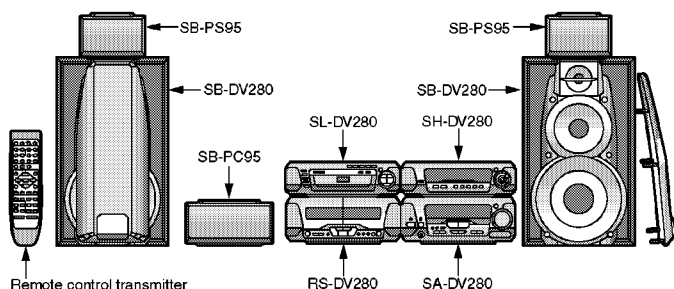


Service Manual

DVD/Video CD/CD changer



MASH
multi-stagenoise-shaping



SL-DV280EG

Colour

(N).....Gold Type

System:SC-DV280

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

Note: Refer to the service manual for Model No.SA-DV280EG (ORDER NO.AD0202035C2) for information on "ACCESSORIES" and "PACKAGING".

Specification

●Disc played

DVD-Video disc

$\frac{8}{12}$ cm single-sided, single-layer
 $\frac{8}{12}$ cm single-sided, double-layer
 $\frac{8}{12}$ cm double-sided, double-layer
 (one layer perside)

CD (CD-DA, VIDEO-CD)

$\frac{8}{12}$ cm discs

CD-R/RW disc

$\frac{8}{12}$ cm discs

●Audio

Number of channels

5.1 (FL, FR, SL, SR, C, SW)

●Video

Signal system

PAL 625/50, PAL 525/60, NTSC

Output level (75Ω)

Composite video 1Vp-p (75Ω)
 S-video Y 1Vp-p (75Ω)
 S-video C 0.3Vp-p (75Ω) (PAL)
 0.286Vp-p (75Ω) (NTSC)

●Pick up

Beam source Semiconductor laser
 Wavelength 658/790 nm

●General

Dimensions (W×H×D): 293×89×288 mm

Weight: 2.5kg

Power Supply: DC10V

Power Consumption: 12W

Notes:

- 1.Design and specifications are subject to change without notice.
- 2.Dimensions and weight are approximate.

●System/SC-DV280

Sound processor: SH-DV280, Tuner/ Amplifier: SA-DV280,
DVD/Video-CD/CD changer: SL-DV280, Stereo cassette deck:
 RS-DV280, Speakers: Front* (SB-DV280),Center* (SB-PC95),
 Surround* (SB-PS95) (*: Made in MAES.)

⚠ WARNING

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

CONTENTS

	Page
1 Before Repair	2

Page

Technics

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2 Precaution of Laser Diode	3	13 Schematic Diagram	45
3 Operating Instructions	3	14 Voltage Chart (Terminal / Module P.C.B.)	55
4 Handling Precautions for Traverse Deck	4	15 Abbreviations	58
5 Operation Checks and Component Replacement Procedures	5	16 Printed Circuit Board Diagram	61
6 Optical Pickup Self-Diagnosis and Replacement Procedure	21	17 Wiring Connection Diagram	65
7 Self-Diagnosis Function and Service Modes	23	18 Terminal Function of ICs	66
8 Adjustment Procedures	33	19 Replacement Parts List	67
9 Electrical Confirmation	35	20 Cabinet parts Location	73
10 To Supply Power Source	36	21 Loading Mechanism Parts Location	74
11 Block Diagram	37	22 Traverse Mechanism Parts Location	75
12 Schematic Diagram Notes	43		

1 Before Repair

This equipment (SL-DV280), which is the component of this system, is supplied with power from the tuner/amplifier (SA-DV280) through the sound processor (SH-DV280). When repairing this equipment or checking operation of the system, be sure to connect the tuner/amplifier and sound processor with it.

This equipment, even in the state of it as a single equipment, permits power supply and operation check. When operating it as a single equipment without the tuner/amplifier and sound processor, refer to the paragraph of "Measurements and Adjustments."

2 Precaution of Laser Diode

CAUTION:

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

Wave length: 658/790 nm

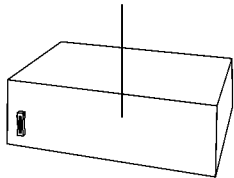
Maximum output radiation power from pickup: 100 μ W/VDE

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

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



LUOKAN 1 LASERLAITE KLASS 1 LASER APPARAT



DVD/Video CD/CD Changer
(Back of product)

ACHTUNG:

Dieses Produkt enthält eine Laserdiode.

Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Lasereinheit abgestrahlt.

Wellenlänge: 658/790 nm

Maximale Strahlungsleistung der Lasereinheit: 100 μ W/VDE

Die Strahlungen der Lasereinheit ungefährlich, wenn folgende Punkte beachtet werden:

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

DANGER	- VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM. (FDA 21 CFR)
CAUTION	- VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM. (IEC 60825-1)
ATTENTION	- RAYONNEMENT LASER VISIBLE ET INVISIBLE EN CAS D'OUVERTURE. EXPOSITION DANGEREUSE AU FAISCEAU.
ADVARSEL	- SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARO!	- AVATTAESSA OLET ALTUUTNA NÄKYMÄÄ JA NÄKYMÄTÖN LASERSÄTELYLLÄ. ÄLÄ KATSO SÄTESEEN.
VARNING	- SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. BETRÄKTA EJ STRÅLEN.
ADVARSEL	- SYNLIG OG USYNLIG LASERSTRÅLING NÄR DEKSEL ÅPNES. UNNGÅ EKSPONERING FOR STRÅLEN.
VORSICHT	- SICHTBARE UND UNSICHTBARE LASERSTRÄHLUNG, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.
注意	- 打开时有可见及不可见激光辐射。避免激光束照射。
注意	- ここを開くと有害及び不可視のレーザー光が出ます。 ビームを直接見たり、照らしたりしないでください。 RQLS0233

(Inside of product)

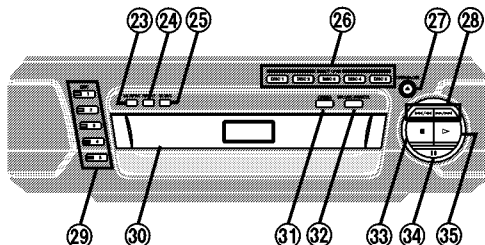
LUOKAN 1 LASERLAITE KLASS 1 LASER APPARAT

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.

3 Operating Instructions



- 23 A-B repeat button (A-B REPEAT)
 - 24 Repeat play button (REPEAT)
 - 25 CD edit button (CD EDIT)
 - 26 Disc direct open buttons (DIRECT OPEN, DISC 1-DISC 5)
 - 27 Disc tray open/close button (▲, OPEN/CLOSE)
 - 28 Skip/search buttons (◀◀/◀, ▶/▶▶)
 - 29 Disc select buttons and indicators (DISC, 1-5)
 - Green: Indicates that the tray is ready to play its disc or to be opened.
 - 30 Disc tray
 - 31 Cinema mode button (CINEMA)
 - 32 Dialogue Enhancer button (DIALOGUE ENHANCER)
 - 33 Stop button (■)
 - 34 Pause button (||)
 - 35 Play button and indicator (▶)
- The colour of the indicator depends on the operation taking place.
- If stopped: orange
 - If playing: green
 - If paused: flashes green
 - When the resume function is on: flashes orange

4 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).

4.1. Handling of traverse deck (optical pickup)

1. Do not give considerable shock to the traverse unit (optical pickup) as it has an extremely high-precision structure.
2. When replacing the optical pickup, install the flexible cable and cut its short land with a nipper. See the optical pickup replacement procedure in this Technical Guide. Before replacing the traverse unit, remove the short pin for preventing static electricity and install a new unit. Connect the connector as short time as possible.
3. The flexible cable may be cut off if an excessive force is applied to it. Use caution when handling the cable.
4. The half-fixed resistor for laser power adjustment cannot be adjusted. Do not turn the resistor.

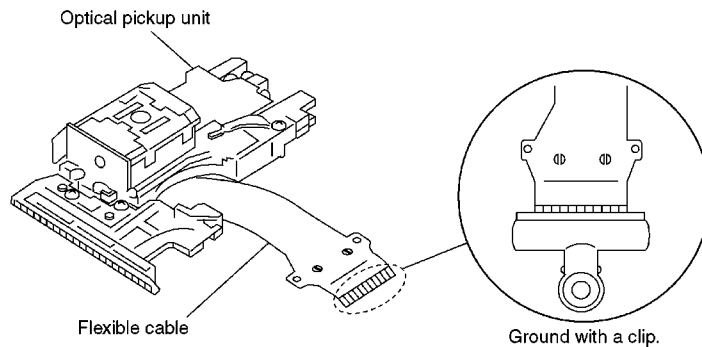


Fig. 1

4.2. Replacement procedure for the optical pickup

1. Connect the Flexible cable to the connector on the terminal P.C.B..
2. Cut the optical unit FPC at the point shown below. (As shown in Fig. 2.)

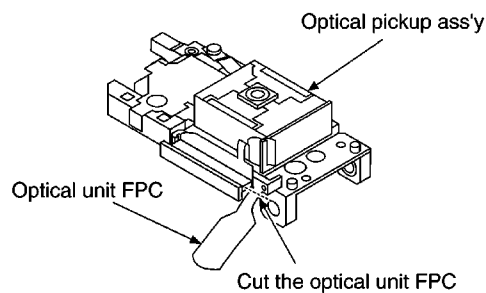


Fig. 2

4.3. Grounding for electrostatic breakdown prevention

1. Human body grounding

Use the anti-static wrist strap to discharge the static electricity from your body. (As shown in Fig. 3.)

2. Work table grounding

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

Caution:

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

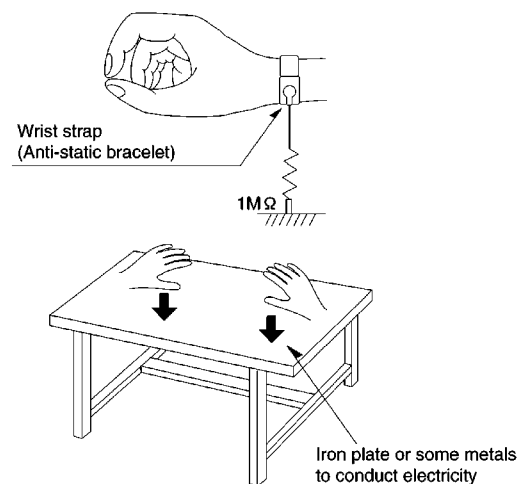


Fig. 3

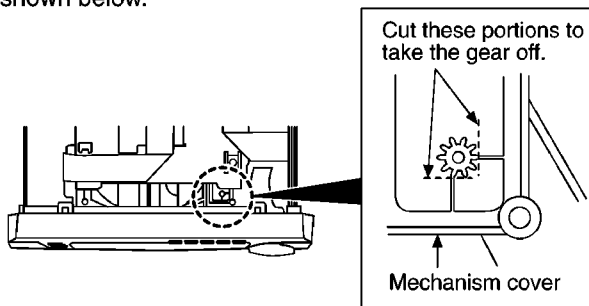
5 Operation Checks and Component Replacement Procedures

- This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
- For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.

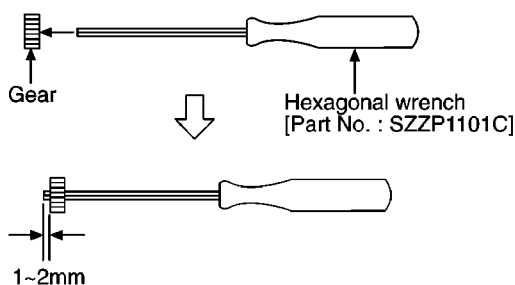
Gear for servicing (as jig) information

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.



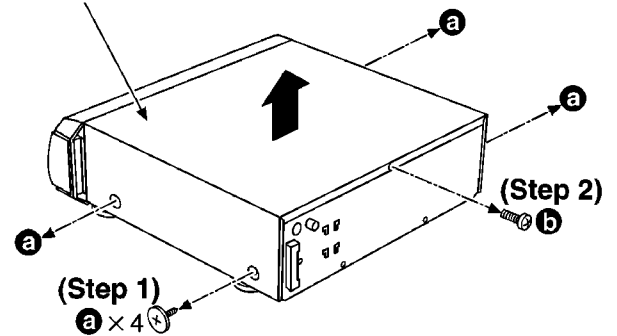
2. Insert the hexagonal wrench (2mm) into the gear, and then project the tip of wrench for 1~2mm length.



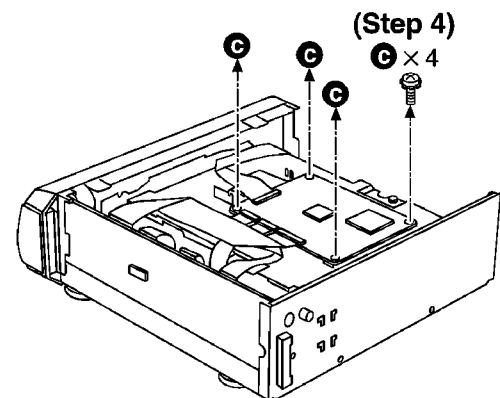
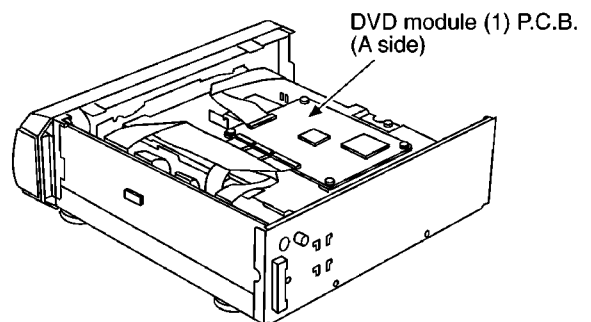
(Preparation of gear as jig is completed.)

5.1. Checking for the DVD module (1) P.C.B.

(Step 3)
Remove the top cabinet.

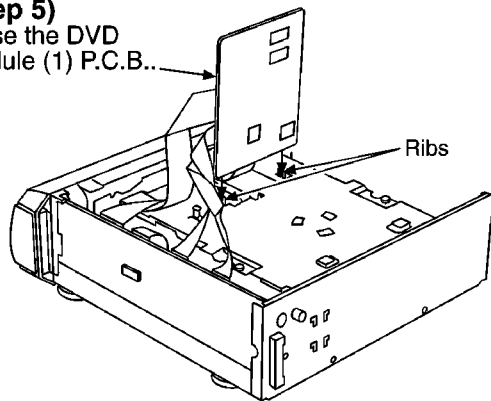


- Check the DVD module (1) P.C.B. (A side) as shown below.



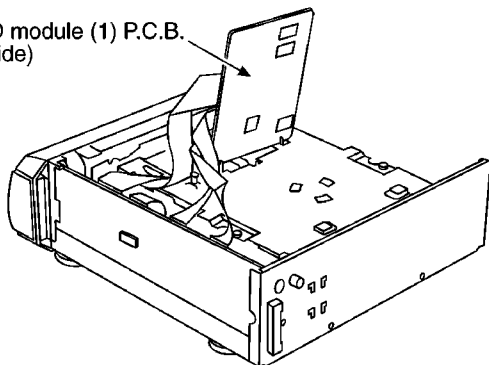
(Step 5)

Raise the DVD module (1) P.C.B...



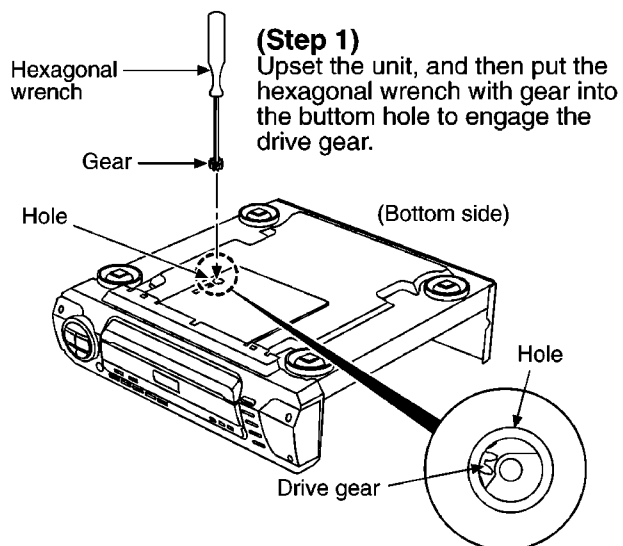
• Check the DVD module (1) P.C.B. (B side) as shown below.

DVD module (1) P.C.B.
(B side)



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

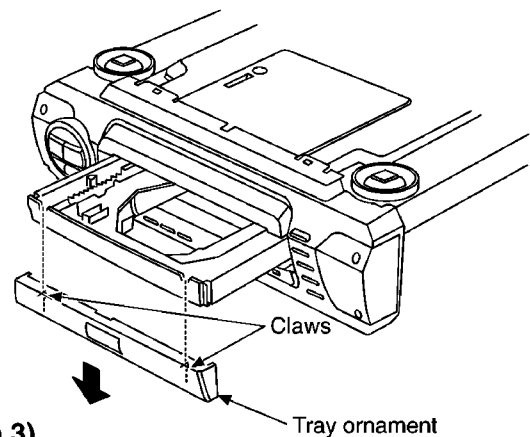
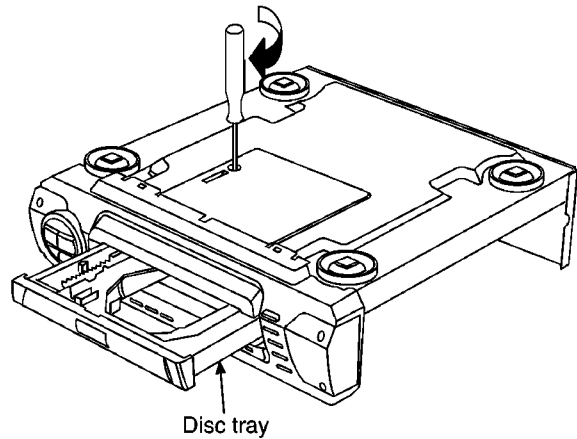
• Follow the (Step 1) - (Step 3) of item 5.1.

**(Step 1)**

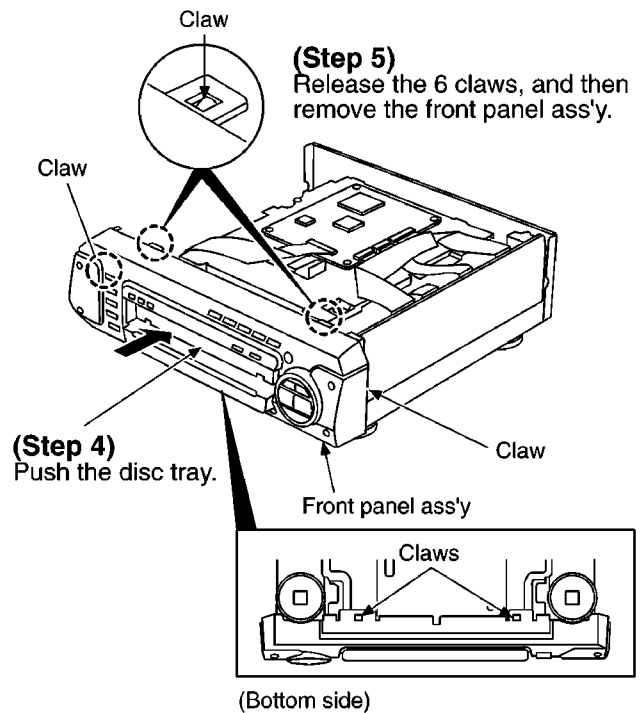
Upset the unit, and then put the hexagonal wrench with gear into the bottom hole to engage the drive gear.

(Step 2)

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

**(Step 3)**

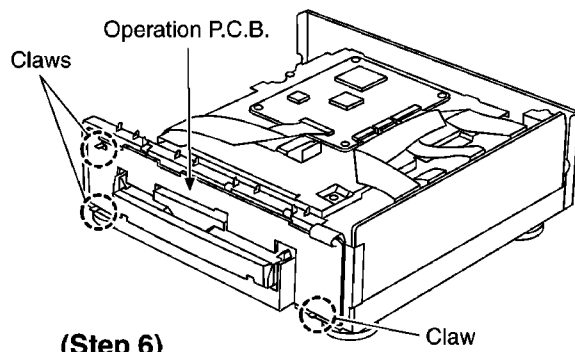
Release the 2 claws, and then remove the tray ornament.

**(Step 4)**

Push the disc tray.

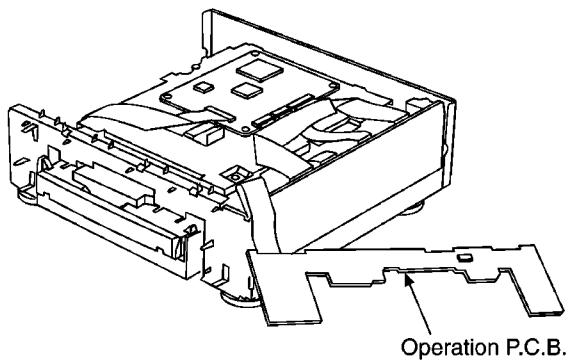
(Step 5)

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



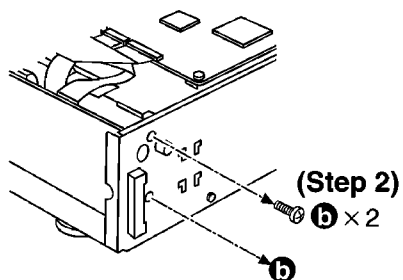
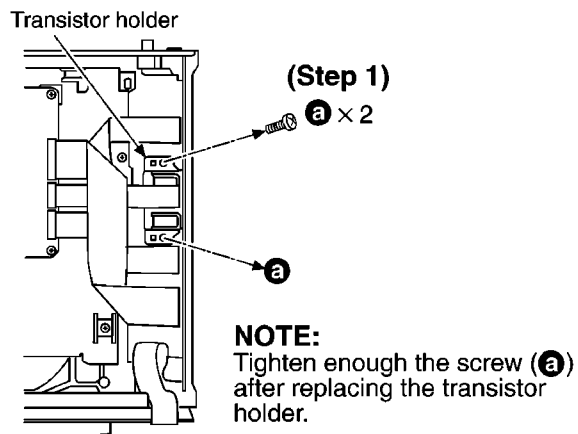
(Step 6)
Release the 3 claws, and then
remove the operation P.C.B..

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



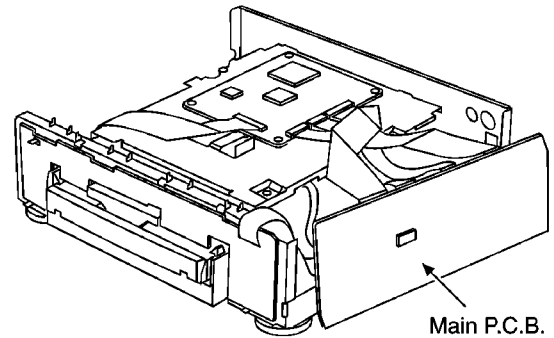
5.3. Checking for the main P.C.B.

- Follow the (Step 1) - (Step 3) of item 5.1.
- Follow the (Step 1) - (Step 5) of item 5.2.



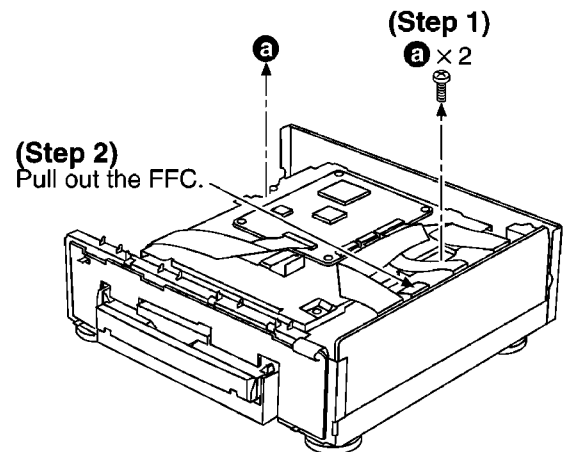
• Check the main P.C.B. as shown below.

(Step 3)
Remove the main P.C.B., and then
place it on the side of unit.

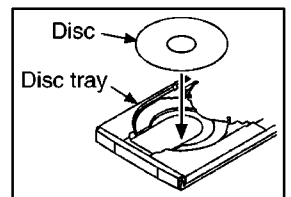


5.4. Checking for the DVD module (2) P.C.B.

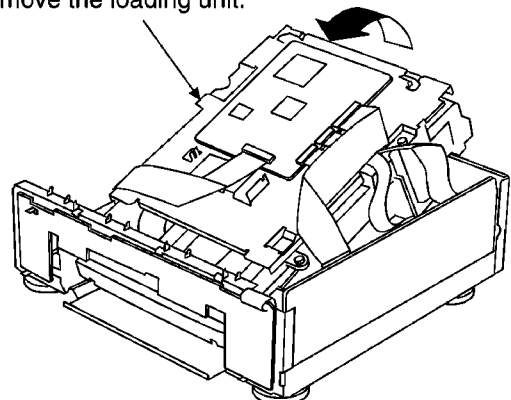
- Follow the (Step 1) - (Step 3) of item 5.1.
- Follow the (Step 1) - (Step 5) of item 5.2.



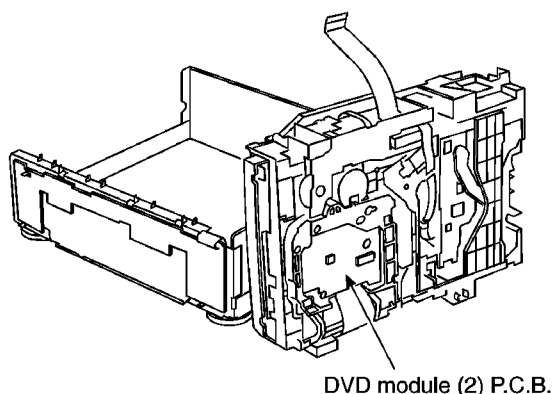
NOTE:
Put in the disc to disc tray.



(Step 3)
Remove the loading unit.

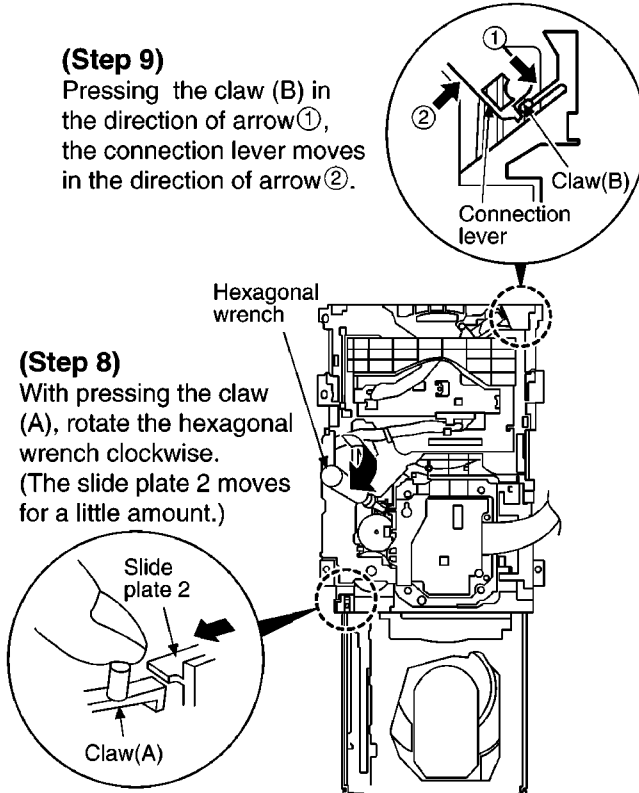
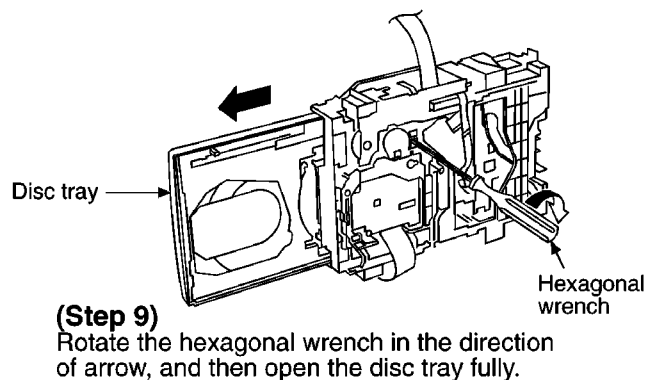
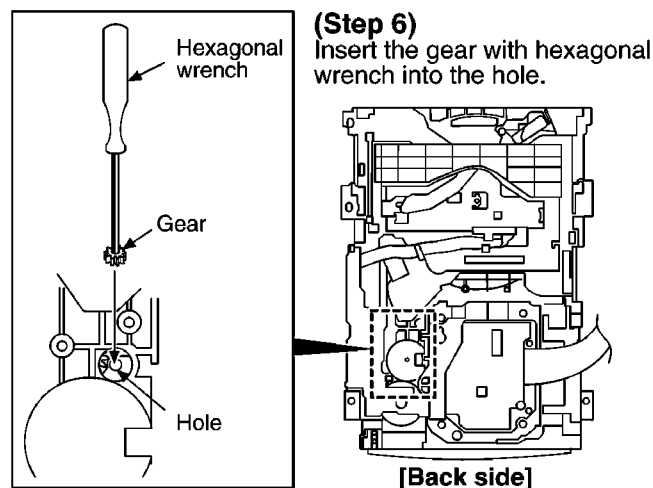
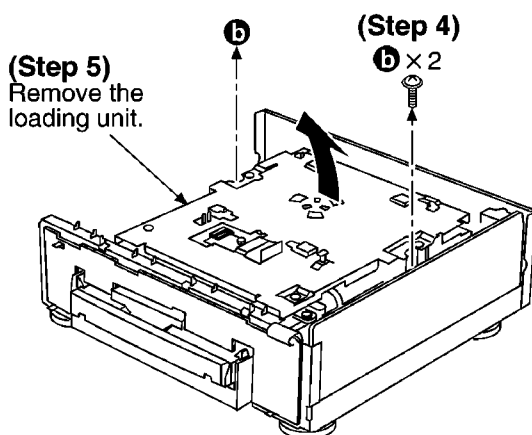
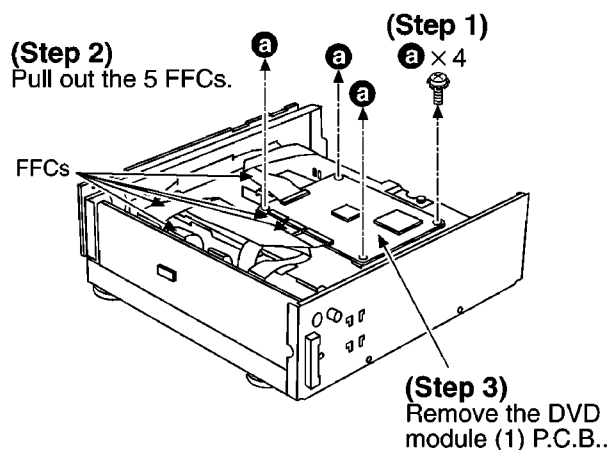


- Check the DVD module (2) P.C.B. as shown below.

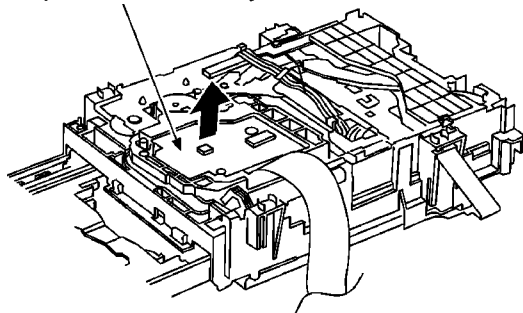


5.5. Replacement for the traverse ass'y

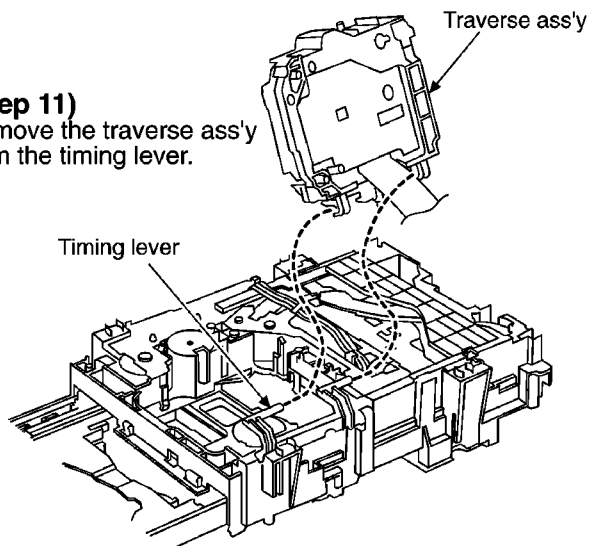
- Follow the (Step 1) - (Step 3) of item 5.1.
- Follow the (Step 1) - (Step 5) of item 5.2.



(Step 10)
Lift up the traverse ass'y.

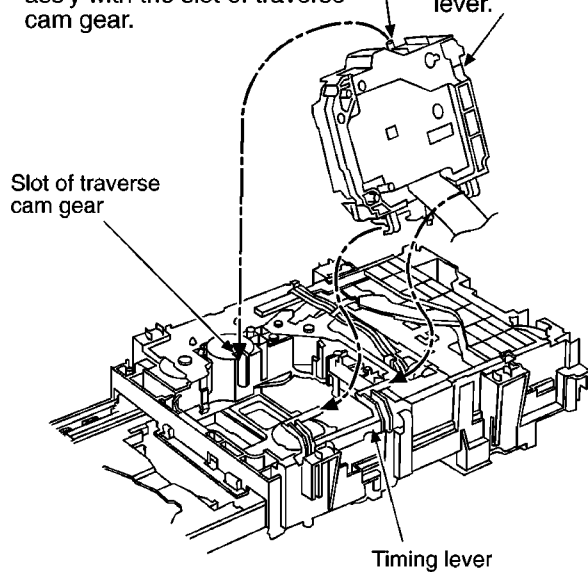


(Step 11)
Remove the traverse ass'y from the timing lever.

