAS 5
NWE 4
X501 (16.9MHz)
8~11, 13~17 A0~8
1,2, 22,23 DQ0~3
21 NCAS
4 NRAS
3 NWE
MNA4400T10T
IC502
4M DRAM
12 VDD +B3
24 VSS
/RESET


OPT OUT
Q551
Power supply
+B2
JK601 OUT
VR701 (VOLUME)
NJU7082BVTE1
IC701
Headphones amp.
Q703
Switch-ing
Headphones amp.
NJU7082BVTE1
IC701
Q601,602
Muting
JK701 HEADPHONES
Q701,702
Muting
Q901,902
D901
Muting cont.
+B1
+B3
Q903
+B2
Buzzer amp.
Q904, 951~955
+B2
Switching (REMOTE)
AREF
GUP
AMUTE
MUTE
RESET
START
OPEN
BLKCK
PDOWN
STAT
MDATA
MCLK
MLD
SMCK
FG
PC
MUTE
BOUT
BATT-STROBE
RESET
+B2
S201
(LASER ON/OFF)
+B3
34 21 47 50 22 23 24 41 15 16 39 40 52 37 45 48 46 33 38 20 18
OPEN
BLKCK
TXPOWER/ REMSEL
PDOWN/ RANSEL
STAT
MDATA
MCLK
MLD
OSC1
OSC2
FG
PC
MUTE
BUZ
STROBE1/ RCLK
RSENSE
STROBE2/ RDATA
BOUT
BATT-STROBE
RESET
XOSC1
SC440323CFU
IC301
SYSTEM CONTROL & LCD DRIVE
START
D301
36
PLAY
S801
(▶II)
REPEAT
STOP
SKIP.R
SKIP.F
MEMORY
EQ
SHOCK.P
REST
HOLD
26 29 27 28 25 31 32 35 44
S202
(REST DET SWITCH)
OFF
ON
S310
(HOLD)
S805 (REPEAT)
S802 (■ / POWER OFF)
S804 (⏮/◀◀)
S803 (▶▶I/▶▶)
S806 (MEMORY /RECALL)
S807 (EQ)
S808 (ANTI-SHOCK)


RS10002E2
IC11
DC-DC CONVERTER
AREF
MCLK
MLD
MDATA
BOUT
BATT-STROBE
AMUTE
RESET
PMCK
START
VG
MSTAT/ ACDET
MCLK/ CHARGE
MLD/ VCNT
MDATA/ EMP
BOUT
STROBE
AMUTE
RESET
CLK
START
VG
EO
EI
VSUB
SSW
SVcc
VADJ
USW
DSW
PREGND
P.GND1
SERIAL REGISTER 8 BIT MEMORY
RECHARGEABLE COMPARATOR/ AMP
EMPTY
TRAINGULAR WAVEFORM
RESET
SUB UP CONV.
UP CONV.
DOWN CONV.
VG GENERATOR
REGULATOR RECHARGEABLE LIMITTER
RECHARGE-ABLE
SHORT
RIPPLE FILTER
+B5
+B1
+B2
+B3
+B4
VDD
GND
VR11 (POWER SUPPLY VOLTAGE ADJ.)
AREF
AVcc
CRP
DVDD
S/P
VSEN
REGB
PVcc2
IOUT
P.GND2
LG
PVcc1
ICNT
RESTART
SPRT
OFF
SOFT
D11
Q11
Regulator
JK11
DC IN 4.5V
ICP11
2 RECHARGEABLE BATTERIES 2.4V
2 R03/LR03(UM-4) BATTERIES 3V
D21
BATTERY CASE
2 R06/LR06(UM-3) BATTERIES 3V
VDD
Vss
VLCD1
VLCD2
VLCD3
SC440323CFU
IC301
SYSTEM CONTROL & LCD DRIVE
RESUME
RANDOM
BP0-3
FP2-18
ZANSEL
NORMAL
S309 (MODE)
LCD301
LCD
Note : CD playback signal

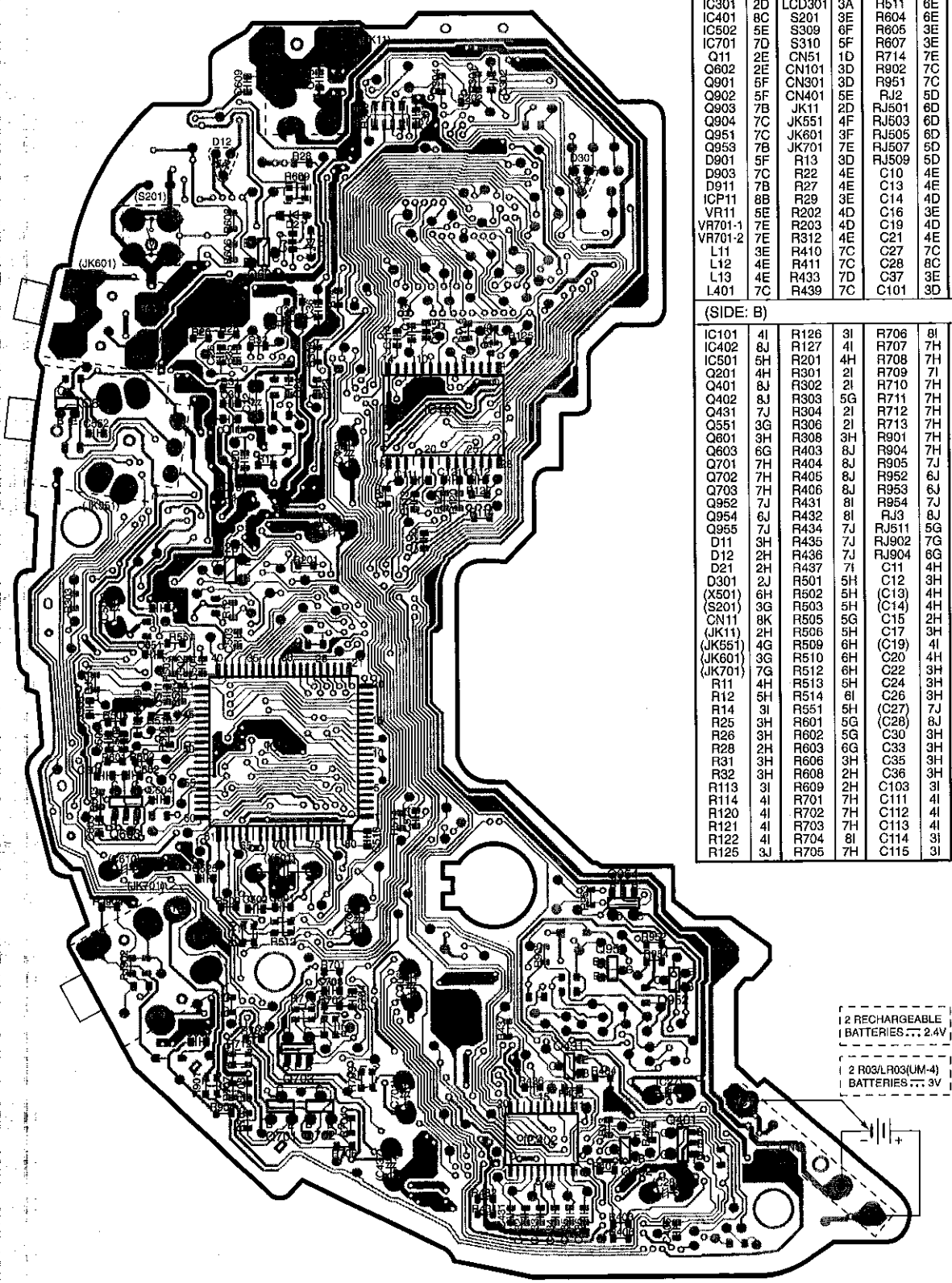
12 Printed Circuit Board and Wiring Connection Diagram



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

G H I J K L

(SIDE: B)



■ ELECTRICAL PARTS LOCATION

Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.
(SIDE: A)							
IC11	3E	X501	6E	R508	5E	C201	4D
IC301	2D	LCD301	3A	R511	6E	C401	8C
IC401	8C	S201	3E	R604	6E	C402	8C
IC502	5E	S309	6F	R605	3E	C404	7D
IC701	7D	S310	5F	R607	3E	C405	7C
Q11	2E	CN51	1D	R714	7E	C408	7C
Q602	2E	CN101	3D	R902	7C	C410	7C
Q901	5F	CN301	3D	R951	7C	C411	8C
Q902	5F	CN401	5E	RJ2	5D	C437	8D
Q903	7B	JK11	2D	RJ501	6D	C438	8C
Q904	7C	JK551	4F	RJ503	6D	C507	5F
Q951	7C	JK601	3F	RJ505	6D	C605	2E
Q953	7B	JK701	7E	RJ507	5D	C606	2E
D901	5F	R13	3D	RJ509	5D	C607	3E
D903	7C	R22	4E	C10	4E	C608	2E
D911	7B	R27	4E	C13	4E	C610	6F
ICP11	8B	R29	3E	C14	4D	C701	7D
VR11	5E	R202	4D	C16	3E	C702	7D
VR701-1	7E	R203	4D	C19	4D	C705	6D
VR701-2	7E	R312	4E	C21	4E	C706	7D
L11	3E	R410	7C	C27	7C	C707	7E
L12	4E	R411	7C	C28	8C	C951	7C
L13	4E	R433	7D	C37	3E		
L401	7C	R439	7C	C101	3D		
(SIDE: B)							
IC101	4I	R126	3I	R706	8I	C120	4I
IC402	8J	R127	4I	R707	7H	C121	4I
IC501	5H	R201	4H	R708	7H	C301	2I
Q201	4H	R301	2I	R709	7I	C302	2I
Q401	8J	R302	2I	R710	7H	C406	8J
Q402	8J	R303	5G	R711	7H	C431	8I
Q431	7J	R304	2I	R712	7H	C432	8J
Q551	3G	R306	2I	R713	7H	C433	8J
Q601	3H	R308	3H	R901	7H	C434	8J
Q603	6G	R403	8J	R904	7H	C435	8J
Q701	7H	R404	8J	R905	7J	C436	8J
Q702	7H	R405	8J	R952	6J	(C437)	8I
Q703	7H	R406	8J	R953	6J	C501	6H
Q952	7J	R431	8I	R954	7J	C502	6H
Q954	6J	R432	8I	RJ3	8J	C503	5H
Q955	7J	R434	7J	RJ511	5G	C504	5H
D11	3H	R435	7J	RJ902	7G	C506	5G
D12	2H	R436	7J	RJ904	6G	(C507)	5G
D21	2H	R437	7I	C11	4H	C508	5G
D301	2J	R501	5H	C12	3H	C509	5G
(X501)	6H	R502	5H	(C13)	4H	C510	6I
(S201)	3G	R503	5H	(C14)	4H	C511	5H
CN11	8K	R505	5G	C15	2H	C514	6I
(JK11)	2H	R506	5H	C17	3H	C515	5H
(JK551)	4G	R509	6H	(C19)	4I	C525	6H
(JK601)	3G	R510	6H	C20	4H	C551	5G
(JK701)	7G	R512	6H	C22	3H	C552	4G
R11	4H	R513	5H	C24	3H	C601	6G
R12	5H	R514	6I	C26	3H	C602	6G
R14	3I	R551	5H	(C27)	7J	C603	6G
R25	3H	R601	5G	(C28)	8J	C604	6H
R26	3H	R602	5G	C30	3H	C609	2H
R28	2H	R603	6G	C33	3H	(C610)	6G
R31	3H	R606	3H	C35	3H	(C701)	7I
R32	3H	R608	2H	C36	3H	C703	7H
R113	3I	R609	2H	C103	3I	C704	7I
R114	4I	R701	7H	C111	4I	(C705)	6I
R120	4I	R702	7H	C112	4I	(C706)	7I
R121	4I	R703	7H	C113	4I	C901	7H
R122	4I	R704	8I	C114	3I	CX505	5G
R125	3J	R705	7H	C115	3I		

13 Terminal Function of IC´s

13.1. IC101(AN8839NSBE1):Servo Amplifier

Pin No.	Mark	I/O Division	Function
1	PDE	I	Tracking signal input (1)
2	PDF	I	Tracking signal input (2)
3	VDD	I	Power supply
4	PDA	I	Focus signal input (1)
5	PDB	I	Focus signal input (2)
6	LPD	I	APC amplifier input
7	LD	O	APC amplifier output
8	RF	O	RF addition output
9	RF IN	I	RF detection signal input
10	CSBRT	I	Capacitor connection for OFTR
11	CEA	I	HPF amplifier capacitor connection
12	BDO	O	Dropout signal output (H: dropout)
13	LDON	I	APC control input
14	GND	---	Ground connection
15	/RFDET	O	RF detection signal output (L: detection)
16	PDOWN	I	Reduced voltage detection signal input
17	OFTR	O	Off-track signal output (H: off-track)
18	NC	---	Unused and open
19	ENV	O	RF envelop signal output
20	ENV OFF	I	Envelop control input
21	NC	---	Unused and open
22	TE IN	I	Tracking error amplifier input
23	TE OUT	O	Tracking error amplifier output
24	FE OUT	O	Focus error amplifier output
25	FE IN	I	Focus error amplifier input
26	VREF	O	Reference voltage output
27	TBAL	I	Tracking balance signal input
28	FBAL	I	Focus balance signal input

13.2. IC301(SC440322CFU):System Control and LCD Drive

Pin No.	Mark	I/O Division	Function
1 ¦ 5	FP6 ¦ FP2	O	LCD segment signal output
6	FP1	O	(Not used, open)
7 ¦ 10	BP3 ¦ BP0	O	LCD segment signal output
11	VLCD3	---	(Not used, GND)
12	VLCD2	I	Power supply (LCD drive bias)
13	VLCD1		
14	VDD	I	Power supply
15	OSC1	I	When MSEL from IC501 is H: Crystal oscillator 1/2 frequency-dividedclock signal input (I SMCK = 8.4672 MHz) When MSEL from IC501 is L: Crystal oscillator 1/4 frequency-divided clocksignal input (I SMCK = 4.2336 MHz)
16	OSC2	O	Crystal oscillator1/2frequency-divided clock signal output
17	XOSC2	---	(Not used, open)
18	XOSC1	I	Connected to reset detection
19	VSS	---	Ground connection
20	RESET	I	Reset detection input
21	BLKCK	I	Block clock input
22	STAT	I	IC501 data input
23	MDATA	I/O	Command data input/output
24	MCLK	O	Output of serial command clock to peripheral IC´s
25	MEMORY	I	MEMORY key input
26	REPEAT	I/O	REPEAT key input
27	SKIP.R	I	SKIP.R key input
28	SKIP.F	I	SKIP.F key input
29	STOP	I	STOP key input
30	BATTERY	I	(Not used, open)
31	EQ	I	EQ key input
32	SHOCK.P	I	SHOCK.P key input
33	BOUT	I	Input of battery charging voltage measurement from IC11 (L: end)
34	OPEN	I	Cover open detection input
35	REST	I	REST switch input
36	PLAY	I	PLAY key input
37	BUZ	O	Buzzer control output
38	BATT STROBE	O	Output for measurement of battery charging voltage (measured by Hi-Z)
39	FG	I	Spindle motor revolution cycle signal input
40	PC	O	Hard mute output
41	MLD	O	Output of serial command latch to peripheral IC´s
42	RANDOM	I	RANDOM switch input
43	RESUME	I	RESUME switch input
44	HOLD	I	HOLD switch input
45	RCLK	O	LCD remote control clock output
46	RDATA	O	Output to LCD remote control
47	TX POWER	O	Optical digital output ON signal
48	RSENSE	I	LCD remote control input
49	LCDREM	---	(Not used, open)
50	PDOWN	O	Headphones power OFF output
51	ZANSEL	I	(Not used, "H")
52	MUTE	O	Hard mute output
53 ¦ 60	FP18 ¦ FP11	O	LCD segment signal output
61	FP10	O	(Not used, open)
62 ¦ 64	FP9 ¦ FP7	O	LCD segment signal output

13.3. IC401(BH6522FVE2):Coil and Motor Drive

Pin No.	Mark	I/O Division	Function
1	CT	O	Triangular wave output (connected to ground via a capacitor)
2	VCC	I	Power supply
3	NC	---	Unused and open
4	VREF	I	Reference voltage input
5	CLK	I	External clock input
6	PVCC1	I	Power supply
7	V01R	O	Focus coil drive signal output
8	PGND1	---	Ground connection
9	V01F	O	Focus coil drive signal output
10	PVCC12	I	Power supply
11	V02F	O	Tracking coil drive signal output
12	PGND2	---	Ground connection
13	V02R	O	Tracking coil drive signal output
14	PVCC2	I	Power supply
15	MONITOR	I	A/D reference voltage monitor
16	NC	---	Unused and open

Pin No.	Mark	I/O Division	Function
17	IN1F	I	Focus coil drive signal Input
18	IN1R	I	Focus coil drive signal input
19	IN2R	I	Tracking coil drive signal input
20	IN2F	I	Tracking coil drive signal input
21	GND	---	Ground connection
22	MUTE(PC)	I	Hard mute input
23	VG	I	Power supply
24	IN3F	I	Traverse motor drive signal input
25	IN3R	I	Traverse motor drive signal input
26	NC	---	Unused and open
27	PGND3	---	Ground connection
28	V03R	O	Traverse motor drive signal output
29	PVCC3	I	Power supply
30	V03F	O	Traverse motor drive signal output
31	PGND34	---	Ground connection
32	NC	---	Unused and open
33	VM	O	For output of spindle motor output power supply
34	PVCC4	I	Power supply
35	VLIM	I	Spindle motor gain control signal input
36	CN4	I	Channel 4 filter (connected to VREF via a capacitor)
37	IN4	I	Reference voltage input
38	OP	O	Spindle motor control signal amplifier output
39	INV	I	Spindle motor control signal reverse input
40	NINV	I	Spindle motor drive input

13.4. IC402(BA6966FVE2):Motor drive

Pin No.	Mark	I/O Division	Function
1	UOUT	O	Spindle motor drive signal output
2	RF	---	Output current detection (connected to ground via a resistance)
3	UIN	I	Rotor position detection input
4	VIN		
5	WIN		
6	COM	I	Motor coil midpoint input
7	CST	---	Starting oscillation capacitor connection
8	CSL1	---	Slope capacitor connections
9	CSL2		
10	GND	---	Ground connection
11	FG	O	Spindle motor revolution cycle signal output
12	BRK -	I	Brake signal input
13	BRK+		
14	STBY	I	Standby input
15	RIB	---	Output TR setting resistor connection
16	VCC	I	Power supply
17	VM	I	Input of spindle motor output power supply
18	NC	---	Unused and open
19	WOUT	O	Spindle motor drive signal output
20	VOUT		

13.5. IC11(RS10002E2):DC/DC Converter

Pin No.	Mark	I/O Division	Function
1	PGND1	---	Ground connection
2	DSW	O	DC/DC converter coil drive
3	PVCC1	I	Power supply
4	VSEN	I	Empty detection input (connected to power supply)
5	RESTART	I	DC/DC converter drive
6	ICNT	I	Setting of charging current
7	AMUTE	O	Muting signal output
8	START	I	Starting of DC/DC converter
9	VG	I	Power supply
10	LG	I	Coil drive for VG voltage increase (connected to power supply)
11	PGND2	---	Ground connection
12	IOUT	O	Charging signal output and charging feedback
13	PVCC2	I	Power supply
14	PEGB	O	Regulator drive signal output
15	MSTAT/ ACDET	O	DC jack detection output
16	MDATA/ EMP	I	Power drop detection input
17	MLD/ VCNT	I	Regulator voltage switching input
18	MCLK/ CHARGE	I	Charging ON/OFF
19	S/P	I	Serial/parallel switching (connected to power supply)
20	DVDD	I	Power supply
21	CLK	I	DC/DC converter external clock input
22	PREGND	---	Ground connection
23	AREF	O	Audio reference output
24	AVCC	O	Ripple filter output
25	CRP	I	Ripple filter smoothing capacitor connection
26	RESET	O	Reset detection output
27	SOFT	O	Soft start setting (connected to ground via a capacitor)
28	EO	O	DC/DC converter error amplifier output
29	EI	I	DC/DC converter error amplifier input
30	VADJ	---	Output for varying DC/DC converter output (unused and open)
31	CT	O	Triangular wave output (connected to ground via a capacitor)
32	SPRT	O	For setting of constants at power OFF (connected to ground via a capacitor)
33	OFF	---	DC/DC converter OFF (unused and open)
34	BOUT	O	Amplifier output
35	STROBE	I	Strobe input
36	SEI	---	Sub DC/DC converter error amplifier input (unused and open)
37	VSUB	I	Power supply
38	SSW		
39	SVCC		
40	USW	I	DC/DC converter coil drive

13.6. IC501(MN662782RPT1):Servoprocessor, Digital Signal Processing, Digital Filter, and D/A Converter

Pin No.	Mark	I/O Division	Function
1	DVDD3	---	Power supply for DRAM

Pin No.	Mark	I/O Division	Function
2	D0	I/O	Data input/output for DRAM
3	D1		
4	NWE	O	Write enable output for DRAM
5	NRAS	O	RAS control signal output for DRAM
6	D2	I/O	Data 2/3 input/output for DRAM
7	D3		
8	NCAS1	O	CAS control 1 signal output for DRAM
9	NCAS2	---	CAS control 2 signal output for DRAM (unused and open)
10 - 14	A8 - A4	O	Addresses 8-4 output for DRAM
15	A9	O	Address 9 output for DRAM
16 - 19	A0 - A3	O	Addresses 0-3 output for DRAM
20	DVSS2	---	Ground connection for digital circuits
21	DVDD2	---	Power supply for digital circuits
22	SPOUT	O	Spindle motor drive output
23	TRV+	O	Traverse motor drive output, positive polarity
24	TRV -	O	Traverse motor drive output, negative polarity
25	TR+	O	Tracking coil drive output, positive polarity
26	TR -	O	Tracking coil drive output, negative polarity
27	FO+	O	Focus coil drive output, positive polarity
28	FO -	O	Focus coil drive output, negative polarity
29	FBAL	O	Focus balance adjustment output
30	TBAL	O	Tracking balance adjustment output
31	VREF	I	D/A output reference voltage input
32	FE	I	Focus error signal input (analog input)
33	TE	I	Tracking error signal input (analog input)
34	BFENV	I	RF envelope signal input (analog input)
35	OFT	I	Off-track signal input (H: off-track)
36	NRFDET	I	RF detection signal input (L: detection)
37	BDO	I	Dropout signal input (H: dropout)
38	LDON	O	Laser ON signal output (H: ON)
39	ARF	I	RF signal input
40	IREF	I	Reference current input
41	AD PVCC	I	A/D reference voltage input
42	DSLF	O	Loop filter output for DSL
43	DSLF2	O	Unbalance current correction output for DSL
44	PLLF	O	Loop filter output for PLL
45	VCOF	O	Loop filter output for jitter-free VCO
46	AVDD2	---	Power supply for analog circuits
47	AVSS2	---	Ground connection for analog circuits
48	OUTL	O	Left channel audio signal output
49	AVSS1	---	Ground connection for analog circuits (for audio output)
50	OUTR	O	Right channel audio signal output
51	AVDD1	---	Power supply for analog circuits
52	FSEL	I	Noise filter ON/OFF switching input (L: ON)
53	TMOD1	I	Terminal mode switching input 1 (L: normal)
54	TMOD2	I	Terminal mode switching input 2 (L: normal)
55	FLAG	---	Flag signal output (unused and open)
56	FCLK	---	LCD frame clock signal output (unused and open)
57	GUP	O	Gain control output for during XBS operation (when ON: increased 6 dB)
58	6T	---	Expansion port output (unused and open)
59	11T	O	Spindle motor gain control signal output
60	TX	O	Digital audio interface signal output
61	MCLK	I	Microprocessor command clock signal input (detected at leading edge)
62	MDATA	I	Microprocessor command data signal input
63	MLD	I	Microprocessor command control signal input (L: load)
64	BLKCK	O	Sub-code block clock signal output (f = 75 Hz)
65	SQCK	I	External clock input for sub-code Q resistor
66	SUBQ	---	Sub-code Q data output (unused and open)
67	DMUTE	---	Mute input (H: mute) (unused and connected to ground)
68	STAT	O	Status signal output
69	NRST	I	Reset signal input (H: reset)
70	SPPOL	O	Spindle motor drive signal output
71	PMCK	O	Clock signal output (f = 88.2 Hz)
72	SMCK	O	System clock signal output (f = 4.2336 MHz)
73	SUBS	---	Sub-code output (unused and open)
74	SBCK	I	Clock input for sub-code output
75	NCLDCK	---	Sub-code frame clock signal output (f = 7.35 kHz)(unused and open)
76	NTEST	I	Test terminal (normal: H)
77	X1	I	Crystal oscillator circuit input (f = 16.9344 MHz)
78	X2	O	Crystal oscillator circuit output (f = 16.9344 MHz)
79	DVDD1	---	Power supply for digital circuits
80	DVSS1	---	Ground connection for digital circuits

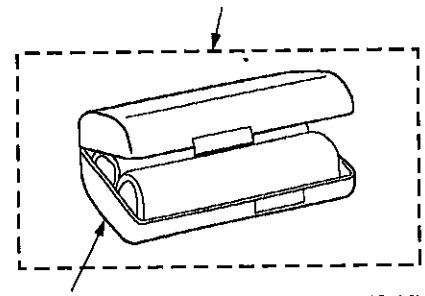
14 Supply of Rechargeable Battery Ass´y as Replacement Parts

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 (RFKFP3GAVABA) 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.

