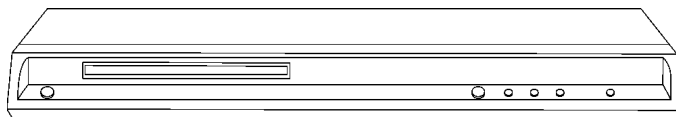


Service Manual

DVD Player



DVD-S52P DVD-S52PC

DL4.1 Mechanism Series

Color

(S).....Silver Type

(K).....Black Type

Specifications

Power supply:	AC120 V, 60 Hz
Power consumption:	11 W
Power consumption in standby mode:	1 W
Dimensions:	16 15/16" (W) × 9 14/16" (D) × 1 11/16" (H) 430 (W) × 251 (D) × 43 (H) mm
Mass:	4.8 lb. (2.2 kg) (approx.)
Signal system:	NTSC
Operating temperature range:	+ 5 to + 35 °C (+ 41 to + 95 °F)
Operating humidity range:	5 to 90 % RH (no condensation)

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

- (1) DVD (DVD-Video, DVD-Audio, DivX^{*6,7})
- (2) DVD-RAM (DVD-VR, JPEG^{*4,7}, MPEG4^{*5,7}, DivX^{*6,7}, MP3^{*2,7})
- (3) DVD-R (DVD-Video, DVD-VR, JPEG^{*4,7}, MP3^{*2,7}, DivX^{*6,7}, MPEG4^{*5,7})
- (4) DVD-R DL (DVD-Video, DVD-VR)
- (5) DVD-RW (DVD-Video, DVD-VR, JPEG^{*4,7}, MP3^{*2,7}, DivX^{*6,7}, MPEG4^{*5,7})
- (6) +R/+RW (Video)
- (7) +R DL (Video)
- (8) CD, CD-R / CD-RW (CD-DA, Video CD, SVCD^{*1}, MP3^{*2,7}, WMA^{*3,7}, JPEG^{*4,7}, MPEG4^{*5,7}, DivX^{*6,7}, HighMAT Level2 (Audio and Image))

*1 Conforming to IEC62107

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

*3 Windows Media Audio Ver.9.0 L3
Not compatible with Multiple Bit Rate (MBR)

*4 Exif Ver2.1 JPEG Baseline files
Picture resolution: between 160 × 120 and 6144 × 4096 pixels (Sub sampling is 4:0:0, 4:2:0, 4:2:2 or 4:4:4)
Extremely long and slender pictures may not be displayed

*5 MPEG4 data recorded with the Panasonic SD multi cameras or DVD video recorders conforming to SD VIDEO specifications (ASF standard) /MPEG4 (Simple Profile) video system/G.726 audio system

*6 Plays all versions of DivX[®] video (including DivX[®]6) with standard playback of DivX[®] media files. Certified to the DivX Home Theater Profile.

GMC (Global Motion Compensation) not supported.

*7 The total combined maximum number of recognizable audio, picture and video contents and groups: 4000 audio, picture and video contents and 400 groups.

* DivX function is used for DVD-S52PC only.

Video output:

Output level:	1 Vp-p (75 Ω)
Output connector:	Pin jack (1 system)

S video output:

Y output level:	1 Vp-p (75 Ω)
C output level:	NTSC; 0.286 Vp-p (75 Ω)
Output connector:	S terminal (1 system)

Component video output:

Y output level:	1 Vp-p (75 Ω)
P _B output level:	0.7 Vp-p (75 Ω)
P _R output level:	0.7 Vp-p (75 Ω)
Output connector:	Pin jack (Y: green, P _B : blue, P _R : red)
Number of connectors:	1 system

Video performance:

Horizontal resolution:	More than 500 lines
Video S/N ratio:	More than 65dB

Audio output:

Output level:	2 Vrms (1 kHz, 0 dB)
---------------	----------------------

Output connector: Pin jack

Number of connectors:

2 channel: 1 system

Audio performance:

- (1) Frequency response:
- 1 DVD (linear audio): 4 Hz-22 kHz (48 kHz sampling)
4 Hz-44 kHz (96 kHz sampling)
- 1 DVD-Audio: 4 Hz-88 kHz (192 kHz sampling)
- 1 CD Audio: 4 Hz-20 kHz
- (2) S / N ratio:
- 1 CD Audio: 115 dB
- (3) Dynamic range:
- 1 DVD (linear audio): 102 dB
- 1 CD Audio: 98 dB
- (4) Total harmonic distortion:
- 1 CD Audio: 0.0025 %

Digital audio output:

Optical digital output: Optical terminal

Coaxial digital output: Pin jack

HDMI AV output: 19pin

Pickup

Wave length: 662 nm / 785 nm

Laser power: CLASS II / CLASS I
(DVD-S52P)
CLASS 2 / CLASS 3A
(DVD-S52PC)

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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"DTS" and "DTS 2.0 + Digital Out" are trademarks of Digital Theater Systems, Inc.

Apparatus Claims of U.S. Patent Nos. 4,631,603, 4,577,216, and 4,819,098, licensed for limited viewing uses only.

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

This product is licensed under the MPEG-4 Visual patent portfolio license for the personal and non-commercial use of a consumer for (i) encoding video in compliance with the MPEG-4 Visual Standard ("MPEG-4 Video") and/or (ii) decoding MPEG-4 Video that was encoded by a consumer engaged in a personal and non-commercial activity and/or was obtained from a video provider licensed by MPEG LA to provide MPEG-4 Video. No license is granted or shall be implied for any other use. Additional information including that relating to promotional, internal and commercial uses and licensing may be obtained from MPEG LA, LLC. See <http://www.mpegla.com>.

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Official DivX® Certified product.
Plays all versions of DivX® video (including DivX®6) with standard playback of DivX® media files.
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⚠ 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 IMPORTANT SERVICE INFORMATION

1.1. Notes

When you replace EEPROM or exchange MODULE P.C.B., you have to take "Manual for customer" to the customer with unit.
(also in the case of unit exchange)

Please take and use "Manual for customer" from below.

1. Come with MODULE P.C.B. or EEPROM (Service part).
2. Make a photocopy section 1.3. "Manual for customer" on this service manual.

"Manual for customer" has important information for "DivX Video-on-Demand Service" user.

Please don't forget take it to the customer with unit!

1.2. About DivX

1.2.1. DivX

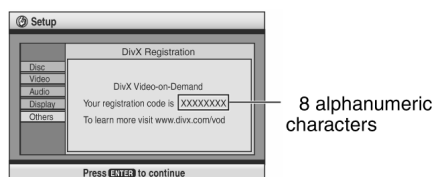
A video compression format developed by DivXNetworks, Inc. that compresses video files without any considerable loss of video quality.

1.2.2. About DivX Video-on-Demand Content

DivX Video-on-Demand (VOD) content is encrypted for copyright protection. In order to play DivX VOD content on this unit, you first need to register the unit.

Follow the on line instructions for purchasing DivX VOD content to enter the unit's registration code and register the unit. For more information about DivX VOD, visit www.divx.com/vod.

Display the unit's registration code



- We recommend that you make a note of this code for future reference.
- After playing DivX VOD content for the first time, another registration code is then displayed in "DivX Registration". Do not use this registration code to purchase DivX VOD content. If you use this code to purchase DivX VOD content, and then play the content on this unit, you will no longer be able to play any content that you purchased using the previous code.
- If you purchase DivX VOD content using a registration code different from this unit's code, you will not be able to play this content. ("Authorization Error" is displayed.)

Regarding DivX content that can only be played a set number of times

Some DivX VOD content can only be played a set number of times. When you play this content, the remaining number of plays is displayed. You cannot play this content when the number of remaining plays is zero. ("Rental Expired" is displayed.)

When playing this content

- The number of remaining plays is reduced by one if
 - you press [⏮] or [SETUP].
 - you press [■] (STOP). [Press [⏮] (PAUSE) to stop play.]
 - you press [⏮] (SKIP) or [⏮] (SEARCH) etc. and arrive at another content or the start of the content being played.

Resume (Stop) and Marker (Play Menu) functions do not work.

1.3. Manual for Customer

Warning for Customers Who Use the DivX Video-on-Demand content.

1. The registration code has been changed for the repair of the product or the product exchange.
2. Obtain and register a new registration code, otherwise you will no longer be able to play DivX Video-on-Demand content.
3. Follow the procedure on the DivX Video-on-Demand web site to register at <http://vod.divx.com/>. (URL is valid as of April, 2005)

* If you do not use the DivX Video-on-Demand content, please ignore this warning.

2 SAFETY PRECAUTIONS

2.1. 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.

2.1.1. LEAKAGE CURRENT COLD CHECK

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

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

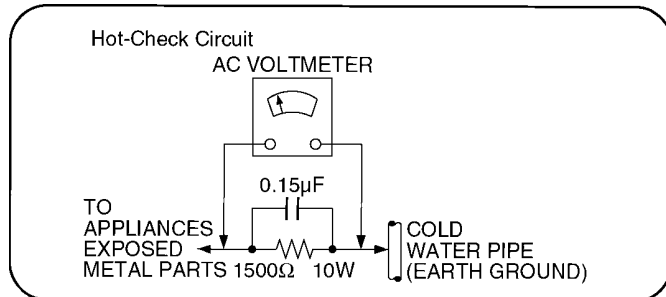


Figure 1

2.1.2. 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 must 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.

3 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).

4 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.

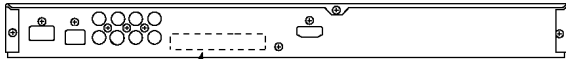
Wave length: 662 nm/785 nm

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

W/VDE

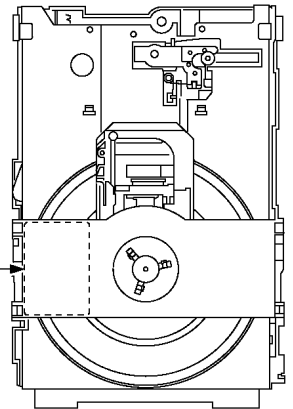
Laser radiation from the pickup lens is safety level, but be sure the followings:

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.



Product complies with DHHS Rules 21 CFR Subchapter J in effect at date of manufacture. Matsushita Electric Industrial Co., Ltd. Kadoma, Osaka, Japan

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 ALTUINKA NÄKYMÄÄ JA NÄKYMÄTÖN LASERSAATELYLLÄ. ÄLÄ KATSO SÄTEESEEN.	
VARNING	- SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. BETRÄKTA EJ STRÅLEN.	
ADVARSEL	- SYNLIG OG USYNLIG LASERSTRÅLING NÄR DEKSEL ÅPNES. UNNGÅ EKSPONERING FOR STRÅLEN.	
VORSICHT	- SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHLEN AUSSETZEN.	
注意	- 打开时有可见及不可见激光辐射。避免激光束照射。	
注意	- ここを開くと、可視及び不可視レーザー光が出ます。 ビームを見たり、触れたりしないでください。	RQLCA0141

**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.

5 SERVICE CAUTION BASED ON LEGAL RESTRICTIONS

5.1. General description about Lead Free Solder (PbF)

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

The normal solder is the alloy of tin (Sn) and lead (Pb). On the other hand, the lead free solder is the alloy mainly consists of tin (Sn), silver (Ag) and Copper (Cu), and the melting point of the lead free solder is higher approx.30°C (86°F) more than that of the normal solder.

Definition of PCB Lead Free Solder being used

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

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

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

Recommended Lead Free Solder (Service Parts Route.)

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

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

Note

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

6 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.

6.1. Grounding for electrostatic breakdown prevention

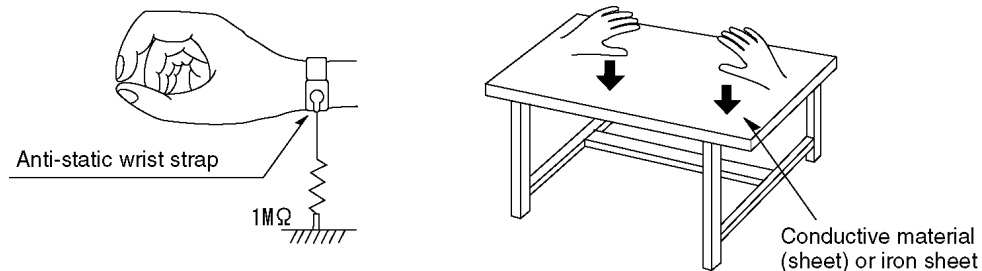
Some devices such as the DVD player use the optical pickup (laser diode) and the optical pickup will be damaged by static electricity in the working environment. Proceed servicing works under the working environment where grounding works is completed.

6.1.1. Worktable grounding

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

6.1.2. Human body grounding

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



6.1.3. Handling of optical pickup

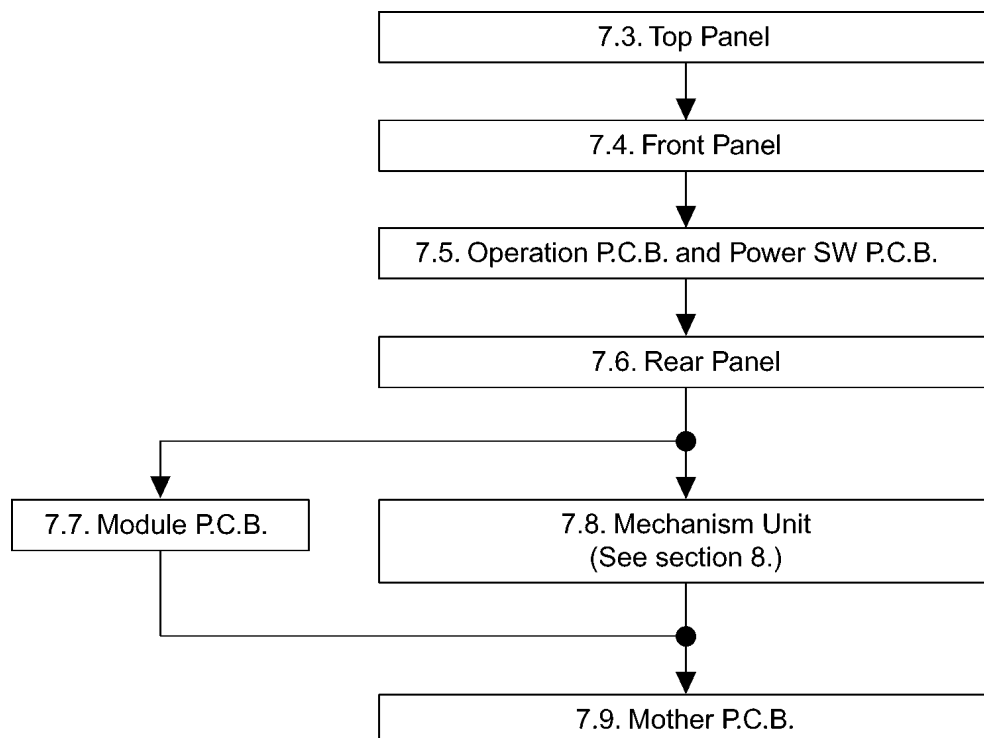
1. To keep the good quality of the optical pickup maintenance parts during transportation and before installation, the both ends of the laser diode are short-circuited. After replacing the parts with new ones, remove the short circuit according to the correct procedure. (See this Technical Guide.)
2.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

6.2. Handling Precautions for Traverse Unit (Optical Pickup)

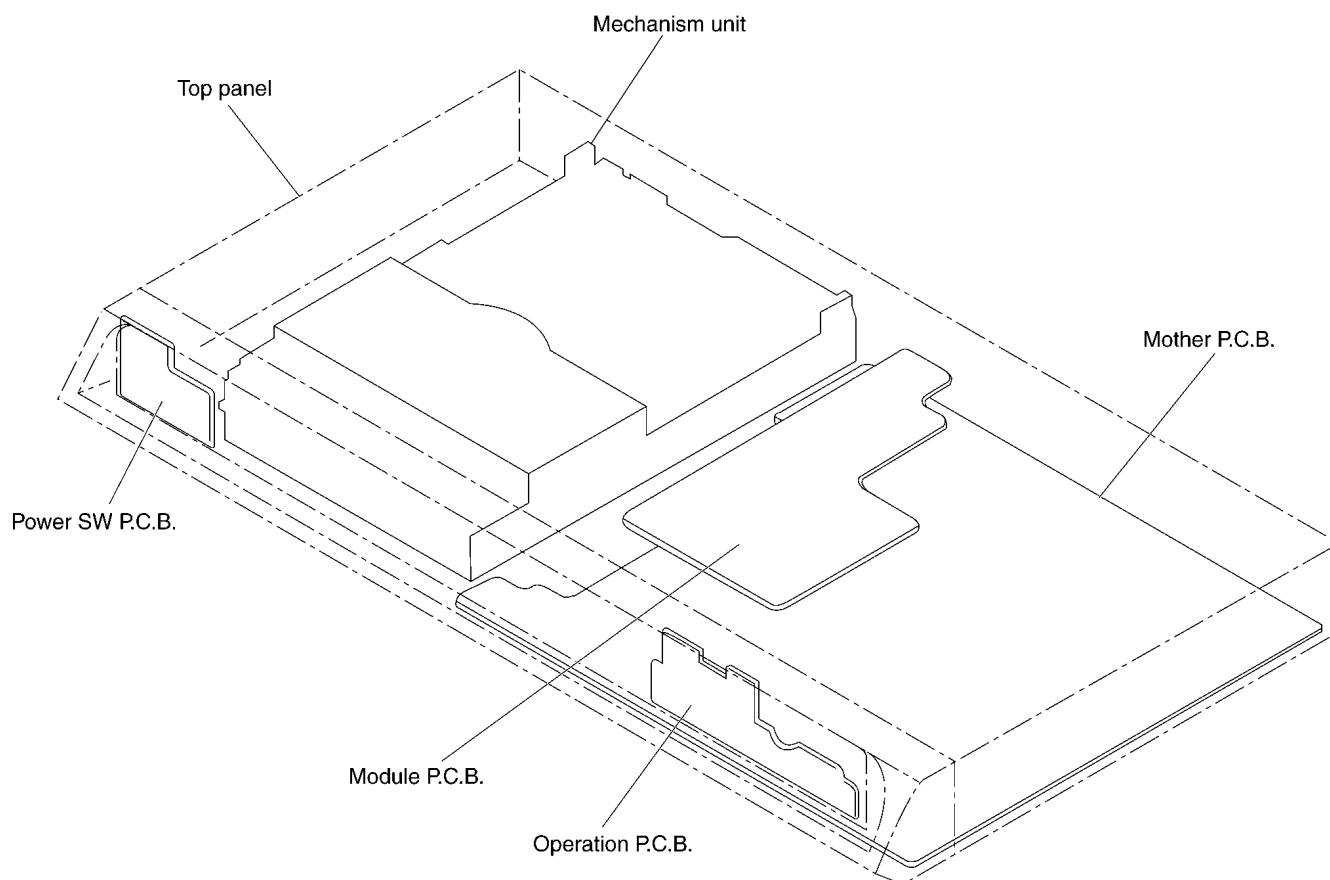
1. Do not give a considerable shock to the traverse unit (optical pickup) as it has an extremely high-precise structure.
2. When replacing the optical pickup, install the flexible cable and cut its short land with a nipper. See the optical pickup replacement procedure in this Technical Guide. Before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

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

7.1. Disassembly Procedure

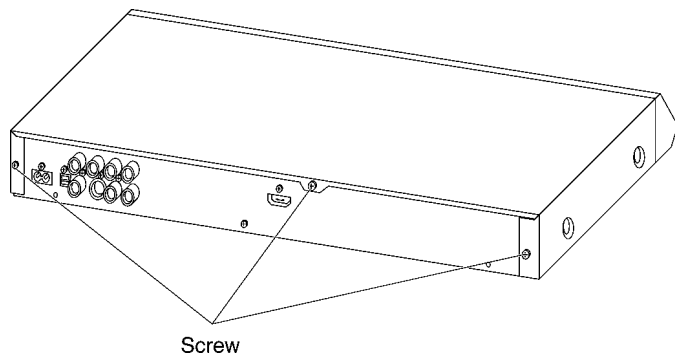
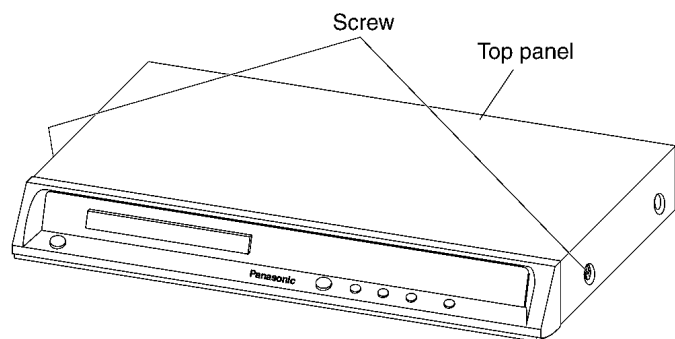


