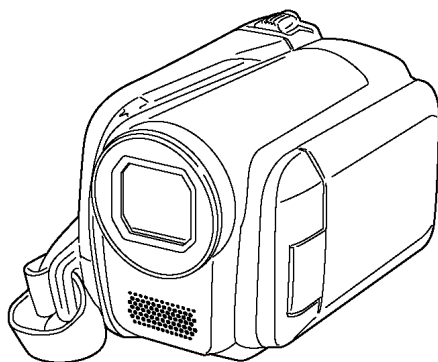


# Service Manual

SD Card / Hard Disk Video Camera



Model No. **SDR-H40P**

**SDR-H40PC**

**SDR-H40EG**

**SDR-H40E**

**SDR-H40EB**

**SDR-H40EP**

**SDR-H40EF**

**SDR-H40GC**

**SDR-H40GN**

**SDR-H40PL**

**SDR-H48GK**

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  $1\text{M}\Omega$  and  $5.2\text{M}\Omega$ . 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  $1\text{ k}\Omega/\text{V}$  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  $0.25\text{ V RMS}$ .

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.

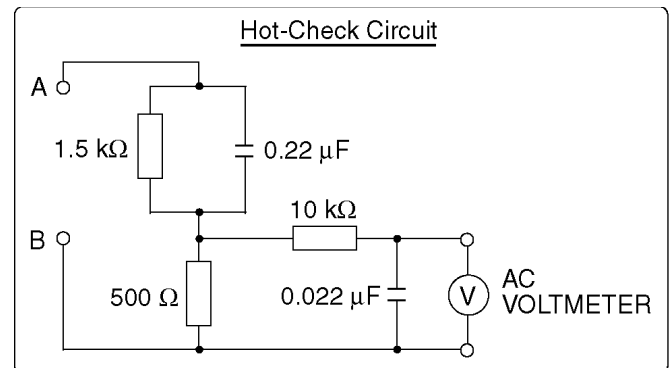


Figure 1

## 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  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)

### 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:

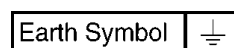
Blue	Neutral
Brown	Live

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.

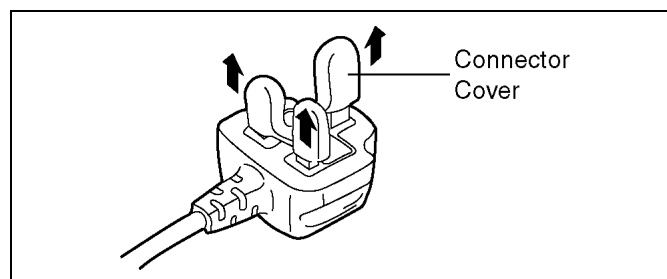
The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

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.



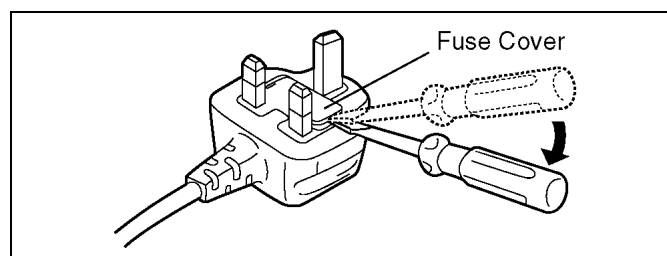
#### 2.3.2.2. Before use

remove the Connector Cover as follows.

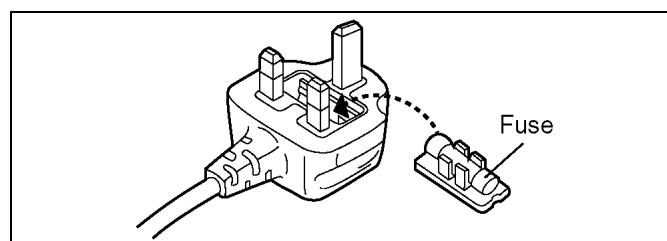


#### 2.3.2.3. How to replace the Fuse

1. Remove the Fuse Cover with a screwdriver.

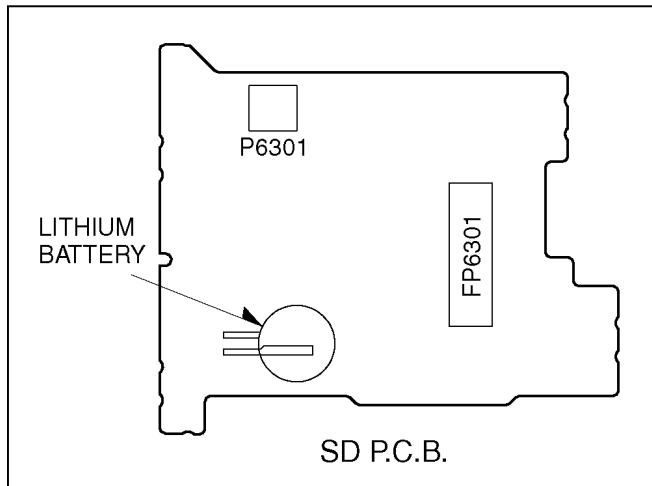


2. Replace the fuse and attach the Fuse cover.



## 2.4. How to Replace the Lithium Battery (PROCEDURE)

1. Remove the SD 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 suosittelemaan tyyppiin.  
 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:

SDR-H40P/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:

SDR-H40EG/E/EB/EP/EF/GC/GN.

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:

SDR-H48GK.

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. (LSEP8443A1: SDR-H40P/PC/PL)

(LSEP8443P1: SDR-H40EG/E/EB/EP/EF/GC/GN, SDR-H48GK)

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

(Main P.C.B.)

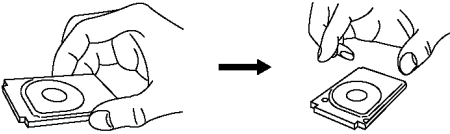

The following circuits are contained in Main P.C.B.

1. Main Connection Circuit
2. AVIO Circuit
3. Video Circuit
4. Memory Circuit
5. USB Host Circuit
6. LCD Circuit
7. Power Circuit
8. HDD G-Sensor Circuit
9. Lens Drive Circuit
10. TG/AFE Circuit
11. SYSCON Circuit
12. Sub SYSCON Circuit

## 3.2. Precautions for Handling HDD

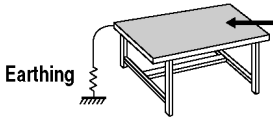

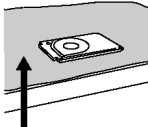
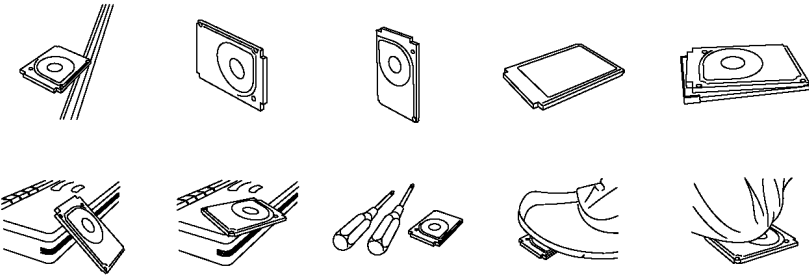
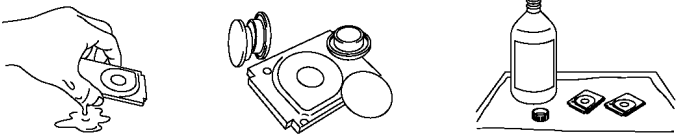
1. Handle HDD very carefully to prevent the static electricity and shock.
2. Set the HDD quickly after taking it out from the package. Make sure to put the HDD on buffer materials, etc.

### 3.2.1. Precautions at incoming process and for opening packages

Preventing shock	<ul style="list-style-type: none"> <li>Do not throw down HDD from luggage carrier or avoid dropping accidentally when unloading. The HDD may not be reliable when impacts of dropping, throwing or rolling occur.</li> <li>Avoid HDD hitting other equipment or other HDD. Hold HDD firmly but do not apply excessive force when taking out from the package because it is particularly slippery.</li> <li>When taking out HDD from the package, make sure to put buffer materials such as conductive urethane materials on a work table. Also, a stable place is recommended to avoid impacts or vibration.</li> </ul>
Preventing condensation	<ul style="list-style-type: none"> <li>To prevent dew condensation on HDD due to sharp temperature change, keep it indoors without unpacking, and adjust the package of HDD to room temperature completely before unpacking.</li> <li>Avoid entrance or window areas where temperature changes easily for storage.</li> </ul>
Holding example	<ul style="list-style-type: none"> <li>Take out HDD holding both sides, not to press the top cover and the center of the device label.</li> </ul> <p><b>&lt;OK&gt;</b></p>  <p><b>&lt;NG&gt;</b></p> 
Preventing static electricity	<ul style="list-style-type: none"> <li>After opening package, HDD must be handled only by a specified worker in E.S.D.* free environment on a conductive mat. It may cause damage on HDD components due to overvoltage such as electrostatic discharge, etc.</li> </ul>

\*E.S.D. = Electrostatically Sensitive Devices

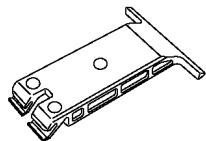
### 3.2.2. Precautions for installing HDD

Preventing static electricity	<ul style="list-style-type: none"> <li>HDD may be destroyed by static electricity charged to clothes or human body. Place a conductive mat with removed earthing and use the wrist strap to prevent static charge.</li> </ul> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>&lt;OK&gt;</p>  <p>Earthing</p> </div> <div style="text-align: center;"> <p>&lt;OK&gt;</p>  <p>Wrist strap</p> </div> </div>
Preventing shock	<ul style="list-style-type: none"> <li>Place HDD with its face upward (the device label upward) on the flat and stable surface using buffer materials, etc.</li> <li>Do not stand HDD. If it falls down, the excessive impacts may damage HDD.</li> <li>Do not store or carry HDD close to other HDD or other components. The components may be distorted due to impacts or weight, which may result in the performance deterioration of the HDD.</li> <li>Do not put HDD in the working area. Do not put HDD close to industrial tools in particular or temporarily put it on the floor.</li> <li>Be extremely careful not to drop HDD when working on it because even dropping HDD down on the work table with a mat on it may cause damage to HDD.</li> </ul> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>&lt;OK&gt;</p>  <p>Buffer materials</p> </div> <div style="text-align: center;"> <p>&lt;NG&gt;</p>  </div> </div>
No water / solvent	<ul style="list-style-type: none"> <li>Do not hold HDD with a wet hand or put magnets, solvent, tea, coffee, etc, close to HDD. This affects internal components and outside of HDD</li> </ul> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>&lt;NG&gt;</p>  </div> </div>
Connector	<ul style="list-style-type: none"> <li>The interface connector pin is easily damaged. Push it lightly and firmly to the end along the connector guide.</li> <li>For further details, refer to "Precautions for inserting and removing HDD FPC".</li> </ul>

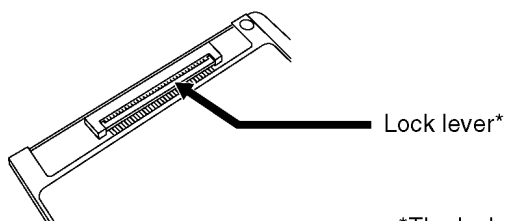
### 3.2.3. Precautions for inserting and removing HDD FPC

Make sure to use the tool (LSVQ0112) when locking and unlocking the lock lever of HDD FPC connector.

Do not lock the lock lever without inserting HDD FPC. Otherwise, the connector may be damaged.



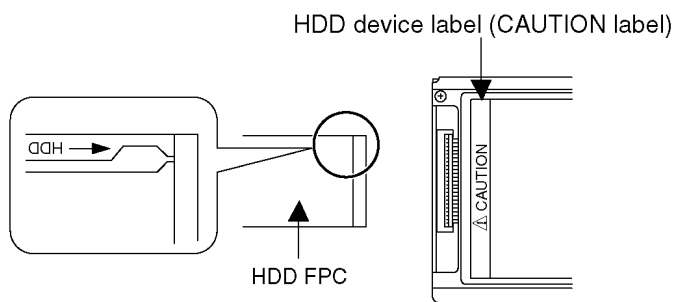
(LSVQ0112)



\*The lock lever is open on initial condition.

#### Insert HDD FPC

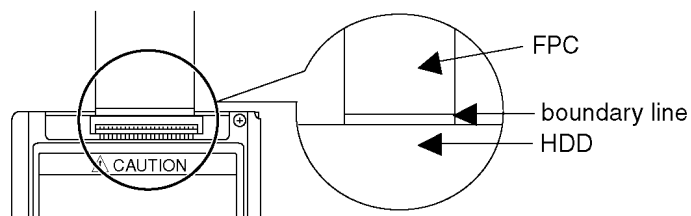
- ① Place HDD so that HDD device label (CAUTION label) faces up.  
**Caution:** Do not set the HDD cushion when installing HDD FPC.
- ② Insert HDD FPC straight to the connector, and make sure if HDD FPC has been inserted to the end.  
**Caution:** The connector surface of HDD FPC must face down and the letter "HDD" and the arrow must be seen as shown.



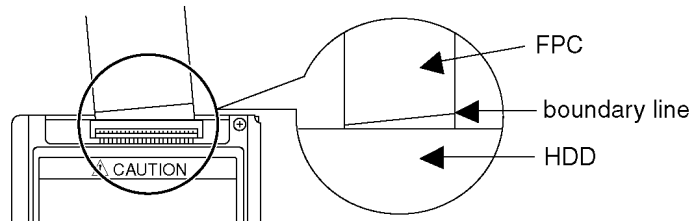
#### Check HDD FPC

Make sure if HDD FPC has been correctly inserted by confirming the FPC pattern boundary line.

<OK>

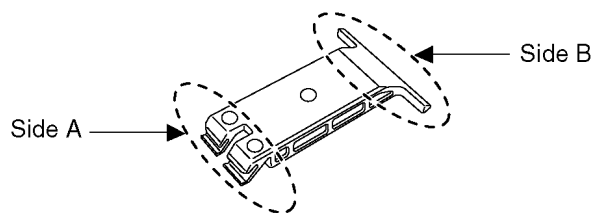


<NG>



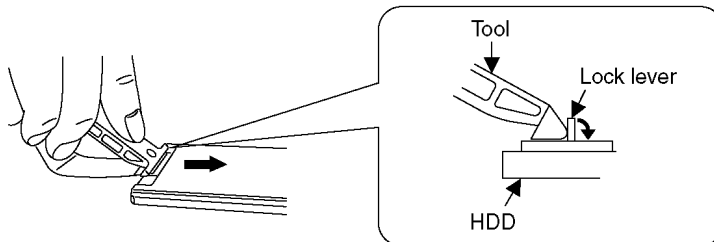
## Tool operation

Lock using the tool after inserting HDD FPC.



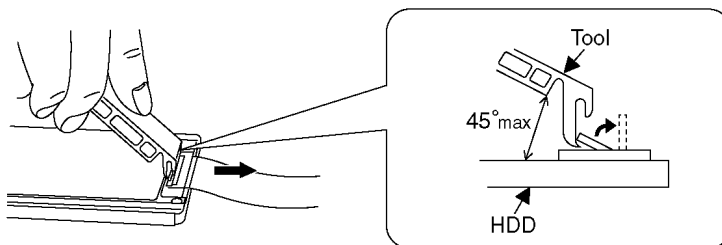
### <How to lock>

After inserting HDD FPC, put the tool (Side B) on the connector and slide it slightly to the direction as shown to lock the lock lever.



### <How to unlock>

Hook up the tip of the tool (Side A) and unlock the lock lever.  
The angle of the tool must be less than 45 degree.



Make sure to use the tool (LSVQ0112) when opening and closing the lock lever.

\*See "" (Fig. D4) for attaching to the unit.

### 3.3. Formatting HDD

When HDD is exchanged, format HDD as the procedure below.

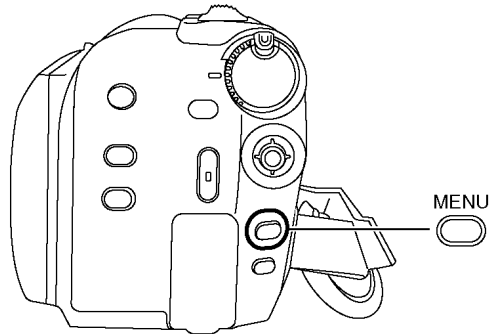
Without formatting, the error message appears on the LCD display when accessing HDD.

<Formatting procedure>

Rotate the mode dial to select .

Select [HDD] in [MEDIA SELECT].

1. Press the MENU button, then  
select [SETUP] →  
[FORMAT HDD] → [YES] and  
press the joystick.



2. When the confirmation message appears, select [YES], then press the joystick.

- When formatting is complete, press the MENU button to exit the message screen.

**Note:**

- During formatting, do not turn this unit off.
- When you format the HDD, use a battery with sufficient battery power or the AC adaptor.
- During formatting, do not cause any vibrations or impacts to this unit.

# 4 Specifications

## SD Card / Hard Disk Video Camera

ITEM	SPECIFICATION	ITEM	SPECIFICATION												
POWER	SD Card/Hard Disk Video Camera: Power Source: DC 9.3/7.2 V Power Consumption: 4.0 W (Recording) AC Adaptor: Power Source: AC 110-240 V, 50/60 Hz Power Consumption: 19 W DC Output: DC 9.3 V, 1.2 A (Unit Operation) DC 8.4 V, 0.75 A (Battery Charging)	STILL PICTURES	Recording Media: SD Memory Card (removable type): 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 (removable type): 4 GB / 8 GB (FAT32 format corresponding) HDD (fixed): 40 GB* <sup>2</sup> Compression: JPEG (Design rule for Camera File system, based on Exif 2.2 standard), DPOF corresponding Picture Size: 640 × 480 (4:3), 640 × 360 (16:9)												
RECORDING FORMAT	SD Card: Based on the SD-Video standard HDD: Independent standard														
CAMERA	Zoom: 40X optical, 70/2000X digital	STANDARD ILLUMINATION	1,400 lx												
	Monitor: 2.7-inch wide LCD (approx. 123K pixels)														
	Lens: Auto Iris, F1.9-F4.3, Focal Length; 1.8 - 75.6 mm Macro (Full Range AF)	MINIMUM REQUIRED ILLUMINATION	6 lx (Approx. 2lx with the colour night view function)												
	Image Sensor: 1/6-inch CCD Image Sensor														
VIDEO	Television System : EIA Standard : 525 Lines, 60 Fields NTSC Colour Signal (SDR-H40P/PC/PL, SDR-H41P) CCIR : 625 Lines, 50 Fields PAL Colour Signal (Except SDR-H40P/PC/PL, SDR-H41P)	USB	Card reader function (No copyright protection support) HDD reader function Hi-Speed USB (USB 2.0) compliant USB terminal Type Mini AB. PictBridge-compliant USB host function (for DVD burner)												
	Video Output Level: 1.0 Vp-p, 75 ohm (AV Multi Jack)	MICROPHONE	Stereo (with a zoom function)												
AUDIO	Audio Output Level (Line): 316 mV, 600 ohm (AV Multi Jack)	SPEAKER	1 round speaker φ20 mm												
		OPERATING TEMPERATURE	0°C - 40°C (32°F - 104°F)												
MOTION PICTURES	Recording media: SD Memory Card (removable type) : 32 MB* <sup>1</sup> /64 MB* <sup>1</sup> /128 MB* <sup>1</sup> /256 MB/512 MB/1 GB/2 GB (FAT12 and FAT16 format corresponding) SDHC Memory Card (removable type) : 4 GB/8 GB (FAT32 format corresponding) HDD (fixed type): 40 GB* <sup>2</sup> Compression: MPEG-2 Recording mode and transfer rate: XP: 10 Mbps (VBR) SP: 5 Mbps (VBR) LP: 2.5 Mbps (VBR) Recordable time: <table><tr><td></td><td>SD Card (1GB)</td><td>HDD (40GB)</td></tr><tr><td>XP</td><td>12 minutes</td><td>9 hours</td></tr><tr><td>SP</td><td>25 minutes</td><td>18 hours</td></tr><tr><td>LP</td><td>50 minutes</td><td>36 hours</td></tr></table> Audio compression: SD card: Dolby Digital/MPEG-1 Audio Layer 2, 16bit (48 kHz/2 ch) HDD: Dolby Digital, 16 bit (48 kHz/2 ch) Maximum number of recordable folders and scenes: SD card: 99 folders × 99 scenes (9801 scenes) HDD: 999 folders × 99 scenes (98901 scenes) (When the date changes, a new folder is created and scenes are recorded in this new folder even if the number of scenes in the old folder has not reached 99.)		SD Card (1GB)	HDD (40GB)	XP	12 minutes	9 hours	SP	25 minutes	18 hours	LP	50 minutes	36 hours	OPERATING HUMIDITY	10 % - 80 %
			SD Card (1GB)	HDD (40GB)											
		XP	12 minutes	9 hours											
		SP	25 minutes	18 hours											
		LP	50 minutes	36 hours											
		OPERATING ALTITUDE	Less than 3000 m (9800 feet) above sea level												
		WEIGHT	SD Card/Hard Disk Video Camera: 340 g (0.75lbs) (without battery) AC Adaptor: 110 g (0.24 lbs)												
		DIMENSIONS	SD Card/Hard Disk Video Camera: (excluding the projecting parts) 67 mm (W) × 70 mm (H) × 116 mm (D) 2.68 inch (W) × 2.80 inch (H) × 4.64 inch (D) AC Adaptor: 92 mm (H) × 33 mm (H) × 61 mm (D) 3.6 inch (W) × 1.3 inch (H) × 2.4 inch (D)												
			STANDARD ACCESSORIES	1 pc. AC Adaptor 1 pc. Battery Pack Unit 1 pc. DC Cable 1 pc. AC Cord (Except SDR-H40GC) 2 pcs. AC Cord (SDR-H40GC) 1 pc. AV Multi Cable 1 pc. CD-ROM 1 pc. USB Cable											
		SOLDER	This model use lead free solder (PbF).												