(as shown in **Fig. 5**)

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



Battery Carrying Case (RFKNLS370-K)

Fig. 5

15 Caution in Use of Rechargeable Battery Ass´y

- 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. (as shown in **Fig. 6**)

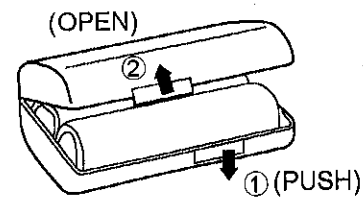


Fig. 6

16 Replacement Parts List

Notes:

*Important safety notice:

*Components identified by ⚠ 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 manufacturerís 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.

*Capacity values are in microfarads (μF) 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)

*"<IA>, <IB>, <IC>, <ID>, <IE>" marks in Remarks indicate language of instruction manual.

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

*This item is not attached to marchandise, but it is supplied as a replacement parts.

ACHTUNG:

Die lasereinheit nicht zerlegen.

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

16.1. Replacement Parts List

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	RKK0120-H	BATT. COVER	1	
2	RGV0200-H	SLIDE KNOB	2	
3	RMA0677	REAR ORNAMENT PLATE	1	
4	RME0283	OPEN SPRING	1	
5	RGK1092-S	LCD WINDOW ORNAMENT	1	
6	RGP0691-X	LCD WINDOW	1	
7	RGU1696-1S	OPERATION KNOB	1	
8	RFKJLSX410GH	BOTTOM CABINET ASS'Y	1	
8-1	RKA0063-K	FOOT	2	
9	RSQ0061	ZEBRA RUBBER	1	
10	RXA0173	SW PCB	1	

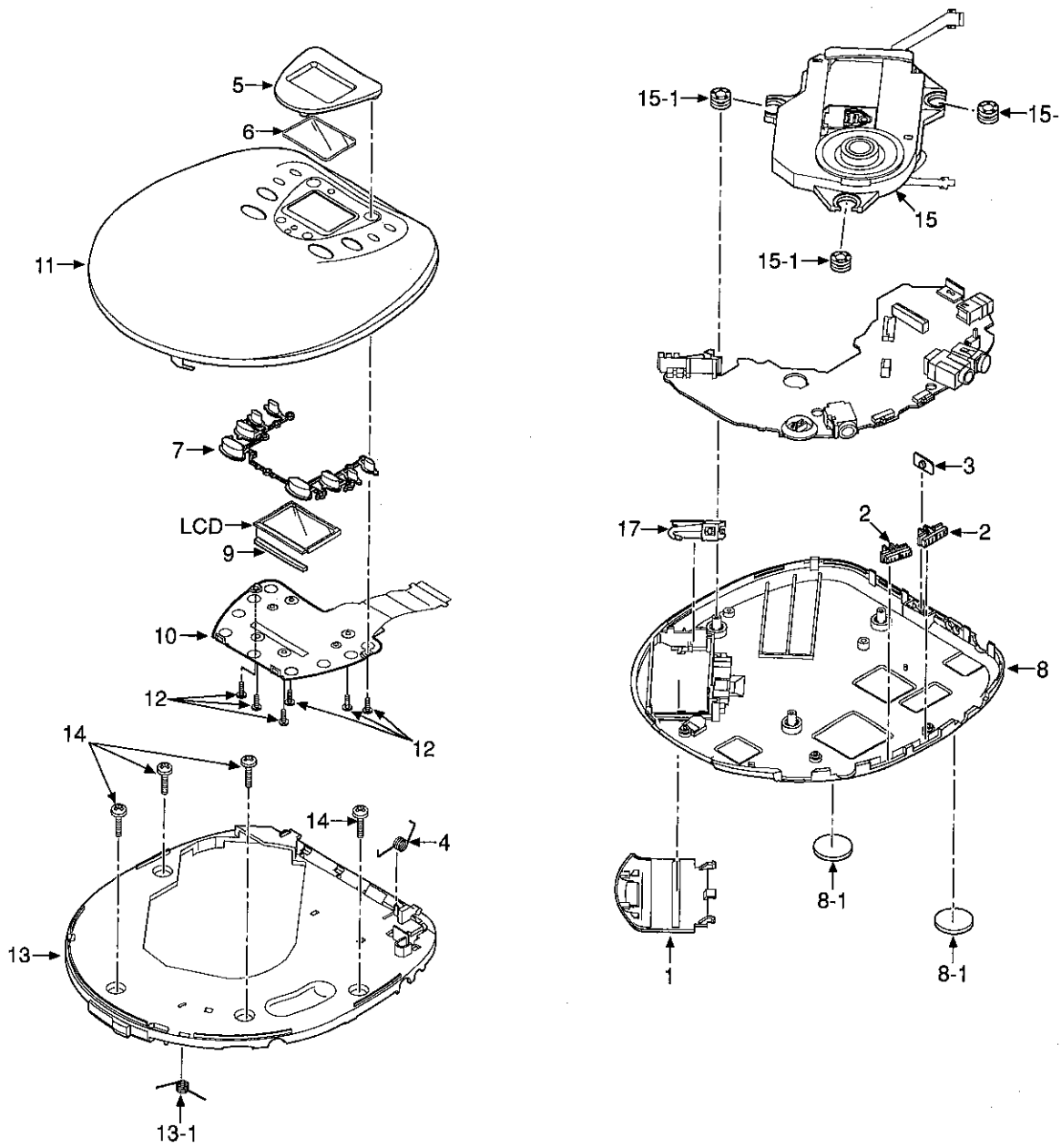
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
11	RGD0057-S	CD LID(S)	1	
12	XQN14+BG3FC	SCREW	6	
13	RYK0884-H	MID CABINET	1	
13-1	RME0265	SPRING	1	
14	XTN17+6GFZ	SCREW	4	
15 ⚠	RAE0220Z	TRAVERSE DECK	1	
15-1	RMG0503-K	FLOATING GUM	3	
17	RJC93030	COMMON TERMINAL	1	
1001	REP2737D-M	P.C.B.ASS'Y	1	
A1	RFA1139-H	BATTERY CASE	1	
A2 ⚠	RFEA403H-S	AC ADAPTOR	1	
A3	RFEV019PCKS	WIRED REMOTE CONTROL	1	
A4	RFEV323P-KS	STEREO EARPHONE	1	
A4-1	RFA0574-K	CLIP	1	
A5	RFKFHHR4AHBA	RECHARGEABLE BATT.ASS'Y	1	
A5-1	RFE0059	SPACER	1	
A5-2	RXQ0449	BATTERY CASE	1	
A6	RQT4956-K	INSTRUCTION MANUAL	1	<IA>
A7	RQCB0169	SERVICE CENTER LIST	1	
A8*	RKB205ZA-0	EAR PADS	1	
C10	ECUV1H121KCV	50V 120P	1	
C11	ECUVNA105ZFV	10V 1U	1	
C12	ECST1AY475RR	10V 4.7U	1	
C13	RCE0JSL470IX	6.3V 47U	1	
C14	RCE0GKS221IG	4V 220U	1	
C15	ECUZNC104ZFV	16V 0.1U	1	
C16,17	ECUVNA105ZFV	10V 1U	2	
C19	ECEA1AKS220	10V 22U	1	
C20	ECUVNA105ZFV	10V 1U	1	
C21	ECUV1E103KBV	25V 0.01U	1	
C22	ECUZNC104ZFV	16V 0.1U	1	
C24	ECUV1H561KBV	50V 560P	1	
C26	ECUVNJ105KBV	63V 1U	1	
C27,28	ECEA0JKS331	6.3V 330U	2	
C30	ECUV1C104KBV	16V 0.1U	1	
C33	ECST1AY475RR	10V 4.7U	1	
C35	ECUVNJ105KBV	63V 1U	1	
C36,37	ECUVNA105ZFV	10V 1U	2	
C101	ECUV1C104KBV	16V 0.1U	1	
C103	ECUV1E223KBV	25V 0.022U	1	
C111	ECUV1E223KBV	25V 0.022U	1	
C112	ECUV1H221KBV	50V 220U	1	
C113,14	ECUZNC104ZFV	16V 0.1U	2	
C115	ECUV1E223KBV	25V 0.022U	1	
C120	ECUV1H152KBV	50V 1500P	1	
C121	ECUV1H121KCV	50V 120P	1	
C201	RCST0JY226RG	6.3 22U	1	
C301	ECUZNC104ZFV	16V 0.1U	1	
C302	ECUVNA105ZFV	10V 1U	1	
C401	ECUV1H102KBV	50V 1000P	1	
C402	ECUVNA105ZFV	10V 1U	1	
C404	RCST0JY226RG	6.3 22U	1	
C405	ECUV1E123KBV	25V 0.012U	1	
C406	ECUV1E153KBV	25V 0.015U	1	
C408	ECUV1E223KBV	25V 0.022U	1	
C410	ECUV1H122KBV	50V 1200P	1	
C411	ECUVNA105ZFV	10V 1U	1	
C431-33	ECUV1H222KBV	50V 2200P	3	
C434	ECUV0J474KBV	6.3V 0.47U	1	
C435,36	ECUV1C333KBV	16V 0.033U	2	
C437	ECEA0JKS470	6.3V 47U	1	
C438	ECUV1H152KBV	50V 1500P	1	
C501,02	ECUV1H150KCV	50V 15P	2	
C503	ECUV1H561KBV	50V 560P	1	
C504	ECUZNC104ZFV	16V 0.1U	1	
C506	ECUVNA224KBV	10V 0.22U	1	
C507	RCE0GKS221IG	4V 220U	1	
C508	ECUV0J474KBV	6.3V 0.47U	1	
C509	ECUV1E103KBV	25V 0.01U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C510,11	ECUZNC104ZFV	16V 0.1U	2	
C514	ECUV1H102KBV	50V 1000P	1	
C515	ECUZNC104ZFV	16V 0.1U	1	
C525	ECUZNC104ZFV	16V 0.1U	1	
C551,52	ECUZNC104ZFV	16V 0.1U	2	
C601,02	ECUV1H102KBV	50V 1000P	2	
C603,04	ECUV1H272KBV	50V 2700P	2	
C605,06	ECST0GY106RR	4V 10U	2	
C607,08	ECUV1H681KBV	50V 680U	2	
C609	ECUZNC104ZFV	16V 0.1U	1	
C610	ECEA0JKS470	6.3V 47U	1	
C701	ECEA0JPD470I	6.3V 47U	1	
C702	ECUZNC104ZFV	16V 0.1U	1	
C703,04	ECUVNJ105KBV	63V 1U	2	
C705,06	ECEA0GKS221	4V 220U	2	
C707	ECUZNC104ZFV	16V 0.1U	1	
C901	ECUV1H332KBV	50V 3300P	1	
C951	ECUV1E223KBV	25V 0.022U	1	
CN11	RJH8302	CONNECTOR	1	
CN51	RJH9209-1	BATT.CASE CONNECT.TERMINA	1	
CN101	RJS2A4616T	CONNECTOR(16P)	1	
CN301	RJS2A6130T	FPC CONNECTOR(30P)	1	
CN401	RJS2A6108T	CONNECTOR(8P)	1	
CX505	ECUV1E223KBV	25V 0.022U	1	
D11	MA1070400L	DIODE	1	
D12	MA741WKTX	DIODE	1	
D21	MA111TX	DIODE	1	
D301	MA142WKTX	DIODE	1	
D901	MA142WKTX	DIODE	1	
D903	MA143TX	DIODE	1	
D911	MA142WKTX	DIODE	1	
IC11	RS10002E2	IC	1	
IC101	AN8839NSBE1	IC	1	
IC301	SC440322CFU	IC	1	
IC401	BH6522FV	IC	1	
IC402	BA6966FV	IC	1	
IC501	MN662782RPT1	IC	1	
IC502	MNA4400T10T	IC	1	
IC701	NJU7082BVTE1	IC	1	
ICP11 ⚠	UNHH20600L	ICP	1	
JK11	RJJ43K09-C	JACK,DC IN	1	
JK551	GP1F366X	JACK,OUT	1	
JK601	RJJD3S5ZB-C	JACK,AUDIO OUT	1	
JK701	RJJ36T02-C	JACK,H.P.	1	
L11	RLQU331KT-W	COIL	1	
L12	RLQS101KT1-T	COIL	1	
L13	RLQU331KT-W	COIL	1	
L401	RLQS330KT1-T	COIL	1	
LCD301	RSL5217-T	LCD	1	
P1	RPK1182	PACKING CASE	1	
P2	RPQ0924	PAD	1	
P3	RPQ0966	PAD	1	
P4	RPF0111	PROTECTION BAG(UNIT)	1	
Q11	2SB1182TLPQR	TRANSISTOR	1	
Q201	MSB709RST1	TRANSISTOR	1	
Q401	XN1210TX	TRANSISTOR	1	
Q402	2SD1819ATX	TRANSISTOR	1	
Q431	DTC144TUA106	TRANSISTOR	1	
Q551	DTA114YUA106	TRANSISTOR	1	
Q601,02	2SD1328QRSTX	TRANSISTOR	2	
Q603	XN1215TX	TRANSISTOR	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
Q701,02	2SD1328QRSTX	TRANSISTOR	2	
Q703	XN1210TX	TRANSISTOR	1	
Q901	DTA114YUA106	TRANSISTOR	1	
Q902	XN1210TX	TRANSISTOR	1	
Q903	DTA114YUA106	TRANSISTOR	1	
Q904	2SD1819ATX	TRANSISTOR	1	
Q951	2SB1218ATX	TRANSISTOR	1	
Q952	2SD1819ATX	TRANSISTOR	1	
Q953	DTC114EUA106	TRANSISTOR	1	
Q954	XN1215TX	TRANSISTOR	1	
Q955	UN5213TX	TRANSISTOR	1	
R11	ERJ3GEYJ822V	1/16W 8.2K	1	
R12	ERJ3GEYJ332V	1/16W 3.3K	1	
R13	ERJ3GEYJ102Z	1/16W 1K	1	
R14	ERJ3GEYJ222V	1/16W 2.2K	1	
R22	ERJ3GEYJ223V	1/16W 22K	1	
R25,26	ERJ3GEYJ104Z	1/16W 100K	2	
R27	ERJ3GEYJ392V	1/16W 3.9K	1	
R28	ERJ3GEYJ100V	1/16W 10	1	
R29	ERJ3GEYJ682V	1/16W 6.8K	1	
R31	ERJ3GEYJ683V	1/16W 68K	1	
R32	ERJ3GEYJ103Z	1/16W 10K	1	
R113,14	ERJ3GEYJ330V	1/16W 33	2	
R120	ERJ3GEYJ103Z	1/16W 10K	1	
R121,22	ERJ3GEYJ124V	1/16W 120K	2	
R125,26	ERJ3GEYJ124V	1/16W 120K	2	
R127	ERJ3GEYJ473V	1/16W 47K	1	
R201	ERJ3GEYJ2R2V	1/16W 2.2	1	
R202	ERJ3GEYJ223V	1/16W 22K	1	
R203	ERJ3GEYJ1R0V	1/16W 1	1	
R301	ERJ3GEYJ392V	1/16W 3.9K	1	
R302	ERJ3GEYJ104Z	1/16W 100K	1	
R303	ERJ3GEYJ102Z	1/16W 1K	1	
R304	ERJ3GEYJ105V	1/16W 1M	1	
R306	EXBV8V473JV	1/16W 47K	1	
R308	ERJ3GEYJ104Z	1/16W 100K	1	
R312	ERJ3GEYJ223V	1/16W 22K	1	
R403	ERJ3GEYJ123V	1/16W 12K	1	
R404	ERJ3GEYJ273V	1/16W 27K	1	
R405	ERJ3GEYJ333V	1/16W 33K	1	
R406	ERJ3GEYJ104Z	1/16W 100K	1	
R410	ERJ3GEYJ822V	1/16W 8.2K	1	
R411	ERJ3GEYJ393V	1/16W 39K	1	
R431,32	ERJ3GEYJ1R0V	1/16W 1	2	
R433	ERJ3GEYJ333V	1/16W 33K	1	
R434	ERJ3GEYJ683V	1/16W 68K	1	
R435	ERJ3GEYJ473V	1/16W 47K	1	
R436	ERJ3GEYJ153V	1/16W 15K	1	
R437	ERJ3GEYJ391V	1/16W 390	1	
R439	ERJ3GEYJ222V	1/16W 2.2K	1	
R501	ERJ3GEYJ683V	1/16W 68K	1	
R502	ERJ3GEYJ563V	1/16W 56K	1	
R503	ERJ3GEY0R00V	CHIP JUMPER	1	
R505	ERJ3GEYJ391V	1/16W 390	1	
R506	ERJ3GEYJ222V	1/16W 2.2K	1	
R508	ERJ3GEYJ1R0V	1/16W 1	1	
R509	ERJ3GEYJ223V	1/16W 22K	1	
R510	EXBV4V103JV	1/32W 10K	1	
R511	ERJ3GEYJ472V	1/16W 4.7K	1	
R512	EXBV4V222JV	1/32W 2.2K	1	
R513	ERJ3GEYJ104Z	1/16W 100K	1	
R514	ERJ3GEYJ681V	1/16W 680	1	
R551	ERJ3GEYJ102Z	1/16W 1K	1	
R601,02	ERJ3GEYJ681V	1/16W 680	2	
R603,04	MCR03PZHJ561	1/16W 560	2	
R605,06	ERJ3GEYJ473V	1/16W 47K	2	
R607,08	ERJ3GEYJ102Z	1/16W 1K	2	
R609	EXBV4V332JV	1/32W 3.3K	1	
R701,02	ERJ3GEYJ473V	1/16W 47K	2	
R703,04	ERJ3GEYJ150V	1/16W 15	2	
R705,06	ERJ3GEYJ1R5V	1/16W 1.5	2	
R707,08	ERJ3GEYJ472V	1/16W 4.7K	2	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R709	EXBV4V473JV	1/32W 47K	1	
R710	EXBV4V183JV	1/32W 18K	1	
R711	EXBV4V223JV	1/32W 22K	1	
R712	EXBV4V331JV	1/32W 330	1	
R713,14	ERJ3GEY0R00V	CHIP JUMPER	2	
R901	EXBV4V821JV	1/32W 820	1	
R902	ERJ3GEYJ274V	1/16W 270K	1	
R904	ERJ3GEYJ470V	1/16W 47	1	
R905	ERJ3GEYJ473V	1/16W 47K	1	
R951	ERJ3GEYJ821V	1/16W 820	1	
R952	ERJ3GEYJ103Z	1/16W 10K	1	
R953,54	ERJ3GEYJ472V	1/16W 4.7K	2	
RJ2,J3	ERJ3GEY0R00V	CHIP JUMPER	2	
RJ501	ERJ3GEY0R00V	CHIP JUMPER	1	
RJ503	ERJ3GEY0R00V	CHIP JUMPER	1	
RJ505	ERJ3GEY0R00V	CHIP JUMPER	1	
RJ507	ERJ3GEY0R00V	CHIP JUMPER	1	
RJ509	ERJ3GEY0R00V	CHIP JUMPER	1	
RJ511	ERJ3GEY0R00V	CHIP JUMPER	1	
RJ902	ERJ3GEY0R00V	CHIP JUMPER	1	
RJ904	ERJ3GEY0R00V	CHIP JUMPER	1	
S201	ESE11SV6	SW,LASER ON/OFF	1	
S202	RSP1A024-A	SW,REST DET	1	
S309	RSS3A007-1A	SW,MODE	1	
S310	RSS2A010-1A	SW,HOLD	1	
SA1	SZZP1054C	PLAYBILITY TEST DISC	1	
SA2	SZZP1056C	UNEVEN TEST DISC	1	
VR11	RRN3A05B33WL	VR,POWER SUPPLY VOLT.ADJ.	1	
VR701	EVUTUFB11C54	VR,VOLUME	1	
X501	RSXC16M9S01T	OSCILLATOR	1	

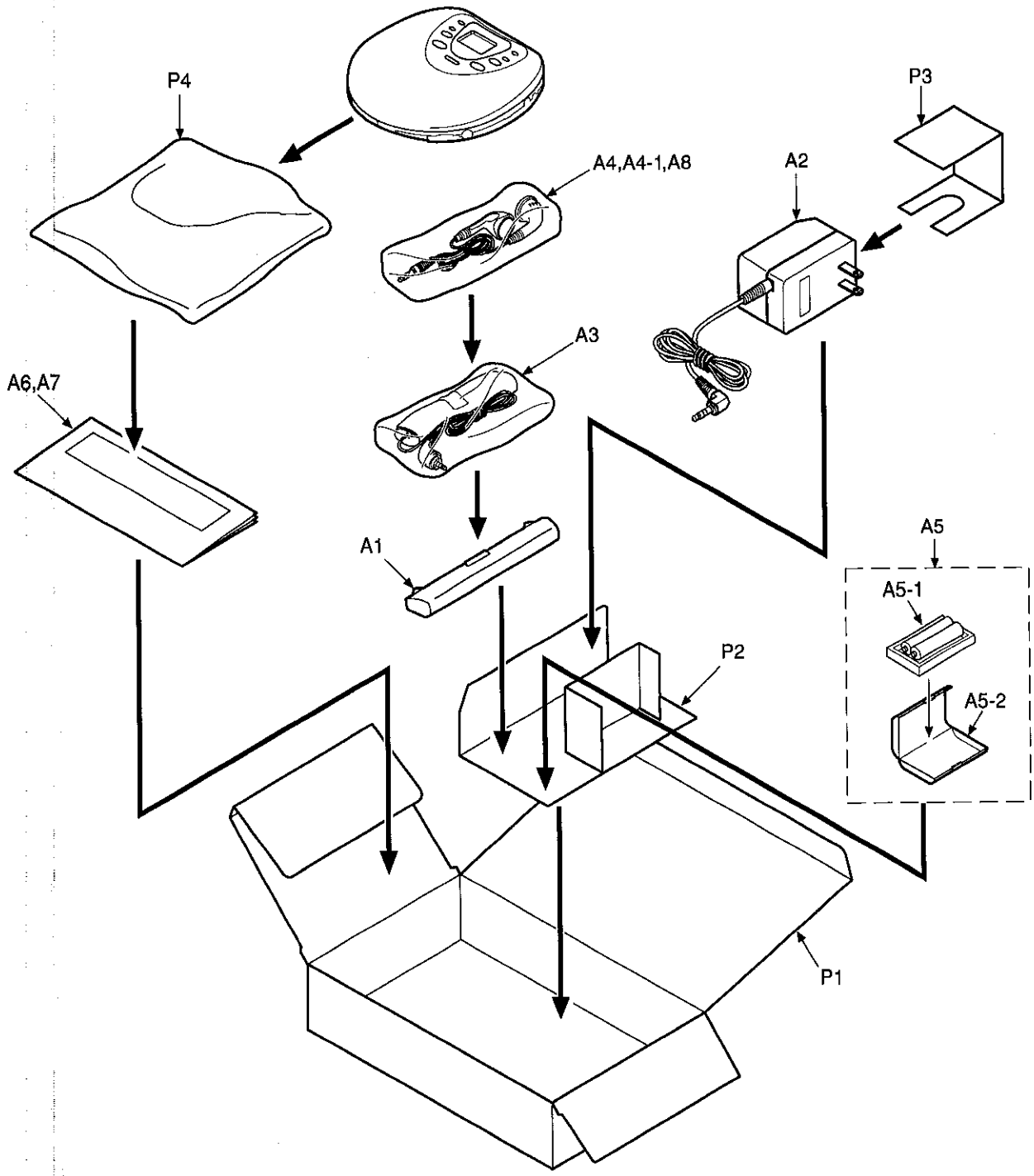
16.2. Cabinet Parts Location



Ref. No.	Part No.	Part Name & Description	Pcs.	Remarks
1	RKK0120-H	BATT. COVER	1	
2	RGV0200-H	SLIDE KNOB	2	
3	RMA0677	REAR ORNAMENT PLATE	1	
4	RME0283	OPEN SPRING	1	
5	RGK1092-S	LCD WINDOW ORNAMENT	1	
6	RGP0691-X	LCD WINDOW	1	
7	RGU1696-1S	OPERATION KNOB	1	
8	RFKJLSX410GH	BOTTOM CABINET ASS'Y	1	
8-1	RKA0063-K	FOOT	2	
9	RSQ0061	ZEBRA RUBBER	1	

Ref. No.	Part No.	Part Name & Description	Pcs.	Remarks
10	RXA0173	SW PCB	1	
11	RGD0057-S	CD LID(S)	1	
12	XQN14+8G3FC	SCREW	6	
13	RYK0884-H	MID CABINET	1	
13-1	RME0265	SPRING	1	
14	XTN17+6GFZ	SCREW	4	
15	RAE0220Z	TRAVERSE DECK	1	
15-1	RMG0503-K	FLOATING GUM	3	
17	RJC93030	COMMON TERMINAL	1	

16.3. Packaging



Ref. No.	Part No.	Part Name & Description	Pcs.	Remarks
A1	RFA1139-H	BATTERY CASE	1	
A2	RFEA403H-S	AC ADAPTOR	1	
A3	RFEV019PCKS	WIREO REMOTE CONTROL	1	
A4	RFEV323P-KS	STEREO EARPHONES	1	
A4-1	RFA0574-K	CLIP	1	
A5	RFKFHHR4AHBA	RECHARGEABLE BATT. ASS'Y	1	
A5-1	RFE0059	SPACER	1	
A5-2	RXQ0449	BATTERY CASE	1	
A6	RQT4956-K	INSTRUCTION MANUAL	1	<1-A>

Ref. No.	Part No.	Part Name & Description	Pcs.	Remarks
A7	RQCB0169	SERVICE CENTER LIST	1	
A8 *	RKB205ZA-0	EAR PADS	1	
P1	RPK1182	PACKING CASE	1	
P2	RPQ0924	PAD	1	
P3	RPQ0966	PAD	1	
P4	RPF0111	PROTECTION BAG(UNIT)	1	

Printed in Japan (H990207400 AM/SF)

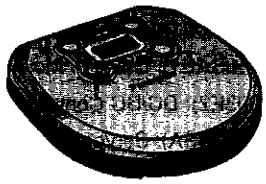
ORDER No. AD0002032C2

Service Manual

Portable CD Player

COMPACT disc DIGITAL AUDIO

MASH multi-stagenoiseshaping



SL-SX270

Traverse Deck: RAE0145Z Mechanism Series

Colours

(S).....Silver Type

(A).....Blue Type [(EG) area only]

Areas

EB.....Great Britain.

