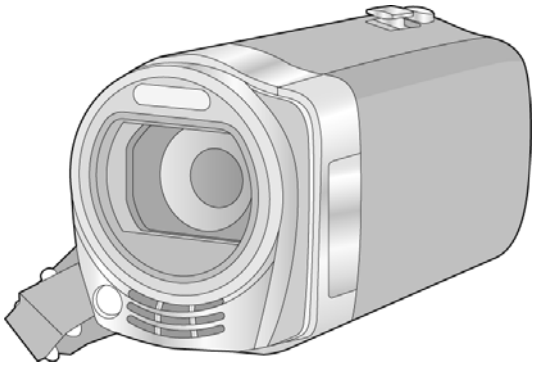
ORDER NO. VM1007031CE
B27

Service Manual

High Definition Video Camera

Model No. HDC-SDX1P
HDC-SDX1EC
HDC-SDX1EG
HDC-SDX1GC



Vol. 1

Colour
(H).....Glay Type
(V).....Violet Type (only EG)

⚠ 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 Precautions

1.1. General Guidelines

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.

1.2. 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 MΩ and 5.2 MΩ. When the exposed metal does not have a return path to the chassis, the reading must be infinity.

1.3. Leakage Current Hot Check (See Figure 1.)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 1.5 kΩ, 10 W resistor, in parallel with a 0.15 μF capacitor, between each exposed metallic part on the set and a good earth ground, as shown in Figure 1.
3. Use an AC voltmeter, with 1 kΩ/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 0.75 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 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.

Hot-Check Circuit

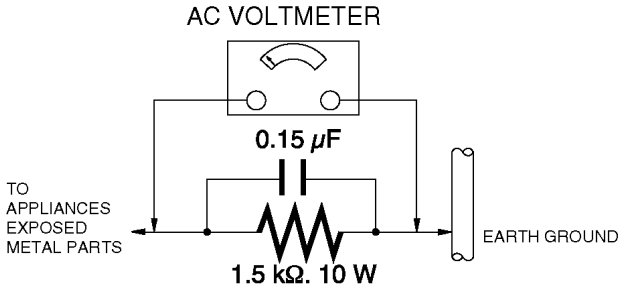


Figure. 1

1.4. How to Discharge the Capacitor on Flash P.C.B.

• This unit equipped with two pieces of capacitors as flash charging capacitors.
"Either one of the capacitor discharging operation" makes discharging for others as well.

CAUTION:

1. **Be sure to discharge the capacitor on FLASH P.C.B..**
2. **Be careful of the high voltage circuit on FLASH P.C.B. when servicing.**

[Discharging Procedure]

1. Refer to the disassemble procedure and Remove the necessary parts/unit.
2. Put the insulation tube onto the lead part of Resistor (ERG5SJ102:1kΩ /5W).
   (an equivalent type of resistor may be used.)
3. Put the resistor between both terminals of capacitor on FLASH P.C.B. for approx. 5 seconds.
4. After discharging confirm that the capacitor voltage is lower than 10V using a voltmeter.

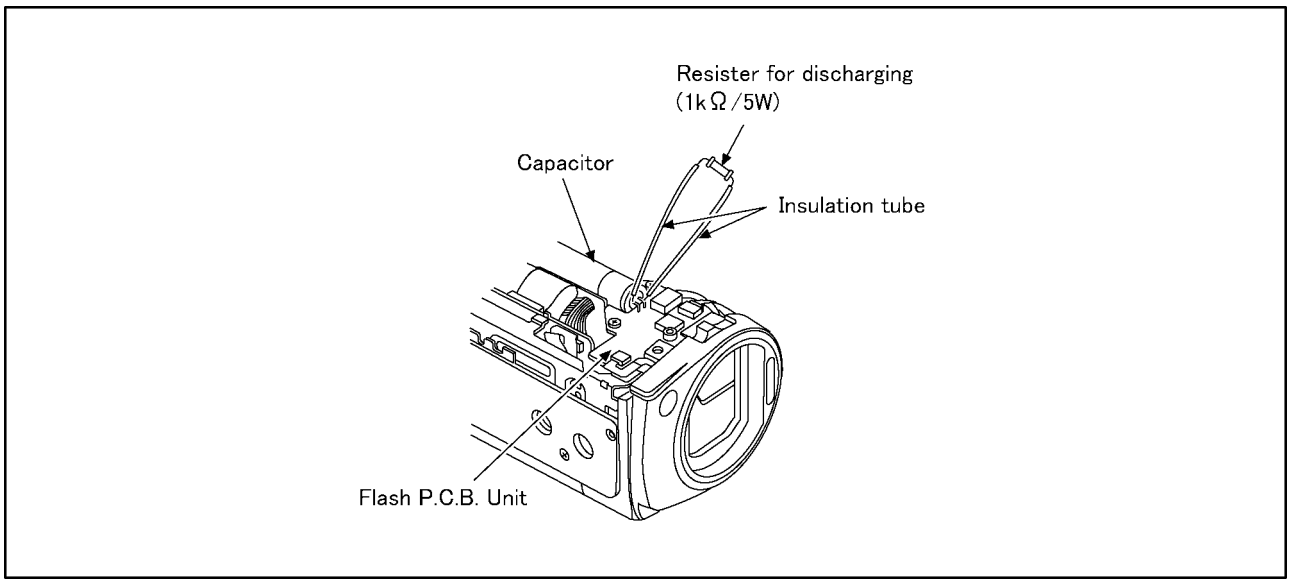


Fig. F1

2 Warning

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

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

2.2. How to Recycle the Lithium Ion Battery (U.S. Only)

ENGLISH

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.

FRANÇAIS

L'appareil que vous vous êtes procuré est alimenté par une batterie au lithium-ion/lithium-polymère. Pour des renseignements sur le recyclage de la batterie, veuillez composer le 1-800-8-BATTERY.

2.3. Caution for AC Cord (For 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 ASTA 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 safety.
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:

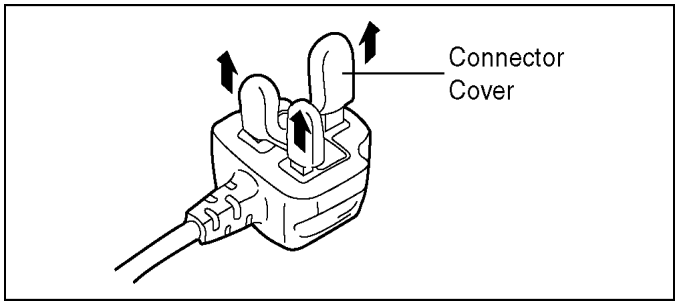
The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

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.

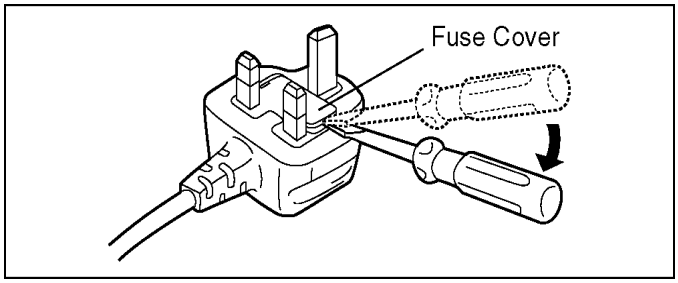
2.3.2.2. Before Use

Remove the Connector Cover as follows.

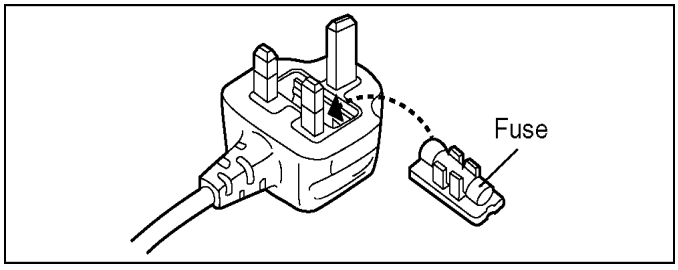


2.3.2.3. How to Replace the Fuse

1. Remove the Fuse Cover with a screwdriver.



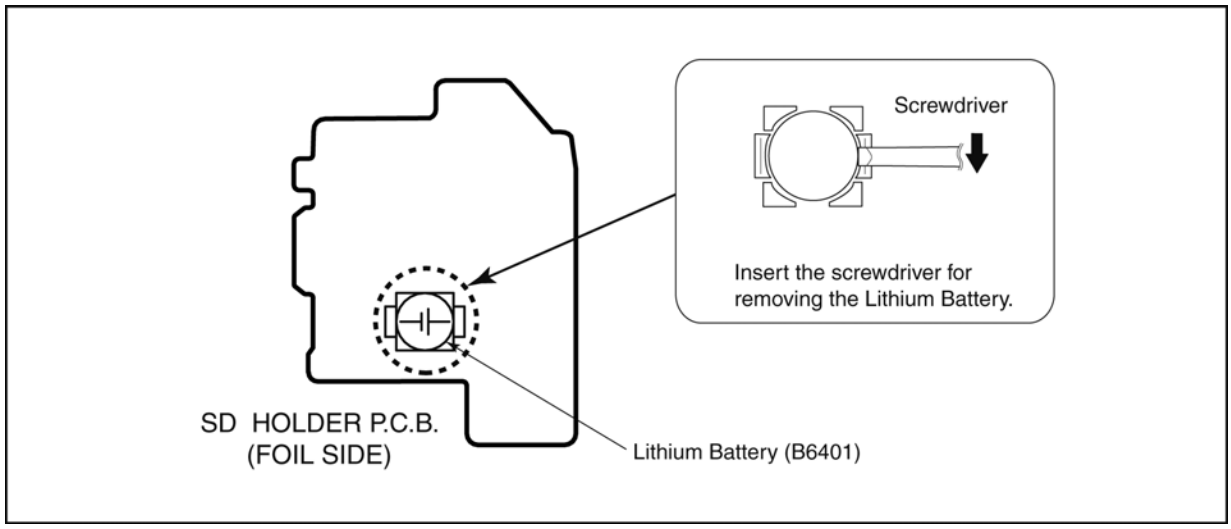
2. Replace the fuse and attach the Fuse cover.



2.4. How to Replace the Lithium Battery

2.4.1. Replacement Procedure

1. Remove the SD Holder P.C.B.. (Refer to Disassembly Procedures.)
2. Remove the Lithium battery (Ref. No. “B6401” at foil side of SD Holder P.C.B.) and then replace it into new one.



NOTE:

This Lithium battery is a critical component.
(Type No.: ML-614S/ZTK **Manufactured by Energy Company, Panasonic Corporation**)
It must never be subjected to excessive heat or discharge.
It must therefore only be fitted in requirement designed specifically for its use.
Replacement batteries must be of 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.

(For English)

CAUTION

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

(For German)

ACHTUNG

Explosionsgefahr bei falschem Anbringen der Batterie. Ersetzen Sie nur mit einem äquivalentem vom Hersteller empfohlenem Typ.
Behandeln Sie gebrauchte Batterien nach den Anweisungen des Herstellers.

(For French)

MISE EN GARDE

Une batterie de remplacement inappropriée peut exploser. Ne remplacez qu’avec une batterie identique ou d’un type recommandé par le fabricant. L’élimination des batteries usées doit être faite conformément aux instructions du manufacturier.

NOTE:

Above caution is applicable for a battery pack which is for HDC-SDX1 series, as well.

3 Service Navigation

3.1. Introduction

This service manual contains technical information, which 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, the information will be followed by service manual to be controlled with original service manual.

3.2. General Description About Lead Free Solder (PbF)

The lead free solder has been used in the mounting process of all electrical components on the printed circuit boards used for this equipment in considering the globally environmental conservation.
The normal solder is the alloy of tin (Sn) and lead (Pb). On the other hand, the lead free solder is the alloy mainly consists of tin (Sn), silver (Ag) and Copper (Cu), and the melting point of the lead free solder is higher approx.30°C (86°F) more than that of the normal solder.

Distinction of P.C.B. Lead Free Solder being used

The letter of "PbF" is printed either foil side or components side on the P.C.B. 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 P.C.B. 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 P.C.B. cleanly for soldering of the new IC.
- Since the melting point of the lead free solder is higher than that of the normal lead solder, it takes the longer time to melt the lead free solder.
- Use the soldering iron (more than 70W) equipped with the temperature control after setting the temperature at 350±30°C (662±86°F).

Recommended Lead Free Solder (Service Parts Route.)

- The following 3 types of lead free solder are available through the service parts route.
  RFKZ03D01KS----------(0.3mm 100g Reel)
  RFKZ06D01KS----------(0.6mm 100g Reel)
  RFKZ10D01KS----------(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%

3.3. Important Notice 1

1. The service manual does not contain the following information, because of the impossibility of servicing at component level without concerned equipment/facilities.
   a. Schematic diagram, Block Diagram and P.C.B. layout of MAIN P.C.B..
   b. Parts list for individual parts for MAIN P.C.B..
   When a part replacement is required for repairing MAIN P.C.B., replace as an assembled parts. (Main P.C.B.)
2. The following category is /are recycle module part. Please send it/them to Central Repair Center.
   - MAIN P.C.B. (VEP03H94BN: HDC-SDX1P)
   - MAIN P.C.B. (VEP03H94BP: HDC-SDX1EC/EG)
   - MAIN P.C.B. (VEP03H94BQ: HDC-SDX1GC)

3.4. How to Define the Model Suffix (NTSC or PAL model)

There are three kinds of HDC-SDX1.

- a) HDC-SDX1P
- b) HDC-SDX1EC/EG
- c) HDC-SDX1GC

What is the difference is that the “INITIAL SETTING” data which is stored in Flash ROM mounted on Main P.C.B..

3.4.1. Defining methods:

To define the model suffix to be serviced, refer to the rating label which is putted on the Unit.

a) HDC-SDX1P

The nameplate for this model show the following Safety registration mark.

b) HDC-SDX1EC/EG

The nameplate for these models show the following Safety registration mark.

c) HDC-SDX1GC

The nameplate for these models do not show any above Safety registration mark.

NOTE:

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

The adjustment instruction is available at “software download” on the “Support Information from NWBG/VDBG-AVC” web-site in “TSN system”, together with Maintenance software.

3.5. Formatting

[FORMAT CARD]

Please be aware that if a medium is formatted, then all the data recorded on the medium will be erased and cannot be restored. Back up important data on a PC, DVD disc etc.

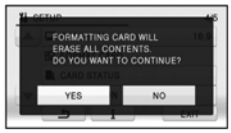
- When formatting is complete, touch [EXIT] to exit the message screen.
- Perform a physical formatting of the SD card when the SD card is to be disposed/ transferred.

- Do not turn this unit off or remove the SD card, while formatting. Do not expose the unit to vibrations or shock.

Use this unit to format media.
Do not format an SD card using any other equipment such as a PC. The card may not be used on this unit.

When disposing of or giving away the SD card, note that:

- Formatting and deletion of this unit or computer only changes the file management information and does not completely delete the data in the SD card.
- It is recommended that the SD card is physically destroyed or the SD card is physically formatted using this unit when disposing of or giving away the SD card.
- To physically format the SD card, connect the unit via the AC adaptor, select [SETUP] → [FORMAT CARD] → [YES] from the menu, and then press and hold the delete/video light button on the screen below for about 3 seconds. When the SD card data deletion screen appears, select [YES], and then follow the on-screen instructions.



- The customer is responsible for the management of the data in the SD card.

4 Specifications

High Definition Video Camera
Information for your safety

Power source: DC 5.0 V (When using AC adaptor)/DC 3.6 V (When using battery)
Power consumption: Recording; 4.4 W/Charging; 7.7 W

Signal system:
NTSC areas: AVCHD;1080/60i
MP4; 720/30p, 540/30p, 480/30p
PAL areas: AVCHD;1080/50i
MP4; 720/25p, 540/25p, 480/25p

Recording format:
AVCHD; AVCHD format compliant
MP4, iFrame; MPEG-4 AVC file format compliant (.MP4)

Image sensor: 1/4.1 type (1/4.1″) 1MOS image sensor
Total; 3320 K
Effective pixels;
Motion picture; 1920 K to 1360 K (16:9), 1440 K to 1020 K (4:3)
Still picture; 2160 K to 1520 K (4:3), 2080 K to 1460 K (3:2), 1920 K to 1360 K (16:9)

Lens: Auto Iris, 16.8× Optical Zoom, F1.8 to F2.6
Focal length; 2.9 mm to 48.7 mm
Macro (Full range AF)
35 mm equivalent;
Motion picture; 35.8 mm to 716 mm (16:9)/43.9 mm to 878 mm (4:3)
Still picture; 35.8 mm to 716 mm (4:3/3:2/16:9)
Minimum focus distance;
Normal; Approx. 4 cm (1.6″) (Wide)/Approx. 1.2 m (3.9 feet) (Tele)
Tele macro; Approx. 50 cm (20″) (Tele)
Intelligent auto Macro; Approx. 1 cm (0.4″) (Wide)/Approx. 50 cm (20″) (Tele)

Zoom: i.Zoom OFF 20×, 23× i.Zoom, 50×/1200× Digital Zoom
Using image sensor effective area

Image Stabilizer Function:
Optical (HYBRID O.I.S., active mode, O.I.S. LOCK function)

Monitor: 6.7 cm (2.7″) wide LCD monitor (Approx. 230 K dots)

Microphone: Stereo (with a zoom microphone function)

Speaker: 1 round speaker, dynamic type

White balance adjustment: Auto tracking white balance system

Standard illumination: 1,400 lx

Minimum required illumination:
NTSC areas: Approx. 4 lx (1/30 with Low light mode in the Scene mode)
Approx. 1 lx with the Color Night Rec function
PAL areas: Approx. 4 lx (1/25 with Low light mode in the Scene mode)
Approx. 1 lx with the colour night view function

AV multi connector video output level:
NTSC areas: AV video output level; 1.0 Vp-p, 75 Ω, NTSC system
PAL areas: AV video output level; 1.0 Vp-p, 75 Ω, PAL system
Component video output level; Y; 1.0 Vp-p, 75 Ω/Pb; 0.7 Vp-p, 75 Ω/Pr; 0.7 Vp-p, 75 Ω

HDMI mini connector video output level:
NTSC areas: HDMI™ (x.v.Color™) 1080i/480p
PAL areas: HDMI™ (x.v.Colour™) 1080i/576p

AV multi connector audio output level (Line): 316 mV, 600 Ω, 2 ch

HDMI mini connector audio output level:
AVCHD; Dolby Digital/Linear PCM
MP4; Linear PCM

USB:
P/GC areas: Card reader/writer function (No copyright protection support)
EC/EG areas: Card reader function (No copyright protection support)
Hi-Speed USB (USB 2.0), USB terminal Type Mini AB
USB host function (for DVD burner)
Battery charging function (Charges from USB terminal when the main unit is off)
WEB camera;
Compression; Motion JPEG
Picture size; 640×480(VGA), 320×240(QVGA), 160×120(QQVGA)

Flash: Available range; Approx. 1.0 m to 2.5 m (3.3 feet to 8.2 feet)

Dimensions:
51.5 mm (W)×57.5 mm (H)×107.5 mm (D)
[2.03 ″ (W)×2.26 ″ (H)×4.23 ″ (D)] (excluding projecting parts)

Mass (Weight):
Approx. 185 g (Approx. 0.41 lbs.) [without battery (supplied) and an SD card (optional)]

Mass (Weight) in operation:
Approx. 229 g (Approx. 0.5 lbs.) [with battery (supplied) and an SD card (optional)]

Operating temperature: 0 °C to 40 °C (32 °F to 104 °F)

Operating humidity: 10%RH to 80%RH

Battery operation time: See “Charging and recording time”

■ Motion pictures

Recording media:
SD Memory Card (FAT12 and FAT16 system compliant)
SDHC Memory Card (FAT32 system compliant)
SDXC Memory Card (exFAT system compliant)
Refer to “Card that you can use with this unit”.

Compression: MPEG-4 AVC/H.264

Recording mode and transfer rate:
AVCHD;
HA; Approx. 17 Mbps (VBR)
HG; Approx. 13 Mbps (VBR)
HX; Approx. 9 Mbps (VBR)
HE; Approx. 5 Mbps (VBR)
MP4;
1280×720p; Approx. 10 Mbps (VBR)
640×480p; Approx. 2.5 Mbps (VBR)
iFrame 960×540p; Approx. 28 Mbps (VBR)
Refer to “Recording modes/approximate record time”.

Picture size:
NTSC areas: AVCHD;
HA/HG/HX/HE; 1920×1080/60i
MP4;
1280×720p; 1280×720/30p
640×480p; 640×480/30p
iFrame 960×540p; 960×540/30p
PAL areas: AVCHD;
HA/HG/HX/HE; 1920×1080/50i
MP4;
1280×720p; 1280×720/25p
640×480p; 640×480/25p
iFrame 960×540p; 960×540/25p

Audio compression:
AVCHD; Dolby Digital/2ch
MP4; AAC/2ch

■ Still pictures

Recording media:
SD Memory Card (FAT12 and FAT16 system compliant)
SDHC Memory Card (FAT32 system compliant)
SDXC Memory Card (exFAT system compliant)
Refer to “Card that you can use with this unit”.

