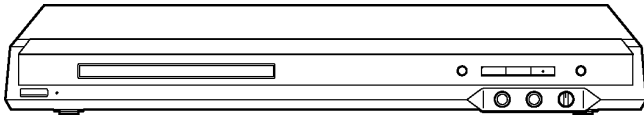


# Service Manual

## DVD / CD Player



## DVD-K29GCS

### DL4.1 Mechanism Series

Colour

(S).....Silver Type

## Specifications

<b>Power supply:</b>	AC220-240 V, 50/60 Hz	<b>Picture resolution:</b>	between 320×240 and 6144×4096 pixels
<b>Power consumption:</b>	11 W		(Sub sampling is 4:2:2 or 4:2:0)
<b>Power consumption in standby mode:</b>	approx. 1 W	(9) HighMAT Level 2 (Audio and Image)	
<b>Dimensions:</b>	430 (W)×249 (D)×43 (H) mm	<b>Video output:</b>	
<b>Mass:</b>	2.2 kg	Output level:	1 Vp-p (75 Ω)
<b>Signal system:</b>	NTSC, PAL 625/50, PAL 525/60	Output terminal:	Pin jack (1 system)
<b>Operating temperature range:</b>	+5 to +35°C	<b>S video output:</b>	
<b>Operating humidity range:</b>	5 to 90 % RH (no condensation)	Y output level:	1 Vp-p (75 Ω)
<b>Region number:</b>	Region No.3	C output level:	NTSC; 0.286 Vp-p (75 Ω) PAL; 0.300 Vp-p (75 Ω)
<b>Discs played [8 cm or 12 cm]:</b>		Output terminal:	S terminal (1 system)
(1) DVD (DVD-Video)		<b>Component video output:</b>	[NTSC: 525(480)p / 525(480)i, PAL: 625(576)p / 625(576)i]
(2) DVD-RAM (DVD-VR compatible, JPEG formatted discs)		Y output level:	1 Vp-p (75 Ω)
(3) DVD-R/RW/+R/+RW (DVD-Video compatible)		P <sub>B</sub> output level:	0.7 Vp-p (75 Ω)
(4) CD-Audio (CD-DA)		P <sub>R</sub> output level:	0.7 Vp-p (75 Ω)
(5) SVCD (Conforming to IEC62107)		Output terminal:	Pin jack (Y: green, P <sub>B</sub> : blue, P <sub>R</sub> : red)
(6) CD, CD-R/CD-RW (CD-DA, Video CD, SVCD, MP3, WMA, JPEG formatted discs)		Number of terminals:	1 system
(7) MP3/WMA		<b>Audio output:</b>	
!The total combined maximum number of recognizable audio and picture contents and groups:	4000 audio and picture contents and 400 groups.	Output level:	2 Vrms (1 kHz, 0 dB)
!Compatible compression rate:		Output terminal:	Pin jack
MP3:	between 32 kbps and 320 kbps	Number of terminals:	2 channel: 1 system
WMA:	between 48 kbps and 320 kbps	<b>Audio performance:</b>	
(8) JPEG		(1) Frequency response:	
!Exif Ver 2.1 JPEG Baseline files		IDVD (linear audio):	4 Hz-22 kHz (48 kHz sampling) 4 Hz-44 kHz (96 kHz sampling)
!The total combined maximum number of recognizable audio and picture contents and groups:	4000 audio and picture contents and 400 groups.	ICD audio:	4 Hz-20 kHz
		(2) S/N ratio:	
		ICD audio:	115 dB
		(3) Dynamic range:	
		IDVD (linear audio):	100 dB



# Panasonic

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ICD audio:	98 dB
(4) Total harmonic distortion:	
ICD audio:	0.0025 %
<b>Digital audio output:</b>	
Coaxial digital output:	Pin jack
<b>Pickup</b>	
Wave length:	662 nm/785 nm
Laser power:	CLASS 2/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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Windows Media, and the Windows logo are trademarks, or registered trademarks of Microsoft Corporation in the United States and/or other countries.	
WMA is a compression format developed by Microsoft Corporation. It achieves the same sound quality as MP3 with a file size that is smaller than that of MP3.	

**⚠ 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  $\infty$ .

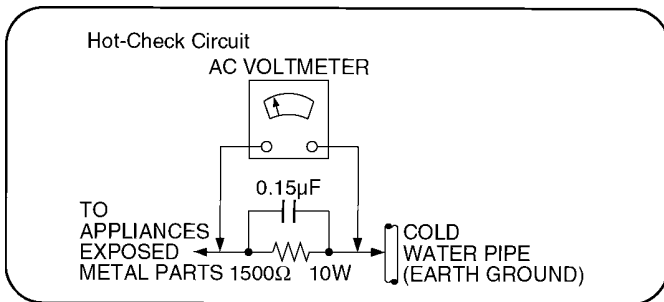


Figure 1

### 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 equivalent) may be used to make the hot checks, leakage current  $\mu 3st$  not exceed  $1/2$  milliamp. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

## 2 PREVENTION OF ELECTRO STATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electro static discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

**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: 662 nm/785 nm

Maximum output radiation power from pickup: 100  $\mu$  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.

**ACHTUNG:**

Dieses Produkt enthält eine Laserdiode.

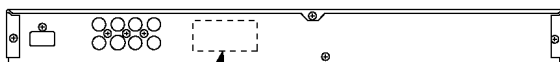
Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Lasereinheit adgestrahlt.

Wellenlänge: 662 nm/785 nm

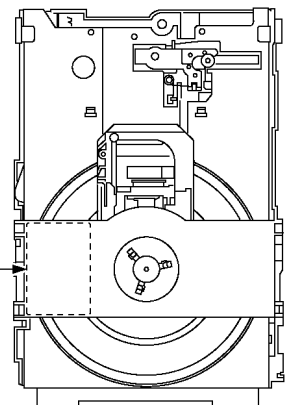
Maximale Strahlungsleistung der Lasereinheit: 100  $\mu$  W/VDE

Die Strahlung 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.



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. UNDGÅ UDSÆTTELSE FOR STRÅLING.	
VARO! - AVATTAESSA OLET ALLTTIINA NÄKYVÄÄ JA NÄKYMÄTÖN LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.	
WARNING - SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. BETRÄKTA EJ STRÅLEN.	
ADVARSEL - SYNLIG OG USYNLIG LASERSTRÅLING NÄR DEKSEL ÅPNES. LUNGA EKSPONERING FOR STRÅLING.	
VORSICHT - SICHTBARE UND UNSICHTBARE LASERSTRÄHLUNG, WENN ABDECKUNG GEOFFNET. 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。 ビームを撃ったり、触れたりしないでください。	RQLCA0141



**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 About lead free solder (PbF)

**Distinction of PbF PCB:**

PCBs (manufactured) using lead free solder will have a PbF stamp on the PCB.

**Caution:**

- Pb free solder has a higher melting point than standard solder; Typically thmelting point is 50 - 70°F (30 - 40°C) higher. Please use a high temperature soldering iron. In case of the soldering iron with temperature control, please set it to 700 ± 20°F (370 ± 10°C).
- Pb free solder will tend to splash when heated too high (about 1100°F/ 600°C).

When soldering or unsoldering, please completely remove all of the solder on the pins or solder area, and be sure to heat the soldering points with the Pb free solder until it melts enough.

## 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

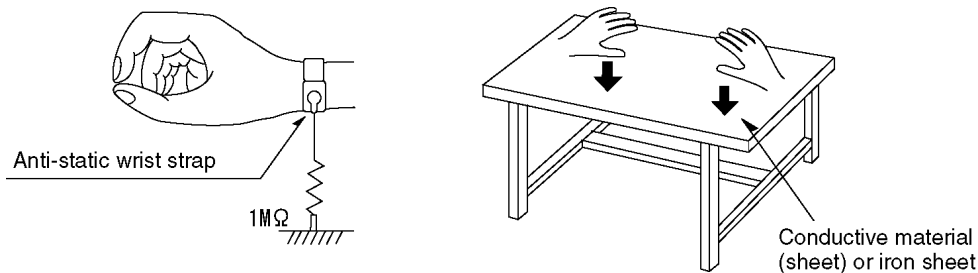
Some devices such as the DVD player use the optical pickup (laser diode) and the optical pickup will be damaged by static electricity in the working environment. Proceed servicing works under the working environment where grounding works is completed.

#### 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

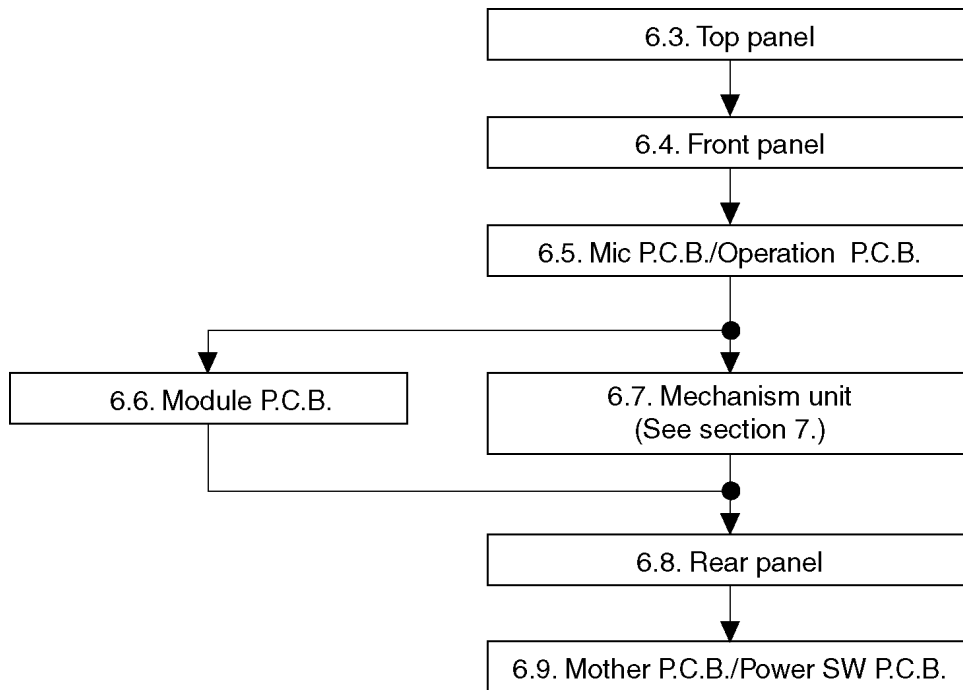
1. To keep the good quality of the optical pickup maintenance parts during transportation and before installation, the both ends of the laser diode are short-circuited. After replacing the parts with new ones, remove the short circuit according to the correct procedure. (See this Technical Guide.)
2. 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)

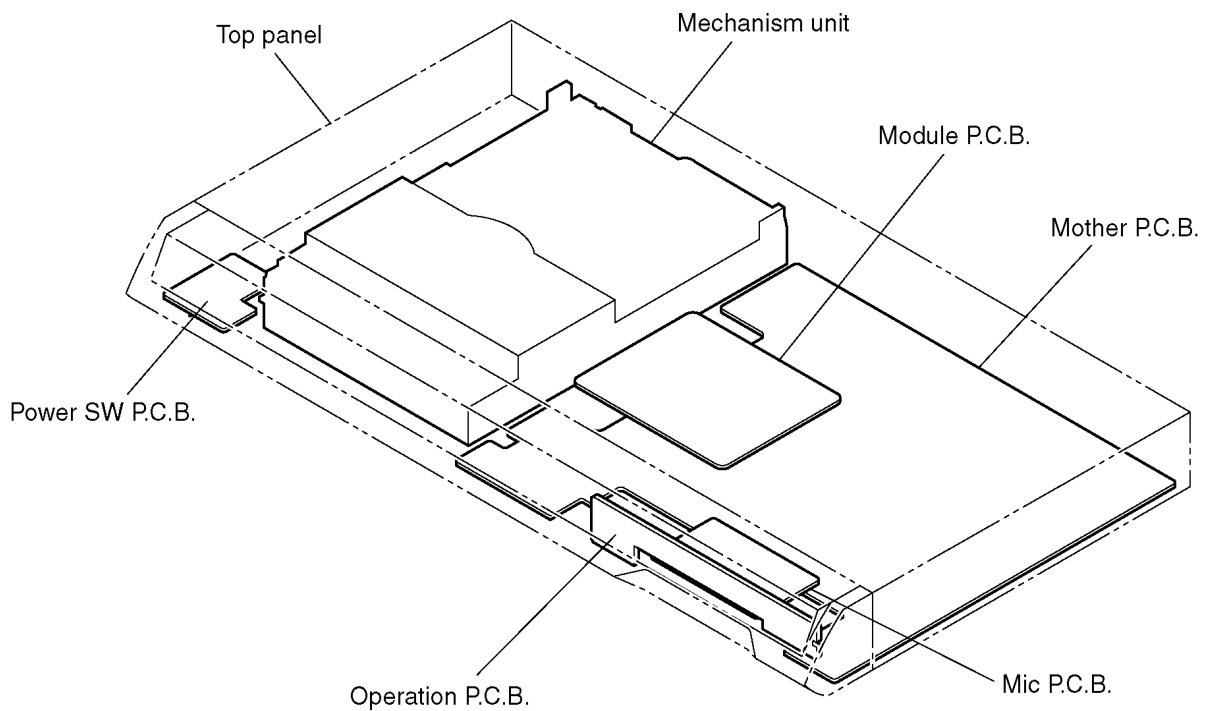
1. Do not give a considerable shock to the traverse unit (optical pickup) as it has an extremely high-precise structure.
2. When replacing the optical pickup, install the flexible cable and cut its short land with a nipper. See the optical pickup replacement procedure in this Technical Guide. Before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

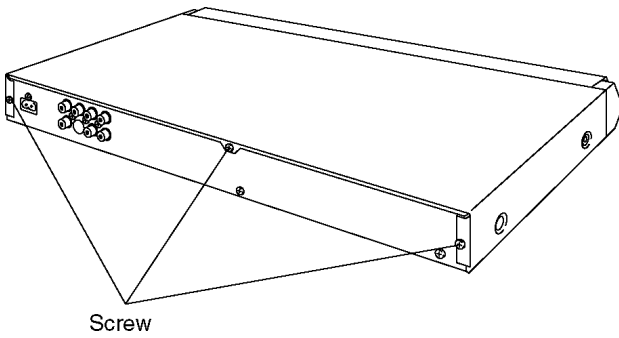
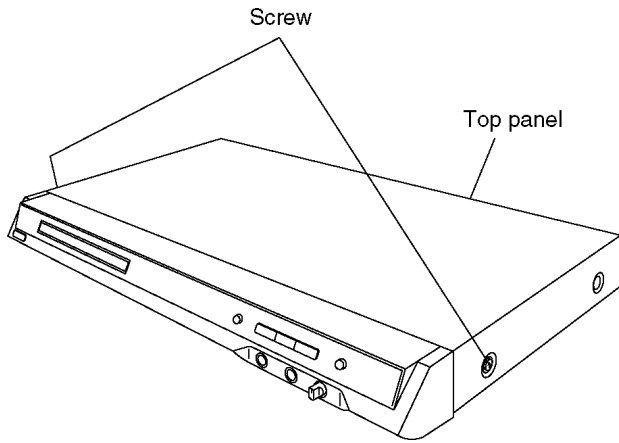


### 6.2. Casing Parts and P.C.B. Positions



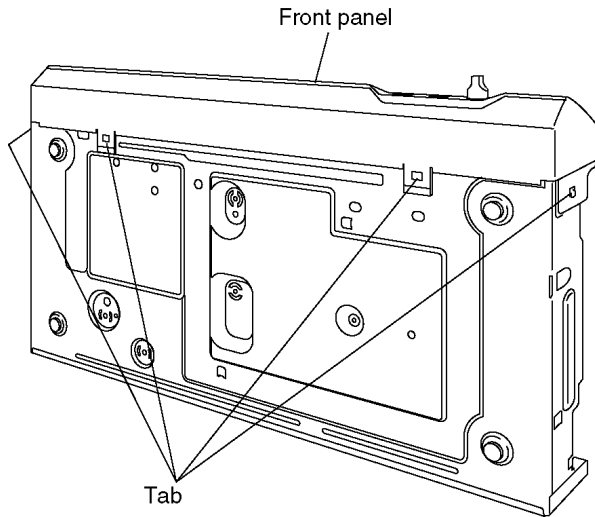
### 6.3. Top Panel

1. Unscrew the screws.



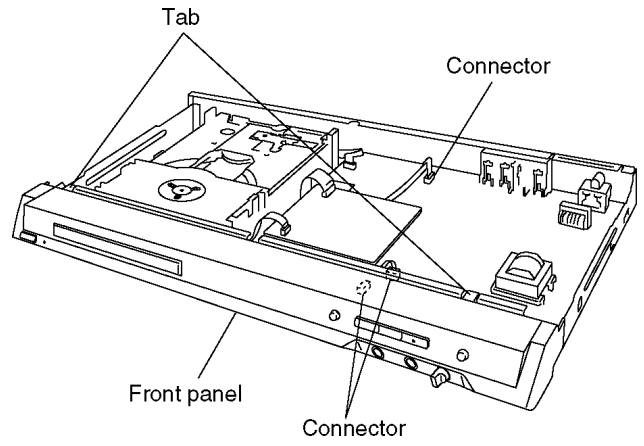
### 6.4. Front Panel

1. Release the tabs.



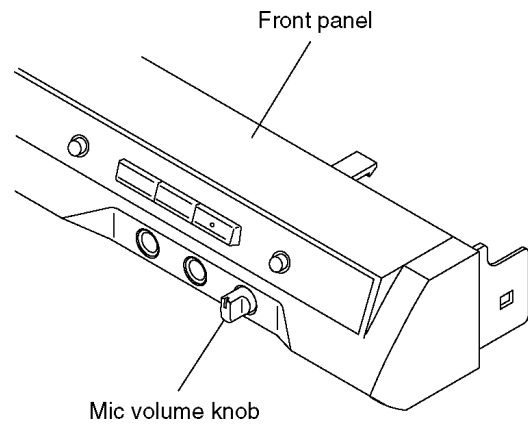
2. Release the tabs.

3. Remove the connectors.

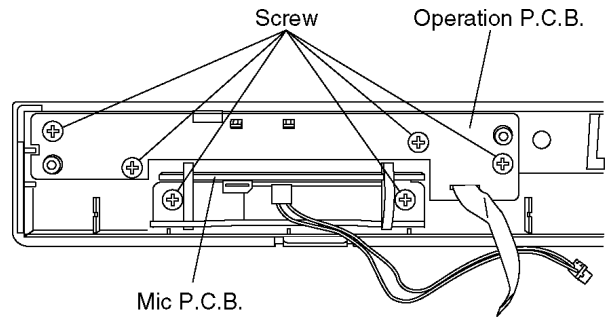


### 6.5. Mic P.C.B. and Operation P.C.B.

1. Pull out the mic volume knob.



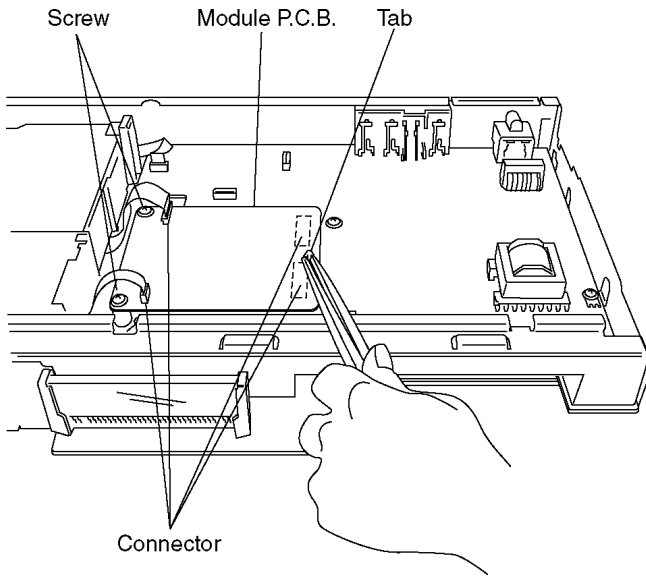
2. Unscrew the screws.





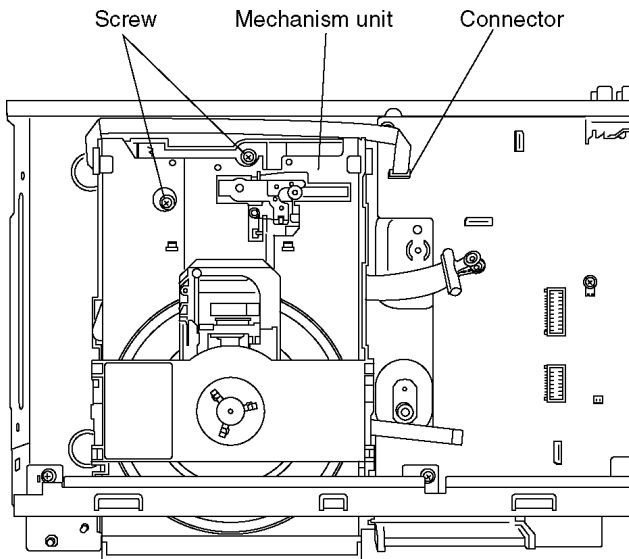
## 6.6. Module P.C.B.

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



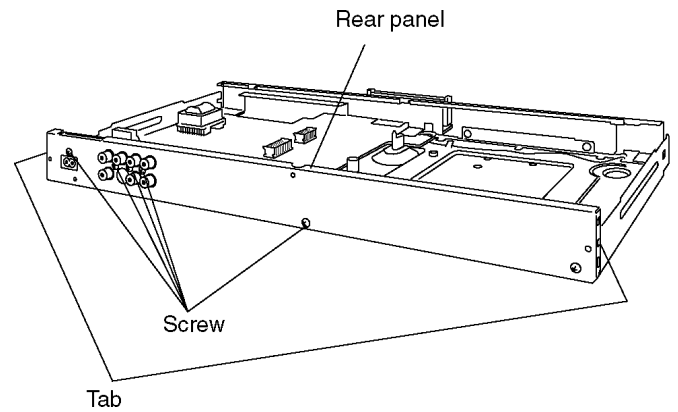
## 6.7. Mechanism Unit

1. Unscrew the screws.
2. Remove the connectors.



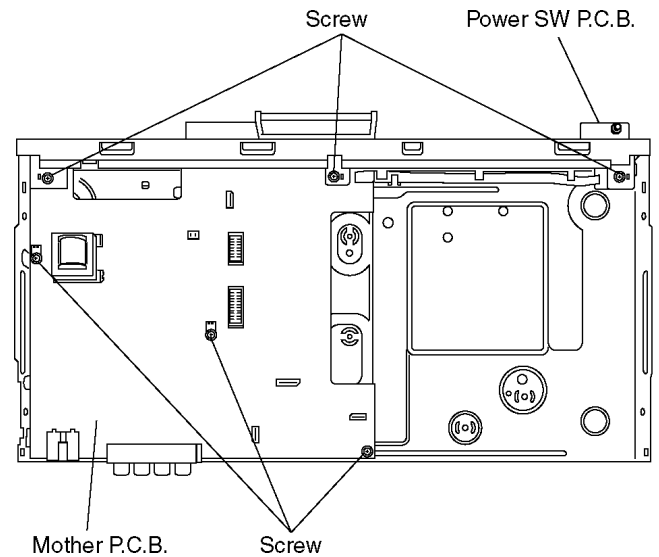
## 6.8. Rear Panel

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



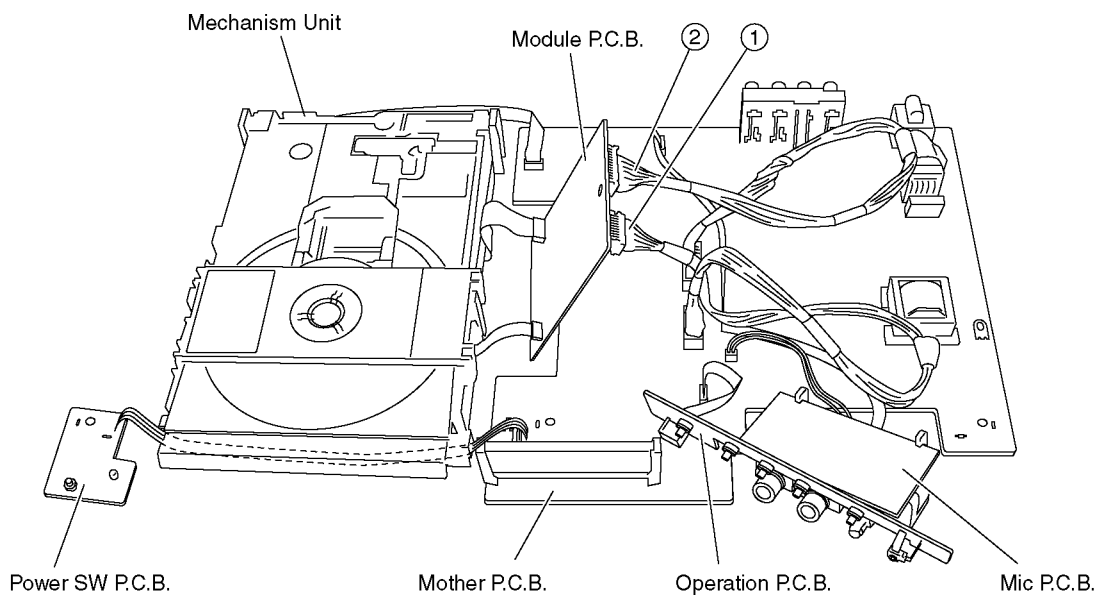
## 6.9. Mother P.C.B. and Power SW P.C.B.

