ORDER NO. AD9803045C0
A6

Service Manual

Portable CD Player

SL-S200

COMPACT disc DIGITAL AUDIO

MASH* multi-stage noise shaping

* MASH is a trademark of NTT.

SL-S200 (P)

SL-S200 (other areas)

Colour
(H) ..... Gray Type
(S) ..... Silver Type
[for (EB) area only.]

Areas
(P) ..... U.S.A.
(PC) ..... Canada.
(EB) ..... Great Britain.
(EG) ..... Germany.
(GC) ..... Asia,Latin America. Middle East and Africa.
(GN) ..... Oceania.
(GK) ..... China.

Traverse Deck: RAE0144Z Mechanism Series

Specifications

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

Pickup
Light source: Semiconductor laser
Wavelength: 780 nm

General
Operation temperature range: 0–40 degree (32–104 fahrenheit)
Rechargeable temperature range: 5–40 degree (41–104 fahrenheit)
Power supply: DC 4.5 V

Power consumption: Anti-shock memory OFF/ON
AC adaptor; 4.3 W / 4.5 W [(P) and (PC) areas]
5.5 W / 5.7 W [other areas]
Battery (DC 3V); 0.6 W / 0.7 W
When recharging; 2.4 W

Playing time
(When used in hold mode, at 25 degree (77 fahrenheit) temperature and on flat and stable surface.)
Battery used: Anti-shock memory OFF/ON
Panasonic Alkaline dry cell batteries (LR6, 2pcs.);
Approx. 10 h / 8.5 h
Optional Rechargeable batteries (SH-CDB8D);
Approx. 3.0 h / 2.5 h
Optional Rechargeable batteries
(P-3GAVA/2B) [for (P) and (PC) areas];
(P-3GAVE/2B) [for (EB) and (EG) areas];
(P-3GAVT/2B) [for (GC),(GN) and (GK) areas];
Approx. 5.5 h / 5.0 h
The play time may be less depending on the operating conditions.
Recharging time:
SH-CBD8D; Approx. 3 h
P-3GAVA/2B, P-3GAVE/2B and P-3GAVT/2B;
Approx. 5 h

Dimensions (W × H × D): 128 × 28.0 × 144 mm
($5^{1}/_{16}$" / $1^{9}/_{32}$" / $5^{11}/_{16}$")
Weight: 265 g (9.4 ounce) with batteries
220 g (7.8 ounce) without batteries

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

■ Accessories

- •AC adaptor [for (P),(PC) areas] (RFEA415C-S) ..... 1pc.
- •AC adaptor [for (EB) area] (RFEA403B-S) ..... 1pc.
- •AC adaptor [for (EG) area] (RFEA401E-3S) ..... 1pc.
- •AC adaptor [for (GC) area] (RFEA403Z-S) ..... 1pc.
- •AC adaptor [for (GN) area] (RFEA403A-S) ..... 1pc.
- •AC adaptor [for (GK) area] (RFEA403T-1S) ..... 1pc.
- •Stereo headphones [for U.S.A.] (RFEV705P-KS) ..... 1pc.
- •Stereo earphones [for except U.S.A.] (RFEV317P-KS) ..... 1pc.
- •Power plug adaptor [for (GC) area only] (SJP5213-2) ..... 1pc.

■ Precaution of Laser Diode

● For (P,PC) areas.

CAUTION: This unit utilizes a class 1 laser. Invisible laser radiation is emitted from the optical pickup lens when the unit is turned on :

1. Do not look directly into the pickup lens.
2. Do not use optical instruments to look at the pickup lens.
3. Do not adjust the preset variable resistor on the optical pickup.
4. Do not disassemble the optical pickup unit.
5. If the optical pickup is replaced, use the manufactures specified replacement pickup only.
6. Use of control or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

● For (EB,EG,GC,GN,GK) areas.

CAUTION: This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pick up lens.
Wave length: 780 nm
Maximum output radiation power from pick up: 100 μW/VDE

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

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

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

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

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

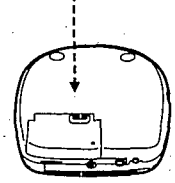
ADVARSEL: I dette a apparat anvendes laser.

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

CLASS 1
LASER PRODUCT

LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

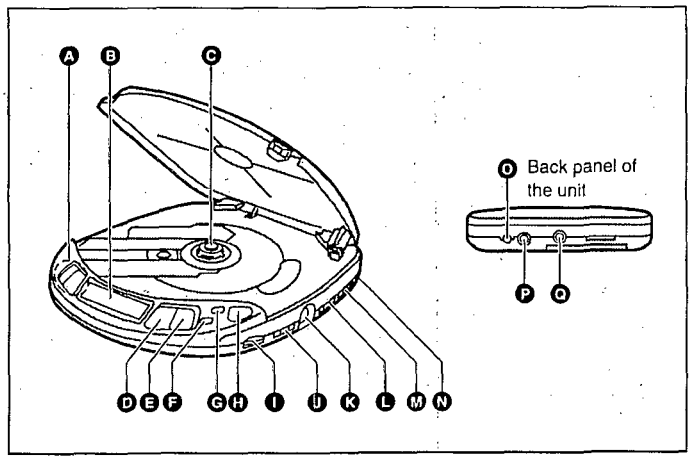
[Bottom side]



Bottom of the unit
Parte inferior del aparato
Apparatens undersida
Produktets underside

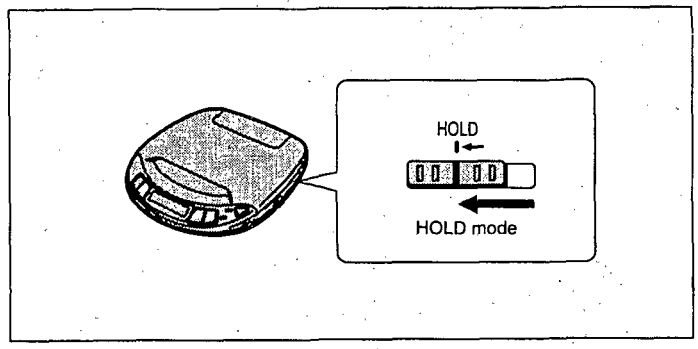
DANGER	INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM.	(Inside of product)
ADVARSEL	USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.	(Indersiden at apparatet)
VARO!	AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTÖNTÄ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

■ Location of Controls



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

■ HOLD Function



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

The HOLD function prevents the following:

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

To use the HOLD function

Set HOLD to the HOLD position.

"hoLd" indication

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

When the unit is powered off

The "hoLd" indication appears only when ▶ ❚❚ button is pressed.

Before operating the buttons

Be sure to move HOLD to release the unit from the hold mode.

■ AC Adaptor (for GK area)

Before use

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

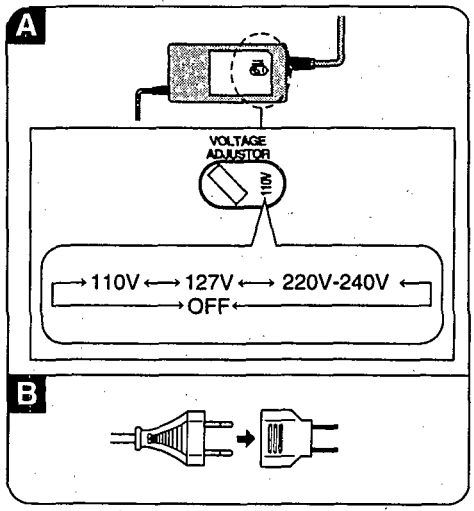
If the power supply in your area is 115 V or 120 V, please set VOLTAGE ADJUSTOR as follows:

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

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

How to use the AC adaptor

To connect the AC adaptor, refer to "Power Supply Preparations"



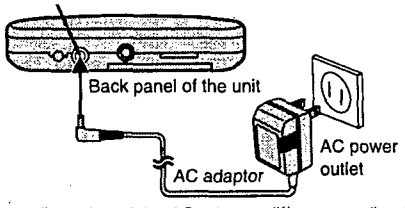
■ Power Supply Preparations

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

Using the AC adaptor

Connect the AC adaptor supplied.

DC IN jack (⊖-C-⊕ DC IN 4.5 V)



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

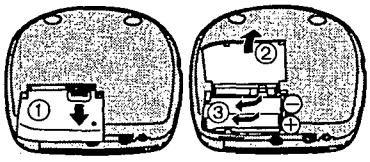
Using rechargeable batteries

Obtain the optional rechargeable batteries for SL-S200. Make sure to recharge the batteries before using them. The unit cannot be used to charge rechargeable batteries other than those specially designed for it.

- Supplied batteries for SL-S205 (RP-BP60)
- Optional batteries (P-3GAVA/2B, SH-CDB8D)

Recharging procedure

1 Insert the special rechargeable batteries into the unit.



2 *Connect the AC adaptor.*

Refer to "Using the AC adaptor" for connection instructions.

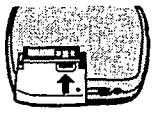
3 When recharging is complete, unplug the AC adaptor from the power outlet and the DC IN jack.

Notes

- *It takes approximately 3 hours to fully recharge the supplied rechargeable batteries.*
- Rechargeable batteries have a service life of approximately 300 charge-discharge cycles. If the operating time on one full charge becomes noticeably shorter than it used to be, the battery has reached the end of its service life and should be replaced.
- You can operate the unit with the AC adaptor while recharging the batteries, but it will lengthen the recharging time.
- The AC adaptor and rechargeable batteries may become warm while recharging is in progress. This is not a malfunction.

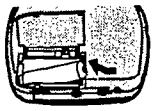
If the battery lid comes loose

Slide the lid back into place horizontally.



Removing batteries

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



Using the car adaptor

Be sure to obtain the car adaptor (SH-CDC9) for SL-S200, *available as an optional accessory.* The car adaptor can be used to recharge the unit's batteries while in the car.

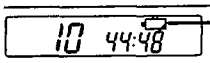
CAUTION:
Use only car adaptor, Model: SH-CDC9 manufactured by Matsushita Electric Industrial Co., Ltd.

Using dry-cell batteries (not included)

After disconnecting the AC adaptor, insert two "AA" (LR6) alkaline batteries.

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

Battery indicator



This indicator flashes on and off when the batteries are almost out of power. Power is cut off completely a short *while later.*

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

Notes

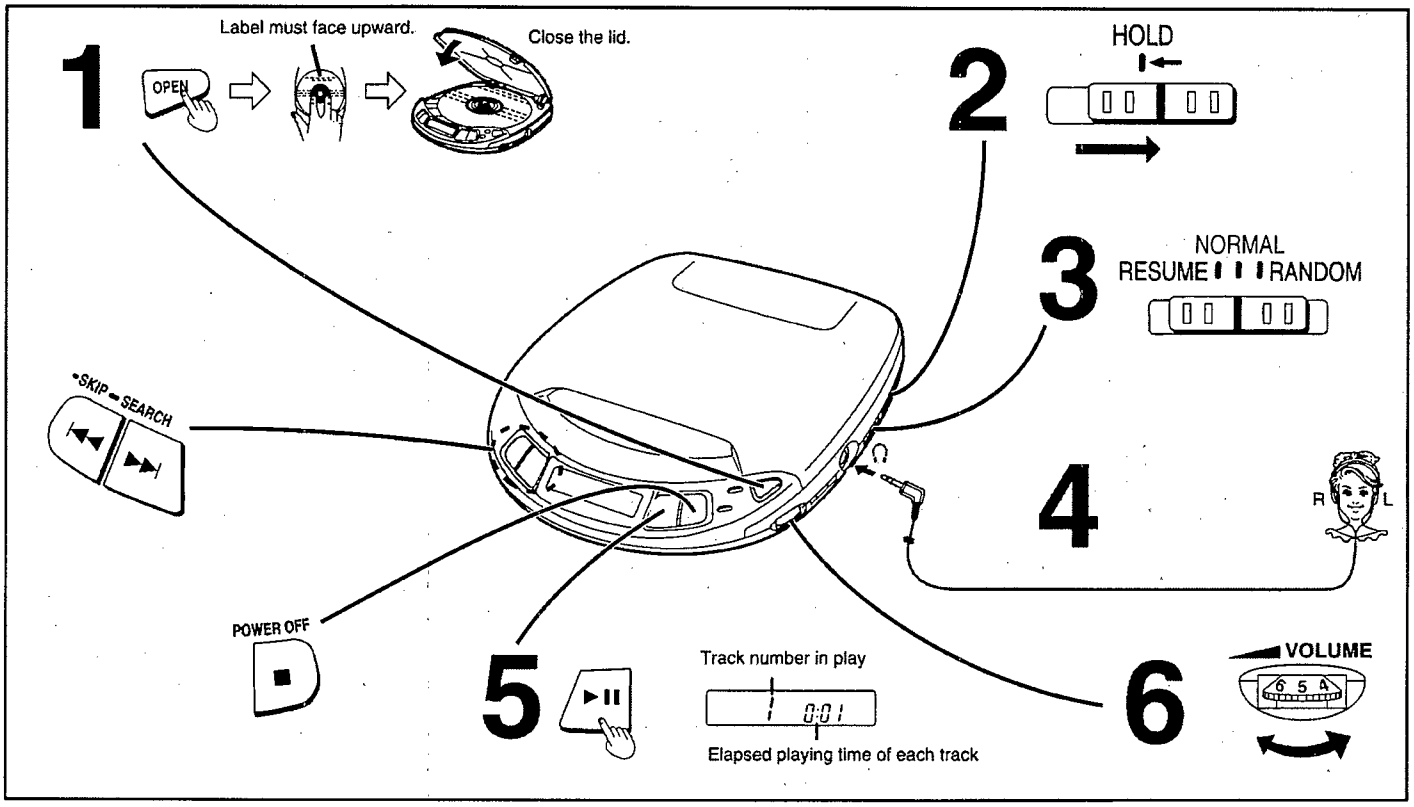
- The length of time the unit will continue to operate between when the battery indicator starts flashing and when the power is cut off differs depending on the type of batteries used.
- The battery indicator may not flash if rechargeable batteries, other than those designated by Panasonic, are used.

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.

■ Troubleshooting Guide

Problem	Check this
Cannot close cover.	Is the disc properly secured in place?
Cannot play discs.	• Is the unit in hold status? • Is the disc properly secured in place? • Is there 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) slider in the NORMAL position?
Cannot hear music—too noisy.	• Is the headphones/earphones plug inserted all the way? • Is the plug 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.*)

■ Sequential Play



Following steps 1–6.

In step 4, connect the stereo headphones/earphones to the ∩ jack. **(Plug in firmly.)**

- Play stops automatically when all the tracks have been played.
- If the unit has been connected to the car audio system, adjust the volume level between 4 and 6 on the unit, then adjust the volume level on the system.

Operation	Button	Display/reference
To pause play	Press during play. ►II	Press again to resume play.
To stop play **Stop mode**	Press during play. POWER OFF ■	Total number of tracks / Total playing time
To turn off the unit Off mode	Press during stop mode. POWER OFF ■	
Skip forward/ backward (skip function)	Press during play. (Backward) (Forward) *SKIP – SEARCH ◄◄ ►► Keep depressed during play.	• 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.
Rapid forward/ backward (search function)		

For your reference:

"no dISC" indication

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

"OPEn" indication

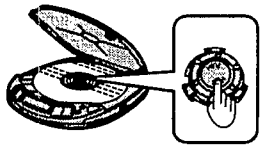
This indication appears for about 10 minutes when the cover is opened. (However, the indication does not appear when the unit is powered off.)

Note

Never insert foreign objects into the unit body.

Removing discs

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.)



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 30 seconds.)

■ Other Play Methods

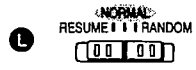
The letter such as Ⓐ in the various illustrations in the "Location of Control" section.

Skip play

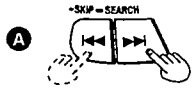
The disc plays from the specific track through to the end, then play stops automatically.

Preparation: Put unit in stop mode.

1



2 Select the desired track.



3

Random play

1

2

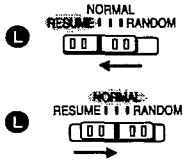
Release

For your reference:

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

Resume play

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.



For your reference:

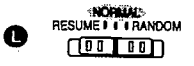
- If the RESUME, NORMAL, RANDOM (play mode selector) slider is put in the RESUME position, the all-repeat function will be activated automatically as soon as the unit is powered on.
- If power is cut off near the end of a track (power off status), playback may resume from the beginning of the next track.
- 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 old disc.

Program play

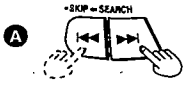
Up to 24 tracks can be entered in the program.

Preparation: Put unit in stop mode.

1



2 Select the desired track.



3 Register in sequence.
(The indication "M" and the programmed sequence appear on the display panel.)

4 Repeat steps 2 and 3 to program all the desired tracks.

5

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

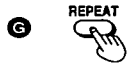
■ **If "F" is displayed**
No more tracks may be added to the sequence.

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

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

Repeat function

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



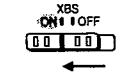
For your reference:
If REPEAT is pressed during program play, only the tracks in the program are repeated.
(The indication "ALL" is not displayed.)

