

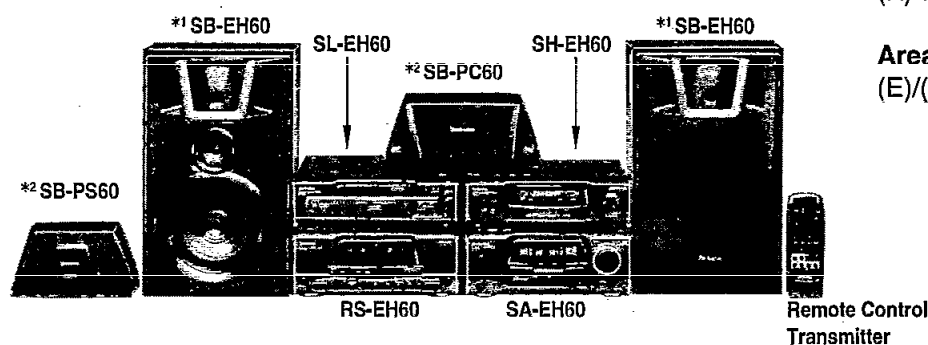
Service Manual

CD Changer

Compact Disc Player
SL-EH60

System: SC-EH60**Colour**

(K) Black

Area(E)/(EP) ... Europe, Russia, Asia,
Latin America, Middle
East, Africa and Oceania.

COMPACT
disc
DIGITAL AUDIO

MASH*3
multi-stage noise shaping

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

RAE0150Z MECHANISM SERIES

Specifications

Audio Section

DA converter : 1 bit DAC MASH

Pickup Section

Wavelength : 780 nm

General

Dimensions : 287(W)/89(H)/336(D) mm
Weight : 2.4 kg

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

System/SC-EH60:

Sound processor: SH-EH60,
Front speakers: *1 SB-EH60,

Tuner/Amplifier: SA-EH60,
Center speaker: *2 SB-PC60,

Compact disc changer: SL-EH60,
Surround speakers: *2 SB-PS60

Cassette deck: RS-EH60,

Notes: *1...For Europe and Russia : Made in PAES,

For others : Made in MESA

*2...Made in MESA

*3...MASH is a trademark of NTT

⚠ WARNING

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

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NOTE:

Refer to the service manual for Model No. SA-EH60 (ORDER No. AD9703048C8) for information on "Accessories", "Connections", "Installation", and "Packaging".

CAUTION:

THIS PRODUCT UTILIZES A LASER.

USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

Handling Precautions for Traverse Deck

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

• Handling of traverse deck (optical pickup)

1. Do not subject the traverse deck (optical pickup) to static electricity as it is extremely sensitive to electrical shock.
2. To protect the laser diode against electrostatic breakdown, short the flexible board (FFC board) with a clip or similar object.
3. Take care not to apply excessive stress to the flexible board (FFC board).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

• Grounding for electrostatic breakdown prevention

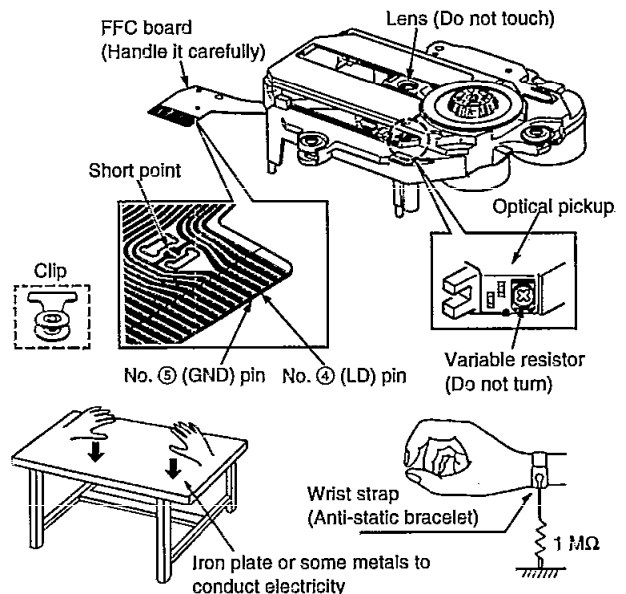
1. Human body grounding
Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table grounding
Put a conductive material (sheet) or steel sheet on the area where the traverse deck (optical pickup) is placed, and ground the sheet.

Caution:

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

Caution when Replacing the Traverse Deck:

The traverse deck has a short point shorted with solder to protect the laser diode against electrostatic breakdown. Be sure to remove the solder from the short point before making connections.



Precaution of Laser Diode

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

Wave length: 780 nm

Maximum output radiation power from pick up: 100 μ W/VE

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

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

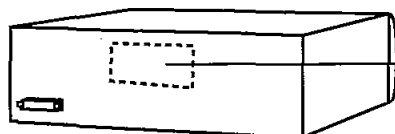
ACHTUNG: Dieses produkt enthält eine laserdioden. Im eingeschalteten zustand wird unsichtbare laserstrahlung von der lasereinheit adgestrahlt.

Wellenlänge: 780 nm

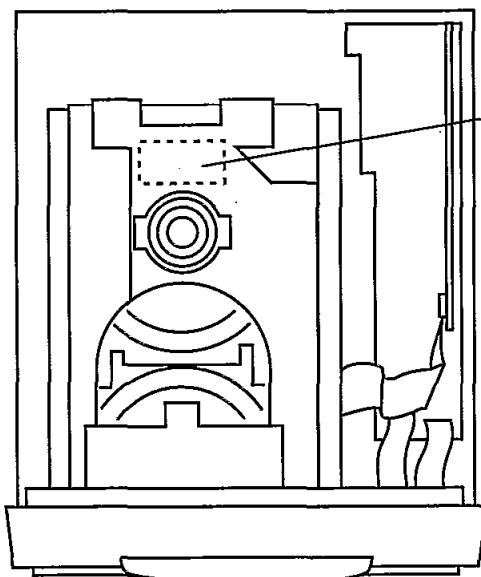
Maximale strahlungsleistung der lasereinheit: 100 μ W/VE

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

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

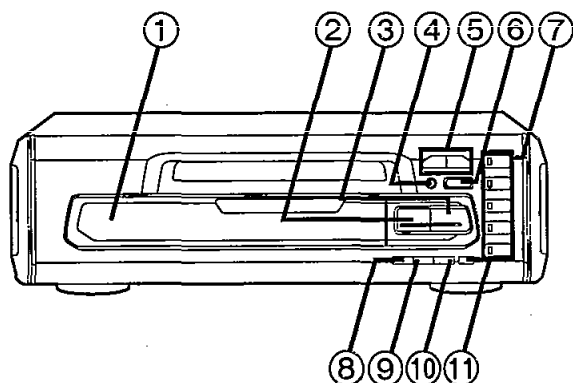


**CLASS 1
LASER PRODUCT**



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

■ Location of Controls



- ① Disc tray
- ② Stop button (■)
- ③ Play button and indicator (▷)
- ④ Pause button (||)
- ⑤ Skip/search buttons (◀◀ / ◀▶, ▶▶ / ▶▶)
- ⑥ Disc tray open/close button (▲, OPEN/CLOSE)
- ⑦ Disc select buttons and indicators (DISC, 1-5)
- ⑧ Random play button (RANDOM)
- ⑨ Repeat button (REPEAT)
- ⑩ AI edit button (AI EDIT)
- ⑪ Disc check button (▲ -NEXT/-AUTO)

■ How to Set the "Transport Mode"

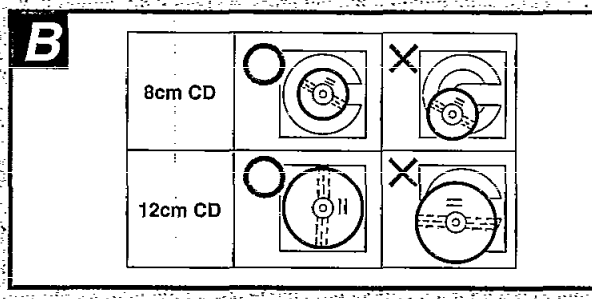
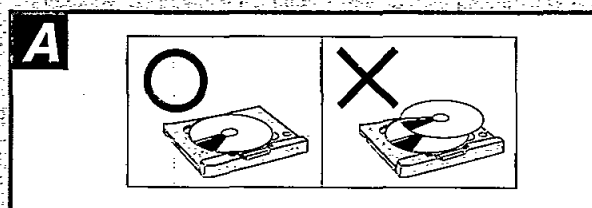
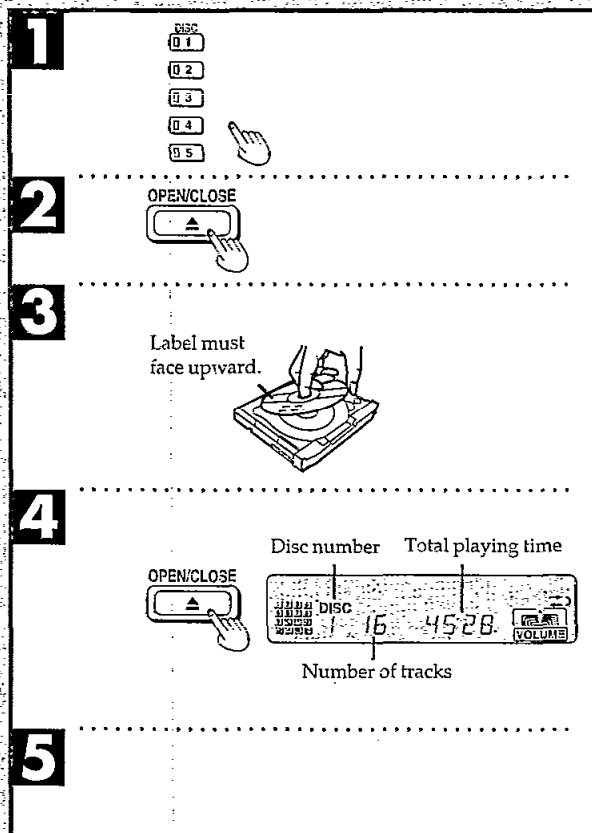
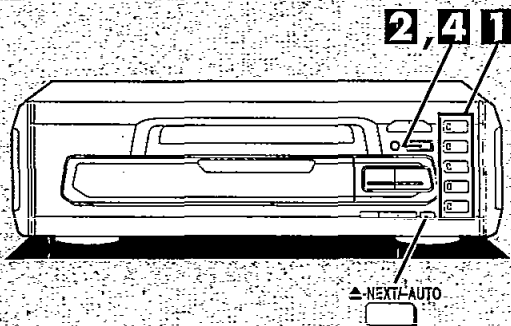
When the alignment of the unit is finished, please make sure to set it to the "Transport Mode" as following procedures;

1. Take all CDs out from the unit.
2. With pressing the STOP key for more than 6 seconds.
The traverse unit is lifted up to the top place, and all the disc trays are fixed automatically.
3. Turn the unit off.

NOTE:

The next time the unit is turned on, the "Transport Mode" is automatically cancelled.

■ Listening to Compact Discs



Always stop the changer before loading or changing CDs. You cannot change CDs while a disc is playing.

How to load CDs

- 1** Press DISC 1-5, whichever you want to open.
- 2** Press **▲** OPEN/CLOSE.
- 3** Set the CD in the tray.
- 4** Press **▲** OPEN/CLOSE.
The tray will close.
- 5** To load other CDs, repeat steps **1** through **4**.

About disc indicators:

The indicator lights as follows.

Green: Indicates that the tray is ready to play its CD or to be opened.
Orange: Indicates that the tray is in a status other than that described above.

How to check which trays have discs

▲ -NEXT/-AUTO is a convenient button to use for this function.

Press **▲** -NEXT/-AUTO.

The first tray to open will be the next one after the disc number shown on the display. For example, when disc 4 is displayed, tray 5 will open.

- Every time you press the button, the next tray opens.
- You can change the CD while the tray is open.
- To close the tray, press **▲** OPEN/CLOSE.

Press and hold **▲** -NEXT/-AUTO.

The trays will open (and close) automatically one after another. The first tray to open will be the next one after the disc number shown on the display. This way, you can check all trays in a row.

- To stop the auto check in course, press **■**.

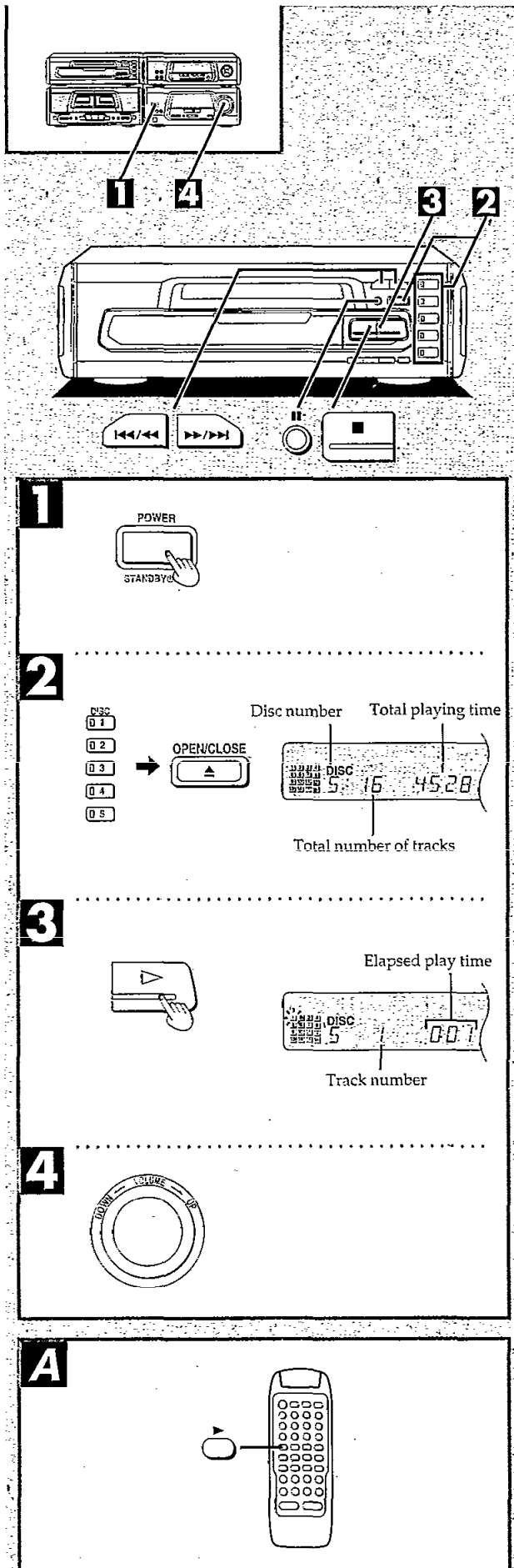
Note

Do not attempt to change CDs while trays are opening and closing in the auto check.

To prevent damage

Always observe the following points.

- Load only 1 CD per tray. **A**
- Load CDs as shown in figure **B**.
An adapter is not needed with 8 cm CDs (singles).
Do not set it on top of magazines, inclined surfaces, etc.
- Do not move the system while trays are opening/closing, or when loaded.
Always unload all trays before moving the system.
- Do not put anything except CDs in trays.
- Do not use cleaning CDs or CDs which are badly warped or cracked.
- Do not use CDs with poorly attached labels or stickers. Adhesive protruding from underneath stickers or left over from peeled off stickers can cause the system to malfunction.



Sequential play

1 Switch on the power.

2 Insert CDs in the trays.

When the "CD" input source is selected, disc number, total number of tracks, and total playing time will appear on the display.

When there are 16 or more tracks on the CD, "≥" will appear.

Note

The total playing time displayed when a disc is loaded includes intervals between tracks. This is why sometimes the displayed time is longer than that listed on the CD.

3 Press ▷.

The changer will automatically play all tracks on all discs. It will start from the first track on the disc shown on the display, and will continue until playing the last track of the final disc (see below).

4 Adjust the volume level as you like.

To stop the disc play:

Press ■.

To temporarily stop the disc play:

Press ||. The play indicator flashes green.

To play again, press ▷.

What is meant by "final disc"?:

For example, if play starts from disc 4, disc 3 will be the "final disc".

Order of progression:

Disc 4→5→1→2→3

About play indicator:

While halted: Lights up orange.

While playing: Lights up green.

For your reference:

If you press ▷ instead of ▲ OPEN/CLOSE after inserting a CD, the tray will close and play will start directly from the track 1.

To search forward/backward	Hold down during playback. [◀/▶] [▶/▶] (Backward) (Forward)
To skip forward/backward	Press. [◀/▶] [▶/▶] (Backward) (Forward)

Note

During random play, you cannot skip to tracks which have already been played.

For your reference:

- During program play or random play, you cannot search-forward/backward over tracks.
- During program play, skipping is in always in the programmed order, whether forward or backward.

One-touch play ■

When the system is OFF, playing starts automatically when you press ▶ on the remote control.

The play will start with volume increasing gradually.

