ORDER No.AD0302058C2

Service Manual

Portable CD Player

COMPACT disc DIGITAL AUDIO

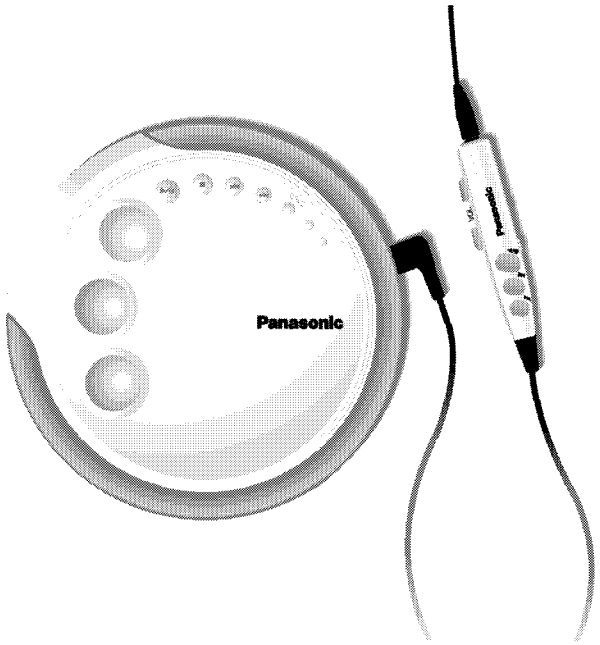
MASH multi-stagenoiseshaping

SL-SX420EB
SL-SX420EG

Colours

(S).....Silver Type

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



Specification

●Audio (CD-DA)

No. of channels:	2 (left and right, stereo)
Frequency response:	20 to 20,000 Hz (+0.5dB ~ -10dB)
DA converter:	1 bit, MASH
Headphone output level:	RMS max. 8mW+8mW/ 16Ω (adjustable)

●Pickup

Light source:	Semiconductor laser
Wavelength:	780 nm

●MP3

Supported bit-rates:	32 kbps to 320 kbps (128 kbps is recommended)
Supported sampling frequency:	48 kHz / 44.1 kHz / 32 kHz
Maximum number of items (sum of albums and tracks):	999
Maximum album levels:	100

●General

Power supply:

DC input (via optional AC adaptor);	DC 4.5V
AC adaptor input;	EB area; AC230V-240V
	EG area; AC220V-230V
Operational temperature range:	0°C-40°C
Rechargeable temperature range:	5°C-40°C

Play time:

Approximate operating time in hours, playing MP3 at the recommended bitrate of 128 kbps, with HOLD on and EQ canceled, at 25 °C on a flat, stable surface.

Batteries used:

2 optional alkaline batteries;	MP3 disc....48h CD-DA disc....37h
2 optional rechargeable batteries;	MP3 disc....23h CD-DA disc....15h
Recharging time:	5 to 6 hours

Panasonic

- 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: 210g (with batteries)
164g (without batteries)

Note:

Specifications are subject to change without notice.

Mss and dimensions are approximate.

Note on CD-R and CD-RW:

This unit can play CD-R and CD-RW recorded with CD-DA or MP3. Use an audio recording disc for CD-DA and finalize* it when you finish recording. The unit may not be able to play some discsdue 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.

⚠ 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.

CONTENTS

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 µW/VDE
Laserradiationfrom the pickup lens is safety level, but be sure the followings:

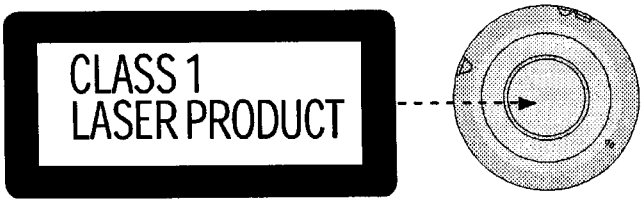
1. Do not disassemble the optical pickup unit, since radiation from exposed laser diode is dangerous.

2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pickup lens for a long time.

ACHTUNG:

Dieses Produkt enthalt eine Laserdiode. Im eingeschalteten Zustand Wird unsichtbare Leserstrahlung von der Lasereinheit abgestrahlt.
Wellenlage: 780nm
Maximale Strahlungsleistung der Lasereinheit: 100 µW/VDE
Die Strahlungasder Lasereinheit ist ungefahrlich, wenn folgende Punkte beachtet werden:

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



(Bottom of product)

(Inside of product)

2 Accessories

For all area:

- Stereo earphones.....1 pc.
  (L0BAB0000124)
- Wired remote control.....1 pc.
  (N2QCBD000010)

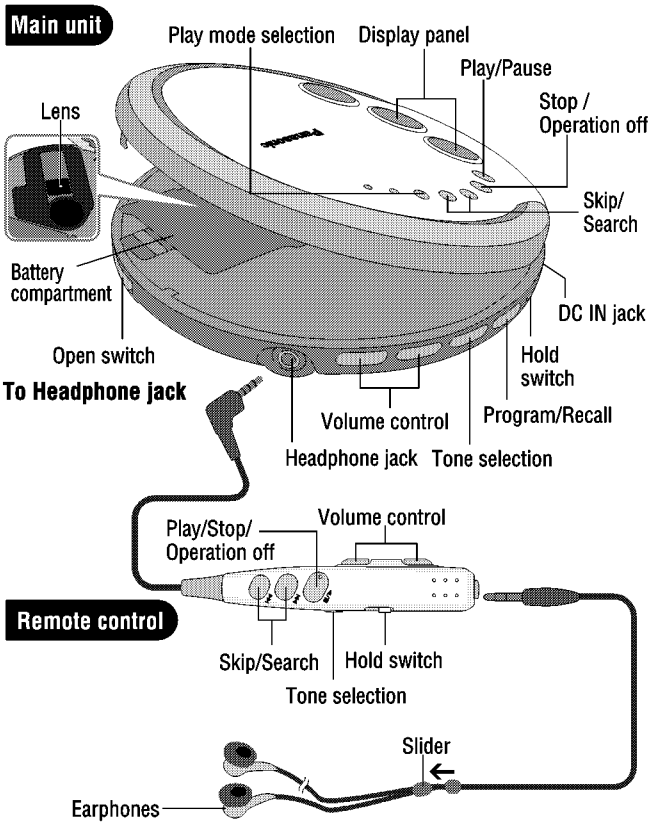
For (EB) area:

- 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 intothe tipof 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**)

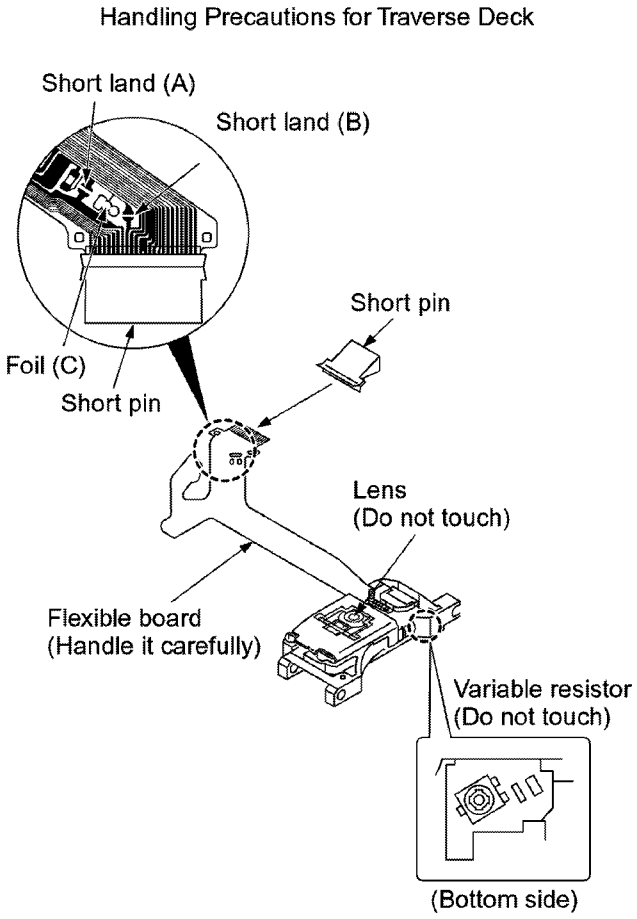


Fig. 1

4.2. 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 fround 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).

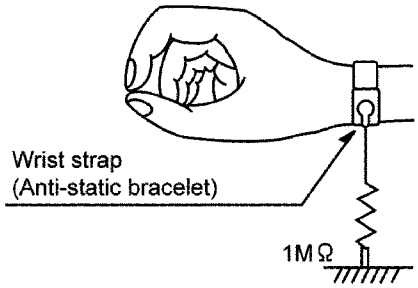


Fig. 2

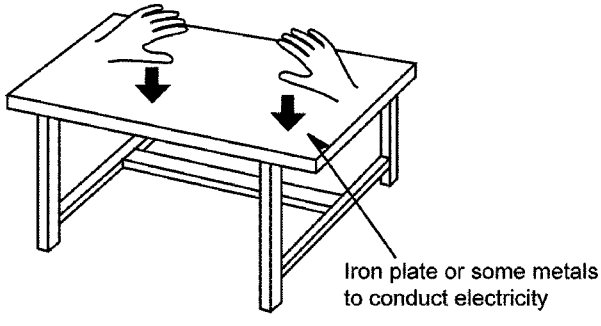


Fig. 3

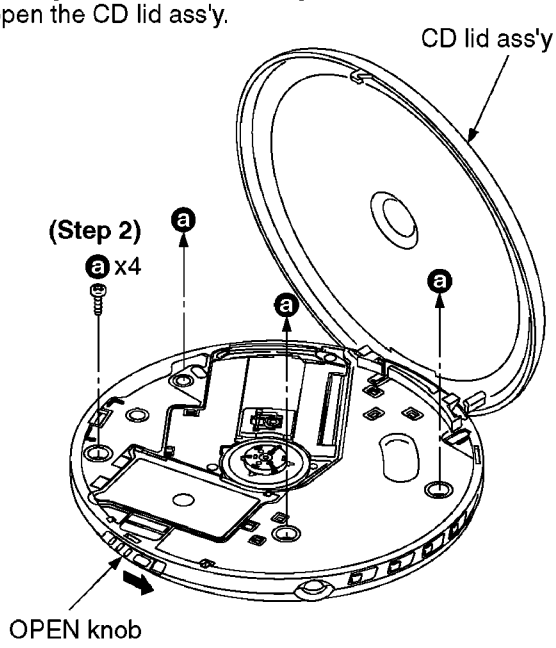
5 Operation Checks and Component Replacement Procedures

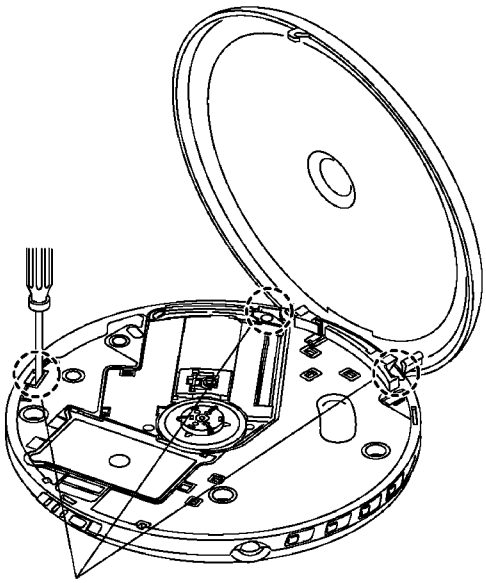
- **This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.**
- **For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.**

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

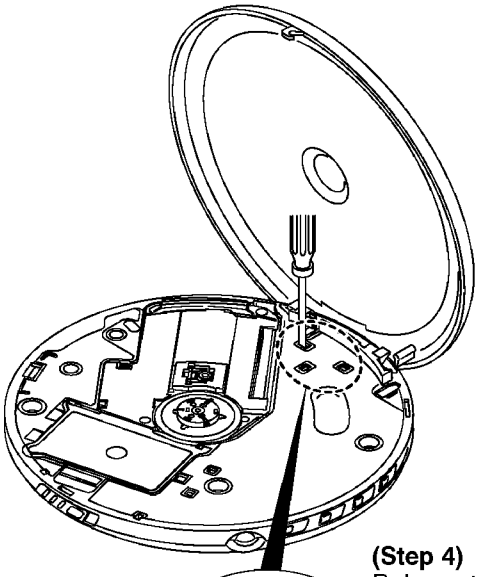
5.1.1. Checking for the P.C.B. ass'y (A side)

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

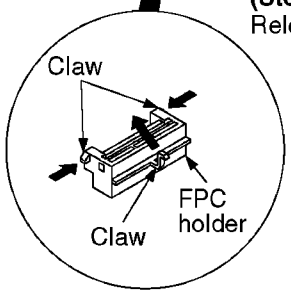




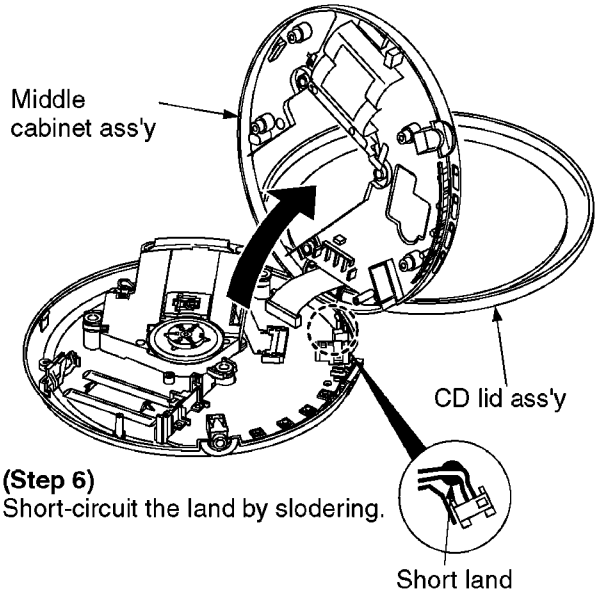
(Step 3)
Release the 3 claws.