\*1 Cannot be guaranteed in operation.

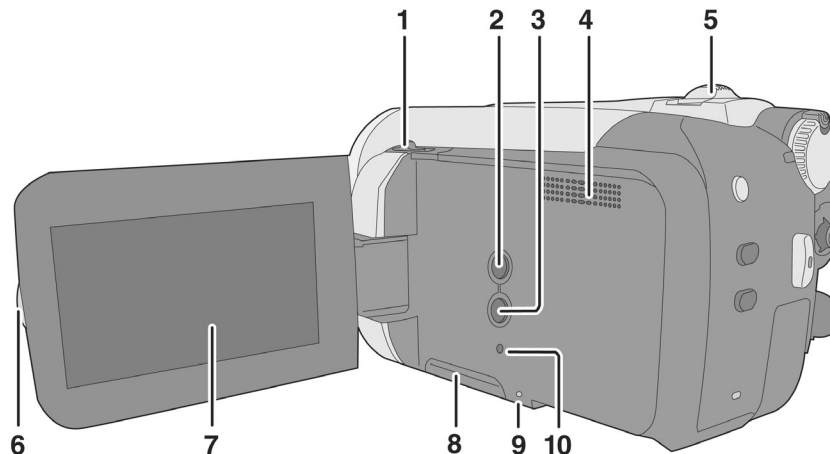
\*2 The 40 GB hard drive utilizes a portion of the storage  
space for formatting, file management and other purposes.  
40 GB is 40,000,000,000 bytes. Usable capacity will be less.

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 SDR-H40P/PC as a sample.

For other models, refer to each Operatin Instructions.

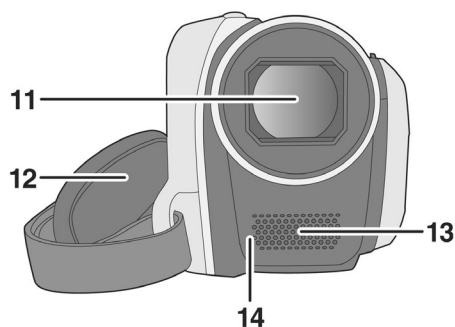


- 1 Open/close switch for the lens cover
- 2 Auto button [AUTO]
- 3 Manual button [MANUAL AF/MF]
- 4 Speaker
- 5 When recording: Zoom lever [W/T]  
When playing back: Volume lever [-VOL+]
- 6 LCD monitor open part

### 7 LCD monitor

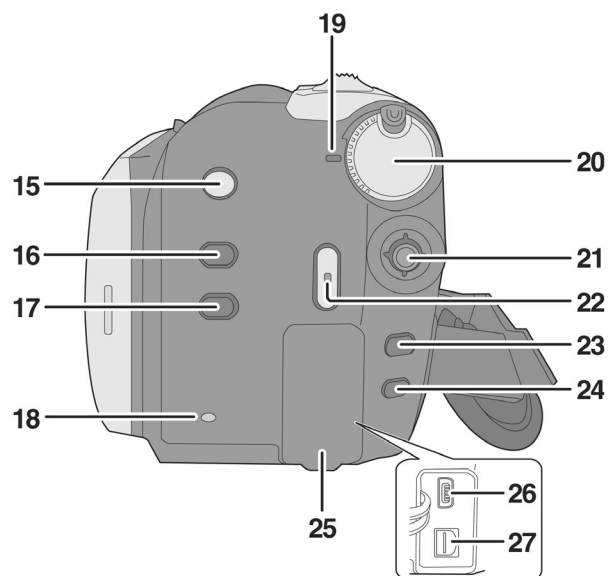
Due to limitations in LCD production technology, there may be some tiny bright or dark spots on the LCD monitor screen. However, this is not a malfunction and does not affect the recorded picture.

- 8 SD card slot cover [SD CARD]
- 9 SD card access lamp [ACCESS]
- 10 Reset button [RESET]



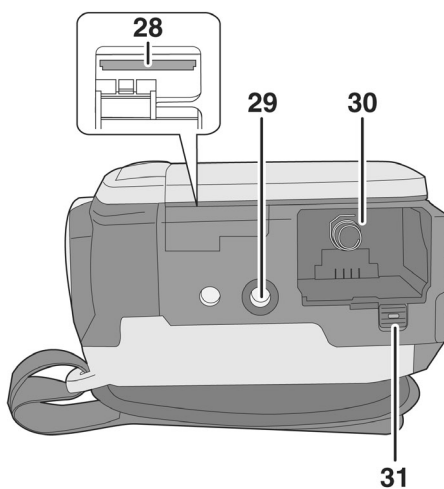
- 11 Lens
- 12 Grip belt
- 13 Microphone (built-in, stereo)
- 14 White balance sensor





- 15 Image stabilizer button [ (O.I.S.) , O.I.S.]
- 16 Power LCD plus button [POWER LCD PLUS]
- 17 DVD COPY button [DVD COPY]
- 18 HDD access lamp [ACCESS HDD]
- 19 Status indicator
- 20 Mode dial

- 21 Joystick
- 22 Recording start/stop button
- 23 Menu button [MENU]
- 24 Delete button [ ]
- 25 Terminal cover
- 26 USB terminal [ ]
- 27 Audio-video output terminal [A/V]



- 28 SD card slot
- 29 Tripod receptacle
- 30 Battery holder
- 31 Battery release lever [BATTERY]

## 6 Service Mode

### 6.1. Error Display

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

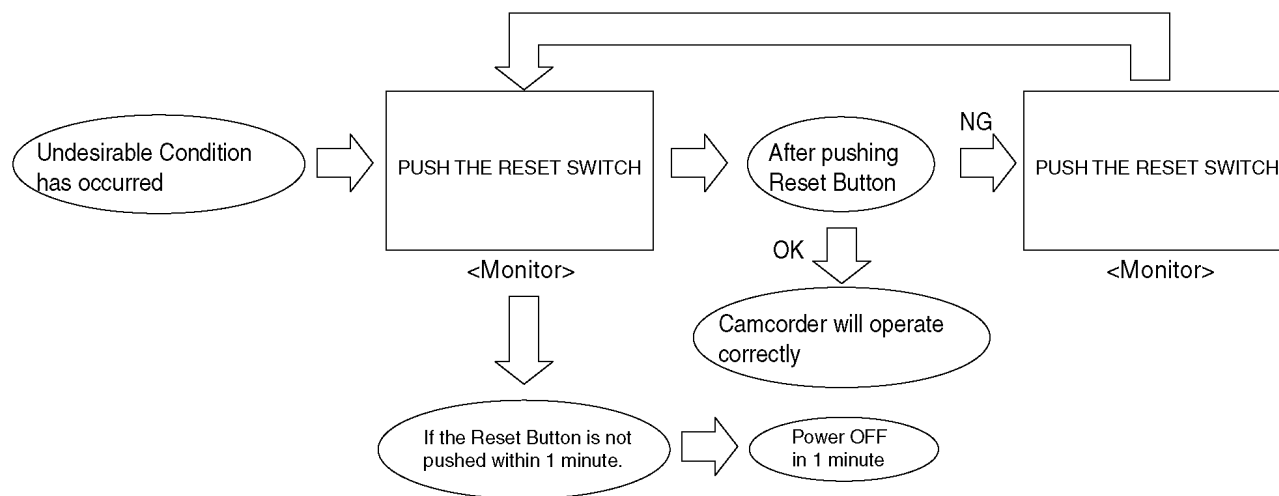


Fig. 1

**Note:**

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

### 6.2. Service Menu

When abnormal detection contents are confirmed, do the following operation. Automatic diagnosis code will be displayed. (Service Menu)

**To enter the Service Menu**

Push the [DELETE], [JOYSTICK CONTROL LEFT] and [DVD COPY] simultaneously for 3 seconds (with no SD Card inserted).

**Note:**

If a SD Card is inserted, the above operation will not work.

This operation displays the following Service Menu items.

ignore							
9 4 0 E	0 8 1 7 0 0	1 8	F F F F	1 / 3	9 4 0 E	0 8 1 7 0 0	1 8 F F F F 2 / 3
1	N O	6	N O	11	N O	9 4 0 E	9 4 0 E 0 0 0 5 0 0 0 1 0 0 0 4 0 0 0 0
2	N O	7	N O	12	N O	<Service Menu 2/3>	
3	N O	8	N O	13	N O	<Service Menu 3/3>	
4	N O	9	N O	14	N O		
5	N O	10	N O	15	N O		
9 4 0 E	9 4 0 E	0 0 0 5 0 0 0 1	0 0 0 4 0 0 0 0				
ignore							
<Service Menu 1/3>							

Item [1]: HDD information	Item [6] : Not used	} ignore	Item [11]: Not used	} ignore
Item [2]: Reset the total elapsed CCD time	Item [7] : Not used		Item [12]: Not used	
Item [3]: HDD temperature information	Item [8] : Not used		Item [13]: Not used	
Item [4]: Camera lock code/Elapsed time	Item [9] : Lock record clear		Item [14]: HDD Hardware test	
Item [5]: Not used	Item [10]: HDD Self check		Item [15]: Not used	} ignore ※ NOTE

※ NOTE: Be careful not to execute the Item [15]. If doing so, the entire HDD data will be erased.

Fig. 2-1

**Note:**

Only perform items 1, 2, 3, 4, 9, 10 and 14 in the Service Menu.

**To select the Item of Service Menu**

1. Press [JOYSTICK CONTROL UP/DOWN] to select item [1], [2], [3], [4], [9], [10] or [14].
2. Press [JOYSTICK CONTROL RIGHT] to display [YES/NO] screen.
3. Press [JOYSTICK CONTROL UP/DOWN] to select [YES].
4. Press [JOYSTICK CONTROL CENTER] to end.

**<Item [1] screen : HDD information (1/7 screen)>**

DRIVE Information 1/7	
01. FALL	ABCD
02. HIGH TEMP 9A	
03. LOW TEMP 9A	
04. SERIAL	
0123456789ABCDEF0123 }	

01. Number of times of fall detection (Base 16 number)  
 02. Number of times of shut down due to high temperature (Base 16 number)  
 03. Number of times of shut down due to low temperature (Base 16 number)  
 ignore

**<Item [1] screen : HDD information (3/7 screen)>**

Press [JOYSTICK CONTROL RIGHT] to display 3/7 screen.

DRIVE Information 3/7	
07. READ ERROR	
010B006464000000000000	
08. THROUPT	
0205006464000000000000	
09. SPINUP	
0327006464330800000000	
10. START/S	
0432006464170100000000	
11. REALLOC SECTOR	
C532006464270000000000 }	

Re-allocated Sector Count (Quantity)

For example :

ignore      A B C D E F  
 C 5 3 2 0 0 6 4 6 4 2 7 0 0 0 0 0 0 0 0 0 0 0

Sorting

F E D C B A  
 0 0 0 0 0 0 0 0 0 0 0 2 7  
 (Base 16 number)

Change to decimal number

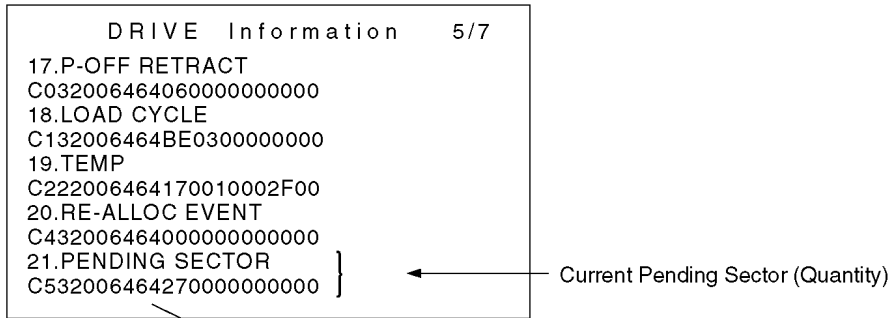
39 (Re-allocated Sector Count)

- If Re-allocated Sector Count is 500 and over, replace HDD.

Fig. 2-2

## &lt;Item [1] screen : HDD information (5/7 screen)&gt;

Press [JOYSTICK CONTROL RIGHT] to display 5/7 screen.



For example :

ignore A B C D E F  
C 5 3 2 0 0 6 4 6 4 2 7 0 0 0 0 0 0 0 0 0 0

Sorting

F E D C B A  
0 0 0 0 0 0 0 0 0 0 0 2 7  
(Base 16 number)

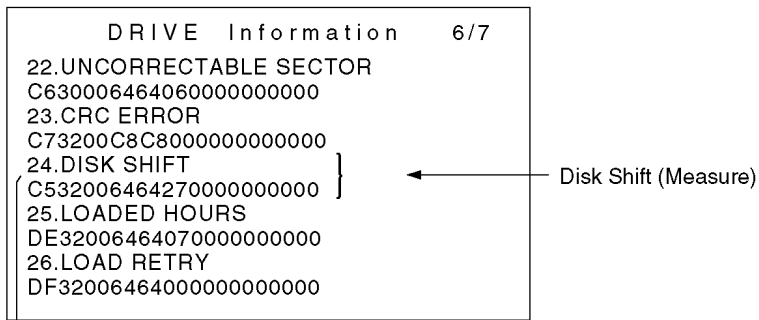
Change to decimal number

→ 39 (Current Pending Sector)

- If Current Pending Sector is 500 and over, replace HDD.

## &lt;Item [1] screen : HDD information (6/7 screen)&gt;

Press [JOYSTICK CONTROL RIGHT] to display 6/7 screen.



For example :

ignore A B C D E F  
C 5 3 2 0 0 6 4 6 4 2 7 0 0 0 0 0 0 0 0 0 0

Sorting

F E D C B A  
0 0 0 0 0 0 0 0 0 0 0 2 7  
(Base 16 number)

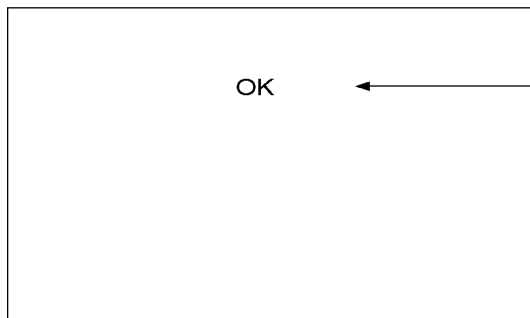
Change to decimal number

→ 39 (Disk Shift)

- If Disk Shift is 400 and over, replace HDD.

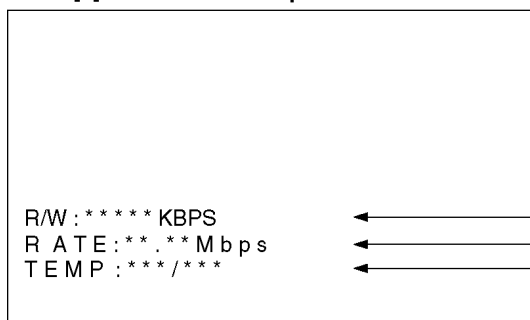
Fig. 2-3

## &lt;Item [2] screen : Reset the total elapsed CCD time&gt;



← "OK" is displayed after "Reset the total elapsed CCD time" is executed.

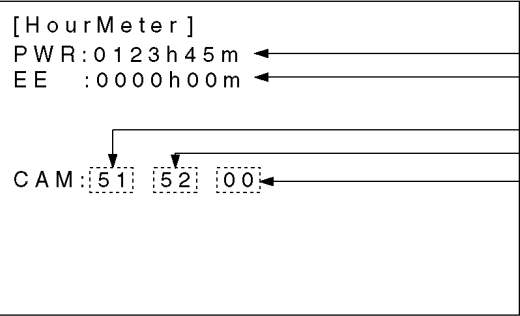
## &lt;Item [3] screen : HDD temperature information&gt;



← Reading/Writing speed (While ACCESS/PC lamp is lighting)  
← Recording bit rate  
← Main Unit temperature (current)/  
Maximum temperature after the power is turned on

Fig. 2-4

<Item [4] screen : Camera lock code/Elapsed time>

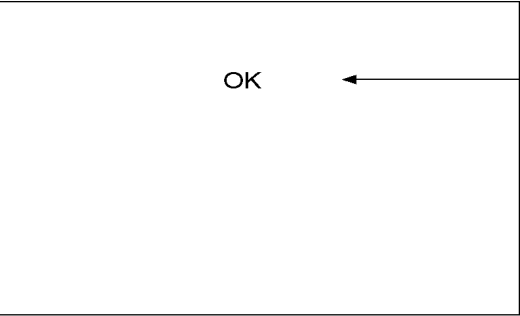


Total elapsed power on time  
**ignore**  
Camera Error record  
The number before previous  
Previous number  
Latest number

Camera Error code record in hexadecimal

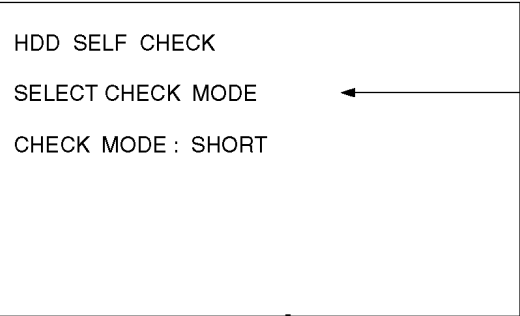
Display	Explanation of cause
00	No error
51	Focus Motor Lock
52	Zoom Motor Lock
53	OIS Drive Error
33	Communication error between CAMERA and ARM

<Item [9] screen : Lock record clear>



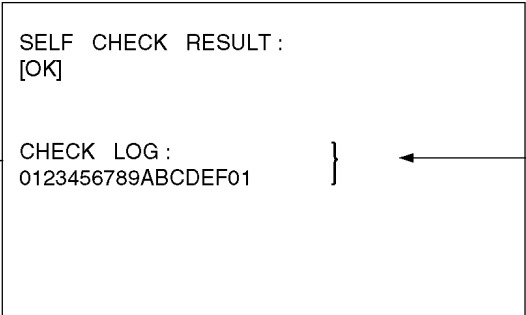
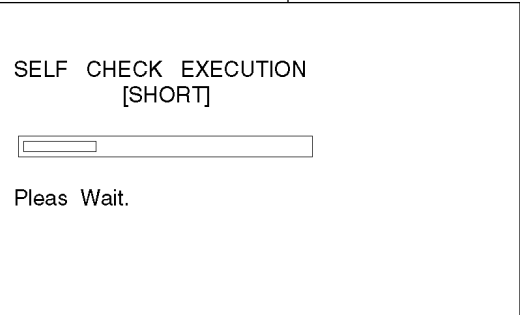
"OK" is displayed after "Lock record Clear" is executed.

<Item [10] screen : HDD Self check>



HDD self check mode "SHORT or EXTEND" is selectable by [JOYSTICK CONTROL ]. However, execute only "SHORT" mode. (Ignore EXTEND mode.)

Select "SHORT" then press [JOYSTICK CONTROL CENTER].



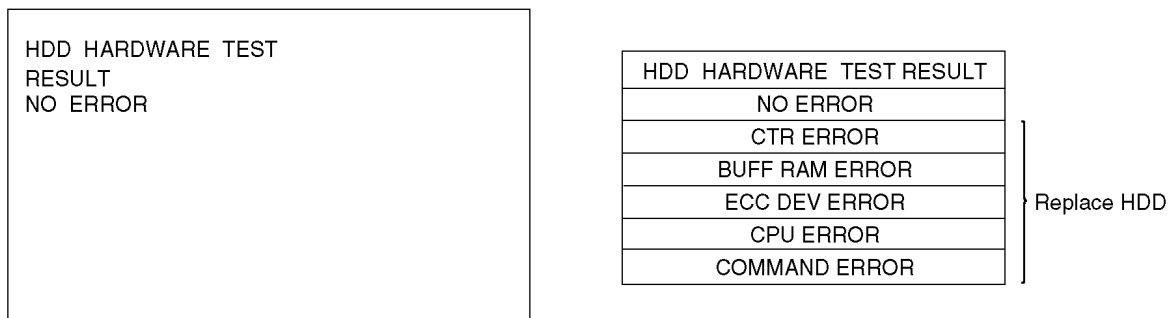
**ignore**

(Execution time: 3 or 4 minutes)

●If "SELF CHECK RESULT" is [NG] or [COMMAND NG] in SHORT check mode, replace HDD.

Fig. 2-5

## &lt;Item [14] screen : HDD Hardware test&gt;



- Replace HDD when "HDD HARDWARE TEST RESULT" is other than [NO ERROR].

Fig. 2-6

**To exit the Service Menu**

Unplug the AC Cord.

**6.3. About Default Setting**

The data of Menu, Mode, Card and EEPROM setting, etc. is set to the default condition in factory.

