

Service Manual

COMPACT
disc
DIGITAL AUDIO

DIGITAL

MASH
multi-stage noise shaping

Portable CD Player

SL-XP170



Colour

(K)... Black Type

Area

Suffix for Model No.	Area	Colour
(E)	Europe.	(K)
(EB)	Great Britain.	
(EG)	Germany and Italy.	
(GC)	Asia, Latin America, Middle Near East and Africa.	
(GN)	Oceania.	

TRAVERSE DECK: RAE0133Z MECHANISM SERIES

SPECIFICATIONS

Audio

No. of channels:	2 channels (left and right, stereo)
Output voltage:	0.6V (50k Ω) ϕ 3.5 stereo mini jack
Frequency response:	20~20,000Hz (+0.5dB, -1.5dB)
S/N:	more than 94dB
Wow and flutter:	Below measurable limit
Digital filter:	8 times over sampling
DA converter:	MASH* (1 bit, 4 DAC)
Headphone output level:	max. 9mW+9mW/16 Ω (variable) stereo mini jack ϕ 3.5

Signal Format

Correction system:	Technics New Super Decoding Algorithm
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Pickup

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

Playing time;

(When the unit is used at 25°C on a flat and stable surface.)

Rechargeable batteries	About 3 hours
Panasonic Dry cell alkaline batteries	About 8 hours

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

Recharging time;

About 3 hours

- ※
- Technics (or Panasonic) developed the world's first MASH type DAC and ADC. MASH technology was invented by NTT (LSI Labs).
 - MASH is a trademark of NTT.

General

Power requirement:

AC; with an included panasonic AC adaptor
(RFEA401E-1S): (E, EG)
(RFEA404B-W): (EB)
(RFEA402Z-W): (GC)
(RFEA404A-W): (GN)
Batteries; 3V (two "AA" size batteries, not included)
(Panasonic R6P/LR6 or equivalent, not included)
Rechargeable Batteries; DC 2.4V with an optional Panasonic Rechargeable Batteries (SH-CDB8D) $\times$ 2
Car Battery; with an optional panasonic car adaptor (SH-CDC9)
4.5V $\diamond$ $\ominus$ $\oplus$

DC IN:

Power consumption:

AC adaptor; 2.7W
Battery; 0.7W

Dimensions (W $\times$ H $\times$ D): 128 $\times$ 30.3 $\times$ 152mm
Weight: 260g without batteries
300g with batteries

Note: Design and specifications are subject to change without notice.
Weight and dimensions are approximate.

Technics

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PRECAUTION OF LASER DIODE

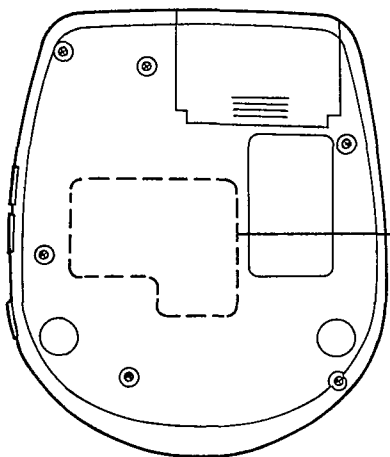
CAUTION: This product utilizes a laser diode with the unit turned “on”, invisible laser radiation is emitted from the pickup lens.
Wave length: 780nm
Maximum output radiation power from pickup: 100μW/VDE
Laser radiation from the pickup lens is safety level, but be sure the followings:

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

ACHTUNG: Dieses Produkt enthält eine Lasereinheit. Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Lasereinheit abgestrahlt.
Wellenlänge: 780nm
Maximale Strahlungsleistung der Lasereinheit: 100μW/VDE
Die Strahlung an der Lasereinheit ist ungefährlich, wenn folgende Punkte beachtet werden:

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

ADVARSEL: I dette a apparat anvendes laser.



(Bottom side)

RQLS0077-1

CLASS 1
LASER PRODUCT

ADVARSEL: USYNLIG LASERSTRÅLING
VED ÅBNING. NÅR SIKKERHEDSAF-
BRYDERE ER UDE AF FUNKTION.
UNDGÅ UDSÆTTELSE FOR STRÅLING.

VORSICHT: Unsichtbare
Laserstrahlung, wenn
Abdeckung geöffnet und
Sicherheitsverriegelung
überbrückt. Nicht dem
Strahl aussetzen.

DANGER: Invisible laser
radiation when open
and interlock defeated.
AVOID DIRECT EX-
POSURE TO BEAM.

ADVARSEL! Usynlig
laserstråling når deksel
åpnes og sikkerhedsfås
brytes. Unngå
eksponering for strålen.
RQLS0077-1

VARO! Avattaessa ja
suojalukitus ohitettaessa
olet alttiina näkymätön
lasersäteilylle.
Älä katso säteeseen.

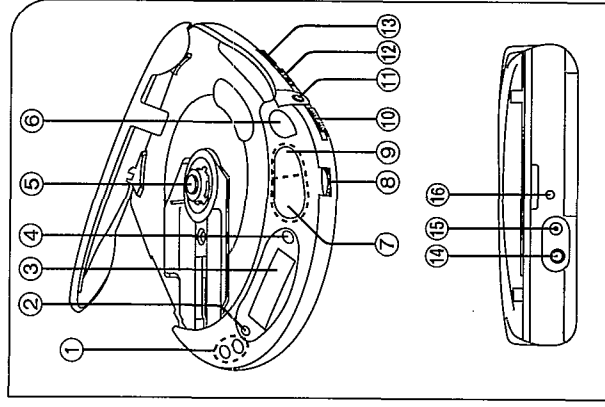
VARNING! Osynlig
laserstråling når denna
del är öppnad och
spärren är urkopplad.
Betrakta ej strålen.

- 2 -

LOCATION OF CONTROLS

Portable CD player

- 1 Skip/search buttons (◀◀-SKIP/-SEARCH▶▶)
- 2 Memory/recall button (MEMORY/RECALL)
- 3 Display
- 4 Repeat button (REPEAT)
- 5 Push button (PUSH)
- 6 Open button (OPEN)
- 7 Play/pause button (▶ II)
- 8 Headphones volume control (VOLUME)
- 9 Stop/operation off button (■/OPR OFF)
- 10 HIGH FILTER/XBS selector (HIGH FILTER, XBS, OFF)
- 11 Headphones jack (⌀) 16Ω φ3.5
- 12 Play mode selector (MODE)
- 13 Hold switch (HOLD)
- 14 Out jack (OUT)
- 15 DC in jack (DC IN 4.5 V ◇-◇)



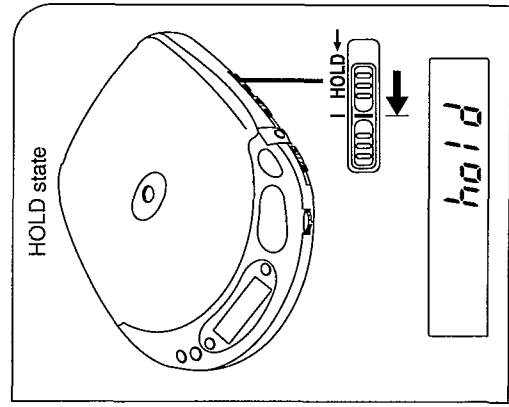
16 Hole for car insulator mounting screw

ACCIDENTAL OPERATION PREVENTION FUNCTION

When this function is in use, the unit will not operate even if a control button is accidentally pressed. (The disc lid, however, can still be opened and closed.) Use this function to prevent the following types of situations.

- While the unit is not in use, the unit is turned on and the batteries become worn down.
- While the unit is in use, the music being played gets turned off.

To use the accidental operation prevention function
Set HOLD to the HOLD state, as shown in the diagram.



Before operation

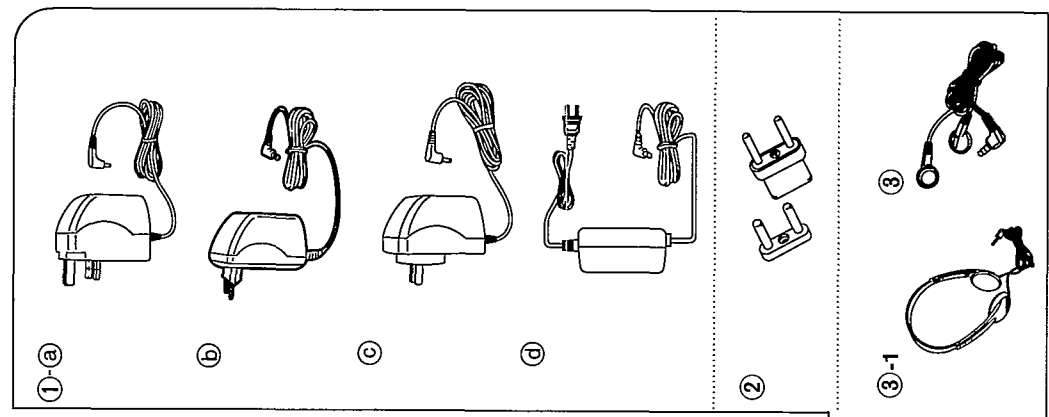
Be sure to move the hold switch to the position opposite the HOLD position and release the unit from the **HOLD** state.

The HOLD indicator
If "hold" appears on the display when the control buttons on the unit are pressed, this indicates that the unit is in the hold state.

In the OPR OFF mode:
This indicator only appears when **II** is pressed.

ACCESSORIES

- 1 AC adaptor 1 pc.
 - a [For (EB) area.] RFEA404B-W
 - b [For (E, EG) areas.] RFEA401E-1S
 - c [For (GN) area.] RFEA404A-W
 - d [For (GC) area.] RFEA402Z-W
- 2 Power plug adaptor 1 pc. (RJP120ZDS-K) [For (GC) area.]
- 3-1 Stereo headphones 1 pc. (RP-HT103DTYS) [For (E, EB, EG) areas.]
- 3-2 Stereo earphones 1 pc. (RFEV306A-KS) [For (GC, GN) areas.]
- 4 Stereo connection cable 1 pc. (RUL2P001X10) [For (GC, GN) areas.]



POWER SOURCE

AC Adaptor

Before use **A**

[For (GC) area.]

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

Connect the AC adaptor. **B**

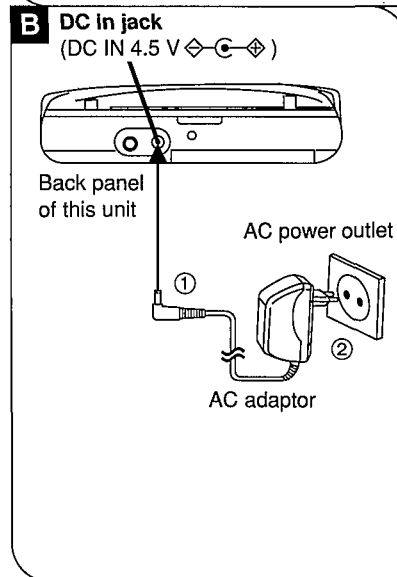
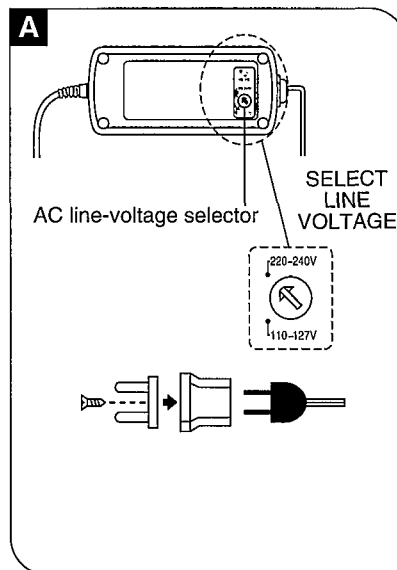
Use only the AC adaptor provided with this unit.

