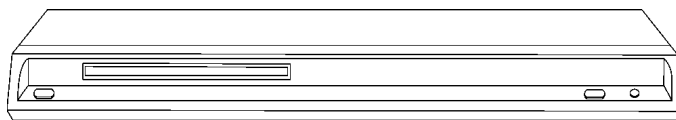


Service Manual

DVD Player



DVD-S1EE
DVD-S1GC
DVD-S1GCA
DVD-S1GCS
DVD-S1GCU
DVD-S1PL
DVD-S1PLA

DL4.5 Mechanism Series

Color

(S).....Silver Type

Specifications

Power supply: AC230V, 50 Hz
 (DVD-S1EE)
 AC110-240 V, 50/60 Hz
 (DVD-S1GC/GCA/GCS/GCU/PL)
 AC120 V, 60 Hz
 (DVD-S1PLA)

Power consumption: 10 W

Power consumption in standby mode:

approx. 1 W

Dimensions: 360 (W) × 251 (D) × 43 (H) mm

Mass: 1.8 kg (approx.)

Signal system: PAL 625/50, PAL 525/60, NTSC
 (DVD-S1GC/GCA/GCS/GCU/EE)
 NTSC
 (DVD-S1PL/PLA)

Operating temperature range: + 5 to + 35 °C

Operating humidity range: 5 to 90 % RH (no condensation)

Discs played [8 cm (3") or 12 cm (5")]:

- (1) DVD (DVD-Video)
- (2) DVD-R (DVD-Video, MP3^{*2,4}, JPEG^{*3,4})
- (3) DVD-RW (DVD-Video, MP3^{*2,4}, JPEG^{*3,4})
- (4) +R/+RW (Video)

- (5) CD, CD-R / CD-RW (CD-DA, Video CD, SVCD^{*1}, MP3^{*2,4}, JPEG^{*3,4})

- (6) DVD-R DL (DVD-Video)

- (7) +R DL (Video)

*1 Conforming to IEC62107

*2 MPEG-1 Layer 3, MPEG-2 Layer 3

*3 Exif Ver2.1 JPEG Baseline files

Picture resolution: between 320 × 240 and 6144 × 4096 pixels (Sub sampling is 4:2:2 or 4:2:0)

*4 The total combined maximum number of recognizable audio and picture contents and groups: 1000 audio and picture contents and 256 groups.

Video output:

Output level: 1 Vp-p (75 Ω)

Output terminal: Pin jack (1 system)/AV
 (DVD-S1EE)
 Pin jack (1 system)
 (DVD-S1GC/GCA/GCS/GCU/PL/PLA)

S video output:

Y output level: 1 Vp-p (75 Ω)

C output level: NTSC: 0.286 Vp-p (75 Ω)
 PAL: 0.300 Vp-p (75 Ω)

Panasonic®

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	(DVD-S1EE/GC/GCA/GCS/GCU)
	0.286 Vp-p (75 Ω)
	(DVD-S1PL/PLA)
Output terminal:	AV
	(DVD-S1EE)
	S terminal (1 system)
	(DVD-
	S1GC/GCA/GCS/GCU/PL/PLA)
Component video output:	[NTSC: 525(480)p/525(480)i,
	PAL: 625(576)p/625(576)i]
	(DVD-S1EE/GC/GCA/GCS/GCU)
	[NTSC: 525(480)p/525(480)i]
	(DVD-S1PL/PLA)
Y output level:	1 Vp-p (75 Ω)
P _B output level:	0.7 Vp-p (75 Ω)
P _R output level:	0.7 Vp-p (75 Ω)
Output terminal:	Pin jack (Y: green, P _B : blue,
	P _R : red)
Number of terminals:	1 system
RGB video output:	(DVD-S1EE)
R output level:	0.7 Vp-p (75 Ω)
G output level:	0.7 Vp-p (75 Ω)
B output level:	0.7 Vp-p (75 Ω)
Output terminal:	AV
Video performance:	
Horizontal resolution:	More than 500 lines
Video S/N ratio:	More than 65dB
Audio output:	
Output level:	2 Vrms (1 kHz, 0 dB)
Output terminal:	Pin jack/AV
	(DVD-S1EE)
	Pin jack
	(DVD-
	S1GC/GCA/GCS/GCU/PL/PLA)

Number of terminals:

2 channel: 1 system

Audio performance:

(1) Frequency response:

1 DVD (linear audio): 4 Hz-22 kHz (48 kHz sampling)
4 Hz-44 kHz (96 kHz sampling)

1 CD audio: 4 Hz-20 kHz

(2) S / N ratio:

1 CD audio: 115 dB

(3) Dynamic range:

1 DVD (linear audio): 92 dB

1 CD audio: 90 dB

(4) Total harmonic distortion:

1 CD audio: 0.003 %

Digital audio output:

Coaxial digital output: Pin jack

Pickup

Wave length: 653 nm/790 nm

Laser power: CLASS 1/CLASS 3A

Note:

Specifications are subject to change without notice.

Mass and dimensions are approximate.

Solder:

This model uses lead free solder (PbF).

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MPEG Layer-3 audio decoding technology licensed from Fraunhofer IIS and Thomson multimedia.

⚠ WARNING

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

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1 SAFETY PRECAUTIONS

1.1. GENERAL GUIDELINES

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

1.1.1. LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between $1M\Omega$ and $5.2M\Omega$.

When the exposed metal does not have a return path to the chassis, the reading must be ∞ .

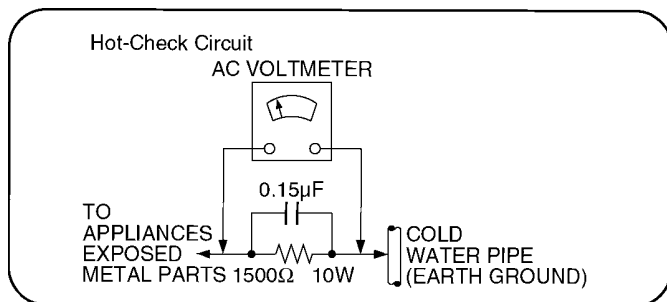


Figure 1

1.1.2. LEAKAGE CURRENT HOT CHECK (See Figure 1.)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a $1.5k\Omega$, 10 watts resistor, in parallel with a $0.15\mu F$ capacitors, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 or

Caution

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

3 PRECAUTION OF LASER DIODE

CAUTION:

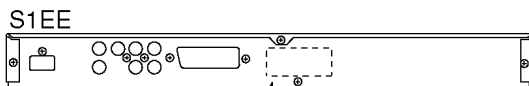
This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pickup lens.

Wave length: 653 nm/790 nm

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

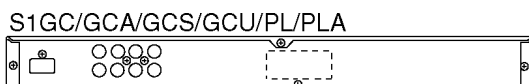
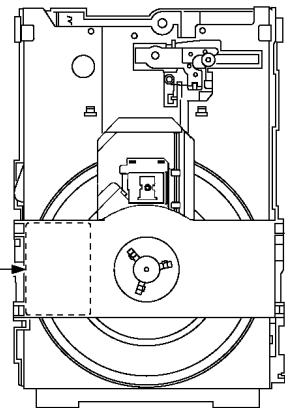
Laser radiation from the pickup lens is safety level, but be sure the followings:

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.



**CLASS1
LASER PRODUCT**

CAUTION	- LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM.	FDA 21 CFR / Class II
CAUTION	- VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.	IEC60825-1 / Class 2b
ATTENTION	- RAYONNEMENT LASER VISIBLE ET INVISIBLE EN CAS D'OUVERTURE. EXPOSITION DANGEREUSE AU FAISCEAU.	
ADVARSEL	- SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING. UNNGÅ UDSÆTTELSE FOR STRÅLING.	
VARO!	- AVATTAESSA OLET ALTIINNA NÄKYVÄÄ JA NÄKYMÄTÖN LASERSTRÄLVIÄ. ÄLÄ KATSO SÄTEESSEEN.	
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 LASERSTRAHLUNG, 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、可視及び不可視レーザー光が出ます。 ビームを見たり、触れたりしないでください。	RQLCA0141



**CLASS1
LASER PRODUCT**

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.

4 SERVICE CAUTION BASED ON LEGAL RESTRICTIONS

4.1. General description about Lead Free Solder (PbF)

The lead free solder has been used in the mounting process of all electrical components on the printed circuit boards used for this equipment in considering the globally environmental conservation.

The normal solder is the alloy of tin (Sn) and lead (Pb). On the other hand, the lead free solder is the alloy mainly consists of tin

(Sn), silver (Ag) and Copper (Cu), and the melting point of the lead free solder is higher approx.30°C (86°F) more than that of the normal solder.

Definition of PCB Lead Free Solder being used

The letter of "PbF" is printed either foil side or components side on the PCB using the lead free solder. (See right figure)
--

PbF

Service caution for repair work using Lead Free Solder (PbF)

- The lead free solder has to be used when repairing the equipment for which the lead free solder is used. (Definition: The letter of "PbF" is printed on the PCB using the lead free solder.)
- To put lead free solder, it should be well molten and mixed with the original lead free solder.
- Remove the remaining lead free solder on the PCB cleanly for soldering of the new IC.
- Since the melting point of the lead free solder is higher than that of the normal lead solder, it takes the longer time to melt the lead free solder.
- Use the soldering iron (more than 70W) equipped with the temperature control after setting the temperature at 350±30°C (662±86°F).

Recommended Lead Free Solder (Service Parts Route.)

The following 3 types of lead free solder are available through the service parts route.

- RFKZ03D01K----- (0.3mm 100g Reel)
- RFKZ06D01K----- (0.6mm 100g Reel)
- RFKZ10D01K----- (1.0mm 100g Reel)

Note

- * Ingredient: tin (Sn) 96.5%, silver (Ag) 3.0%, Copper (Cu) 0.5%, Cobalt (Co) / Germanium (Ge) 0.1 to 0.3%

5 PREVENTION OF STATIC ELECTRICITY DISCHARGE

The laser diode in the traverse unit (optical pickup) may brake down due to static electricity of clothes or human body. Use due caution to electrostatic breakdown when servicing and handling the laser diode.

5.1. Grounding for electrostatic breakdown prevention

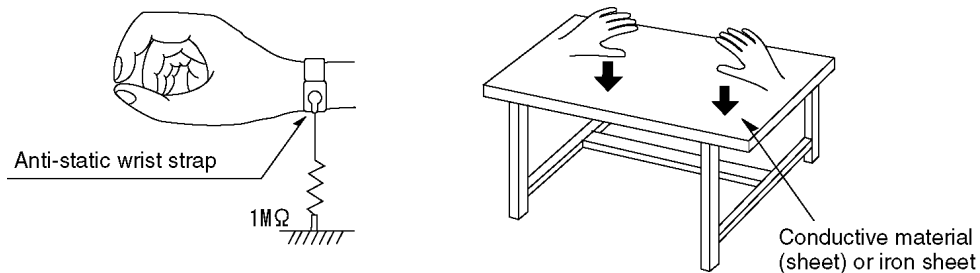
Some devices such as the DVD player use the optical pickup (laser diode) and the optical pickup will be damaged by static electricity in the working environment. Proceed servicing works under the working environment where grounding works is completed.

5.1.1. Worktable grounding

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

5.1.2. Human body grounding

1. Use the anti-static wrist strap to discharge the static electricity form your body.



5.1.3. Handling of optical pickup

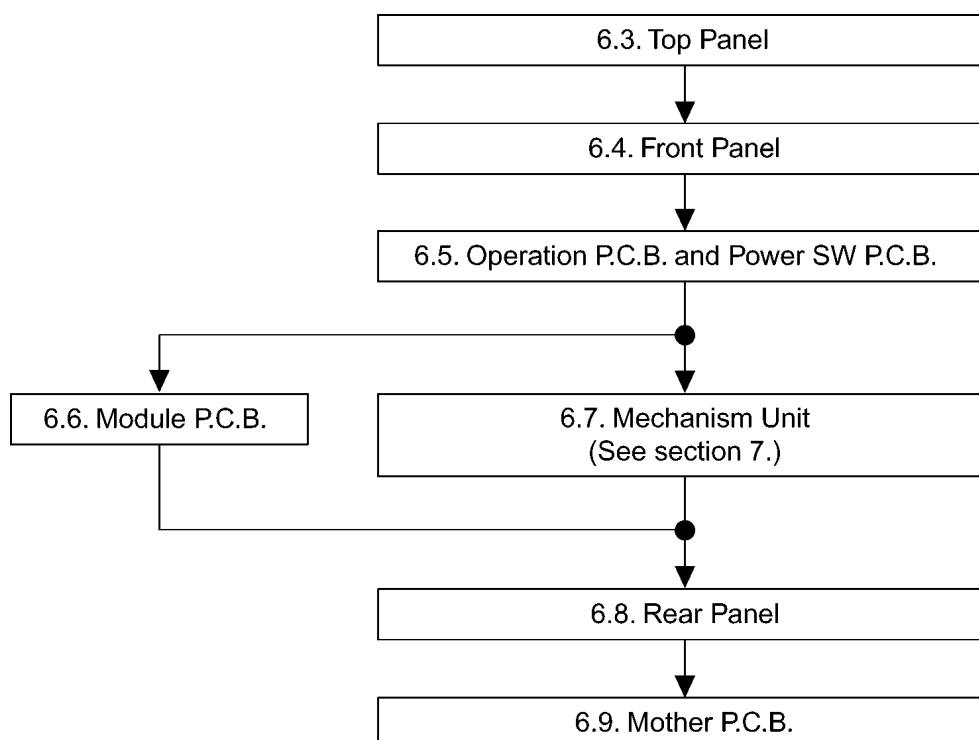
1. To keep the good quality of the optical pickup maintenance parts during transportation and before installation, the both ends of the laser diode are short-circuited. After replacing the parts with new ones, remove the short circuit according to the correct procedure. (See this Technical Guide.)
2. Do not use a tester to check the laser diode for the optical pickup. Failure to do so will damage the laser diode due to the power supply in the tester.