Compression:
JPEG (Design rule for Camera File system, based on Exif 2.2 standard),
DPOF corresponding

Picture size:
Picture aspect [4:3]; 1952×1464/640×480
Picture aspect [3:2]; 2064×1376
Picture aspect [16:9]; 1920×1080
Refer to “Approximate number of recordable pictures”.

AC adaptor
Information for your safety

Power source:	AC 110 V to 240 V, 50/60 Hz
Power consumption:	12 W
DC output:	DC 5.0 V, 1.6 A

Dimensions:
46 mm (W)×25 mm (H)×75.5 mm (D)
[1.8 ″ (W)×1.0 ″ (H)×3.0 ″ (D)]
Mass (Weight):
Approx. 115 g (Approx. 0.25 lbs.)

Specifications may change without prior notice.

Charging and recording time

■ **Charging/Recording time**

● Temperature: 25 °C (77 °F)/humidity: 60%RH

NTSC areas					
Battery model number [Voltage/Capacity (minimum)]	**Charging time**	**Recording format**	**Recording mode**	**Maximum continuous recordable time**	**Actual recordable time**
Supplied battery/ VW-VBK180 (optional) [3.6 V/1790 mAh]	2 h 50 min	AVCHD	HA/HG	1 h 45 min	55 min
			HX/HE	1 h 50 min	
		MP4	1280×720p	1 h 55 min	1 h
			640×480p	2 h	
			iFrame 960×540p	1 h 50 min	55 min
VW-VBK360 (optional) [3.6 V/3580 mAh]	4 h 50 min	AVCHD	HA	3 h 40 min	1 h 50 min
			HG/HX/HE		1 h 55 min
		MP4	1280×720p	3 h 55 min	2 h
			640×480p	4 h 5 min	2 h 5 min
			iFrame 960×540p	3 h 50 min	2 h

PAL areas					
Battery model number [Voltage/Capacity (minimum)]	**Charging time**	**Recording format**	**Recording mode**	**Maximum continuously recordable time**	**Actual recordable time**
Supplied battery/ VW-VBK180 (optional) [3.6 V/1790 mAh]	2 h 50 min	AVCHD	HA/HG/ HX/HE	1 h 55 min	1 h
		MP4	1280×720p	2 h 5 min	1 h 5 min
			640×480p	2 h 10 min	
			iFrame 960×540p	2 h	1 h
VW-VBK360 (optional) [3.6 V/3580 mAh]	4 h 50 min	AVCHD	HA/HG/HX	3 h 55 min	2 h
			HE	4 h	2 h 5 min
		MP4	1280×720p	4 h 15 min	2 h 10 min
			640×480p	4 h 25 min	2 h 15 min
			iFrame 960×540p	4 h 10 min	2 h 10 min

● These times are approximations.

● **The indicated charging time is for when the battery has been discharged completely. Charging time and recordable time vary depending on the usage conditions such as high/low temperature.**

● The actual recordable time refers to the recordable time when repeatedly starting/stopping recording, turning the unit on/off, moving the zoom lever etc.

● The batteries heat up after use or charging. This is not a malfunction.

Cards that you can use with this unit

Use SD cards conforming to Class 4 or higher of the SD Speed Class Rating* for motion picture recording.

Card type	Capacity	Motion picture recording	Still picture recording
SD Memory Card	8 MB/16 MB	Cannot be used.	Can be used.
	32 MB/64 MB/ 128 MB/256 MB	Cannot be guaranteed in operation.	
	512 MB/1 GB/ 2 GB	Can be used.	
SDHC Memory Card	4 GB/6 GB/8 GB/ 12 GB/16 GB/ 24 GB/32 GB		
SDXC Memory Card	48 GB/64 GB		

* The SD Speed Class Rating is the speed standard for successive writes.

Recording modes/approximate recordable time

● SD cards are only mentioned with their main memory size. The stated times are the approximate recordable times for continuous recording.

Recording format		AVCHD			
Recording mode		**HA**	**HG**	**HX**	**HE**
Picture size		**1920×1080**	**1920×1080**	**1920×1080**	**1920×1080**
SD card	**4 GB**	30 min	40 min	1 h	1 h 30 min
	8 GB	1 h	1 h 20 min	2 h	3 h 20 min
	16 GB	2 h	2 h 40 min	4 h 10 min	6 h 40 min
	32 GB	4 h 10 min	5 h 30 min	8 h 20 min	13 h 40 min
	48 GB	6 h 20 min	8 h 10 min	12 h 30 min	20 h 20 min
	64 GB	8 h 30 min	11 h	16 h 50 min	27 h 30 min

Recording format		MP4		
Recording mode		**1280×720p**	**640×480p**	**iFrame**
Picture size		**1280×720**	**640×480**	**960×540**
SD card	**4 GB**	50 min	3 h 20 min	19 min
	8 GB	1 h 45 min	7 h	40 min
	16 GB	3 h 30 min	14 h	1 h 20 min
	32 GB	7 h 30 min	30 h	2 h 40 min
	48 GB	11 h	44 h 50 min	4 h
	64 GB	15 h	60 h 30 min	5 h 20 min

Ⓐ Favors image quality

Ⓑ Favors recording time

● If recording for long periods, prepare batteries for 3 or 4 times the period you wish to record for.

● The default setting is [HG] mode.

● Maximum continuously recordable time for one scene: 12 hours

● The recording is paused once when the recording time for one scene exceeds 12 hours, and the recording will automatically resume after a few seconds.

● If a recording with a lot of action is recorded, the recording time is reduced.

● The recordable time may be reduced if recording of short scene is repeated.

● Use time in the row of 4 GB in above table as a guideline for the time that can be copied onto one DVD disc (4.7 GB).

Approximate number of recordable pictures

● SD cards are only mentioned with their main memory size. The stated number is the approximate number of recordable pictures.

Aspect ratio		4:3			
Picture size		2.9M 1952×1464		0.3M 640×480	
Picture quality					
SD card	**512 MB**	300	500	3600	6100
	1 GB	600	1000	7400	12000
	2 GB	1200	2000	15000	25000
	4 GB	2500	4000	30000	50000
	8 GB	5000	8000	60500	102000
	16 GB	10000	16000	122000	205000
	32 GB	20000	32000	246000	414000
	48 GB	31000	49000	364000	613000
	64 GB	42000	66000	492000	829000

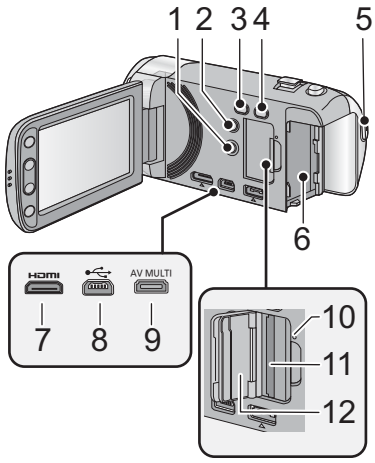
Aspect ratio		3:2		16:9	
Picture size		2.8M 2064×1376		2.1M 1920×1080	
Picture quality					
SD card	**512 MB**	300	500	440	690
	1 GB	600	1000	900	1400
	2 GB	1200	2000	1800	2800
	4 GB	2500	4000	3600	5600
	8 GB	5000	8000	7300	11000
	16 GB	10000	16000	14000	23000
	32 GB	20000	32000	29000	46000
	48 GB	31000	49000	44000	69000
	64 GB	42000	66000	59000	93000

● **The number of recordable pictures depends on whether and are used together and on the subject being recorded.**

● Maximum number of recordable pictures that can be displayed is 99999.
If the number of recordable pictures exceeds 99999, the number will not change when the picture is taken until the number of recordable pictures gets less than 99999.

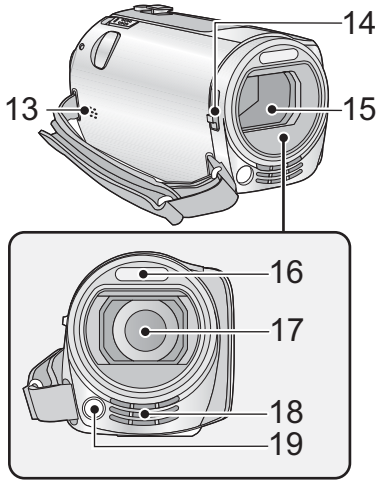
● The memory capacity indicated on the label of an SD card is the total of the capacity for copyright protection and management and the capacity which can be used on the unit, a PC etc.

5 Location of Controls and Components

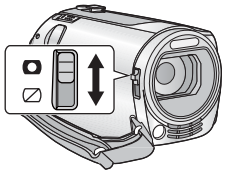


1 Power button [⏻/I]
2 Delete/Video light button [🗑/LIGHT]
3 Intelligent auto/Manual button [iA/MANUAL]
4 Optical image stabilizer button [(( ))O.I.S.]
5 Recording start/stop button
6 Battery holder
7 HDMI mini connector [HDMI]
8 USB terminal [⇐]
9 AV multi connector [AV MULTI]
- Use the AV multi cable (only the supplied cable).

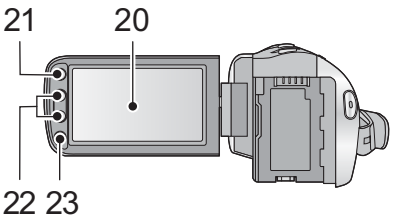
10 Access lamp [ACCESS]
11 Card slot
12 SD card cover



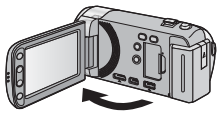
13 Speaker
14 Lens cover opening/closing switch
When not using the unit, close the lens cover to protect the lens.
- Slide the opening/closing switch to open/close the cover.



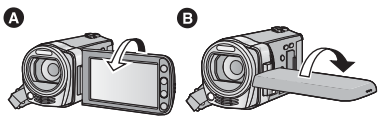
15 Lens cover
16 Built-in flash
17 Lens
18 Internal stereo microphones
19 Video light



20 LCD monitor (Touch screen)



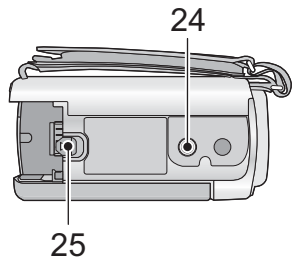
- It can open up to 90°.



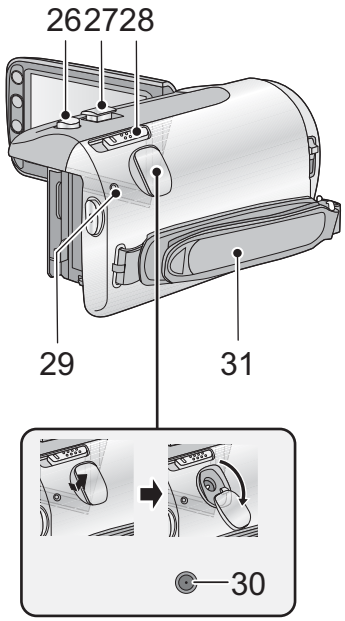
- It can rotate up to 180° Ⓐ towards the lens or 90° Ⓑ towards the opposite direction.

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.

21 Menu button [MENU]
22 Adjust zoom buttons
23 Sub recording start/stop button
- This button functions in the same manner as the recording start/stop button.

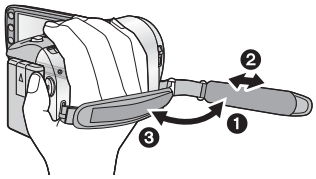


24 Tripod receptacle
25 Battery release lever [BATT]



26 Photoshot button [ ]
27 Zoom lever [W/T] (In Motion Picture Recording Mode or Still Picture Recording Mode)
Thumbnail display switch [/]/ Volume lever [−VOL+] (In Playback Mode)
28 Mode switch
29 Status indicator
30 DC input terminal
- Do not use any other AC adaptors except the supplied one.

31 Grip belt
Adjust the length of the grip belt so that it fits your hand.

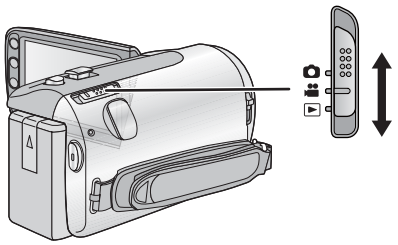


❶ Flip the belt.
❷ Adjust the length.
❸ Replace the belt.

Selecting a mode

Change the mode to recording or playback.

Operate the mode switch to change the mode to , or .



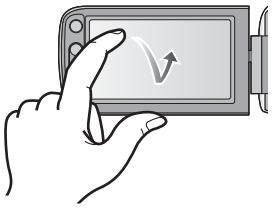
	Motion Picture Recording Mode
	Still Picture Recording Mode
	Playback Mode

How to use the touch screen

You can operate by directly touching the LCD monitor (touch screen) with your finger. It is easier to use the stylus pen (supplied) for detailed operation or if it is hard to operate with your fingers.

■ Touch

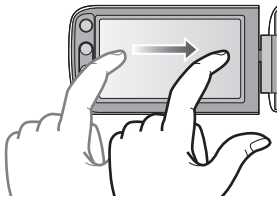
Touch and release the touch screen to select icon or picture.



- Touch the center of the icon.
- Touching the touch screen will not operate while you are touching another part of the touch screen.

■ Drag

Move your finger while pressing on the touch screen. Can be used during direct playback and playback zoom.



■ About the operation icons

/ / / :

These icons are used to switch the menu and thumbnail display page, for item selection and setting etc.

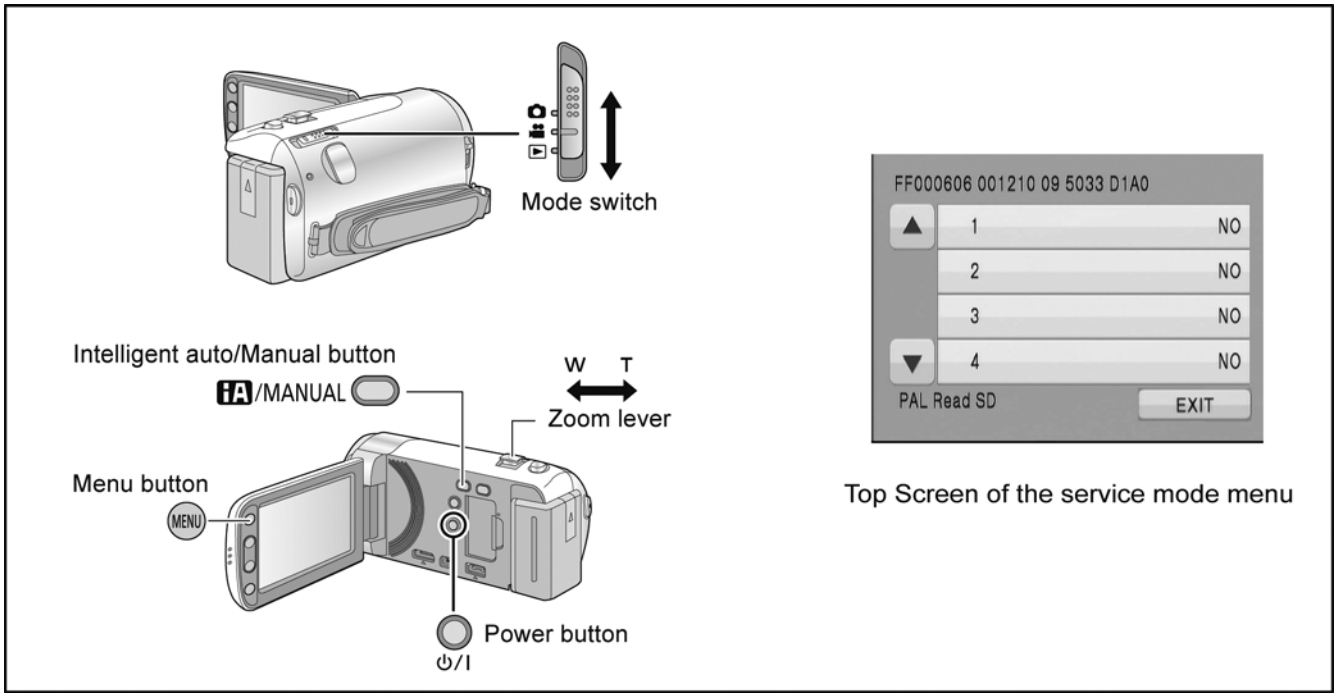
:

Touch to return to the previous screen such as when setting menus

- Do not touch on the LCD monitor with hard pointed tips, such as ball point pens.
- Perform the touch screen calibration when the touch is not recognized or wrong location is recognized.

6 Service Mode

1. **Indication method of the service menu**
   Set the mode switch “Motion Picture Recording” mode.
2. Turn the power on, and then while keep pressing the “Zoom lever” to W side, “Intelligent auto/Manual” button and “Menu” button for more than 3 seconds until the top screen of the Service Mode Menu being displayed.



Top Screen of the service mode menu

Service mode menu

Screen display	Contents	Function
1	Factory settings	Function to throw a product up in a factory shipment state (When recorded data in Built-in memory, “error display” is done)
4	Lock search history indication	Display the camera system error cord for three histories saved in EEPROM
5	Power ON self check result display	Power ON self check (function to diagnose correct function of the device and interface between devices) result display

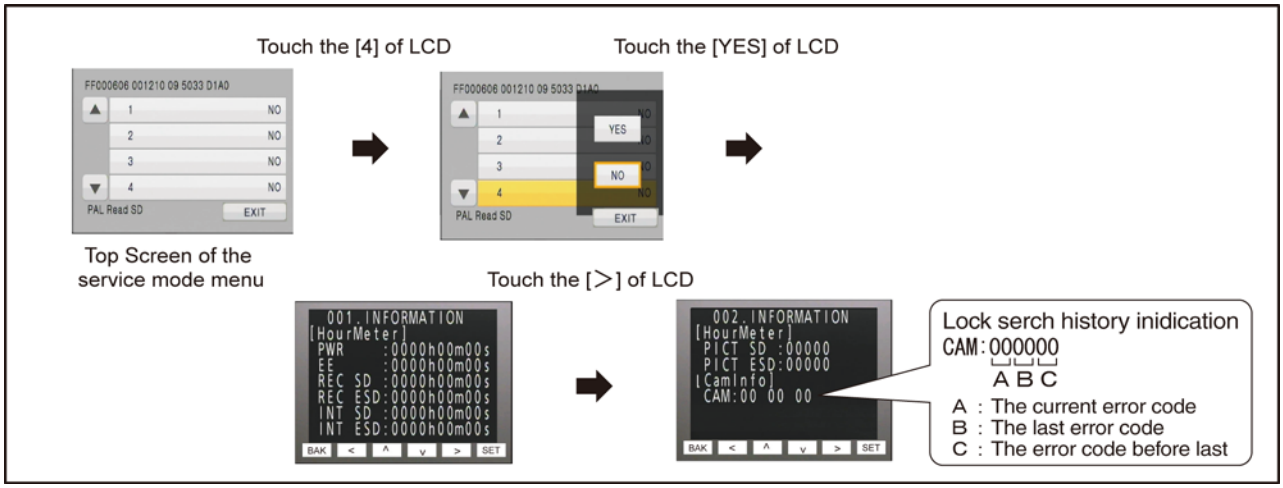
NOTE:
Do not using service mode except above table of Service Menu.

3. End method of the top screen of the service menu
   Push the “Menu” button to end the service mode, and then POWER OFF.

6.1. Lock Search History Indication

Touch the [4] of LCD, select Lock search history indication.

Operation specifications



Indication contents

- Lock search history indication
  Display the camera system error cord for three histories saved in EEPROM.
- The error cord contents which are displayed

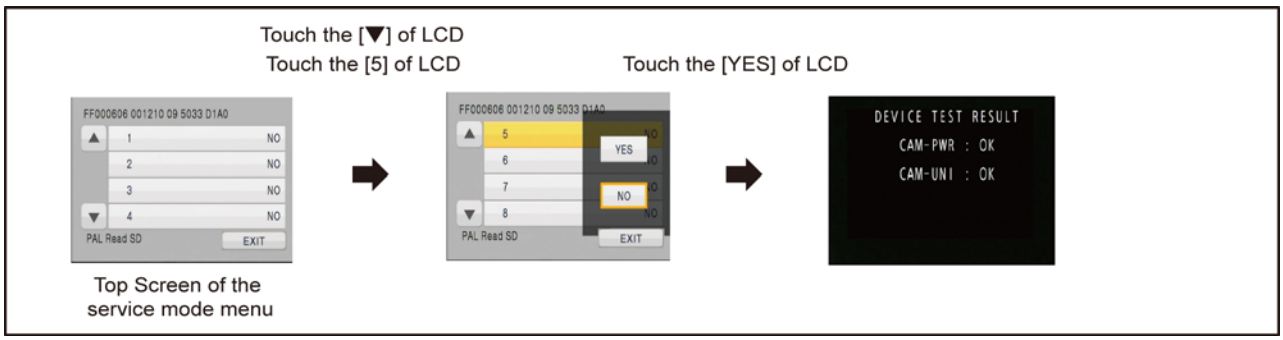
Error code	Function
51	Focus control is abnormal
52	Zoom control is abnormal
53	OIS lens control is abnormal
73	High temperature is abnormal
33	Communication between camera to ARM is abnormal

Push the “Menu” button to end the service mode, and then POWER OFF.