**6.3.1. How to set the Default Setting**

1. Turn the Power on and set the Mode Dial to [VIDEO RECORDING MODE].
2. When pressing [DELETE], [JOYSTICK CONTROL RIGHT] and [DVD COPY] for more than 3 minutes simultaneously (with no SD Card inserted), the items below are set to the Default Setting.
  1. Menu, Mode, Adjusted Value
  2. Card format
  3. Reset of picture files and directory number (Set the picture record file number to 1)
  4. Clear the information of Mechanism Lock
  5. Set the time setting to no-setting

## 7 Service Fixture & Tools

### 7.1. Service Tools and Equipment

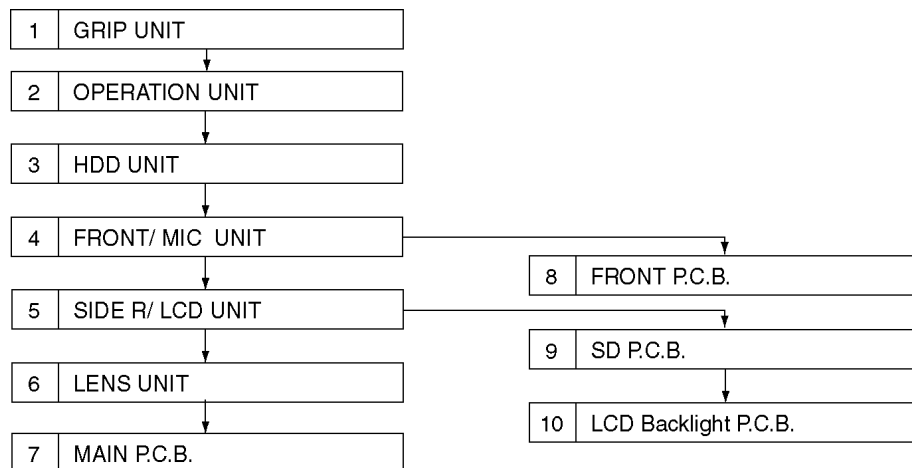
Parts Name	Parts No.	Q'ty	Remarks
PC	---	1	
AC Adaptor	---	1	
DC Cable	---	1	
AV Multi Cable	---	1	
USB Cable	---	1	
PC-Adjustment Program	---	1	
Light Box	VFK1164LBX1	1	
Infinity Lens	VFK1164TCM02	1	With Focus Chart
Color Bar Chart	VFK1164TFGB2	1	
Gray Scale Chart	VFK1164TFGS2	1	
Color Conversion	VFK1164TFCT2	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	
HDD Conector Tool	LSVQ0112	1	
Pin For CCD	RFKZ0476	1	New
Extension Cable (16pin)	VFK1175	1	FP41 (Main) - FP6501 (Front)
Extension Cable (26pin)	VFK1492	1	FP81 (Main) - FP8101 (LCD Backlight)
Extension Cable (20pin)	VFK1461	1	FP61 (Main) - Operation Unit
Extension Cable (33pin)	VFK1950	1	FP71 (Main) - Lens Unit
Extension Cable (16pin)	VFK1175	1	FP31 (Main) - Prism Unit
Extension Cable (22pin)	VFK1282	1	FP51 (Main) - FP6301 (SD)
Extension Cable (12pin)	VFK1388	1	FP11 (Main) - Side (L) Case Unit
Extension Cable (40pin)	RFKZ0464	1	FP21 (Main) - HDD Unit (New)



## 8 Disassembly and Assembly Instructions

### 8.1. Disassembly Flow Chart

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



### 8.2. P.C.B. Layout

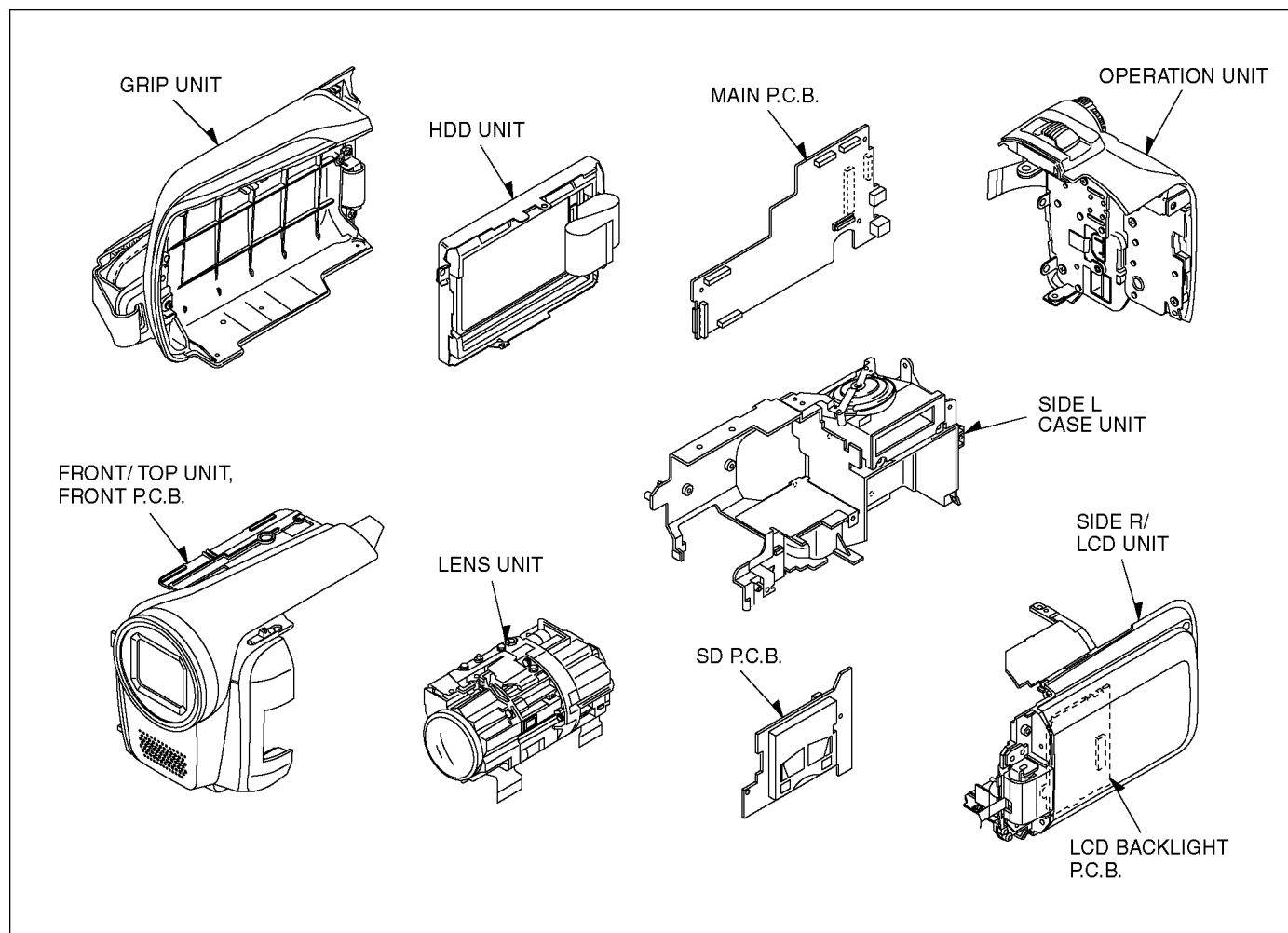


Fig. F1

## 8.3. Disassembly Procedures

### Flow-Chart for Disassembly Procedure

No.	Item / Part	Fig.	Removal (Screw,Connector,FPC. & Other)
1	Grip Unit		5-Screws (A) 1-Screw (B) 2-Tabs Grip Unit
2	Operation Unit		Open the LCD Unit and Jack Cover. 3-Screws (C) 1-Screw (D) 1-Connector FP61 Operation Unit
3	HDD Unit		4-Screws (E) 1-Connector FP21 Head Disk Drive, HDD Cushion, HDD Shield Case
4	Front/ Mic Unit		4-Screws (F) 1-Tab 1-Connector FP6501 Front/ Mic Unit
5	Side R/ LCD Unit		3-Screws (G) 1-Connector FP81 Side R/ LCD Unit
6	Main P.C.B.		1-Screw (H) 4-Connectors FP11,FP31,FP51,FP71 Main P.C.B. & Main Plate Unit
			3-Screws (I) Main Plate Unit,Main P.C.B.
7	Lens Unit		1-Screw (J) Lens Unit
8	Front P.C.B.		3-Screws (K) Front P.C.B.
9	SD P.C.B.		5-Screws (L) 1-Tab 1-Connector P6301 Speaker Angle,SD P.C.B.
10	LCD Backlight P.C.B.		Turn the LCD Case to the arrow direction so that the screws can be seen, and remove the 2 screws (M). 6-Tabs LCD Case A Unit 1-Connector FP8101 LCD Case B Unit
			1-Connector FP8102 1-Screw (N) 6-Tabs LCD Backlight P.C.B.

If the Card inserted,take out it before disassembling.

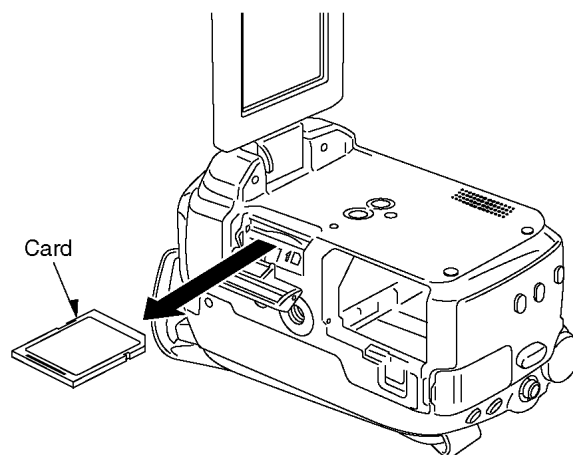


Fig. D1

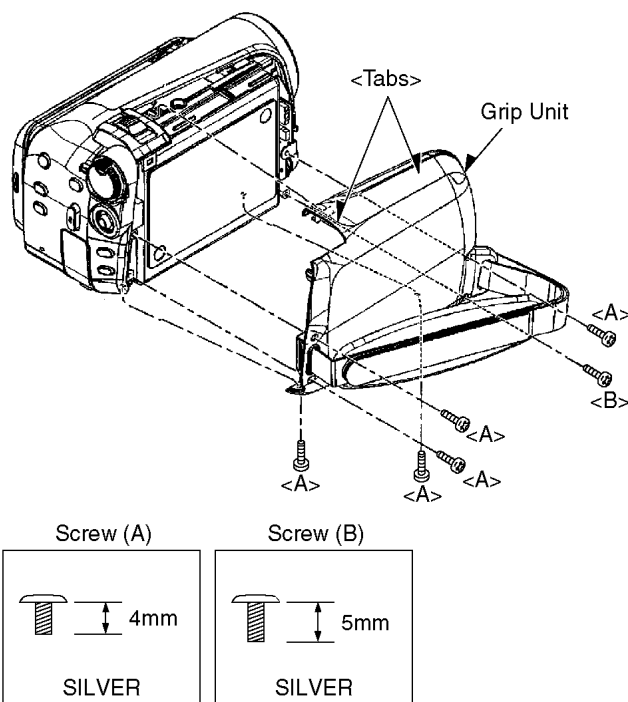


Fig. D2

Open the LCD Unit and Jack Cover.

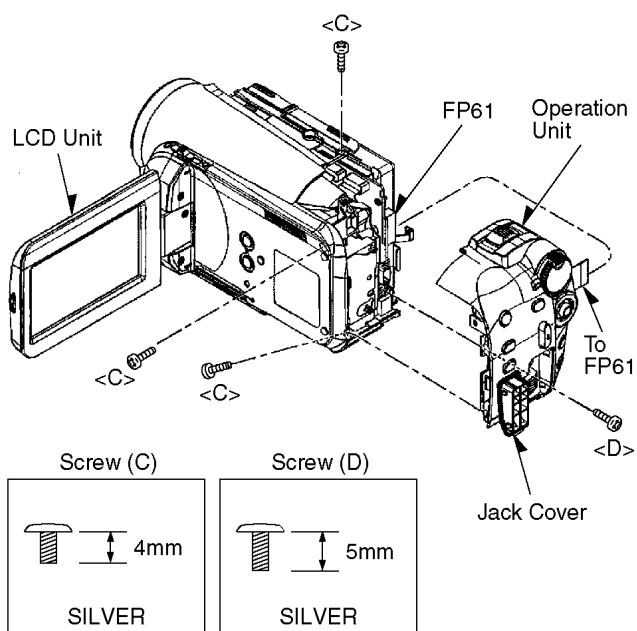


Fig. D3

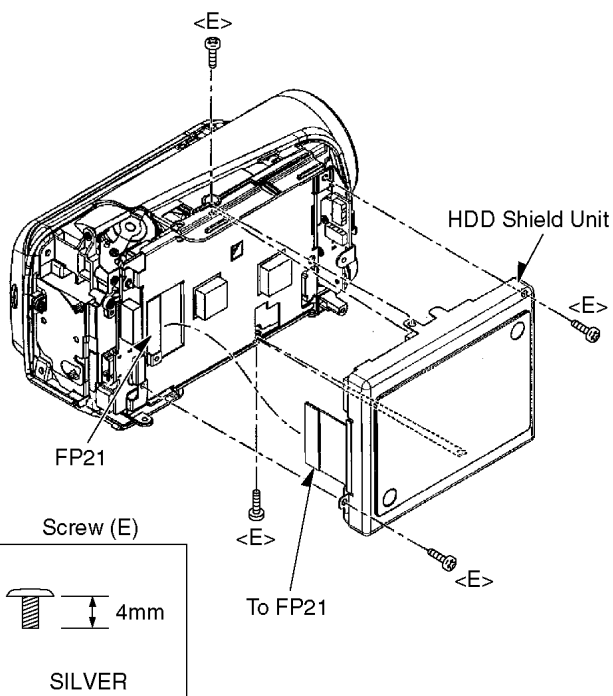


Fig. D4

### Note for replacing HDD

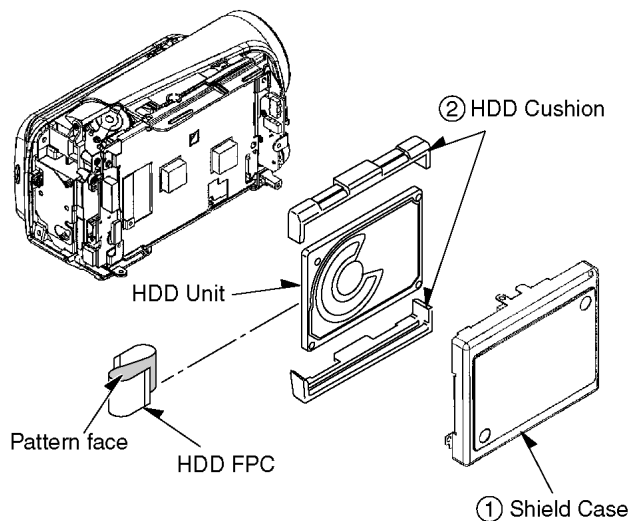
- Be sure to use the tool when inserting and removing HDD FPC.

After replacing the HDD, be sure to format the new HDD.

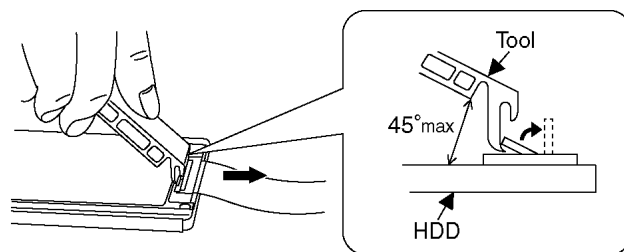
See "Formatting HDD" in Service Navigation.

### 1) How to Remove

- Remove the HDD Shield Case from the unit.
- Remove the HDD cushion from the HDD.
- Remove the HDD FPC from HDD using the tool.



- See "Tool operation" in Service Navigation.



## 2) How to Attach

- ① Attach the HDD FPC to the new HDD using the tool.
- ② Attach the HDD cushion to the HDD.
- ③ Attach the HDD Shield Case to the unit.

- ① See "Tool operation" in Service Navigation.

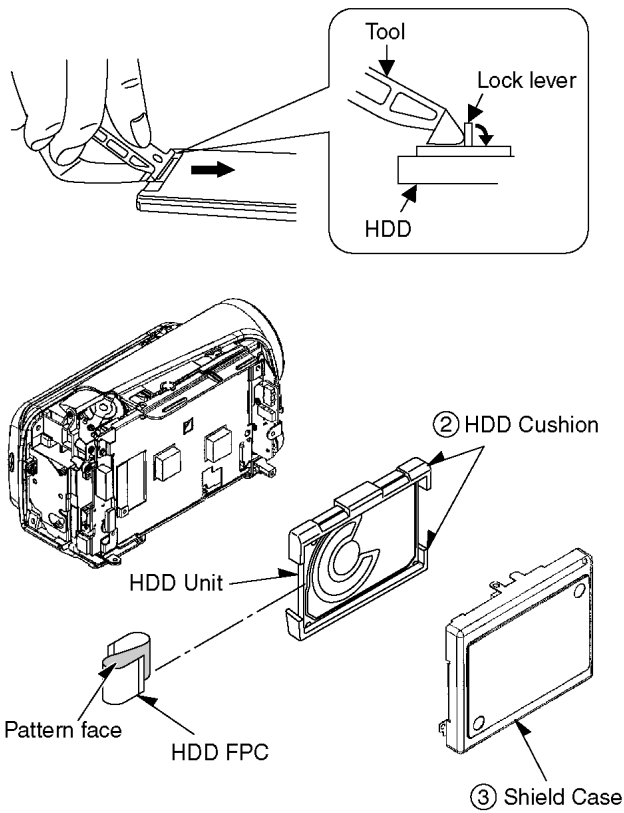


Fig. D5

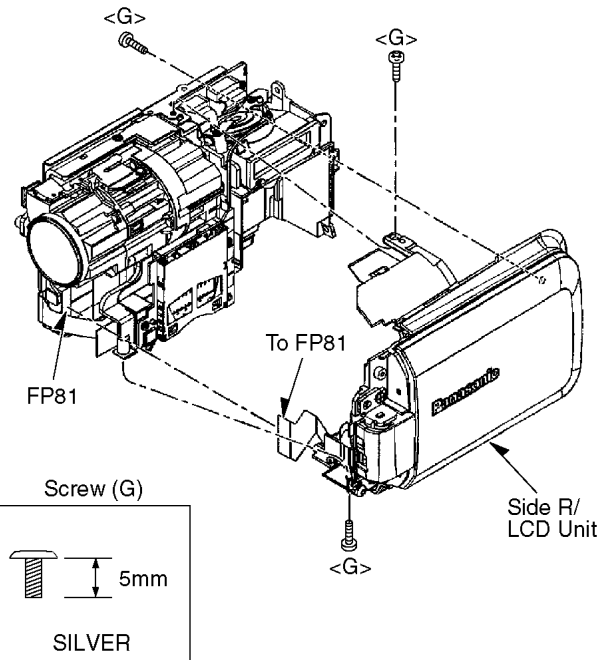


Fig. D6

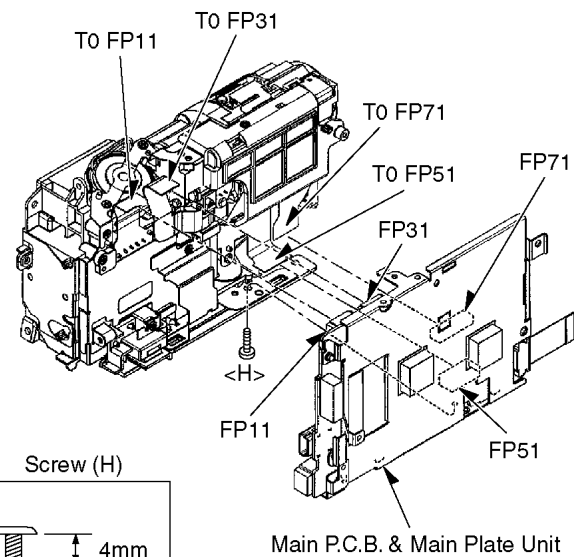
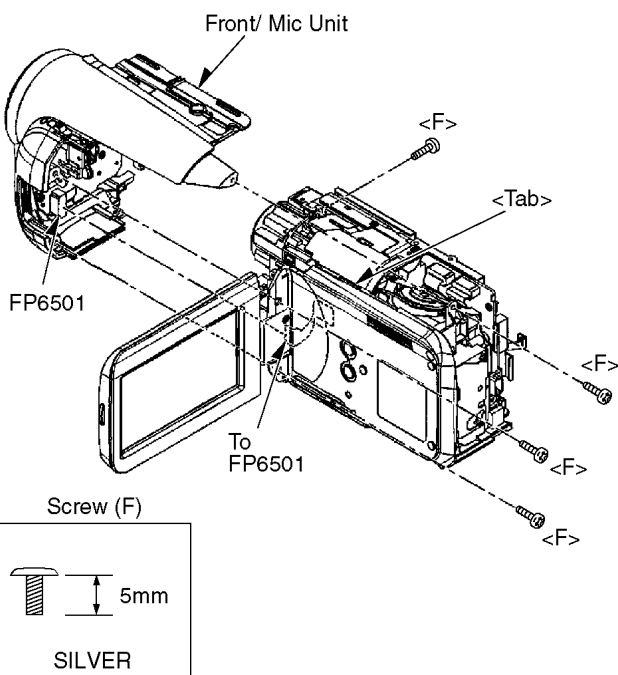


