ORDER NO. AD9605107A3

Service Manual

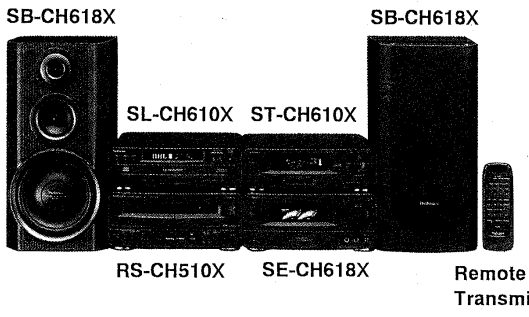
Compact Disc Changer

Compact Disc Player

SL-CH610X

COMPACT disc DIGITAL AUDIO

DIGITAL MASH *1 multi-stage noise shaping



Colour

(K) : Black

Areas

Suffix for Model No.	Area	Colour
(GT)	China, Taiwan, Hong Kong	(K)

System: SC-CH618X

Please file and use this manual together with the service manual for Model No. SL-CH515, Order No. AD9312325C8.

Because of unique interconnecting cables, when a component requires service, send or bring in the entire system.

Note:
This service manual is provided to indicate the differences between the original No. SL-CH515 (E) and the subsequent model No. SL-CH610X (GT).

RAE0113Z MECHANISM SERIES

Specifications

■ Audio

DA converter 1 bit 2 DAC MASH

■ Pickup

Wavelength 780 nm

■ General

Dimensions (W × H × D) 270 × 89 × 325 mm

Weight 2.9 kg

Notes:
Specifications are subject to change without notice.
Weight and dimensions are approximate.

*1 MASH is a trademark of NTT.

System	Tuner/sound processor	Compact disc changer	Amplifier	Cassette deck	Speakers
SC-CH618X	ST-CH610X	**SL-CH610X**	SE-CH618X	RS-CH510X	SB-CH618X

⚠WARNING

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

Panasonic®

■ Contents

NOTE:
Refer to the service manual for Model No. SE-CH618X (ORDER No. AD9605108A3) attached to SE-CH610 (ORDER No. AD9412357C3) for information on "Accessories", "Stacking the Components", "Connections" and "Packaging".

CAUTION:
THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

■ Handling Precautions for Traverse Deck

The laser diode in the traverse deck (optical pickup) may break down due to potential difference caused by static electricity of clothes or human body. So, be careful of electrostatic breakdown during repair of the traverse deck (optical pickup).

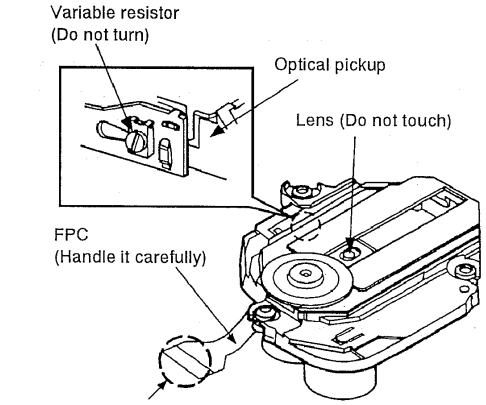
• Handling of traverse deck (optical pickup)

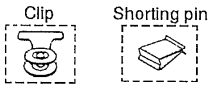
1. Do not subject the traverse deck (optical pickup) to static electricity as it is extremely sensitive to electrical shock.
2. To prevent the breakdown of the laser diode, an anti-static shorting pin is inserted into the flexible board (FPC board).
   When removing or connecting the short pin, finish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

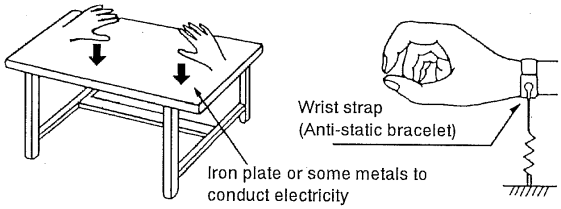
• Grounding for electrostatic breakdown prevention

1. Human body grounding
   Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table grounding
   Put a conducive material (sheet) or steel sheet on the area where the traverse deck (optical pickup) is placed, and ground the sheet.

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







■ Precaution of Laser Diode

CAUTION: This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pick up lens.
Wave length: 780 nm
Maximum output radiation power from pick up: 100 μW/VDE

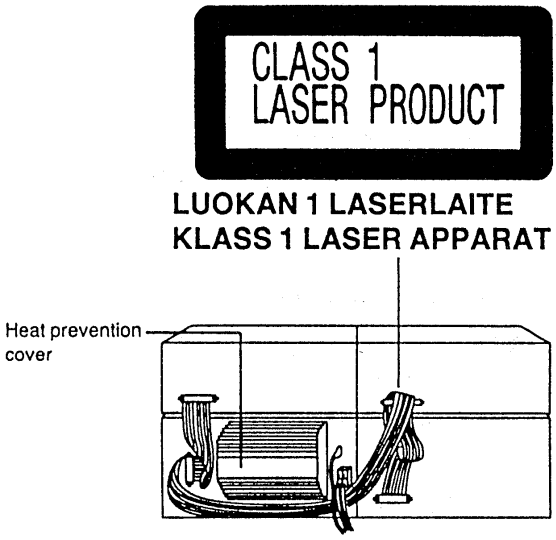
Laser radiation from the pick up unit is safety level, but be sure the followings:

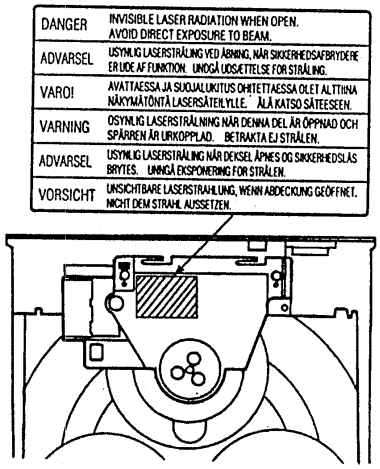
1. Do not disassemble the pick up unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pick up unit. It was already adjusted.
3. Do not lock at the focus lens using optical instruments.
4. Recommend not to lock at pick up lens for a long time.

ACHTUNG: Dieses produkt enthält eine laserdiode. Im eingeschalteten zustand wird unsichtbare laserstrahlung von der lasereinheit adgestrahit.
Wellenlänge: 780 nm
Maximale strahlungsleistung der laserinhelt: 100 μW/VDE

Die strahlung an der lasereinheit ist ungefährlich, wenn folgende punkte beachtet werden:

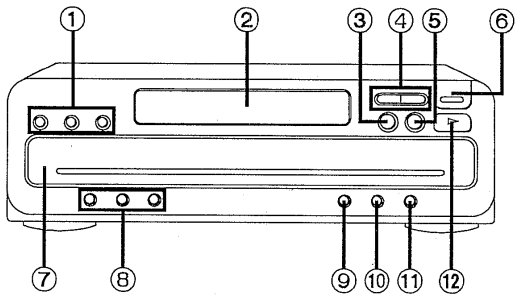
1. Die lasereinheit nicht zerlegen, da die strahlung an der freigelegten laserdiode gefährliich ist.
2. Den werksseitig justierten einstellregler der lasereinreit nicht verstellen.
3. Nicht mit optischen instrumenten in die fokussierlinse blicken.
4. Nicht über längere zeit in die fokussierlinse blicken.



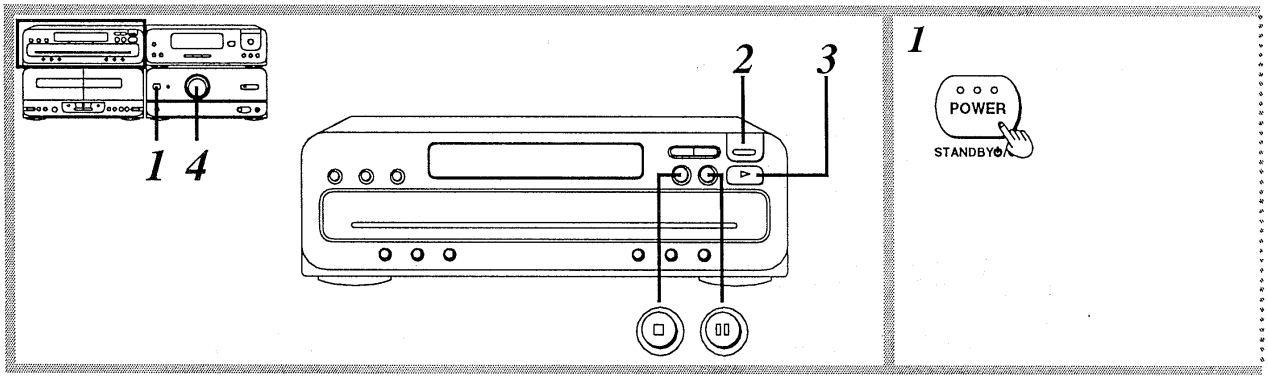


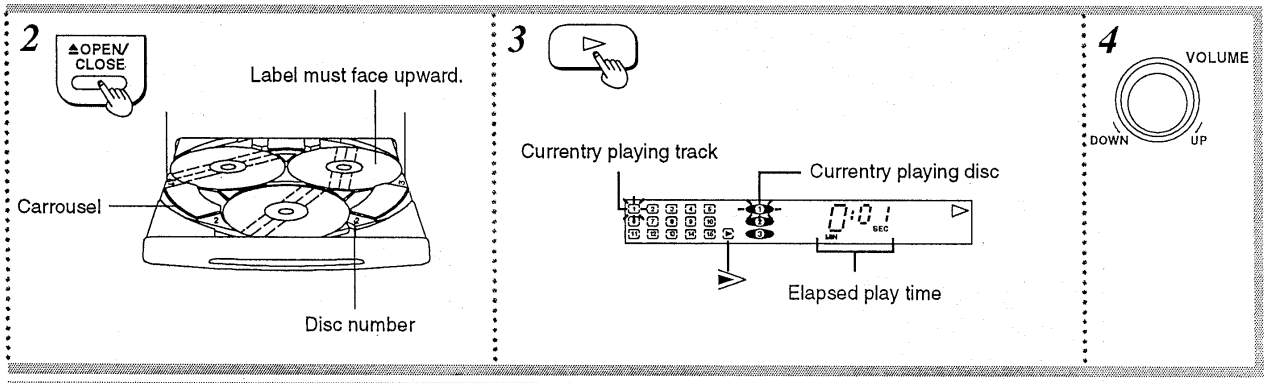
■ Location of Controls

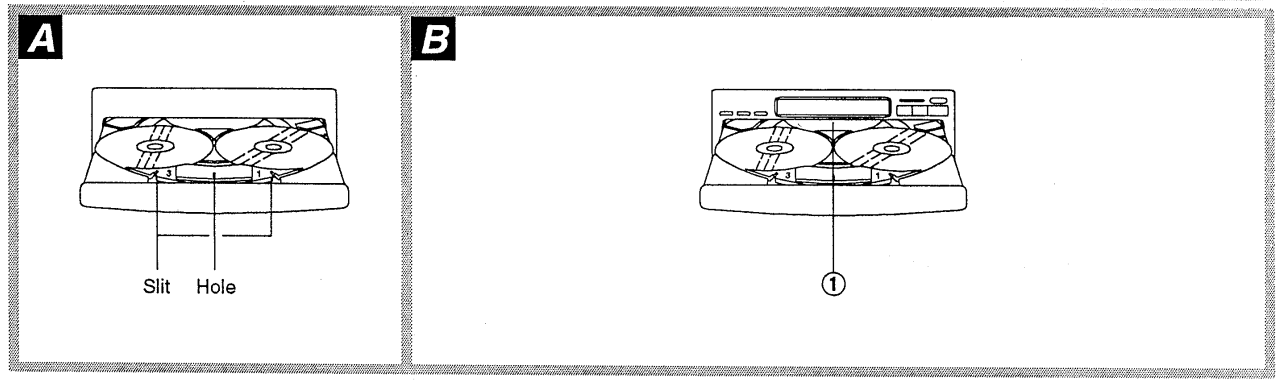
① **Disc buttons**
② **Display section**
③ **Stop button**
④ **Skip/search buttons**
⑤ **Pause button**
⑥ **Disc tray open/close button**
⑦ **Loading drawer**
⑧ **CD edit buttons**
⑨ **Display mode button**
⑩ **Random play button**
⑪ **Repeat button**
⑫ **Play button and indicator**



■ Listening to Compact Discs







Sequential play

1 **Switch on the power.**

2 **Press ▲ OPEN/CLOSE to open the loading drawer. Insert the CD with label facing upward.**
Do not load 8 cm and 12 cm discs on the same disc tray.
Be sure to load a 8 cm disc correctly at center position.
Press ▲ OPEN/CLOSE to close the loading drawer.

