ORDER NO. DSC0905029CE
B26

Service Manual

Digital Camera/Lens Kit

LUMIX

Model No. **DMC-GH1KPP**
DMC-GH1KEB
DMC-GH1KEC
DMC-GH1KEG
DMC-GH1KGC
DMC-GH1KGH
DMC-GH1KGK
DMC-GH1KGN
DMC-GH1KGT

Colour
(K).....Black Type
(N).....Gold Type (only PP/EC/EG/GC)
(R).....Red Type (only PP/EB/EC/EG/GC)

⚠ 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. **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

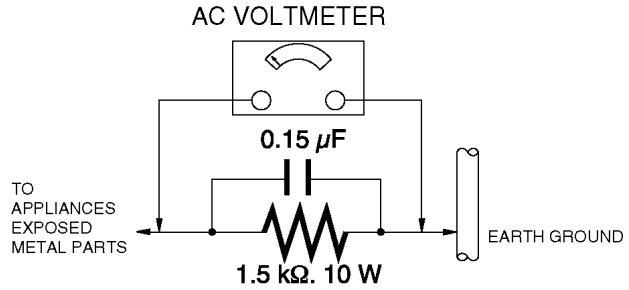


Figure. 1

1.4. How to Discharge the Capacitor on Flash Sub PCB

CAUTION:

1. **Be sure to discharge the capacitor on FLASH SUB PCB.**
2. **Be careful of the high voltage circuit on FLASH SUB PCB 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 SUB PCB for approx. 5 seconds.
4. After discharging confirm that the capacitor voltage is lower than 10V using a voltmeter.

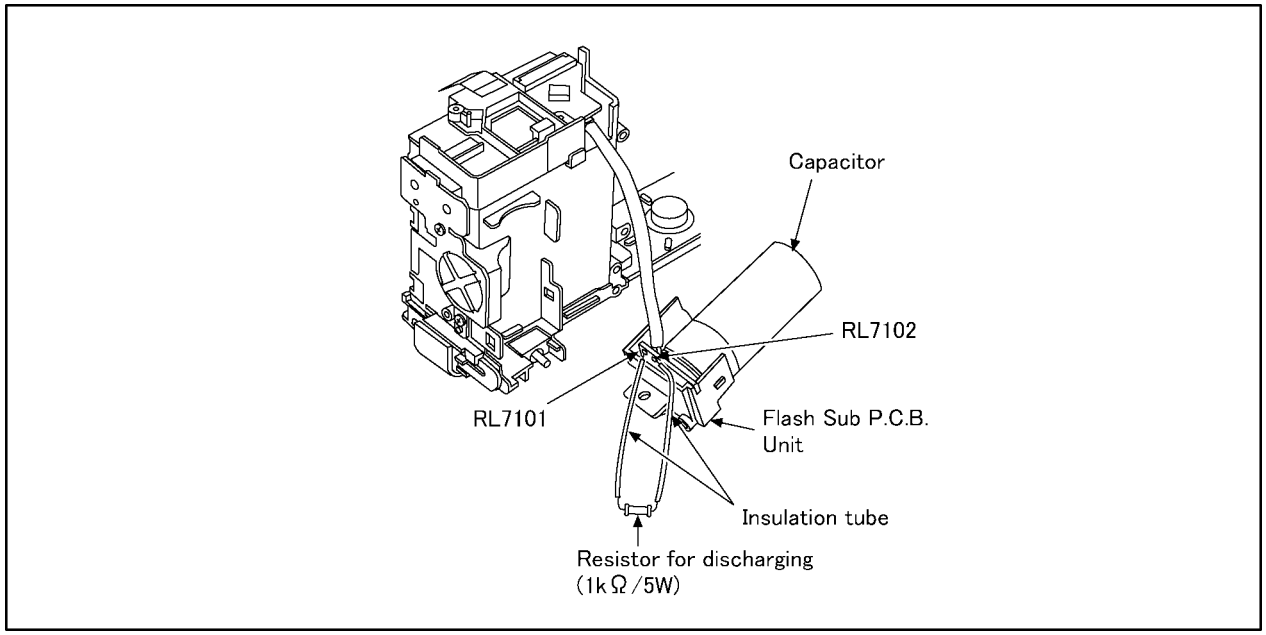


Fig. F1

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 image sensor, IC (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 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 recyclable. Pour des renseignements sur le recyclage de la batterie, veuillez composer le 1-800-8-BATTERY.

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

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:

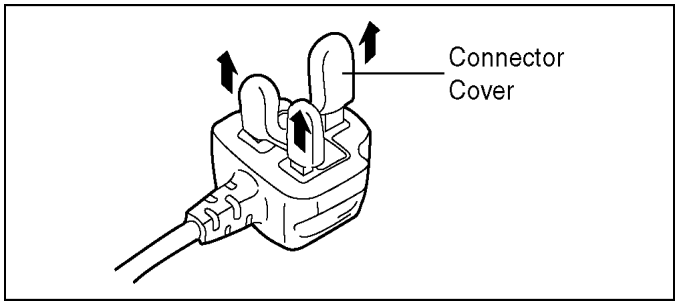
The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

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.

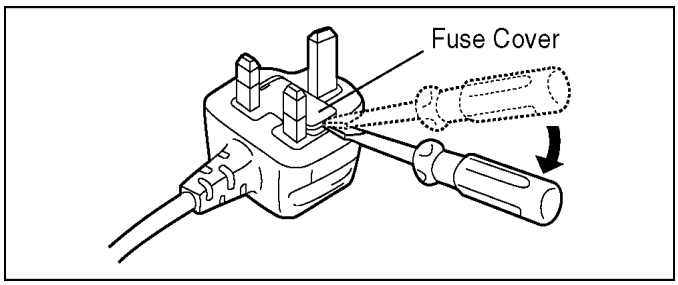
2.3.2.2. Before Use

Remove the Connector Cover as follows.

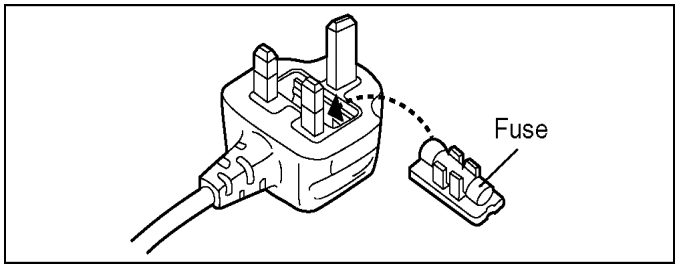


2.3.2.3. How to Replace the Fuse

1. Remove the Fuse Cover with a screwdriver.



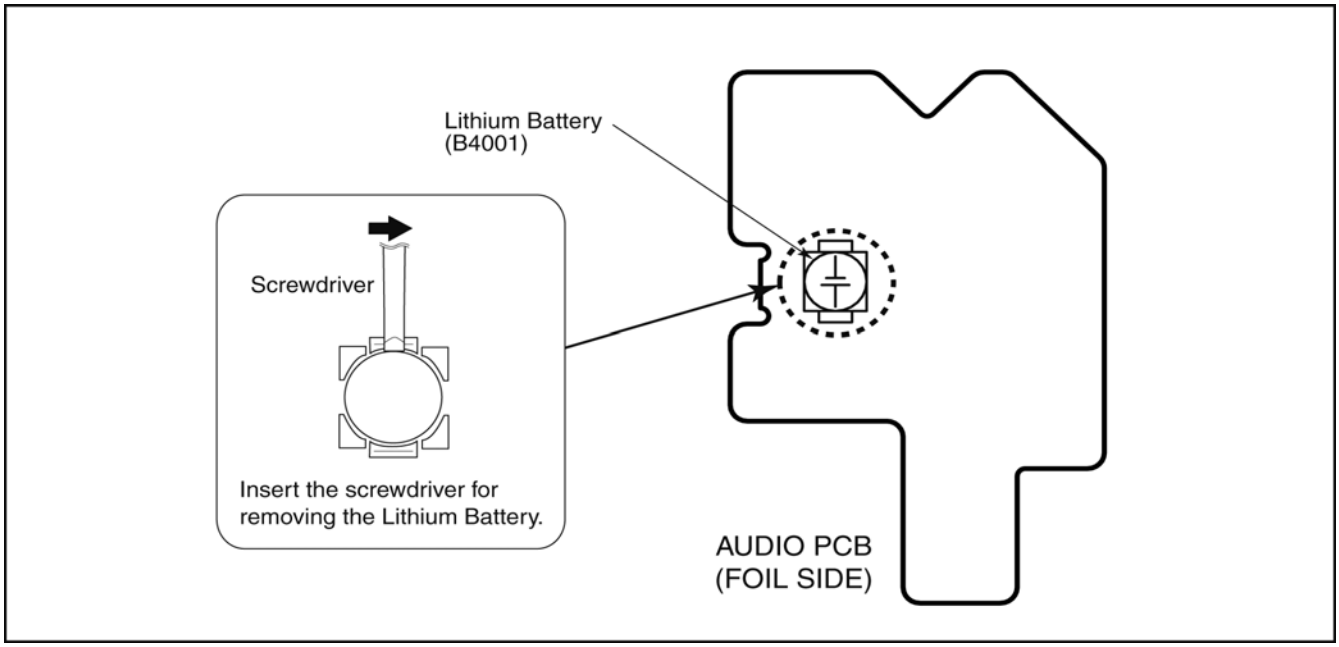
2. Replace the fuse and attach the Fuse cover.



