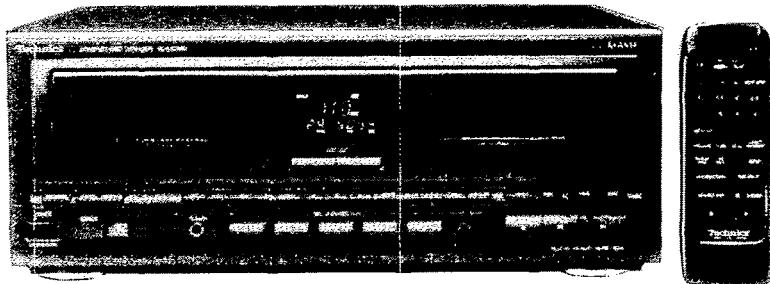


Service Manual

COMPACT
DISC
DIGITAL AUDIO

MASH®
multi-stage noise shaping

* MASH is a trademark of NTT.



RAE0150Z MECHANISM SERIES

■ Specifications

■ AUDIO

No. of channels	2 (left and right, stereo)
Frequency response	2-20,000 Hz, ±1 dB
Output voltage	2 V (at 0 dB)
Dynamic range	92 dB
S/N	100 dB
Total harmonic distortion	0.007% (1 kHz, 0 dB)
Wow and flutter	Below measurable limit
DA converter	* MASH (1 bit)
Output impedance	Approx. 1 kΩ
Load impedance	More than 10 kΩ

■ PICKUP

Wavelength	780 nm
------------	--------

■ GENERAL

Power consumption	14 W GC only 17 W
Power supply	for continental Europe and Australia AC 50/60 Hz, 230~240 V for others AC 50/60 Hz, 110 V/127 V/220 V/230~240 V
Dimensions (W×H×D)	430×170×387 mm
Weight	7.0 kg

Note:

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

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Technics®

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⚠ WARNING

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

■ Before Repair

- (1) Turn off the power supply using a 10Ω , 10 W resistor, connect both ends of power supply capacitors (C12, C21, C22) in order to discharge the voltage.
- (2) Before turning the power supply on, after completion of repair, slowly apply the primary voltage by using a power supply voltage controller to make sure that the consumed current at 50 Hz in NO SIGNAL mode should be shown below with respect to supply voltage 240 V/110 V/120 V/220 V/230~240 V.

Power supply voltage	AC 240 V	AC 110 V	AC 120 V	AC 220 V	AC 230~240 V
Consumed current 50 Hz	30~45 mA	80~100 mA	70~90 mA	30~50 mA	35~55 mA

■ Protection Circuitry

The protection circuitry may have operated if either of the following conditions is noticed:

- * No sound is heard when the power is switched ON.
- * Sound stops during a performance.

The function of this circuitry is prevent circuitry damage if, for example, the positive and negative speaker connection wires are "shorted", or if speaker systems with an impedance less than the indicated rated impedance of this unit are used.

If this occurs, follow the procedure outlined below:

1. Switch OFF the power.
2. Determine the cause of the problem and correct it.
3. Switch ON the power once again.

Note:

When the protection circuitry functions, the unit will not operate unless the power is first switched OFF and then ON again.

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.

■ 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 μW /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.

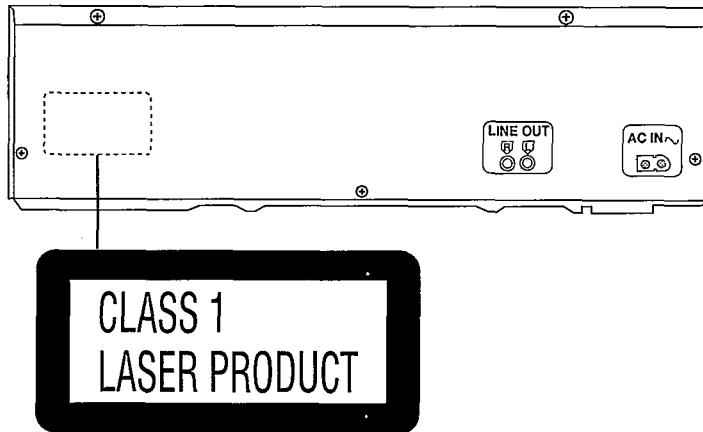
ACHTUNG: Dieses Produkt enthält eine Laserdiode. Im eingeschalteten Zustand wird unsichtbare Leserstrahlung von der Lasereinheit abgestrahlt.

Wellenlänge: 780 nm

Maximale Strahlungsleistung der Lasereinheit: 100 μW /VDE

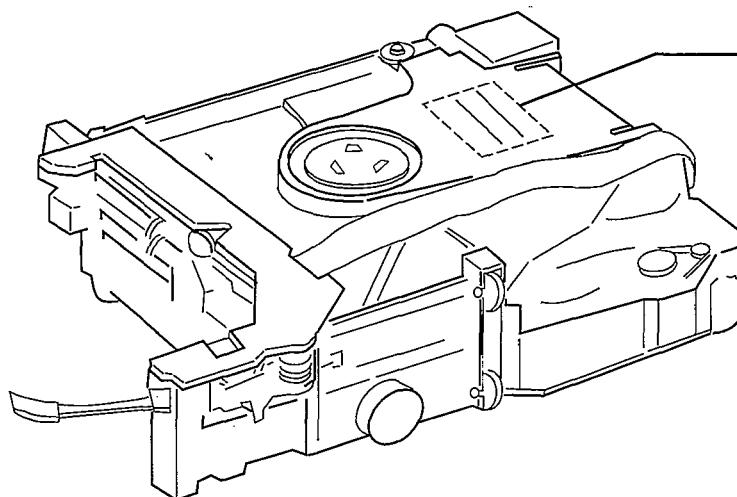
Die Strahlung an der Lasereinheit ist ungefährlich, wenn folgende Punkte beachtet werden:

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



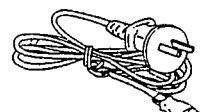
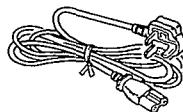
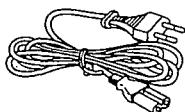
DANGER	INVISIBLE LASER RADIATION WHEN OPEN, AVOID DIRECT EXPOSURE TO BEAM.
ADVARSEL	USYNLIG LASERSTRÅLING VED ÅBNING. HÅR SIKKERHEDSAFBDYRERE ER LØST AF FUNKTION. UNDGA UDSETTELSE FOR STRÅLING.
VARO!	AVATTAESSA JA SUOVALIKUTUS OHITETTAESSA OLET ALTTINA NAKYMÄTÖHTÄ LASERSÄTEKYLLE. ÄLÄ KATSO SÄTEESEEN.
WARNING	OSYNLIG LASERSTRÅLING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREHÄR UNKOPPLAD. BETRAKTA EJ STRÅLEN.
ADVARSEL	UGYLDIG LASERSTRÅLING NÄR DEKSEL ÄPNES OG SIKKERHEDSÅS BRYTES. UNDGA EKSPOSERING FOR STRÅLEN.
VORSICHT	UNSICHTBARE LASERSTRÄHLUNG, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAH AUSSETZEN.

ROLSD064

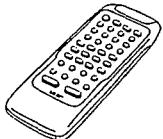


■ Accessories

- AC power supply cord
(E, EG, GC) areas : (RJA0019-2K).....1
- (EB) area : (RJA0049-K).....1
- (GN) area : (RJA0036-K).....1



- Remote control transmitter
(RAK-SL186WH)1



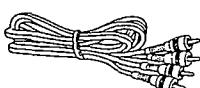
- Batteries for remote control transmitter.....2 pcs.
(UM-4, "AAA", R03)



- Power plug adaptor [for (GC) area only]
(SJP5213-2).....1



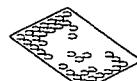
- Stereo connection cable.....1 pc.
(SJP2249-3)



- Notebook-like binder.....1 pc.
[Liner notes organizer]
(RFA0623-K1)



- Adhesive number.....1 pc.
(RQLA0326)



■ Caution for AC Main Lead

[For (EB) area only.]

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.

An 5-ampere fuse is fitted in this plug.

Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5-ampere and that it is approved by ASTA or BSI to BS1362.

Check for the ASTA mark or the BSI mark on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.

If you lose the fuse cover the plug must not be used until a replacement cover is obtained.

A replacement fuse cover can be purchased from your local dealer.

CAUTION!

IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.

THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13-AMPERE SOCKET.

If a new plug is to be fitted please observe the wiring code as shown below.

If in any doubt please consult a qualified electrician.

IMPORTANT

The wire in this mains lead are coloured in accordance with the following code:

Blue: Neutral

Brown: Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

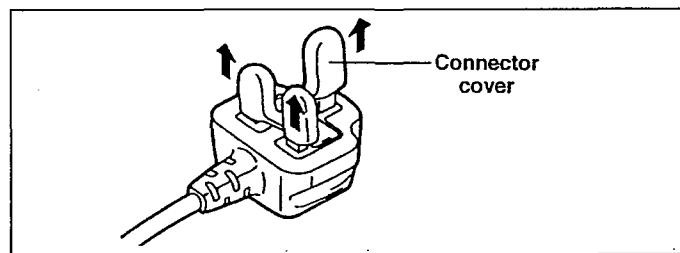
This apparatus was produced to BS 800.

The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

Under no circumstances should either of these wires be connected to the earth terminal of the three pin plug, marked with the letter E or the Earth Symbol

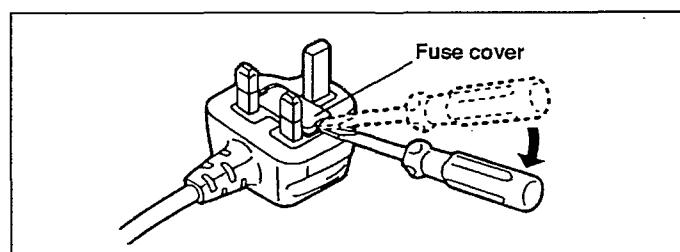
Before use

Remove the connector cover as follows.

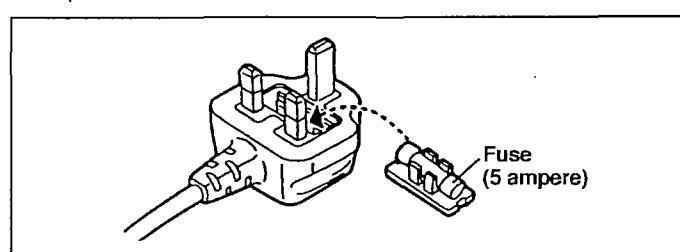


How to replace the fuse

1. Remove the fuse cover with a screwdriver.



2. Replace the fuse and attach the fuse cover.



■ Connections

Before connecting the changer to your audio system, make sure that the power of the changer and all other system components is turned off.

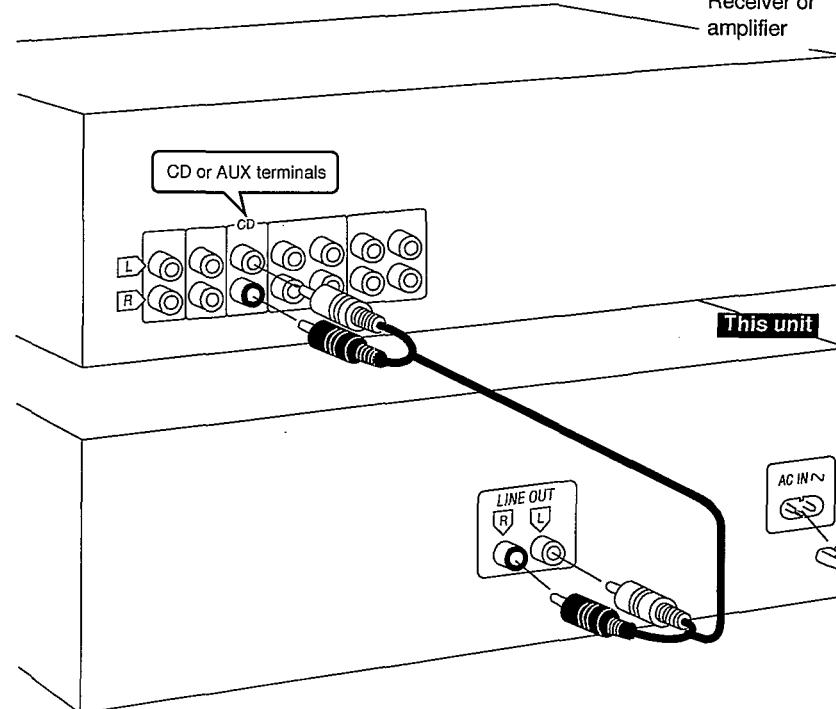
- Although the figure below shows the AC power supply cord being connected to a household AC outlet, if the amplifier (or receiver) is equipped with an AC outlet, connect the cord to that outlet.
- The configuration of the AC outlet differs according to area.

(For United Kingdom only)

BE SURE TO READ THE CAUTION FOR AC POWER SUPPLY CORD ON PAGE 3 BEFORE THE FOLLOWING CONNECTIONS.

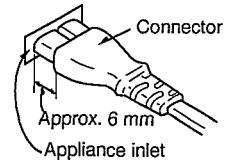
Stereo connection cable

White (L) 
Red (R)



(For areas except Australia and N.Z.)
Insertion of Connector

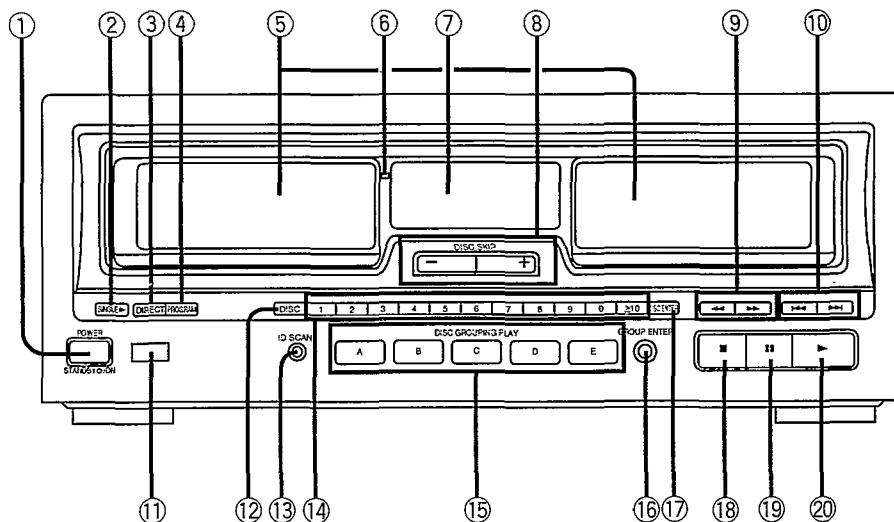
Even when the connector is perfectly inserted, depending on the type of inlet used, the front part of the connector may jut out as shown in the drawing. However there is no problem using the unit.



Connect this cord after all other cables and cords are connected.

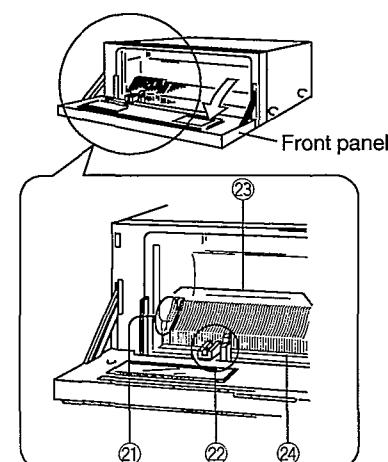


■Front Panel Controls



Note

For an explanation on how to open the front panel, see p. 7 "How to set discs".



No.	Name	Ref. page
①	Power "STANDBY /ON" switch (POWER, STANDBY /ON)	8
	Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.	
②	Single disc play button (SINGLE)	9
③	Direct programming button (DIRECT)	13
④	Programming button (PROGRAM)	12
⑤	Windows	-
⑥	"STANDBY" indicator (STANDBY)	-
	When the unit is connected to the AC mains supply, this indicator lights up in standby mode and goes out when the unit is turned on.	
⑦	Display	-
⑧	Disc skip buttons (DISC SKIP /)	16
⑨	Search buttons (,)	15
⑩	Track skip buttons (,)	16
⑪	Remote control signal sensor	-
⑫	Disc selector button (DISC)	9
⑬	ID scan button (ID SCAN)	17
⑭	Numeric buttons (1-9, 0, \geq 10)	9

No.	Name	Ref. page
⑯	Disc group buttons (DISC GROUPING PLAY,A,B,C,D,E)	10
⑯	Group enter button (GROUP ENTER)	10
⑯	Disc enter button (DISC ENTER)	12
⑯	Stop button ()	8
⑯	Pause button ()	8
⑯	Play button ()	8
⑯	Disc slot for single disc play (SINGLE)	9
⑯	Disc slot for single disc play	
⑯	Loader carriage	7
⑯	Disc slots	7
⑯	Slot numbers	7

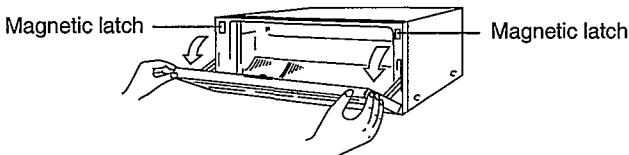
■Setting/Removing Discs

Special notes

- You can set discs in the slots and remove them too, while playing discs.
- Never set a disc in the slot of the disc being played.
- Sometimes the front panel cannot be opened while a disc is playing. It is a question of time. In such case, wait until you can open it.

How to set discs

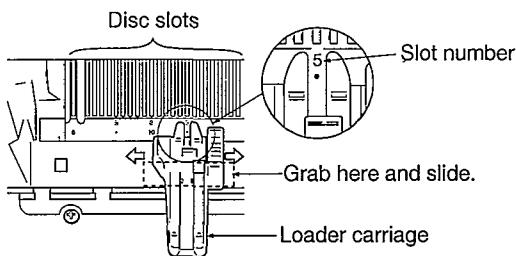
1. Pulling gently from both ends, open the front panel.



Cautions

- Except when setting or removing discs, keep hands out of the changer while open. You could injure yourself if somehow entangled in the internal mechanism.
- Keep cassette tapes away from the magnetic latches.

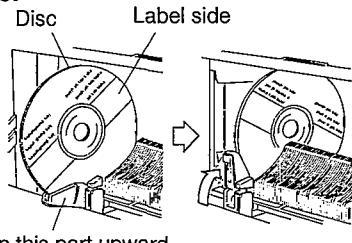
2. Slide the loader carriage to the slot you want. You can read the numbers between the prongs as shown below.



Note

Slot No. 0 (SINGLE) is reserved for single disc play (p. 9).

3. Set the disc on the loader and flip the loader upwards.



Cautions

- Do not use 8 cm discs fitted with expander rings. Expander rings could damage the disc slots.
- Do not use cleaning discs, discs with stickers on the label side or warped discs. All of these could damage your changer.
- Do not put anything other than discs in the changer.
- Do not set a disc in the slot of the disc being played (slot flashes). The disc in play is returned to its slot when finished. If two discs somehow jam the slot, one or both could be damaged. When this happens, the message "TAKE OUT" will appear on the display. Remove the disc that doesn't belong in the slot and press the stop button.
- Do not open the front panel while the changer is changing discs.

Note

- Set discs with the label facing to the right.
- Never load more than one disc in any given slot.

4. Gently close the front panel.

Note

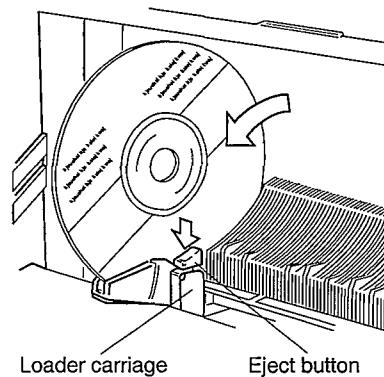
If you leave the front panel open while a disc is in play, when the disc is over, the changer will stop.

How to remove discs

1. Open the front panel.

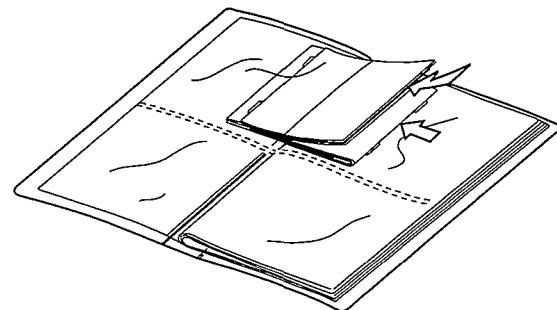
2. Slide the loader carriage to the slot you want.

3. Press the eject button on the loader carriage.

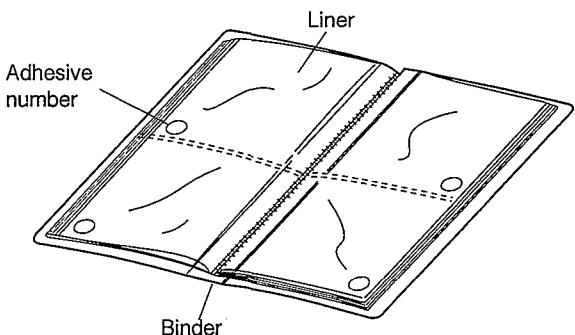


How to know what disc is in what slot

Your changer comes with a notebook-like binder (liner notes organizer) in which you can keep your CD liners. There are also adhesive numbers for indicating slot numbers in the binder. This is a convenient way to keep track of what disc is in what slot.



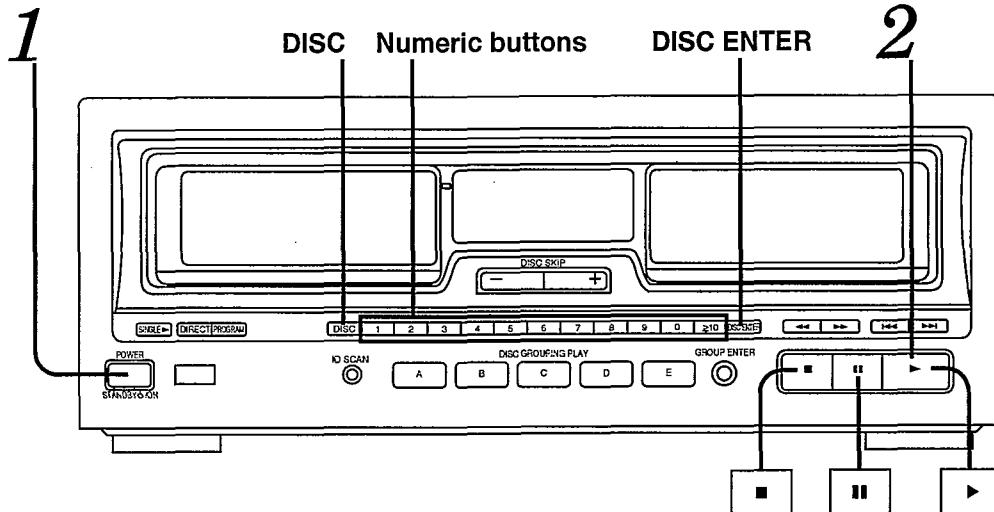
Put two liners back-to-back inside each pocket, as shown above.



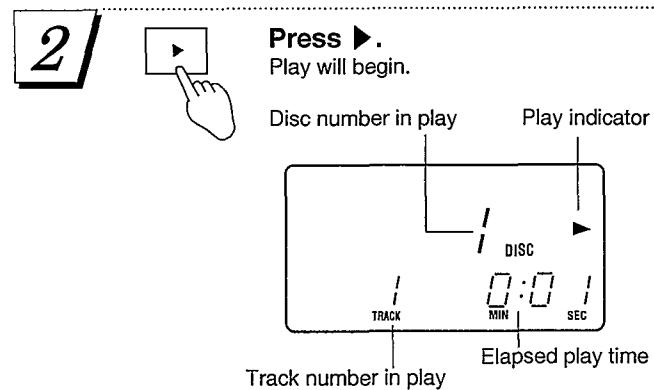
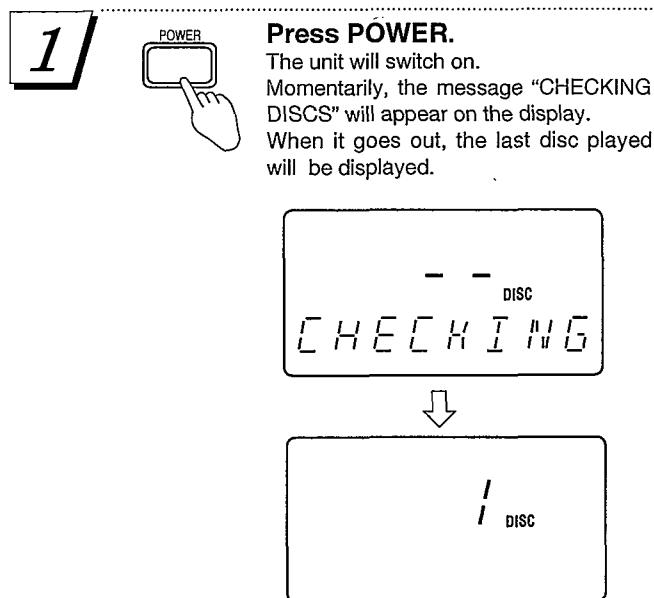
■Basic Operations

Sequential play

The changer plays all the tracks on all the discs in order and stops automatically when the last track on the last disc finishes playing.

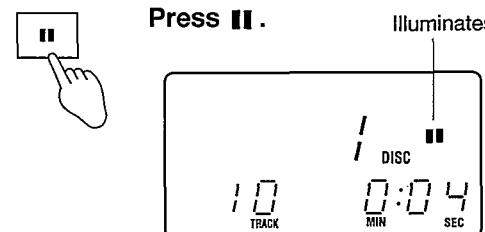


Before starting, load your discs (see p. 7).



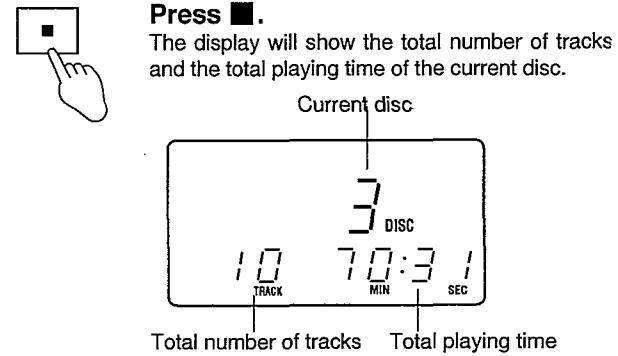
Note
The disc number is the same as the slot number.

To temporarily stop play



Press ▶ to resume play.

To stop play



The total playing time displayed includes the silent sections between tracks. For this reason, it may be a few seconds longer than the playing time indicated on the disc.
When you open the front panel, the total number of tracks and the total playing time go out.

Press ▶ to re-start play.

Note
It takes roughly 3 seconds from the time you press ■ until the disc is returned to the slot.

To directly access a specific disc

Select the disc you want with the numeric buttons.

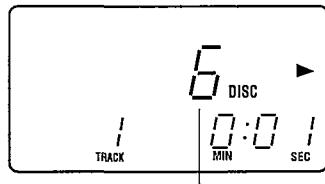
To select a disc from 1 to 9

For example: "6"

DISC → **6**

↓ (Press within 7 seconds.)

Press **▶**.



Disc number

The changer will start playing the selected disc from the first track.

To select a disc from 10 to 110

For example: "109"

DISC → **1** → **0** → **9**

↓ (Press within 7 seconds.)

Press **▶**.

Note

When selecting discs, the ≥ 10 button does not respond to touch.

For your reference

- If you press DISC ENTER instead of **▶** to select a disc, the disc number will be displayed but play will not start automatically.
- When in the stop mode, if you select an empty slot, the message "NO DISC" will appear on the display.
- While a disc is playing, if you select an empty slot, the changer will automatically play the next disc available.
- If you select "0", the changer will switch to the single disc play mode (See the right side of this page.).

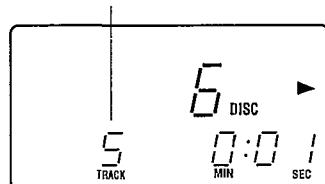
To directly access a specific track

After selecting a disc, select a track with the numeric buttons.

Press the numeric button(s) to select the track.

Play will begin from the selected track.

Track number



To select a track between 1 and 9:

Press the corresponding numeric button.

To select a two-digit track number 10 or higher:

First press ≥ 10, and then press the numbers for the two digits

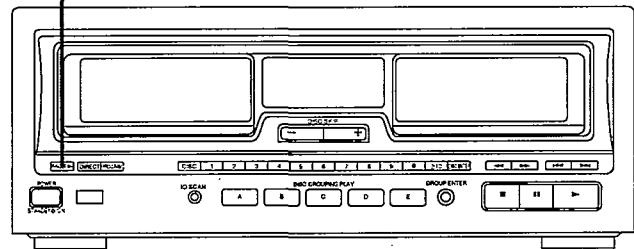
For example; number 20:

Press ≥ 10, then 2, and then 0.

Single Disc Play

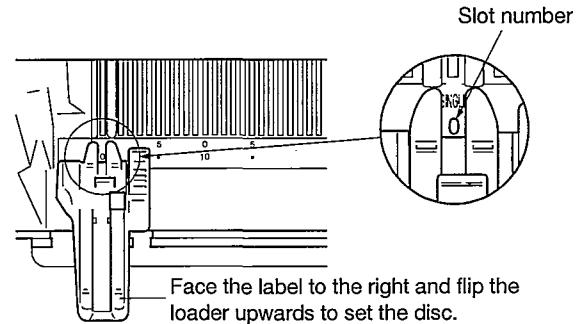
Single disc play is for that special disc of yours, perhaps one you just bought. You see, the changer has a slot for one special disc which you can use even when the rack is full (max. 110 discs).

2 **SINGLE▶**



1

Open the front panel, and set the disc in the slot No. 0.



Slot number
Face the label to the right and flip the loader upwards to set the disc.

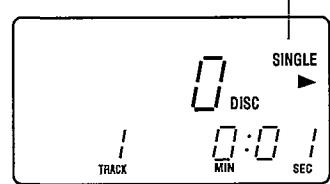
2



Close the front panel and press **SINGLE▶**.

The disc will start playing from the first track.

Illuminates



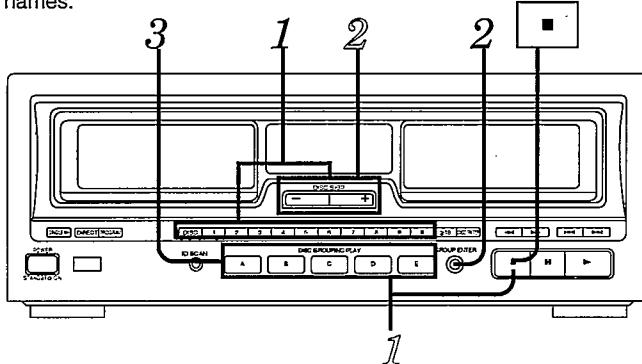
The changer plays all the tracks in order and stops automatically when the last track finishes playing.

To cancel single disc play mode

- Select another disc with the numeric buttons.
- Skip to another disc with DISK SKIP -/+ (See p. 16)
- Select a group. (See p. 10)

■ Disc Grouping Play

Sometimes, you want to block off your CDs into groups. For example, by the type of music, or your favorite CDs, etc. Well, this changer lets you make up to five groups, A through E. Basically, it's like dropping a disc into a box, then playing just discs from that box. What's more, you can name the groups with any of the preset names.



To make groups

- Any single group can hold up to 110 CDs.
- You can enter the same CD into as many of the 5 groups, A through E, as you like.
- You can assign any one of the preset names to a registered group (see step 2 on p. 11). We recommend that you name your groups by the type of discs you put in them.

1

(During sequential play or while it is on stop)

Select a disc.

- **Using the numeric buttons**
To select a disc from 1 to 9
For example: "6"
DISC → 6
(Press within 7 seconds.)
- **To select discs from 10 to 110**
For example: "109"
DISC → 1 → 0 → 9
(Press within 7 seconds.)

Flashing

• **Using DISC SKIP -/+**
Press either DISC SKIP - or + until reaching the disc you want.

Note
You cannot select slot No. 0.

2

Press GROUP ENTER.
If any groups have been registered already, their letters will light up.

Illuminates

Flashing

(Perform step 3)
You have to select a group within 7 seconds from when the indication "ENTER" starts flashing on the display. Unless you do so, the changer will return to the way it was before you pressed GROUP ENTER.