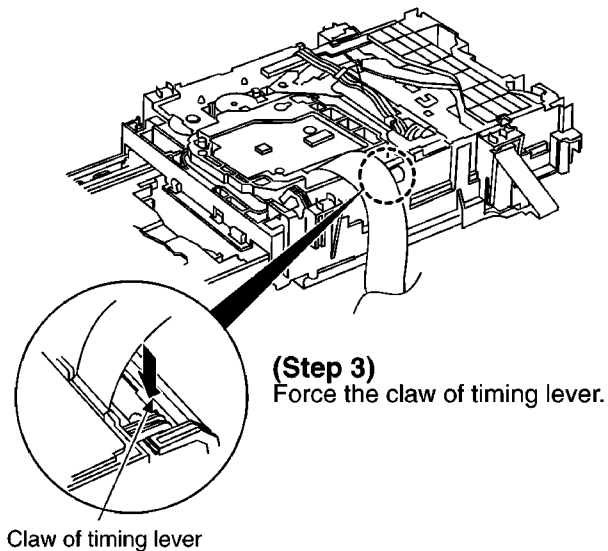


Installation for traverse ass'y

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

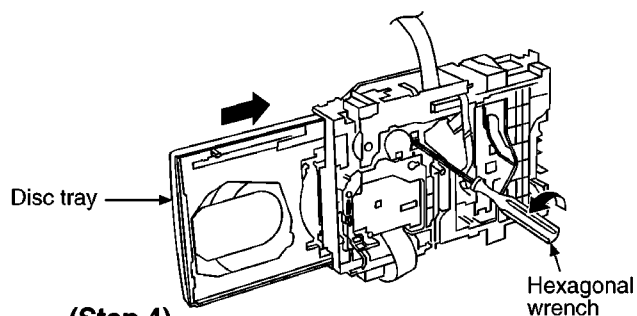


(Step 1)
Install the traverse ass'y to the timing lever.

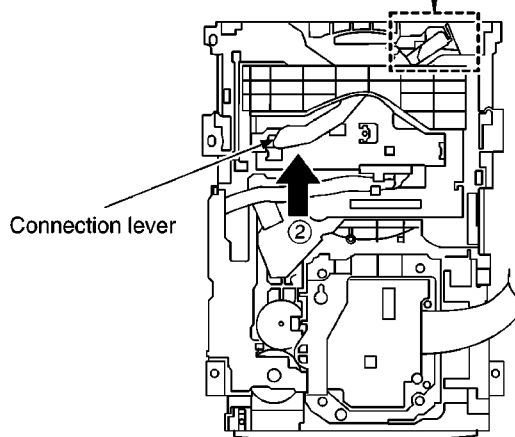
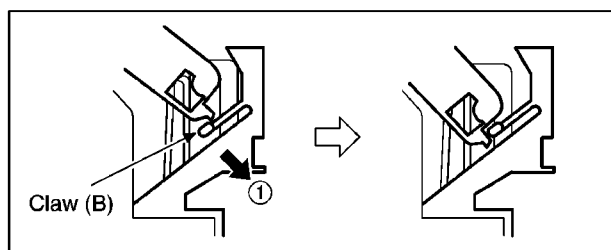


(Step 3)
Force the claw of timing lever.

Claw of timing lever



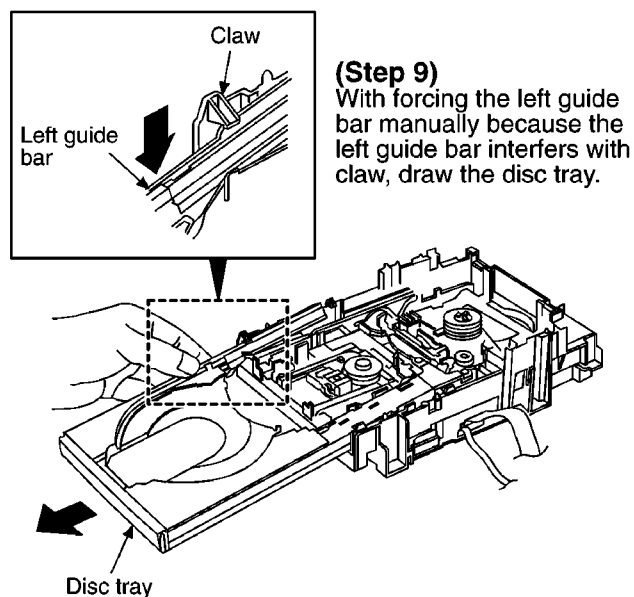
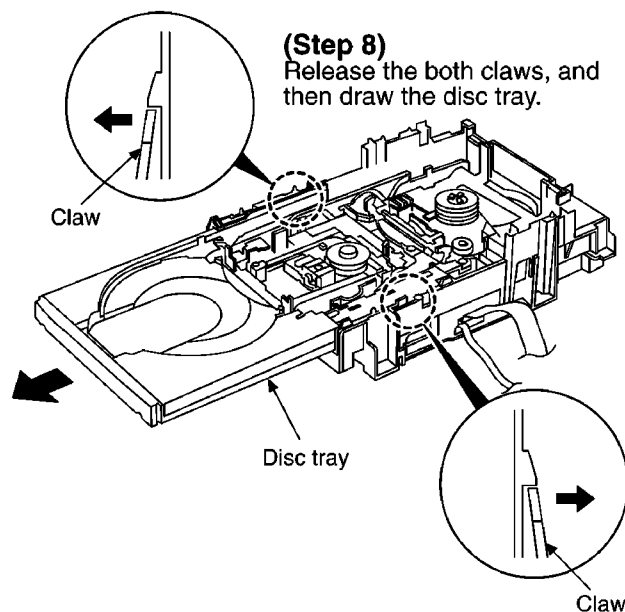
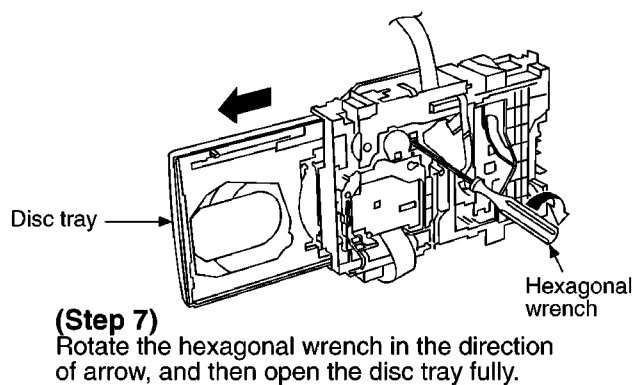
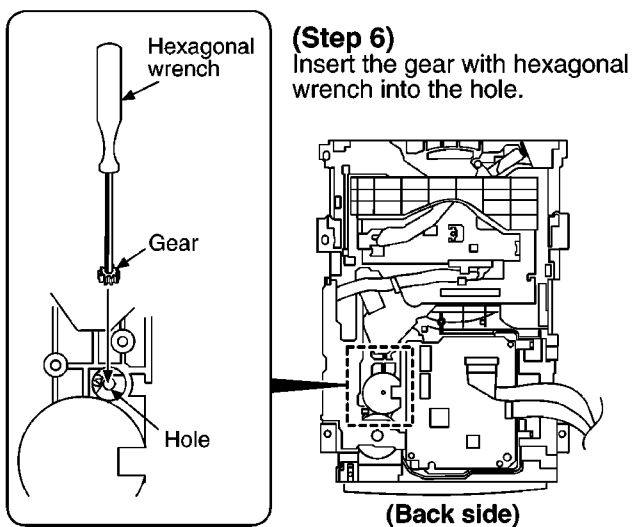
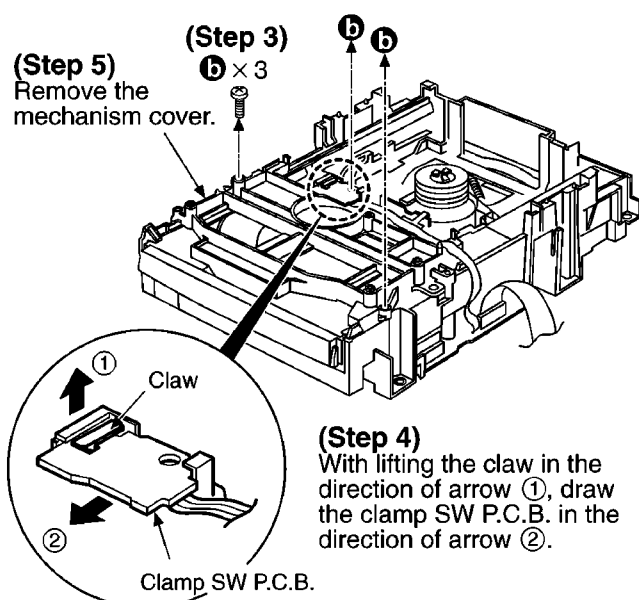
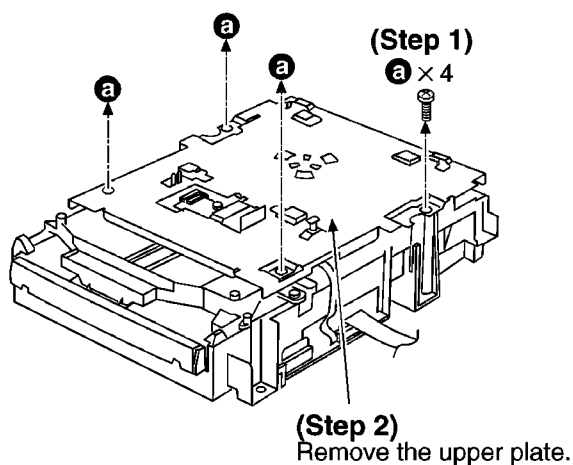
(Step 4)
Rotate the hexagonal wrench in the direction of arrow, and then close the disc tray fully.



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

5.6. Replacement for the disc tray

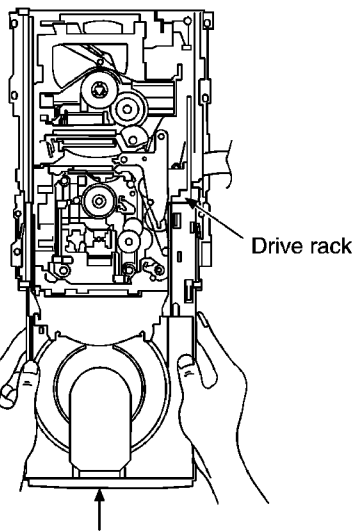
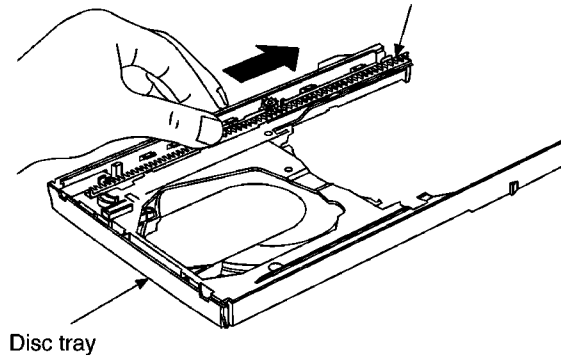
- Follow the (Step 1) - (Step 3) of item 5.1.
- Follow the (Step 1) - (Step 5) of item 5.5.



Installation of the disc tray after replacement

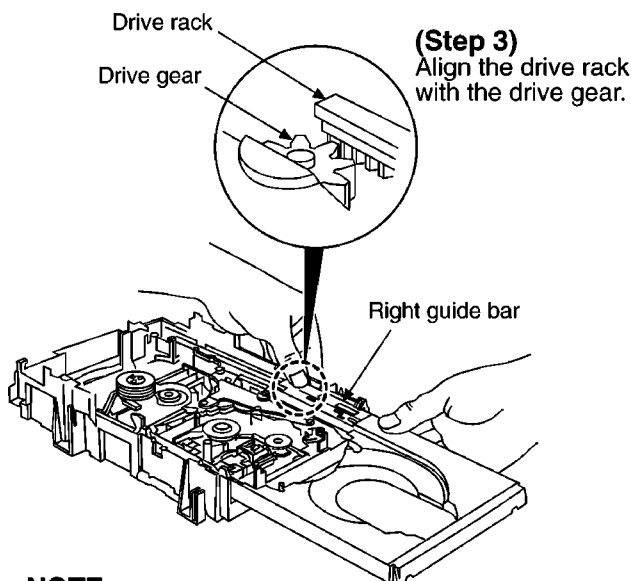
(Step 1)

Slide the drive rack fully in the direction of arrow.



(Step 2)

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

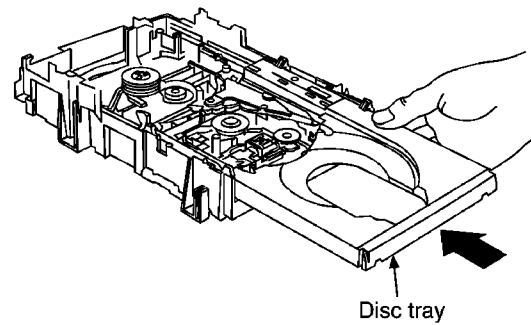


NOTE:

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

(Step 4)

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

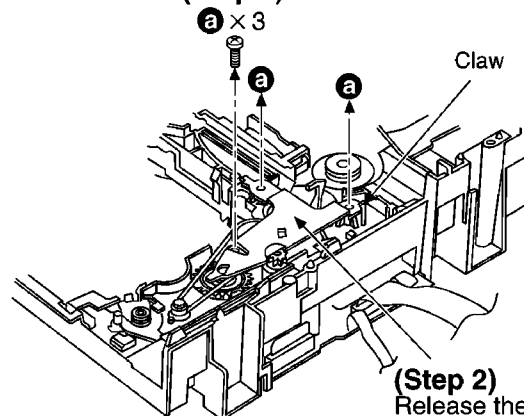


5.7. Disassembly and reassembly for mechanism base drive unit

Disassembly for mechanism base drive unit

- Follow the (Step 1) - (Step 3) of item 5.1.
- Follow the (Step 1) - (Step 13) of item 5.5.
- Follow the (Step 1) - (Step 9) of item 5.6.

(Step 1)

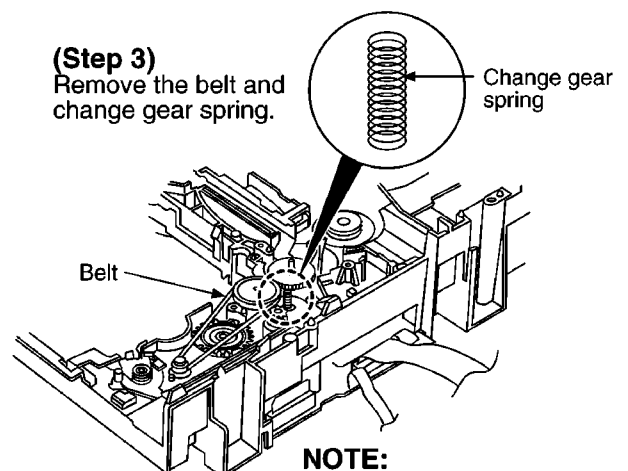


(Step 2)

Release the claw, and then remove the gear holder.

(Step 3)

Remove the belt and change gear spring.

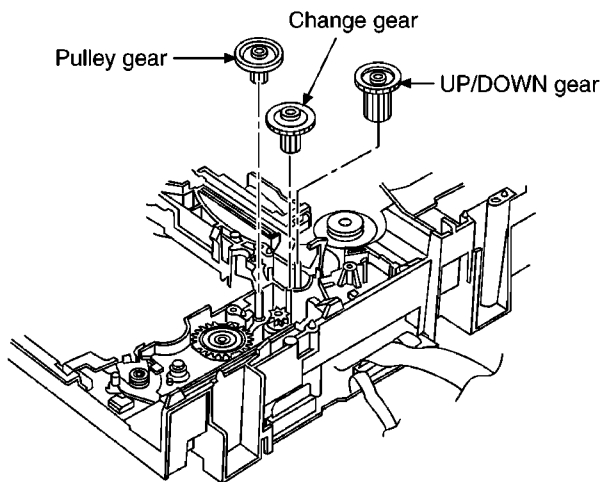


NOTE:

Take care not to lose the change gear spring.

(Step 4)

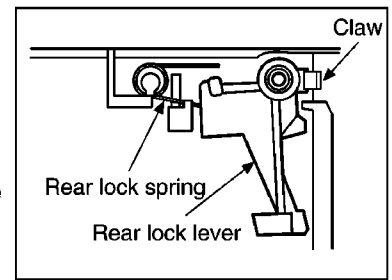
Remove the pulley gear, change gear and UP/DOWN gear.

**(Step 8)**

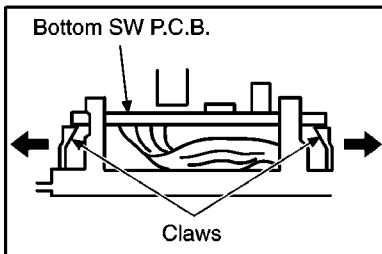
Release the claw, and then remove the rear lock lever.

NOTE:

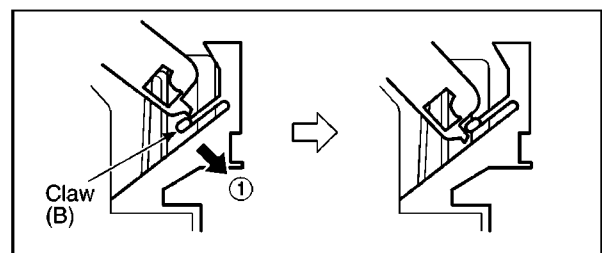
Take care not to take the rear lock spring off.

**(Step 5)**

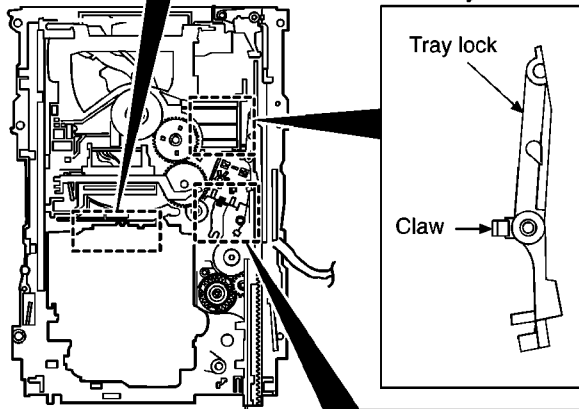
Release the 2 claws, and then remove the bottom SW P.C.B..

**(Step 9)**

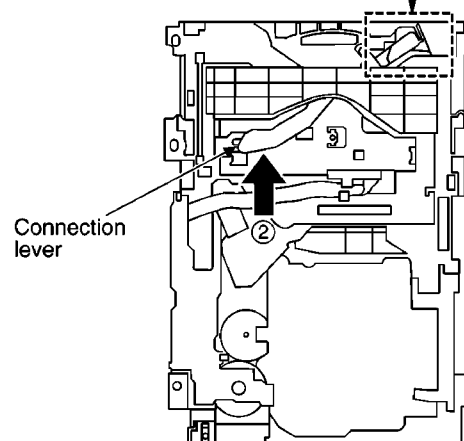
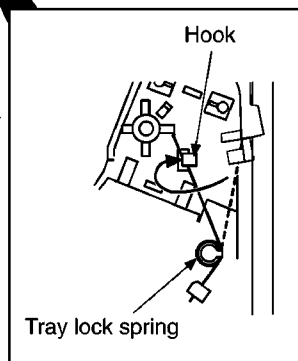
Pressing the claw (B) in the direction of arrow ①, force the connection lever in the direction of arrow ②.

**(Step 7)**

Release the claw, and then remove the tray lock.

**(Step 6)**

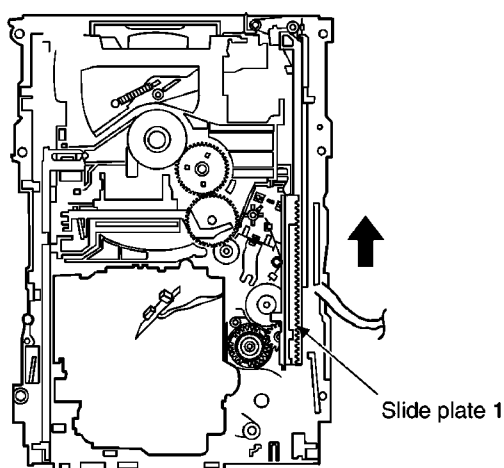
Install the tray lock spring to the hook temporarily.



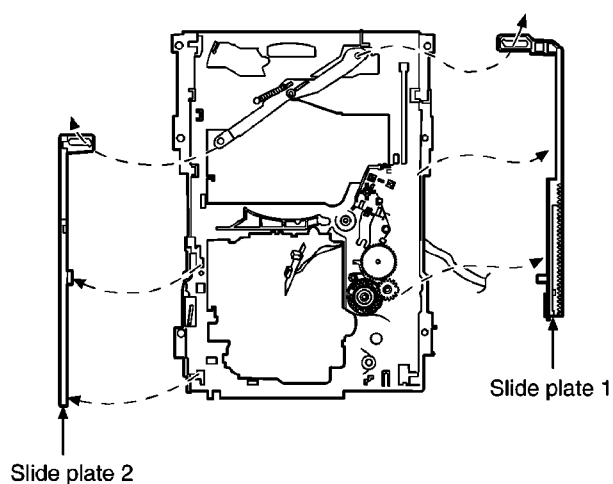
(Step 10)

Move the slide plate 1 to the end of stock side.

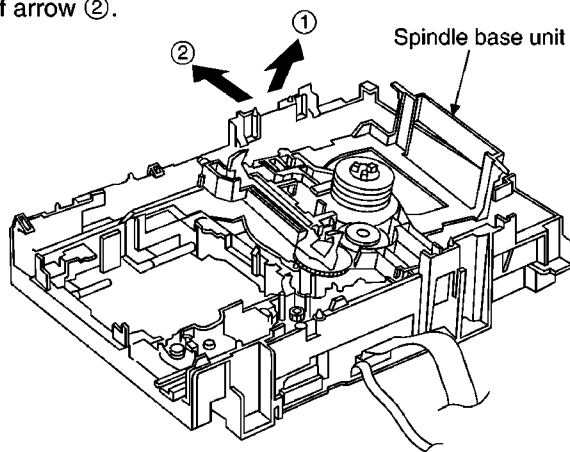
(Stock side)

**(Step 12)**

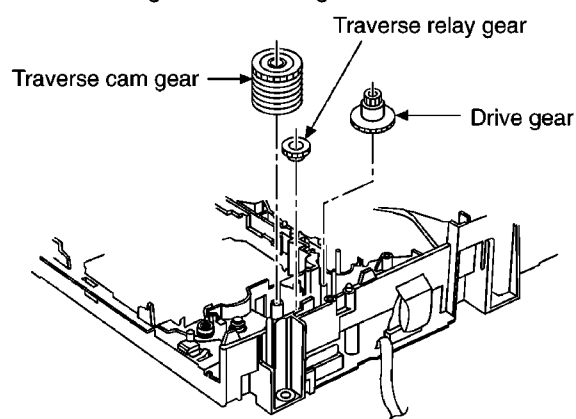
Remove the slide plate 1 and slide plate 2.

**(Step 11)**

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.

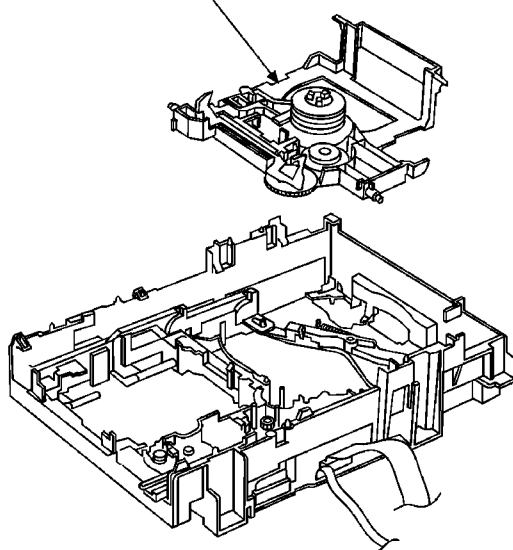
**(Step 13)**

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



Disassembly/reassembly for the spindle base unit

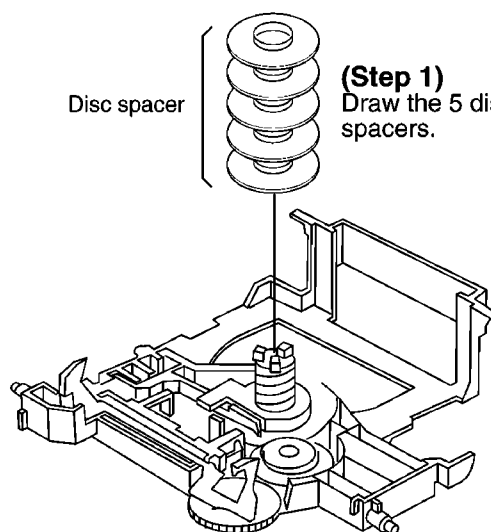
Spindle base unit



Disc spacer

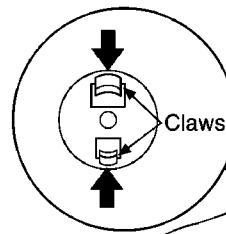
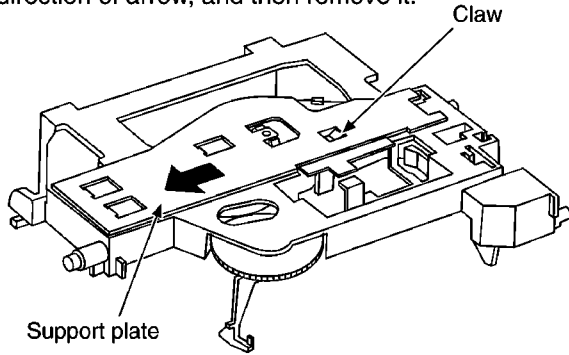
(Step 1)

Draw the 5 disc spacers.

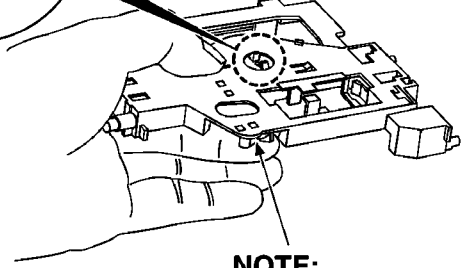


(Step 2)

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

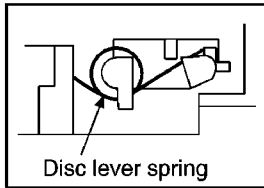
**(Step 5)**

Release the 2 claws.

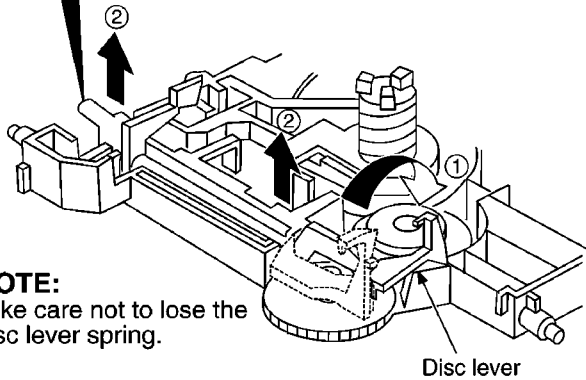
**NOTE:**

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

(Installation for disc lever spring)

**(Step 3)**

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

**NOTE:**

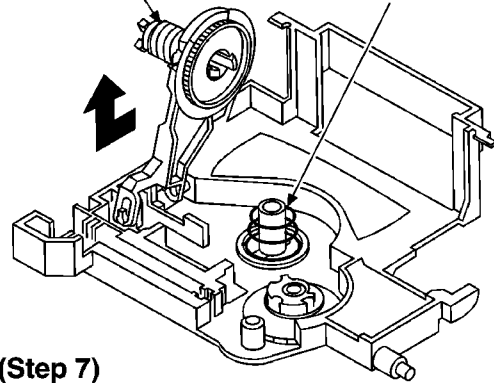
Take care not to lose the disc lever spring.

Disc lever

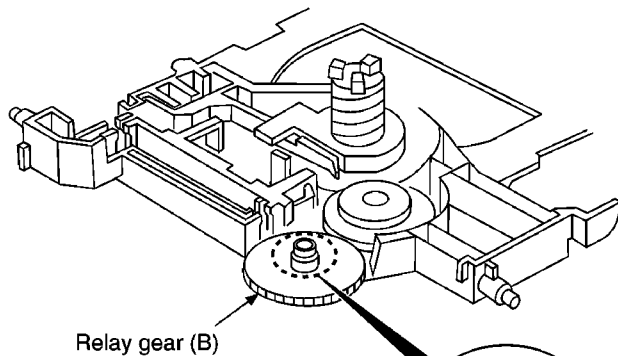
Loading stopper ass'y

(Step 6)

Remove the cushion spring.

**(Step 7)**

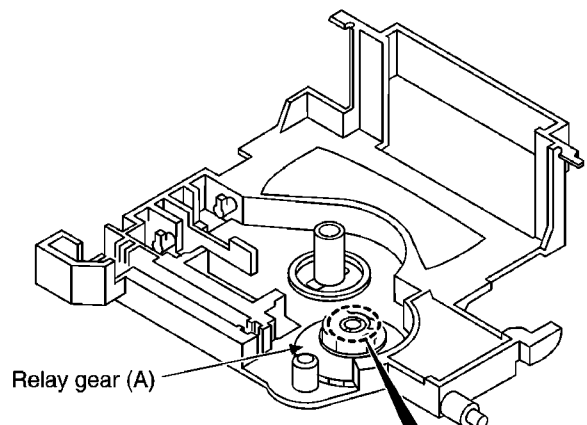
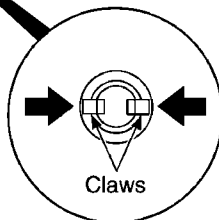
Remove the loading stopper ass'y in the direction of arrow.



Relay gear (B)

(Step 4)

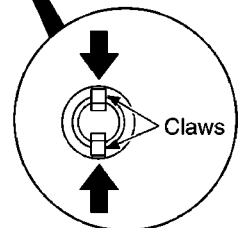
Release the 2 claws, and then draw the relay gear (B).



Relay gear (A)

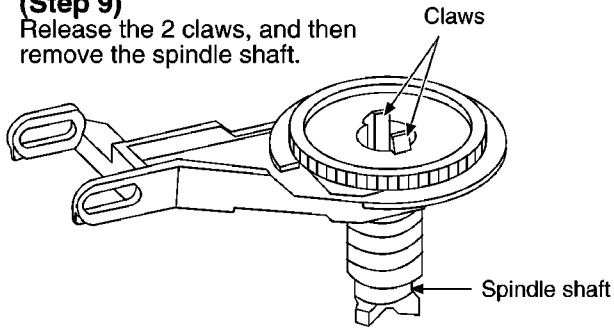
(Step 8)

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

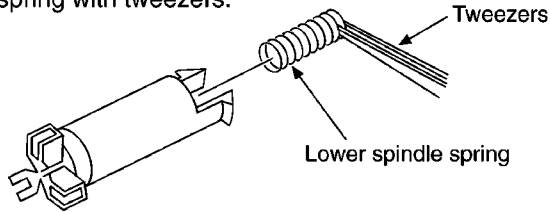


(Step 9)

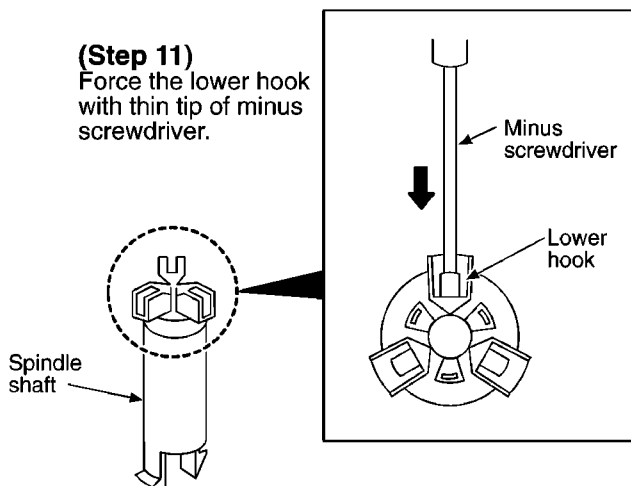
Release the 2 claws, and then remove the spindle shaft.

**(Step 10)**

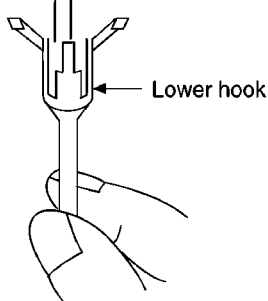
Remove the lower spindle spring with tweezers.

**(Step 11)**

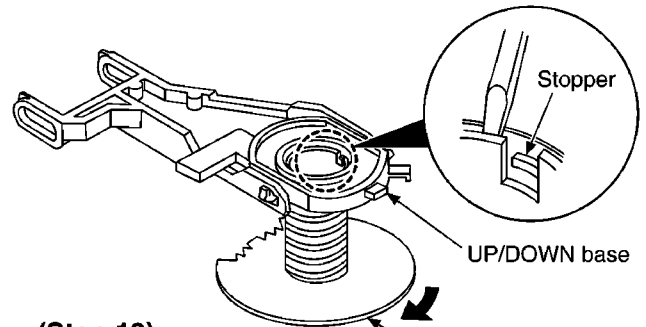
Force the lower hook with thin tip of minus screwdriver.

**(Step 12)**

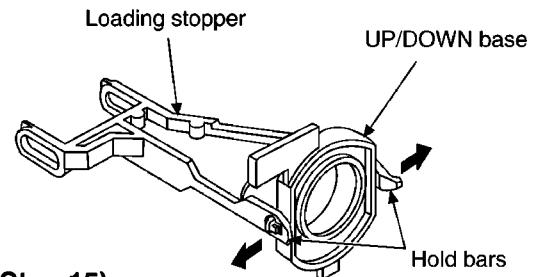
Squeeze the shaft of lower hook, and then draw it.

**(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.

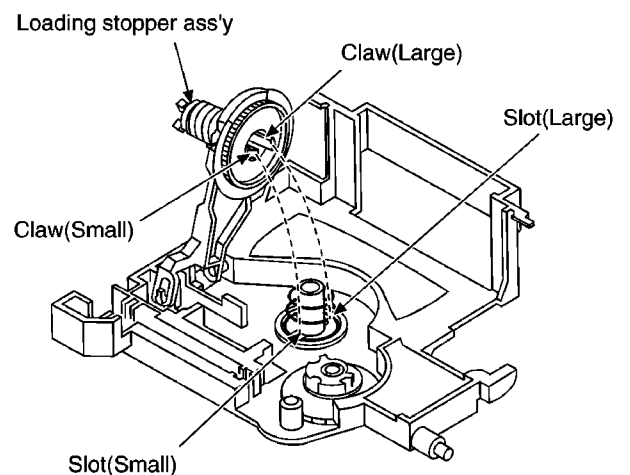
**(Step 15)**

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

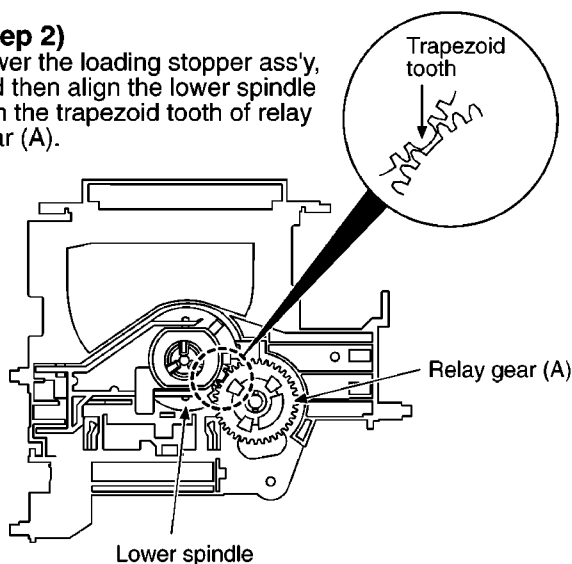
(Step 1)

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.)