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

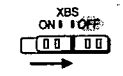
1-track repeat (1 ↻) ←
One track is repeated.
↓
All-track repeat (ALL ↻)
All the tracks on the disc are repeated.
↓
Cancel ——

Changing the sound quality

XBS ON:
Select this setting to boost the low-range response.



OFF:
Select this setting to turn off the XBS function.



■ 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 swining of the unit.

1

2

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

Notes

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

Using the unit with an audio system

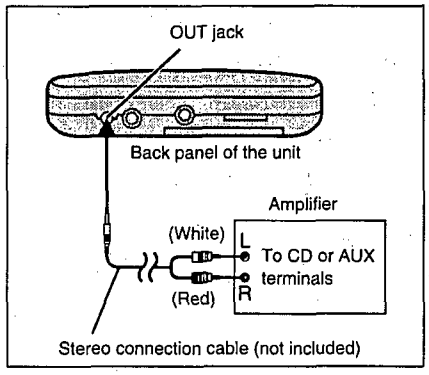
The ANTI-SHOCK uses digital signal compression technology. It is recommended that the ANTI-SHOCK be kept in the OFF position if the unit is connected to a home audio system.

■ Using the Unit Optional Accessories

Using the unit with an audio system

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

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



Using the unit with a car audio system stereo

Items to be purchased

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

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

For securing the unit and connecting the power supply:
- Car adaptor (SH-CDC9)
- Car mounting kit (SH-CDF7)
  Car mounting arm, Car insulator

Note

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

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

■ Cautions

Listening caution

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.

Sound can be deceiving. Over time your hearing "comfort level" adapts to higher volumes of sound. So what sounds "normal" can actually be loud and harmful to your hearing.
Guard against this by setting your equipment at a safe level BEFORE your hearing adapts.
To establish a safe level:
- Start your volume control at a low setting.
- Slowly increase the sound until you can hear it comfortably and clearly, and without distortion.

Once you have established a comfortable sound level:
- Set the dial and leave it there.

Rechargeable batteries

- Only the RP-BP60, P-3GAVA/2B, SH-CDB8D batteries can be recharged.
- If the power delivered by the batteries lasts for a very short time after recharging, it means that the batteries' service life is over. Do not use them any more.
- Recharging already charged batteries will shorten their service life.
- When recharging batteries for the first time or when they have not been used for a long period of time, the play time may be shorter than usual. In a case like this, repeatedly recharge and discharge the batteries. This will restore them to their regular state.
- Do not allow any metal objects to touch the terminals of rechargeable batteries since this may cause short-circuiting which is dangerous.
- Do not peel off the plastic covering on the rechargeable batteries. Short-circuiting may occur which is dangerous.

Dry cell batteries/rechargeable batteries

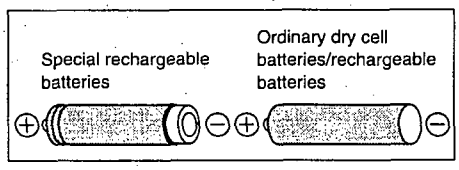
To prevent damage to the batteries and electrolyte leakage, heed the following points.
- Align the ⊕ and ⊖ polarities properly when inserting the batteries.
- Do not mix different types or makes of batteries or old and new batteries.
- Remove the batteries if you do not plan to use the unit for a long 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.

Carrying dry cell batteries/ rechargeable batteries around

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

When purchasing rechargeable batteries

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



When driving a car

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

■ Handling Precautions for Traverse Deck

The laser diode in the traverse deck (optical pickup) may break down due to potential difference caused by static electricity of clothes or human body.
So, be careful of electrostatic breakdown during repair of the traverse deck (optical pickup).

• Handling of traverse deck (optical pickup)

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

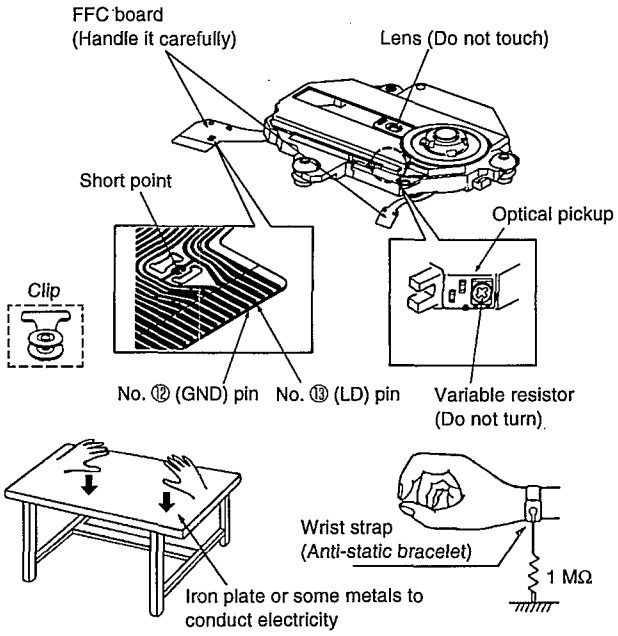
• Grounding for electrostatic breakdown prevention

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

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

Caution when Replacing the Traverse Deck:

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



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

1. Conventional Shockproofing Technique

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

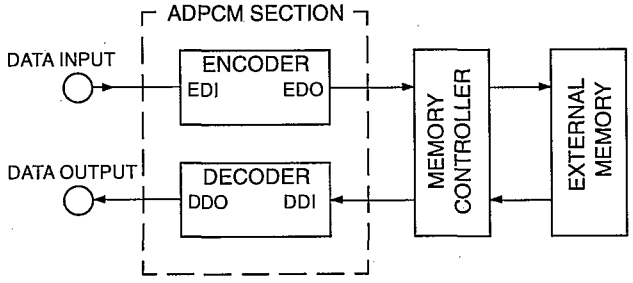
If reaccess to the break point is accomplished before the memory becomes empty, apparent playback sound is entirely kept free from breaking even when information pauses due to vibration, etc. It was necessary to use the 4M bits memory for securing the accumulation time of about 10 seconds.

2. Compression-shockproofing [Outline]

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

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

All-inclusive Block Diagram



■ Operation Checks and Component Replacement Procedures

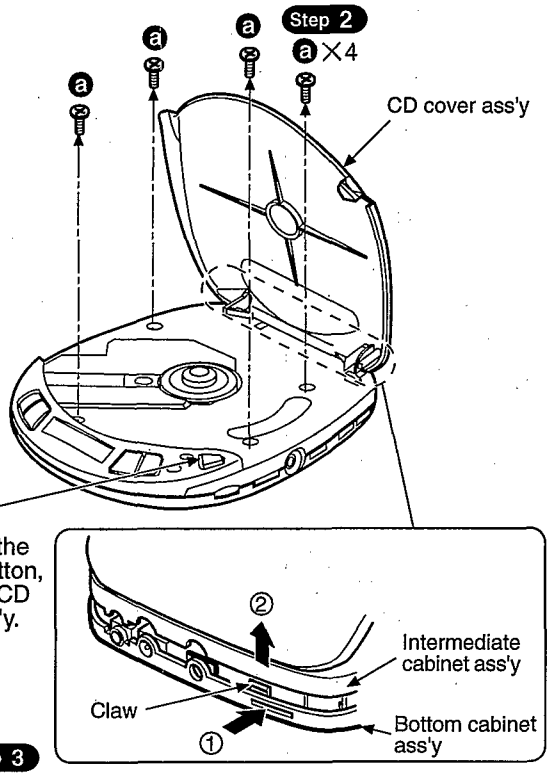
NOTE **1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.**

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

3. [ ] indicates parts No.

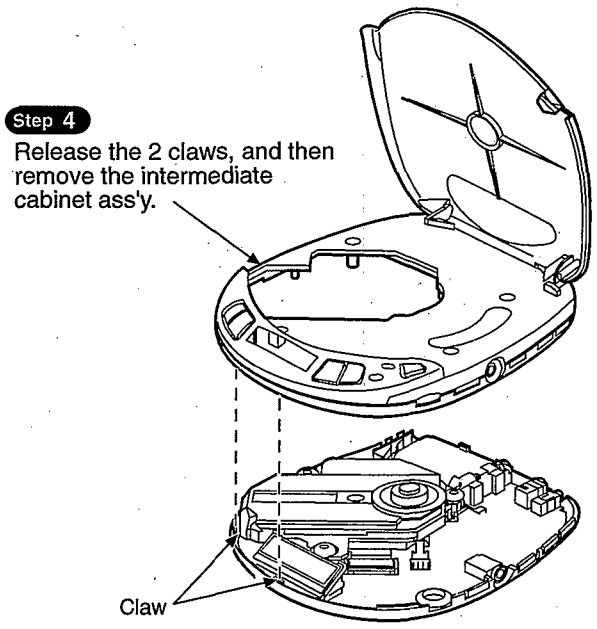
1. Checking for the P.C.B.

〈Checking for the P.C.B. (A side)〉



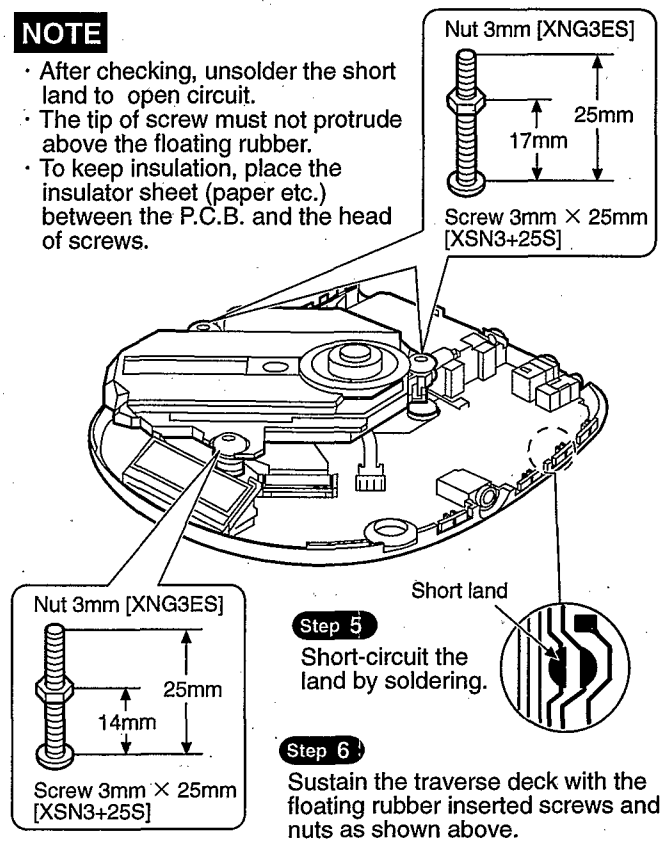
Step 3

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

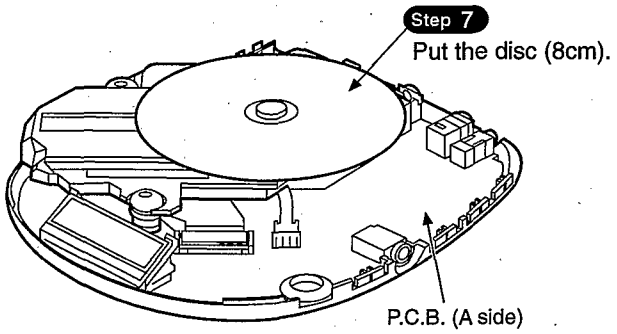


NOTE

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



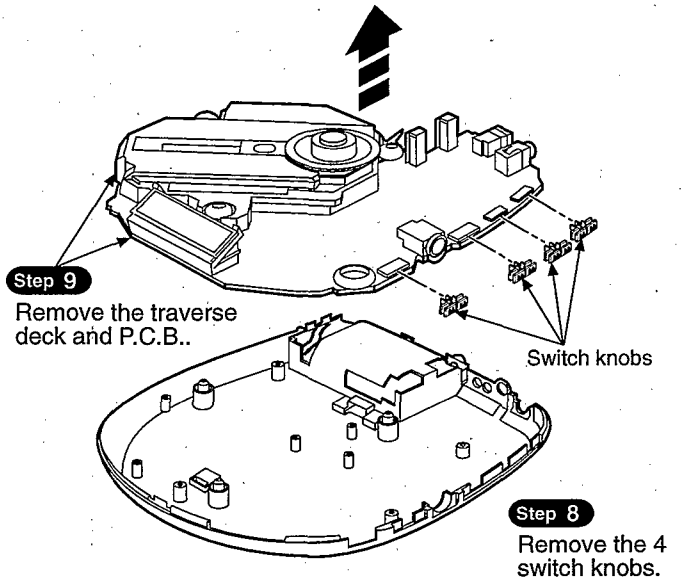
· Check the P.C.B. (A side) as shown below.

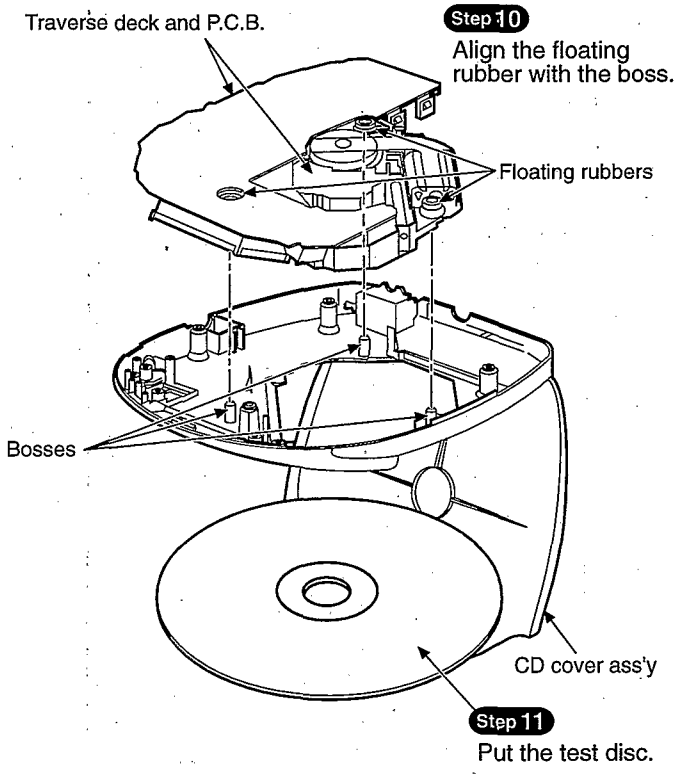


NOTE

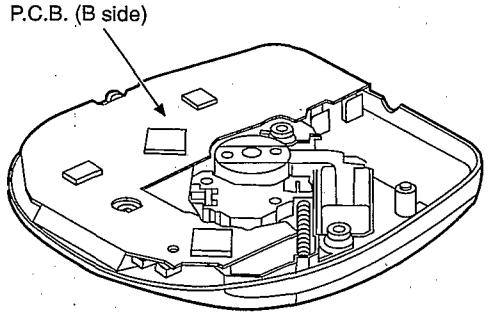
After checking, unsolder the short land to open circuit.

〈Checking for the P.C.B. (B side)〉





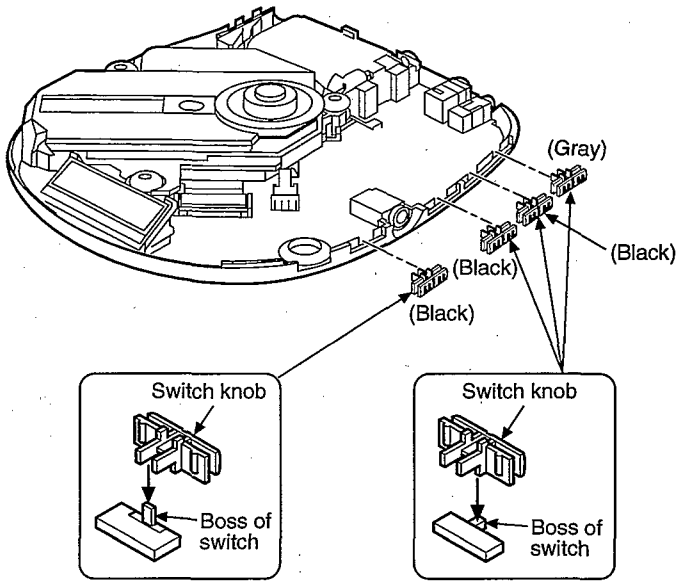
• Check the P.C.B. (B side) as shown below.



NOTE

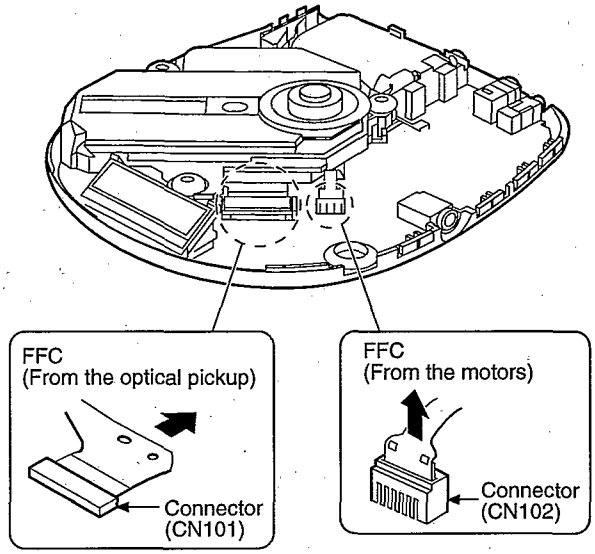
After checking, unsolder the short land to open circuit.