6.2. Power ON Self Check Result Display

Touch the [5] of LCD, select Power ON self check result display.

Operation specifications



Indication contents

- Power ON self check result display
  Function to diagnose correct function of the device and interface between devices result display.

  Display the following commnucation test result.
  - CAM-PWR : Commnucation test between IC2006 to IC301
  - CAM-UNI : Commnucation test between IC3401 to IC301

  Display other than “OK” are abnomalities of each lines.

Cutting of battery connection or AC power supply connection to end the service mode.

7 Service Fixture & Tools

7.1. When Replacing the Main P.C.B.

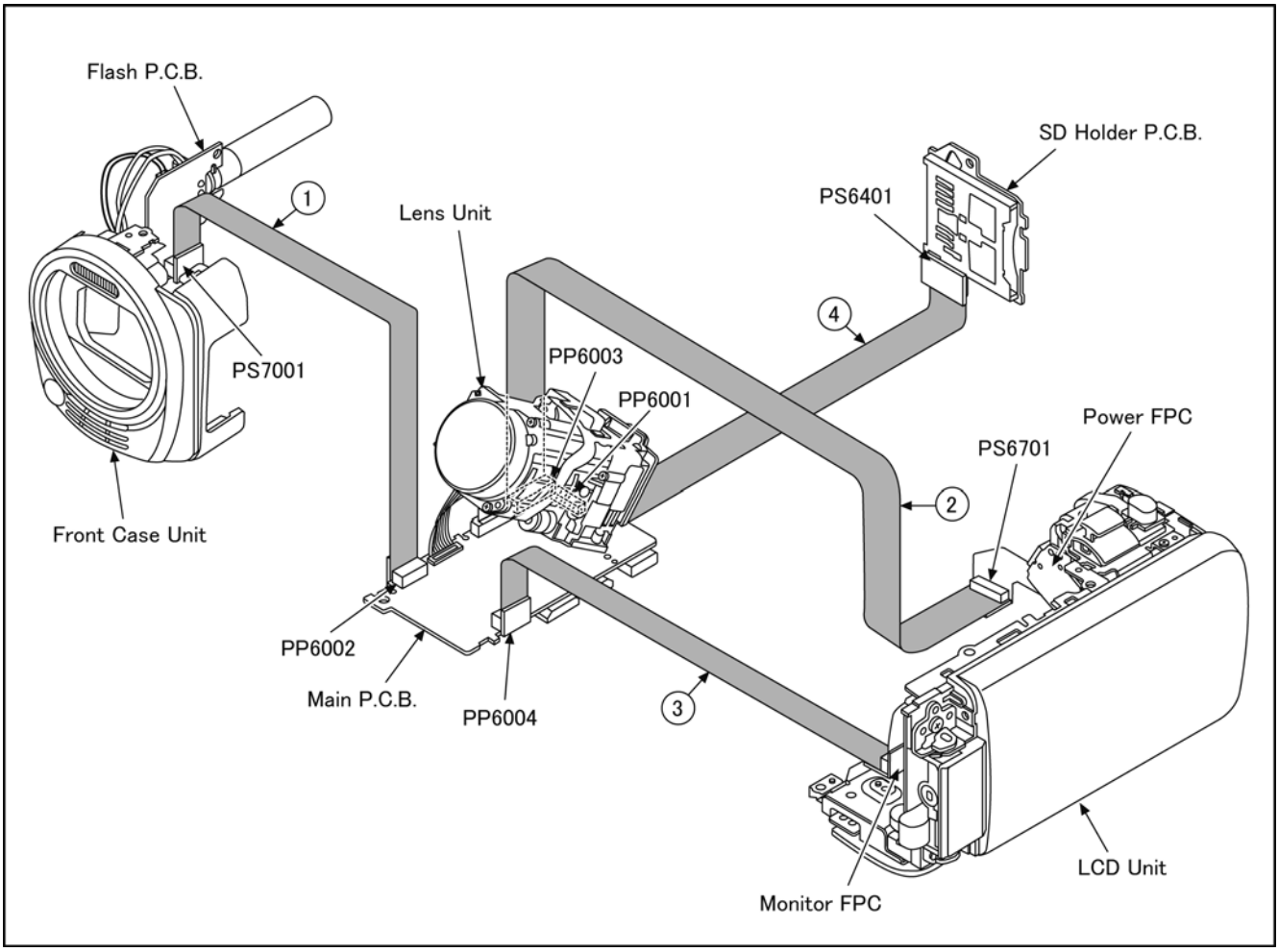
After replacing the MAIN P.C.B., be sure to achieve adjustment.
The adjustment instruction is available at “software download” on the “Support Information from NWBG/VDBG-AVC” web-site in “TSN system”, together with Maintenance software.

7.2. Service Position

This Service Position is used for checking and replacing parts. Use the following Extension cables for servicing.

Table S1 Extension Cable List

No.	Parts No.	Connection	Form
1	VFK2020	PP6002(MAIN) - PS7001(FLASH)	20PIN 0.5 B to B
2	RFKZ0379	PP6003(MAIN) - PS6701(POWER FPC)	40PIN 0.5 B to B
3	VFK1933	PP6004(MAIN) - MONITOR FPC	34PIN 0.5 B to B
4	VFK1870	PP6001(MAIN) - PS6401(SD HOLDER)	30PIN 0.5 B to B



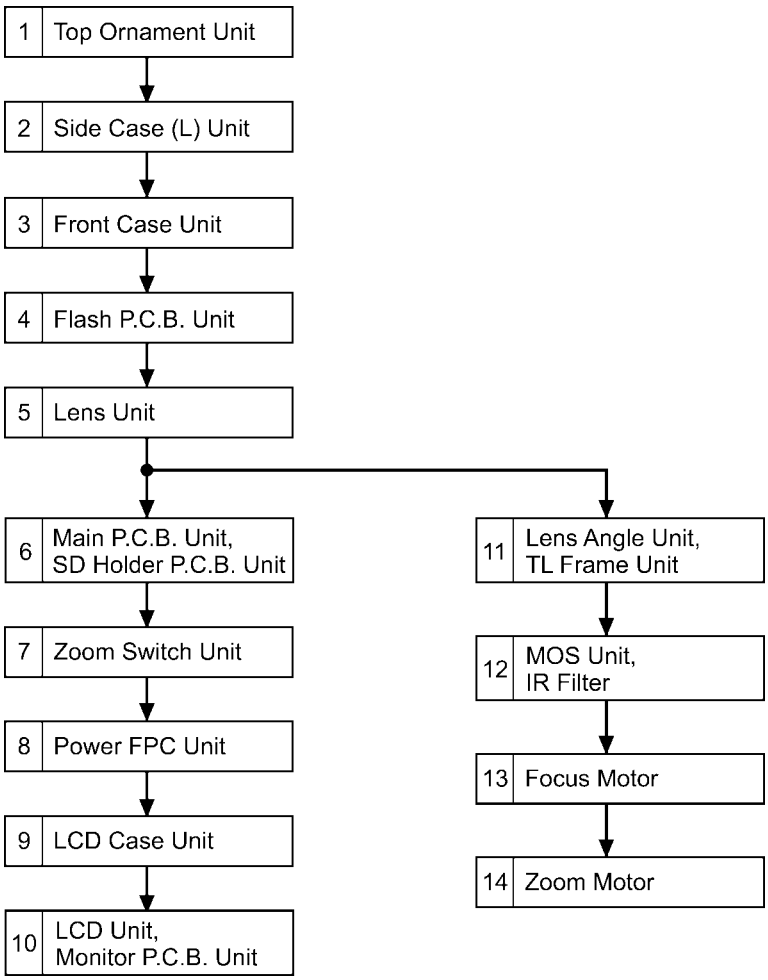
CAUTION-1. (When servicing FLASH P.C.B.)

1. Be sure to discharge the capacitor on FLASH P.C.B..
   Refer to “HOW TO DISCHARGE THE CAPACITOR ON FLASH P.C.B.”.
   The capacitor voltage is not lowered soon even if the AC Cord is unplugged or the battery is removed.
2. Be careful of the high voltage circuit on FLASH P.C.B..
3. DO NOT allow other parts to touch the high voltage circuit on FLASH P.C.B..

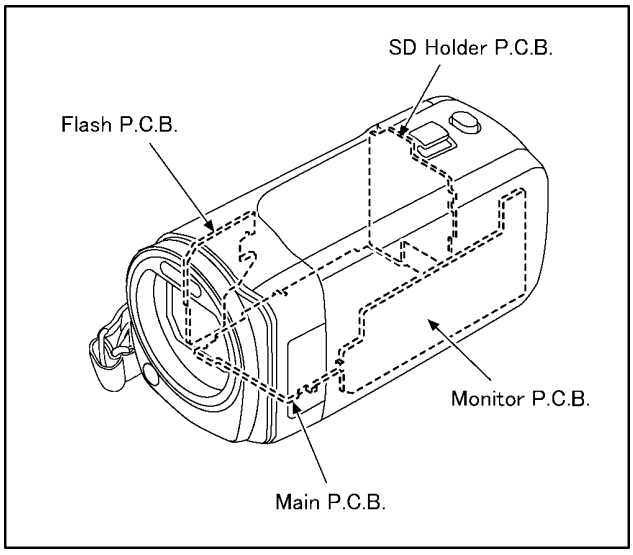
8 Disassembly and Assembly Instructions

8.1. Disassembly Flow Chart

This is a disassembling chart.
When assembling, perform this chart conversely.



8.2. PCB Location



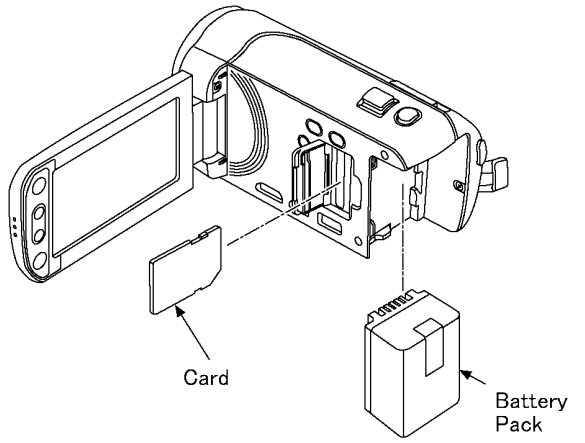
8.3. Disassembly Procedure

No.	Item	Fig	Removal
1	Top Ornament Unit	Fig.D1	1 Screw (A)
		Fig.D2	2 Locking tabs
			2 Ribs
			Top Ornament Unit
2	Side Case (L) Unit	Fig.D3	2 Screws (B)
			1 Screw (C)
		Fig.D4	1 Screw (D)
			2 Screws (E)
			3 Locking tabs
			P6401 (Connector)
			Side Case (L) Unit
3	Front Case Unit	Fig.D5	P7001 (Connector)
			P7002 (Connector)
			FP7001 (Flex)
			1 Screw (F)
			1 Screw (G)
			1 Screw (H)
			2 Locking tabs
			Front Case Unit
		Fig.D6	Discharge of the capacitor
4	Flash P.C.B. Unit	Fig.D7	2 Screws (I)
			PS7001 (Connector)
			Flash P.C.B. Unit
5	Lens Unit	Fig.D8	2 Screws (J)
			1 Screw (K)
			PP6003 (Connector)
			3 Locking tabs
			P6001 (Connector)
			FP6008 (Flex)
			Lens Unit
6	Main P.C.B. Unit SD Holder P.C.B. Unit	Fig.D9	2 Screws (L)
			PP6004 (Connector)
		Fig.D10	Radiation Plate
			PS6401 (Connector)
			Main P.C.B. Unit
			SD Holder P.C.B. Unit
7	Zoom Switch Unit	Fig.D11	1 Screw (N)
			FP6701 (Flex)
			1 Rib
			1 Locking tab
			Zoom Switch Unit
8	Power FPC Unit	Fig.D12	FP6702 (Flex)
			1 Screw (O)
			2 Ribs
			1 Locking tab
			DC Jack Angle
			Power FPC Unit
9	LCD Case Unit	Fig.D13	2 Screws (P)
			6 Locking tabs
			LCD Case (T)
		Fig.D14	FP901 (Flex)
			FP902 (Flex)
			LCD Case Unit

No.	Item	Fig	Removal
10	LCD Unit Monitor P.C.B. Unit	Fig.D15	1 Screw (Q)
			2 Ribs
			LCD Frame
			FP903 (Flex)
			FP904 (Flex)
			FP905 (Flex)
		FIg.D16	3 Locking tabs
			LCD Unit
		Fig.D17	1 Locking tab
			Reflection Sheet
			Light Guide Plate
			Diffusion Sheet
			Prism Sheet B
			Prism Sheet A
			Lens Holder
			Monitor P.C.B. Unit
11	Lens Angle Unit TL Frame Unit	Fig.D18	1 Locking tab
			3 Convexes
			Lens Angle Unit
			TL Frame Unit
12	MOS Unit IR Filter	Fig.D19	2 Screws (R)
			MOS Cushion
			MOS Unit
			IR Filter
13	Focus Motor	Fig.D20	3 Screws (S)
			4 Solders
			2 Convexes
			Focus Motor
14	Zoom Motor	Fig.D21	3 Screws (T)
			4 Solders
			2 Convexes
			Zoom Motor

NOTE:
When servicing and reassembling, remove the card and battery pack from the unit.