7.2. Casing Parts and P.C.B. Positions



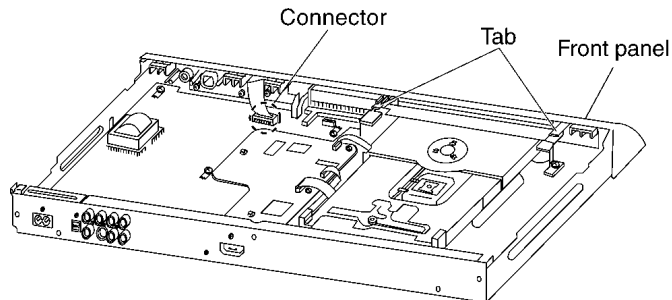
7.3. Top Panel

1. Unscrew the screws.

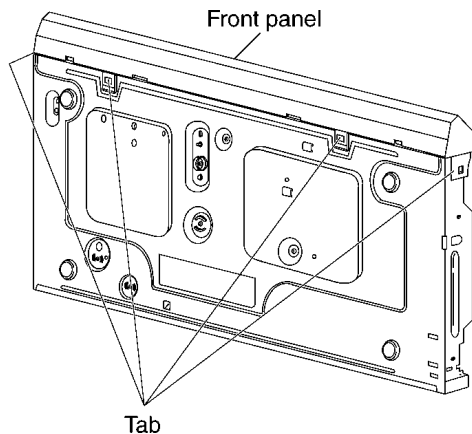


7.4. Front Panel

1. Release the tabs and connector.

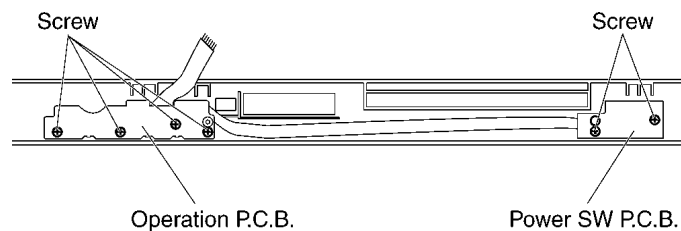


2. Release the tabs.



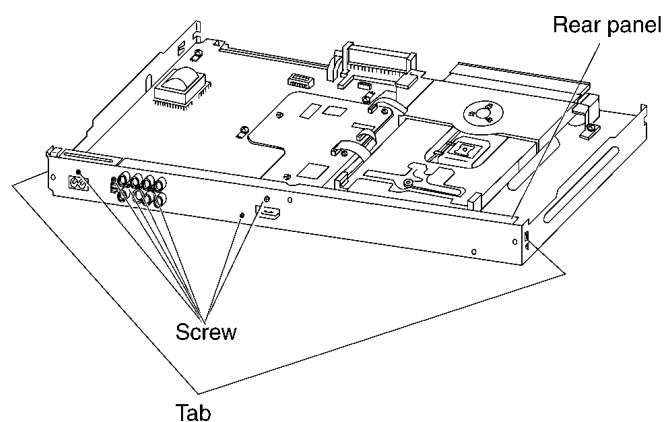
7.5. Operation P.C.B. and Power SW P.C.B.

1. Unscrew the screws.



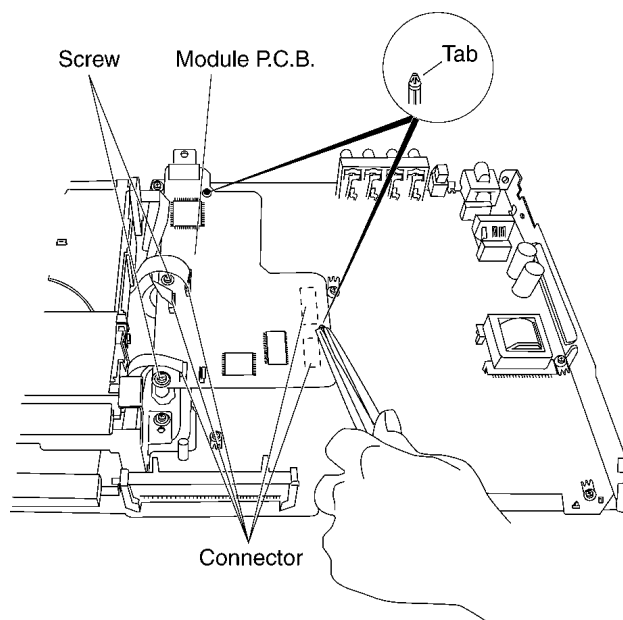
7.6. Rear Panel

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



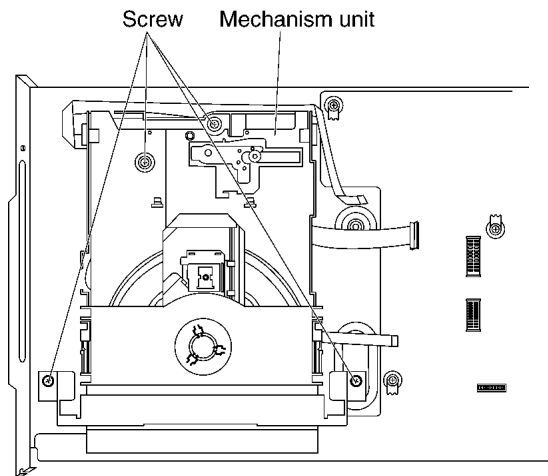
7.7. Module P.C.B.

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

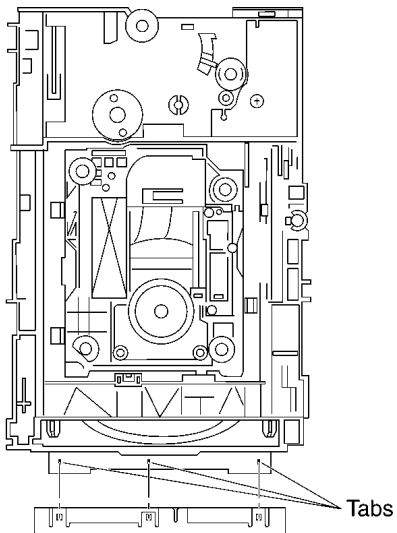


7.8. Mechanism Unit

1. Unscrew the screws.

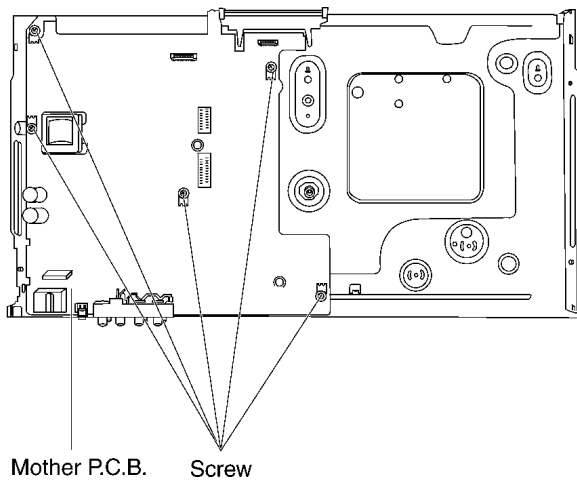


2. Release the tabs.



7.9. Mother P.C.B.

1. Unscrew the screws.

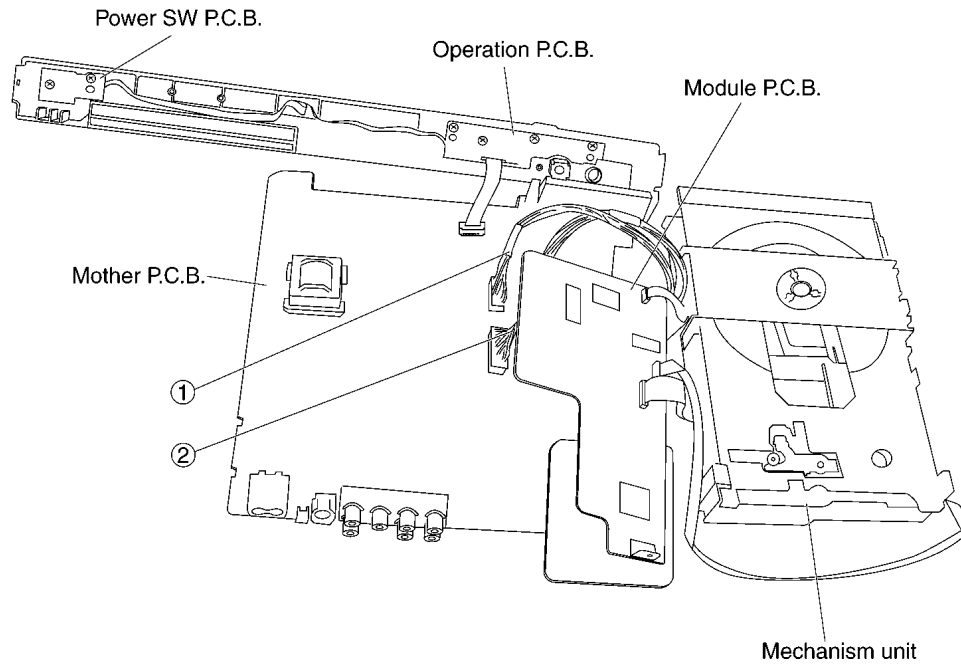


7.10. Service Position

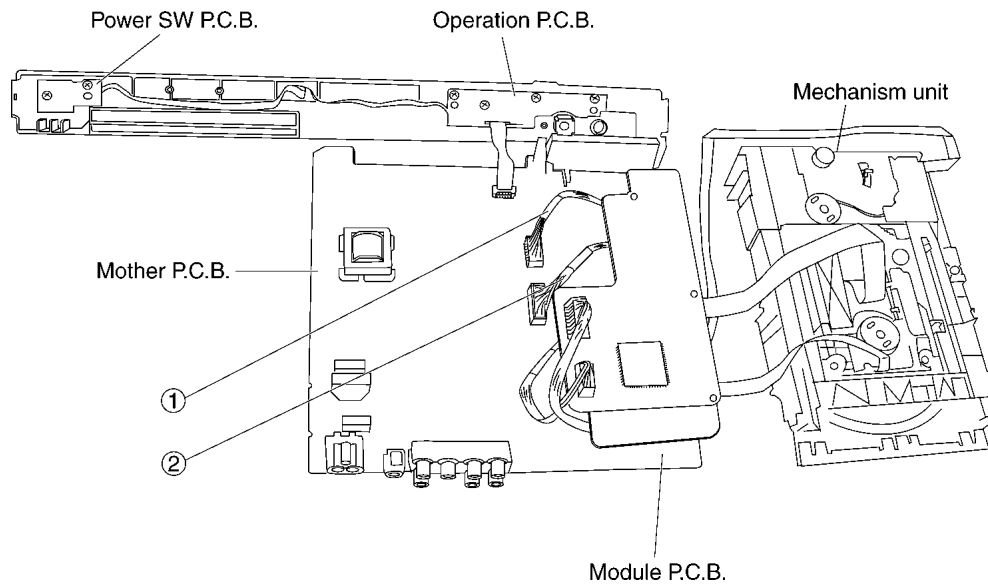
Caution:

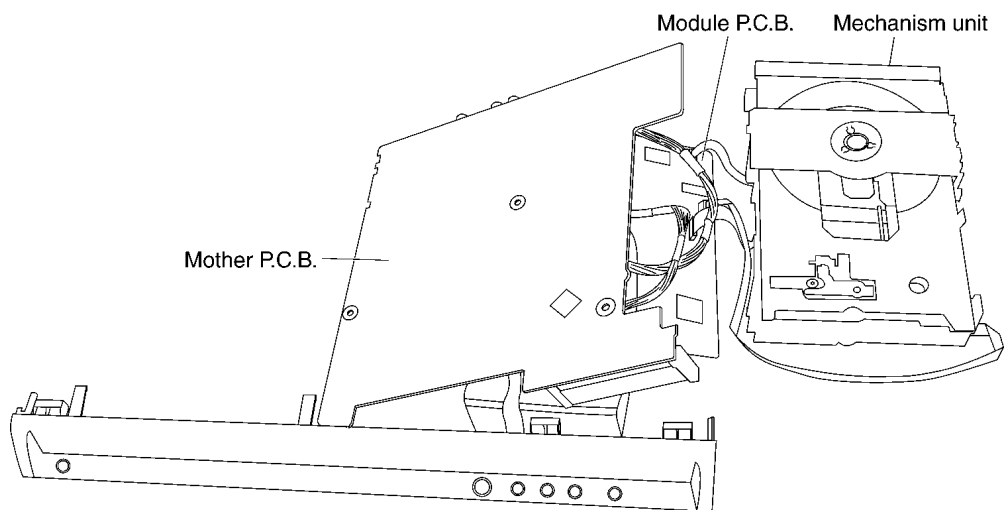
Put an insulation material between Module P.C.B. and Mother P.C.B..

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



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



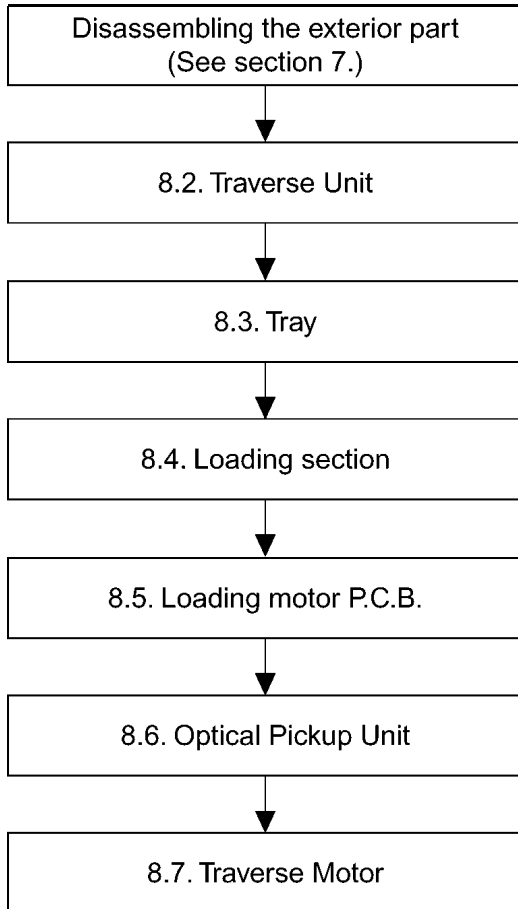


7.10.3. List of the Extension Cables

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

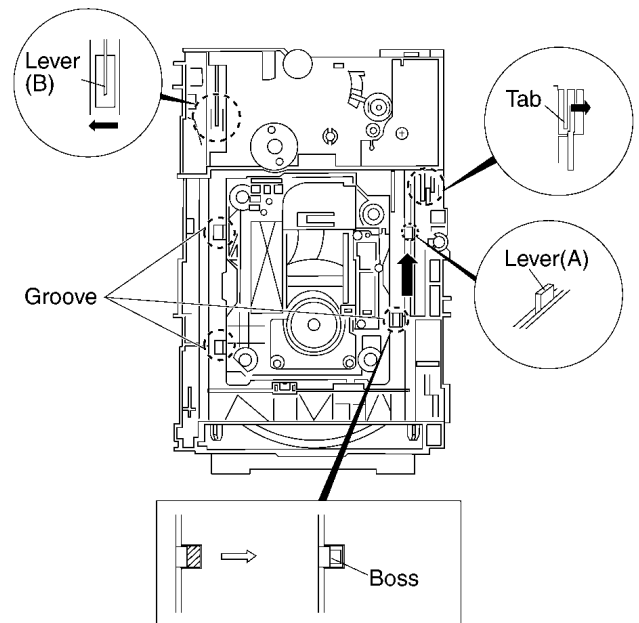
8 ASSEMBLING AND DISASSEMBLING THE MECHANISM UNIT

8.1. Disassembly Procedure

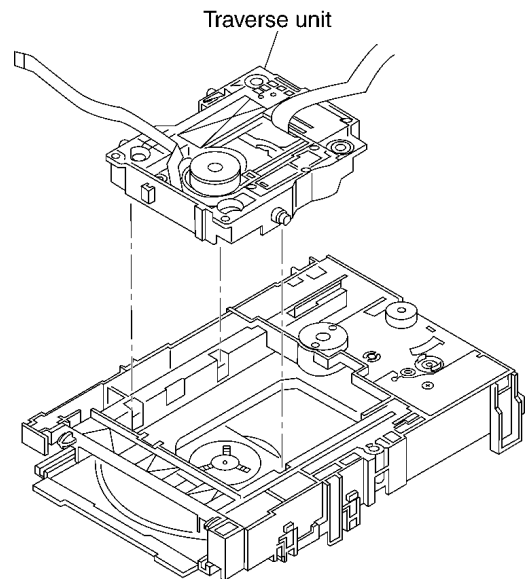


8.2. Traverse Unit

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.)

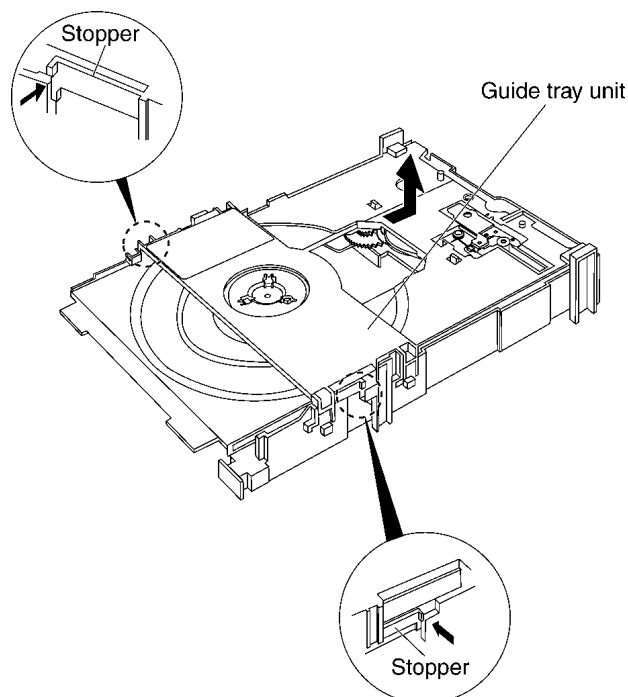


4. Remove the traverse unit.

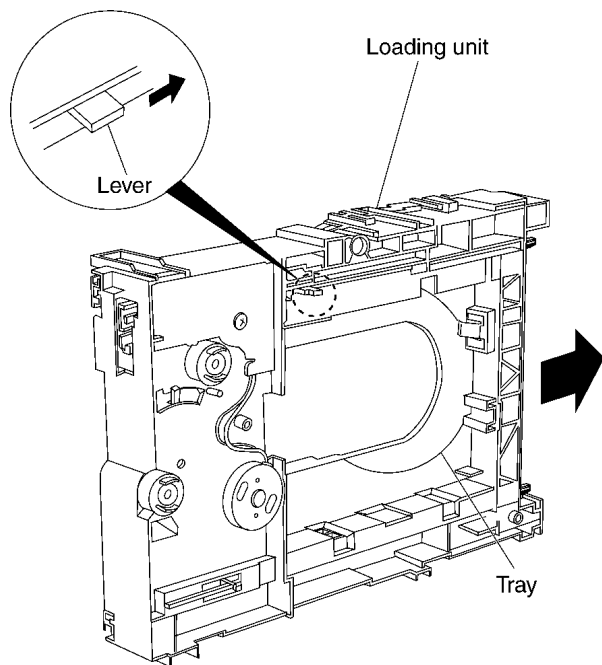


8.3. Tray

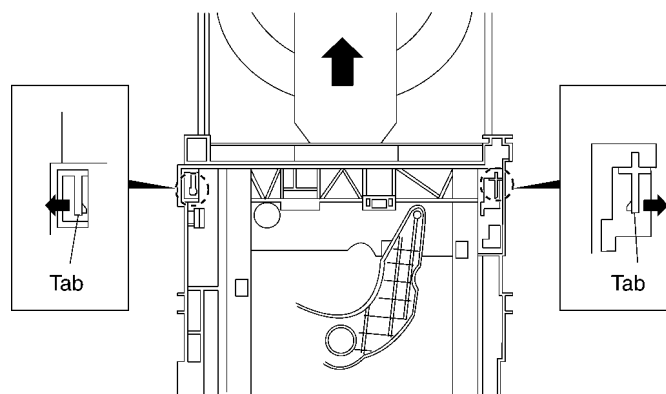
- Slide the guide tray unit while pressing the stopper in the arrow direction, and remove the guide tray unit.