CAUTION

Do not use the AC adaptor provided with this unit for other products.

Note:

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



Dry cell batteries (not included)

Install two LR6 (UM-3) type alkaline batteries as shown in the figure. **A**

Make sure that the AC adaptor is disconnected from the AC power outlet and the unit.

■ If the battery lid comes off **B**

Slide it back into place horizontally.

■ Battery removal **C**

Press and pull up batteries in the direction of the arrow to remove them.

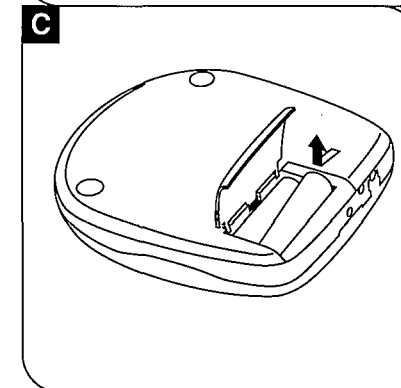
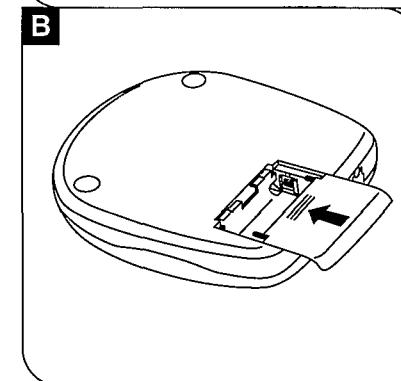
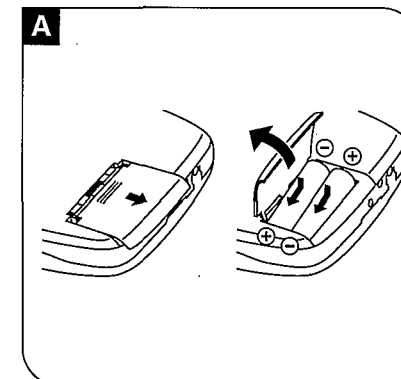
Be sure to do this with the unit is turned off.

Car adaptor

CAUTION

Use only car adaptor, Model: SH-CDC9 or SH-CDC2, manufactured by Matsushita Electric Industrial Co., Ltd.

For installations details, refer to the operating instructions for the SH-CDC9. The rechargeable batteries can be recharged with the car adaptor.



**Rechargeable batteries
(not included)**

Make sure that the batteries have been charged before use.

- **Recharging batteries**
Install two rechargeable batteries.

A Only the SH-CDB8D batteries can be recharged.

Connect the AC adaptor. B
It takes about 3 hours to fully recharge them.

While recharging, the AC adaptor and rechargeable batteries may get warm. This is normal.

After completing recharging the batteries, disconnect the AC adaptor from the DC in jack and the AC power outlet.

For (GC) area.

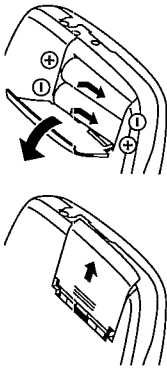
If the power supply in your area is 110 V or 220 V, the time for complete recharging takes 5 hours, which is different from the time described in this booklet.

■ **Battery removal C**

Press and pull up batteries in the direction of the arrow to remove them.

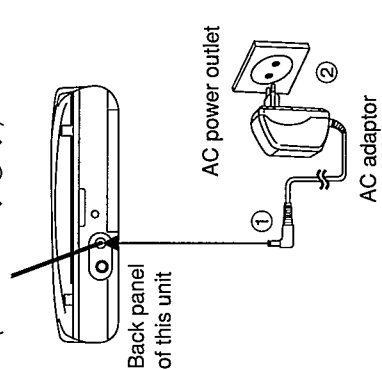
- The batteries can be used for about 10 months (300 times) if it is recharged every day. After that, their operating time will be shortened, and you will need to replace them.
- You can operate the unit with the AC adaptor while recharging the batteries, but it will lengthen the recharging time.

A

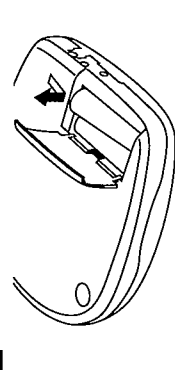


B

DC in jack
(DC IN 4.5 V ⬡ G ⬡)



C



When purchasing rechargeable batteries A

In order to ensure your safety, our portable CD players are constructed in such a way as to prevent ordinary batteries from being recharged. If the unit is to be operated on rechargeable batteries, please obtain the ones which have been specially designed for use with this unit.

Specially designed rechargeable batteries:
SH-CDB8D (set of 2)
For details, please check with your dealer.

Battery indicator B

When the indicator flashes, the battery is fully-used.

In a short while, the unit is automatically turned off.

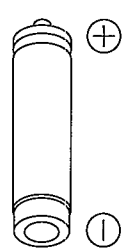
(The length of time the unit can continue to play after the indicator has started flashing depends on the type of battery.)

Type of battery	Remedial action
Rechargeable batteries	Recharge the batteries
Dry cell batteries	Replace the batteries

(There may be cases in which the battery indicator does not flash if rechargeable batteries other than the specified type are used.)

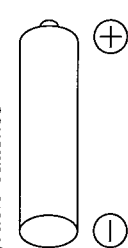
A

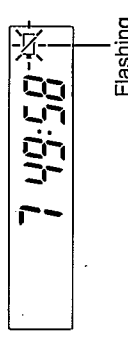
Specially designed rechargeable batteries



B

Generally available dry cell batteries/rechargeable batteries





■ USING THE UNIT WITH OPTIONAL ACCESSORIES

Listening through an audio system **A**

Discs can be played as part of an audio system by connecting this unit to the system using the stereo connection cable.

- Before connecting this unit to your audio system, make sure to turn off the unit on all other system components.
- Do not connect the cable to the turntable (PHONO) connectors on the amplifier.
- If you have an amplifier which is equipped with mini phone jack, obtain the optional connecting cable (RP-CA102A).

Using the unit together with a car audio system **B**

The car kit, available as an optional accessory, makes it possible to listen to CDs in a car.

The structure of the cassette adaptor may not allow connection to some car audio systems.

■ What should be purchased

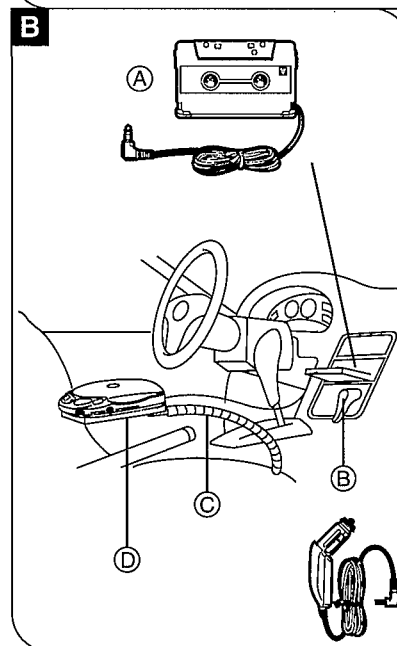
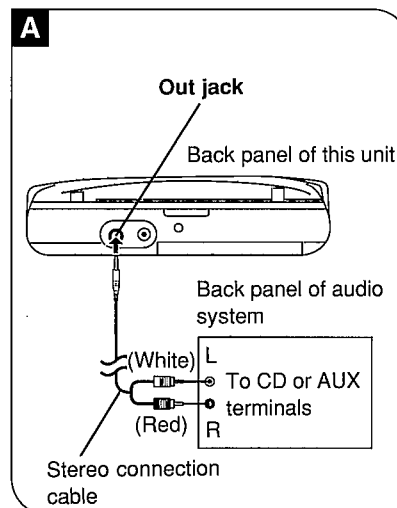
For connection to the car audio system:
Car stereo cassette adaptor (SH-CDM9)

A

For securing the unit and connecting the power supply:

- Car adaptor (SH-CDC9) **B**
- Car mount kit (SH-CDF7)
- Car mounting arm **C**, Car insulator **D**

For further details, refer to the operating instructions of the respective products.



■ TROUBLESHOOTING GUIDE

Before requesting service for this unit, check the chart below for a possible cause of the problem you are experiencing. Some simple checks or a minor adjustment on your part may eliminate the problem and restore proper operation.

If you are in doubt about some of the check points, or if the remedies indicated in the chart do not solve the problem, refer to the directory of Authorized Service Centers (enclosed with this unit) to locate a convenient service center, or consult your dealer for instructions.

Problem	Probable cause(s)	Suggested remedy
The disc lid does not close.	The disc is not fixed properly.	Fix the disc properly.
The unit will not play.	The hold switch is set to HOLD.	Release the hold state.
	Moisture has formed inside the unit.	Allow the unit to dry for about one hour before using.
The disc in the unit does not play.	The disc does not fit into the pivot.	Push the disc gently until it clicks.
	The disc is scratched.	Replace the disc with a new one.
	The disc is not within specified standards.	Exchange the disc for another one.
The disc in the unit is not removed.	The disc is fixed.	Open the disc lid and press PUSH.
There is noise from the tuner or disturbance on the TV screen.	Caused by high-frequency signals of this unit.	Use the unit farther away from the tuner or TV.
		If the tuner or TV antenna is the indoor type, use an outdoor antenna.

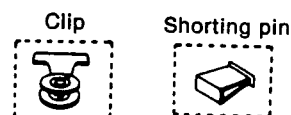
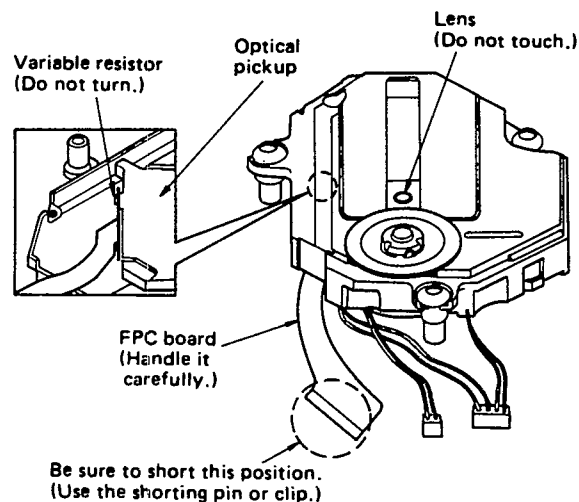
HANDLING PRECAUTIONS FOR TRAVERSE DECK

The laser diode in the traverse deck (optical pickup) may break down due to potential difference caused by static electricity of clothes or human body.

So, be careful of electrostatic breakdown during repair of the traverse deck (optical pickup).