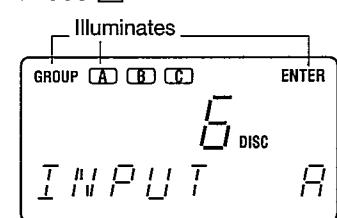
3

A B C D E



Press the DISC GROUPING PLAY button(s) you want.
(This "INPUT" the disc in the group.)

For example: To input disc No. 6 in group A.
Press A.



To enter the same disc into different groups
Repeat steps 2 and 3 selecting the specific groups.

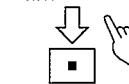
4

Repeat steps 1, 2 and 3 until you have completed all items.

To check what discs are in what groups

1

A B C D E



(During sequential play or while it is on stop)
Press the DISC GROUPING PLAY button you want and then press ■.

2



Press either DISC SKIP - (or +).
Every time you press DISC SKIP, the next disc number in order is displayed.
- : Numbers progress in reverse order.
+ : Numbers progress in regular order.

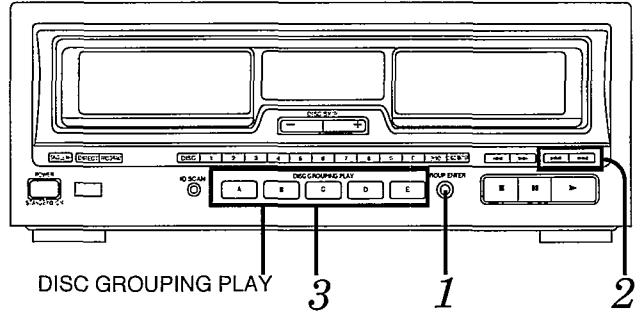
Example



Disc number of disc registered in group A

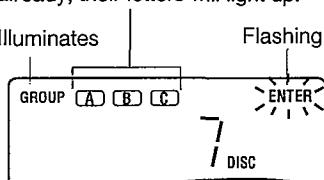
Note

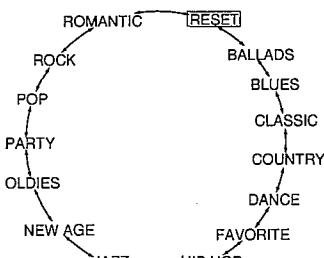
After checking, if you press the button of a group that is lit on the display, the changer reverts back to sequential play but does not automatically start playing the group.

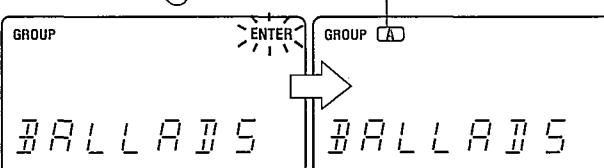


To name groups

You can name your groups. The changer has several preset names to choose from.

1  GROUP ENTER (During sequential play or while it is on stop)
Press GROUP ENTER.
 If any groups have been registered already, their letters will light up.


2  (Press within 7 seconds.)
Select the name you want with \blacktriangleleft and \triangleright .
 Names change in rotation as shown below, every time you press \blacktriangleleft or \triangleright .


3  (Press within 7 seconds.) **Press the DISC GROUPING PLAY button for the group you want to name.**
 For example: To name group A **Press A.**


The above example shows when "BALLADS" has been selected.

4  **Repeat steps 1, 2 and 3 to name other groups.**

To cancel names

Select "RESET" in step 2 and then the name of the group you want to cancel in step 3. Thereafter, the group will appear as "GROUP ... (A,B,C,D or E.)".

To start play

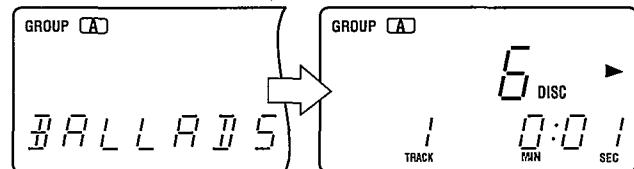
Unless otherwise specified, the changer selects sequential play.

 A B C D E

(During sequential play or while it is on stop)

Press the DISC GROUPING PLAY button of the group you want.

For example: To hear group A
Press A.



Notes

- Unnamed groups will be displayed as "GROUP A, B, C..." and so forth. In the above example, "GROUP A" appears in the place of "BALLADS".
- If you press the group button of a group which has no discs registered in it, the message "NO INPUT" will appear on the display.

To cancel group play

(In the stop mode)

Press the DISC GROUPING PLAY button indicated on the display.

(The group indication on the display will go out.)

For your reference

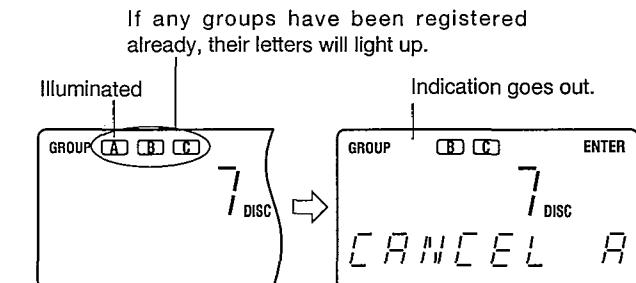
The group contents will remain stored in memory even after the unit is switched off.
 However, if the power cord is unplugged or the power supply is otherwise interrupted for an extended length of time, the contents will be erased from memory.

To cancel discs from groups

 A B C D E

Perform steps 1 and 2 shown on page 10, and then in step 3, press the DISC GROUPING PLAY button(s) you want.

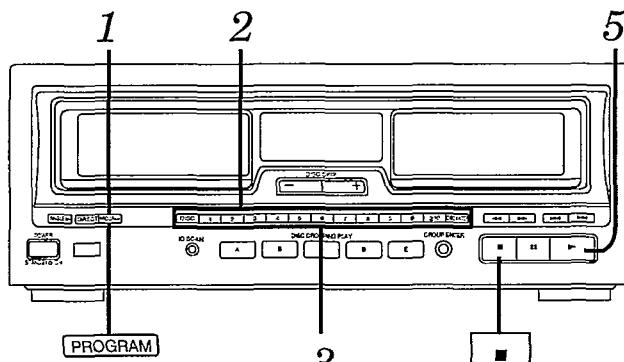
For example: To cancel disc No. 7 from group A.
Press A.



You can cancel a disc from two or more groups at one time, provided it has been entered in each of the groups, of course.
 Press ■ in step 3 on page 10. (In the stop mode)

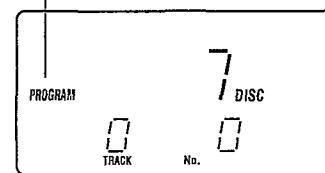
■Program Play

Everyone has his/her favorite tracks. You can program the changer to play them in a specific order. With this changer, you can make one program and fill it with up to 32 selections from any of the discs in the rack.



1 [In the stop mode]
Press **PROGRAM**.

Illuminates

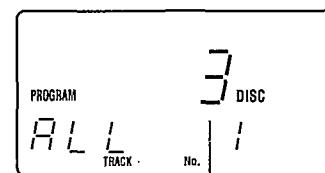


2 Select the disc(s) you want with the numeric buttons.

For example:

To select disc 3.

DISC → **3** → **DISC ENTER**



Specified disc number

The "ALL" indication shows that all the tracks on the disc are selected.

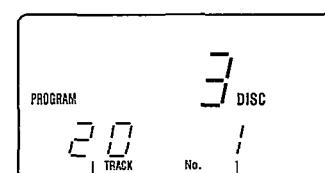
To program by means of disc numbers only, repeat the above operation. (The count will increase by one for each operation.)

You can select slot No. 0.

3 Press the numeric button(s) to specify the track.

For example:

To select track No. 20, press ≥10, then 2, and then 0.



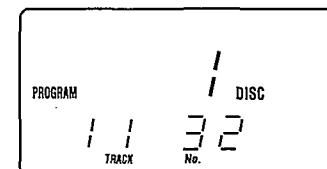
Specified track number

Program order

4

Repeat steps 2 and 3 until you have completed all entries.

If you enter non-existing disc(s) or track(s), the corresponding indicator illuminates and the entry is included in the count. In the play mode, the changer will cancel the non-existing entry.



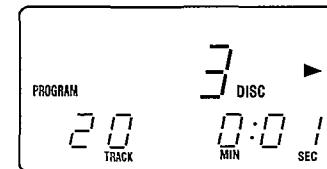
If you attempt a 33rd selection, the "PGM FULL" indication will be displayed.

5

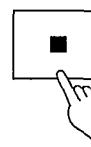


Press **▶** to start play.

To enter additional selections during play, repeat steps 2 and 3.



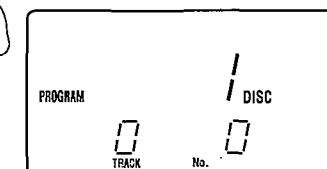
To clear all programmed contents



[In the stop mode]

Press **■**.

The display will look as below.



To quit the program mode



[In the stop mode]

Press **PROGRAM**.

The changer will return to the sequential play mode.

The programmed contents will remain stored in memory until they are cleared, even after the program mode is canceled.

Therefore, after program, it is possible to cancel the program mode and use another play mode and then hear the same program again at a later time.

In addition, if discs are changed, the program will be played using the new discs. If non-existing entries are found at this time, the changer will cancel them.

For your reference

The program will remain stored in memory even after the unit is switched off.

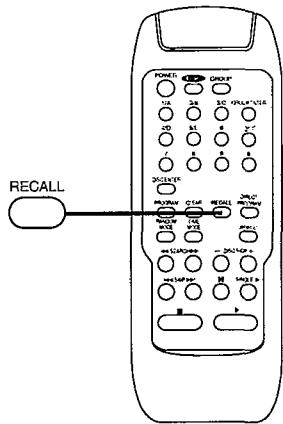
However, if the power cord is unplugged or the power supply is otherwise interrupted for an extended length of time, the contents will be erased from memory.

Special note on recording programs

The changer needs time to change the discs and find the tracks. This time will vary depending on what you put into the program. In any case, the total playing time will be longer than that of the actual tracks.

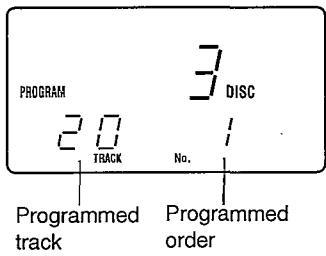
To check programmed contents

(only available from the remote control)



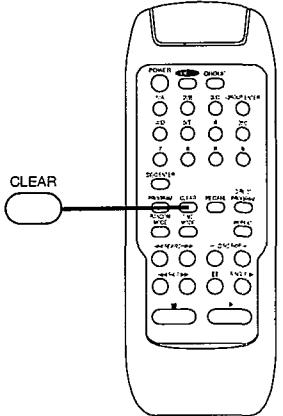
Press RECALL.

Each time you press RECALL, the display shows the programmed disc and track number in the sequence you have entered.



To clear a single item from the program

(only available from the remote control)



(In the stop mode) Press CLEAR.

Each time you press CLEAR, you will cancel the last entry in the order you have entered all selections.

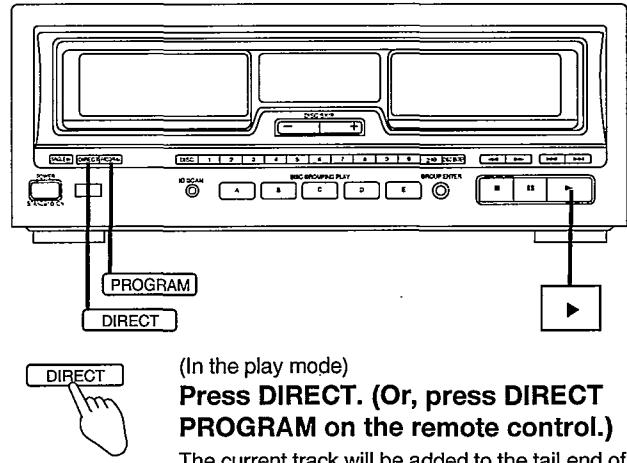


To clear an entry in the middle of the program sequence, press RECALL repeatedly until the display shows the selection to be cleared, and then press CLEAR within three seconds after that.

■Direct Programming

You can add the track in play to your program.

In fact, a good way to build up your program is to listen to tracks and add those you like while they are still being played. It sure makes programming easier if you listen-and-program.

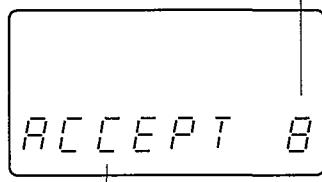


(In the play mode)

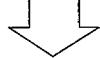
Press DIRECT. (Or, press DIRECT PROGRAM on the remote control.)

The current track will be added to the tail end of the program.

Example Programmed order of the newly added track



Illuminates for about 2 seconds when DIRECT is pressed.



Returns to the original indication.

Note

When you make a program as explained under "Program play" on the left page, and then perform the above procedure without clearing the program first, the selected track is added to the end of the program.

To listen to programmed tracks

(In the stop mode)

Press PROGRAM and check "PROGRAM" appears on the display, then press ▶.

The program will start from the first track.

To clear all programmed contents.

See p. 12.

To check programmed contents.

See the left side of the page.

To clear a single item from the program.

See the left side of the page.

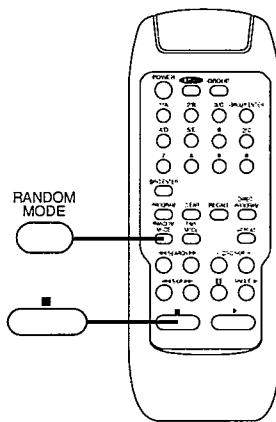
Notes

- You cannot add to the program if already full, that is, if already 32 selections have been programmed. If you press DIRECT in such case, the message "PGM FULL" will be displayed. Therefore, direct programming is possible only when 31 or less tracks have been programmed.
- During program play, the DIRECT button does not respond to touch.

■ Random Play

(Only available from the remote control)

The tracks will be played in random order. There are two types of random play as described below.



One disc random play

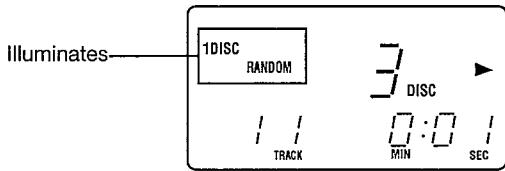
The changer will play all tracks on the current disc in random order. Then, it will choose a new disc randomly, excluding the discs already played, and play all tracks on that disc in random order.



[In the stop or play mode]

Press RANDOM MODE so that the "1 DISC RANDOM" indicator illuminates.

Each time the button is pressed, the display will change in the following order: 1 DISC RANDOM → FULL RANDOM → (off).

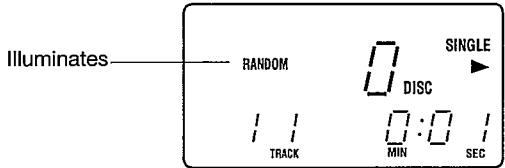


The changer will stop automatically when all the tracks on all discs have been played once.

In the single disc play mode

Only tracks from the disc in slot No.0 are played, though played in random order.

Every time you press RANDOM MODE, the display switches between OFF and "RANDOM".

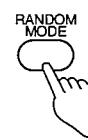


In the disc grouping play mode.

Only tracks from one of the discs, selected at randomly from all discs in the group by the changer, are played. The tracks too are played in random order.

Full random play

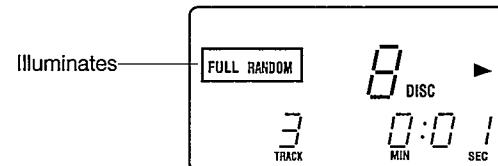
The changer will play tracks from all of the discs at random. However, it may choose the same track twice. In a single pass, the changer can play up to 250 tracks.



[In the stop or play mode]

Press RANDOM MODE so that the "FULL RANDOM" indicator illuminates.

Each time the button is pressed, the display will change in the following order: 1 DISC RANDOM → FULL RANDOM → (off).



Once the changer has played the maximum 250 tracks, it stops automatically.

Note

The disc in slot No.0 will not be played.

In the disc grouping play mode.

The changer selects tracks randomly from all discs in the group but not from other groups.

To cancel random play mode



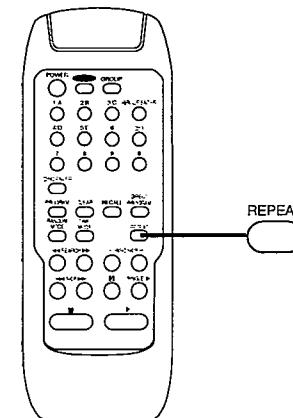
Press ■.

The "1 DISC (or FULL) RANDOM" indicator will go out.

■ Repeat Function

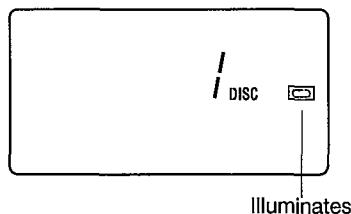
(Only available from the remote control.)

Play will continue endlessly in accordance with the specific play mode selected.





[Before or during play]
Press REPEAT.



In the sequential play mode

All tracks of all discs will be played repeatedly.

In the single disc play mode

The changer will repeatedly play all tracks on the disc in slot No. 0.

In the program play mode

The changer plays only the programmed selections in the programmed sequence repeatedly.

In the one disc random play mode

When the changer has played all the tracks on the current disc in random order. Then, it will choose a new disc randomly, excluding the discs already played, and play continuously. The sequence differs each time.

In the full random play mode

Once the changer has played the maximum 250 tracks, it will select a new random sequence and will continue playing.

To repeat the same track over and over

To repeat the programmed tracks

1. Select the desired track using the program play procedure on page 12.
2. Press REPEAT to display "DISC".
3. Press ▶.

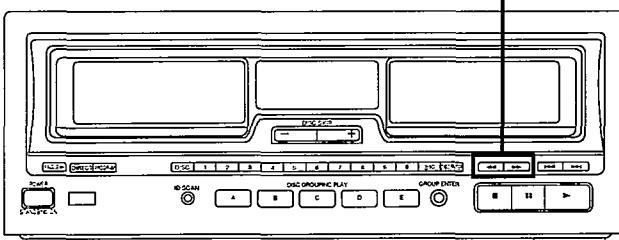
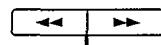
To cancel repeat mode



Press REPEAT again.
The "DISC" indicator will go out.

■Search Function

You can search rapidly forward or backward on the disc for specific sections.



[In the play or pause mode]
Press and hold < or >.



< : You can search backward.
> : You can search forward.

Release the button when you reach the desired point.
The changer will return to the previous mode (play or pause).

In the program/random play mode

You can search forward or backward only within the current track.

In the single disc play mode

You can search forward or backward only within the current disc.

In the sequential/disc grouping play mode

When the changer finishes searching the current disc, it starts searching the next one.

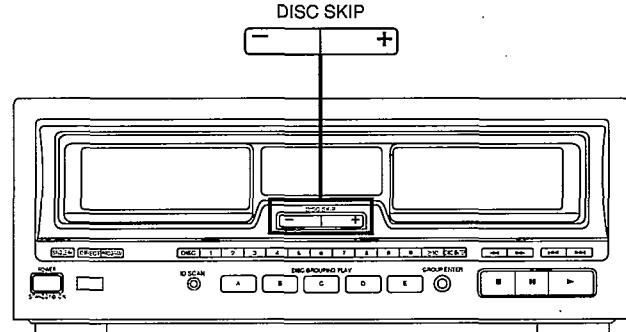
For your reference

The search function will begin slowly, and then, if the button is held down for longer than 3 seconds, it will change to high-speed search.

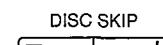
■Skip Function

To skip discs

Use this function to skip discs when selecting a disc which you wish to listen to.



You can use this function in stop, sequential play, one disc random play and disc grouping play modes.

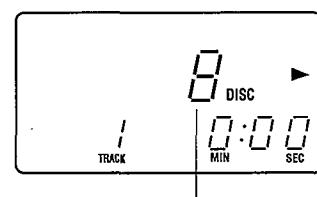


Press either DISC SKIP (- or +) until you reach the desired disc.

-: Skips backwards to the preceding disc.
+: Skips forward to next disc.

Note:

The changer skips over empty slots.



Disc number at the playing position

Notes

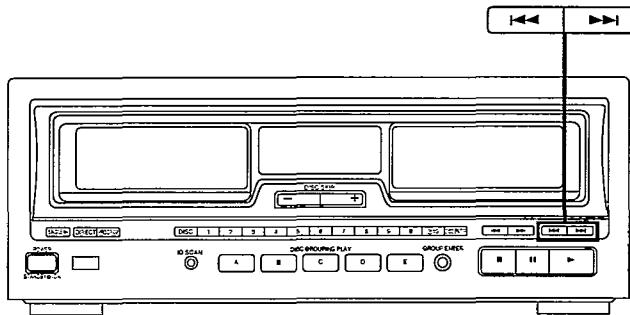
- This function does not work in the full disc random play mode or during program play.
- If you attempt to use this function during single disc play, the changer will cancel single disc play.

For your reference

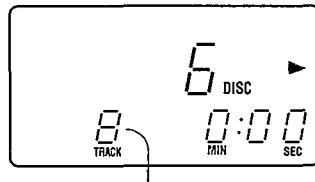
If you press the DISC SKIP buttons intermittently, the slot Nos change slowly. If you hold the buttons down, the changer fastskips through numbers.

To skip tracks

Use this function to skip tracks when selecting a track which you wish to listen to.



Press either **◀◀** or **▶▶** until you reach the desired track.
◀◀ : You can skip backward.
▶▶ : You can skip forward.



Track number at the playing position

In the sequential/single disc/disc grouping/program play mode

You can skip only within the current disc.

In the program play mode, you can skip from one track to another in the programmed sequence.

◀◀ : You can skip to the beginning of the track being played. If you press this button again quickly, you can skip to the beginning of the previous track.
 Remember that in a backward skip, the current track is included in the count.

▶▶ : You can skip as many tracks as the number of times you press the button.

In the random play mode

◀◀ : You can skip to the beginning of the current track.

▶▶ : You can skip to the beginning of a next track in the random order the changer has selected.

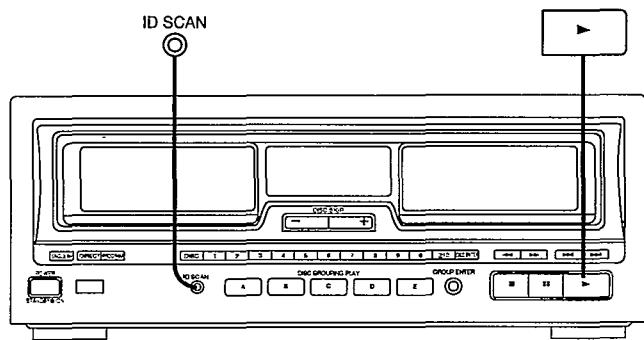
You can also skip tracks when the changer is in the stop mode (except during random play) or pause mode.

ID Scan Function

This function is convenient to use when searching for a desired track.

The function will search from the beginning of the track for a loud section, and will play 10 seconds of the track centering around that point.

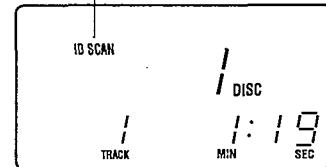
The order of scanning is the same as for play mode.



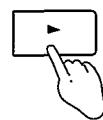
Press ID SCAN.
 ID scan will start.



Illuminates



When the desired track has been found:



Press ▶.

The changer will play the track from the beginning.

To cancel ID scan

Press ID SCAN while this function is in operation.
 The "ID" indicator will go out.

The changer will continue to play from the track being played.

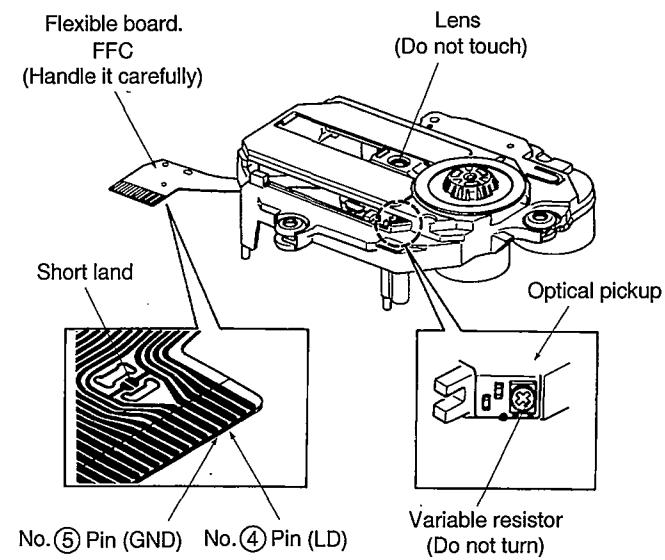
■ Handling Precautions for Traverse Deck

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. The short land between the No. ④ (LD) and No. ⑤ (GND) pins on the flexible board (FFC) is shorted with a solder build-up to prevent damage to the laser diode.
To connect to the PC board, be sure to open by removing the solder build-up, and finish the work quickly.
3. Take care not to apply excessive stress to the flexible board (FFC).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.



● Grounding for electrostatic breakdown prevention

1. Human body grounding

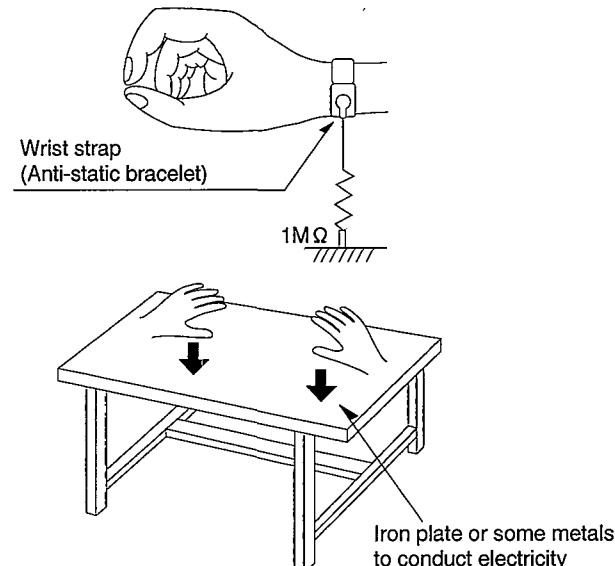
Use the anti-static wrist strap to discharge the static electricity from your body.

2. Work table grounding

Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.

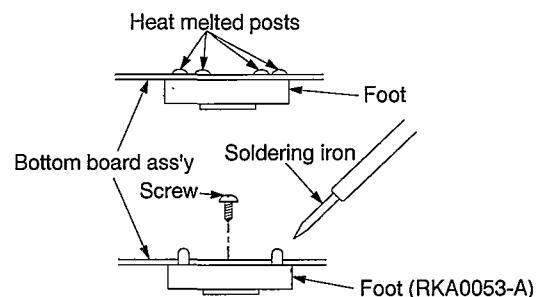
Caution:

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).



■ Replacement of the Foot

1. Remove the 4 heat melted posts on the Bottom board ass'y with a pair of nippers or similar tool.
2. To replace the foot (RKA0053-A) on the Bottom board ass'y melt the 4 posts with a soldering iron or install it with a screw (XTB3+6J).



■ Self-Diagnosis Mode

Self-diagnosis mode list

Mode	Procedure	Content	Use	Page
FL display mode	<p>Turn ON power button with no disc loaded.</p> <p>↓</p> <p>Press the following 3 buttons simultaneously: PLAY(▶),STOP(■),TRACK SKIP(◀▶)</p> <p>↓</p> <p>FL all unlit</p> <p>↓</p> <p>Press DISC button</p> <p>↓</p> <p>Press specified button</p> <p>↓</p> <p>FL all lit</p>	FL all unlit / all lit	Enables checking of whether FL and each SW are okay or not, before set disassembly.	P19
Mechanical mode	<p>Turn ON power button with no disc loaded.</p> <p>↓</p> <p>Hold down the STOP (■) button for at least 2 seconds.</p> <p>↓</p> <p>Simultaneously press the TRACK SKIP (▶▶) button for at least 2 seconds, while holding down the STOP (■) button.</p> <p>↓</p> <p>C (Appears on display)</p>	<p>Displays defective points while performing a series of mechanism operations.</p> <p>C F-15: PU rest SW etc. C F-27: Slide drive system C F-28 / C F-29: Loading system</p> <p>-----</p> <p>F26: Main IC defect (Automatically displayed when power is turned ON, regardless of mode setting.)</p>	Enables fault to be diagnosed, before set disassembly.	P20 P22
Test mode	<p>Turn OFF power button once, with no disc loaded.</p> <p>↓</p> <p>Turn ON power while simultaneously holding down the following button: PLAY(▶), STOP(■)</p> <p>↓</p> <p>TEST MODE (Appears on display)</p> <p>↓</p> <p>Press A button</p> <p>↓</p> <p>Press B button</p> <p>↓</p> <p>Mount disc in single (slot 0) position.</p> <p>↓</p> <p>Press C button</p>	<p>A button: Results in independent operation of traverse deck.</p> <p>B button: Repeats loading / unloading operation.</p> <p>C button: Automatically repeats loading / unloading / slide operation.</p>	Use to check correct operation after disassembly. Use to check correct operation after repair.	P23 P24 P25
Servo adjustment mode	<p>After mounting disc in slot, turn OFF power button once.</p> <p>↓</p> <p>Turn ON power while simultaneously pressing the following three buttons: PLAY(▶),PAUSE(■),STOP(■)</p> <p>↓</p> <p>Press the PLAY(▶) button.</p>	<p>Displays servo circuit status on FL.</p> <p>F T L</p>	Enables checking of servo status. * F = Focus servo * T = Tracking servo * L = CLV servo	P26 P27

Before set disassembly

Before set disassembly, perform **Self-diagnosis** (**FL display mode** and **Mechanical mode**) and **CD basic operation checking**, and develope an idea of the cause of the problem.

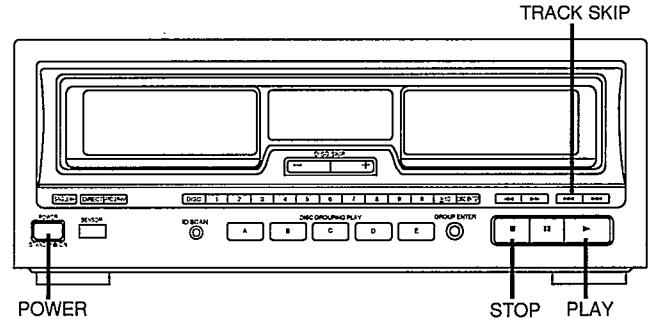
Self-diagnosis **FL display mode**

FL all unlit test

Press **POWER** with no disc loaded.

Press **STOP(■)**, **PLAY(▶)**, **TRACK SKIP(◀▶)** simultaneously.

FL is all unlit.

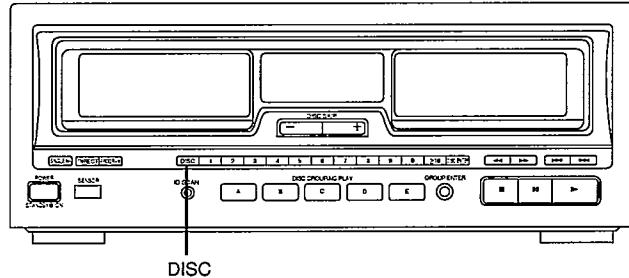
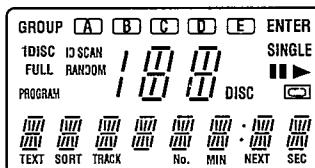


Previous display remains unchanged:
 * Check switches (■, ▶, ▵).
 Characters remain displayed:
 * Check the grid of the characters.

FL all lit test

Press **DISC** (FL remains all unlit)

Press all buttons except **STOP(■)**, **PAUSE(■■)**, **PLAY(▶)**, **SEARCH(◀▶)**, **DISC**, **DISC ENTER** and **POWER**.