Fig. D7



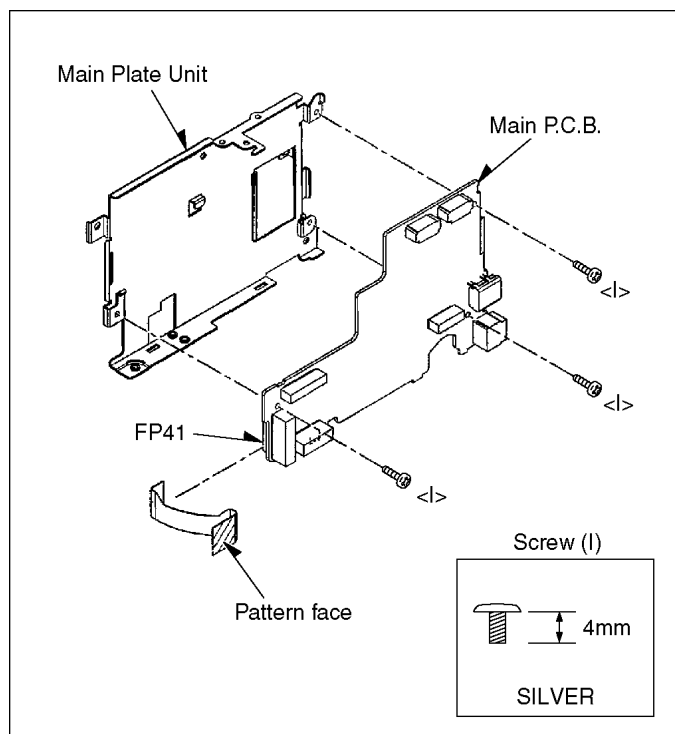


Fig. D8

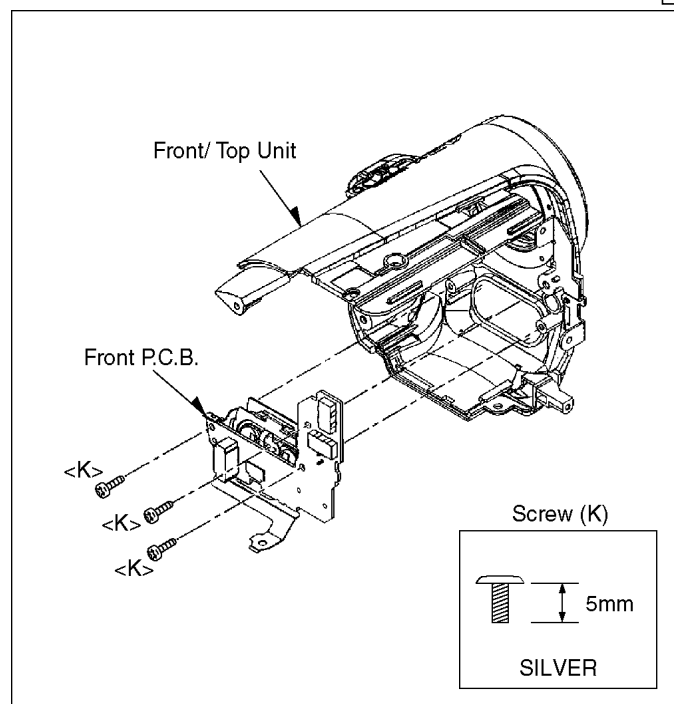


Fig. D10

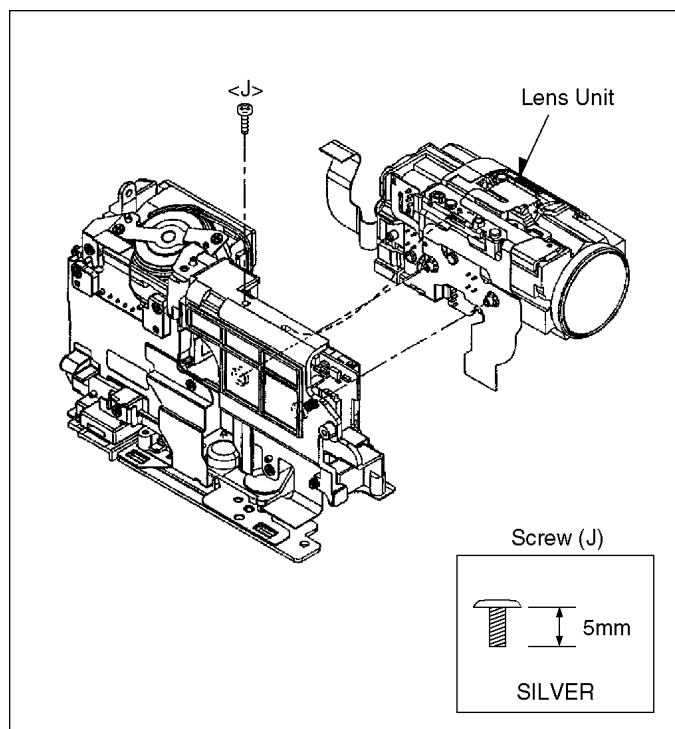


Fig. D9

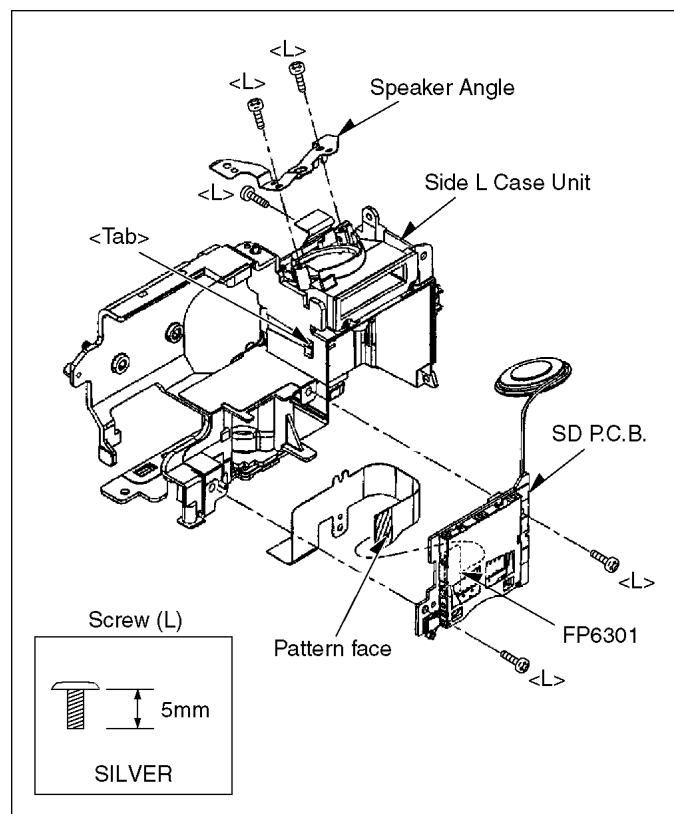


Fig. D11

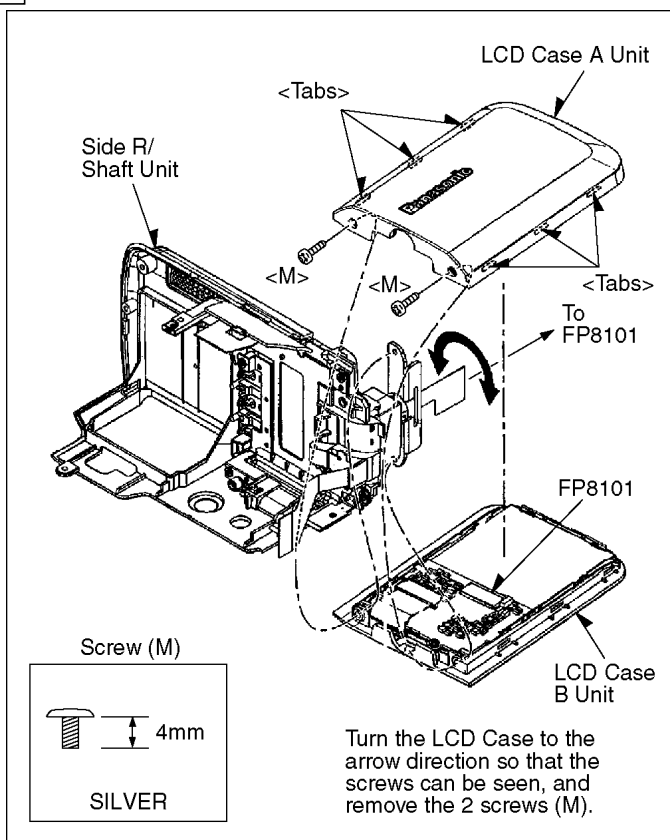


Fig. D12

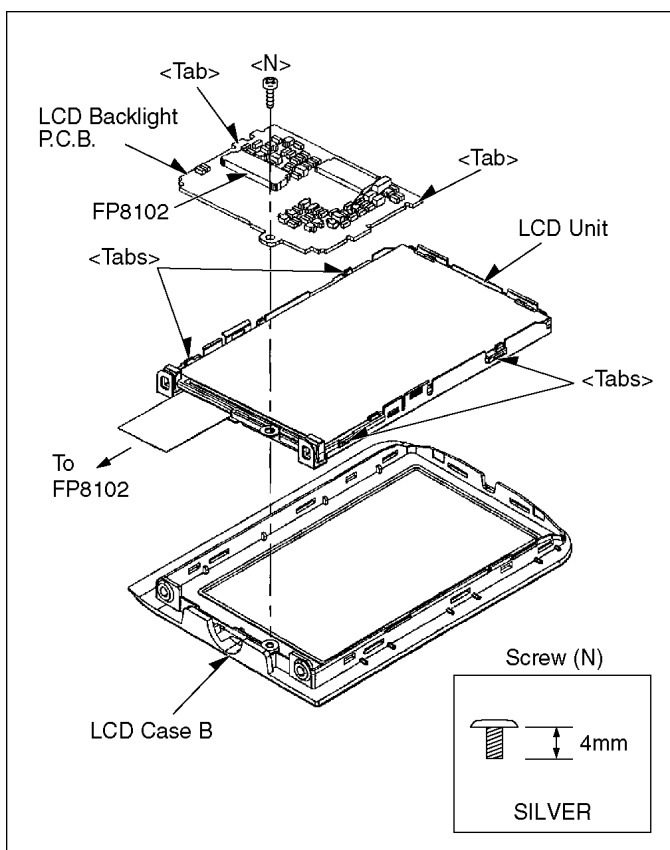


Fig. D13

## 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.

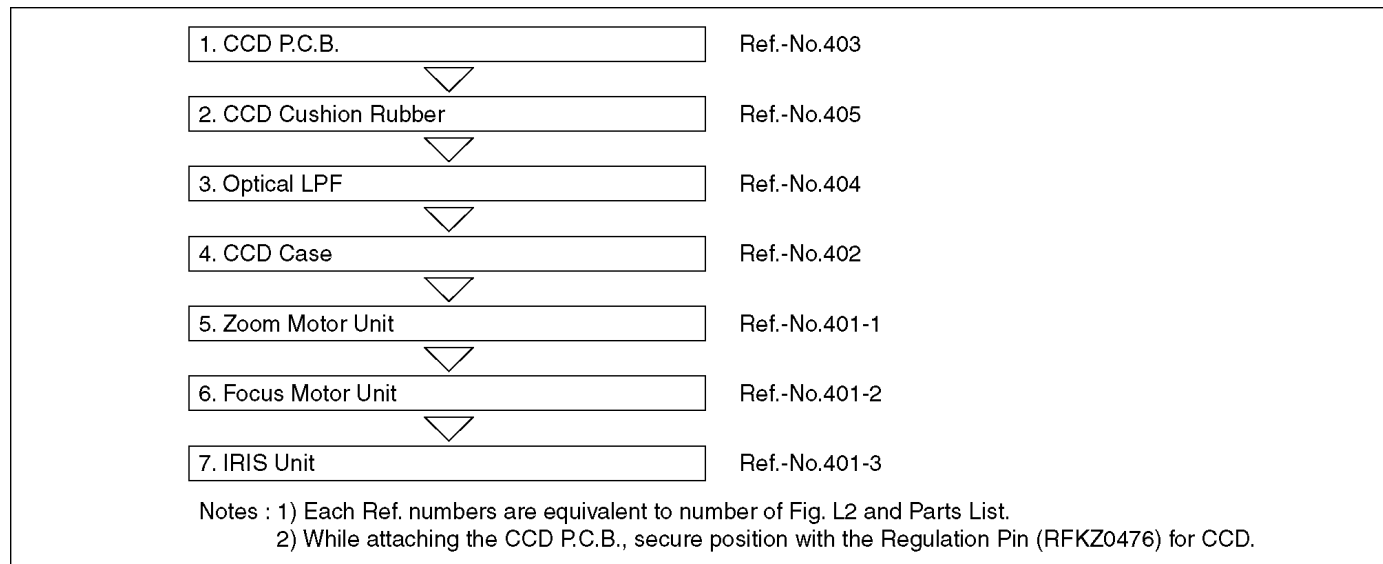


Fig. L1

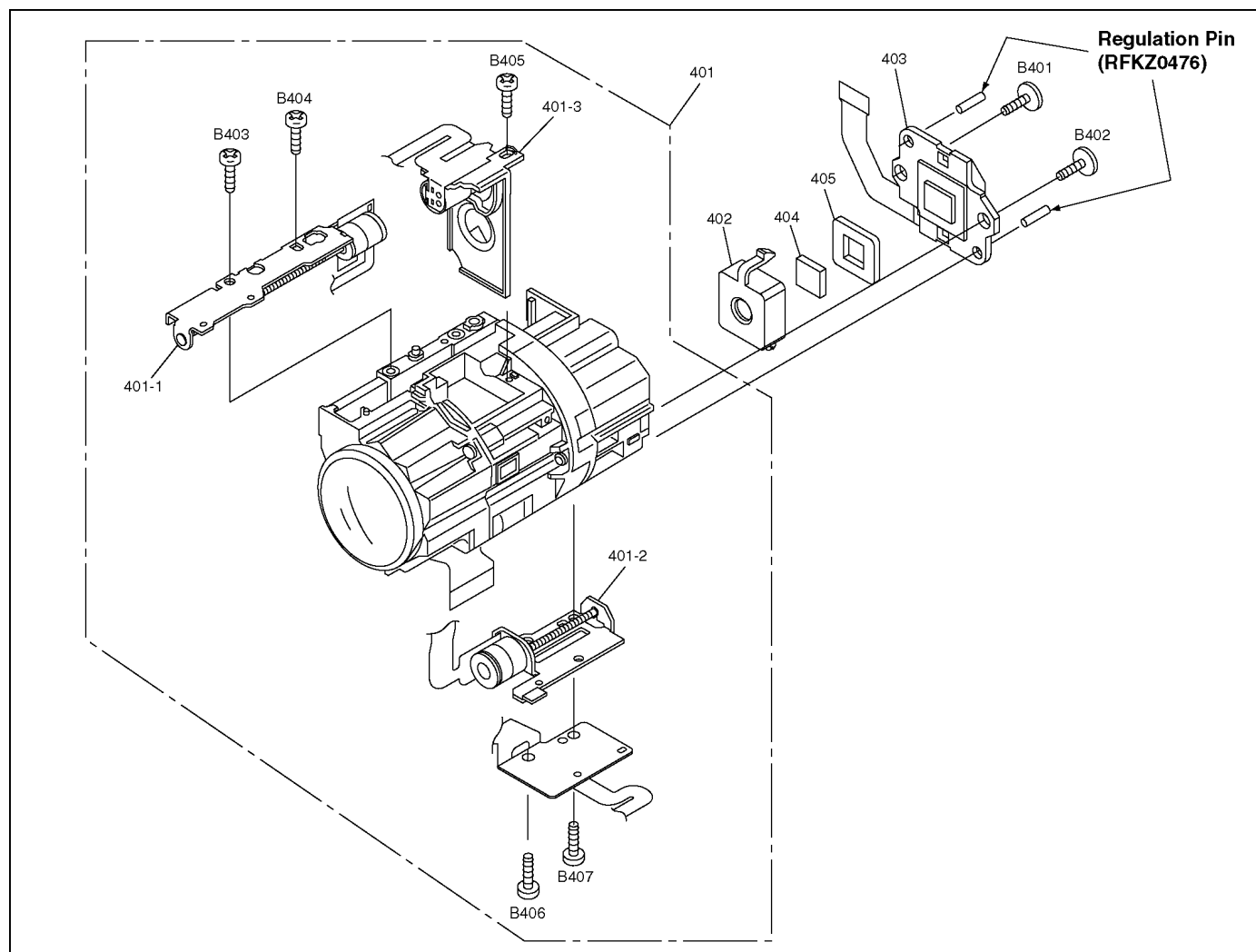


Fig. L2

## 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

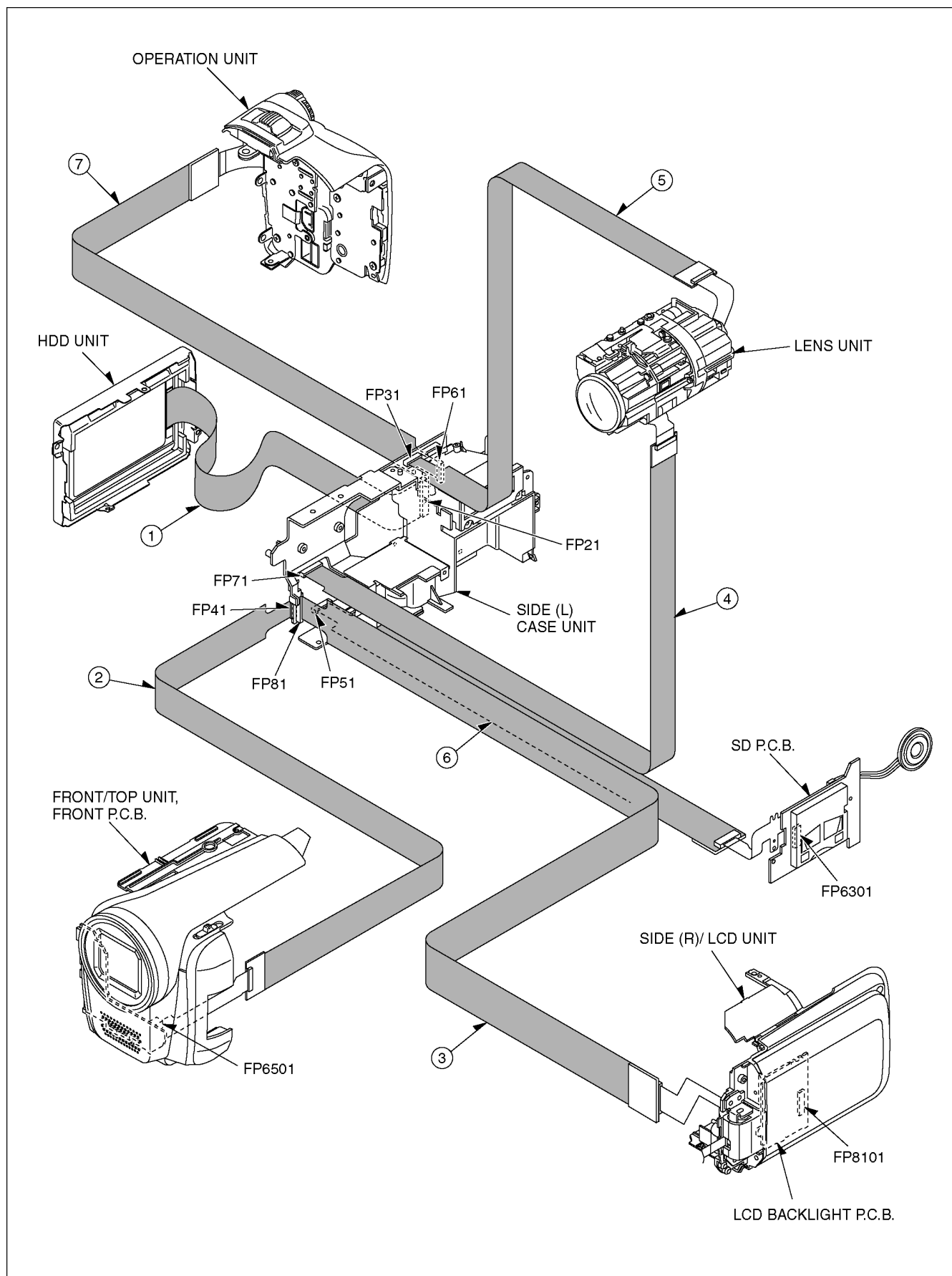
Use the following extension cables when checking or adjusting individual circuit boards except module Parts (Main P.C.B.).

