ORDER NO. AD9902009C1
A6

Service Manual

Portable CD Player

SL-S360

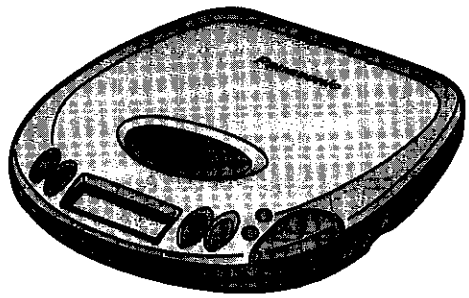
COMPACT disc DIGITAL AUDIO

MASH* multi-stage noise shaping

* MASH is a trademark of NTT.

Colour
(S) ..... Silver Type

Areas
(P) ..... U.S.A.
(PC) ..... Canada.



Traverse Deck: RAE0145Z 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

Operational 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;	2.9 W / 3.0 W
Battery (DC 3V);	0.4 W / 0.4 W
When recharging;	4.0 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. 22 h / 25 h
Optional Rechargeable batteries (P-3GAVA/2B);	Approx. 10 h / 11 h

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

Recharging time:

P-3GAVA/2B;	Approx. 5 h
SH-CDB8D;	Approx. 3 h

Dimensions (W × H × D):	128 × 25.8 × 144 mm ($5^{1}/_{16}$" / $1^{1}/_{32}$" / $5^{11}/_{16}$")
Weight:	257 g (9.1 ounce) with batteries 212 g (7.5 ounce) 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

■ Accessories

AC adaptor (RFEA415C-S) ..... 1pc.

Stereo headphones (For U.S.A.) (RFEV705P-KS) ..... 1pc.

Stereo earphones (For Canada) (RFEV324P-KS) ..... 1pc.

■ Precaution of Laser Diode

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 herin may result in hazardous radiation exposure.

■ 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).

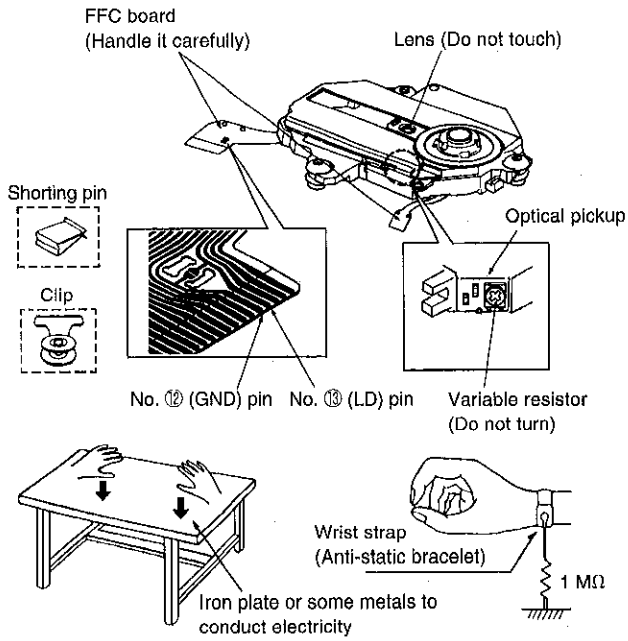
• Handling of traverse deck (optical pickup)

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 conductive material (sheet) or steel sheet on the area where the traverse deck (optical pickup) is placed, and ground the sheet.

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

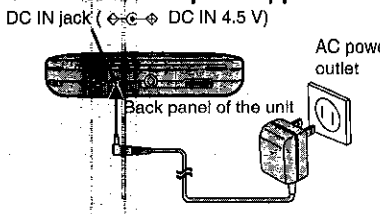


■ Power Supply Preparations

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.



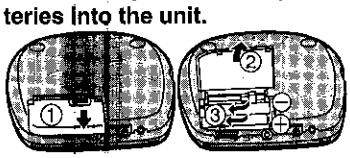
The configuration of the AC adaptor differs according to the model.

Using rechargeable batteries

Obtain the optional rechargeable batteries.
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.
- Optional batteries (P-3GAVA/2B, SH-CDB8D)

Recharging procedure

1 Insert the special rechargeable batteries into the unit.

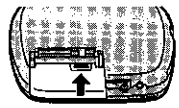


2 Connect the AC adaptor.
(Refer to "Using the AC adaptor" for connection instructions.)
Recharging starts and the "⏍" charging indicator flashes on and off on the unit's display panel. When the rechargeable batteries fully recharge the charging indicator disappears.

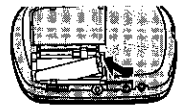
3 When recharging is complete, unplug the AC adaptor from the power outlet and the DC IN jack.

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 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

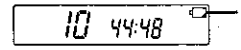
Be sure to obtain the car adaptor (SH-CDC9) for SL-S360 , available as an optional accessory.
The car adaptor can be used to recharge the unit's batteries while in the car.

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

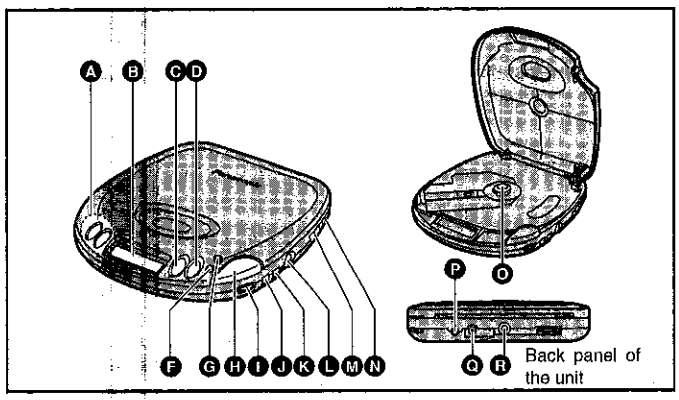


This indicator flashes on and off when the batteries are almost out of power. Power is cut off completely a short while later.
Rechargeable batteries: Recharge batteries.
Dry-cell batteries: Replace batteries with new ones.

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 flash if rechargeable batteries, other than those designated by Panasonic, are used.

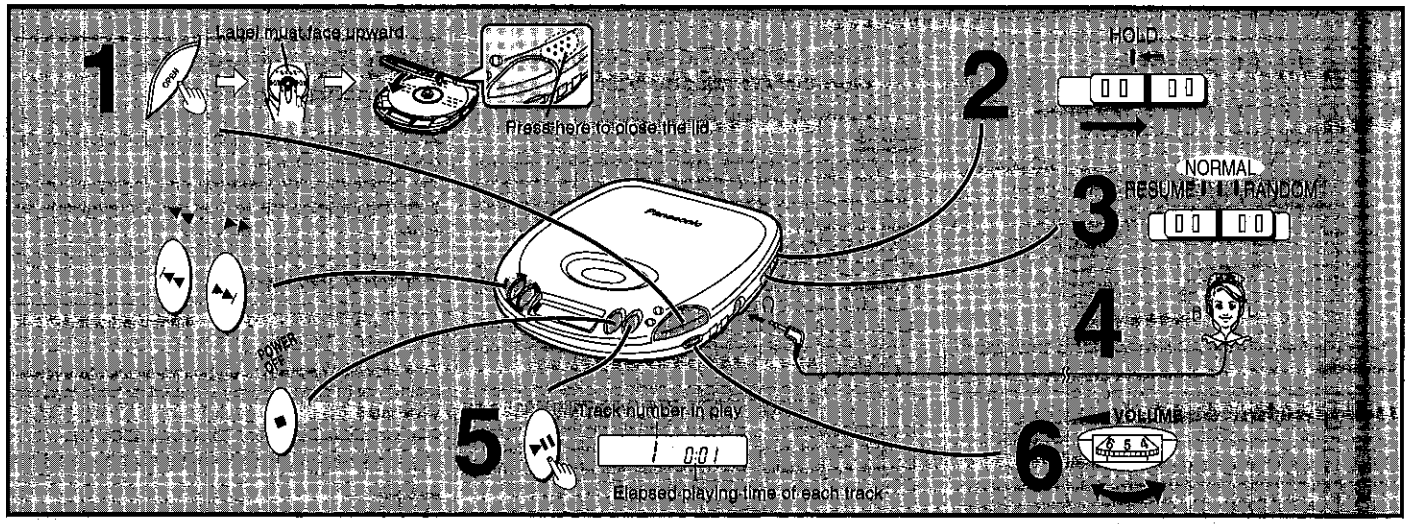
If the unit malfunctions or freezes during use, then disconnect the power sources (the AC adaptor and batteries).
Re-connect the power source and continue operation.

■ Location of Controls



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

■ Sequential Play



Follow 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.	Press again to restart 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)	• 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)	Keep depressed during play.	

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

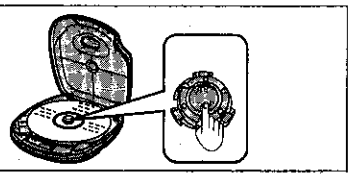
This indication appears for about 10 minutes when the cover is opened. (However, the indication does not appear when the unit is powered off.)

Note

Never insert foreign objects into the unit body.

Removing discs

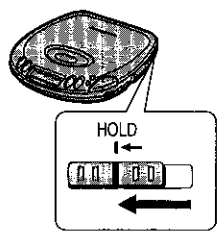
After the disc has stopped rotating, press [PUSH] to release the disc. (To protect the disc, never open the cover while it is playing.)



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.)

■ HOLD Function



HOLD mode

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 [▶ ❚❚] is pressed.

Before operating the buttons

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

■ Other Play Methods

The letters such as Ⓐ in the various illustrations refer to the descriptions in the "Location of Controls" 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

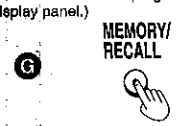
Program play

Up to 24 tracks can be entered in the programmed sequence.
Preparation: Put unit in stop mode.

1

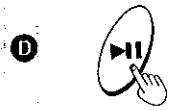
2 Select the desired track.

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] desired number of times.

■ **If " ʃ " is displayed**
No more tracks can be programmed.

■ **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 the sequence.)

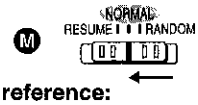
■ **To delete the entire programmed sequence**
Press [■,POWER OFF].

Random play

1

2

Release



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.

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.

Release

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

Repeat function

Press during play or stop mode.

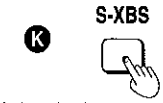
The setting is switched in the sequence indicated below each time [REP] is pressed.

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

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

Changing the sound quality

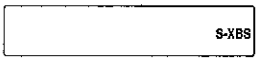
Press during play or stop mode.



The setting switches in the sequence indicated below each time [S-XBS] pressed.

S-XBS→Normal (no indicator is shown)
↑——————————

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



■ 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] to release the disc?
Tracks on disc do not play in order, starting with the first track.	Is the [RESUME, NORMAL, RANDOM] (play mode) slider in the [NORMAL] position?
Cannot hear music— too noisy.	• 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.)

■ Anti-Shock Function

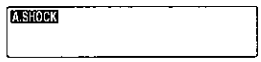
Anti shock works by reading audio data and storing it in memory (up to 40 seconds worth). The unit then fills in interruptions caused by bumps and vibrations with data from the memory. This unit also incorporates a powerful anti-shock mechanism that prevents skipping caused when play speed is changed by swinging of the unit.

Press during play or stop mode.

A.SHOCK

Ⓙ 

The following indicator appears on the display panel.

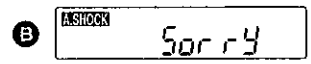
Ⓑ 

Note

If you have pressed [A.SHOCK] when the unit is in stop status, press [▶II] to start play.

When bumps continue repeatedly

The following indicator appears on the display panel and sound is interrupted.

Ⓑ 

To cancel the anti-shock function

Press [A.SHOCK] again.

Note

- The anti-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 anti-shock operation, the disc rotates at a higher rate than usual to collect extra audio data. This could result in a slight increase in disc rotation noise.

Using the unit with an audio system

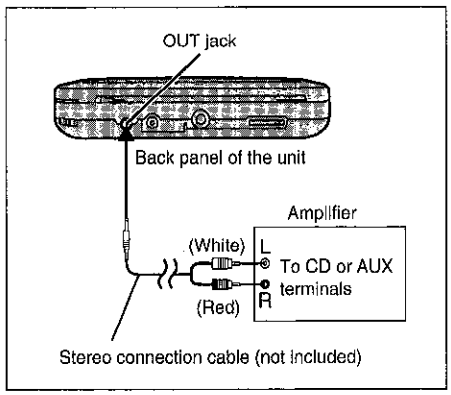
The anti-shock function uses digital signal compression technology. It is recommended that the anti-shock function be canceled if the unit is connected to a home audio system.

■ Using the 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.
- Sound quality changes when S-XBS is selected, but volume is reduced by approximately fifty percent.



Using the unit with a car audio system

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 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.

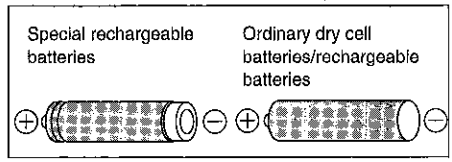
Carrying dry cell batteries/ rechargeable batteries around

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)



When driving a car

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

■ Operation Checks and Component Replacement Procedures

NOTE

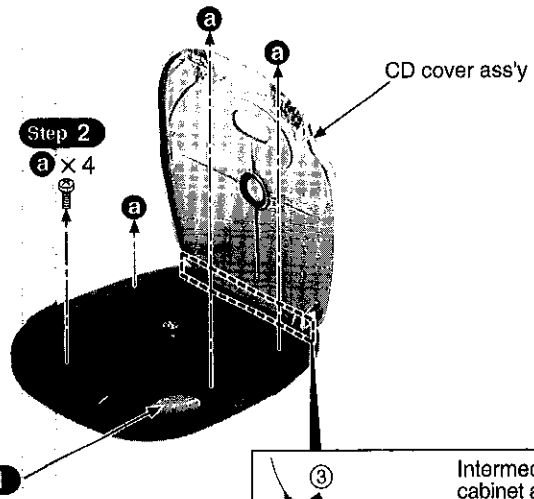
1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.

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)〉

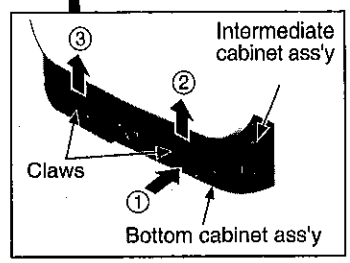


Step 1

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

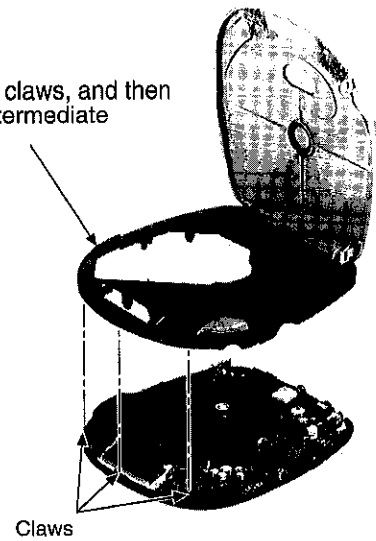
Step 3

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



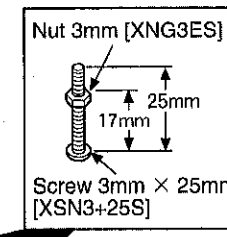
Step 4

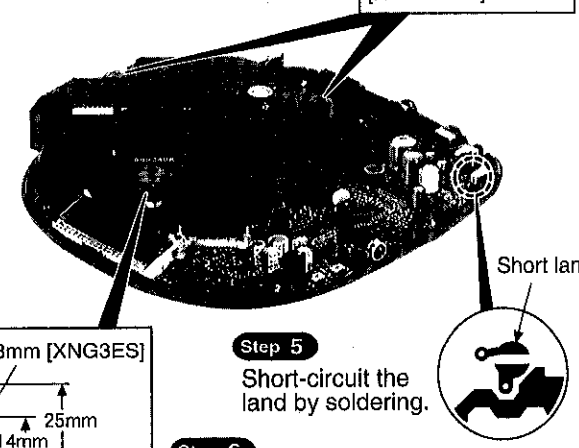
Release the 3 claws, and then remove the intermediate cabinet ass'y.