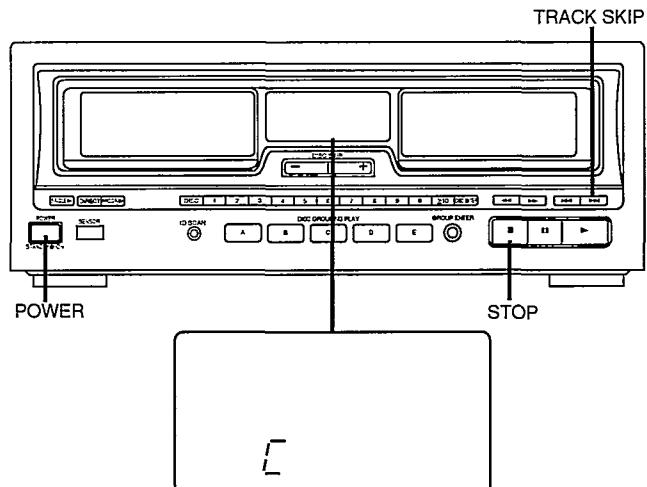
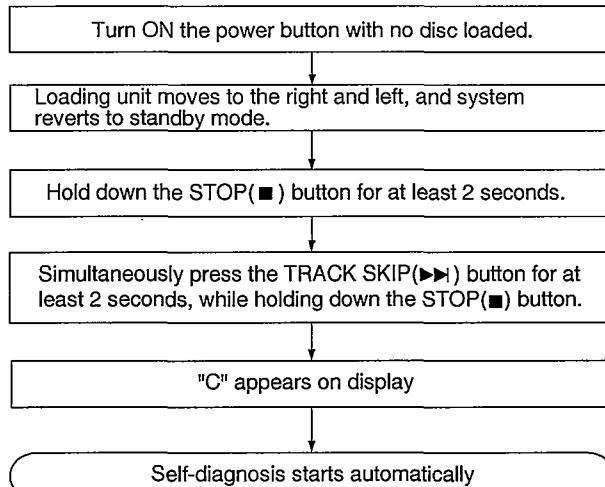
Result	Handling
All lit	Normal (Pressed button and FL normal)
All remain unlit	Check all buttons pressed above
Missing letters	Check grid of missing letters

Cancellation

- Press **STOP(■)** or turn OFF/ON power button.

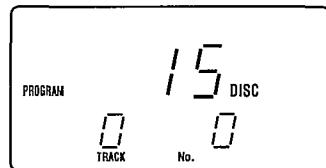
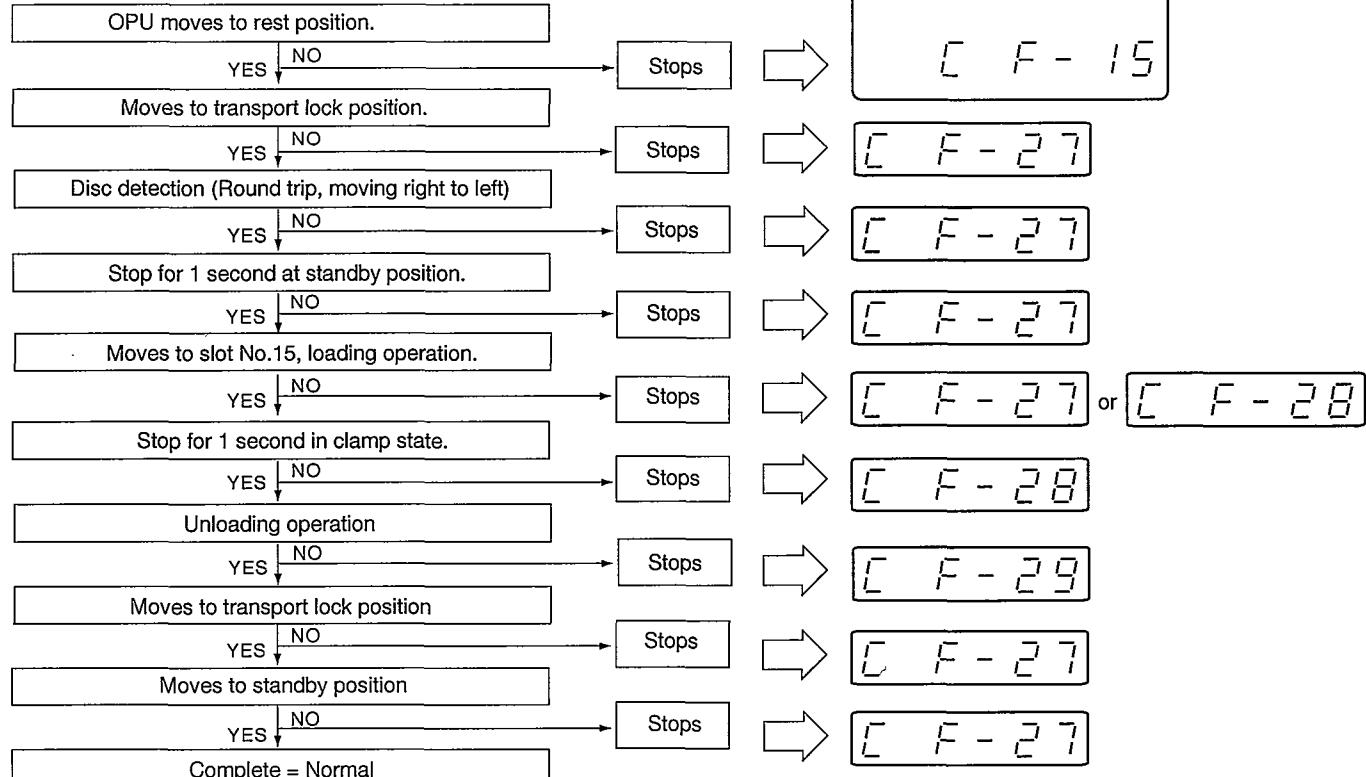
Self-diagnosis Mechanical mode

Setting



Loading unit operation and display

(Display)



Cancellation

- Turn power button OFF/ON.

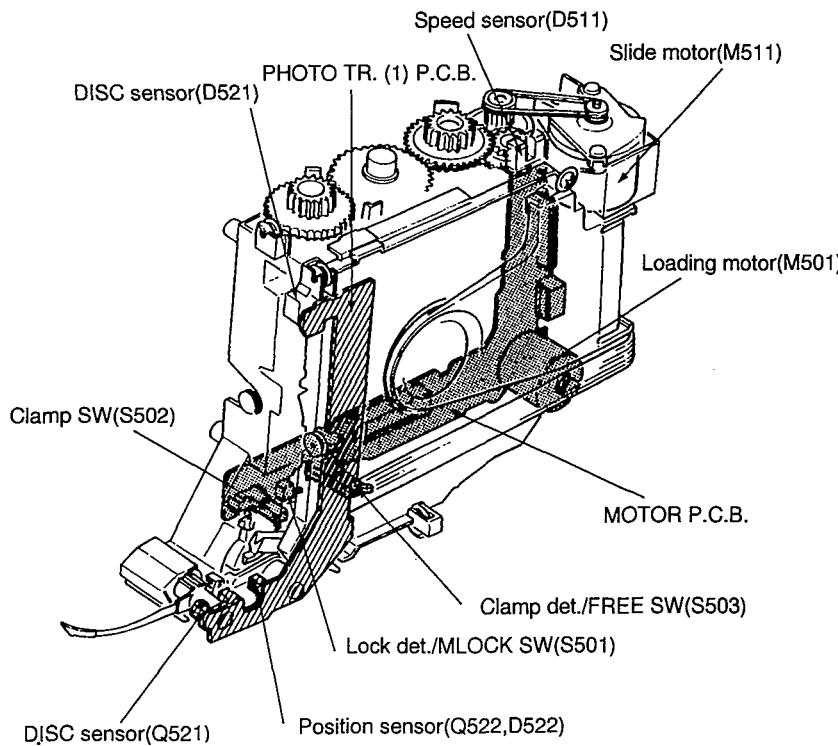
Self-diagnosis **Mechanical mode****Display and handling**

Display	Cause	Handling
F-15	The symptom is slow start-up of the CD when power is turned ON. The cause is defective contact of the OPU rest switch.	Abnormal rest detection switch (S701).
F-26 (Automatic display)	Symptom is that the unit does not operate when the play button is pressed, or the CD is skipping etc. The probable cause is defective system control IC. Lock det./MLOCK SW (S501) does not go ON/OFF in initial operation.	* Check system control (IC401) and servo IC (IC702). * Check each IC and the servo circuit. * Check Lock det./MLOCK SW (S501).
F-27	Sensor abnormal. Load on slide drive system is too great. Loading unit does not move to the right and left. Slide motor malfunction.	* Check slide motor (M511). * Check position sensor (Q522, D522) and speed sensor (D511). * Check gears of slide drive system. (Jammed by foreign matter or great teeth missing.)
F-28	Clamp det./FREE SW does not go OFF, and Clamp det.SW (S502) does not go ON within 5 seconds during loading.	* Check Clamp det./FREE SW (S503) and Clamp SW (S502). * Check loading motor (M501). * Check loading drive system. (Riding-up, shifting or foreign matter jamming of levers, missing gear teeth etc.)
F-29	Clamp det./FREE SW (S503) and clamp SW do not go ON within 5 seconds during unloading.	

<Method for returning from error display to normal display>

* C F-26: When repair is complete, the error display disappears automatically.

* C F-15/ 27/ 28/ 29: Power SW ON/ OFF.



Ref. No.	Part name (Part number)
IC401	System control IC (UPD78044A172)
IC702	Servo processor IC (MN662741RPA)
S501	Lock det./MLOCK SW (RSP1A017-A)
S502	Clamp det. SW (RSH1A005)
S503	Clamp det./FREE SW (RSH1A005)
S701	Rest detection SW (RSM0006-P)
Q521	Disc sensor (PT4810F)
Q522	Position sensor (PT480F)
D511	Speed sensor (RSQGP1S53V)
D521	Disc sensor (LN66S)
D522	Position sensor (GL480V)
M501	Loading motor (RFKPLMC50PAK)
M511	Slide motor (RFKPLMC50PBK)

Check of basic CD operation

1

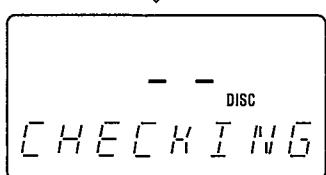
[With power supply OFF]

Place one disc in stocker. For example, place a disc in slot No.30.

2

Press power

[CHECKING DISCS] scrolls across the display, and the number of the slot containing the disc is displayed.

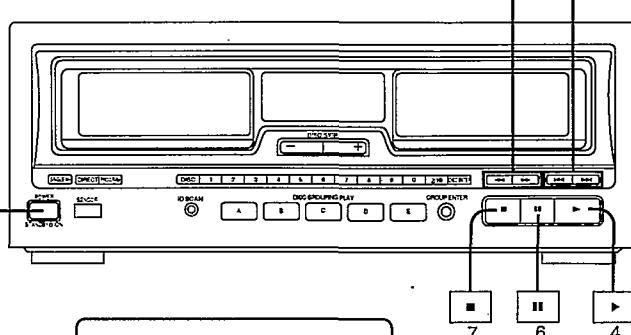


3

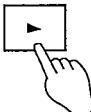


Press either (◀ or ▶) until you reach the desired track.
 ▶ : You can skip backward.
 ▶ : You can skip forward.

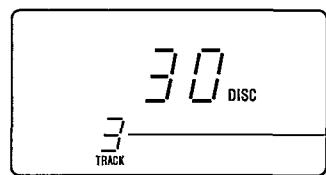
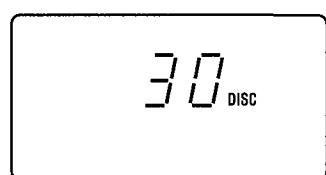
2 POWER



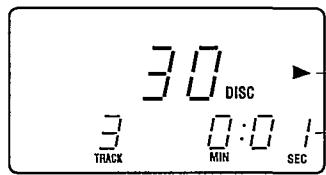
4



Press PLAY (▶).



Track number at the playing position.



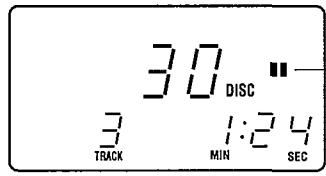
Play indicator

Elapsed play time

5

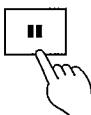


[In the play or pause mode]
 Press and hold ▲ or ▼.
 ▲ : you can search backward.
 ▼ : You can search forward.



Illuminates

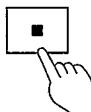
6



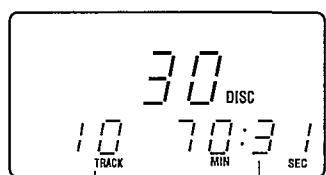
Press PAUSE (■).



7



Press STOP (■).



Total number of tracks Total playing time

Result	Handling
No abnormalities in any operation	In accordance with the buttons operated in Self-diagnosis: FL display mode, all operation buttons (32 buttons) except the DISC ENTER button are normal. Perform PROGRAM and other operation.
Fails to play or play performance is poor.	Perform servo adjustment mode (p26, 27).
Failure of operation other than play. (Example) Does not skip tracks.	Check between button which does not work and servo module. Check for FFC catching of the OPU. Check for bending of the traverse deck worm gear.

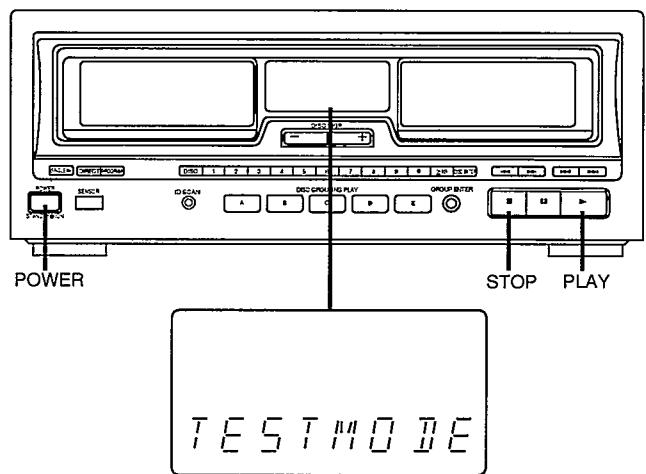
Self-diagnosis Test mode A

Setting

Turn OFF power button with no disc loaded.

Turn ON power button while simultaneously pressing PLAY(▶) button and STOP (■) button.

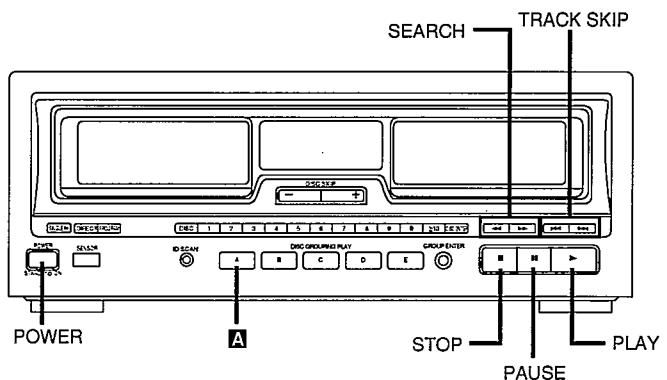
"TEST MODE" appears on the display.



To independently operate the traverse deck,

Press the **A** button on the operation panel.

The following buttons now work: PLAY (▶), PAUSE (■), STOP (■), SEARCH (◀, ▶) and TRACK SKIP (◀, ▶).



Cancellation

Turn the power button OFF/ON

In case of a panel block malfunction

With this equipment, the traverse deck can be operated independently even if the panel block malfunctions.

Connect TEST POINT 1 and the 5V line with lead wire.

Plug into the outlet.

Setting complete

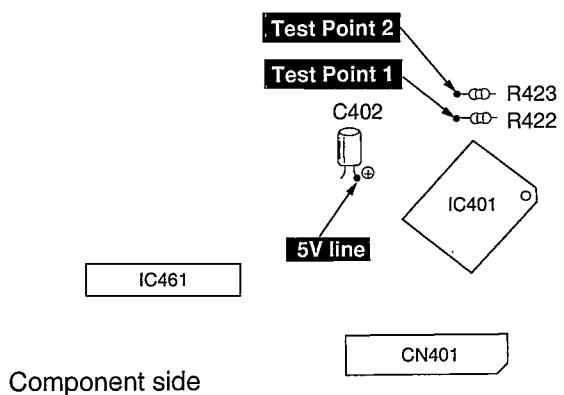
Connect TEST POINT 2 and the 5V line with lead wire.

PLAY operation starts.

Remove the lead wire from TEST POINT 2 and the 5V line

STOP state.

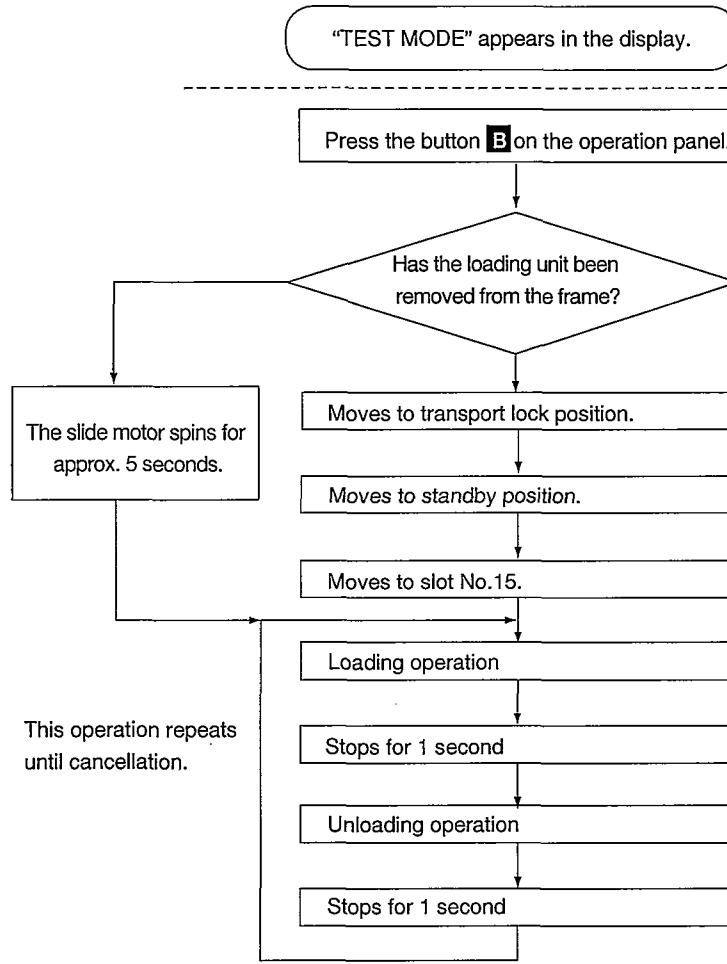
MAIN P.C.B.



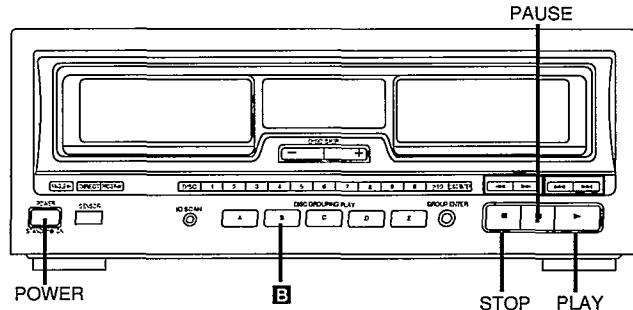
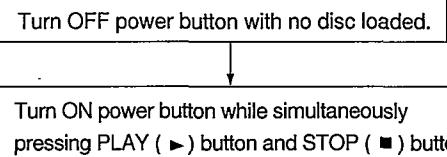
* To cancel, remove all lead wires.

Self-diagnosis Test mode B

To perform load and unload operations at the loading unit,



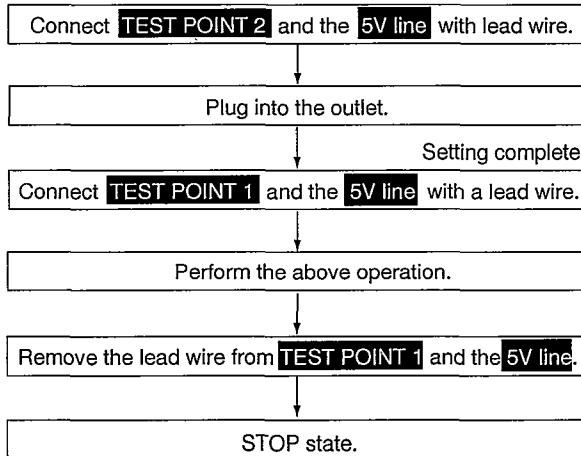
Setting the “TEST MODE”



In case of a panel block malfunction

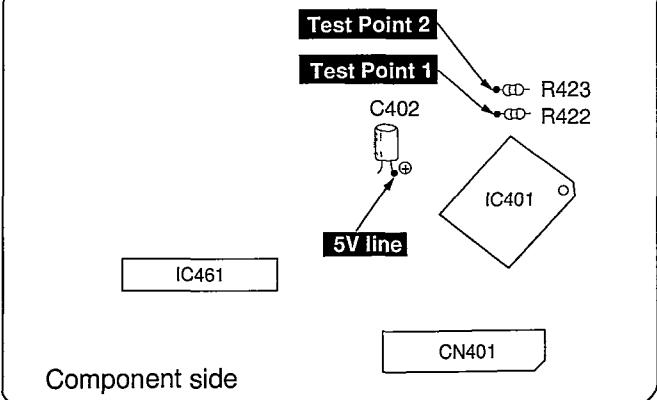
With this equipment, the traverse can be operated independently even if the panel block malfunctions.

• TEST POINT location diagram



* To cancel, remove all lead wires.

MAIN P.C.B.



Component side

Self-diagnosis **Test mode** **C**

To perform linked operation of the loading unit,

Setting the “TEST MODE”

Turn OFF power button with no disc loaded.

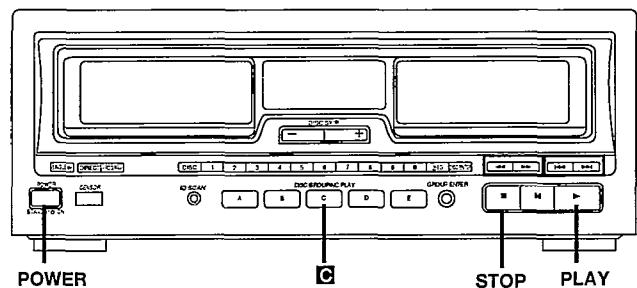
“TEST MODE” appears in the display.

Turn ON power button while simultaneously pressing PLAY (▶) button and STOP (■) button.

Load disc at single (slot No.0) position.

Press button **C** on the operation panel.

The following automatic operation begins.



Starts the play the disc at slot No. 0 for a second, then stops the play.

Moves one to the right (slot No.1).

Unloads the disc to slot No.1.

Loads the disc and plays for a second and stops.

Moves one to the right (slot No.2)

The same operation as above until slot No.110.

Moves one to the left (slot No.109).

The same operation as above until slot No.0.

Continue

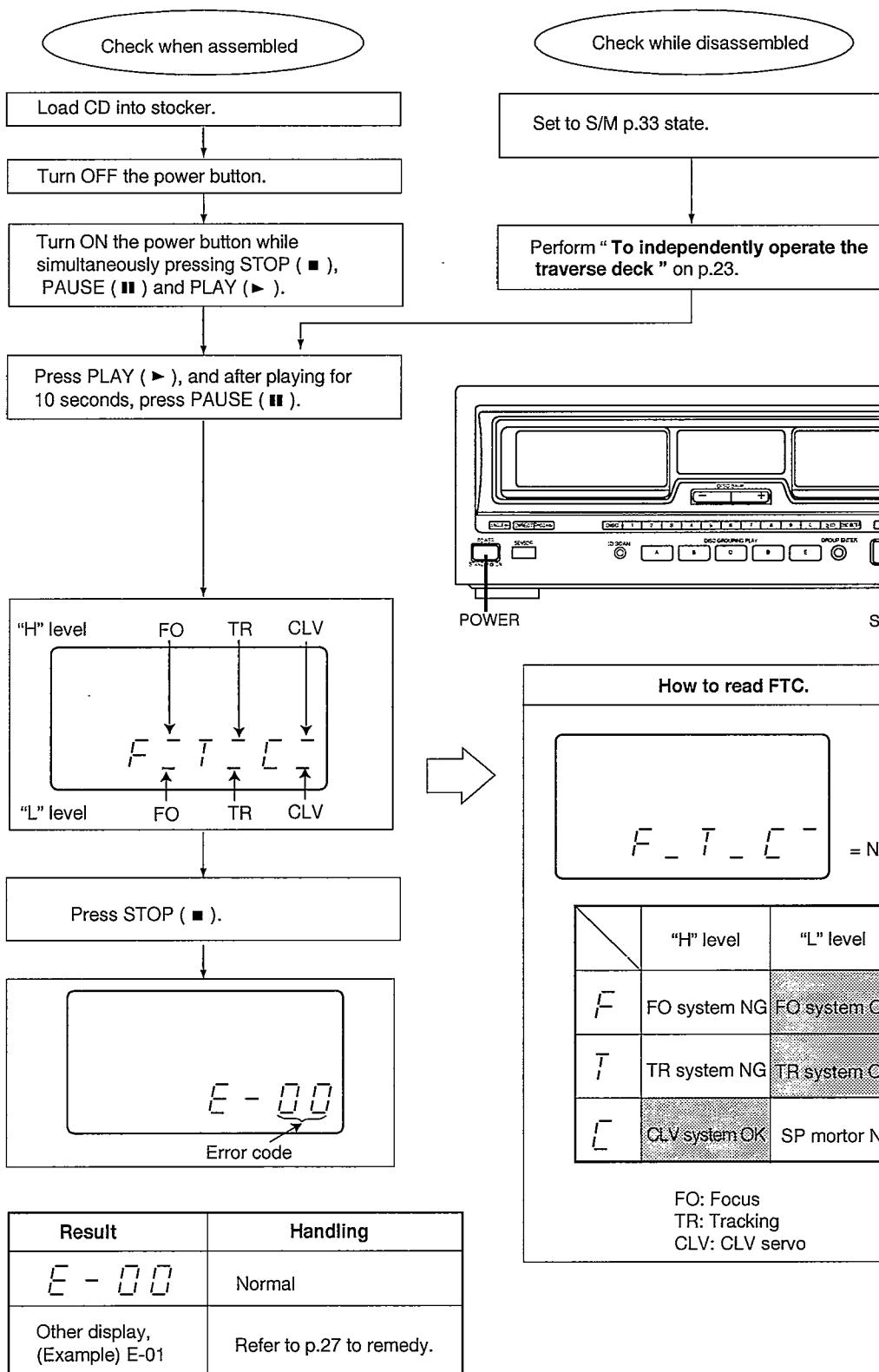
Cancellation

* Turn power button OFF/ON.

Self-diagnosis Servo adjustment mode

This function shows the operating status of the servo system circuits (focus, tracking, CLV) on the FL display.

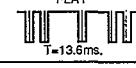
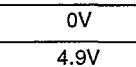
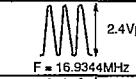
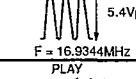
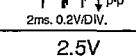
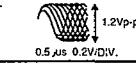
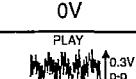
The results of automatic adjustment of the servo circuit are also displayed, using error codes.



● Error code based on troubleshooting

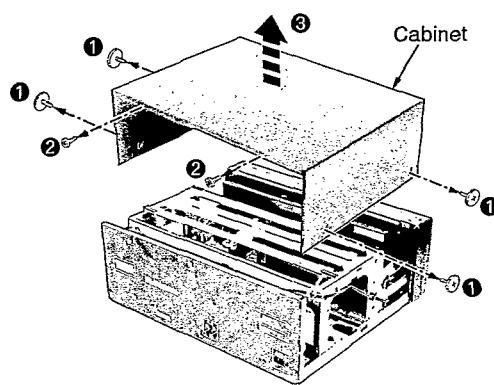
※ The unit is satisfactory if the error code is **E - 00** or **E - 02**

※ Before testing, check that the test disc is free of scratches and optical pickup is clean.

FL error code display	Symptom	Probable cause	Signal to check		Normal voltage and waveform values	
			Signal name	Location	PLAY	STOP
E - 01	Focus and tracking offset adjustments not completed in the specified time period.	1. Clocks X1 and X2, power supply V _{dd} and reset/RST, all on IC702. 2. MDATA, MCLK, MLD and SENSE signal to/from mechanism controller.	MDATA	IC702 ⑥ pin		4.9V
			MCLK	IC702 ⑦ pin		4.8V
			MLD	IC702 ⑨ pin		4.9V
			SENSE	IC702 ⑩ pin	0V	0V
			/RST	IC702 ⑯ pin	4.9V	4.9V
			X1	IC702 ⑮ pin		2.4Vp-p F = 16.9344MHz
			X2	IC702 ⑯ pin		5.4Vp-p F = 16.9344MHz
E - 03 E - 05 E - 07 E - 09 E - 0B E - 0D E - 0F	Disc play unstable.	1. Scratches or contaminants on disc surface. 2. Focus and tracking servo circuits (check waveforms, voltages, and part values.) 3. Spindle driver circuit. 4. Optical pickup.	FE	IC702 ⑩ pin		2.5V
			TE	IC702 ⑪ pin		2.5V
			FOD	IC702 ⑩ pin	2.5V	2.5V
			TRD	IC702 ⑪ pin	2.5V	2.5V
			KICK	IC702 ⑫ pin	2.5V	2.5V
			/FLOCK	IC702 ⑬ pin	0V	4.9V
			/RF DET	IC702 ⑭ pin	0V	4.9V
			RF	TJ701		1.2Vp-p 0.5Hz 0.2V/DIV.
			STAT	IC702 ⑮ pin	1.3V	0V
			FBAL	IC702 ⑯ pin	2.5 ± 1.25V	2.5 ± 1.25V
E - 04 E - 06 E - 0C E - 0E	Best "Eye" (PD Balance) adjustment not completed in the specified time period.	1. Scratches or contaminants on disc surface. 2. Focus and Tracking servo circuit (check waveforms, voltages, and part values.) 3. Optical pickup.	RF	TJ701		1.2Vp-p 0.5Hz 0.2V/DIV.
			FE	IC702 ⑩ pin		0.3V 2ms. 0.1V/DIV.
			/TLOCK	IC702 ⑪ pin	0.1V	0V
			OFT	IC702 ⑫ pin	0V	0V
			FE	IC702 ⑩ pin		0.3V 2ms. 0.1V/DIV.
E - 08 E - 0A	Focus or Tracking gain adjustment not completed in the specified time period.	1. Scratches or contaminants on disc surface. 2. Focus and Tracking servo circuit (check waveforms, voltages, and part values.) 3. Optical pickup.	TE	IC702 ⑪ pin		0.5V 2ms. 0.2V/DIV.
			/TLOCK	IC702 ⑫ pin	0.1V	0V
			OFT	IC702 ⑬ pin	0V	0V

Disassembly/Operation Checks/Reassembly Procedures

■ COMMON · · · · · ITEMS FOR EACH PROCEDURE



①, ② Remove the 6 screws.

③ Remove the cabinet.

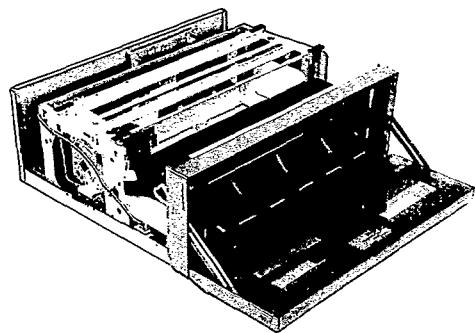
① (Black)
ϕ 3 × 10mm② (Black)
ϕ 3 × 8mm

※ The numbers reversed in white indicate the order of procedures.

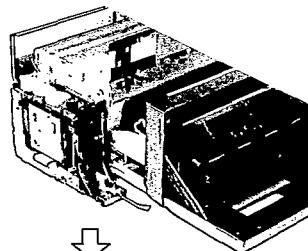
※ The screw illustrations are equivalent to actual size.

■ PRIOR TO THE OPERATION CHECKS

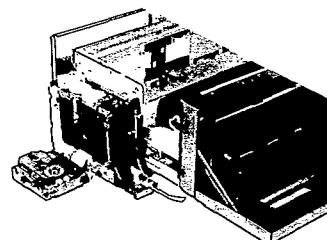
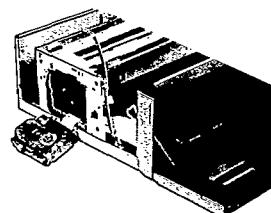
The following DISASSEMBLY/OPERATION CHECKS/REASSEMBLY procedures consist of 3 main items.
Follow the appropriate procedures to the failed block.