■ Operation Checks and Main Component Replacement Procedures

NOTE

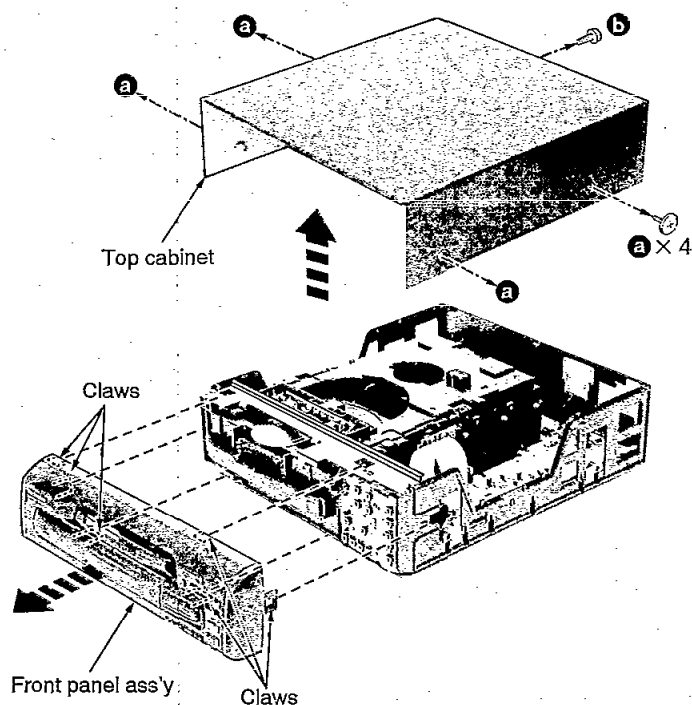
1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.
3. Select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

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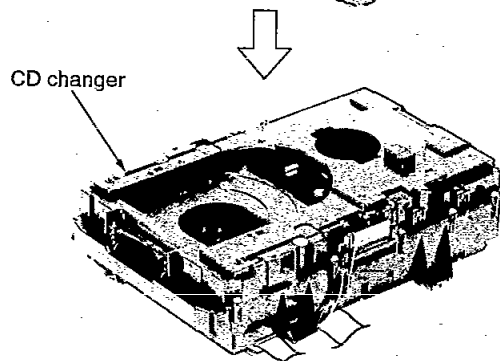
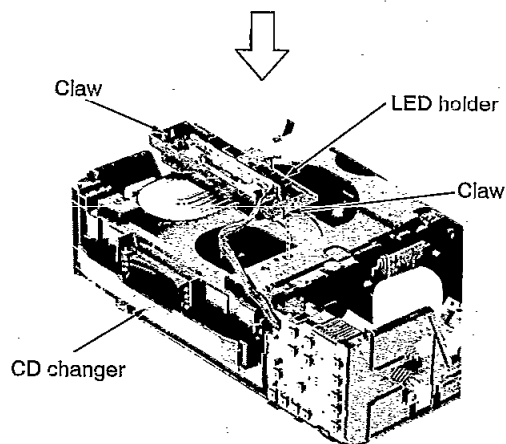
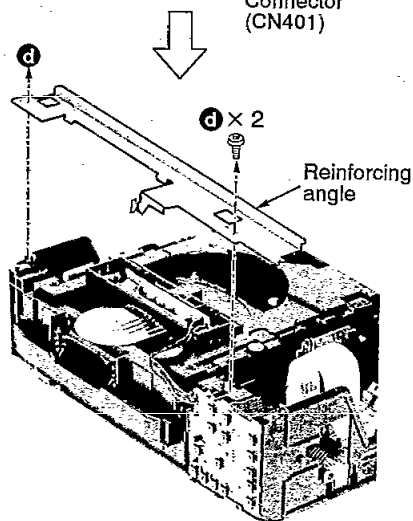
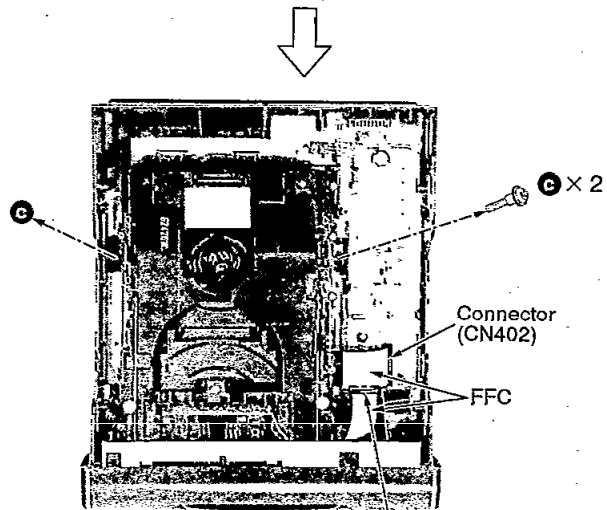
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■ CD Changer Disassembly / Reassembly

1. Removal for the CD changer unit



- Step 1** Remove the 5 screws.
- Step 2** Remove the top cabinet.
- Step 3** Release the 6 claws, and then remove the front panel ass'y.



Step 4 Pull out the FFC (2 points).

Step 5 Remove the 2 screws.

Step 6 Remove the 2 screws.

Step 7 Remove the reinforcing angle.

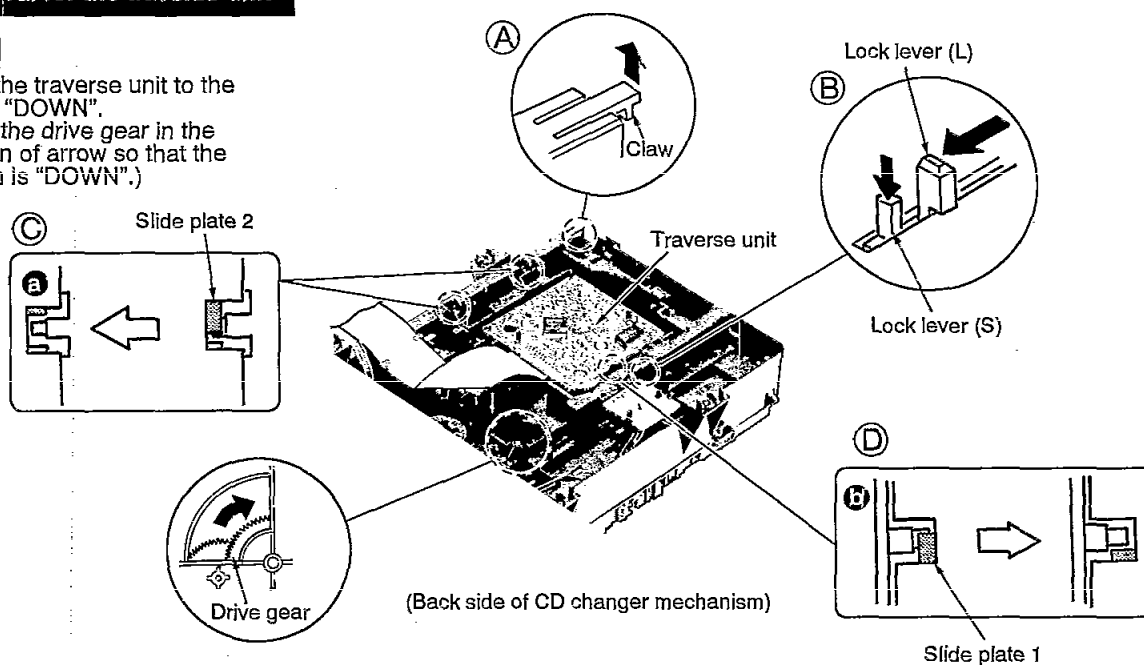
Step 8 Release the 2 claws, and then remove the LED holder.

The CD changer unit will be removed.

2. Removal for the traverse unit

NOTE

Locate the traverse unit to the position "DOWN".
(Rotate the drive gear in the direction of arrow so that the position is "DOWN".)



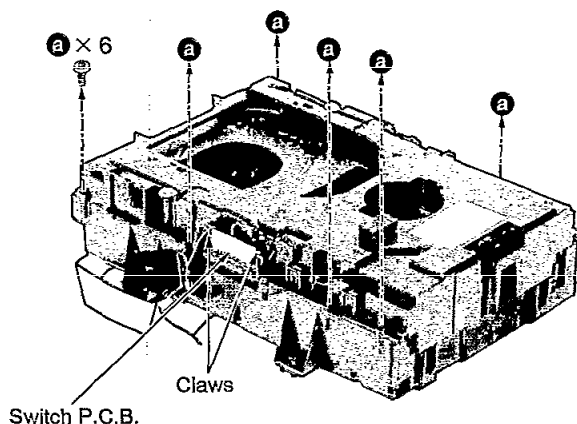
Procedures

- Step 1** Push the lock lever (S) with lifting the claw, and then push the lock lever (L) in the direction of arrow (→).
Refer to the figures A and B.
- Step 2** The slide plate 1 and 2 of traverse retain boss a and b are open.
Refer to the figures C and D.
- Step 3** Push the traverse unit in the direction of arrow (→).
(The FFC is connected.)
- Step 4** The traverse unit will be removed.

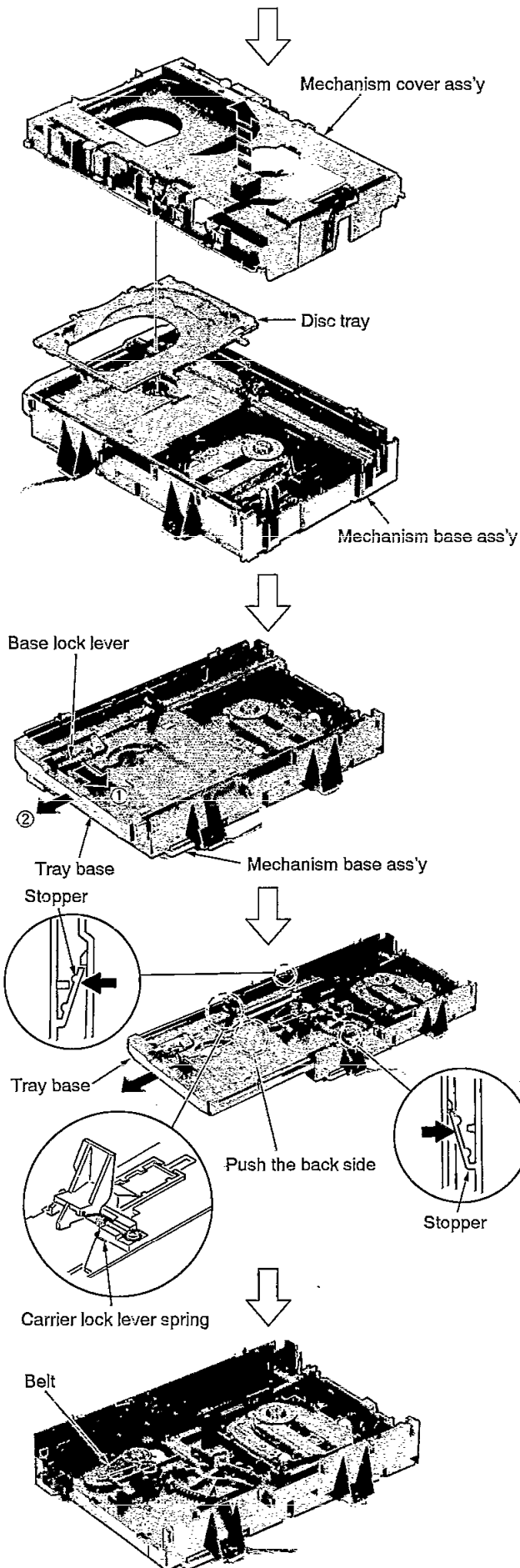
3. Disassembly for the CD changer unit

NOTE

Locate the traverse unit to the position "DOWN".



- Step 1** Release the 2 claws, and then remove the switch P.C.B..
- Step 2** Remove the 6 screws.



Step 3 Remove the mechanism cover ass'y.

ⓘ 4 disc trays contacted to the mechanism cover ass'y will be removed.
1 disc tray is removed to the mechanism base ass'y.

Step 4 Remove the disc tray sided mechanism base ass'y.

Step 5 Unlock the base lock lever.

Step 6 Draw the tray base until it will be stopped.

Step 7 Release the stopper manually.

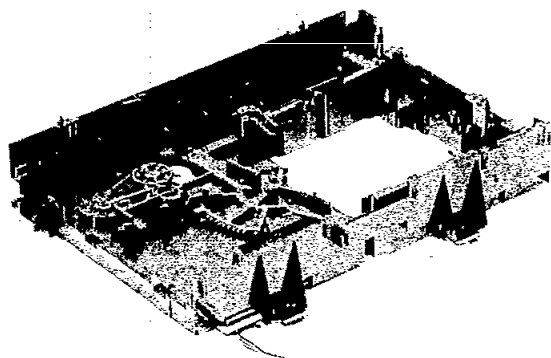
Step 8 Draw the tray base.

ⓘ In case that the tray base can not be open due to hooking, draw the tray base with finger pressing the back side indicated by ① of base. (Take care handling of stopper.)

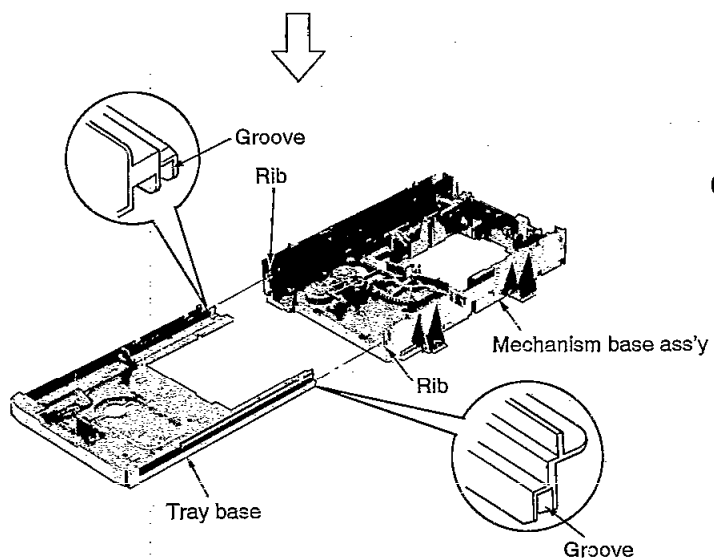
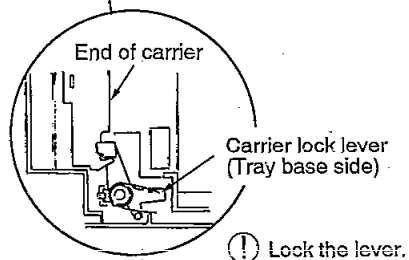
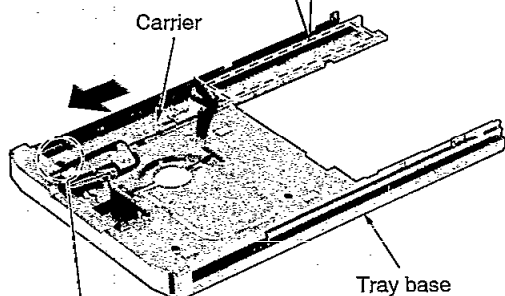
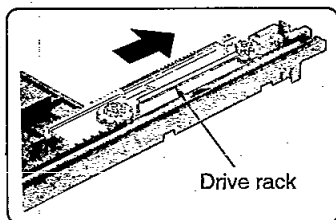
ⓘ Take care not avoid the carrier lock lever spring.

The belt and each part can be replaced after above procedures are performed.

4. Reassembly for the CD changer unit



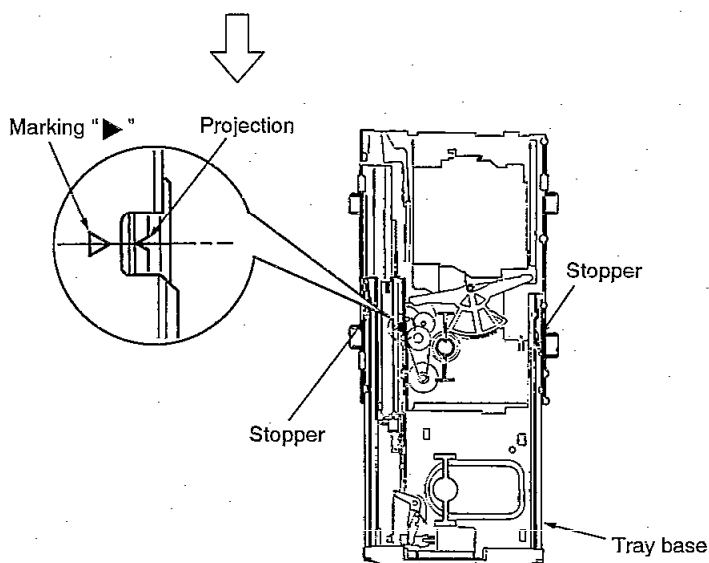
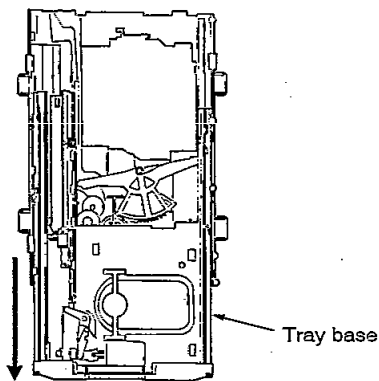
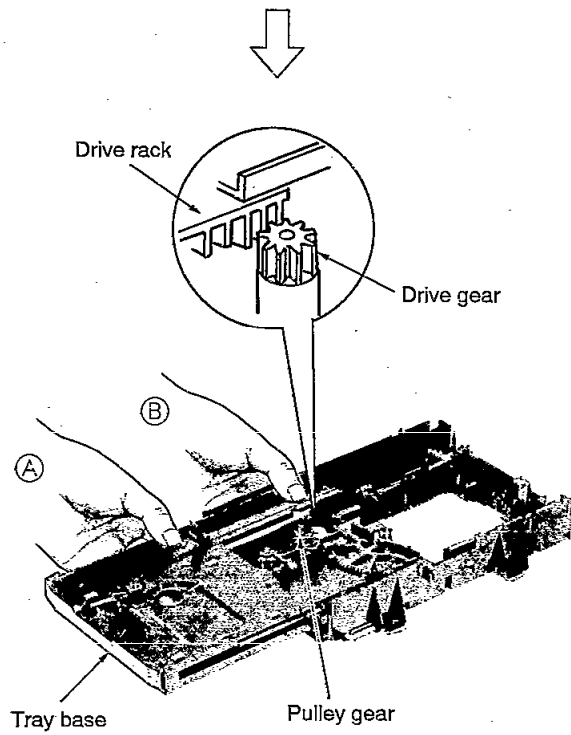
[Back side]



Step 1 Pull the drive rack in the direction of arrow (→) fully.

Step 2 Slide the carrier in the direction of arrow (→).

Step 3 Insert the tray base to the mechanism base ass'y with keeping the procedures **Step 1** and **Step 2**.



Step 4 Insert the drive rack until the driver rack interferes with the drive gear.

Position (A)

Step 5 Rotate the pulley gear clockwise gently by hand (5 or 6 times).

ⓘ When the gear begins to rotate, rotate the pulley gear with finger pressure (position (B)) because the drive rack gear will fall free.