EG.....Europe and Russia

Specification

●Audio (Anti-shock off)

No. of channels:	2 channels (left and right, stereo)
Frequency response:	20 to 20,000 Hz (+0.5dB, -1.5dB)
Output voltage:	0.6 V (50kΩ)
S/N:	more than 96 dB*
Wow and flutter:	Below measurable limit
DA converter:	1 bit, MASH
Headphones output level:	Max. 9mW+9mW/ 16Ω (adjustable)

●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 4.5V

●Power consumption

Power source	**ANTI-SHOCK MEMORY 3.0 OFF/ ON**
AC adaptor	3.2W/ 3.4W
Battery (DC 3V)	0.4W/ 0.45W
When recharging:	4.0W

●Play time

[When used in hold mode, at 25°C (77°F) temperature and on flat and stable surface]

Batteries used	**ANTI-SHOCK MEMORY 3.0 OFF/ ON**
2 "AA" (LR6) alkaline batteries	About 23h/ 28h
Rechargeable batteries (recharhging time)	11h/ 13h (5h)

batteries

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

Dimensions (WxHxD)	128x25.9x131.5mm
Weight:	237g (with batteries)
	191g (without batteries)

Notes:

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®

CONTENTS

1 Accessories

- Stereo headphones.....1 pc.
  (RFEV335P-KS)
- Ear pad.....1 pc.
  (STE31H-K3)
- Wird remote control.....1 pc.
  (RFEV015PCKS)

For EB area

- AC adaptor.....1 pc.
  (RFEA403B-S)

For EG area

- AC adaptor.....1 pc.
  (RFEA419E-M)

2 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 µW/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 enthalt eine Laserdiode. Im eingeschalteten Zustand wird unsichtbare Leserstrahlung von der Lasereinheit abgestrahlt.

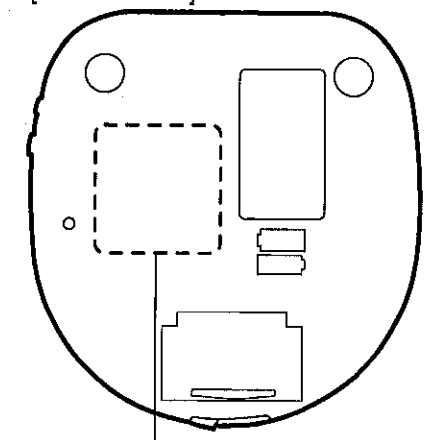
Wellenlage: 780 nm

Maximale Strahlungsleistung der Lasereinheit: 100 µW/VDE

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

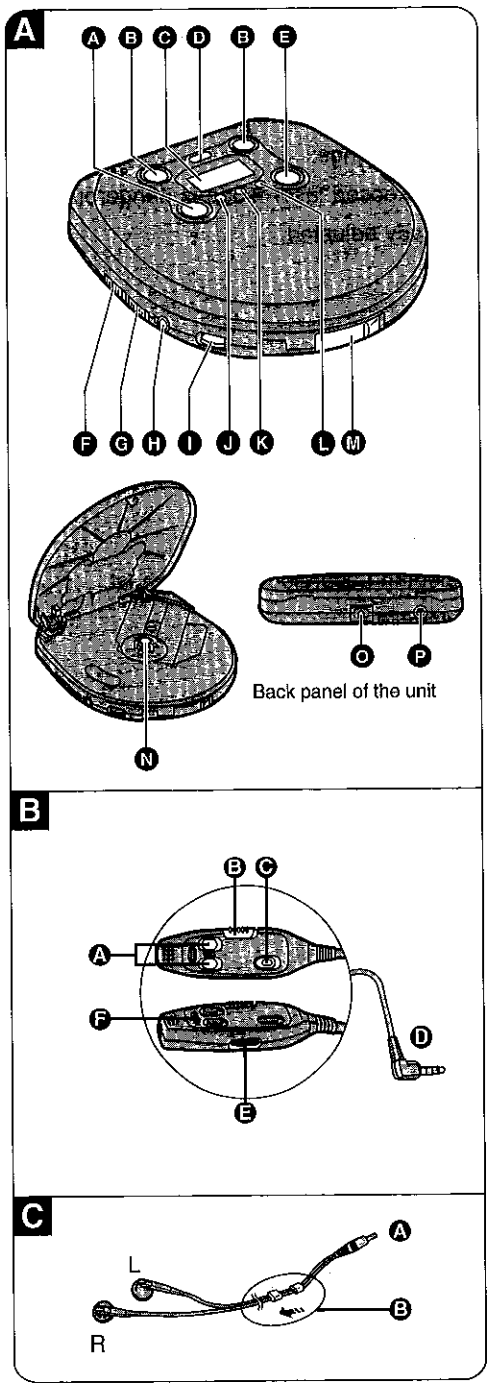
1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefahrlich ist.
2. Den werkseitig Justierten Einstellregler der Lasereinhit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlines blicken.
4. Nicht uber langere Zeit in die Fokussierlines blicken.

[Bottom side]



RQLS0196

3 Operating Instructions



Portable CD Player A

- Ⓐ Stop/operation off button (■, OPR OFF)
- Ⓑ Skip/search buttons (|◀◀, ▶▶| ◀◀, ▶▶)
- Ⓒ Display
- Ⓓ Anti-shock button (A.SHOCK)
- Ⓔ Play/pause button (▶ ❚❚)
- Ⓕ Play mode selector (NOR, RANDOM, RESUME)
- Ⓖ Hold switch (HOLD)
- Ⓗ Headphone jack (🎧)
- Ⓘ Headphones volume control (VOLUME)
- Ⓙ EQ button (EQ)
- Ⓚ Memory/recall button (MEMORY/RECALL)
- Ⓛ Repeat button ( )
- Ⓜ Open switch (OPEN)
- Ⓝ CD release button (PUSH)
- Ⓞ Hole for car mounting base
- Ⓟ DC IN jack (DC IN 4.5 V)

Wired remote control B

- Ⓐ Skip/search buttons (+, −)
- Ⓑ HOLD switch (HOLD)
- Ⓒ Play/stop/off button
- Ⓓ Plug
- Ⓔ Volume control (VOL)
- Ⓕ HOLD indicator

Stereo earphones C

- Ⓐ Plug
- Ⓑ Slider

4 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).

4.1. Handling the traverse deck (optical pickup)

1. The traverse deck (optical pickup) is an extremely high-precision construction and must not be subjected to impact, excessive vibration, or other types of rough handling.
2. In order to prevent static electricity damage to the laser diode, use a short pin or similar tool to short the optical pickup's flexible circuit boards after they have been disconnected from the main circuit board. (as shown in **Fig. 1**)
3. Handle the flexible circuit boards with care; excessive force could cause them to be broken.
4. Do not turn the pre-set variable resistor (for adjustment of the laser power); it has been adjusted at the factory.

   (as shown in **Fig. 2**)

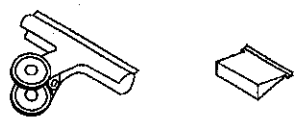


Fig.1

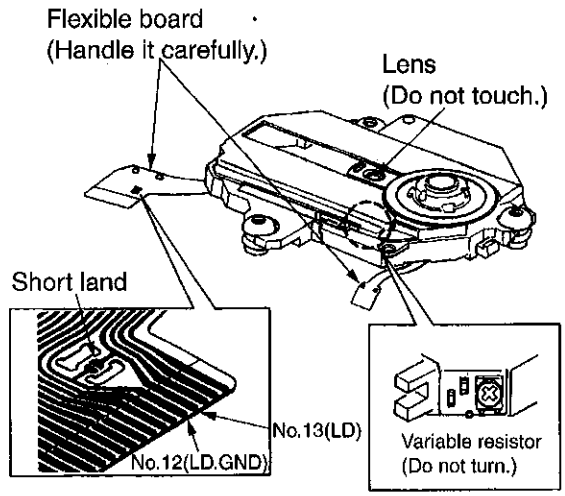


Fig.2

4.2. Grounding for electrostatic breakdown prevention

1. Human body grounding

   Use the anti-static wrist strap to discharge the static electricity from your body. (as shown in **Fig.3**)
2. Work table grounding

   Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and fround the sheet. (as shown in **Fig.4**)

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).

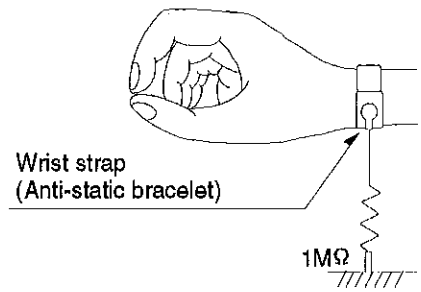


Fig.3

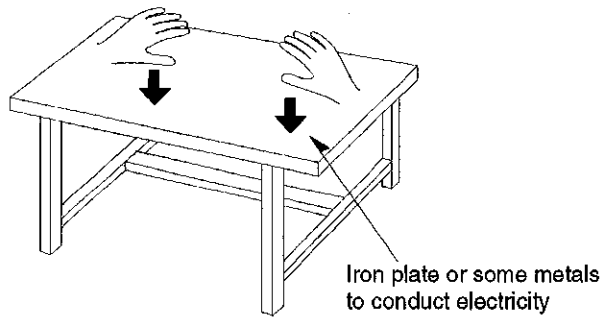


Fig.4

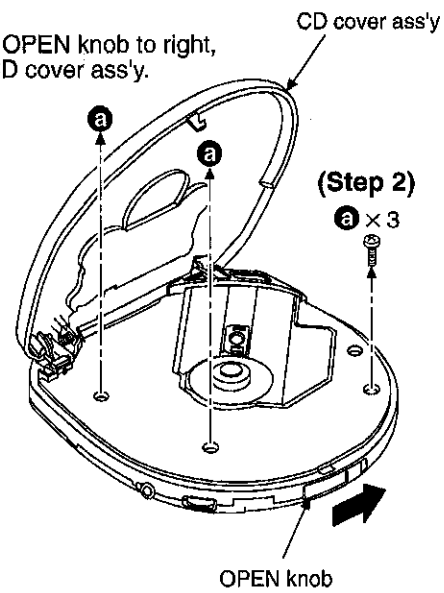
5 Operation Checks and Component Replacement Procedures

- **This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.**
- **For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.**

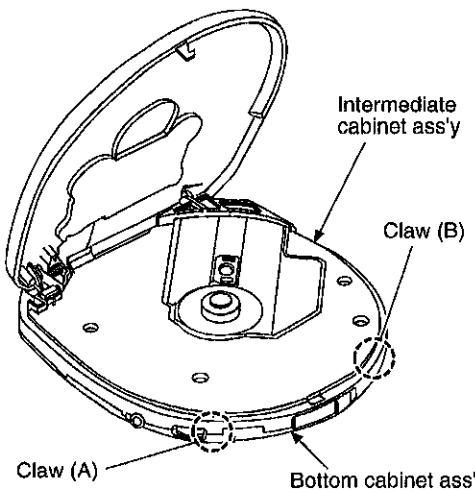
5.1. Checking for the main P.C.B.

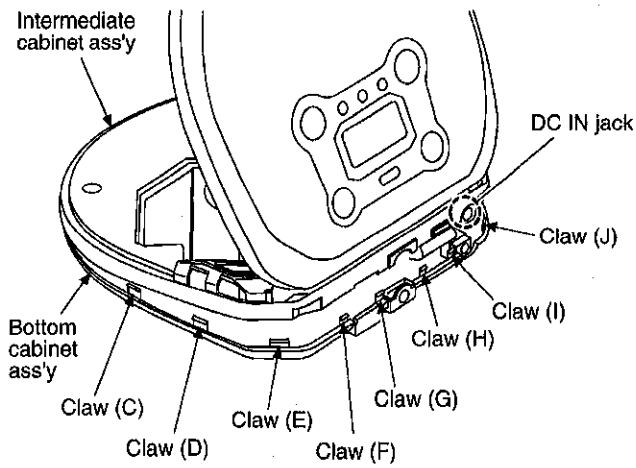
5.1.1. Checking for the main P.C.B. (A side)

(Step 1)
Sliding the OPEN knob to right, open the CD cover ass'y.



(Step 3)
Spread the clearance between the bottom cabinet ass'y and intermediate cabinet ass'y manually.



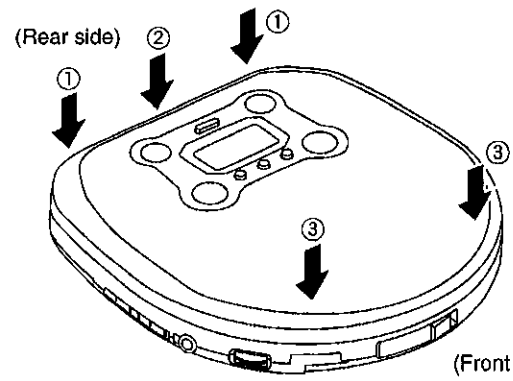


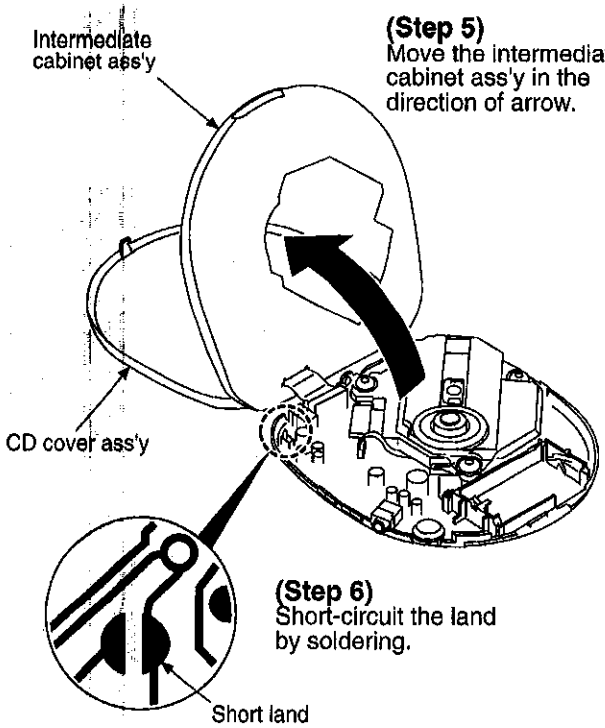
(Step 4)
Open the clearance between the bottom cabinet ass'y and intermediate cabinet ass'y, and then release the claw (C) to claw (J) in turn.

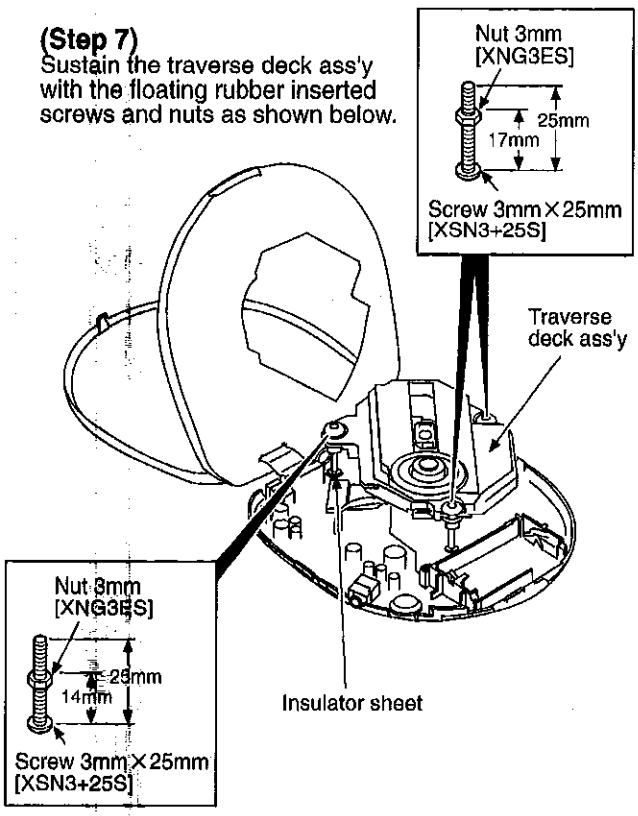
NOTE:
Take care not to break the DC IN Jack provided with intermediate cabinet.

■ CD cover ass'y and intermediate reassembly procedure

① Fit together right side and left side of rear part. (Either right or left side)
② Fit together the center of rear part.
③ Fit together the right and left of front part. (Either right or left side)

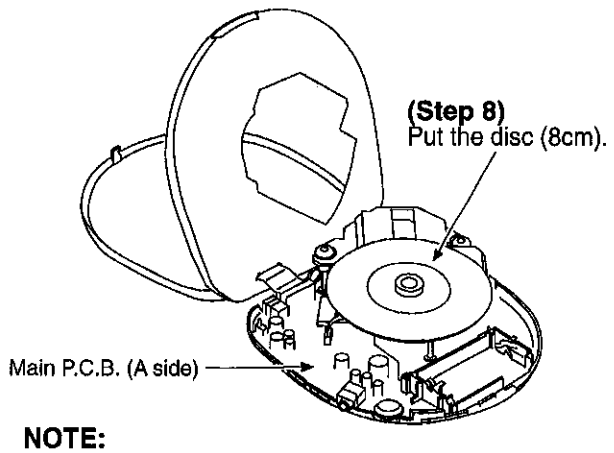






NOTE:
- The tip of screw must not protrude above the floating rubber.
- To keep insulation, place the insulator sheet (paper etc.) between the P.C.B. and the head of screws.

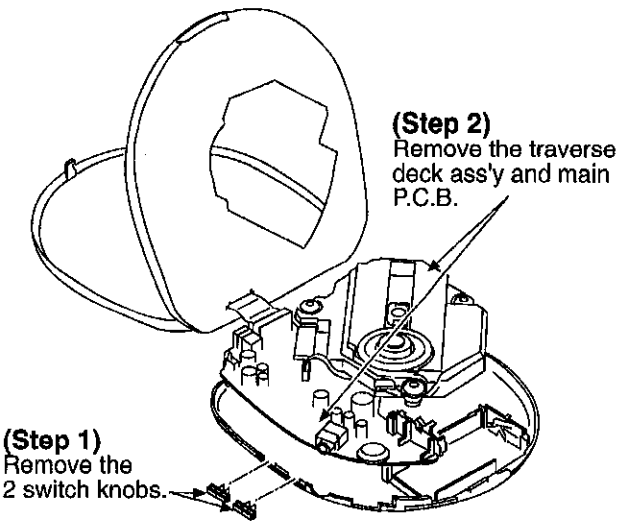
- **Check the main P.C.B. (A side) as shown below.**

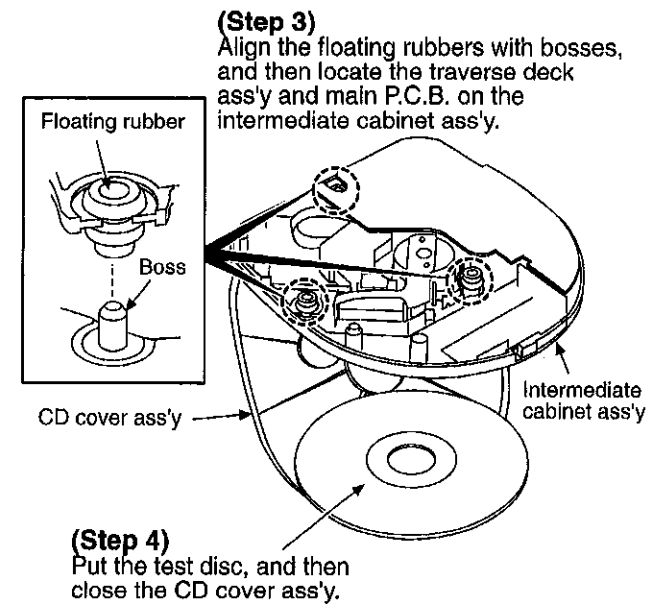


NOTE:
After checking, unsolder the short land to open circuit.

5.1.2. Checking for the main P.C.B. (B side)

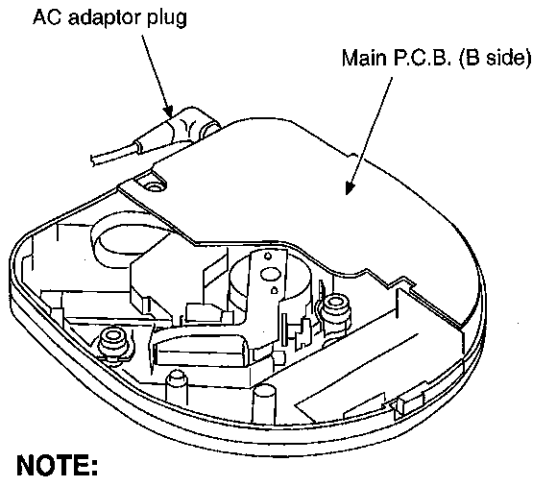
- Follow the **(Step 1)** - **(Step 6)** of item 5.1.1.





- **Check the main P.C.B. (B side) as shown below.**

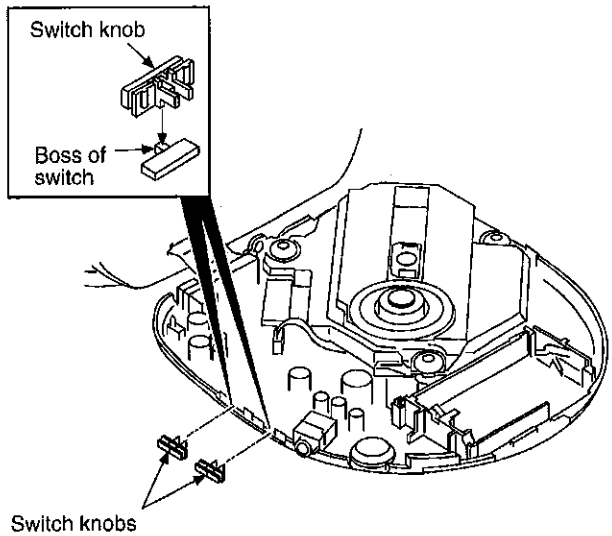
(Step 5)
Insert the AC adaptor plug into the DC IN jack, and then apply the power.



NOTE:
After checking, unsolder the short land to open circuit.