3 **Press ▷.**
Disc play begins from the first track on the first disc.
Play stops automatically when the last track on the last disc finishes playing.

4 **Adjust the volume level as you like.**

To stop the disc play:
Press □.

To temporarily stop the disc play:
Press ▯▯.
"▮▮" indicator lights.
To play again, press ▷.

When "⩥" appears on the display:
It indicates there are 16 or more tracks on the disc at the playing position.

Concerning the total playing time on the display:
The total play time including the gaps between the tracks is indicated. This is why the time may be several seconds longer than the figure given in the liner notes, etc.

For your reference:
- If you press ▷ instead of ▲ OPEN/CLOSE after inserting disc(s), the loading drawer will close and play will start directly.
- About ▷ indicator:
  While halted: Lights up orange.
  While playing: Lights up green.

(To be continued)

Note

Avoid following things to prevent the malfunction or incorrect operation.

- Do not push the loading drawer to close.
- Do not cover the hole or slits. **A**
- Do not turn the tray forcibly by hand because it may fail to operate normally.
- Do not move this changer with a compact disc inside the unit. If a disc comes off the disc tray, it might be scratched or the changer might become incapable of playing.

To exchange discs during play

While a disc is playing, you can exchange discs.

1. Press ▲ OPEN/CLOSE during playing.
   The loading drawer will open at half position.
2. Exchange the discs.
3. Press ▲ OPEN/CLOSE again to close the loading drawer.

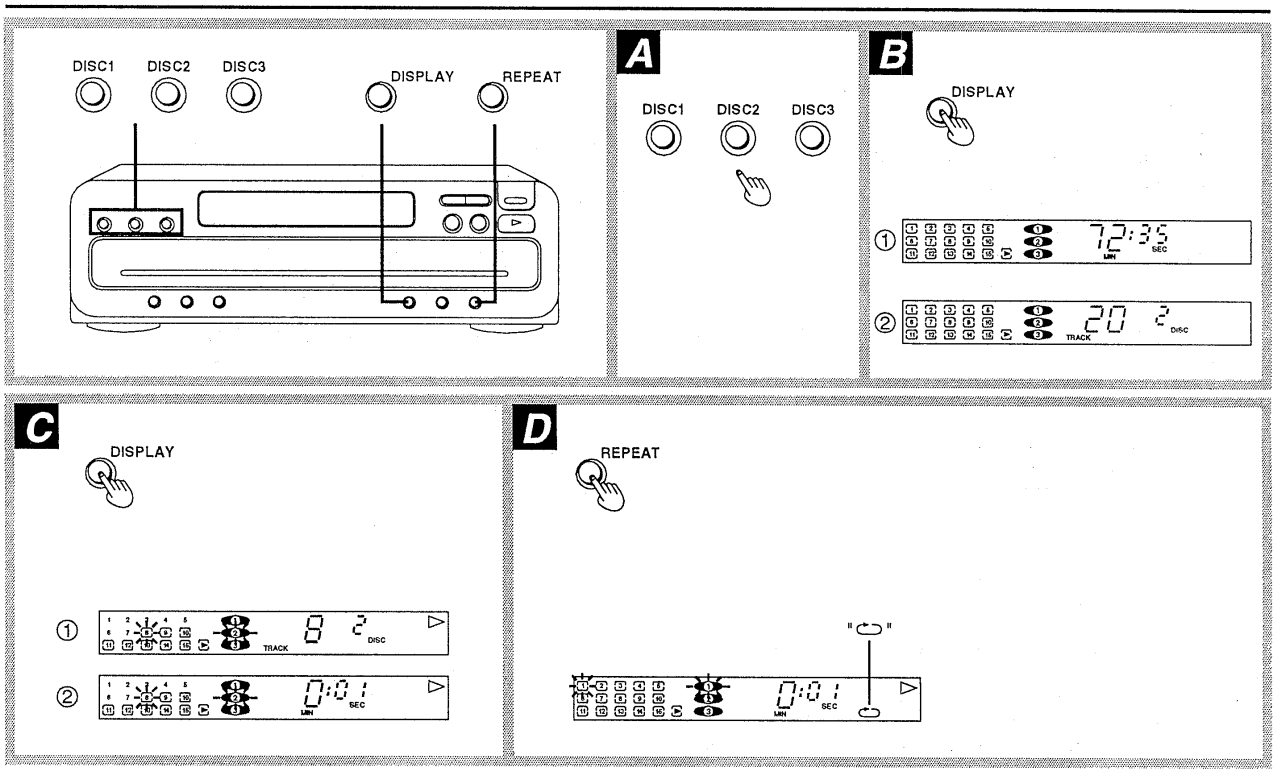
After the last track on the current disc finishes playing, the changer will play all the remaining disc(s) loaded, and then stop.

For your reference:

If you play a disc with the loading drawer open, the changer will automatically stop when the last track on the current disc finishes playing.

Notes

- Do not insert another disc onto tray placed at ①, although the tray is partially showing, its disc is in the play position. **B**
- To open fully, follow the procedure below.
  1. Press □.
  2. Press ▲ OPEN/CLOSE to close the loading drawer.
  3. Press ▲ OPEN/CLOSE again to open the drawer.



To select the desired discs **A**

Press DISC 1, DISC 2 or DISC 3 to select the disc which you want to play.

The play will automatically start from the first track of the disc you select.

To confirm the total playing time of the disc currently playing

Press DISPLAY.

The display will change (as described below) each time you press the button.

In the stop mode: **B**

① The display shows the total playing time of the disc at the playing position.
② The display shows the disc number and the total track number of the disc at the playing position.

In the play mode: **C**

① The display shows the track number of the disc currently playing.
② The display shows the elapsed time of the track currently playing.

Repeat function **D**

This function repeats the play of all tracks on the loaded discs.

Press REPEAT before or during play.

In sequential play mode:
All tracks of all discs will be played repeatedly.

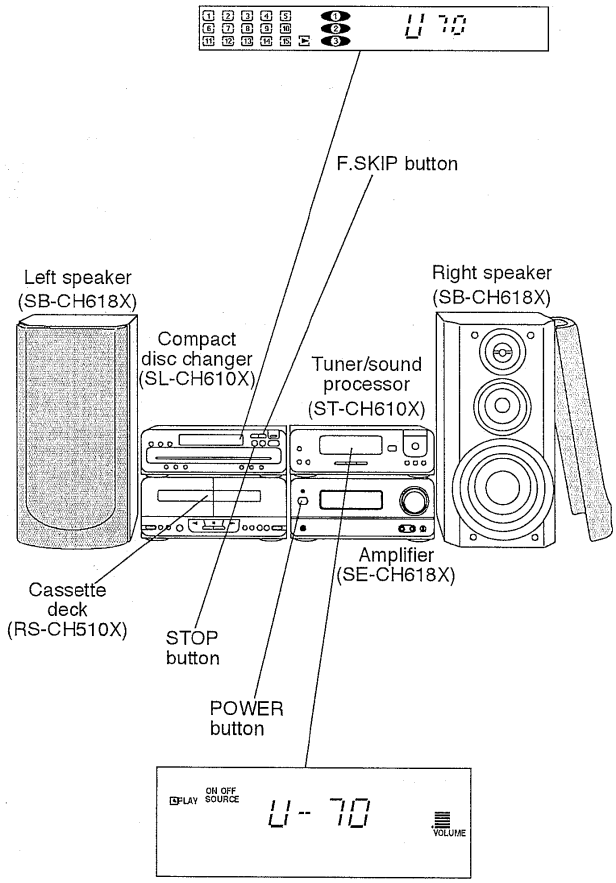
In program play mode:
The changer plays only the programed selections in the programmed sequence continuously.
You can enjoy the same track over and over if you press REPEAT when only one track is programmed.

To cancel repeat play, press REPEAT once again.

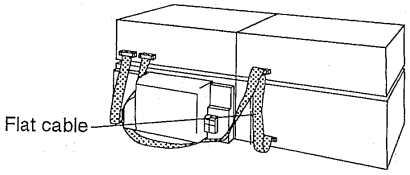
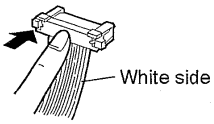
■ About the self-diagnostic mode

This unit is equipped with a self-diagnostic function which, in the event of a malfunction, automatically displays a code indicating the nature of the malfunction. Use this self-diagnostic function when servicing the unit.

SC-CH618X: (SL-CH610X, ST-CH610X, SE-CH618X, RS-CH510X, SB-CH618X)

Display method	Display location
To display the malfunction code U-70: ..... Automatically displays on the tuner/sound processor and the CD changer when a malfunction occurs. F16~F25: .... Displays on the CD changer using the procedure described below. F-61 ..... Automatically displays on the tuner/sound processor when a malfunction occurs. • **Display procedure** 1. Switch on the power to the unit (SL-CH610X). Connect the system and press the POWER button on the amplifier (SE-CH618X). 2. While pressing the STOP button for at least 2 seconds, press the F.SKIP button. The self-diagnostic mode will be activated. If there is a malfunction, the above operation will cause the malfunction code (F16~F25) to be displayed. **Note:** There may be more than one malfunction at the same time, so after correction the first malfunction displayed, repeat the procedure above [steps (1) and (2)] to confirm that no other malfunction is displayed. If there is no other malfunction, "END" is displayed, the disc tray will half-eject, full-eject, and then close. **To return to the normal display** **1. For U-70:** • Press an operation button (any button other than the OPEN/CLOSE button) on the unit (tuner/sound processor or CD changer) which displayed "U-70". • To re-display the code, switch the power off (POWER STANDBY button), and then switch power back on again. **2. For F16-F25:** • Switch off the power (POWER STANDBY button). • To re-display the code, switch the power on (POWER STANDBY button) and then repeat the procedure above (step 1 and 2). **3. For F-61:** • If "F-61" is displayed, the power will automatically be switched off and the standby indicator will light up. • "F-61" will be displayed for 3 seconds, and then the clock will be displayed. • To re-display the code, switch the power on. "F-61" will be re-displayed, and then after 3 seconds the clock will be displayed and the power will automatically switch off.	

● **Display contents**

Display code	Problem or condition	Correction procedure
U-70 (displayed automatically)	A bus-line communications error has occurred as a result of the flat cables being inserted incorrectly, thus preventing the system from operating. 1. If "U-70" is displayed on the tuner/sound processor, the tape deck cannot be operated by remote control. 2. If "U-70" is displayed on the CD changer, the CD changer cannot be operated by remote control.	 1. To check for correct insertion of the flat cables. ①Insert each connector until you hear a click. ②Insert the flat cables at the back of the unit in the order indicated. Make sure the white side of the cable is on your right side.  2. Breakage of flat cable. (Check and replace as necessary.) 3. If the problem is not corrected by items (1.) and (2.) above, this indicates a faulty IC. **SL-CH610X:** IC301 (M38173M6270) IC302 (LA5608M-TE-L) Check these IC's and replace as necessary.
F16	Faulty traverse deck UP switch. Example: The rotary hits the traverse deck.	1. Check for faulty contact of the switch (S501), faulty soldering of switch terminals, and damaged foil. 2. Replace the switch, repair soldering or repair foil.
F17	Faulty traverse deck DOWN switch. Example: The tray opens.	1. Check for faulty contact of the switch (S501), faulty soldering of switch terminals, and damaged foil, etc. 2. Replace the switch, repair soldering or repair foil.
F18	Faulty rotary turret rotation detection. Example: The turret continues to turn at the initial position without stopping.	1. Check the optical sensor (D503) and replace if necessary.
F20	Faulty loading motor rotation detection. Example: The turret repeatedly rotates in forward or reverse direction, or tray repeatedly moves out and back in.	1. Check the optical sensor (D502) and replace if necessary.
F21	Loading motor rotates in reverse. Example: The turret repeatedly rotates in forward or reverse direction, or tray repeatedly moves out and back in.	1. Check the mounting direction of the motor (M501), and if the direction is reversed, remount it in the correct direction.
F22	Faulty loading motor and loading mechanism. Example: Nothing happens when the PLAY button is pressed. The loading operation is not performed when the OPEN/CLOSE button is pressed.	1. Check the motor (M501) and replace if necessary. Check the cams and other of the loading mechanism to confirm that none are damaged or missing, and that all are mounted in the correct positions.
F24	Faulty half-open switch. Example: When the tray is opened during play, it opens completely (full open).	1. Check for faulty switch contacts (S503), faulty soldering of switch terminals, and damaged foil. 2. Replace the switch, repair soldering or repair foil.
F25	Faulty full-open switch. Example: When the tray is opened, it closes after 3 or 4 seconds.	1. Check for faulty switch contacts (S502), faulty soldering of switch terminals, and damaged foil. 2. Replace the switch, repair soldering or repair foil.
F-61	When the power switch is switched on, it automatically switches back off, making it impossible to switch power on.	1. Faulty amplifier (SE-CH618X) output IC (IC501). 2. Fan motor is burnt out, locked, or stopped. 3. Speaker cable shorts. 4. Replace the output IC, fan motor or speaker cable as necessary.