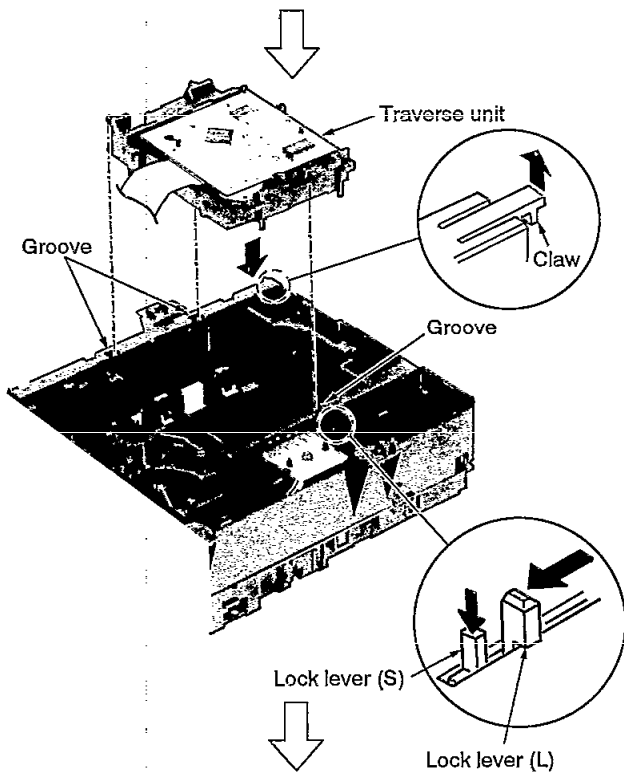
Step 6 Allow the tray base be open manually.

※ Draw the inserted tray base forward.

Step 7 Locate the projection at the marking "▶" as shown left.

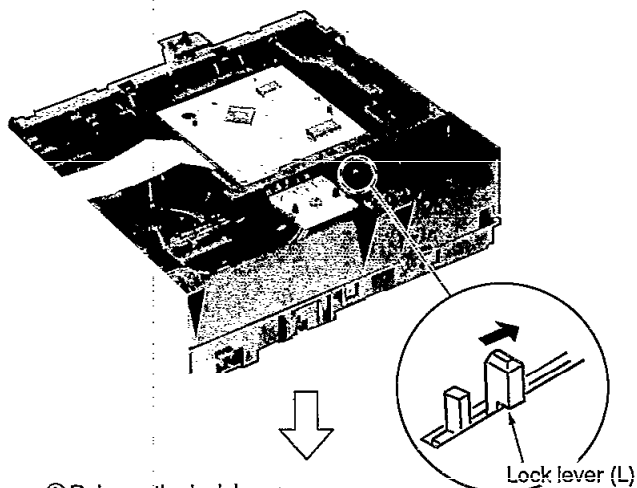
ⓘ In case that the stated above is not operated draw the tray base again.
(Refer to item ⓘ on page 9)

(Retry the item marked with ⓘ)



Step 8 While lifting the claw upward, press the lock lever (L) with forcing the lock lever (S).

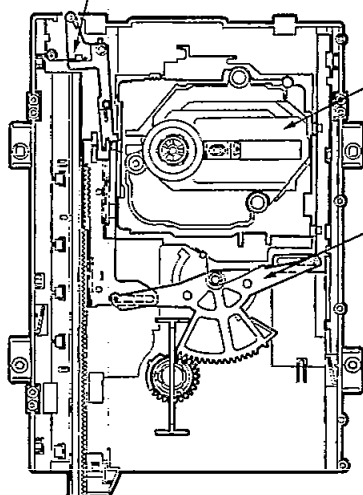
Step 9 Align the boss of traverse unit with the groove of mechanism base ass'y.



① Release the lock lever manually.

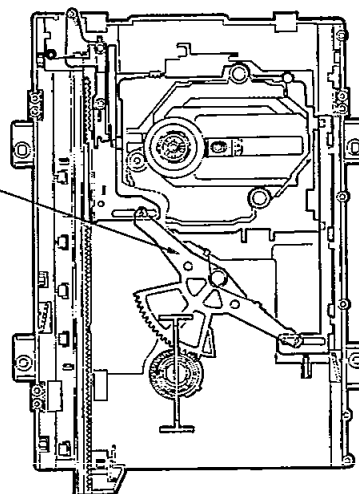
Step 10 Pull the lock lever (L) in the direction of arrow (→).

After assembly, confirm the traverse unit operation.

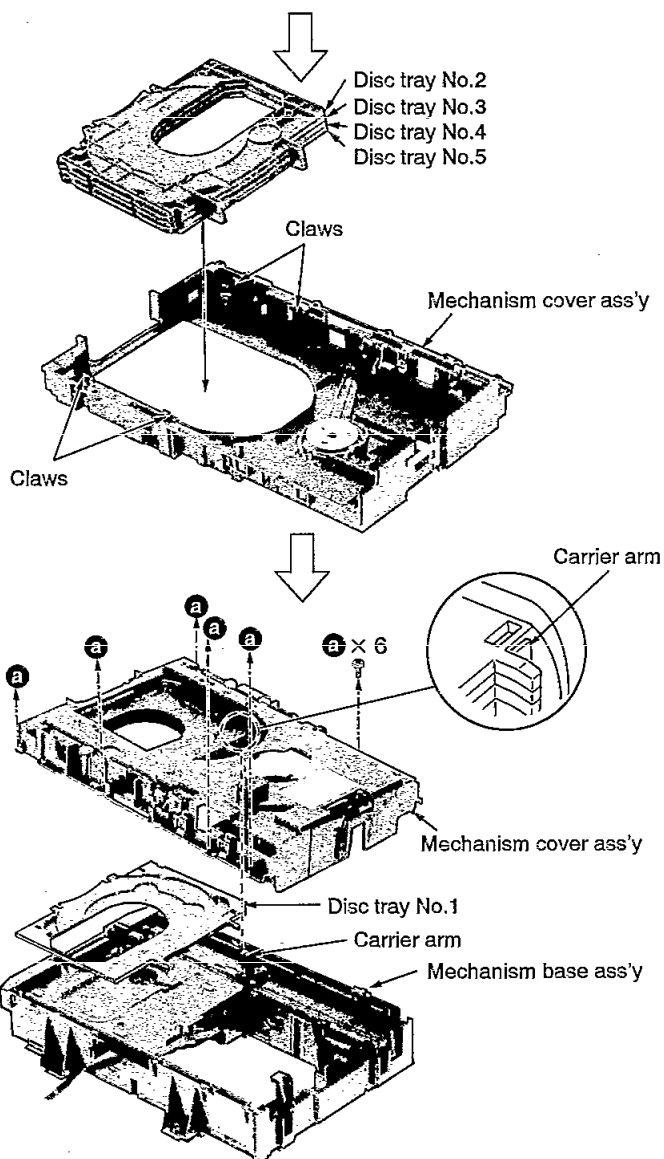


⟨"DOWN"stated⟩

② Rotate the conversion lever manually.



⟨"UP"stated⟩



Step 11 Install the 4 disc trays to the mechanism cover ass'y. (Allow them to lock with claws.)

⚠ Install the disc trays in specific order.
(Disc tray No. is indicated on the tray.)

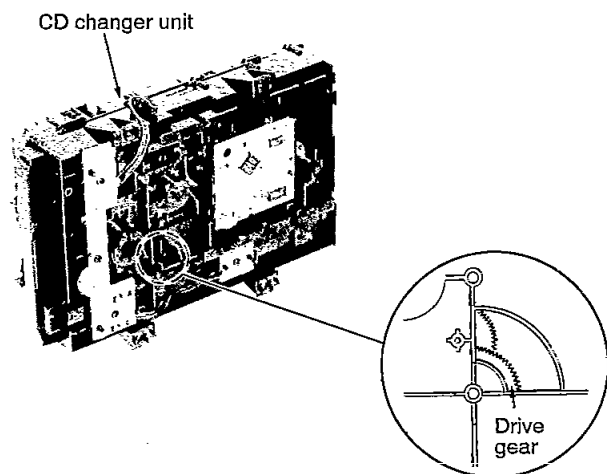
Step 12 Place the disc tray No.1 on the mechanism base ass'y.

Step 13 Install the mechanism cover ass'y.

⚠ The carrier arm is positioned as shown left.

5. Inspection for the CD changer unit

- Begin the inspections in condition that the traverse is kept from disc tray. (5 disc trays in the store compartment.)



※ Manual operations

① Rotate the drive gear counterclockwise manually.

The traverse runs over the disc tray, and rises at maximum level.

② Rotate the drive gear clockwise manually.

The disc tray moves and is stored in upper compartment.

The tray base is open.

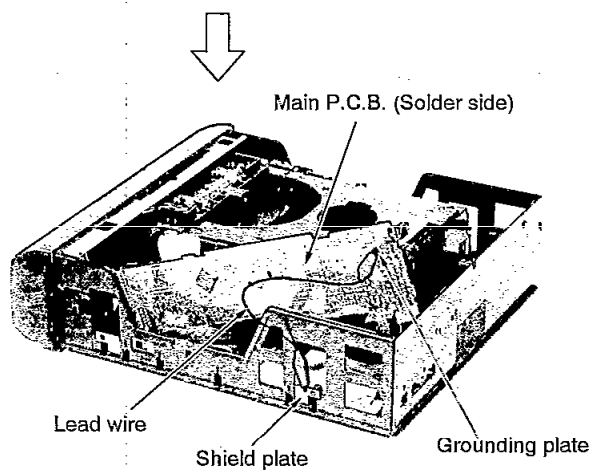
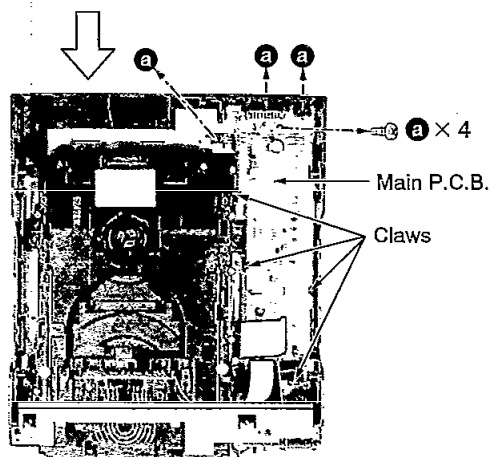
③ Again rotate the drive gear counterclockwise manually.

The tray base is closed, and then it returns to start position.

■ Checking Procedures for each P.C.B.

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

Perform the items **Step 1** and **Step 2** for CD changer removal (Refer to page 6.)



Step 1 Remove the 4 screws.

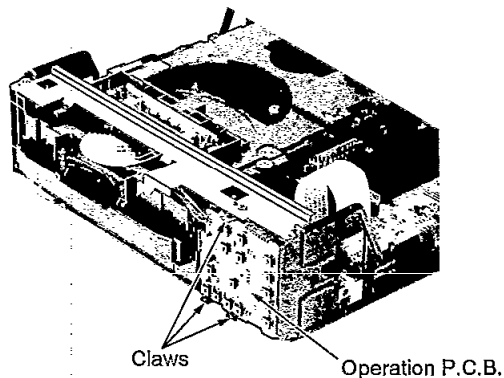
Step 2 Remove the 4 claws, and then stand the main P.C.B..

Step 3 Connect the lead wire between the grounding plate and shield plate.

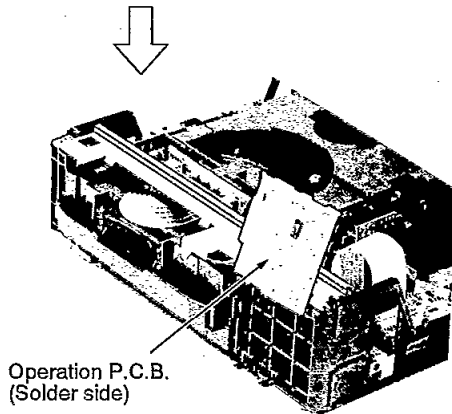
Check the main P.C.B. (solder side) as shown left.

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

Perform the items **Step 1** ~ **Step 3** for CD changer removal (Refer to page 6.)



Step 1 Release the 3 claws, and then upset the operation P.C.B..

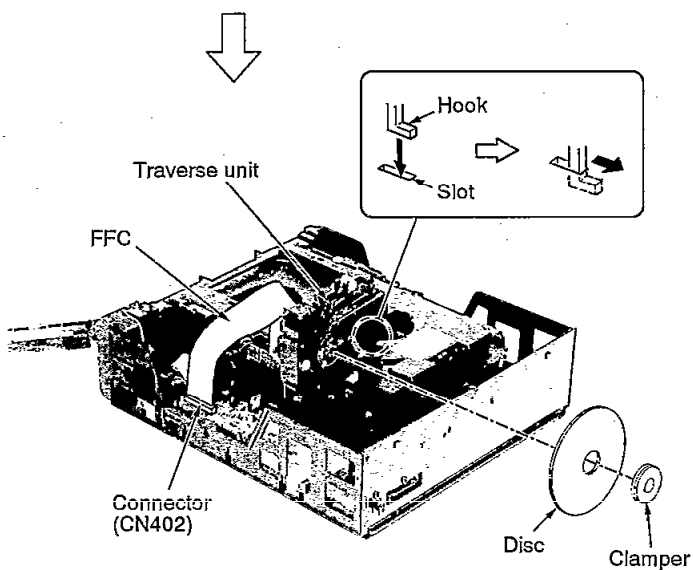
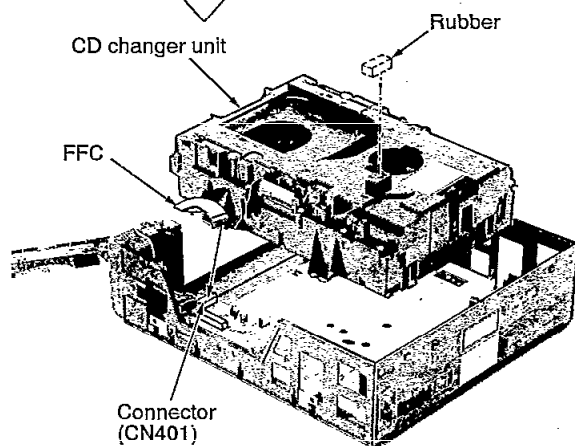


Check the operation P.C.B. (solder side)
as shown left.

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

Perform the items **Step 1** ~ **Step 8** for CD changer removal
(Refer to pages 6 and 7.)

Perform the items **Step 1** ~ **Step 4** for traverse unit removal
(Refer to page 8.)



Step 1 Install the CD changer unit to the set.

ⓘ Screw tighten is not necessary.

Step 2 Connect the FFC to the connector (CN401).

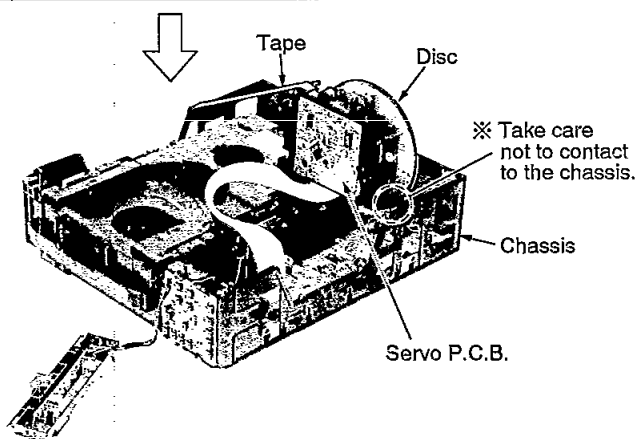
Step 3 Remove the rubber.

Step 4 Align the hook of traverse unit with the slot, and then stand it.

Step 5 Attach the disc and clamper with magnet to the traverse unit.

ⓘ Prepare the clamper used ordinarily.

Step 6 Connect the FFC to the connector (CN402).



Step 7

Apply the tape between the chassis and traverse unit not to contact the disc with chassis.

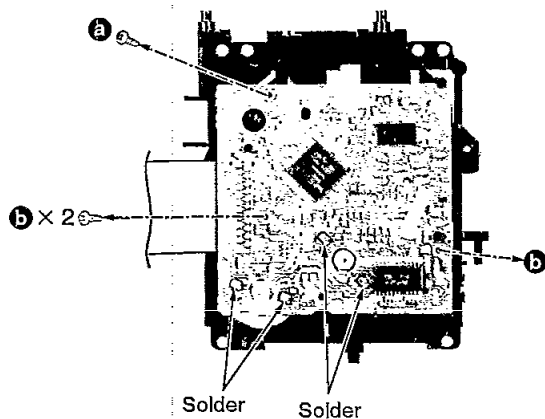
Check the servo P.C.B. (solder side) as shown left.

Main Component Replacement Procedures

1. Replacement for the traverse deck ass'y

Perform the items **Step 1** ~ **Step 8** for CD changer removal (Refer to pages 6 and 7.)

Perform the items **Step 1** ~ **Step 4** for traverse unit removal (Refer to page 8.)



Step 1

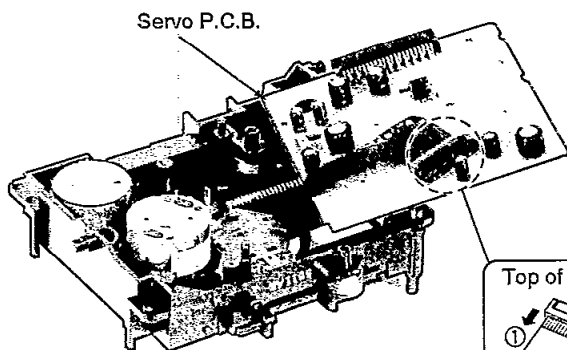
Remove the 3 screws.

Step 2

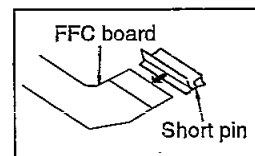
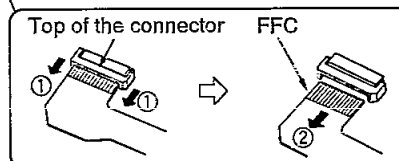
Unsolder the motor terminals.

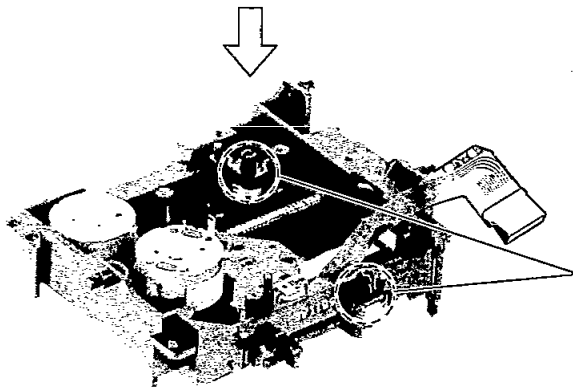
Step 3

Remove the FFC from the connector, and then remove the servo P.C.B..