Notice for installation of switch knobs

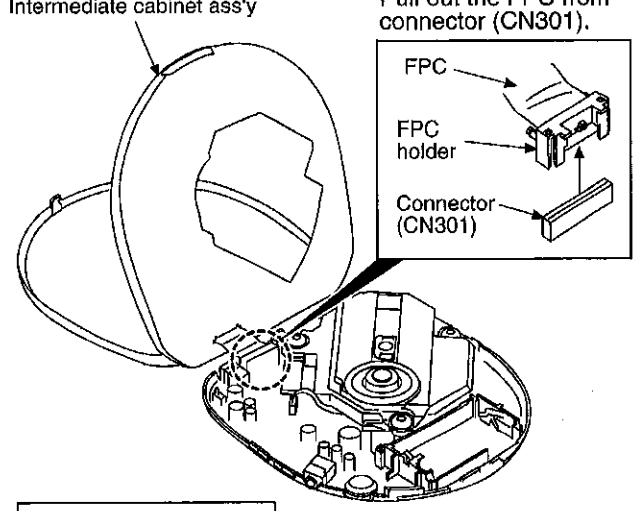
- Make sure the bosses of switch are fit in the switch knobs.

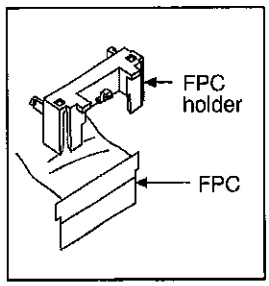


5.2. Replacement for the CD cover ass'y and LCD

- Follow the **(Step 1)** - **(Step 5)** of item 5.1.1.

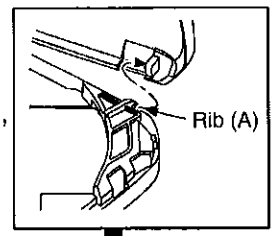
(Step 1)
Pull out the FPC from connector (CN301).

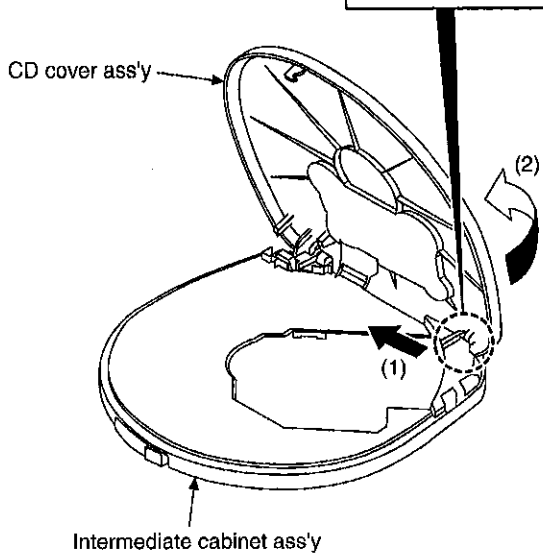




(Step 2)
Remove the FPC holder from FPC.

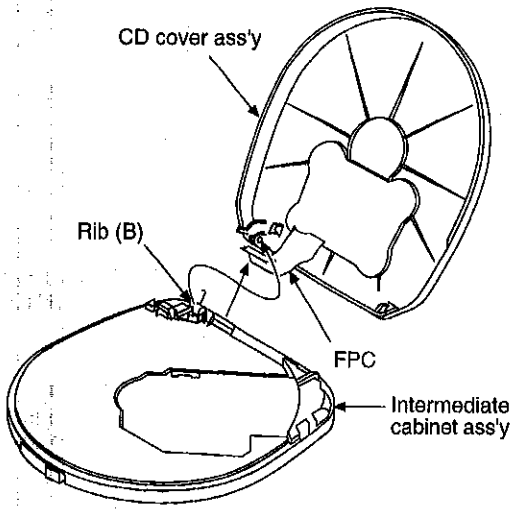
(Step 3)
Bend the intermediate cabinet ass'y in the direction of arrow (1), and then release the CD cover ass'y from the rib (A).





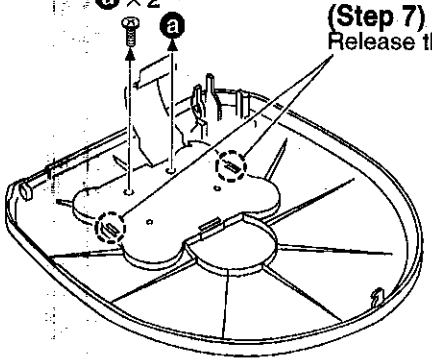
(Step 4)
Remove the CD cover ass'y from the rib (B).

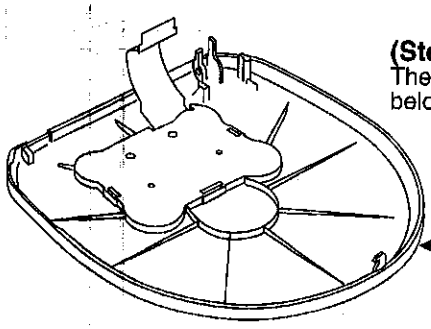
(Step 5)
Draw the FPC from the intermediate cabinet ass'y.
(Take care not to damage the FPC.)



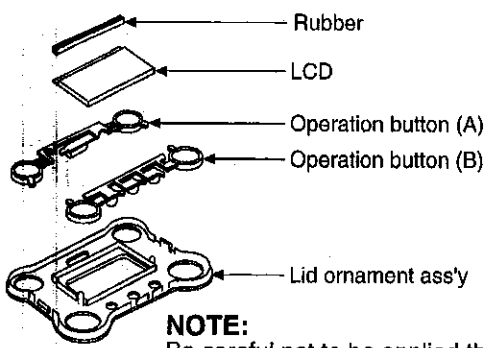
(Step 6)
ⓐ × 2

(Step 7)
Release the 2 claws.



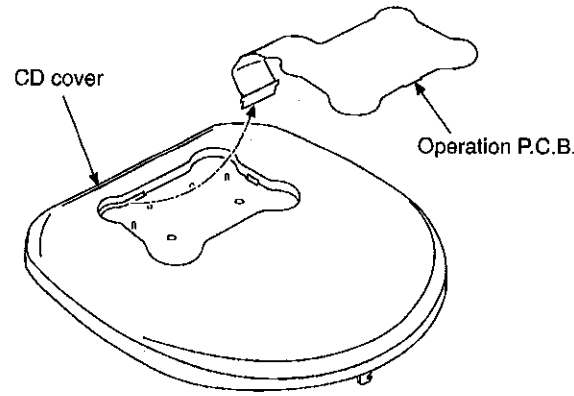


(Step 8)
The parts illustrated below will be free.



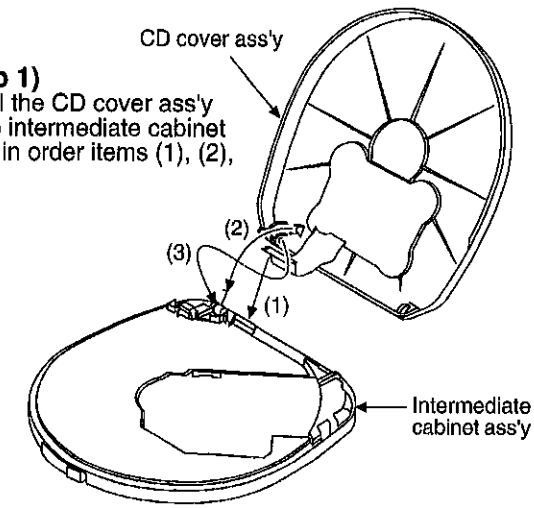
NOTE:
Be careful not to be applied the dust or smudge on the surface rubber.

(Step 9)
Remove the operation P.C.B. from CD cover.

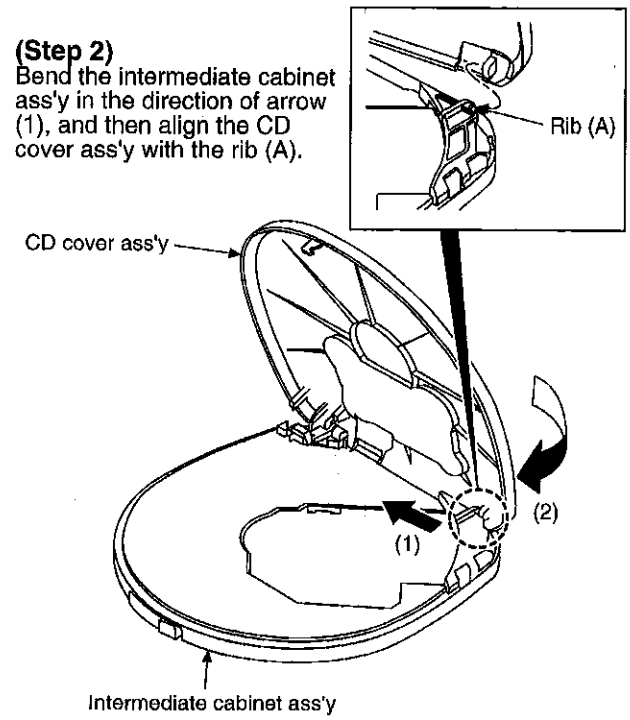


Installation of CD cover ass'y

(Step 1)
Install the CD cover ass'y to the intermediate cabinet ass'y in order items (1), (2), (3).

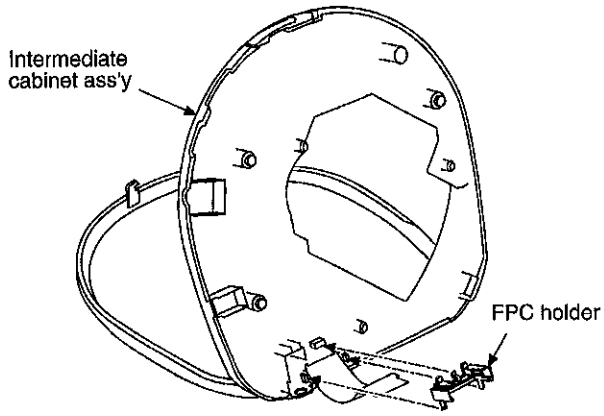


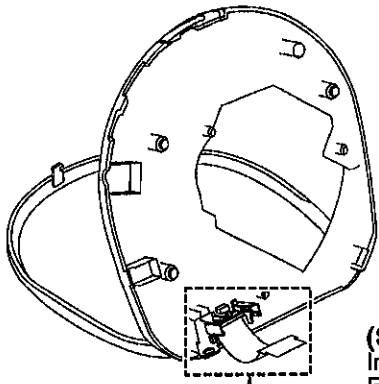
(Step 2)
Bend the intermediate cabinet ass'y in the direction of arrow (1), and then align the CD cover ass'y with the rib (A).



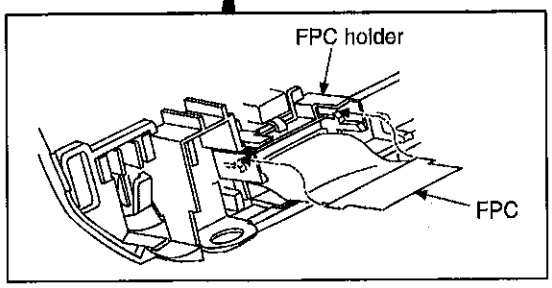
Installation of intermediate cabinet ass'y

(Step 1)
Install the FPC holder to intermediate cabinet ass'y.

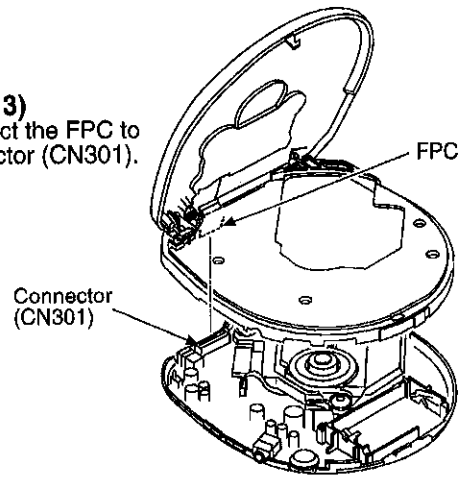




(Step 2)
Install the FPC to FPC holder.

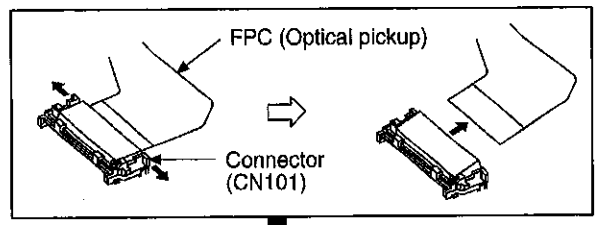


(Step 3)
Connect the FPC to connector (CN301).



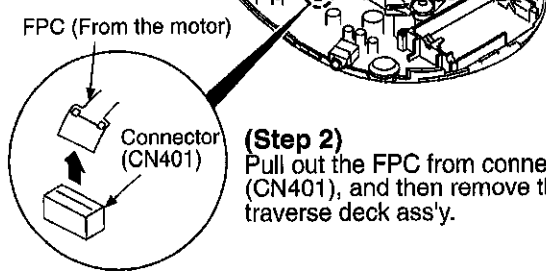
5.3. Replacement for the traverse motor

- Follow the **(Step 1)** - **(Step 5)** of item 5.1.1.



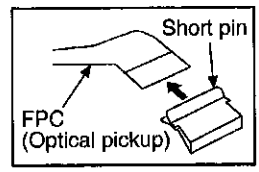
(Step 1)
Pull out the FPC from connector (CN101).

(Step 3)
Remove the traverse deck.

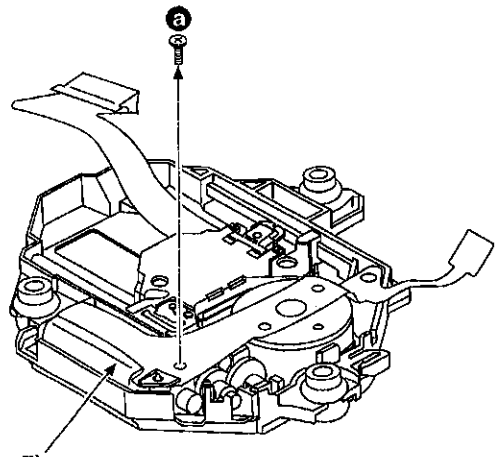


(Step 2)
Pull out the FPC from connector (CN401), and then remove the traverse deck ass'y.

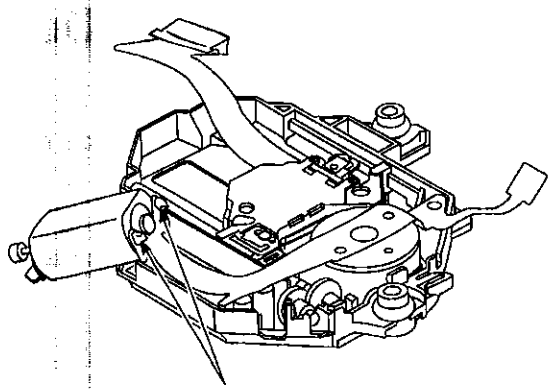
NOTE:
Insert a short pin into the traverse deck's FPC.
(Refer to **"Handling Precautions for Traverse Deck"**.)



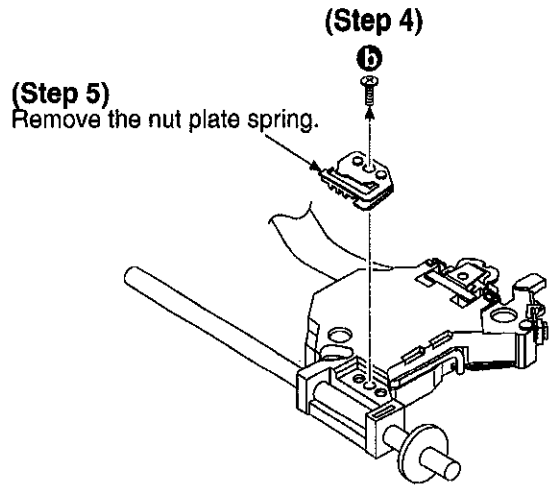
(Step 4)



(Step 5)
Remove the traverse motor.

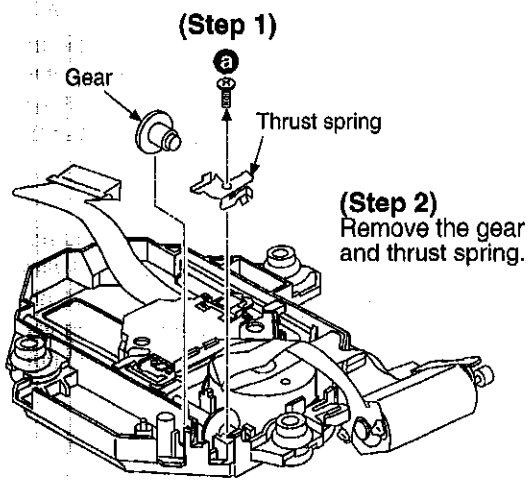


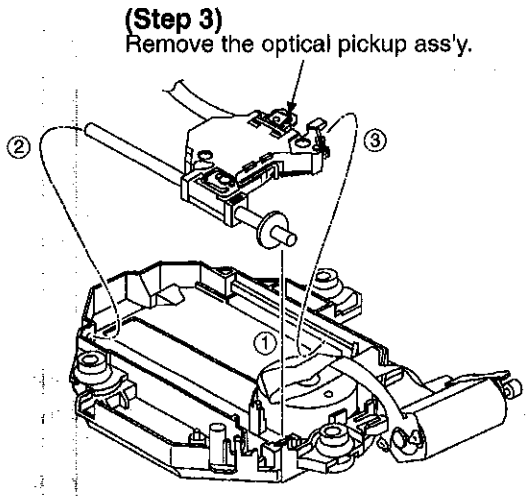
(Step 6)
Unsolder the motor terminals.
(2 points)

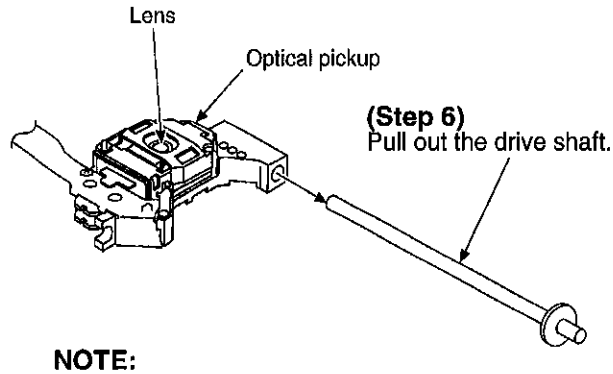


5.4. Replacement for the optical pickup

- Follow the **(Step 1)** - **(Step 5)** of item 5.1.1.
- Follow the **(Step 1)** - **(Step 5)** of item 5.3.







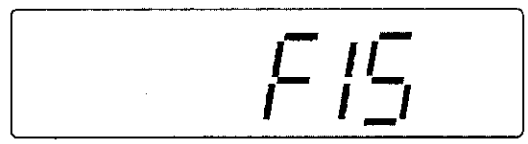
NOTE:
1. Use care to prevent damage the optical pickup, due to the precision construction.
2. Do not apply the grease on the lens of optical pickup.
3. Do not touch the lens of the optical pickup.

6 Display of Self-Diagnostic Function

This unit (SL-SX270) has self-diagnostic function, it may display below-mentioned on the LCD of this unit.

- The substance of self-diagnostic display.

LCD display



(Press PLAY and STOP button. After 15 seconds, it is displayed for 2 seconds.)

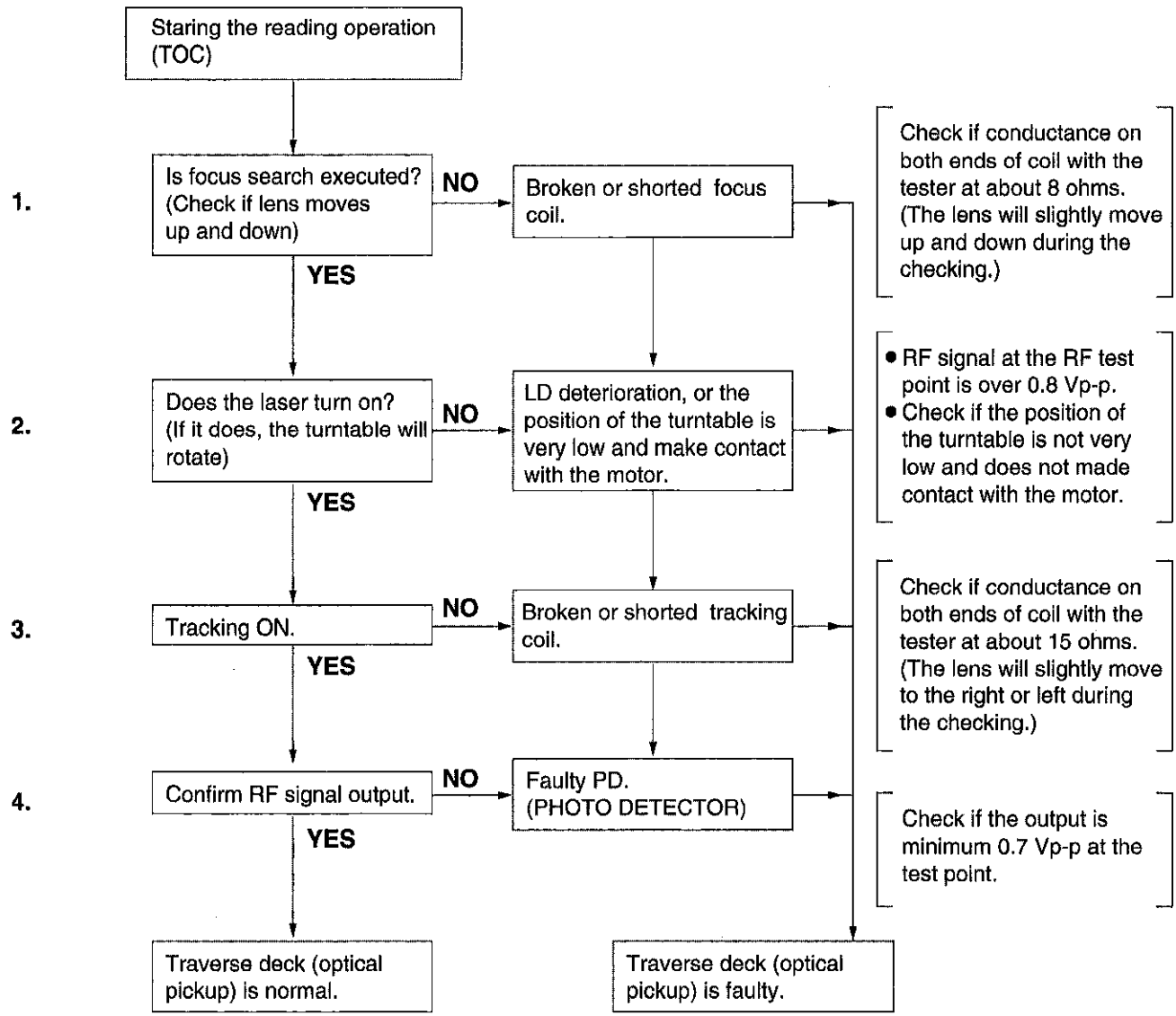
In the case of this display, it may be causing for abnormally movements of traverse deck, touching failure of REST det. SW. and coming off or cutting off the flexible P.C.B.. It is necessary for confirmation or repair and replacement each parts.

7 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.

(Procedure No.) **(Checking Points)** **(Cause)** **(Testing Procedure)**



※Replace the traverse deck.

- Check electrical circuit.
- Check for flaws on disc or if it is warped or not centerd.

●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 foward 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.

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

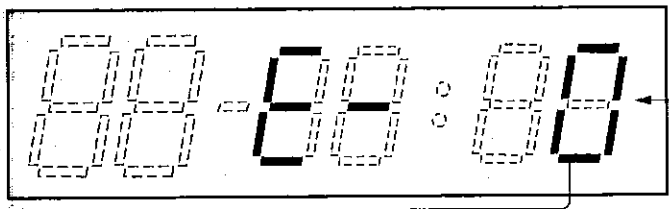
On this unit (SL-SX270), each automatic adjustment results are displayed on the LCD. This function is convenient to check or identify which automatic adjustment circuit is incorrect. The followings are the contents of the automatic adjustment result displays (self-check function). (Using the new Servo IC: MN662784SA)

8.1. 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 ▶II (PLAY/PAUSE) Button.
3. Press the ■ (OPR OFF) Button once.
4. An automatic adjustment result is displayed on the LCD.

8.2. 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 are 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. (check the waveform or voltage.)

(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. (check the waveform or voltage.)

(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 are correct.

(check the waveform or voltage.)

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.

9 Outline of 40-Second Sound Keeper Technique Used for Prevention of Sound from Skipping

9.1. 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 16M bit memory for securing the accumulation time of about 40 seconds.

9.2. Compression-shockproofing [Outline]

Fig. 5 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.

The data compression technique has conduced to reduction of required memory capacity from 16M bits to 4M bits for securing the accumulation time equivalent to the conventional.

