

Service Manual

Portable CD Player

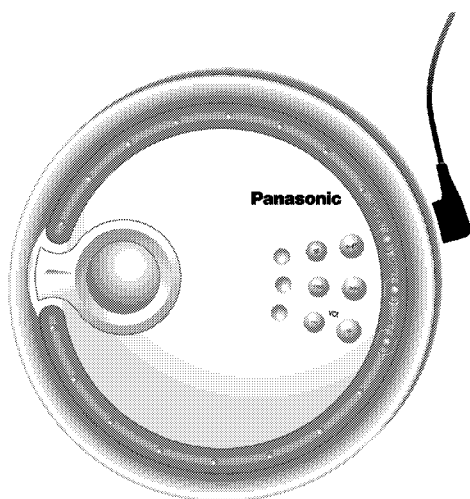


SL-SX320EB
SL-SX320EG

Colours

(S).....Silver Type

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



Specification

●Audio

No. of channels: 2 (left and right, stereo)

Frequency response: 20 to 20,000 Hz
(+0dB ~ -7dB)

DA converter: 1 bit, MASH

Headphone output level: RMS max. 6mW+6mW/ 16Ω
(adjustable)

●Pickup

Light source: Semiconductor laser

Wavelength: 780 nm

●General

Power supply:

DC input; DC 4.5V

AC adaptor input; EB area; AC230V-240V
50Hz/60Hz

EG area; AC220V-230V
50Hz/60Hz

Power consumption: Using AC adaptor; 2.75W

Recharging; 4.2W

Play time:

[Approximate operating time in hours (in hold mode with EQ canceled, at 25 °C on a flat, stable surface)]

2 optional alkaline batteries: 33 hours

2 optional rechargeable batteries: 15 hours

Recharging time: about 6 hours

- The play time may be less depending on the operating conditions.
- Play time will be considerably reduced when playing CD-RW.

Dimensions (WxHxD): 135x27.7x135mm

Mass: 206g (with batteries)

160g (without batteries)

Operational temperature range: 0°C-40°C

Note:

Specifications are subject to change without notice.

Mass and dimensions are approximate.

Note on CD-R and CD-RW:

This unit can play CD-R and CD-RW recorded with CD-DA. Use an audio recording disc for CD-DA and finalize* it when you finish recording. The unit may not be able to play some discs due to the condition of the recording.

*A process performed after recording that enables CD-R/CD-RW players to play audio CD-R and CD-RW.

Panasonic

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⚠ 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.

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1 Precaution of Laser Diode

CAUTION:

This unit utilizes a class 1 laser. Invisible laser radiation is emitted from the 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.

CAUTION:

This product utilizes a liser diode with the unit turned "on", invisible laser radiation is emitted from the pickup lens.

Wave length: 780nm

Maximum output wadiation power from pickup: 100 μ W/VDE

Laserradiationfromthe 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:

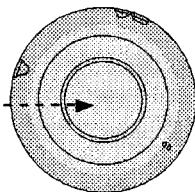
Dieses Produkt enthält eine Laserdiode. Im eingeschalteten Zustand Wird unsichtbare Leserstrahlung von der Lasereinheit abgestrahlt.

Wellenlage: 780nm

Maximale Strahlungsleistung der Lasereinheit: 100 μ W/VDE

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

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



(Bottom of product)

ADVARSEL: USTYLIIG LASERSTRÅLING VED ARBEID, NÅR SIKKERHEDSARBEJ- DYRE ER LØST AF FUNKTION. UNDGA UDSÆTTELSE FOR STRÅLING. VORSIGT: UDSÆTTELSE FOR LASERSTRÅ- LING, VEDNÅR ABEDEKKNING GEFØRER ET LIND SIKKERHEDSVERRIGELING ØBERBRØK. NICHT DEM STRÅL- AUSSETZEN.	VARO! AHAATTAESSA JA SUOJALU- KITUS OMITETTÄSSÄ OLET ALTTIINA NAARMATONTA LASERISÄTELYLLÄ. ÄLÄ KATSO SÄTEESSEEN. VARO! OSYVILIG LASERSTRÅLING ING NÅR OFINNA OPI ÄR ÖPPNAD OCH SPÅRERN ÅR UPPRÖPLAD. BEHÅR KÄLLA STRÅLEN. ADVARSEL: USTYLIIG LASERSTRÅLING ING NÅR DEKSEL ÅPNES OG SIKKERHEDSLAS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.
DANGER: INVISIBLE LASER RADIAT- ION WHEN OPEN AND INTERLOCK DEFEATED. AVOID DIRECT EXPOSURE TO BEAM.	A pleine puissance, l'éclairure d'origine du danger pour endommager l'oreille de l'utilisateur.

(Inside of product)

2 Accessories

For all area:

- Stereo earphones.....1 pc.
(L0BAB0000123)

For EB area:

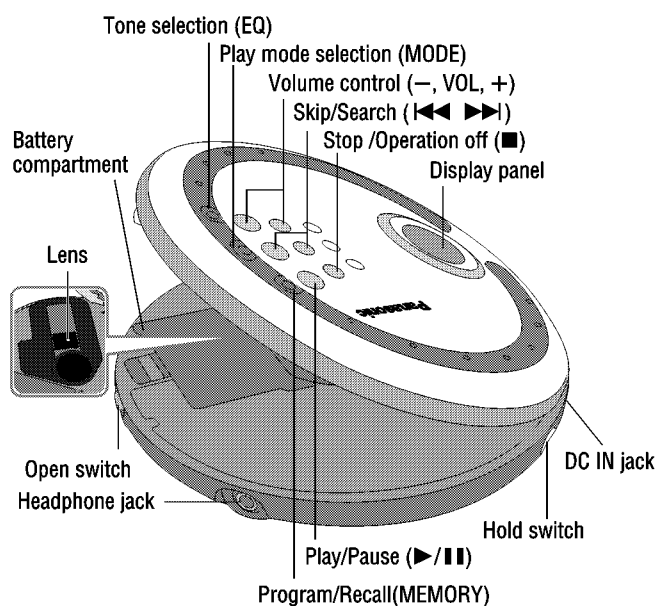
- AC adaptor.....1 pc.

(N0JCCE000004)

For EG area:

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

3 Operating Instructions



4 Handling Precautions for Traverse Deck

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

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

4.1. Handling the traverse deck (optical pickup)

1. The traverse deck (optical pickup) is an extremely high-precision construction and must not be subjected to impact, excessive vibration, or other types of rough handling.
2. To protect the laser diode against electrostatic breakdown, be sure that the short land A and B of the flexible board (FFC board) should be short-circuit by solder before pulling out the FFC. Then inserting a short pin or similar object into the tip of the flexible board.
(Refer to **Fig. 1**)
3. Handle the flexible circuit boards with care; excessive force could cause them to be broken.
4. Do not turn the pre-set variable resistor (for adjustment of the laser power); it has been adjusted at the factory.
(as shown in **Fig. 1**)

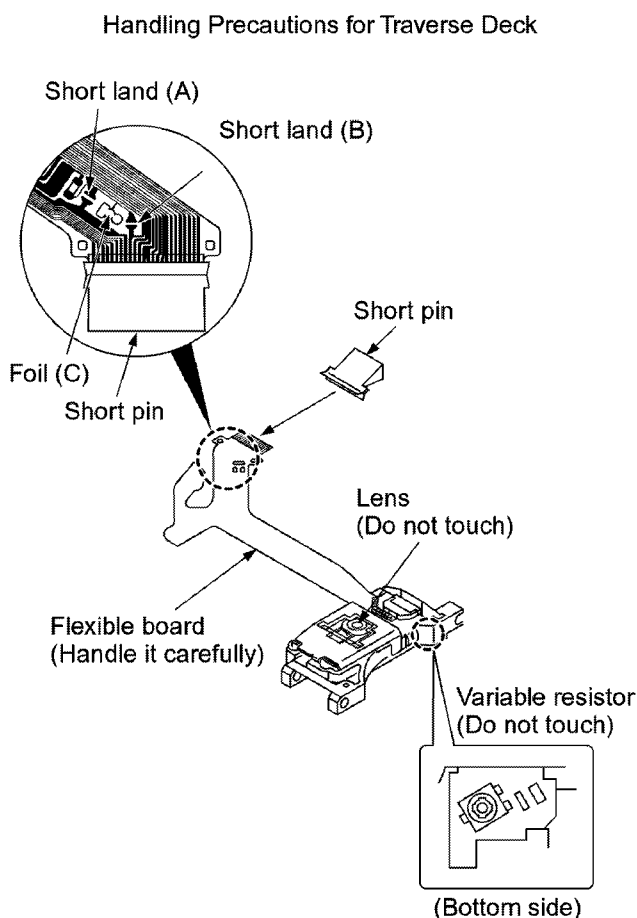


Fig. 1

4.2. Caution when replacing traverse deck

The new traverse deck short-circuits by the short pin, the foil (C) and short lands to protect the laser diode against electrostatic breakdown. Be sure to replace to new one following procedures.

1. Remove the short pin from the FFC, and then connect it to

the connector.

2. Cut the foil (C). (Refer to **Fig. 1**) (Take care not to make contact with cutting point each other.)
3. Unsolder the short lands. (Refer to **Fig. 1**)

4.3. Grounding for electrostatic breakdown prevention

1. Human body grounding

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

2. Work table grounding

Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.
(as shown in **Fig. 3**)

Caution

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

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

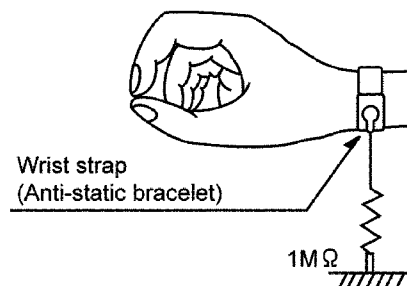


Fig. 2

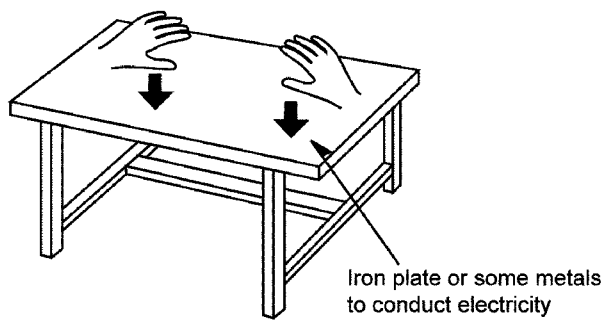


Fig. 3

5 Operation Checks and Component Replacement Procedures

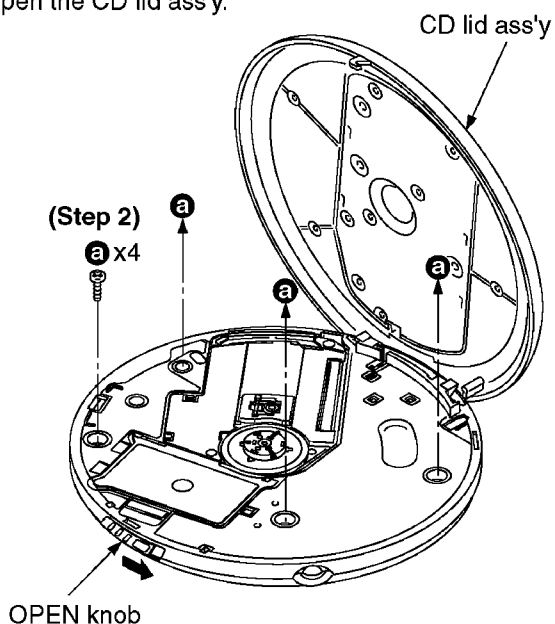
- This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
- For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.

5.1. Checking for the P.C.B. ass'y

5.1.1. Checking for the P.C.B. ass'y (A side)

(Step 1)

Sliding the OPEN knob to right, open the CD lid ass'y.



(Step 2)

a x4

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

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a

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a

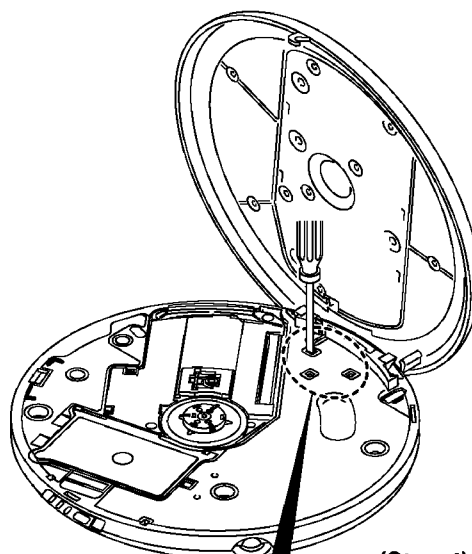
a

a

a

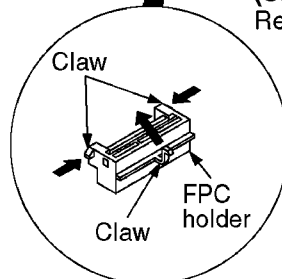
(Step 3)

Release the 3 claws.



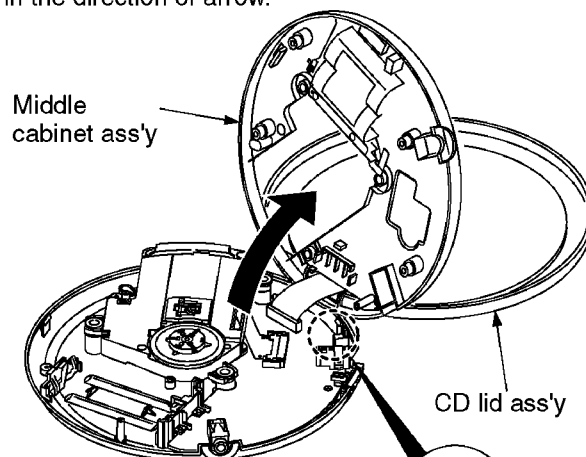
(Step 4)

Release the 3 claws.



(Step 5)

Move the middle cabinet ass'y in the direction of arrow.



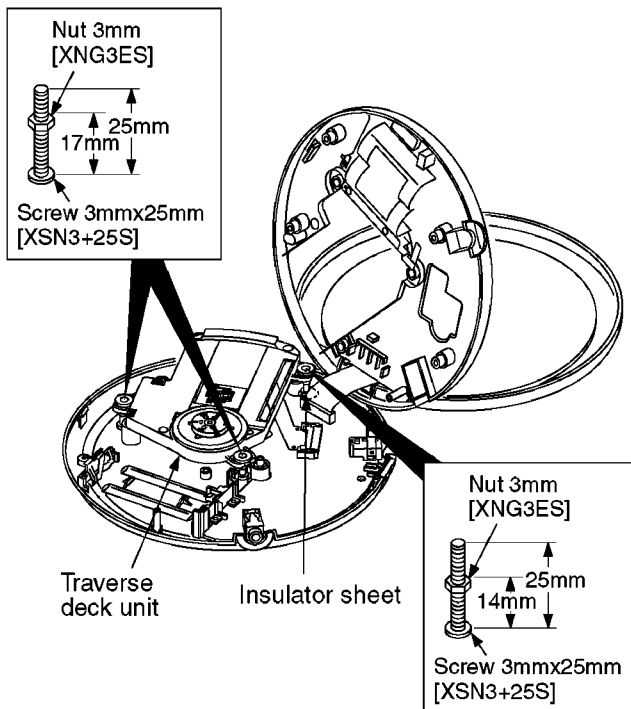
(Step 6)

Short-circuit the land by soldering.