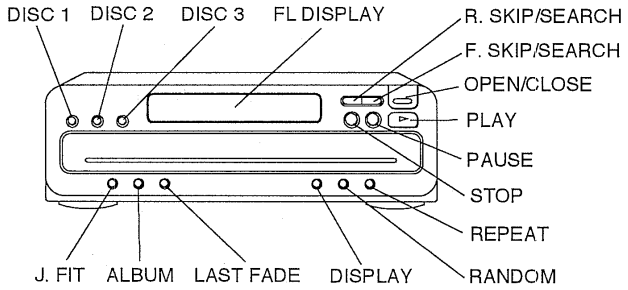
■ Before Adjustments and P.C.B. Checks

This unit is equipped with service modes that can check the location of failures when used with the following procedure.
Use the service modes to first check the unit, that adjust it and check each P.C.B.

FL Display and Panel Switch Check Mode

Checking FL display and panel switches with upper cabinet removed:

1. Turn the unit on (see power supply on page 18).
2. Press and hold the [STOP (■)] button for more than 2 seconds, then press the [REPEAT] button.
3. The display goes off and the unit is set to one of the service modes.
4. When the [DISC 1], [DISC 2], [DISC 3], [J.FIT], [ALBUM], [LAST FADE], [DISPLAY], [RANDOM] and [REPEAT] buttons on the front panel of the unit are pressed, Their display lights up.
5. When the [OPEN/CLOSE] button is pressed, the tray opens fully and "C-F" is displayed.
6. Press the [OPEN/CLOSE] button again to close the tray.
7. To clear the service mode, turn the unit off.



Service mode C-2

This service mode checks the main P.C.B. with the tray ass'y removed from the unit (traverse installed).

● Procedure for displaying automatic adjustment codes

1. Set the unit to Step 11 "Checking for the main P.C.B." (see page 14).
2. Turn the unit on (see power supply on page 18).
3. Press and hold the [STOP (■)] button for more than 2 seconds, then press the [R.SKIP/SEARCH (⏮/◀◀)] button.
4. The "C-2" code is displayed and the traverse lift, causing the disc to rotate. (The unit will be set to the automatic adjustment results mode.)

   Notes: • When the single unit is turned on, a "U-70" error code is displayed. However, continuously pressing the buttons in step 3 above allows "C-2" to appear on the display.
   • The [STOP], [PLAY], [SKIP], [SEARCH] and [OPEN/CLOSE] buttons can be used. However, when the [OPEN/CLOSE] button is pressed the tray will half open.
5. After automatic adjustment, the code display indicates the location of failures in the servo circuit. (See page 9)

● Troubleshooting using the automatic adjustment code

Notes:

1. If "E-00" is displayed as an error code, this means no error was found.
2. Check the disc and laser-detector lens for damage, contamination or stains.

● Clearing the automatic adjustment results mode

1. Turn off the unit and turn it on again. (The traverse lowers.)
2. Remove the test disc from the unit and turn it off. (The automatic adjustment results mode will be cleared.)

Service mode C-1

This service mode checks the servo P.C.B. with the traverse removed from the unit.

● Procedure for displaying automatic adjustment codes

1. Set the unit to Step 17 "Checking for the servo P.C.B." (see page 12).
2. Turn the unit on (see power supply on page 18).
3. Press and hold the [STOP (■)] button for more than 2 seconds, then press the [PLAY (►)] button.
4. The "C-1" code is displayed and causing the disc to rotate. (The unit will be set to the automatic adjustment results mode.)

   Note: • When the single unit is turned on, a "U-70" error code is displayed. However, continuously pressing the buttons in step 3 above allows "C-1" to appear on the display.
   • Only [STOP] and [PLAY] button will operate.
5. After automatic adjustment, the code display indicates the location of failures in the servo circuit.

● Troubleshooting using the automatic adjustment code

Notes:

1. If "E-00" is displayed as an error code, this means no error was found.
2. Check the disc and laser-detector lens for damage, contamination or stains.

● Clearing the automatic adjustment results mode

1. Remove the test disc from the unit and turn it off. (The automatic adjustment results mode will be cleared.)

● Automatic adjustment code

FL error code display	Symptom	Probable cause	Signal to check		Normal voltage and waveform values	
			Location	Signal name	PLAY	STOP
E-01	Focus and tracking offset adjustments not completed in specified time period.	①Clocks X1 and X2, power supply VDD, and reset/RST, all on IC702. ②MDATA, MCLK, MLD, and SENSE signals to/from mechanism controller.	IC702 ⑧ pin	MDATA	PLAY 5 V 0 V T=13.6 ms.	4.8V
			IC702 ⑦ pin	MCLK	PLAY 5 V 0 V T=13.8 ms.	4.8V
			IC702 ⑨ pin	MLD		
			IC702 ⑩ pin	SENSE	0V	0V
			IC702 ⑱ pin	/RST	4.9V	4.9V
			IC702 ⑱ pin	X1	2.9 Vp-p F=16.9344 MHz	2.9 Vp-p F=16.9344 MHz
			IC702 ⑲ pin	X2	4.8 Vp-p F=16.9344 MHz	4.8 Vp-p F=16.9344 MHz
E-03 E-05 E-07 E-09 E-0B E-0D E-0F	Disc play unstable	①Scratches or contaminants on disc surface ②Focus and Tracking servo circuits (check waveforms, voltages, and part values.) ③Spindle driver circuit ④Optical pickup	IC702 ㉜ pin	F E	PLAY 3 Vp-p 2 ms. 0.1 V/DIV.	2.4V
			IC702 ㉝ pin	T E	PLAY 400 mVp-p 2 ms. 0.2 V/DIV.	2.4V
			IC702 ㉘ pin	FOD	2.4V	2.4V
			IC702 ㉗ pin	TRD	2.4V	2.4V
			IC702 ㉖ pin	KICK	2.4V	2.4V
			IC702 ⑪ pin	/FLOCK	0V	4.9V
			IC702 ㊳ pin	/RF DET	0V	4.8V
			TJ701	R F	PLAY 1.2 Vp-p 0.5 μs. 0.2 V/DIV	3.4V
			IC702 ⑰ pin	STAT	4.9V	0V
E-04 E-06 E-0C E-0E	Best "eye" (PD balance) adjustment not completed in specified time period.	①Scratches or contaminants on disc surface ②Focus servo circuits (check waveforms, voltages, and part values.) ③Optical pickup	IC702 ㉚ pin	FBAL	2.5V ± 1.25V	2.5V ± 1.25V
			TJ701	R F	PLAY 1.2 Vp-p 0.5 μs. 0.2 V/DIV	3.4V
			IC702 ㉜ pin	F E	PLAY 3 Vp-p 2 ms. 0.1 V/DIV.	0V
			IC702 ㊱ pin	O F T	0V	0V
			IC702 ⑫ pin	/TLOCK	0V	0V
E-08 E-0A	Focus or Tracking gain adjustment not completed in specified time period.	①Scratches or contaminants on disc surface ②Focus and Tracking servo circuit (check waveforms, voltages, and part values.) ③Optical pickup	IC702 ㉜ pin	F E	PLAY 3 Vp-p 2 ms. 0.1 V/DIV.	2.4V
			IC702 ㉝ pin	T E	PLAY 400 mVp-p 2 ms. 0.2 V/DIV.	2.4V
			IC702 ㊱ pin	O F T	0V	0V
			IC702 ⑫ pin	/TLOCK	0V	0V

Warning: This product uses a laser diode. Refer to caution statements on page 2.
ACHTUNG: Die lasereinheit nicht zerlegen.
Die lasereinheit dart nur gegen eine vom hersteller speziferte einheit ausgetauscht werden.
"ATTENTION SERVICER" Some chassis components may have sharp edges. Be careful when disassembling and servicing.

■ Operation Check and Main Component Replacement Procedures

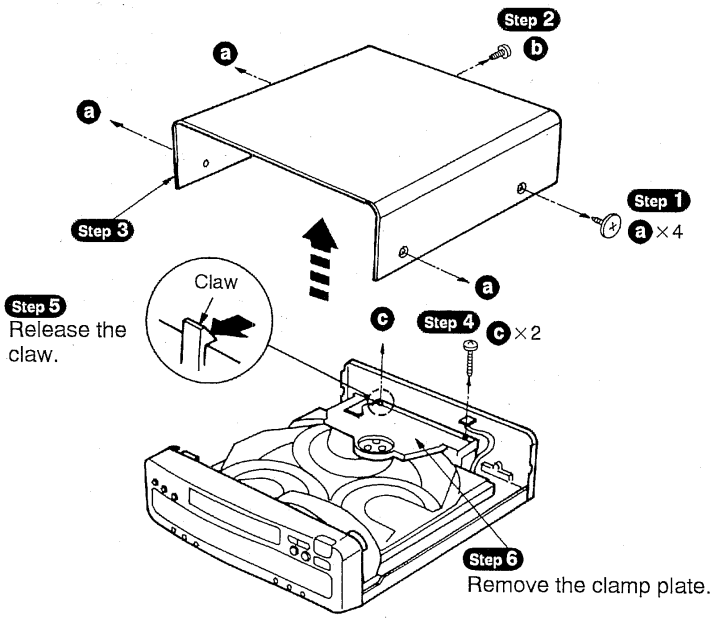
NOTE

1. **This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.**
2. **For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.**
3. **Select items from the following index when checks or replacement are required.**
4. **Illustrated screws are equivalent to actual size.**
5. **Refer the parts No. on the page of "Main Component Replacement Procedures", if necessary.**

• Contents

■ Checking Procedure for each P.C.B.

1. Checking for the servo P.C.B.

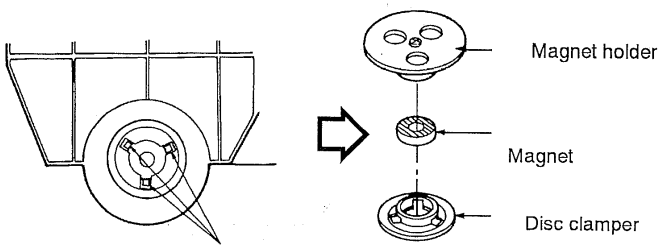


ⓐ (Black)
[RHD30007]

ⓑ (Black)
[XTBS3+8JFZ1]

ⓒ (Black)
[XTB3+16JFZ]

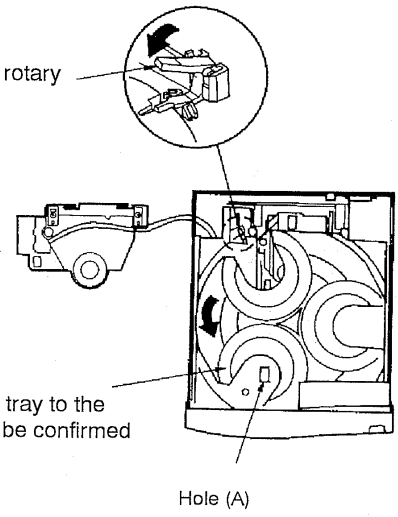
d (Black)
[XTBS3+8JFZ1]



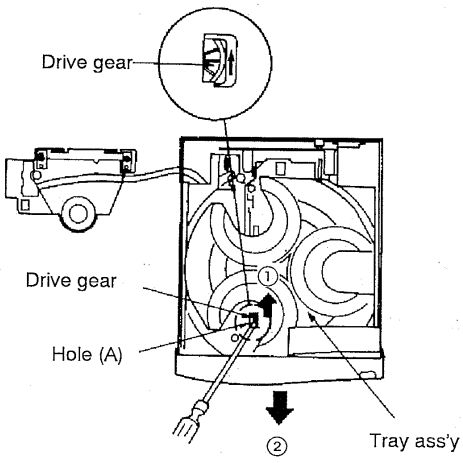
Step 7
Release the 3 claws.

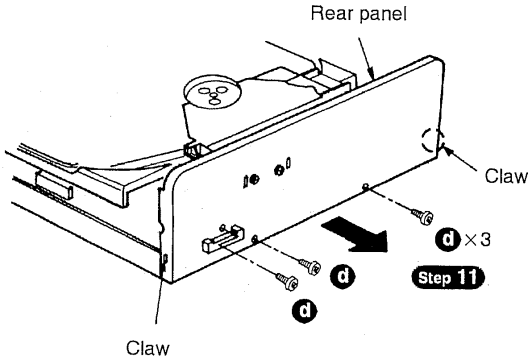
Step 8
Pressing the rotary lock lever.

Step 9
Rotate the rotary tray to the position that can be confirmed the hole (A).