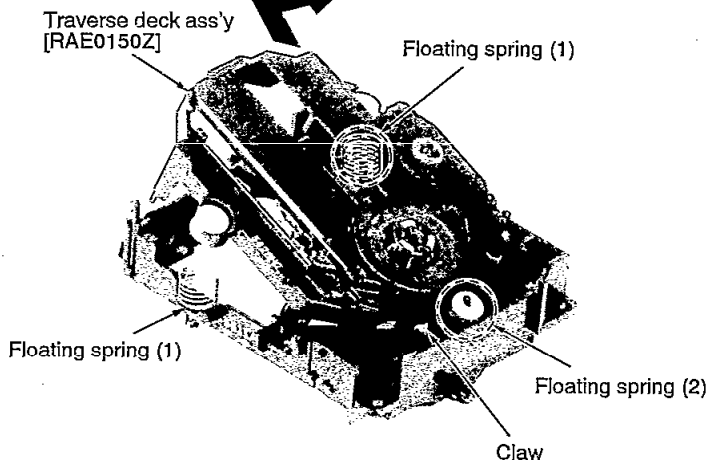
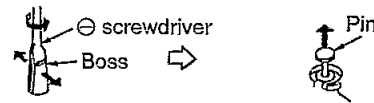
Caution:
Insert a short pin into the traverse unit FFC board.
(Refer to "Handling Precautions for Traverse Deck" on page 2.)





Step 4 Remove the pins.

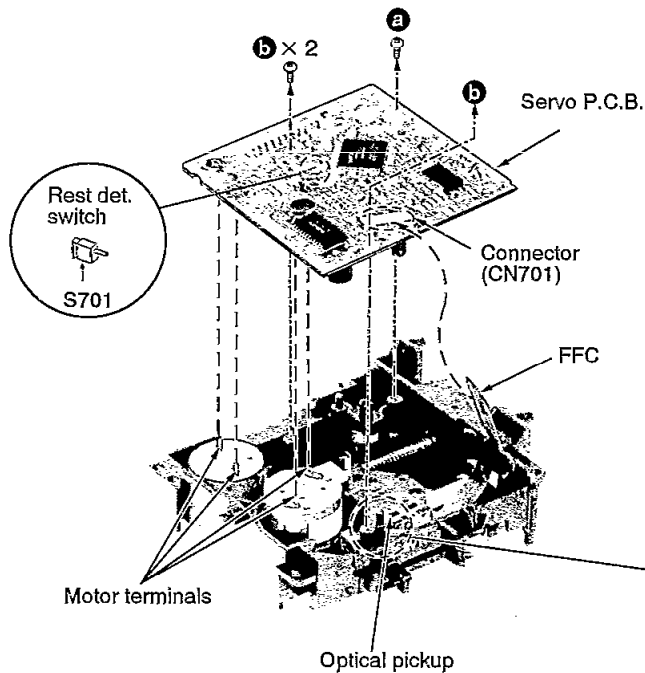
1. Spread the boss with $\ominus$ screwdriver.
2. Pull out the pin in the direction of arrow.



Step 5 Release the claws, and then remove the traverse deck ass'y.

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

Installation of the servo P.C.B.



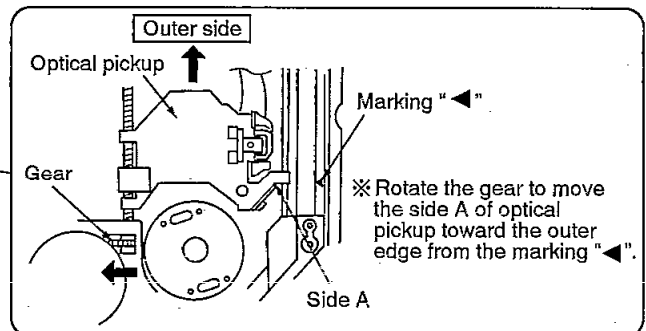
Step 1 Before installing the servo P.C.B., move the optical pickup toward the outer edge from mark "◀".

- ⚠ In case that the optical pickup is not moved toward the outer edge from the marking, the rest detect switch (S701) mounted on the servo P.C.B. may be damaged.

Step 2 Connect the FFC to the connector.

Step 3 Install the servo P.C.B., and then tighten screws.

- ⚠ After tightening screws, solder each motor terminal.



■ Error Code Display and Servo Adjustment Function

This unit has an error code display function, so that if the unit operates incorrectly, the fault is displayed using an error code on the FL display of the Tuner/Amplifier (SA-EH60). It also has a servo adjustment function for displaying the status of servo system functions (Focus, Tracking, CLV Servo) on the FL display of the Tuner/Amplifier.

The system control IC and FL display are part of the Tuner/Amplifier so make sure the system has been connected properly before using three functions. (This unit can be operated independently, although the error code display and servo adjustment functions cannot be used.)

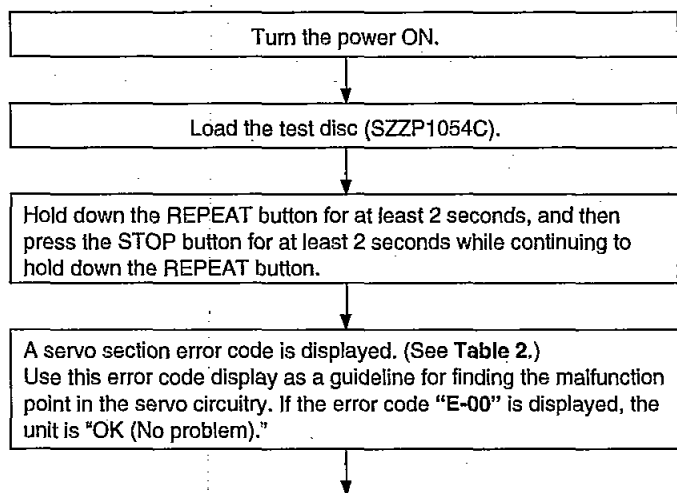
Use these two functions for guidance during fault diagnosis and repair.

Note:

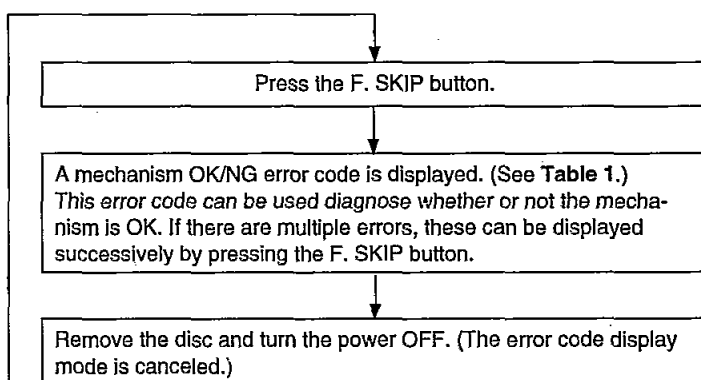
Check beforehand for scratching or soiling of the test disc (SZZP1054C), and soiling or other problems with the pickup lens.

● Error code display procedure

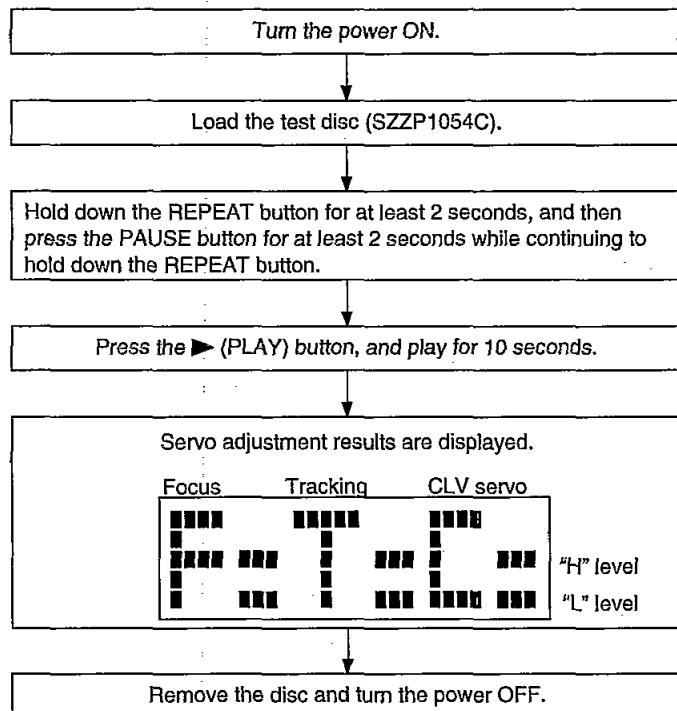
Automatic adjustment results



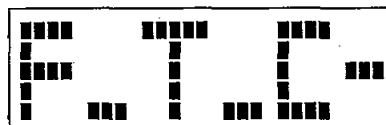
Checking the mechanism switches



● Servo adjustment procedure



(Example)



⇒ Normal

	"L" level	"H" level
Focus system	normal	defective
Tracking system	normal	defective
CLV servo system	defective	normal

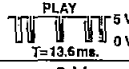
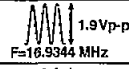
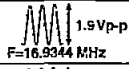
• Table 1

FL display	Symptom	Cause
H-15	When CD tray opens, it closes by itself.	Disc tray "Open" detection switch (S4) fault.
H-16	When CD tray close, it opens by itself.	
F-15	Does not play, even when CD play button is pressed.	Pickup rest position detection switch (S701) fault.
F-16	Traverse pushes up disc tray.	Up position detection switch (S3) fault.
F-26	Does not move even when "▶" (PLAY) button is pressed.	System control or servo processor IC (IC901, IC702) fault.
F-27	Tray keeps moving for a while, or selected tray does not open.	Disc number detection switch (S5) fault.
F-28		Stocker position detection, or play position detection switch (S1, S2) fault
F-75	NO DISC is displayed and unit does not play, even when a CD is loaded.	CD circuit power supply problem.

• Table 2

※ The unit is satisfactory if the error code is "E-00" or "E02".

※ 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	
			Location	Signal name	PLAY	STOP
E-01	Focus and tracking offset adjustments not completed in specified time period.	① Clocks X1 and X2, power supply VDD, and reset (/RST), all on IC702. ② MDATA, MCLK, MLD, and SENSE signals to/from mechanism controller.	IC702 ⑧ pin	MDATA		0 V
			IC702 ⑦ pin	MCLK		4.8 V
			IC702 ⑨ pin	MLD	0 V	0 V
			IC702 ⑩ pin	SENSE	4.9 V	4.9 V
			IC702 ⑪ pin	/RST	4.9 V	4.9 V
			IC702 ⑤⑧ pin	X1		
E-02 E-03 E-05 E-06 E-07 E-09 E-0A E-0B E-0D E-0E 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	IC702 ③② pin	FE		2.5 V
			IC702 ③③ pin	TE		2.5 V
			IC702 ②⑧ pin	FOD	2.5 V	2.5 V
			IC702 ②⑦ pin	TRD	2.5 V	2.5 V
			IC702 ②⑥ pin	KICK	2.5 V	2.5 V
			IC702 ①① pin	/FLOCK	0 V	4.9 V
			IC702 ③⑧ pin	/RF DET	0 V	4.9 V
			TJ701	RF		2.4 V
			IC702 ①⑦ pin	STAT	4.9 V	0 V
			IC702 ③② pin	FE		2.5 V
E-04 E-08 E-0C	Focus or Tracking gain adjustment not completed in specified time period.	① Scratches or contaminants on disc surface ② Focus servo circuit (check waveforms, voltages, and part values.) ③ Optical pickup	IC702 ③③ pin	TE		2.5 V
			IC702 ③⑥ pin	OFT	0 V	0 V
			IC702 ①② pin	/TLOCK	0 V	0 V

■ To Supply Power Source

Cautions:

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

This unit SL-EH60 is designed to operate on power supplied from the Tuner/Amplifier (SA-EH60) through the Cassette Deck RS-EH60.

When connecting the unit to other system components, do not connect to the Tuner/Amplifier SA-EH60 directly. Be sure to connect this unit through the Cassette Deck RS-EH60.

When operating the unit SL-EH60 alone for testing and servicing, without having power supplied from the Tuner/Amplifier SA-EH60 and the Cassette Deck RS-EH60, use the following method.

Power Supply to This Unit Alone

Apply +10 V DC power to the section between L1 (**DC10V**) and E1 (**GND**). (Shown in Fig.1)

To Check Signals

Connect the oscilloscope or the speaker with built-in amplifier to the section between LINE OUT (L-ch) of the resistor R447 and the **GND** as well as the section between LINE OUT (R-ch) of the resistor R448 and the **GND** and check if the signals are outputting from this unit. (Shown in Fig. 1)

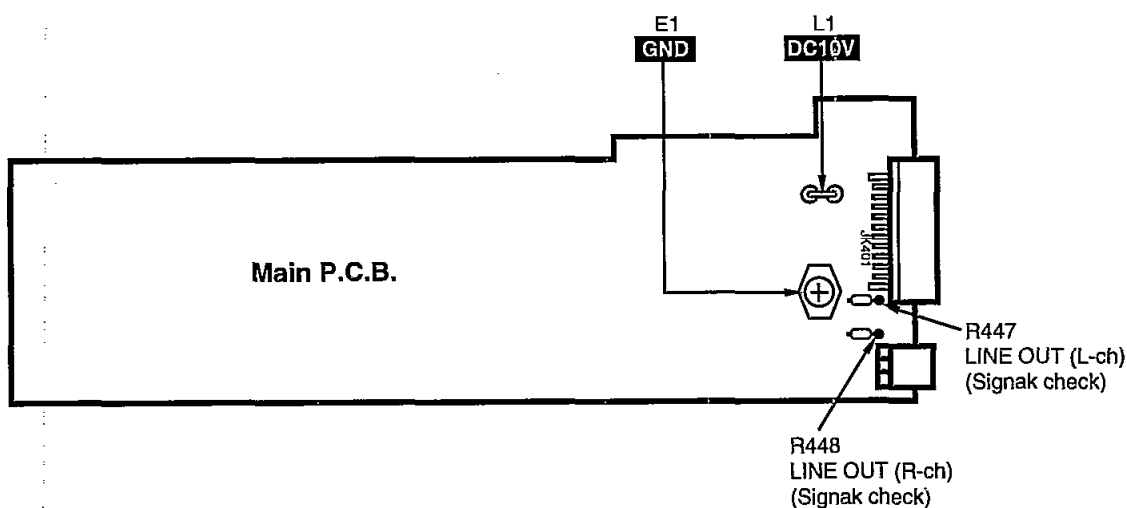


Fig. 1

■ Schematic Diagram

	Page
A SERVO CIRCUIT	22, 23
B SWITCH CIRCUIT	24
C SWITCH (S2, S3) CIRCUIT	24
D LED CIRCUIT	24
E LOADING MOTOR CIRCUIT	24
F OPERATION CIRCUIT	24
G MAIN CIRCUIT	24, 25

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

Notes:

- S1 : Stocker position detect switch
- S2 : Play position detect switch
- S3 : Up position detect switch
- S4 : Tray open detect switch
- S5 : Disc number detect switch
- S601 : Disc select switch (DISC 5)
- S602 : Disc select switch (DISC 4)
- S603 : Disc select switch (DISC 3)
- S604 : Disc select switch (DISC 2)
- S605 : Disc select switch (DISC 1)
- S606 : Disc check switch (▲ -NEXT/-AUTO)
- S607 : Repeat switch (REPEAT)
- S608 : AI edit switch (AI EDIT)
- S609 : Random play switch (RANDOM)
- S610 : R. Skip/Search switch (◀◀/▶▶)
- S611 : Stop switch (■)
- S612 : Play switch (▶)
- S613 : F. Skip/Search switch (▶▶/▶▶)
- S614 : Pause switch (||)
- S615 : Disc tray open/close switch (▲ OPEN/CLOSE)
- S701 : Rest switch

• Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

No mark : CD STOP

() : CD PLAY [1kHz, L + R, 0 dB]

• Important safety notice:

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

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

• 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 legs of IC or LSI with the fingers directly.

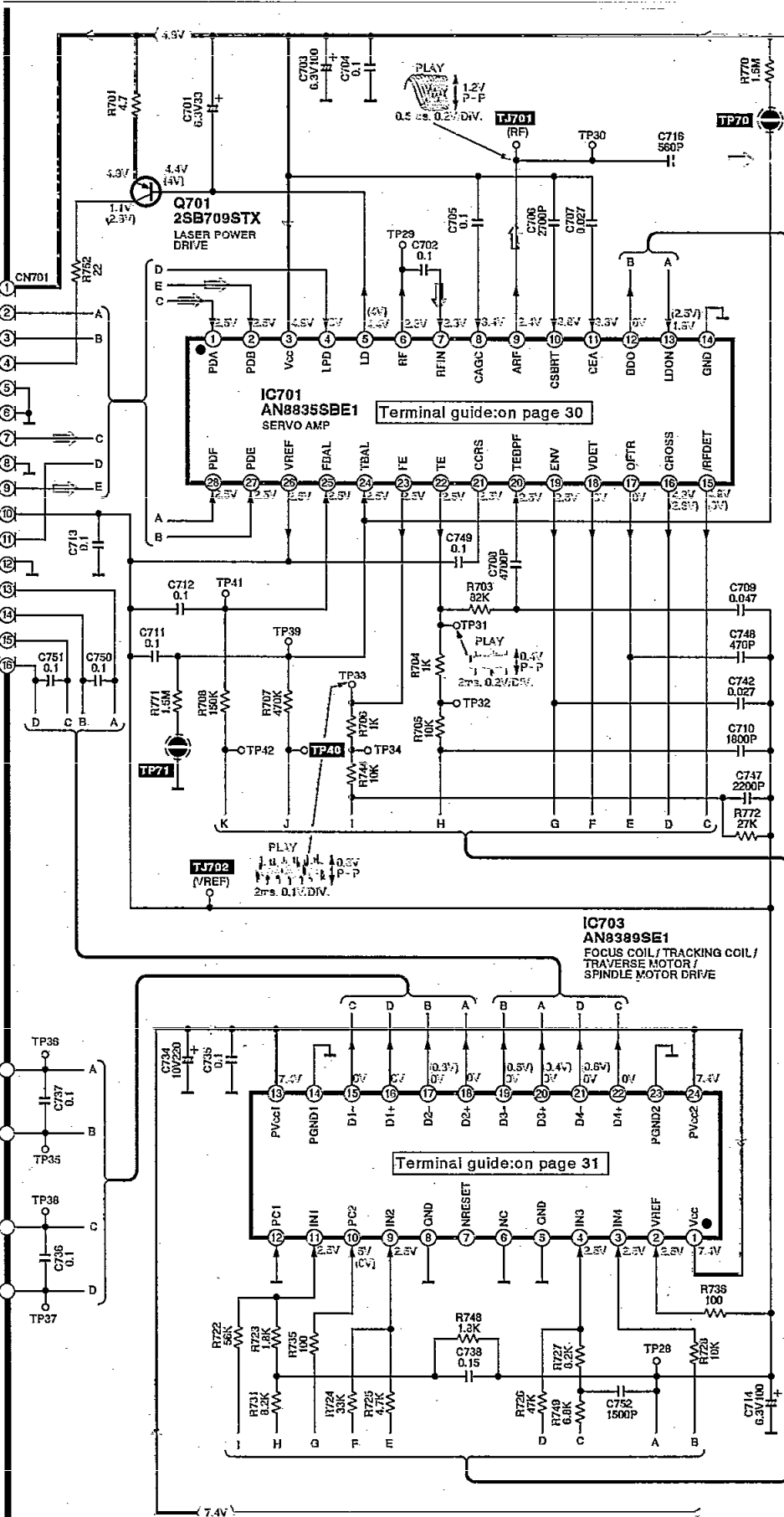
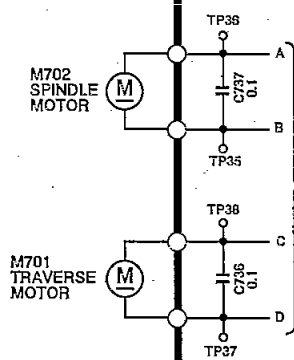
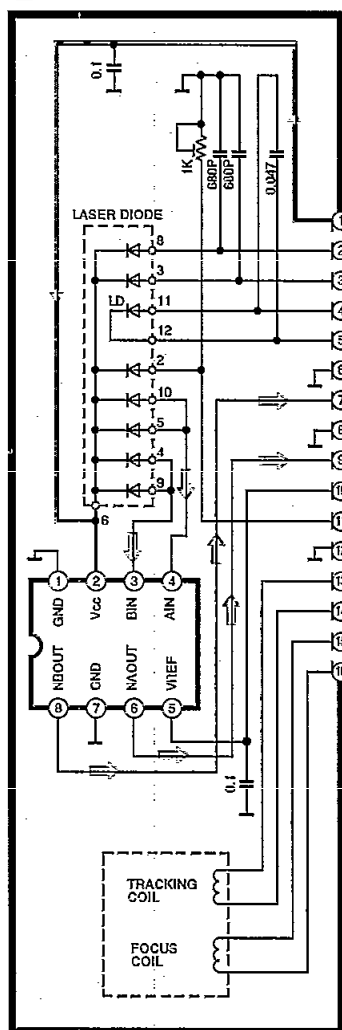
• Voltage and signal line

