

Service Manual

Compact Disc Player

COMPACT
disc
DIGITAL AUDIO

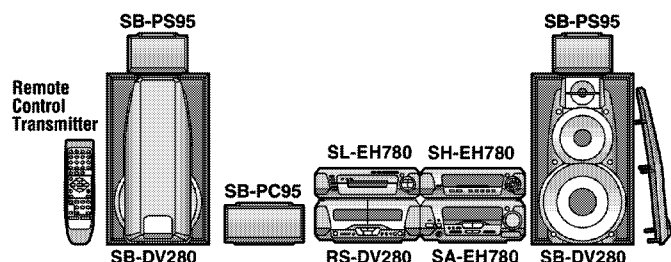
MASH
multi-stage noise shaping

SL-EH780E

Traverse Deck: RAE0152Z Mechanism series

Colour

(N).....Gold Type



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

System	SC-EH780
Sound Processor	SH-EH780
Tuner/Amplifier	SA-EH780
CD Changer	SL-EH780
Cassette Deck	RS-DV280
Front Speakers*	SB-DV280
Center Speaker*	SB-PC95
Surround Speakers*	SB-PS95

* : Made in Spain.

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 k Ω
Load impedance:	More than 10 k Ω

Pickup section

Wavelength:	780 nm
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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.

Note on CD-R and CD-RW

This unit can play CD-DA format audio CD-R and CD-RW that have been finalized* upon completion of recording. It may not be able to play some CD-R or CD-RW due to the condition of recording.
* Finalizing is a process that enables CD-R/CD-RW players to play audio CD-R and CD-RW.

⚠ 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-EH780 (Order No. AD0202025C2) 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.

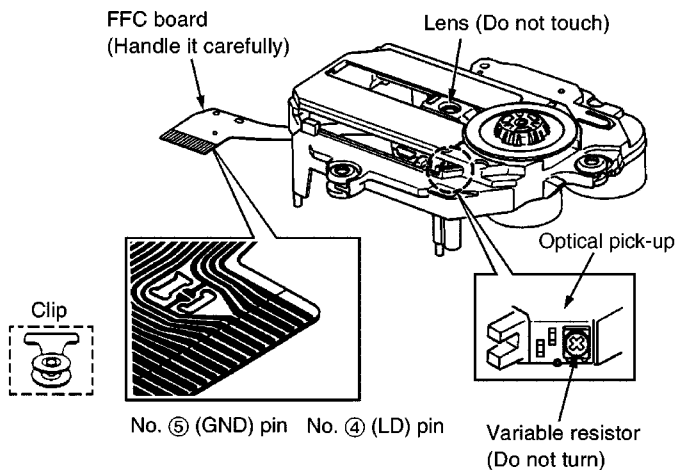


Fig. 2-1.

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.

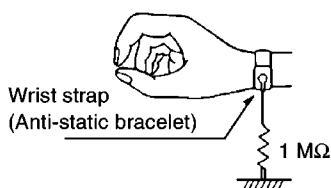


Fig. 2-2.

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.

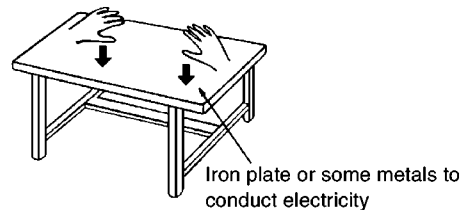


Fig. 2-3.

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.

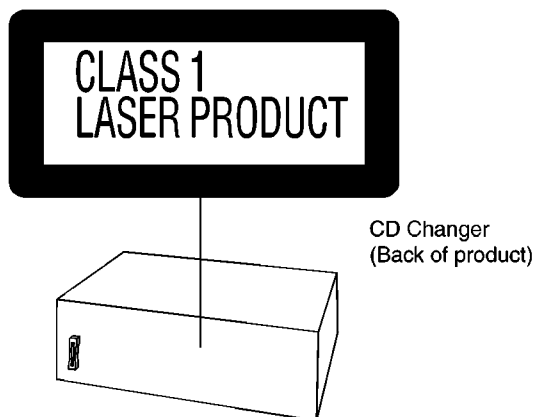
ACHTUNG: Dieses Produkt enthält eine Lasereinheit. Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Lasereinheit abgestrahlt.

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.



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)

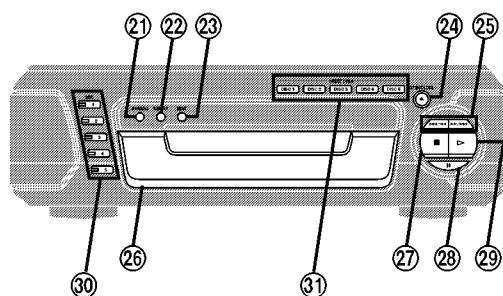
(Tuotteen sisällä)

(Apparatens insida)

(Produktets innsida)

(Im Inneren des Gerätes)

4 Location of Controls



21 Random play button (RANDOM)

22 Repeat play button (REPEAT)

23 CD edit button (EDIT)

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

25 Skip/search buttons (◀◀, ▶▶, ◀▶, ▶◀)

26 Disc tray

27 Stop button (■)

28 Pause button (||)

29 Play button and indicator (▷)

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

If stopped: orange

If playing: green

If paused: flashes

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

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

31 Disc direct open buttons

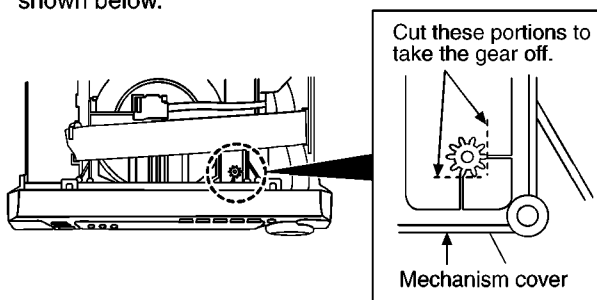
(DIRECT OPEN, DISC 1-DISC 5)

5 Operation Checks and Component Replacement Procedures

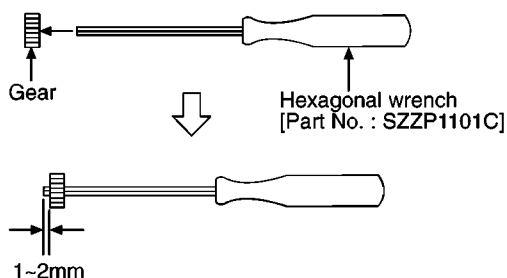
Gear for servicing (as jig) information

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.

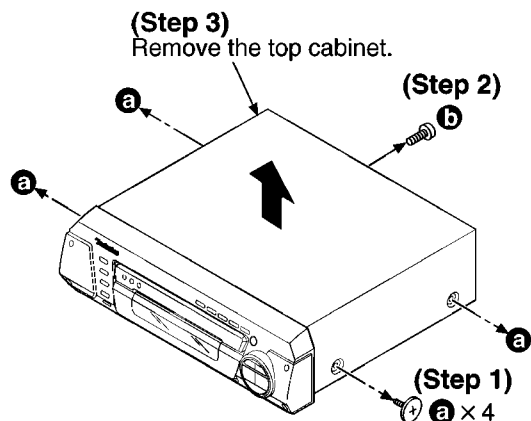


2. Insert the hexagonal wrench (2mm) into the gear, and then project the tip of wrench for 1~2mm length.

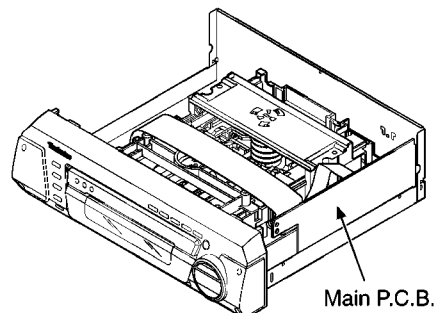


(Preparation of gear as jig is completed.)

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

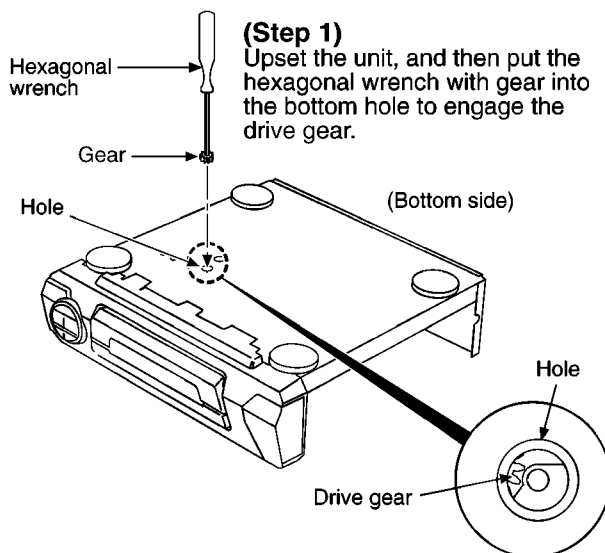


- Check the main P.C.B. as shown below.

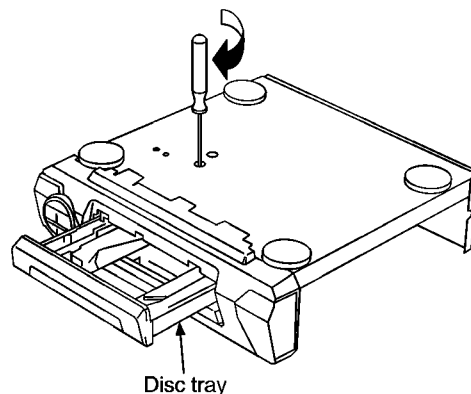


5.2. Checking for the operation P.C.B.

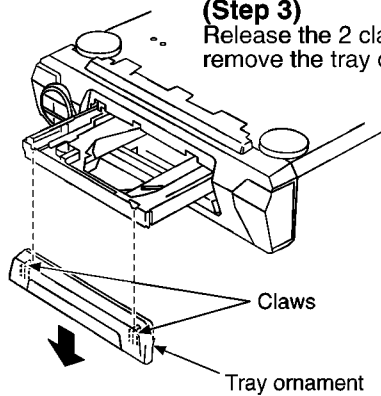
- Follow the (Step 1) - (Step 3) of item 5.1.



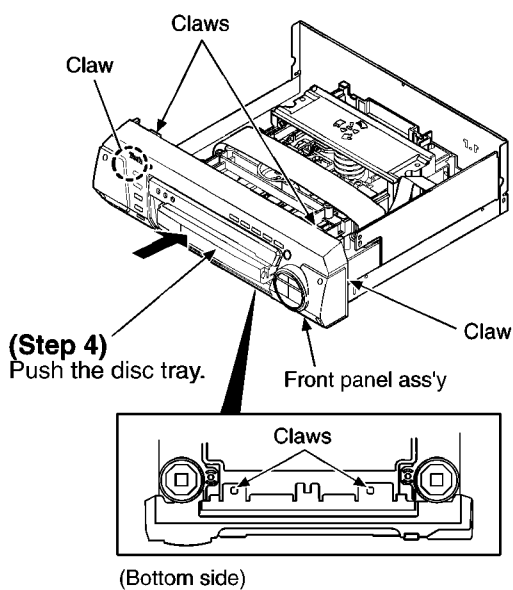
- (Step 2) Rotate the hexagonal wrench with gear in direction of arrow, and then open the disc tray.



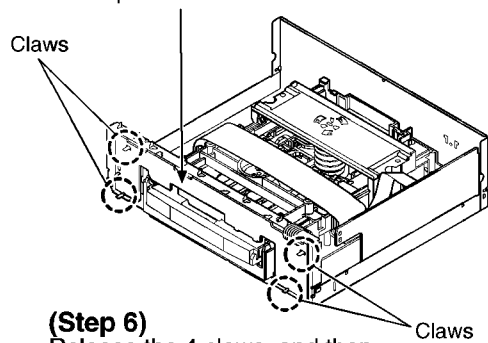
Release the 2 claws, and then remove the tray ornament.



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

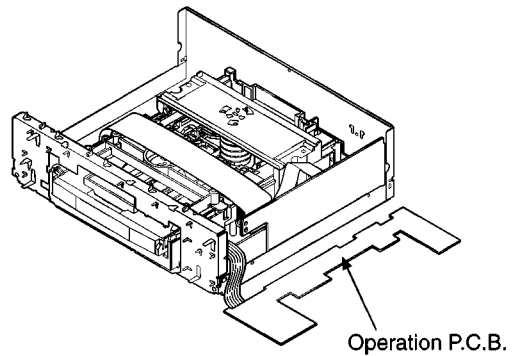


Operation P.C.B.



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

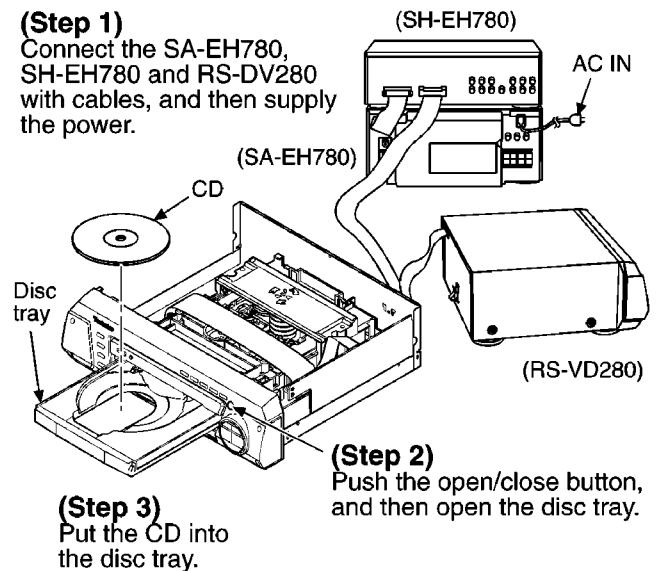
- Check the operation P.C.B. as shown below.



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

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

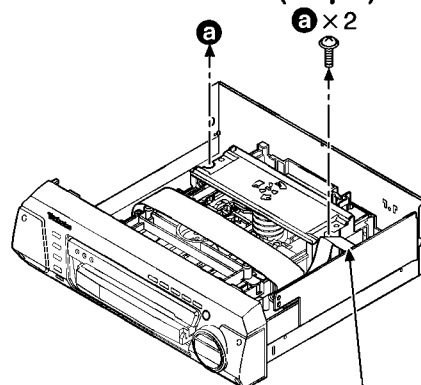
Connect the SA-EH780, SH-EH780 and RS-DV280 with cables, and then supply the power.



(Step 2)
Push the open/close button,
and then open the disc tray.

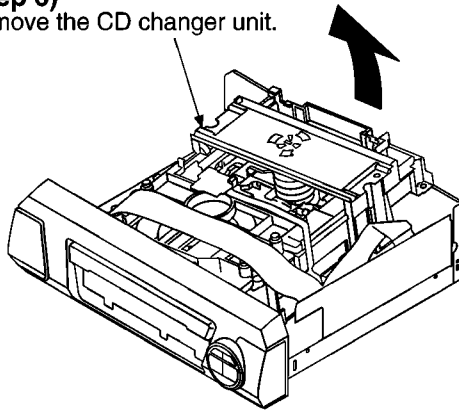
(Step 3)
Put the CD into
the disc tray.

(Step 4)

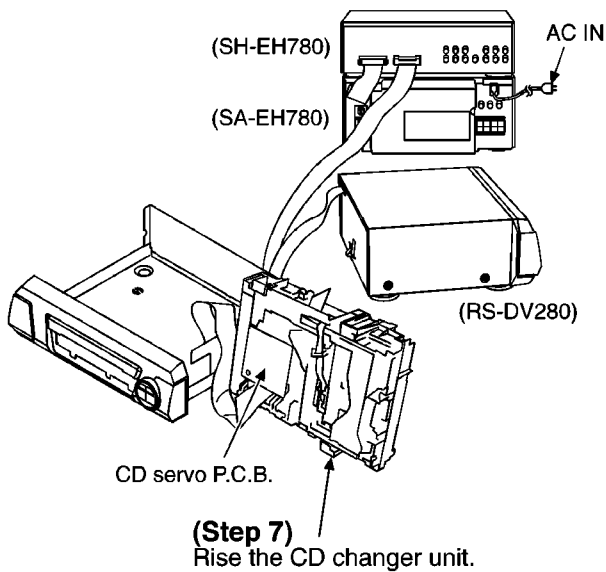


(Step 5)
Remove the FFC from connector (CN401).

(Step 6)
Remove the CD changer unit.