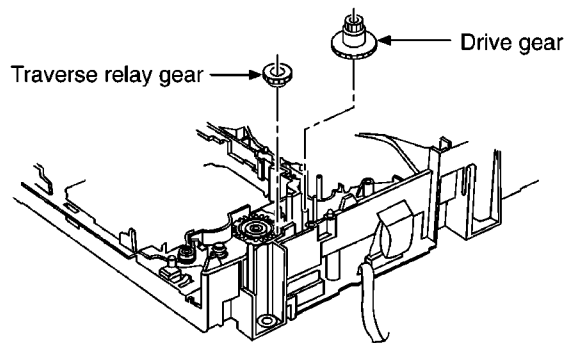


(Step 2)

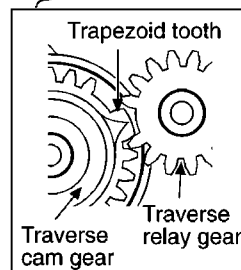
Lower the loading stopper ass'y, and then align the lower spindle with the trapezoid tooth of relay gear (A).

**(Step 3)**

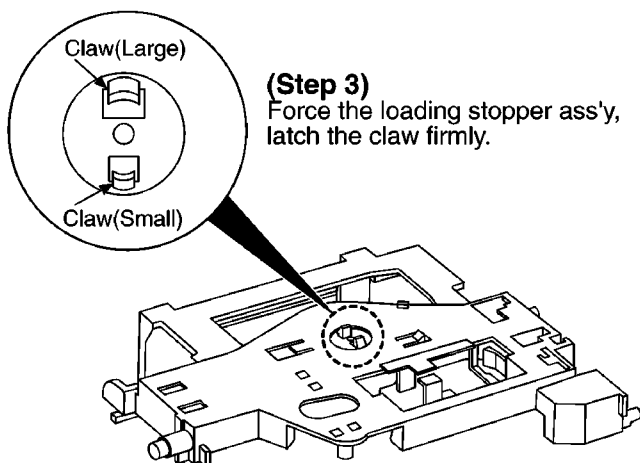
Install the drive gear and traverse relay gear.



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

**(Step 3)**

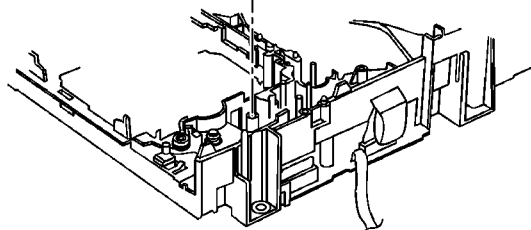
Force the loading stopper ass'y, latch the claw firmly.



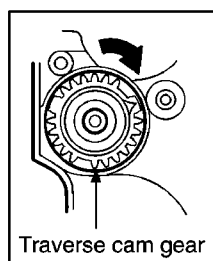
Reassembling for mechanism base drive unit

Traverse cam gear →

(Step 1)
Install the traverse cam gear.

**(Step 2)**

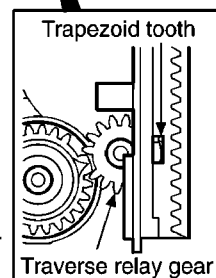
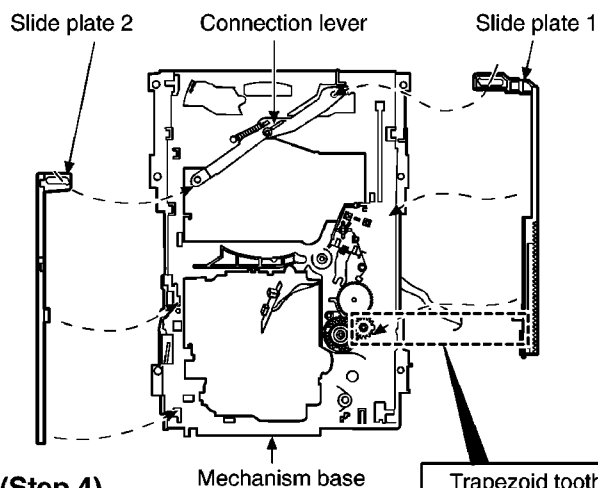
Rotate the traverse cam gear to the direction of arrow.

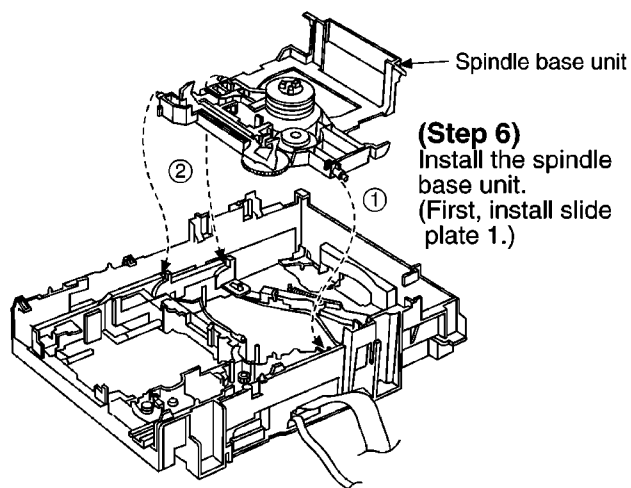
**(Step 4)**

Install the slide plate 2 to the mechanism base, and then match to the connection lever.

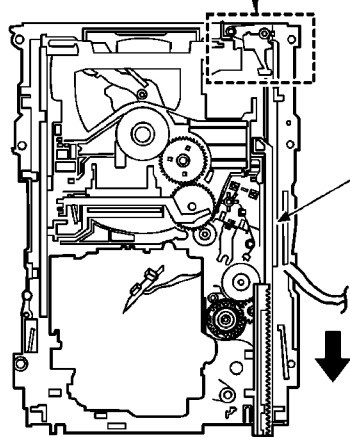
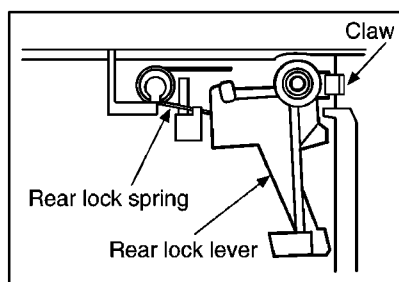
(Step 5)

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.

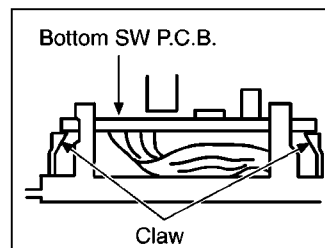




(Step 8)
Install the rear lock lever.
(The claw should be latched.)

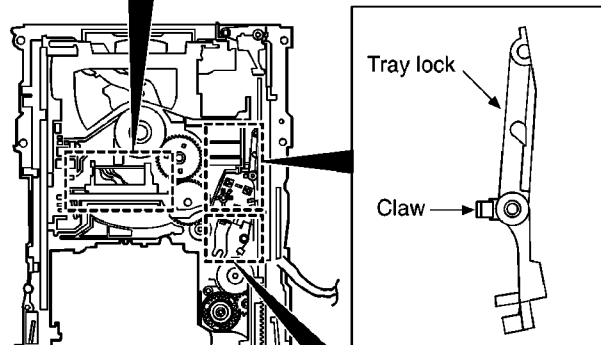


(Front side)

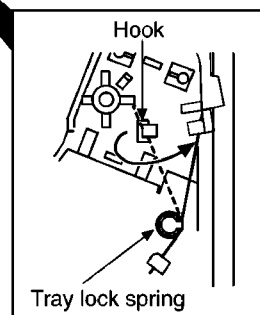


(Step 9)
Install the bottom SW P.C.B..
(The claw should be latched.)

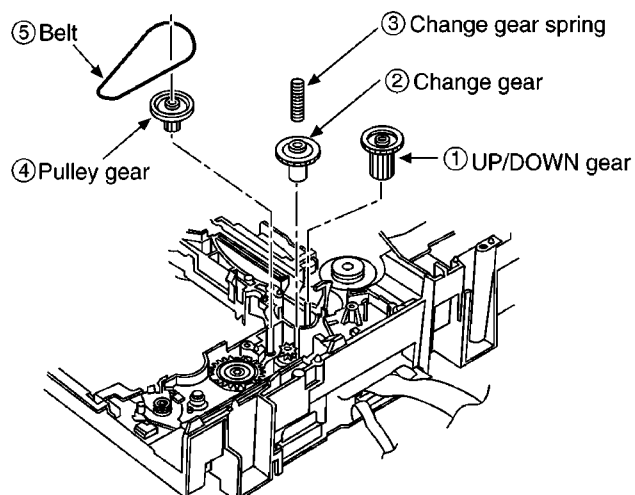
(Step 10)
Install the tray lock.
(The claw should be latched.)



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

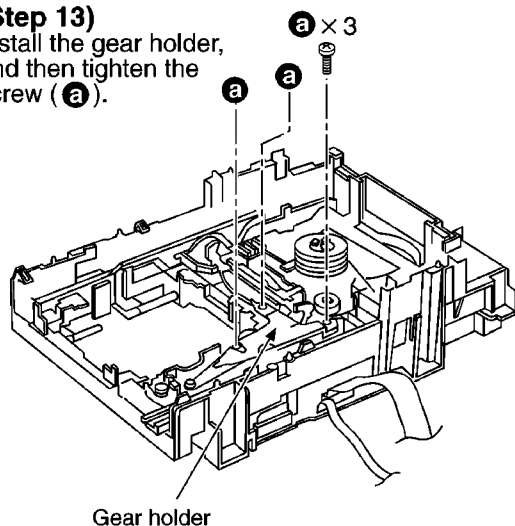


(Step 12)
Install the UP/DOWN gear, change gear, change gear spring, pulley gear and belt in the order of ① - ⑤ .



(Step 13)

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

**(Step 14)**

Install the tray base, traverse ass'y, mechanism cover and upper plate.
(Refer to the items 5.5. and 5.6. of Main Component Replacement Procedures.)

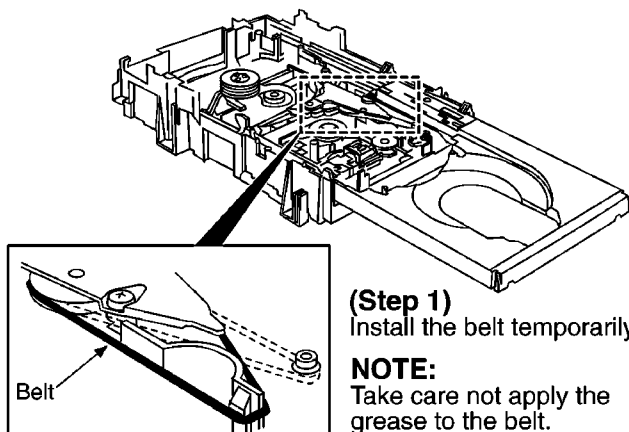
[Operation check after servicing]

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

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

5.8. Replacement for the motor ass'y

- Follow the (Step 1) - (Step 3) of item 5.1.
- Follow the (Step 1) - (Step 7) of item 5.5.
- Follow the (Step 1) - (Step 7) of item 5.6.

**(Step 1)**

Install the belt temporarily.

NOTE:

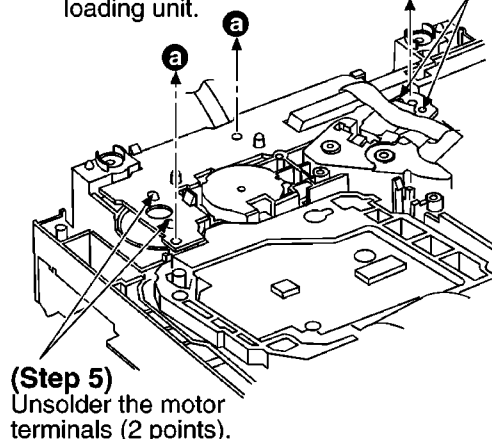
Take care not apply the grease to the belt.

(Step 4)

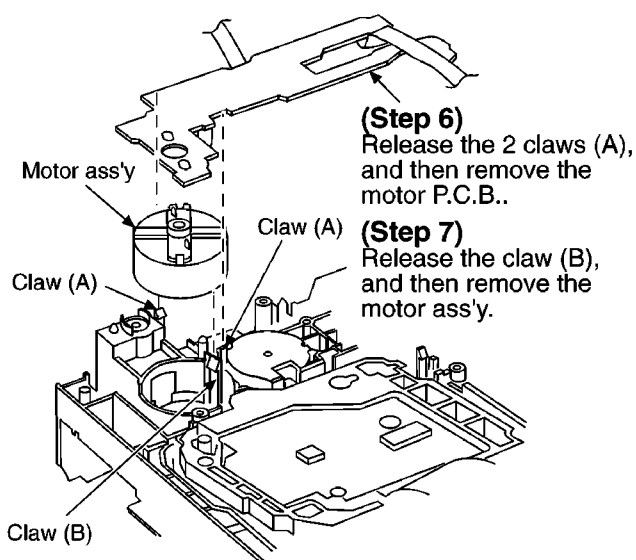
Unsolder the plunger terminals (2 points).

(Step 2)
Upset the CD loading unit.

(Step 3)
a × 3

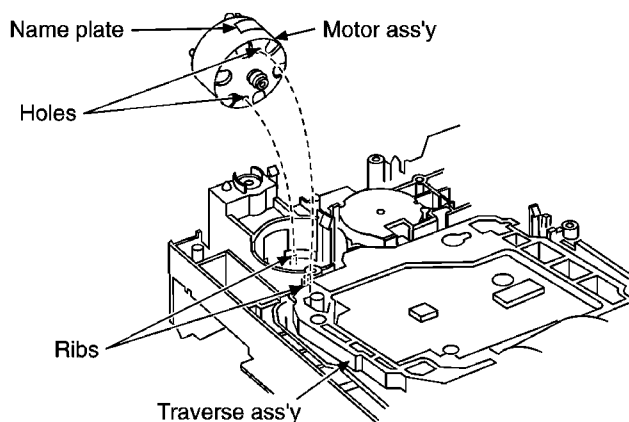


(Step 5)
Unsolder the motor terminals (2 points).



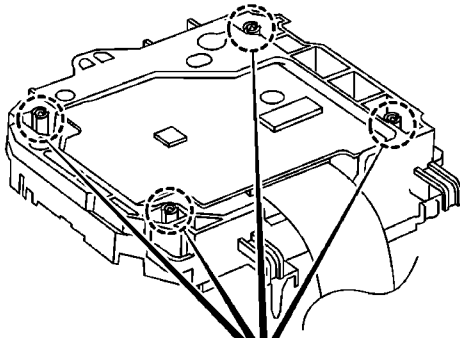
Notice for motor ass'y installation

1. Locate the name plate of motor to the traverse ass'y.
2. Align the hole of motor with the ribs.

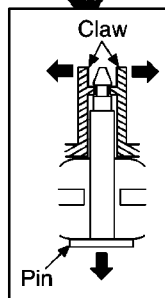


5.9. Replacement for the optical pickup

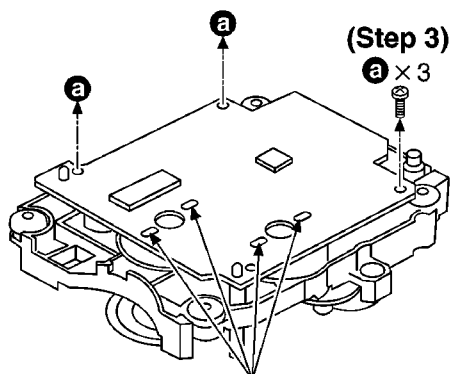
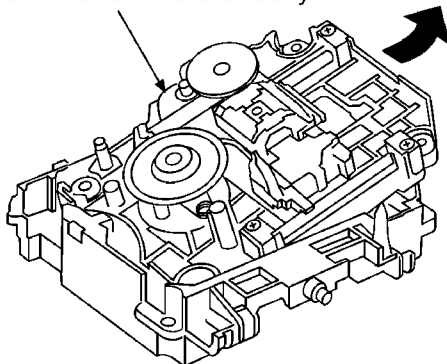
- Follow the (Step 1) - (Step 3) of item 5.1.
- Follow the (Step 1) - (Step 5) of item 5.2.
- Follow the (Step 1) - (Step 13) of item 5.5.



(Step 1)
Release the 2 claws, and the pull out the pin.

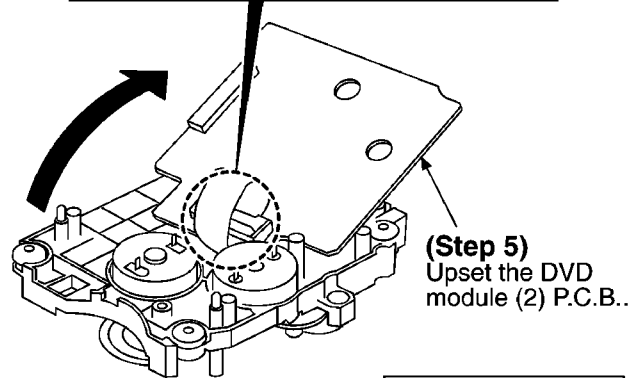
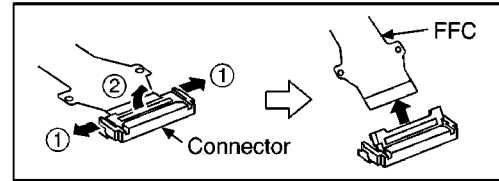


(Step 2)
Remove the traverse deck ass'y.



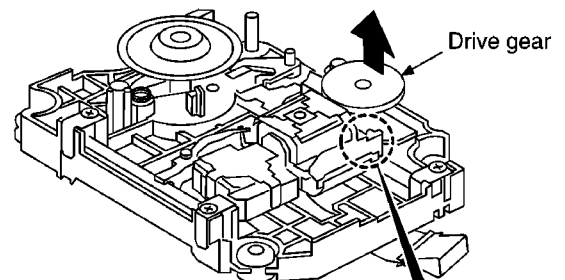
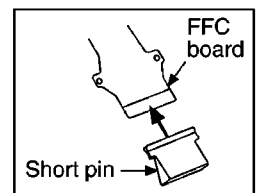
(Step 4)
Unsolder the motor terminals.

(Step 6)
Pull out the FFC from connector.

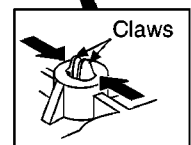


(Step 5)
Upset the DVD module (2) P.C.B..

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

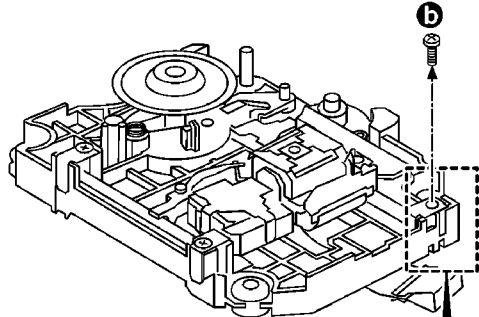


(Step 7)
Release the claws, and then pull out the drive gear.



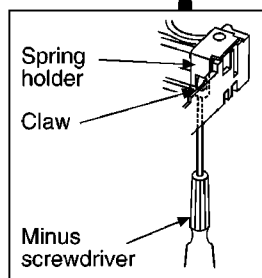
(Bottom side)

(Step 8)



(Step 9)

Release the claw, and then remove the spring holder.

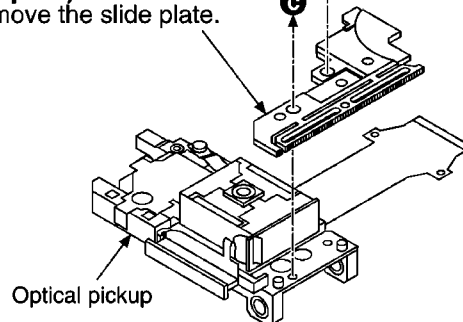


(Step 14)

C × 2

(Step 15)

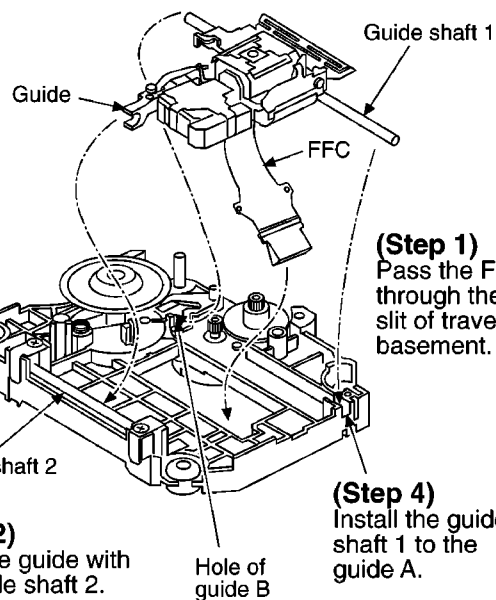
Remove the slide plate.



Installing the optical pickup

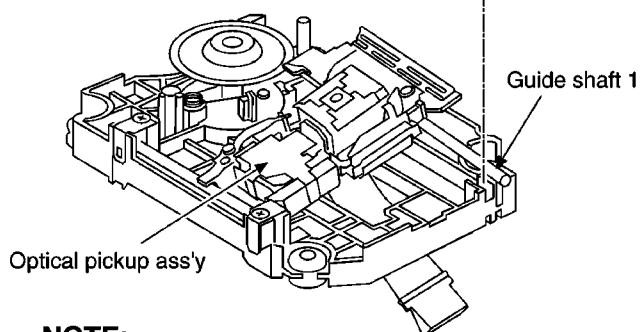
(Step 3)

Install the tip end of guide shaft 1 to the hole of guide B.



(Step 11)

Lift up the optical pickup ass'y, and then remove the guide shaft 1 from the guide A.



(Step 10)

Remove the adjust spring.

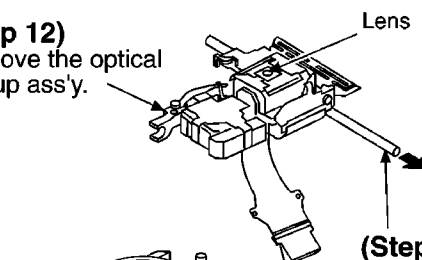
Guide shaft 1

NOTE:

Take care not to lose the adjust spring.

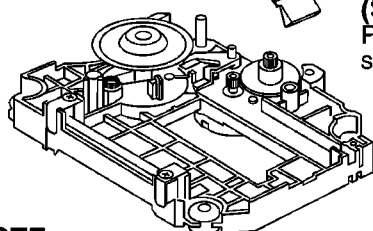
(Step 12)

Remove the optical pickup ass'y.



(Step 13)

Pull out the guide shaft 1.



NOTE:

1. Use care to prevent damage the optical pickup, due to the precision construction.
2. Do not touch the lens of the optical pickup.

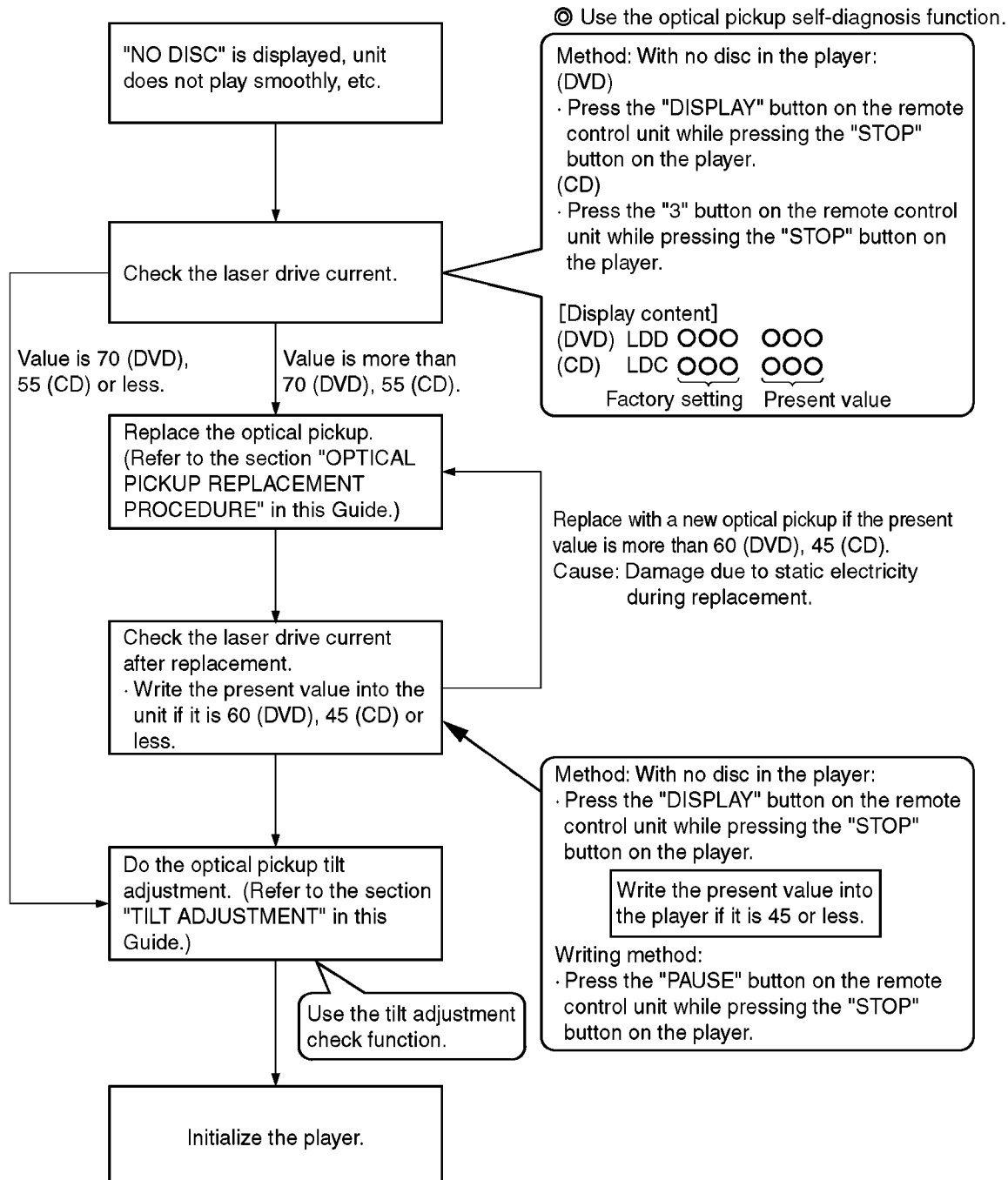
6 Optical Pickup Self-Diagnosis and Replacement Procedure

6.1. Self-diagnosis

The optical pickup self-diagnosis function and tilt adjustment check function have been included in this unit. When repairing, use the following procedure for effective Self-diagnosis and tilt adjustment. Be sure to use the self-diagnosis function before replacing the optical pickup when "NO DISC" is displayed. As a guideline, you should replace the optical pickup when the value of the laser drive current is more than 55.

Note:

Press the power button to turn on the power, and check the value within three minutes before the unit warms up. (Otherwise, the result will be incorrect.)



6.2. Cautions to Be Used Before Replacing the Optical Pickup Unit and Spindle Motor Assembly

Before replacing the optical pickup unit and spindle motor assembly, check the total using hours for each of them. The checking method is as follows:

	Operating state & Key operation	Display
Using hours of DVD and CD lasers	Press "STOP" button on the player, and " ▲ " on the remote control .	T1_xxxx_yyyy: total hours are displayed by 4-digit figures (unit: 10 hours).
Using hours of SP motor	Press "STOP" button on the player, and " ► " on the remote control.	T2_xxxx: total hours are displayed by 4-digit figures (unit: 10 hours).
Resetting using hours of DVD and CD lasers (Simultaneous resetting)	Press "STOP" button on the player, and " ▼ " on the remote control.	T1_0000_0000
Resetting using hours of the SP motor	Press "STOP" button on the player, and " ◀ " on the remote control .	T2_0000

Cautions to be taken when replacing the optical pickup

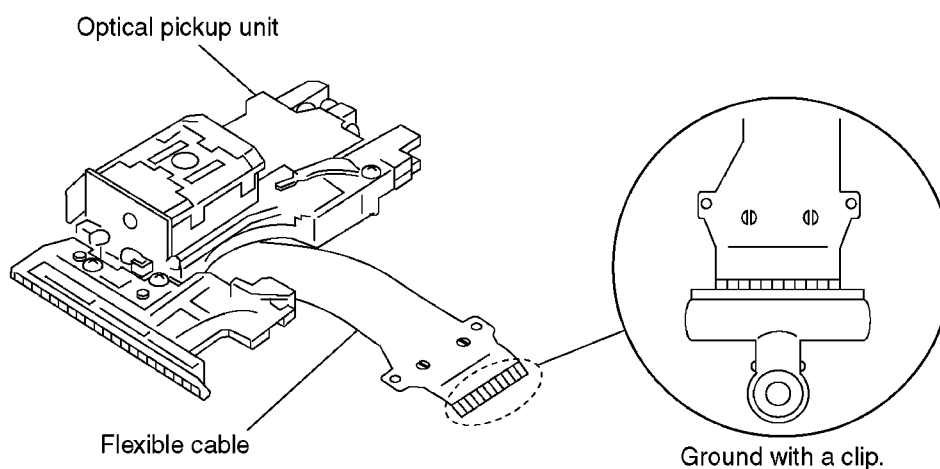
The optical pickup may break down due to the static electricity of human body. Take proper protection measures against static electricity before repairing the parts around the optical pickup.

1. Do not touch the areas around the laser diode and actuator.
2. Do not judge the laser diode with a tester. (The tester will be damaged easily.)
3. It is recommended to use a destaticized soldering iron for short-circuiting or removing the laser diode. (Recommended soldering iron) HAKKO ESD Product

4. Solder the land of the flexible cable in the optical pickup.

Note:

- When using a soldering iron which is not destaticized, short-circuit the terminal face of the flexible case with a clip. After that, short-circuit the land.
- After the repairing work is completed, remove the solder according to the correct procedure shown in this Technical Guide.



7 Self-Diagnosis Function and Service Modes

7.1. New servicing method for DVD player (5th generation models)

With the 5th generation models new self-diagnosis function and new servicing method described below are additionally available.

7.1.1. Firmware updating and recovery with disc

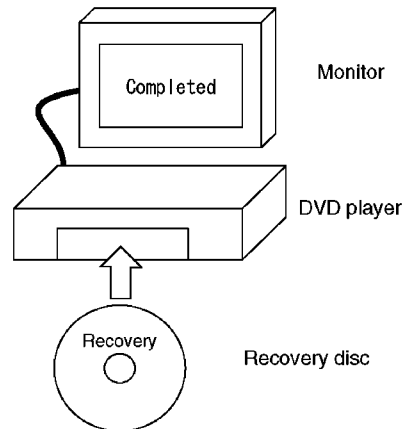
- Recovery
- Firmware updating

Simply run the recovery disc. Then both of the above operations are automatically performed.

Commercially available CD-R can now perform updating and recovery process, making it easier to update the version.

Recovery process: Optimization of player after replacement of FROM, EEPROM and modular P.C.B.

Version updating: Firmware updating for improved operability and performance



7.1.2. New self-diagnosis function

- Cumulative operation time display function (Spindle motor and DVD/CD laser)
- ADSC internal RAM display function

Utilization of the above functions, in combination with servicing procedures, is expected to contribute to higher efficiency of fault diagnosis.

[Purposes]

Operation time display function: For faultfinding of spindle motor or laser that has limited service life

ADSC internal RAM display function: For faulty part identification in servo system using the learned values

7.2. How to use recovery disc

7.2.1. Performing recovery

1. Load the recovery disc RFKZD5TR006 on to the player and run it.
2. Recovery is performed automatically. When it is finished, a message appears on the screen.
3. Remove the recovery disc.
4. Turn off the power.

7.2.2. Updating firmware

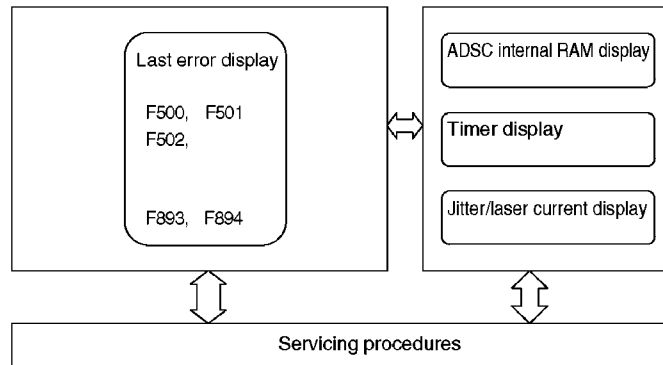
1. Load the recovery disc RFKZD5TR006 on to the player and run it.
2. Firmware version of the player is automatically checked. Appropriate message appears whenever necessary.
3. Using remote controller's cursor key, select whether version updating is to be done or not. (Selection of Yes/No)
4. a. If Yes is selected, version updating is performed.
b. If No is selected, only recovery is performed.
5. a. When updating is finished, remove the disc according to the message appearing on the screen.
b. Remove the disc according to the message appearing on the screen.
6. Turn off the power.

7.3. Fault diagnosis using new self-diagnosis function

The 5th generation DVD players have the additional new service modes as described above to further reinforce the diagnosis function.

These new functions are unable to bring sufficient results when they are used alone.

Effective fault diagnosis can be expected when multiple diagnostic methods are properly combined in accordance with the servicing procedures depending on specific fault status.



* New servicing procedures are now under study to match with the newly developed self-diagnosis functions introduced here.

Details of the new servicing procedures will be informed from time to time.

1. Cumulative operation time display function

For spindle motor and DVD/CD laser, the cumulative operation time is displayed.

When servicing, check the timer display and use it as information for fault diagnosis.

At the time of repair and replacement of these components, make sure to check the operation time and reset the timer after replacement.

