

Service Manual

Compact Disc Player

COMPACT
disc
DIGITAL AUDIO

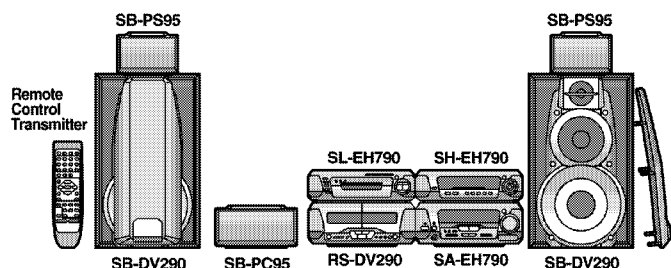
MASH
multi-stage noise shaping

SL-EH790E

Colour

(S).....Silver Type

System: SC-EH790



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

Note: Refer to the service manual for Model No. SA-EH790E/EB/EG/EP (ORDER NO.AD0303004C2) for information on "ACCESSORIES" and "PACKAGING".

Specification

■ Discs played (8 cm or 12 cm)

CD (CD-DA)
CD-R/RW (CD-DA, WMA, MP3 formatted discs)

■ Audio

No. of channels	2 (left and right, stereo)
Frequency response	20 to 20,000 Hz (+0.5 dB to -2 dB)
Output voltage	0.78 V (at 0 dB)
Dynamic range	85 dB
S/N	95 dB
Total harmonic distortion	0.02% (1 kHz, 0 dB)
Wow and flutter	Below measurable limit
Digital filter	8 fs
DA converter	1 bit DAC MASH
Output impedance	1 k Ω
Load impedance	More than 10 k Ω

■ Pickup

Wavelength 790 nm

■ General

Dimensions (W×H×D)

293×89×288 mm

Mass

2.2 kg

Notes

- 1.Design and specifications are subject to change without notice.
- 2.Dimensions and weight are approximate.
- 3.Total harmonic distortion is measured by the digital spectrum analyzer.

Note on CD-R and CD-RW

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

*A process performed after recording that enables CD-R/CD-RW players to play audio CD-R and CD-RW.

■ System/SC-EH790

Sound processor: SH-EH790, **CD changer: SL-EH790**, Tuner/ Amplifier: SA-EH790, Cassette Deck: RS-DV290, Speakers: Front* (SB-DV290), Center* (SB-PC95), Surround* (SB-PS95) (*Made in MAES.)

⚠ 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.

Technics

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1 Note

Refer to the service manual for Model No. SA-EH790E/EB/EG/EP (ORDER NO.AD0303004C2) for information on Accessories and Packaging.

2 Handling Precautions for Traverse Deck

The laser diode in the traverse deck (optical pick-up) 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 pick-up).

2.1. Handling of traverse deck (optical pick-up)

1. Do not subject the traverse deck (optical pick-up) 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. Refer to Fig. 2-1.
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. Refer to Fig. 2-1.

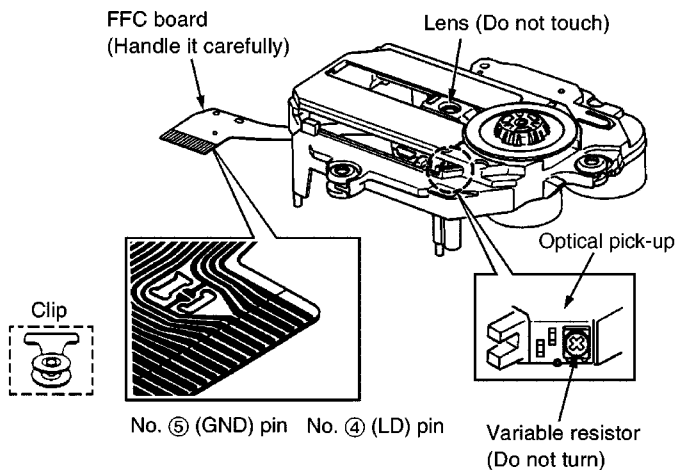


Fig. 2-1.

2.2. Grounding for electrostatic breakdown prevention

2.2.1. Human body grounding

Use the anti-static wrist strap to discharge the static electricity from your body. Refer to Fig. 2-2.

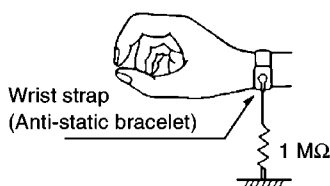


Fig. 2-2.

2.2.2. Work table grounding

Put a conductive material (sheet) or steel sheet on the area where the traverse deck (optical pick-up) is placed, and ground the sheet. Refer to Fig. 2-3.

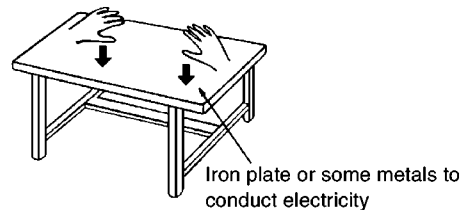


Fig. 2-3.

Caution:

The static electricity of your clothes will not be grounded through the wrist strap.

So take care not to let your clothes touch the traverse deck (optical pick-up).

3 Precaution of Laser Diode

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.

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

Wave length: 780 nm

Maximum output radiation power from pick-up: 100 µW/VDE

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

1. Do not disassemble the pick-up unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pick-up unit. It was already adjusted.
3. Do not 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 Lasereinheit. Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Lasereinheit abgestrahlt.

Wellenlänge: 780 nm

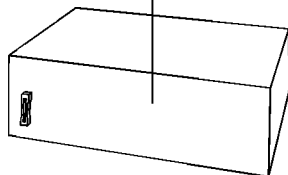
Maximale Strahlungsleistung der Lasereinheit: 100 µW/VDE

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

1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Lasereinheit 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.



CD Changer
(Back of product)



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

(Inside of product)

(Indersiden at apparatet)

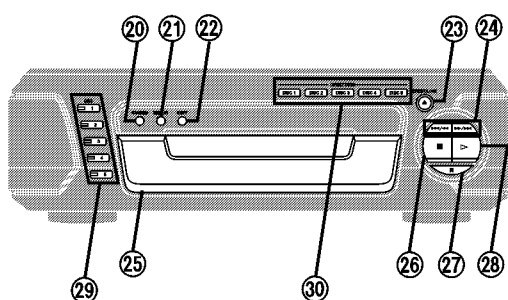
(Tuotteen sisällä)

(Apparatens insida)

(Produktets innside)

(Im Inneren des Gerätes)

4 Location of Controls



20 Random play button (RANDOM)

21 Repeat play button (REPEAT)

22 CD edit button (EDIT)

23 Disc tray open/close button (▲, OPEN/CLOSE)

24 Skip/search buttons (◀◀/◀, ▶/▶▶)

25 Disc tray

26 Stop button (■)

27 Pause button (||)

28 Play button and indicator (▶)

The colour of the indicator depends on the operation taking place.

If stopped: orange

If playing: green

If paused: flashes

29 Disc select buttons and indicators (DISC, 1-5)

Green: Indicates that the tray is ready to play its CD or to be opened.

30 Disc direct open buttons

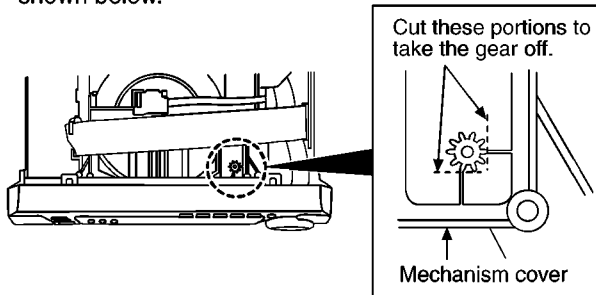
(DIRECT OPEN, DISC 1-DISC 5)

5 Operation Checks and Component Replacement Procedures

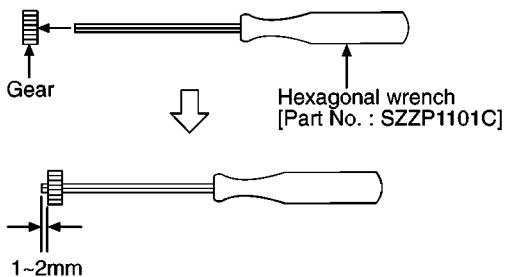
Gear for servicing (as jig) information

1. This unit has a gear which used for checking items (Open/close of disc tray, up/down operation of traverse unit by manually) when servicing. (For gear information, that is described on the items for disassembly procedures.)
2. For preparation of gear (for servicing), perform the procedures as follows.
3. In case of re-servicing the same set, the "gear for servicing" may be took off because it had been used. So, the "gear for servicing" must be stored.

1. Remove the gear provided with mechanism cover as shown below.

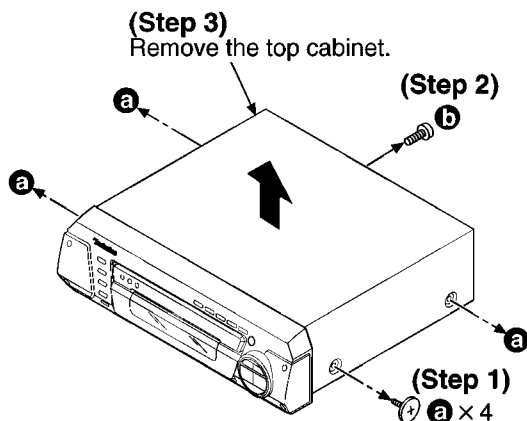


2. Insert the hexagonal wrench (2mm) into the gear, and then project the tip of wrench for 1~2mm length.

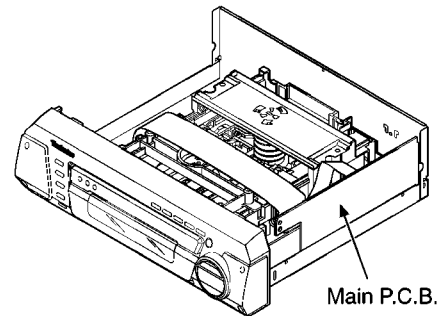


(Preparation of gear as jig is completed.)

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

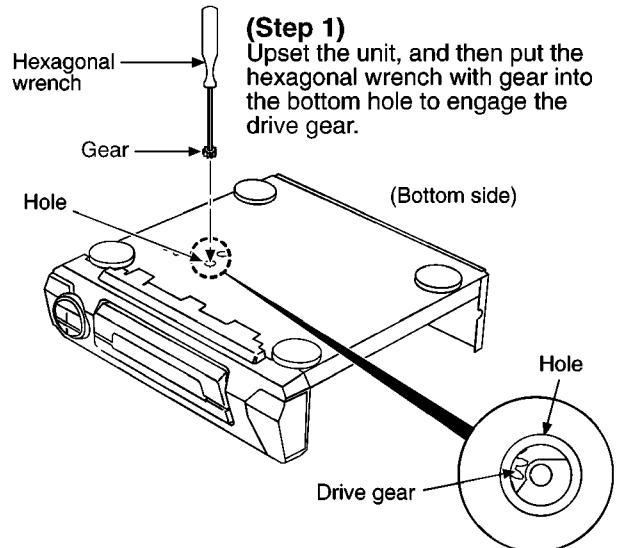


- Check the main P.C.B. as shown below.



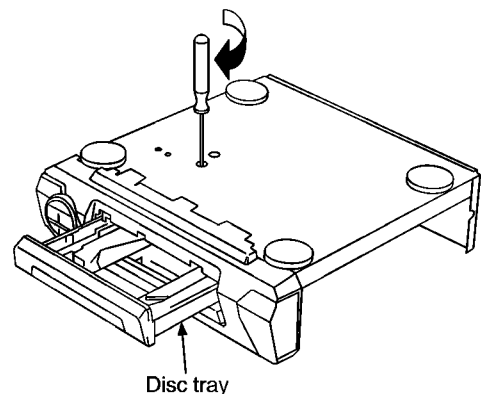
5.2. Checking for the operation P.C.B.

- Follow the (Step 1) - (Step 3) of item 5.1.



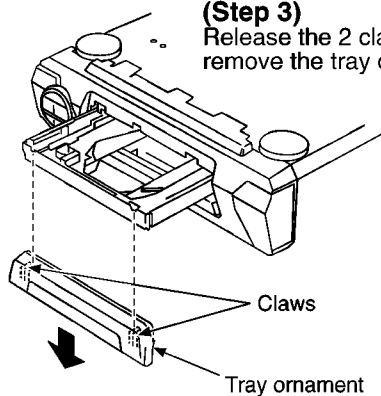
(Step 2)

Rotate the hexagonal wrench with gear in direction of arrow, and then open the disc tray.



(Step 3)

Release the 2 claws, and then remove the tray ornament.

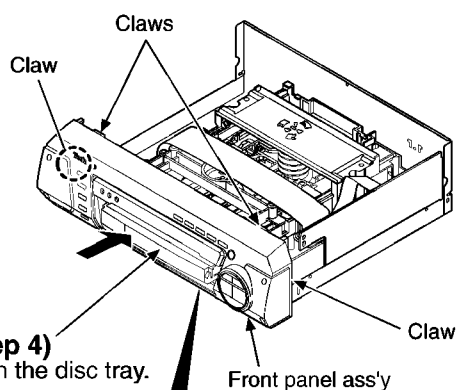


Claws

Tray ornament

(Step 5)

Release the 6 claws, and then remove the front panel ass'y.



Claws

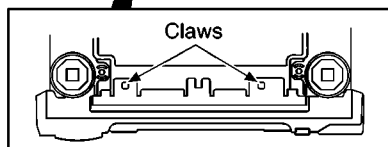
Claw

Claw

Front panel ass'y

(Step 4)

Push the disc tray.



Claws

(Bottom side)

Operation P.C.B.

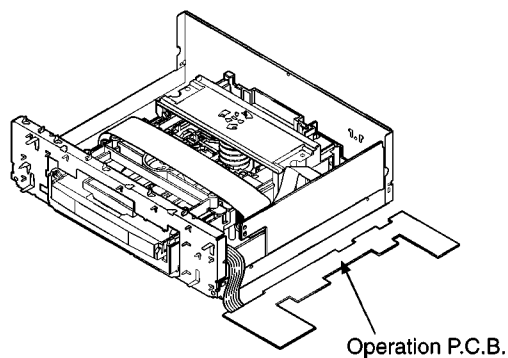
Claws

(Step 6)

Release the 4 claws, and then remove the operation P.C.B..

Claws

- Check the operation P.C.B. as shown below.



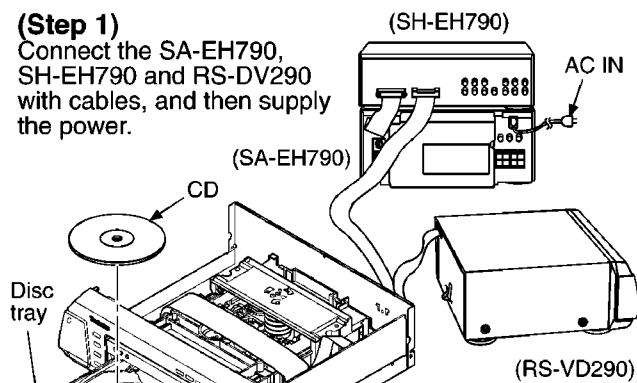
Operation P.C.B.

5.3. Checking for the CD servo P.C.B.

- Follow the (Step 1) - (Step 3) of item 5.1.

(Step 1)

Connect the SA-EH790, SH-EH790 and RS-DV290 with cables, and then supply the power.



(SH-EH790)

(SA-EH790)

AC IN

CD

Disc tray

(RS-DV290)

(Step 2)

Push the open/close button, and then open the disc tray.

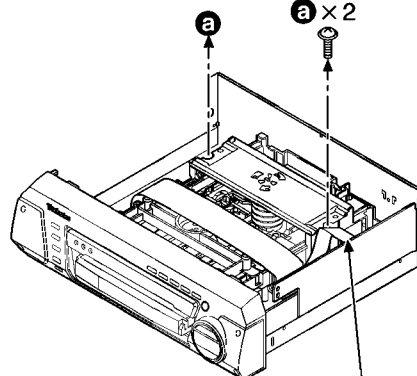
(Step 3)

Put the CD into the disc tray.

(Step 4)

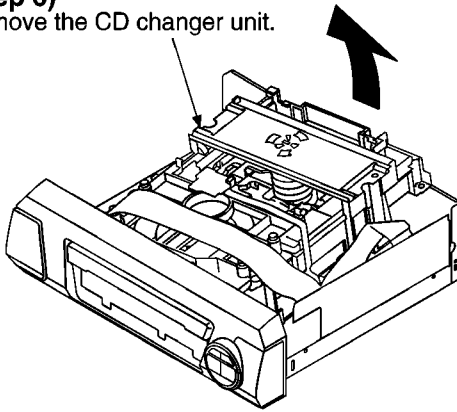
a

a × 2

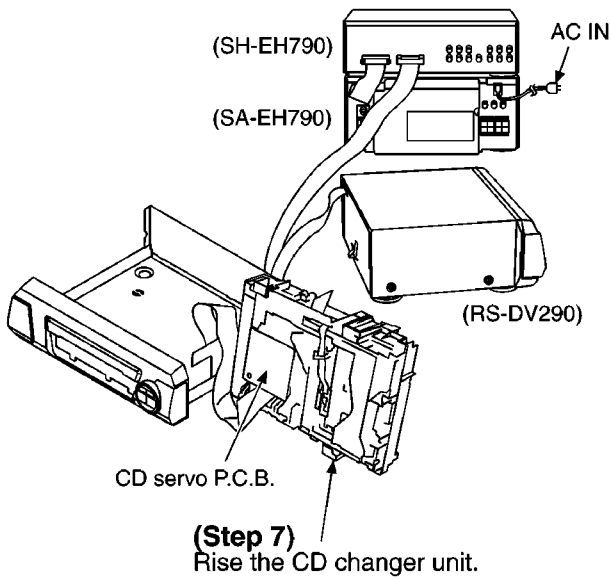
**(Step 5)**

Remove the FFC from connector (CN401).

(Step 6)
Remove the CD changer unit.



• Check the CD servo P.C.B. as shown below.

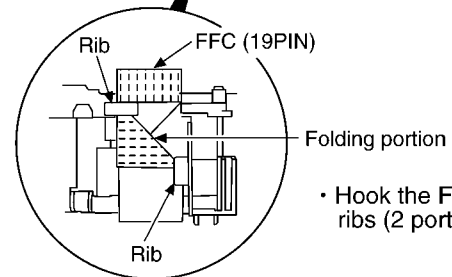
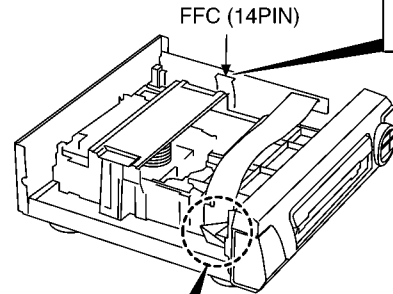
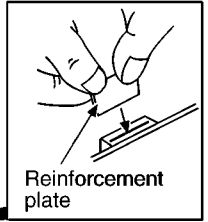


NOTE:

- The CD unit should be checked under "PLAY MODE".
- Do not operate the "DISC change" while the unit is stayed vertically.

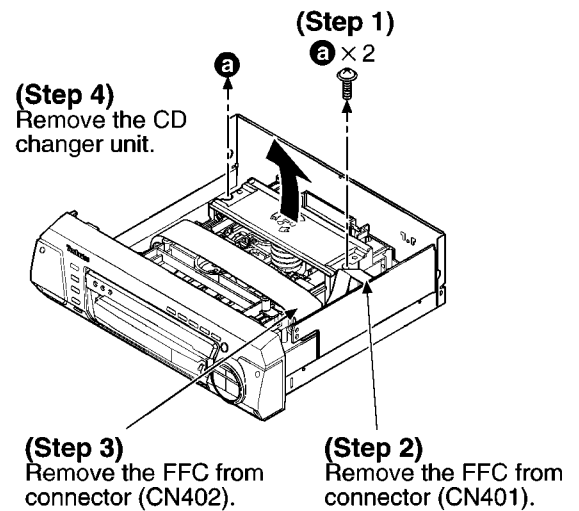
Cable arrangement

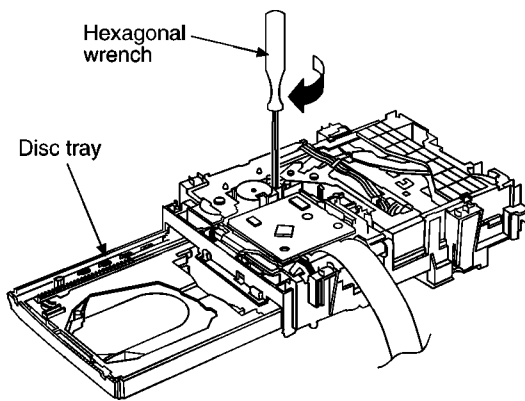
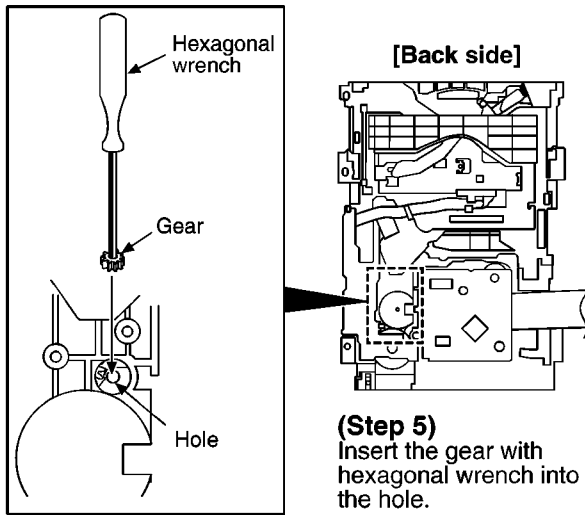
■ **Notice for installing the FFC**
When connecting the FFC, insert it straight with nipping the reinforcement plate by finger.