5.2. Handling Precautions for Traverse Unit (Optical Pickup)

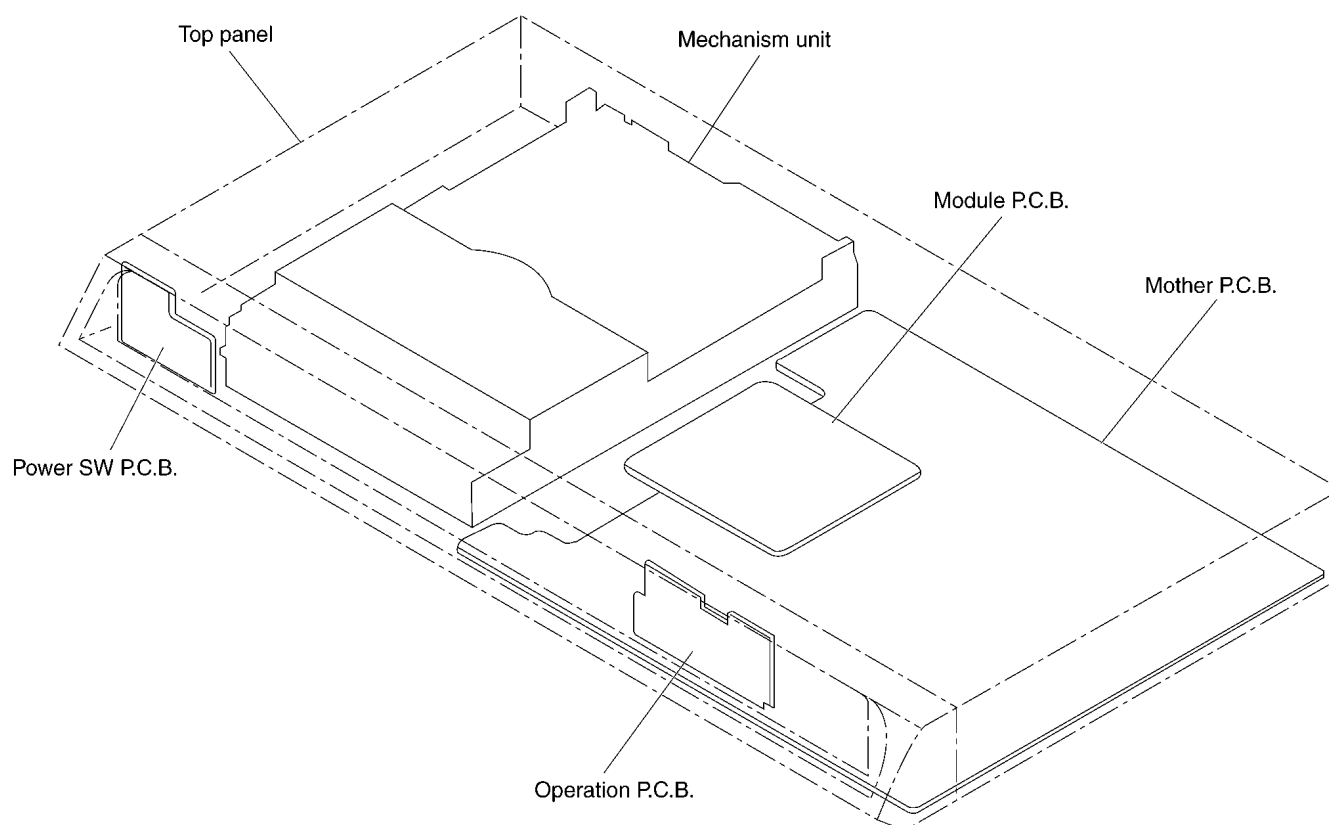
1. Do not give a considerable shock to the traverse unit (optical pickup) as it has an extremely high-precise structure.
2. When replacing the optical pickup, install the flexible cable and cut its short land with a nipper. See the optical pickup replacement procedure in this Technical Guide. Before replacing the traverse unit, remove the short pin for preventing static electricity and install a new unit. Connect the connector as short times 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.

6 DISASSEMBLING THE CASING AND CHECKING P.C.B.S

6.1. Disassembly Procedure

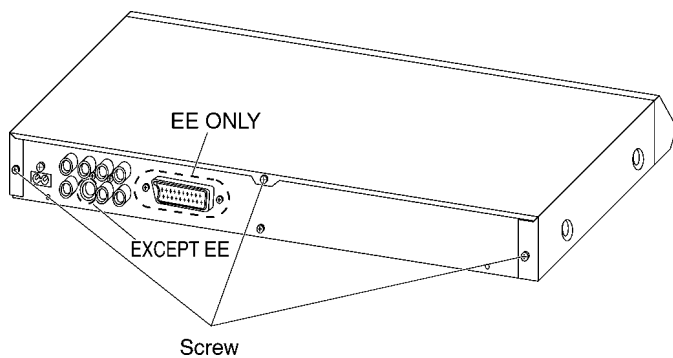
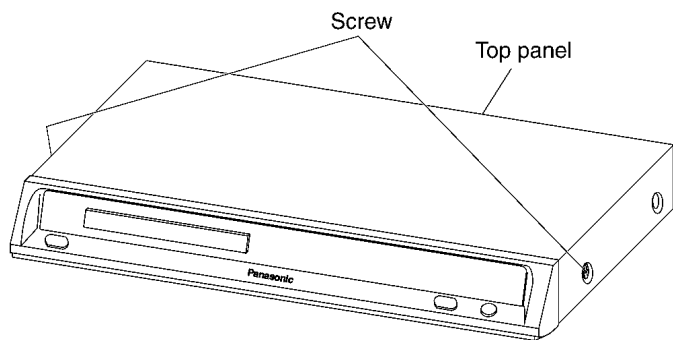


6.2. Casing Parts and P.C.B. Positions



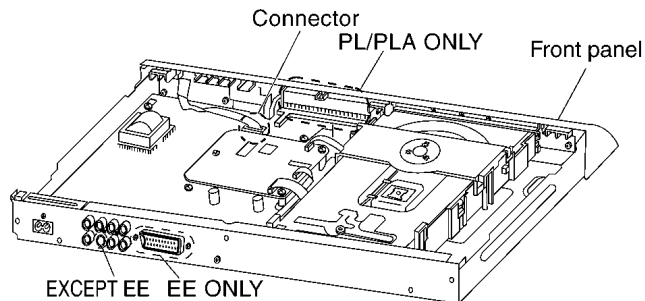
6.3. Top Panel

1. Unscrew the screws.

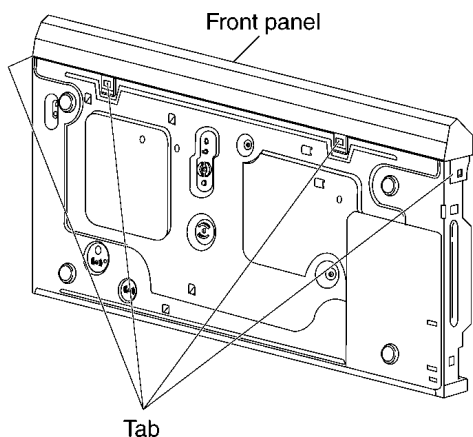


6.4. Front Panel

1. Release the connector.

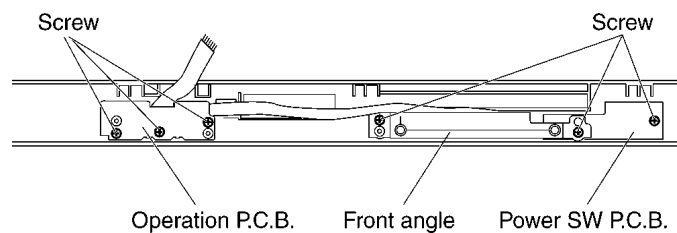


2. Release the tabs.



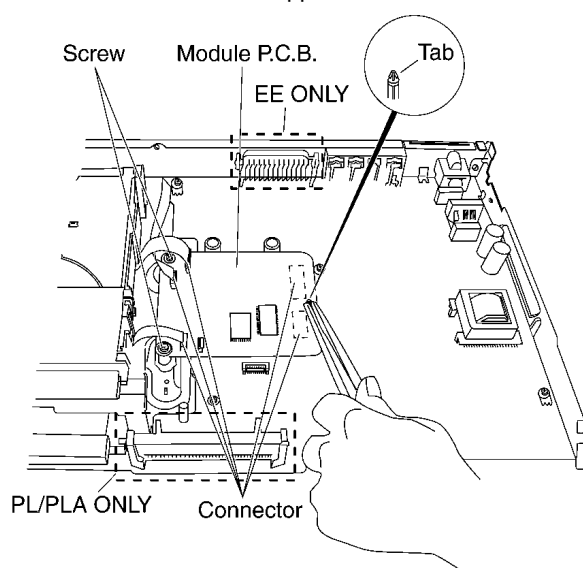
6.5. Operation P.C.B. and Power SW P.C.B.

1. Unscrew the screws.



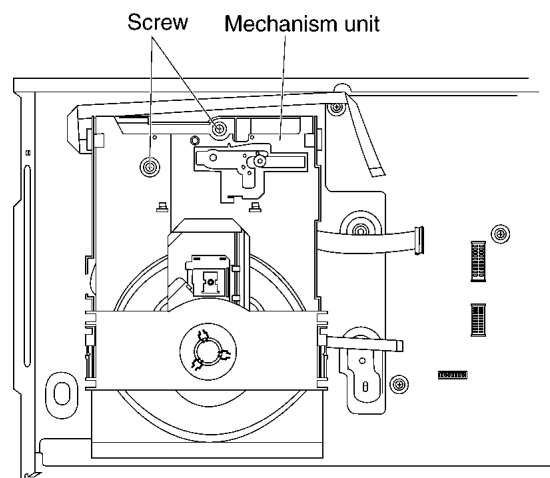
6.6. Module P.C.B.

1. Remove the connectors.
2. Unscrew the screws.
3. Press each tab with the nipper to module P.C.B. vertically.

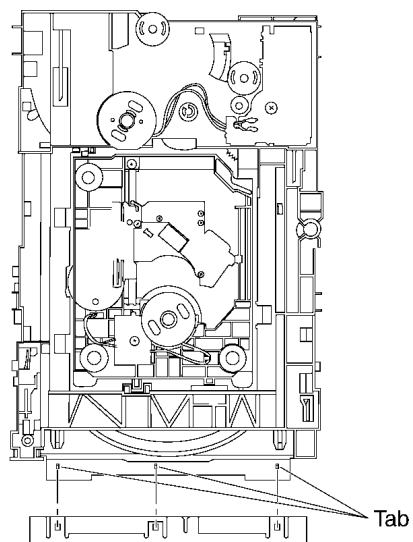


6.7. Mechanism Unit

1. Unscrew the screws.

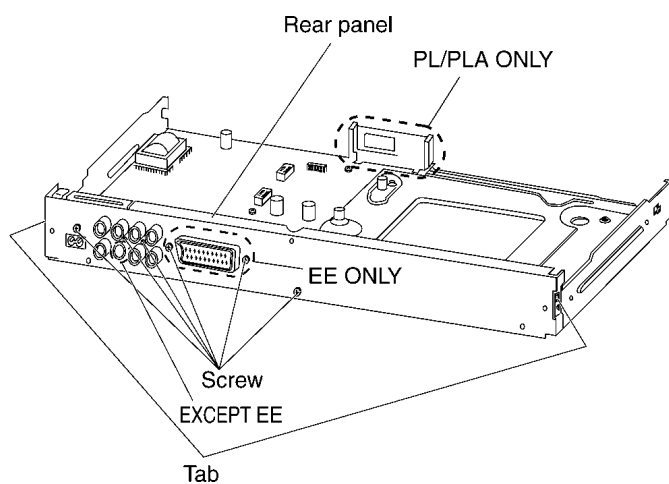


2. Release the tabs.



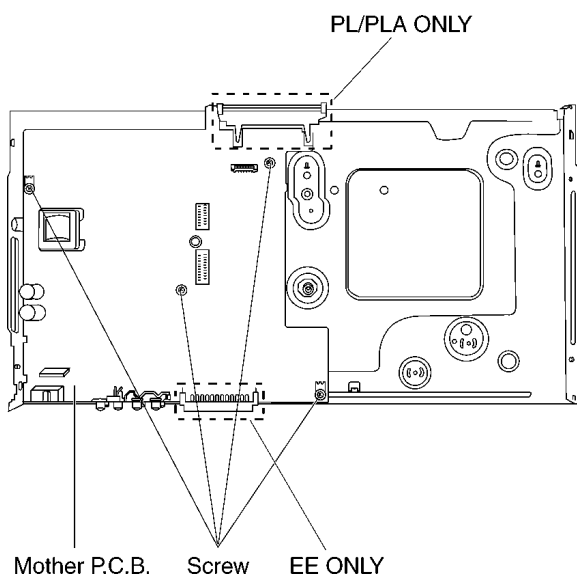
6.8. Rear panel

1. Unscrew the screws.
2. Release the tabs.



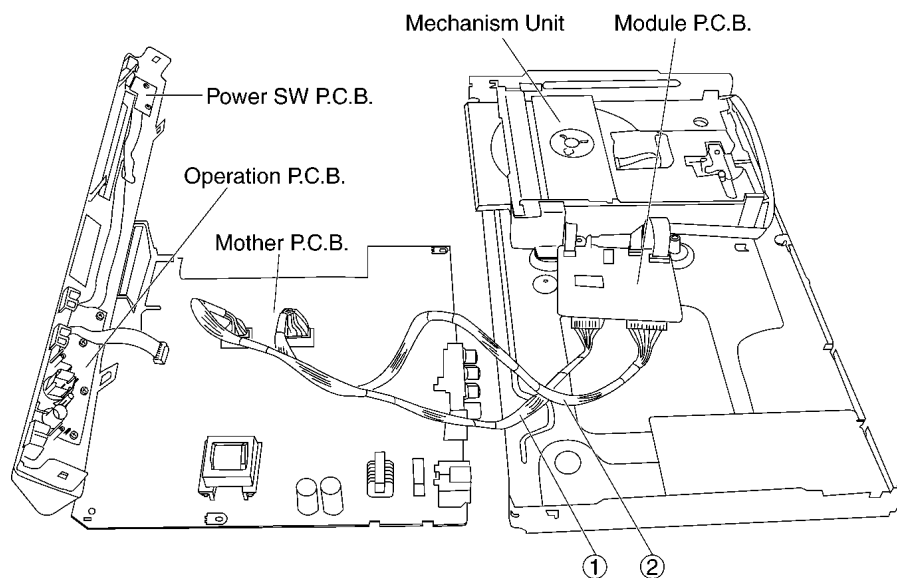
6.9. Mother P.C.B.