- Each block are described in order to the followings. **DISASSEMBLY**
→ **OPERATION CHECK**
→ **REASSEMBLY**

Act.1 → **Loading unit** (Refer to pages 30~37)

Traverse deck separation (Refer to pages 38~41)

Act.2 → **Traverse deck** (Refer to pages 42~45)Act.3 → **Front panel** (Refer to page 46)→ **Main P.C.B.** (Refer to page 47)

■ Repair Guide

Removal for loading unit

(☞ Refer to pages 30~37)

Traverse deck separation

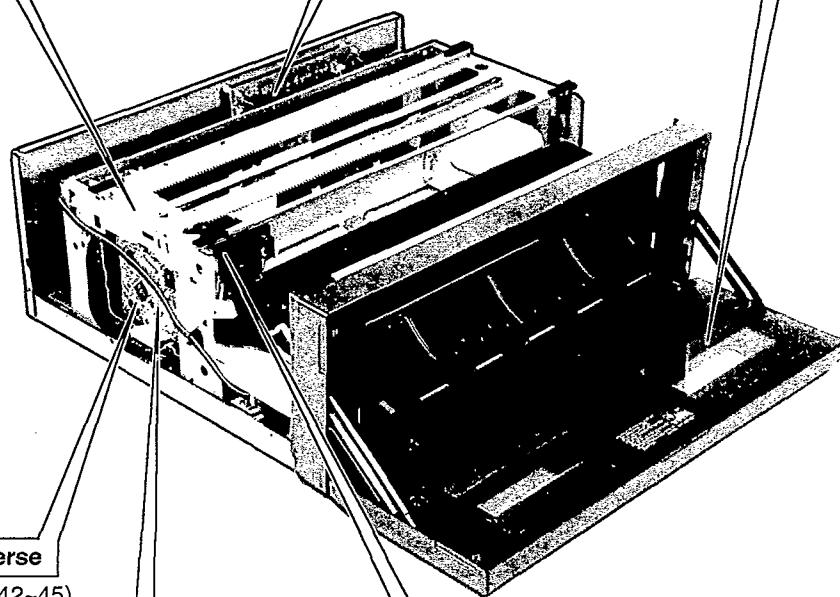
(☞ Refer to pages 38~41)

Removal for main P.C.B.

(☞ Refer to page 47)

Removal for front panel

(☞ Refer to page 46)



Removal for traverse

(☞ Refer to pages 42~45)

Servo module diagnosis

- Mechanical mode setting (☞ Refer to pages 20~22)
- Servo adjustment mode (☞ Refer to pages 26,27)

Operation checks for loading

- Mechanical mode setting (☞ Refer to pages 20~22)
- Servo adjustment mode (☞ Refer to pages 26,27)

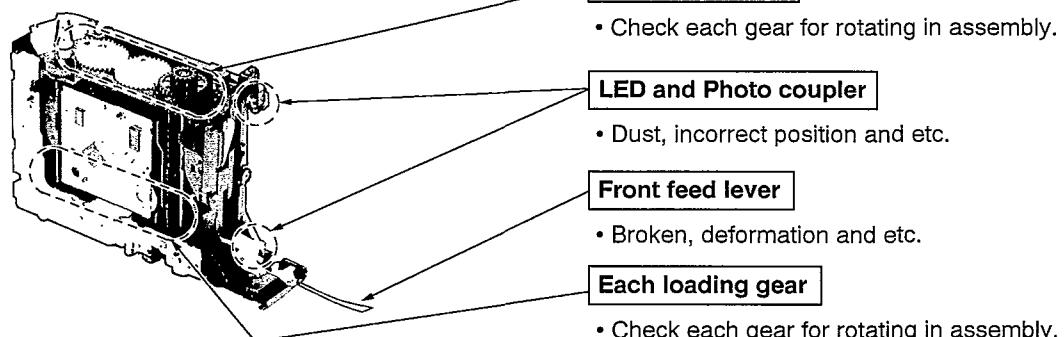
Precaution

- Handling of the loading unit (☞ Refer to pages 30)

Precaution

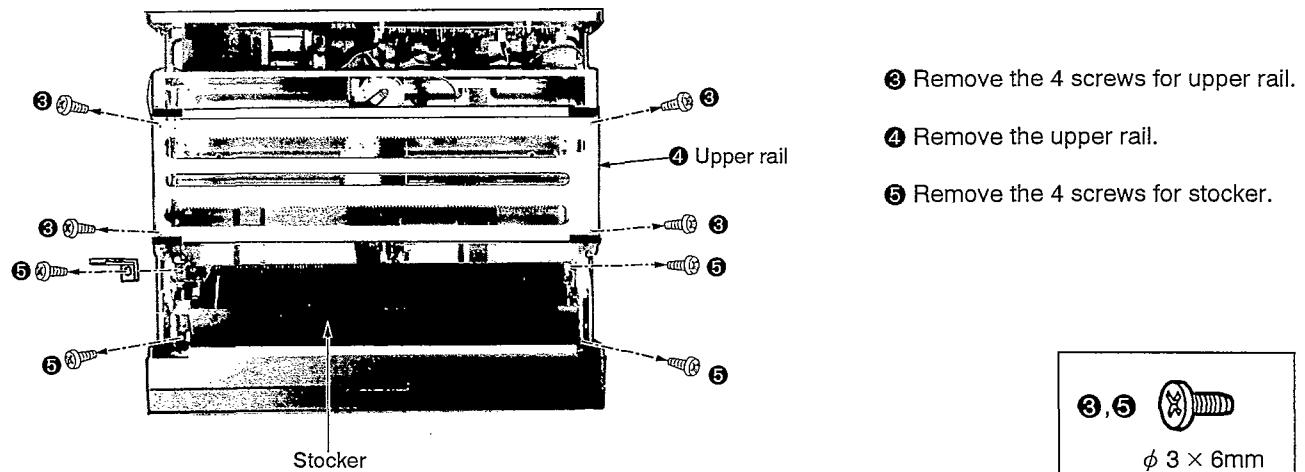
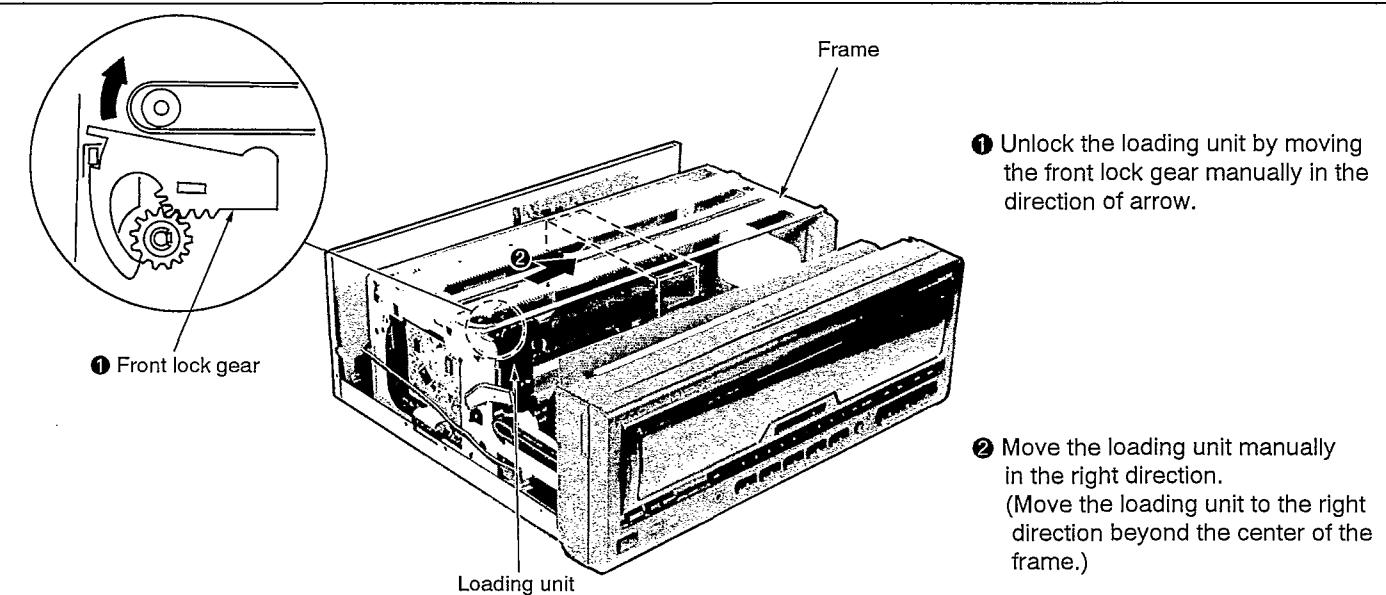
■ Handling of the loading unit

- During the loading unit disassembly/operation checks/reassembly, handle the following parts carefully .

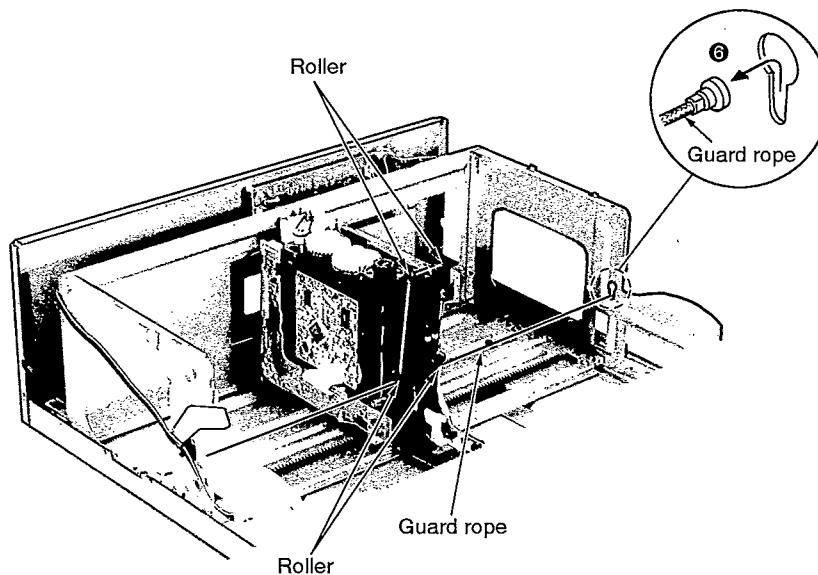


Act.1 Loading unit Disassembly

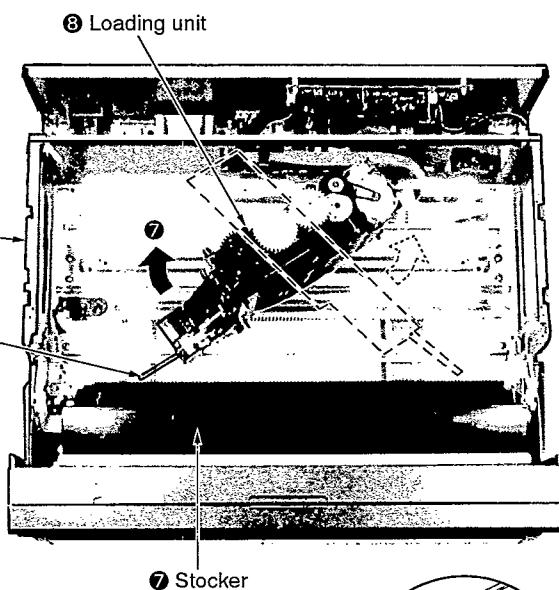
■ Handling of the loading unit



Act.1 Loading unit Disassembly



⑥ Remove the guard rope.



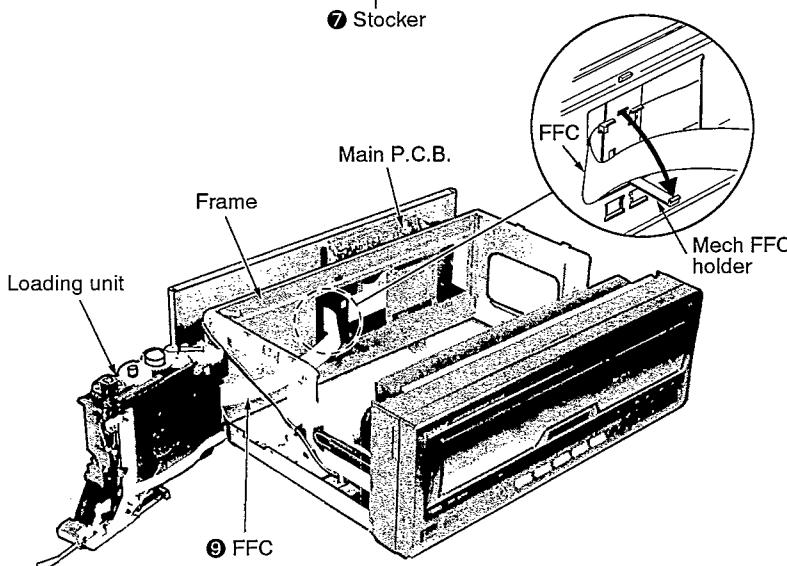
NOTE

Front feed lever

NOTE

When removing the loading unit, make sure to avoid the front feed lever from the stocker and then, lift up the loading unit because the front feed lever is positioned under stocker.

⑦ Rotate the loading unit to clockwise or counterclockwise with lifting the stocker and then, slide the front lever under the stocker.
 ⑧ Remove the loading unit from frame.



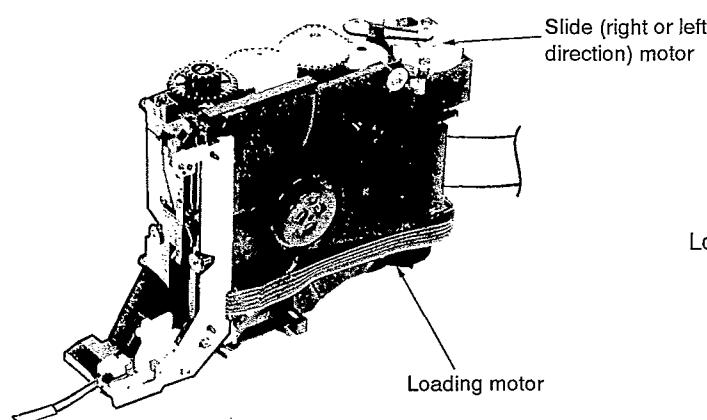
⑨ Remove the mech FFC holder.

⑩ Remove the FFC from loading unit. Then, reconnect the FFC to the loading unit through the opening of frame.

Preparation for operation checks is completed.

Act.1 Loading unit Operation checks

■ Test mode



※ This operation can be executed without traverse deck (including servo module).

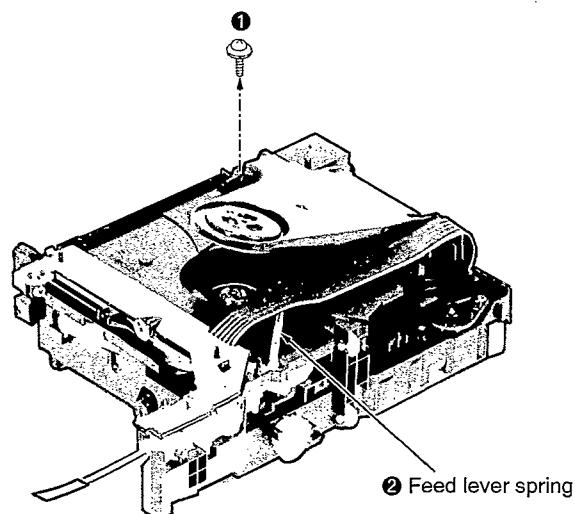
- ① Set to the test mode and then, push the button **B** on front panel (Refer to page 24)
- ② The slide(right or left direction) motor rotates for approximate 20 seconds.
- ③ Then, the loading motor rotates with repeating the following operation.

Load → (Stop for 1 second) → Unload → (Stop for 1 second)

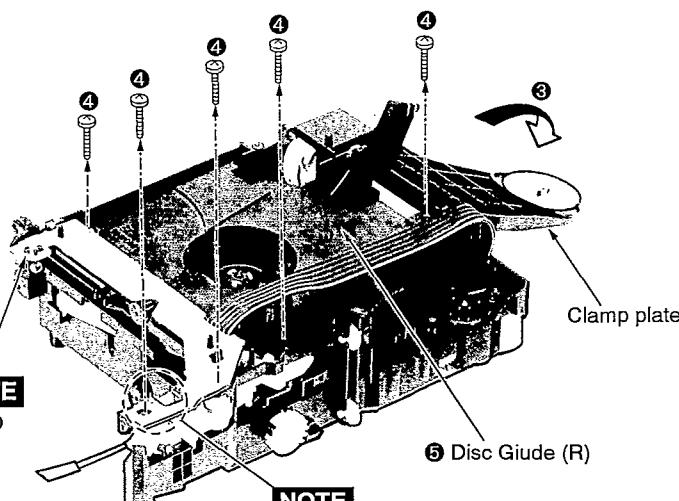
Make sure there are no unusual noise, binding or running over visually.

- ④ To relieve the operation, set to the power off.

■ Manual operation (For this operation, remove the parts described in "Test mode", and more the parts as follows.)



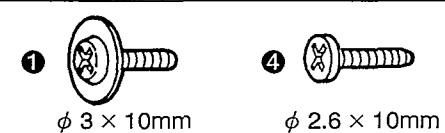
- ① Remove the 1 screw.
- ② Remove the feed lever spring.



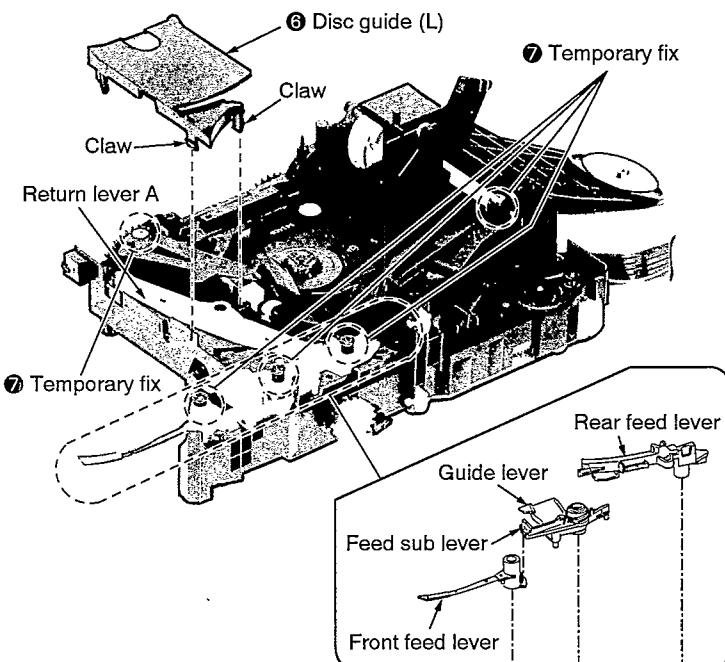
- ③ Tilt the clamp plate backward.
- ④ Remove the 5 screws.
- ⑤ Remove the disc guide (R).

NOTE

Take care not to touch the LED or photo coupler by hand.

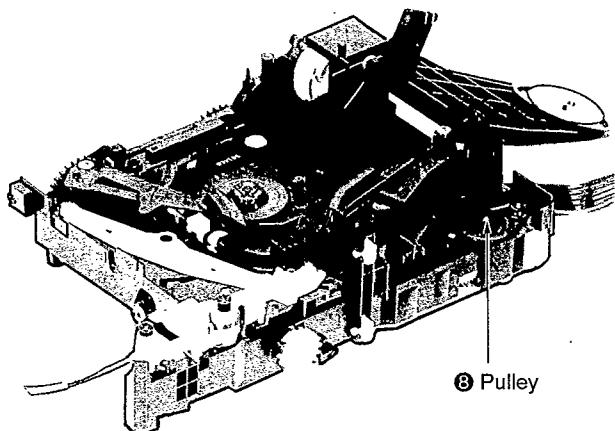


Act.1 Loading unit Operation checks



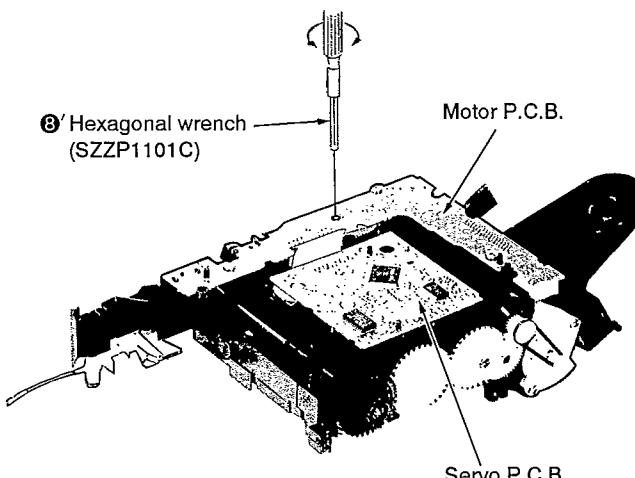
⑥ Release the 2 claws and then, remove the disc guide (L).

⑦ In this manual operation, the rear/front feed levers, guide lever ass'y, etc. may be removed because the disc guides(L/R) are removed already.
Tempoarary fix those levers with 5 screws.



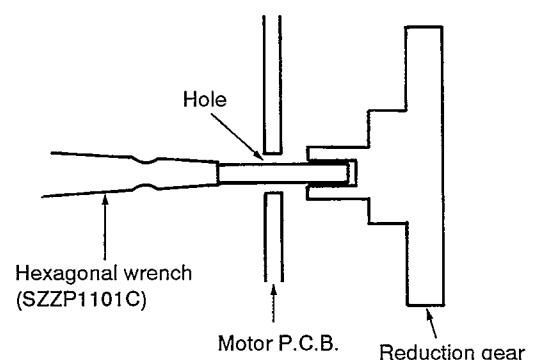
⑧ In case of confirmation manually, rotate the pulley as shown left.

- Rotate clockwise : Loading operation
- Rotate counterclockwise : Unloading operation



⑧' Or rotate with 2 mm hexagonal wrench (SZZP1101C).

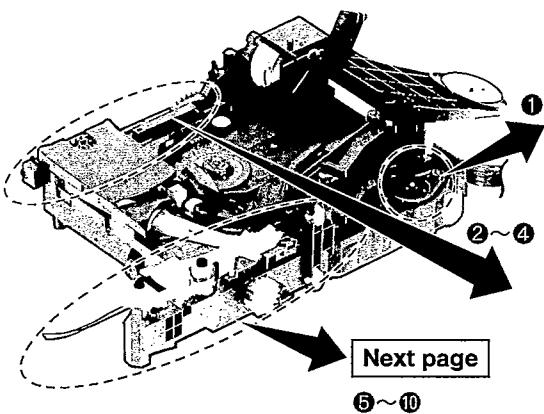
- Rotate clockwise : Unloading operation
- Rotate counterclockwise : Loading operation



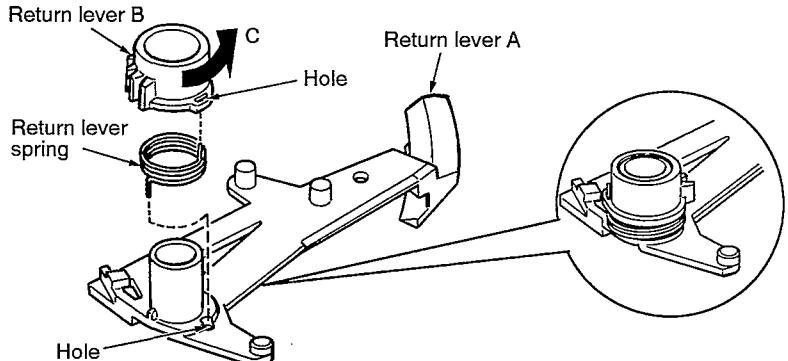
Act.1 Loading unit Reassembly

■ In Test mode Follow the items ⑯ ~ ㉚.

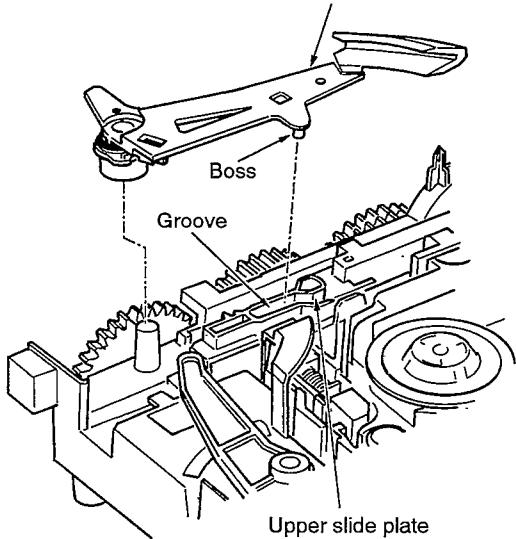
■ In Manual operation In case that the parts fixed temporary are removed, the perform the items ① ~ ⑩ and then, follow the items ⑪ ~ ㉚.



① Rotate the pulley clockwise fully.



③ Return lever A

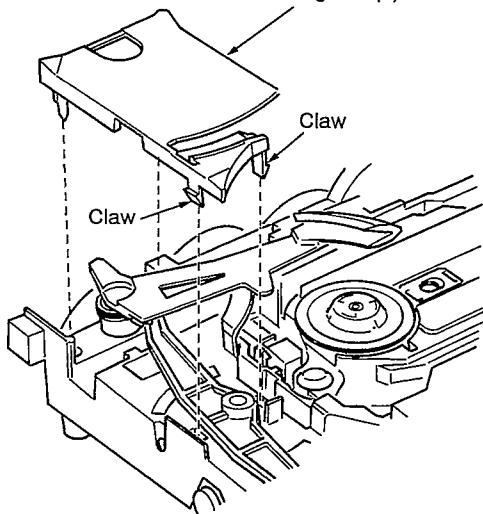


② Align the both ends of the spring with the holes of return lever A and B and then, install the return lever A with rotating the return lever B in the direction of arrow (→) C.

③ Install the return lever A.

(Align the boss of return lever A with the groove of upper slide plate.)

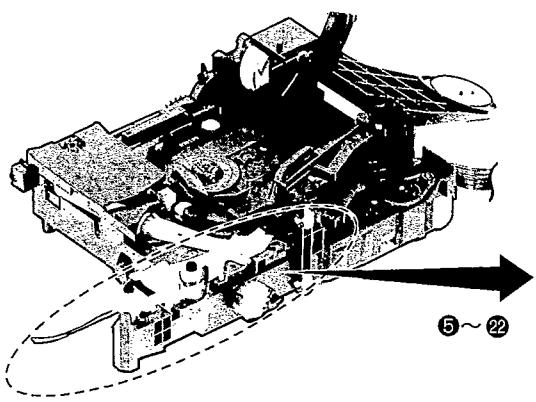
④ Disc guide (L)



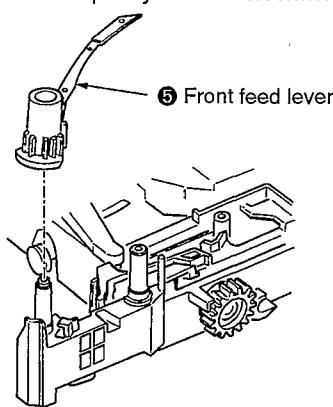
④ Install the disc guide(L).

(Press the disc guide (L) until the claws are hooked completely.)

Act.1 Loading unit Reassembly



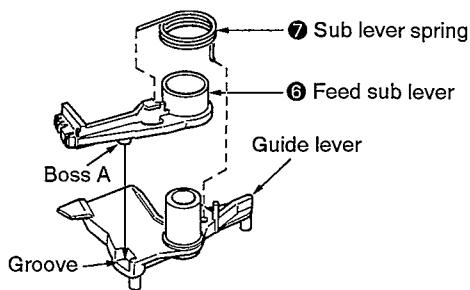
(The state of pulley rotated clockwise fully.)



⑥ Install the front feed lever.

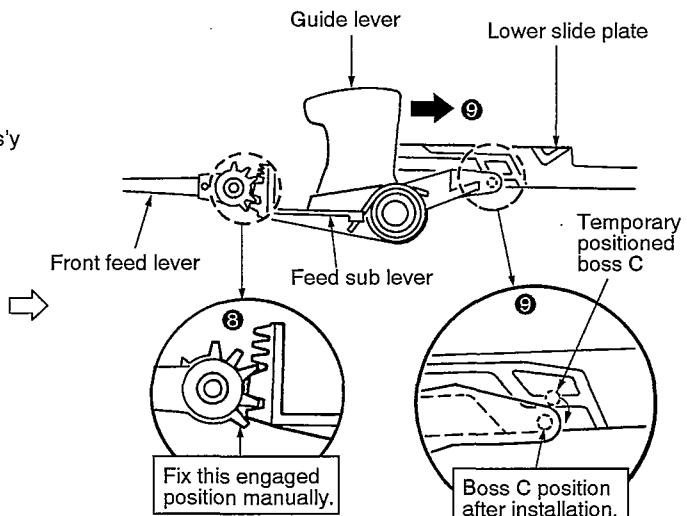
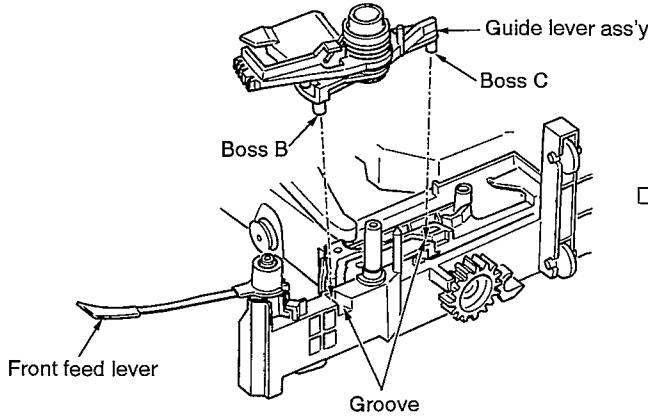
NOTE

Avoid the front feed lever to deform or bend.



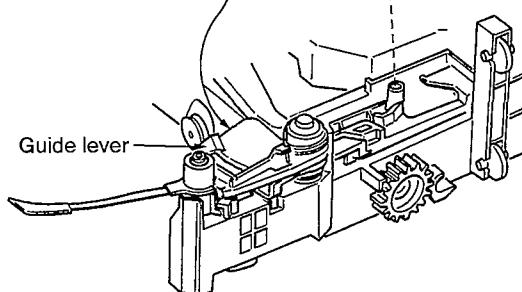
⑥ Install the feed sub lever to the guide lever.
 • Align the boss A of feed sub lever with the groove of the guide lever.

⑦ Install the sub lever spring.



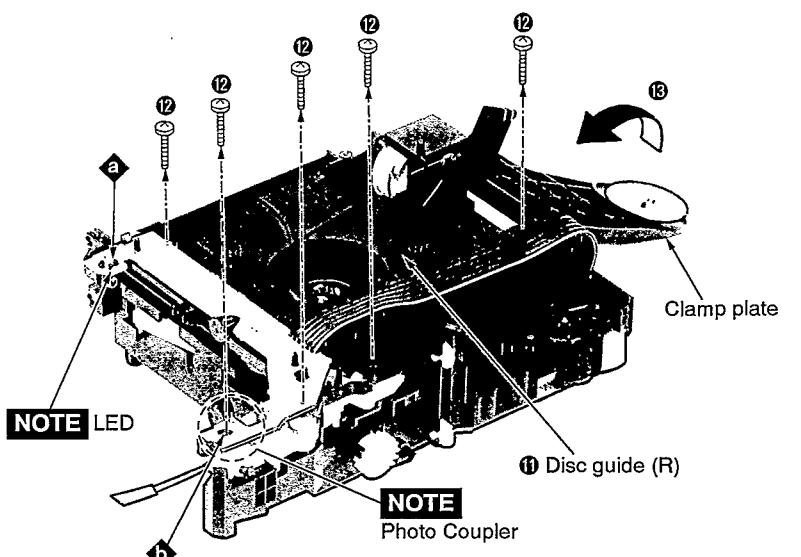
⑧ Engage the gear of guide lever ass'y with the gear of front feed lever temporary.
 • Boss B must be placed in the groove.
 • Boss C must be run over the lower side plate.

⑨ With fixing the gear by finger not to slip off the gear clench, rotate the guide lever in the direction of arrow.
 • The boss C will fit in the groove.



⑩ Install the rear feed lever.
 (Align the guide lever with the groove of rear feed lever.)