5.4. Replacement for the traverse deck ass'y

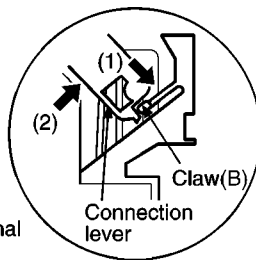
- Follow the (Step 1) - (Step 3) of item 5.1.
- Follow the (Step 1) - (Step 4) of item 5.2.



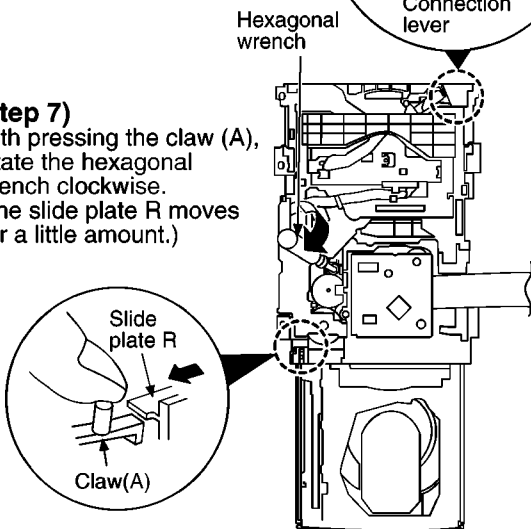


(Step 6)
Rotate the hexagonal wrench in the direction of arrow (clockwise), and then open the disc tray fully.

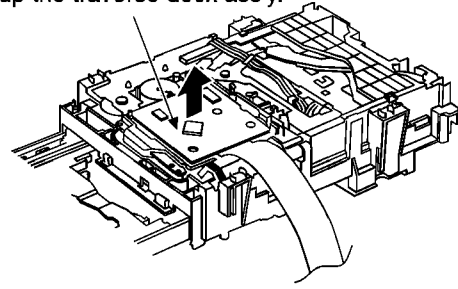
(Step 8)
Pressing the claw (B) in the direction of arrow (1), the connection lever moves in the direction of arrow (2).



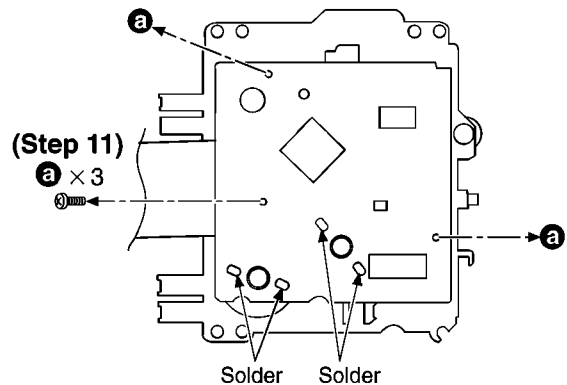
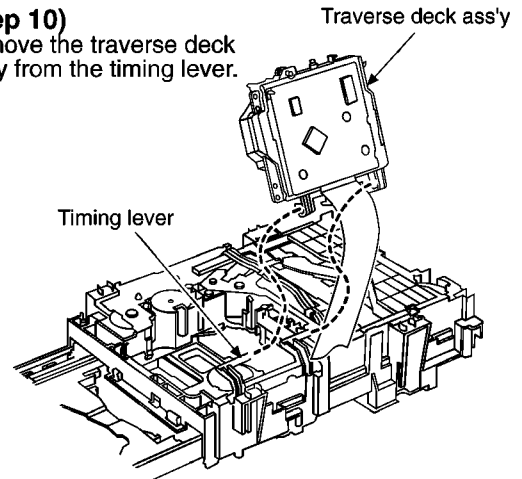
(Step 7)
With pressing the claw (A), rotate the hexagonal wrench clockwise. (The slide plate R moves for a little amount.)



(Step 9)
Lift up the traverse deck ass'y.



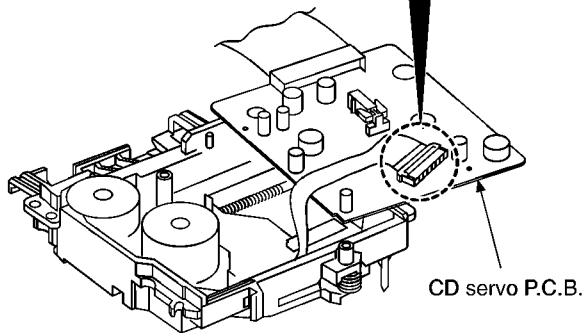
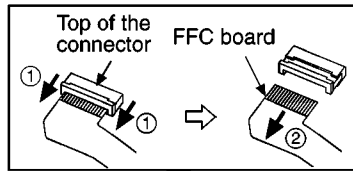
(Step 10)
Remove the traverse deck ass'y from the timing lever.



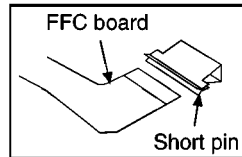
(Step 12)
Unsolder the motor terminals (4 points).

(Step 13)

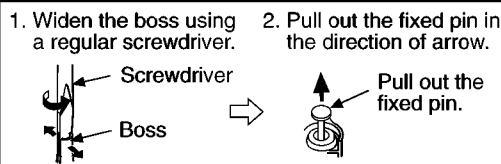
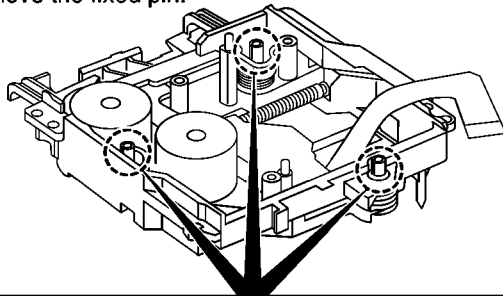
Remove the FFC board from the connector, and then remove the CD servo P.C.B..

**Caution:**

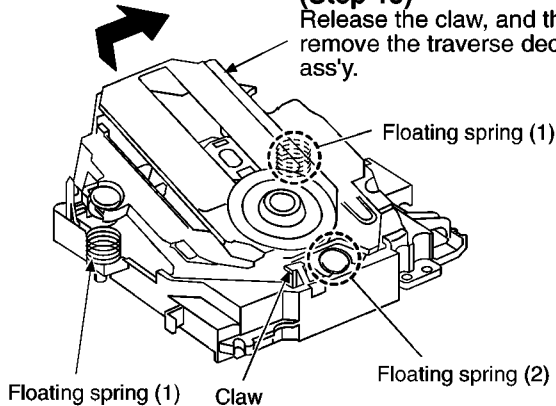
Insert a short pin into the traverse unit FFC board.
(Refer to "Handling Precautions for Traverse Deck".)

**(Step 14)**

Remove the fixed pin.

**(Step 15)**

Release the claw, and then remove the traverse deck ass'y.

**NOTE:**

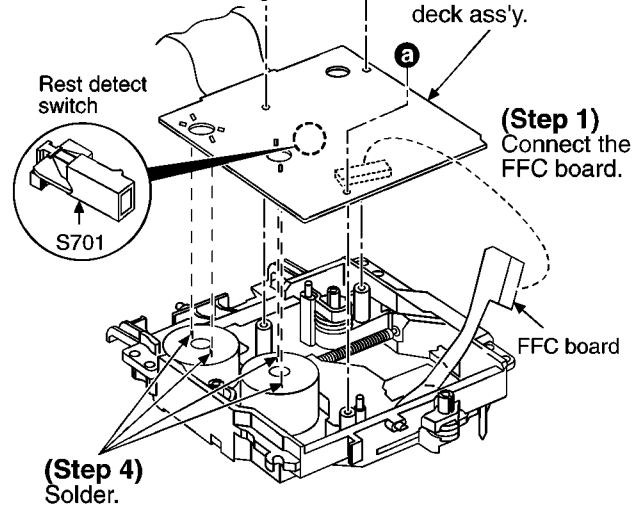
Be careful not to lose the 3 floating springs because those will also be removed on removal of the traverse deck ass'y.

Installation of the CD servo P.C.B. after replacement**(Step 3)**

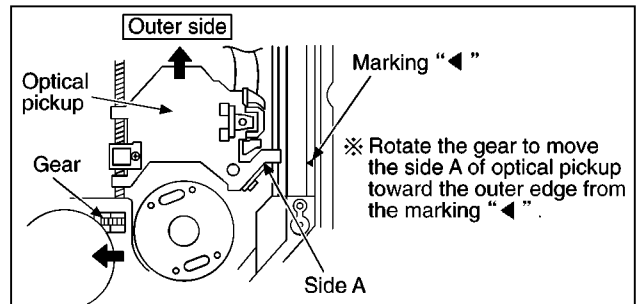
a × 3

(Step 2)

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

**Note for installation of the CD servo P.C.B.**

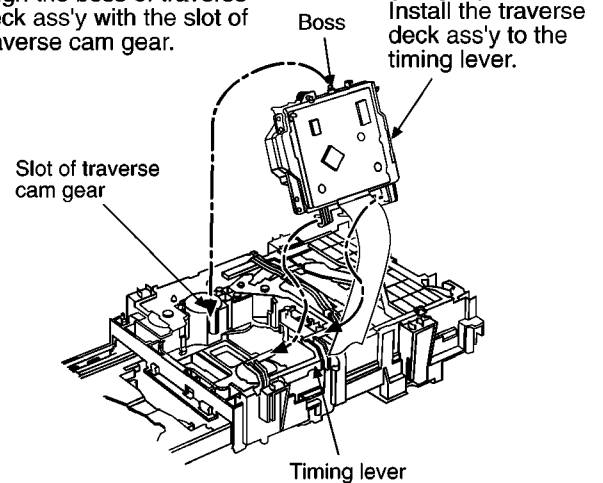
Before installing the CD servo P.C.B., move the optical pickup toward the outer edge from the mark "◀".
[Otherwise, the rest detect switch (S701) mounted on the CD servo P.C.B. may be damaged.]

**Installation for traverse deck ass'y****(Step 2)**

Align the boss of traverse deck ass'y with the slot of traverse cam gear.

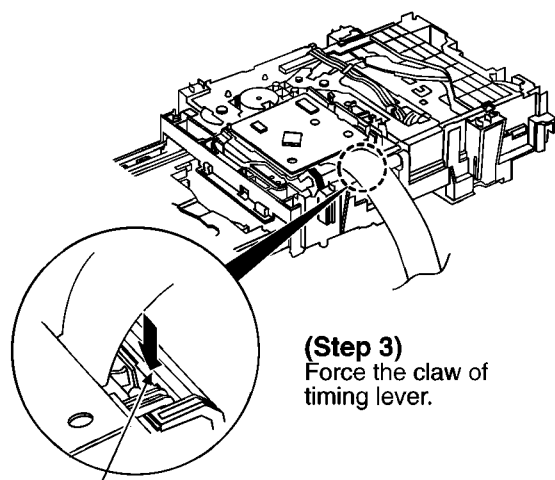
(Step 1)

Install the traverse deck ass'y to the timing lever.

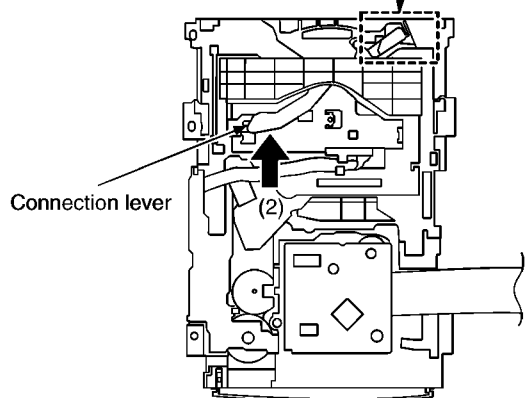
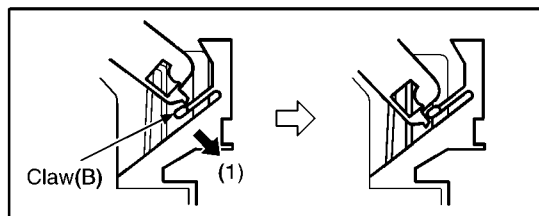
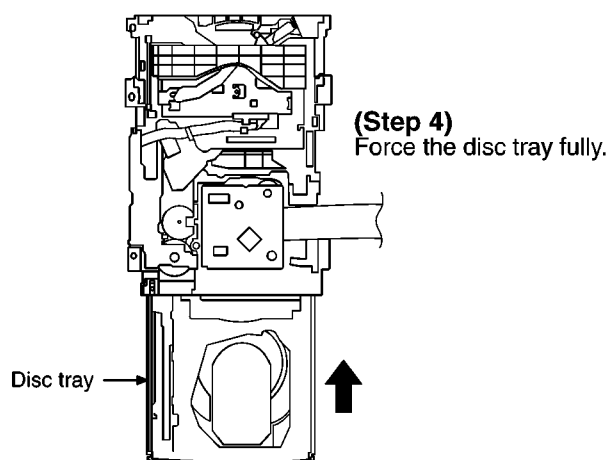


5.5. Replacement for the disc tray

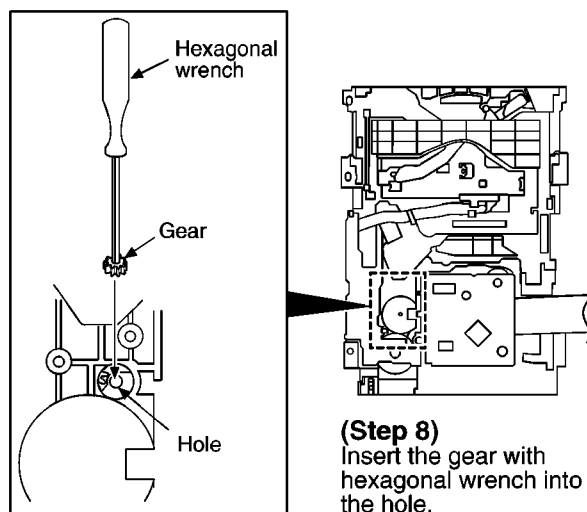
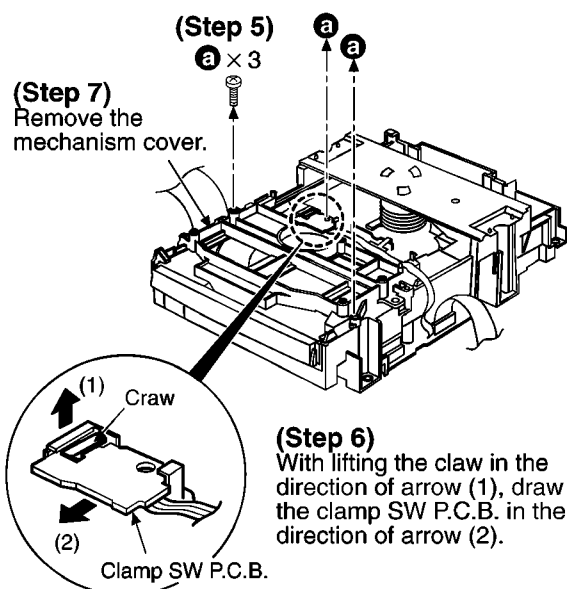
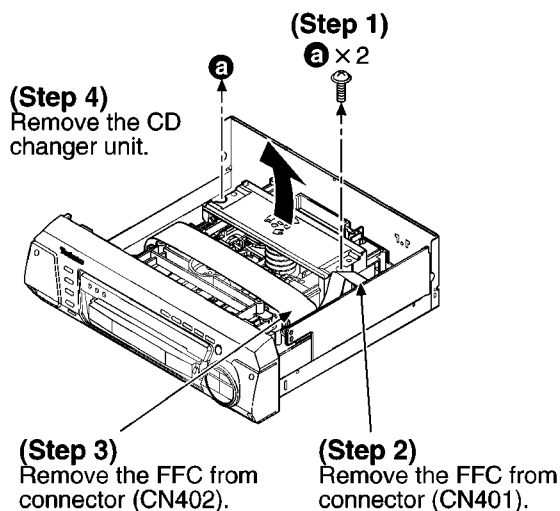
- Follow the (Step 1) - (Step 3) of item 5.1.
- Follow the (Step 1) - (Step 4) of item 5.2.

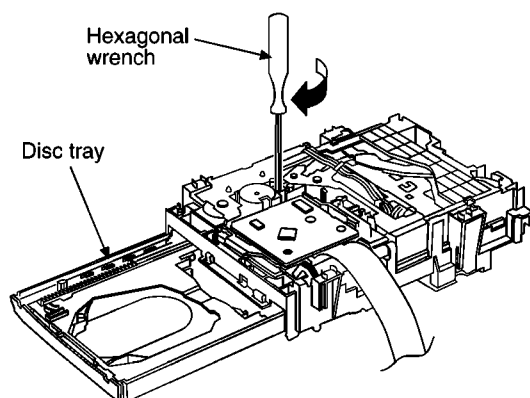


Claw of timing lever

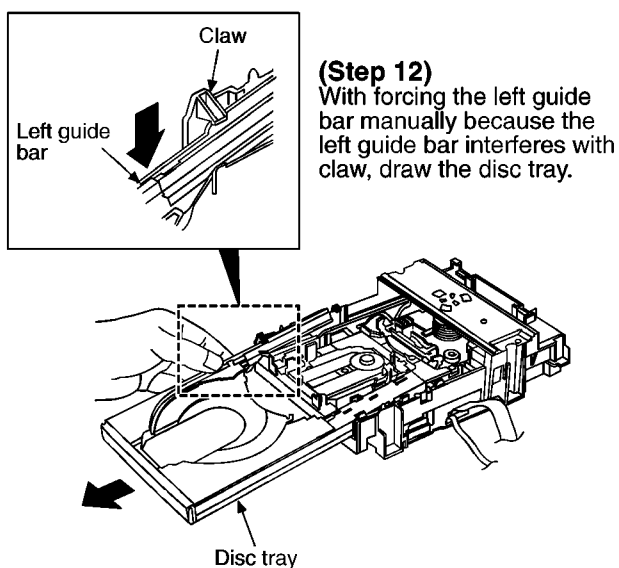
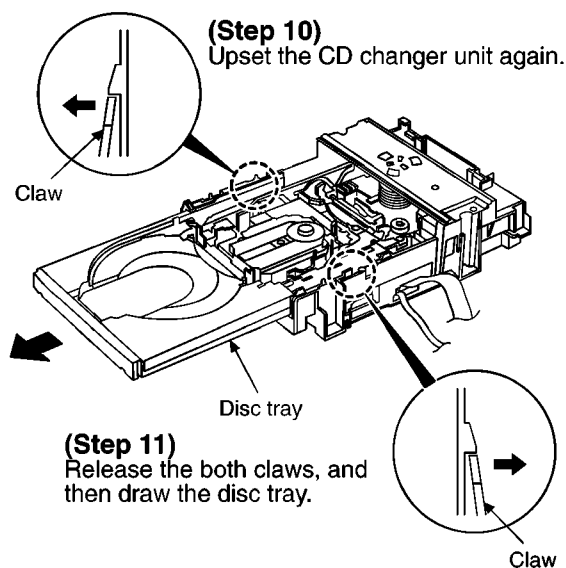
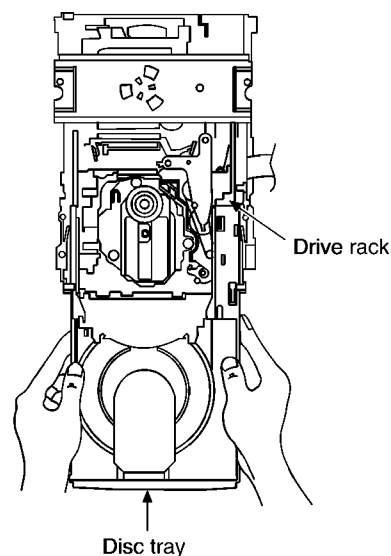
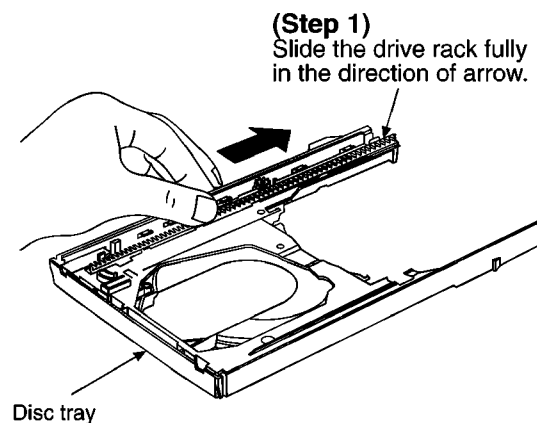


(Step 5)
With pressing the claw (B) in the direction of arrow (1), force the connection lever in the direction of arrow (2).