1. Unscrew the screws.

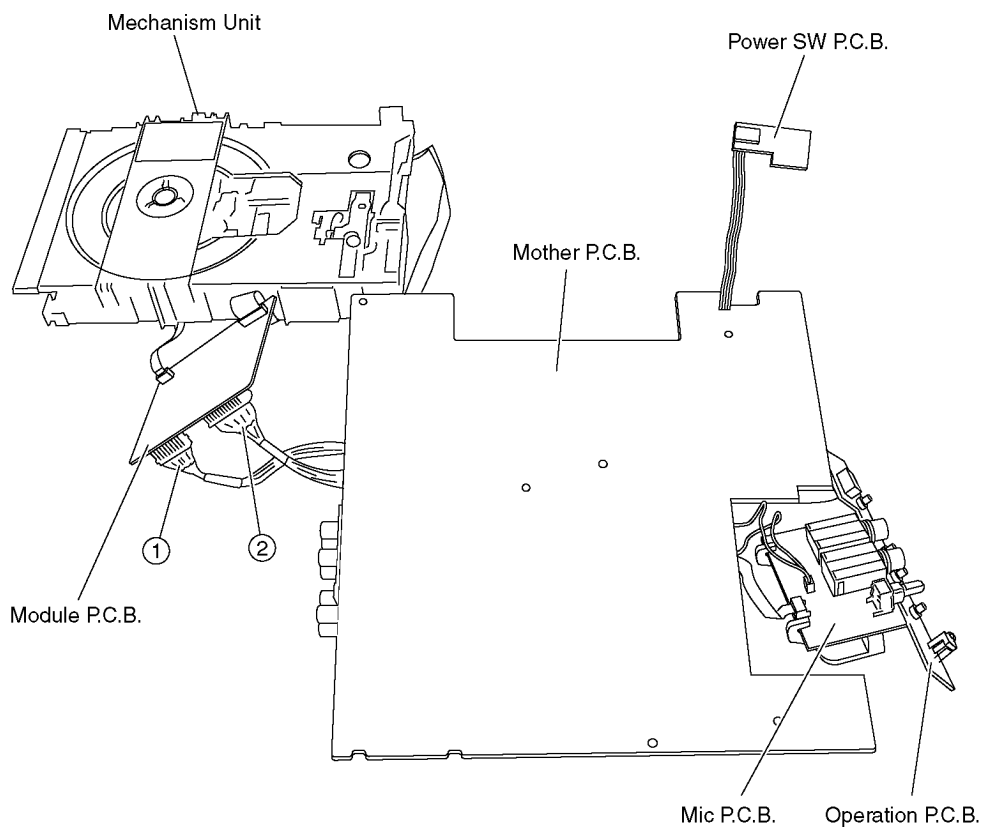


## 6.10. Service Position

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



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

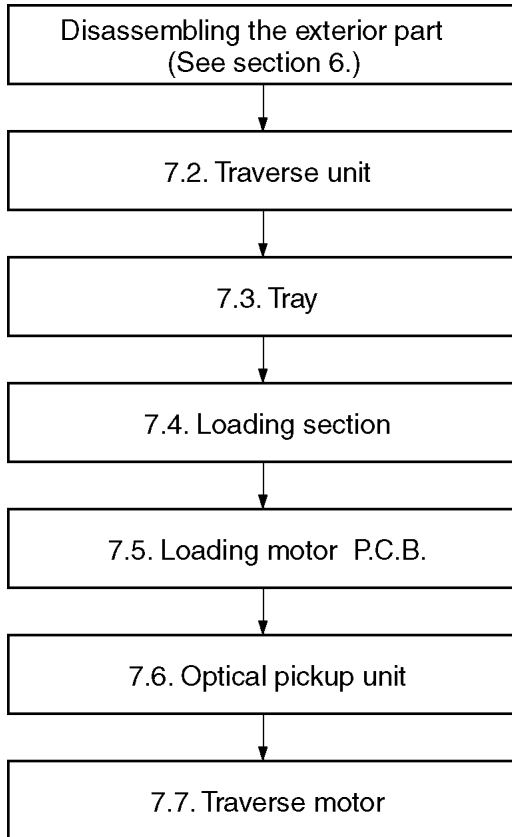


### 6.10.3. List of the Extension Cables

①	VUC8026	14pins	FP8102(Module P.C.B.)—FP3501(Mother P.C.B.)
②	RFKZ0106	20pins	FP8101(Module P.C.B.)—FP3502(Mother P.C.B.)

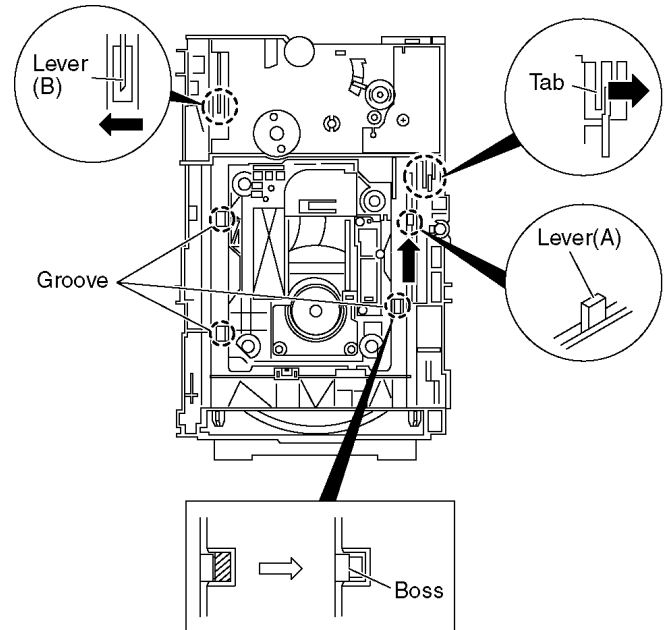
## 7 ASSEMBLING AND DISASSEMBLING THE MECHANISM UNIT

### 7.1. Disassembly Procedure

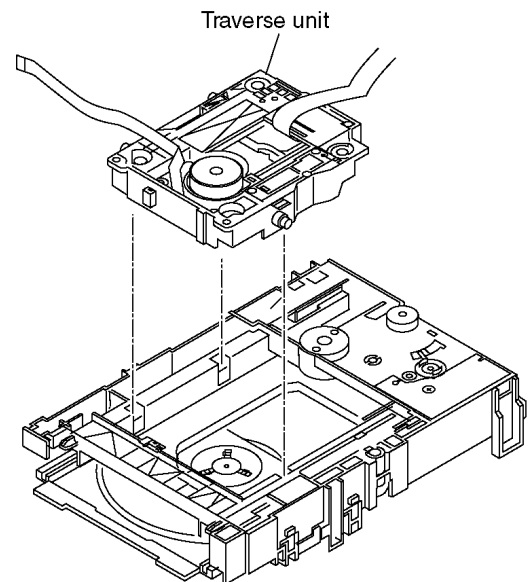


### 7.2. Traverse Unit

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.)

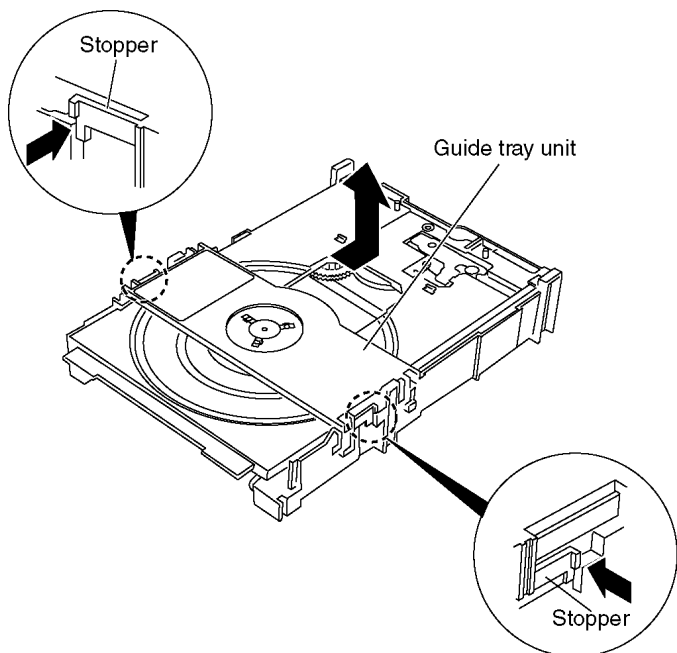


#### 4. Remove the traverse unit

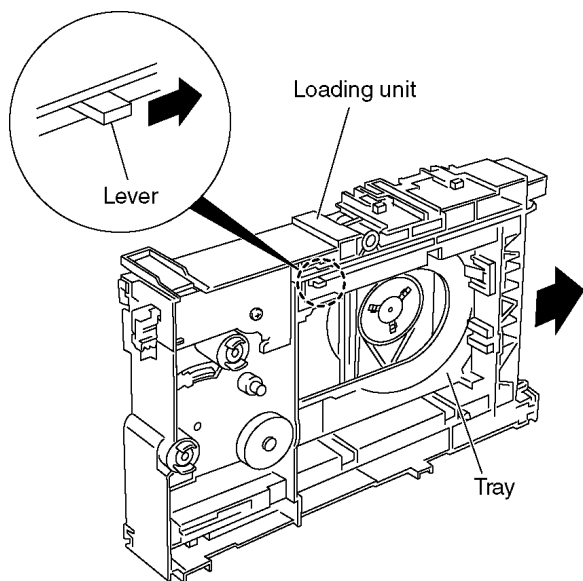


### 7.3. Tray

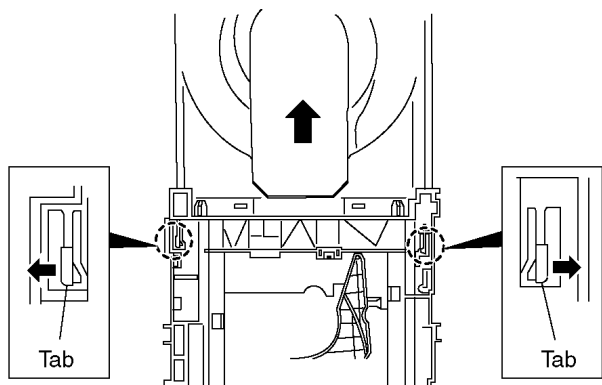
- Slide the guide tray unit while pressing the stopper in the arrow direction, and remove the guide tray unit.



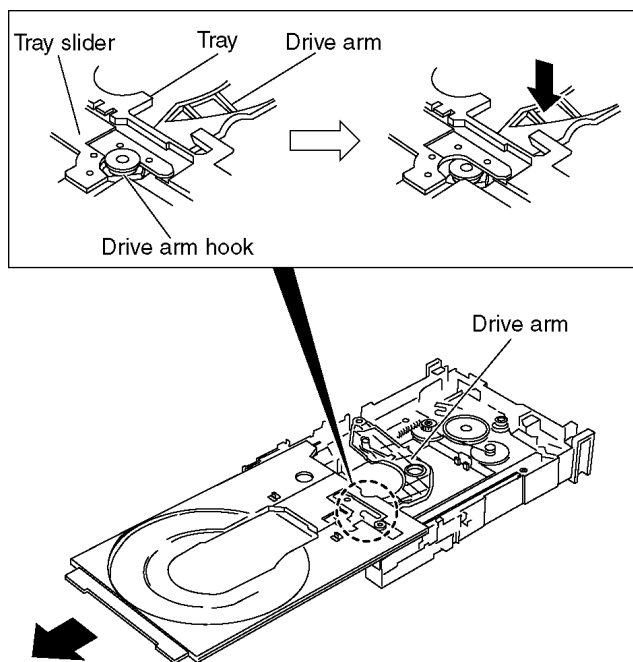
- Raise the loading unit.
- Slide the lever in the arrow direction till it stops and pull the tray out.



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

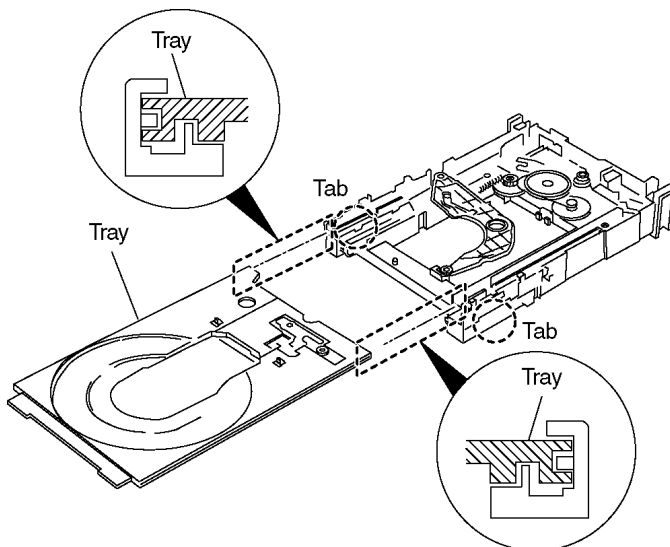


- Remove the drive arm concave phase from the tray slider and tray.

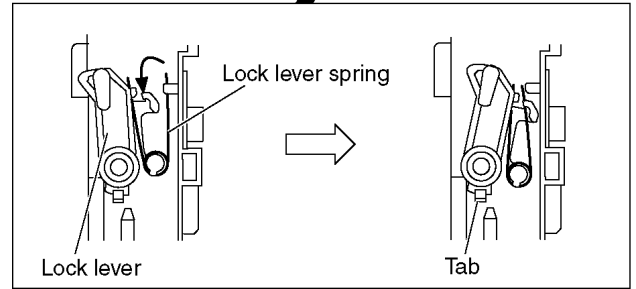
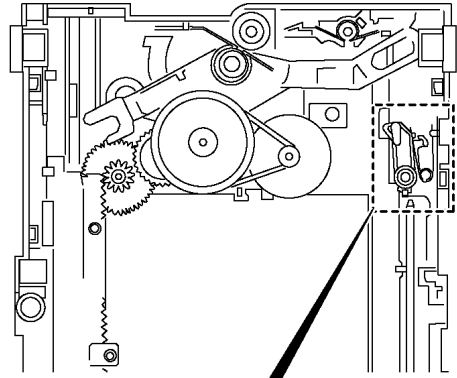
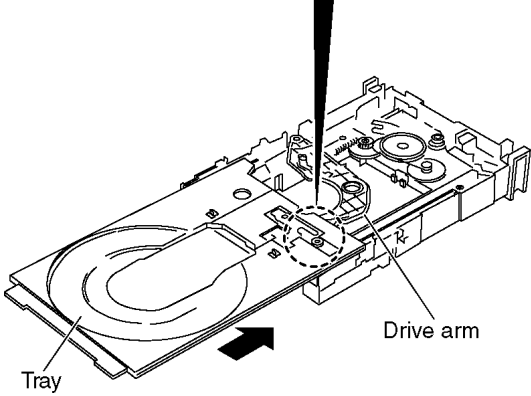
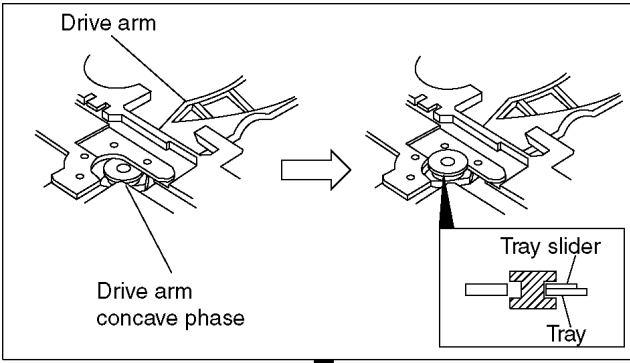


#### <Assembling the tray unit>

- Insert a part of the tray into the unit sliding over the groove on the mechanical chassis unit.
- Insert the tray to the point before the tab of the mechanical chassis unit.

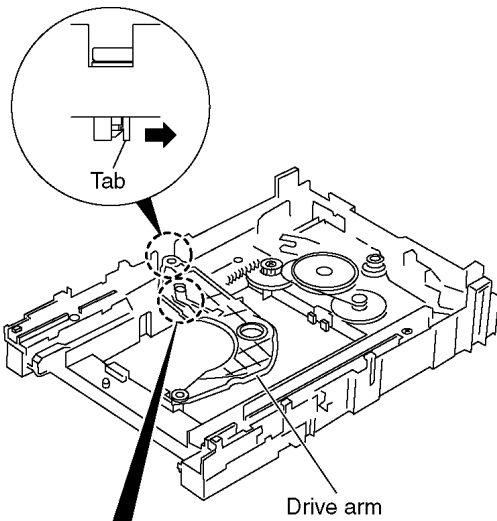


- Hook the drive arm concave phase over the tray and the tray slider.
- Press in the tray.
- Make sure that the tray and the drive arm move smoothly.



### 7.4. Loading section

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

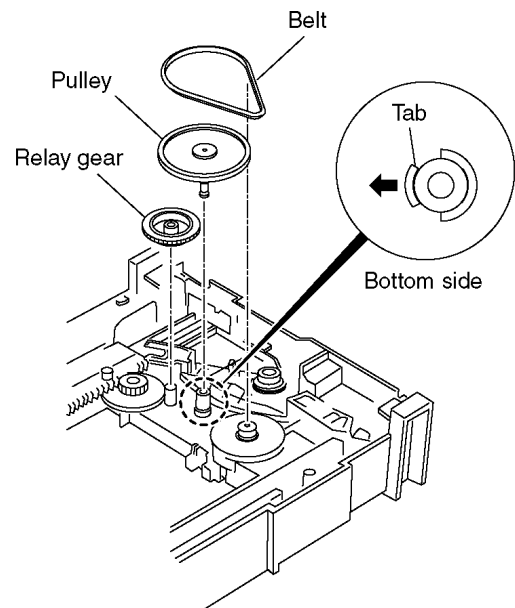


**■ Important point in installing the drive rack**

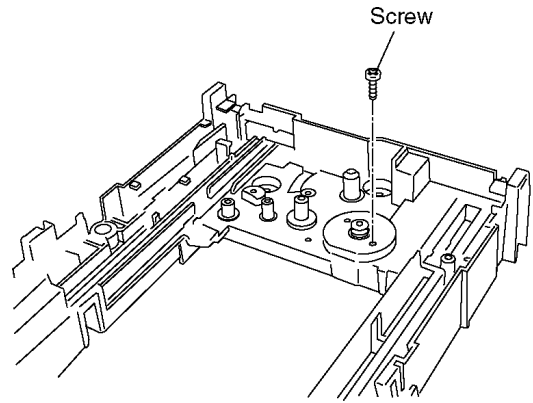
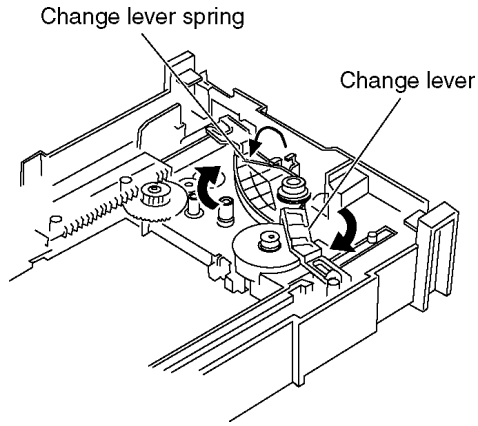
- Install the boss the drive rack into the drive arm groove securely.

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

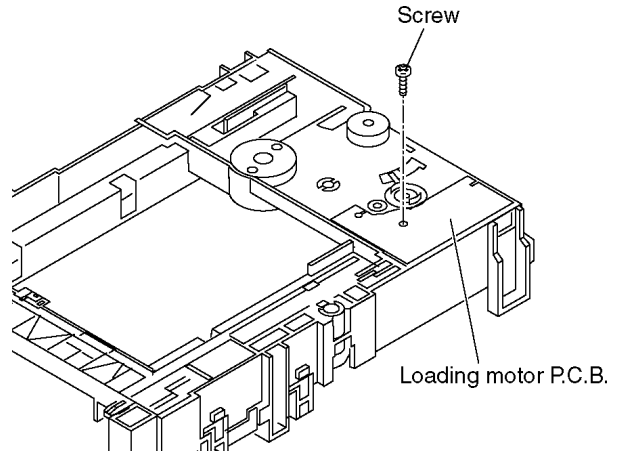
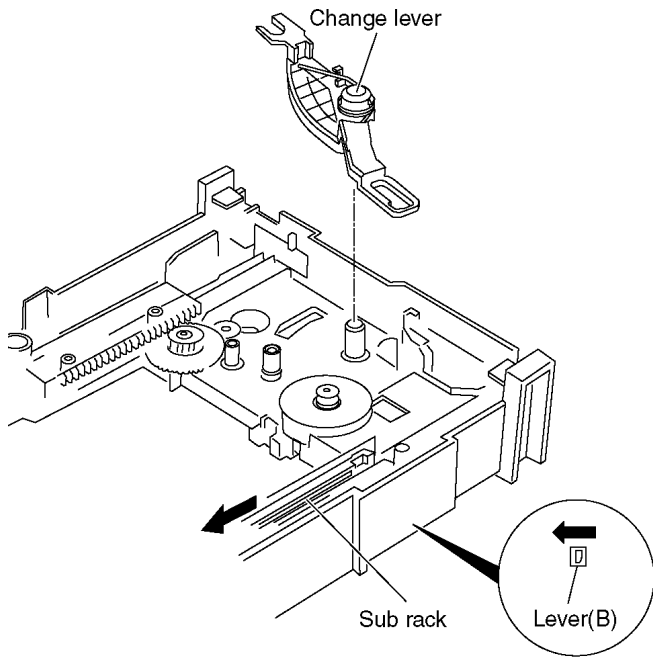
4. Remove the belt.
5. Unlock the tab and remove the pulley.
6. Remove the relay gear.



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.

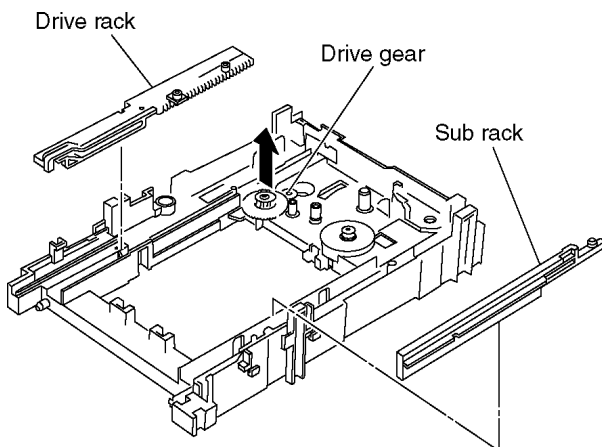


9. Pull the lever (B) in the bottom side to your side and remove the change lever.



(Bottom side)

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



## 7.5. Loading motor P.C.B.

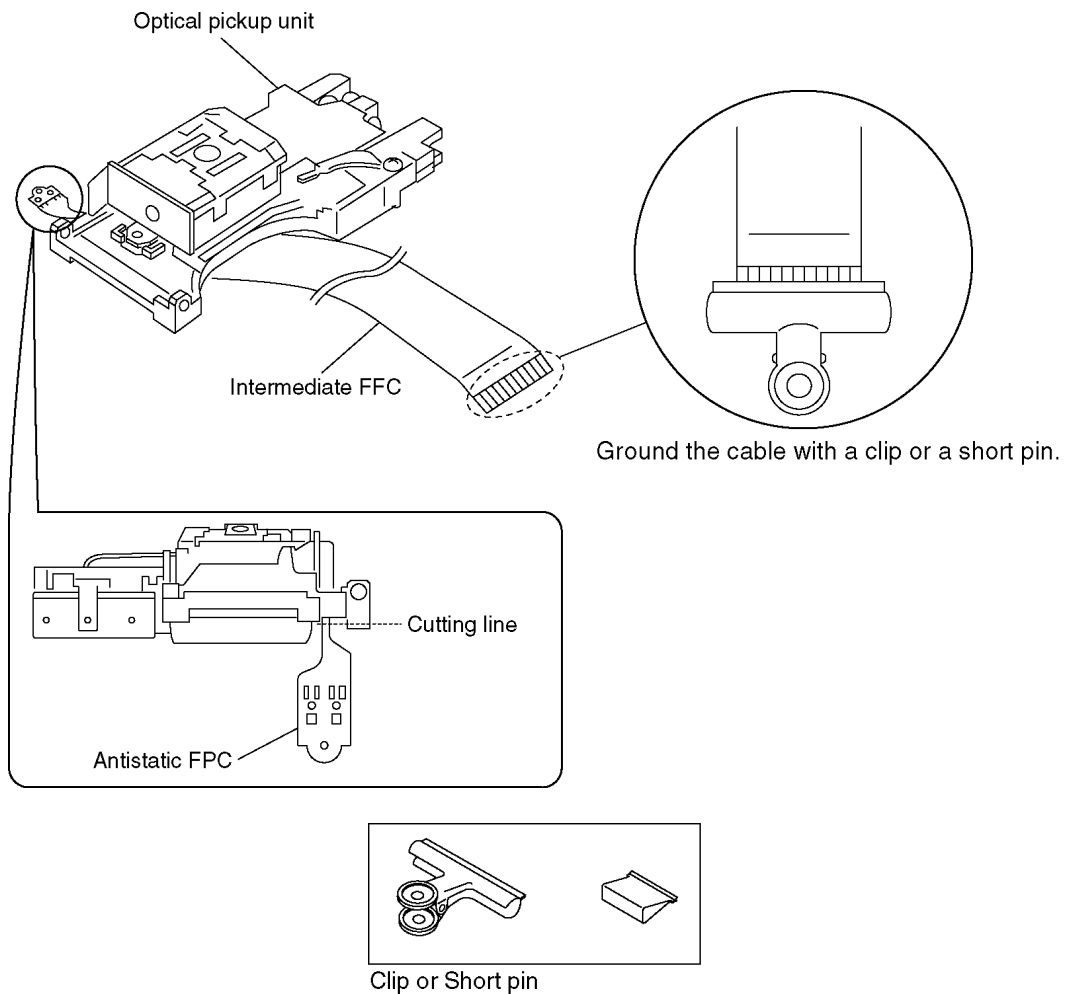
1. Unscrew the screws

## 7.6. Optical Pickup Unit

### 7.6.1. Cautions to Be Taken in Handling the Optical Pickup Unit

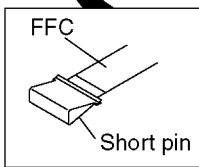
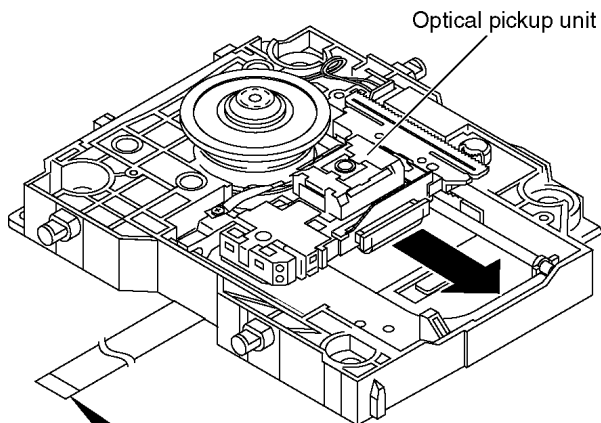
The laser diode in the optical pickup unit may be damaged due to electrostatic discharge generating from clothes or human body. Use due caution to electrostatic discharge damage when servicing the laser diode.