(Step 4)
Release the 3 claws.

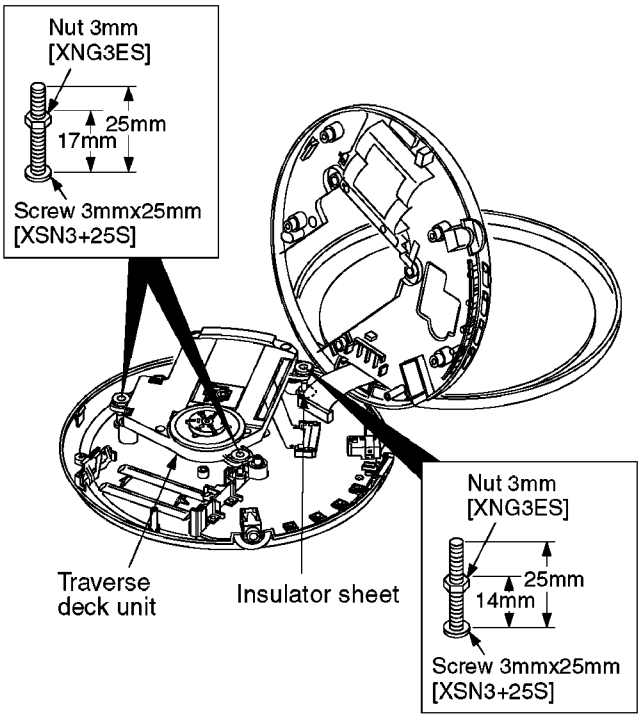


(Step 5)
Move the middle cabinet ass'y in the direction of arrow.



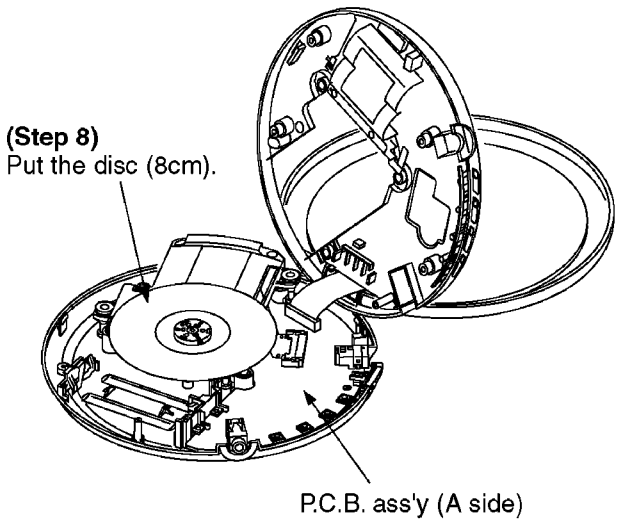
(Step 6)
Short-circuit the land by slodering.

(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.

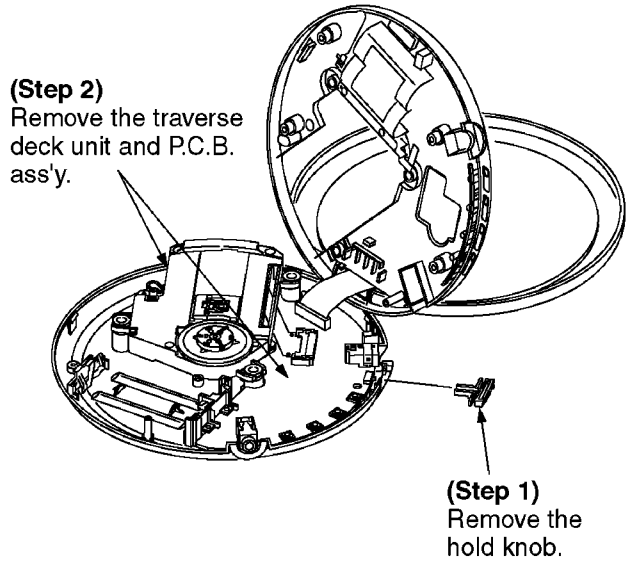
- **Check the P.C.B. ass'y (A side) as shown below.**



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

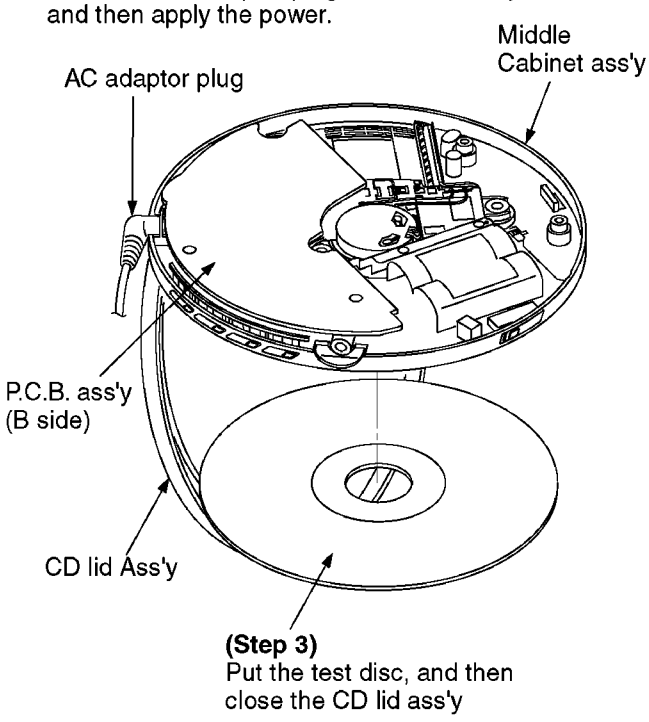
5.1.2. Checking for the P.C.B. ass'y (B side)

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



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

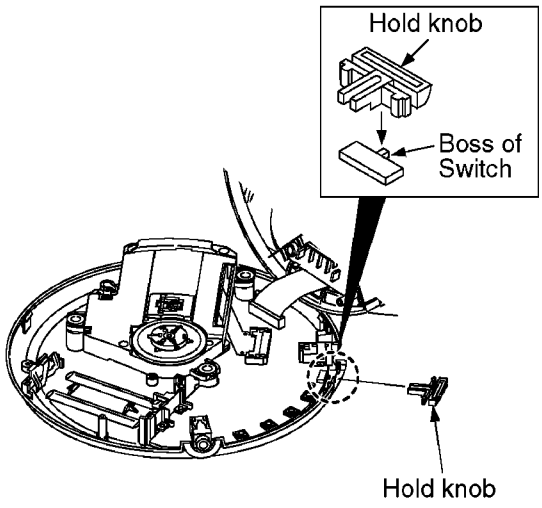
(Step 4)
Insert the AC adaptor plug into the DC IN jack, and then apply the power.



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

Notice for installation of hold knobs

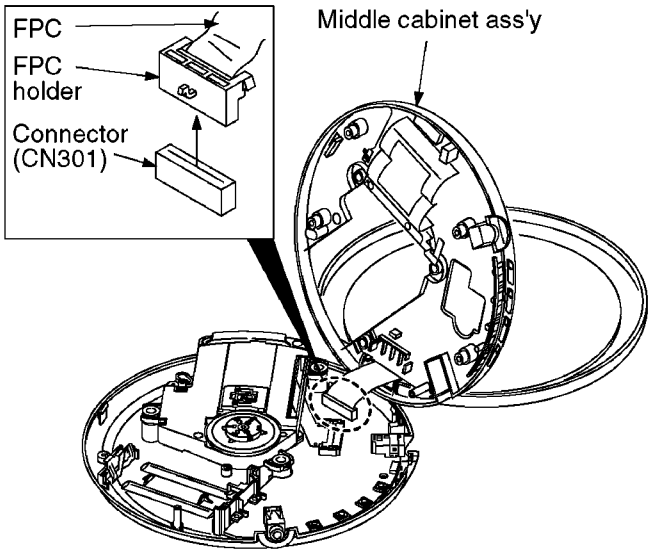
·Make sure the bosses of switch are fit in the hold knob.

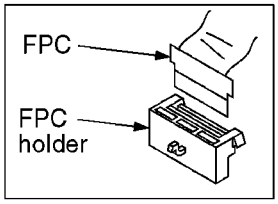


5.2. Replacement for the CD lid ass'y and LCD

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

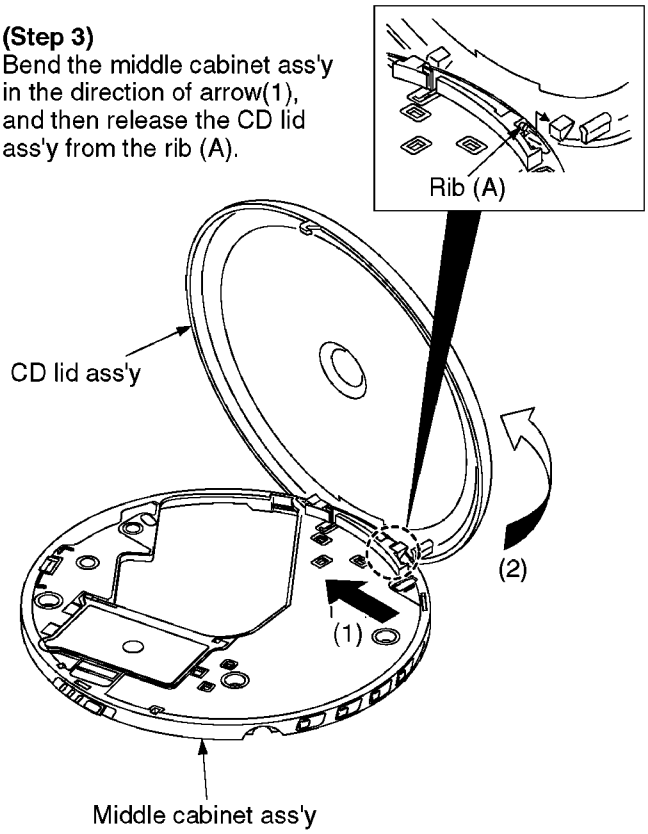
(Step 1)
Pull out the FPC from connector (CN301).





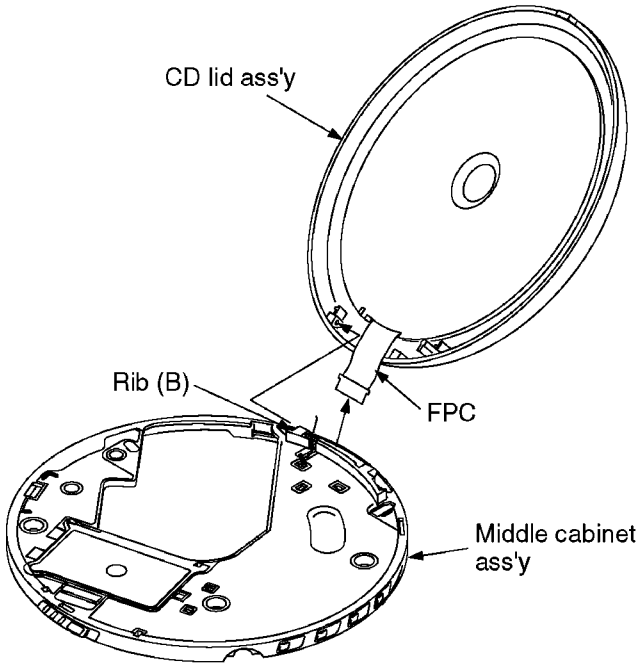
(Step 2)
Remove the FPC holder from FPC.