(Step 7)

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

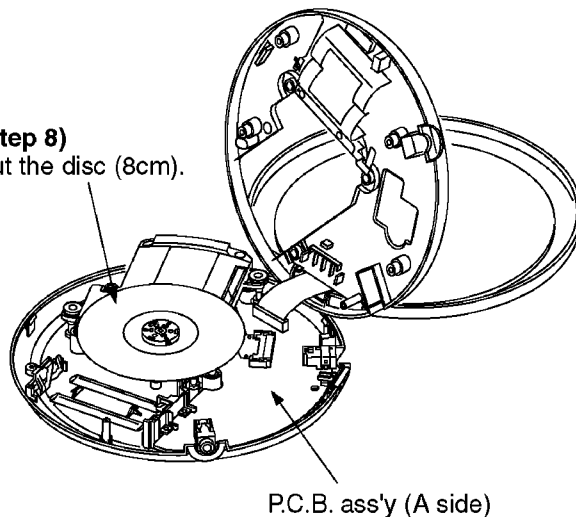
**NOTE:**

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

- Check the P.C.B. ass'y (A side) as shown below.

(Step 8)

Put the disc (8cm).

**NOTE:**

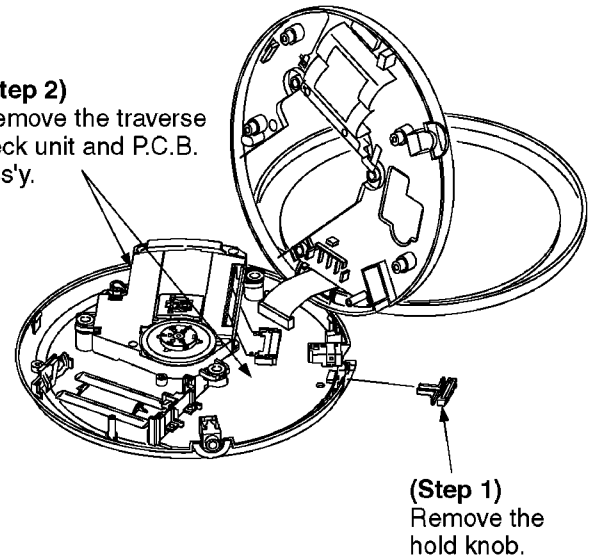
After checking, unsolder the short land to open circuit

5.1.2. Checking for the P.C.B. ass'y (B side)

- Follow the (Step1)-(Step6) of item 5.1.1.

(Step 2)

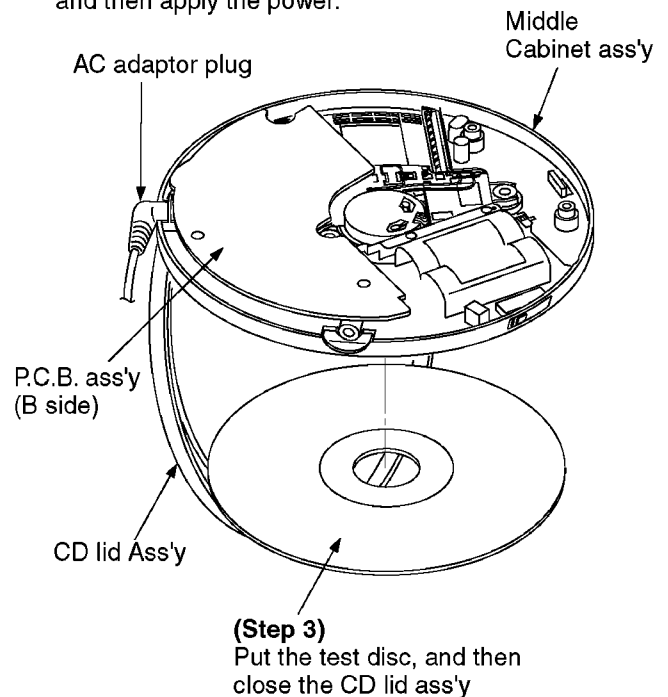
Remove the traverse deck unit and P.C.B. ass'y.



- Check the P.C.B. ass'y (B side) as shown below.

(Step 4)

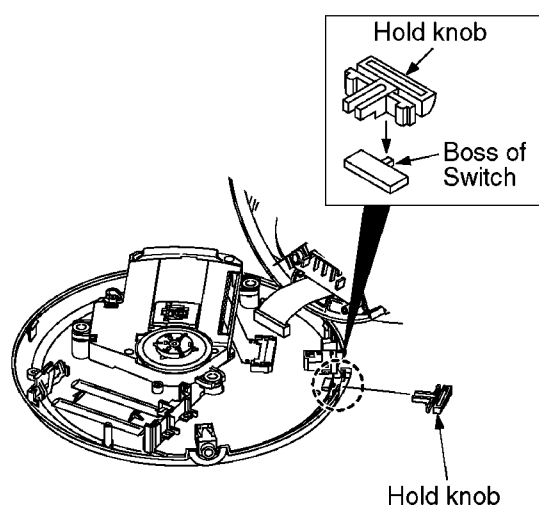
Insert the AC adaptor plug into the DC IN jack, and then apply the power.

**NOTE:**

After checking, unsolder the short land to open circuit.

Notice for installation of hold knobs

• Make sure the bosses of switch are fit in the hold knob.

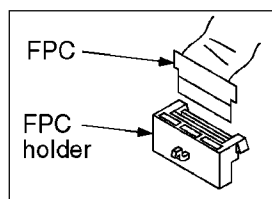
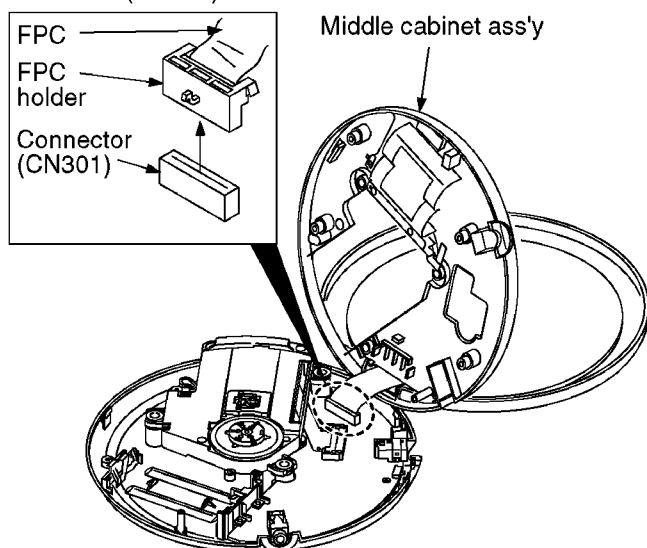


5.2. Replacement for the CD cover ass'y and LCD

• Follow the (Step1)-(Step6) of item 5.1.1.

(Step 1)

Pull out the FPC from connector (CN301).

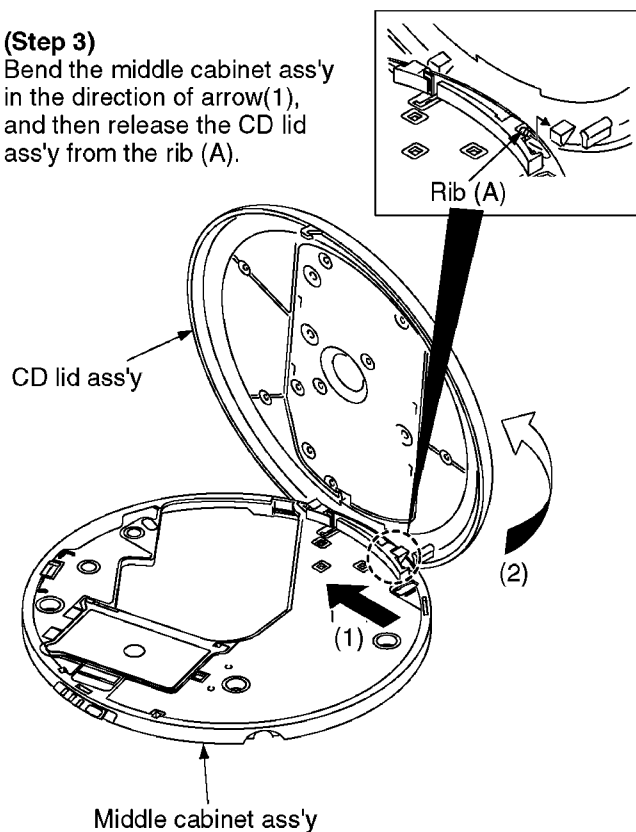


(Step 2)

Remove the FPC holder from FPC.

(Step 3)

Bend the middle cabinet ass'y in the direction of arrow(1), and then release the CD lid ass'y from the rib (A).

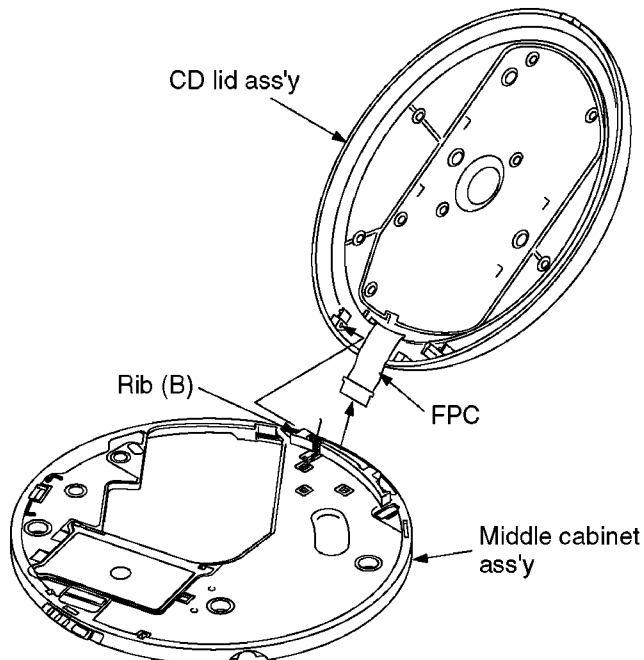


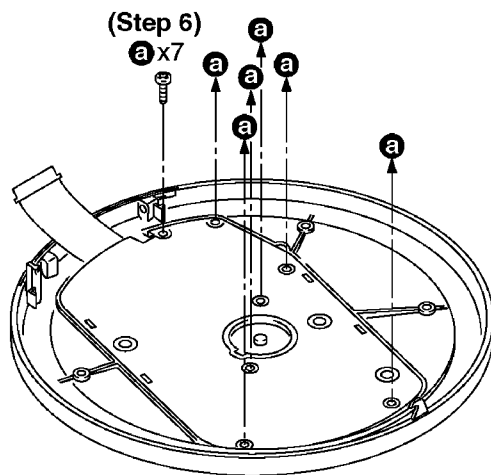
(Step 4)

Remove the CD lid ass'y from the rib (B).

(Step 5)

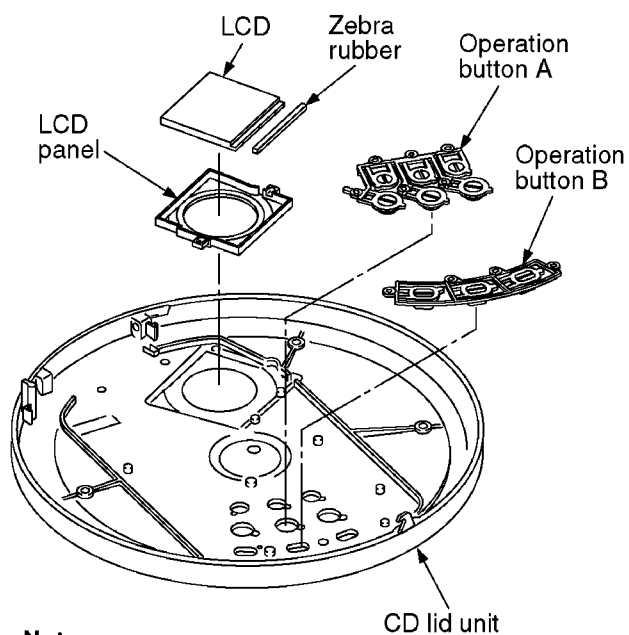
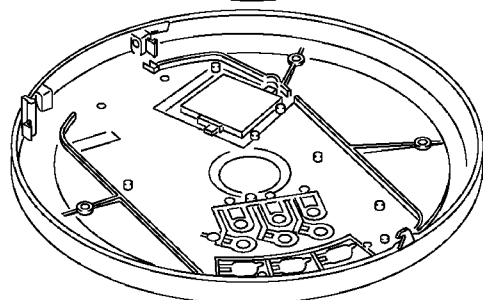
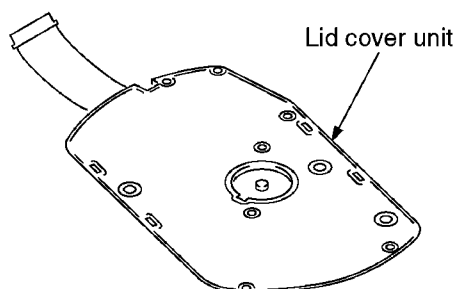
Draw the FPC from the middle cabinet ass'y. (Take care not to damage the FPC.)





(Step 7)
Remove the lid cover unit.

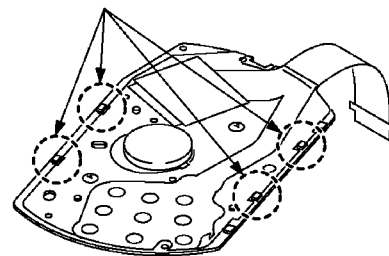
(Step 8)
The parts illustrated below will be free.