2.4. How to Replace the Lithium Battery

2.4.1. Replacement Procedure

1. Remove the AUDIO PCB. (Refer to Disassembly Procedures.)
2. Remove the Lithium battery (Ref. No. “B4001” at foil side of AUDIO PCB) and then replace it into new one.



NOTE:

This Lithium battery is a critical component.
(Type No.: ML-421S/ZTE **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 DMC-GH1K 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. Important Notice

*When servicing, it is recommended dealing with Clean box. (Refer to "8.2. Clean Box" section of this service manual for details.)

3.2.1. Camera Body Unit

3.2.1.1. About Mount Box Block (Ref. 7)

1. This Service Manual does not contain the repair service information for "MOUNT BOX BLOCK"(Ref.7), because it requires special facilities and equipment.
   a. Schematic diagram, Block diagram and P.C.B. layout of "MOUNT BOX BLOCK".
   b. Parts list for individual parts of "MOUNT BOX BLOCK"
2. If the "MOUNT BOX BLOCK" is confirmed as defective, exchange the "MOUNT BOX BLOCK" as a unit (supplied as service parts size).
3. Before exchange the "MOUNT BOX BLOCK", the performances must be carefully checked, by following the "7.Troubleshooting Guide" section of this service manual.

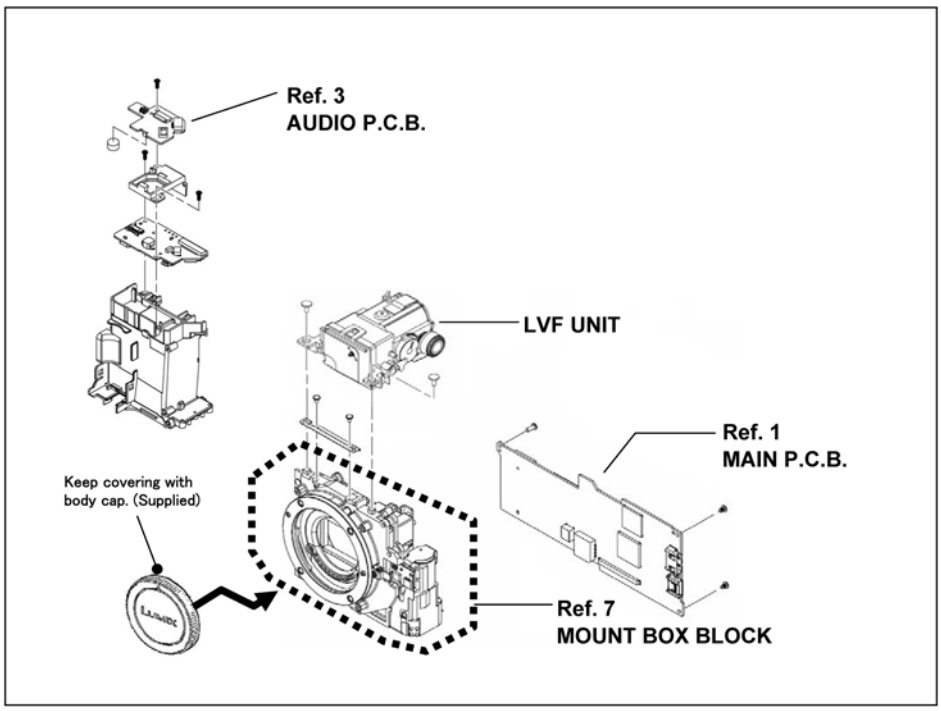


Fig. S1

Important:

1. After replacing the MOUNT BOX BLOCK, the mount box data has to be stored to the unit.
   When the serial number of the mount box block which is put on the shield plate of mount box block is entered to the adjustment unit, the applicable data is stored into the MAIN P.C.B.
   For more details, consult the adjustment instruction which is available together with the Maintenance software at "software download" on the "Support Information from NWBG/VDBG-AVC" web-site in "TSN system".

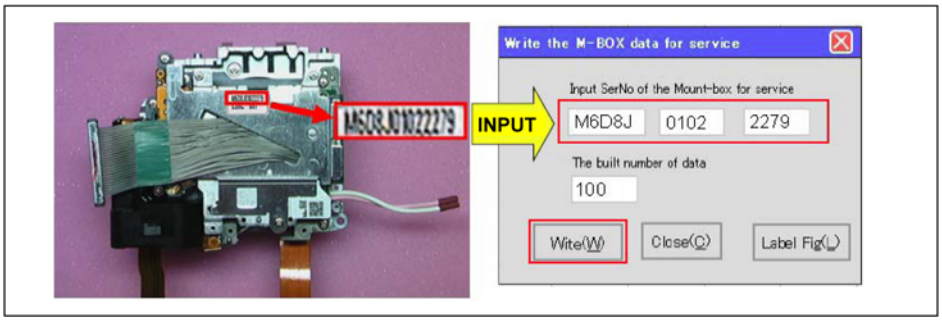


Fig. S2

2. The full adjustment procedures must be performed after replacing the "MOUNT BOX BLOCK", otherwise picture quality can not be meet with specification.

3.2.1.2. About Main P.C.B. (Ref. 1) / Audio P.C.B. (Ref. 3)

1. This Service Manual does not contain the repair service information for "MAIN P.C.B."(Ref.1) and “AUDIO P.C.B.”(Ref.3), because it requires special facilities and equipment.
   a. Schematic diagram, Block diagram and P.C.B. layout of "MAIN P.C.B." / “AUDIO P.C.B.”.
   b. Parts list for individual parts of "MAIN P.C.B." / “AUDIO P.C.B.”.
2. When a part replacement is required for repairing "MAIN P.C.B." and “AUDIO P.C.B.”, replace as an assembled P.C.B. parts and send it/them to Central Repair Center.
3. The following category is recycle module part. Please send it/them to Central Repair Center.
   *MAIN P.C.B. (VEP56084A: DMC-GH1KPP/GC/GH/GK/GN/GT)
   *MAIN P.C.B. (VEP56084B: DMC-GH1KEB/EC/EG)
   *AUDIO P.C.B. (VEP54012A): Excluding replacement of Lithium Battery

Important (About Main P.C.B.):

1. Before exchange the "MAIN P.C.B.", the performances must be carefully checked, by following the "7.Troubleshooting Guide" section of this service manual.
2. Before replacing the "MAIN P.C.B.", proceed the EEPROM data backup from the unit. After replacing the MAIN PCB, overwrite the EEPROM data with backup data from the unit first, then proceed the adjustment /inspection.
   If it is impossible to make a data backup due to the unit does not turns on the power and so on, additional adjustment (using the light box) is required.
   For more details, consult the adjustment instruction which is available together with the Maintenance software at "software download" on the "Support Information from NWBG/VDBG-AVC" web-site in "TSN system".
3. The full adjustment procedures must be performed after replacing the "MAIN P.C.B.", otherwise Picture quality can not be meet with specification.

3.2.2. Lens Unit

3.2.2.1. About Lens MAIN Block unit (Ref. 215)

1. This Service Manual does not contain the repair service information for "LENS MAIN BLOCK UNIT"(Ref.215), because it requires special facilities and equipment.
2. "LENS MAIN BLOCK UNIT" performance must be confirmed with the "7.Troubleshooting Guide" section of this service manual.
3. In case of the "LENS MAIN BLOCK UNIT" defect, contact to the service department of sales company.

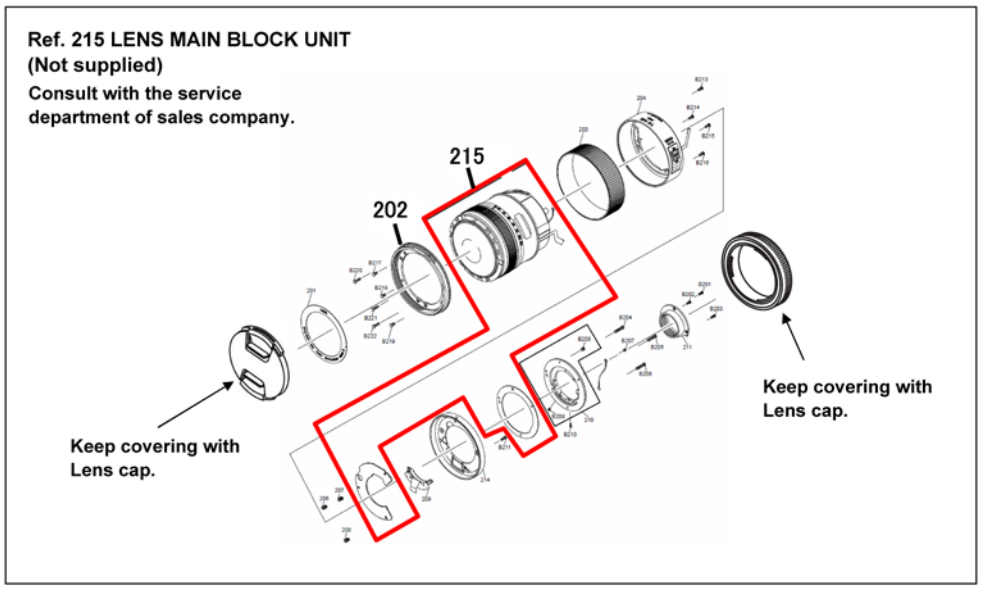


Fig. S3

3.2.2.2. About Lens Cleaning (Inside of the Lens Unit)

1. When there is a dust/dirt inside surface of the 1st lens frame unit and/or subject side of the 2nd lens frame unit, it can be cleaned up by removing the "Hood Adaptor" (Ref.202) and 1st lens frame unit.
   Refer to the "11.Maintenance" Section of this service Manual, for details.