Ref.	Part No.	Pin	Part Name	Connection			Q'ty
1	RFKZ0464	40	Flat Cable	FP21	(Main)	- HDD Unit	1
2	VFK1175	16	Flat Cable	FP41	(Main)	- FP6501 (Front)	1
3	VFK1492	26	Flat Cable	FP81	(Main)	- FP8101 (LCD Backlight)	1
4	VFK1950	33	Flat Cable	FP71	(Main)	- Lens Unit	1
5	VFK1175	16	Flat Cable	FP31	(Main)	- Prism Unit	1
6	VFK1282	22	Flat Cable	FP51	(Main)	- FP6301 (SD P.C.B)	1
7	VFK1461	20	Flat Cable	FP61	(Main)	- Operation Unit	1

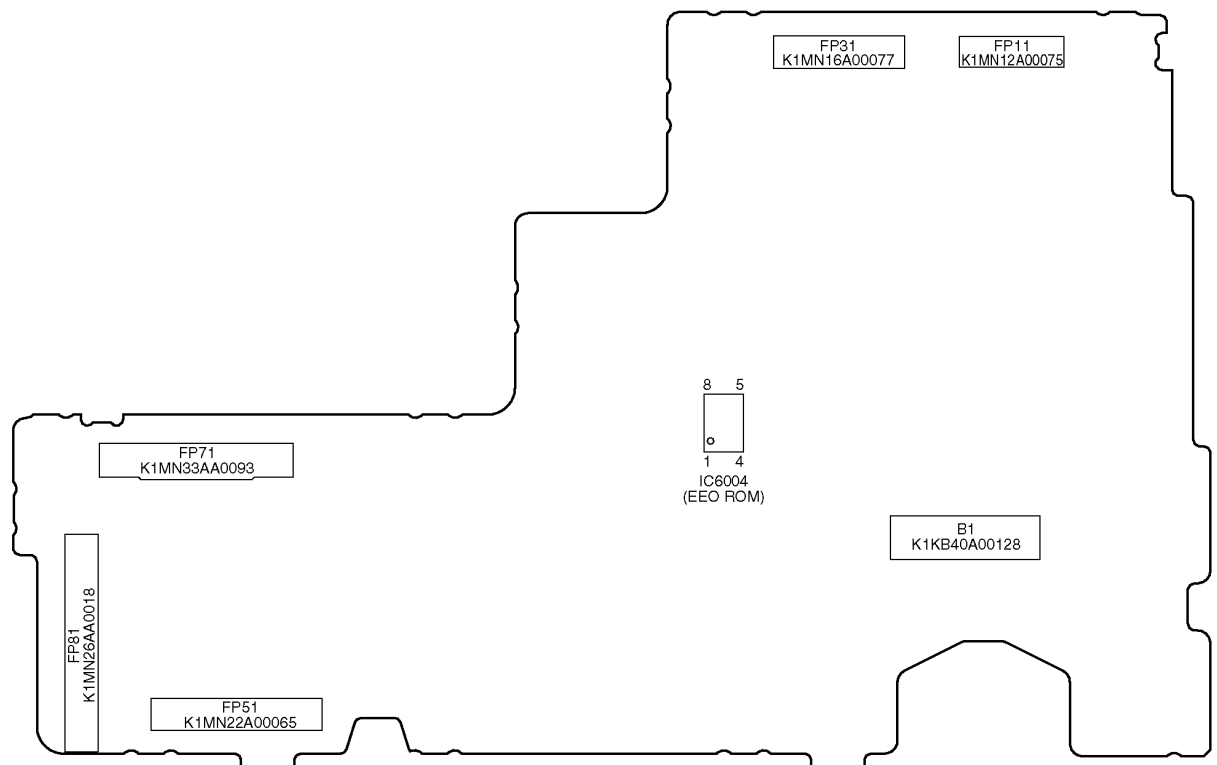


## 9.2.2. Checking and repairing individual circuit boards except module parts (Main P.C.B.)

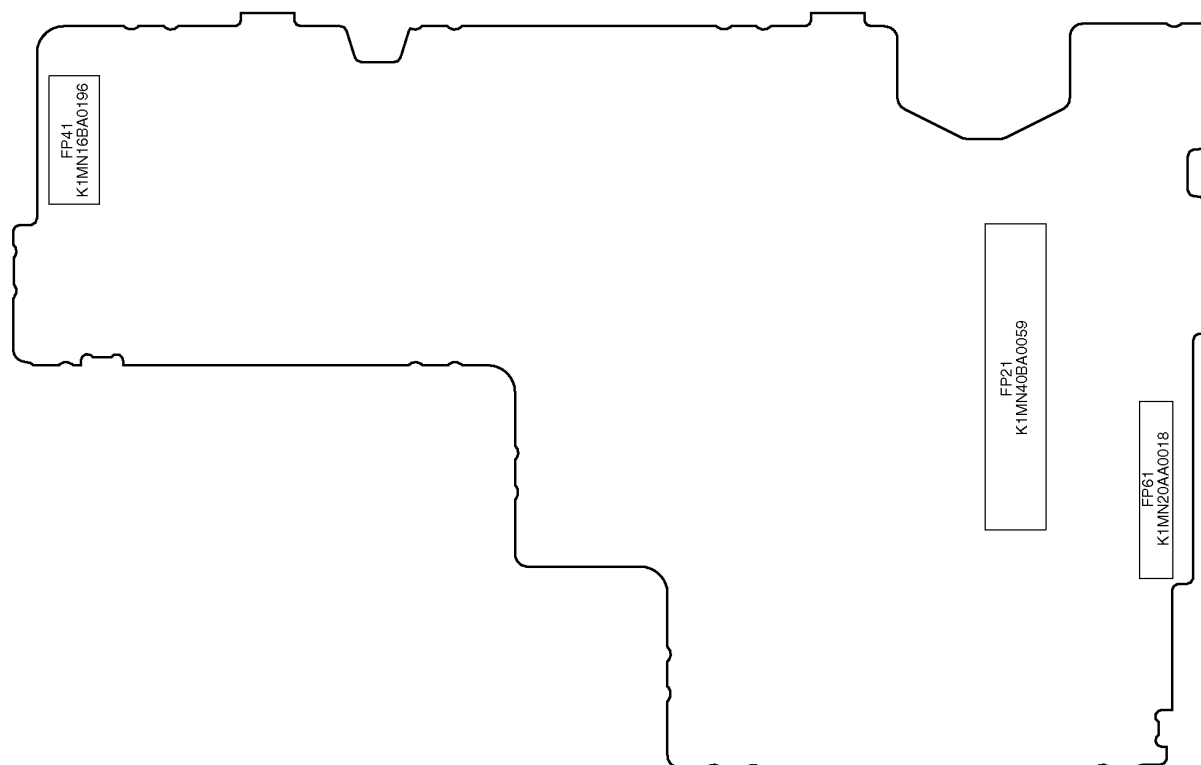
How to use extension cables.



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



(COMPONENT SIDE)



(FOIL SIDE)

## 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.	LENS UNIT	
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

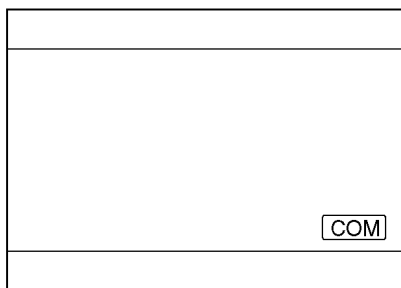
### 9.4.2. Set-up manual for SD Card/Hard Disk Video Camera.

#### 1. Installation of USB-SERIAL Driver

Execute the "Setup.exe" file in "Com Mass" folder by double clicking to install the USB-SERIAL driver.

#### 2. Set-Up

- Remove the SD card from this unit.
- To enter the PC connection (COM) mode, push the [DELETE] button, [DVD COPY] button and [JOYSTICK CONTROL UP] simultaneously for 3 seconds without connecting the USB Cable.



<LCD Monitor>

c. Connect the PC and SD Card/Hard Disk Video Camera as shown in Fig. E1 and E2.

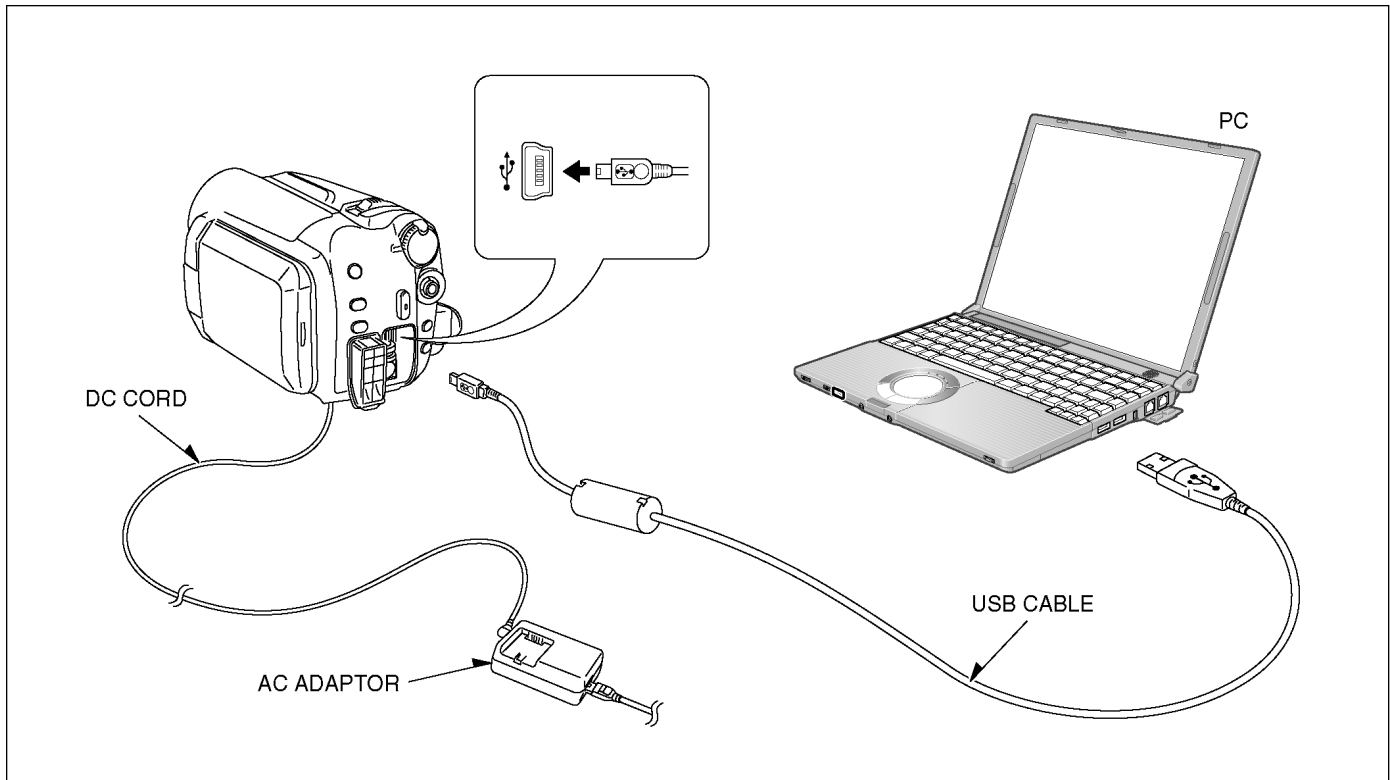


Fig. E1

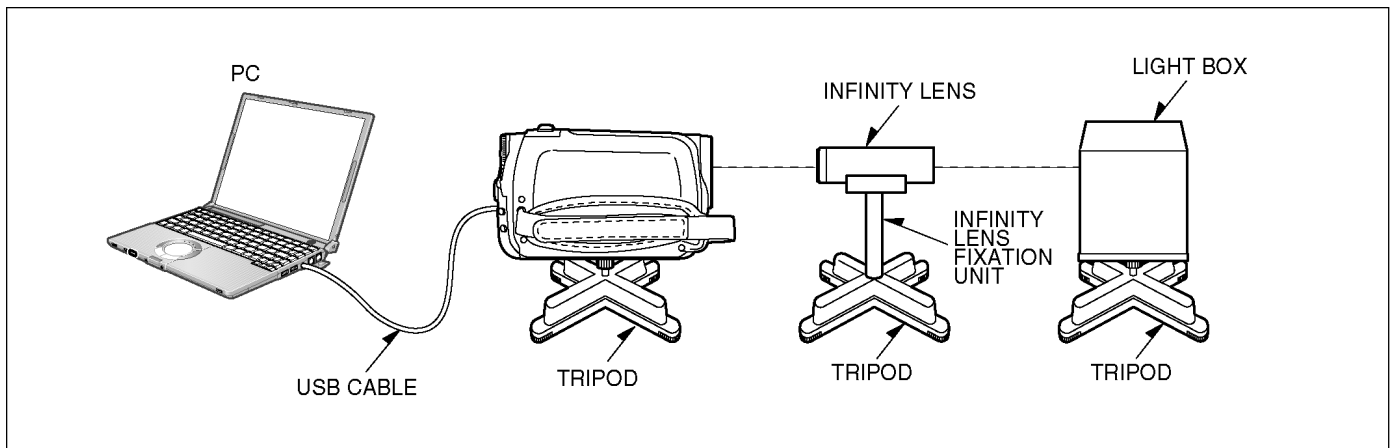


Fig. E2 Rough image of set-up connection

### 9.4.3. Set up of PC-EVR Adjustment Program

1. Turn on the PC and install the PC-EVR Adjustment Program into the PC.
2. Execute the "khd2008.exe" file by double clicking to start up the PC-EVR Adjustment Program.

The main menu will be displayed.

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

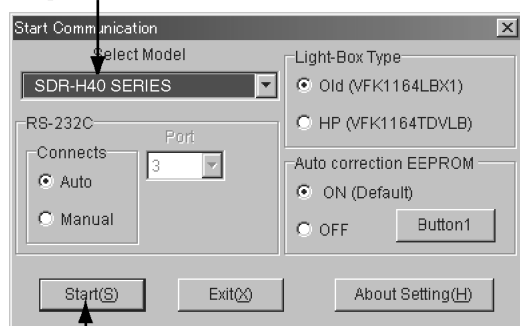
#### Note:

When the camcorder does not power on, turn the power on with forced power on function.

<How to turn the power on with forced power on function >

Push and hold the [MENU] and [JOYSTICK CONTROL RIGHT], then set [POWER SW] to ON until the power is turned on.

- ① Select the appropriate model.

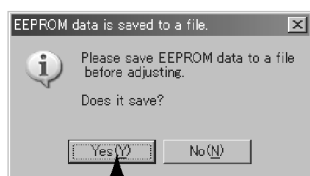


- ② Click to start.

Fig. E2-1

5. When the communication is complete, the dialog will appear.

Click "Yes" and "Save" to save the EEPROM data.



- ③ Click.

Fig. E2-2

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.

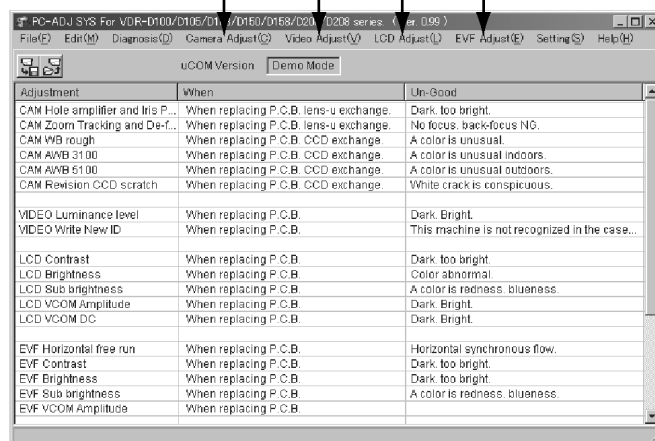


Fig. E2-3

#### 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.

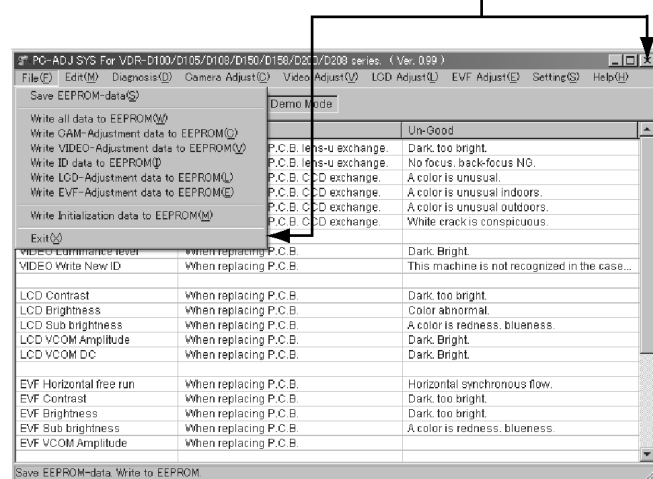


Fig. E2-4

8. To release the PC connection (COM) mode, push the [DELETE], [DVD COPY] and [JOYSTICK CONTROL UP] simultaneously for 3 seconds with the USB Cable disconnected.

### 9.4.4. How to confirm "OneNAND-Flash ROM Error"

If there is a problem with Flash ROM (IC3203), the unit does not turn the power on.

(Problem: When the power SW is turned on, the power LED lights for 3 seconds and goes out. The power can not be turned on again.)

If this problem occurs, check if the Flash ROM (IC3203) has a problem in the following procedure.

1. Start PC-EVR Adjustment Program.

Refer to "8.1.4. Set up of PC-EVR Adjustment Program" and start PC-EVR Adjustment Program.

## 2. Select the "Diagnosis"

### ① Select the "Diagnosis"

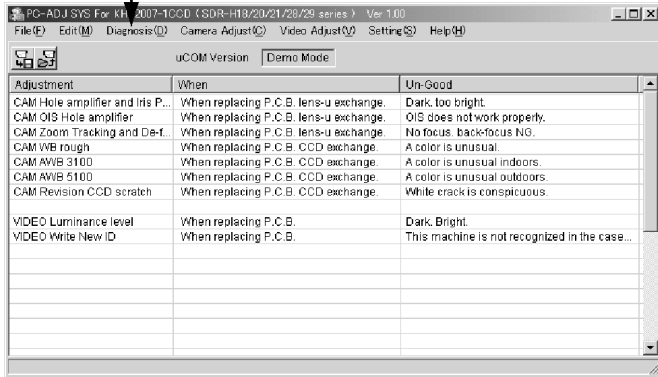


Fig. E2-5

## 3. Select the "Lock Info"

### ② Select the "Lock Info"

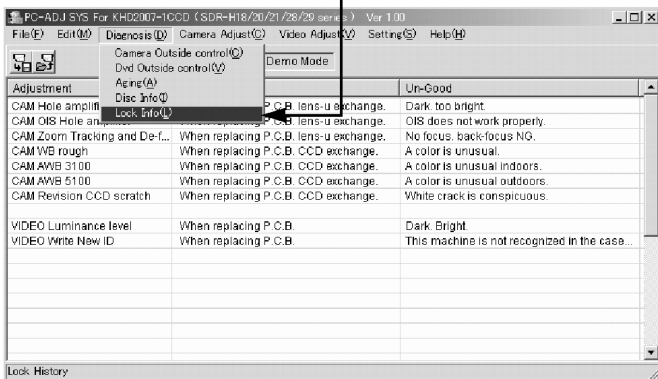


Fig. E2-6

## 4. Confirm the OneNAND-Flash ROM Error information.

OneNAND-Flash ROM Error information

No Error : Flash ROM (IC3203) is normal.

Fatal Error : Flash ROM (IC3203) is defective.

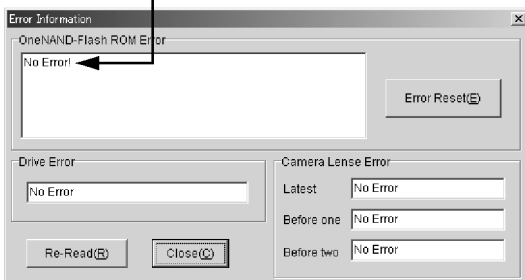


Fig. E2-7

## 5. If "Fatal Error" is displayed, Flash ROM (IC3203) is defective. Replace Main P.C.B.

### Note:

This error information is recorded on EEPROM.

Click "Error Reset" to clear the error information after replacing Flash ROM (IC3203).

### ③ Click the "Error Reset"

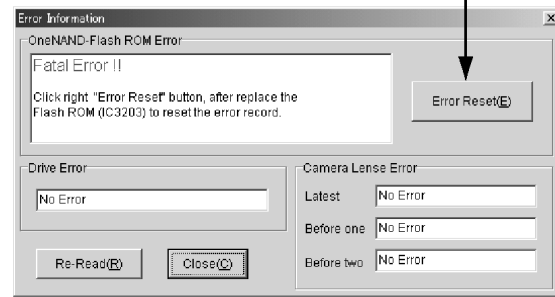


Fig. E2-8

# 10 Maintenance

## 10.1. Cleaning Lens and LCD Panel

Do not touch the surface of the lens 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:**

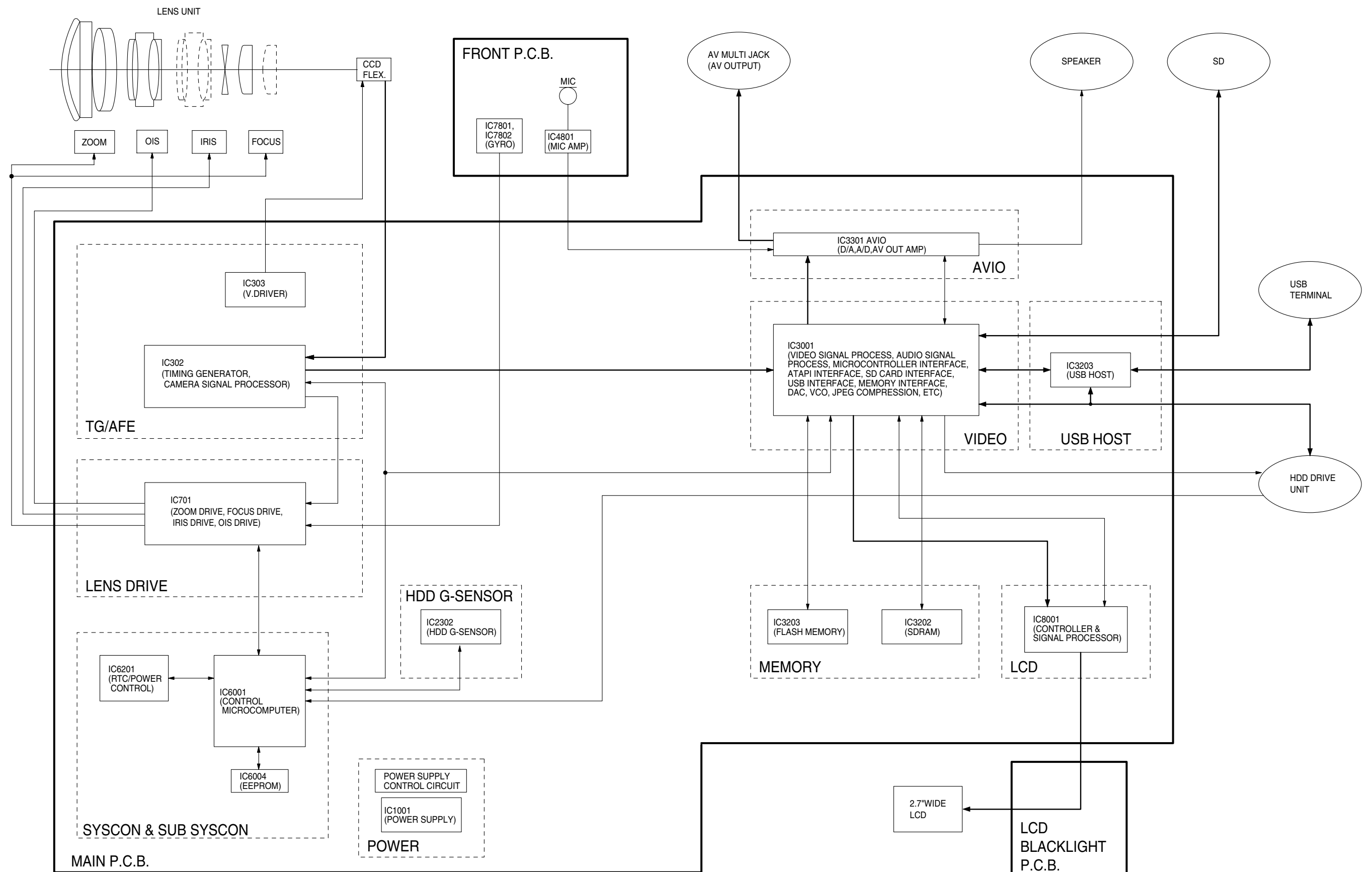
A lens cleaning paper and lens cleaner are available at local camera shops and market place.