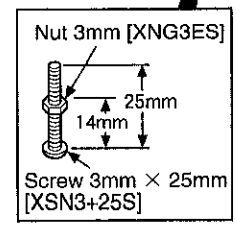


NOTE

- 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.







Step 5

Short-circuit the land by soldering.

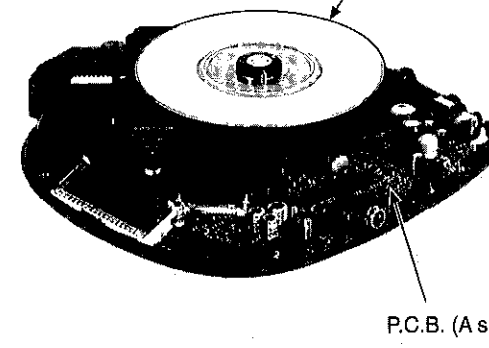
Step 6

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

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

Step 7

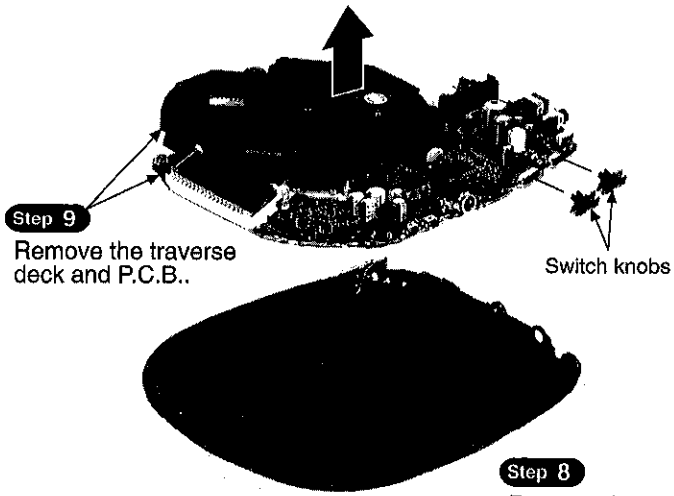
Put the disc (8cm).

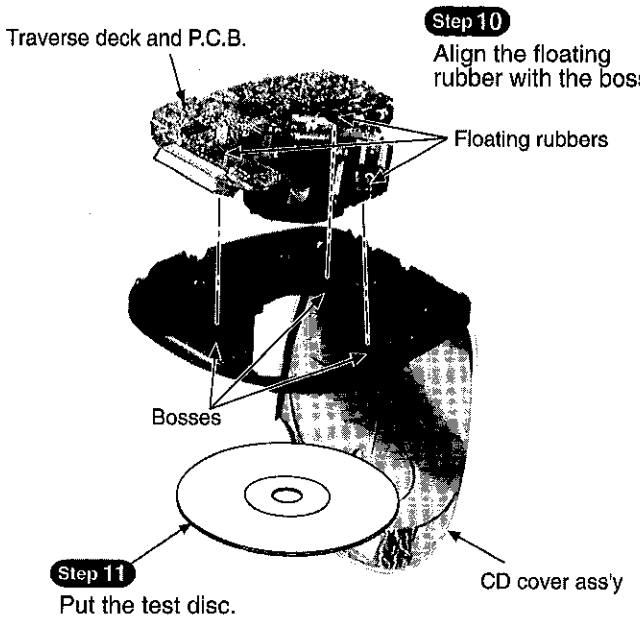


NOTE

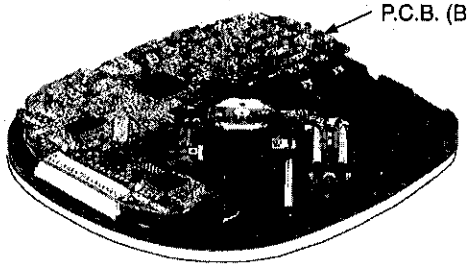
After checking, unsolder the short land to open circuit.

〈Checking for the P.C.B. (B side)〉





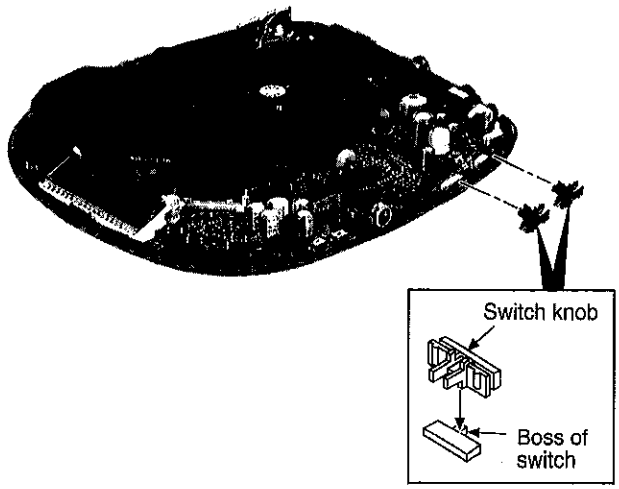
· **Check the P.C.B. (B side) as shown below.**



NOTE

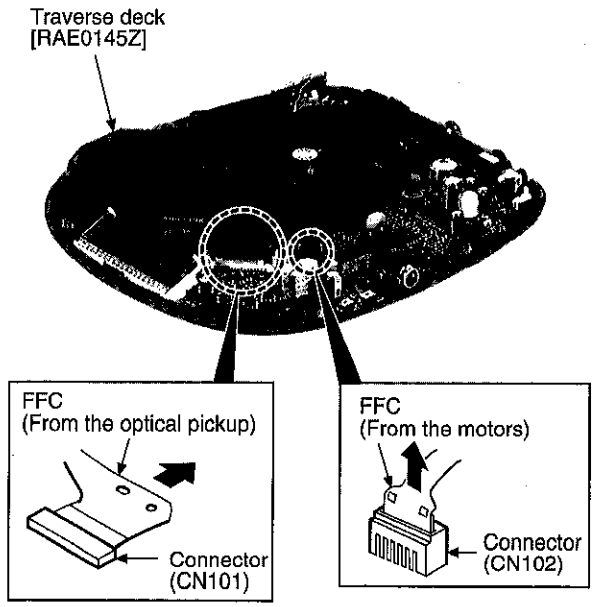
After checking, unsolder the short land to open circuit.

Notice for installation of switch knobs



2. Replacement for the traverse deck

· Follow the Step 1 ~ Step 4 in item 1 on page 7.

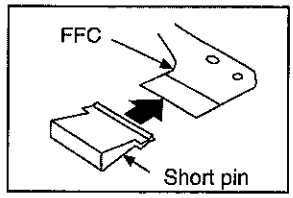


Step 1
Pull out the FFC from connector (CN101).

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

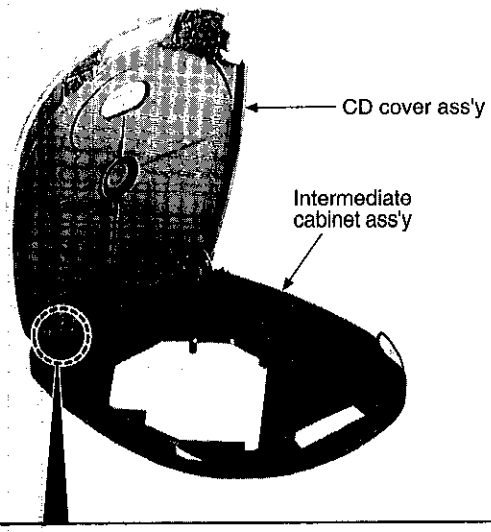
NOTE

Insert a short pin into the traverse deck's FFC.
(Refer to "Handling Precautions for Traverse Deck" on page 2.)



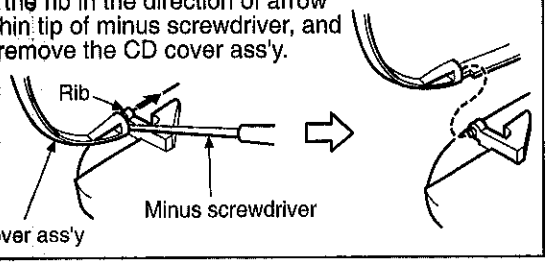
3. Replacement for the CD cover ass'y

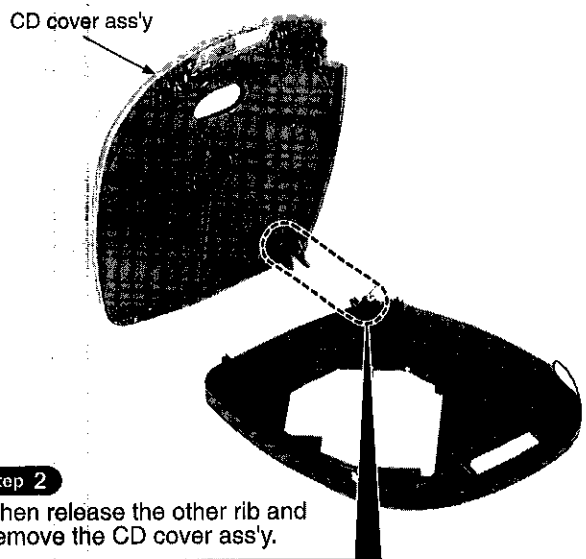
· Follow the Step 1 ~ Step 4 in item 1 on page 7.



Step 1

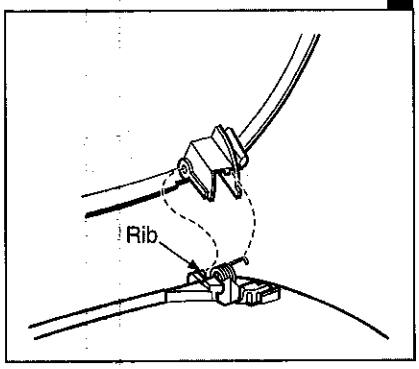
Push the rib in the direction of arrow with thin tip of minus screwdriver, and then remove the CD cover ass'y.





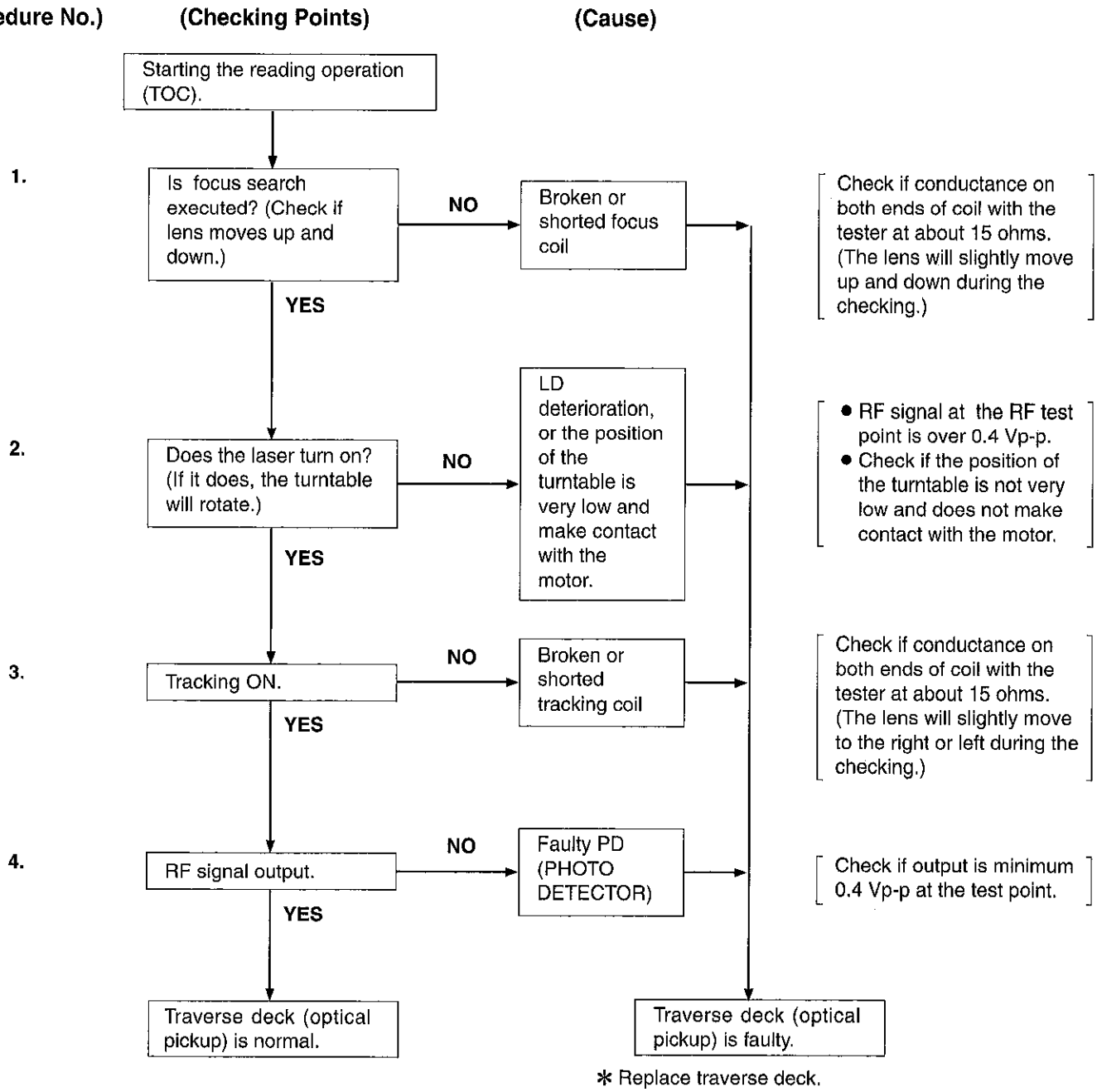
Step 2

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



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

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



- 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)

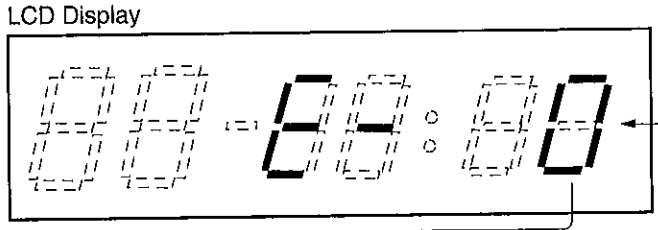
On the unit (SL-S360), each automatic adjustment result are displayed on the LCD. This function is convenient to check or identify which automatic adjustment circuit is incorrect. The followings are the contents of the automatic adjustment result displays (Self-Check Function).