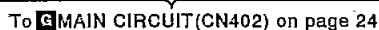
—————▶ : Positive voltage line

⇒ : CD signal line

A SERVO CIRCUIT (P.C.Board: on page 26)

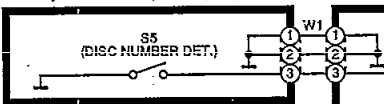
Δ OPTICAL PICKUP CIRCUIT





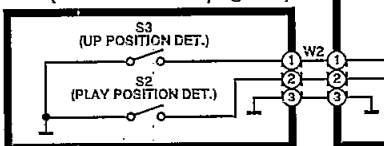
B SWITCH CIRCUIT

(P.C.Board : on page 26)



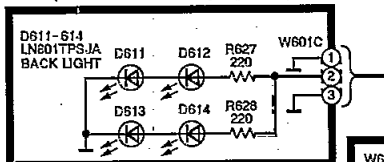
C SWITCH(S2,S3) CIRCUIT

(P.C.Board : on page 26)



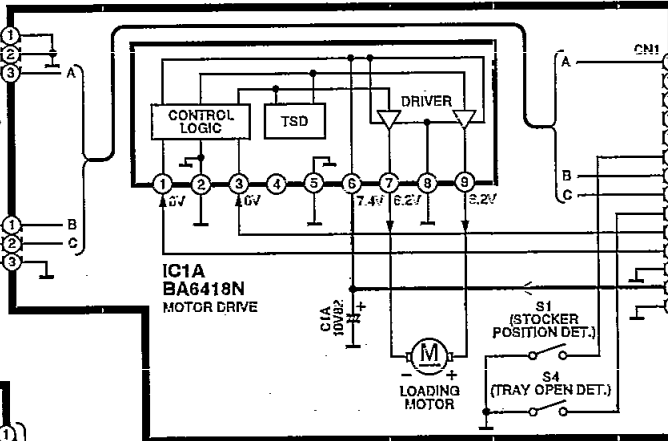
D LED CIRCUIT

(P.C.Board : on page 26)



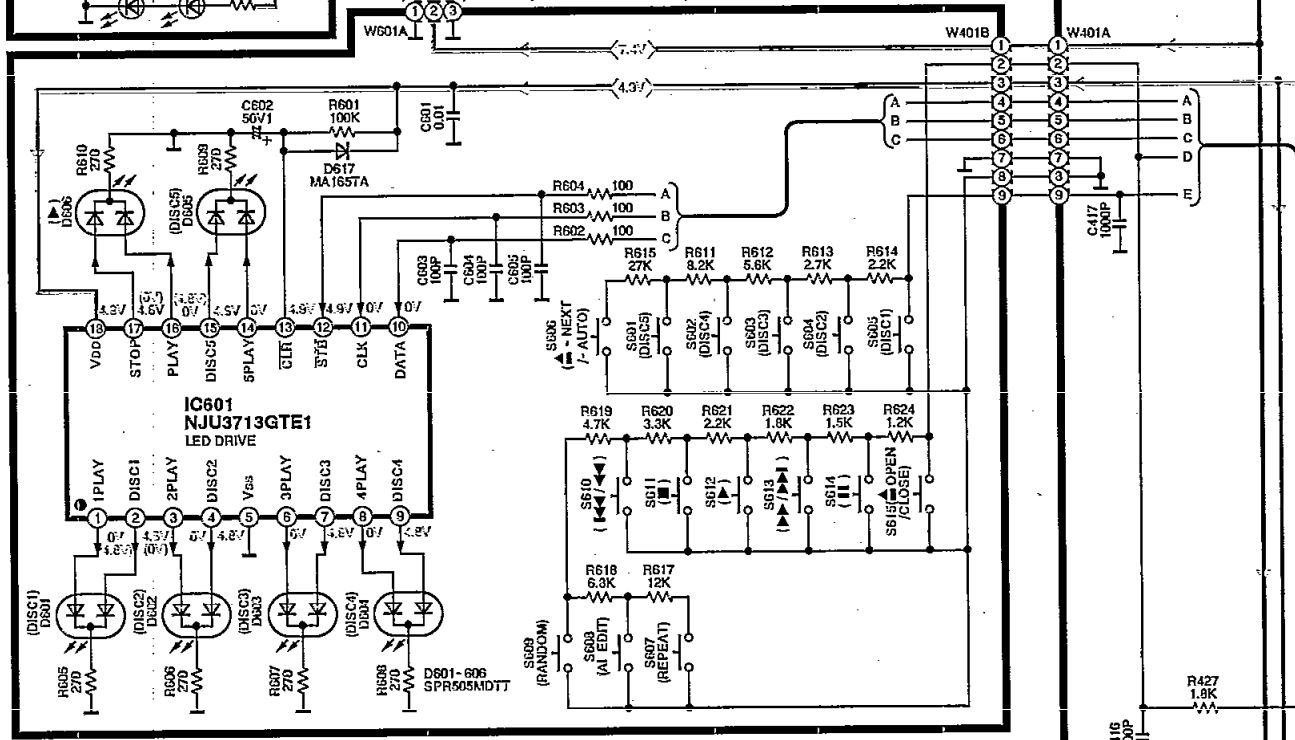
E LOADING MOTOR CIRCUIT

(P.C.Board : on page 26)



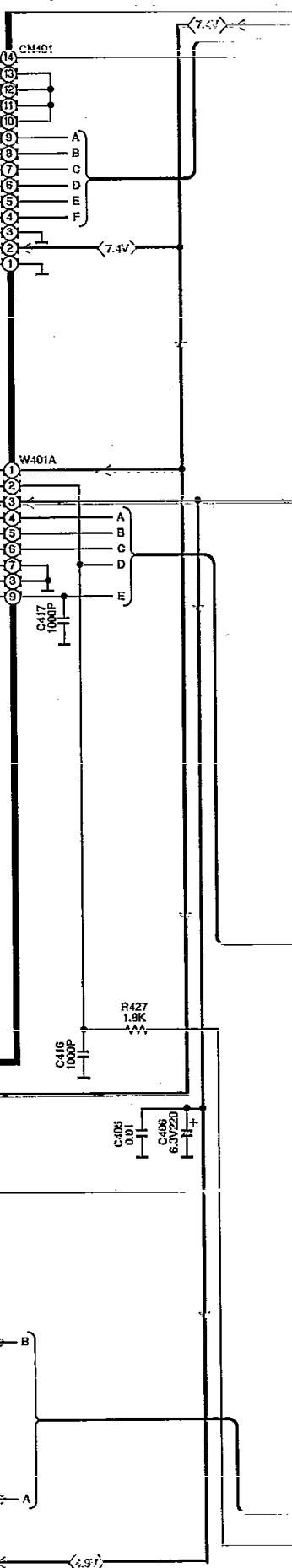
F OPERATION CIRCUIT

(P.C.Board : on page 27)

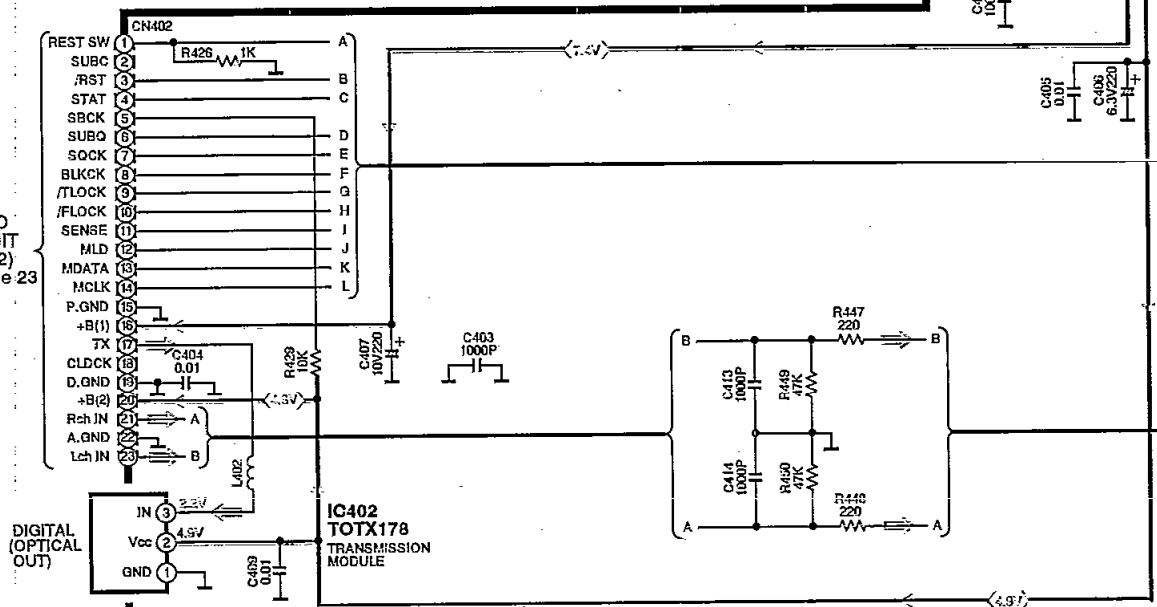


G MAIN CIRCUIT

(P.C.Board : on page 27)

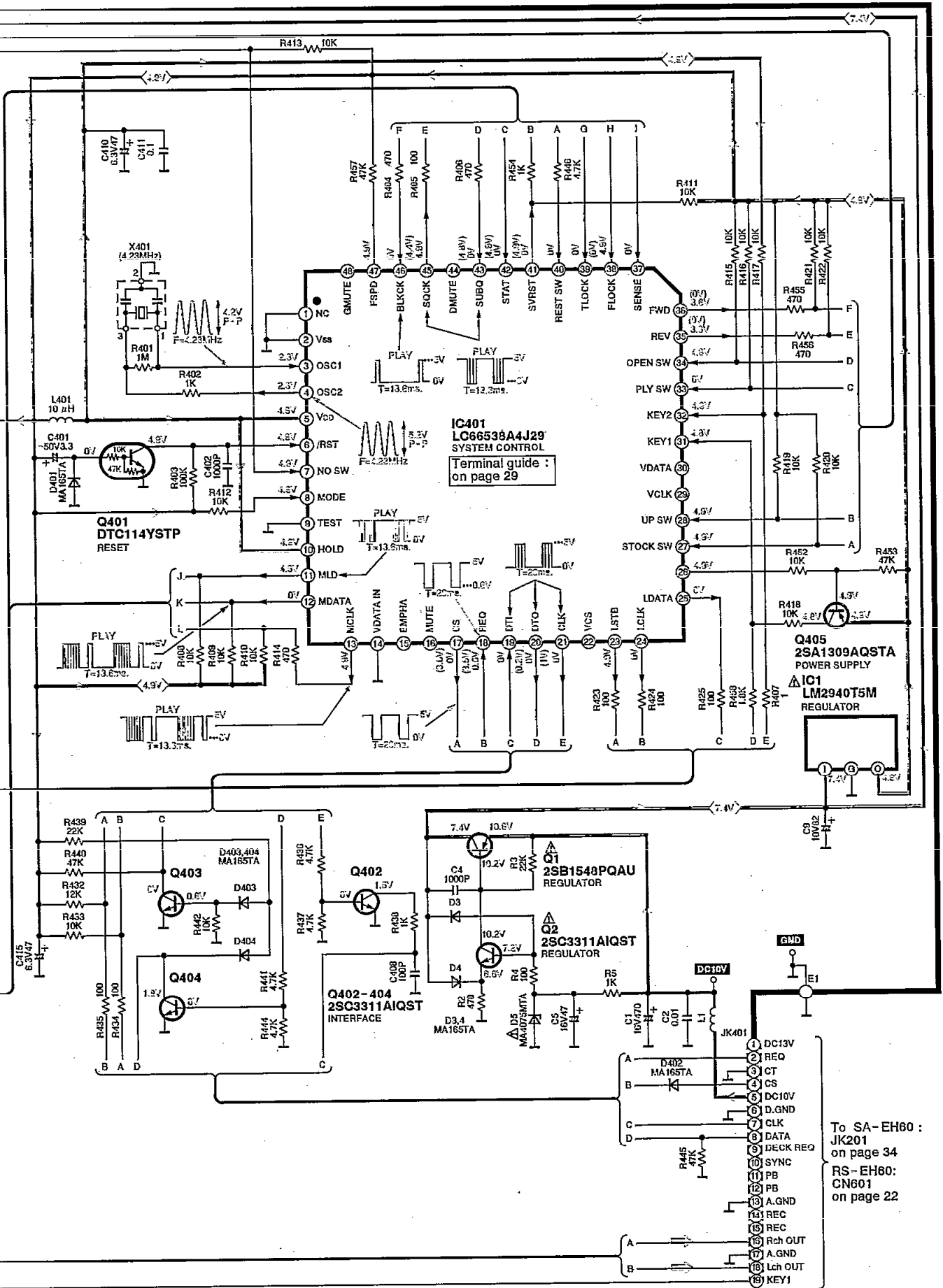


To A SERVO CIRCUIT (CN702) on page 23



— : Positive voltage Line

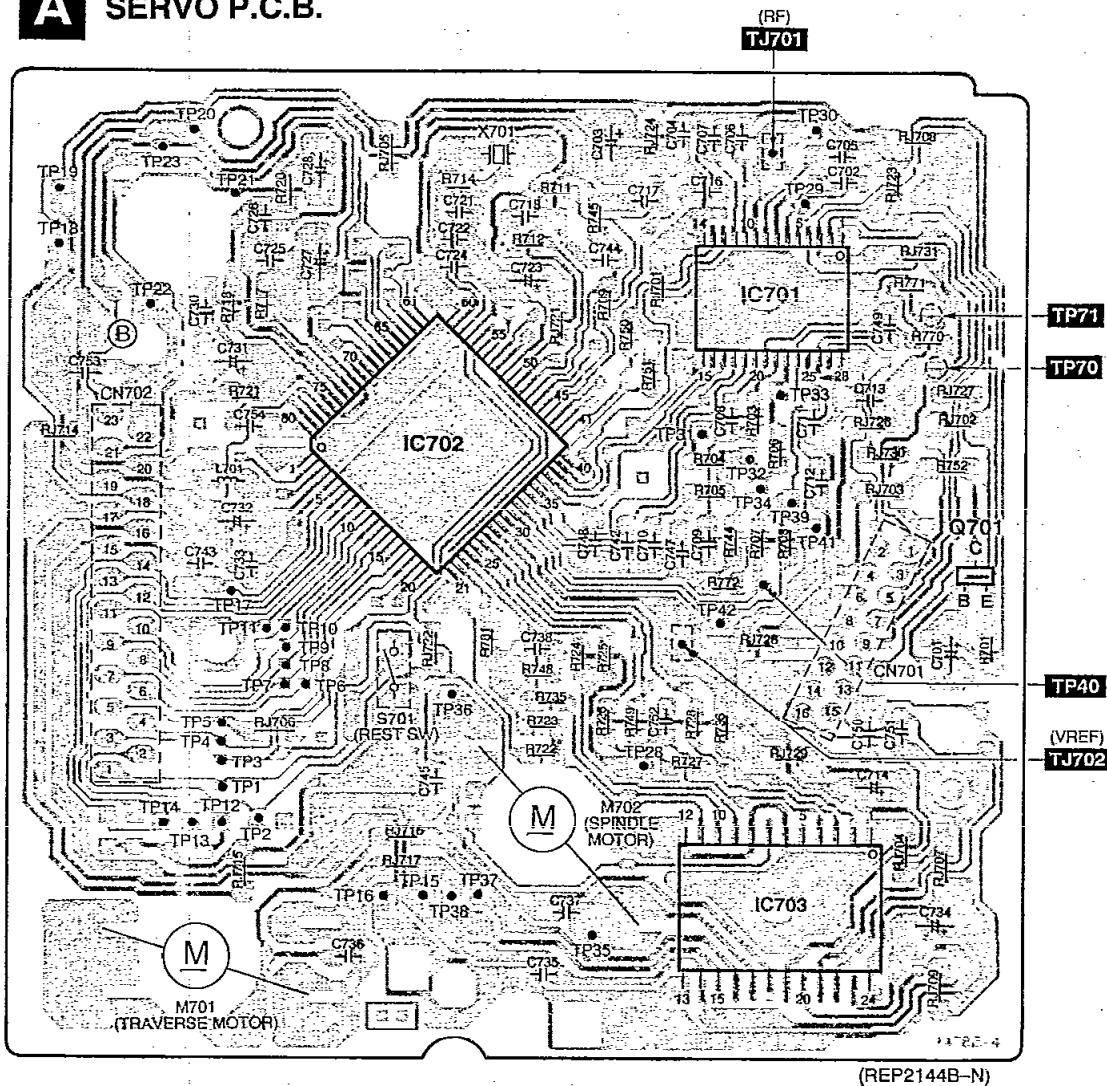
— : CD signal Line



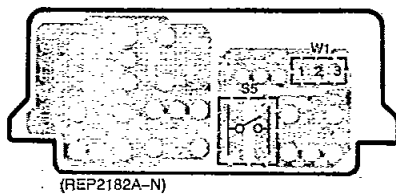
Printed Circuit Board Diagram

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

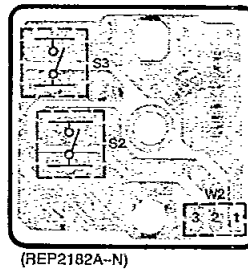
A SERVO P.C.B.