Act.1 Loading unit Reassembly



⑪ Install the disc guide(R).

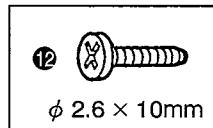
NOTE

Align the claw of disc guide with the slot **a**.

⑫ Install the 5 screws.

NOTE

Align the upper portion of boss inserted sensor holder with the slot **b**, and then tighten screw.

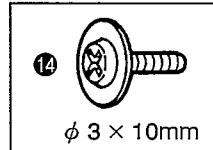


⑬ Tilt the clamp plate forward.

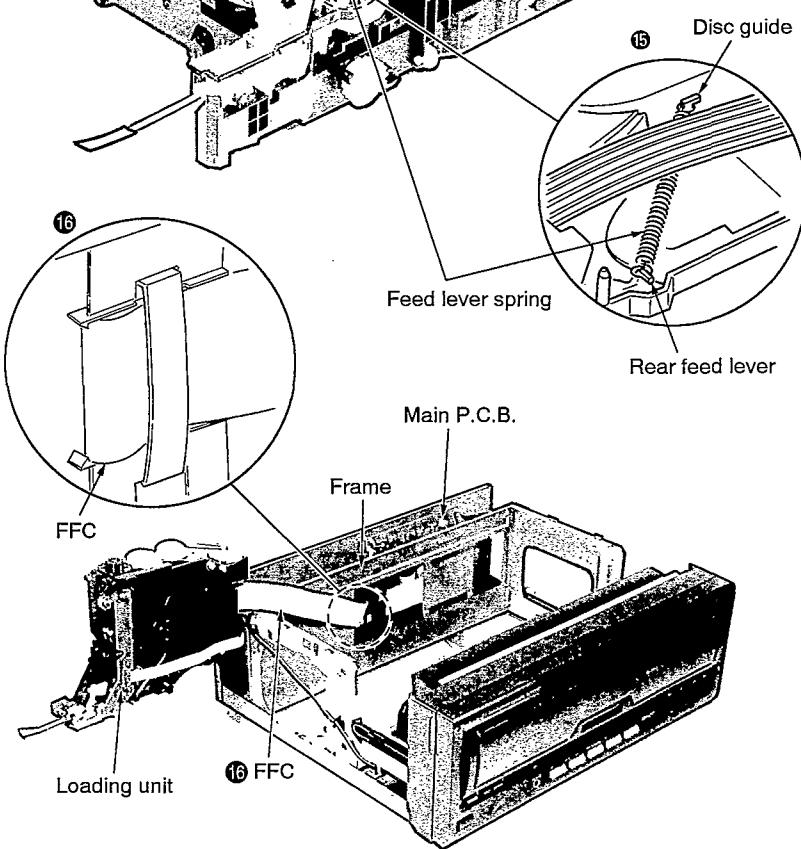
NOTE

Take care not to touch the LED or photo coupler by hand.

⑭ Install the 1 screw.

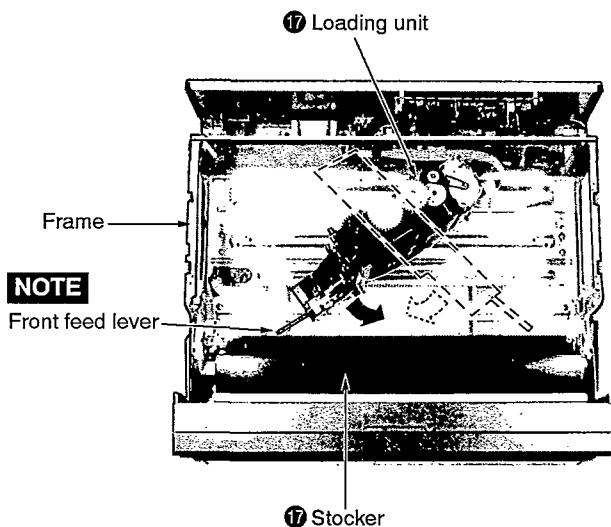


⑮ Install the feed lever spring.



⑯ Remove the FFC from loading unit.
Then, reconnect the FFC to the loading unit over the frame.

Act.1 | Loading unit | Reassembly



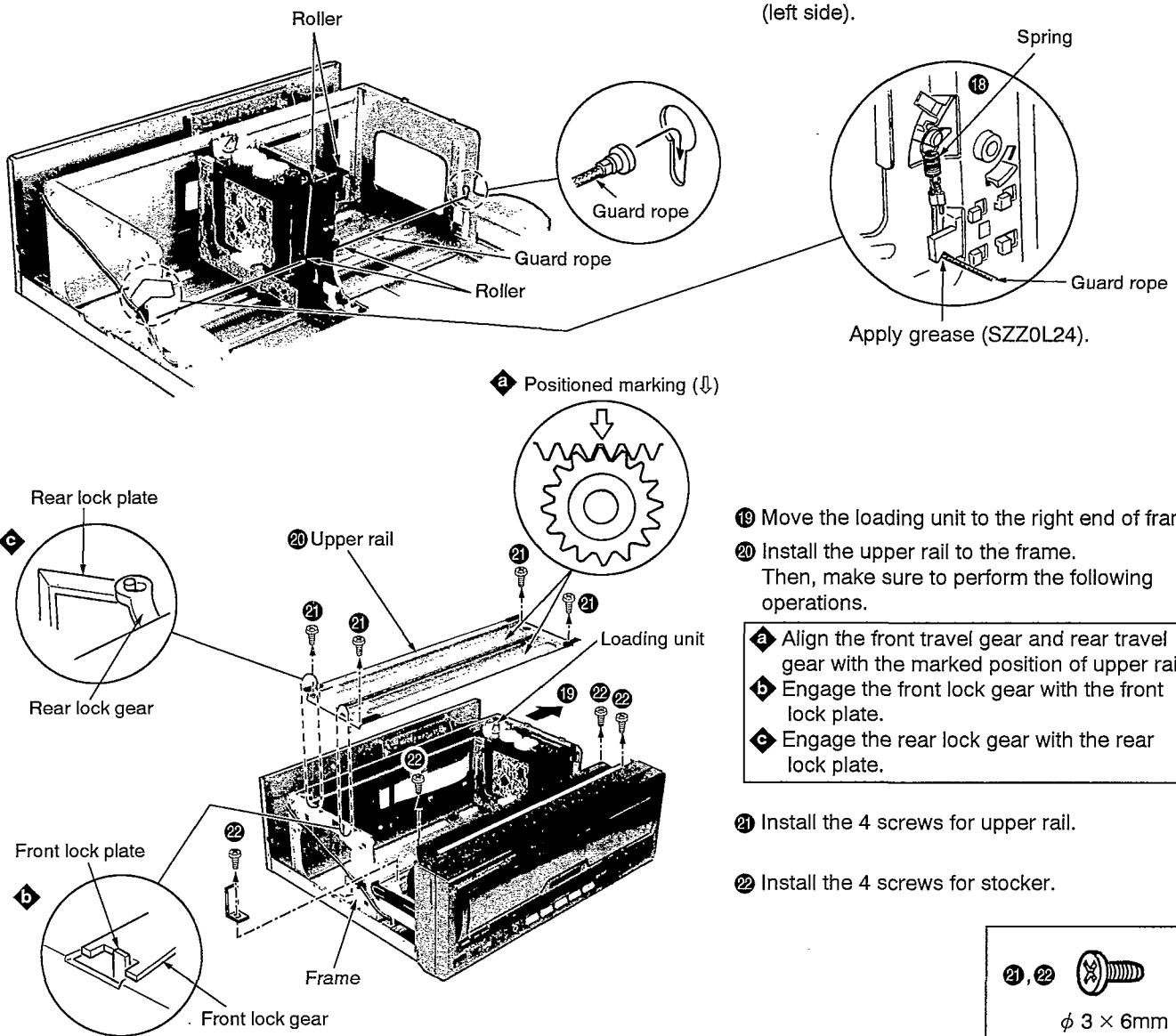
NOTE

Front feed lever

The diagram shows a cross-sectional view of the loading unit and stocker. The loading unit is labeled 17 and is positioned at the top, with a pointer indicating its location. The stocker is labeled 17 and is positioned at the bottom, with a pointer indicating its location. The components are shown in a perspective view, highlighting their internal structure and how they interact within the machine.

NOTE

When reassembling the loading unit, make sure to avoid the front feed lever from the stocker and then, install the loading unit because the front feed lever is positioned under stocker.

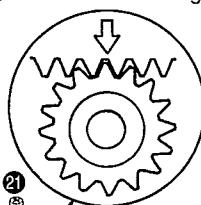


17 Rotate the loading unit counterclockwise or clockwise with lifting the stocker and then, place the front feed lever under the stocker.

⑯ Hang the guard rope with the spring side (left side).

The diagram shows a cross-section of a rear wheel assembly. A vertical spring (18) is positioned within the wheel hub. A guard rope is attached to the bottom of the spring and extends downwards, secured to a frame or hub component. The entire assembly is contained within a circular housing.

◆ a Positioned marking ({})



19 Move the loading unit to the right end of frame.

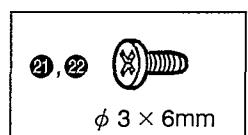
20 Install the upper rail to the frame

Then, make sure to perform the following operations.

- ◆ Align the front travel gear and rear travel gear with the marked position of upper rail.
- ◆ Engage the front lock gear with the front lock plate.
- ◆ Engage the rear lock gear with the rear lock plate.

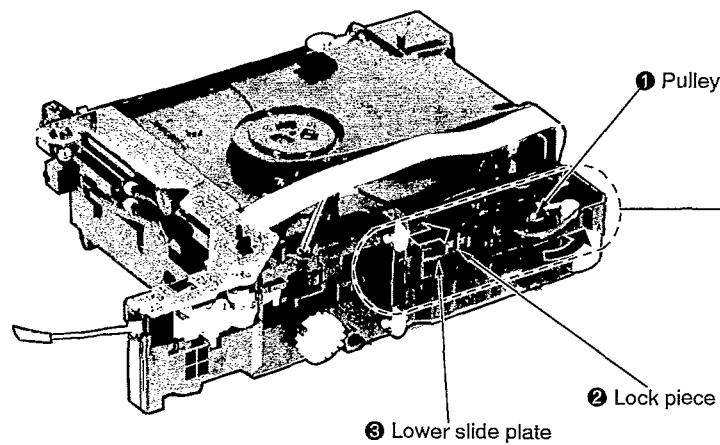
21 Install the 4 screws for upper rail.

22 Install the 4 screws for stocker.

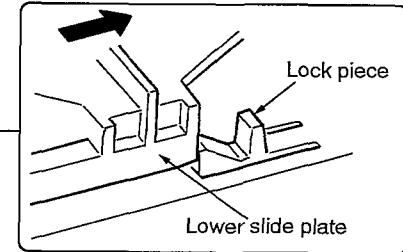


Act.1 Traverse deck separation Disassembly

The followings are described the procedures to make the traverse deck part from loading unit after removed the loading unit block from the frame.

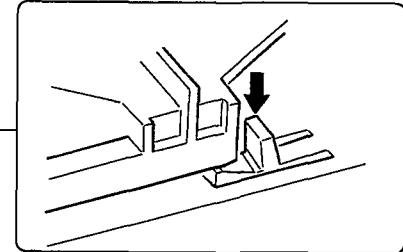


① Rotate the pulley counterclockwise.



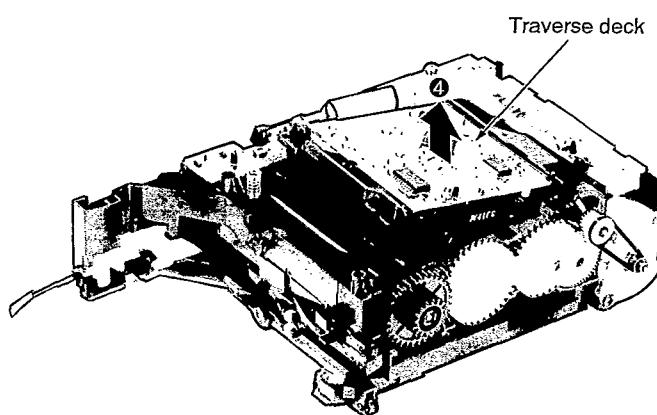
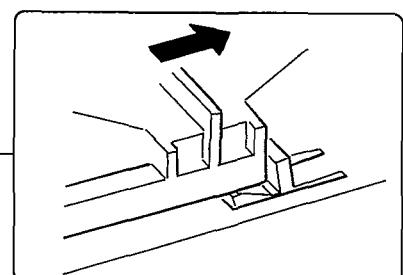
Rotate the pulley until the lower slide plate is moved in the direction of arrow and then touched to the lock piece.

② Rotate the pulley counterclockwise fully with pressing the rib of lock piece.



The lower slide plate runs over the lock piece.

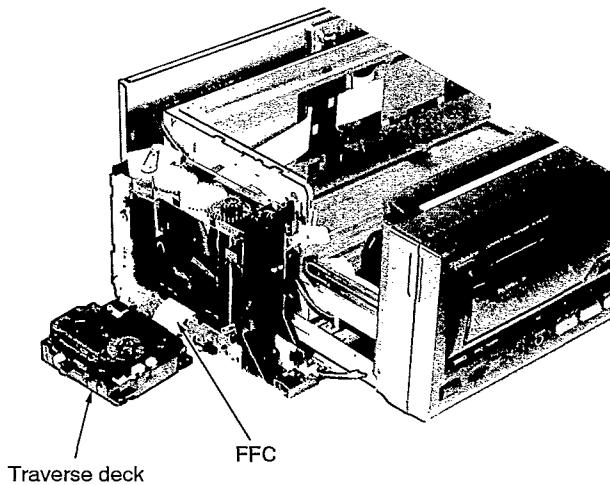
③ Slide the lower slide plate manually in the direction of arrow until the lower slide plate touches the rib of lock piece



④ Upset the loading unit and then, lift up the traverse deck.

Act.1 Traverse deck separation Operation check

Focus operation confirmation



① Set the switch to TEST MODE.

(Refer to page 23)

② Press the button **A** on the operation panel.

Standby the traverse deck to individual operation.

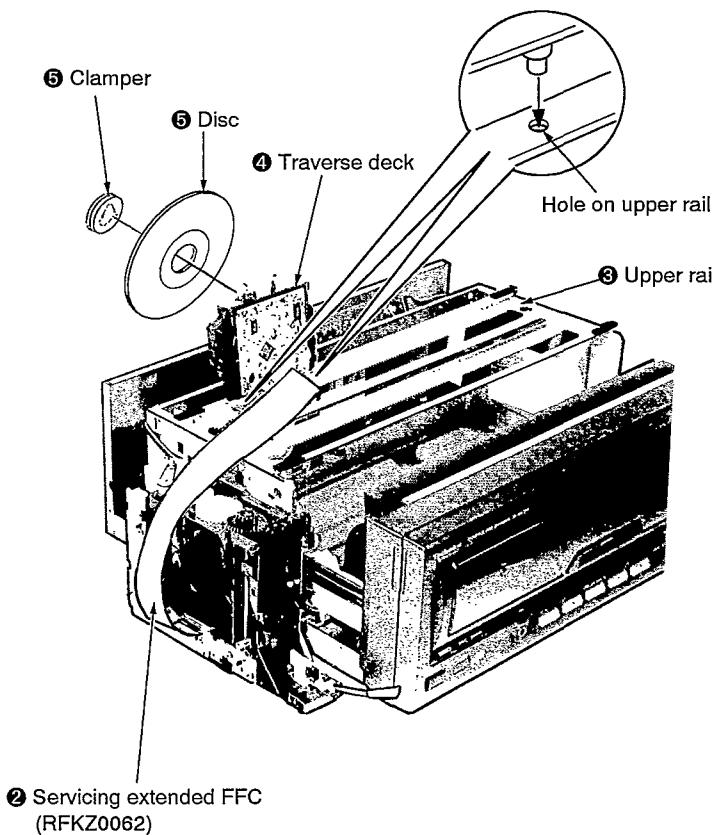


Press the PLAY(▶)button.



Confirm the focus operation visually.

Servo module confirmation



① Remove the FFC between the traverse deck and loading unit.

② Connect the servicing extended FFC between the traverse deck and loading unit.

③ Install the upper rail.
(The screws are not necessary for fixing.)

④ Locate the servo module faced to you and then, align the traverse deck with the hole on upper rail.

⑤ Attach the disc to the clamper with magnet.



Preparation for operation checks is completed.

⑥ Set the switch to TEST MODE.
(Refer to page 23)

⑦ Press the button **A** on the operation panel.



Standby the traverse deck to individual operation.



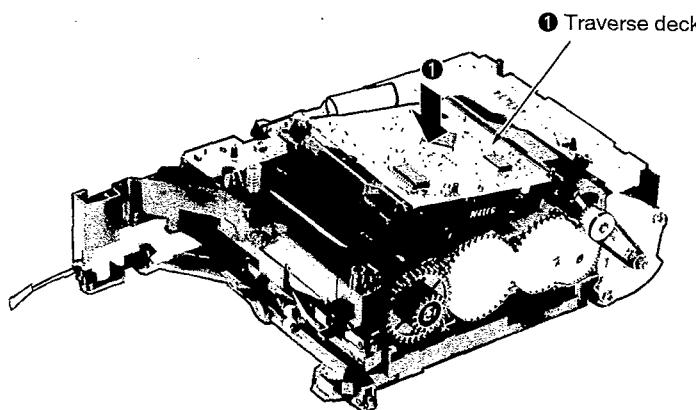
Press the PLAY(▶)button.



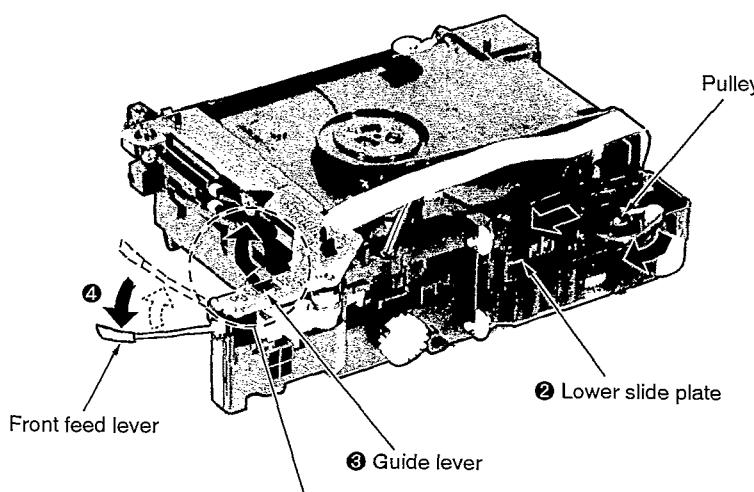
CD play starts.



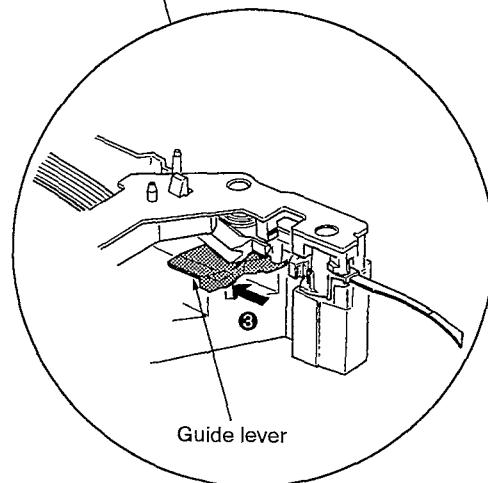
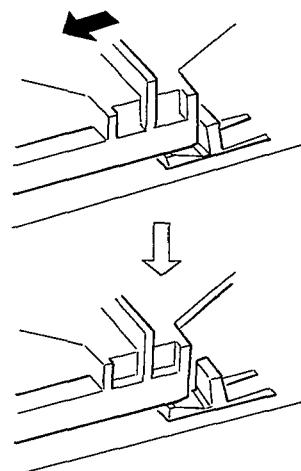
Check the servo module.

Act.1 **Traverse deck separation** **Resassembly**

① Equip the traverse deck with the loading unit.



② Slide the lower slide plate in the direction of arrow with supporting manually not to be fall free the traverse deck.



The traverse deck will not fall free as shown above.

③ While pushing the guide lever in the direction of arrow, rotate the pulley clockwise.



To easy installation loading unit into the frame, rotate the pulley fully clockwise.

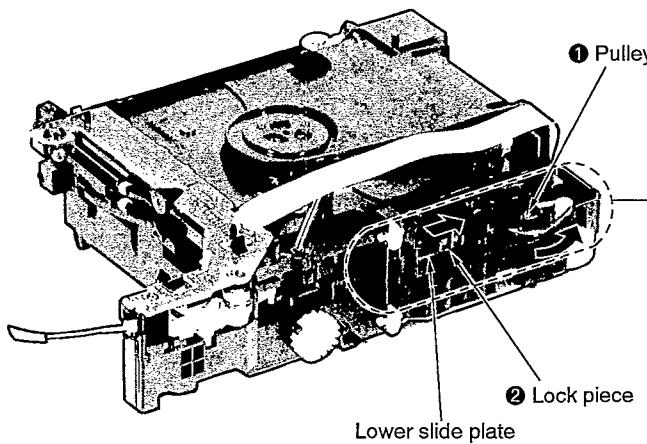
Confirmation

During the above operation, make sure that the front feed lever rotates to clockwise (Dot line) once and then, return to original position(Full line).

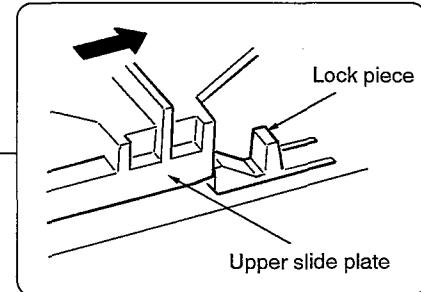
Act.1 Traverse deck separation Reassembly

■ In case that the operations described in item "Confirmation" are not to be performed.

- In case that the operations described in item "confirmation" are not to be performed (The front feed lever will not return to original position (Full line) and is fixed at position indicated with dot line), perform the following operations.

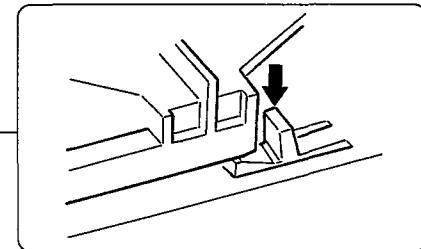


① Rotate the pulley counterclockwise.

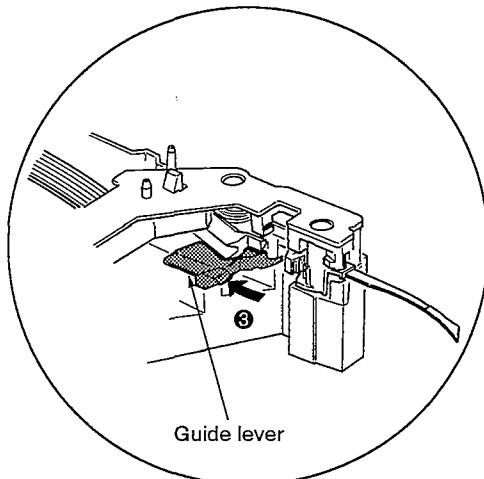


Rotate the pulley until the lower slide plate moves in the direction of arrow and touches the lock piece.

② With pushing the rib of lock piece, rotate the pulley counterclockwise fully.



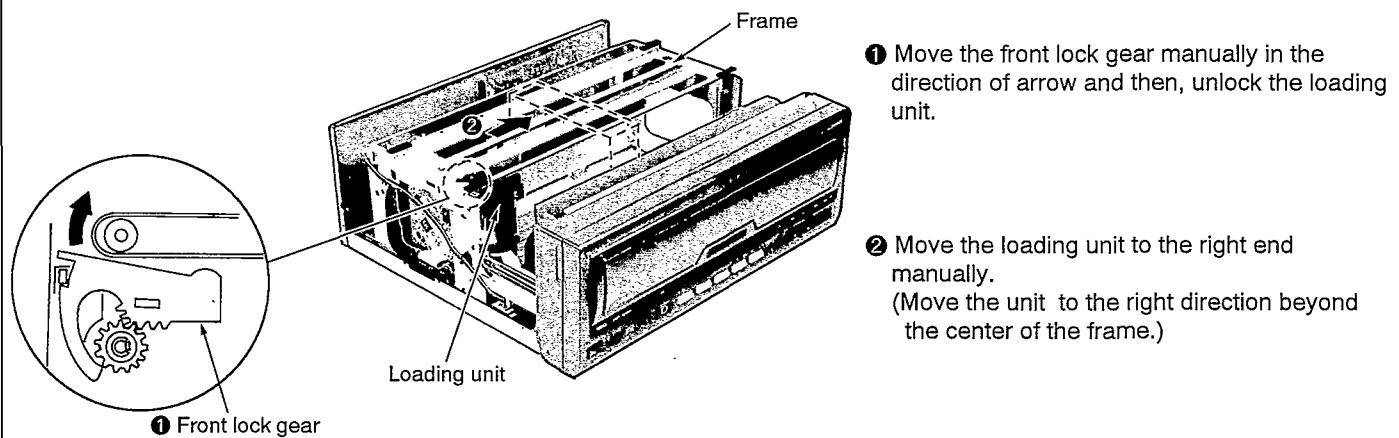
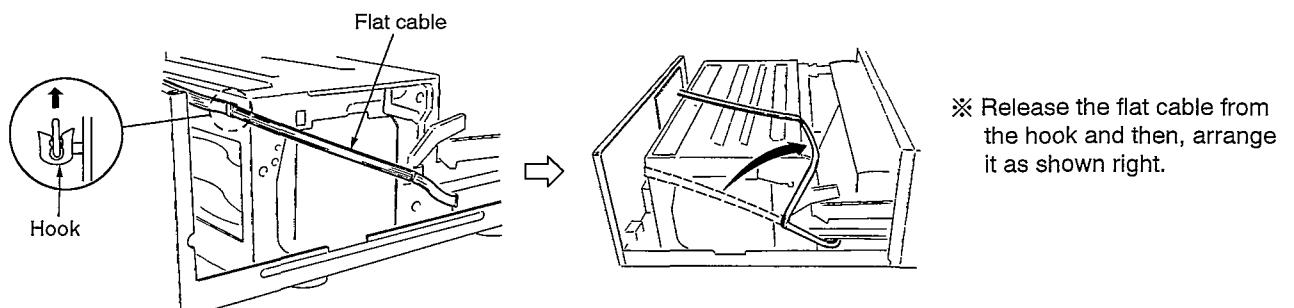
The lower slide plate runs over the lock piece.



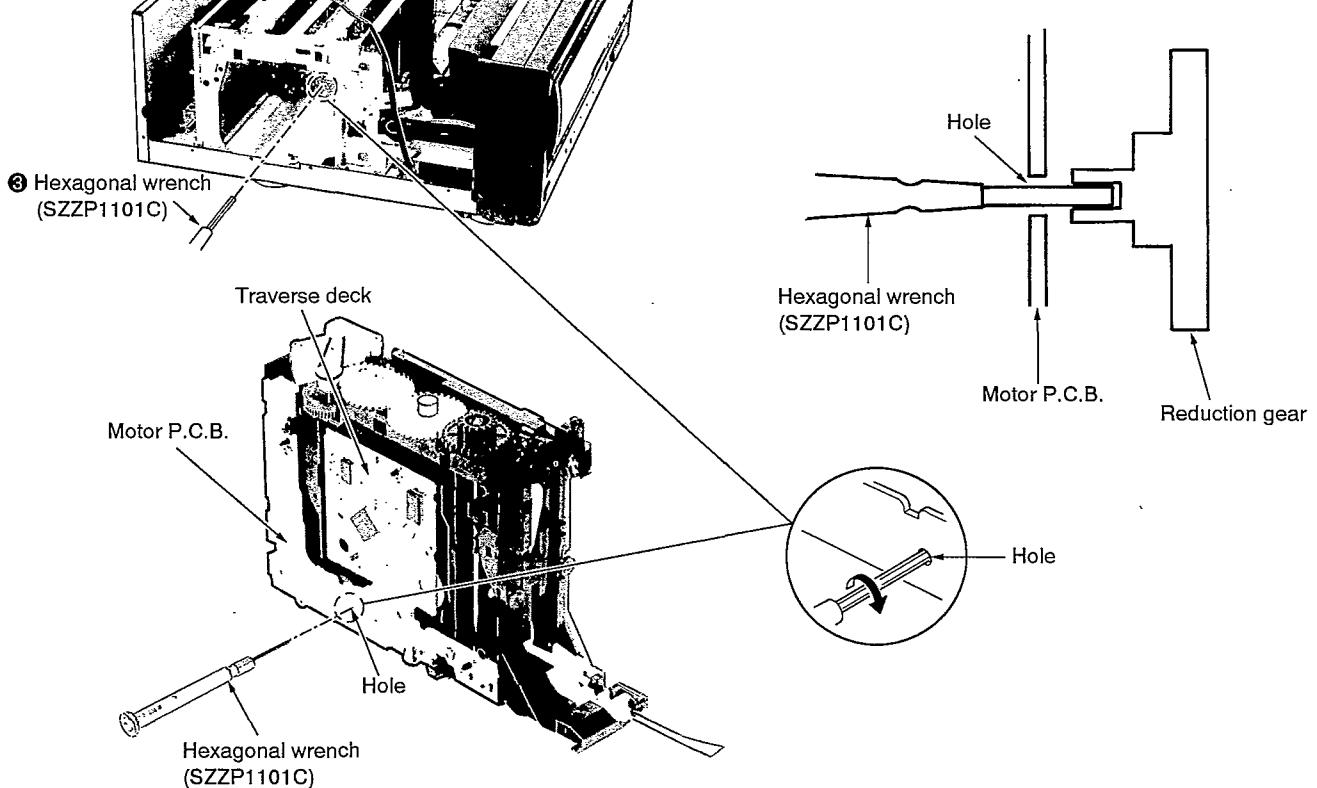
Rotate the pulley counterclockwise with pushing the guide lever as shown item ③ on page.

Act.2 Independent traverse deck Disassembly

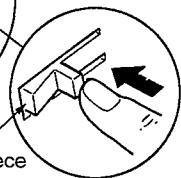
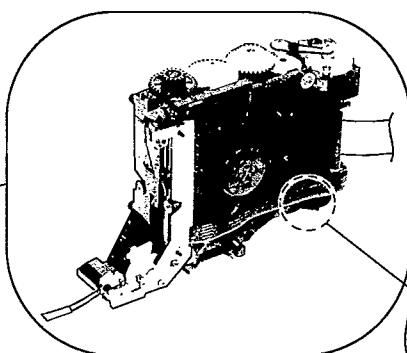
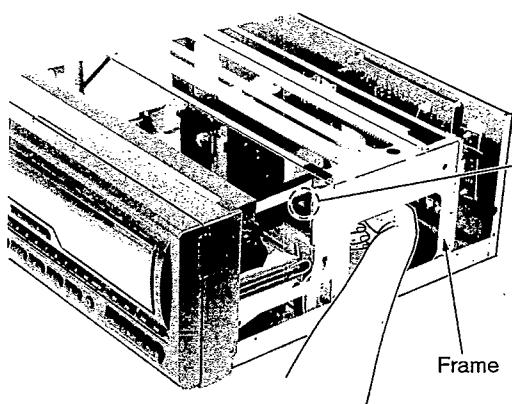
- The traverse deck can be removed individually without removal of loading unit.
- It is very convenient to perform the operation checks for traverse deck quickly.



② Move the loading unit to the right end manually.
(Move the unit to the right direction beyond the center of the frame.)