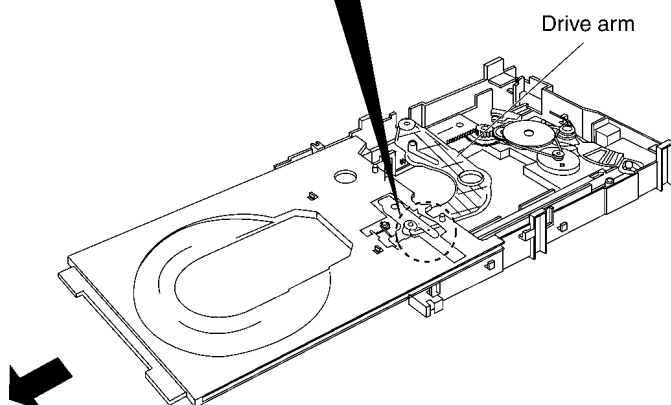
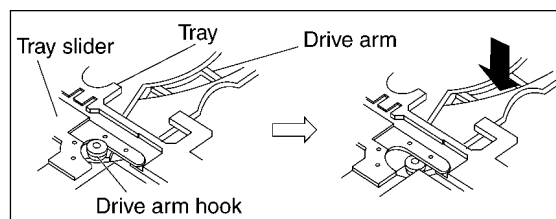
- Raise the loading unit.
- Slide the lever in the arrow direction till it stops and pull the tray out.



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

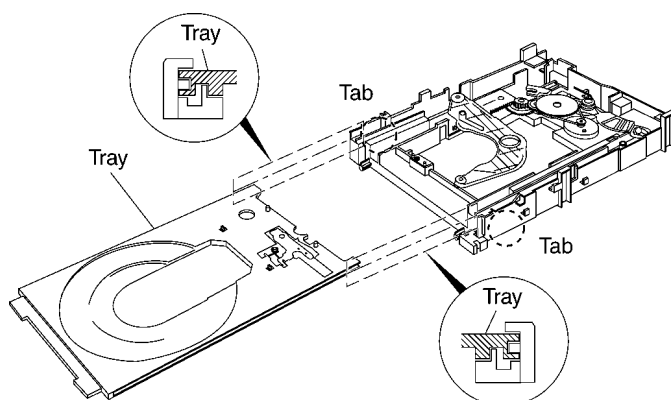


- Remove the drive arm concave phase from the tray slider and tray.



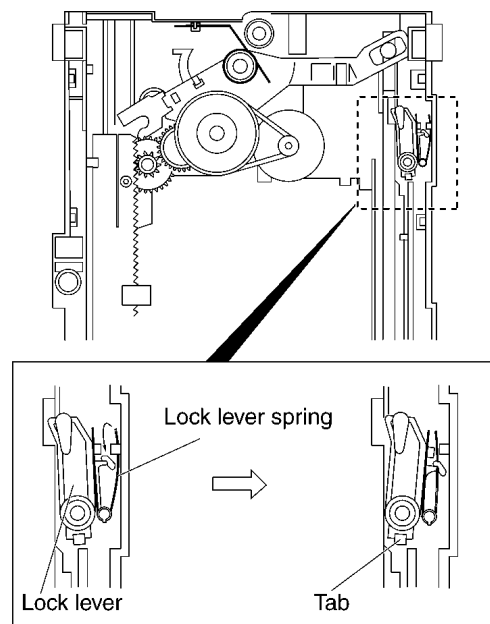
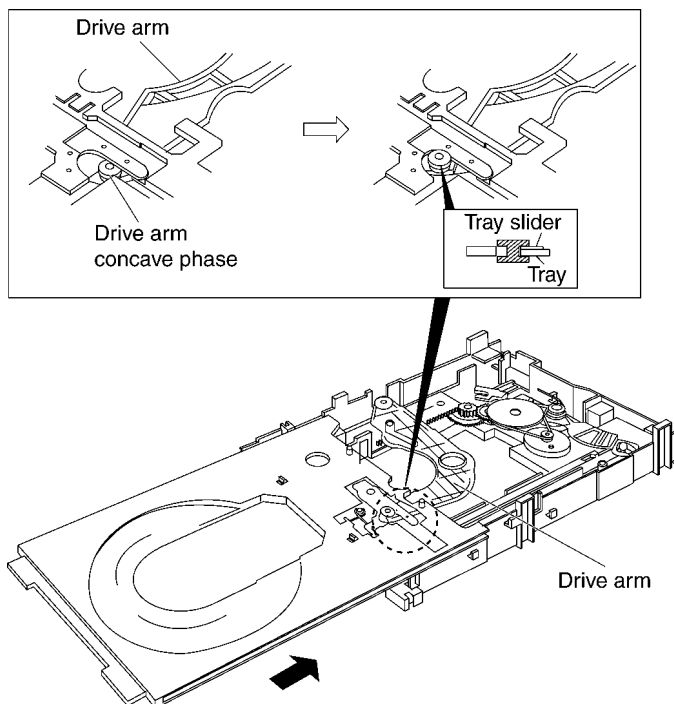
<Assembling the tray unit>

- 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.

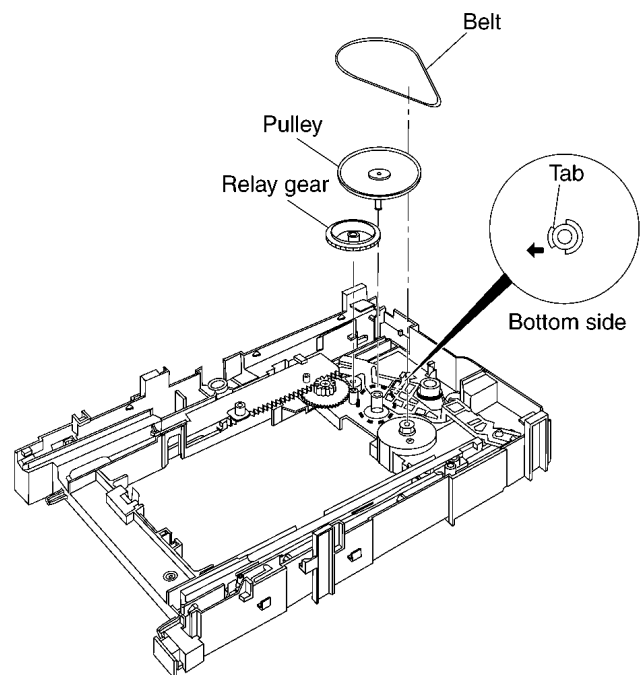
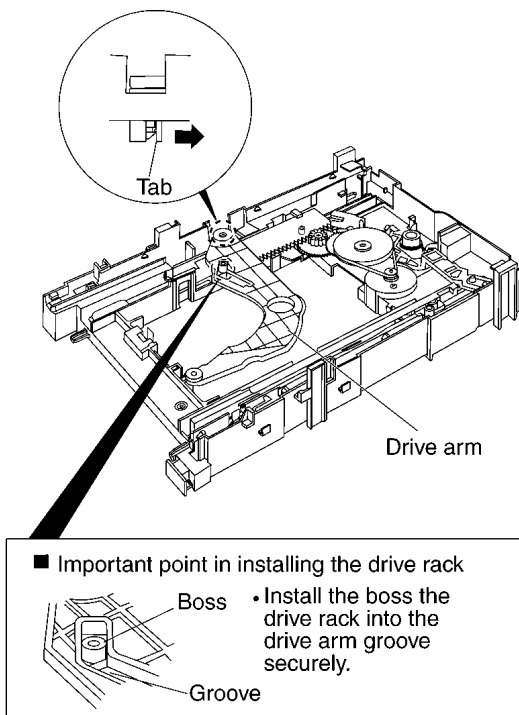
5. Make sure that the tray and the drive arm move smoothly.



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

8.4. Loading section

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

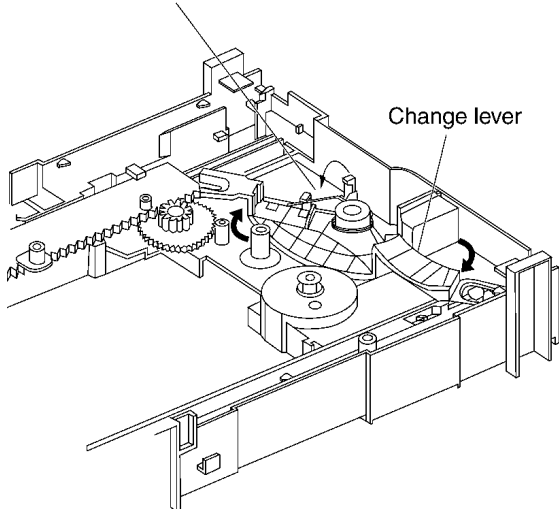


7. Turn the change lever in the arrow direction till it stops.
8. Hook the change lever spring on the change lever project part temporarily.

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

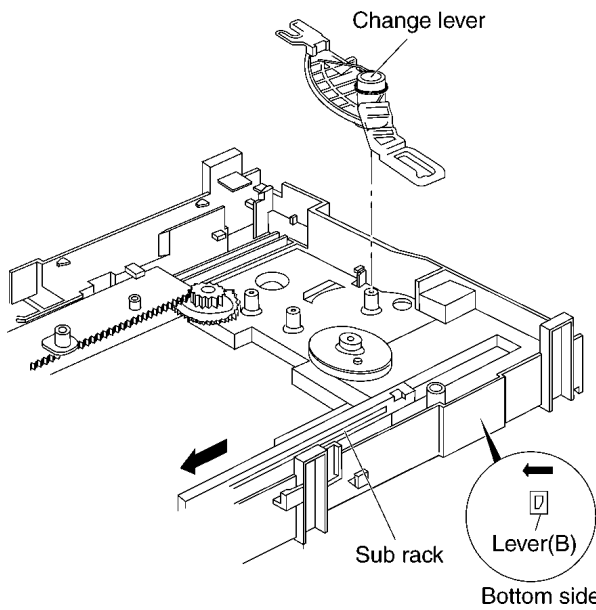
Change lever spring

Change lever



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

Change lever



Sub rack

Lever(B)

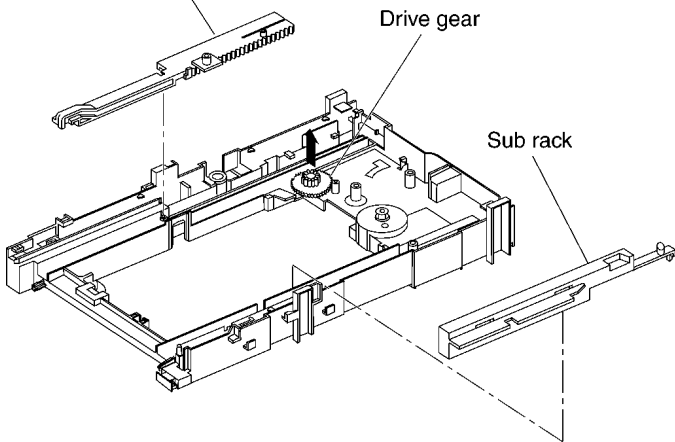
Bottom side

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

Drive rack

Drive gear

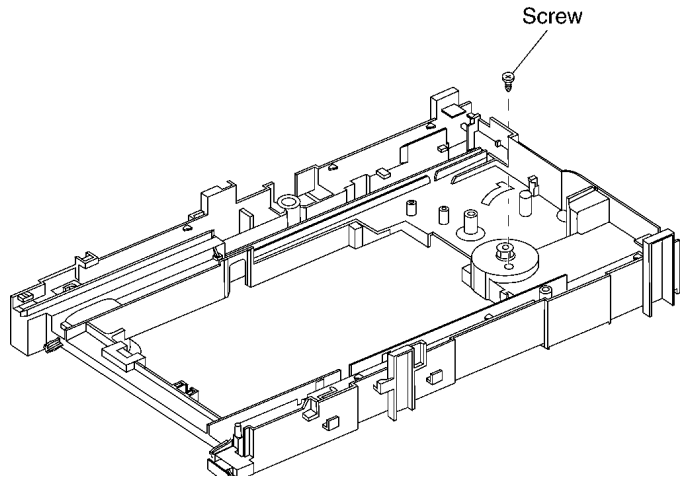
Sub rack



8.5. Loading motor P.C.B.

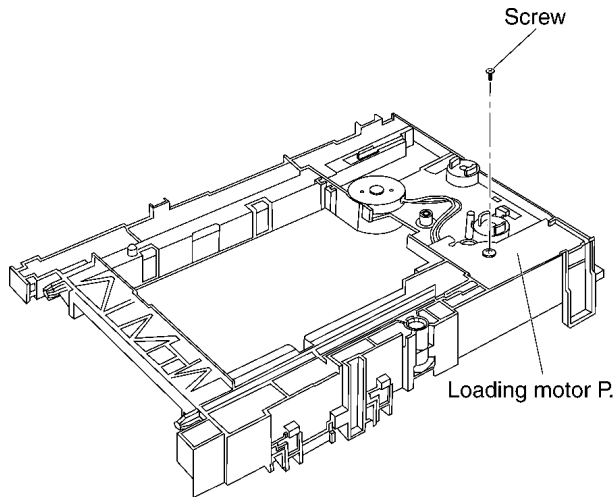
1. Unscrew the screws.

Screw



Screw

Loading motor P.C.B.

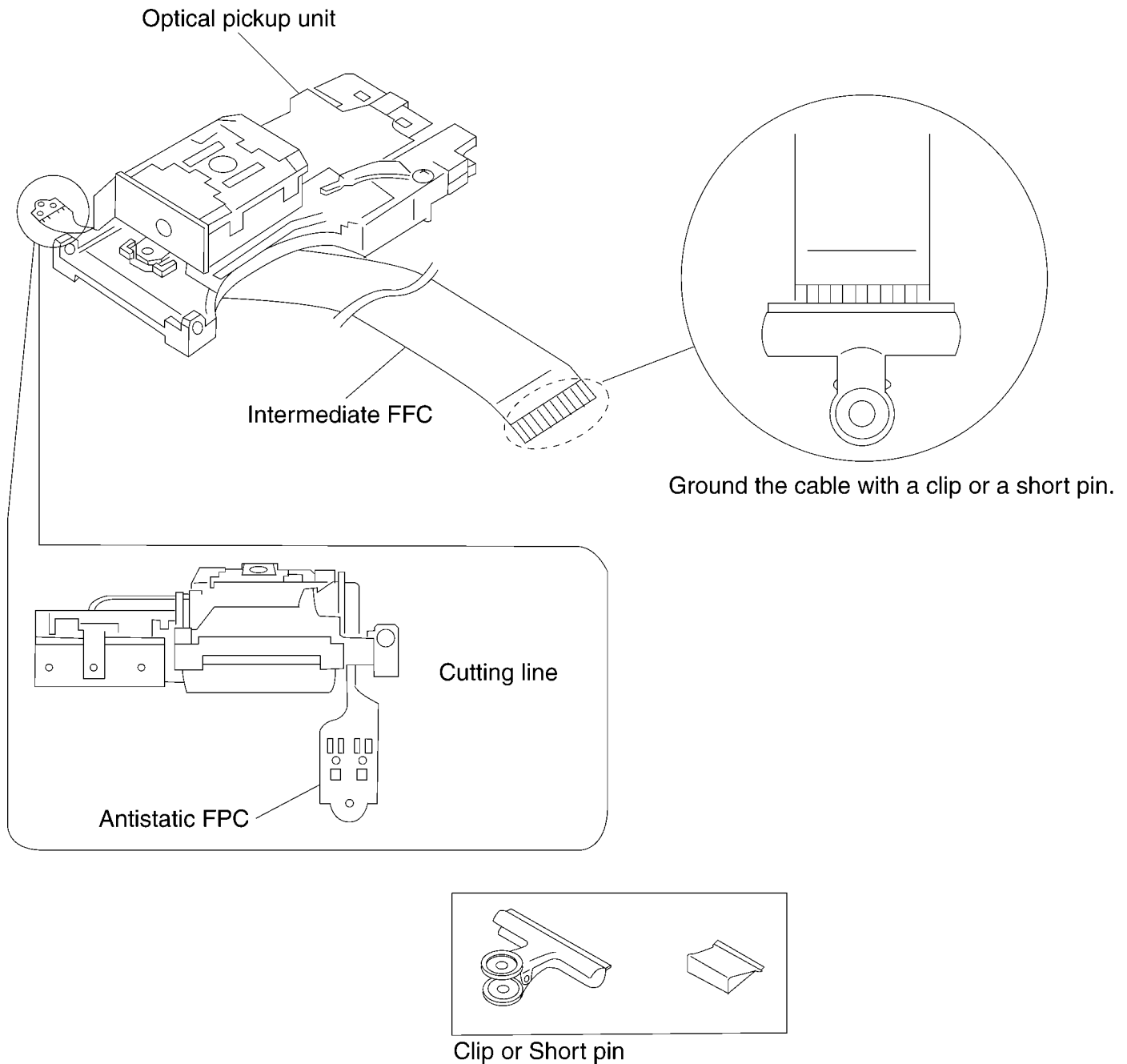


8.6. Optical Pickup Unit

8.6.1. Cautions to Be Taken in Handling the Optical Pickup Unit

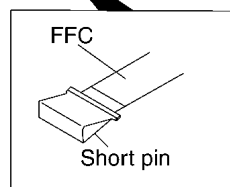
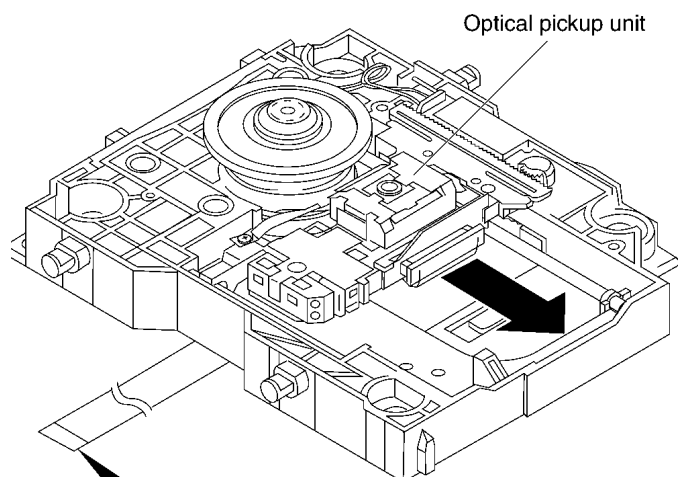
The laser diode in the optical pickup unit may be damaged due to electrostatic discharge generating from clothes or human body. Use due caution to electrostatic discharge damage when servicing the laser diode.

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.



