

Service Manual

DVD Video Camera



Model No. **VDR-D50P**

VDR-D50PC

VDR-D50EG

VDR-D50E

VDR-D50EB

VDR-D50EP

VDR-D50EE

VDR-D50EF

VDR-D50GC

VDR-D50GCS

VDR-D50GN

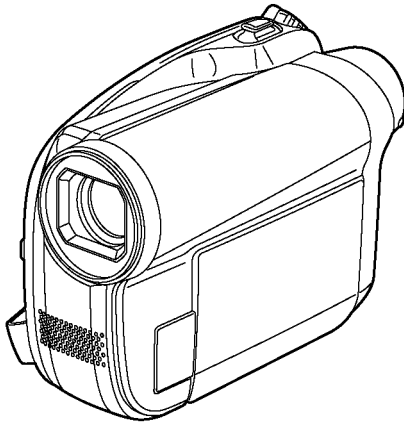
VDR-D50GT

VDR-D50SG

VDR-D50PL

VDR-D51EE

VDR-D58GK



VOL.1

Colour

(S).....Silver Type

⚠ 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.

Panasonic[®]

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1 Safety Precaution

1.1. General Guidelines

1.1.1. 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, Circuit Board Layout, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent X-RADIATION, shock fire, or other hazards. Do not modify the original design without permission of manufacturer.

2. An Isolation Transformer should always be used during the servicing of AC Adaptor whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect AC Adaptor from being damaged by accidental shorting that may occur during servicing.
3. 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.
4. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
5. 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 infinity.

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" to exposed metallic part on the set. And connect "B" to a good earth ground, as shown in Figure 1.
3. Use an AC voltmeter, with $1\text{ k}\Omega/V$ 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 0.25 V RMS.

A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed $1/2\text{ mA}$. 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.

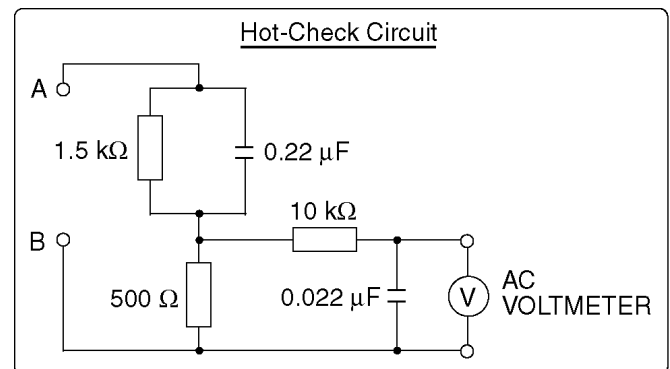


Figure 1

2 Warning

2.1. Prevention of Electrostatic Discharge (ESD) to Electrostatic Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatic 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 electrostatic 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 antistatic solder removal device. Some solder removal devices not classified as “antistatic (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).

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by Δ in the schematic diagrams, Exploded Views and replacement parts list. 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.

2.2. Service caution based on legal restrictions

2.2.1. 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 degrees 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 degrees 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%

2.3. Caution for AC Cord (For EB/GC/GCS/SG)

2.3.1. Information for your safety

IMPORTANT

Your attention is drawn to the fact that recording of pre-recorded tapes or discs or other published or broadcast material may infringe copyright laws.

WARNING

To reduce the risk of fire or shock hazard, do not expose this equipment to rain or moisture.

CAUTION

To reduce the risk of fire or shock hazard and annoying interference, use the recommended accessories only.

FOR YOUR SAFETY

DO NOT REMOVE THE OUTER COVER

To prevent electric shock, do not remove the cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

2.3.2. Caution for AC mains lead

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three-pin mains plug for your safety and convenience.

A 5-ampere fuse is fitted in this plug.

Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5 amperes and it is approved by ASTA or BSI to BS1362

Check for the ASRA mark or the BSI mark on the body of the fuse.



If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.

If you lose the fuse cover, the plug must not be used until a replacement cover is obtained.

A replacement fuse cover can be purchased from your local Panasonic Dealer.

If the fitted moulded plug is unsuitable for the socket outlet in your home then the fuse should be removed and the plug cut off and disposed of safely.

There is a danger of severe electrical shock if the cut off plug is inserted into any 13-ampere socket.

If a new plug is to be fitted please observe the wiring code as shown below.

If in any doubt, please consult a qualified electrician.

2.3.2.1. Important

The wires in this mains lead are coloured in accordance with the following code:

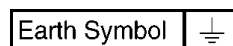
Blue	Neutral
Brown	Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

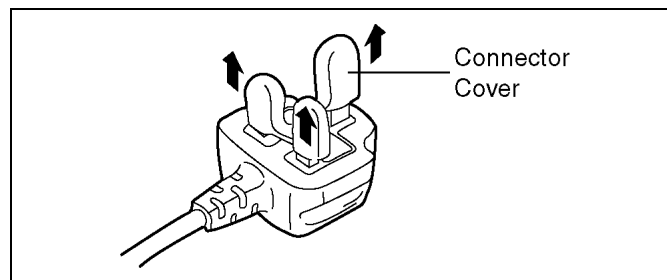
The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

Under no circumstances should either of these wires be connected to the earth terminal of the three pin plug, marked with the letter E or the Earth Symbol.



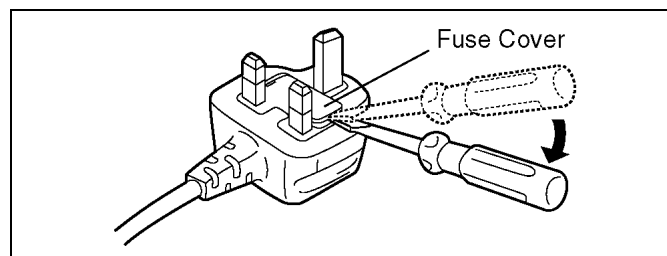
2.3.2.2. Before use

remove the Connector Cover as follows.

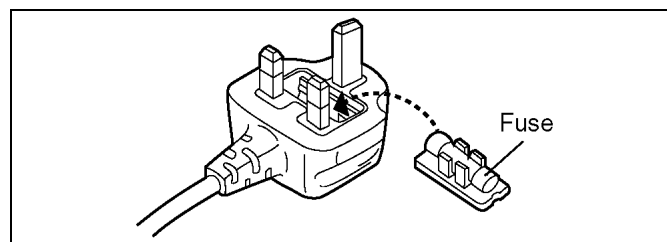


2.3.2.3. How to replace the Fuse

1. Remove the Fuse Cover with a screwdriver.

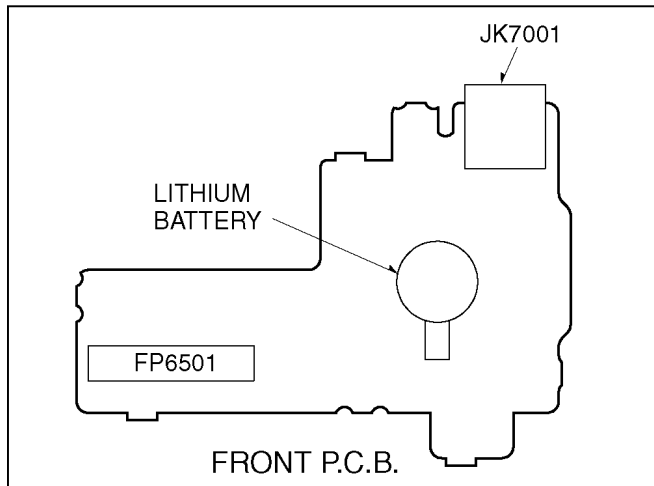


2. Replace the fuse and attach the Fuse cover.



2.4. How to Replace the Lithium Battery (PROCEDURE)

1. Remove the Front P.C.B.. (Refer to Disassembly Procedures.)
2. Unsolder the Lithium Battery "ML-621S/F9D" and then replace the new one. (See Figure B1.)



CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

CAUTION

The battery used in this device may present a risk of fire or chemical burn if mistreated.
Do not recharge, disassemble, heat above 100°C (212°F), or incinerate.
Replace battery with Panasonic part number ML-621S/F9D only.
Use of another battery may present a risk of fire or explosion.
Dispose of used battery promptly.
Keep away from children.
Do not disassemble and do not dispose of in fire.

Fig. B1

Note:

The lithium battery is a critical component. (Type No.: ML-621S/F9D Manufactured by Panasonic.)
It must never be subjected to excessive heat or discharge.
It must therefore only be fitted in equipment designed specifically for its use.
Replacement batteries must be of the same type and manufacture.
They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.
Do not attempt to re-charge the old battery or re-use it for any other purpose.
It should be disposed of in waste products destined for burial rather than incineration.

CAUTION

Danger of explosion if battery is incorrectly replaced.
 Replace only with the same or equivalent type recommended by the equipment manufacturer.
 Discard used batteries according to manufacturer's instructions.

PRECAUTION

Le fait de remplacer incorrectement la pile peut présenter des risques d'explosion.
 Remplacer la pile uniquement par une pile identique ou de type équivalent recommandée par le fabricant. Se débarrasser des piles usagées conformément aux instructions du fabricant.

VORSICHT

Bei einer falsch eingesetzten Batterie besteht Explosionsgefahr. Nur mit einer vom Hersteller empfohlenen Batterie vom gleichen Typ ersetzen.
 Verbrauchte Batterien beim Fachhändler oder einer Sammelstelle für Sonderstoffe abliefern.

VARNING

Explosionsfara vid felaktigt batteribyte.
 Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren.
 Kassera använt batteri enligt fabrikantens instruktion.

ADVARSEL!

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
 Udskiftning må kun ske med batteri af samme fabrikat og type.
 Levér det brugte batteri tilbage til leverandøren.

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.
 Vaihda paristo ainoastaan laitevalmistajan suositteluun tyypin.
 Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

2.5. How to Recycle the Lithium Battery (U.S. Only)**U.S.A./CANADA CONSUMERS: ATTENTION:**

A lithium ion/polymer battery that is recyclable powers the product you have purchased. Please call 1-800-8-BATTERY for information on how to recycle this battery.

3 Service Navigation

3.1 Service Information

This service manual contains technical information which will allow service personnel's to understand and service this model.

Please place orders using the parts list and not the drawing reference numbers.

If the circuit is changed or modified, this information will be followed by supplement service manual to be filed with original service manual.

Notes 1:

1. VSK0697 is indicated on AC Adapter used on the following models:

VDR-D50P/PC/PL.

However, the AC Adapter replacement part number is DE-A51BA which should be used when ordering.

2. VSK0698 is indicated on AC Adapter used in the following models:

VDR-D50EG/E/EB/EP/EE/GC/GCS/GN/GT/SG, VDR-D51EE.

However, the AC Adapter replacement part number is DE-A51CA which should be used when ordering.

3. VSK0698 is indicated on AC Adapter used on the following model:

VDR-D58GK.

However, the AC Adapter replacement part number is DE-A51DA which should be used when ordering.

Notes 2:

- 1) This service manual does not contain the following information, because of the impossibility of servicing at component level.

1. Schematic Diagram, Block Diagram and P.C.B. layout of Main P.C.B.
2. Parts List for individual parts of Main P.C.B.

- 2) The following category are recycle module part. Please send them to Central Repair Center.

*Main P.C.B. (LSEP8431A1: VDR-D50P/PC/PL)

(LSEP8431P1: VDR-D50EG/E/EB/EF/EP)

(LSEP8431Q1: VDR-D50GC/GCS/GN/EE/SG, VDR-D58GK)

(LSEP8431C1: VDR-D50GT)

(LSEP8431R1: VDR-D51EE)

When a part replacement is required for repairing each Main P.C.B., replace the assembly parts.

(Main P.C.B.)

The following circuits are contained in Main P.C.B.

1. Main Connection Circuit
2. AVIO Circuit
3. Video Circuit
4. Memory Circuit
5. Jack Circuit
6. EVF/LCD Circuit
7. Power Circuit
8. Control Circuit
9. Lens Drive Circuit
10. TG/AFE Circuit
11. Sub System Circuit

3.2. Service Caution

3.2.1. Precaution of Laser Light

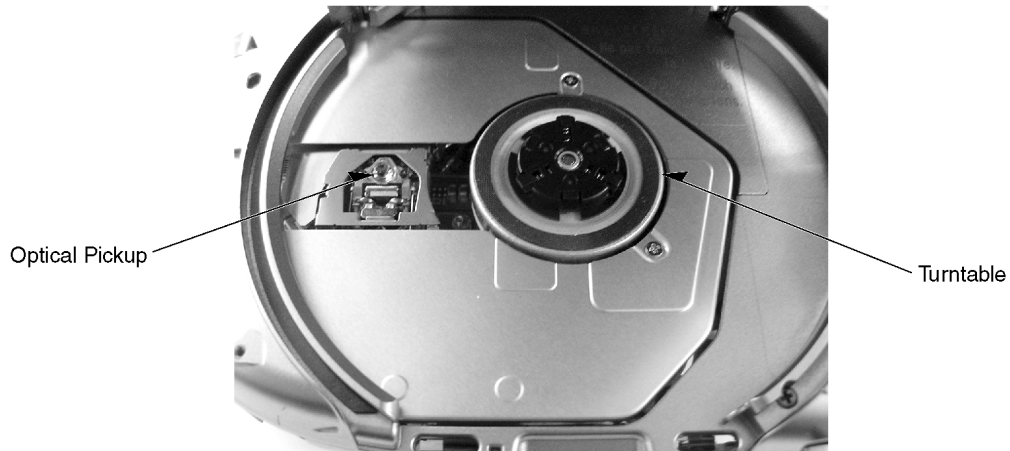
Please remove the AC adapter/charger or battery at servicing that opens the Disc Cover.

CAUTION

Laser light striking the eye may cause your eyesight to be lost : For safety, be sure to remove any power supply (AC adaptor/charger, battery, etc.) from the DVD video camera/recorder before starting work.

<CSA requirement>

CAUTION: VISIBLE LASER RADIATION DO NOT STARE INTO THE BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS CLASS 1M



3.3. Procedure for Removing Disc

3.3.1. Item to be checked

Connect the AC adaptor/charger or charged battery (power supply), make sure that the ACCESS indicator turns off, and then press the DISC EJECT button again.

Even with normal product, the disc cannot be removed while the ACCESS indicator is lit or blinking.

3.3.2. Procedure for Removing the disc manually

Please removing the disc by the following procedure when the disc cannot be removeing due to the breakdown of the electrical system etc.

1. Insert the small Clip or similar object into the Eject hole.
2. Press it gently, and then open the Disc cover.
3. Remove the disc.

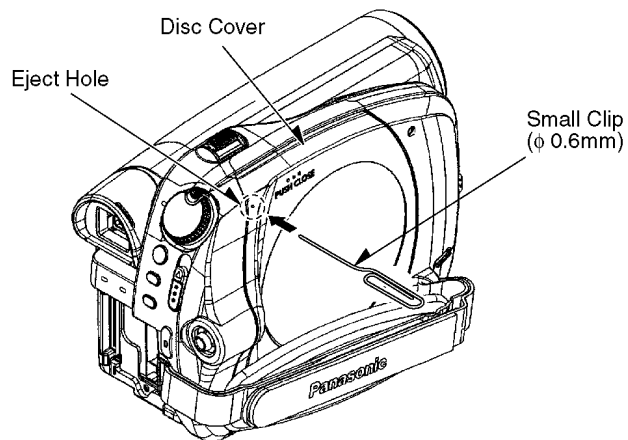
CAUTION



Laser light striking the eye may cause your eyesight to be lost : For safety, be sure to remove any power supply (AC adaptor/charger, battery, etc.) from the DVD video camera/recorder before starting work.

<CSA requirement>

CAUTION: VISIBLE LASER RADIATION DO NOT STARE INTO THE BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS CLASS 1M



4 Specifications

DVD Video Camera

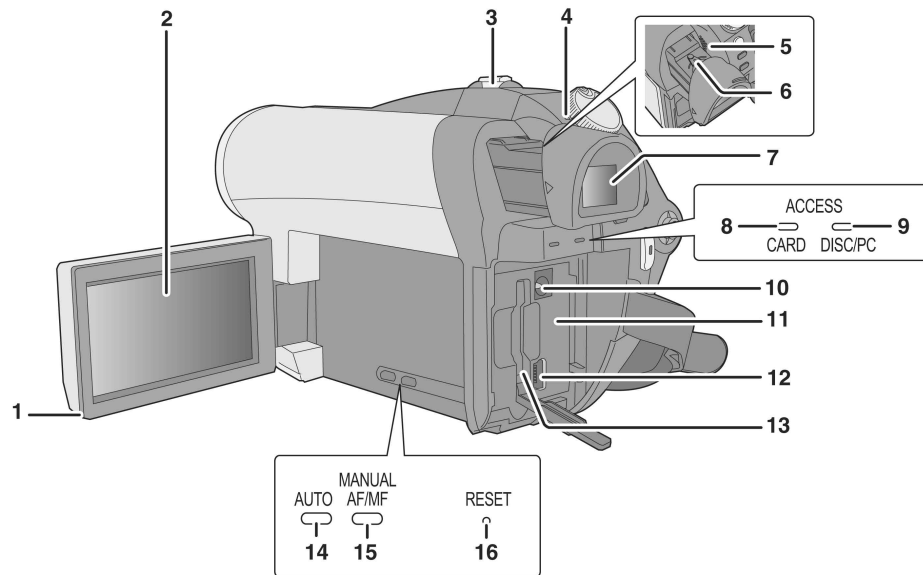
ITEM	SPECIFICATION	ITEM	SPECIFICATION
POWER	Source: DC 9.3 / 7.2 V Consumption: Recording 5.9W	STANDARD ILLUMINATION	1,400 lx
RECORDING FORMAT	DVD-Video Recording format (DVD-RAM, DVD-RW) DVD-Video format (DVD-RW, DVD-R, DVD-R DL)	MINIMUM REQUIRED ILLUMINATION	6 lx (Approx. 2lx with the colour night view function)
RECORDING / PLAYBACK TIME	XP mode : approx. 18min. with one side RAM disc SP mode : approx. 37min. with one side RAM disc LP mode : approx. 75min. with one side RAM disc	USB	Card reader / writer function (No copyright protection support) Hi-Speed USB (USB 2.0) compliant PictBridge-compliant
CAMERA	Zoom: 40X optical, 70/2000X digital	MICROPHONE	Stereo (with a zoom function)
	Monitor: 2.7-inch wide LCD (approx. 123K pixels)	SPEAKER	1 round speaker ϕ 20 mm
	Lens: Auto Iris, F1.9-F4.3, Focal Length; 1.8 - 75.6 mm Macro (Full Range AF)	OPERATING TEMPERATURE	0°C - 40°C (32°F - 104°F) (0°C - 30°C (32°F - 86°F) when connected to the PC)
	Image Sensor: 1/6-inch CCD Image Sensor	OPERATING HUMIDITY	10% - 80%
	Viewfinder: Colour Electronic Viewfinder (approx. 113k pixels)		
VIDEO	Television System : EIA Standard : 525 Lines, 60 Fields NTSC Colour Signal (VDR-D50P/PC/PL/GT) CCIR : 625 Lines, 50 Fields PAL Colour Signal (Except VDR-D50P/PC/PL/GT)	WEIGHT	400 g (0.88 lbs) (without supplied battery and DVD disc)
	Video Output Level: 1.0 Vp-p, 75 ohm (AV Multi Jack)	DIMENSIONS	52.8 mm (W) \times 89.5 mm (H) \times 128.6 mm (D) 2.08 inch (W) \times 3.52 inch (H) \times 5.06 inch (D) (excluding the projection parts)
AUDIO	Audio Output Level (Line): 316 mV, 600 ohm (AV Multi Jack)	STANDARD ACCESSORIES	1 pc. AC Adaptor 1 pc. Battery Pack Unit 1 pc. DC Cable 1 pc. AC Cord (Except VDR-D50GC/GCS/SG) 2 pcs. AC Cord (VDR-D50GC/GCS/SG) 1 pc. AV Multi Cable 1 pc. CD-ROM 1 pc. USB Cable
DISC RECORDING FUNCTIONS	Recording Media: 8cm DVD-RAM Ver.2.1 8cm DVD-RW Ver.1.1/2X-SPEED (2X/1X) 8cm DVD-R for General Ver. 2.0 8cm DVD-R for DL Ver. 3.0	SOLDER	This model use lead free solder (PbF).
	Motion Picture recording format: MPEG2		
	Transfer Rete: XP mode: 10Mbps (VBR) SP mode: 5Mbps (VBR) LP mode: 2.5Mbps (VBR)		
	Audio recording format: Dolby Digital, 16bit (48KHz/2ch)		
CARD MEMORY FUNCTIONS	Recording Media: SD Memory Card, SDHC Memory Card SD Memory Card: 8 MB/16 MB/32 MB/64 MB/128 MB/256 MB/512 MB/ 1 GB/2 GB (FAT12 and FAT16 format corresponding) SDHC Memory Card: 4 GB / 8 GB (FAT32 format corresponding) Still picture recording file format: JPEG (Desing rule for Camera File system, based on Exif 2.2 standard), DPOF corresponding Still Image Size: 640 \times 480 (4:3) 640 \times 360 (16:9)		

Weight and dimensions are approximate values.
Specifications may change without prior notice.

5 Location of Controls and Components

Followings are the Location of Controls and Components for VDR-D50P/PC as a sample.

For other models, refer to each Operatin Instructions.



1 LCD monitor open part

2 LCD monitor

Due to limitations in LCD production technology, there may be some tiny bright or dark spots on the LCD monitor screen. However, this is not a malfunction and does not affect the recorded picture.

7 Viewfinder

Due to limitation in LCD production technology, there may be some tiny bright or dark spots on the viewfinder screen. However, this is not a malfunction and does not affect the recorded picture.

8 SD card access lamp [ACCESS CARD]

9 Disc/PC access lamp [ACCESS DISC/PC]

10 DC input terminal [DC/C.C.IN]

11 Battery holder

12 USB terminal [↔]

13 SD card slot [SD CARD]

14 Auto button [AUTO]

15 Manual button [MANUAL AF/MF]

16 Reset button [RESET]

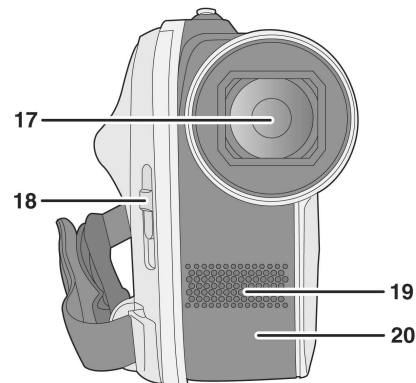
3 When recording: Zoom lever [W/T]

When playing back: Volume lever [-VOL+]

4 Status indicator

5 Speaker

6 Eyepiece corrector knob

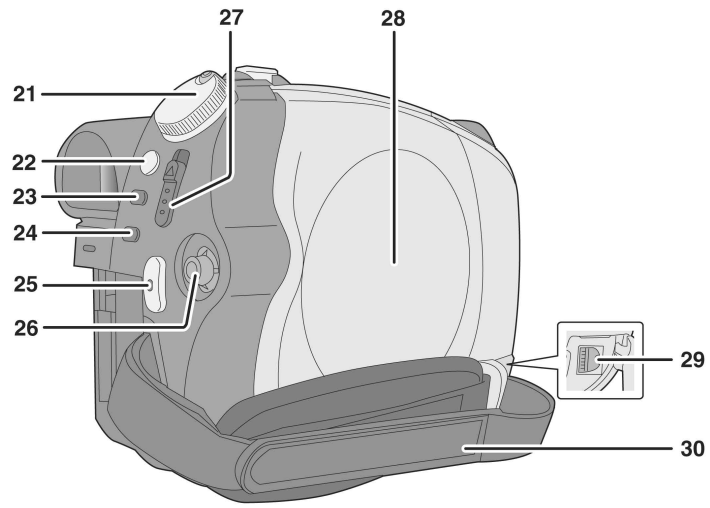


17 Lens

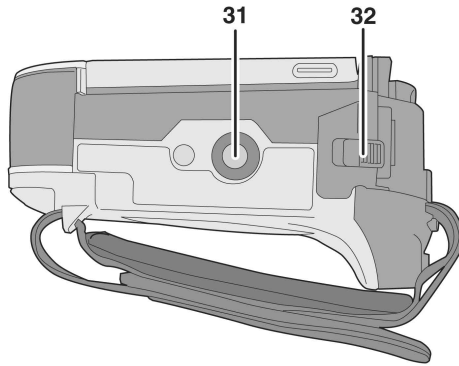
18 Lens cover open/close switch

19 Microphone (built-in, stereo)

20 White balance sensor



- | | |
|---|--------------------------------------|
| 21 Mode dial | 27 Disc eject lever [DISC EJECT] |
| 22 Image stabilizer button [(hand icon), O.I.S.] | 28 Disc compartment |
| 23 Menu button [MENU] | 29 Audio-video output terminal [A/V] |
| 24 Delete button [(trash icon)] | 30 Grip belt |
| 25 Recording start/stop button | |
| 26 Joystick | |

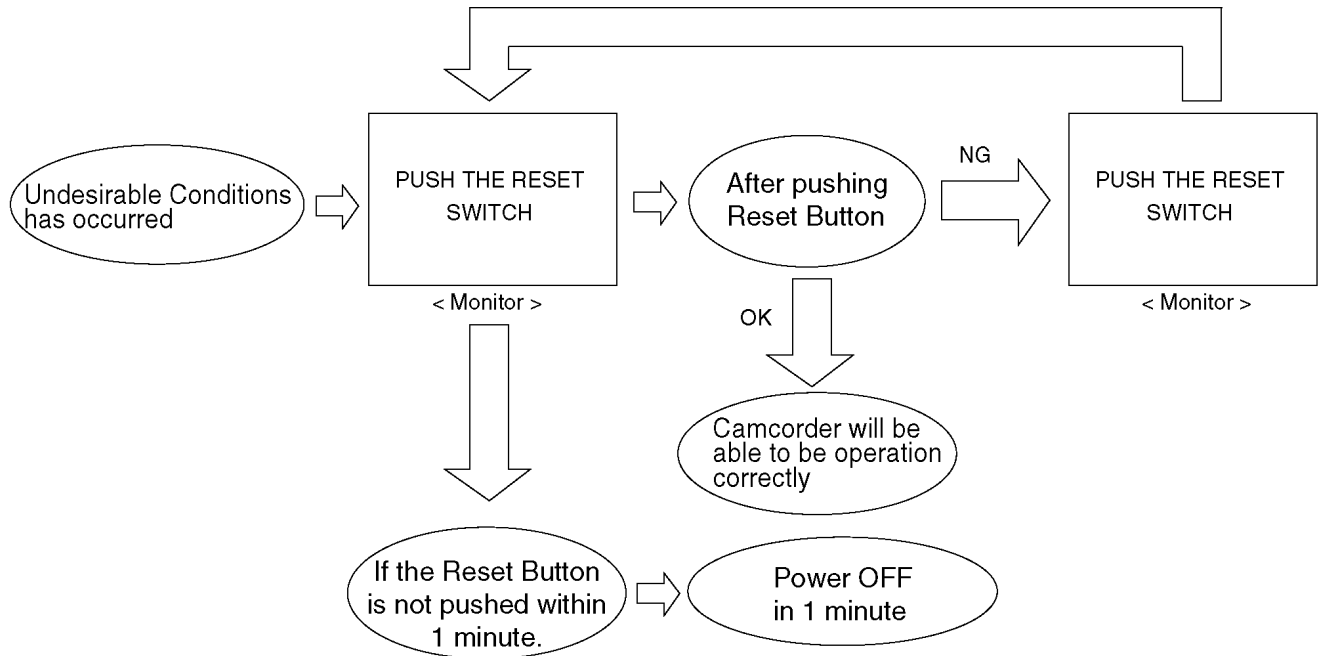


- | |
|------------------------------------|
| 31 Tripod receptacle |
| 32 Battery release lever [BATTERY] |

6 Service Mode

6.1. Error Display

"PUSH THE RESET SWITCH" is displayed automatically on the EVF or the LCD Monitor when an undesirable condition has occurred.