(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).



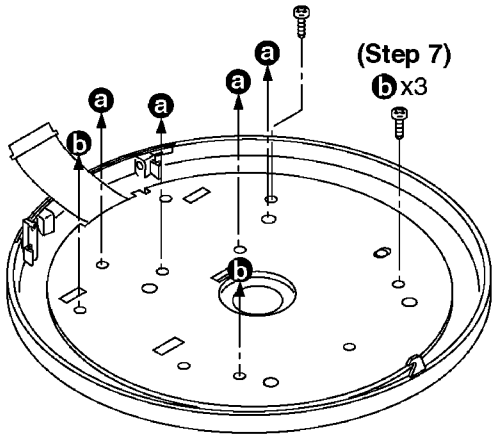
(Step 4)
Remove the CD lid ass'y from the rib (B).

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



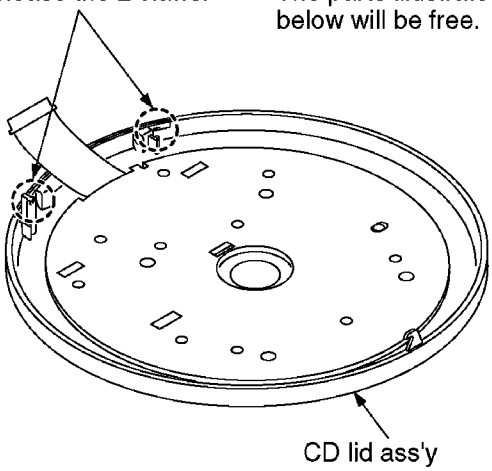
(Step 6)
ⓐx5

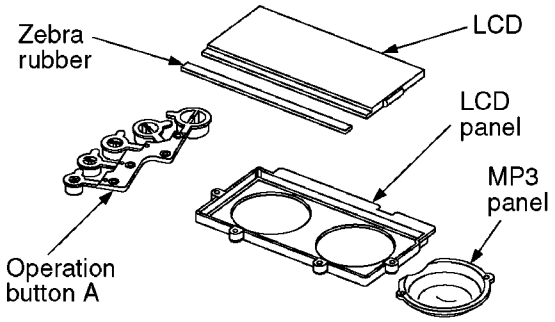
(Step 7)
ⓑx3

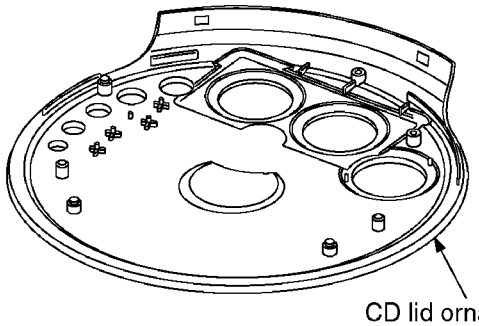


(Step 8)
Release the 2 claws.

(Step 9)
The parts illustrated below will be free.

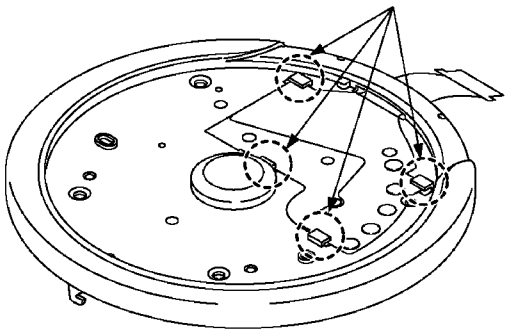




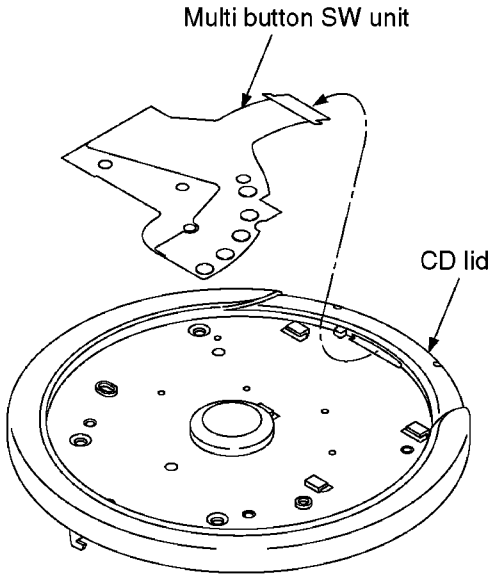


Note:
Be careful not to be applied the dust or smudge on the surface zebra rubber.

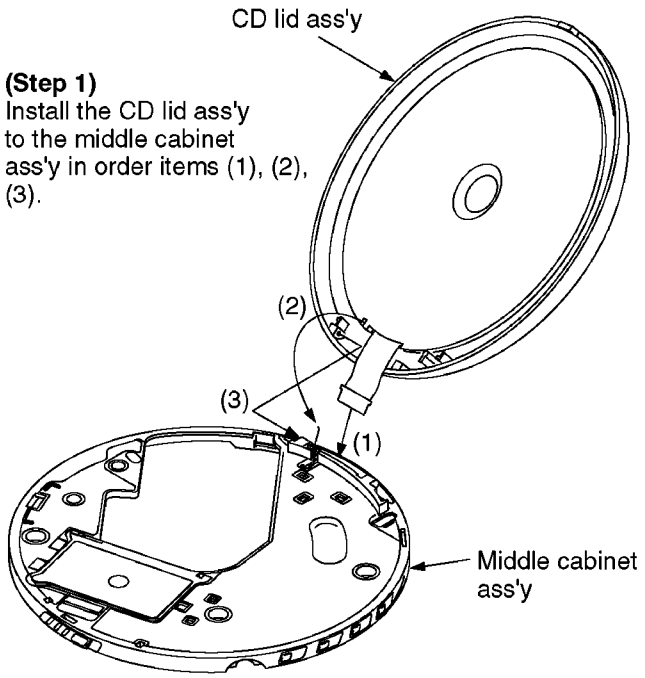
(Step 10)
Release the 4 claws.



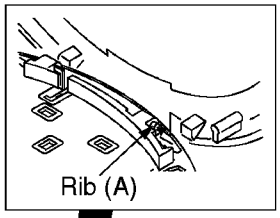
(Step 11)
Remove the multi button SW unit from CD lid.



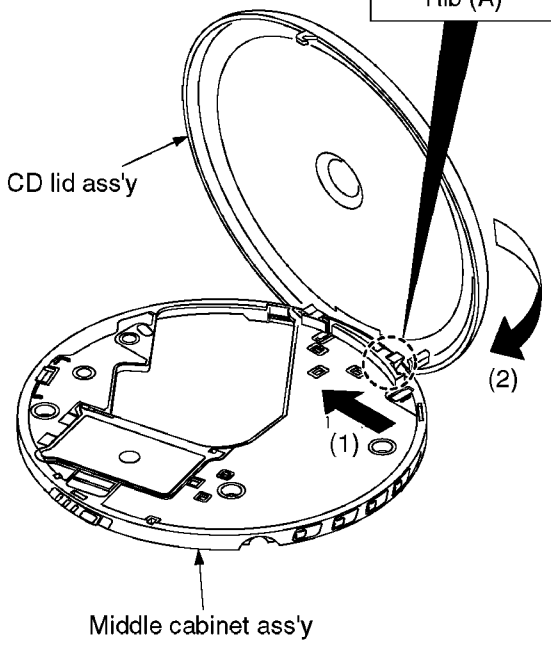
Installation of CD lid ass'y



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

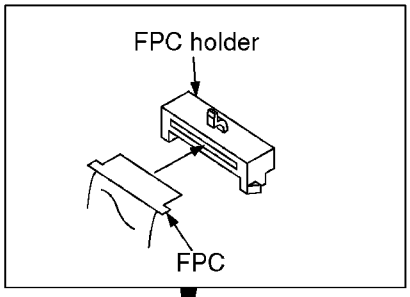


(Step 2)
Bend the Middle cabinet ass'y in the direction of arrow(1), and then aline the CD lid ass'y from the rib (A).

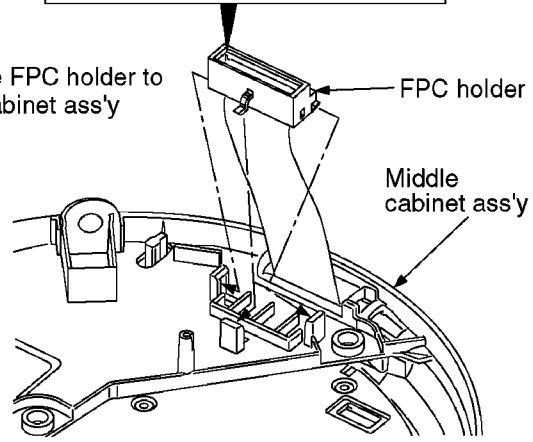


Installation of middle cabinet ass'y

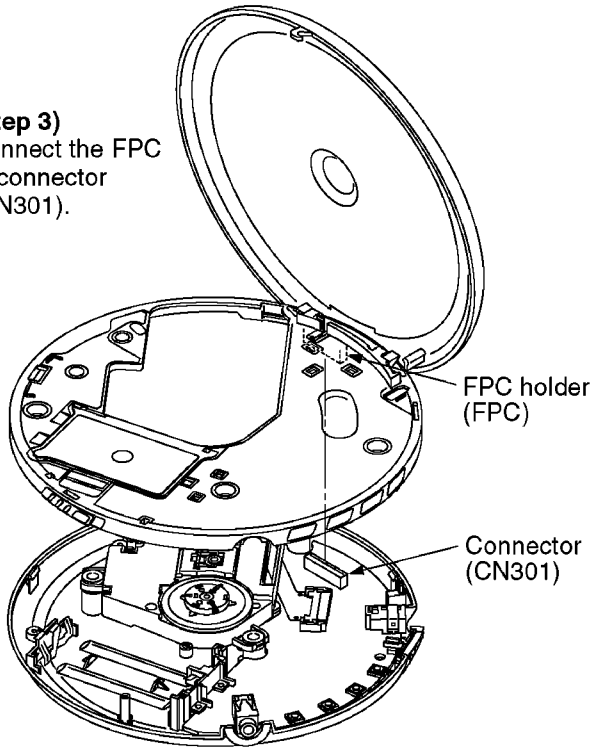
(Step 1)
Install the FPC to FPC holder



(Step 2)
Install the FPC holder to middle cabinet ass'y



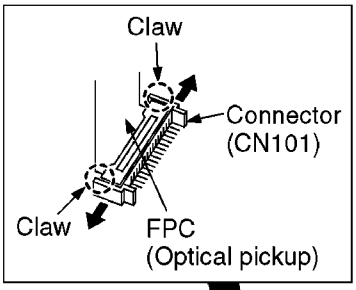
(Step 3)
Connect the FPC to connector (CN301).



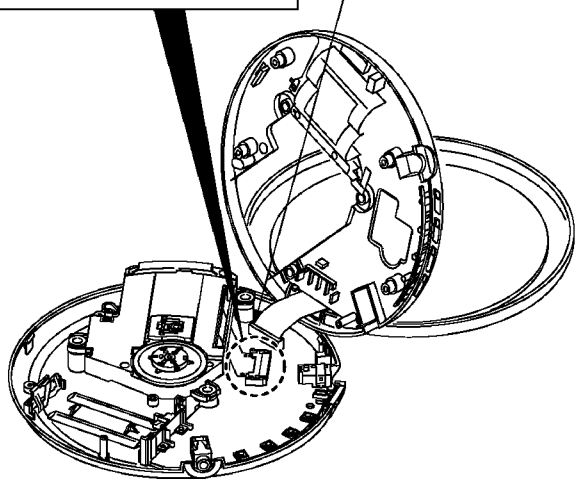
5.3. Replacement for the traverse motor

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

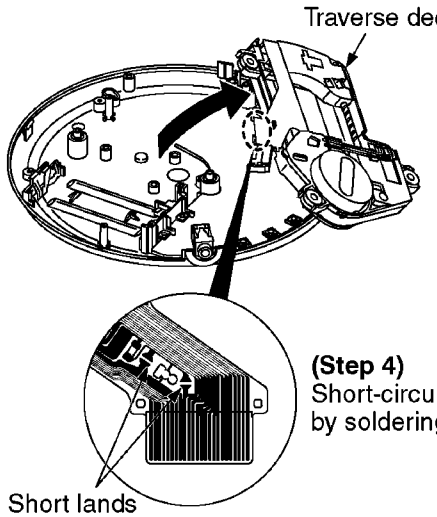
(Step 2)
Release the 2 claws.