Operation time of the replacement parts (spindle motor and laser) is the valuable information as actual data for future product quality.

Please save the records and supply information to us.

2. ADSC internal RAM display function

The function is to display the internal RAM data of ADSC servo processor.

The RAM data are the learned values of drive servo, memorizing those concerning focus and tracking, as well as data slice and equalizer.

* This function is also a newly developed service mode. Its full utilization is still under study.

7.4. ADSC internal RAM display function

1. Operation/display

Key operation: Main unit STOP + remote controller [1] Operate the remote controller [CLEAR] key to update internal RAM address and display 11 learned values.

Table 1 shows the descriptions of the display.

2. How to utilize

At present, learned values of ADSC internal RAM are expected to be useful for the following faulty part identification.

Use how learned value changes from initial value to find whether faulty part exists before or after ADSC in the focus/tracking servo system.

[Focus system]

When focus gain remains at initial value and tracking gain changes, fault exists before ADSC input.

When focus gain changes and tracking gain remains at initial value, fault exists after ADSC output.

[Tracking system]

When focus gain remains at initial value and tracking gain changes, fault exists after ADSC output.

When focus gain changes and tracking gain remains at initial value, fault exists before ADSC input.

Table 1 ADSC internal RAM learned value

Address	Memory data	Data range	Standard value
4B4	Focus gain learned value except for DVD DL (L1 layer)	0040h~0800h	200h
4BC	Focus gain learned value of DVD DL (L1 layer)	0040h~0800h	200h
4B6	Focus balance learned value except for DVD DL (L1 layer)	B000h~5000h	0000h
4BE	Focus balance learned value of DVD DL (L1 layer)	B000h~5000h	0000h
4B5	Tracking gain learned value except for DVD DL (L1 layer)	0040h~0800h	200h
4BD	Tracking gain learned value of DVD DL (L1 layer)	0040h~0800h	200h
TB0	Tracking balance learned value of DVD SL and DL (L0)	0060h~FFA0h	0000h
	Tracking balance learned value of CD and VCD	B000h~5000h	0000h
TB1	Tracking balance learned value of DVD DL (L1 layer)	FFA0~0060h	0000h
DBD	DSL offset learned value of DVD	9000h~F000h	
DBC	DSL offset learned value of CD and VCD	9000h~F000h	
FC0	Equalizer FC value except for DVD DL (L1 layer)	0000h~0004h	
BT0	Equalizer BOOST value except for DVD DL (L1 layer)	0000h~0004h	
FC1	Equalizer FC value of DVD DL (L1 layer)	0000h~0004h	
BT1	Equalizer BOOST value of DVD DL (L1 layer)	0000h~0004h	

Notes:

1. Learned values of focus balance and tracking balance are the coded binary data.
2. DSL offset learned value is effective only in upper 2 digits. (Lower 2 digits, normally 06, are ignored.)

Picking up servo learned value (Determined)

1. Focus (primary)/tracking balance learning ... When leading in focus
2. Focus/tracking gain and equalizer ... When leading in tracking
3. Focus balance (secondary) ... When leading in tacking

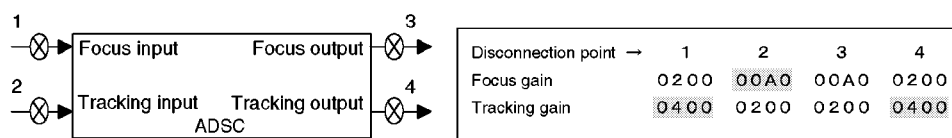
[Note]

When fault exists somewhere after tracking servo, the disc type is switched by retry to make learned value different from the one in normal startup.

Initial learned value: Gain = 0200
Balance = 0000
DSL = C406/CC06 (Differs depending on P.C.B.)
Equalizer = 0000

Equalizer value is entered when RF signal is sent out.

When focus/tracking servo system circuit is faulty, the gain learned value changes from initial value as follows.



Examples of ADSC internal RAM learned value display

7.5. Overview of each function

7.5.1. Cumulative operation time display

1. Operation/display

T 1 0 1 2 3 0 1 2 3	DVD/CD laser operation time Unit: 10 hours in decimal notation
T 2 0 1 2 3	Spindle motor operation time Unit: 10 hours in decimal notation

Key operations are as follows.

Laser operation time In STOP mode, main unit [STOP]+ remote controller [▲]

Spindle motor operation time In STOP mode, main unit [STOP]+ remote controller [►]

To reset the timer, perform the following while displaying the time with above key operation.

Laser operation time In STOP mode, main unit [STOP]+ remote controller [▼]

Spindle motor operation time In STOP mode, main unit [STOP]+ remote controller [◀]

2. How to utilize

Reference information in fault diagnosis of laser or spindle motor system

Review of faulty point in repeated repair

7.6. DVD Self Diagnostic Function-Error Code

Error Code	Error Content	Additional error explanation	Defect 1	Defect 2	Defect 3	Defect 4
	U, H error					
U11	Focus error					
H01	Tray loading error					
H02	Spindle servo error	(Spindle servo, DSC SP motor, CLV servo error)				
H03	Traverse servo error					
H04	Tracking servo error					
H05	Seek error					
H06	Power error	Cannot switch off the power because of the panel and system computer communication error				
	DSC related					
F500	DSC error	DSC stops in the occurrence of servo error (starup, focus error, etc)	OPU	ADSC	FEP	servo drive
F501	DSC not Ready	DSC-system computer communication error (Communication failure caused by idling of DSC)	ADSC	CPU		
F502	DSC Time out error	Similar disposal as F500	OPU	ADSC	FEP	servo drive
F503	DSC communication Failure	Communication error (result error occurred although communication command was sent)	ADSC	FEP	EEPROM	
F505	DSC Attention error	Similar disposal as F500	OPU	ADSC	FEP	servo drive
F506	Invalid media	Disc is flipped over, TOC unreadable, incompatible disc	DISC	FEP	ADSC	ODC
	ODC related					
F600	Access failure to management information caused by demodulation error	Operation stopped because navigation data is not accessible caused by the demodulation defect	ODC	FEP	ADSC	
F601	Indeterminate sector ID requested	Operation stopped caused by the request to access abnormal ID data	ODC	FEP	ADSC	
F602	Access failure to LEAD-IN caused by demodulation error	LEAD IN data unreadable				
F603	Access failure to KEYDET caused by demodulation error	Access failure to CSS data of disc				
F610	ODC abnormality	No permission for command execution	ODC			
F611	6626 QCODE don't read Error	Access failure to seek address in CD series	ODC			
F612	No CRC OK for a specific time	Access failure to ID data in DVD series	ODC			
F630	No reply to KEY DET enquiry	(for internal use only)				
F631	CPPM KEY DET is not available till the FILE terminal	(CPPM file system is unreadable caused by scratches)	DISC	CPPM		
F632	CPPM KEY DET is not available	Been revoked or falsified	DISC	EEPROM	CPPM	
	Disc code					
F103	Illegal highlight Position	Big possibility of disc specification violation during highlight display	DISC			
	HIC Error					
F4FF	Force initialize failure (time out)		EEPROM	CPU	FEP	ADSC
	Micro computer error					
F700	MBX overflow	When replying message to disc manager				
F701	Message command does not end	Next message is sent before replying to disc manager				
F702	Message command changes	Message is changed before it is sent as a reply to disc manager				
F880	Task number is not appropriate	Message coming from a non-existing task				
F890	Sending message when message is being sent to AV task	Sending message to AV task				
F891	Message couldn't be sent to AV task	Begin sending message to AV task				
F893	FROM falsification		FROM	CPU		
F894	EEPROM abnormality		EEPROM	Serial communication on lone		
F8A0	Message command is not appropriate	Begin sending message to AV task				

7.7. Last Error Code saved during NO PLAY

Error code	Error Content	System computer	Setting task	System computer internal error code
F0BF	6) Cannot playback because physical layer is not recognizable	PCND_NOPLAY PHYSICAL 0x50	DriveManager	0xDOBF
F0C0	8) DVD: Cannot playback because it is not DVD Video/Adio/VR	PCND_NOPLAY VIDEO 0x70	DiscManager	0xDOC0
F0C1	9) DVD: Prohibited by the restricted region code	PCND_NOPLAY RCD 0x80	DiscManager	0xDOC1
F0C2	A) DVD: PAL restricted playback	PCND_NOPLAY PAL 0x90	DiscManager	0xDOC2
F0C3	B) DVD: Parental lock setting prohibits the playback of the entire title	PCND_NOPLAY PTL 0xA0	DiscManager	0xDOC3
F0C4	C) VCD: Prohibited because it is in PHOTO CD fromat	PCND_NOPLAY PHOTO CD 0xB0	DiscManager	0xDOC4
F0C5	VCD/CD: Prohibited because it is CDROM without CD-DA	PCND_NOPLAY CDROM 0xC0	DiscManager	0xDOC5

7.8. Self-diagnosis Function and Service Modes

in use

UHF error display
The latest error storage
function
n=1

Jitter/read error display

Laser drive current display
For DVD

new DVD

UHF error display
Same, currently in use

Jitter/read error display
Focus drive value display

Laser drive current display
For DVD/CD

ADSC internal RAM data
display

Total operation time display
SP motor
Laser (DVD/CD)

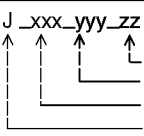
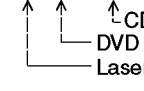
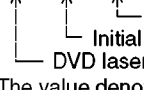
The focus drive current value can be displayed.

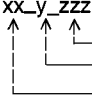
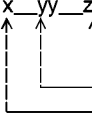
The servo learning value stored in the RAM data inside the ADSC (servo controller) IC is displayed.

The operation times of SP motor and the laser (both for the DVD and CD) can be displayed.

7.9. Service mode table

Pressing various button combinations on the player and remote control unit can activate the service modes.

Item	Play mode and button combination	Function	Display	Cancellation method
Jitter check	In PLAY mode, press "STOP" button on the player, and "5" button on the remote control unit.	Jitter check Jitter rate is measured and displayed. Measurement is repeatedly done in the cycle of one second. Read error counter starts from zero upon mode setting. When target block data failed to be read out, the counter advances by one increment. When the failure is caused by minor error, it may be corrected when retried to enable successful reading. In this case, the counter advances by one. When the error persists even after retry, the counter may jump by two or more.	 J _xxx_yyy_zz Focus drive value Read error counter Jitter rate Jitter check mode Jitter rate is shown in decimal notation to one place of decimal. Focus drive value is shown in hexadecimal notation.	Press STOP button.
Error code check	Press "STOP" button on the player, and "0" button on the remote control unit.	Error code check The latest error code stored in EEPROM is displayed.	Error code (play_err) is expressed in the following convention. Error code = 0 x DAXX is expressed: → DVD UXX Error code = 0 x DBXX is expressed: → DVD HXX Error code = 0 x DXXX is expressed: → DVD FXXX Error code = 0 x 0000 is expressed: → DVD FXXX	Cancelled automatically 5 seconds later.
Initial setting of laser drive current	In STOP mode, press "STOP" button on the player, and "PAUSE" button on the remote control unit.	Initial setting of laser drive current. Initial current value for each of DVD laser and CD laser is separately saved in EEPROM.	 LDO_034_028 CD laser current measurement DVD laser current measurement Laser current measurement mode	Cancelled automatically 5 seconds later.
DVD laser drive current measurement	In STOP mode, press "STOP" button on the player, and "DISPLAY" button on the remote control unit.	DVD laser drive current measurement ·DVD laser drive current is measured and the result is displayed together with the initial value stored in EEPROM. After the measurement, DVD laser emission is kept on. It is turned off when POWER key is switched off. (It is also turned off when the primary power is switched off.)	 LDD_034_032 Measured current Initial current stored in EEPROM DVD laser current measurement mode The value denotes the current in decimal notation. The above example shows the initial current is 34mA and the measured value is 32mA.	Cancelled automatically 5 seconds later.
ADSC internal RAM data check	Press "STOP" button on the player, and "1" button on the remote control unit.	ADSC internal RAM data check ·ADSC internal RAM data is read out and displayed. Change the address with "CANCEL" key operation to show the data for 14 addresses.	 A_DFA_6901 RAM data for specified address Address ADSC internal RAM data check mode The value is shown in hexadecimal notation. The above example shows the data in ADSC address DFAh is 6901h.	Press STOP button.
CD laser drive current measurement	In STOP mode, press "STOP" button on the player, and "3" button on the remote control unit.	CD laser drive current measurement CD laser drive current is measured and the result is displayed together with the initial value stored in EEPROM. After the measurement, CD laser emission is kept on. It is turned off when POWER key is switched off. (It is also turned off when the primary power is switched off.)	 LDC_028_026 Measured current Initial current stored in EEPROM CD laser current measurement mode The value denotes the current in decimal notation. The above example shows the initial current is 28mA and the measured value is 26mA.	Cancelled automatically 5 seconds later.

Item	Play mode and button combination	Function	Display	Cancellation method
Version display	In STOP mode, press "STOP" button on the player, and "7" button on the remote control unit.	Version display	xx_y_zzz  System controller release number System controller model number System controller generation	Cancelled automatically 5 seconds later.
Dealer's lock	In STOP mode, press "STOP" on the player, and "PLAY" button on the remote control unit for 3 second.	Dealer's lock The lock is switched ON or OFF. When dealer's lock is ON, it prohibits the tray opening. When the lock is switched, its ON/OFF status is stored in EEPROM.	· "LOCKED" sign appears when dealer's lock is switched on, or when secondary power key or tray opening key is pressed while the lock is on. · "UNLOCKED" sign appears when dealer's lock is switched off.	Repeat the same operation.
Initialization	In STOP mode, press "STOP" button on the player and "≥10" button on the remote control unit.	Initialization User settings are cancelled and player is initialized to factory setting.	"INITIALIZED"	
Region display	In STOP mode, press "STOP" button on the player, and "6" button on the remote control unit.	Region display	x_yy_zzz  N: NTSC / 6: PAL60 N: noPAL / P: PAL Region No.	Cancelled automatically 5 seconds later.
Timer 1 check	In STOP mode, press "STOP" button on the player, and "▲" button on the remote control unit.	Timer 1 check Operation time of laser operation timer is measured separately for DVD laser and CD laser.	T1_1234_5678 Shown to the left is DVD laser time, and to the right CD laser time. Time is shown in 4 digits of decimal notation in a unit of 10 hours. "0000" will follow "9999".	Cancelled automatically 5 seconds later.
Timer 1 reset	While displaying Timer 1 data, press "STOP" button on the player, and "▼" button on the remote control unit.	Timer 1 reset Operation time of laser operation timer of both DVD laser and CD laser is reset all at once.	T1_0000_0000	Cancelled automatically 5 seconds later.
Timer 2 check	In STOP mode, press "STOP" button on the player, and "▶" button on the remote control unit.	Timer 2 check Spindle motor operation timer	T2_1234 Time is shown in 4 digits of decimal notation in a unit of 10 hours. "0000" will follow "9999".	Cancelled automatically 5 seconds later.
Timer 2 reset	While displaying Timer 2 data, press "STOP" button on the player, and "◀" button on the remote control unit.	Timer 2 reset Spindle motor operation timer	T2_0000	Cancelled automatically 5 seconds later.

7.10. Sales demonstration lock function

This function prevents discs from being lost when the unit is used for sales demonstrations by disabling the disc eject function. "LOCKED" is displayed on the unit, and ordinary operation is disabled.

7.10.1. Setting

The sales demonstration lock is set by simultaneously pressing "STOP" button on the player and "PLAY" button on the remote control unit.

7.10.2. Cancellation

The lock can be cancelled by the same procedure as used in setting. ("UNLOCKED" is displayed on cancellation. Disconnecting the power cable from power outlet does not cancel the lock.)

7.11. Service Precautions

7.11.1. Recovery after the dvd player is repaired

When an FROM or an EEPROM in and on the module P.C.B. has replaced, carry out the recovery disc processing to optimize the drive.

Playback the disk above to process the recovery automatically,

Recovery disc (Product number: RFKZD5TR006)

Note:

This unit requires no initialization process carried out after the traditional DVD players were repaired.

When the recovery measures are taken, the customer setting will return to the factory setting as same as the procedure described in item of "Initialization" in 7.9 is carried out. Write down the contents of the setting before recovery processing, and reset the player

7.11.2. Firmware version-up of the DVD player

The firmware of the DVD player may be renewed to improve the quality including operationability and playerbility to the substandard discs.processing to optimize the drive.

The version-up disc has also a recovery function so that you don't need use the recovery disc again.

Note:

If the AC power supply is shut out during version-up due to a power failure, the version-up is improperly carried out.

In such a case, replace the FROM and carry out the version-up again.

The product number of the version-up disc will be noticed when it is supplied.

7.12. Handling After Completing Repairs

Use the following procedure after completing repairs.

7.12.1. Method

Confirm that the power is turned on:

1. Press the "OPEN/CLOSE" button to close the tray.
2. Press the "POWER" button to turn off the power.
3. Disconnect the power plug from the outlet.

7.12.2. Precautions

Do not disconnect the power plug from the outlet with the tray still open, then close the tray manually.

8 Adjustment Procedures

8.1. Service Tools and Equipment

Application	Name	Number
Tilt adjustment	DVD test disc	DVDT-S15 or DVDT-S01
	Hex wrench	Commercially available hex wrench
Others	Screw lock	RZZ0L01
	Grease	RFKXGAK152
	Oil	RFKXGA1280, JZS0648
Confirmation	CD test disc	PVCD-K06 or any other commercially available disc
	VCD test disc	PVCD-K06 or any other commercially available disc

8.2. Important points in adjustment

8.2.1. Important points in optical adjustment

- Before starting optical adjustment, be sure to take anti-static measures.
- Optical pickup tilt adjustment is needed after replacement of the following components.

1. Optical pickup unit
2. Spindle motor unit
3. Optical pickup peripheral parts (such as rail)

Notes

Adjustment is generally unnecessary after replacing other parts of the traverse unit. However, make adjustment if there is a noticeable degradation in picture quality. Optical adjustments cannot be made inside the optical pickup. Adjustment is generally unnecessary after replacing the traverse unit.

8.2.2. Important points in electrical adjustment

- Follow the adjustment procedures described in this Manual.

8.3. Storing and Handling Test Discs

- Surface precision is vital for DVD test discs. Be sure to store and handle them carefully.

1. Do not place discs directly onto the workbench, etc., after use.
2. Handle discs carefully in order to maintain their flatness. Place them into their case after use and store them vertically. Store discs in a cool place where they are not exposed to direct sunlight or air from air conditioners.
3. Accurate adjustment will not be possible if the disc is warped when placed on a surface made of glass, etc. If this happens, use a new test disc to make optical adjustments.
4. If adjustment is done using a warped disc, the adjustment will be incorrect and some discs will not be playable.

8.4. Optical adjustment

8.4.1. Optical pickup tilt adjustment

Measurement point	Adjustment point	Mode	Disc
	Tangential adjustment screw Tilt adjustment screw	T01 (inner periphery) play T43 (outer periphery) play	DVDR-S15 or DVDT-S01
Measuring equipment	Adjustment value		
None (Main unit display for servicing is used.)	Adjust to the minimum jitter value.		

8.4.1.1. Adjustment procedure

1. While pressing "STOP" button on the main unit, press "5" on the remote control unit.
2. Confirm that "J_xxx_yyy_zz" is shown on the front display.

For your information:

"yyy" and "zz" shown to the right have nothing to do with the jitter value. "yyy" is the error counter, while "zz" is the focus drive value.

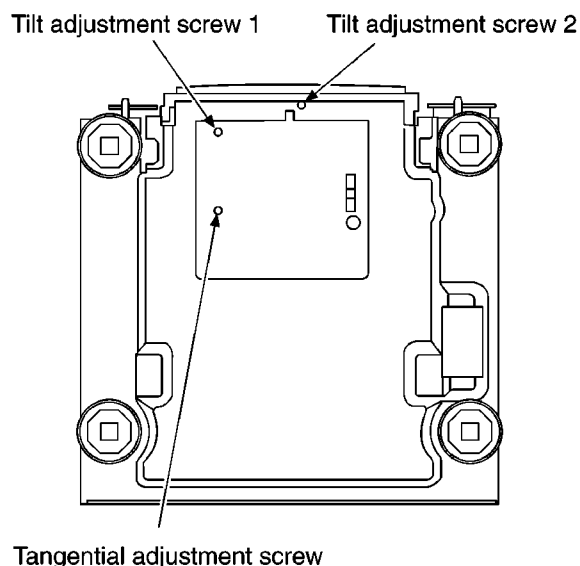
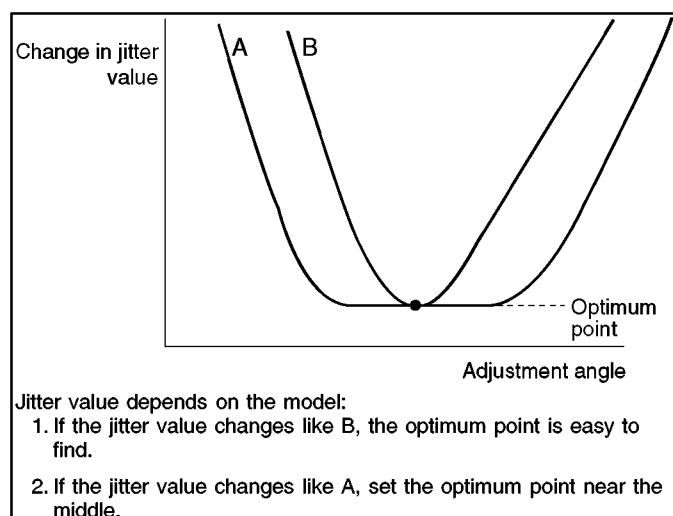
Note:

Jitter value appears on the front display.

3. Play test disc T01 (inner periphery).
4. Adjust tangential adjustment screw so that the jitter value is minimized.
5. Play test disc T43 (outer periphery).
6. Adjust tilt adjustment screw 1 so that the jitter value is minimized.
7. Play test disc T43 (outer periphery).
8. Adjust tilt adjustment screw 2 so that the jitter value is minimized.
9. Repeat adjusting tilt adjustment screws 1 and 2 alternately until the jitter value is minimized.

8.4.1.2. Important points

1. Make tangential adjustment first, and then make tilt adjustment.
2. Repeat adjusting two or three times to find the optimum point.
3. Finish the procedure with tilt adjustment.

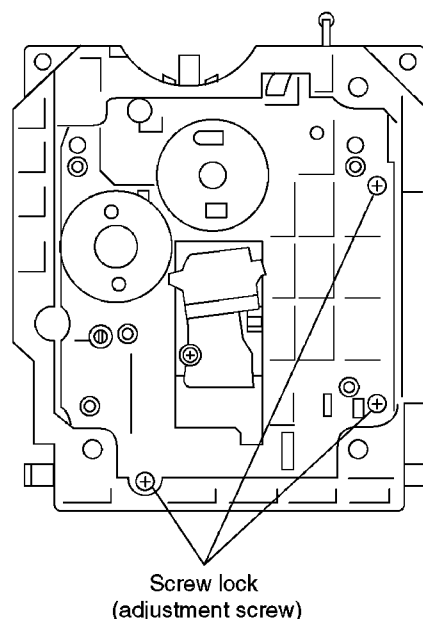


8.4.1.3. Check after adjustment

Play test disc or any other disc to make sure there is no picture degradation in the inner, middle and outer peripheries, and no audio skipping. After adjustment is finished, lock each adjustment screw in position using screw lock.

8.4.1.4. Procedure for screw lock

1. After adjustment, remove top cover, tray, clamper base and traverse unit in this sequence.
2. Lay the traverse unit upside down, and fix adjustment screw with screw lock.
3. After fixing, reassemble traverse unit, clamper base, tray and top cover.



9 Electrical Confirmation

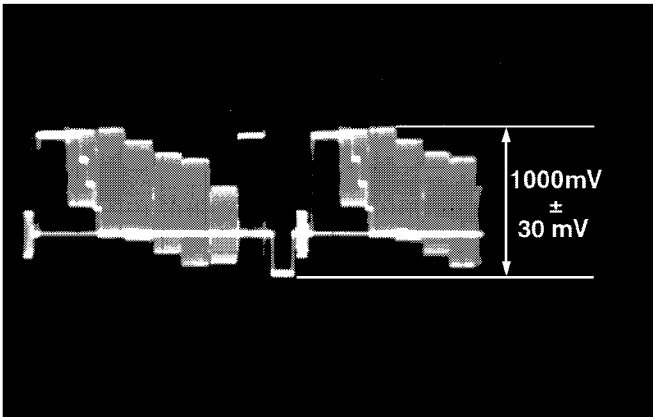
9.1. Video Output (Luminance Signal) Confirmation

Do this confirmation after replacing a P.C.B.

Measurement point	Mode	Disc
Video output terminal	Color bar 75% PLAY (Title 46):DVDT-S15 PLAY (Title 12):DVDT-S01	DVDT-S15 or DVDT-S01
Measuring equipment, tools	Confirmation value	
Screwdriver, Oscilloscope 200mV/div, 10μsec/div	1000mVp-p±30mV	

Purpose: To maintain video signal output compatibility.

1. Connect the oscilloscope to the video output terminal and terminate at 75 ohms.
2. Confirm that the luminance signal (Y+S) level is 1000 mVp-p±30 mV.



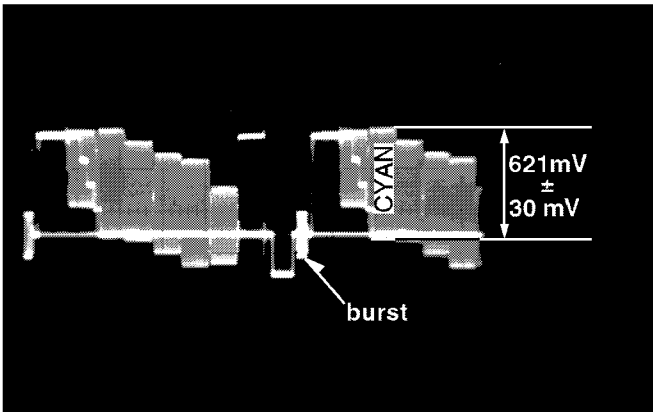
9.2. Video Output (Chrominance Signal) Confirmation

Do this confirmation after replacing a P.C.B.

Measurement point	Mode	Disc
Video output terminal	Color bar 75% PLAY (Title 46):DVDT-S15 PLAY (Title 12):DVDT-S01	DVDT-S15 or DVDT-S01
Measuring equipment, tools	Confirmation value	
Screwdriver, Oscilloscope 200mV/div, 10μsec/div	621mVp-p±30mV	

Purpose: To maintain video signal output compatibility.

1. Connect the oscilloscope to the video output terminal and terminate at 75 ohms.
2. Confirm that the chrominance signal (C) level is 621 mVp-p±30 mV.



10 To Supply Power Source

Cautions:

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

This unit SL-DV280 is designed to operate on power supplied from the system connected. (For system connection, refer to Fig. 4.)

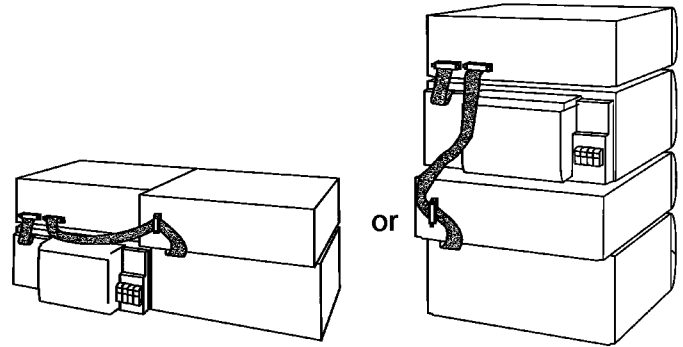


Fig. 4

When the unit SL-DV280 has to test and service alone, use the following method to supply power source.

1. Connect a DC power supply to JK1-5pin and JK1-6pin and .

Then adjust the outputs to 10V for 5pin (refer to Fig. 5 and Fig. 6)

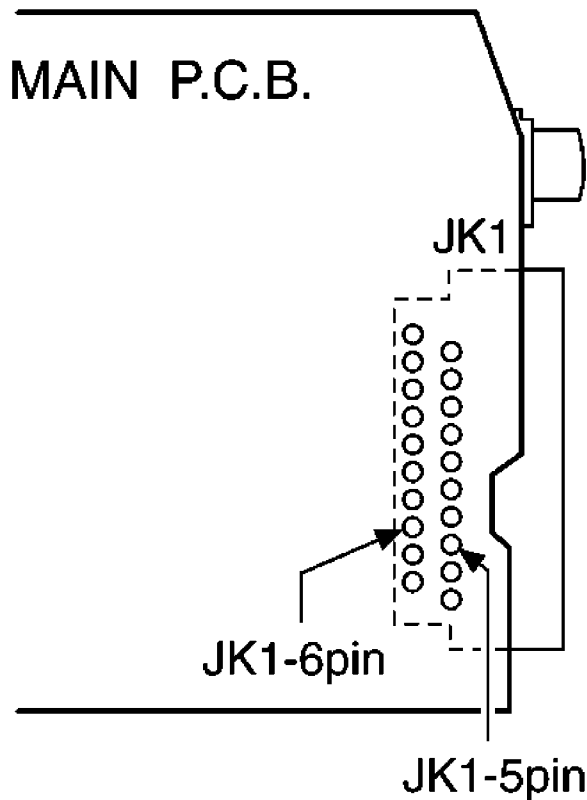


Fig. 5

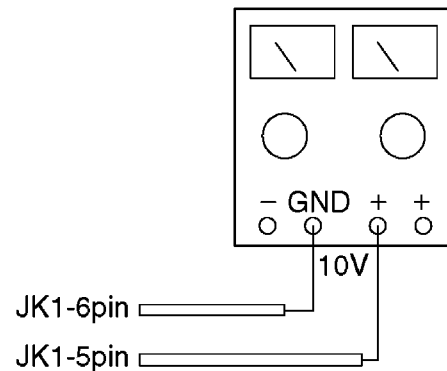


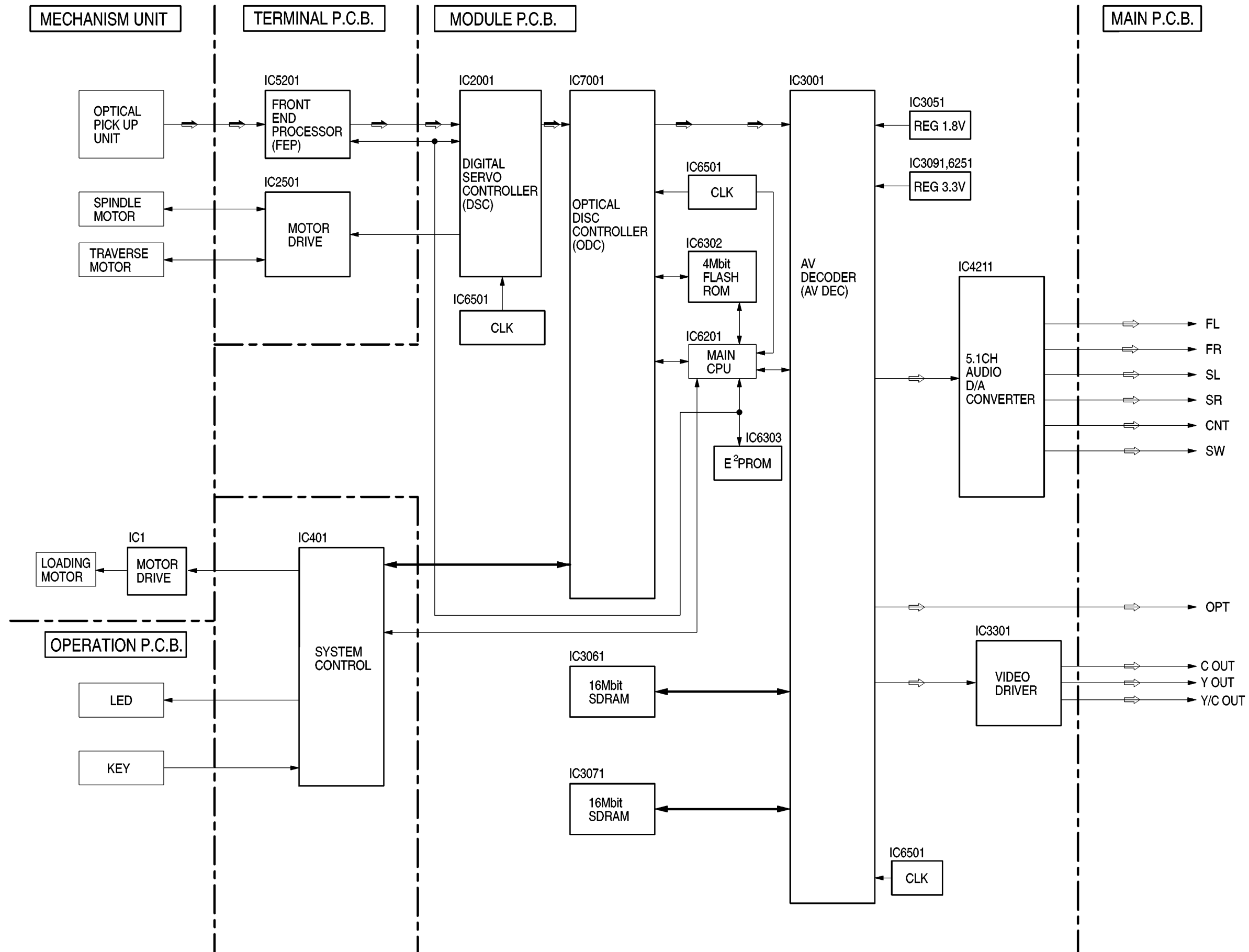
Fig. 6

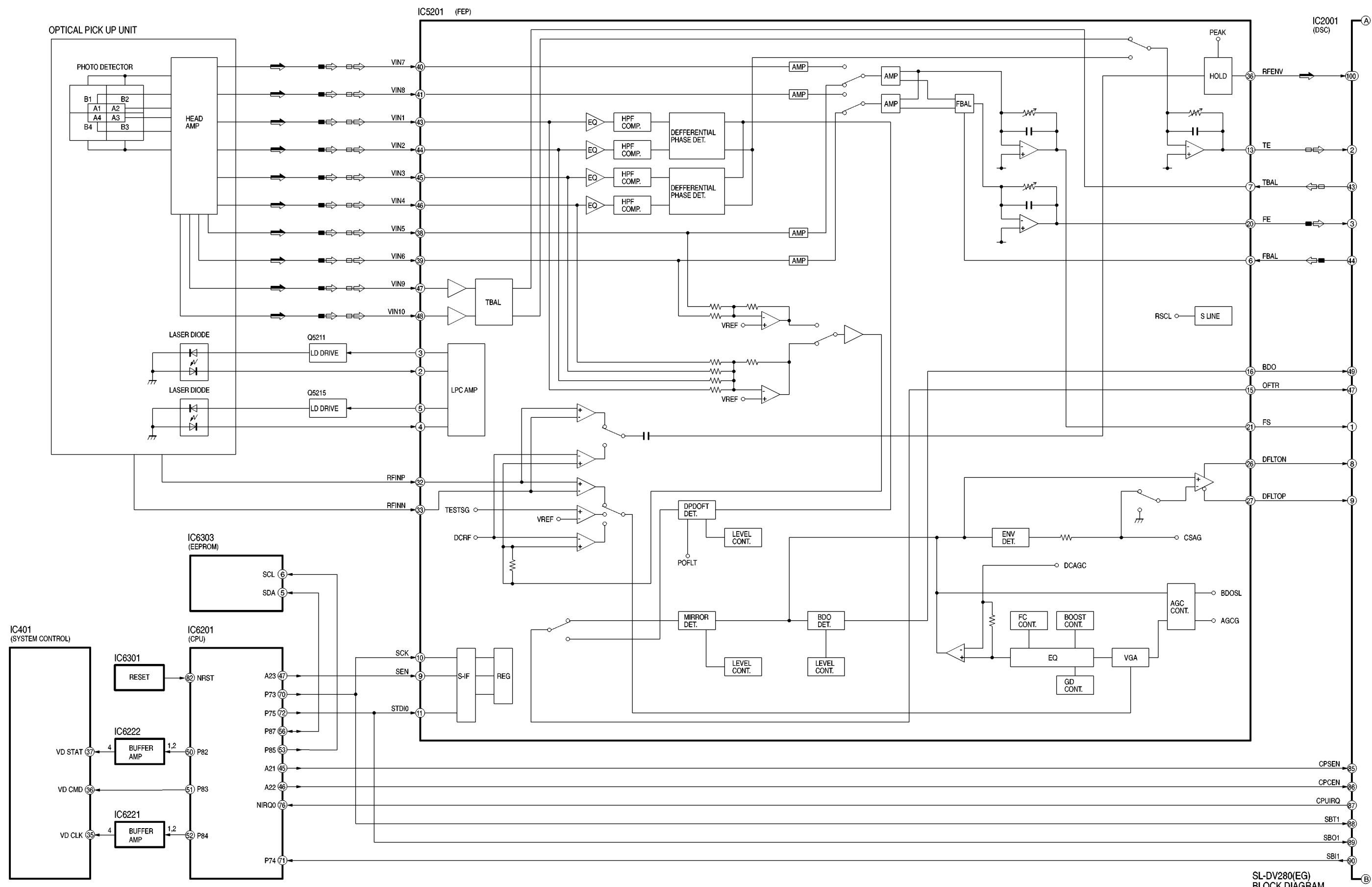
Note:

Use only this method when checking the voltage etc..