Note:

When "PUSH THE RESET SWITCH" is displayed repeatedly, required.
Check the Error Code which is listed in the Service Menu.

6.2. Service Menu

When abnormal detection contents are confirmed a When I do the following operation automatic diagnosis code is displayed.

1. Preparation

(1) Remove the card and disc from this unit.

2. To enter the Service Menu. (see Fig. S1)

(1) Turn on power and set the Mode Dial to [DISC PLAYBACK MODE].

(2) Pushed [DELETE] button, [JOYSTICK CONTROL LEFT] button and [RECORDING START/STOP] button simultaneously for 3 seconds.

3. To select the Item.

(1) Press the [JOYSTICK CONTROL UP/DOWN] to select item [1] or [4].

(2) Press the [JOYSTICK CONTROL RIGHT] to display [YES/NO] screen.

(3) Press the [JOYSTICK CONTROL UP/DOWN] to select [YES].

(4) Press the [JOYSTICK CONTROL CENTER].

4. To exit the Service Menu.

(1) Unplug the AC Cord.

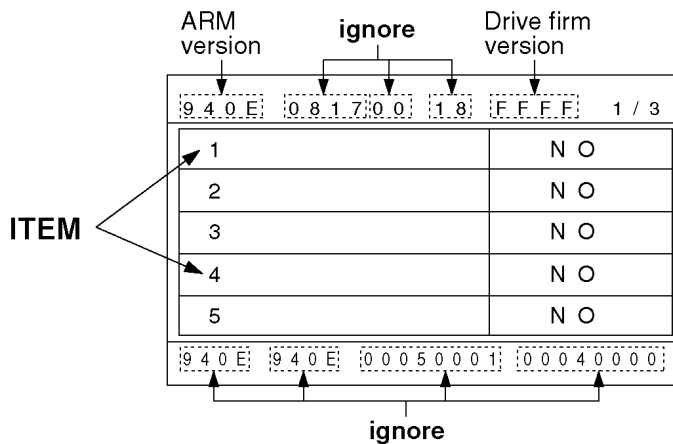


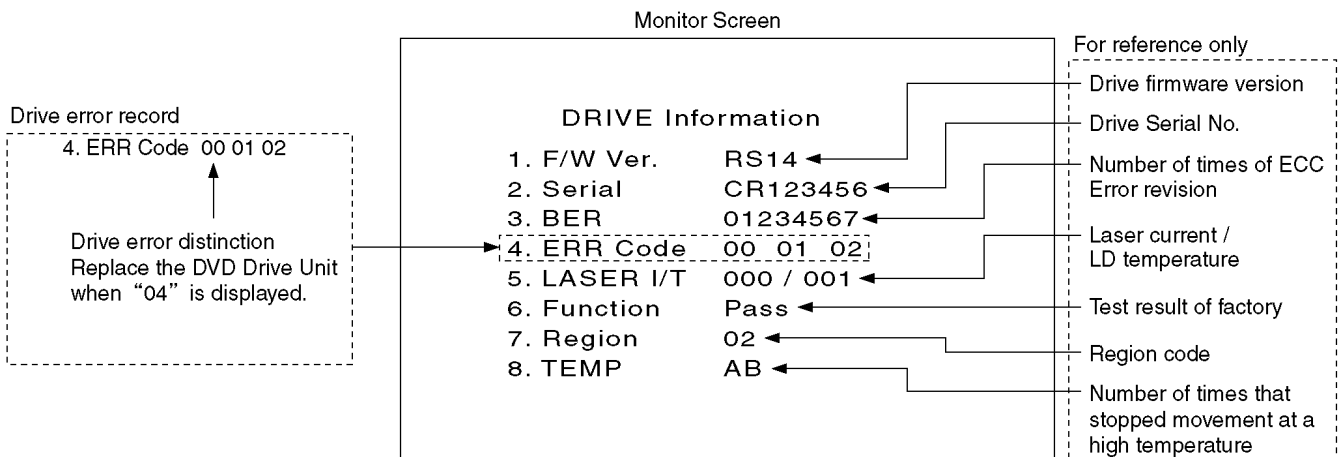
Fig. S1

NOTE:

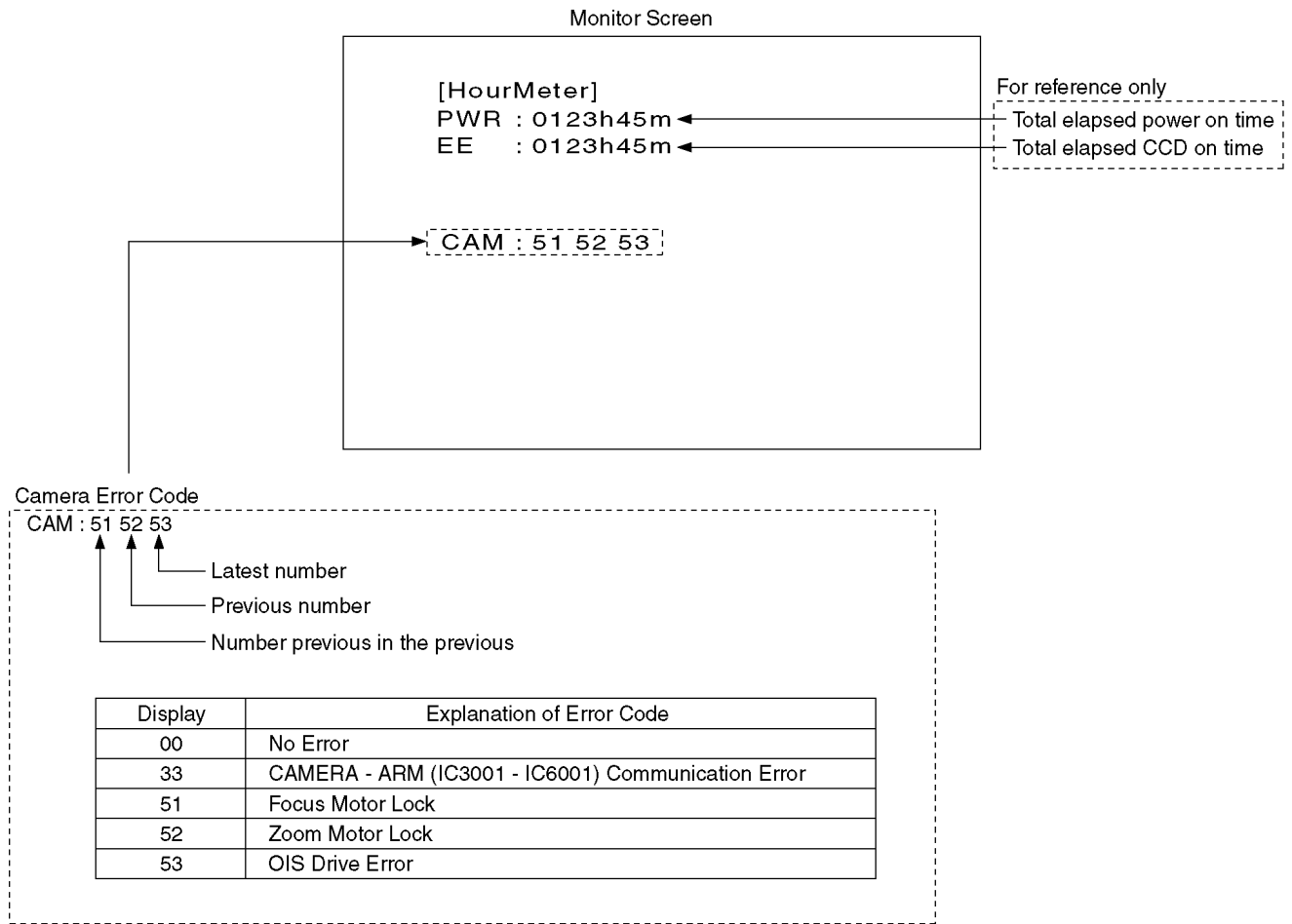
Do not operate items except for [1] and [4] in the Service Menu.

Self diagnosis code contents are as follows.

<Item 1>



<Item 4>



Please do the error code backup record the clear after repair completion.

CLEAR METHOD

If the Card and Disc inserted, take out it before Service Mode operation.

Turn on power and set the Mode Dial to [DISC RECORDING MODE].

Pushed [DELEATE] button, [JOYSTICK CONTROL RIGHT] and [RECORDING START/STOP] button simultaneously for 3 seconds.

7 Service Fixture & Tools

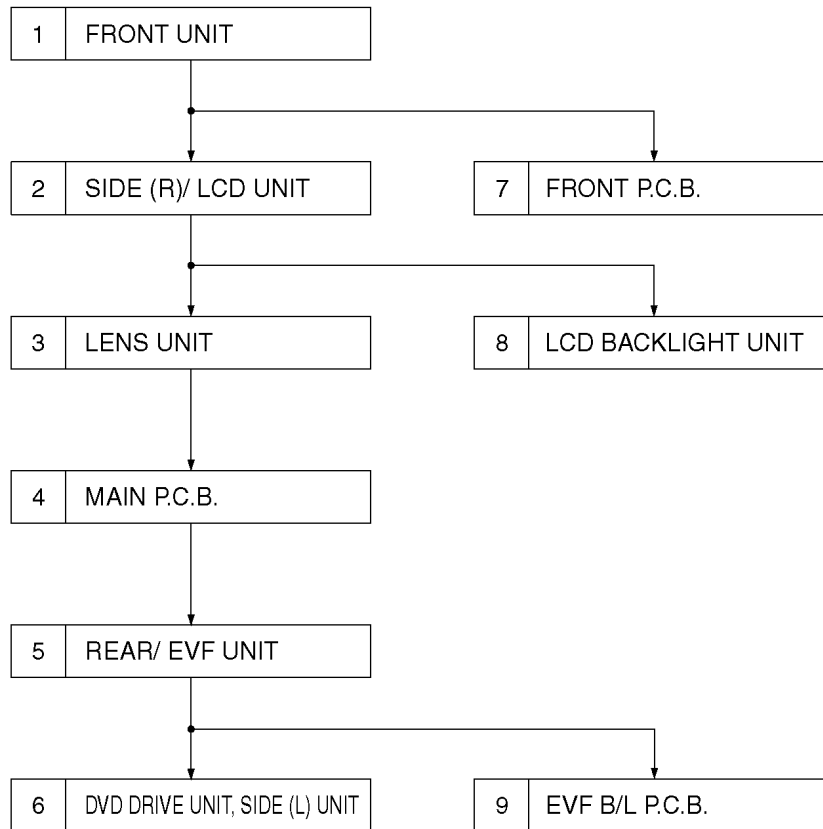
7.1. Service Tools and Equipment

Parts Name	Parts No.	Q'ty	Remarks
PC	---	1	
AC Adaptor	---	1	
DC Cable	---	1	
AV Multi Cable	---	1	
USB Cable	---	1	
PC-Adjustment Program	---	1	
Light Box	VFK1164LBX1	1	
White Chart	VFK1164TFWC2	1	
Color Bar Chart	VFK1164TFCB2	1	
Gray Scale Chart	VFK1164TFGS2	1	
Color Conversion	VFK1164TFCT2	1	
Light Box (New)	VFK1164TDVLB	1	
Color Conversion (C12) (New)	VFK1164LBB12	1	
Color Conversion (C2) (New)	VFK1164LBB2	1	
Color Conversion (C4) (New)	VFK1164LBB4	1	
Color Conversion (C8) (New)	VFK1164LBB8	1	
Infinity Lens	VFK1164TCM02	1	With Focus Chart
Infinity Lens	RFKZ0422	1	
Tripod	VFK1164TST	1	
Tripod	RFKZ0333B	1	
Adapter for infinity Lens	RFKZ0333H	1	
Grease	LSUQ0050	1	
Plier	LSUQ0028	1	
Pin For CCD	RFKZ0476	1	New
Extension Cable (24pin)	VFK1284	1	FP41 (Main) - FP6501 (Front)
Extension Cable (18pin)	VFK1443	1	FP91 (Main) - FP8901 (EVF Backlight)
Extension Cable (60pin)	LSUA0059	1	B21 (Main) - DVD Drive Unit
Extension Cable (24pin)	VFK1284	1	FP81 (Main) - FP8101 (LCD Backlight)
Extension Cable (18pin)	VFK1443	1	FP61 (Main) - Side Case L Unit
Extension Cable (33pin)	VFK1950	1	FP71 (Main) - Lens Unit
Extension Cable (16pin)	VFK1175	1	FP31 (Main) - Prism Unit
Extension Cable (18pin)	VFK1443	1	FP11 (Main) - Rear Case Unit

8 Disassembly and Assembly Instructions

8.1. Disassembly Frow Chart

This flow chart indicates the disassembly steps the cabinet parts, P.C.B. and Mecha. Unit in order to access to be serviced. When reinstalling, perform the steps in the reverse order.



8.2. P.C.B. Layout

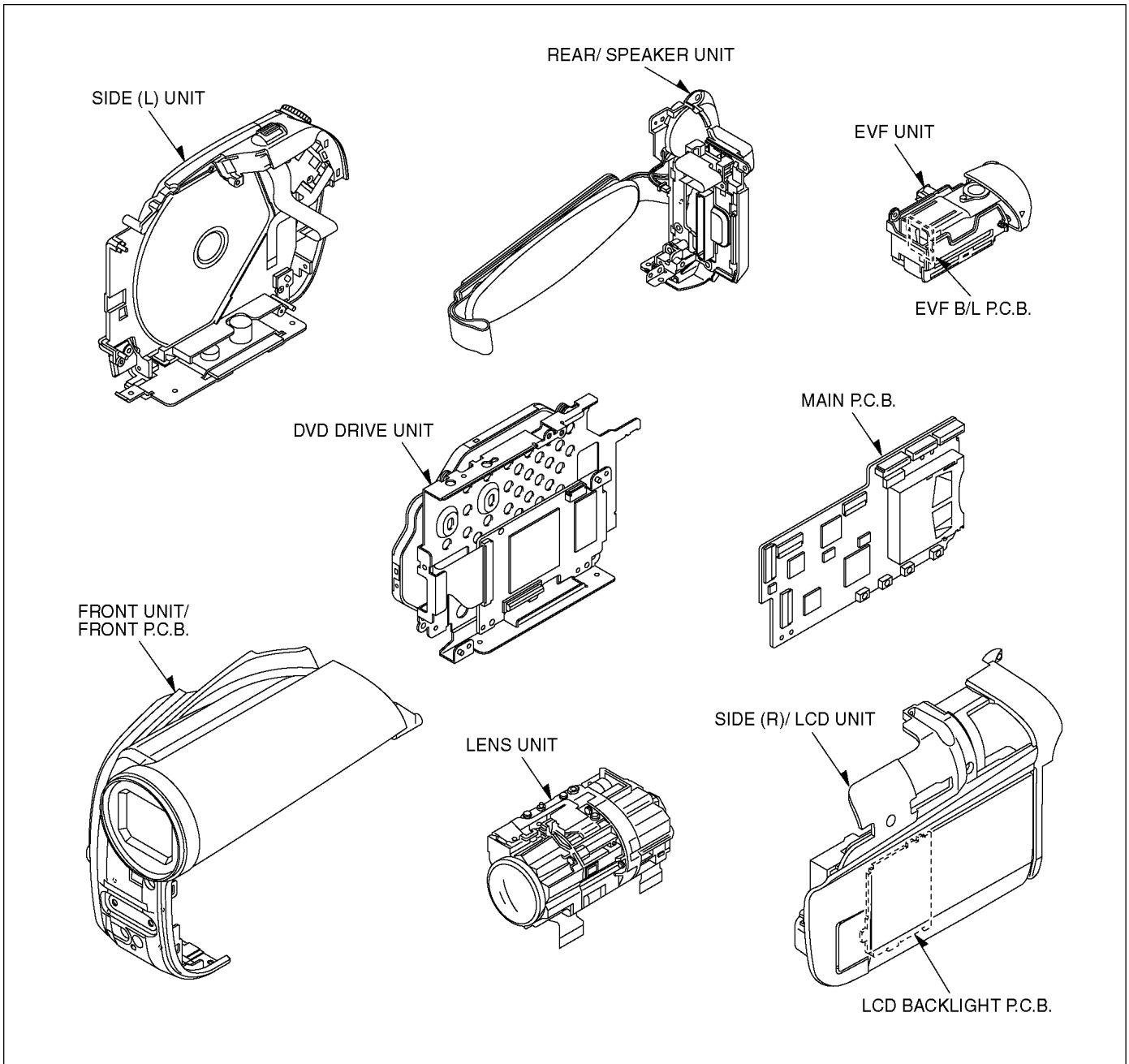


Fig. F1

8.3. Disassembly Procedures

Flow-Chart for Disassembly Procedure

No.	It. / Part	Fig.	Removal (Screw, Connector, FPC. & Other)
1	Front Unit	Fig. D2	2-Screws (A) Front Panel Unit
		Fig. D3	1-Screw (B) 1-Screw (C)
		Fig. D4	Open the Disc Cover 1-Screw (D)
		Fig. D5	1-Screw (E)
		Fig. D6	Detach the Grip Belt
		Fig. D7	1-Screw (F) 1-Connector FP6501 Front Unit
		2	Side(R)/LCD Unit
Fig. D9	2-Screws (H) 3-Screws (I) 1-Screw (J) 1-Connector FP81 Side(R)/LCD Unit		
3	Lens Unit	Fig. D10	1-Screw (K)
		Fig. D11	2-Connectors FP31, FP71 Lens Unit
4	Main P.C.B.	Fig. D12	2-Screws (L1) 1-Screws (L2) 4-Connectors FP11, FP61, FP91, P51 Main P.C.B.
5	Rear/EVF Unit	Fig. D13	2-Screws (M) 3-Screws (N) Rear/EVF Unit
6	DVD Drive Unit, Side (L) Unit	Fig. D14	1-Connector P2403 1-Screw (O) DVD Drive Unit, Side (L) Unit
7	Front P.C.B.	Fig. D15	4-Screws (P) Front P.C.B.
8	LCD Backlight P.C.B.	Fig. D16	2-Screws (Q) 2-Screws (R) Earth Plate Side Case R Unit LCD/Shaft Unit Side R Piece
		Fig. D17	2-Connectors FP8101, FP8102 2-Screws (S) 1-Screw (T) LCD Case A LCD Case B Unit Shaft Case Unit LCD Backlight P.C.B.
9	EVF B/L P.C.B.	Fig. D18	2-Screws (U) Rear/Speaker Unit EVF Unit
		Fig. D19	Remove the Tab(1), and Twist the EVF Case Unit in the direction of the arrow, and Remove the Tab(2). 1-Connector FP8901 EVF Slide Base Unit EVF Case Unit
		Fig. D20	2-Tabs EVF LCD Unit
		Fig. D21	1-Connector FP8902 4-Tabs EVF B/L P.C.B.

CAUTION



Laser light striking the eye may cause your eyesight to be lost : For safety, be sure to remove any power supply (AC adaptor/ charger, battery, etc.) from the DVD video camera/recorder before starting work.

<CSA requirement>

CAUTION: VISIBLE LASER RADIATION DO NOT STARE INTO THE BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS CLASS 1M

If the Card inserted, take out it before disassembling

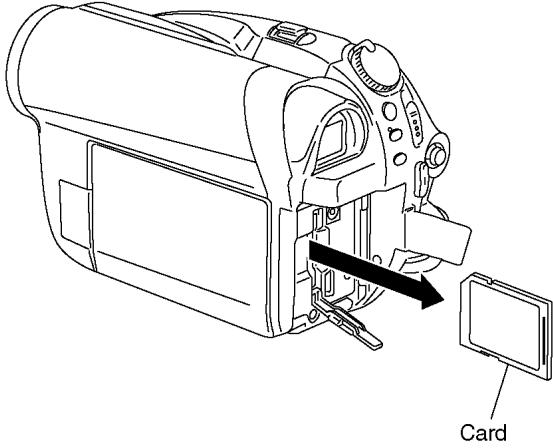


Fig. D1

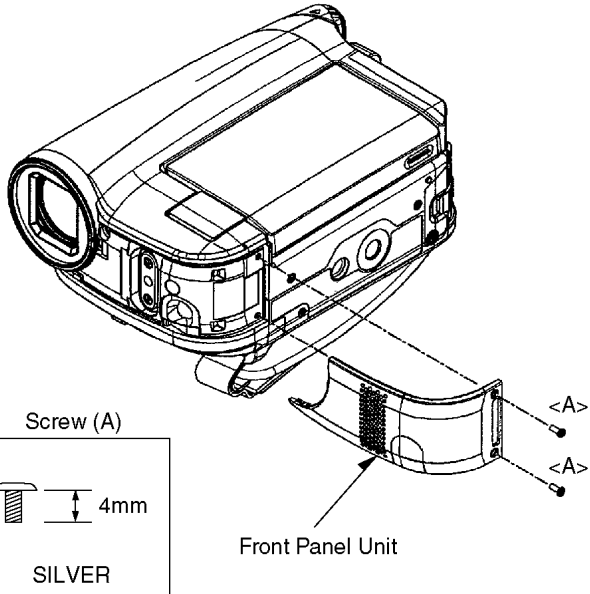
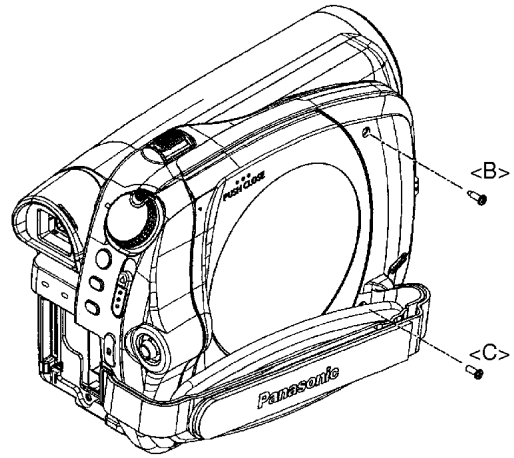
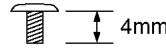
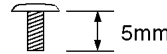


Fig. D2



Screw (B)

Screw (C)

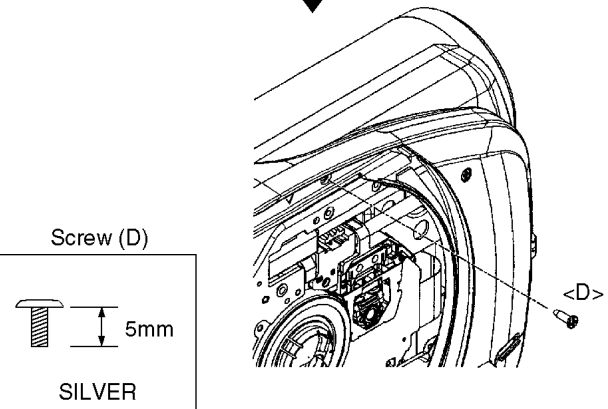
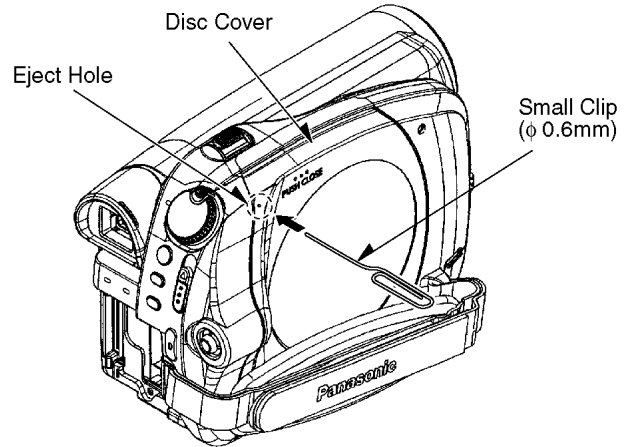


SILVER

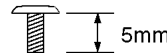
SILVER

Fig. D3

- Open the Disc Cover
 1. Insert the Small Clip or similar object into the Eject hole.
 2. Press it gently, and then open the Disc Cover.