• How to display automatic adjustment results

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

• Display of automatic adjustment results (Self-Check Function)

LCD Display



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

<Example>

	MSB			LSB	
	TGC	FGC	TBC	FBC	
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.)				

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

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

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

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

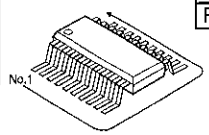
Follow the below steps when "E – F" is displayed.
(Cause: All adjustments (TGC,FGC,TBC,FBC) are set beyond the limit.)
• Check if
(1) the optical pickup returns to the normal state by exchanging the traverse deck, and
(2) the waveform or voltage of the servo IC's (IC101,501) are correct.

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

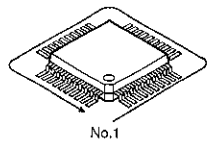
Note:
If any other disc than the test disc (SZZP1054C) is used, an error message may be displayed. This is not a malfunction.

■ Type Illustration of IC's, Transistor and Diodes

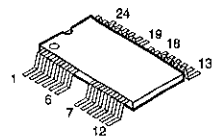
AN8746SAE1	32PIN
AN8839NSBE1	28PIN
NJU7082BVTE1	8PIN
RS10002E2	40PIN



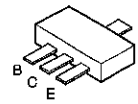
SC502171CPB	52PIN
MN662782RPT1	80PIN



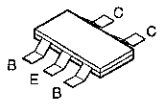
MNV7400CT1T



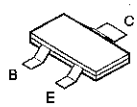
2SB766ATX



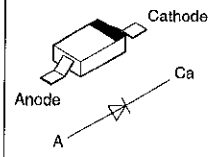
XN1210TX
XN1215TX



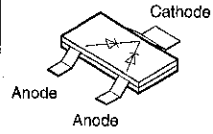
MSB709RST1
2SD1328TX
DTA114YUA106



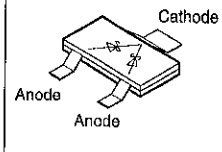
MA111TX



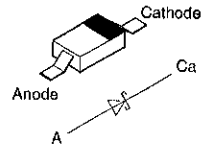
MA142WKTX



MA741WKTX



MA1070400L



■ Schematic Diagram

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

Notes:

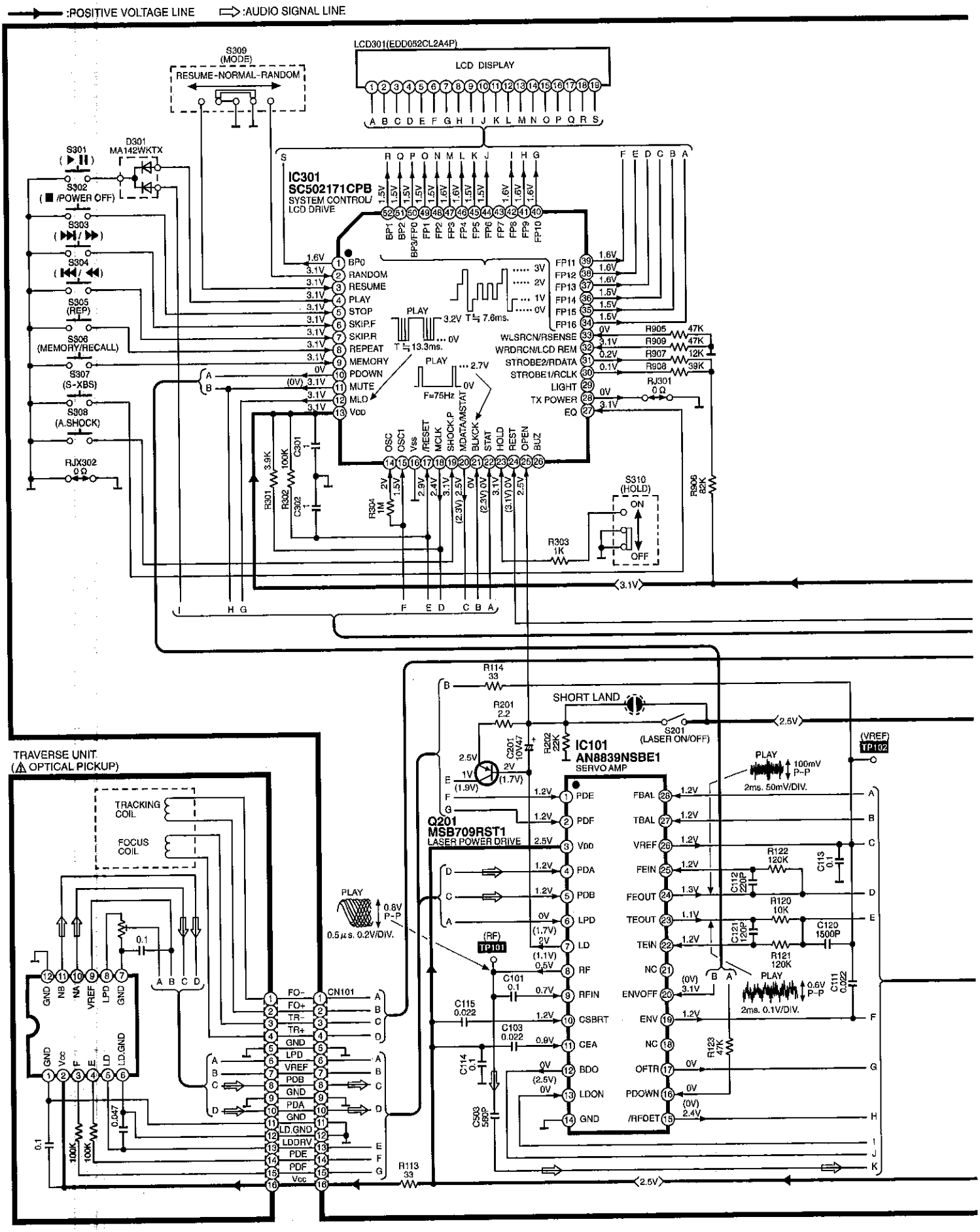
- •S201 : Laser ON/OFF switch in "OFF" position.
  (It turns "ON" with disc holder closed.)
- •S202 : Rest detector switch in "OFF" position.
  (It turns "ON" when optical pickup comes to innermost periphery.)
- •S301 : Play/pause (► II) switch.
- •S302 : Stop/power off (■ POWER OFF) switch.
- •S303, 304: Skip/search (S303: ►►I,►► S304:I◄◄,◄◄) switches.
- •S305 : Repeat (REP) switch.
- •S306 : Memory/recall (MEMORY/RECALL) switch.
- •S307 : S-XBS Selector (S-XBS) switch.
- •S308 : Anti-shock (A.SHOCK) switch.
- •S309 : Play mode selector (MODE) in "NORMAL" position.
  (RANDOM↔NORMAL↔ RESUME)
- •S310 : Hold (HOLD) switch in "OFF" position.
- •VR11 : Power supply voltage adjustment VR.
- •VR701-1, VR701-2: Volume control VR.

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

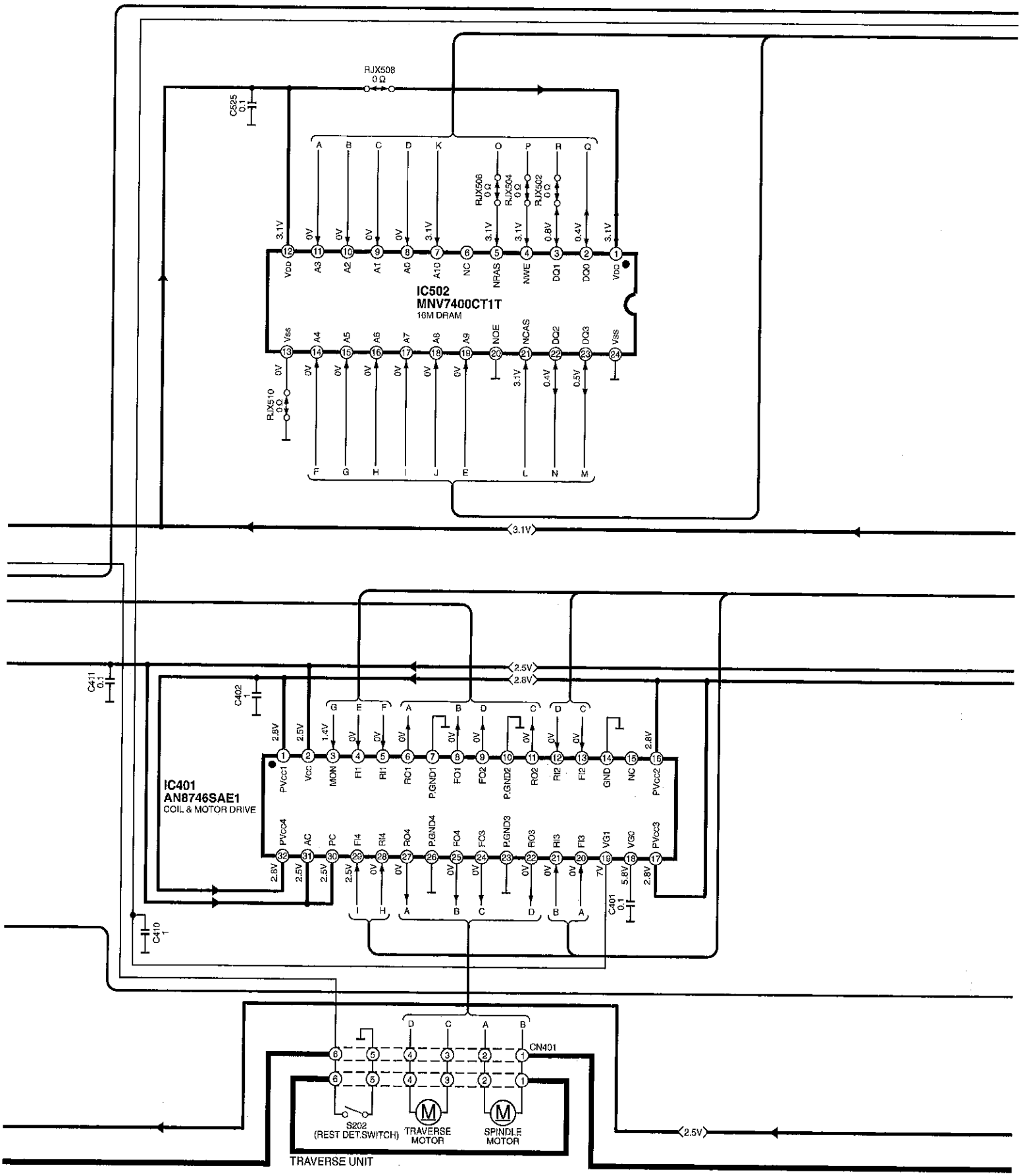
Caution!

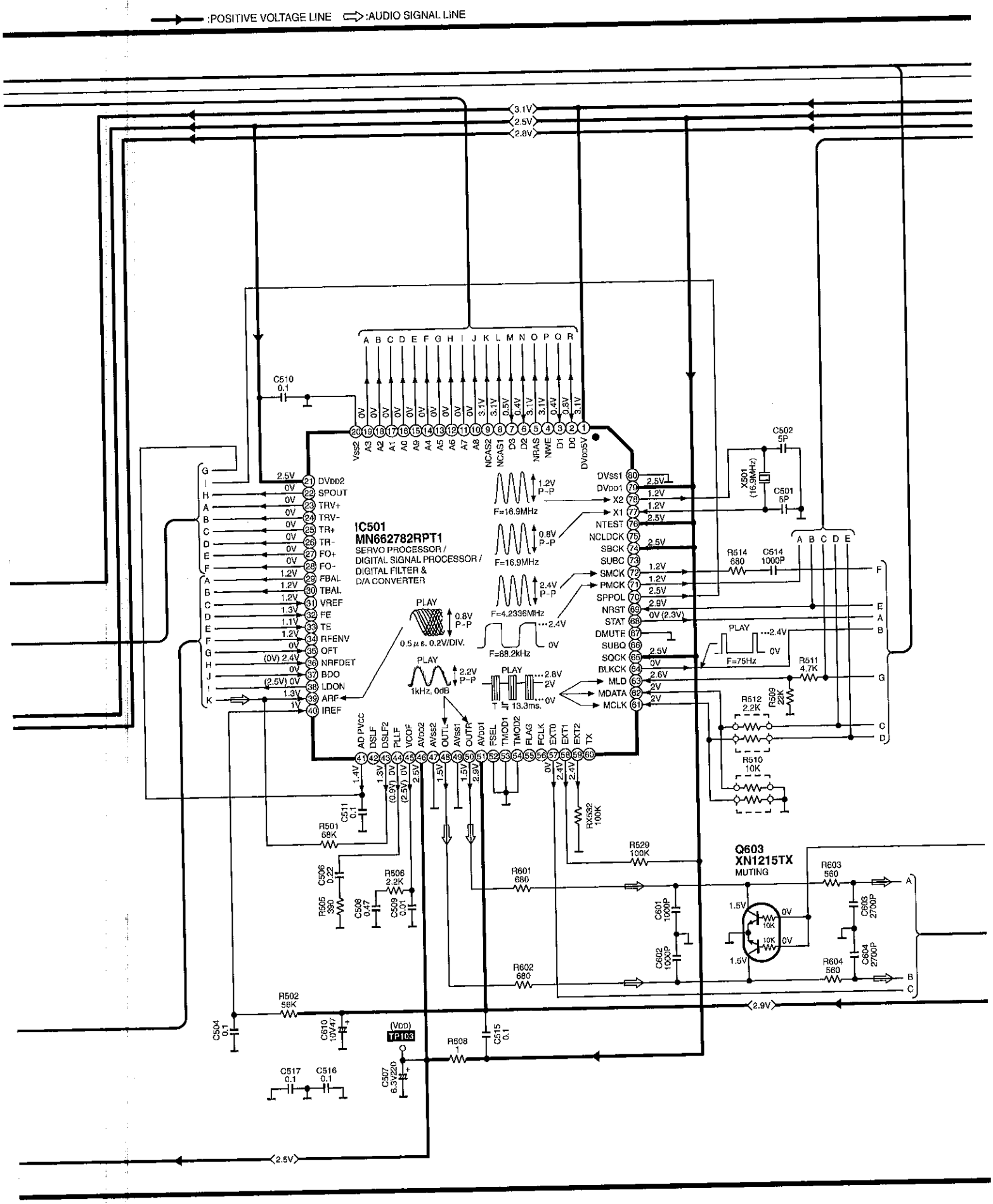
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