1. Unscrew the screws.

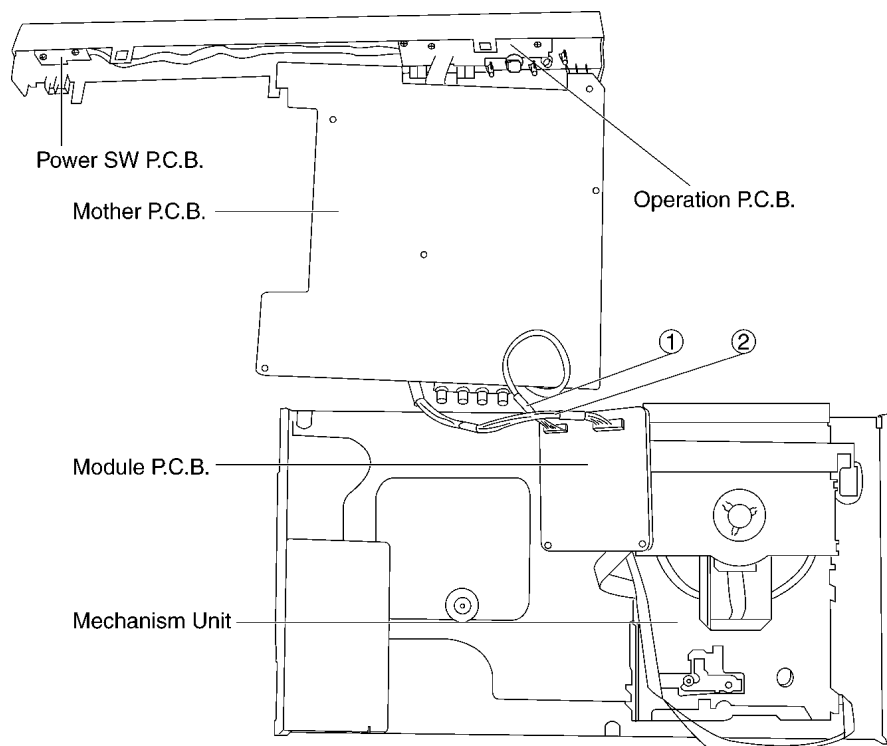


6.10. Service Position

6.10.1. Servicing position of the Module P.C.B.



6.10.2. Servicing position of the Mother P.C.B.

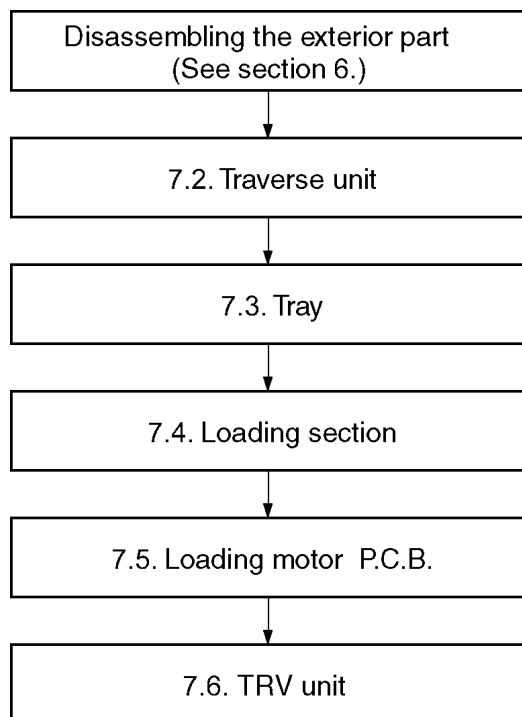


6.10.3. List of the Extension Cables

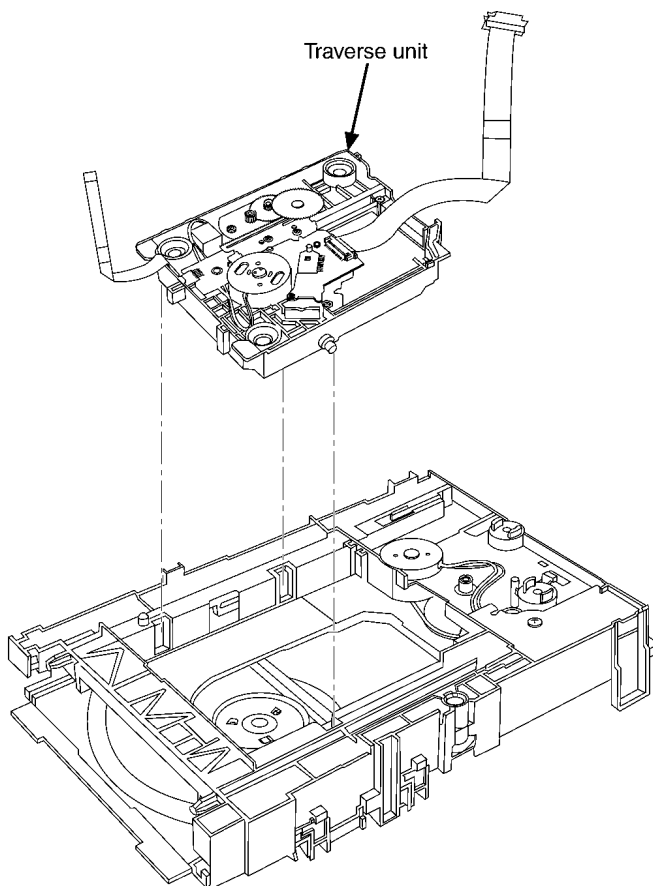
①	VUC8026	14pins	PS8101(Module P.C.B.) — FP3501(Mother P.C.B.)
②	RFKZ0106	20pins	PS8301(Module P.C.B.) — FP3502(Mother P.C.B.)

7 ASSEMBLING AND DISASSEMBLING THE MECHANISM UNIT

7.1. Disassembly Procedure

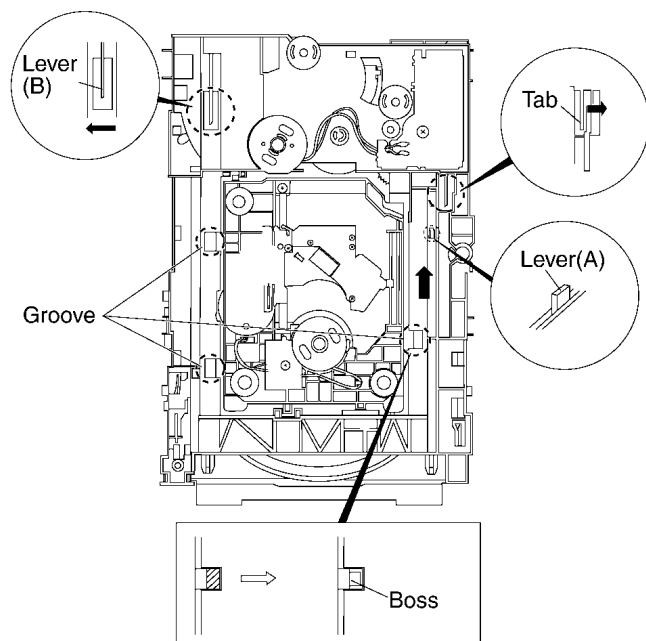


4. Remove the traverse unit



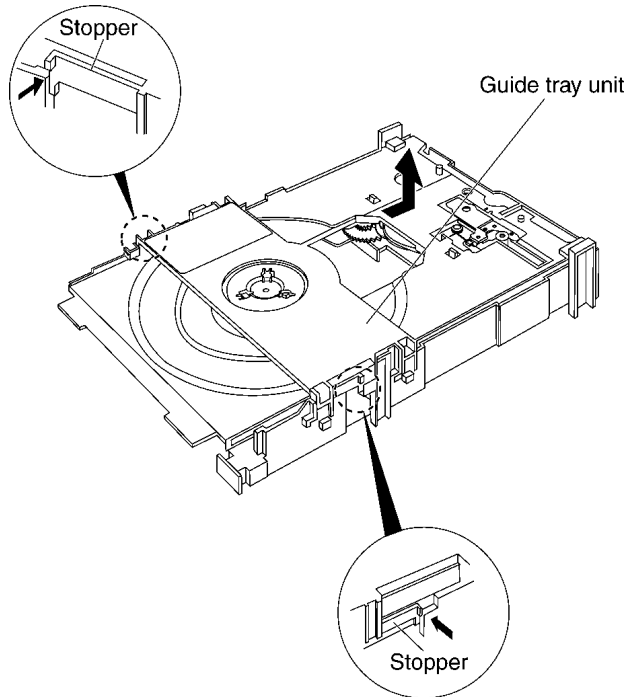
7.2. Traverse Unit

1. Slide the lever (A) in the arrow direction (to the opposite side) till it stops.
2. Slide the lever (A) further by bending the tab at the right side of the lever A in the right direction. (The right groove opens and the boss becomes seen.)
3. Open the lever (B) to left. (The 2 grooves at the left side open.)

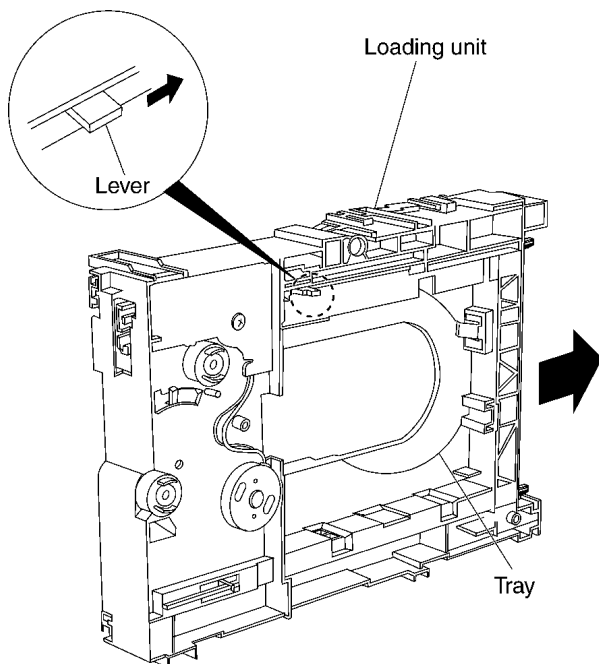


7.3. Tray

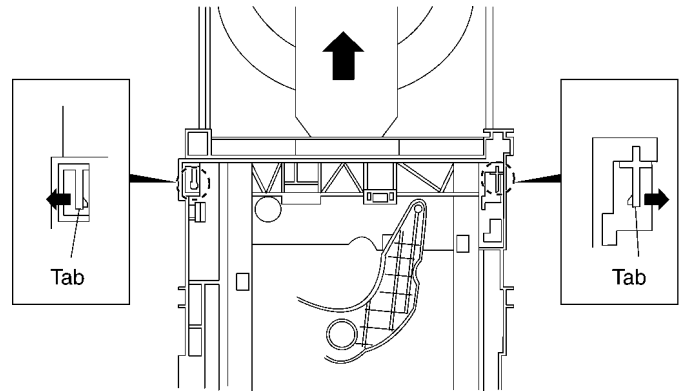
1. Slide the guide tray unit while pressing the stopper in the arrow direction, and remove the guide tray unit.



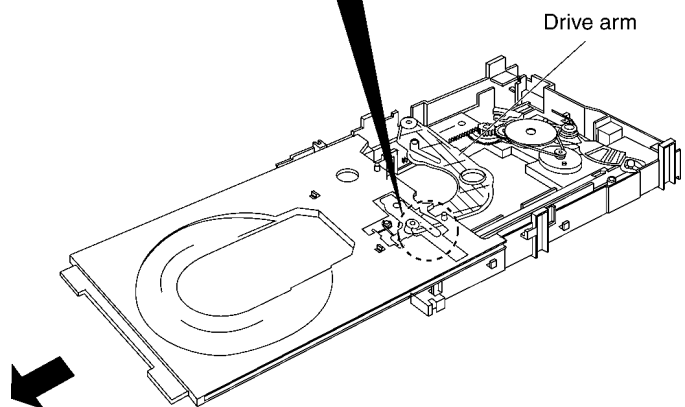
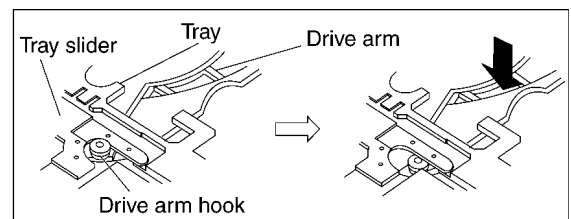
2. Raise the loading unit.
3. Slide the lever in the arrow direction till it stops and pull the tray out.