Screw (D)



SILVER

Fig. D4

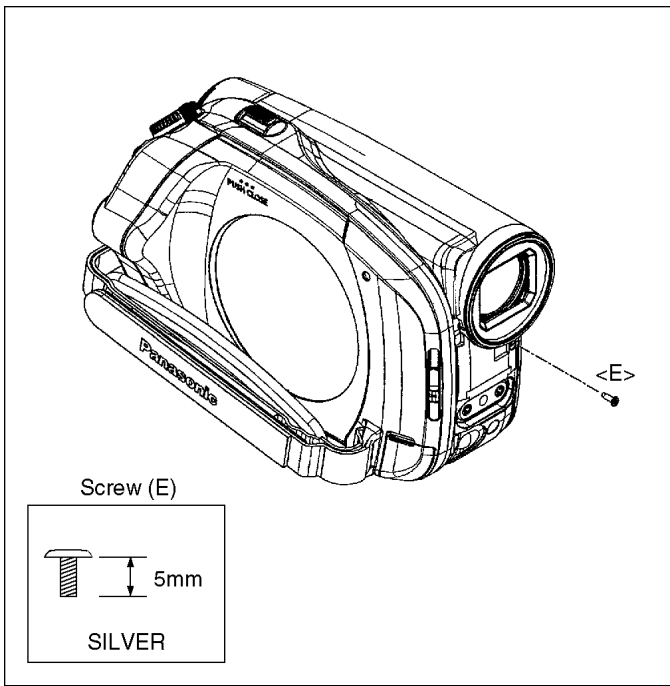


Fig. D5

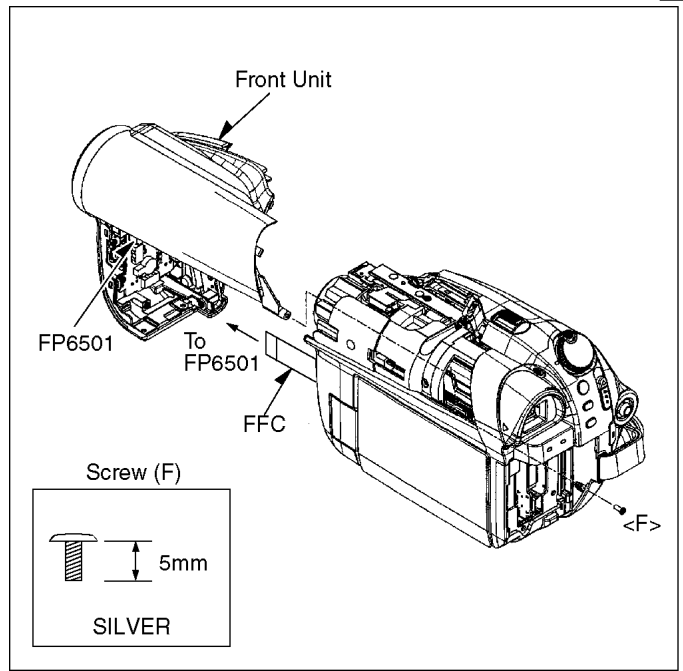


Fig. D7

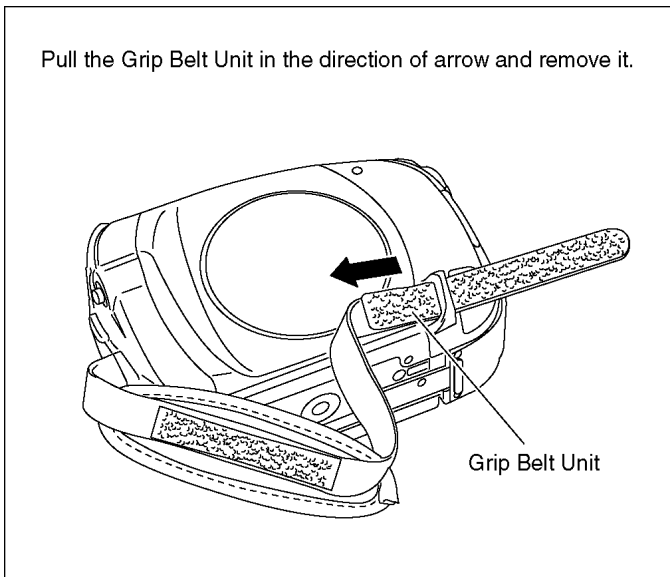


Fig. D6

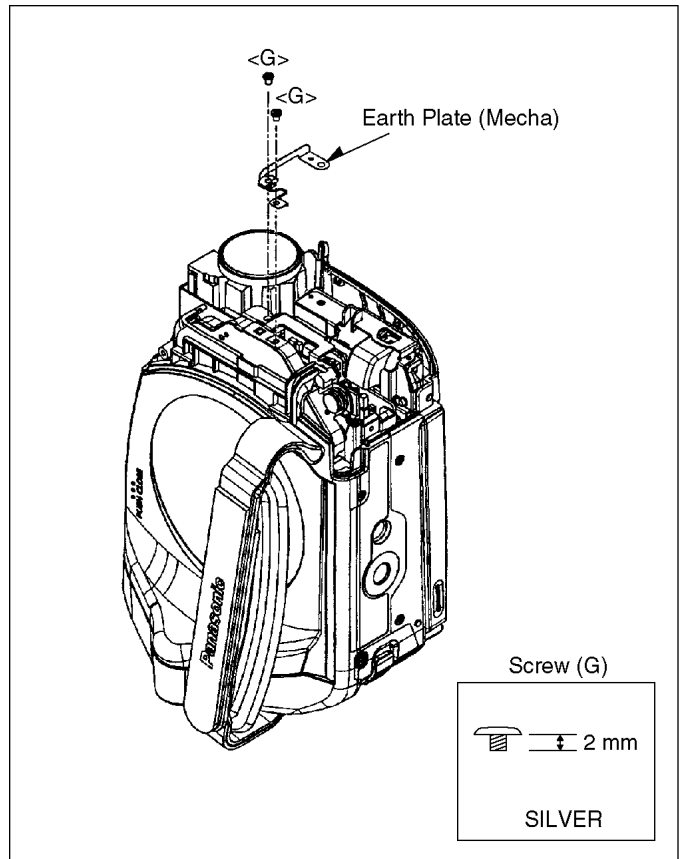


Fig. D8

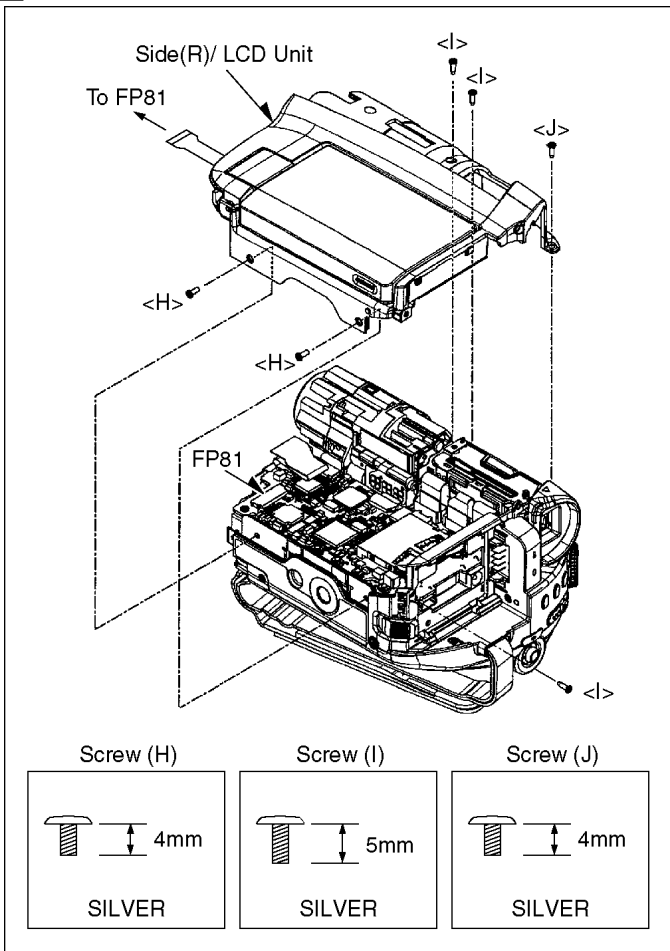


Fig. D9

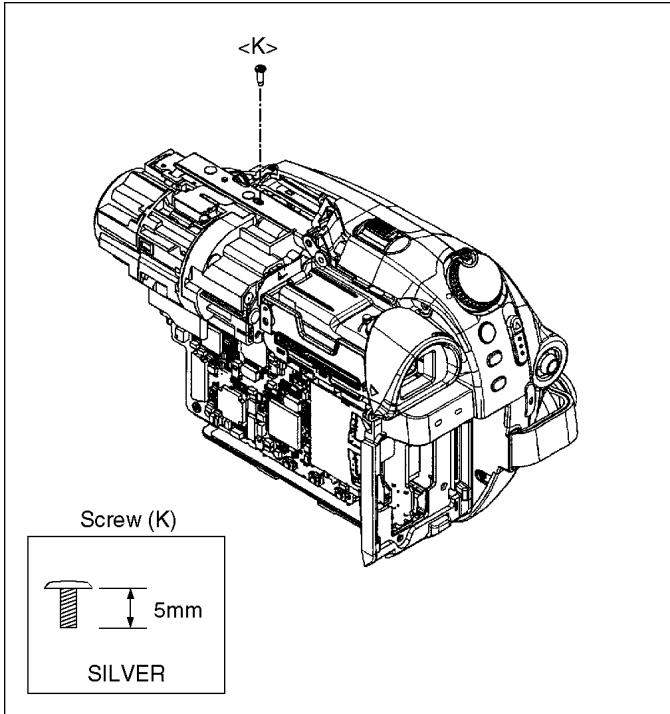


Fig. D10

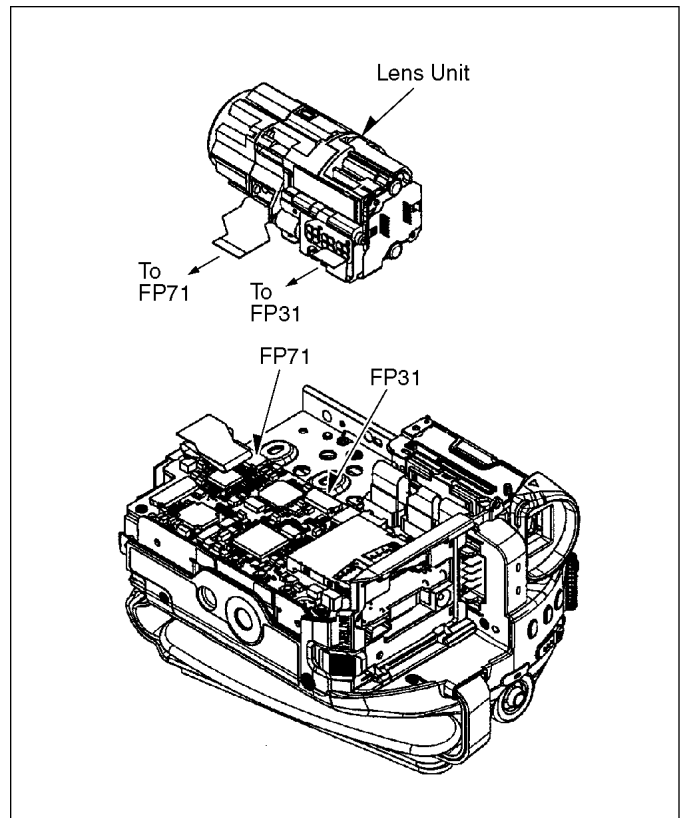


Fig. D11

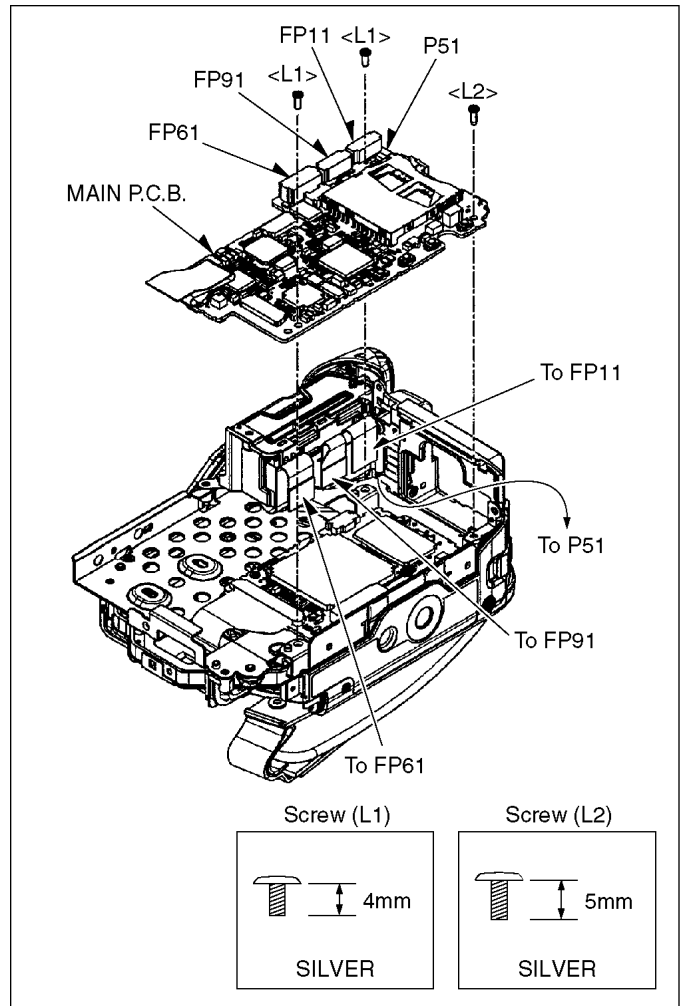


Fig. D12

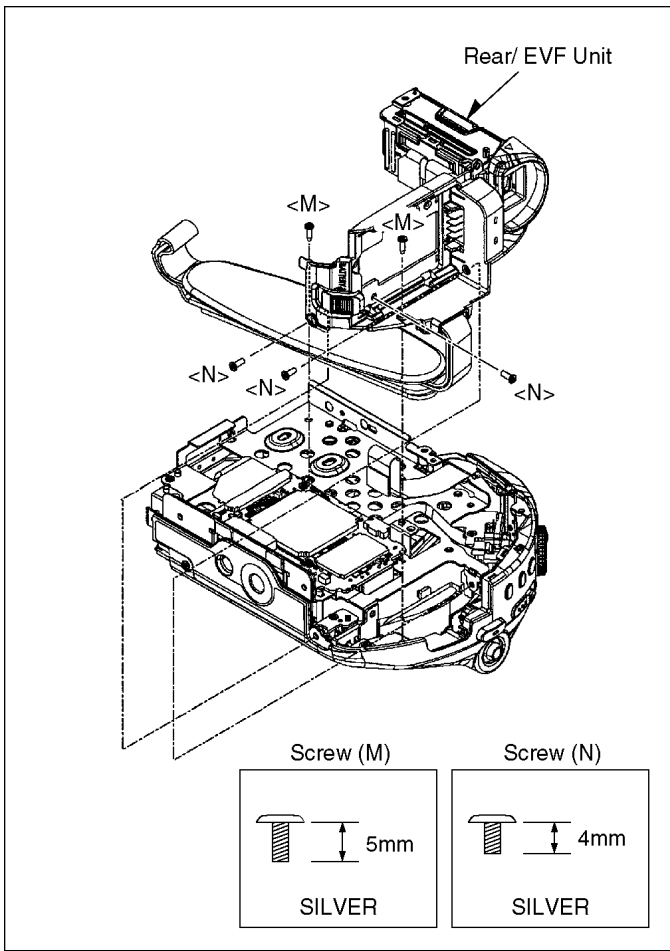


Fig. D13

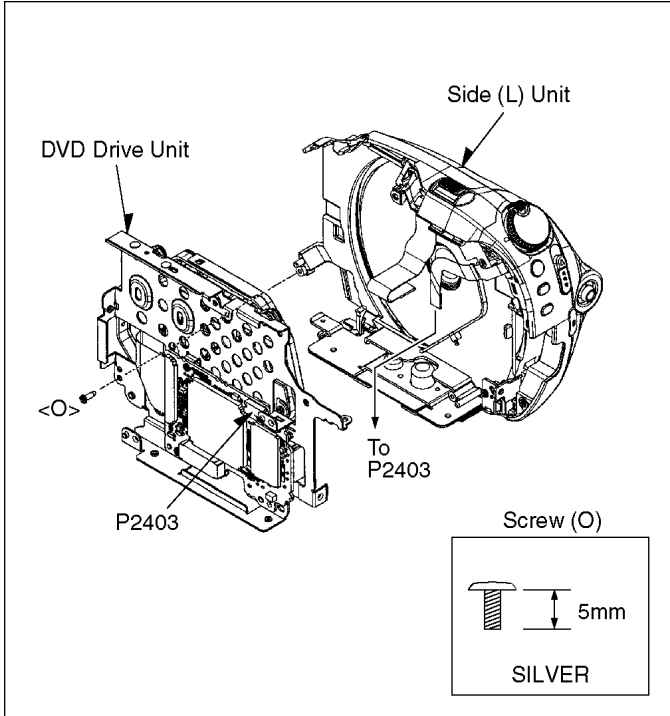


Fig. D14

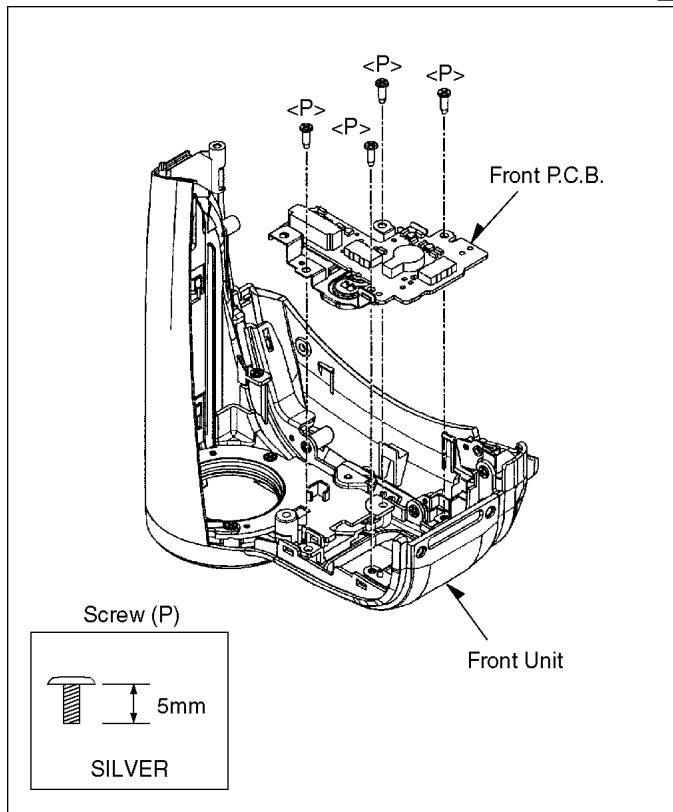


Fig. D15

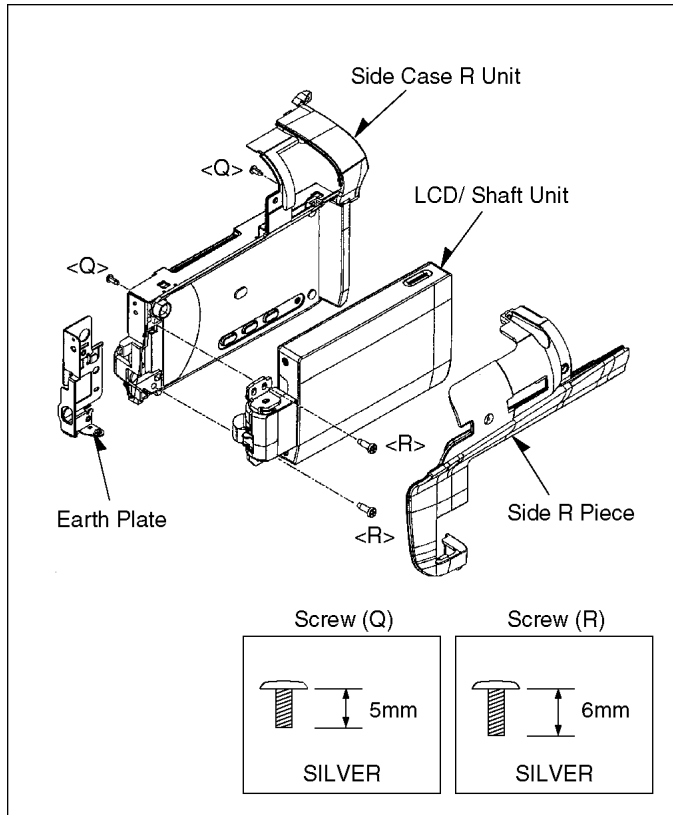


Fig. D16

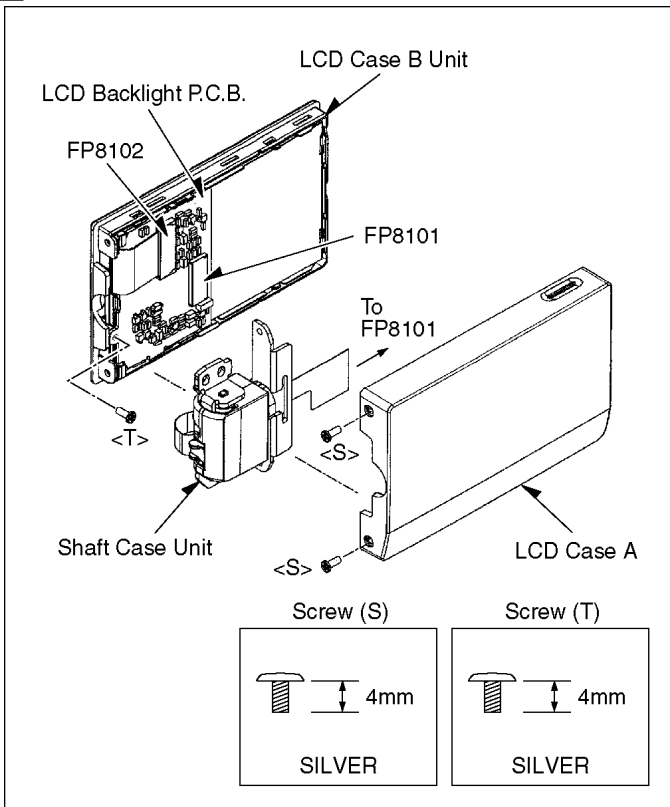


Fig. D17

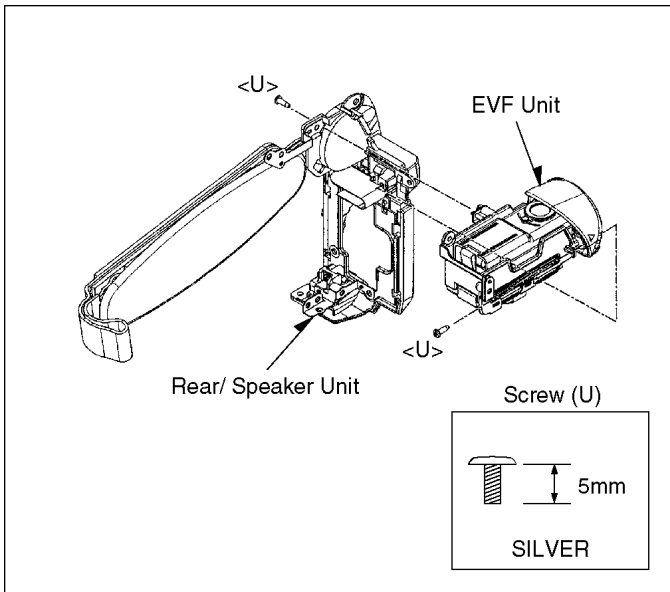


Fig. D18

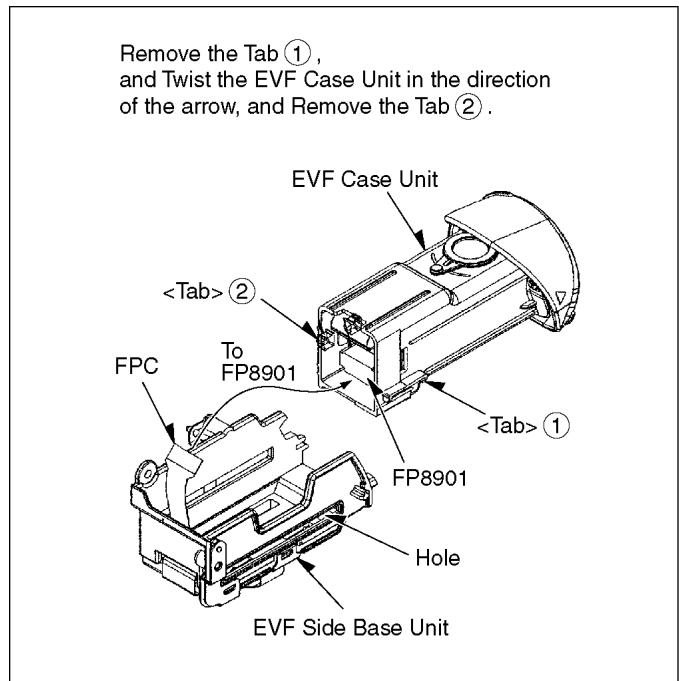


Fig. D19

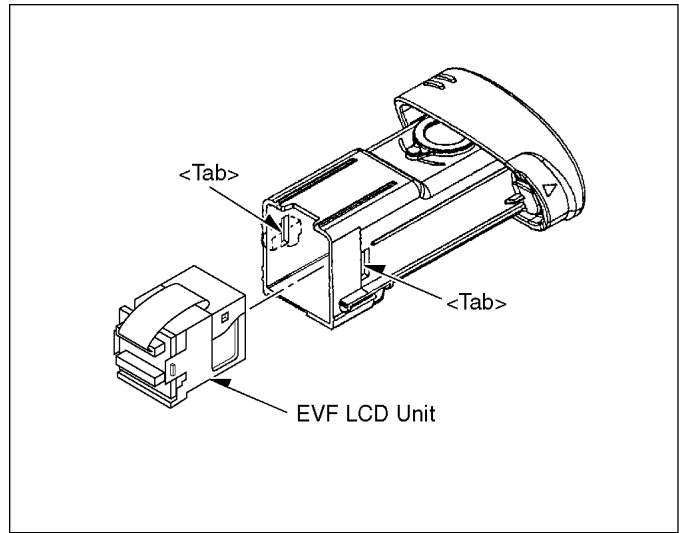


Fig. D20

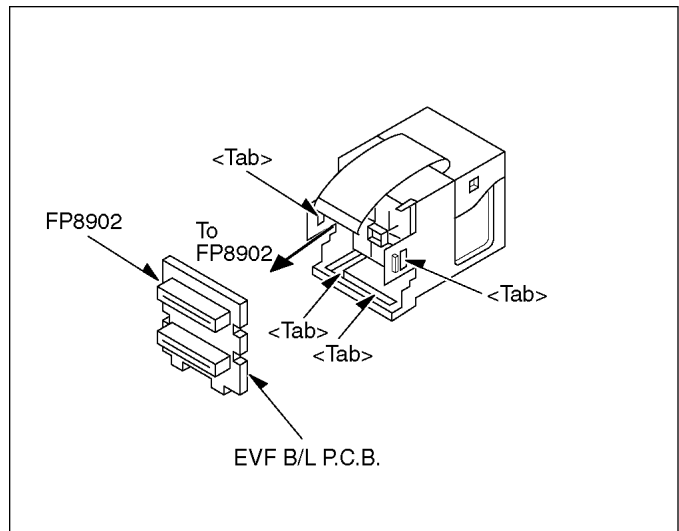


Fig. D21

8.4. Disassembly Procedures of Camera Lens Unit

The following flowchart describes order or steps for removing the Camera lens unit and certain printed circuit boards in order to make access to the item needing service.