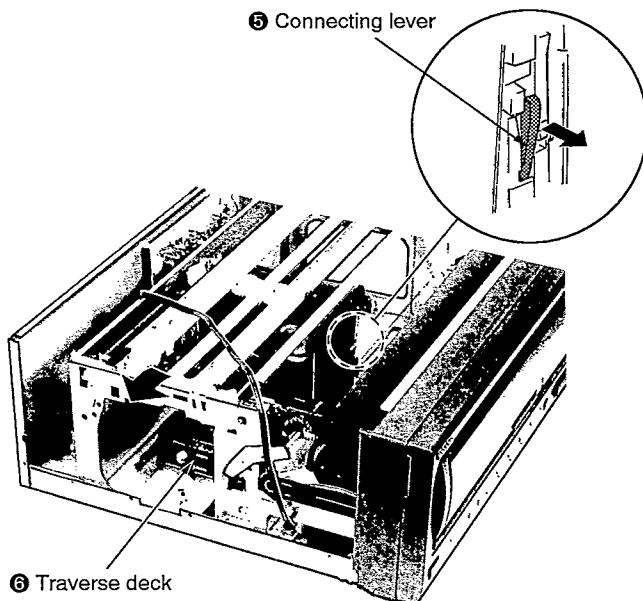
Act.2 Independent traverse deck Disassembly



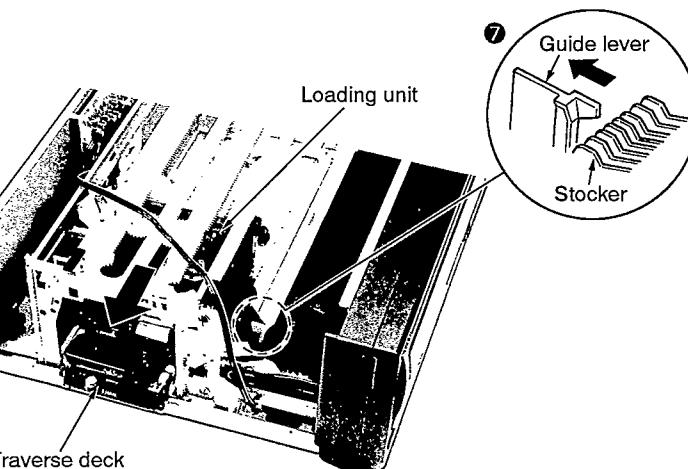
NOTE

Handle the edge of frame with care.

- ④ Put the right hand into the right side of frame and then, pressing the lock piece, rotate the hexagonal wrench to clockwise.



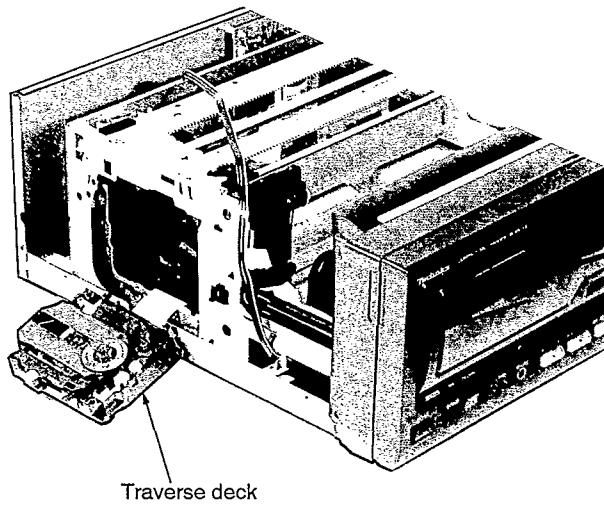
- ⑤ Pull the connecting lever in the direction of arrow.
- ⑥ Separate the traverse deck from the loading unit.



- ⑦ Move the guide lever in the direction of arrow and then, move the loading unit to the left end with relieving the engagement to stocker.

Act.2 Independent traverse deck Operation checks

■ Focus operation confirmation



① Set the switch to TEST MODE.
(☞ Refer to page 23)

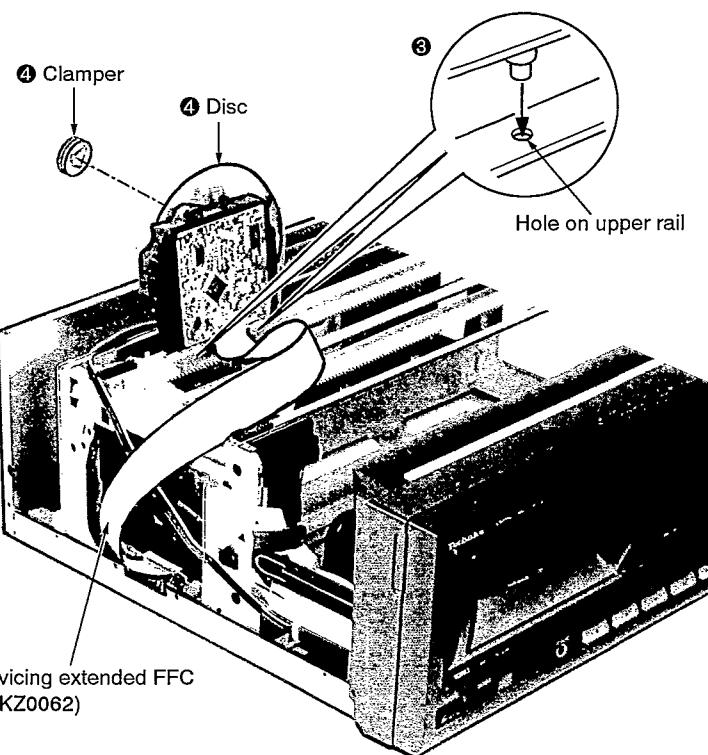
② Press the button **A** on the operation panel.

Standby the traverse deck to individual operation.

Press the PLAY(▶)button.

Confirm the focus operation visually.

■ Servo module confirmation



① Remove the FFC between the traverse deck and loading unit.
② Connect the servicing extended FFC between the traverse deck and loading unit.
③ Locate the servo module faced to you and then, align the traverse deck with the hole on upper rail.
④ Attach the disc to the turn table with clamper (magnet).

Preparation for operation checks is completed.

⑤ Set the switch to TEST MODE.
(☞ Refer to page 23)

⑥ Press the button **A** on the operation panel.

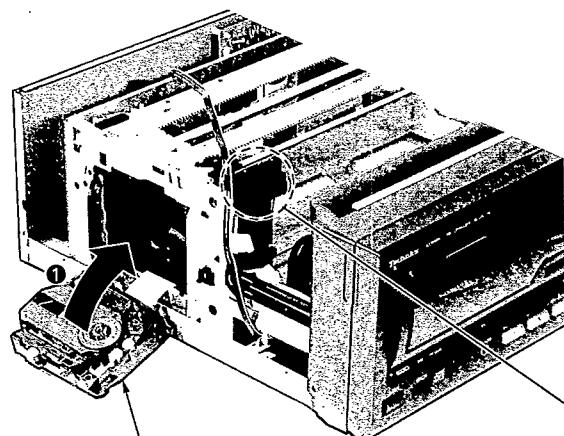
Standby the traverse deck to individual operation.

Press the PLAY(▶)button.

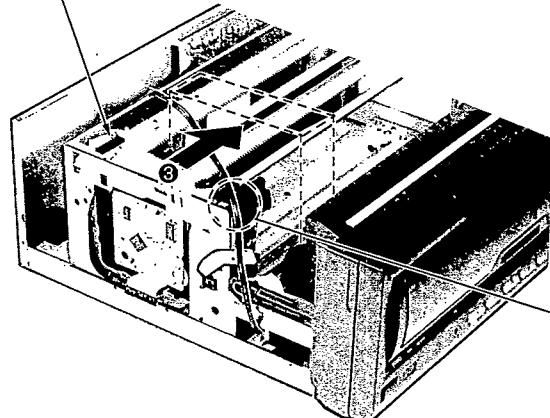
CD play starts.

Check the servo module.

Act.2 Independent traverse deck Reassembly



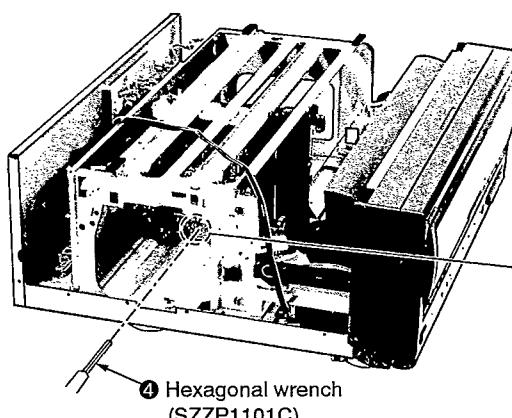
Loading unit



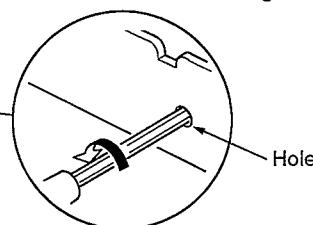
① Equip the traverse deck with the loading unit.

② Push the guide lever in the direction of arrow with supporting manually not to be fall free the traverse deck.

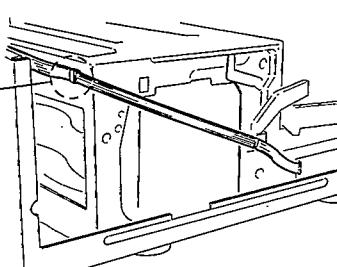
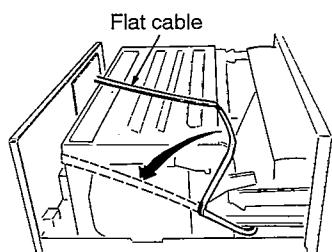
The traverse deck will not fall free as shown above.



④ Hexagonal wrench (SZZP1101C)

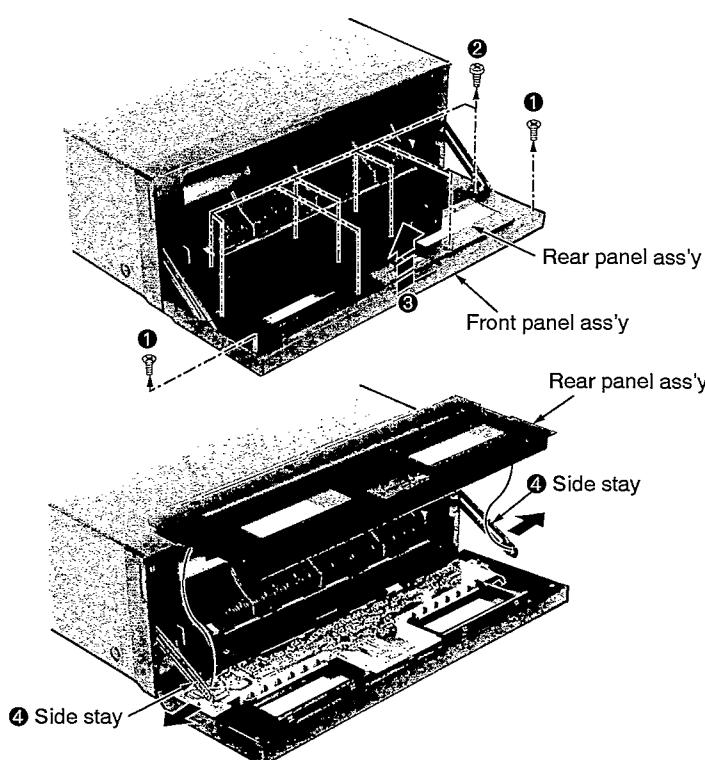


③ Move the guide lever in the direction of arrow and then, move the loading unit to the center with relieving the engagement to stocker.

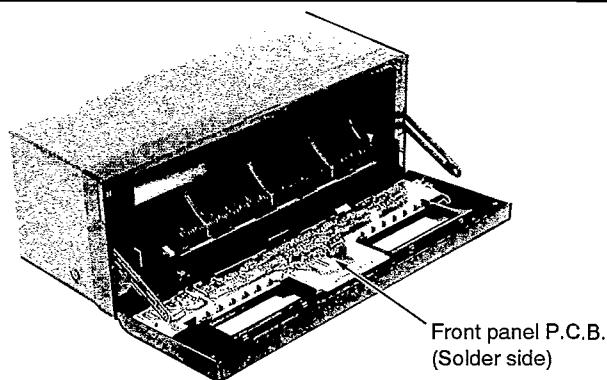


※ Arrange the flat cable in original form.

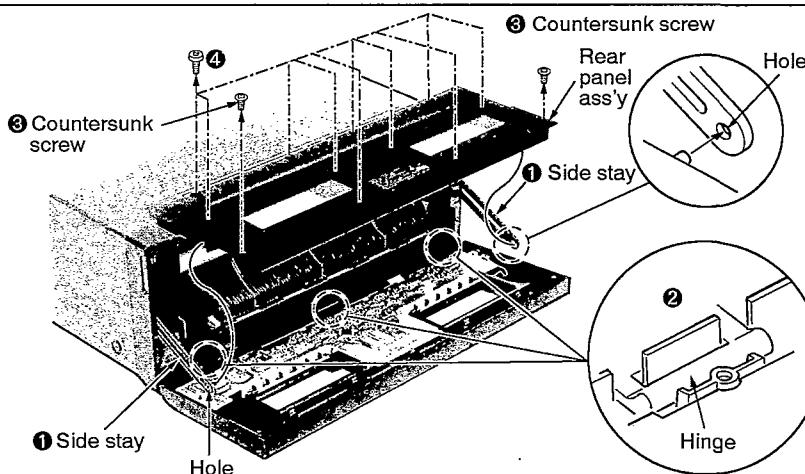
Act.3 | Front panel | Disassembly



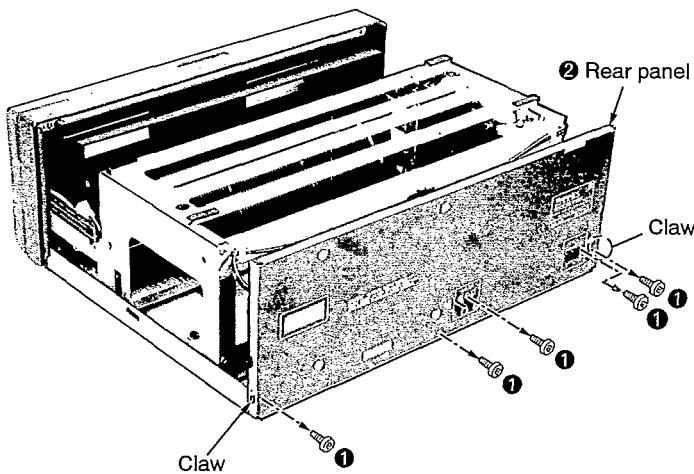
Act.3 | Front panel | Operation checks



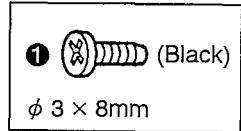
Act.3 | Front panel | Reassembly



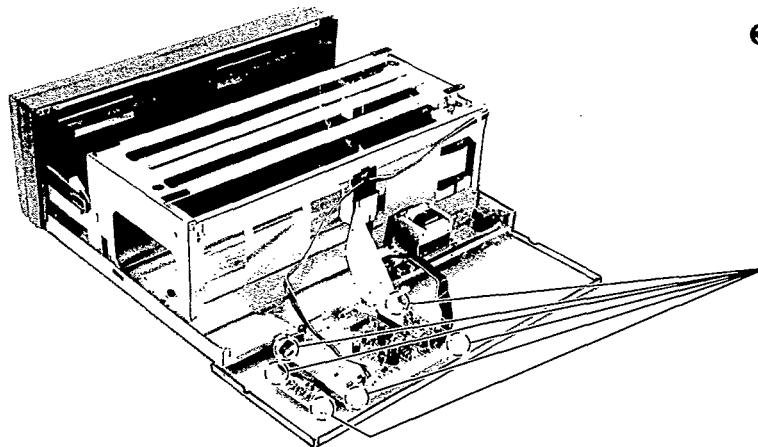
Act.3 Main P.C.B. and disc signal P.C.B. Disassembly



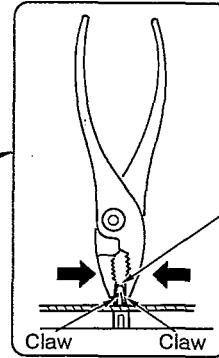
① Remove the 5 screws.



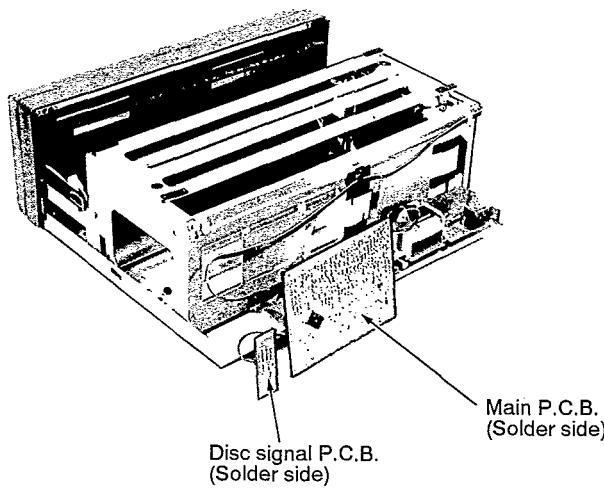
② Release the 2 claw, and then remove the rear panel.



③ Release the P.C.B. supports from the main P.C.B. (Pinch the claws of P.C.B. supports with plier as shown below.)



Act.3 Main P.C.B. and disc signal P.C.B. Operation checks



• Perform the operation checks in the state as shown left.

Act.3 Main P.C.B. and disc signal P.C.B. Reassembly

For reassembly after operation check, perform in reverse order of disassembly (① – ③).

■ Measurements and Adjustments

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

Measuring Instruments and Special Tools

- Test discs
- 1. Playability test disc (SZZP1054C)
- 2. Uneven test disc (SZZP1056C)
- Musical program disc (ordinary)
- DC electronic voltmeter (EVM)

PREPARATION

1. Remove the loading unit as shown in Fig. 1.
(Refer to "Handling of the loading unit" on pages 28, 29.)
2. Set the unit in the test mode as follows: hold the STOP and PLAY keys on and set the POWER switch to ON.
(Refer to "Test mode setting" on page 21.)
3. Follow the adjustment procedure.

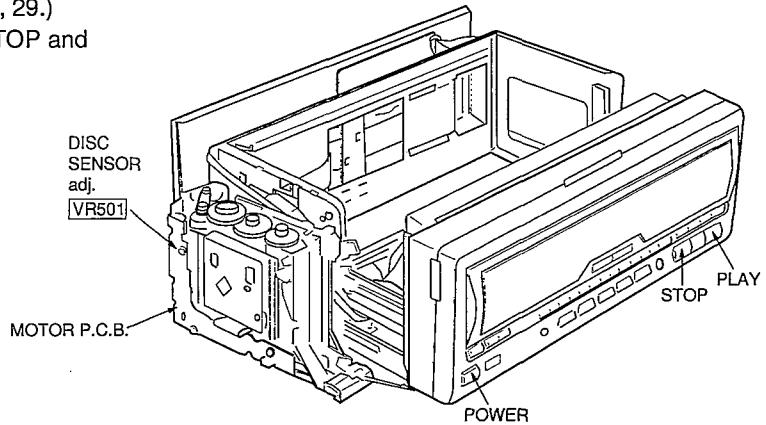


Fig. 1

(1) DISC SENSOR ADJUSTMENT

1. Unsolder the short land to open circuit as shown in Fig. 2.
2. Connect the DC electronic voltmeter across **TP501** (+) and **TP502** (-) on the motor P.C.B. as shown in Fig. 2.
3. Adjust **VR501** so that the DC electronic voltmeter read **2.8±0.1V**.
4. Short-circuit the land by soldering after adjustment as shown in Fig. 2.

(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 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.

• Adjustment points

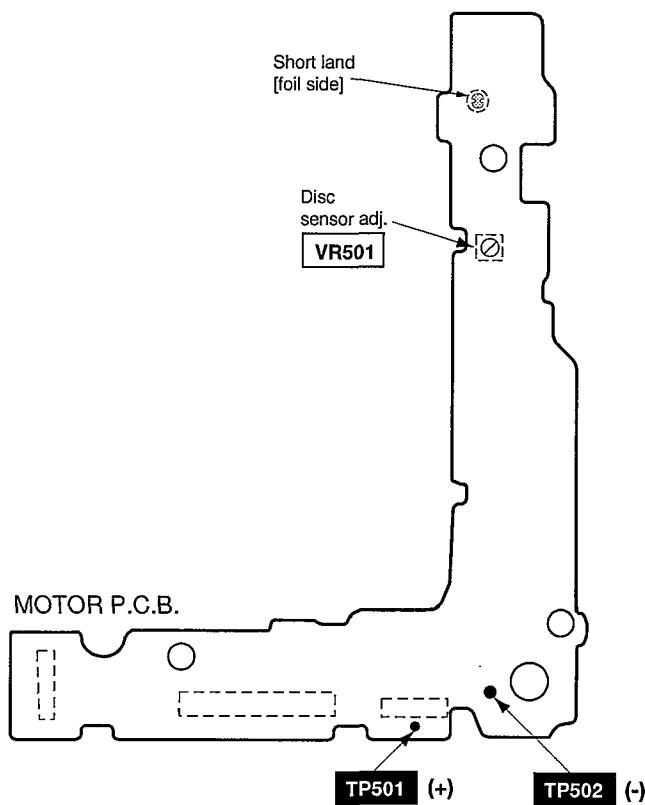
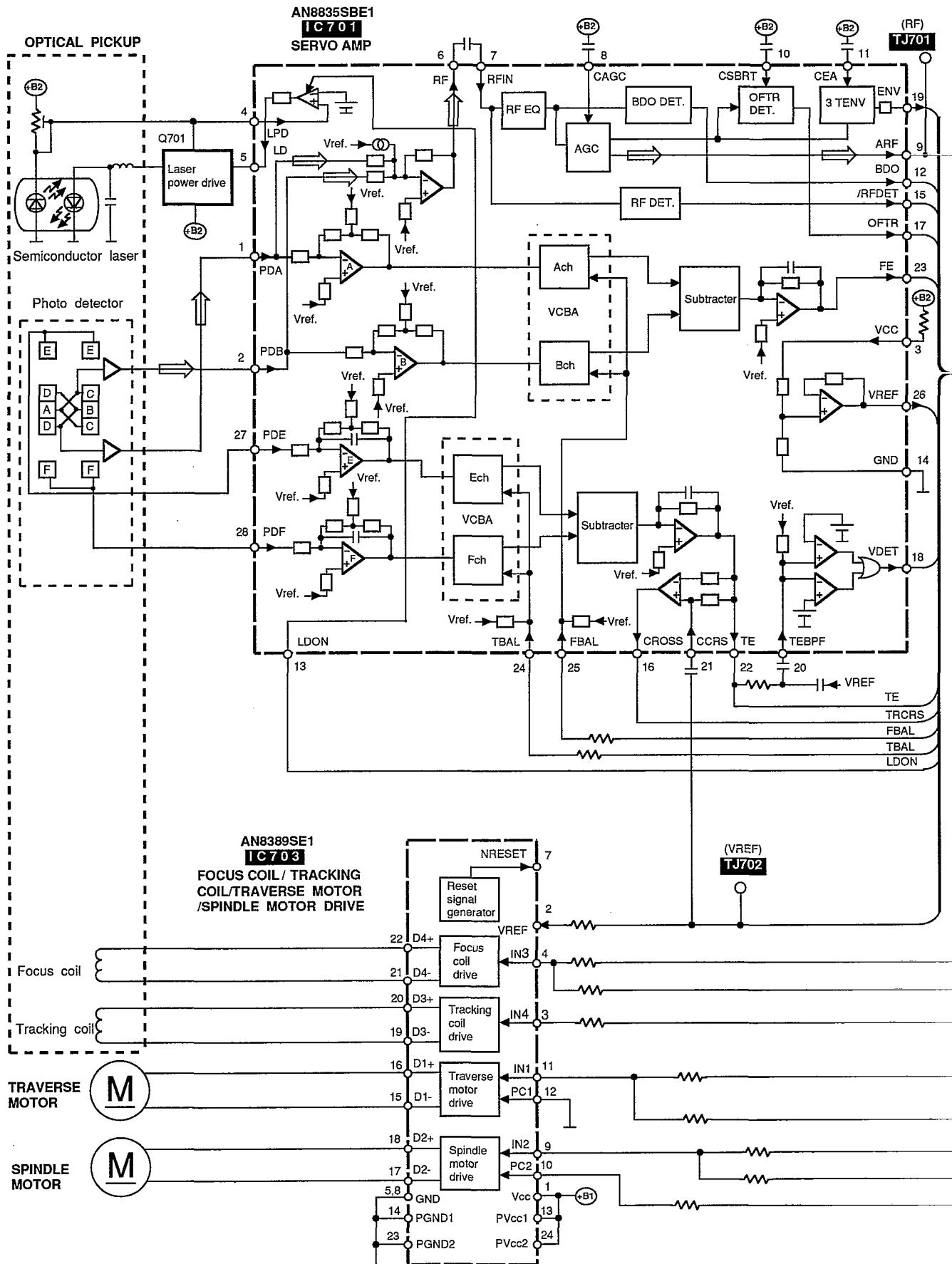


Fig. 2

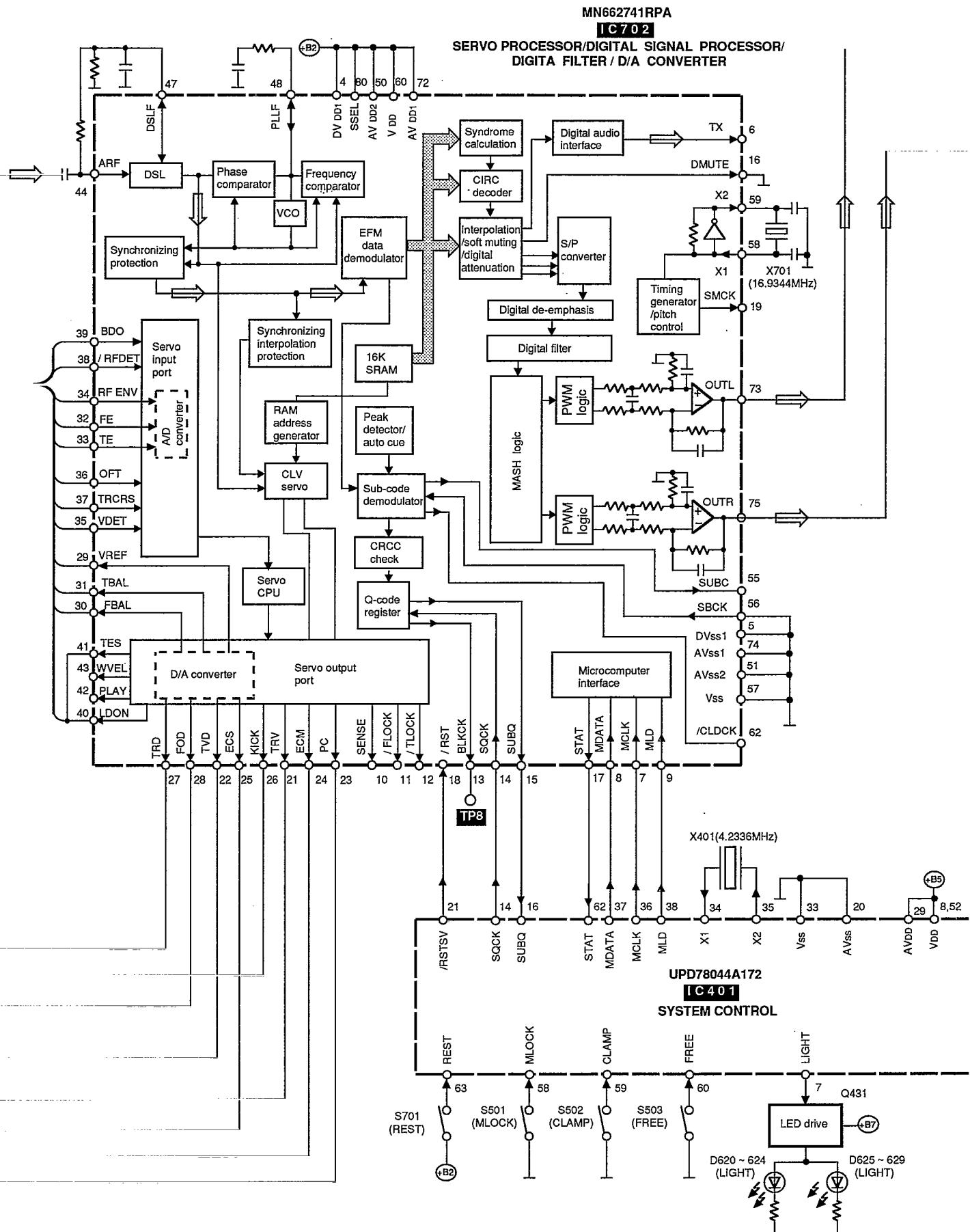
• Terminal guide of IC's, transistors and diodes.

