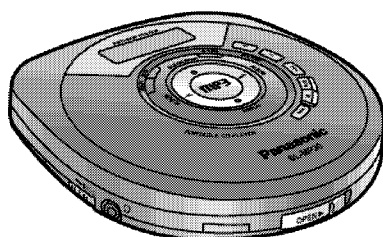


Service Manual

Portable CD Player



SL-MP30EB
SL-MP30EG
SL-MP31CEB
SL-MP31CEG
SL-MP35EB
SL-MP35EG

Traverse Deck: RAE0145Z Mechanism Series

Colour

(S).....Silver Type (SL-MP30 and SL-MP31C only)

(K).....Black Type (SL-MP35 only)

Specifications

IAudio

No. of channels: 2 channels (left and right, stereo)
Frequency response: 20 ~ 20,000 Hz (+0.5dB ~ -7dB)
Headphones output level: RMS Max. 6mW+6mW/ 16Ω (adjustable)
D/A converter : 1bit, MASH

IPickup

Light source: Semiconductor laser
Wavelength: 780 nm

IMP3

Max. number of tracks (files): 999
Max. number of albums (folders): 999
Max. album levels: 100
Recommended bit-rate: 128kbps

IGeneral

Operational temperature range: 0°C-40°C

Rechargeable temperature range: 5°C-40°C (41°F-104°F)

Power supply: DC 4.5V with optional AC adaptor RP-AC46

Power consumption:

AC adaptor (CD-DA/MP3): 2.4W/2.5W

Battery (DC3V)(CD-DA/MP3): 0.33W/0.4W

Power off; 1.9W

When recharging; 4.6W

Playing time:

[When used in hold mode, at 25°C (77°F) temperature and on flat and stable surface]

Batteries used	CD-DA disc	MP3 disc
2 alkaline batteries	30h	40h
2 optional rechargeable batteries (P-3GAVE/2B))	12h	16h

Panasonic

© 2002 Matsushita Electric Industrial Co., Ltd. All rights reserved. Unauthorized copying and distribution is a violation of law.

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

Recharging time (Europe/Others): 5h-6h/3h-4h

Dimensions (WxHxD): 128x29.1x131.5mm

Weight (SL-MP30/MP31C): 259g (with batteries)
213g (without batteries)

Weight (SL-MP35):

263g (with batteries)

217g (without batteries)

Note:

Specifications are subject to change without notice.

Weight and dimensions are approximate.

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

CONTENTS

	Page		Page
1 Precaution of Laser Diode	2	10 Display of Self-Diagnostic Function	15
2 Accessories	3	11 Schematic Diagram Notes	16
3 Operating Instructions	4	12 Schematic Diagram	19
4 Playing MP3 Files	4	13 Printed Circuit Board and Wiring Connection Diagram	23
5 Handling Precautions for Traverse Deck	5	14 Block Diagram	25
6 Operation Checks and Component Replacement Procedures	6	15 Terminal Function of IC's	27
7 Checking the Operation Problems on the Traverse Deck (Optical Pickup)	13	16 Replacement Parts List	30
8 Automatic Adjustment Results Display Function (Self-check Function)	14	17 Cabinet Parts Location	33
9 Outline of 48-Second Sound Keeper Technique Used for Prevention of Sound from Skipping	15	18 Traverse Unit Parts Location	34
		19 Packaging	35

1 Precaution of Laser Diode

CAUTION:

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

Wave length: 780 nm

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

Laser radiation from the pickup lens is safety level, but be sure the followings:

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

ACHTUNG:

Dieses Produkt enthält eine Laserdiode.

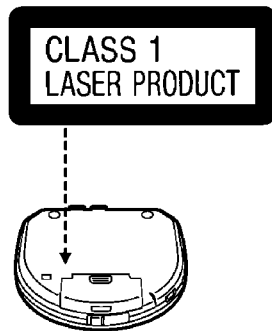
Im eingeschalteten Zustand wird unsichtbare Leserstrahlung von der Lasereinheit abgestrahlt.

Wellenlänge: 780 nm

Maximale Strahlungsleistung der Lasereinheit: 100 μ W/VDE

Die Strahlungen der Lasereinheit 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 Fokussierlines blicken.
4. Nicht über längere Zeit in die Fokussierlines blicken.



DANGER	INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM.
ADVARSEL	USYNLIG LASERSTRÅLING VED ÅBNING. NÅR SIKKERHEDSÅFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARO!	AVATTAESSA JA SUOJALUKITUS OHTETTAESSA OLET ALTIINA NÄKYMÄTÖNTÄ LASERSÄTELYLLE. ÄLÄ KATSO SÄTEESEEN.
VARNING	OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRÄKTA EJ STRÅLEN.
ADVARSEL	USYNLIG LASERSTRÅLING NÄR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.
VORSICHT	UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.

2 Accessories

- Stereo earphones.....1pc.
(L0BAB0000172)

SL-MP30EB/MP35EB models only

- AC adaptor.....1pc.
(N0JCCE0000004)

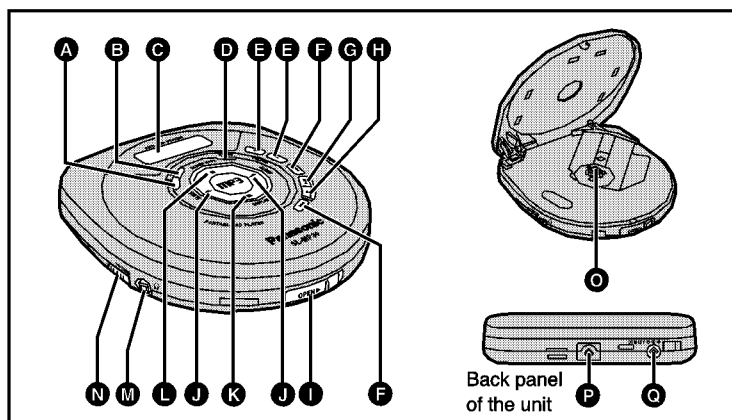
SL-MP30EG/MP35EG models only

- AC adaptor.....1pc.
(RFEA418E-S)

SL-MP31C model only

- Car adaptor.....1pc.
(SH-CDC12PEY)
- Car stereo cassette adaptor.....1pc.
(SHCDM10B1PYK)

3 Operating Instructions



- | | |
|--|---|
| A Memory/recall button (MEMORY) | J Album skip buttons (← ALBUM →) |
| B Mode button (MODE) | K Display button (DISPLAY) |
| C Display | L Album mode button (ALBUM MODE) |
| D S-XBS button (S-XBS) | M Headphone jack (○) |
| E Headphone volume control (+, VOLUME, -) | N Hold switch (HOLD) |
| F Skip/search buttons (⏮, ⏭) | O CD release button (PUSH) |
| G Play/pause button (▶/⏸) | P Hole for car mounting base |
| H Stop/operation off button (■) | Q DC IN jack (DC IN 4.5 V ⚡) |
| I Open switch (OPEN ▶) | |

4 Playing MP3 Files

What is MP3 ?

A method of compressing audio, MPEG Audio Layer 3 (MP3) allows audio to be reduced to up to one tenth its original size when a compression rate of 128 kbps is used, without overtly hurting audio quality.

When creating MP3 files to play on this unit

• **Disc formats:** ISO9660 level 1 and level 2 (except for extended formats)

Files: MP3 files with the suffix ".mp3" or ".MP3"

• MP3 files may not be played in the order you recorded them. Note the following if you want the files to play in the order you record them.

- 1 Use software that records the files to the disc in file name order.
- 2 Prefix folder and file names with 3-digit numbers in the order you want to play them.
- 3 Give the files and folders names with 8 characters or less, including the 3-digit prefix.
- 4 It is better not to create folders (albums) within folders (such as shown in example 2).

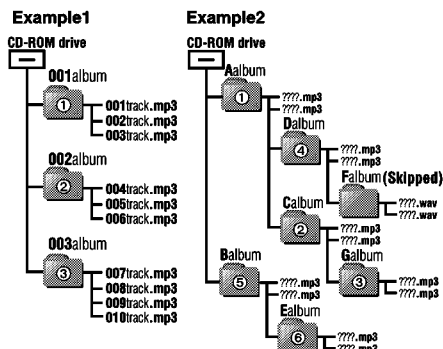
This unit plays MP3 files in the following order.

Numbers such as ① show the order folders (albums) and files (tracks) within them are played.

Example1: Recommended method when creating MP3 discs.

Example2: A disc not created in the recommended way.
• Play will be in the order shown in the below diagram, irrespective of folder and track names, so the order of play in this example will be A→C→G→D, not A→B→C→D. Folders and files in the same level will be played in order according to their names.

• Folders that do not contain MP3 files ("Falbum" in the example) are skipped.



Limitations on MP3

- This unit cannot play files if they have a suffix other than ".mp3" or ".MP3".
- This unit cannot play files that have the suffix ".mp3" or ".MP3" if they are not MP3 files.
- This unit is not compatible with ID3 tags.
- This unit is compatible with multi-session but if there are a lot of sessions it takes more time for play to start. Keep the number of sessions to a minimum to avoid this.
- This unit cannot play files recorded using packet write.

Frequently asked questions

Q. Can I play a disc if it has both audio data and MP3 data?

No. Only the data type used for the first track is played.

Q. Is there a limit on the number of albums and tracks?

This unit can play a maximum of 999 albums and 999 tracks. The unit cannot play albums or tracks beyond these limits.

Q. Why is sound interrupted between tracks?

The pick-up lens has to move to find the next track so a few seconds of silence is normal.

Q. Can I use 700-MB data?

Yes, you can.

5 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).

5.1. 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. In order to prevent static electricity damage to the laser diode, use a short pin or similar tool to short the optical pickup's flexible circuit boards after they have been disconnected from the main circuit board. (as shown in **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. 2**)

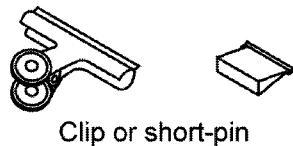


Fig. 1

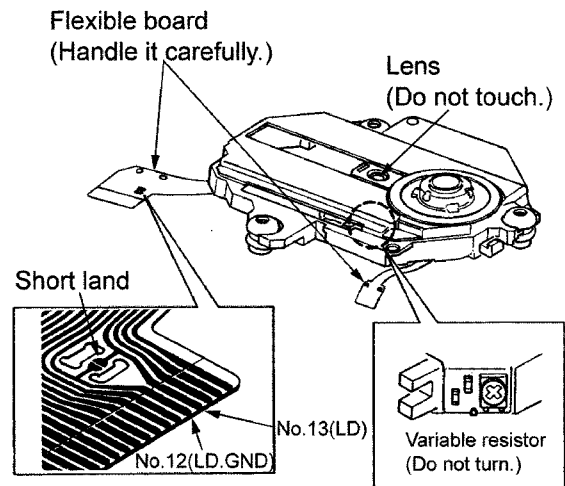


Fig. 2

5.2. 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. 3**)
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. 4**)

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).

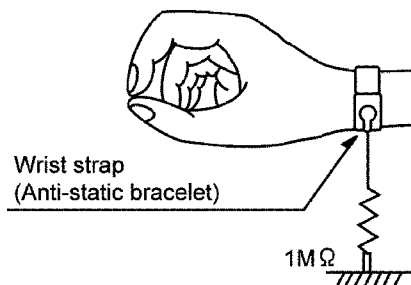


Fig. 3

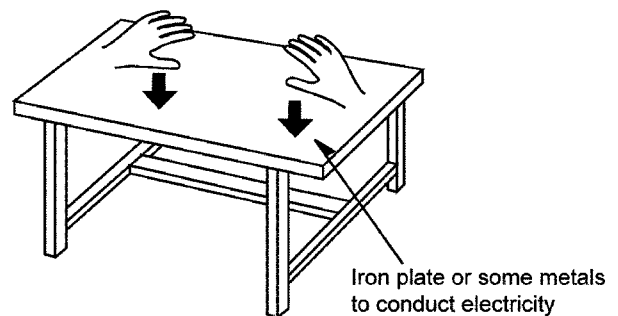


Fig. 4

6 Operation Checks and Component Replacement Procedures

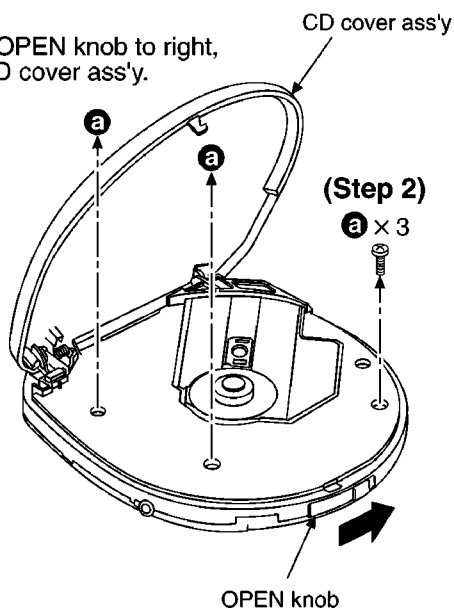
- This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
- For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.

6.1. Checking for the main P.C.B.

6.1.1. Checking for the main P.C.B. (A side)

(Step 1)

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

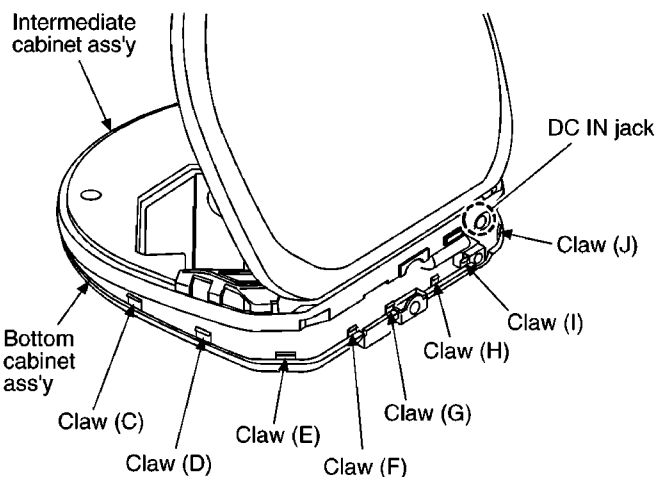
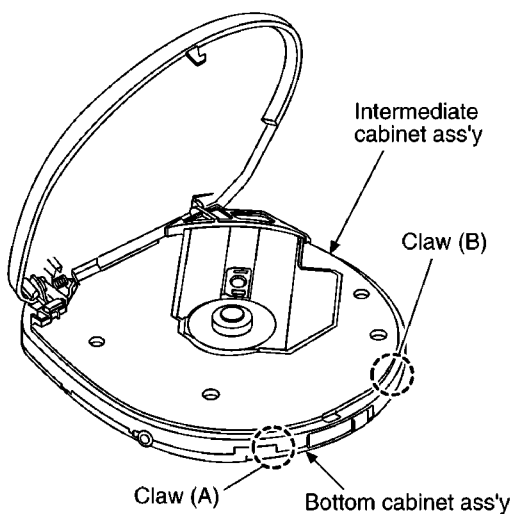


(Step 2)

a x 3

(Step 3)

Spread the clearance between the bottom cabinet ass'y and intermediate cabinet ass'y manually.