4. Spread the tabs at the both sides and pull the tray out. (The tray slides a little forward and stops.)

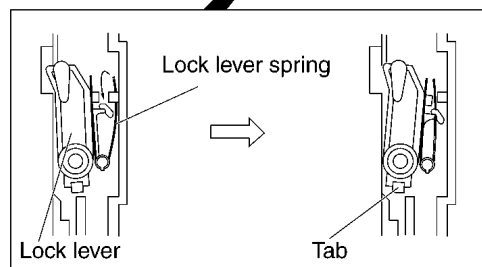
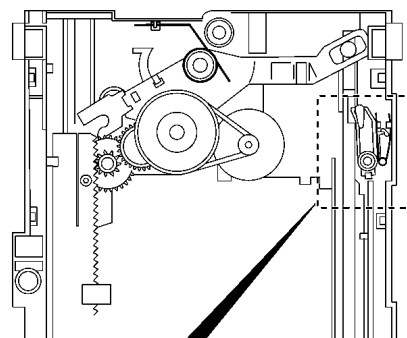
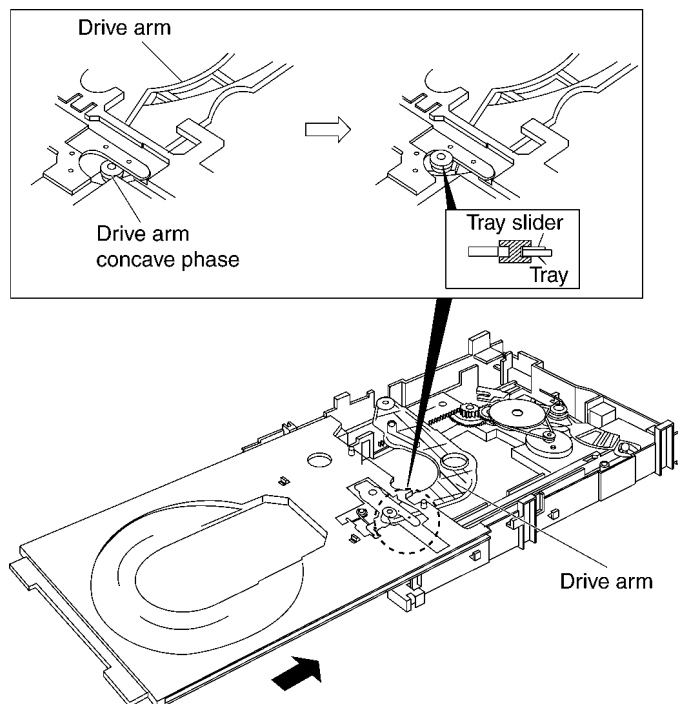


5. Remove the drive arm concave phase from the tray slider and tray.



<Assembling the tray unit>

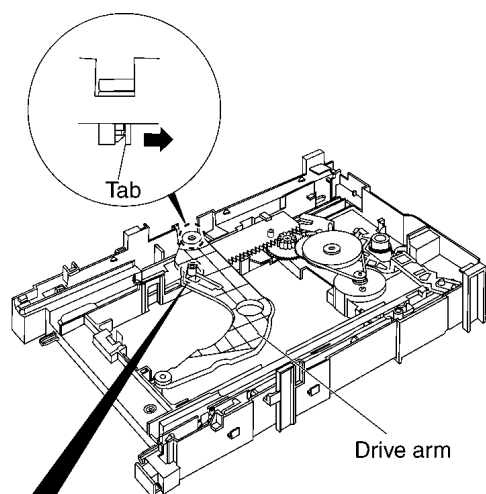
5. Make sure that the tray and the drive arm move smoothly.



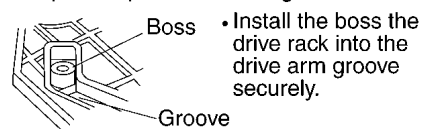
4. Remove the belt.
5. Unlock the tab and remove the pulley.
6. Remove the relay gear.

7.4. Loading section

1. Spread the tabs at the both sides and push out the drive arm shaft.

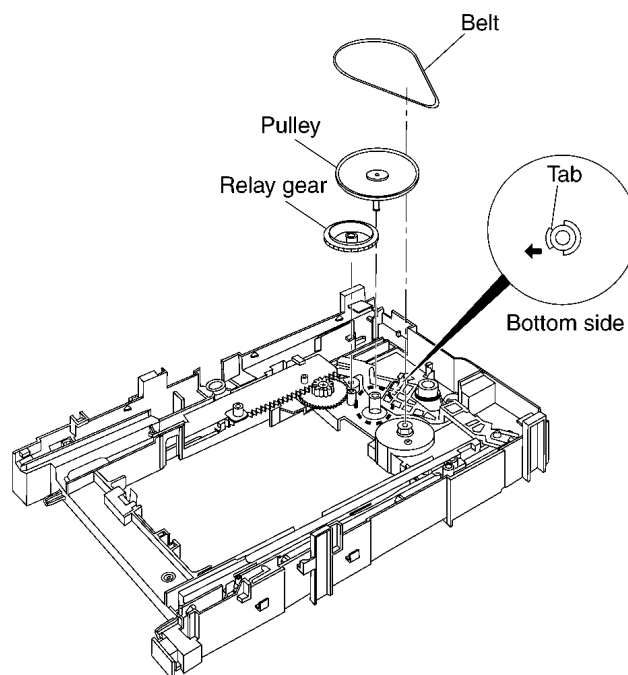


■ Important point in installing the drive rack



- Install the boss the drive rack into the drive arm groove securely.

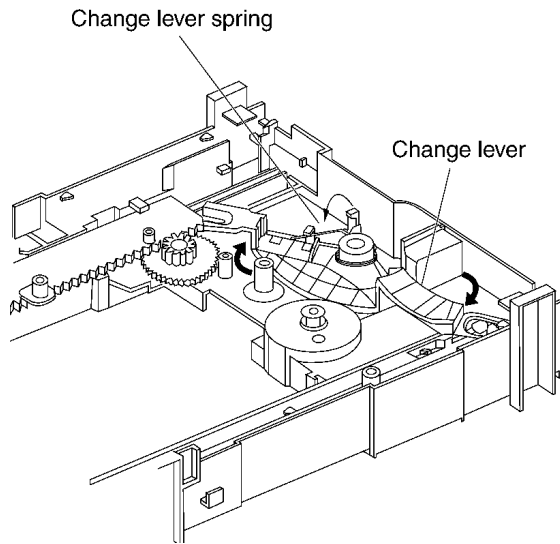
2. Hook the lock lever spring on the lock lever projection part temporarily.
3. Unlock the tab and remove the lock lever.



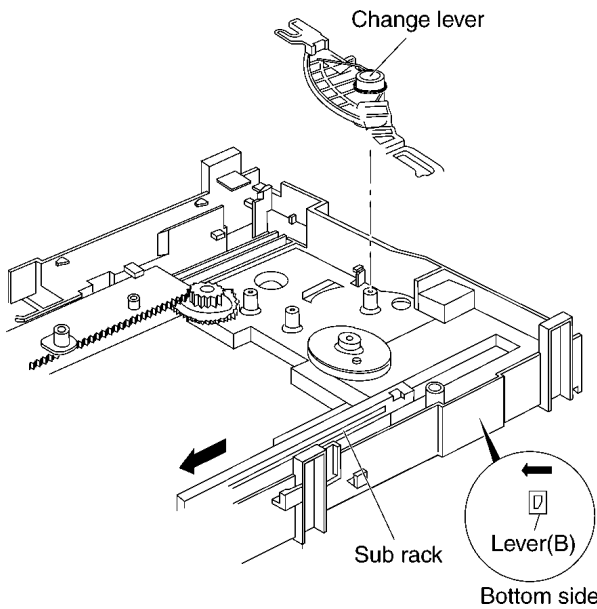
7. Turn the change lever in the arrow direction till it stops.
8. Hook the change lever spring on the change lever project part temporarily.

7.5. Loading motor P.C.B.

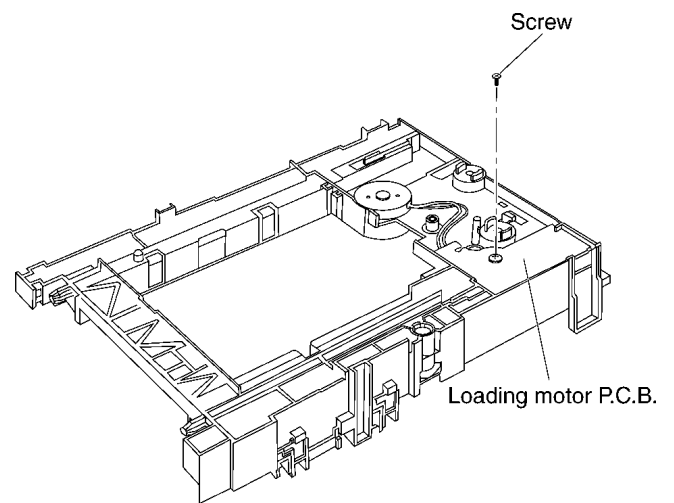
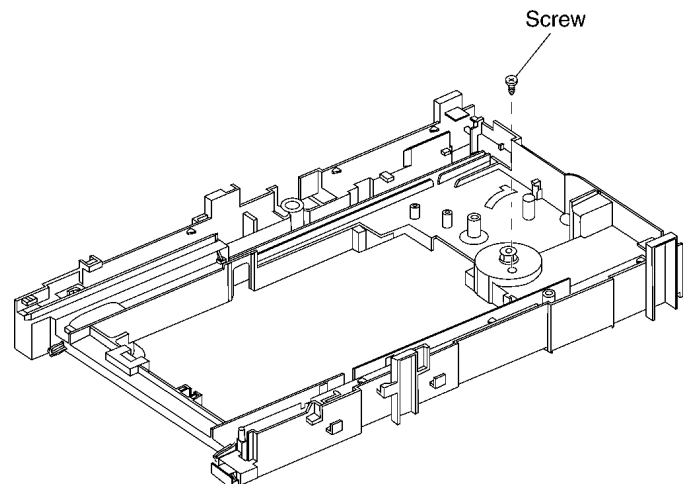
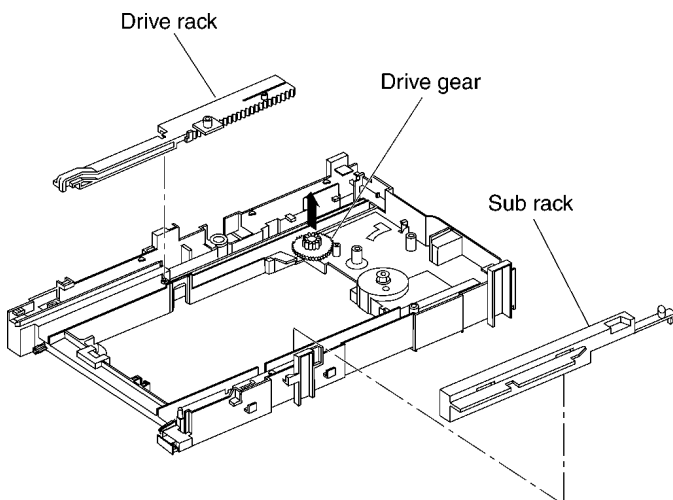
1. Unscrew the screws.