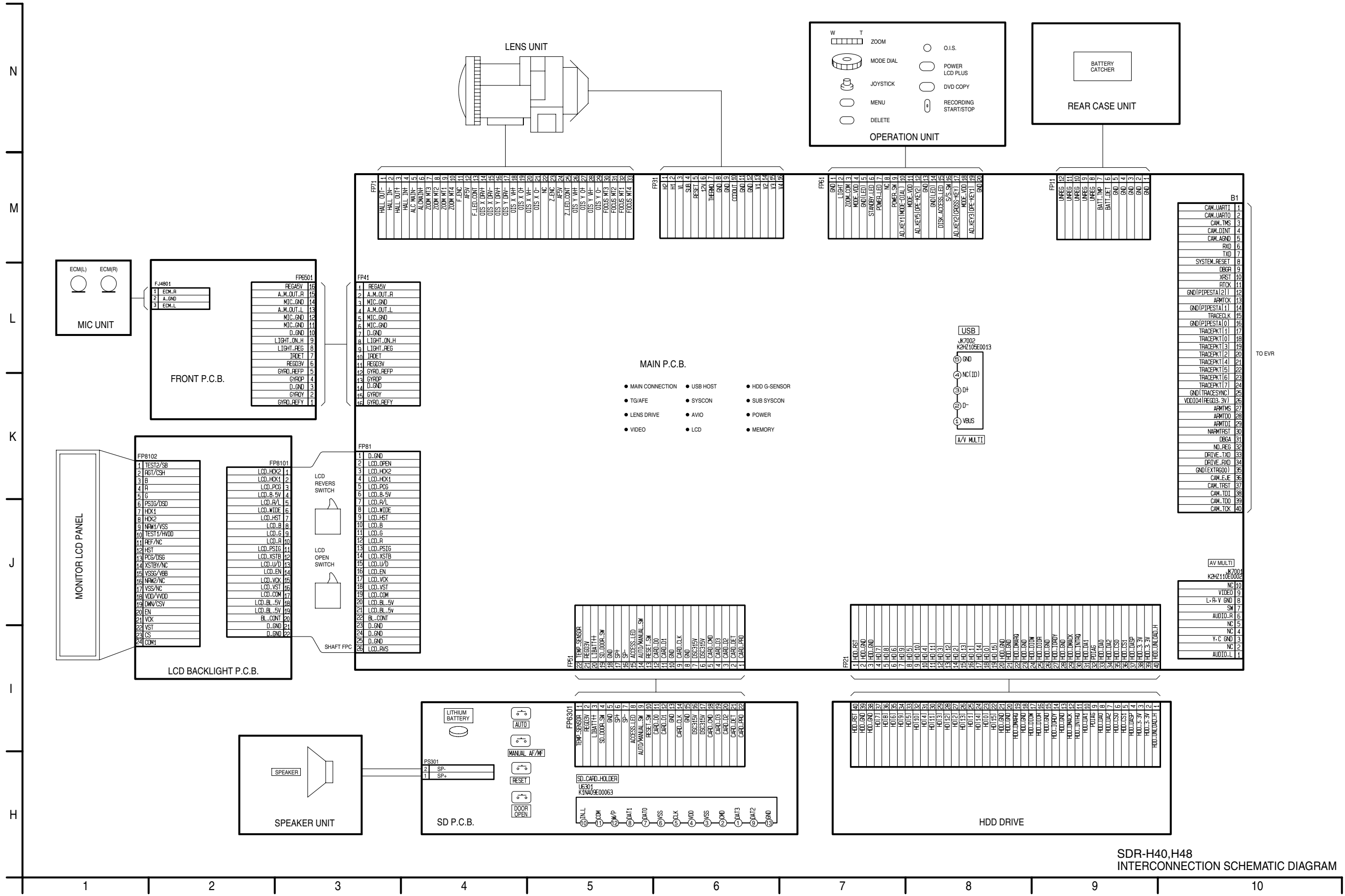


# 11 Schematic Diagrams

## 11.1. OVERALL SCHEMATIC DIAGRAM

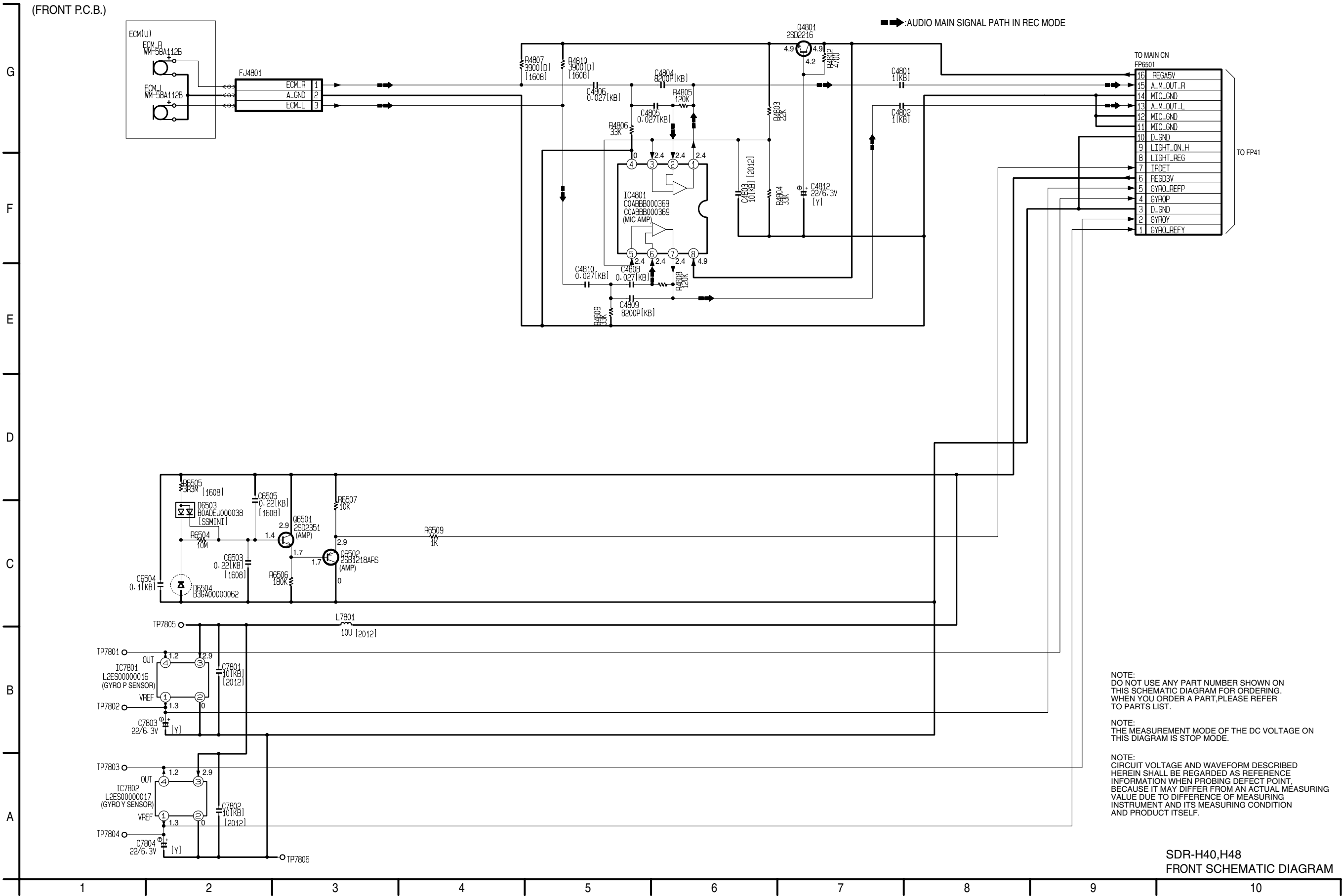


11.2. INTERCONNECTION SCHEMATIC DIAGRAM

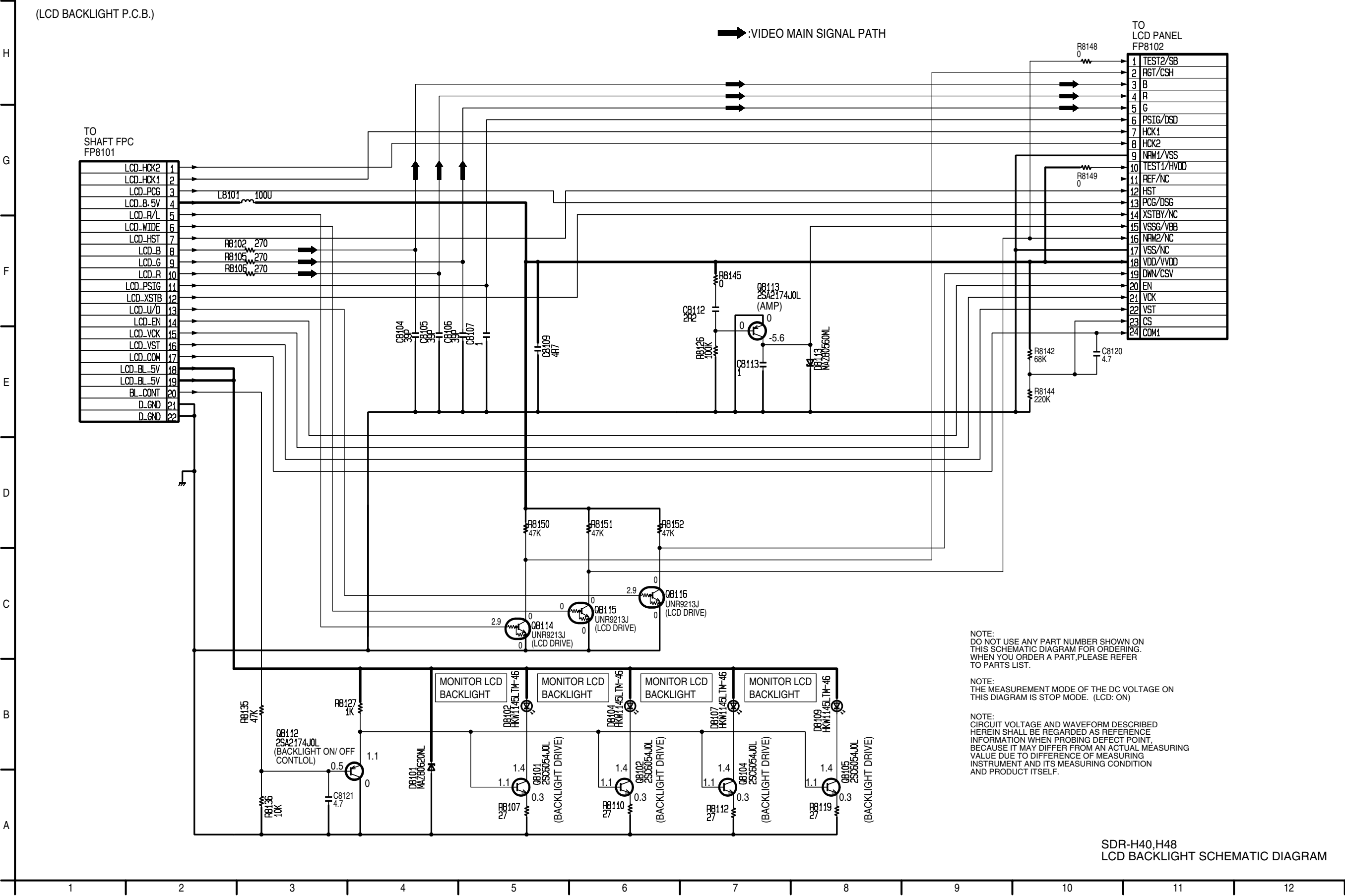


SDR-H40, H48  
INTERCONNECTION SCHEMATIC DIAGRAM

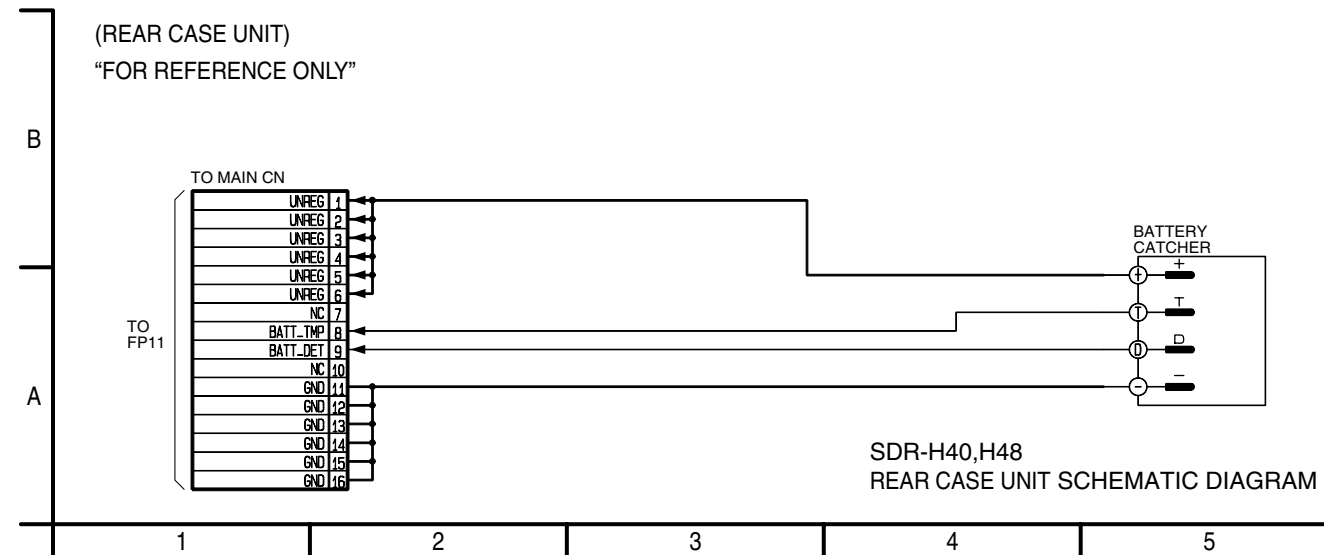
11.3. FRONT SCHEMATIC DIAGRAM



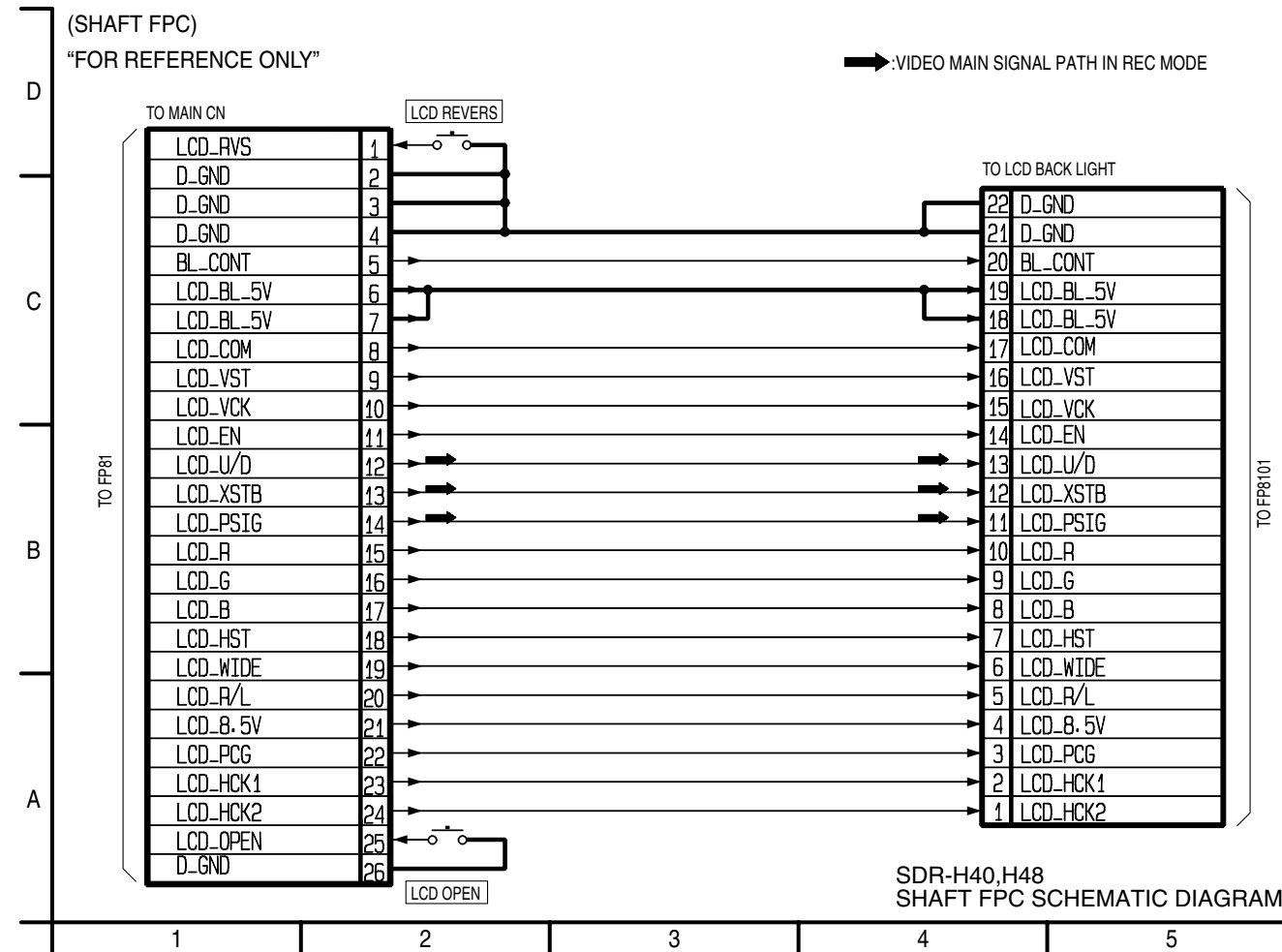
11.4. LCD BACKLIGHT SCHEMATIC DIAGRAM



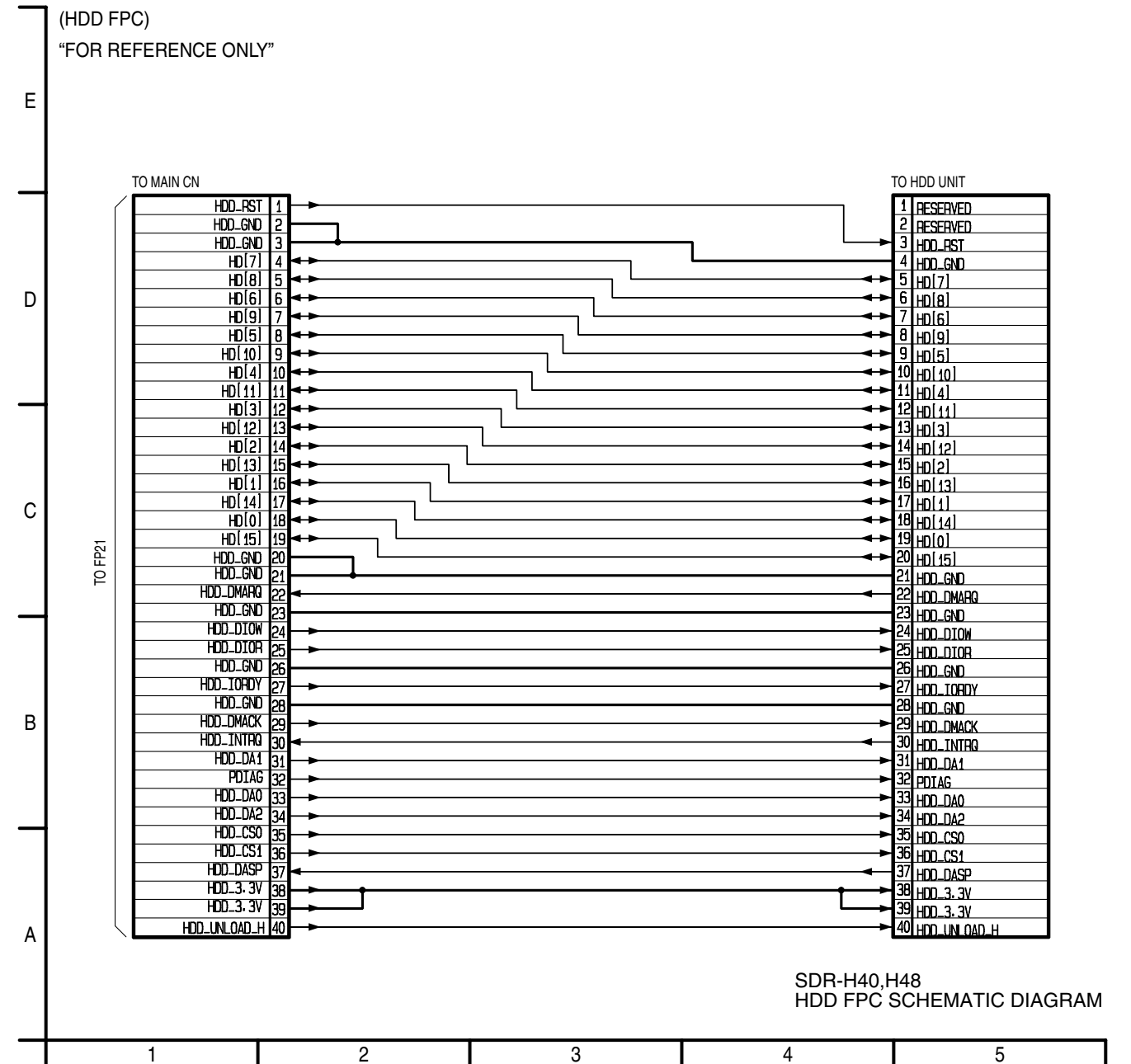
## 11.5. REAR CASE SCHEMATIC DIAGRAM



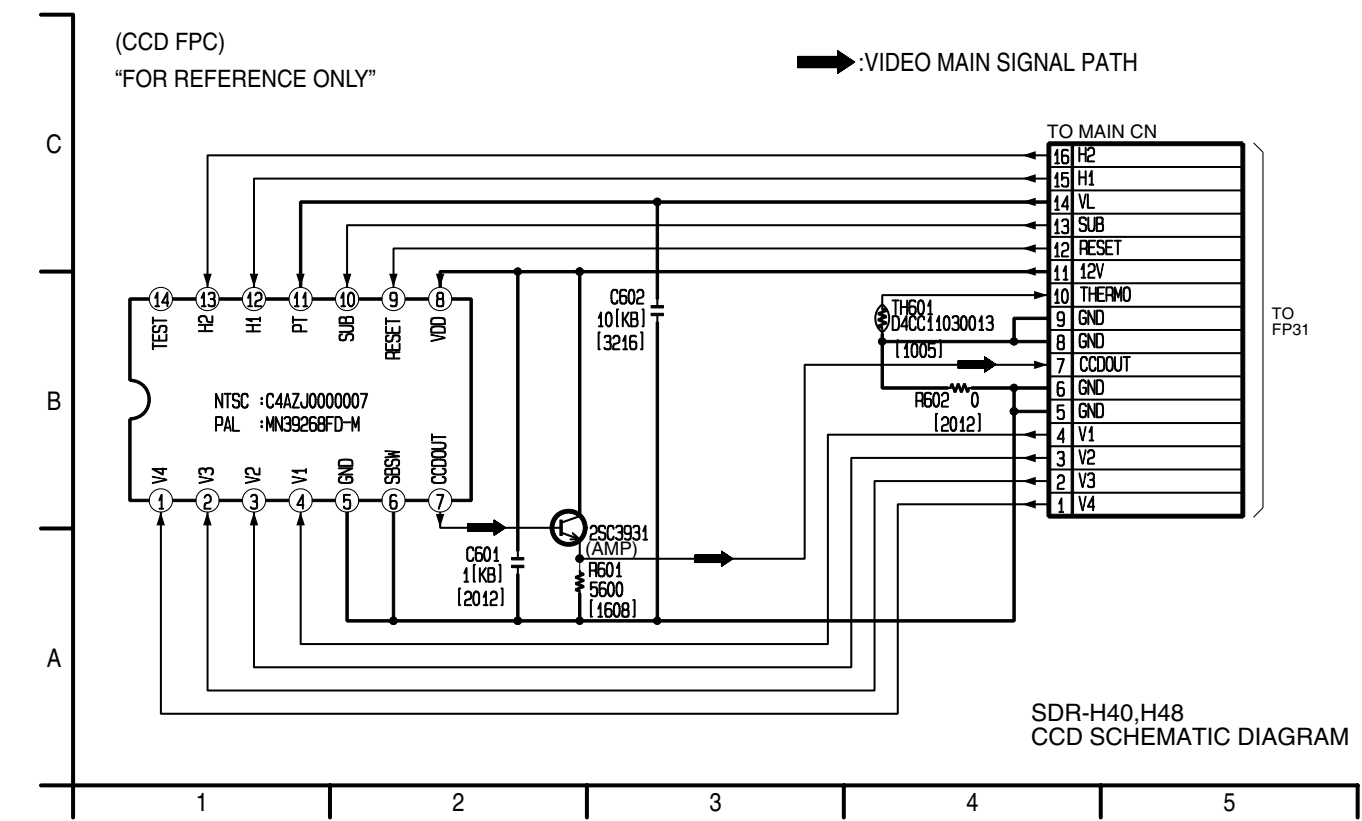
## 11.6. SHAFT FPC SCHEMATIC DIAGRAM



## 11.7. HDD FPC UNIT SCHEMATIC DIAGRAM

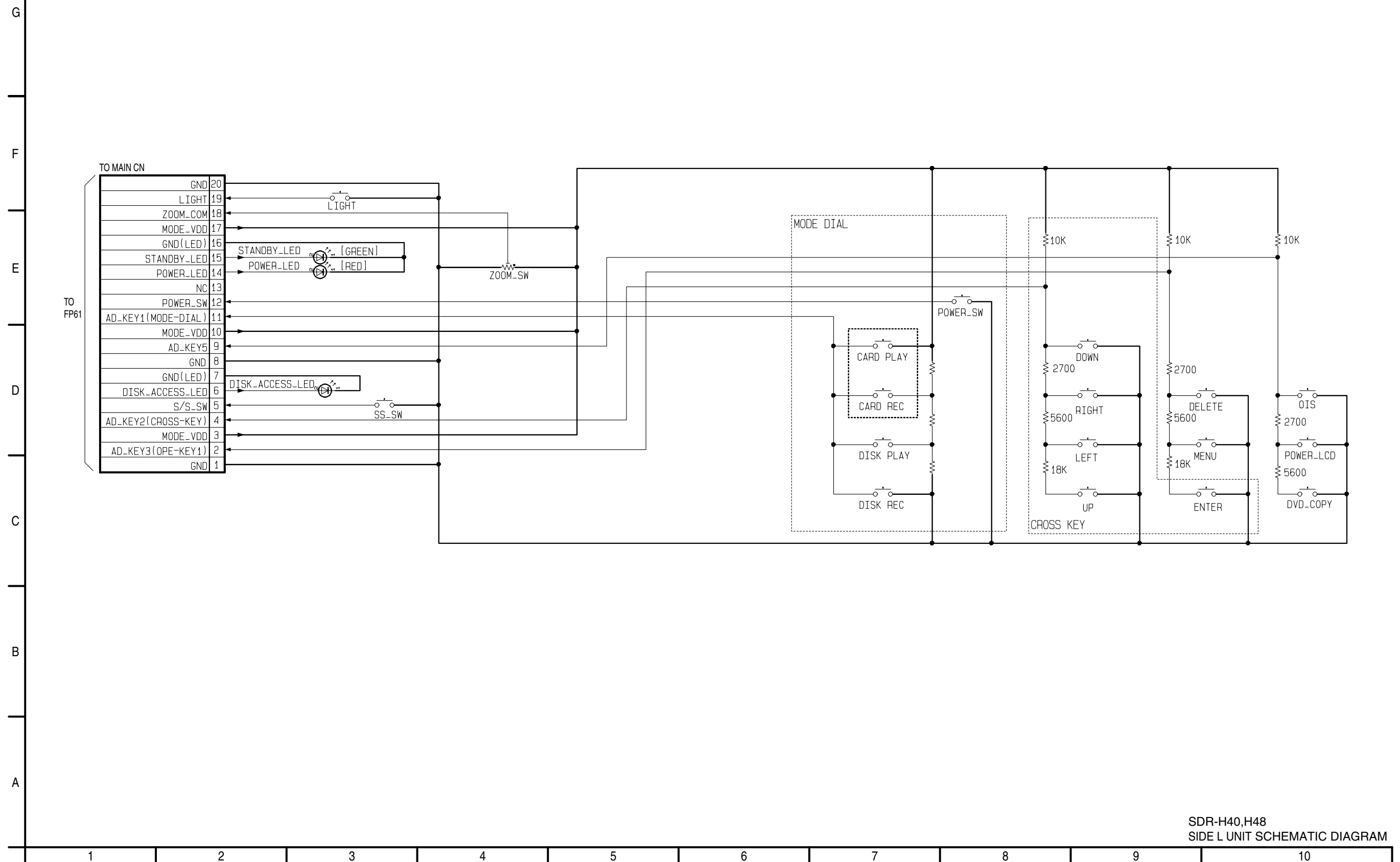


11.8. CCD SCHEMATIC DIAGRAM

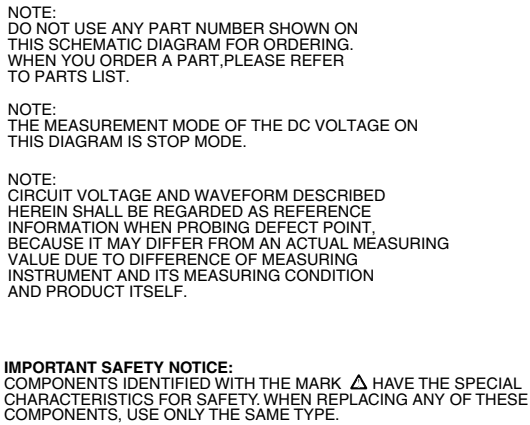


### 11.9. SIDE L UNIT SCHEMATIC DIAGRAM

(SIDE L UNIT)  
"FOR REFERENCE ONLY"