IMPORTANT:

IT MUST BE PERFORMED INSIDE OF SATISFIED CLEAN LEVEL
(Satisfied clean level: Less than class 10,000 Federal Standard 209D).
As for clean box, refer to the "8.2. Clean box" in details.

CAUTION

*DO NOT REMOVE 1st LENS FRAME UNIT OTHER THAN INSIDE OF SATISFIED CLEAN LEVEL.
(Satisfied clean level: Less than class 10,000 Federal Standard 209D)

3.2.2.3. About Flexible Cable and Connector

Do not touch carelessly so that the foreign body should not adhere to the terminal part of flexible cable and connector.
Wipe off with a clean cloth and the cotton bud, etc. when the terminal part is dirty.

3.3. 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 PCB Lead Free Solder being used

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

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

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

Recommended Lead Free Solder (Service Parts Route.)

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

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

There are six kinds of DMC-GH1K, regardless of the colours.

- a) DMC-GH1K (Japan domestic model)
- b) DMC-GH1KPP
- c) DMC-GH1KEB/EC/EG/GH/GN
- d) DMC-GH1KGC
- e) DMC-GH1KGT
- f) DMC-GH1KGK

What is the difference is that the “INITIAL SETTINGS” data which is stored in Flash ROM mounted on MAIN PCB.

3.4.1. Defining methods:

To define the model suffix to be serviced, refer to the nameplate which is putted on the bottom side of the Unit.

a) DMC-GH1K (Japan domestic model)

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

b) DMC-GH1KPP

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

c) DMC-GH1KEB/EC/EG/GH/GN

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

d) DMC-GH1KGC

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

e) DMC-GH1KGT

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

f) DMC-GH1KGK

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

NOTE:

After replacing the MAIN PCB, 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.

3.4.2. INITIAL SETTINGS:

When you replace the MAIN PCB, be sure to perform the initial settings after achieving the adjustment by ordering the following procedure in accordance with model suffix of the unit.

1. IMPORTANT NOTICE:

Before proceeding Initial settings, be sure to read the following CAUTIONS.

CAUTION:(INITIAL SETTINGS)

---AFTER REPLACING THE MAIN P.C.B. ---

[Except "EG, EB and EC" models : (VEP56084A is used as a Main P.C.B.)]

*.The model suffix can be chosen JUST ONE TIME.
(Effective model suffix : " PP/GC/GT/GK/GN/GH and NONE(JAPAN)")

*.Once one of the model suffix has been chosen, the model suffix lists will not be displayed, thus, it can not be changed.

[Only for "EG, EB and EC" models : (VEP56084B is used as a Main P.C.B.)]

*.From the beginning, only "EG, EB and EC" are displayed as model suffix lists, and these are displayed from the second times as well.

2. PROCEDURES:

- **Preparation**
  Insert the SD memory card which has a few photo data.
- **Step 1. The temporary cancellation of initial setting:**
  Set the Drive mode lever to [SINGLE].
  While keep pressing [DISPLAY] and [FILM MODE] buttons simultaneously, turn the Power on.
- **Step 2. The cancellation of initial setting:**
  Press the [PLAYBACK] button, then playback the picture.
  Press [FILM MODE] and "[UP] of Cursor buttons" simultaneously, then turn the Power off.
- **Step 3. Turn the Power on:**
  Set the mode dial to [P], and then turn the Power on.
- **Step 4. Display the INITIAL SETTING:**
  While keep pressing [MENU/SET] and "[RIGHT] of Cursor buttons" simultaneously, turn the Power off.
  When MAIN P.C.B. is replaced, all of the model suffix is displayed as follows.
  There are two kinds of "INITIAL SETTINGS" menu format.

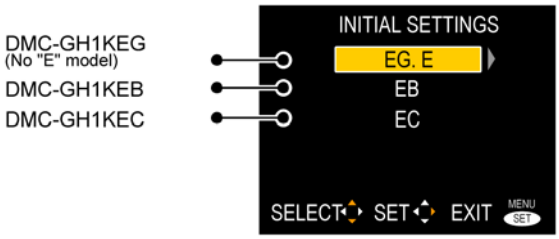
[CASE 1. After replacing MAIN P.C.B.]

[Except "EG, EB and EC" models : (VEP56084A is used as a Main P.C.B.)]

When MAIN P.C.B. has just been replaced, all of the model suffix are displayed as follows. (two pages in total)

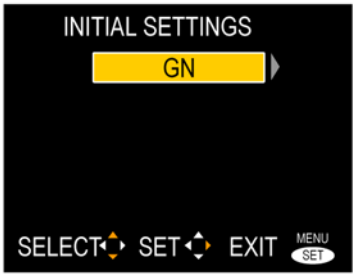
[Only for "EG, EB and EC" models : (VEP56084B is used as a Main P.C.B.)]

When MAIN P.C.B. has just been replaced, only 4 model suffix are displayed as follows.

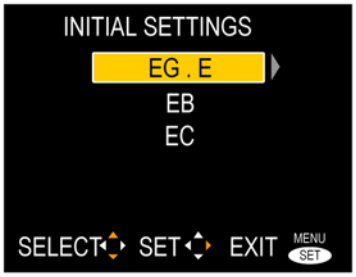


[CASE 2. Other than "After replacing MAIN P.C.B."]

<Other than “EG/EB/EC” models>



<Only “EG/EB/EC” models>

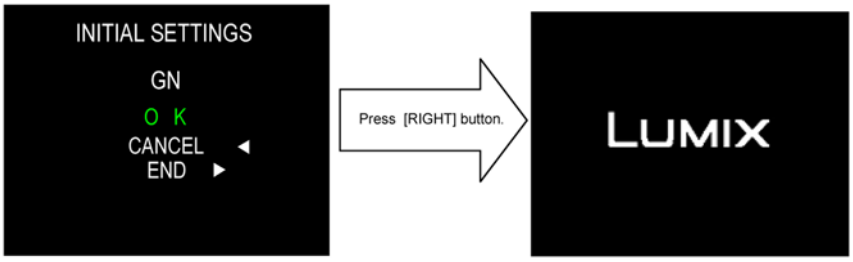


- **Step 5. Set the INITIAL SETTING: (Refer to “CAUTION 1”)**

[Caution: After replacing MAIN P.C.B.]

The model suffix can been chosen, **JUST ONE TIME**.
Once one of the model suffix have been chosen, the model suffix lists will not be displayed, thus, it can be changed.
Select the area carefully.

Select the area with pressing “[UP] / [DOWN] of Cursor buttons”, and then press the “[RIGHT] of Cursor buttons”.



The only set area is displayed, and then press the “[RIGHT] of Cursor buttons” after confirmation.
(The unit is powered off automatically.)
Confirm the display of “PLEASE SET THE CLOCK” in English when the unit is turned on again.

- **Step 6. CONFIRMATION:**

The display shows “PLEASE SET THE CLOCK” when turn the Power on again.
When the unit is connected to PC with USB cable, it is detected as removable media.

1) As for your reference Default setting condition is given in the following table.

- **Default setting (After “INITIAL SETTINGS”)**

	MODEL	VIDEO OUTPUT	LANGUAGE	DATE	REMARKS
a)	DMC-GH1K (Japan domestic model)	NTSC	Japanese	Year/Month/Date	
b)	DMC-GH1KPP	NTSC	English	Month/Date/Year	
c)	DMC-GH1KEB/EC/EG/GC/GH/GN	PAL	English	Date/Month/Year	
d)	DMC-GH1KGK	PAL	Chinese (simplified)	Year/Month/Date	
e)	DMC-GH1KGT	NTSC	Chinese (traditional)	Year/Month/Date	

4 Specifications

Digital Camera Body (DMC-GH1): Information for your safety

Power Source:	DC 9.3 V
Power Consumption:	2.9 W (When recording with LCD Monitor) 2.7 W (When recording with Viewfinder) 2.0 W (When playing back with LCD Monitor) 1.8 W (When playing back with Viewfinder)