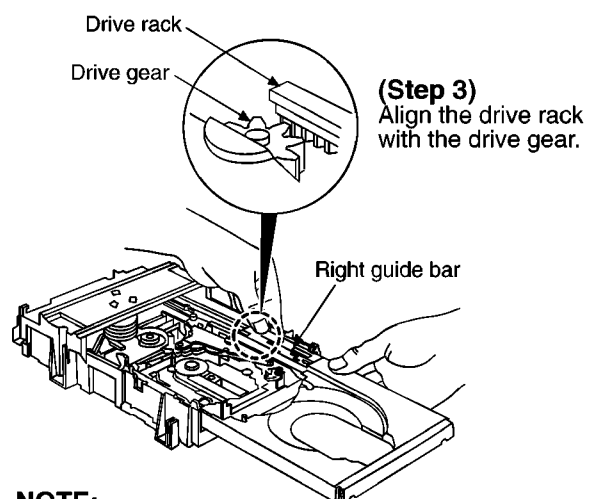


**(Step 9)**

Rotate the hexagonal wrench in the direction of arrow (clockwise), and then open the disc tray fully.

**Installation of the disc tray after replacement****(Step 2)**

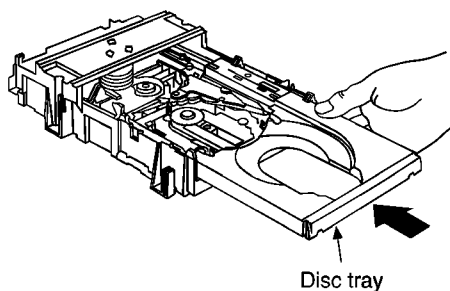
Holding the drive rack not to move, install the disc tray.

**NOTE:**

Force the right guide bar of tray base manually not to move upwards.

(Step 4)

Holding the drive rack manually, push the disc tray in the direction of arrow.



Disc tray

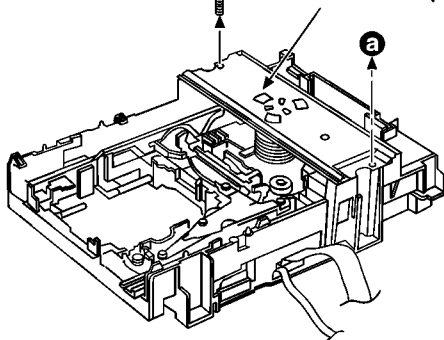
5.6. Disassembly and reassembly for mechanism base drive unit

Disassembly for mechanism base drive unit

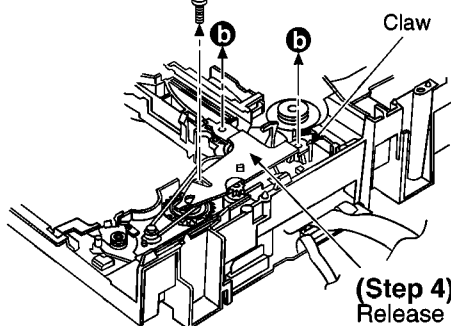
- Follow the (Step 1) - (Step 3) of item 5.1.
- Follow the (Step 1) - (Step 4) of item 5.2.
- Follow the (Step 1) - (Step 10) of item 5.4.
- Follow the (Step 1) - (Step 12) of item 5.5.

(Step 1)**a** × 2**(Step 2)**

Remove the upper plate.

**(Step 3)****b** × 3

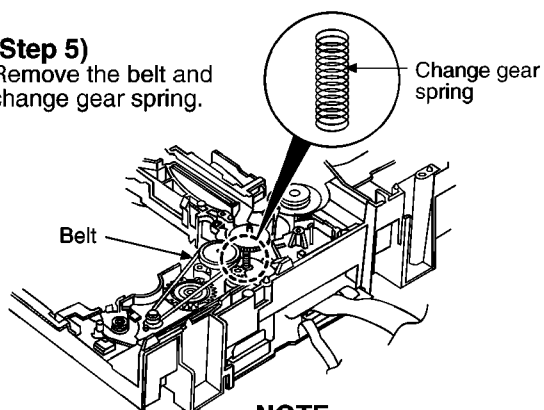
Claw

**(Step 4)**

Release the claw, and then remove the gear holder.

(Step 5)

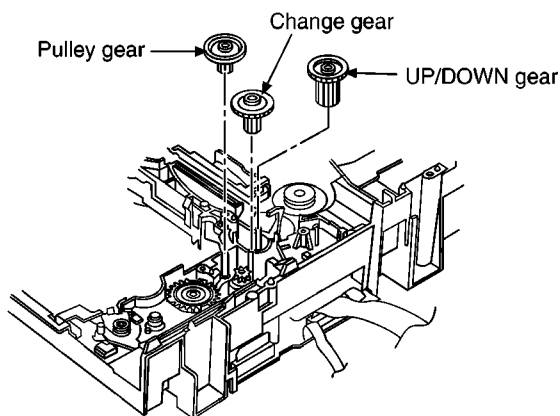
Remove the belt and change gear spring.

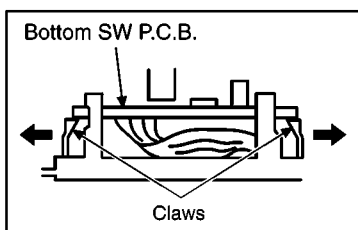
**NOTE:**

Take care not to lose the change gear spring.

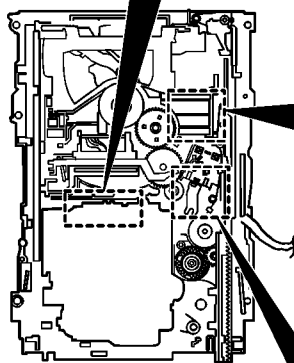
(Step 6)

Remove the pulley gear, change gear and UP/DOWN gear.

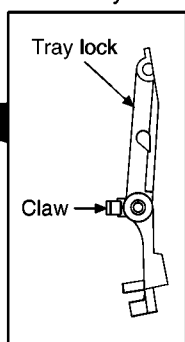




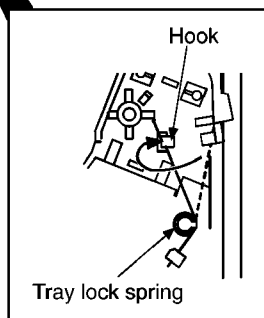
(Step 7)
Release the 2 claws,
and then remove the
bottom SW P.C.B..



(Step 9)
Release the claw, and then
remove the tray lock.

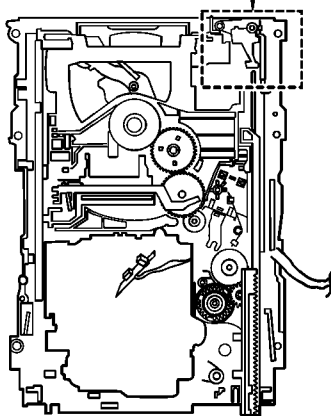
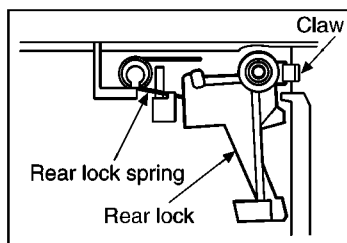


(Step 8)
Install the tray lock spring to
the hook temporarily.

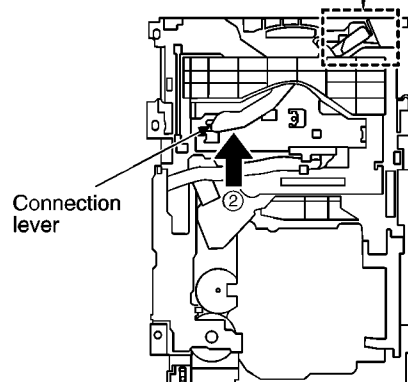
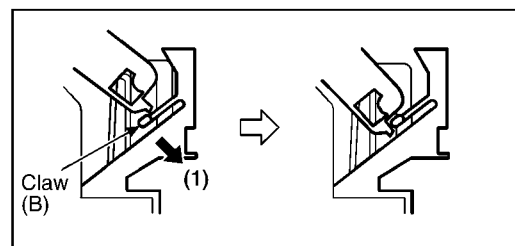


(Step 10)
Release the claw, and
then remove the rear
lock.

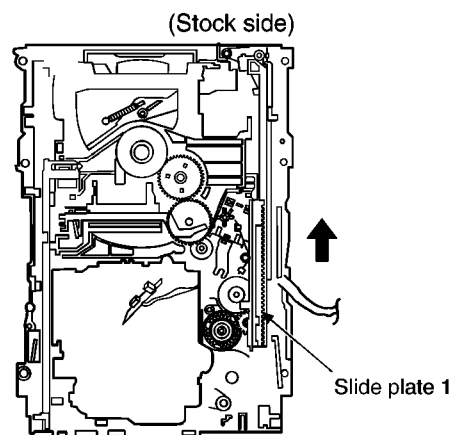
NOTE:
Take care not take the
rear lock spring off.



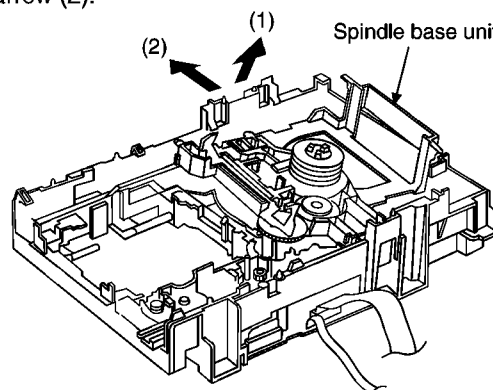
(Step 11)
Pressing the claw (B) in the direction of arrow (1),
force the connection lever in the direction of arrow (2).



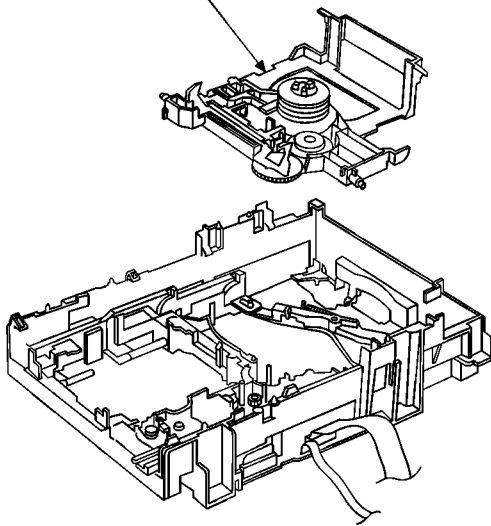
(Step 12)
Move the slide plate 1 to the end of stock side.



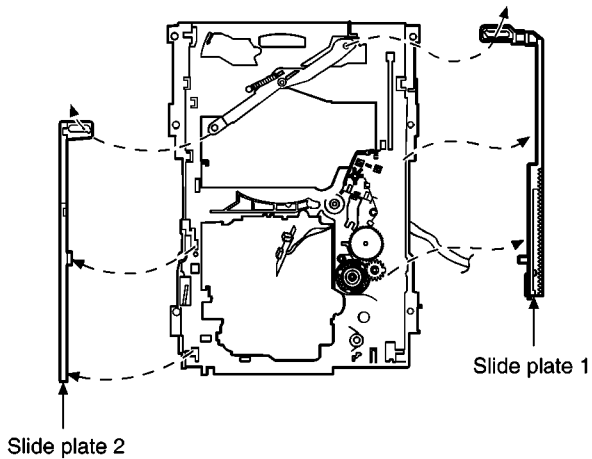
(Step 13)
Lift up the left end of spindle base unit in the direction
of arrow (1), and then remove the unit in the direction
of arrow (2).



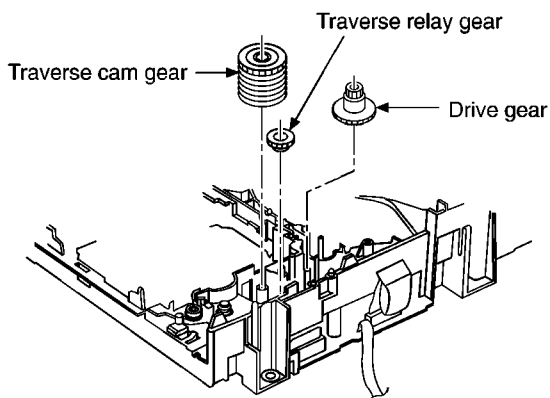
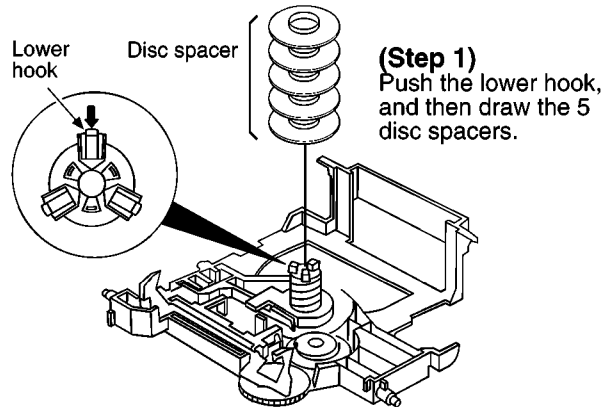
Spindle base unit

**(Step 14)**

Remove the slide plate 1 and slide plate 2.

**(Step 15)**

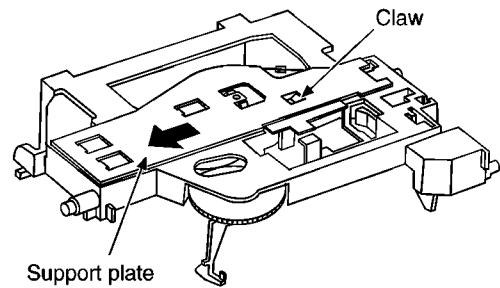
Remove the traverse relay gear, traverse cam gear and drive gear.

**Diassembly/reassembly for the spindle base unit****(Step 1)**

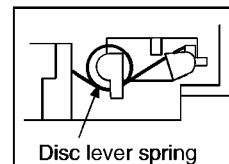
Push the lower hook, and then draw the 5 disc spacers.

(Step 2)

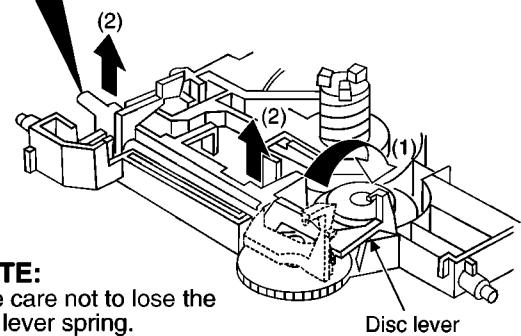
Pushing the claw, slide the support plate in the direction of arrow, and then remove it.



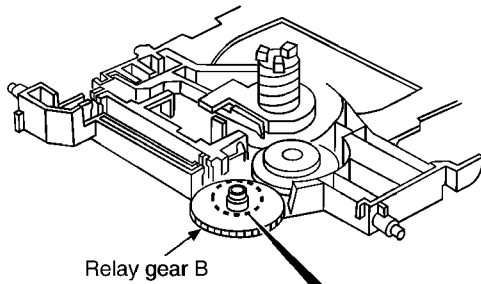
(Installation for disc lever spring)

**(Step 3)**

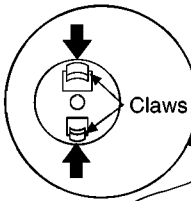
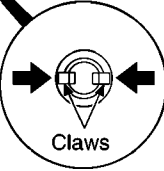
Rotate the disc lever in the direction of arrow (1), draw the disc lever.

**NOTE:**

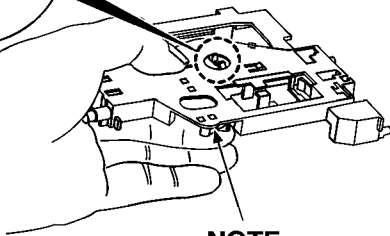
Take care not to lose the disc lever spring.



(Step 4)
Release the 2 claws, and then
draw the relay gear B.



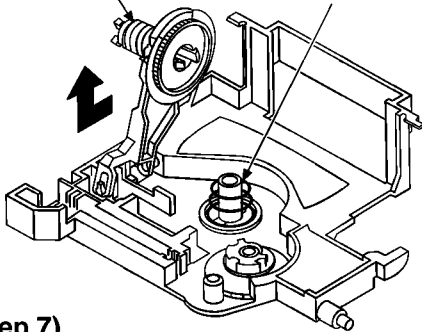
(Step 5)
Release the 2 claws.



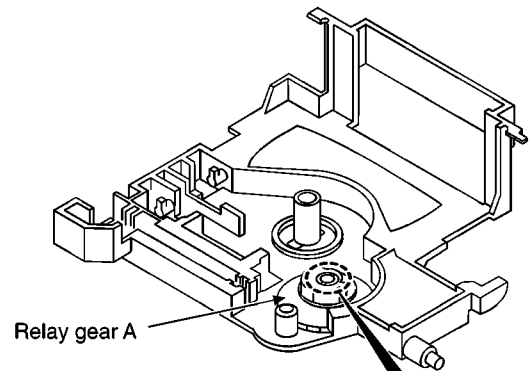
NOTE:
Hold the loading stopper
ass'y manually because
it is flipped by spring.

Loading stopper ass'y

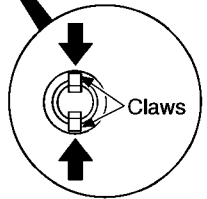
(Step 6)
Remove the cushion
spring.



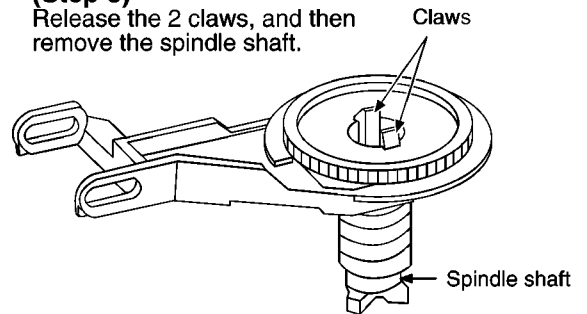
(Step 7)
Remove the loading stopper ass'y
in the direction of arrow.



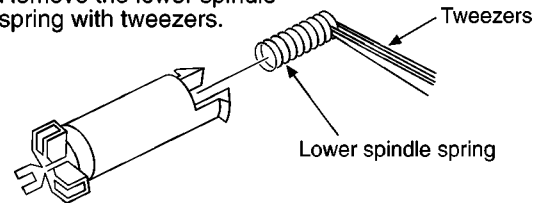
(Step 8)
Release the 2 claws, and then
remove the relay gear A.



(Step 9)
Release the 2 claws, and then
remove the spindle shaft.

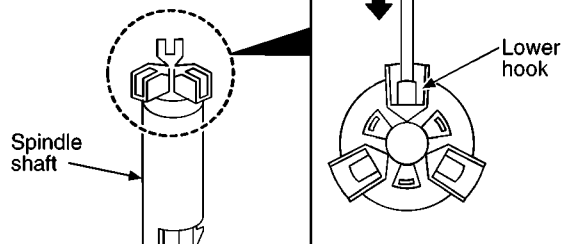


(Step 10)
Remove the lower spindle
spring with tweezers.

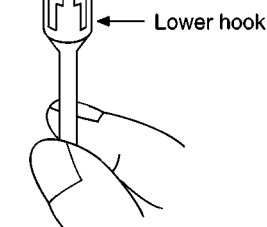


(Step 11)

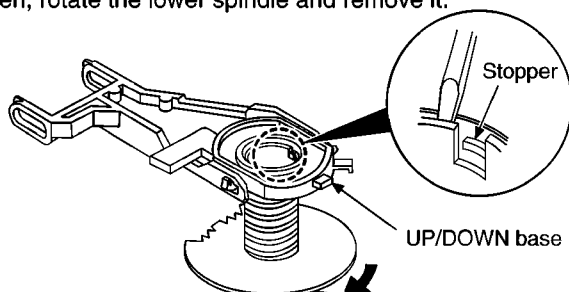
Force the lower hook with thin tip of minus screwdriver.

**(Step 12)**

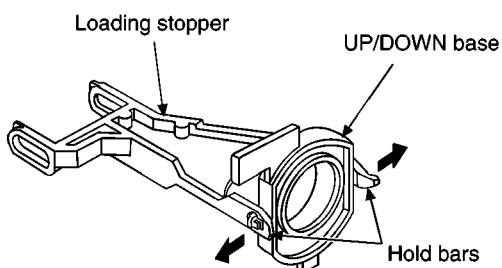
Squeeze the shaft of lower hook, and then draw it.

**(Step 14)**

Insert the thin tip of minus screwdriver between the lower spindle and UP/DOWN base, and then slacken the lower spindle to release the stopper. Then, rotate the lower spindle and remove it.