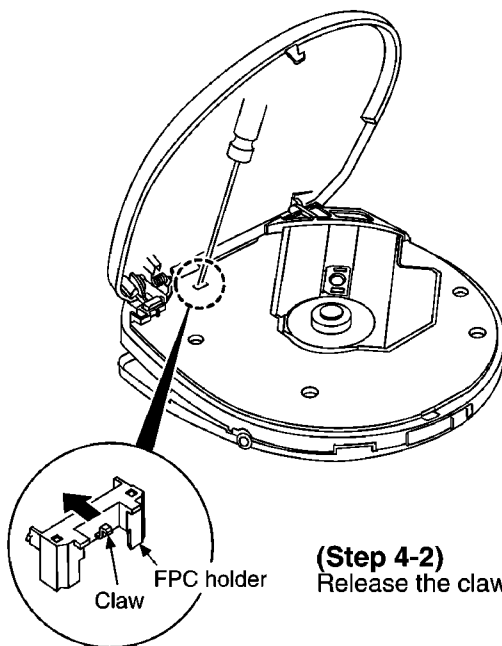
(Step 4-1)

Open the clearance between the bottom cabinet ass'y and intermediate cabinet ass'y, and then release the claw (C) to claw (J) in turn.

NOTE:

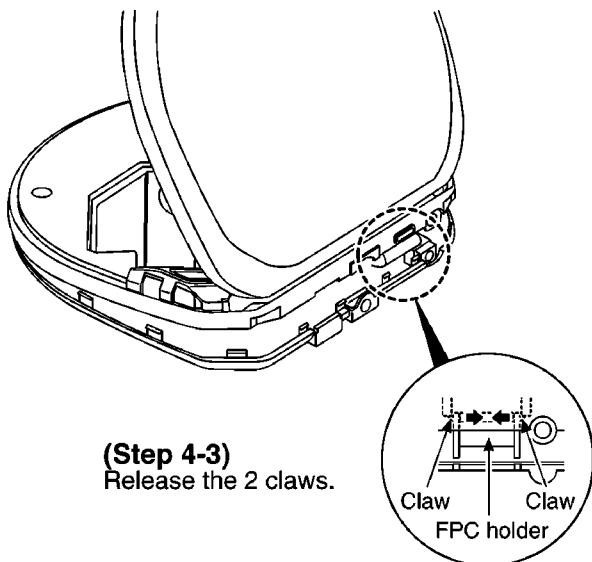
Take care not to break the DC IN Jack provided with intermediate cabinet.

[In case of SL-MP30]

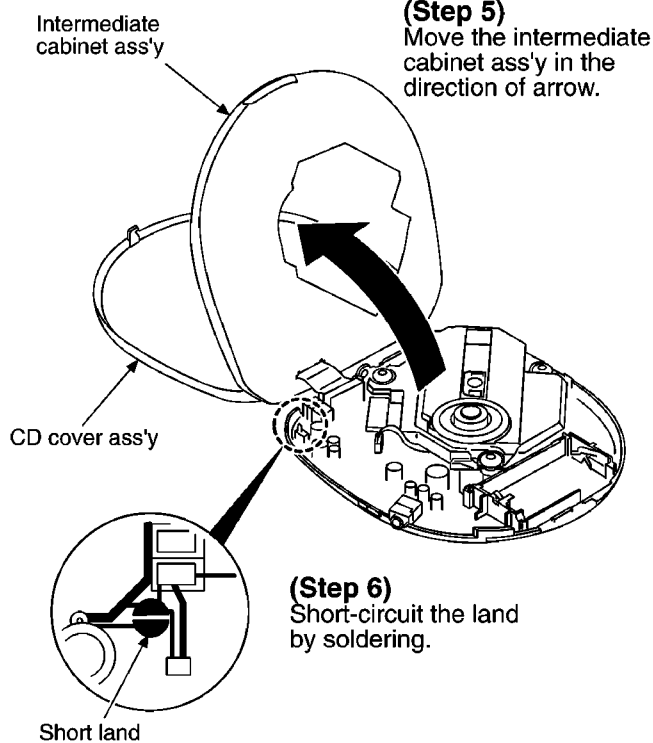


(Step 4-2)

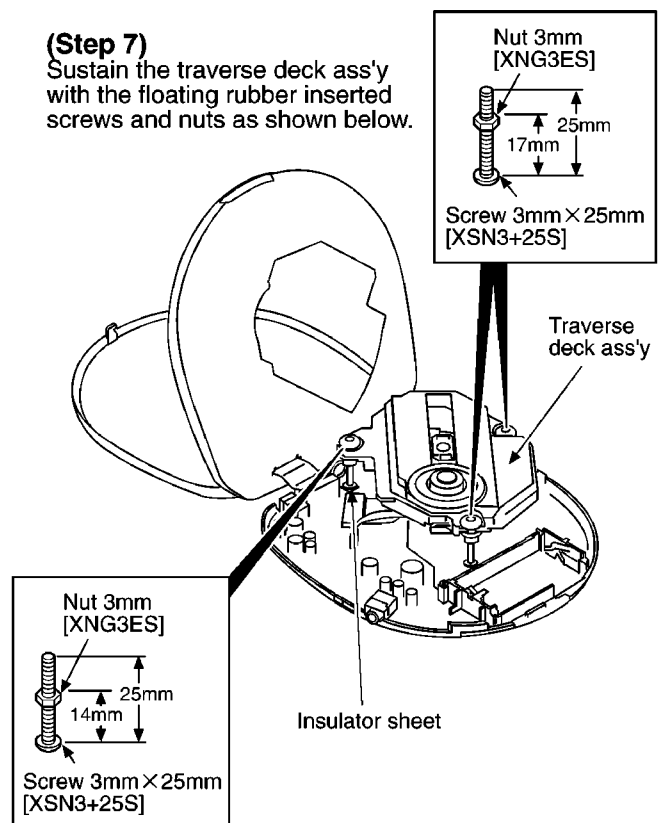
Release the claw.



[In common area]



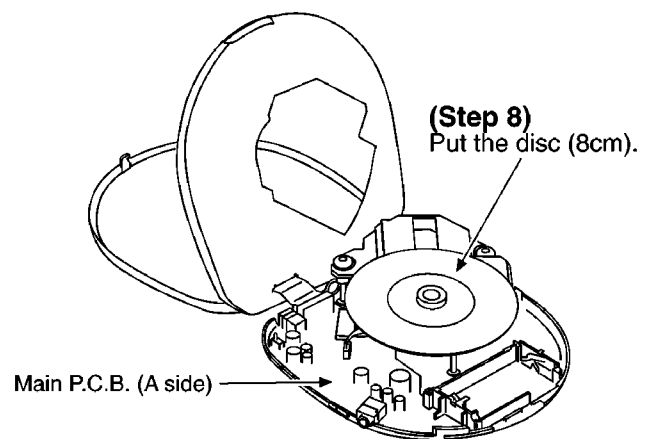
(Step 7)
Sustain the traverse deck ass'y with the floating rubber inserted screws and nuts as shown below.



NOTE:

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

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

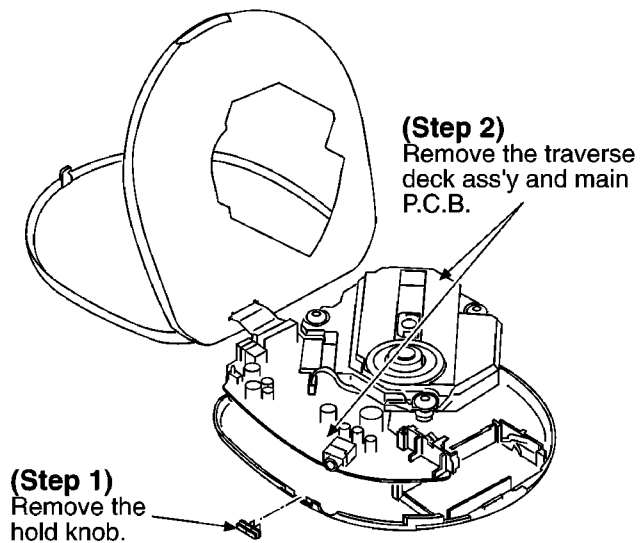


NOTE:

After checking, unsolder the short land to open circuit.

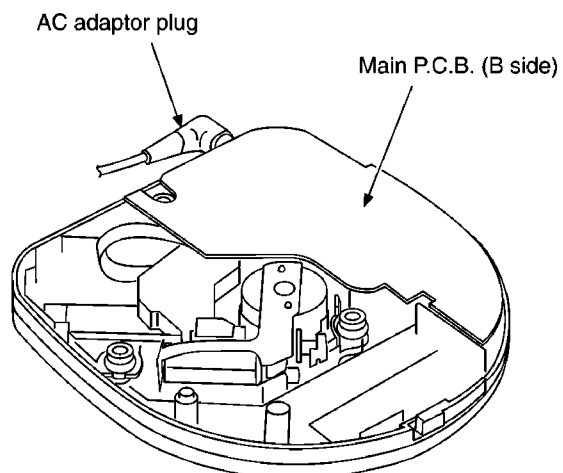
6.1.2. Checking for the main P.C.B. (B side)

- Follow the (Step 1) - (Step 6) of item 5.1.1.



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

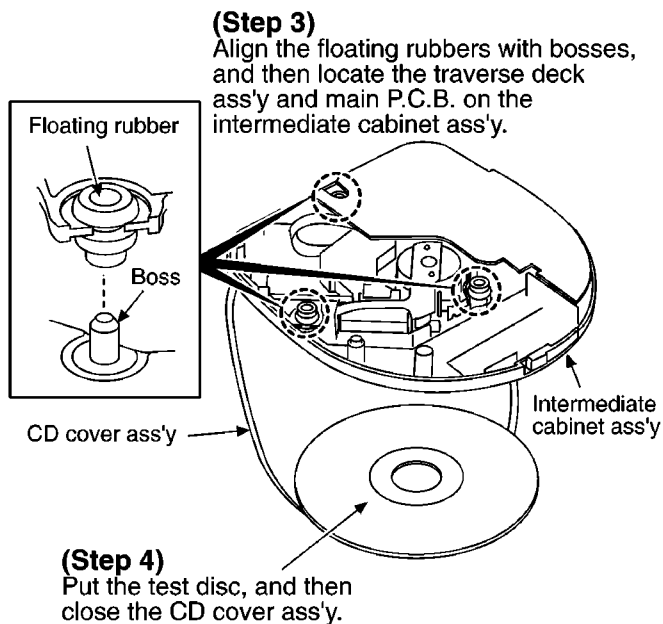
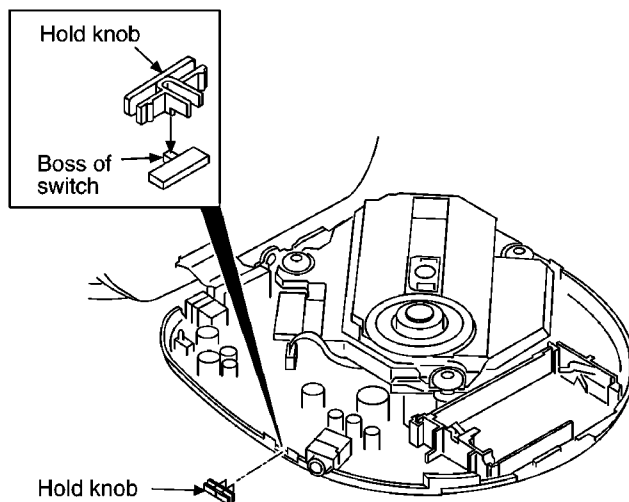
(Step 5)
Insert the AC adaptor plug into the DC IN jack, and then apply the power.



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

Notice for installation of hold knob

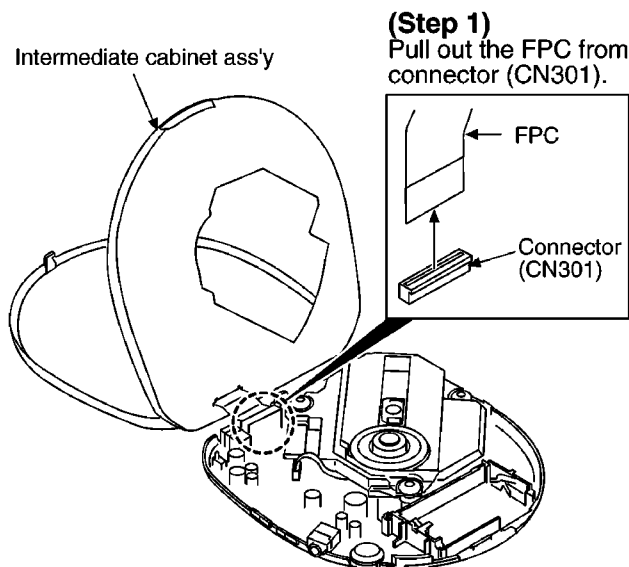
- Make sure the boss of switch is fit in the hold knob.



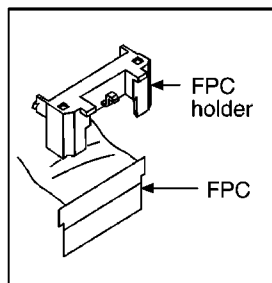
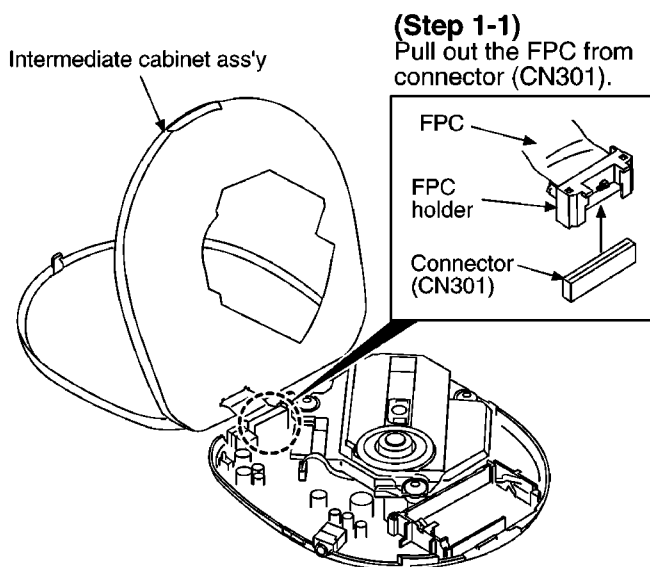
6.2. Replacement for the CD cover ass'y and LCD

- Follow the (Step 1) - (Step 6) of item 5.1.1.