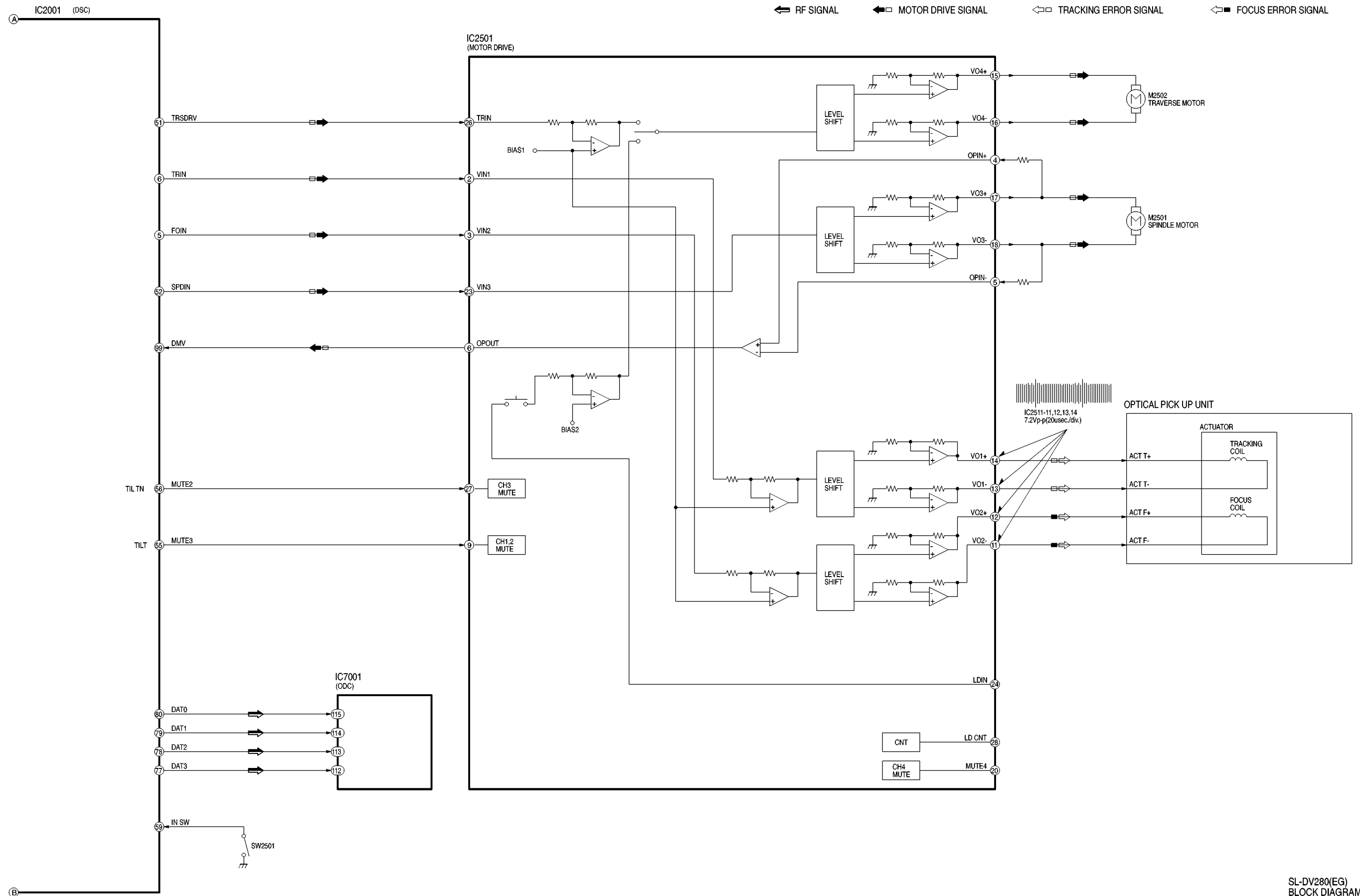
In case of checking operations, use the system connections to supply power source.

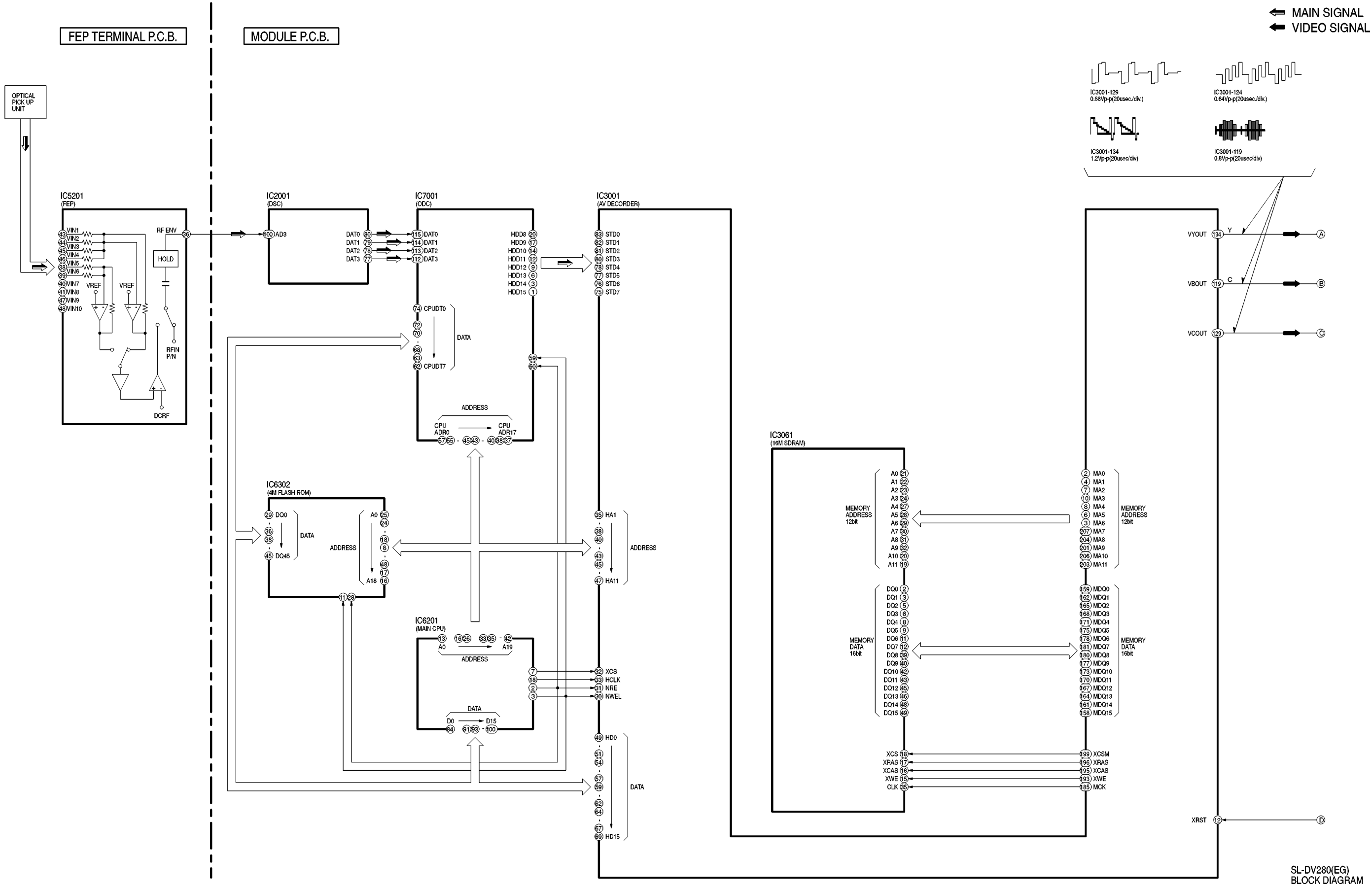
11 Block Diagram



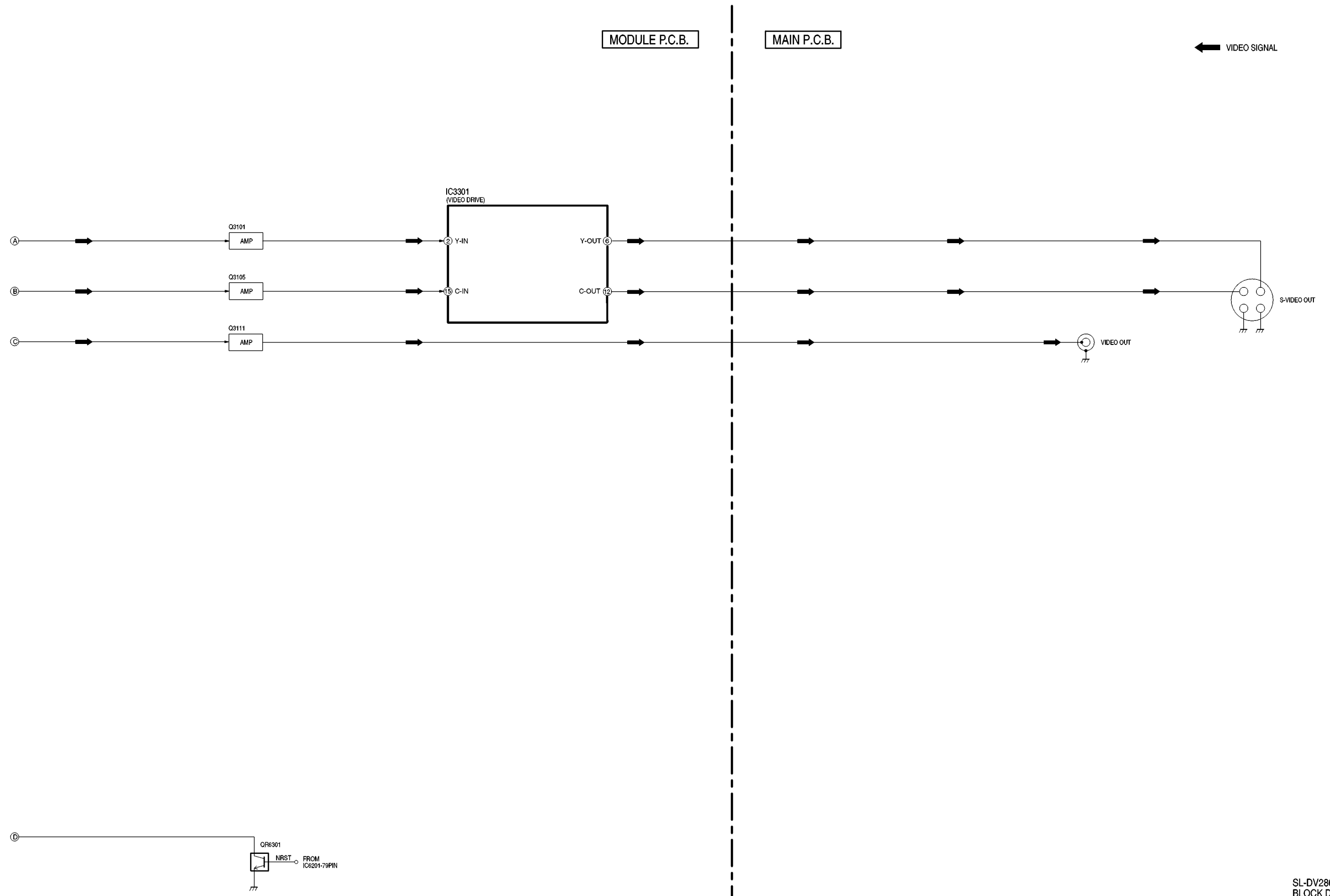


SL-DV280(EG)
BLOCK DIAGRAM

SL-DV280(EG)
BLOCK DIAGRAM



SL-DV280(EG)
BLOCK DIAGRAM



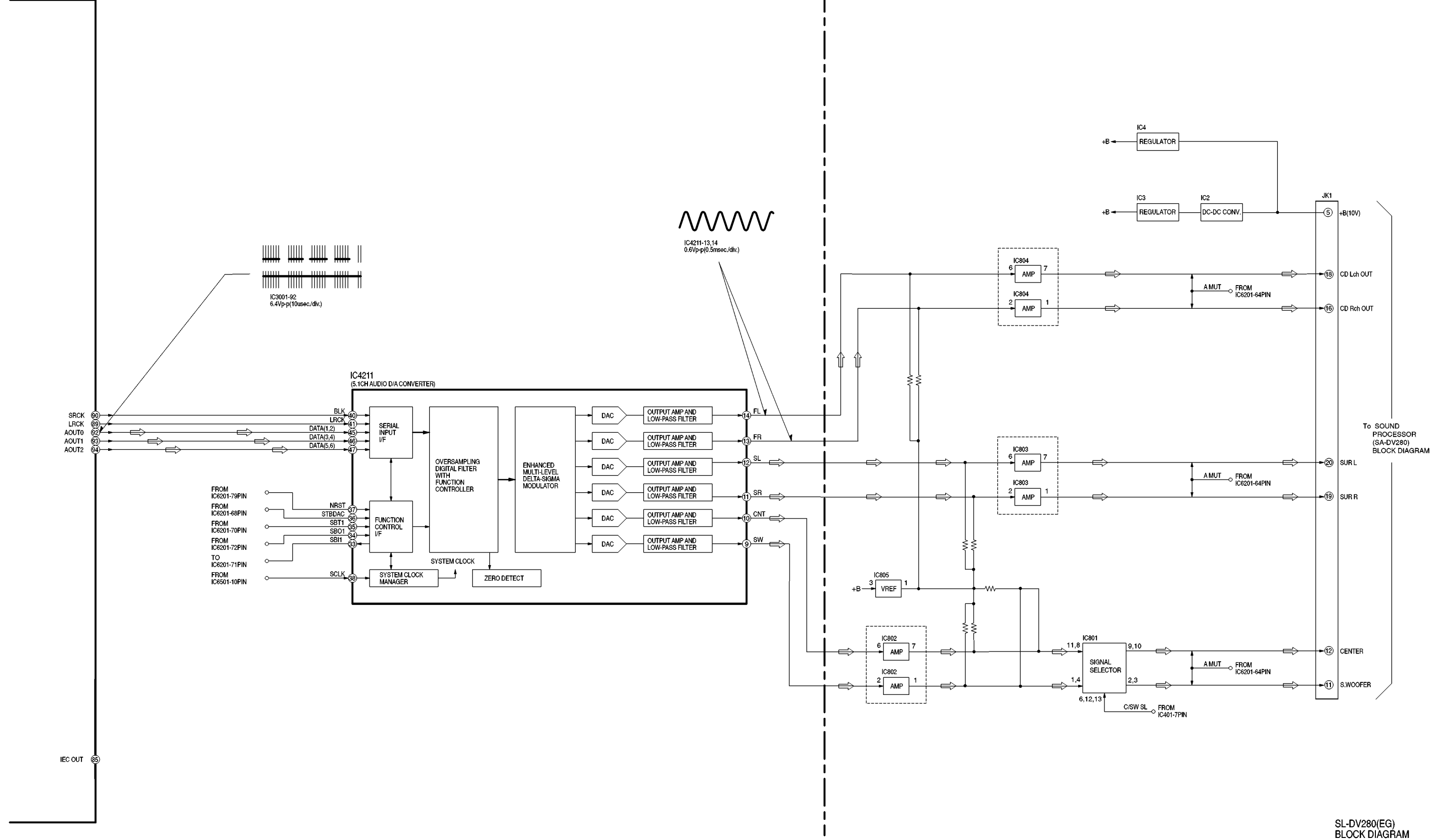
SL-DV280(EG)
BLOCK DIAGRAM

IC3001
(AV DECODER)

MODULE P.C.B.

MAIN P.C.B.

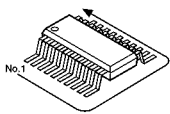
← AUDIO SIGNAL

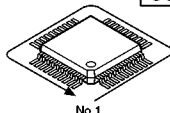


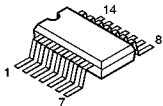
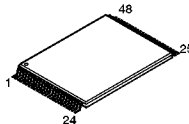
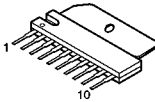
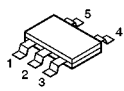
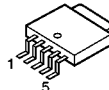
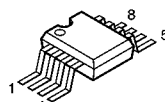
SL-DV280(EG)
BLOCK DIAGRAM

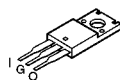
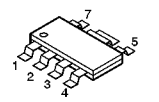
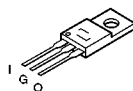
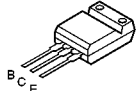
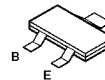
12 Schematic Diagram Notes

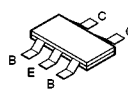
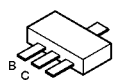
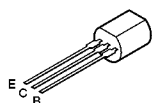
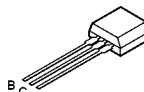
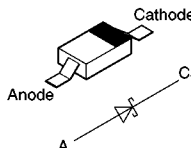
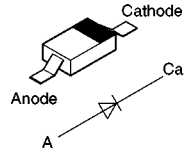
12.1. Type Illustration of IC's, Transistors and Diodes

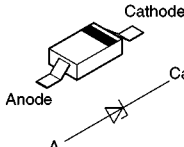
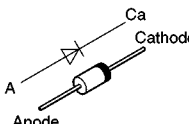
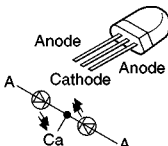
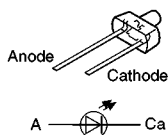
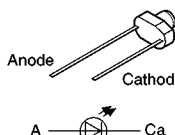
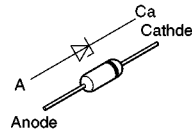
	C0CBCBD00002	6PIN	C2BBFD000307	42PIN
	C1DB00000582	16PIN	NJM4580EDTE1	8PIN
	C1AB00001393	16PIN	NJU3713GTE1	18PIN
	C0GBG0000020	28PIN	C3ABMG000103	50PIN

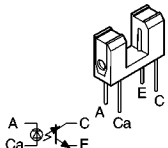
	MN103S13BGA	144PIN	MN102H60GFA	100PIN
	MN67706EC	100PIN	AN8708FHK	48PIN
	C0FBBK000021	48PIN	MN677533MP	208PIN

C0JBAS000138	C3FBKG000011	TA7291P	PST596JNR C0JBAA000001	PQ1CZ31H2ZP PQ018EZ01ZP	BA4558FHTT1 C3EBEC000024
					

NJM78M05FA	C0CBCBE00001	LM2940T5M	2SB1417PQTA	2SB1218TX UN5111TX 2SD1328TX UN5212TX 2SD1819ATX UN5214TX B1GDGFEE0001 UN521NTX DTC114EUA106	
					

FMW1T98	2SB1115-T 2SB766ATX 2SD874QRSTX	2SB621ARSTA	RVTDTTC143EST	MA728TX MA735TX MA728-TX	MA111TX SFPB-72V
					

MA8082MTX MA8091MTX	RL1N4003N02	SML79455C	LNJ301MPUJAD	SELS5923C	MTZJ4R7BTA
					

GP1S94					
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12.2. 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.
- S2 : Tray position 2 detect switch.
- S3 : Tray open detect switch.
- S4 : Clamp detect switch.
- S5 : Bottom detect switch.
- S601 : Disc select (DISC5) switch.
- S602 : Disc select (DISC4) switch.
- S603 : Disc select (DISC3) switch.
- S604 : Disc select (DISC2) switch.
- S605 : Disc select (DISC1) switch.
- S606 : Disc direct open (DIRECT OPEN, DISC1) switch.
- S607 : Disc direct open (DIRECT OPEN, DISC2) switch.
- S608 : Disc direct open (DIRECT OPEN, DISC3) switch.
- S609 : Disc direct open (DIRECT OPEN, DISC4) switch.
- S610 : Disc direct open (DIRECT OPEN, DISC5) switch.
- S611 : Disc tray open/close ( , OPEN/CLOSE) switch.
- S612 : A-B repeat (A-B REPEAT) switch.
- S613 : Repeat (REPEAT) switch.
- S614 : CD edit (CD EDIT) switch.
- S615 : Cinema mode (CINEMA MODE) switch.
- S616 : Dialog enhancer (DIALOG ENHANCER) switch.
- S617 : Pause () switch.
- S618 : Stop () switch.
- S619 : Play () switch.
- S620 : R. skip/search ( / ) switch.
- S621 : F. skip/search ( / ) switch.
- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

No mark: CD STOP

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

Important safety notice:

Components identified by  mark have special characteristics important for safety.

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

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 lines

-  : Positive voltage line
-  : AUDIO signal line
-  : MAIN signal line
-  : VIDEO signal line
-  : Focus error signal line
-  : Tracking error signal line
-  : Motor drive signal line

13 Schematic Diagram

SCHEMATIC DIAGRAM-1

A TERMINAL CIRCUIT

-  MAIN SIGNAL
 FOCUS ERROR SIGNAL
 TRACKING ERROR SIGNAL

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

TO OPTICAL PICKUP UNIT
FP5201

T+	30	TC5225
F+	29	TC5224
F-	28	TC5223
T-	27	TC5222
3.3VHF	26	TC5221
GND	25	TC5220
LD+(DVD)	24	TC5219
GND	23	TC5218
RFP	21	TC5217
RFN	20	TC5216
F1(DVD)	19	TC5215
F2(DVD)	18	TC5214
GAINH/L	17	TC5213
PIN(DVD)	16	TC5212
VREF2.2(DVD)	15	TC5211
TA(DVD)	14	TC5210
TD(DVD)	13	TC5209
TC(DVD)	12	TC5208
TB(DVD)	11	TC5207
VCC5V	10	TC5206
FE1	9	TC5205
GND	8	TC5204
LD+(CD)	7	TC5203
T1(CD)	6	TC5202
VREF2.2(CD)	5	TC5201
FE2(CD)	4	
T2(CD)	3	
PIN(CD)	2	
GND	1	

SL-DV280(EG)
TERMINAL CIRCUIT DIAGRAM

To [A] TERMINAL
CIRCUIT (FP5202)
on SCHEMATIC
DIAGRAM-1
FP2001

SL-DV280(EG)
MODULE CIRCUIT DIAGRAM

SCHEMATIC DIAGRAM-4
VIDEO D/A CONVERTER
SECTION (VD)

G

F

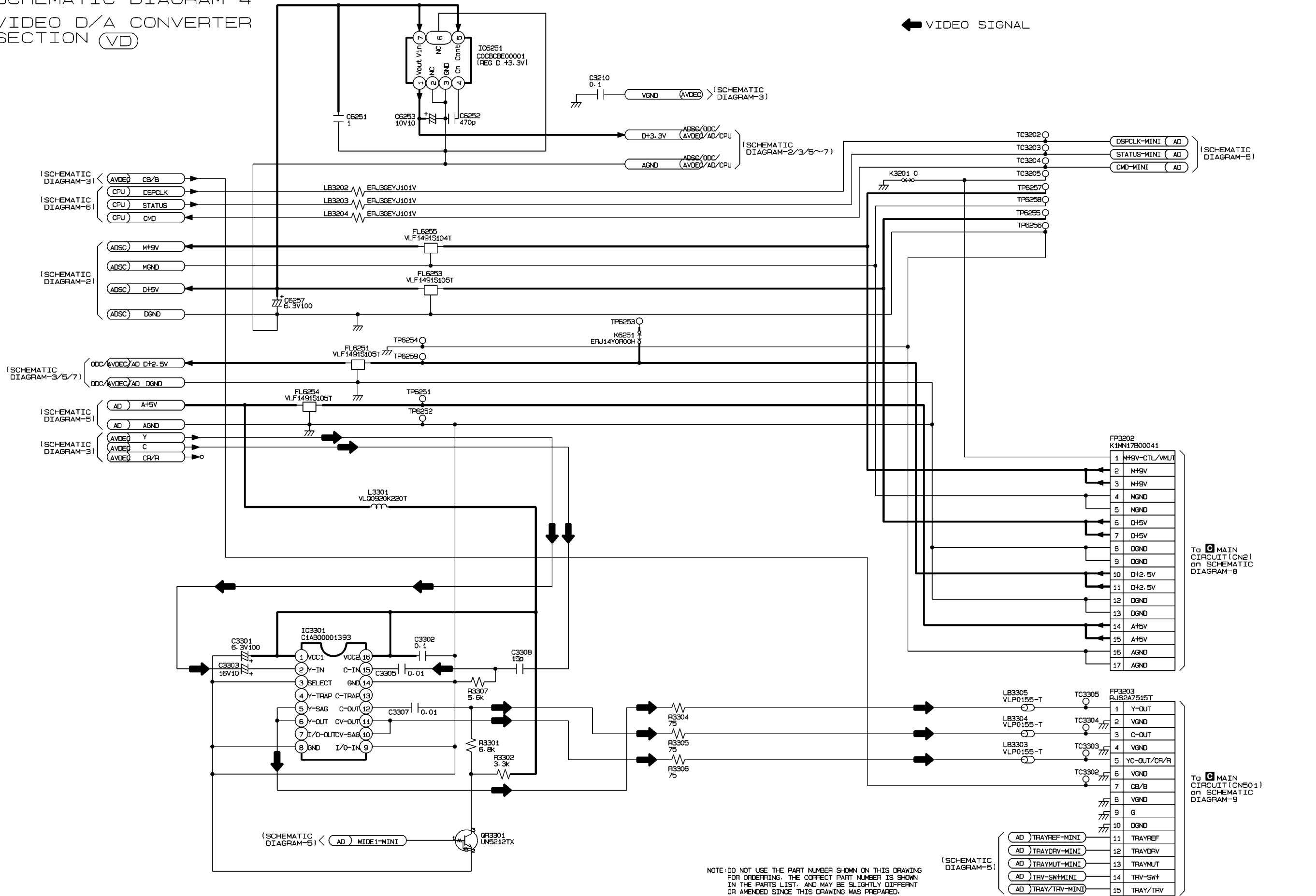
E

D

C

B

A

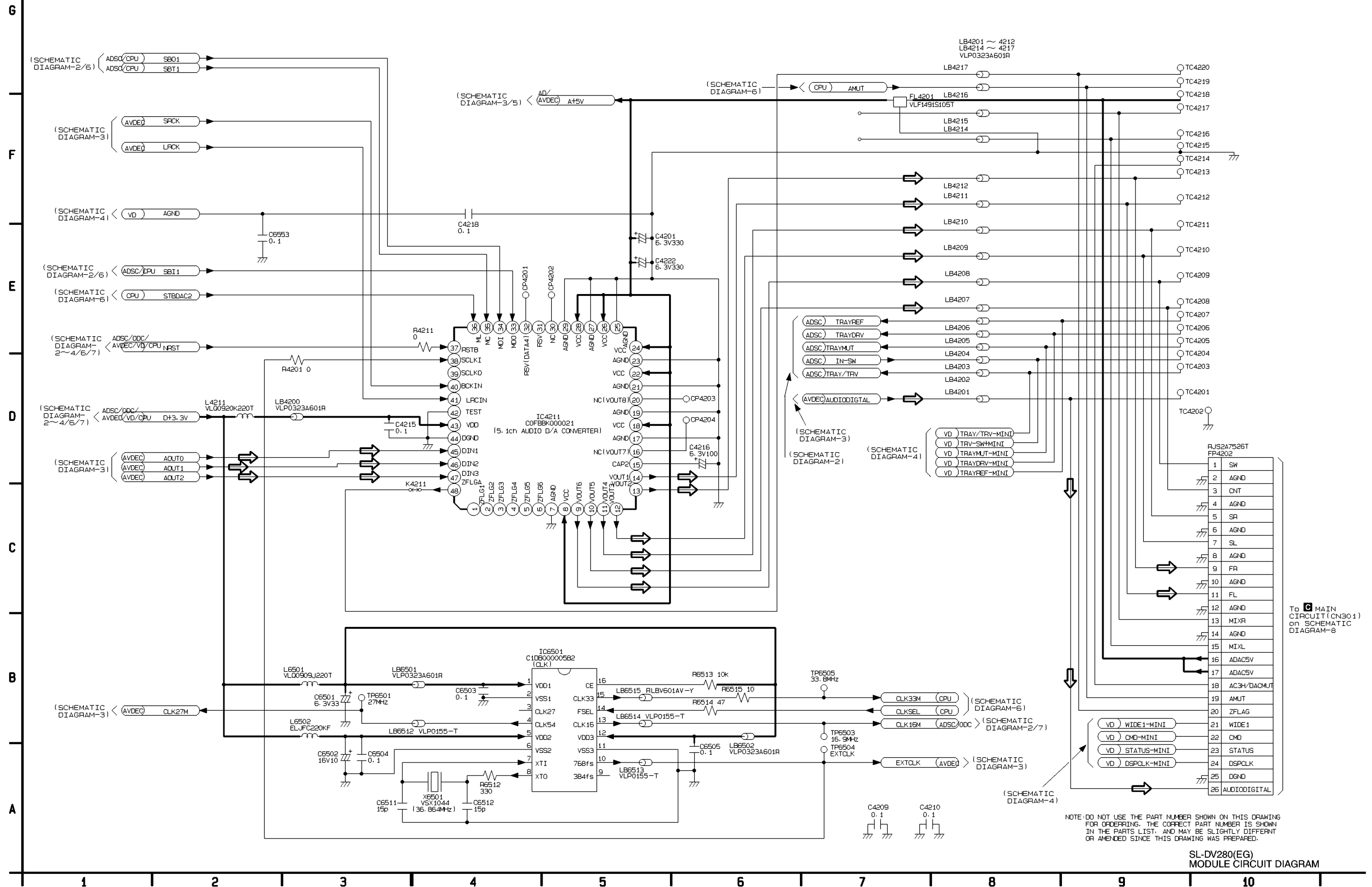


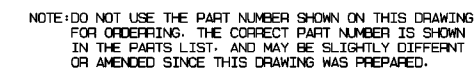
SL-DV280(EG)
MODULE CIRCUIT DIAGRAM

SCHEMATIC DIAGRAM-5

AUDIO D/A CONVERTER SECTION (AD)