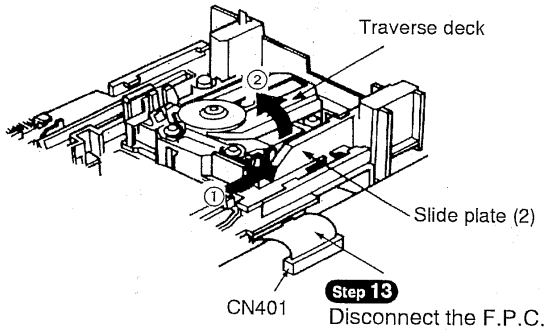
Step 10
Pressing the drive gear in the direction of arrow ①, the tray ass'y moves slightly in the direction of arrow ②. Then, pull the tray ass'y in the direction of arrow ②.





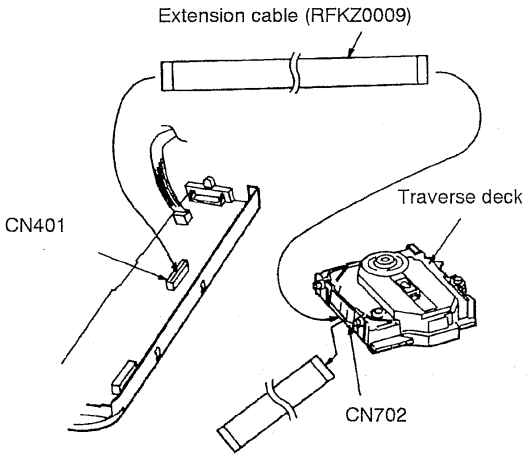
Step 12
Release the claws and then remove the rear panel.

Step 14
Pressing the slide plate (2) in the direction of arrow ①, and then remove the traverse deck in the direction of arrow ②.

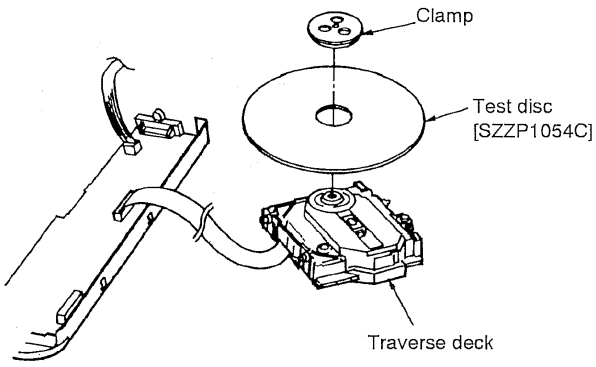


NOTE
When removing the traverse deck, please be careful not to damage the F.P.C.

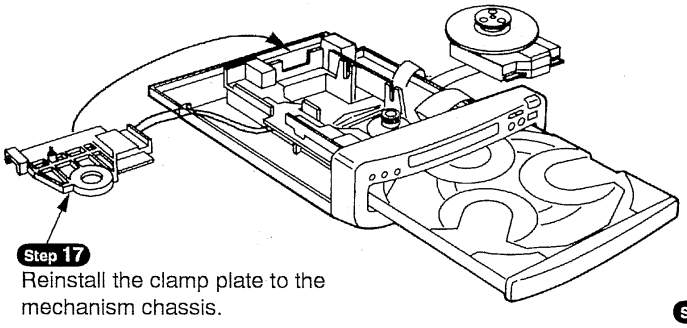
Step 15
Substitute the serviceable extension cable for the F.P.C. between the connector (CN403) on main P.C.B. and the connector (CN702) on servo P.C.B.



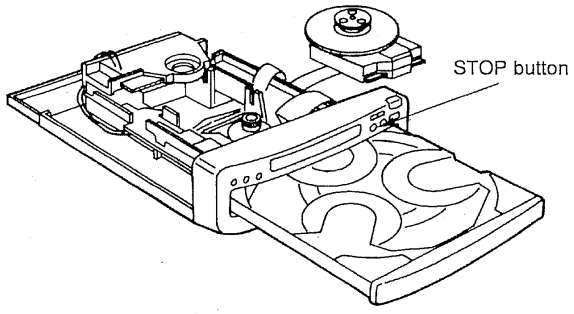
Step 16
Place the test disc (SZZP1054C) and secure it by using the clamper ass'y.



NOTE
Apply 10V AC power with using power supply tool.
(Fig.1: see page 18)

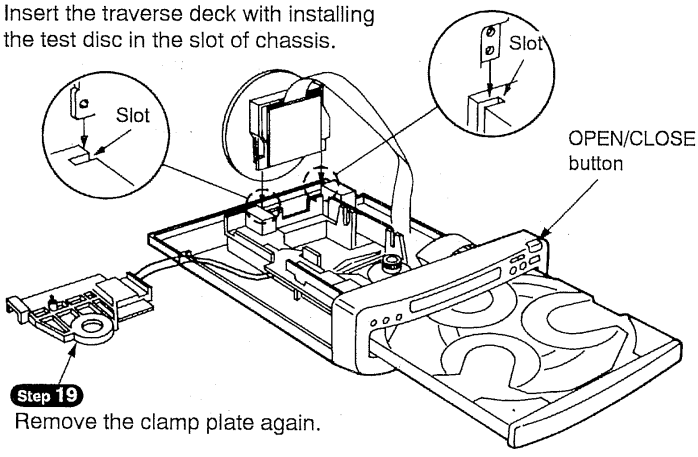


Step 17
Reinstall the clamp plate to the mechanism chassis.

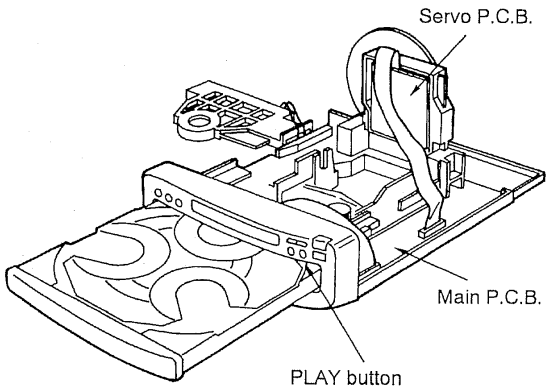


Step 18
Set the service mode **C-1** , and confirm to function. Then push the stop button. (See page 9)

Step 20
Insert the traverse deck with installing the test disc in the slot of chassis.



Step 19
Remove the clamp plate again.



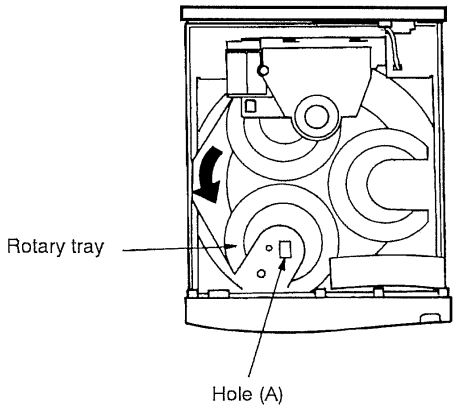
NOTE
Do not push the OPEN/CLOSE button with removing the clamp plate.

Step 21
Pushing the play button check the operation of servo P.C.B.

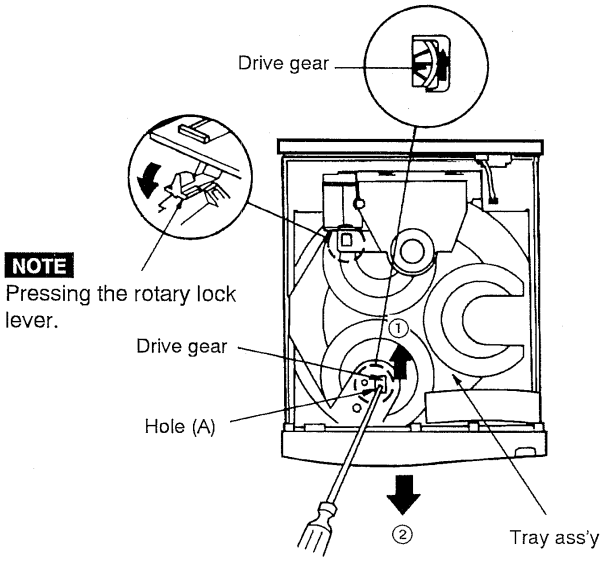
2. Checking for the main P.C.B.

- Follow the item 1 (Step 1 ~ Step 3) on checking procedure for each P.C.B. (See page 10)

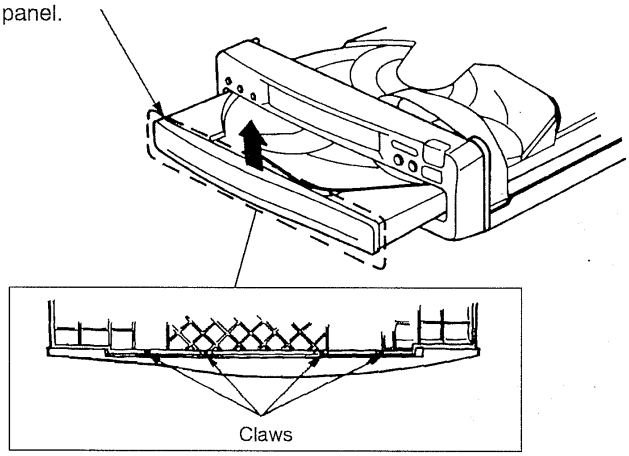
Step 1
Rotate the rotary tray to the position that can be confirmed the hole (A).



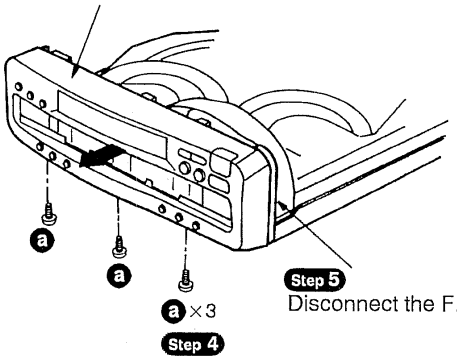
Step 2
Pressing the drive gear in the direction of arrow ①, the tray ass'y moves slightly in the direction of arrow ②. Then, pull the tray ass'y in the direction of arrow ②.



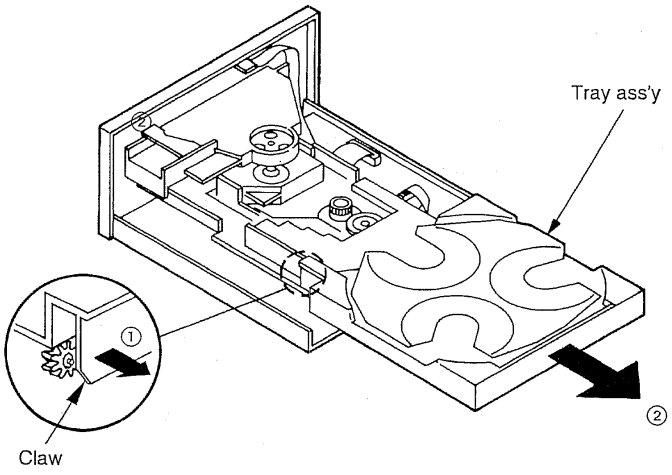
Step 3
Remove the 4 claws and then remove the tray panel.



Step 6
Remove the front panel ass'y.

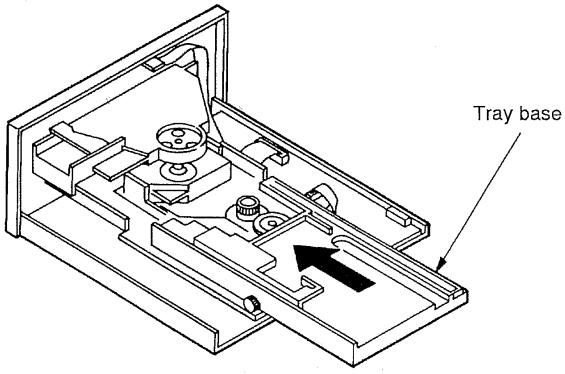


[XTBS3+8JFZ1]



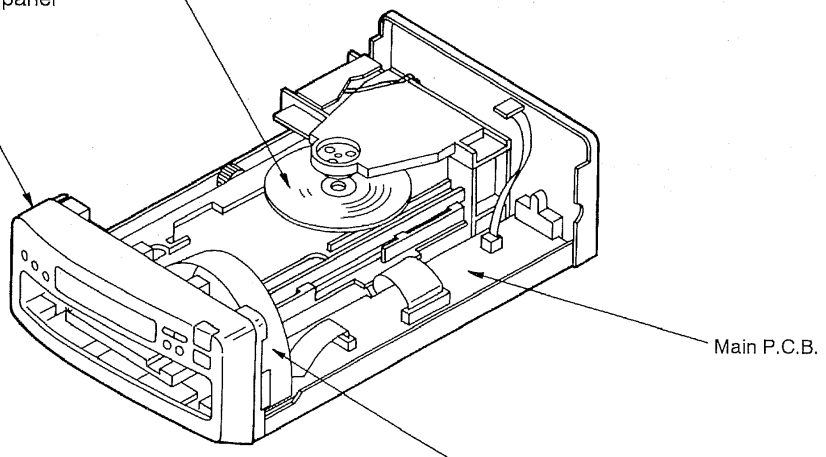
Step 7
Release the claw in the direction of arrow ① and then pull out the tray ass'y in the direction of arrow ②.