・Card
・Battey Pack



8.3.1. Removal of the Top Ornament Unit

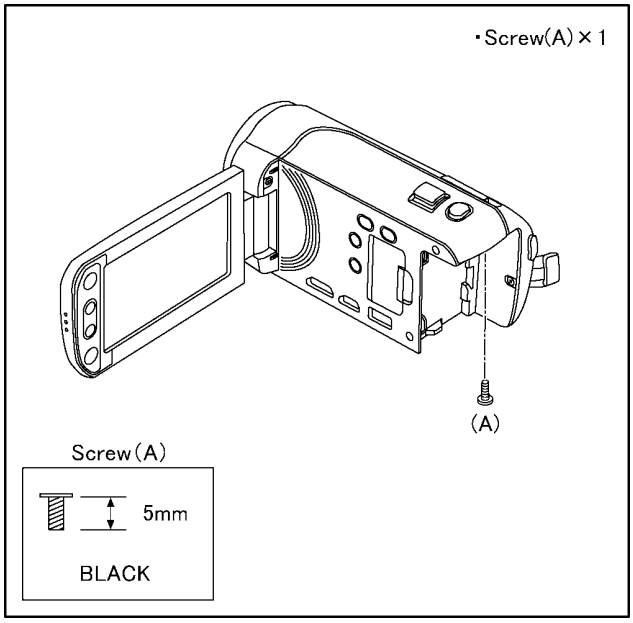


Fig.D1

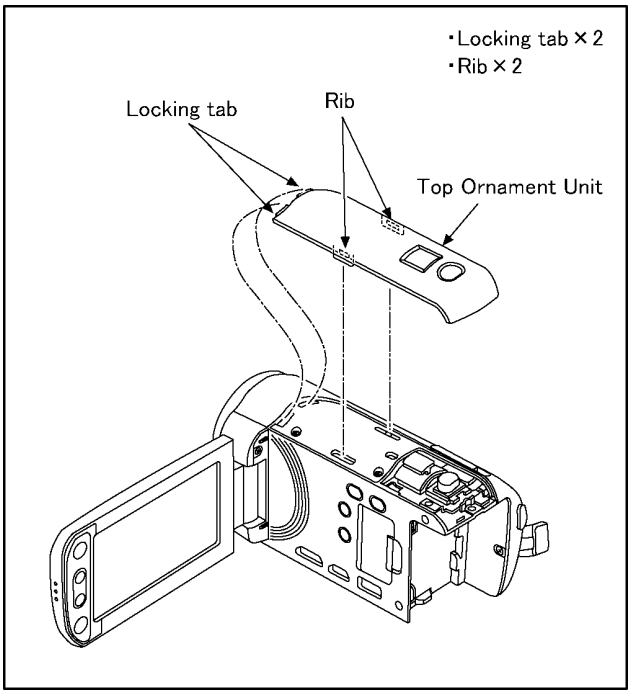


Fig.D2

8.3.2. Removal of the Side Case (L) Unit

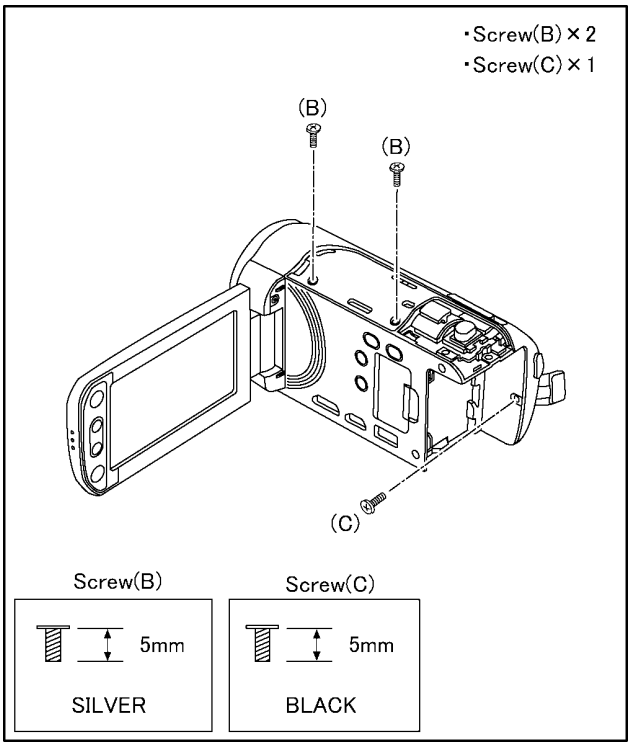


Fig.D3

8.3.3. Removal of the Front Case Unit

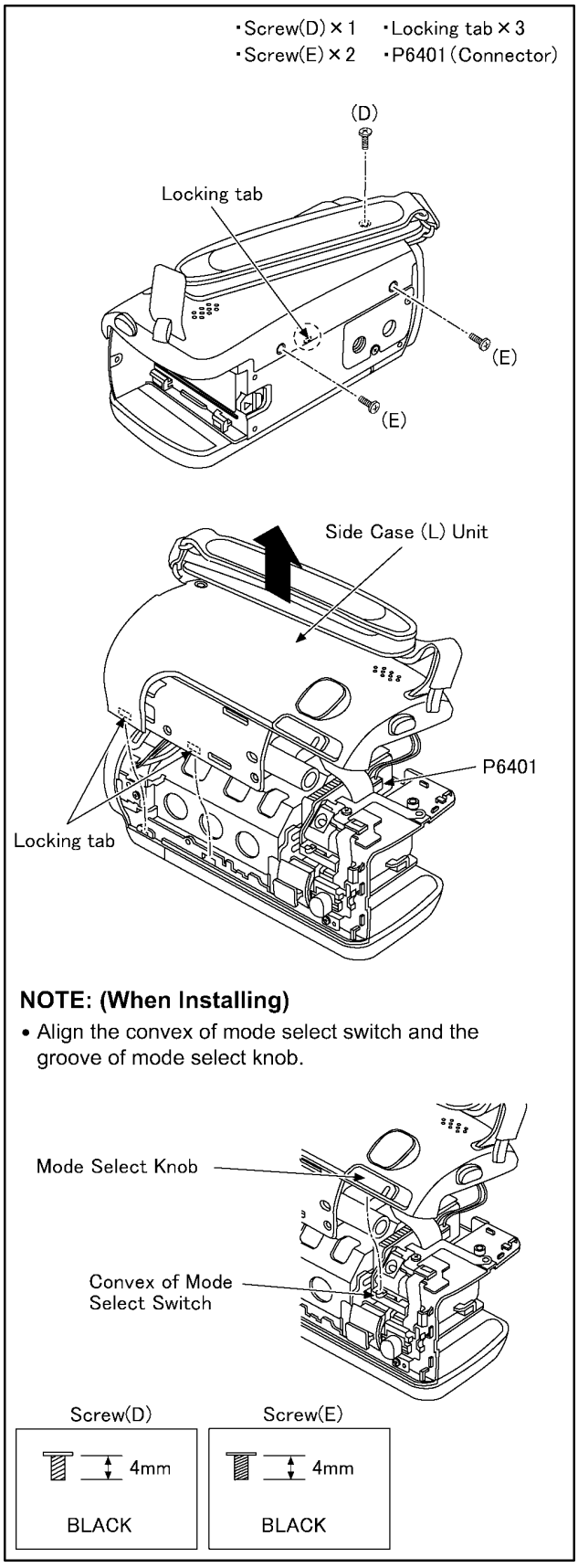


Fig.D4

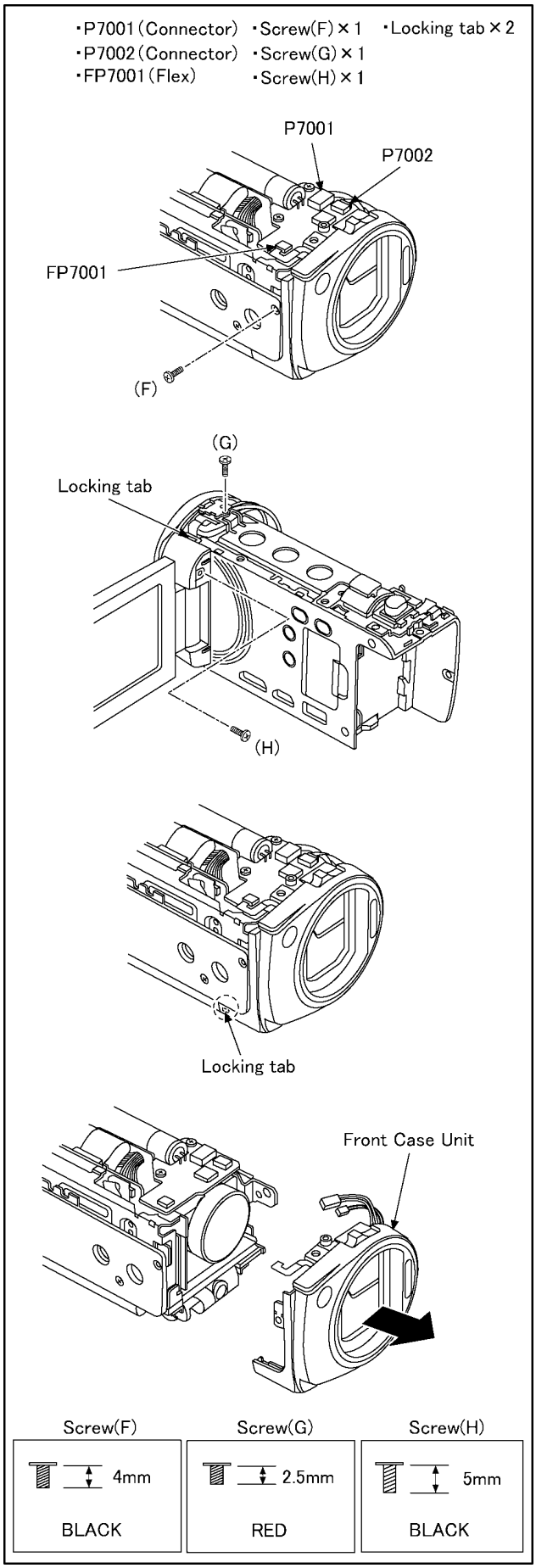
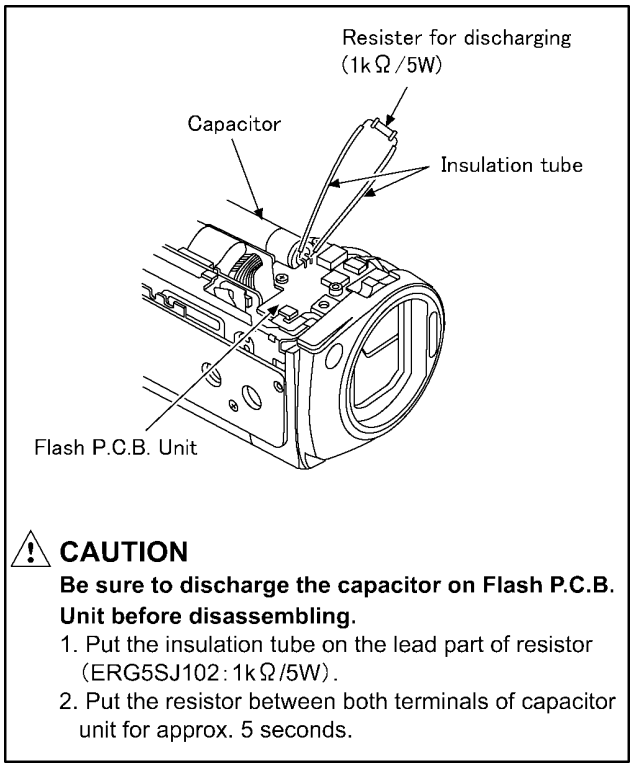


Fig.D5



⚠ CAUTION

Be sure to discharge the capacitor on Flash P.C.B. Unit before disassembling.

1. Put the insulation tube on the lead part of resistor (ERG5SJ102 : 1kΩ/5W).
2. Put the resistor between both terminals of capacitor unit for approx. 5 seconds.