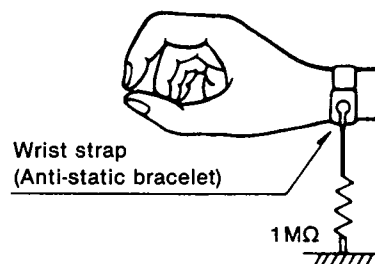
• Handling of traverse deck (optical pickup)

1. Do not subject the traverse deck (optical pickup) to static electricity as it is extremely sensitive to electrical shock.
2. To prevent the breakdown of the laser diode, an antistatic shorting pin is inserted into the flexible board (FPC board).
When removing or connecting the short pin, finish the job in as short time as possible.
3. Take care not to apply excessive stress to the flexible board (FPC board).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.



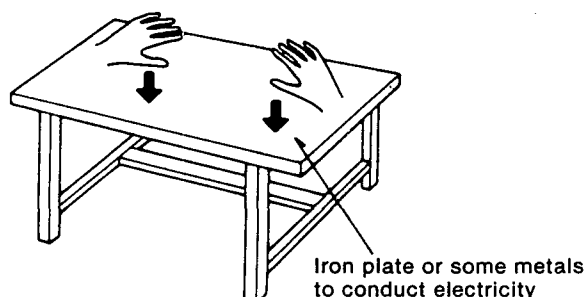
• Grounding for electrostatic breakdown prevention

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).



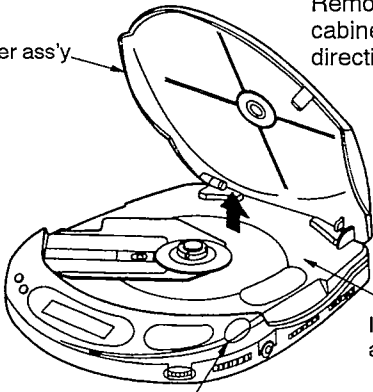
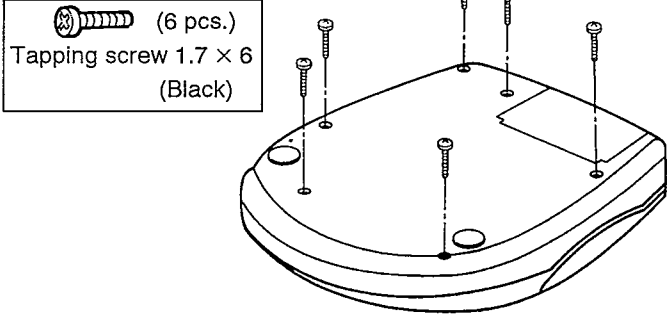
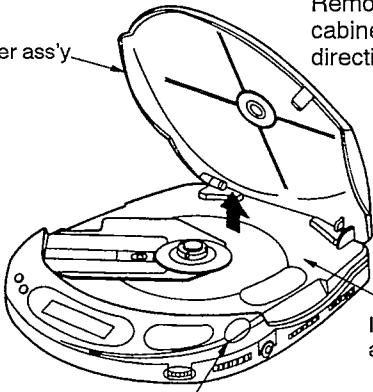
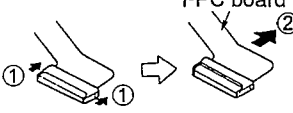
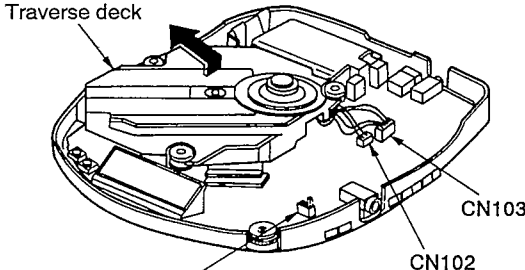
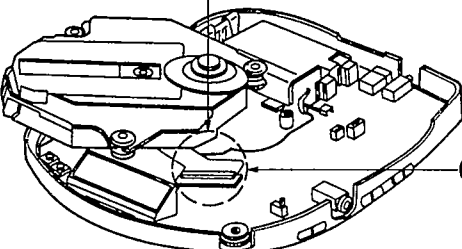
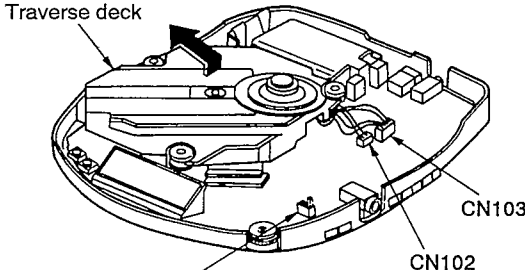
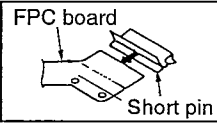
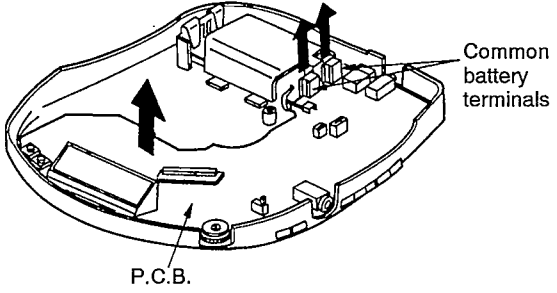
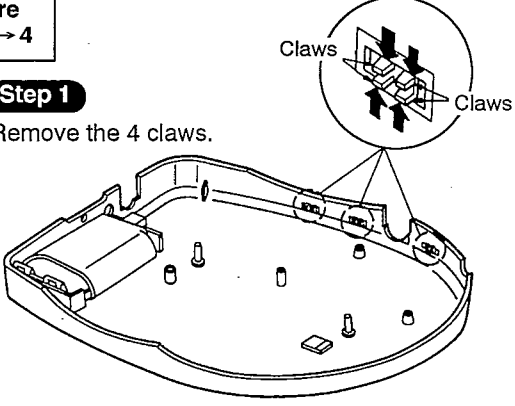
DISASSEMBLY INSTRUCTIONS

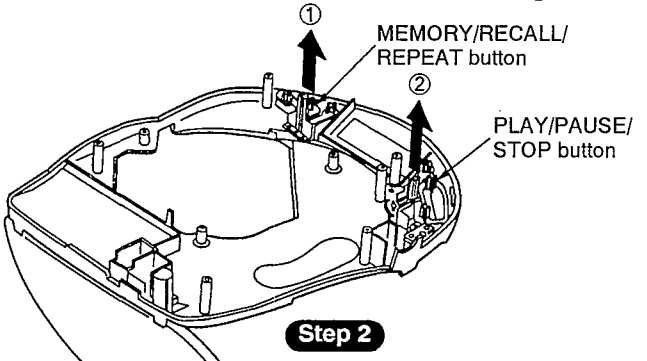
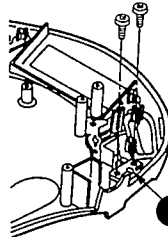
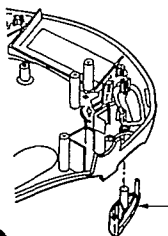
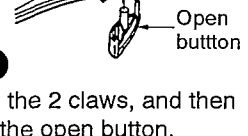
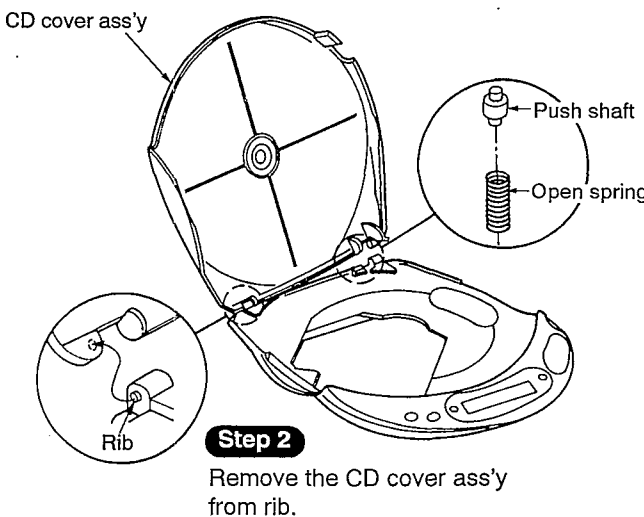
Warning: This product uses a laser diode. Refer to caution statements on page 2.

ACHTUNG:

- Die lasereinheit nicht zerlegen.
- Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

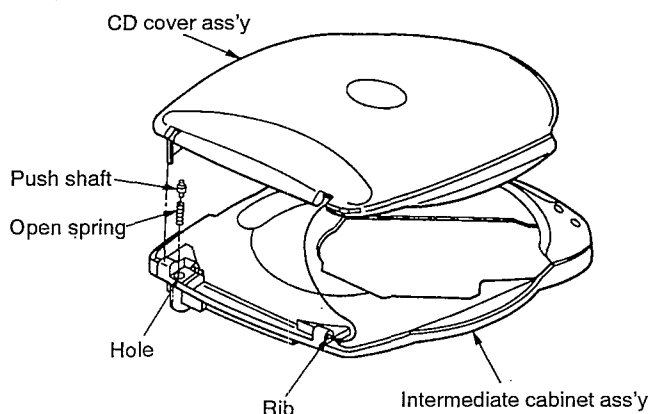
※ This CD player is equipped with FPC boards, so handle them with care during disassembly and reassembly.

Ref.No. 1	Removal of the intermediate cabinet ass'y	Step 3 Remove the intermediate cabinet ass'y in the direction of arrow.  CD cover ass'y Intermediate cabinet ass'y	
Procedure 1	Step 1 Remove the 6 screws.  (6 pcs.) Tapping screw 1.7 x 6 (Black)	Step 2 Push the open button and open the CD cover ass'y. 	
Ref.No. 2	Removal of the traverse deck	1. Push the top of the connector in the direction of arrow ①. 2. Remove the FPC board in the direction of arrow ②.  FPC board	
Procedure 1 → 2	Step 1 Pull out the traverse deck in the direction of arrow.  Traverse deck S201 (Laser ON/OFF switch) CN102 CN103	Step 3 Remove the FPC board(CN101).  FPC board	
	Step 2 Disconnect the 2 connectors (CN102, CN103). 	Caution: Insert a short pin into the traverse deck's FPC board. (Refer to "handling precautions for traverse deck" on page 7.)  FPC board Short pin	
Ref.No. 3	Removal of the P.C.B.	Ref.No. 4	Removal of the switch knob (H.FILTER/HOLD/P.MODE)
Procedure 1 → 2 → 3	Step 1 Remove the P.C.B. and common battery terminals in the direction of arrow.  Common battery terminals P.C.B.	Procedure 1 → 2 → 3 → 4	Step 1 Remove the 4 claws.  Claws Claws

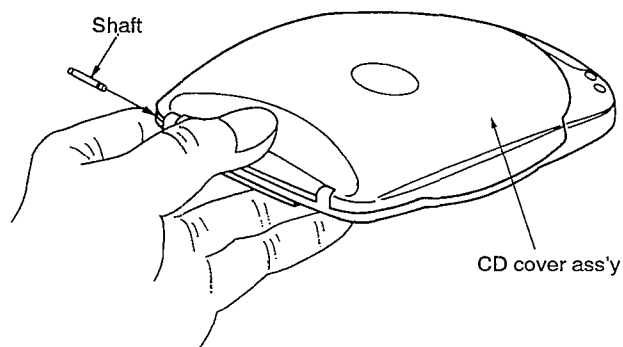
Ref.No. 5	Removal of the MEMORY/RECALL/REPEAT button and PLAY/PAUSE/STOP button	Ref.No. 6	Removal of the open button and lock lever
Procedure 1 → 5	Step 1 Remove the MEMORY/RECALL/REPEAT button in the direction of arrow ①.  Step 2 Remove the PLAY/PAUSE/STOP button in the direction of arrow ②.	Procedure 1 → 6	Step 1 Remove the 2 screws.  Step 2 Remove the lock lever.  Step 3 Release the 2 claws, and then remove the open button.  (2 pcs.) Tapping screw (Black)
Ref.No. 7	Removal of the CD cover ass'y	※ When the CD cover ass'y is removed, the push shaft and the open spring will also be removed. Be careful not to loose them.  Step 2 Remove the CD cover ass'y from rib.	