Note:

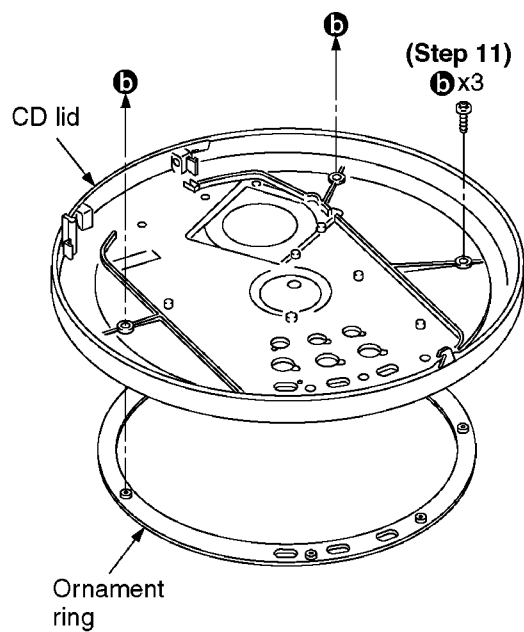
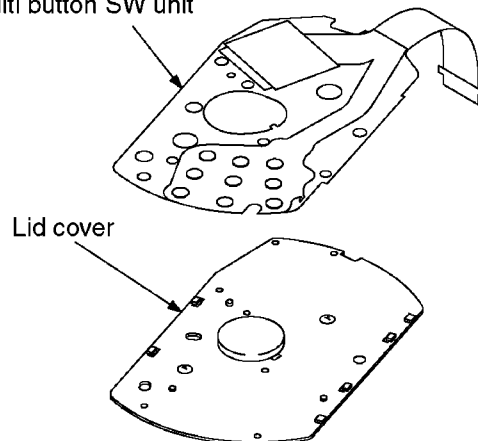
Be careful not to be applied the dust or smudge on the surface zebra rubber.

(Step 9)
Release the 4 claws.



(Step 10)
Remove the multi button SW unit from lid cover.

Multi button SW unit

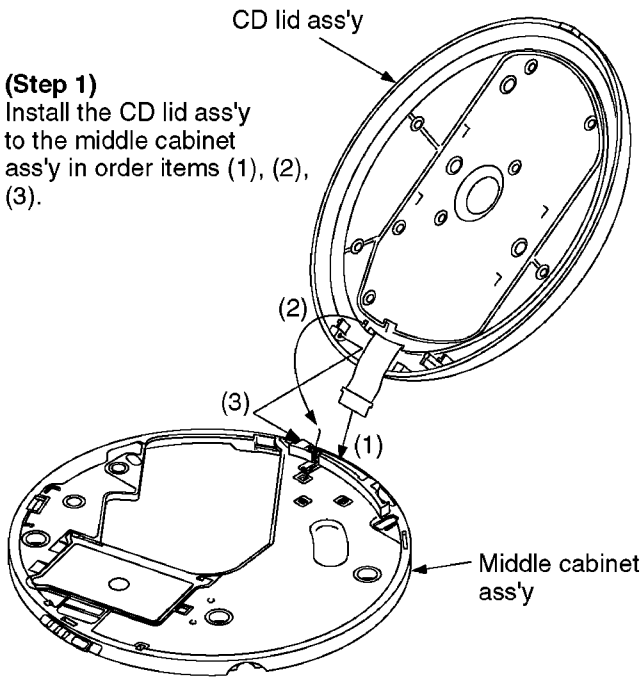


(Step 12)
Remove the ornament ring.

Installation of CD lid ass'y

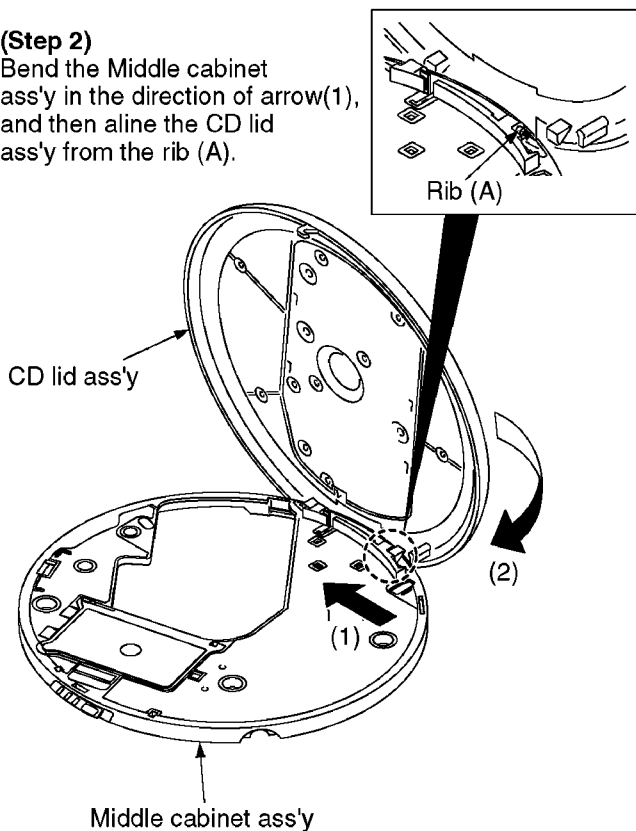
(Step 1)

Install the CD lid ass'y to the middle cabinet ass'y in order items (1), (2), (3).



(Step 2)

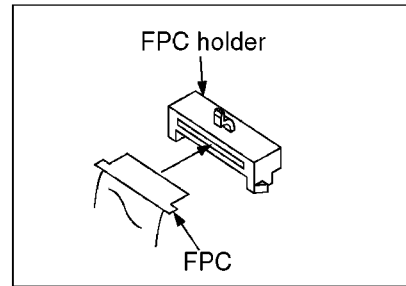
Bend the Middle cabinet ass'y in the direction of arrow(1), and then align the CD lid ass'y from the rib (A).



Installation of middle cabinet ass'y

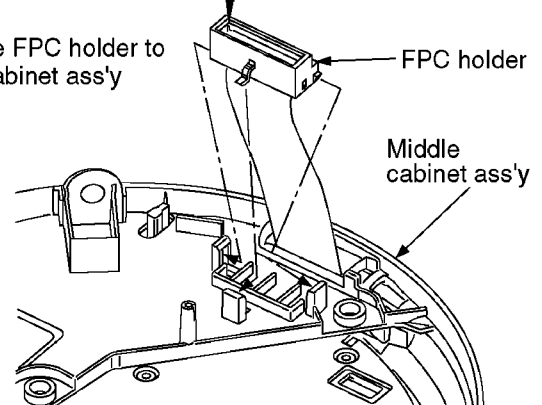
(Step 1)

Install the FPC to FPC holder



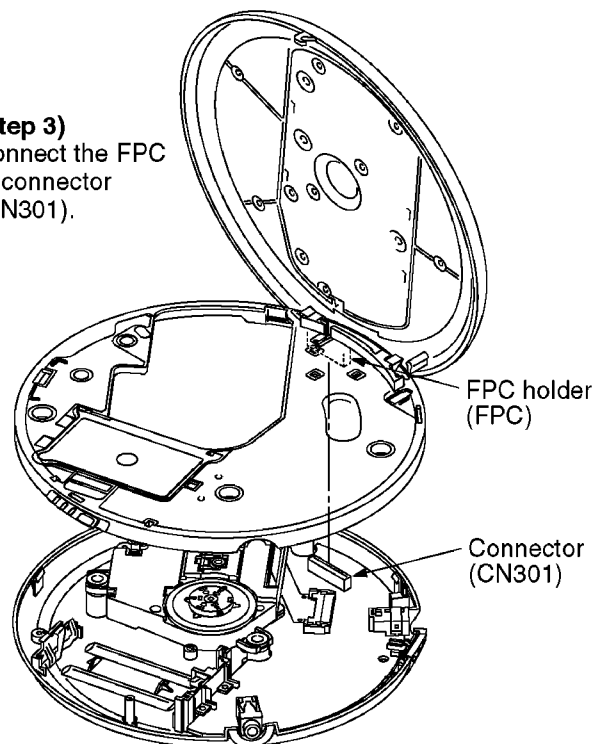
(Step 2)

Install the FPC holder to middle cabinet ass'y



(Step 3)

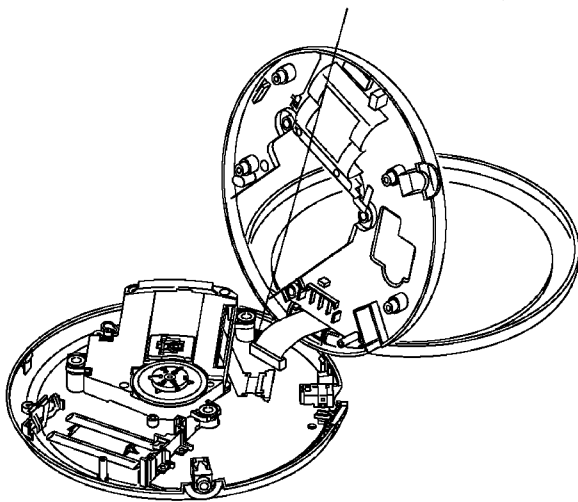
Connect the FPC to connector (CN301).



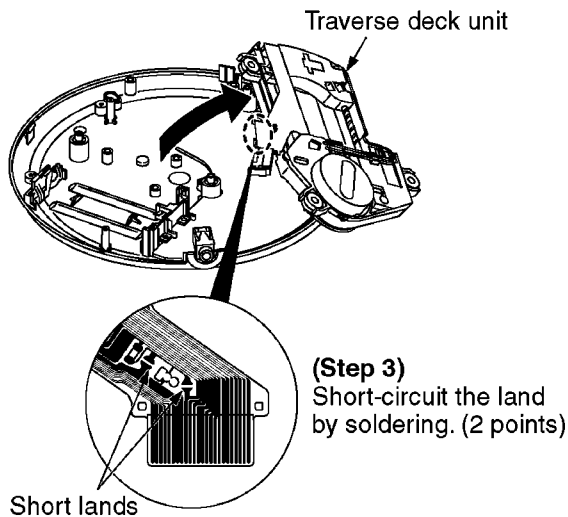
5.3. Replacement for the traverse motor

- Follow the (Step1)-(Step6) of item 5.1.1.

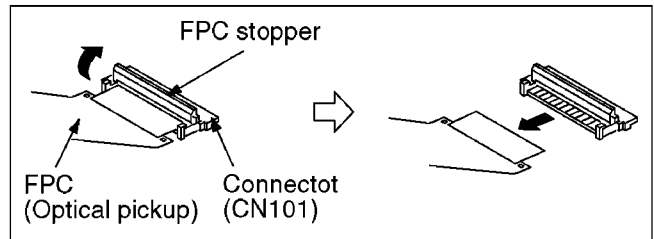
(Step 1)
Pull out the FPC holder
from connector (CN301)



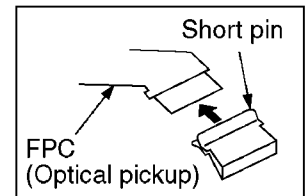
(Step 2)
Move the traverse deck unit in the direction of arrow



(Step 4)
Move the FPC stopper in the direction of arrow.
(Step 5)
Pull out the FPC from connector (CN101),
and then remove the traverse deck unit.

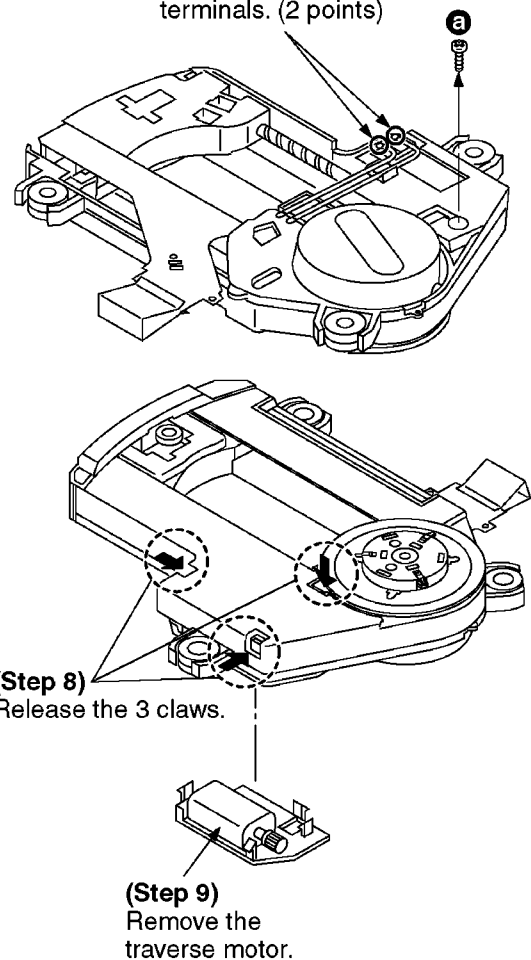


NOTE:
Insert a short pin into the
traverse deck's FPC.
(Refer to "Handling
Precautions for
Traverse Deck".)



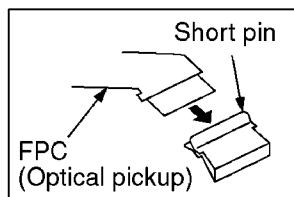
(Step 6)
Unsolder the motor
terminals. (2 points)

(Step 7)



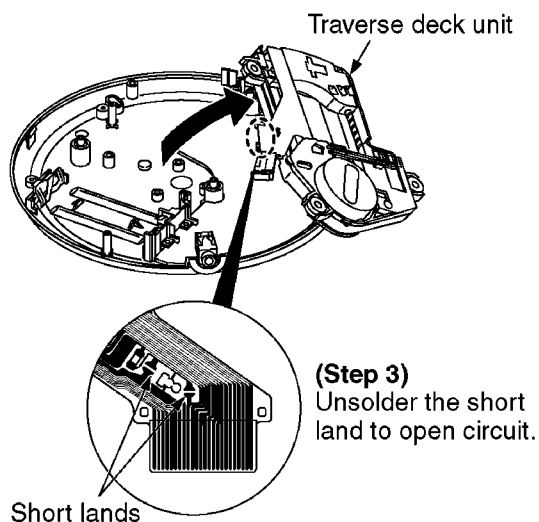
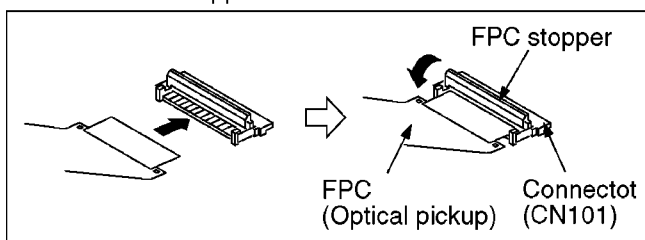
Notice for installation of traverse deck unit

(Step 1)
Remove a short pin from
traverse deck's FPC.



(Step 2)
Connect the FPC from connector (CN101).

(Step 3)
Move the FPC stopper in the direction of arrow.

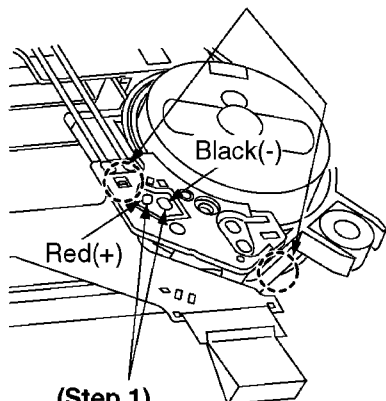


(Step 3)
Unsolder the short
land to open circuit.