Fig.D6

8.3.4. Removal of the Flash P.C.B. Unit

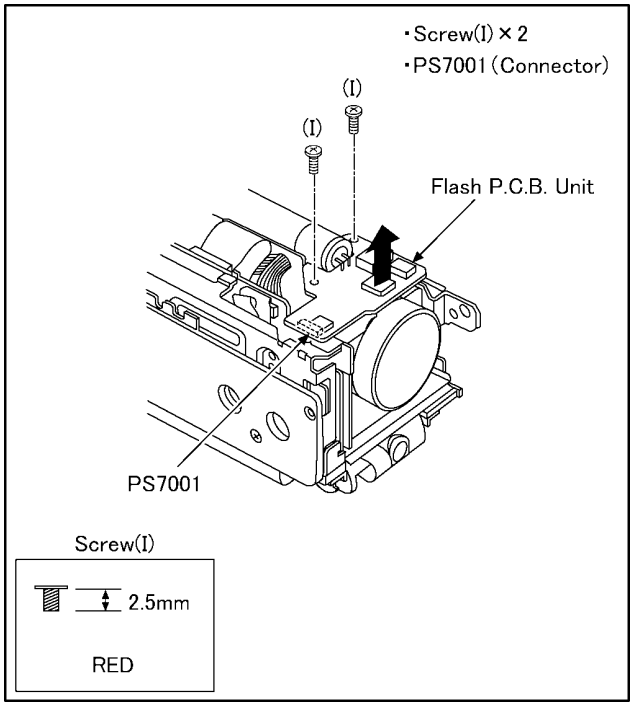


Fig.D7

8.3.5. Removal of the Lens Unit

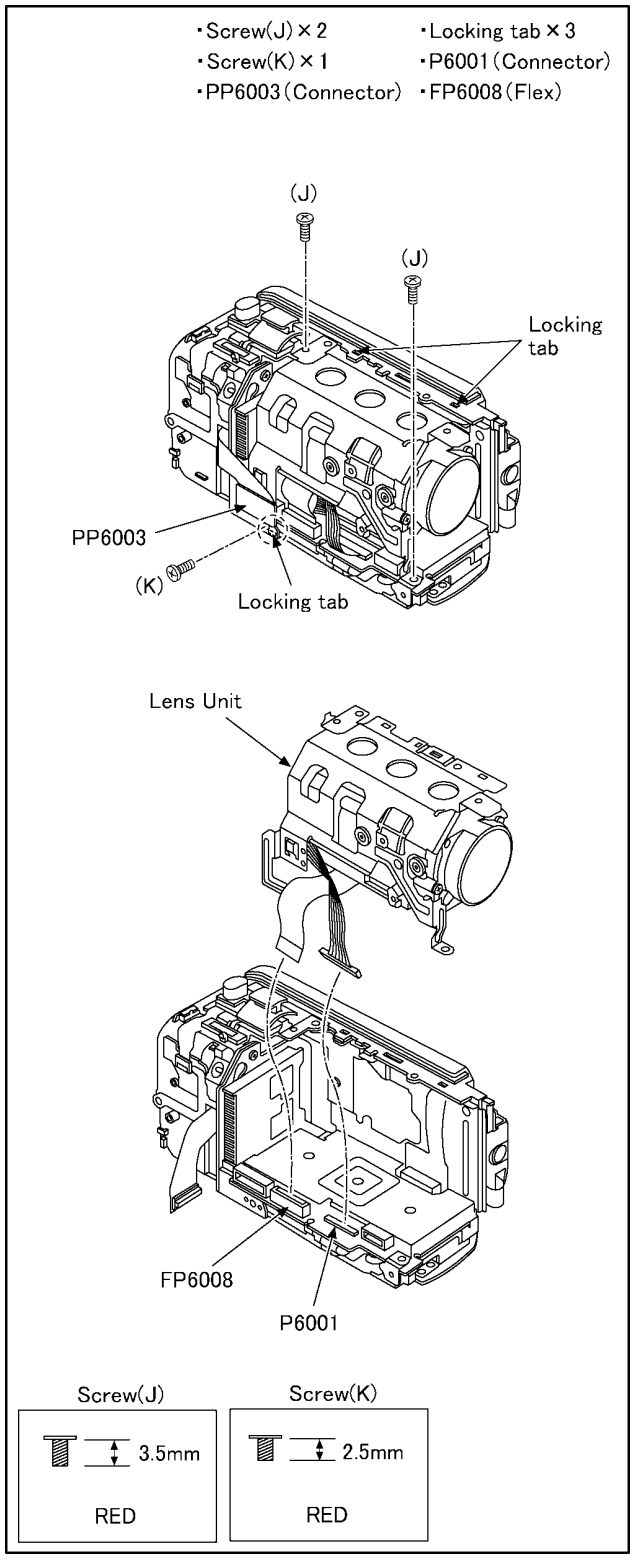


Fig.D8

8.3.6. Removal of the Main P.C.B. Unit and SD Holder P.C.B. Unit

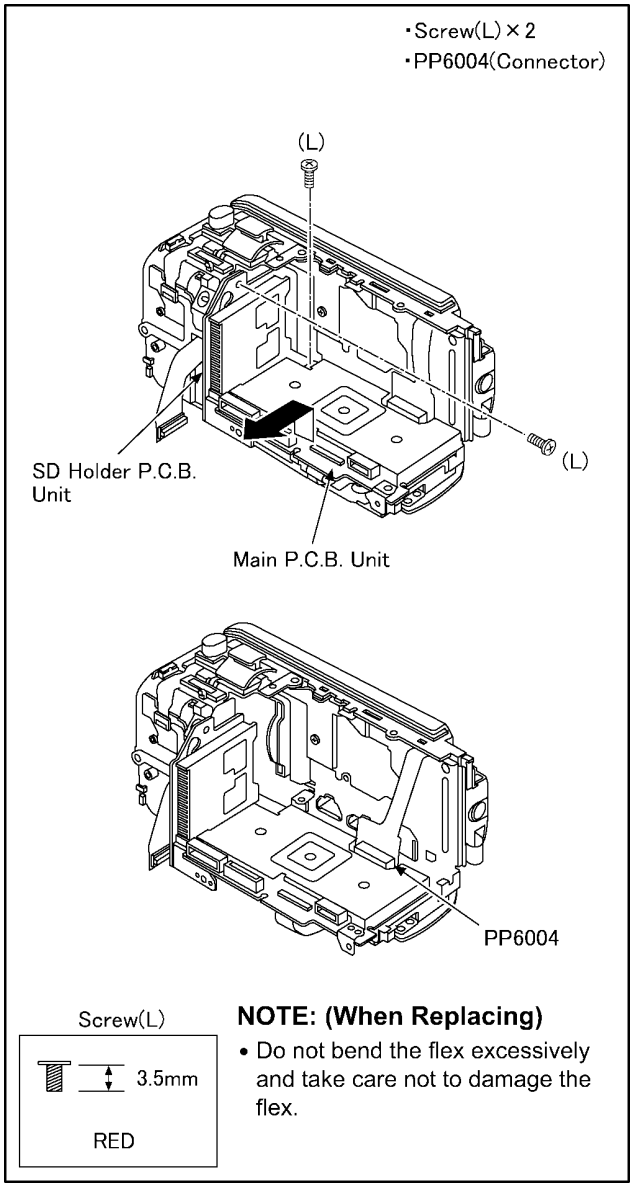


Fig.D9

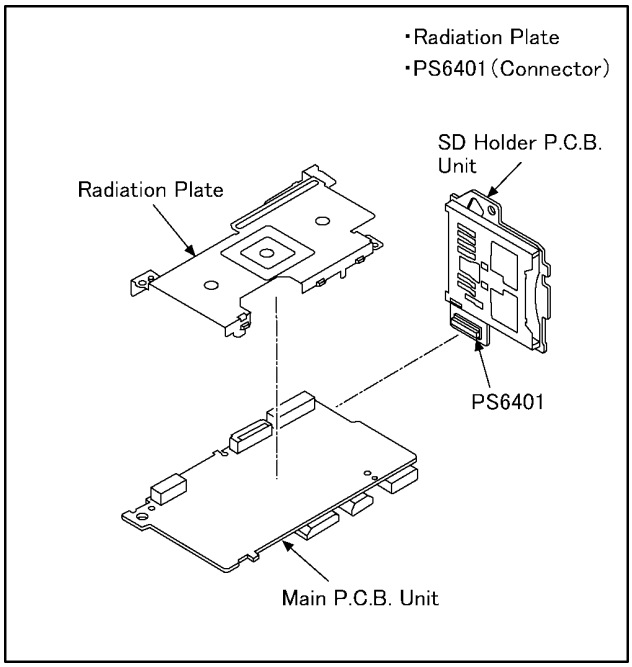


Fig.D10

8.3.7. Removal of the Zoom Switch Unit

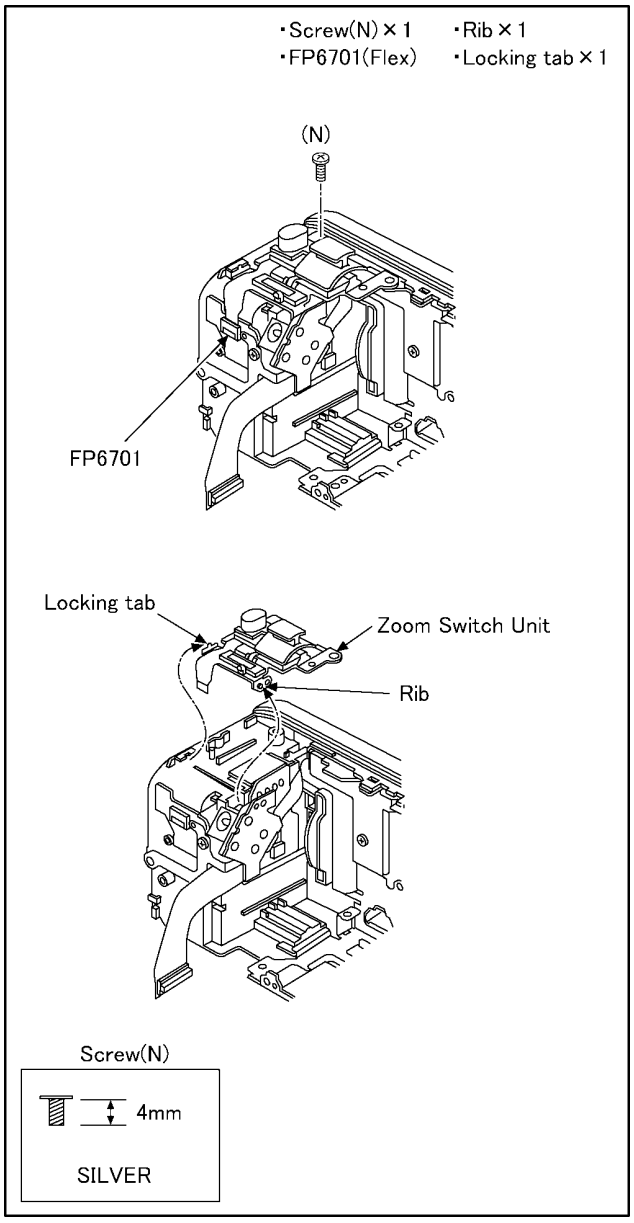


Fig.D11

8.3.8. Removal of the Power FPC Unit

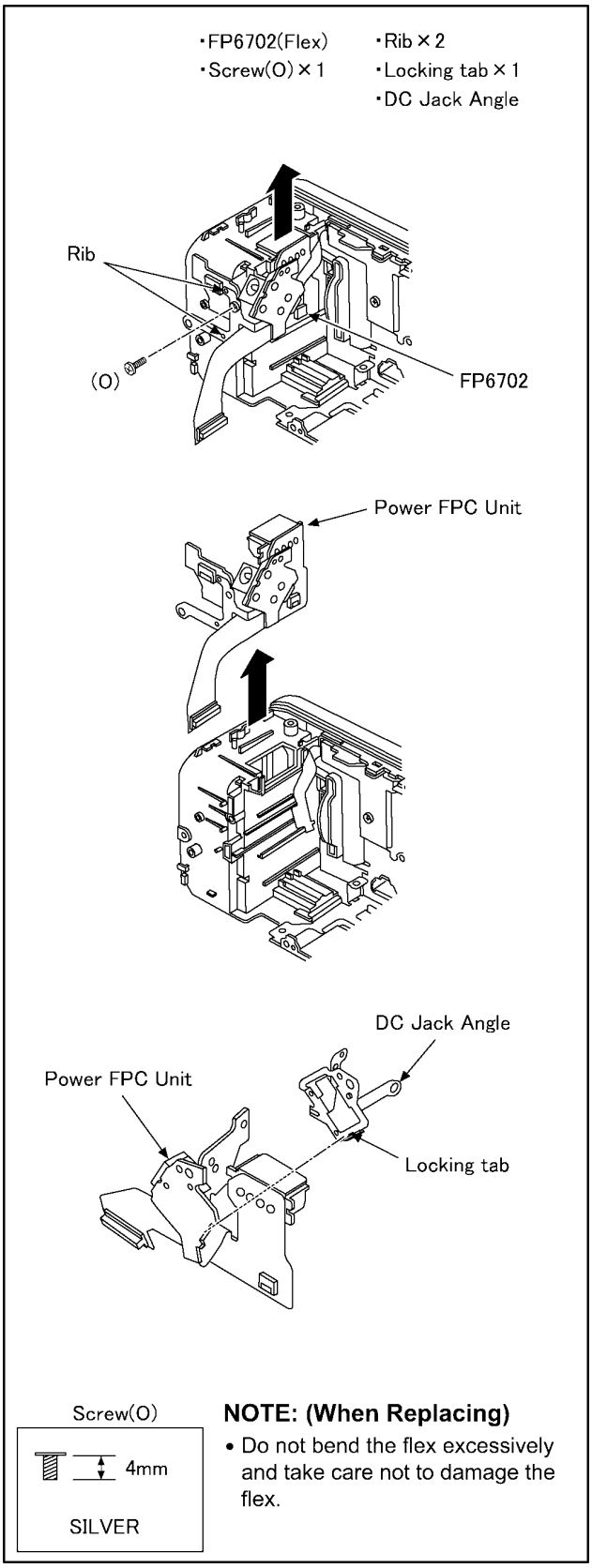


Fig.D12

8.3.9. Removal of the LCD Case Unit

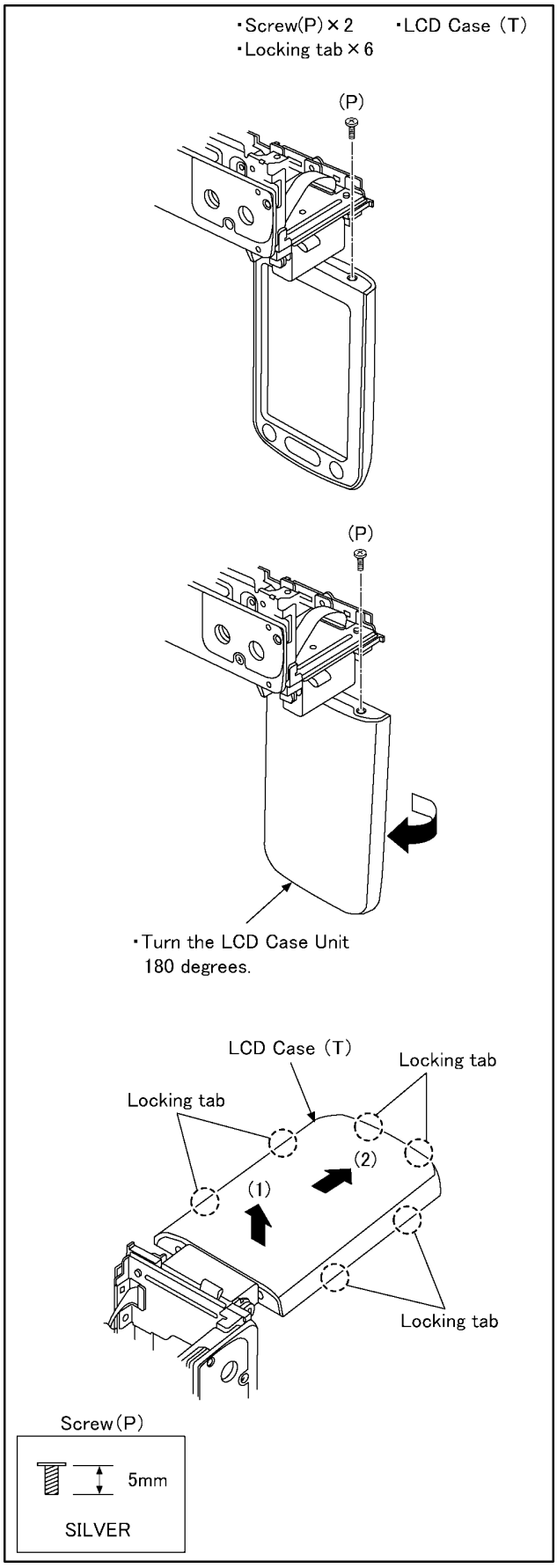


Fig.D13

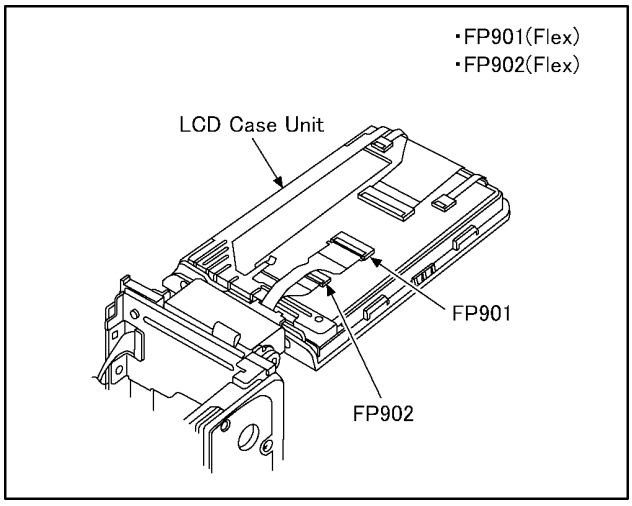


Fig.D14

8.3.10. Removal of the LCD Unit and Monitor P.C.B. Unit

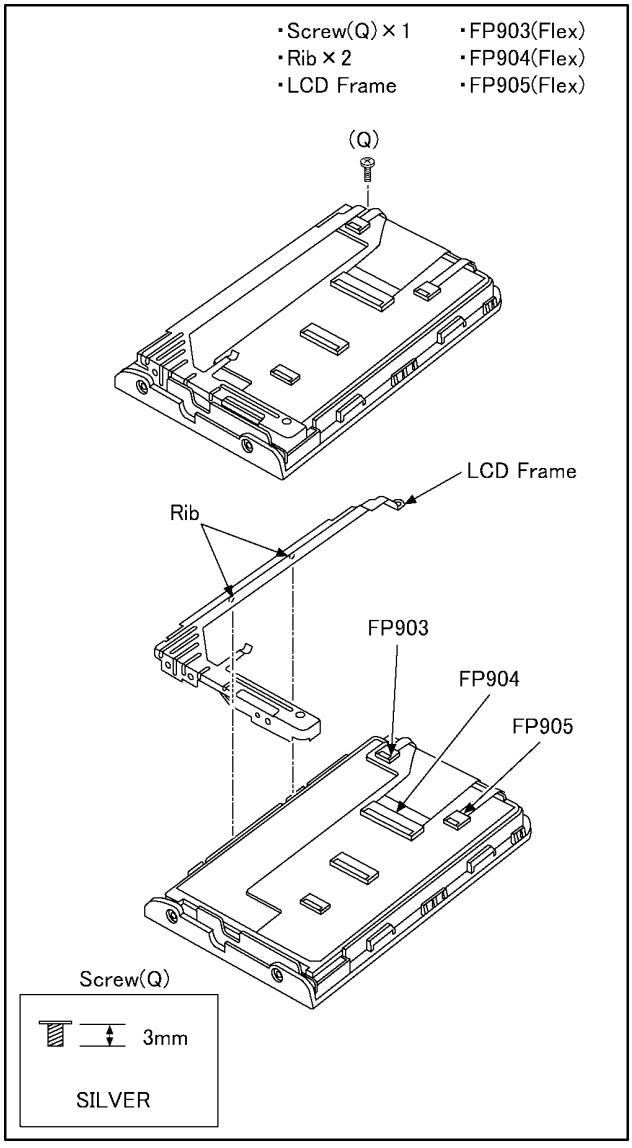


Fig.D15

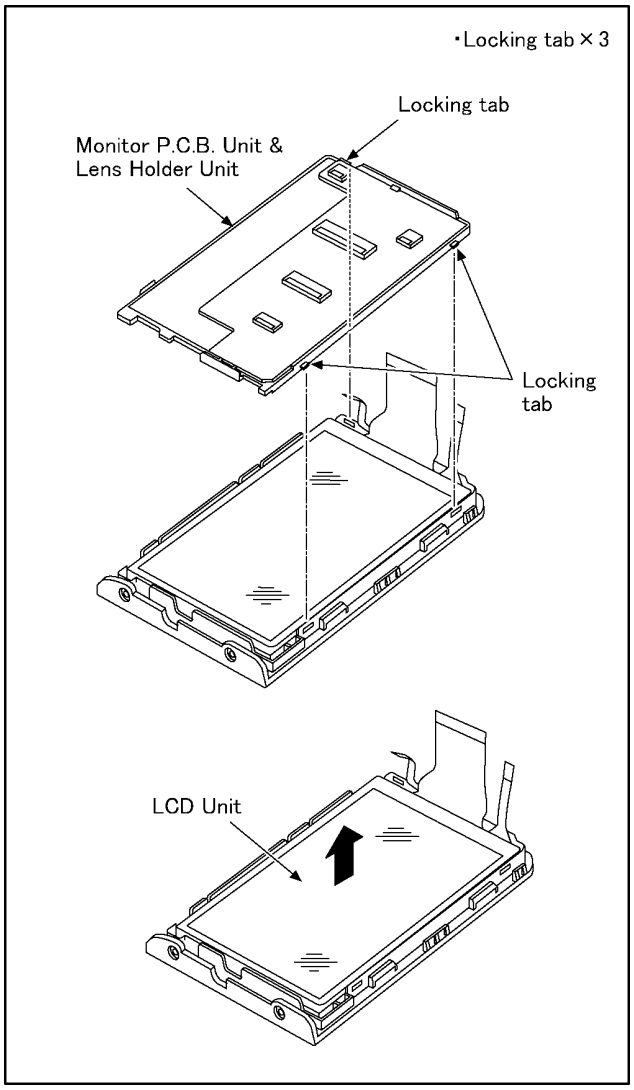


FIg.D16

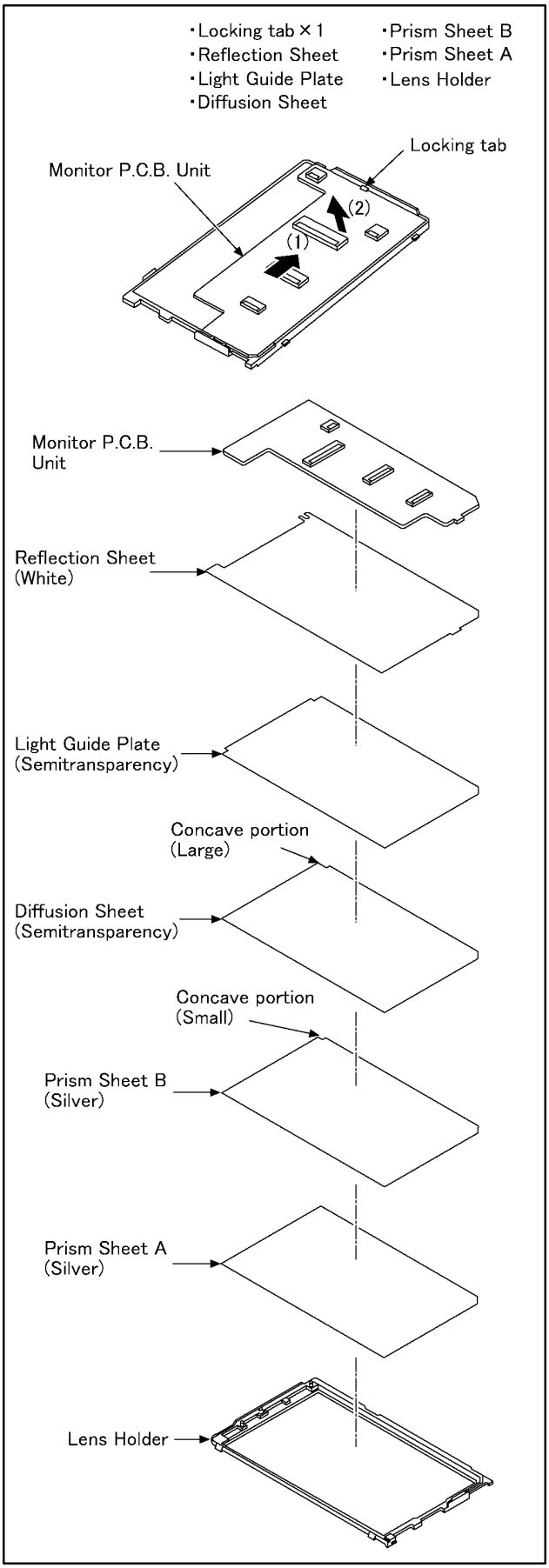


Fig.D17

8.3.11. Removal of the Lens Angle Unit and TL Frame Unit

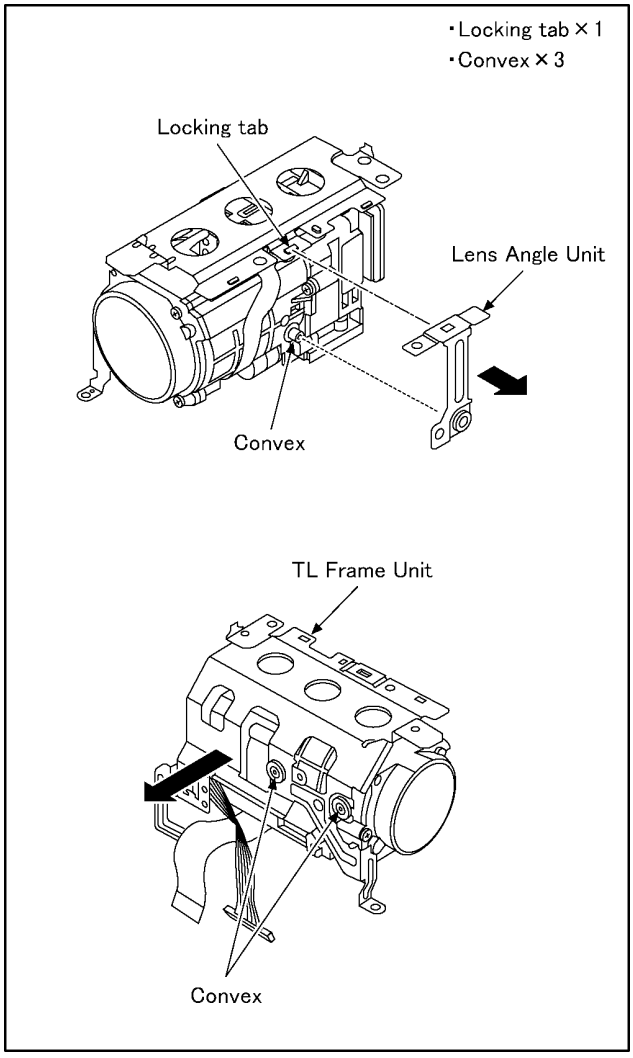


Fig.D18

8.3.12. Removal of the MOS Unit and IR Filter

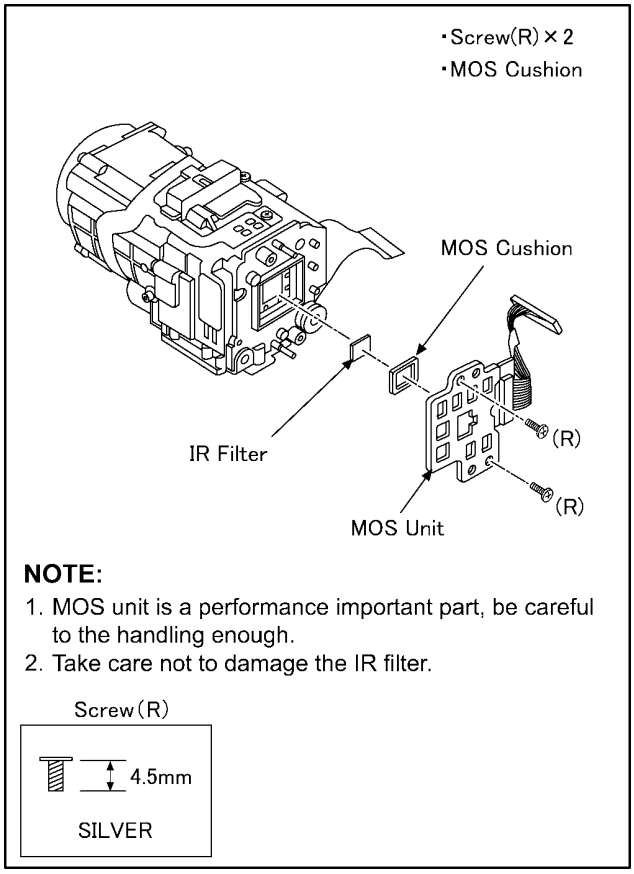


Fig.D19

8.3.13. Removal of the Focus Motor

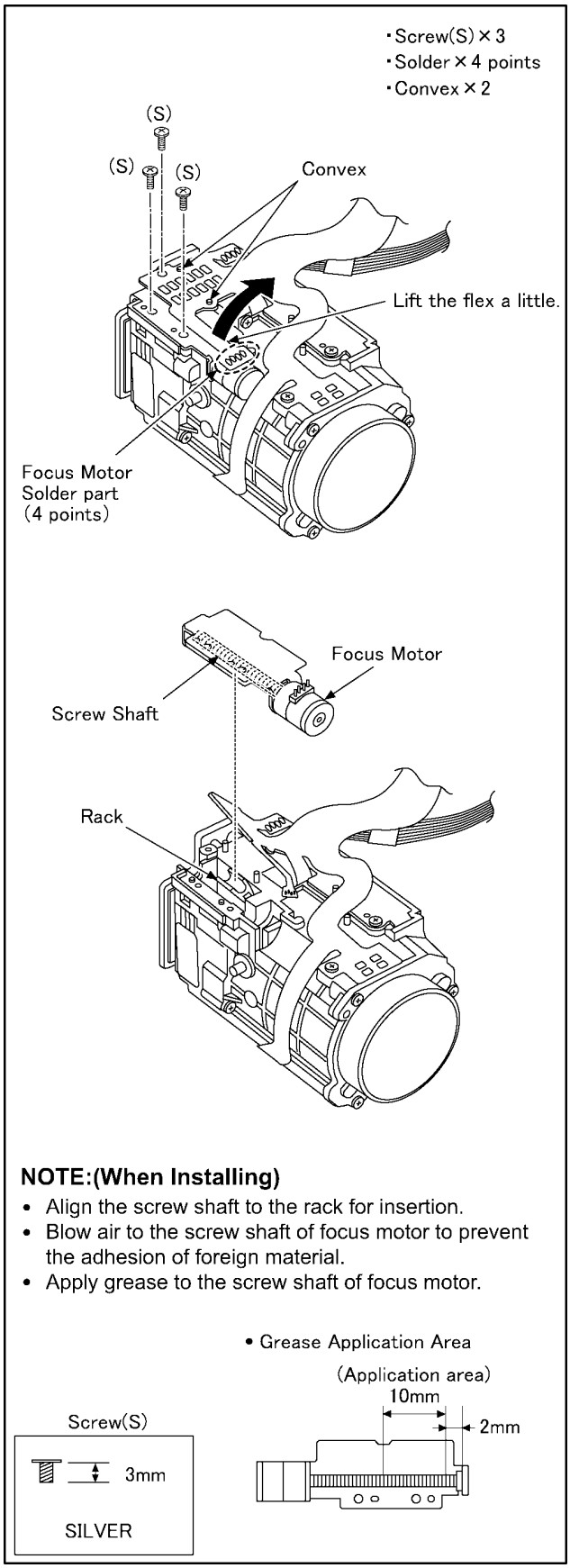


Fig.D20

8.3.14. Removal of the Zoom Motor

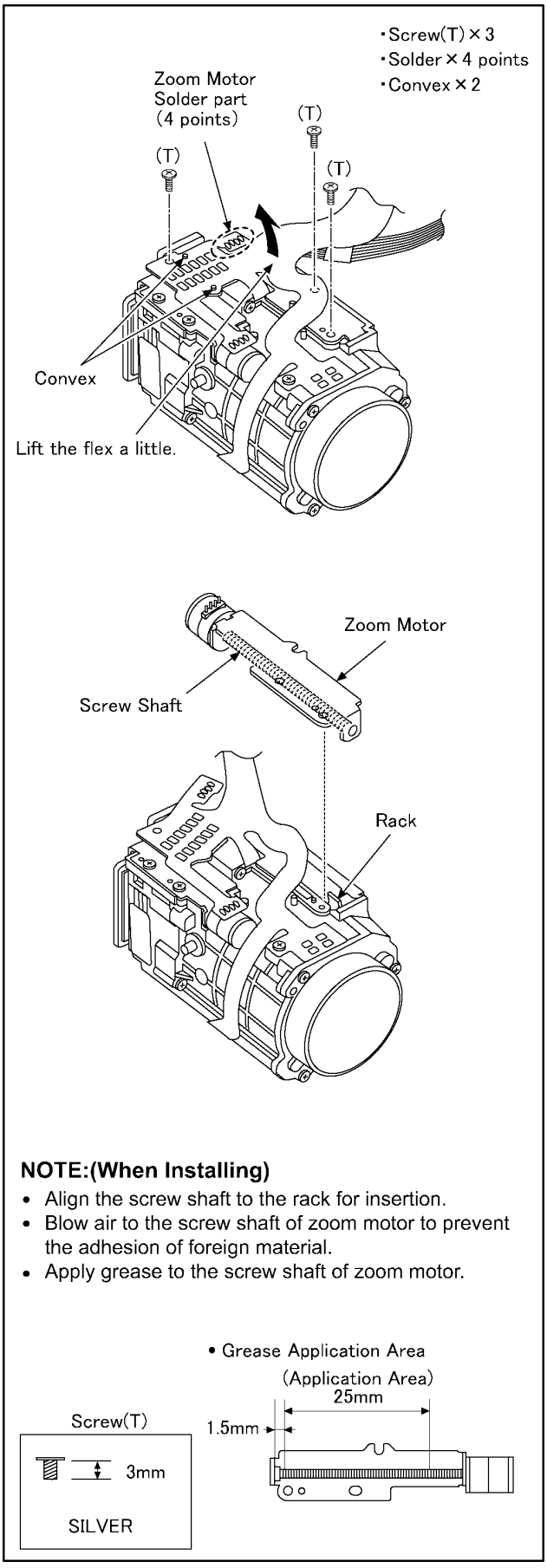


Fig.D21

9 Measurements and Adjustments

9.1. Electric Adjustment

- Adjustment method is different from a conventional High definition video camera.
- An exclusive jig and PC (including software for adjustment “Tatsujin”) are necessary for electric adjustment.
- A USB driver for service is necessary to communication with PC.
- Connection method of the main unit and an exclusive adjustment jig as follows

9.1.1. Adjustment Procedure

- Connect the main unit to PC with USB.
  The adjustment instruction is available at "Software download" on the "Support Information from NWBG/VDBG-AVC" web-site in "TSN System".