■ HOW TO INSTALL THE CD COVER ASS'Y

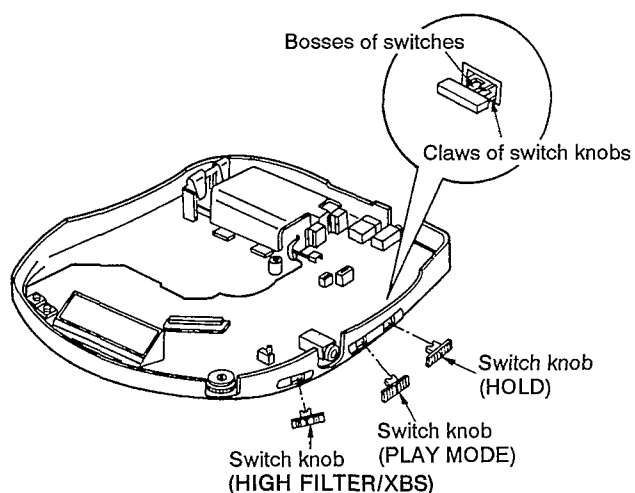
- Step 1** Align the open spring and the push shaft with the hole of intermediate cabinet ass'y.
- Step 2** Install the CD cover ass'y to the intermediate cabinet ass'y.



- Step 3** Holding the CD cover ass'y not to be detached the open spring and the push shaft, install the shaft.



■ HOW TO INSTALL THE SWITCH KNOB

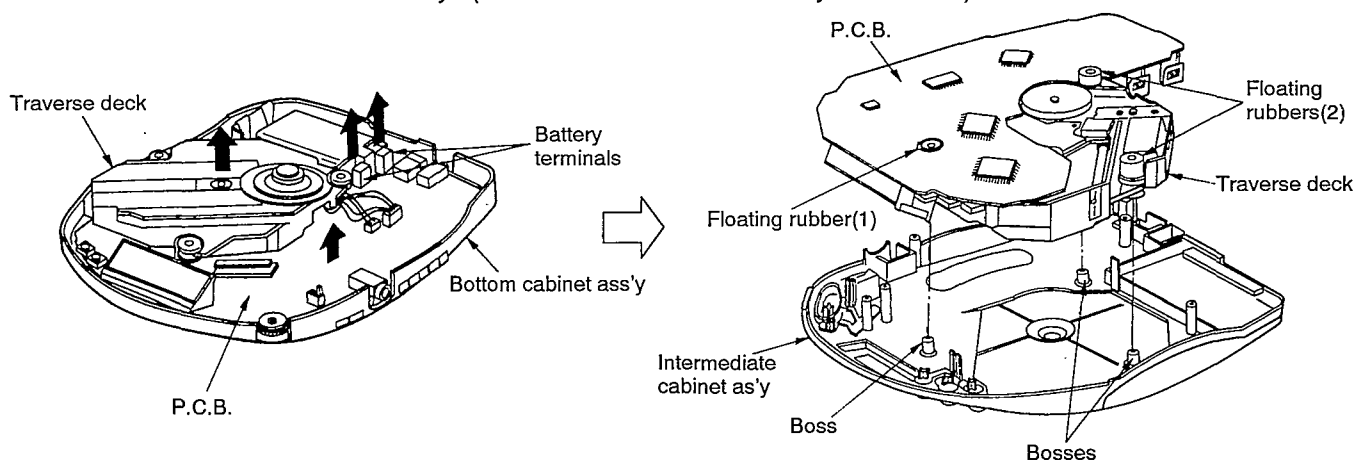


- Make sure the bosses of the switches are fit in the claws of switch knobs when inserting the switch knob.

※ Before installing the switch knob, be sure to check the claws for defects that would render the claws unserviceable. (If a white line like white wax on a claw is found, the claw may be broken when installing the switch knob.)

■ HOW TO CHECK THE P.C.B.

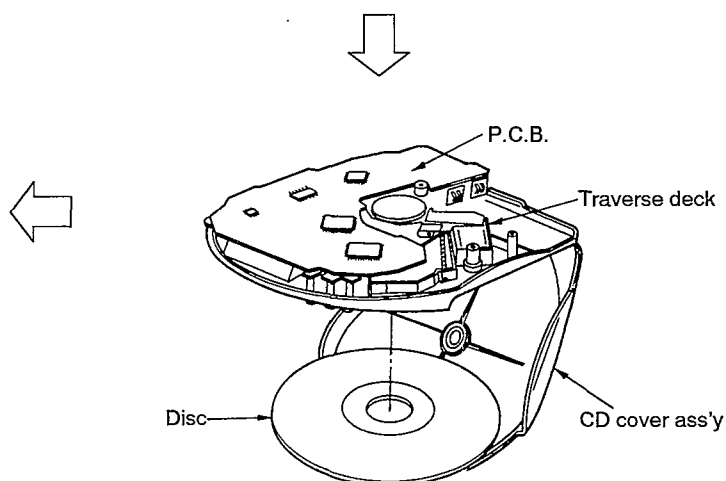
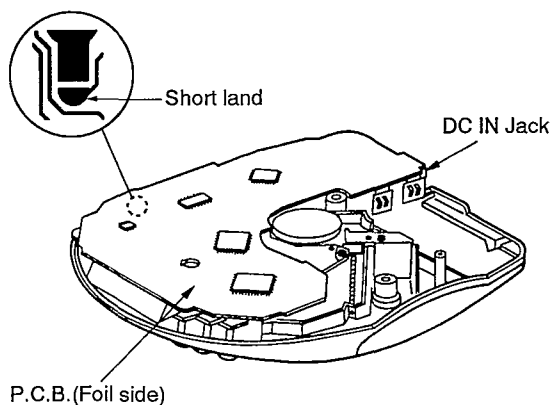
1. Remove the intermediate cabinet ass'y. (See Ref.No.1 of the disassembly instructions.)



2. Remove the traverse deck, P.C.B. and battery terminals from the bottom cabinet ass'y.

3. Install the traverse deck and P.C.B. in the intermediate cabinet ass'y.

Note: Engage the floating rubbers of the traverse deck in the bosses on the intermediate cabinet ass'y.



7. Short the short land of the laser ON/OFF SW(S201) by soldering it. (See page 12.)

Note: After checking the P.C.B., remove the solder from the short land.

8. With the P.C.B. in place as shown in the figure right, connect the AC adaptor to the DC IN Jack, press the play button and then measure the voltage and waveform.

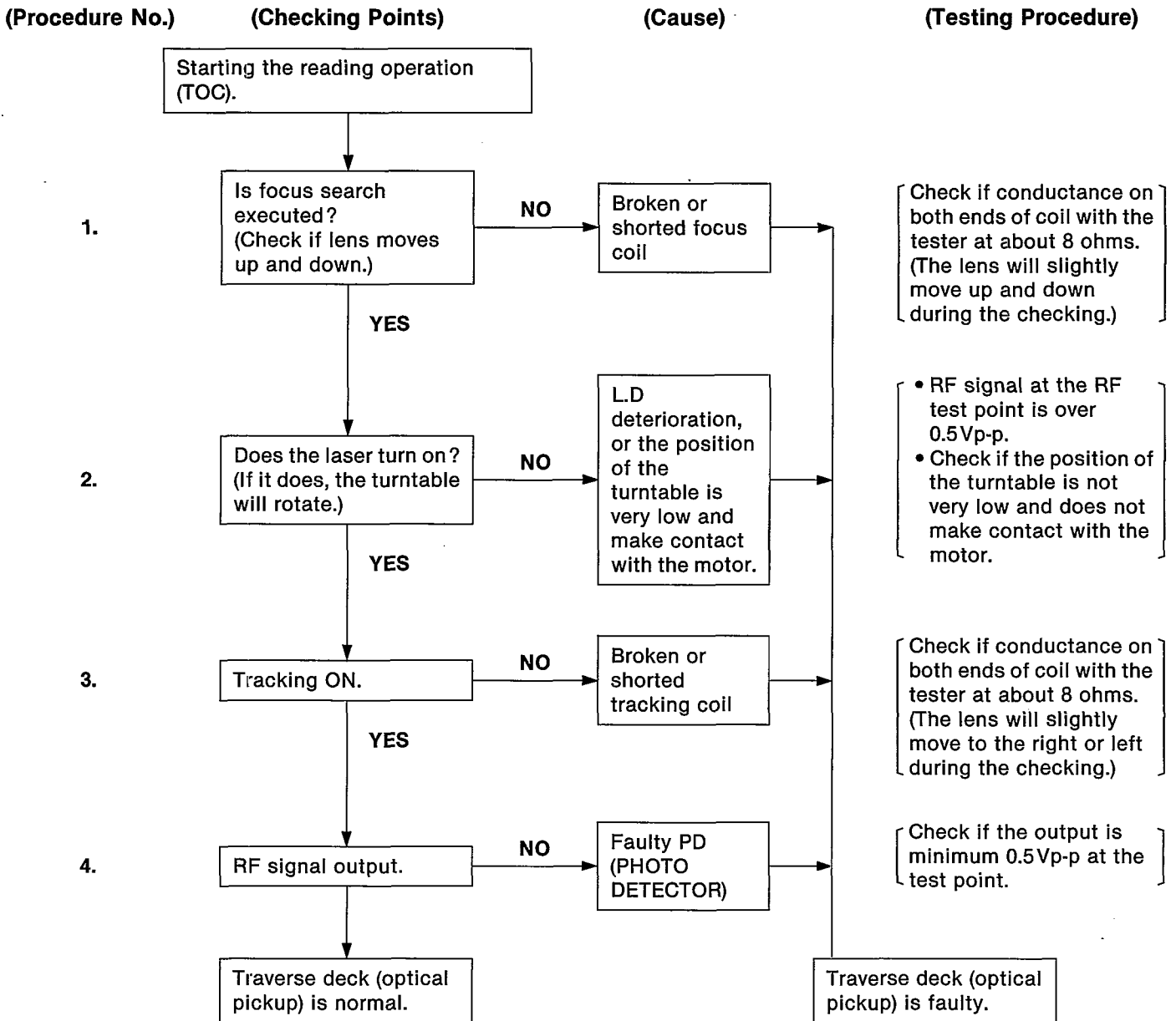
4. Open the CD cover ass'y.

5. Install the unit in place by holding the traverse deck and P.C.B. firmly, and then install the disc.

6. Close 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 warped or not centered.

• Check the operations described below on the traverse deck after replacing it.