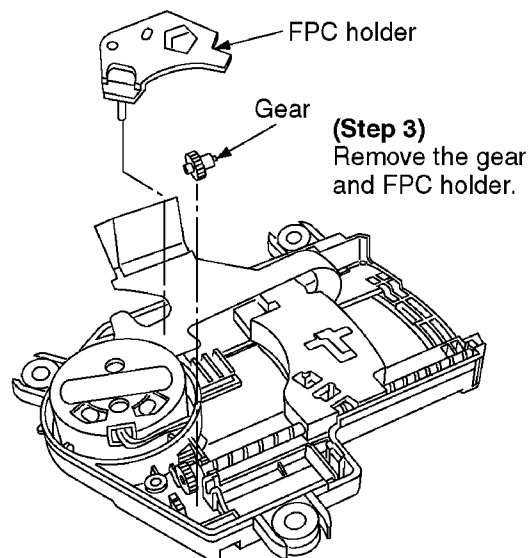
5.4. Replacement for the optical pickup

- Follow the (Step1)-(Step6) of item 5.1.1.
- Follow the (Step1)-(Step9) of item 5.3.

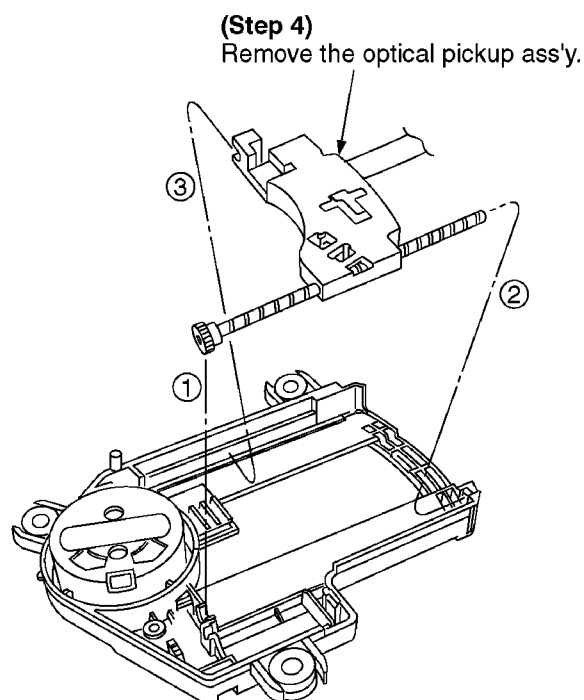
(Step 2)
Release the 2 claws.



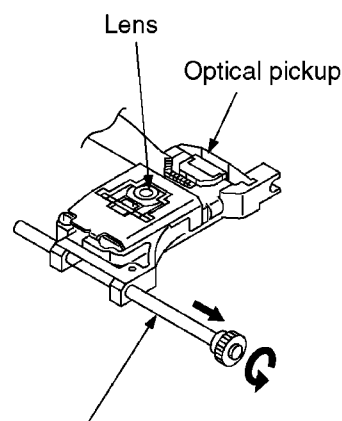
(Step 1)
Unsolder the motor lead wires (2 point).



(Step 3)
Remove the gear
and FPC holder.



(Step 4)
Remove the optical pickup ass'y.



(Step 5)
Rotate the drive shaft, and then pull out it.

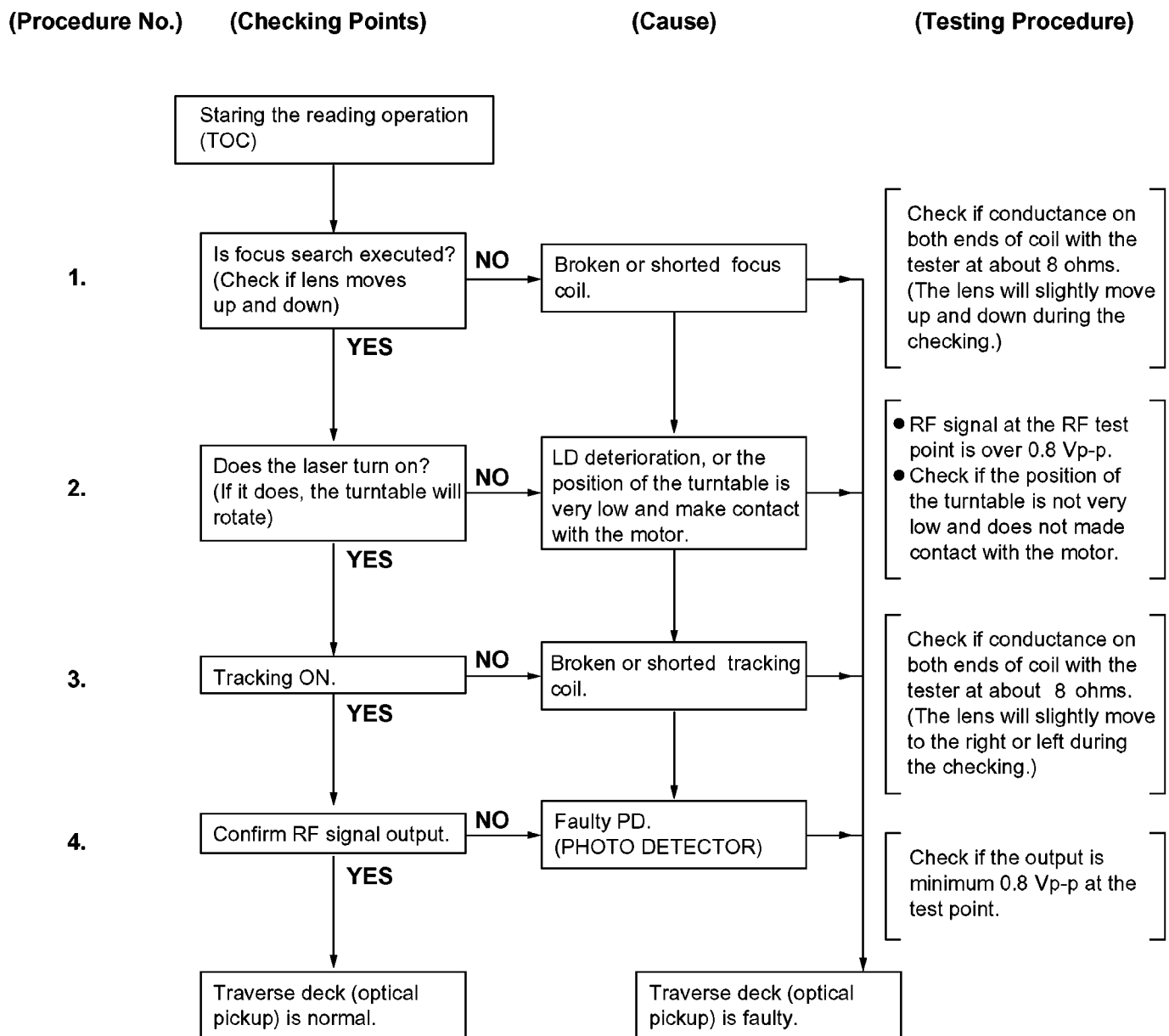
NOTE:

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

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

Make sure to follow the procedures below to check the operation problems of the traverse deck (optical pickup) before replacing it.

Replace the traverse deck only after the problem is identified.



✕ Replace the traverse deck.

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

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

*Checking Skip Search

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

*Checking Manual Search

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

*Checking Playability

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

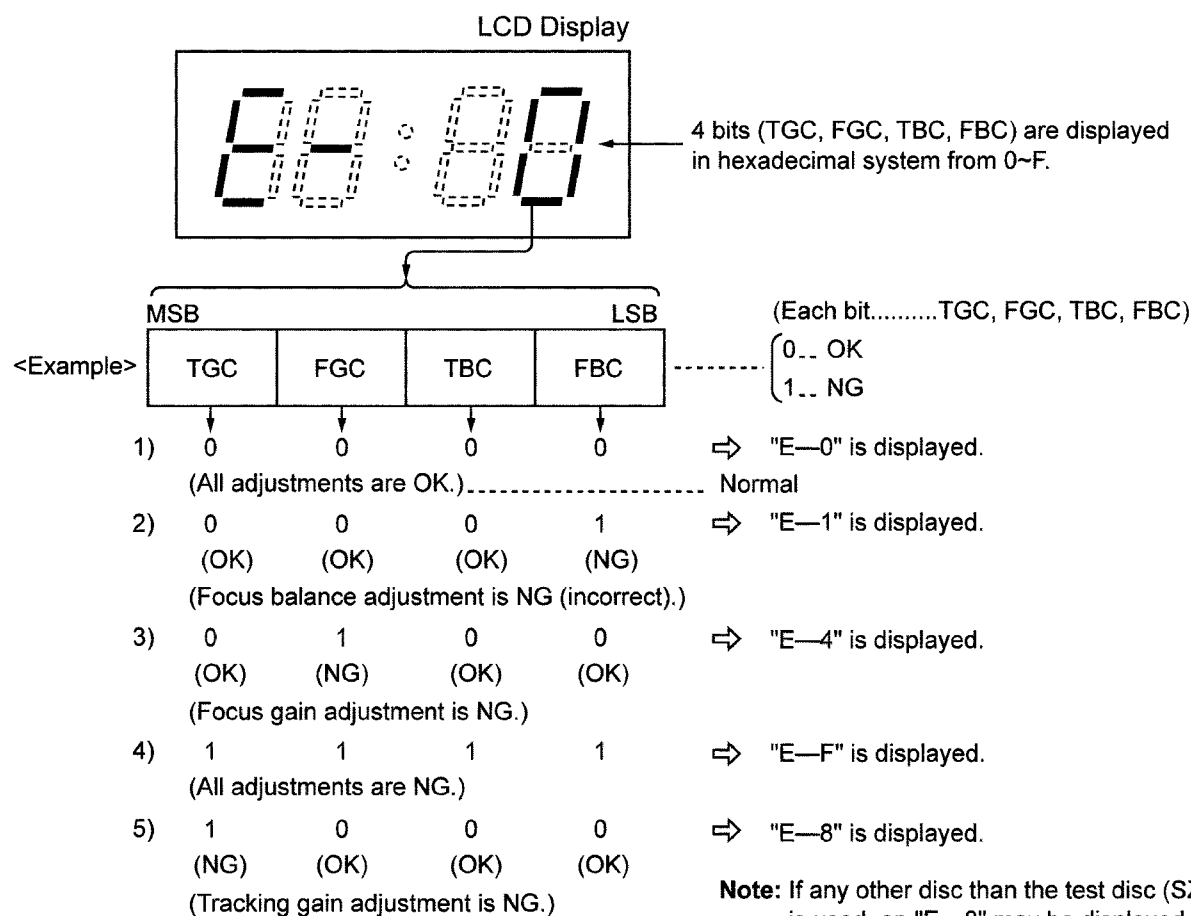
7 Automatic Adjustment Results Display Function (Self-check Function)

On these units (SL-SX320), each automatic adjustment results are displayed on the LCD. This function is convenient to check or identify which automatic adjustment circuit is incorrect. The followings are the contents of the automatic adjustment results display (self-check function).

7.1. How to display automatic adjustment results

1. Load the test disc (SZZP1054C).
2. Press the ◀◀ (SKIP/SEARCH) and ▶▶ (SKIP/SEARCH) Buttons simultaneously and hold them, and additionally press the ▶ / || (PLAY/PAUSE) Button.
3. Press the ■ (Stop/operation off) Button once.
4. An automatic adjustment result is displayed on the LCD.

7.2. Display of automatic adjustment results (self-check function)



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

<Example>

Follow the below steps when "E-1" is displayed.

(Cause: Focus balance (FBC) is set beyond the limit.)

● Check if

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

Follow the below steps when "E-4" is displayed.

(Cause: Focus gain (FGC) is set beyond the limit.)

● Check if

1. the waveform or voltage of the focus servo circuit is

correct. (check the waveform or voltage.)

2. the focus coil of the optical pickup is correct (around 8 ohms).
3. the optical pickup returns to the normal state by exchanging the traverse deck.

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

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

● Check if

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

(check the waveform or voltage.)

Note:

It is not always necessary to exchange the traverse deck when an error message is displayed.

Be sure to check if the circuit is defective or not before

exchanging the traverse deck.

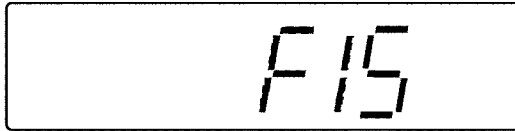
Note:

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

8 Display of Self-Diagnostic Function

This model is equipped with a self-diagnosis function and shows, when necessary, the following indication in the LCD section of the set.

LCD display



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

“F15”---This indication appears when the Down switch fails to turn ON since the magnetic head fails to move up/down normally (Due to trouble of the magnetic head or trouble of the magnetic head up/down motor) or the magnetic head P.C.B. is out of position or a foreign matter has mixed in or for some other reason.

In such a case, check the peripheral parts of the magnetic head, repair or replace defective parts with normal ones.