Figure of connection

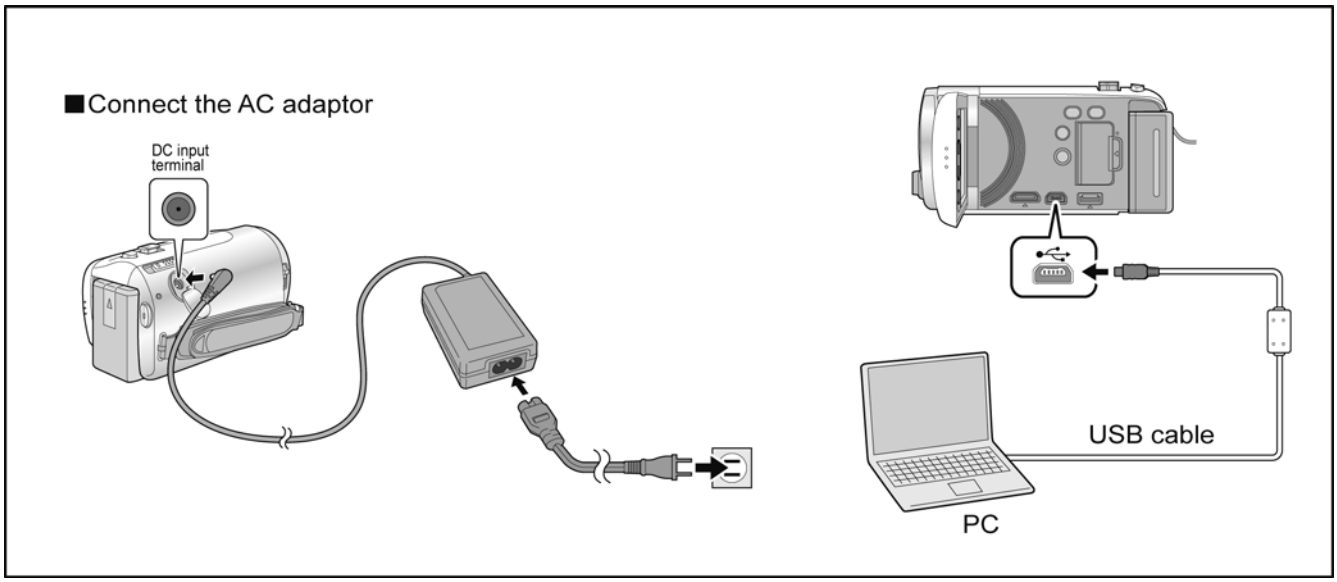
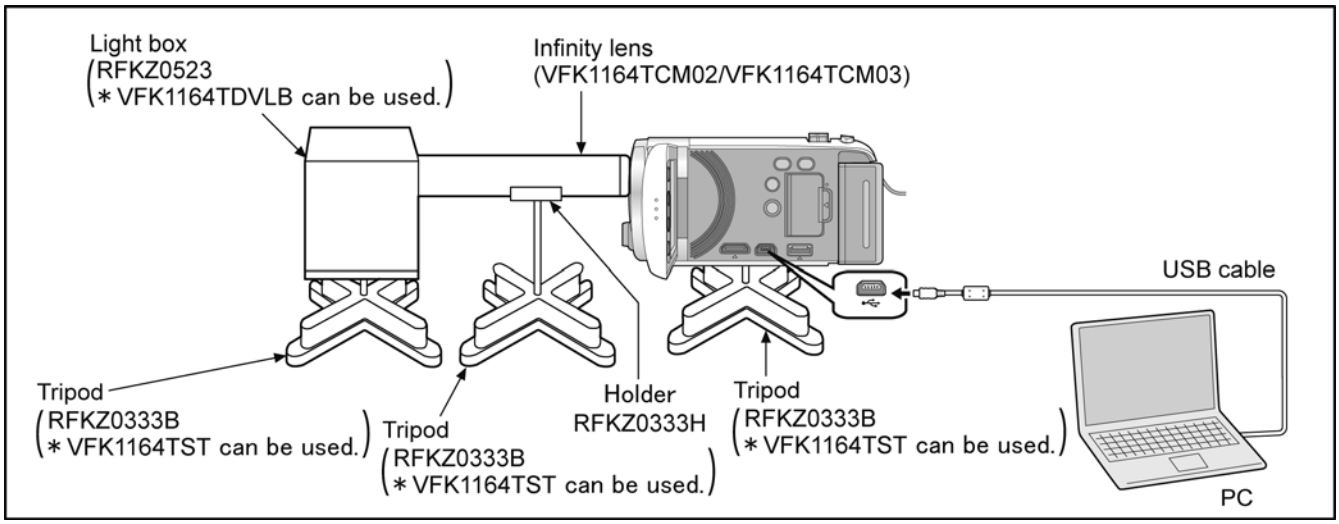


Figure of image when adjustment



Part Number of jig

- Only a necessary jig mentions it in setup of electric adjustment.

No.	Part Name	Part Number	Remarks
1	PC	------	
2	AC Adaptor	------	
3	USB Cable	------	
4	Adjustment Software (Tatsujin)	------	

Adjustment Items

- Adjustment item as follows.

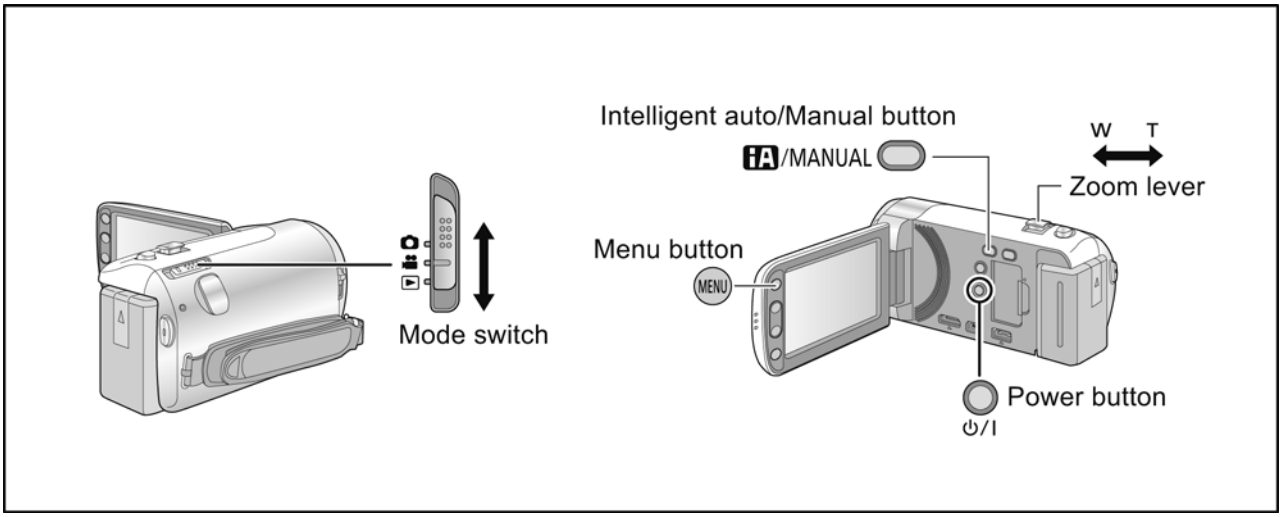
  The adjustment instruction is available at "Software download" on the "Support Information from NWBG/VDBG-AVC" web-site in "TSN System".

	Replacement part / Adjustment item	Main P.C.B.	IC2002(EEPROM)	Lens Unit	MOS Unit	IC3701	IC301
Camera Part	● Hall amplifire/PWM bias	○	○	○	○		
	● OIS Hall amplifire adjustment (automatic)	○	○	○	○		
	● OIS Sensor Offset adjustment (automatic)	○	○				
	● Zoom tracking adjustment (automatic)	○	○	○	○		
	● Address wound revision (automatic)	○	○		○		
	● White balance adjustment (automatic)	○	○		○		
	● Gain adjustment between channels (automatic)	○			○		○
Video Part	● Brightness level adjustment	○	○			○	

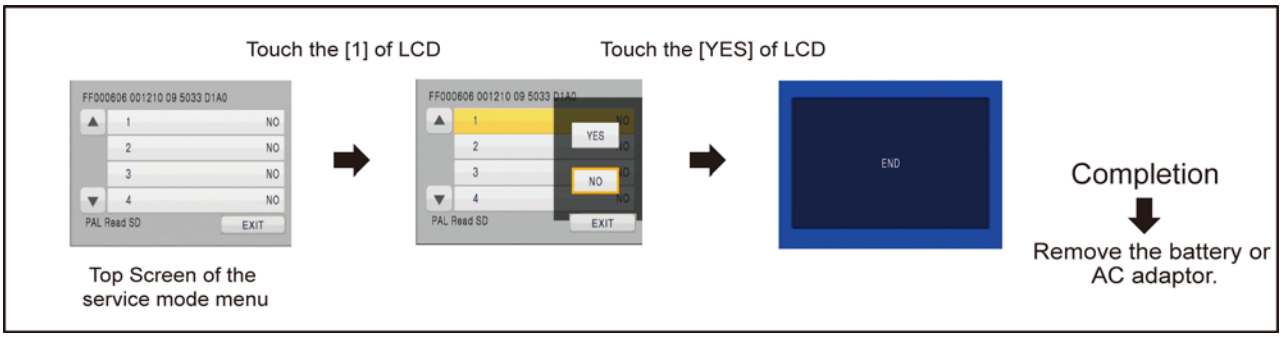
10 Factory Setting

10.1. How To Turn On The Factory Settings?

1. Set the mode switch “Motion Picture Recording” mode.
2. Turn the power on, and then while keep pressing the “Zoom lever” to W side, “Intelligent auto/Manual” button and “Menu” button for more than 3 seconds until the top screen of the Service Mode Menu being displayed.



3. Touch the [1] of LCD.
4. Touch the [YES] of LCD.
5. After few seconds “END” is displayed on LCD monitor. Cutting of battery connection or AC power supply connection as a completion of the “FACTORY SETTINGS”.



10.2. What Is The Factory Settings?

The factory settings clean up and/or refresh the following settings.

1. MENU, MODE, ADJUSTMENT VALUE.
2. SD card format.
3. Reset the folder number and file number of still pictures.
   (Setting the folder number is 100, and file number is 0.)
4. Clear the mechanism lock information.
5. Clear the service mode information contents.
6. Initialize the VIERA Link Physical Address.

The setting position of factory settings:

Name	Setting position
Mode switch	Motion picture recording mode

VM1007031CE

Service Manual

Diagrams and Replacement Parts List

High Definition Video Camera

Model No.

HDC-SDX1P
HDC-SDX1EC
HDC-SDX1EG
HDC-SDX1GC

Vol. 1
Colour
(H).....Glay Type
(V).....Violet Type (only EG)

Table of contents

S1. About Indication of The Schematic Diagram

S1.1. 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.

1.Although reference number of the parts is indicated on the P.C.B. drawing and/or schematic diagrams, it is NOT mounted on the P.C.B. when it is displayed with "$" mark.

2.It is only the "Test Round" and no terminal (Pin) is available on the P.C.B. when the TP (Test Point) indicated as "●" mark.

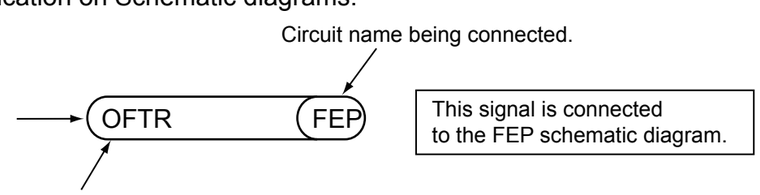
3.The voltage being indicated on the schematic diagram is measured in "Standard-Playback" mode when there is no specify mode is mentioned.

4.Although the voltage and waveform available on here is measured with standard frame, it may be differ from actual measurement due to modification of circuit and so on.

5.The voltage being indicated here may be include observational-error (deviation) due to internal-resistance and/or reactance of equipment. Therefore, handle the value indicated on here as reference.

6.Use the parts number indicated on the Replacement Parts List .

7.Indication on Schematic diagrams:



S2. Voltage Chart

Note) Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard.
Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

S2.1. Flash P.C.B.

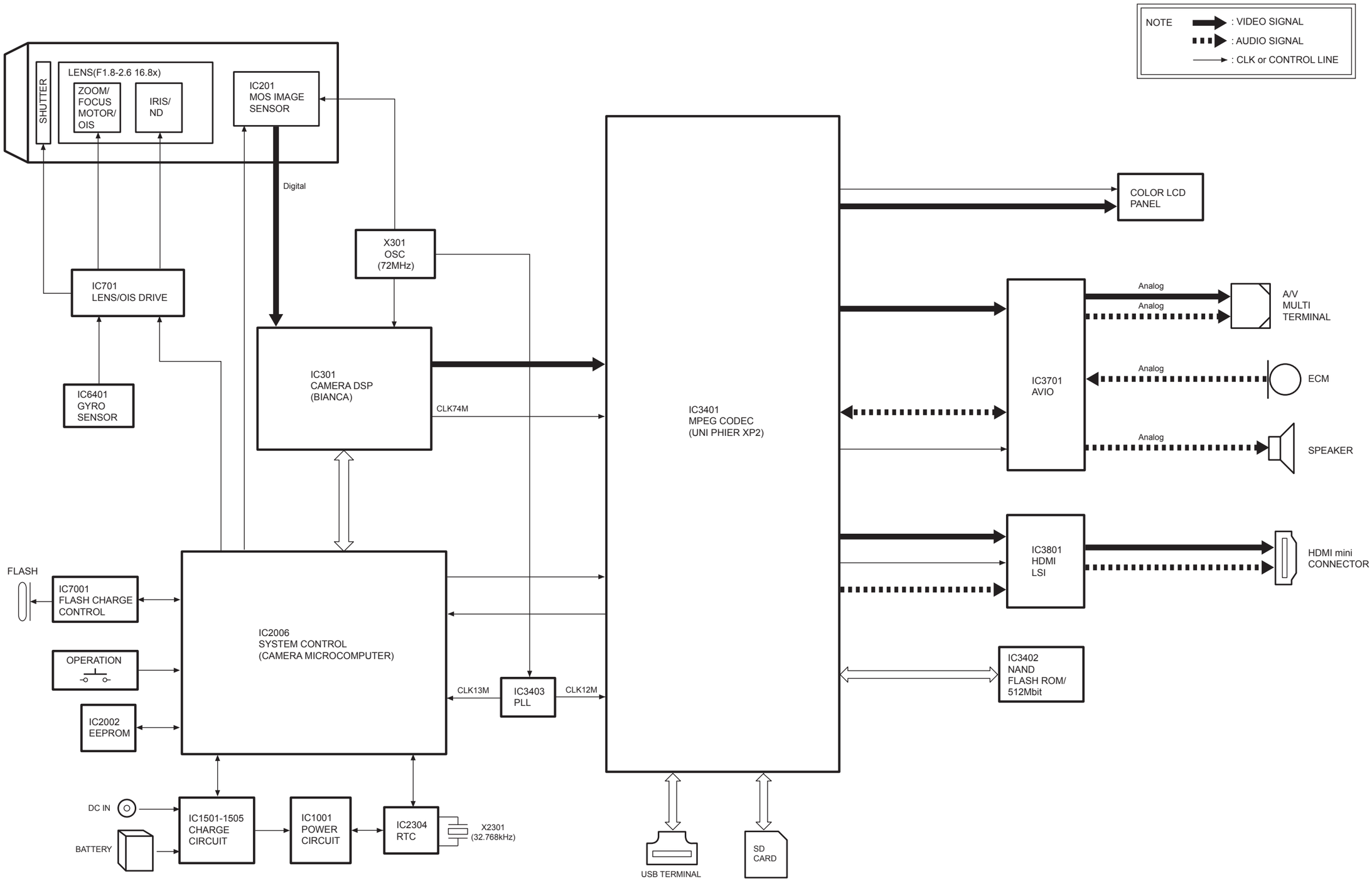
REF No.	PIN No.	POWER ON
IC7001	1	0
IC7001	2	0
IC7001	3	0
IC7001	4	0
IC7001	5	3.3
IC7001	6	0
IC7001	7	0
IC7001	8	0
IC7001	9	2.9
IC7001	10	4.8

S2.2. SD Holder P.C.B.