All-inclusive Block Diagram

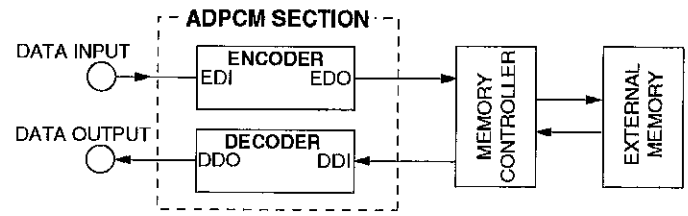
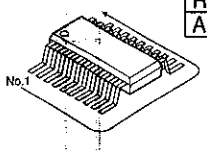


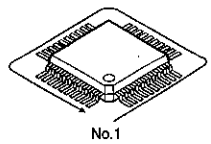
Fig.5

10 Schematic Diagram Note

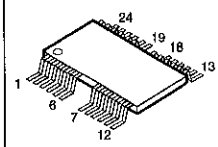
10.1. Type Illustration of IC's, Transistors and Diodes

NJU7082BVTE1	8PIN	M38224M051HP	80PIN
AN8839NSBE1	28PIN	MN662784SA	80PIN
RS10003E2	40PIN		
AN8746SAE1	32PIN		

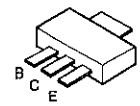




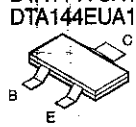
M51V7400D1FS



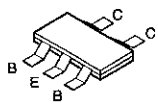
2SB1132T100



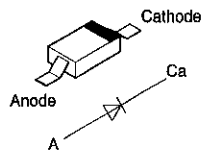
2SB709ATX
2SD1328TX
2SD1819ATX
DTA114YUA106
DTA144EUA106



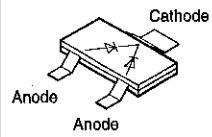
FMG6AT148



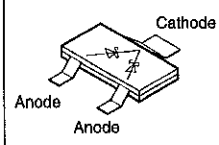
MA111TX



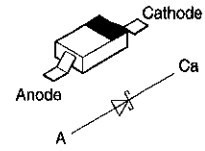
DAN202UT106



RB715FT106



MA1070400L



10.2. Schematic Diagram Notes

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.)
- S309: Play mode selector (MODE) in "NORMAL" position.
  (RESUME ⟺ RANDOM ⟺ NORMAL)
- S310: Hold (HOLD) switch in "OFF" position.
- S801: Anti-shock (A.SHOCK) switch in "OFF" position.
- S802, 804: Skip/search (▶▶ / ▶▶| , |◀◀ / ◀◀) switch.
- S803: Play/pause (▶||) switch.
- S805: Stop/power off (■ /OPR OFF) switch.
- S806: EQ (EQ) switch in "OFF" position.
- S807: Memory/recall (MEMORY/RECALL) switch.
- S808: Repeat (↻)switch.
- VR701-1,2: Headphones volume (VOLUME) control.
- Components identified by ⚠ mark have special characteristics important for safety.
- When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.
- The supply part number is described alone in the replacement parts.
- Signal line
- ▬▶ : Positive voltage line.
- ⟹ : CD playback signal line.
- 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:

*AC adaptor is used for power supply.

*Set the headphones (earphones) VR(VR701) to center position(No.5).

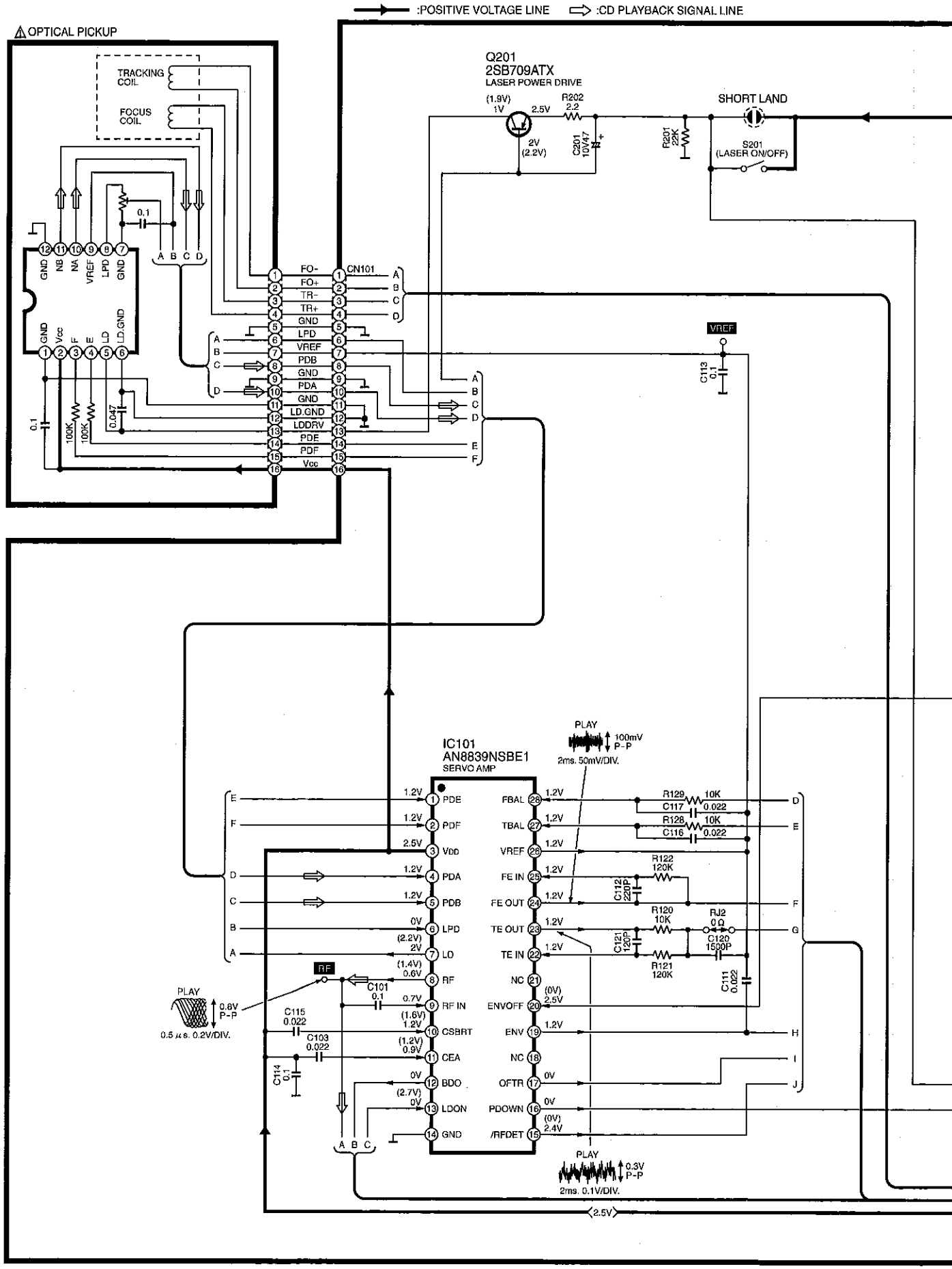
*( ).....CD playback mode (Test disc 1kHz, L+R, 0dB)
Set the hold unlock and ANTI-SHOCK switches to OFF.

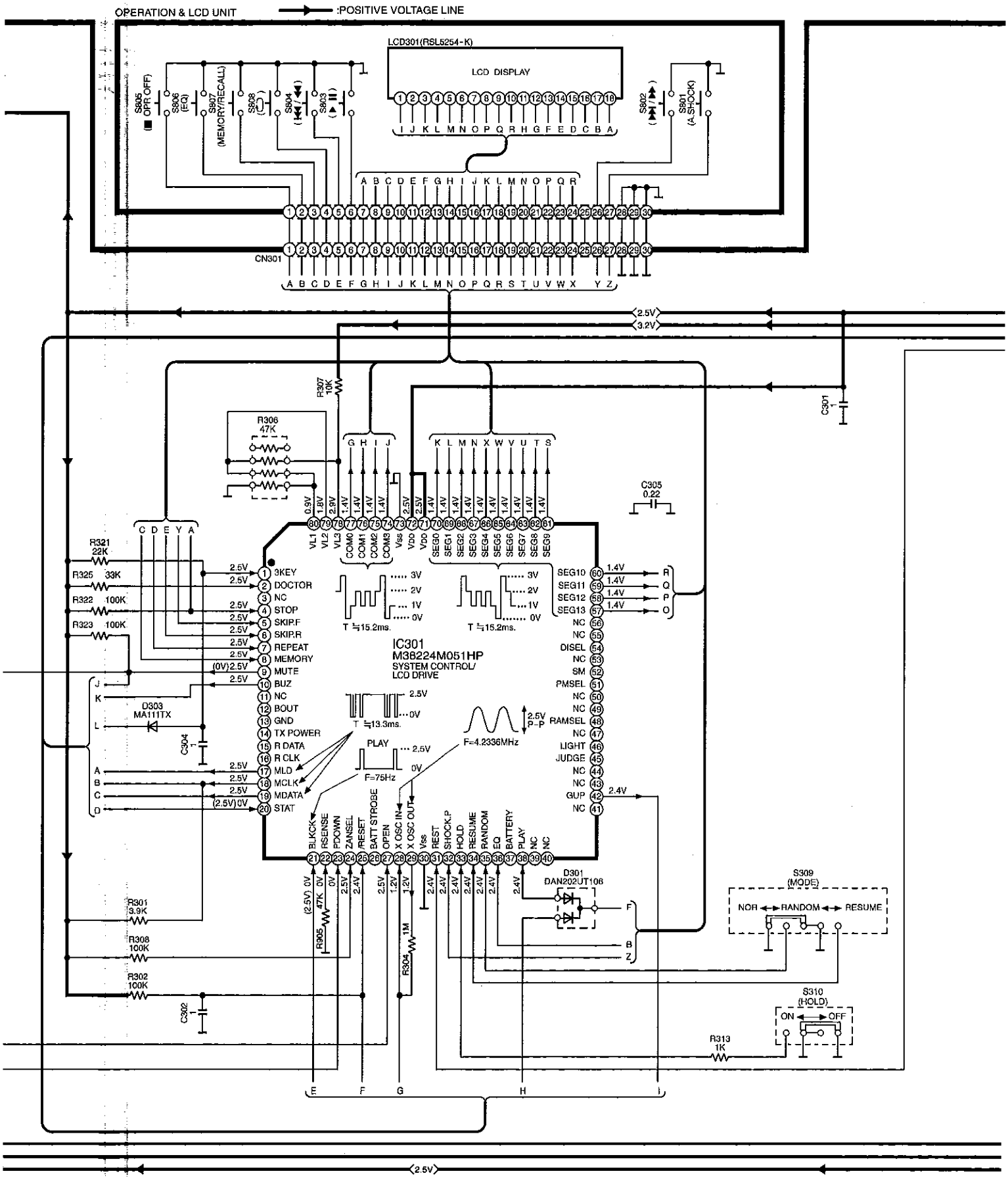
*No mark.....CD stop mode

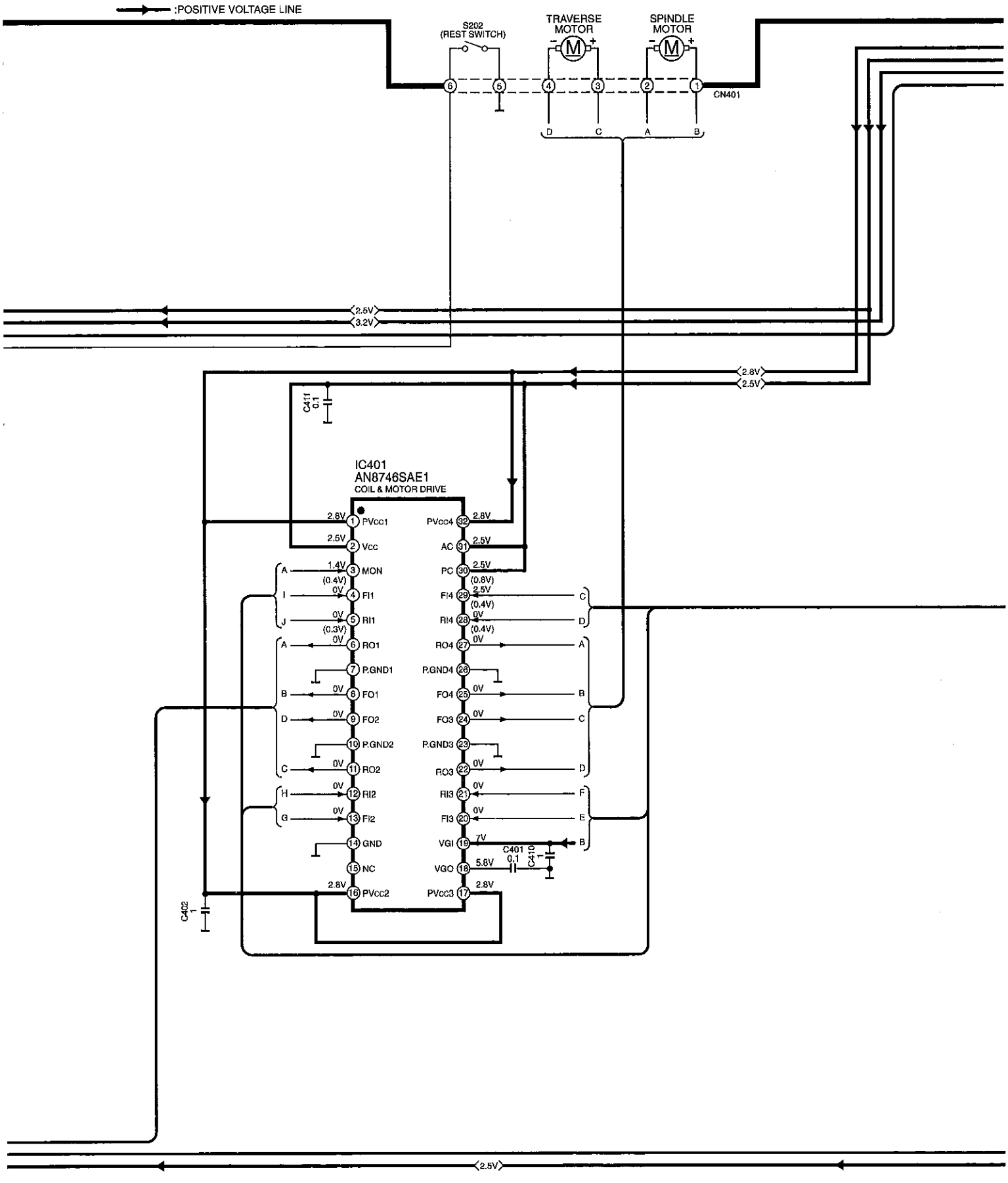
Caution!!

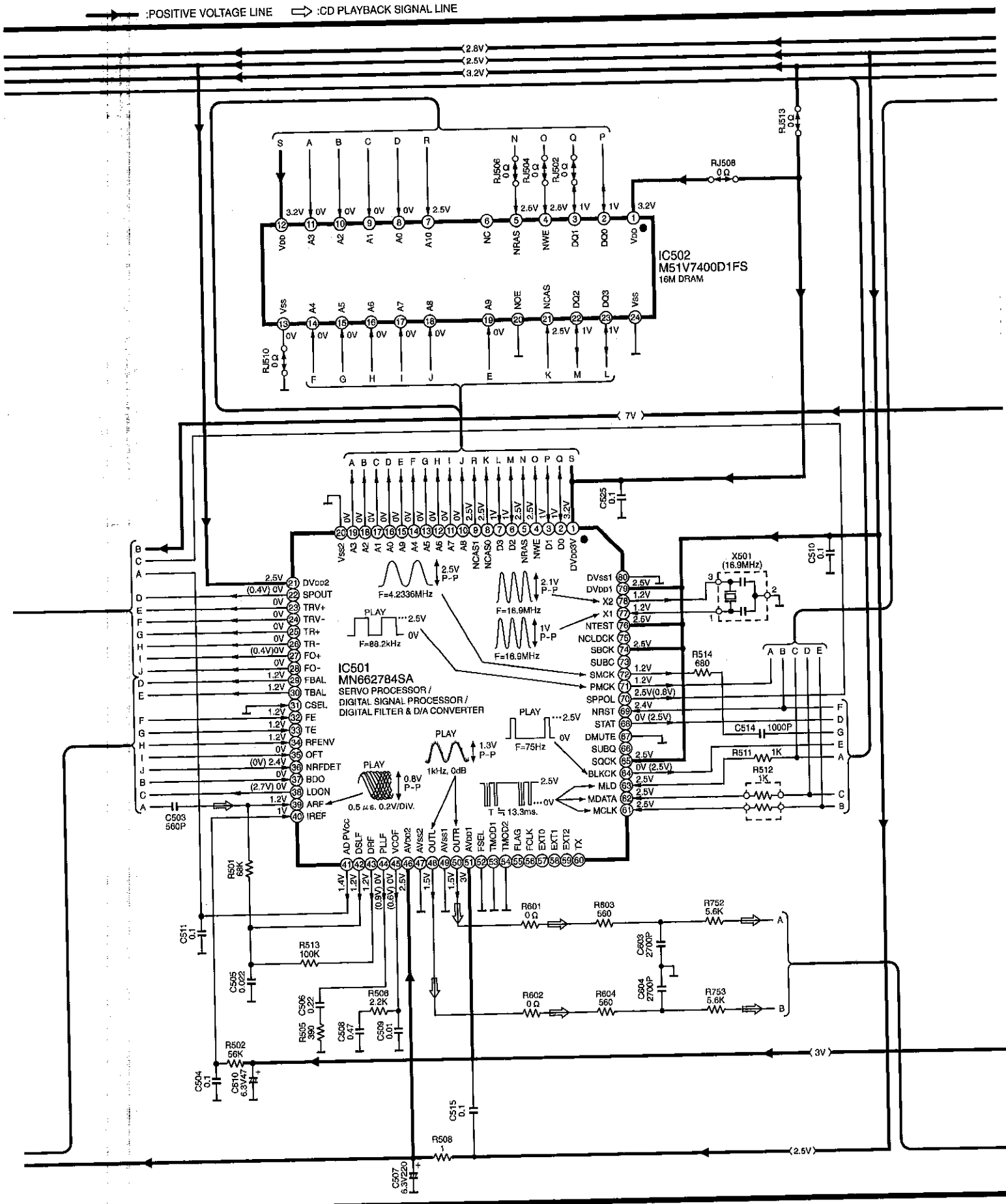
- IC and LSI are sensitive to static electricity.
- Secondary trouble can be prevented by taking care during repair.
- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the pins of IC or LSI with fingers directly.

11 Schematic Diagram

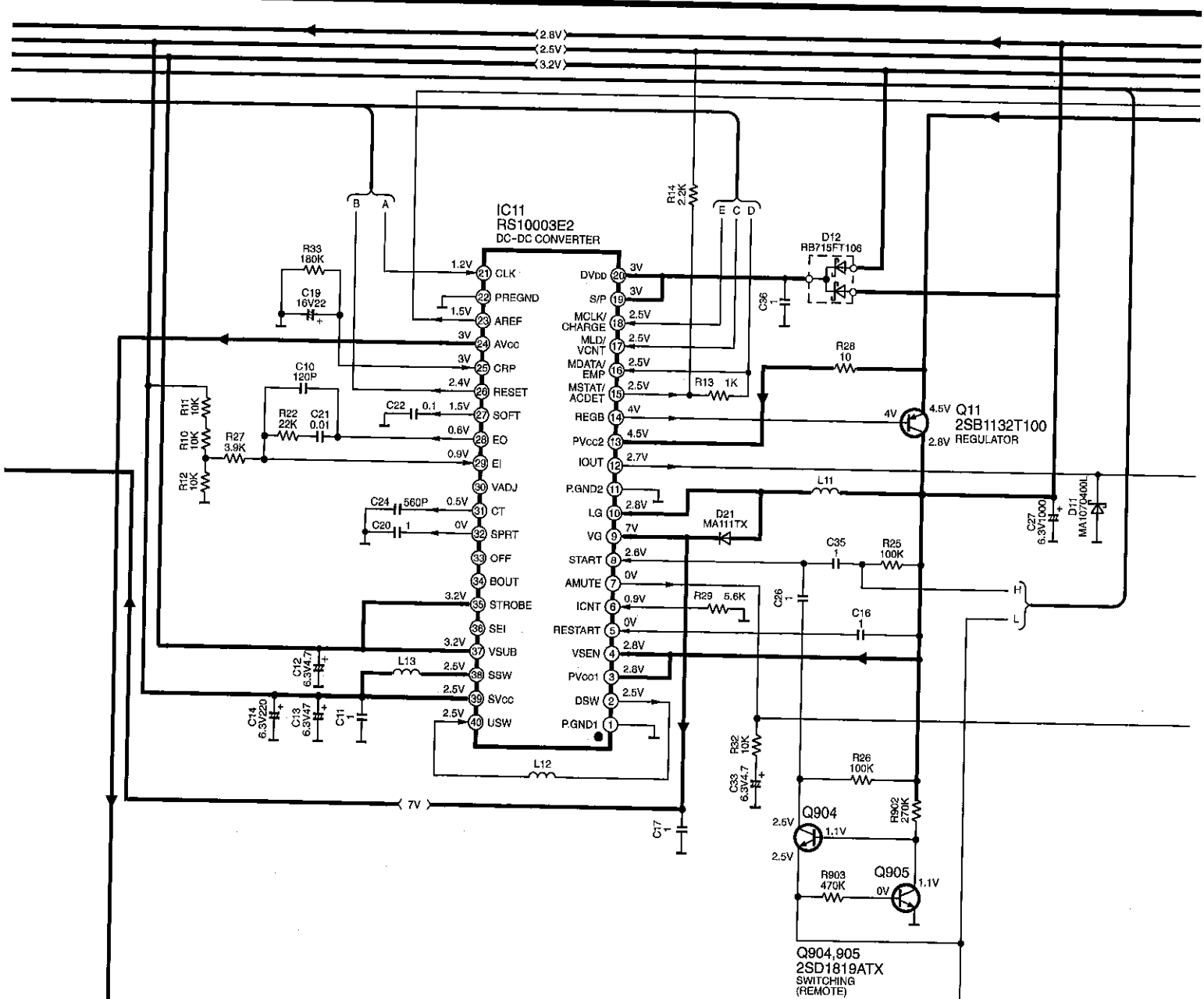


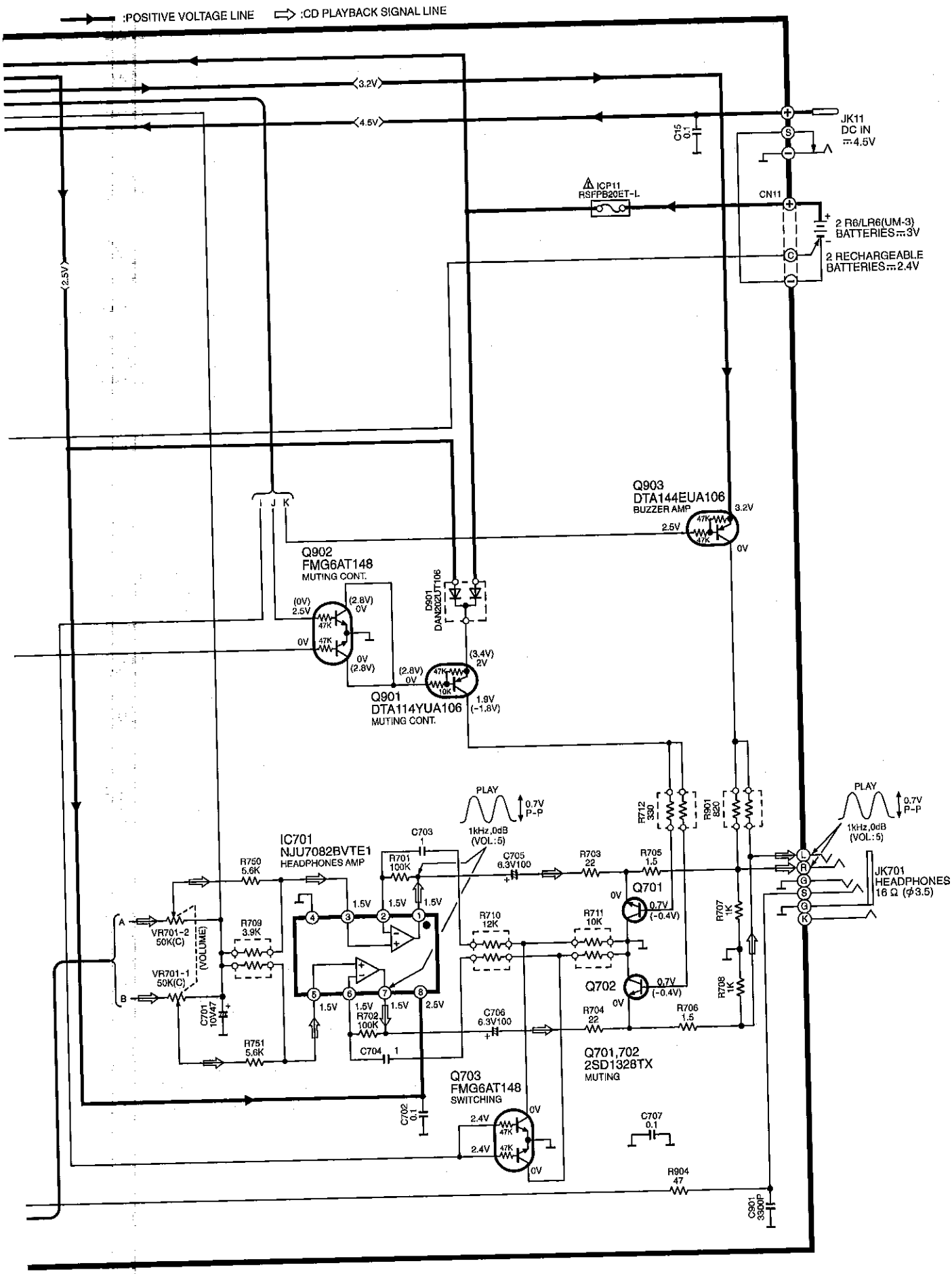

OPERATION & LCD UNIT
:POSITIVE VOLTAGE LINE
LCD301(RSL5254-K)
LCD DISPLAY
S805 OPR OFF
S806 (EQ)
S807 (MEMORY/RECALL)
S808
S804
S803
S802
S801 (A.SHOCK)
CN301
2.5V
3.2V
R307 10K
R306 47K
C301
C305 0.22
R321 22K
R325 33K
R322 100K
R323 100K
IC301
M38224M051HP
SYSTEM CONTROL/
LCD DRIVE
1 3KEY
2 DOCTOR
3 NC
4 STOP
5 SKIP.F
6 SKIP.R
7 REPEAT
8 MEMORY
9 MUTE
10 BUZ
11 NC
12 BOUT
13 GND
14 TX POWER
15 R DATA
16 R CLK
17 MLD
18 MCLK
19 MDATA
20 STAT
D303 MA111TX
C304
T ≒15.2ms.
T ≒13.3ms.
PLAY
F=75Hz
F=4.2336MHz
2.5V P-P
SEG10 SEG11 SEG12 SEG13
NC DISEL SM PMSEL RAMSEL LIGHT JUDGE GUP
BLKCK RSENSE PDOWN ZANSEL /RESET BATT STROBE OPEN X OSC IN X OSC OUT Vss REST SHOCK.P HOLD RESUME RANDOM EQ BATTERY PLAY NC NC
D301 DAN202UT106
S309 (MODE)
NOR RANDOM RESUME
S310 (HOLD)
ON OFF
R313 1K
R301 3.9K
R308 100K
R302 100K
R305 47K
R304 1M
C302
E F G H I