9 Type Illustration of IC's, Transistors and Diodes

 No.1 <table><tr><td>AN41506A-VB</td><td>48PIN</td></tr><tr><td>C2BBFD000409</td><td>80PIN</td></tr><tr><td>MN662788SD</td><td>100PIN</td></tr></table>		AN41506A-VB	48PIN	C2BBFD000409	80PIN	MN662788SD	100PIN	 No.1 AN22003A-NF 32PIN	 No.1 C3ABMB000027	 No.1 C0ABAA000068
AN41506A-VB	48PIN									
C2BBFD000409	80PIN									
MN662788SD	100PIN									
C0CBAAC00107 No.1	FMG6AT148 No.1	XN0F26300L No.1	B1DHAC000002 B1CFHA000001 No.1	B1ABMD000004 No.1	2SB1182TLPQR No.1					
2SB709A B1GDCFJN0011 UN5213TX No.1	UN5215TX UNR511300L UNR511400L UNR521300L UNR521L00L No.1	MA2J11100L No.1	 No.1							

10 Schematic Diagram Notes

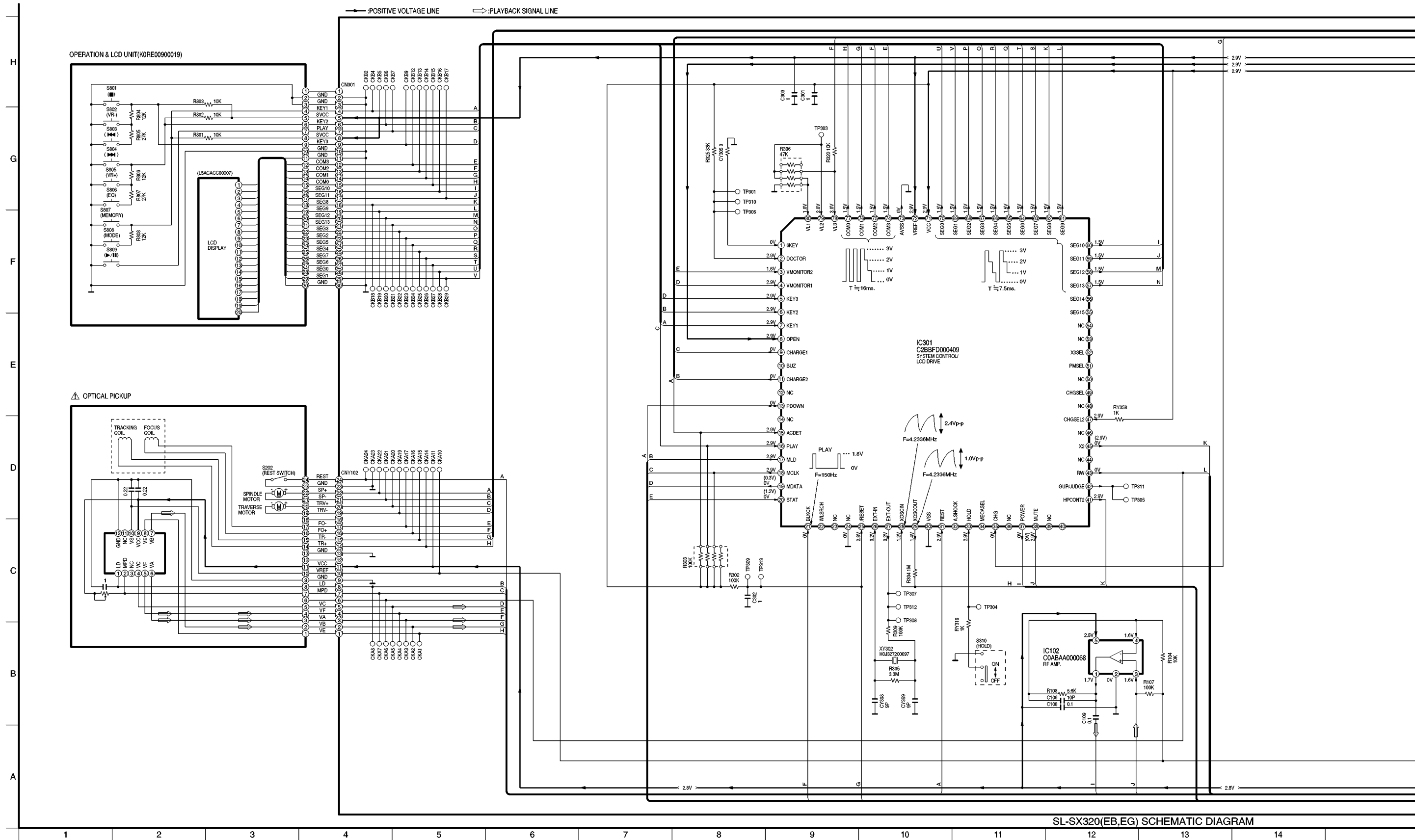
Note:

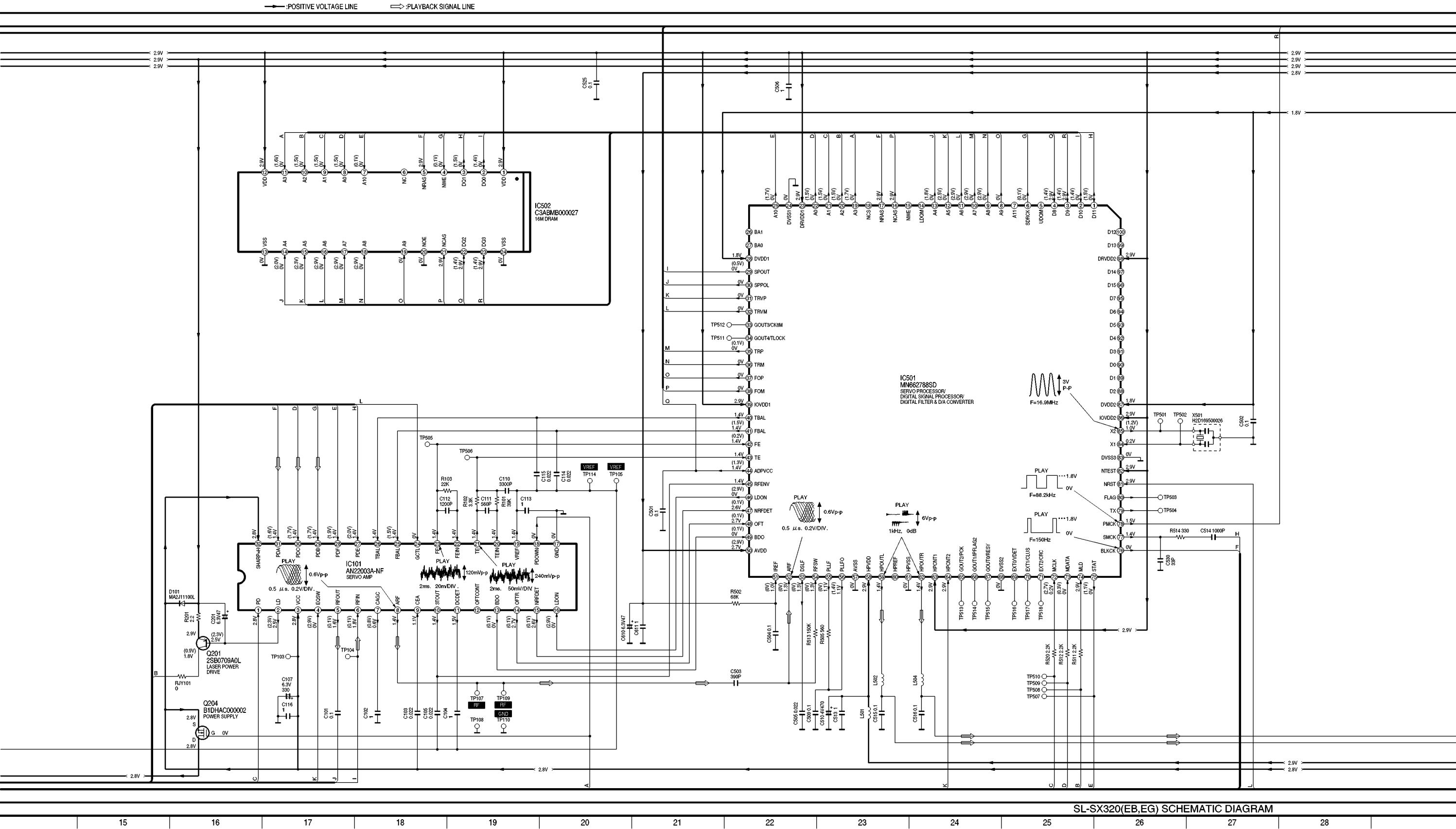
- S201: Open switch in "OFF" position.
(It turns "ON" with disc holder closed.)
- S202: Rest switch in "OFF" position.
(It turns "ON" when optical pickup comes to innermost periphery.)
- S301: Hold (HOLD) switch in "OFF" position.
- S801: Stop/operation off (■) switch.
- S802, 805: Volume control (VOL+,VOL -) switch.
- S803, 804: Skip/search (◀◀ , ▶▶) switch.
- S806: Tone selection (EQ) switch.
- S807: Program / recall (MEMORY) switch.
- S808: Play mode selection (MODE) switch.
- S809: Play/pause (▶ / ||) switch.
- Components identified by △ mark have special characteristics important for safety.
- When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.
- The supply part number is described alone in the replacement parts.
- Signal line
-  : Positive voltage line.
-  : Playback signal line.
- The voltage value and waveforms are the reference voltage of this measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of GND terminal (DC IN Jack). Accordingly, there may arise some errors in the voltage values and waveforms depending upon the internal impedance of the tester or measuring unit.
- Measurement conditions:
- *().....CD playback mode (Test disc 1kHz, L+R, 0dB)
- *No mark.....CD stop mode

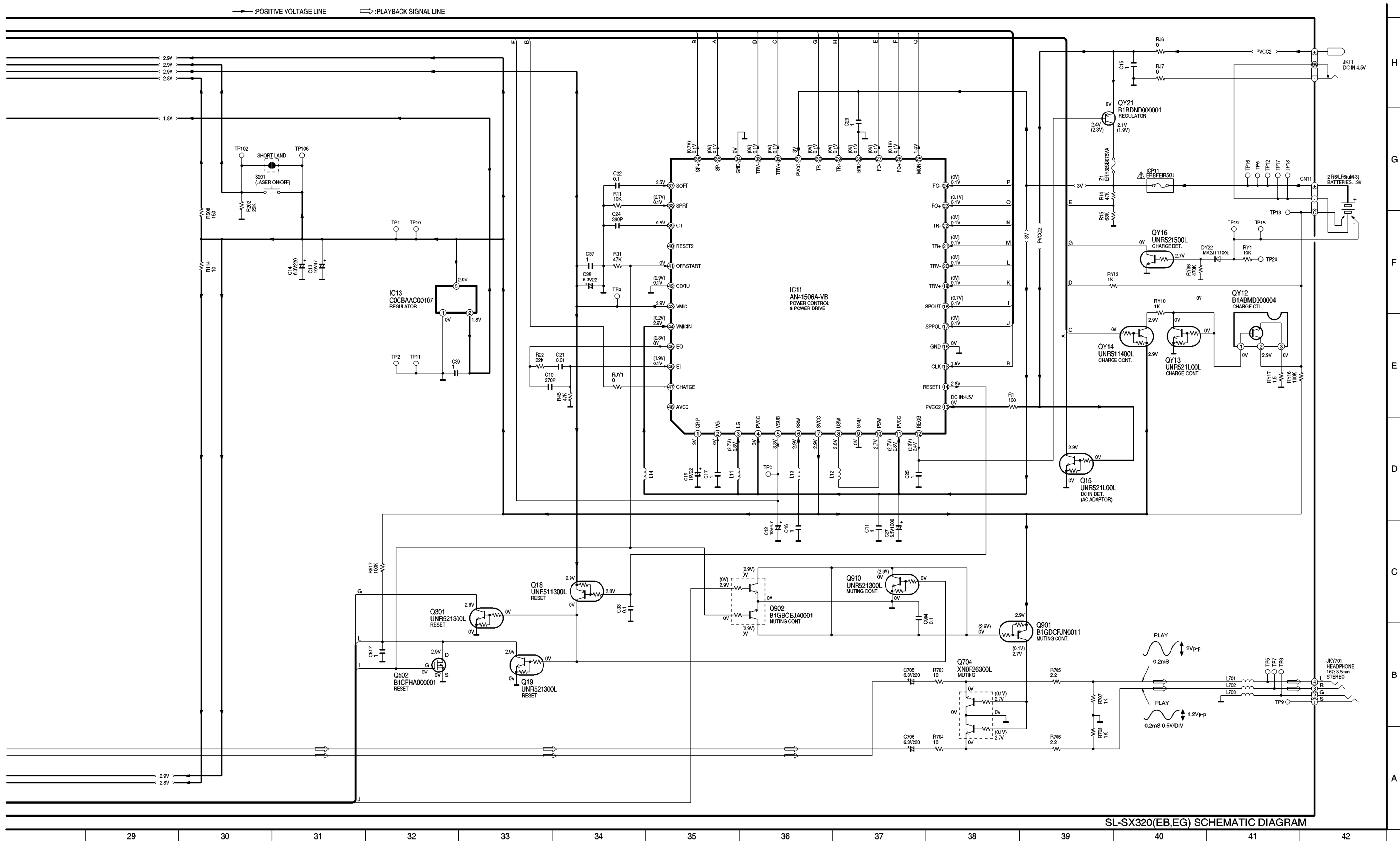
Caution!!