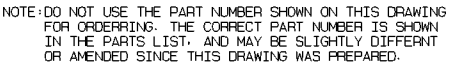
← AUDIO SIGNAL



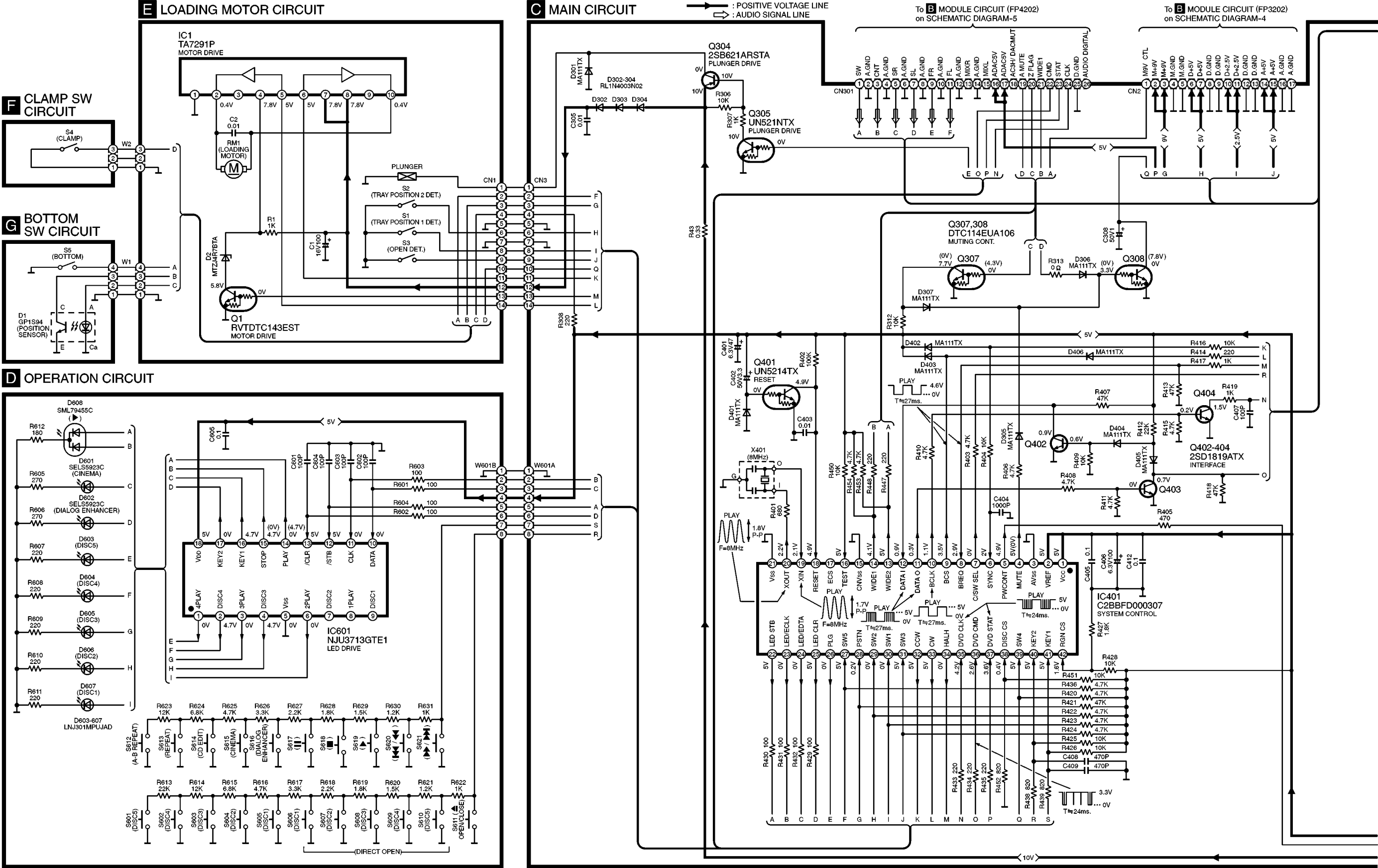


50

← MAIN SIGNAL



SCHEMATIC DIAGRAM-8

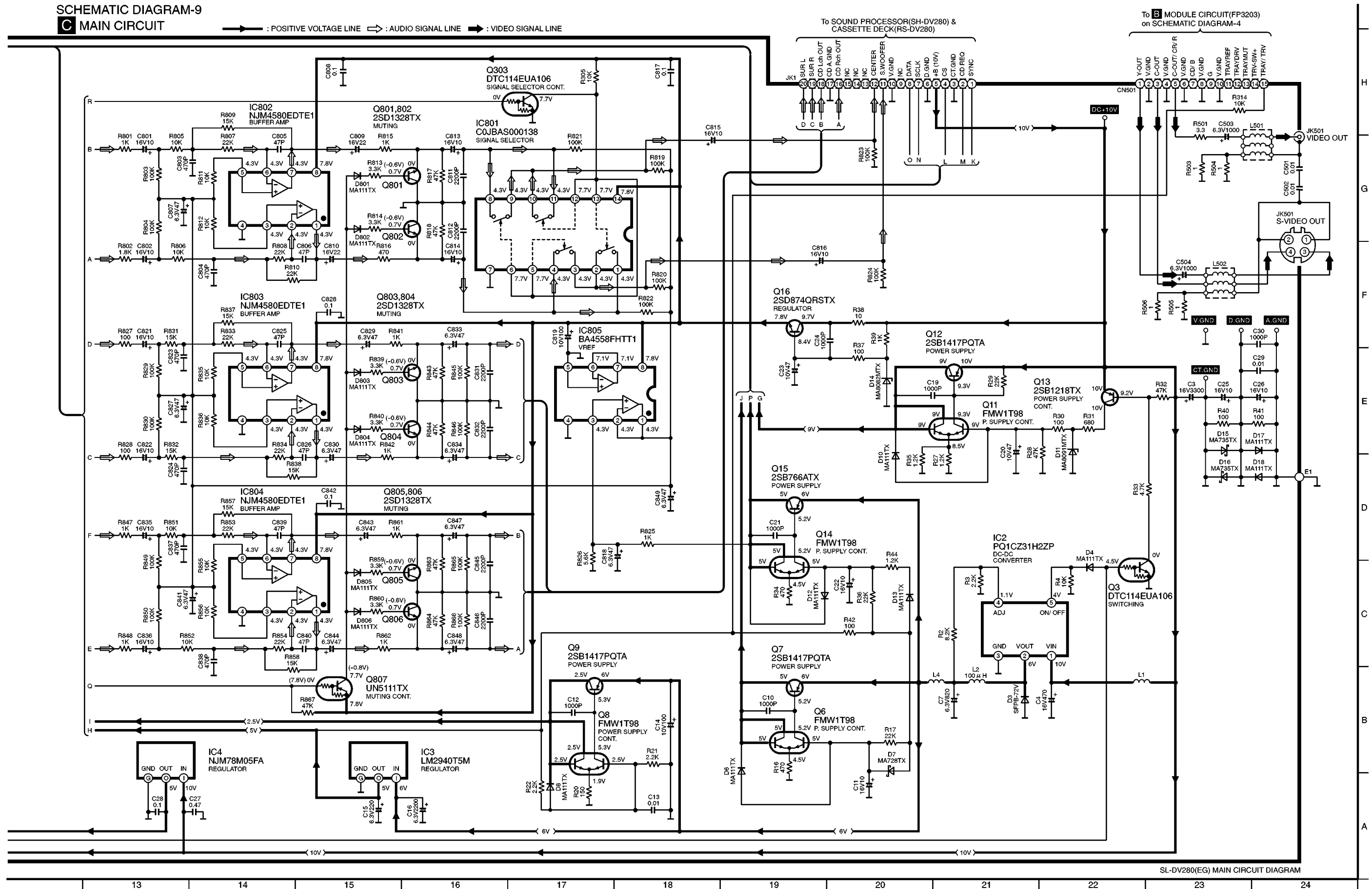


SL-DV280(EG) LOADING MOTOR,CLAMP SW,BOTTOM SW,OPERATION,MAIN CIRCUIT DIAGRAM

SCHEMATIC DIAGRAM-9

C MAIN CIRCUIT

→ : POSITIVE VOLTAGE LINE ⇨ : AUDIO SIGNAL LINE ⇨ : VIDEO SIGNAL LINE



SL-DV280(EG) MAIN CIRCUIT DIAGRAM

14 Voltage Chart (Terminal / Module P.C.B.)

Ref No.	IC2001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	1.6	1.6	1.7	3.3	1.6	1.7	0	1.6	1.6	1.5	1.5	1.7	1.4	3.3	1.7	2.4	0	2.2	1.5	0
PLAY	2.1	1.6	1.7	1.3	1.6	1.7	0	1.6	1.6	1.5	1.5	1.7	1.4	3.3	1.7	2.5	1.1	2.2	1.5	0
Ref No.	IC2001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	1.1	1.1	1.9	1.7	1.5	0	3.3	1.7	0	0	1.7	0	1.7	1.6	0	1.5	1.9	3.3	1.7	1.7
PLAY	1.3	1.3	1.9	1.7	1.5	0	3.3	1.7	0	0	1.7	0	1.7	1.6	0	1.7	1.7	3.3	1.7	1.7
Ref No.	IC2001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	0	1.7	1.9	1.0	0	3.3	3.3	1.5	0	0	1.7	1.7	0	0	0	0	0	2.5	3.3	0
PLAY	0	2.0	1.9	1.0	0	3.3	0	1.5	0	0	1.7	2.0	0	0	3.3	3.3	0	2.5	3.3	0
Ref No.	IC2001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
STOP	1.9	0	0	0	0	0.9	3.3	1.7	3.3	0.2	3.4	0	0	0	3.3	1.6	0.9	1.3	0.5	1.7
PLAY	1.8	0	0.2	0	0	0.9	0	1.7	3.3	0.1	3.4	0	0	0	3.3	1.6	0.9	0.9	0.9	1.1
Ref No.	IC2001																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
STOP	0	3.3	1.7	3.1	3.3	3.3	3.3	2.8	3.3	3.3	0	0	0	0	0	2.5	2.4	1.8	1.6	1.6
PLAY	0	3.3	1.7	3.0	3.3	3.3	3.3	2.8	3.3	3.3	0	0	0	0	0	2.5	2.4	1.8	2.0	1.1
Ref No.	IC3001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	3.3	0.1	1.4	0.1	0	1.2	0	0.9	3.3	1.4	3.3	3.3	3.3	1.8	0	0	0	0	0	0
PLAY	3.3	0.1	1.4	0.1	0	0	0.5	0.9	3.3	1.5	3.3	3.0	3.3	1.8	0	0	0	0	0	0
Ref No.	IC3001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	0	0	0	0	0	0	3.3	3.3	0	3.3	3.1	3.3	1.5	3.3	2.9	3.0	2.9	3.0	1.8	2.8
PLAY	0	0	0	0	0	0	2.4	3.3	0	3.3	2.4	3.3	1.5	3.3	0.6	0.6	0.6	3.0	1.8	2.8
Ref No.	IC3001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	3.0	2.8	0	0	0	0	0	3.3	3.3	3.3	3.3	0	3.3	3.1	3.1	3.0	3.1	0	3.1	3.0
PLAY	2.4	2.2	3.1	0	3.3	3.3	3.3	3.3	3.3	0.4	0	0	3.3	0	0.1	0.1	0	0	0	0.7
Ref No.	IC3001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
STOP	3.0	3.0	1.8	3.0	3.1	3.0	3.1	0	3.4	0	0	0	0	3.3	1.3	0	3.3	1.7	1.8	3.4
PLAY	1.2	1.1	1.8	1.2	1.2	0.8	0.8	0	0.7	0	0	0	0	3.3	1.9	1.7	1.7	1.7	1.8	0.4
Ref No.	IC3001																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
STOP	1.7	1.7	1.7	0	1.7	0	1.8	1.6	1.7	1.7	3.3	0	0	0	0	0	0	3.3	1.4	3.3
PLAY	1.8	1.7	1.8	0	1.7	0	1.8	1.6	1.7	3.3	0	0	0	0	0	0	0	3.3	1.6	3.3
Ref No.	IC3001																			
MODE	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
STOP	0	0	0	1.8	1.8	0	0	1.8	3.3	1.4	3.3	3.3	0	0	0	1.0	1.0	2.4	0.6	3.3
PLAY	0	0	0	1.8	1.8	0	0	1.8	0	3.3	3.3	0	0	0	1.0	1.0	0.6	2.4	0.6	0
Ref No.	IC3001																			
MODE	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
STOP	0.6	0.6	2.4	0.4	0	0.6	0.6	2.4	0.4	3.3	1.3	1.3	2.2	0.3	0	0	0	0	0	0
PLAY	0.6	0.6	2.4	0.4	3.3	1.3	1.3	2.4	0.4	0	1.3	2.2	0.5	0	0	0	0	3.3	3.0	0
Ref No.	IC3001																			
MODE	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
STOP	0	0	3.3	3.1	0	1.8	0	0	0	0	0	0	0.1	0	0	3.3	0	3.1	3.1	3.3
PLAY	1.8	1.2	1.2	0.1	1.2	0.1	2.1	1.2	2.2	0	0	0	1.4	1.2	0	3.3	0	2.3	2.1	3.3
Ref No.	IC3001																			
MODE	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
STOP	3.0	3.1	0	3.0	3.0	3.3	3.3	3.0	0	3.1	3.2	3.3	3.1	1.8	3.1	3.1	3.0	2.9	3.3	3.1
PLAY	3.0	3.1	0	0	3.0	2.6	3.3	2.5	2.5	3.1	2.6	2.5	3.1	2.6	3.1	2.4	3.0	2.6	2.8	0
Ref No.	IC3001																			
MODE	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
STOP	3.0	0	1.7	3.3	1.7	0	3.3	1.8	3.0	3.3	3.3	3.0	3.3	0	3.3	3.3	3.3	3.3	3.1	0
PLAY	2.6	0	1.7	1.7	3.3	0	3.3	1.8	3.0	3.3	3.3	3.0	0	0	0	3.3	3.3	3.3	0	0
Ref No.	IC3001																			
MODE	201	202	203	204	205	206	207	208												
STOP	0.1	1.8	0.9	0	3.3	0	1.2	0												
PLAY	0.1	1.8	0.9	0	3.3	0	1.2	0												
Ref No.	IC3051																			
MODE	1	2	3	4	5															
STOP	2.6	2.6	1.8	0	0															
PLAY	2.6	2.6	1.8	0	0															
Ref No.	IC3061																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	3.3	3.1	2.9	0	3.1	3.0	3.3	3.3	2.9	0	2.9	3.0	3.3	3.0	3.3	3.3	3.3	3.1	0.8	0
PLAY	3.3	3.2	3.0	0	3.1	3.1	3.3	3.3	3.1	0	3.0	3.1	3.3	2.8	3.3	3.3	3.3	3.1	1.4	0
Ref No.	IC3061																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	0	0	0	1.4	3.3	0	1.1	1.2	1.4	1.2	0	0	0	3.3	1.7	3.0	0	3.3	3.1	2.9
PLAY	0	0	0	1.5	3.3	0	1.1	1.5	1.4	1.2	0	0	0	3.3	1.7	3.0	0	3.3	3.1	3.1
Ref No.	IC3061										IC3091									
MODE	41	42	43	44	45	46	47	48	49	50		1	2	3	4	5	6			
STOP	0	2.9	2.9	3.3	3.1	2.8	0	3.0	3.0	0		5.0	0	5.0	1.3	0	3.3			
PLAY	0	3.1	3.1	3.3	3.2	2.8	0	2.8	3.2	0		5.0	0	5.0	1.3	0	3.3			

Ref No.	IC6201																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	3.3	3.0	3.3	2.7	3.3	3.3	3.3	3.0	3.3	3.3	3.3	3.3	2.4	3.0	3.0	2.8	3.3	1.3	0	0
PLAY	3.3	3.0	3.3	3.2	3.3	3.3	3.3	3.1	3.3	3.3	3.3	3.3	2.4	3.0	3.1	2.9	3.3	1.3	0	0
Ref No.	IC6201																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	3.3	3.3	1.6	1.6	3.3	3.0	2.8	2.9	2.7	2.6	2.6	3.0	2.5	3.3	2.7	2.6	2.8	3.0	2.6	2.4
PLAY	3.3	3.3	1.6	1.6	3.3	3.1	2.9	3.0	2.8	2.8	2.7	3.0	2.7	3.3	2.7	2.7	2.9	3.0	2.6	2.5
Ref No.	IC6201																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	2.8	2.4	0.5	3.3	3.3	3.3	3.3	1.1	1.1	3.0	1.4	2.9	3.3	2.0	0	3.3	3.3	0	0	3.3
PLAY	2.9	2.6	0.5	3.3	3.3	3.3	3.3	1.1	1.1	3.0	1.4	2.8	3.3	2.0	0	3.3	3.3	0	0	3.3
Ref No.	IC6201																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
STOP	0	0	0	3.3	0	3.3	3.3	3.3	0	2.8	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.4	0	3.3
PLAY	0	0	0	3.3	0	3.3	3.3	3.3	0	2.8	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.4	0	3.4
Ref No.	IC6201																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
STOP	3.3	3.3	3.3	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0	3.1	3.0	3.1	3.1	3.1	3.1	3.1	3.1
PLAY	3.3	3.3	3.3	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0	3.1	3.1	3.0	3.1	3.1	3.1	3.1	3.1
Ref No.	IC6251										IC6301									
MODE	1	2	3	4	5	6	7		1	2	3	4	5							
STOP	3.3	0	0	1.9	5.1	0	5.1		0	0	0	3.3	3.3							
PLAY	3.3	0	0	1.9	5.1	0	5.1		0	0	0	3.3	3.3							
Ref No.	IC6302																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	2.6	2.9	0.1	3.4	0.1	3.4	3.4	3.4	0	0	0.1	3.3	0	0	0	0	0.1	0.1	3.4	3.4
PLAY	2.3	0.1	2.3	2.0	2.4	1.7	1.7	1.7	0	0	3.3	3.3	0	0	0	0	0.1	1.8	1.8	1.7
Ref No.	IC6302																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	3.4	0.1	3.4	3.4	2.9	3.0	0	3.1	3.0	3.1	3.1	3.0	3.1	3.1	3.1	3.1	3.3	3.1	3.1	3.1
PLAY	1.8	1.7	1.7	1.7	2.9	3.0	0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.1	3.3	3.3	3.1	3.0	3.0
Ref No.	IC6302										IC6303									
MODE	41	42	43	44	45	46	47	48		1	2	3	4	5	6	7	8			
STOP	3.1	3.1	3.1	3.1	3.1	0	3.3	2.4		0	0	0	0	3.3	3.3	0	3.3			
PLAY	3.1	3.1	3.1	3.1	3.1	0	3.3	2.6		0	0	0	0	3.3	3.3	0	3.3			
Ref No.	IC6501																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
STOP	3.3	0	1.6	1.5	3.3	0	1.6	0.8	1.4	1.5	0	3.3	1.5	0	1.5	3.3				
PLAY	3.3	0	1.6	1.5	3.3	0	1.4	1.0	1.4	1.5	0	3.2	1.5	0	1.4	3.2				
Ref No.	IC7001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	1.3	3.3	0	3.3	3.3	3.3	3.3	0	1.7	2.5	3.3	3.4	3.3	1.7	3.3	3.3	1.7	0	3.4	1.7
PLAY	1.8	3.3	2.0	3.3	3.3	0	3.3	0	1.7	2.5	3.3	0	3.3	1.7	3.3	3.3	1.8	0	3.4	1.7
Ref No.	IC7001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	3.3	3.3	3.3	0	0	3.3	0	0	0	3.3	0	3.3	0	0	0	2.5	2.4	2.6	0	2.9
PLAY	3.3	3.3	3.3	3.3	1.0	3.3	3.2	0	0	3.3	0	3.3	0	0	0	2.5	1.5	2.3	0	2.9
Ref No.	IC7001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	2.8	2.6	2.8	2.5	2.6	3.0	2.6	2.7	2.8	3.0	2.8	3.0	3.0	3.0	2.9	0	2.4	3.3	3.3	3.0
PLAY	2.7	2.2	2.4	2.5	2.6	2.8	2.5	2.8	2.6	2.9	2.9	3.0	2.9	2.9	2.9	0	2.5	3.3	3.3	3.0
Ref No.	IC7001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
STOP	3.3	3.3	3.3	0	0	2.5	0	3.0	3.0	3.0	0	3.0	3.0	3.0	1.7	3.3	0	3.3	0	0
PLAY	3.4	3.1	3.1	0	0	2.5	0	3.0	3.1	3.1	0	3.1	3.1	3.1	1.7	3.3	0	3.3	0	0
Ref No.	IC7001																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
STOP	1.7	0	0	0	3.1	2.5	0	0	0	1.7	1.8	3.3	1.7	1.7	1.7	3.3	1.7	0	0	1.5
PLAY	1.7	0	0	0	3.1	2.5	0	0	0	1.8	1.7	3.3	1.7	1.7	1.7	3.3	1.7	0	0	1.5
Ref No.	IC7001																			
MODE	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
STOP	1.7	3.3	0	3.3	3.3	0	0	0	0.2	3.4	1.6	1.7	1.7	1.3	0	3.3	3.3	3.3	0	0
PLAY	1.7	3.3	0	3.3	3.3	0	0	0	0.1	3.4	1.7	1.7	1.7	1.3	0	3.3	3.3	3.3	0	0
Ref No.	IC7001																			
MODE	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
STOP	0	0	0	3.3	2.5	3.3	0	3.3	3.3	3.3	0	3.3	3.3	0	3.3	0	0	3.3	3.3	0
PLAY	0	0	0	3.3	2.5	3.3	0	3.4	3.4	3.3	0	3.3	3.3	0	3.4	0	0	3.3	3.4	0
Ref No.	IC7001																			
MODE	141	142	143	144																
STOP	0.2	0	0	3.3																
PLAY	0.2	0	0	3.4																
Ref No.	QR3301																			
MODE	E	C	B																	
STOP	0	0.1	4.3			0	3.1	0												
PLAY	0	0.1	4.3			0	3.1	0												
Ref No.	QR6301																			
MODE	E	C	B																	
STOP	0	0.1	4.3			0	3.1	0												
PLAY	0	0.1	4.3			0	3.1	0												

Ref No.	IC2501																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	1.6	1.6	1.6	2.0	2.0	1.6	0	5.0	0	0	2.9	2.9	2.9	2.9	4.3	4.3	3.8	3.8	0	0
PLAY	1.6	1.6	1.6	1.4	2.3	0	0	5.0	3.3	0	2.9	2.9	2.9	2.9	4.3	4.3	5.1	3.5	0	0
Ref No.	IC2501																			
MODE	21	22	23	24	25	26	27	28												
STOP	9.0	9.0	1.6	8.3	0	1.6	0	2.5												
PLAY	9.0	9.0	1.8	8.1	0	1.6	3.3	2.5												
Ref No.	IC5201																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0	0	4.6	0	4.6	1.6	1.6	2.7	3.3	2.7	3.3	1.8	1.6	0	3.3	0	3.3	0.5	0	1.6
PLAY	0	0.5	3.3	0	4.6	1.6	1.6	2.6	3.3	2.7	3.3	1.8	1.6	0	0	0	3.3	0.5	0	1.6
Ref No.	IC5201																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	1.6	1.6	1.6	1.6	3.3	1.8	1.8	1.0	1.7	0.6	0	2.2	2.2	2.9	1.6	1.6	5.0	2.2	2.2	2.3
PLAY	2.1	1.6	1.6	1.6	3.3	1.8	1.8	1.0	1.7	1.4	0	2.2	2.2	2.2	2.0	0.9	5.0	2.2	2.2	2.3
Ref No.	IC5201																			
MODE	41	42	43	44	45	46	47	48												
STOP	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2												
PLAY	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2												
Ref No.	IC3071																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	3.4	3.2	3.1	0	3.1	3.1	3.4	3.3	3.0	0	3.0	3.0	3.4	3.3	3.3	3.3	3.3	3.4	0.8	0.1
PLAY	3.4	3.2	3.1	0	3.1	3.1	3.4	3.3	3.1	0	3.1	3.1	3.4	3.3	3.3	3.3	3.3	3.4	0.9	0.1
Ref No.	IC3071																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	0.1	0.1	0.1	1.4	3.4	0	1.0	1.4	1.3	1.3	0.1	0	0	0	0	3.3	0	3.4	3.1	3.0
PLAY	0.1	0.1	0.1	1.4	3.4	0	1.0	1.4	1.4	1.4	0.1	0.1	0	0	0	3.3	0	3.4	3.2	3.1
Ref No.	IC3071																			
MODE	41	42	43	44	45	46	47	48	49	50										
STOP	0	3.1	3.0	3.4	3.2	3.0	0	3.0	3.1	0										
PLAY	0.1	3.1	3.1	3.3	3.2	3.0	0.1	3.0	3.2	0.1										
Ref No.	IC3301																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
STOP	4.9	1.5	0	1.6	1.8	1.8	1.7	0	0	1.8	1.8	2.1	2.1	0	2.0	4.9				
PLAY	4.9	1.5	0	1.6	1.8	1.8	1.8	0	0	1.8	1.8	2.1	2.1	0	2.1	4.9				
Ref No.	IC4211																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0	0	0	0	0	0	0	5.1	2.5	2.6	2.5	2.6	2.5	2.6	2.6	0	0	5.1	0	0
PLAY	3.4	3.4	0	0	0	0	0	5.1	2.5	2.6	2.5	2.6	2.5	2.6	2.6	0	0	5.1	0	0
Ref No.	IC4211																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	0	5.1	0	5.1	0	5.1	0	5.1	0	0	0	0	3.3	3.4	2.9	3.4	3.1	1.4	1.4	1.7
PLAY	0	5.1	0	5.1	0	5.1	0	5.1	0	0	0	0	3.3	3.4	2.9	3.4	3.1	1.4	1.4	1.7
Ref No.	IC4211								IC6221								IC6222			
MODE	41	42	43	44	45	46	47	48		1	2	3	4	5		1	2	3	4	5
STOP	1.7	0	3.4	0	0	0	0	0		3.1	3.1	0	4.5	5.0		2.9	2.9	0	4.2	5.0
PLAY	1.7	0	3.4	0	0.5	0	0	3.4		3.1	3.1	0	4.5	5.0		2.9	2.8	0	4.1	5.0
Ref No.	Q5211				Q5215				QR5251											
MODE	E	C	B		E	C	B		E	C	B									
STOP	5.0	2.2	4.6		5.0	1.2	4.6		3.3	0.1	3.3									
PLAY	4.0	0.9	3.3		5.0	1.2	4.6		3.3	3.3	0.1									

15 Abbreviations

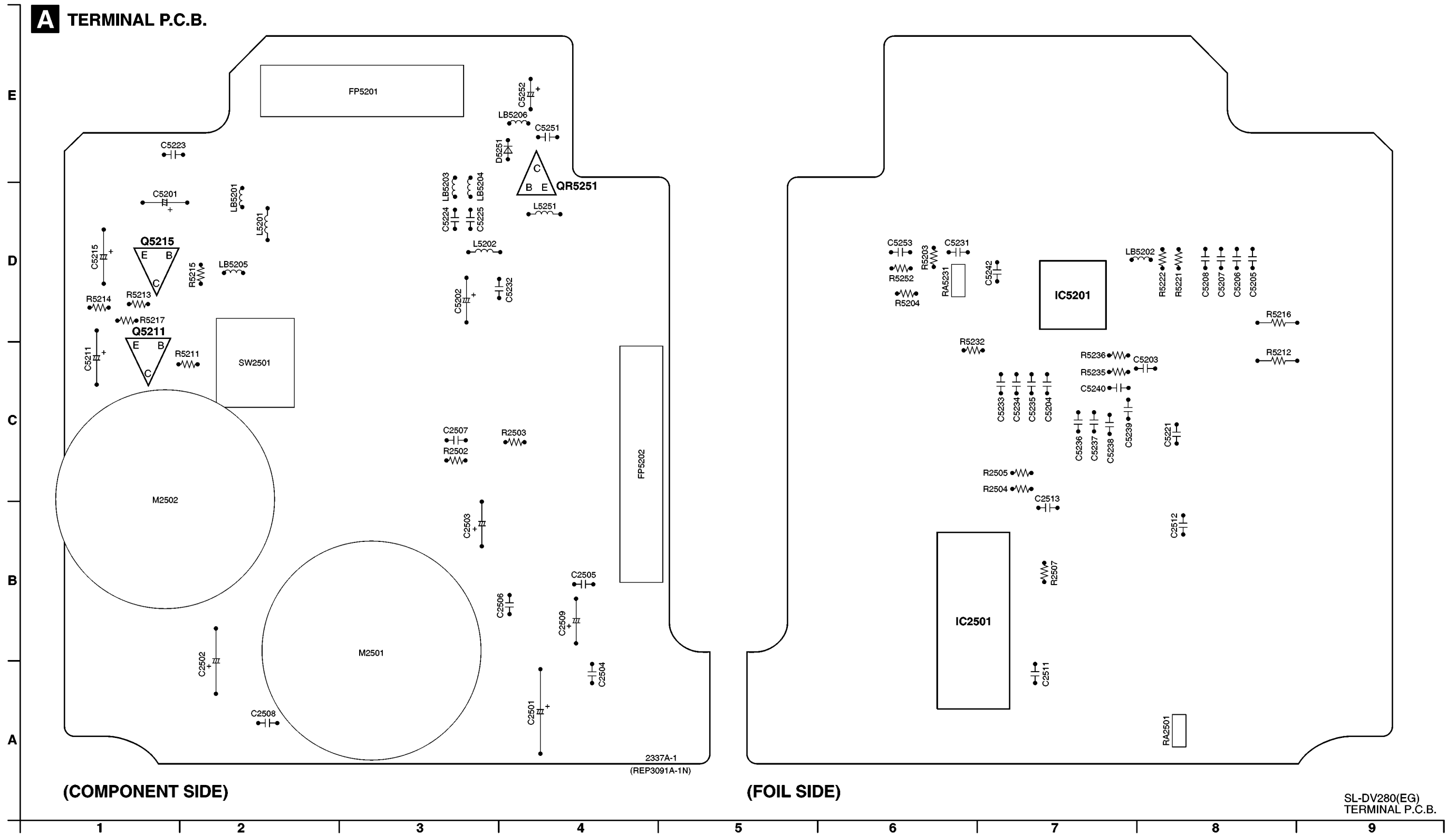
INITIAL/LOGO		ABBREVIATIONS
A	A0~UP	ADDRESS
	ACLK	AUDIO CLOCK
	AD0~UP	ADDRESS BUS
	ADATA	AUDIO PES PACKET DATA
	ALE	ADDRESS LATCH ENABLE
	AMUTE	AUDIO MUTE
	AREQ	AUDIO PES PACKET REQUEST
	ARF	AUDIO RF
	ASI	SERVO AMP INVERTED INPUT
	ASO	SERVOAMPOUTPUT
	ASYN	AUDIO WORD DISTINCTION SYNC
B	BCK	BIT CLOCK (PCM)
	BCKIN	BIT CLOCK INPUT
	BDO	BLACK DROP OUT
	BLKCK	SUB CODE BLOCK CLOCK
	BOTTOM	CAP. FOR BOTTOM HOLD
	BYP	BYPATH
	BYTCK	BYTE CLOCK
C	CAV	CONSTANT ANGULAR VELOCITY
	CBDO	CAP. BLACK DROP OUT
	CD	COMPACT DISC
	CDSC	CD SERIAL DATA CLOCK
	CDSRDATA	CD SERIAL DATA
	CDRF	CD RF (EFM) SIGNAL
	CDV	COMPACT DISC-VIDEO
	CHNDATA	CHANNEL DATA
	CKSL	SYSTEMCLOCKSELECT
	CLV	CONSTANT LINEAR VELOCITY
	COFTR	CAP. OFF TRACK
	CPA	CPU ADDRESS
	CPCS	CPU CHIP SELECT
	CPDT	CPU DATA
	CPUADR	CPU ADDRESS LATCH
	CPUADT	CPU ADDRESS DATA BUS
	CPUIRQ	CPU INTERRUPT REQUEST
	CPRD	CPU READ ENABLE
	CPWR	CPU WRITE ENABLE
	CS	CHIPSELECT
	CSYNIN	COMPOSITESYNC IN
	CSYNOUT	COMPOSITE SYNC OUT
	DACCK	D/A CONVERTER CLOCK
	DEEMP	DEEMPHASIS BIT ON/OFF
	DEMPH	DEEMPHASIS SWITCHING
	DIG0~UP	FL DIGIT OUTPUT
	DIN	DATA INPUT
	DMSRCK	DM SERIAL DATA READ CLOCK
	DMUTE	DIGITAL MUTE CONTROL
	DO	DROPOUT
	DOUT0~UP	DATAOUTPUT
	DRF	DATA SLICE RF (BIAS)
	DRPOT	DROP OUT SIGNAL
	DREQ	DATA REQUEST
	DRESP	DATA RESPONSE
	DSC	DIGITAL SERVO CONTROLLER
	DSL	DATA SLICE LOOP FILTER
	DVD	DIGITAL VIDEO DISC

INITIAL/LOGO		ABBREVIATIONS
E	EC	ERROR TORQUE CONTROL
	ECR	ERROR TORQUE CONTROL
	ENCSEL	REFERENCE
	ETMCLK	ENCODER SELECT
	ETSCLK	EXTERNAL M CLOCK (81MHz/40.5MHz)
F	FBAL	EXTERNAL S CLOCK (54MHz)
	FCLK	FOCUS BALANCE
	FE	FRAME CLOCK
	FFI	FOCUS ERROR
	FEO	FOCUS ERROR AMP INVERTED INPUT
	FG	FOCUS ERROR AMP OUTPUT
	FSC	FREQUENCY GENERATOR
G	FSC	FREQUENCY SUB CARRIER
	FSC	FS (384 OVER SAMPLING)CLOCK
G	GND	COMMON GROUNDING (EARTH)
H	HA0~UP	HOST ADDRESS
	HD0~UP	HOST DATA
	HINT	HOST INTERRUPT
	HRXW	HOST READ/WRITE
I	IECOUT	IEC958 FORMAT DATA OUTPUT
	IPFRAG	INTERPOLATION FLAG
	IREF	I (CURRENT) REFERENCE
	ISEL	INTERFACE MODE SELECT
L	LDON	LASER DIODE CONTROL
	LPC	LASER POWER CONTROL
	LRCK	L CH/R CH DISTINCTION CLOCK
M	MA0~UP	MEMORY ADDRESS
	MCK	MEMORY CLOCK
	MCKI	MEMORY CLOCK INPUT
	MCLK	MEMORY SERIAL COMMAND CLOCK
	MDATA	MEMORY SERIAL COMMAND DATA
	MDQ0~UP	MEMORY DATA INPUT/OUTPUT
	MDQM	MEMORY DATA I/O MASK
	MLD	MEMORYSERIALCOMMAND LOAD
	MPEG	MOVING PICTURE EXPERTS GROUP
	MPEG	MOVING PICTURE EXPERTS GROUP
O	ODC	OPTICAL DISC CONTROLLER
	OFTR	OFF TRACKING
	OSCI	OSCILLATOR INPUT
	OSCO	OSCILLATOR OUTPUT
	OSD	ON SCREEN DISPLAY
P	P1~UP	PORT
	PCD	CD TRACKING PHASE DIFFERENCE
	PCK	PLL CLOCK
	PDVD	DVD TRACKING PHASE DIFFERENCE
	PEAK	CAP. FOR PEAK HOLD
	PLLCLK	CHANNEL PLL CLOCK
	PLLOK	PLL LOCK
	PWMCTL	PWM OUTPUT CONTROL
	PWMDA	PULSE WAVEMOTOR DRIVEA
	PWMOA, B	PULSE WAVE MOTOR OUT A, B
	PWMOA, B	PULSE WAVE MOTOR OUT A, B
	PWMOA, B	PULSE WAVE MOTOR OUT A, B