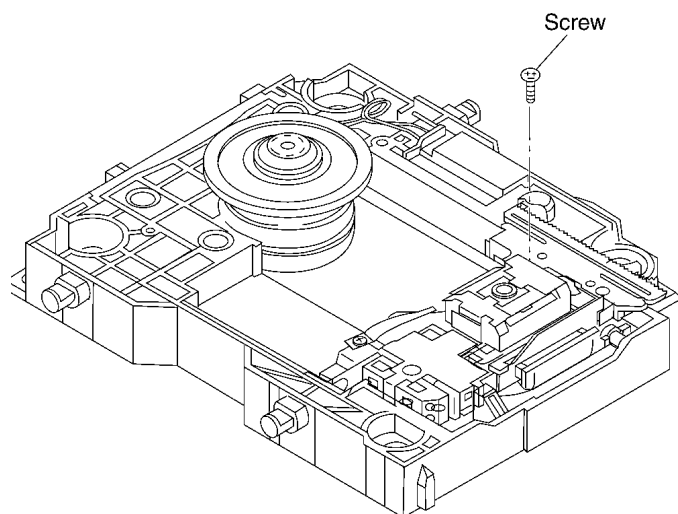
8.6.2. Procedure for Disassembling the Optical Pickup Unit

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

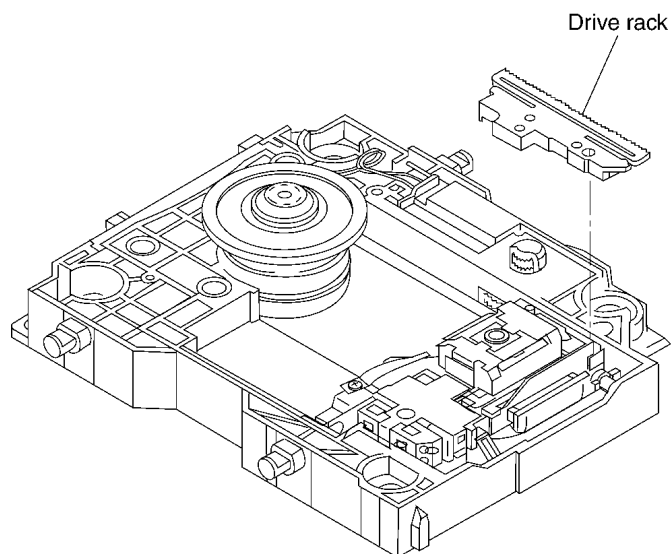


[Caution]
Insert the short pin into the
FFC of the optical pickup unit.
[See "Caution to be taken in
handling the optical pickup unit"]

2. Unscrew the screws.

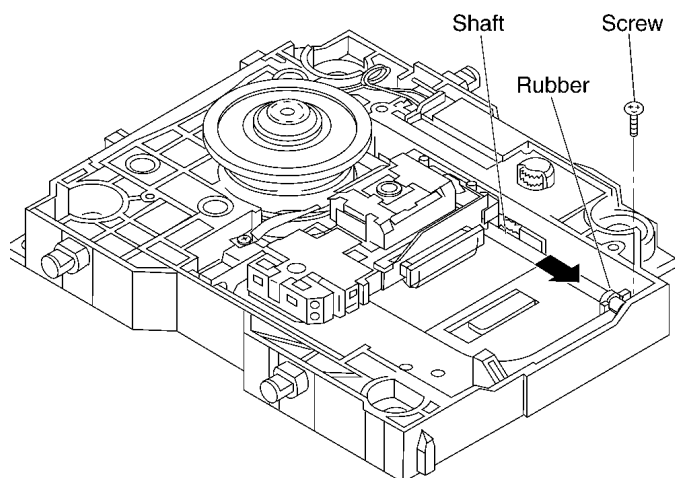


3. Remove the drive rack.

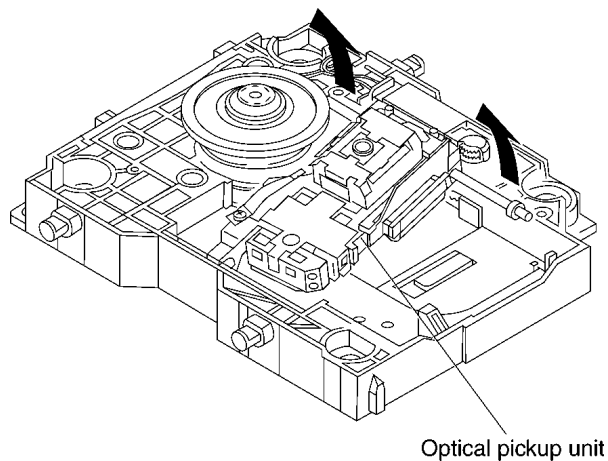


4. Unscrew the screw.

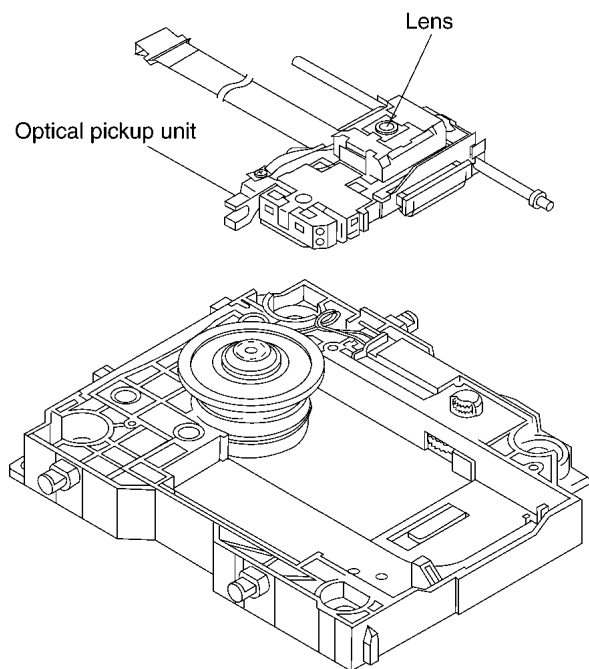
5. Slide the shaft in the arrow direction.



6. Lift the optical pickup unit with the shaft.



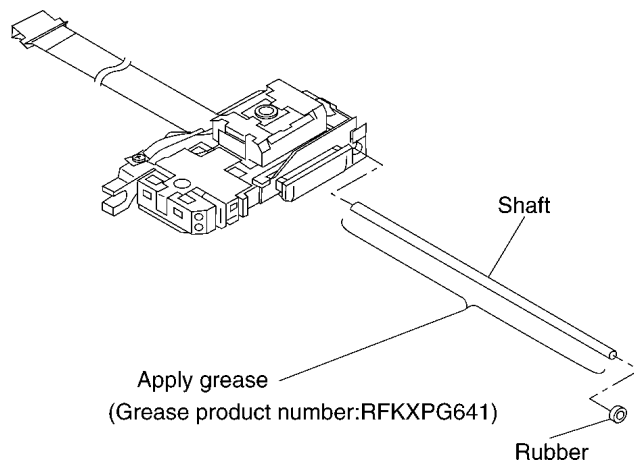
7. Remove the optical pickup unit.



[Caution]

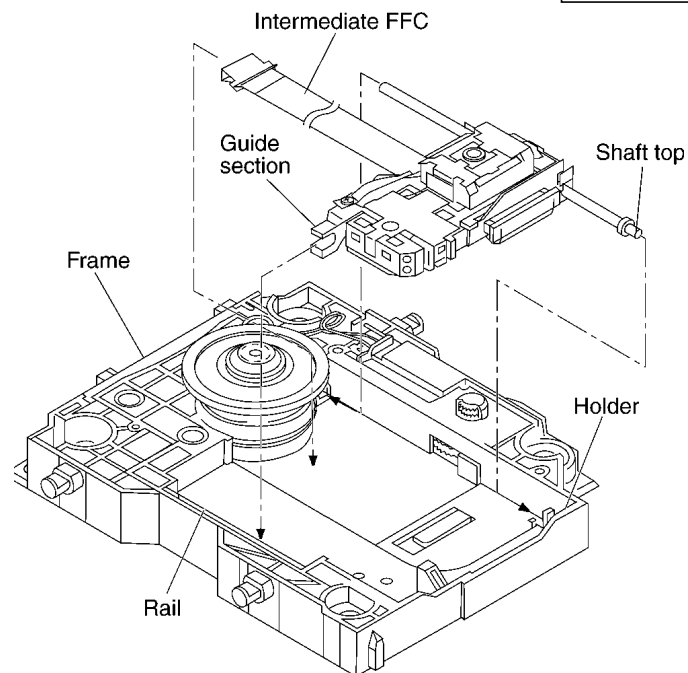
1. Do not give a considerable shock to the optical pickup unit as it has an extremely high-precise structure.
2. Do not touch the lens in the optical pickup unit.

8. Pull the shaft and the rubber out.

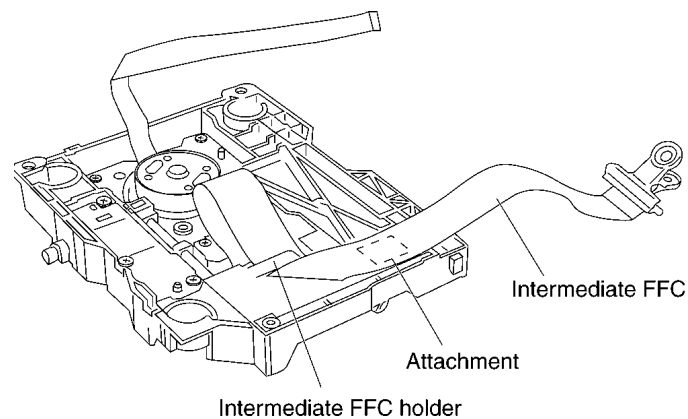


<Assembling the optical pickup unit>

1. Pass the intermediate FPC 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.

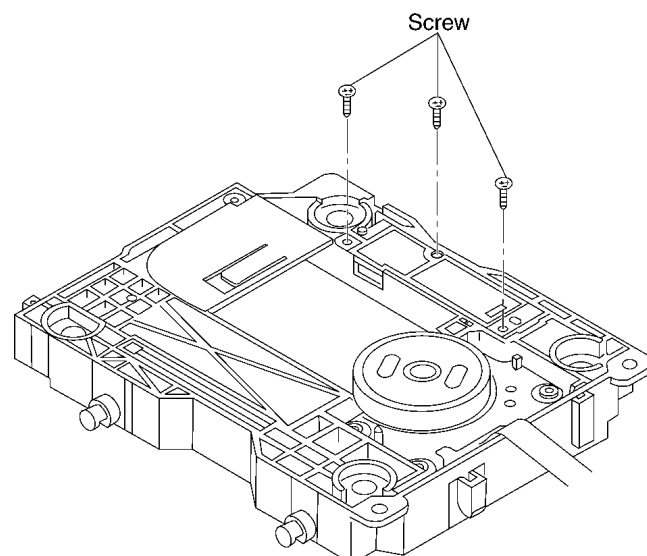


4. The intermediate FFC is fixed as shown below.

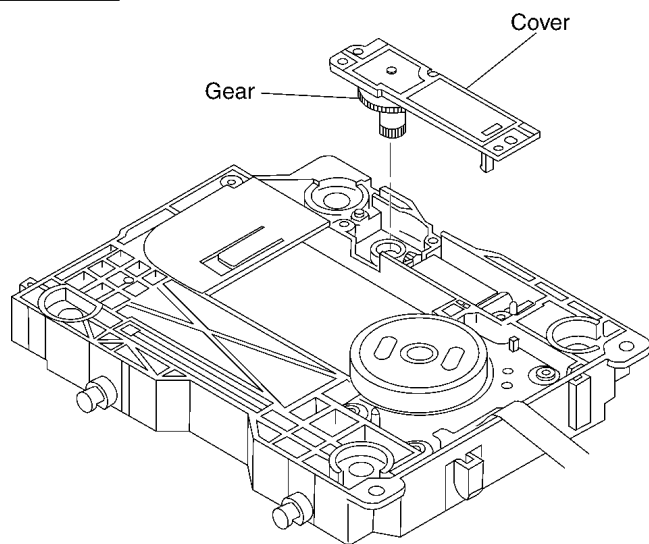


8.7. Traverse Motor

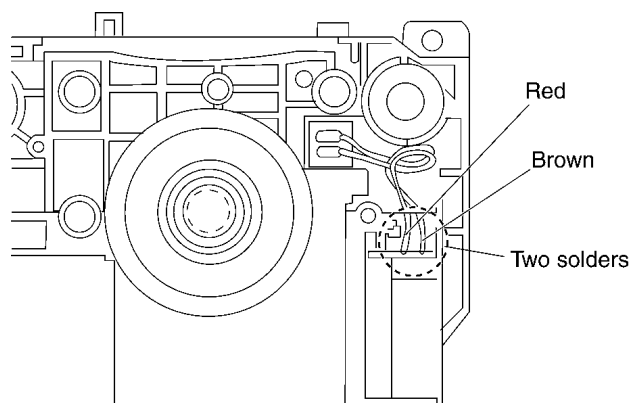
1. Unscrew the screws.



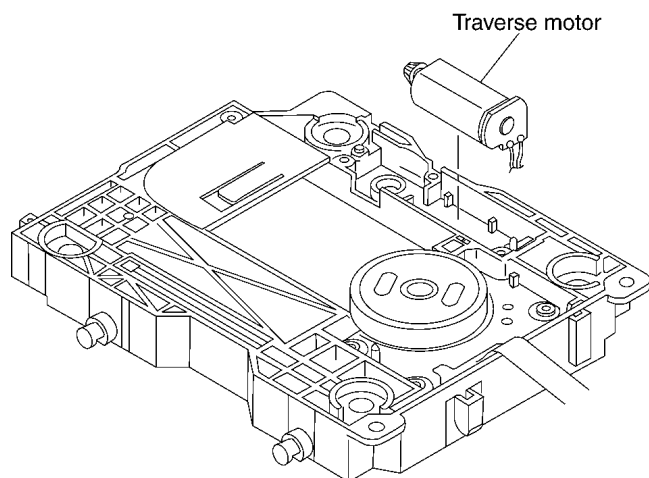
2. Remove the cover while lifting the inner gear.



3. Remove the solders.



4. Remove the traverse motor.



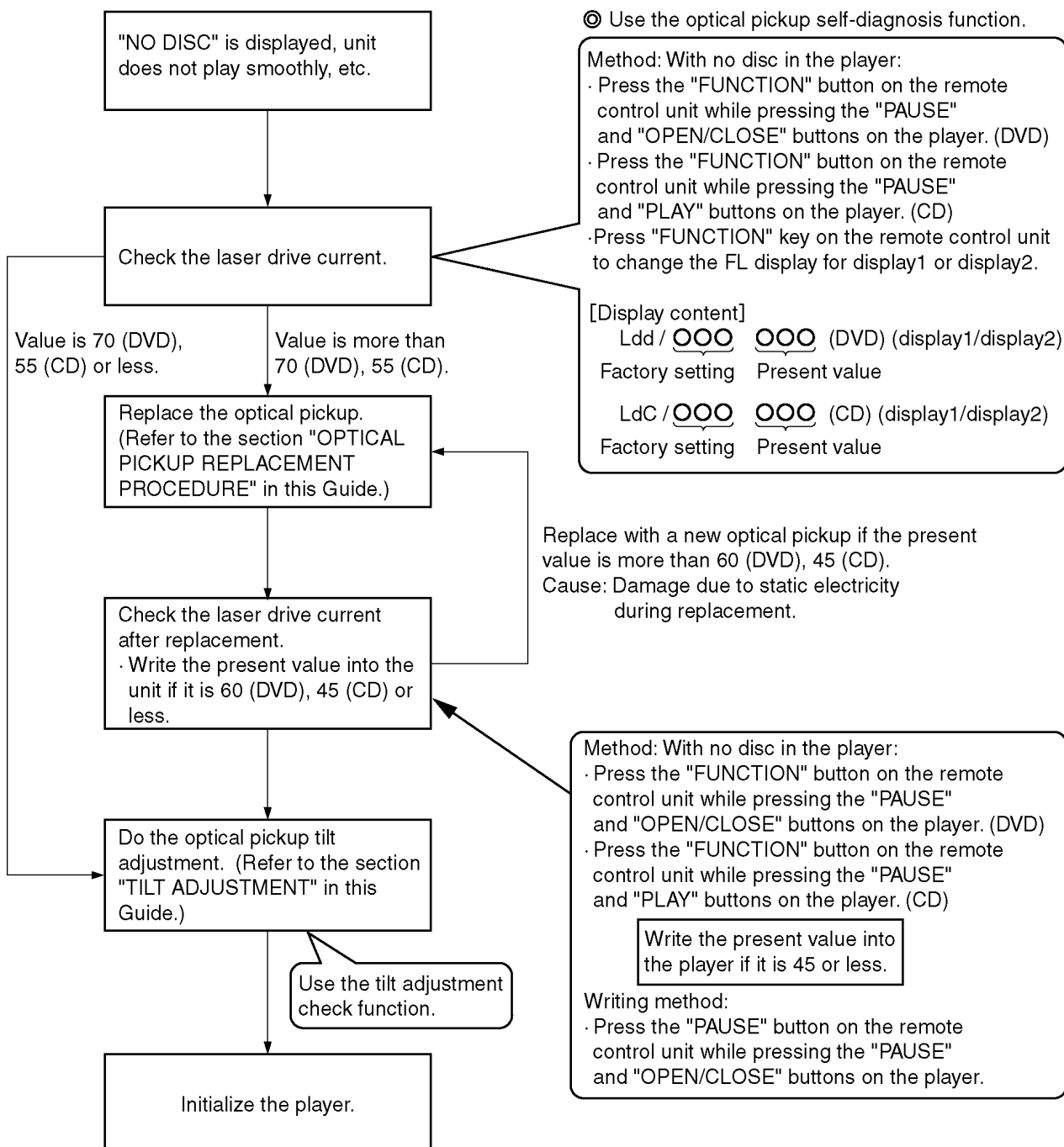
9 SELF-DIAGNOSIS FUNCTION AND SERVICE MODES

9.1. 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.)



9.2. 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 9.3. 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 11.4. for Optical Pickup Tilt Adjustment Procedure.	Refer to section 11.4. 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 8 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 9.5. Initializing the DVD player.

9.3. 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, DV3.2 (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	DV3.2 (IC8001) stops in the occurrence of servo error (starup, focus error, etc)	Optical pickup	DV3.2 (IC8001)	servo drive	
F501	DSC not Ready	DSC-system computer communication error (Communication failure caused by idling of DSC)	DV3.2 (IC8001)			
F502	DSC Time out error	Similar disposal as F500	Optical pickup	DV3.2 (IC8001)	servo drive	
F503	DSC communication Failure	Communication error (result error occurred although communication command was sent)	DV3.2 (IC8001)	EEPROM (IC8611)		
F505	DSC Attention error	Similar disposal as F500	Optical pickup	DV3.2 (IC8001)	servo drive	
F506	Invalid media	Disc is flipped over, TOC unreadable, incompatible disc	DISC	DV3.2 (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	DV3.2 (IC8001)			
F601	Indeterminate sector ID requested	Operation stopped caused by the request to access abnormal ID data	DV3.2 (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	DV3.2 (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	DV3.2 (IC8001)			
F612	No CRC OK for a specific time	Access failure to ID data in DVD series	DV3.2 (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)	DV3.2 (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)	DV3.2 (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 DECODER, 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.

9.4. 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

9.5. 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/yyy_ zz(display1/display2) Jitter rate is shown in decimal notation to one place of decimal. Focus drive value is shown in hexadecimal notation.	Press STOP or OPEN/CLOSE button.
Error code check	In STOP (no disc) mode, press PAUSE and OPEN/CLOSE 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 FXXX 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/CLOSE 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) 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 witedh on.	Cancelled automatically 5 seconds later.
DVD laser drive current measurement	In STOP (no disc) mode, press PAUSE and OPEN/CLOSE 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) 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/CLOSE 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) The value is shown in hexadecimal notation. The above example shows the data in ADSC address DFAh is 6901h.	Press STOP or OPEN/CLOSE 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) 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/CLOSE buttons on the player, and "7" button on the remote control unit. (Press "FL SELECT" key on the remote control unit to change the FL display for Display1 or Display2.)	Version display	srrr/xyzzzz(display1/display2) ※ When check this item, connect this player to monitor TV and check with watching the display shown on the monitor.	Cancelled automatically 5 seconds later.
Lighting of display tube	In STOP (no disc) mode, press PAUSE and OPEN/CLOSE buttons on the player, and "9" button on the remote control unit.	Lighting of display tube		Repeat the same operation.
Dealer's lock	In 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.	· "LOC" sign appears when dealer's lock is switched on, or when secondary power key or tray opening key is pressed while the lock is on. · "UNLOC" sign appears when dealer's lock is switched off.	Repeat the same operation.
Initialization	In STOP (no disc) mode, press PAUSE, QUICK OSD and OPEN/CLOSE buttons on the player for 3 seconds or longer.	Initialization User settings are cancelled and player is initialized to factory setting.	"InI"	
Region display	In STOP (no disc) mode, press PAUSE and OPEN/CLOSE buttons on the player, and "6" button on the remote control unit.	Region display	wxyz Panel controller jumper information N: NTSC / 6: PAL60 N: noPAL / P: PAL Region No.	Cancelled automatically 5 seconds later.