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

11 Schematic Diagram

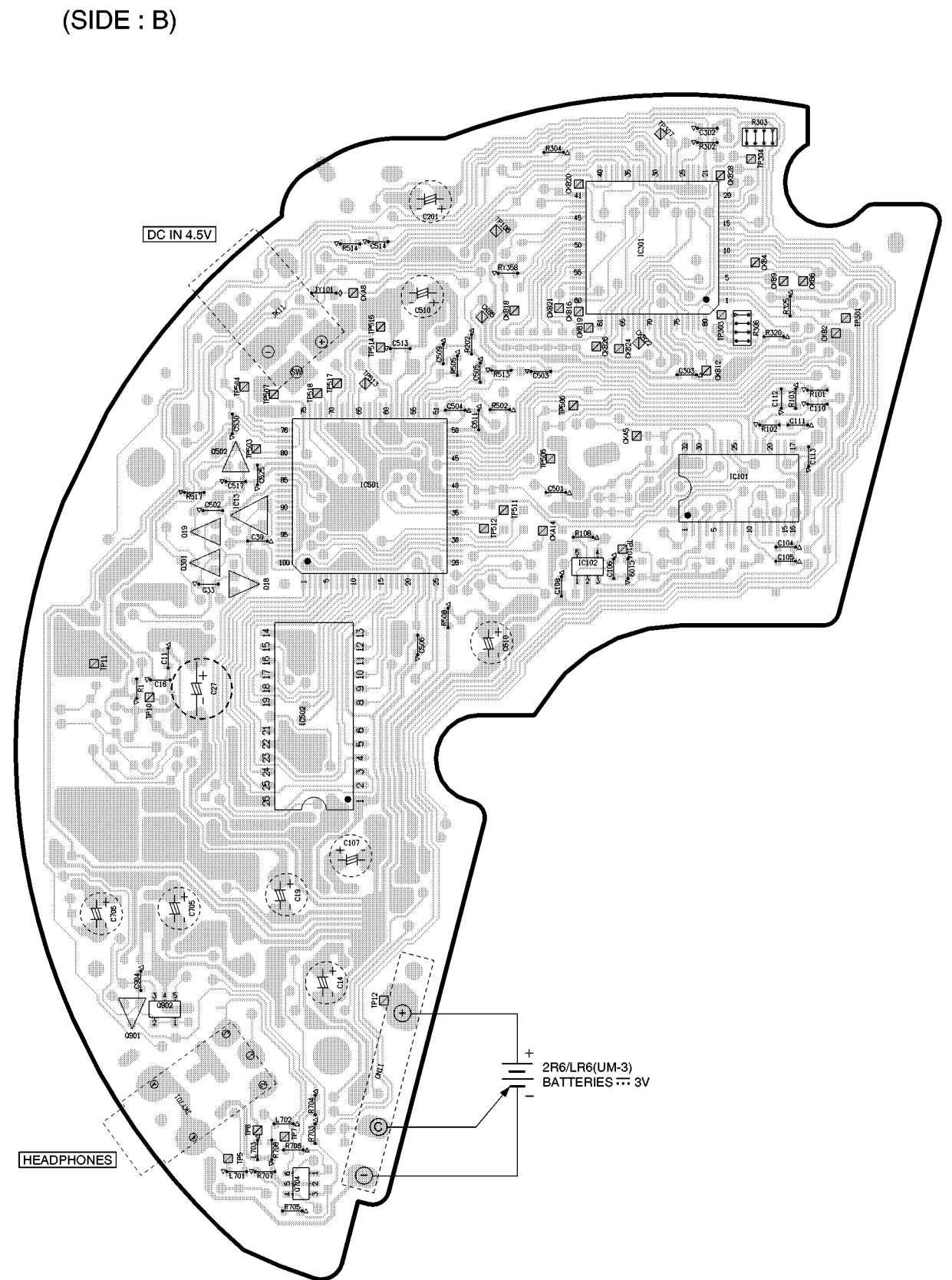
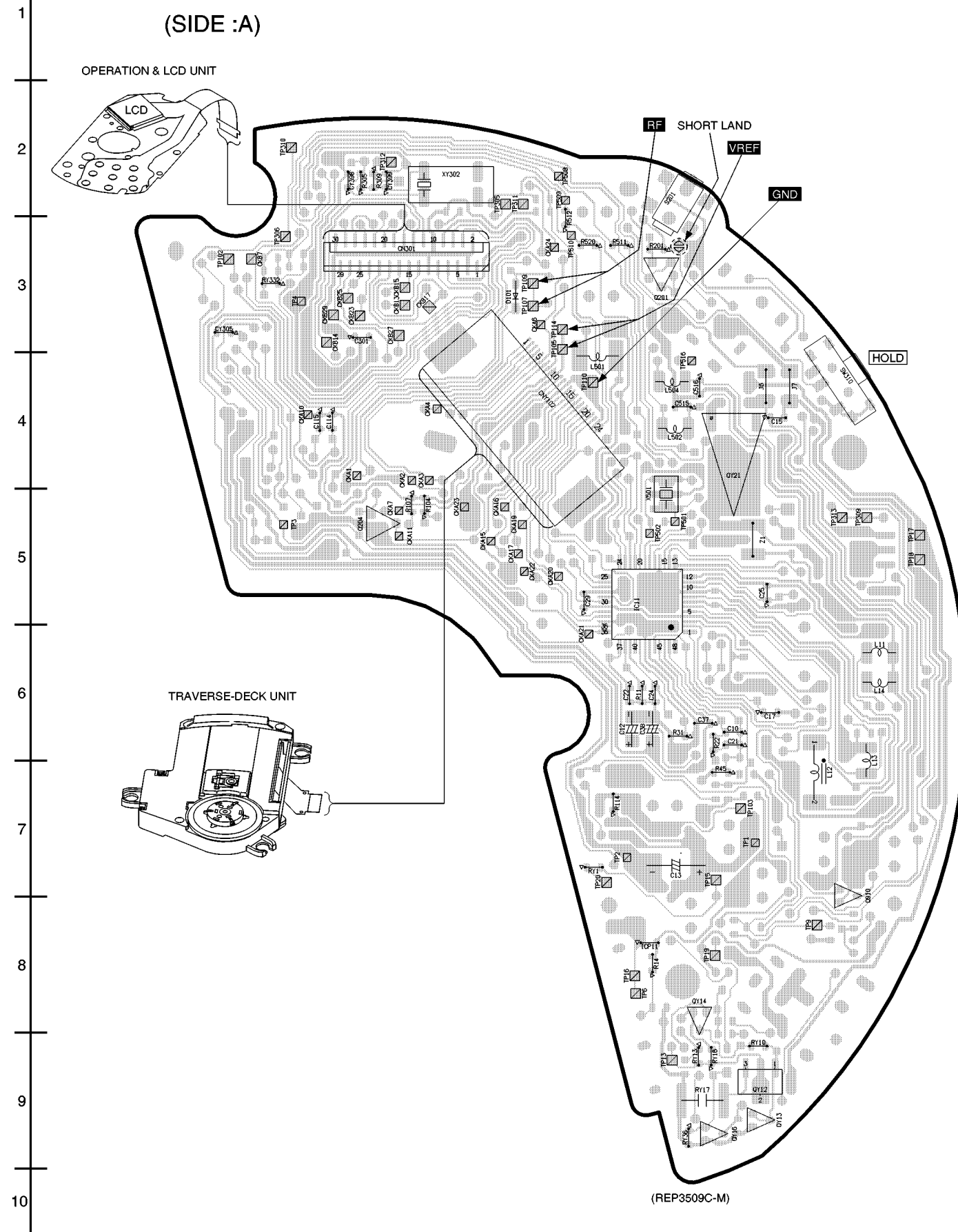




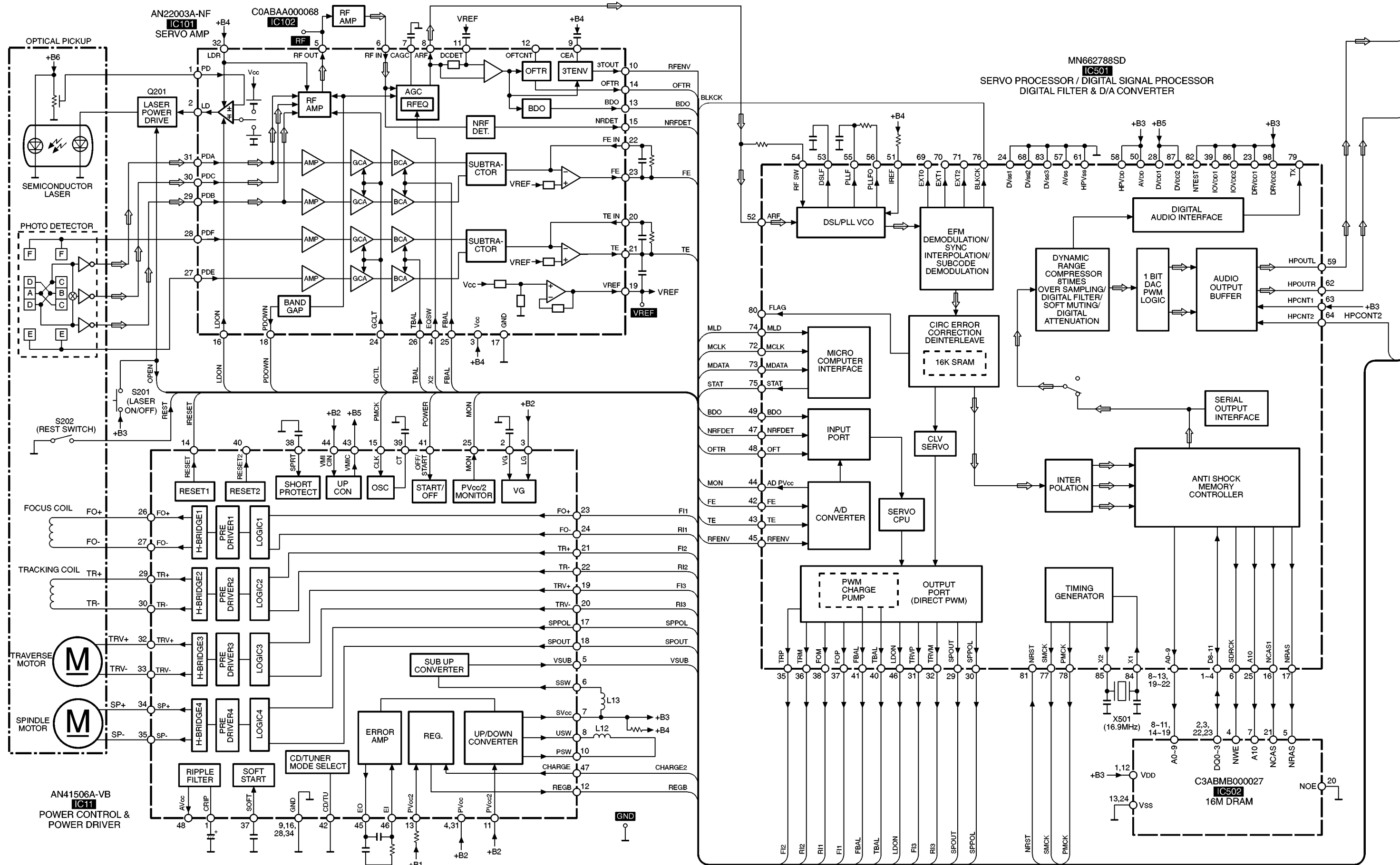


12 Printed Circuit Board and Wiring Connection Diagram

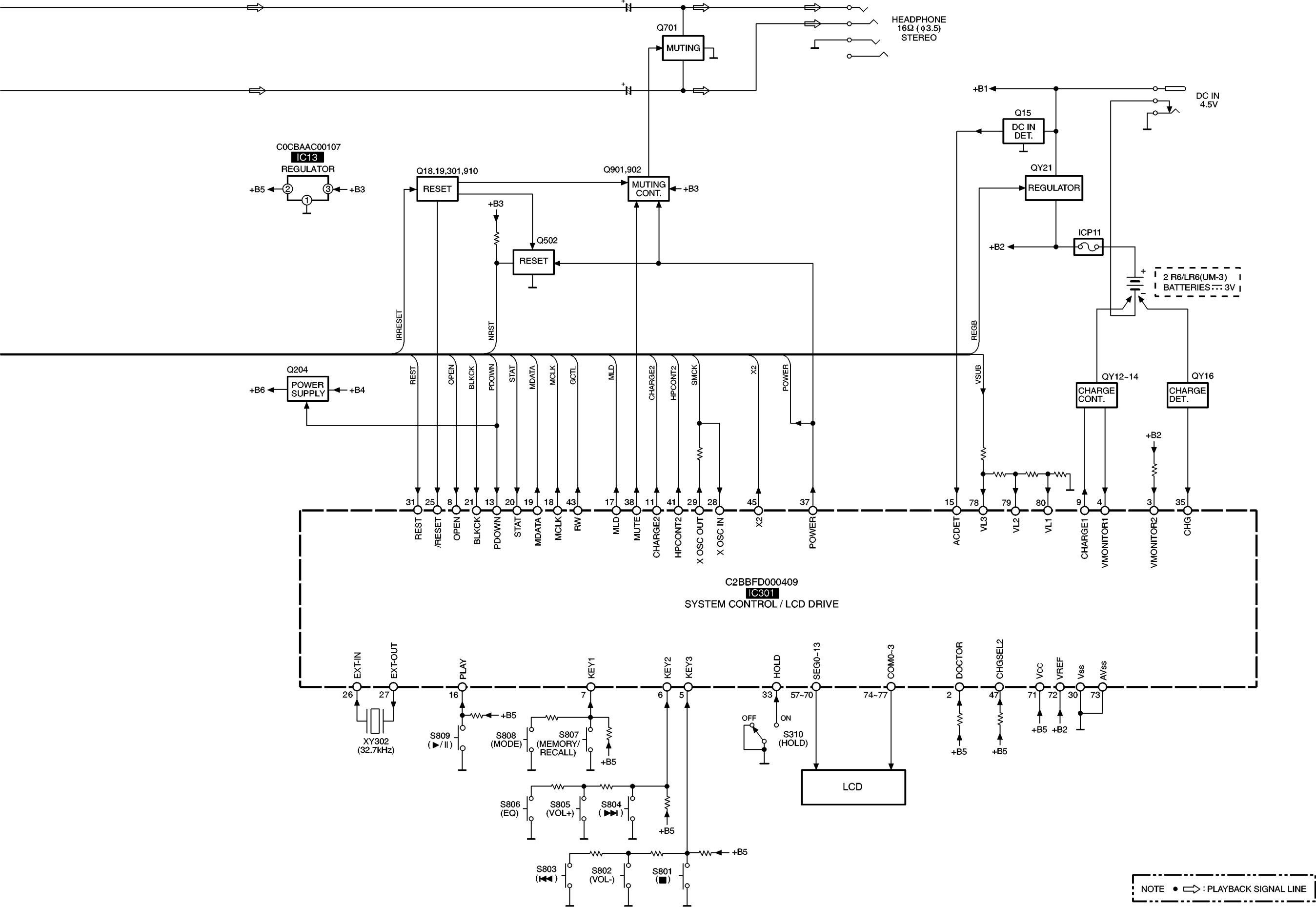
Note: This printed circuit board diagram may be modified at any time with the development of new technology.



13 Block Diagram



SL-SX320(EB,EG)BLOCK DIAGRAM



SL-SX320(EB,EG)BLOCK DIAGRAM

14 Terminal Function of ICs

14.1. IC101(AN22003A-NF): Servo Amplifier

Pin No.	Terminal Name	I/O	Function
1	PD	I	APC amplifier input terminal
2	LD	O	Laser power drive signal output
3	V _{CC}	I	Power supply terminal
4	EQSW	I	EQ characteristic drive signal input
5	RFOUT	O	RF addition output terminal
6	RF IN	I	RF signal input terminal
7	CAGC	O	AGC loop filter capacity connection terminal
8	ARF	O	RF signal output terminal
9	CEA	I	H.P.F. Capacitor connection terminal
10	3TOUT	O	RF envelope signal output terminal
11	DCDET	O	The H.P.F. capacitor connection terminal for detection systems
12	OFTCONT	-	Not used, open
13	BDO	O	Dropout signal output terminal
14	OFTR	O	Off-track signal output terminal
15	NRFDET	O	RF detection signal output terminal
16	LDON	I	Laser ON signal input terminal
17	GND	-	GND
18	PDOWN	I/O	Reduced voltage detection signal input
19	VREF	O	Reference voltage output terminal
20	TEIN	I	Tracking error amplifier input terminal
21	TE	O	Tracking error amplifier output terminal
22	FEIN	I	Focus error amplifier input terminal
23	FE	O	Focus error amplifier output terminal
24	GCTL	I	RF/FE/TE gain control signal output terminal
25	FBAL	I	Focus balance signal input terminal
26	TBAL	I	Tracking balance signal input terminal
27	PDE	I	Tracking signal input terminal
28	PDF	I	Tracking signal input terminal
29	PDB	I	Focus signal input terminal
30	PDC	I	RF addition amplifier input terminal
31	PDA	I	Focus signal input terminal
32	SHARP=H	I	LD reference voltage input terminal

14.2. IC301(C2BBFD000409): System Control

Pin No.	Terminal Name	I/O	Function
1	6KEY	I	6Key Remote control key signal input
2	DOCTOR	I	Doctor mode select signal input
3	VMONITO R2	I	Battery remaining measurement/battery shorting detect signal input
4	VMONITO R1	I	Rechargeable battery/alkaline battery voltage signal input
5	KEY3	I	Operation key signal input
6	KEY2	I	Operation key signal input
7	KEY1	I	Operation key signal input
8	OPEN	I	CD cover open detect signal input
9	CHARGE1	O	Charge control signal output
10	BUZ	O	Buzzer control output terminal
11	CHARGE2	I	Charging ON signal output
12	NC	-	Not used, open
13	PDOWN	I/O	Headamp power OFF signal terminal
14	ECS	-	Not used, open
15	ACDET	I	AC Power supply detect signal input
16	PLAY	I	PLAY key signal input
17	MLD	O	Serial command latch output