Notice for installation of switch knobs



2. Replacement for the traverse deck

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



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

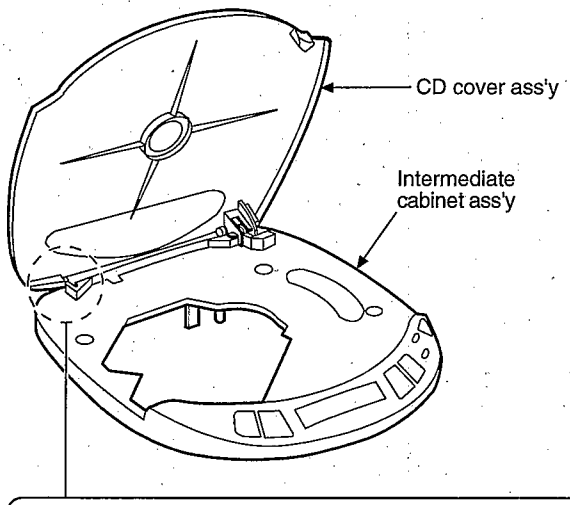
Step 2
Pull out the FFC from connector (CN102).

NOTE

Solder the point between pin ⑫ (LD GND) and pin ⑬ (LD) of FFC board.
(Refer to "Handling Precautions for Traverse Deck" on page 8.)

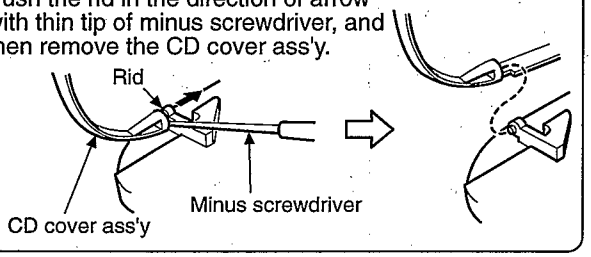
3. Replacement for the CD cover ass'y

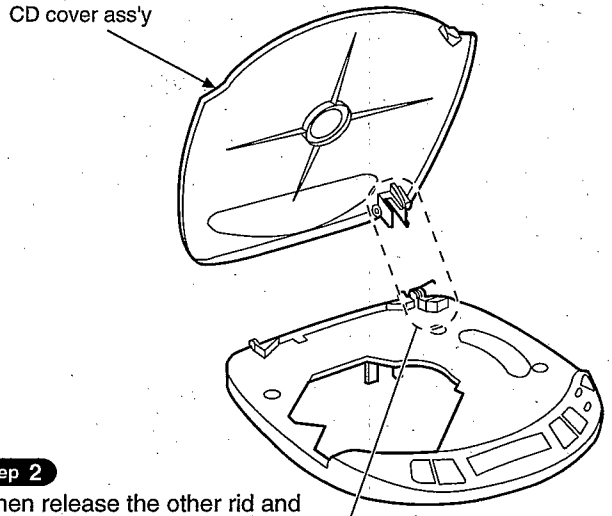
· Follow the Step 1 ~ Step 4 in item 1 on page 9.



Step 1

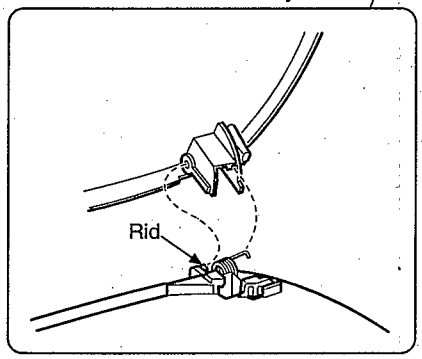
Push the rid in the direction of arrow with thin tip of minus screwdriver, and then remove the CD cover ass'y.





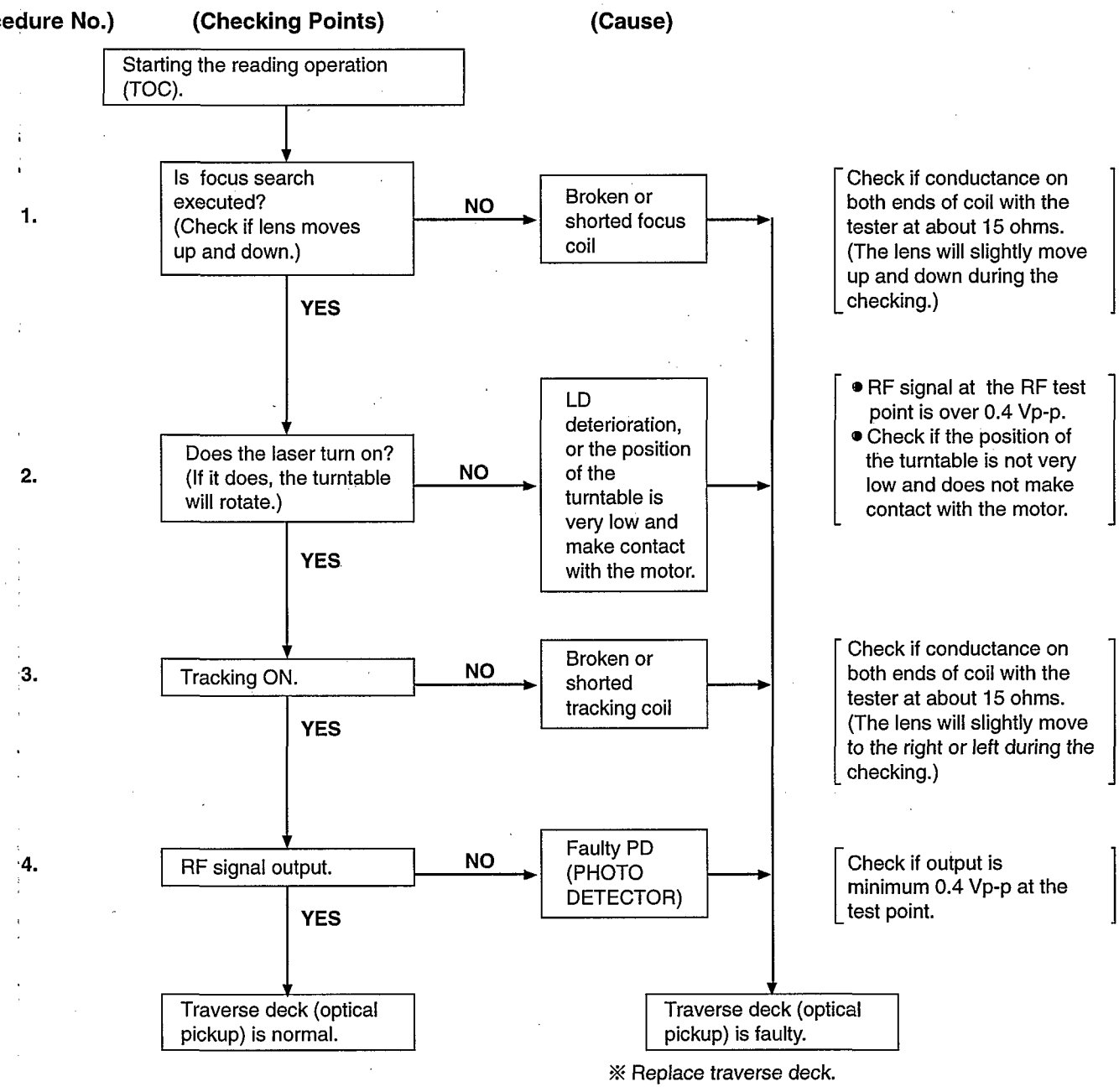
Step 2

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



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

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



※ Replace traverse deck.

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

* Checking Skip Search

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

* Checking Manual Search

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

* Checking Playability

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

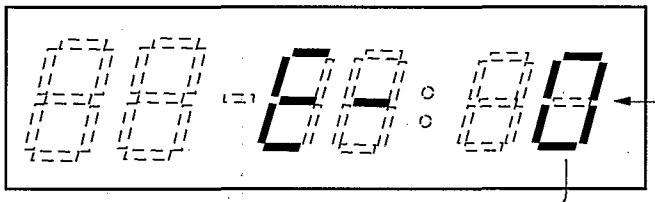
■ Automatic Adjustment Results Display Function (Self-check Function)

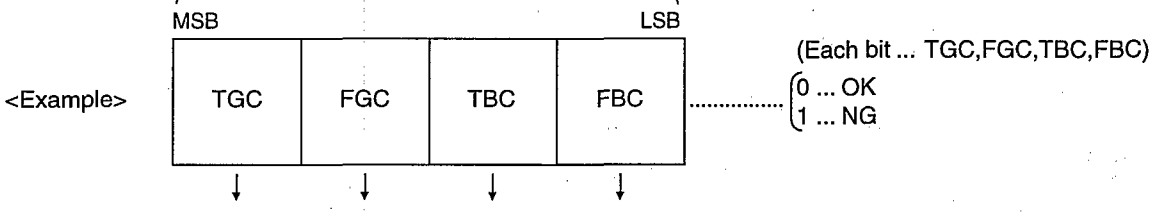
On the unit (SL-S200), each automatic adjustment result are displayed on the LCD. This function is convenient to check or identify which automatic adjustment circuit is incorrect. The followings are the contents of the automatic adjustment result displays (self-check function).

• How to display automatic adjustment results

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

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





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

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

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

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

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

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

<Example> **Follow the below steps when "E—1" is displayed.**
(Cause: Focus balance (FBC) is set beyond the limit.)
- Check if

(1) the waveform or voltage of the focus servo circuit is correct, and
(2) the optical pickup returns to the normal state by exchanging the traverse deck.

Follow the below steps when "E—4" is displayed.
(Cause: Focus gain (FGC) is set beyond the limit.)
- Check if

(1) the waveform or voltage of the focus servo circuit is correct,
(2) the focus coil of the optical pickup is correct (around 15 ohms), and
(3) the optical pickup returns to the normal state by exchanging the traverse deck.

Follow the below steps when "E—F" is displayed.

(Cause: All adjustments (TGC,FGC,TBC,FBC) are set beyond the limit.)
- Check if

(1) the optical pickup returns to the normal state by exchanging the traverse deck, and
(2) the waveform or voltage of the servo IC's(IC101,501) are correct.

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

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

■ Measurements and Adjustments

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

• Measuring instruments and special tools

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

• Test short land

Short-circuit the lands of the laser ON/OFF switch (S201) by soldering them. It turns "ON" position. (Refer to below **Fig. 1.** or printed circuit board and wiring connection diagram for short land location on page 26.)

Note: Remove the solders from the lands after adjustment.

• Adjustment point

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

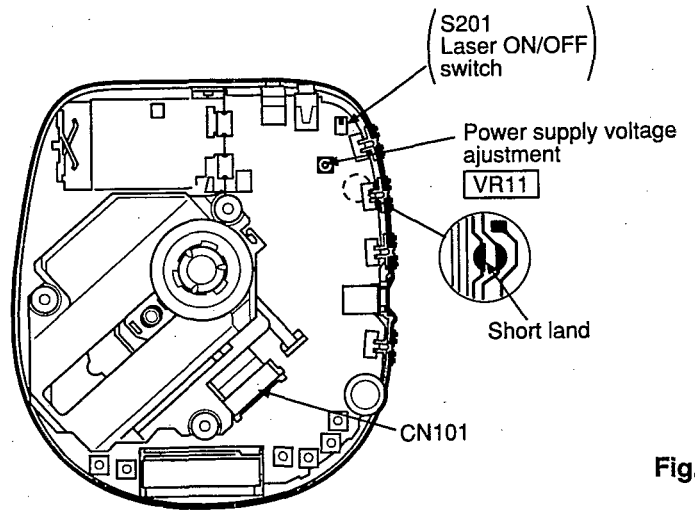


Fig. 1

• Adjustment procedure

(1) POWER SUPPLY VOLTAGE ADJUSTMENT

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

(2) CHECK OF PLAY OPERATION

*** Checking Skip Search**

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

*** Checking Manual Search**

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

*** Checking Playability**

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

• Automatic adjustment

On our conventional type portable CD player, there were mounted 6 semi-fixed controls for each adjustment. Since the SL-S200 servo circuit is equipped with an automatic adjusting circuit, these controls are removed from SL-S200.

On conventional portable CD player Use for Old Servo IC (AN8373SE2, AN8374SE2)		**On SL-S200** Use for New Servo IC (AN8339SBE1, MNG746RPK1AL)
1. Tracking Offset Adjustment VR (TOC)	➡	Non Adjustment
2. Focus Offset Adjustment VR (FOC)		
3. Tracking Gain Adjustment VR (TGC)	➡	Automatic Adjusting Circuit
4. Focus Gain Adjustment VR (FGC)		
5. Tracking Balance Adjustment VR (TBC)		
6. Focus Balance Adjustment VR (FBC)		
Total 6 Adjustment VRs	➡	No Adjustment VR

Although all discs are manufactured according to the same specifications, their characteristics are not always precisely the same because they are produced by different manufacturers in various lots, or have different warp etc.
SL-S200 automatically controls the servo circuit to obtain optimum performance according to any disc's characteristics. Therefore, no malfunction occurs because of mis-adjustment.

■ Schematic Diagram

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

Notes:

- S201 : Laser ON/OFF switch in "OFF" position. (It turns "ON" with disc holder closed.)
- S202 : Rest detector in "OFF" position. (It turns "ON" when optical pickup comes to innermost periphery.)
- S301 : Memory/recall (MEMORY/RECALL) switch.
- S302 : Repeat (REPEAT) switch.
- S303, 304: Skip/search (I◄◄ -SKIP/--SEARCH ►►I) switches. (S303:I◄◄ ,S304:►►I)
- S305 : Stop/power off (■ POWER OFF) switch.
- S306 : Play/pause (► II) switch.
- S307 : Play mode selector (MODE) in "RANDOM" position. (RANDOM ←→ NORMAL ←→ RESUME)
- S308 : Hold (HOLD) switch in "ON" position.
- S501 : Anti-shock (ANTI-SHOCK) switch in "OFF" position.
- S701 : XBS Selector (XBS) switch in "OFF" position.
- VR11 : Power supply voltage adjustment VR.
- VR701-1, VR701-2 : Volume control VR.

- The voltage value and waveforms are the reference voltage of this measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of GND terminal (DC IN Jack). Accordingly, there may arise some errors in the voltage values and waveforms depending upon the internal impedance of the tester or measuring unit.
- The parenthesized is the voltage for test disc (1kHz, L+R, 0 dB) in play mode, and the other, for no disc in stop mode.
- AC adaptor is used for power supply.
- ▭ : Positive voltage lines.
- ⇨ : Audio signal lines.
- 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.

Notes:

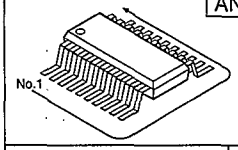
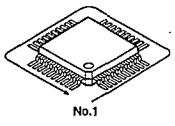
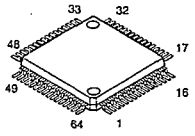
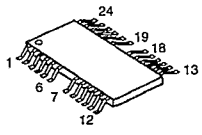
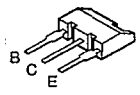
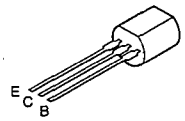
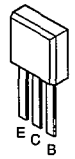
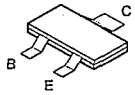
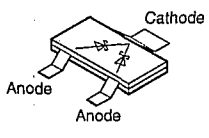
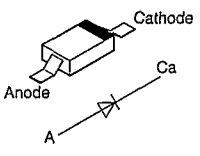
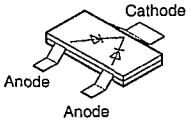
Parts used in the differ depending on Suffix of Serial No.
When repairing the set or replacing the electric parts, use replacement parts after making sure the Suffix of the set meets the Suffix on the Schematic Diagram and Parts List.
In the Remarks column, [A] - [D] are the Suffix of the Product.

Caution!