To reassemble the unit follow the steps in reverse order.

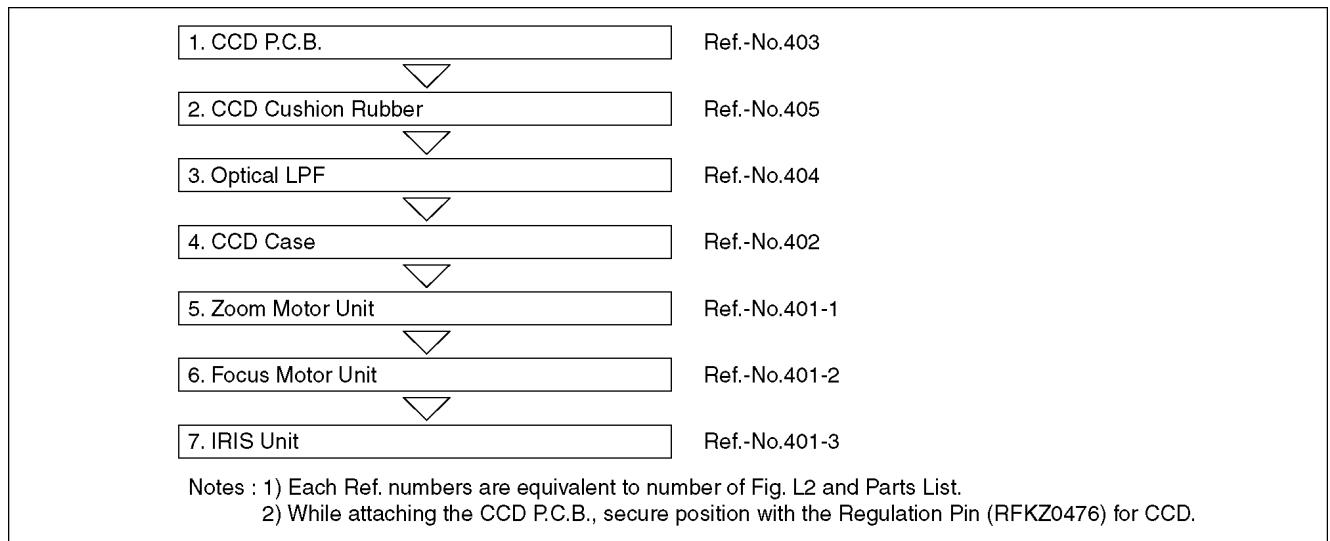


Fig. L1

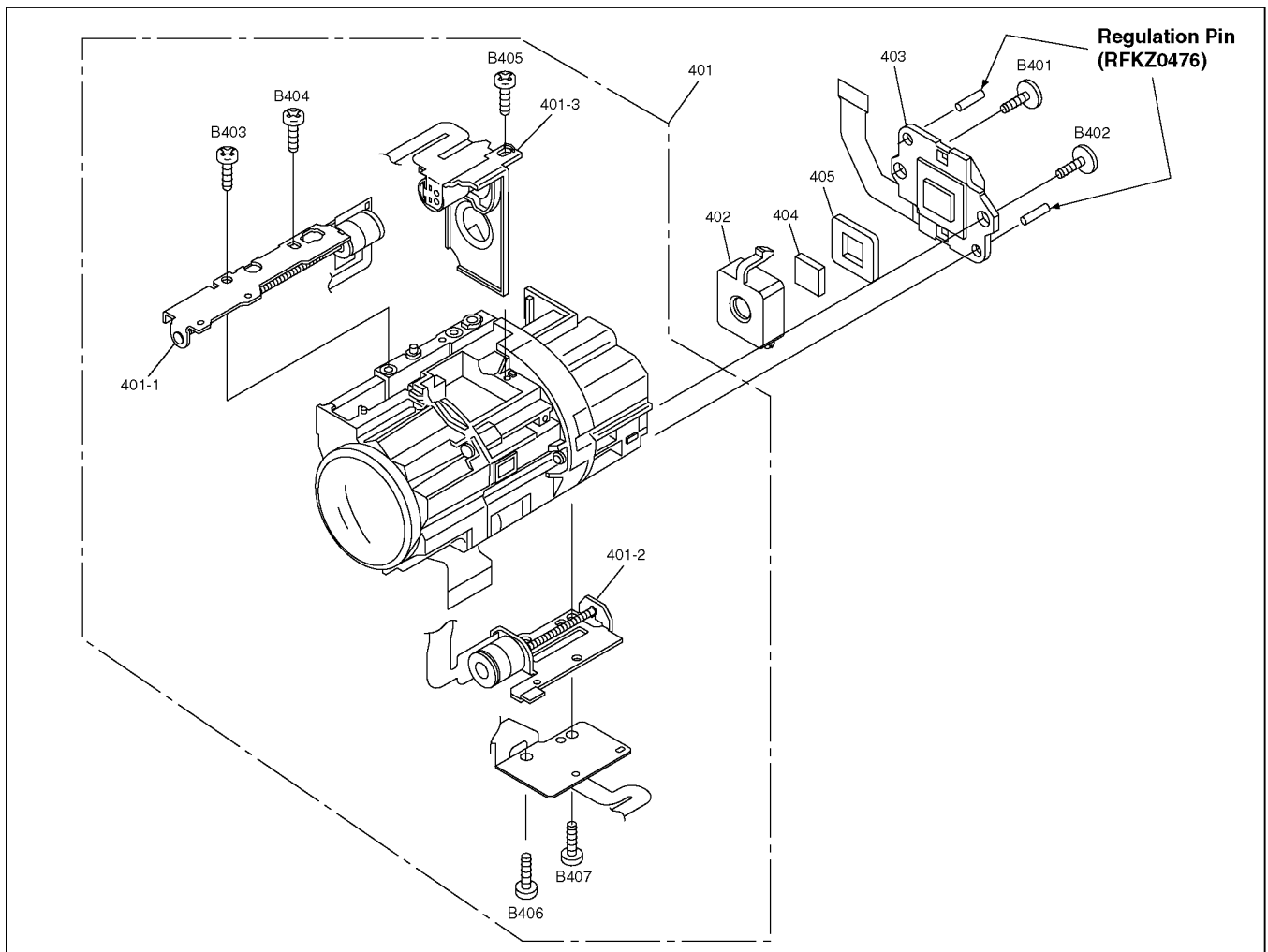


Fig. L2

9 Measurements and Adjustments

9.1. EEPROM Data for spare parts of the MAIN P.C.B.

After replacing the MAIN P.C.B., be sure to achieve adjustment.

As for Adjustment condition/procedure, consult the "Adjustment Manual" which is available in Adjustment software.

The Adjustment software is available at "TSN Website", therefore, access to "TSN Website" at "Support Information from NWBG/VDBG-PAVC".

9.2. Service Positions

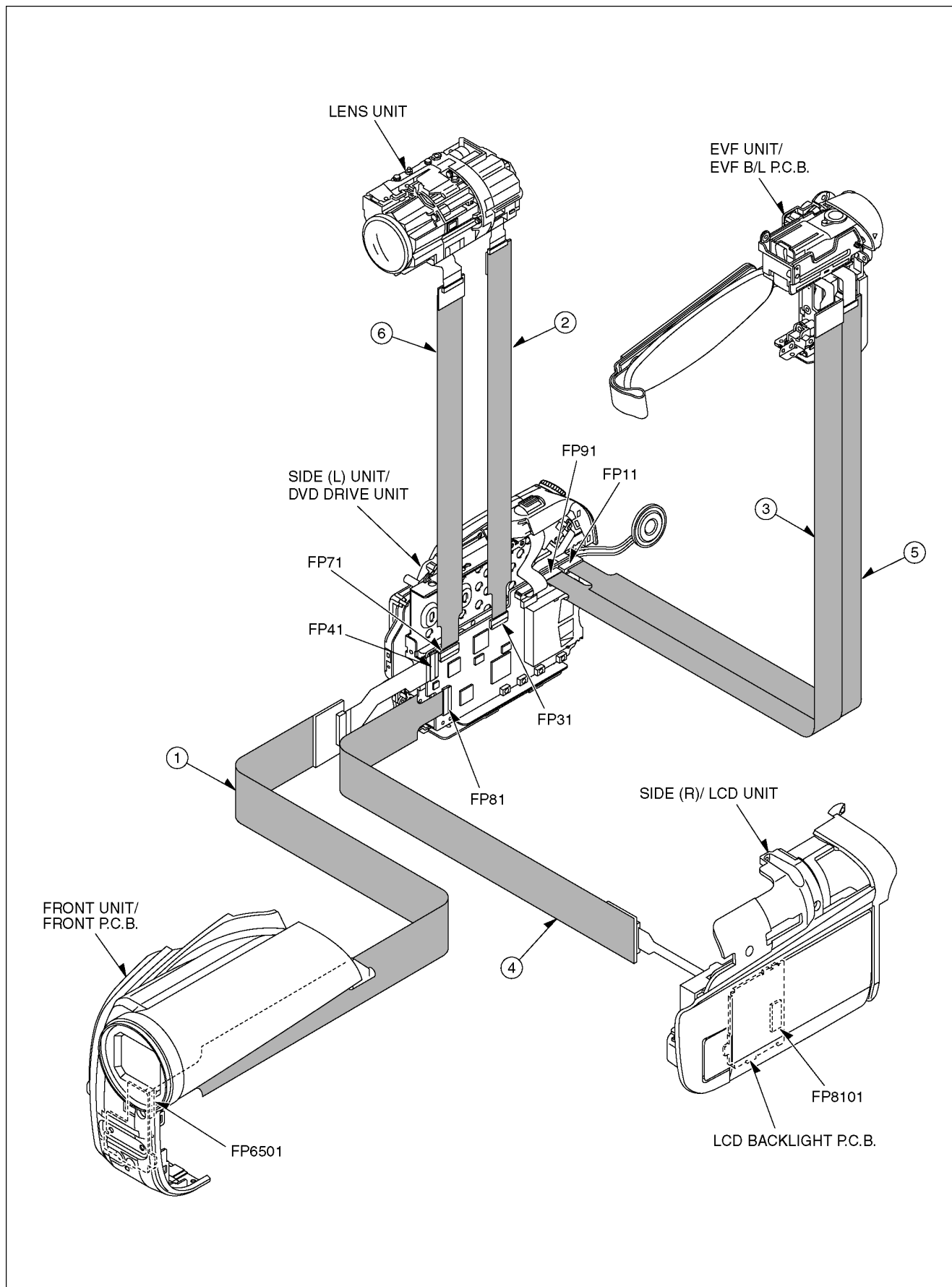
9.2.1. List of the extension cables

Use the following extension cables when checking or adjusting individual circuit boards except module Parts (Main P.C.B.).

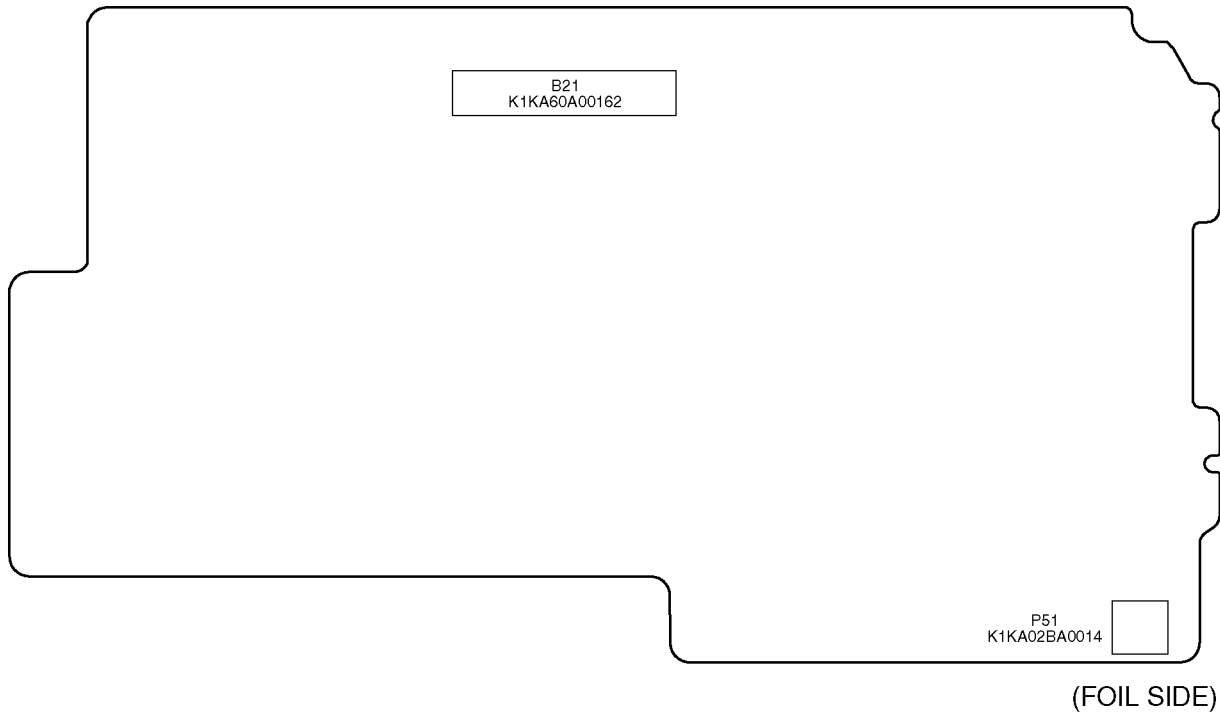
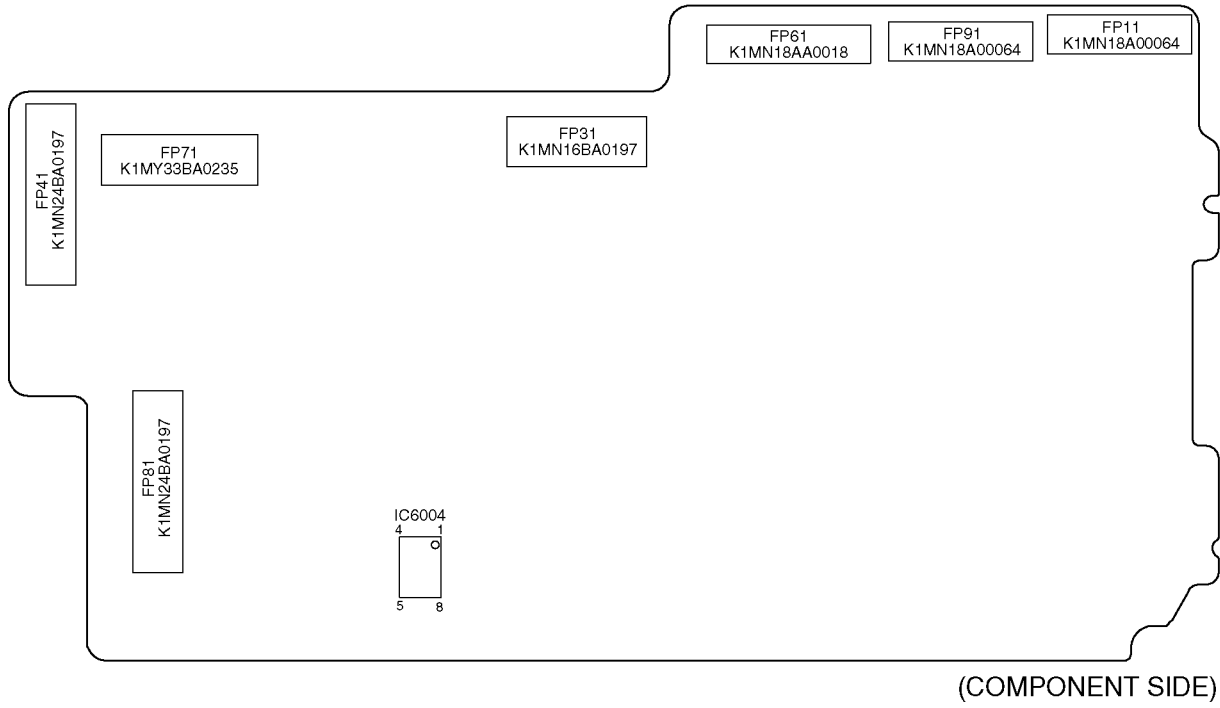
Ref.	Part No.	Pin	Part Name	Connection	Q'ty
1	VFK1284	24	Flat Cable	FP41 (Main) - FP6501 (Front)	1
2	VFK1175	16	Flat Cable	FP31 (Main) - Prism Unit	1
3	VFK1443	18	Flat Cable	FP91 (Main) - FP8901 (EVF Backlight)	1
4	VFK1284	24	Flat Cable	FP81 (Main) - FP8101 (LCD Backlight)	1
5	VFK1443	18	Flat Cable	FP11 (Main) - Rear Case Unit	1
6	VFK1950	33	Flat Cable	FP71 (Main) - Lens Unit	1

9.2.2. Checking and repairing individual circuit boards except module parts (Main P.C.B.)

How to use extension cables.



9.3. Location for Connectors of the Main P.C.B.



9.4. Electrical Adjustment Procedures

9.4.1. Initial guideline

The table below shows which adjustments are necessary according to the unit parts and individual parts to be replaced. Make sure to perform these adjustments shown below as necessary.

Adjustment Item		Replacement Parts							
		MAIN P.C.B.	IC302 (CAMERA SIGNAL PROCESS)	IC701 (FOCUS/ZOOM MOTOR DRIVE & OIS/IRIS/HALL AMP CONTROL)	IC3001 (CAMERA DIGITAL SIGNAL PROCESS/SHUFFLING)	IC3301 (VIDEO/AUDIO SIGNAL PROCESS)	IC6001 (SYSTEM MICROCONTROLLER)	IC6004 (EEPROM)	CCD P.C.B.
Camera	CAM hall amplifier and Iris PWM	○							
	CAM Zoom Tracking and De-focus	○							○
	CAM WB rough	○	○						
	CAM AWB 3100	○	○		○			○	
	CAM AWB 5100	○	○		○			○	
	CAM Revision CCD scratch	○						○	
Video	Luminance level	○			○	○			

Note: ○ : Adjustment Item

9.4.2. Set-up manual for DVD Video Camera.

1. Installation of USB Driver

The USB Driver is available at "Software download" on the "Support Information from NWBG/VDBG-PAVC" web-site in "TSN System".

2. Set-Up

- Remove the card and disc from this unit.
- An exclusive jig and PC (including software for adjustment "Tatsujin") are necessary for electric adjustment.
- Connect main unit to PC with USB.

The adjustment instruction is available at "Software download" on the "Support Information from NWBG/VDBG-PAVC" web-site in "TSN System".

- Connect the PC and DVD Video Camera as shown in Fig. E1 and E2.

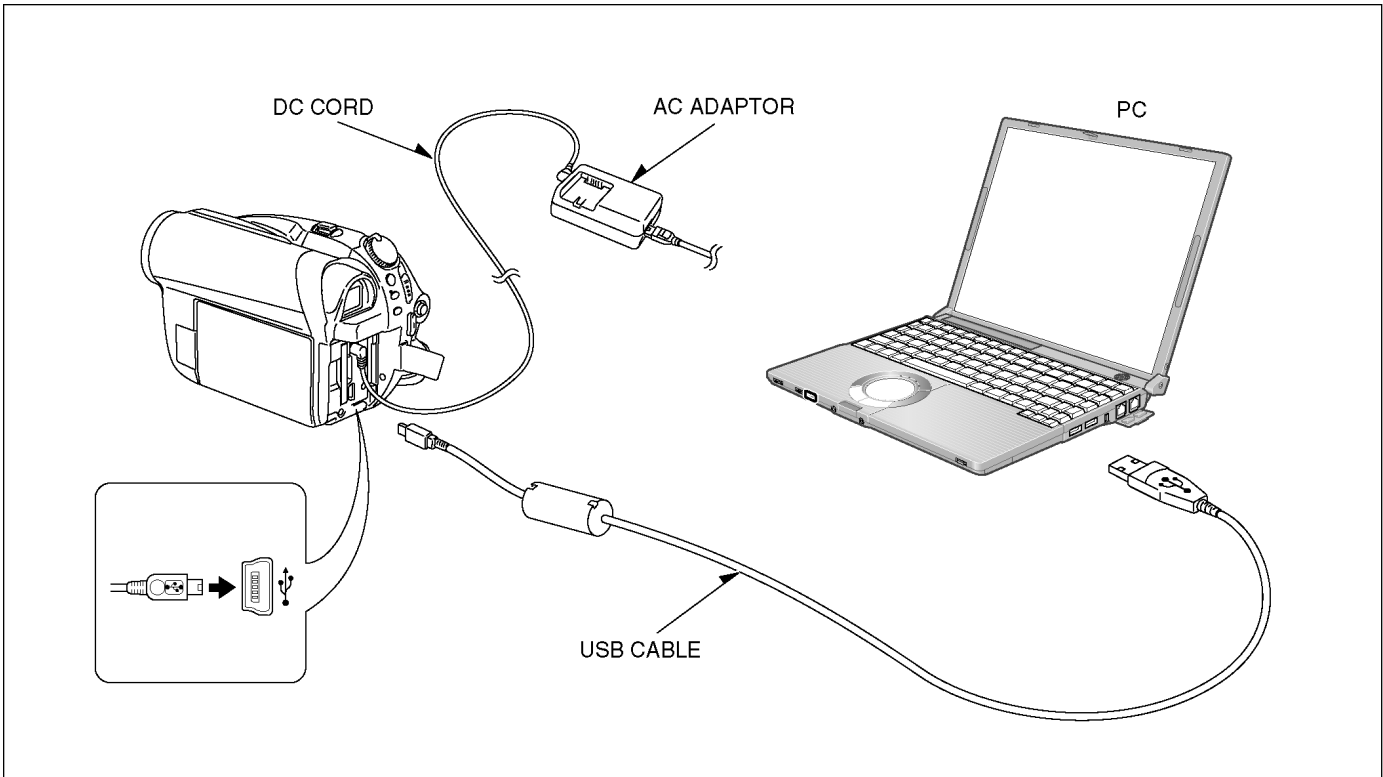


Fig. E1

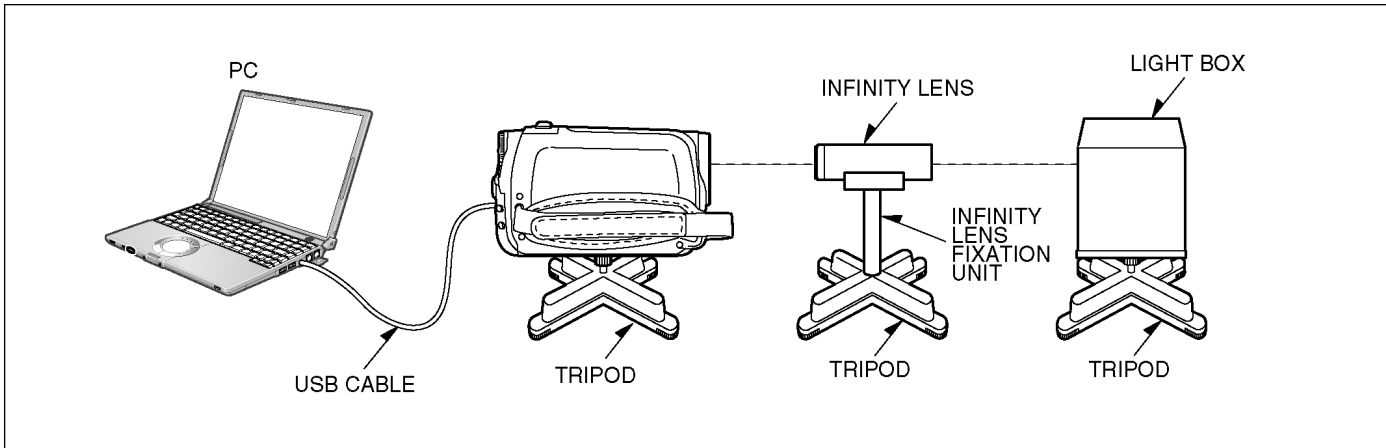


Fig. E2 Rough image of set-up connection

Part Number of jig

· Only a necessary jig mentions it setup electric adjustment

Ref	Parts Name	Parts No.	Q'ty	Remarks
1	Personal Computer	---	1	With Tatsuin Software
2	AC Adaptor	---	1	The AC Adaptor for Video Camera
3	DC Cable	---	1	
4	USB Cable	---	1	
5	Infinity Lens Fixation Unit	---	1	
6	TATSUJIN PC-Adjustment Program	---	1	

9.4.3. Set up of PC-EVR Adjustment Program

1. Turn on the PC and install the TATSUJIN Adjustment Program into the PC.
2. TATSUJIN PC-Adjustment Program start in the following procedure.