1. Do not give a considerable shock to the optical pickup 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 optical pickup 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.
4. The antistatic FPC is connected to the new optical pickup unit. After replacing the optical pickup unit and connecting the Intermediate FFC, cut off the antistatic FPC.



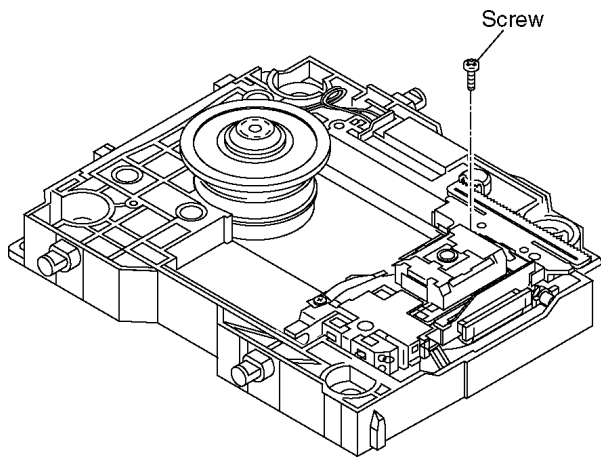
### 7.6.2. Procedure for Disassembling the Optical Pickup Unit

1. Move the optical pickup unit in the arrow direction till it stops.

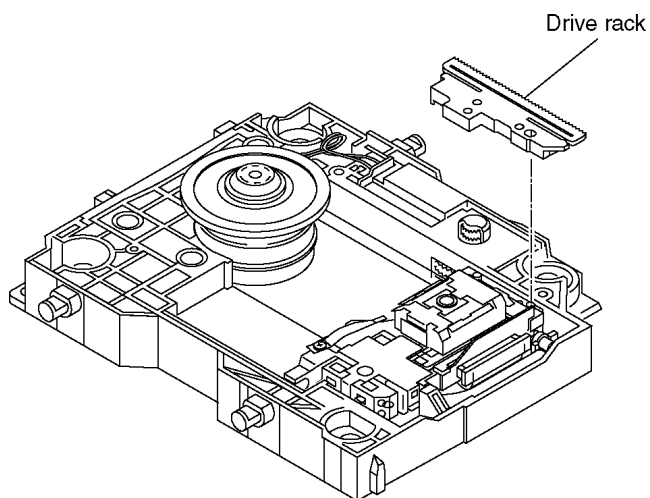


**[Caution]**  
Insert the short pin into the FFC of the optical pickup unit.  
[See "Caution to be taken in handling the optical pickup unit" ]

2. Unscrew the screws.

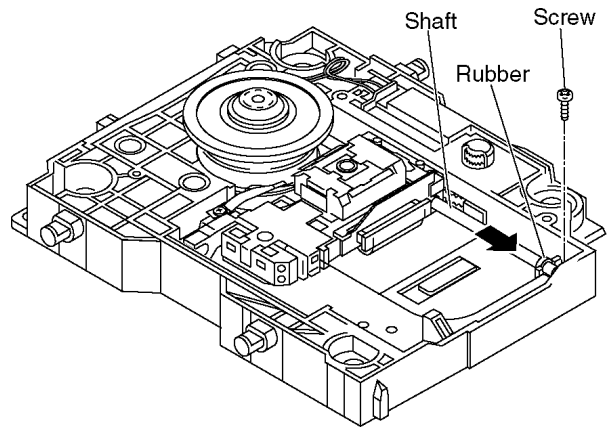


3. Remove the drive rack.

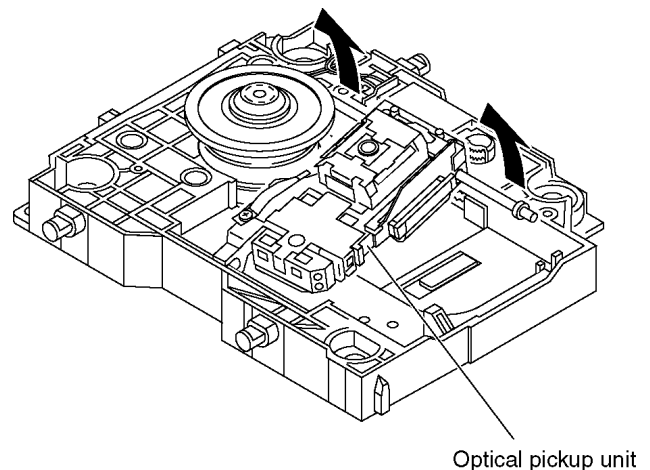


4. Unscrew the screw

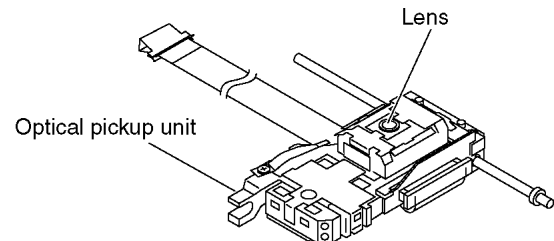
5. Slide the shaft in the arrow direction.



6. Lift the optical pickup unit with the shaft.



7. Remove the optical pickup unit.

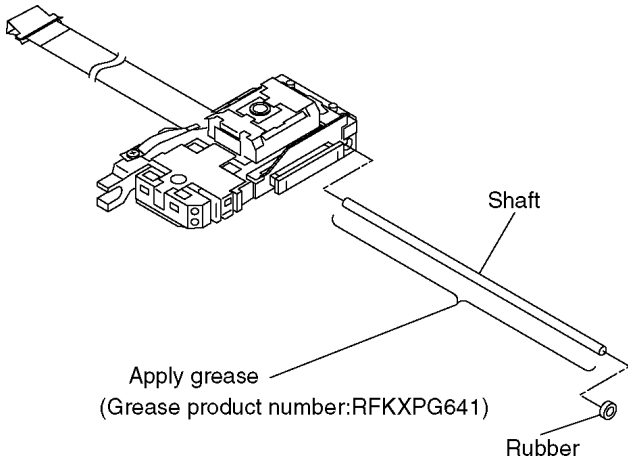


**[Caution]**

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

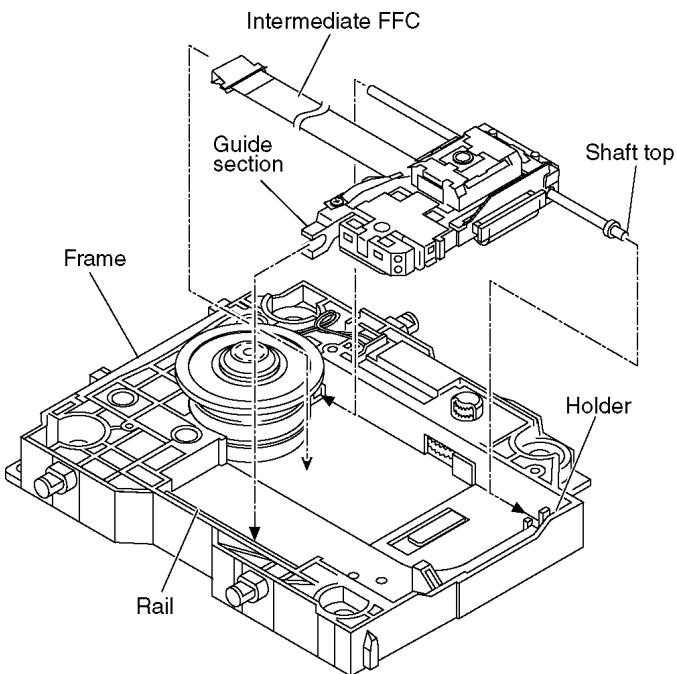
8. Pull the shaft and the rubber out.



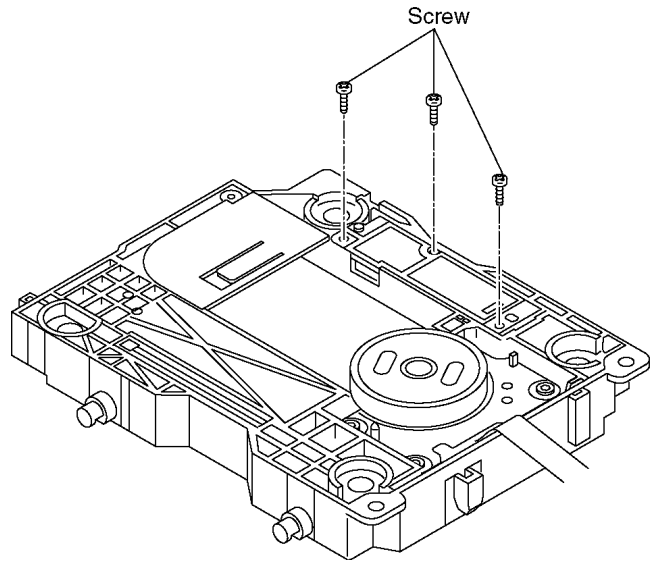
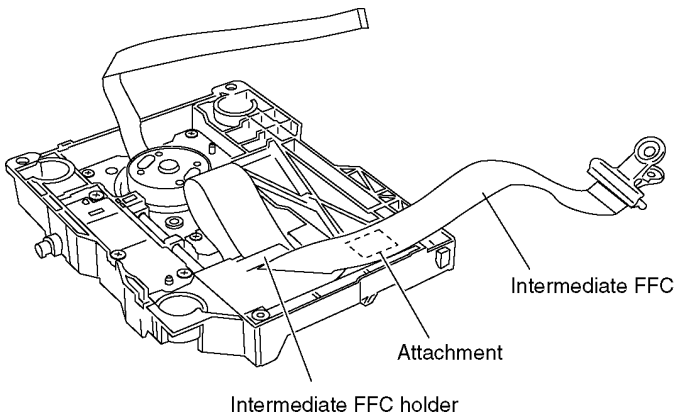


**<Assembling the optical pickup unit>**

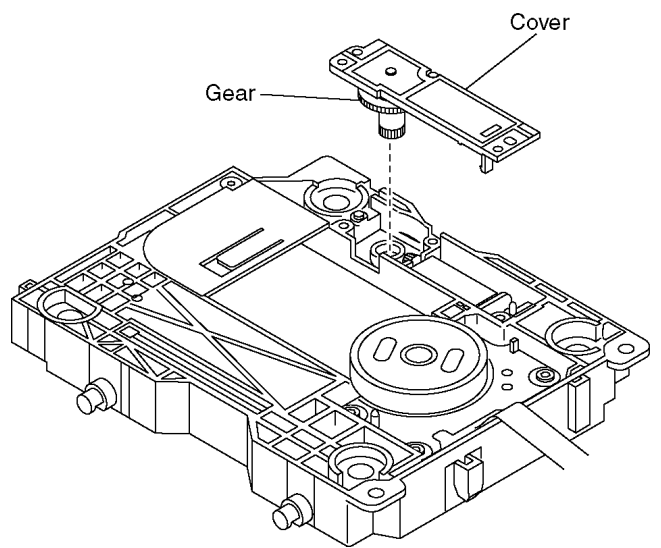
1. Pass the intermediate FFC through the frame hole.
2. Align the guide section of the optical pickup unit with the rail.
3. Install the shaft top to the holder.



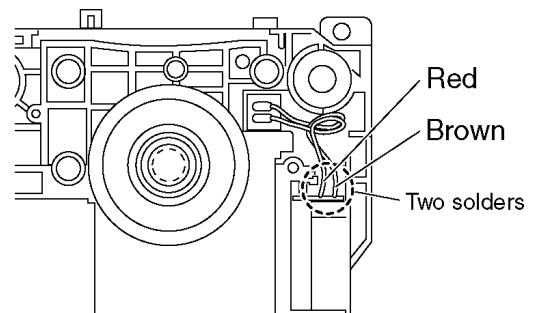
4. The intermediate FFC is fixed as shown below.



2. Remove the cover while lifting the inner gear.



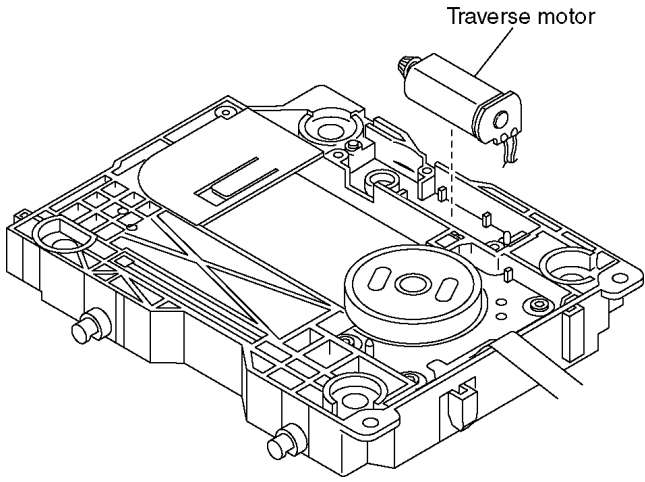
3. Remove the solders.



4. Remove the traverse motor.

**7.7. Traverse Motor**

1. Unscrew the screws.



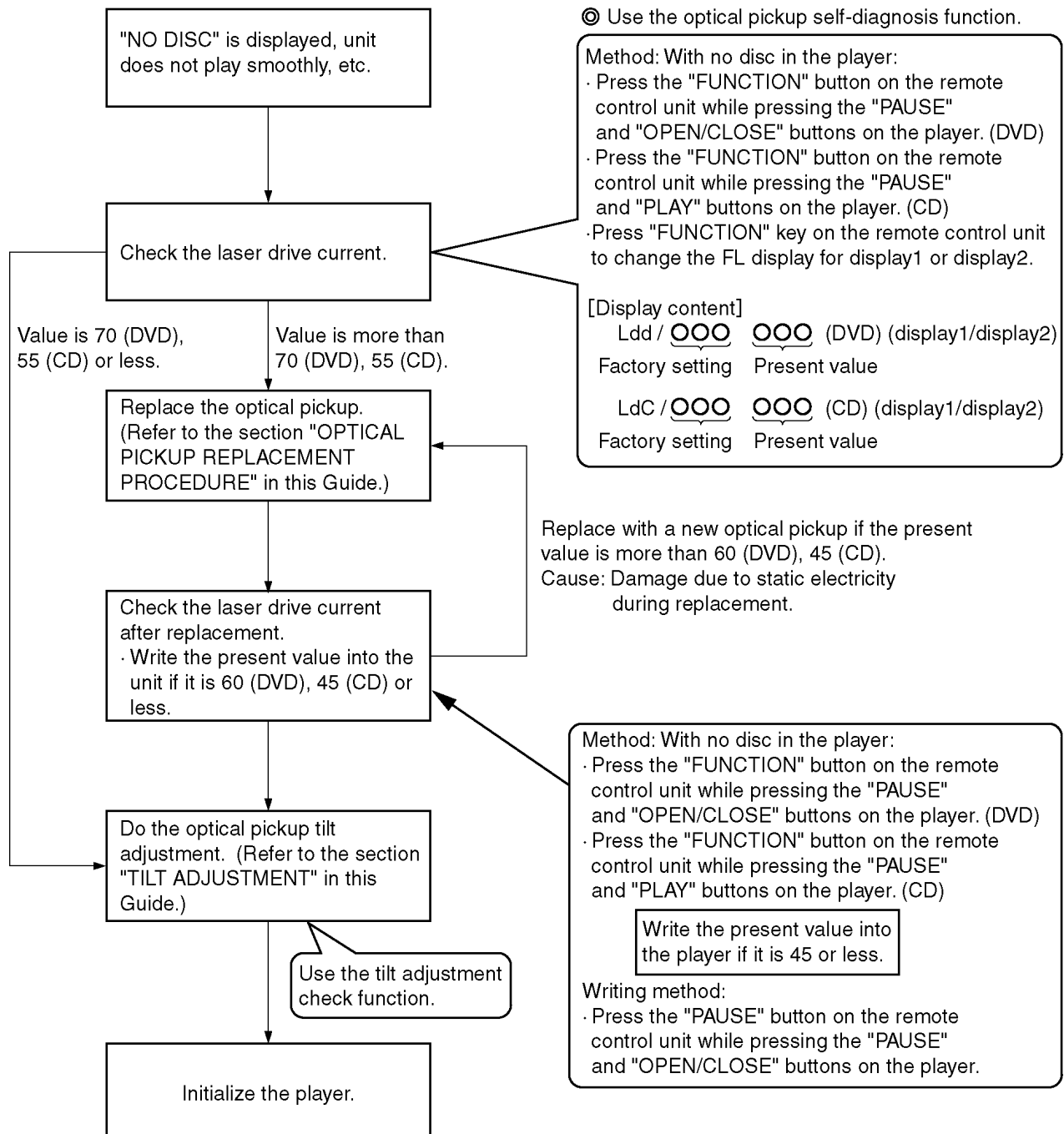
## 8 Self-Diagnosis Function and Service Modes

### 8.1. Optical Pickup Breakdown 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.)



## 8.2. Service Mode Table 1

The service modes can be activated by pressing various button combination on the player and remote control unit.

Player buttons	Remote control unit buttons	Application	Note
PAUSE + 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. Refer to section 10.4. for Optical Pickup Tilt Adjustment Procedure.	Refer to section 10.4. Optical Pickup Tilt Adjustment
	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 7 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)	
PAUSE QUICK OSD OPEN/CLOSE		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
	U, H error					
U11	Focus error					
U15	Unfinalized DVD-R					
H01	Tray loading error					
H02	Spindle servo error	(Spindle servo, DV2 (IC8001) 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				
H07	Spindle motor drive error		Spindle motor ass'y			
	DSC related					
F500	DSC error	DV2 (IC8001) stops in the occurrence of servo error (starup, focus error, etc)	Optical pickup	DV2 (IC8001)	servo drive	
F501	DSC not Ready	DSC-system computer communication error (Communication failure caused by idling of DSC)	DV2 (IC8001)			
F502	DSC Time out error	Similar disposal as F500	Optical pickup	DV2 (IC8001)	servo drive	
F503	DSC communication Failure	Communication error (result error occurred although communication command was sent)	DV2 (IC8001)	EEPROM (IC8611)		
F505	DSC Attention error	Similar disposal as F500	Optical pickup	DV2 (IC8001)	servo drive	
F506	Invalid media	Disc is flipped over, TOC unreadable, incompatible disc	DISC	DV2 (IC8001)		
	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	DV2 (IC8001)			
F601	Indeterminate sector ID requested	Operation stopped caused by the request to access abnormal ID data	DV2 (IC8001)			
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	DV2 (IC8001)			

Error Code	Error Content	Additional error explanation	Defect 1	Defect 2	Defect 3	Defect 4
F611	6626 QCODE don't read Error	Access failure to seek address in CD series	DV2 (IC8001)			
F612	No CRC OK for a specific time	Access failure to ID data in DVD series	DV2 (IC8001)			
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 (*1)		
F632	CPPM KEY DET is not available	Been revoked or falsified	DISC	EEPROM (IC8611)	CPPM (*1)	
	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 (IC8611)	DV2 (IC8001)		
	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 (IC8651)	DV2 (IC8001)		
F894	EEPROM abnormality		EEPROM (IC8611)	Serial communication on lone		
F895	Language area abnormality	Firm version agreement check for factory preset setting failure prevention	FROM (IC8651)			
F896	No existence model	Firm version agreement check for factory preset setting failure prevention				
F897	Initialize is not completed	Initialize completion check for factory preset setting failure prevention				
F898	Disagreement of hardware and software	Unsuitable combination of AV RECORDER, SDRAM and FLASH ROM (firmware)				
F8A0	Message command is not appropriate	Begin sending message to AV task				

**Note:**

An error code will be canceled if a power supply is turned OFF.

\*1: CPPM is the copy guard function beforehand written in the disk for protection of copyrights.

## 8.4. 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

## 8.5. Service mode table 2

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

Item	Player mode and button combination	Function	Display	Cancellation method
Jitter check	In STOP mode within disc, press PAUSE and OPEN/CLOSE buttons on the player, and "5" button on the remote control unit. (Press "FL SELECT" key on the remote control unit to change the FL display for Display1 or Display2.)	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/yyyy_ zz(display1/display2)  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 or OPEN button.
Error code check	In STOP (no disc) mode, press PAUSE and OPEN buttons on the player, and "0" button on the remote control unit. * With pointing of cursor up and down on display, the panel controller switches serial number of history and sends out the command accordingly.	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: → nn UXX Error code = 0 x DBXX is expressed: → nn HXX Error code = 0 x DXXX is expressed: → nn FXX Error code = 0 x 0000 is expressed: → nn F--- * "nn" denotes the serial number of history.(01~20) * "xx" denotes the error code.	Cancelled automatically 5 seconds later.
Initial setting of laser drive current	In STOP (no disc) mode, press PAUSE and OPEN buttons on the player, and PAUSE button on the remote control unit. (Press "FL SELECT" key on the remote control unit to change the FL display for Display1 or Display2.)	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(display1/display2)  DVD laser current measurement CD laser current measurement Laser current measurement mode  The value denotes the current in decimal notation. The above example shows the initial current is 34mA and 28mA for DVD laser and CD laser respectively when the laser is switched on.	Cancelled automatically 5 seconds later.
DVD laser drive current measurement	In STOP (no disc) mode, press PAUSE and OPEN buttons on the player, and FUNCTION button on the remote control unit. (Press "FL SELECT" key on the remote control unit to change the FL display for Display1 or Display2.)	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 POWER button on the player is switched off.)	Ldd/034_032(display1/display2)  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	In STOP (no disc) mode, press PAUSE and OPEN buttons on the player, and RETURN button on the remote control unit. (Press "FL SELECT" key on the remote control unit to change the FL display for Display1 or Display2.)	ADSC internal RAM data check ADSC internal RAM data is read out and displayed. Change the address with CLEAR key operation to show the data for 11 addresses.	A_FbO/A_0000(display1/display2)  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 or OPEN button.
Servo process display	In STOP (no disc) mode, press PAUSE and PLAY buttons on the player, and "7" button on the remote control unit.	Servo process display The servo process from STOP to ACCESS is displayed.	_____	Pull out the AC cord.
CD laser drive current measurement	In STOP (no disc) mode, press PAUSE and PLAY buttons on the player, and FUNCTION button on the remote control unit. (Press "FL SELECT" key on the remote control unit to change the FL display for Display1 or Display2.)	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 POWER button on the player is switched off.)	LdC/028_026(display1/display2)  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	Player mode and button combination	Function	Display	Cancellation method
Version display	In STOP (no disc) mode, press PAUSE and OPEN 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	<p>sr/rr/xyzzz(display1/display2)</p> <p>System controller release number System controller model number System controller generation Panel controller release number Panel controller model number</p> <p>※ When check this item, connect this player to monitor TV and check with watching the display shown on the monitor.</p>	Cancelled automatically 5 seconds later.
Lighting of display tube	In STOP (no disc) mode, press PAUSE and OPEN buttons on the player, and "9" button on the remote control unit.	Lighting of display tube	_____	Repeat the same operation.
Dealer's lock	In STOP mode, press STOP button on the player, and POWER button on the remote control unit for 1 second or longer.	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 EEPROM.	<p>· "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.</p> <p>· "UNLOC" sign appears when dealer's lock is switched off.</p>	Repeat the same operation.
Initialization	In STOP (no disc) mode, press PAUSE, QUICK OSD and OPEN buttons on the player for 3 seconds or longer.	Initialization User settings are cancelled and player is initialized to factory setting.	"InI"	
Region display	In STOP (no disc) mode, press PAUSE and OPEN buttons on the player, and "6" button on the remote control unit.	Region display	<p>wxyzzz</p> <p>Panel controller jumper information N: NTSC / 6: PAL60 N: noPAL / P: PAL Region No.</p>	Cancelled automatically 5 seconds later.

Item	Player mode and button combination	Function	Display	Cancellation method
Timer 1 check	In STOP (no disc) mode, press PAUSE and PLAY buttons on the player, and "5" 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.	t1 1234/5678(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 STOP and PLAY buttons on the player, and "5" 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 PAUSE and PLAY buttons on the player, and "6" 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	t2 1234/5(display1/display2) Time is shown in 5 digits of decimal notation in a unit of 10 hours. "00000" will follow "99999".	Cancelled automatically 5 seconds later.
Timer 2 reset	While displaying Timer 2 data, press STOP and PLAY buttons on the player and "6" 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 STOP button on the player and POWER 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

- When FROM or module P.C.B. is replaced, carry out the recovery processing to optimize the drive.  
Playback the recovery disk to process the recovery automatically.
- Recovery disc [Product number: RFKZD03R005] (RFKZD03R004 can not be recovered as a partial item.  
So use the new recovery disc, RFKZD03R005.)
- Performing recovery
  1. Load the recovery disc RFKZD03R005 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.

**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 8.5. is carried out. Write down the contents of the setting before recovery processing, and reset the player.

### 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 playerbility to the substandard discs.processing to optimize the drive.  
The recovery disc has also firmware version-up.
- After version-up, recovery processing is executed automatically.
- Part number of the recovery disc for version-up will be noticed when it is supplied.
- Updating firmware
  1. Load the recovery 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 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.

**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.

# 10 ADJUSTMENT PROCEDURES

## 10.1. Service Tools and Equipment

Application	Name	Number
Tilt adjustment	DVD test disc	DVDT-S15 or DVDT-S01
	TORX screw driver (T6)	Available on sales route. (T6) or RFKZ0185
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
	Recovery disc	RFKZD03R005

## 10.2. Important points in adjustment

### 10.2.1. 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.

### 10.2.2. 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.

## 10.4. Optical adjustment

### 10.4.1. Optical pickup tilt adjustment

Measurement point	Adjustment point	Mode	Disc
	Tangential adjustment screw Tilt adjustment screw	T01 (inner periphery) play T30 (central periphery) play T43 (outer periphery) play	DVDT-S15 or DVDT-S01
Measuring equipment		Adjustment value	
None (Main unit display for servicing is used.)		Adjust to the minimum jitter value.	