[In case of SL-MP35]



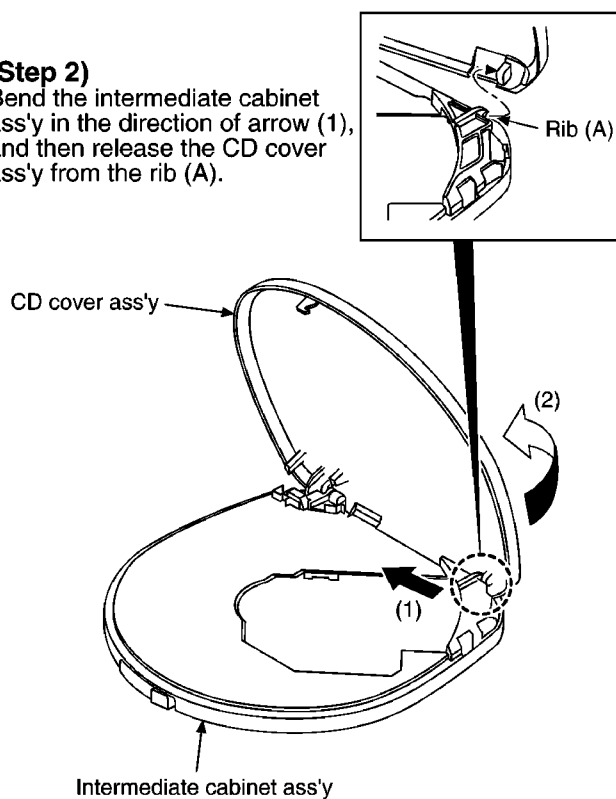
[In case of SL-MP30]



[In common area]

(Step 2)

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

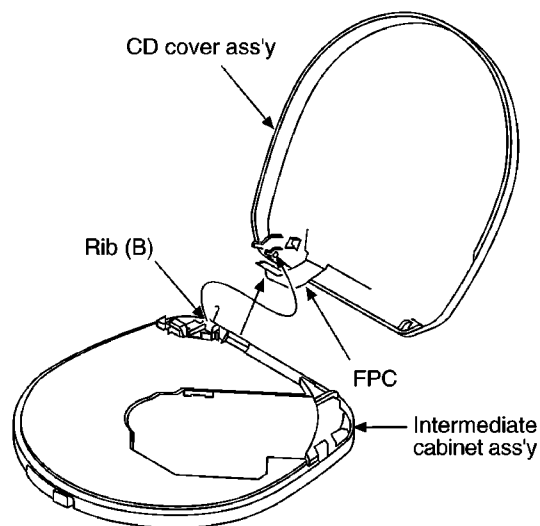


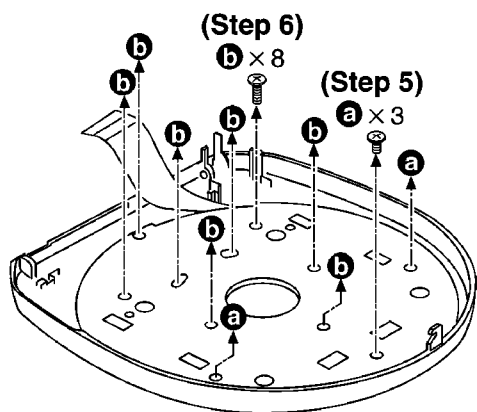
(Step 3)

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

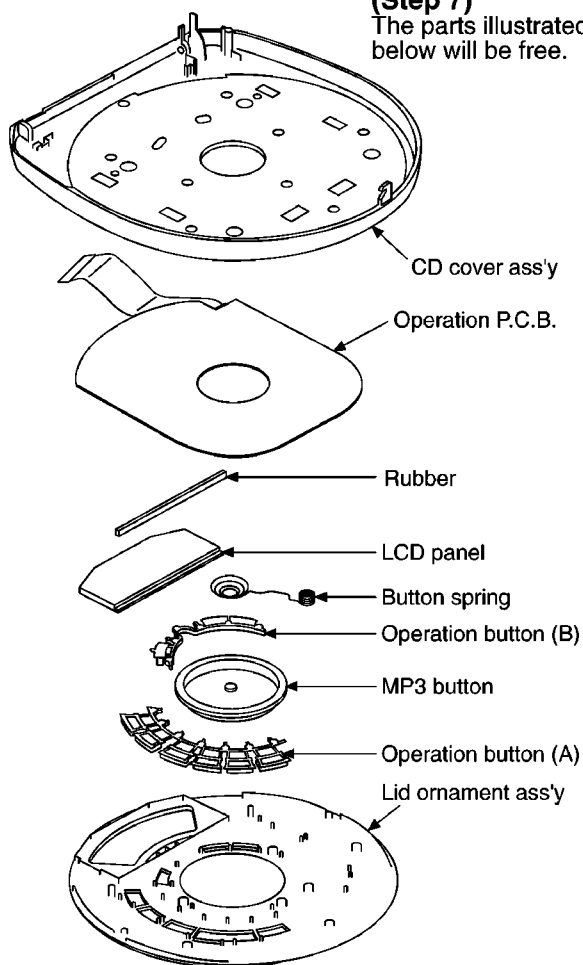
(Step 4)

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





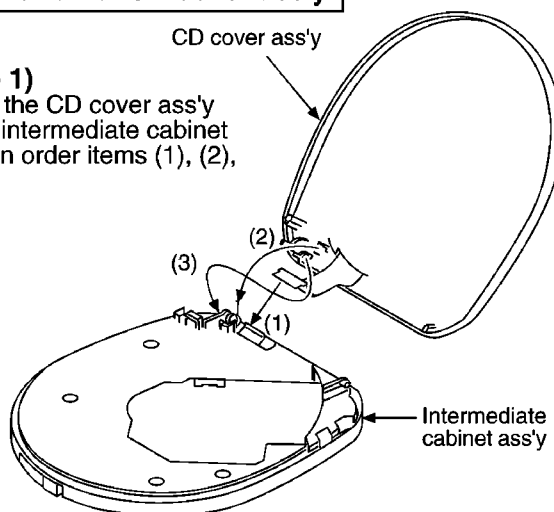
(Step 7)
The parts illustrated below will be free.



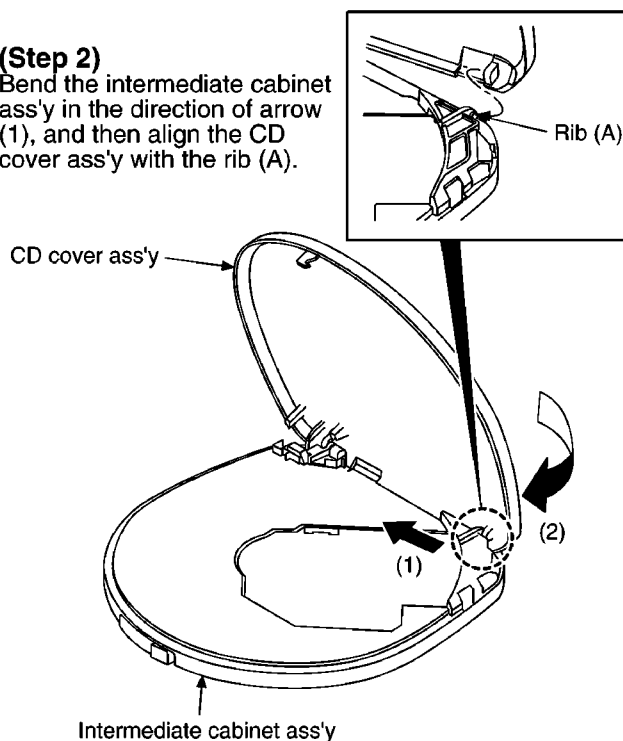
NOTE:
Be careful not to be applied the dust or smudge on the surface rubber.

Installation of CD cover ass'y

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



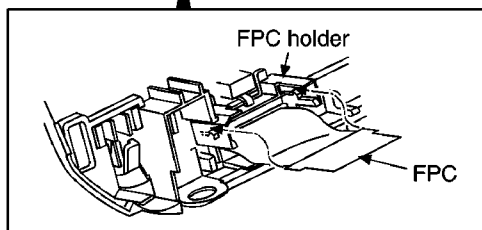
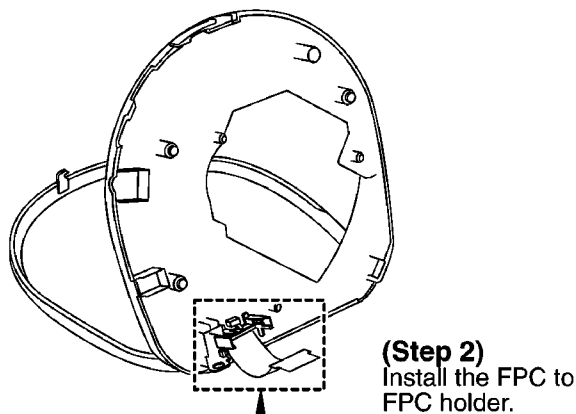
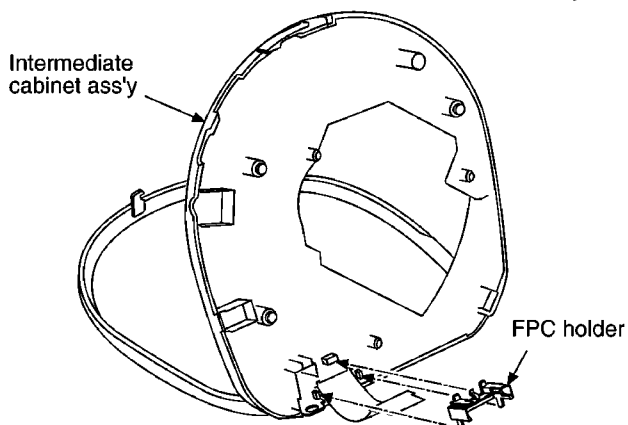
(Step 2)
Bend the intermediate cabinet ass'y in the direction of arrow (1), and then align the CD cover ass'y with the rib (A).



Installation of intermediate cabinet ass'y (SL-MP30)

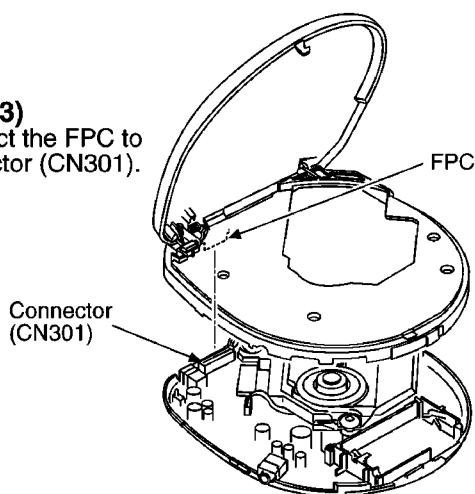
(Step 1)

Install the FPC holder to intermediate cabinet ass'y.



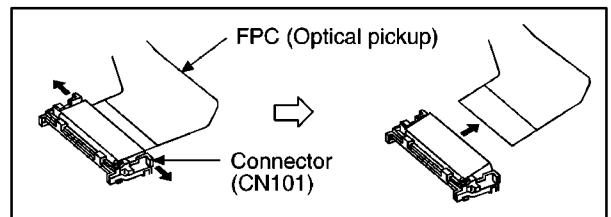
(Step 3)

Connect the FPC to connector (CN301).



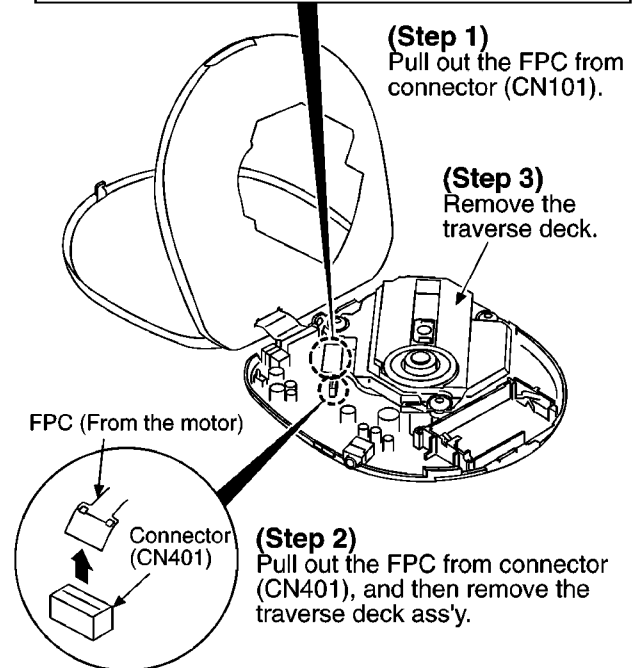
6.3. Replacement for the traverse motor

- Follow the (Step 1) - (Step 5) of item 5.1.1.



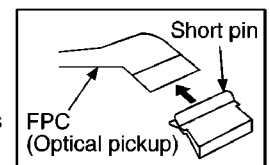
(Step 1)

Pull out the FPC from connector (CN101).

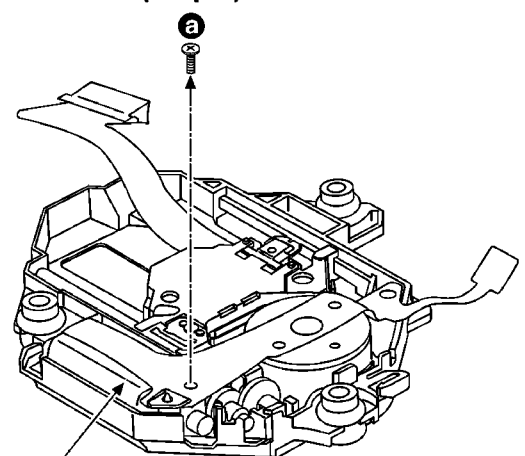


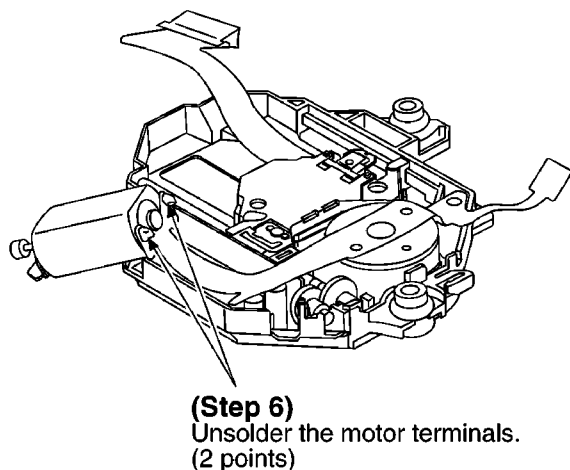
NOTE:

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



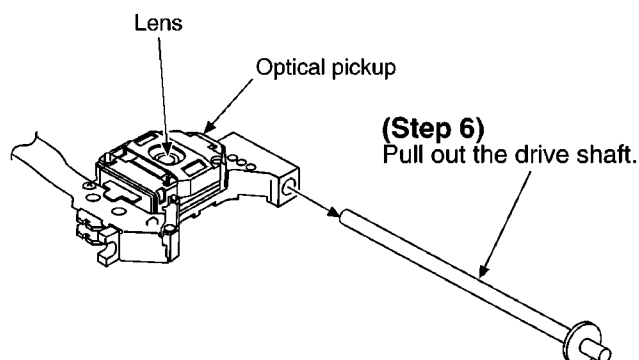
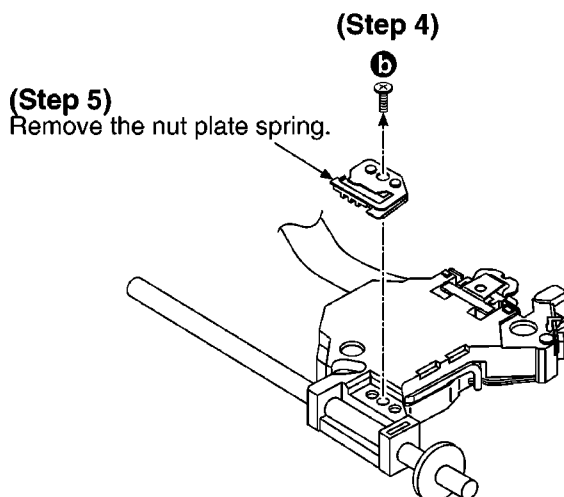
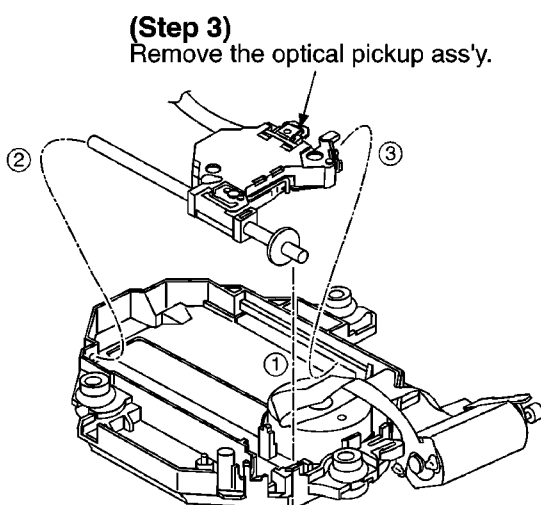
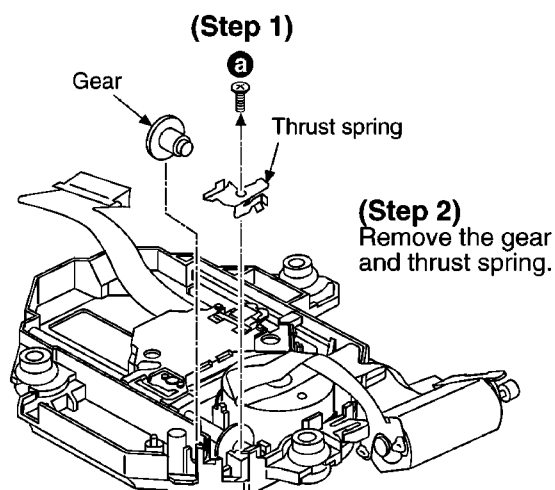
(Step 4)





6.4. Replacement for the optical pickup

- Follow the **(Step 1)** - **(Step 5)** of item 5.1.1.
- Follow the **(Step 1)** - **(Step 5)** of item 5.3.



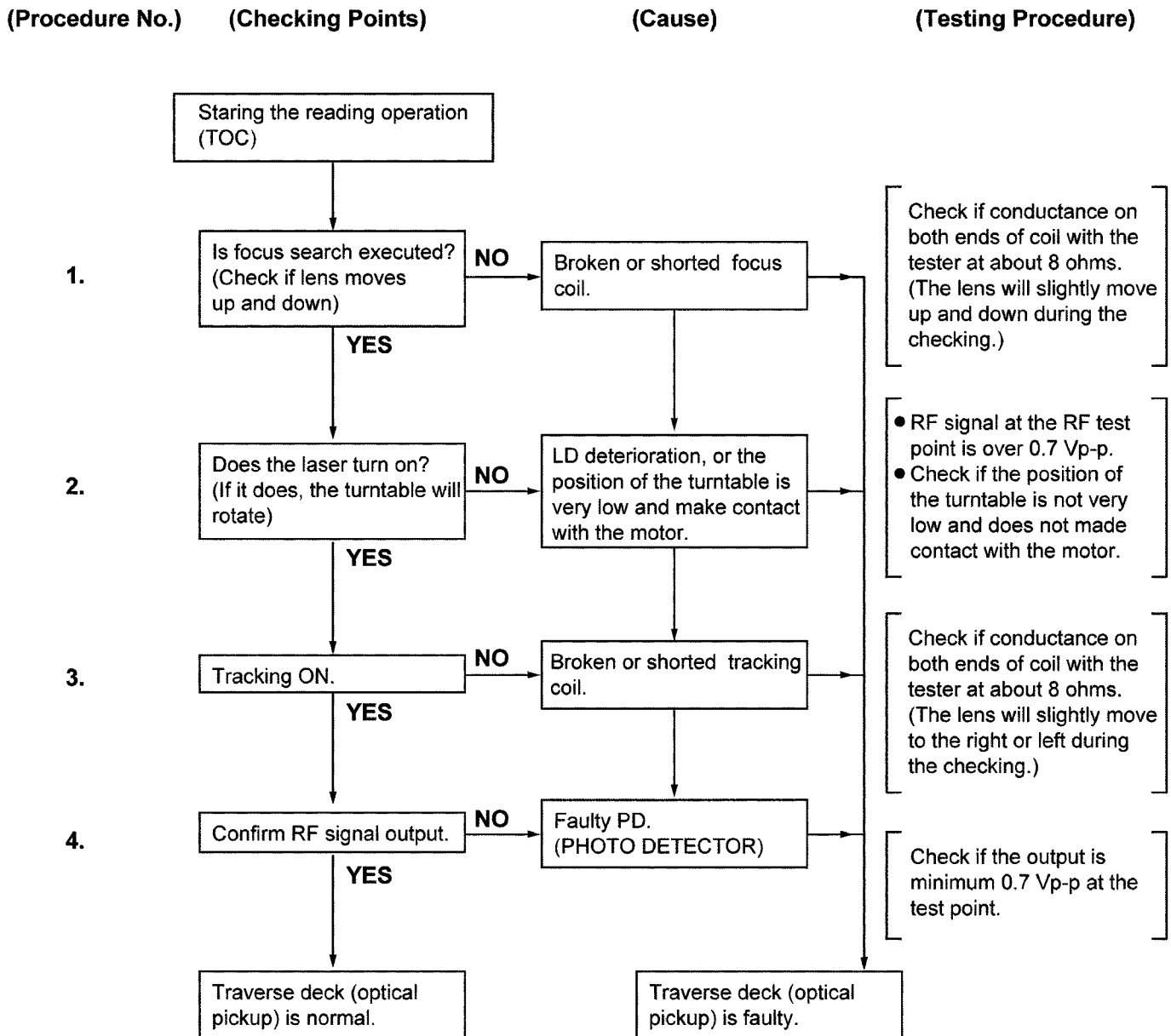
NOTE:

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.

7 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.

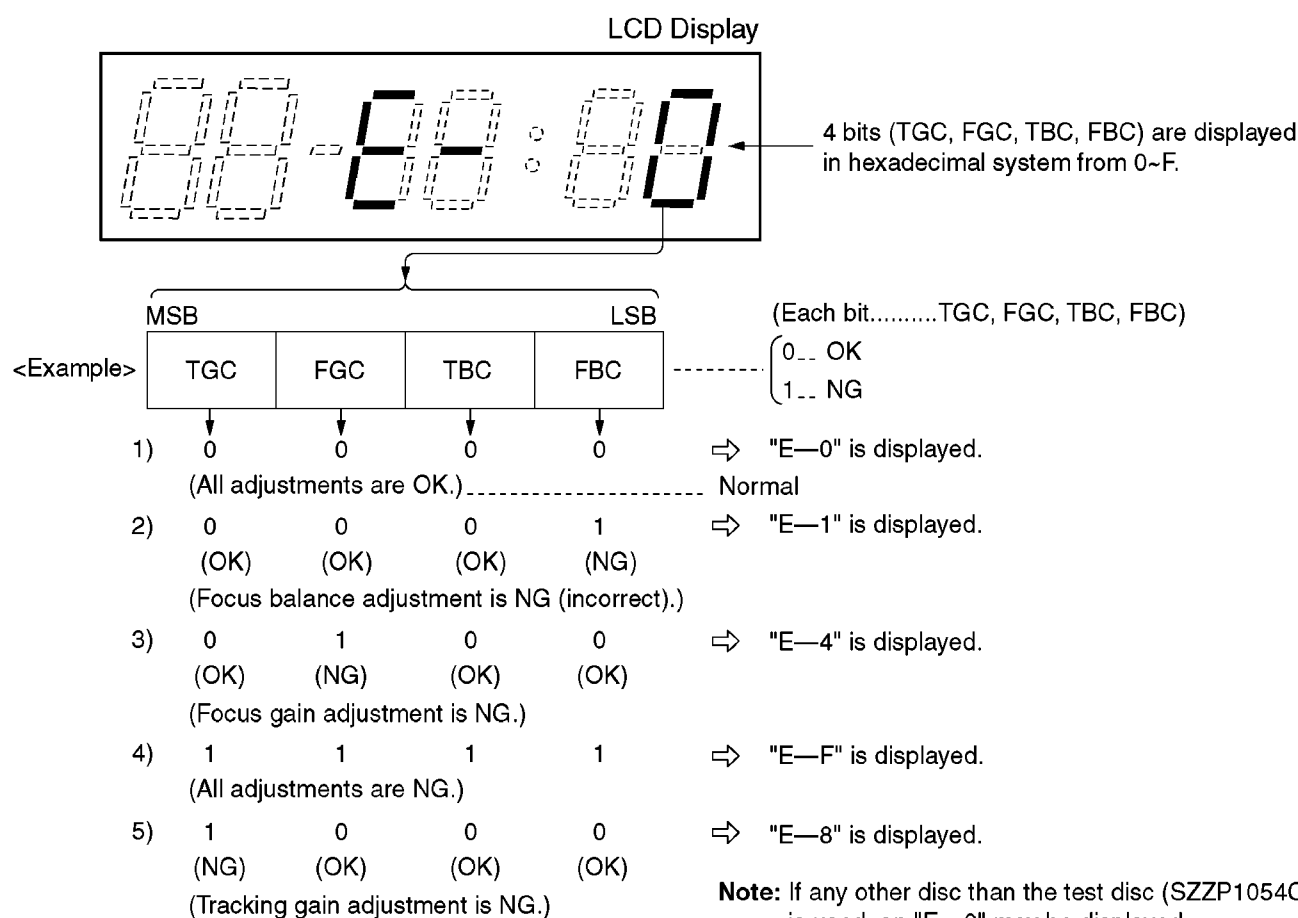
8 Automatic Adjustment Results Display Function (Self-check Function)

On these units (SL-MP30/MP31C/MP35), 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 result displays (self-check function). (Using the new Servo IC: MN662791AA)

8.1. How to display automatic adjustment results

1. Load the test disc (SZPP1054C).
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) Button once.
4. An automatic adjustment result is displayed on the LCD.

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



<Example>

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

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

1 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.)

1 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 15 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.)

1 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.

9 Outline of 48-Second Sound Keeper Technique Used for Prevention of Sound from Skipping

9.1. Conventional Shock proofing Technique

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

If reaccess to the break point is accomplished before the memory becomes empty, apparent playback sound is entirely kept free from breaking even when information pauses due to vibration, etc. It was necessary to use the 16M bit memory for securing the accumulation time of about 48 seconds.

9.2. Compression-shock proofing [Outline]

Fig. 8 is a block diagram showing the compression-shock proofing mechanism, the difference of which from the conventional mechanism is as follows: Input information read

out at double speed undergoes data compression (16 bits -- 4 bits) by the encoder in the ADPCM (Adaptive Difference PCM) and stored in the external memory; the stored memory information undergoes data elongation (4 bits -- 16 bits) by the decoder in the ADPCM and supplied at normal speed to the D/A converter.

The data compression technique has conducted to reduction of required memory capacity from 16M bits to 4M bits for securing the accumulation time equivalent to the conventional.

All-inclusive Block Diagram

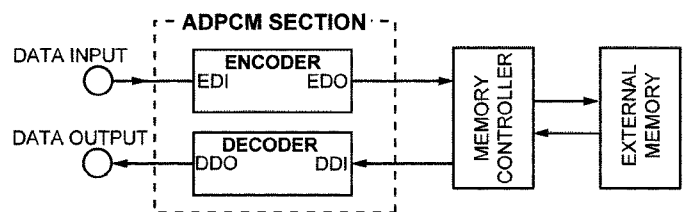
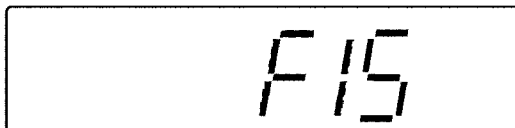


Fig. 8

10 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



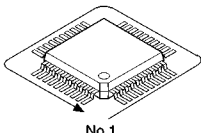
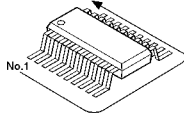
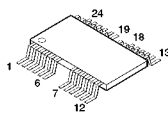
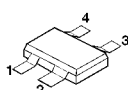
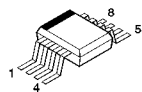
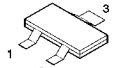
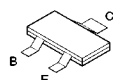
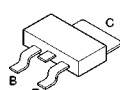
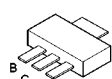
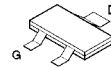
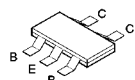
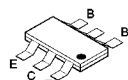
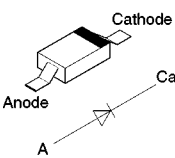
(Press PLAY and STOP button. After 15 seconds, it is displayed for 2 seconds.)

"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.

11 Schematic Diagram Notes

11.1. Type Illustration of IC's, Transistors and Diodes

 No.1	MN662791AA 80PIN AN41505A-VB 48PIN C0HBA0000113 64PIN C2BBGE000622 80PIN	 No.1	AN8885SBE1V 28PIN NJU7082BVAE1 8PIN	C3ABMB000027 	C0EBB0000031 
AK93C45BH-L 	C0CBAAE00022 	 DTA114YUA106 DTA144EUA106 DTC143EUA106 DTC144TUA106 2SB709ATX UN5215TX	2SB1182TLPQR 	B1ABMD000004 	
2SK1958T1 	FMG6AT148 	XN0F26300L 	MA111TX 		

11.2. Schematic Diagram Notes

Notes:

- S201: Laser ON / OFF switch.
 S202: Rest detection switch.
 S310: Hold switch (HOLD) in "OFF" position.

SL-MP30/31C

- S801: Play/ Pause() switch.
 S802: Volume + (+VOLUME) switch.
 S803: Volume - (VOLUME -) switch.
 S804: A skip. F ( ALBUM ) switch.
 S805: A skip. R ( ALBUM ) switch.
 S806: EQ switch.
 S807: Skip. F () switch.
 S808: Mode (MODE) switch.
 S809: Amode (ALBUM MODE) switch.
 S810: Stop/ operation () switch.
 S811: Skip. R () switch.
 S812: Display (DISPLAY) switch.
 S813: Memory (MEMORY) switch.

SL-MP35

- S901: Play/ Pause() switch.
 S902: Volume + (+VOLUME) switch.
 S903: Volume - (VOLUME -) switch.
 S904: A skip. F ( ALBUM ) switch.
 S905: A skip. R ( ALBUM ) switch.
 S906: EQ switch.
 S907: Skip. F () switch.
 S908: Mode (MODE) switch.
 S909: Amode (ALBUM MODE) switch.
 S910: Stop/ operation () switch.
 S911: Skip. R () switch.
 S912: Memory (MEMORY) switch.
 S913: Display (DISPLAY) 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.