BA4558FHTT1	AN8389SE1	AN8835SBE1	BA6274N	MM12510F 44PIN MN662741RPA 80PIN
RCD12042TH	UPD78044A172		2SC3311AIQST 2SD1450RSTTA UN4114TA UN4112AITA UN4212AITA UN4214AITA UN4215TA	2SB1238QSTV6 2SB1320AQRSTA 2SD1862QRTV6 2SD2136PQRTA
MA4270MTA	MA4043HTA MA4051MTA MA4062MTA MA4075MTA MA4091MTA		MA165TA 1SS291TA	RLN4003N02
MA4030MTA	BR3433S	LN66S	SLR-332DC3F	

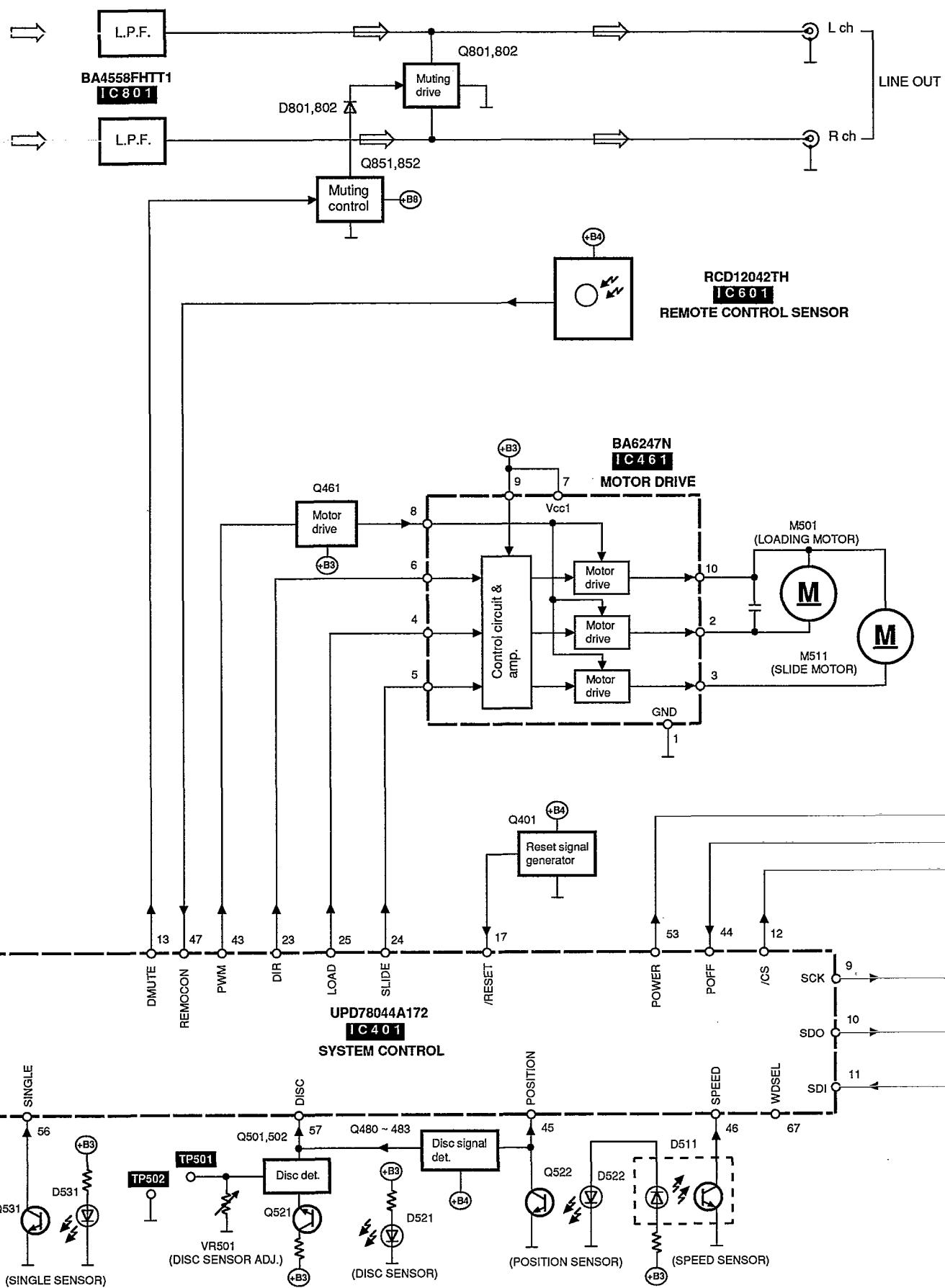
■ Block Diagram

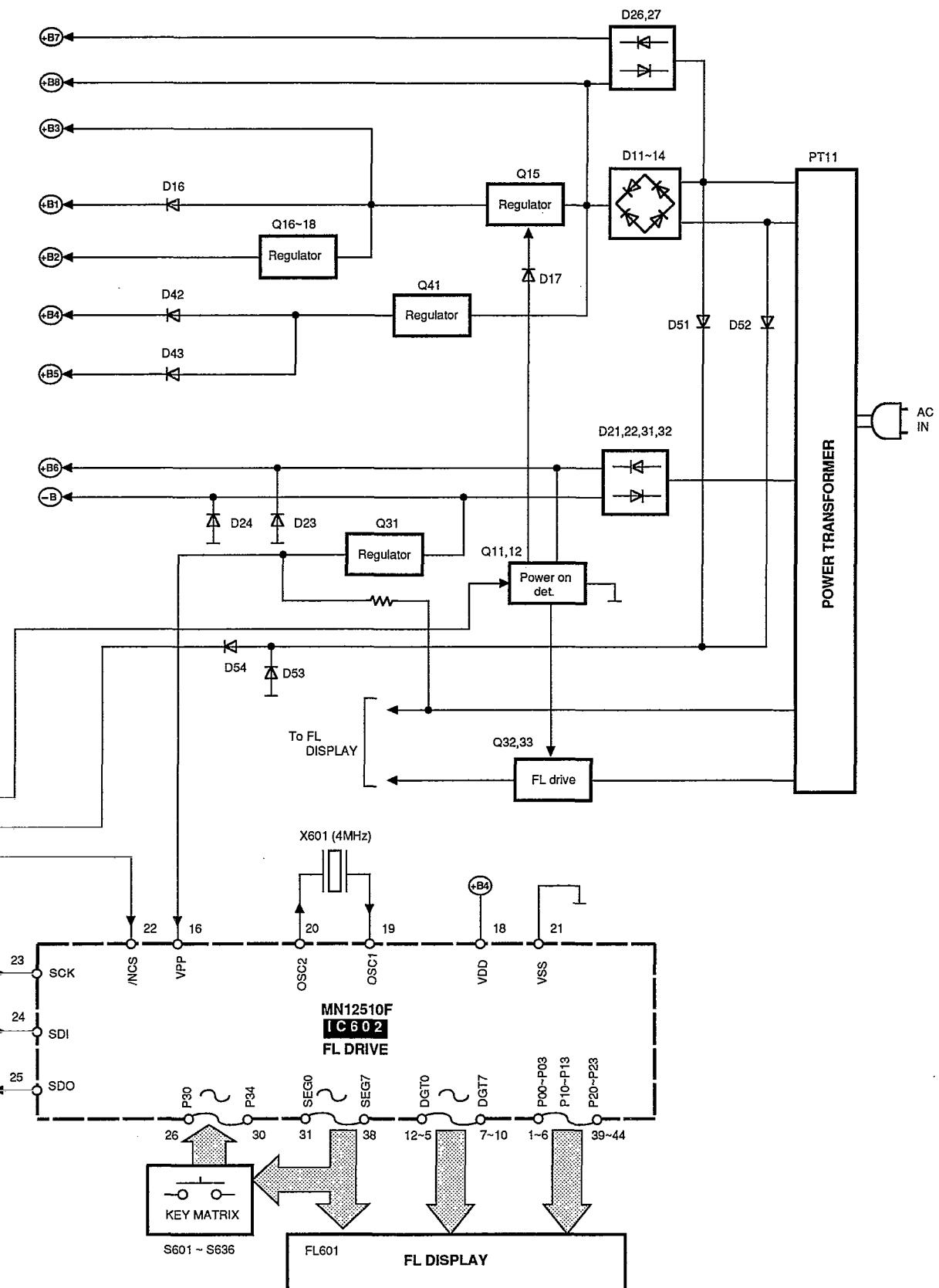


- Signal line : Audio signal



● Signal line → : Audio signal





■ Terminal Guide

● IC401 (UPD78044A172): System control

Pin No.	Mark	I/O Division	Function
1 6	NONE	—	Not connected
7	LIGHT	O	Not used, open
8	VDD	I	Power supply terminal
9	SCK	O	Serial clock output terminal
10	SDO	O	Serial data output terminal
11	SDI	I	Serial data input terminal
12	/CS	O	Chip select terminal
13	DMUTE	O	Muting control signal
14	SQCK	O	sub-code Q register clock
15	NC	—	Not connected
16	SUBQ	I	Sub-code Q data
17	/RESET	I	Reset signal input
18	NONE	—	Not connected
19	KBDATA	O	Keyboard data signal (Not used open)
20	AVSS	—	GND terminal
21	/RSTSV	O	Reset signal output
22	/LCK	O	Not used, open
23	DIR	O	Motor control signal
24	SLIDE	O	Motor control signal
25	LOAD	O	Motor control signal
26	KBCS	O	Chip select terminal (Not used, open)
27	SEL 1	—	Not used, connected to GND
28	KBCLK	O	Serial clock terminal (Not used, open)

Pin No.	Mark	I/O Division	Function
29	AVDD	I	Power supply terminal
30	AVREF	I	Power supply terminal (Not used, connected to GND)
31	XT1	—	Not used, connected to GND
32	XT2	—	Not used, open
33	VSS	—	GND terminal
34	X1	I	Crystal Osc terminal (f=4.2336MHz)
35	X2	O	
36	MCLK	O	Command clock signal
37	MDATA	O	Command data signal
38	MLD	O	Command load signal ("L" LOAD)
39	EPCLK	O	Not used, open
40	EPSO	I	Not used, open
41	/EPCS	O	Not used, open
42	/EPHOLD	O	Not used, open
43	PWM	O	Motor control signal
44	POFF	I	Power det. terminal
45	POSITION	I	Rotary tray position det. terminal
46	SPEED	I	Loading motor speed sensor signal
47	REMOCON	I	Remote control signal input
48	IC	—	Not used, connected to GND
49 51	NONE	—	Not connected
52	VDD	I	Power supply terminal
53	POWER	O	Power ON/OFF output terminal

Pin No.	Mark	I/O Division	Function
54	EPSI	O	Serial data input terminal (Not used, OPEN)
55	NONE	—	Not connected
56	SINGLE	I	Disc slot det. terminal for single play
57	DISC	I	Disc control signal
58	MLOCK	I	Mechanism det. terminal (S501)
59	CLAMP	I	Mechanism det. terminal (S502)
60	FREE	I	Mechanism det. terminal (S503)
61	PHSEL1	—	Not connected
62	STAT	I	Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQCK)
63	REST	I	Rest position det.

Pin No.	Mark	I/O Division	Function
64	PHSEL2	—	Not connected
65	STP 1	—	Not used, connected to GND
66	STP 2	—	Not used, connected to GND
67	WDSEL	—	Not connected
68	LED 3	O	LED drive signal
69	NONE	—	Not connected
70		—	
71	VPP	I	Power supply terminal (Not used, connected to GND)
72	NONE	—	Not connected
80		—	

● IC602 (MN12510F): FL drive

Pin No.	Mark	I/O Division	Function
1	P21	O	Segment signal of FL display
2	P20		
3	P03	O	Segment signal of FL display
6	P00		
7	DGT7	O	Grid signal of FL display
10	DGT4		
11	NC	—	Not connected
12	DGT3	O	Grid signal of FL display
15	DGT0		
16	VPP	I	Power supply terminal
17	NC	—	Not connected
18	VDD	I	Power supply terminal
19	OSC 1	I	Crystal Osc terminal (f=4.2326MHz)
20	OSC 2	O	

Pin No.	Mark	I/O Division	Function
21	VSS	—	GND terminal
22	/NCS	I	Chip select terminal
23	SCK	I	Serial clock input terminal
24	SDI	I	Serial data input terminal
25	SDO	O	Serial data output terminal
26	P30	I	Key return signal
30	P34		
31	SEG 0	O	Segment signal of FL display and key scan signal
38	SEG 7		
39	P 10	O	Segment signal of FL display and key scan signal
42	P 13		
43	P 23	O	Segment signal of FL display and key scan signal
44	P 22		

● IC702 (MN662741RPA): Servo processor/ digital signal processor/ digital filter D/A converter

Pin No.	Mark	I/O Division	Function
1	BCLK	O	Serial bit clock terminal
2	LRCK	O	L/R discriminating signal
3	SRDATA	O	Serial data (Not used, open)
4	DVDD1	I	Power supply (digital circuit) terminal
5	DVss 1	—	GND (digital circuit) terminal
6	TX	O	Digital audio interface signal
7	MCLK	I	Command clock signal
8	MDATA	I	Command data signal
9	MLD	I	Command load signal ("L":LOAD)
10	SENSE	O	Sense signal (OFT, FESL, NACEND, NAJEND, POSAD, SFG)
11	/FLOCK	O	Optical servo condition (focus) ("L": lead-in)
12	/TLOCK	O	Optical servo condition (tracking) ("L": lead-in)
13	BLKCK	O	Sub-code block clock (f=75Hz) (Not used, open)
14	SQCK	I	Sub-code Q register clock
15	SUBQ	O	Sub-code Q data
16	DMUTE	I	Muting input ("H": MUTE) (Not used, connected to GND)
17	STAT	O	Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQCK)
18	/RST	I	Reset signal ("L": reset)
19	SMCK	O	System clock (f=4.2336MHz) (Not used, open)
20	PMCK	O	Frequency division clock signal (No used, open) (f= $\frac{1}{1.92} \times ck = 88.2\text{kHz}$)
21	TRV	O	Traverse servo control

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

Pin No.	Mark	I/O Division	Function
43	WVEL	O	Double velocity status signal ("H": double) (Not used, open)
44	ARF	I	RF signal input
45	IREF	I	Reference current input
46	DRF	I	DSL bias terminal (Not used, open)
47	DSL	I/O	DSL loop filter terminal
48	PLLF	I/O	PLL loop filter terminal
49	VCOF	I/O	VCO loop filter terminal
50	AVDD2	I	Power supply (analog circuit) terminal(2)
51	AVss2	—	GND (analog circuit) terminal
52	EFM	O	EFM signal (Not used, open)
53	PCK	O	PLL extract clock (f= 4.3218MHz) (Not used, open)
54	PDO	O	Phase comparated signal of EFM and PCK (Not used, open)
55	SUBC	O	Sub-code serial output clock (Not used, open)
56	SBCK	I	Sub-code serial input data (Not used, connected to GND)
57	Vss	—	GND terminal
58	X1	I	Crystal oscillator terminal (f=16.9344MHz)
59	X2	O	
60	VDD	I	Reset signal ("L": reset)
61	BYTCK	O	Byte clock signal (Not used, open)
62	/CLDCK	O	Sub-code frame clock signal (f CLDCK=7.35KHz: Normal) (Not used, open)
63	FCLK	O	Crystal frame clock (Not used, open)
64	IPFLAG	O	Interpolation flag terminal (Not used, open)

Pin No.	Mark	I/O Division	Function
65	FLAG	O	Flag terminal (Not used, open)
66	CLVS	O	Turntable servo phase synchro signal ("H": CLV, "L": Rough servo) (Not used, open)
67	CRC	O	Sub-code CRC check terminal ("H": ON, "L": NG) (Not used, open)
68	DEMPH	O	De-emphasis ON signal ("H": ON) (Not used, open)
69	RESY	O	Re-synchronizing signal of frame sync. (Not used, open)
70	/RST2	I	Reset terminal after "MASH" circuit (Not used, connected to power supply)
71	/TEST	I	Test terminal (Normal: "H") (Not used, connected to power supply)
72	AVDD1	I	Power supply (analog circuit) terminal (1)
73	OUTL	O	Lch audio signal
74	AV ss1	—	GND (analog circuit) terminal (1)
75	OUTR	O	Rch audio signal
76	RSEL	I	Polarity direction control terminal of RF signal (Not used, connected to power supply)
77	CSEL	I	Frequency control terminal of crystal oscillator (Not used, connected to GND)
78	PSEL	I	Test terminal (Normal: "L") (Not used, connected to GND)
79	MSEL	I	"SMCK" terminal frequency select ("L": SMCK=4.2336MHz) (Not used, connected to GND)
80	SSEL	O	"SUBQ" terminal mode select ("H": Q code buffer) (Not used, connected to power supply)

● IC701 (AN8835SBE1): Servo amp

Pin No.	Mark	I/O Division	Function
1	PDA	I	Focus signal input terminal 1 (Ach)
2	PDB	I	Focus signal input terminal 2 (Bch)
3	VCC	I	Power supply terminal
4	LPD	I	Laser PD signal
5	LD	O	Laser power auto control output
6	RF	O	RF amp terminal
7	RF IN	I	AGC input terminal
8	CAGC	I	AGC detection capacitor input
9	ARF	O	RF signal
10	CSBRT	I	OFTR capacitor connection terminal
11	CEA	I	HPF-AMP capacitor connection terminal
12	BDO	O	Dropout detection control
13	LDON	I	LD APC ON/OFF ("H": ON, "L": OFF)
14	GND	—	GND terminal

Pin No.	Mark	I/O Division	Function
15	/RFDET	O	RF det. signal ("L": det.)
16	CROSS	O	Tracking error zero cross output
17	OFTR	O	Off track detection ("H": det.)
18	VDET	O	Oscillation det. signal ("H": det.)
19	ENV	O	Envelope output terminal
20	TEBPF	I	Oscillation detect input terminal (Not used, open)
21	CCRS	I	CROSS capacitor connection terminal
22	TE	O	Tracking error signal
23	FE	O	Focusing error signal
24	TBAL	I	Tracking balance adj. input
25	FBAL	I	Focus balance adj. input
26	VREF	O	Reference voltage output
27	PDE	I	Tracking signal input terminal 1 (Ech)
28	PDF	I	Tracking signal input terminal 2 (F ch)

● IC703(AN8389SE1): Focus coil/ tracking coil/ traverse motor/ spindle motor drive

Pin No.	Mark	I/O Division	Function
1	Vcc	I	Power supply terminal
2	VREF	I	Reference voltage input
3	IN4	I	Motor driver (4) input
4	IN3	I	Motor driver (3) input
5	GND	—	GND terminal
6	NC	—	Not used, connected to GND
7	NRESET	O	Reset terminal (Not used, open)
8	GND	—	GND terminal
9	IN2	I	Motor driver (2) input
10	PC2	I	PC2 (power cut) input
11	IN1	I	Motor driver (1) input
12	PC1	I	PC1 (power cut) input (Not used, connected to GND)

Pin No.	Mark	I/O Division	Function
13	PVcc1	I	Driver power supply (1)
14	PGND1	—	Driver GND terminal (1)
15	D1-	O	Motor driver (1) output terminal (-)
16	D1+	O	Motor driver (1) output terminal (+)
17	D2-	O	Motor driver (2) output terminal (-)
18	D2+	O	Motor driver (2) output terminal (+)
19	D3-	O	Motor driver (3) output terminal (-)
20	D3+	O	Motor driver (3) output terminal (+)
21	D4-	O	Motor driver (4) output terminal (-)
22	D4+	O	Motor driver (4) output terminal (+)
23	PGND2	—	Driver GND terminal (2)
24	PVcc2	I	Driver power supply (2)

■ Schematic Diagram (Parts list on pages 70~73.)

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

Note:

- **S501:** Lock det. switch. (MLOCK)
- **S502:** Clamp det. switch. (CLAMP)
- **S503:** Clamp det. switch. (FREE)
- **S601:** Stop (■) switch.
- **S602, 603:** Disc skip switches. (S602: +, S603: -)
- **S604:** Programming (PROGRAM) switch.
- **S605:** Single play (SINGLE ▶) switch.
- **S606:** Pause (■■) switch.
- **S607, 608:** Track skip switches. (S607: ▶▶, S608: ◀◀)
- **S609:** Direct programming (DIRECT) switch
- **S610:** Power "STANDBY Ⓛ /ON" (POWER, STANDBY Ⓛ ON) switch.
- **S611:** Play (▶) switch.
- **S612, 613:** Search (SEARCH) switches. [S612: ▶▶, S613: ◀◀]
- **S614:** Group enter (GROUP ENTER) switch.
- **S615:** OPEN/CLOSE det. switch.
- **S616~620:** Disc group (DISC GROUPING PLAY) switches.
[S616: A, S617: B, S618: C, S619: D, S620: E]
- **S621~631:**
 - Numeric (1~9, 0, \geq 10) switches.
 - $\left[\begin{array}{l} \text{S621: (0), S622: (1), S623: (2), S624: (3), S625: (4),} \\ \text{S626: (5), S627: (6), S628: (7), S629: (8), S630: (9),} \\ \text{S631: (\geq 10)} \end{array} \right]$
- **S633:** Disc selector (DISC) switch.
- **S634:** Disc enter (DISC ENTER) switch.
- **S636:** ID scan (ID SCAN) switch.
- **S701:** Rest detector.
- The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis. Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.
- * The parenthesized are the values of voltage generated during playing (Test disc 1kHz, L+R, 0dB), others are voltage values in stop mode.
- Important safety notice:
Components identified by \triangle 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 as occasion calls. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
- / : Positive voltage lines and negative voltage lines.
- : audio signal lines.

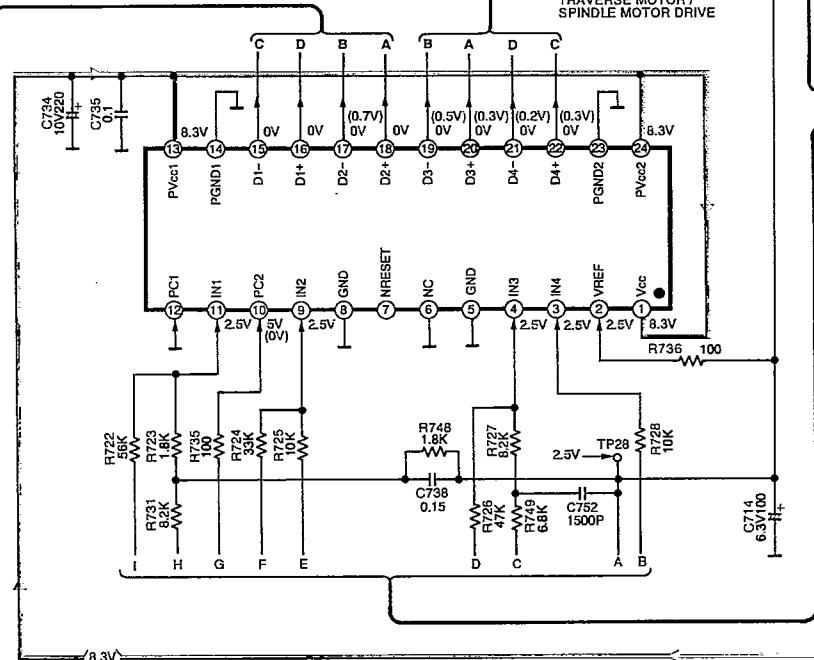
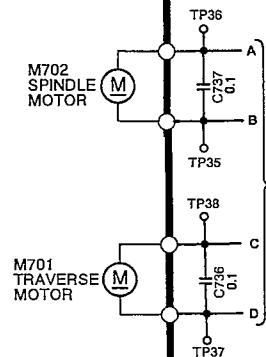
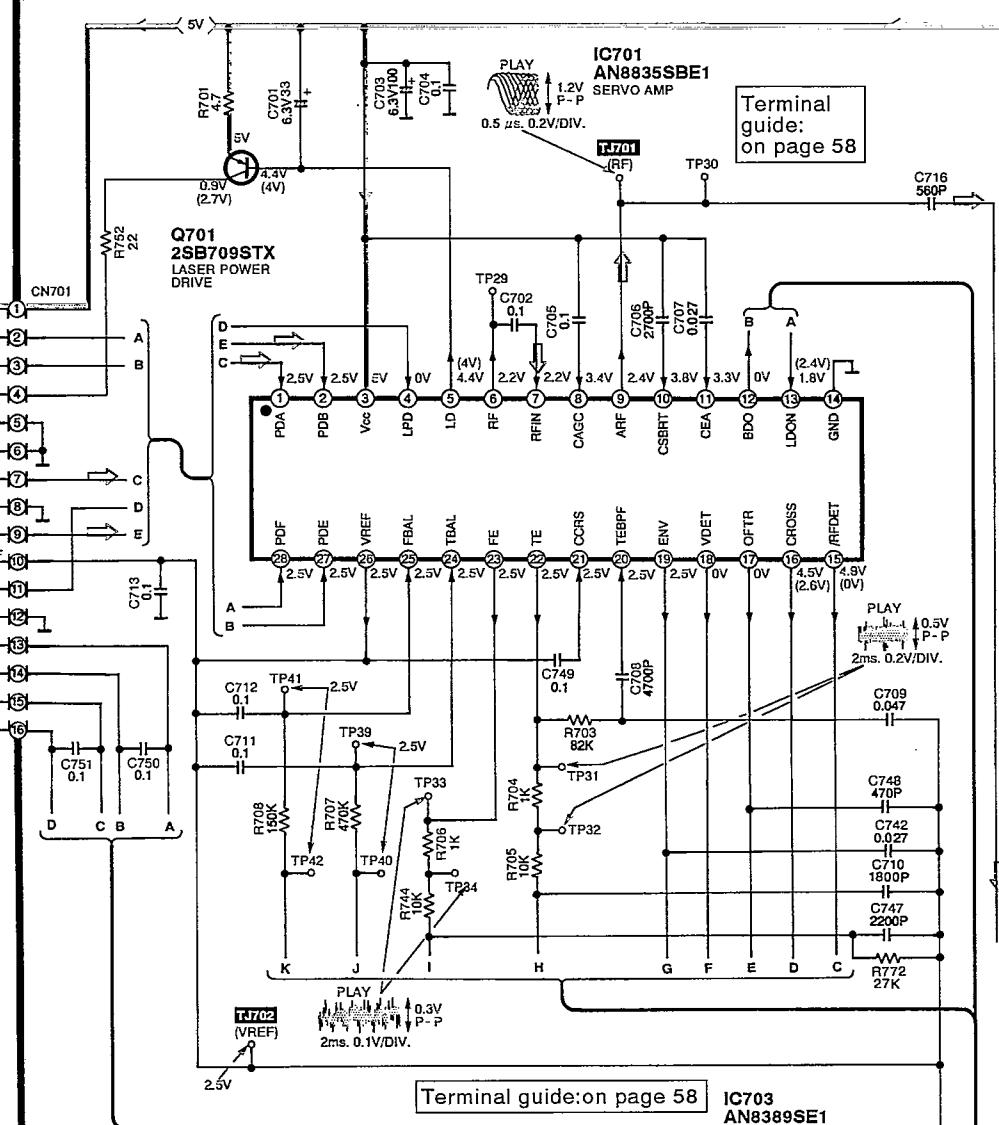
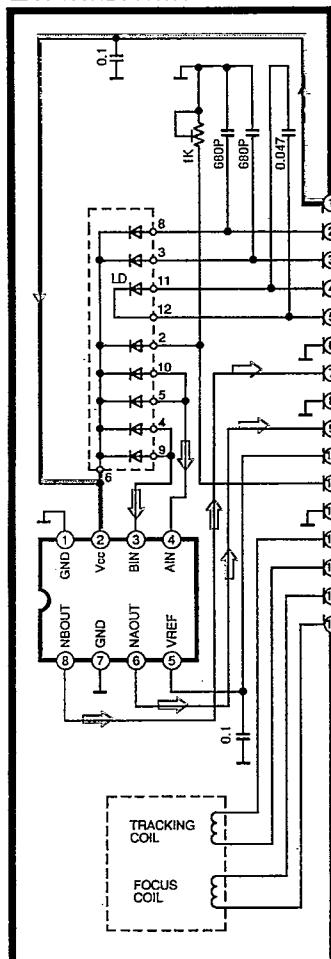
Caution!

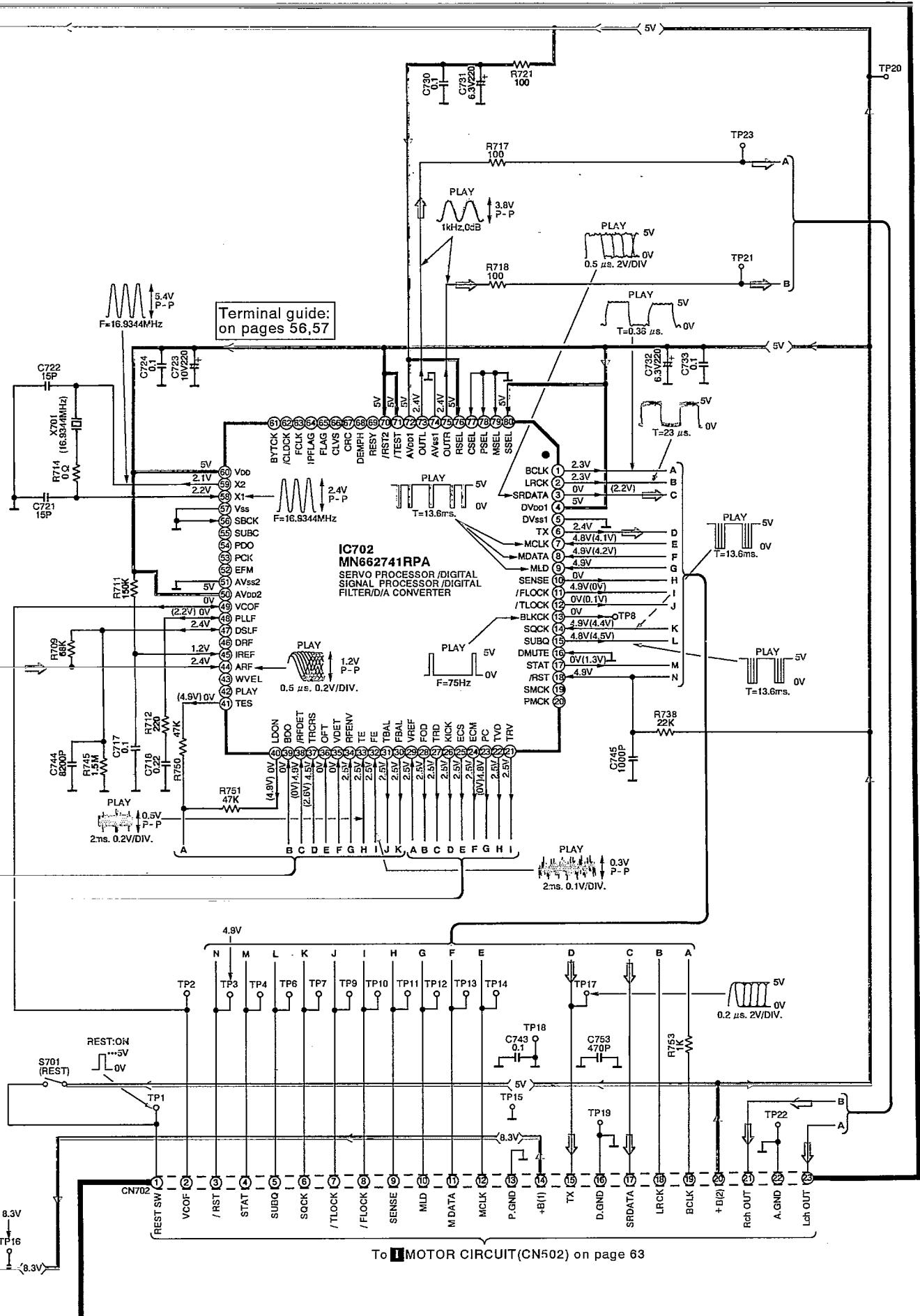
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

- 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.

- : Audio signal lines.