#### 10.4.1.1. Adjustment procedure

1. While pressing PAUSE and OPEN/CLOSE buttons 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.

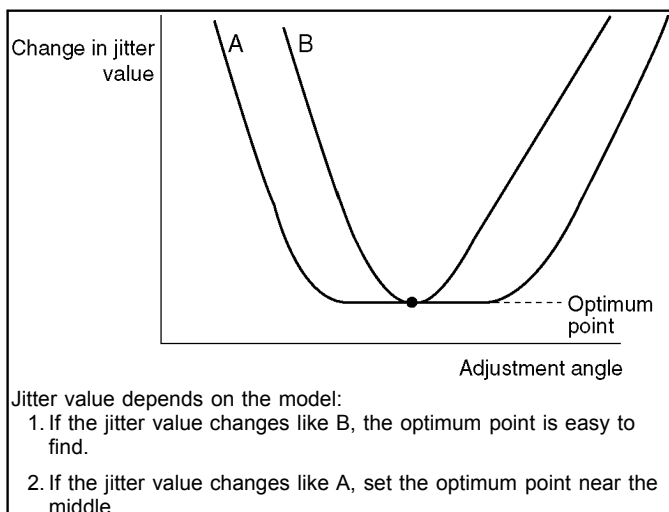
##### Note:

Jitter value appears on the front display.

3. Play test disc T30 (central periphery).
4. Adjust tangential adjustment screw so that the jitter value is minimized.
5. Play test disc T30 (central periphery).
6. Adjust tilt adjustment screw 1 so that the jitter value is minimized.
7. Play test disc T30 (central 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.
10. Finally please reproduce T01 (inner periphery) and T43 (outer periphery) and check the jitter value. (Please readjust, when the jitter value is extremely different.)

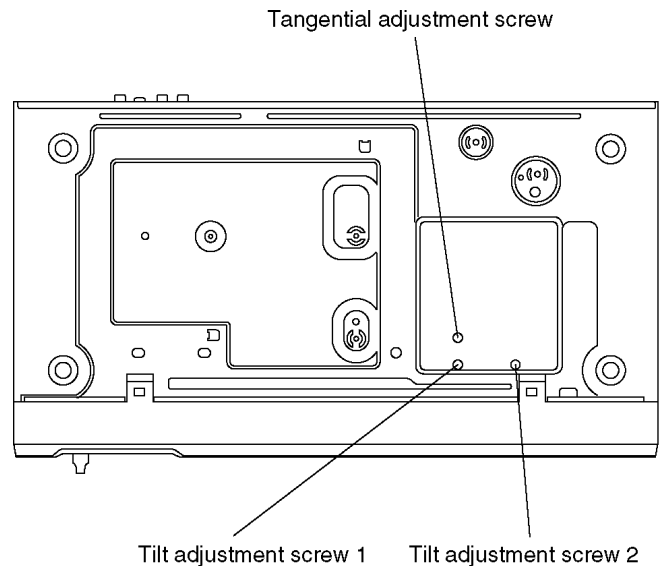
#### 10.4.1.2. Important points

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.



##### Note:

When FFC has covered the adjustment screw, please insert a screwdriver, evading FFC(s).



#### 10.4.1.3. Check after adjustment

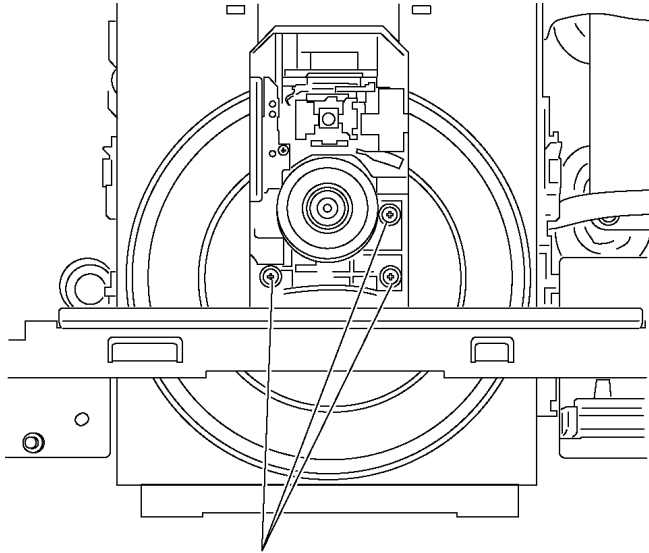
Play test disc or any other disc to make sure there is no picture degradation in the inner, middle and outer peripheries, and no audio skipping. After adjustment is finished, lock each adjustment screw in position using screw lock.

#### 10.4.1.4. Procedure for screw lock

Please perform a screw lock in which by the side of the tip or head of an adjustment screw.

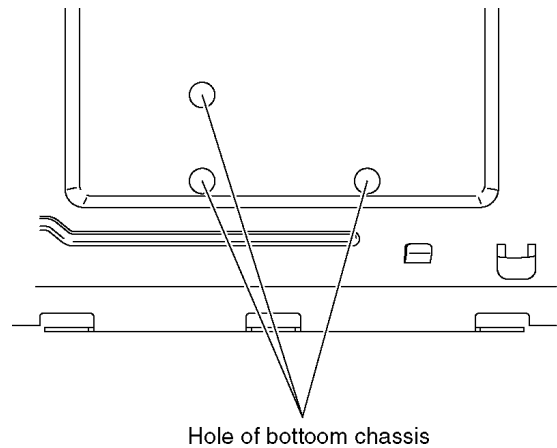
**<When a screw lock is performed to the tip part side of an adjustment screw>**

1. After adjustment, remove top panel.
2. After pulling out a tray to the position which does not become obstructive, remove clamber plate.
3. Fix adjustment screw with screw lock.
4. After fixing, reassemble clamber plate and top panel.



Screw lock  
(adjustment screw)

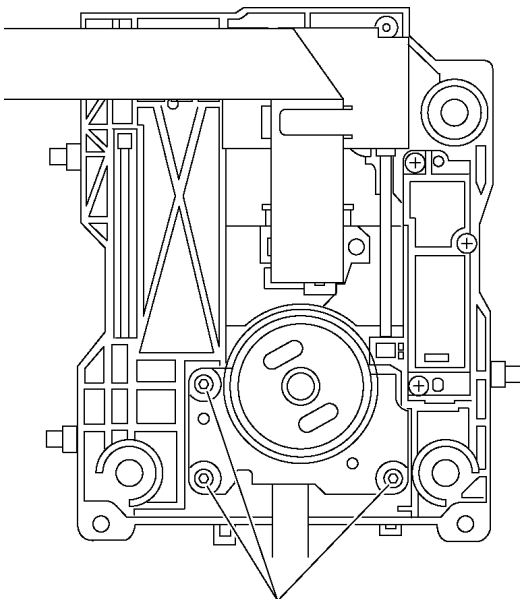
It is also possible to perform screw lock on the head of an adjustment screw after an adjustment end using an injector etc. from the hole at the bottom of a product (hole of bottom chassis), without decomposing.



Hole of bottom chassis

**<When a screw lock is performed to the head side of an adjustment screw>**

1. After adjustment, remove top panel, front panel, rear panel and mechanism unit in this sequence.
2. Lay the mechanism unit upside down, and fix adjustment screw with screw lock.
3. After fixing, reassemble mechanism unit, rear panel, front panel and top panel.



Screw lock  
(adjustment screw)

# 11 Abbreviations

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

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

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

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

# 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					IC1101					IC1151											
MODE	1	2	3	4	5	1	2	3	1	2	3	4	5									
PLAY	2.0	1.7	0	15.0	-211.0	2.9	2.5	0	10.7	3.3	9.0	-	0									
STOP	1.9	1.7	0	15.0	-87.2	2.9	2.5	0	11.2	3.3	9.0	-	0									
Ref No.	IC1195																					
MODE	1	2	3	4	5																	
PLAY	5.1	0	3.8	3.5	3.3																	
STOP	5.1	0	3.8	3.5	3.3																	
Ref No.	IC3501																					
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16						
PLAY	5.0	2.4	2.5	1.9	5.0	1.9	0	2.3	2.3	0	2.3	2.3	1.9	1.9	1.9	2.3						
STOP	5.0	2.4	2.5	1.7	5.0	1.7	0	2.3	2.3	0	2.3	2.3	1.6	1.6	1.6	2.4						
Ref No.	IC4301																					
MODE	1	2	3	4	5	6	7	8														
PLAY	0	0	0	-10.3	0	0	0	11.8														
STOP	0	0	0	-10.1	0	0	0	12.0														
Ref No.	IC6001																					
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
PLAY	0	0.3	0.4	3.3	3.3	3.3	3.3	3.3	1.7	1.5	0	0	0.1	0	3.3	1.6	1.6	3.3	0	0		
STOP	0	0.3	0.4	3.3	3.3	3.3	3.3	3.3	1.7	1.5	0	0	0	0.1	3.3	1.6	1.6	3.3	0	0		
Ref No.	IC6001																					
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40		
PLAY	3.1	3.3	3.3	3.3	0	0	0	3.3	3.3	3.3	0	0	0	-4.4	-4.4	3.2	-8.0	-8.0	-7.9	-8.0		
STOP	3.2	3.3	3.3	3.3	0	0	0	3.3	3.3	3.3	0	3.3	3.3	0	0	-8.7	-9.2	-9.2	-9.2	-9.2		
Ref No.	IC6001																					
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60		
PLAY	-7.4	-7.4	-10.4	-7.4	-7.4	-7.4	-10.4	-10.4	-7.7	-3.0	0	-10.2	-10.3	-10.2	-7.5	-10.4	-10.4	3.2	2.7	2.8		
STOP	-9.2	-9.2	-9.2	-9.2	-9.2	-9.2	-9.2	-9.2	-9.2	-9.2	0	-9.2	-9.2	-9.2	-9.2	-9.2	-9.3	0	0	0		
Ref No.	IC6001																					
MODE	61	62	63	64																		
PLAY	3.3	0	3.3	0																		
STOP	0	3.2	0	0																		
Ref No.	Q1045				Q1051				Q1081				Q1082									
MODE	E	C	B		1	2	3	4	E	C	B		E	C	B							
PLAY	14.9	23.0	15.5		5.1	4.1	0	1.7	0	0.7	0		0	0	0.7							
STOP	14.9	22.8	15.5		5.1	4.1	0	1.7	0	0.7	0		0	0	0.7							
Ref No.	Q1115				Q1125				Q1126													
MODE	1	2	3	4	5	6	E	C	B	1	2	3	4	5								
PLAY	5.1	5.1	0.1	5.1	5.1	5.1	2.4	1.3	1.8	1.8	1.3	1.3	0.7	1.3								
STOP	5.1	5.1	0.1	5.1	5.1	5.1	2.4	1.3	1.7	1.7	1.3	1.3	0.7	1.3								
Ref No.	Q4302			Q4422			Q4423			Q4751			Q4924									
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B				
PLAY	0	3.6	0	0	0	-4.2	0	0	-4.2	1.8	5.0	2.5	0	-4.2	0							
STOP	0	0	0	0	0	0.7	0	0	0.7	1.8	5.0	2.5	0	-3.7	0							
Ref No.	Q4940			Q4947			Q4948			Q4949			Q4950									
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B				
PLAY	0	0	-4.2	0	0	-4.2	0	0	-4.2	0	5.8	0	0	0	0.7	0						
STOP	0	0	-3.7	0	0	-3.7	0	0	-3.7	0	6.0	0	0	0	0.7	0						
Ref No.	Q6085																					
MODE	E	C	B																			
PLAY	-6.5	-6.4	-5.8																			
STOP	-6.6	-6.5	-5.8																			
Ref No.	QR1115			QR4302			QR4304															
MODE	E	C	B	E	C	B	1	2	3	4	5	6										
PLAY	0	0	3.3	0.1	-4.2	0	5.0	5.0	5.0	3.6	0	0										
STOP	0	0	3.3	3.7	3.6	0	5.0	5.0	5.0	0	0	0										
Ref No.	QR4305			QR4306			QR4307			QR4308												
MODE	1	2	3	4	5	6	E	C	B	E	C	B	E	C	B							
PLAY	0	0	0	-4.2	5.8	0	0	0.1	3.6	0	1.6	0	1.6	1.5	0							
STOP	0	0	0	-3.7	6.0	0	0	3.7	0	0	1.6	0	1.7	1.6	0							
Ref No.	Q4901						Q4902															
MODE	1	2	3	4	5	6	1	2	3	4	5	6										
PLAY	0	0	11.4	11.4	3.2	0	-10.6	0	11.4	11.4	11.4	-10.6										
STOP	0	0	11.9	11.8	3.2	0	-10.3	0	11.9	11.8	11.8	-10.4										

## 12.2. MODULE P.C.B.

Ref No.	IC8001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PLAY	3.2	3.3	0	3.3	3.3	3.3	3.3	3.3	0	3.3	3.3	3.3	3.3	3.3	3.3	0	3.3	3.3	3.3	0
STOP	3.2	3.1	0	3.1	3.3	3.3	3.1	3.1	0	3.2	3.1	3.3	3.0	3.2	2.9	0	3.2	3.1	3.3	0
Ref No.	IC8001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
PLAY	0	3.3	2.3	1.8	1.1	1.2	2.0	3.3	0	0.9	0.9	0.7	0	3.3	0	0	0	3.3	0	0
STOP	0	3.3	3.3	0	3.3	1.2	0	3.3	0	0.7	0.5	0.3	0.8	3.3	0	1.1	2.3	2.5	1.4	1.4
Ref No.	IC8001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
PLAY	3.3	3.3	0	1.2	0	0	3.3	3.3	0	3.3	0	2.0	3.3	0	0	3.3	3.3	3.3	3.3	3.3
STOP	2.8	0.6	2.5	1.2	2.1	1.0	0.6	3.3	0	1.9	2.8	2.6	3.3	0	3.3	3.3	3.3	3.3	3.3	3.3
Ref No.	IC8001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
PLAY	0	3.3	0	0	0	0.1	2.9	2.8	2.7	3.0	0	0	3.2	0	1.6	2.0	1.7	0.1	3.3	0
STOP	0	3.3	0	0	0	0	0	2.8	2.8	0	0	0	0	0	1.6	1.6	1.7	3.3	0	3.3
Ref No.	IC8001																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
PLAY	2.8	3.3	3.3	3.3	0	0	0	0	0	1.2	0	0	0	0	0	0	0	3.3	0.7	0
STOP	3.2	0	0	3.3	0	0	0	0	1.2	0	0	0	0	0	0	0	0	3.3	0.8	0
Ref No.	IC8001																			
MODE	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
PLAY	2.3	2.1	1.8	1.3	0	1.7	3.3	2.1	2.1	1.8	1.8	1.3	1.3	1.6	1.6	1.6	1.6	3.3	1.9	1.5
STOP	2.3	2.1	1.8	0	0	1.8	3.2	2.1	2.0	1.8	1.8	1.0	1.6	1.6	1.6	1.6	3.3	3.3	1.8	1.5
Ref No.	IC8001																			
MODE	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
PLAY	1.4	0	0.4	1.0	0.1	0.1	2.2	1.6	2.6	2.6	2.6	2.6	2.6	2.6	2.4	2.4	2.4	2.4	1.6	1.8
STOP	1.4	0	0	0.1	0.1	0.6	2.2	1.6	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	1.6	1.6
Ref No.	IC8001																			
MODE	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
PLAY	3.3	1.2	1.9	2.1	0	1.6	1.6	1.6	0.6	3.3	0.4	0.4	1.0	1.0	2.2	0.7	0	0.9	3.3	0
STOP	3.3	1.2	2.0	2.1	0	1.6	1.6	1.6	0.4	3.3	0.5	0.4	1.0	1.0	2.2	0.4	0	0.9	3.3	0
Ref No.	IC8001																			
MODE	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
PLAY	3.3	0	1.6	0	-	1.5	3.3	0.1	1.7	1.6	1.3	1.2	0	0	1.1	3.3	3.3	0	3.3	0
STOP	3.3	0	1.6	0	1.5	1.5	3.3	0.1	1.7	1.6	0	1.2	0	0	0	1.6	3.3	0	3.3	0
Ref No.	IC8001																			
MODE	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
PLAY	0	3.3	0	0	0	0	0	0	0	3.3	0	1.0	1.6	1.0	1.0	3.3	3.3	0.8	0.8	0.7
STOP	0	3.3	0	0	0	0	0	0	0	3.3	0	0.8	1.6	1.0	0.9	3.3	3.3	0.8	0.9	0.9
Ref No.	IC8001																			
MODE	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
PLAY	0	3.3	1.0	1.5	0	1.7	0.5	3.1	3.3	3.3	0.6	0.6	0	0	3.1	3.3	3.3	0	1.2	1.2
STOP	0	3.3	0	0.8	0.9	0	0	1.8	3.3	3.3	2.2	2.2	0	0	0	3.0	3.3	0	1.2	1.6
Ref No.	IC8001																			
MODE	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
PLAY	2.3	0	0	0	3.3	1.6	0	0	0	0	3.3	1.6	0	3.0	0	1.2	0	0	3.3	3.0
STOP	0	0	1.6	0	3.3	1.6	0	1.5	1.5	0	3.3	3.3	0.5	0.8	0	1.2	0	0	3.3	3.1
Ref No.	IC8001																			
MODE	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256				
PLAY	3.0	0	1.6	3.3	3.2	3.3	0	3.2	2.3	0	2.4	3.1	0	3.2	3.3	3.2				
STOP	1.6	0	1.6	3.2	3.2	3.3	0	0	3.3	0	3.3	3.3	0	0	3.3	3.0				
Ref No.	IC8051																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PLAY	3.3	3.2	3.3	3.2	3.2	0	3.2	3.2	3.3	3.2	3.2	0	3.3	3.1	3.3	3.3	3.3	3.2	3.0	1.5
STOP	3.3	3.0	3.3	3.2	3.1	0	3.3	3.3	3.3	3.1	3.0	0	2.9	3.3	2.8	3.3	3.2	3.2	3.2	2.7
Ref No.	IC8051																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
PLAY	1.5	0	0	0	0	3.1	3.3	0	2.3	1.6	1.5	1.5	0	0	0	0	3.3	3.3	2.4	-
STOP	1.7	0	0.1	0.1	0.2	1.6	3.3	0	1.6	1.6	1.6	1.5	0.1	0	0	0	3.3	1.6	2.8	-
Ref No.	IC8051																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54						
PLAY	0	3.2	3.3	3.2	3.2	0	3.1	3.2	3.3	3.1	3.2	0	3.3	0						
STOP	0	3.2	3.3	3.2	3.1	0	3.0	3.2	3.3	2.9	2.9	0	3.1	0						
Ref No.	IC8111																			
MODE	1	2	3	4	5	6	7	8												
PLAY	3.3	-	0	2.0	4.7	-	-	5.1												
STOP	3.3	-	0	2.3	4.7	-	-	5.1												
Ref No.	IC8251																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PLAY	3.3	1.6	3.3	3.3	1.8	1.6	1.6	9.0	4.3	4.3	4.3	4.2	3.1	5.5	2.5	2.6	2.6	2.6	0	9.0
STOP	3.3	1.6	0	0	1.6	1.6	1.6	9.0	4.2	4.2	4.2	4.2	3.8	3.8	2.6	2.6	2.6	2.6	0	9.0
Ref No.	IC8251																			
MODE	21	22	23	24	25	26	27	28												
PLAY	5.1	1.6	1.6	0	1.8	1.8	1.8	1.6												
STOP	5.1	1.6	1.6	0	1.7	1.8	1.6	1.6												
Ref No.	IC8421																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
PLAY	1.6	1.6	1.3	1.7	1.7	3.3	3.3	3.3	0	2.5	2.5	2.5	0	5.0	5.0	4.9				
STOP	1.6	1.6	0	1.7	3.2	3.3	3.3	3.3	0	2.5	2.5	2.5	0	5.0	0	0				
Ref No.	IC8601																			
MODE	1	2	3																	
PLAY	0	3.2	3.3																	
STOP	0	3.2	3.3																	



Ref No.	IC8611																					
MODE	1	2	3	4	5	6	7	8														
PLAY	0	0	0	0	3.3	3.3	0	3.3														
STOP	0	0	0	0	3.3	3.3	0	3.3														
Ref No.	IC8651																					
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
PLAY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
STOP	1.0	0.3	0.6	2.4	0	0	3.3	3.3	0	0	3.3	3.2	3.3	3.3	3.3	3.3	3.3	3.3	0	0		
Ref No.	IC8651																					
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40		
PLAY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
STOP	0	0	0	0	3.3	3.3	0	3.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	3.3	0.6	0.6	0.6		
Ref No.	IC8651																					
MODE	41	42	43	44	45	46	47	48														
PLAY	-	-	-	-	-	-	-	-														
STOP	0.6	0.6	0.6	0.6	0.6	0	3.3	0														
Ref No.	Q8550			Q8551			Q8552			Q8560			Q8561									
MODE	E	C	B		E	C	B		E	C	B		E	C	B		E	C	B			
PLAY	5.0	5.0	4.3		0.4	4.0	1.0		4.6	2.2	3.9		0	0.1	0.7		0	5.0	0.1			
STOP	5.1	5.1	4.4		0	5.0	0.1		5.0	1.3	5.0		0	0.1	0.7		0	5.0	0.1			
Ref No.	Q8562																					
MODE	E	C	B																			
PLAY	5.0	0.1	5.0																			
STOP	5.0	0.1	5.0																			
Ref No.	QR8111						QR8431			QR8571												
MODE	1	2	3	4	5	6		E	C	B		E	C	B								
PLAY	0	0	1.2	0	0	4.7		0	4.2	0		3.3	3.2	0.1								
STOP	0	0	1.2	0	0	4.7		0	0	3.3		3.3	0	3.3								

### 12.3. MIC P.C.B.

Ref No.	IC4671									IC4691											
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8				
PLAY	0	0	0	-10.3	0	0	0	11.8		0	0	0	-10.3	0	0	0	11.8				
STOP	0	0	0	-10.1	0	0	0	12.0		0	0	0	-10.1	0	0	0	12.0				

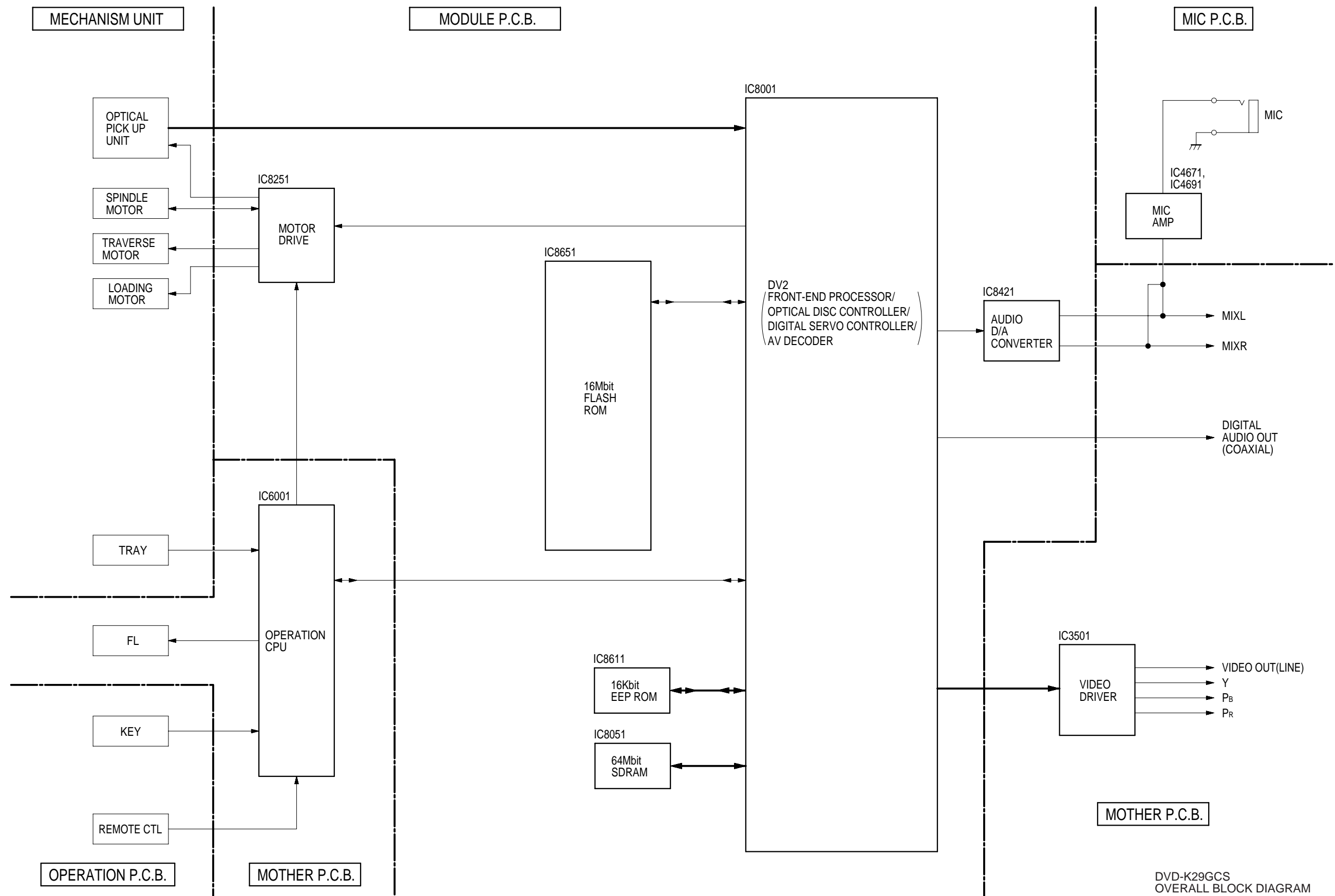


# 13 BLOCK DIAGRAM

**Note:**

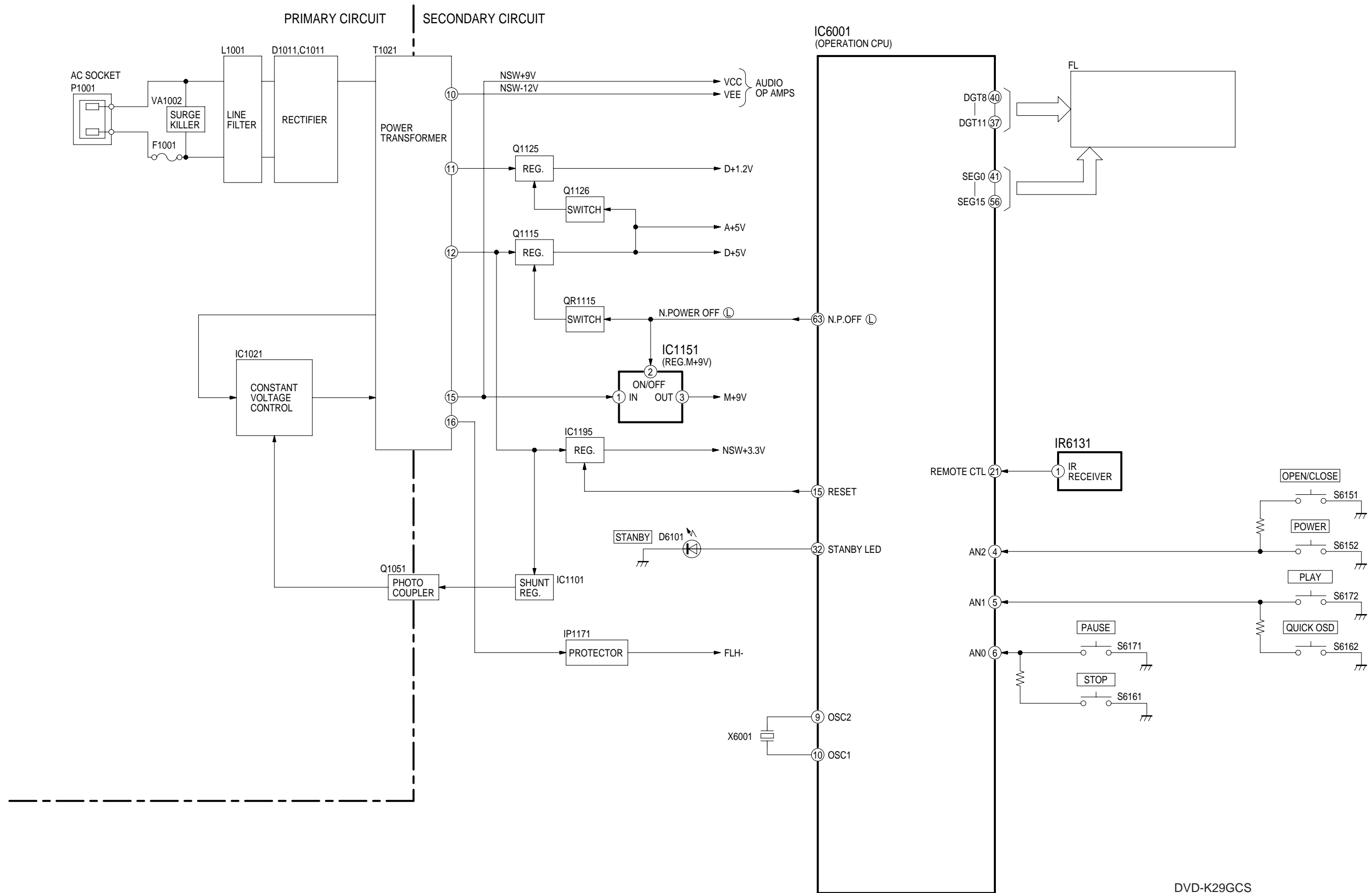
Circuit voltage and waveform described herein shall be regarded as reference information when probing defect point, because it may differ from an actual measuring value due to difference of Measuring instrument and its measuring condition and product itself.