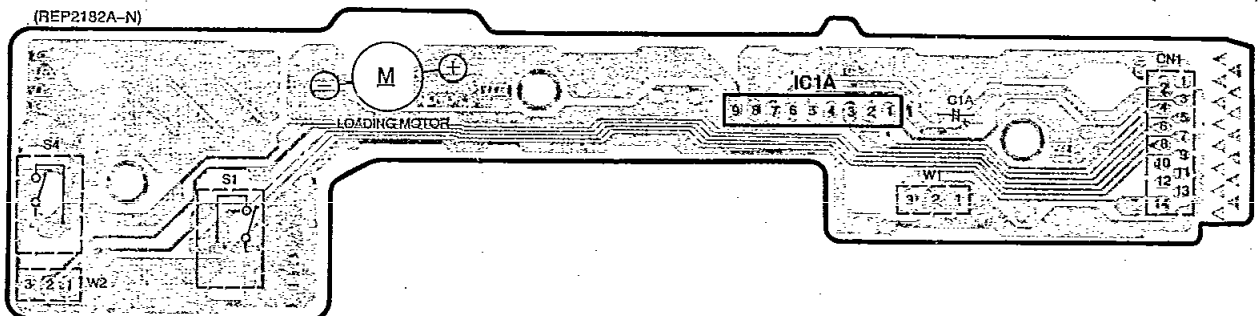
B SWITCH P.C.B.



C SWITCH (S2,S3) P.C.B.



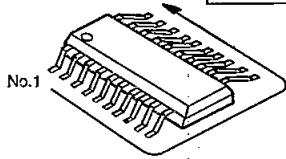
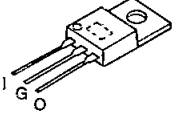
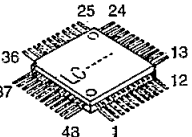
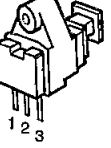
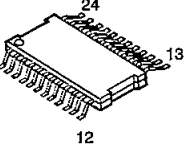
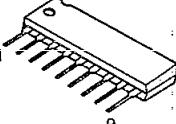
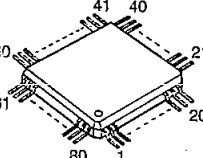
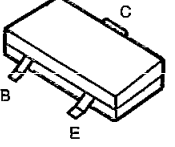
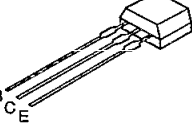
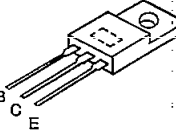
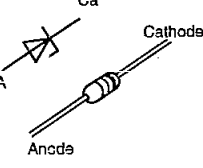
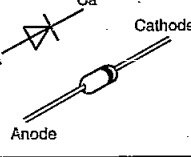
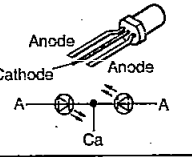
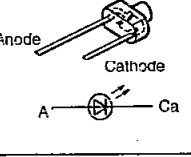
E LOADING MOTOR P.C.B.



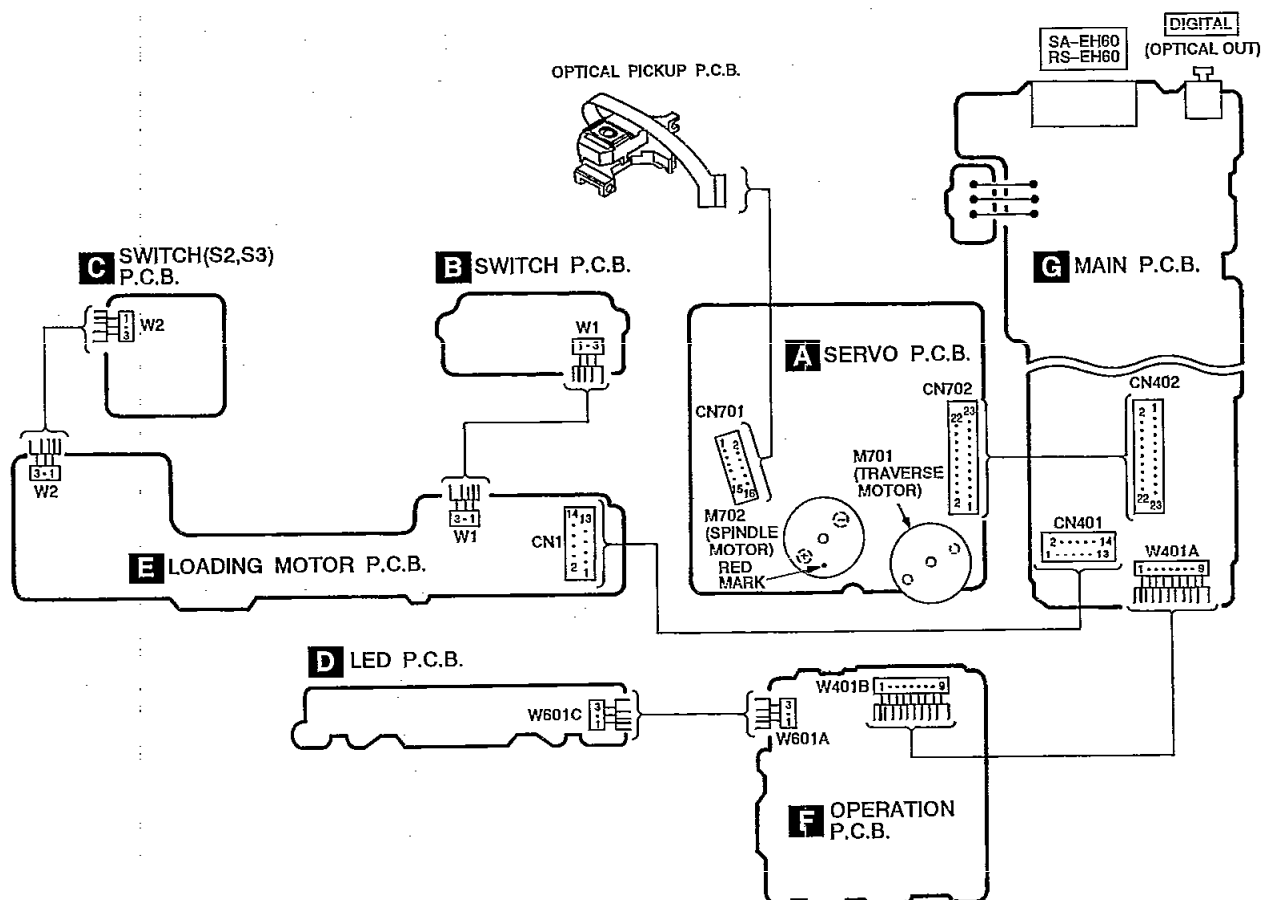
D LED P.C.B.



■ Type Illustration of IC's, Transistors and Diodes

 NJU3713GTE1 18PIN AN8835SBE1 28PIN	 LM2940T5M	 LC66538A4J29	 TOTX178	 AN8389SE1
 BA6418N	 MN662741RPA	 2SB709STX	 DTC114YSTP	 2SA1309AQSTA 2SC3311AIQST
 2SB1548PQAU	 MA4075MTA	 MA165TA	 SPR505MDTT	 LNJ801TPSJA

■ Wiring Connection Diagram



■ Terminal Function of IC's

● IC401 (LC66538A4J29): System control

Pin No.	Terminal Name	I/O	Function
1	NC	—	No used, connected to GND
2	VSS	—	GND terminal
3	OSC1	I	Crystal oscillating circuit input (f = 4.23 MHz)
4	OSC2	O	Crystal oscillating circuit output (f = 4.23 MHz)
5	VDD	I	Power supply (+5 V)
6	/RST	I	Reset signal input ("L": reset)
7	NO SW	I	Disc tray number detection signal input
8	MODE	I	Test mode signal input
9	TEST	—	Test terminal
10	HOLD	I	No used, connected to power supply
11	MLD	O	Command load signal output
12	MDATA	O	Command data signal output
13	MCLK	O	Command clock signal output
14	VDATA IN	—	No used, connected to GND
15	EMPHA	—	No used, open
16	MUTE	—	No used, open
17	CS	O	Communication request signal output to SA-EH60
18	REQ	I	Communication request signal input from SA-EH60
19	DTI	I	Communication data signal input from SA-EH60
20	DTO	O	Communication data signal output to SA-EH60
21	CLK	O	Communication clock signal output to SA-EH60
22	VCS	—	No used, open
23	LSTB	O	LED drive signal output
24	LCLK	O	LED drive command clock signal output
25	LDATA	O	LED drive command data signal output
26	—	—	No used, connected to power supply
27	STOCK SW	I	Stocker position detection signal input
28	UP SW	I	Disc tray up position detection signal input
29	VCLK	—	No used, open
30	VDATA	—	No used, open
31	KEY1	I	Key switch detection signal input
32	KEY2	I	Key switch detection signal input

Pin No.	Terminal Name	I/O	Function
33	PLY SW	I	Disc tray play position detection signal input
34	OPEN SW	I	Disc tray open position detection signal input
35	REV	O	Loading motor drive (reverse) signal output
36	FWD	O	Loading motor drive (forward) signal output
37	SENSE	I	Sense signal input
38	FLOCK	I	Focus servo feeding signal input ("L": Feed)
39	TLOCK	I	Tracking servo feeding signal input ("L": Feed)
40	REST SW	I	Rest position detection signal input
41	SVRST	O	Reset signal output to IC702
42	STAT	I	Status signal input
43	SUBQ	I	Sub-code Q code input
44	DMUTE	—	No used, open
45	SQCK	O	Sub-code Q resister clock signal output
46	BLKCK	I	Sub-code block clock signal input (fBLKCK = 75 Hz during normal playback)
47	ESPD	—	No used, connected to power supply
48	GMUTE	—	No used, open

● IC701 (AN8835SBE1): Servo Amp.

Pin No.	Terminal Name	I/O	Function
1	PDA	I	Focus (A-ch) signal input terminal
2	PDB	I	Focus (B-ch) signal input terminal
3	VCC	I	Power supply terminal
4	LPD	I	Laser PD signal input
5	LD	O	Laser power auto control signal 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 output
10	CSBRT	I	OFTR capacitor connection terminal
11	CEA	I	HPF-AMP capacitor connection terminal
12	BDO	O	Dropout detection control signal output
13	LDON	I	LD APC ON/OFF ("H": ON, "L": OFF)
14	GND	—	GND terminal
15	/RFDET	O	RF detection signal output ("L": det.)
16	CROSS	O	Tracking error zero cross output
17	OFTR	O	Off track detection signal output ("H": det.)
18	VDET	O	Vibration detection signal output ("H": det.)
19	ENV	O	Envelope output terminal
20	TEBPF	I	Vibration detection signal input ("H": det.)
21	CCRS	I	CROSS capacitor connection terminal
22	TE	O	Tracking error signal output
23	FE	O	Focus error signal output
24	TBAL	I	Tracking balance adjustment signal input
25	FBAL	I	Focus balance adjustment signal input
26	VREF	O	Reference voltage output
27	PDE	I	Tracking signal (E-ch) input terminal
28	PDF	I	Tracking signal (F-ch) input terminal

● IC702 (MN662741RPA): Servo Processor, Digital Signal Processor, Digital Filter, D/A Converter

Pin No.	Terminal Name	I/O	Function
1	BCLK	O	Bit clock output for serial data
2	LRCK	O	L/R clock signal output
3	SRDATA	O	Serial data output
4	DVDD1	—	Power supply input (for digital circuit)
5	DVSS1	—	GND (for digital circuit)
6	TX	O	Digital audio interface signal output
7	MCLK	I	Microprocessor command clock signal input (Latches data at first transition)
8	MDATA	I	Microprocessor command data signal input
9	MLD	I	Microprocessor command load signal input
10	SENSE	O	Sense signal output (OFT, FESL, MAGEND, NAJEND, POSAD, SFG) (Not used, open)
11	/FLOCK	O	Focus servo feeding signal output ("L": Feed)
12	/TLOCK	O	Tracking servo feeding signal output ("L": Feed) (Not used, open)
13	BLKCK	O	Sub-code block clock signal output (fBLKCK = 75 Hz during normal playback)
14	SQCK	I	External clock signal input for sub-code Q resister
15	SUBQ	O	Sub-code Q code output
16	DMUTE	I	Muting input ("H": Mute)
17	STAT	O	Status signal output (CRC, CUE, CLVS, TTSTVP, FCLV, SQCK)
18	/RST	I	Reset signal input
19	SMCK	—	1/2-divided clock signal of crystal oscillating at MSEL = "H" (fSMCK = 8.4672 MHz) 1/4-divided clock signal of crystal oscillating at MSEL = "L" (fSMCK = 4.2336 MHz) (Not used, open)
20	PMCK	—	1/192-divided clock signal of crystal oscillating (fPMCK = 88.2 kHz) (Not used, open)
21	TRV	O	Traverse forced feed output
22	TVD	O	Traverse drive output
23	PC	O	Spindle motor ON signal output ("L": ON)
24	ECM	O	Spindle motor drive signal output (forced mode output)
25	ECS	O	Spindle motor drive signal output (servo error signal output)
26	KICK	O	Kick pulse output
27	TRD	O	Tracking drive output
28	FOD	O	Focus drive output
29	VREF	I	D/A (drive) output (TVD, ECS, TRD, FOD, FBAL, TBAL) reference voltage input
30	FBAL	O	Focus balance adjustment output
31	TBAL	O	Tracking balance adjustment output
32	FE	I	Focus error signal input (analog input)
33	TE	I	Tracking error signal input (analog input)
34	RFENV	I	RF envelope signal input
35	VDET	I	Vibration detection signal input ("H": detection)

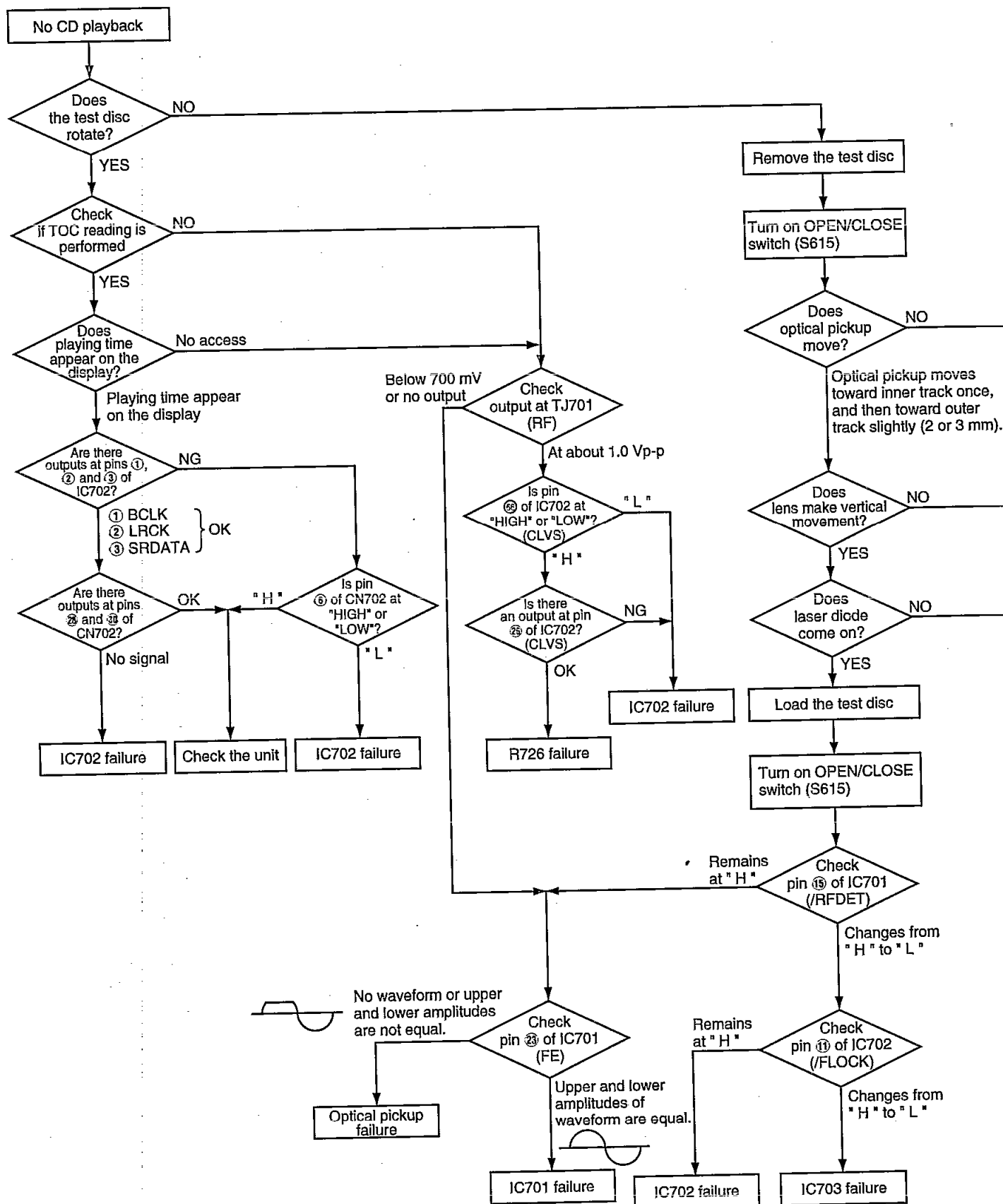
Pin No.	Terminal Name	I/O	Function
36	OFT	I	Off-track signal input ("H": off track)
37	TRCRS	I	Track cross signal input
38	/RFDET	I	RF detection signal input ("L": detection)
39	BDO	I	Dropout signal input ("H": Dropout)
40	LDON	O	Laser on signal output ("H": ON)
41	TES	O	Tracking error shunt signal output ("H": shunt)
42	PLAY	O	Play signal out ("H": PLAY) (Not used, open)
43	WVEL	O	Double speed status signal output ("H": Double speed) (Not used, open)
44	ARF	I	RF signal input
45	IREF	I	Reference current input
46	DRF	—	DSL bias (Not used, open)
47	DSLIF	I/O	DSL loop filter
48	PLLF	I/O	PLL loop filter
49	VCOF	I/O	VCO loop filter
50	AVDD2	—	Power supply input (for analog circuit)
51	AVSS2	—	GND (for analog circuit)
52	EFM	—	EFM signal output (Not used, open)
53	PCK	—	PLL extraction clock output (fPCK = 4.321 MHz during normal playback) (Not used, open)
54	PDO	—	Phase comparison signal of EFM and PCK signals (Not used, open)
55	SUBC	O	Sub-code serial data output
56	SBCK	I	Clock input for sub-code serial data
57	Vss	—	GND
58	X1	I	Crystal oscillating circuit input (f = 16.9344 MHz)
59	X2	O	Crystal oscillating circuit output (f = 16.9344 MHz)
60	VDD	—	Power supply input (for oscillating circuit)
61	BYTCK	—	Byte clock output (Not used, open)
62	/CLDCK	O	Sub-code frame clock signal output (fCLDCK = 7.35 kHz during normal playback)
63	FCLK	—	Crystal frame clock signal output (fFCLK = 7.35 kHz, double = 14.7 kHz) (Not used, open)
64	IPFLAG	O	Interpolation flag output ("H": Interpolation)
65	FLAG	O	Flag output (Not used, open)
66	CLVS	O	Spindle servo phase synchronizing signal output ("H": CLV, "L": rough servo) (Not used, open)
67	CRC	O	Sub-code CRC checked output ("H": OK, "L": NG) (Not used, open)
68	DEMPH	O	De-emphasis ON signal output ("H": ON) (Not used, open)
69	RESY	—	Frame re-synchronizing signal output (Not used, open)
70	/RST2	I	Reset input through MASH circuit ("L": Reset)
71	/TEST	I	Test input