PC Menu : [Start] → [Program] → [win Tatsujin] → [DV Movie] → [VDR-D50 Series]

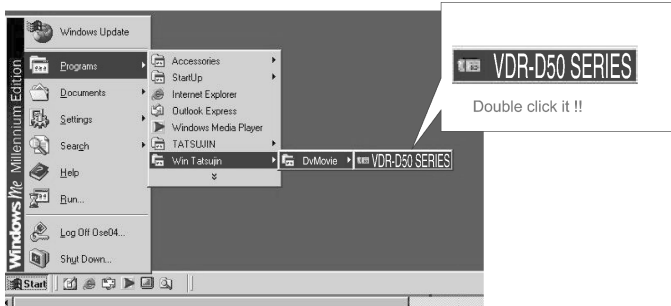


Fig. E3-1

3. Select the appropriate model.
4. Turn on the camcorder and set to PC connection (COM) mode. Then click "Start".

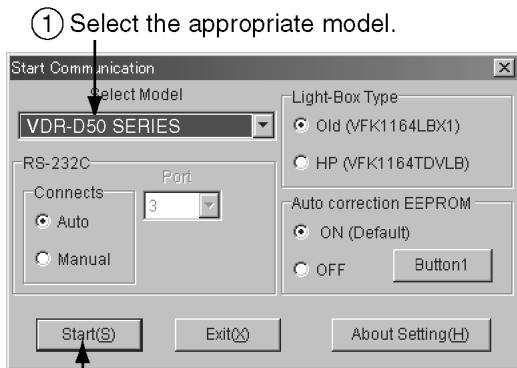


Fig. E3-2

5. When the communication is complete, the dialog will appear.
Click "Yes" and "Save" to save the EEPROM data.

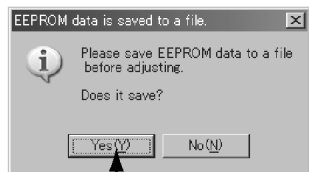


Fig. E3-3

6. When EEPROM data has been saved, the menu will appear.

To perform each adjustment, display the adjustment menu by selecting from "Camera Adjust" or "Video Adjust" and select each adjustment item.

- 4 Select the desired menu.

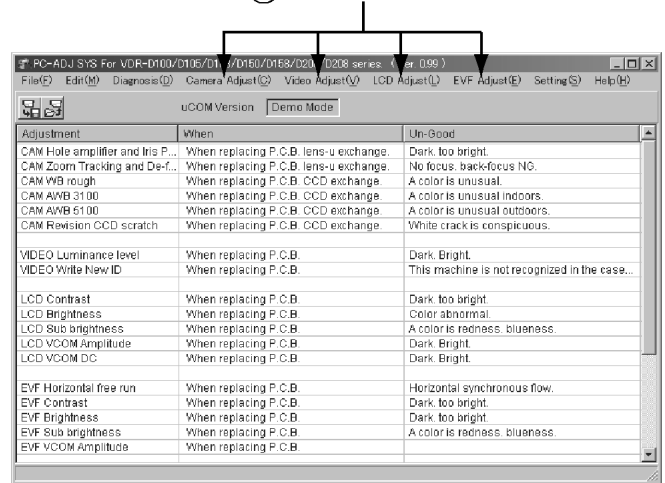


Fig. E3-4

Note:

The adjusted data is stored in the EEPROM IC after each adjustment.

7. After adjustment, to close the software, select "Exit" in the File menu or close the window.

- 5 Select "Exit" or close the window.

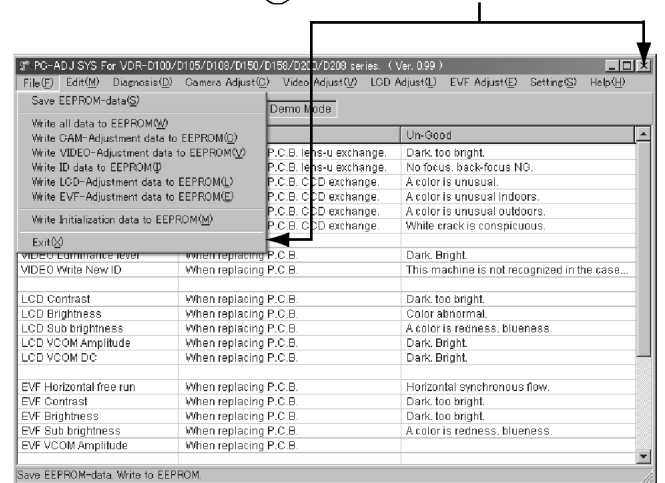


Fig. E3-5

8. To release the PC connection (COM) mode, push the [DELETE], [RECORDING START/STOP] an [JOYSTICK CONTROL UP] simultaneously for 3 seconds with the USB Cable disconnected.

10 Maintenance

10.1. Cleaning Lens, Viewfinder and LCD Panel

Do not touch the surface of the lens, Viewfinder and LCD Panel with your hand.

When cleaning the lens, use air-Blower to blow off the dust.

When cleaning the LCD Panel, dampen the lens cleaning paper with lens cleaner, and the gently wipe the their surface.

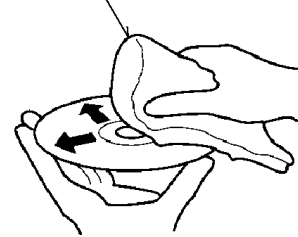
Note:

A lens cleaning paper and lens cleaner are available at local camera shops and market place.

10.2. Cleaning Disc

1. Use the provided disc cleaning cloth, or soft and dry cloth to lightly clean the disc from the inner to outer edges in axial direction.
2. If the dirt cannot be removed with the above procedure, put a few droplets of absolute alcohol in a soft and dry cloth, and use it to lightly clean the disc from the inner to outer edges in axial direction.

Disc cleaning cloth provided
or soft and dry cloth



CLEANING DISC

10.3. Cleaning optical pickup

Note:

Do not clean the optical pickup needlessly. The optical pickup is a precision component. Repeated cleaning could cause a fault.

1. Attach the AC adapter/charger or battery (power supply), and then slide the DISC EJECT switch to open the disc insertion block.
2. Remove the AC adapter/charger or battery (power supply).

Caution:

Laser light striking the eye may cause your eyesight to be lost : For safety, be sure to remove any power supply (AC adaptor/charger, battery, etc.) from the DVD video camera/recorder before starting work.

<CSA requirement>

CAUTION: VISIBLE LASER RADIATION DO NOT STARE INTO THE BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS CLASS 1M

3. Check to see whether the optical pickup is dirty. If it is not dirty, use the following procedure to clean it:
 - a. Apply one drop of absolute alcohol on a clean cotton swab (*1).
Lens cleaner liquid for CD/DVD (generally available) may be substituted for absolute alcohol.
 - b. Lightly swab the optical pickup to clean it.
Using too much force during cleaning may cause a fault to occur.
- *1: Always use a fresh cotton swab free from any additive or chemical.

OPTICAL PICKUP

COTTON SWAB

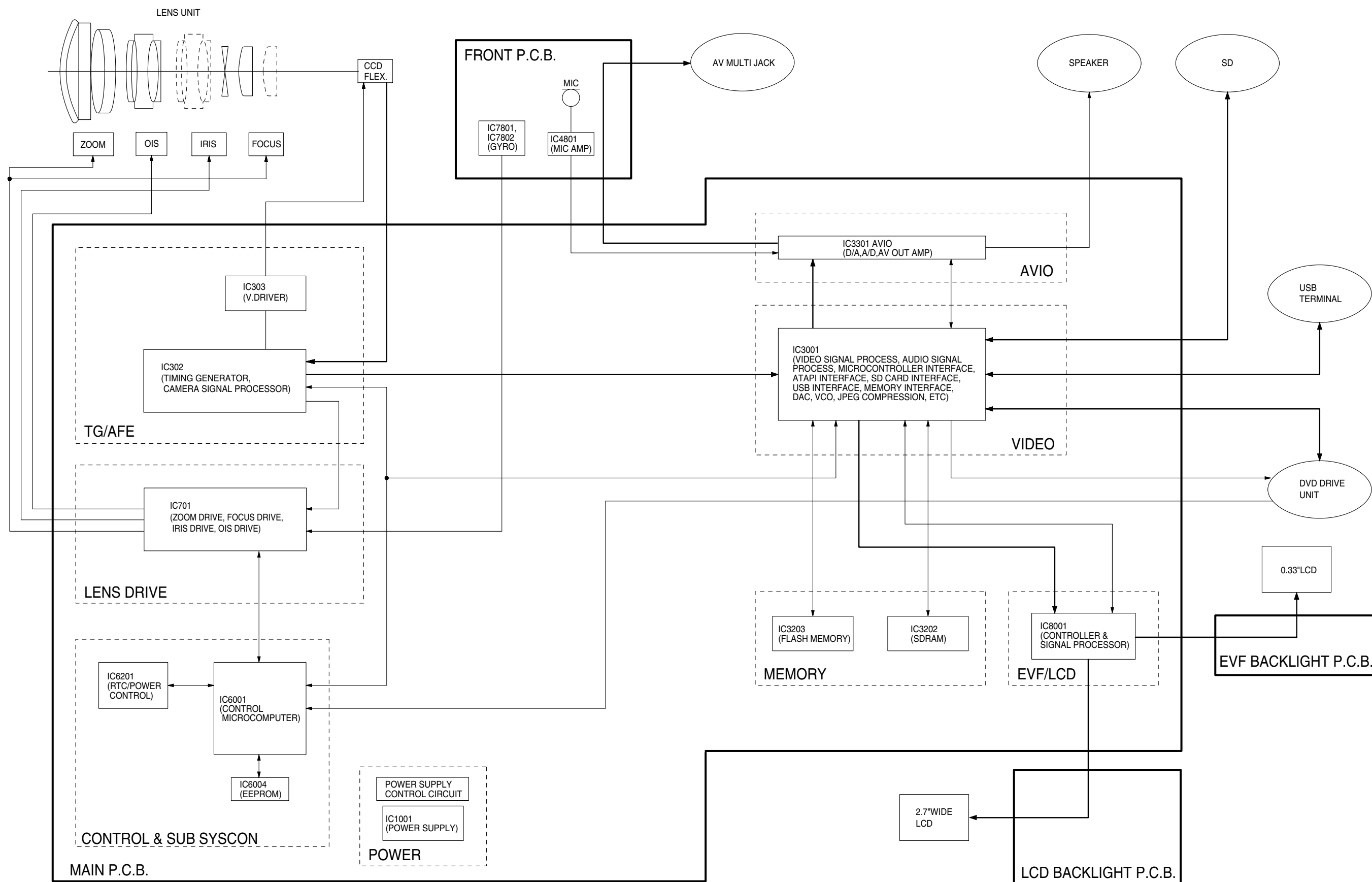
TURNTABLE



CLEANING OPTICAL PICKUP

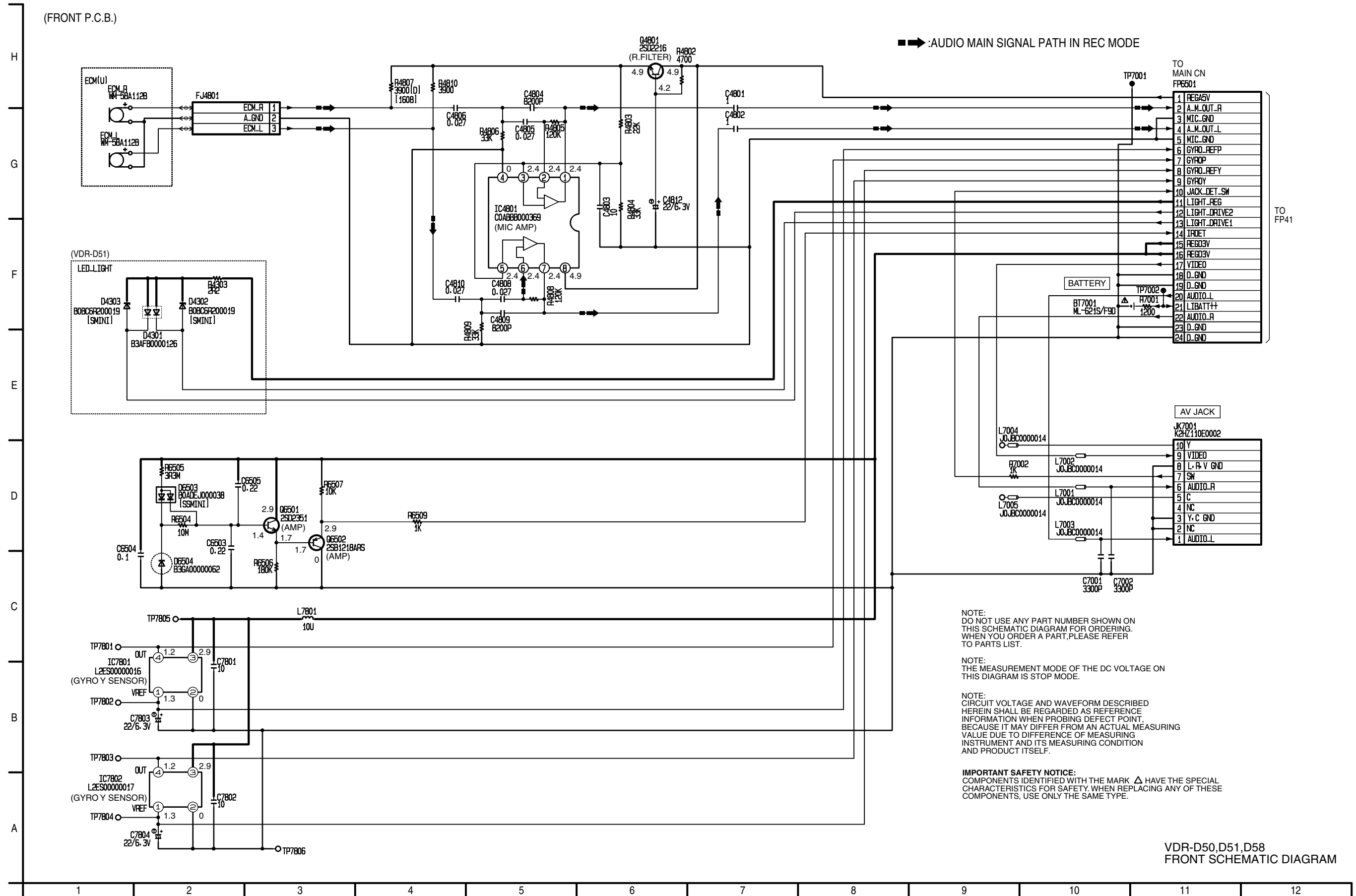
11 Schematic Diagrams

11.1. OVERALL SCHEMATIC DIAGRAM

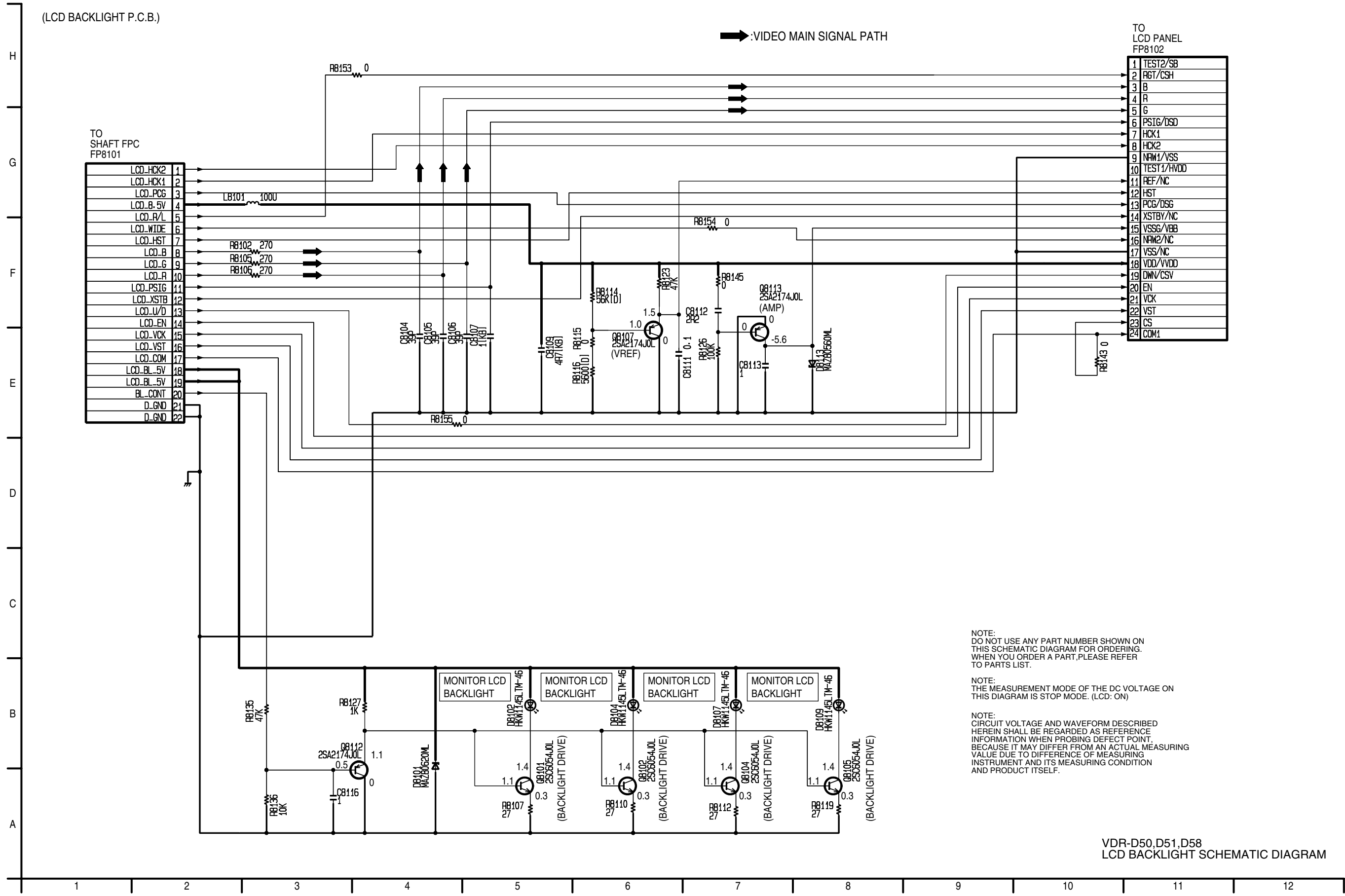


VDR-D50, D51, D58
OVERALL SCHEMATIC DIAGRAM

11.3. FRONT SCHEMATIC DIAGRAM



11.4. LCD BACKLIGHT SCHEMATIC DIAGRAM



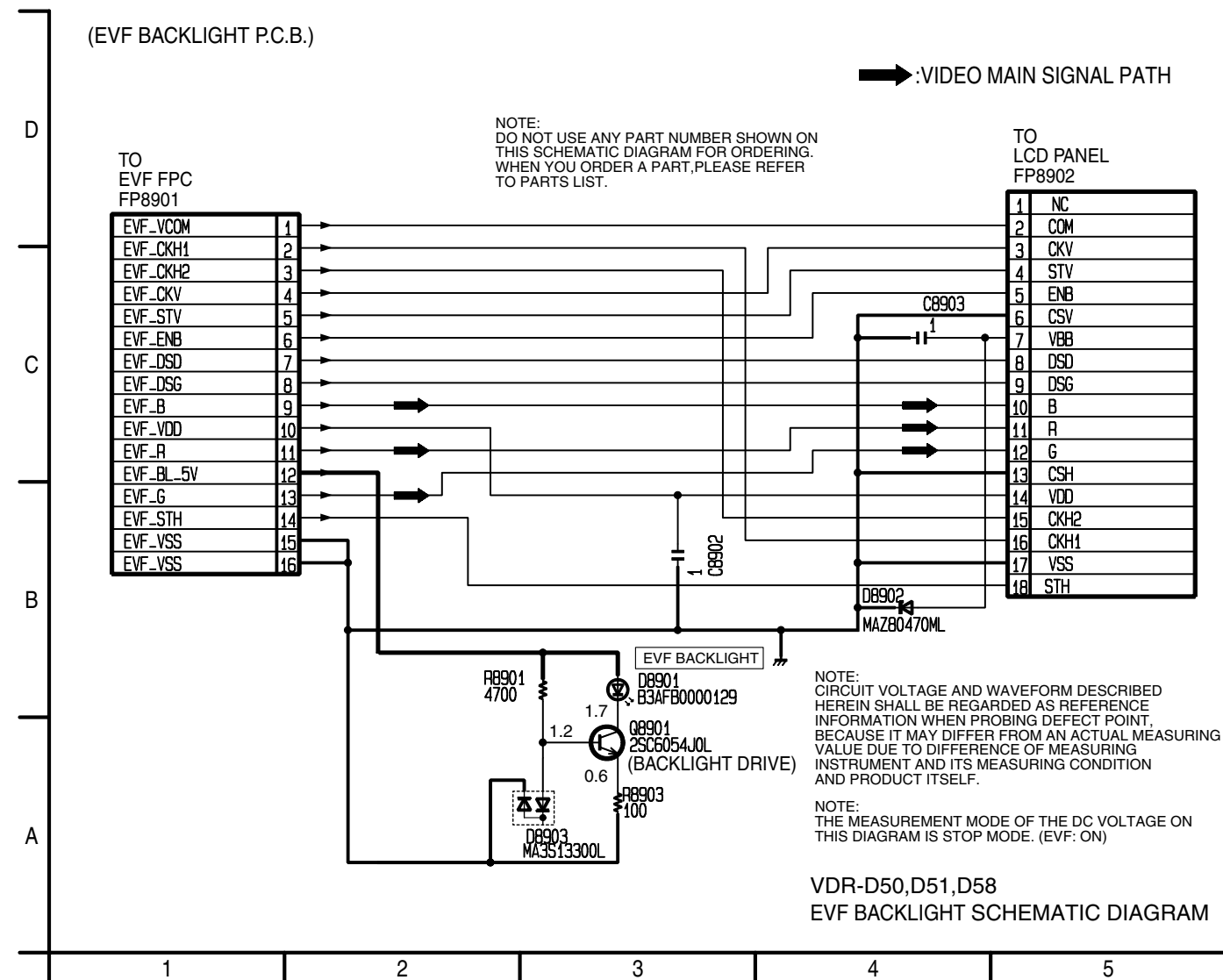
NOTE:
DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE:
THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE. (LCD: ON)

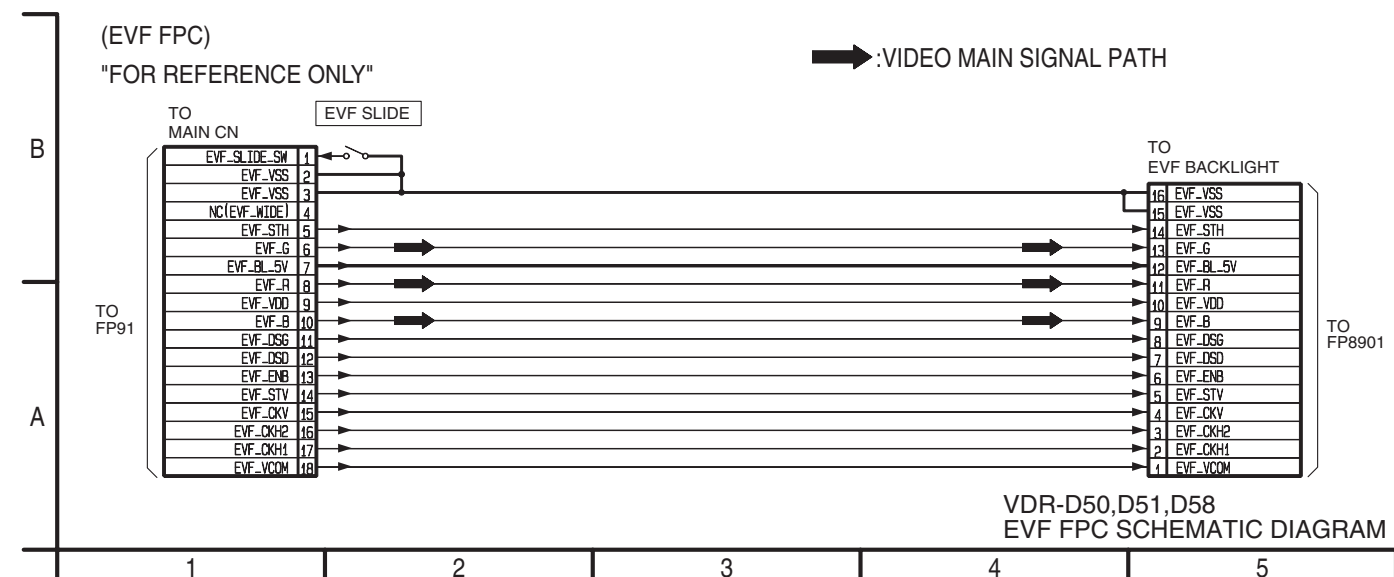
NOTE:
CIRCUIT VOLTAGE AND WAVEFORM DESCRIBED HEREIN SHALL BE REGARDED AS REFERENCE INFORMATION WHEN PROBING DEFECT POINT. BECAUSE IT MAY DIFFER FROM AN ACTUAL MEASURING VALUE DUE TO DIFFERENCE OF MEASURING INSTRUMENT AND ITS MEASURING CONDITION AND PRODUCT ITSELF.