Camera effective pixels:	12,100,000 pixels
Image sensor:	4/3″ Live MOS sensor, total pixel number 13,980,000 pixels, Primary color filter
Digital zoom:	Max. 4×
Extended Optical Zoom: (Except for the maximum picture size for each aspect ratio)	ON/OFF simple enlargement (compatible with lenses from other manufacturers)
Focus:	Auto focus/Manual Focus, Face detection/AF Tracking/ 23-area-focusing/1-area-focusing
Shutter system:	Focal-plane shutter
Burst recording	
Burst speed:	3 pictures/second (High speed), 2 pictures/second (Low speed)
Number of recordable pictures:	Max. 7 pictures (when there are RAW files) Depends on the capacity of the card (when there are no RAW files)
ISO sensitivity (Standard Output Sensitivity):	AUTO/ISO100/200/400/800/1600/3200
Shutter speed:	B (Bulb) (max. 4 minutes), 60 seconds to 1/4000th of a second
Metering range:	EV 0 to EV 18
White balance:	Auto white balance/Daylight/Cloudy/Shade/Incandescent lights/ Flash/White set1/White set2/White balance K set
Exposure (AE):	Program AE (P)/Aperture-priority AE (A)/Shutter-priority AE (S)/ Manual Exposure (M)/AUTO Exposure Compensation (1/3 EV Step, −3 EV to +3 EV)
Metering mode:	Multiple/Center weighted/Spot
LCD monitor:	3.0″ TFT LCD (Approx. 460,000 dots) (field of view ratio about 100%)
Viewfinder:	Color LCD Viewfinder (Approx. 1,440,000 dots) (field of view ratio about 100%) (with diopter adjustment −4 to +4 diopter)
Flash:	Built-in pop up flash GN 11 equivalent (ISO100·m) Flash range: Approx. 1.0 m (3.28 feet) to 4.8 m (15.8 feet) (When the 14–140 mm/F4.0–5.8 lens included in DMC-GH1K is mounted, focal length is 22 mm, [ISO AUTO] is set, and the aspect ratio is set to [4:3]) AUTO, AUTO/Red-eye reduction, Forced ON, Forced ON/ Red-eye reduction, Slow sync., Slow sync./Red-eye reduction, Forced OFF
Flash synchronization speed:	Equal to or smaller than 1/160th of a second
Microphone:	Stereo
Speaker:	Monaural
Recording media:	SD Memory Card/SDHC Memory Card
Picture size	
Still picture:	When the aspect ratio setting is [4:3] 4000×3000 pixels, 2816×2112 pixels, 2048×1536 pixels When the aspect ratio setting is [3:2] 4128×2752 pixels, 2928×1952 pixels, 2064×1376 pixels When the aspect ratio setting is [16:9] 4352×2448 pixels, 3072×1728 pixels, 1920×1080 pixels When the aspect ratio setting is [1:1] 2992×2992 pixels, 2112×2112 pixels, 1504×1504 pixels
Recording quality	
Motion pictures:	[AVCHD] (With stereo audio) When set to [FHD]: 1920×1080 pixels (60i recording/17 Mbps) (Sensor output is 24 frames/sec.)/ When set to [SH]: 1280×720 pixels (60p recording/17 Mbps)/ When set to [H]: 1280×720 pixels (60p recording/13 Mbps)/ When set to [L]: 1280×720 pixels (60p recording/9 Mbps) [MOTION JPEG] (With stereo audio) When set to [HD]: 1280×720 pixels (30 frames/sec.)/ When set to [WVGA]: 848×480 pixels (30 frames/sec.)/ When set to [VGA]: 640×480 pixels (30 frames/sec.)/ When set to [QVGA]: 320×240 pixels (30 frames/sec.)
Quality:	RAW/RAW+Fine/RAW+Standard/Fine/Standard
Recording file format	
Still Picture:	JPEG (based on "Design rule for Camera File system", based on "Exif 2.21" standard)/DPOF corresponding
Pictures with audio:	JPEG (based on "Design rule for Camera File system", based on "Exif 2.21" standard)+"QuickTime" (pictures with audio)
Motion pictures with audio:	AVCHD/QuickTime Motion JPEG
Interface	
Digital:	"USB 2.0" (High Speed)
Analog video/audio:	NTSC, Audio line output (stereo)
Terminal	
[MIC/REMOTE]:	φ 2.5 mm jack
[AV OUT/DIGITAL]:	Dedicated jack (14 pin)
[HDMI]:	MiniHDMI TypeC (1.3a corresponding)
[DC IN]:	None (when using an AC adaptor, use supplied DC cable)
Dimensions:	Approx. 124 mm (W)×89.6 mm (H)×45.2 mm (D) [4 7/8″ (W)×3 1/2″(H)×1 13/16″ (D)] (excluding the projecting parts)
Mass (weight):	Approx. 385 g/13.6 oz (camera body), Approx. 903 g/31.9 oz (with the 14–140 mm/F4.0–5.8 lens included in DMC-GH1K, card and battery)
Operating temperature:	0 °C to 40 °C (32 °F to 104 °F)
Operating humidity:	10% to 80%
Language select:	[ENGLISH]/[FRANÇAIS]/[ESPAÑOL]/[PORTUGUÊS]

AC Adaptor (Panasonic DE-A49B):

Information for your safety

Input:	110 V to 240 V ~ 50/60 Hz, 0.3 A
Output:	DIGITAL CAMERA 9.3 V ⎓ 1.2 A CHARGE 8.4 V ⎓ 0.65 A

Battery Pack (lithium-ion) (Panasonic DMW-BLB13PP):

Information for your safety

Voltage/capacity (Minimum):	7.2 V/1250 mAh

Interchangeable Lens (H-VS014140)
"LUMIX G VARIO HD 14–140 mm/F4.0–5.8 ASPH./MEGA O.I.S."

Focal length:	f=14 mm to 140 mm (35 mm film camera equivalent: 28 mm to 280 mm)
Aperture type:	7 leaf shutters/iris diaphragm/circular diaphragm
Aperture range:	F4.0 (Wide) to F5.8 (Tele)
Minimum aperture value:	F22
Lens construction:	17 elements in 13 groups (4 non-spherical lenses/2 ED lenses)
In focus distance:	0.5 m (1.64 feet) to ∞ (from the focus distance reference line)
Maximum image magnification:	0.2× (35 mm film camera equivalent: 0.4×)
Optical Image Stabilizer:	Available
Mount:	"Micro Four Thirds Mount"
Angle of view:	75° (Wide) to 8.8° (Tele)
Filter diameter:	62 mm (2.44 inch)
Max. diameter:	Approx. 70 mm (2.76 inch)
Overall length:	Approx. 84 mm (3.31 inch) (from the tip of the lens to the base side of the lens mount)
Mass (weight):	Approx. 460 g (16.2 oz)

NOTE:(Only for "EB/EC/EG" models)

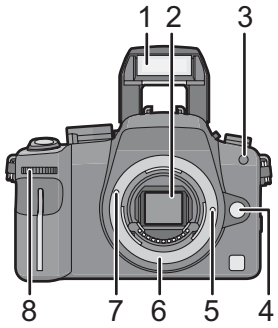
- Data from the PC can not be written to the camera using the USB connection cable.
- Motion pictures can be recorded continuously for up to 15 minutes.
  The maximum continuous recording time (up to 15 minutes) is displayed on the screen.

5 Location of Controls and Components

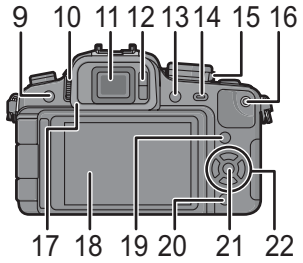
Names of the Components

■Camera body

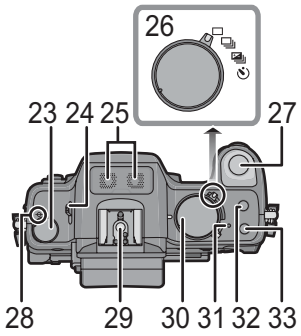
1 Flash
2 Sensor
3 Self-timer indicator
AF assist lamp
4 Lens release button
5 Lens lock pin
6 Mount
7 Lens fitting mark
8 Front dial



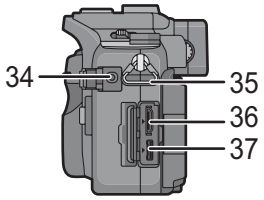
9 [LVF/LCD] button
10 Diopter adjustment dial
11 Viewfinder
12 Eye sensor
13 Playback button
14 [AF/AE LOCK] button
15 Camera ON/OFF switch
16 Motion picture button
17 Eye Cup
18 LCD monitor
19 [DISPLAY] button
20 Delete button/
Preview button
21 [MENU/SET] button
22 Cursor buttons
▲/ISO
◀/AF mode
▼/Function button
Assign Menu to ▼ button. It is convenient to register Menu that is used often.
[ASPECT RATIO]/[QUALITY]/[METERING MODE]/[I.EXPOSURE]/[GUIDE LINE]/
[REC AREA]/[REMAINING DISP.]
►/WB (White balance)



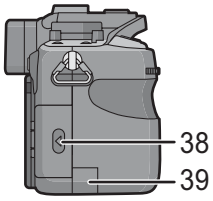
23 Focus mode dial
24 Flash open lever
25 Stereo microphone
26 Drive mode lever
Single:
Burst:
Auto Bracket:
Self-timer:
27 Shutter button
28 Focus distance reference mark
29 Hot shoe
30 Mode dial
31 Status indicator
32 [Q.MENU] button
33 [FILM MODE] button



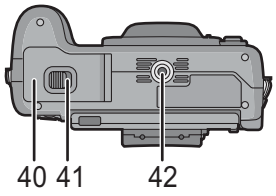
34 [MIC/REMOTE] socket
35 Shoulder strap eyelet
• Be sure to attach the shoulder strap when using the camera to ensure that you will not drop it.
36 [HDMI] socket
37 [AV OUT/DIGITAL] socket



38 Card door
39 DC cable cover



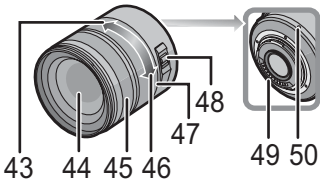
40 Battery door
41 Release lever
42 Tripod receptacle
• When you use a tripod, make sure the tripod is stable when the camera is attached to it.