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

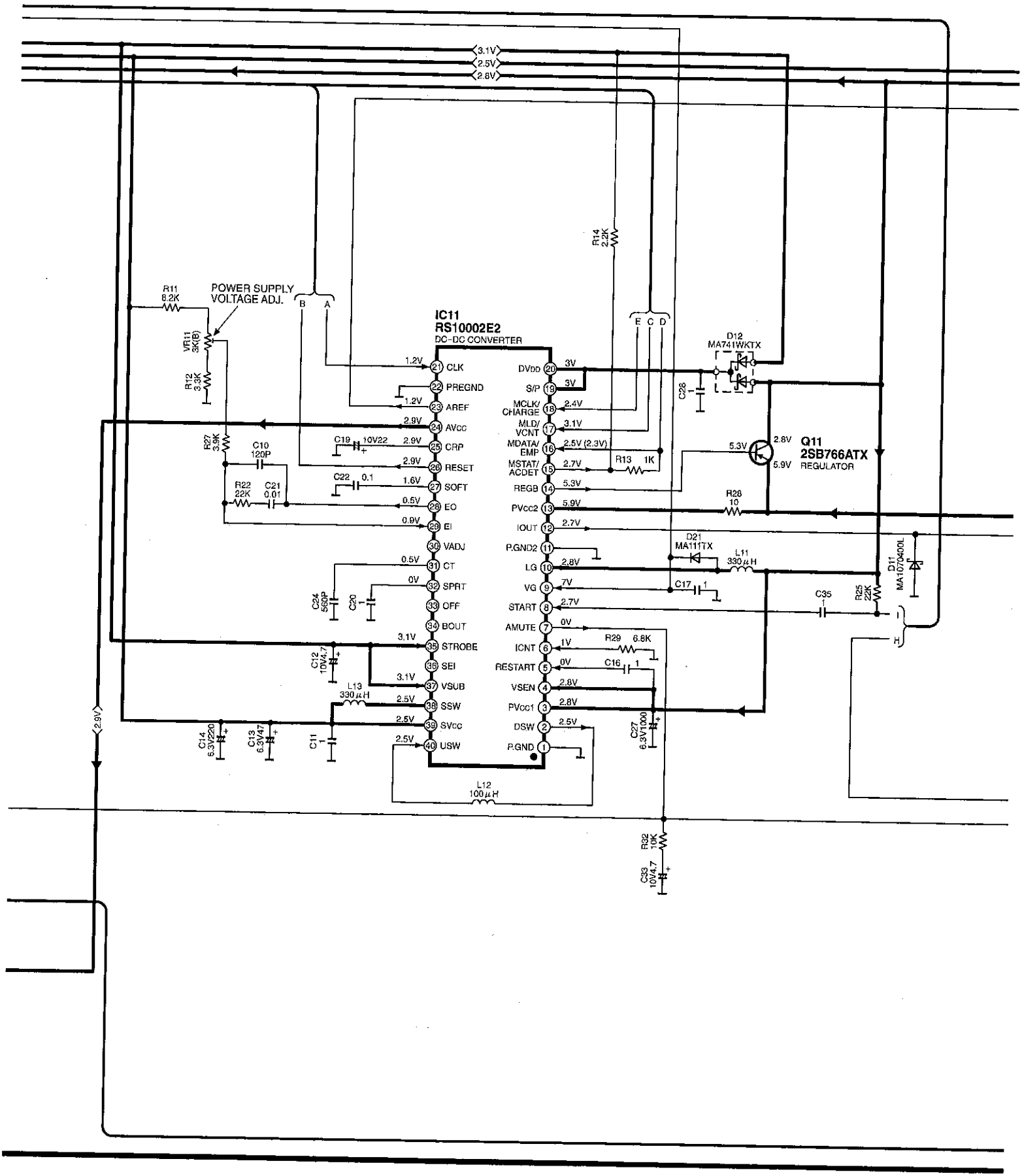

:POSITIVE VOLTAGE LINE
:AUDIO SIGNAL LINE
LCD301(EDD052CL2A4P)
LCD DISPLAY
S309 (MODE)
RESUME-NORMAL-RANDOM
S301
D301 MA142WKTX
S302 (/POWER OFF)
S303
S304
S305 (REP)
S306 (MEMORY/RECALL)
S307 (S-XBS)
S308 (A.SHOCK)
RJX302
IC301
SC502171CPB
SYSTEM CONTROL/ LCD DRIVE
BP0
RANDOM
RESUME
PLAY
STOP
SKIP.F
SKIP.R
REPEAT
MEMORY
PDOWN
MUTE
MLD
VDD
OSC
OSC1
Vss
/RESET
MCLK
SHOCK.P
MDATA/MSTAT
BLKCK
STAT
HOLD
REST
OPEN
BUZ
BP1
BP2
BP3/FP0
FP1
FP2
FP3
FP4
FP5
FP6
FP7
FP8
FP9
FP10
FP11
FP12
FP13
FP14
FP15
FP16
WLSRCN/RSENSE
WRDRCN/LCD REM
STROBE2/RDATA
STROBE1/RLCK
LIGHT
TX POWER
EQ
R905 47K
R909 47K
R907 12K
R908 39K
RJ301 0Ω
R301 3.9K
R302 100K
C301
C302
R304 1M
R303 1K
S310 (HOLD)
ON
OFF
R906 82K
3.1V
TRAVERSE UNIT
(⚠ OPTICAL PICKUP)
TRACKING COIL
FOCUS COIL
CN101
FO-
FO+
TR-
TR+
GND
LPD
VREF
PDB
GND
PDA
GND
LD.GND
LDDRV
PDE
PDF
Vcc
R114 33
R201 2.2
SHORT LAND
S201 (LASER ON/OFF)
C201 10V47
R202 22K
IC101
AN8839NSBE1
SERVO AMP
Q201
MSB709RST1
LASER POWER DRIVE
PDE
PDF
VDD
PDA
PDB
LPD
LD
RF
RFIN
CSBRT
CEA
BDO
LDON
GND
FBAL
TBAL
VREF
FEIN
FEOUT
TEOUT
TEIN
NC
ENVOFF
ENV
NC
OFTR
PDOWN
/RFOET
R122 120K
C112 220P
C113 0.1
R120 10K
C121 220P
C120 1500P
R121 120K
C111 0.022
R123 47K
C101 0.1
C115 0.022
C103 0.022
C114 0.1
C503 560P
R113 33
(VREF) TP102
(RF) TP101
PLAY
2ms. 50mV/DIV.
2ms. 0.1V/DIV.
0.5μs. 0.2V/DIV.
0.8V P-P
100mV P-P
0.6V P-P
2.5V

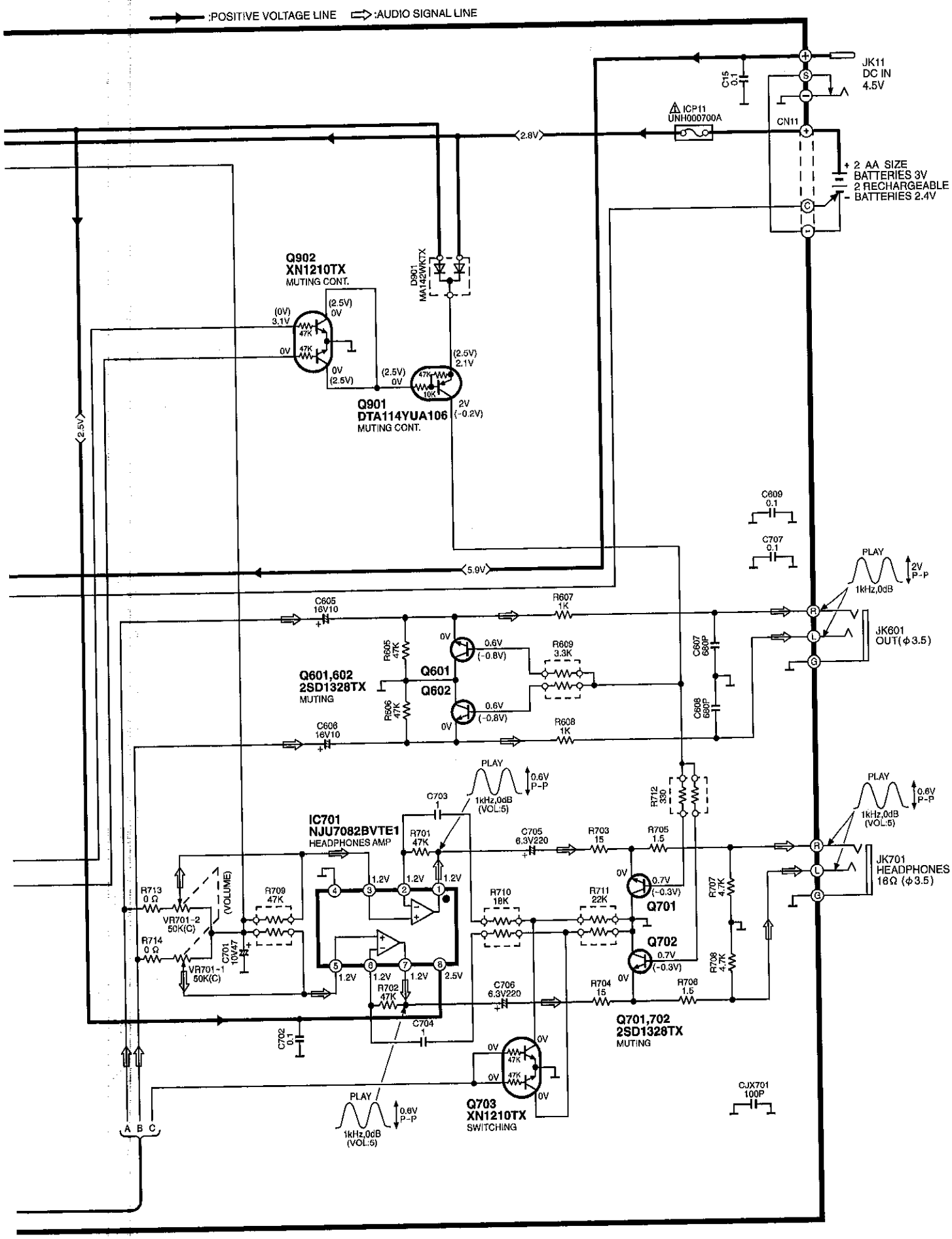
:POSITIVE VOLTAGE LINE




:POSITIVE VOLTAGE LINE
:AUDIO SIGNAL LINE
3.1V
2.5V
2.8V
IC501
MN662782RPT1
SERVO PROCESSOR / DIGITAL SIGNAL PROCESSOR / DIGITAL FILTER & D/A CONVERTER
Q603
XN1215TX
MUTING
F=16.9MHz
F=4.2336MHz
F=88.2kHz
F=75Hz
PLAY
C510 0.1
C502 5P
C501 5P
X501 (16.9MHz)
R514 680
C514 1000P
R511 4.7K
R512 2.2K
R509 22K
R510 10K
R501 68K
R502 56K
R529 100K
R601 680
R602 680
R603 560
R604 560
C601 1000P
C602 1000P
C603 2700P
C604 2700P
C504 0.1
C610 10V47
C515 0.1
C516 0.1
C517 0.1
C507 6.3V220
R508 1
TP103
(VDD)

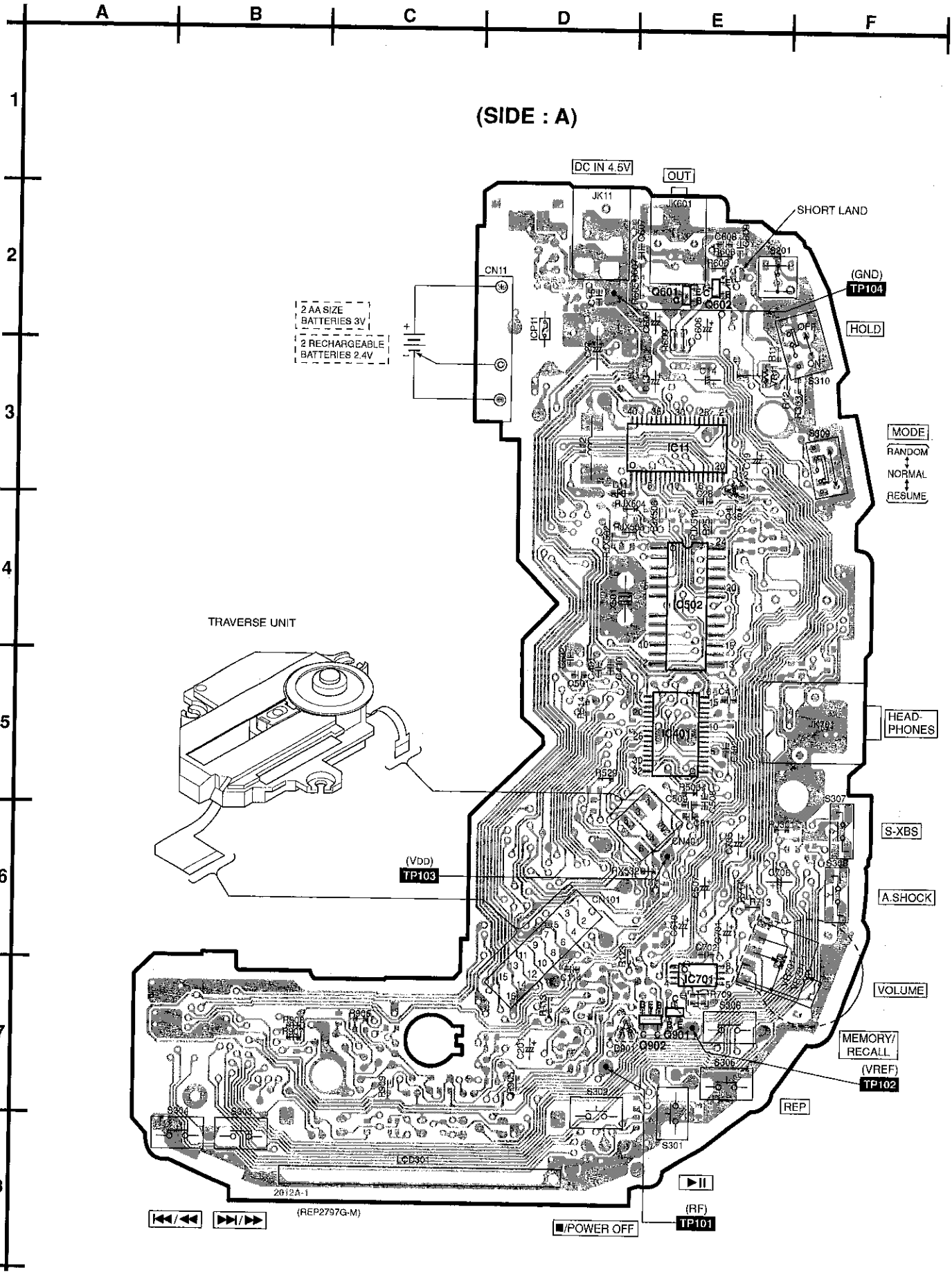
:POSITIVE VOLTAGE LINE




:POSITIVE VOLTAGE LINE
:AUDIO SIGNAL LINE
JK11
DC IN
4.5V
C15
0.1
ICP11
UNH000700A
CN11
2.8V
+ 2 AA SIZE
BATTERIES 3V
2 RECHARGEABLE
- BATTERIES 2.4V
Q902
XN1210TX
MUTING CONT.
D901
MA142WKTX
Q901
DTA114YUA106
MUTING CONT.
2.5V
5.9V
C609
0.1
C707
0.1
PLAY
1kHz,0dB
2V
P-P
JK601
OUT(φ3.5)
C605
16V10
C606
16V10
R607
1K
R608
1K
R605
47K
R606
47K
R609
3.3K
C607
680P
C608
680P
Q601,602
2SD1328TX
MUTING
Q601
Q602
0V
0.6V
(-0.8V)
C703
1
PLAY
1kHz,0dB
(VOL:5)
0.6V
P-P
IC701
NJU7082BVTE1
HEADPHONES AMP
R701
47K
C705
6.3V220
R703
15
R705
1.5
R712
330
JK701
HEADPHONES
16Ω (φ3.5)
R713
0Ω
R714
0Ω
VR701-2
50K(C)
VR701-1
50K(C)
(VOLUME)
R709
47K
C701
10V47
R710
18K
R711
22K
Q701
0.7V
(-0.3V)
Q702
R707
4.7K
R708
4.7K
C706
6.3V220
R704
15
R706
1.5
R702
47K
C704
1
C702
0.1
Q701,702
2SD1328TX
MUTING
Q703
XN1210TX
SWITCHING
CJX701
100P
A B C