* Checking Skip Search

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

* Checking Manual Search

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

* Checking Playability

1. Play the 0.7mm black dot and the 0.7mm 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.

MEASUREMENTS AND ADJUSTMENTS

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

ACHTUNG: • Die lasereinheit nicht zerlegen.

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

• Measuring instruments and special tools

• Test discs

1. Playability test disc (SZZP1054C)
2. Uneven test disc (SZZP1056C)

- Musical program disc (ordinary)
- DC voltmeter
- Lead wire (for test points)

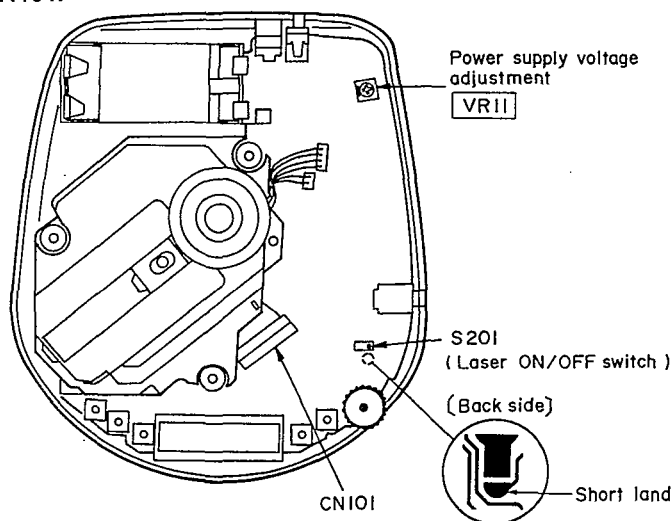
• Test short land

Short-circuit the lands of the laser ON/OFF switch (S201) by soldering them. It turns "ON" position. (Refer to below figure or printed circuit board and wiring connection diagram for short land location on pages 21, 22.)

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.



• Adjustment procedure

(1) POWER SUPPLY VOLTAGE ADJUSTMENT

1. Connect the DC voltmeter to **TP3** (VCC) (+) and **TP4** (GND) on the P.C.B.
2. Connect the AC adaptor cord to the DC (IN) port and move the PLAY switch to the ON position. (Use a new dry cell battery or a rechargeable battery that is full charged.)
3. Insert the test disc, and switch the player power ON.
4. Adjust **VR11** on the P.C.B. at 3.26 ± 0.01 V.

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

• Automatic adjustment

On our conventional type portable CD player, there were mounted 6 semi-fixed controls for each adjustment. Since the SL-XP170 servo circuit is equipped with an automatic adjusting circuit, these controls are removed from SL-XP170.

On conventional portable CD player
Use for Old Servo IC (AN8373SE2, AN8374SE2)

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

On SL-XP170
Use for New Servo IC (AN8832SBE1, MN662740RE)

Non Adjustment

Automatic Adjusting Circuit

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-XP170 automatically controls the servo circuit to obtain optimum performance according to any disc's characteristics. Therefore, no malfunction occurs because of mis-adjustment.

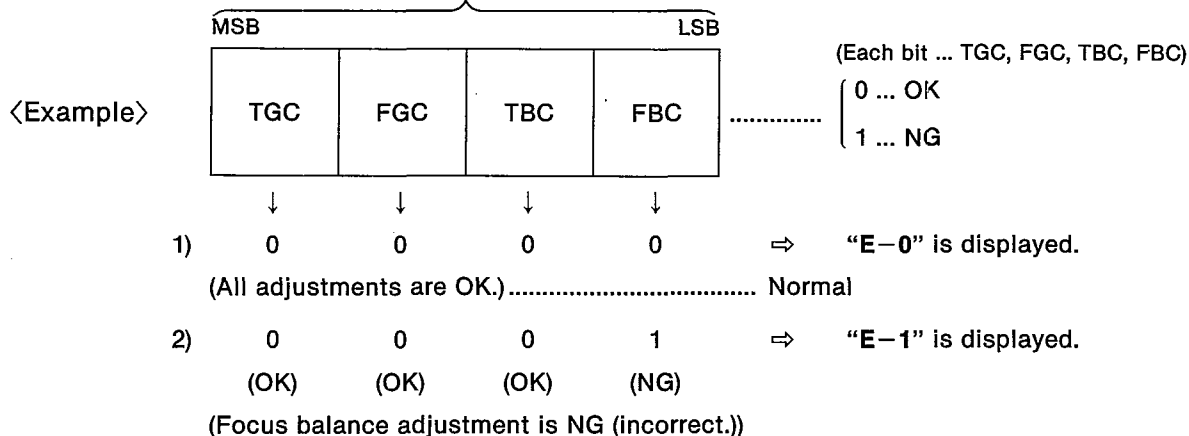
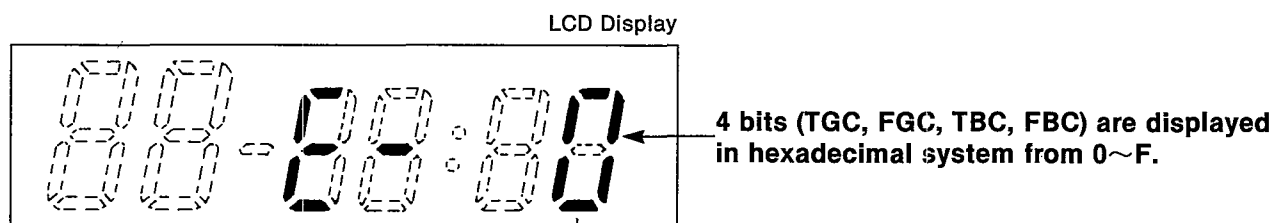
■ DISPLAY FUNCTION OF AUTOMATICALLY-ADJUSTED RESULTS (SELF-CHECK FUNCTION)

On this unit (SL-XP170), each automatically-adjusted 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 automatically-adjusted result displays (self-check function).

• How to display automatically-adjusted 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/OPR OFF) Button once.
4. An automatically-adjusted result is displayed on the LCD.

• Display of automatically-adjusted results (self-check function)



- 3) 0 1 0 0 ⇒ “E-4” is displayed.
 (OK) (NG) (OK) (OK)
 (Focus gain adjustment is NG.)
- 4) 1 1 1 1 ⇒ “E-F” is displayed.
 (All adjustments are NG.)

<Example> Follow the below steps when “E-1” is displayed.

- (Cause: Focus balance (TBC) is set beyond the limit.)
- Check if
 - (1) R101~104 (4 resistors) is not defective by measuring the value,
 - (2) the waveform or voltage of the focus servo circuit is correct, and
 - (3) 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 8 ohms), and
 - (3) the optical pickup returns to the normal state by exchanging the traverse deck.

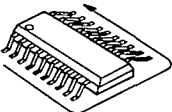
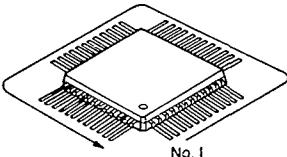
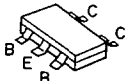
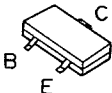
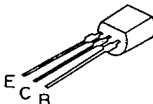
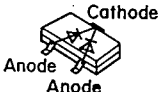
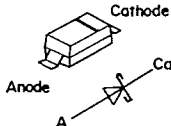
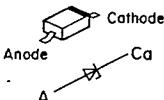
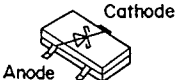
Follow the below steps when “E-F” is displayed.

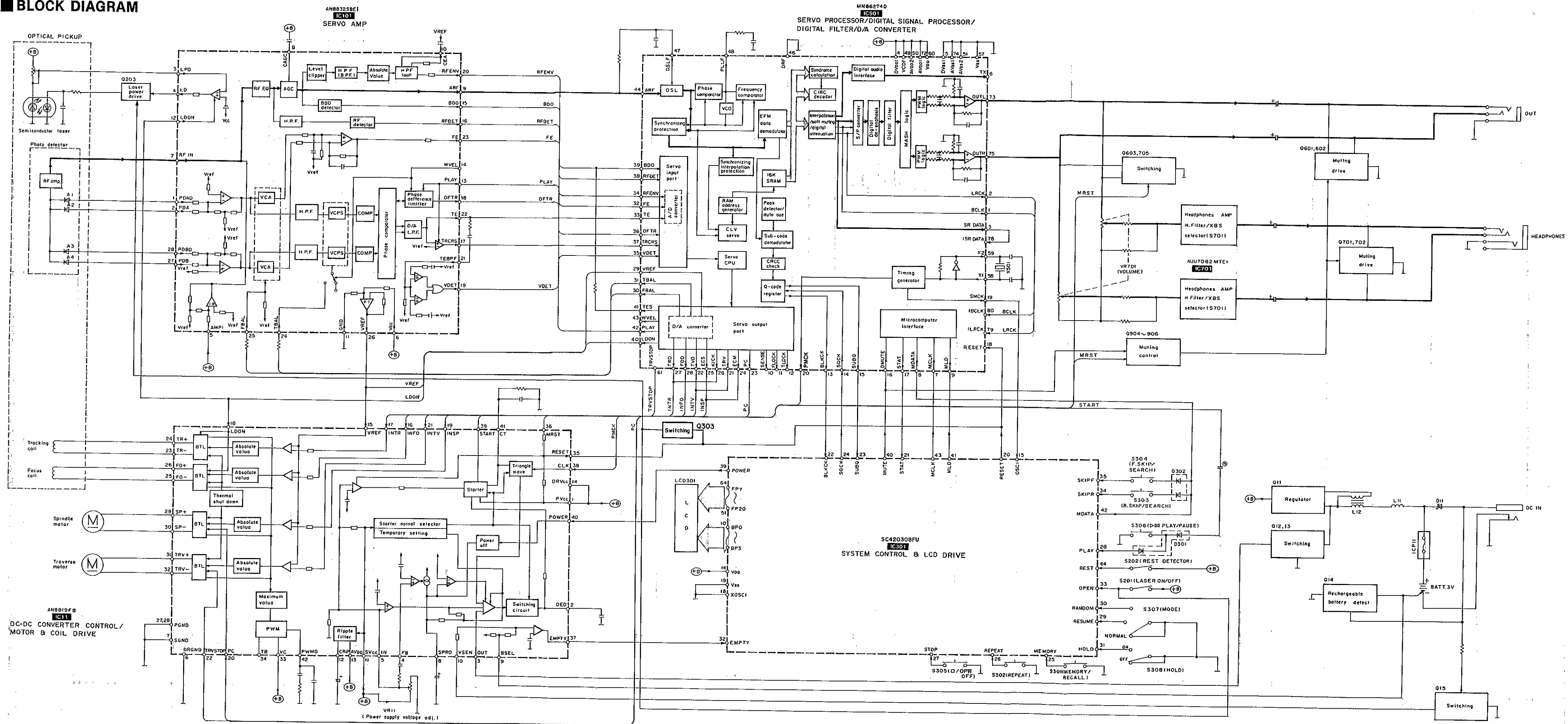
- (Cause: All adjustments (TGC, FGC, TBC, FBC) are set beyond the limit.)
- Check if
 - (1) the optical pickup returns to the normal state by exchanging the traverse deck, and
 - (2) the waveform or voltage of the servo IC’s (IC101, 501) are correct.

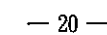
Note:
It is not always necessary to exchange the traverse deck when an error message is displayed. Be sure to check if the circuit is defective or not before exchanging the traverse deck.