■Lens

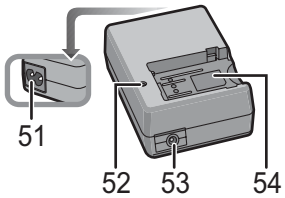
H-VS014140 (LUMIX G VARIO HD 14–140 mm/F4.0–5.8 ASPH./MEGA O.I.S.)

43 Tele
44 Lens surface
45 Focus ring
46 Wide
47 Zoom ring
48 [O.I.S.] switch
49 Contact point
50 Lens fitting mark



■Battery charger/AC adaptor

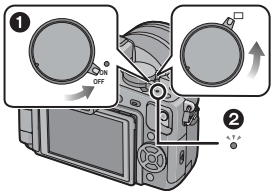
51 Power input socket [AC IN]
52 [CHARGE] indicator
53 Power output socket [DC OUT]
54 Battery holder



Selecting the [REC] mode, and record still picture or motion picture

1 Turn the camera on.

- The status indicator ❷ lights when you turn this unit on ❶.
- Make sure the drive mode lever is set to [▭].



2 Switching the mode by rotating the mode dial.

Align a desired mode with part Ⓐ.

- **Rotate the mode dial slowly and surely to adjust to each mode. (The mode dial rotates 360 °)**

■Basic

iA Intelligent Auto Mode

The subjects are recorded using settings automatically selected by the camera.

P Program AE Mode

The subjects are recorded using your own settings.

■Advanced

A Aperture-priority AE Mode

The shutter speed is automatically determined by the aperture value you set.

S Shutter-priority AE Mode

The aperture value is automatically determined by the shutter speed you set.

M Manual Exposure Mode

The exposure is adjusted by the aperture value and the shutter speed which are manually adjusted.

Creative Motion Picture Mode

Record motion picture with manual settings.

CUST Custom Mode

Use this mode to take pictures with previously registered settings.

SCN Scene Mode

This allows you to take pictures that match the scene being recorded.

My Color Mode

Easily check the color of light, brightness, and vividness of color when the picture is taken.

■Advanced Scene Mode

Portrait mode

Use this mode to take pictures of people.

Scenery mode

Use this mode to take pictures of scenery.

Sports mode

Use this mode to take pictures of sporting events, etc.

Close-up mode

Use this mode to take pictures of a close-by subject.

Night portrait mode

Use this mode to take pictures of night scenes and people against night time scenery.

About the Lens

This unit can use the dedicated lenses compatible with the Micro Four Thirds™ System lens mount specification (Micro Four Thirds mount) such as the LUMIX G VARIO HD 14–140 mm/F4.0–5.8 ASPH./MEGA O.I.S. lens included in DMC-GH1K.
Select a lens that matches the scene being recorded and your use of the pictures.
If you use a lens other than a dedicated interchangeable lens, auto focus cannot be activated and accurate metering is not possible. Also, some functions will not work.

■"Micro Four Thirds Mount"

This is the lens mount standard for the "Micro Four Thirds System".
This was newly developed as interchangeable lens dedicated for digital cameras.

■When using lenses other than the 14–140 mm/F4.0–5.8 lens included in DMC-GH1K

- Depending on the type of lens, you may not be able to use some functions such as the direction detection function, [STABILIZER], Quick AF and Continuous AF.
- The available flash range etc. differs depending on the aperture value of the lens you are using.
- Take some test pictures with the lens you are using.
- Lens with the Four Thirds™ mount specification can be used by using the mount adaptor (DMW-MA1; optional). Because of its structure, Micro Four Thirds mount specification lenses cannot be used on the Four Thirds mount specification cameras. It can only be used on the Micro Four Thirds mount specification cameras.

Interchangeable lens that can be used with this unit and compatibility of the functions
(○: Usable, ●: Some functions/features limited, —: Not usable)

Lens type	when recording still pictures		while recording motion pictures	
	Auto focus	Auto aperture setting	Auto focus	Auto aperture setting
Micro Four Thirds mount specification lens compatible to motion pictures (LUMIX G VARIO HD)	○ ([AFS], [AFC])	○	○ *2	○
Micro Four Thirds mount specification lens not compatible to motion pictures	○ ([AFS], [AFC])	○	● *2, 3, 4	● *5
Four Thirds mount specification lens compatible to contrast AF *1	● ([AFS])	○	● *3, 4	● *5
Four Thirds mount specification lens not compatible to contrast AF *1	—	○	—	● *5

∗1 Mount adaptor (DMW-MA1; optional) is necessary to use with this unit.
∗2 When recording motion pictures, the focus is continuously adjusted for both [AFS] and [AFC]
∗3 Fewer tracking functions are compatible than with the Micro Four Thirds mount specification lens compatible with motion pictures. Also, the sound of auto focus operation may be recorded.
∗4 Auto focus does not work and [MF] is used when recording with [REC MODE] set to [AVCHD] and [REC QUALITY] set to [FHD] ([FHD]).
∗5 The sound of aperture operation may be recorded.

Refer to catalogues/Web pages for most current information regarding compatible lenses.
http://panasonic.co.jp/pavc/global/cs (This Site is English only.)

Cautions for Use

Optimal use of the camera

Take care not to drop or knock the unit or put a lot of pressure on it.
- Take care not to knock or drop the bag/case that you inserted the camera in as the shock may cause damage to the camera, lens or LCD monitor.
- Do not use a paper bag as it can easily rip causing the camera to fall and be damaged.
- We strongly recommend you purchase a good camera bag/case from your local dealer to protect your camera.

Keep the camera as far away as possible from electromagnetic equipment (such as microwave ovens, TVs, video games etc.).
- If you use the camera on top of or near a TV, the pictures and sound on the camera may be disrupted by electromagnetic wave radiation.
- Do not use the camera near cell phones because doing so may result in noise adversely affecting the pictures and sound.
- Recorded data may be damaged, or pictures may be distorted, by strong magnetic fields created by speakers or large motors.
- Electromagnetic wave radiation generated by microprocessors may adversely affect the camera, disturbing the pictures and sound.
- If the camera is adversely affected by electromagnetic equipment and stops functioning properly, turn the camera off and remove the battery or disconnect AC adaptor. Then reinsert the battery or reconnect AC adaptor and turn the camera on.

Do not use the camera near radio transmitters or high-voltage lines.
- If you record near radio transmitters or high-voltage lines, the recorded pictures and sound may be adversely affected.

Always use the supplied cords and cables. If you use optional accessories, use the cords and the cables supplied with them.
Do not extend the cords or the cables.

Do not spray the camera with insecticides or volatile chemicals.
- If the camera is sprayed with such chemicals, the body of the camera may be damaged and the surface finish may peel off.
- Do not keep rubber or plastic products in contact with the camera for a long period of time.

Cleaning

Before cleaning the camera, remove the battery or disconnect the power plug from the outlet. Then wipe the camera with a dry soft cloth.
- When the camera is soiled badly, it can be cleaned by wiping the dirt off with a wrung wet cloth, and then with a dry cloth.
- Wipe off any dirt or dust on the zoom ring and the focus ring with a dry, dustless cloth.
- Do not use solvents such as benzine, thinner, alcohol, kitchen detergents, etc., to clean the camera, since it may deteriorate the external case or the coating may peel off.
- When using a chemical cloth, be sure to follow the accompanying instructions.

■About dirt on the image sensor

This camera features an interchangeable lens system so dirt may get inside the camera body when changing lenses. Depending on the recording conditions, dirt on the image sensor may appear on the recorded picture.
Do not change lenses where there is a lot of dust, and always attach the body cap when a lens is not attached to the camera, so that dirt or dust does not get inside the camera body. Remove any dirt on the body cap before attaching it.

Dust reduction function
This unit has a dust reduction function that will blow off the debris and dust that have affixed to the front of the imaging device. This function will function automatically when the camera is turned on, but if you see dust, perform the [SENSOR CLEANING] in the [CUSTOM MENU] menu.

Removing dirt on the image sensor

The image sensor is very precise and delicate, so be sure to observe the following when you do have to clean it yourself.

- Blow off the dust on the surface of the image sensor with a commercially available blower brush. Be careful not to blow too strongly.
- Do not put the blower brush further inside than the lens mount.
- Do not let the blower brush touch the image sensor as the image sensor may get scratched.
- Do not use any objects except a blower brush to clean the image sensor.
- If you cannot remove the dirt or dust with the blower, consult the dealer or your nearest Service Center.

For care of the eye cup on the viewfinder

- As the eye cup cannot be removed, gently wipe it with a dry and soft cloth, and be careful not to remove it.
- If you wipe the eye cup too hard and it is removed, consult the dealer or your nearest Service Center.

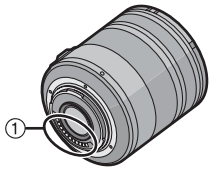
About the LCD monitor/Viewfinder

- Do not press the LCD monitor with excessive force. Uneven colors may appear on the LCD monitor and it may malfunction.
- If the camera is cold when you turn it on, the picture on the LCD monitor/Viewfinder will be slightly darker than usual at first. However, the picture will return to normal brightness when the internal temperature of the camera increases.

Extremely high precision technology is employed to produce the LCD monitor/ Viewfinder screen. However there may be some dark or bright spots (red, blue or green) on the screen. This is not a malfunction. The LCD monitor/Viewfinder screen has more than 99.99% effective pixels with a mere 0.01% of the pixels inactive or always lit. The spots will not be recorded on pictures on a card.