**(Step 13)**

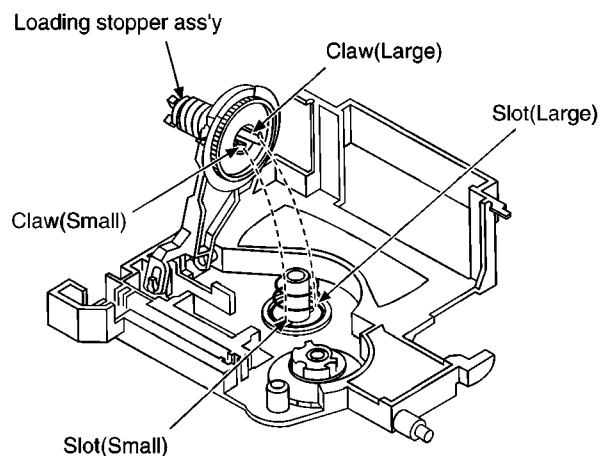
Rotate the lower spindle in the direction of arrow until the lower spindle interferes with stopper.

**(Step 15)**

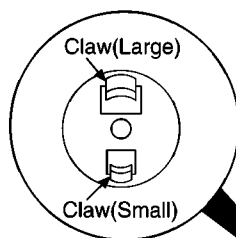
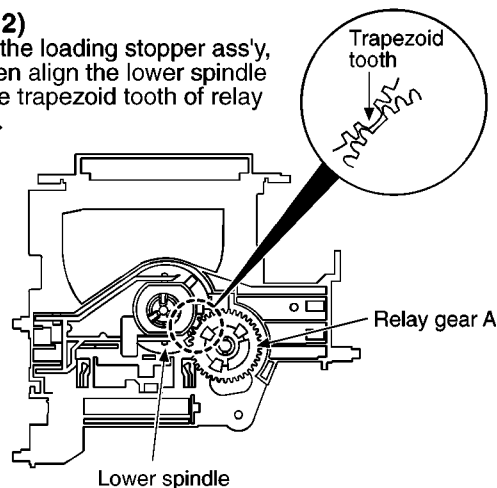
Rotate the UP/DOWN base at a 90 degree angle. Then, spread the hold bars of loading stopper and remove the UP/DOWN base.

Installation for loading stopper ass'y**(Step 1)**

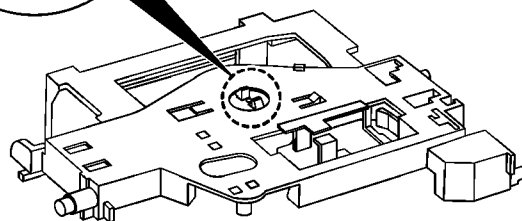
Align the claw of loading stopper ass'y with the slot of spindle base. (Caution should be exercised when alignment of claw due to the size of claws.)

**(Step 2)**

Lower the loading stopper ass'y, and then align the lower spindle with the trapezoid tooth of relay gear A.

**(Step 3)**

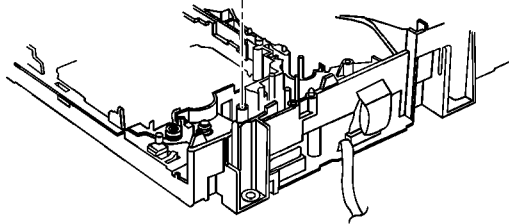
Force the loading stopper ass'y, latch the claw firmly.



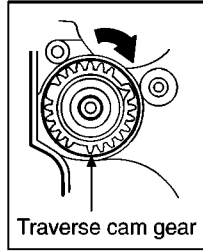
Reassembling for mechanism base drive unit

Traverse cam gear →

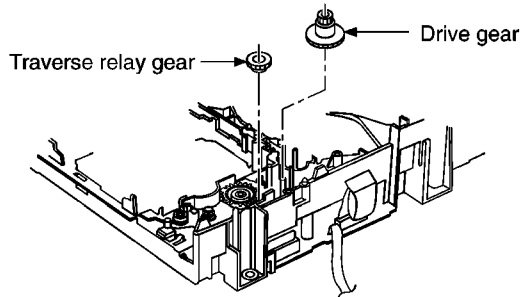
(Step 1)
Install the traverse cam gear.



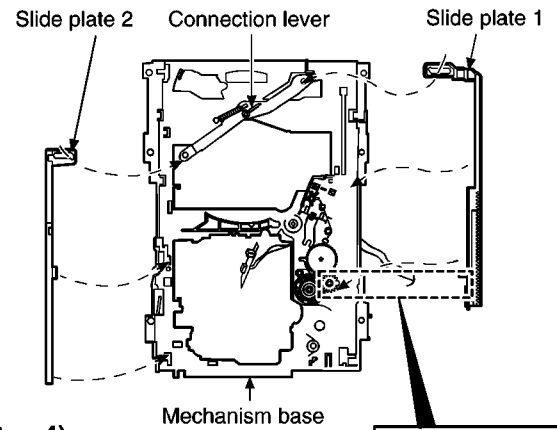
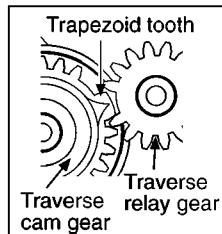
(Step 2)
Rotate the traverse cam gear to the direction of arrow.



(Step 3)
Install the drive gear and traverse relay gear.

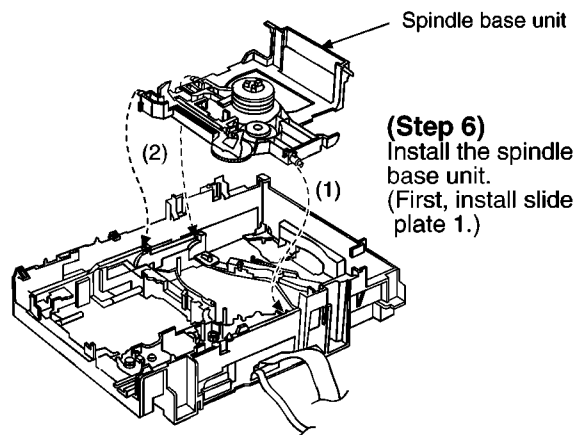
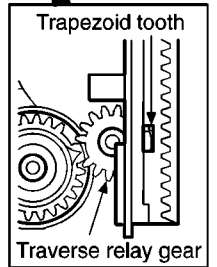


※ When installing the traverse relay gear, align the trapezoid tooth of gear with tooth of drive gear.



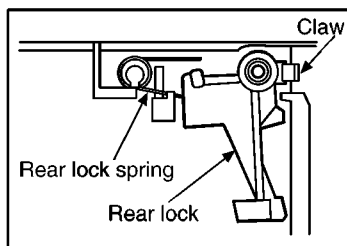
(Step 4)
Install the slide plate 2 to the mechanism base, and then match to the connection lever.

(Step 5)
Install the slide plate 1 to the mechanism base, and then match to the connection lever and align the trapezoid tooth of traverse relay gear with the slide plate 1.

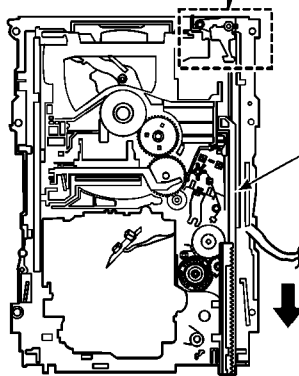


(Step 6)
Install the spindle base unit.
(First, install slide plate 1.)

(Step 8)
Install the rear lock.
(The claw should be latched.)



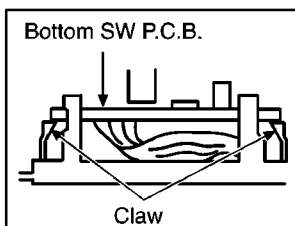
(Step 7)
Move the slide plate 1
to forward fully.



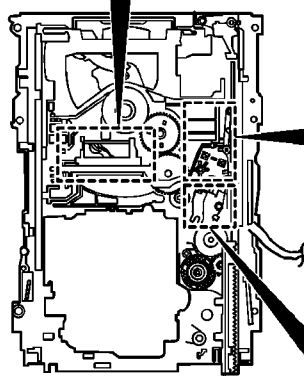
(Front side)

Bottom SW P.C.B.

(Step 9)
Install the bottom SW P.C.B..
(The claw should be latched.)



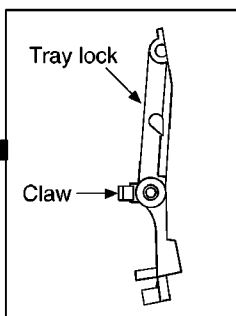
(Step 10)
Install the tray lock.
(The claw should be latched.)



Tray lock

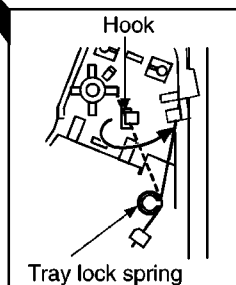
Claw

(Step 11)
Remove the tray lock
spring from hook, and
then latch to the tray
lock.



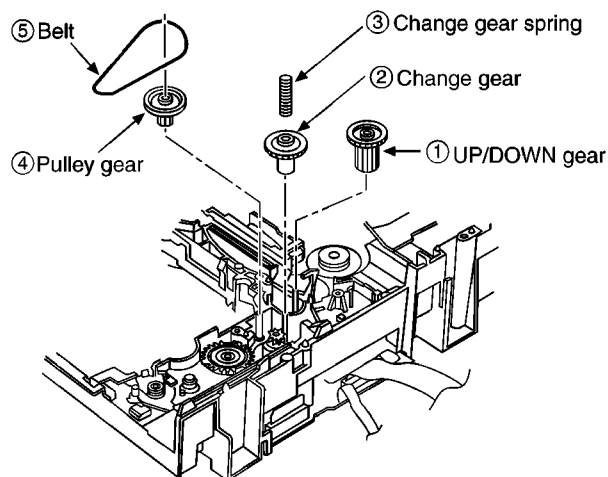
Hook

Tray lock spring



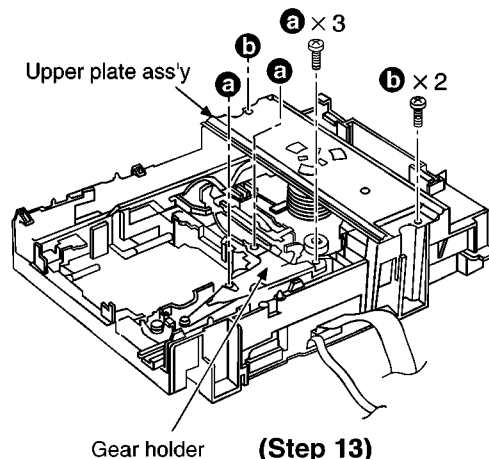
(Step 12)

Install the UP/DOWN gear, change gear, change gear spring, pulley gear and belt in the order of ①-⑤.



(Step 14)

Install the upper plate ass'y, and then
tighten the screw (b).



(Step 13)

Install the gear holder,
and then tighten the
screw (a).

(Step 15)

Install the tray base, traverse deck and mechanism
cover. (Refer to the items 5.4. and 5.5.)

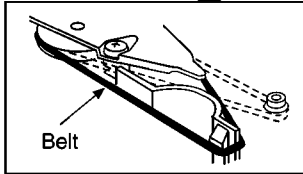
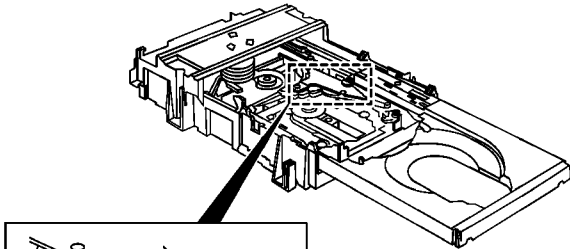
[Operation check after servicing]

Check the proper operation of following items with gear
and hexagonal screwdriver.

- 1) Open/close of tray base.
- 2) Moving the tray base to the stock side.
- 3) UP/DOWN operation of spindle base unit.
- 4) UP/DOWN operation of traverse unit.

5.7. Replacement for the motor ass'y

- Follow the (Step 1) - (Step 3) of item 5.1.
- Follow the (Step 1) - (Step 4) of item 5.2.
- Follow the (Step 1) - (Step 10) of item 5.4.



(Step 1)
Install the belt temporarily.

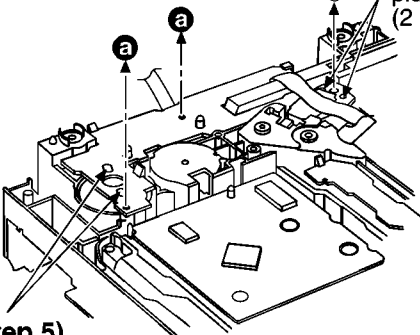
NOTE:
Take care not apply the grease to the belt.

(Step 2)
Upset the CD changer unit.

(Step 3)

a × 3

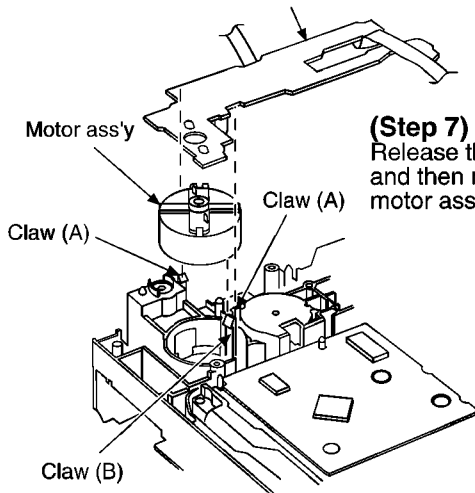
(Step 4)
Unsolder the plunger terminals (2 points).



(Step 5)
Unsolder the motor terminals (2 points).

(Step 6)

Release the 2 claws (A), and then remove the motor P.C.B..

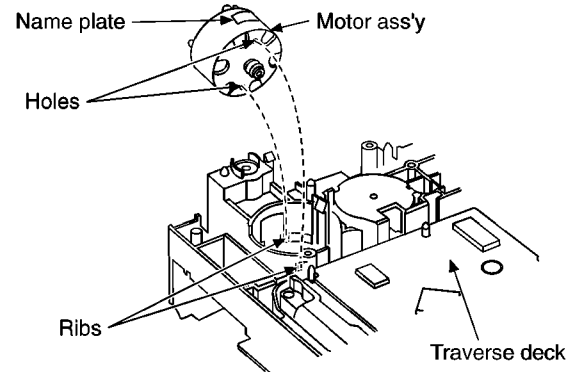


(Step 7)

Release the claw (B), and then remove the motor ass'y.

Notice for motor ass'y installation

1. Locate the name plate of motor to the traverse deck.
2. Align the hole of motor with the ribs.



6 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-EH790). 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 these functions. 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 pick-up lens.

6.1. Error code display procedure

6.1.1. Automatic adjustment results

1. Turn on the power.

Table 6-1.

FL display	Symptom	Cause
H15	When CD tray opens, it closes by itself.	Tray open detect switch (S3) fault.
F15	Does not play, even if CD PLAY button is played.	Pick-up rest position detect switch (S701) fault.
F16	Disc tray goes on up.	Clump switch (S4) fault.
F17	Disc tray goes on down.	Bottom switch (S5) fault.
F26	Disc not move even when the PLAY button is pressed.	System control and servo processor IC (IC451, IC702) fault.
F27	Tray keeps moving for a while, or selected tray does not open.	Tray position detect switch (S1, S2) fault.
F28		
F29		

6.2. Servo adjustment procedure

1. Turn on the power.
2. Load the test disc (SZZP1054C).
3. Hold down the REPEAT button for at least 2 seconds, and then press the PAUSE button for at least 2 seconds while continuing to hold down the REPEAT button.
4. Press the PLAY button, and play for 10 seconds.
5. Servo adjustment results are displayed. Refer to Fig. 6-2. For further information about servo adjustment results, refer to Fig. 6-3.

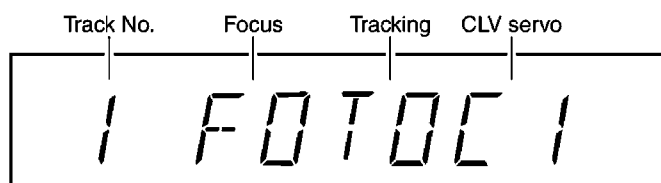


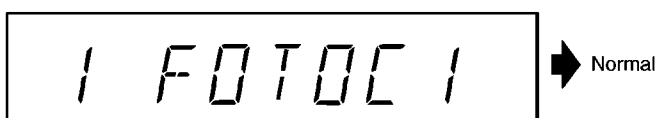
Fig. 6-2.

2. Load the test disc (SZZP1054C).
3. Hold down the REPEAT button for at least 2 seconds, and then press the STOP button for at least 2 seconds while continuing to hold down the REPEAT button.
4. A servo section error code is displayed. Refer to Error code based on troubleshooting. Use this error code display as a guideline for finding the malfunction point in the servo circuitry. If the error code **E00** is displayed, the unit is OK.

6.1.2. Checking the mechanism switches

1. After a servo section error code is displayed, press the F.SKIP button.
2. A mechanism OK/NG error code is displayed. Refer to Table 6-1. This error code can be used to diagnose whether the mechanism is OK or not. If there are multiple errors, these can be displayed successively by pressing the F.SKIP button.
3. Press the STOP button, then remove the disc and turn off the power. (The error code display mode is canceled.)

(Example)



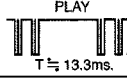
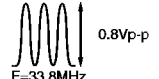
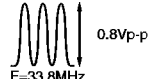
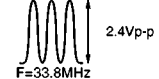
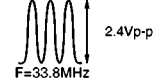
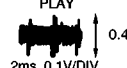
	"0" level	"1" level
Focus system	normal	defective
Tracking system	normal	defective
CLV servo system	defective	normal

Fig. 6-3.

6. Remove the disc and turn off the power.

6.3. Error code based on troubleshooting

- This unit is satisfactory if the error code is **E00** and **E02**.
- Before testing, check that the test disc is free of scratches and optical pick-up is clean.

FL error code display	Symptom	Probable cause	Signal to check		Normal voltage and waveform values	
			Signal name	Location	PLAY	STOP
E01	Focus and tracking offset adjustments not completed in the specified time period.	Clocks X1 IN and X2 OUT, power supply V_{DD} and reset/RST, all on IC702. MDATA, MCLK, MLD and SENSE signals to/from mechanism controller.	MDATA	IC702-pin 8	0.3 V	0 V
			MCLK	IC702-pin 7	 PLAY T ≈ 13.3ms...0V...3V	2.9 V
			MLD	IC702-pin 9		2.9 V
			/RST	IC702-pin 18	2.9 V	2.9 V
			X1 IN	IC702-pin 58	 0.8Vp-p F=33.8MHz	 0.8Vp-p F=33.8MHz
			X2 OUT	IC702-pin 59	 2.4Vp-p F=33.8MHz	 2.4Vp-p F=33.8MHz
E03, E05, E07, E09, E0B, E0D, E0F	Disc play unstable.	Scratches or contaminants on disc surface. Focus and Tracking servo circuit (check waveforms, voltages and part values.) Spindle driver circuit. Optical pick-up.	FE	IC702-pin 32	 PLAY 0.1Vp-p 2ms. 0.1V/DIV.	1.7 V
			TE	IC702-pin 33	 PLAY 0.4Vp-p 2ms. 0.1V/DIV.	1.7 V
			FOD	IC702-pin 28	1.7 V	1.7 V
			TRD	IC702-pin 27	1.7 V	1.7 V
			/RFDET	IC702-pin 38	0 V	3.3 V
			RF	TJ701	 PLAY 0.7Vp-p 0.5μs. 0.2V/DIV.	1.0 V
			STAT	IC702-pin 17	3.3 V	0 V
E04, E06, E0C, E0E,	Best Eye (PD balance) adjustment not completed in the specified time period.	Scratches or contaminants on disc surface. Focus and Tracking servo circuit (check waveforms, voltages and part values.) Optical pick-up.	FBAL	IC702-pin 30	1.7 V	1.7 V
			RF	IC701-pin 8	 PLAY 0.7Vp-p 0.5μs. 0.2V/DIV.	1.0 V
			FE	IC702-pin 32	 PLAY 0.1Vp-p 2ms. 0.1V/DIV.	1.7 V
			OFT	IC702-pin 36	0 V	0 V
E08, E0A	Focus and Tracking gain adjustment not completed in specified time period.	Scratches or contaminants on disc surface. Focus and Tracking servo circuit (check waveforms, voltages and part values.) Optical pick-up.	FE	IC702-pin 32	 PLAY 0.1Vp-p 2ms. 0.1V/DIV.	1.7 V
			TE	IC702-pin 33	 PLAY 0.4Vp-p 2ms. 0.1V/DIV.	1.7 V
			OFT	IC702-pin 36	0 V	0 V

7 To Supply Power Source

This unit is designed to operate on power supplied from system connected.

When a component requires service, use the system connections to supply power source.

For system connections, refer to Fig. 7-1.