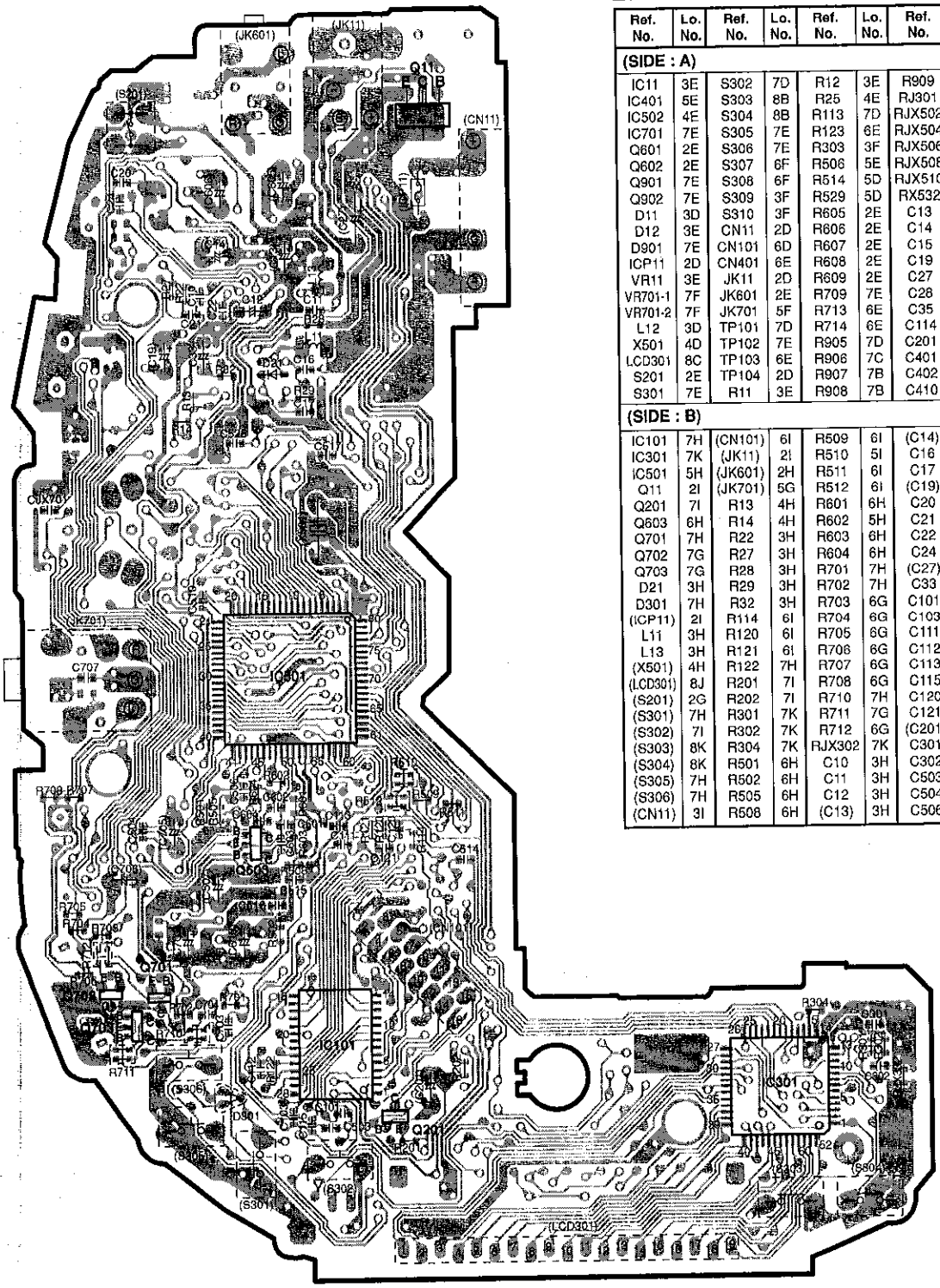
■ Printed Circuit Board and Wiring Connection Diagram

• This 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.	Ref. No.	Lo. No.
(SIDE : A)									
IC11	3E	S302	7D	R12	3E	R909	7C	C411	5E
IC401	5E	S303	8B	R25	4E	RJ301	6E	C501	5D
IC502	4E	S304	8B	R113	7D	RJX502	4D	C502	5D
IC701	7E	S305	7E	R123	6E	RJX504	4D	C507	6E
Q601	2E	S306	7E	R303	3F	RJX506	4E	C508	5E
Q602	2E	S307	6F	R506	5E	RJX508	4D	C509	5E
Q901	7E	S308	6F	R514	5D	RJX510	4E	C511	6E
Q902	7E	S309	3F	R529	5D	RX532	6E	C605	2E
D11	3D	S310	3F	R605	2E	C13	3E	C606	2E
D12	3E	CN11	2D	R606	2E	C14	3E	C607	2E
D901	7E	CN101	6D	R607	2E	C15	2D	C608	2E
ICP11	2D	CN401	6E	R608	2E	C19	3E	C609	2E
VR11	3E	JK11	2D	R609	2E	C27	3D	C610	6E
VR701-1	7F	JK601	2E	R709	7E	C28	4E	C701	6E
VR701-2	7F	JK701	5F	R713	6E	C35	4E	C702	6E
L12	3D	TP101	7D	R714	6E	C114	7D	C705	6E
X501	4D	TP102	7E	R905	7D	C201	7D	C706	6E
LCD301	8C	TP103	6E	R906	7C	C401	5D		
S201	2E	TP104	2D	R907	7B	C402	5E		
S301	7E	R11	3E	R908	7B	C410	5D		
(SIDE : B)									
IC101	7H	(CN101)	6I	R509	6I	(C14)	3H	(C507)	6H
IC301	7K	(JK11)	2I	R510	5I	C16	3H	C510	5H
IC501	5H	(JK601)	2H	R511	6I	C17	4H	C514	6I
Q11	2I	(JK701)	5G	R512	6I	(C19)	3H	C515	6H
Q201	7I	R13	4H	R601	6H	C20	2G	C516	6H
Q603	6H	R14	4H	R602	5H	C21	3H	C517	4H
Q701	7H	R22	3H	R603	6H	C22	3H	C525	4H
Q702	7G	R27	3H	R604	6H	C24	2G	C601	6H
Q703	7G	R28	3H	R701	7H	(C27)	3I	C602	6H
D21	3H	R29	3H	R702	7H	C33	3H	C603	6H
D301	7H	R32	3H	R703	6G	C101	7I	C604	6H
(ICP11)	2I	R114	6I	R704	6G	C103	7H	(C605)	2H
L11	3H	R120	6I	R705	6G	C111	6I	(C606)	2H
L13	3H	R121	6I	R706	6G	C112	7H	(C610)	6H
(X501)	4H	R122	7H	R707	6G	C113	6I	(C701)	6H
(LCD301)	8J	R201	7I	R708	6G	C115	7H	C703	7H
(S201)	2G	R202	7I	R710	7H	C120	6I	C704	7H
(S301)	7H	R301	7K	R711	7G	C121	6I	(C705)	6H
(S302)	7I	R302	7K	R712	6G	(C201)	7I	(C706)	6G
(S303)	8K	R304	7K	RJX302	7K	C301	7K	C707	5G
(S304)	8K	R501	6H	C10	3H	C302	7K	CJX701	4G
(S305)	7H	R502	6H	C11	3H	C503	7H		
(S306)	7H	R505	6H	C12	3H	C504	6H		
(CN11)	3I	R508	6H	(C13)	3H	C506	6H		

■ Measurements and Adjustments

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

• Measuring instruments and special tools

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

• Test short land

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

• Adjustment point

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

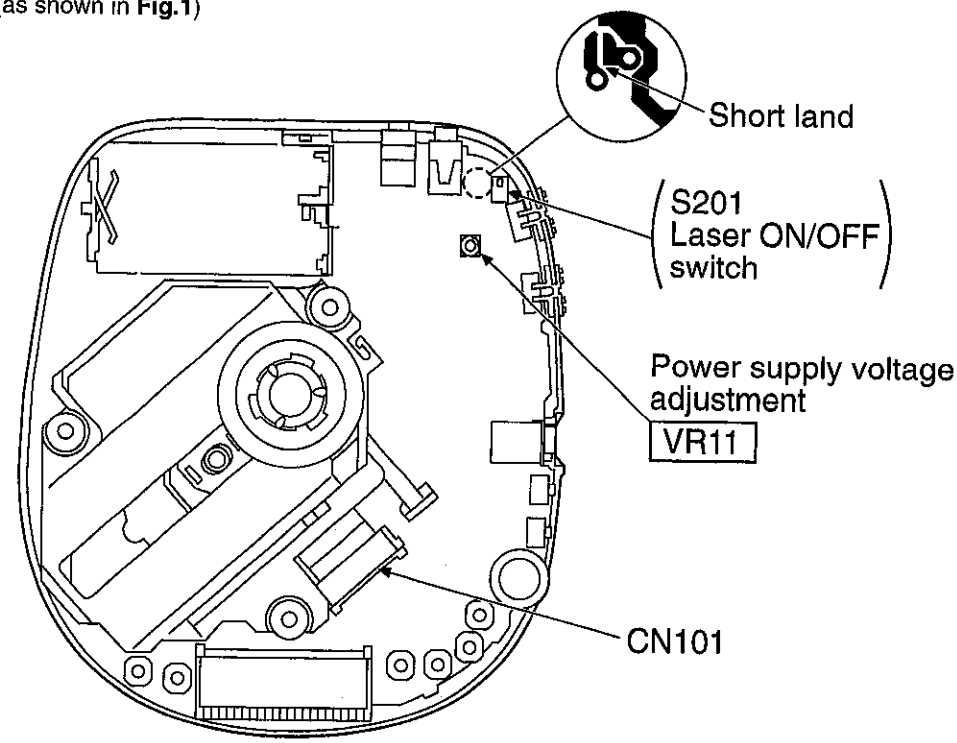


Fig. 1

• Adjustment procedure

(1) POWER SUPPLY VOLTAGE ADJUSTMENT

1. Connect the DC voltmeter to **TP103** (V_{DD}) 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 **2.45 ± 0.02V**, as shown in Fig.1.