## 13.1. OVERALL BLOCK DIAGRAM



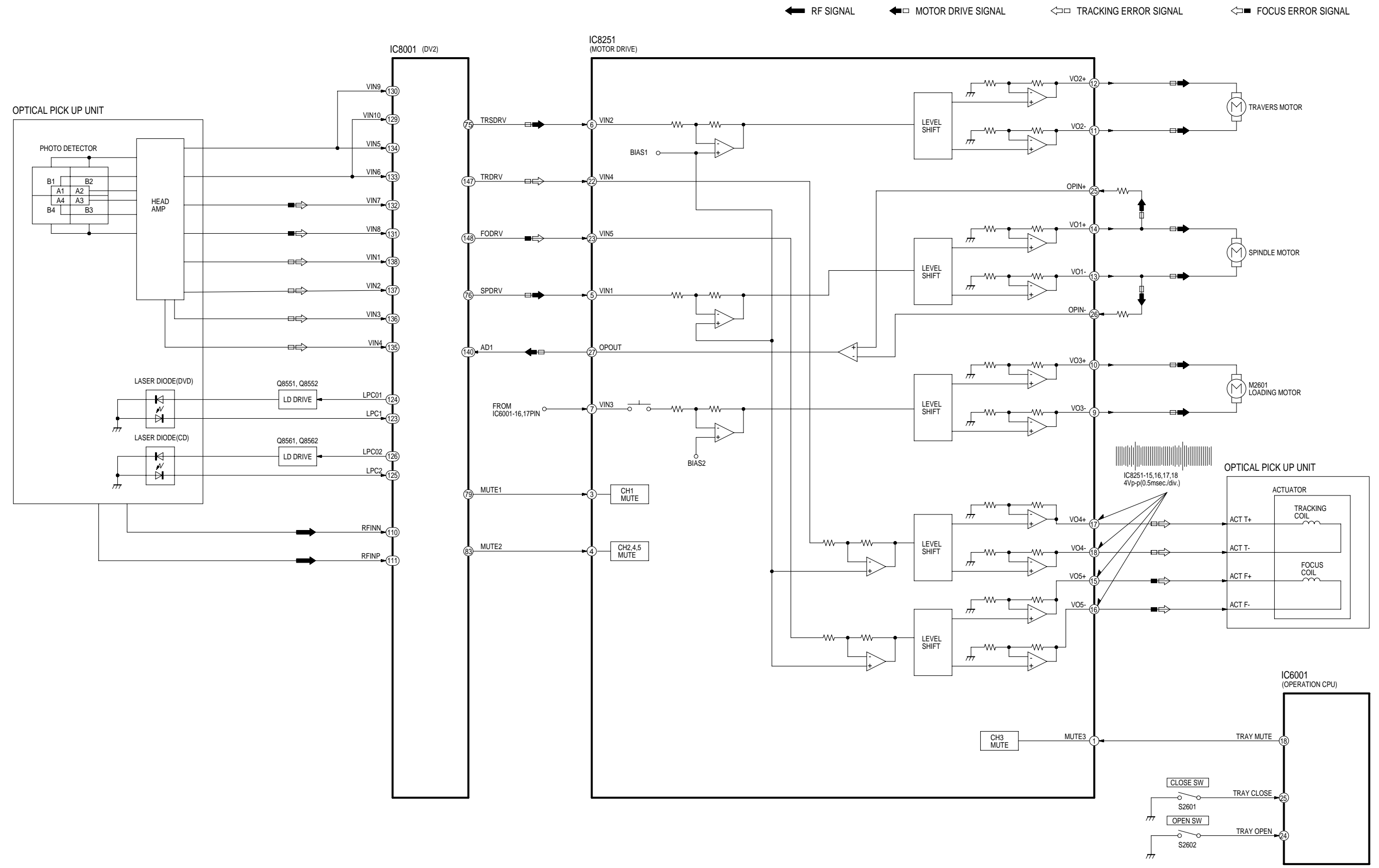
DVD-K29GCS  
OVERALL BLOCK DIAGRAM

### 13.2. POWER SUPPLY BLOCK DIAGRAM



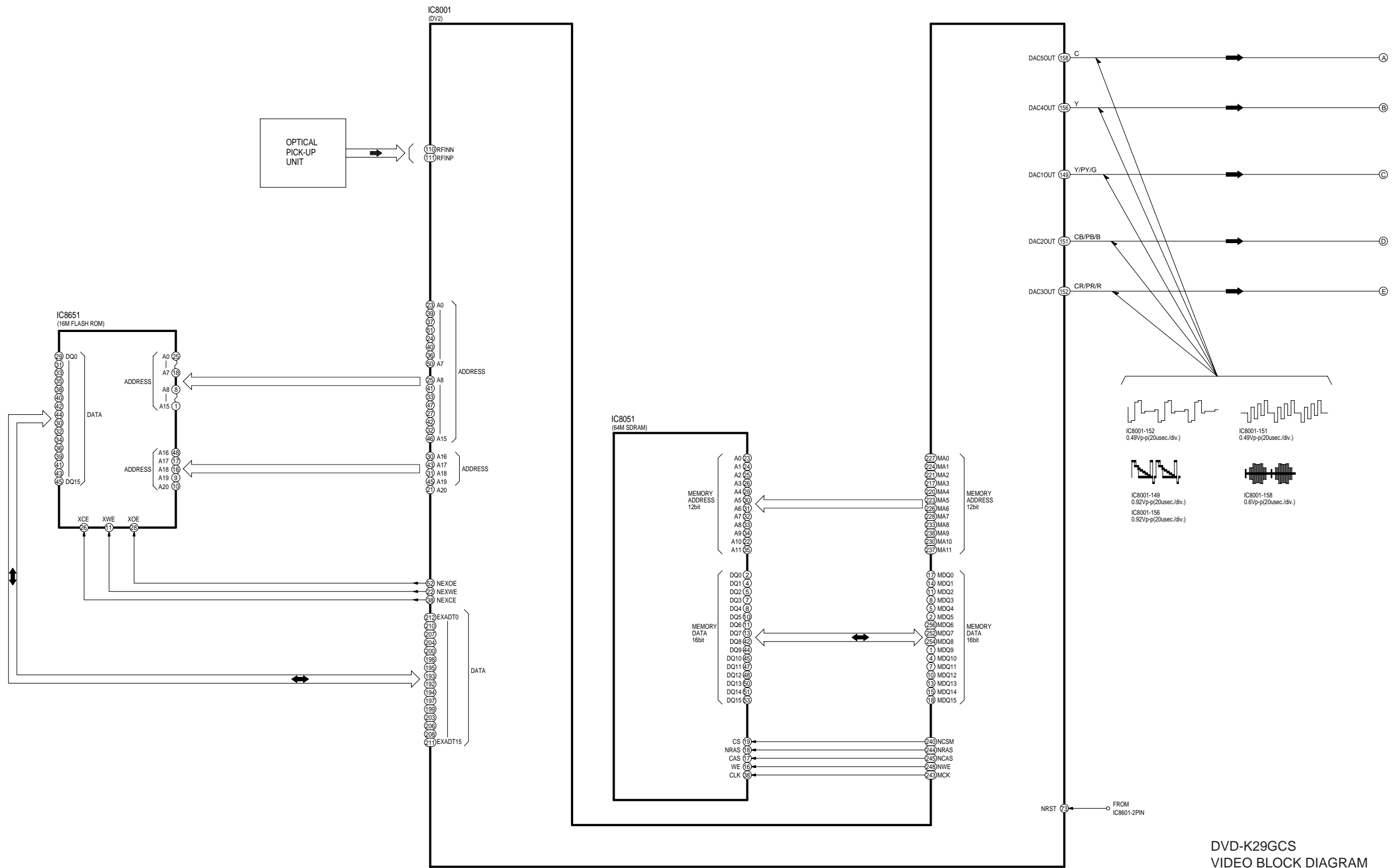
DVD-K29GCS  
POWER SUPPLY BLOCK DIAGRAM

### 13.3. SERVO BLOCK DIAGRAM

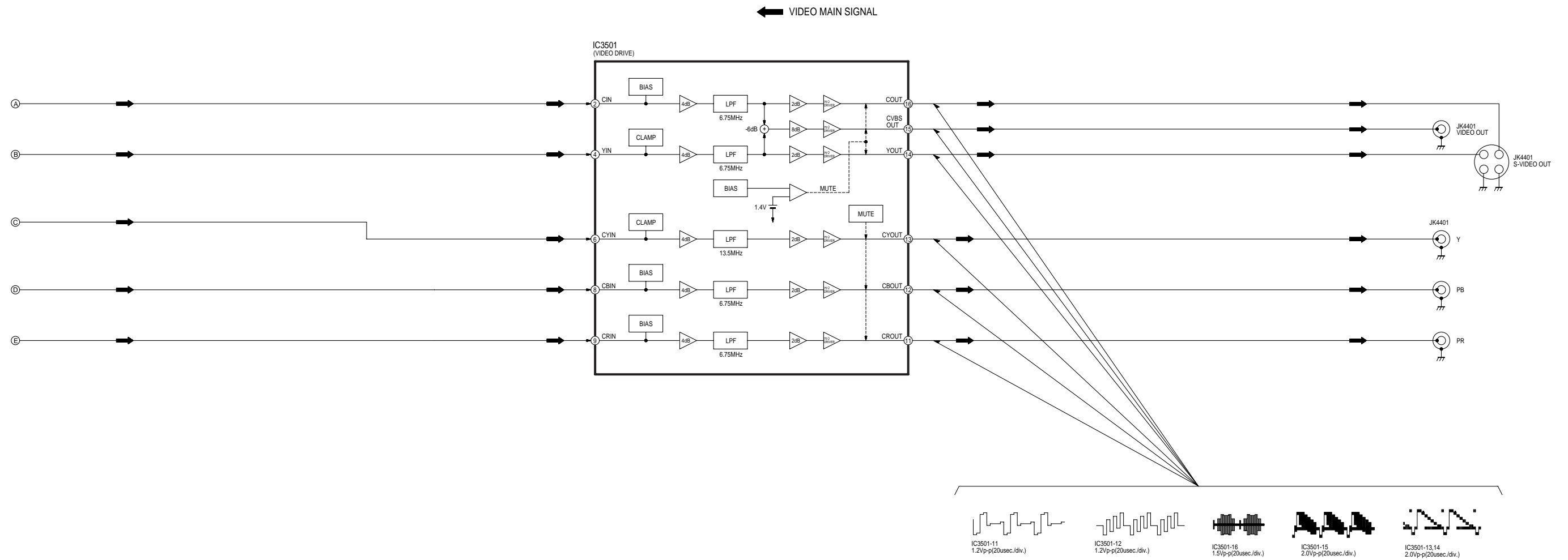


DVD-K29GCS SERVO BLOCK DIAGRAM

### 13.4. VIDEO BLOCK DIAGRAM



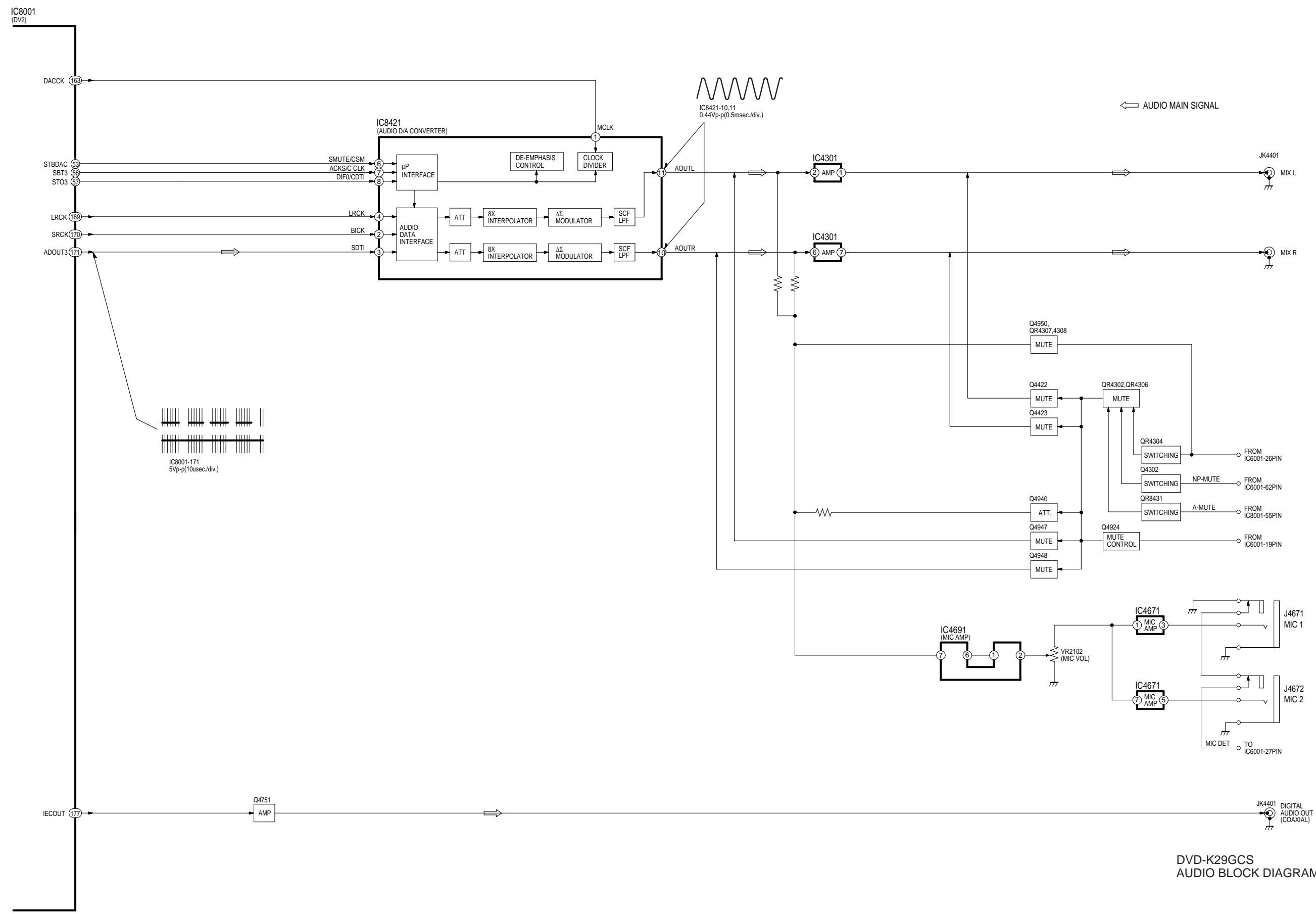
DVD-K29GCS VIDEO BLOCK DIAGRAM



DVD-K29GCS  
VIDEO BLOCK DIAGRAM

DVD-K29GCS  
VIDEO BLOCK DIAGRAM

### 13.5. AUDIO BLOCK DIAGRAM



DVD-K29GCS  
AUDIO BLOCK DIAGRAM



# 14 INTERCONNECTION SCHEMATIC DIAGRAM & SCHEMATIC DIAGRAM NOTES

## 14.1. INTERCONNECTION SCHEMATIC DIAGRAM



DVD-K29GCS INTERCONNECTION SCHEMATIC 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  $\triangle$  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  $\triangle$  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.

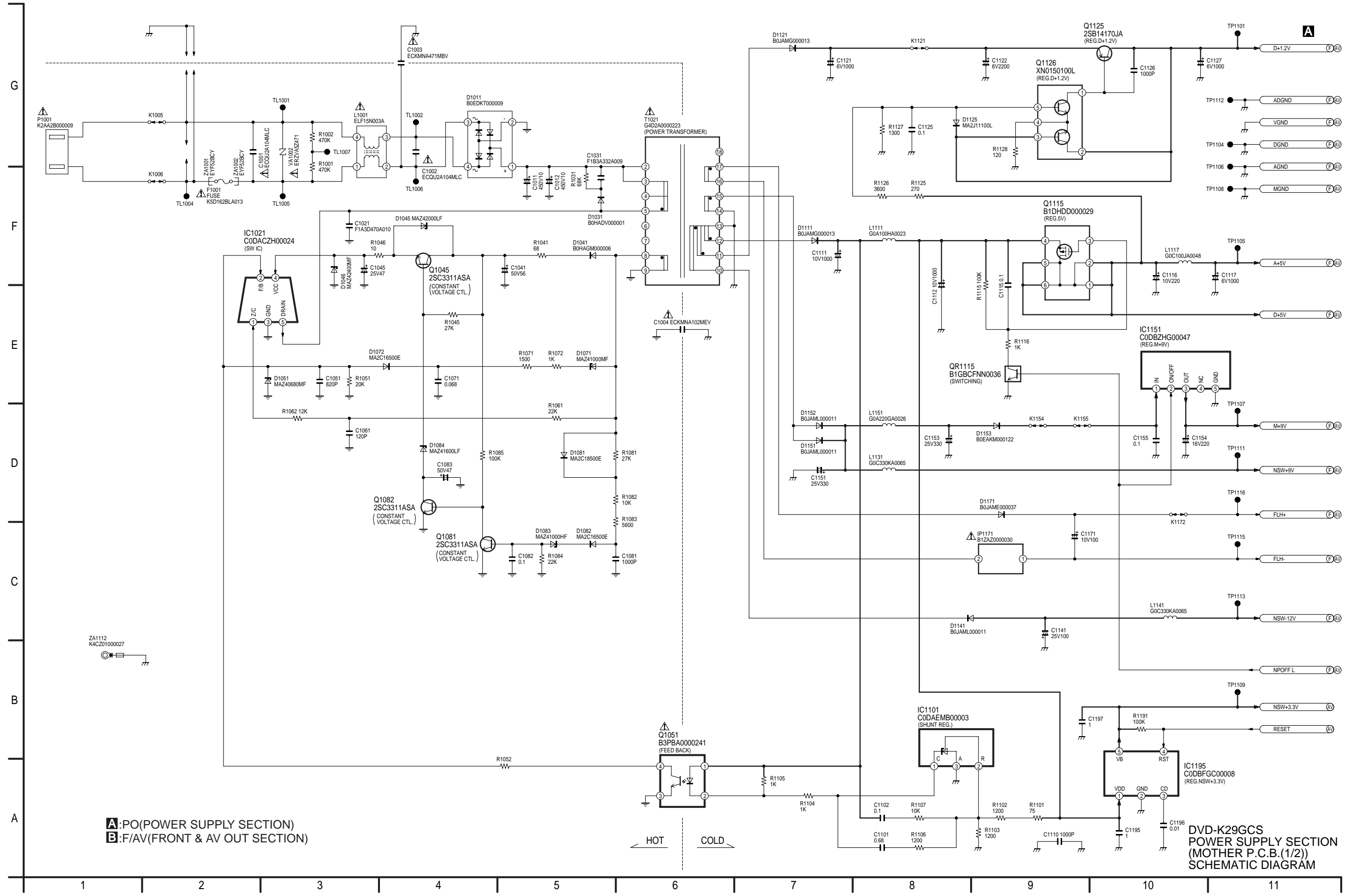
Ground the soldering iron.

Put a conductive mat on the work table.