INITIAL/LOGO		ABBREVIATIONS
R	RE	READ ENABLE
	RFENV	RF ENVELOPE
	RFO	RF PHASE DIFFERENCE OUTPUT
	RS	(CD-ROM) REGISTER SELECT
	RSEL	RF POLARITY SELECT
	RST	RESET
	RSV	RESERVE
S	SBI0, 1	SERIAL DATA INPUT
	SBO0	SERIAL DATA OUTPUT
	SBT0, 1	SERIAL CLOCK
	SCK	SERIAL DATA CLOCK
	SCKR	AUDIO SERIAL CLOCK RECEIVER
	SCL	SERIAL CLOCK
	SCLK	SERIAL CLOCK
	SDA	SERIAL DATA
	SEG0~UP	FL SEGMENT OUTPUT
	SELCLK	SELECTCLOCK
	SEN	SERIALPORT ENABLE
	SIN1, 2	SERIAL DATA IN
	SOUT1, 2	SERIAL DATA OUT
	SPDI	SERIAL PORT DATA INPUT
	SPDO	SERIAL PORT DATA OUTPUT
	SPEN	SERIAL PORT R/W ENABLE
	SPRCLK	SERIAL PORT READ CLOCK
	SPWCLK	SERIAL PORT WRITE CLOCK
	SQCK	SUB CODE Q CLOCK
	SQCX	SUBCODEQ DATA READ CLOCK
	SRDATA	SERIAL DATA
	SRMADR	SRAM ADDRESS BUS
	SRMDT0~7	SRAM DATA BUS 0~7
	SS	START/STOP
	STAT	STATUS
	STCLK	STREAM DATA CLOCK
	STD0~UP	STREAM DATA
	STENABLE	STREAM DATA INPUT ENABLE
	STSEL	STREAM DATA POLARITY SELECT
	STVALID	STREAMDATAVALIDITY
	SUBC	SUB CODE SERIAL
	SBCK	SUB CODE CLOCK
	SUBQ	SUB CODE Q DATA
	SYSCLK	SYSTEM CLOCK
T	TE	TRACKING ERROR
	TIBAL	BALANCE CONTROL
	TID	BALANCE OUTPUT 1
	TIN	BALANCE INPUT
	TIP	BALANCE INPUT
	TIS	BALANCE OUTPUT 2
	TPSN	OP AMP INPUT
	TPSO	OP AMP OUTPUT
	TPSP	OP AMP INVERTED INPUT
	TRCRS	TRACKCROSSIGNAL
	TRON	TRACKING ON
	TRSON	TRAVERSE SERVO ON

INITIAL/LOGO		ABBREVIATIONS
V	VBLANK	V BLANKING
	VCC	COLLECTOR POWER SUPPLY VOLTAGE
	VCDCONT	VIDEO CD CONTROL (TRACKING BALANCE)
	VDD	DRAIN POWER SUPPLY VOLTAGE
	VFB	VIDEO FEED BACK
	VREF	VOLTAGE REFERENCE
	VSS	SOURCE POWERSUPPLYVOLTAGE
W	WAIT	BUS CYCLE WAIT
	WDCK	WORD CLOCK
	WEH	WRITE ENABLE HIGH
	WSR	WORD SELECT RECEIVER
X	X	X' TAL
	XALE	X ADDRESS LATCH ENABLE
	XAREQ	X AUDIO DATA REQUEST
	XCDROM	X CD ROM CHIP SELECT
	XCS	X CHIP SELECT
	XCSYNC	X COMPOSITE SYNC
	XDS	X DATA STROBE
	XHSYNCO	X HORIZONTAL SYNC OUTPUT
	XHINT	XHINTERRUPTREQUEST
	XI	X' TAL OSCILLATOR INPUT
	XINT	X INTERRUPT
	XMW	X MEMORY WRITE ENABLE
	XO	X' TAL OSCILLATOR OUTPUT
	XRE	X READ ENABLE
	XSRMCE	X SRAM CHIP ENABLE
	XSRMOE	X SRAM OUTPUT ENABLE
	XSRMWE	X SRAM WRITE ENABLE
	XVCS	XV-DEC CHIPSELECT
	XVDS	X V-DEC CONTROL BUS STROBE
	XVSYNCO	X VERTICAL SYNC OUTPUT

16 Printed Circuit Board Diagram



B MODULE P.C.B. (SIDE : A)

F

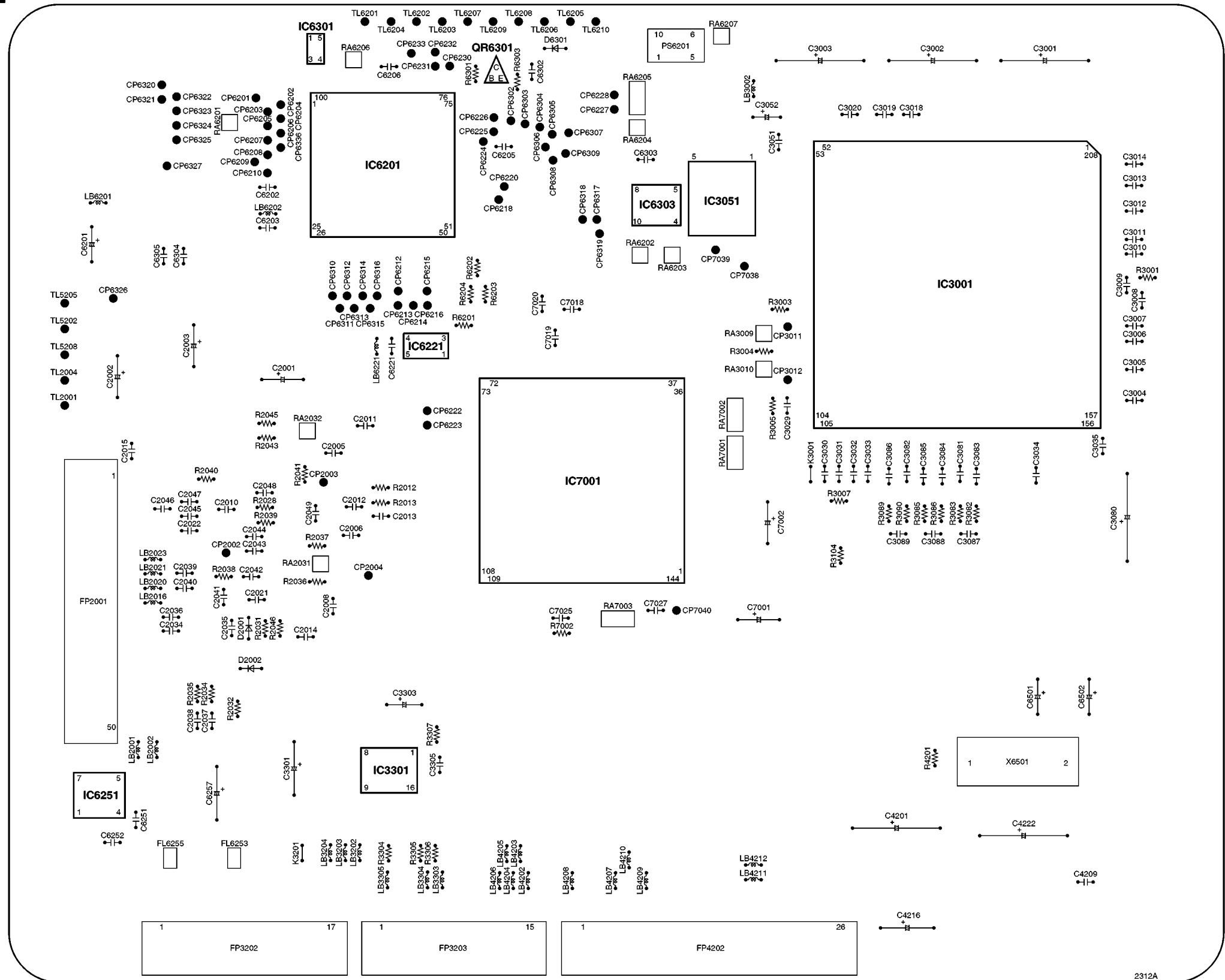
E

D

C

B

A

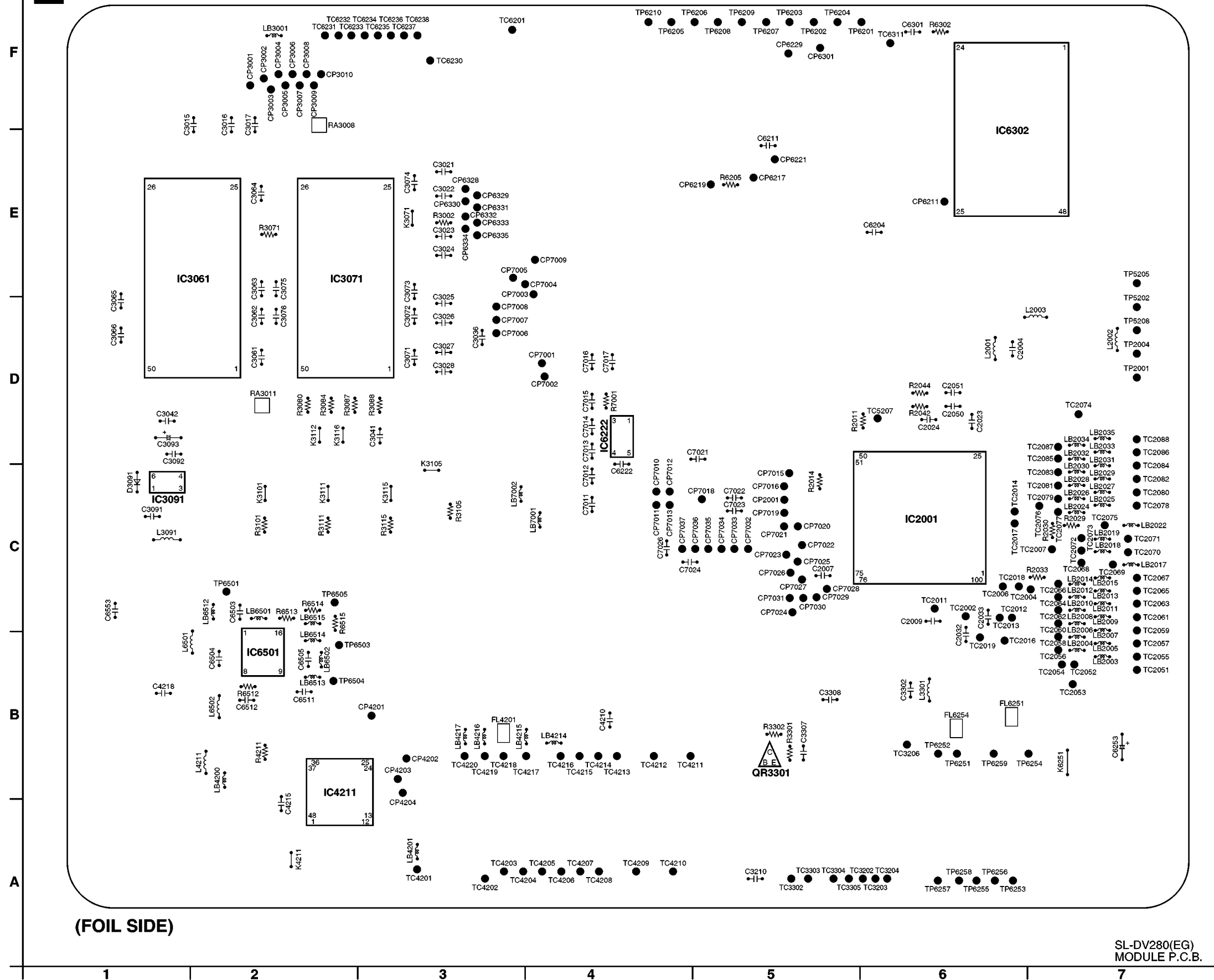


(COMPONENT SIDE)

2312A
(REP3098W-N)

SL-DV280(EG)
MODULE P.C.B.

1 2 3 4 5 6 7

B MODULE P.C.B. (SIDE : B)

A OPERATION P.C.B.

F CLAMP SW P.C.B.

G BOTTOM SW P.C.B.

(REP3176A-M)

(REP2578A-N)

(REP2578A-N)

RM1
(LOADING MOTOR)

N

C1

S2

S1

R1

J

62

Q1

W2

W1

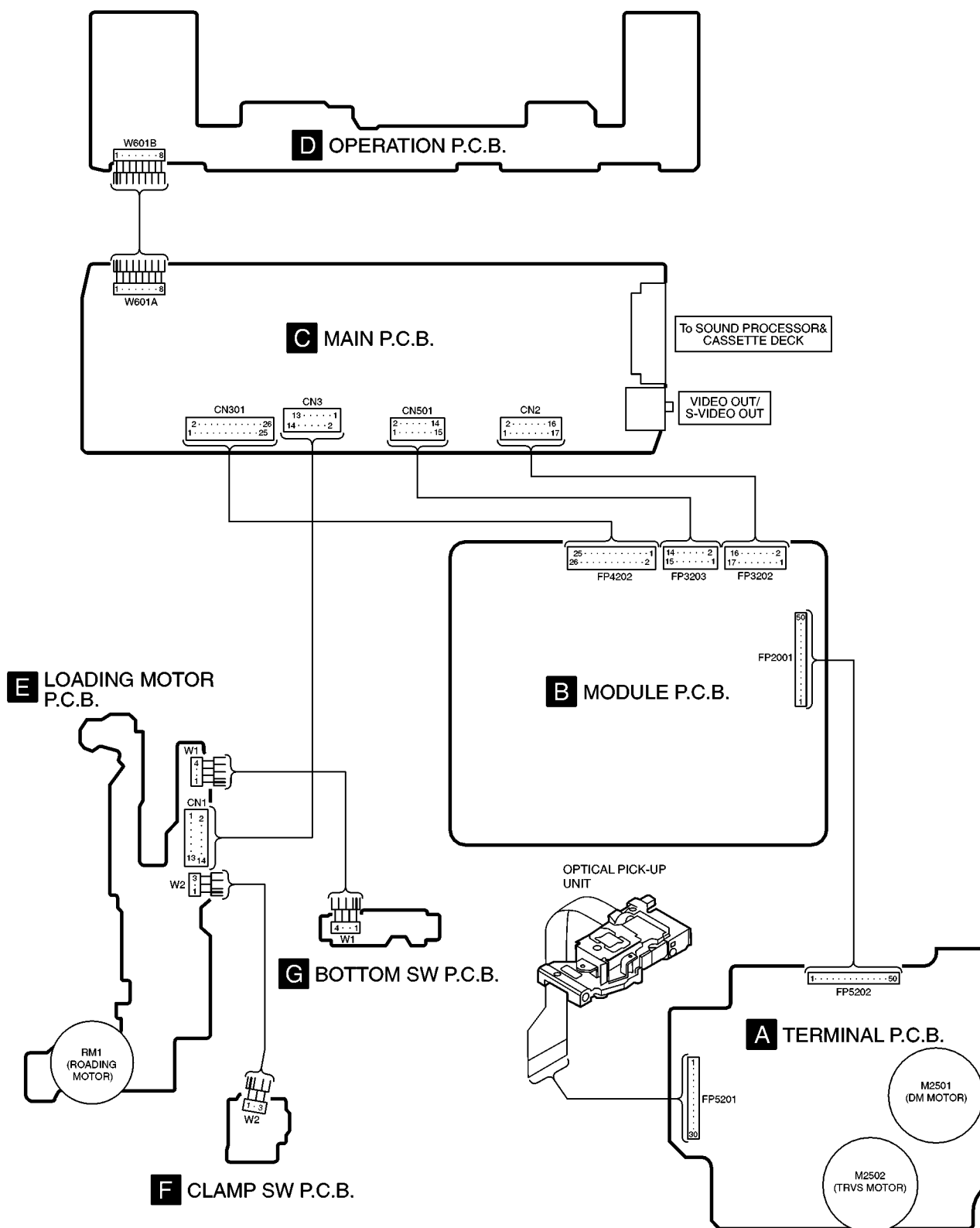
PLUNGER

1879-AAA

(REP2578A-A)

SL-DV280(EG) MAIN, OPERATION, LOADING MOTOR,
CLAMP SW, BOTTOM SW P.C.B.

17 Wiring Connection Diagram



18 Terminal Function of IC's

18.1. IC401 (C2BBFD000307): SYSTEM CONTROL

Pin No.	Mark	I/O Division	Function
1	VCC	I	Connected to power supply
2	VREF		
3	AVSS	—	Connected to GND
4	MUTE	O	Mute control output terminal
5	PWCON T	O	DVD module power supply control output terminal
6	SYNC	I	Power failure detect signal input terminal
7	C/SW SEL	O	Center/sub woofer speaker select signal output terminal
8	B_REQ	I	Serial communication request signal input terminal
9	B_CS	O	Serial communication chip select signal output terminal
10	B_CLK	O	Serial communication clock signal output terminal
11	DATA O	O	Serial communication data signal output terminal
12	DATA I	I	Serial communication data signal input terminal
13	WIDE2	O	Select control output terminal for wide picture
14	WIDE1		
15	CNV _{SS}	—	Connected to GND
16	TEST	I	Test mode input terminal
17	E-CS	O	Not used, open
18	RESET	I	Reset signal input terminal
19	XIN	I	Crystal oscillator input terminal (f=8MHz)
20	XOUT	O	Crystal oscillator output terminal (f=8MHz)
21	V _{SS}	—	Connected to GND
22	LED-STB	O	Serial signal output to LED drive
23	LED/ E-CLK	O	Serial signal output terminal to LED drive or EEPROM
24	LED/ E-DATA	O	Serial signal output terminal to LED drive or EEPROM
25	LED- CLR	O	Latch clear signal output terminal to LED drive
26	PLG	O	Plunger control signal output terminal
27	SW5	I	Bottom switch detect signal input terminal
28	PSTN	I	Position sensor detect signal input terminal
29	SW2	I	Disc tray position 2 detect signal input terminal
30	SW1	I	Disc tray position 1 detect signal input terminal
31	SW3	I	Disc tray open detect signal input terminal
32	CCW	O	Motor drive control signal output terminal (forward direction)
33	CW	O	Motor drive control signal output terminal (reverse direction)
34	HALH	O	Motor drive control signal output terminal (speed)
35	DVD- CLK	I	Serial communication signal input terminal for DVD main micro-computer
36	DVD- CMD	O	Serial communication signal output terminal for DVD main micro-computer
37	DVD- STAT	I	Serial communication signal input for DVD main micro-computer
38	DV/HD	—	Connected to GND through resistor
39	SW4	I	Clamp switch detect signal input terminal

Pin No.	Mark	I/O Division	Function
40	KEY2	I	Operation key signal input terminal
41	KEY1		
42	RGN CS	I	Area select signal input terminal

19 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 manufacture's specified parts shown in the parts list.

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

*ACHTUNG:Die lasereinheit nicht zerlegen. Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

*Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads(pF) F=Farads (F)

*Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000K (OHM)

*The markings (RTL) indicate that the retention time is limited for these items. After the discontinuation of these assemblies in production, it will no longer be available.

*The parts described as [SPC] at the Remarks column are supplied by SPC.

Other are supplied by MESA.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	REZ1225-1	FFC(14P)	1	
2	REZ1390	FFC(15P)	1	
3	REZ1391	FFC(17P)	1	
4	REZ1392	FFC(26P)	1	
5	RMX0210	SPACER	1	
6	RYF0592-N	TRAY ORNAMENT	1	
7	RKA0105-K	RUBBER	4	
8	RKA0106-N	FOOT RING	4	
9	RYP1103-N	FRONT PANEL ASS'Y	1	
9-1	RGB0025-A	TECHNICS BADGE	1	
10	XTB3+5JFZ	SCREW	2	
11	XTBS3+8JFZ1	SCREW	5	
12	XTW3+8T	SCREW	2	
13	RHD30007-1S	SCREW	4	
14	RKM0399-1S	TOP CABINET	1	
15	REZ1377	FFC(50P)	1	
16	RHD30090	SCREW	4	
301	RML0517	TIMING LEVER	1	
302	RML0516	LEVER	1	
303	RMB0551	UPPER SPINDLE SPRING	1	
304	RMQ0744	LOWER HOOK	1	
305	RDV0056	BELT	1	
306	RML0525	FRONT LOCK LEVER	1	
307	RML0526	DISC SPRING	1	
308	RDG0424	DRIVE GEAR	1	
309	RDG0425	CHANGE GEAR	1	
310	RDG0427	TRAVERSE CAM GEAR	1	
311	RDG0428	TRAVERSE RELAY GEAR	1	
312	RDG0426	UP/DOWN GEAR	1	
313	RDG0429	PULLEY GEAR	1	
314	RMB0549-1	CHANGE GEAR SPRING	1	
315	RMQ0748	GEAR HOLDER	1	
316	RMB0553	SPRING	1	
317	RML0530	LEVER	1	
318	RML0518	CONNECTION LEVER	1	
319	RMM0201	SLIDE PLATE(1)	1	
320	RME0258	REAR LOCK SPRING	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
321	RML0521	REAR LOCK LEVER	1	
322	RME0257	TRAY LOCK SPRING	1	
323	RML0520	TRAY LOCK	1	
324	RMM0202	SLIDE PLATE(2)	1	
325	XTB3+10J	SCREW	9	
326	RMR0624-W2	CLAMPER	1	
327	RMR1367-K	FIXED PLATE	1	
328	RMB0561	ASSIST LEVER SPRING	1	
329	RMR1121-K	MECHANISM COVER	1	
330	RMQ0742	SPINDLE BASE	1	
331	RXQ0561	DISC TRAY	1	
332	RME0261	FRONT LOCK SPRING	1	
333	RMX0140	DISC SPACER	5	
334	RMQ0653	MAGNET	1	
335	RMQ0749	UPPER SPINDLE	1	
336	RMX0141	SPACER	1	
337	XTW3+10T	SCREW	4	
339	RXQ0595	MOTOR ASS'Y	1	
341	RSJ0003	SOLENOID	1	
342	RMS0398-1	MOVING CORE	1	
344	RML0519	CD LEVER	1	
346	RML0522	LOADING STOPPER	1	
347	RMQ0745	LOWER SPINDLE	1	
348	RMQ0746	UP/DOWN BASE	1	
349	RMB0550	LOWER SPINDLE SPRING	1	
350	RMQ0747	UPPER HOOK	1	
351	RME0263	SPRING	1	
352	RMQ0743	SPINDLE SHAFT	1	
353	RMB0552	CUSHION SPRING	1	
354	RDG0430	RELAY GEAR(A)	1	
355	RDG0431	RELAY GEAR(B)	1	
356	RME0262	DISC LEVER SPRING	1	
376	RMC0387	SUPPORT SPRING	1	
377	RMA1003	BACK YOKE	1	[SPC]
378	XTV2+6G	SCREW	1	
401	RDG0499	TRAVERSE GEAR(A)	1	[SPC]
402	RHD17036	SCREW	2	[SPC]
404	RMC0415	ADJUST SPRING HOLDER	3	[SPC]
405	RMC0416	SPRING HOLDER	1	[SPC]
407	RME0320	ADJUST SPRING	3	[SPC]
408	RMM0234-1	TRAVERSE DRIVE RACK	1	[SPC]
409	RMS0710	GUIDE SHAFT(1)	1	[SPC]
410	RMS0711	GUIDE SHAFT(2)	1	[SPC]
411	RDG0500	TRAVERSE GEAR(B)	1	[SPC]
412	RDG0501	TRAVERSE GEAR(C)	1	[SPC]
413	RME0319	TRAVERSE GEAR SPRING	1	[SPC]
414	RAF3022A-1	OPTICAL PICK-UP	1	[SPC] Δ
415	RJB2308A	INTERFACE FPC	1	[SPC]
417	RHD14095	SCREW	1	[SPC]
418	VHD1224	SCREW	3	[SPC]
419	RMX0192	INNER STOPPER	1	[SPC]
420	RMG0561-T	CUSHION RUBBER	1	[SPC]
422	RMG0545-A1	FLOATING RUBBER	4	[SPC]
423	RXQ0749B	SPINDLE MOTOR ASS'Y	1	[SPC]
424	RMR1366-K	TRAVERSE CHASSIS	1	
425	RMS0712-1	FIXEDPIN	4	
428	RHD20060	SCREW	1	[SPC]
429	RMG0558-K	PCB RUBBER	1	[SPC]
C1	ECEA1CKS101	16V 100U	1	
C2	ECBA1E103ZF5	25V 0.01U	1	ECBT1E103ZF5
C3	ECA1CM332	16V 3300U	1	
C4	ECA1CM471	16V 470U	1	
C7	EEUFC0J821B	6.3V 820U	1	
C10	ECUV1H102KBV	50V 1000P	1	ECJ1VB1H102K
C11	ECEA1CKS100	16V 10U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C12	ECUV1H102KBV	50V 1000P	1	ECJ1VB1H102K
C13	ECUVNH103KBV	50V 0.01U	1	F1H1H103A748
C14	ECEALAKS101	10V 100U	1	ECEALAKA101I
C15	ECEALAKS221	10V 220U	1	
C16	ECA0JM222	6.3V 2200U	1	
C19	ECUV1H102KBV	50V 1000P	1	ECJ1VB1H102K
C20	ECEALAKS470	10V 47U	1	
C21	ECUV1H102KBV	50V 1000P	1	ECJ1VB1H102K
C22	ECEALCKS100	16V 10U	1	
C23	ECEALAKS470	10V 47U	1	
C24	ECUV1H102KBV	50V 1000P	1	ECJ1VB1H102K
C25,26	ECEALCKS100	16V 10U	2	
C27	ECUVNC474KBN	16V 0.47U	1	F1J1C474A091
C28	ECUVNC104ZFB	16V 0.1U	1	F1H1C104A072
C29	ECUVNH103KBV	50V 0.01U	1	F1H1H103A748
C30	ECUV1H102KBV	50V 1000P	1	ECJ1VB1H102K
C305	ECUVNH103KBV	50V 0.01U	1	F1H1H103A748
C308	ECEALHKS010	50V 1U	1	
C401	RCE0JKA470IG	6.3V 47U	1	F2A0J4700007
C402	ECEALHKS3R3	50V 3.3U	1	
C403	ECUVNH103KBV	50V 0.01U	1	F1H1H103A748
C404	ECUV1H102KBV	50V 1000P	1	ECJ1VB1H102K
C405	ECUVNC104ZFB	16V 0.1U	1	F1H1C104A072
C406	EEAF0J101B	6.3V 100U	1	
C407	ECUV1H101JCV	50V 100P	1	ECJ1VC1H101J
C408,09	F1H1H471A736	50V 470P	2	
C412	ECUVNC104ZFB	16V 0.1U	1	F1H1C104A072
C501,02	ECUVNH103KBV	50V 0.01U	2	F1H1H103A748
C503,04	ECA0JM102	6.3V 1000U	2	ECA0JM102B
C601-04	ECUV1H101JCV	50V 100P	4	ECJ1VC1H101J
C605	ECUVNC104ZFB	16V 0.1U	1	F1H1C104A072
C801,02	ECEALCKS100	16V 10U	2	
C803,04	F1H1H471A736	50V 470P	2	
C805,06	ECUV1H470JCV	50V 47P	2	F1H1H470A736
C807	RCE0JKA470IG	6.3V 47U	1	F2A0J4700007
C808	ECUVNC104ZFB	16V 0.1U	1	F1H1C104A072
C809,10	ECEALCKS220	16V 22U	2	
C811,12	ECUV1H222KBV	50V 2200P	2	ECJ1VB1H222K
C813-16	ECEALCKS100	16V 10U	4	
C817	ECUVNC104ZFB	16V 0.1U	1	F1H1C104A072
C818	RCE0JKA470IG	6.3V 47U	1	F2A0J4700007
C819	ECEALAKS101	10V 100U	1	ECEALAKA101I
C821,22	ECEALCKS100	16V 10U	2	
C823,24	F1H1H471A736	50V 470P	2	
C825,26	ECUV1H470JCV	50V 47P	2	F1H1H470A736
C827	RCE0JKA470IG	6.3V 47U	1	F2A0J4700007
C828	ECUVNC104ZFB	16V 0.1U	1	F1H1C104A072
C829,30	RCE0JKA470IG	6.3V 47U	2	F2A0J4700007
C831,32	ECUV1H222KBV	50V 2200P	2	ECJ1VB1H222K
C833,34	RCE0JKA470IG	6.3V 47U	2	F2A0J4700007
C835,36	ECEALCKS100	16V 10U	2	
C837,38	F1H1H471A736	50V 470P	2	
C839,40	ECUV1H470JCV	50V 47P	2	F1H1H470A736
C841	RCE0JKA470IG	6.3V 47U	1	F2A0J4700007
C842	ECUVNC104ZFB	16V 0.1U	1	F1H1C104A072
C843,44	RCE0JKA470IG	6.3V 47U	2	F2A0J4700007
C845,46	ECUV1H222KBV	50V 2200P	2	ECJ1VB1H222K
C847-49	RCE0JKA470IG	6.3V 47U	3	F2A0J4700007
C2001-03	EEVHB0G101R	4V 100U	3	
C2004-09	ECUZNC104ZFB	16V 0.1U	6	F1H1C1040008
C2010	ECUV1H221KBV	50V 220P	1	F1H1H2210001
C2011	ECUVNC104KBV	16V 0.1U	1	ECJ1VB1C104K
C2012	ECUVNC473KBV	16V 0.047U	1	F1H1C473A071
C2013	ECUVNC104KBV	16V 0.1U	1	ECJ1VB1C104K
C2014,15	ECUZNC104ZFB	16V 0.1U	2	F1H1C1040008
C2021-24	ECUZNC104ZFB	16V 0.1U	4	F1H1C1040008
C2032-34	ECUVNH102JCV	50V 1000P	3	F1H1H102A737
C2035,36	ECUV1H331JCV	50V 330P	2	F1H1H331A004

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C2037	ECUV1H681JCV	50V 680P	1	ECJ1VC1H681J
C2038	ECUV1H561JCV	50V 560P	1	F1H1H561A004
C2039,40	ECUVNC104KBV	16V 0.1U	2	ECJ1VB1C104K
C2041	ECUV1H682KBV	50V 6800P	1	ECJ1VB1H682K
C2042	ECUV1H272KBV	50V 2700P	1	F1H1H272A009
C2043,44	ECUZNC104ZFB	16V 0.1U	2	F1H1C1040008
C2045	ECUV1H470JCV	50V 47P	1	F1H1H470A736
C2046	ECUV1C183KBV	16V 0.018U	1	ECJ1VB1C183K
C2047,48	ECUVNH103KBV	50V 0.01U	2	F1H1H103A748
C2049	ECUVNC474KBN	16V 0.47U	1	F1J1C474A091
C2050	ECUV1C393KBV	16V 0.039U	1	ECJ1VB1C393K
C2051	ECUV1H822KBV	50V 8200P	1	ECJ1VB1H822K
C2501	EEVFC0J221P	6.3V 220U	1	[SPC]
C2502	ECEV1CA101WP	16V 100U	1	[SPC]
C2503	ECEV1CA220WR	16V 22U	1	[SPC]
C2504-08	ECJ1ZF1C104Z	16V 0.1U	5	[SPC]
C2509	EEVFC1C100R	16V 10U	1	[SPC]
C2511-13	ECJ1ZF1C104Z	16V 0.1U	3	[SPC]
C3001-03	ECEV0JA331P	6.3V 330U	3	
C3004	ECUVNA105ZFB	10V 1U	1	F1H1A105A030
C3005,06	ECUZNC104ZFB	16V 0.1U	2	F1H1C1040008
C3007,08	ECUVNA105ZFB	10V 1U	2	F1H1A105A030
C3009-11	ECUZNC104ZFB	16V 0.1U	3	F1H1C1040008
C3012,13	ECUVNA105ZFB	10V 1U	2	F1H1A105A030
C3014,15	ECUZNC104ZFB	16V 0.1U	2	F1H1C1040008
C3016	ECUVNA105ZFB	10V 1U	1	F1H1A105A030
C3017,18	ECUZNC104ZFB	16V 0.1U	2	F1H1C1040008
C3019,20	ECUVNA105ZFB	10V 1U	2	F1H1A105A030
C3021-23	ECUZNC104ZFB	16V 0.1U	3	F1H1C1040008
C3024	ECUVNA105ZFB	10V 1U	1	F1H1A105A030
C3025	ECUZNC104ZFB	16V 0.1U	1	F1H1C1040008
C3026	ECUVNA105ZFB	10V 1U	1	F1H1A105A030
C3027-29	ECUZNC104ZFB	16V 0.1U	3	F1H1C1040008
C3030	ECUVNA105ZFB	10V 1U	1	F1H1A105A030
C3031-35	ECUZNC104ZFB	16V 0.1U	5	F1H1C1040008
C3036	ECUV1H220JCV	50V 22P	1	ECJ1VC1H220J
C3041,42	ECUZNC104ZFB	16V 0.1U	2	F1H1C1040008
C3051	ECUZNC104ZFB	16V 0.1U	1	F1H1C1040008
C3052	F3K1A1060001	10V 10U	1	
C3061-64	ECUZNC104ZFB	16V 0.1U	4	F1H1C1040008
C3065	ECUVNA105ZFB	10V 1U	1	F1H1A105A030
C3066	ECUZNC104ZFB	16V 0.1U	1	F1H1C1040008
C3071-74	ECUZNC104ZFB	16V 0.1U	4	F1H1C1040008
C3075	ECUVNA105ZFB	10V 1U	1	F1H1A105A030
C3076	ECUZNC104ZFB	16V 0.1U	1	F1H1C1040008
C3080	ECEV0JA331P	6.3V 330U	1	
C3081,82	ECUZNC104ZFB	16V 0.1U	2	F1H1C1040008
C3083-86	ECUVNA105KBN	10V 1U	4	F1J1A105A003
C3087-89	ECUZNC104ZFB	16V 0.1U	3	F1H1C1040008
C3091,92	ECUZNC104ZFB	16V 0.1U	2	F1H1C1040008
C3093	F3K1A1060001	10V 10U	1	
C3210	ECUZNC104ZFB	16V 0.1U	1	F1H1C1040008
C3301	EEVHB0J101P	6.3V 100U	1	
C3302	ECUZNC104ZFB	16V 0.1U	1	F1H1C1040008