(2) CHECK OF PLAY OPERATION

*** Checking Skip Search**

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

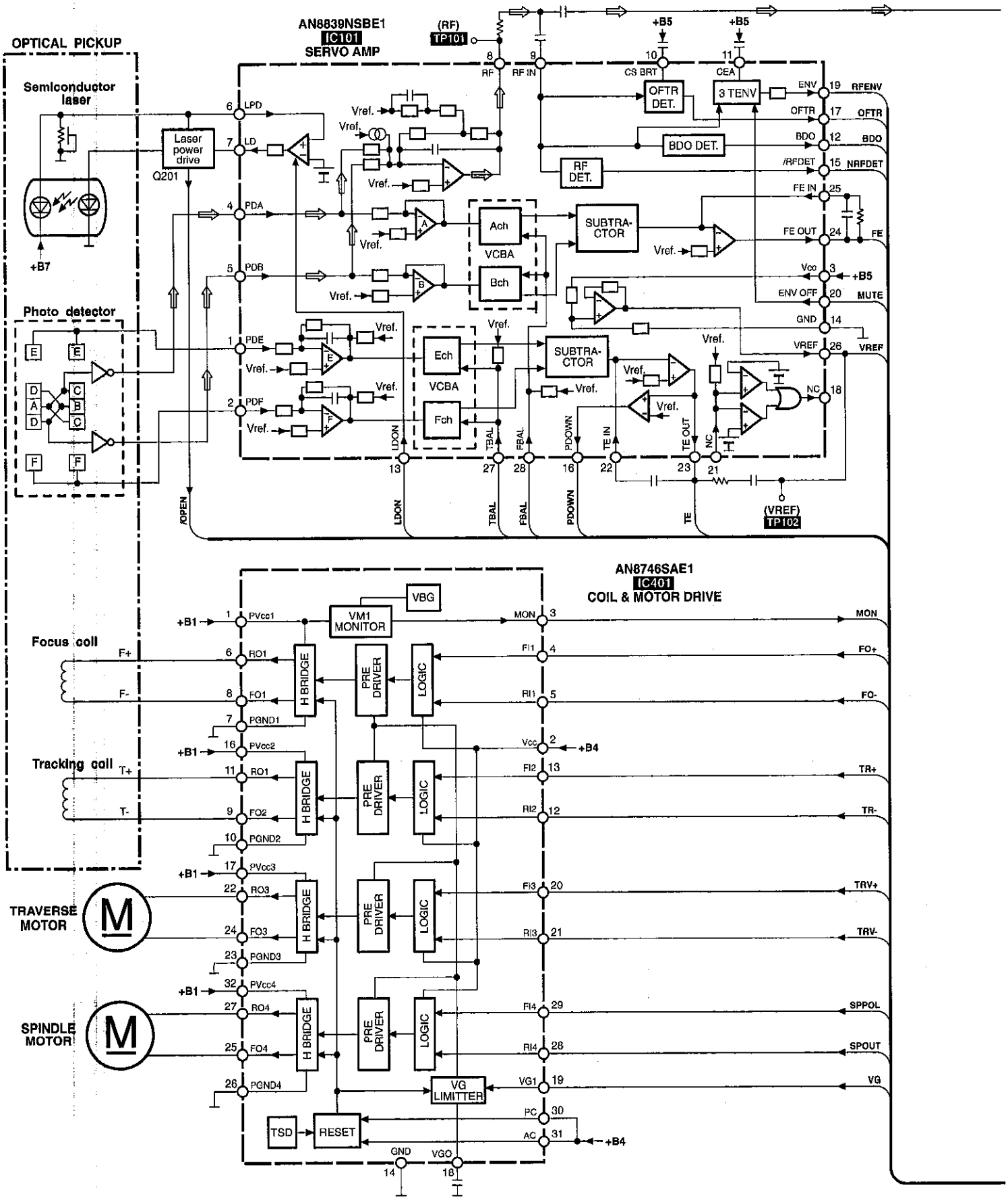
*** Checking Manual Search**

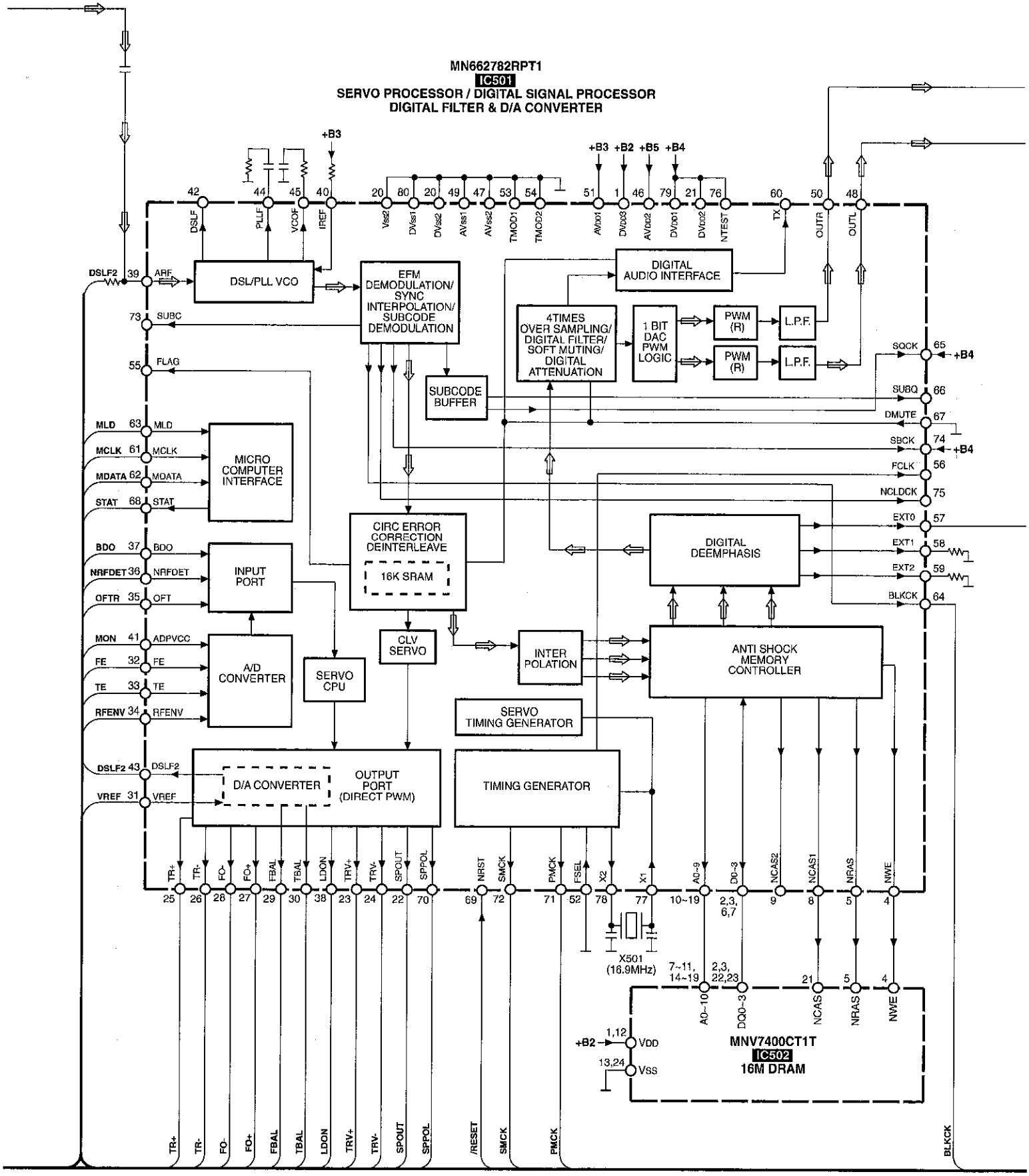
1. Play an ordinary musical program disc.
2. Press the manual search button to check for smooth manual search operations at either low or high speed (in both the forward and backward directions).

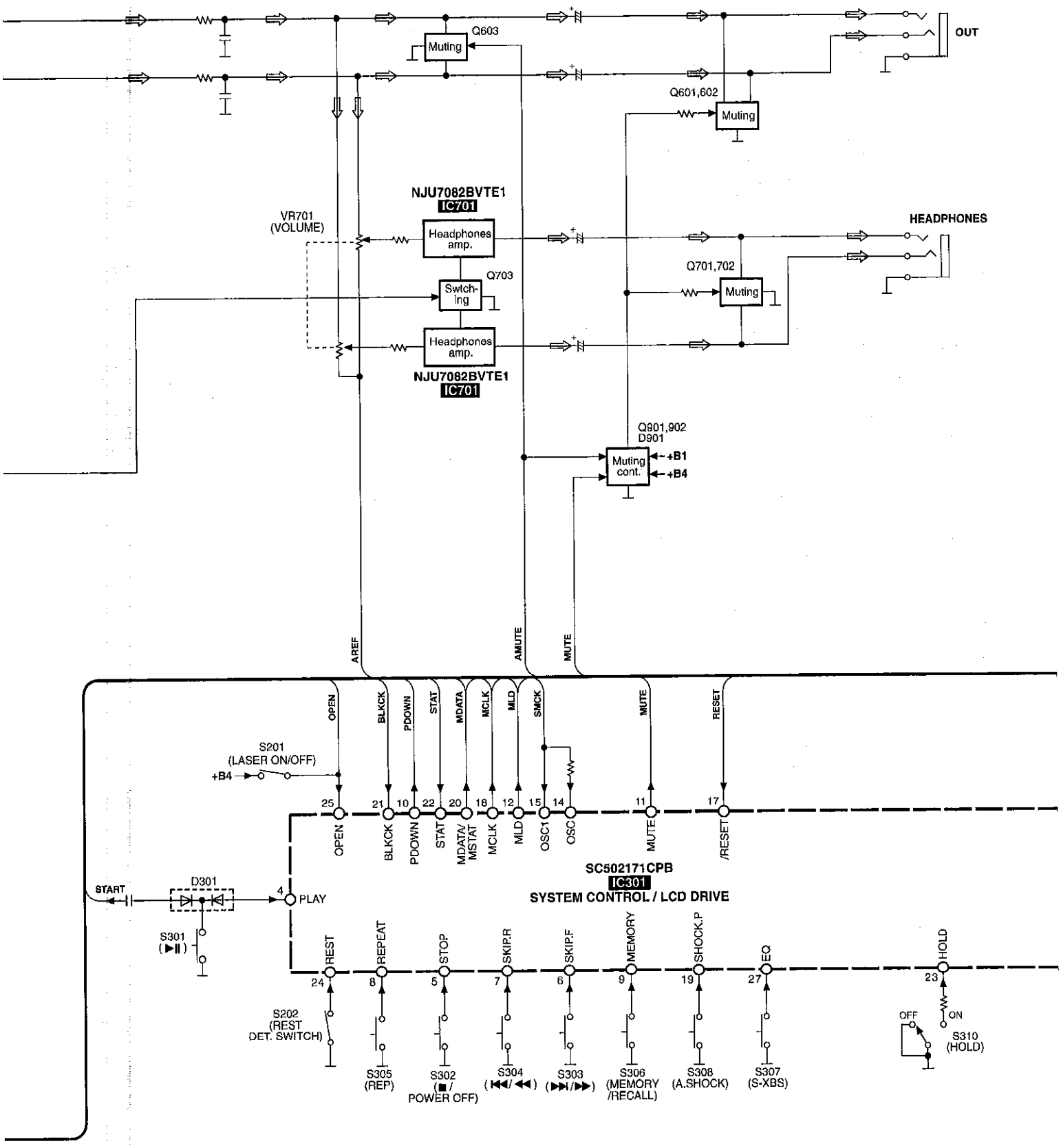
*** Checking Playability**

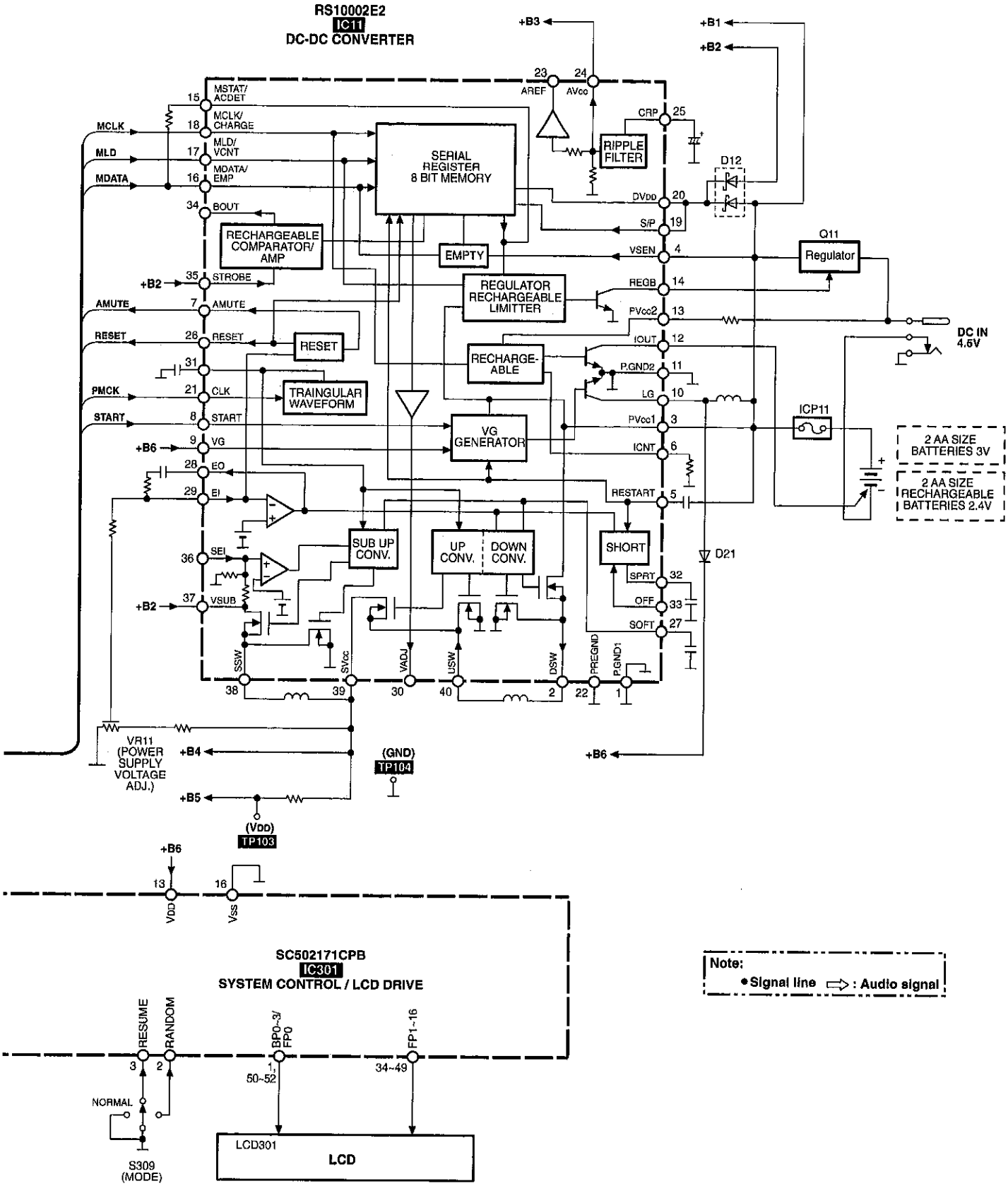
1. Play the 0.7 mm black dot and the 0.7 mm wedge on the playability test disc (SZZP1054C) and verify that no sound skip or noise occurs.
2. Play the middle tracks of the uneven test disc (SZZ1056C) and verify that no sound skip or noise occurs.

■ Block Diagram




MN662782RPT1
IC501
SERVO PROCESSOR / DIGITAL SIGNAL PROCESSOR
DIGITAL FILTER & D/A CONVERTER
DSL/PLL VCO
EFM DEMODULATION/ SYNC INTERPOLATION/ SUBCODE DEMODULATION
DIGITAL AUDIO INTERFACE
4TIMES OVER SAMPLING/ DIGITAL FILTER/ SOFT MUTING/ DIGITAL ATTENUATION
1 BIT DAC PWM LOGIC
PWM (R)
L.P.F.
SUBCODE BUFFER
MICRO COMPUTER INTERFACE
INPUT PORT
A/D CONVERTER
CIRC ERROR CORRECTION DEINTERLEAVE
16K SRAM
DIGITAL DEEMPHASIS
CLV SERVO
SERVO CPU
INTER POLATION
ANTI SHOCK MEMORY CONTROLLER
SERVO TIMING GENERATOR
TIMING GENERATOR
D/A CONVERTER
OUTPUT PORT (DIRECT PWM)
X501 (16.9MHz)
MNV7400CT1T
IC502
16M DRAM


Q603
Muting
OUT
Q601,602
Muting
NJU7082BVTE1
IC701
VR701
(VOLUME)
Headphones amp.
HEADPHONES
Q703
Swtch-ing
Q701,702
Muting
Headphones amp.
NJU7082BVTE1
IC701
Q901,902
D901
Muting cont.
+B1
+B4
AREF
AMUTE
MUTE
OPEN
BLKCK
PDOWN
STAT
MDATA
MCLK
MLD
SMCK
MUTE
RESET
S201
(LASER ON/OFF)
+B4
25
21
10
22
20
18
12
15
14
11
17
OPEN
BLKCK
PDOWN
STAT
MDATA/
MSTAT
MCLK
MLD
OSC1
OSC
MUTE
/RESET
SC502171CPB
IC301
SYSTEM CONTROL / LCD DRIVE
START
D301
4
PLAY
S301
(▶II)
REST
REPEAT
STOP
SKIP.R
SKIP.F
MEMORY
SHOCK.P
EQ
HOLD
24
8
5
7
6
9
19
27
23
S202
(REST
DET. SWITCH)
S305
(REP)
S302
(■/
POWER OFF)
S304
(⏮/◀◀)
S303
(▶▶⏭/▶▶)
S306
(MEMORY
/RECALL)
S308
(A.SHOCK)
S307
(S-XBS)
OFF
ON
S310
(HOLD)


RS10002E2
IC11
DC-DC CONVERTER
+B3
+B1
+B2
AREF
AVcc
MSTAT/ ACDET
MCLK/ CHARGE
MLD/ VCNT
MDATA/ EMP
MCLK
MLD
MDATA
SERIAL REGISTER 8 BIT MEMORY
CRP
RIPPLE FILTER
D12
DVDD
S/P
VSEN
Q11
Regulator
BOUT
RECHARGEABLE COMPARATOR/ AMP
EMPTY
REGULATOR RECHARGEABLE LIMITTER
REGB
PVcc2
STROBE
AMUTE
RESET
RECHARGE-ABLE
IOUT
P.GND2
LG
PVcc1
ICNT
RESTART
DC IN 4.5V
ICP11
2 AA SIZE BATTERIES 3V
2 AA SIZE RECHARGEABLE BATTERIES 2.4V
PMCK
CLK
TRAINGULAR WAVEFORM
START
VG
VG GENERATOR
EO
EI
SEL
VSUB
SUB UP CONV.
UP CONV.
DOWN CONV.
SHORT
D21
SPRT
OFF
SOFT
SSW
SVcc
VADJ
USW
DSW
PREGND
P.GND1
VR11 (POWER SUPPLY VOLTAGE ADJ.)
+B4
+B5
+B6
(GND)
TP104
(VDD)
TP103
SC502171CPB
IC301
SYSTEM CONTROL / LCD DRIVE
VDD
VSS
RESUME
RANDOM
BP0~3/ FP0
FP1~16
NORMAL
S309 (MODE)
LCD301
LCD
Note:
• Signal line ⇨ : Audio signal