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

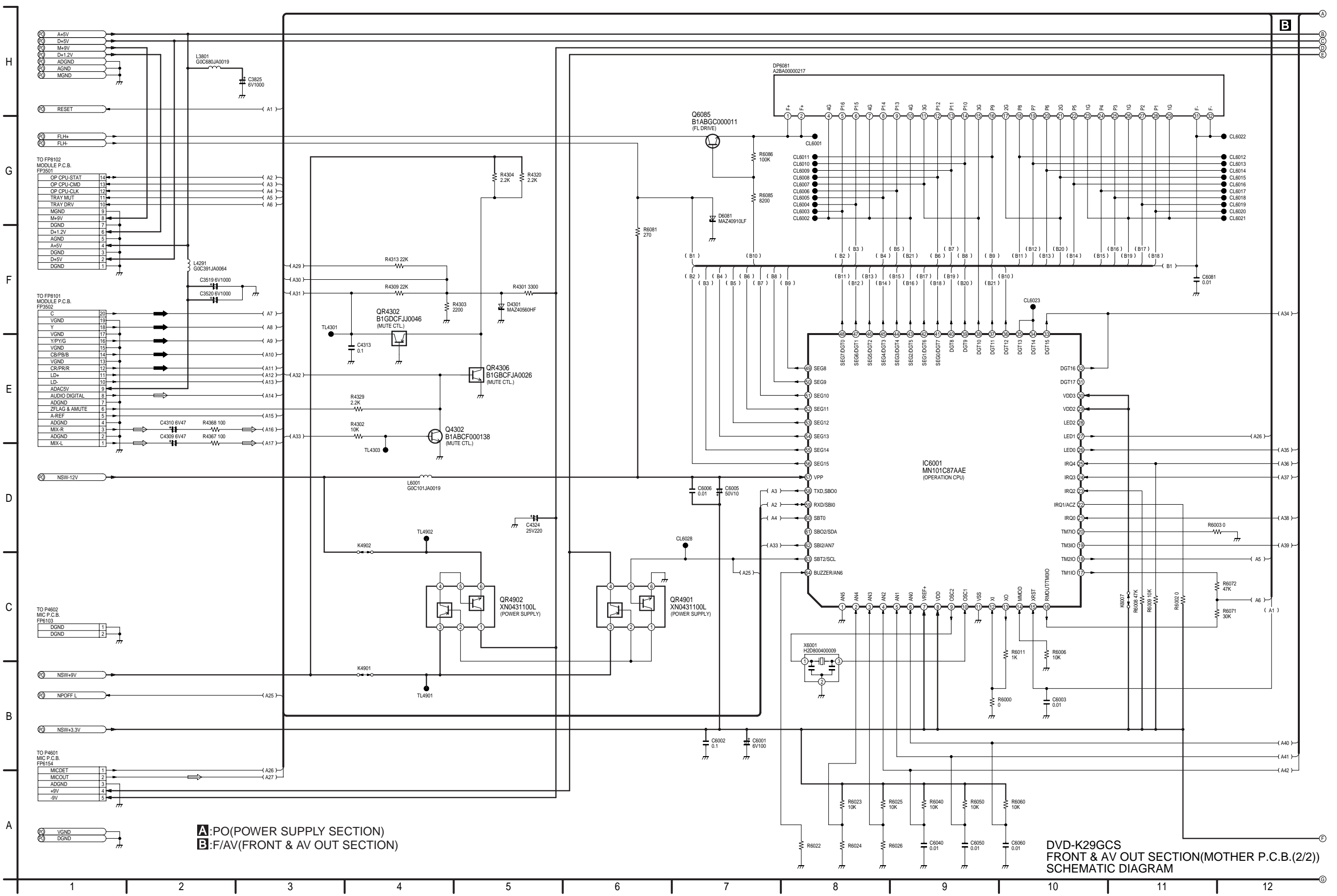
# 15 SCHEMATIC DIAGRAM

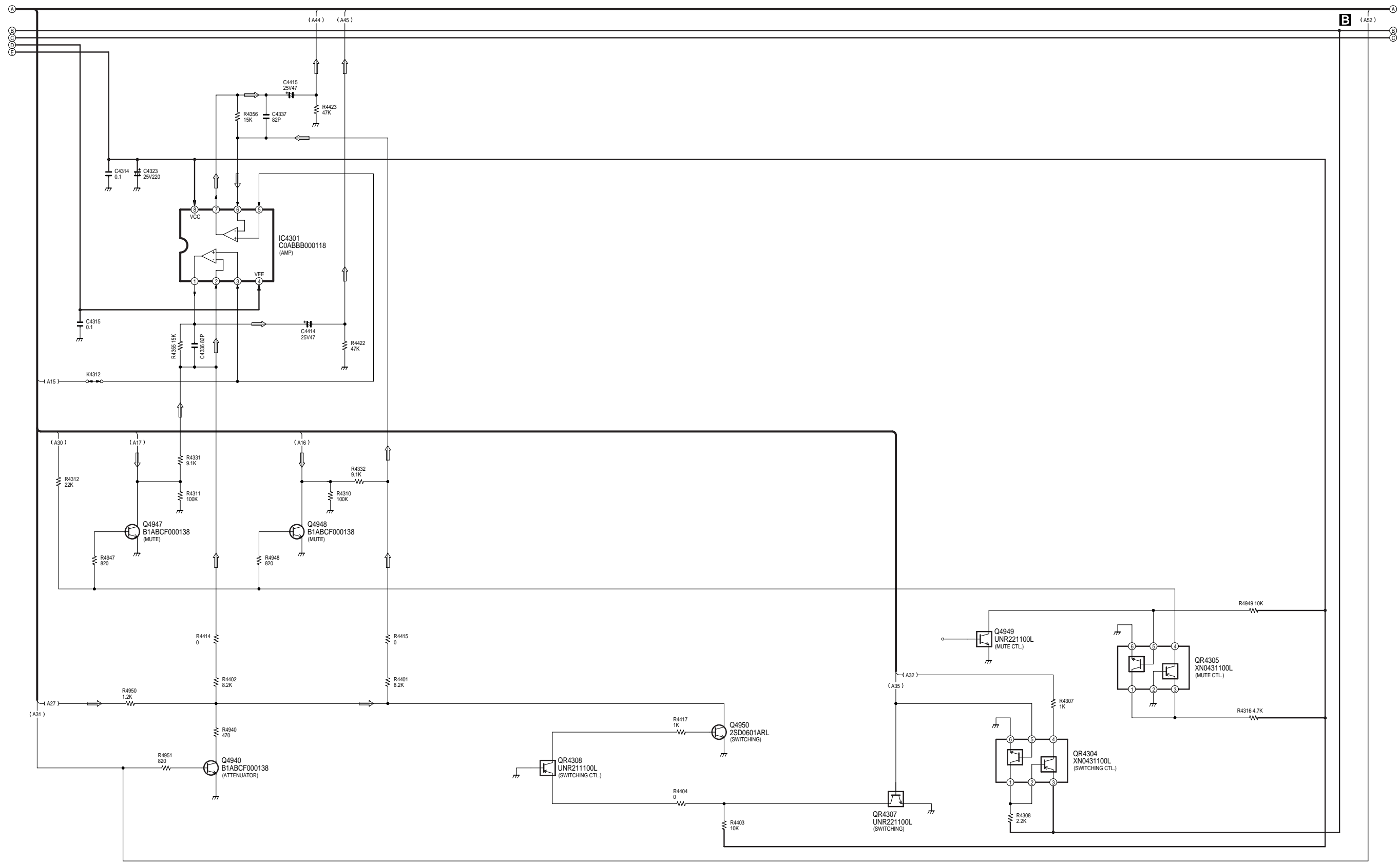
## 15.1. POWER SUPPLY SECTION (MOTHER P.C.B. (1/2)) SCHEMATIC DIAGRAM



DVD-K29GCS  
POWER SUPPLY SECTION  
(MOTHER P.C.B.(1/2))  
SCHEMATIC DIAGRAM

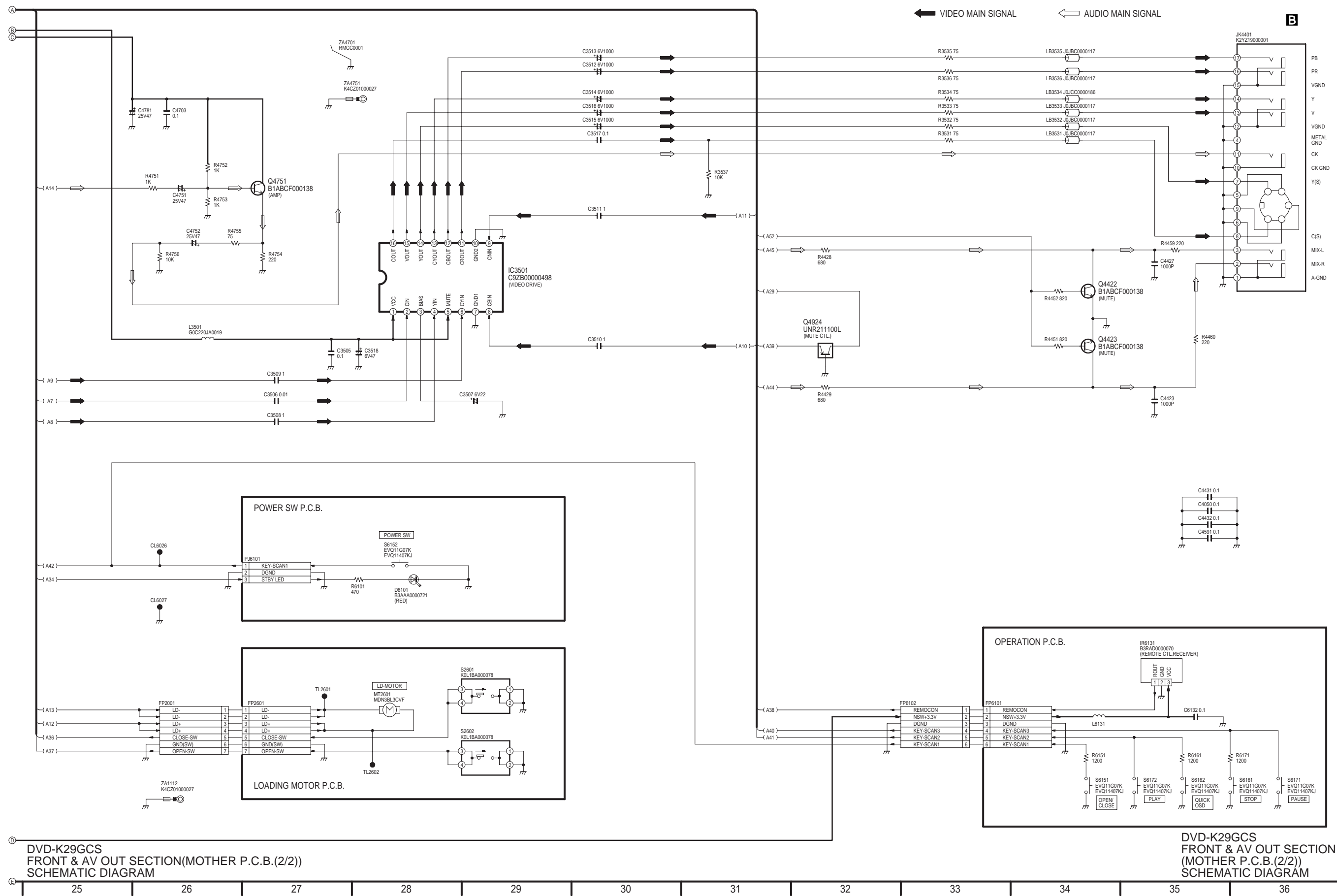
### 15.2. FRONT & AV OUT SECTION (MOTHER P.C.B. (2/2)) SCHEMATIC DIAGRAM