9. Pull the lever (B) in the bottom side to your side and remove the change lever.



10. Remove the drive rack, the sub rack and the drive gear.

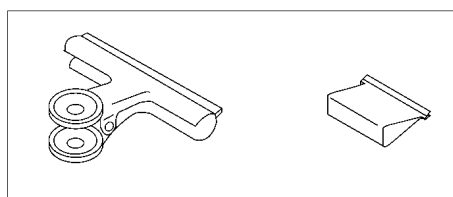
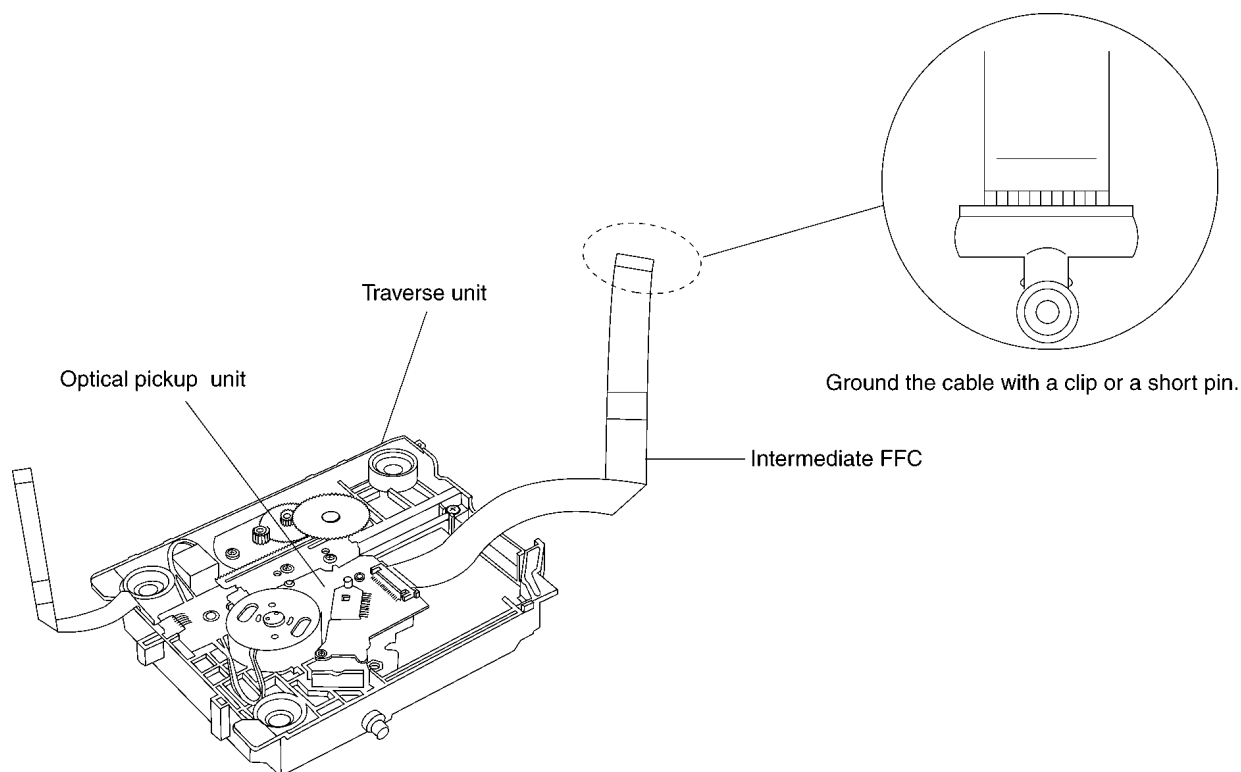


7.6. TRV Unit

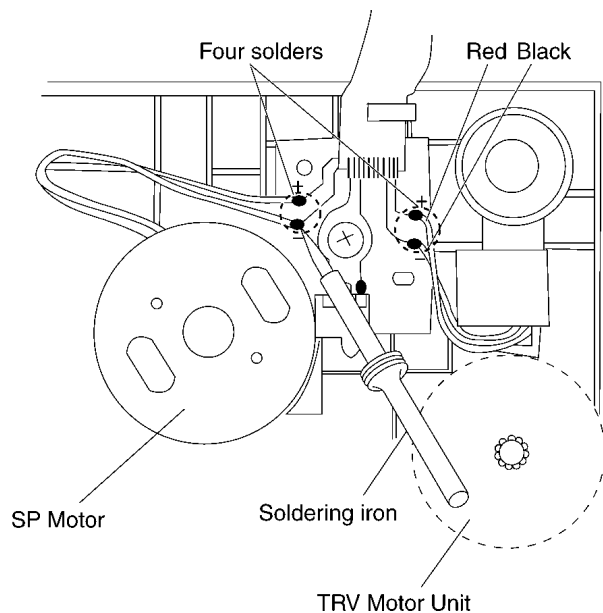
7.6.1. Cautions to Be Taken in Handling the TRV Unit

The laser diode in the TRV unit may be damaged due to electrostatic discharge generating from clothes or human body. Use due caution to electrostatic discharge damage when servicing the laser diode.

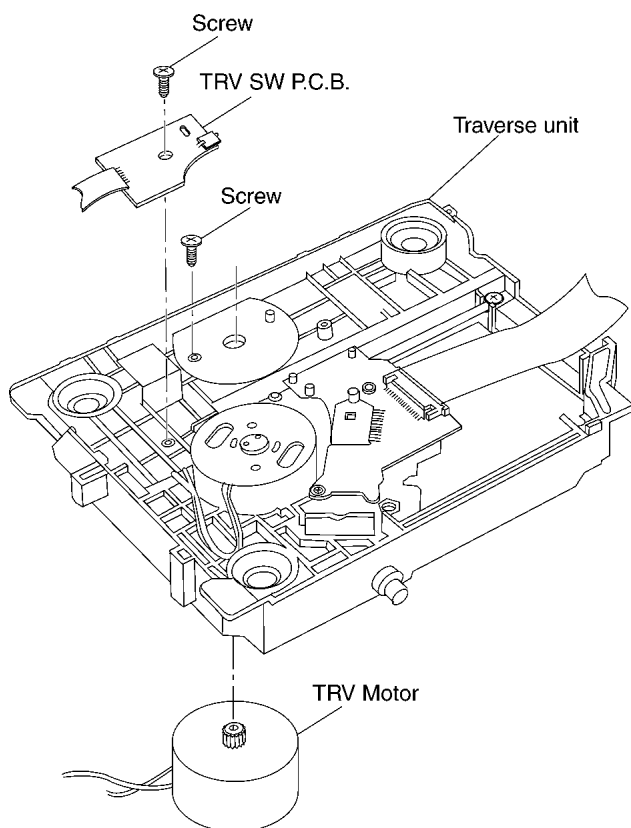
1. Do not give a considerable shock to the TRV unit as it has an extremely high-precise structure.
2. To prevent the laser diode from the electrostatic discharge damage, the Intermediate FFC of the TRV unit removed from the PCB should be short-circuited with a short pin or a clip.
3. The Intermediate FFC may be cut off if an excessive force is applied to it. Use caution when handling the Intermediate FFC.



Clip or Short pin



7. Unscrew the screws, then remove the TRV Motor and TRV SW P.C.B. Unit.



<Assembling the TRV unit>

1. After replacing the TRV Unit and connecting the 22P FFC, remove the solder on the optical pickup unit.

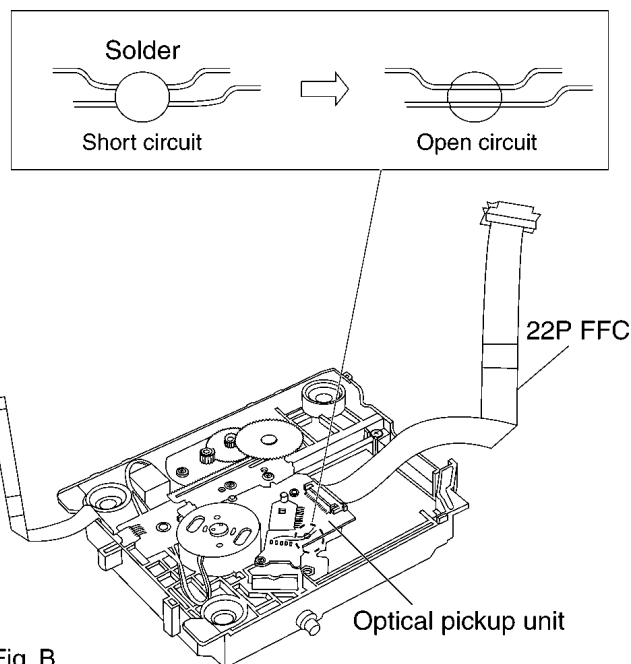
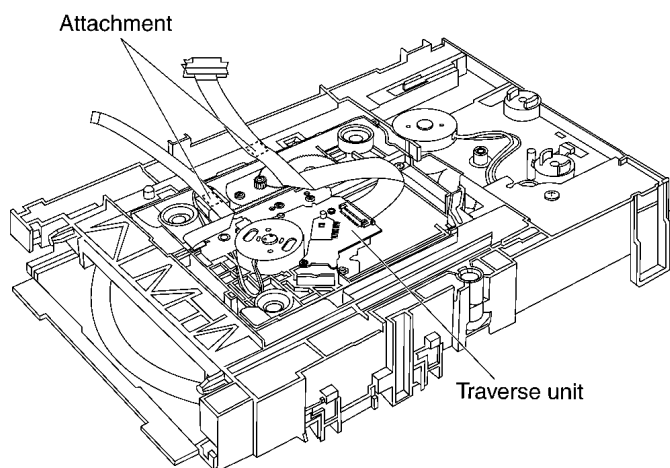


Fig. B

Caution

- Do not give a considerable shock to the optical pickup unit as it has an extremely high-precise structure.
- Do not touch the lens in the optical pickup unit.

2. The FFC is fixed as shown below.



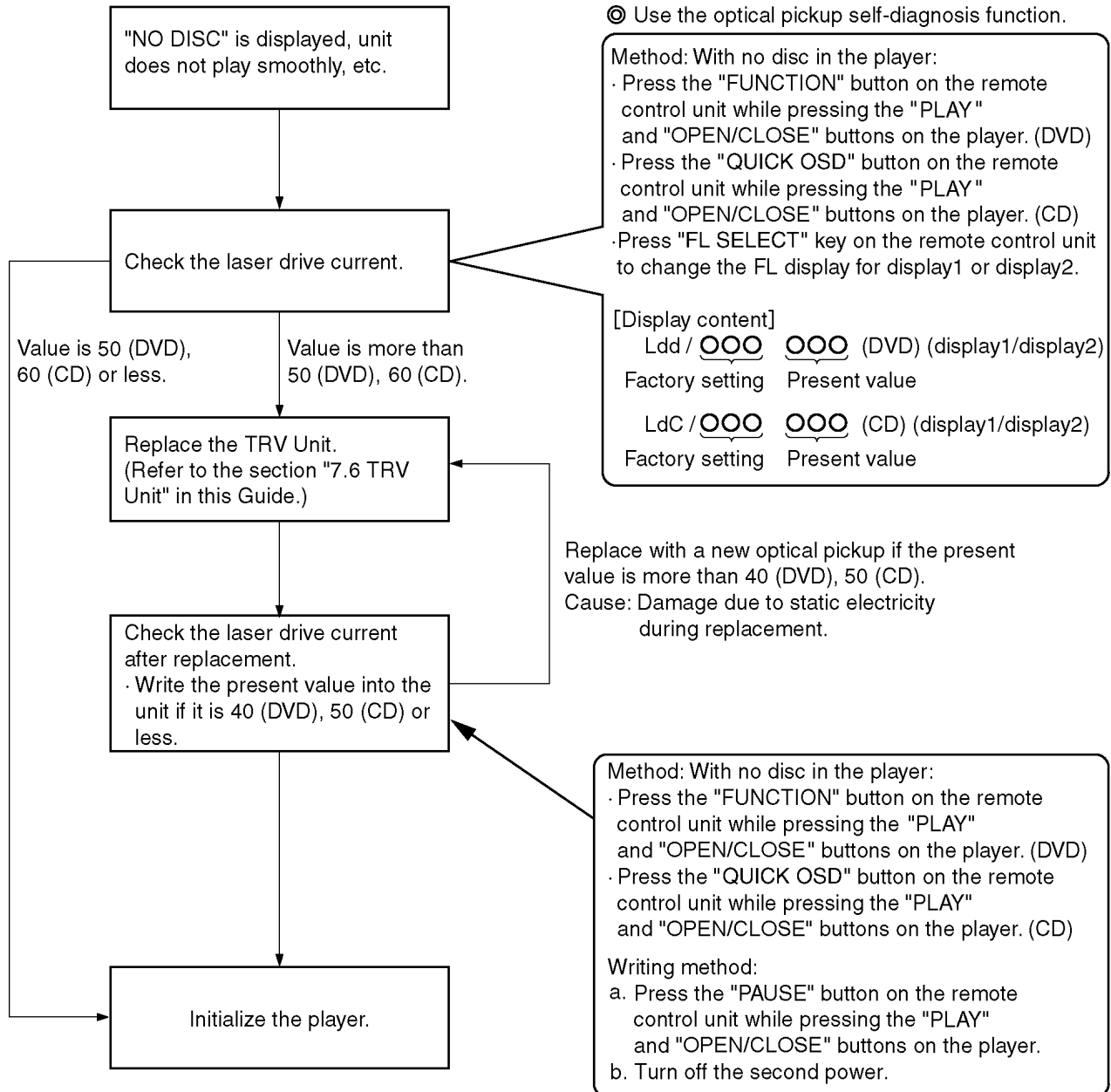
8 SELF-DIAGNOSIS FUNCTION AND SERVICE MODES

8.1. Optical Pickup Breakdown Diagnosis

The optical pickup self-diagnosis function has been included in this unit. When repairing, use the following procedure for effective Self-diagnosis. Be sure to use the self-diagnosis function before replacing the TRV Unit when "NO DISC" is displayed. As a guideline, you should replace the TRV Unit 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.)



8.2. Service Mode Table 1

The service modes can be activated by pressing various button combination on the player and remote control unit. please carry out your operation based on the remote control supplied with Panasonic DVD player of previous models.

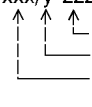
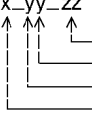
Player buttons	Remote control unit buttons	Application	Note
PLAY + OPEN/CLOSE	0	Displaying the UHF display F _ _ _	Refer to section 8.3. Self-Diagnosis Function (UHF Display).
	5	Jitter check, tilt adjustment *Display shows J_ xxx/yyy_zz "yyy" and "zz" shown to the right have nothing to do with the jitter value. "yyy" is the error counter, while "zz" is the focus drive value.	
	6	Checking the region numbers and broadcast system	
	7	Checking the program version	Check the IC8651 FLASH ROM program.
	9	Lighting Confirmation Function of Display Tube	
	FUNCTION	Checking the laser drive current	Refer to section 8.1. Optical Pickup Replacement Procedure.
	PAUSE	Writing the laser drive current value after replacing the optical pickup (do not use for anything other than optical pickup replacement)	
	POWER	Initializing the DVD player (restoring factory preset settings)	Refer to section 8.5. Initializing the DVD player.