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

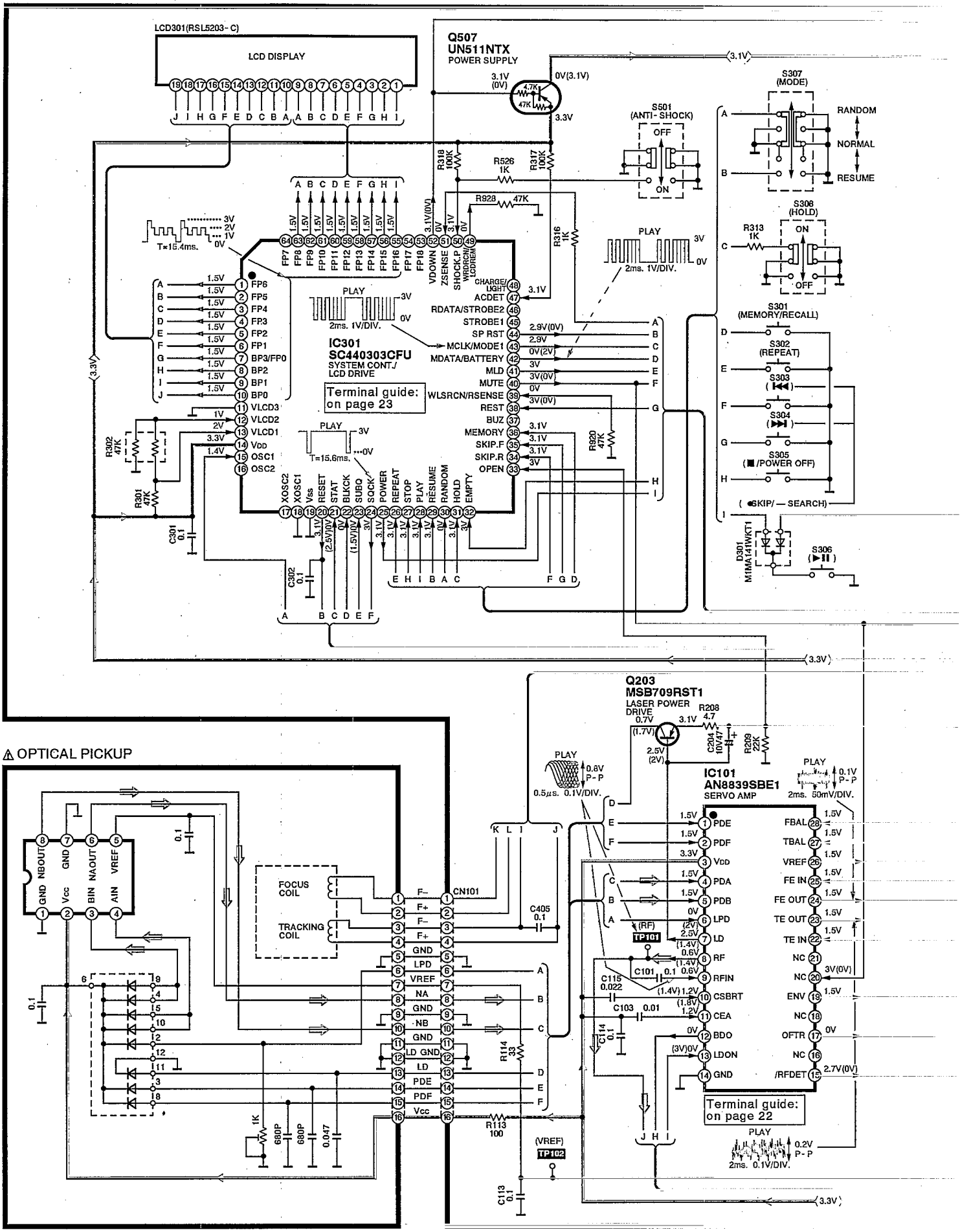
- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the pins of IC or LSI with fingers directly.

■ Type Illustration of IC's, Transistor and Diodes

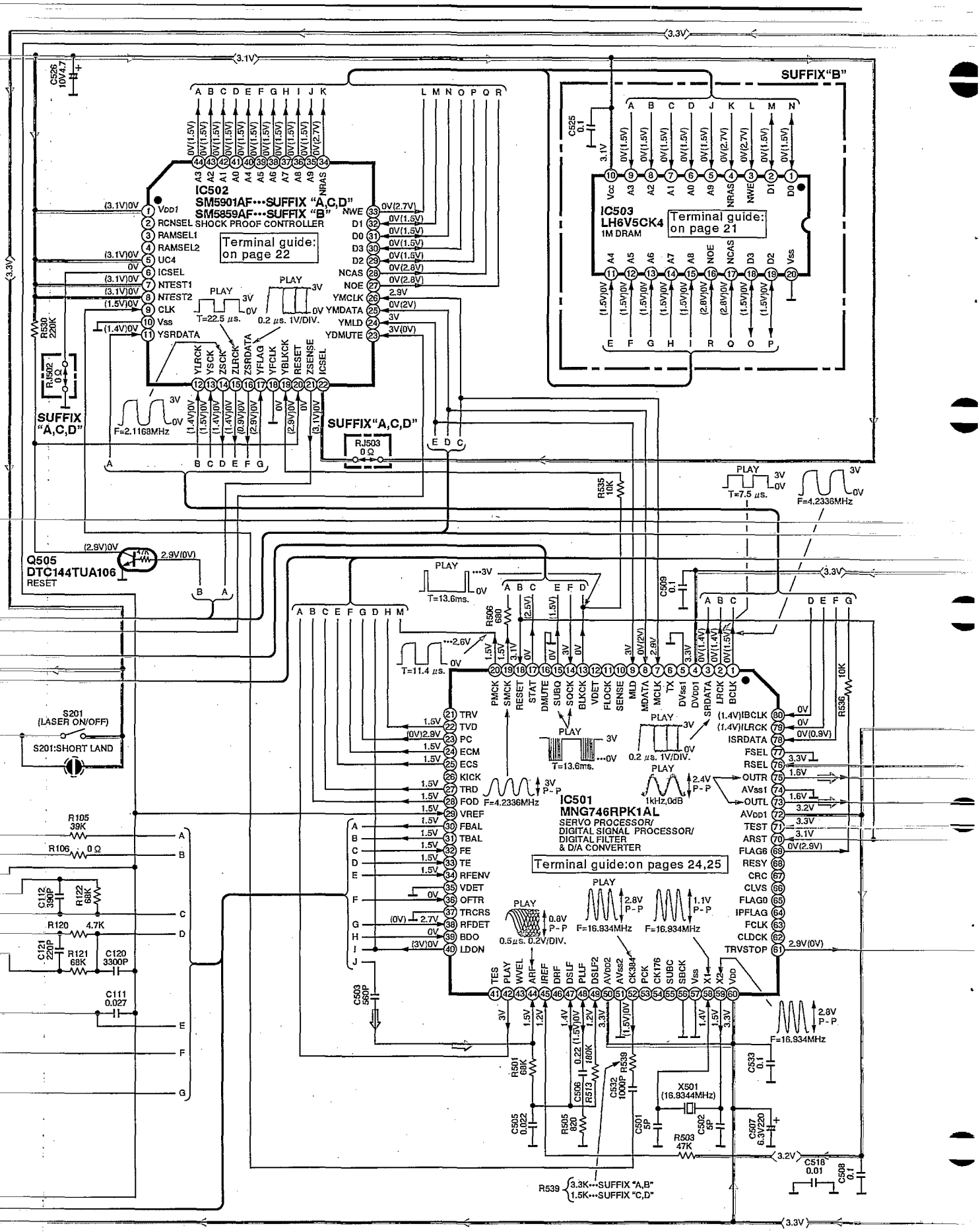
NJU7082BVTE1 8PIN AN8839NSBE1 28PIN 	AN8789FBEB 44PIN BA6893KE2 44PIN MNG746RPK1AL 80PIN SM5859AF 44PIN SM5901AF 44PIN 	SC440303CFU 	LH6V5CK4 	
2SD2074HWRST 	2SD1302STTA 	2SD1450STTA 		2SB970RSTX 2SD1328TX DTA114YUA106 DTC114TUA106 DTC144TUA106 MSB1218ART1 MSB709RST1 UN511NTX
RB411DT146 	MA110TX 			M1MA141WKT1 

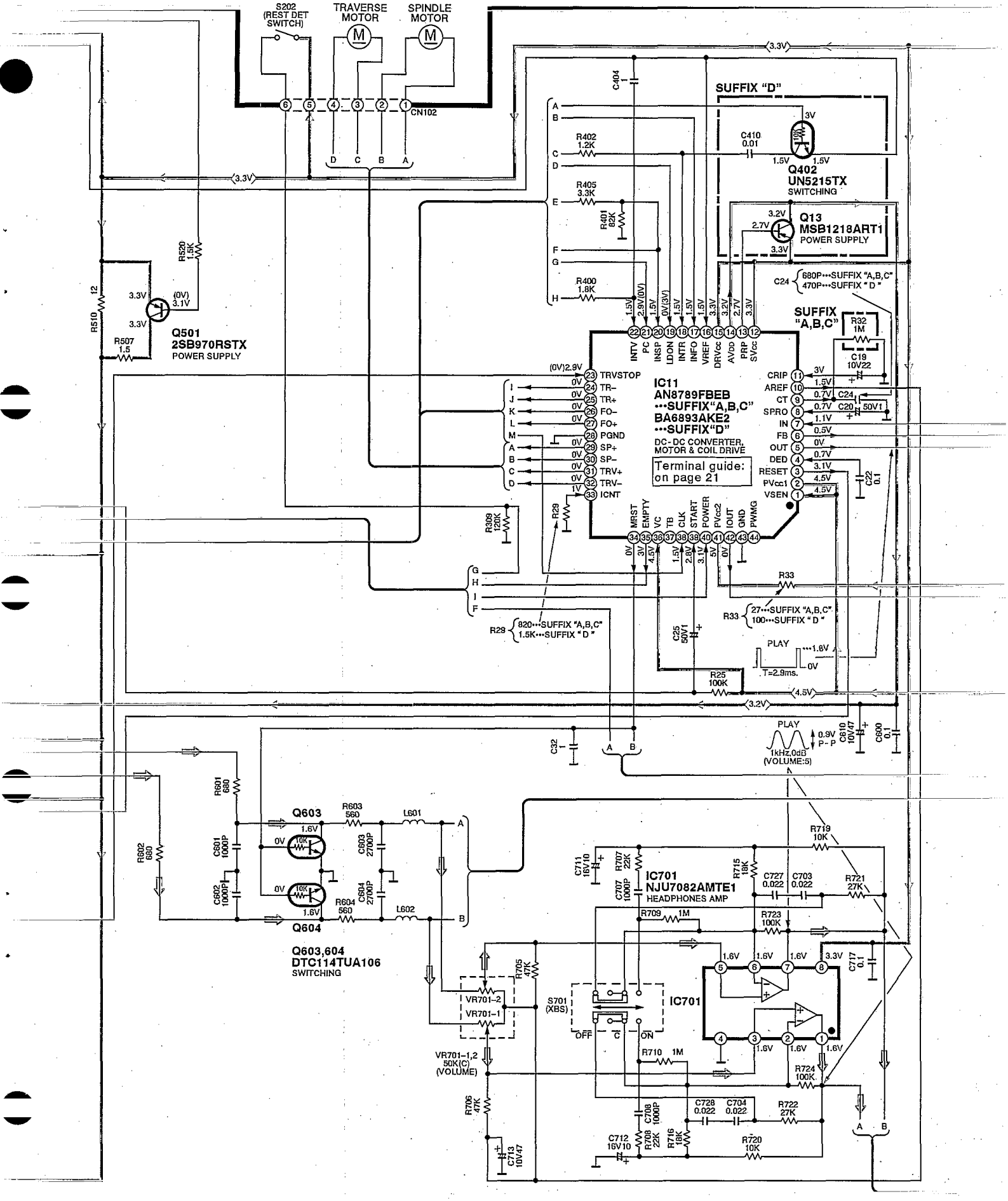
: Positive voltage lines. : Audio signal lines.

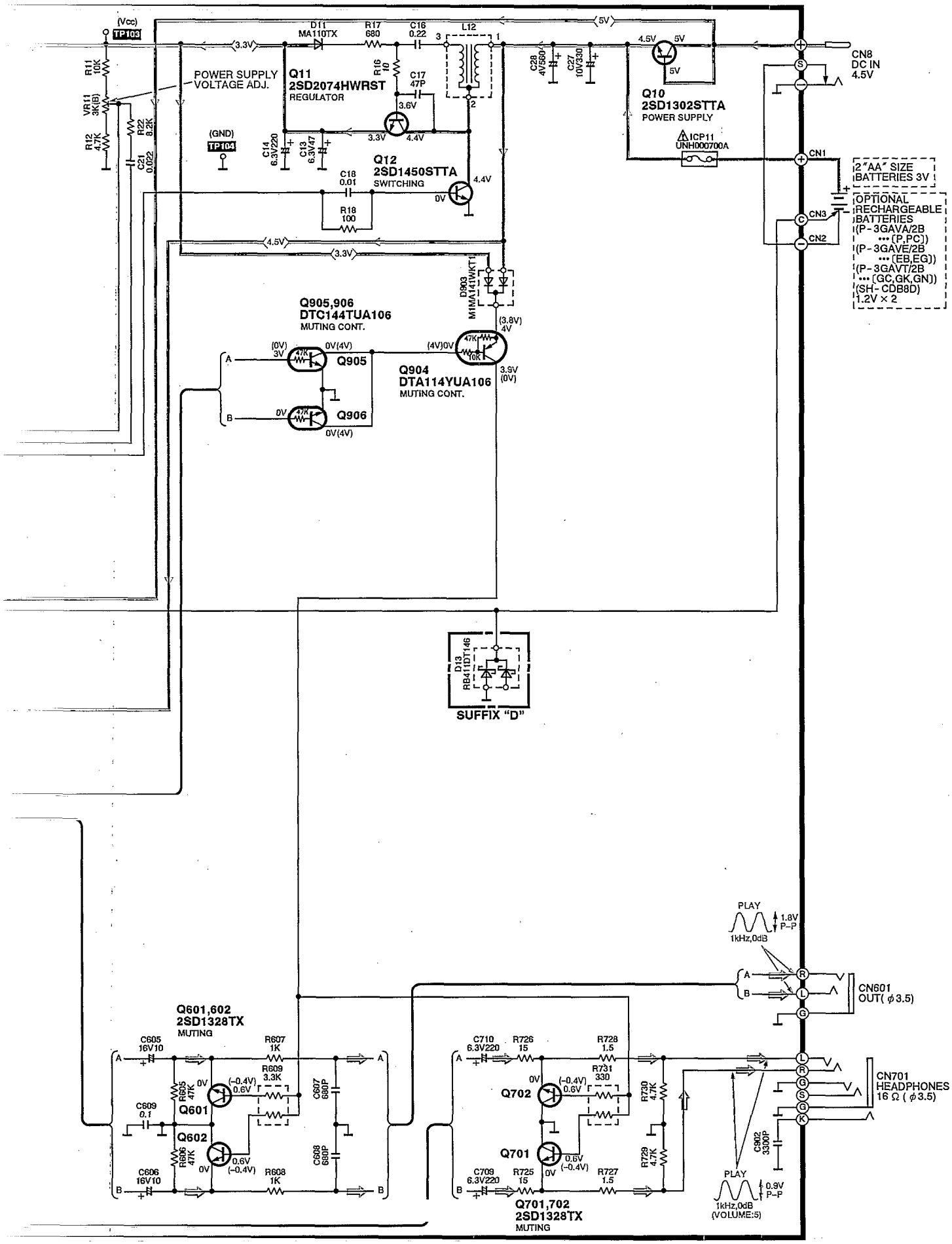
(P.C.Board:on pages 26,27)



: Positive voltage lines. : Audio signal lines.