Item	Player mode and button combination	Function	Display	Cancellation method
Timer 1 check	In STOP (no disc) mode, press 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.	t11234/5678(display1/display2) Shown to the display1 is DVD laser time, and to the display2 CD laser time. Time is shown in 4 digits of decimal notation in a unit of 10 hours. "0000" will follow "9999".	Cancelled automatically 5 seconds later.
Timer 1 reset	While displaying Timer 1 data, press 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	t21234/5(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.

9.6. 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.

9.6.1. 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.

9.6.2. 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.)

9.7. Handling After Completing Repairs

Use the following procedure after completing repairs.

9.7.1. 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.

9.7.2. Precautions

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

10 SERVICE PRECAUTIONS

10.1. 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.

10.2. 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.

11 ADJUSTMENT PROCEDURES

11.1. 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

11.2. Important points in adjustment

11.2.1. 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.

11.2.2. Important points in electrical adjustment

- Follow the adjustment procedures described in this Manual.

11.3. 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.

11.4. Optical adjustment

11.4.1. 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	DVDR-S15 or DVDT-S01
Measuring equipment	Adjustment value		
None (Main unit display for servicing is used.)		Adjust to the minimum jitter value.	

11.4.1.1. 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.

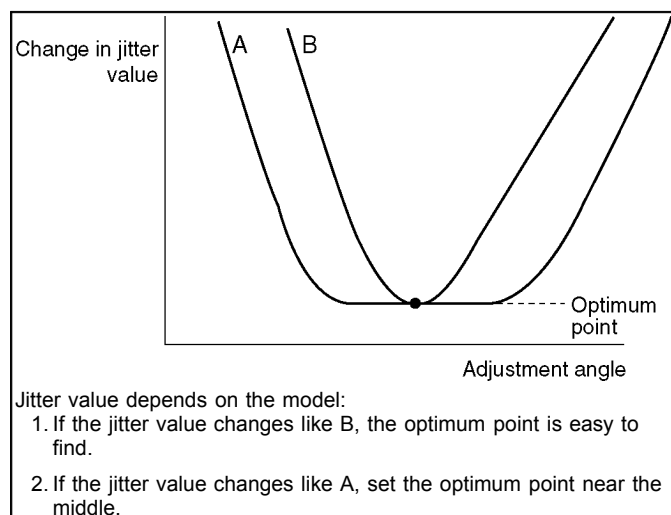
Note:

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.)

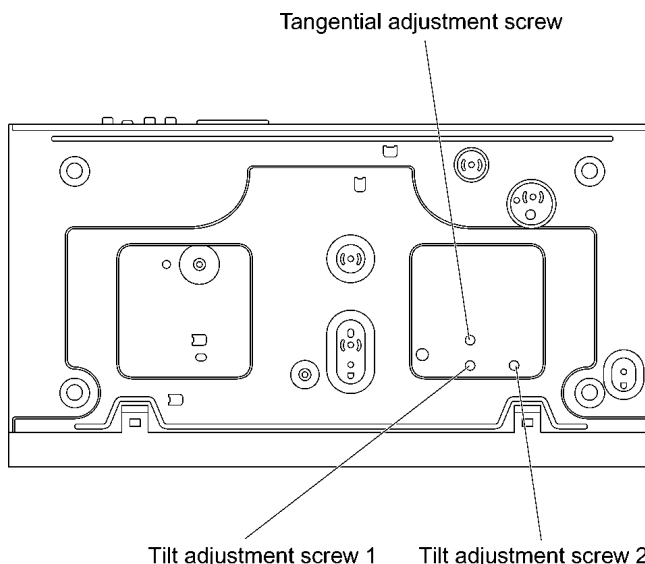
11.4.1.2. Important points

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).



11.4.1.3. Check after adjustment

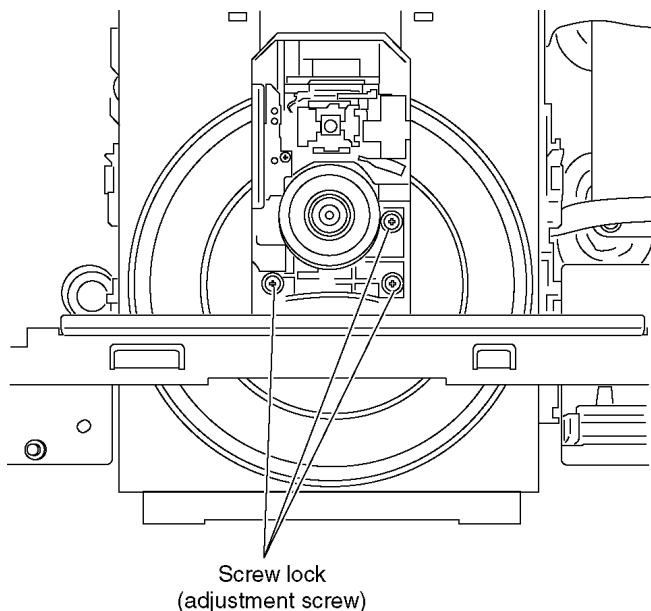
Play test disc or any other disc to make sure there is no picture degradation in the inner, middle and outer peripheries, and no audio skipping. After adjustment is finished, lock each adjustment screw in position using screw lock.

11.4.1.4. Procedure for screw lock

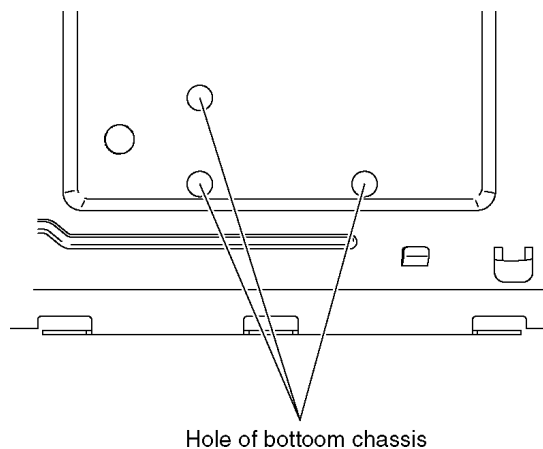
Please perform a screw lock in which by the side of the tip or head of an adjustment screw.

<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.

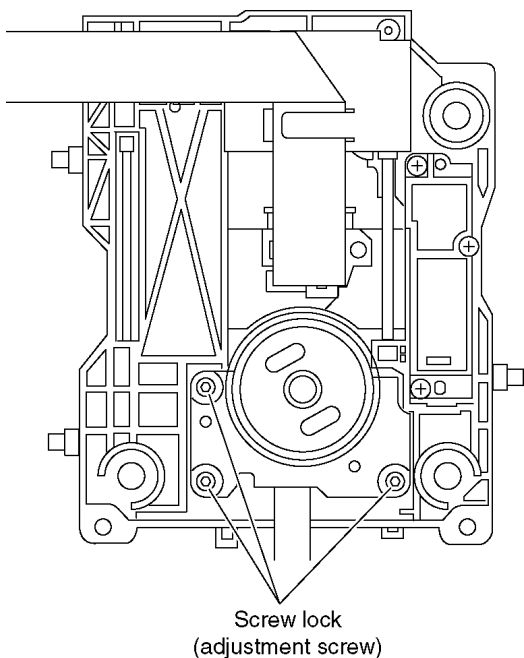


It is also possible to perform screw lock on the head of an adjustment screw after an adjustment end using an injector etc. from the hole at the bottom of a product (hole of bottom chassis), without decomposing.



<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.



12 ABBREVIATIONS

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

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

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

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

13 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.

13.1. MOTHER P.C.B.

Ref No.	IC1021								IC1101					IC1151							
MODE	1	2	3	4	5	6	7	9	1	2	3		1	2	3	4	5				
PLAY	-0.1	-0.3	-0.1	-0.1	0	-4	-4.2	0	3.4	0	2.5		11.2	3.3	8.9	0	0				
STOP	0.3	0	0	0	0	0	0	-4.5	3.4	0	2.5		12.9	3.2	0	0	0				
Ref No.	IC1195																				
MODE	1	2	3	4	5																
PLAY	5	0	4.3	3.3	3.3																
STOP	5	0	4.3	3.3	3.3																
Ref No.	IC3501																				
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16					
PLAY	4.8	2.3	2.4	1.7	2.6	1.2	0	0	2.3	0	2.3	2.3	1.7	1.7	1.6	2.3					
STOP	5	2.3	0	0	0	1.7	0	2.3	2.3	0	0	2.3	0	0	0	2.3					
Ref No.	IC4301																				
MODE	1	2	3	4	5	6	7	8													
PLAY	2.6	0	0	-10.3	2.5	2.5	0	12.1													
STOP	2.6	0	2.5	0	2.5	0	0	13.5													
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	1.5	0	3.3	3.3	3.3	3.3	3.3	1.7	1.6	0	0	3.3	0	3.3	0.2	0.1	0	3.3	0	
STOP	0	1.5	0	3.3	3.3	3.3	3.3	3.3	1.7	1.5	0	0	3.3	0	3.3	1.6	1.6	3.3	3.3	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	3.3	0.7	0	3.3	0	0	0	3.3	3.3	3.3	-0.6	-0.6	-0.5	3.2	3.2	3.2	-4.4	-7.2	-4.3	-7.1	
STOP	3.2	0.7	0	3.2	0	0	0	3.3	3.3	3.3	0.2	0.1	0.1	3.2	0	3.2	-7	-7	-7	-7	
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	-10.2	-10.2	-6.7	-10.2	-10.2	-3.4	-10.2	-10.2	-3.5	-10.3	-10.3	-6.8	-10.2	-10.2	-10.2	-10.3	-10.3	3.2	2.7	3	
STOP	-3.3	-3.3	-3.3	-6.6	-6.6	-6.6	-6.5	-7	-10	-6.6	-6.6	-6.6	0	0	-3.3	-3.3	-10	3.2	3	3	
Ref No.	IC6001				IC6021				Q1051				Q1115								
MODE	61	62	63	64		B	C	E		1	2	3	4		1	2	3	4	5	6	
PLAY	0	0	3.2	3.3		0	5	1.7		-0.2	0	5.1	4.1		5	5	0	5	5	5	
STOP	0	0	0.9	3.3		0	5	1.7		0.5	0.3	-0.2	-0.1		5	5	0	5	0	5	
Ref No.	Q4302			Q4422			Q4423			Q4751			Q6085								
MODE	B	C	E		B	C	E		B	C	E		B	C	E		B	C	E		
PLAY	4.1	0	0		0	0	-5.8		0	0	-5.8		5	1.8	2.5		-6.3	-6.4	-5.7		
STOP	0	0	0		0	0	0.7		0	0	0.7		5	2.5	1.9		-6.3	-6.4	-5.7		
Ref No.	QR1115			QR4302			QR4306														
MODE	B	C	E		B	C	E		B	C	E										
PLAY	0	0	3.2		-5.8	0.1	0		0.1	0	4.1										
STOP	0	0	3.3		3.6	3.7	0		3.7	0	0										

13.2. MODULE P.C.B.

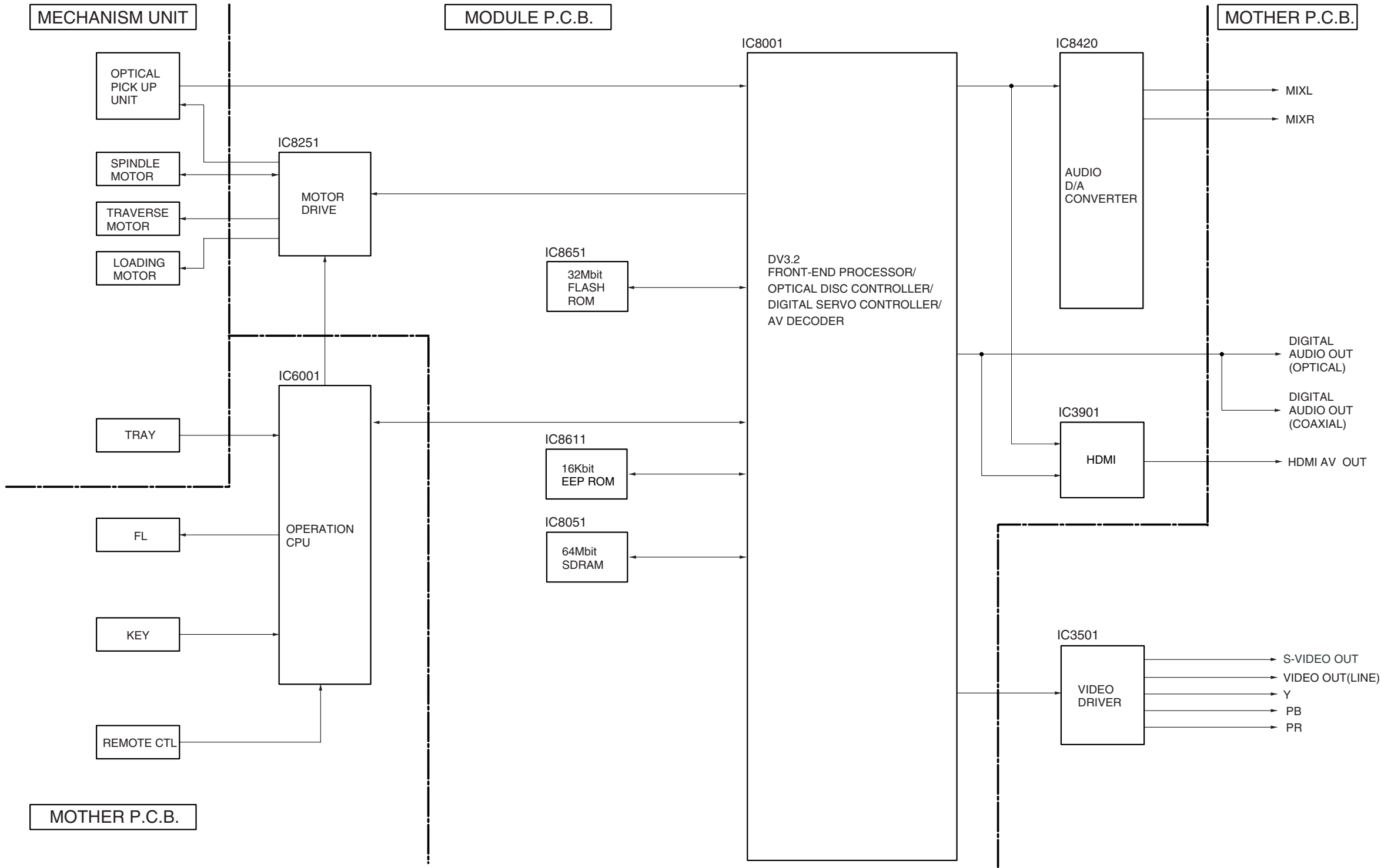
Ref No.	IC3901																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PLAY	1	1.6	1.6	1.7	0	3.3	1.2	1.3	1	1	1.2	1	1	1.2	0	3.3	0	1.3	0	1.2
STOP	1.6	1.1	1.1	1.1	0	0	0	0	1.6	0	0	3.3	3.3	0	0	1.6	3.3	0	3.3	0
Ref No.	IC3901																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
PLAY	1.2	0.3	1	2.7	1.5	0.9	2.2	1	1.2	0.8	3.3	3.3	0	3.3	3.3	1.9	2.1	1.9	1.4	1.3
STOP	0	0	3.3	3.3	0	1.6	0	0	0.2	1.6	0	1.7	1.3	0	0	0	0	1.7	0	0
Ref No.	IC3901																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
PLAY	2	1.2	0	1.2	3.3	0	3.3	3.3	0	0	0	3.3	3	3.3	3.3	3.3	0	3.3	3.3	0
STOP	0	3.3	0	3.3	3.3	3.3	3.3	0	0	0	3.3	0	0	3.3	2.6	1.8	1.3	3.3	0	1.3
Ref No.	IC3901																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
PLAY	3.2	1.6	3.3	0	0	1.8	1.6	0	3.3	3.3	0	0	0	0	0	0	0	0	0	0
STOP	3.3	0	0	2.9	1.6	2.8	1.4	2.3	0	0	0	0	0	3.3	0	0	0	0	0	3.3
Ref No.	IC3901																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
PLAY	0	0	1.2	0	0.9	2.3	0	1.8	0	0.1	0	3.2	2	2	0	1.8	1.6	1.6	1.6	1.6
STOP	0	0.4	0	0	0	0	2.3	3.3	0	0	0	0	0	0	0	0	3.3	3.3	3.3	0
Ref No.	IC3901																			
MODE	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
PLAY	1.9	1.4	0.2	0.1	0.2	2.1	3.2	0	2.2	1.6	2.5	0	2.3	2.3	2.3	2.3	3.2	0	3.2	0
STOP	0	0	0	3.3	3.3	0	0	3.3	3.3	1.6	1.6	2.8	0	0	3.1	3.2	0	0	0	0.5
Ref No.	IC3901																			
MODE	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
PLAY	1.8	2.5	1.6	1.7	0	1.6	1.7	3.3	0.8	0.9	0.4	3.3	2.2	0	1.1	2.2	0	0.4	0.9	0
STOP	0	3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	3.6	3.3	1	0	0.7
Ref No.	IC3901																			
MODE	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
PLAY	3.3	3.3	0	1.6	0	1.6	3.2	0	0	0	0	1.6	0	3.3	0	1.6	0	1.2	3	3.1
STOP	2.3	1.3	0	1.3	1.8	0	1.6	1	0.7	0	1.2	1.3	2.8	3.3	0	1.8	1.4	1.5	1.6	1.7
Ref No.	IC3901										IC3952									
MODE	161	162	163	164		1	2	3	4	5	6									
PLAY	2.9	0.6	1.8	1.7		1.3	0.1	8.3	9	0	5.1									
STOP	2.9	0.6	1.8	1.7		1.2	0	8.3	9	2	5.1									
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	1	1.6	1.6	1.7	0	3.3	1.2	1.3	1	1	1.2	1	1	1.2	0	3.3	0	1.3	0	1.2
STOP	0.8	0.8	0.9	1.1	0	3.3	1	1.3	0.9	0.9	0.7	0.9	0.7	1.2	0	3.3	1	1.9	0	1.2
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	1.2	0.3	1	2.7	1.5	0.9	2.2	1	1.2	0.8	3.3	3.3	0	3.3	3.3	1	2.1	1.9	1.4	1.3
STOP	0.3	0.6	3	1.7	1.3	2.6	1.3	1.6	0.6	0	3	0	3.3	3.3	2.4	2.4	0.9	0.9	2.4	1.2
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	2	1.2	0	1.2	3.3	0	3.3	3.3	0	0	0	3.3	3	3.3	3.3	3.3	0	3.3	3.3	0
STOP	2.2	1.1	0	1.2	3.3	0	0	3.3	0	0	0	3.3	3	3.3	3.3	0	0	3.3	3.3	0
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	3.2	1.6	3.3	0	0	1.8	1.6	0	3.3	3.3	0	0	0	0	0	0	0	0	0	0
STOP	3.3	1.6	0	0	0	1.7	1.6	0	0	3.3	0	3.3	3.3	0	3.3	0	0	0	0	0
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	0	0	1.2	0	0.9	2.3	0	1.8	0	0.1	0	3.2	2	2	0	1.8	1.6	1.6	1.6	1.6
STOP	0	0	1.2	3.2	0.9	0	0	1.8	0	0.1	1.8	3.2	2.1	2	1.8	1.8	1.6	1.6	1.6	1.6
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	1.9	1.4	0.2	0.1	0.2	2.1	3.2	0	2.2	1.6	2.5	0	2.3	2.3	2.3	2.3	3.2	0	3.2	0
STOP	1.9	1.4	0	0.1	0	0.1	3.2	0	2.2	1.6	2.2	2.2	0	2.2	2.2	2.2	3.2	0	3.2	0
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	1.8	2.5	1.6	1.7	0	1.6	1.7	3.3	0.8	0.9	0.4	3.3	2.2	0	1.1	2.2	0	0.4	0.9	0
STOP	2	1.6	1.6	1.6	0	1.6	1.6	3.3	0.8	0.9	0.4	3.2	2.2	1	1	2.2	0	1.4	0.8	0
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	3.3	0	1.6	0	1.6	3.2	0	0	0	0	1.6	0	3.3	0	1.6	0	1.2	3	3.1
STOP	3.3	3.3	0	1.6	0	1.6	3.2	0	0	0	0	1.6	0	3.3	0	1.6	0	1.2	3	3.1
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	2.8	3.1	2.9	3	0	3.3	3.1	3	3	3.2	3	3	0	3.3	3.1	3	3.1	2.9	2.9	2.8
STOP	2.9	3.2	2.9	3.1	0	3.3	3.1	3.1	3	3.3	3.1	3	0	3.3	3.2	3	3.1	2.9	2.9	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	3.2	0	1.6	3.3	1.6	0	1.2	3.2	0	3.2	3.2	0	0	0	0	3.3	3.3	0	0	1.5
STOP	3.2	0	1.6	3.2	1.6	0	1.2	3.2	3.2	3.1	3.2	0	2.4	0	0	3.3	1.6	0	0	1.6
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	1.8	0	0	3.2	0	0.2	1.4	1.5	0	1.2	1.4	2.6	2.6	1.5	1.4	0	1.2	0	3.3
STOP	0.1	0	0.3	0	3.3	1.6	0.3	1.5	0.6	0	1.2	1.6	2.7	2.6	1.2	1.1	1.6	0	0	0
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	1.2	0	0	0.5	0.2	0	0.5	0.5	1.8	1.2	0	1.2	3.3	0.3	1.2	0	0	0	3.3	1.5
STOP	3.2	0	0	1.4	0	0	0	0	3.3	0	0	1.6	0	3.3	1.6	1.2	0	0	1.2	1.4
Ref No.	IC8001																			
MODE	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256				
PLAY	0.9	3.3	0	1.5	0	0	0.3	1	0	0	0.5	3.3	1.2	0	0	0				
STOP	1.6	0	1.6	0	0	3.3	1.2	0	0	0	0	0	3.3	1.2	0	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	0	0	0	0	0	2.9	0	3.3	0	0	0	2.8	3.3	2.6	3.2	3.2	3.2	3.2	0
STOP	3.3	3.2	3.3	3.2	3.1	0	3.2	3.3	3.3	3.3	3	0	2.9	3.3	3.3	3.2	3.2	3.1	0	2.5