A MAIN CIRCUIT

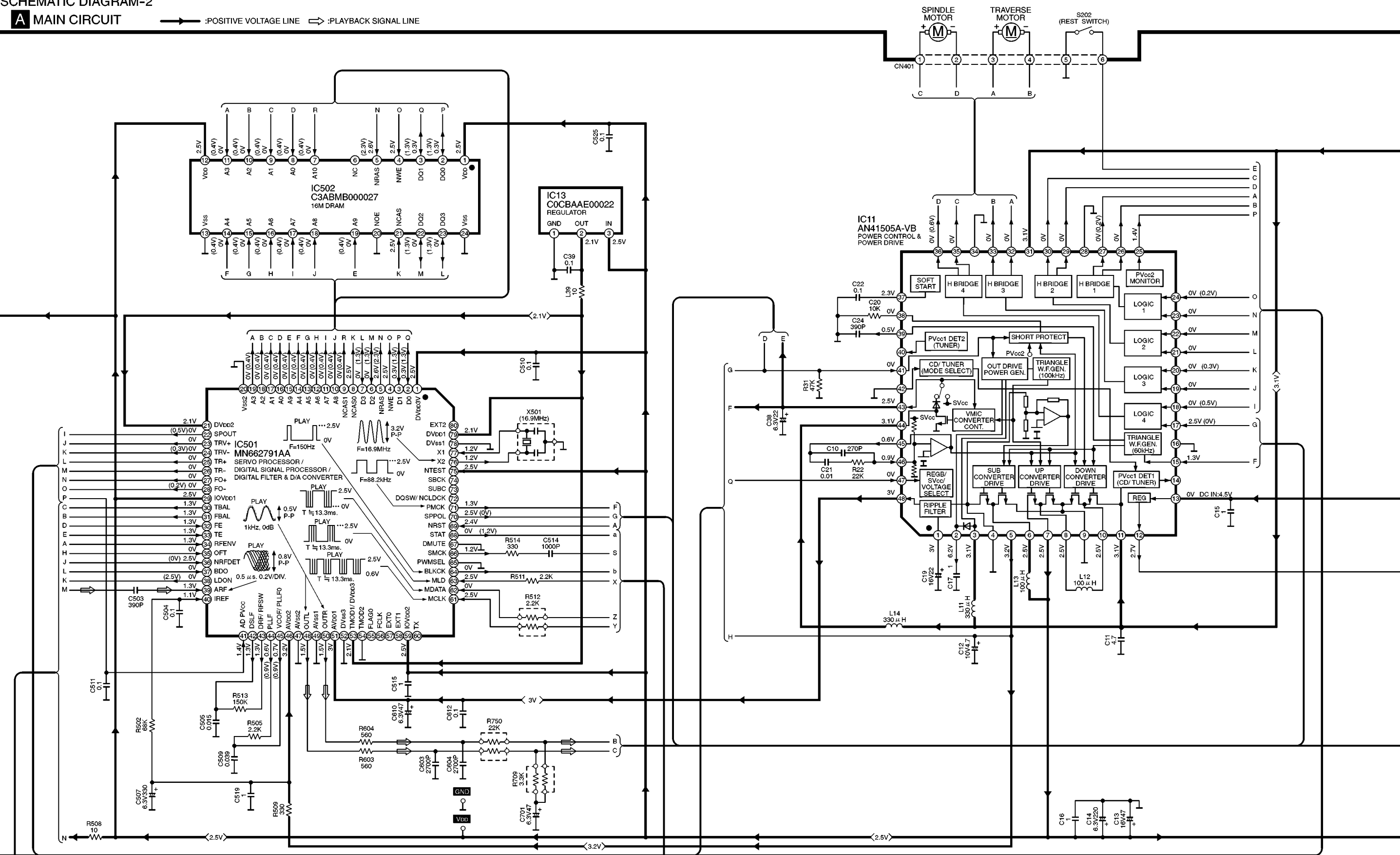
NOTE:
The number which noted at the connectors on the schematic diagram as "SCHEMATIC DIAGRAM-1" or "SCHEMATIC DIAGRAM-2" indicates the schematic diagram serial number located on the left corner in the schematic diagram.



SCHEMATIC DIAGRAM-2

A MAIN CIRCUIT

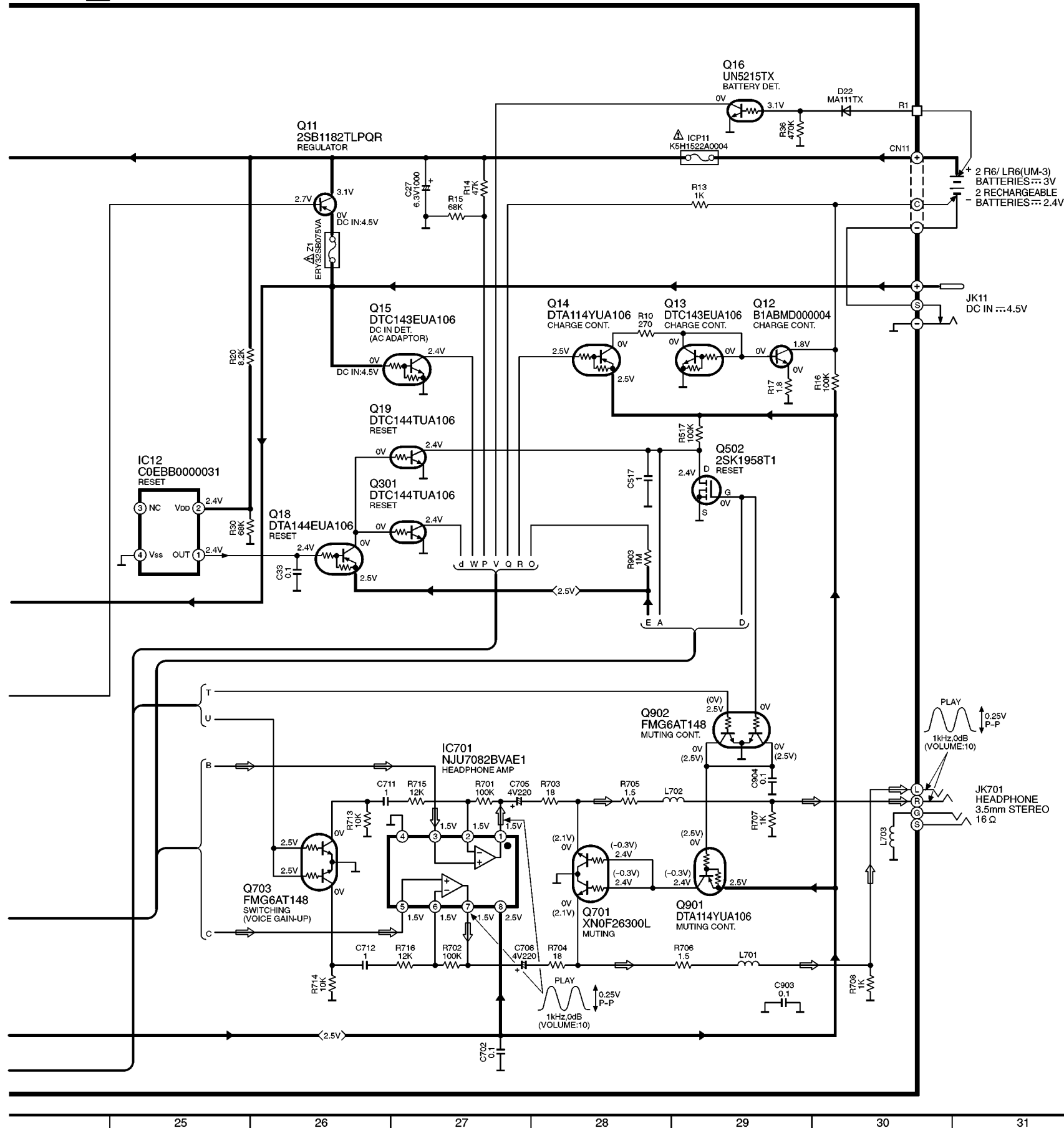
→ : POSITIVE VOLTAGE LINE ⇨ : PLAYBACK SIGNAL LINE



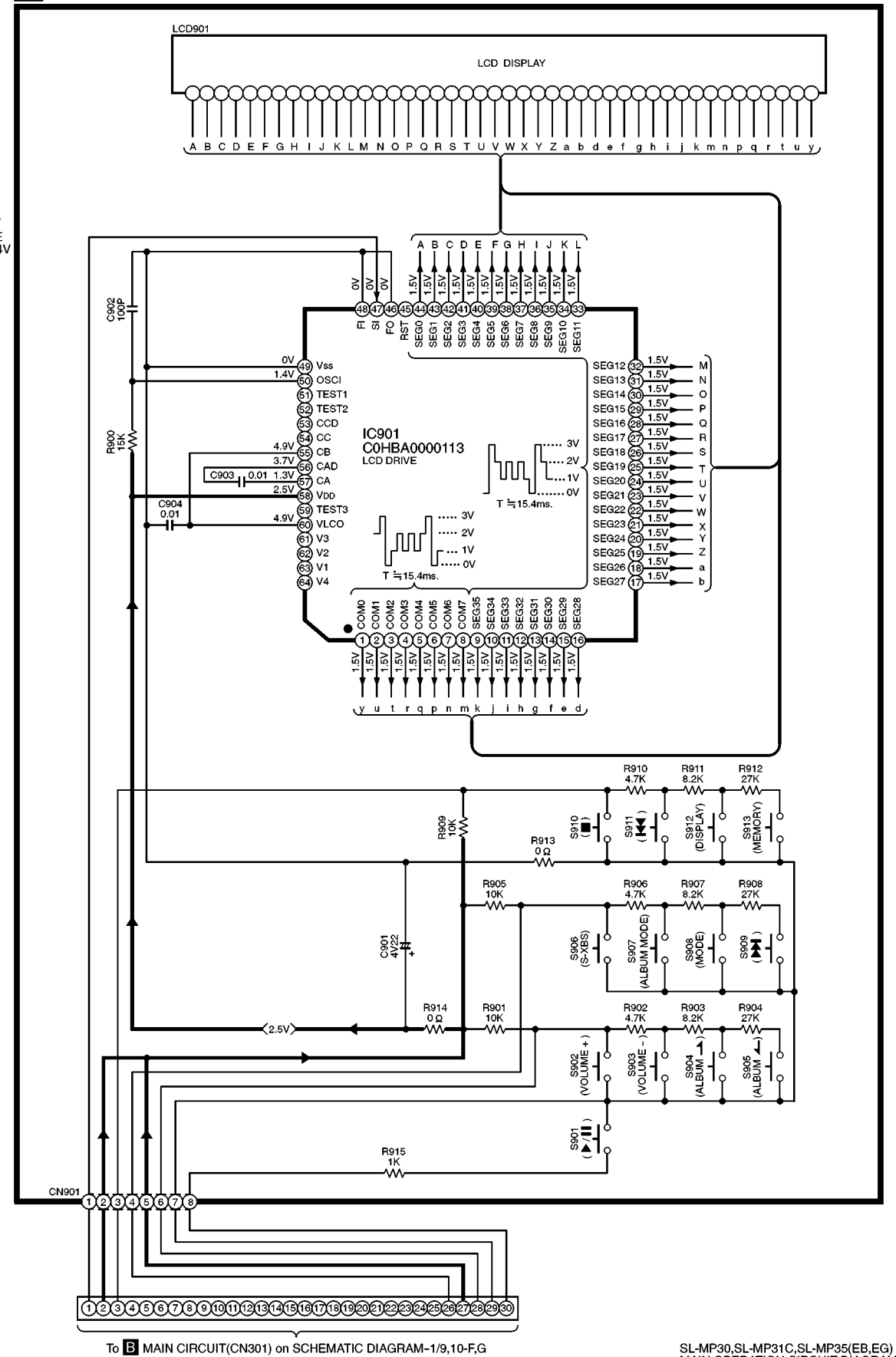
SCHEMATIC DIAGRAM-3

A MAIN CIRCUIT

→ : POSITIVE VOLTAGE LINE ⇨ : PLAYBACK SIGNAL LINE



B OPERATION CIRCUIT [For SL-MP35]