Pin No.	Terminal Name	I/O	Function
18	MCLK	O	Serial command clock / EEPROM clock output
19	MDATA	O	Serial command data output / EEPROM data output
20	STAT	I	Status signal input
21	BLKCK	I	Block clock signal input
22	WLSRCN	-	Not used
23	NC	-	Not used, open
24	NC	-	Not used, open
25	/RESET	I	Reset detect signal input
26	EXT-IN	I	Oscillator connected terminal (F=32.7 kHz)
27	EXT OUT	O	
28	XOSCIN	I	System clock signal
29	XOSCOUT	O	
30	V _{SS}	-	GND
31	REST	I	Rest detect switch signal input
32	A.SHOCK	-	Not used, open
33	HOLD	I	HOLD switch signal input
34	MECASEL	-	Not used, open
35	CHG	I	Alkaline battery detect signal input
36	NC	-	Not used, open
37	POWER	O	Power supply detect signal output
38	MUTE	O	Muting signal output
39	NC	-	Not used, open
40	NC	-	Not used, open
41	HPCONT2	I	Headphone control signal output
42	GUP / JUDGE	O	Sound gain up/Judge signal output
43	RW	O	Output for CD-RW
44	NC	-	Not used, open
45	X2	O	RF equalizer twice speed signal output
46	NC	-	Not used, open
47	CHGSEL2	I	Charging signal input
48	TYPESEL	-	Not used, open
49	CHGSEL	-	Not used, open
50	PMSEL2	-	Not used, open
51	PMSEL	-	Not used, open
52	X3SEL	-	Not used, open
53	NC	-	Not used, open
54	NC	-	Not used, open
55	SEG15	-	Not used, open
56	SEG14	-	Not used, open
57	SEG13	O	LCD segment signal output
70	SEG0		
71	V _{CC}	I	Power supply terminal
72	VREF	I	Reference voltage input terminal
73	AV _{SS}	O	GND
74	COM3	O	LCD common signal output terminal
77	COM0		
78	VL3	I	Power supply terminal
79	VL2	I	Power supply terminal (LCD drive bias)
80	VL1	I	Power supply terminal (LCD drive bias)

14.3. IC501(MN662788SD): Servo Processor, Digital Signal Processor, Digital Filter & D/A Converter

Pin No.	Terminal Name	I/O	Function
1 4	D11 D8	I/O	DRAM data I/O signal 11 - 8
5	UDQM	-	Not use, open
6	SDRCK	O	SDRAM clock signal input
7	A11	-	Not used, open
8 13	A9 A4	O	DRAM address signal output 9 - 4
14	LDQM	-	Not used, open
15	NWE	-	Not used, open
16	NCAS	O	DRAM CAS control signal output
17	NRAS	O	DRAM RAS control signal output
18	NCS	-	Not used, open
19 22	A3 A0	O	DRAM address signal output 3 - 0
23	DRVDD1	I	Power supply 1 for DRAM interface
24	DVSS1	-	GND1 for digital circuits
25	A10	O	DRAM address signal output 10
26	BA1	-	Not used, open
27	BA0	-	Not used, open
28	DVDD1	I	Power supply 1 for digital circuits
29	SPOUT	O	Spindle motor drive signal output
30	SPPOL	O	Spindle motor drive signal output
31	TRVP	O	Traverse drive signal output (+)
32	TRVM	O	Traverse drive signal output (-)
33	GOUT3 /CK8M	-	TP512
34	GOUT4 /TLOCK	-	TP511
35	TRP	O	Tracking drive signal output (+)
36	TRM	O	Tracking drive signal output (-)
37	FOP	O	Focus drive signal output (+)
38	FOM	O	Focus drive signal output (-)
39	IOVDD1	I	Power supply1 for digital I/O
40	TBAL	O	Tracking balance adjustment output
41	FBAL	O	Focus balance adjustment output
42	FE	I	Focus error signal input
43	TE	I	Tracking error signal input
44	ADPVCC	I	Voltage input for supply voltage monitor
45	RFENV	I	RF envelope signal input
46	LDON	O	Laser ON signal output
47	NRFDET	I	RF detection signal input
48	OFT	I	Off-track signal input
49	BDO	I	Dropout signal input
50	AVDD1	I	Power supply1 for analog circuits
51	IREF	I	Reference current input for analog
52	ARF	I	RF signal input
53	DSLIF	I	DSL loop filter
54	RFSW	I	DSL loop filter
55	PLLIF	O	PLL loop filter
56	PLLFO	O	PLL loop filter
57	AVSS1	-	GD1 for analog circuits
58	HPVDD	I	Power supply for headphone out
59	HPOUTL	O	L-ch audio output
60	HPREF	-	Not used, open
61	HPVSS	-	GND for headphone out
62	HPOUTR	O	R-ch audio output
63	HPCNT1	I	Headphone out control signal input1
64	HPCNT2	I	Headphone out control signal input2

Pin No.	Terminal Name	I/O	Function
65	GOUT2 /PCK	-	TP513
66	GOUT1 /IPFLAG2	-	TP514
67	GOUT0 /RESY	-	TP515
68	DVSS2	-	GND2 for digital circuits
69	EXT0 /VDET	-	TP516
70	EXT1 /CLUS	-	TP517
71	EXT2/CRC	-	TP518
72	MCLK	I	Microcontroller command clock signal output
73	MDATA	I	Microcontroller command data signal output
74	MLD	I	Microcontroller command load signal output
75	STAT	O	Status signal output
76	BLKCK	O	Sub-code block clock signal output
77	SMCK	O	Clock signal output
78	PMCK	O	Clock signal output (F=88.2kHz)
79	TX	O	TP504
80	FLAG	O	TP503
81	NRST	I	LSI reset signal input
82	NTEST	I	Test input pin
83	DVSS3	-	GND3 for digital circuits
84	X1	I	Crystal oscillator connected (F=16.9 MHz)
85	X2	O	
86	IOVDD2	I	Power supply2 for digital I/O
87	DVDD2	I	Power supply2 for digital circuits
88	D2	-	Not used, open
89	D1	-	Not used, open
90	D0	-	Not used, open
91 95	D3 D7	-	Not used, open
96	D15	-	Not used, open
97	D14	-	Not used, open
98	DRVDD2	I	Power supply2 for DRAM interface I/O
99	D13	-	Not used, open
100	D12	-	Not used, open

15 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 manufactures specified parts shown in the parts list.

*The parenthesized indications in the Remarks columns specify the areas.

Parts without these indications can be used for all areas.

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

Parts without these indications can be used for all colours.

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

*Capacity values are in microfarads (μ F) unless specified otherwise, P=Pico-farads (pF), F=Farads (F).

*Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM).

*The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, it will no longer be available.

*All parts are supplied by SPC.

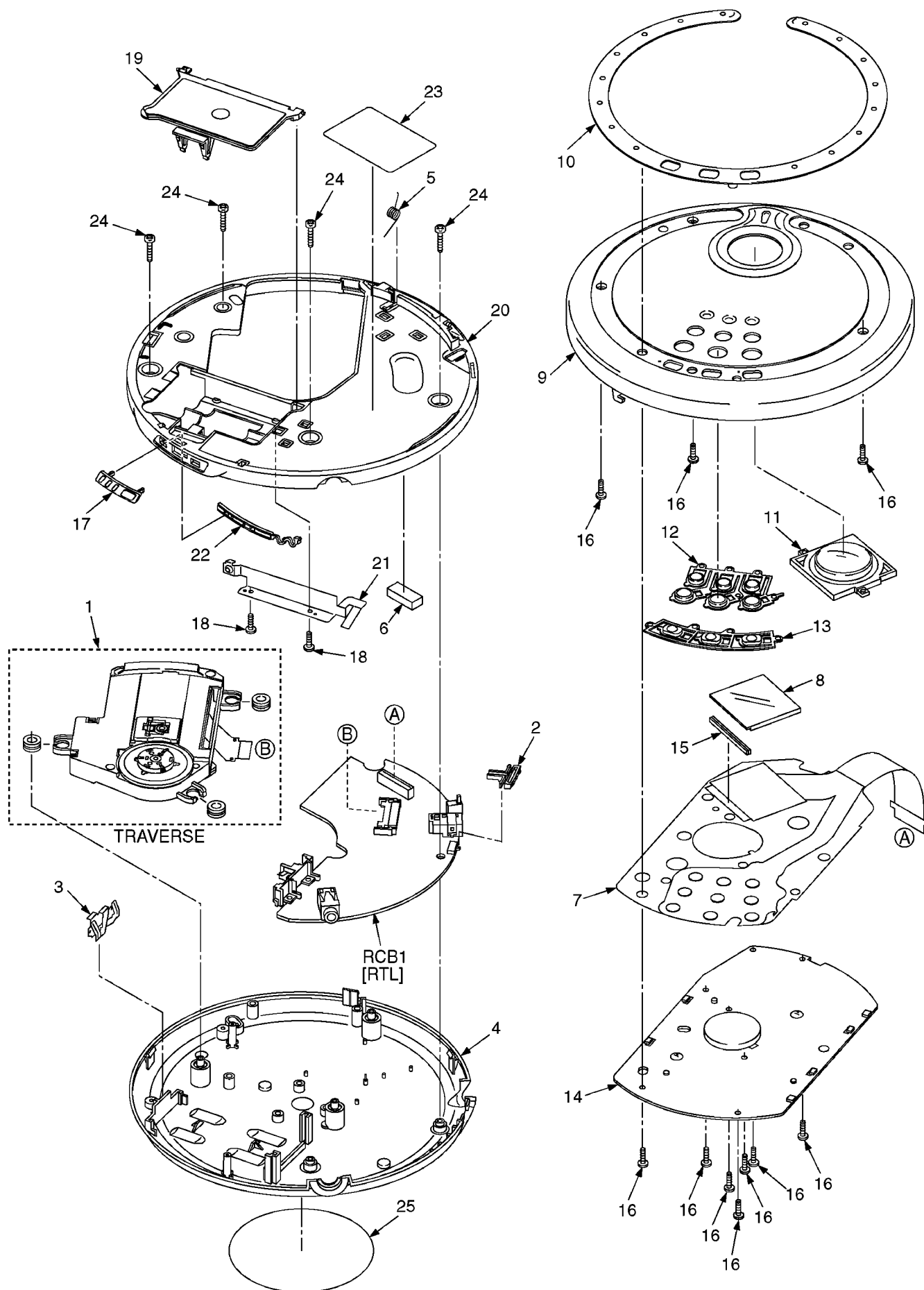
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	RAE0240Z-M	TRAVERSE DECK UNIT	1	Δ
1-1	RMG0605-K	FLOATING RUBBER	3	
1-2	RAF0240A	OPTICAL PICK UP	1	Δ
1-3	RDG0554	GEAR 1	1	
1-4	RDG0555	GEAR 2	1	
1-5	RMQ1125	MOTOR SUPPORTER	1	
1-6	RMS0782	SHAFT	1	
1-7	XQN17+BG45	SCREW	1	
1-8	RXQ0971-3	MOTOR ASS'Y	1	
2	RGV0317-H1	KNOB, HOLD	1	
3	RJC93038-2	BATTERY TERMINAL	1	
4	RKS0376-A	BOTTOM CABINET	1	
5	RME0388	OPEN SPRING	1	
6	RMRL1514-K	FPC HOLDER	1	
7	K0RE00900019	MULTI BUTTON SW UNIT	1	
8	L5ACACC00007	LCD	1	
9	RGD0094-S	CD LID	1	(EGS) (EBS)
9	RGD0094-A	CD LID	1	(EGA)
10	RGK1626-A	ORNAMENT RING	1	(EGS) (EBS)
10	RGK1626-1A	ORNAMENT RING	1	(EGA)
11	RGF0995-A	LCD PANEL	1	
12	RGU2190-S	OPERATION BUTTON A	1	
13	RGU2191-A	OPERATION BUTTON B	1	(EGS) (EBS)
13	RGU2191-1A	OPERATION BUTTON B	1	(EGA)
14	RMRL1521-H	LID COVER	1	(EGS) (EBS)
14	RMRL1521-1A	LID COVER	1	(EGA)
15	RSQ0095	ZEBRA RUBBER	1	
16	XQN14+BG3FC	SCREW	10	
17	RGV0318-H1	KNOB, OPEN	1	
18	RHQ0088-K	SCREW	2	
19	RKK0171-A	BATTERY LID	1	
20	RKM0482A-A	MIDDLE CABINET	1	
21	RMC0537	DETECTION PLATE	1	
22	RMRL1412-K1	LOCK PLATE	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
23	RQLS0244	LASER LABEL	1	
24	XTN17+6GFZ	SCREW	4	
25	RGN2427-H1	NAME PLATE	1	(EGS) (EGA)
25	RGN2428-H1	NAME PLATE	1	(EBS)
A1	L0BAB0000123	STEREO EARPHONES	1	
A2	N0JCCE000004	AC ADAPTOR	1	(EBS) Δ
A3	RQT6784-B	O/I BOOK	1	(EBS) English
A4	RFEA419E-M	AC ADAPTOR	1	(EGS) (EGA) Δ
A5	RQT6786-E	O/I BOOK	1	(EGS) (EGA) English French German Spanish Netherlands Swedish Danish Italian Portuguese Russian Czech Polish
C10	ECUV1H271KBV	50V 270P	1	FIH1H271A009
C11	FIH1A105A028	10V 1U	1	
C12	RCST1AY475RG	10V 4.7U	1	F3F1A4750003
C13	F3H1A476A001	16V 47U	1	
C14	RCE0JKA221IG	6.3V 220U	1	F2A0J2210012
C15-17	ECUVNA105ZFV	10V 1U	3	FIH1A105A030
C19	ECA1CAK220XH	16V 22U	1	
C20	FIH1A105A028	10V 1U	1	
C21	ECUVNH103KBV	50V 0.01U	1	FIH1H103A748
C22	ECUZNC104ZFV	16V 0.1U	1	FIH1C1040008
C24	ECUV1H391KBV	50V 390P	1	ECJ1VB1H391K
C25	ECUVNA105ZFV	10V 1U	1	FIH1A105A030
C27	F2A0J102A130	6.3V 1000U	1	
C29	FIH1A105A028	10V 1U	1	
C33	ECUZNC104ZFV	16V 0.1U	1	FIH1C1040008
C37	ECUVNA105ZFV	10V 1U	1	FIH1A105A030
C38	RCST0JY226RG	6.3V 22U	1	F3F0J2260002
C39	FIH1A105A028	10V 1U	1	
C101	ECJ1VB1C104K	16V 0.1U	1	
C102	ECUVNA105ZFV	10V 1U	1	FIH1A105A030
C103	ECJ1VB1E223K	25V 0.022U	1	
C104	FIH1A105A028	10V 1U	1	
C105	ECJ1VB1E223K	25V 0.022U	1	
C106	ECJ1VC1H100C	50V 10P	1	ECJ1VC1H100D
C107	ECEA0JKS331	6.3V 330U	1	
C108, 09	ECUZNC104ZFV	16V 0.1U	2	FIH1C1040008
C110	ECJ1VB1H332K	50V 3300P	1	
C111	ECJ1VB1H561K	50V 560P	1	
C112	ECUV1H122KBV	50V 1200P	1	FIH1H122A013
C113	FIH1A105A028	10V 1U	1	
C114, 15	ECJ1VB1E223K	25V 0.022U	2	
C116	FIH1A105A028	10V 1U	1	
C201	ECA0JAK470XH	6.3V 47U	1	
C301	FIH1A105A028	10V 1U	1	
C302, 03	ECUVNA105ZFV	10V 1U	2	FIH1A105A030
C501, 02	ECUZNC104ZFV	16V 0.1U	2	FIH1C1040008
C503	ECUV1H391KBV	50V 390P	1	ECJ1VB1H391K
C504	ECUZNC104ZFV	16V 0.1U	1	FIH1C1040008
C505	ECJ1VB1E223K	25V 0.022U	1	
C506	ECUVNA105ZFV	10V 1U	1	FIH1A105A030
C509	ECJ1VB1C104K	16V 0.1U	1	
C510	ECEA0GKS471	4V 470U	1	
C513	FIH1A105A028	10V 1U	1	
C514	ECJ1VB1H102K	50V 1000P	1	
C515, 16	ECJ1VB1C104K	16V 0.1U	2	
C517	ECUVNA105ZFV	10V 1U	1	FIH1A105A030
C525	ECUZNC104ZFV	16V 0.1U	1	FIH1C1040008
C530	ECJ1VC1H330J	50V 33P	1	
C610	ECA0JAK470XH	6.3V 47U	1	
C611	FIH1A105A028	10V 1U	1	