REF No.	PIN No.	POWER ON
Q3901	E	3.3
Q3901	C	3.3
Q3901	B	3.3
QR6402	E	2.9
QR6402	C	-0.8
QR6402	B	2.9

S3. Block Diagram

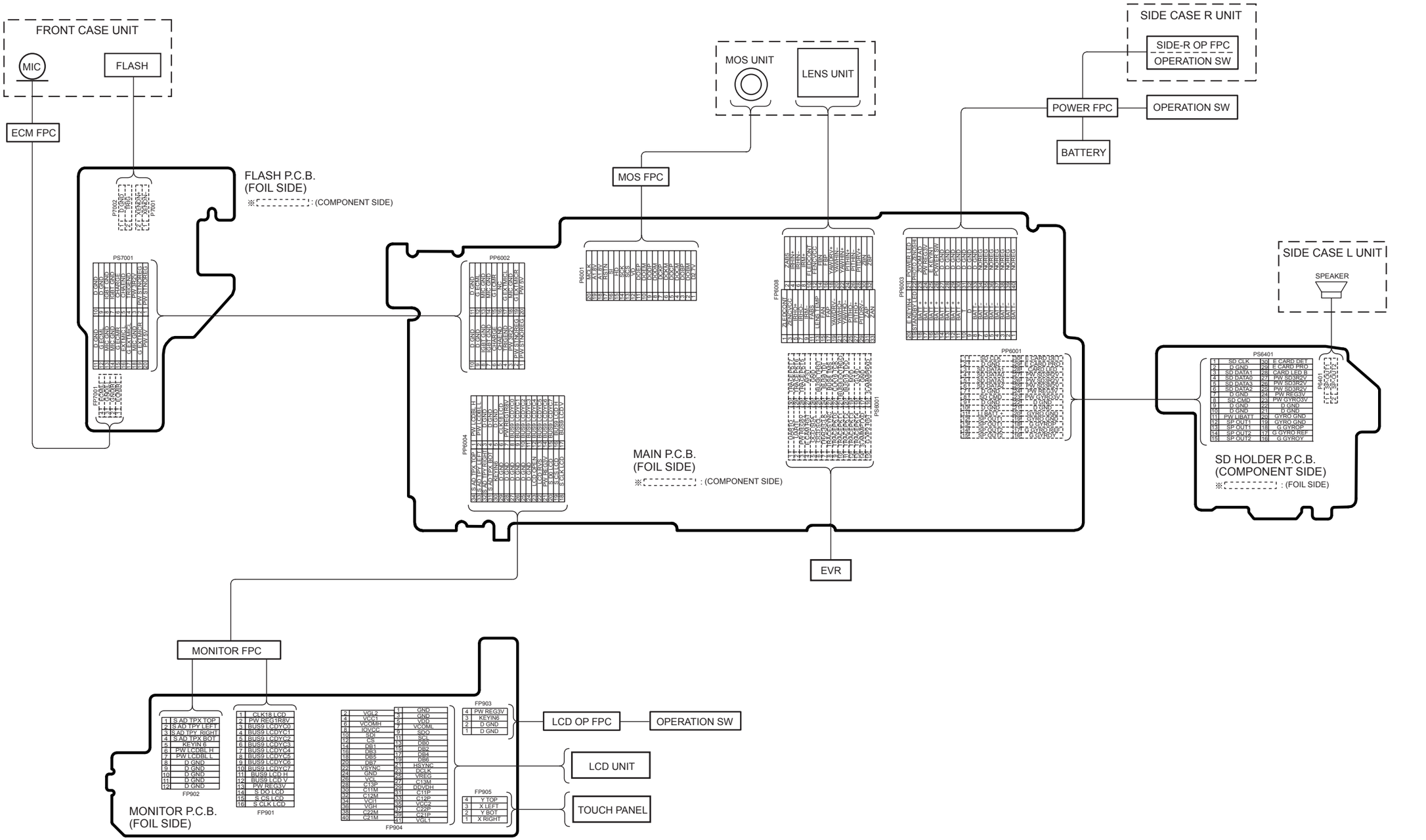
S3.1. Overall Block Diagram



HDC-SDX1 OVERALL BLOCK DIAGRAM

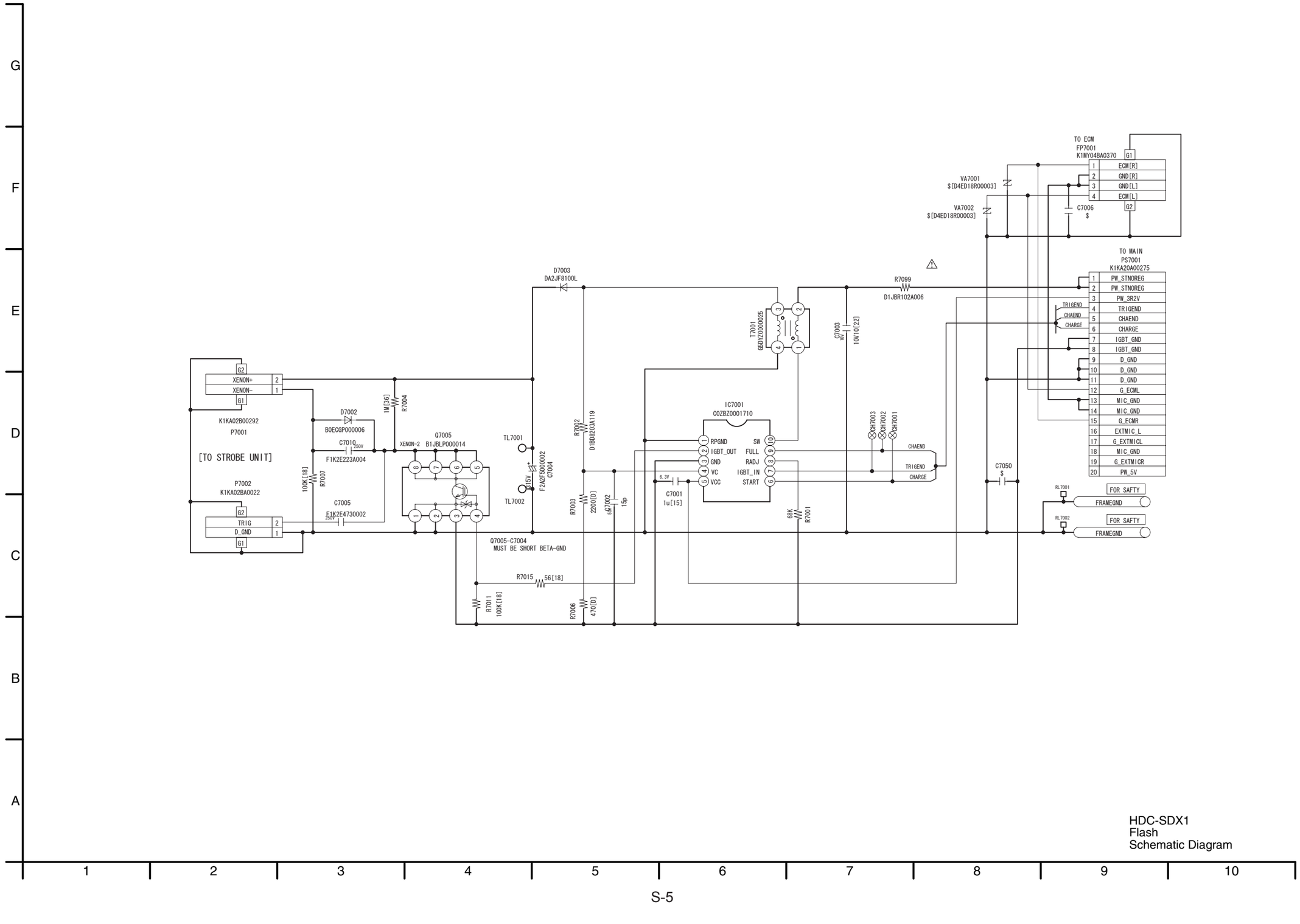
S4. Schematic Diagram

S4.1. Interconnection Diagram



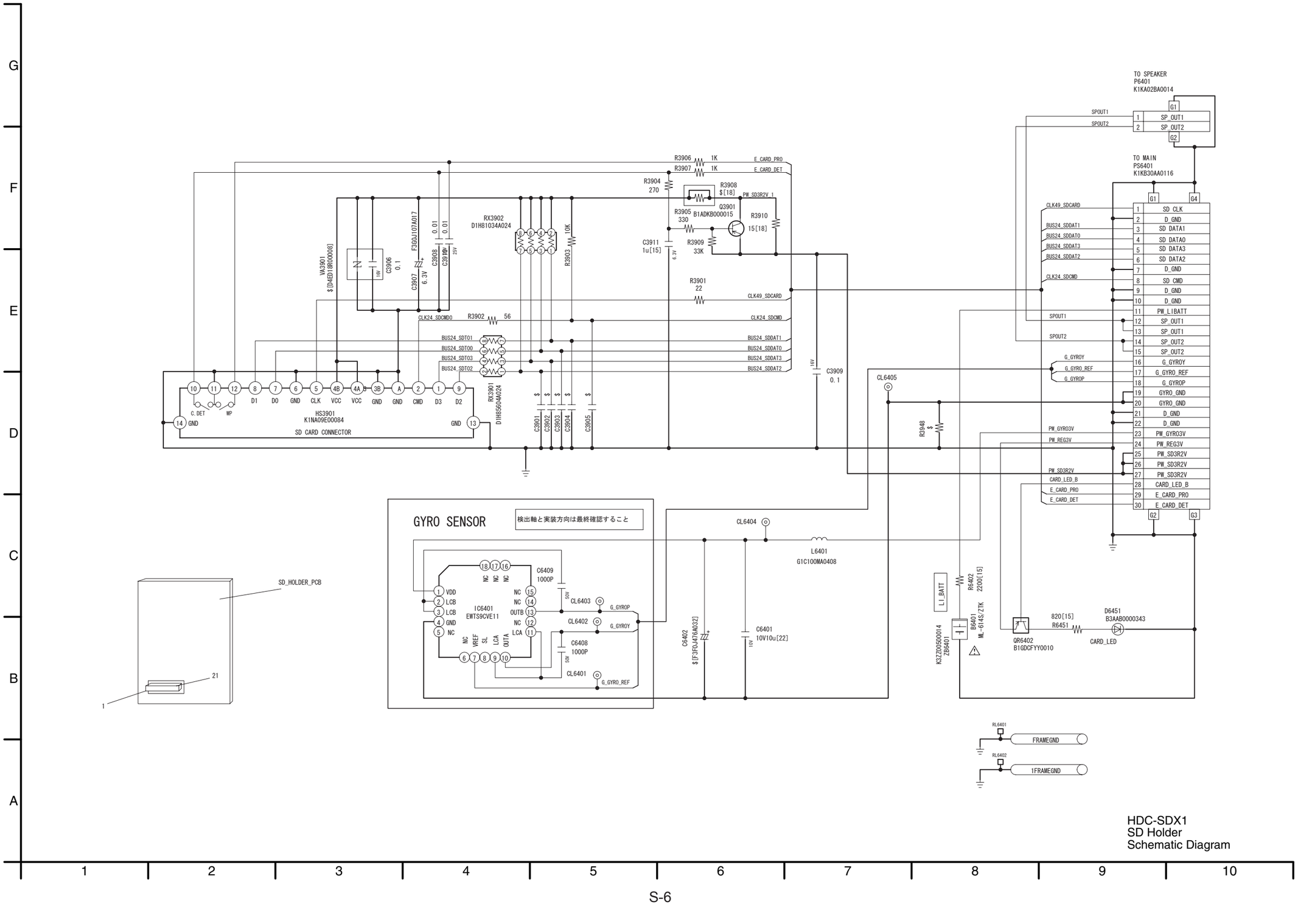
HDC-SDX1 INTERCONNECTION DIAGRAM

S4.2. Flash Schematic Diagram

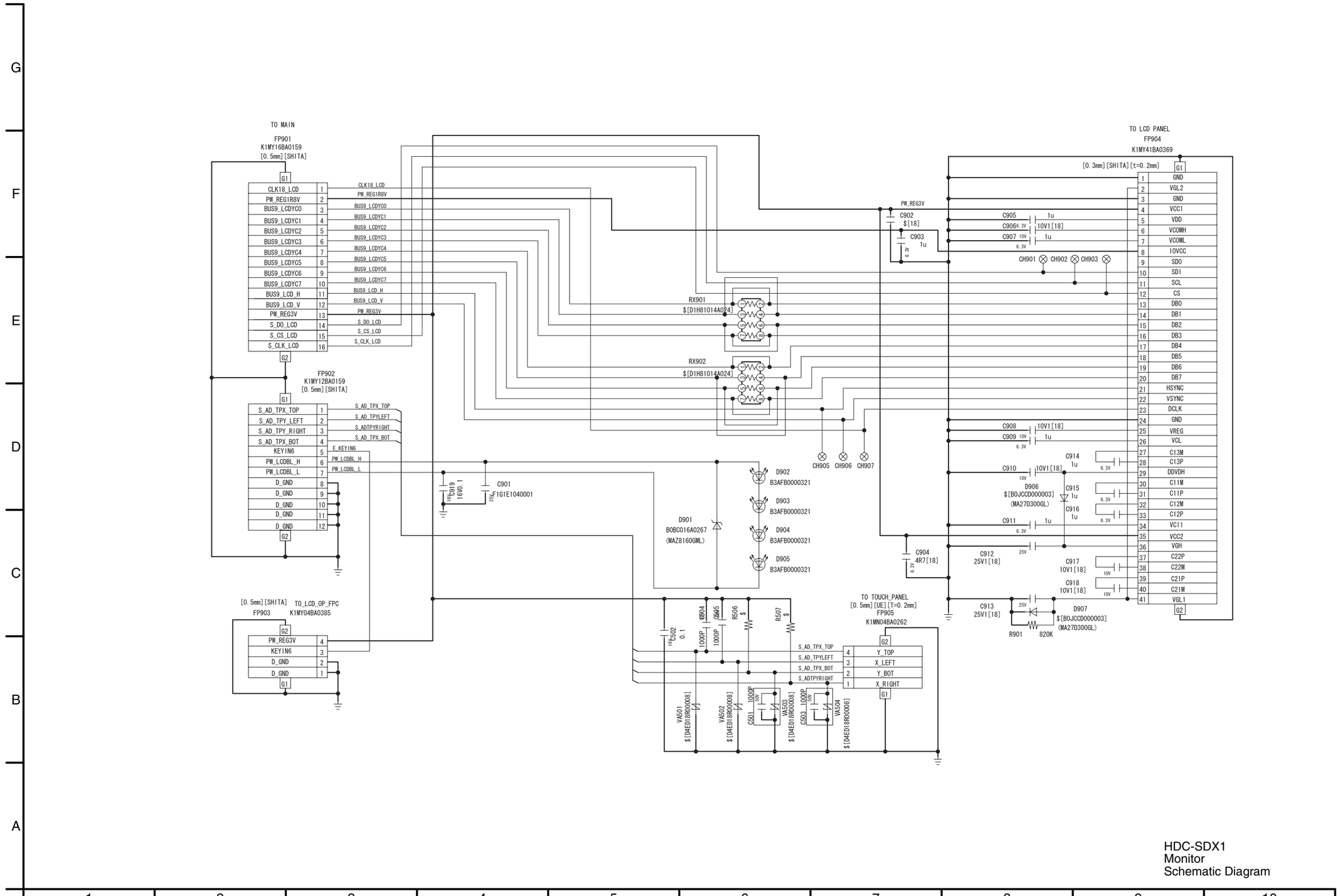


HDC-SDX1
Flash
Schematic Diagram

S4.3. SD Holder Schematic Diagram



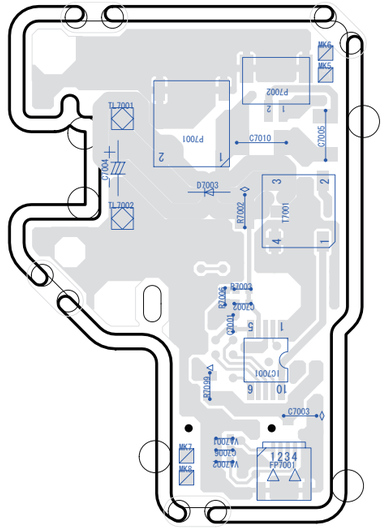
S4.4. Monitor Schematic Diagram



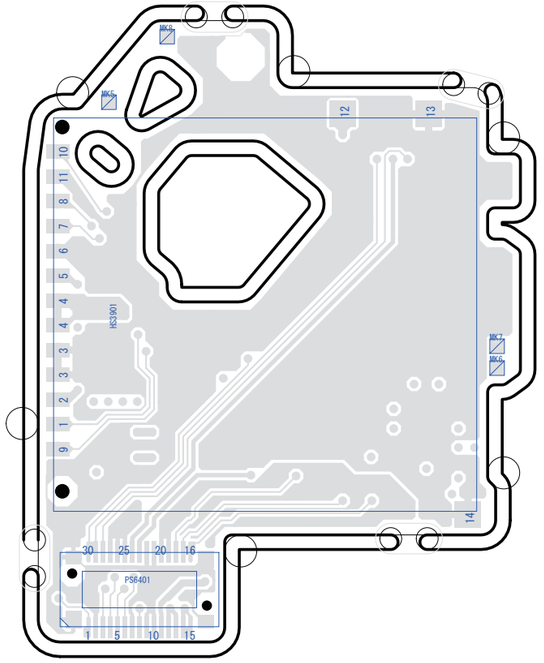
HDC-SDX1
Monitor
Schematic Diagram

S5. Print Circuit Board

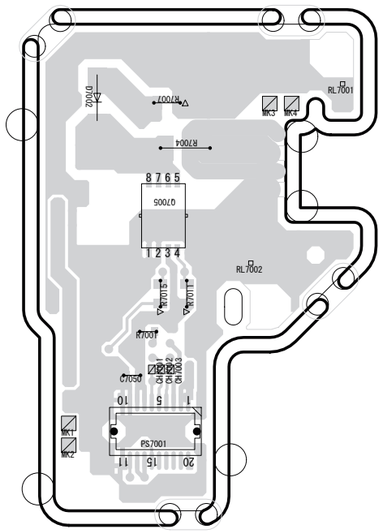
S5.1. Flash P.C.B. / S5.2. SD Holder P.C.B.



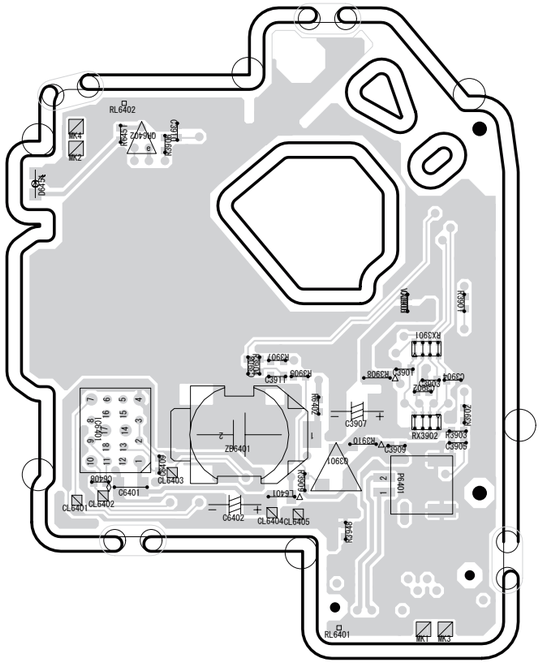
(Component Side)



(Component Side)



(Foil Side)

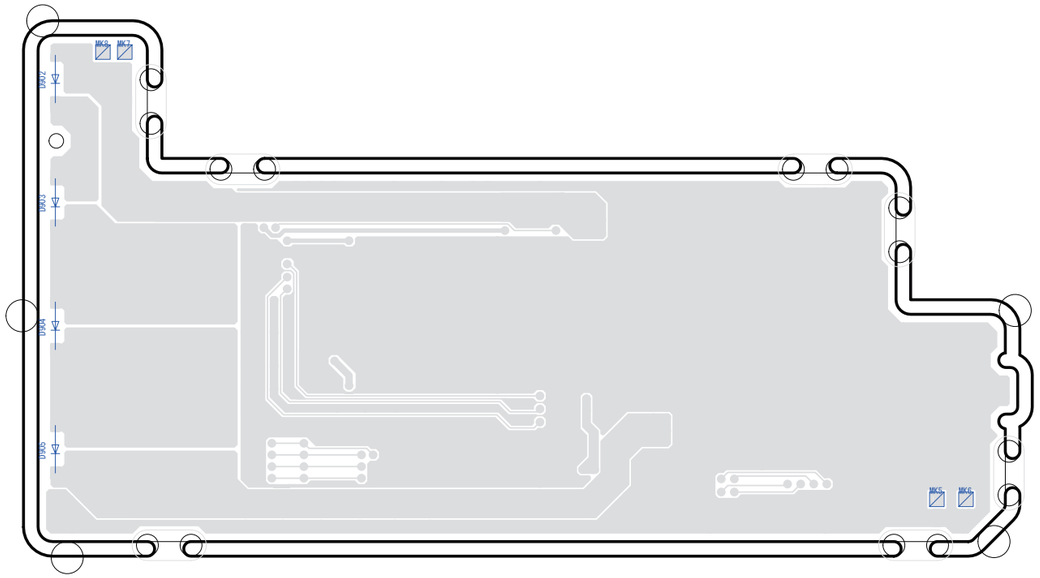


(Foil Side)

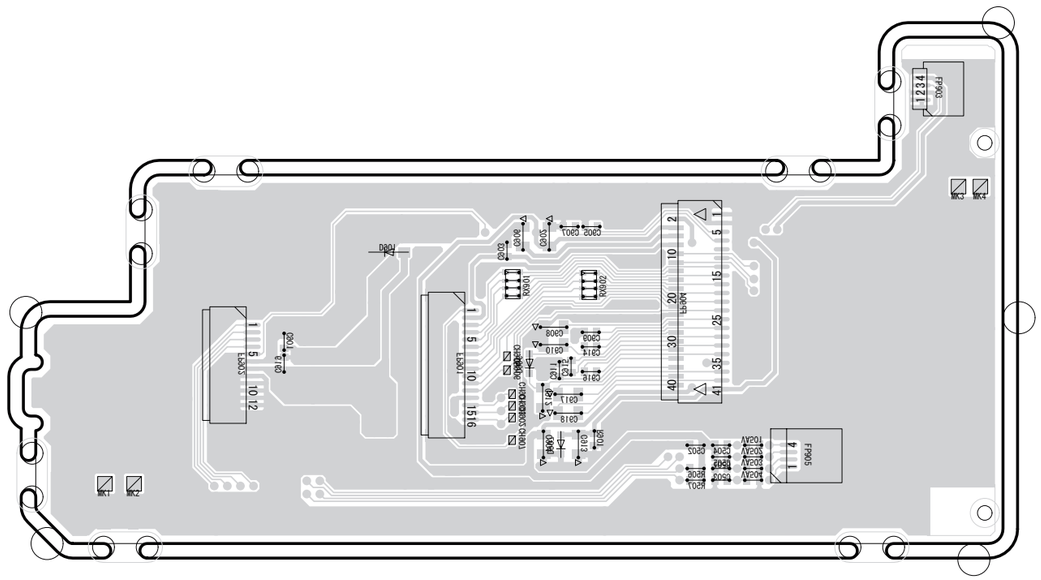
HDC-SDX1
Flash P.C.B.

HDC-SDX1
SD Holder P.C.B.

S5.3. Monitor P.C.B.



(Component Side)



(Foil Side)

HDC-SDX1
Monitor P.C.B.

S6. 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 ⚠ 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 MICRO-FARADS (uf), P=uuF.
4. 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.

E.S.D. standards for Electrostatically Sensitive Devices, refer to "PREVENTION OF ELECTROSTATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES" section.