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

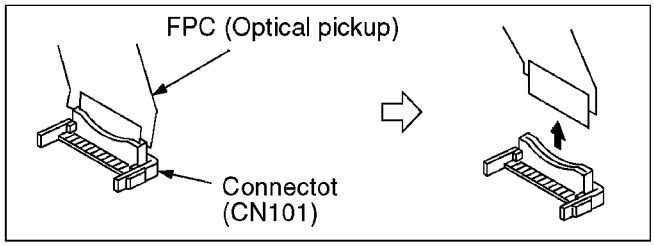


(Step 3)
Move the traverse deck unit in the direction of arrow

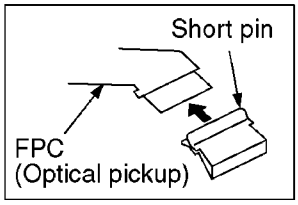


(Step 4)
Short-circuit the land by soldering. (2 points)

(Step 5)
Pull out the FPC from connector (CN101), and then remove the traverse deck unit.

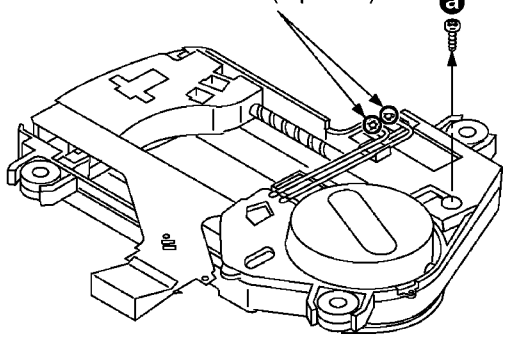


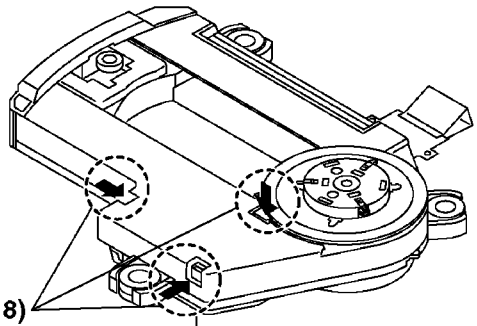
NOTE:
Insert a short pin into the traverse deck's FPC. (Refer to **"Handling Precautions for Traverse Deck"**.)



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

(Step 7)



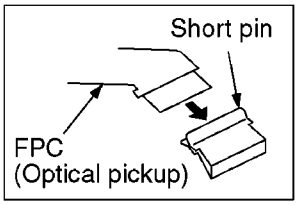


(Step 8)
Release the 3 claws.

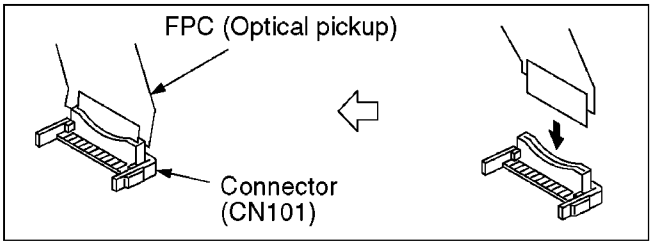
(Step 9)
Remove the traverse motor.

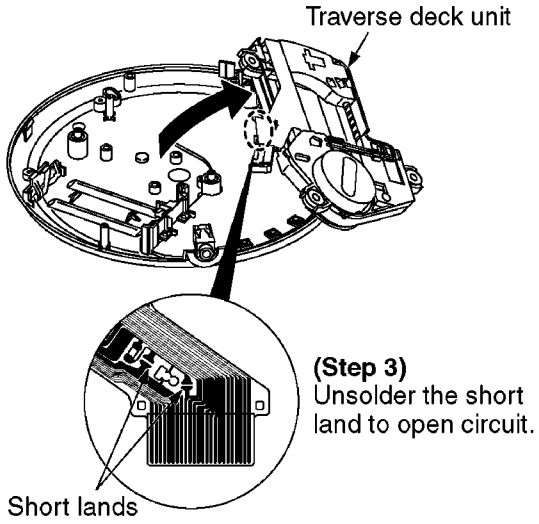
Notice for installation of traverse deck unit

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



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



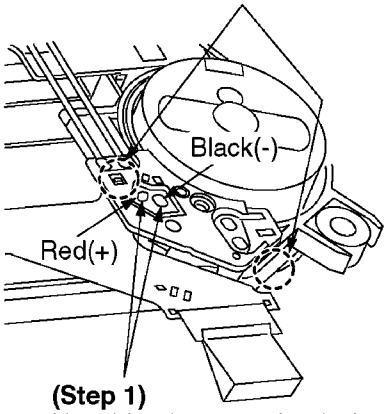


(Step 3)
Unsolder the short land to open circuit.

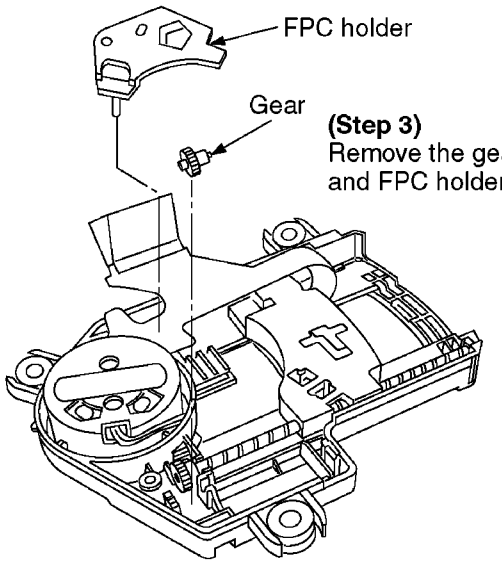
5.4. Replacement for the optical pickup

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

(Step 2)
Release the 2 claws.

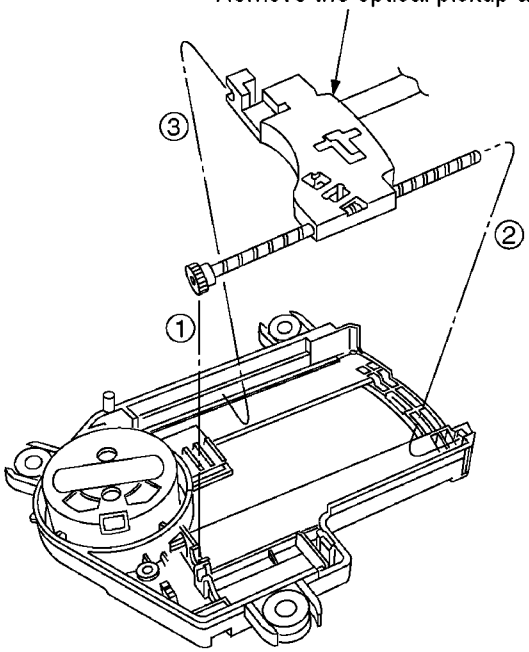


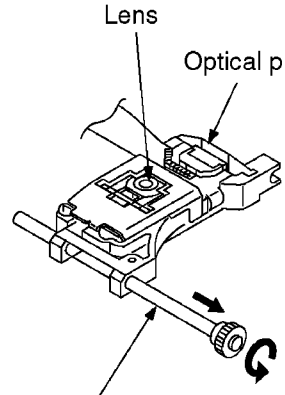
(Step 1)
Unsolder the motor lead wires (2 point).



(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.

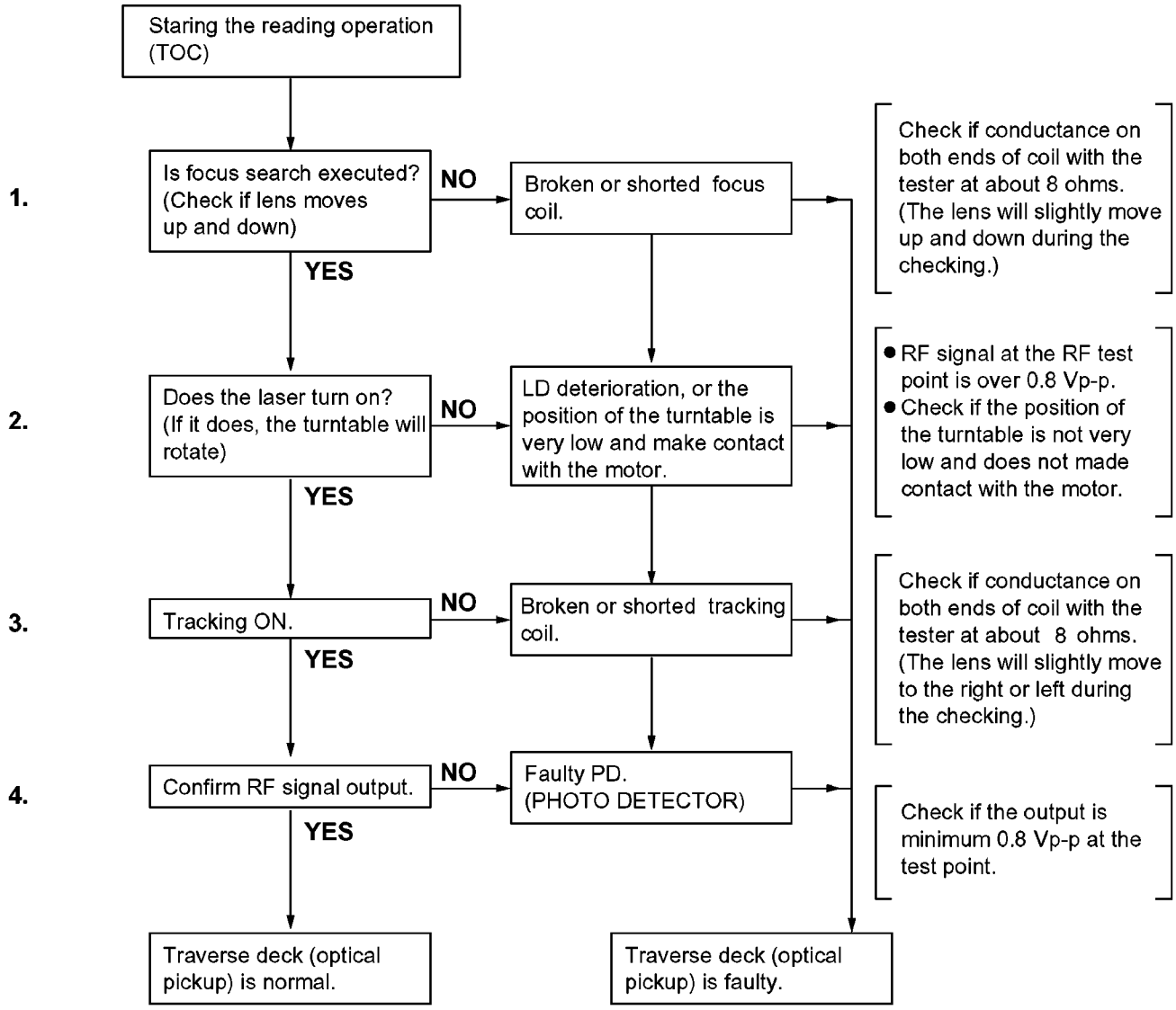
NOTE:
1. Use care to prevent damage the optical pickup, due to the precision construction.
2. Do not apply the grease on the lens of optical pickup.
3. Do not touch the lens of the optical pickup.

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.

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



※Replace the traverse deck.