VDR-D50,D51,D58
LCD BACKLIGHT SCHEMATIC DIAGRAM

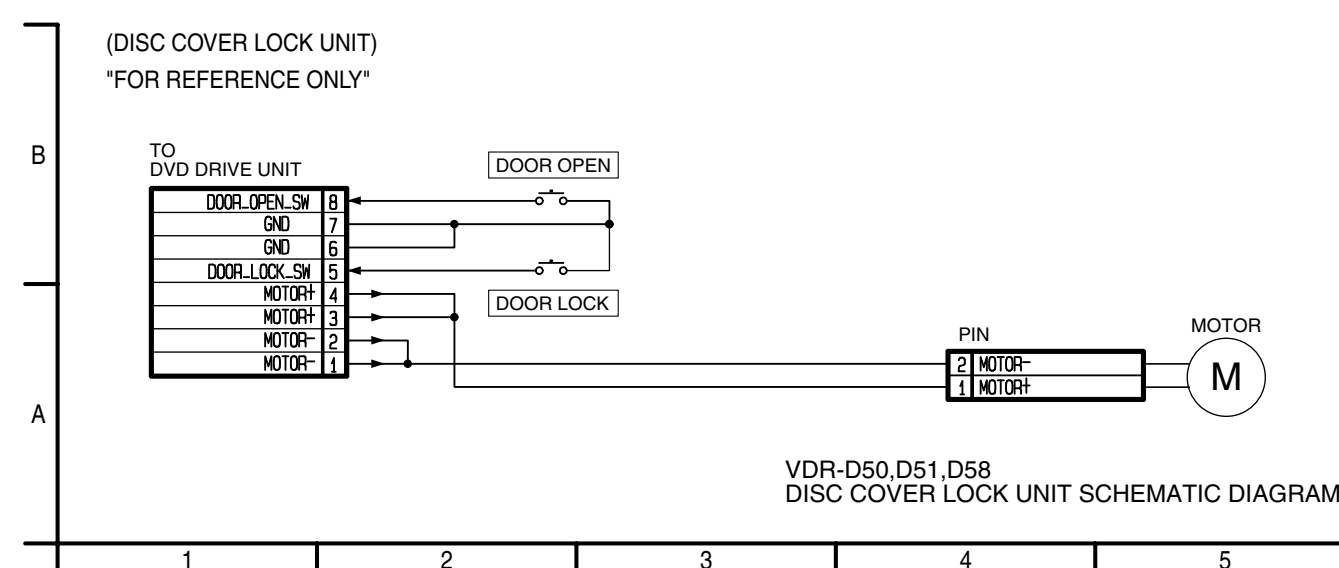
11.5. EVF BACKLIGHT SCHEMATIC DIAGRAM



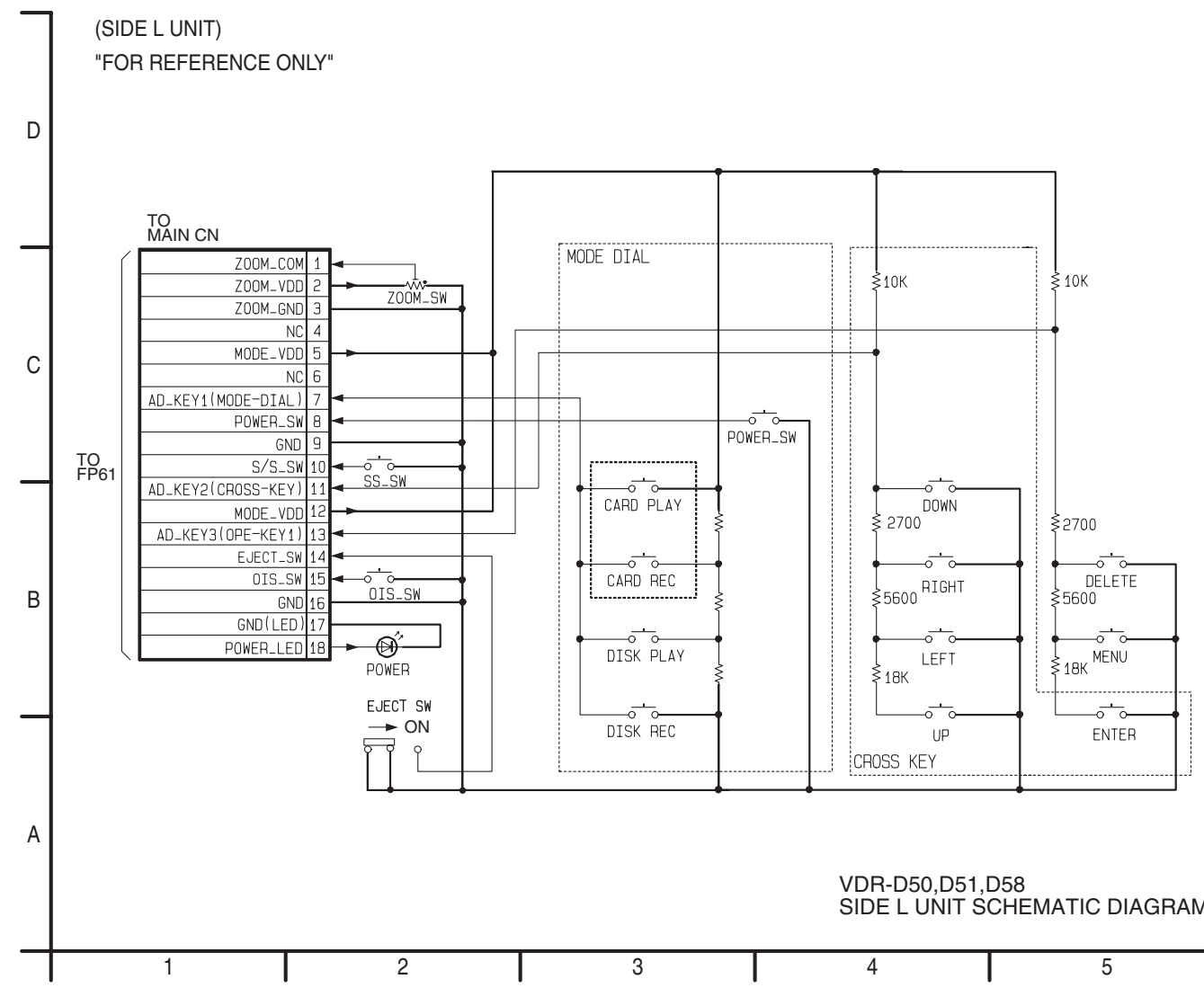
11.6. EVF FPC SCHEMATIC DIAGRAM



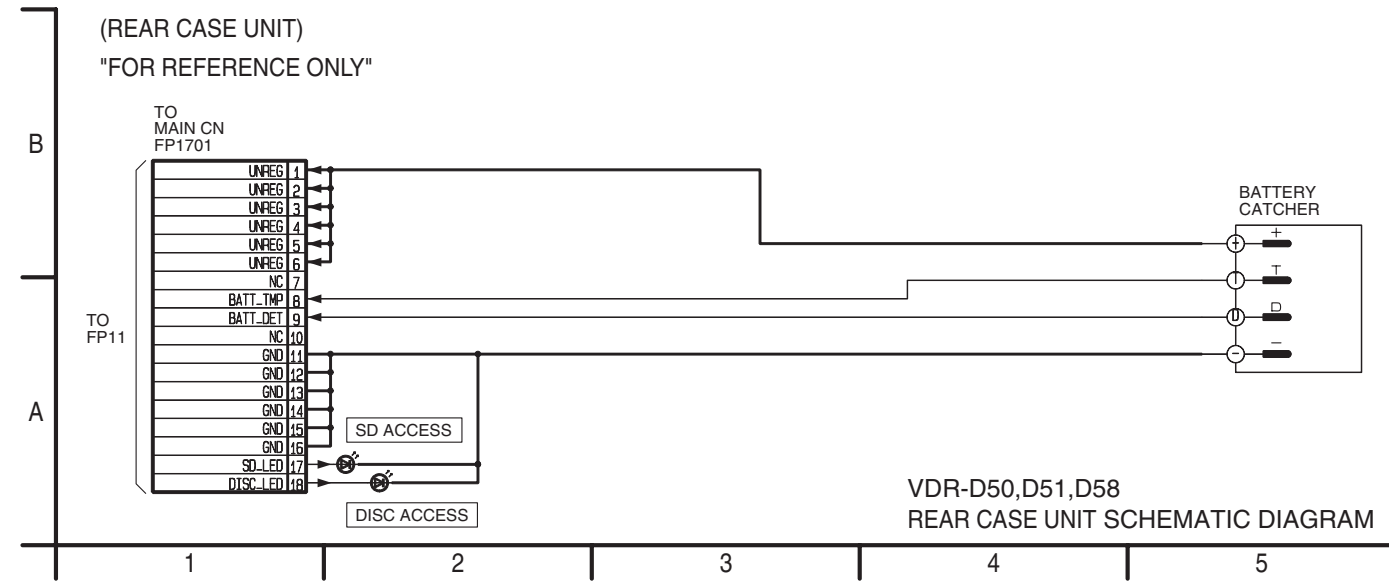
11.7. DISC COVER LOCK UNIT SCHEMATIC DIAGRAM



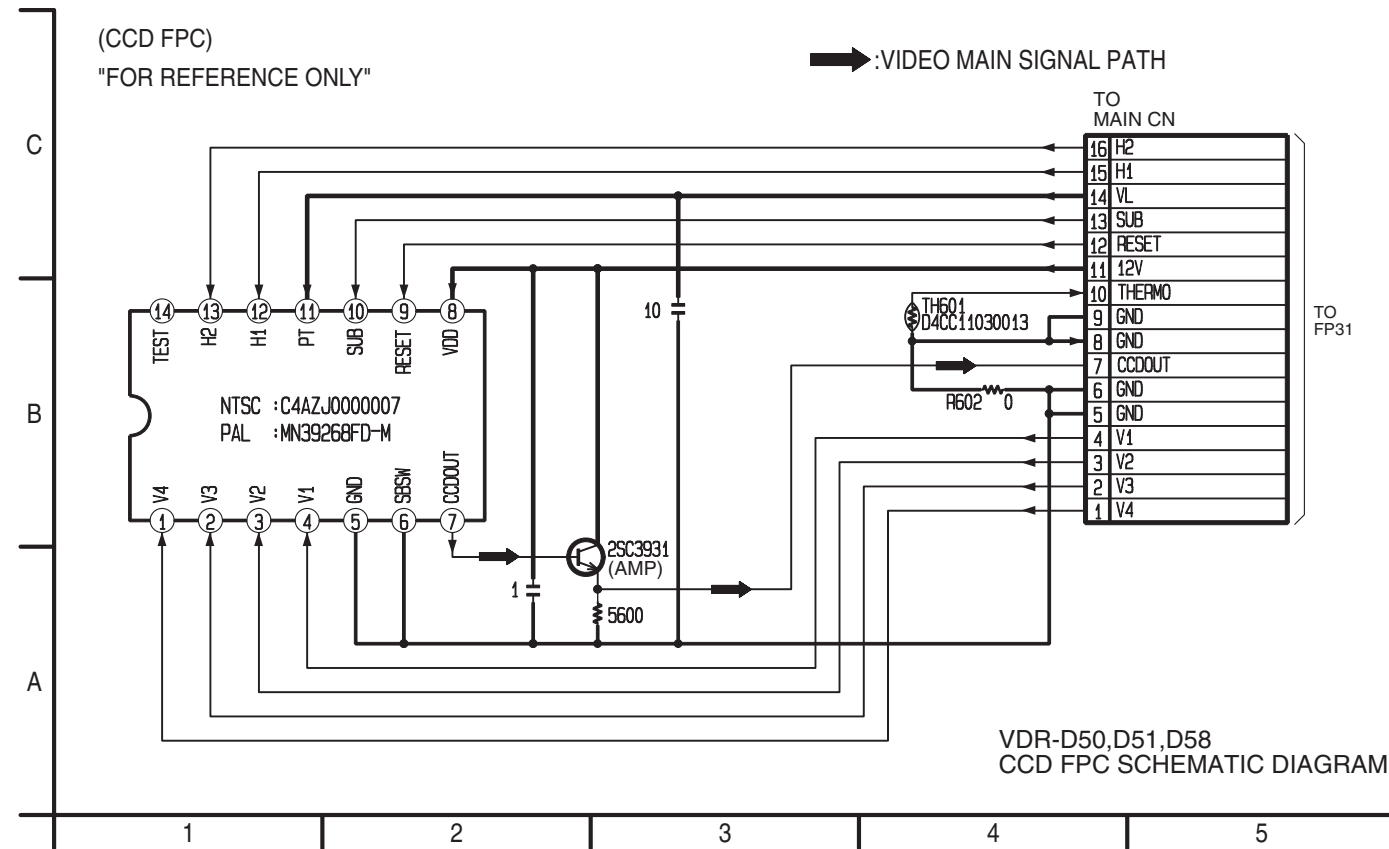
11.8. SIDE L UNIT SCHEMATIC DIAGRAM



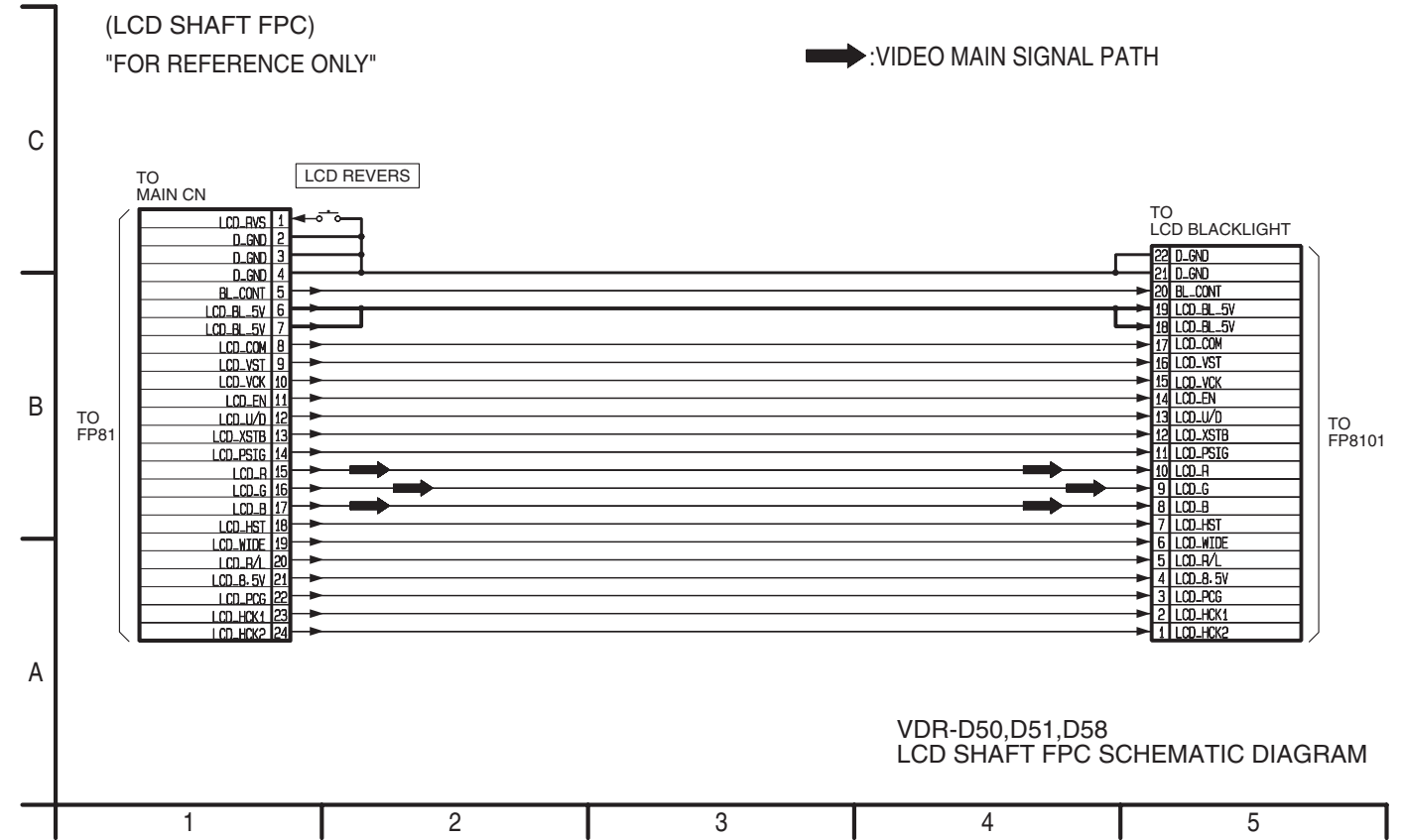
11.9. REAR CASE UNIT SCHEMATIC DIAGRAM



11.10. CCD SCHEMATIC DIAGRAM

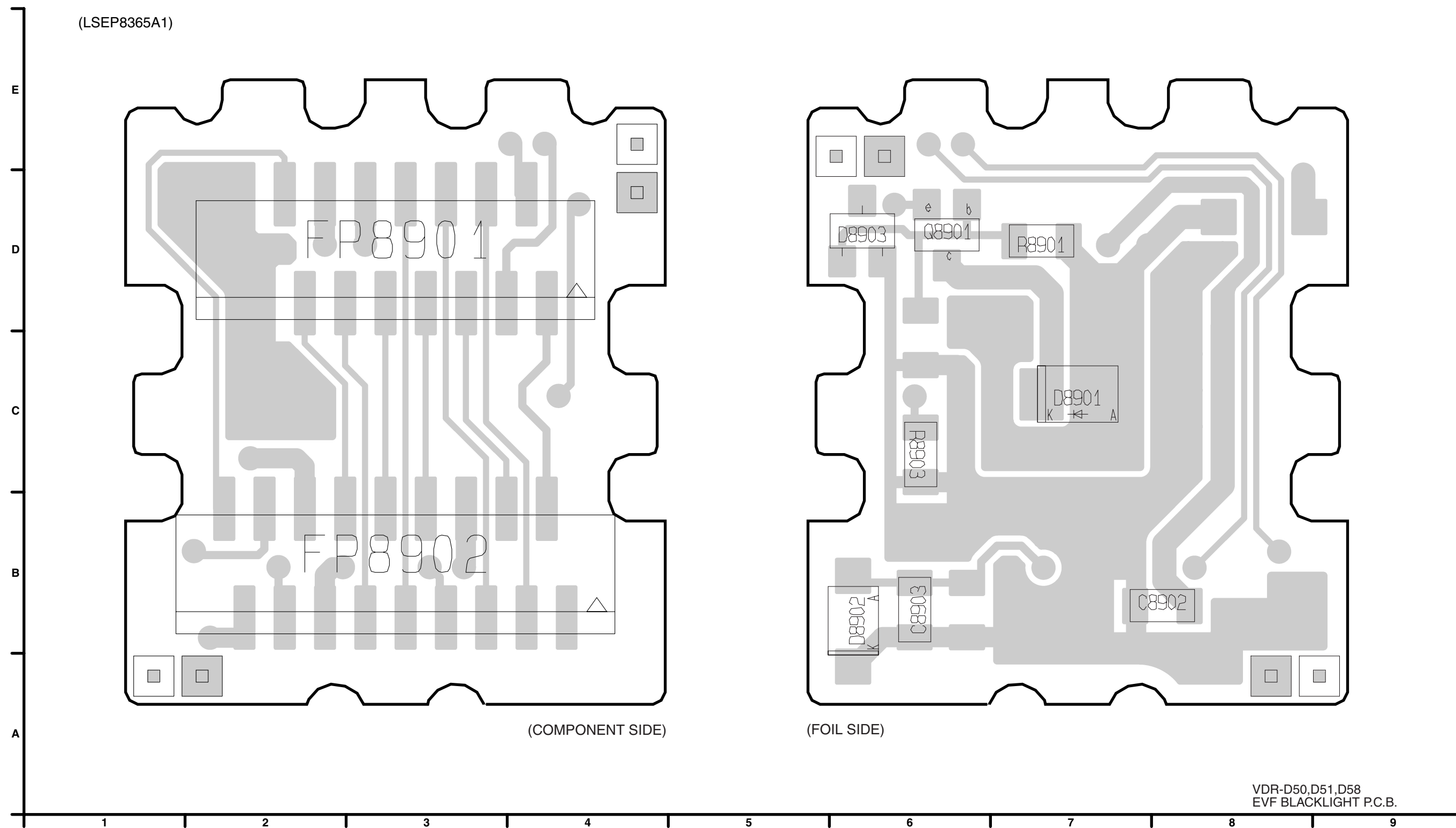


11.11. LCD SHAFT FPC SCHEMATIC DIAGRAM



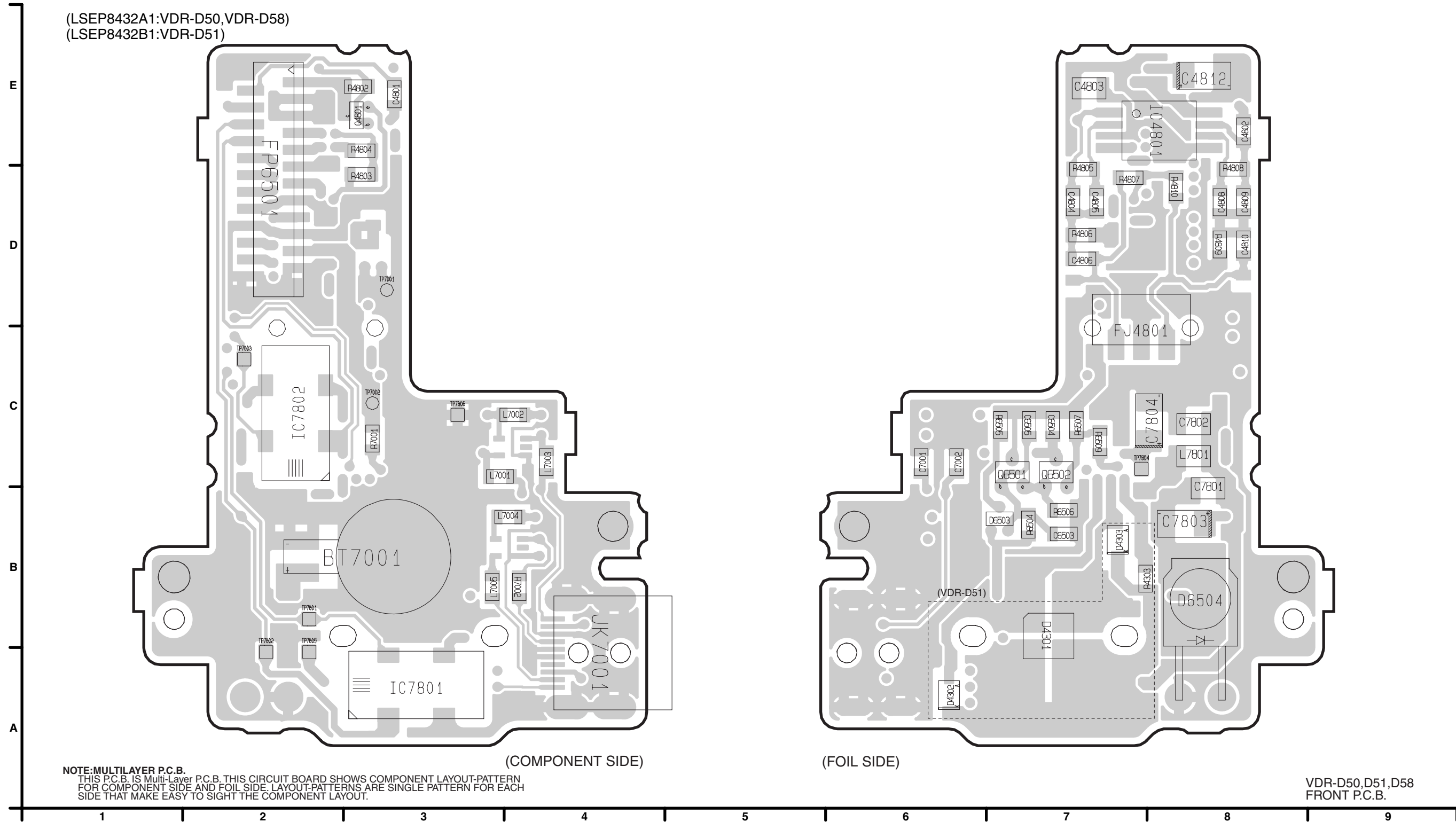
12 Printed Circuit Board

12.1. EVF BACKLIGHT P.C.B.

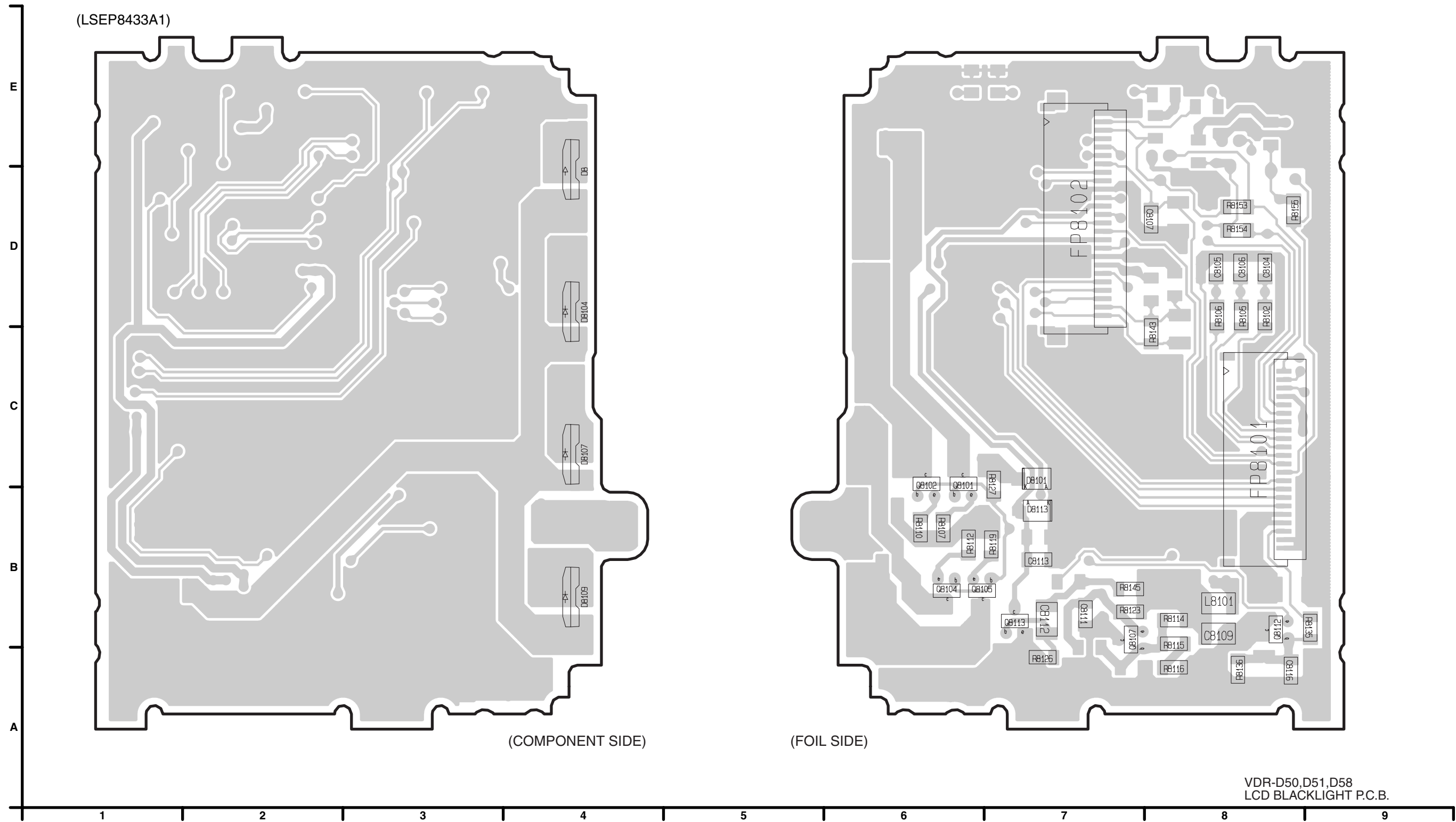


12.2. FRONT P.C.B.

(LSEP8432A1:VDR-D50,VDR-D58)
(LSEP8432B1:VDR-D51)