DVD-K29GCS  
FRONT & AV OUT SECTION(MOTHER P.C.B.(2/2))  
SCHEMATIC DIAGRAM

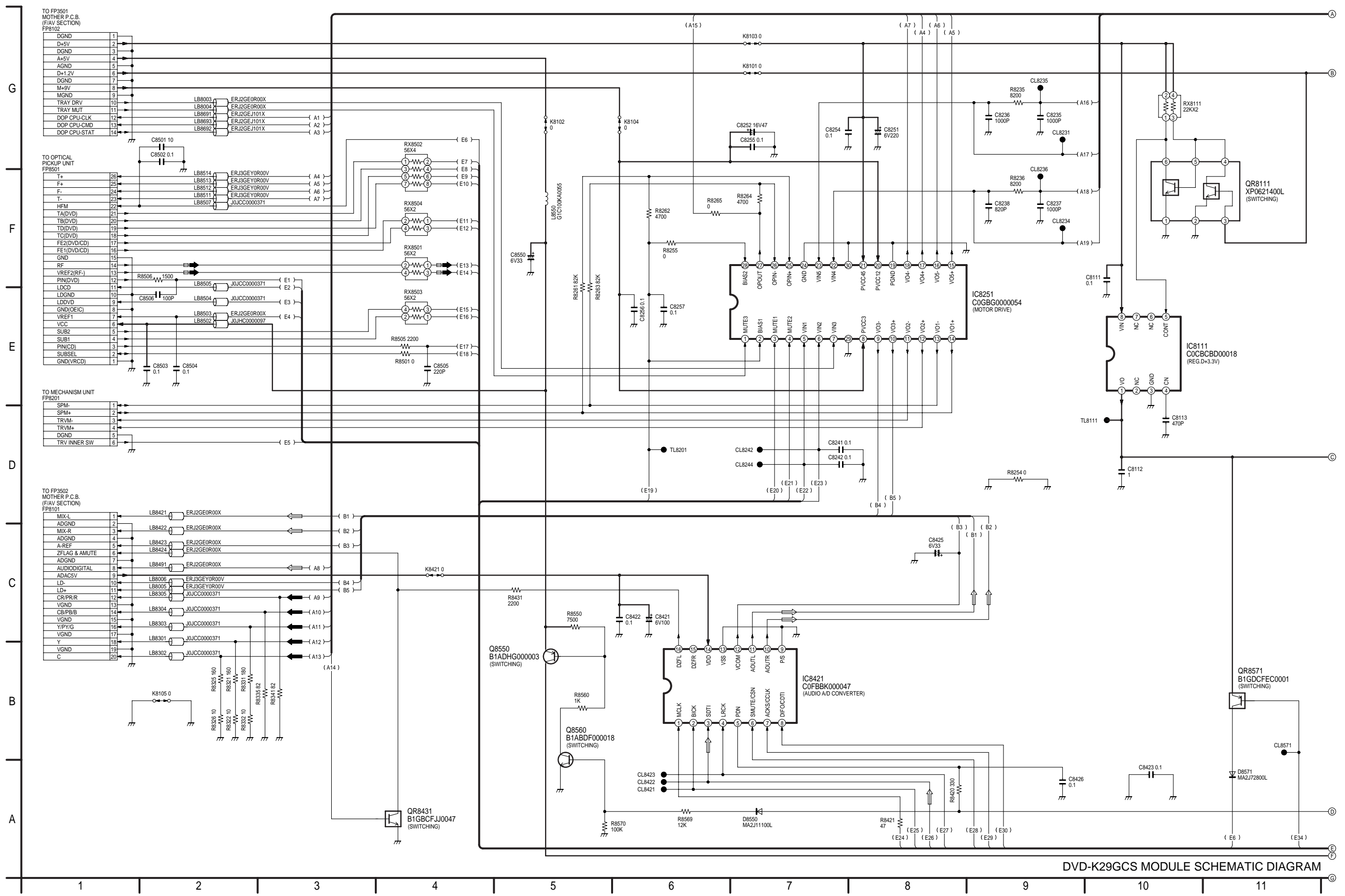
DVD-K29GCS  
FRONT & AV OUT SECTION(MOTHER P.C.B.(2/2))  
SCHEMATIC DIAGRAM



DVD-K29GCS FRONT & AV OUT SECTION(MOTHER P.C.B.(2/2)) SCHEMATIC DIAGRAM

DVD-K29GCS FRONT & AV OUT SECTION (MOTHER P.C.B.(2/2)) SCHEMATIC DIAGRAM

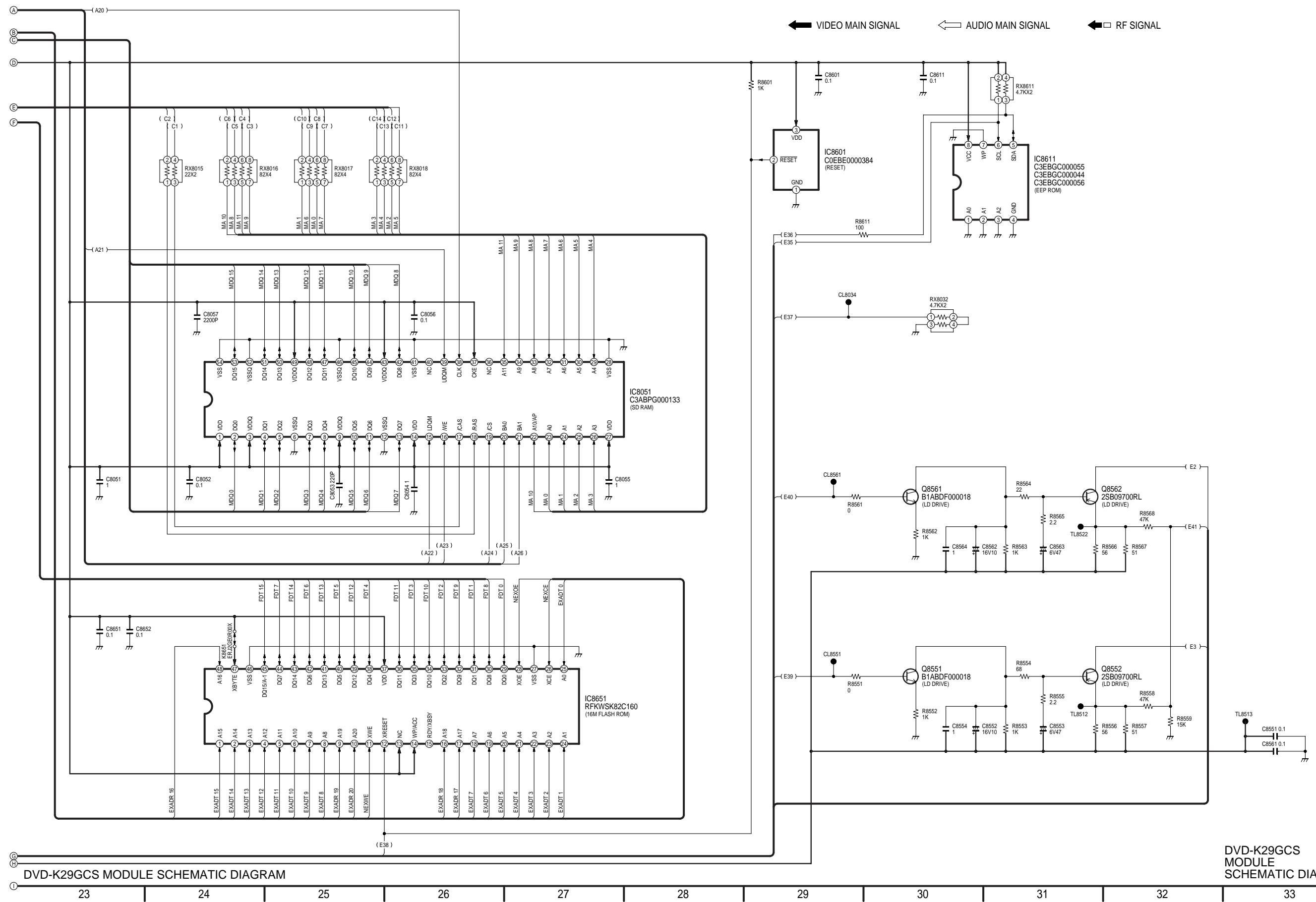
### 15.3. MODULE SCHEMATIC DIAGRAM



DVD-K29GCS MODULE SCHEMATIC DIAGRAM



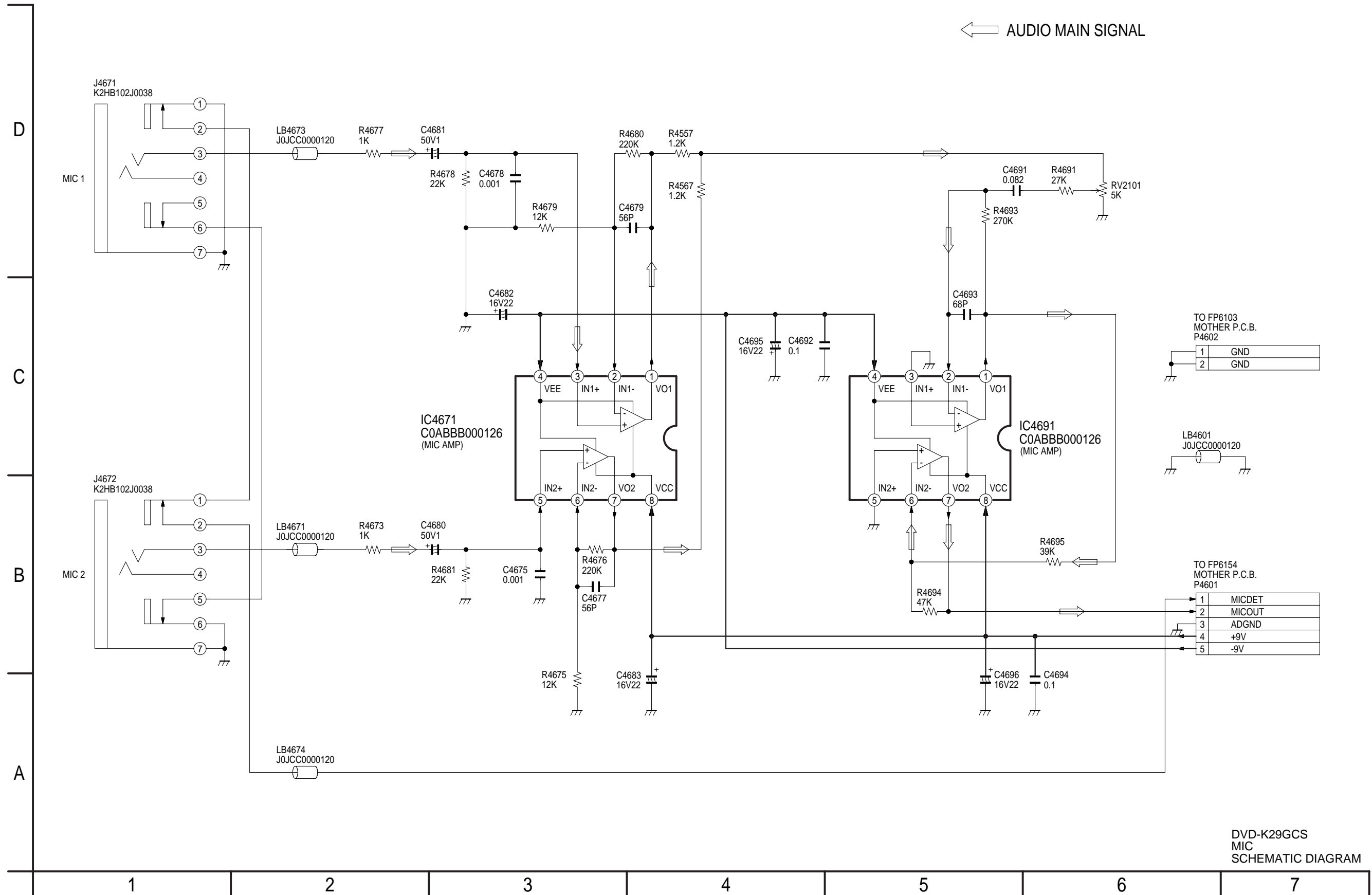




DVD-K29GCS MODULE SCHEMATIC DIAGRAM

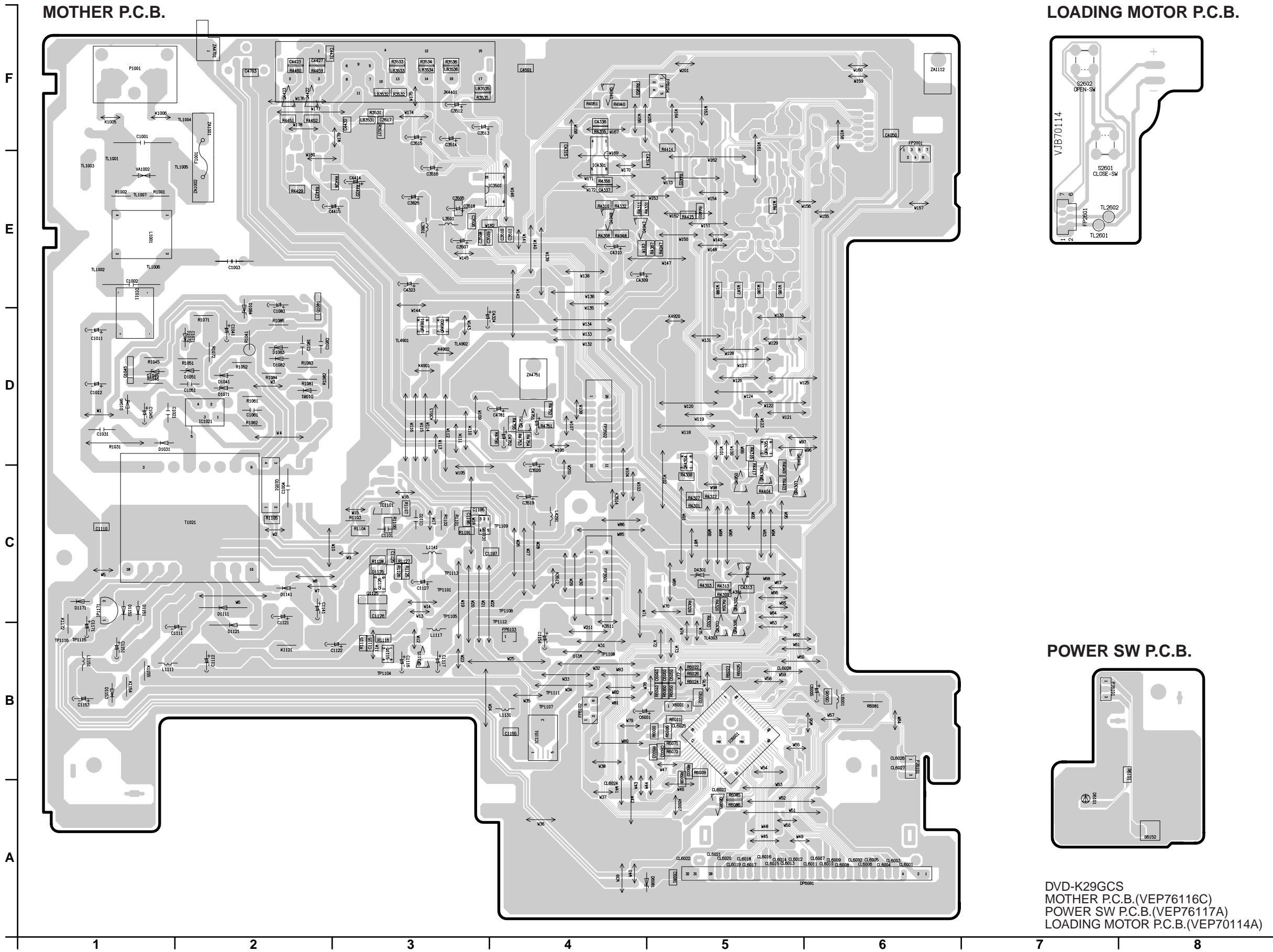
DVD-K29GCS MODULE SCHEMATIC DIAGRAM

### 15.4. MIC SCHEMATIC DIAGRAM



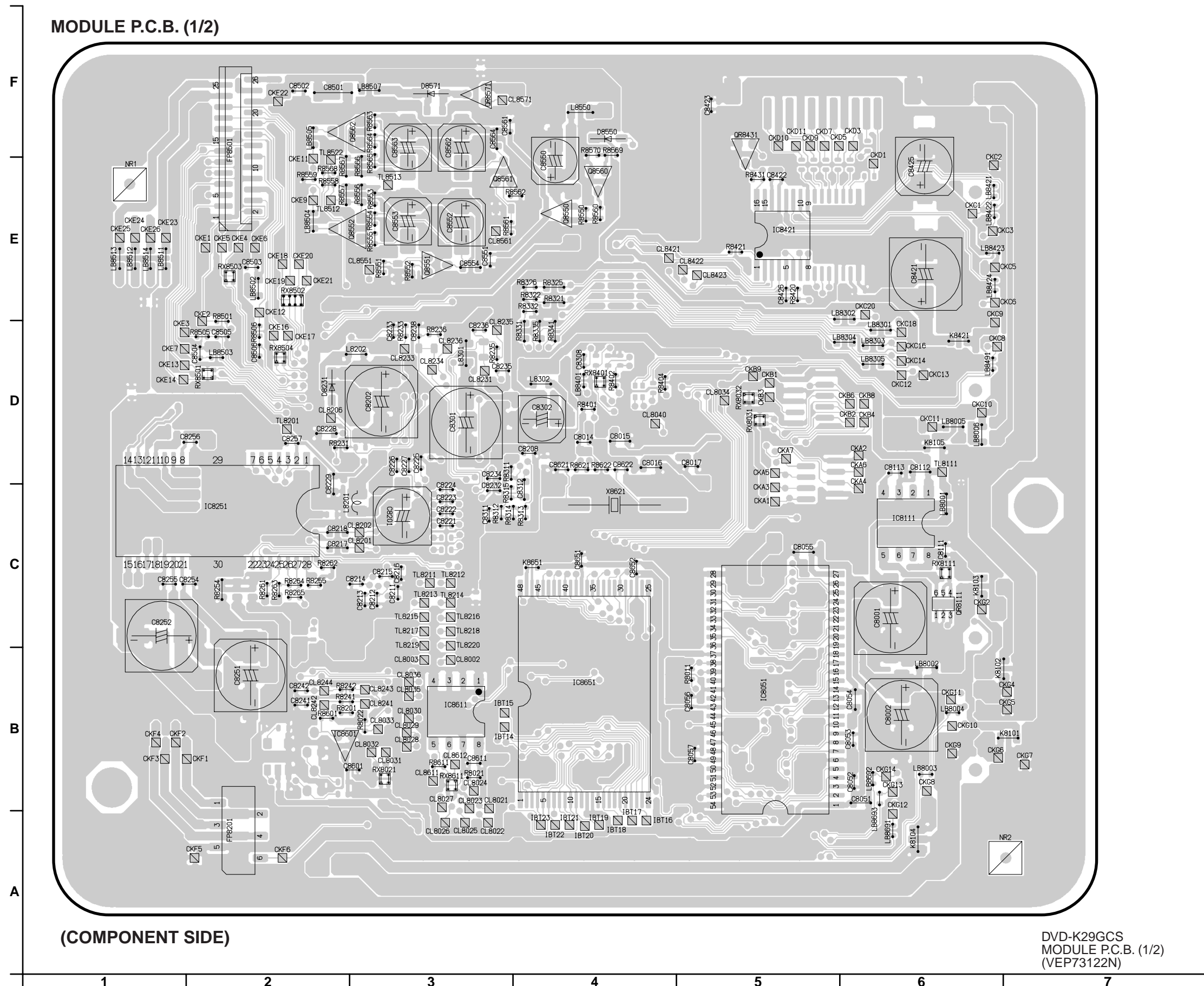
# 16 PRINT CIRCUIT BOARD

## 16.1. MOTHER P.C.B.

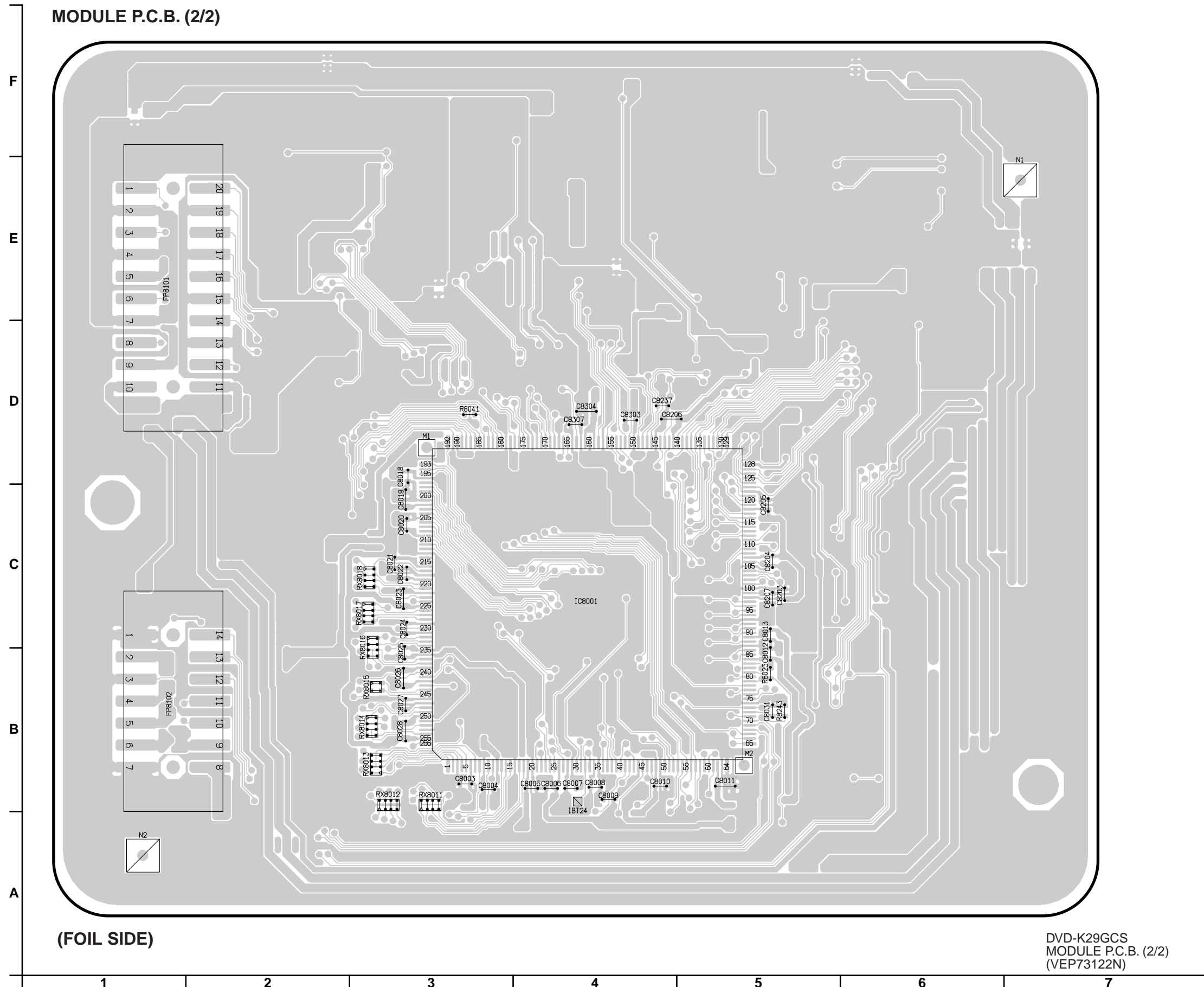




### 16.3. MODULE P.C.B. (1/2) (COMPONENT SIDE)



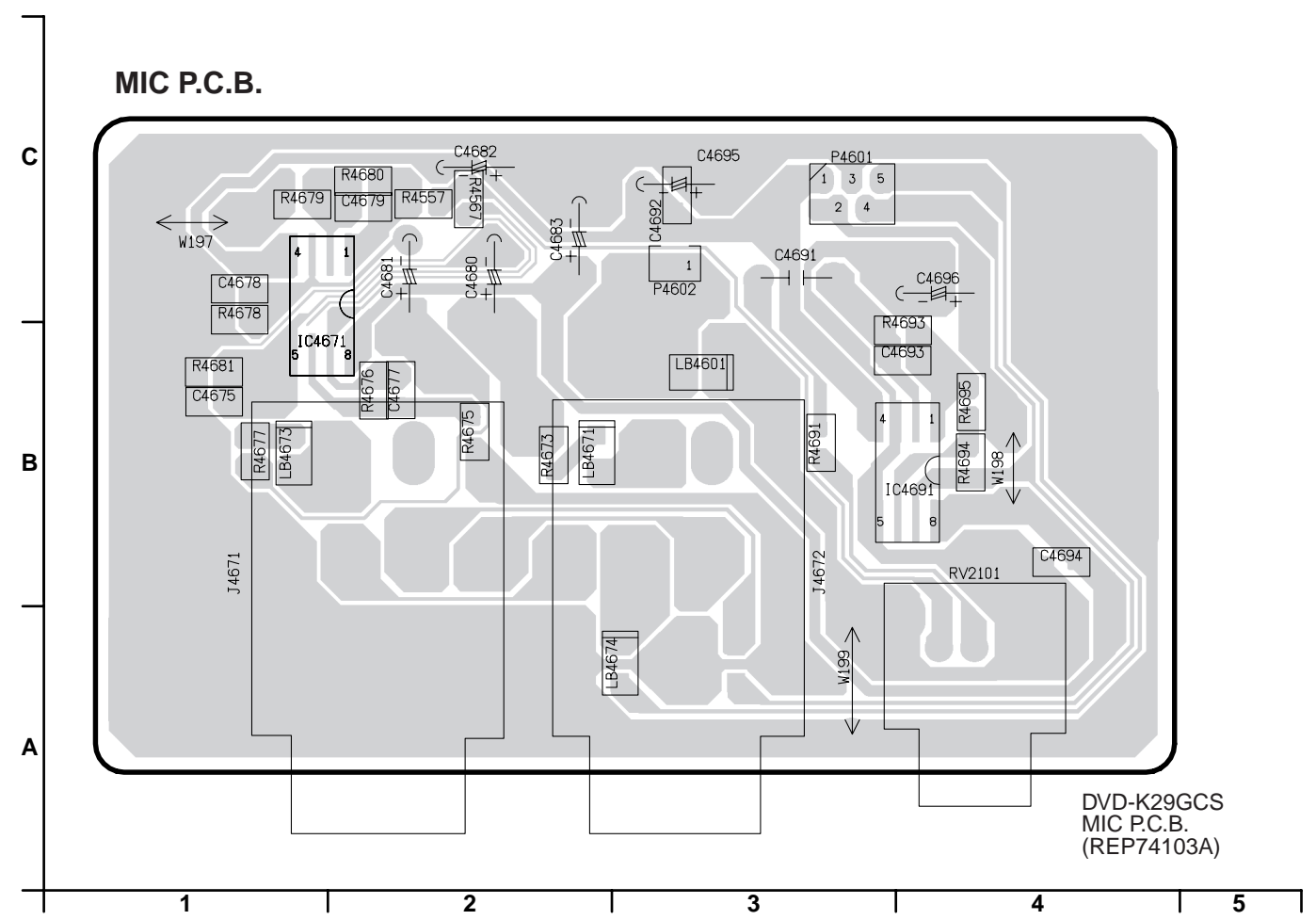
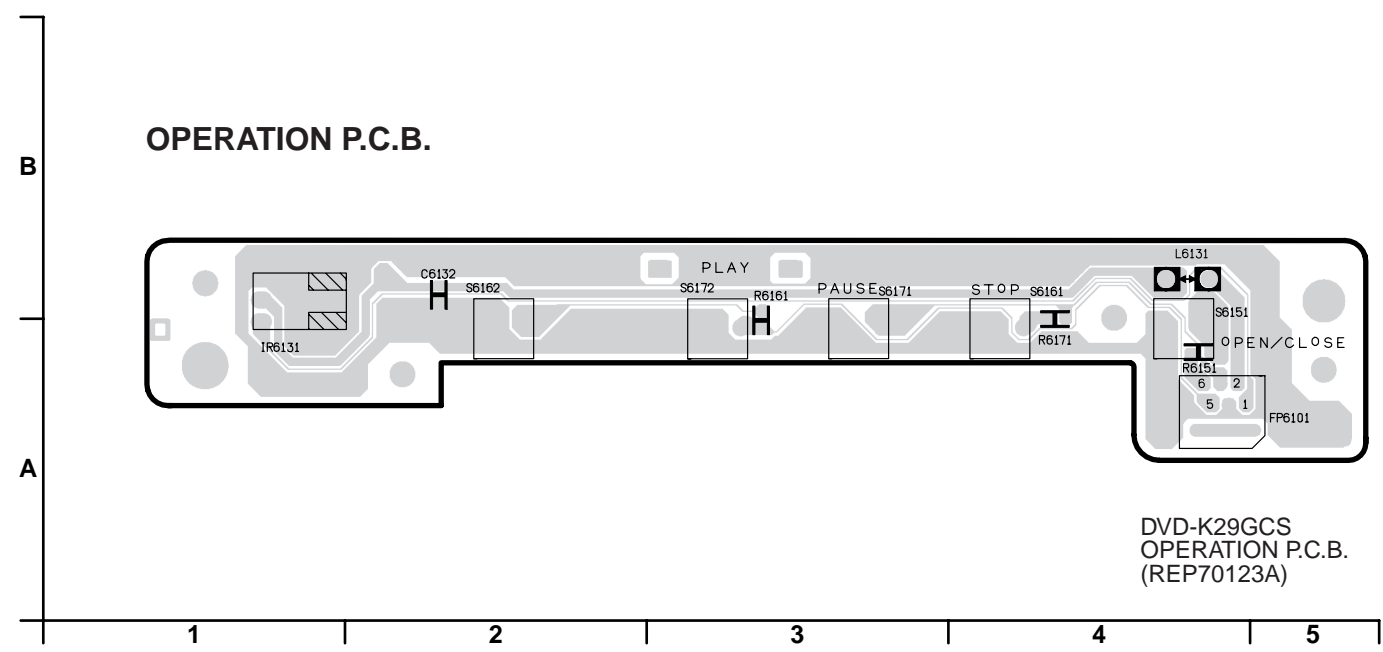
### 16.4. MODULE P.C.B. (2/2) (FOIL SIDE)



16.5. OPERATION P.C.B. & MIC P.C.B.

MIC P.C.B.			
Integrated Circuit		Connectors	
IC4671	B-1	P4601	C-3
IC4691	B-4	P4602	C-3

ADDRESS INFORMATION

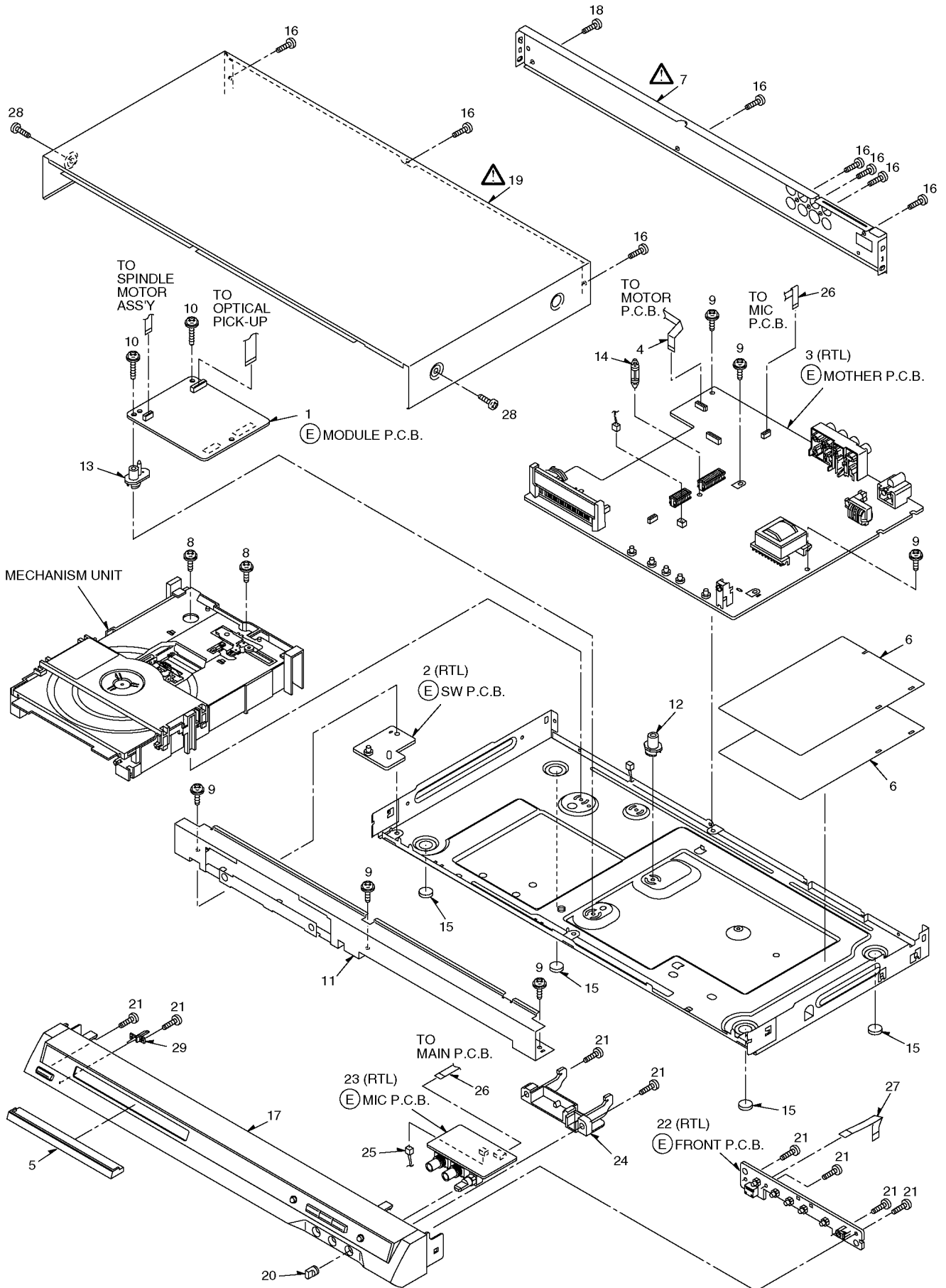




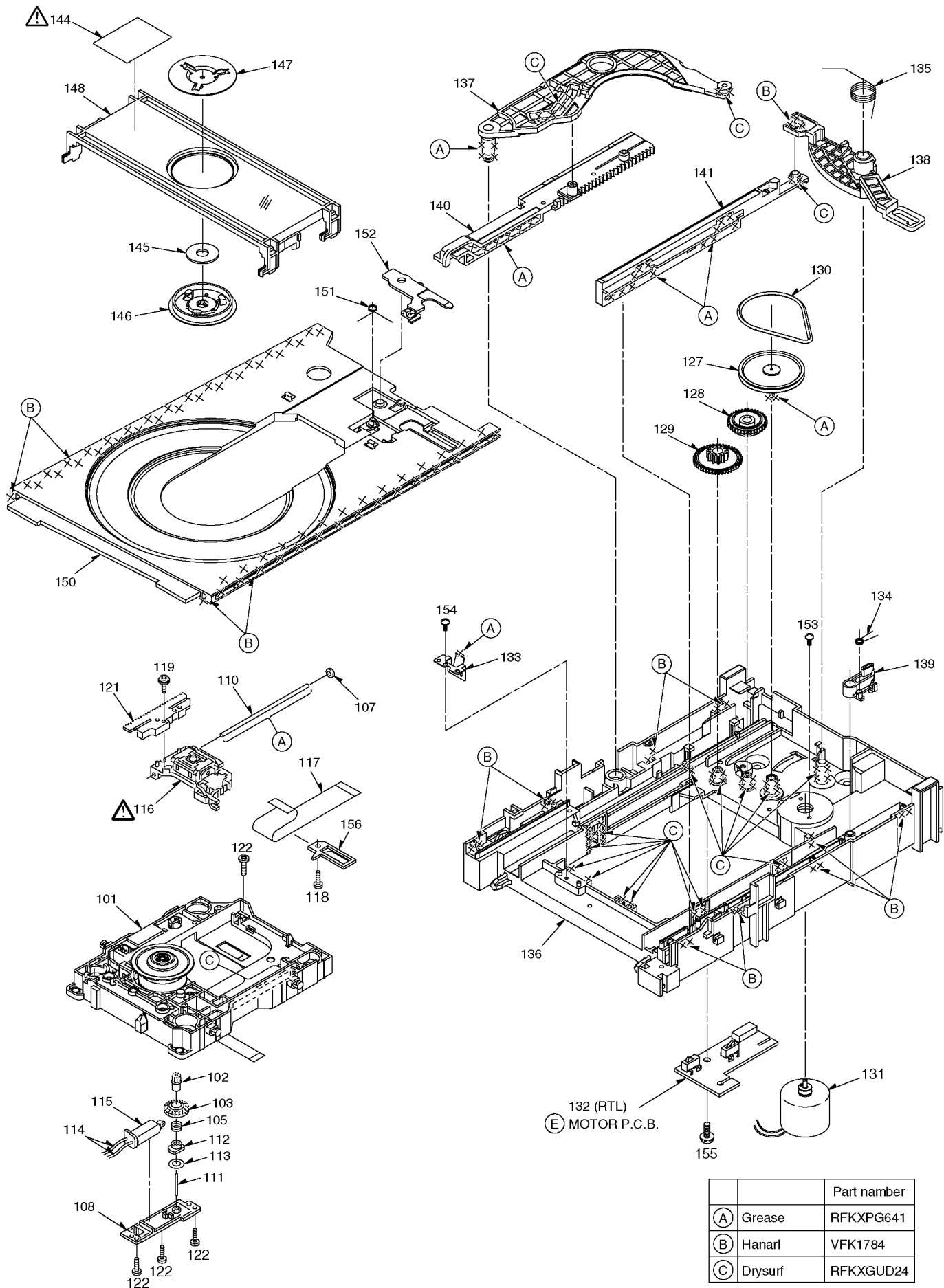


# 17 EXPLODED VIEWS

## 17.1. CASING PARTS & MECHANISM SECTION EXPLODED VIEW

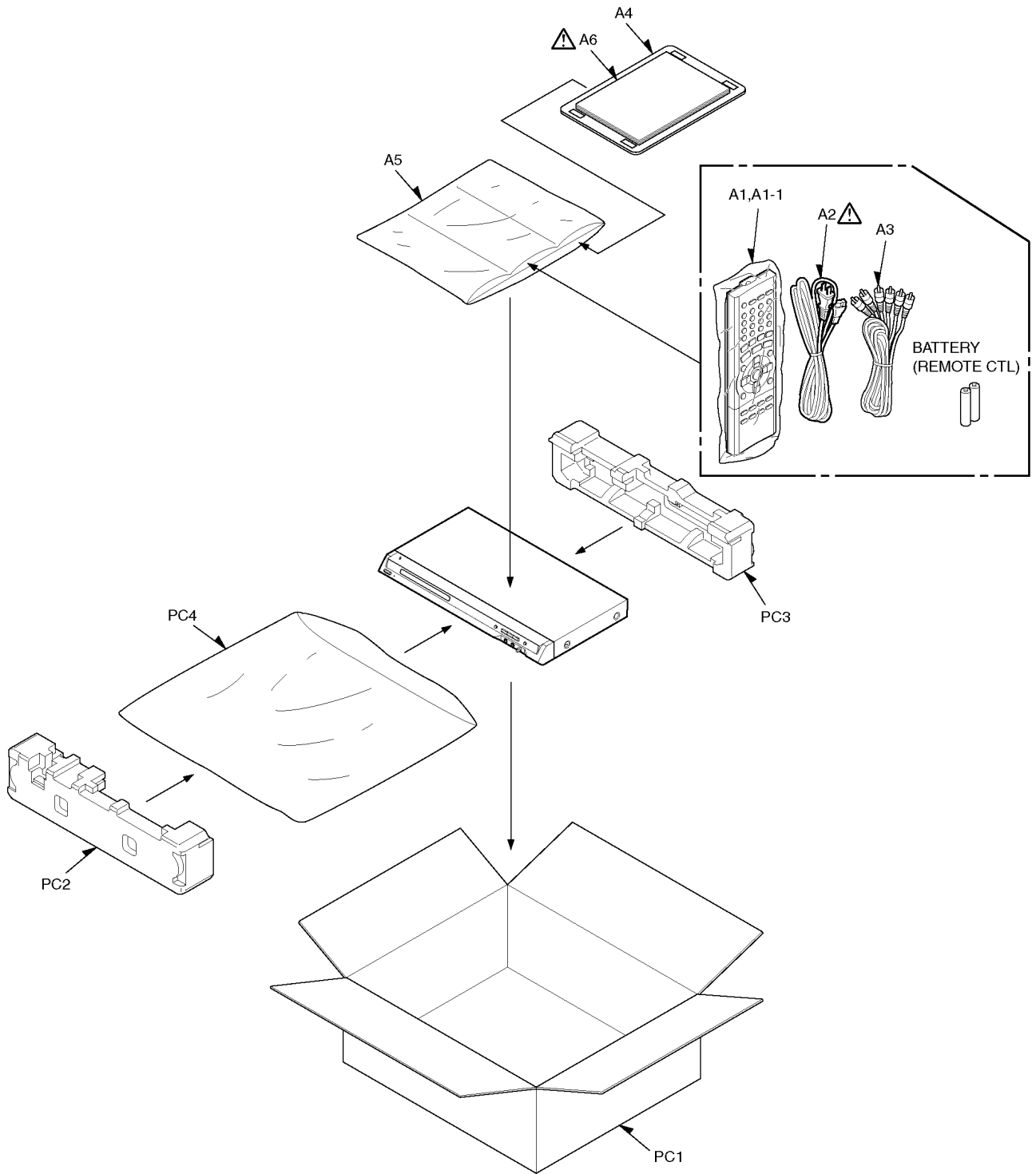


# 17.2. MECHANISM SECTION EXPLODED VIEW



		Part number
(A)	Grease	RFKXPG641
(B)	Hanarl	VFK1784
(C)	Drysurf	RFKXGUD24

### 17.3. PACKING & ACCESSORIES SECTION EXPLODED VIEW



# 18 REPLACEMENT PARTS LIST

## Notes:

\*Important safety notice:

Components identified by  $\triangle$  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.

\*Capacity values are in microfarads ( $\mu$ F) 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 marking (RTL) indicates the retention time is limited for this item. After the discontinuation of this assembly in production, it will no longer be available.

\*\*“(IA), (IB)” marks in Remarks indicate languages of instruction manuals. [(IA): English, (IB): chinese (Traditional).]

\*All parts are supplied by S.P.C..