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

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

*Checking Skip Search

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

*Checking Manual Search

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

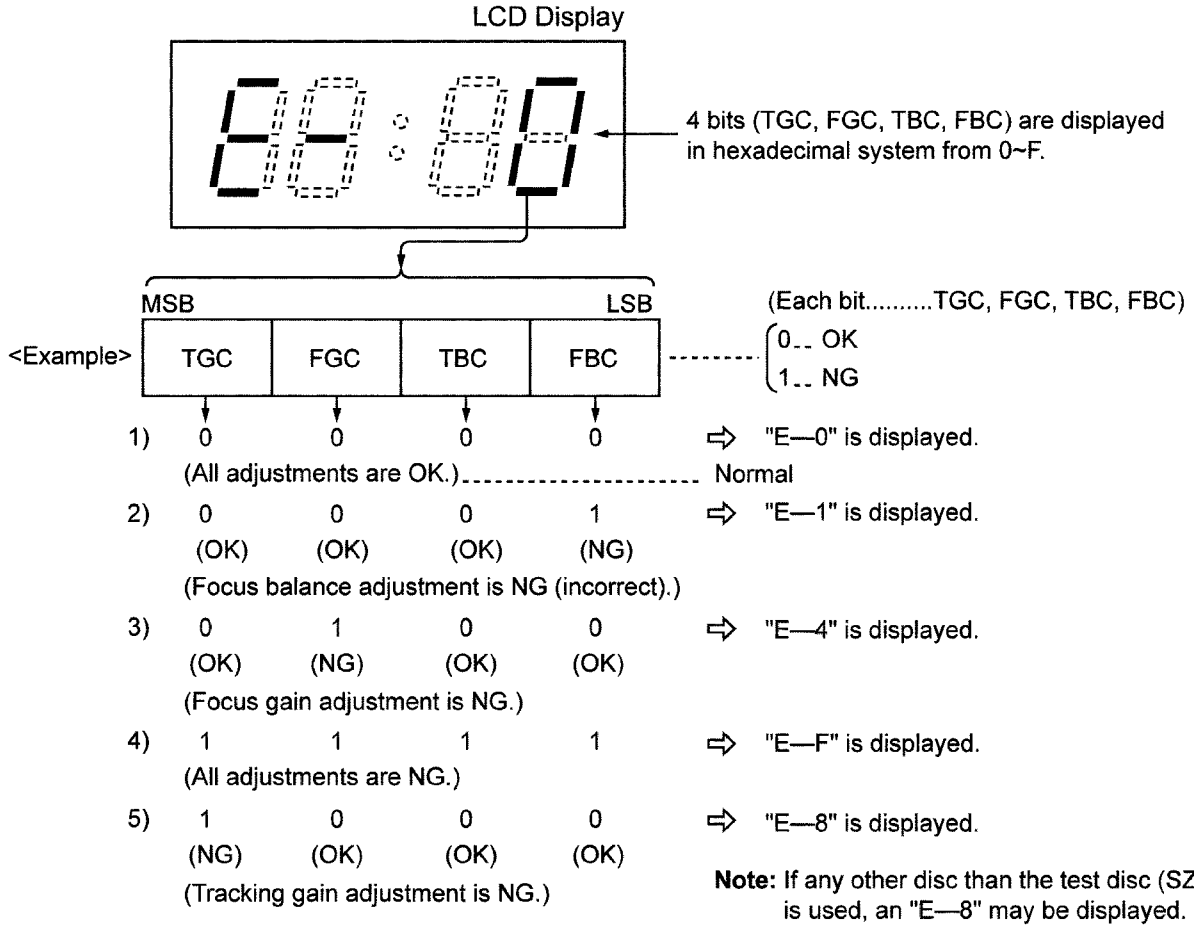
7 Automatic Adjustment Results Display Function (Self-check Function)

On these units (SL-SX420), 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 contentsof the automaticadjustmentresult displays (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 pressthe ▶ / ❚❚ (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.

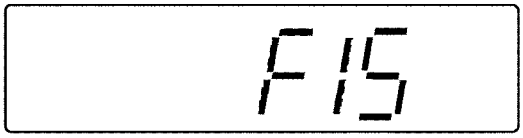
Note:

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

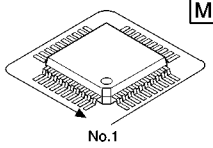
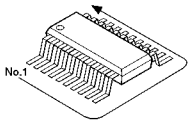
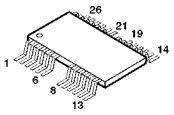
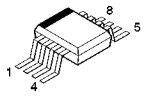
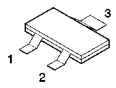
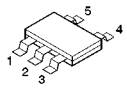
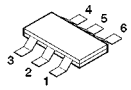
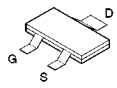
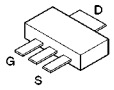
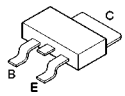
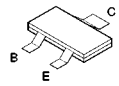
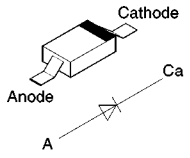
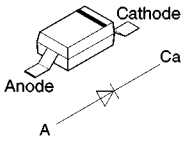


(Press PLAY and STOP button. After 15 seconds,it is displayed for 2 seconds.)

"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)orthe 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

C0DBFFB00004 48PIN C2BBGE000670 80PIN MN6627911AC1 80PIN 		AN22003A-NF 32PIN C1BB00000742 8PIN 		C3ABMB000027 	AK93C45BH-L 
C0CBAAB00018 	UMG6NTR 	B1GFGCAA0001 	B1CDGD000001 B1CFHA000001 	B1ABMD00004 	2SB1182TLPQR 
2SB709A B1GDCFJN0011 	B1GDCFNN0007 DTC143EUA106 UN5215TX	MA2J11100L 	MAZ80560ML 		

10 Schematic Diagram Notes

Note:

- ●S801: Play/pause (▶ / ▌▌) switch.
- ●S802: Stop/operation off (■) switch.
- ●S803, 805: Skip/search (▶▶| , |◀◀) switch.
- ●S804: Mode (MODE) switch.
- ●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.
- ●SY806, 807: Volume control (VOL+,VOL -) switch.
- ●SY808: Program / recall (MEMORY) switch.
- ●SY809: Tone selection (EQ) 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 valuesandwaveforms depending upon the internal impedance of the tester or measuring unit.

Measurement conditions:

*( ).....CD playback mode (Test disc 1kHz, L+R, 0dB)

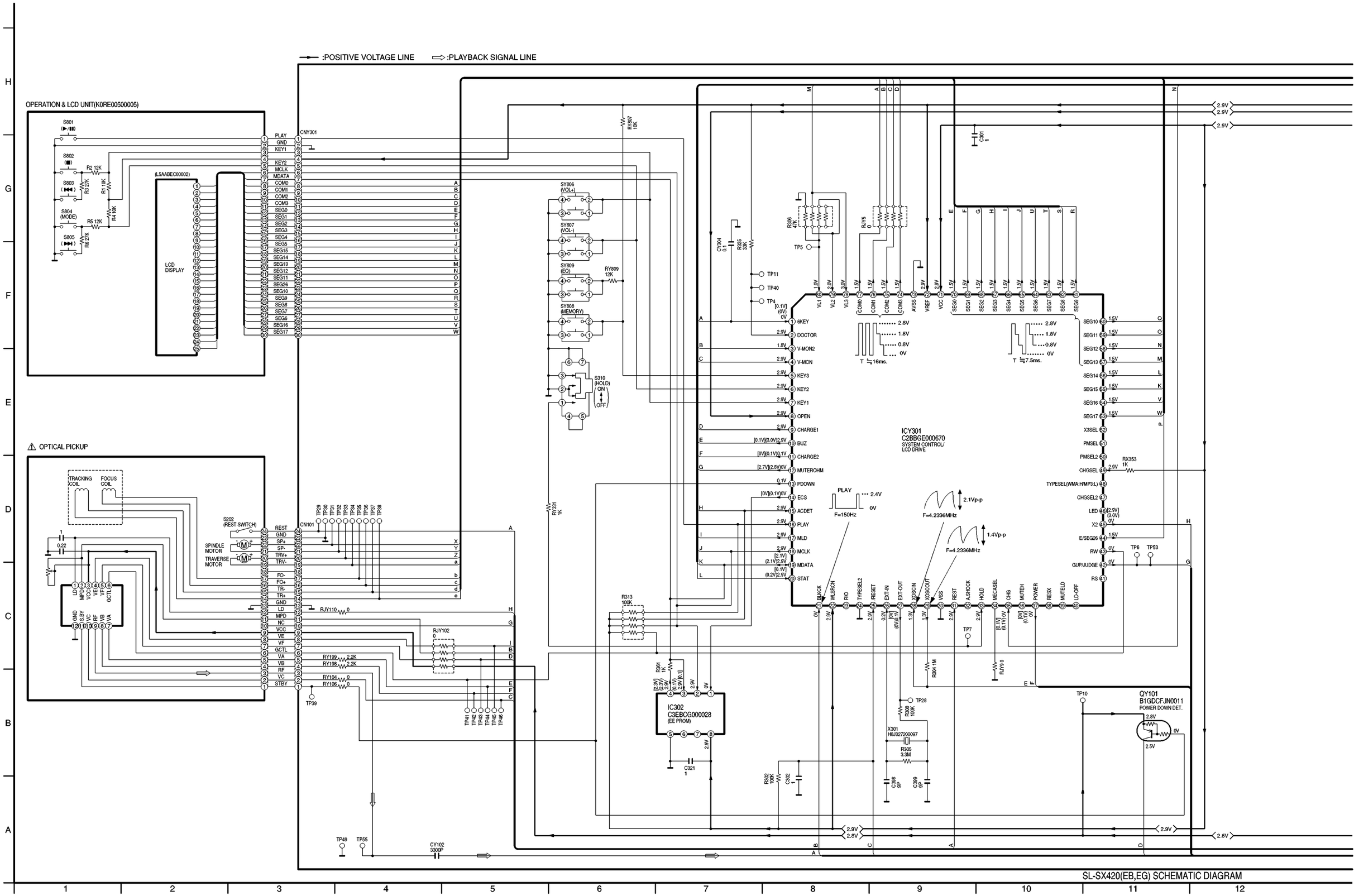
*[ ].....CD playback mode (MP3 recoded disc)

*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



:POSITIVE VOLTAGE LINE :PLAYBACK SIGNAL LINE

IC502
C3ABMB000027
16M DRAM

ICY101
AN22003A-NF
SERVO AMP

ICY501
MN6627911AC1
SERVO PROCESSOR/
DIGITAL SIGNAL PROCESSOR/
DIGITAL FILTER & D/A CONVERTER

Q201
2SB0709A0L
LASER POWER
DRIVE

SL-SX420(EB,EG) SCHEMATIC DIAGRAM

:POSITIVE VOLTAGE LINE ⇨:PLAYBACK SIGNAL LINE

IC11
C0DBFFB00004
POWER CONTROL & POWER DRIVE

ICY13
C0CBAAB00018
REGULATOR

Q11
B1BDND000001
REGULATOR

ICP11
KSH1522A0018

QY16
UNR521500L
CHARGE DET.

Q12
B1ABMD000004
CHARGE CONT.

Q13
B1GBCFGG0011
CHARGE CONT.

Q14
B1GDCFJN0011
CHARGE CONT.

Q15
B1GBCFGG0011
DC IN DET.
(AC ADAPTOR)

Q18
B1GDCFNN0007
RESET DRIVE

QY904
B1CDGD000001
SWITCHING
(REMOTE)

Q19
B1GBCFGG0011
RESET

Q301
B1GBCFGG0011
RESET

Q502
B1CFHA000001
RESET

Q702
B1GDCFJN0011
MUTING CONT.

QY903
B1GDCFNN0007
BUZZER AMP

Q701
B1GFGCAA0001
MUTING

Q703
B1GFCFNA0001
SWITCHING
(VOICE GAIN-UP)

IC701
C1BB00000742
HEADPHONES
AMP

JK11
DC IN 4.5V

CN11
2 R6/LR6(uM-3)
BATTERIES...3V

JKY701
HEADPHONE
16Ω 3.5mm
STEREO

SHORT LAND
S201
(LASER
ON/OFF)

SL-SX420(EB,EG) 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.

