Service Manual

Compact Disc Player

COMPACT disc DIGITAL AUDIO

MASH multi-stage noise shaping

SL-EH760

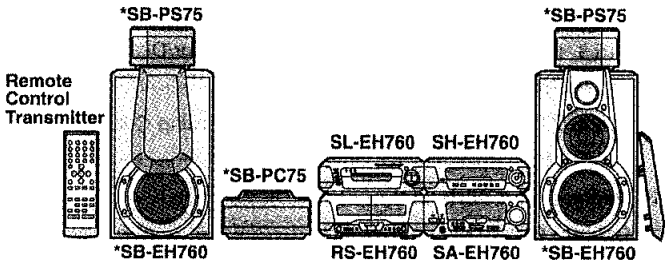
Traverse Deck:RAE0152Z-1 Mechanism series

Colour

(S).....Silver Type

Area

(E).....Europe.



System	SC-EH760
Sound Processor	SH-EH760
Tuner/Amplifier	SA-EH760
CD Changer	**SL-EH760**
Cassette Deck	RS-EH760
Front Speakers*	SB-EH760
Center Speaker*	SB-PC75
Surround Speakers*	SB-PS75

* : Made in Spain.

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

Specifications

Audio Section

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 kΩ
Load impedance:	More than 10 kΩ

Pickup Section

Wavelength:	780 nm

General

Dimensions (W×H×D):	293×89×288 mm
Mass:	2.2 kg

Notes: Specifications are subject to change without notice.
Mass and dimensions are approximate.
Total harmonic distortion is measured by the digital spectrum analyzer.

⚠ 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-EH760 (Order No. AD0002037C2) for information on Packaging.

2 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).

2.1. 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. 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.

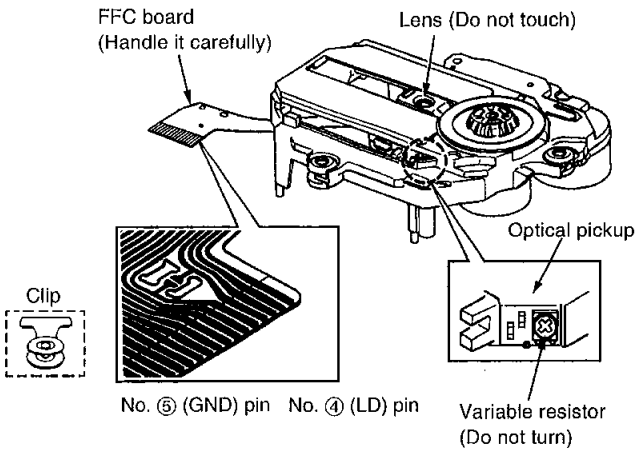


Fig.2-1.

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.

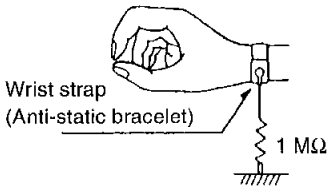


Fig.2-2.

2.2.2. Work table grounding

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

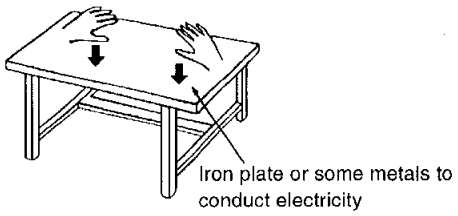


Fig.2-3.

Caution:

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

So take care not to let your clothes tough the traverse deck (optical pickup).

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:

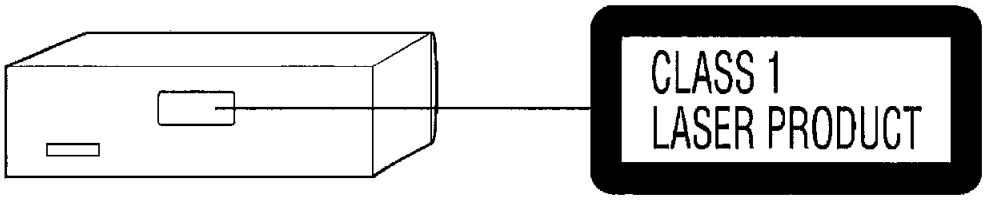
This product utilizes a laser diode with the unit turned on, invisible laser radiation is emitted from the pickup lens.

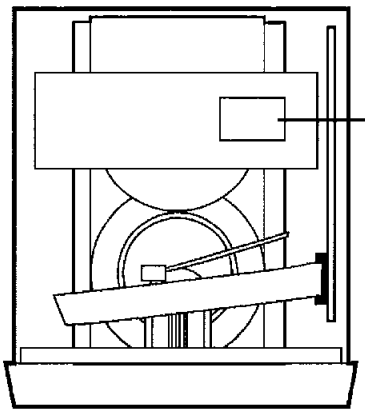
Wave length: 780 nm

Maximum output radiation power from pickup: 100μW/VDE

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

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





DANGER	INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK DEFEATED. AVOID DIRECT EXPOSURE TO BEAM.
ADVARSEL	USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARO!	AVATTAESSA JA SUOJALLKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTÖNTÄ LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
VARNING	OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STARÅLEN.
ADVARSEL	USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.
VORSICHT	UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET UND SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT. NICHT DEM STRAHL AUSSETZEN.

(Inside of product)

(Indersiden at apparatet)

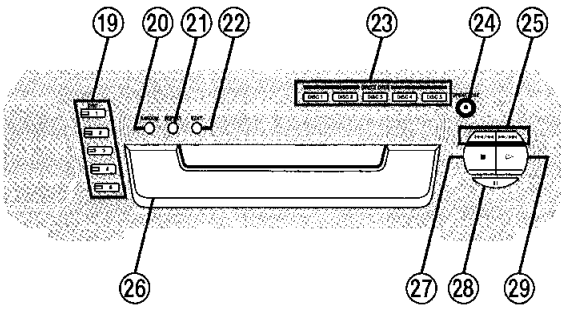
(Tuotteen sisällä)

(Apparatens insida)

(Produktets innside)

(Im Inneren des Gerätes)

4 Location of Controls



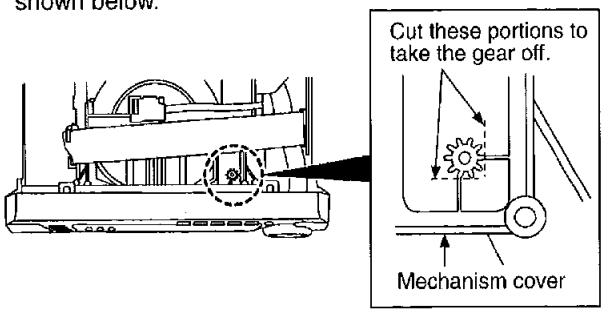
⑲ **Disc select buttons and indicators (DISC, 1–5)**
Green: Indicates that the tray is ready to play its CD or to be opened.
⑳ **Random play button (RANDOM)**
㉑ **Repeat button (REPEAT)**
㉒ **CD edit button (EDIT)**
㉓ **Disc direct open buttons (DIRECT OPEN, DISC 1– DISC 5)**
㉔ **Disc tray open/close button (▲ OPEN/CLOSE)**
㉕ **Skip/search buttons (I◄◄/◄◄, ►►/►►I)**
㉖ **Disc tray**
㉗ **Stop button (■)**
㉘ **Pause button (❚❚)**
㉙ **Play button and indicator (▷)**
The color of the indicator depends on the operation taking place.
If stopped: orange
If playing: green
If paused: flashes

5 Operation Checks and Component Replacement Procedures

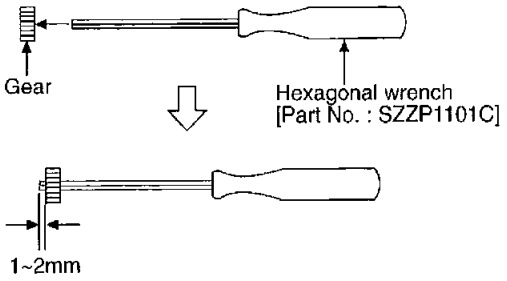
Gear for servicing (as jig) information

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.

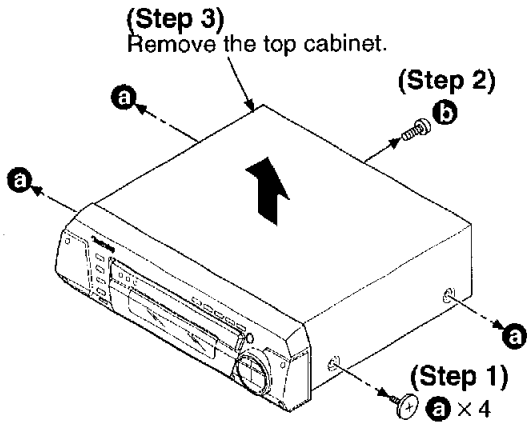


2. Insert the hexagonal wrench (2mm) into the gear, and then project the tip of wrench for 1~2mm length.

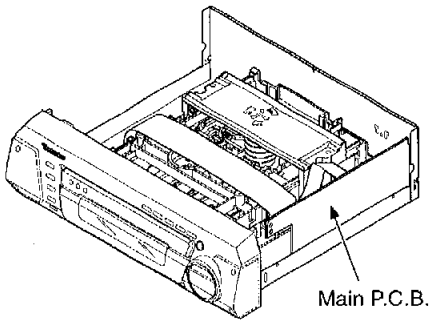


(Preparation of gear as jig is completed.)

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

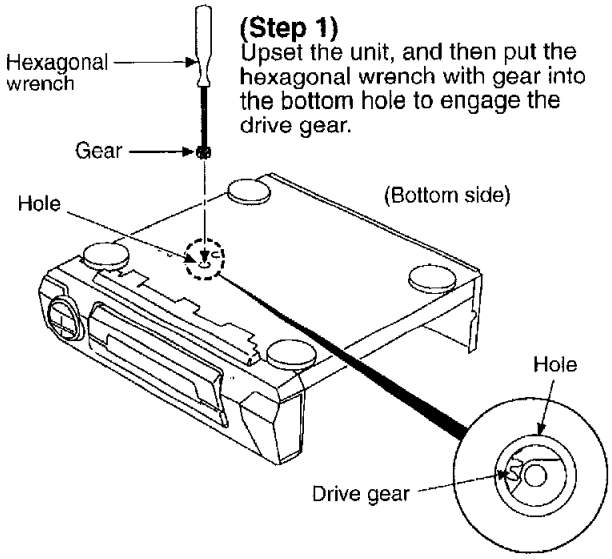


• **Check the main P.C.B. as shown below.**



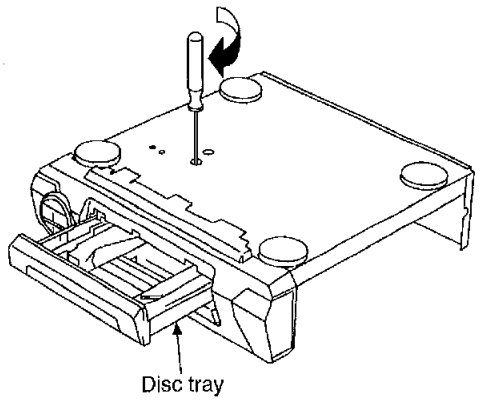
5.2. Checking for the operation P.C.B.

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

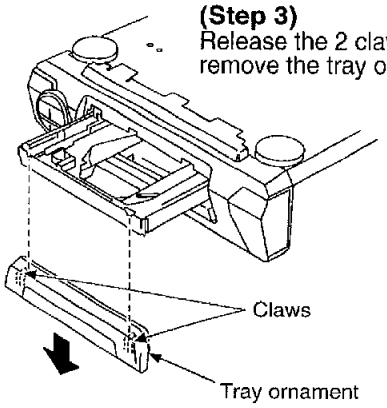


(Step 1)
Upset the unit, and then put the hexagonal wrench with gear into the bottom hole to engage the drive gear.

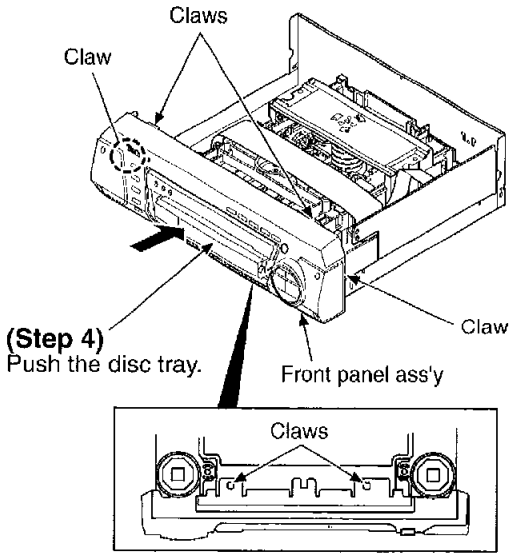
(Step 2)
Rotate the hexagonal wrench with gear in direction of arrow, and then open the disc tray.

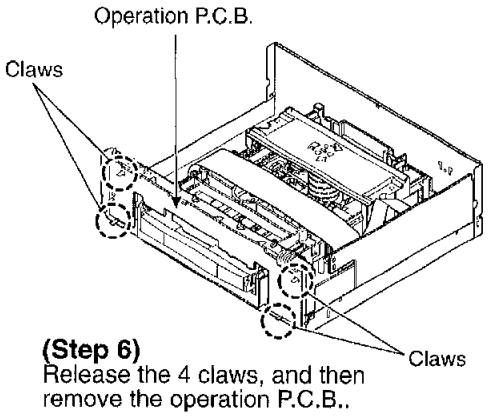


(Step 3)
Release the 2 claws, and then remove the tray ornament.



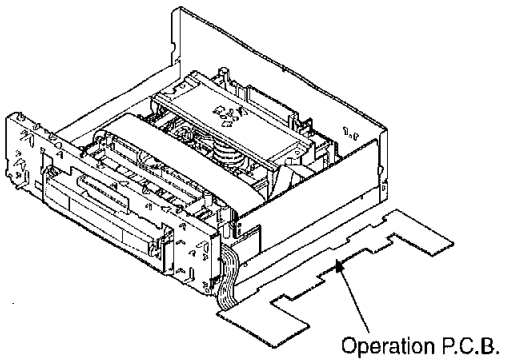
(Step 5)
Release the 6 claws, and then remove the front panel ass'y.





(Step 6)
Release the 4 claws, and then remove the operation P.C.B..

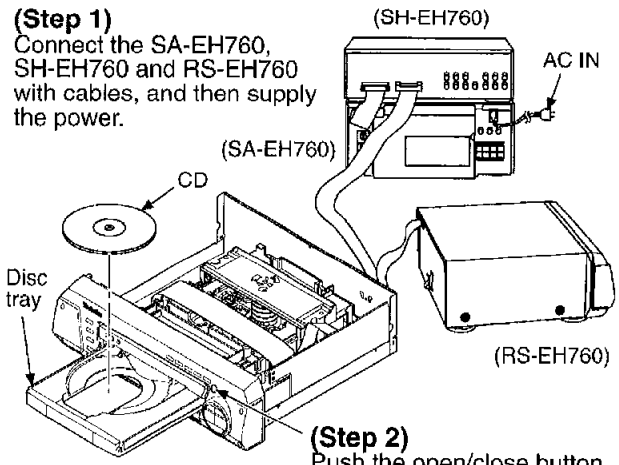
- **Check the operation P.C.B. as shown below.**

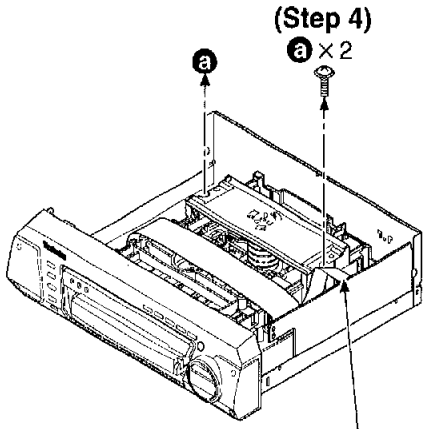


5.3. Checking for the CD servo P.C.B.

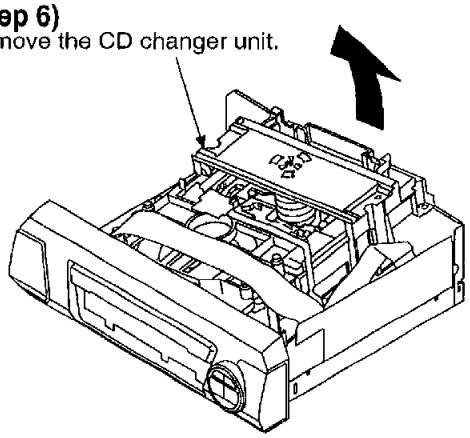
- Follow the **(Step 1)** - **(Step 3)** of item 5.1.

(Step 1)
Connect the SA-EH760, SH-EH760 and RS-EH760 with cables, and then supply the power.

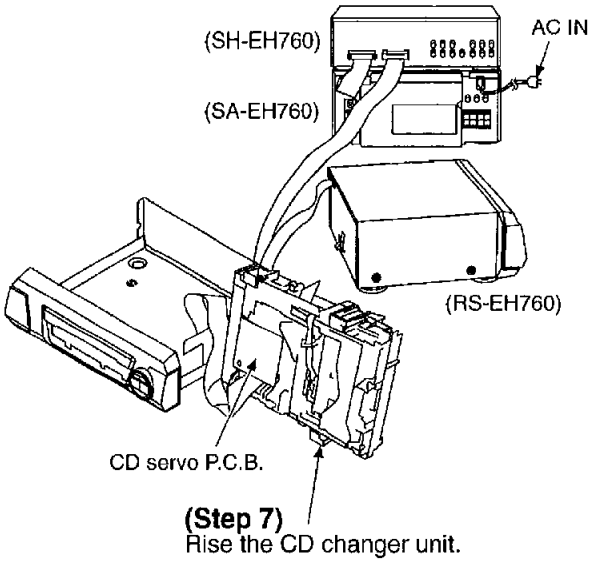




(Step 6)
Remove the CD changer unit.



- **Check the CD servo P.C.B. as shown below.**

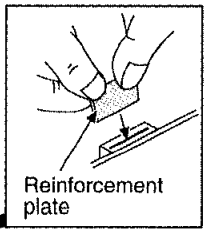


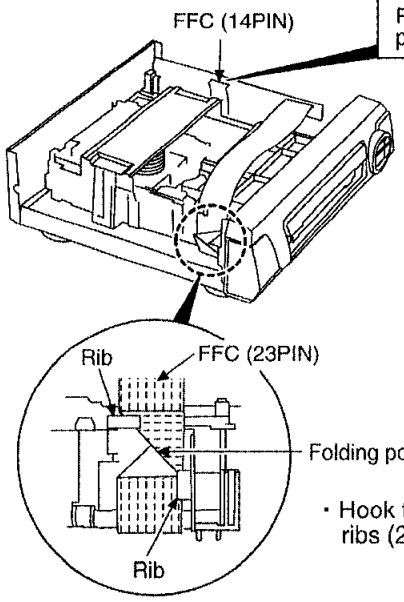
(Step 7)
Rise the CD changer unit.

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

Cable arragement

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

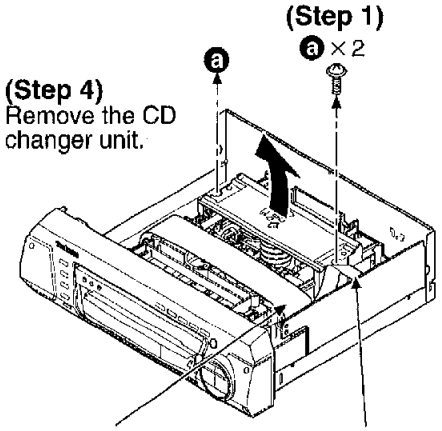


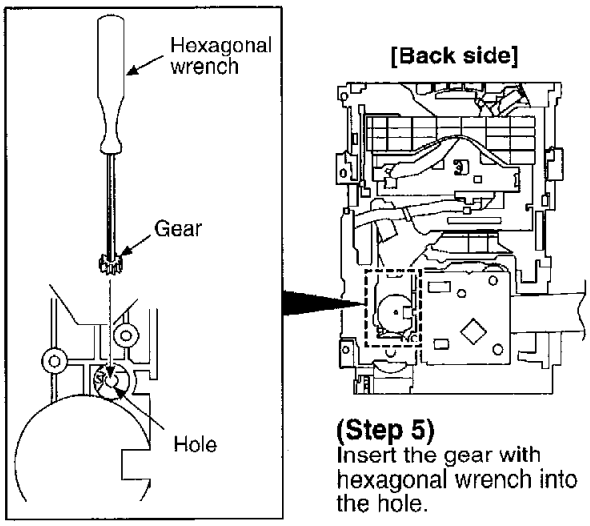


- Hook the FFC to the ribs (2 portions).

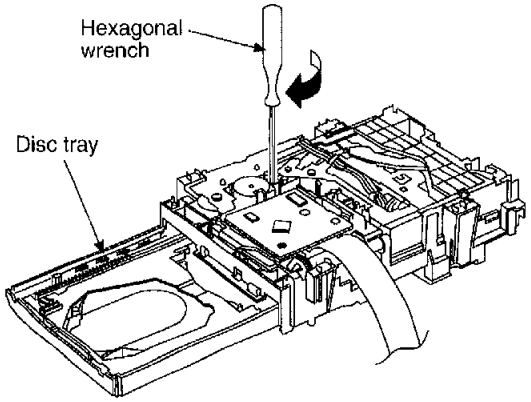
5.4. Replacement for the traverse deck ass'y

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



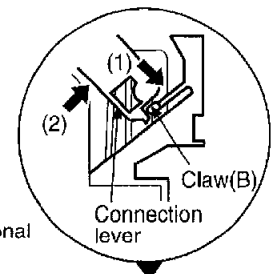


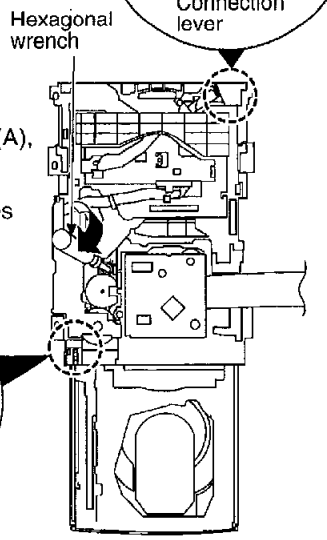
(Step 5)
Insert the gear with hexagonal wrench into the hole.