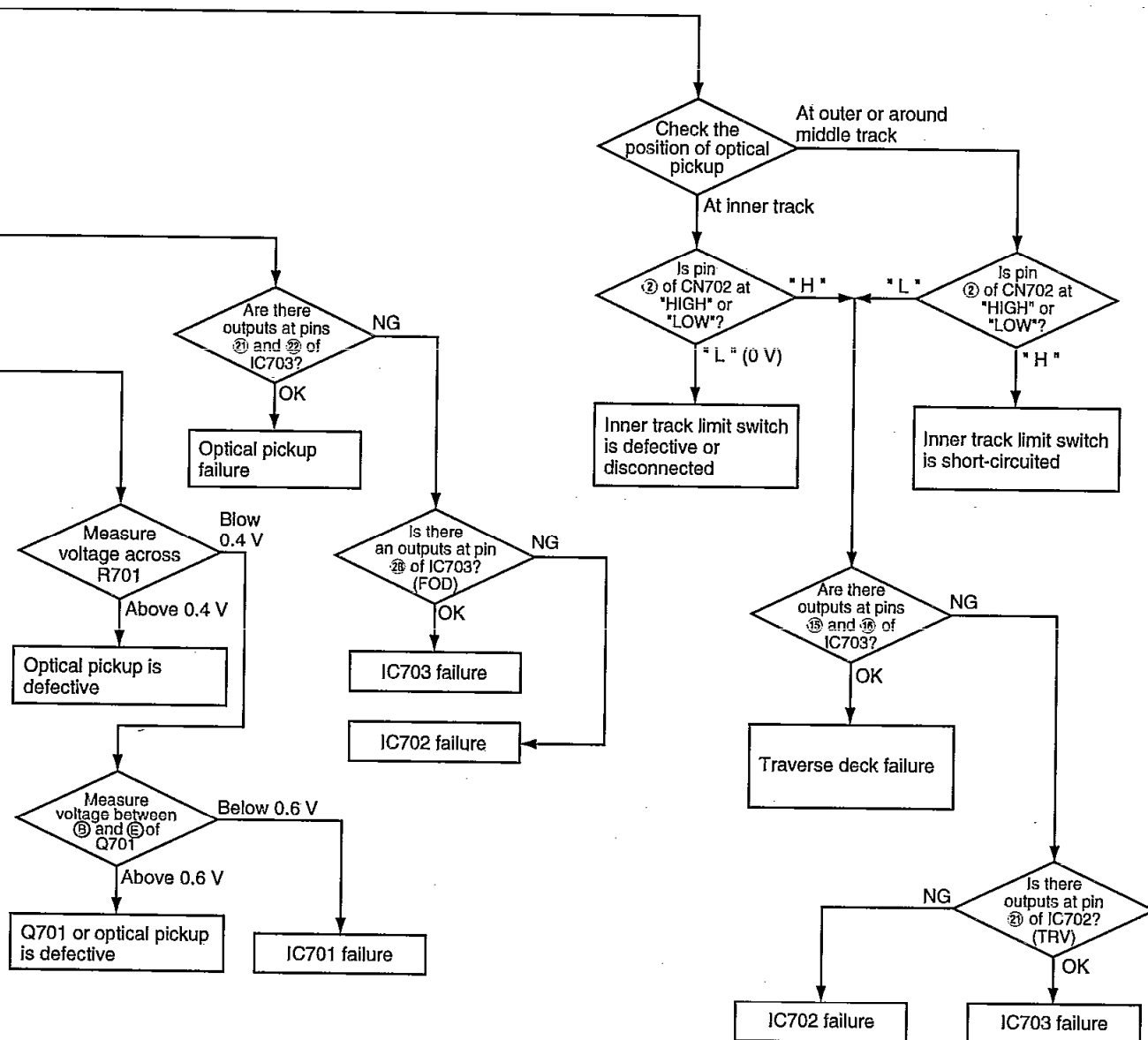
Pin No.	Terminal Name	I/O	Function
72	AVDD1	—	Power supply input (for analog circuit)
73	OUTL	O	Left channel audio signal output
74	AVSS1	—	GND
75	OUTR	O	Right channel audio signal output
76	RSEL	I	RF signal polarity assignment input (at "H" level: RSEL = "H") (at "L" level: RSEL = "L")
77	CSEL	I	Crystal oscillating frequency designation input ("L": 16.9344 MHz, "H": 33.8688 MHz)
78	SRDATA	I	Audio serial data signal input
79	LRCK	I	Audio L/R clock signal input
80	BCLK	I	Audio Bit clock signal input

• IC703 (AN8389SE1): Focus/Tracking Coil Driver
Traverse/Spindle Motor Driver

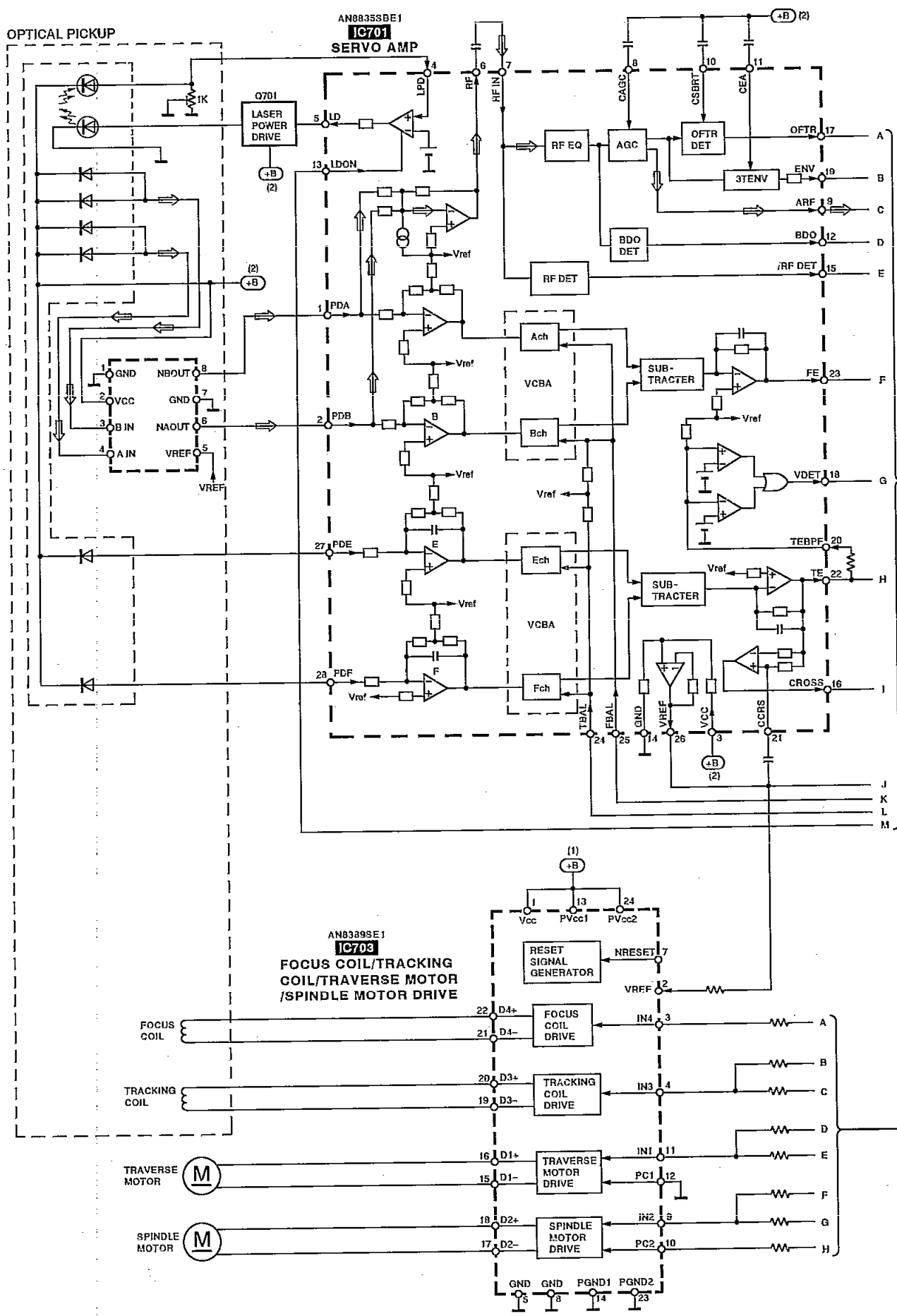
Pin No.	Terminal Name	I/O	Function
1	Vcc	—	Power supply
2	VREF	I	VREF input
3	IN4	I	Focus driver (4) input
4	IN3	I	Tracking driver (3) input
5	GND	—	Ground connection
6	NC	—	Ground connection
7	NRESET	—	Reset input (Not used, open)
8	GND	—	Ground connection
9	IN2	I	Spindle motor driver (2) input
10	PC2	I	PC2 (power cut) input
11	IN1	I	Traverse motor driver (1) input
12	PC1	I	PC1 (power cut) input
13	PVcc1	—	Power supply (1) for driver
14	PGND1	—	Ground connection (1) for driver
15	D1-	O	Traverse motor driver (1) reverse-action output
16	D1+	O	Traverse motor driver (1) forward-action output
17	D2-	O	Spindle motor driver (2) reverse-action output
18	D2+	O	Spindle motor driver (2) forward-action output
19	D3-	O	Tracking actuator (3) reverse-action output
20	D3+	O	Tracking actuator (3) forward-action output
21	D4-	O	Focus actuator (4) reverse-action output
22	D4+	O	Focus actuator (4) forward-action output
23	PGND2	—	Ground connection (2) for driver
24	PVcc2	—	Power supply (2) for driver

Troubleshooting Guide





■ Block Diagram





Replacement Parts List (Electrical)

Notes: *Important safety notice:

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

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

When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.

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

Parts without these indications can be used for all areas.

* [M] indicates in Remarks columns parts that are supplied by MESA.

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

*ACHTUNG: Die Lasereinheit nicht zerlegen.

Die Lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

*The "(SF)" mark denotes the standard part.

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)		CN1	RJS1A6714	CONNECTOR(14P)	[M]
				CN401	RJS1A6814	CONNECTOR(14P)	[M]
				CN402	RJS1A6823	CONNECTOR(23P)	[M]
IC1Δ	LM2940T5	IC	[M]			EARTH TERMINAL(S)	
IC1A	BA6418N	IC	[M]	E1	SNE1004-2	EARTH TERMINAL	[M]
IC401	LC66538A4J29	IC	[M]			JACK(S)	
IC402	TOTX178	IC	[M]				
IC601	NJU3713GTE1	IC	[M]	JK401	RJT065K19	SYSTEM	[M]
		TRANSISTOR(S)				CD SERVO CIRCUIT	
						INTEGRATED CIRCUIT(S)	
Q1Δ	2SB1548PQAU	TRANSISTOR	[M]	IC701	AN8835SBE1	IC	[M]
Q2Δ	2SC3311AIRTA	TRANSISTOR	[M]	IC702	MN662741RPA	IC	[M]
Q401	DTC114YSTP	TRANSISTOR	[M]	IC703	AN8389SE1	IC	[M]
Q402-404	2SC3311AIRTA	TRANSISTOR	[M]			TRANSISTOR(S)	
Q405	2SA1309A-R	TRANSISTOR	[M]				
		DIODE(S)		Q701	2SB709S	TRANSISTOR	[M]
						COIL(S)	
D3, 4	MA165	DIODE	[M]	L701	RLBN102V-Y	COIL	[M]
D5Δ	MA4075MTA	DIODE	[M]			OSCILLATOR(S)	
D401-404	MA165	DIODE	[M]	X701	RSXB16M9J02T	OSCILLATOR	[M]
D601-606	SPR505MD/T	L. E. D.	[M]			SWITCH(ES)	
D611-614	LNJ801TPSJA	L. E. D.	[M]	S701	RSMD006-P	SW	[M]
D617	MA165	DIODE	[M]			CONNECTOR(S)	
		COIL(S)		CN701	RJU035T016-1	CONNECTOR(16P)	[M]
L1	BL02RN2R65T2	COIL	[M]	CN702	RJS1A6723-1Q	CONNECTOR(23P)	[M]
L401	RLQA100JT-Y	COIL	[M]				
L402	BL02RN2R65T2	COIL	[M]				
		OSCILLATOR(S)					
X401	EFOEC4234T3	OSCILLATOR	[M]				
		SWITCH(ES)					
S1	RSH1A005	SW	[M]				
S2, 3	RSH1A032-U	SW	[M]				
S4	RSH1A005	SW	[M]				
S5	RSH1A032-U	SW	[M]				
S601-615	EVQ21405R	SW	[M]				
		CONNECTOR(S)					

Resistors and Capacitors

Notes : * Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)
 * Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM) , 1M=1,000k(OHM)