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

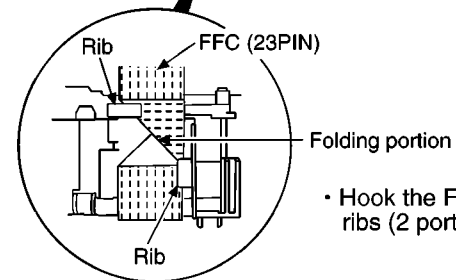
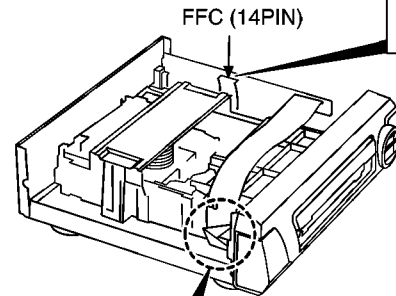
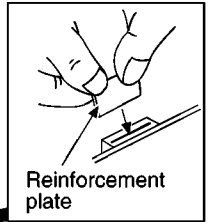


NOTE:

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

Cable arrangement

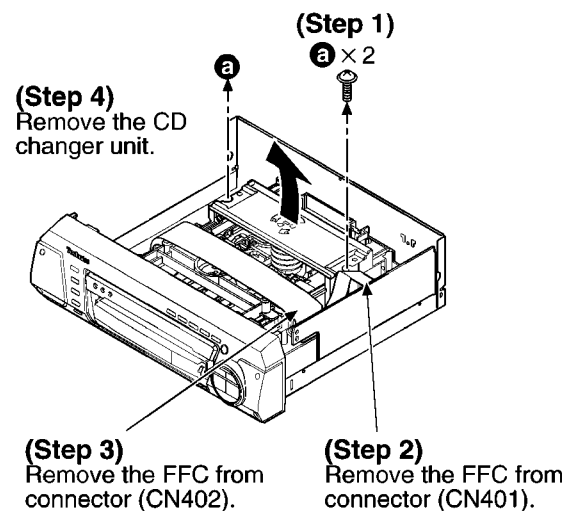
- **Notice for installing the FFC**
When connecting the FFC, insert it straight with nipping the reinforcement plate by finger.

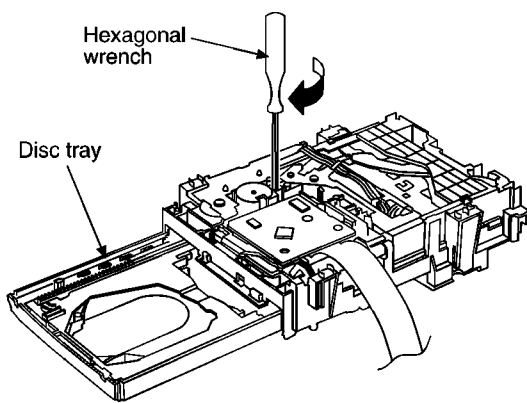
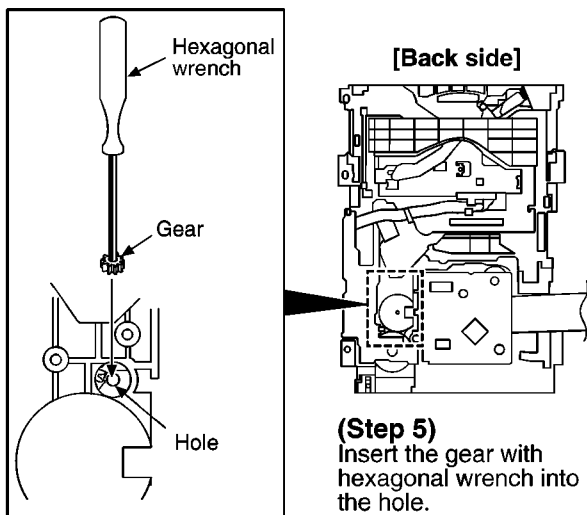


- Hook the FFC to the ribs (2 portions).

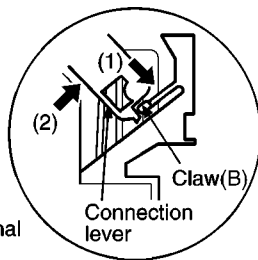
5.4. Replacement for the traverse deck ass'y

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

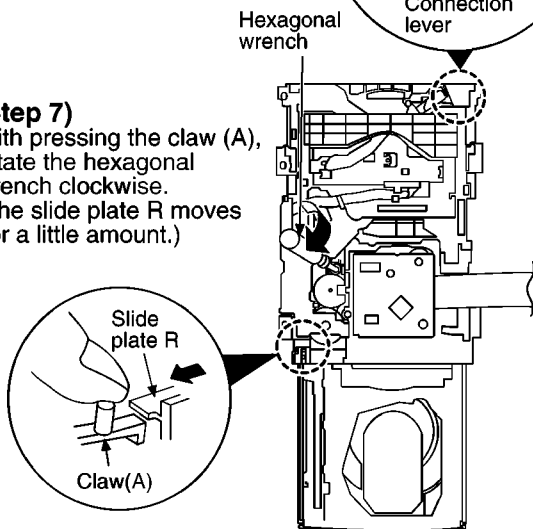




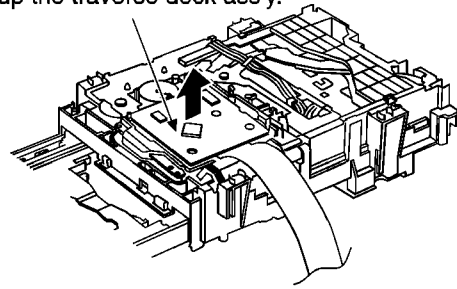
(Step 8)
Pressing the claw (B) in the direction of arrow (1), the connection lever moves in the direction of arrow (2).



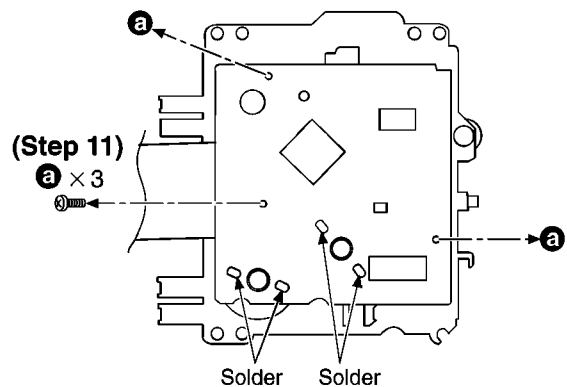
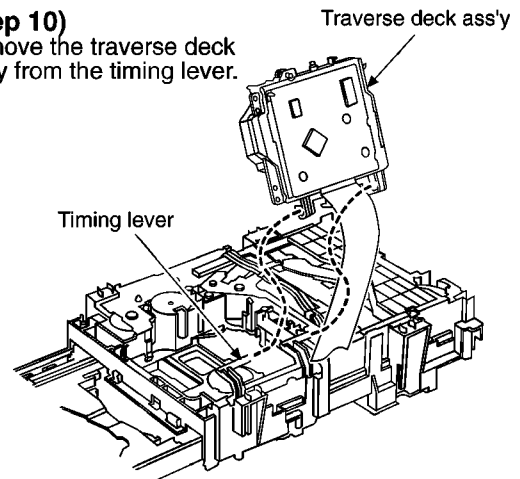
(Step 7)
With pressing the claw (A), rotate the hexagonal wrench clockwise. (The slide plate R moves for a little amount.)



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



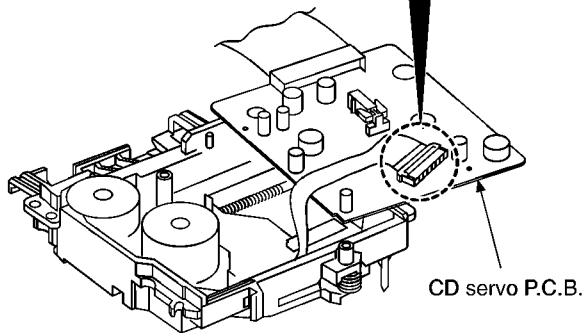
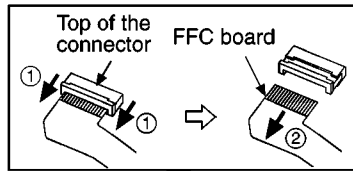
(Step 10)
Remove the traverse deck ass'y from the timing lever.



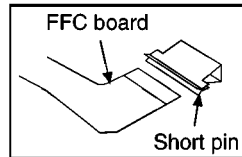
(Step 12)
Unsolder the motor terminals (4 points).

(Step 13)

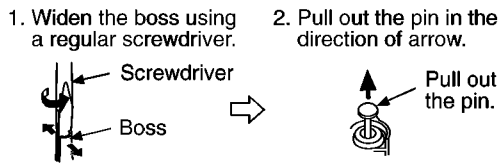
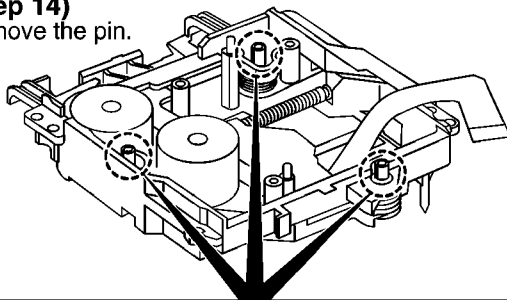
Remove the FFC board from the connector, and then remove the CD servo P.C.B..

**Caution:**

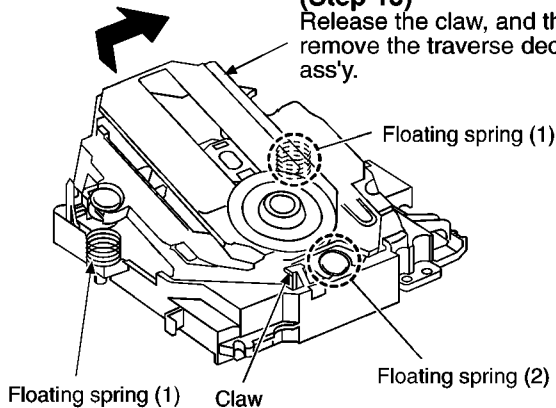
Insert a short pin into the traverse unit FFC board.
(Refer to "Handling Precautions for Traverse Deck".)

**(Step 14)**

Remove the pin.

**(Step 15)**

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

**NOTE:**

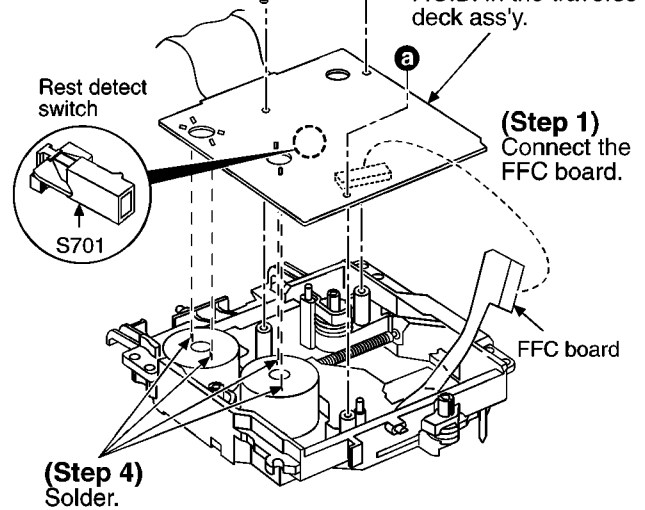
Be careful not to lose the 3 floating springs because those will also be removed on removal of the traverse deck ass'y.

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

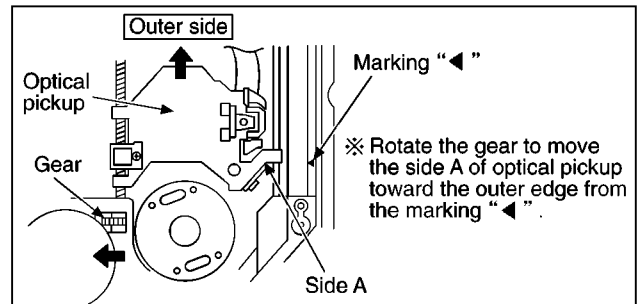
a × 3

(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.**

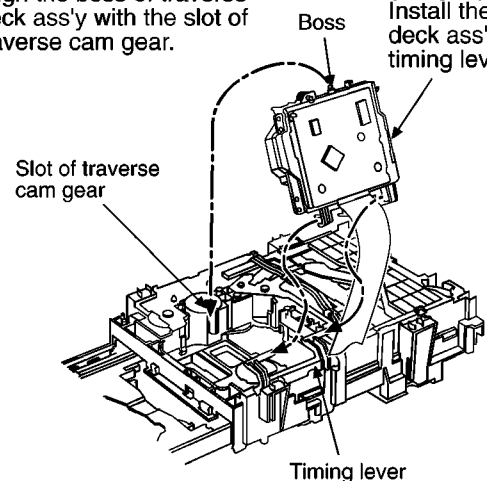
Before installing the CD servo P.C.B., move the optical pickup toward the outer edge from the mark "◀".
[Otherwise, the rest detect switch (S701) mounted on the CD servo P.C.B. may be damaged.]

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

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

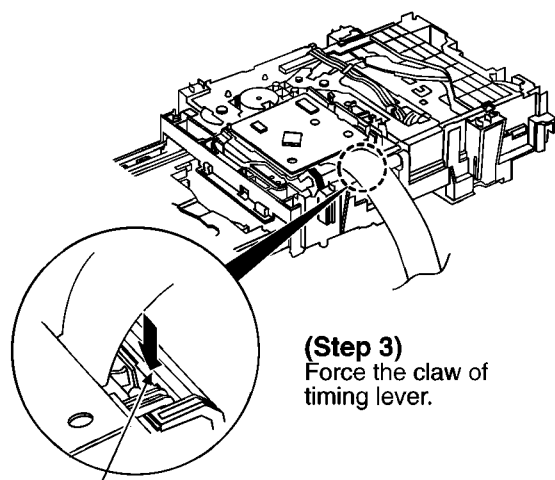
(Step 1)

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

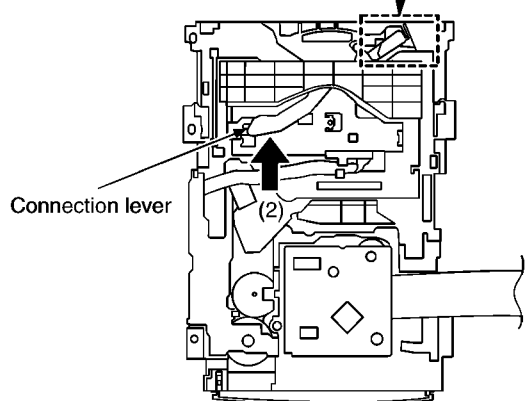
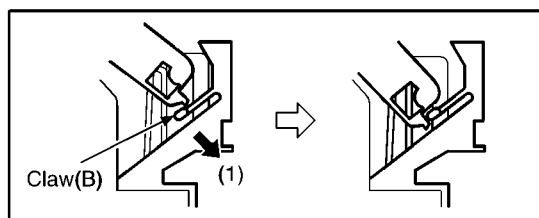
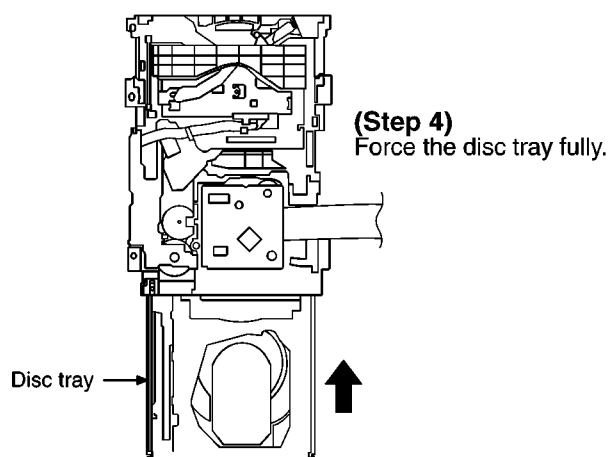


5.5. Replacement for the disc tray

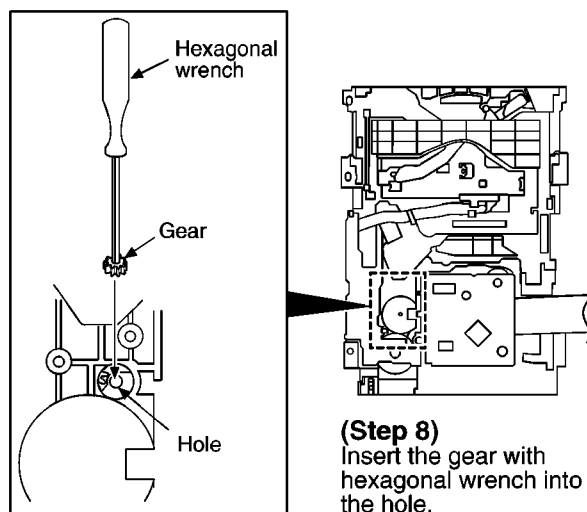
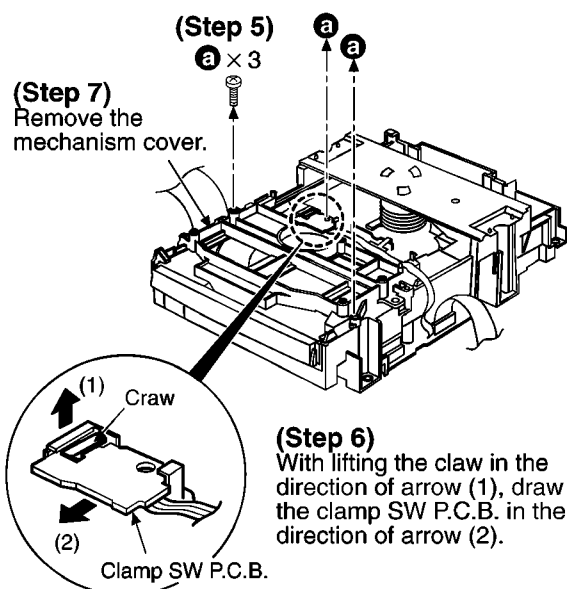
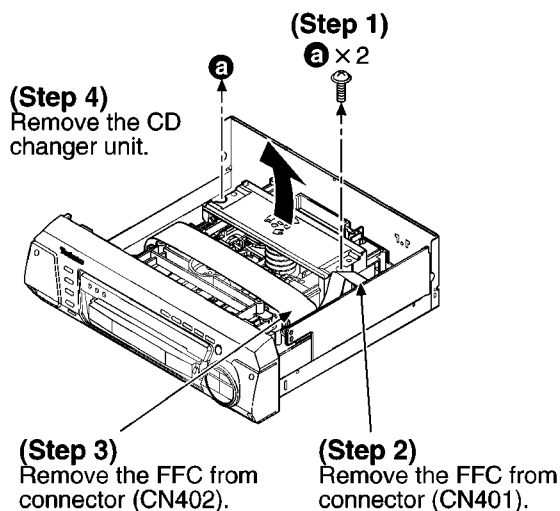
- Follow the (Step 1) - (Step 3) of item 5.1.
- Follow the (Step 1) - (Step 4) of item 5.2.