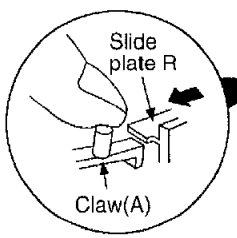
(Step 6)
Rotate the hexagonal wrench in the direction of arrow (clockwise), and then open the disc tray fully.

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

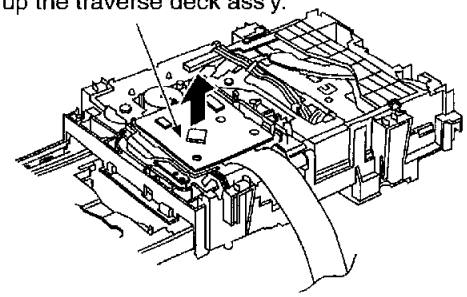




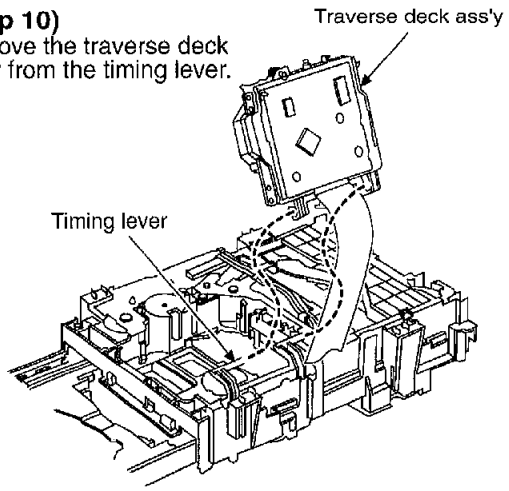
(Step 7)
With pressing the claw (A), rotate the hexagonal wrench clockwise.
(The slide plate R moves for a little amount.)

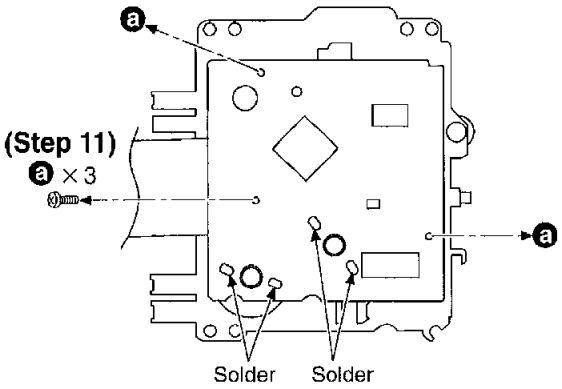


(Step 9)
Lift up the traverse deck ass'y.



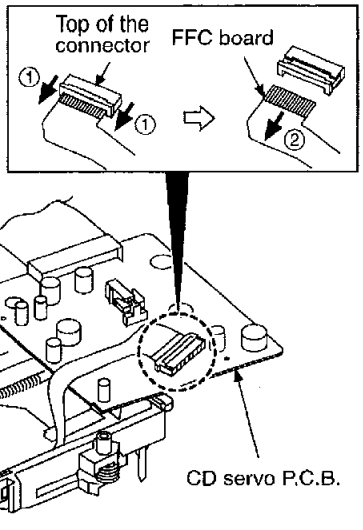
(Step 10)
Remove the traverse deck ass'y from the timing lever.



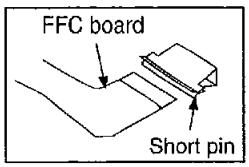


(Step 12)
Unsolder the motor terminals (4 points).

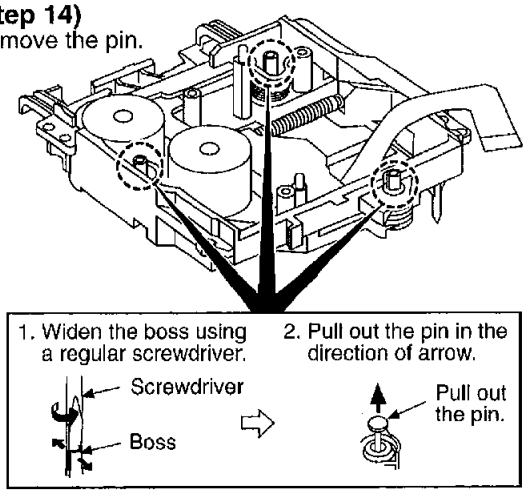
(Step 13)
Remove the FFC board from the connector, and then remove the CD servo P.C.B..



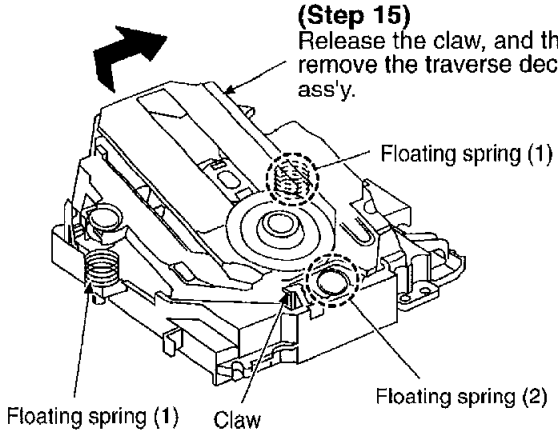
Caution:
Insert a short pin into the traverse unit FFC board.
(Refer to "**Handling Precautions for Traverse Deck**".)



(Step 14)
Remove the pin.



(Step 15)
Release the claw, and then remove the traverse deck ass'y.



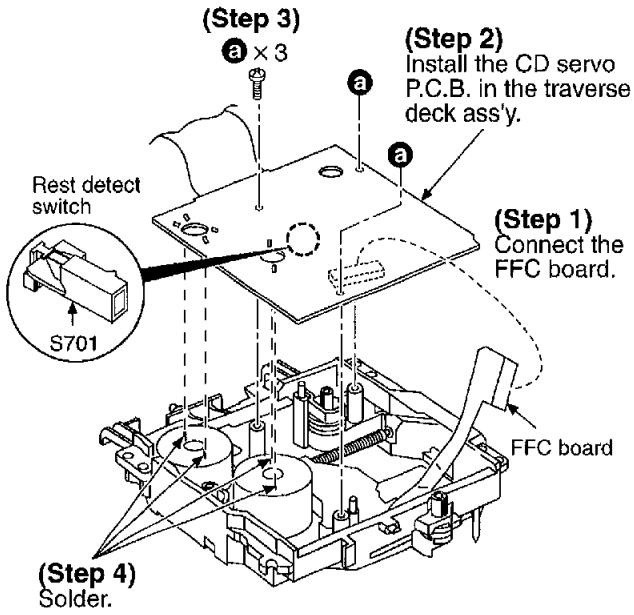
NOTE:
Be careful not to lose the 3 floating springs because those will also be removed on removal of the traverse deck ass'y.

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

(Step 3)
ⓐ × 3

(Step 2)
Install the CD servo P.C.B. in the traverse deck ass'y.

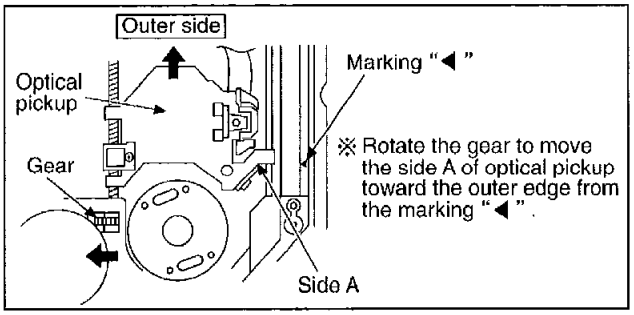
(Step 1)
Connect the FFC board.



(Step 4)
Solder.

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

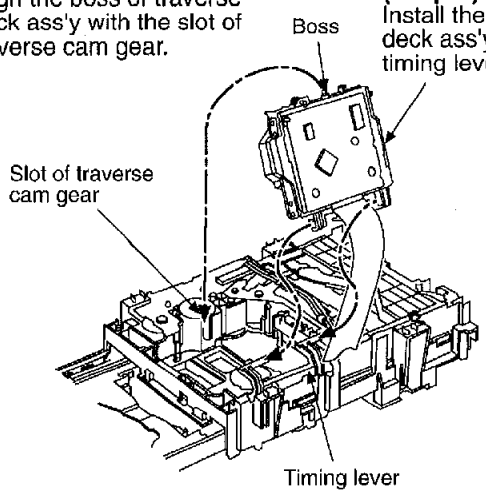
Before installing the CD servo P.C.B., move the optical pickup toward the outer edge from the mark "◀".
[Otherwise, the rest detect switch (S701) mounted on the CD servo P.C.B. may be damaged.]

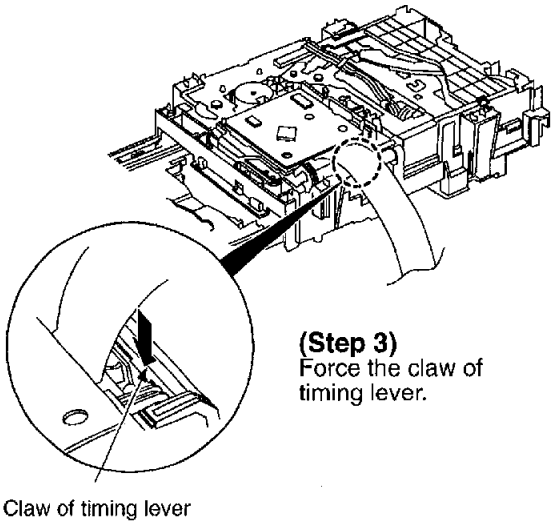


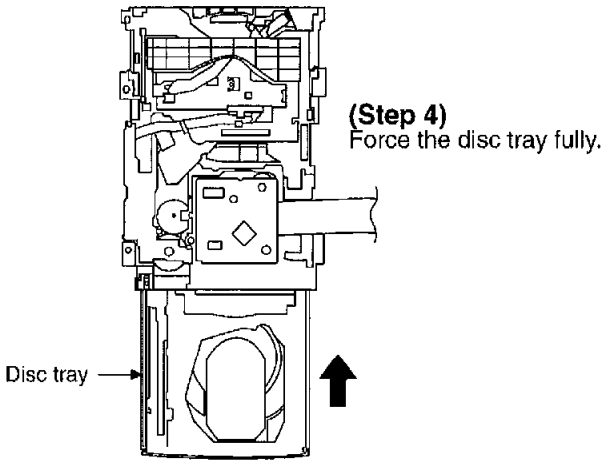
Installation for traverse deck ass'y

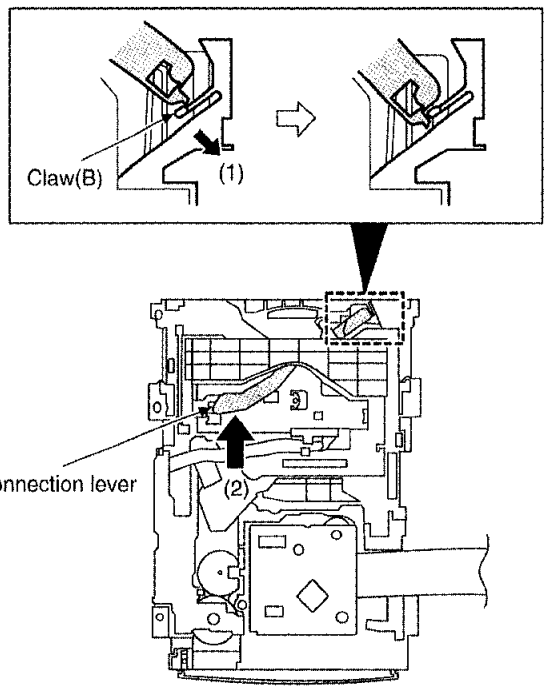
(Step 2)
Align the boss of traverse deck ass'y with the slot of traverse cam gear.

(Step 1)
Install the traverse deck ass'y to the timing lever.





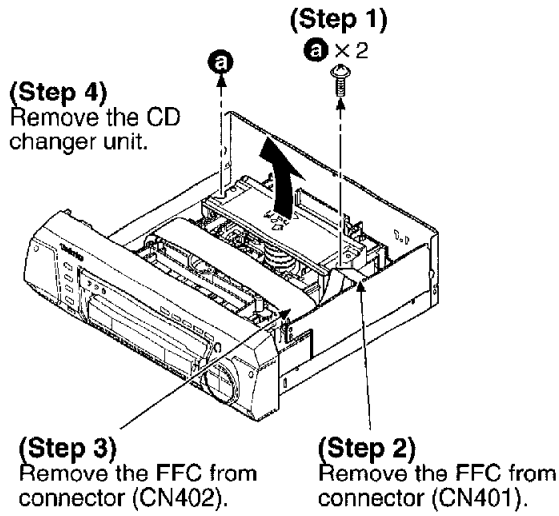


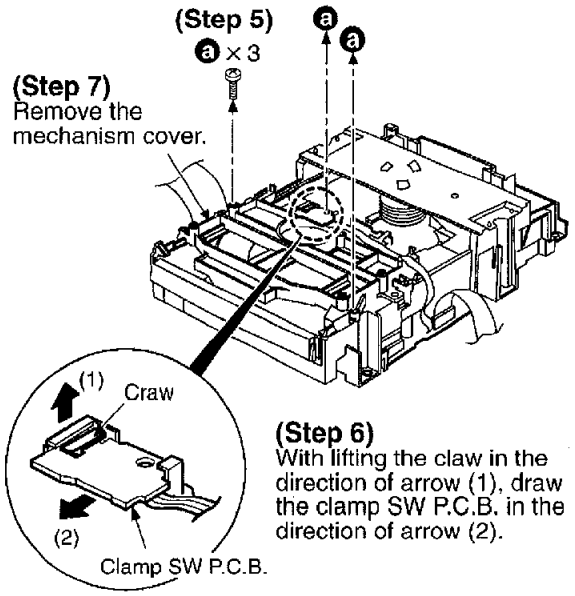


(Step 5)
With pressing the claw (B) in the direction of arrow (1), force the connection lever in the direction of arrow (2).

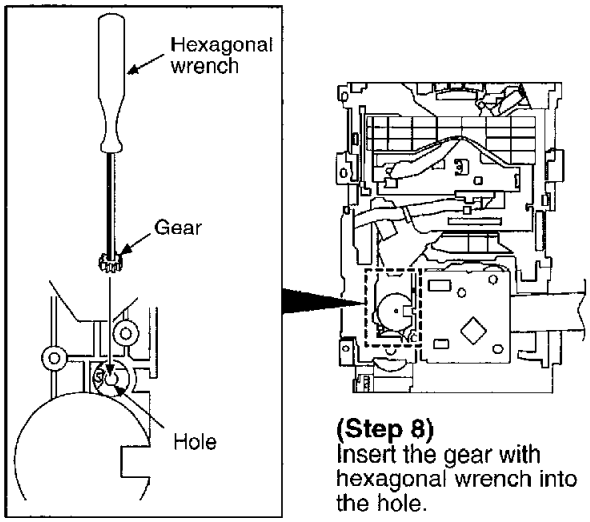
5.5. Replacement for the disc tray

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

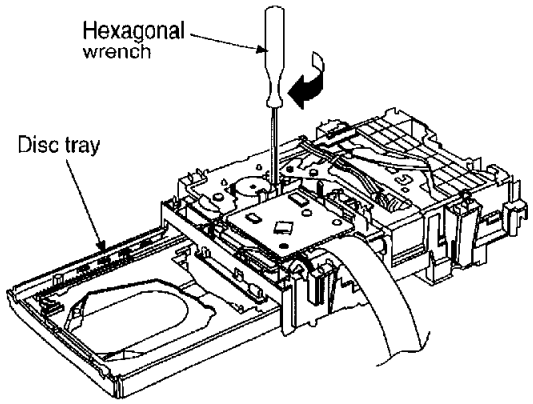




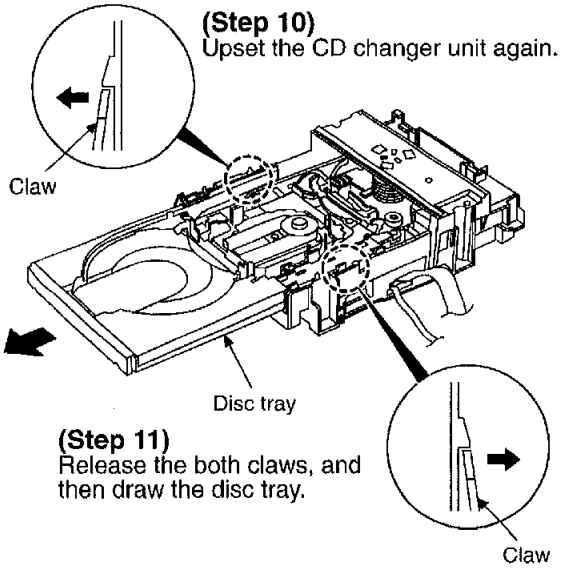
(Step 6)
With lifting the claw in the direction of arrow (1), draw the clamp SW P.C.B. in the direction of arrow (2).



(Step 8)
Insert the gear with hexagonal wrench into the hole.

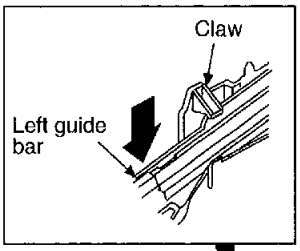


(Step 9)
Rotate the hexagonal wrench in the direction of arrow (clockwise), and then open the disc tray fully.

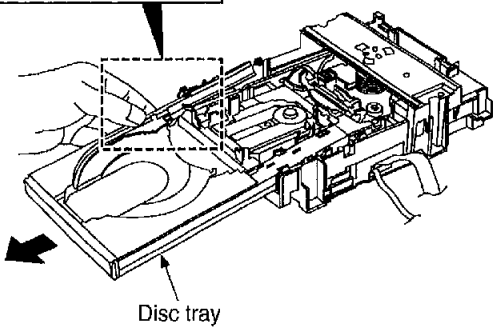


(Step 10)
Upset the CD changer unit again.

(Step 11)
Release the both claws, and then draw the disc tray.

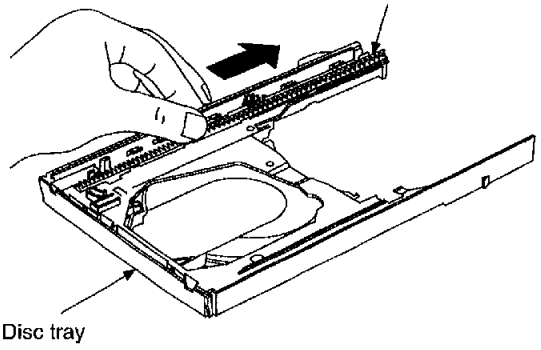


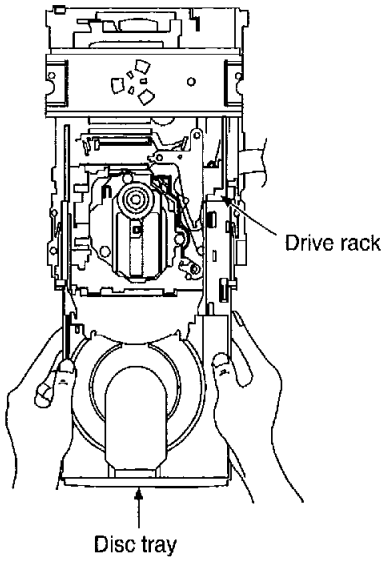
(Step 12)
With forcing the left guide bar manually because the left guide bar interferes with claw, draw the disc tray.



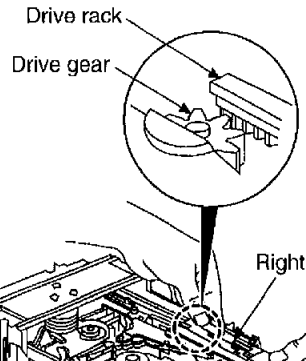
Installation of the disc tray after replacement

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





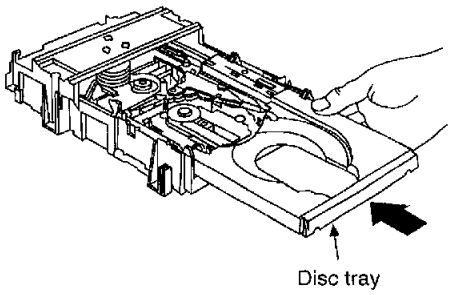
(Step 2)
Holding the drive rack not to move, install the disc tray.



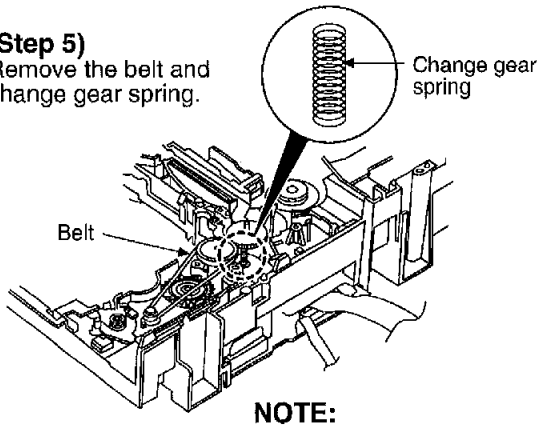
(Step 3)
Align the drive rack with the drive gear.

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.



(Step 5)
Remove the belt and change gear spring.



NOTE:
Take care not to lose the change gear spring.

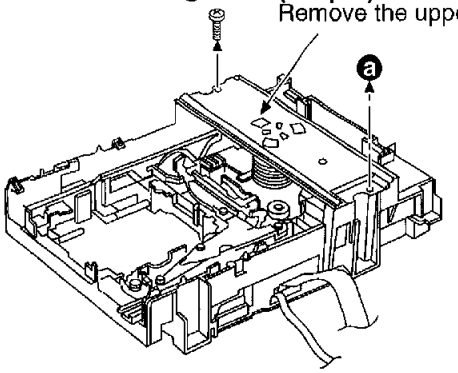
5.6. Disassembly and reassembly for mechanism base drive unit

Disassembly for mechanism base drive unit

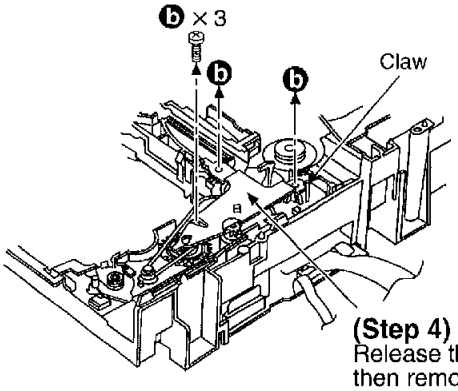
- Follow the **(Step 1)** - **(Step 3)** of item 5.1.
- Follow the **(Step 1)** - **(Step 4)** of item 5.2.
- Follow the **(Step 1)** - **(Step 10)** of item 5.4.
- Follow the **(Step 1)** - **(Step 12)** of item 5.5.