8.3. DVD Self Diagnostic Function-Error Code

Error Code	Error Content	Additional error explanation	Defect 1	Defect 2	Defect 3	Defect 4
U11	Focus error	Focus coil, FE signal error	TRV Unit	DV4.1 (IC8001)		
H01	Tray loading error	LD motor error, DV4.1 (IC8001) error	LD Motor	IC8251		
H02	Spindle servo error	(Spindle servo, DV4.1 (IC8001) SP motor, CLV servo error)	LD Motor	DV4.1 (IC8001)		
H03	Traverse servo error	Traverse servo, DV4.1 (IC8001) , TRV motor error	TRV Motor	DV4.1 (IC8001)		
H04	Tracking servo error	Tracking coil, DV4.1 (IC8001) error	TRV Unit	DV4.1 (IC8001)		
H05	Seek error	TRV Motor, IC8251 error	TRV Motor	IC8251		
H07	Spindle motor drive					

8.4. Last Error Code saved during NO PLAY

Error code	Error Content	Condition	Available buttons
F0C0	DVD : Cannot playback because it is not DVD Video	The DVD-ROM/-R/-RW/+R/+RW is not MP3/JPEG/DVD-Video format	POWER, OPEN/CLOSE
F0C1	DVD : Prohibited by the restricted region code	The region code of DVD is not right .	POWER, OPEN/CLOSE
F0C2	DVD : PAL restricted playback	When put the DVD-PAL disc into the NTSC only player	POWER, OPEN/CLOSE
F0C3	DVD : Parental lock setting prohibits the playback of the entire title	"LOCK ALL" of the DISC-RATINGS has been chose.	POWER, OPEN/CLOSE

Item	Player mode and button combination	Function	Display	Cancellation method
Version display	In STOP (no disc) or PLAY mode, press PLAY and OPEN/CLOSE buttons on the player, and "7" button on the remote control unit. (Press "FL SELECT" key on the remote control unit to change the FL display for Display1 or Display2.)	Version display	xxx/y zzz(display1/display2)  ※ When check this item, connect this player to monitor TV and check with watching the display shown on the monitor.	Cancelled automatically 5 seconds later.
Lighting of display tube	In any mode, press PLAY and OPEN/CLOSE buttons on the player, and "9" button on the remote control unit.	Lighting of display tube	_____	Repeat the same operation.
Dealer's lock	In PLAY mode, press PLAY and OPEN/CLOSE buttons on the player, and QUICK REPLAY button on the remote control unit.	Dealer's lock The lock is switched ON or OFF. When dealer's lock is ON, it prohibits switching off of the secondary power and tray opening. When the lock is switched, its ON/OFF status is stored in FLASH ROM.	· "LOC" 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. · "UNLOC" sign appears when dealer's lock is switched off.	Repeat the same operation.
Initialization	In STOP (no disc) mode, press PLAY, POWER and OPEN/CLOSE buttons on the player for 3 seconds or longer.	Initialization User settings are cancelled and player is initialized to factory setting.	"INI"	
All reset	When initialization by the user is being performed, and "INI" is displayed on the FL, press PLAY and OPEN/CLOSE buttons on the player.	Initialization User settings are cancelled and player is initialized to factory setting. All of the error codes saved in the FROM are cancelled.	RESET	
Region display	In STOP (no disc) or PLAY mode, press PLAY and OPEN/CLOSE buttons on the player, and "6" button on the remote control unit.	Region display	x_yy_zz  Panel controller jumper information N: NTSC / 6: PAL60 N: noPAL / P: PAL Region No.	Cancelled automatically 5 seconds later.

Item	Player mode and button combination	Function	Display	Cancellation method
Timer 1 check	In STOP (no disc) mode, press PLAY and OPEN/CLOSE buttons on the player, and "1" button on the remote control unit. (Press "FL SELECT" key on the remote control unit to change the FL display for Display1 or Display2.	Timer 1 check Laser operation timer Operation time is measured separately for DVD laser and CD laser.	t11234/5678(display1/display2) Shown to the display1 is DVD laser time, and to the display2 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 PLAY and OPEN/CLOSE buttons on the player, and "2" button on the remote control unit. (Press "FL SELECT" key on the remote control unit to change the FL display for Display1 or Display2.	Timer 1 reset Laser operation timer Operation time of both DVD laser and CD laser is reset all at once.	t10000/0000(display1/display2)	Cancelled automatically 5 seconds later.
Timer 2 check	In STOP (no disc) mode, press PLAY and OPEN/CLOSE buttons on the player, and "3" button on the remote control unit. (Press "FL SELECT" key on the remote control unit to change the FL display for Display1 or Display2.	Timer 2 check Spindle motor operation timer	t21234/5(display1/display2) Time is shown in 5 digits of decimal notation in a unit of 1 hours. "00000" will follow "99999".	Cancelled automatically 5 seconds later.
Timer 2 reset	While displaying Timer 2 data, press PLAY and OPEN/CLOSE buttons on the player and "8" button on the remote control unit. (Press "FL SELECT" key on the remote control unit to change the FL display for Display1 or Display2.	Timer 2 reset Spindle motor operation timer	t20000/0(display1/display2)	Cancelled automatically 5 seconds later.

8.6. 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. "LOC" is displayed on the unit, and ordinary operation is disabled.

8.6.1. Setting

The sales demonstration lock is set by simultaneously pressing PLAY and OPEN/CLOSE buttons on the player and QUICK REPLAY button on the remote control unit for 1 second or longer.

8.6.2. Cancellation

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

8.7. Handling After Completing Repairs

Use the following procedure after completing repairs.

8.7.1. 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.

8.7.2. Precautions

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

9 SERVICE PRECAUTIONS

9.1. Recovery after the DVD player is repaired.

- The DVD player requires no recovery process after it is repaired; therefore, there is no necessity of using recovery disc.
- Models that require no recovery process are listed as below(As of Feb.2006):

*DVD-K32

*DVD-S32

*DVD-S1

9.2. Firmware version-up of the DVD player

- The firmware of the DVD player may be renewed to improve the quality including operationability and playability to the substandard discs.

Make sure to observe the following rules when performing version-up.

Note:

When FROM or module P.C.B. is replaced, carry out the process of firmware version-up.

- The latest firmware required for version-up can be downloaded from TSN-WEB [Support Information from NWBG-PAVC].

When it is finished, use burning software to make up a version-up disc in the form of CD-R.

Note:

Do not modify the file name of downloaded data at random; keep the original file names for disc burning.

Make sure to select normal format instead of image format.

If you may not be able to complete a downloading from the TSN-WEB page, please obtain the file through your local Panasonic Service Organization.

- Updating firmware

1. Load the version-up disc that is supplied 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 "ENTER" button or player's "OPEN/CLOSE" button, select whether version updating is to be done or not according to the message appearing on the screen.
4. a. If "ENTER" is pushed, version updating is performed.
b. If "OPEN/CLOSE" is pushed, version updating is cancelled.
5. a. When updating is finished, the player will restart. Remove the disc after the tray has opened automatically.
b. Remove the disc.
6. a. Write the present

10 ADJUSTMENT PROCEDURES

10.1. Service Tools and Equipment

Application	Name	Number
Inspection	Extension cable (module P.C.B. to mother P.C.B.)	VUC8026
	Extension cable (module P.C.B. to mother P.C.B.)	RFKZ0106
Others	Hanarl	VFK1784
	Grease	RFKXPG641
	Drysurf	RFKXGUD24
Confirmation	CD test disc	PVCD-K06 or any other commercially available disc
	VCD test disc	PVCD-K06 or any other commercially available disc
	DVD test disc	DVDT-S15 or DVDT-S01

10.2. Important points in electrical adjustment

- Follow the adjustment procedures described in this Manual.

10.3. 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.

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
S	RSV	RESERVE
	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	SERIAL PORT 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	SUBCODE Q 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	STREAM DATAVALIDITY
	SUBC	SUB CODE SERIAL

12 VOLTAGE CHART

Note:

- Circuit voltage and waveform described herein shall be regarded as reference information when probing defect point, because it may differ from an actual measuring value due to difference of measuring instrument and its measuring condition and product itself.

12.1. MOTHER P.C.B.

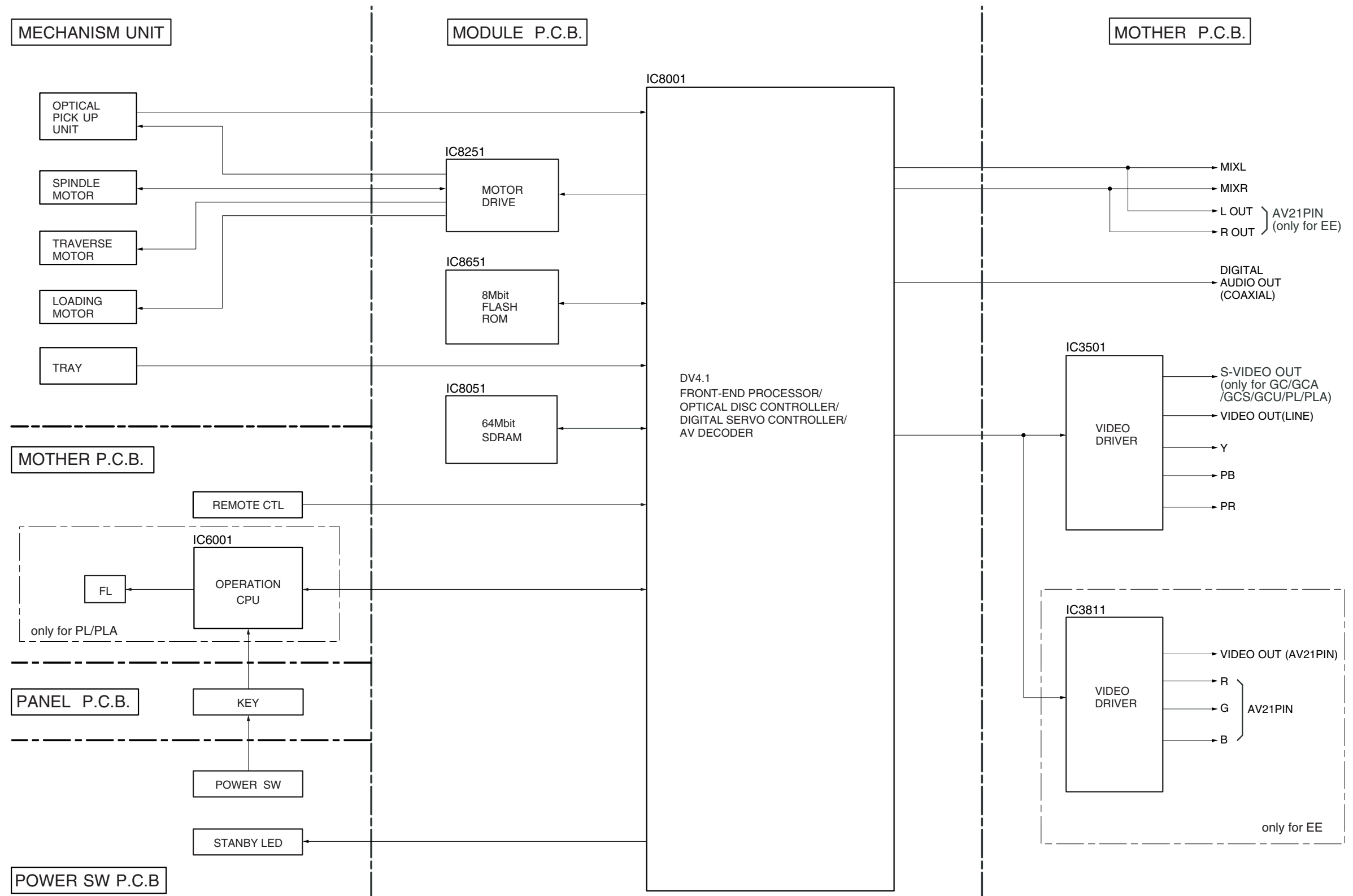
Ref No.	IC1021									IC1021(PLA)											
MODE	1	2	3	4	5	6	7	9		1	2	3	4	5	6	7	9				
PLAY	-0.2	0	0	0	0	0	0	-1.5		-0.1	0	-0.5	0	0	-0.3	-0.2	-4				
STOP	0	0	0	0	0	0	0	-3.7		-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-3.9				
Ref No.	IC1101			IC1151					IC1195												
MODE	1	2	3		1	2	3	4	5		1	2	3								
PLAY	3.4	0	0		11.3	3.2	8.8	0	0		5.1										

13 BLOCK DIAGRAM

Note:

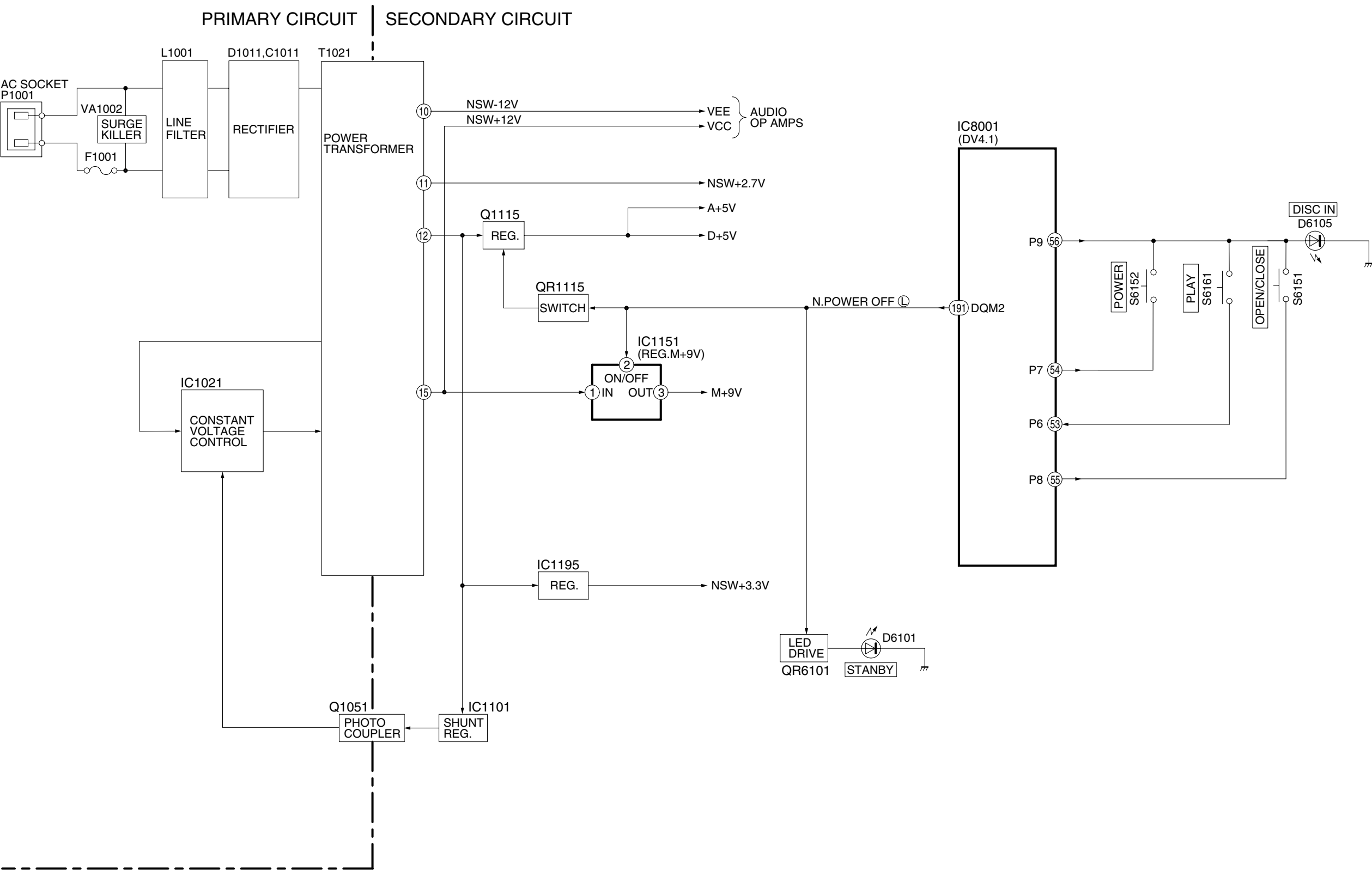
Circuit voltage and waveform described herein shall be regarded as reference information when probing defect point, because it may differ from an actual measuring value due to difference of measuring instrument and its measuring condition and product itself.

13.1. OVERALL BLOCK DIAGRAM



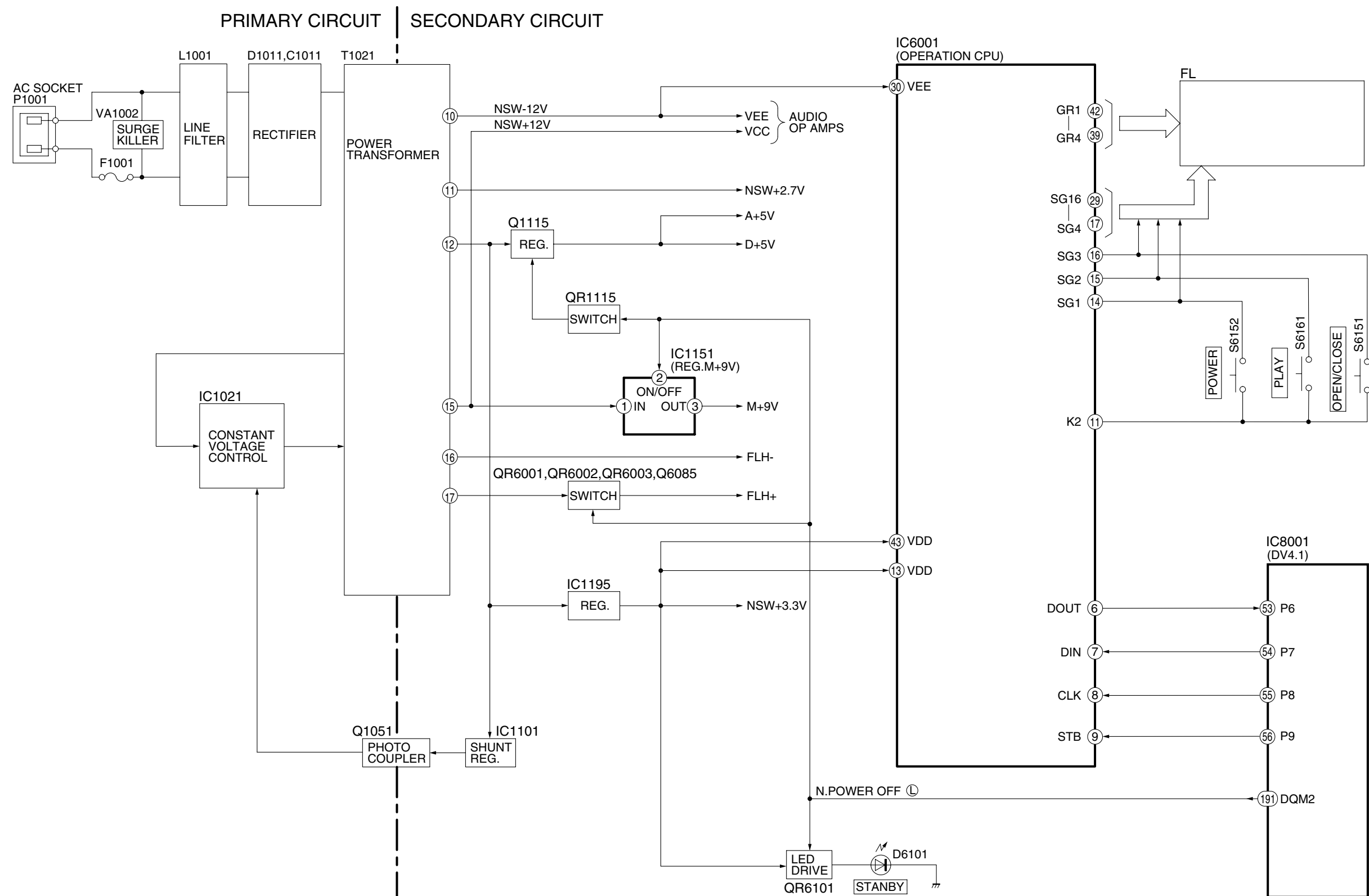
DVD-S1EE/GC/GCS/GCA/GCU/PL/PLA
OVERALL BLOCK DIAGRAM

13.2. POWER SUPPLY BLOCK DIAGRAM (DVD-S1EE/GC/GCA/GCS/GCU)



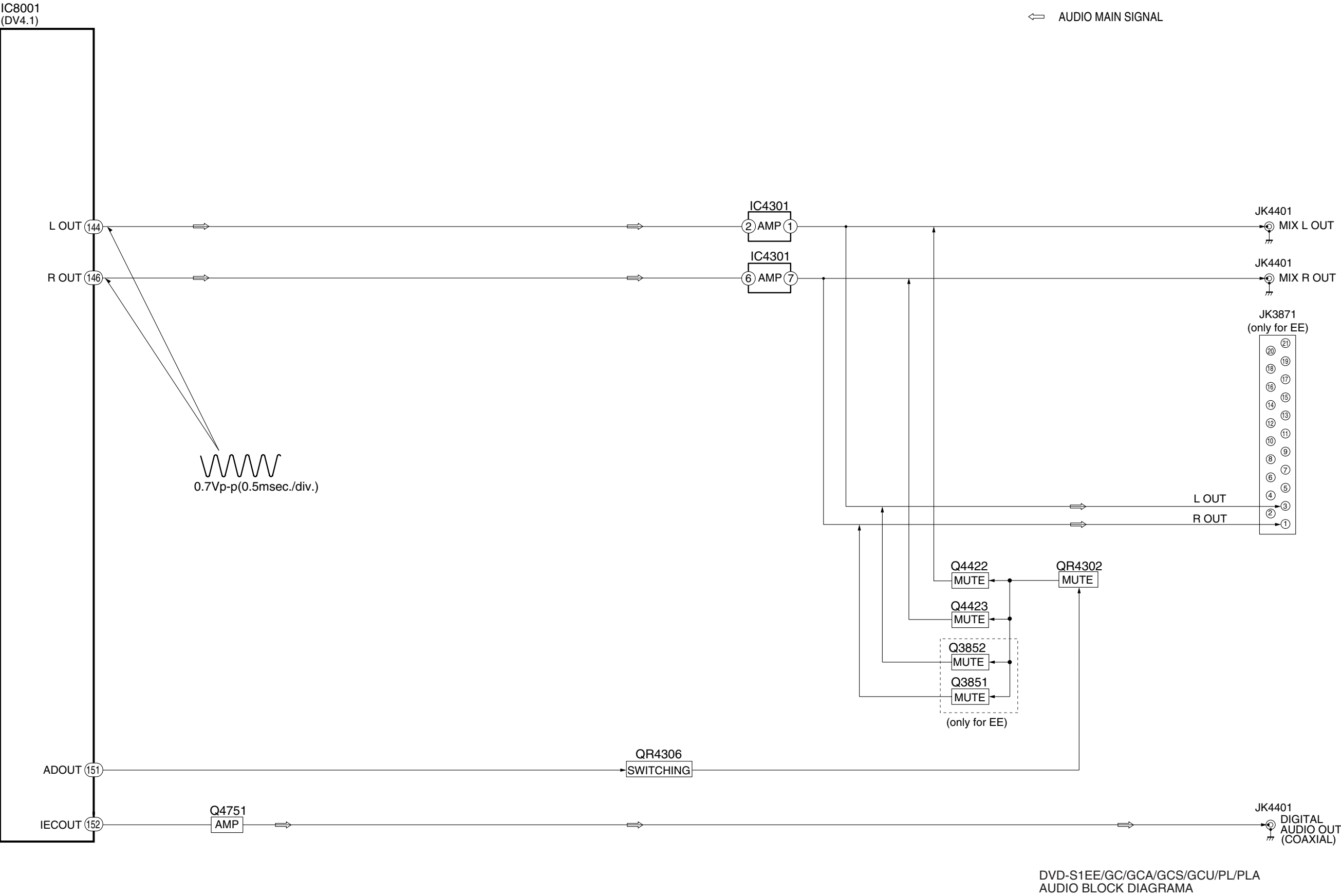
DVD-S1EE/GC/GCA/GCS/GCU
POWER SUPPLY BLOCK DIAGRAM

13.3. POWER SUPPLY BLOCK DIAGRAM (DVD-S1PL/PLA)



DVD-S1PL/PLA
POWER SUPPLY BLOCK DIAGRAM

13.7. AUDIO BLOCK DIAGRAM



14.2. SCHEMATIC DIAGRAM NOTES

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

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.

Important safety notice:

There are special components used in this equipment which are important for safety.

These parts are marked by △ in the schematic diagrams. It is essential that these critical parts should be replaced with manufacturer’s specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

Caution!

IC and LSI are sensitive to static electricity.

Secondary trouble can be prevented by taking care during repair.

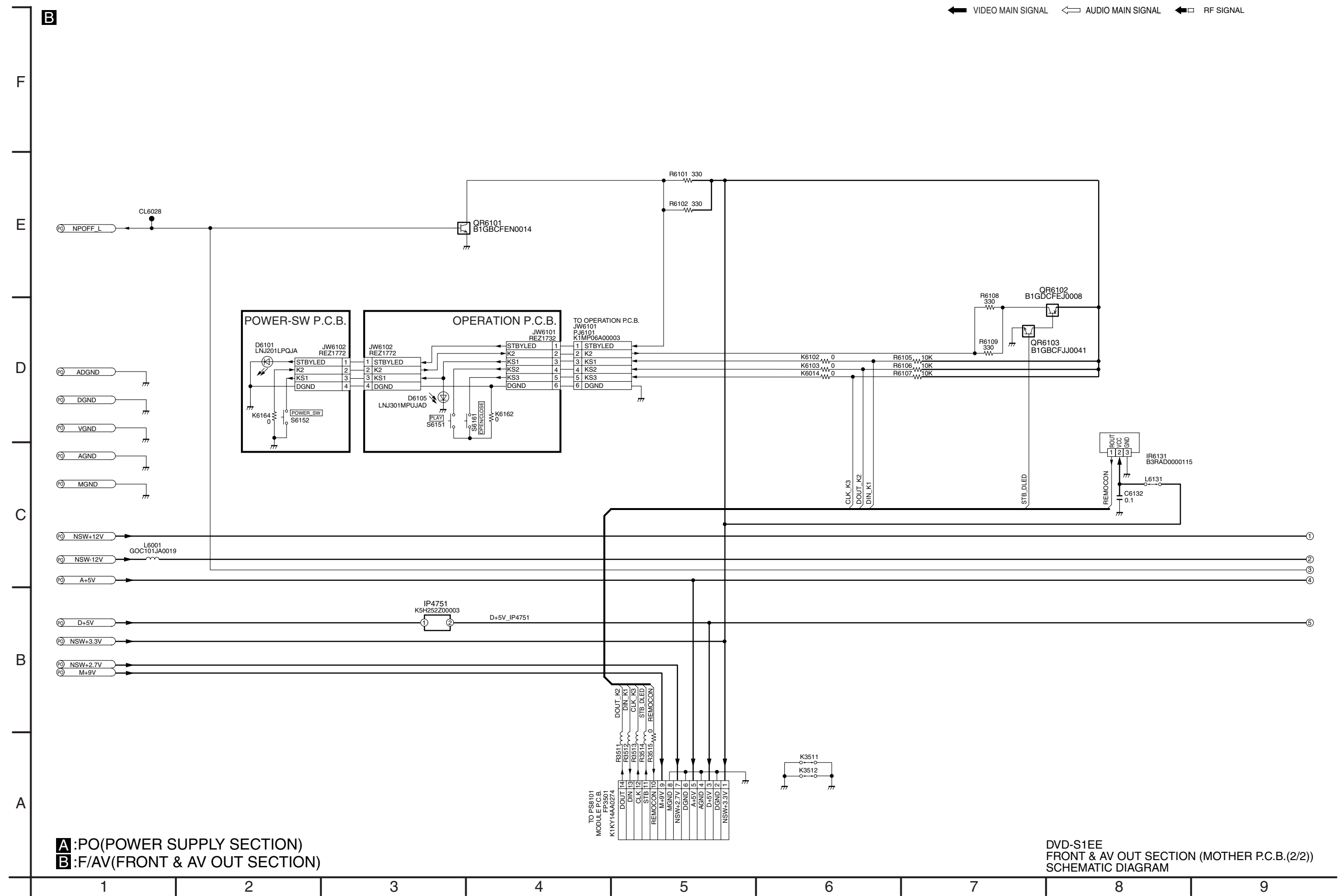
Cover the parts boxes made of plastics with aluminum foil.