About the Lens

- Do not press the lens with excessive force.
- Do not leave the camera with the lens facing the sun as rays of light from the sun may cause it to malfunction. Also, be careful when placing the camera outside or near a window.
- When there is dirt (water, oil, and fingerprints, etc.) on the surface of the lens, the picture may be affected. Lightly wipe the surface of the lens with a soft, dry cloth before and after taking pictures.
- Do not place the lens mount facing downwards. Do not allow the lens mount contacts ① to become dirty.



Battery

The battery is a rechargeable lithium ion battery. Its ability to generate power comes from the chemical reaction that takes place inside it. This reaction is susceptible to the surrounding temperature and humidity. If the temperature is too high or too low, the operating time of the battery will become shorter.

Always remove the battery after use.

If you drop the battery accidentally, check to see if the body of the battery and the terminals are damaged.
- Inserting a damaged battery in the camera will damage the camera.

Bring charged spare batteries when going out.
- Be aware that the operating time of the battery becomes shorter in low temperature conditions such as at a ski resort.
- When you travel, do not forget to bring the battery charger (supplied) and the AC cable (supplied) so that you can charge the battery in the country that you are traveling in.

Dispose of unusable battery.
- The battery has a limited life.
- Do not throw the battery into fire because it may cause an explosion.
- The unusable battery should be discarded in accordance with battery recycling laws. Call the RBRC hotline at 1-800-822-8837 for information.

Do not allow battery terminals to come into contact with metal objects (such as necklaces, hairpins etc.).
- This can cause short circuiting or heat generation and you may be badly burned if you touch a battery.

Charger

- If you use the battery charger near a radio, the radio reception may be disturbed.
- Keep the charger 1 m (3.28 feet) or more away from radios.
- The charger may generate whirring sounds when it is being used. This is not a malfunction.
- After use, be sure to disconnect the power supply device from the electrical outlet. (A very small amount of current is consumed if it is left connected.)
- Keep the terminals of the charger and battery clean.

Card

Do not leave the card where the temperature is high, where electromagnetic waves or static electricity are easily generated or exposed to direct sunlight.
Do not bend or drop the card.
- The card may be damaged or the recorded content may be damaged or deleted.
- Put the card in the card case or the storage bag after use and when storing or carrying the card.
- Do not allow dirt, dust or water to get into the terminals on the back of the card and do not touch the terminals with your fingers.

Notice for when transferring to another party, or disposing of the memory card
- “Format” or “delete” using the camera or a PC will only modify the file management information, and it will not erase the data in the memory card completely.
  It is recommended to physically destroy the memory card or use the commercially available computer data deletion software to completely erase the data in the memory card before transferring to another party or disposing.
  Management of data in the memory card is the responsibility of the user.

About the personal information

If a name or birthday is set for [BABY1]/[BABY2]/Face Recognition function, this personal information is kept in the camera and included in the recorded image.

Disclaimer

- Information including personal information may be altered or vanish due to erroneous operation, effect of static electricity, accident, malfunction, repair, or other handlings. Please note in advance that Panasonic is not liable in any way for any direct or indirect damage from the alteration or vanishing of information or personal information.

When requesting a repair, transferring to another party or disposing

- Reset the settings to protect the personal information.
- Remove the memory card from the camera when requesting a repair.
- Settings may return to factory default when camera is repaired.
- Please contact the dealer where you purchased the camera or your nearest Service Center if above operations are not possible due to malfunction.

When transferring to another party, or disposing of the memory card, please refer to "Notice for when transferring to another party, or disposing of the memory card" on P169.

When not using the camera for a long period of time

- Store the battery in a cool and dry place with a relatively stable temperature: [Recommended temperature: 15 °C to 25 °C (59 °F to 77 °F), Recommended humidity: 40% to 60%]
- Always remove the battery and the card from the camera.
- If the battery is left inserted in the camera, it will discharge even if the camera is turned off. If the battery continues to be left in the camera, it will discharge excessively and may become unusable even if charged.
- When storing the battery for a long period of time, we recommend charging it once a year. Remove the battery from the camera and store it again after it has completely discharged.
- We recommend storing the camera with a desiccant (silica gel) when you keep it in a closet or a cabinet.
- **Check all the parts before taking pictures when you have not used the camera for a long period of time.**

About the picture data

- Recorded data may be damaged or lost if the camera breaks down due to inappropriate handling. Panasonic will not be liable for any damage suffered due to loss of recorded data.

About tripods

- When you use a tripod, make sure the tripod is stable when this unit is attached to it.
- You may not be able to remove the battery when using a tripod.
- Make sure that the screw on the tripod is not at an angle when attaching or detaching the camera. You may damage the screw on the camera if you use excessive force when turning it. Also, the camera body and the rating label may be damaged or scratched if the camera is attached too tightly to the tripod.
- Read the operating instructions for the tripod carefully.

About the shoulder strap

- If you attach a heavy interchangeable lens (more than about 1 kg) to the camera body, do not carry the camera by the soulder strap. Hold the camera and the lens when carrying them.

Message Display

Confirmation messages or error messages will be displayed on the screen in some cases. The major messages are described below as examples.

[THIS MEMORY CARD IS LOCKED]

→ The Write-Protect switch on the SD Memory Card and the SDHC Memory Card are moved to [LOCK]. Move the switch back to unlock it.

[NO VALID PICTURE TO PLAY]

→ Record a picture or insert a card with a recorded picture and then play it.

[THIS PICTURE IS PROTECTED]

→ Delete the picture after canceling the protect setting.

[THIS PICTURE CANNOT BE DELETED]/[SOME PICTURES CANNOT BE DELETED]

- Pictures not based on the DCF standard cannot be deleted.
  → If you want to delete some pictures, format the card after saving necessary data on a PC etc.

[NO ADDITIONAL SELECTIONS CAN BE MADE]

- The number of pictures, which can be set at one time when [MULTI] has been selected for [DELETEMULTI], [FAVORITE], [TITLE EDIT], [TEXT STAMP] or [RESIZE] has been exceeded.
  → Reduce the number of pictures set, and then repeat the operation.
- More than 999 favorites have been set.

[CANNOT BE SET ON THIS PICTURE]

- [TITLE EDIT], [TEXT STAMP] or [PRINT SET] cannot be set for pictures not based on the DCF standard.

**[MEMORY CARD ERROR
FORMAT THIS CARD?]**

- This card has a format which is not recognized by the camera.
  → Format the card again with the camera after saving necessary data on a PC etc.

[PLEASE CHECK THAT THE LENS IS ATTACHED CORRECTLY]

- Do not press the lens release button.
- Check that the lens is attached correctly and then turn the camera off and on.
  → If the message persists, contact the dealer or your nearest Service Center.

[THE LENS IS NOT ATTACHED PROPERLY.]

- Detach the lens and then attach it again.

[MEMORY CARD PARAMETER ERROR]/[THIS MEMORY CARD CANNOT BE USED]

→ Use a card compatible with this unit.

- You can only use an SDHC Memory Card if using cards with 4 GB or more capacity.

**[MEMORY CARD ERROR
PLEASE CHECK THE CARD]**

- An error has occurred accessing the card.
  → Insert the card again.
  → Insert a different card.

**[READ ERROR/WRITE ERROR
PLEASE CHECK THE CARD]**

- It has failed to read or write data.
  → Remove the card after turning the power [OFF]. Insert the card again, turn the power on, and try to read or write the data again.
- The card may be broken.
  → Insert a different card.

[CANNOT RECORD DUE TO INCOMPATIBLE FORMAT (NTSC/PAL) DATA ON THIS CARD.]

  → If you want to delete some pictures, format the card after saving necessary data on a PC etc.
  → Insert a different card.

[MOTION RECORDING WAS CANCELLED DUE TO THE LIMITATION OF THE WRITING SPEED OF THE CARD]

- It is recommended to use a card with SD Speed Class* with “Class 6” or higher when recording motion pictures.

* SD speed class is the speed standard regarding continuous writing.

- When you set the picture quality to [FHD], [HD] or [VGA], we recommend using a high-speed card with “10MB/s” or greater displayed on the package.
- In the event that it stops even after using a “10MB/s” card or higher, the data writing speed has deteriorated so it is recommended to make a backup and then format.
- Depending on the type of SD Memory Card or SDHC Memory Card, motion picture recording may stop in the middle.

[A FOLDER CANNOT BE CREATED]

- A folder cannot be created because there are no remaining folder numbers that can be used.
  → Format the card after saving necessary data on a PC etc. If you execute [NO.RESET] in the [SETUP] menu after formatting, the folder number is reset to 100.

[PICTURE IS DISPLAYED FOR 4:3 TV]/[PICTURE IS DISPLAYED FOR 16:9 TV]

- The AV cable is connected to the camera.
  → Press [MENU/SET] if you want to delete this message at once.
  → Select [TV ASPECT] in the [SETUP] menu if you want to change the TV aspect.
- This message also appears when the USB connection cable is connected to the camera only. In this case, connect the other end of the USB connection cable to a PC or a printer.

[PRINTER BUSY]/[PLEASE CHECK THE PRINTER]

- The printer cannot print.
  → Check the printer.

[NO BATTERY POWER REMAINS]

- The remaining battery power is low.
  → Charge the battery.