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C3303	EEVHB1C100R	16V 10U	1	
C3305	ECUVNH103KBV	50V 0.01U	1	FIH1H103A748
C3307	ECUVNH103KBV	50V 0.01U	1	FIH1H103A748
C3308	ECUX1H150JCV	50V 15P	1	ECJ1VC1H150J
C4201	ECEV0JA331P	6.3V 330U	1	
C4209,10	ECUZNC104ZFV	16V 0.1U	2	FIH1C1040008
C4215	ECUZNC104ZFV	16V 0.1U	1	FIH1C1040008
C4216	EEVHB0J101P	6.3V 100U	1	
C4218	ECUZNC104ZFV	16V 0.1U	1	FIH1C1040008
C4222	ECEV0JA331P	6.3V 330U	1	
C5201,02	EEVHB1C100R	16V 10U	2	[SPC]
C5203,04	ECJ1ZF1C104Z	16V 0.1U	2	[SPC]
C5205-08	ECUX1H102JCV	50V 1000P	4	[SPC]
C5211	EEVHB0J470R	6.3V 47U	1	[SPC]
C5215	EEVHB0J470R	6.3V 47U	1	[SPC]
C5221	ECJ1ZF1C104Z	16V 0.1U	1	[SPC]
C5223	ECJ1ZF1C104Z	16V 0.1U	1	[SPC]
C5224,25	ECJ1ZB1C104K	16V 0.1U	2	[SPC]
C5231	ECUV1H101JCV	50V 100P	1	ECJ1VC1H101J [SPC]
C5232,33	ECJ1ZF1C104Z	16V 0.1U	2	[SPC]
C5234	ECUV1H222KBV	50V 2200P	1	ECJ1VB1H222K [SPC]
C5235	ECUV1H391JCV	50V 390P	1	FIH1H391A004 [SPC]
C5236	ECUX1H102JCV	50V 1000P	1	[SPC]
C5237	ECJ1ZB1C104K	16V 0.1U	1	[SPC]
C5238	ECUV1A224KBV	10V 0.22U	1	FIH1A224A001 [SPC]
C5239	ECJ1ZB1C104K	16V 0.1U	1	[SPC]
C5240	ECUV1H561JCV	50V 560P	1	FIH1H561A004 [SPC]
C5242	ECUV1H472KBV	50V 4700P	1	[SPC]
C5251	ECJ1ZF1C104Z	16V 0.1U	1	[SPC]
C5252	F3K1A1060001	10V 10U	1	[SPC]
C5253	ERJ3GEYJ472V	1/16W 4.7K	1	[SPC]
C6201	EEVHB0J330R	6.3V 33U	1	
C6202-06	ECUZNC104ZFV	16V 0.1U	5	FIH1C1040008
C6211	ECUZNC104ZFV	16V 0.1U	1	FIH1C1040008
C6221,22	ECUZNC104ZFV	16V 0.1U	2	FIH1C1040008
C6251	ECUVNA105ZFV	10V 1U	1	FIH1A105A030
C6252	FIH1H471A736	50V 470P	1	
C6253	F3K1A1060001	10V 10U	1	
C6257	EEVHB0J101P	6.3V 100U	1	
C6301	ECUV1H101JCV	50V 100P	1	ECJ1VC1H101J
C6302	ECUVNC104KBV	16V 0.1U	1	ECJ1VB1C104K
C6303-05	ECUZNC104ZFV	16V 0.1U	3	FIH1C1040008
C6501	EEVHB0J330R	6.3V 33U	1	
C6502	EEVHB1C100R	16V 10U	1	
C6503-05	ECUZNC104ZFV	16V 0.1U	3	FIH1C1040008
C6511,12	ECUX1H150JCV	50V 15P	2	ECJ1VC1H150J
C6553	ECUZNC104ZFV	16V 0.1U	1	FIH1C1040008
C7001,02	EEVHB0G101R	4V 100U	2	
C7011-27	ECUZNC104ZFV	16V 0.1U	17	FIH1C1040008
CN1	RJS1A9414	CONNECTOR (14P)	1	K1MN14A00049
CN2	K1MN17B00037	CONNECTOR (17P)	1	
CN3	RJS1A6714-Q	CONNECTOR (14P)	1	K1MN14B00054
CN301	RJS2A7726	CONNECTOR (26P)	1	K1MN26B00045
CN501	K1MN15B00057	CONNECTOR (15P)	1	
D1	GP1S94	PHOTO COUPLER	1	B3NAA0000029
D2	MTZJ4R7B	DIODE	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
D3	SFPB-72V	DIODE	1	B0JCP0000004
D4	MA111TX	DIODE	1	MA2J11100L
D6	MA111TX	DIODE	1	MA2J11100L
D7	MA728TX	DIODE	1	MA2J72800L
D8	MA111TX	DIODE	1	MA2J11100L
D10	MA111TX	DIODE	1	MA2J11100L
D11	MA8091MTX	DIODE	1	MAZ80910ML
D12,13	MA111TX	DIODE	2	MA2J11100L
D14	MA8082M	DIODE	1	MAZ80820M
D15,16	MA735TX	DIODE	2	MA2Q73500L
D17,18	MA111TX	DIODE	2	MA2J11100L
D301	MA111TX	DIODE	1	MA2J11100L
D302-04	RL1N4003N02	DIODE	3	B0AAMM000009
D305-07	MA111TX	DIODE	3	MA2J11100L
D401-06	MA111TX	DIODE	6	MA2J11100L
D601,02	SELS5923C	LED	2	B3ADA0000083
D603-07	LNJ301MPUJAD	LED	5	
D608	SML79455C	LED	1	
D801-06	MA111TX	DIODE	6	MA2J11100L
D2001	MA111TX	DIODE	1	MA2J11100L
D2002	MA728TX	DIODE	1	MA2J72800L
D3091	MA111TX	DIODE	1	MA2J11100L
D5251	MA728-TX	DIODE	1	MA2J72800L [SPC]
D6301	MA728TX	DIODE	1	MA2J72800L
FL4201	VLF1491S105T	CHIP FILTER	1	FIJ1A1050021
FL6251	VLF1491S105T	CHIP FILTER	1	FIJ1A1050021
FL6253,54	VLF1491S105T	CHIP FILTER	2	FIJ1A1050021
FL6255	VLF1491S104T	CHIP FILTER	1	FIJ1E1040022
FP2001	K1MN50B00010	CONNECTOR (50P)	1	
FP3202	K1MN17B00041	CONNECTOR (17P)	1	
FP3203	RJS2A7515T	CONNECTOR (15P)	1	K1MN15B00037
FP4202	RJS2A7526T	CONNECTOR (26P)	1	K1MN26B00037
FP5201	K1MN30B00062	CONNECTOR (30P)	1	[SPC]
FP5202	K1MN50B00010	CONNECTOR (50P)	1	[SPC]
IC1	TA7291P	IC	1	C0GAM0000005
IC2	PQ1CZ31H2ZP	IC	1	
IC3	LM2940T5	IC	1	C0CAADG00019
IC4	NJM78M05FA	IC	1	C0CAADE00007
IC401	C2BBFD000307	IC	1	
IC601	NJU3713GTE1	IC	1	C0ZBZ0000040
IC801	C0JBAS000138	IC	1	
IC802-04	NJM4580EDTE1	IC	3	C0ABBB000125
IC805	BA4558FHTT1	IC	1	C0ABBB000210
IC2001	MN67706EC	IC	1	
IC2501	C0GBG0000020	IC	1	[SPC]
IC3001	MN677533MP	IC	1	
IC3051	PQ018EZ01ZP	IC	1	C0DBCHG00001
IC3061	C3ABMG000103	IC	1	
IC3071	C3ABMG000103	IC	1	
IC3091	C0CBCBD00002	IC	1	
IC3301	CIAB00001393	IC	1	
IC4211	C0FBBK000021	IC	1	
IC5201	AN8708FHK	IC	1	[SPC]
IC6201	MN102H60GFA	IC	1	
IC6221,22	C0JBAA000001	IC	2	
IC6251	C0CBCBE00001	IC	1	
IC6301	PST596JNR	IC	1	C0EBE0000070
IC6302	RFKFRV45C040	IC	1	
IC6303	C3EBEC000024	IC	1	
IC6501	CIAB00000582	IC	1	
IC7001	MN103S13BGA	IC	1	
JK1	RJT065K20	SYSTEM CONNECTOR (20P)	1	K1FA220B0006
JK501	RJH8203N	JACK, VIDEO OUT	1	
K3001	ERJ3GEY0R00Z	CHIP JUMPER	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
K3071	ERJ3GEY0R00Z	CHIP JUMPER	1	
K3101	ERJ3GEY0R00Z	CHIP JUMPER	1	
K3105	ERJ3GEY0R00Z	CHIP JUMPER	1	
K3111,1	ERJ3GEY0R00Z	CHIP JUMPER	2	
2				
K3115,1	ERJ3GEY0R00Z	CHIP JUMPER	2	
6				
K3201	ERJ3GEY0R00Z	CHIP JUMPER	1	
K4211	ERJ3GEY0R00Z	CHIP JUMPER	1	
K6251	ERJ14Y0R00	CHIP JUMPER	1	ERJ14Y0R00H
L1	RLL500050T-Y	COIL	1	G0A100G00005
L2	RLQX101M-T	COIL	1	G0ZZ00001930
L4	RLL500050T-Y	COIL	1	G0A100G00005
L501,02	GOBYYYY00016	COIL	2	
L2001,0	G1C100KA0019	COIL	2	
2				
L2003	G1C100KA0008	COIL	1	
L3091	G1C100KA0008	COIL	1	
L3301	VLQ0920K220T	COIL	1	G1C220K00011
L4211	VLQ0920K220T	COIL	1	G1C220K00011
L5201,0	ELJEA100KF	COIL	2	[SPC]
2				
L5251	ELJEA100KF	COIL	1	[SPC]
L6501	VLQ0909J220T	COIL	1	G1C220JA0010
L6502	ELJFC220KF	COIL	1	
LB2001,02	JALBK2HS470T	COIL	2	G1CYYYZ00003
LB2003-35	VLP0323A601R	COIL	33	J0JCC0000062
LB3001,02	JALBK2HS470T	COIL	2	G1CYYYZ00003
LB3202-04	ERJ3GEYJ101V	1/16W 100	3	
LB3303-05	VLP0155-T	COIL	3	J0JCC0000119
LB4200-12	VLP0323A601R	COIL	13	J0JCC0000062
LB4214-17	VLP0323A601R	COIL	4	J0JCC0000062
LB5201	JALBK2HS470T	COIL	1	G1CYYYZ00003 [SPC]
LB5202	VLP0323A601R	COIL	1	J0JCC0000062 [SPC]
LB5203,04	VLP0155-T	COIL	2	J0JCC0000119 [SPC]
LB5205,06	VLP0323A601R	COIL	2	J0JCC0000062 [SPC]
LB6201	VLP0323A601R	COIL	1	J0JCC0000062
LB6202	VLP0155-T	COIL	1	J0JCC0000119
LB6221	VLP0323A601R	COIL	1	J0JCC0000062
LB6501,02	VLP0323A601R	COIL	2	J0JCC0000062
LB6512-14	VLP0155-T	COIL	3	J0JCC0000119
LB6515	VLP0157-T	COIL	1	J0JCC0000077
LB7001,02	JALBK2HS470T	COIL	2	G1CYYYZ00003
PCB1	REP3098W-N	DVD MODULE P.C.B.	1	(RTL)
PCB2	REP3176A-M	MAIN P.C.B.	1	(RTL)
PCB3	REP2578A-N	LOADING MOTOR P.C.B.	1	(RTL)
PCB4	REP3091A-1N	TERMINAL P.C.B.	1	[SPC] (RTL)
PS6201	VJS2961C010	CONNECTOR (10P)	1	KLKE10A00075
Q1	RVTDT143EST	TRANSISTOR	1	
Q3	DTC114EUA106	TRANSISTOR	1	B1GBCFJJ0007
Q6	FMW1T98	TRANSISTOR	1	
Q7	2SB1417PQTA	TRANSISTOR	1	2SB14170JA
Q8	FMW1T98	TRANSISTOR	1	
Q9	2SB1417PQTA	TRANSISTOR	1	2SB14170JA
Q11	FMW1T98	TRANSISTOR	1	
Q12	2SB1417PQTA	TRANSISTOR	1	2SB14170JA
Q13	2SB1218ATX	TRANSISTOR	1	2SB1218A0L

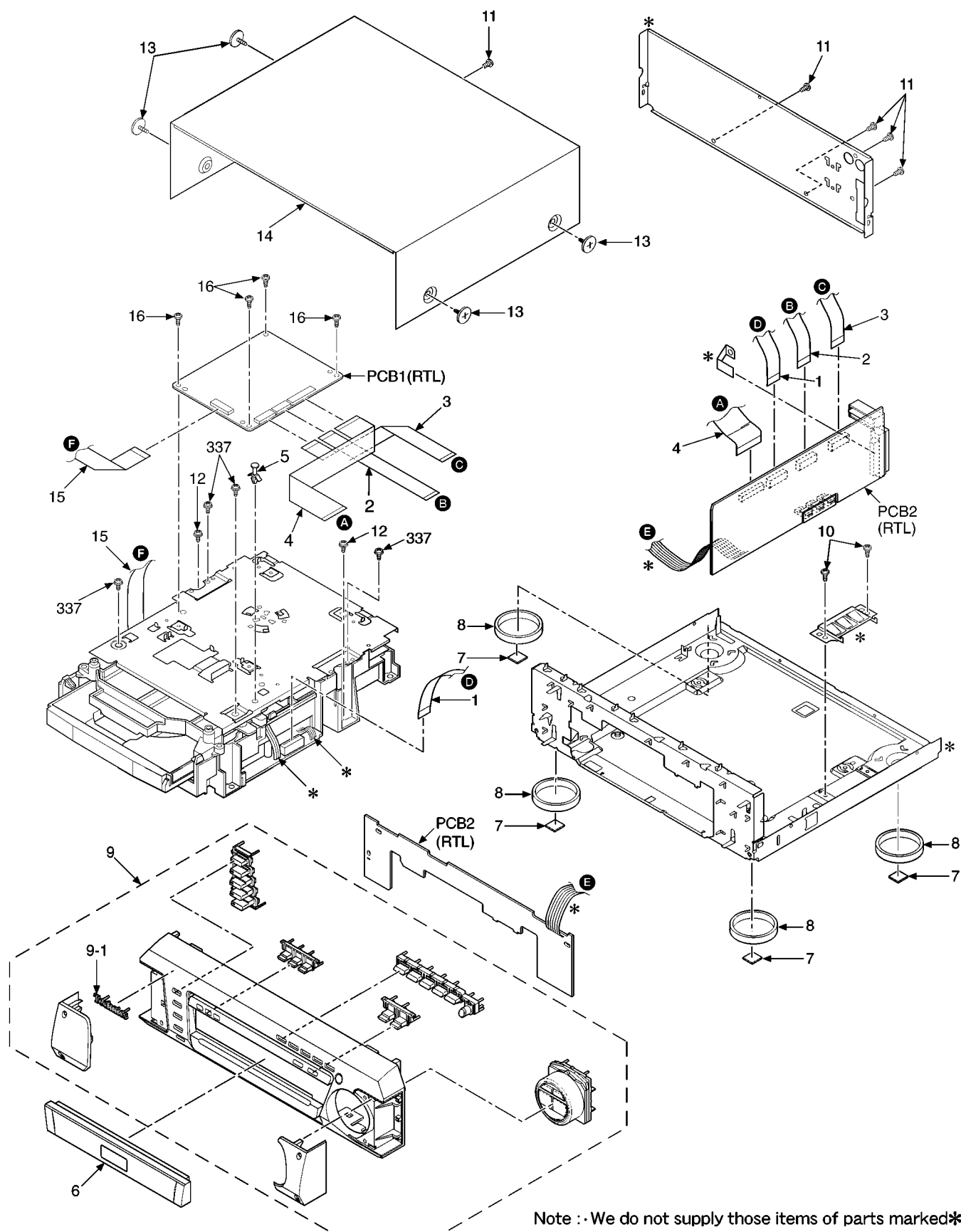
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
Q14	FMW1T98	TRANSISTOR	1	
Q15	2SB766ATX	TRANSISTOR	1	2SB0766A0L
Q16	2SD874QRSTX	TRANSISTOR	1	2SD08740WL
Q303	DTC114EUA106	TRANSISTOR	1	B1GBCFJJ0007
Q304	2SB621A-R	TRANSISTOR	1	2SB0621AH
Q305	UN521NTX	TRANSISTOR	1	UNR521N00L
Q307,08	DTC114EUA106	TRANSISTOR	2	B1GBCFJJ0007
Q401	UN5214TX	TRANSISTOR	1	UNR521400L
Q402-04	2SD1819ATX	TRANSISTOR	3	2SD1819A0L
Q801-06	2SD1328QRSTX	TRANSISTOR	6	2SD13280WL
Q807	UN5111TX	TRANSISTOR	1	UNR511100L
Q5211	2SB1115-T	TRANSISTOR	1	B1BDBF000004 [SPC]
Q5215	2SB1115-T	TRANSISTOR	1	B1BDBF000004 [SPC]
QR3301	UN5212TX	TRANSISTOR	1	UNR521200L
QR5251	B1GDGFEE0001	TRANSISTOR	1	[SPC]
QR6301	UN5212TX	TRANSISTOR	1	UNR521200L
R1	ERDS2FJ102	1/4W 1K	1	
R2	ERJ3GEYJ822V	1/16W 8.2K	1	D0GB822JA002
R3	ERJ3GEYJ222V	1/16W 2.2K	1	
R4	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R16	ERJ3GEYJ471V	1/16W 470	1	
R17	ERJ3GEYJ223V	1/16W 22K	1	D0GB223JA002
R20	ERJ3GEYJ151V	1/16W 150	1	
R21,22	ERJ3GEYJ222V	1/16W 2.2K	2	
R27	ERJ6GEYJ122V	1/10W 1.2K	1	
R28	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
R29	ERJ3GEYJ223V	1/16W 22K	1	D0GB223JA002
R30	ERJ3GEYJ101V	1/16W 100	1	
R31	ERJ6GEYJ681V	1/10W 680	1	
R32	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
R33	ERJ3GEYJ472V	1/16W 4.7K	1	
R34	ERJ3GEYJ471V	1/16W 470	1	
R35	ERJ6GEYJ122V	1/10W 1.2K	1	
R36	ERJ3GEYJ223V	1/16W 22K	1	D0GB223JA002
R37	ERJ3GEYJ101V	1/16W 100	1	
R38	ERD2FCG100	2W 10	1	
R39	ERJ3GEYJ102V	1/16W 1K	1	
R40-42	ERJ3GEYJ101V	1/16W 100	3	
R43	ERQ16NKR33E	0.33	1	
R44	ERJ3GEYJ122V	1/16W 1.2K	1	
R305,06	ERJ3GEYJ103V	1/16W 10K	2	D0GB103JA002
R307	ERJ3GEYJ102V	1/16W 1K	1	
R308	ERJ3GEYJ221V	1/16W 220	1	
R312	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R313	ERJ3GEY0R00V	1/16W 0	1	
R314	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R401	ERJ3GEYJ681V	1/16W 680	1	D0GB681JA002
R402	ERJ3GEYJ104V	1/16W 100K	1	D0GB104JA002
R403	ERJ3GEYJ472V	1/16W 4.7K	1	
R404	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R405	ERJ3GEYJ471V	1/16W 470	1	
R406	ERJ3GEYJ472V	1/16W 4.7K	1	
R407	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
R408	ERJ3GEYJ472V	1/16W 4.7K	1	
R409	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R410,11	ERJ3GEYJ472V	1/16W 4.7K	2	
R412	ERJ3GEYJ223V	1/16W 22K	1	D0GB223JA002
R413	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
R414	ERJ3GEYJ221V	1/16W 220	1	
R415	ERJ3GEYJ472V	1/16W 4.7K	1	
R416	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R417	ERJ3GEYJ102V	1/16W 1K	1	
R418	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
R419	ERJ3GEYJ102V	1/16W 1K	1	
R420	ERJ3GEYJ472V	1/16W 4.7K	1	
R421	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
R422-24	ERJ3GEYJ472V	1/16W 4.7K	3	
R425,26	ERJ3GEYJ103V	1/16W 10K	2	D0GB103JA002
R427	ERJ3GEYJ182V	1/16W 1.8K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R428	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R429-32	ERJ3GEYJ101V	1/16W 100	4	
R433-35	ERJ3GEYJ221V	1/16W 220	3	
R436	ERJ3GEYJ472V	1/16W 4.7K	1	
R438,39	ERJ3GEYJ821V	1/16W 820	2	
R447,48	ERJ3GEYJ221V	1/16W 220	2	
R450,51	ERJ3GEYJ103V	1/16W 10K	2	D0GB103JA002
R452	ERJ3GEYJ821V	1/16W 820	1	
R453,54	ERJ3GEYJ472V	1/16W 4.7K	2	
R501	ERJ3GEYJ3R3V	1/16W 3.3	1	
R503-06	ERJ3GEYJ1R0V	1/16W 1	4	
R601-04	ERJ3GEYJ101V	1/16W 100	4	
R605,06	ERJ3GEYJ271V	1/16W 270	2	
R607-11	ERJ3GEYJ221V	1/16W 220	5	
R612	ERJ3GEYJ181V	1/16W 180	1	
R613	ERJ3GEYJ223V	1/16W 22K	1	D0GB223JA002
R614	ERJ3GEYJ123V	1/16W 12K	1	
R615	ERJ3GEYJ682V	1/16W 6.8K	1	D0GB682JA002
R616	ERJ3GEYJ472V	1/16W 4.7K	1	
R617	ERJ3GEYJ332V	1/16W 3.3K	1	D0GB332JA002
R618	ERJ3GEYJ222V	1/16W 2.2K	1	
R619	ERJ3GEYJ182V	1/16W 1.8K	1	
R620	ERJ3GEYJ152V	1/16W 1.5K	1	
R621	ERJ3GEYJ122V	1/16W 1.2K	1	
R622	ERJ3GEYJ102V	1/16W 1K	1	
R623	ERJ3GEYJ123V	1/16W 12K	1	
R624	ERJ3GEYJ682V	1/16W 6.8K	1	D0GB682JA002
R625	ERJ3GEYJ472V	1/16W 4.7K	1	
R626	ERJ3GEYJ332V	1/16W 3.3K	1	D0GB332JA002
R627	ERJ3GEYJ222V	1/16W 2.2K	1	
R628	ERJ3GEYJ182V	1/16W 1.8K	1	
R629	ERJ3GEYJ152V	1/16W 1.5K	1	
R630	ERJ3GEYJ122V	1/16W 1.2K	1	
R631	ERJ3GEYJ102V	1/16W 1K	1	
R801	ERJ3GEYJ102V	1/16W 1K	1	
R802	ERJ3GEYJ182V	1/16W 1.8K	1	
R803,04	ERJ3GEYJ104V	1/16W 100K	2	D0GB104JA002
R805,06	ERJ3GEYJ103V	1/16W 10K	2	D0GB103JA002
R807,08	ERJ3GEYJ223V	1/16W 22K	2	D0GB223JA002
R809	ERJ3GEYJ153V	1/16W 15K	1	
R810	ERJ3GEYJ223V	1/16W 22K	1	D0GB223JA002
R811,12	ERJ3GEYJ103V	1/16W 10K	2	D0GB103JA002
R813,14	ERJ3GEYJ332V	1/16W 3.3K	2	D0GB332JA002
R815	ERJ3GEYJ102V	1/16W 1K	1	
R816	ERJ3GEYJ471V	1/16W 470	1	
R817,18	ERJ3GEYJ473V	1/16W 47K	2	D0GB473JA002
R819-24	ERJ3GEYJ104V	1/16W 100K	6	D0GB104JA002
R825	ERJ3GEYJ102V	1/16W 1K	1	
R826	ERJ3GEYJ562V	1/16W 5.6K	1	D0GB562JA002
R827,28	ERJ3GEYJ101V	1/16W 100	2	
R829,30	ERJ3GEYJ104V	1/16W 100K	2	D0GB104JA002
R831,32	ERJ3GEYJ153V	1/16W 15K	2	
R833,34	ERJ3GEYJ223V	1/16W 22K	2	D0GB223JA002
R835,36	ERJ3GEYJ103V	1/16W 10K	2	D0GB103JA002
R837,38	ERJ3GEYJ153V	1/16W 15K	2	
R839,40	ERJ3GEYJ332V	1/16W 3.3K	2	D0GB332JA002
R841,42	ERJ3GEYJ102V	1/16W 1K	2	
R843,44	ERJ3GEYJ473V	1/16W 47K	2	D0GB473JA002
R845,46	ERJ3GEYJ104V	1/16W 100K	2	D0GB104JA002
R847,48	ERJ3GEYJ102V	1/16W 1K	2	
R849,50	ERJ3GEYJ104V	1/16W 100K	2	D0GB104JA002
R851,52	ERJ3GEYJ103V	1/16W 10K	2	D0GB103JA002
R853,54	ERJ3GEYJ223V	1/16W 22K	2	D0GB223JA002
R855,56	ERJ3GEYJ103V	1/16W 10K	2	D0GB103JA002
R857,58	ERJ3GEYJ153V	1/16W 15K	2	
R859,60	ERJ3GEYJ332V	1/16W 3.3K	2	D0GB332JA002
R861,62	ERJ3GEYJ102V	1/16W 1K	2	
R863,64	ERJ3GEYJ473V	1/16W 47K	2	D0GB473JA002
R865,66	ERJ3GEYJ104V	1/16W 100K	2	D0GB104JA002
R867	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
R2011	ERJ3GEYJ472V	1/16W 4.7K	1	
R2012	ERJ3GEYJ123V	1/16W 12K	1	
R2013	ERJ3RBD123V	1/16W 12K	1	

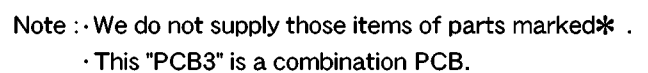
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R2014	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
R2028	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R2029-33	ERJ3GEYJ153V	1/16W 15K	5	
R2034,35	ERJ3GEYJ183V	1/16W 18K	2	D0GB183JA002
R2036	ERJ3GEYJ123V	1/16W 12K	1	
R2037	ERJ3GEYJ562V	1/16W 5.6K	1	D0GB562JA002
R2038	ERJ3GEYJ105V	1/16W 1M	1	
R2039	ERJ3GEYF153V	1/16W 15K	1	
R2040	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
R2041	ERJ3GEYD123V	1/16W 12K	1	D0HB123ZA002
R2042	ERJ3GEYJ223V	1/16W 22K	1	D0GB223JA002
R2043	ERJ3GEY0R00Z	CHIP JUMPER	1	
R2044	ERJ3GEYJ563V	1/16W 56K	1	
R2045	ERJ3GEY0R00Z	CHIP JUMPER	1	
R2046	ERJ3GEYJ153V	1/16W 15K	1	
R2502,03	ERJ3GEYJ153V	1/16W 15K	2	[SPC]
R2504,05	ERJ3GEYJ823V	1/16W 82K	2	D0GB823JA002 [SPC]
R2507	ERJ6GEYJ6R8V	1/10W 6.8	1	[SPC]
R3001	ERJ3GEYJ220V	1/16W 22	1	
R3002	ERJ3GEYJ472V	1/16W 4.7K	1	
R3003	ERJ3GEYJ101V	1/16W 100	1	
R3004	ERJ3GEYJ221V	1/16W 220	1	
R3005	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
R3007	ERJ3GEY0R00Z	CHIP JUMPER	1	
R3071	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R3080	ERA3YED752V	1/16W 7.5K	1	
R3082	ERJ3RBD242V	1/16W 2.4K	1	
R3083	ERJ3RBD162V	1/16W 1.6K	1	
R3084	ERA3YED752V	1/16W 7.5K	1	
R3085	ERJ3RBD183V	1/16W 18K	1	
R3086	ERJ3RBD432V	1/16W 4.3K	1	
R3087,88	ERA3YED752V	1/16W 7.5K	2	
R3089	ERJ3RBD392V	1/16W 3.9K	1	
R3090	ERJ3RBD302V	1/16W 3K	1	
R3101	ERA3YHD750V	1/16W 75	1	
R3104	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R3105	ERA3YHD750V	1/16W 75	1	
R3111	ERA3YHD750V	1/16W 75	1	
R3115	ERA3YHD750V	1/16W 75	1	
R3301	ERJ3GEYJ682V	1/16W 6.8K	1	D0GB682JA002
R3302	ERJ3GEYJ332V	1/16W 3.3K	1	D0GB332JA002
R3304-06	ERA3YHD750V	1/16W 75	3	
R3307	ERJ3GEYJ562V	1/16W 5.6K	1	D0GB562JA002
R4201	ERJ3GEY0R00Z	CHIP JUMPER	1	
R4211	ERJ3GEY0R00Z	CHIP JUMPER	1	
R5203	ERJ3GEYJ563V	1/16W 56K	1	[SPC]
R5204	ERJ3GEYJ223V	1/16W 22K	1	D0GB223JA002 [SPC]
R5211	ERJ3GEYJ2R2V	1/16W 2.2	1	D0GB2R2JA002 [SPC]
R5212	ERJ12YJ270H	1/2W 27	1	[SPC]
R5213	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002 [SPC]
R5214	ERJ3GEYJ223V	1/16W 22K	1	D0GB223JA002 [SPC]
R5215	ERJ3GEYJ2R2V	1/16W 2.2	1	D0GB2R2JA002 [SPC]
R5216	ERJ12YJ270H	1/2W 27	1	[SPC]
R5217	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002 [SPC]
R5221,22	ERJ3GEYJ822V	1/16W 8.2K	2	D0GB822JA002 [SPC]
R5232	ERJ3RBD123V	1/16W 12K	1	[SPC]
R5235	ERJ3GEYJ105V	1/16W 1M	1	[SPC]
R5236	ERJ3GEY0R00V	1/16W 0	1	[SPC]
R5252	ERJ3GEYJ102V	1/16W 1K	1	[SPC]
R6201	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R6202	ERA3YED151V	1/16W 150	1	
R6203	ERA3YED471V	1/16W 470	1	
R6204	ERA3YED391V	1/16W 390	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R6205	ERJ3GEYJ102V	1/16W 1K	1	
R6301	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R6302,03	ERJ3GEYJ472V	1/16W 4.7K	2	
R6512	ERJ3RBD331V	1/16W 330	1	
R6513	ERJ3GEYJ103V	1/16W 10K	1	D0GB103JA002
R6514	ERJ3GEYJ470V	1/16W 47	1	
R6515	ERJ3GEYJ100V	1/16W 10	1	
R7001	ERJ3GEYJ102V	1/16W 1K	1	
R7002	ERJ3GEYJ473V	1/16W 47K	1	D0GB473JA002
RA2031	EXBV4V273JV	1/32W 27K	1	
RA2032	EXBV4V472JV	1/32W 4.7K	1	
RA2501	EXBV8V473JV	1/16W 47K	1	[SPC]
RA3008	EXBV4V103JV	1/32W 10K	1	
RA3009,10	EXBV4V221JV	1/32W 220	2	
RA3011	EXBV4V473JV	1/32W 47K	1	
RA5231	EXBV8V101JV	1/16W 100	1	[SPC]
RA6201-04	EXBV4V103JV	1/32W 10K	4	
RA6205	EXBV8V473JV	1/16W 47K	1	
RA6206	EXBV4V473JV	1/32W 47K	1	
RA6207	EXBV4V472JV	1/32W 4.7K	1	
RA7001-03	EXBV8V473JV	1/16W 47K	3	
RJ101-28	ERJ6GEY0R00V	CHIP JUMPER	28	ERJ6GEY0R00Z
RJ150-54	ERJ3GEY0R00Z	CHIP JUMPER	5	
S1,S2	RSH1A032-U	SW,TRAY POSITION DET.	2	K0F111B00057
S3	RSH1A005-1U	SW,OPEN/CLOSE DET.	1	
S4	RSH1A91ZA-A	SW,CLAMP	1	K0L1BA000007
S5	RSP1A017-A	SW,BOTTOM	1	K0L1BB000005
S601-21	EVQ11G05R	SW,PUSH	21	
SW2501	RSH1A048-A	SWITCH	1	[SPC]
X401	RSXY8M00D01T	OSCILLATOR	1	H2B800400005
X6501	VSX1044	OSCILLATOR	1	H0J368500003

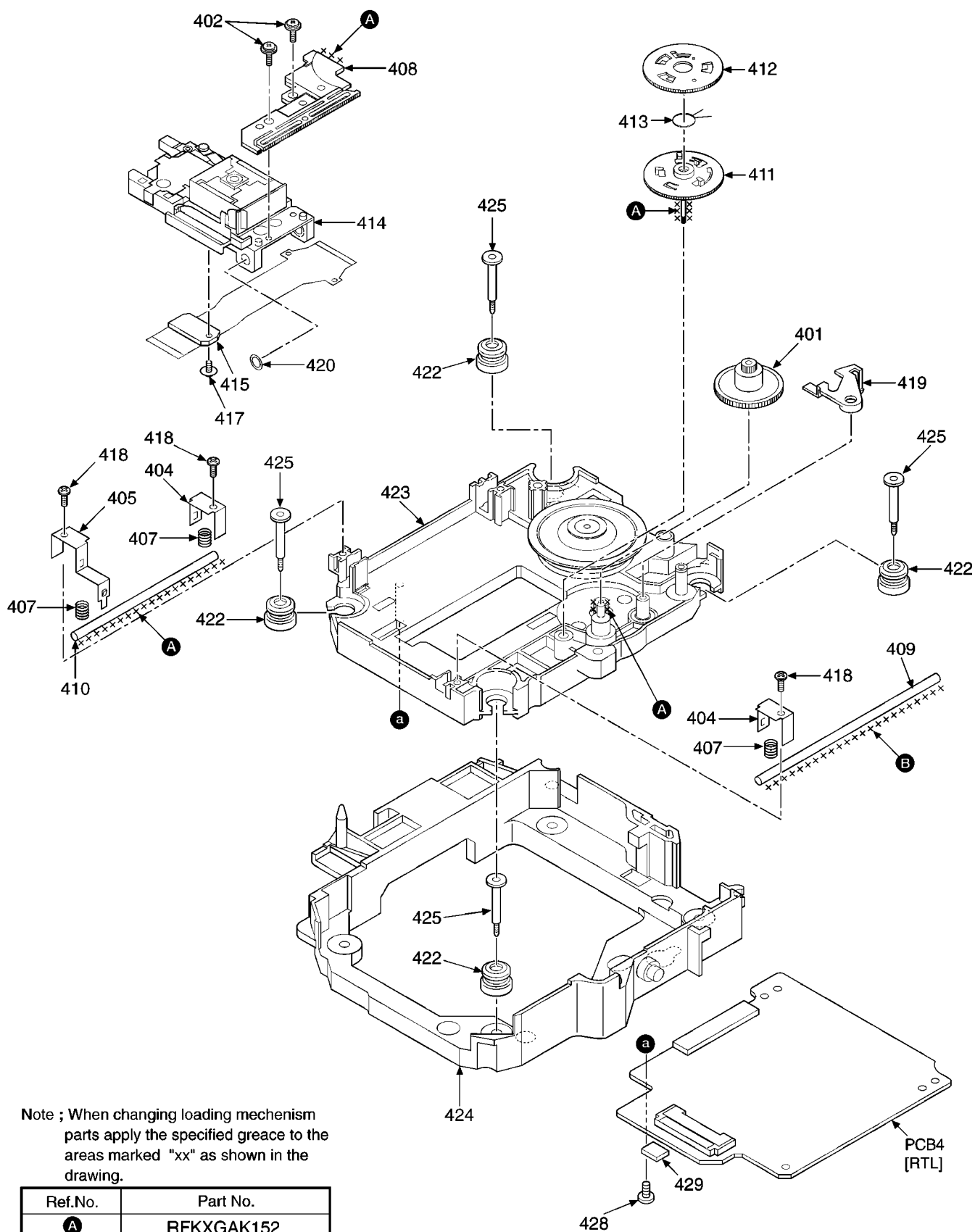
20 Cabinet parts Location



Ref.No.	Part No.
A	RFKXEM30L



22 Traverse Mechanism Parts Location



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