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

■ TERMINAL GUIDE OF IC’S, TRANSISTORS AND DIODES

No. 1  NJU7082MTE1 8 Pin AN8832SBE1 28 Pin	 No. 1 AN8819FB 44 Pin SC420308FU 64 Pin MN662740RE 80 Pin	 FMG4T148		
 2SB709QRSTX 2SD601QRSTX 2SD1328RSTTX UN2114TX UN2214TX DTD122JKT146	 2SD1302STTA	 MA151WKTX	 MA151WATX	 D1FS4
 MA8039TX	 RB411DT147			



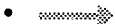


SCHEMATIC DIAGRAM

(Parts list on pages 27, 28)

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

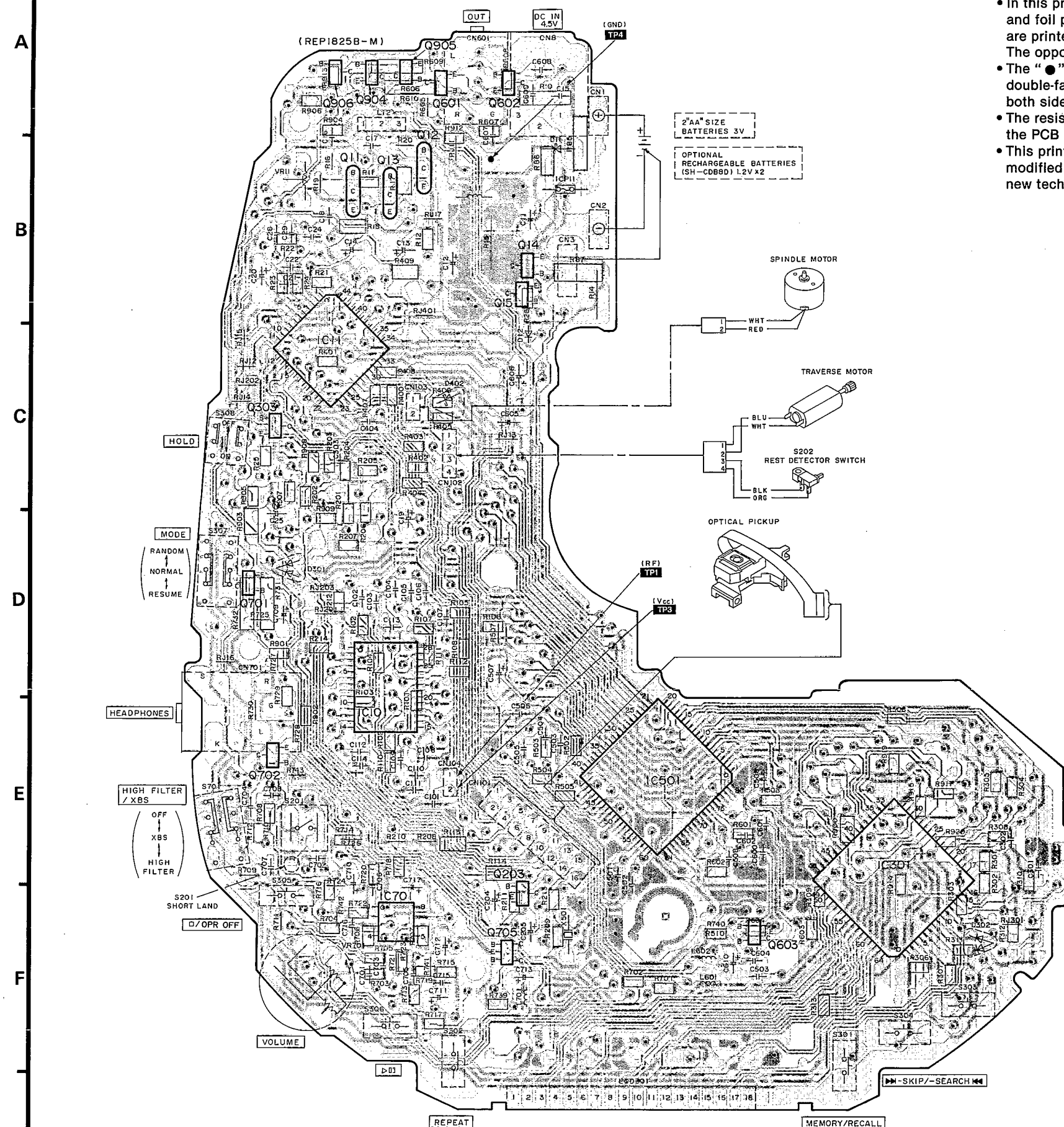
Notes:

- **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**, **S304** : Skip/search (◀◀ -SKIP/-SEARCH ▶▶) switches.
S303: ◀◀, S304: ▶▶
- **S305** : Stop/operation off (■ OPR OFF) switch.
- **S306** : Play/pause (▶ ||) switch.
- **S307** : Play mode selector (MODE) in "NORMAL" position.
(RESUME ↔ NORMAL ↔ RANDOM)
- **S308** : Hold (HOLD) switch in "OFF" position.
- **S701** : High filter/XBS selector (HIGH FILTER/XBS/OFF) in "OFF" position.
- 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 (1 kHz, L+R, 0dB) 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 Δ mark have special characteristics important for safety. Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

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 aluminium 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.

PRINTED CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM



Notes:

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

■
 TERMINAL FUNCTION OF IC’S

• IC11 (AN8819FB): DC-DC converter control/coil & motor drive

Pin No.	Mark	I/O Division	Function
1	PV _{CC}	I	Power supply terminal
2	DED	I	Dead time Input
3	OUT	O	Switching output
4	FB	O	Error amp output
5	IN	I	Error amp input
6	DRGND	—	Ground terminal
7	SGND	—	Ground terminal
8	SPRO	I	Short protect circuit
9	BSEL	I	Battery select terminal
10	VSEN	I	Empty detect terminal
11	SV _{CC}	I	Power supply terminal
12	CRIP	I	Ripple filter terminal
13	AV _{DD}	I	Power supply terminal
14	DRV _{CC}	I	Power supply terminal
15	VREF	I	Reference voltage input
16	INFO	I	Focus coil control signal input
17	INTR	I	Tracking coil control signal input
18	LDON	I	Laser ON/OFF control signal input
19	INSP	I	Spindle motor control signal input
20	PC	I	Phase control terminal
21	INTV	I	Traverse motor control signal input
22	TRVSTOP	I	Traverse motor stopping signal input

• IC101 (AN8832SBE1): Servo amp

Pin No.	Mark	I/O Division	Function
1	PDAD	I	Photo detector current input
2	PDA	I	Photo detector current input
3	LPD	I	Non-inverting laser power input
4	LD	O	Laser power auto control output
5	AMPI	I	RF signal input Not used, connected to V _{CC}
6	V _{CC}	I	Power supply terminal
7	RFIN	I	RF signal input
8	CAGC	I	AGC detecting capacitor terminal
9	ARF	O	RF signal output
10	CEA	I	HPF-amp. terminal
11	GND	—	Ground terminal
12	LDON	I	Laser ON/OFF control input
13	PLAY	I	Play control terminal
14	WVEL	—	WVEL control terminal Not used, open

Pin No.	Mark	I/O Division	Function
23	TR—	O	Tracking coil drive signal output
24	TR+		
25	FO—	O	Focus coil drive signal output
26	FO+		
27	P. GND	—	Ground terminal
28	P. GND	—	Ground terminal
29	SP+	O	Spindle motor drive signal output
30	SP—		
31	TRV+	O	Traverse motor drive signal output
32	TRV—		
33	VC	I	PWM control terminal
34	TB	I	PWM control terminal
35	RESET	I	Reset signal input
36	MRST	O	Muting signal output
37	EMPTY	O	Empty signal output
38	CLK	I	Clock signal input (f=88.2kHz)
39	START	I	Start detection input
40	POWER	I	Power ON/OFF detection terminal
41	CT	I	Triangular wave oscillator capacitor input
42	PWMG	I	PWM control terminal
43	COMPO	O	Laser power drive terminal
44	COMPI	I	

Pin No.	Mark	I/O Division	Function
15	BDO	O	Dropout detection output
16	RFDET	O	NRFDET signal output
17	TRCRS	O	CROSS signal output
18	OFTR	O	OFTR signal output
19	VDET	O	VDET signal output
20	RFENV	O	Envelope signal output
21	TEBPF	I	Shock detection signal input
22	TE	O	Tracking error signal output
23	FE	O	Focus error signal output
24	TBAL	I	Tracking balance signal input
25	FBAL	I	Focus balance signal input
26	VREF	O	Reference voltage output
27	PDB	I	Photo detector current input
28	PDBD	I	Photo detector current input

• IC301 (SC420308FU): System control & LCD drive

Pin No.	Mark	I/O Division	Function
1 6	FP6 FP1	O	LCD segment signal output Not used, open
7	BP3/FP0	O	LCD segment signal output
8 10	BP2 BP0	O	LCD segment signal output
11	VLCD3	I	Voltage control terminal
12	VLCD2		
13	VLCD1		
14	V _{DD}	I	Power supply terminal
15	OSC1	I	Main-system clock input terminal
16	OSC2	—	Not used, open
17	XOSC2	—	Not used, open
18	XOSC1	—	Not used, connected to GND
19	V _{SS}	—	Ground terminal
20	RESET	O	Reset signal output terminal
21	STAT	I	Processing condition (CRU, CUE, CLVS, FCLV, TTSTOP) input
22	BLKCK	I	Sub-code block (Q data) clock (75Hz) output
23	SUBQ	I	Sub-code (Q data) output
24	SQCK	O	Sub-code Q resistor clock output
25	MEMORY	I	Key input terminal (MEMORY)
26	REPEAT	I	Key input terminal (REPEAT)
27	STOP	I	Key Input terminal (STOP)

Pin No.	Mark	I/O Division	Function
28	PLAY	I	Key input terminal (PLAY/PAUSE)
29	RESUME	I	Key input terminal (RESUME)
30	RANDOM	I	Key Input terminal (RANDOM)
31	HOLD	I	Key Input terminal (HOLD)
32	EMPTY	I	Empty detect signal input
33	OPEN	I	Disc holder open detect terminal
34	SKIP R	I	Key Input terminal (SKIP/SEARCH. R.)
35	SKIP F	I	Key input terminal (SKIP/SEARCH. F.)
36	WRDRCN	O	Remote control signal output
37	BUZ	O	Beep control output
38	LED	O	LED drive command signal
39	POWER	O	Power ON/OFF signal output
40	MUTE	O	Muting signal output ("H": MUTE)
41	MLD	O	Command load signal output
42	MDATA	O	Command data output
43	MCLK	O	Command clock output
44	REST	I	Rest detect terminal
45 50	FP26 FP21	O	LCD segment signal output Not used, open
51 64	FP20 FP7	O	LCD segment signal output

• IC501 (MN662740RE): Servo processor/digital signal processor/digital filter/D/A converter