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
##	VEP03H95A	FLASH P.C.B. UNIT	1	(RTL) E.S.D.
##	VEP03H96A	SD HOLDER P.C.B.	1	(RTL) E.S.D.
##	VEP26333A	MONITOR P.C.B. UNIT	1	(RTL) E.S.D.
##	VEP03H95A	FLASH P.C.B. UNIT		(RTL) E.S.D.
C7001	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C7002	F1G1H150A565	C.CAPACITOR CH 50V 15	1	
C7003	F1J1A106A043	C.CAPACITOR CH 10V 10U	1	
C7004	F2A2F5000002	ALUMINUM NON-SOLID ELECTR	1	
C7005	F1K2E4730005	C.CAPACITOR 250V 0.047U	1	
C7010	F1K2E223A004	C.CAPACITOR 250V 0.022U	1	
D7002	B0ECGP000006	DIODE	1	E.S.D.
D7003	DA2JF8100L	DIODE	1	E.S.D.
FP7001	K1MY04BA0370	CONNECTOR 4P	1	
IC7001	C0ZBZ0001710	IC	1	E.S.D.
P7001	K1KA02B00292	CONNECTOR 2P	1	
P7002	K1KA02BA0022	CONNECTOR 2P	1	
PS7001	K1KA20A00275	CONNECTOR 20P	1	
Q7005	B1JBLP000014	TRANSISTOR	1	
R7001	ERJ2GEJ683	M.RESISTOR CH 1/16W 68K	1	
R7002	D1BD8203A119	SURFACE MOUNTING PRECISIO	1	
R7003	ERJ2RHD222	M.RESISTOR CH 1/16W 2.2K	1	
R7004	ERJ8GEYJ105V	M.RESISTOR CH 1/4W 1M	1	
R7006	ERJ2RHD471X	M.RESISTOR CH 1/16W 470	1	
R7007	ERJ3GEYJ104	M.RESISTOR CH 1/10W 100K	1	
R7011	ERJ3GEYJ104	M.RESISTOR CH 1/10W 100K	1	
R7015	ERJ3GEYJ560	M.RESISTOR CH 1/10W 56	1	
⚠ R7099	D1JBR102A006	M.RESISTOR CH 1/16W 1K	1	
T7001	G5DYZ0000025	TRANSFOMER	1	
##	VEP03H96A	SD HOLDER P.C.B.		(RTL) E.S.D.
⚠ B6401	ML-614S/ZTK	BATTERY	1	[ENERGY]
C3906	F1G1C104A077	C.CAPACITOR CH 16V 0.1U	1	
C3907	F3G0J107A017	C.CAPACITOR CH 6.3V 100U	1	
C3908	F1G1E1030005	C.CAPACITOR CH 25V 0.01U	1	
C3909	F1G1C104A077	C.CAPACITOR CH 16V 0.1U	1	
C3910	F1G1E1030005	C.CAPACITOR CH 25V 0.01U	1	
C3911	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C6401	F1J1A106A043	C.CAPACITOR CH 10V 10U	1	
C6408	F1G1H222A571	C.CAPACITOR CH 50V 2200P	1	
C6409	F1G1H222A571	C.CAPACITOR CH 50V 2200P	1	
D6451	B3AAB0000343	DIODE	1	E.S.D.
HS3901	K1NA09E00084	SD CARD SLOT	1	
IC6401	EWTS9CVE11	IC	1	E.S.D.
L6401	G1C100MA0408	CHIP INDUCTOR 10UH	1	
P6401	K1KA02BA0014	CONNECTOR 2P	1	
PS6401	K1KB30AA0116	CONNECTOR 30P	1	
Q3901	B1ADKB000015	TRANSISTOR	1	
QR6402	B1GDCFYY0010	TRANSISTOR	1	
R3901	ERJ2GEJ220	M.RESISTOR CH 1/16W 22	1	
R3902	ERJ2GEJ560X	M.RESISTOR CH 1/10W 56	1	
R3903	ERJ2GEJ103	M.RESISTOR CH 1/10W 10K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R3904	ERJ2GEJ271	M.RESISTOR CH 1/10W 270	1	
R3905	ERJ2GEJ331	M.RESISTOR CH 1/16W 330	1	
R3906	ERJ2GEJ102X	M.RESISTOR CH 1/16W 1K	1	
R3907	ERJ2GEJ102X	M.RESISTOR CH 1/16W 1K	1	
R3909	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R3910	D0GB150JA057	M.RESISTOR CH 1/10W 15	1	
R6402	ERJ2GEJ222	M.RESISTOR CH 1/10W 2.2K	1	
R6451	ERJ2GEJ821	M.RESISTOR CH 1/10W 820	1	
RX3901	D1H85604A024	RESISTOR NETWORKS	1	
RX3902	EXB28V103JX	RESISTOR NETWORKS	1	
ZB6401	K3ZZ00500014	BATTERY HOLDER	1	
##	VEP26333A	MONITOR P.C.B. UNIT		(RTL) E.S.D.
C501	F1G1H1020008	C.CAPACITOR CH 50V 1000P	1	
C502	F1G1C104A077	C.CAPACITOR CH 16V 0.1U	1	
C503	F1G1H1020008	C.CAPACITOR CH 50V 1000P	1	
C504	F1G1H1020008	C.CAPACITOR CH 50V 1000P	1	
C505	F1G1H1020008	C.CAPACITOR CH 50V 1000P	1	
C901	F1G1E1040001	C.CAPACITOR CH 25V 0.1U	1	
C903	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C904	F1H0J475A010	C.CAPACITOR CH 6.3V 4.7U	1	
C905	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C906	ECJ1VB1A105K	C.CAPACITOR CH 10V 1U	1	
C907	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C908	ECJ1VB1A105K	C.CAPACITOR CH 10V 1U	1	
C909	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C910	ECJ1VB1A105K	C.CAPACITOR CH 10V 1U	1	
C911	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C912	F1H1E105A116	C.CAPACITOR CH 25V 1U	1	
C913	F1H1E105A116	C.CAPACITOR CH 25V 1U	1	
C914	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C915	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C916	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C917	ECJ1VB1A105K	C.CAPACITOR CH 10V 1U	1	
C918	ECJ1VB1A105K	C.CAPACITOR CH 10V 1U	1	
C919	F1G1C104A077	C.CAPACITOR CH 16V 0.1U	1	
D901	B0BC016A0267	DIODE	1	E.S.D.
D902	B3AFB0000321	DIODE	1	E.S.D.
D903	B3AFB0000321	DIODE	1	E.S.D.
D904	B3AFB0000321	DIODE	1	E.S.D.
D905	B3AFB0000321	DIODE	1	E.S.D.
FP901	K1MY16BA0159	CONNECTOR 16P	1	
FP902	K1MY12BA0159	CONNECTOR 12P	1	
FP903	K1MY04BA0385	CONNECTOR 4P	1	
FP904	K1MY41BA0369	CONNECTOR 41P	1	
FP905	K1MN04BA0262	CONNECTOR 4P	1	
R901	ERJ2GEJ824	M.RESISTOR CH 1/16W 820K	1	

HDC-SDX1P-H

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	VYK4J47	TOP ORNAMENT UNIT	1	(-H)
1	VYK4J50	TOP ORNAMENT UNIT	1	(-V)
2	VYK4F12	SIDE CASE(L) UNIT	1	(-H)
2	VYK4F13	SIDE CASE(L) UNIT	1	(-V)
25	VYK4D95	FRONT CASE UNIT	1	(-H)
25	VYK4F06	FRONT CASE UNIT	1	(-V)
B2	XQN16+B4FJK	SCREW	1	
B3	XQN16+B4FJK	SCREW	1	
B5	XQN16+BJ4FJK	SCREW	1	
B7	XQN16+B5FN	SCREW	1	
B8	XQN16+B5FN	SCREW	1	
B11	VHD1919	SCREW	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
3	VEP03H95A	FLASH P.C.B. UNIT	1	(RTL) E.S.D.
4	VXK1947	LENS ANGLE UNIT	1	
5	VXK1948	TL FRAME UNIT	1	
8	VSC6238	RADIATION PLATE	1	
9	VEP03H94BN	MAIN P.C.B. UNIT	1	(RTL) E.S.D. P
9	VEP03H94BP	MAIN P.C.B. UNIT	1	(RTL) E.S.D. EC,EG
9	VEP03H94BQ	MAIN P.C.B. UNIT	1	(RTL) E.S.D. GC
10	VEP03H96A	SD HOLDER P.C.B. UNIT	1	(RTL) E.S.D.
11	K0RE00700032	ZOOM SWITCH UNIT	1	
12	VMP9728	DC JACK ANGLE	1	
13	VYK4D94	SIDE CASE(R) UNIT	1	(-H)
13	VYK4F03	SIDE CASE(R) UNIT	1	(-V)
24	VMB4390	CONDENSOR EARTH SPRING	1	
28	VEP01A38A	POWER FPC UNIT	1	(RTL) E.S.D.
201	VXW1151	LENS UNIT	1	
202	VXQ1924	MOS UNIT	1	
203	VMX3811	MOS CUSHION	1	
204	VDL2467	IR FILTER	1	
205	L6HA66NC0015	ZOOM MOTOR	1	
206	L6HA66NC0016	FOCUS MOTOR	1	
B1	XQN16+B4FJK	SCREW	1	
B4	XQN16+BJ5FJK	SCREW	1	
B6	XQN16+BJ5FJK	SCREW	1	
B10	XQN16+BJ5FJK	SCREW	1	
B12	VHD1919	SCREW	1	
B13	VHD1919	SCREW	1	
B14	VHD1919	SCREW	1	
B15	VHD1907	SCREW	1	
B16	VHD1907	SCREW	1	
B17	VHD1907	SCREW	1	
B18	VHD1907	SCREW	1	
B21	XQN16+BJ4FN	SCREW	1	
B22	XQN16+BJ4FN	SCREW	1	
B201	VHD2072	SCREW	1	
B202	VHD2072	SCREW	1	
B203	VHD2073	SCREW	1	
B204	VHD2073	SCREW	1	
B205	VHD2073	SCREW	1	
B206	VHD2073	SCREW	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
14	VMP9730	LCD FRAME	1	
15	K0RE00400006	LCD CASE UNIT(W/SW)	1	
16	VYK3Q88	PANEL UNIT	1	
17	LSGL1526	LIGHT GUIDE PLATE	1	
18	VGL1333	REFLECTION SHEET	1	
19	VEP26333A	MONITOR P.C.B. UNIT	1	(RTL) E.S.D.
20	VGQ0K73	LENS HOLDER	1	
21	VGL1330	PRISM SHEET A	1	
22	VGL1331	PRISM SHEET B	1	
23	VGL1296	DIFFUSION SHEET	1	
29	VKM8767	LCD CASE(T)	1	(-H)
29	VKM8768	LCD CASE(T)	1	(-V)
B23	VHD1688	SCREW	1	
B24	VHD1688	SCREW	1	
B25	XQN14+BJ3FN	SCREW	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks

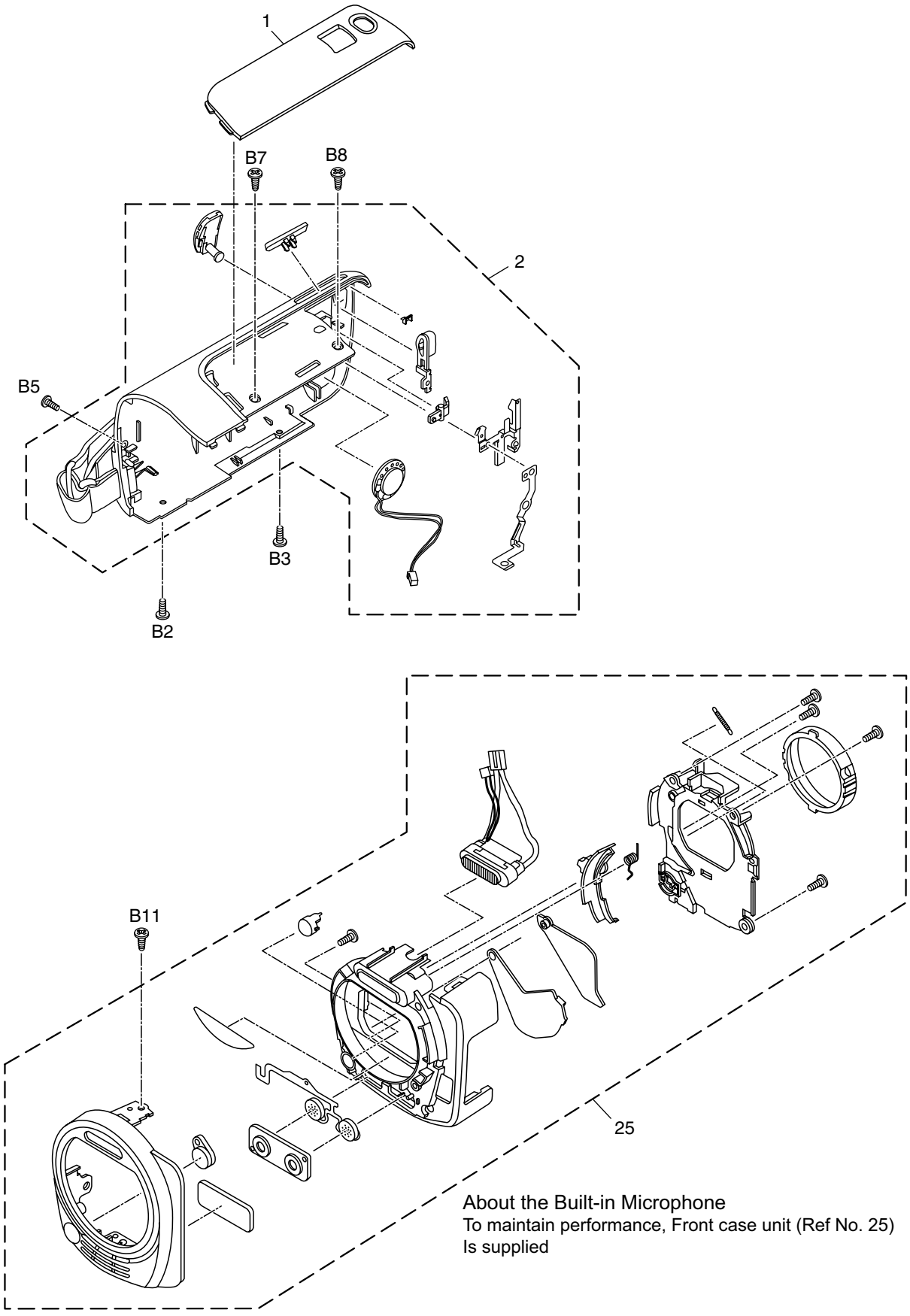
HDC-SDX1P-H

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
⚠ 301	---	BATTERY PACK	1	
302	K1HY12YY0004	MULTI D/RCA CABLE	1	
303	K1HY04YY0032	USB CABLE	1	
⚠ 304	K2CA2CA00025	AC CABLE	1	P
⚠ 305	VSK0711	AC ADAPTOR	1	P
⚠ 305	VSK0712	AC ADAPTOR	1	EC,EG,GC
306	VGQ0C14	STYLUS PEN	1	
307	VFF0657-S	CD-ROM	1	
309	VPF1294	BAG, POLYETHYLENE	1	
⚠ 310	VQT2W55	OPERATING INSTRUCTIONS (E	1	P
⚠ 310	VQT2W58	BASIC OPERATING INSTRUCTI	1	EC
⚠ 310	VQT2W56	BASIC OPERATING INSTRUCTI	1	EG
⚠ 310	VQT2W60	BASIC OPERATING INSTRUCTI	1	GC
⚠ 310	VQT2W61	BASIC OPERATING INSTRUCTI	1	GC
311	VPG2M80	PACKING CASE	1	P
311	VPG2M81	PACKING CASE	1	EC,EG,GC
311	VYQ5835	PACKING CASE UNIT	1	EGV
312	VPN6970	PAD	1	
313	VPF1388	PROTECT BAG	1	
⚠ 315	K2CQ29A00002	AC CABLE	1	EC,EG,GC
⚠ 317	K2CT39A00002	AC CABLE	1	GC
318	VFF0670	CD-ROM(O/I)	1	GC
318	VFF0669	CD-ROM(O/I)	1	EC,EG

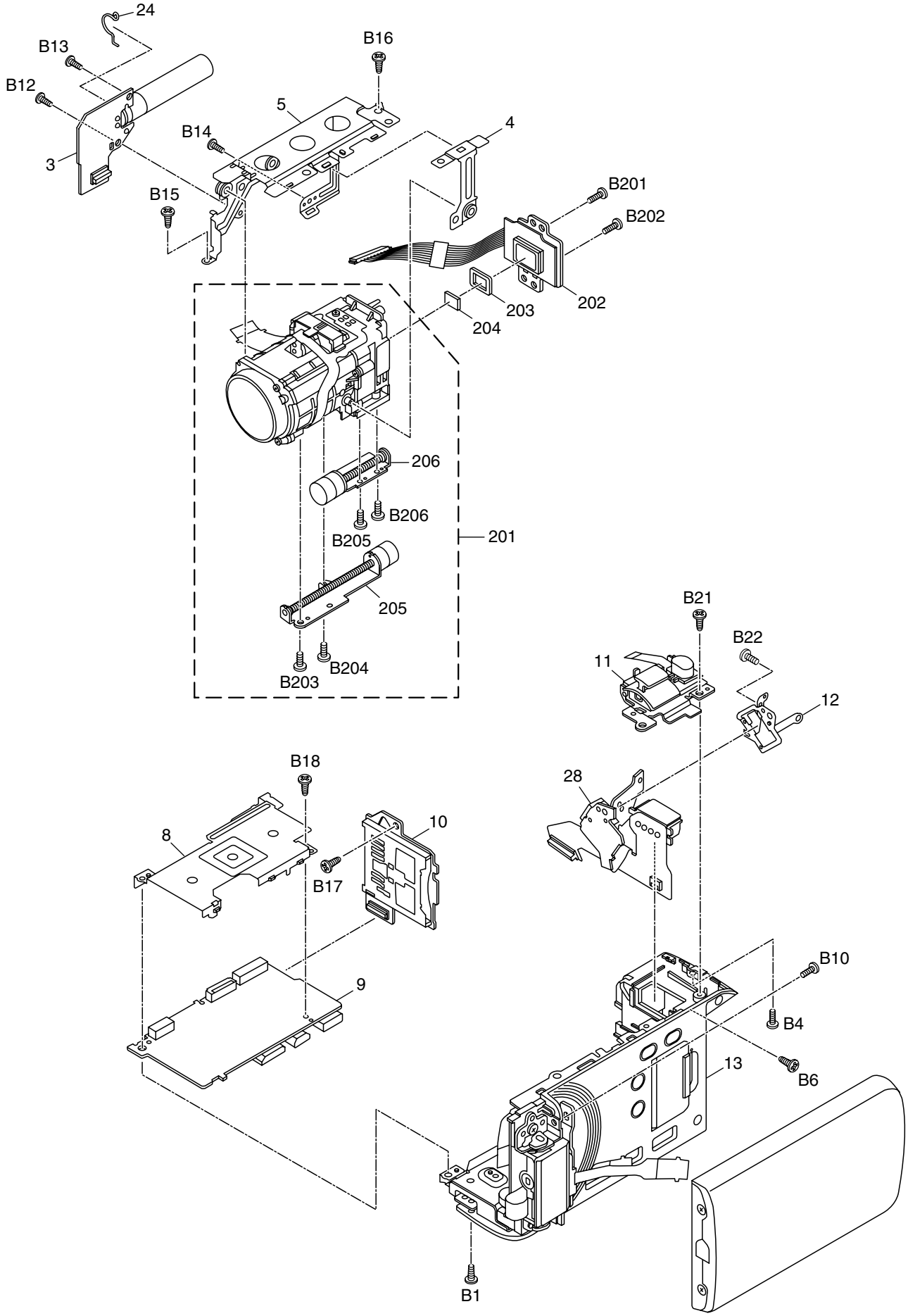
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks

S7. Exploded View

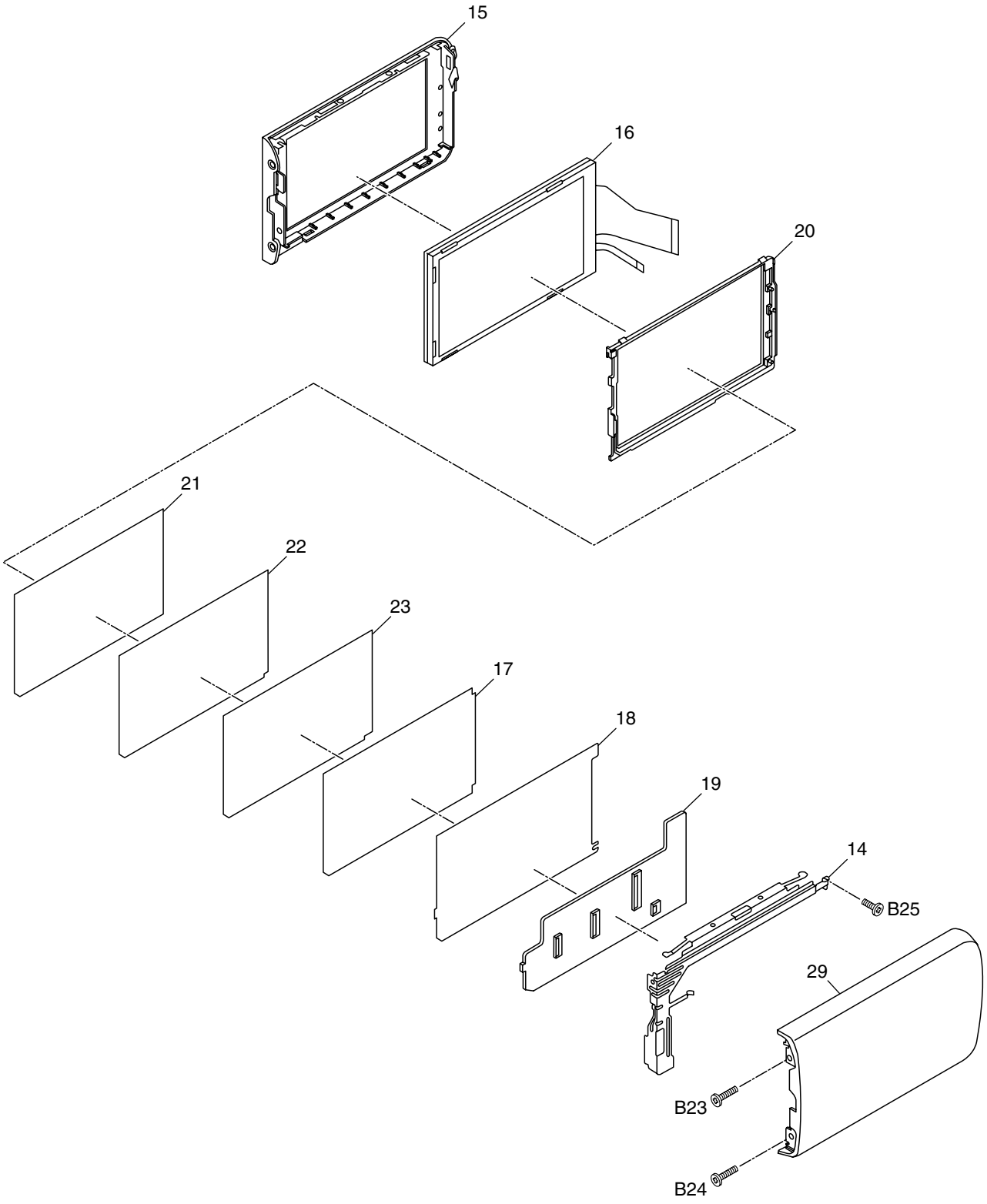
S7.1. Frame and Casing Section (1)



S7.2. Frame and Casing Section (2)



S7.3. LCD Section



S7.4. Packing Parts and Accessories Section