S202
(REST DET SWITCH)
TRAVERSE MOTOR
SPINDLE MOTOR
CN102
SUFFIX "D"
SUFFIX "A,B,C"
Q402
UN5215TX
SWITCHING
Q13
MSB1218ART1
POWER SUPPLY
Q501
2SB970RSTX
POWER SUPPLY
IC11
AN8789FBEB
•••SUFFIX"A,B,C"
BA6893AKE2
•••SUFFIX"D"
DC-DC CONVERTER, MOTOR & COIL DRIVE
Terminal guide: on page 21
Q603
Q604
Q603,604
DTC114TUA106
SWITCHING
IC701
NJU7082AMTE1
HEADPHONES AMP
PLAY
1kHz,0dB
(VOLUME:5)
T=2.9ms.
VR701-1,2
50K(C)
(VOLUME)


: Positive voltage lines.
: Audio signal lines.
(Vcc)
TP103
D11
MA110TX
R17
680
C16
0.22
L12
3.3V
5V
4.5V
POWER SUPPLY
VOLTAGE ADJ.
Q11
2SD2074HWRST
REGULATOR
R16
10
C17
47P
3.6V
3.3V
4.4V
R11
10K
VR11
3K(B)
R12
4.7K
R22
8.2K
C21
0.022
(GND)
TP104
C14
6.3V220
C13
6.3V47
C28
4V560
C27
10V330
Q10
2SD1302STTA
POWER SUPPLY
ICP11
UNH000700A
CN8
DC IN
4.5V
CN1
2 "AA" SIZE
BATTERIES 3V
OPTIONAL
RECHARGEABLE
BATTERIES
(P-3GAVA/2B
... (P,PC))
(P-3GAVE/2B
... (EB,EG))
(P-3GAVT/2B
... (GC,GK,GN))
(SH-CDB8D)
1.2V × 2
CN3
CN2
C18
0.01
R18
100
4.4V
0V
D903
M1MA141WKT1
(3.8V)
4V
Q905,906
DTC144TUA106
MUTING CONT.
(0V)
3V
0V(4V)
Q905
Q906
(4V)0V
47K
10K
Q904
DTA114YUA106
MUTING CONT.
3.9V
(0V)
A
B
D13
RB411DT146
SUFFIX "D"
PLAY
1kHz,0dB
1.8V
P-P
CN601
OUT(φ3.5)
Q601,602
2SD1328TX
MUTING
C605
16V10
R607
1K
R609
3.3K
R605
47K
Q601
Q602
R606
47K
C609
0.1
C606
16V10
R608
1K
C607
680P
C608
680P
(−0.4V)
0.6V
0.6V
(−0.4V)
C710
6.3V220
R726
15
R728
1.5
R731
330
Q702
Q701
R730
4.7K
R729
4.7K
C709
6.3V220
R725
15
R727
1.5
C902
3300P
CN701
HEADPHONES
16 Ω (φ3.5)
PLAY
1kHz,0dB
(VOLUME:5)
0.9V
P-P
Q701,702
2SD1328TX
MUTING

■ Terminal Function of IC's

● **IC11 (AN8789FBEB** ..... suffix A,B and C **)**
(BA6893AKE2 ..... suffix D **)** **: DC-DC Converter / Motor & Coil Drive**

Pin No.	Terminal Name	I/O	Function
1	VSEN	I	Empty detect input terminal
2	PVCC1	I	Power supply terminal
3	RESET	O	Reset signal input terminal
4	DED	I	Deduction time signal input terminal
5	OUT	O	DC/DC converter output terminal
6	FB	O	Error amp output terminal
7	IN	I	Error amp input terminal
8	SPRO	I	Short protection signal input terminal
9	CT	O	Trianglar wave output terminal
10	AREF	O	1/2 AVDD signal output terminal
11	CRIP	I	Ripple removal capacitor terminal
12	SVCC	I	Power supply terminal
13	PRP	I	Power supply terminal
14	AVDD	O	Ripple filter output terminal
15	DRVCC	I	Power supply terminal
16	VREF	I	REference voltage input terminal
17	INFO	I	Focus coil driver input terminal
18	INTR	I	Tracking coil driver input terminal
19	LDON	I	Driver ON/OFF control terminal
20	INSP	I	Spindle motor driver input terminal
21	PC	I	Driver ON/OFF control terminal
22	INTV	I	Traverse motor driver input terminal

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

● **IC503 (MNV4400-T8T** ..... suffix B only**): 1M DRAM**

Pin No.	Terminal Name	I/O	Function
1	D0	I/O	Data 0 input/output terminal
2	D1	I/O	Data 1 input/output terminal
3	NWE	I	Write enable terminal
4	NRAS	I	Row address strobe input terminal
5	A9	I	Address 9 input terminal
6	A0	I	Address 0 input terminal
7 ~ 9	A1 ~ A3	I	Address 1~3 input terminal

Pin No.	Terminal Name	I/O	Function
10	VCC	I	Power supply terminal
11 ~ 15	A4 ~ A8	I	Address 4~8 output terminal
16	NOE	I	Output enable terminal
17	NCAS	I	Column address strobe terminal
18	D3	I/O	Data 3 input/output terminal
19	D2	I/O	Data 2 input/output terminal
20	VSS	–	GND terminal

• IC101 (AN8839SBE1): Servo Amp

Pin No.	Terminal Name	I/O	Function
1	PDE	I	Tracking signal input terminal (1)
2	PDF	I	Tracking signal input terminal (2)
3	VDD	I	Power supply terminal
4	PDA	I	Focus signal input terminal (1)
5	PDB	I	Focus signal input terminal (2)
6	LPD	I	APC amp input terminal
7	LD	O	APC amp output terminal
8	RF	O	RF summing output terminal
9	RF IN	I	RF signal input terminal
10	CSBRT	I	Capacitor connection terminal for OFTR
11	CEA	I	Capacitor connection terminal for H.P.F. amp
12	BDO	O	Dropout signal output terminal ("H" : Dropout)
13	LDON	I	APC control input terminal
14	GND	–	GND terminal

Pin No.	Terminal Name	I/O	Function
15	/RFDET	O	RF det. signal output terminal ("L" : Det.)
16	NC	–	Not used, open
17	OFTR	O	Off track signal output terminal ("H" : Off track)
18	NC	–	Not used, open
19	ENV	O	RF envelope signal output terminal
20	ENV OFF	I	ENV control input terminal
21	NC	–	Not used, open
22	TE IN	I	Tracking error amp input terminal
23	TE OUT	O	Tracking error amp output terminal
24	FE OUT	O	Focus error amp output terminal
25	FE IN	I	Focus error amp input terminal
26	VREF	O	Reference voltage output terminal
27	TBAL	I	Tracking balance signal input terminal
28	FBAL	I	Focus balance signal input terminal

• IC502 (SM5901AF ..... suffix A,C and D) (SM5859AF ..... suffix B) : Shock Proof Controller

Pin No.	Terminal Name	I/O	Function
1	VDD1	I	Power supply terminal
2	RCNSEL	–	Not used, open
3,4	RAMSEL1, RAMSEL2	–	Not used, open
5	UC4	–	Not used, connected to Vcc
6	ICSEL	–	Not used, open (Suffix A,C and D : connected to GND)
7,8	NTEST1, NTEST2	–	Test terminal (not used, connected to Vcc)
9	CLK	I	Clock input terminal (f=16.9344MHz)
10	VSS	–	GND terminal
11	YSRDATA	I	Serial data input terminal
12	YLRCK	I	Serial L/R clock input terminal
13	YSCK	I	Serial bit clock input terminal
14	ZSCK	O	Serial bit clock output terminal
15	ZLRCK	0	Serial L/R clock output terminal
16	ZSRDATA	O	Serial data output terminal
17	YFLAG	I	RAM over-flow frag terminal

Pin No.	Terminal Name	I/O	Function
18	YFCLK	–	Not used, connected to GND
19	YBLKCK	I	Sub-code block clock input terminal
20	RESET	I	Reset input terminal
21	ZSENSE	O	Microcomputer status output terminal
22	ICSEL	–	Not used, open (Suffix A,C and D : connected to Vcc)
23	YDMUTE	I	Mute signal input terminal
24	YMLD	I	Microcomputer latch clock input terminal
25	YMDATA	I	Microcomputer serial data input terminal
26	YMCLK	I	Microcomputer shift clock input terminal
27	NOE	O	DRAM output imable output ternimal
28	NCAS	O	DRAM culmun address strobe output terminal
29~32	D0~D3	I/O	DRAM data input/output terminal
33	NWE	O	DRAM write enable ourput terminal
34	NRAS	O	DRAM row address strobe output terminal
35~44	A0~A9	O	DRAM address output terminal

• IC301 (SC44302CFU): System Control / LCD Drive

Pin No.	Terminal Name	I/O	Function
1~6	FP6~FP1	O	LCD segment signal output terminal
7	BP3/FP0		
8~10	BP2~BP0		
11~13	VLCD3~VLCD0	I	LCD voltage control input terminal (Pin No.11 : connected to GND)
14	VDD	I	Power supply treminal
15	OSC1	I	Main system clock input treminal
16	OSC2	–	Not used, open
17	XOSC2	–	Not used, open
18	XOSC1	–	Not used, connected to GND
19	VSS	–	GND terminal
20	RESET	O	Reset signal input terminal
21	STAT	I	Status sihnal input terminal (CRC,CUE,CLVS,TT STOP,FCLV,SQOK)
22	BLKCK	I	Sub-code block clock input terminal (f=75Hz with nomal play)
23	SUBQ	I	Sub-code Q data input terminal
24	SQCK	O	Sub-code Q register clock signal output terminal
25	POWER	O	Power ON/OFF signal output terminal
26	REPEAT	I	REPEAT key input terminal
27	STOP	I	STOP key input terminal
28	PLAY	I	PLAY key input terminal
29	RESUME	I	RESUME switch input terminal
30	RANDOM	I	RANDOM switch input terminal
31	HOLD	I	HOLD switch input terminal
32	EMPTY	I	Empty detect input terminal

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

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

Pin No.	Terminal Name	I/O	Function
1	BCLK	O	Serial bit clock output terminal
2	LRCK	O	L/R discriminating signal output terminal
3	SRDATA	O	Serial data signal output terminal
4	DVDD1	I	Power supply terminal
5	DVSS1	–	GND terminal
6	TX	–	Not used, open
7	MCLK	I	Command clock signal input terminal
8	MDATA	I	Command data signal input terminal
9	MLD	I	Command load signal input ("L" : load)
10	SENSE	–	Not used, open
11	FLOCK	–	Not used, open
12	VDET	–	Not used, open
13	BLKCK	O	Sub-code block clock output terminal (f=75Hz)
14	SQCK	I	Sub-code Q resister clock input terminal
15	SUBQ	O	Sub-code Q code output terminal
16	DMUTE	–	Not used, connected to GND
17	STAT	O	Status siganal output terminal (CRC,CUE,CLVS,TTSTOP,FCLV,SQCK)
18	RESET	I	Reset signal input terminal ("L" : reset)
19	SMCK	O	System clock output terminal (f=4.236MHz)
20	PMCK	O	Frequency division clock signal output terminal (f=1/1.92xck=88.2kHz)
21	TRV	–	Not used, open
22	TVD	O	Traverse data siganl output terminal

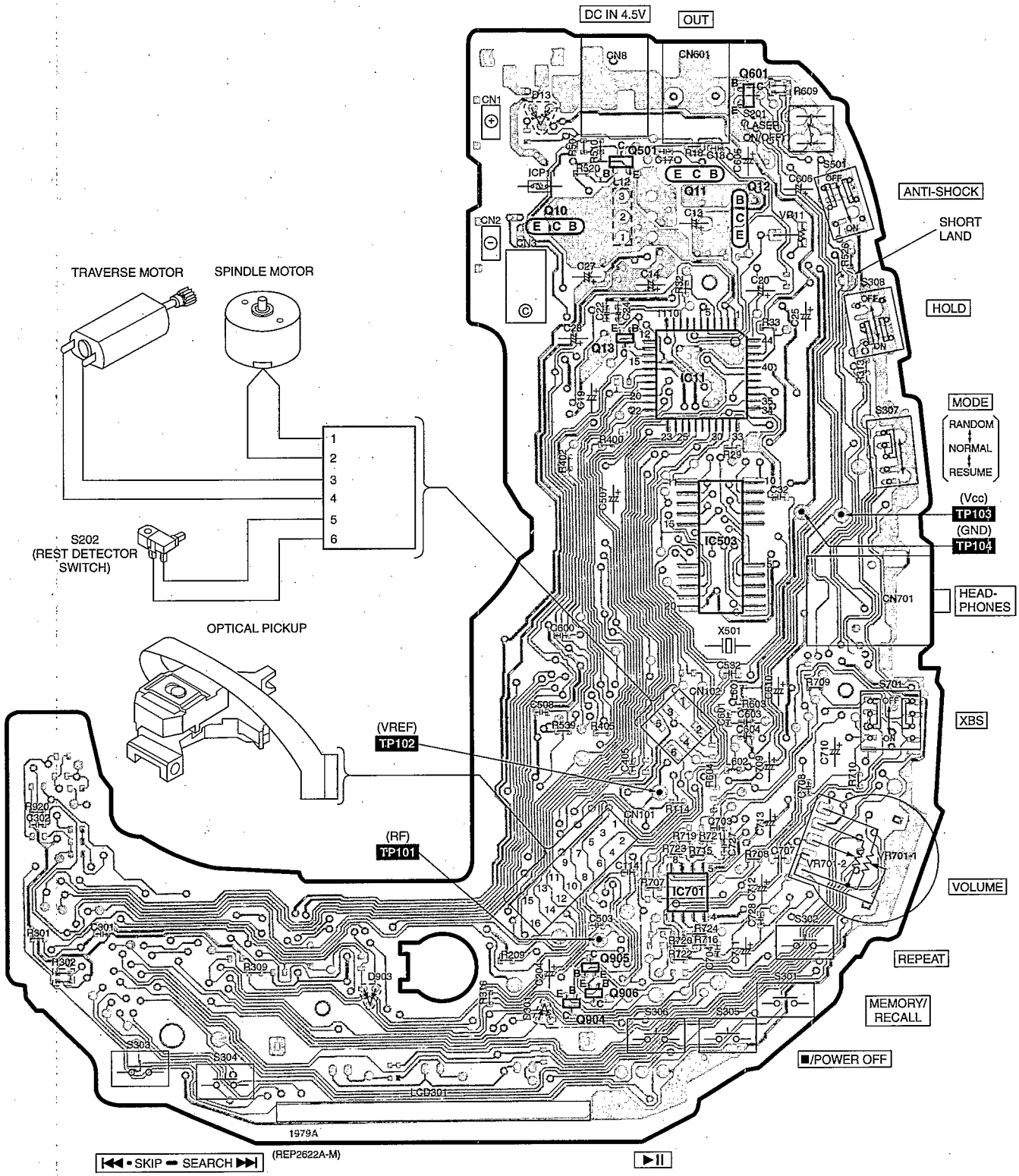
Pin No.	Terminal Name	I/O	Function
23	PC	O	Spindle motor drive signal ("L" : ON)
24	ECM	O	Spindle motor drive signal (Forced mode)
25	ECS	O	Spindle motor drive signal (Servo error signal)
26	KICK	–	Not used, open
27	TRD	O	Tracking drive signal output terminal
28	FOD	O	Focus drive signal output terminal
29	VREF	I	Reference voltage input terminal
30	FBAL	O	Focus balance adjustment output terminal
31	TBAL	O	Tracking balance adjustment output terminal
32	FE	I	Focus error signal input terminal
33	TE	I	Tracking error signal input terminal
34	REFNV	I	RF envelope signal input terminal
35	VDET	–	Not used, connected to GND
36	OFTR	I	Off track signal input ("H" : off track)
37	TRCRS	–	Not used, connected to GND
38	RFDET	I	RF detection signal input ("L" : detection)
39	BDO	I	Dropout detection signal input ("L" : dropout)
40	LDON	O	Lser power control signal output ("H" : ON)
41	TES	–	Not used, open
42	PLAY	O	Play signal output terminal ("H" : play)
43	WVEL	–	Not used, open
44	ARF	I	RF signal input terminal

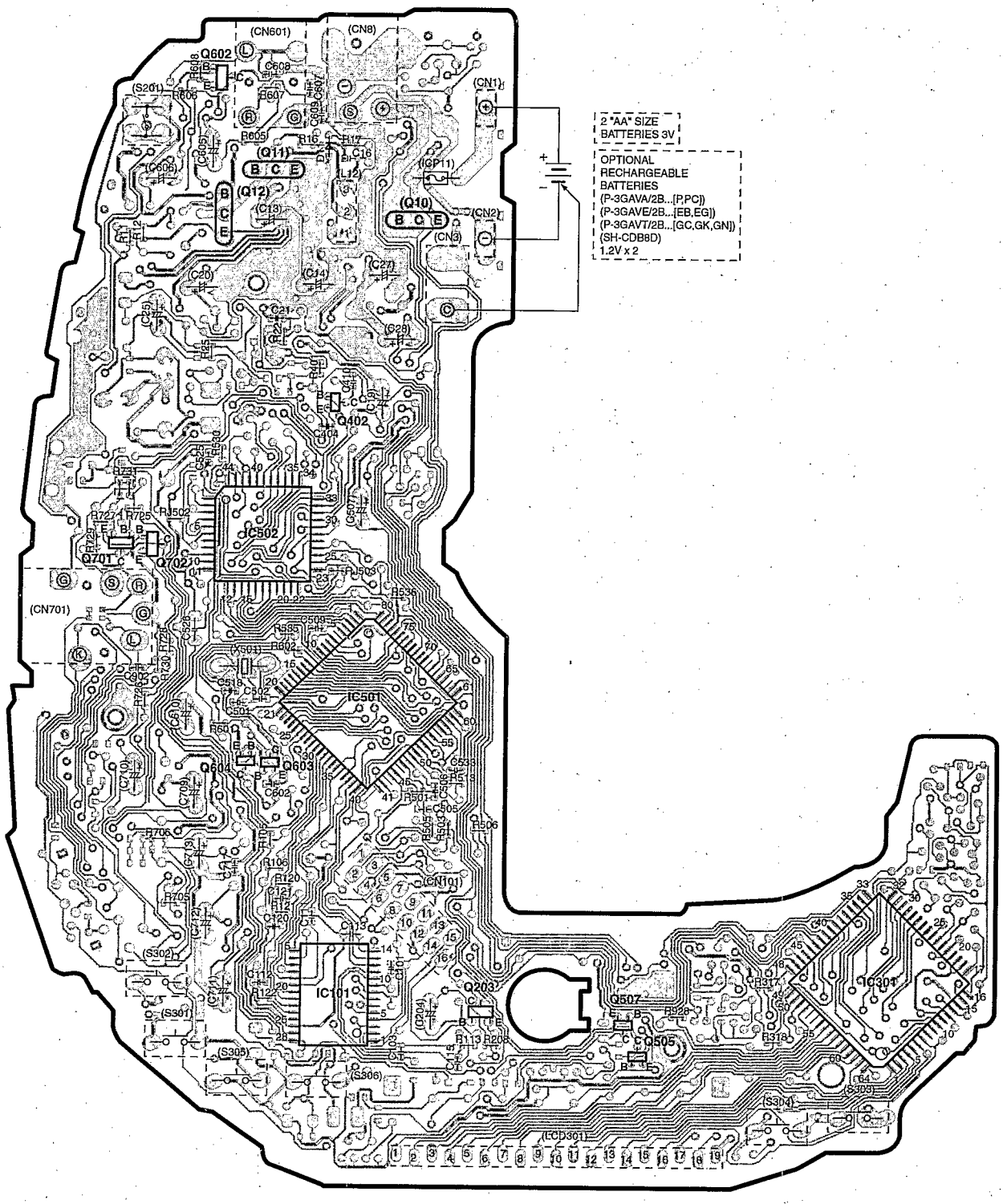
Pin No.	Terminal Name	I/O	Function
45	IREF	I	Reference current input terminal
46	DRF	–	Not used, open
47	DSLF	I/O	DSL loop filter input/output terminal
48	PLLF	I/O	PLL loop filter input/output terminal
49	DSLF2	I	VCO loop filter input terminal
50	AVDD2	I	Power suplly terminal
51	AVSS2	–	GND terminal
52	CK384	O	Clock output terminal (f=16.9344MHz)
53	PCK	–	Not used, open
54	CK176	–	Not used, open
55	SUBC	–	Not used, open
56	SBCK	–	Not used, connected to GND
57	VSS	–	GND terminal
58	X1	I	Crystal oscillator input (f=16.9344MHz)
59	X2	O	Crystal oscillator output (f=16.9344MHz)
60	VDD	I	Power supply terminal
61	TRVSTOP	O	Driver ON/OFF control signal output terminal
62	CLDCK	–	Not used, open