(Step 1)
ⓐ × 2

(Step 2)
Remove the upper plate.

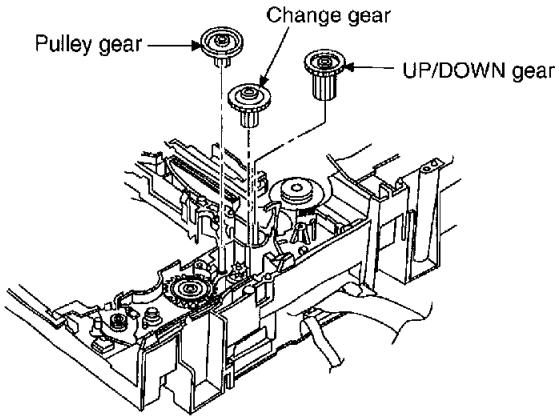


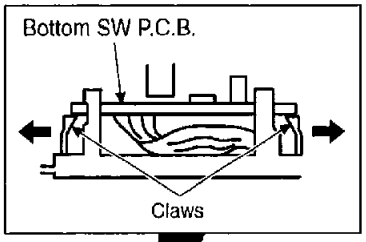
(Step 3)
ⓑ × 3



(Step 4)
Release the claw, and then remove the gear holder.

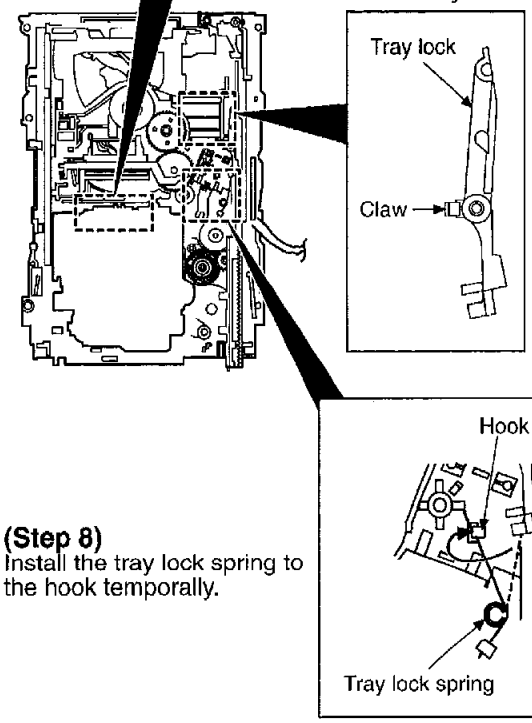
(Step 6)
Remove the pulley gear, change gear and UP/DOWN gear.





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

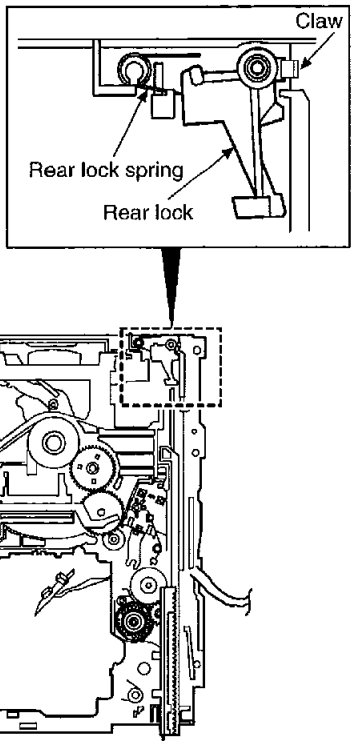
(Step 9)
Release the claw, and then remove the tray lock.



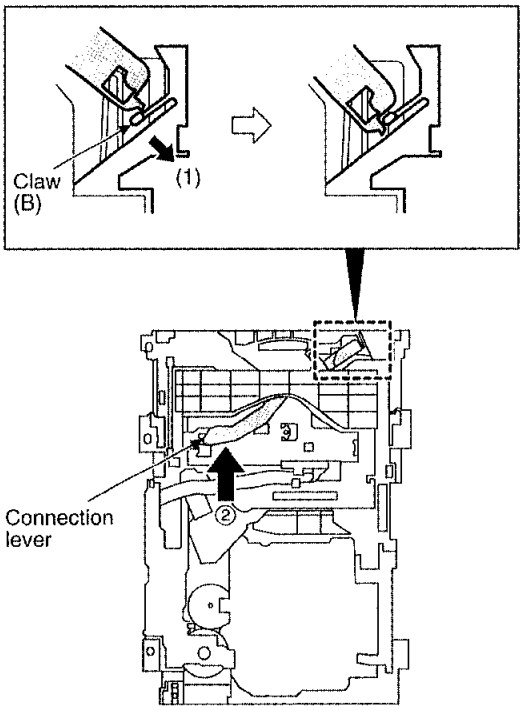
(Step 8)
Install the tray lock spring to the hook temporally.

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

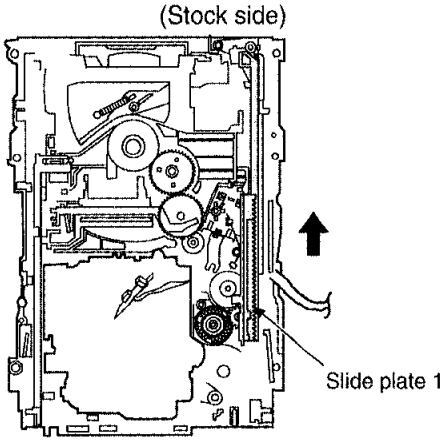
NOTE:
Take care not take the rear lock spring off.



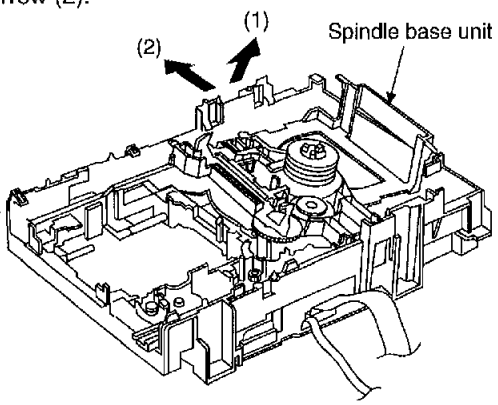
(Step 11)
Pressing the claw (B) in the direction of arrow (1), force the connection lever in the direction of arrow (2).

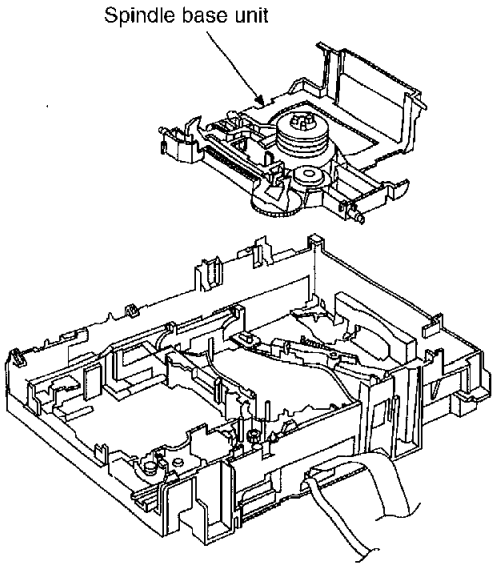


(Step 12)
Move the slide plate 1 to the end of stock side.

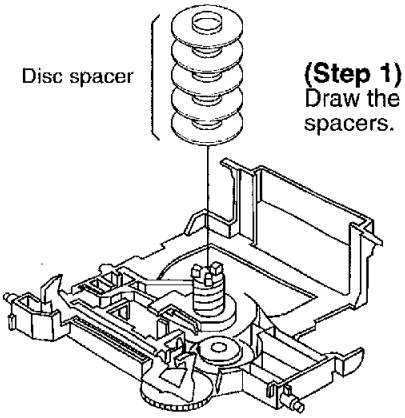


(Step 13)
Lift up the left end of spindle base unit in the direction of arrow (1), and then remove the unit in the direction of arrow (2).



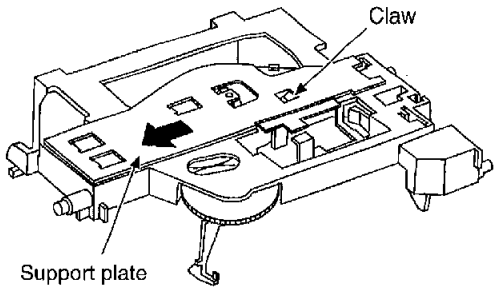


Diassembly/reassembly for the spindle base unit

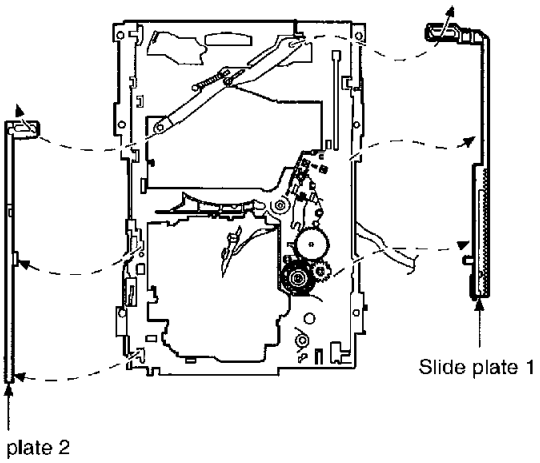


(Step 1)
Draw the 5 disc spacers.

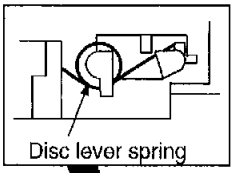
(Step 2)
Pushing the claw, slide the support plate in the direction of arrow, and then remove it.



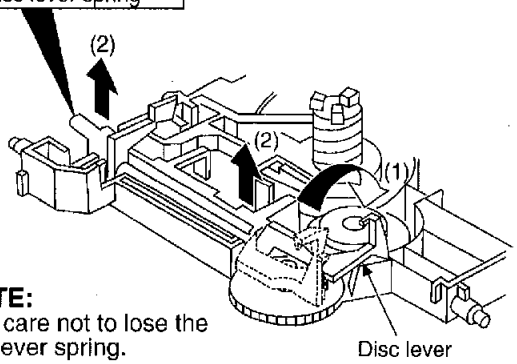
(Step 14)
Remove the slide plate 1 and slide plate 2.



(Installation for disc lever spring)

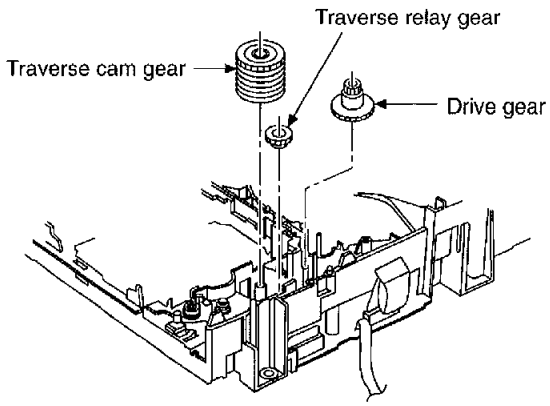


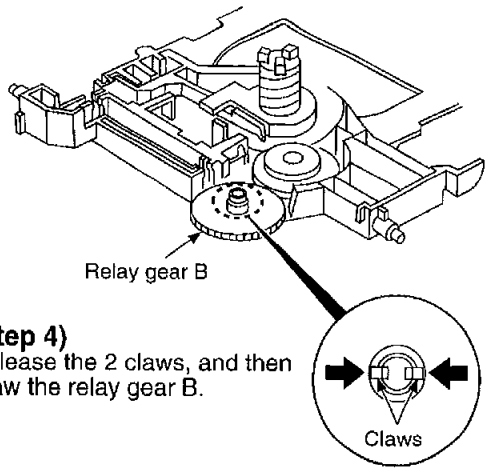
(Step 3)
Rotate the disc lever in the direction of arrow (1), draw the disc lever.



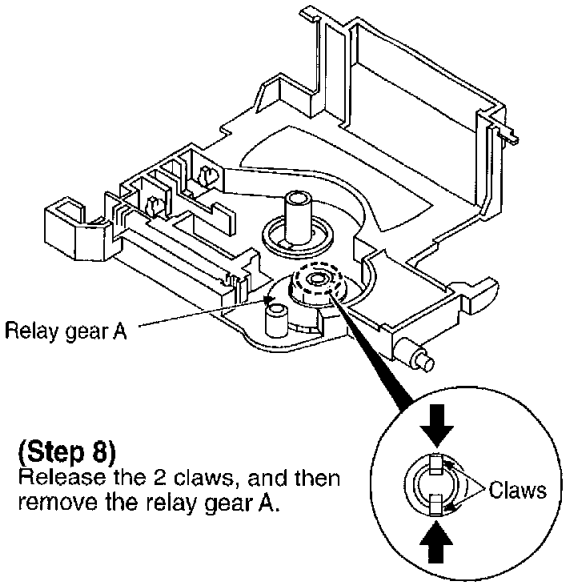
NOTE:
Take care not to lose the disc lever spring.

(Step 15)
Remove the traverse relay gear, traverse cam gear and drive gear.

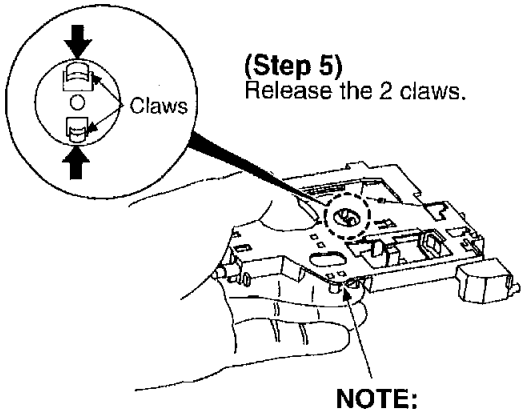




(Step 4)
Release the 2 claws, and then draw the relay gear B.



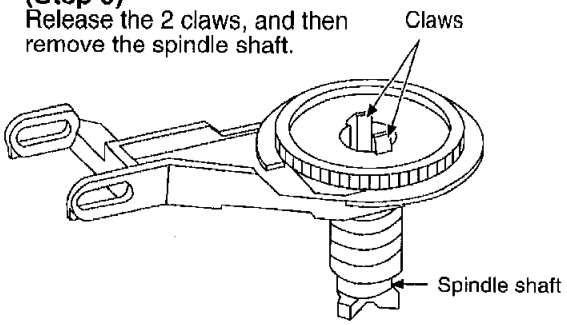
(Step 8)
Release the 2 claws, and then remove the relay gear A.

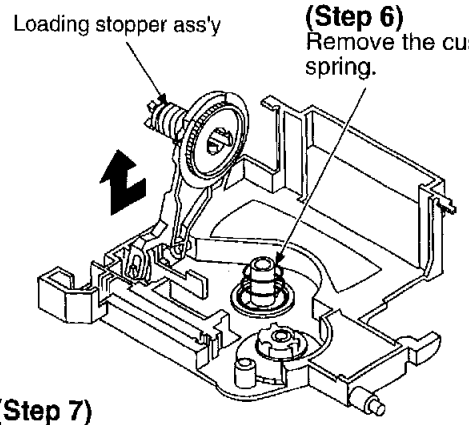


(Step 5)
Release the 2 claws.

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

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

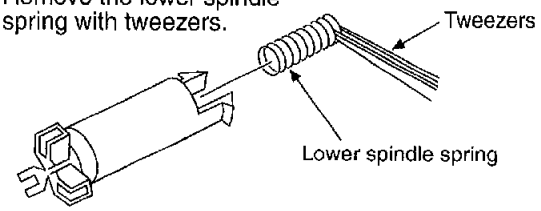




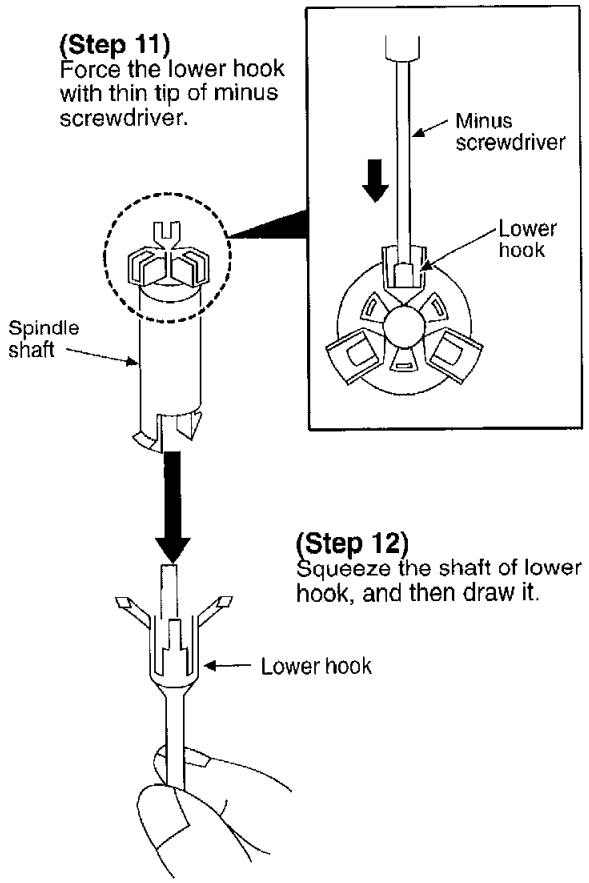
(Step 6)
Remove the cushion spring.

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

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

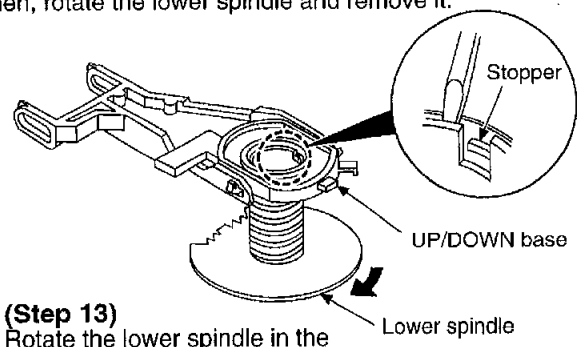


(Step 11)
Force the lower hook with thin tip of minus screwdriver.

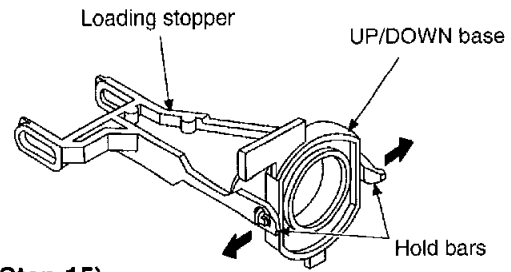


(Step 12)
Squeeze the shaft of lower hook, and then draw it.

(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.



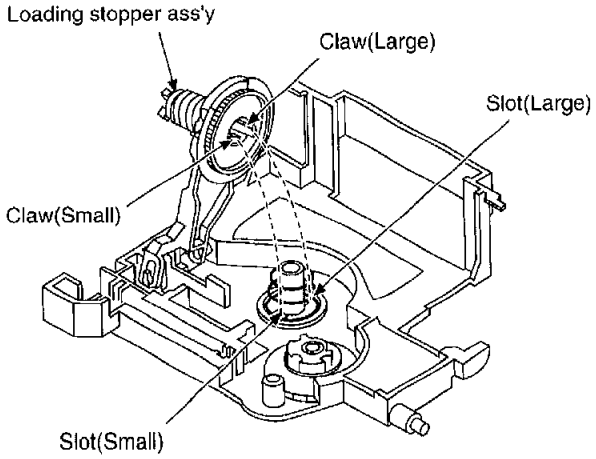
(Step 13)
Rotate the lower spindle in the direction of arrow until the lower spindle interferes with stopper.



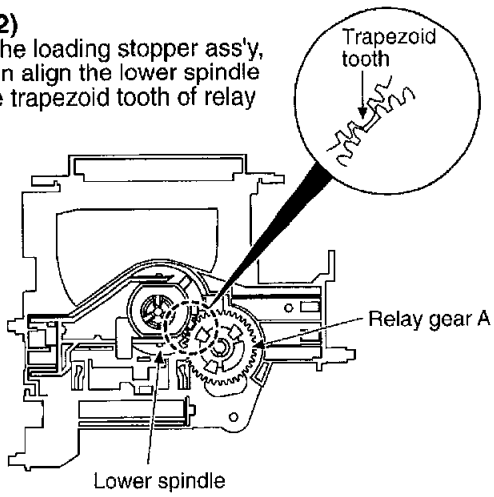
(Step 15)
Rotate the UP/DOWN base at a 90 degree angle. Then, spread the hold bars of loading stopper and remove the UP/DOWN base.

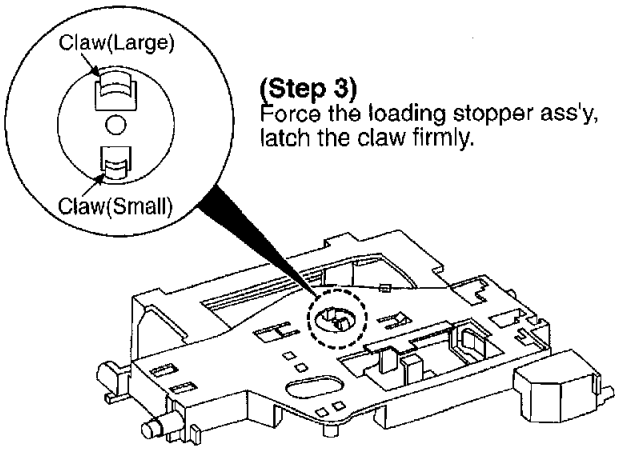
Installation for loading stopper ass'y

(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.)



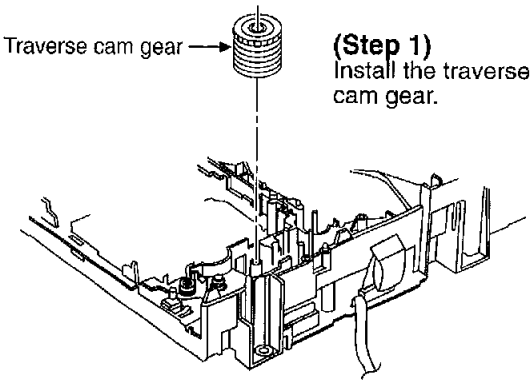
(Step 2)
Lower the loading stopper ass'y, and then align the lower spindle with the trapezoid tooth of relay gear A.