:POSITIVE VOLTAGE LINE
S202
(REST SWITCH)
TRAVERSE
MOTOR
SPINDLE
MOTOR
CN401
2.5V
3.2V
2.8V
2.5V
C411
0.1
IC401
AN8746SAE1
COIL & MOTOR DRIVE
PVcc1
Vcc
MON
FI1
RI1
RO1
P.GND1
FO1
FO2
P.GND2
RO2
RI2
FI2
GND
NC
PVcc2
PVcc4
AC
PC
FI4
RI4
RO4
P.GND4
FO4
FO3
P.GND3
RO3
RI3
FI3
VGI
VGO
PVcc3
C401
0.1
C410
1
C402
1


:POSITIVE VOLTAGE LINE
:CD PLAYBACK SIGNAL LINE
IC502
M51V7400D1FS
16M DRAM
IC501
MN662784SA
SERVO PROCESSOR /
DIGITAL SIGNAL PROCESSOR /
DIGITAL FILTER & D/A CONVERTER
X501
(16.9MHz)
F=4.2336MHz
F=16.9MHz
F=88.2kHz
F=75Hz
1kHz, 0dB
0.5 μs, 0.2V/DIV.
T ≒ 13.3ms.
PLAY
2.8V
2.5V
3.2V
7V
3V

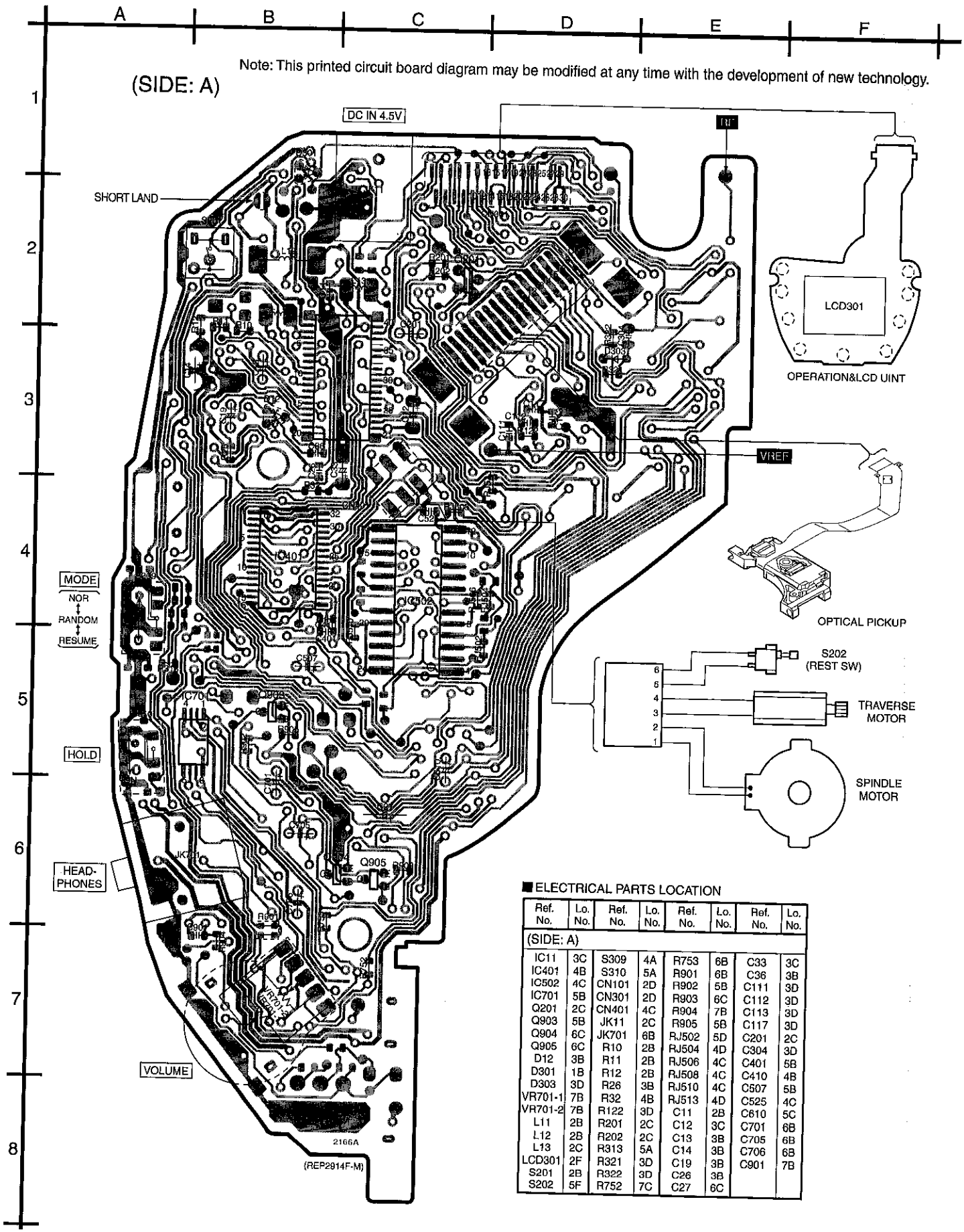
:POSITIVE VOLTAGE LINE :CD PLAYBACK SIGNAL LINE




:POSITIVE VOLTAGE LINE
:CD PLAYBACK SIGNAL LINE
3.2V
4.5V
2.5V
JK11
DC IN
4.5V
C15
0.1
ICP11
RSFPB20ET-L
CN11
2 R6/LR6(UM-3)
BATTERIES 3V
2 RECHARGEABLE
BATTERIES 2.4V
Q903
DTA144EUA106
BUZZER AMP
Q902
FMG6AT148
MUTING CONT.
D901
DAN202UT106
Q901
DTA114YUA106
MUTING CONT.
IC701
NJU7082BVTE1
HEADPHONES AMP
PLAY
0.7V P-P
1kHz,0dB
(VOL:5)
R750
5.6K
R751
5.6K
R709
3.9K
VR701-2
50K(C)
VR701-1
50K(C)
(VOLUME)
C701
10V47
C703
1
R701
100K
C705
6.3V100
R703
22
R705
1.5
R710
12K
R711
10K
R702
100K
C704
1
C706
6.3V100
R704
22
R706
1.5
Q701
Q702
0.7V
(-0.4V)
R707
1K
R708
1K
R712
330
R901
820
JK701
HEADPHONES
16 Ω (φ3.5)
Q701,702
2SD1328TX
MUTING
Q703
FMG6AT148
SWITCHING
C702
0.1
C707
0.1
R904
47
C901
3300P

12 Printed Circuit Board and Wiring Connection Diagram

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

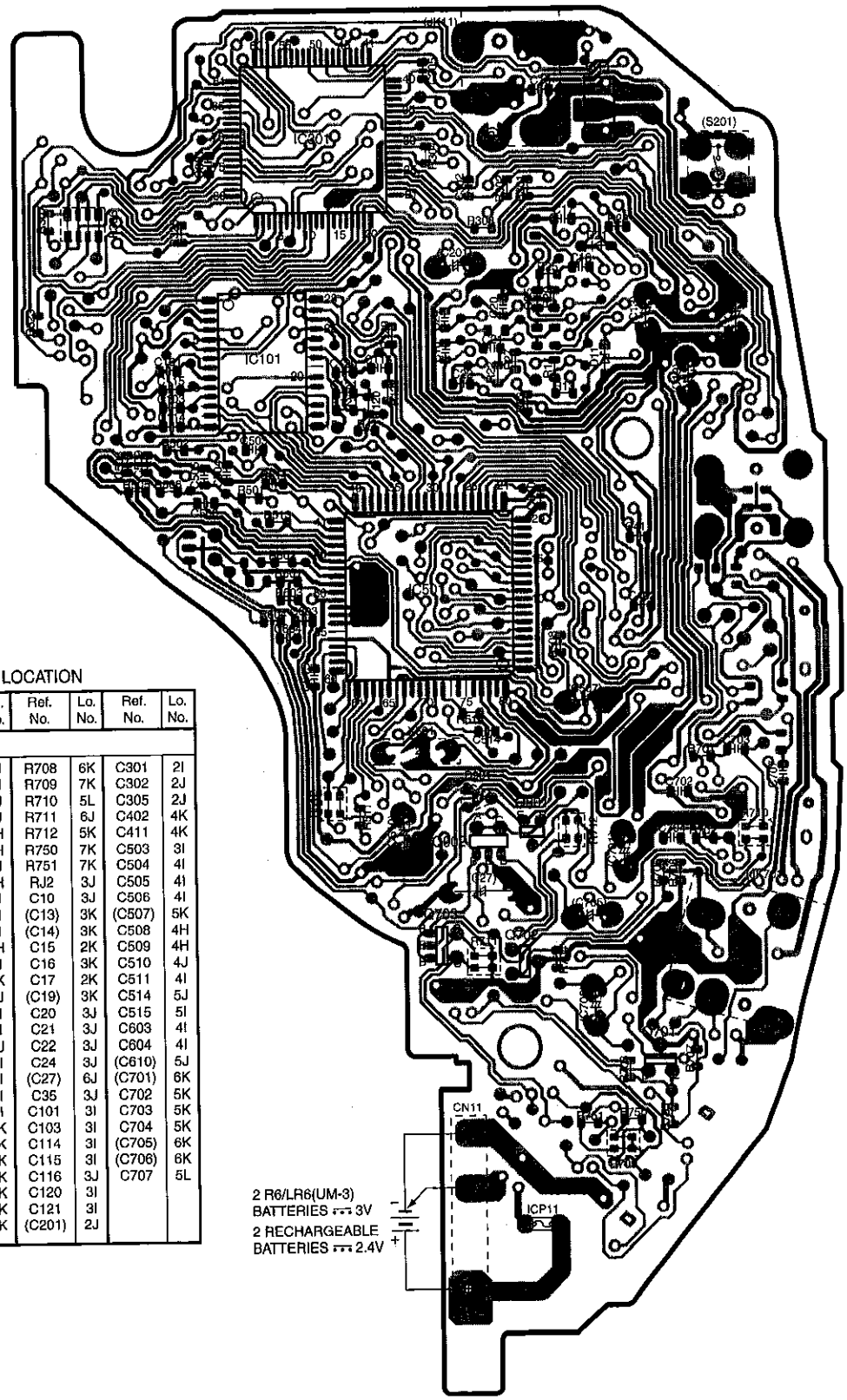


■ELECTRICAL PARTS LOCATION

Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.
(SIDE: A)							
IC11	3C	S309	4A	R753	6B	C33	3C
IC401	4B	S310	5A	R901	6B	C36	3B
IC502	4C	CN101	2D	R902	5B	C111	3D
IC701	5B	CN301	2D	R903	6C	C112	3D
Q201	2C	CN401	4C	R904	7B	C113	3D
Q903	5B	JK11	2C	R905	5B	C117	3D
Q904	6C	JK701	6B	RJ502	5D	C201	2C
Q905	6C	R10	2B	RJ504	4D	C304	3D
D12	3B	R11	2B	RJ506	4C	C401	5B
D301	1B	R12	2B	RJ508	4C	C410	4B
D303	3D	R26	3B	RJ510	4C	C507	5B
VR701-1	7B	R32	4B	RJ513	4D	C525	4C
VR701-2	7B	R122	3D	C11	2B	C610	5C
L11	2B	R201	2C	C12	3C	C701	6B
L12	2B	R202	2C	C13	3B	C705	6B
L13	2C	R313	5A	C14	3B	C706	6B
LCD301	2F	R321	3D	C19	3B	C901	7B
S201	2B	R322	3D	C26	3B		
S202	5F	R752	7C	C27	6C		

G H I J K L

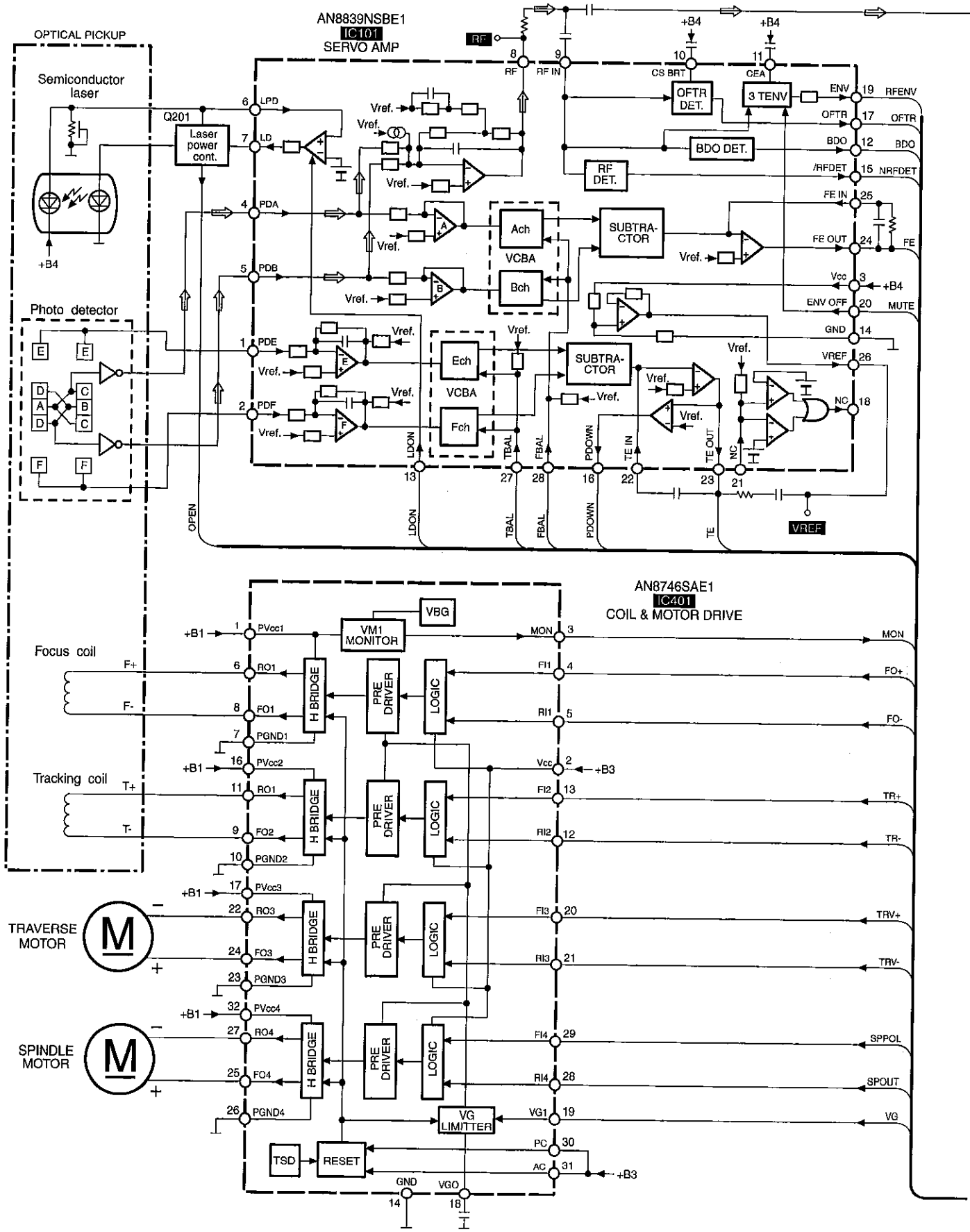
(SIDE: B)