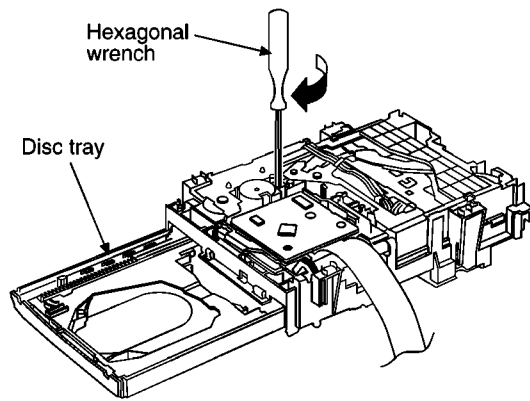


Claw of timing lever

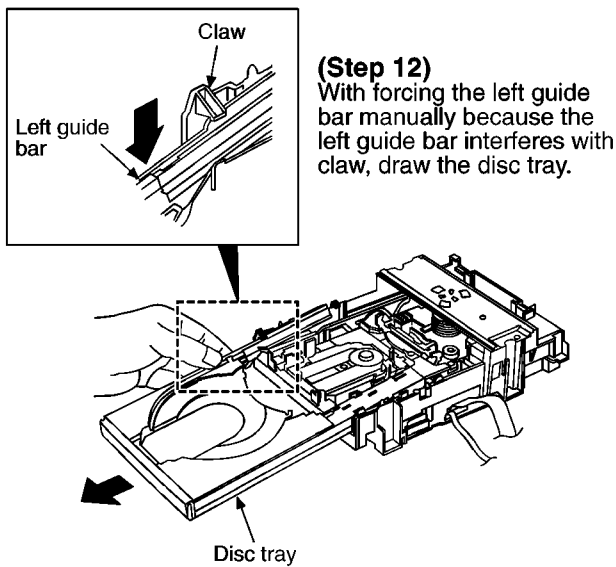
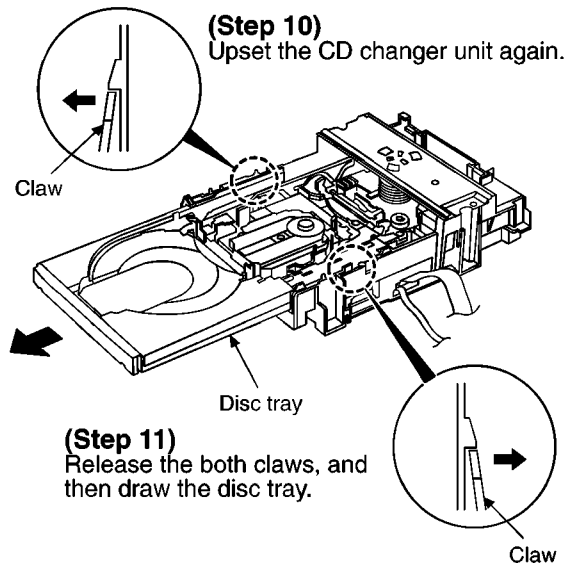
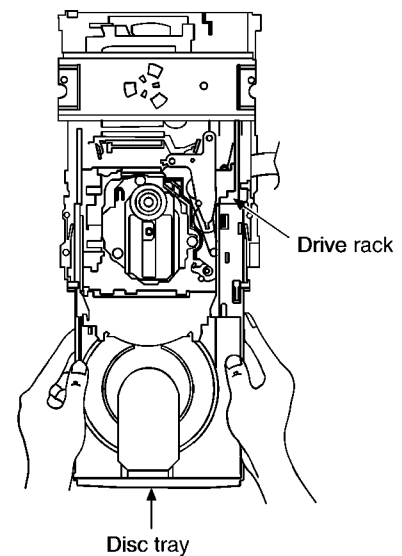
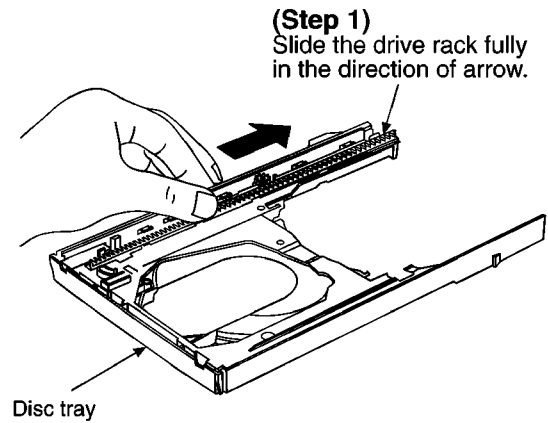


(Step 5)
With pressing the claw (B) in the direction of arrow (1), force the connection lever in the direction of arrow (2).

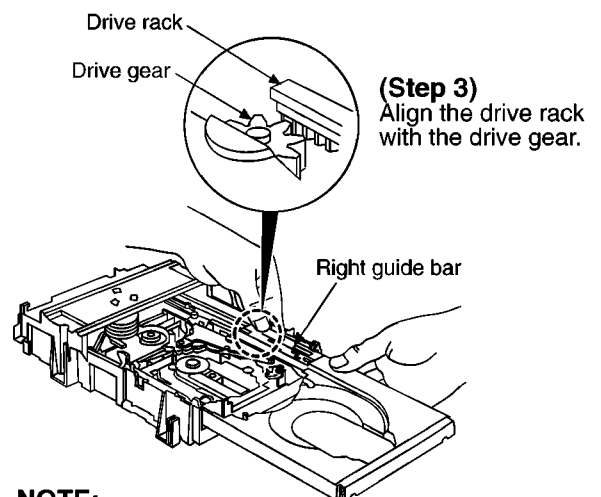


**(Step 9)**

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)**

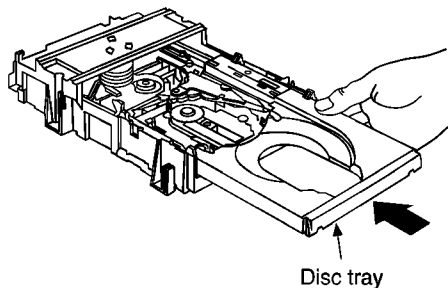
Holding the drive rack not to move, install the disc tray.

**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.



5.6. Disassembly and reassembly for mechanism base drive unit

Disassembly for mechanism base drive unit

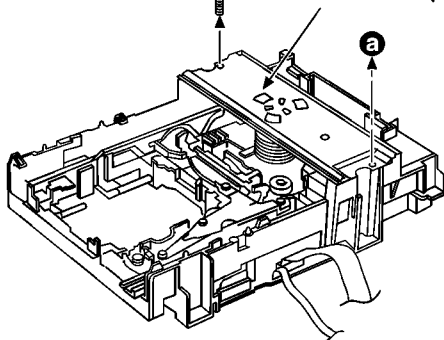
- Follow the (Step 1) - (Step 3) of item 5.1.
- Follow the (Step 1) - (Step 4) of item 5.2.
- Follow the (Step 1) - (Step 10) of item 5.4.
- Follow the (Step 1) - (Step 12) of item 5.5.

(Step 1)

a × 2

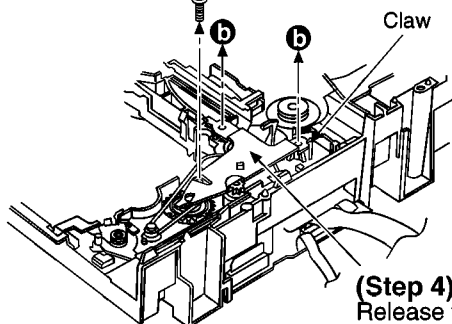
(Step 2)

Remove the upper plate.

**(Step 3)**

b × 3

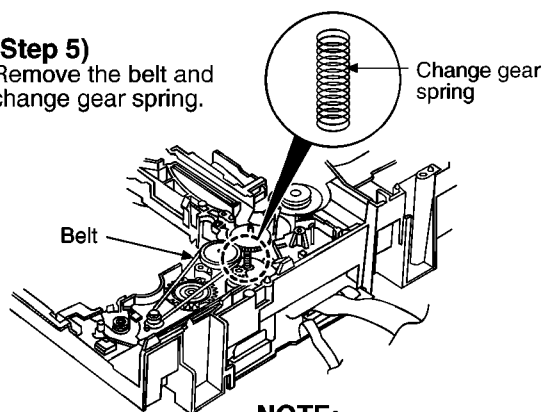
Claw

**(Step 4)**

Release the claw, and then remove the gear holder.

(Step 5)

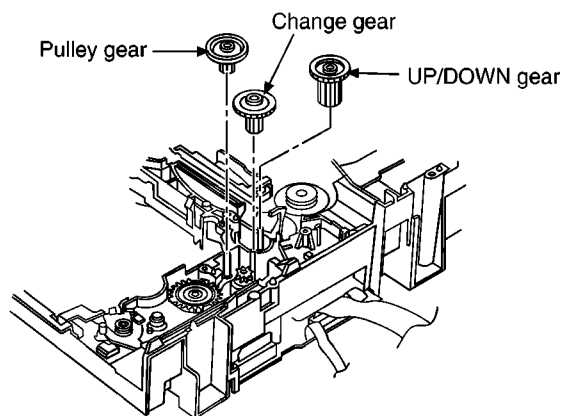
Remove the belt and change gear spring.

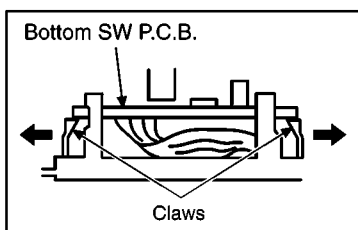
**NOTE:**

Take care not to lose the change gear spring.

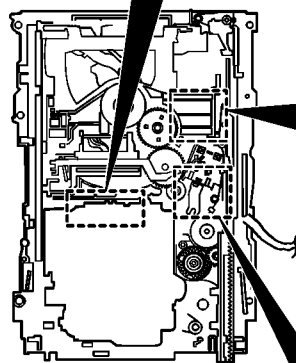
(Step 6)

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

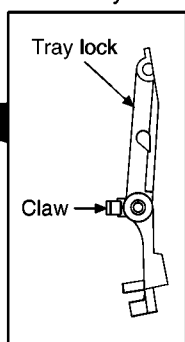




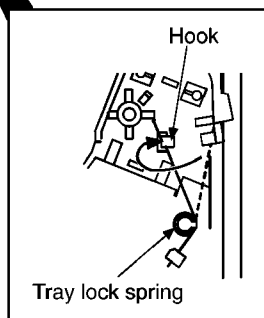
(Step 7)
Release the 2 claws,
and then remove the
bottom SW P.C.B..



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

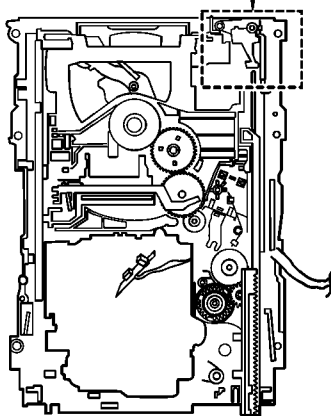
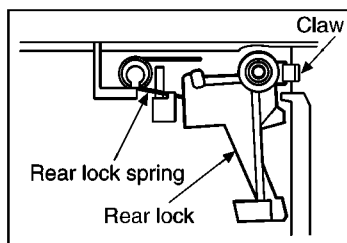


(Step 8)
Install the tray lock spring to
the hook temporarily.

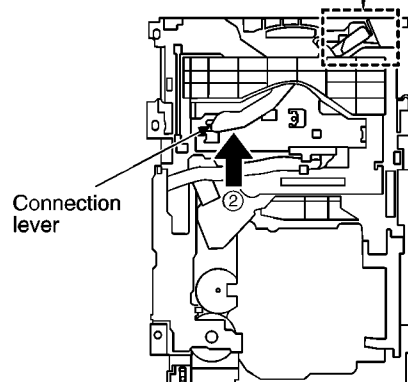
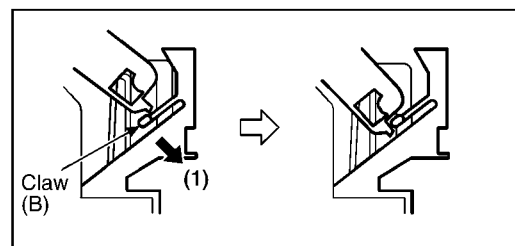


(Step 10)
Release the claw, and
then remove the rear
lock.

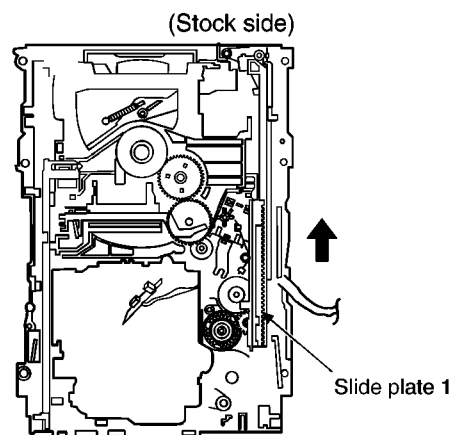
NOTE:
Take care not take the
rear lock spring off.



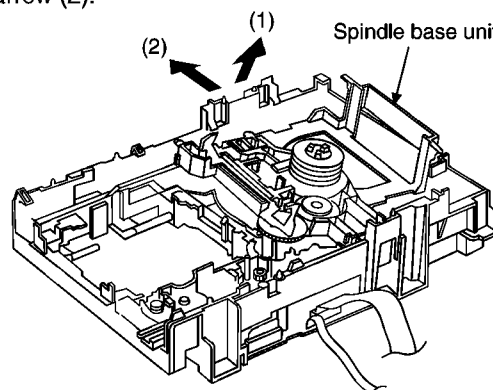
(Step 11)
Pressing the claw (B) in the direction of arrow (1),
force the connection lever in the direction of arrow (2).

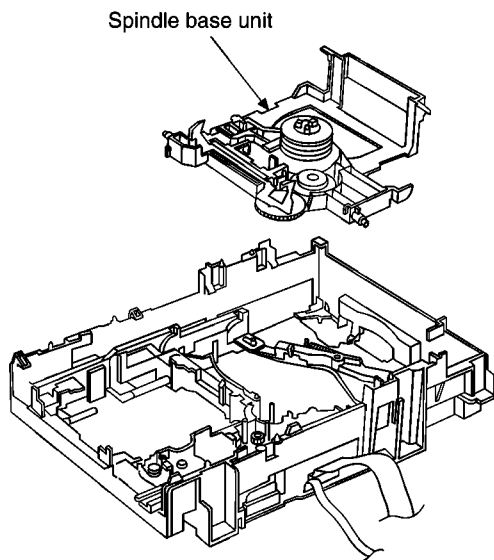


(Step 12)
Move the slide plate 1 to the end of stock side.

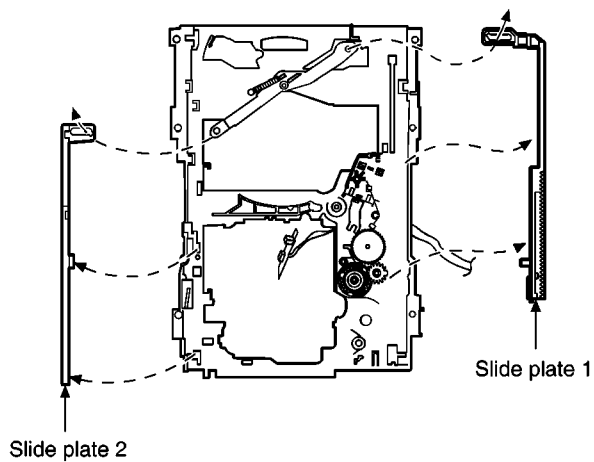


(Step 13)
Lift up the left end of spindle base unit in the direction
of arrow (1), and then remove the unit in the direction
of arrow (2).