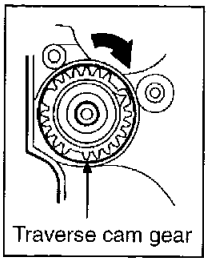
(Step 3)
Force the loading stopper ass'y, latch the claw firmly.

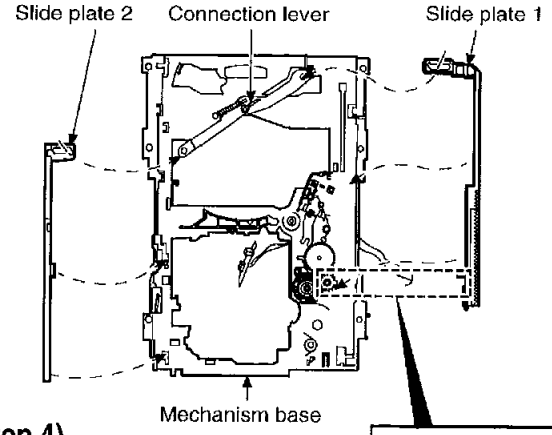
Reassembling for mechanism base drive unit



(Step 1)
Install the traverse cam gear.

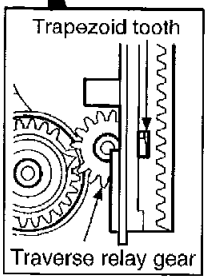
(Step 2)
Rotate the traverse cam gear to the direction of arrow.



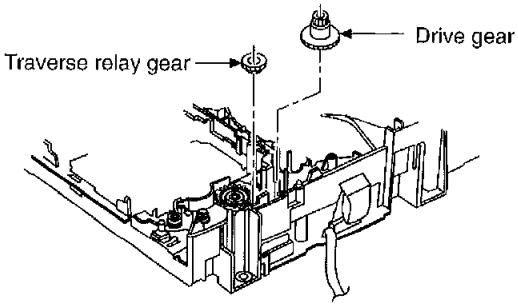


(Step 4)
Install the slide plate 2 to the mechanism base, and then match to the connection lever.

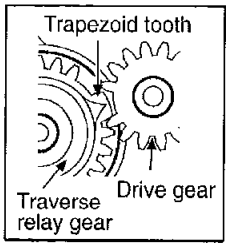
(Step 5)
Install the slide plate 1 to the mechanism base, and then match to the connection lever and align the trapezoid tooth of traverse relay gear with the slide plate 1.

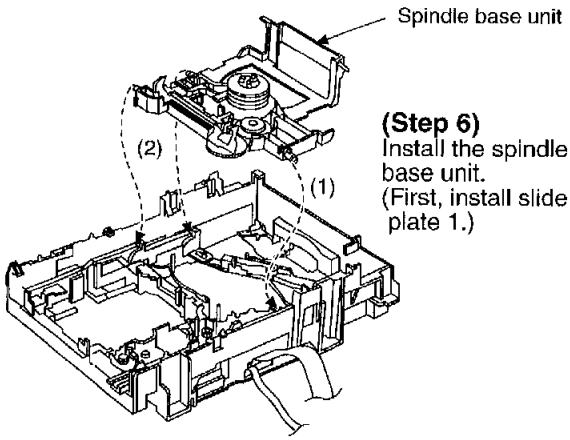


(Step 3)
Install the drive gear and traverse relay gear.

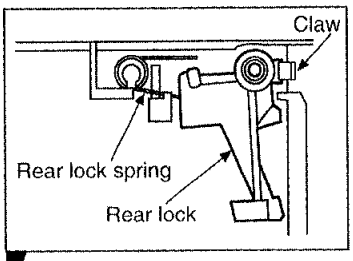


※ When installing the traverse relay gear, align the trapezoid tooth of gear with tooth of drive gear.

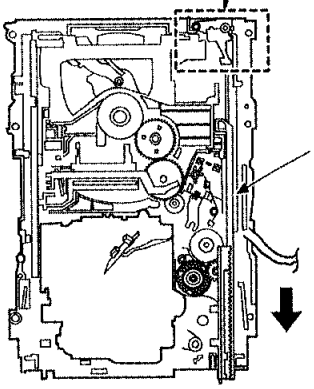




(Step 6)
Install the spindle base unit.
(First, install slide plate 1.)



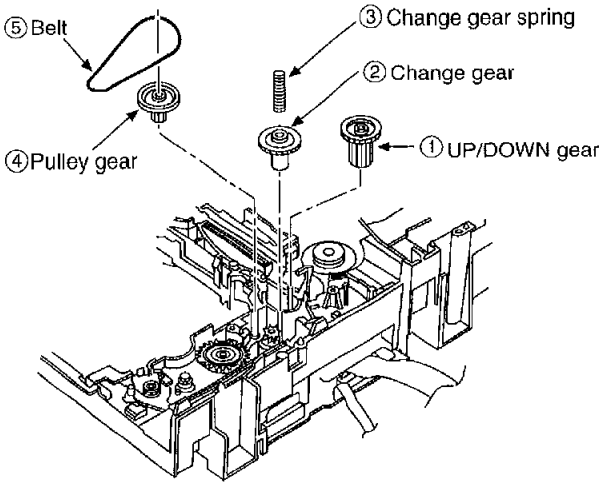
(Step 8)
Install the rear lock.
(The claw should be latched.)

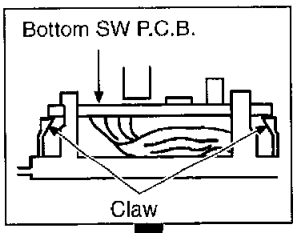


(Step 7)
Move the slide plate 1 to forward fully.

(Front side)

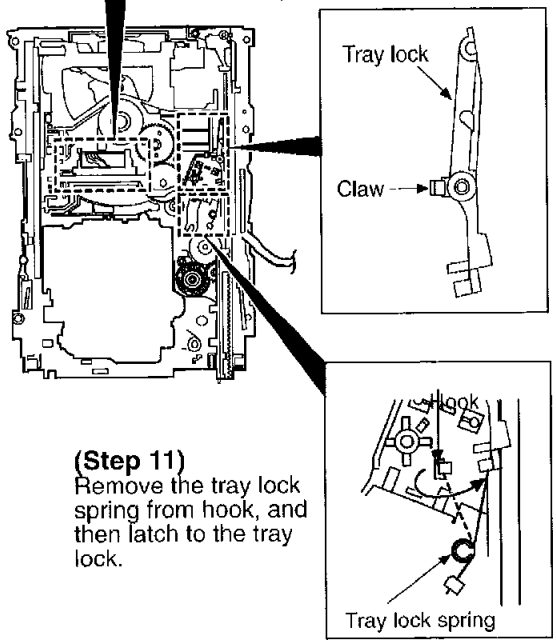
(Step 12)
Install the UP/DOWN gear, change gear, change gear spring, pulley gear and belt in the order of ① - ⑤ .





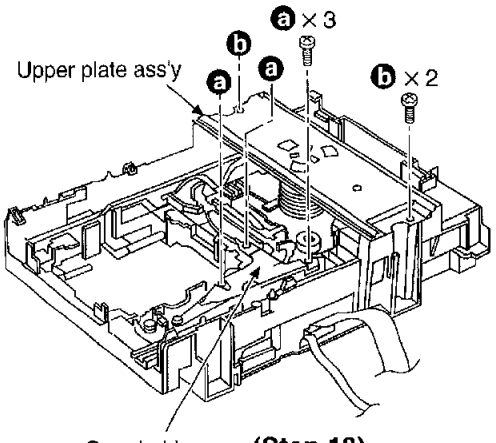
(Step 9)
Install the bottom SW P.C.B..
(The claw should be latched.)

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



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

(Step 14)
Install the upper plate ass'y, and then tighten the screw (ⓑ).



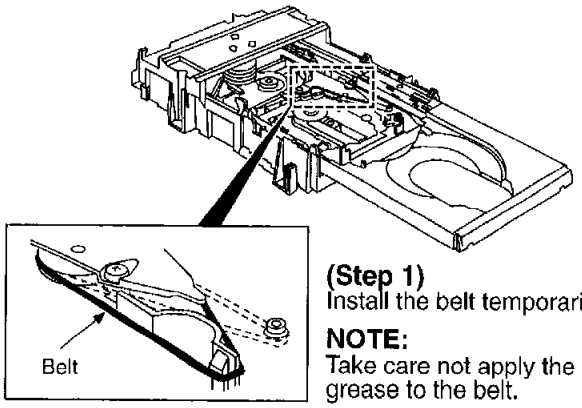
(Step 13)
Install the gear holder, and then tighten the screw (ⓐ).

(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.



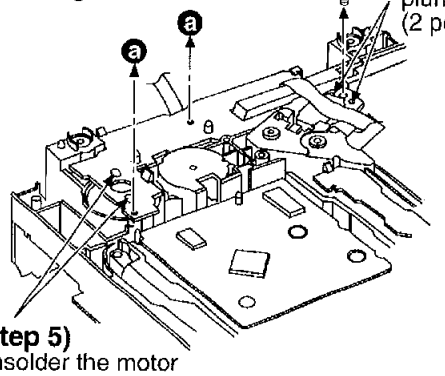
(Step 1)
Install the belt temporarily.

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

(Step 2)
Upset the CD changer unit.

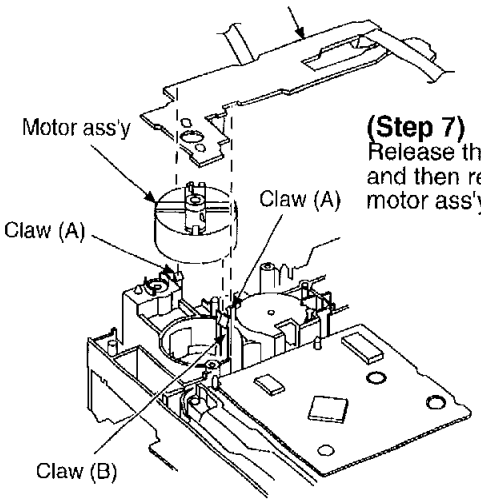
(Step 3)
ⓐ × 3

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



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

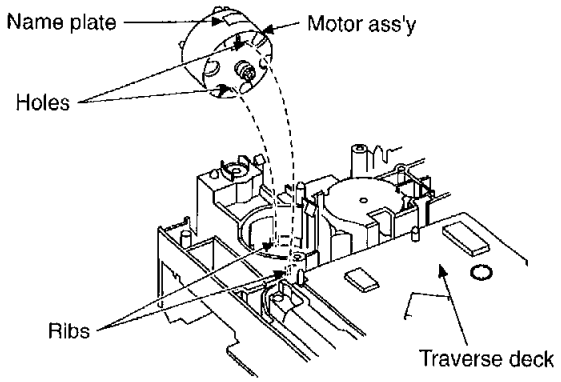
(Step 6)
Release the 2 claws (A), and then remove the motor P.C.B..



(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-EH760). 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 pickup lens.

6.1. Error Code Display Procedure

6.1.1. Automatic Adjustment Results

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 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. 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 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. Remove the disc and turn off the power. (The error code display mode is canceled.)

FL display	Symptom	Cause
H15	When CD tray opens, it closes by itself.	Tray open detect switch (S3) fault.
F15	Does not play, even when CD play button is pressed.	Pickup rest position detection switch (S701) fault.
F16	Disc tray goes on up.	Clump switch (S4) fault.
F17	Disc tray goes on down.	Bottom switch (S5) fault.
F26	Does not move even when "▶"(PLAY) button is pressed.	System control or 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		

Table 6-1.

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.

Track No. Focus Tracking CLV servo

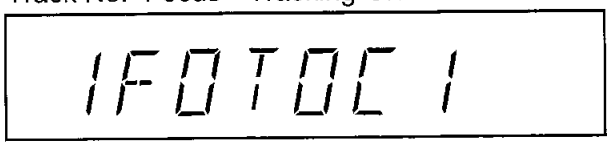


Fig. 6-2.

(Example)

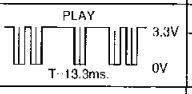
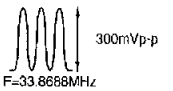
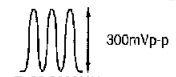
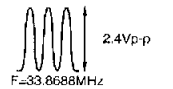
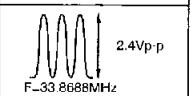
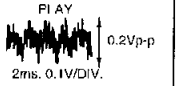
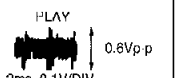
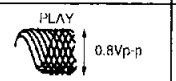
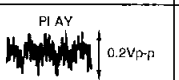
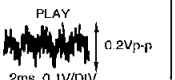
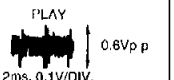
	"0" level	"1" level
Focus system	normal	defective
Tracking system	normal	defective
CLV servo system	defective	normal

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 pickup 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	IC702-8 pin	0V	0 V
			MCLK	IC702-7 pin		3.4 V
			MLD	IC702-9 pin		3.4 V
			SENSE	IC702-10 pin	-	-
			/RST	IC702-18 pin	3.4 V	3.4 V
			X1 IN	IC702-58 pin		
			X2 OUT	IC702-59 pin		
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 pickup.	FE	IC702-32 pin		1.7 V
			TE	IC702-33 pin		1.7 V
			FOD	IC702-28 pin	1.7 V	1.7 V
			TRD	IC702-27 pin	1.7 V	1.7 V
			KICK	IC702-26 pin	-	-
			/FLOCK	IC702-11 pin	-	-
			/RFDET	IC702-38 pin	0 V	3.3 V
			RF	TJ701		1.0 V
			STAT	IC702-17 pin	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 pickup.	FBAL	IC702-30 pin	1.7 V	1.7 V
			RF	IC701-8 pin		1.0 V
			FE	IC702-32 pin		1.7 V
			/TLOCK	IC702-12 pin	-	-
			OFT	IC702-36 pin	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 pickup.	FE	IC702-32 pin		1.7 V
			TE	IC702-33 pin		1.7 V
			/TLOCK	IC702-12 pin	-	-
			OFT	IC702-36 pin	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.

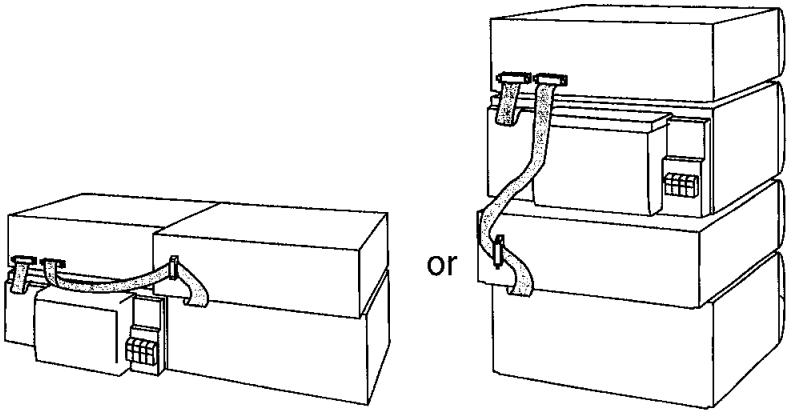


Fig. 7-1.

8 Schematic Diagram Note

- **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 (►►/►►I)
S614:	Play switch (►)
S615:	Stop switch (■)
S616:	R.Skip/search switch (I◄◄/◄◄)
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.

- **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

9 Schematic Diagram

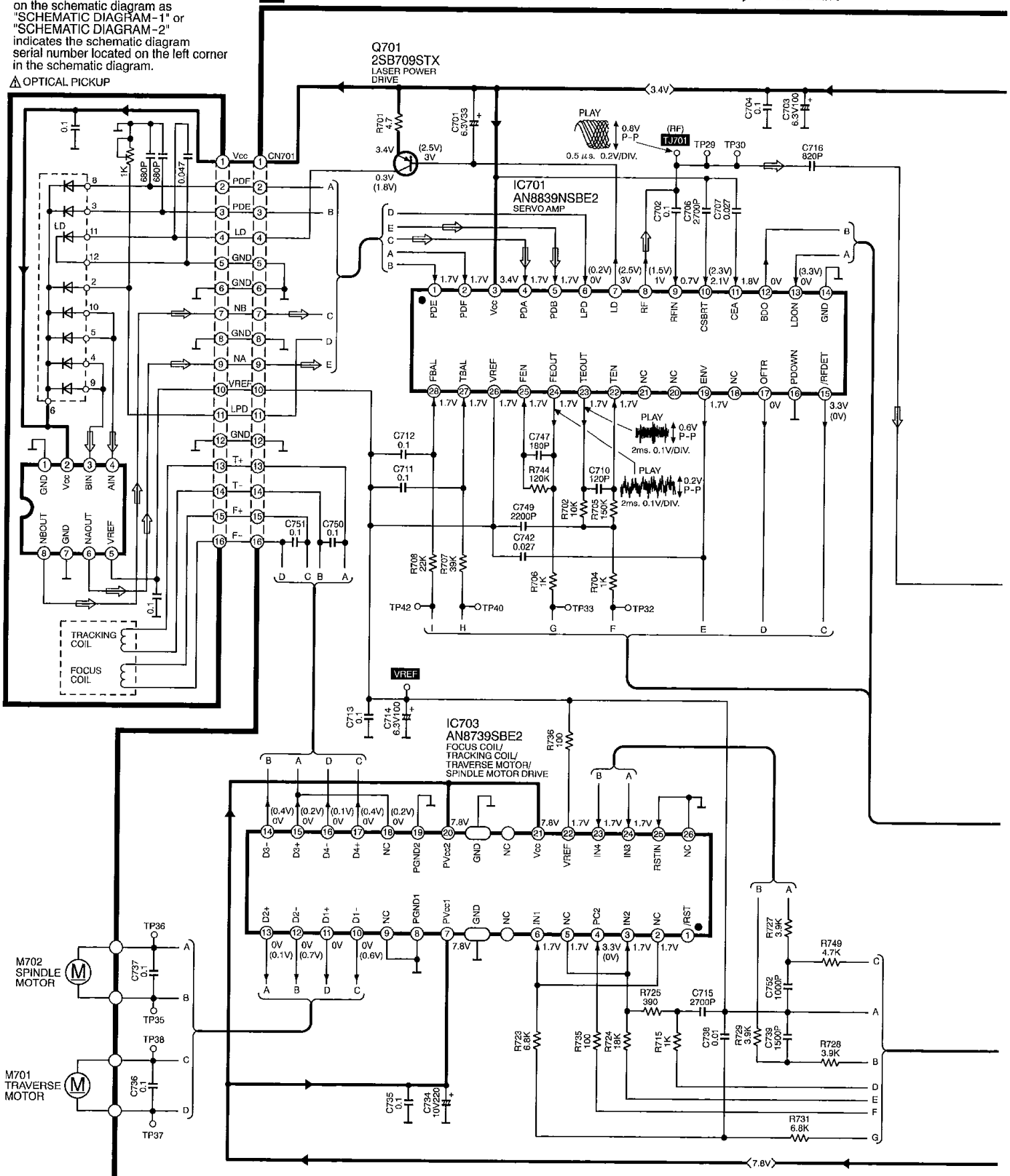
SCHEMATIC DIAGRAM-1

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.