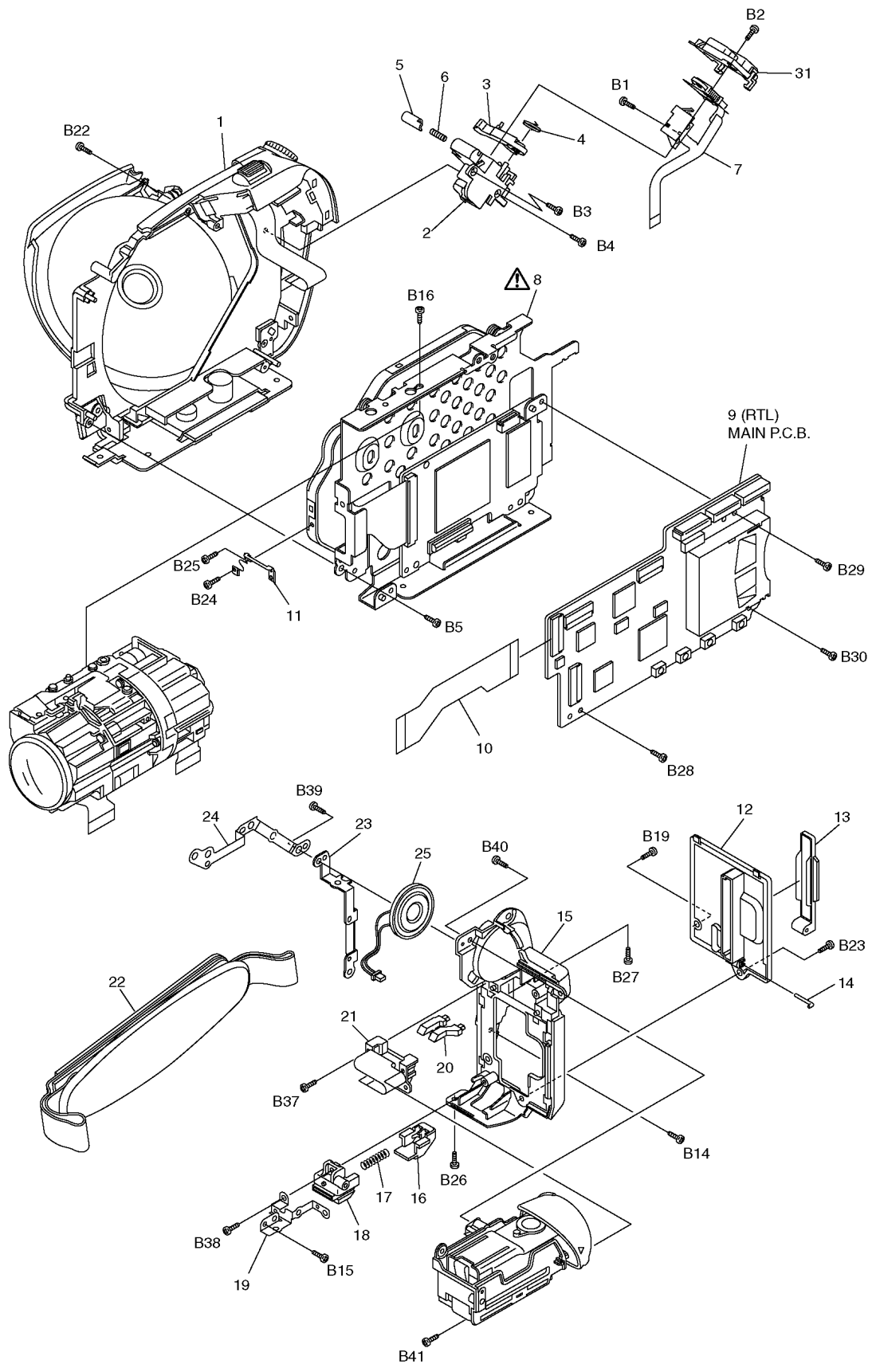
12.3. LCD BACKLIGHT P.C.B.

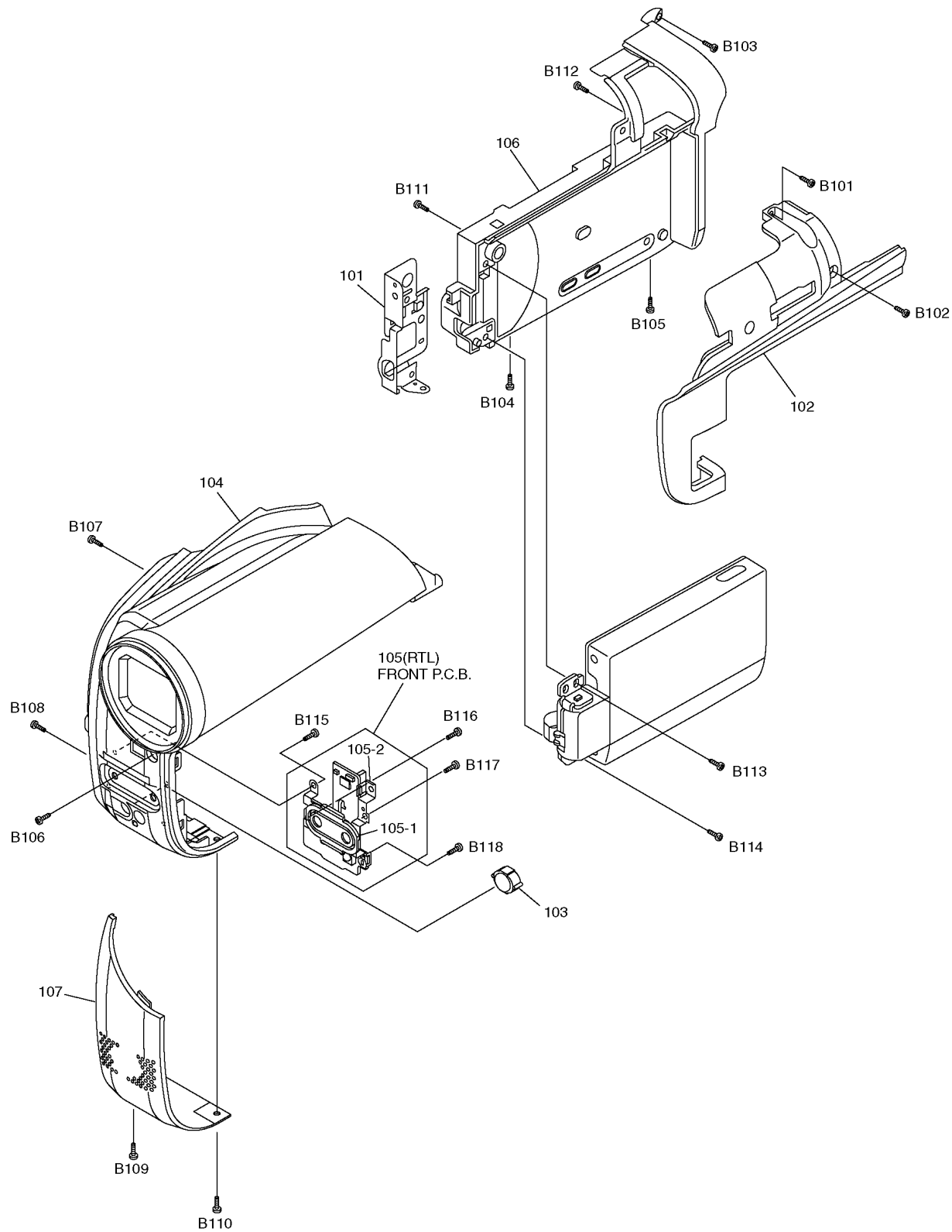


13 Parts and Exploded Views

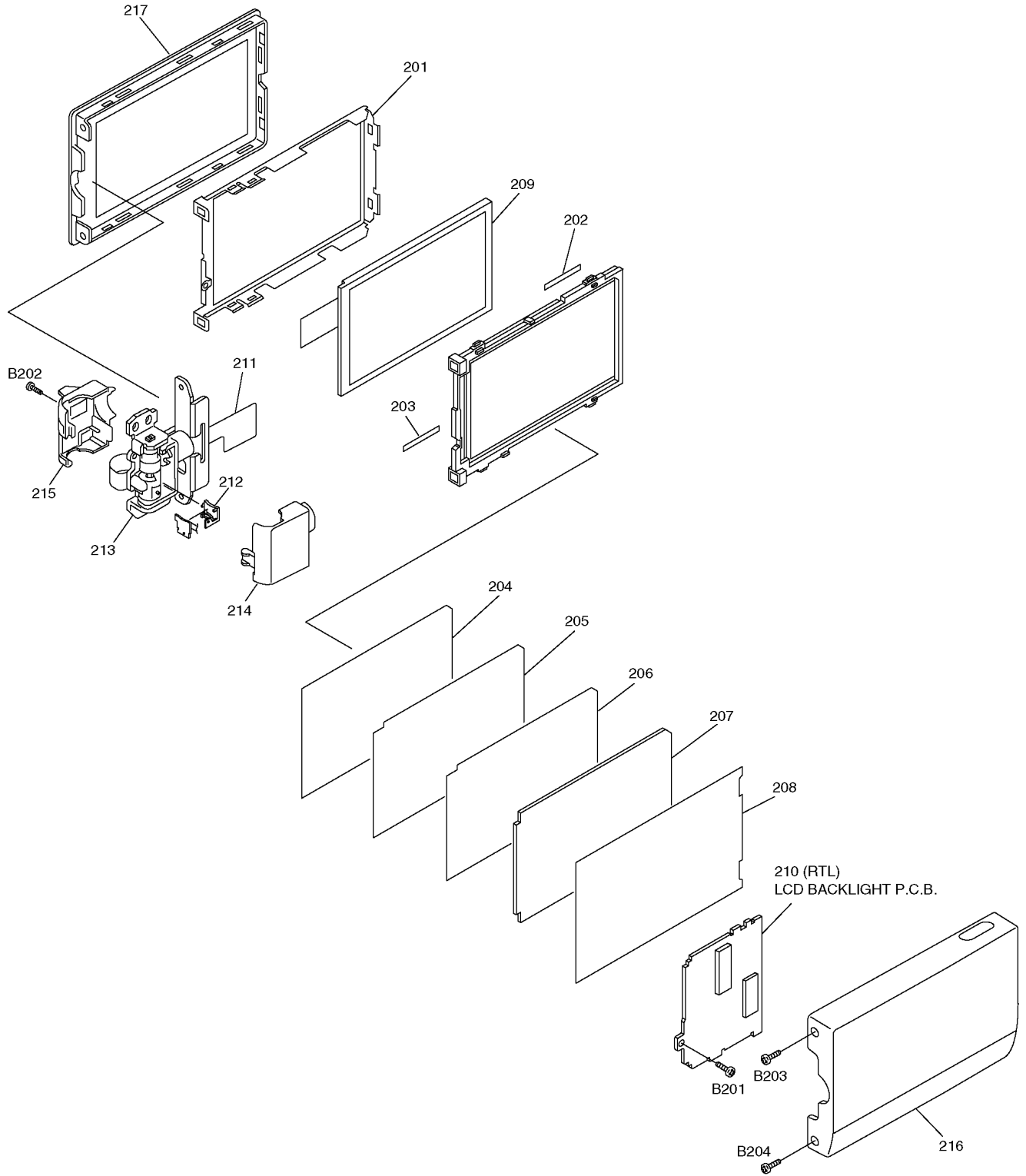
13.1. Exploded Views

13.1.1. Frame & Casing Section





13.1.2. LCD Section

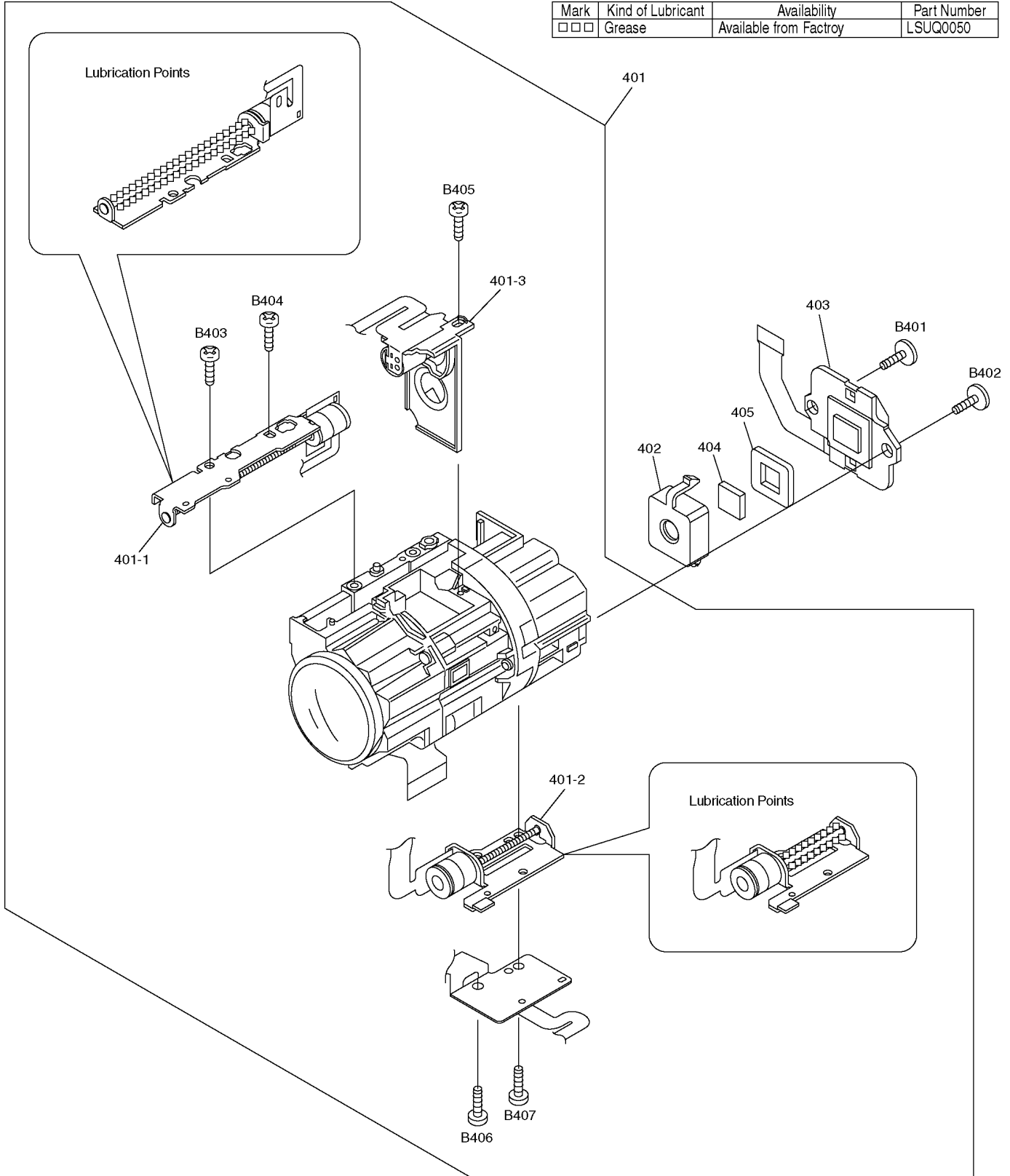


13.1.3. Camera Lens Section

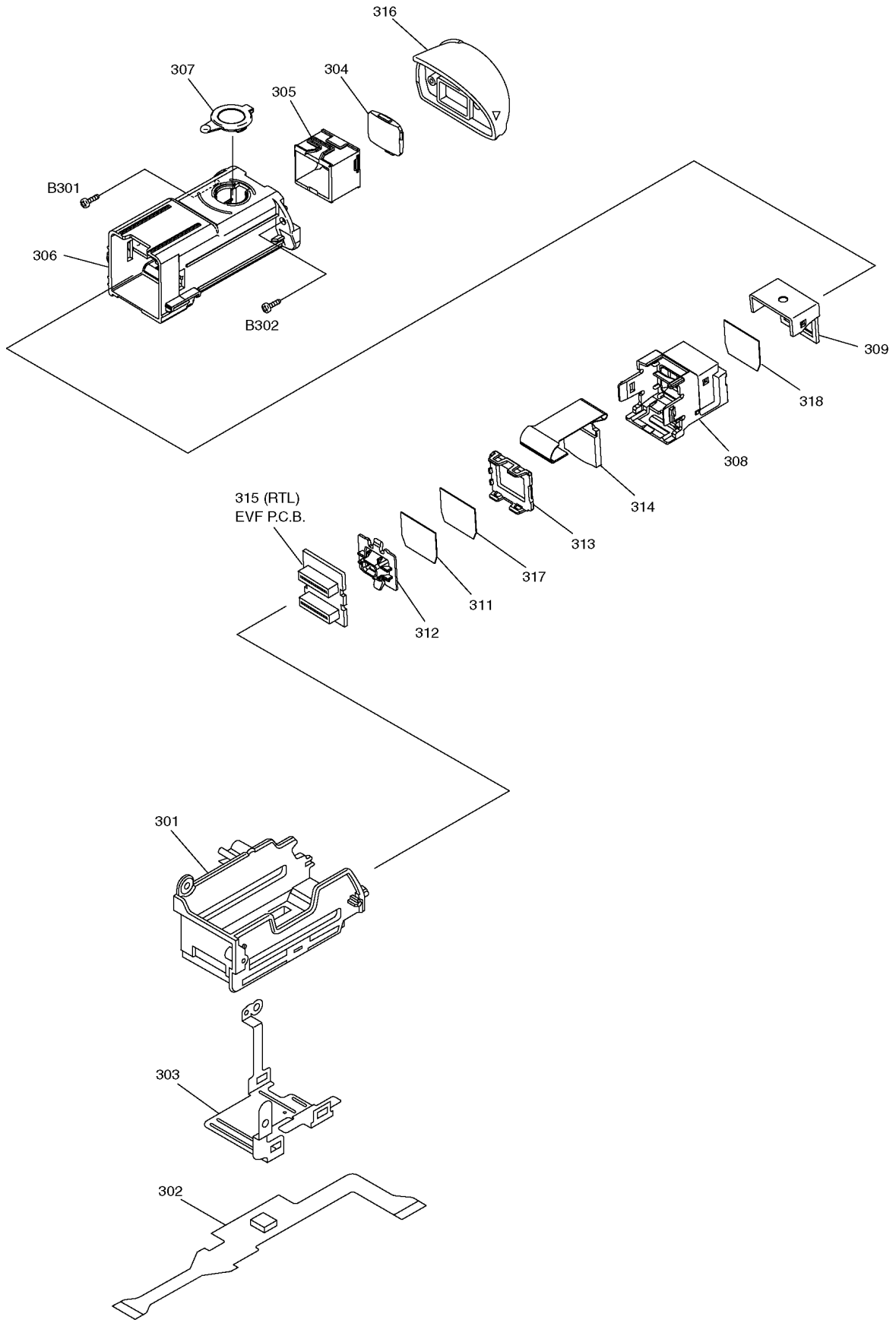
LUBRICATION POINTS

When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

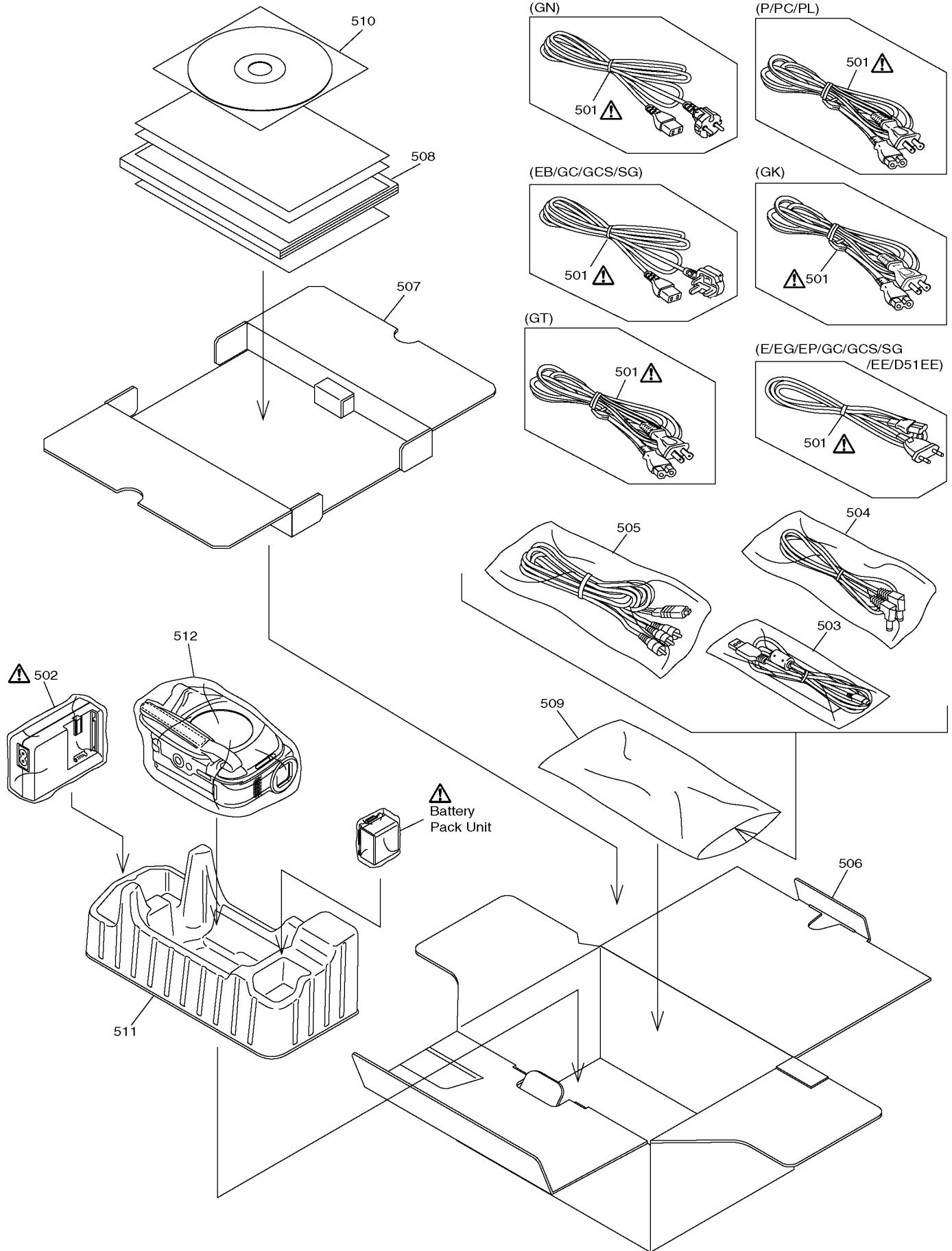
Mark	Kind of Lubricant	Availability	Part Number
□□	Grease	Available from Factory	LSUQ0050