Pin No.	Terminal Name	I/O	Function
63	FCLK	–	Not used, open
64	IPFLAG	–	Not used, open
65	FLAG0	–	Not used, open
66	CLVS	–	Not used, open
67	CRC	–	Not used, open
68	RESY	–	Not used, open
69	FLAG6	O	Flag trminal
70	ARST	I	Reset signal input terminal
71	TEST	I	Test terminal ("H" : nomal)
72	AVDD1	I	Power suplly terminal
73	OUTL	O	Lch audio signal output terminal
74	AVSS1	–	GND terminal
75	OUTR	O	Rch audio signal output terminal
76	RSEL	–	Not used, connected to Vcc
77	FSEL	–	Not used, connected to GND
78	ISRDATA	I	Serial data signal input terminal
79	ILRCK	I	L/R discriminating signal input terminal
80	IBCLK	I	Serial bit clock input signal

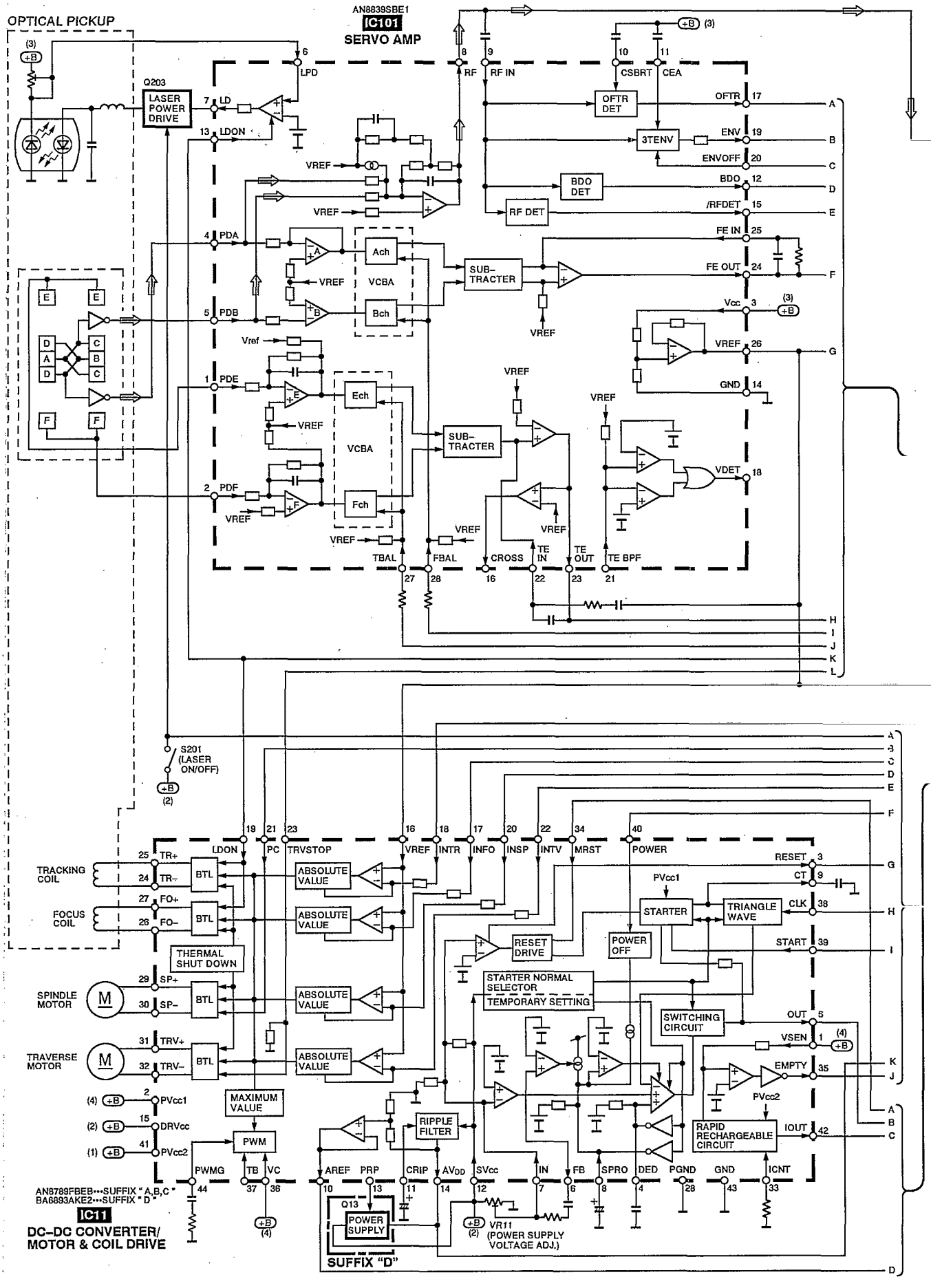
■ Printed Circuit Board and Wiring Connection Diagram

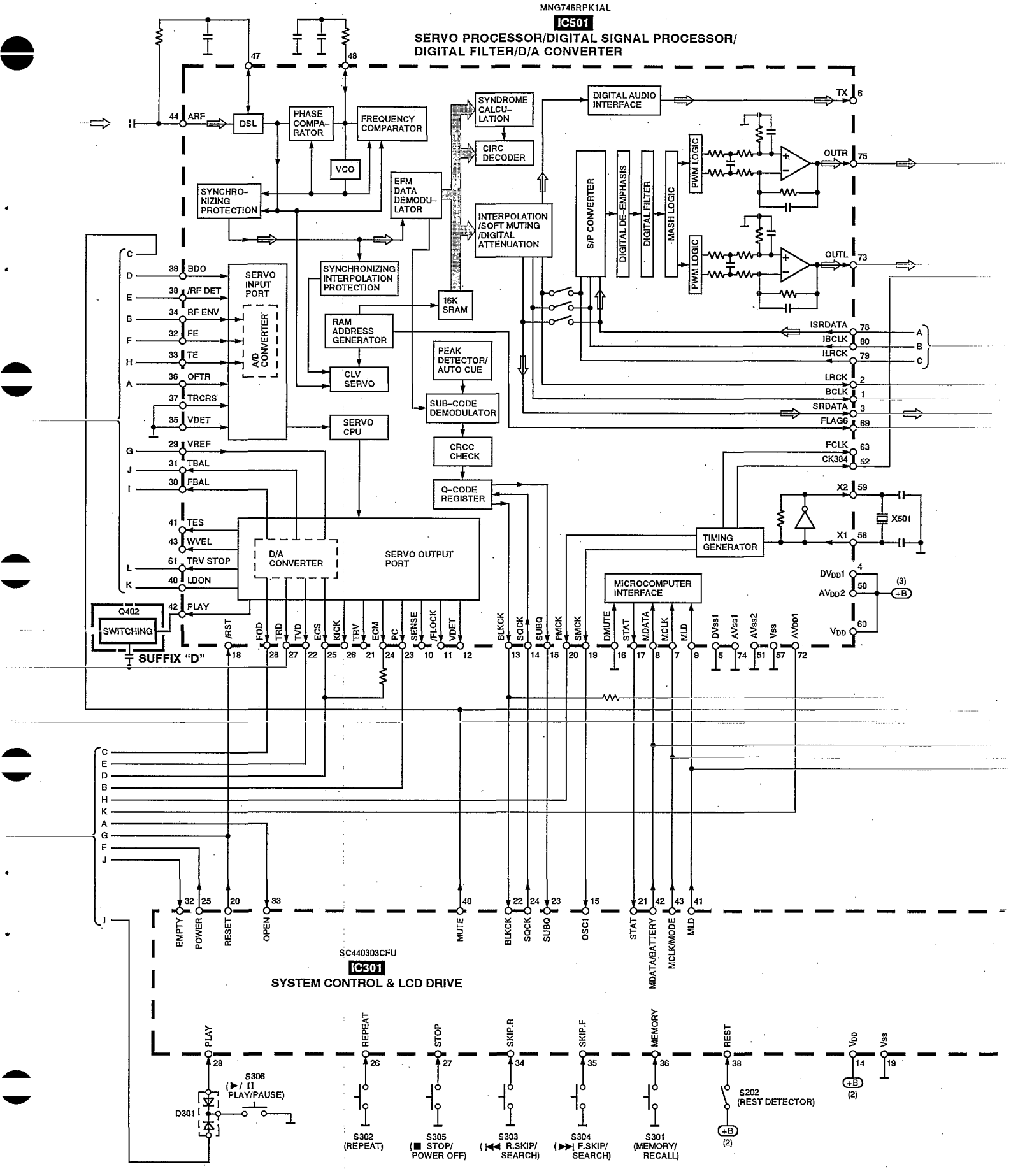
• This circuit board diagram may be modified at any time with the development of new technology.

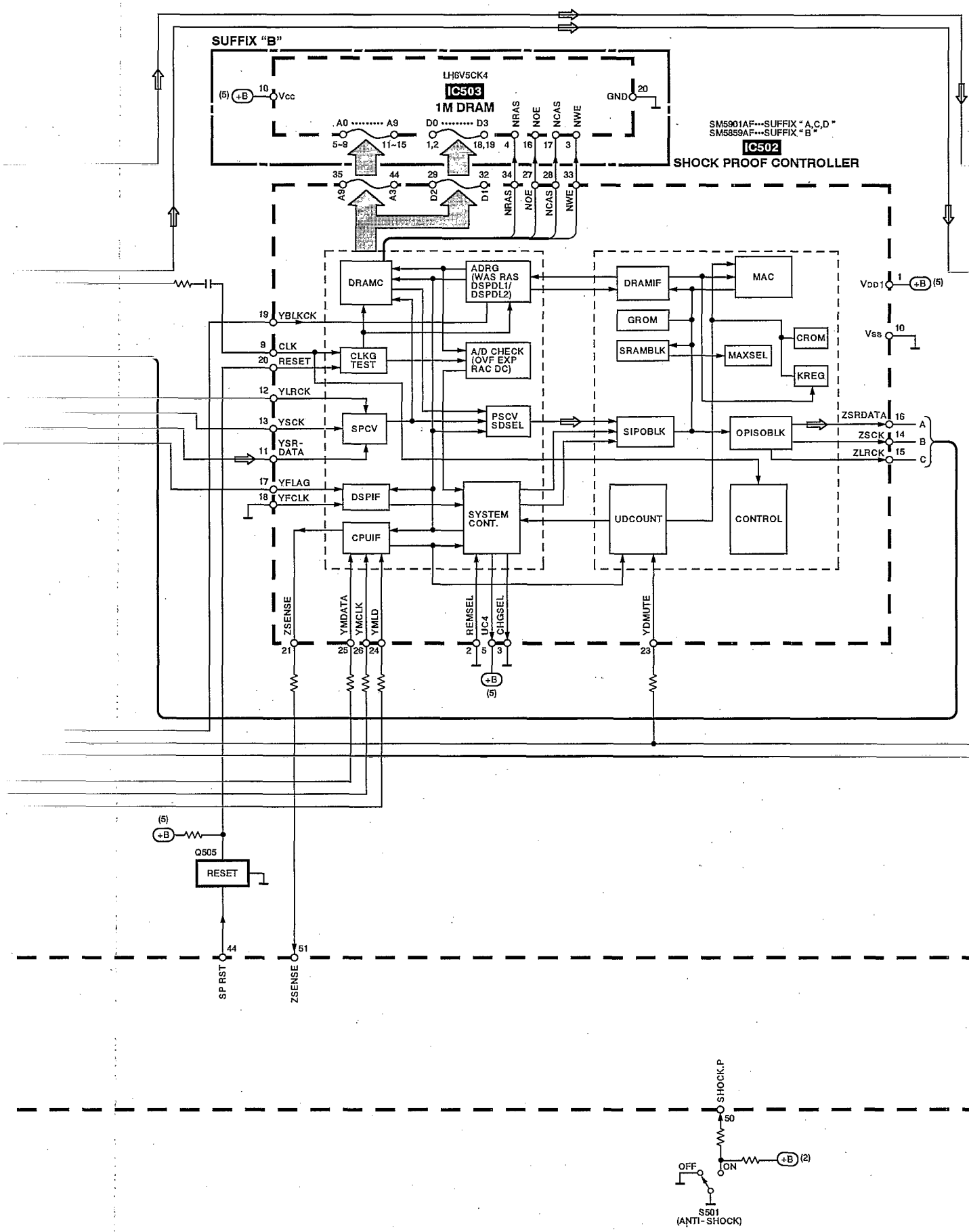


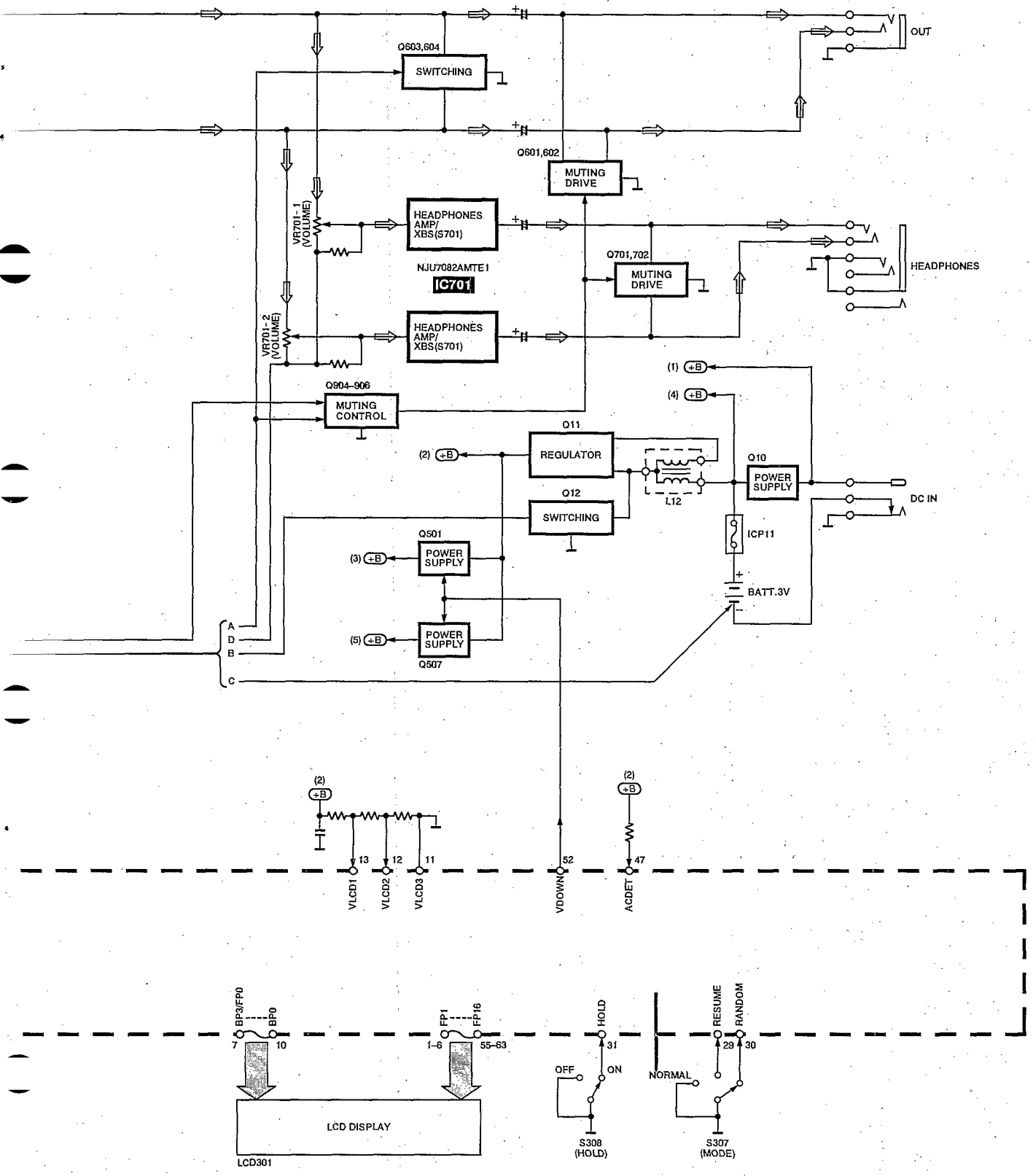

2 "AA" SIZE
BATTERIES 3V
OPTIONAL
RECHARGEABLE
BATTERIES
(P-3GAVA/2B...[P,PC])
(P-3GAVE/2B...[EB,EG])
(P-3GAVT/2B...[GC,GK,GN])
(SH-CDB8D)
1.2V x 2
(CN601)
(CN8)
(CN1)
(CN2)
(CN3)
(CP11)
Q602
Q11
Q12
Q10
Q402
Q701
Q702
Q604
Q603
Q203
Q507
Q505
IC502
IC501
IC101
IC301
(CN701)
(CN101)
(S201)
(S302)
(S301)
(S305)
(S306)
(S303)
(S304)
(LCD301)