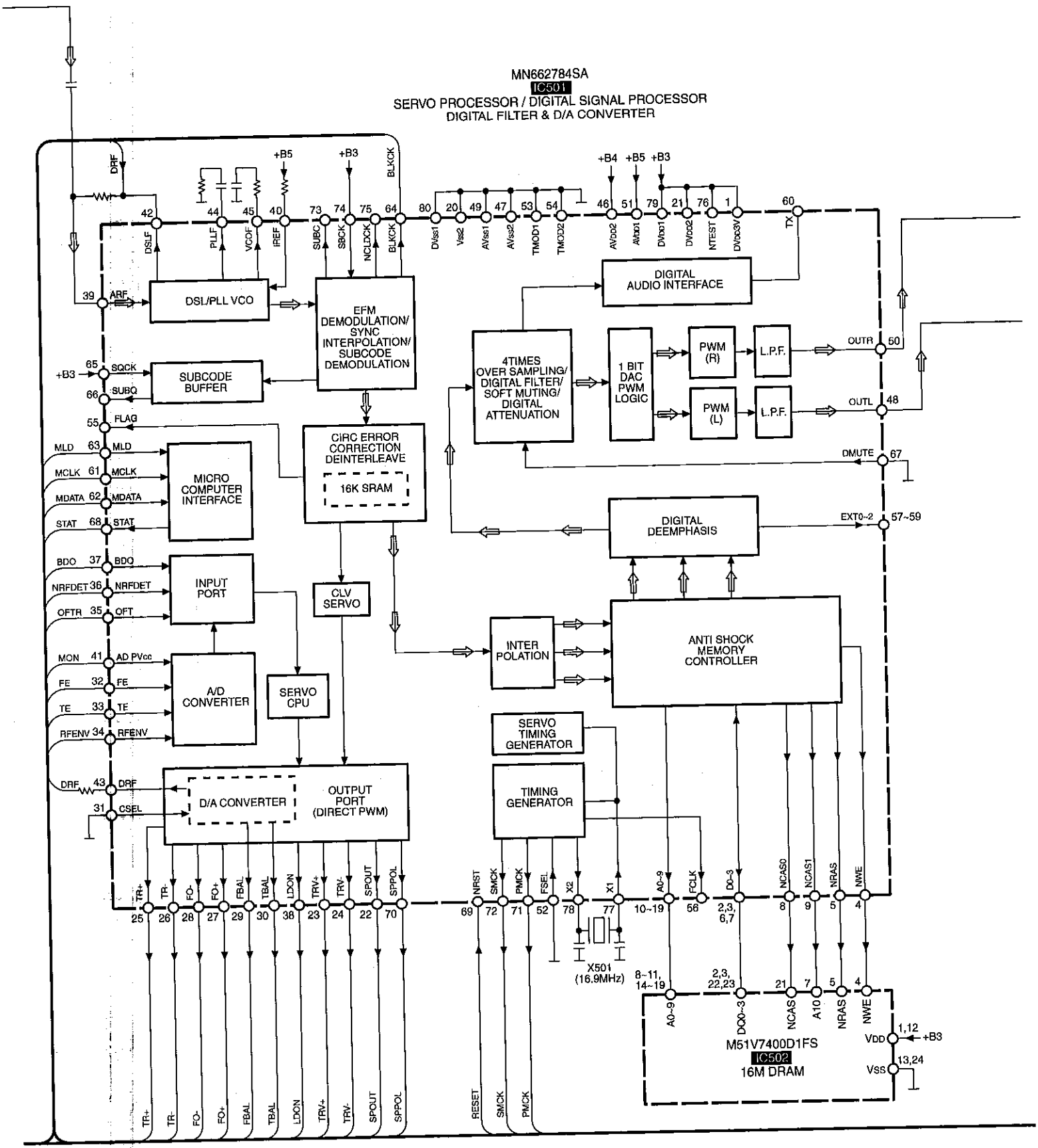


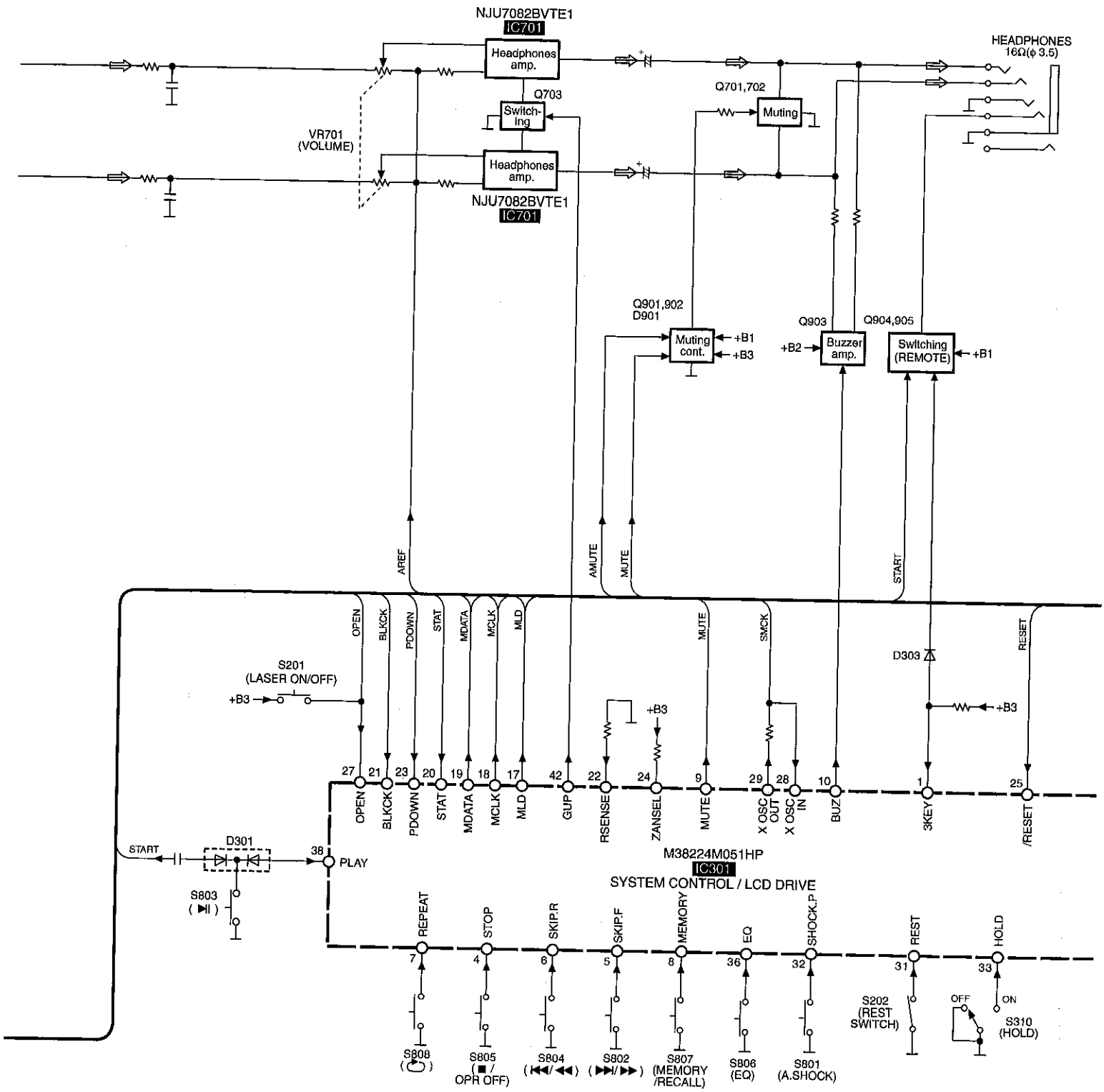
■ELECTRICAL PARTS LOCATION

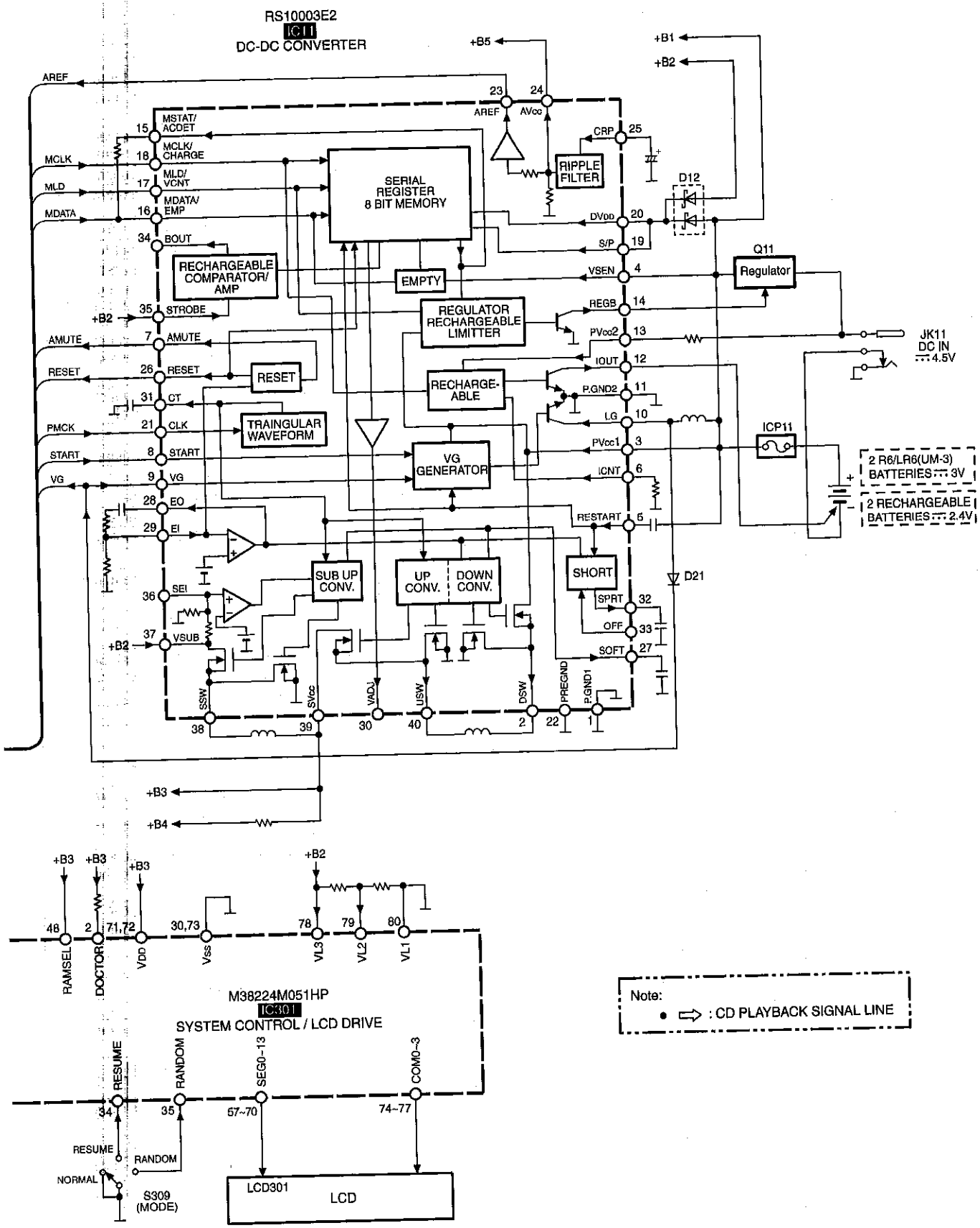
Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.
(SIDE: B)							
IC101	3I	R129	3J	R708	6K	C301	2I
IC301	2I	R301	2J	R709	7K	C302	2J
IC501	4J	R302	2J	R710	5L	C305	2J
Q11	2K	R304	2J	R711	6J	C402	4K
Q701	7K	R306	2H	R712	5K	C411	4K
Q702	6J	R307	2H	R750	7K	C503	3I
Q703	6J	R308	2J	R751	7K	C504	4I
Q901	5J	R323	3H	RJ2	3J	C505	4I
Q902	5J	R325	2I	C10	3J	C506	4I
D11	3K	R501	4I	(C13)	3K	(C507)	5K
D21	2K	R502	3I	(C14)	3K	C508	4H
D901	5J	R505	4H	C15	2K	C509	4H
ICP11	7J	R506	4I	C16	3K	C510	4J
X501	5J	R508	4K	C17	2K	C511	4I
(S201)	2K	R511	5J	(C19)	3K	C514	5J
CN11	7J	R512	5I	C20	3J	C515	5I
(JK11)	2J	R513	4I	C21	3J	C603	4I
(JK701)	6L	R514	5J	C22	3J	C604	4I
R13	3K	R601	4I	C24	3J	(C610)	5J
R14	3K	R602	4I	(C27)	6J	(C701)	6K
R22	3J	R603	4I	C35	3J	C702	5K
R25	3K	R604	4I	C101	3I	C703	5K
R27	3J	R701	5K	C103	3I	C704	5K
R28	2K	R702	5K	C114	3I	(C705)	6K
R29	3K	R703	7K	C115	3I	(C706)	6K
R33	3J	R704	6K	C116	3J	C707	5L
R120	3J	R705	7K	C120	3I		
R121	3I	R706	6K	C121	3I		
R128	3J	R707	7K	(C201)	2J		

13 Block Diagram




MN662784SA
IC501
SERVO PROCESSOR / DIGITAL SIGNAL PROCESSOR
DIGITAL FILTER & D/A CONVERTER
DSL/PLL VCO
EFM DEMODULATION/ SYNC INTERPOLATION/ SUBCODE DEMODULATION
SUBCODE BUFFER
CIRC ERROR CORRECTION DEINTERLEAVE
16K SRAM
MICRO COMPUTER INTERFACE
INPUT PORT
A/D CONVERTER
SERVO CPU
CLV SERVO
D/A CONVERTER
OUTPUT PORT (DIRECT PWM)
DIGITAL AUDIO INTERFACE
4TIMES OVER SAMPLING/ DIGITAL FILTER/ SOFT MUTING/ DIGITAL ATTENUATION
1 BIT DAC PWM LOGIC
PWM (R)
PWM (L)
L.P.F.
L.P.F.
DIGITAL DEEMPHASIS
INTER POLATION
ANTI SHOCK MEMORY CONTROLLER
SERVO TIMING GENERATOR
TIMING GENERATOR
X501 (16.9MHz)
M51V7400D1FS
IC502
16M DRAM
+B3
+B4
+B5
DRF
ARF
DSLF
PLLF
VCOF
IREF
SUBC
SBCK
NCLOCK
BLKCK
DVss1
Vss2
AVss1
AVss2
TMOD1
TMOD2
AVDD2
AVdd1
DVdd1
DVDD2
NTEST
DVDD3V
TX
SQCK
SUBQ
FLAG
MLD
MCLK
MDATA
STAT
BDO
NRFDET
OFT
AD PVcc
FE
TE
RFENV
CSEL
OUTR
OUTL
DMUTE
EXT0~2
TR+
TR-
FO-
FO+
FBAL
TBAL
LDON
TRV+
TRV-
SPOUT
SPPOL
NRST
SMCK
PMCK
FSEL
X2
X1
A0~9
FCLK
D0~3
NCAS0
NCAS1
NRAS
NWE
RESET
NCAS
A10
VDD
VSS


NJU7082BVTE1
IC701
Headphones amp.
Q703
Switch-ing
VR701 (VOLUME)
Headphones amp.
NJU7082BVTE1
IC701
HEADPHONES 16Ω(φ 3.5)
Q701,702
Muting
Q901,902 D901
Muting cont.
+B1
+B3
Q903
Buzzer amp.
+B2
Q904,905
Switching (REMOTE)
+B1
AREF
AMUTE
MUTE
START
OPEN
BLKCK
PDOWN
STAT
MDATA
MCLK
MLD
MUTE
SMCK
RESET
S201 (LASER ON/OFF)
+B3
D303
27 OPEN
21 BLKCK
23 PDOWN
20 STAT
19 MDATA
18 MCLK
17 MLD
42 GUP
22 RSENSE
24 ZANSEL
9 MUTE
29 X OSC OUT
28 X OSC IN
10 BUZ
1 3KEY
25 /RESET
START
D301
38 PLAY
S803 (▶II)
M38224M051HP
IC301
SYSTEM CONTROL / LCD DRIVE
7 REPEAT
4 STOP
6 SKIP.R
5 SKIP.F
8 MEMORY
36 EQ
32 SHOCK.P
31 REST
33 HOLD
S808 ( )
S805 (■ / OPR OFF)
S804 (◀◀/ ◀◀)
S802 (▶▶I/ ▶▶)
S807 (MEMORY /RECALL)
S806 (EQ)
S801 (A.SHOCK)
S202 (REST SWITCH)
OFF
ON
S310 (HOLD)


RS10003E2
IC11
DC-DC CONVERTER
AREF
MCLK
MLD
MDATA
PMCK
START
VG
RESET
AMUTE
+B2
+B3
+B4
+B5
+B1
MSTAT/ ACDET
MCLK/ CHARGE
MLD/ VCNT
MDATA/ EMP
BOUT
STROBE
CT
CLK
EO
EI
SEI
VSUB
SERIAL REGISTER 8 BIT MEMORY
RECHARGEABLE COMPARATOR/ AMP
EMPTY
REGULATOR RECHARGEABLE LIMITTER
RESET
TRAINGULAR WAVEFORM
VG GENERATOR
SUB UP CONV.
UP CONV.
DOWN CONV.
RECHARGE-ABLE
RIPPLE FILTER
SHORT
CRP
DVDD
S/P
VSEN
REGB
PVcc2
IOUT
P.GND2
LG
PVcc1
ICNT
RESTART
SPRT
OFF
SOFT
SSW
SVcc
VADJ
USW
DSW
PREGND
P.GND1
AVcc
D12
D21
Q11
Regulator
JK11
DC IN 4.5V
ICP11
2 R6/LR6(UM-3) BATTERIES 3V
2 RECHARGEABLE BATTERIES 2.4V
RAMSEL
DOCTOR
VDD
Vss
VL3
VL2
VL1
M38224M051HP
IC301
SYSTEM CONTROL / LCD DRIVE
RESUME
RANDOM
SEG0-13
COM0-3
57~70
74~77
NORMAL
S309 (MODE)
LCD301
LCD
Note:
: CD PLAYBACK SIGNAL LINE

14 Terminal Function of IC's

14.1. IC101(AN8839NSBE1): Servo Amplifier

Pin No.	Mark	I/O Division	Function
1	PDE	I	Tracking signal input (1) terminal
2	PDF	I	Tracking signal input (2) terminal
3	VDD	I	Power supply input terminal
4	PDA	I	Focus signal input (1) terminal
5	PDB	I	Focus signal input (2) terminal
6	LPD	I	APC amplifier input terminal
7	LD	O	APC amplifier output terminal
8	RF	O	RF addition output terminal
9	RF IN	I	RF detection signal input terminal
10	CSBRT	I	Capacitor connection terminal for OFTR
11	CEA	I	HPF amplifier capacitor connection input terminal
12	BDO	O	Dropout signal output terminal (H: dropout)
13	LDON	I	APC control input terminal
14	GND	—	Connected to GND
15	/RFDET	O	RF detection signal output terminal (L: detection)
16	PDOWN	O	Reduced voltage detection signal output terminal
17	OFTR	O	Off-track signal output terminal (H: off-track)
18	NC	—	Not used, open
19	ENV	O	RF envelop signal output terminal
20	ENV OFF	I	Envelop control input terminal
21	NC	—	Not used, open
22	TE IN	I	Tracking error amplifier input terminal
23	TE OUT	O	Tracking error amplifier output terminal
24	FE OUT	O	Focus error amplifier output terminal
25	FE IN	I	Focus error amplifier 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

14.2. IC301(M38224M051HP): System Control / LCD Drive

Pin No.	Mark	I/O Division	Function
1	3KEY	I	A/D key input terminal
2	DOCTOR	I	Doctor mode input terminal (connected to power supply through resistor)
3	NC	—	Not used, open
4	STOP	I	STOP key input terminal
5	SKIP.F	I	SKIP.F key input terminal
6	SKIP.R	I	SKIP.R key input terminal
7	REPEAT	I	REPEAT key input terminal
8	MEMORY	I	MEMORY key input terminal
9	MUTE	O	Hard mute output terminal
10	BUZ	O	Buzzer control output terminal
11	NC	—	Not used, open
12	BOUT	I	Input terminal of battery charging voltage measurement (L: end) (Not used, open)
13	GND	—	Not used, open
14	TXPOWER	O	Optical output ON signal output terminal (Not used, open)
15	RDATA	O	Output terminal to LCD remote control (Not used, open)
16	RCLK	O	LCD remote control clock output terminal (Not used, open)
17	MLD	O	Output terminal of serial command latch to peripheral IC
18	MCLK	O	LCD remote control clock output terminal
19	MDATA	O	Command data output terminal
20	STAT	I	Data input terminal
21	BLKCK	I	Block clock input terminal
22	RSENSE	I	LCD remote control input terminal
23	PDOWN	I	Headphones power OFF input terminal
24	ZANSEL	I	For selection of battery remaining power indication input terminal
25	/RESET	I	Reset detection input terminal
26	BATT STROBE	O	Output terminal for measurement of battery charging voltage (measured by Hi-Z) (Not used, open)
27	OPEN	I	Cover open detection input terminal
28	XOSCIN	I	Clock signal input When MSEL is H: Crystal oscillator 1/2 frequency divided clock signal input terminal (I SMCK= 8.4672 MHz) When MSEL is L: Crystal oscillator 1/4 frequency divided clock signal input (I SMCK= 4.2336 MHz)
29	XOSCOUT	O	Crystal oscillator 1/2 frequencydivided clock signal output terminal
30	VSS	—	Connected to GND
31	REST	I	Reset detection input terminal
32	SHOCK.P	I	SHOCK.P key input terminal
33	HOLD	I	HOLD switch input terminal
34	RESUME	I	RESUM switch input terminal
35	RANDOM	I	RANDOM switch input terminal
36	EQ	I	EQ key input terminal
37	BATTERY	I	BATT CHECK key input terminal (Not used, open)
38	PLAY	I	PLAY key input terminal
39~41	NC	—	Not used, open
42	GUP	O	Gain control output terminal for during XBS operation (When ON: increased 6 dB)
43~44	NC	—	Not used, open
45	JUDGE	—	Not used, open
46	LIGHT	—	Not used, open
47	NC	—	Not used, open
48	RAMSEL	I	For selection of 4M/16M DRAM input terminal (Not used, open)
49~50	NC	—	Not used, open
51	PMSEL	I	When 16MRAM: For selection of power management input terminal (Not used, open)
52	SM	I	When SP OFF: ANTI SHOCK detection OFF switching input terminal (Not used, open)
53	NC	—	Not used, open
54	DISEL	—	Not used, open
55~56	NC	—	Not used, open
57~70	SEG13~ SEG0	O	LCD segment signal output terminal
71~72	VDD	I	Power supply input terminal
73	VSS	—	GND terminal
74~77	COM3~ COM0	O	LCD segment signal output terminal
78	VL3	I	Power supply input terminal
79~80	VL2~VL1	I	Power supply input terminal (LCD drive bias)

14.3. IC401(AN8746SAE1): Coil and Motor Drive

Pin No.	Mark	I/O Division	Function
1	PVCC1	I	Power supply input terminal
2	VCC	I	Power supply input terminal
3	MON	I	A/D reference voltage monitor input terminal
4	FI1	I	Focus coil (+) drive signal input terminal
5	RI1	I	Focus coil (-) drive signal input terminal
6	RO1	O	Focus coil (-) drive signal output terminal
7	PGND1	—	GND terminal
8	FO1	O	Focus coil (+) drive signal output terminal
9	FO2	O	Tracking coil (+) drive signal output terminal
10	PGND2	—	GND terminal
11	RO2	O	Tracking coil (-) drive signal output terminal
12	RI2	I	Tracking coil (-) drive signal input terminal
13	FI2	I	Tracking coil (+) drive signal input terminal
14	GND	—	GND terminal
15	NC	—	Not used, open
16	PVCC2	I	Power supply input terminal
17	PVCC3	I	Power supply input terminal
18	VGO	O	Output terminal to power supply
19	VGI	I	Power supply input terminal
20	FI3	I	Traverse motor (+) drive signal input terminal
21	RI3	I	Traverse motor (-) drive signal input terminal
22	RO3	O	Traverse motor (-) drive signal output terminal
23	PGND3	—	GND terminal
24	FO3	O	Traverse motot (+) drive signal output terminal
25	FO4	O	Traverse motot (+) drive signal output terminal
26	PGND4	—	GND terminal
27	RO4	O	Traverse motor (-) drive signal output terminal
28	RI4	I	Traverse motor (-) drive signal input terminal
29	FI4	I	Traverse motor (+) drive signal input terminal
30	PC	I	Hard mute input terminal
31	AC	I	Power supply input terminal
32	PVCC4	I	Power supply input terminal

14.4. IC11(RS10003E2): DC/DC Converter

Pin No.	Mark	I/O Division	Function
1	PGND1	—	GND terminal
2	DSW	O	DC/DC converter coil drive output terminal
3	PVCC1	I	Power supply input terminal
4	VSEN	I	Empty detection input terminal (connected to power supply)
5	RESTART	I	DC/DC converter drive input terminal
6	ICNT	I	Setting of charging current input terminal (Connected to GND through resistor)
7	AMUTE	O	Muting signal output terminal
8	START	I	Starting of DC/DC converter input terminal
9	VG	I	Power supply input terminal
10	LG	I	Coil drive input terminal for VG voltage increase (connected to power supply)
11	PGND2	—	GND terminal
12	IOUT	O	Charging signal and charging feedback output terminal
13	PVCC2	I	Power supply input terminal
14	REGB	O	Regulator drive signal output terminal
15	MSTAT/ACDET	O	DC jack detection output terminal
16	MDATA/EMP	I	Power drop detection input terminal
17	MLD/VCNT	I	Regulator voltage switching input terminal
18	MCLK/CHARGE	I	Charging ON/OFF input terminal
19	S/P	I	Serial/parallel switching input terminal (connected to power supply)
20	DVDD	I	Power supply input terminal
21	CLK	I	DC/DC converter external clock input terminal
22	PREGND	—	GND terminal
23	AREF	O	Audio reference output terminal
24	AVCC	O	Ripple filter output terminal
25	CRP	I	Ripple filter smoothing capacitor connection terminal
26	RESET	O	Reset detection output terminal
27	SOFT	O	Soft start setting output terminal (connected GND through capacitor)
28	EO	O	DC/DC converter error amplifier output terminal
29	EI	I	DC/DC converter error amplifier input terminal
30	VADJ	O	Output for varying DC/DC converter output terminal (Not used, open)
31	CT	O	Triangular wave output terminal (connected GND through capacitor)
32	SPRT	O	Output terminal for setting of constants anti-power OFF (connected to GND through capacitor)
33	OFF	—	DC/DC converter OFF(Not used, open)
34	BOUT	O	Amplifier output terminal (Not used, open)
35	STROBE	I	Strobe input terminal
36	SEI	I	Sub DC/DC converter error amplifier input terminal (Not used, open)
37	VSUB	I	Power supply input terminal
38	SSW		
39	SVCC		
40	USW	I	DC/DC converter coil drive input terminal

14.5. IC501(MN662784SA): Servoprocessor, Digital Signal Processor, Digital Filter and D/A Converter

Pin No.	Mark	I/O Division	Function
1	DVDD3V	I	Power supply input terminal for DRAM
2	D0	I/O	Data input/output terminal for DRAM
3	D1		

Pin No.	Mark	I/O Division	Function
4	NWE	O	Write enable output terminal for DRAM
5	NRAS	O	RAS control signal output terminal for DRAM
6	D2	I/O	Data 2/3 input/output terminal for DRAM
7	D3		
8	NCAS0	O	CAS control 0 signal output terminal for DRAM
9	NCAS1	O	CAS control 1 signal output terminal for DRAM
10~14	A8~4	O	Addresses 8-4 output terminal for DRAM
15	A9	O	Address 9 output terminal for DRAM
16~19	A0~A3	O	Addresses 0-3 output terminal for DRAM
20	VSS2	—	GND terminal
21	DVDD2	I	Power supply input terminal for digital circuits
22	SPOUT	O	Spindle motor drive output terminal
23	TRV+	O	Traverse motot drive(+) output terminal
24	TRV-	O	Traverse motot drive (-) output terminal
25	TR+	O	Tracking coil drive (+) output terminal
26	TR-	O	Tracking coil drive (-) output terminal
27	FO+	O	Focus coil drive (+) output terminal
28	FO-	O	Focus coil drive (-) output terminal
29	FBAL	O	Focus balance adjustment output terminal
30	TBAL	O	Tracking balance adjustment output terminal
31	CSEL	—	Connected to GND
32	FE	I	Focus error signal input terminal (analog input)
33	TE	I	Tracking error signal input terminal (analog input)
34	RFENV	I	RF envelope signal input terminal (analog input)
35	OFT	I	Off-track signal input terminal (H: off-track)
36	NRFDET	I	RF detection signal input terminal (L: detection)
37	BDO	I	Dropout signal input terminal (H: dropout)
38	LDON	O	Laser ON signal output terminal(H: ON)
39	ARF	I	RF signal input terminal
40	IREF	I	Reference current input terminal
41	AD PVCC	O	A/D reference voltage output terminal
42	DSLF	O	Loop filter output terminal for DSL
43	DRF	O	Bias output terminal for DSL
44	PLLF	O	Loop filter output terminal for PLL
45	VCOF	O	Loop filter output terminal for jitter-free VCO
46	AVDD2	I	Power supply input terminal for analog circuits
47	AVSS2	—	Connected to GND
48	OUTL	O	Left channel audio signal output terminal
49	AVSS1	—	Connected to GND
50	OUTR	O	Right channel audio signal output terminal
51	AVDD1	I	Power supply input terminal for analog circuits
52	FSEL	I	Noise filter ON/OFF switching input (L: ON) (Connected to GND)
53	TMOD1	I	Terminal mode switching input 1 (L: normal) (Connected to GND)
54	TMOD2	I	Terminal mode switching input 2 (L: normal) (Connected to GND)
55	FLAG	—	Flag signal output (Not used, open)
56	FCLK	—	LCD frame click signal output (Not used, open)
57~58	EXT0 ~EXT2	I	Not used, open
60	TX	O	Digital audio interface signal output terminal (Not used, open)
61	MCLK	I	Microprocessor command clock signal input terminal (detected at leading edge)
62	MDATA	I	Microprocessor command data signal input terminal
63	MLD	I	Microprocessor command control signal input terminal (L: load)
64	BLKCK	O	Sub-code block clock signal output terminal (I=75Hz)
65	SQCK	I	External clock input terminal for sub-code Q resistor (Connected to power supply)
66	SUBQ	—	Sub-code Q data output terminal (Not used, open)
67	DMUTE	—	Mute input terminal (H: mute) (Not used, connected GND)
68	STAT	O	Status signal output terminal
69	NRST	I	Reset signal input terminal (H: reset)
70	SPPOL	O	Spindle motor drive signal output terminal
71	PMCK	O	Clock signal output terminal
72	SMCK	O	System clock signal output terminal
73	SUBC	O	Sub-code output terminal (Not used, open)
74	SBCK	I	Clock input terminal for sub-code output terminal (Connected to power supply)
75	NCLDCK	O	Sub-code frame clock signal output terminal (Not used, open)
76	NTEST	I	Test terminal (normal: H)
77	X1	I	Crystal oscillator circuit input terminal (F=16.9MHz)
78	X2	O	Crystal oscillator circuit output terminal (F=16.9MHz)
79	DVDD1	I	Power supply input terminal for digital circuits
80	DVSS1	—	Connected to GND

15 Replacement Parts List

Notes:

*Inportant 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 manufactures 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.

*The parenthesized indications in the Remarks columns specify the colours. (Refer to the cover page for colour.)