(SIDE :A)

OPERATION & LCD UNIT

LCD

RF

SHORT LAND

HOLD

MEMORY

EQ

VOL-

GND

VOL+

VREF

TRAVERSE-DECK UNIT

(REP3473B-M)

(SIDE : B)

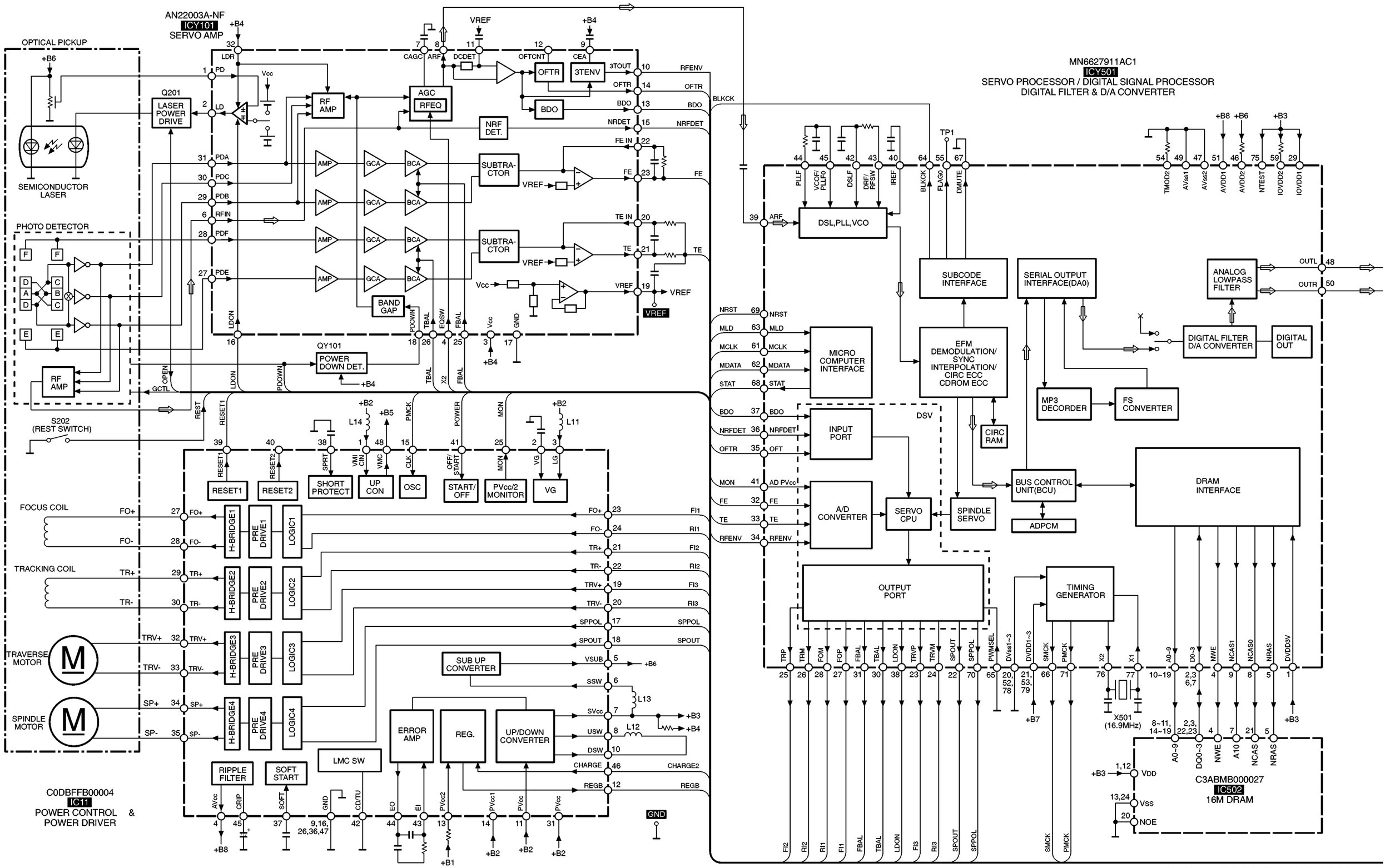
DC IN 4.5V

HEADPHONES

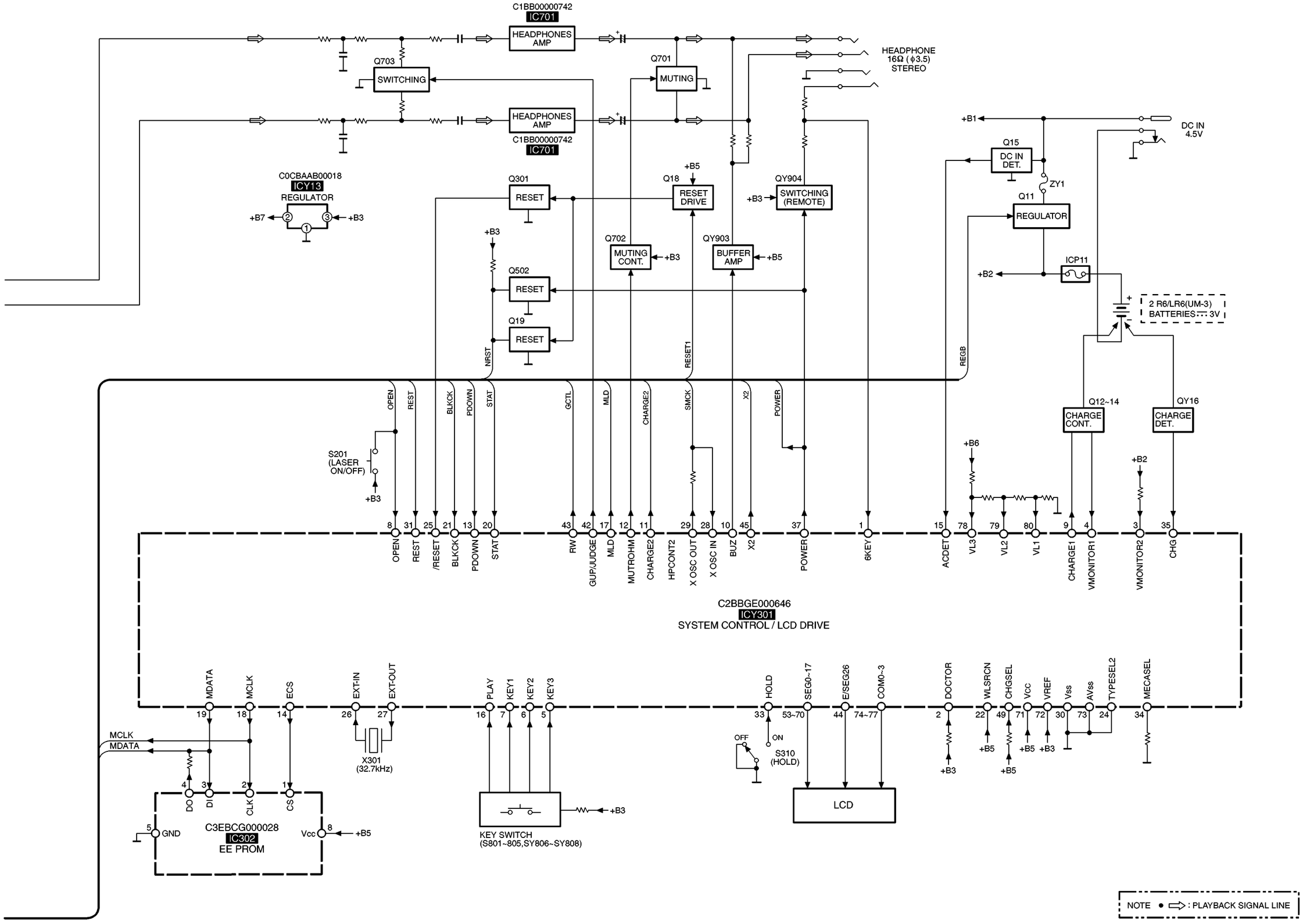
2R6/LR6(UM-3,AA SIZE)
BATTERIES ⎓ 3V

SL-SX420(EB,EG)
PRINTED CIRCUIT BOARD DIAGRAM

13 Block Diagram



SL-SX420(EB,EG)BLOCK DIAGRAM



SL-SX420(EB,EG)BLOCK DIAGRAM

14 Terminal Function of ICs

14.1. ICY101(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	-	Not used, open
6	RF IN	I	RF signal input terminal
7	CAGC	-	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	I	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	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	-	Not used, open
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. ICY301(C2BBGE000670): 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	V-MON 2	I	Battery remaining measurement/battery shorting detect signal input
4	V-MON	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	MUTEROH M	O	Mute signal output
13	PDOWN	O	Headamp power OFF signal output
14	ECS	O	EEPROM communication selection output
15	ACDET	I	AC Power supply detect signal input
16	PLAY	I	PLAY key signal input
17	MLD	O	Serial command latch output
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	RIO	-	Not used, open
24	TYPESEL2	I	Model selection input (SX420:L / CT500:H)
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	MUTEH	-	Not used, open
37	POWER	O	Power supply detect signal output
38	RESX	O	Muting signal output
39	MUTELD	-	Not used, open
40	LD-OFF	-	Not used, open
41	RS	-	Not used, open
42	GUP / JUDGE	O	XBS ON signal output
43	RW	O	Output for CD-RW
44	E/SEG26	O	Segment output
45	X2	O	RF equalizer twice speed signal output
46	LED	O	LED drive signal output
47	CHGSEL2	-	Not used, open
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 | 70	SEG17 | SEG0	O	LCD segment signal output
71	V_{CC}	I	Power supply terminal
72	VREF	I	Reference voltage input terminal
73	AV_{SS}	O	GND
74 | 77	COM3 | COM0	O	LCD common signal output terminal
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. ICY501(MN6627911AC1): Servo Processor, Digital Signal Processor, Digital Filter & D/A Converter

Pin No.	Terminal Name	I/O	Function
1	DV_{DD} 3V	I	Power supply terminal
2	D0	I/O	Data 0-1 input/output terminal
3	D1		
4	NWE	O	Write enable output terminal
5	NRAS	O	RAS control signal output terminal

Pin No.	Terminal Name	I/O	Function
6	D2	I/O	Data 2-3 input/output terminal
7	D3		
8	NCAS0	O	CAS control 0 signal output terminal
9	NCAS1	O	CAS control 1 signal output terminal
10 | 14	A8 | A4	O	Addresses 8-4 output terminal
15	A9	O	Address 9 output terminal
16 | 19	A0 | A3	O	Addresses 0-3 output terminal
20	V_{SS} 2	-	GND
21	DV_{DD} 2	I	Power supply terminal
22	SPOUT	O	Spindle motor drive output terminal
23	TRV+	O	Traverse motor drive (+) output terminal
24	TRV-	O	Traverse motor drive (-) output terminal
25	TR+	O	Tracking coil drive (+) output terminal
26	TR-	O	Tracking coil drive (-) output terminal
27	FO+	O	Focus coil drive (+) output terminal
28	FO-	O	Focus coil drive (-) output terminal
29	IOV_{DD} 1	I	Power supply terminal
30	TBAL	O	Tracking balance adjustment signal output
31	FBAL	O	Focus balance adjustment signal output
32	FE	I	Focus error signal input terminal
33	TE	I	Tracking error signal input terminal
34	RFENV	I	RF envelope signal input terminal
35	OFT	I	Off-track signal input terminal (H: Off track)
36	NRFDET	I	RF detection signal input terminal (L: Detect)
37	BDO	I	Dropout signal input terminal
38	LDON	O	Laser ON signal output terminal (H: ON)
39	ARF	I	RF signal input terminal
40	IREF	I	Reference current input terminal
41	AD PV_{CC}	I	A/D reference voltage input terminal
42	DSLF	O	Loop filter output terminal for DSL
43	DRF/RFSW	I	Loop filter input terminal for DSL
44	PLLF	O	Loop filter output terminal for PLL
45	VCOF/PLL FO	O	Loop filter output terminal for PLL
46	AV_{DD} 2	I	Power supply terminal
47	AV_{SS} 2	-	GND
48	OUTL	O	L ch audio signal output terminal
49	AV_{SS} 1	-	GND
50	OUTR	O	R ch audio signal output terminal
51	AV_{DD} 1	I	Power supply terminal
52	DV_{SS} 3	-	GND
53	TMOD1/DV_{DD} 3	I	Power supply terminal
54	TMOD2	I	Terminal mode 2 selection terminal (L: Normal)
55	FLAG0	-	Not used, open
56	FCLK	-	Not used, open
57	EXT0	-	Not used, open
58	EXT1	-	Not used, open
59	IOV_{DD} 2	I	Power supply terminal
60	TX	-	Not used, open
61	MCLK	I	Serial command clock input
62	MDATA	I	Serial command data input
63	MLD	I	Serial command latch input
64	BLKCK	O	Sub-code block clock signal output
65	PWMSEL	-	Connected to GND
66	SMCK	O	System clock signal output
67	DMUTE	I	Clock signal input for Sub-code serial
68	STAT	O	Status signal output terminal
69	NRST	I	Reset signal input terminal (L: Reset)
70	SPPOL	O	Spindle motor drive signal output terminal
71	PMCK	O	Clock signal output

Pin No.	Terminal Name	I/O	Function
72	DQSW/NC LDCK	-	Not used, open
73	SUBC	-	Not used, open
74	SBCK	-	Not used, open
75	NTEST	I	Test terminal (Connected to V_{DD})
76	X2	O	Crystal oscillator connected (F=16.9 MHz)
77	X1	I	
78	DV_{SS} 1	-	GND
79	DV_{DD} 1	I	Power supply terminal
80	EXT2	-	Not used, open

15 Replacement Parts List

Notes:

*Important safety notice:

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

*Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

*When replacing any of components, be sure to use only 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 (μF) unless specified otherwise, P=Pico-farads (pF), F=Farads (F).

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

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

*All parts are supplied by SPC.