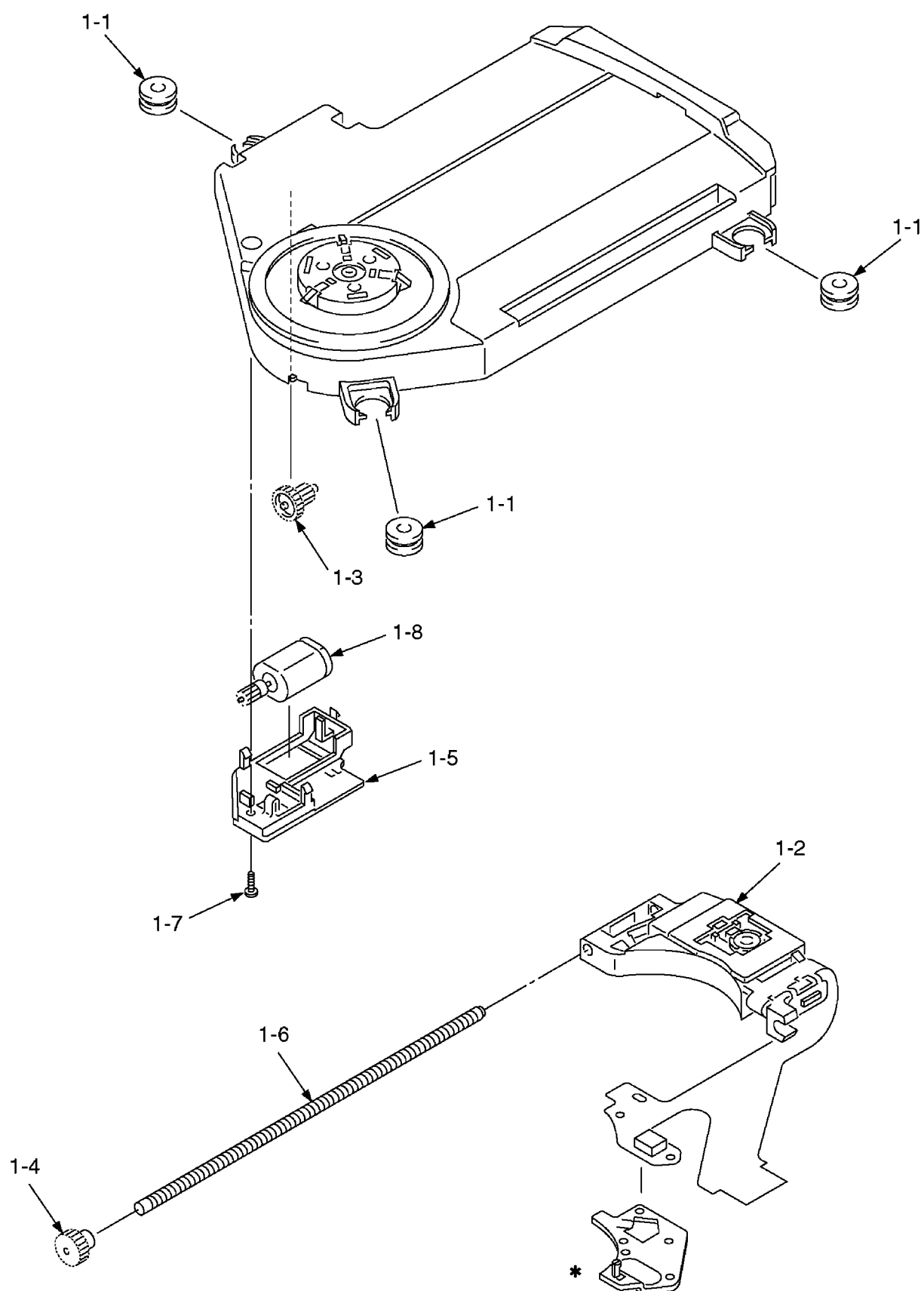
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C705,06	RCE0JKA221IG	6.3V 220U	2	F2A0J2210012
C904	ECUZN104ZFB	16V 0.1U	1	F1H1C1040008
CN11	K4BC03B00014	BATTERY TERMINAL	1	
CN301	K1MN30A00051	CONNECTOR (30P)	1	
CNY102	K1MN24B00093	CONNECTOR (24P)	1	
CY305	ERJ3GEY0R00V	1/16W 0	1	
CY398,9 9	ECUV1H090DCV	50V 9P	2	F1H1H9R0A244
D101	MA2J11100L	DIODE	1	
DY22	MA2J11100L	DIODE	1	
IC11	AN41506A-VB	IC	1	
IC13	C0CBAAC00107	IC	1	
IC101	AN22003A-NF	IC	1	
IC102	C0ABAA000068	IC	1	
IC301	C2BBFD000409	IC	1	
IC501	MN662788SD	IC	1	
IC502	C3ABMB000027	IC	1	
ICP11	ERBFE1R50U	IC PROTECTOR	1	△
JK11	RJJ43K09-C	JACK,DC IN	1	K2EB2B000006
JKY701	K2HC104B0013	JACK,HEADPHONE	1	
L11	RLQU331KT-W	COIL	1	G1C331K00004
L12	G1A101D00009	COIL	1	
L13,14	RLQU101KT-W	COIL	2	G1C101K00008
L501	G1C471K00007	COIL	1	
L502	RLQU101KT-W	COIL	1	G1C101K00008
L504	RLQU101KT-W	COIL	1	G1C101K00008
L701,02	RLEV102V-Y	COIL	2	J0JBC0000014
L703	J0JCC0000181	COIL	1	
P1	RPN1584	TRAY 1	1	(EBS)
P2	RPN1585	TRAY 2	1	(EBS)
P3	RPQ1510	SHEET	1	(EBS)
P4	RPF0111-2	PROTECTION BAG	1	(EGS) (EGA)
P5	RPK1909	GIFT BOX	1	(EGS)
P5	RPK1910	GIFT BOX	1	(EGA)
P6	RPQ0836-3	PAD	1	(EGS) (EGA)
P7	RPQ1529	PAD	1	(EGS) (EGA)
PCB1	REP3509C-M	P.C.B. ASS'Y	1	[RTL]
Q15	UNR521L00L	TRANSISTOR	1	
Q18	UN5113TW	TRANSISTOR	1	
Q19	UN5213TX	TRANSISTOR	1	UNR521300L
Q201	2SB709A	TRANSISTOR	1	2SB709A
Q204	B1DHAC000002	TRANSISTOR	1	
Q301	UN5213TX	TRANSISTOR	1	UNR521300L
Q502	B1CFHA000001	TRANSISTOR	1	
Q704	XN0F26300L	TRANSISTOR	1	
Q901	B1GDCFJN0011	TRANSISTOR	1	
Q902	FMG6AT148	TRANSISTOR	1	B1GBCEJA0001
Q910	UN5213TX	TRANSISTOR	1	UNR521300L
QY12	B1ABMD000004	TRANSISTOR	1	
QY13	UNR521L00L	TRANSISTOR	1	
QY14	UNR511400L	TRANSISTOR	1	
QY16	UN5215TX	TRANSISTOR	1	UNR521500L
QY21	2SB1182TLPQR	TRANSISTOR	1	B1BDND000001
R1	ERJ3GEYJ101	1/16W 100	1	D0GB101JA002
R11	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R14	ERA3YK473V	3W 47K	1	
R15	ERJ3GEYD683V	1/16W 68K	1	
R22	ERJ3GEYJ223V	1/16W 22K	1	D0GB223JA002

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R31	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
R45	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
R101	ERJ3GEYJ393V	1/16W 39K	1	D0GB393JA002
R102	ERJ3GEYJ332V	1/16W 3.3K	1	D0GB332JA002
R103	ERJ3GEYJ223V	1/16W 22K	1	D0GB223JA002
R104	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R107	ERJ3GEYJ104	1/16W 100K	1	
R108	ERJ3GEYJ562V	1/16W 5.6K	1	D0GB562JA002
R114	ERJ3GEYJ100	1/16W 10	1	
R201	ERJ3GEYJ2R2V	1/16W 2.2	1	D0GB2R2JA002
R202	ERJ3GEYJ223V	1/16W 22K	1	D0GB223JA002
R302	ERJ3GEYJ104	1/16W 100K	1	
R303	EXBV8V104JV	1/16W 100K	1	
R304	ERJ3GEYJ105V	1/16W 1M	1	
R305	ERJ3GEYJ335V	1/16W 3.3M	1	
R306	EXBV8V473JV	1/16W 47K	1	
R309	ERJ3GEYJ104	1/16W 100K	1	
R320	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R325	ERJ3GEYJ333V	1/16W 33K	1	D0GB333JA002
R502	ERJ3GEYJ683V	1/16W 68K	1	D0GB683JA002
R505	MCR03PZHJ561	1/16W 560	1	
R508	ERJ3GEYJ151V	1/16W 150	1	
R511,12	ERJ3GEYJ222V	1/16W 2.2K	2	
R513	ERJ3GEYJ154V	1/16W 150K	1	
R514	ERJ3GEYJ331V	1/16W 330	1	
R517	ERJ3GEYJ104	1/16W 100K	1	
R520	ERJ3GEYJ222V	1/16W 2.2K	1	
R703,04	ERJ3GEYJ100	1/16W 10	2	
R705,06	ERJ3GEYJ2R2V	1/16W 2.2	2	D0GB2R2JA002
R707,08	ERJ3GEYJ102V	1/16W 1K	2	
RJ6,J7	ERJ8GEY0R00V	1/8W 0	2	D0YFR0000002
RJY1	ERJ3GEY0R00V	1/16W 0	1	
RJY101	ERJ3GEY0R00V	1/16W 0	1	
RY1	D0YBR0000010	10K	1	
RY10	ERJ3GEYJ102V	1/16W 1K	1	
RY13	ERJ3GEYJ102V	1/16W 1K	1	
RY16	ERJ3GEYJ104	1/16W 100K	1	
RY17	ERJ12YJ1R5U	1/2W 1.5	1	
RY36	ERJ3GEYJ474V	1/16W 470K	1	
RY332	ERJ3GEYJ102V	1/16W 1K	1	
RY358	ERJ3GEYJ102V	1/16W 1K	1	
S201	ESE11MV9T	SW,OPEN	1	
S202	RSP1A024-A	SW,REST DET.	1	K0L1BA000029
S310	RSS2A010-1A	SW,HOLD	1	K0D112B00071
X501	H2D169500026	OSCILLATOR	1	
XY302	H0J327200097	OSCILLATOR	1	
Z1	ERY32SB075VA	IC PROTECTOR	1	

16 Cabinet Parts Location



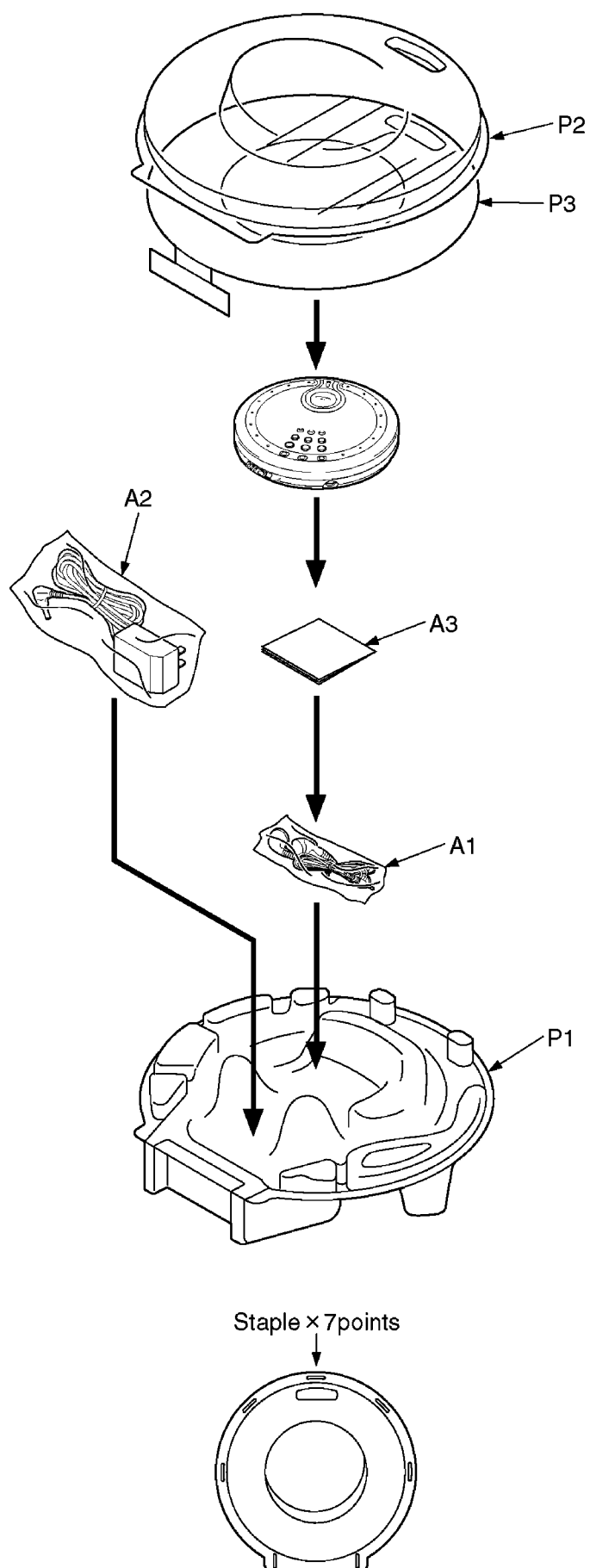
17 Traverse Parts Location



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

18 Packaging

18.1. SL-SX320EB



18.2. SL-SX320EG