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
		RESISTORS	R617	ERDS2TJ123	1/4W 12K [M]	R720	ERJ6GEY0R00A	1/10W 0.00 [M]
			R618	ERDS2TJ682T	1/4W 6.8K [M]	R721	ERJ6GEYJ101V	1/10W 100 [M]
			R619	ERDS2TJ472	1/4W 4.7K [M]	R722	ERJ6GEYJ563V	1/10W 56K [M]
R2	ERDS2TJ471	1/4W 470 [M]	R620	ERDS2TJ332	1/4W 3.3K [M]	R723	ERJ6GEYJ182V	1/10W 1.8K [M]
R3	ERDS2TJ223	1/4W 22K [M]	R621	ERDS2TJ222	1/4W 2.2K [M]	R724	ERJ6GEYJ333V	1/10W 33K [M]
R4	ERDS2TJ101	1/4W 100 [M]	R622	ERDS2TJ182	1/4W 1.8K [M]	R725	ERJ6GEYJ472V	1/10W 4.7K [M]
R5	ERDS2TJ102	1/4W 1K [M]	R623	ERDS2TJ152	1/4W 1.5K [M]	R726	ERJ6GEYJ473V	1/10W 47K [M]
R401	ERDS2TJ105T	1/4W 1M [M]	R624	ERDS2TJ122	1/4W 1.2K [M]	R727	ERJ6GEYJ822V	1/10W 8.2K [M]
R402	ERDS2TJ102	1/4W 1K [M]	R627, 628	ERDS2TJ221	1/4W 220 [M]	R728	ERJ6GEYJ103V	1/10W 10K [M]
R403	ERDS2TJ104	1/4W 100K [M]			CAPACITORS	R731	ERJ6GEYJ822V	1/10W 8.2K [M]
R404	ERDS2TJ471	1/4W 470 [M]				R735, 736	ERJ6GEYJ101V	1/10W 100 [M]
R405	ERDS2TJ101	1/4W 100 [M]				R744	ERJ6GEYJ103V	1/10W 10K [M]
R406	ERDS2TJ471	1/4W 470 [M]	C1	ECA1CM471BE	16V 470U [M]	R745	ERJ6GEYJ155V	1/10W 1.5M [M]
R407	ERDS2TJ180	1/4W 1.0 [M]	C1A	ECA1AKF820E	10V 82U [M]	R748	ERJ6GEYJ182V	1/10W 1.8K [M]
R408-413	ERDS2TJ103	1/4W 10K [M]	C2	ECBT1E103ZF	25V 0.01U [M]	R749	ERJ6GEYJ682V	1/10W 6.8K [M]
R414	ERDS2TJ471	1/4W 470 [M]	C4	ECBT1H102KB5	50V 1000P [M]	R750, 751	ERJ6GEYJ473V	1/10W 47K [M]
R415-422	ERDS2TJ103	1/4W 10K [M]	C5	RCE1CKA470BG	16V 47U [M]	R752	ERJ6GEYJ220V	1/8W 22 [M]
R423-425	ERDS2TJ101	1/4W 100 [M]	C9	ECA1AKF820B	10V 82U [M]	R770, 771	ERJ6GEYJ155V	1/10W 1.5M [M]
R426	ERDS2TJ102	1/4W 1K [M]	C401	RCE1HKA3R3BG	50V 3.3U [M]	R772	ERJ6GEYJ273V	1/10W 27K [M]
R427	ERDS2TJ182	1/4W 1.8K [M]	C402, 403	ECBT1H102KB5	50V 1000P [M]			CHIP JUMPER(S)
R429	ERDS2TJ103	1/4W 10K [M]	C404, 405	ECBT1E103ZF	25V 0.01U [M]			
R432	ERDS2TJ123	1/4W 12K [M]	C406	ECEA0JKA221B	6.3V 220U [M]			
R433	ERDS2TJ103	1/4W 10K [M]	C407	ECEA1AKA221B	10V 220U [M]	RJ701-709	ERJ8GEY0R00A	CHIP JUMPER [M]
R434, 435	ERDS2TJ101	1/4W 100 [M]	C408	ECBT1H101KB5	50V 100P [M]	RJ714-717	ERJ8GEY0R00A	CHIP JUMPER [M]
R436, 437	ERDS2TJ472	1/4W 4.7K [M]	C409	ECBT1E103ZF	25V 0.01U [M]	RJ721-724	ERJ6GEY0R00A	CHIP JUMPER [M]
R438	ERDS2TJ102	1/4W 1K [M]	C410	ECEA0JKA470B	6.3V 47U [M]	RJ726-731	ERJ6GEY0R00A	CHIP JUMPER [M]
R439	ERDS2TJ223	1/4W 22K [M]	C411	ECBT1H104ZFS	50V 0.1U [M]			
R440	ERDS2TJ473	1/4W 47K [M]	C413, 414	ECBT1H102KB5	50V 1000P [M]			TEST JUMPER(S)
R441	ERDS2TJ472	1/4W 4.7K [M]	C415	ECEA0JKA470B	6.3V 47U [M]			
R442	ERDS2TJ103	1/4W 10K [M]	C416, 417	ECBT1H102KB5	50V 1000P [M]	TJ701, 702	EYF8CU	TEST JUMPER [M]
R444	ERDS2TJ472	1/4W 4.7K [M]	C601	ECBT1E103ZF	25V 0.01U [M]			CAPACITOR
R445	ERDS2TJ473	1/4W 47K [M]	C602	ECEA1HKA010B	50V 1U [M]			
R446	ERDS2TJ472	1/4W 4.7K [M]	C603-605	ECBT1H101KB5	50V 100P [M]			
R447, 448	ERDS2TJ221	1/4W 220 [M]			CD SERVO CIRCUIT	C701	ECEA0JKA330I	6.3V 33U [M]
R449, 450	ERDS2TJ473	1/4W 47K [M]			RESISTORS	C702	ECUZNE104MBN	25V 0.1U [M]
R452	ERDS2TJ103	1/4W 10K [M]				C703	ECEA0JKA101I	6.3V 100U [M]
R453	ERDS2TJ473	1/4W 47K [M]				C704, 705	ECUZNE104MBN	25V 0.1U [M]
R454	ERDS2TJ102	1/4W 1K [M]	R701	ERJ6GEYJ4R7V	1/10W 4.7 [M]	C706	ECUV1H272KBN	50V 2700P [M]
R455, 456	ERDS2TJ471	1/4W 470 [M]	R703	ERJ6GEYJ823	1/10W 82K [M]	C707	ECUV1E273KBN	25V 0.027U [M]
R457	ERDS2TJ473	1/4W 47K [M]	R704	ERJ6GEYJ102A	1/10W 1K [M]	C708	ECUE1H472KBN	50V 4700P [M]
R458	ERDS2TJ182	1/4W 1.8K [M]	R705	ERJ6GEYJ103V	1/10W 10K [M]	C709	ECUE1C473KBN	16V 0.047U [M]
R601	ERDS2TJ104	1/4W 100K [M]	R706	ERJ6GEYJ102A	1/10W 1K [M]	C710	ECUV1H182KBN	50V 1800P [M]
R602-604	ERDS2TJ101	1/4W 100 [M]	R707	ERJ6GEYJ474V	1/10W 470K [M]	C711, 712	ECUWNE104ZFN	25V 0.1U [M]
R605-610	ERDS2TJ271	1/4W 270 [M]	R708	ERJ6GEYJ154V	1/10W 150K [M]	C713	ECUV1C104MBN	16V 0.1U [M]
R611	ERDS2TJ822	1/4W 8.2K [M]	R709	ERJ6GEYJ683V	1/10W 68K [M]	C714	ECEA0JKA101I	6.3V 100U [M]
R612	ERDS2TJ562	1/4W 5.6K [M]	R711	ERJ6GEYJ154V	1/10W 150K [M]	C716	ECUE1H561KBN	50V 560P [M]
R613	ERDS2TJ272T	1/4W 2.7K [M]	R712	ERJ6GEYJ221V	1/10W 220 [M]	C717	ECUWNE104ZFN	25V 0.1U [M]
R614	ERDS2TJ222	1/4W 2.2K [M]	R714	ERJ6GEYJ121V	1/10W 120 [M]	C718	ECUVNC224KBN	16V 0.22U [M]
R615	ERDS2TJ273	1/4W 27K [M]	R717, 718	ERJ6GEYJ102A	1/10W 1K [M]	C721, 722	ECUV1H100DCN	50V 10P [M]

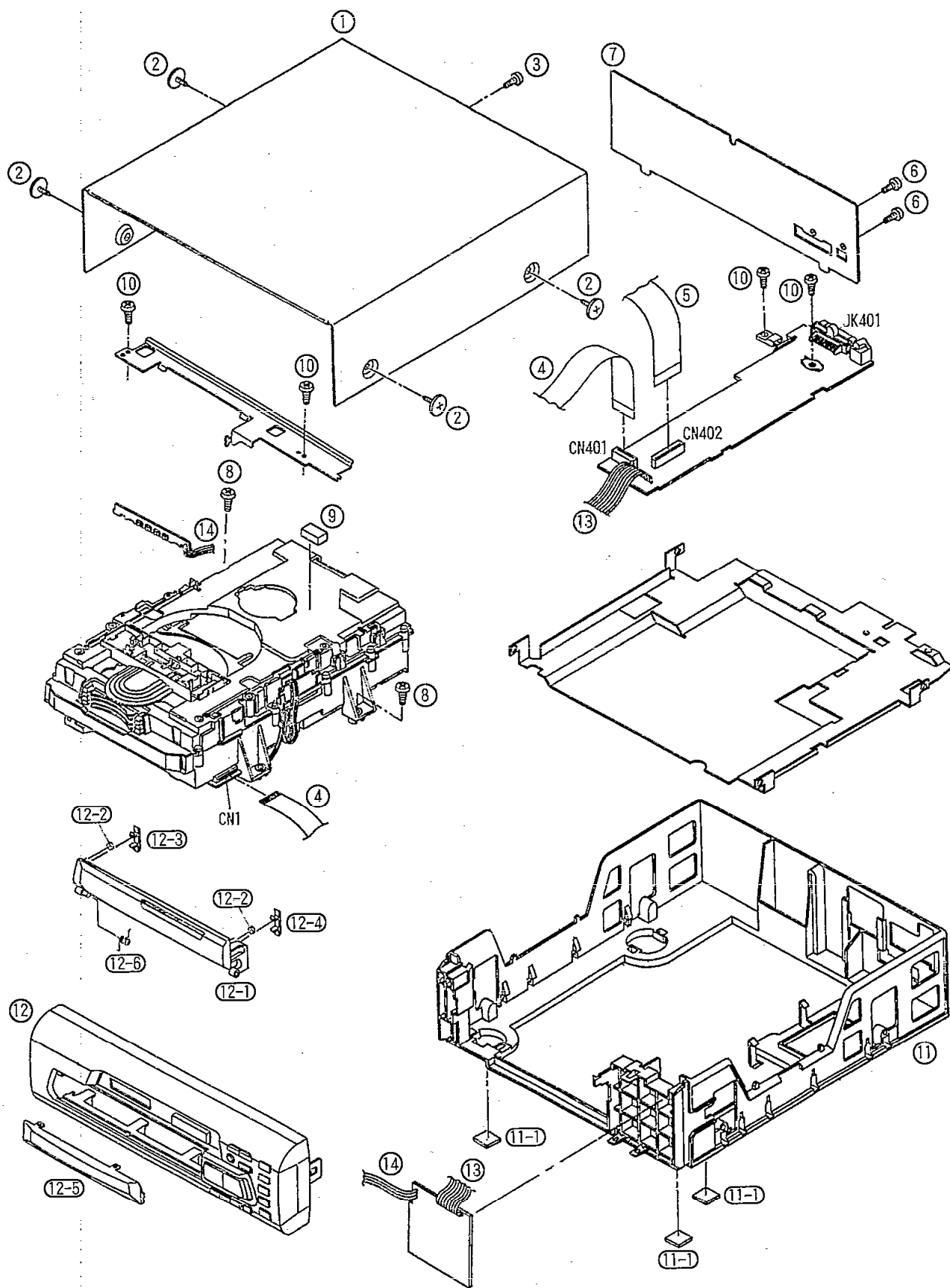
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■ Replacement Parts List (Cabinet and Loading Unit)

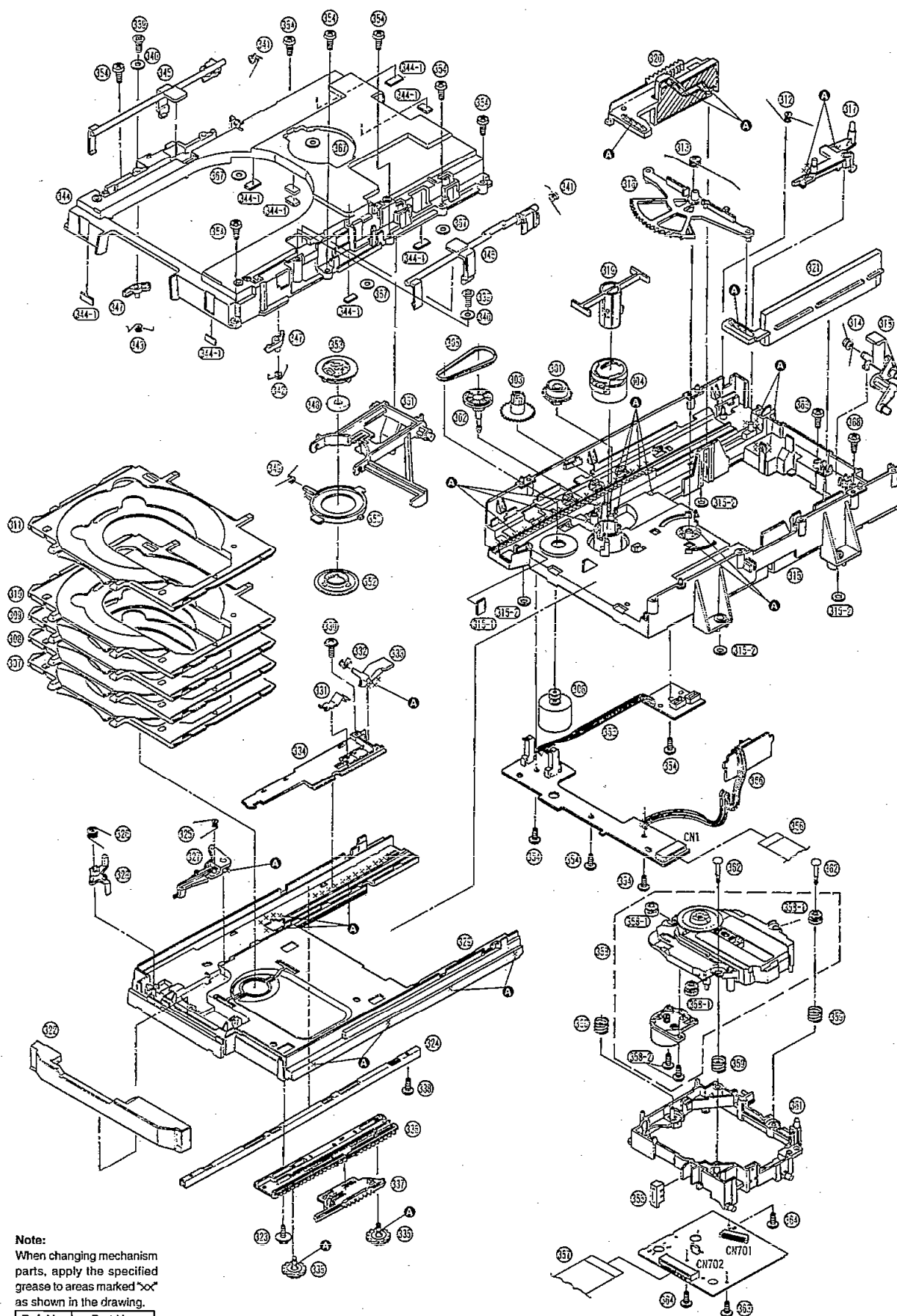
Note: The reference number SA represent the grease and tool used for this unit.

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET PARTS		326	RME0172	CARRIER LOCK LEVER SPRING	[M]
1	RKMD222-3K	CABINET	[M]	327	RML0377	BASE LOCK LEVER	[M]
2	RHD30007-K1	SCREW	[M]	328	RML0378	CARRIER LOCK LEVER	[M]
3	XTBS3+8JFZ1	SCREW	[M]	329	RMR0884-K	TRAY BASE	[M]
4	REZ0555	FLAT CABLE	[M]	330	RHD20009-1	SCREW	[M]
5	REZ0765	FFC (23P)	[M]	331	RMG0274	TRAY HOOK SPRING	[M]
6	XTBS3+8JFZ1	SCREW	[M]	332	RME0173	CARRIER ARM SPRING	[M]
7	RGR0217B-F	REAR GRILL ASS'Y	[M]	333	RML0376-1	CARRIER ARM	[M]
8	RHD30065	SCREW	[M]	334	RMD0137	CARRIER	[M]
9	RMG0439-K	RUBBER	[M]	335	RDG0312	SPEED GEAR	[M]
10	XTB3+8JFZ	SCREW	[M]	336	RMD0134	DRIVE BACK	[M]
11	RYK0697-K1	BOTTOM BOARD ASS'Y	[M]	337	RMD0135	CUSHION RACK	[M]
11-1	SHG1654	RUBBER	[M]	338	XTN2+6F	SCREW	[M]
12	RYPO731A-K	FRONT PANEL ASS'Y	[M]	339	XTS3+8J	SCREW	[M]
12-1	RKD089DA-K	DISC COVER	[M]	340	XWE4E10	WASHER	[M]
12-2	RMG0305-K	RUBBER	[M]	341	RME0178-3	HOLD SPRING	[M]
12-3	RKQ0197-X	CAP 1	[M]	342	RME0181	LIFT PREVENTION SPRING(1)	[M]
12-4	RKQ0204-X	CAP 2	[M]	343	RME0182	LIFT PREVENTION SPRING(2)	[M]
12-5	RKW0503A-Q	ORNAMENT PANEL	[M]	344	RFRNLCA10EAK	MECHANISM COVER ASS'Y	[M]
12-6	RMB0472	SPRING	[M]	344-1	RMF0221	FELT	[M]
13	RWJ1809125KK	FLAT CABLE (W401/9P)	[M]	345	RML0381	HOLD NAIL (1)	[M]
14	RWJ1803130KK	FLAT CABLE (W601/3P)	[M]	346	RML0382	HOLD NAIL (2)	[M]
		LOADING UNIT		347	RML0384	LIFT PREVENTION LEVER	[M]
301	RDG0309	INTERMEDIATE GEAR	[M]	348	RHM245ZA	MAGNET	[M]
302	RDG0310	PULLEY GEAR	[M]	349	RME0174	CLAMP LEVER SPRING	[M]
303	RDG0311	DRIVE GEAR	[M]	350	RFRNACH430GE	CLAMP BASE ASS'Y	[M]
304	RDG0313	UP/DOWN GEAR	[M]	351	RML0388-1	CLAMP LEVER	[M]
305	RDVD036	BELT	[M]	352	RMR0624-W2	CLAMPER	[M]
306	REMD058	MOTOR ASS'Y	[M]	353	RMR0899-K	FIXED PLATE	[M]
307	RGQ0170-K3	DISC TRAY (1)	[M]	354	XTB3+10J	SCREW	[M]
308	RGQ0171-K	DISC TRAY (2)	[M]	355	RMR0975-W	CAP	[M]
309	RGQ0172-K	DISC TRAY (3)	[M]	356	REZ0555	FFC	[M]
310	RGQ0173-K	DISC TRAY (4)	[M]	357	REZ0765	FFC	[M]
311	RGQ0174-K	DISC TRAY (5)	[M]	358	RAE0150Z	TRAVERSE DECK ASS'Y	[M]
312	RME0170	LOCK LEVER SPRING	[M]	358-1	SHGD113-1	FLOATING RUBBER	[M]
313	RME0179	ASSIST SPRING	[M]	358-2	SNSD38	SCREW	[M]
314	RME0180	TRAY HOLD SPRING	[M]	359	RME0109	FLOATING SPRING (1)	[M]
315	RFRNACH430GC	MECHANISM BASE ASS'Y	[M]	360	RME0142	FLOATING SPRING (2)	[M]
315-1	RMF0221	FELT	[M]	361	RMD0293-1	TRAVERSE CHASSIS	[M]
315-2	RMG0402-K	RUBBER WASHER	[M]	362	RMS0123-1	TRAVERSE FIXED PIN	[M]
316	RML0379	CONVERSION LEVER	[M]	363	XTN2+6G	SCREW	[M]
317	RML0380	LOCK LEVER	[M]	364	XTV2+6G	SCREW	[M]
318	RML0383	TRAY HOLD LEVER	[M]	365	REZ0792	FLAT CABLE (3P) (W2)	[M]
319	RML0385	UP/DOWN LEVER	[M]	366	REZ0793	FLAT CABLE (3P) (W1)	[M]
320	RMD0139	SLIDE PLATE (1)	[M]	367	RMG0430-Q	RUBBER TUBE	[M]
321	RMD0141	SLIDE PLATE (2)	[M]	368	XTWS3+8T	SCREW	[M]
322	RGQ0175-K	TRAY ORNAMENT	[M]			JIG/TOOL(S)	
323	RHD20010	SCREW	[M]	SA1	SZZP1054C	TEST DISC	[M]
324	RMD0868	REINFORCING ANGLE	[M]	SA2	RFXPG671	GREASE	[M]
325	RME0171	BASE LOCK LEVER SPRING	[M]				

■ Cabinet Parts Location



Loading Unit Parts Location



Note:
When changing mechanism
parts, apply the specified
grease to areas marked "x"
as shown in the drawing.

Ref. No.	Part No.
A	RFKXP671

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