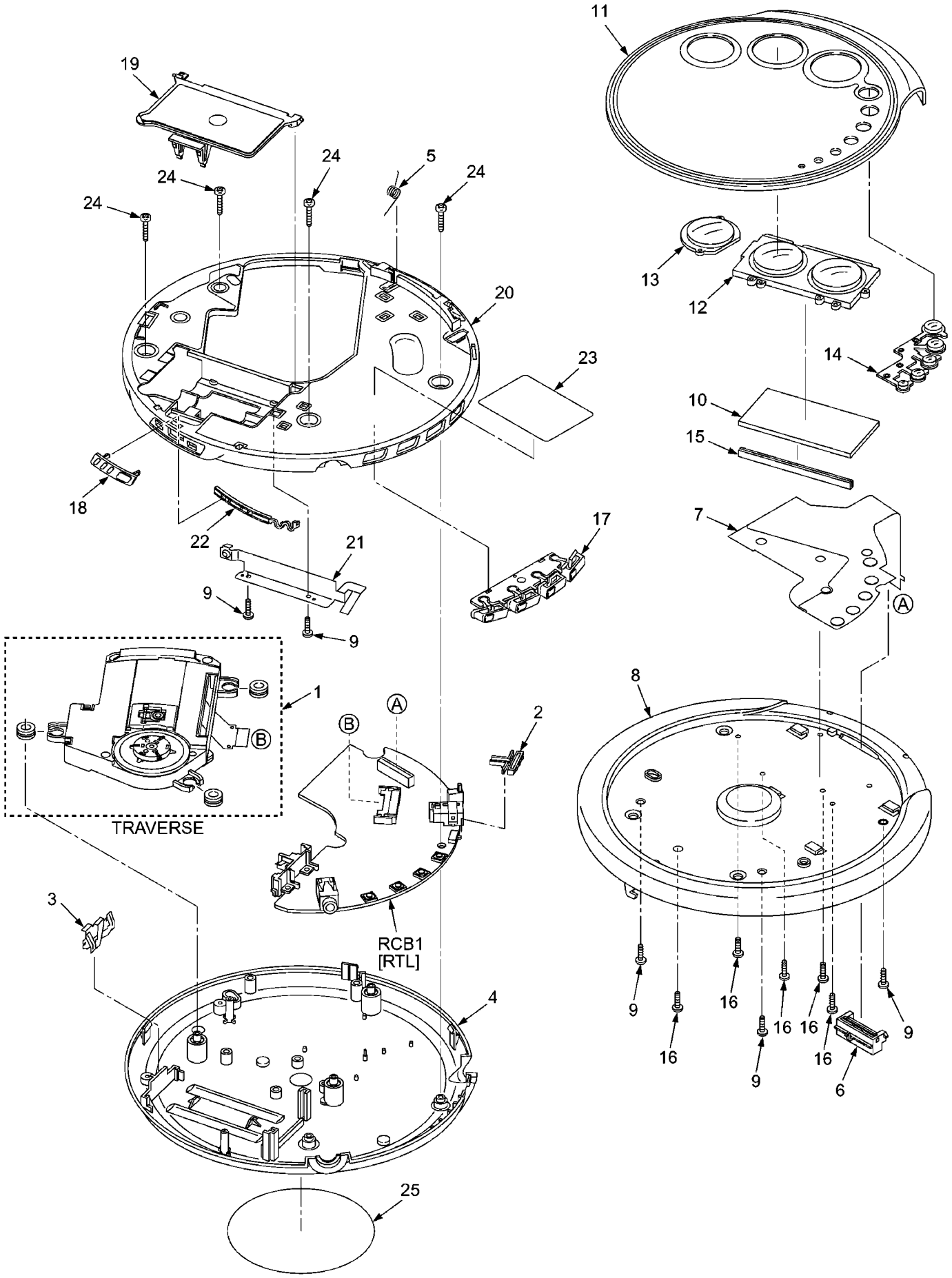
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	RAE0242Z-M	TRAVERSE DECK UNIT	1	⚠
1-1	RMG0605-K	FLOATING RUBBER	3	
1-2	RAF0241A	OPTICAL PICK-UP	1	⚠
1-3	RDG0554	GEAR 1	1	
1-4	RDG0555	GEAR 2	1	
1-5	RMQ1125	MOTOR SUPPORTER	1	
1-6	RMS0782	SHAFT	1	
1-7	XQN17+BG45	SCREW	1	
1-8	RXQ0971-3	MOTOR ASS'Y	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	RMR1514-K	FPC HOLDER	1	
7	K0RE00500005	MULTI BUTTON SW UNIT	1	
8	RGD0093-1A	CD LID	1	(EGS)(EBS)
8	RGD0093-2A	CD LID	1	(EGA)
9	RHQ0088-K	SCREW	5	
10	L5AABEC00002	LCD	1	
11	RGK1619-S1	CD LID ORNAMENT	1	(EGS)(EBS)
11	RGK1619-A	CD LID ORNAMENT	1	(EGA)
12	RGP0991-A	LCD PANEL	1	
13	RGP1013-A1	MP3 PANEL	1	
14	RGU2180-S	OPERATION BUTTON A	1	
15	RSQ0092	ZEBRA RUBBER	1	
16	XQN14+BG3FC	SCREW	5	
17	RGU2181-A1	OPERATION BUTTON B	1	
18	RGV0318-H1	KNOB,OPEN	1	
19	RKK0171-A	BATTERY LID	1	
20	RKM0482-A1	MIDDLE CABINET	1	
21	RMC0537	DETECTION PLATE	1	
22	RMR1412-K1	LOCK PLATE	1	
23	RQLS0244	LASER LABEL	1	
24	XTN17+6GFZ	SCREW	4	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
25	RGN2412-H	NAME PLATE	1	(EBS)
25	RGN2411-H	NAME PLATE	1	(EGS)(EGA)
A1	L0BAB0000124	STEREO EARPHONES	1	
A2	N0JCCE000004	AC ADAPTOR	1	(EBS) ⚠
A3	N2QCBD000010	WIRED REMOTE CONTROL	1	
A4	RQT6879-B	O/I BOOK	1	(EBS) English
A5	RFEA419E-M	AC ADAPTOR	1	(EGS)(EGA) ⚠ ;
A6	RQT6880-E	O/I BOOK	1	(EGS) (EGA) English French German Spanish Danish Italian Portuguese Russian Czeco Polish
C10	ECUV1H271KBV	50V 270P	1	F1H1H271A009
C11	ECUVNJ475MBN	6.3V 4.7U	1	F1J0J4750002
C12	RCST1AY475RG	10V 4.7U	1	F3F1A4750003
C13	F3H1A476A001	16V 47U	1	
C14	RCE0JKA221IG	6.3V 220U	1	F2A0J2210012
C15	ECJ1VC1H121J	50V 120P	1	
C16	F1H1A105A028	10V 1U	1	
C17	ECUVNA105ZFV	10V 1U	1	F1H1A105A030
C19	ECA1CAK220XH	16V 22U	1	
C20	F1H1A105A028	10V 1U	1	
C21	ECUVNH103KBV	50V 0.01U	1	F1H1H103A748
C22	ECUZNC104ZFV	16V 0.1U	1	F1H1C1040008
C27	F2A0J102A130	6.3V 1000U	1	
C38	RCST0JY226RG	6.3V 22U	1	F3F0J2260002
C103	ECJ1VB1E223K	25V 0.022U	1	
C104,05	ECJ1VB1C104K	16V 0.1U	2	
C111	ECJ1VB1E223K	25V 0.022U	1	
C113,14	ECJ1VB1H102K	50V 1000P	2	
C116,17	ECJ1VB1E223K	25V 0.022U	2	
C120	ECJ1VB1H332K	50V 3300P	1	
C121	ECJ1VB1H561K	50V 560P	1	
C201	RCST0JY226RG	6.3V 22U	1	F3F0J2260002
C301,02	ECUVNA105ZFV	10V 1U	2	F1H1A105A030
C321	ECUVNA105ZFV	10V 1U	1	F1H1A105A030
C398,99	ECUV1H090DCV	50V 9P	2	F1H1H9R0A244
C501	ECJ1VB1H102K	50V 1000P	1	
C502	ECEA1CKS101	16V 100U	1	
C503	ECUV1H391KBV	50V 390P	1	ECJ1VB1H391K
C504	ECUZNC104ZFV	16V 0.1U	1	F1H1C1040008
C505	ECJ1VB1H153K	50V 0.015U	1	
C507	ECEA0JKS331	6.3V 330U	1	
C509	ECJ1VB1C104K	16V 0.1U	1	
C510	ECJ1VB1H102K	50V 1000P	1	
C511	ECUZNC104ZFV	16V 0.1U	1	F1H1C1040008
C513	ECUV1H330GCV	50V 33P	1	ECJ1VC1H330K
C514,15	ECJ1VB1H102K	50V 1000P	2	
C517	ECUVNA105ZFV	10V 1U	1	F1H1A105A030
C519	F1H1A105A028	10V 1U	1	
C524,25	ECJ1VB1H102K	50V 1000P	2	
C603,04	ECJ1VB1H272K	50V 2700P	2	
C610	ECA0JAK470XH	6.3V 47U	1	
C701	ECA1CAK220XH	16V 22U	1	
C702	ECUZNC104ZFV	16V 0.1U	1	F1H1C1040008
C705,06	ECA0JAK221XH	6.3V 220U	2	
C707,08	ECUVNC473KBV	16V 0.047U	2	F1H1C473A071
C711-13	F1H1A105A028	10V 1U	3	
C903	ECUZNC104ZFV	16V 0.1U	1	F1H1C1040008
CN11	K4BC03B00014	BATTERY TERMINAL	1	
CN101	K1MN24B00093	CONNECTOR(24P)	1	