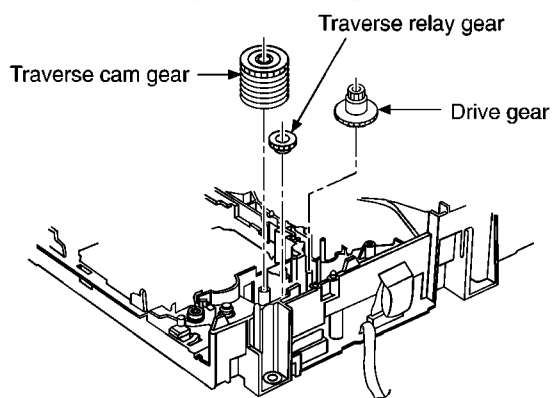


**(Step 14)**

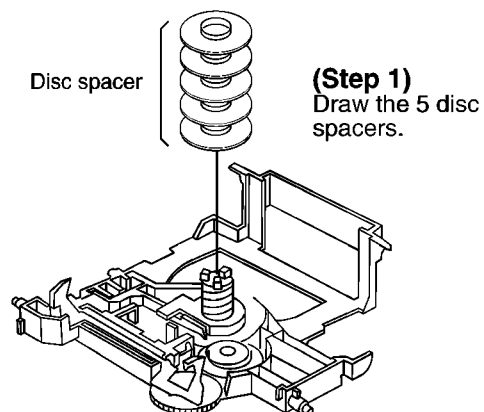
Remove the slide plate 1 and slide plate 2.

**(Step 15)**

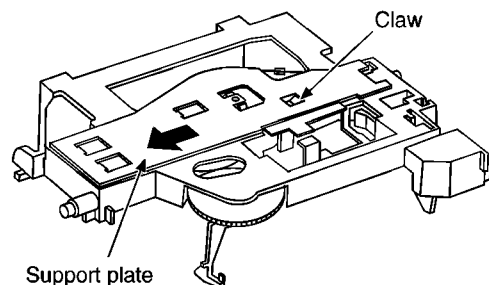
Remove the traverse relay gear, traverse cam gear and drive gear.



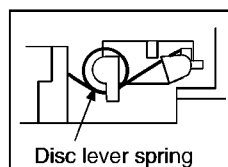
Diassembly/reassembly for the spindle base unit

**(Step 2)**

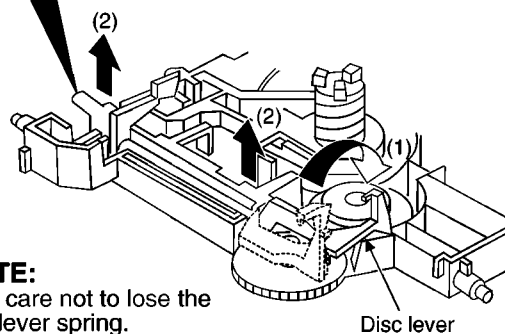
Pushing the claw, slide the support plate in the direction of arrow, and then remove it.



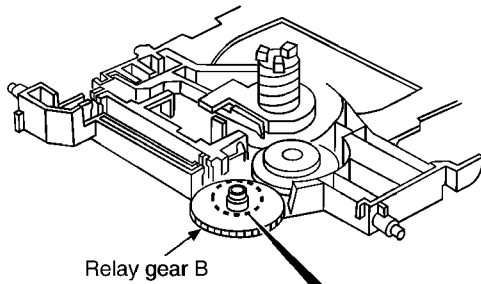
(Installation for disc lever spring)

**(Step 3)**

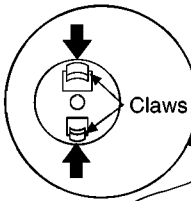
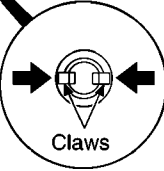
Rotate the disc lever in the direction of arrow (1), draw the disc lever.

**NOTE:**

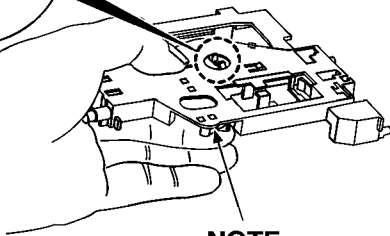
Take care not to lose the disc lever spring.



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



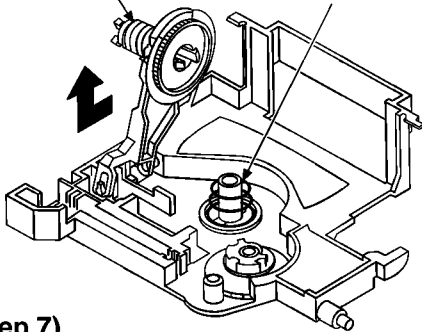
(Step 5)
Release the 2 claws.



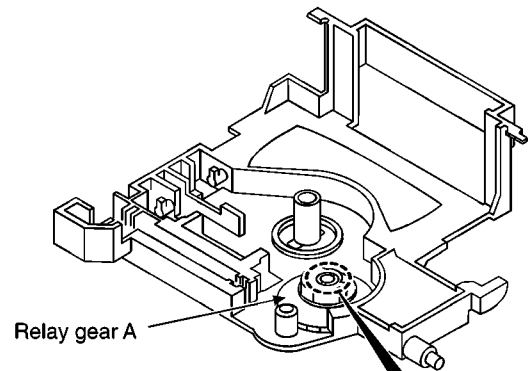
NOTE:
Hold the loading stopper
ass'y manually because
it is flipped by spring.

Loading stopper ass'y

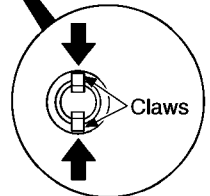
(Step 6)
Remove the cushion
spring.



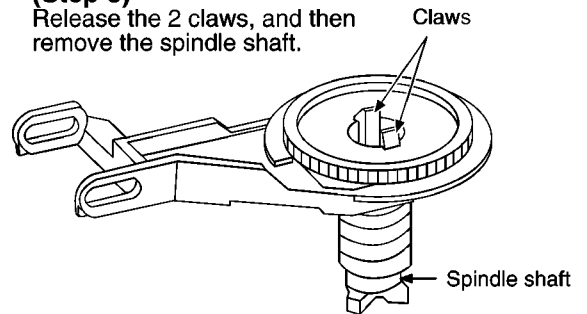
(Step 7)
Remove the loading stopper ass'y
in the direction of arrow.



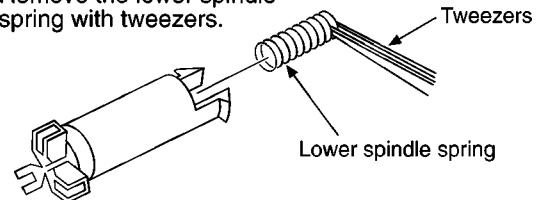
(Step 8)
Release the 2 claws, and then
remove the relay gear A.



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

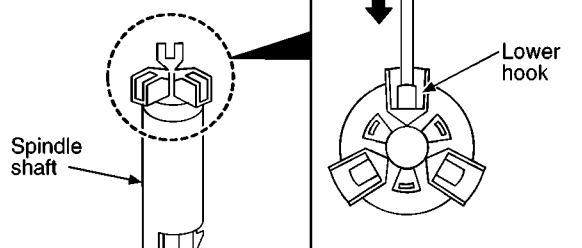


(Step 10)
Remove the lower spindle
spring with tweezers.

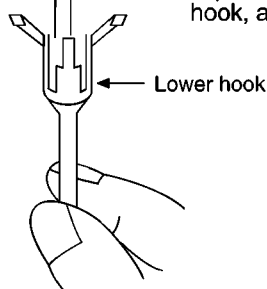


(Step 11)

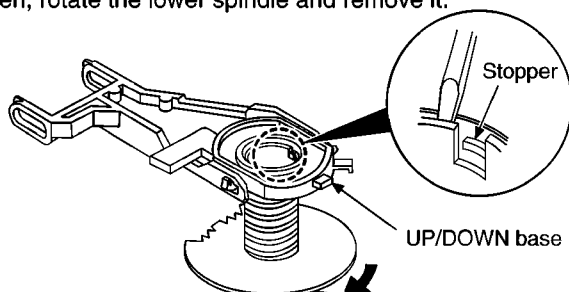
Force the lower hook with thin tip of minus screwdriver.

**(Step 12)**

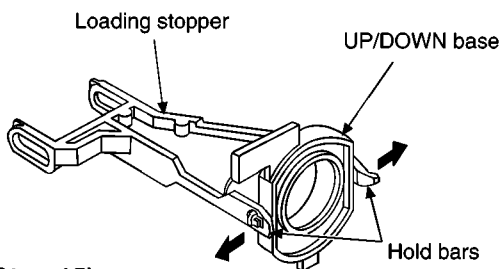
Squeeze the shaft of lower hook, and then draw it.

**(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)**

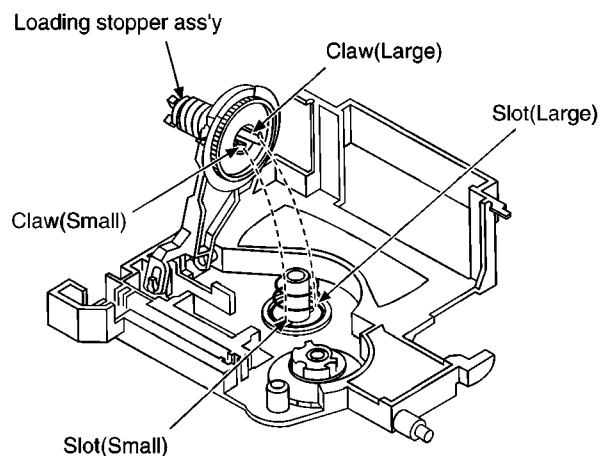
Rotate the lower spindle in the direction of arrow until the lower spindle interferes with stopper.

**(Step 15)**

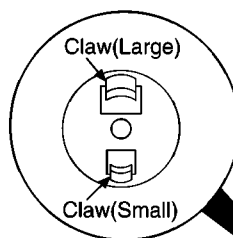
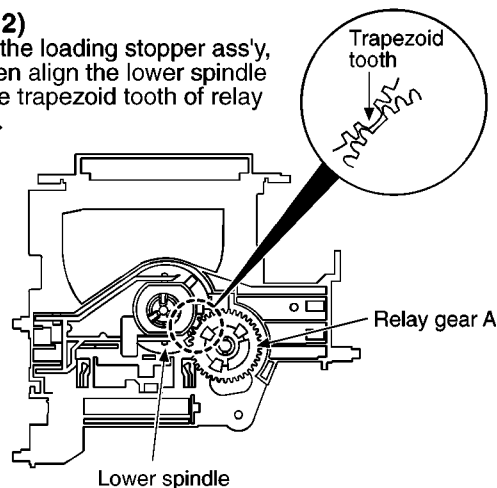
Rotate the UP/DOWN base at a 90 degree angle. Then, spread the hold bars of loading stopper and remove the UP/DOWN base.

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

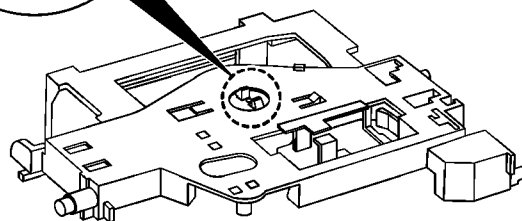
Align the claw of loading stopper ass'y with the slot of spindle base. (Caution should be exercised when alignment of claw due to the size of claws.)

**(Step 2)**

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

**(Step 3)**

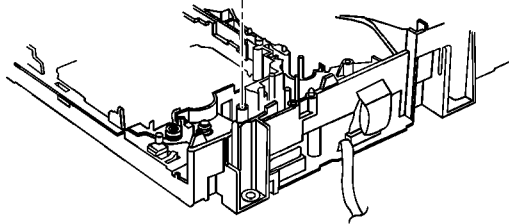
Force the loading stopper ass'y, latch the claw firmly.



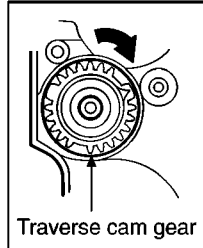
Reassembling for mechanism base drive unit

Traverse cam gear →

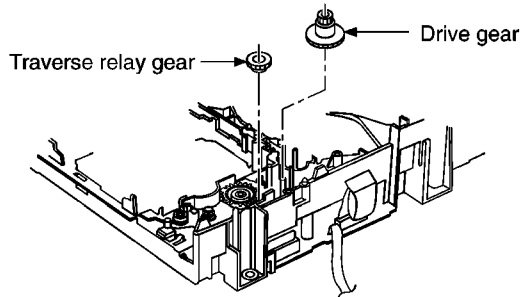
(Step 1)
Install the traverse cam gear.



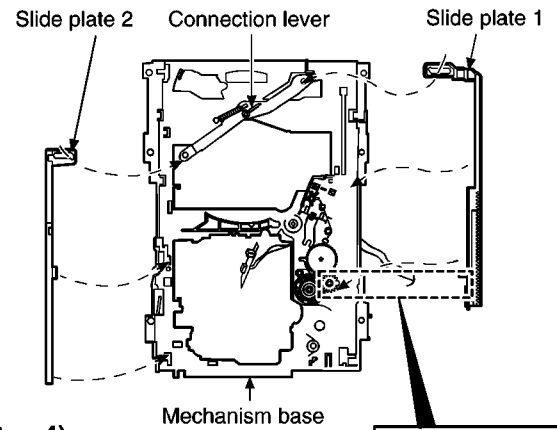
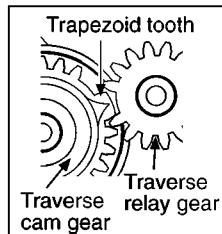
(Step 2)
Rotate the traverse cam gear to the direction of arrow.



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

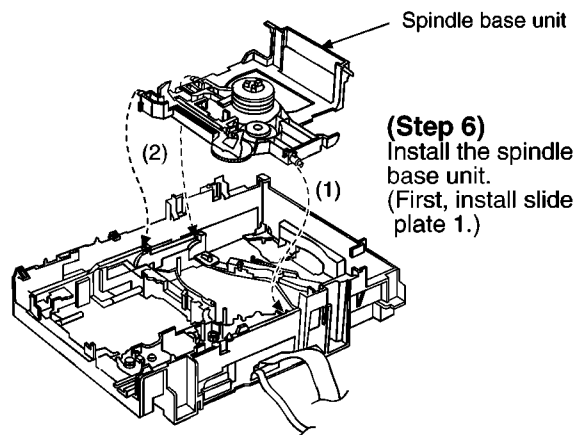
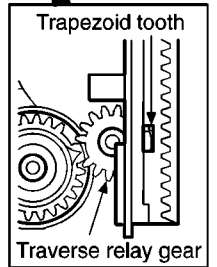


※ When installing the traverse relay gear, align the trapezoid tooth of gear with tooth of drive gear.



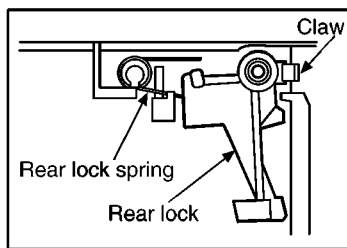
(Step 4)
Install the slide plate 2 to the mechanism base, and then match to the connection lever.

(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.

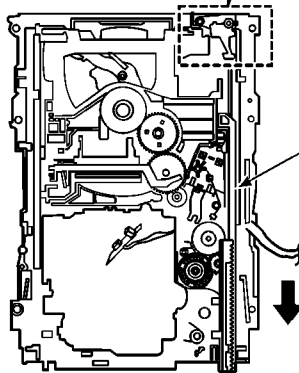


(Step 6)
Install the spindle base unit.
(First, install slide plate 1.)

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



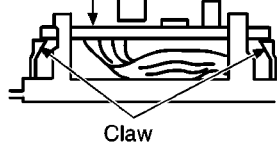
(Step 7)
Move the slide plate 1 to forward fully.



(Front side)

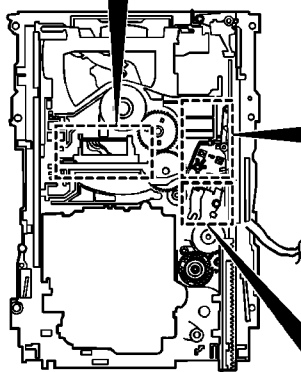
Bottom SW P.C.B.

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



Claw

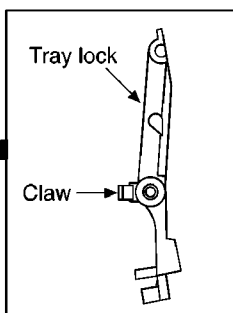
(Step 10)
Install the tray lock.
(The claw should be latched.)