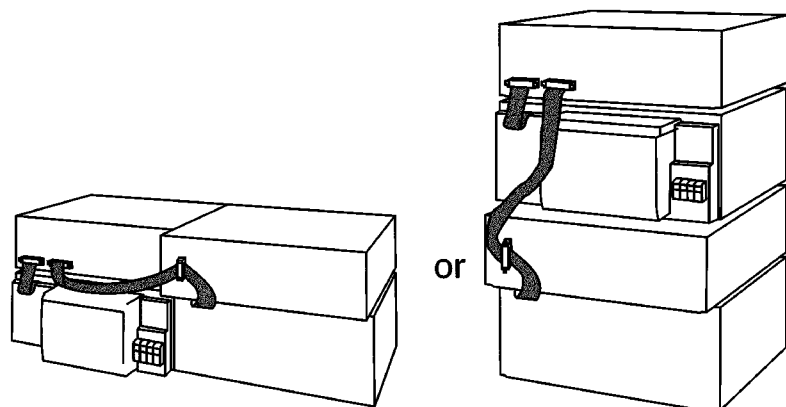


Fig. 7-1.

8 Schematic Diagram Notes

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

Notes:

S1:	Tray position 1 detect switch in OFF position
S2:	Tray position 2 detect switch in OFF position
S3:	Tray open detect switch in OFF position
S4:	Clump switch in OFF position
S5:	Bottom switch in OFF position
S601:	Disc direct open switch (DIRECT OPEN DISC 5)
S602:	Disc direct open switch (DIRECT OPEN DISC 4)
S603:	Disc direct open switch (DIRECT OPEN DISC 3)
S604:	Disc direct open switch (DIRECT OPEN DISC 2)
S605:	Disc direct open switch (DIRECT OPEN DISC 1)
S606:	Disc select switch (DISC 1)
S607:	Disc select switch (DISC 2)
S608:	Disc select switch (DISC 3)
S609:	Disc select switch (DISC 4)
S610:	Disc select switch (DISC 5)
S611:	Disc tray open/close switch (▲ OPEN/CLOSE)
S612:	Pause switch (■)
S613:	F.Skip/search switch (▶▶/▶▶▶)
S614:	Play switch (▶)
S615:	Stop switch (■)
S616:	R.Skip/search switch (◀◀/◀◀◀)
S617:	Random play switch (RANDOM)
S618:	Repeat switch (REPEAT)
S619:	CD edit switch (EDIT)
S701:	Rest detect switch in OFF position

- 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 [1 kHz, 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.

- The supply part number is described alone in the replacement 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.

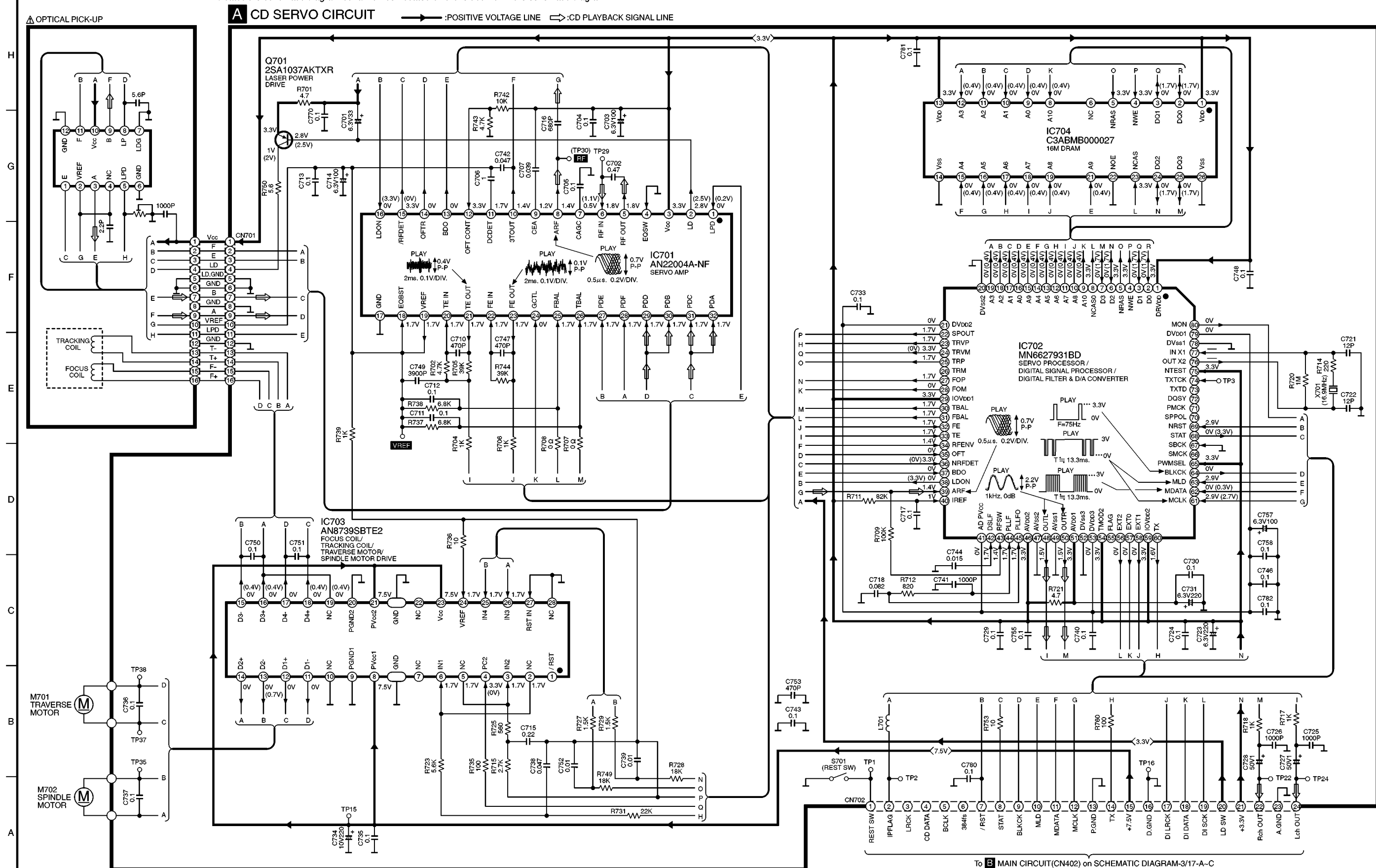
Do not touch the legs of IC or LSI with the fingers directly.

• Voltage and signal line

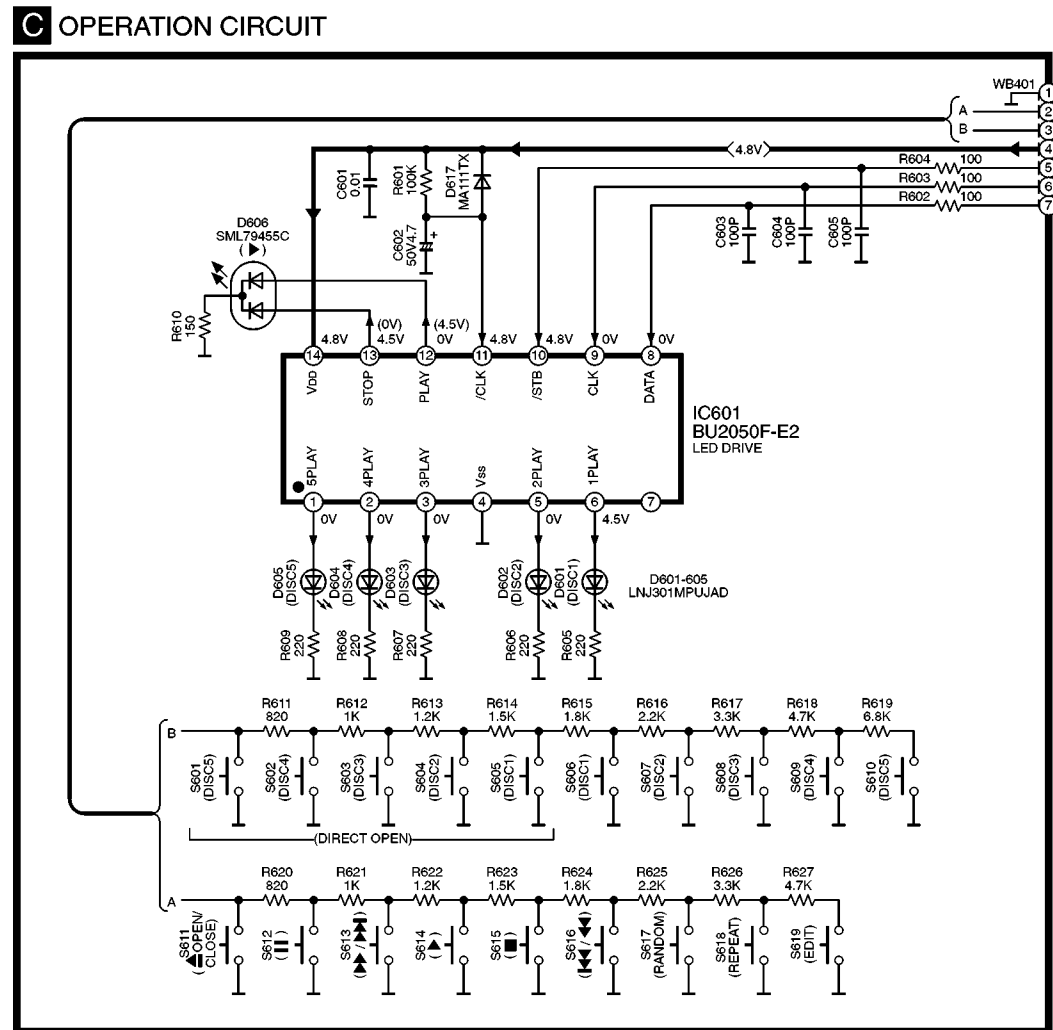
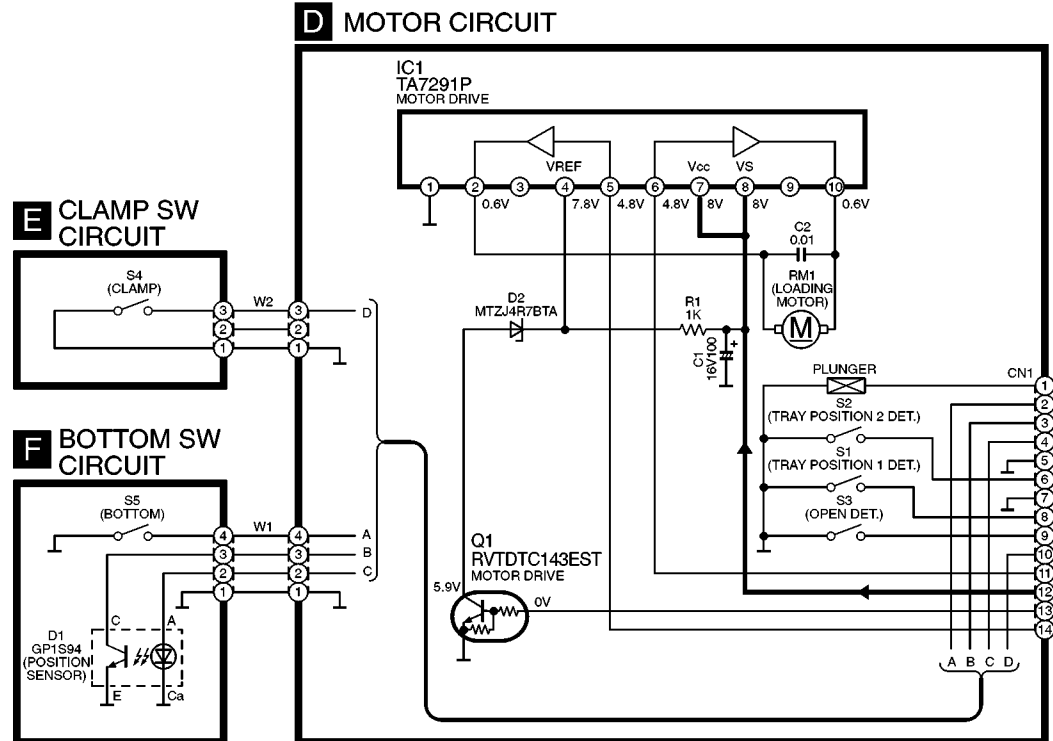
→ : Positive voltage line
⇨ : CD play back signal line

| SCHEMATIC DIAGRAM-1

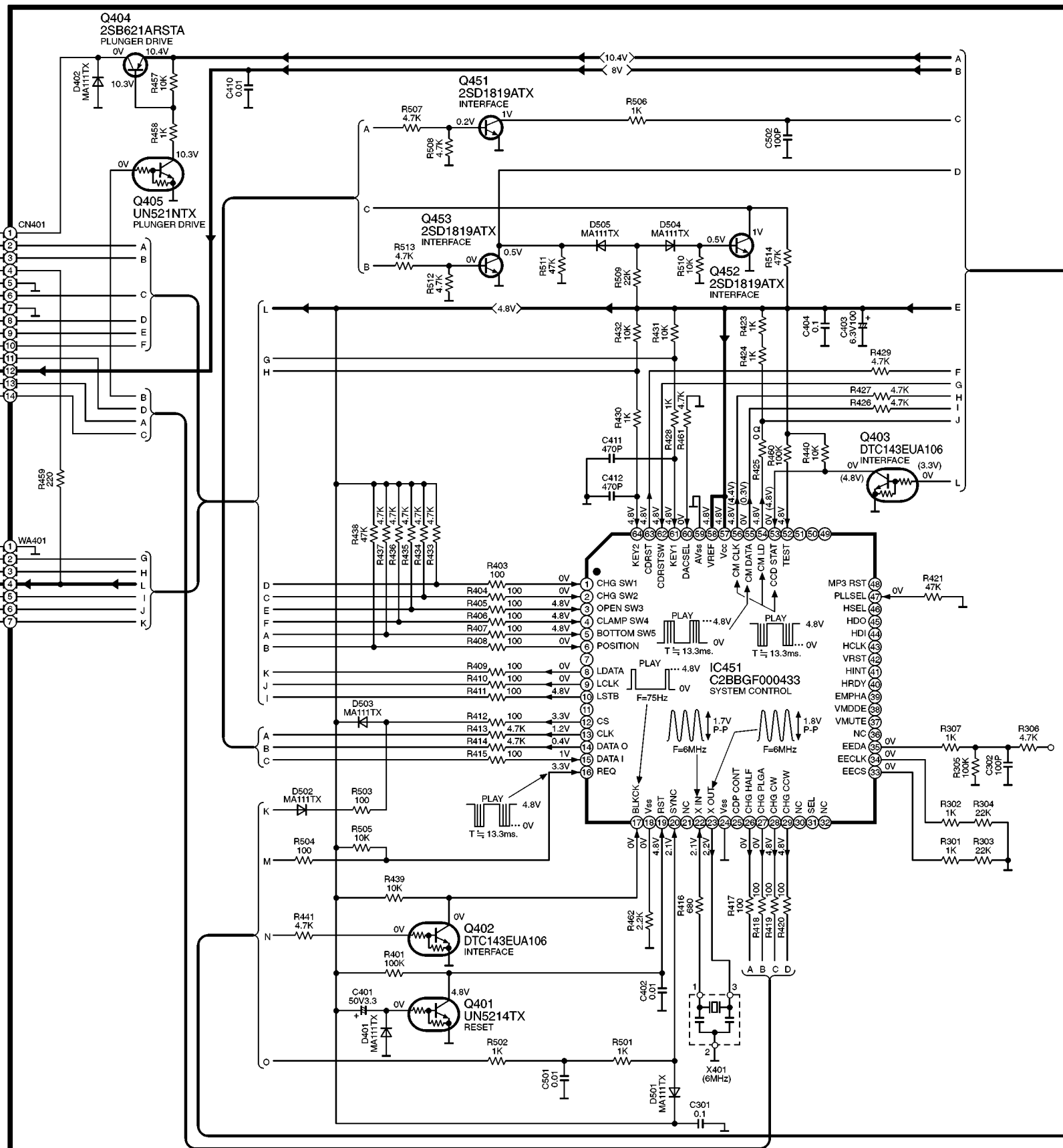
NOTE:
The number which noted at the connectors on the schematic diagram as "SCHEMATIC DIAGRAM-1" or "SCHEMATIC DIAGRAM-2" indicates the schematic diagram serial number located on the left corner in the schematic diagram.



SCHEMATIC DIAGRAM-2

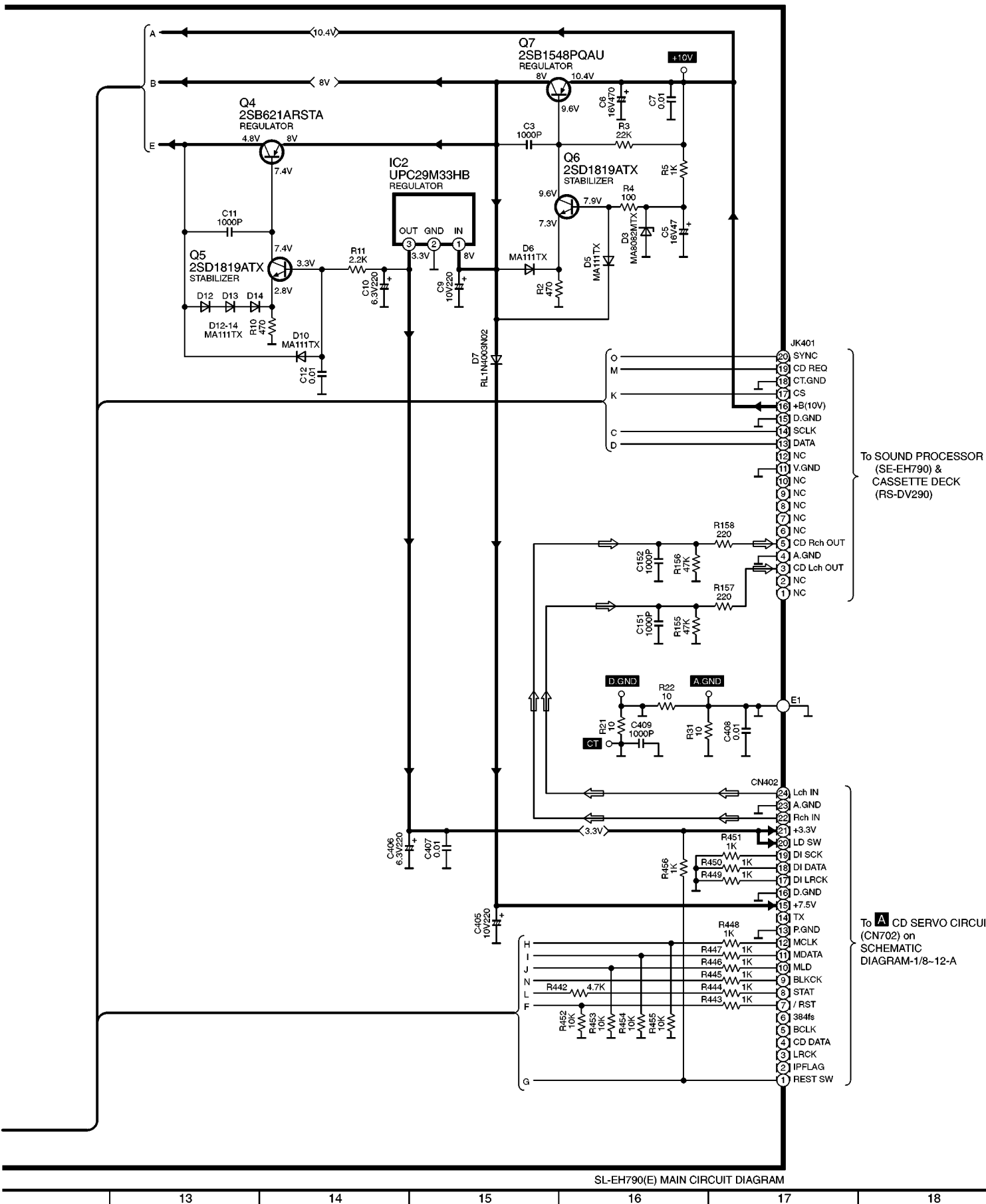


B MAIN CIRCUIT



SCHEMATIC DIAGRAM-3

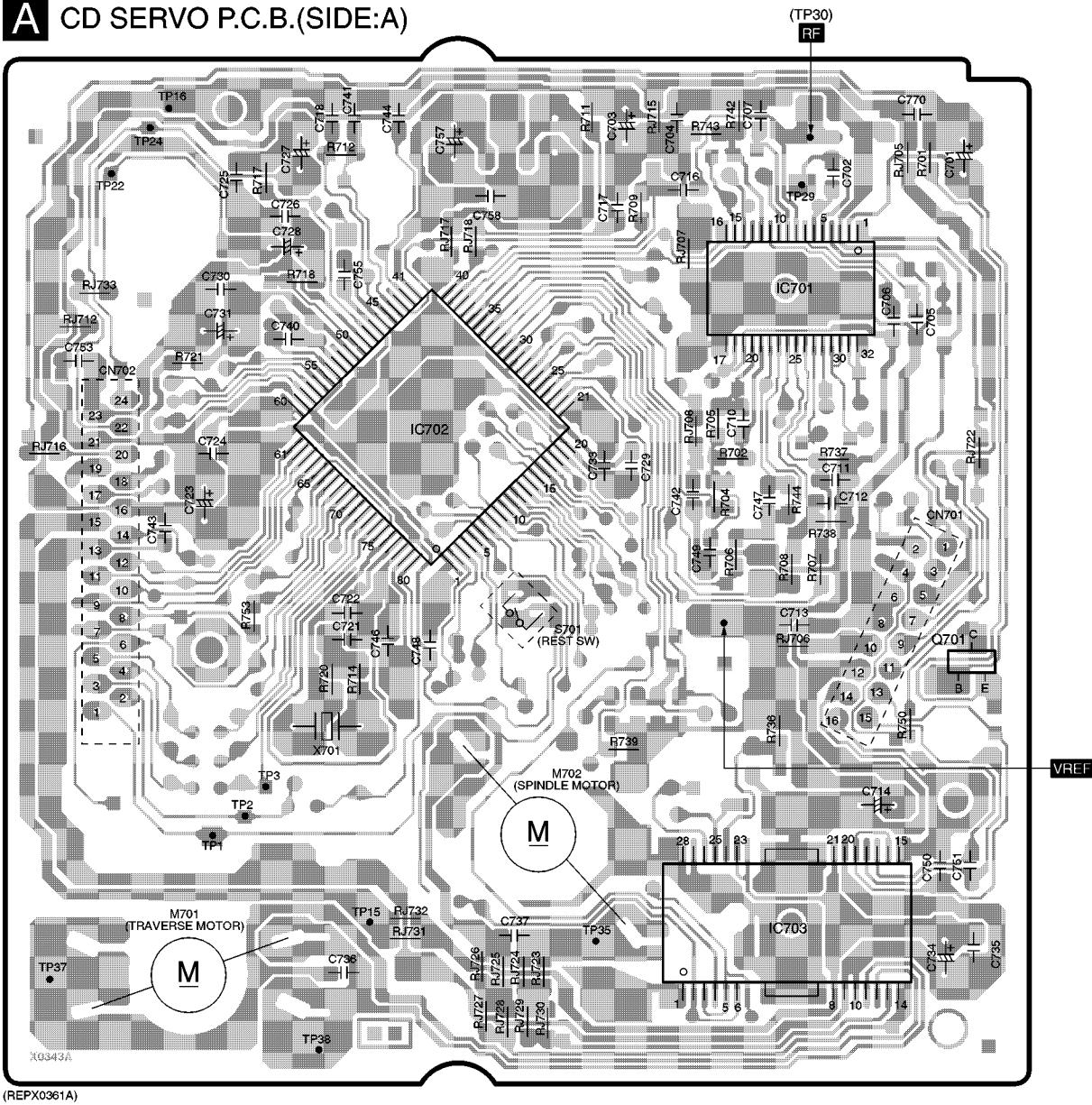
→ : POSITIVE VOLTAGE LINE ⇨ : CD PLAYBACK SIGNAL LINE