Pin No.	Mark	I/O Division	Function
1	BCLK	O	Serial bit clock output
2	LRCK	O	L/R discriminating signal output
3	SRDATA	O	Serial data signal output
4	DV _{DD1}	I	Power supply (digital circuit) terminal
5	DV _{SS1}	—	GND (digital circuit) terminal
6	TX	O	Digital audio interface signal (Not used, open)
7	MCLK	I	Command clock signal
8	MDATA	I	Command data signal
9	MLD	I	Command load signal ("L": LOAD)
10	SENSE	O	Sense signal (OFT, FESL, NACEND, NAJEND, POSAD, SFG) (Not used, open)
11	FLOCK	O	Optical servo condition (focus) ("L": lead-in) (Not used, open)
12	TLOCK	O	Optical servo condition (tracking) ("L": lead-in) (Not used, open)
13	BLKCK	O	Sub-code block clock (f=75 Hz) (Not used, open)
14	SQCK	I	Sub-code Q register clock
15	SUBQ	O	Sub-code Q data
16	DMUTE	I	Muting input ("H": MUTE) (Not used, connected to GND)
17	STAT	O	Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQCK)
18	RESET	I	Reset signal ("L": reset)
19	SMCK	O	System clock (f=4.2336 MHz)
20	PMCK	O	Frequency division clock signal ($f = \frac{1}{1.92} \times ck = 88.2 \text{ kHz}$)
21	TRV	O	Traverse servo control

Pin No.	Mark	I/O Division	Function
22	TVD	O	Traverse drive signal
23	PC	O	Turntable motor drive signal ("L": ON)
24	ECM	O	Turntable motor drive signal (Forced mode)
25	ECS	O	Turntable motor drive signal (Servo error signal)
26	KICK	O	Kick pulse output
27	TRD	O	Tracking drive signal output
28	FOD	O	Focus drive signal output
29	VREF	I	D/A drive output (TVD, ECS, TRD, FOD, FBAL, TBAL) normal voltage input terminal
30	FBAL	O	Focus balance adj. output (Not used, open)
31	TBAL	O	Tracking balance adj. output
32	FE	I	Focus error signal (analog input)
33	TE	I	Tracking error signal (analog input)
34	RFENV	I	RF envelope signal
35	VDET	I	Oscillation det. signal ("H": det.)
36	OFTR	I	Off track signal ("H": Off track)
37	TRCRS	I	Track cross signal input
38	RFDET	I	RF detection signal ("L": detection)
39	BDO	I	Dropout detection signal ("H": dropout)
40	LDON	O	Laser power control ("H": ON)
41	TES	O	Tracking error shunt output ("H": dropout)
42	PLAY	O	Play signal ("H": play)

Pin No.	Mark	I/O Division	Function
43	WVEL	O	Double velocity status signal ("H": double) (Not used, open)
44	ARF	I	RF signal input
45	IREF	I	Reference current input
46	DRF	I	DSL bias terminal (Not used, connected to GND)
47	DSL F	I/O	DSL loop filter terminal
48	PLL F	I	PLL loop filter terminal
49	VCO F	I	VCO loop filter terminal (Not used, connected to AV _{DD2})
50	AV _{DD2}	I	Power supply (analog circuit) terminal (2)
51	AV _{SS2}	—	GND (analog circuit) terminal
52	FS384	O	384 fs (16.9344 MHz) output (Not used, open)
53	PCK	O	PLL extract clock (f=4.3218 MHz) (Not used, open)
54	TROF	O	Tracking servo OFF signal (Not used, open)
55	SUBC	O	Sub-code serial output data (Not used, open)
56	SBCK	I	Sub-code serial input clock (Not used, open)
57	V _{SS}	—	GND terminal
58	X1	I	Crystal oscillator terminal (f=16.9344 MHz)
59	X2	O	
60	V _{DD}	I	Power supply terminal
61	TRVSTOP	O	Traverse motor stop control terminal
62	CLDCK	O	Sub-code frame clock signal (f CLDCK=7.35 kHz: Normal) (Not used, open)

Pin No.	Mark	I/O Division	Function
63	FCLK	O	Crystal frame clock (Not used, open)
64	IPFLAG	O	Interpolation flag terminal
65	FLAGO	O	Flag terminal
66	CLVS	O	Turntable servo phase synchro signal ("H": CLV, "L": Rough servo) (Not used, open)
67	CRC	O	Sub-code CRC check terminal ("H": OK, "L": NG)
68	DEMPHA	O	De-emphasis ON signal ("H": ON) (Not used, open)
69	FLAG6	O	Flag terminal
70	SEL	I	Not used, connected to GND
71	TEST	I	Test terminal (Normal: "H")
72	AV _{DD1}	I	Power supply (analog circuit) terminal (1)
73	OUTL	O	Lch audio signal
74	AV _{SS1}	—	GND (analog circuit) terminal (1)
75	OUTR	O	Rch audio signal
76	RSEL	I	Polarity direction control terminal of RF signal (Not used, connected to power supply)
77	CSEL	I	Frequency control terminal of crystal oscillator (Not used, connected to GND)
78	ISRDATA	I	Serial data signal input
79	ILRCK	I	L/R discriminating signal input
80	IBCLK	I	Serial bit clock input

REPLACEMENT PARTS LIST

Notes: *Important safety notice:

 Components identified by Δ mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

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

*ACHTUNG: Die Lasereinheit nicht zerlegen.

Die Lasereinheit darf nur gegen eine vom Hersteller spezifizierte Einheit ausgetauscht werden.

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)				OSCILLATOR(S)	
IC11	AN8819FB	DC-DC CONV.		X501	RSXZ16M9M01T	OSCILLATOR (16.9344MHz)	
IC101	AN8832SBE1	SERVO AMP				LCD(S)	
IC301	SC420308FU	SYSTEM CONT. & LCD DRIVE					
IC501	MN662740RE	SERVO PROCESSOR		LCD301	RSL5105-L	LCD	
IC701	NJU7082MTE1	HEADPHONES AMP				SWITCH(ES)	
		TRANSISTOR(S)					
Q11-13	2SD1302STA	TRANSISTOR		S201	RSH1A91ZA-A	LASER ON/OFF	
Q14	DTD122JKT146	TRANSISTOR		S202	SSH5	REST DETECTOR	
Q15	2SD601QSTX	TRANSISTOR		S301	EVQ21405R	MEMORY/RECALL	
Q203	2SB709QSTX	TRANSISTOR		S302	EVQ21405R	REPEAT	
Q303	UN2214TX	TRANSISTOR		S303	EVQ21405R	SKIP/SEARCH(B)	
Q601, 602	2SD1328QRSTX	TRANSISTOR		S304	EVQ21405R	SKIP/SEARCH(F)	
Q603	FMG4T148	TRANSISTOR		S305	EVQ21405R	STOP/OPR OFF	
Q701, 702	2SD1328QRSTX	TRANSISTOR		S306	EVQ21405R	PLAY/PAUSE	
Q705	FMG4T148	TRANSISTOR		S307	ESD11H230	PLAY MODE	
Q904	UN2114TX	TRANSISTOR		S308	ESD11H220	HOLD	
Q905, 906	2SD601QSTX	TRANSISTOR		S701	ESD11H230	HIGH FILTER/XBS SELECTOR	
		DIODE(S)				CONNECTOR(S) AND JACK(S)	
D11	D1FS4	DIODE		CN1, 2	RJC93015	BATTERY TERMINAL (+/-)	
D12	MA8039TX	DIODE		CN3	RJH5102-1	RECHARGEABLE BATT. TERMINAL	
D301	MA151WKTX	DIODE		CN8	RJJ4303-1	DC IN JACK	
D302	MA151WATX	DIODE		CN101	RJU035T016-1	SOCKET (16P)	
D402	RB411DT147	DIODE		CN102	RJT068W04V	CONNECTOR (4P)	
		IC PROTECTOR(S)		CN103, 104	RJT068W02V	CONNECTOR (2P)	
ICP11	SRUN50T	IC PROTECTOR	Δ	CN601	RJJD355ZB-C	OUT JACK	
		VARIABLE RESISTOR(S)		CN701	RJJ36T02-C	HEADPHONES JACK	
						<PRINTED CIRCUIT BOARD	
						ASS'Y>	
VR11	EVNDXAA00B33	POWER SUPPLY VOLTAGE ADJ.		PCB1	REP1825B-M	MAIN P. C. B.	(RTL)
VR701	EVUBPAT50C54	VOLUME					
		COIL(S)					
L11	RLQB330KT-M	COIL					
L12	RLZ0028T-M	COIL					
L601, 602	RLB0003	COIL					
L701	RLB0003	COIL					

Note:

The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.

Ref.No.	Part No.	Part Name & Description	Remarks	Ref.No.	Part No.	Part Name & Description	Remarks
				12	RMS0462	PUSH SHAFT	
		CABINET AND CHASSIS		13	RGU1031-H	PLAY/PAUSE/STOP BUTTON	
				14	RGU1032-H	MEMORY/RECALL/REPEAT BUTTON	
1	RKK0065-K	BATTERY COVER		15	RGU1030-H	OPEN BUTTON	
2	RJF0013	LCD HOLDER		16	RML0342	LOCK LEVER	
3	SBND90ZK0A	VOLUME KNOB		17	XTN17+6GFZ	SCREW	
4	XQN17+C3FZ	SCREW		18	RAE0133Z	TRAVERSE DECK	
5	RGV0120-1K	H. FILTER/HOLD/P. MODE KNOB		18-1	SHGD157	FLOATING RUBBER(1)	
6	RJC93007	COMMON BATTERY TERMINAL		18-2	SHGD165	FLOATING RUBBER(2)	
7	RMA0677	REAR ORNAMENT		19	RFKJLXP170E	BOTTOM CABINET ASS' Y	(E)
8	RMS0105-1	SHAFT		19	RFKJLXP170EB	BOTTOM CABINET ASS' Y	(EB, GC, GN)
9	RYF0272C-K	CD COVER ASS' Y		19	RFKJLXP170EG	BOTTOM CABINET ASS' Y	(EG)
10	RFKJLXP170EK	INTERMEDIATE CABINET ASS' Y		19-1	RKA0063-K	FOOT	
11	RMB0351	OPEN SPRING		20	RHE5079YA	SCREW	