Tray lock

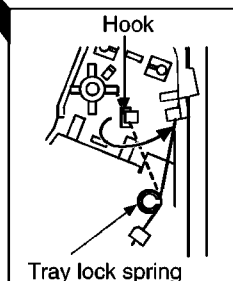
Claw

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



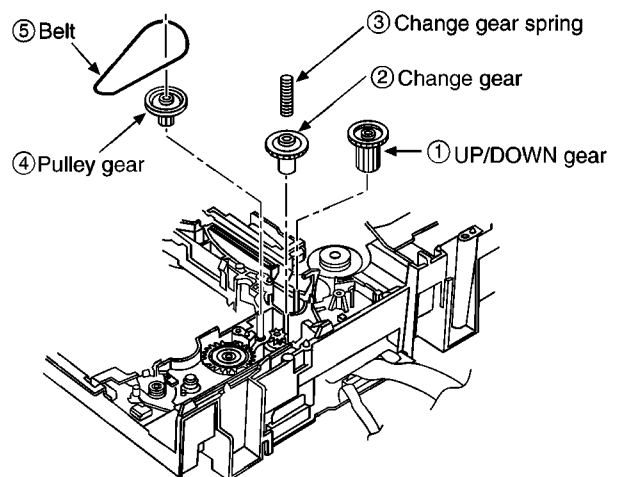
Hook

Tray lock spring



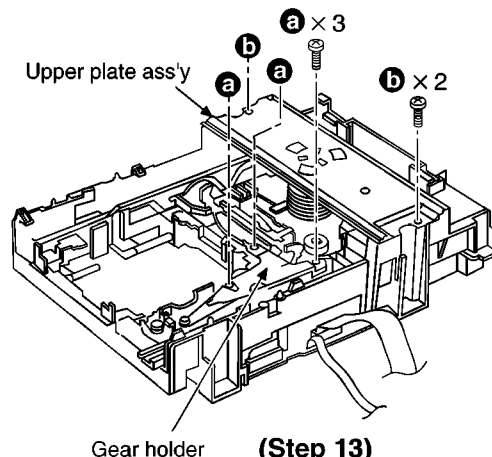
(Step 12)

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).



Gear holder

(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.)

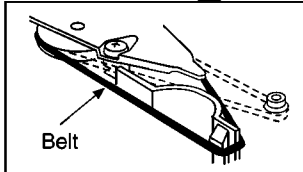
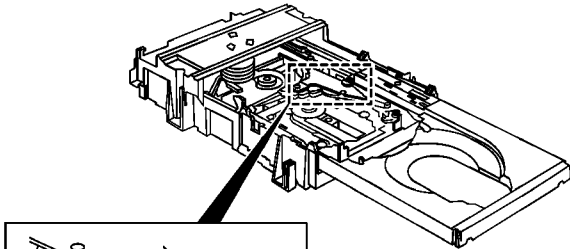
[Operation check after servicing]

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.

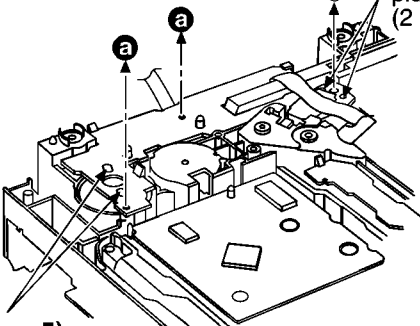
NOTE:
Take care not apply the grease to the belt.

(Step 2)
Upset the CD changer unit.

(Step 3)

a × 3

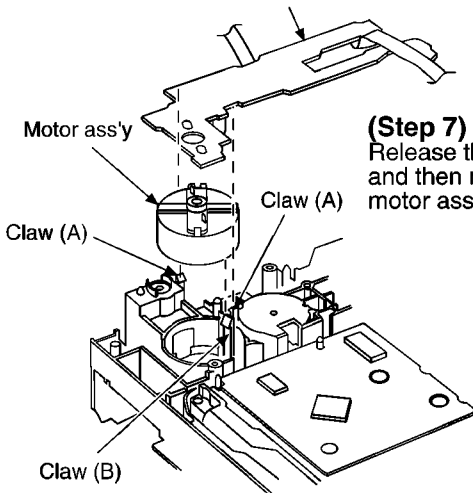
(Step 4)
Unsolder the plunger terminals (2 points).



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

(Step 6)

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

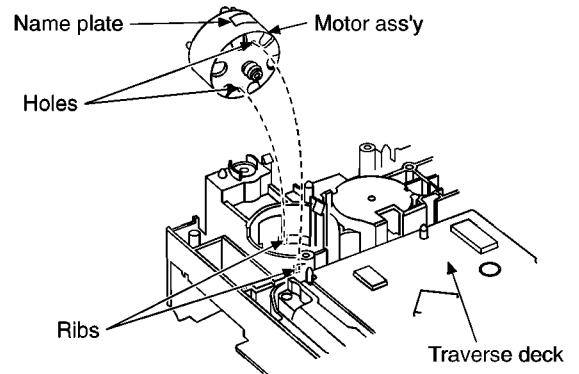


(Step 7)

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-EH780). 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.

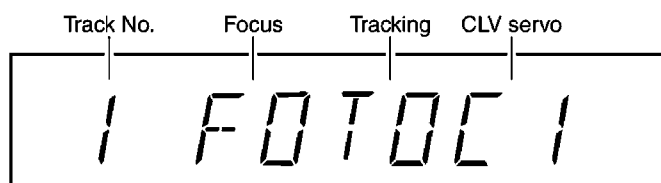


Fig. 6-2.

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)



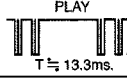
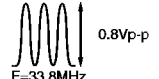
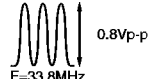
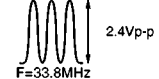
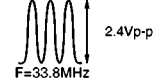
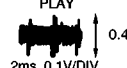
	"0" level	"1" level
Focus system	normal	defective
Tracking system	normal	defective
CLV servo system	defective	normal

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		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		
			X2 OUT	IC702-pin 59		
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		1.7 V
			TE	IC702-pin 33		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		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		1.0 V
			FE	IC702-pin 32		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		1.7 V
			TE	IC702-pin 33		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.

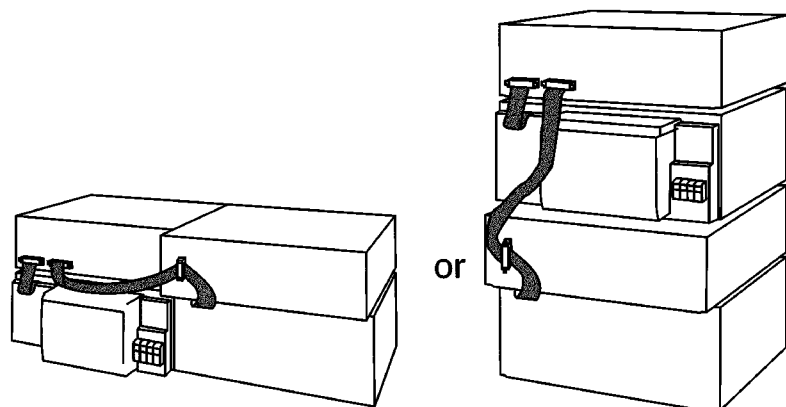


Fig. 7-1.

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

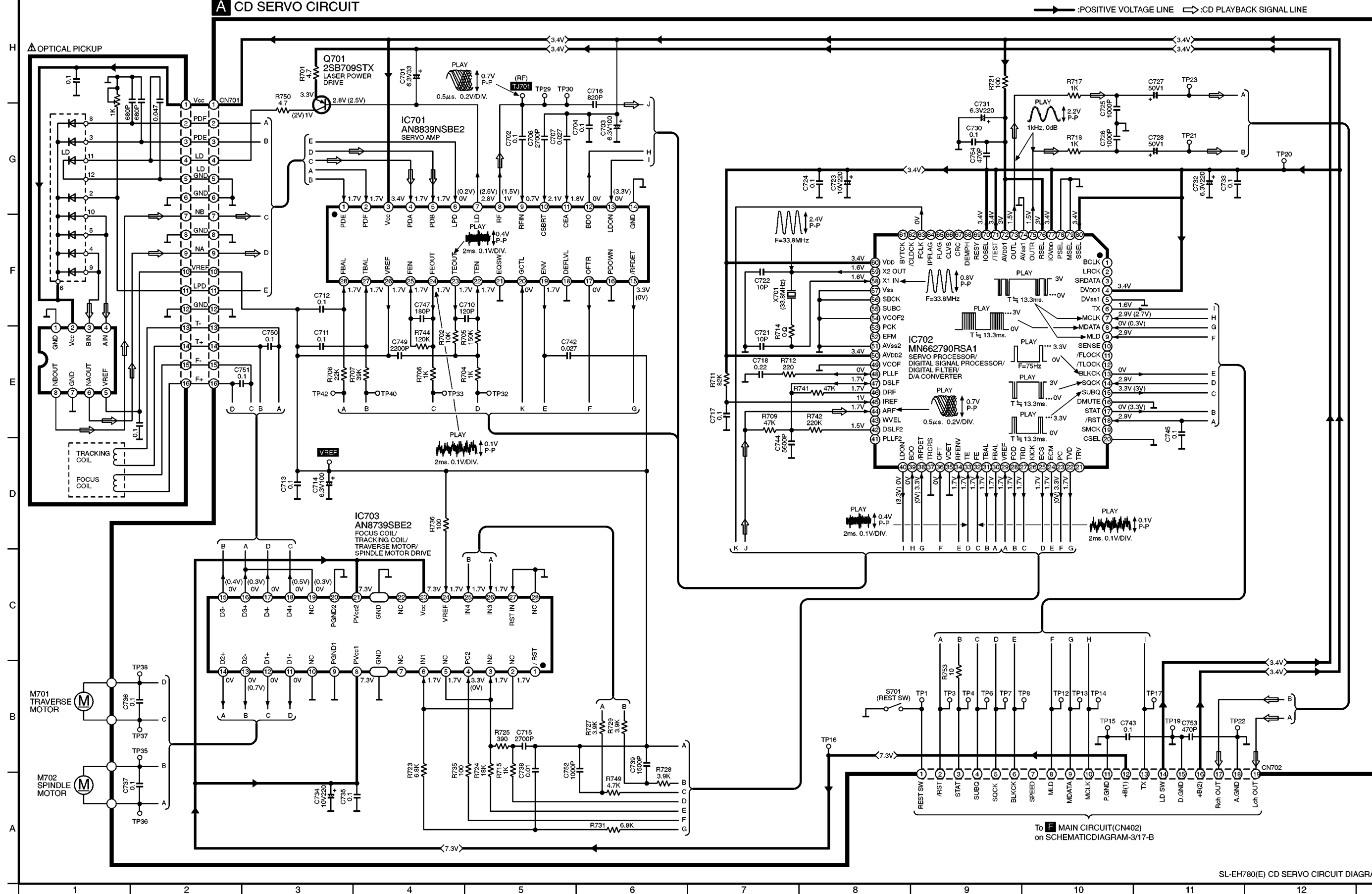
→ : Positive voltage line
⇨ : CD play back signal line

9 Schematic Diagram

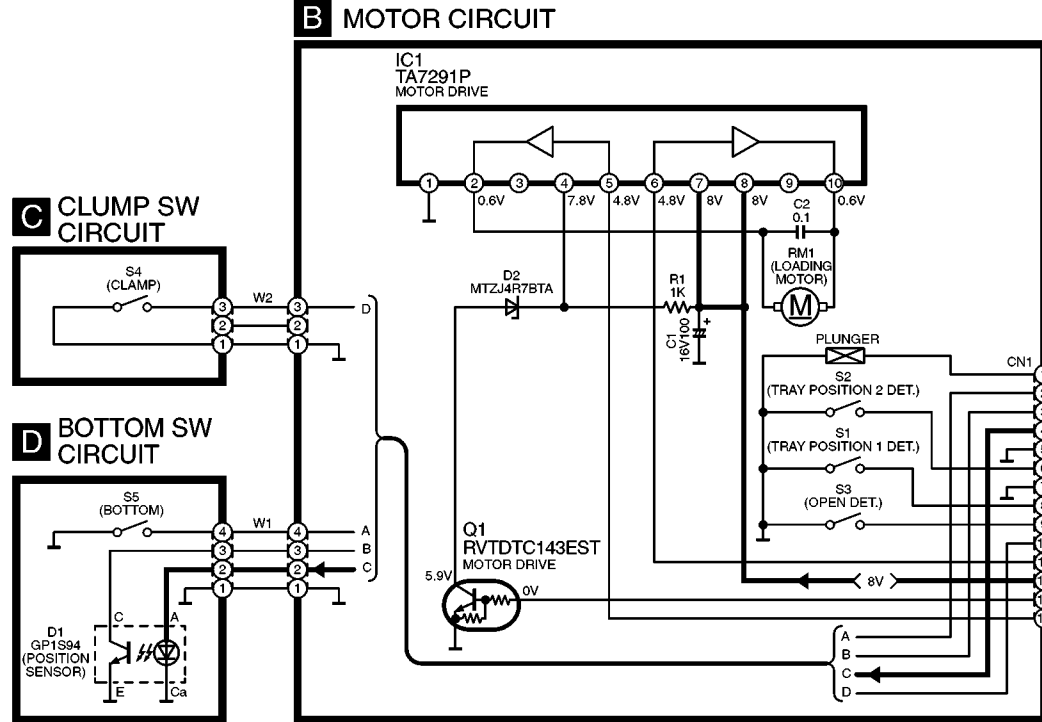
SCHEMATIC DIAGRAM-1

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.