Step 8
Push the tray base fully in the direction of arrow.



Step 9
Reinstall the front panel ass'y to the unit.

Step 11
Set the test disc (SZZP1054C) to the traverse position.



NOTE
Apply 10V AC power with using power supply tool.
(Fig.1: see page 18)

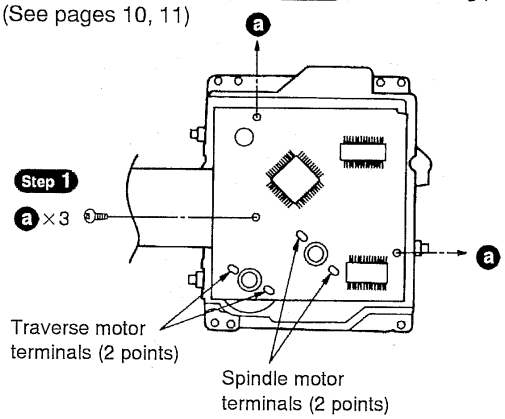
Step 10
Connect the F.P.C. board (CN601).

Step 12
Set the service mode **C-2**, and check the operation of main P.C.B. (See page 8)

■ Main Component Replacement Procedures

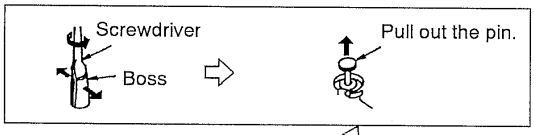
1. Replacement for the traverse deck ass'y

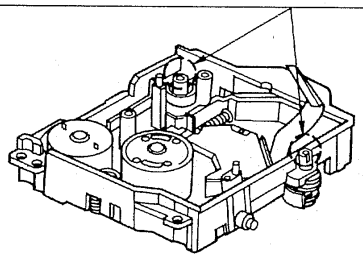
• Follow the item 1 (Step 1 ~ Step 14) on checking procedure for each P.C.B.
(See pages 10, 11)

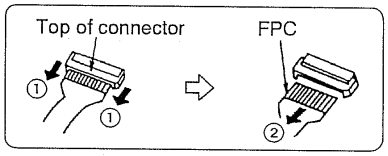


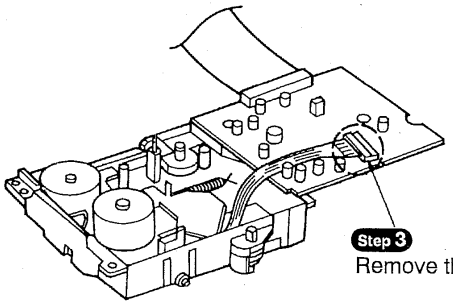
Step 2
Unsolder the spindle motor terminals and traverse motor terminals.

Step 4
Remove the pin.

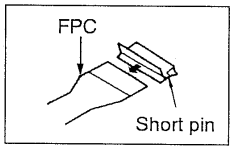


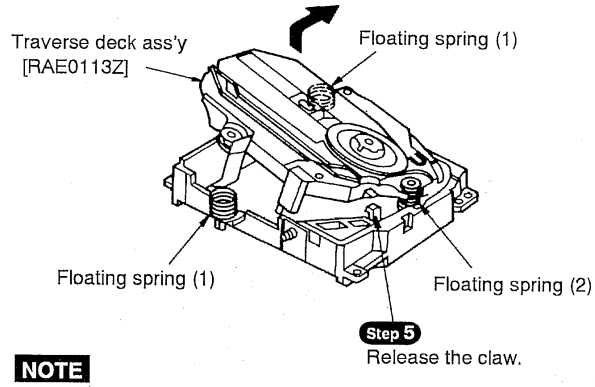






CAUTION
Insert a short pin into the traverse unit FPC board.
(Refer to "Handling Precautions for Traverse Deck" on page 2.)



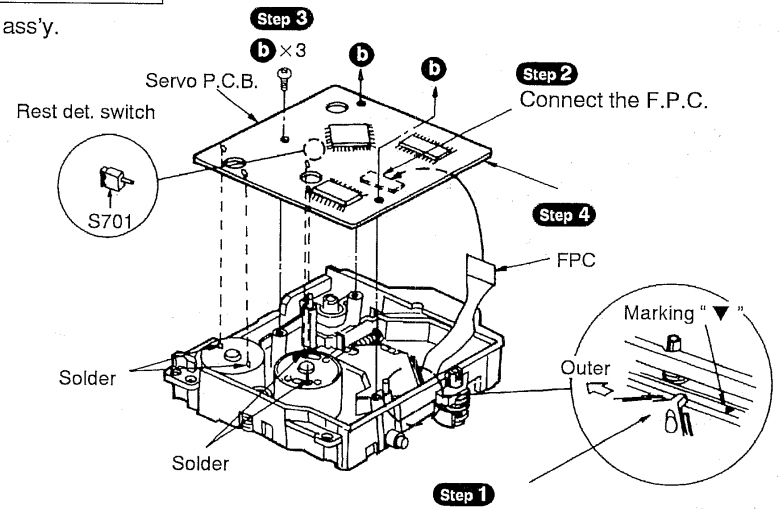


NOTE
Be careful not to lose the 3 springs because those will also be removed on removal of the traverse deck ass'y.

Installation of the servo P.C.B. after replacement

• Install the servo P.C.B. in the traverse deck ass'y.

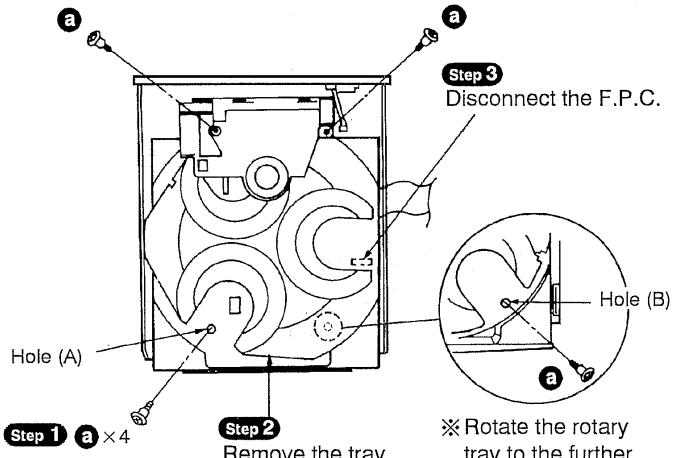
Before installing the servo P.C.B., move the optical pickup toward the outer edge from the mark " ▼ ". [Otherwise, the rest detect switch (S701) mounted on the servo P.C.B. may be damaged.]



a, b
[XTV2+6G]

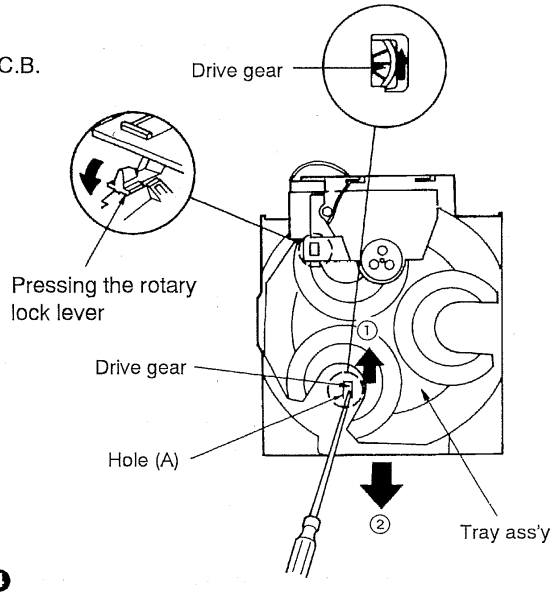
2. Replacement for the belt, motor ass'y and solenoid

- Follow the item 2 (Step 1~Step 6) on checking procedure for each P.C.B. (See page 13)

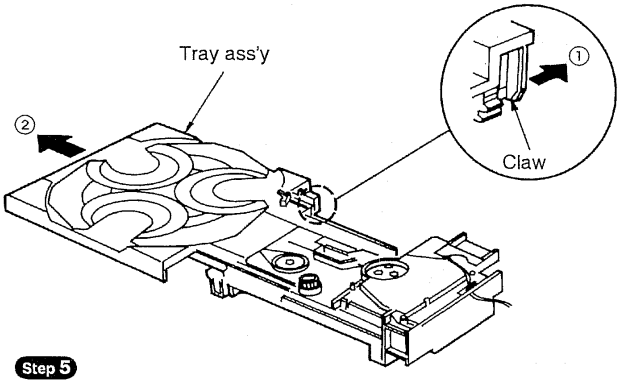


Step 2 Remove the tray ass'y and loading unit.

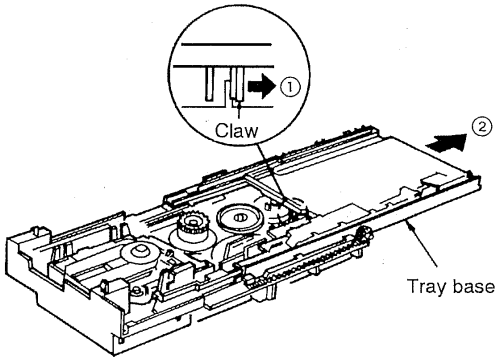
※Rotate the rotary tray to the further position that can be confirmed the hole (B).



Step 4
Pressing the drive gear in the direction of arrow ①, the tray ass'y moves slightly in the direction of arrow ②. Then, pull the tray ass'y in the direction of arrow ②.

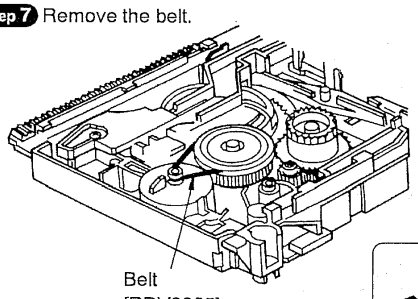


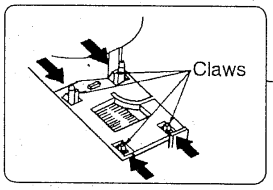
Step 5
Release the claw in the direction of arrow ① and then remove the tray ass'y in the direction of arrow ②.



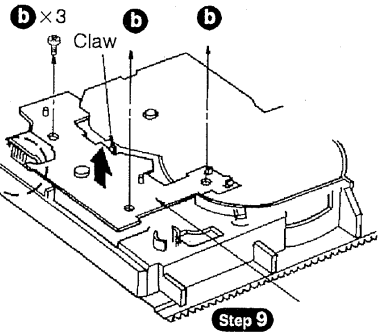
Step 6
Release the claw in the direction of arrow ① and then remove the tray base in the direction of arrow ② .

Step 7 Remove the belt.





Step 8

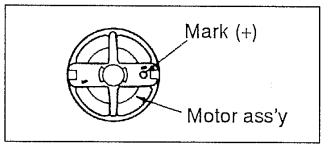


Step 9
Release the 5 claws and then remove the loading motor P.C.B.

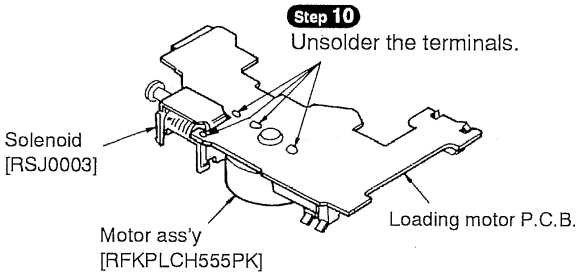
[RHD30043]

(Black)

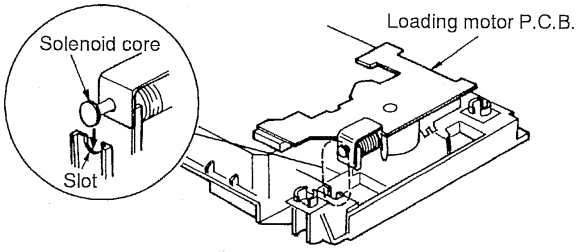
[XTB3+10JFZ]



Step 10
Unsolder the terminals.