A



1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----







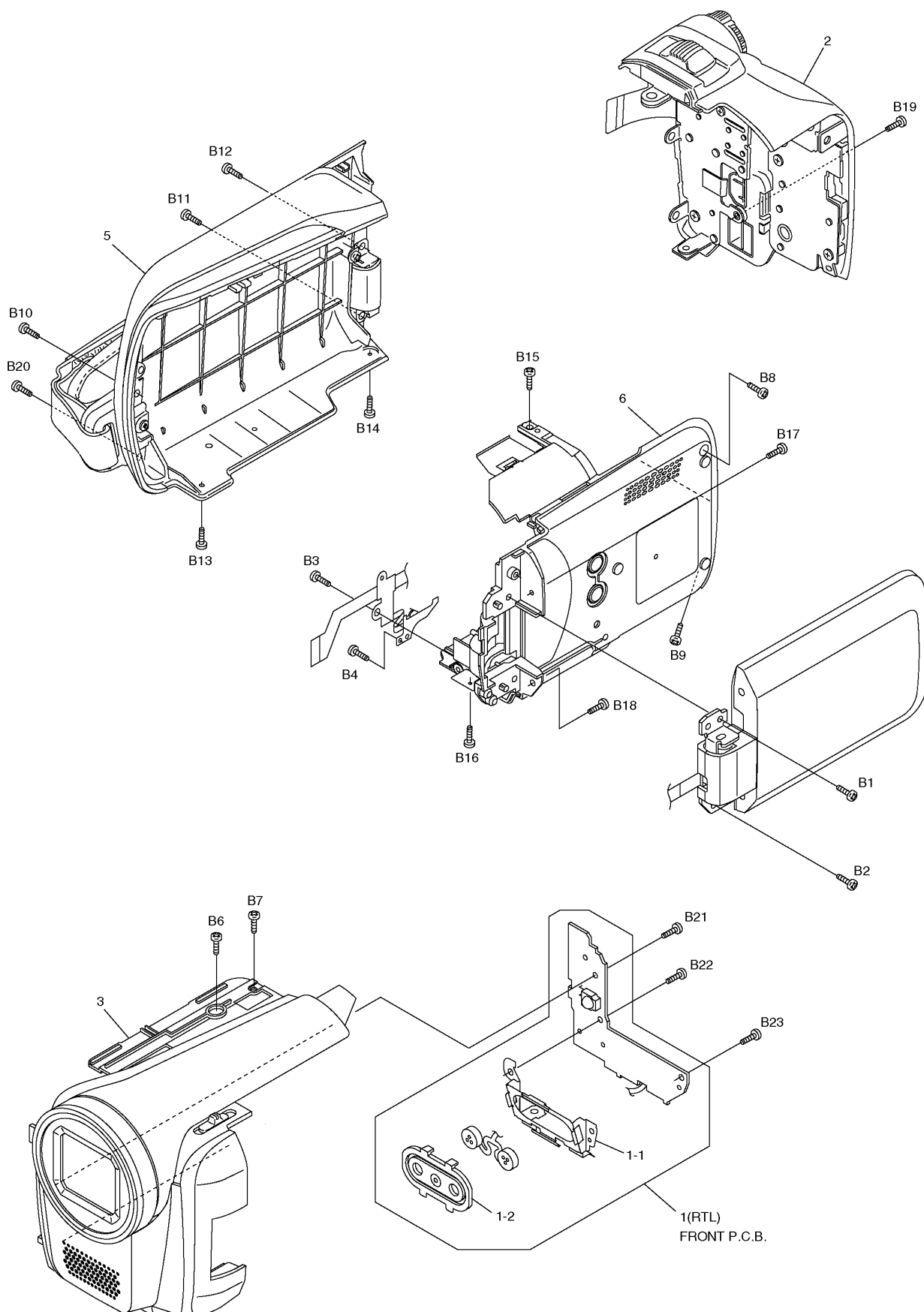


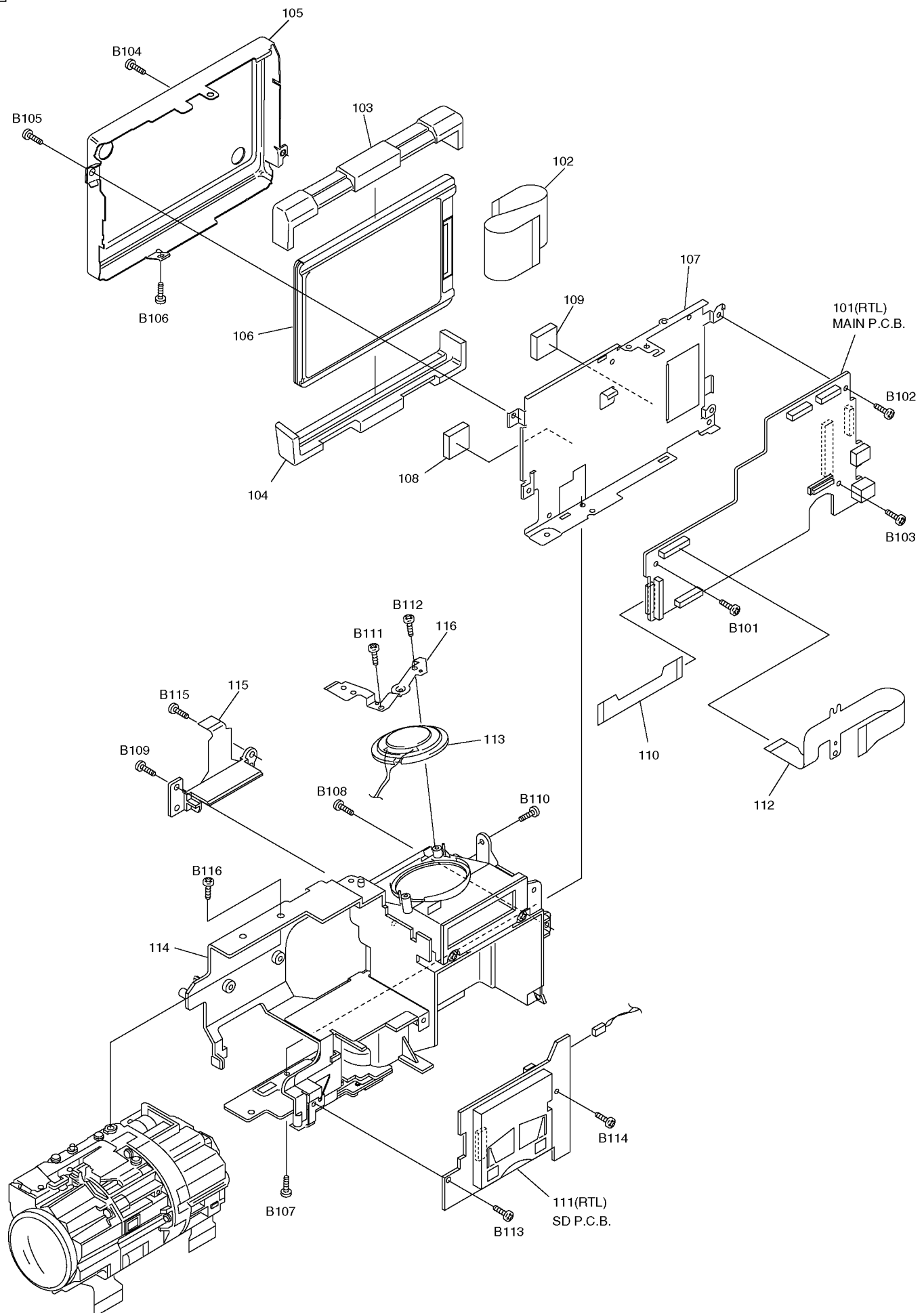


# 13 Parts and Exploded Views

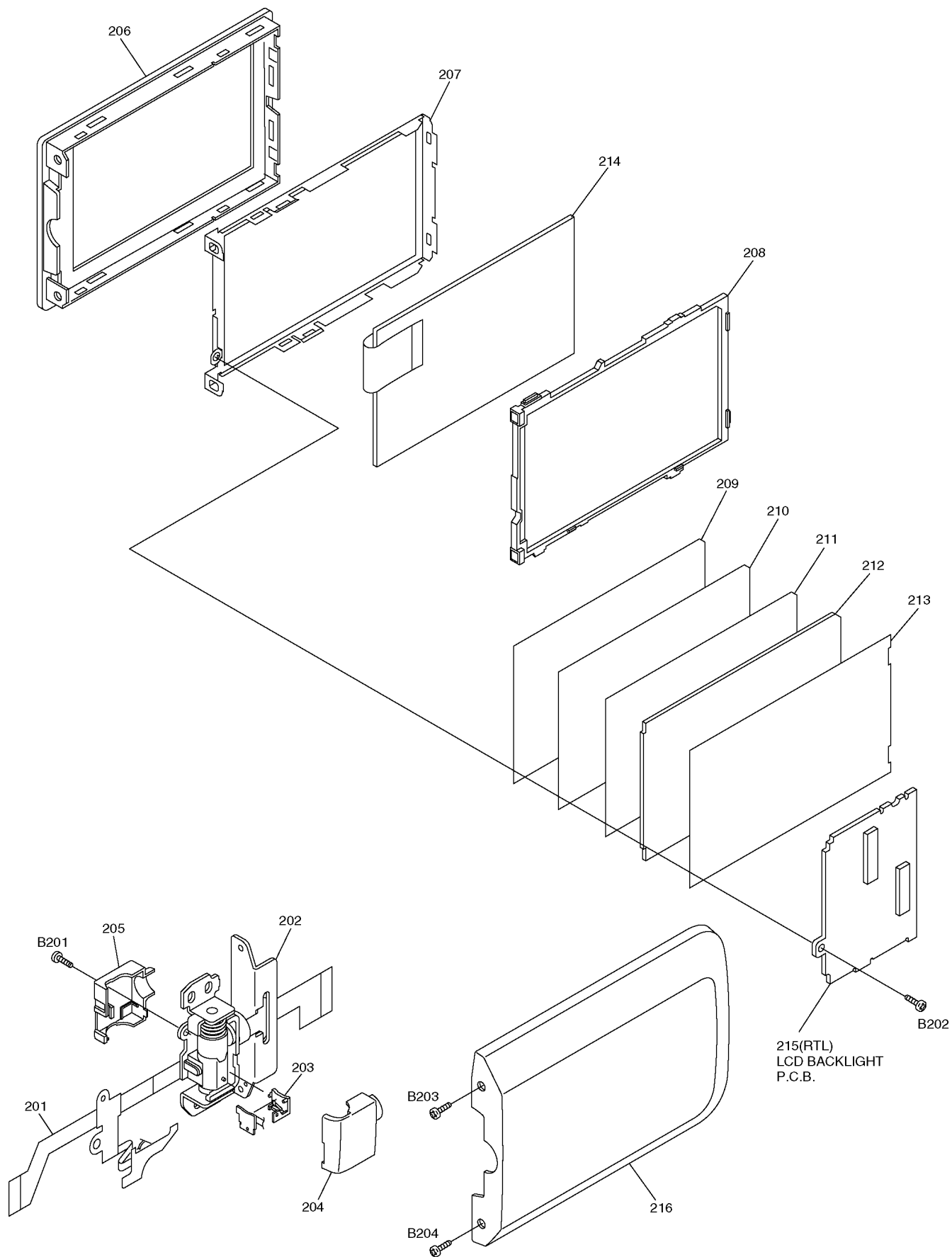
## 13.1. Exploded Views

### 13.1.1. Frame & Casing Section

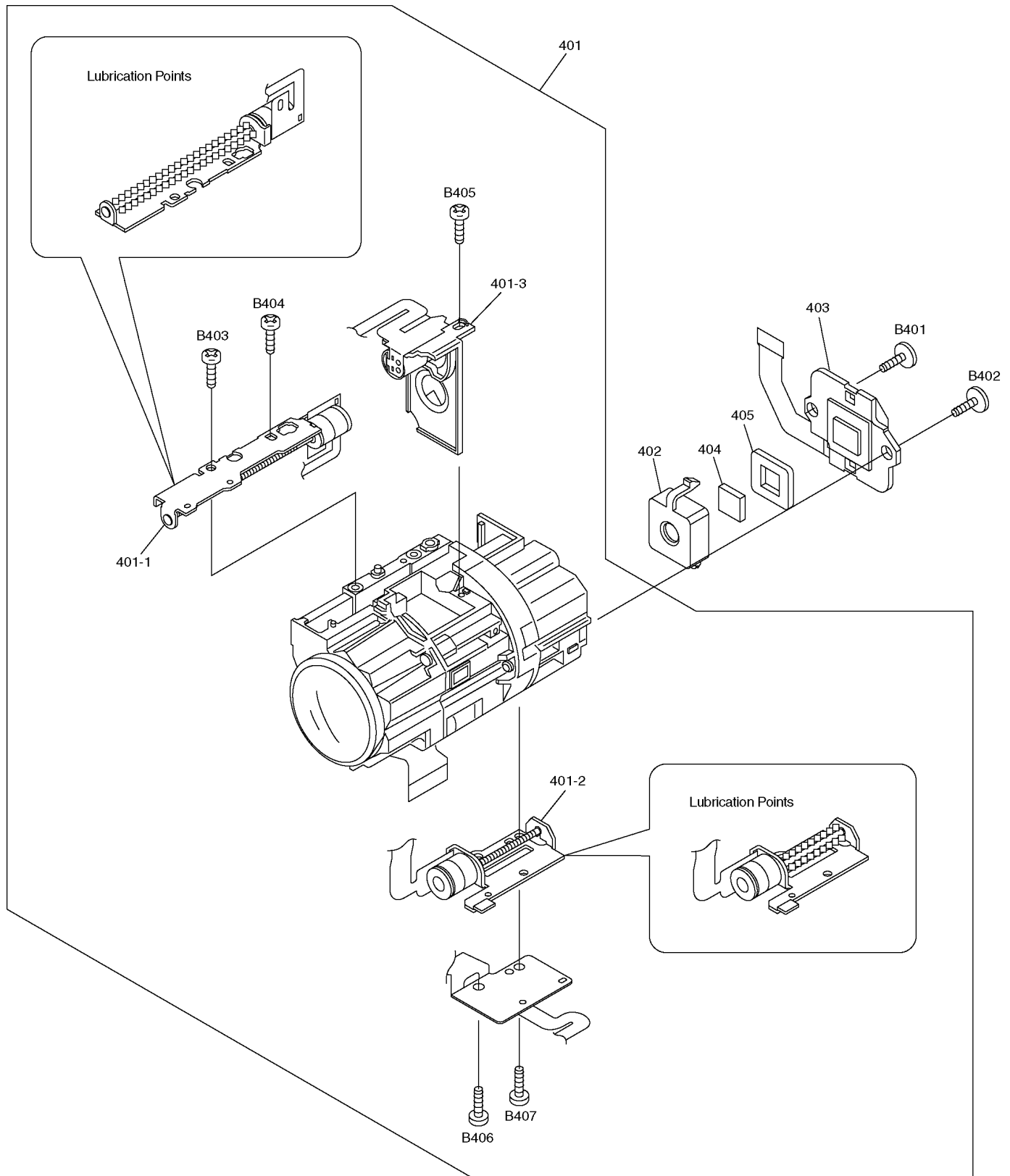




### 13.1.2. LCD Section

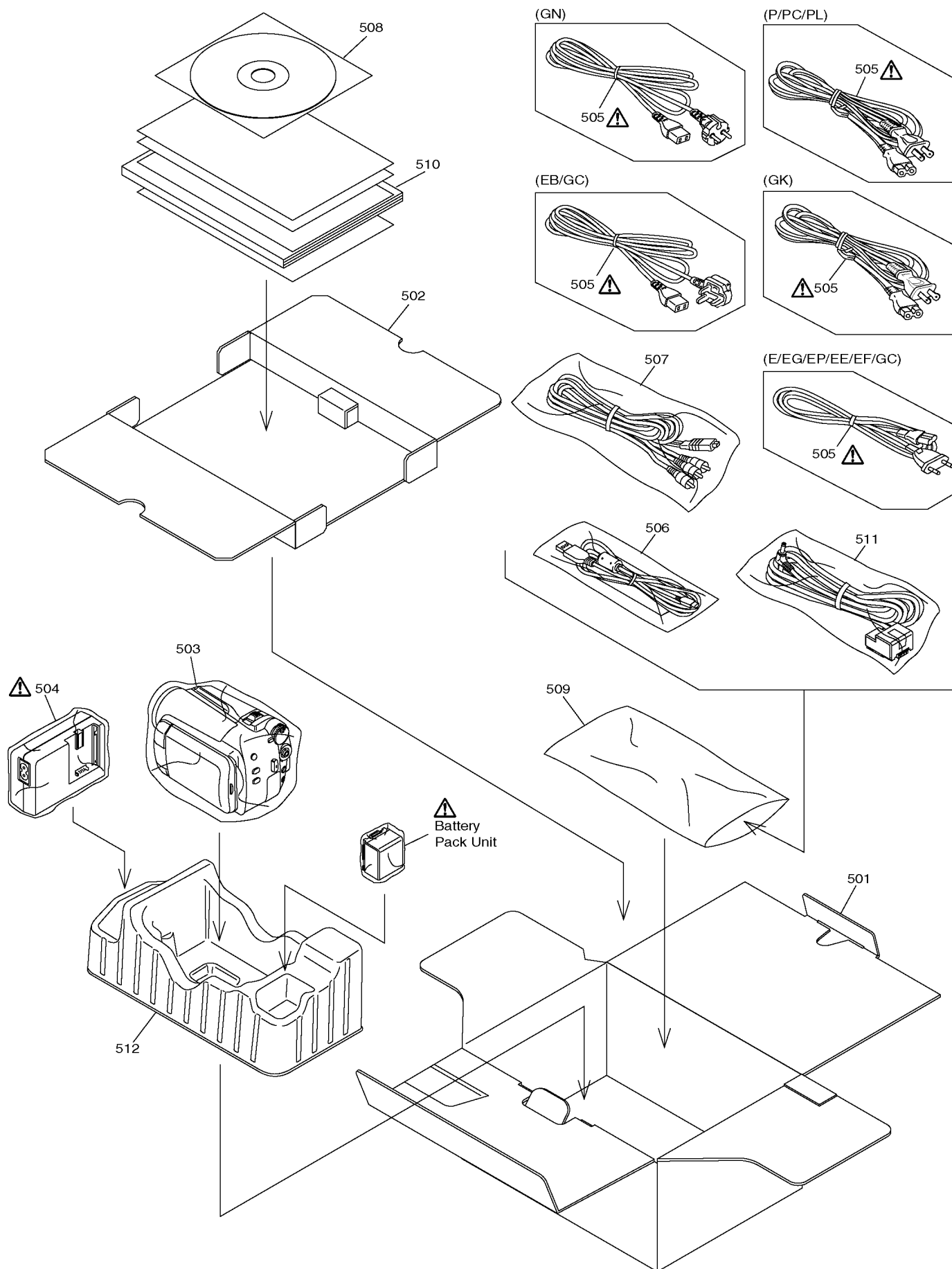


### 13.1.3. Camera Lens Section





### 13.1.4. 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 △ 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	LSEP8445A1	FRONT P.C.B.	1	(RTL)
1-1	LSMA1039	FRONT ANGLE	1	
1-2	LSMG0190	MIC DAMPER	1	
2	LSYK2330	OPERATION U	1	
3	LSYK2350	FRONT/TOP U	1	
5	LSYK2352	GRIP U	1	
6	LSYK2322	SIDE R CASE U	1	
B1	XQN2+BF5FN	SCREW	1	
B2	XQN2+BF5FN	SCREW	1	
B3	XQN16+BJ4FN	SCREW	1	
B4	XQN16+BJ4FN	SCREW	1	
B6	XQN16+BF4FN	SCREW	1	
B7	XQN16+BF4FN	SCREW	1	
B8	XQN16+BF4FN	SCREW	1	
B9	XQN16+BF4FN	SCREW	1	
B10	XQN16+BF4FN	SCREW	1	
B11	XQN16+BF4FN	SCREW	1	
B12	XQN16+BF4FN	SCREW	1	
B13	XQN16+BF4FN	SCREW	1	
B14	XQN16+BF4FN	SCREW	1	
B15	XQN16+BJ5FN	SCREW	1	
B16	XQN16+BJ5FN	SCREW	1	
B17	XQN16+BJ5FN	SCREW	1	
B18	XQN16+BJ5FN	SCREW	1	
B19	XQN16+BJ5FN	SCREW	1	
B20	XQN16+BJ5FN	SCREW	1	
B21	XQN16+BJ5FN	SCREW	1	
B22	XQN16+BJ5FN	SCREW	1	
B23	XQN16+BJ5FN	SCREW	1	
101	LSEP8443A1	MAIN P.C.B.	1	[PSECI]
				(RTL) P, PC, PL
101	LSEP8443P1	MAIN P.C.B.	1	(RTL) EG, E, EB, EF,
				EP, GC, GN, H48GK
102	LSJB8451	HDD RELAY FPC	1	
103	LSMG0196	HDD CUSHION	1	
104	LSMG0196	HDD CUSHION	1	
105	LSSC1029	HDD SHIELD CASE	1	
106	N3CZBRH00004	HDD	1	
107	LSMA1036	MAIN PLATE	1	
108	LSMG0194	SUB SUPPORT DAMPER	1	
109	LSMG0194	SUB SUPPORT DAMPER	1	
110	LSJB8450	FRONT FPC	1	
111	LSEP8444A1	SD P.C.B.	1	(RTL)
112	LSJB8448	SD FPC	1	
113	L0AA02A00083	LOUDSPEAKER	1	
114	LSYK2333	SIDE L CASE U	1	
115	LSEK0838	BATTERY TERMINAL U	1	
116	LSMA1040	SPEAKER ANGLE	1	
B101	XQN16+BF4FN	SCREW	1	
B102	XQN16+BF4FN	SCREW	1	
B109	XQN16+BJ5FN	SCREW	1	
B103	XQN16+BF4FN	SCREW	1	
B104	XQN16+BF4FN	SCREW	1	
B105	XQN16+BF4FN	SCREW	1	
B106	XQN16+BF4FN	SCREW	1	
B108	XQN16+BJ5FN	SCREW	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
B107	XQN16+BF4FN	SCREW	1	
B110	XQN16+BJ5FN	SCREW	1	
B111	XQN16+BJ5FN	SCREW	1	
B112	XQN16+BJ5FN	SCREW	1	
B113	XQN16+BJ5FN	SCREW	1	
B114	XQN16+BJ5FN	SCREW	1	
B115	XQN16+BJ5FN	SCREW	1	
B116	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 △ 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	LSEP8449A1	LCD SHAFT FPC	1	
202	LSXA0946	SHAFT U	1	
203	LSMD0880	SHAFT SW HOLDER	1	
204	LSKM1688	SHAFT CASE A	1	
205	LSKM1689	SHAFT CASE B	1	
206	LSKM1690	LCD CASE B	1	
207	LSSC1011	LCD SHIELD CASE	1	
208	LSXY1249	PANEL HOLDER U	1	
209	LSGL1523	BEF SHEET A WIDE	1	
210	LSGL1524	BEF SHEET B WIDE	1	
211	LSGL1525	DIFFUSION SHEET WIDE	1	
212	LSGL1526	LEAD LIGHT PANEL	1	
213	LSGL1527	REFLECT SHEET WIDE	1	
214	L5BDDXH00032	LCD	1	
215	LSEP8433B1	LCD BACKLIGHT P.C.B.	1	(RTL)
216	LSYK2323	LCD CASE A U	1	[PSECI]
				P, PC, PL
216	LSYK2324	LCD CASE A U	1	EG, E, EB, EF, EP, GC, GN
216	LSYK2325	LCD CASE A U	1	H48GK
B201	LSHD0130	SCREW	1	
B202	XQN16+BJ4FN	SCREW	1	
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 △ 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	LSXN0053	LENS U	1	
401-1	L6HA66NB0009	ZOOM MOTOR U	1	
401-2	L6HA66NB0010	FOCUS MOTOR U	1	
401-3	LSEM0111	IRIS U	1	
402	LSDW0122	CCD CASE	1	
403	LSEP8447A1	CCD P.C.B.	1	P, PC, PL
403	LSEP8447B1	CCD P.C.B.	1	EG, E, EB, EF, EP, GC, GN, H48GK
404	LSFL0292	OPTICAL LPF	1	
405	VMX3282	CCD CUSHION RUBBER	1	
B401	LSHD0136	SCREW	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
B402	LSHD0136	SCREW	1	
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. 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  $\Delta$  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	LSPG2588	PACKING CASE	1	[PSECI]
				P, PC, PL
501	LSPG2592	PACKING CASE	1	EG, E, EB, EF
501	LSPG2593	PACKING CASE	1	GC, GN
501	LSPG2616	PACKING CASE	1	EP
501	LSPG2594	PACKING CASE	1	H48GK
502	LSPN0886	PAD	1	
503	VPF1129	PROTECTION BAG	1	
504	DE-A51BA	POWER CHARGERS	1	[PSECI] $\Delta$
				P, PC, PL
504	DE-A51CA	POWER CHARGERS	1	EG, E, EB, EF, EP, GC, GN $\Delta$
504	DE-A51DA	POWER CHARGERS	1	H48GK $\Delta$
505	K2CA2CA00029	AC CORD	1	[PSECI] $\Delta$
				P, PC, PL
505	K2CQ2CA00006	AC CORD	1	EG, E, EF, EP, GC $\Delta$
505	K2CT3CA00004	AC CORD	1	EB, GC $\Delta$
505	K2CJ2DA00011	AC CORD	1	GN $\Delta$
505	K2CA2CA00020	AC CORD	1	H48GK $\Delta$
506	K1HA05CD0014	USB CABLE	1	[PSECI]
				P, PC, PL
506	K1HA05CD0016	USB CABLE	1	(EXCEPT P/PC/PL)
507	K2KZ9CB00002	AV CABLE	1	
508	LSFT0757-S	CD-ROM	1	[PSECI] SEE "NOTES"
				P, PC, PL
508	LSFT0758-S	CD-ROM	1	(EXCEPT P/PC/PL) SEE "NOTES"
509	LSPF0107	POLY BAG	1	
510	LSQT1337-A	O/I	1	[PSECI]
				P, PC
510	LSQT1338-A	O/I	1	[PSECI]
				PC
510	LSQT1339-A	O/I	1	[PSECI]
				PL

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
510	LSQT1341-A	O/I	1	EG
510	LSQT1342-A	O/I	1	EG
510	LSQT1343-A	O/I	1	EG, EF
510	LSQT1344-A	O/I	1	E
510	LSQT1345-A	O/I	1	E
510	LSQT1348-A	O/I	1	EB
510	LSQT1346-A	O/I	1	EP
510	LSQT1347-A	O/I	1	EP
510	LSQT1349-A	O/I	1	GC
510	LSQT1351-A	O/I	1	GC
510	LSQT1350-A	O/I	1	GC
510	LSQT1353-A	O/I	1	GN
510	LSQT1354-A	O/I	1	H48GK
511	K2GJ2DC00020	DC CABLE	1	
512	LSPN0899	BOTTOM PAD	1	

## 13.2.5. 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  $\Delta$  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
B1	K1KB40A00128	CONNECTOR 40P	1	