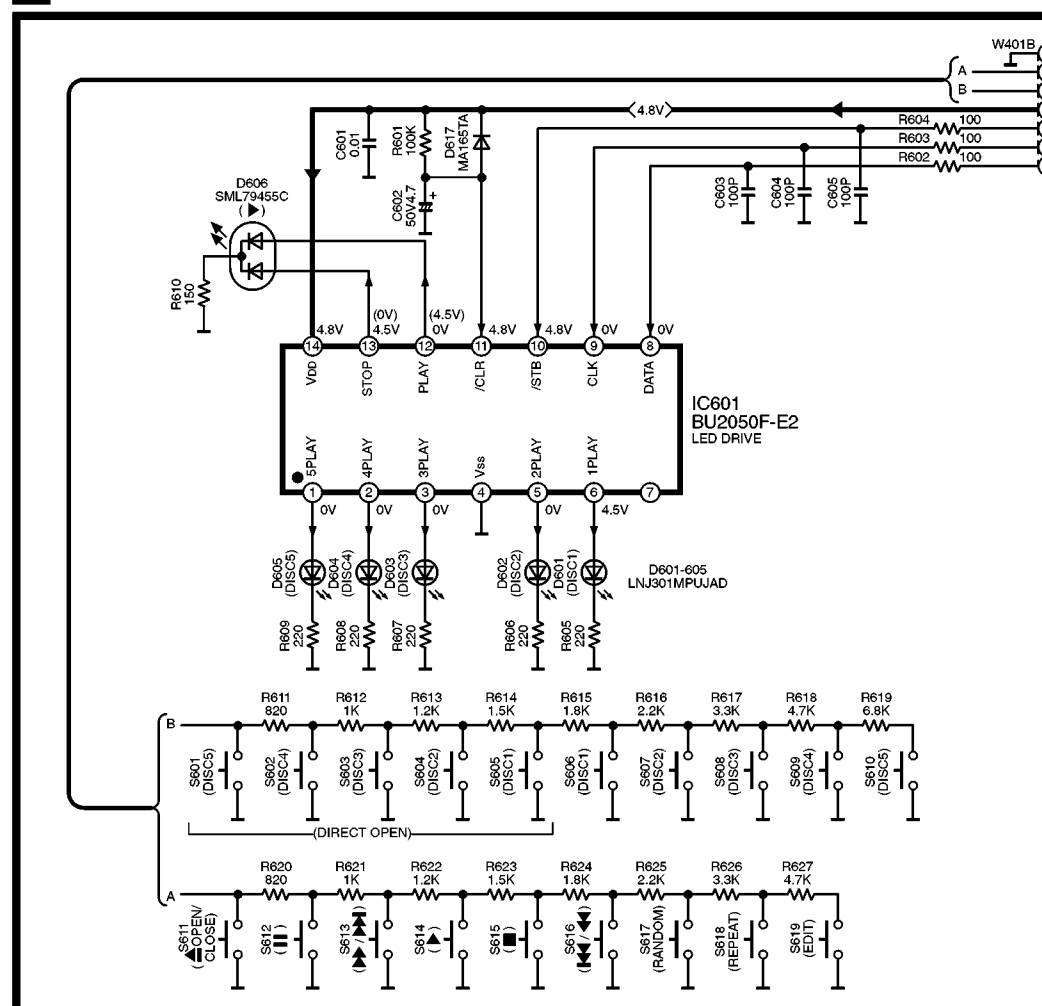
A CD SERVO CIRCUIT



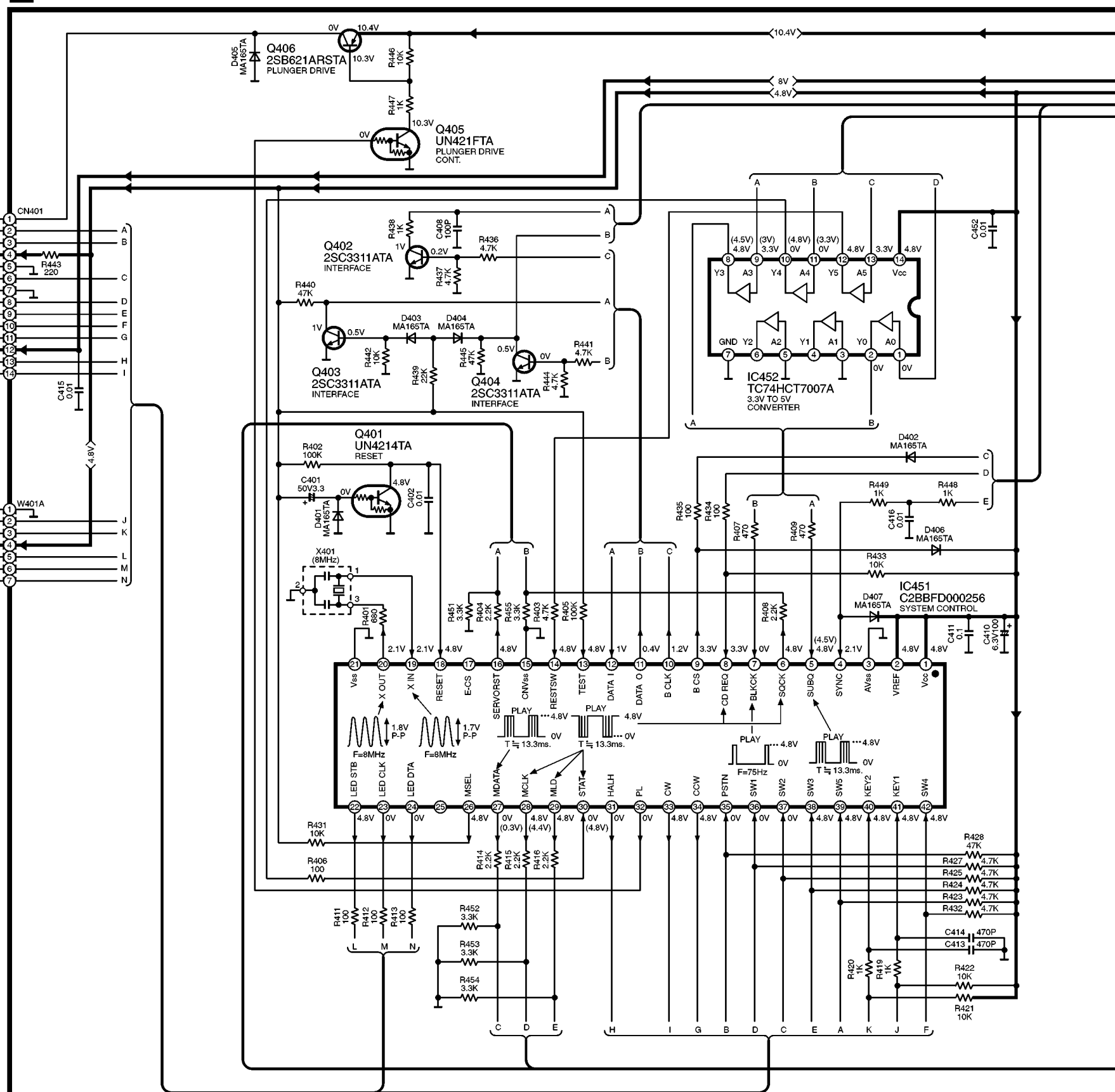
SCHEMATIC DIAGRAM-2



E OPERATION CIRCUIT

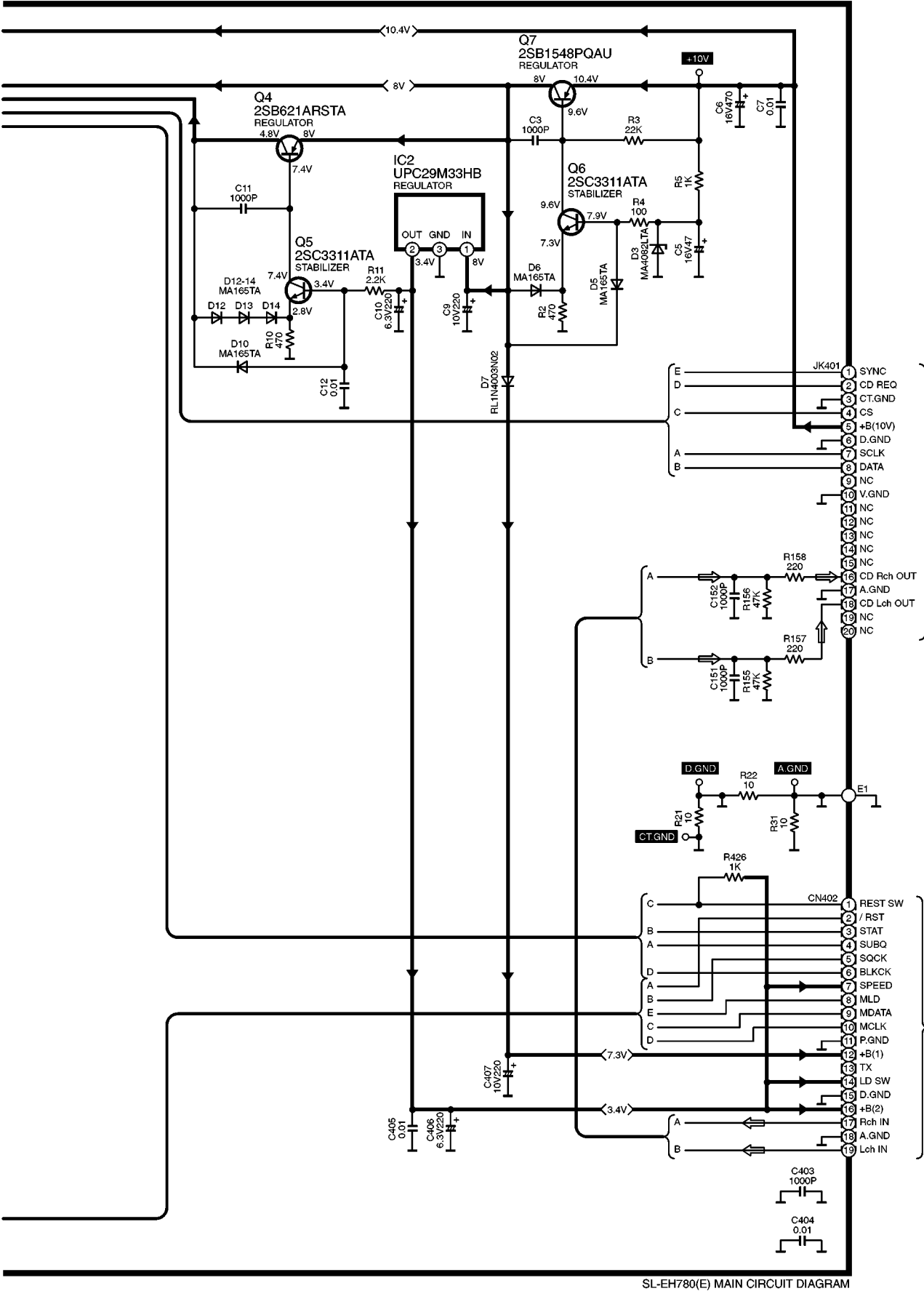


F MAIN CIRCUIT : POSITIVE VOLTAGE LINE



SCHEMATIC DIAGRAM-3

→ : POSITIVE VOLTAGE LINE ⇨ : CD PLAYBACK SIGNAL LINE



To SOUND PROCESSOR
(SE-EH780) &
CASSETTE DECK
(RS-DV280)

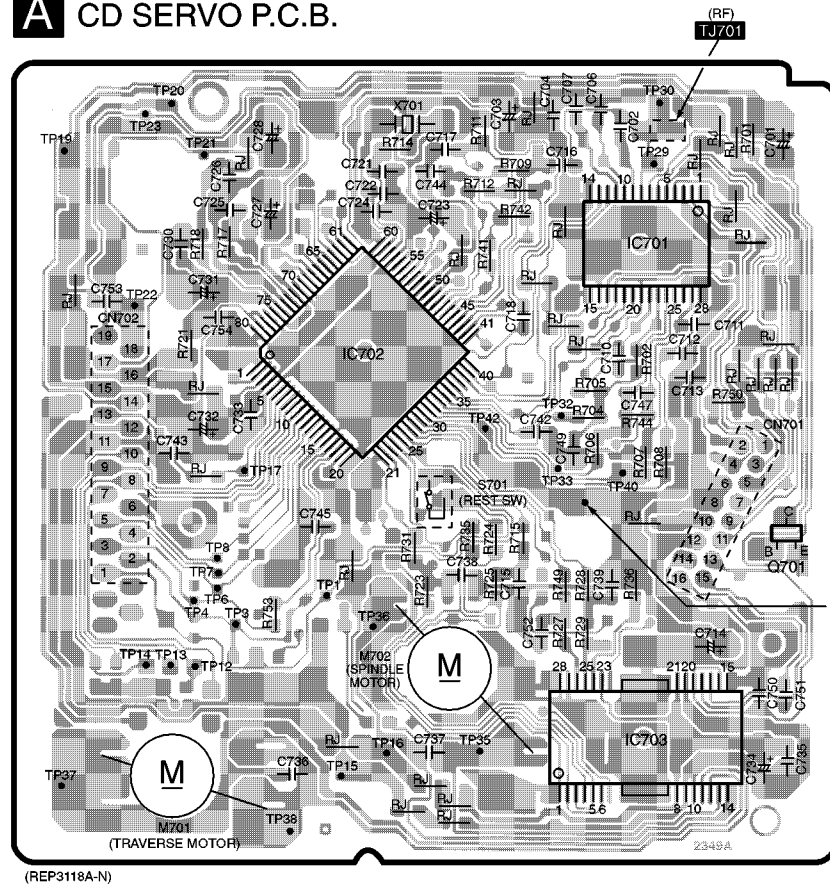
To **A** CD SERVO CIRCUIT(CN702)
on SCHEMATIC DIAGRAM-1/9,10,11-A

H
G
F
E
D
C
B
A

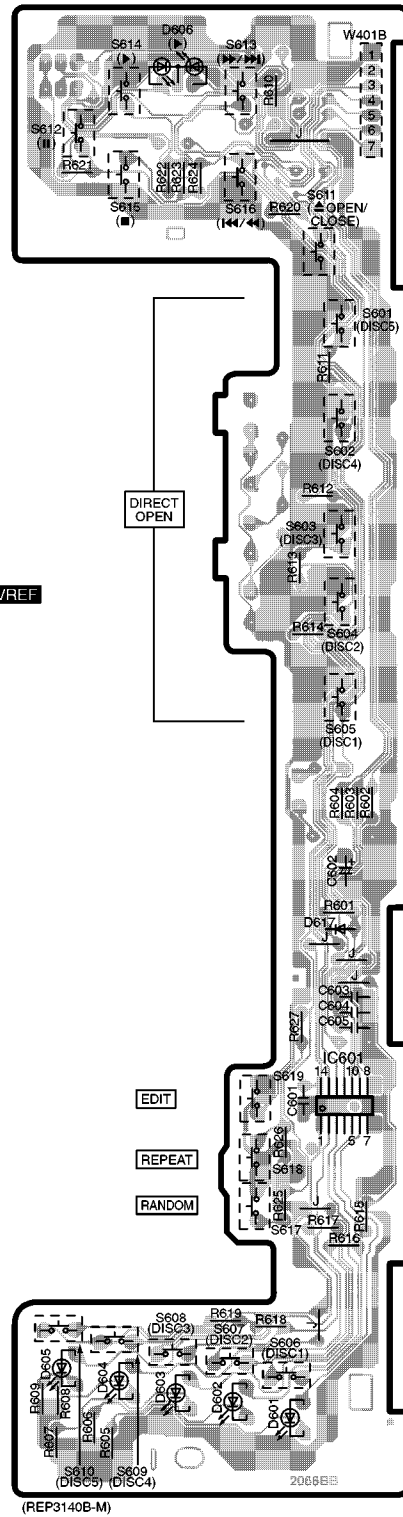
10 Printed Circuit Board Diagram

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

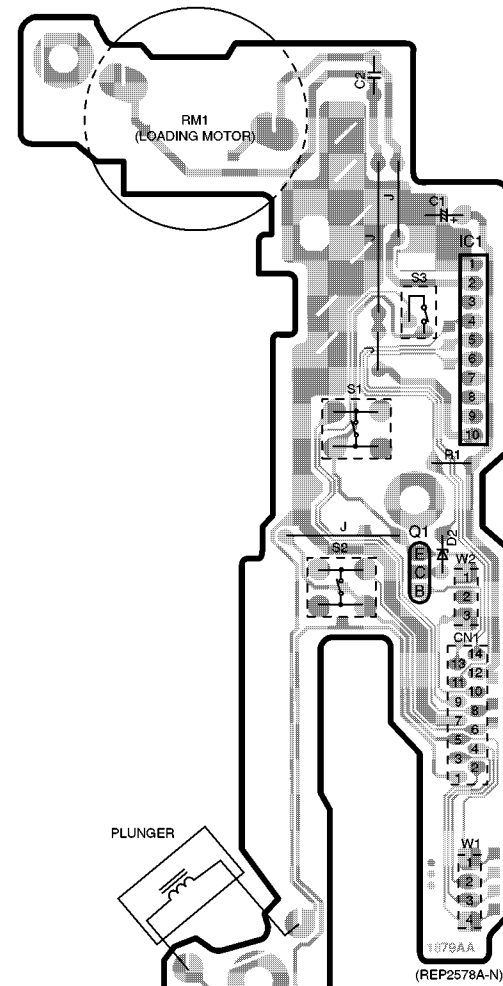
A CD SERVO P.C.B.



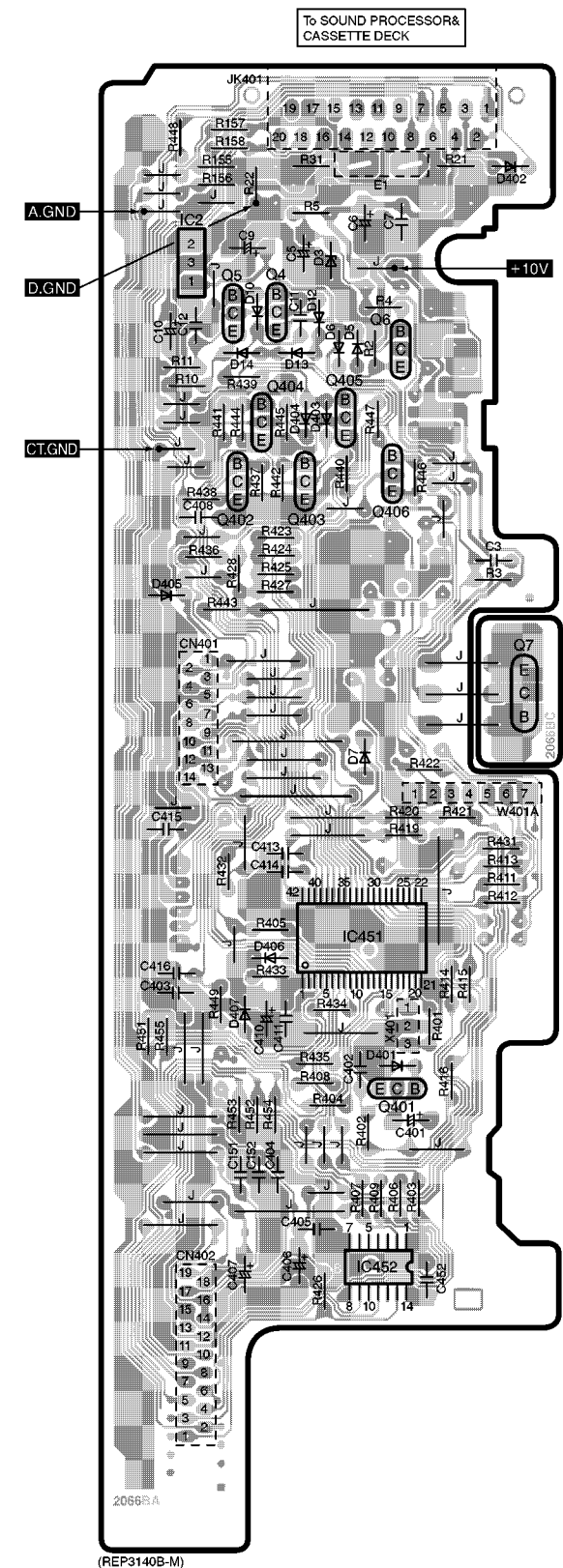
E OPERATION P.C.B.



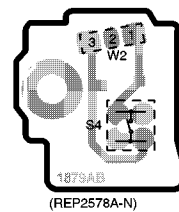
B MOTOR P.C.B.



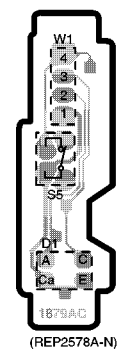
F MAIN P.C.B.