Installation of the loading motor P.C.B. after replacement

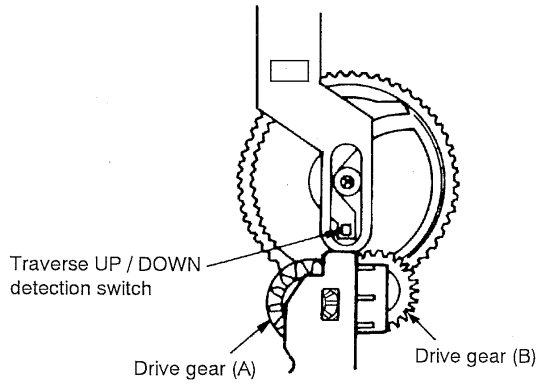


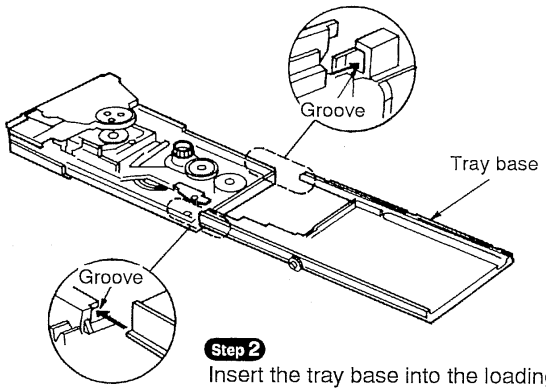
NOTE
Align the slot of lever with the solenoid core.

Installation of the tray base and the tray ass'y after replacement

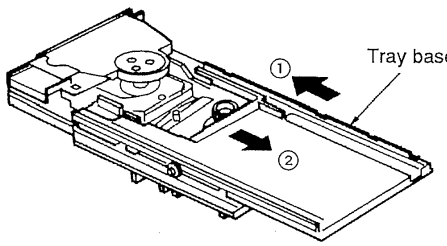
Step 1
Place the loading mechanism into the CLOSE / TRAVERSE DOWN position.

[Checkpoints]
1. Traverse UP / DOWN detection switch should be at the center position.
2. Make sure that the two drive gears can be turned freely by hand.



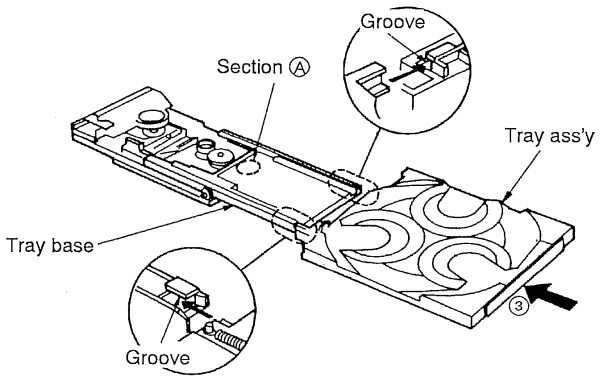


Step 2
Insert the tray base into the loading mechanism groove.



Step 3
Push the tray base fully in the direction of arrow ① and make sure that tray lock takes place.

Step 4
Disengage the tray lock and pull out fully in the direction of arrow ②.



Step 5
Insert the tray ass'y into the tray base groove.

Step 6
Pressing the section Ⓐ by a finger, insert the tray ass'y in the direction of arrow ③.
Release the finger from pressing the section Ⓐ and then press it in the direction of arrow till "tray lock" takes place.

■ Measurements and Adjustments

Cautions:
- It is very dangerous to look at or touch the laser beam. (Laser radiation is invisible.) With the unit turned "on", laser radiation is emitted from the pickup lens.
- Avoid exposure to the laser beam, especially when performing adjustments.

This unit SL-CH610X is designed to operate on power supplied from the Amplifier SE-CH618X through the Tuner/Sound Processor ST-CH610X.
When connecting the unit to other system components, do not connect to the Amplifier SE-CH618X directly. Be sure to connect this unit through the Tuner/Sound Processor ST-CH610X.
When operating the unit SL-CH610X alone for testing and servicing, without having power supplied from the Amplifier SE-CH618X and the Tuner/Sound Processor ST-CH610X, use the following method.

Power Supply to This Unit alone

Apply 11V AC power to the section between **AC** of the coil (L1) and the jumper (J1) **GND** as well as the section between **AC** of the coil (L2) and the jumper (J1) **GND** . (10V AC power can be also applied when using power supply tool.) **(Shown in Fig. 1)**

To Check Signals

Connect the oscilloscope or the speaker with built-in amplifier to the section between LINE OUT (Lch) of the resistor R815 and the GND point of the jumper J1 as well as the section between LINE OUT (Rch) of the resistor R816 and the GND point of the jumper J1 and check if the signals are outputting from this unit. **(Shown in Fig. 1)**

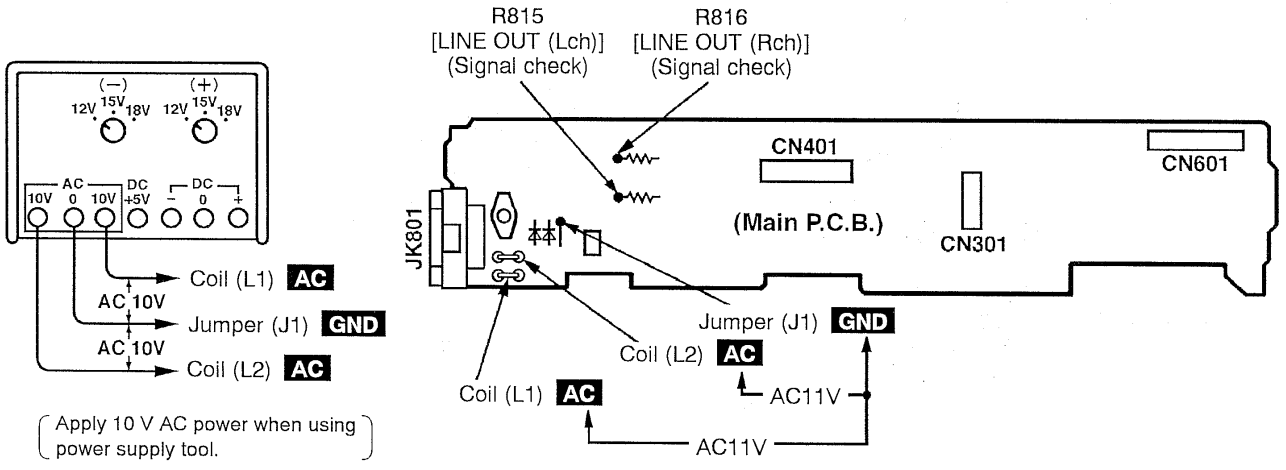
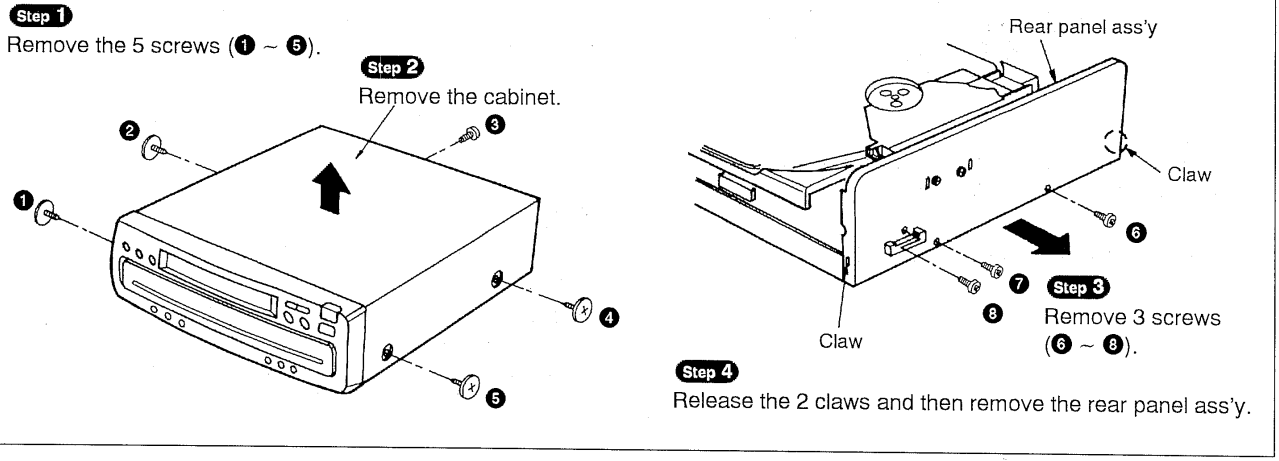


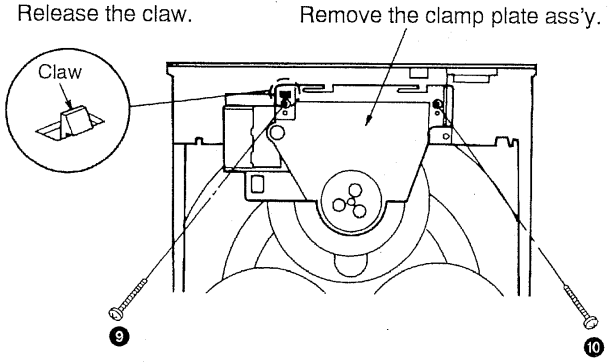
Fig. 1

● Preparation of Adjustment

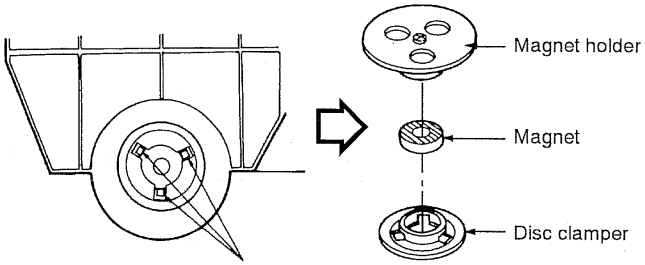


Step 6
Release the claw.

Step 7
Remove the clamp plate ass'y.



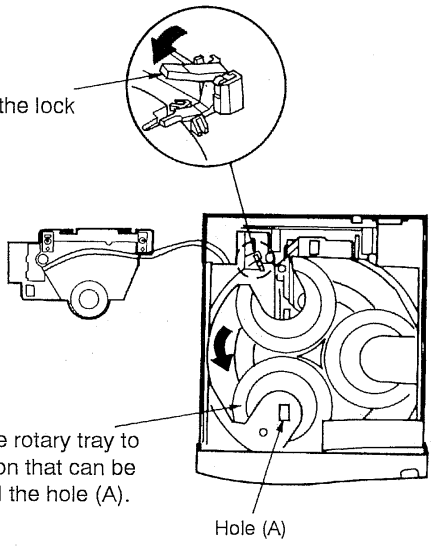
Step 5
Remove 2 screws (9, 10).



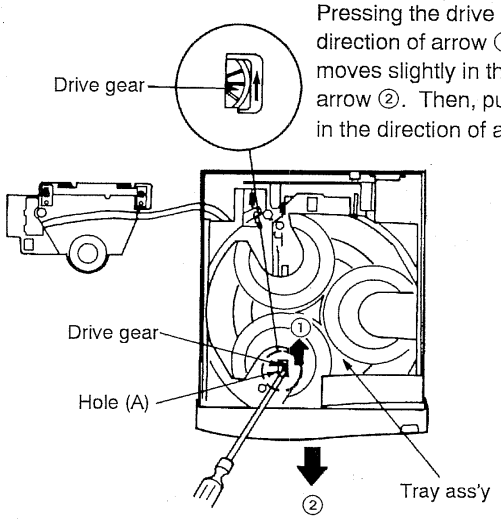
Step 8
Remove the 3 claws, and then remove the magnet holder, magnet and disc clamper separately.

Step 9
Pressing the lock lever.

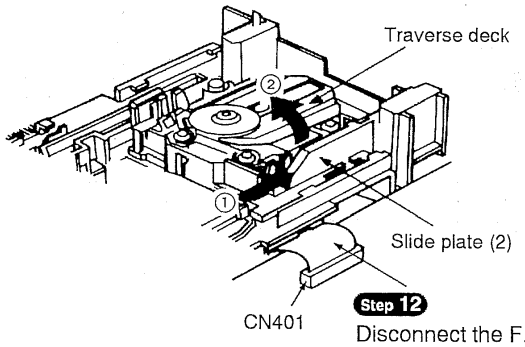
Step 10
Rotate the rotary tray to the position that can be confirmed the hole (A).



Step 11
Pressing the drive gear in the direction of arrow ①, the tray ass'y moves slightly in the direction of arrow ②. Then, pull the tray ass'y in the direction of arrow ②.