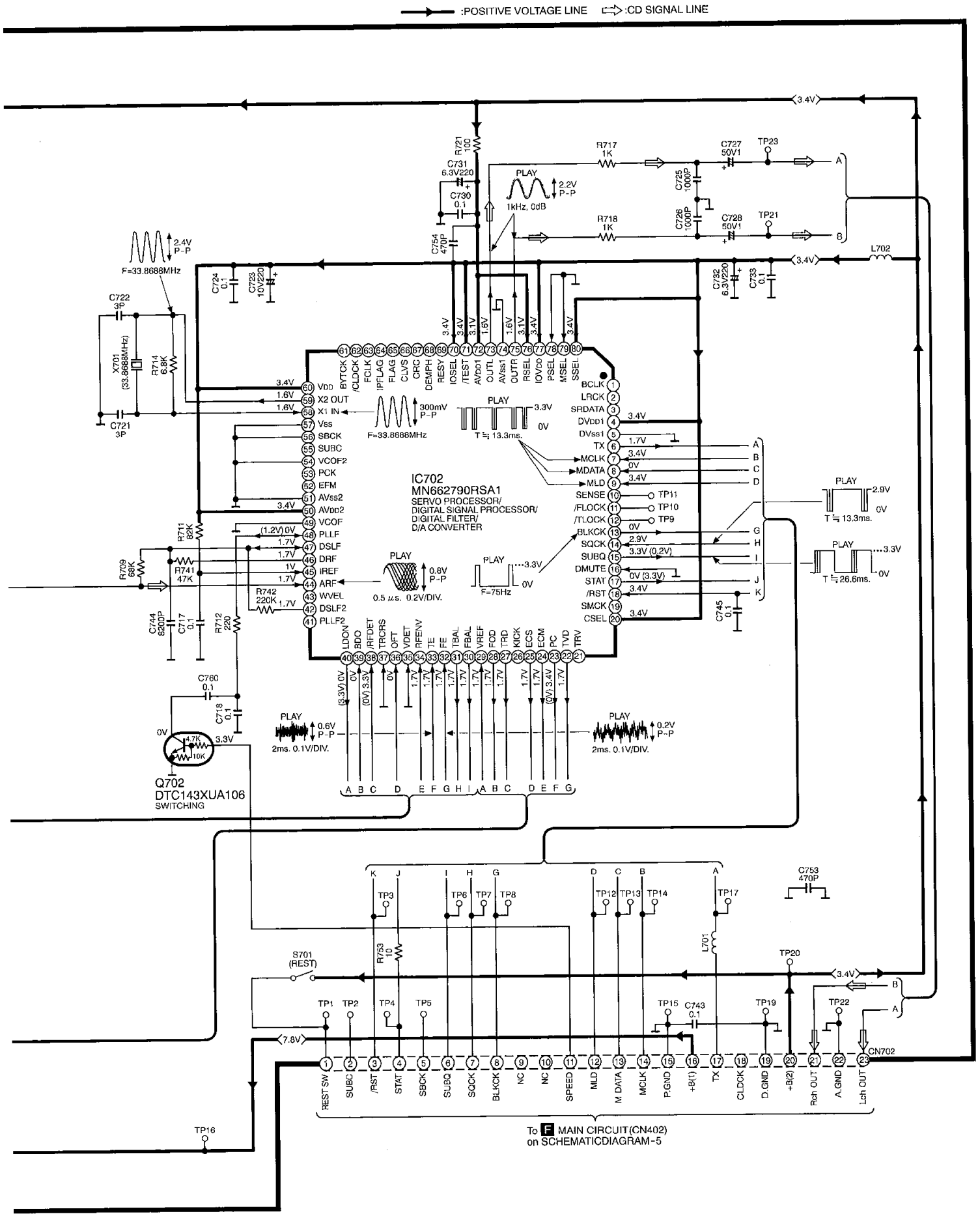
⚠ OPTICAL PICKUP

A CD SERVO CIRCUIT

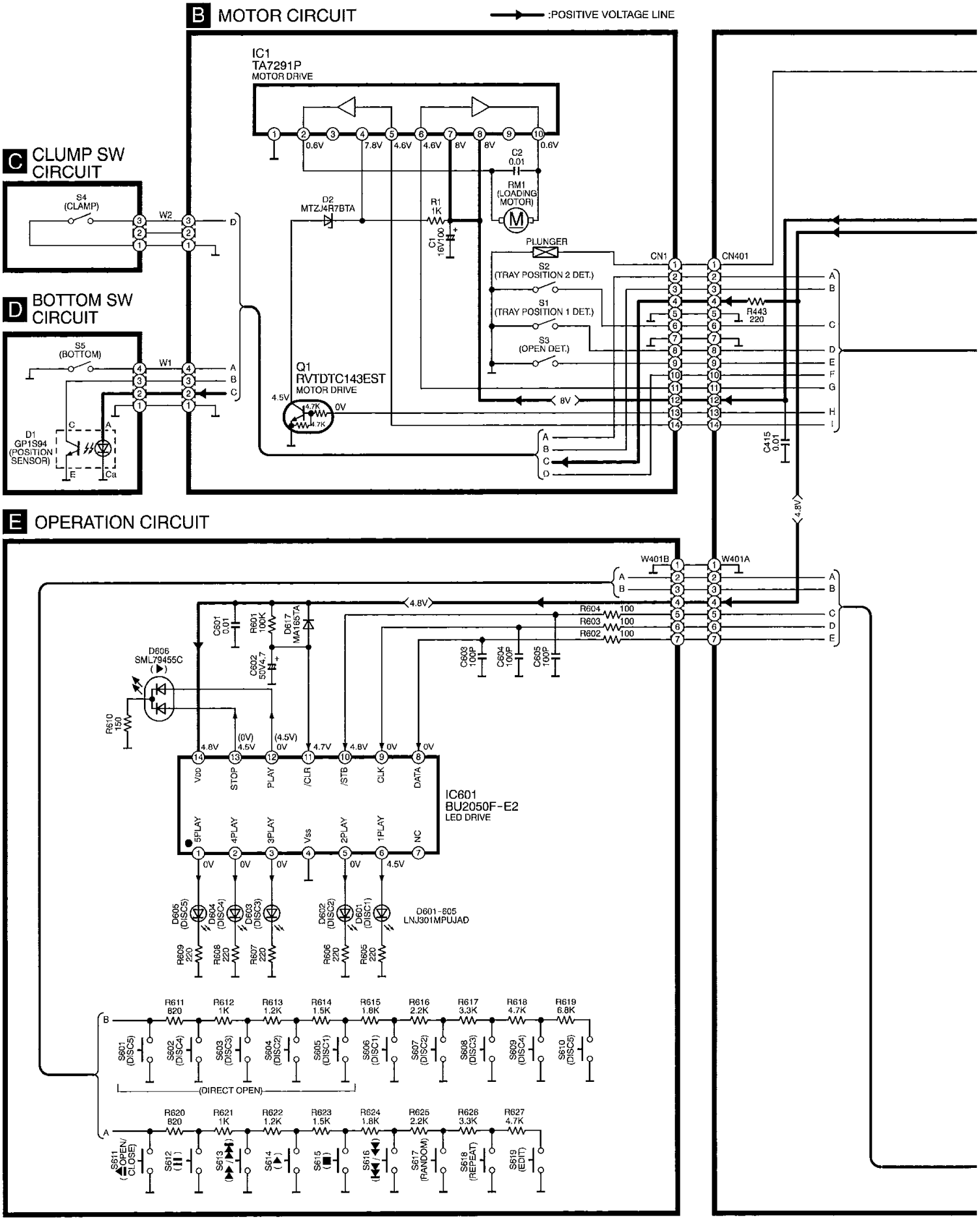
:POSITIVE VOLTAGE LINE :CD SIGNAL LINE



SCHEMATIC DIAGRAM-2



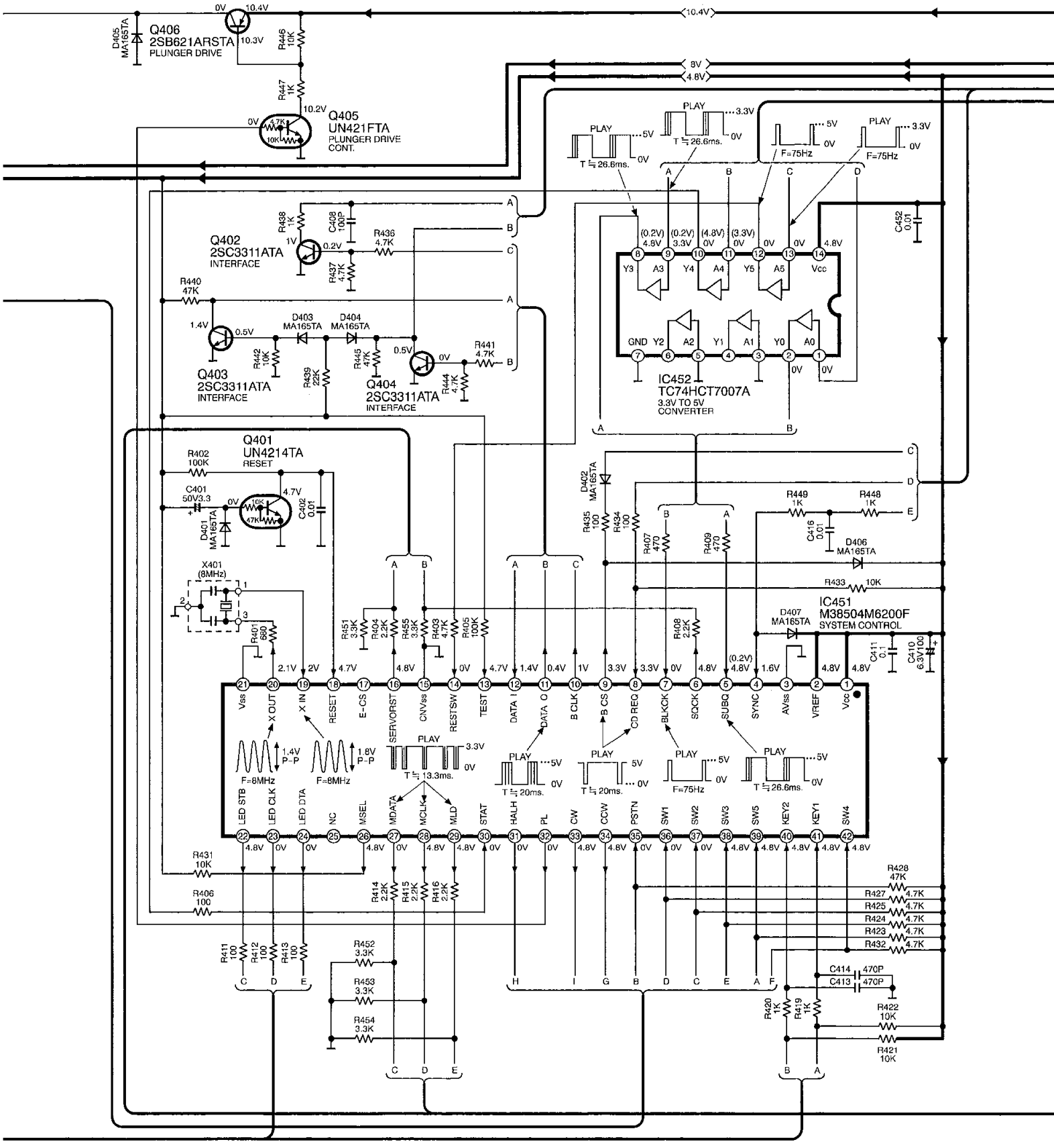
SCHEMATIC DIAGRAM-3



SCHEMATIC DIAGRAM-4

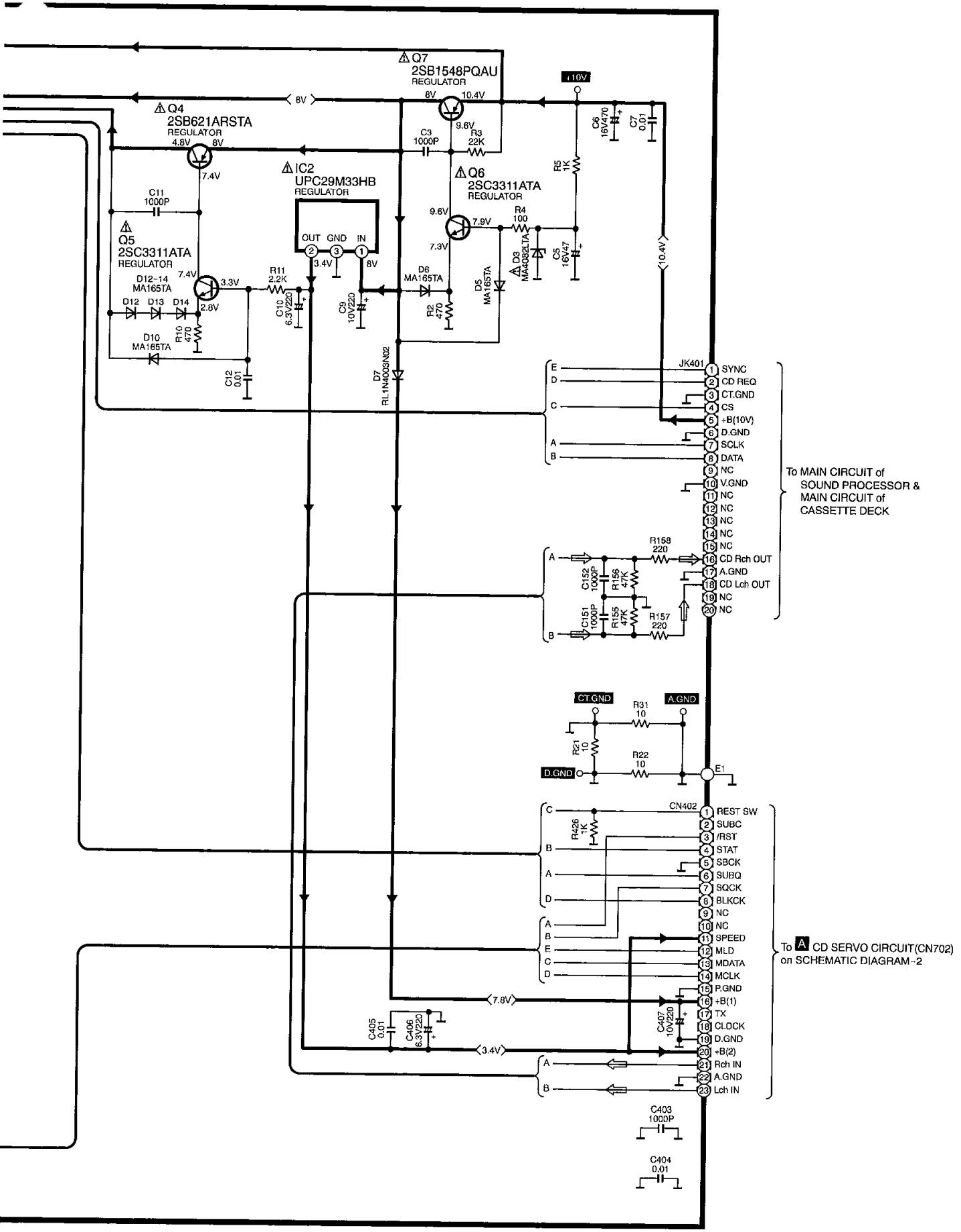
F MAIN CIRCUIT

:POSITIVE VOLTAGE LINE

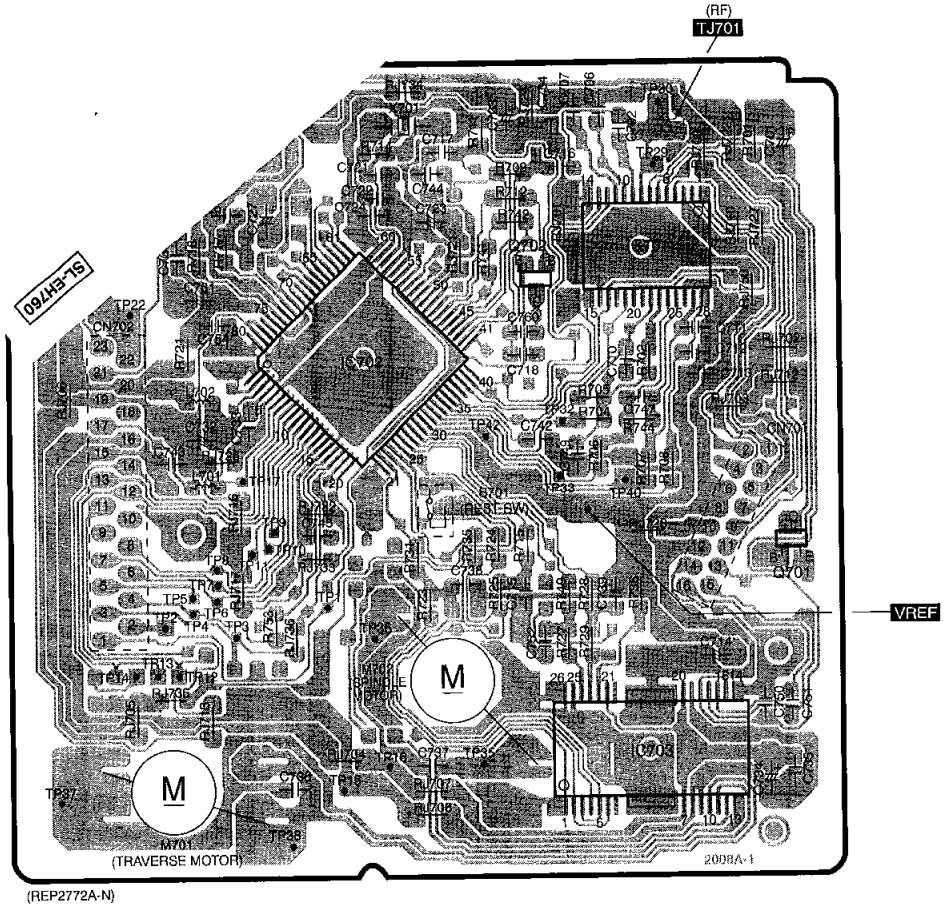


SCHEMATIC DIAGRAM-5

:POSITIVE VOLTAGE LINE :CD SIGNAL LINE



...dified at any time with the development of new technology.

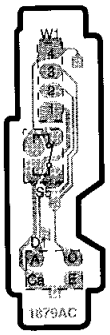


(REP2772A-N)

C CLAMP SW P.C.B.

(REP2578A-N)

D BOTTOM SW P.C.B.

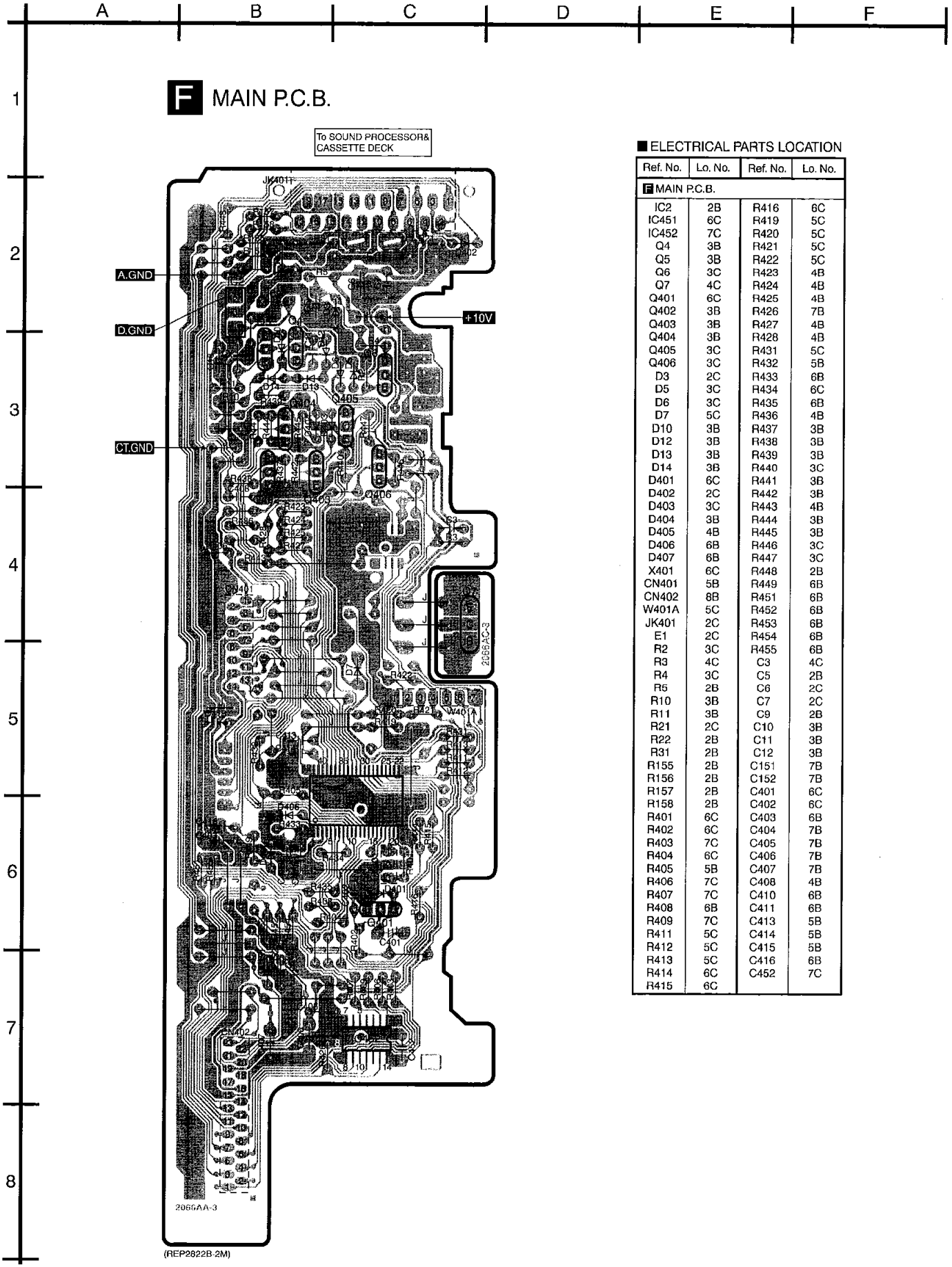


(REP2578A-N)

■ ELECTRICAL PARTS LOCATION

Ref. No.	Lo. No.	Ref. No.	Lo. No.
A CD SERVO P.C.B.			
IC701	2D	RJ721	2C
IC702	3B	RJ722	2D
IC703	4D	RJ724	1C
Q701	3D	RJ726	3B
Q702	2C	RJ727	2D
L701	3B	RJ728	3D
L702	3B	RJ731	2B
X701	1C	RJ732	3B
S701	3C	RJ733	3B
CN701	3D	RJ734	1C
CN702	3A	RJ735	4A
M701	4A	RJ736	4B
M702	4C	RJ750	2D
TJ701	2D	C701	2D
R701	2D	C702	2D
R702	3D	C703	1C
R704	3C	C704	1C
R705	3C	C706	1C
R706	3C	C707	1C
R707	3D	C710	3D
R708	3D	C711	2D
R709	2C	C712	3D
R711	2C	C713	3D
R712	2C	C714	4D
R714	2B	C715	4C
R715	3C	C716	2C
R717	2B	C717	2C
R718	2B	C718	3C
R721	3B	C721	2B
R723	4C	C722	2B
R724	3C	C723	2C
R725	4C	C724	2B
R727	4C	C725	2B
R728	4C	C726	2B
R729	4C	C727	2B
R731	3C	C728	2B
R735	3C	C730	2B
R736	4D	C731	2B
R741	2C	C732	3B
R742	2C	C733	3B
R744	3D	C734	4D
R749	4C	C735	4D
R753	4B	C736	4B
RJ701	2C	C737	4C
RJ702	3D	C738	4C
RJ703	3D	C739	4C
RJ704	4B	C742	3C
RJ705	4A	C743	3A
RJ706	3A	C744	2C
RJ707	4C	C745	3B
RJ708	5C	C747	3D
RJ709	2D	C749	3C
RJ710	2D	C750	4D
RJ712	3D	C751	4D
RJ713	4B	C752	4C
RJ714	2A	C753	2A
RJ716	3B	C754	2B
RJ717	4B	C760	2C
C CLAMP SW P.C.B.			
S4	7A	W2	6A
D BOTTOM SW P.C.B.			
D1	7D	W1	6D
S5	7D		

F MAIN P.C.B.