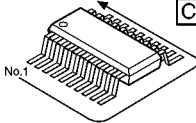
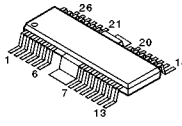
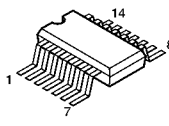
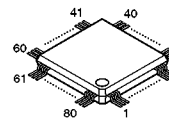
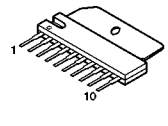
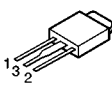
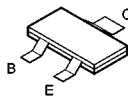
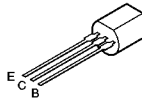
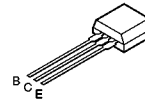
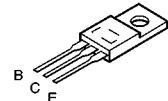
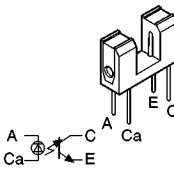
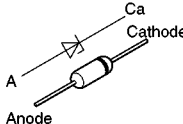
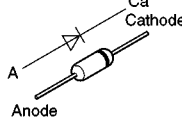
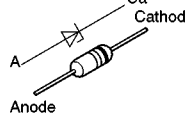
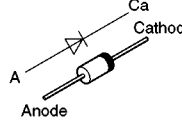
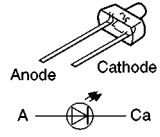
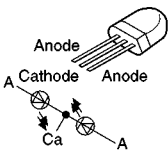
C CLAMP SW P.C.B.



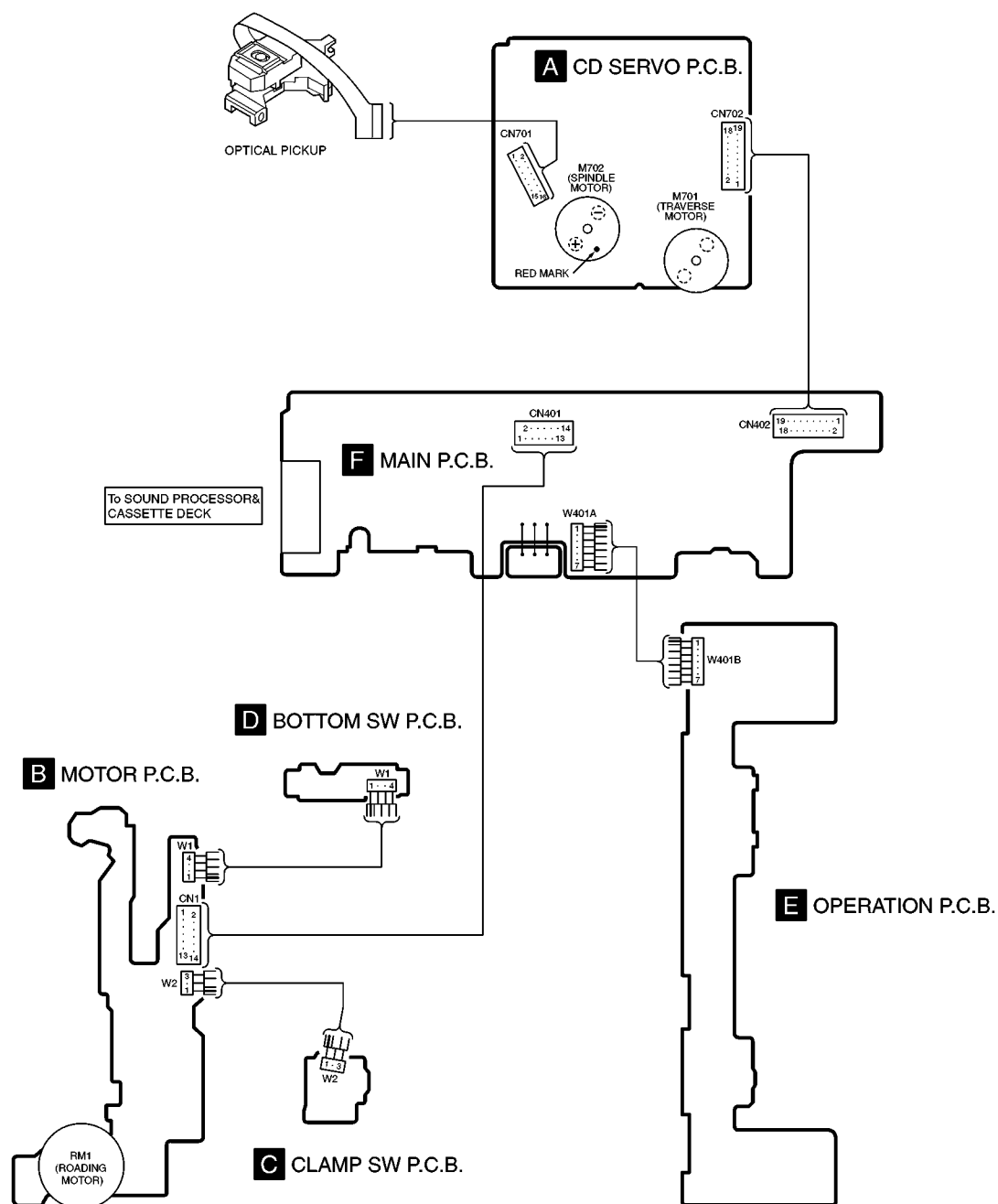
D BOTTOM SW P.C.B.



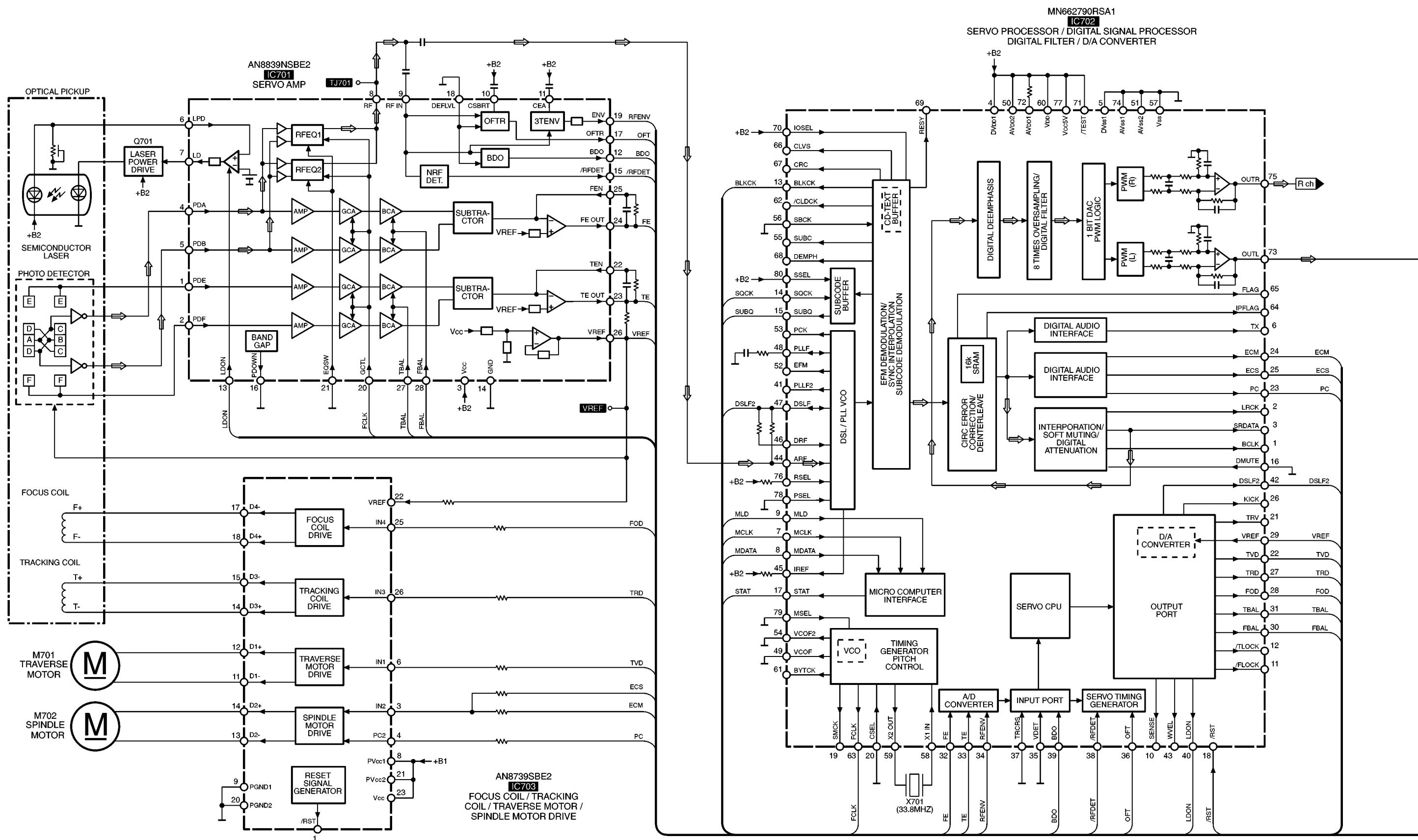
11 Type Illustration of ICs, Transistors and Diodes

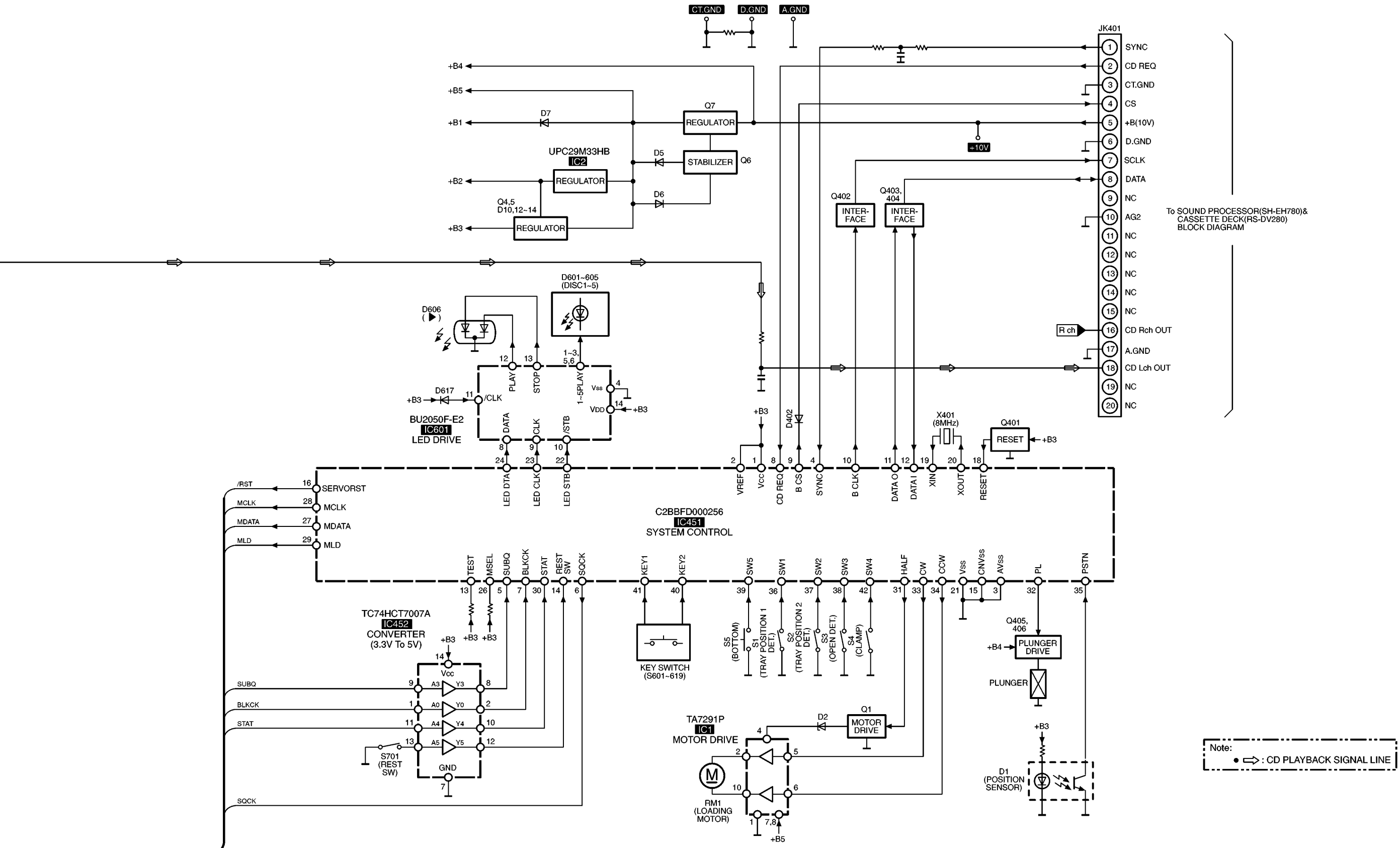
 <table><tr><td>AN8839NSBE2</td><td>28PIN</td></tr><tr><td>BU2050F-E2</td><td>14PIN</td></tr><tr><td>C2BBFD000256</td><td>42PIN</td></tr></table>	AN8839NSBE2	28PIN	BU2050F-E2	14PIN	C2BBFD000256	42PIN	 AN8739SBE2	 TC74HCT7007A	 MN662790RSA1	 TA7291P
AN8839NSBE2	28PIN									
BU2050F-E2	14PIN									
C2BBFD000256	42PIN									
 UPC29M33HB	 2SB709STX	 2SC3311ATA UN421FTA UN4214TA	 2SB621ARSTA	 RVTDTTC143EST	 2SB1548PQAU					
 GP1S94	 MTZJ4R7BTA	 MA165TA	 MA4082LTA	 RL1N4003N02	 LNJ301MPUJAD					
 SML79455C										

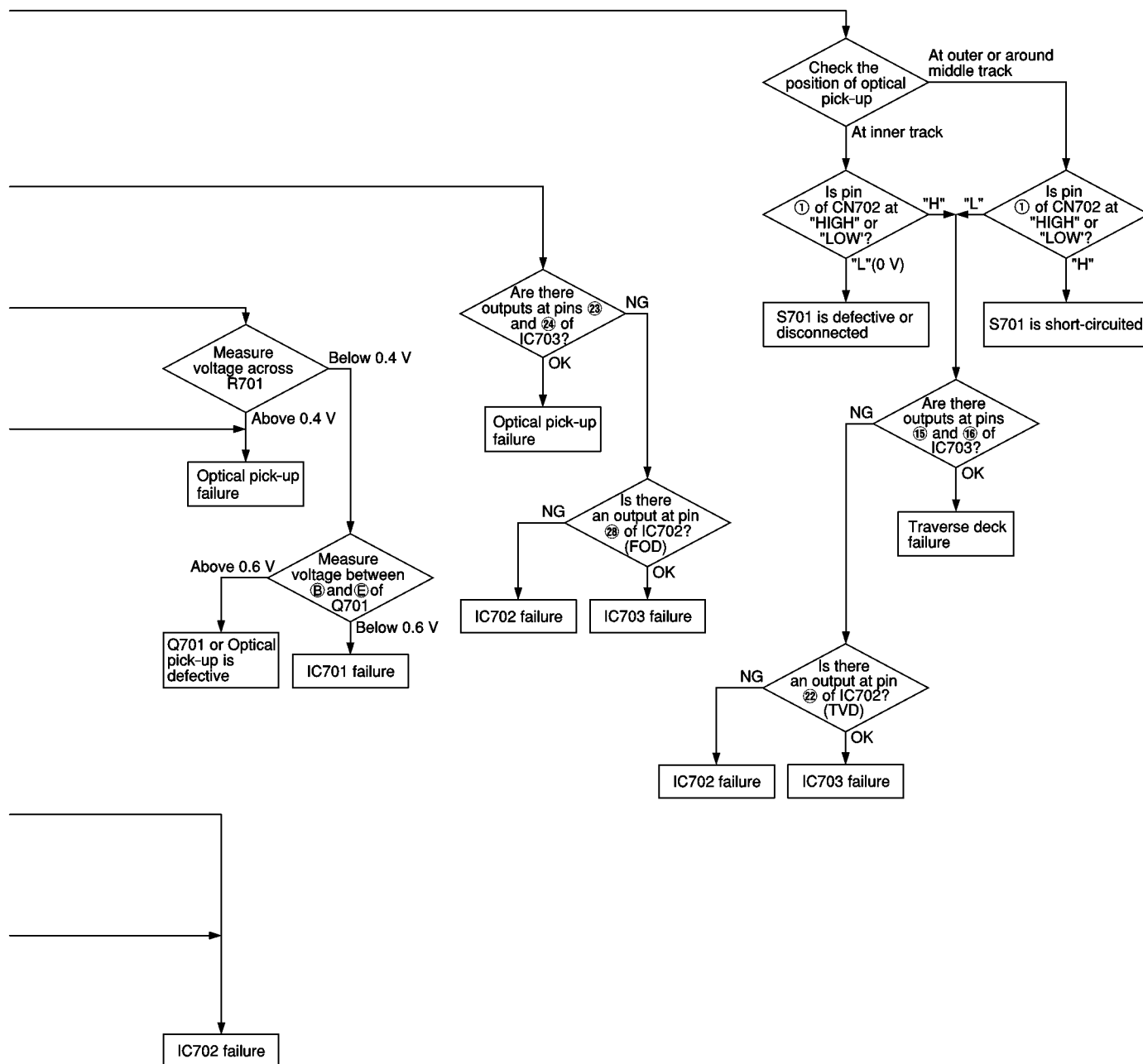
12 Wiring Connection Diagram



13 Block Diagram







15 Terminal Function of ICs

15.1. IC451 (C2BBFD000256): 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 for CD servo IC
28	MCLK	O	Command clock output for CD servo IC
29	MLD	O	Command load output for CD servo IC
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	DEFLVL	-	Not used, connected to GND
19	ENV	O	Envelope signal output
20	GCTL	I	Sub-code frame clock signal input
21	EQ SW	-	Not used, connected to GND
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 (MN662790RSA1): 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	-	Frequency control terminal of crystal oscillator (Not used, connected to GND)
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	PLL2	-	PLL loop filter terminal (Not used, open)
42	DSL2	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	DSL1	I/O	DSL loop filter terminal
48	PLL1	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=16.9344 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	O	Crystal frame clock
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