[THIS BATTERY CANNOT BE USED]

- The battery cannot be recognized by the camera.
  → Use a genuine Panasonic battery. If this message is displayed even when a genuine Panasonic battery is used, contact the dealer or your nearest Service Center.
- The battery cannot be recognized as its terminal is dirty.
  → Remove any dirt etc. from the terminal.

[PLEASE MAKE SURE TO TURN ON THE POWER OF EXTERNAL MICROPHONE.]

- When attaching the stereo microphone (DMW-MS1; optional), check the battery status and make sure the power is on before use.

Troubleshooting

First, try out the following procedures.

If the problem is not resolved, **it may be improved by selecting [RESET] on the [SETUP] menu**.

Battery and power source

The camera cannot be operated even when it is turned on.

- The battery is not inserted correctly.
- The battery is exhausted.
- Charge the battery.
- AC adaptor is not connected properly.

The LCD monitor turns off while the camera is turned on.

- Is the display set to Viewfinder?
  → Press [LVF/LCD] button to switch to LCD monitor display.
- Is [AUTO LCD OFF] of the [ECONOMY] mode active?
  → Press the shutter button halfway to cancel these modes.
- Is the LCD monitor switched off?
  → Switch the display by pressing [DISPLAY].
- The battery is exhausted.
- Charge the battery.

The camera turns off immediately after it is turned on.

- The battery is exhausted.
- Charge the battery.
- If you leave the camera on, the battery will be exhausted.
  → Turn the camera off frequently by using the [ECONOMY] mode etc.

This unit is turned off automatically.

- If you connect to a TV compatible with VIERA Link with a HDMI mini cable (optional) and turn off the power on the TV with the remote control for the TV, the power on this unit also turns off.
  → If you are not using VIERA Link, set [VIERA Link] to [OFF].

The [CHARGE] lamp flashes.

- Is the temperature of the battery excessively high or low? If it is, it will take longer than usual to charge the battery or charging may remain incomplete.
- Are the terminals of the charger or battery dirty?
  → Wipe off the dirt using a dry cloth.

Recording

The picture cannot be recorded.
The shutter does not activate.

- Is the mode dial correctly set?
- Is the card inserted?
- Is there any memory remaining on the card?
  → Delete the pictures which are not necessary to increase the available memory.
- Is the subject focused?
  → At the time of purchase, the camera is set so that you cannot take a picture until the subject is brought into focus. If you want to be able to take a picture when you press the shutter button fully even if the subject is not focused, set [FOCUS PRIORITY] in the [CUSTOM MENU] menu to [OFF].

The recorded picture is whitish.

- Picture might look whitish when lens or image sensor gets dirty with finger print or similar.
  → If the lens is dirty turn the camera off and then gently wipe the lens surface with a soft dry cloth.
  → Refer to “About dirt on the image sensor”.

The recorded picture is too bright or dark.

→ Check that the exposure is correctly compensated.
- Is the AE lock applied in inappropriate way?

2 or 3 pictures are taken at one time.

→ Unset the settings of White Balance Bracket.

The subject is not focused properly.

- The subject is beyond the focus range of the camera.
- There is camera shake (jitter) or the subject is moving slightly.
- Is [FOCUS PRIORITY] in the [CUSTOM MENU] menu set to [OFF]?
  In this case, the picture may not be properly focused even if [AFS] or [AFC] in Focus Mode is set.
- Is the AF lock applied in inappropriate way?

The recorded picture is blurred.
The Optical Image Stabilizer is not effective.

- The shutter speed will become slower and the Optical Image Stabilizer function may not work properly when taking pictures especially in dark places.
  → We recommend holding the camera firmly with both hands when taking pictures.
  → We recommend using a tripod and the self-timer when taking pictures with a slow shutter speed.

Taking pictures using White Balance Bracket is not possible.

- Is the number of recordable pictures 2 or less?

The recorded picture looks rough.
Noise appears on the picture.

- Is the ISO sensitivity high or the shutter speed slow?
  (ISO sensitivity is set to [AUTO] when the camera is shipped. Therefore, when taking pictures indoors etc. noise will appear.)
  → Decrease the ISO sensitivity.
  → Increase the setting for [NOISE RED.] in [FILM MODE] or lower the setting for each of the items other than [NOISE RED.].
  → Take pictures in bright places.
  → Set the [LONG SHTR NR] to [ON].

The brightness or the hue of the recorded picture is different from the actual scene.

- If recording under fluorescent light, the brightness or the hue may change slightly when the shutter speed becomes fast. This occurs due to the characteristics of fluorescent light. It is not a malfunction.

Reddish horizontal streaks appear on the LCD monitor during recording.

- This is characteristic of MOS sensors which serve as the camera's pickup sensors. It appears when the subject has a bright part. Some unevenness may occur in the surrounding areas, but this is not a malfunction.
  It is recorded in motion pictures but is not recorded on still pictures.
- It is recommended that you take pictures while taking care not to expose the screen to sunlight or any other source of strong light.

Motion picture recording stops in the middle.

- It is recommended to use a card with SD Speed Class□ with "Class 6" or higher when recording motion pictures.

□ SD speed class is the speed standard regarding continuous writing.

- Depending on the type of the card, recording may stop in the middle.
  → When you set the picture quality to [FHD], [HVGA] or [VGA], we recommend using a high-speed card with "10MB/s" or greater displayed on the package.
  → In the event that it stops even after using a "10MB/s" card or higher, the data writing speed has deteriorated so it is recommended to make a backup and then format.

You cannot compensate the exposure.

- Are you in Exposure Compensation operation?
  → Press the front dial to switch to Exposure Compensation operation.

Subject cannot be locked.
(AF tracking not possible)

- Set the AF area to the distinctive color of the subject if there is a part that is different from the surrounding color.

Lens

Recorded image may be warped, or nonexistent color is surrounding the subject.

- Depending on the lens used, picture may be warped slightly or you may see colors along the edge depending on the zoom factor, due to the characteristics of the lens. Also, the peripherals of the image might look warped because the perspective is enhanced when the wide angle is used. This is not a malfunction.

Flash

The flash is not activated.

- Is the flash closed?
  → Slide the [ϟ OPEN] lever to open the flash.

The flash is activated 2 times.

- The flash is activated 2 times. The interval between the first and second flash is longer when Red-eye reduction is set so the subject should not move until the second flash is activated.

LCD monitor/Viewfinder

The LCD monitor turns off although the camera is turned on.

- The LCD monitor turns off when [AUTO LCD OFF] is selected for the [ECONOMY] mode.
  [This does not happen when using the AC adaptor.]
  If the remaining battery power is low, it may take longer for the flash to be charged, and the time during which the LCD monitor is turned off may become longer.
- It will switch to viewfinder display if there is hand or object near the eye sensor.

The LCD monitor/Viewfinder is too bright or dark.

→ Adjust the brightness of the LCD monitor/viewfinder to a proper level.
- [POWER LCD] is activated.

The picture is not displayed on the LCD monitor.

- Does the picture appear on the Viewfinder?
  → Press [LVF/LCD] to switch to LCD monitor display.
- Is the LCD monitor switched off?
  → Switch the display by pressing [DISPLAY].

LCD monitor and viewfinder do not switch when [LVF/LCD] is pressed.

- Is the [EXPO. SETTINGS] set to [SWITCH BY PRESSING THE LVF/LCD BUTTON]?
- It is only displayed on the LCD monitor when the camera is connected to a PC or printer.

Black, red, blue and green dots appear on the LCD monitor.

- This is not a malfunction.
  These pixels do not affect the recorded pictures.

Noise appears on the LCD monitor.

- In dark places, noise may appear to maintain the brightness of the LCD monitor. This does not affect the pictures you are recording.

The LCD monitor flickers indoors.

- The LCD monitor may flicker for a few seconds after turning the camera on indoors under fluorescent light. This is not a malfunction.

A flickering horizontal line appears on the LCD monitor under fluorescent light.

- This is characteristic of MOS sensors which serve as the camera's pickup sensors.
  This is not a malfunction.

You see red, green, or blue flashes when you move your eyes in the viewfinder, or when the camera is moved rapidly.

- This is a characteristic of the drive system of the viewfinder of this unit, and it is not a malfunction. There will be no problem with the recorded image.

Playback

The picture being played back is not rotated, or is rotated in an unexpected direction, when displayed.

- You can display the pictures without being rotated when [ROTATE DISP.] is set to [OFF].

- You can rotate pictures with the [ROTATE] function.
- You can only display the pictures rotated if you use a lens that supports the direction detection function and [ROTATE DISP.] is set to [ON].

The picture is not played back.

- Did you press [▶]?
- Is the card inserted?
- Is there a picture on the card?
- Is this a picture whose file name has been changed in the PC? If it is, it cannot be played back by this unit.

The recorded pictures are not displayed.

- Has [PLAYBACK MODE] been set for playback?
  → Change to [NORMAL PLAY].

The folder number and the file number are displayed as [—] and the screen turns black.

- Is this a non-standard picture, a picture which has been edited using a PC or a picture which was taken by another make of digital camera?
- Did you remove the battery immediately after picture-taking or did you take the picture using a battery with a low remaining charge?
  → Format the data to delete the pictures mentioned above.
  (Other pictures will be deleted as well and it will not be possible to restore them. Therefore, check well before formatting.)

Images with different date as recorded date are played back in the Calendar Playback.

- Is the clock in the camera set properly?
- Images edited on a PC or images recorded on other cameras might display a different date to the recorded date during the Calendar Playback.

White round spots like soap bubbles appear on the recorded picture.