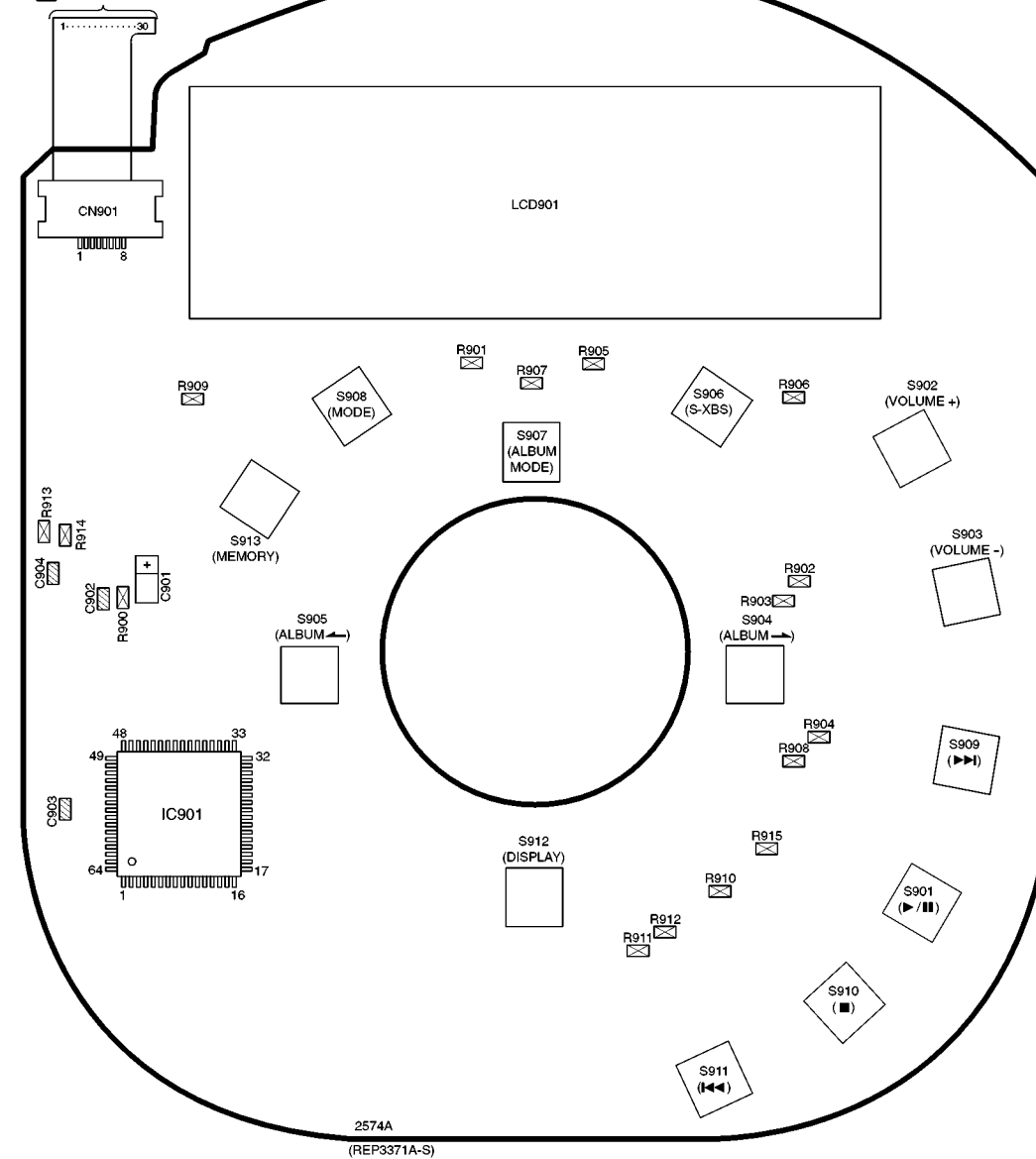


To **B** MAIN CIRCUIT(CN301) on SCHEMATIC DIAGRAM-1/9,10-F,G

SL-MP30,SL-MP31C,SL-MP35(EB,EG)
MAIN,OPERATION CIRCUIT DIAGRAM

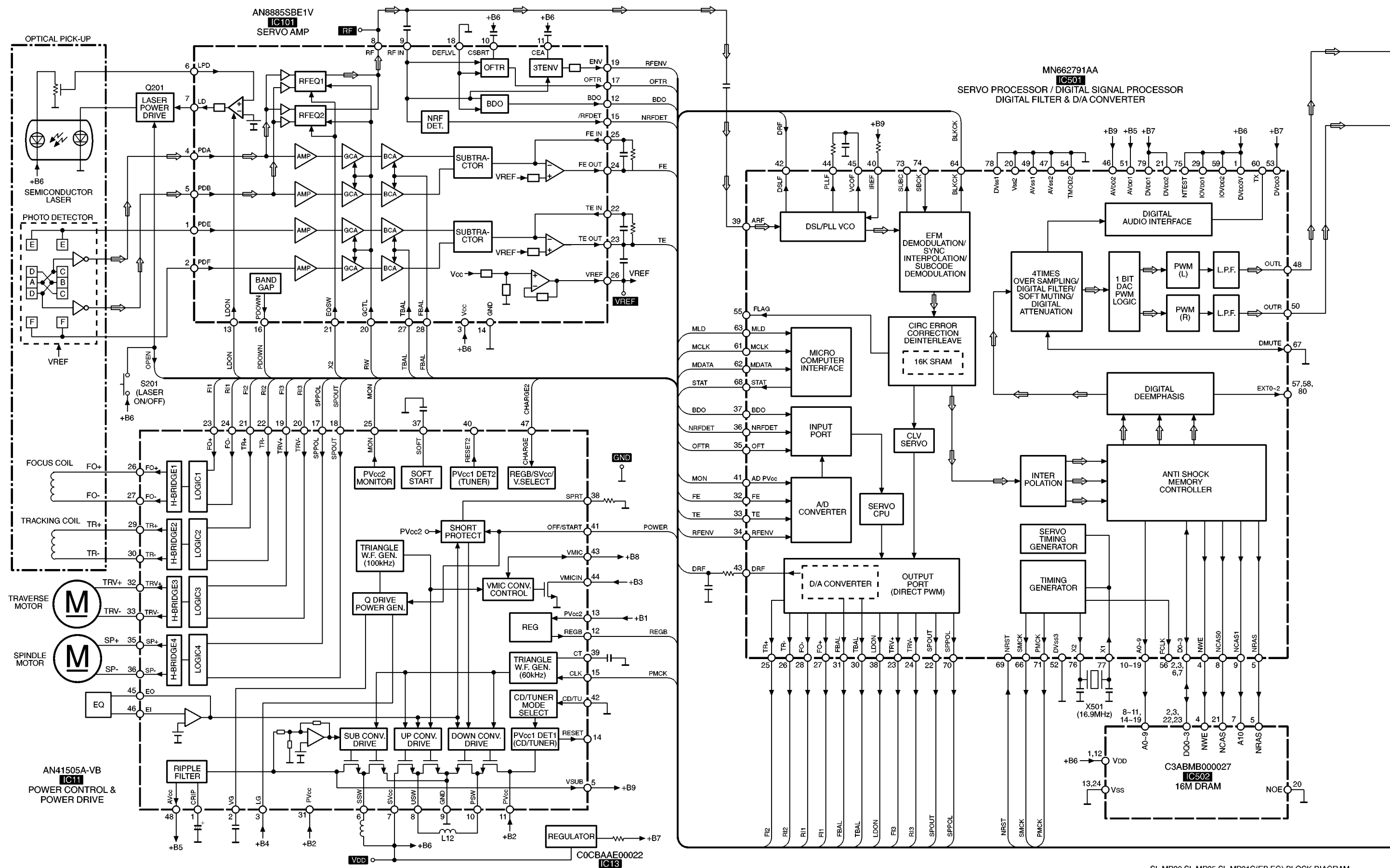
B OPERATION P.C.B.
[For SL-MP35]

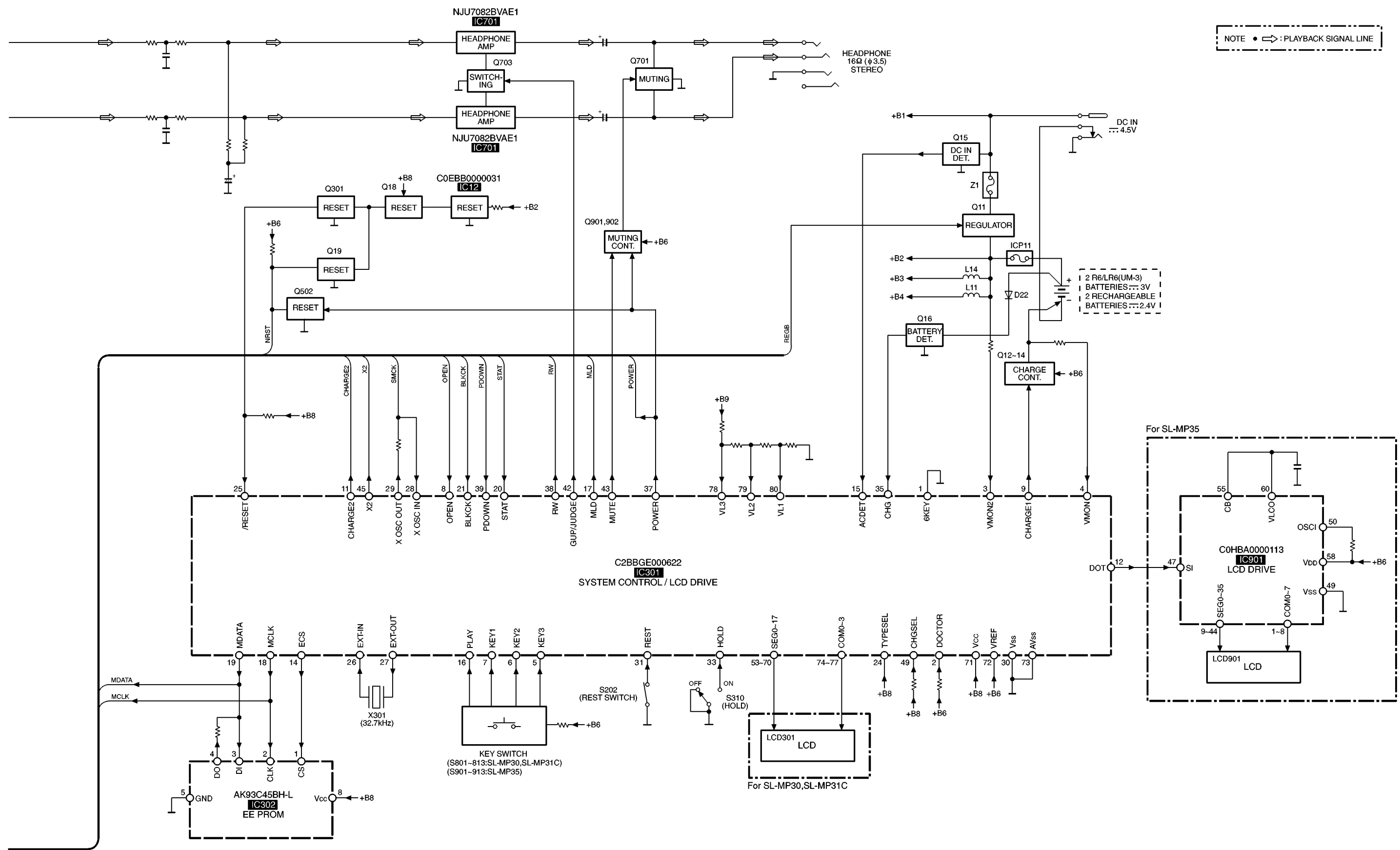
To **A** MAIN P.C.B.(CN301)



SL-MP35(EB,EG) OPERATION P.C.B.

14 Block Diagram





15 Terminal Function of IC's

15.1. IC101(AN8885SBE1V): Servo Amplifier

Pin No.	Mark	I/O Division	Function
1	PDE	I	Tracking signal input (1) terminal
2	PDF	I	Tracking signal input (2) terminal
3	V _{DD}	O	Power supply output terminal
4	PDA	I	Focus signal input (1) terminal
5	PDB	I	Focus signal input (2) terminal
6	LPD	I	APC amplifier input terminal
7	LD	O	APC amplifier output terminal
8	RF	O	RF addition output terminal
9	RF IN	I	RF detection signal input terminal
10	CSBRT	I	Capacitor connection terminal for detection of RF envelope signal
11	CEA	I	Capacitor connection terminal for H.P.F. amplifier
12	BD0	O	BD0 output terminal
13	LDON	I	APC control terminal
14	GND	—	Connected to GND
15	/RFDET	O	NRFDET output terminal
16	PDOWN	O	Power down mode control terminal
17	OFTR	O	Off-track signal output terminal (H:off-track)
18	DEFLVL	—	OFTR/BD0 detection level control terminal
19	ENV	O	3TENV output terminal
20	GCTL	I	RF/FE/TE gain control terminal
21	EQSW	I	EQ characteristic control terminal
22	TE IN	I	TE amplifier reverse input terminal
23	TE OUT	O	TE amplifier output terminal
24	FE OUT	O	FE amplifier output terminal
25	FE IN	I	FE amplifier reverse input terminal
26	VREF	O	VREF output terminal
27	TBAL	I	TBAL control terminal
28	FBAL	I	FBAL control terminal

15.2. IC301(C2BBGE000633): SYSTEM CONTROL/ LCD DRIVE

Pin No.	Mark	I/O Division	Function
1	6KEY	I	6key remote control input terminal
2	DOCTOR	I	Doctor mode input terminal
3	VMON2	I	Battery input terminal
4	VMON	I	Battery input terminal
5	KEY3	I	Key3 input terminal
6	KEY2	I	Key2 input terminal
7	KEY1	I	Key1 input terminal
8	OPEN	I	Open switch signal input terminal
9	CHARGE1	O	Charge control signal output terminal
10	BUZ	—	Not used, open
11	CHARGE2	O	Charge control signal output terminal
12	DOT	O	Not used
13	NC	—	Not used, open
14	ECS	O	CS output terminal for EEPROM
15	AC DET	I	DC IN detect signal input terminal
16	PLAY	I	PLAY key input terminal
17	MLD	O	Serial command latch signal output terminal
18	MCLK	O	Serial clock signal output terminal
19	MDATA	O	Serial command data signal output terminal

Pin No.	Mark	I/O Division	Function
20	STAT	I	Serial command status signal input terminal
21	BLKCK	I	Block clock signal input terminal
22	NC	—	Not used, open
23	NC	—	Not used, open
24	TYPESEL	I	Connected to power supply
25	/RESET	I	Reset signal input terminal
26	EXT-IN	I	EXTERNAL signal input terminal
27	EXT-OUT	O	EXTERNAL signal output terminal
28	X OSC IN	I	Crystal oscillator input terminal
29	X OSC OUT	O	Crystal oscillator output terminal
30	VSS	—	GND terminal
31	REST	I	REST switch detection signal input terminal
32	A.SHOCK	—	Not used, open
33	HOLD	I	HOLD switch detection signal input terminal
34	RESUME	—	Not used, open
35	CHG	I	Connected to GND
36	NC	—	Not used, open
37	POWER	O	Power ON output terminal
38	RW	O	CD-RW equivalence output terminal
39	PDOWN	I	Head amp. power OFF output terminal
40	NC	—	Not used, open
41	NC	—	Not used, open
42	GUP/ JUDGE	O	Volume gain up/ doctor mode check OK output terminal
43	MUTE	O	Hard mute signal output terminal
44	NC	—	Not used, open
45	X2	O	RF equalizer velocity output terminal
46	NC	—	Not used, open
47	ECCSEL	—	Not used, open
48	RAMSEL	—	Not used, open
49	CHGSEL	—	Connected to power supply through resistor
50	PMSEL2	—	Not used, open
51	PMSEL	—	Not used, open
52	X3 SEL	—	Not used, open
53 ~ 70	SEG17 ~ SEG0	O	Segment output terminal
71	VCC	I	Power supply input terminal
72	VREF	I	Power supply input terminal
73	AVSS	—	GND terminal
74 ~ 77	COM3 ~ COM0	O	LCD common signal output terminal
78 ~ 80	VL3 ~ VL1	I	LCD drive bias input terminal

15.3. IC501(MN662791AA): Servo processor, Digital Signal Processing, Digital Filter, and D/A Converter

Pin No.	Mark	I/O Division	Function
1	DV _{DD} 3V	I	Power supply input terminal for DRAM interface
2	D0	I/O	Data input/output terminal for DRAM
3	D1		
4	NWE	O	Write enable output terminal for DRAM
5	NRAS	O	RAS control signal output terminal for DRAM

Pin No.	Mark	I/O Division	Function
6	D2	I/O	Data 2/3 input /output terminal for DRAM
7	D3		
8	NCAS0	O	CAS control 0 signal output terminal for DRAM
9	NCAS1	O	CAS control 1 signal output terminal for DRAM
10~14	A8~A4	O	Addresses 8~4 output terminal for DRAM
15	A9	O	Address 9 output terminal for DRAM
16~19	A0~A3	O	Addresses 0~3 output terminal for DRAM
20	V _{SS} 2	I	Connected to GND
21	DV _{DD} 2	I	Power supply input terminal for digital circuit
22	SPOUT	O	Spindle motor drive output terminal (absolute value)
23	TRV+	O	Traverse motor drive (+) output terminal
24	TRV-	O	Traverse motor drive (-) output terminal
25	TR+	O	Tracking motor drive (+) output terminal
26	TR-	O	Tracking motor drive (-) output terminal
27	FO+	O	Focus motor drive (+) output terminal
28	FO-	O	Focus motor drive (-) output terminal
29	IOVDD1	I/O	Power supply for IN/OUT
30	TBAL	O	Tracking balance adjustment output terminal
31	FBAL	O	Focus balance adjustment output terminal
32	FE	I	Focus error signal input terminal (Analog input)
33	TE	I	Tracking error signal input terminal (Analog input)
34	RFENV	I	RF envelope signal input terminal (Analog input)
35	OFT	I	Off-track signal input terminal (H:off-track)
36	NRFDET	I	RF detection signal input terminal (L:detection)
37	BD0	I	Dropout signal input terminal (H:dropout)
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	ADPV _{CC}	O	A/D reference voltage output terminal (Analog input)
42	DSL	O	Loop filter output terminal for DSL
43	DRF/ RFSW	I	Bias input terminal for DSL
44	PLL	O	Loop filter output terminal for PLL
45	VCOF/ PLLF0	O	Loop filter output terminal for jitter-free VCO
46	AV _{DD} 2	I	Power supply input terminal for analog circuit (DSL,PLL,VCOF,AD,DA)
47	AV _{SS} 2	I	GND for analog circuit (DSL,PLL,VCOF,AD,DA)
48	OUTL	O	Left channel audio signal output terminal
49	AV _{SS} 1	—	Connected to GND
50	OUTR	O	Right channel audio signal output terminal
51	AV _{DD} 1	I	Power supply input terminal for analog circuit
52	FSEL	—	GND terminal
53	TMOD1	I	Connected to power supply
54	TMOD2	—	Connected to GND
55	FLAG0	O	Flag signal output terminal (Not used, open)