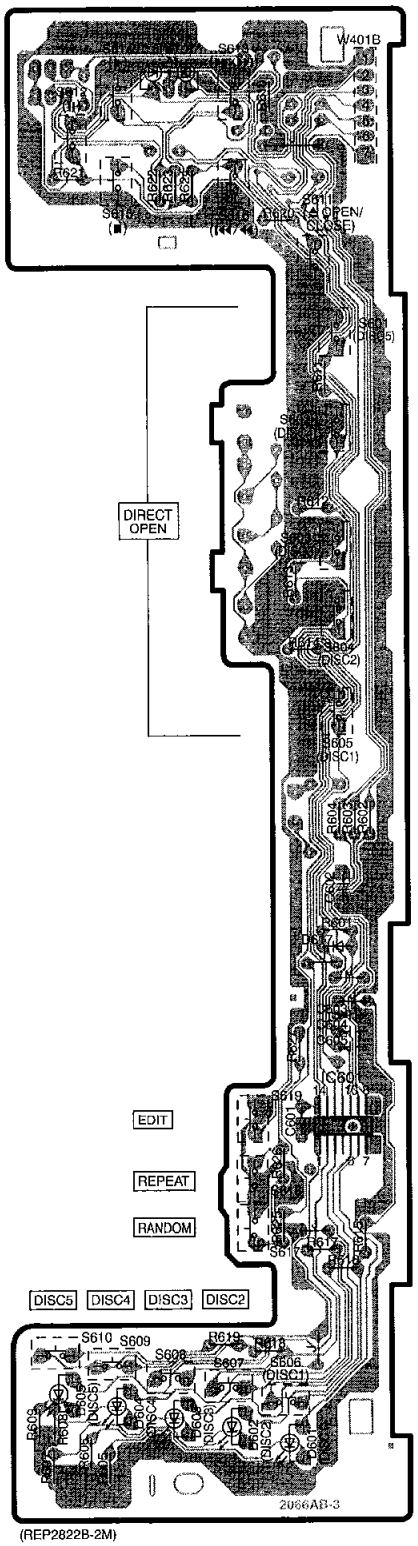


(REP2822B-2M)

■ ELECTRICAL PARTS LOCATION

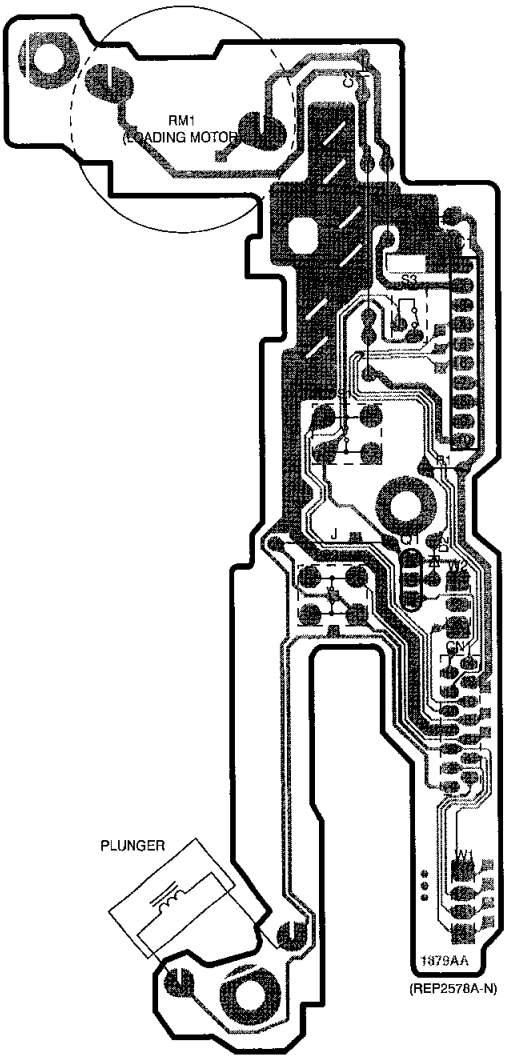
Ref. No.	Lo. No.	Ref. No.	Lo. No.
F MAIN P.C.B.			
IC2	2B	R416	6C
IC451	6C	R419	5C
IC452	7C	R420	5C
Q4	3B	R421	5C
Q5	3B	R422	5C
Q6	3C	R423	4B
Q7	4C	R424	4B
Q401	6C	R425	4B
Q402	3B	R426	7B
Q403	3B	R427	4B
Q404	3B	R428	4B
Q405	3C	R431	5C
Q406	3C	R432	5B
D3	2C	R433	6B
D5	3C	R434	6C
D6	3C	R435	6B
D7	5C	R436	4B
D10	3B	R437	3B
D12	3B	R438	3B
D13	3B	R439	3B
D14	3B	R440	3C
D401	6C	R441	3B
D402	2C	R442	3B
D403	3C	R443	4B
D404	3B	R444	3B
D405	4B	R445	3B
D406	6B	R446	3C
D407	6B	R447	3C
X401	6C	R448	2B
CN401	5B	R449	6B
CN402	8B	R451	6B
W401A	5C	R452	6B
JK401	2C	R453	6B
E1	2C	R454	6B
R2	3C	R455	6B
R3	4C	C3	4C
R4	3C	C5	2B
R5	2B	C6	2C
R10	3B	C7	2C
R11	3B	C9	2B
R21	2C	C10	3B
R22	2B	C11	3B
R31	2B	C12	3B
R155	2B	C151	7B
R156	2B	C152	7B
R157	2B	C401	6C
R158	2B	C402	6C
R401	6C	C403	6B
R402	6C	C404	7B
R403	7C	C405	7B
R404	6C	C406	7B
R405	5B	C407	7B
R406	7C	C408	4B
R407	7C	C410	6B
R408	6B	C411	6B
R409	7C	C413	5B
R411	5C	C414	5B
R412	5C	C415	5B
R413	5C	C416	6B
R414	6C	C452	7C
R415	6C		

E OPERATION P.C.B.



(REP2822B-2M)

B MOTOR P.C.B.



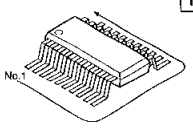
(REP2578A-N)

■ELECTRICAL PARTS LOCATION

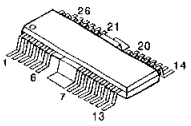
Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.
B MOTOR P.C.B.							
IC1	3E	S2	4E	W2	4E	C2	1E
Q1	4E	S3	3E	RM1	2D		
D2	4E	CN1	4E	R1	3E		
S1	3E	W1	5E	C1	2E		
E OPERATION P.C.B.							
IC601	6B	S608	7B	R603	5B	R618	7B
D601	8B	S609	7A	R604	5B	R619	7B
D602	8B	S610	7A	R605	8A	R620	2B
D603	8B	S611	2B	R606	8A	R621	2A
D604	7A	S612	2A	R607	8A	R622	2B
D605	7A	S613	2B	R608	8A	R623	2B
D606	2B	S614	2A	R609	8A	R624	2B
D617	5B	S615	2A	R610	2B	R625	7B
S601	3B	S616	2B	R611	3B	R626	6B
S602	3B	S617	7B	R612	3B	R627	6B
S603	4B	S618	6B	R613	4B	C601	6B
S604	4B	S619	6B	R614	4B	C602	5B
S605	4B	W401B	2B	R615	7B	C603	6B
S606	7B	R601	5B	R616	7B	C604	6B
S607	7B	R602	5B	R617	7B	C605	6B

11 Type Illustration of ICs, Transistors and Diodes

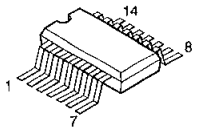
AN8839NSBE2	28PIN
BU2050F-E2	14PIN
M38504M6200F	42PIN