BT7001	ML-621S/F9DE	BATTERY	1	$\Delta$
C601	ECJ2FB1C105K	C.CAPACITOR CH 16V 1U	1	
C602	ECUM1A106KBM	C.CAPACITOR CH 10V 10U	1	
C4801	F1G0J105A001	C.CAPACITOR CH 6.3V 1U	1	
C4802	F1G0J105A001	C.CAPACITOR CH 6.3V 1U	1	
C4803	ECJ2FB0J106K	C.CAPACITOR CH 6.3V 10U	1	
C4804	ECJ0EB1C822K	C.CAPACITOR CH 16V 8200P	1	
C4805	ECJ0EB1A273K	C.CAPACITOR CH 10V 0.027U	1	
C4806	ECJ0EB1A273K	C.CAPACITOR CH 10V 0.027U	1	
C4808	ECJ0EB1A273K	C.CAPACITOR CH 10V 0.027U	1	
C4809	ECJ0EB1C822K	C.CAPACITOR CH 16V 8200P	1	
C4810	ECJ0EB1A273K	C.CAPACITOR CH 10V 0.027U	1	
C4812	F3F0J226A055	E.CAPACITOR CH 6.3V 22U	1	
C6301	F3G0J107A017	C.CAPACITOR CH 6.3V 100U	1	
C6302	ECJ1VB1E103K	C.CAPACITOR CH 25V 0.01U	1	
C6303	ECJ1VB1E103K	C.CAPACITOR CH 25V 0.01U	1	
C6306	ECJ1VC1H180J	C.CAPACITOR CH 50V 18P	1	
C6307	ECJ1VC1H180J	C.CAPACITOR CH 50V 18P	1	
C6308	ECJ1VC1H180J	C.CAPACITOR CH 50V 18P	1	
C6310	ECJ1VC1H180J	C.CAPACITOR CH 50V 18P	1	
C6311	ECJ1VB1E103K	C.CAPACITOR CH 25V 0.01U	1	
C6312	ECJ1VC1H180J	C.CAPACITOR CH 50V 18P	1	
C6313	ECJ1XB1C104K	C.CAPACITOR CH 16V 0.1U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C6315	ECJ1XB1C104K	C.CAPACITOR CH 16V 0.1U	1	
C6316	F1G1A104A012	C.CAPACITOR CH 10V 0.1U	1	
C6503	ECJ1VB1A224K	C.CAPACITOR CH 10V 0.22U	1	
C6504	F1G1A104A012	C.CAPACITOR CH 10V 0.1U	1	
C6505	ECJ1VB1A224K	C.CAPACITOR CH 10V 0.22U	1	
C7801	F1J1A106A023	C.CAPACITOR CH 10V 10U	1	
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	
C8112	F1J1A2250007	C.CAPACITOR CH 10V 2.2U	1	
C8113	ECJ1VB1A105K	C.CAPACITOR CH 10V 1U	1	
C8120	ECJ2FB0J475K	C.CAPACITOR CH 6.3V 4.7U	1	
C8121	ECJ2FB0J475K	C.CAPACITOR CH 6.3V 4.7U	1	
D6301	B3AAB0000137	DIODE	1	
D6503	B0ADEJ000038	DIODE	1	
D6504	B3GA00000062	DIODE	1	
D8101	MAZ80620ML	DIODE	1	
D8102	B3AFB0000215	LED	1	
D8104	B3AFB0000215	LED	1	
D8107	B3AFB0000215	LED	1	
D8109	B3AFB0000215	LED	1	
D8113	MAZ80470ML	DIODE	1	
FP6301	K1MN22BA0196	CONNECTOR 22P	1	
FP6501	K1MN16A00077	CONNECTOR 16P	1	
FP8101	K1MN22BA0197	CONNECTOR 22P	1	
FP8102	K1MN24BA0196	CONNECTOR 24P	1	
IC301	C0DBGFC00031	IC	1	
IC302	VUEALLPT008	IC	1	
IC303	C1AB00002039	IC	1	
IC4801	C0ABBB000369	IC	1	
IC6301	C0ZBZ0001479	IC	1	
IC7801	L2ES00000016	GYROSCOPE	1	
IC7802	L2ES00000017	GYROSCOPE	1	
L6301	G1C100KA0031	COIL	1	
L7801	G1C100KA0031	CHIP INDUCTOR 10UH	1	
L8101	G1C101KA0031	CHIP INDUCTOR 100UH	1	
P6301	K1KA02BA0014	CONNECTOR 2P	1	
Q601	2SC3931CTX	CHIP TRANSISTOR	1	
Q4801	2SD2216J08	TRANSISTOR	1	
Q6301	2SB09700RL	TRANSISTOR	1	
Q6501	B1ABCF000098	TRANSISTOR	1	
Q6502	2SB1218ARL	TRANSISTOR	1	
Q8101	2SC6054J0L	TRANSISTOR	1	
Q8102	2SC6054J0L	TRANSISTOR	1	
Q8104	2SC6054J0L	TRANSISTOR	1	
Q8105	2SC6054J0L	TRANSISTOR	1	
Q8112	2SA2174J0L	TRANSISTOR	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
Q8113	2SA2174J0L	TRANSISTOR	1	
Q8114	UNR9213J	TRANSISTOR-RESISTOR	1	
Q8115	UNR9213J	TRANSISTOR-RESISTOR	1	
Q8116	UNR9213J	TRANSISTOR-RESISTOR	1	
R601	ERJ3GEYJ562	M.RESISTOR CH 1/10W 5.6K	1	
R602	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	1	
R4802	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R4803	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R4804	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R4805	ERJ2GEJ124	M.RESISTOR CH 1/16W 120K	1	
R4806	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R4807	VRE0071E392	M.RESISTOR CH 1/10W 3.9K	1	
R4808	ERJ2GEJ124	M.RESISTOR CH 1/16W 120K	1	
R4809	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R4810	VRE0071E392	M.RESISTOR CH 1/10W 3.9K	1	
R6301	ERJ6GEYJ122V	M.RESISTOR CH 1/10W 1.2K	1	
R6302	D0GB103JA057	M.RESISTOR CH 1/10W 10K	1	
R6303	ERJ3GEY0R00	M.RESISTOR CH 1/10W 0	1	
R6304	ERJ3GEY0R00	M.RESISTOR CH 1/10W 0	1	
R6306	ERJ6GEYJ150V	M.RESISTOR CH 1/10W 15	1	
R6307	ERJ3GEYJ561	M.RESISTOR CH 1/10W 560	1	
R6308	ERJ3GEY0R00	M.RESISTOR CH 1/10W 0	1	
R6309	ERJ3GEYJ330	M.RESISTOR CH 1/10W 33	1	
R6310	ERJ3GEYJ330	M.RESISTOR CH 1/10W 33	1	
R6311	ERJ3GEYJ330	M.RESISTOR CH 1/10W 33	1	
R6312	ERJ3GEYJ330	M.RESISTOR CH 1/10W 33	1	
R6313	ERJ3GEYJ330	M.RESISTOR CH 1/10W 33	1	
R6504	ERJ2GEJ106X	M.RESISTOR CH 1/16W 10M	1	
R6505	ERJ3GEYJ335	M.RESISTOR CH 1/10W 3.3M	1	
R6506	ERJ2GEJ184	M.RESISTOR CH 1/16W 180K	1	
R6507	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R6509	ERJ2GEJ102X	M.RESISTOR CH 1/16W 1K	1	
R8102	ERA3YED271V	M.RESISTOR 1/16W 270	1	
R8105	ERA3YED271V	M.RESISTOR 1/16W 270	1	
R8106	ERA3YED271V	M.RESISTOR 1/16W 270	1	
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	
R8119	ERJ3RED270	M.RESISTOR CH 1/10W 27	1	
R8126	ERJ3GEYJ104	M.RESISTOR CH 1/10W 100K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R8127	D0GB102JA057	M.RESISTOR CH 1/10W 1K	1	
R8135	ERA3YED822V	M.RESISTOR CH 1/16W 8.2K	1	
R8136	ERJ3RBD302	SURFACE MOUNTING PRECISIO	1	
R8142	ERJ3GEYJ683	M.RESISTOR CH 1/10W 68K	1	
R8144	ERJ3GEYJ224	M.RESISTOR CH 1/10W 220K	1	
R8145	ERJ3GEY0R00	M.RESISTOR CH 1/10W 0	1	
R8148	ERJ3GEY0R00	M.RESISTOR CH 1/10W 0	1	
R8149	ERJ3GEY0R00	M.RESISTOR CH 1/10W 0	1	
R8150	D0GB473JA057	M.RESISTOR CH 1/10W 47K	1	
R8151	D0GB473JA057	M.RESISTOR CH 1/10W 47K	1	
R8152	D0GB473JA057	M.RESISTOR CH 1/10W 47K	1	
SW6301	K0F111B00074	SWITCH	1	
SW6302	K0F111A00547	SWITCH	1	
SW6303	K0F111A00547	SWITCH	1	
SW6304	K0F111A00547	SWITCH	1	
SW8201	K0C111B00008	SWITCH	1	
SW8202	K0F111B00074	SWITCH	1	
TH601	D4CC11030013	THERMISTOR	1	
U6301	K1NA09E00063	CONNECTOR 9P	1	