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	0	0	0	0	0.1	1.3	0	0	0	0	1.6	1.5	0	0	0	3.3	1.5	0	0	0
STOP	1.5	0	0	0	0	1.4	3.3	0	1.6	1.6	1.6	1.5	0	0	0	0	3.3	1.5	2.7	2.7
Ref No.	IC8051																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54						
PLAY	0	2.9	3.3	3.1	3	0	0	0	3.3	0	2.8	0	3	0						
STOP	0	3.3	3.2	3.2	0	3	3	3.3	3.3	2.9	0	3	0	3						
Ref No.	IC8111										IC8151									
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5						
PLAY	3.3	0	0	1.9	4.7	0	0	5		2.8	5	1.2	1.2	0						
STOP	0	0	0	0	0	0	0	0		2.7	5	1.2	1.2	0						
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	3.2	1.6	3.3	3.3	1.7	1.6	0	0	4.2	4.2	4.3	4.2	4.5	5.2	2.7	2.3	2.5	2.5	0	0
STOP	3.3	1.6	0	0	1.2	0	0	9	0	4.3	0	4.3	3.9	3.9	2.5	2.5	2.5	0	0	9
Ref No.	IC8251																			
MODE	21	22	23	24	25	26	27	28												
PLAY	0	1.6	1.6	0	2.2	0	0	0												
STOP	5	1.6	1.9	0	2	1.6	1.7	1.6												
Ref No.	IC8420																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
PLAY	0	3.3	0	3.3	1.4	0	0	0	0	0	5	0	1.2	2.3	2.5	0				
STOP	0	0	3	1.2	0	1.7	0	1.6	1.7	0	0	0	5	0	0	2.5				
Ref No.	IC8601										IC8606									
MODE	1	2	3	4		1	2	3	4	5		1	2	3	4	5	6	7	8	
PLAY	3.3	1.2	0	0		3.3	3.4	0	0	0		0	0	0	0	0	0	0	3.4	
STOP	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	
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	1.6	0.8	0	0	0	1.2	1.5	1.4	3.3	0	3.3	3.3	3.3	3.3	0	0	3.3	0	0	1.6
STOP	0	0	0	0	3.3	0	3.3	3.3	3.3	2	3.3	0	3.3	3.3	3.3	0	3.3	1.6	1.7	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	1.5	0	0	0	0	3.3	0	0	1	0	0	1	1	1	1	1	1	1	1	1
STOP	3.3	0	3.3	1.3	0	3.3	0	0	1.4	1.4	1.4	1.4	1.3	3.3	1.3	1.3	1.3	1.3	1.4	1.3
Ref No.	IC8651										IC8701									
MODE	41	42	43	44	45	46	47	48		1	2	3	4	5		1	2	3	4	5
PLAY	1	1	1	1	1	0	3.3	0		0	3.3	0	3.3	1.4		0	3.3	0	3.3	1.4
STOP	3.3	1.3	1.2	1.3	3.3	3	0	0		0	1.6	0	0	0		3.3	3.3	0	0	3.3
Ref No.	Q3901					Q3902					Q3903					Q8551				
MODE	B	C	E			B	C	E		B	C	E			B	C	E			
PLAY	4.2	1	-1.2			5.1	0	3.4		5	3.4	1.6			5	0	0		0.8	5
STOP	4	1	-0.7			5	3.3	3.3		5	3.4	3.4			5	0	0		0.6	5
Ref No.	Q8561					Q8562					QR8111					QR8420				
MODE	B	C	E			B	C	E		1	2	3	4	5	6		B	C	E	
PLAY	3.7	1.3	1.9			2.3	4.4	3.7		0	0	1.3	0	0	3.8		4.1	0	0	
STOP	0	0	0			0	5	5		0	0	1.2	0	0	4.7		0	0	0	
Ref No.	QR8571																			
MODE	B	C	E																	
PLAY	3.2	3.3	0																	
STOP	-1.4	3.3	3.3																	

14 BLOCK DIAGRAM

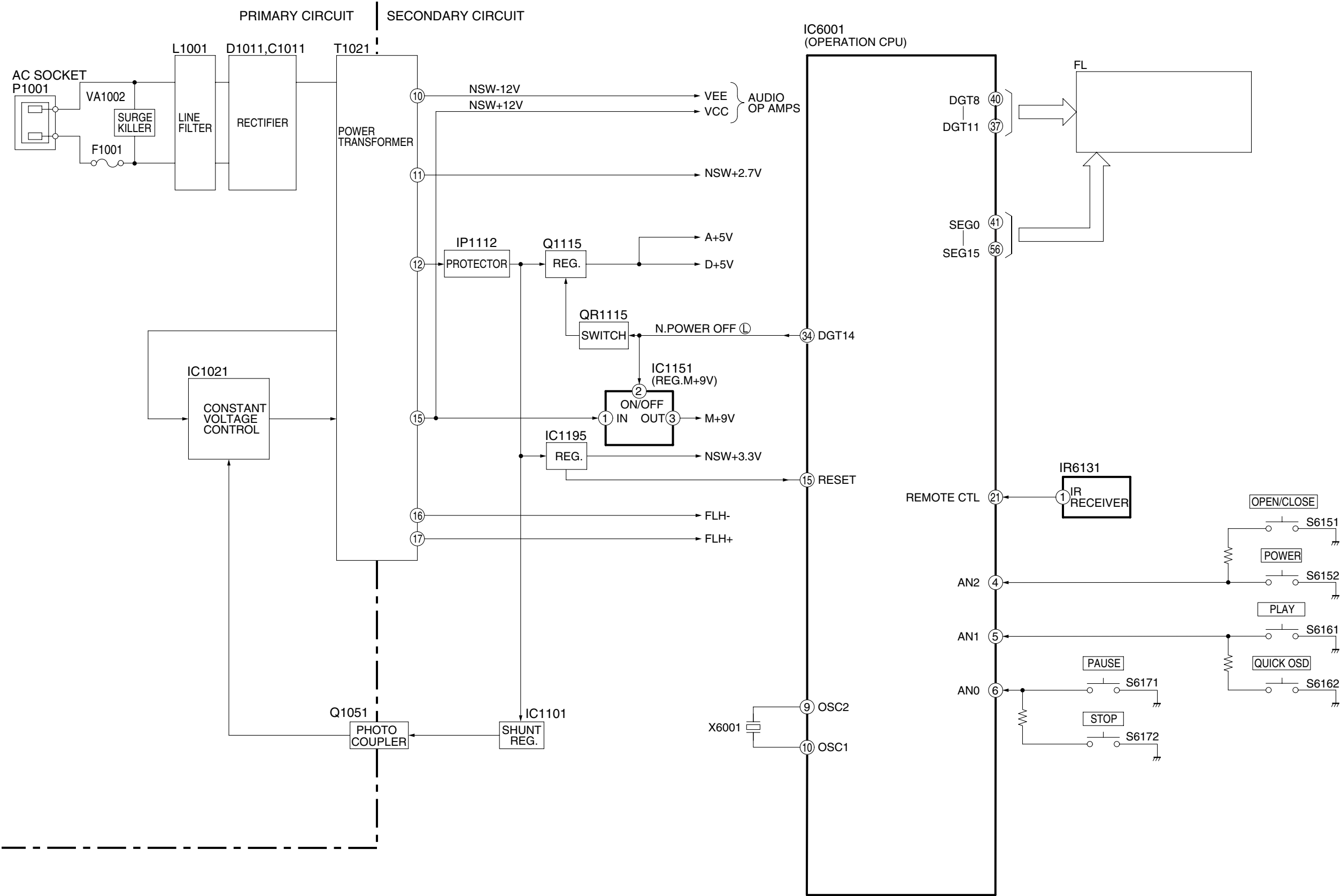
Note:
Circuit voltage and waveform described herein shall be regarded as reference information when probing defect point, because it may differ from an actual measuring value due to difference of Measuring instrument and its measuring condition and product itself.