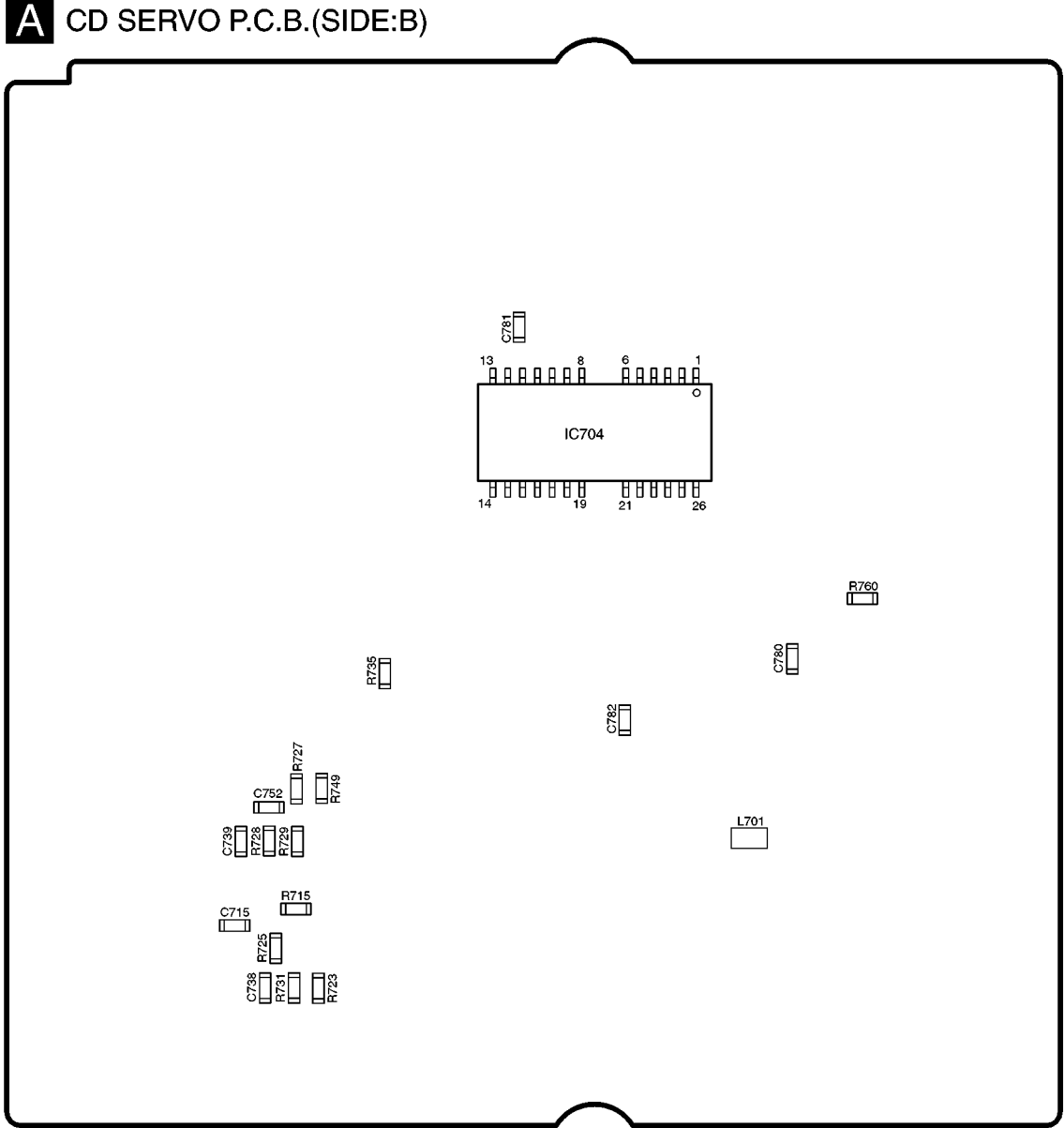
10 Printed Circuit Board Diagram

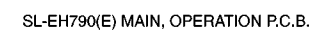
Note: This printed circuit board diagram may be modified at any time with the development of new technology.

A CD SERVO P.C.B.(SIDE:A)

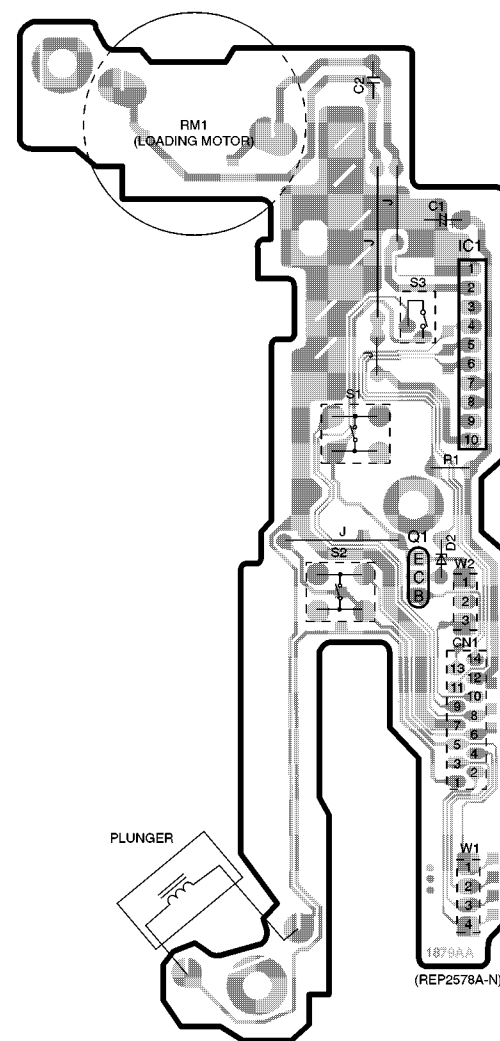


A CD SERVO P.C.B.(SIDE:B)

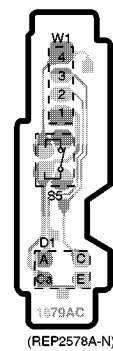




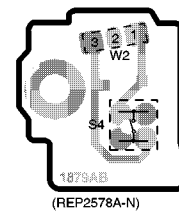
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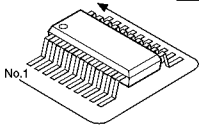
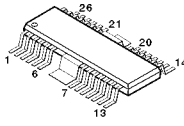
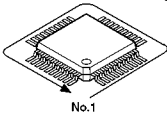
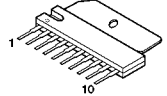
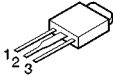
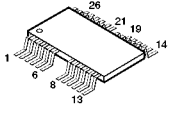
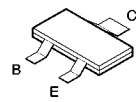
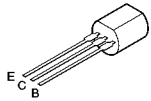
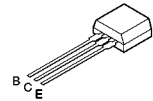
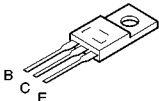
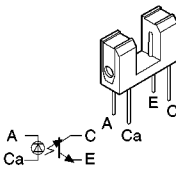
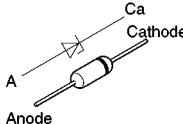
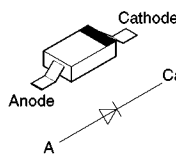
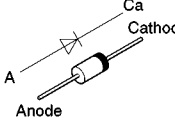
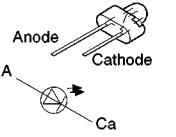
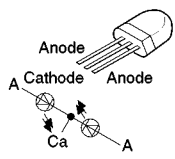
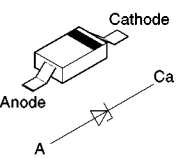
F BOTTOM SW P.C.B.



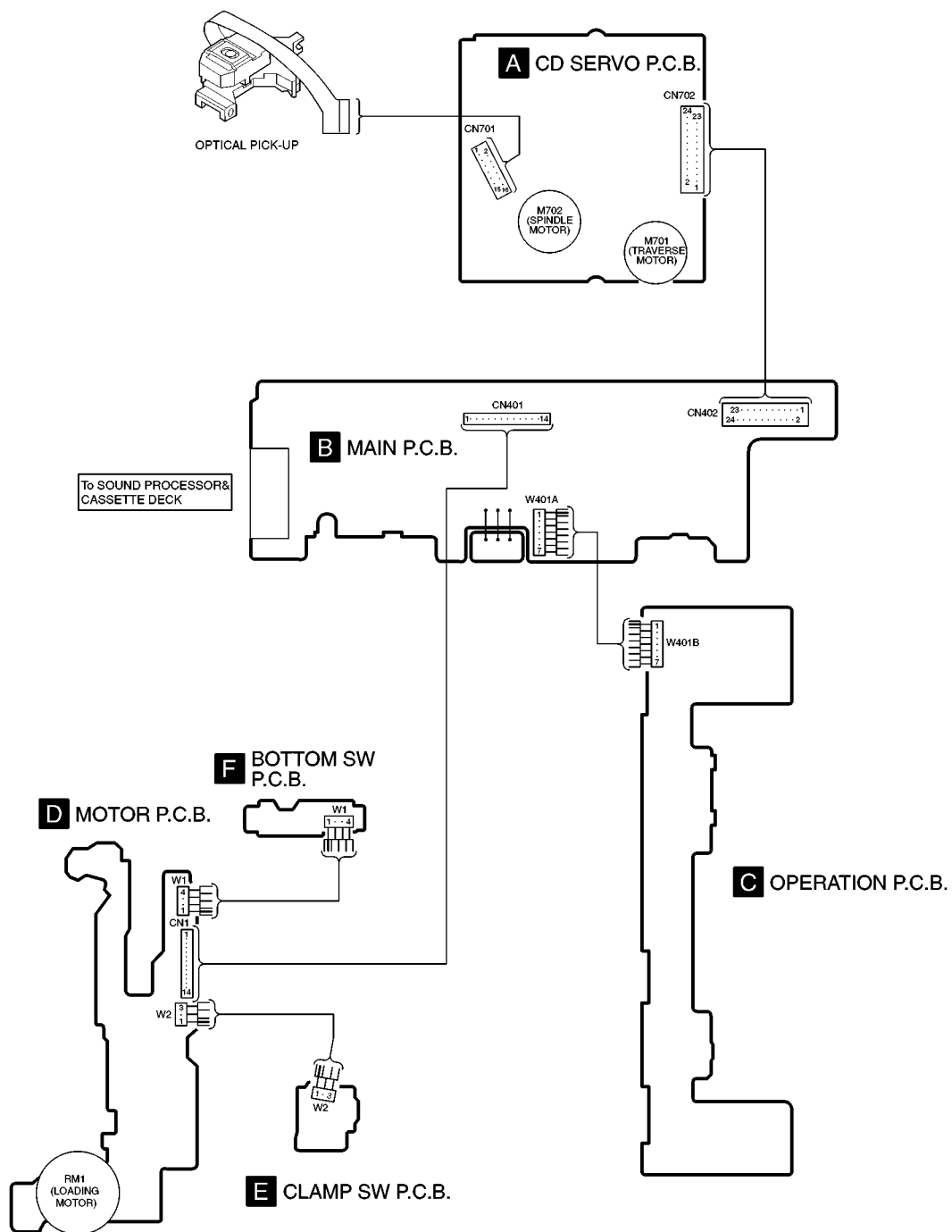
E CLAMP SW P.C.B.



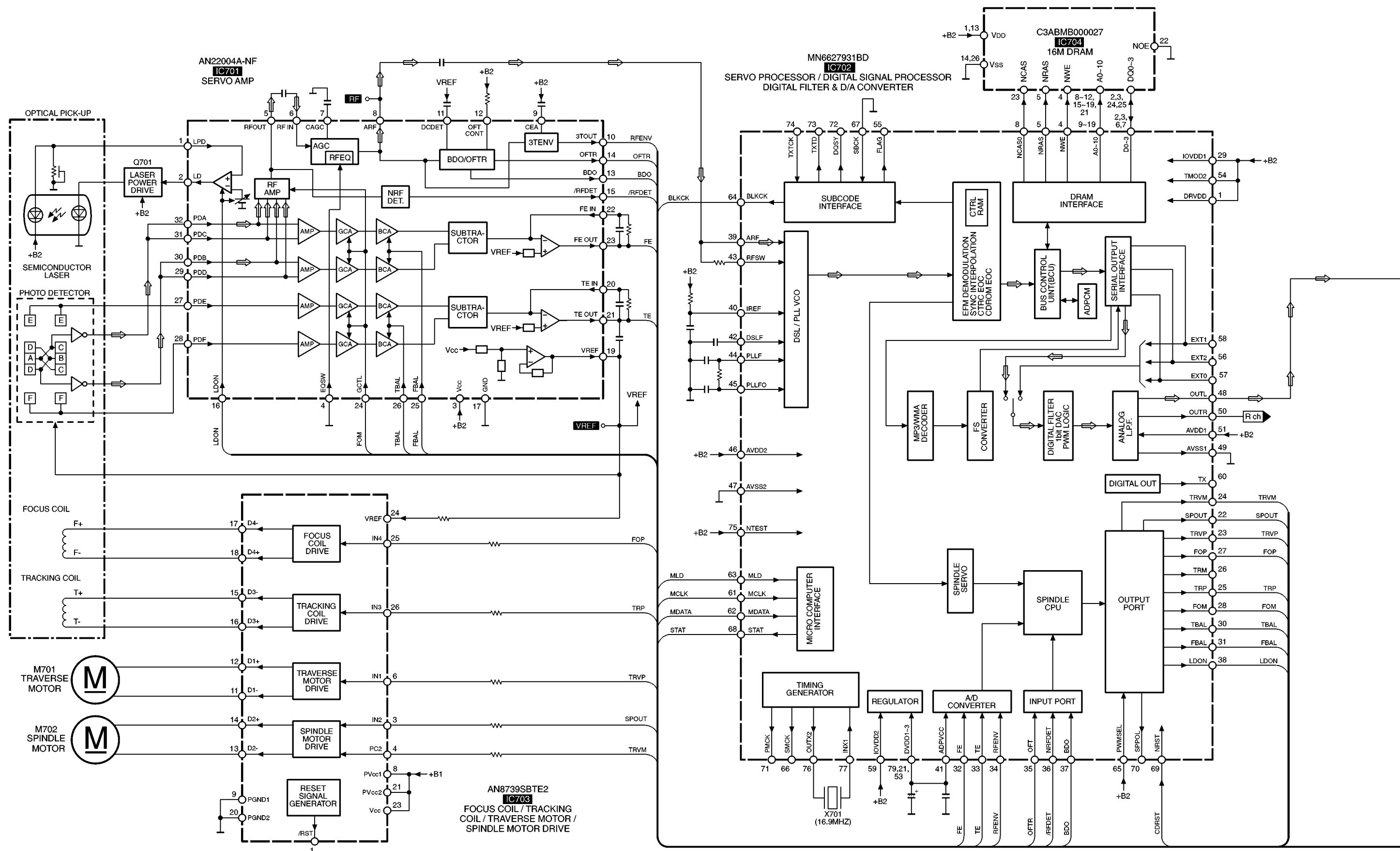
11 Type Illustration of ICs, Transistors and Diodes

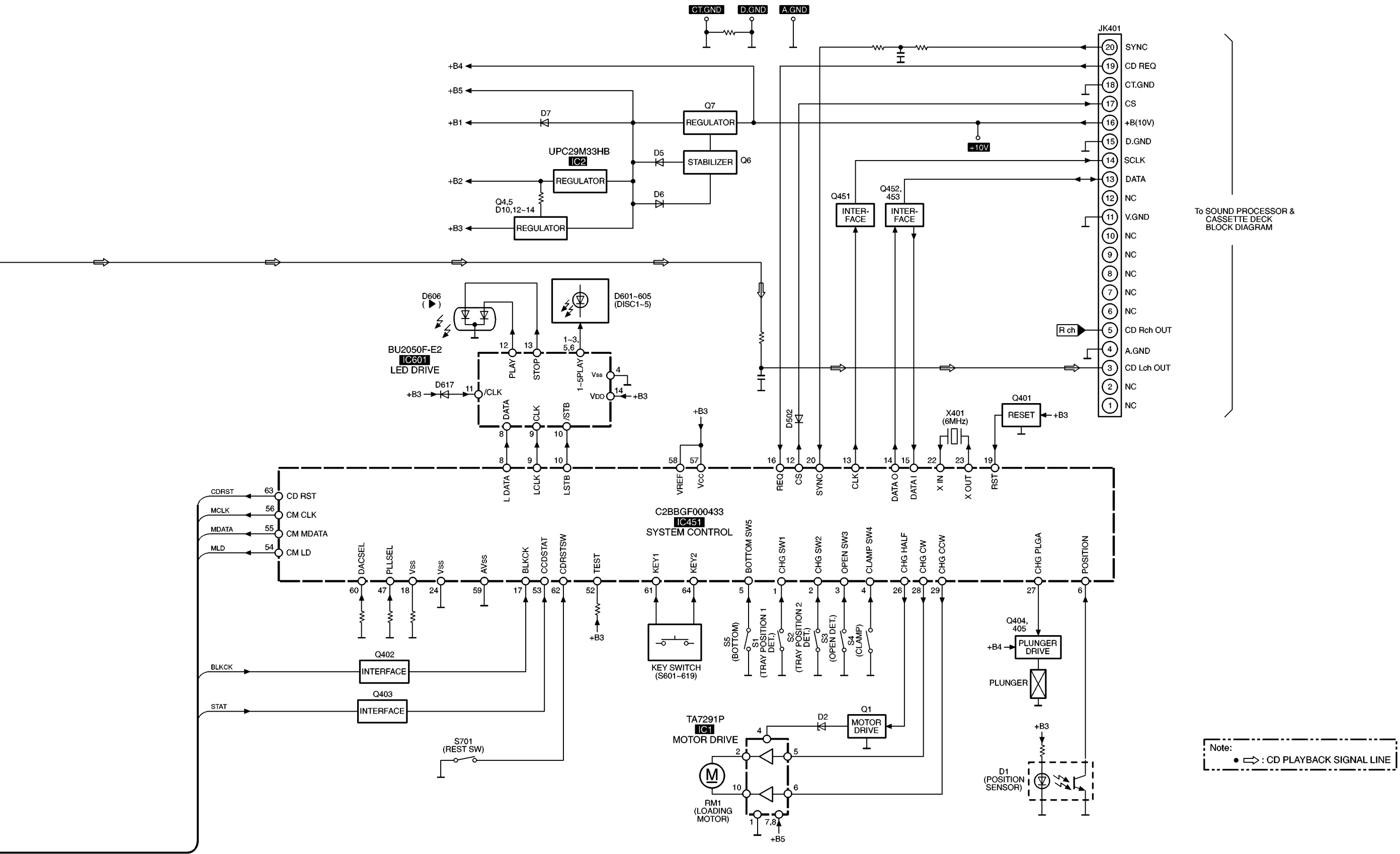
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BU2050F-E2	14PIN										
AN22004A-NF	32PIN										
C2BBGF000433	64PIN										
MN6627931BD	80PIN										
 1 2 3 UPC29M33HB	 1 6 8 13 21 26 C3ABMB000027	 C B E DTC143EUA106 UN5214TX 2SA1037AKTXR UN521NTX 2SD1819ATX	 E C B 2SB621ARSTA	 B C E RVTDTTC143EST	 B C E 2SB1548PQAU						
 A Ca C E Ca GP1S94	 A Ca Cathode Anode MTZJ4R7BTA	 Cathode Anode A Ca MA111TX	 A Ca Cathode Anode RL1N4003N02	 Anode Cathode A Ca LNJ301MPUJAD	 Anode Cathode Anode A Ca A SML79455C						
 Cathode Anode A Ca MA8082MTX											