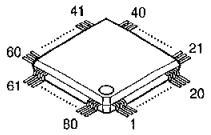
AN8739SBE2



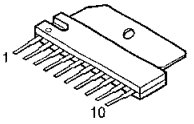
TC74HCT7007A



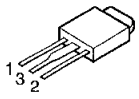
MN662790RSA1



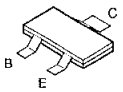
TA7291P

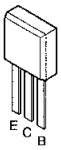


UPC29M33HB



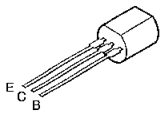
2SB709STX
DTC143XUA106



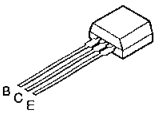


2SC3311ATA
UN421FTA
UN4214TA

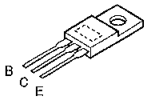
2SB621ARSTA



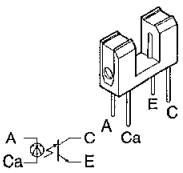
RVTDTC143EST



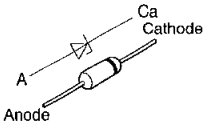
2SB1548PQAU



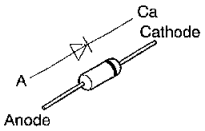
GP1S94



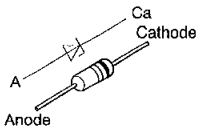
MTZJ4R7BTA



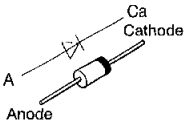
MA165TA



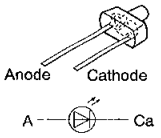
MA4082LTA



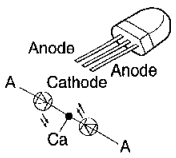
RL1N4003N02



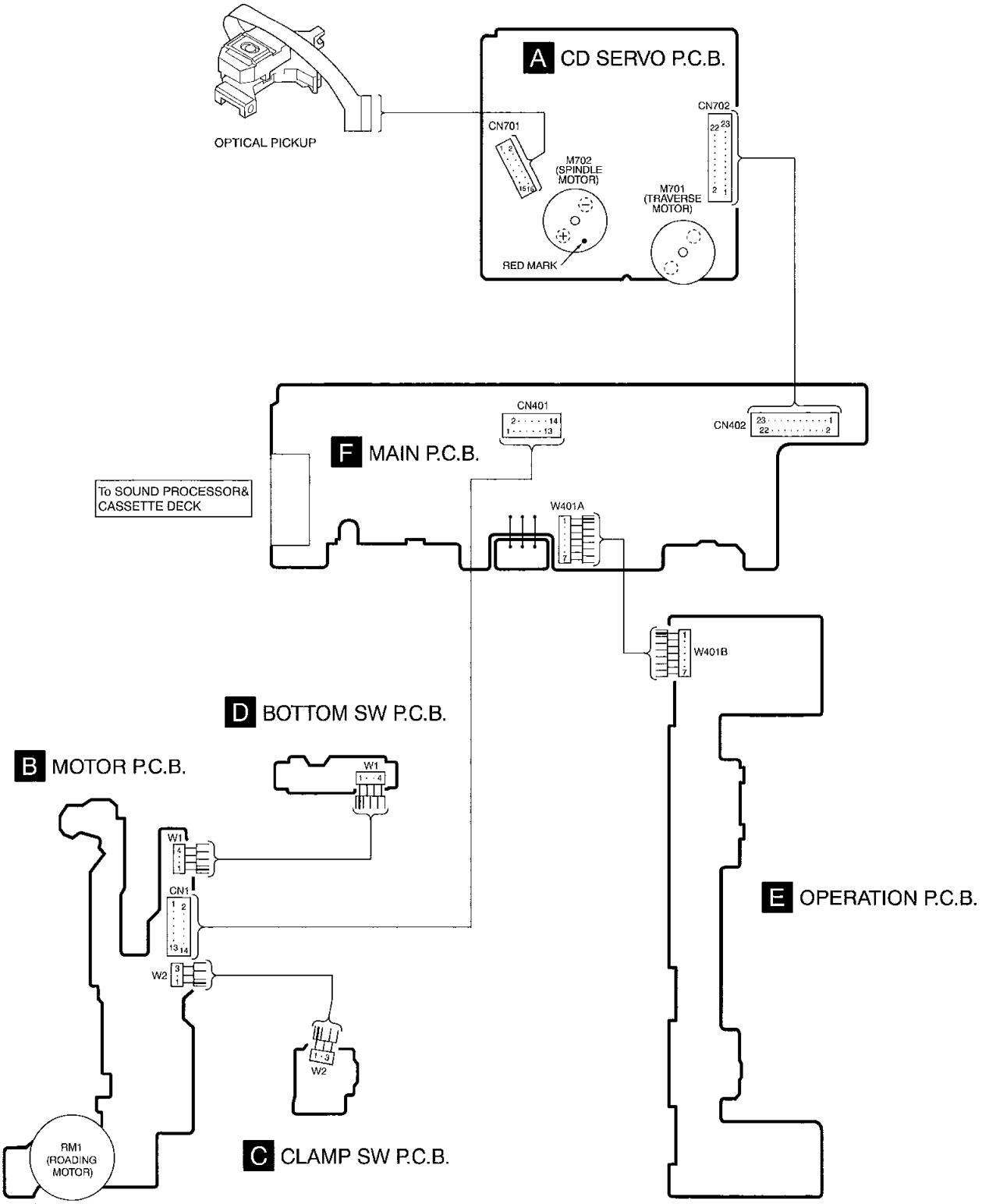
LNJ301MPUJAD



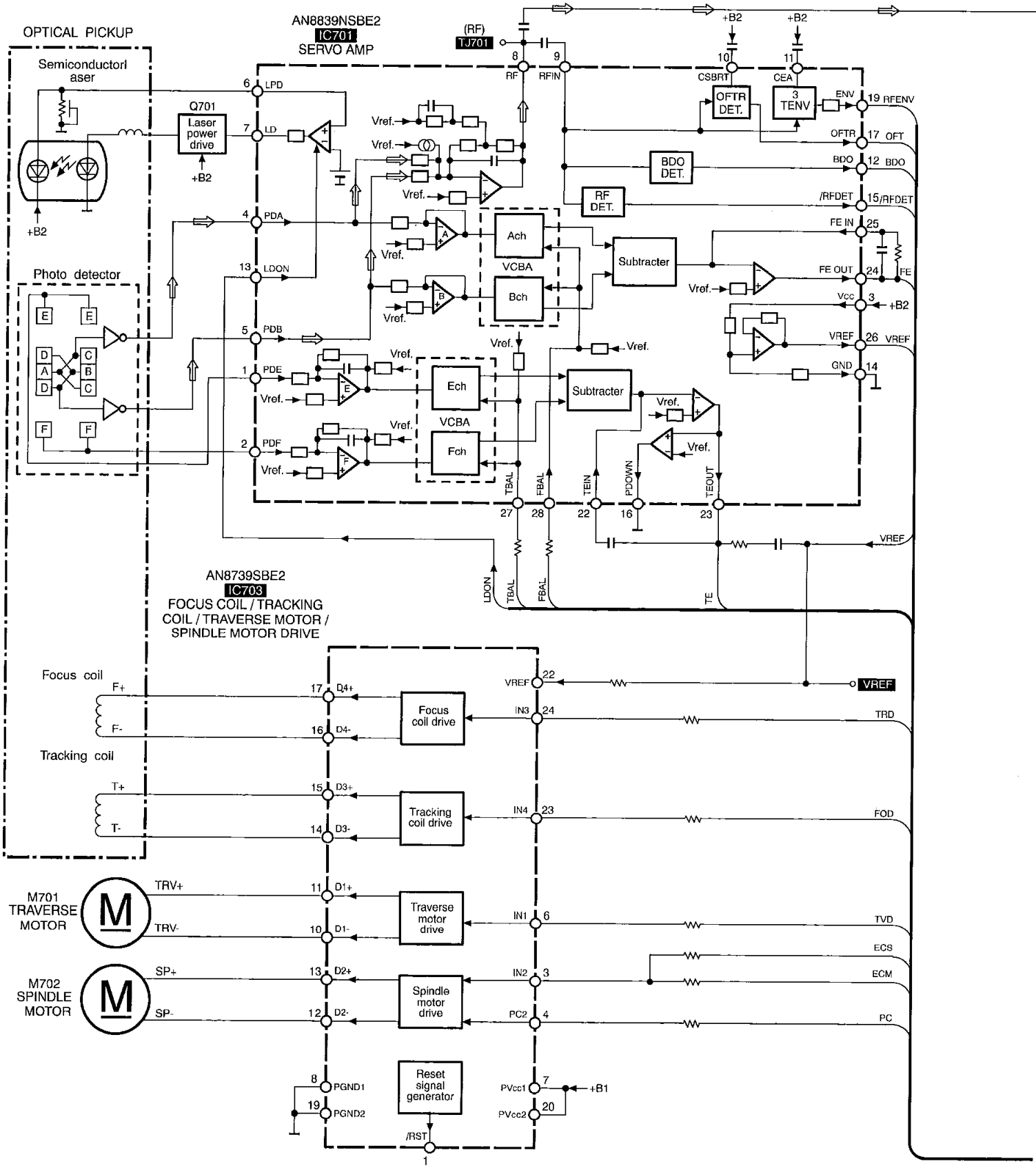
SML79455C

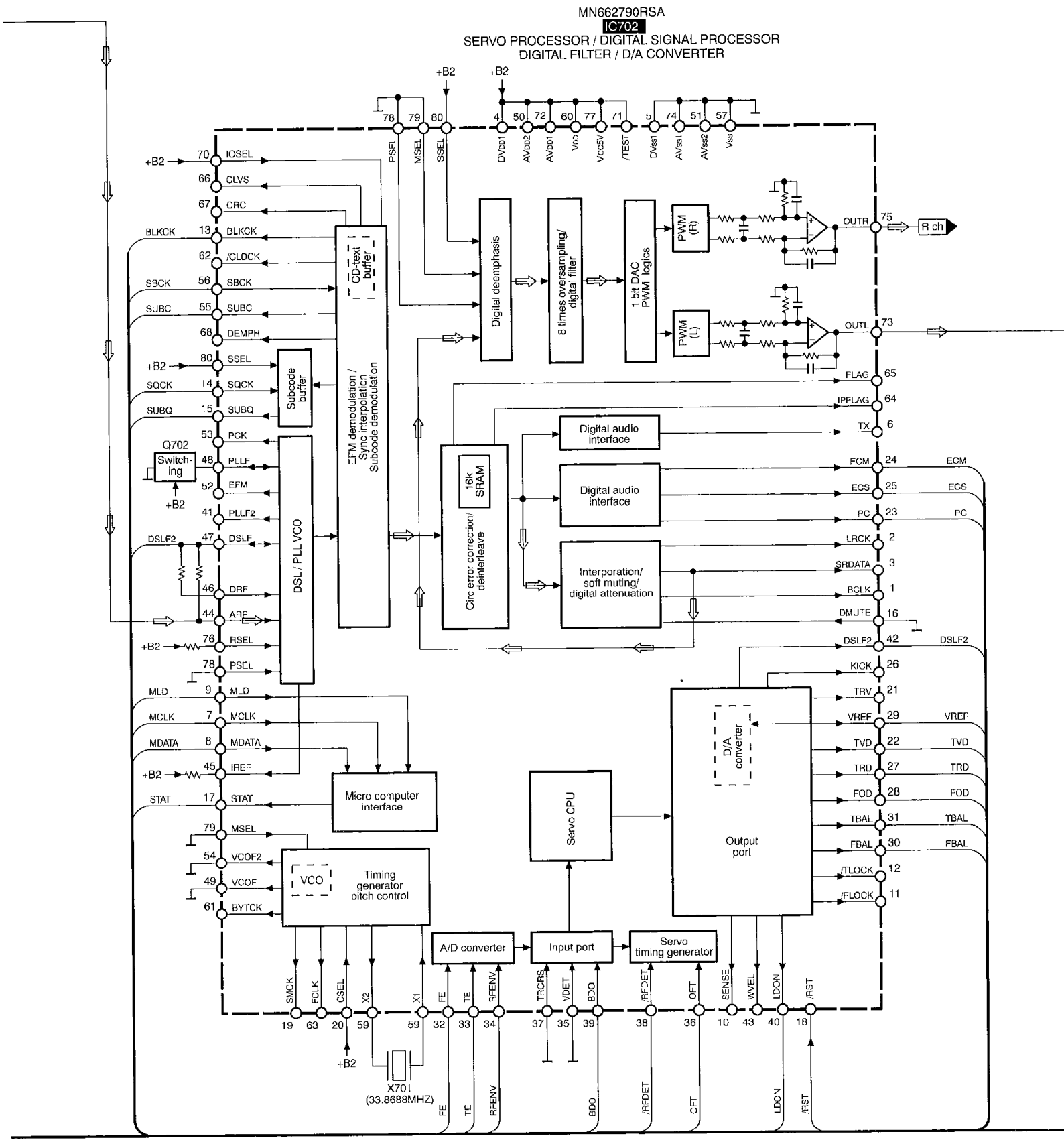


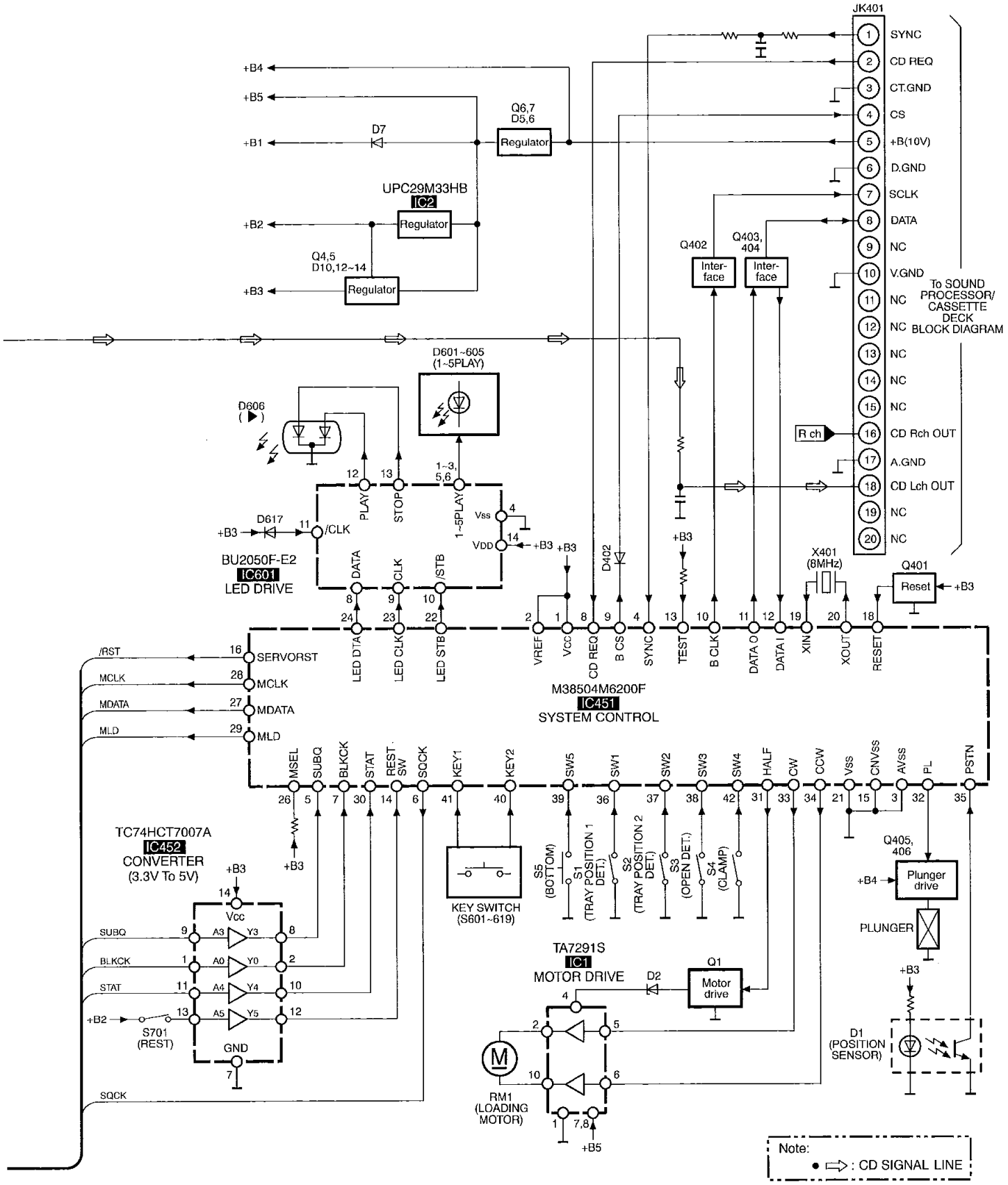
12 Wiring Connection Diagram



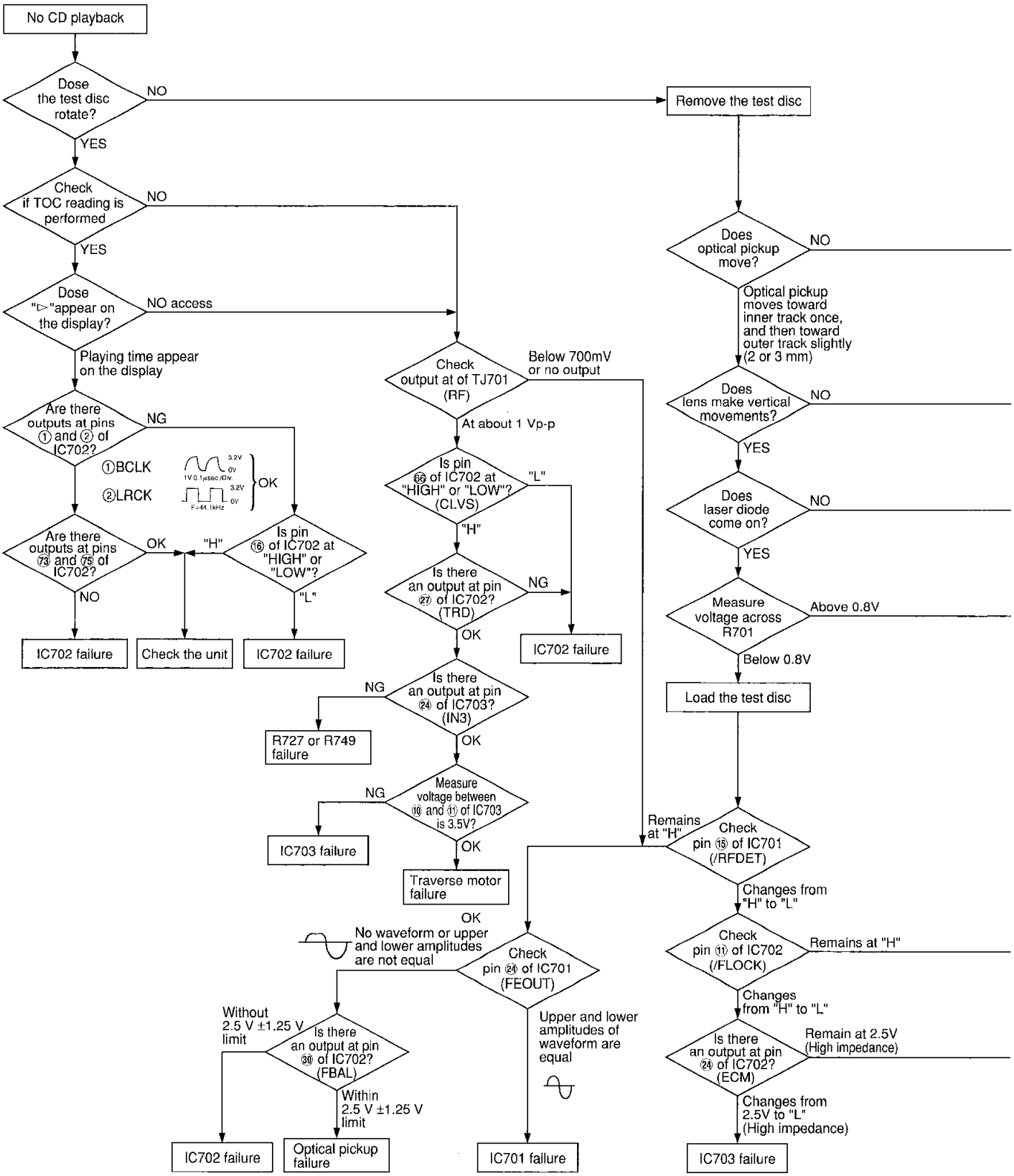
13 Block Diagram

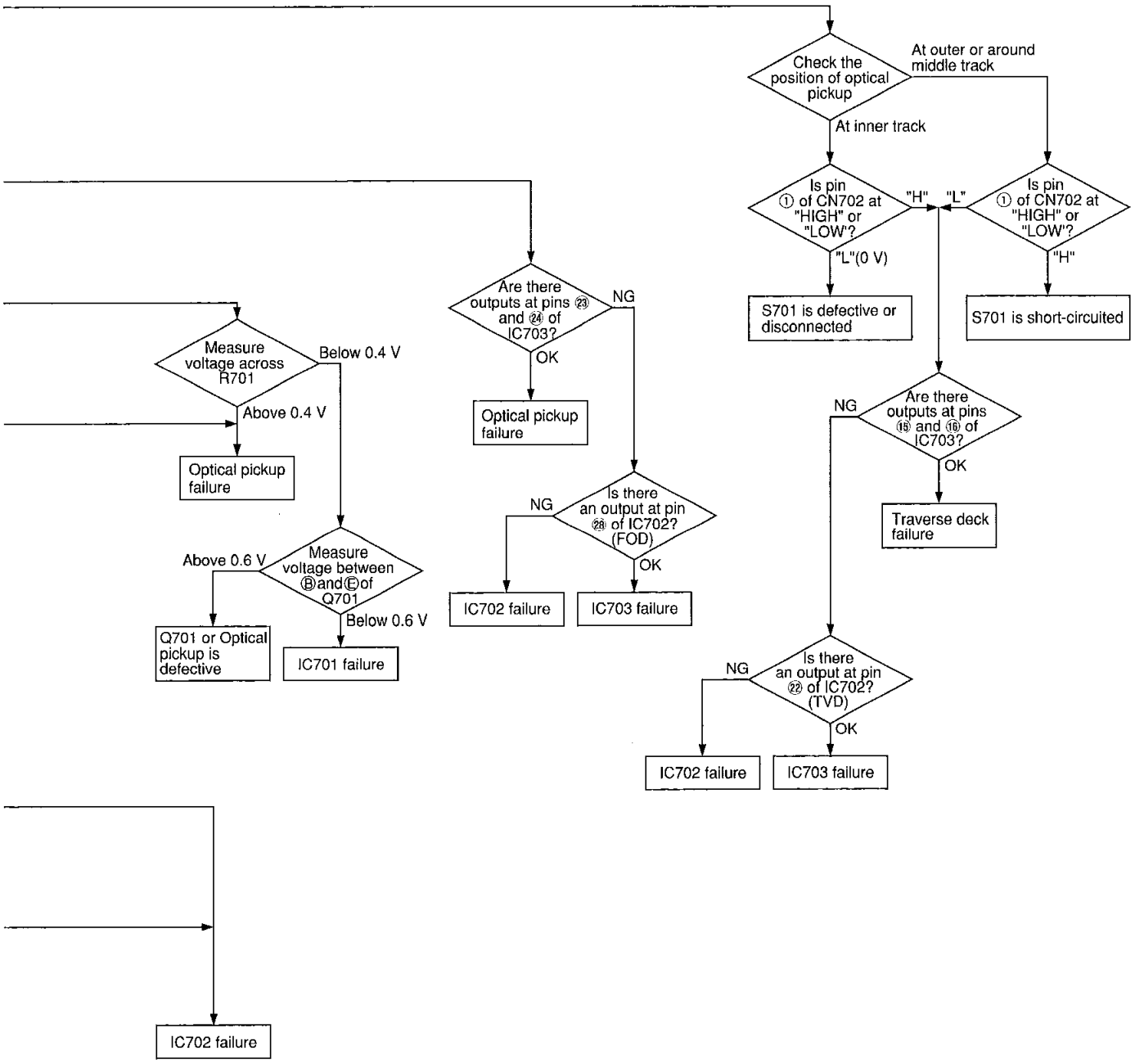



MN662790RSA
IC702
SERVO PROCESSOR / DIGITAL SIGNAL PROCESSOR
DIGITAL FILTER / D/A CONVERTER
+B2
PSEL
MSEL
SSEL
DVDD1
AVDD2
AVDD1
VDD
VCC5V
/TEST
DVSS1
AVSS1
AVSS2
VSS
IOSEL
CLVS
CRC
BLKCK
/CLDCK
SBCK
SUBC
DEMPH
SSEL
SQCK
SUBQ
PCK
PLLF
EFM
PLLF2
DSLF
DRF
RFE
RSEL
PSEL
MLD
MCLK
MDATA
IREF
STAT
MSEL
VCOF2
VCOF
BYTCK
CD-text buffer
Subcode buffer
EFM demodulation / Sync interpolation Subcode demodulation
DSL / PLL VCO
Digital deemphasis
8 times oversampling/ digital filter
1 bit DAC PWM logics
PWM (R)
PWM (L)
OUTR
OUTL
R ch
FLAG
IPFLAG
TX
ECM
ECS
PC
LRCK
SRDATA
BCLK
DMUTE
DSLF2
KICK
TRV
VREF
TVD
TRD
FOD
TBAL
FBAL
/TLOCK
/FLOCK
16k SRAM
Circ error correction/ deinterleave
Digital audio interface
Digital audio interface
Interporation/ soft muting/ digital attenuation
Q702
Switch-ing
Micro computer interface
Servo CPU
D/A converter
Output port
VCO
Timing generator pitch control
A/D converter
Input port
Servo timing generator
SMCK
FCLK
CSEL
X2
X1
FE
TE
RFENV
TRCRS
VDET
BDO
/RFDET
OFT
SENSE
WVEL
LDON
/RST
X701
(33.8688MHZ)


JK401
SYNC
CD REQ
CT.GND
CS
+B(10V)
D.GND
SCLK
DATA
NC
V.GND
NC
NC
NC
NC
CD Rch OUT
A.GND
CD Lch OUT
NC
NC
To SOUND PROCESSOR/ CASSETTE DECK BLOCK DIAGRAM
+B4
+B5
+B1
+B2
+B3
D7
Q6,7 D5,6
Regulator
UPC29M33HB
IC2
Q4,5 D10,12~14
Q402
Q403, 404
Inter-face
R ch
D601~605 (1~5PLAY)
D606
D617
BU2050F-E2
IC601
LED DRIVE
PLAY
STOP
1~5PLAY
/CLK
DATA
CLK
/STB
Vss
VDD
D402
X401 (8MHz)
Q401
Reset
M38504M6200F
IC451
SYSTEM CONTROL
/RST
MCLK
MDATA
MLD
SERVORST
LED DTA
LED CLK
LED STB
VREF
VCC
CD REQ
B CS
SYNC
TEST
B CLK
DATA O
DATA I
XIN
XOUT
RESET
MSEL
SUBQ
BLKCK
STAT
REST SW
SQCK
KEY1
KEY2
SW5
SW1
SW2
SW3
SW4
HALF
CW
CCW
Vss
CNVss
AVss
PL
PSTN
TC74HCT7007A
IC452
CONVERTER
(3.3V To 5V)
Vcc
GND
S701 (REST)
KEY SWITCH (S601~619)
S5 (BOTTOM)
S1 (TRAY POSITION 1 DET.)
S2 (TRAY POSITION 2 DET.)
S3 (OPEN DET.)
S4 (CLAMP)
Q405, 406
Plunger drive
PLUNGER
TA7291S
IC1
MOTOR DRIVE
D2
Q1
Motor drive
RM1 (LOADING MOTOR)
D1 (POSITION SENSOR)
Note:
: CD SIGNAL LINE

14 Troubleshooting Guide




Check the position of optical pickup
At outer or around middle track
At inner track
Is pin ① of CN702 at "HIGH" or "LOW"?
"H"
"L"
Is pin ① of CN702 at "HIGH" or "LOW"?
"L"(0 V)
"H"
S701 is defective or disconnected
S701 is short-circuited
Are there outputs at pins ㉓ and ㉔ of IC703?
NG
OK
Optical pickup failure
Measure voltage across R701
Below 0.4 V
Above 0.4 V
Optical pickup failure
Is there an output at pin ㉘ of IC702? (FOD)
NG
OK
IC702 failure
IC703 failure
Measure voltage between Ⓑand Ⓔof Q701
Above 0.6 V
Below 0.6 V
Q701 or Optical pickup is defective
IC701 failure
Are there outputs at pins ⑮ and ⑯ of IC703?
NG
OK
Traverse deck failure
Is there an output at pin ㉒ of IC702? (TVD)
NG
OK
IC702 failure
IC703 failure
IC702 failure

15 Terminal Function of ICs

15.1. IC451 (M38504M6200F): System Control

Pin No.	Terminal Name	I/O	Function
1	V_{cc}	I	Power supply terminal
2	VREF	I	Reference voltage input
3	AV_{SS}	-	GND terminal
4	SYNC	I	Power failure detect signal input
5	SUBQ	I	Sub-code Q data signal input
6	SQCK	O	Sub code Q resistor clock signal output
7	BLKCK	I	Block clock signal input
8	CD REQ	I	Serial communication signal to Sound Processor (Request signal input)
9	B CS	O	Serial communication signal to Sound Processor (Chip select signal output)
10	B CLK	O	Serial communication signal to Sound Processor (Clock signal output)
11	DATA O	O	Serial communication signal to Sound Processor (Data signal output)
12	DATA I	I	Serial communication signal to Sound Processor (Data signal input)
13	TEST	I	Test mode select signal input (Connected to V_{CC} via resistor)
14	RESTSW	I	Rest switch signal input
15	CNV_{SS}	-	Connected to V_{SS}
16	SERVO RST	O	Reset signal output for CD servo IC
17	E-CS	-	EEPROM serial communication signal (Not used, open)
18	RESET	I	Reset signal input
19	X IN	I	Oscillator connected terminal (8 MHz)
20	X OUT	O	
21	V_{SS}	-	GND terminal
22	LED STB	O	LED serial strobe signal output
23	LED CLK	O	LED serial clock signal output
24	LED DTA	O	LED serial data signal output
25	NC	-	Not used, open
26	MSEL	I	Function select signal input (Connected to V_{CC} via resistor)
27	MDATA	O	Command data output
28	MCLK	O	Command clock output
29	MLD	O	Command load output
30	STAT	I	Status signal input
31	HALH	O	CD mechanism motor speed control signal output
32	PL	O	CD mechanism solenoid control signal output
33	CW	O	CD mechanism motor control signal output (forward direction)
34	CCW	O	CD mechanism motor control signal output (reverse direction)
35	PSTN	I	Position sensor detect signal input
36	SW1	I	Disc tray position 1 detect signal input
37	SW2	I	Disc tray position 2 detect signal input
38	SW3	I	Disc tray open detect signal input
39	SW5	I	Bottom switch detect signal input
40	KEY2	I	Operation key signal input
41	KEY1	I	Operation key signal input
42	SW4	I	Clump switch detect signal input

15.2. IC701 (AN8839NSBE2): Servo Amp

Pin No.	Terminal Name	I/O	Function
1	PDE	I	Tracking signal input terminal 1 (E ch)
2	PDF	I	Tracking signal input terminal 2 (F ch)
3	V_{cc}	I	Power supply terminal
4	PDA	I	Focus signal input terminal 1 (A ch)
5	PDB	I	Focus signal input terminal 2 (B ch)
6	LPD	I	Laser PD signal
7	LD	O	Laser power auto control output
8	RF	O	RF amp terminal
9	RFIN	I	AGC input terminal
10	CSBRT	I	OFTR capacitor connection terminal
11	CEA	I	HPF-AMP capacitor connection terminal
12	BDO	O	Dropout detection control
13	LDON	I	LD APC ON/OFF (H: ON)
14	GND	-	GND terminal
15	/RFDET	O	RF detect signal output (L: detect)
16	PDOWN	-	Power down terminal
17	OFTR	O	Off track detection (H: detect)
18	NC	-	Not used, open
19	ENV	O	Envelope signal output
20	NC	-	Not used, open
21			
22	TEN	I	Tracking error signal input
23	TEOUT	O	Tracking error signal output
24	FEOUT	O	Focus error signal output
25	FEN	I	Focus error signal input
26	VREF	O	Reference voltage output
27	TBAL	I	Tracking balance adj. input
28	FBAL	I	Focus balance adj. input

15.3. IC702 (MN662790RSA): Servo Processor/Digital Signal Processor/Digital Filter/ D/A converter

Pin No.	Terminal Name	I/O	Function
1	BCLK	-	Serial bit clock output (Not used, open)
2	LRCK	-	L/R discriminating signal output (Not used, open)
3	SRDATA	-	Serial data signal output (Not used, open)
4	$DV_{DD}1$	I	Power supply terminal
5	$DV_{SS}1$	-	GND terminal
6	TX	O	Digital audio interface signal output
7	MCLK	I	Command clock signal input
8	MDATA	I	Command data signal input
9	MLD	I	Command load signal input
10	SENSE	-	Sense signal (Not used, open)
11	/FLOCK	-	Optical servo condition (focus) (Not used, open)
12	/TLOCK	-	Optical servo condition (tracking) (Not used, open)
13	BLKCK	O	Sub-code block clock signal output (f=75 Hz)
14	SQCK	I	Sub-code Q resistor clock signal input
15	SUBQ	O	Sub-code Q data signal output
16	DMUTE	-	Muting input (Not used, connected to GND)
17	STAT	O	Status signal output
18	/RST	I	Reset signal input (L: reset)

Pin No.	Terminal Name	I/O	Function
19	SMCK	-	System clock (f=4.2336 MHz) (Not used, open)
20	CSEL	I	Frequency control terminal of crystal oscillator (Connected to V_{DD})
21	TRV	-	Traverse servo control signal output (Not used, open)
22	TVD	O	Traverse drive signal output
23	PC	O	Turntable motor drive signal output (L: ON)
24	ECM	O	Turntable motor drive signal output (Forced mode)
25	ECS	O	Turntable motor drive signal output (Servo error signal)
26	KICK	-	Kick pulse output (Not used, open)
27	TRD	O	Tracking drive signal output
28	FOD	O	Focus drive signal output
29	VREF	I	D/A drive output normal voltage input
30	FBAL	O	Focus balance adj. output
31	TBAL	O	Tracking balance adj. output
32	FE	I	Focus error signal input
33	TE	I	Tracking error signal input
34	RFENV	I	RF envelope signal input
35	VDET	I	Oscillator detect signal input (H: detect)
36	OFT	I	Off track signal input (H: Off track)
37	TRCRS	I	Track cross signal input
38	/RFDET	I	RF detect signal input (L: detect)
39	BDO	I	Dropout detection signal input (H: dropout)
40	LDON	O	Laser power control signal output (H: ON)
41	PLLF2	-	PLL loop filter terminal (Not used, open)
42	DSLF2	I/O	DSL loop filter terminal
43	WVEL	-	Double velocity status signal output (Not used, open)
44	ARF	I	RF signal input
45	IREF	I	Reference current input
46	DRF	I	DSL bias terminal
47	DSLF	I/O	DSL loop filter terminal
48	PLLF	I/O	PLL loop filter terminal
49	VCOF	-	VCO loop filter terminal (Not used, connected to GND)
50	$AV_{DD}2$	I	Power supply terminal
51	$AV_{SS}2$	-	GND terminal
52	EFM	-	EFM signal (Not used, open)
53	PCK	-	PLL extract clock (Not used, open)
54	VCOF2	-	VCO loop filter terminal (Not used, connected to GND)
55	SUBC	-	Sub-code serial output clock (Not used, open)
56	SBCK	-	Sub-code serial input data (Not used, connected to GND)
57	V_{SS}	-	GND terminal
58	X1 IN	I	Crystal oscillator terminal (f=33.8688 MHz)
59	X2 OUT	O	
60	V_{DD}	I	Power supply terminal
61	BYTCK	-	Byte clock signal (Not used, open)
62	/CLDCK	-	Sub-code frame clock signal (Not used, open)
63	FCLK	-	Crystal frame clock (Not used, open)
64	IPFLAG	-	Interpolation flag terminal (Not used, open)
65	FLAG	-	Flag terminal (Not used, open)
66	CLVS	-	Turntable servo phase synchro signal (Not used, open)
67	CRC	-	Sub-code CRC check terminal (Not used, open)
68	DEMPH	-	De-emphasis ON signal (Not used, open)
69	RESY	-	Re-synchronizing signal of frame sync. (Not used, open)
70	IOSEL	I	I/O select signal input (Connected to V_{DD})
71	/TEST	I	Test terminal (Not used, connected to power supply)
72	$AV_{DD}1$	I	Power supply terminal
73	OUTL	O	L ch audio signal output
74	$AV_{SS}1$	-	GND terminal
75	OUTR	O	R ch audio signal output
76	RSEL	I	Polarity direction control terminal of RF signal (Not used, connected to power supply)
77	IOV_{DD}	I	Power supply terminal
78	PSEL	I	Test terminal (Connected to GND)
79	MSEL	-	Output frequency select signal input (Not used, connected to GND)
80	SSEL	I	SUBQ output mode select signal input (Not used, connected to V_{DD})

15.4. IC703 (AN8739SBE2): 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	$PV_{CC}1$	I	Driver power supply terminal 1
8	PGND1	-	Driver GND terminal 1
9	NC	-	Not used, connected to GND
10	D1-	O	Motor driver 1 output terminal (-)
11	D1+	O	Motor driver 1 output terminal (+)
12	D2-	O	Motor driver 2 output terminal (-)
13	D2+	O	Motor driver 2 output terminal (+)
14	D3-	O	Motor driver 3 output terminal (-)
15	D3+	O	Motor driver 3 output terminal (+)
16	D4-	O	Motor driver 4 output terminal (-)
17	D4+	O	Motor driver 4 output terminal (+)
18	NC	-	Not used
19	PGND2	-	Driver GND terminal 2
20	$PV_{CC}2$	I	Driver power supply terminal 2
21	V_{CC}	I	Power supply terminal
22	VREF	I	Reference voltage input terminal
23	IN4	I	Motor driver 4 input
24	IN3	I	Motor driver 3 input
25	RSTIN	I	Reset terminal (Not used, connected to GND)
26	NC	-	Not used, connected to GND

16 Replacement Parts List

Notes:

- Important safety notice:

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

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

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

- The marking [RTL] indicates that Retention Time is Limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependent on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.