Parts without these indications can be used for all colours.

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

*Capacity values are in microfarads (μF) 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).

*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.

*"<IA>,<IB>, <IC>" marks in Remarks indicate languages of instruction manuals.

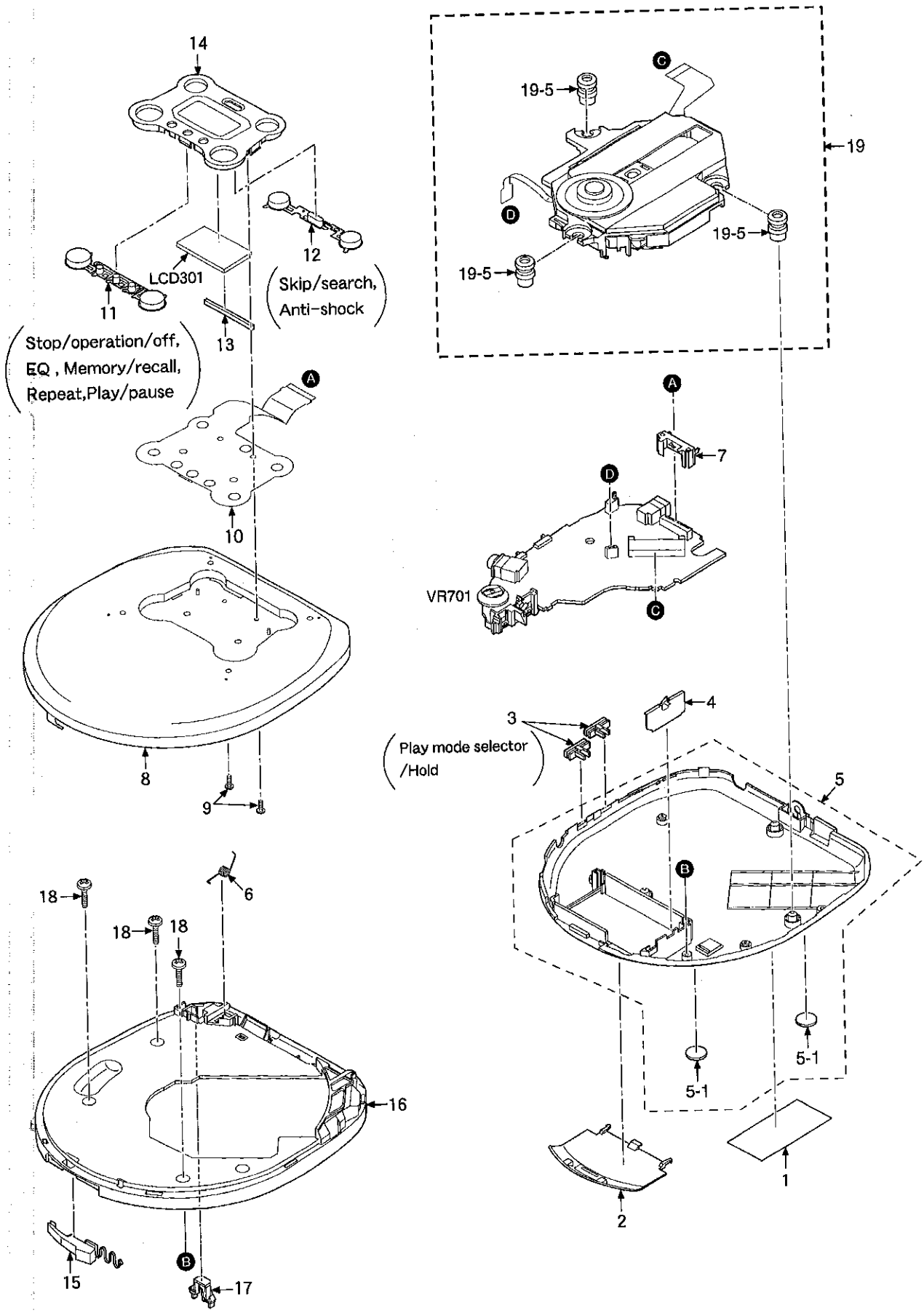
[<IA>:English/Spanish/Swedish/German/Italian/French, <IB>:Netherlands/Russian/Polish/Danish/Czeco,<IC>: English]

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	RGN1905-K	NAME PLATE	1	(EB)
1	RGN1904-K	NAME PLATE	1	(EG)
2	RKK0135-H	BATTERY LID	1	
3	RGV0200-K	SWITCH KNOB	2	
4	RJQ93020	BATTERY TERMINAL	1	
5	RFKJLSX270EG	BOTTOM CABINET ASS'Y	1	
5-1	RKA0112-K	FOOT	2	
6	RME0308	OPEN SPRING	1	
7	RML0578	FPC HOLDER	1	
8	RGD0065-A	CD COVER	1	(A)
8	RGD0065-S	CD COVER	1	(S)
9	RHE5119YA	SCREW	2	
10	RSG0052-L	OPERATION P.C.B.	1	
11	RGU1837-S	OPERATION BUTTON(B)	1	
12	RGU1836-S	OPERATION BUTTON(A)	1	
13	RSQ0070	RUBBER	1	
14	RYF0541-4A	LID ORNAMENT ASS'Y	1	(A)
14	RYF0541-A	LID ORNAMENT ASS'Y	1	(S)
15	RGU1838-H	OPEN KNOB	1	
16	RKM0411-H	INTERMEDIATE CABINET	1	
17	RML0580	STOPPER	1	
18	XTN17+6GFZ	SCREW	3	
19	RAE0145Z	TRAVERSE DECK	1	⚠
19-1	RAF0142A	OPTICAL PICKUP	1	⚠
19-2	RDG0305	GEAR	1	
19-3	RDG0306	GEAR	1	
19-4	RJB2106A	TRAVERSE FPC	1	
19-5	RMG0449-H	FLOATING RUBBER	3	
19-6	RMC0264	THRUST SPRING	1	
19-7	RXQ0482	NUT PLATE SPRING	1	
19-8	RXQ0525	TRAVERSE MOTOR	1	
19-9	SNSD38	SCREW	1	
19-10	XQN17+BG45	SCREW	1	
19-11	XQN17+CG45	SCREW	1	
19-12	XQN2+BG55	SCREW	1	
A1	RFEA403B-S	AC ADAPTOR	1	(EB) ⚠
A1	RFEA419E-M	AC ADAPTOR	1	(EG) ⚠
A2	RFEV335P-KS	STEREO EARPHONES	1	
A3	RFEV015PCKS	REMOTE CONTROLLER	1	
A4	RQA0117	WARRANTY CARD	1	
A5	RQCB0169	SERVICE CENTER LIST	1	
A6	RQT5361-E	INSTRUCTION MANUAL	1	(EG)<IA>
A6	RQT5362-H	INSTRUCTION MANUAL	1	(EG)<IB>
A6	RQT5363-B	INSTRUCTION MANUAL	1	(EB)<IC>
C10	ECUV1H121KCV	50V 120P	1	
C11	ECUVNA105ZFV	10V 1U	1	
C12	ECST0JY475RR	6.3V 4.7U	1	
C13	RCE0JSL470IX	6.3V 47U	1	
C14	RCE0JKA221IG	6.3V 220U	1	
C15	ECUZNC104ZFV	16V 0.1U	1	
C16,17	ECUVNA105ZFV	10V 1U	2	
C19	ECA1CAK220XH	16V 22U	1	
C20	ECUVNA105ZFV	10V 1U	1	
C21	ECUVNH103KBV	50V 0.01U	1	
C22	ECUZNC104ZFV	16V 0.1U	1	
C24	ECUV1H561KBV	50V 560P	1	
C26	ECUVNA105ZFV	10V 1U	1	
C27	RCE0JRC102BG	6.3V 1000U	1	
C33	ECST0JY475RR	6.3V 4.7U	1	
C35,36	ECUVNA105ZFV	10V 1U	2	
C101	ECUVNC104KBV	16V 0.1U	1	
C103	ECUVNE223KBV	25V 0.022U	1	
C111	ECUVNE223KBV	25V 0.022U	1	
C112	ECUV1H221KBV	50V 220P	1	
C113,14	ECUZNC104ZFV	16V 0.1U	2	
C115-17	ECUVNE223KBV	25V 0.022U	3	
C120	ECUV1H152KBV	50V 1500P	1	
C121	ECUV1H121KCV	50V 120P	1	
C201	ECEA1AKS470	10V 47U	1	
C301,02	ECUVNA105ZFV	10V 1U	2	
C304	ECUVNJ105KBN	63V 1U	1	
C305	ECUV1C224ZFV	16V 0.22U	1	
C401	ECUZNC104ZFV	16V 0.1U	1	
C402	ECUVNA105ZFV	10V 1U	1	
C410	ECUVNA105ZFV	10V 1U	1	
C411	ECUZNC104ZFV	16V 0.1U	1	
C503	ECUV1H561KBV	50V 560P	1	
C504	ECUZNC104ZFV	16V 0.1U	1	
C505	ECUVNE223KBV	25V 0.022U	1	
C506	ECUVNA224KBV	10V 0.22U	1	
C507	RCE0JKA221IG	6.3V 220U	1	
C508	ECUV0J474KBV	6.3V 0.47U	1	
C509	ECUVNH103KBV	50V 0.01U	1	
C510,11	ECUZNC104ZFV	16V 0.1U	2	
C514	ECUV1H102KBV	50V 1000P	1	
C515	ECUZNC104ZFV	16V 0.1U	1	
C525	ECUZNC104ZFV	16V 0.1U	1	
C603,04	ECUV1H272KBV	50V 2700P	2	

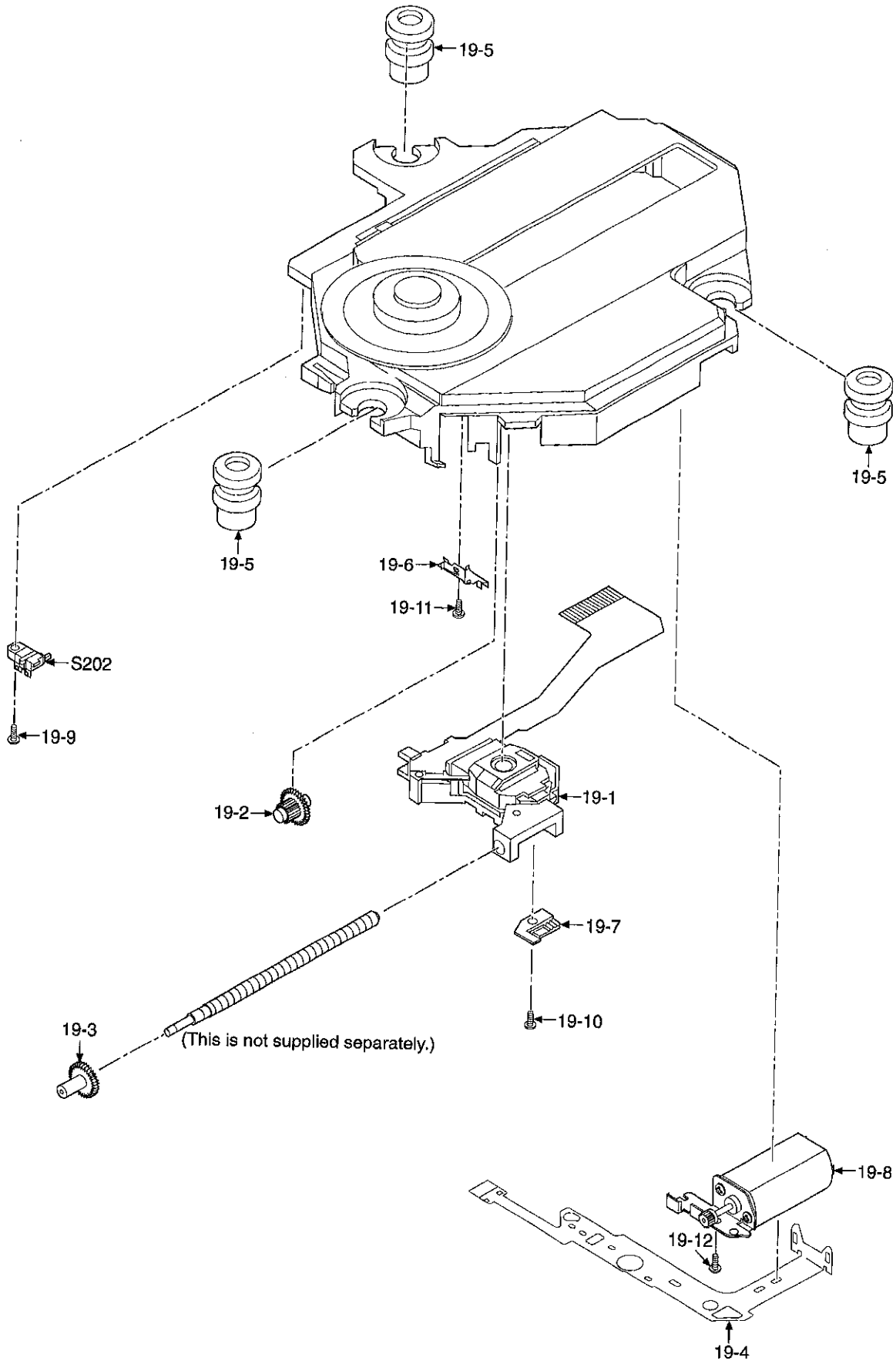
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C610	ECA0JAK470XH	6.3V 47U	1	
C701	ECEA1AKS470	10V 47U	1	
C702	ECUZNC104ZFV	16V 0.1U	1	
C703,04	ECUVNJ105KBV	63V 1U	2	
C705,06	ECA0JAK101XH	6.3V 100U	2	
C707	ECUZNC104ZFV	16V 0.1U	1	
C901	ECUV1H332KBV	50V 3300P	1	
CN11	RJH8303-2	BATTERY TERMINAL	1	
CN101	RJS2A6216T	CONNECTOR(16P)	1	
CN301	RJS2A6130T	CONNECTOR(30P)	1	
CN401	RJS2A5106T1	CONNECTOR(6P)	1	
D11	MA1070400L	DIODE	1	
D12	MA741WKTX	DIODE	1	
D21	MA111TX	DIODE	1	
D301	MA142WKTX	DIODE	1	
D303	MA111TX	DIODE	1	
D901	MA142WKTX	DIODE	1	
IC11	RS10003E2	IC	1	
IC101	AN8839NSBE2	IC	1	
IC301	M38224M051HP	IC	1	
IC401	AN8746SAE1	IC	1	
IC501	MN662784SA	IC	1	
IC502	MNV7400CT1T	IC	1	
IC701	NJU7082BVTE1	IC	1	
ICP11	RSFPB20ET-L	IC PROTECTOR	1	⚠
JK11	RJJ43K09-C	JACK,DC IN	1	
JK701	RJJ36T02-C	JACK,HEADPHONES	1	
L11	RLQU331KT-W	COIL	1	
L12	RLQS101KT1-D	COIL	1	
L13	RLQU331KT-W	COIL	1	
LCD301	RSL5254-K	LCD	1	
P1	RPK1400	PACKING CASE	1	(A)
P1	RPK1399	PACKING CASE	1	(S)
P2	RPQ0836-1	PAD	1	
P3	RPQ0924	PAD	1	
P4	RPQ0966	PAD	1	
P5	RPF0046	PROTECTION BAG(F.B.)	1	(EG)
P6	RPF0111	PROTECTION BAG(UNIT)	1	
PCB1	REP2914F-M	MAIN P.C.B.ASS'Y	1	(RTL)
Q11	2SB1132T100	TRANSISTOR	1	
Q201	2SB709ATX	TRANSISTOR	1	
Q701,02	2SD1328QRSTX	TRANSISTOR	2	
Q703	FMG6AT148	TRANSISTOR	1	
Q901	DTA114YUA106	TRANSISTOR	1	
Q902	FMG6AT148	TRANSISTOR	1	
Q903	UN5113TX	TRANSISTOR	1	
Q904,05	2SD1819ATX	TRANSISTOR	2	
R10-12	ERJ3GEYD103V	1/16W 10K	3	
R13	ERJ3GEYJ102V	1/16W 1K	1	
R14	ERJ3GEYJ222V	1/16W 1	1	
R22	ERJ3GEYJ223V	1/16W 22K	1	
R25,26	ERJ3GEYJ104Z	1/16W 100K	2	
R27	ERJ3GEYJ392V	1/16W 3.9K	1	
R28	ERJ3GEYJ100V	1/16W 10	1	
R29	ERJ3GEYJ562V	1/16W 5.6K	1	
R32	ERJ3GEYJ103Z	1/16W 10K	1	
R33	ERJ3GEYD184V	1/16W 180K	1	
R120	ERJ3GEYJ103Z	1/16W 10K	1	
R121,22	ERJ3GEYJ124V	1/16W 120K	2	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R128,29	ERJ3GEYJ103Z	1/16W 10K	2	
R201	ERJ3GEYJ223V	1/16W 22K	1	
R202	ERJ3GEYJ2R2V	1/16W 2.2	1	
R301	ERJ3GEYJ392V	1/16W 3.9K	1	
R302	ERJ3GEYJ104Z	1/16W 100K	1	
R304	ERJ3GEYJ105V	1/16W 1M	1	
R306	EXBV8V473JV	1/16W 47K	1	
R307	ERJ3GEYJ103Z	1/16W 10K	1	
R308	ERJ3GEYJ104Z	1/16W 100K	1	
R313	ERJ3GEYJ102V	1/16W 1K	1	
R321	ERJ3GEYJ223V	1/16W 22K	1	
R322,23	ERJ3GEYJ104Z	1/16W 100K	2	
R325	ERJ3GEYJ333V	1/16W 33K	1	
R501	ERJ3GEYJ683V	1/16W 68K	1	
R502	ERJ3GEYJ563V	1/16W 56K	1	
R505	ERJ3GEYJ391V	1/16W 390	1	
R506	ERJ3GEYJ222V	1/16W 2.2K	1	
R508	ERJ3GEYJ1R0V	1/16W 1	1	
R511	ERJ3GEYJ102V	1/16W 1K	1	
R512	EXBV4V102JV	1/32W 1K	1	
R513	ERJ3GEYJ104Z	1/16W 100K	1	
R514	ERJ3GEYJ681V	1/16W 680	1	
R601,02	ERJ3GEY0R00V	1/16W 0	2	
R603,04	MCR03PZHJ561	1/16W 560	2	
R701,02	ERJ3GEYJ104Z	1/16W 100K	2	
R703,04	ERJ3GEYJ220V	1/16W 22	2	
R705,06	ERJ3GEYJ1R5V	1/16W 1.5	2	
R707,08	ERJ3GEYJ102V	1/16W 1K	2	
R709	EXBV4V392J	1/32W 3.9K	1	
R710	EXBV4V123J	1/32W 12K	1	
R711	EXBV4V103JV	1/32W 10K	1	
R712	EXBV4V331JV	1/32W 330	1	
R750-53	ERJ3GEYJ562V	1/16W 5.6K	4	
R901	EXBV4V821JV	1/32W 820	1	
R902	ERJ3GEYJ274V	1/16W 270K	1	
R903	ERJ3GEYJ474V	1/16W 470K	1	
R904	ERJ3GEYJ470V	1/16W 47	1	
R905	ERJ3GEYJ473V	1/16W 47K	1	
RJ2	ERJ3GEY0R00V	1/16W 0	1	
RJ502	ERJ3GEY0R00V	1/16W 0	1	
RJ504	ERJ3GEY0R00V	1/16W 0	1	
RJ506	ERJ3GEY0R00V	1/16W 0	1	
RJ508	ERJ3GEY0R00V	1/16W 0	1	
RJ510	ERJ3GEY0R00V	1/16W 0	1	
RJ512,13	ERJ3GEY0R00V	1/16W 0	2	
S201	ESE11SV6	SW,LASER ON/OFF	1	
S202	ESE11HS4	SW,REST DET.	1	
S309	RSS3A007-1A	SW,MODE	1	
S310	RSS2A010-1A	SW,HOLD	1	
VR701	EVUTUFB11C54	V.R.,VOLUME	1	
X501	RSXY16M9F02T	OSCILLATOR	1	

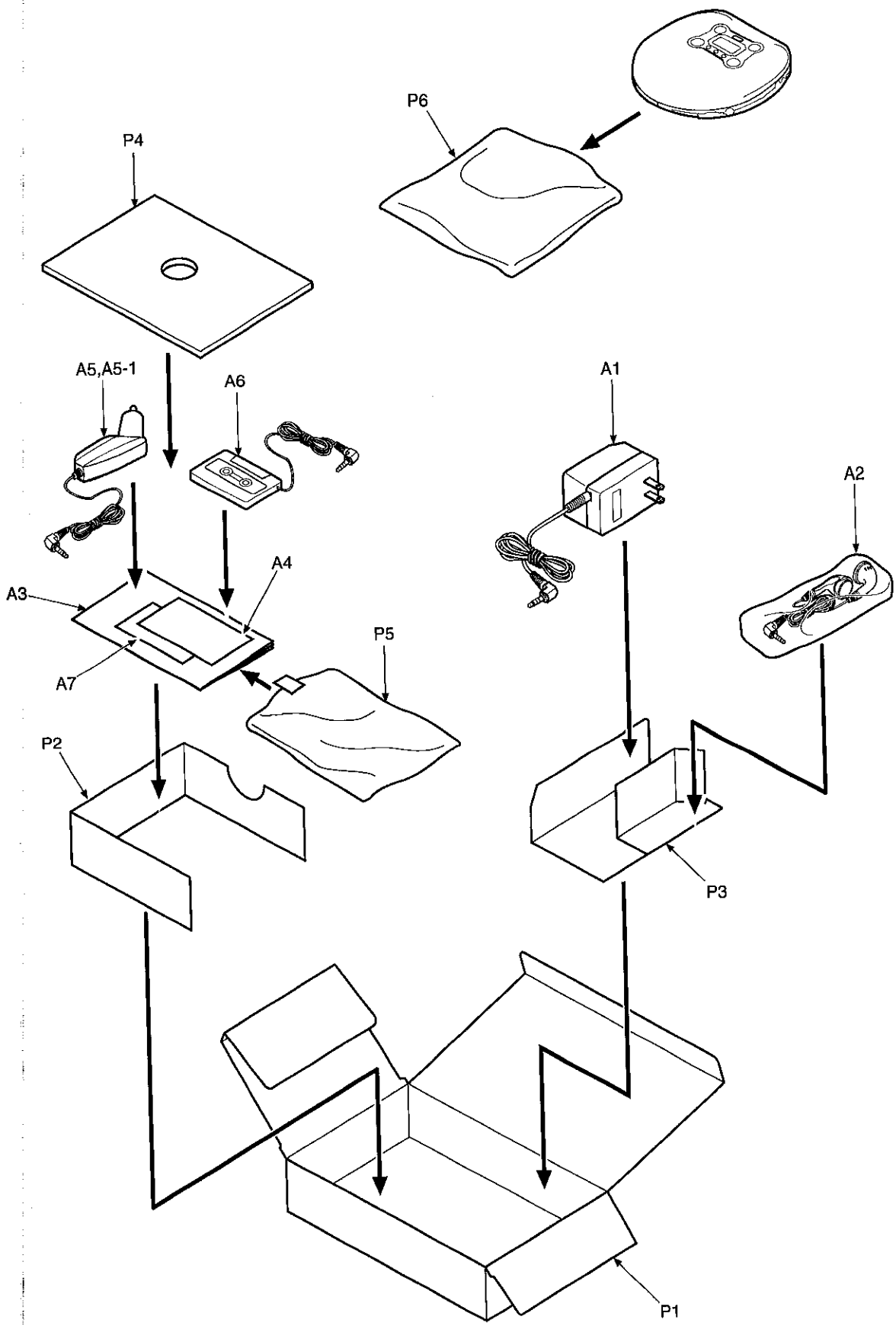
16 Cabinet Parts Location



17 Traverse Parts Location



18 Packaging



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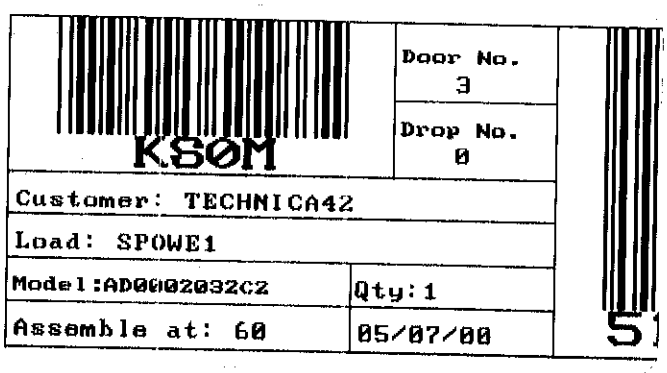
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Door No.
3
Drop No.
0
Customer: TECHNICA42
Load: SPOWE1
Model:AD0002032C2
Qty:1
Assemble at: 60
05/07/00