■ Block Diagram




MNG746RPK1AL
IC501
SERVO PROCESSOR/DIGITAL SIGNAL PROCESSOR/
DIGITAL FILTER/D/A CONVERTER
ARF
DSL
PHASE COMPA-RATOR
FREQUENCY COMPARATOR
VCO
SYNCHRO-NIZING PROTECTION
EFM DATA DEMODU-LATOR
SYNDROME CALCU-LATION
CIRC DECODER
INTERPOLATION /SOFT MUTING /DIGITAL ATTENUATION
DIGITAL AUDIO INTERFACE
S/P CONVERTER
DIGITAL DE-EMPHASIS
DIGITAL FILTER
MASH LOGIC
PWM LOGIC
OUTR
OUTL
SERVO INPUT PORT
A/D CONVERTER
BDO
/RF DET
RF ENV
FE
TE
OFTR
TRCRS
VDET
VREF
TBAL
FBAL
SYNCHRONIZING INTERPOLATION PROTECTION
16K SRAM
RAM ADDRESS GENERATOR
CLV SERVO
SERVO CPU
PEAK DETECTOR/ AUTO CUE
SUB-CODE DEMODULATOR
CRCC CHECK
Q-CODE REGISTER
TES
WVEL
TRV STOP
LDON
PLAY
D/A CONVERTER
SERVO OUTPUT PORT
Q402
SWITCHING
SUFFIX "D"
TIMING GENERATOR
X501
MICROCOMPUTER INTERFACE
ISRDATA
IBCLK
ILRCK
LRCK
BCLK
SRDATA
FLAG6
FCLK
CK384
DVDD1
AVDD2
VDD
DMUTE
STAT
MDATA
MCLK
MLD
/RST
FOD
TRD
TVD
ECS
KICK
TRV
ECM
PC
SENSE
/FLOCK
VDET
BLKCK
SQCK
SUBQ
PMCK
SMCK
SC440303CFU
IC301
SYSTEM CONTROL & LCD DRIVE
EMPTY
POWER
RESET
OPEN
MUTE
OSC1
MDATA/BATTERY
MCLK/MODE
PLAY
REPEAT
STOP
SKIP.R
SKIP.F
MEMORY
REST
S306
(▶/ II PLAY/PAUSE)
D301
S302 (REPEAT)
S305 (■ STOP/ POWER OFF)
S303 (|◀◀ R.SKIP/ SEARCH)
S304 (▶▶| F.SKIP/ SEARCH)
S301 (MEMORY/ RECALL)
S202 (REST DETECTOR)
+B


SUFFIX "B"
LH6V5CK4
IC503
1M DRAM
(5) +B
10 Vcc
GND 20
A0 ····· A9
D0 ····· D3
NRAS
NOE
NCAS
NWE
5~9
11~15
1,2
18,19
4
16
17
3
35
44
29
32
34
27
28
33
A9
A3
D2
D1
SM5901AF···SUFFIX "A,C,D"
SM5859AF···SUFFIX "B"
IC502
SHOCK PROOF CONTROLLER
DRAMC
ADRG (WAS RAS DSPDL1/ DSPDL2)
A/D CHECK (OVF EXP RAC DC)
CLKG TEST
SPCV
PSCV SDSEL
DSPIF
CPUIF
SYSTEM CONT.
DRAMIF
GROM
SRAMBLK
MAC
CROM
MAXSEL
KREG
SIPOBLK
OPISOBLK
UDCOUNT
CONTROL
19 YBLKCK
9 CLK
20 RESET
12 YLRCK
13 YSCK
11 YSR-DATA
17 YFLAG
18 YFCLK
VDD1 1 +B (5)
Vss 10
ZSRDATA 16 A
ZSCK 14 B
ZLRCK 15 C
ZSENSE 21
YMDATA 25
YMCLK 26
YMLD 24
REMSEL 2
UC4 5
CHGSEL 3
YDMUTE 23
(5) +B
Q505
RESET
44 SP RST
51 ZSENSE
SHOCK.P
50
OFF
ON
+B (2)
S501
(ANTI-SHOCK)


OUT
Q603,604
SWITCHING
Q601,602
MUTING DRIVE
VR701-1 (VOLUME)
HEADPHONES AMP/ XBS(S701)
NJU7082AMTE1
IC701
Q701,702
MUTING DRIVE
HEADPHONES
VR701-2 (VOLUME)
HEADPHONES AMP/ XBS(S701)
Q904-906
MUTING CONTROL
(1) +B
(4) +B
Q11
REGULATOR
(2) +B
Q10
POWER SUPPLY
L12
Q12
SWITCHING
DC IN
ICP11
Q501
POWER SUPPLY
(3) +B
BATT.3V
(5) +B
POWER SUPPLY
Q507
A
D
B
C
(2) +B
13
12
11
VLCD1
VLCD2
VLCD3
52
VDOWN
(2) +B
47
ACDET
BP3/FP0
BP0
7
10
FP1
FP16
1–6
55–63
LCD DISPLAY
LCD301
HOLD
31
OFF
ON
S308 (HOLD)
RESUME
RANDOM
29
30
NORMAL
S307 (MODE)

■ Replacement Parts List

Notes: *Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.
*In the Remarks columun, [A] - [D] are the Suffixes of the Product.
*ALL parts are supplied by MESA.

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	RFKJLS200EBH	BOTTOM CABINET ASS'Y	1	<EB>
1	RFKJLS200EGH	BOTTOM CABINET ASS'Y	1	<EG>
1	RFKJLS200GCH	BOTTOM CABINET ASS'Y	1	<GC>
1	RFKJLS200GKH	BOTTOM CABINET ASS'Y	1	<GK>
1	RFKJLS200GNH	BOTTOM CABENET ASS'Y	1	<GN>
1	RFKJLS200P-H	BOTTOM CABINET ASS'Y	1	<P,PC>
1-1	RKA0063-K	FOOT	2	
2	RKK0102-K	BATTERY COVER	1	
3	RJF0030	LCD HOLDER	1	
4	RGV0200-K	KNOB,XBS HOLD	3	
5	RJC93020	BATTERY TERMINAL	1	
6	RMA0677	FIXER	1	
7	RYF0441E-H	CD COVER ASS'Y	1	(H)
7	RYF0441E-S	CD COVER ASS'Y	1	(S)
8	RYK0718A-K	MIDDLE CABINET UNIT	1	
8-1	RGU1494-K	BUTTON,SKIP/SEARCH	1	
8-2	RGU1495-K	BUTTON,PLAY/PAUSE	1	
8-3	RME0241	SPRING	1	
8-4	RML0472	STOPPER	1	
9	XTN17+6GFZ	SCREW	4	
10	RAE0144Z	TRAVERSE DECK ASS'Y	1	
10-1	RMG0449-H	FLOATING RUBBER	3	
11	RSL5203-C	LCD	1	
12	RGV0200-H	KNOB,ANTI SHOCK	1	
13	RJC93015-1	BATTERY TERMINAL(CN1,2)	2	
⚠ A1	RFEA401E-3S	AC ADAPTOR	1	<EG>
A2	RFEV317P-KS	STEREO EARPHONES	1	<EG>
A3	RQA0117	WARRANTY CARD	1	<EG>
A4	RQCB0169	SERVICE CENTER LIST	1	<EG>
A5	RQT4338-E	INSTRUCTION MANUAL	1	<EG> IA
A6	RQT4340-D	INSTRUCTION MANUAL	1	<EG> IB
A7	RQT4341-H	INSTRUCTION MANUAL	1	<EG> IC
⚠ A11	RFEA403B-S	AC ADAPTOR	1	<EB>
A12	RFEV317P-KS	STEREO EARPHONES	1	<EB>
A13	RQA0117	WARRANTY CARD	1	<EB>
A14	RQCB0169	SERVICE CENTER LIST	1	<EB>
A15	RQT4337-B	INSTRUCTION MANUAL	1	<EB> IG
⚠ A21	RFEA403Z-S	AC ADAPTOR	1	<GC>
A22	RFEV317P-KS	STEREO EARPHONES	1	<GC>
A23	RQCB0169	SERVICE CENTER LIST	1	<GC>
A24	RQT4344-K	INSTRUCTION MANUAL	1	<GC> ID
⚠ A25	SJP5213-2	PLUG ADAPTOR	1	<GC>
⚠ A31	RFEA403A-S	AC ADAPTOR	1	<GN>
A32	RFEV317P-KS	STEREO EARPHONES	1	<GN>
A33	RQX7433ZA-1	WARRANTY CARD	1	<GN>
A34	RQCB0169	SERVICE CENTER LIST	1	<GN>
A35	RQT4337-B	INSTRUCTION MANUAL	1	<GN> IG
⚠ A41	RFEA415C-S	AC ADAPTOR	1	<P>
A42	RFEV705P-KS	STEREO HEADPHONES	1	<P>
A43	RQT4335-P	INSTRUCTION MANUAL	1	<P> IE
⚠ A51	RFEA415C-S	AC ADAPTOR	1	<PC>
A52	RFEV317P-KS	STEREO EARPHONES	1	<PC>
A53	RQCB0792	SERVICE CENTER LIST	1	<PC>
A54	RQT4336-C	INSTRUCTION MANUAL	1	<PC> IF
A55	SQX7185	WARRANTY CARD	1	<PC>
A56	RQT4335-P	INSTRUCTION MANUAL	1	<PC> IE
⚠ A61	RFEA403T-1S	AC ADAPTOR	1	<GK>
A62	RFEV317P-KS	STEREO EARPHONES	1	<GK>
A63	RQCB0169	SERVICE CENTER LIST	1	<GK>
A64	RQT4344-K	INSTRUCTION MANUAL	1	<GK> ID
C13	RCE0JSC470IX	6.3V 47U	1	
C14	RCE0JKA221IG	6.3V 220U	1	
C16	ECUVNA224KBV	10V 0.22U	1	
C17	ECUV1H470KCV	50V 47P	1	
C18	ECUV1E103KBV	25V 0.01U	1	
C19	ECEA1AKA220I	10V 22U	1	
C20	ECEA1HKA010I	50V 1U	1	
C21	ECUV1C223KBV	16V 0.022U	1	
C22	ECUZNC104ZFV	16V 0.1U	1	
C24	ECUV1H471KBV	50V 470P	1	[D]
C24	ECUV1H681KBV	50V 680P	1	[A,B,C]
C25	ECEA1HKA010I	50V 1U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C27	RCE1AMT331IV	10V 330U	1	
C28	RCE0GMT561IV	4V 560U	1	
C32	ECUVNA105ZFV	10V 1U	1	
C101	ECUV1C104KBV	16V 0.1U	1	
C103	ECUV1E103KBV	25V 0.01U	1	
C111	ECUV1C273KBV	16V 0.027U	1	
C112	ECUV1H391KBV	50V 390P	1	
C113	ECUVNE104ZFN	25V 0.1U	1	
C114	ECUZNC104ZFV	16V 0.1U	1	
C115	ECUV1C223KBV	16V 0.022U	1	
C120	ECUV1H332KBV	50V 3300P	1	
C121	ECUV1H221KBV	50V 220P	1	
C204	RCE1AKA470IG	10V 47U	1	
C301,02	ECUZNC104ZFV	16V 0.1U	2	
C404	ECUVNA105ZFV	10V 1U	1	
C405	ECUV1C104KBV	16V 0.1U	1	
C410	ECUV1E103KBV	25V 0.01U	1	[D]
C501,02	ECUV1H050CCV	50V 5P	2	
C503	ECUV1H561KBV	50V 560P	1	
C505	ECUV1C223KBV	16V 0.022U	1	
C506	ECUVNA224KBV	10V 0.22U	1	
C507	RCE0JKA221IG	6.3V 220U	1	
C508,09	ECUZNC104ZFV	16V 0.1U	2	
C518	ECUV1E103KBV	25V 0.01U	1	
C525	ECUZNC104ZFU	16V 0.1U	1	[B]
C526	RCST1AY475RE	10V 4.7U	1	
C532	ECUV1H102KBN	50V 1000P	1	
C533	ECUZNC104ZFV	16V 0.1U	1	
C600	ECUZNC104ZFV	16V 0.1U	1	
C601,02	ECUV1H102KBV	50V 1000P	2	
C603,04	ECUV1H272KBV	50V 2700P	2	
C605,06	ECEA1CKA100I	16V 10U	2	
C607,08	ECUV1H681KBV	50V 680P	2	
C609	ECUZNC104ZFV	16V 0.1U	1	
C610	RCE1AKA470IG	10V 47U	1	
C703,04	ECUV1C223KBV	16V 0.022U	2	
C707	ECUV1H102KBN	50V 1000P	1	
C708	ECUV1H102KBV	50V 1000P	1	
C709,10	ECA0JAK221XH	6.3V 220U	2	
C711,12	ECEA1CPK100I	16V 10U	2	
C713	RCE1AKA470IG	10V 47U	1	
C717	ECUZNC104ZFV	16V 0.1U	1	
C727,28	ECUV1C223KBV	16V 0.022U	2	
C902	ECUV1H332KBV	50V	1	
CN1,N2	RJC93015-1	BATTERY TERMINAL	2	
CN3	RJH5104	RECHARGE.BATT.TERMINAL	1	
CN8	RJJ43K09-C	DC IN	1	
CN101	RJS2A4716M1	CONNECTOR(16P)	1	
CN102	RJS2A5106T1	CONNECTOR(6P)	1	
CN601	RJJD3S5ZB-C	LINE OUT	1	
CN701	RJJ33TK07-C	HEADPHONE	1	
D11	MA110TX	DIODE	1	
D13	RB411DT146	DIODE	1	[D]
D301	M1MA141WKT1	DIODE	1	
D903	M1MA141WKT1	DIODE	1	
IC11	AN8789FBEB	IC	1	[A,B,C]
IC11	BA6893AKE2	IC	1	[D]
IC101	AN8839SBE1	IC	1	
IC301	SC440303CFU	IC	1	
IC501	MNG746RPK1AL	IC	1	
IC502	SM5859AF	IC	1	[B]
IC502	SM5901AF	IC	1	[A,C,D]
IC503	LH6V5CK4	IC	1	[B]
IC701	NJU7082AMTE1	IC	1	
⚠ ICP11	UNH000700A	IC PROTECTOR	1	
L12	RLZ0028T-M	COIL	1	
L601,02	RLBV121AV-1	COIL	2	
P1	RPK0991	GIFT BOX	1	<EG>(H)
P1	RPK1077	GIFT BOX	1	<EG>(S)