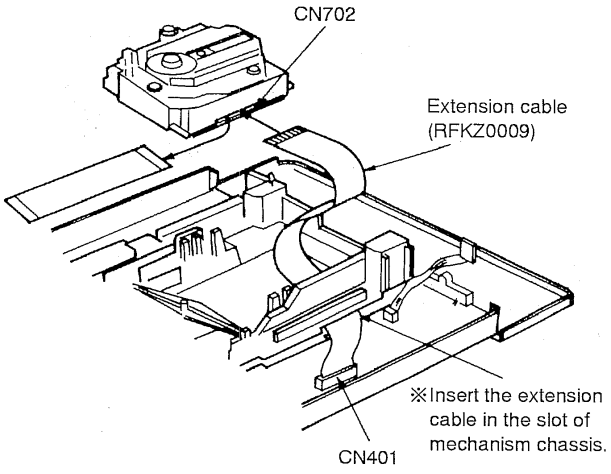


Step 13
Pressing the slide plate (2) in the direction of arrow ①, and then remove the traverse deck in the direction of arrow ②.



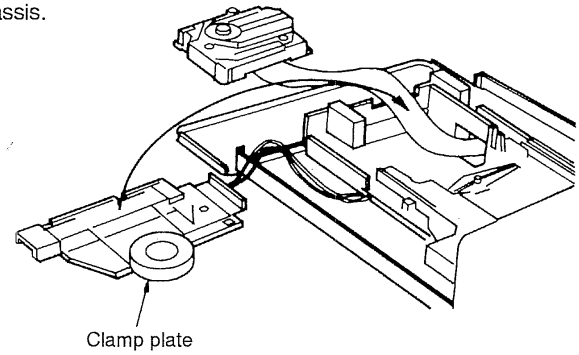
Step 12
Disconnect the F.P.C.

Step 14
Substitute the serviceable extension cable for the F.P.C. between the connector (CN401) on main P.C.B. and the connector (CN702) on servo P.C.B.



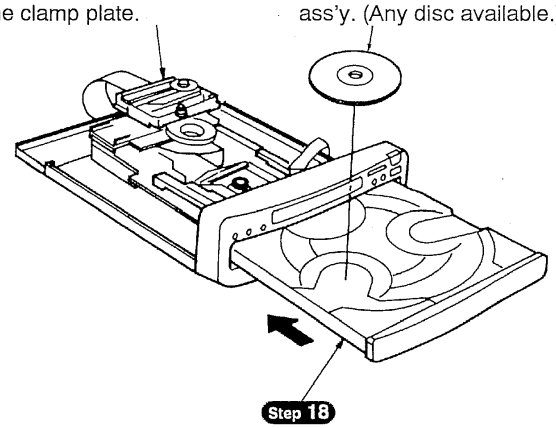
NOTE
When removing the traverse deck, please be careful not to damage the F.P.C.

Step 15
Reinstall the clamp plate to the mechanism chassis.



Step 16
Place the traverse deck on the clamp plate.

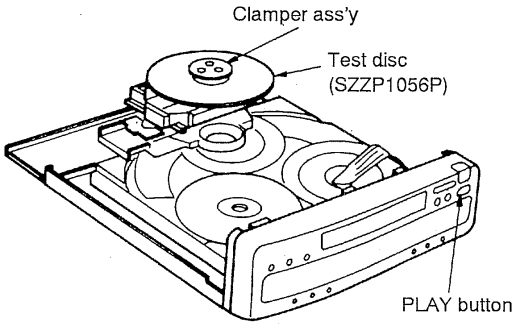
Step 17
Place a disc on the tray ass'y. (Any disc available.)



Step 18
Restore the tray ass'y to the main unit.

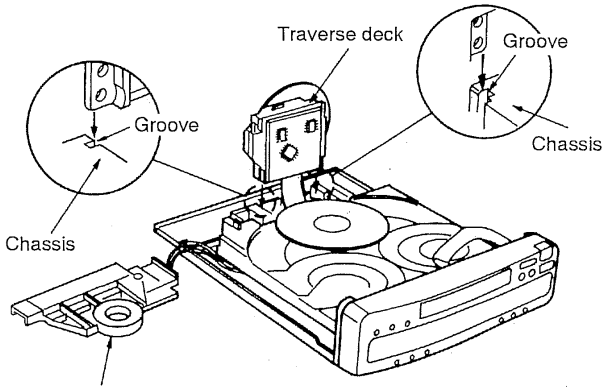
Step 19
Place the test disc (SZZP1056P) on the traverse deck and secure it by using the clamper ass'y.

NOTE
Apply 10V AC power with using power supply tool.
(Fig.1: see page 18)



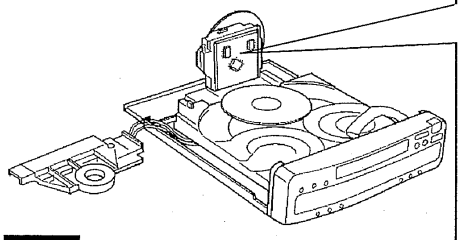
Step 20
Press the PLAY button and playing the track 19 on the test disc.

Step 22
Keep playing a disc, and insert the traverse deck to the groove of chassis slowly.

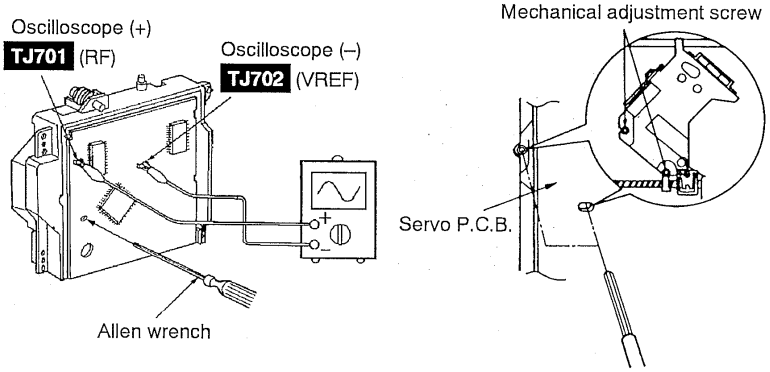


Step 21
Keep playing a disc, and lift the traverse deck slowly. Then re-remove the clamp plate, and place it aside of chassis.

- Checking and adjusting for the servo P.C.B. as shown below.



NOTE
Do not push the Open/Close button with removing the clamp plate.



NOTE:
The elevation angle adjusting pot is accessible only after track 19 on the test disc, SZZP1056C, has been played.

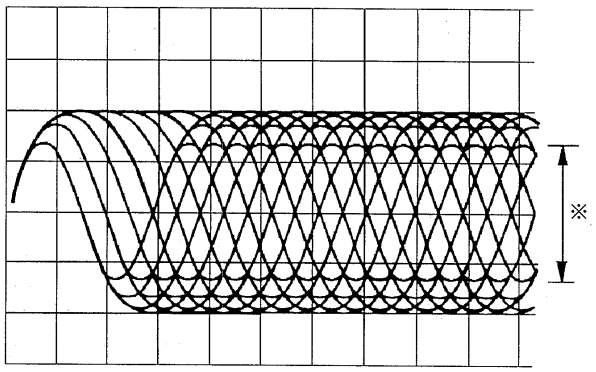
Measuring Instruments and Special Tools

- Test disc
  1. Playability test disc (SZZP1054C)
  2. Uneven test disc (SZZP1056C)
- Allen wrench (M2.0) (SZZP1101C)
- Oscilloscope

(1) MECHANICAL ADJUSTMENT

- When the traverse deck is replaced, making adjustments is not necessary. (The traverse deck ass'y is already adjusted.)
- Make adjustments to improve playability when the traverse deck has not been replaced. Make the electrical adjustments first.

1. Connect the oscilloscope's CH. 1 probe across **TJ701** (+) and **TJ702** (VREF) on the Servo P.C.B. (See page 20)
   Oscilloscope setting:
   VOLT ..... 200 mV
   SWEEP ..... 0.5 μsec
   Input coupling ..... AC
2. Switch the player power **ON**, and play track **19** on the test disc (SZZP1056C).
3. Leave the player in Play mode and place it as shown in the figure on the right.
4. Alternately adjust the two mechanical adjusting screws with the 2.0 mm allen wrench (SZZP1101C) unit the RF signal amplitude on the oscilloscope is maximize.
5. After completing the adjustment, lock the mechanical adjustments with lock paint (RZZ0L01).



※ **Maximize the amplitude.**

(2) CHECK OF PLAY OPERATION AFTER ADJUSTMENT

- 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 direction).
- 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 test disc (SZZP1054C) and verify that no sound skip or noise occurs.
  2. Play the middle tracks of the uneven test disc and verify that no sound skip or noise occurs.

■ Replacement Parts List (ref. pages 54~61 of SL-CH515 service manual)

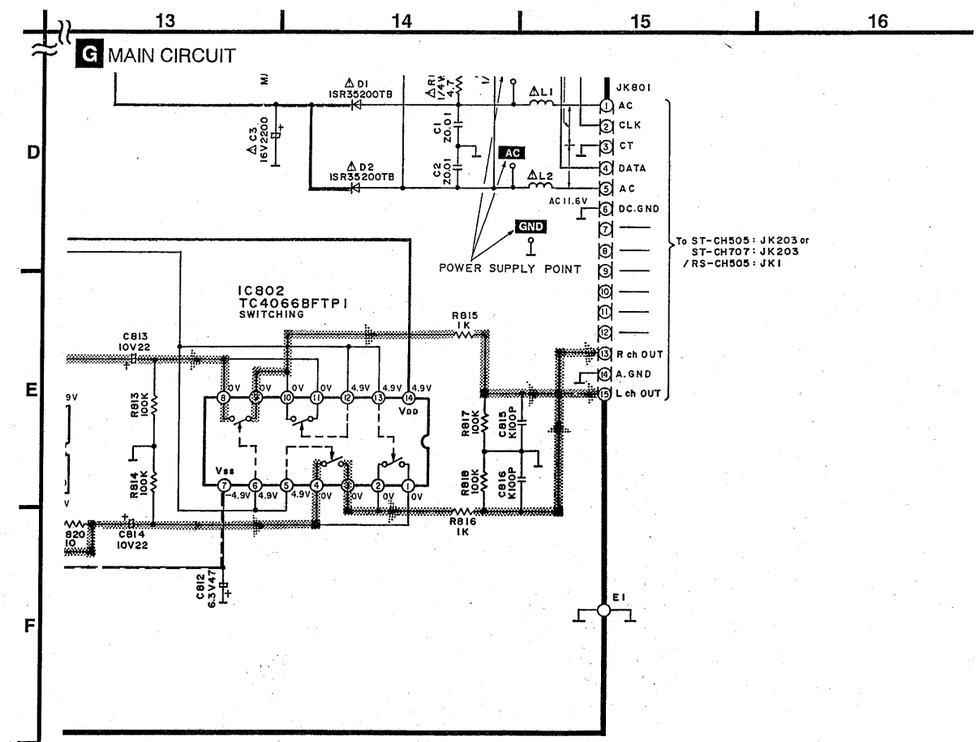
Notes: *Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.
*The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.
*Warning: This product uses a laser diode. Refer to caution statements on page 2.
*The "(SF)" mark denotes the standard part.