■ Terminal Function of IC's

• IC11 (RS10002E2): DC-DC Converter

Pin No.	Terminal Name	I/O	Function
1	P.GND1	–	GND terminal
2	DSW	O	DC/DC converter coil drive terminal
3	PVcc1	I	Power supply terminal
4	VSEN	I	Empty supply terminal (Power supply terminal)
5	RESTART	I	DC/DC converter drive terminal
6	ICNT	I	Charge current setting terminal
7	AMUTE	O	Muting signal output terminal
8	START	I	DC/DC converter start terminal
9	VG	I	Power supply terminal
10	LG	I	Connected to power supply
11	P.GND2	–	GND terminal
12	IOUT	O	Charge signal output terminal
13	PVcc2	I	Power supply terminal
14	REGB	O	Regulator drive signal output terminal
15	MSTAT/ ACDET	O	DC jack detect signal output terminal
16	MDATA/ EMP	I	Decline voltage detect input terminal
17	MLD/VCNT	I	Regulator voltage select input terminal
18	MCLK/ CHARGE	I	Charge ON/OFF terminal
19	S/P	I	Serial/Parallel select terminal (Connected power supply)
20	DV_{DD}	I	Power supply terminal
21	CLK	I	Clock signal input terminal
22	PREGND	–	GND terminal
23	AREF	O	Audio reference output terminal
24	AVcc	O	Ripple filter output terminal
25	CRP	I	Connected to capacitor
26	RESET	O	Reset detect signal output terminal
27	SOFT	O	Soft start setting terminal (Connected to capacitor)
28	EO	O	DC/DC converter error amp output terminal
29	EI	I	DC/DC converter error amp input terminal
30	VADJ	–	DC/DC converter variable output terminal (Not used, open)
31	CT	O	Triangular wave output terminal (Connected to capacitor)
32	SPRT	O	Power off time-constat setting terminal (Connected to capacitor)
33	OFF	–	DC/DC converter off terminal (Not used, open)
34	BOUT	–	Amp output terminal (Not used, open)
35	STROBE	I	Strobe input terminal
36	SEI	–	Sub DC/DC converter, error amp input terminal (Not used, open)
37	VSUB	I	Power supply terminal
38	SSW		
39	SVcc		
40	USW	I	DC/DC converter coil drive terminal

• IC101 (AN8839NSBE1): 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	V_{DD}	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	PDOWN	I	Power down input terminal
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	ENVOFF	I	ENV control input terminal
21	NC	–	Not used, open
22	TEIN	I	Tracking error amp input terminal
23	TEOUT	O	Tracking error amp output terminal
24	FEOUT	O	Focus error amp output terminal
25	FEIN	I	Focus error amp input terminal
26	VREF	O	Reference voltage output terminal
27	TBAL	I	Tracking balance signal input terminal
28	FBAL	I	Focus balance signal input terminal

• IC501 (MN662782RPT1): Servo Processor / Digital Signal Processor / Digital Filter / D/A Converter

Pin No.	Terminal Name	I/O	Function
1	$DV_{DD}5V$	I	Power supply terminal
2	D0	I/O	Data 0 input/output terminal
3	D1	I/O	Data 1 input/output terminal
4	NWE	O	Write enable output terminal
5	NRAS	O	RAS control signal output terminal
6	D2	I/O	Data 2 input/output terminal
7	D3	I/O	Data 3 input/output terminal
8	NCAS1	O	CAS control 1 signal output terminal
9	NCAS2	O	Address 10 output terminal

Pin No.	Terminal Name	I/O	Function
10 ~ 14	A8 ~ A4	O	Address 8 ~ 4 output terminal
15	A9	O	Address 9 output terminal
16 ~ 19	A0 ~ A3	O	Address 0 ~ 3 output terminal
20	Vss2	–	GND terminal
21	$DV_{DD}2$	I	Power supply terminal
22	SPOUT	O	Spindle motor drive output terminal
23	TRV+	O	Traverse motor drive output terminal

Pin No.	Terminal Name	I/O	Function
24	TRV–	O	Traverse motor 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 adj. output terminal
30	TBAL	O	Tracking balance adj. output terminal
31	VREF	I	Reference voltage input terminal
32	FE	I	Focus error signal input terminal
33	TE	I	Tracking error signal input terminal
34	RFENV	I	RF envelope signal input terminal
35	OFT	I	OFF track signal input terminal ("H" : off track)
36	NRFDET	I	RF detect signal input terminal ("L" : detect)
37	BDO	I	Drop out signal input terminal ("H" : drop out)
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 converter reference voltage output
42	DSLF	–	DSL loop filter output terminal (Not used, open)
43	DSLF2	O	DSL unbalance current correction output terminal
44	PLLF	O	PLL loop filter output terminal
45	VCOF	O	Loop filter output terminal
46	$AV_{DD}2$	I	Power supply terminal
47	AVss2	–	GND terminal
48	OUTL	O	Audio Lch output terminal
49	AVss1	–	GND terminal
50	OUTR	O	Audio Rch output terminal
51	$AV_{DD}2$	I	Power supply terminal
52	FSEL	–	Noise filter select terminal ("H" : ON, "L" : OFF)

Pin No.	Terminal Name	I/O	Function
53	TMOD1	–	Terminal mode select 1 terminal ("L" : normal)
54	TMOD2	–	Terminal mode select 2 terminal ("L" : normal)
55	FLAG	–	Flag signal output terminal (Not used, open)
56	FCLK	–	Frame clock signal output terminal (Not used, open)
57	EXT0	O	Expansion port 0 output terminal
58	EXT1	O	Expansion port 1 output terminal
59	EXT2	O	Expansion port 2 output terminal
60	TX	–	Digital audio interface signal output terminal (Not used, open)
61	MCLK	I	Micon command clock signal input terminal
62	MDATA	I	Micon command data input terminal
63	MLD	I	Micon command load signal input terminal ("L" : load)
64	BLKCK	O	Sub code block clock signal output terminal (fBLKCK=75kHz)
65	SQCK	I	Sub code Q resistor clock input terminal
66	SUBQ	–	Sub code Q data output terminal (Not used, open)
67	DMUTE	I	Muting input terminal ("H" : mute)
68	STAT	O	Status signal output terminal (RESY,CLVS,NTTSTOP,SQCK,FLAG6, SENSE,NTLOCK,BSSEL,SUBQ DATA, CD TEXT DATA,ANTISHOCK LOAD DATA)
69	NRST	I	Reset input terminal ("L" : reset)
70	SPPOL	O	Spindle motor drive signal output
71	PMCK	O	Clock signal output terminal (88.2kHz)
72	SMCK	O	Clock signal output terminal (4.2336MHz)
73	SUBC	–	Sub code output terminal (Not used, open)
74	SBCK	I	Sub code output clock input terminal
75	NCLDCK	–	Sub code frame clock output terminal (f CLOCK=7.35kHz) (Not used, open)
76	NTEST	I	Test terminal ("H" : normal)
77	X1	I	Crystal oscillator input terminal (f=16.9344MHz)
78	X2	O	Crystal oscillator output terminal (f=16.9344MHz)
79	$DV_{DD}1$	I	Power supply terminal
80	DVss1	–	GND terminal

• IC301 (SC502171CPB): System Control / LCD Drive

Pin No.	Terminal Name	I/O	Function
1	BP0	O	LCD segment signal output terminal
2	RANDOM	I	RANDOM switch input terminal
3	RESUME	I	RESUME switch input terminal
4	PLAY	I	PLAY key input terminal
5	STOP	I	STOP key input terminal
6	SKIP.F	I	SKIP.F key input terminal
7	SKIP.R	I	SKIP.R key input terminal
8	REPEAT	I	REPEAT key input terminal
9	MEMORY	I	MEMORY key input terminal
10	PDOWN	O	Head amp OFF output terminal
11	MUTE	O	Hard muting output terminal
12	MLD	O	Serial command latch output terminal
13	V_{DD}	I	Power supply terminal
14	OSC	I	System clock input terminal
15	OSC1	I	System clock input terminal
16	Vss	–	GND terminal
17	/RESET	I	Reset signal input terminal
18	MCLK	O	Serial command output terminal
19	SHOCK.P	I	SHOCK.P key input terminal
20	MDATA/ MSTAT	O	Command data output terminal
21	BLKCK	I	Block clock input terminal
22	STAT	I	Status signal input terminal
23	HOLD	I	HOLD switch input terminal
24	REST	I	REST (innermost position) detection input terminal
25	OPEN	I	CD cover open detection terminal
26	BUZ	–	Beep control output terminal (Not used, open)
27	EQ	I	S-XBS key input terminal
28	TXPOWER	O	Optical Out power control signal output
29	LIGHT	–	LED power supply output (Not used, open)
30	STROBE1/ RCLK	O	Remote control clock signal output terminal
31	STROBE2/ RDATA	O	Remote control data signal output terminal
32	WRDRCN/ LCDREM	I	Remote control data signal input
33	WLSRCN/ RSENSE	I	Remote control sense signal input
34 ~ 42	FP16 ~ FP8	O	LCD segment signal output terminal
43	FP7	–	LCD segment signal output terminal (Not used, open)
44 ~ 49	FP6 ~ FP1	O	LCD segment signal output terminal
50	BP3/FP0	O	LCD segment signal output terminal
51	BP2	O	LCD segment signal output terminal
52	BP1		

■ 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.
* The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
* ALL parts are supplied by MESA.
* "<IA>, <IB>" marks in Remarks indicate language of instruction manual.
<IA>: English
<IB>: Canadian French