12 Wiring Connection Diagram



13 Block Diagram

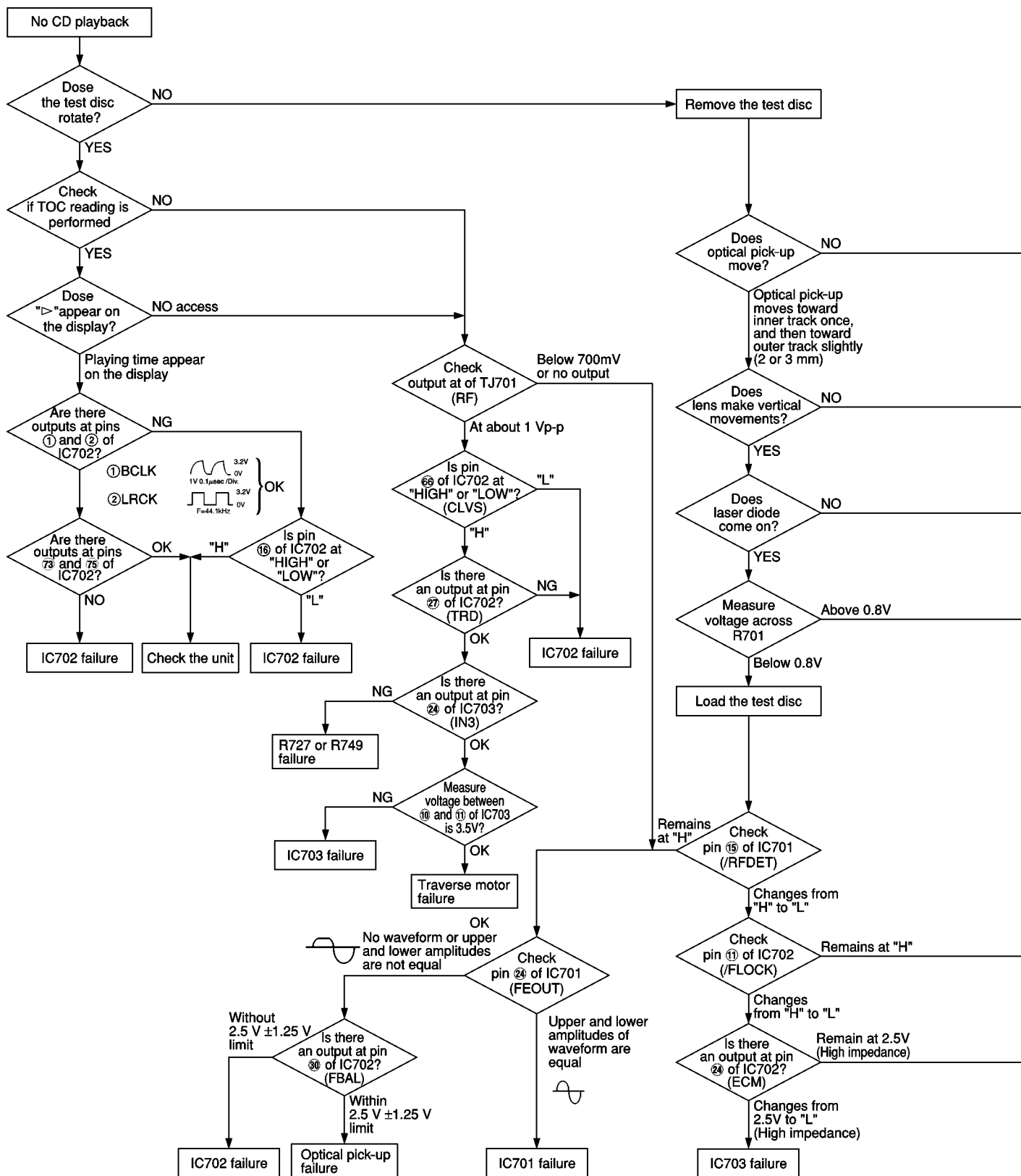


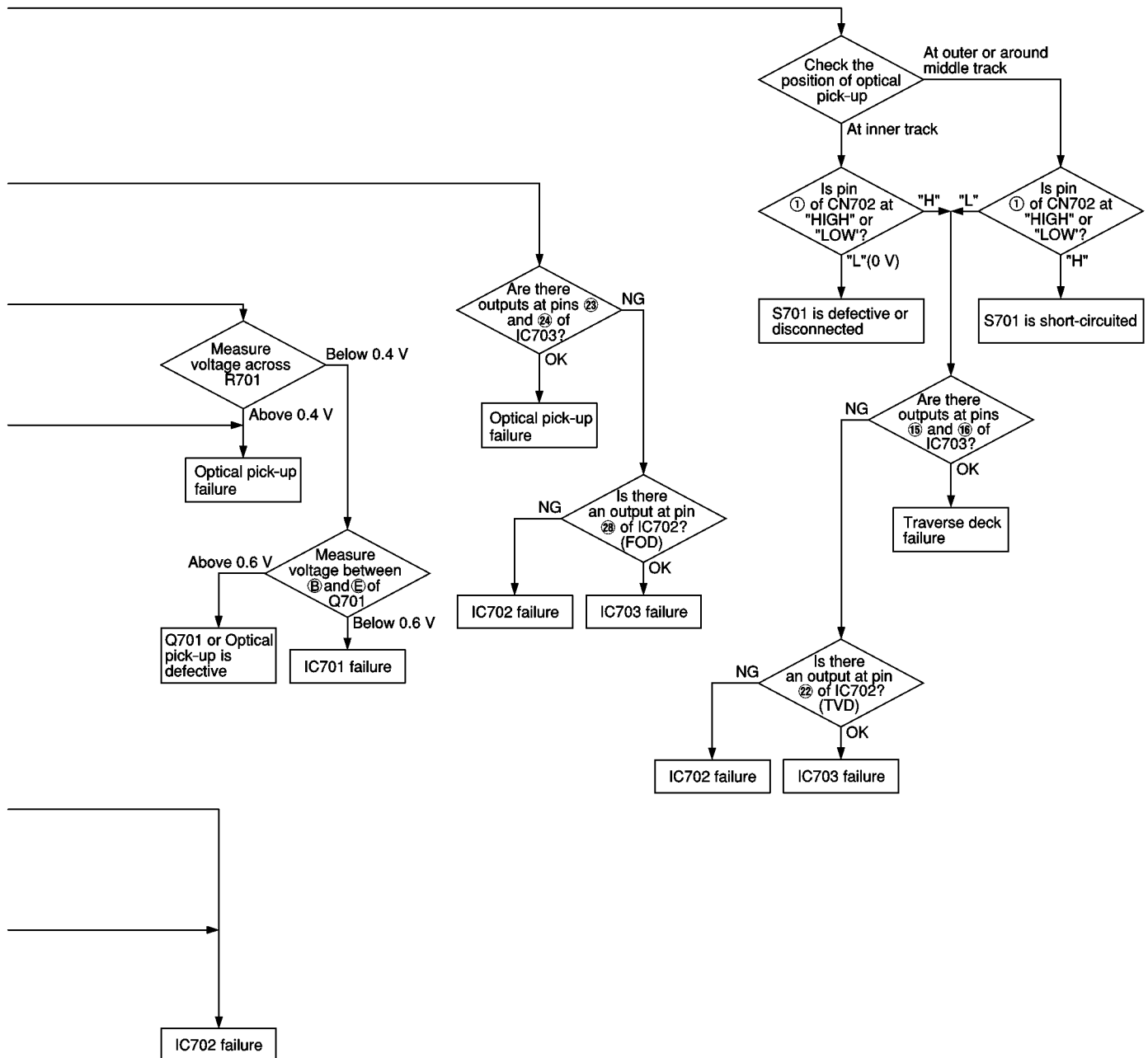


To SOUND PROCESSOR &
CASSETTE DECK
BLOCK DIAGRAM

Note:
• ➡ : CD PLAYBACK SIGNAL LINE

14 Troubleshooting Guide





15 Terminal Function of ICs

15.1. IC451 (C2BBGF000433): System Control

Pin No.	Terminal Name	I/O	Function
1	CHG SW1	I	CD changer switch1 input
2	CHG SW2	I	CD changer switch2 input
3	OPEN SW3	I	Open switch 3 input
4	CLAMP SW4	I	Clamp switch4 input
5	BOTTOM SW5	I	Bottom switch5 input
6	POSITION	I	Position switch input
7	—	—	Not used, open
8	LDATA	O	LED data output
9	LCLK	O	LED clock output
10	LSTB	O	LED serial output
11	—	—	Not used, open
12	CS	O	Chip select signal output
13	CLK	O	Clock signal output
14	DATA O	O	Data signal output
15	DATA I	I	Data signal input
16	REQ	I	Request signal input
17	BLKCK	I	Block signal input
18	Vss	—	GND terminal
19	RST	I	Reset signal input
20	SYNC	I	Power failure detect signal input
21	NC	—	Not used, open
22	X IN	I	Oscillator connected terminal (6MHz)
23	X OUT	O	
24	Vss	—	GND terminal
25	CDP CONT	—	Not used, open
26	CHG HALF	O	Changer Half drive output
27	CHG PLGA	O	Changer plunger output
28	CHG CW	O	Changer Motor Clockwise output
29	CHG CCW	O	Changer Motor counter clockwise output
30	NC	—	Not used, open
31	SEL	—	Not used, open
32	NC	—	Not used, open
33	EECS	O	EEPROM chip select
34	EECLK	O	EEPROM clock signal output
35	EEDA	I/O	EEPROM data signal
36	NC	—	Not used, open
37	VMUTE	—	Not used, open
38	VMDDE	—	Not used, open
39	EMPHA	—	Not used, open
40	HRDY	—	Not used, open
41	HINT	—	Not used, open
42	VRDT	—	Not used, open
43	HCLK	—	Not used, open
44	HDI	—	Not used, open
45	HDO	—	Not used, open
46	HSEL	—	Not used, open
47	PLLSEL	I	Connect to GND
48	MP3 RST	—	Not used, open
49	—	—	Not used, open
50	—	—	Not used, open
51	—	—	Not used, open
52	TEST	I	Test mode select signal input
53	CCD STAT	I	Status signal input
54	CM LD	O	Command load output
55	CM DATA	O	Command data output
56	CM CLK	O	Command clock output
57	Vcc	I	Power supply terminal
58	VRFF	I	Reference voltage input

Pin No.	Terminal Name	I/O	Function
59	AVss	—	GND terminal
60	DACSEL	I	Connect to GND
61	KEY1	I	Operation key signal input
62	CDRSTSW	I	CD Limit switch input
63	CDRST	O	CD reset output
64	KEY2	I	Operation key signal input

15.2. IC701 (AN22004A-NF): Servo Amp

Pin No.	Terminal Name	I/O	Function
1	LPD	I	APC Amp input terminal
2	LD	O	APC Amp. output terminal
3	Vcc	I	Power source terminal
4	EQSW	—	GND
5	RFOUT	O	RF summing Amp output terminal
6	RFIN	I	AGC input terminal
7	CAGC	I	AGC loop filter connecting capacitor terminal
8	ARF	O	AGC output terminal
9	CEA	I	HPF Amp connecting capacitor terminal
10	3TOUT	O	3TOUT output terminal
11	DCDET	I	Detection system's HPF connecting capacitor terminal
12	OFTCNT	I	RFTR detection level adjustment terminal
13	BDO	O	BDO output terminal
14	OFTR	O	OFTR output terminal
15	/RFDET	O	NRFDET output terminal
16	LDON	I	LDON terminal
17	GND	—	GND
18	EQBST	I	Equalizer boost adjustment terminal
19	VREF	O	VREF output terminal
20	TE IN	I	Amp inverting input terminal
21	TEOUT	O	TE amp output terminal
22	FE IN	I	Amp inverting input terminal
23	FEOUT	O	FE amp output terminal
24	GCTL	I	GCTL terminal
25	FBAL	I	FBAL control terminal
26	TBAL	I	TBAL control terminal
27	PDE	I	Tracking signal input terminal 5
28	PDF	I	Tracking signal input terminal 6
29	PDD	I	Tracking signal input terminal 4
30	PDB	I	Tracking signal input terminal 2
31	PDC	I	Tracking signal input terminal 3
32	PDA	I	Tracking signal input terminal 1

15.3. IC702 (MN6627931BD): Servo Processor/Digital Signal Processor/Digital Filter/ D/A converter

Pin No.	Terminal Name	I/O	Function
1	DRV _{DD}	I	Power supply for DRAM interface (Pin 2 to 19 and 80)
2	D0	I/O	DRAM data I/O signal 0
3	D1	I/O	DRAM data I/O signal 1
4	NWE	O	DRAM write enable signal
5	NRAS	O	DRAM RAS control signal
6	D2	I/O	DRAM data I/O signal 2
7	D3	I/O	DRAM data I/O signal 3
8	NCAS0	O	DRAM CAS control signal 0
9	A10	O	DRAM CAS control signal 10
10 19	A0 A9	O	DRAM address signal 0—9
20	DV _{SS} 2	—	GND for digital circuits
21	DV _{DD} 2	I	Power supply for digital circuits
22	SPOUT	O	Spindle motor drive signal output (absolute value output)
23	TRVP	O	Traverse drive output (positive polarity output)

Pin No.	Terminal Name	I/O	Function
24	TRVM	O	Traverse drive output (negative porarity output)
25	TRP	O	Tracking drive output (positive polarity output)
26	TRM	—	Not used, open
27	FOP	O	Focus drive output (positive plarity output)
28	FOM	O	Focus drive output (negative polarity output)
29	IOV _{DD} 1	I	Power supply for I/O
30	TBAL	O	Tracking balance adjustment output
31	FBAL	O	Focus 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 (analog input)
35	OFT	I	Off-track signal input (High:Off-track)
36	NRFDET	I	RF detection signal input (Low:detection)
37	BDO	I	Dropout signal input (High: Dropout)
38	LDON	O	Laser ON signal output (High: ON)
39	ARF	I	RF signal input
40	IREF	I	Reference current input
41	ADPV _{CC}	I	Voltage input for supply voltage monitor (analog input)
42	DSL _F	I	DSL loop filter
43	RFSW	I	DSL loop filter
44	PLL _F	I	PLL loop filter
45	PLL _{FO}	I	PLL loop filter
46	AV _{DD} 2	I	Power supply for analog circuits (for DSL, PLL and A/D)
47	AV _{SS} 2	—	GND for analog circuits (for DSL, PLL and A/D)
48	OUTL	O	L-ch audio output
49	AV _{SS} 1	—	GND for analog circuits (for audio output stage)
50	OUTR	O	R-ch audio output
51	AV _{DD} 1	I	Power supply for analog circuits (for audio output stage)
52	DV _{SS} 3	—	GND for digital circuits
53	DV _{DD} 3	I	Power supply for digital circuits
54	TMOD2	I	Test input pin (Low: Normal)
55	FLAG	—	Not used, open
56	EXT2	O	Expansion port 2
57	EXT0	O	Expansion port 0
58	EXT1	O	Expansion port 1
59	IOV _{DD} 2	I	Power supply for I/O
60	TX	O	Digital audio interface output signal
61	MCLK	I	Micro controller command clock signal input (Latches data at the rising adge)
62	MDATA	I	Micro controller command data signal input
63	MLD	I	Micro controller command load signal input (Low: Load)
64	BLKCK	O	Subcode block clock signal (F=75 Hz in normal-speed playback mode)
65	PWMSEL	I	PWM output mode selection input (Low: Direct High: 3-state)
66	SMCK	—	Not,used, open
67	SBCK	I	GND
68	STAT	O	Status signal output
69	NRST	I	Reset input (Low: Reset)
70	SPPOL	—	Not used, open
71	PMCK	—	Not used, open
72	DQSY	—	Not used, open
73	TXTD	—	Not used, open
74	TXTC	I	Test point 3
75	NTEST	I	Test input pin (High: Normal)
76	OUT X2	O	Crystal oscillator circuit output pin
77	in X1	I	Crystal oscillator circuit input pin
78	DV _{SS} 1	—	GND for digital circuits
79	DV _{DD} 1	I	Power supply for digital circuits

Pin No.	Terminal Name	I/O	Function
80	MON	O	Monitor for evaluation

15.4. IC703 (AN8739SBTE2): Focus Coil/Tracking Coil/ Traverse Motor/Spindle Motor Drive

Pin No.	Terminal Name	I/O	Function
1	/RST	-	Not used, open
2	NC	-	Not used
3	IN2	I	Motor driver 2 input
4	PC2	I	Turntable motor drive signal input (L: ON)
5	NC	-	Not used
6	IN1	I	Motor driver 1 input
7	NC	-	Not used, open
8	PV _{CC} 1	I	Driver power supply terminal 1
9	PGND1	-	Driver GND terminal 1
10	NC	-	Not used, connected to GND
11	D1-	O	Motor driver 1 output terminal (-)
12	D1+	O	Motor driver 1 output terminal (+)
13	D2-	O	Motor driver 2 output terminal (-)
14	D2+	O	Motor driver 2 output terminal (+)
15	D3-	O	Motor driver 3 output terminal (-)
16	D3+	O	Motor driver 3 output terminal (+)
17	D4-	O	Motor driver 4 output terminal (-)
18	D4+	O	Motor driver 4 output terminal (+)
19	NC	-	Not used
20	PGND2	-	Driver GND terminal 2
21	PV _{CC} 2	I	Driver power supply terminal 2
22	NC	-	Not used, open
23	V _{CC}	I	Power supply terminal
24	VREF	I	Reference voltage input terminal
25	IN4	I	Motor driver 4 input
26	IN3	I	Motor driver 3 input
27	RSTIN	I	Reset terminal (Not used, connected to GND)
28	NC	-	Not used, connected to GND

16 Replacement Parts List

Notes:

- Important safety notice:

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

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

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

- The marking [RTL] indicates the retention time is limited for this item. After the discontinuation of this assembly in production, it will no longer be available.
- All parts are supplied by SPC.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	RKM0399-S1	TOP CABINET	1	
2	RHD30007-1S	SCREW	4	
3	XTBS3+8JFZ1	SCREW	1	
4	REZ1536	FFC(19P)	1	
5	REZ1382-J	FFC(14P)	1	
6	RYF0520E-S	TRAY ORNAMENT	1	
7	XTW3+8T	SCREW	2	
8	RKA0105-K	RUBBER	4	
9	RKA0106-N	FOOT RING	4	
10	RYP1173-S	FRONT PANEL ASS'Y	1	
10-1	RGB0025-A	TECHNICS BADGE	1	
11	XTBS3+8JFZ1	SCREW	3	
12	XTB3+8JFZ	SCREW	1	
13	RQLS0104	LASER CAUTION LABEL	1	
14	REZ1191-2	FLAT CABLE	1	
15	RGR0286A-K	REAR PANEL	1	
301	RAB0153Z-S	TRAVERSE DECK ASS'Y	1	
301-1	SHGD113-1	REBBER	3	
301-2	SNSD38	SCREW	2	
301-3	RAF0152A-S	OPTICAL PICK-UP	1	
301-4	RDG0247	DRIVE GEAR	1	
301-5	RDG0248	GEAR	1	
301-6	RXQ0339	TRAVERSE MOTOR	1	
301-7	RXQ0304-1	PLATE	1	
301-8	XQN17+CG5	SCREW	1	
301-9	XQS2+A3FZ	SCREW	1	
301-10	XQS17+A35FZ	SCREW	2	
302	RDV0056	BELT	1	
303	RMB0549-1	SPRING	1	
304	RMB0561	SPRING	1	
305	RME0257	SPRING	1	
306	RME0258	SPRING	1	
307	RME0261	SPRING	1	
308	RML0516	LEVER	1	
309	RML0517	LEVER	1	
310	RML0518	LEVER	1	
311	RML0519	LEVER	1	
312	RML0520	TRAY LOCK	1	
313	RML0521	REAR LOCK	1	
314	RML0525	FRONT LOCK	1	
315	RML0530	LEVER	1	
316	RMM0201	SLIDE PLATE 1	1	
317	RMM0202	SLIDE PLATE 2	1	
318	RMB0551	SPRING	1	
319	RMB0553	SPRING	1	
320	RMQ0747	UPPER HOOK	1	
321	RMQ0749	UPPER SPINDLE	1	
322	RMX0140	DISC SPACER	5	
323	RMX0141	SPACER	1	
324	RHM0001	MAGNET	1	