Pin No.	Terminal Name	I/O	Function
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	-	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	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 MESA.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	RKM0399-1S	CABINET	1	
2	RHD30007-1S	SCREW	4	
3	XTBS3+8JFZ1	SCREW	1	
4	REZ1361-J	FFC(19P)	1	
5	REZ1382-J	FFC(14P)	1	
6	RYF0520D-N	CD LID ASS'Y	1	
7	XTW3+8T	SCREW	2	
8	RKA0105-K	RUBBER	4	
9	RKA0106-N	FOOT RING	4	
10	RYP1101-N	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	Δ
301-1	SHGD113-1	RUBBER	3	
301-2	SNSD38	SCREW	2	
301-3	RAF0150A-1	OPTICAL PICK-UP	1	Δ
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	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	RMQ0653	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	

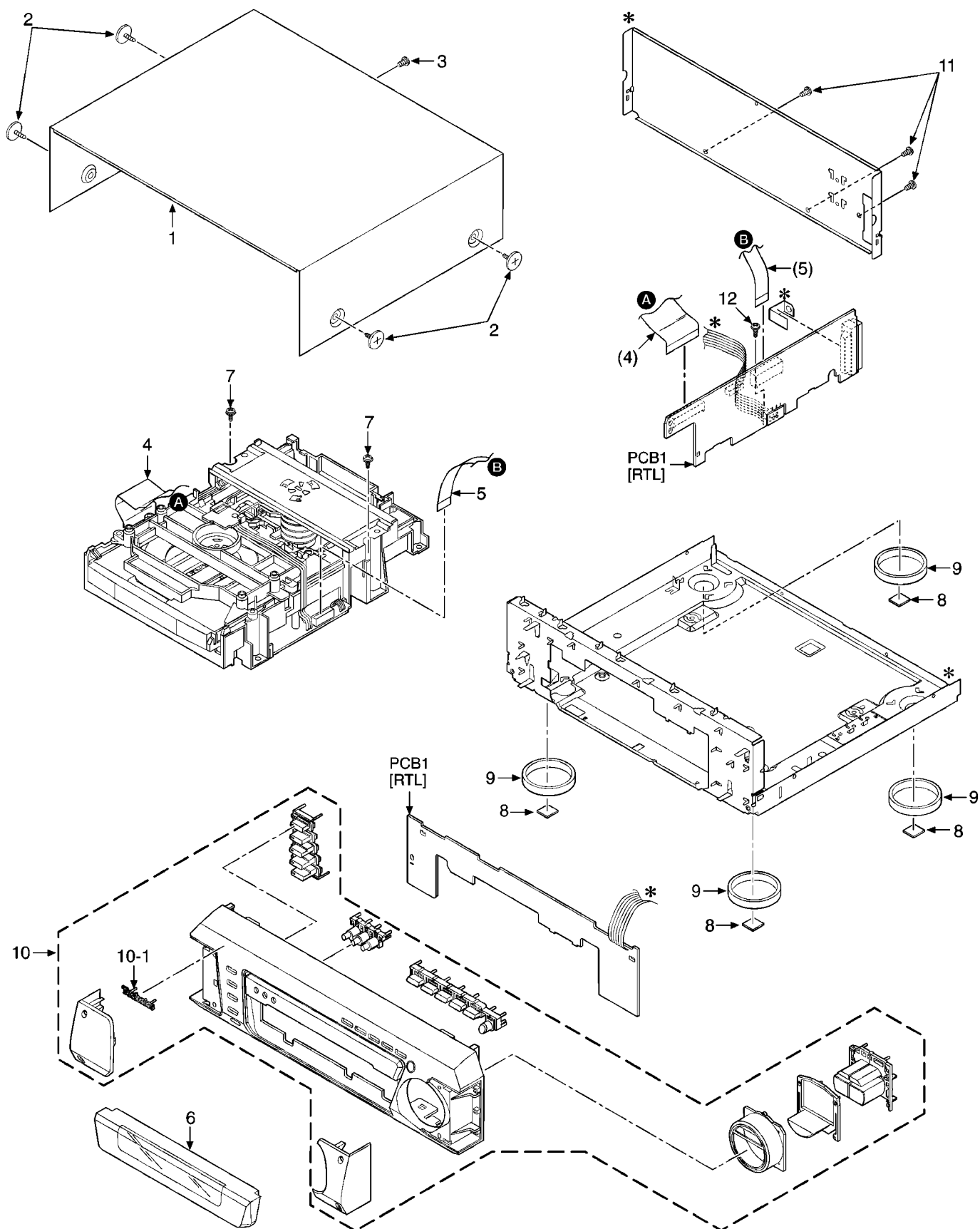
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
330	RDG0431	GEAR, RELAY B	1	
331	XTV2+6G	SCREW	2	
332	RMB0552	SPRING	1	
333	RME0262	SPRING	1	
334	RME0263	SPRING	1	
335	RML0526	SPRING	1	
336	RMQ0742	SPINDLE BASE	1	
337	RMB0550	SPRING	1	
338	RML0522	LOADING STOPPER	1	
339	RMQ0743	SPINDLE SHAFT	1	
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	ECBA1E103ZF5	25V 0.01U	1	ECBT1E103ZF3
C3	ECBA1H102KB5	50V 1000P	1	
C5	RCE1CKA470BG	16V 47U	1	F2A1C470A017
C6	ECA1CAM471XB	16V 470U	1	
C7	ECBT1C103MS5	16V 0.01U	1	F1D1C103A004
C9	ECEA1AKS221	10V 220U	1	
C10	F2A0J221A143	6.3V 220U	1	
C11	ECBA1H102KB5	50V 1000P	1	
C12	ECBT1C103MS5	16V 0.01U	1	F1D1C103A004
C151, 52	ECBA1H102KB5	50V 1000P	2	
C401	RCE1HKA3R3BG	50V 3.3U	1	F2A1H3R3A015
C402	ECBT1C103MS5	16V 0.01U	1	F1D1C103A004
C403	ECBA1H102KB5	50V 1000P	1	
C404, 05	ECBT1C103MS5	16V 0.01U	2	F1D1C103A004
C406	F2A0J221A143	6.3V 220U	1	
C407	ECEA1AKS221	10V 220U	1	
C408	ECBA1H101KB5	50V 100P	1	
C410	EEAFC0J101B	6.3V 100U	1	
C411	ECBT1H104KB5	50V 0.1U	1	F1D1H1040002
C413, 14	ECBT1H471KB5	50V 470P	2	F1D1H471A012
C415, 16	ECBT1C103MS5	16V 0.01U	2	F1D1C103A004
C452	ECBT1C103MS5	16V 0.01U	1	F1D1C103A004
C601	ECBT1C103MS5	16V 0.01U	1	F1D1C103A004
C602	RCE1HKA4R7BG	50V 4.7U	1	F2A1H4R70009
C603-05	ECBA1H101KB5	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	F1J1H121A507
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	
C717	ECUWNE104ZFN	25V 0.1U	1	
C718	ECUV1A224KEV	10V 0.22U	1	F1H1A224A001
C721, 22	ECUV1H100DCV	50V 10P	2	
C723	ECEA1AKS221	10V 220U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C724	ECUZNE104MBN	25V 0.1U	1	
C725,26	ECUE1H102KBN	50V 1000P	2	F1J1H1020023
C727,28	ECEA1HKS010	50V 1U	2	
C730	ECUWNE104ZFN	25V 0.1U	1	
C731,32	ECEA1AKS221	6.3V 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	ECUV1E562KEV	25V 5600P	1	
C745	ECUV1E104KBN	25V 0.1U	1	F1J1E1040007
C747	ECUV1H181KCN	50V 180P	1	
C749	ECUM1H222KBN	50V 2200P	1	
C750,51	ECUZNE104MBN	25V 0.1U	2	
C752	ECUE1H102KBN	50V 1000P	1	F1J1H1020023
C753	ECUV1H471KBM	50V 470P	1	
C754	ECUE1H471KBN	50V 470P	1	
CN401	RJS1A6714-Q	CONNECTOR (14P)	1	K1MN14B00054
CN402	K1MN19B00035	CONNECTOR (19P)	1	
CN701	K1MN16B00080	CONNECTOR (16P)	1	
CN702	RJS1A6719-1Q	CONNECTOR (19P)	1	
D1	GP1S94	DIODE	1	B3NAA0000029
D2	MTZJ4R7B	DIODE	1	
D3	MA4082LTA	DIODE	1	MAZ40820LF
D5,D6	MA165	DIODE	2	MA2C165
D7	RL1N4003N02	DIODE	1	B0AAMM000009
D10	MA165	DIODE	1	MA2C165
D12-14	MA165	DIODE	3	MA2C165
D401-07	MA165	DIODE	7	MA2C165
D601-05	LNJ301MPUJAD	LED	5	
D606	SML79455C	LED	1	
D617	MA165	DIODE	1	MA2C165
IC1	TA7291P	IC	1	C0GAM0000005
IC2	UPC29M33HB	IC	1	C0CAABE00005
IC451	C2BBFD000256	IC	1	
IC452	TC74HCT7007A	IC	1	C0JBAZ001229
IC601	BU2050F-E2	IC	1	C1BB00000573
IC701	AN8839NSBE2	IC	1	AN8839NSB-E2
IC702	MN662790RSA1	IC	1	MN662790RSA
IC703	AN8739SBE2	IC	1	AN8739SBTE2
JK401	RJT065K20	SYSTEM CONNECTOR (20P)	1	K1FA220B0006
PCB1	REP3140B-M	PCB ASS`Y	1	[RTL]
PCB301	REP2880A-N	PCB ASS`Y	1	[RTL]
PCB302	REP2578A-N	PCB ASS`Y	1	[RTL]
Q1	RVTDC143EST	TRANSISTOR	1	
Q4	2SB0621AHA	TRANSISTOR	1	
Q5,Q6	2SC3311ATA	TRANSISTOR	2	2SC3311A0A
Q7	2SB1548PQAU	TRANSISTOR	1	2SB15480J1AU
Q401	UN4214TA	TRANSISTOR	1	UNR421400A
Q402-04	2SC3311ATA	TRANSISTOR	3	2SC3311A0A
Q405	UN421FTA	TRANSISTOR	1	UNR421F00A
Q406	2SB0621AHA	TRANSISTOR	1	
Q701	2SB709S	TRANSISTOR	1	2SB07090S
R1	ERDS2FJ102	1/4W 1K	1	
R2	ERDS2FJ471	1/4W 470	1	
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	ERDS2TJ222T
R21,22	ERDS2FJ100	1/4W 10	2	
R31	ERDS2FJ100	1/4W 10	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R155,56	ERDS2FJ473	1/4W 47K	2	ERDS2TJ473T
R157,58	ERDS2FJ221	1/4W 220	2	
R401	ERDS2FJ681	1/4W 680	1	ERDS2TJ681T
R402	ERDS2FJ104	1/4W 100K	1	ERDS2TJ104T
R403	ERDS2FJ472	1/4W 4.7K	1	ERDS2TJ472T
R404	ERDS2FJ222	1/4W 2.2K	1	ERDS2TJ222T
R405	ERDS2FJ104	1/4W 100K	1	ERDS2TJ104T
R406	ERDS2FJ101	1/4W 100	1	
R407	ERDS2FJ471	1/4W 470	1	
R408	ERDS2FJ222	1/4W 2.2K	1	ERDS2TJ222T
R409	ERDS2FJ471	1/4W 470	1	
R411-13	ERDS2FJ101	1/4W 100	3	
R414-16	ERDS2FJ222	1/4W 2.2K	3	ERDS2TJ222T
R419,20	ERDS2FJ102	1/4W 1K	2	
R421,22	ERDS2FJ103	1/4W 10K	2	
R423-25	ERDS2FJ472	1/4W 4.7K	3	ERDS2TJ472T
R426	ERDS2FJ102	1/4W 1K	1	
R427	ERDS2FJ472	1/4W 4.7K	1	ERDS2TJ472T
R428	ERDS2FJ473	1/4W 47K	1	ERDS2TJ473T
R431	ERDS2FJ103	1/4W 10K	1	
R432	ERDS2FJ472	1/4W 4.7K	1	ERDS2TJ472T
R433	ERDS2FJ103	1/4W 10K	1	
R434,35	ERDS2FJ101	1/4W 100	2	
R436,37	ERDS2FJ472	1/4W 4.7K	2	ERDS2TJ472T
R438	ERDS2FJ102	1/4W 1K	1	
R439	ERDS2FJ223	1/4W 22K	1	
R440	ERDS2FJ473	1/4W 47K	1	ERDS2TJ473T
R441	ERDS2FJ472	1/4W 4.7K	1	ERDS2TJ472T
R442	ERDS2FJ103	1/4W 10K	1	
R443	ERDS2FJ221	1/4W 220	1	
R444	ERDS2FJ472	1/4W 4.7K	1	ERDS2TJ472T
R445	ERDS2FJ473	1/4W 47K	1	ERDS2TJ473T
R446	ERDS2FJ103	1/4W 10K	1	
R447-49	ERDS2FJ102	1/4W 1K	3	
R451-55	ERDS2FJ332	1/4WV 3.3K	5	
R601	ERDS2FJ104	1/4W 100K	1	ERDS2TJ104T
R602-04	ERDS2FJ101	1/4W 100	3	
R605-09	ERDS2FJ221	1/4W 220	5	
R610	ERDS2FJ151	1/4W 150	1	ERDS2TJ151T
R611	ERDS2FJ821	1/4W 820	1	ERDS2TJ821T
R612	ERDS2FJ102	1/4W 1K	1	
R613	ERDS2FJ122	1/4W 1.2K	1	ERDS2TJ122T
R614	ERDS2FJ152	1/4W 1.5K	1	
R615	ERDS2FJ182	1/4W 1.8K	1	
R616	ERDS2FJ222	1/4W 2.2K	1	ERDS2TJ222T
R617	ERDS2FJ332	1/4WV 3.3K	1	
R618	ERDS2FJ472	1/4W 4.7K	1	ERDS2TJ472T
R619	ERDS2TJ682T	1/4W 6.8K	1	
R620	ERDS2FJ821	1/4W 820	1	ERDS2TJ821T
R621	ERDS2FJ102	1/4W 1K	1	
R622	ERDS2FJ122	1/4W 1.2K	1	ERDS2TJ122T
R623	ERDS2FJ152	1/4W 1.5K	1	
R624	ERDS2FJ182	1/4W 1.8K	1	
R625	ERDS2FJ222	1/4W 2.2K	1	ERDS2TJ222T
R626	ERDS2FJ332	1/4WV 3.3K	1	
R627	ERDS2FJ472	1/4W 4.7K	1	ERDS2TJ472T
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	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
R711	ERJ6GEYJ823	1/10W 82K	1	ERJ6GEYJ823V
R712	ERJ8GEYJ221V	1/8W 220	1	
R714	ERJ3GEY0R00V	CHIP JUMPER	1	
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	D0GD391JA003

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R727-29	ERJ6GEYJ392V	1/10W 3.9K	3	
R731	ERJ6GEYJ682V	1/10W 6.8K	1	
R735,36	ERJ6GEYJ101V	1/10W 100	2	
R741	ERJ6GEYF473	1/10W 47K	1	ERJ6GEYJ473V
R742	ERJ6GEYJ224Z	1/10W 220K	1	
R744	ERJ6GEYJ124V	1/10W 120K	1	
R749	ERJ6GEYJ472V	1/10W 4.7K	1	
R750	ERJ6GEYJ4R7V	1/10W 4.7	1	
R753	ERJ6GEYJ100	1/10W 10	1	
RJ701,02	ERJ6GEY0R00V	CHIP JUMPER	2	
RJ704	ERJ6GEY0R00V	CHIP JUMPER	1	
RJ710	ERJ6GEY0R00V	CHIP JUMPER	1	
RJ712-14	ERJ6GEY0R00V	CHIP JUMPER	3	
RJ721-42	ERJ3GEY0R00V	CHIP JUMPER	22	
S1,S2	RSH1A032-U	SW, TRAY POSITION DET.	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	RSXY8M00D01T	OSCILLATOR	1	H2B800400005
X701	RSXB33M8J01T	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