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	VEP73122N	MODULE P.C.B.	1	
2	VEP76117A	SW P.C.B.	1	(RTL)
3	VEP76116C	MOTHER P.C.B.	1	(RTL)
4	REZ1685	FFC(7P)	1	
5	RGKC0053C	TRAY TOP	1	
6	RGQC0022	INSULATION SHEET	2	
7	RGRC0019H-A	REAR PANEL	1	$\triangle$
8	RHD30101-1	SCREW	2	
9	RHD30111-3	SCREW	6	
10	RHDC0023	SCREW	2	
11	RMAC0019A-1	FRONT ANGLE	1	
12	RMNC0016	PCB SUPPORT (A)	1	
13	RMNC0017	PCB SUPPORT (B)	1	
14	RMNC0019	PCB SUPPORT	1	
15	RKA0130-K	FOOT RUBBER	4	
16	VHD0690-1	SCREW	8	
17	RFGDVK29AS	FRONT PANEL ASS'Y	1	
18	XTN4+10FFC	SCREW	1	
19	RKMC0010-S	TOP PANEL	1	$\triangle$
20	RGWC0007A-J	MIC VOLUME KNOB	1	
21	RHD26046	SCREW	8	
22	VEP70123A	FRONT P.C.B.	1	(RTL)
23	VEP74103A	MIC P.C.B.	1	(RTL)
24	RMNC0018	KARAOKE HOLDER	1	
25	REX1155	CONNECTOR CABLE (2P)	1	
26	REZC0040	FFC (5P)	1	
27	REZC0041	FFC (6P)	1	
28	RHD30007-1SJ	SCREW	2	
29	RGLC0021-1	LIGHTING PIECE	1	
101	RXQ1327	SPINDLE MOTOR ASS'Y	1	
102	RDG0557	PINION SHAFT	1	
103	RDG0558	BEVEL GEAR	1	
105	RMB0713-1	THRUST SPRING	1	
107	RMG0617-H	CUSHION RUBBER (A)	1	
108	RMQ1112	MOTOR COVER	1	
110	RMS0788	GUIDE SHAFT	1	
111	RMS0798	GEAR SHAFT	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
112	RMX0233	THRUST WASHER	1	
113	RMX0247-1	WASHER	1	
114	RWJ6702042	MOTOR CABLE	1	
115	RXQ0946	TRAVERSE MOTOR ASS'Y	1	
116	RAF3113A-1C	OPTICAL PICK-UP	1	$\triangle$
117	REZ1686	FFC	1	
118	RHD14112-J	SCREW	1	
119	RHD17046-1	SCREW	1	
121	RMM0261	OPU DRIVE RACK	1	
122	VHD1224-1	SCREW	4	
127	RDG0597	PULLEY GEAR	1	
128	RDG0548	RELAY GEAR	1	
129	RDG0549	DRIVE GEAR	1	
130	RDV0070	BELT	1	
131	REM0126	LOADING MOTOR ASS'Y	1	
132	VEP70114A	MOTOR P.C.B.	1	(RTL)
133	RMC0387	SUPPORT SPRING	1	
134	RME0351	LOCK LEVER SPRING	1	
135	RMEC0350	CHANGE LEVER SPRING	1	
136	RMK0616	MECHA CHASSIS ASS'Y	1	
137	RML0680	DRIVE ARM	1	
138	RML0628	CHANGE LEVER	1	
139	RML0629	LOCK LEVER	1	
140	RMM0283	DRIVE RACK	1	
141	RMM0284	SUB RACK	1	
144	RQLCA0141	LASER CAUTION LABEL	1	$\triangle$
145	JSMC0048	MAGNET	1	
146	RMR1685-X	CLAMPER	1	
147	RMA1890	MAGNET HOLDER	1	
148	RMR1686-K1	CLAMP PLATE	1	
150	RGQ0417-K	TRAY	1	
151	RME0353-1	TRAY SLIDER SPRING	1	
152	RML0631	TRAY SLIDER	1	
153	XQN17+C25FJ	SCREW	1	
154	XTB26+6GFJ	SCREW	1	
155	XTN2+6GFJ	SCREW	1	
156	RMQ1280	FFC HOLDER PIECE	1	
A1	EUR7631110R	REMOTE CONTROL ASS'Y	1	
A1-1	UR76EC3103	BATTERY COVER	1	
A2	RJA0019-2X	AC CORD	1	$\triangle$
A3	K2KA6BA00004	AV CORD	1	
A4	RPHC0096	PAD	1	
A5	RPFC0042	POLYETHYLENE BAG (F.B.)	1	
A6	RQTC0065-B	OPERATING INSTRUCTIONS	1	(IA) $\triangle$
A6	RQTC0066-K	OPERATING INSTRUCTIONS	1	(IB) $\triangle$
C1001,02	FOCAF104A024	0.1U	2	$\triangle$
C1003	ECKMNA471MBV	470P	1	$\triangle$
C1004	ECKMNA102MEV	0.01U	1	$\triangle$
C1011,12	ECA2WHG100	450V 10U	2	
C1021	F1A3D470A010	2000V 47P	1	
C1031	F1B3A332A009	1000V 3300P	1	
C1041	F2A1H5600009	50V 56U	1	
C1045	ECA1EHG470	25V 47U	1	
C1051	ECQB1H821JF	50V 820P	1	
C1061	ECQB1H121KF	50V 0.12U	1	
C1071	ECQB1H683JF4	50V 0.068U	1	
C1081	ECQB1H102JF	50V 1000P	1	
C1082	ECQB1H104JF4	50V 0.1U	1	
C1083	VCEA1HJC470	50V 47U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C1101	ECQV1H684JL	50V 0.68U	1	
C1102	ECQB1H104JF4	50V 0.1U	1	
C1110	ECJ1VB1H102K	50V 1000P	1	
C1111	F2A1A1020054	10V 1000U	1	
C1112	F2A1A102A206	10V 1000U	1	
C1115	F1H1C104A111	16V 0.1U	1	
C1116	ECA1CM221	16V 220U	1	
C1117	F2A0J102A247	6.3V 1000U	1	
C1121	F2A0J1020045	6.3V 1000U	1	
C1122	F2A0J222A247	6.3V 2200U	1	
C1125	F1H1C104A111	16V 0.1U	1	
C1126	ECJ1VB1H102K	50V 1000P	1	
C1127	F2A0J102A247	6.3V 1000U	1	
C1141	EEUFC1E101S	25V 100U	1	
C1151	EEUFC1E331	25V 330U	1	
C1153	ECA1EM331	25V 330U	1	
C1154	ECA1CM221	16V 220U	1	
C1155	ECJ1VB1E104K	25V 0.1U	1	
C1171	F2A1A1010072	10V 100U	1	
C1195	ECJ1VB1A105K	10V 1U	1	
C1196	ECJ1VB1H103K	50V 0.01U	1	
C1197	ECJ1VB1A105K	10V 1U	1	
C3505	ECJ1XB1C104K	16V 0.1U	1	
C3506	ECJ1VB1H103K	50V 0.01U	1	
C3507	ECEA0JKS220	6.3V 22U	1	
C3508-11	ECJ1VB1C105K	16V 1U	4	
C3512-16	F2A0J102A247	6.3V 1000U	5	
C3517	ECJ1XB1C104K	16V 0.1U	1	
C3518	ECEA0JKA470	6.3V 47U	1	
C3519,20	F2A0J102A247	6.3V 1000U	2	
C3825	F2A0J102A247	6.3V 1000U	1	
C4050	F1H1C104A111	16V 0.1U	1	
C4309,10	ECEA0JKA470	6.3V 47U	2	
C4313-15	F1H1C104A111	16V 0.1U	3	
C4323,24	F2A1E221A205	25V 220U	2	
C4336,37	ECJ1VC1H820G	50V 82P	2	
C4414,15	F2A1E470A205	25V 47U	2	
C4423	ECJ1XC1H102J	50V 1000P	1	
C4427	ECJ1XC1H102J	50V 1000P	1	
C4431	F1H1C104A111	16V 0.1U	1	
C4432	ECJ1XB1C104K	16V 0.1U	1	
C4591	F1H1C104A111	16V 0.1U	1	
C4675	ECJ1VB1H102K	50V 1000P	1	
C4677	F1H1H560A799	50V 56P	1	
C4678	ECJ1VB1H102K	50V 1000P	1	
C4679	F1H1H560A799	50V 56P	1	
C4680,81	ECEA1HSN010	50V 1U	2	
C4682,83	ECEA1CKS220	16V 22U	2	
C4691	ECQV1H823JZ	50V 0.082U	1	
C4692	ECJ1VF1H104Z	50V 0.1U	1	
C4693	ECJ1XC1H680J	50V 68P	1	
C4694	ECJ1VF1H104Z	50V 0.1U	1	
C4695,96	ECEA1CKS220	16V 22U	2	
C4703	ECJ1XB1C104K	16V 0.1U	1	
C4751,52	F2A1E470A205	25V 47U	2	
C4781	F2A1E470A205	25V 47U	1	
C6001	F2A0J101A245	6.3V 100U	1	
C6002	ECJ2VB1E104K	25V 0.1U	1	
C6003	ECJ1VB1H103K	50V 0.01U	1	
C6005	F2A1H100A236	50V 10U	1	
C6006	ECJ1VB1H103K	50V 0.01U	1	
C6040	ECJ1VF1H103Z	50V 0.01U	1	
C6050	ECJ1VF1H103Z	50V 0.01U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C6060	ECJ1VF1H103Z	50V 0.01U	1	
C6081	ECJ1VB1H103K	50V 0.01U	1	
C6132	ECJ1XB1C104K	16V 0.1U	1	
C8001	F2G0J101A066	6.3V 100U	1	
C8002	F2G0G331A012	4V 330U	1	
C8003	ECJ0EB1H222K	50V 2200P	1	
C8004-10	F1G1C104A083	16V 0.1U	7	F1G1C104A042
C8011	ECJ1VB0J105K	6.3V 1U	1	
C8012-14	F1G1C104A083	16V 0.1U	3	F1G1C104A042
C8015,16	ECJ1VB0J105K	6.3V 1U	2	
C8017,18	F1G1C104A083	16V 0.1U	2	F1G1C104A042
C8019	ECJ1VB0J105K	6.3V 1U	1	
C8020-22	F1G1C104A083	16V 0.1U	3	F1G1C104A042
C8023	ECJ1VB0J105K	6.3V 1U	1	
C8024	ECJ0EB1H222K	50V 2200P	1	
C8025	F1G1C104A083	16V 0.1U	1	F1G1C104A042
C8026	ECJ1VB0J105K	6.3V 1U	1	
C8027	F1G1C104A083	16V 0.1U	1	F1G1C104A042
C8028	ECJ1VB0J105K	6.3V 1U	1	
C8031	F1G1C104A083	16V 0.1U	1	F1G1C104A042
C8051	ECJ1VB0J105K	6.3V 1U	1	
C8052	F1G1C104A083	16V 0.1U	1	F1G1C104A042
C8053	ECJ0EC1H221J	50V 220P	1	
C8054,55	ECJ1VB0J105K	6.3V 1U	2	
C8056	F1G1C104A083	16V 0.1U	1	F1G1C104A042
C8057	ECJ0EB1H222K	50V 2200P	1	
C8111	ECJ0EB1A104K	10V 0.1U	1	F1G1A104A014
C8112	ECJ1VB0J105K	6.3V 1U	1	
C8113	ECUX1E471KBQ	25V 470P	1	ECJ0EB1E471K
C8201	F2G0J101A031	6.3V 100U	1	
C8202	F2G0J101A066	6.3V 100U	1	
C8203-05	F1G1C104A083	16V 0.1U	3	F1G1C104A042
C8206	ECJ1VB0J105K	6.3V 1U	1	
C8207,08	F1G1C104A083	16V 0.1U	2	F1G1C104A042
C8211	ECJ0EB1A333K	10V 0.033U	1	
C8212-14	F1G1C104A083	16V 0.1U	3	F1G1C104A042
C8215	ECJ0EB1C562K	16V 5600P	1	
C8216	ECJ0EB1C183K	16V 0.018U	1	F1G1C183A004
C8217,18	ECJ1VB0J105K	6.3V 1U	2	
C8221-24	ECJ0EB1A104K	10V 0.1U	4	F1G1A104A014
C8225-27	F1G1C104A083	16V 0.1U	3	F1G1C104A042
C8228,29	ECJ1VB0J105K	6.3V 1U	2	
C8232	F1G1C104A083	16V 0.1U	1	F1G1C104A042
C8233	ECJ0EB1E472K	25V 4700P	1	
C8234	F1G1C104A083	16V 0.1U	1	F1G1C104A042
C8235-37	F1G1H1020008	50V 1000P	3	ECJ0EB1H102K
C8238	ECUE1E821KBQ	25V 820P	1	F1G1E821A056
C8241,42	ECJ0EB1A104K	10V 0.1U	2	F1G1A104A014
C8251	F2G0J221A065	6.3V 220U	1	
C8252	F2G1C470A076	16V 47U	1	
C8254-57	F1G1C104A083	16V 0.1U	4	F1G1C104A042
C8301	F2G0J221A031	6.3V 220U	1	
C8302	F2G0J330A031	6.3V 33U	1	
C8303	F1G1C104A083	16V 0.1U	1	F1G1C104A042
C8304	ECJ1VB0J105K	6.3V 1U	1	
C8307	F1G1C104A083	16V 0.1U	1	F1G1C104A042
C8308	ECJ0EC1H150J	50V 15P	1	
C8311	F1G1C104A083	16V 0.1U	1	F1G1C104A042
C8312	ECJ1VB0J105K	6.3V 1U	1	
C8421	F2G0J101A083	6.3V 100U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C8422,23	F1G1C104A083	16V 0.1U	2	F1G1C104A042
C8425	F2G0J330A083	6.3V 33U	1	
C8426	F1G1C104A083	16V 0.1U	1	F1G1C104A042
C8501	ECJ3YB1A106K	10V 10U	1	
C8502-04	F1G1C104A083	16V 0.1U	3	F1G1C104A042
C8505	ECJ0EC1H221J	50V 220P	1	
C8506	ECJ0EC1H101J	50V 100P	1	
C8550	F2G0J330A031	6.3V 33U	1	
C8551	F1G1C104A083	16V 0.1U	1	F1G1C104A042
C8552	F2G1C100A072	16V 10U	1	
C8553	F2G0J470A031	6.3V 47U	1	
C8554	ECJ1VB0J105K	6.3V 1U	1	
C8561	F1G1C104A083	16V 0.1U	1	F1G1C104A042
C8562	F2G1C100A072	16V 10U	1	
C8563	F2G0J470A031	6.3V 47U	1	
C8564	ECJ1VB0J105K	6.3V 1U	1	
C8601	F1G1C104A083	16V 0.1U	1	F1G1C104A042
C8611	F1G1C104A083	16V 0.1U	1	F1G1C104A042
C8621	ECJ0EC1H150J	50V 15P	1	
C8622	ECJ0EC1H220J	50V 22P	1	
C8651,52	F1G1C104A083	16V 0.1U	2	F1G1C104A042
D1011	B0EDKT000009	DIODE	1	
D1031	AP01C	DIODE	1	B0HADV000010
D1041	BOHAGM000006	DIODE	1	
D1045	MA4200L	DIODE	1	MAZ42000LF
D1046	MA4240H	DIODE	1	MAZ42400H
D1051	MA4068M	DIODE	1	MAZ40680M
D1071	MA4100M	DIODE	1	MAZ41000MF
D1072	MA2C16500E	DIODE	1	
D1081	MA2C18500E	DIODE	1	
D1082	MA2C16500E	DIODE	1	
D1083	MA4100H	DIODE	1	MAZ41000H
D1084	MA4160-L	DIODE	1	MAZ41600L
D1111	21DQ06FC4	DIODE	1	B0JAMG000013
D1121	21DQ06FC4	DIODE	1	B0JAMG000013
D1125	MA2J11100L	DIODE	1	
D1141	B0JAML000011	DIODE	1	
D1151,52	B0JAML000011	DIODE	2	
D1153	B0EAKM000122	DIODE	1	
D1171	B0JAME000037	DIODE	1	
D4301	MA4056H	DIODE	1	MAZ40560H
D6081	MA4091L	DIODE	1	MAZ40910L
D6101	B3AAA0000721	DIODE	1	
D8231	MA2J11100L	DIODE	1	
D8550	MA2J11100L	DIODE	1	
D8571	MA2J72800L	DIODE	1	
DP6081	A2BA00000217	DISPLAY TUBE	1	
F1001	K5D162BLA013	FUSE	1	△
FP2001	K1MN07A00005	CONNECTOR (7P)	1	
FP2601	K1MN07B00082	CONNECTOR (7P)	1	
FP3501	K1KA14A00135	CONNECTOR (MALE) 14P	1	
FP3502	K1KA20A00215	CONNECTOR (MALE) 20P	1	
FP6101	K1MN06C00005	CONNECTOR (6P)	1	
FP6102	K1MN06A00013	CONNECTOR (6P)	1	
FP6103	K1KA02AA0193	CONNECTOR (2P)	1	
FP6154	VJS3623A005W	CONNECTOR (FEMALE) 5P	1	K1MN05A00003
FP8101	K1KB20A00165	CONNECTOR (20P)	1	
FP8102	K1KB14A00074	CONNECTOR (14P)	1	
FP8201	RJS2A5106T	CONNECTOR (FEMALE) 6P	1	K1MN06A00022
FP8501	K1MN26A00061	CONNECTOR (26P)	1	
IC1021	C0DACZH00024	IC	1	
IC1101	C0DAEMB00003	IC	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
IC1151	C0DBZHG00047	IC	1	
IC1195	C0DBFGC00008	IC	1	
IC3501	C9ZB00000498	IC	1	
IC4301	C0ABBB000118	IC	1	
IC4671	C0ABBB000216	IC	1	C0ABBB000126
IC4691	C0ABBB000216	IC	1	C0ABBB000126
IC6001	MN101C87AAE	IC	1	
IC8001	RFKVDS39BKIT	IC	1	
IC8051	C3ABPG000133	IC	1	
IC8111	C0CBCBD00018	IC	1	
IC8251	C0GBG0000054	IC	1	
IC8421	C0FBBK000047	IC	1	
IC8601	C0EBBE000384	IC	1	
IC8651	RFKWSK82C160	IC	1	
IP1171	B1ZAZ0000030	IC PROTECTOR	1	△
IR6131	B3RAD0000070	REMOTE CONTROL SENSOR	1	
J4671,72	K2HB102J0038	JACK, MIC2	2	
JK4401	K2YZ19000001	JACK, AUDIO VIDEO OUT	1	
K8101-03	ERJ3GEY0R00	1/10W 0	3	
K8104	ERJ6GEY0R00V	1/8W 0	1	
K8105	ERJ3GEY0R00	1/10W 0	1	
K8421	ERJ3GEY0R00	1/10W 0	1	
K8651	ERJ2GE0R00X	1/16W 0	1	
L1001	ELF15N003A	NOISE FILTER	1	△
L1111	G0A100HA0023	COIL 10UH	1	
L1117	G0C100JA0048	COIL 10UH	1	
L1131	G0C330KA0065	COIL 33UH	1	
L1141	G0C330KA0065	COIL 33UH	1	
L1151	G0A220GA0026	COIL 22UH	1	
L3501	G0C220JA0019	COIL 22UH	1	
L3801	VLQ0599J680	COIL 68UH	1	G0C680JA0026
L4291	G0C391JA0064	COIL 390UH	1	
L6001	G0C101JA0019	COIL 100UH	1	
L8201	G1C100K00020	COIL 10UH	1	
L8202	J0JCC0000079	COIL 9UH	1	
L8301	G1C100KA0055	COIL 10UH	1	
L8302	J0JCC0000079	COIL 9UH	1	
L8550	G1C100KA0055	COIL 10UH	1	
LB3531-33	J0JBC0000117	COIL	3	
LB3534	J0JCC0000186	COIL	1	
LB3535,36	J0JBC0000117	COIL	2	
LB4601	J0JCC0000120	COIL	1	
LB4671	J0JCC0000120	COIL	1	
LB4673,74	J0JCC0000120	COIL	2	
LB8001,02	J0JHC0000097	COIL	2	
LB8003,04	ERJ2GE0R00X	1/16W 0	2	
LB8005,06	ERJ3GEY0R00	1/10W 0	2	
LB8301-05	J0JCC0000371	COIL	5	
LB8401	ERJ2GEJ151	1/16W 150	1	
LB8421-24	ERJ2GE0R00X	1/16W 0	4	
LB8491	ERJ2GE0R00X	1/16W 0	1	
LB8502	J0JHC0000097	COIL	1	
LB8503	ERJ2GE0R00X	1/16W 0	1	
LB8504,05	J0JCC0000371	COIL	2	
LB8507	J0JCC0000371	COIL	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
LB8511-14	ERJ3GEY0R00	1/10W 0	4	
LB8691-93	ERJ2GEJ101	1/16W 100	3	
P1001	K2AA2B000009	AC INLET	1	△
P4601	VJS3611B005W	CONNECTOR (5P)	1	K1MN05B00011
P4602	K1KA02AA0193	CONNECTOR (2P)	1	
PC1	RPGC0363	PACKING CASE	1	
PC2	RPNC0085A	CUSHION (A)	1	
PC3	RPNC0085B	CUSHION (B)	1	
PC4	RPFC0026-B	POLYETHYLENE BAG	1	
PJ6101	REZ1682	CABLE	1	
Q1045	2SC3311AS	TRANSISTOR	1	
Q1051	B3PBA0000241	TRANSISTOR	1	△
Q1081, 82	2SC3311AS	TRANSISTOR	2	
Q1115	B1DHDD000029	TRANSISTOR	1	
Q1125	2SB14170JA	TRANSISTOR	1	
Q1126	XN1501	TRANSISTOR	1	XN01501
Q4302	B1ABCF000138	TRANSISTOR	1	
Q4422, 23	B1ABCF000138	TRANSISTOR	2	
Q4751	B1ABCF000138	TRANSISTOR	1	
Q4924	UN2111	TRANSISTOR	1	UNR211100L
Q4940	B1ABCF000138	TRANSISTOR	1	
Q4947, 48	B1ABCF000138	TRANSISTOR	2	
Q4949	UNR221100L	TRANSISTOR	1	
Q4950	2SD0601ARL	TRANSISTOR	1	
Q6085	B1ABGC000011	TRANSISTOR	1	
Q8550	B1ADHG000003	TRANSISTOR	1	
Q8551	B1ABDF000018	TRANSISTOR	1	
Q8552	2SB970-R	TRANSISTOR	1	2SB09700R
Q8560, 61	B1ABDF000018	TRANSISTOR	2	
Q8562	2SB970-R	TRANSISTOR	1	2SB09700R
QR1115	B1GBCFNN0036	TRANSISTOR	1	
QR4302	B1GDCEJ0046	TRANSISTOR	1	
QR4304, 05	XN0431100L	TRANSISTOR	2	
QR4306	B1GBCFJA0026	TRANSISTOR	1	
QR4307	UNR221100L	TRANSISTOR	1	
QR4308	UN2111	TRANSISTOR	1	UNR211100L
QR4901, 02	XN0431100L	TRANSISTOR	2	
QR8111	XP6214	TRANSISTOR	1	XP06214
QR8431	B1GBCFJJ0047	TRANSISTOR	1	
QR8571	B1GDCEFC0001	TRANSISTOR	1	
R1001, 02	ERDS2FJ474	1/4W 470K	2	
R1031	ERG2SJ683	2W 68K	1	
R1041	ERGLSJ680	1W 68	1	
R1045	ERDS2FJ273	1/4W 27K	1	
R1046	ERDS2FJ100	1/4W 10	1	
R1051	EROS2CKF2002	1/4W 20K	1	EROS2CKF2002
R1061	ERDS2FJ223	1/4W 22K	1	
R1062	ERDS2FJ123	1/4W 12K	1	
R1071	EROS2CHF1501	1/4W 1.5K	1	
R1072	EROS2CHF1001	1/4W 1K	1	
R1081	EROS2CKF2702	1/4W 27K	1	EROS2CKF2702
R1082	EROS2CHF1002	1/4W 1K	1	
R1083	EROS2CHF5601	1/4W 5.6K	1	
R1084	ERDS2FJ223	1/4W 22K	1	
R1085	ERDS2FJ104	1/4W 100K	1	
R1101	ERDS2FJ750	1/4W 75	1	
R1102, 03	EROS2CKF1201	1/4W 1.2K	2	EROS2CKF1201
R1104	ERJ6GEYJ102V	1/8W 1K	1	
R1105	ERJ3GEYJ102V	1/10W 1K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R1106	ERJ3GEYJ122	1/10W 1.2K	1	
R1107	ERJ3GEYJ103V	1/10W 10K	1	DOGB103JA002
R1115	ERJ3GEYJ104	1/10W 100K	1	
R1116	ERJ3GEYJ102V	1/10W 1K	1	
R1125	ERJ3GEYJ271	1/10W 270	1	
R1126	ERJ3RBD362	1/16W 3.6K	1	
R1127	ERJ3RBD132	1/16W 1.3K	1	
R1128	ERJ3GEYJ121	1/10W 120	1	
R1191	ERJ3GEYJ104	1/10W 100K	1	
R3531	ERJ3EKF75R0	1/10W 75	1	
R3532-34	ERJ3GEYF750	1/10W 75	3	
R3535, 36	ERJ3EKF75R0	1/10W 75	2	
R3537	ERJ3GEYJ103V	1/10W 10K	1	DOGB103JA002
R4301	ERJ3GEYJ332	1/10W 3.3K	1	
R4302	ERJ3GEYJ103V	1/10W 10K	1	DOGB103JA002
R4303, 04	ERJ3GEYJ222	1/10W 2.2K	2	
R4307	ERJ3GEYJ102V	1/10W 1K	1	
R4308	ERJ3GEYJ222	1/10W 2.2K	1	
R4309	ERJ3GEYJ223	1/10W 22K	1	
R4310, 11	ERJ3GEYJ104	1/10W 100K	2	
R4312, 13	ERJ3GEYJ223	1/10W 22K	2	
R4316	ERJ3GEYJ472	1/10W 4.7K	1	
R4320	ERJ3GEYJ222	1/10W 2.2K	1	
R4329	ERJ3GEYJ222	1/10W 2.2K	1	
R4331, 32	D0HB912ZA002	1/10W 9.1K	2	
R4355, 56	D0HB153ZA002	1/10W 15K	2	
R4367, 68	ERJ3GEYJ101	1/10W 100	2	DOGB101JA002
R4401, 02	ERJ3GEYJ822	1/10W 8.2K	2	
R4403	ERJ3GEYJ103V	1/10W 10K	1	DOGB103JA002
R4404	ERJ3GEY0R00	1/10W 0	1	
R4414, 15	ERJ3GEY0R00	1/10W 0	2	
R4417	ERJ3GEYJ102V	1/10W 1K	1	
R4422, 23	ERJ3GEYJ473V	1/10W 47K	2	DOGB473JA002
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R4673	ERJ3GEYJ102V	1/10W 1K	1	
R4675	ERJ3GEYJ123V	1/10W 12K	1	
R4676	ERJ3GEYJ224	1/10W 220K	1	
R4677	ERJ3GEYJ102V	1/10W 1K	1	
R4678	ERJ3GEYJ223	1/10W 22K	1	
R4679	ERJ3GEYJ123V	1/10W 12K	1	
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R4681	ERJ3GEYJ223	1/10W 22K	1	
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R4754	ERJ3GEYJ221	1/10W 220	1	
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R4940	ERJ3GEYJ471	1/10W 470	1	
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R4949	ERJ3GEYJ103V	1/10W 10K	1	DOGB103JA002
R4950	ERJ3GEYJ122	1/10W 1.2K	1	
R4951	ERJ3GEYJ821	1/10W 820	1	
R6000	ERJ3GEY0R00	1/10W 0	1	





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