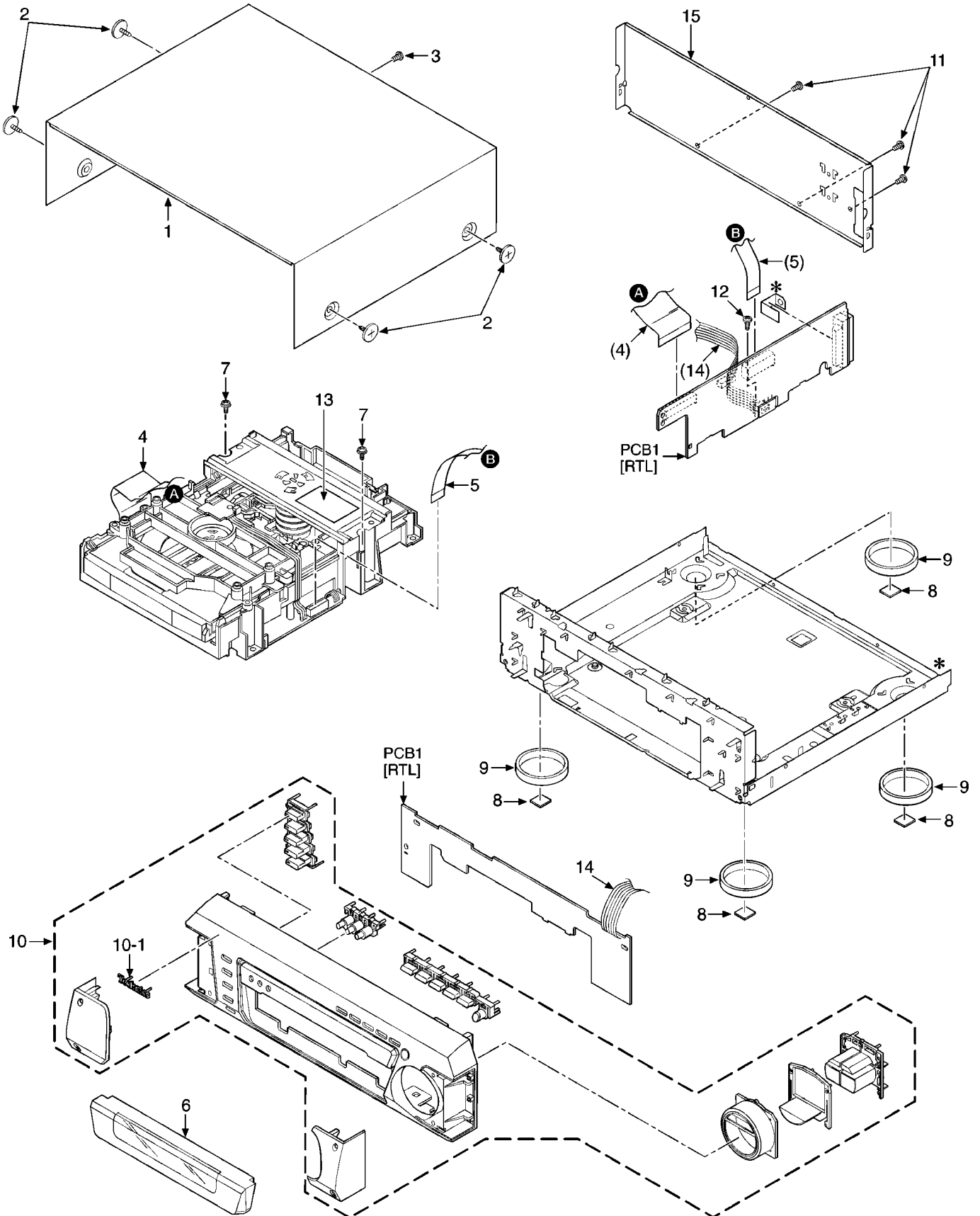
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
325	RMR0334	MAGNET HOLDER	1	
326	RMR0624-W5	CLAMPER	1	
327	RMR1121-K	MECHANISM COVER	1	
328	RXQ0561	DISC TRAY	1	
329	RDG0430	GEAR, RELAY A	1	
330	RDG0431	GEAR, RELAY B	1	
332	RMB0552	SPRING	1	
333	RME0262	SPRING	1	
334	RME0263	SPRING	1	
335	RML0526	LEVER	1	
336	RMQ0742	SPINDLE BASE	1	
337	RMB0550	SPRING	1	
338	RML0522	LOADING STOPPER	1	
339	RMQ0743	SPINDLE SHAFT	1	
340	RMQ0744	LOWER HOOK	1	
341	RMQ0745	LOWER SPINDLE	1	
342	RMQ0746	UP/DOWN BASE	1	
343	RXQ0595	MOTOR	1	
344	XTB3+10J	SCREW	11	
345	RDG0424	GEAR, DRIVE	1	
346	RDG0425	GEAR, CHANGE	1	
347	RDG0426	GEAR, UP/DOWN	1	
348	RDG0427	GEAR, TRAVERSE CAM	1	
349	RDG0428	GEAR, TRAVERSE RELAY	1	
350	RDG0429	GEAR, PULLEY	1	
351	RME0109	FLOATING SPRING(1)	2	
352	RME0142	FLOATING SPRING(2)	1	
353	RMR1124A-K	TRAVERSE CHASSIS	1	
354	RMS0632	FIXED PIN	3	
355	XTN2+6G	SCREW	3	
356	RMQ0748	GEAR HOLDER	1	
357	RSJ0003	SOLENOID	1	
358	RHM212ZD	MOVING CORE	1	
C1	ECEA1CKS101	16V 100U	1	
C2	ECBA1E103ZF5	25V 0.01U	1	
C3	ECJ1VB1H102K	50V 1000P	1	
C5	RCE1CKA470BG	16V 47U	1	F2A1C470A017
C6	ECA1CM471	16V 470U	1	
C7	ECUVNH103KBV	50V 0.01U	1	F1H1H103A748
C9	ECEA1AKS221	10V 220U	1	
C10	F2A0J221A143	6.3V 220U	1	
C11	ECJ1VB1H102K	50V 1000P	1	
C12	ECUVNH103KBV	50V 0.01U	1	F1H1H103A748
C151, 52	ECJ1VB1H102K	50V 1000P	2	
C301	ECJ1VB1C104K	16V 0.1U	1	
C302	ECUV1H101JCV	50V 100P	1	ECJ1VC1H101J
C401	RCE1HKA3R3BG	50V 3.3U	1	F2A1H3R3A015
C402	ECUVNH103KBV	50V 0.01U	1	F1H1H103A748
C403	EEAF0CJ101B	6.3V 100U	1	
C404	ECJ1VB1C104K	16V 0.1U	1	
C405	ECEA1AKS221	10V 220U	1	
C406	F2A0J221A143	6.3V 220U	1	
C407, 08	ECUVNH103KBV	50V 0.01U	2	F1H1H103A748
C409	ECJ1VB1H102K	50V 1000P	1	
C410	ECUVNH103KBV	50V 0.01U	1	F1H1H103A748
C411, 12	F1H1H471A736	50V 470P	2	
C501	ECUVNH103KBV	50V 0.01U	1	F1H1H103A748
C502	ECUV1H101JCV	50V 100P	1	ECJ1VC1H101J
C601	ECUVNH103KBV	50V 0.01U	1	F1H1H103A748
C602	ECEA1HKA4R7	50V 4.7U	1	
C603-05	ECUV1H101JCV	50V 100P	3	ECJ1VC1H101J
C701	ECEA0JKA330I	6.3V 33U	1	
C702	ECUVNJ474KBV	6.3V 0.47U	1	F1H0J474A002
C703	ECEA0JKS101	6.3V 100U	1	
C704	ECUVNC104KBV	16V 0.1U	1	F1H1C104A042
C705	ECJ1VF1C104Z	16V 0.1U	1	
C706	ECUVNJ105KBV	6.3V 1U	1	F1H0J105A002
C707	F1H1C393A075	16V 0.039U	1	
C710	ECJ1XB1H471K	50V 470P	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C711-13	ECUVNC104KBV	16V 0.1U	3	FIH1C104A042
C714	ECEA0JKS101	6.3V 100U	1	
C715	FIH1C224A074	16V 0.22U	1	
C716	ECJ1VB1H681K	50V 680P	1	
C717	ECUVNC104ZFV	16V 0.1U	1	ECJ1VF1C104Z
C718	ECUX1C823KBV	16V 0.082U	1	
C721,22	ECJ1VC1H120J	50V 12P	2	
C723	ECEA1AKS221	6.3V 220U	1	
C724	ECUVNC104KBV	16V 0.1U	1	FIH1C104A042
C725,26	ECJ1VB1H102K	50V 1000P	2	
C727,28	ECA1HAK010XI	50V 1U	2	
C729	ECUVNC104KBV	16V 0.1U	1	FIH1C104A042
C730	ECUVNC104ZFV	16V 0.1U	1	ECJ1VF1C104Z
C731	ECEA1AKS221	6.3V 220U	1	
C733	ECUVNC104KBV	16V 0.1U	1	FIH1C104A042
C734	ECEA1AKS221	10V 220U	1	
C735-37	ECUVNC104ZFV	16V 0.1U	3	ECJ1VF1C104Z
C738	FIH1C473A088	16V 0.047U	1	
C739	ECJ1VB1H103K	50V 0.01U	1	
C740	ECUVNC104KBV	16V 0.1U	1	FIH1C104A042
C741	ECJ1VB1H102K	50V 1000P	1	
C742	FIH1C473A088	16V 0.047U	1	
C743	ECUVNC104ZFV	16V 0.1U	1	ECJ1VF1C104Z
C744	ECUV1C153KBV	16V 0.015U	1	ECJ1VB1C153K
C746	ECUVNC104KBV	16V 0.1U	1	FIH1C104A042
C747	ECJ1XB1H471K	50V 470P	1	
C748	ECUVNC104KBV	16V 0.1U	1	FIH1C104A042
C749	FIH1H392A022	50V 3900P	1	
C750,51	ECUVNC104KBV	16V 0.1U	2	FIH1C104A042
C752	ECJ1VB1H103K	50V 0.01U	1	
C753	ECJ1XB1H471K	50V 470P	1	
C755	ECUVNC104KBV	16V 0.1U	1	FIH1C104A042
C757	ECEA0JKS101	6.3V 100U	1	
C758	ECUVNC104KBV	16V 0.1U	1	FIH1C104A042
C770	ECUVNC104KBV	16V 0.1U	1	FIH1C104A042
C780-82	ECUVNC104KBV	16V 0.1U	3	FIH1C104A042
CN1	RJS1A9414	CONNECTOR (14P)	1	K1MN14A00049
CN401	RJS1A6714-Q	CONNECTOR (14P)	1	K1MN14B00054
CN402	K1MN24B00051	CONNECTOR (24P)	1	
CN701	RJS2A8616	CONNECTOR (16P)	1	
CN702	K1MN24B00090	CONNECTOR (24P)	1	
D1	GP1S94	DIODE	1	B3NAA0000029
D2	MTZJ4R7B	DIODE	1	
D3	MA8082M	DIODE	1	MAZ80820M
D5,D6	MA2J11100L	DIODE	2	
D7	B0AAMM000009	DIODE	1	
D10	MA2J11100L	DIODE	1	
D12-14	MA2J11100L	DIODE	3	
D401,02	MA2J11100L	DIODE	2	
D501-05	MA2J11100L	DIODE	5	
D601-05	LNJ301MPUJAD	LED	5	
D606	B3AHA0000012	LED	1	
D617	MA2J11100L	DIODE	1	
IC1	C0GAM0000005	DRIVE IC	1	
IC2	UPC29M33HB	IC	1	C0CAABE00005
IC451	C2BBGF000433	IC	1	
IC601	BU2050F-E2	IC	1	C1BB00000573
IC701	AN22004A-NF	IC	1	
IC702	MN6627931BD	IC	1	
IC703	AN8739SBE2	IC	1	AN8739SBTE2
IC704	C3ABMB000027	IC	1	
JK401	RJT065K20	SYSTEM CONNECTOR (20P)	1	K1FA220B0006
L701	RLEBV102V-Y	COIL	1	J0JBC0000014
PCB1	REP3468A-M	PCB ASS'Y	1	[RTL]
PCB301	REPX0361A	PCB ASS'Y	1	[RTL]
PCB302	REP2578A-N	PCB ASS'Y	1	[RTL]

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
Q1	B1GACFGG0004	TRANSISTOR	1	
Q4	2SB0621AHA	TRANSISTOR	1	
Q5,Q6	2SD1819A0L	TRANSISTOR	2	
Q7	2SB1548PQAU	TRANSISTOR	1	2SB15480J1AU
Q401	UN5214TX	TRANSISTOR	1	UNR521400L
Q402,03	DTC143EUA106	TRANSISTOR	2	B1GBCFGG00011
Q404	2SB0621AHA	TRANSISTOR	1	
Q405	UN521NTX	TRANSISTOR	1	UNR521N00L
Q451-53	2SD1819A0L	TRANSISTOR	3	
Q701	2SA1037AKTXR	TRANSISTOR	1	BIADCF000001
R1	ERDS2FJ102	1/4W 1K	1	
R2	ERJ8GEYJ471V	1/8W 470	1	
R3	ERJ3GEYJ223V	1/16W 22K	1	D0GB223JA002
R4	ERJ3GEYJ101	1/16W 100	1	D0GB101JA002
R5	ERJ3GEYJ102V	1/16W 1K	1	
R10	ERJ3GEYJ471V	1/16W 470	1	
R11	ERJ3GEYJ222V	1/16W 2.2K	1	
R21,22	ERJ3GEYJ100	1/16W 10	2	
R31	ERJ3GEYJ100	1/16W 10	1	
R155,56	ERJ3GEYJ473V	1/16W 47K	2	D0GB473JA002
R157,58	ERJ3GEYJ221V	1/16W 220	2	
R301,02	ERJ3GEYJ102V	1/16W 1K	2	
R303,04	ERJ3GEYJ223V	1/16W 22K	2	D0GB223JA002
R305	ERJ3GEYJ104	1/16W 100K	1	
R306	ERJ3GEYJ472V	1/16W 4.7K	1	
R307	ERJ3GEYJ102V	1/16W 1K	1	
R401	ERJ3GEYJ104	1/16W 100K	1	
R403-12	ERJ3GEYJ101	1/16W 100	10	D0GB101JA002
R413,14	ERJ3GEYJ472V	1/16W 4.7K	2	
R415	ERJ3GEYJ101	1/16W 100	1	D0GB101JA002
R416	ERJ3GEYJ681V	1/16W 680	1	D0GB681JA002
R417-20	ERJ3GEYJ101	1/16W 100	4	D0GB101JA002
R421	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
R423,24	ERJ3GEYJ102V	1/16W 1K	2	
R425	ERJ3GEY0R00V	1/16W 0	1	
R426,27	ERJ3GEYJ472V	1/16W 4.7K	2	
R428	ERJ3GEYJ102V	1/16W 1K	1	
R429	ERJ3GEYJ472V	1/16W 4.7K	1	
R430	ERJ3GEYJ102V	1/16W 1K	1	
R431,32	ERJ3GEYJ103V	1/16W 10K	2	D0GB103JA002
R433-37	ERJ3GEYJ472V	1/16W 4.7K	5	
R438	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
R439,40	ERJ3GEYJ103V	1/16W 10K	2	D0GB103JA002
R441,42	ERJ3GEYJ472V	1/16W 4.7K	2	
R443-51	ERJ3GEYJ102V	1/16W 1K	9	
R452-55	ERJ3GEYJ103V	1/16W 10K	4	D0GB103JA002
R456	ERJ3GEYJ102V	1/16W 1K	1	
R457	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R458	ERJ3GEYJ102V	1/16W 1K	1	
R459	ERJ3GEYJ221V	1/16W 220	1	
R460	ERJ3GEYJ104	1/16W 100K	1	
R461	ERJ3GEYJ472V	1/16W 4.7K	1	
R462	ERJ3GEYJ222V	1/16W 2.2K	1	
R501,02	ERJ3GEYJ102V	1/16W 1K	2	
R503,04	ERJ3GEYJ101	1/16W 100	2	D0GB101JA002
R505	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R506	ERJ3GEYJ102V	1/16W 1K	1	
R507,08	ERJ3GEYJ472V	1/16W 4.7K	2	
R509	ERJ3GEYJ223V	1/16W 22K	1	D0GB223JA002
R510	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R511	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
R512,13	ERJ3GEYJ472V	1/16W 4.7K	2	
R514	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
R601	ERJ3GEYJ104	1/16W 100K	1	
R602-04	ERJ3GEYJ101	1/16W 100	3	D0GB101JA002
R605-09	ERJ3GEYJ221V	1/16W 220	5	
R610	ERJ3GEYJ151V	1/16W 150	1	
R611	ERJ3GEYJ821V	1/16W 820	1	
R612	ERJ3GEYJ102V	1/16W 1K	1	
R613	ERJ3GEYJ122	1/16W 1.2K	1	ERJ3GEYJ122V
R614	ERJ3GEYJ152V	1/16W 1.5K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R615	ERJ3GEYJ182V	1/16W 1.8K	1	
R616	ERJ3GEYJ222V	1/16W 2.2K	1	
R617	ERJ3GEYJ332V	1/16W 3.3K	1	D0GB332JA002
R618	ERJ3GEYJ472V	1/16W 4.7K	1	
R619	ERJ3GEYJ682V	1/16W 6.8K	1	D0GB682JA002
R620	ERJ3GEYJ821V	1/16W 820	1	
R621	ERJ3GEYJ102V	1/16W 1K	1	
R622	ERJ3GEYJ122	1/16W 1.2K	1	ERJ3GEYJ122V
R623	ERJ3GEYJ152V	1/16W 1.5K	1	
R624	ERJ3GEYJ182V	1/16W 1.8K	1	
R625	ERJ3GEYJ222V	1/16W 2.2K	1	
R626	ERJ3GEYJ332V	1/16W 3.3K	1	D0GB332JA002
R627	ERJ3GEYJ472V	1/16W 4.7K	1	
R701	D0GB4R7JA008	1/16W 4.7	1	
R702	ERJ3GEYJ472V	1/16W 4.7K	1	
R704	ERJ3GEYJ102V	1/16W 1K	1	
R705	ERJ3GEYJ393V	1/16W 39K	1	D0GB393JA002
R706	ERJ3GEYJ102V	1/16W 1K	1	
R707,08	ERJ3GEY0R00V	1/16W 0	2	
R709	ERJ3GEYJ104	1/16W 100K	1	
R711	ERJ3GEYJ823V	1/16W 82K	1	D0GB823JA002
R712	ERJ3GEYJ821V	1/16W 820	1	
R714	ERJ3GEYJ221V	1/16W 220	1	
R715	ERJ3GEYJ272V	1/16W 2.7K	1	
R717,18	ERJ3GEYJ102V	1/16W 1K	2	
R720	ERJ3GEYJ105V	1/16W 1M	1	
R721	D0GB4R7JA008	1/16W 4.7	1	
R723	ERJ3GEYJ562V	1/16W 5.6K	1	D0GB562JA002
R725	MCR03PZHJ561	1/16W 560	1	
R727	ERJ3GEYJ152V	1/16W 1.5K	1	
R728	ERJ3GEYJ183V	1/16W 18K	1	D0GB183JA002
R729	ERJ3GEYJ152V	1/16W 1.5K	1	
R731	ERJ3GEYJ223V	1/16W 22K	1	D0GB223JA002
R735	ERJ3GEYJ101	1/16W 100	1	D0GB101JA002
R736	ERJ3GEYJ100	1/16W 10	1	
R737,38	ERJ3GEYJ682V	1/16W 6.8K	2	D0GB682JA002
R739	ERJ3GEYJ102V	1/16W 1K	1	
R742	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R743	ERJ3GEYJ472V	1/16W 4.7K	1	
R744	ERJ3GEYJ393V	1/16W 39K	1	D0GB393JA002
R749	ERJ3GEYJ183V	1/16W 18K	1	D0GB183JA002
R750	ERJ3GEYJ5R6	1/6W 5.6	1	
R753	ERJ3GEYJ100	1/16W 10	1	
R760	ERJ3GEYJ101	1/16W 100	1	D0GB101JA002
RJ705-08	ERJ3GEY0R00V	1/16W 0	4	
RJ712	ERJ3GEY0R00V	1/16W 0	1	
RJ715-18	ERJ3GEY0R00V	1/16W 0	4	
RJ722-33	ERJ3GEY0R00V	1/16W 0	12	
S1,S2	RSH1A032-U	TRAY POSITION	2	K0F111B00057
S3	RSH1A005	SW,OPEN DET.	1	K0J1BB000010
S4	RSH1A91ZA-A	SW,CLAMP	1	K0L1BA000007
S5	RSP1A017-A	SW,BOTTOM	1	K0L1BB000005
S601-19	EVQ11G05R	SW,PUSH	19	
S701	RSH1A043-U	SW,REST	1	K0J1BB000022
X401	RSXY6M00M03T	OSCILLATOR	1	H2B600400003
X701	RSXB16M9J02T	OSCILLATOR	1	

17 Cabinet Parts Location



Note : We do not supply those items of parts marked * .
This "PCB1" is a combination PCB.

18 Loading Unit Parts Location

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

Ref.no.	Part No.
A	RFKXEM30L