Ref. No.	Part Number		Description	Remarks
	SL-CH515 (E)	SL-CH610X (GT)		
INTEGRATED CIRCUIT				
IC801	XRA4558FT1	**XRA4558FHTT1**	I.C, L.P.F.	Changed
TRANSISTOR				
Q801	UN4112	**UN4112AITA**	TRANSISTOR	Changed
EARTH TERMINAL				
E1	SNE1004-1	**SNE1004-2**	GND TERMINAL	Changed
CAPACITORS				
C4	ECEA1AKA470B	**RCE1AKA470BG**	CAPACITOR 10V 47μ	Changed
C6	ECEA1AKA221Q	**ECEA1AKA221B**	CAPACITOR 10V 220μ	Changed
C7	ECEA0JKA221B	**RCE0JKA221BV**	CAPACITOR 6.3V 220μ	Changed
C10	ECA1EM101B	**RCE1EM101BV**	CAPACITOR 25V 100μ	Changed
C11	ECA1VM101B	**RCE1VM101BV**	CAPACITOR 35V 100μ	Changed
C12	ECA1HM101B	**RCE1HM101BV**	CAPACITOR 50V 100μ	Changed
C304	ECA0JM102B	**RCE0JKA101BV**	CAPACITOR 6.3V 100μ	Changed
C305	ECEA1AKA470B	**RCE0JM102BV**	CAPACITOR 6.3V 1000μ	Changed
C309, 310	ECEA1HKA3R3B	**RCE1HKA3R3BG**	CAPACITOR 50V 3.3μ	Changed
C318	ECEA0JKA470B	**RCE0JKA470BG**	CAPACITOR 6.3V 47μ	Changed
C811, 812	ECEA10JKA470B	**RCE0JKA470BG**	CAPACITOR 6.3V 47μ	Changed

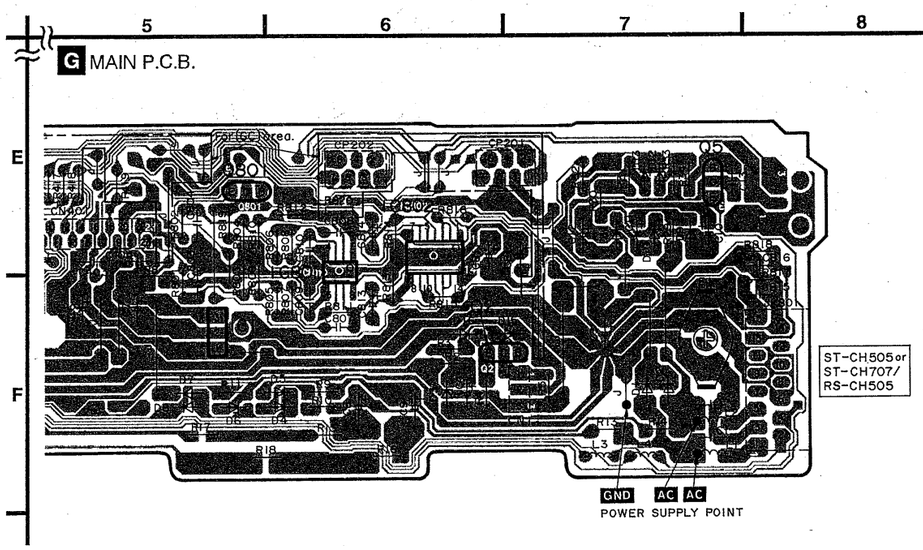
Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET PARTS	
1	RKM0282-K	CABINET	
2	RHD30007-K1	SCREW	
3	XTBS3+8JFZ1	SCREW	
4	REZ0555	FPC(14P)	
5	REZ0639	FPC(23P)	
6	RGK0700-K	TRAY PANEL	
7	RGR0195A-E	REAR PANEL ASS'Y	
8	RHD30043	SCREW	
9	RFKJLCH515PK	BOTTOM BOARD ASS'Y	
9-1	RKA0011-3	FOOT	
10	RMG0319-K	RUBBER	
11	RDG0228	GEAR	
12	RGT0014	ROTARY TRAY	
13	RMA0681	ANGLE	
14	RME0123	SPRING	
15	RML0312	LEVER	
16	RDG0225	GEAR	
17	RDG0227	GEAR	
18	RMA0654	ANGLE	
19	RMA0655	ANGLE	
20	REZ0651	FLAT CABLE(W1)	
21	RME0139	SPRING	
22	RMG0293-C	RUBBER	
23	RML0291	LEVER	
24	RMR0627-K	TRAY BASE	
25	RMS0382	SHAFT	
26	SDRD14	ROLLER	
27	XTW3+6S	SCREW	
28	XTBS26+10J	SCREW	

Ref. No.	Part No.	Part Name & Description	Remarks
29	XTWS3+10T	SCREW	
30	RDF0033	PLATE	
31	RHM245ZA	MAGNET	
32	RMR0334	MAGNET HOLDER	
33	RMR0624-W	DISC CLAMPER	
34	RFKNLCH610EK	CLAMP PLAT ASS'Y	
35	XTB3+6JFZ	SCREW	
36	RMN0195	FL SPACER	
37	RMN0257	FL HOLDER	
38	REZ0638	FPC(23P)	
39	RFKGLCH610XG	FRONT PANEL ASS'Y	
39-1	RKW0372-V	FL PANEL	
40	XTBS26+8J	SCREW	
41	SHE185-2	P.C.B. SPACER	
42	RMA0764	ANGLE	
43	XTB3+16JFZ	SCREW	
44	RFKNLCH610EA	BUTTON(A)	
45	RFKNLCH610EB	BUTTON(B)	
46	RFKNLCH610EC	BUTTON(C)	
47	RFKNLCH610ED	BUTTON(D)	
48	RMB0386	SPRING	
49	RGL0269-Q	LEADING LIGHT PANEL	
50	RFKNLCH555PK	DISC TRAY ASS'Y	
51	XTN2+6F	SCREW	
52	RMN0222	LED HOLDER	
53	REZ0644	FLAT CABLE(W601)	
54	RMN0261	ANGLE	
55	RFKNLCH610EE	BUTTON(E)	
56	RFKNLCH610EF	BUTTON(F)	
57	RGU1179-K	OPEN BUTTON	

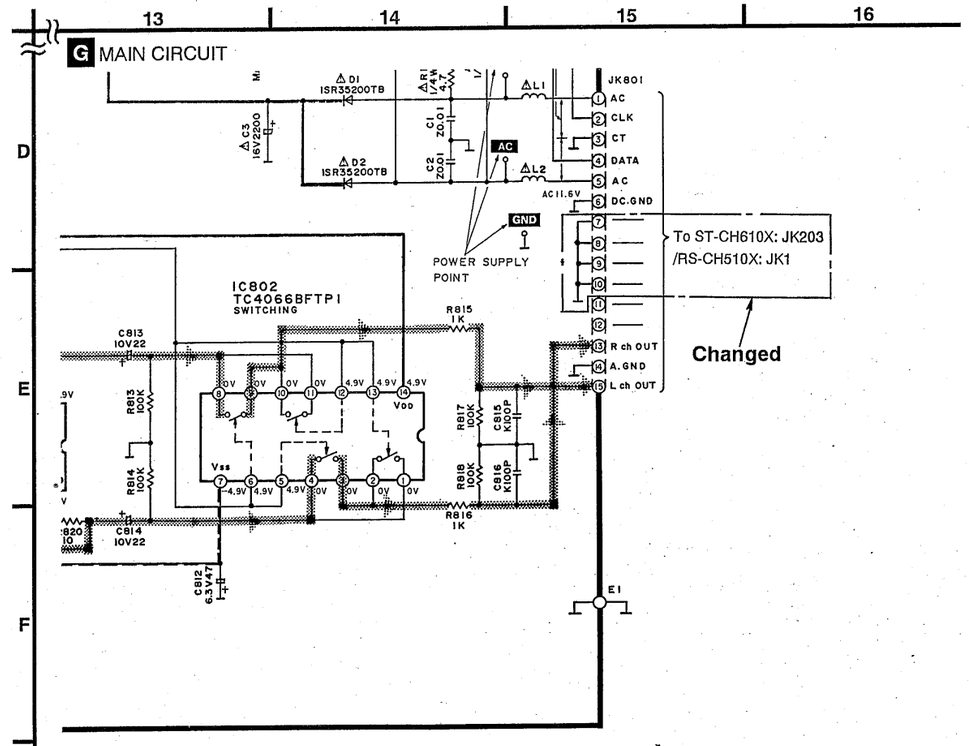
■ Schematic Diagram (SL-CH515 service manual on page 29)



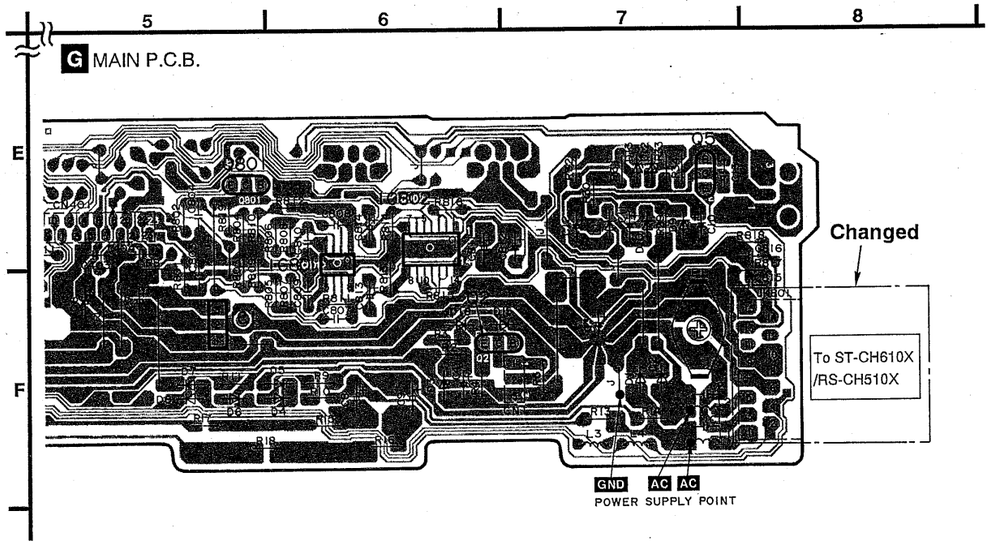
■ Printed Circuit Board Diagram (SL-CH515 service manual on page 32)



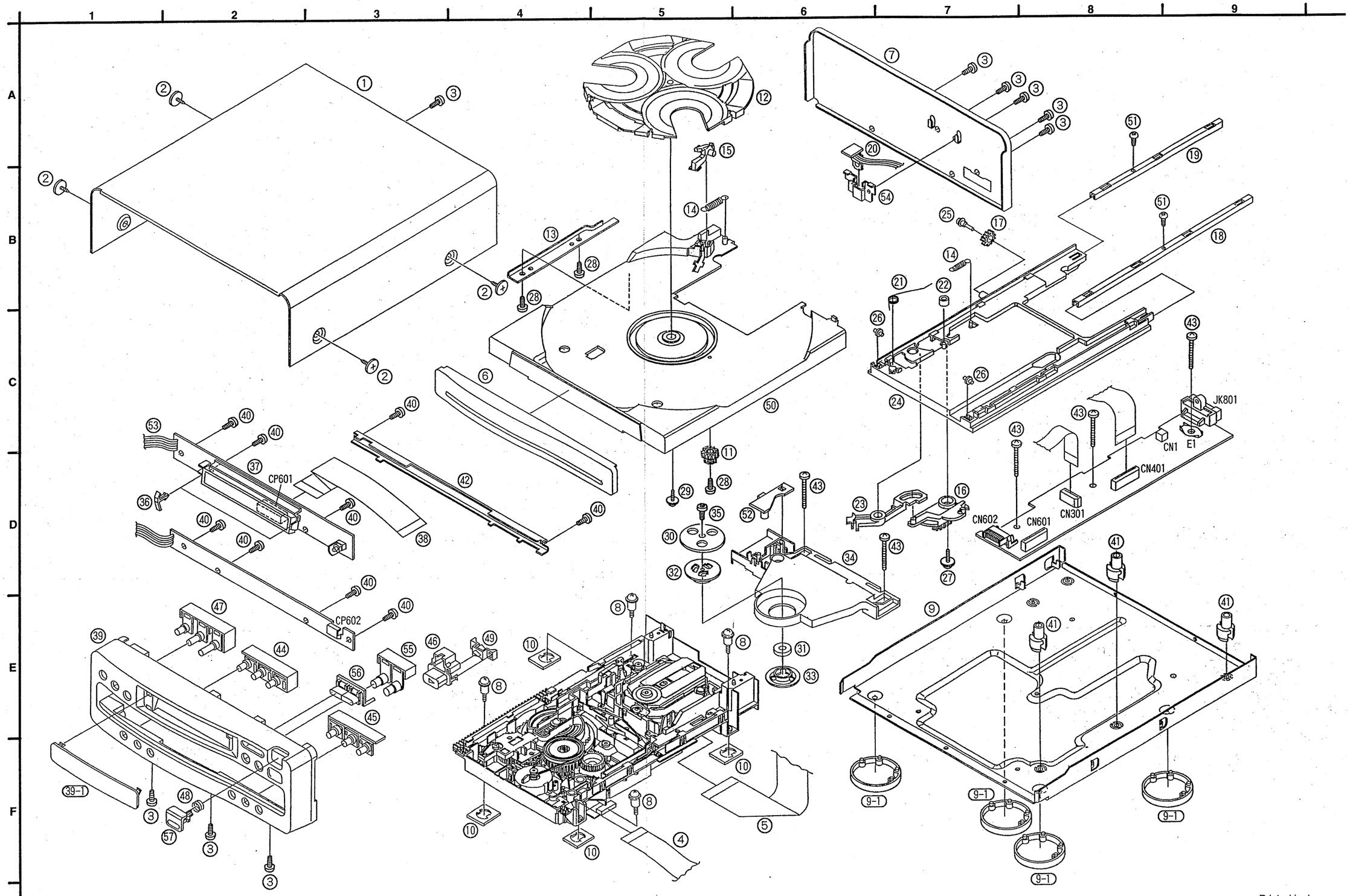
■ Schematic Diagram (SL-CH610X)



■ Printed Circuit Board Diagram (SL-CH610X)



■ Cabinet Parts Location



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