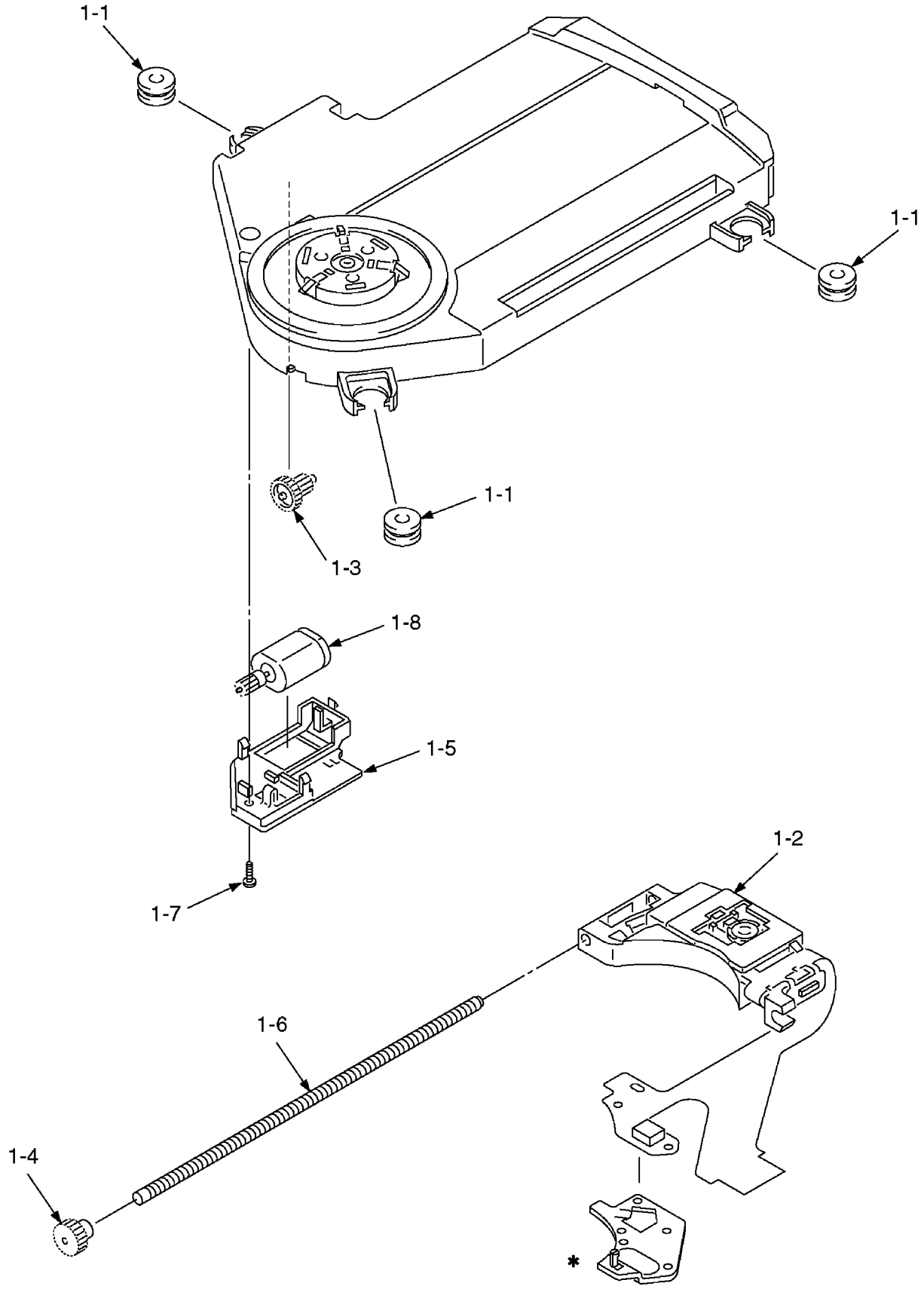
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
CNY301	K1MN30A00051	CONNECTOR(30P)	1	
CX9	F1H1A105A028	10V 1U	1	
CX526	ECUV1H390KUV	50V 39P	1	
CY39	ECJ1VB1H102K	50V 1000P	1	
CY102	ECJ1VB1H332K	50V 3300P	1	
CY112	ECJ1VB1H561K	50V 560P	1	
CY304	ECJ1VB1C104K	16V 0.1U	1	
CY902	ECJ1VB1H332K	50V 3300P	1	
D11	MAZ80560ML	DIODE	1	
D101	MA2J11100L	DIODE	1	
DY22	MA2J11100L	DIODE	1	
IC11	C0DBFFB00004	IC	1	
IC302	AK93C45BH-L	IC	1	C3EBCG000028
IC502	C3ABMB000027	IC	1	
IC701	C1BB00000742	IC	1	
ICP11	K5H1522A0018	IC PROTECTOR	1	⚠
ICY13	C0CBAAB00018	IC	1	
ICY101	AN22003A-NF	IC	1	
ICY301	C2BBGE000670	IC	1	
ICY501	MN6627911AC1	IC	1	
JK11	RJJ43K09-C	JACK,DC IN	1	K2EB2B000006
JK701	K2HC104B0013	JACK,HEADPHONE	1	
L11	RLQU331KT-W	COIL	1	G1C331K00004
L12	G1A101D00009	COIL	1	
L13	RLQU101KT-W	COIL	1	G1C101K00008
L14	RLQU331KT-W	COIL	1	G1C331K00004
P1	RPN1584	TRAY1	1	(EBS)
P2	RPN1585	TRAY2	1	(EBS)
P3	RPQ1500	SHEET	1	(EBS)
P4	RPF0111-2	PROTECTION BAG	1	(EGS)(EGA)
P5	RPK1881	GIFT BOX	1	(EGS)
P5	RPK1882	GIFT BOX	1	(EGA)
P6	RPQ0836-3	PAD	1	(EGS)(EGA)
P7	RPQ1529	PAD	1	(EGS)(EGA)
PCB1	REP3473B-M	P.C.B. ASS'Y	1	[RTL]
Q11	2SB1182TLPQR	TRANSISTOR	1	B1BDND000001
Q12	B1ABMD000004	TRANSISTOR	1	
Q13	DTC143EUA106	TRANSISTOR	1	B1GBCFGG0011
Q14	B1GDCFJN0011	TRANSISTOR	1	
Q15	DTC143EUA106	TRANSISTOR	1	B1GBCFGG0011
Q18	B1GDCFNN0007	TRANSISTOR	1	
Q19	DTC143EUA106	TRANSISTOR	1	B1GBCFGG0011
Q201	2SB709A	TRANSISTOR	1	2SB0709A
Q301	DTC143EUA106	TRANSISTOR	1	B1GBCFGG0011
Q502	B1CFHA000001	TRANSISTOR	1	
Q701	B1GFGCAA0001	TRANSISTOR	1	
Q702	B1GDCFJN0011	TRANSISTOR	1	
Q703	UMG6NTR	TRANSISTOR	1	B1GFCFNA0001
QY16	UN5215TX	TRANSISTOR	1	UNR521500L
QY101	B1GDCFJN0011	TRANSISTOR	1	
QY903	B1GDCFNN0007	TRANSISTOR	1	
QY904	B1CDGD000001	TRANSISTOR	1	
R10	ERJ3GEYJ271V	1/16W 270	1	
R13	ERJ3GEYJ102V	1/16W 1K	1	
R14	ERJ3RBD473	1/16W 47K	1	
R15	ERJ3RBD753	1/16W 75K	1	
R16	ERJ3GEYJ104	1/16W 100K	1	
R17	ERJ12YJ1R8U	1/2W 1.8	1	
R22	ERJ3GEYJ223V	1/16W 22K	1	D0GB223JA002

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R28	ERJ3GEYJ271V	1/16W 270	1	
R29	ERJ3GEYJ560V	1/16W 56	1	
R31	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
R50	ERJ3GEY0R00V	1/16W 0	1	
R110	ERJ3GEYJ100	1/16W 10	1	
R120	ERJ3GEYJ332V	1/16W 3.3K	1	D0GB332JA002
R121	ERJ3GEYJ393V	1/16W 39K	1	D0GB393JA002
R201	ERJ3GEYJ2R2V	1/16W 2.2	1	D0GB2R2JA002
R202	ERJ3GEYJ223V	1/16W 22K	1	D0GB223JA002
R302	ERJ3GEYJ104	1/16W 100K	1	
R304	ERJ3GEYJ105V	1/16W 1M	1	
R305	ERJ3GEYJ335V	1/16W 3.3M	1	
R306	EXBV8V473JV	1/16W 47K	1	
R307	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R308	ERJ3GEYJ104	1/16W 100K	1	
R313	EXBV8V104JV	1/16W 100K	1	
R325	ERJ3GEYJ333V	1/16W 33K	1	D0GB333JA002
R361	ERJ3GEYJ102V	1/16W 1K	1	
R505	MCR03PZHJ561	1/16W 560	1	
R509	ERJ3GEYJ331V	1/16W 330	1	
R511	ERJ3GEYJ222V	1/16W 2.2K	1	
R512	EXBV4V222JV	1/16W 2.2K	1	
R513	ERJ3GEYJ154V	1/16W 150K	1	
R514	ERJ3GEYJ681V	1/16W 680	1	D0GB681JA002
R517	ERJ3GEYJ104	1/16W 100K	1	
R603	EXBV4V561JV	1/32W 560	1	
R703,04	ERJ3GEYJ180V	1/16W 18	2	
R707,08	ERJ3GEYJ102V	1/16W 1K	2	
R709	EXBV4V222JV	1/16W 2.2K	1	
R713	EXBV4V332JV	1/32W 3.3K	1	
R714	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R715	EXBV4V222JV	1/16W 2.2K	1	
R721,22	ERJ3GEYJ223V	1/16W 22K	2	D0GB223JA002
R750	EXBV4V123J	1/32W 12K	1	D1H412320001
RJY5	EXBV8VR000V	1/8W 0	1	
RJY9	ERJ3GEY0R00V	1/16W 0	1	
RJY102	EXBV8VR000V	1/8W 0	1	
RJY104	ERJ3GEY0R00V	1/16W 0	1	
RJY106	ERJ3GEY0R00V	1/16W 0	1	
RJY110	ERJ3GEY0R00V	1/16W 0	1	
RJY501	ERJ3GEY0R00V	1/16W 0	1	
RJY503	ERJ3GEY0R00V	1/16W 0	1	
RX353	ERJ3GEYJ102V	1/16W 1K	1	
RX355	ERJ3GEYJ102V	1/16W 1K	1	
RY1	D0YBR0000010	10K	1	
RY36	ERJ3GEYJ474V	1/16W 470K	1	
RY122	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
RY196,97	ERJ3GEYJ103V	1/16W 10K	2	D0GB103JA002
RY198,99	ERJ3GEYJ222V	1/16W 2.2K	2	
RY331	ERJ3GEYJ102V	1/16W 1K	1	
RY502	ERJ3GEYJ683V	1/16W 68K	1	D0GB683JA002
RY807	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
RY809	ERJ3GEYJ123V	1/16W 12K	1	
RY901	EXBV4V821JV	1/32W 820	1	
RY902	ERJ3GEYJ223V	1/16W 22K	1	D0GB223JA002
RY903	ERJ3GEYJ105V	1/16W 1M	1	
RY905	ERJ3GEYJ470V	1/16W 47	1	
S201	ESE11MV9T	SW,OPEN	1	
S202	RSP1A024-A	SW,REST DET.	1	K0L1BA000029
S310	RSS2A010-1A	SW,HOLD	1	K0D112B00071
SY806-09	EVQPLMA15	SW,OPERATION	4	
X301	H0J327200097	OSCILLATOR	1	
X501	H2D169500026	OSCILLATOR	1	
ZY1	ERY32SB075VA	IC PROTECTOR	1	

16 Cabinet Parts Location



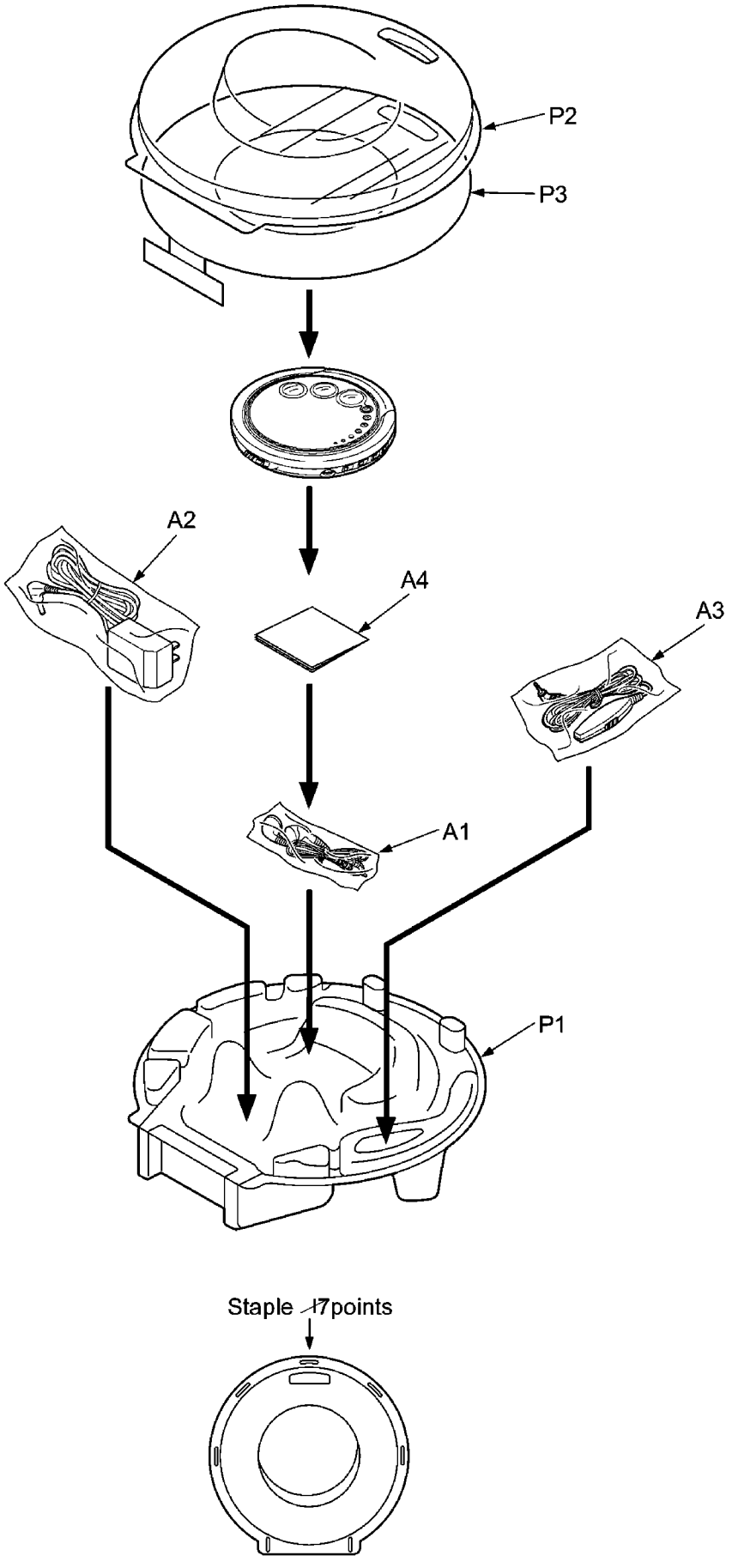
17 Traverse Parts Location



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

18 Packaging

18.1. SL-SX420EB



18.2. SL-SX420EG