Pin No.	Mark	I/O Division	Function
56	FCLK	—	Not used, open
57	EXT0	—	Not used, open
58	EXT1	—	Not used, open
59	IOV _{DD} 2	I	Power supply for IN/OUT
60	TX	O	Digital audio interface signal output terminal (Not used, open)
61	MCLK	I	Microprocessor command clock signal input terminal
62	MDATA	I	Microprocessor command data signal input terminal
63	MLD	I	Microprocessor command load signal input terminal (L:load)
64	BLKCK	O	Sub-code block clock signal output terminal (f=75Hz:during normal speed playback)
65	PWMSEL	I/O	PWM output mode select input terminal (L:direct, H:3 value) (Connected to GND)
66	SMCK	O	System clock signal output terminal (f=4.236/8.4672MHz)
67	DMUTE	I/O	Mute input terminal (H:mute) (Connected to GND)
68	STAT	O	Status signal output terminal
69	NRST	I	Reset signal input terminal (H:reset)
70	SPPOL	O	Spindle motor drive signal output terminal (polarity output)
71	PMCK	O	Clock signal output terminal (f=88.2KHz)
72	NCLDCK	O	Frame clock signal output terminal (f=7.35KHz:during normal speed playback)(Not used, open)
73	SUBC	O	Sub-code serial output terminal (Not used, open)
74	SBCK	I	Clock input terminal for sub-code output terminal
75	NTEST	I	Test input terminal (H:normal)
76	X2	O	Crystal oscillator circuit output terminal (f=16.9344MHz)
77	X1	I	Crystal oscillator circuit input terminal (f=16.9344MHz)
78	DV _{SS} 1	—	Connected to GND
79	DV _{DD} 1	I	Power supply input terminal for digital circuits
80	EXT2	I	Extension IN/OUT port (2) (Not used, open)

15.4. IC901(C0HBA0000113): LCD DRIVE

Pin No.	Mark	I/O Division	Function
1 ~ 8	COM0 ~ COM7	O	COM0~7 output terminal for LCD drive
9 ~ 44	SEG35 ~ SEG0	O	Segment output terminal for LCD drive
45	RST	—	Monitor reset signal output (Not used, open)
46	F0	—	Connected to GND
47	S1	I	Serial data input terminal
48	F1	—	Connected to GND
49	VSS	—	Connected to GND
50	OSC1	I	Oscillator connection input terminal
51	TEST1	—	Test terminal
52	TEST2	—	Test terminal
53	CCD	—	Capacitor connection input terminal for circuit drive
54	CC	—	Capacitor connection input terminal for circuit drive

Pin No.	Mark	I/O Division	Function
55	CB	—	Capacitor connection input terminal for circuit drive (Connected to GND through capacitor)
56	CAD	—	Capacitor connection terminal for circuit drive
57	CA	—	Capacitor connection terminal for circuit drive
58	VDD	I	Power supply input terminal
59	TEST3	—	Test terminal
60	VLCO	—	Connected to GND
61 ~ 63	V3 ~ V1	—	Power supply input terminal
64	V4	—	Power supply input terminal

16 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. (Refer to the cover page for area.)

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.

*"<IA>-<IC>" marks in Remarks indicate languages of instruction manuals.

[<IA>: English/Spanish/Swedish/German/Italian/French,
<IB>: Netherlands/Danish/Russian/Czech/Polish
/Portuguese,
<IC>:English]

*All parts are supplied by SPC.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	RAE0145Z	TRAVERSE DECK	1	Δ ;
1-1	RAF0142A	OPTICAL PICK-UP	1	Δ
1-2	RDG0305	GEAR	1	
1-3	RDG0306	GEAR	1	
1-4	RJB2550A	TRAVERSE FPC	1	
1-5	RMG0449-H	FLOATING RUBBER	3	
1-6	RMC0264	THRUST SPRING	1	
1-7	RXQ0482	NUT PLATE SPRING	1	
1-8	RXQ0525	TRAVERSE MOTOR	1	
1-9	SNSD38	SCREW	1	
1-10	XQN17+BG45	SCREW	1	
1-11	XQN17+CG45	SCREW	1	
1-12	XQN2+BG55	SCREW	1	
2	RGV0200-H	HOLD KNOB	1	
3	RJC93036	BATTERY TERMINAL	1	
4	RFKJLMP35EGK	BOTTOM CABINET ASS'Y	1	(MP35)
4	RFKJLSX390ES	BOTTOM CABINET ASS'Y	1	(MP30) (MP31C)
4-1	RKA0112-K	FOOT	2	
6	RMB0679	SPRING	1	
7	RML0578	FPC HOLDER	1	(MP30) (MP31C)
8	KORE01300015	MULTI BUTTON SW UNIT	1	(MP30) (MP31C)
9	L5AABEC00001	LCD PANEL	1	(MP30) (MP31C)
9	L5ADBFC00001	LCD PANEL	1	(MP35)
10	RGD0086-A	CD LID	1	(MP30) (MP31C)
10	RGD0086-K	CD LID	1	(MP35)

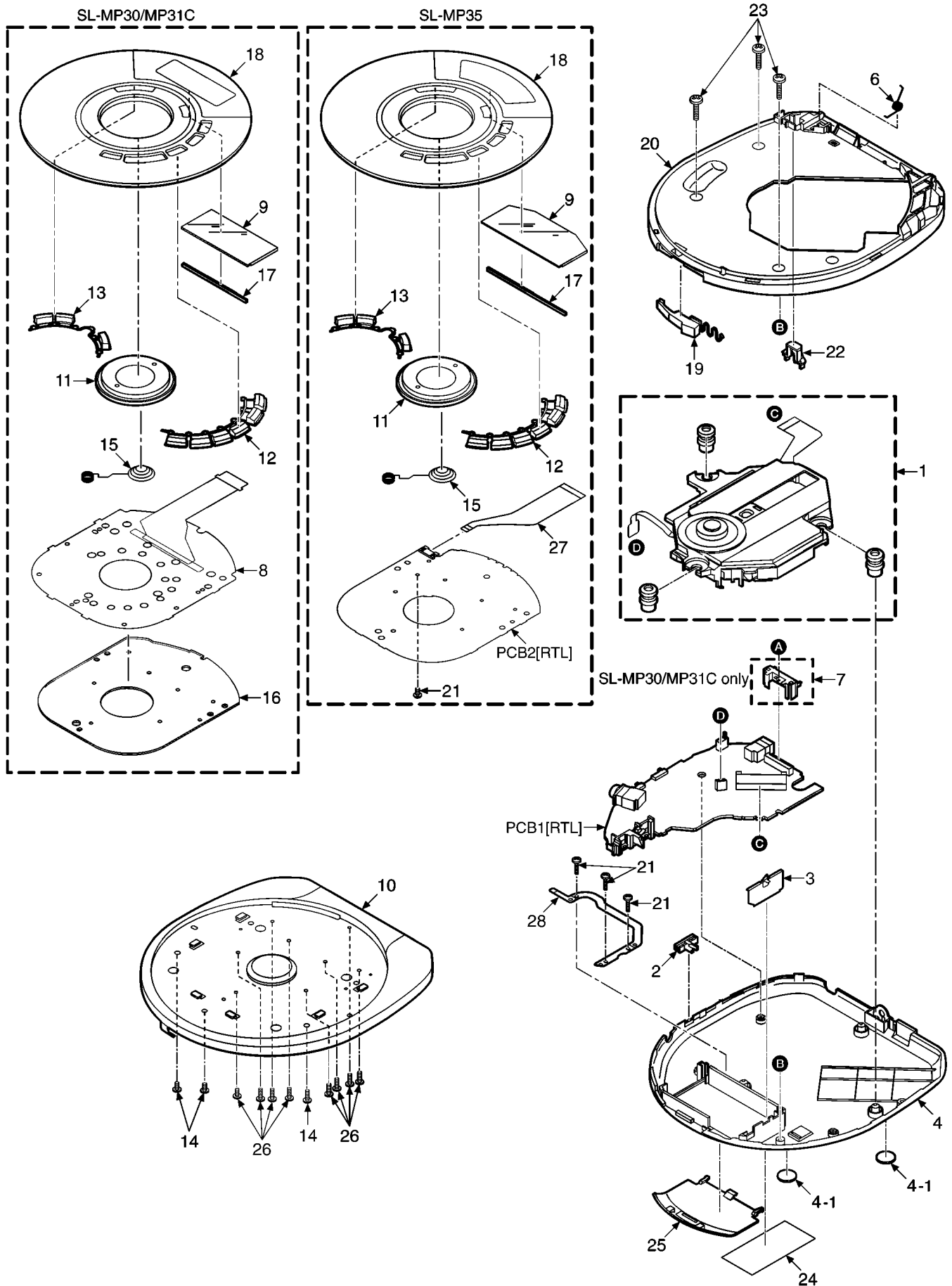
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
11	RGU2098-S	MP3 BUTTON	1	
12	RGU2099-1S	OPERATION BUTTON (A)	1	(MP30) (MP31C)
12	RGU2099-S	OPERATION BUTTON (A)	1	(MP35)
13	RGU2100-K	OPERATION BUTTON (B)	1	(MP35)
13	RGU2100-S	OPERATION BUTTON (B)	1	(MP30) (MP31C)
14	RHQ0088-K	SCREW	3	
15	RMB0707	BUTTON SPRING	1	
16	RMQ1096	SPACER	1	(MP30) (MP31C)
17	RSQ0086	RUBBER	1	(MP35)
17	RSQ0087	RUBBER	1	(MP30) (MP31C)
18	RYF0632-K	LID ORNAMENT	1	(MP35)
18	RYF0632-S	LID ORNAMENT	1	(MP30)
18	RYF0632A-S	LID ORNAMENT	1	(MP31C)
19	RGU1838-H	OPEN KNOB	1	
20	RKM0411A-A	INTERMEDIATE CABINET	1	(MP30) (MP31C)
20	RKM0411A-K	INTERMEDIATE CABINET	1	(MP35)
21	XQN14+BG3FC	SCREW	1	(MP35)
21	XQN14+BG3FC	SCREW	3	
22	RML0580	STOPPER	1	
23	XTN17+6GFZ	SCREW	3	
24	RGN2291-H	NAME PLATE	1	(MP35EG)
24	RGN2292-H	NAME PLATE	1	(MP35EB)
24	RGN2298-H	NAME PLATE	1	(MP30EG)
24	RGN2299-H	NAME PLATE	1	(MP30EB)
24	RGN2337-H	NAME PLATE	1	(MP31CEG)
24	RGN2338-H	NAME PLATE	1	(MP31CEB)
25	RKK0135-A	BATTERY COVER	1	(MP30) (MP31C)
25	RKK0135-K	BATTERY COVER	1	(MP35)
26	RHE5079YA	SCREW	8	
27	RJE2586A	FPC	1	(MP35)
28	RMC0482	TERMINAL SPRING	1	
A1	L0BAB0000172	STEREO EARPHONES	1	
A2	RQT4960-E	INST. MANUAL (CAR KIT)	1	(MP31CEG)
A2	RQT4961-D	INST. MANUAL (CAR KIT)	1	(MP31CEG)
A2	RQT4965-R	INST. MANUAL (CAR KIT)	1	(MP31CEG)
A2	RQT4966-B	INST. MANUAL (CAR KIT)	1	(MP31CEB)
A2	RQT6462-E	INSTRUCTION MANUAL	1	(EG) <IA>
A2	RQT6463-H	INSTRUCTION MANUAL	1	(EG) <IB>
A2	RQT6464-B	INSTRUCTION MANUAL	1	(MP35EB) <IC>
A2	RQT6542-B	INSTRUCTION MANUAL	1	(MP30EB) (MP31CEB) <IC>
A3	N0JCC000004	AC ADAPTOR	1	(MP30EB/MP35EB) Δ
A3	RFEA418E-S	AC ADAPTOR	1	(MP30EG/MP35EG) Δ
A4	SH-CDC12PEY	CAR ADAPTOR	1	(MP31C) Δ
A4-1	XBA2C05NB10	FUSE 0.5A (IN CAR ADAPT.)	1	(MP31C) Δ
A5	SHCDM10B1PYK	CAR CASSETTE ADAPTOR	1	(MP31C)
C10	ECUV1H271KBV	50V 270P	1	F1H1H271A009
C11	ECUVN3475MBN	6.3V 4.7U	1	F1J0J4750002
C12	RCST1AY475RG	10V 4.7U	1	F3F1A4750003
C13	RCST1CC476RC	16V 47U	1	F3H1A476A001
C14	RCE0JKA221IG	6.3V 220U	1	F2A0J2210012
C15,16	F1H1A105A028	10V 1U	2	
C17	ECUVNA105ZFV	10V 1U	1	F1H1A105A030
C19	ECA1CAK220XH	16V 22U	1	
C20	ERJ3GEYJ103Z	1/16W 10K	1	
C21	ECUVNH103KBV	50V 0.01U	1	F1H1H103A748
C22	ECUZNC104ZFV	16V 0.1U	1	F1H1C1040008