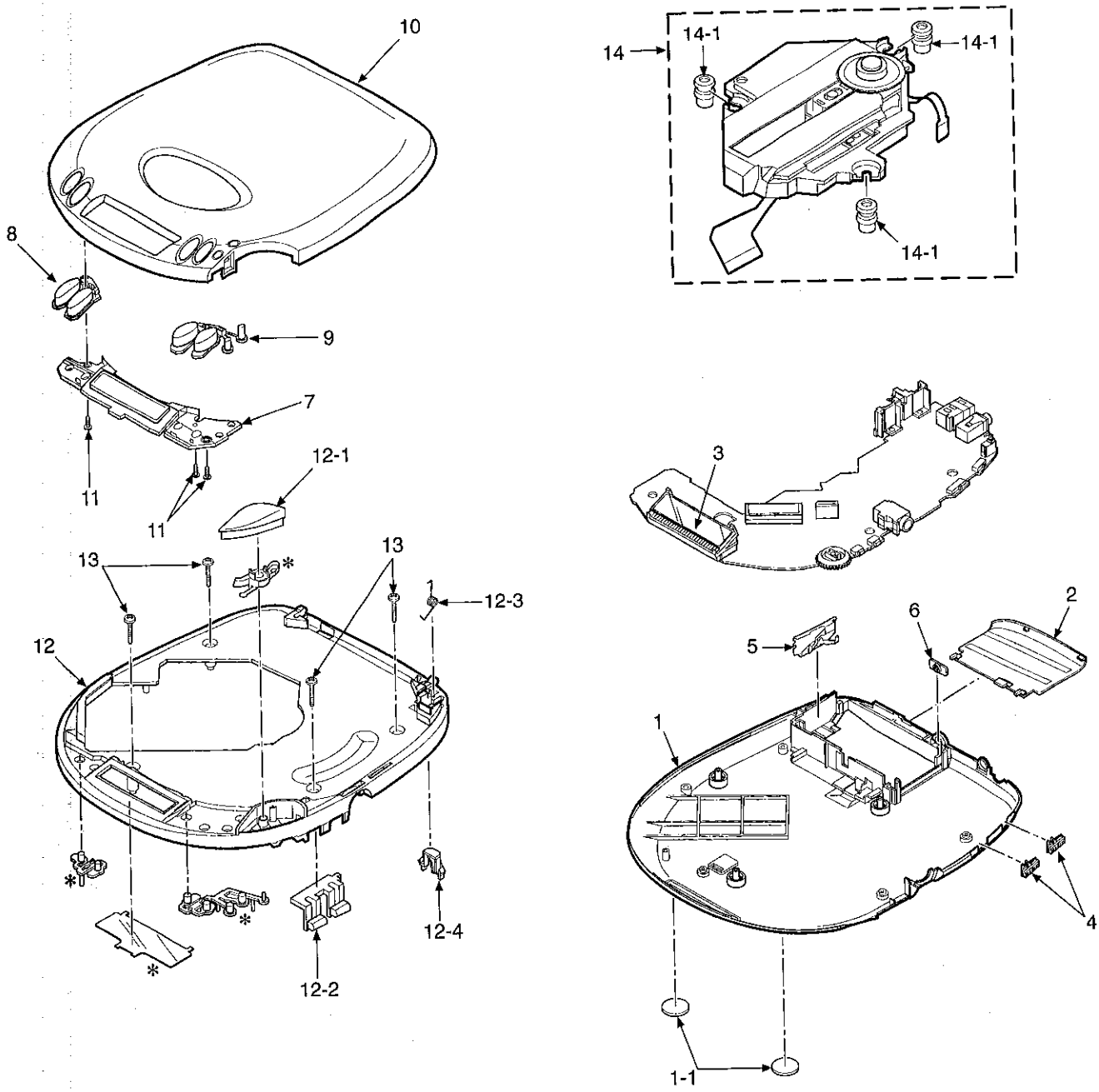
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	RFKJLS360P-S	BOTTOM CABINET ASS'Y	1	
1-1	RKA0063-K	FOOT	2	
2	RKK0102-H	BATTERY COVER	1	
3	EDD052CL2A4P	LCD(LCD301)	1	
4	RGV0200-K	KNOB,SLIDE	2	
5	RJC93020	BATTERY TERMINAL	1	
6	RMA0677	REAR ORNAMENT PLATE	1	
7	RGP0700-Q	LCD WINDOW	1	
8	RGU1705-H	BUTTON,OPERATION 1	1	
9	RGU1706-H	BUTTON,OPERATION 2	1	
10	RYF0504-S	CD LID ASS'Y	1	
11	XQN14+BG4FZ	SCREW	3	
12	RYK0896-H	INTERMEDIATE CABI.ASS'Y	1	
12-1	RGU1707-1H	BUTTON,OPEN	1	
12-2	RGU1708-H	BUTTON	1	
12-3	RME0287	SPRING	1	
12-4	RML0472	STOPPER	1	
13	XTN17+6GFZ	SCREW	4	
14	RAE0145Z	TRAVERSE DECK	1	
14-1	RMG0449-H	FLOATING RUBBER	3	
⚠ A1	RFEA415C-S	AC ADAPTOR	1	
A2	RFEV324P-KS	STEREO INSIDEPHONES	1	(PC)
A2	RFEV705P-KS	STEREO HEADPHONES	1	(P)
A3	RQT4834-P	OPERATING INSTRUCTIONS	1	<IA>
A3	RQT4835-C	OPERATING INSTRUCTIONS	1	(PC)<IB>
A4	SQX7183	WARRANTY CARD	1	(PC)
A5	RQCB0792	SERVICE CENTER LIST	1	(PC)
C10	ECUV1H121JCV	50V 120P	1	
C11	ECUVNA105ZFV	10V 1U	1	
C12	RCST1AY475RE	10V 4.7U	1	
C13	RCE0JSC470IX	6.3V 47U	1	
C14	RCE0JKA221IG	6.3V 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	
C27	RCE0JRC102BG	6.3V 1000U	1	
C28	ECUVNA105ZFV	10V 1U	1	
C33	RCST1AY475RE	10V 4.7U	1	
C35	ECUVNJ105KBV	63V 1U	1	
C101	ECUV1C104KBV	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	ECUVNE223KBV	25V 0.022U	1	
C120	ECUV1H152KBV	50V 1500P	1	
C121	ECUV1H121JCV	50V 120P	1	
C201	RCE1AKA470IG	10V 47U	1	
C301,02	ECUVNA105ZFV	10V 1U	2	
C401	ECUZNC104ZFV	16V 0.1U	1	
C402	ECUVNA105ZFV	10V 1U	1	
C410	ECUVNA105ZFV	10V 1U	1	
C411	ECUZNC104ZFV	16V 0.1U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C501,02	ECUV1H050CCV	50V 5P	2	
C503	ECUV1H561KBV	50V 560P	1	
C504	ECUZNC104ZFV	16V 0.1U	1	
C506	ECUVNA224KBV	10V 0.22U	1	
C507	RCE0JKA221IG	6.3V 220U	1	
C508	ECUV0J474KBV	6.3V 0.47U	1	
C509	ECUV1E103KBV	25V 0.01U	1	
C510,11	ECUZNC104ZFV	16V 0.1U	2	
C514	ECUV1H102KBV	50V 1000P	1	
C515-17	ECUZNC104ZFV	16V 0.1U	3	
C525	ECUZNC104ZFV	16V 0.1U	1	
C601,02	ECUV1H102KBV	50V 1000P	2	
C603,04	ECUV1H272KBV	50V 2700P	2	
C605,06	ECEA1CKS100	16V 10U	2	
C607,08	ECUV1H681KBV	50V 680P	2	
C609	ECUZNC104ZFV	16V 0.1U	1	
C610	RCE1AKA470IG	10V 47U	1	
C701	RCE1AKA470IG	10V 47U	1	
C702	ECUZNC104ZFV	16V 0.1U	1	
C703,04	ECUVNJ105KBV	63V 1U	2	
C705,06	ECA0JAK221XH	6.3V 220U	2	
C707	ECUZNC104ZFV	16V 0.1U	1	
CJX701	ECUV1H101KCV	CHIP JUMPER	1	
CN11	RJH8303	CONNECTOR	1	
CN101	RJS2A4716M1	CONNECTOR(16P)	1	
CN401	RJS2A5106T1	CONNECTOR(6P)	1	
D11	MA1070400L	DIODE	1	
D12	MA741WKTX	DIODE	1	
D21	MA111TX	DIODE	1	
D301	MA142WKTX	DIODE	1	
D901	MA142WKTX	DIODE	1	
IC11	RS10002E2	IC	1	
IC101	AN8839NSBE1	IC	1	
IC301	SC502171CPB	IC	1	
IC401	AN8746SAE1	IC	1	
IC501	MN662782RPT1	IC	1	
IC502	MNV7400CT1T	IC	1	
IC701	NJU7082BVTE1	IC	1	
⚠ ICP11	UNH000700A	IC PROTECTOR	1	
JK11	RJJ43K09-C	JACK,DC IN	1	
JK601	RJJD3S5ZB-C	JACK,OUT	1	
JK701	RJJ33TK07-C	JACK,HEADPHONES	1	
L11	RLQU331KT-W	COIL	1	
L12	RLQS101KT1-T	COIL	1	
L13	RLQU331KT-W	COIL	1	
P1	RPN1192	TRAY	1	(P)
P2	RPN1193	COVER	1	(P)
P3	RPQ0916	MOUNT	1	(P)
P4	RPK1222	PACKING CASE	1	(PC)
P5	RPQ0819	PAD	1	(PC)
P6	RPQ0836-1	PAD	1	(PC)
P7	RPF0046	PROTECTION COVER	1	(PC)
P8	RPF0111	PROTECTION COVER	1	(PC)
Q11	2SB766ATX	TRANSISTOR	1	
Q201	MSB709RST1	TRANSISTOR	1	
Q601,02	2SD1328QRSTX	TRANSISTOR	2	
Q603	XN1215TX	TRANSISTOR	1	
Q701,02	2SD1328QRSTX	TRANSISTOR	2	
Q703	XN1210TX	TRANSISTOR	1	
Q901	DTA114YUA106	TRANSISTOR	1	
Q902	XN1210TX	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	ERJ3GEYJ223V	1/16W 22K	1	
R27	ERJ3GEYJ392V	1/16W 3.9K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R28	ERJ3GEYJ100V	1/16W 10	1	
R29	ERJ3GEYJ682V	1/16W 6.8K	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	
R123	ERJ3GEYJ473V	1/16W 47K	1	
R201	ERJ3GEYJ2R2V	1/16W 2.2	1	
R202	ERJ3GEYJ223V	1/16W 22K	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	
R501	ERJ3GEYJ683V	1/16W 68K	1	
R502	ERJ3GEYJ563V	1/16W 56K	1	
R505	ERJ3GEYJ391V	1/16W 390	1	
R506	ERJ3GEYJ222V	1/16W 1	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	
R514	ERJ3GEYJ681V	1/16W 680	1	
R529	ERJ3GEYJ104Z	1/16W 100K	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	
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	1/16W 0	2	
R905	ERJ3GEYJ473V	1/16W 47K	1	
R906	ERJ3GEYJ823V	1/16W 82K	1	
R907	ERJ3GEYJ123V	1/16W 12K	1	
R908	ERJ3GEYJ393V	1/16W 39K	1	
R909	ERJ3GEYJ473V	1/16W 47K	1	
RJ301	ERJ3GEY0R00V	CHIP JUMPER	1	
RJX302	ERJ3GEY0R00V	CHIP JUMPER	1	
RJX502	ERJ3GEY0R00V	CHIP JUMPER	1	
RJX504	ERJ3GEY0R00V	CHIP JUMPER	1	
RJX506	ERJ3GEY0R00V	CHIP JUMPER	1	
RJX508	ERJ3GEY0R00V	CHIP JUMPER	1	
RJX510	ERJ3GEY0R00V	CHIP JUMPER	1	
RX532	ERJ3GEYJ104Z	1/16W 100K	1	
S201	ESE11SV6	SW,LASER ON/OFF	1	
S301-06	EVQ11G05R	SW,PUSH	6	
S307,08	EVQPUM02K	SW,PUSH	2	
S309	RSS3A007-1A	SW,MODE	1	
S310	RSS2A010-1A	SW,HOLD	1	
VR11	RRN3A05B33WL	V.R. P.SUPPLY VOLT.ADJ.	1	
VR701	EVUTUFB11C54	V.R. VOLUME	1	
X501	RSXZ16M9M01T	OSCILLATOR	1	

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

■ Cabinet Parts Location



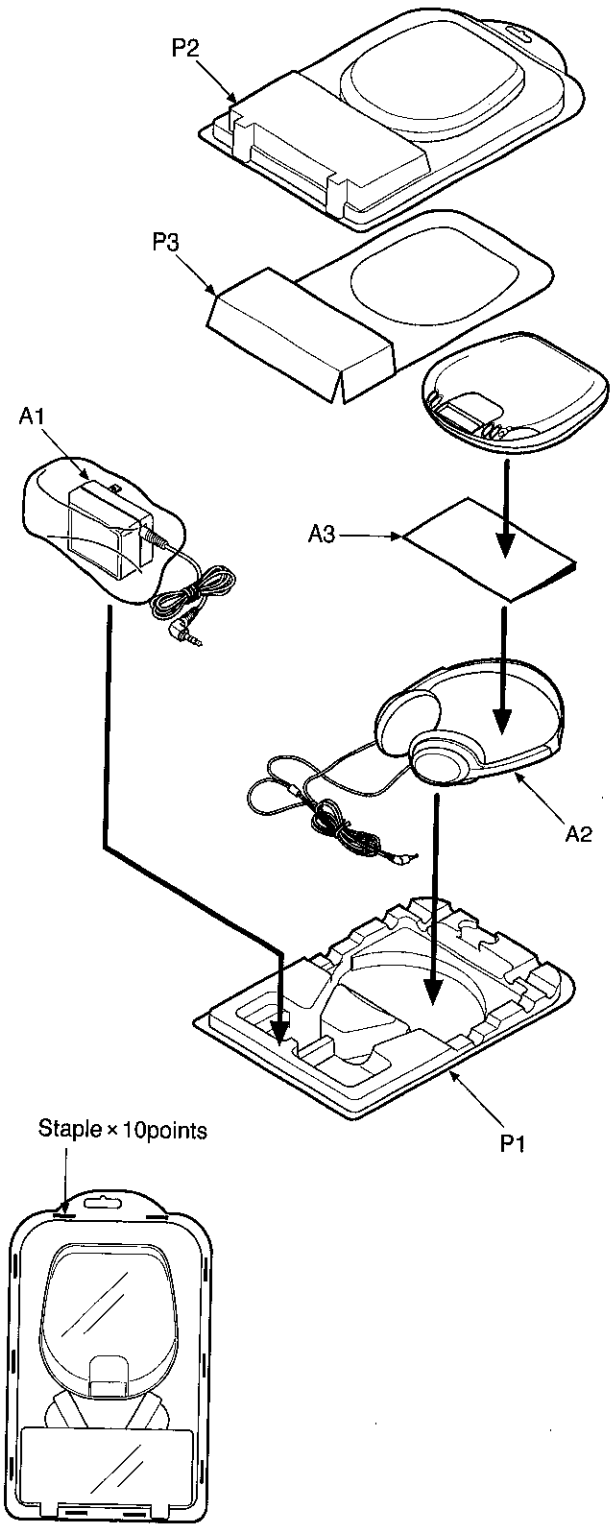
Note: We do not supply those items of parts marked *.

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	RFKJLS360P-S	BOTTOM CABINET ASS'Y	1	
1-1	RKA0063-K	FOOT	2	
2	RKK0102-H	BATTERY COVER	1	
3	EDD052CL2A4P	LCD(LCD301)	1	
4	RGV0200-K	KNOB,SLIDE	2	
5	RJC93020	BATTERY TERMINAL	1	
6	RMA0677	REAR ORNAMENT PLATE	1	
7	RGP0700-Q	LCD WINDOW	1	
8	RGU1705-H	BUTTON,OPERATION 1	1	
9	RGU1706-H	BUTTON,OPERATION 2	1	

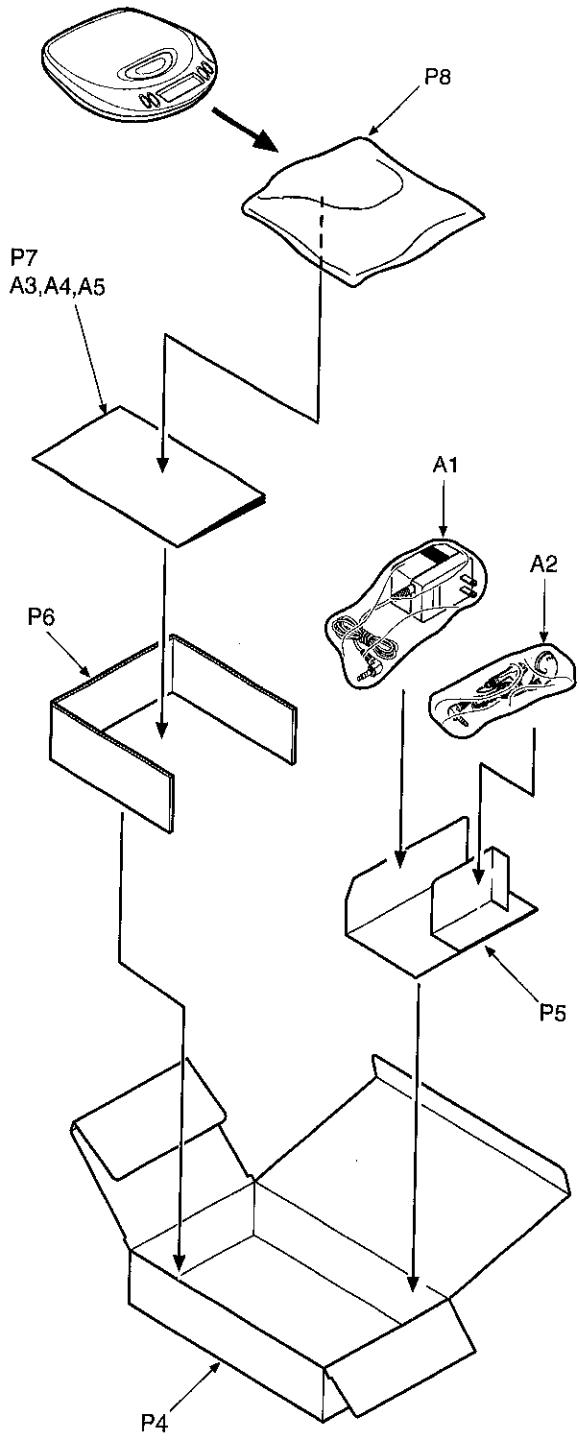
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
10	RYF0504-S	CD LID ASS'Y	1	
11	XQN14+BG4FZ	SCREW	3	
12	RYK0896-H	INTERMEDIATE CABI.ASS'Y	1	
12-1	RGU1707-1H	BUTTON,OPEN	1	
12-2	RGU1708-H	BUTTON	1	
12-3	RME0267	SPRING	1	
12-4	RML0472	STOPPER	1	
13	XTN17+6GFZ	SCREW	4	
14	RAE0145Z	TRAVERSE DECK	1	
14-1	RMG0449-H	FLOATING RUBBER	3	

■ Packaging

SL-S360(P)



SL-S360(PC)



Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
⚠ A1	RFEA415C-S	AC ADAPTOR	1	
A2	RFEV324P-KS	STEREO INSIDEPHONES	1	(PC)
A2	RFEV705P-KS	STEREO HEADPHONES	1	(P)
A3	RQT4834-P	OPERATING INSTRUCTIONS	1	<IA>
A3	RQT4835-C	OPERATING INSTRUCTIONS	1	(PC)<IB>
A4	SQX7183	WARRANTY CARD	1	(PC)
A5	RQCB0792	SERVICE CENTER LIST	1	(PC)

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
P1	RPN1192	TRAY	1	(P)
P2	RPN1193	COVER	1	(P)
P3	RPQ0916	MOUNT	1	(P)
P4	RPK1222	PACKING CASE	1	(PC)
P5	RPQ0819	PAD	1	(PC)
P6	RPQ0836-1	PAD	1	(PC)
P7	RPF0046	PROTECTION COVER	1	(PC)
P8	RPF0111	PROTECTION COVER	1	(PC)

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