Ground the soldering iron.

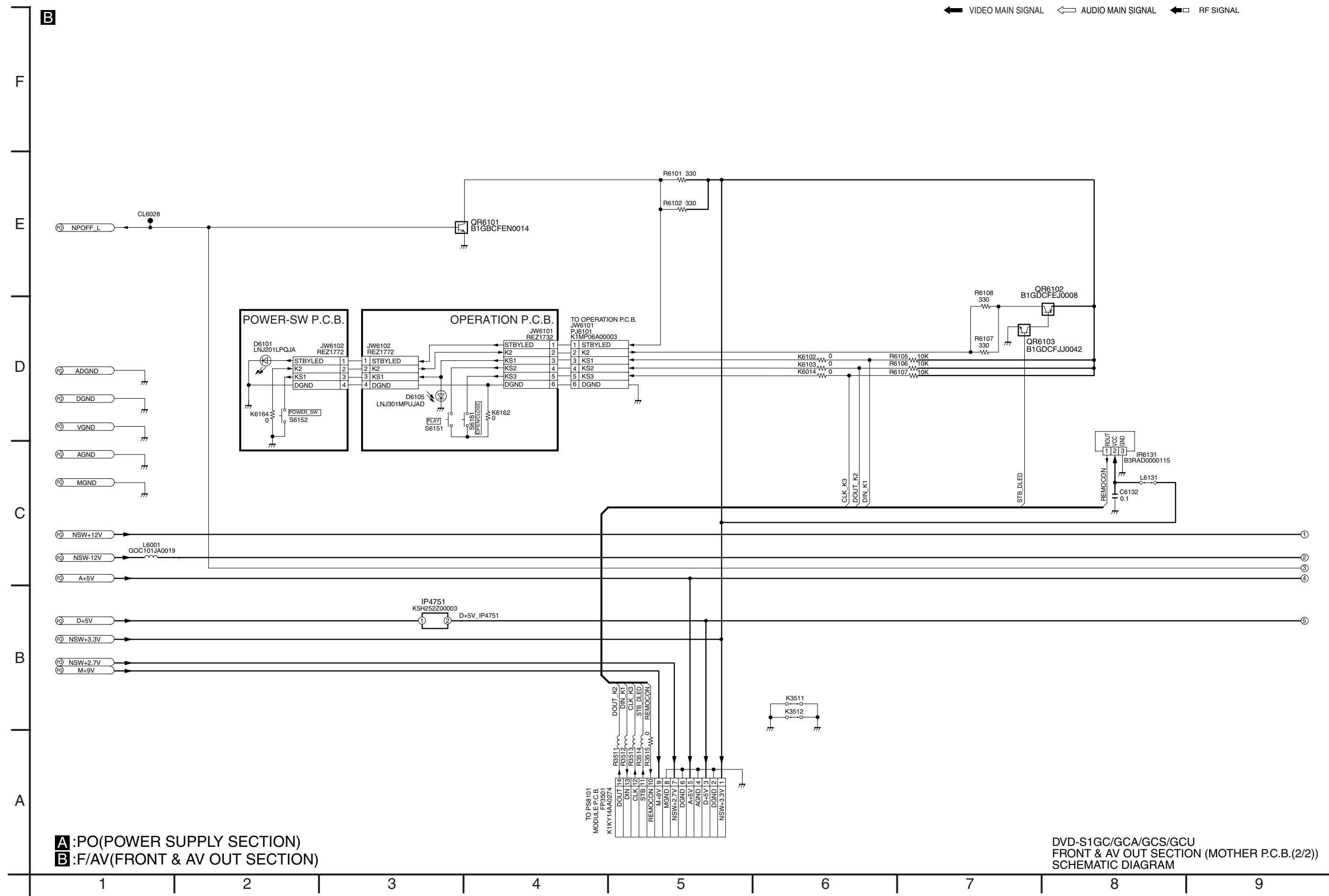
Put a conductive mat on the work table.

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

15.3. FRONT & AV OUT SECTION (MOTHER P.C.B. (2 / 2)) SCHEMATIC DIAGRAM (DVD-S1EE)



15.4. FRONT & AV OUT SECTION (MOTHER P.C.B. (2 / 2)) SCHEMATIC DIAGRAM (DVD-S1GC/GCA/GCS/GCU)



B

F

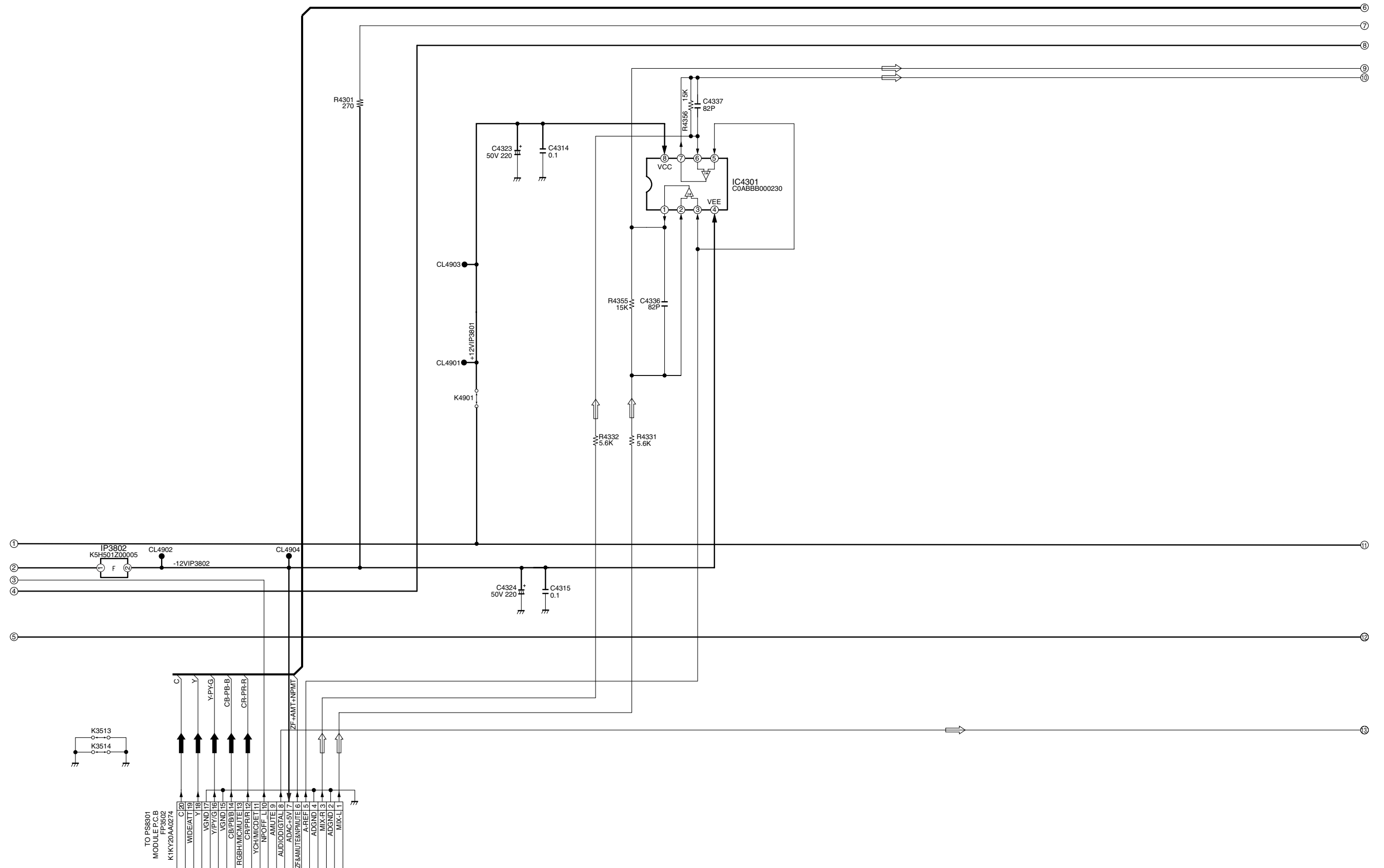
E

D

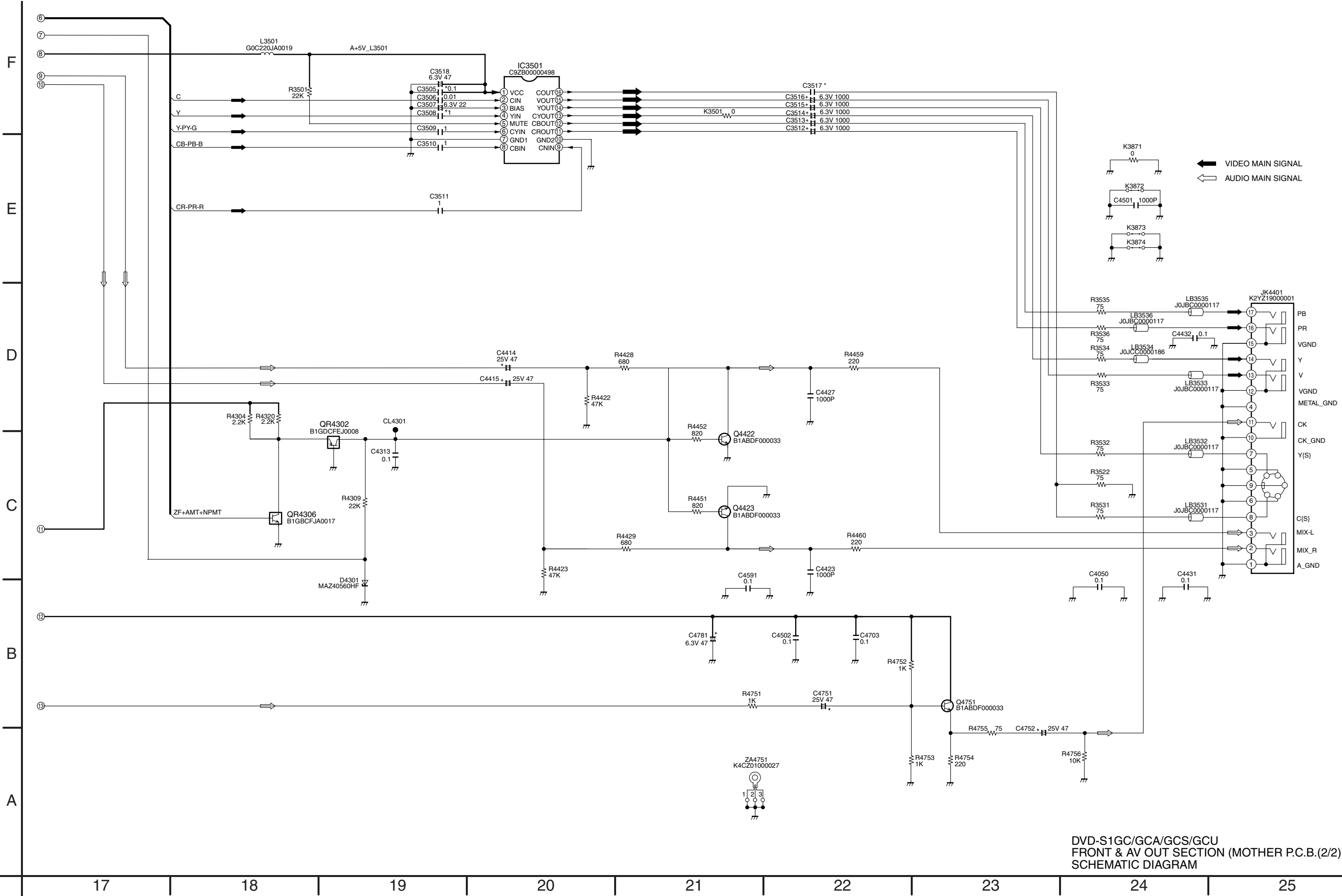
C

B

A



DVD-S1GC/GCA/GCS/GCU
FRONT & AV OUT SECTION (MOTHER P.C.B.(2/2))
SCHEMATIC DIAGRAM



DVD-S1GC/GCA/GCS/GCU
FRONT & AV OUT SECTION (MOTHER P.C.B.(2/2))
SCHEMATIC DIAGRAM