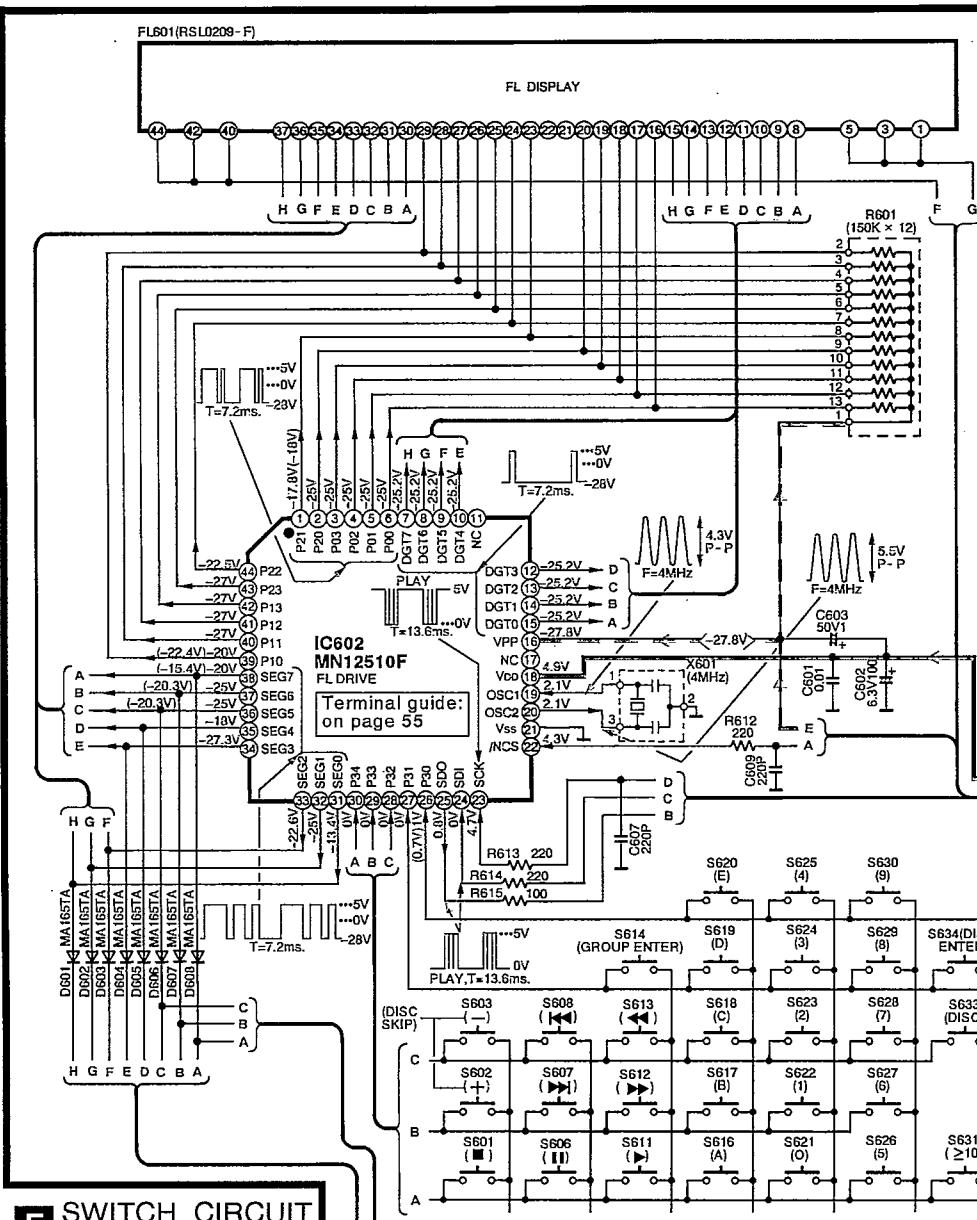
A SERVO CIRCUIT (P.C. Board: on page 66)



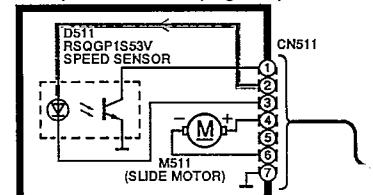


- : Audio signal lines

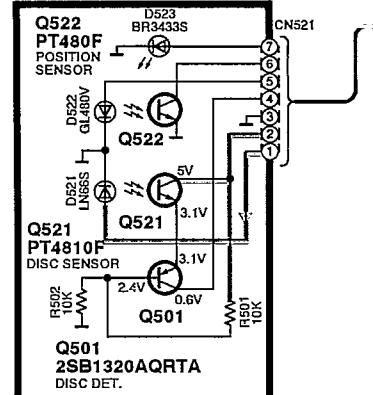
B FRONT PANEL CIRCUIT (P.C. Board: on page 67)



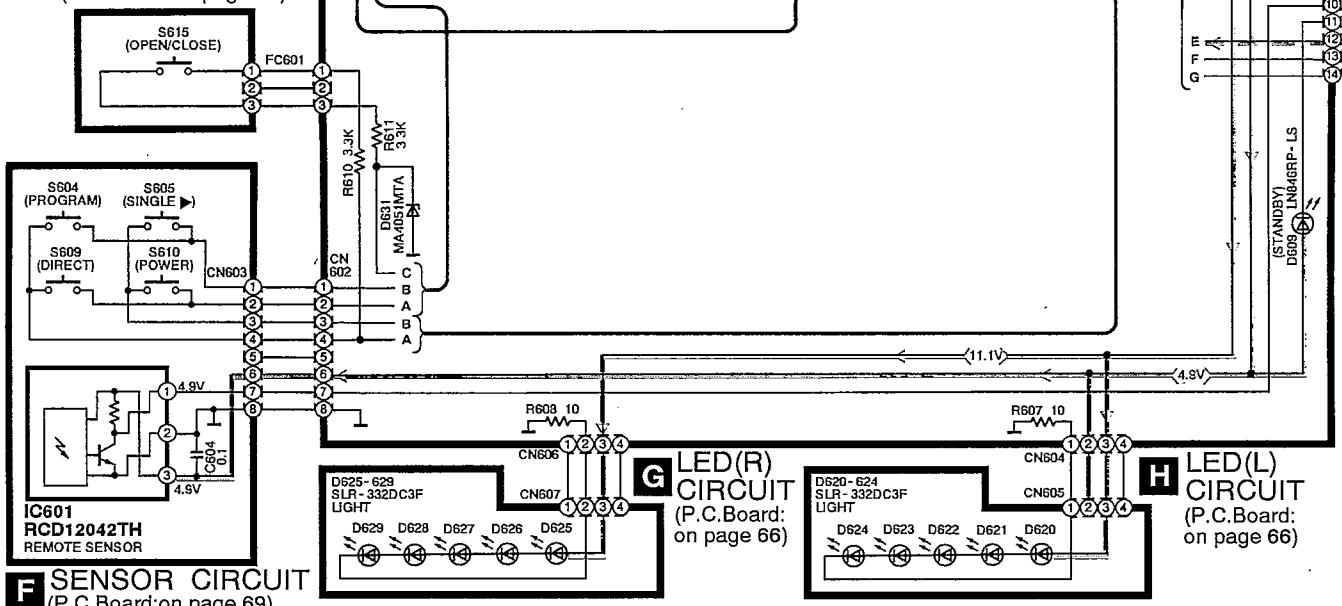
C SLIDE MOTOR CIRCUIT (P.C. Board: on page 69)



D PHOTO TR.(1)
CIRCUIT
(P.C. Board: on page 66)



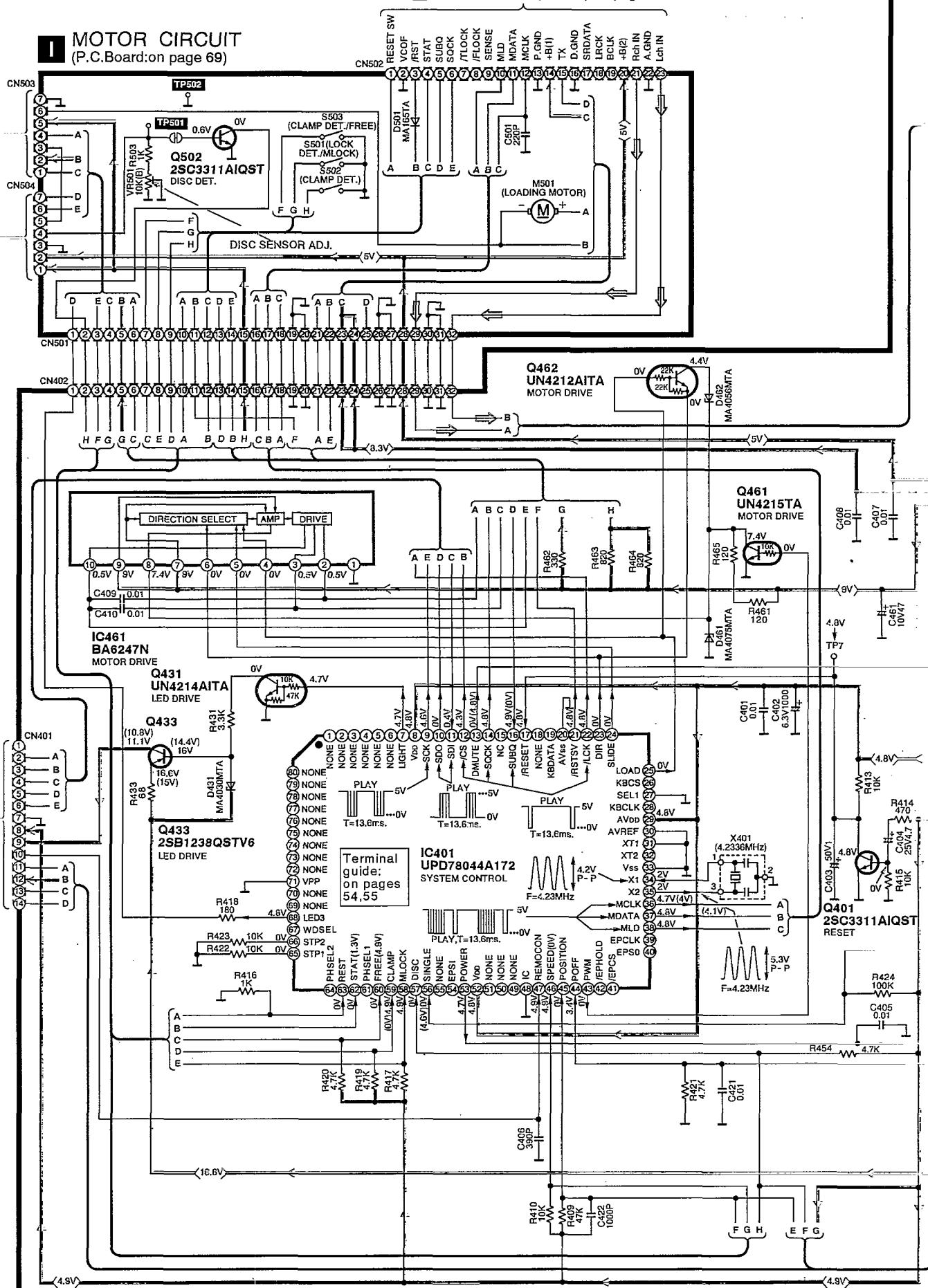
E SWITCH CIRCUIT (P.C.Board:on page 69)



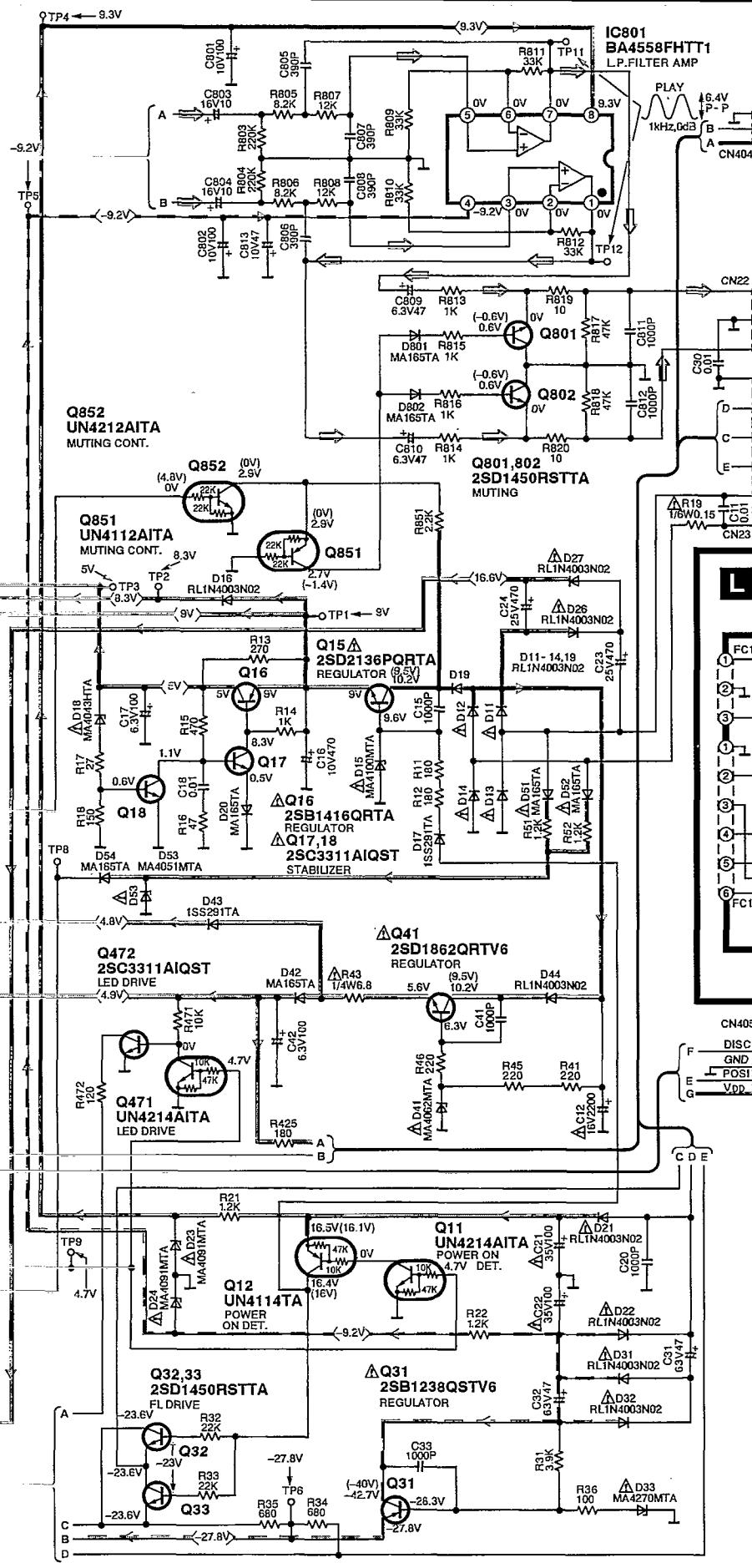
F SENSOR CIRCUIT (P.C.Board:on page 69)

I MOTOR CIRCUIT (P.C. Board: on page 69)

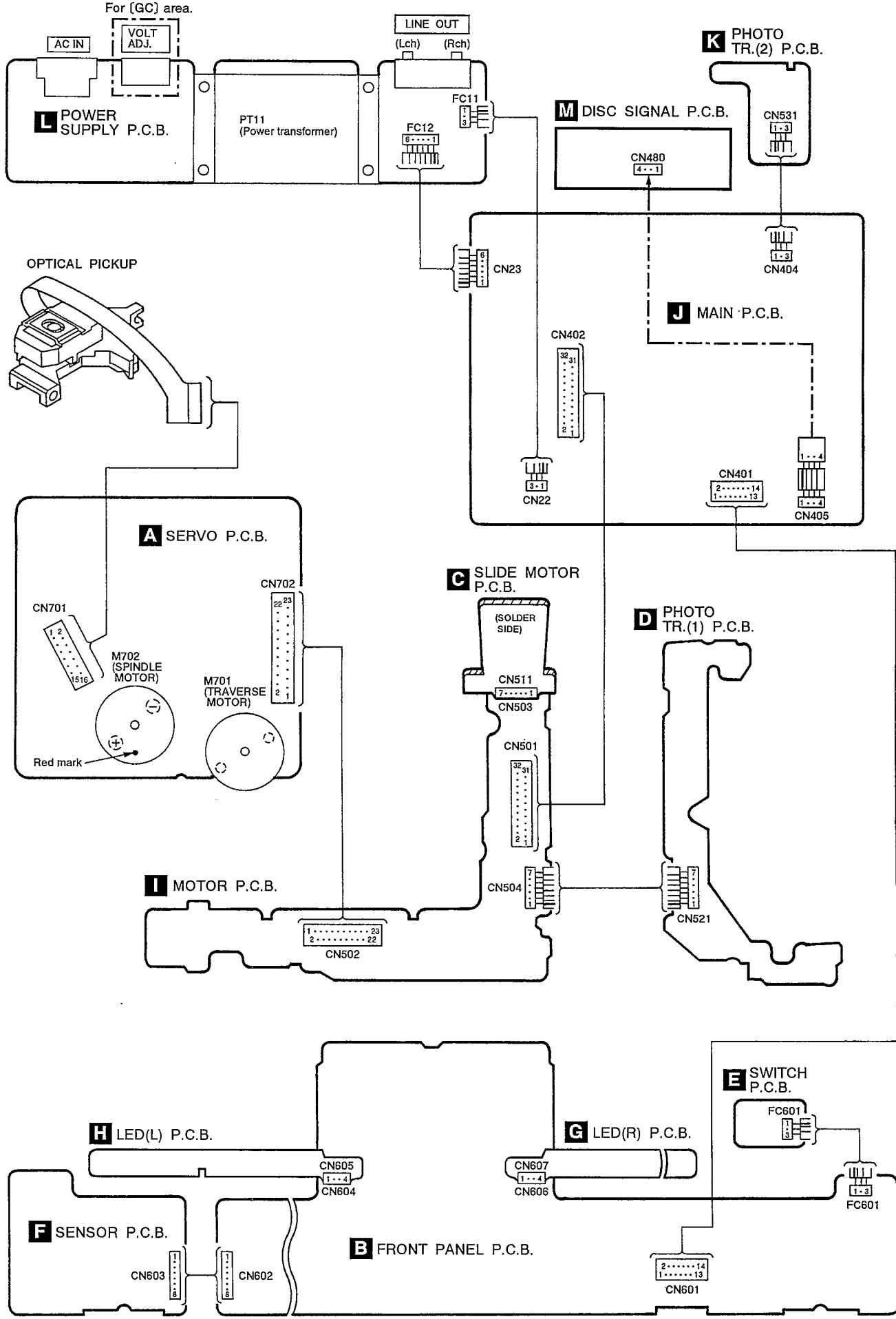
To **A SERVO CIRCUIT(CN702)** on page 61



• → : Audio signal lines.

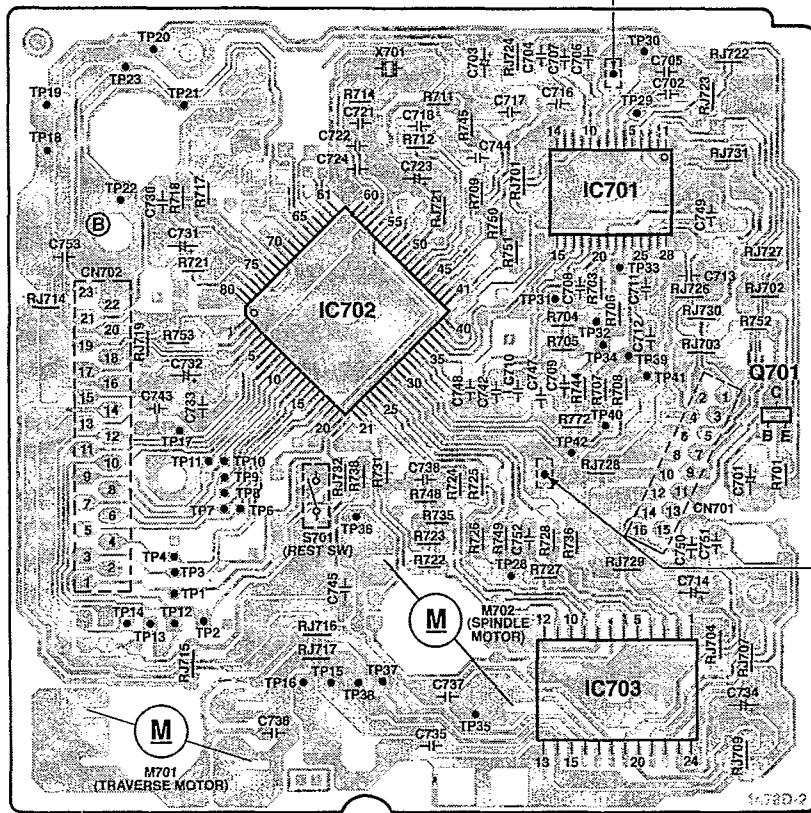
J MAIN CIRCUIT (P.C. Board: on page 68)

■Wiring Connection Diagram

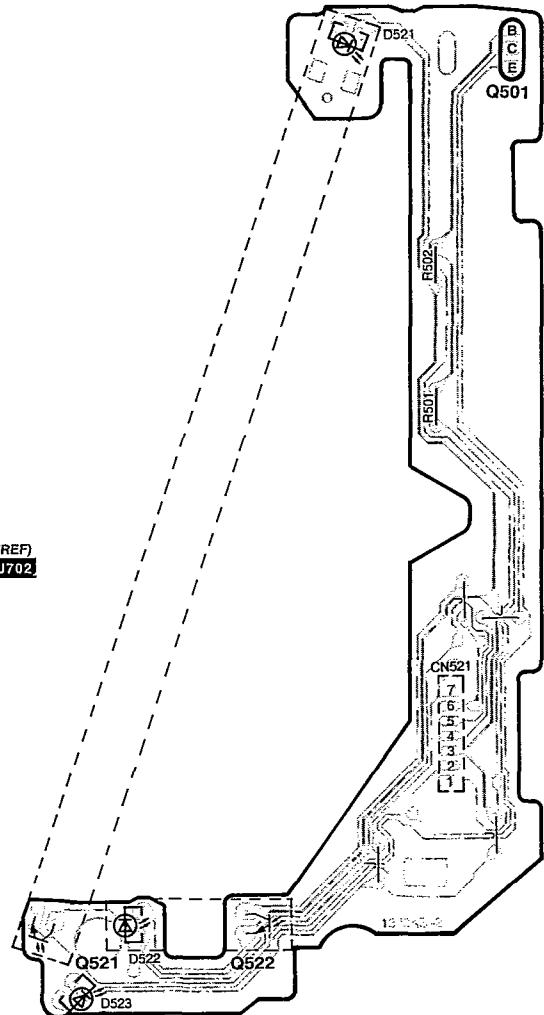


■ Printed Circuit Board Diagram

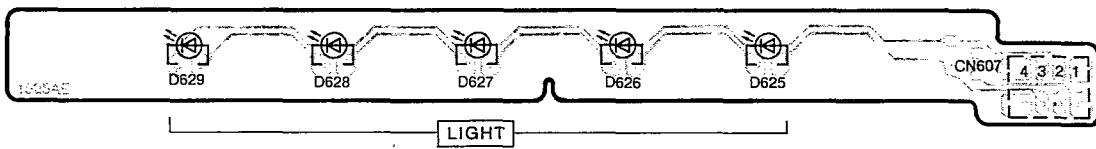
A SERVO P.C.B (REP2144D-N)



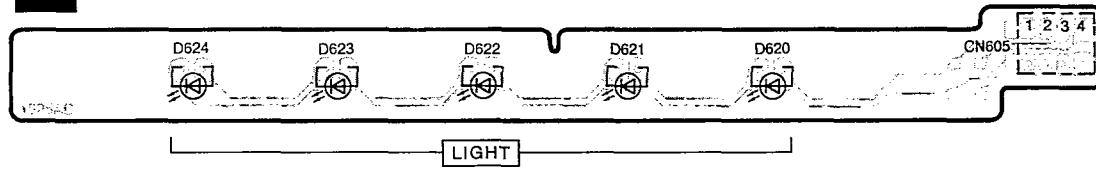
D PHOTO TR.(1) P.C.B. (REP2219A-2N)



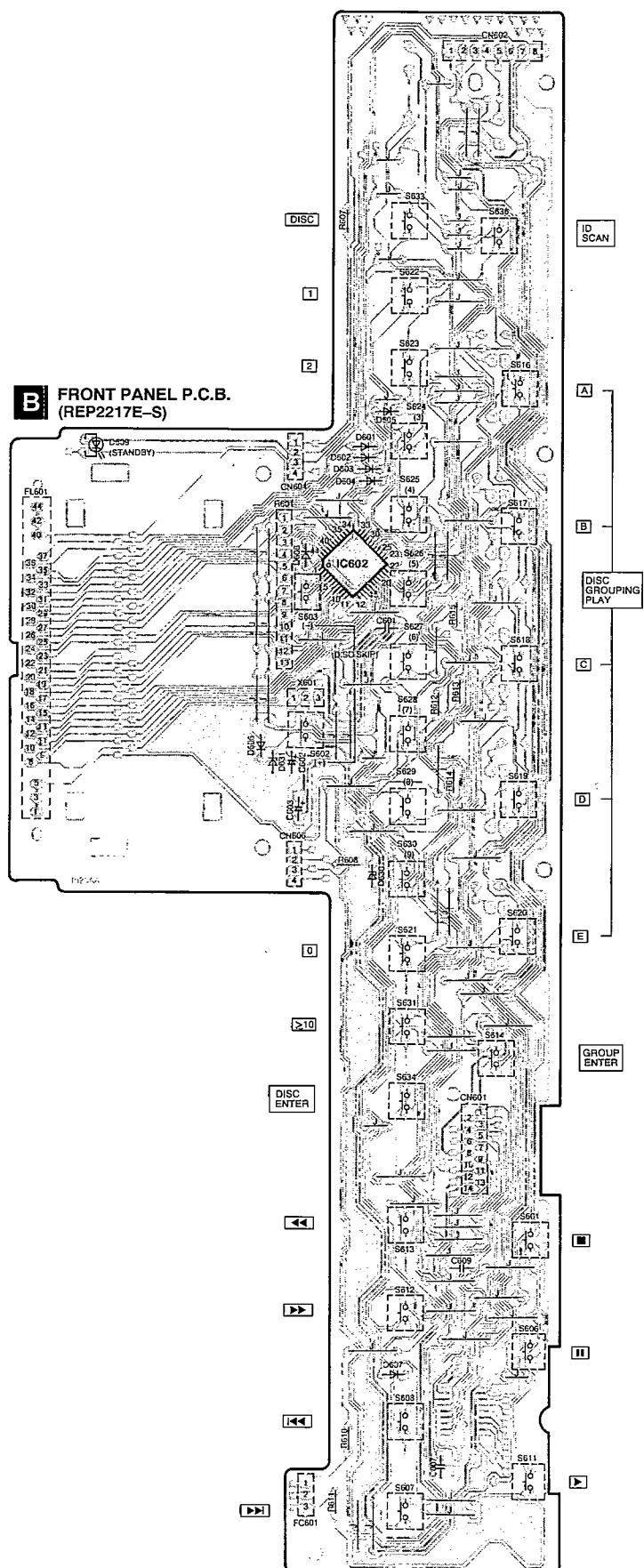
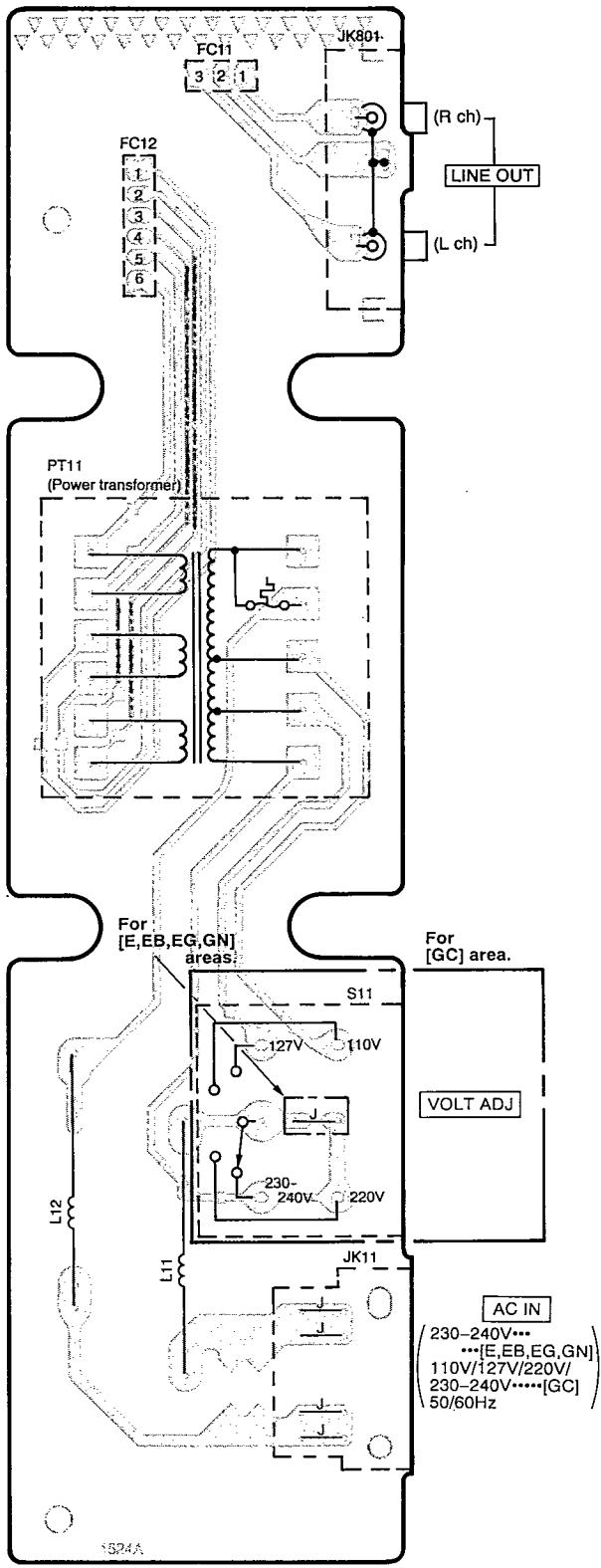
G LED (R) P.C.B. (REP2217E-S)



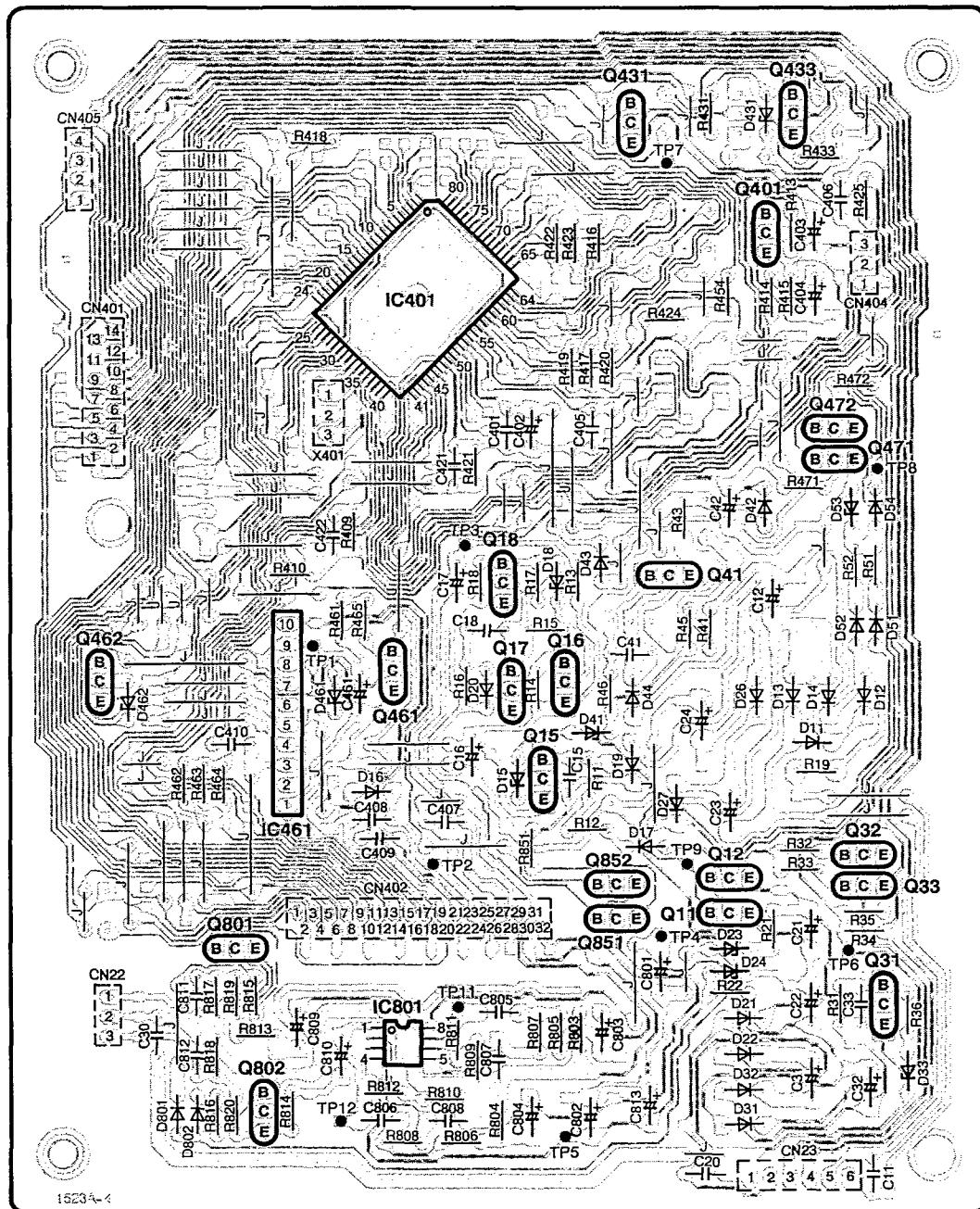
H LED (L) P.C.B. (REP2217E-S)



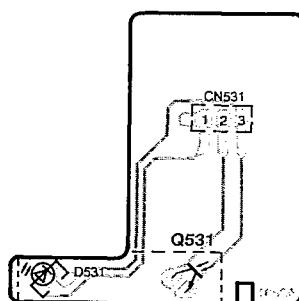
L POWER SUPPLY P.C.B.
 (REP2218B-P...[E,EB,EG])
 (REP2218C-P...[GN])
 (REP2218D-P...[GC])



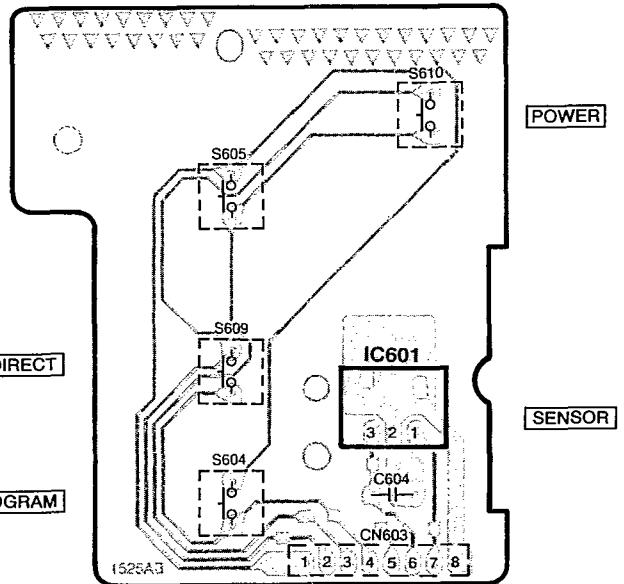
J MAIN P.C.B. (REP2216B-M)



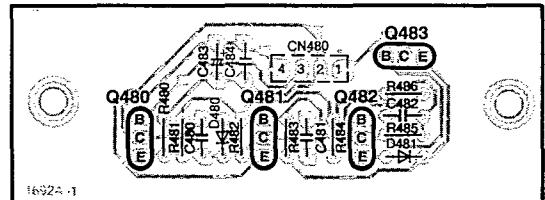
**K PHOTO TR.(2)
P.C.B. (REP2348A-N)**



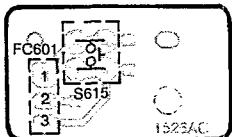
F SENSOR P.C.B. (REP2217E-S)



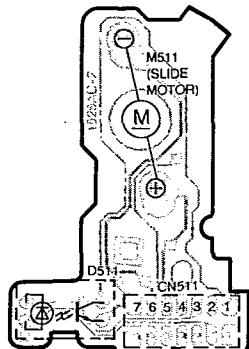
M DISC SIGNAL P.C.B.
(REP2385A-N)



E SWITCH P.C.B.
(REP2217E-S)



**C SLIDE MOTOR
P.C.B.
(REP2219A-3N)**



MOTOR P.C.B. (REP2219A-1N)