- All parts are supplied by MESA.

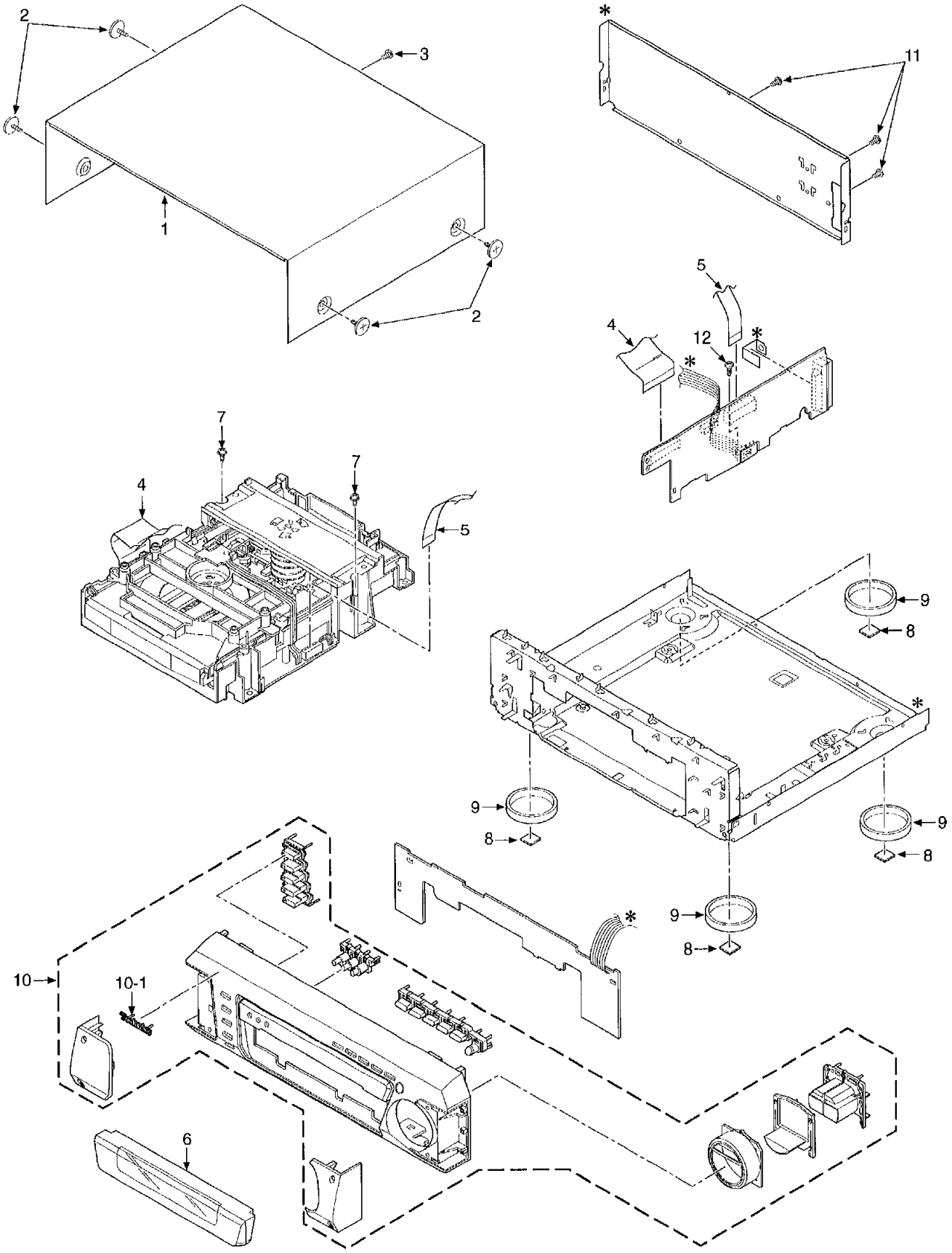
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	RKM0399-1S	TOP CABINET	1	
2	RHD30007-S	SCREW	4	
3	XTBS3+8JFZ1	SCREW	1	
4	REZ1200-1	FFC	1	
5	REZ1201-2	FFC	1	
6	RYF0520B-1S	CD LID ASS'Y	1	
7	XTW3+8T	SCREW	2	
8	RKA0105-K	RUBBER	4	
9	RKA0106-N	FOOT RING	4	
10	RYP0896E-1S	FRONT PANEL ASS'Y	1	
10-1	RGB0025-A	TECHNICS BADGE	1	
11	XTBS3+8JFZ1	SCREW	3	
12	XTB3+8JFZ	SCREW	1	
301	RAE0152Z-1	TRAVERSE DECK ASS'Y	1	
301-1	SHGD113-1	RUBBER	3	
301-2	SNSD38	SCREW	2	
301-3	RAF0150A-1	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	XQN2+CQ5	SCREW	1	
301-10	XQS17+A35FZ	SCREW	1	
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	RHM245ZA	MAGNET	1	
325	RMR0334	MAGNET HOLDER	1	
326	RMR0624-W2	CLAMPER	1	
327	RMR1121-K	MECHANISM COVER	1	
328	RXQ0561	TRAY BASE	1	
329	RDG0430	GEAR,RELAY A	1	
330	RDG0431	GEAR,RELAY B	1	
331	XTV2+6G	SCREW	2	
332	RMB0552	SPRING	1	
333	RME0262	SPRING	1	
334	RME0263	SPRING	1	
335	RML0526	SPRING	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	RMR1124-K	TRAVERSE CHASSIS	1	
354	RMS0632	TRAVERSE FIXED PIN	3	
355	XTN2+6G	SCREW	1	
356	RMQ0748	GEAR HOLDER	1	
C1	ECEA1CKS101	16V 100U	1	
C2	ECBT1E103ZF	25V 0.01U	1	
C3	ECBT1H102KB5	50V 1000P	1	
C5	RCE1CKA470BG	16V 47U	1	
C6	ECA1CM471	16V 470UF	1	
C7	ECBT1E103ZF	25V 0.01U	1	
C9	ECEA1AKS221	10V 220U	1	
C10	ECEA1AKS221	6.3V 220U	1	
C11	ECBT1H102KB5	50V 1000P	1	
C12	ECBT1C103MS5	16V 0.01U	1	
C40	ECEA1AKS221	6.3V 220U	1	
C151,52	ECBT1H102KB5	50V 1000P	2	
C401	RCE1HKA3R3BG	50V 3.3U	1	
C402	ECBT1E103ZF	25V 0.01U	1	
C403	ECBT1H102KB5	50V 1000P	1	
C404,05	ECBT1E103ZF	25V 0.01U	2	
C407	ECEA1AKS221	10V 220U	1	
C408	ECBT1H101KB5	50V 100P	1	
C410	EEAFC0J101B	6.3V 100P	1	
C411	ECBT1H104ZF5	50V 0.1U	1	
C413,14	ECBT1H471KB5	50V 470P	2	
C415,16	ECBT1E103ZF	25V 0.01U	2	
C452	ECBT1E103ZF	25V 0.01U	1	
C601	ECBT1E103ZF	25V 0.01U	1	
C602	RCE1HKA4R7BG	50V 4.7U	1	
C603-05	ECBT1H101KB5	50V 100P	3	
C701	ECEA0JKA330I	6.3V 33U	1	
C702	ECUZNE104MBN	25V 0.1U	1	
C703	ECEA0JKS101	6.3V 100U	1	
C704	ECUZNE104MBN	25V 0.1U	1	
C706	ECUV1H272KBN	50V 2700P	1	
C707	ECUV1E273KBN	25V 0.027U	1	
C710	ECUV1H121KCN	50V 120P	1	
C711,12	ECUWNE104ZFN	25V 0.1U	2	
C713	ECUZNE104MBN	25V 0.1U	1	
C714	ECEA0JKS101	6.3V 100U	1	
C715	ECUV1H272KBN	50V 2700P	1	
C716	ECUV1H821KBN	50V 820P	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C717	ECUWNE104ZFN	25V 0.1U	1	
C718	ECUV1E104KBN	25V 0.1U	1	
C721,22	ECUV1H030CCN	50V 3P	2	
C723	ECEA1AKS221	10V 220U	1	
C724	ECUZNE104MBN	25V 0.1U	1	
C725,26	ECUE1H102KBN	50V 1000P	2	
C727,28	ECEA1HKS010	50V 1U	2	
C730	ECUWNE104ZFN	25V 0.1U	1	
C731,32	ECEA1AKS221	10V 220U	2	
C733	ECUZNE104MBN	25V 0.1U	1	
C734	ECEA1AKS221	10V 220U	1	
C735-37	ECUWNE104ZFN	25V 0.1U	3	
C738	ECUE1H103KBN	50V 0.01U	1	
C739	ECUE1H152KBN	50V 1500P	1	
C742	ECUV1E273KBN	25V 0.027U	1	
C743	ECUWNE104ZFN	25V 0.1U	1	
C744	ECUE1E822KBN	25V 8200P	1	
C745	ECUV1E104KBN	25V 0.1U	1	
C747	ECUV1H181KCN	50V 180P	1	
C749	ECUE1H222KBN	50V 2200P	1	
C750,51	ECUZNE104MBN	25V 0.1U	2	
C752	ECUE1H102KBN	50V 1000P	1	
C753	ECUV1H471KBM	50V 470P	1	
C754	ECUE1H471KBN	50V 470P	1	
C760	ECUV1E104KBN	25V 0.1U	1	
CN1	RJS1A9414	CONNECTOR(14P)	1	
CN401	RJS1A6714	CONNECTOR(14P)	1	
CN402	RJS1A6723-Q	CONNECTOR(23P)	1	
CN701	RJU035T016-1	CONNECTOR(16P)	1	
CN702	RJS1A6723-1Q	CONNECTOR(23P)	1	
D1	GP1S94	DIODE	1	
D2	MTZJ4R7B	DIODE	1	
D3	MA4082LTA	DIODE	1	⚠
D5,D6	MA165	DIODE	2	
D7	RL1N4003N02	DIODE	1	
D10-12	MA165	DIODE	3	
D14	MA165	DIODE	1	
D401-07	MA165	DIODE	7	
D601-05	LNJ301MPUJAD	LED	5	
D606	SML79455C	LED	1	
D617	MA165	DIODE	1	
IC1	TA7291P	IC	1	
IC2	UPC29M33HB	IC	1	⚠
IC451	M38504M6200F	IC	1	
IC452	TC74HCT7007A	IC	1	
IC601	BU2050F-E2	IC	1	
IC701	AN8839NSBE2	IC	1	
IC702	MN662790RSA	IC	1	
IC703	AN8739SBE2	IC	1	
JK401	RJT065K20	SYSTEM CONNECTOR(20P)	1	
L701,02	RLBN102V-Y	COIL	2	
PCB1	REP2822B-2M	PCB ASS'Y	1	[RTL]
PCB2	REP2578A-N	MECHA PCB	1	[RTL]
PCB3	REP2772A-N	SERVO PCB	1	[RTL]
Q1	RVTDTC143EST	TRANSISTOR	1	
Q4	2SB621A-R	TRANSISTOR	1	⚠
Q5,Q6	2SC3311ATA	TRANSISTOR	2	⚠
Q7	2SB1548PQAU	TRANSISTOR	1	⚠
Q401	UN4214TA	TRANSISTOR	1	
Q402-04	2SC3311ATA	TRANSISTOR	3	
Q405	UN421FTA	TRANSISTOR	1	
Q406	2SB621A-R	TRANSISTOR	1	
Q701	2SB709S	TRANSISTOR	1	
Q702	DTC143XUA106	TRANSISTOR	1	
R1	ERDS2FJ102	1/4W 1K	1	
R2	ERDS2FJ471	1/4W 470	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R3	ERDS2FJ223	1/4W 22K	1	
R4	ERDS2FJ101	1/4W 100	1	
R5	ERDS2FJ102	1/4W 1K	1	
R10	ERDS2FJ471	1/4W 470	1	
R11	ERDS2FJ222	1/4W 2.2K	1	
R21,22	ERDS2FJ100	1/4W 10	2	
R31	ERDS2FJ100	1/4W 10	1	
R155,56	ERDS2FJ473	1/4W 47K	2	
R157,58	ERDS2FJ221	1/4W 220	2	
R401	ERDS2FJ681	1/4W 680	1	
R402	ERDS2FJ104	1/4W 100K	1	
R403	ERDS2FJ472	1/4W 4.7K	1	
R404	ERDS2FJ222	1/4W 2.2K	1	
R405	ERDS2FJ104	1/4W 100K	1	
R406	ERDS2FJ101	1/4W 100	1	
R407	ERDS2FJ471	1/4W 470	1	
R408	ERDS2FJ222	1/4W 2.2K	1	
R409	ERDS2FJ471	1/4W 470	1	
R411-13	ERDS2FJ101	1/4W 100	3	
R414-16	ERDS2FJ222	1/4W 2.2K	3	
R419,20	ERDS2FJ102	1/4W 1K	2	
R421,22	ERDS2FJ103	1/4W 10K	2	
R423-25	ERDS2FJ472	1/4W 4.7K	3	
R426	ERDS2FJ102	1/4W 1K	1	
R427	ERDS2FJ472	1/4W 4.7K	1	
R428	ERDS2FJ473	1/4W 47K	1	
R431	ERDS2FJ103	1/4W 10K	1	
R432	ERDS2FJ472	1/4W 4.7K	1	
R433	ERDS2FJ103	1/4W 10K	1	
R434,35	ERDS2FJ101	1/4W 100	2	
R436,37	ERDS2FJ472	1/4W 4.7K	2	
R438	ERDS2FJ102	1/4W 1K	1	
R439	ERDS2FJ223	1/4W 22K	1	
R440	ERDS2FJ473	1/4W 47K	1	
R441	ERDS2FJ472	1/4W 4.7K	1	
R442	ERDS2FJ103	1/4W 10K	1	
R443	ERDS2FJ221	1/4W 220	1	
R444	ERDS2FJ472	1/4W 4.7K	1	
R445	ERDS2FJ473	1/4W 47K	1	
R446	ERDS2FJ103	1/4W 10K	1	
R447-49	ERDS2FJ102	1/4W 1K	3	
R451-55	ERDS2FJ332	1/4W 3.3K	5	
R601	ERDS2FJ104	1/4W 100K	1	
R602-04	ERDS2FJ101	1/4W 100	3	
R605-09	ERDS2FJ221	1/4W 220	5	
R610	ERDS2FJ151	1/4W 150	1	
R611	ERDS2FJ821	1/4W 820	1	
R612	ERDS2FJ102	1/4W 1K	1	
R613	ERDS2FJ122	1/4W 1.2K	1	
R614	ERDS2FJ152	1/4W 1.5K	1	
R615	ERDS2FJ182	1/4W 1.8K	1	
R616	ERDS2FJ222	1/4W 2.2K	1	
R617	ERDS2FJ332	1/4W 3.3K	1	
R618	ERDS2FJ472	1/4W 4.7K	1	
R619	ERDS2FJ682	1/4W 6.8K	1	
R620	ERDS2FJ821	1/4W 820	1	
R621	ERDS2FJ102	1/4W 1K	1	
R622	ERDS2FJ122	1/4W 1.2K	1	
R623	ERDS2FJ152	1/4W 1.5K	1	
R624	ERDS2FJ182	1/4W 1.8K	1	
R625	ERDS2FJ222	1/4W 2.2K	1	
R626	ERDS2FJ332	1/4W 3.3K	1	
R627	ERDS2FJ472	1/4W 4.7K	1	
R701	ERJ6GEYJ4R7V	1/10W 4.7	1	
R702	ERJ6GEYJ103V	1/10W 10K	1	
R704	ERJ6GEYJ102V	1/10W 1K	1	
R705	ERJ6GEYJ154V	1/10W 150K	1	
R706	ERJ6GEYJ102V	1/10W 1K	1	
R707	ERJ6GEYJ393V	1/10W 39K	1	
R708	ERJ6GEYJ223V	1/10W 22K	1	
R709	ERJ6GEYJ683Z	1/10W 68K	1	
R711	ERJ6GEYJ823	1/10W 82K	1	
R712	ERJ8GEYJ221V	1/8W 220	1	
R714	ERJ6GEYJ682V	1/10W 6.8K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R715	ERJ6GEYJ102V	1/10W 1K	1	
R717,18	ERJ6GEYJ102V	1/10W 1K	2	
R721	ERJ6GEYJ101V	1/10W 100	1	
R723	ERJ6GEYJ682V	1/10W 6.8K	1	
R724	ERJ6GEYJ183V	1/10W 18K	1	
R725	ERJ6GEYJ391V	1/10W 390	1	
R727-29	ERJ6GEYJ392V	1/10W 3.9K	3	
R731	ERJ6GEYJ682V	1/10W 6.8K	1	
R735,36	ERJ6GEYJ101V	1/10W 100	2	
R741	ERJ6GEYJ473V	1/10W 47K	1	
R742	ERJ6GEYJ224Z	1/10W 220K	1	
R744	ERJ6GEYJ124V	1/10W 120K	1	
R749	ERJ6GEYJ472V	1/10W 4.7K	1	
R753	ERJ6GEYJ100	1/10W 10	1	
RJ701	ERJ6GEY0R00A	CHIP JUMPER	1	
RJ702-10	ERJ8GEY0R00A	CHIP JUMPER	9	
RJ712-14	ERJ8GEY0R00A	CHIP JUMPER	3	
RJ716 17	ERJ8GEY0R00A	CHIP JUMPER	2	
RJ721 22	ERJ6GEY0R00A	CHIP JUMPER	2	
RJ724	ERJ6GEY0R00A	CHIP JUMPER	1	
RJ726-28	ERJ6GEY0R00A	CHIP JUMPER	3	
RJ731-36	ERJ6GEY0R00A	CHIP JUMPER	6	
RJ750	ERJ6GEY0R00A	CHIP JUMPER	1	
S1,S2	RSH1A032-U	SW,TRAY POSITION DET.	2	
S3	RSH1A005	SW,OPEN DET	1	
S4	RSH1A91ZA-A	SW,CLAMP	1	
S5	RSP1A017-A	SW,BOTTOM	1	
S601-19	EVQ11G05R	SW,PUSH	19	
S701	RSH1A043-U	SW,REST	1	
TJ701	EYF8CU	JUMMPER	1	
X401	RSXY8M00D01T	OSCILLATOR	1	
X701	RSXB33M8J01T	OSCILLATOR	1	

17 Cabinet Parts Location



Note : We do not supply those items of parts marked ✻.

18 Loading Unit Parts Location

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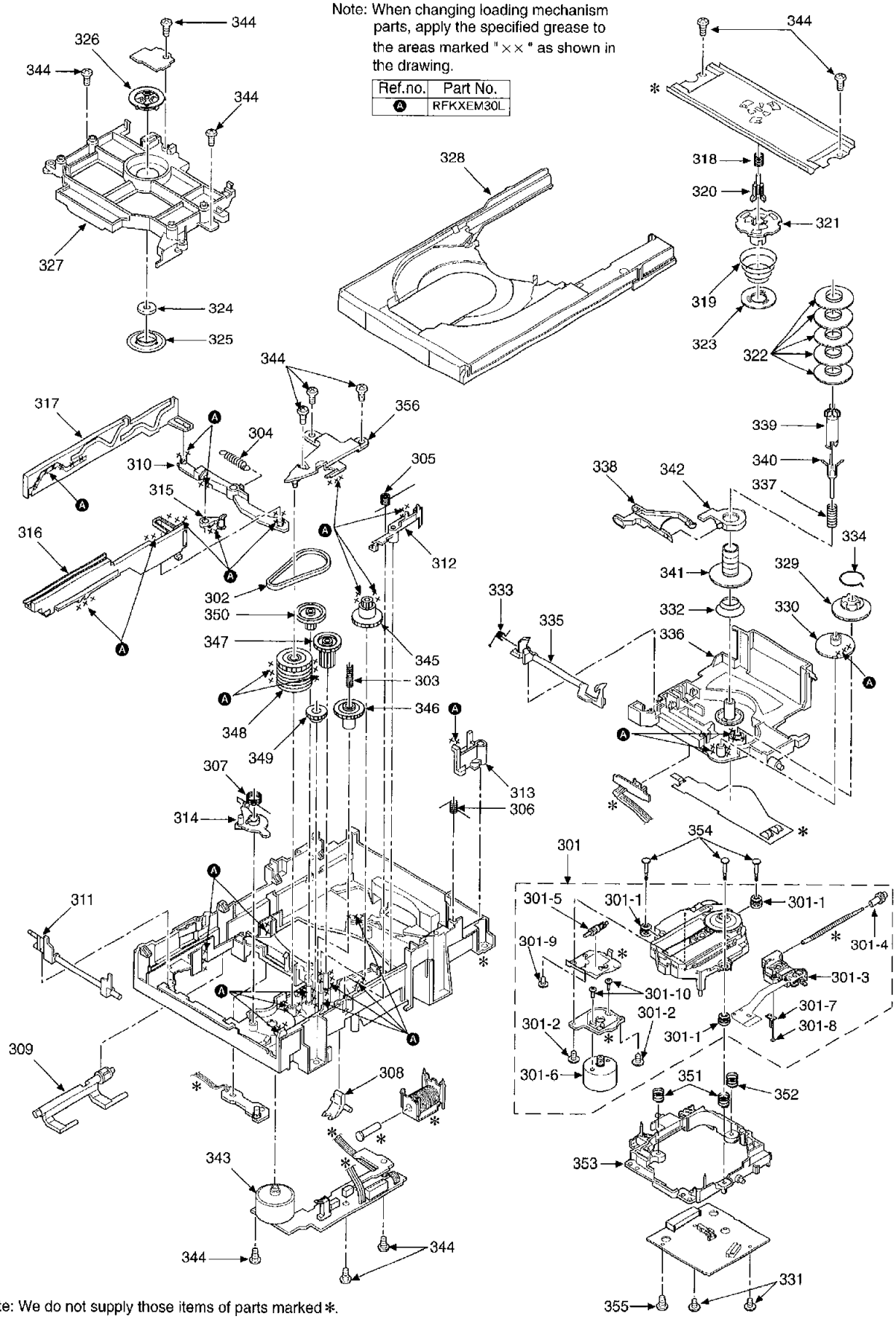
Note: When changing loading mechanism parts, apply the specified grease to the areas marked "××" as shown in the drawing.

Ref.no.	Part No.
Ⓐ	RFKXEM30L



Note: We do not supply those items of parts marked ✻.