14.1. OVERALL BLOCK DIAGRAM



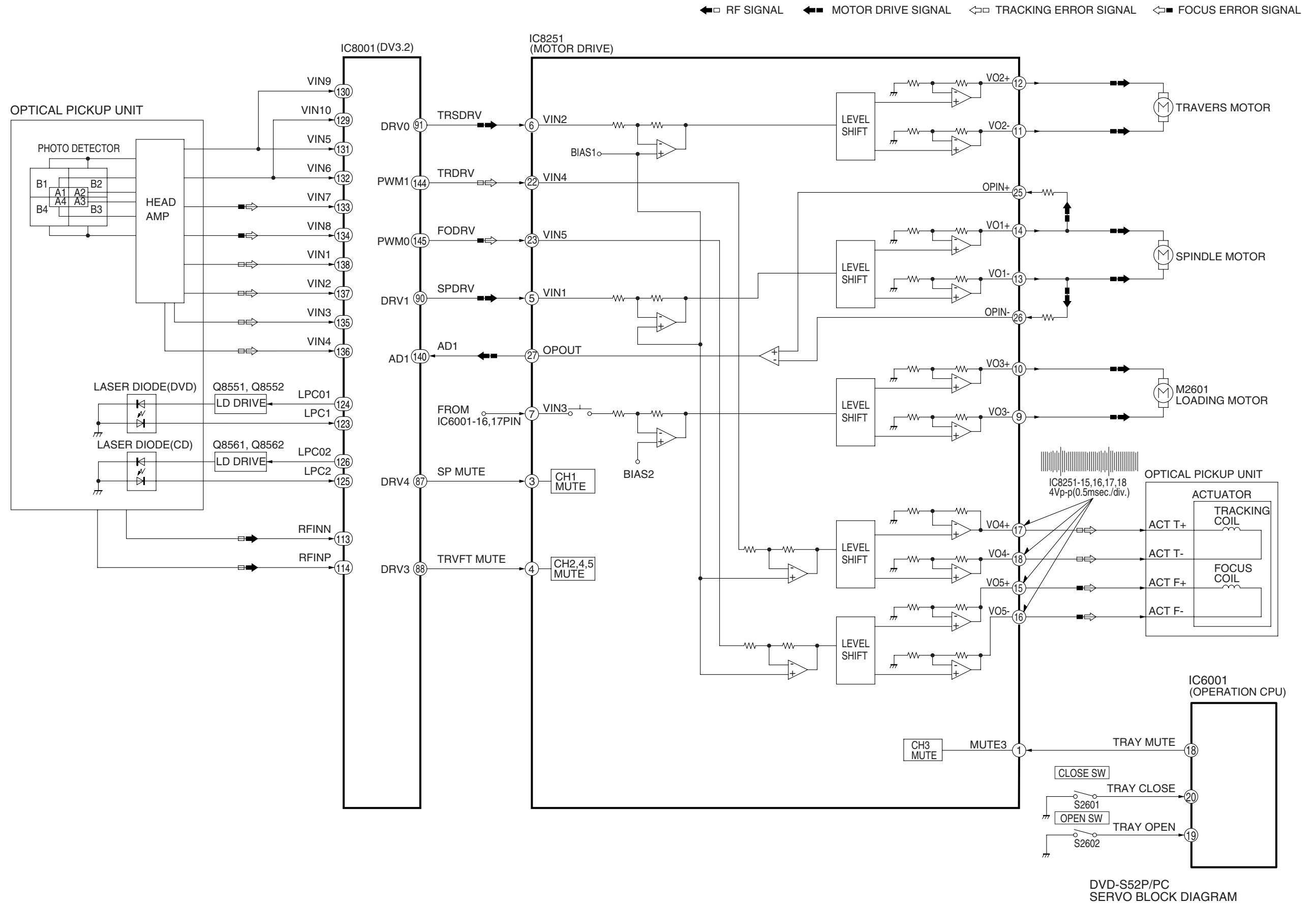
DVD-S52P/PC
OVERALL BLOCK DIAGRAM

14.2. POWER SUPPLY BLOCK DIAGRAM

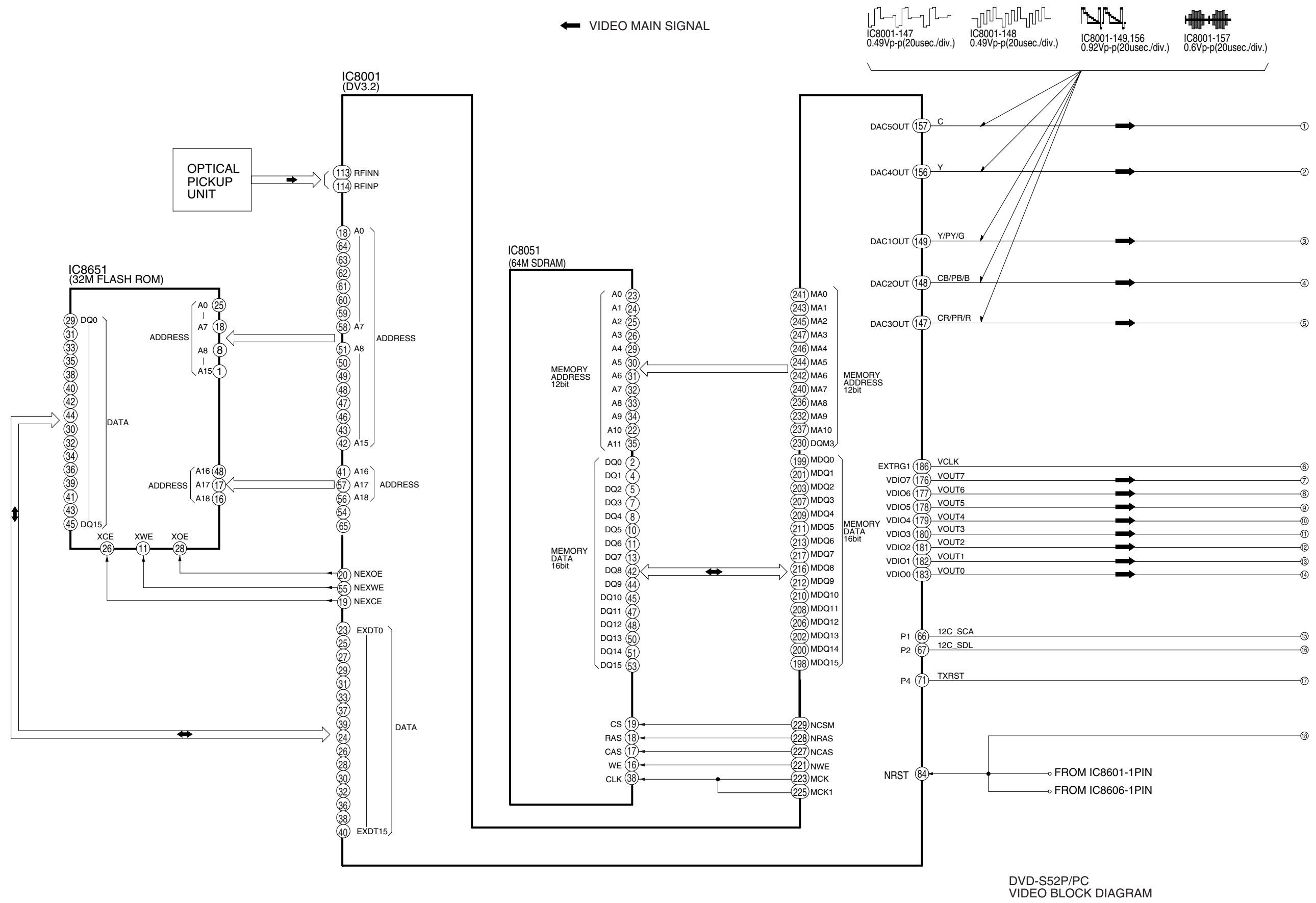


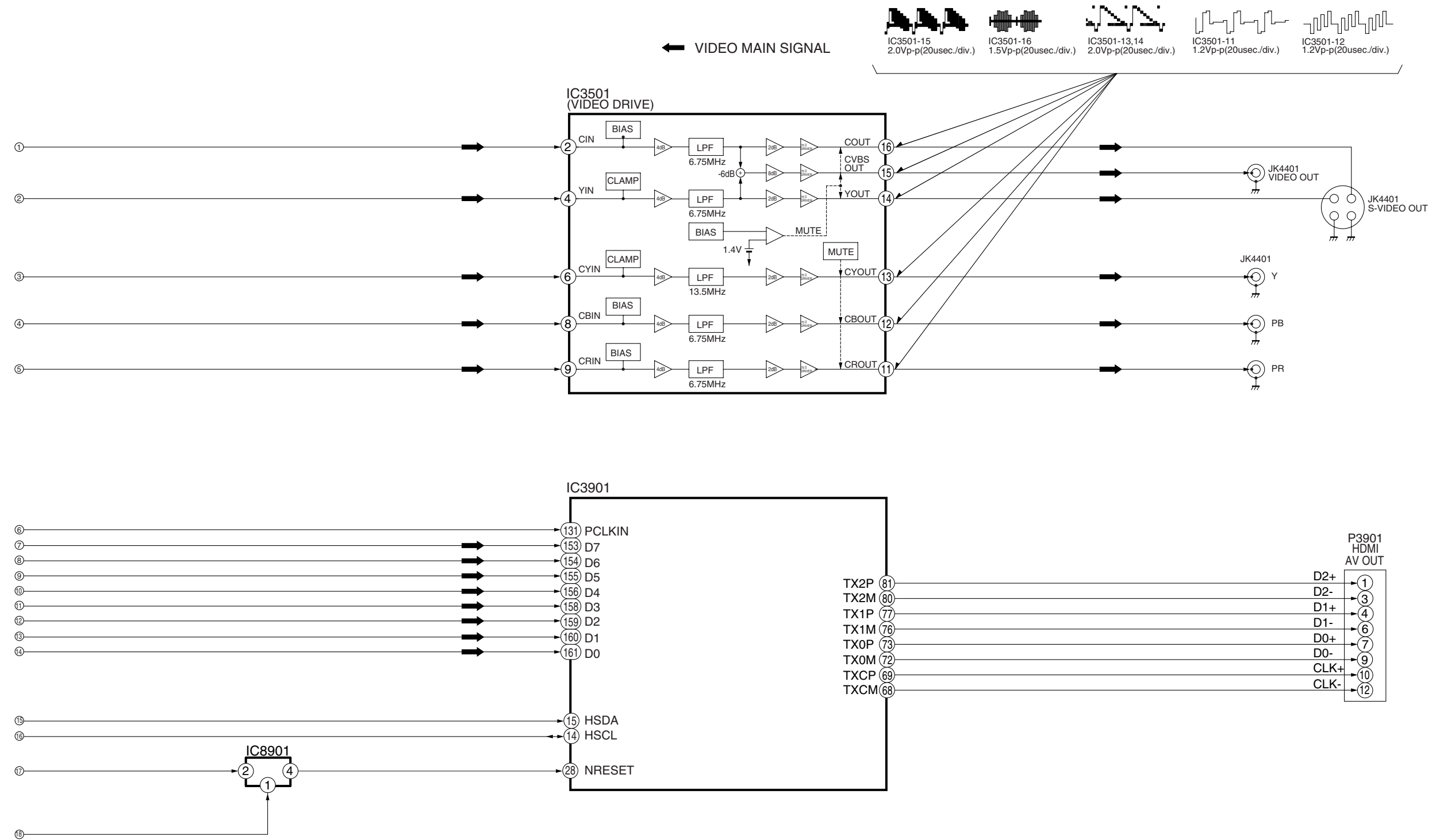
DVD-S52P/PC
POWER SUPPLY BLOCK DIAGRAM

14.3. SERVO BLOCK DIAGRAM



14.4. VIDEO BLOCK DIAGRAM

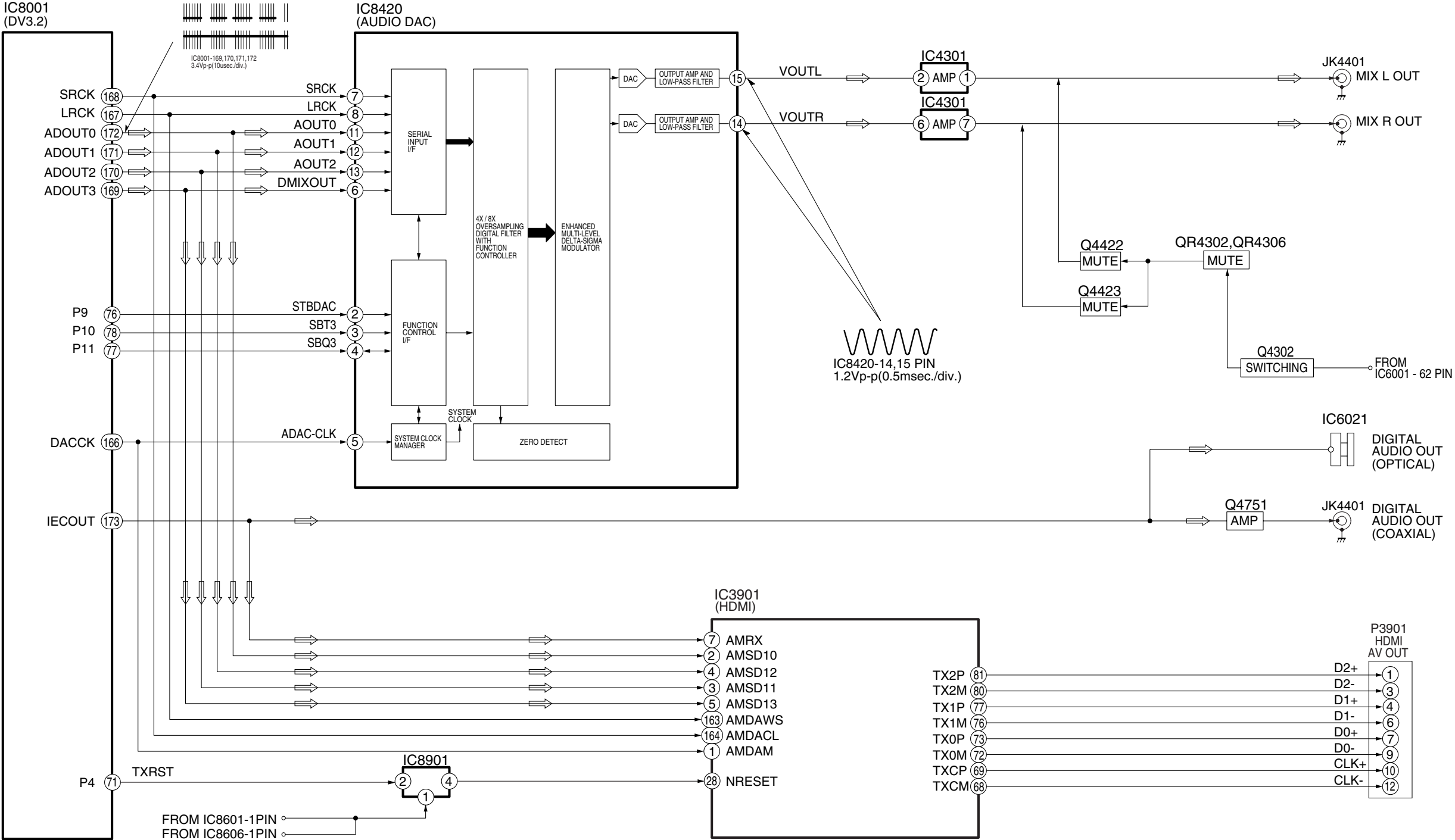




DVD-S52P/PC
VIDEO BLOCK DIAGRAM

14.5. AUDIO BLOCK DIAGRAM

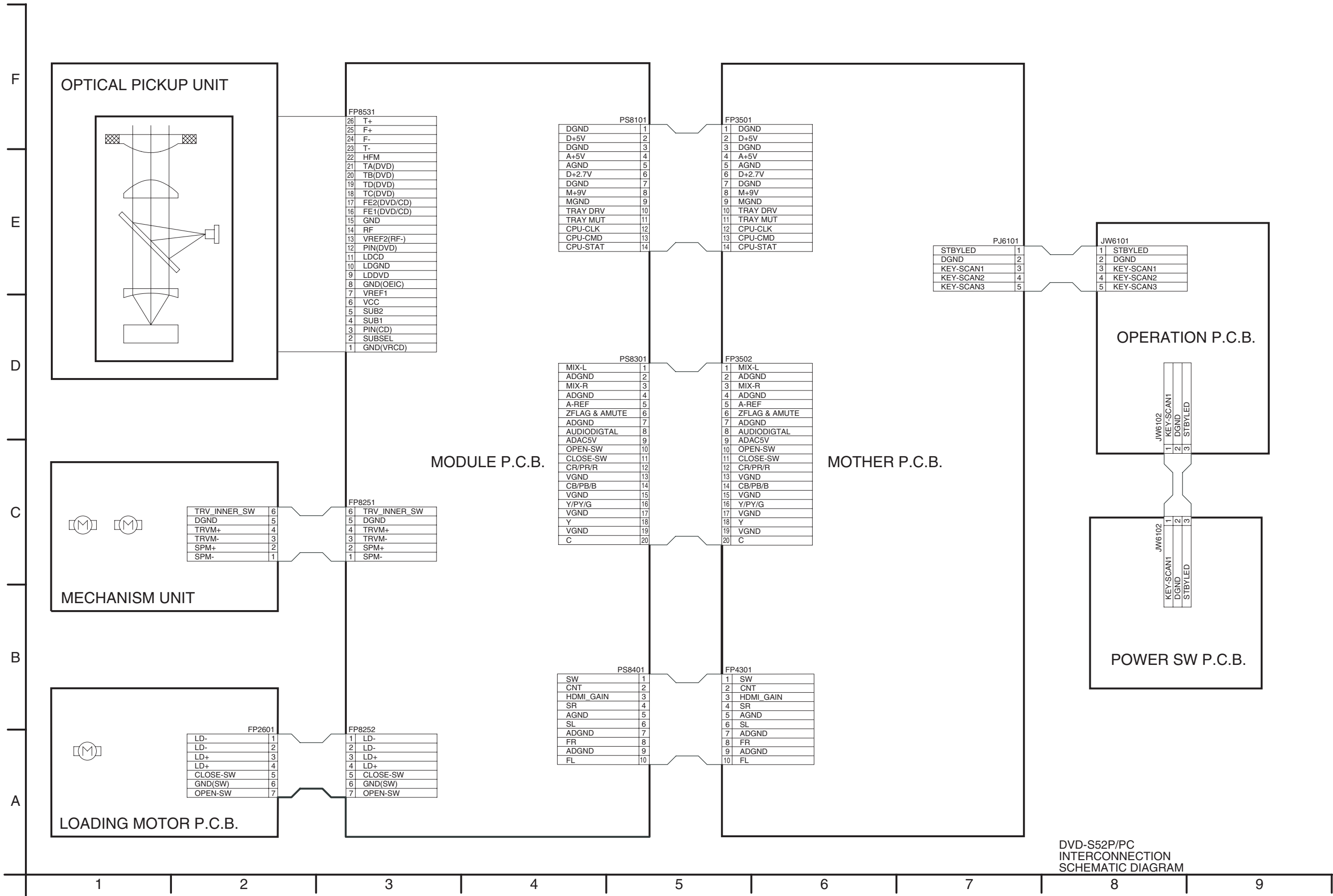
← AUDIO MAIN SIGNAL



DVD-S52P/PC
AUDIO BLOCK DIAGRAM

15 INTERCONNECTION SCHEMATIC DIAGRAM & SCHEMATIC DIAGRAM NOTES

15.1. INTERCONNECTION SCHEMATIC DIAGRAM



DVD-S52P/PC
INTERCONNECTION
SCHEMATIC DIAGRAM

15.2. SCHEMATIC DIAGRAM NOTES

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

Important safety notice:

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

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

Important safety notice:

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

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

Caution!

IC and LSI are sensitive to static electricity.

Secondary trouble can be prevented by taking care during repair.

Cover the parts boxes made of plastics with aluminum foil.

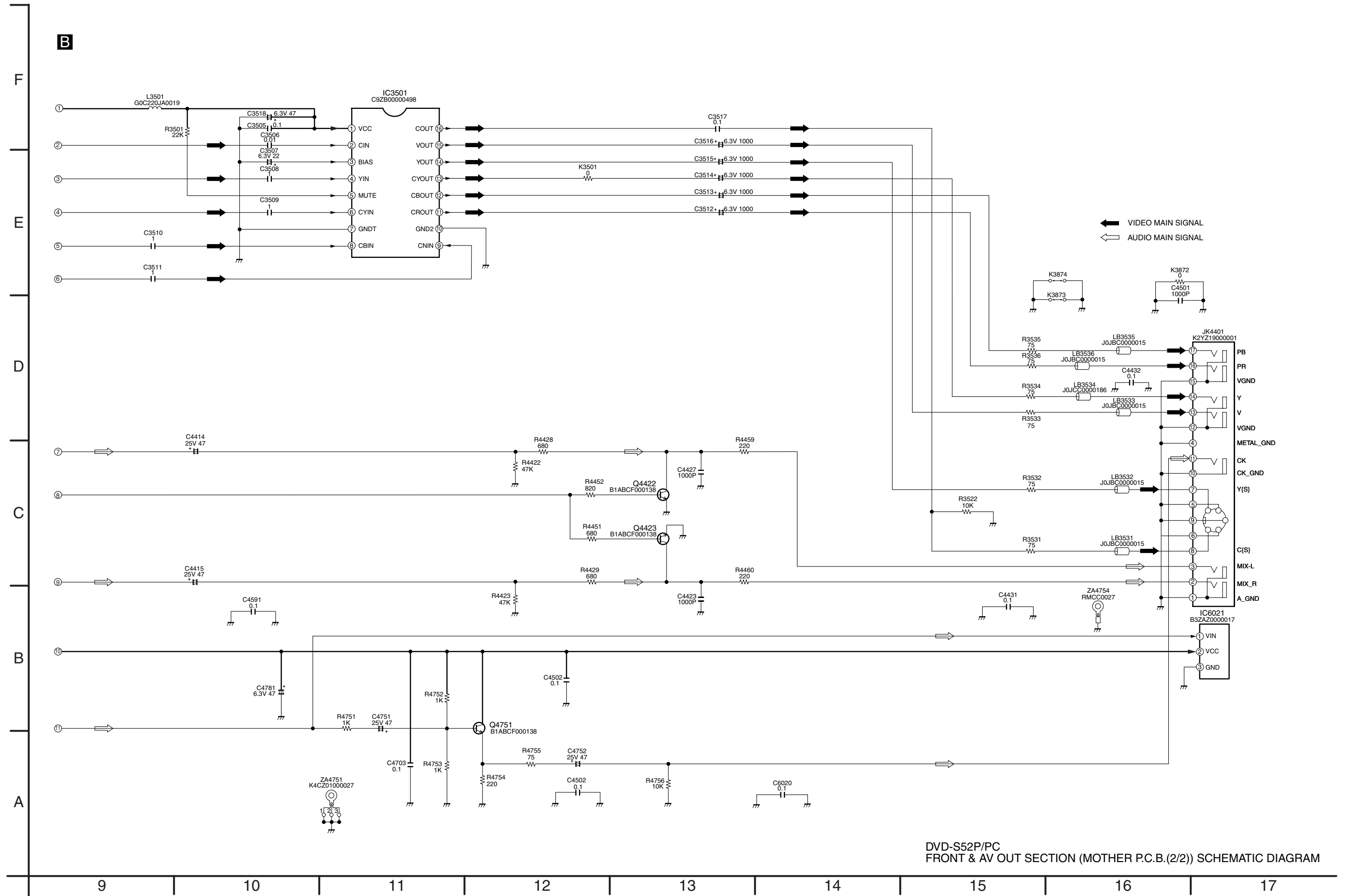
Ground the soldering iron.

Put a conductive mat on the work table.

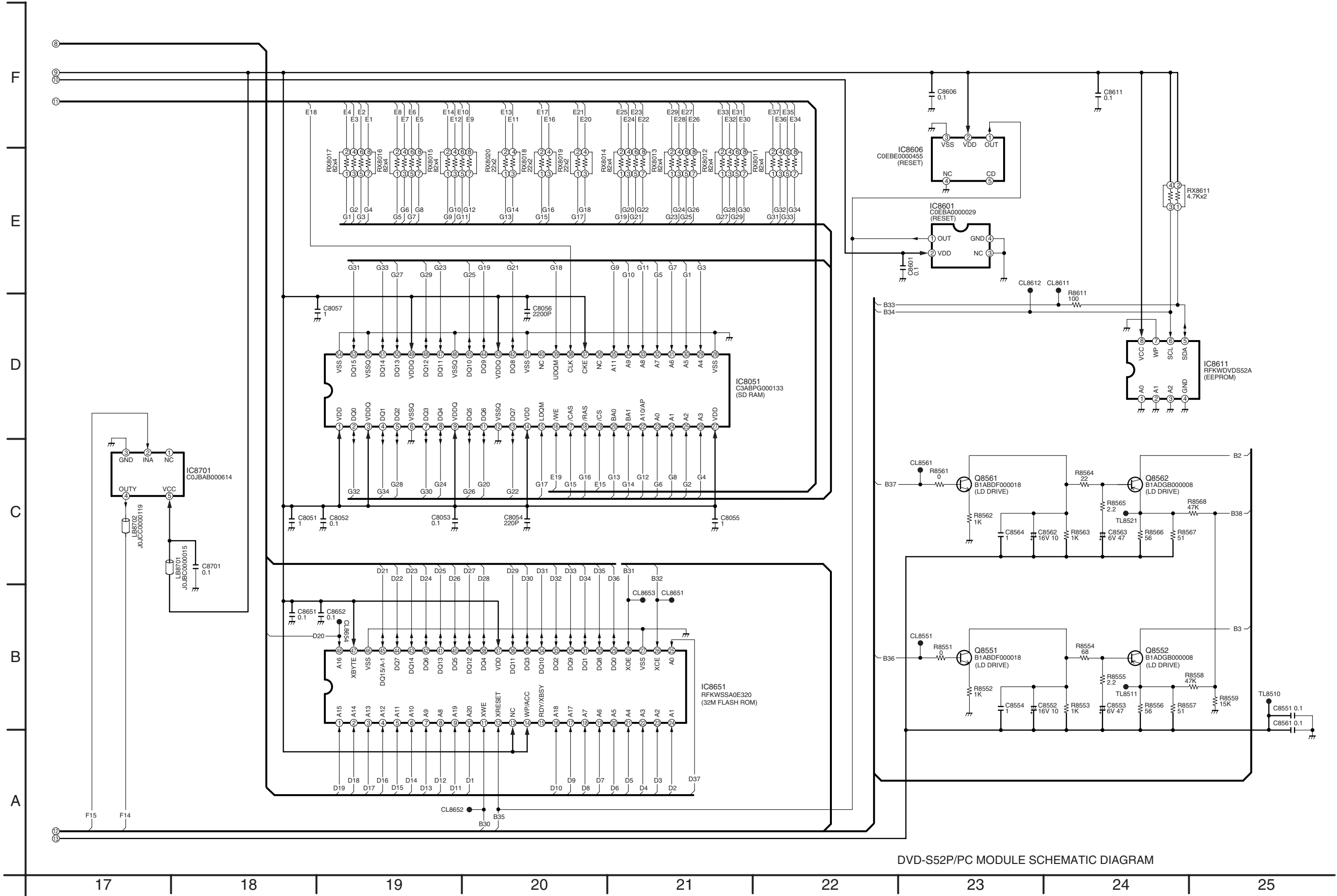
Do not touch the legs of IC or LSI with the fingers directly.