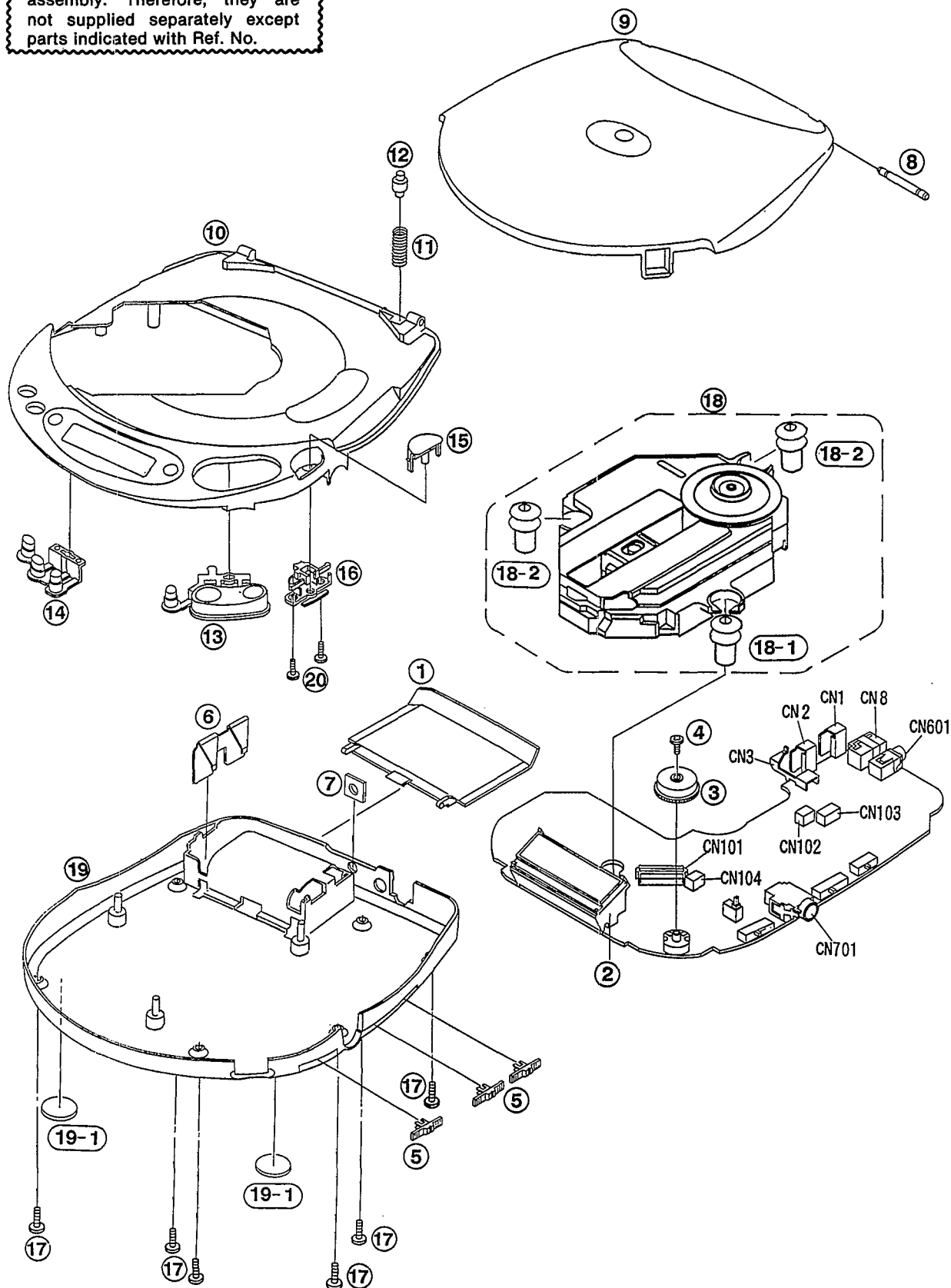
RESISTORS AND CAPACITORS

Notes : * Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)
* Resistance values are in ohms, unless specified otherwise, 1 K=1,000 (OHM), 1 M=1,000k (OHM)

Ref.No.	Part No.	Values & Remarks	Ref.No.	Part No.	Values & Remarks	Ref.No.	Part No.	Values & Remarks
					CAPACITORS	C205	ECEA1CKA100I	16V 10U
		RESISTORS				C301	ECUV1C104ZFN	16V 0.1U
R14, 15	ERJ1WYK3R9H	1W 3.9	C11, 12	ECEA1AKA470I	10V 47U	C302	ECUVNC105ZFN	16V 1U
R16	ERJ6GEYJ100	1/10W 10	C13	RCE1ASC4701X	10V 47U	C303	ECUV1E223KBN	25V 0.022U
R19, 20	ERJ6GEYJ180V	1/10W 18	C14	ECEA0JKA101I	6.3V 100U	C404	ECUVNC105ZFN	16V 1U
R208	ERJ6GEYK4R7V	1/10W 4.7	C15	ECUV1C104ZFN	16V 0.1U	C501, 502	ECUV1H150KCN	50V 15P
R210	ERJ6GEYJ100	1/10W 10	C16	ECUVNC105ZFN	16V 1U	C503	ECUV1H561KBN	50V 560P
R507	ERJ6GEYJ100	1/10W 10	C17	ECUV1H470KCN	50V 47P	C504	ECUV1C104KBN	16V 0.1U
R510	ERJ6GEYJ100	1/10W 10	C18	ECUV1E103KBN	25V 0.01U	C505	ECUV1E223KBN	25V 0.022U
R605, 606	ERJ6GEYJ473V	1/10W 47K	C19	ECEA1AKA220I	10V 22U	C506	ECUV1C474KBM	16V 0.47U
R709-712	ERJ6GEYJ105	1/10W 1M	C20	ECEA1EKA4R7I	25V 4.7U	C507	ECEA0GKA221	4V 220U
R723, 724	ERJ6GEYJ154V	1/10W 150K	C21	ECUV1E223KBN	25V 0.022U	C508, 509	ECUV1C104ZFN	16V 0.1U
R725	ERJ6GEYJ180V	1/10W 18	C22	ECUV1C104KBN	16V 0.1U	C600	ECUV1C104ZFN	16V 0.1U
R726	ERJ8GEYJ180V	1/8W 18	C24	ECUV1H391KBN	50V 390P	C601, 602	ECUV1H102KBN	50V 1000P
R727, 728	ERJ6GEYK1R5V	1/10W 1.5	C25	ECEA1HKN010I	50V 1U	C603, 604	ECUV1H272KBN	50V 2700P
R730	ERJ6GEYJ104V	1/10W 100K	C28	ECUV1E103KBN	25V 0.01U	C605, 606	ECSTGY475RR	4V 4.7U
R741, 742	ERJ6GEYJ101V	1/10W 100	C29	ECUV1H470KCN	50V 47P	C607, 608	ECUV1H681KBN	50V 680P
R743	ERJ6GEYJ100	1/10W 10	C101, 102	ECUV1C104KBN	16V 0.1U	C609	ECUV1C104ZFN	16V 0.1U
		CHIP JUMPERS	C103	ECUV1E183KBN	25V 0.018U	C610	ECEA0JKA101I	6.3V 100U
			C104	ECUV1E223KBN	25V 0.022U	C701, 702	ECUV1H332KBN	50V 3300P
			C105	ECUV1C333KBN	16V 0.033U	C703, 704	ECUV1E123KBN	25V 0.012U
			C106	ECUV1H222KBN	50V 2200P	C705, 706	ECUV1C333KBN	16V 0.033U
RJ11	ERJ8GEYOR00V	CHIP JUMPER	C107	ECUV1H152KBN	50V 1500P	C707, 708	ECUV1H102KBN	50V 1000P
RJ12	ERJ6GEYOR00V	CHIP JUMPER	C108	ECUV1C473KBN	16V 0.047U	C709, 710	ECEA0GKA221	4V 220U
RJ13	ERJ8GEYOR00V	CHIP JUMPER	C109	ECUV1C333KBN	16V 0.033U	C711, 712	ECEA1CKA100I	16V 10U
RJ14-17	ERJ6GEYOR00V	CHIP JUMPER	C110	ECUV1E103KBN	25V 0.01U	C713	ECEA0JKA101I	6.3V 100U
RJ201-203	ERJ6GEYOR00V	CHIP JUMPER	C111	ECUV1C333KBN	16V 0.033U	C715, 716	ECUV1C473KBN	16V 0.047U
RJ301	ERJ6GEYOR00V	CHIP JUMPER	C112	ECUV1H331KBN	50V 330P	C717	ECEA0GKA221	4V 220U
RJ401	ERJ6GEYOR00V	CHIP JUMPER	C113, 114	ECUV1C104ZFN	16V 0.1U			
			C204	ECEA0JKA470I	6.3V 47U			

CABINET PARTS LOCATION

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



REPLACEMENT PARTS LIST

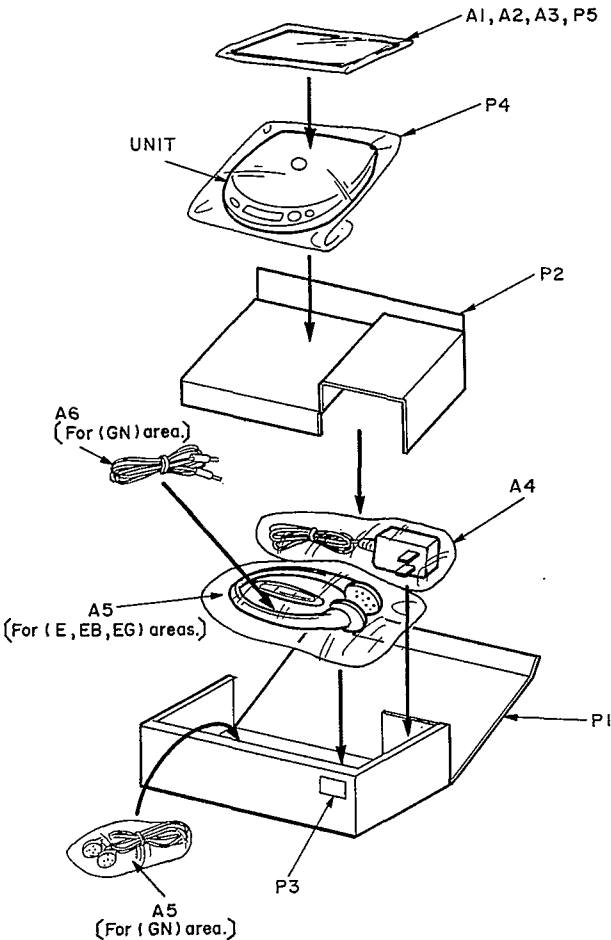
Notes: *Important safety notice:
Components identified by Δ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
*The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		PACKING MATERIAL		A1	RQT2506-B	INSTRUCTION MANUAL	(EB, GN)
				A1	RQT2507-D	INSTRUCTION MANUAL	(EG)
				A1	RFKSLXP170GC	INSTRUCTION MANUAL ASS'Y	(GC)
P1	RPK0474	PACKING CASE		A2	RQA0013	WARRANTY CARD	(E, EB, EG)
P2	RPQ0448	PAD		A2	RQX7433ZA	WARRANTY CARD	(GN)
P3	SQZD3	AREA LABEL	(E)	A3	RQCB0169	SERVICENTER LIST	
P3	SQZD7	AREA LABEL	(EB)	A4	RFEA401E-1S	AC ADAPTOR	(E, EG) Δ
P3	SQZD6	AREA LABEL	(EG)	A4	RFEA404B-W	AC ADAPTOR	(EB) Δ
P3	RQLA0066	AREA LABEL	(GC)	A4	RFEA402Z-W	AC ADAPTOR	(GC) Δ
P3	RQLA0067	AREA LABEL	(GN)	A4	RFEA404A-W	AC ADAPTOR	(GN) Δ
P4	SPPD1	PROTECTION BAG (UNIT)		A5	RP-HT103DTYS	STEREO HEADPHONES	(E, EB, EG)
P5	RPF0046	PROTECTION BAG (F. B.)		A5	RFEV306A-KS	STEREO EARPHONES	(GC, GN)
		ACCESSORIES		A6	RJL2P001X10	STEREO CONNECTION CABLE	(GC, GN)
				A7 ※	RKB205ZA-0	EAR PADS	(GC, GN)
A1	RFKSLXP170E	INSTRUCTION MANUAL ASS'Y	(E)	A8	RJP120ZDS-K	POWER PLUG ADAPTOR	(GC) Δ

※ This parts is supplied only with replacement parts list.

PACKAGING

● For (E, EB, EG, GN) areas.



● For (GC) area.