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C24	ECUV1H391JCV	50V 390P	1	F1H1H391A004
C27	F2A0J102A130	6.3V 1000U	1	
C33	ECJ1VB1C104K	16V 0.1U	1	
C38	RCST0JY226RG	6.3V 22U	1	F3F0J2260002
C39	ECJ1VB1C104K	16V 0.1U	1	
C101	ECJ1VB1C104K	16V 0.1U	1	
C103	ECUVNE223KBV	25V 0.022U	1	F1H1E223A050
C111	ECUVNE223KBV	25V 0.022U	1	F1H1E223A050
C112	ECUV1H221KBV	50V 220P	1	F1H1H2210001
C113,14	F1H1A105A028	10V 1U	2	
C115-17	ECUVNE223KBV	25V 0.022U	3	F1H1E223A050
C120	ECJ1VB1H152K	50V 1500P	1	
C121	ECUV1H121JCV	50V 120P	1	F1H1H121A004
C199	F3G0G1070001	4V 100U	1	
C201	ECA0JAK470XH	6.3V 47U	1	
C301,02	ECUVNA105ZFV	10V 1U	2	F1H1A105A030
C304	ERJ3GEY0R00V	1/16W 0	1	
C315	ECEA1CKS101	16V 100U	1	
C321	ECUVNA105ZFV	10V 1U	1	F1H1A105A030
C398,99	ECUV1H090DCV	50V 9P	2	F1H1H9R0A244
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	ECJ1VB1C393K	16V 0.039U	1	
C510,11	ECUZNC104ZFV	16V 0.1U	2	F1H1C1040008
C514	ECJ1VB1H102K	50V 1000P	1	
C515	F1H1A105A028	10V 1U	1	
C517	ECUVNA105ZFV	10V 1U	1	F1H1A105A030
C519	F1H1A105A028	10V 1U	1	
C525	ECUZNC104ZFV	16V 0.1U	1	F1H1C1040008
C603,04	ECUV1H272KBV	50V 2700P	2	F1H1H272A009
C610	ECA0JAK470XH	6.3V 47U	1	
C612	ECUZNC104ZFV	16V 0.1U	1	F1H1C1040008
C701	ECEA0JPD470I	6.3V 47U	1	
C702	ECUZNC104ZFV	16V 0.1U	1	F1H1C1040008
C705,06	ECA0GAD221XI	4V 220U	2	
C711,12	F1H1A105A028	10V 1U	2	
C901	RCST0GY226RG	4V 22U	1	F3F0G2260002 (MP35)
C902	ECUV1H101JCV	50V 100P	1	F1H1H101A004 (MP35)
C903	ECUVNH103KBV	50V 0.01U	1	F1H1H103A748 (MP35)
C903	ECUZNC104ZFV	16V 0.1U	1	F1H1C1040008 (MP30/MP31C)
C904	ECUVNH103KBV	50V 0.01U	1	F1H1H103A748 (MP35)
C904	ECUZNC104ZFV	16V 0.1U	1	F1H1C1040008 (MP30/MP31C)
CN11	RJH8303-3	BATTERY TERMINAL	1	K4BC03B00014
CN101	RJS2A6216T	CONNECTOR (16P)	1	K1MN16B00027
CN301	RJS2A6130T	CONNECTOR (30P)	1	K1MN30A00023
CN401	RJS2A5106T1	CONNECTOR (6P)	1	K1MN06A00021
CN901	RJS2A7108T	CONNECTOR (8P)	1	K1MN08B00034 (MP35)
D22	MA111TX	DIODE	1	MA2J11100L
D101	MA111TX	DIODE	1	MA2J11100L
IC11	AN41505A-VE	IC	1	
IC12	C0EBB0000031	IC	1	
IC13	C0CBAE000022	IC	1	
IC101	AN8885SBE1V	IC	1	
IC301	C2BBGE000633	IC	1	
IC302	AK93C45BH-L	IC	1	C3EBCG000028
IC501	MN662791AA	IC	1	
IC502	C3ABMB000027	IC	1	
IC701	NJU7082BVAE1	IC	1	
IC901	C0HBA0000113	IC	1	(MP35)
ICP11	K5H1522A0004	IC PROTECTOR	1	A

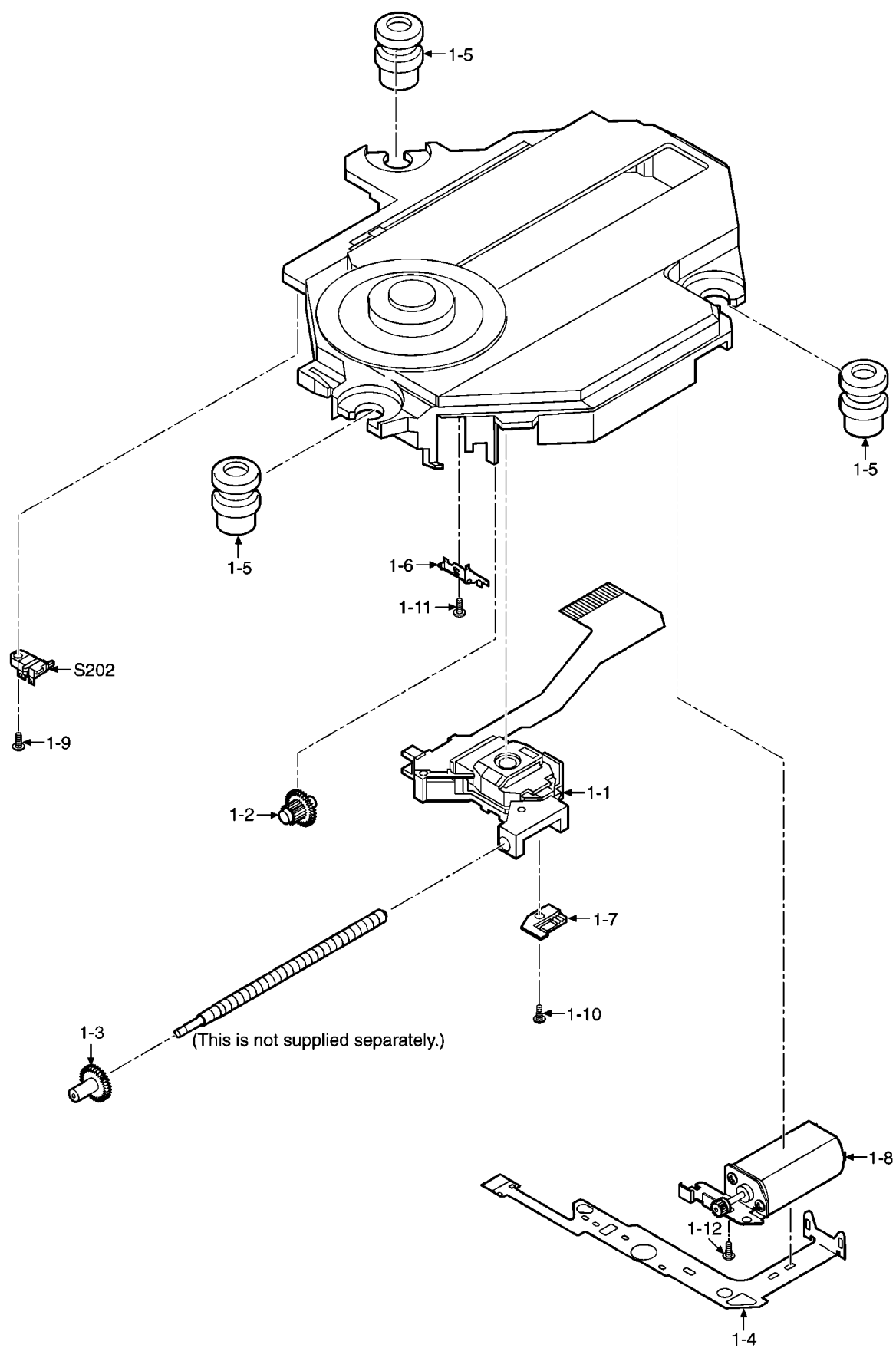
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
JK11	RJJ43K09-C	JACK,DC IN	1	K2EB2B000006
JK701	K2HC104B0013	JACK,HEADPHONE	1	
L11	RLQU331KT-W	COIL	1	G1C331K00004
L12	GLA101D00007	COIL	1	
L13	RLQU101KT-W	COIL	1	G1C101K00008
L14	RLQU331KT-W	COIL	1	G1C331K00004
L39	ERJ3GEYJ100V	1/16W 10	1	
L701-03	RLBV601AV-Y	COIL	3	J0JCC0000077
P1	RPF0111-2	PROTECTION BAG	1	
P2	RPK1763	PACKING CASE	1	(MP35)
P2	RPK1767	PACKING CASE	1	(MP30)
P2	RPK1790	PACKING CASE	1	(MP31C)
P3	RPQ0836-1	PAD	1	
P4	RPQ1297	PAD	1	(MP30EB/MP35EB)
P4	RPQ1346	PAD	1	(MP30EG/MP35EG)
PCB1	REP3370B-M	MAIN P.C.B.	1	(RTL)
PCB2	REP3371A-S	OPERATION P.C.B.	1	(MP35) (RTL)
Q11	2SB1182TLPQR	TRANSISTOR	1	B1BDND000001
Q12	B1ABMD000004	TRANSISTOR	1	
Q13	DTC143EUA106	TRANSISTOR	1	B1GBCFGG0011
Q14	DTA114YUA106	TRANSISTOR	1	B1GDCFJN0011
Q15	DTC143EUA106	TRANSISTOR	1	B1GBCFGG0011
Q16	UN5215TX	TRANSISTOR	1	UNR521500L
Q18	DTA144EUA106	TRANSISTOR	1	B1GDCFNN0007
Q19	DTC144TUA106	TRANSISTOR	1	B1GBCFNA0010
Q201	2SB709A	TRANSISTOR	1	2SB0709A
Q301	DTC144TUA106	TRANSISTOR	1	B1GBCFNA0010
Q502	2SK1958T1	TRANSISTOR	1	B1CFHA000001
Q701	XN0F26300L	TRANSISTOR	1	
Q703	FMG6AT148	TRANSISTOR	1	B1GBCEJA0001
Q901	DTA114YUA106	TRANSISTOR	1	B1GDCFJN0011
Q902	FMG6AT148	TRANSISTOR	1	B1GBCEJA0001
R1	D0YBR0000010	RESISTOR	1	
R10	ERJ3GEYJ271V	1/16W 270	1	
R13	ERJ3GEYJ102V	1/16W 1K	1	
R14	ERA3YKD473V	3W 47K	1	
R15	ERJ3GEYJ683V	1/16W 68K	1	D0GB683JA002
R16	ERJ3GEYJ104Z	1/16W 100K	1	
R17	ERJ12YJ1R8U	1/2W 1.8	1	
R20	ERJ3GEYJ822V	1/16W 8.2K	1	D0GB822JA002
R22	ERJ3GEYJ223V	1/16W 22K	1	D0GB223JA002
R30	ERJ3GEYJ683V	1/16W 68K	1	D0GB683JA002
R31	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
R36	ERJ3GEYJ474V	1/16W 470K	1	
R120	ERJ3GEYJ103Z	1/16W 10K	1	
R121,22	ERJ3GEYJ124V	1/16W 120K	2	D0GB124JA002
R128	EXBV4V103JV	1/32W 10K	1	
R201	ERJ3GEYJ2R2V	1/16W 2.2	1	D0GB2R2JA002
R202	ERJ3GEYJ223V	1/16W 22K	1	D0GB223JA002
R302	ERJ3GEYJ104Z	1/16W 100K	1	
R304	ERJ3GEYJ105V	1/16W 1M	1	
R305	ERJ3GEYJ335V	1/16W 3.3M	1	
R306	EXBV8V473JV	1/16W 47K	1	
R307	ERJ3GEYJ103Z	1/16W 10K	1	
R308	ERJ3GEYJ104Z	1/16W 100K	1	
R313	EXBV8V104JV	1/16W 100K	1	
R325	ERJ3GEYJ333V	1/16W 33K	1	D0GB333JA002
R326	ERJ3GEY0R00V	1/16W 0	1	
R331	ERJ3GEYJ102V	1/16W 1K	1	
R353	ERJ3GEY0R00V	1/16W 0	1	
R361	ERJ3GEYJ102V	1/16W 1K	1	
R502	ERJ3GEYJ683V	1/16W 68K	1	D0GB683JA002
R505	ERJ3GEYJ222V	1/16W 2.2K	1	
R508	ERJ3GEYJ100V	1/16W 10	1	
R509	ERJ3GEYJ331V	1/16W 330	1	D0GB331JA002
R511	ERJ3GEYJ222V	1/16W 2.2K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R512	EXBV4V222JV	1/16W 2.2K	1	
R513	ERJ3GEYJ154V	1/16W 150K	1	
R514	ERJ3GEYJ331V	1/16W 330	1	D0GB331JA002
R517	ERJ3GEYJ104Z	1/16W 100K	1	
R603,04	MCR03PZHJ561	1/16W 560	2	
R701,02	ERJ3GEYJ104Z	1/16W 100K	2	
R703,04	ERJ3GEYJ180V	1/16W 18	2	
R705,06	ERJ3GEYJ1R5V	1/16W 1.5	2	
R707,08	ERJ3GEYJ102V	1/16W 1K	2	
R709	EXBV4V332JV	1/32W 3.3K	1	
R713,14	ERJ3GEYJ103Z	1/16W 10K	2	
R715,16	ERJ3GEYJ123V	1/16W 12K	2	
R750	EXBV4V223JV	1/16W 22K	1	
R900	ERA3YED153V	3W 15K	1	(MP35)
R901	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002 (MP35)
R902	ERJ3GEYJ472V	1/16W 4.7K	1	(MP35)
R903	ERJ3GEYJ105V	1/16W 1M	1	(MP30) (MP31C)
R903	ERJ3GEYJ822V	1/16W 8.2K	1	D0GB822JA002 (MP35)
R904	ERJ3GEYJ273V	1/16W 27K	1	D0GB273JA002 (MP35)
R905	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002 (MP35)
R906	ERJ3GEYJ472V	1/16W 4.7K	1	(MP35)
R907	ERJ3GEYJ822V	1/16W 8.2K	1	D0GB822JA002 (MP35)
R908	ERJ3GEYJ273V	1/16W 27K	1	D0GB273JA002 (MP35)
R909	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002 (MP35)
R910	ERJ3GEYJ472V	1/16W 4.7K	1	(MP35)
R911	ERJ3GEYJ822V	1/16W 8.2K	1	D0GB822JA002 (MP35)
R912	ERJ3GEYJ273V	1/16W 27K	1	D0GB273JA002 (MP35)
R913,14	ERJ3GEY0R00V	1/16W 0	2	(MP35)
R915	ERJ3GEYJ102V	1/16W 1K	1	(MP35)
S201	ESE11MV9T	SW,LASER ON/OFF	1	
S202	ESE11HS4	SW,REST DET.	1	
S310	RSS2A010-1A	SW,HOLD	1	K0D112B00071
S901	K0H1BA000432	SW,PLAY	1	(MP35)
S902	K0H1BA000432	SW,VOL +	1	(MP35)
S903	K0H1BA000432	SW,VOL -	1	(MP35)
S904	K0H1BA000432	SW,A.SKIP F	1	(MP35)
S905	K0H1BA000432	SW,A.SKIP R	1	(MP35)
S906	K0H1BA000432	SW,EQ	1	(MP35)
S907	K0H1BA000432	SW,SKIP F	1	(MP35)
S908	K0H1BA000432	SW,MODE	1	(MP35)
S909	K0H1BA000432	SW,A.MODE	1	(MP35)
S910	K0H1BA000432	SW,STOP	1	(MP35)
S911	K0H1BA000432	SW,SKIP R	1	(MP35)
S912	K0H1BA000432	SW,DISPLAY	1	(MP35)
S913	K0H1BA000432	SW,MEMORY	1	(MP35)
X301	RSXC32K7L01T	OSCILLATOR	1	H0J327200034
X501	H2D169500015	OSCILLATOR	1	
Z1	ERY32SB075VA	COMPONENTS COMBINATIONS	1	△

17 Cabinet Parts Location



18 Traverse Unit Parts Location



19 Packaging