13.1.4. EVF Section



13.1.5. Packing Parts & Accessories Section



13.2. Replacement Parts List

13.2.1. Frame & Casing Section Parts List

Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark Δ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	LSYK2276	SIDE L/OPERATION U	1	(PSECI)
2	LSMD0881	LOCK LEVER BASE	1	(PSECI)
3	LSML0379	LOCK LEVER	1	(PSECI)
4	LSMB0343	LOCK LEVER SPRING	1	(PSECI)
5	LSMD0882	DETECT PIECE	1	(PSECI)
6	LSMB0345	DETECT SPRING	1	(PSECI)
7	LSXY1247	PLUNGER/LOCK FPC U	1	(PSECI)
8	LSXK0326S-1	DVD DRIVE UNIT	1	P, PC Δ
8	LSXK0326S-4	DVD DRIVE UNIT	1	PL, GN Δ
8	LSXK0326S-2	DVD DRIVE UNIT	1	E, EG, EB, EP, EF, GC Δ
8	LSXK0326S-5	DVD DRIVE UNIT	1	EE, D51EE Δ
8	LSXK0326S-3	DVD DRIVE UNIT	1	GCS, SG, GT Δ
8	LSXK0326S-6	DVD DRIVE UNIT	1	D58GK Δ
9	LSEP8431A1	MAIN P.C.B.	1	(PSECI) (RTL) P, PC, PL
9	LSEP8431P1	MAIN P.C.B.	1	(PSECI) (RTL) EG, E, EB, EF, EP
9	LSEP8431Q1	MAIN P.C.B.	1	(PSECI) (RTL) EE, GC, GCS, GN, SG, D58GK
9	LSEP8431C1	MAIN P.C.B.	1	(PSECI) (RTL) GT
9	LSEP8431R1	MAIN P.C.B.	1	(PSECI) (RTL) D51EE
10	LSJB8437-1	FRONT FPC	1	(PSECI)
11	LSSC1017	EARTH PLATE (MECHA)	1	(PSECI)
12	LSKML651	REAR PANEL	1	(PSECI)
13	LSKF0700	SD COVER	1	(PSECI)
14	LSMS0319	SD COVER PIN	1	(PSECI)
15	LSKML647	REAR CASE	1	(PSECI)
16	LSGT0618	BATTERY RELEASE KNOB	1	(PSECI)
17	LSMB0346	BATTERY RELEASE SPRING	1	(PSECI)
18	LSMD0877	BATTERY RELEASE HOLDER	1	(PSECI)
19	LSSC1010	EARTH PLATE (REAR)	1	(PSECI)
20	LSGL1522	LED PANEL (REAR)	1	(PSECI)
21	LSEK0828	TERMINAL/FPC U	1	(PSECI)
22	LSGQ0263	GRIP BELT U	1	(PSECI)
23	LSMA1029	GRIP BELT ANGLE (REAR)	1	(PSECI)
24	LSMC0166	SPEAKER ANGLE	1	(PSECI)
25	L0AA02A00082	LOUD SPEAKER	1	(PSECI)
31	LSMD0896	DISC LOCK COVER	1	(PSECI)
B1	XQN16+BJ5FN	SCREW	1	
B2	XQN16+BJ5FN	SCREW	1	
B3	XQN16+BJ5FN	SCREW	1	
B4	XQN16+BJ5FN	SCREW	1	
B5	XQN16+BJ5FN	SCREW	1	
B14	XQN16+BJ5FN	SCREW	1	
B15	XQN16+BJ5FN	SCREW	1	
B16	XQN16+BJ5FN	SCREW	1	
B19	XQN16+BJ5FN	SCREW	1	
B22	XQN16+BJ5FN	SCREW	1	
B23	XQN16+BJ5FN	SCREW	1	
B24	XQN16+B2FN	SCREW	1	
B25	XQN16+B2FN	SCREW	1	
B26	XQN16+BF4FN	SCREW	1	
B27	XQN16+BF4FN	SCREW	1	
B28	XQN16+BF4FN	SCREW	1	
B29	XQN16+BF4FN	SCREW	1	
B30	XQN16+BJ5FN	SCREW	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
B37	XQN16+BJ5FN	SCREW	1	
B38	XQN16+BJ5FN	SCREW	1	
B39	XQN16+BJ5FN	SCREW	1	
B40	XQN16+BJ5FN	SCREW	1	
B41	XQN16+BJ5FN	SCREW	1	
101	LSMA1031	EARTH PLATE (SIDE R)	1	(PSECI)
102	LSKML650	SIDE R PIECE	1	(PSECI)
103	LSMD0822	LED LIGHT LENS	1	(PSECI) D51EE
104	LSYK2298	FRONT/SHUTTER U	1	(PSECI)
105	LSEP8432A1	FRONT P.C.B.	1	(PSECI) (RTL) (EXCEPT D51EE)
105	LSEP8432B1	FRONT P.C.B.	1	(PSECI) (RTL) D51EE
105-1	LSMG0190	MIC DAMPER	1	(PSECI)
105-2	LSSC1012	EARTH PLATE (MIC)	1	(PSECI)
106	LSYK2292	SIDE CASE R U	1	(PSECI)
107	LSYK2274	FRONT PANEL U	1	(PSECI)
B101	XQN16+BJ5FN	SCREW	1	
B102	XQN16+BJ5FN	SCREW	1	
B103	XQN16+BF4FN	SCREW	1	
B104	XQN16+BF4FN	SCREW	1	
B105	XQN16+BF4FN	SCREW	1	
B106	XQN16+BJ5FN	SCREW	1	
B107	XQN16+BJ5FN	SCREW	1	
B108	XQN16+BF4FN	SCREW	1	
B109	XQN16+BF4FN	SCREW	1	
B110	XQN16+BF4FN	SCREW	1	
B111	XQN16+BJ5FN	SCREW	1	
B112	XQN16+BJ5FN	SCREW	1	
B113	XQN2+B5FN	SCREW	1	
B114	XQN2+B5FN	SCREW	1	
B115	XQN16+BJ5FN	SCREW	1	
B116	XQN16+BJ5FN	SCREW	1	
B117	XQN16+BJ5FN	SCREW	1	
B118	XQN16+BJ5FN	SCREW	1	

13.2.2. LCD Section Parts List

Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark Δ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
201	LSSC1011	LCD SHIELD CASE	1	(PSECI)
202	LSMD0879	PANEL HOLDER	1	(PSECI)
203	LSZT0125	BOTHSIDED TAPE	2	(PSECI)
204	LSGL1523	BEF SHEET A WIDE	1	(PSECI)
205	LSGL1524	BEF SHEET B WIDE	1	(PSECI)
206	LSGL1525	DIFFUSION SHEET WIDE	1	(PSECI)
207	LSGL1526	LEAD LIGHT PANEL	1	(PSECI)
208	LSGL1527	REFLECT SHEET WIDE	1	(PSECI)
209	L5BDDYH00026	LCD PANEL	1	(PSECI)
210	LSEP8433A1	LCD BACKLIGHT P.C.B.	1	(PSECI) (RTL)
211	LSEP8435A1	LCD SHAFT FPC	1	(PSECI)
212	LSMD0880	SHAFT SW HOLDER	1	(PSECI)
213	LSXA0946	SHAFT U	1	(PSECI)
214	LSKML652	SHAFT CASE A	1	(PSECI)
215	LSKML653	SHAFT CASE B	1	(PSECI)
216	LSKML660	LCD CASE A	1	(PSECI) P, PC, P L, GT
216	LSKML661	LCD CASE A	1	(PSECI) EG, E, E B, EF, EP, GC, GC S,

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
				GN, GN, SG
216	LSKM1670	LCD CASE A	1	(PSECI) D51EE
216	LSKM1671	LCD CASE A	1	(PSECI) D58GK
217	LSKM1649	LCD CASE B	1	(PSECI)
B201	XQN16+BJ4FN	SCREW	1	
B202	LSHD0130	SCREW	1	(PSECI)
B203	XQN16+BF4FN	SCREW	1	
B204	XQN16+BF4FN	SCREW	1	

13.2.3. Camera Lens Section Parts List

Note: 1. *Be sure to make your orders of replacement parts according to this list.
 2. IMPORTANT SAFETY NOTICE
 Components identified with the mark Δ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
401	LSXY1219	LENS U	1	(PSECI) P, PC, P L, GT
401	LSXY1220	LENS U	1	(PSECI) EG, E, E B, EE, EF, EP, GC
				GCS, GN, SG, D51 EE, D58GK
401-1	L6HA66NB0009	ZOOM MOTOR U	1	(PSECI)
401-2	L6HA66NB0010	FOCUS MOTOR U	1	(PSECI)
401-3	LSEM0111	AUTO IRIS (U)	1	(PSECI)
402	LSXY1205	CCD CASE (U)	1	(PSECI) P, PC, P L, GT
402	LSXY1206	CCD CASE (U)	1	(PSECI) EG, E, E B, EE, EF, EP, GC
				GCS, GN, SG, D51 EE, D58GK
403	LSEP8434A1	CCD P.C.B.	1	(PSECI) P, PC, P L, GT
403	LSEP8434B1	CCD P.C.B.	1	(PSECI) EG, E, E B, EE, EF, EP, GC
				GCS, GN, SG, D51 EE, D58GK
404	LSFL0292	OPTICAL LPF	1	(PSECI)
405	VMX3282	CCD CUSHION RUBBER	1	
B401	LSHD0136	CCD SET SCREW	1	(PSECI)
B402	LSHD0136	CCD SET SCREW	1	(PSECI)
B403	XQN16+BJ4FN	SCREW	1	
B404	XQN16+BJ4FN	SCREW	1	
B405	XQN16+BJ4FN	SCREW	1	
B406	XQN16+BJ4FN	SCREW	1	
B407	XQN16+BJ4FN	SCREW	1	

13.2.4. EVF Section Parts List

Note: 1. *Be sure to make your orders of replacement parts according to this list.
 2. IMPORTANT SAFETY NOTICE
 Components identified with the mark Δ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
301	LSMD0878	EVF SLIDE BASE	1	(PSECI)
302	LSEP8436A1	EVF FPC	1	(PSECI)
303	LSMA1032	EVF LOCK PLATE	1	(PSECI)
304	LSFL0176	EVF LENS	1	
305	LSMD0851	LENS HOLDER	1	(PSECI)
306	LSKM1659	EVF CASE	1	(PSECI)
307	LSGT0619	EYE SIGHT LEVER	1	(PSECI)
308	LSMD0847	EVF MASK CASE	1	(PSECI)
309	LSMD0848	EVF MASK TOP COVER	1	(PSECI)
311	LSDL0360	DIFFUSION SHEET	1	(PSECI)

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
312	LSMD0849	EVF REFLECT PIECE	1	(PSECI)
313	LSMD0850	EVF SHEET HOLDER	1	(PSECI)
314	L5BDDXH00027	LCD PANEL	1	(PSECI)
315	LSEP8365A1	EVF B/L P.C.B.	1	(PSECI) (RTL)
316	LSKM1648	EYE CAP	1	(PSECI)
317	LSDL0359	PROTECT PLATE	1	(PSECI)
318	LSDL0359	PROTECT PLATE	1	(PSECI)
B301	XQN16+BJ4FN	SCREW	1	
B302	XQN16+BJ4FN	SCREW	1	

13.2.5. Packing Parts & Accessories Section Parts List

Note: 1. *Be sure to make your orders of replacement parts according to this list.
 2. IMPORTANT SAFETY NOTICE
 Components identified with the mark Δ have the special characteristics for safety. When replacing any of these components, use only the same type.
 3. Supply of CD-ROM, in accordance with license protection, is allowable as replacement parts only for customers who accidentally damaged or lost their own.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
501	K2CA2CA00029	AC CORD	1	P, PC, PL Δ
501	K2CQ2CA00006	AC CORD	1	EG, E, EE, EF, EP, GC, GCS, SG Δ
				D51EE
501	K2CT3CA00004	AC CORD	1	EB, GC, GCS, SG Δ
501	K2CJ2DA00011	AC CORD	1	GN Δ
501	K2CA2CA00028	AC CORD	1	(PSECI) GT Δ
501	K2CA2CA00020	AC CORD	1	D58GK Δ
502	DE-A51BA	POWER CHARGERS	1	(PSECI) P, PC, P L Δ
502	DE-A51CA	POWER CHARGERS	1	(PSECI) EG, E, E B, EE, EF, EP, GC, Δ
				GCS, GN, SG, D51 EE
502	DE-A51EA	POWER CHARGERS	1	(PSECI) GT Δ
502	DE-A51DA	POWER CHARGERS	1	(PSECI) D58GK Δ
503	K1HA05CD0017	USB CABLE	1	(PSECI) P, PC, P L
503	K1HA05CD0016	USB CABLE	1	(PSECI) EG, E, E B, EE, EF, EP, GC, Δ
				GCS, GN, GT, SG, D51EE, D58GK
504	K2GJ2DC00011	DC CABLE	1	
505	K2KZ9CB00002	AV CABLE	1	
506	LSPG2570	PACKING CASE	1	(PSECI) P, PC, P L
506	LSPG2578	PACKING CASE	1	(PSECI) EG, E, E B, EF
506	LSPG2558	PACKING CASE	1	(PSECI) EE, GT, D51EE
506	LSPG2615	PACKING CASE	1	(PSECI) EP
506	LSPG2579	PACKING CASE	1	GC
506	LSPG2580	PACKING CASE	1	(PSECI) GCS, GN, SG
506	LSPG2581	PACKING CASE	1	(PSECI) D58GK
507	LSPN0882	PAD	1	(PSECI)
508	LSQT1319-A	O/I	1	(PSECI) P, PC
508	LSQT1320-A	O/I	1	(PSECI) PC
508	LSQT1321-A	O/I	1	(PSECI) PL
508	LSQT1323-A	O/I	1	(PSECI) EG
508	LSQT1324-A	O/I	1	(PSECI) EG
508	LSQT1325-A	O/I	1	(PSECI) EG
508	LSQT1326-A	O/I	1	(PSECI) E
508	LSQT1327-A	O/I	1	(PSECI) E
508	LSQT1330-A	O/I	1	(PSECI) EB
508	LSQT1334-A	O/I	1	(PSECI) EE, D51 EE
508	LSQT1325-A	O/I	1	(PSECI) EF

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
508	LSQT1328-A	O/I	1	(PSECI) EP
508	LSQT1329-A	O/I	1	(PSECI) EP
508	LSQT1331-A	O/I	1	(PSECI) GC, GCS, SG
508	LSQT1332-A	O/I	1	(PSECI) GC, GCS, SG
508	LSQT1333-A	O/I	1	(PSECI) GC, GCS, SG
508	LSQT1335-A	O/I	1	(PSECI) GN
508	LSQT1322-A	O/I	1	(PSECI) GT
508	LSQT1336-A	O/I	1	(PSECI) D58GK
509	VPF1112	POLYETHYLENE BAG	1	
510	LSFT0761-S	CD-ROM	1	(PSECI) P, PC, PL
510	LSFT0762-S	CD-ROM	1	(PSECI) EG, E, EB, EE, EF, EP, GC, GCS, GN, GT, SG, D51EE, D58GK
511	LSPN0899	BOTTOM PAD	1	(PSECI)
512	VPF1129	PROTECTION BAG	1	

13.2.6. Electrical Replacement Parts List

- Note: 1. Be sure to make your orders of replacement parts according to this list.
 2. IMPORTANT SAFETY NOTICE: Components identified with the mark Δ have the special characteristics for safety. When replacing any of these components, use only the same type.
 3. Unless otherwise specified,
 All resistors are in OHMS, K=1,000 OHMS. All capacitors are in MICROFARADS (uf), P=uuf.
 4. The P.C. Board units marked with "■" show below the main assembled parts.
 5. 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.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
B21	K1KA60A00162	CONNECTOR 60P	1	
BT7001	ML-621S/F9DE	BATTERY	1	(PSECI) Δ
C601	ECJ2FB1C105K	C. CAPACITOR CH 16V 1U	1	
C602	ECUM1A106KBM	C. CAPACITOR CH 10V 10U	1	
C702	ECJ1VB1A105K	C. CAPACITOR CH 10V 1U	1	
C4801	ECJ1VB1A105K	C. CAPACITOR CH 10V 1U	1	
C4802	ECJ1VB1A105K	C. CAPACITOR CH 10V 1U	1	
C4803	ECJ2FB0J106K	C. CAPACITOR CH 6.3V 10U	1	
C4804	ECJ1VB1H822K	C. CAPACITOR CH 50V 8200P	1	
C4805	ECJ1VB1C273K	C. CAPACITOR CH 16V 0.027U	1	
C4806	ECJ1VB1C273K	C. CAPACITOR CH 16V 0.027U	1	
C4808	ECJ1VB1C273K	C. CAPACITOR CH 16V 0.027U	1	
C4809	ECJ1VB1H822K	C. CAPACITOR CH 50V 8200P	1	
C4810	ECJ1VB1C273K	C. CAPACITOR CH 16V 0.027U	1	
C4812	F3F0J226A055	E. CAPACITOR CH 6.3V 22U	1	
C6503	ECJ1VB1A224K	C. CAPACITOR CH 10V 0.22U	1	
C6504	ECJ1XB1C104K	C. CAPACITOR CH 16V 0.1U	1	
C6505	ECJ1VB1A224K	C. CAPACITOR CH 10V 0.22U	1	
C7001	ECJ1VB1H332K	C. CAPACITOR CH 50V 3300P	1	
C7002	ECJ1VB1H332K	C. CAPACITOR CH 50V 3300P	1	
C7801	F1J1A106A023	C. CAPACITOR CH 10V 10U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C7802	F1J1A106A023	C. CAPACITOR CH 10V 10U	1	
C7803	F3F0J226A055	E. CAPACITOR CH 6.3V 22U	1	
C7804	F3F0J226A055	E. CAPACITOR CH 6.3V 22U	1	
C8104	ECJ1VC1H390J	C. CAPACITOR CH 50V 39P	1	
C8105	ECJ1VC1H390J	C. CAPACITOR CH 50V 39P	1	
C8106	ECJ1VC1H390J	C. CAPACITOR CH 50V 39P	1	
C8107	ECJ1VB1A105K	C. CAPACITOR CH 10V 1U	1	
C8109	ECJ2FB1A475K	C. CAPACITOR CH 10V 4.7U	1	
C8111	ECJ1XB1C104K	C. CAPACITOR CH 16V 0.1U	1	
C8112	ECJ2FB1A225K	C. CAPACITOR CH 10V 2.2U	1	
C8113	ECJ1VB1A105K	C. CAPACITOR CH 10V 1U	1	
C8116	ECJ1VB0J105K	C. CAPACITOR CH 6.3V 1U	1	
C8902	ECJ1VB1A105K	C. CAPACITOR CH 10V 1U	1	
C8903	ECJ1VB0J105K	C. CAPACITOR CH 6.3V 1U	1	
D1701	B3AAB0000137	DIODE	1	
D1702	B3AAB0000137	DIODE	1	
D4301	B3AFB0000126	LED	1	(PSECI) 51EE
D4302	B0BC6R200019	DIODE	1	(PSECI) 51EE
D4303	B0BC6R200019	DIODE	1	(PSECI) 51EE
D6503	B0ADEJ000038	DIODE	1	(PSECI) 51EE
D6504	B3GA00000062	DIODE	1	
D8101	MAZ80620ML	DIODE	1	
D8102	B3AFB0000215	LED	1	(PSECI)
D8104	B3AFB0000215	LED	1	(PSECI)
D8107	B3AFB0000215	LED	1	(PSECI)
D8109	B3AFB0000215	LED	1	(PSECI)
D8113	MAZ80510ML	DIODE	1	
D8901	B3AFB0000129	DIODE	1	
D8902	MAZ80470ML	DIODE	1	
D8903	MA3S13300L	DIODE	1	
FP6501	K1MN24A00062	CONNECTOR 24P	1	(PSECI)
FP8101	K1MN22BA0197	CONNECTOR 22P	1	
FP8102	K1MN24BA0196	CONNECTOR 24P	1	(PSECI)
FP8901	K1MN16A00077	CONNECTOR 16P	1	
FP8902	K1MN18A00064	CONNECTOR 18P	1	
IC303	C1AB00002039	IC	1	
IC4801	C0ABBB000369	IC	1	
IC7802	L2ES00000017	IC	1	
IC8001	C1AB00002388	IC	1	
JK7001	K2HZ110E0002	JACK	1	
L7001	J0JBC0000014	FILTER	1	
L7002	J0JBC0000014	FILTER	1	
L7003	J0JBC0000014	FILTER	1	
L7801	G1C100KA0031	COIL 10UH	1	(PSECI)
L8101	G1C101KA0031	COIL 100UH	1	(PSECI)
Q601	2SC3931CTX	TRANSISTOR	1	
Q4801	2SD2216J08	TRANSISTOR	1	
Q6501	B1ABC0000098	TRANSISTOR	1	
Q6502	2SB1218ARL	TRANSISTOR	1	
Q8101	2SC6054J0L	TRANSISTOR	1	
Q8102	2SC6054J0L	TRANSISTOR	1	
Q8104	2SC6054J0L	TRANSISTOR	1	
Q8105	2SC6054J0L	TRANSISTOR	1	
Q8107	2SA2174J0L	TRANSISTOR	1	
Q8112	2SA2174J0L	TRANSISTOR	1	
Q8113	2SA2174J0L	TRANSISTOR	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
Q8901	2SC6054J0L	TRANSISTOR	1	
R315	ERJ2GEJ470	M.RESISTOR CH 1/16W 47	1	
R601	ERJ3GEYJ562	M.RESISTOR CH 1/10W 5.6K	1	
R602	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	1	
R4802	ERJ3GEYJ472	M.RESISTOR CH 1/10W 4.7K	1	
R4803	ERJ3GEYJ223	M.RESISTOR CH 1/10W 22K	1	
R4804	ERJ3GEYJ333	M.RESISTOR CH 1/10W 33K	1	
R4805	D0GB124JA057	M.RESISTOR CH 1/10W 120K	1	
R4806	ERJ3GEYJ333	M.RESISTOR CH 1/10W 33K	1	
R4807	VRE0071E392	M.RESISTOR CH 1/10W 3.9K	1	
R4808	D0GB124JA057	M.RESISTOR CH 1/10W 120K	1	
R4809	ERJ3GEYJ333	M.RESISTOR CH 1/10W 33K	1	
R4810	VRE0071E392	M.RESISTOR CH 1/10W 3.9K	1	
R6504	ERJ3GEYJ106	M.RESISTOR CH 1/10W 10M	1	
R6505	ERJ3GEYJ335	M.RESISTOR CH 1/10W 3.3M	1	
R6506	D0GB184JA057	M.RESISTOR CH 1/10W 180K	1	
R6507	D0GB103JA057	M.RESISTOR CH 1/10W 10K	1	
R6509	D0GB102JA057	M.RESISTOR CH 1/10W 1K	1	
R7001	ERJ3GEYJ122	M.RESISTOR CH 1/10W 1.2K	1	
R8102	ERA3YED271V	M.RESISTOR CH 1/16W 270	1	(PSECI)
R8105	ERA3YED271V	M.RESISTOR CH 1/16W 270	1	(PSECI)
R8106	ERA3YED271V	M.RESISTOR CH 1/16W 270	1	(PSECI)
R8107	ERJ3RED270	M.RESISTOR CH 1/10W 27	1	
R8110	ERJ3RED270	M.RESISTOR CH 1/10W 27	1	
R8112	ERJ3RED270	M.RESISTOR CH 1/10W 27	1	
R8114	ERJ3RBD563	M.RESISTOR CH 1/10W 56K	1	
R8115	ERJ3GEY0R00	M.RESISTOR CH 1/10W 0	1	
R8116	ERA3YED562V	M.RESISTOR CH 1/16W 5.6K	1	
R8119	ERJ3RED270	M.RESISTOR CH 1/10W 27	1	
R8123	D0GB473JA057	M.RESISTOR CH 1/10W 47K	1	
R8126	ERJ3GEYJ104	M.RESISTOR CH 1/10W 100K	1	
R8127	D0GB102JA057	M.RESISTOR CH 1/10W 1K	1	
R8135	ERA3YKD473V	M.RESISTOR CH 1/16W 47K	1	
R8136	ERJ3RBD103	M.RESISTOR CH 1/10W 10K	1	
R8143	ERJ3GEY0R00	M.RESISTOR CH 1/10W 0	1	
R8145	ERJ3GEY0R00	M.RESISTOR CH 1/10W 0	1	
R8153	ERJ3GEY0R00	M.RESISTOR CH 1/10W 0	1	
R8154	ERJ3GEY0R00	M.RESISTOR CH 1/10W 0	1	
R8155	ERJ3GEY0R00	M.RESISTOR CH 1/10W 0	1	
R8901	ERJ3GEYJ472	M.RESISTOR CH 1/10W 4.7K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R8903	ERJ3RBD101	M.RESISTOR CH 1/10W 100	1	
SW2501	ESE18L62D	SWITCH	1	(PSECI)
SW2502	ESE18L62D	SWITCH	1	(PSECI)
SW8201	KOC111B00008	SWITCH	1	(PSECI)
SW9201	ESE18L61D	SWITCH	1	(PSECI)
TH601	D4CC11030013	THERMISTOR	1	