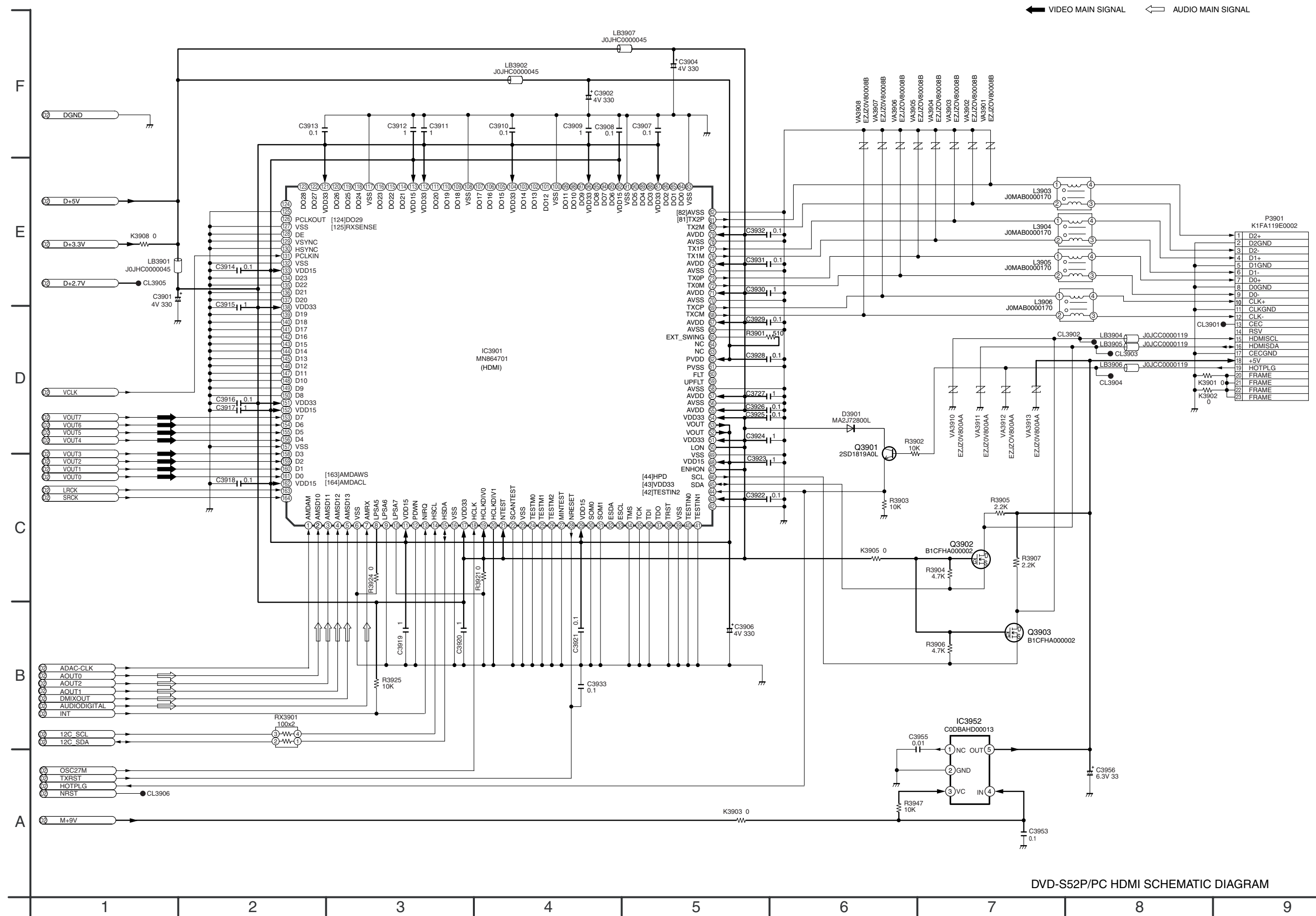






DVD-S52P/PC MODULE SCHEMATIC DIAGRAM

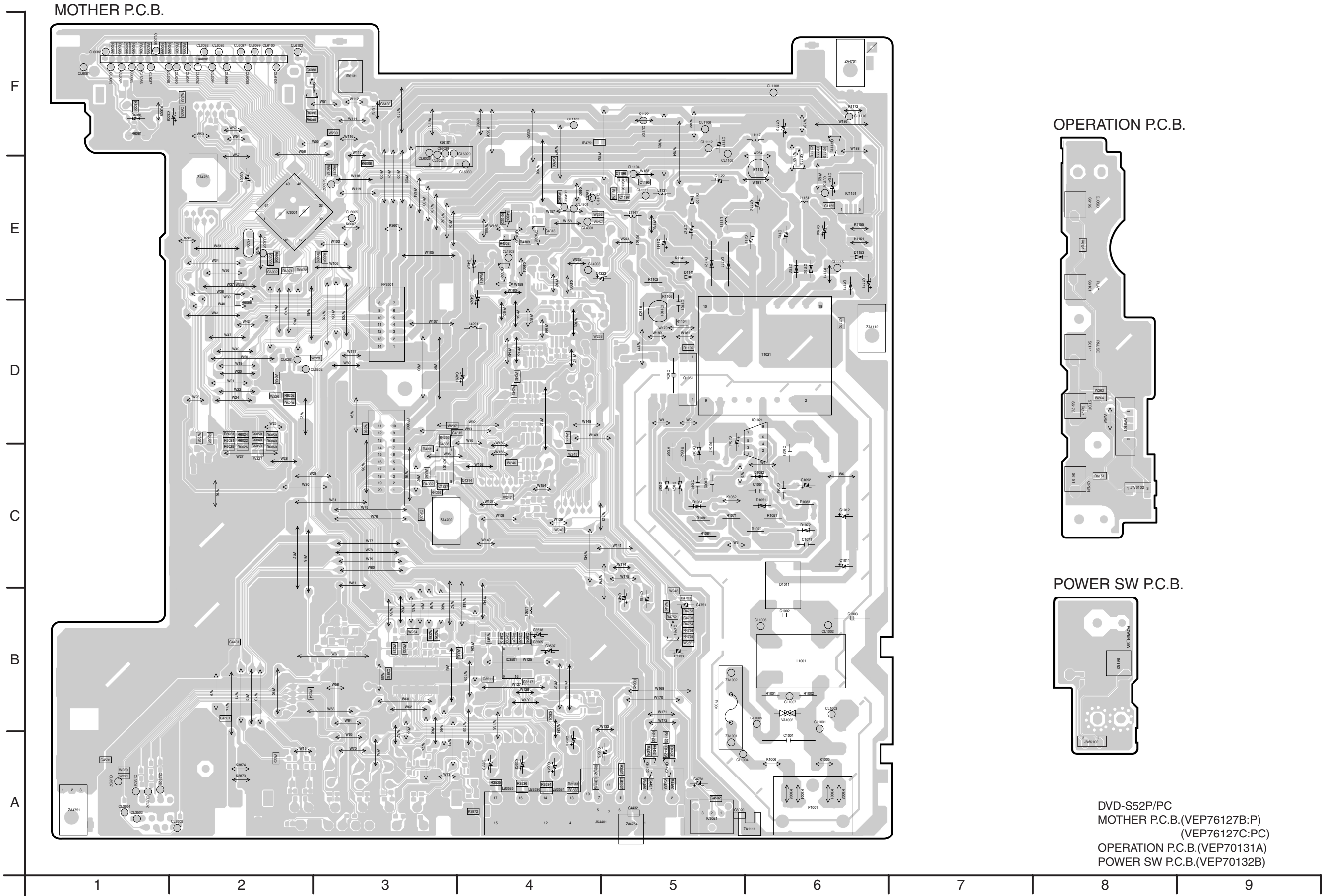
16.4. HDMI SCHEMATIC DIAGRAM



DVD-S52P/PC HDMI SCHEMATIC DIAGRAM

17 PRINT CIRCUIT BOARD

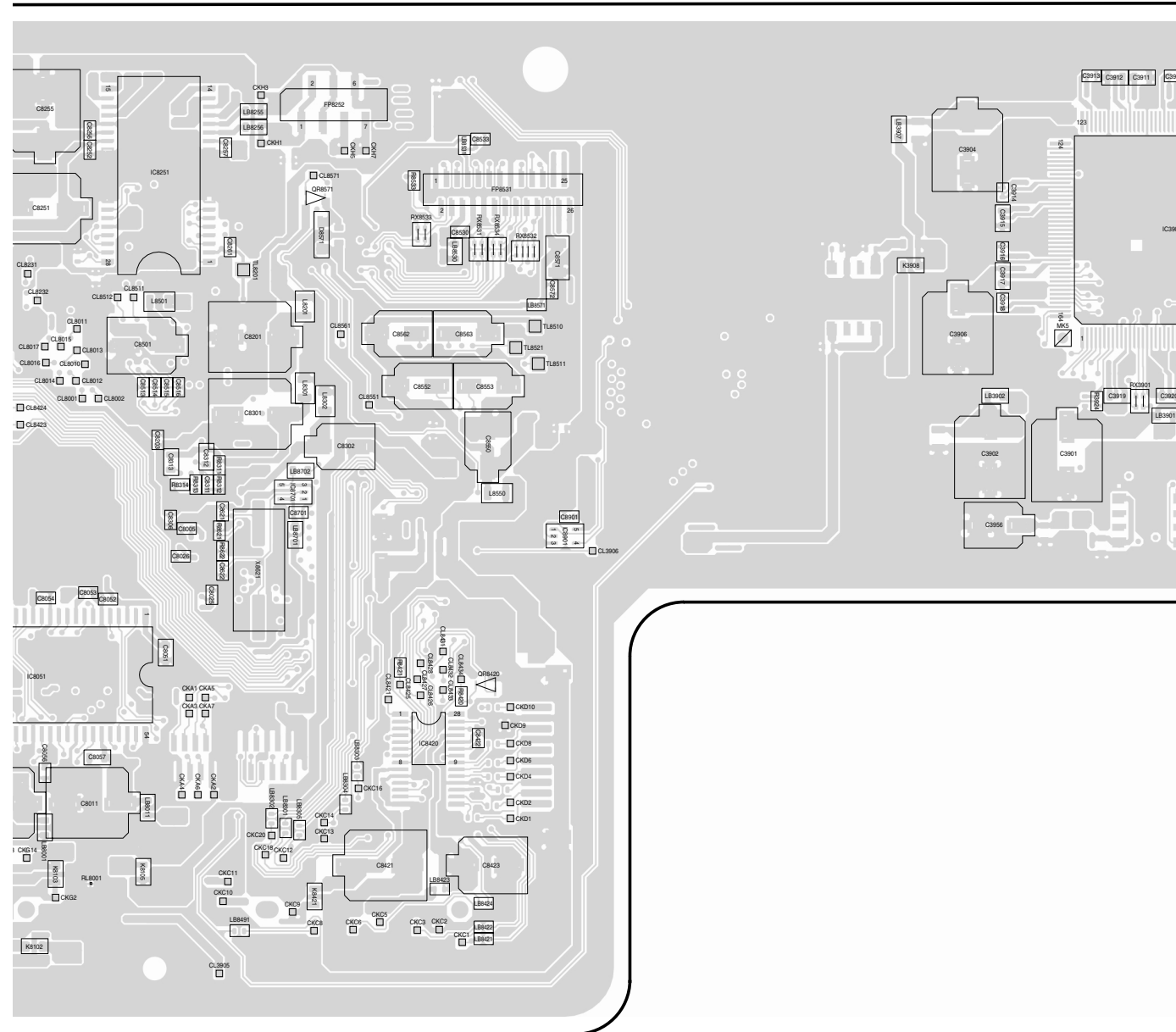
17.1. MOTHER P.C.B.



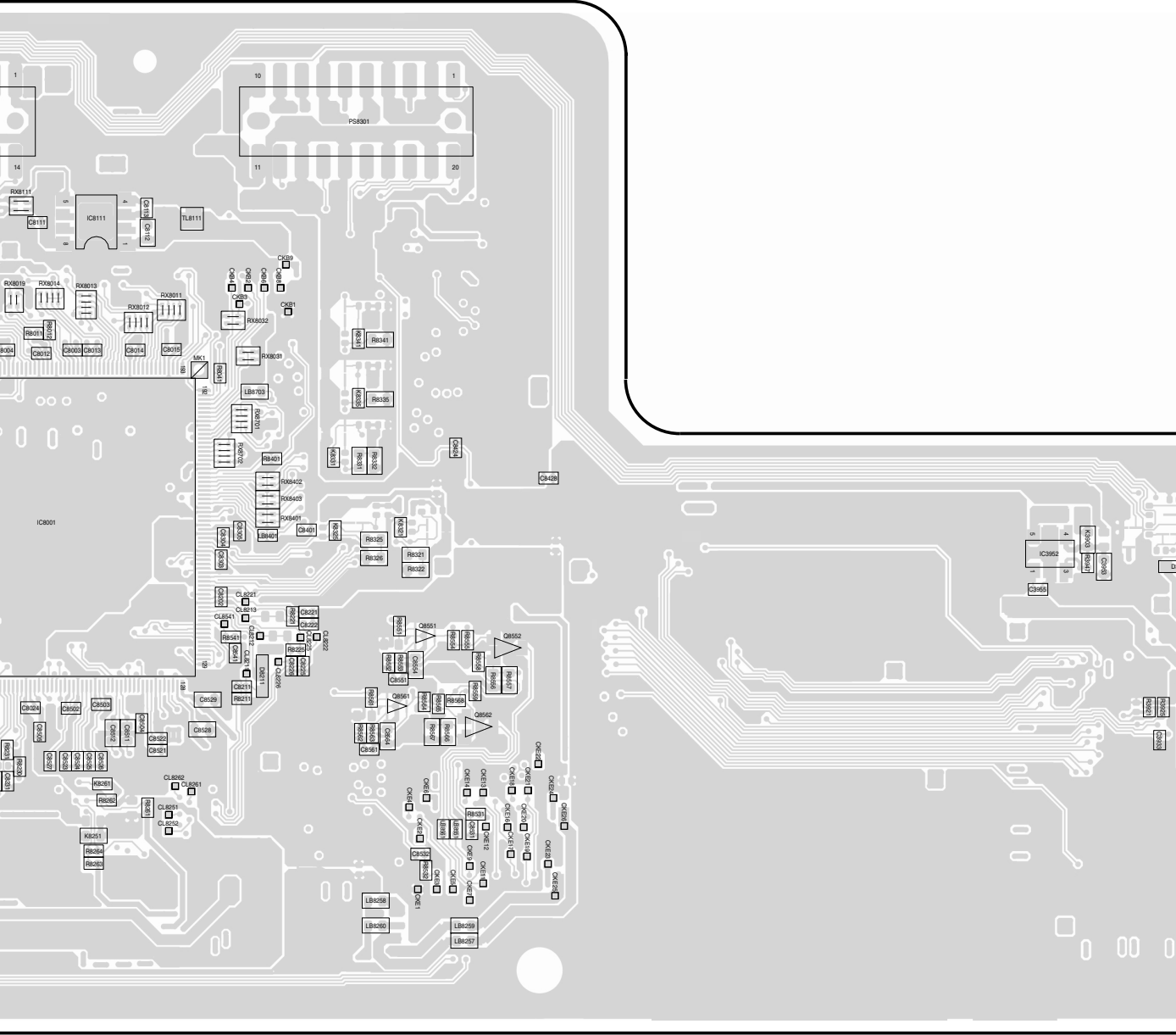
17.2. MOTHER P.C.B. ADDRESS INFORMATION

MOTHER P.C.B.					
Transistor		CL3502 CL3503 CL3504 CL3505 CL3506 CL3507 CL4301 CL4303 CL4901 CL4902 CL4903 CL6001 CL6005 CL6007 CL6026 CL6027 CL6028 CL6029 CL6030 CL6081 CL6082 CL6083 CL6084 CL6085 CL6086 CL6087 CL6088 CL6089 CL6090 CL6091 CL6092 CL6093 CL6094 CL6095 CL6096 CL6097 CL6098 CL6099 CL6100 CL6102	A-1 A-1 A-1 A-1 A-1 E-4 E-4 E-4 E-4 E-4 E-2 E-3 E-3 F-3 F-3 F-3 F-3 E-4 F-1 F-1 F-1 F-1 F-1 F-1 F-2 F-2 F-2 F-2 F-2 F-2 F-2 F-2 F-2 F-2 F-2	CL6103	F-2
Q1051	D-5			CL6201	D-2
Q1115	E-6			CL6202	D-2
Q4302	E-4			Connector	
Q4422	A-5			FP3501	D-3
Q4423	A-5			FP3502	C-3
Q4751	B-5			P1001	A-6
Q6085	F-3			PJ6101	E-6
Transistor-resistor				JK4401	A-4
QR1115	F-6	Transformer			
QR4302	E-4	T1021	D-6		
QR4306	E-4				
Inntegrated Circuit					
IC1021	C-6				
IC1101	D-5				
IC1151	E-6				
IC1195	E-5				
IC3501	B-4				
IC4301	C-3				
IC6001	E-2				
IC6021	A-5				
Test Point					
CL1001	B-6				
CL1002	B-6				
CL1003	B-6				
CL1004	A-6				
CL1005	B-6				
CL1006	B-6				
CL1007	B-6				
CL1101	F-5				
CL1104	E-5				
CL1105	E-5				
CL1106	F-5				
CL1107	E-6				
CL1108	F-6				
CL1109	F-4				
CL1111	E-5				
CL1112	F-5				
CL1113	E-4				
CL1115	E-6				
CL1116	E-6				
CL3501	A-1				

ADDRESS INFORMATION



17.4. MODULE P.C.B. (2/2)



17.5. MODULE P.C.B. ADDRESS INFORMATION

MODULE P.C.B.								
Transistor			CKB4	D-4	F	CKE11	B-5	F
Q3901	C-8	F	CKB6	D-4	F	CKE12	B-5	F
Q3902	C-8	F	CKB8	D-4	F	CKE13	B-5	F
Q3903	C-8	F	CKB9	E-4	F	CKE14	B-4	F
Q8551	C-4	F	CKC1	B-4	C	CKE16	B-5	F
Q8552	C-5	F	CKC2	B-4	C	CKE16	B-5	F
Q8561	C-4	F	CKC3	B-4	C	CKE17	B-5	F
Q8562	C-5	F	CKC5	B-4	C	CKE18	B-5	F
Transistor-resistor			CKC6	B-4	C	CKE19	B-5	F
QR8111	E-2	F	CKC8	B-4	C	CKE20	B-5	F
QR8420	C-5	C	CKC9	B-4	C	CKE21	B-5	F
QR8571	E-4	C	CKC10	B-3	C	CKE22	C-5	F
Inntegrated Circuit			CKC11	B-3	C	CKE23	B-5	F
IC3901	E-7	C	CKC12	B-4	C	CKE24	B-5	F
IC3952	C-7	F	CKC13	B-4	C	CKE25	B-5	F
IC8001	D-3	F	CKC14	B-4	C	CKE26	B-5	F
IC8051	C-3	C	CKC16	B-4	C	CKF1	E-2	C
IC8111	E-3	F	CKC18	B-4	C	CKF2	E-2	C
IC8151	B-2	C	CKC20	B-4	C	CKF3	E-2	C
IC8251	E-3	C	CKD1	B-5	C	CKF4	E-2	C
IC8420	C-5	C	CKD2	B-5	C	CKF5	E-2	C
IC8601	B-2	F	CKD4	C-5	C	CKF6	E-2	C
IC8606	B-2	F	CKD6	C-5	C	CKG2	B-3	C
IC8611	C-2	F	CKD8	C-5	C	CKG4	B-2	C
IC8651	D-2	C	CKD9	C-5	C	CKG5	B-2	C
IC8701	D-4	C	CKD10	C-5	C	CKG6	B-2	C
IC8901	C-5	C	CKE1	B-4	F	CKG7	B-2	C
Test Point			CKE2	B-4	F	CKG8	B-2	C
CKA1	C-3	C	CKE3	B-4	F	CKG9	B-2	C
CKA2	B-3	C	CKE4	B-4	F	CKG10	B-2	C
CKA3	C-3	C	CKE5	B-4	F	CKG11	B-2	C
CKA4	B-3	C	CKE6	B-4	F	CKG12	B-2	C
CKA5	C-3	C	CKE7	B-4	F	CKG13	B-3	C
CKA6	B-3	C	CKE9	B-4	F	CKG14	B-3	C
CKA7	C-3	C						
CKB1	D-4	F						
CKB2	D-4	F						
CKB3	D-4	F						

ADDRESS INFORMATION
C.....COMPONENT SIDE
F.....FOIL SIDE

MODULE P.C.B.								
Test Point			CL8065	D-2	F	CL8551	D-4	C
CKH1	E-4	C	CL8066	D-2	F	CL8561	D-4	C
CKH3	E-4	C	CL8068	D-2	F	CL8571	E-4	C
CKH5	E-4	C	CL8069	D-2	F	CL8611	C-2	F
CKH7	E-4	C	CL8211	C-4	F	CL8612	C-2	F
CL3901	C-8	F	CL8212	C-4	F	CL8651	C-2	C
CL3902	C-8	F	CL8213	C-4	F	CL8652	C-2	F
CL3903	C-8	F	CL8221	C-4	F	CL8653	C-2	C
CL3904	C-8	F	CL8222	C-4	F	CL8654	D-2	C
CL3905	B-5	F	CL8225	C-4	F	RL8001	B-3	C
CL3906	C-5	C	CL8226	C-4	F	TL8111	E-3	F
CL8001	D-3	C	CL8231	E-2	C	TL8201	E-4	C
CL8002	D-3	C	CL8232	D-3	C	TL8510	D-5	C
CL8010	D-3	C	CL8251	B-3	F	TL8511	D-5	C
CL8011	D-3	C	CL8252	B-3	F	TL8521	D-5	C
CL8012	D-3	C	CL8261	B-3	F	Connector		
CL8013	D-3	C	CL8262	B-3	F	FP8251	E-2	C
CL8014	D-3	C	CL8421	C-4	C	FP8252	E-4	C
CL8015	D-3	C	CL8422	D-2	C	FP8531	E-5	C
CL8016	D-3	C	CL8423	D-3	C	P3901	E-8	C
CL8017	D-3	C	CL8424	D-3	C	PS8101	E-2	F
CL8051	D-2	F	CL8425	C-4	C	PS8301	E-4	F
CL8052	D-2	F	CL8426	C-4	C			
CL8053	D-2	F	CL8427	C-4	C			
CL8054	D-2	F	CL8428	C-4	C			
CL8055	D-2	F	CL8431	C-4	C			
CL8056	D-2	F	CL8432	C-4	C			
CL8057	D-2	F	CL8433	C-4	C			
CL8058	C-2	C	CL8434	C-4	C			
CL8059	D-2	F	CL8435	D-2	C			
CL8060	D-2	F	CL8511	D-3	C			
CL8061	D-2	F	CL8512	D-3	C			
CL8062	D-2	F	CL8541	C-4	C			
CL8063	D-2	F						
CL8064	D-2	F						

18 EXPLODED VIEWS

18.1. CASING PARTS & MECHANISM SECTION EXPLODED VIEW