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
P2	RPQ0753	SPACER	1	<EG>
P3	RPQ0836	PAD	1	<EG>
P4	RPF0046	POLYETHYLENE COVER	1	<EG>
P5	RPF0111	PROTECTION COVER	1	<EG>
P11	RPK0991	GIFT BOX	1	<EB>(H)
P11	RPK1077	GIFT BOX	1	<EB>(S)
P12	RPQ0753	SPACER	1	<EB>
P13	RPQ0836	PAD	1	<EB>
P14	RPF0046	POLYETHYLENE COVER	1	<EB>
P15	RPF0111	PROTECTION COVER	1	<EB>
P21	RPK0991	GIFT BOX	1	<GC>
P22	RPQ0683	SPACER	1	<GC>
P23	RPQ0836	PAD	1	<GC>
P24	RPF0111	PROTECTION COVER	1	<GC>
P31	RPK0991	GIFT BOX	1	<GN>
P32	RPQ0753	SPACER	1	<GN>
P33	RPQ0836	PAD	1	<GN>
P34	RPF0046	POLYETHYLENE COVER	1	<GN>
P35	RPF0111	PROTECTION COVER		<GN>
P41	RPN1044	COVER	1	<P>
P42	RPN1124	TRAY	1	<P>
P43	RPQ0848	MOUNT	1	<P>
P51	RPK0994	GIFT BOX	1	<PC>
P52	RPQ0752	SPACER	1	<PC>
P53	RPQ0836	PAD	1	<PC>
P54	RPF0046	POLYETHYLENE COVER	1	<PC>
P55	RPF0111	PROTECTION COVER	1	<PC>
P61	RPK0992	GIFT BOX	1	<GK>
P62	RPQ0753	SPACER	1	<GK>
P63	RPQ0836	PAD	1	<GK>
P64	RPF0046	POLYETHYLENE COVER	1	<GK>
P65	RPF0111	PROTECTION COVER	1	<GK>
PCB1	REP2622A-M	P.C.B.ASS'Y	1	
Q10	2SD1302STTA	TRANSISTOR	1	
Q11	2SD2074HWRST	TRANSISTOR	1	
Q12	2SD1450STTA	TRANSISTOR	1	
Q13	MSB1218ART1	TRANSISTOR	1	[D]
Q203	MSB709RST1	TRANSISTOR	1	
Q402	UN5215TX	TRANSISTOR	1	[D]
Q501	2SB970RSTX	TRANSISTOR	1	
Q505	DTC144TUA106	TRANSISTOR	1	
Q507	UN511NTX	TRANSISTOR	1	
Q601,02	2SD1328TX	TRANSISTOR	2	
Q603,04	DTC114TUA106	TRANSISTOR	2	
Q701,02	2SD1328TX	TRANSISTOR	2	
Q904	DTA114YUA106	TRANSISTOR	1	
Q905,06	DTC144TUA106	TRANSISTOR	2	
R11	ERJ3GEYJ103Z	1/16W 10K	1	
R12	ERJ3GEYJ472V	1/16W 4.7K	1	
R16	ERJ3GEYJ100V	1/16W 10	1	
R17	ERJ3GEYJ681V	1/16W 680	1	
R18	ERJ3GEYJ101V	1/16W 100	1	
R22	ERJ3GEYJ822V	1/16W 8.2K	1	
R25	ERJ3GEYJ104Z	1/16W 100K	1	
R29	ERJ3GEYJ152V	1/16W 1.5K	1	[D]
R29	ERJ3GEYJ821V	1/16W 820	1	[A,B,C]
R32	ERJ3GEYJ105V	1/16W 1M	1	[A,B,C]
R33	ERJ3GEYJ101V	1/16W 100	1	[D]
R33	ERJ3GEYJ270V	1/16W 27	1	[A,B,C]
R105	ERJ3GEYJ393V	1/16W 39K	1	
R106	ERJ3GEY0R00V	1/16W 0	1	
R113	ERJ3GEYJ101V	1/16W 100	1	
R114	ERJ3GEYJ330V	1/16W 33	1	
R120	ERJ3GEYJ472V	1/16W 4.7K	1	
R121,22	ERJ3GEYJ683V	1/16W 68K	2	
R208	ERJ3GEYJ4R7V	1/16W 4.7	1	
R209	ERJ3GEYJ223V	1/16W 22K	1	
R301	ERJ3GEYJ473V	1/16W 47K	1	
R302	EXBV4V473JV	1/32W 47K	1	
R309	ERJ3GEYJ124V	1/6W 120K	1	
R313	ERJ3GEYJ102Z	1/16W 1K	1	
R316	ERJ3GEYJ102Z	1/16W 1K	1	

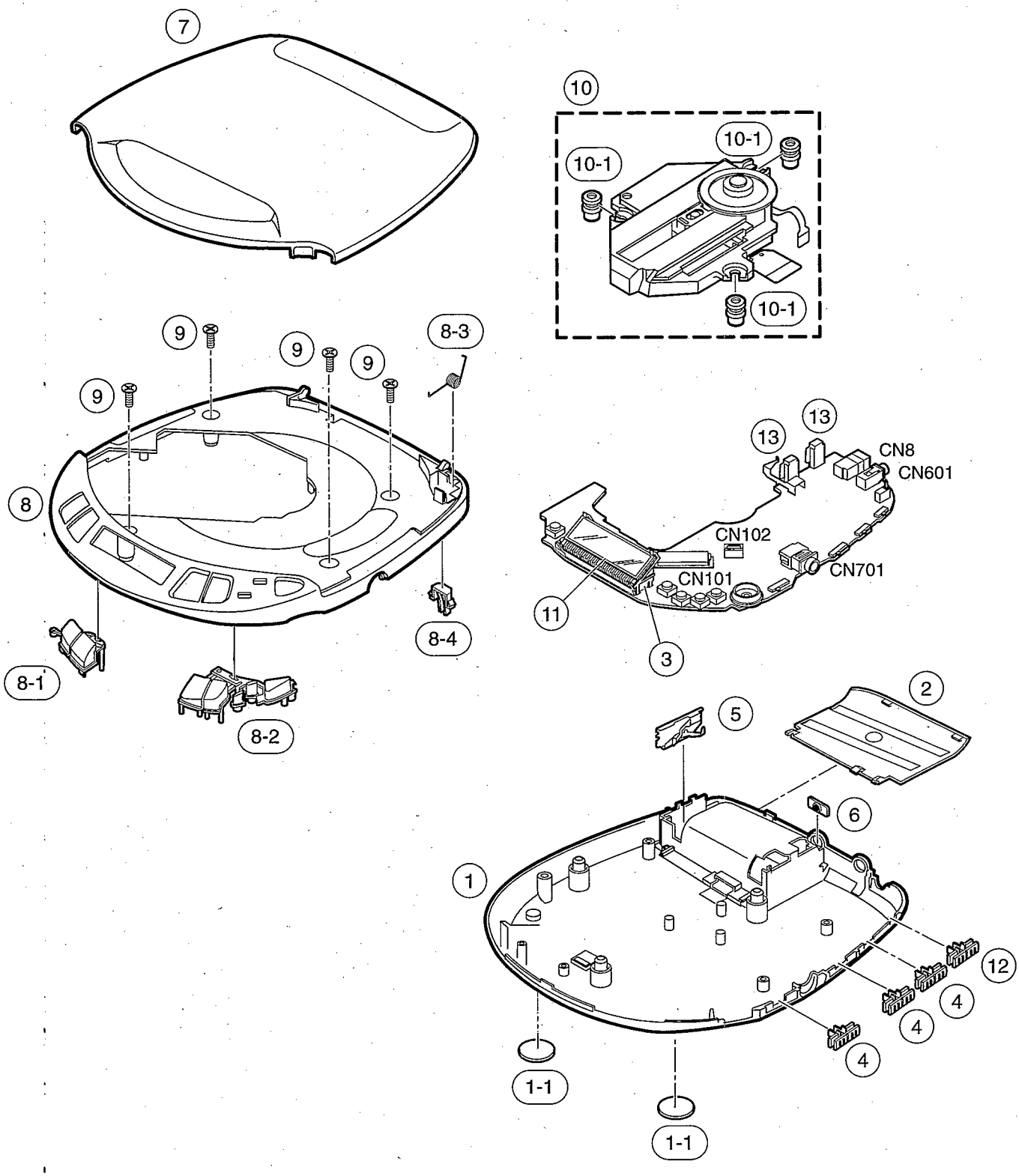
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R317,18	ERJ3GEYJ104Z	1/16W 100K	2	
R400	ERJ3GEYJ182V	1/16W 1.8K	1	
R401	ERJ3GEYJ823V	1/16W 82K	1	
R402	ERJ3GEYJ122V	1/16W 1.2K	1	
R405	ERJ3GEYJ332V	1/16W 3.3K	1	
R501	ERJ3GEYJ683V	1/16W 68K	1	
R503	ERJ3GEYJ473V	1/16W 47K	1	
R505	ERJ3GEYJ821V	1/16W 820	1	
R506	ERJ3GEYJ681V	1/16W 680	1	
R507	ERJ3GEYJ1R5V	1/16W 1.5	1	
R510	ERJ3GEYJ120V	1/16W 12	1	
R513	ERJ3GEYJ184V	1/16W 180K	1	
R520	ERJ3GEYJ152V	1/16W 1.5K	1	
R526	ERJ3GEYJ102Z	1/16W 1K	1	
R530	ERJ3GEYJ224V	1/16W 220K	1	
R535	ERJ6GEYJ103V	1/10W 10K	1	
R536	ERJ3GEYJ103Z	1/16W 10K	1	
R539	ERJ3GEYJ152V	1/16W 1.5K	1	[C,D]
R539	ERJ3GEYJ332V	1/16W 3.3K	1	[A,B]
R601,02	ERJ3GEYJ681V	1/16W 680	2	
R603,04	ERJ3GEYJ561V	1/16W 560	2	
R605,06	ERJ3GEYJ473V	1/16W 47K	2	
R607,08	ERJ3GEYJ102Z	1/16W 1K	2	
R609	EXBV4V332JV	1/32W 3.3K	1	
R705,06	ERJ3GEYJ473V	1/16W 47K	2	
R707,08	ERJ3GEYJ223V	1/16W 22K	2	
R709,10	ERJ3GEYJ105V	1/16W 1M	2	
R715,16	ERJ3GEYJ183V	1/16W 18K	2	
R719,20	ERJ3GEYJ103Z	1/16W 10K	2	
R721,22	ERJ3GEYJ273V	1/16W 27K	2	
R723,24	ERJ3GEYJ104Z	1/16W 100K	2	
R725,26	ERJ3GEYJ150V	1/16W 15	2	
R727,28	ERJ3GEYJ1R5V	1/16W 1.5	2	
R729,30	ERJ3GEYJ472V	1/16W 4.7K	2	
R731	EXBV4V331JV	1/32W 330	1	
R920	ERJ3GEYJ473V	1/16W 47K	1	
R928	ERJ3GEYJ473V	1/16W 47K	1	
RJ502,03	ERJ3GEY0R00V	CHIP JUMPER	2	[A,C,D]
S201	ESE11SV6	SW	1	
S301-06	EVQ11G05R	SW	6	
S307	RSS3A007-1A	SW	1	
S308	RSS2A010-1A	SW	1	
S501	RSS2A010-1A	SW	1	
S701	RSS2B028-A	SW	1	
VR11	RRN3A05B33WL	VR	1	
VR701	EVUTUFB11C54	VR	1	
X501	RSXZ16M9W01T	OSCILLATOR	1	

Notes: • The"IA, IB, IC, ID, IE ,IF ,IG"marks in Remarks indicate language of instruction manual.

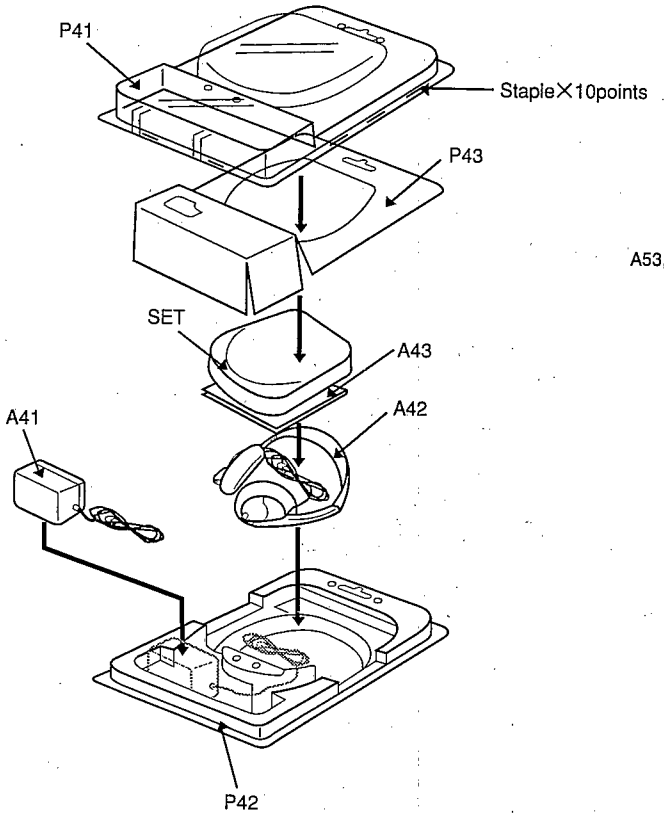
- IA : English, Spanish, Swedish
- IB : German, Italian, French
- IC : Dutch, Danish, Russian
- ID : English, Spanish, Chinese
- IE : English
- IF : Canadian French
- IG : Emglish

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

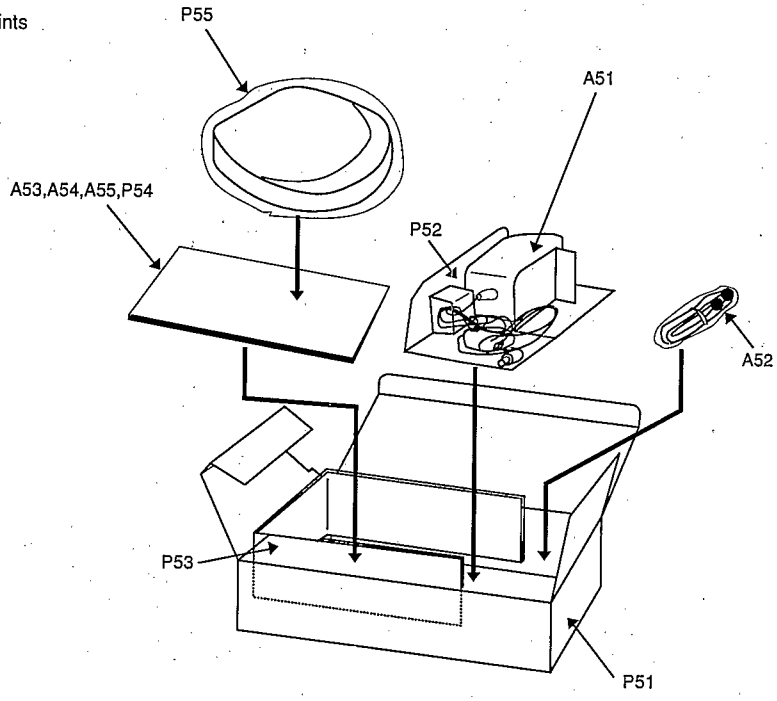
■ Cabinet Parts Location



■ Packaging



SL-S200(P)



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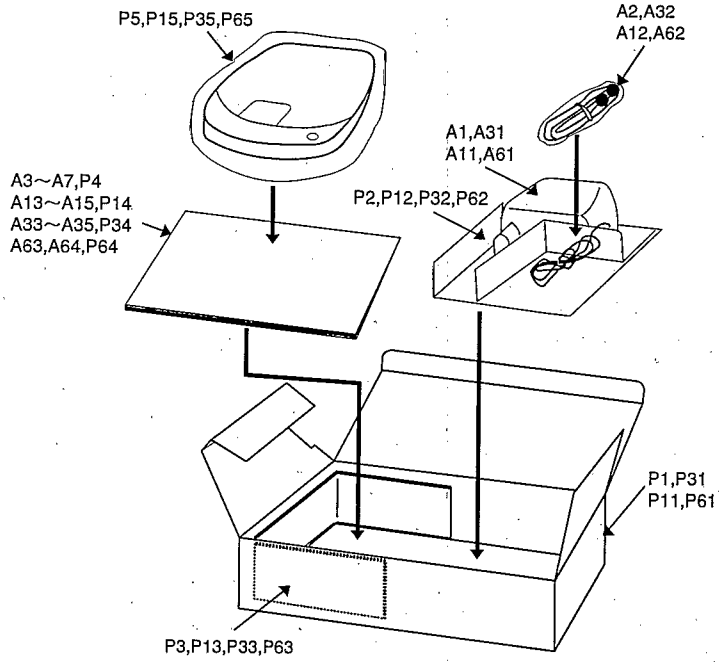

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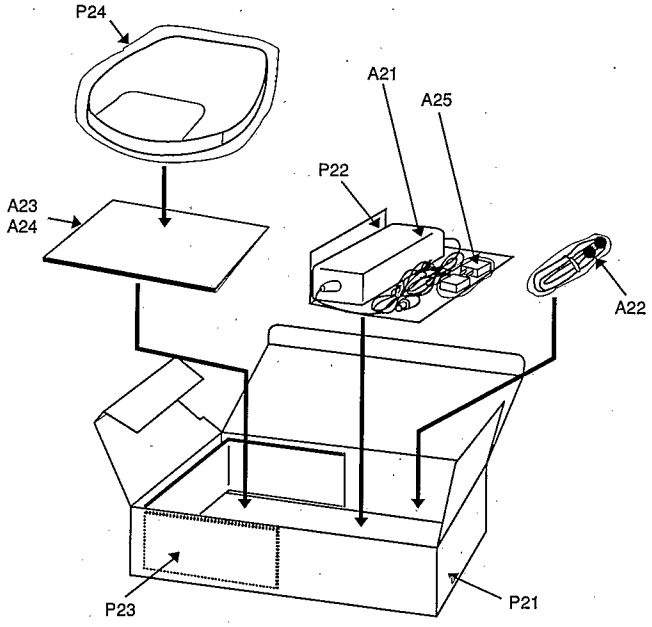

SL-S200(GC)

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F980310000 MT/KH

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