- If you take a picture with the flash in a dark place or indoors, white round spots may appear on the picture caused by the flash reflecting of particles of dust in the air. This is not a malfunction.
  A characteristic of this is that the number of round spots and their position differ in every picture.

[THUMBNAIL IS DISPLAYED] appears on the screen.

- Is it a picture that has been recorded with other equipment? In such cases, these pictures may be displayed with a deteriorated picture quality.

Red part of the recorded image has changed color to black.

- When the flash is set to red-eye reduction ([ϟA👁], [ϟ👁], [ϟS👁]) and if you take a picture of subject with red color surrounded by a skin tone color, that red part may be corrected to black by the digital red-eye reduction function.
  → It is recommended to take pictures with the [D.RED-EYE] set to [OFF].

A clicking sound is recorded in the motion pictures.

- This unit automatically adjusts the aperture during motion picture recording. A clicking sound may occur at this time depending on the lens, and this sound may be recorded on the motion pictures. This is not a malfunction.
- The operational sound of the zoom or button operation may be recorded when it is operated during the recording of a motion picture.

TV, PC and printer

The picture does not appear on the television.

- Is the camera connected to the TV correctly?
  → Set the TV input to external input mode.
- Output from the [HDMI] socket is not possible when it is connected to the PC or the printer.
  → Connect it only to the TV.

The display areas on the TV screen and the camera's LCD monitor are different.

- Depending on the TV model, the pictures may be extended horizontally or vertically or they may be displayed with their edges cut off.

The motion pictures cannot be played back on a TV.

- Are you trying to play back the motion pictures by directly inserting the card in the card slot of the TV?
  → Connect the camera to the TV with the AV cable (supplied), or with the HDMI mini cable (optional), and then play back the motion pictures on the camera.
  → Motion pictures recorded in [AVCHD] can be played back on Panasonic televisions (VIERA) with the AVCHD logo.

The picture is not displayed fully on the TV.

→ Check [TV ASPECT] setting.

VIERA Link does not work.

- Is it connected properly with the HDMI mini cable (optional)?
  → Confirm that the HDMI mini-cable (optional) is firmly fitted.
  → Press [▶] on this unit.
- Is the [VIERA Link] on this unit set to [ON]?
  → Depending on HDMI terminal of the TV, the input channel may not switch automatically. In this case, use the remote control for the TV to switch input. (For details on how to switch input, please read the operating instructions for the TV.)
  → Check the VIERA Link setting on the connected device.
  → Turn the power to the unit off and then back on again.
  → Set [VIERA Link] to [Off] on the TV and then turn it back to [On]. (Refer to the operating instructions of the TV for details.)

The picture cannot be transferred when the camera is connected to a PC.

- Is the camera connected to the PC correctly?
- Is the camera recognized by the PC correctly?
  → Set to [PC] in [USB MODE].

The card is not recognized by the PC.

→ Disconnect the USB connection cable. Connect it again while the card is inserted in the camera.

The picture cannot be printed when the camera is connected to a printer.

- Pictures cannot be printed using a printer which does not support PictBridge.
  → Set to [PictBridge(PTP)] in [USB MODE].

The ends of the pictures are cut at printing.

→ When using a printer with a trimming or borderless printing function, cancel this function before printing. (For details, refer to the operating instructions for the printer.)
→ When you order photo studios to print pictures, ask the photo studio if the pictures can be printed with both ends.

Others

There is a sound from lens unit.

- It is a sound of lens movement or aperture operation when the power is turned [ON] or [OFF], and it is not a malfunction.
- You may hear a sound from the lens and image in the LCD monitor may suddenly change when the brightness has changed by zoom operation or moving the camera, but there is no effect on recording.
  The sound is caused by the automatic adjustment of the aperture. This is not a malfunction.

An unreadable language was selected by mistake.

→ Press [MENU/SET], select the [SETUP] menu icon [🔧] and then select the [🌐] icon to set the desired language.

Part of the picture is flashing in black and white.

- This is a highlight function showing the white saturated area.
- Is the [HIGHLIGHT] set to [ON]?

A red lamp sometimes turns on when the shutter button is pressed halfway.

- In dark places, the AF assist lamp lights red to make it easier to focus on a subject.

The AF assist lamp does not turn on.

- Is [AF ASSIST LAMP] on the [CUSTOM MENU] menu set to [ON]?
- The AF assist lamp does not turn on in bright places.

The camera becomes warm.

- The surface of the camera and the reverse side of the LCD monitor may become warm during use. This does not affect the performance or quality of the camera.

The clock is reset.

- If you do not use the camera for a long time, the clock may be reset.
  → When the message [PLEASE SET THE CLOCK] appears, set the clock again. When you take a picture before setting the clock, [AM12:00 0. 0. 0] is recorded.

The file numbers are not recorded consecutively.

- When you perform an operation after taking a certain action, the pictures may be recorded in folders with different numbers from the ones used prior to the operation.

The file numbers are recorded in ascending order.

- If the battery was inserted or removed without first turning the camera's power off, the folder and file numbers for the pictures taken will not be stored in the memory. When the power is then turned back on and pictures are taken, they may be stored under file numbers which should have been assigned to previous pictures.

Age is not displayed correctly.

- Check the clock and birthday settings.

About the Battery

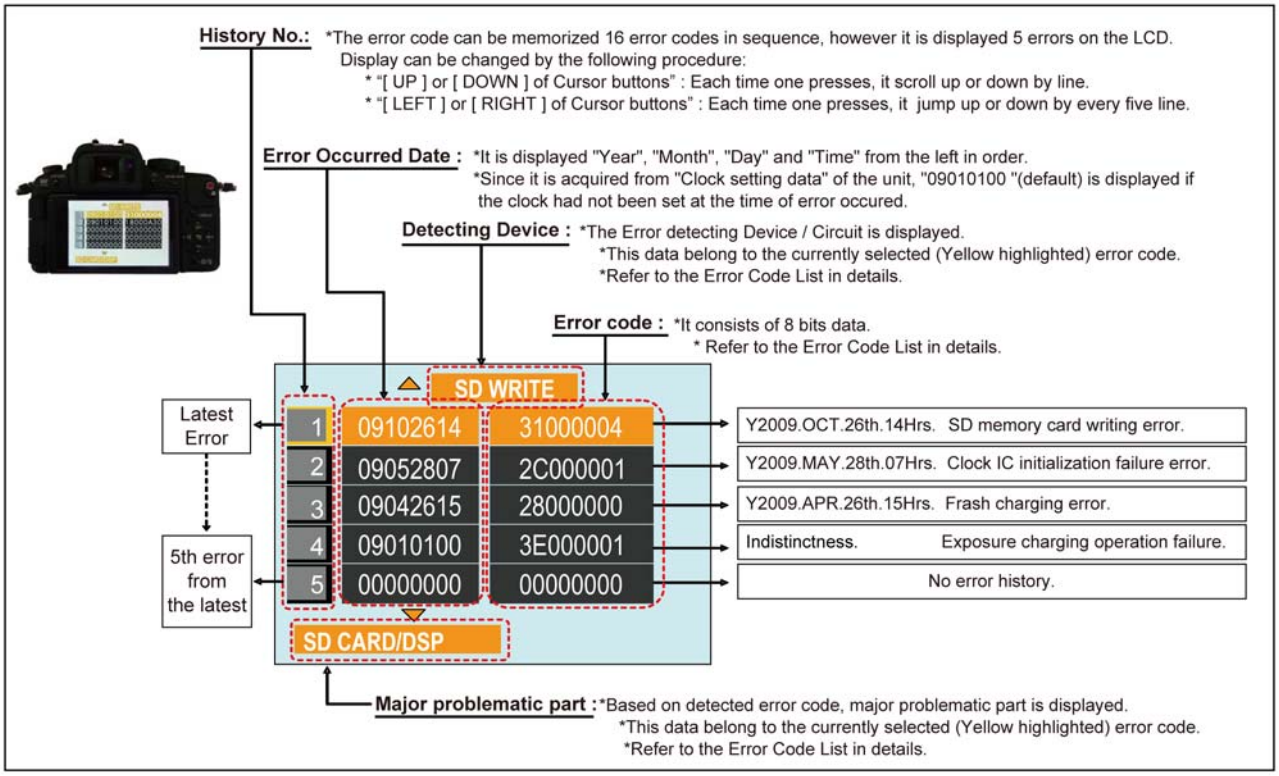
- **This unit has a function that can distinguish useable batteries. Exclusive batteries are supported by this function. (Conventional batteries not supported by this function cannot be used)**

It has been found that counterfeit battery packs which look very similar to the genuine product are made available to purchase in some markets. Some of these battery packs are not adequately protected with internal protection to meet the requirements of appropriate safety standards. There is a possibility that these battery packs may lead to fire or explosion. Please be advised that we are not liable for any accident or failure occurring as a result of use of a counterfeit battery pack. To ensure that safe products are used we would recommend that a genuine Panasonic battery pack is used.

6 Service Mode

6.1. Error Code Memory Function

1. **General description**
   This unit is equipped with history of error code memory function, and can be memorized 16 error codes in sequence from the latest. When the error is occurred more than 16, the oldest error is overwritten in sequence.
   The error code is not memorized when the power supply is shut down forcibly.
   (i.e., when the unit is powered on by the battery, the battery is pulled out)
   The error code is memorized to FLASH ROM when the unit has just before powered off.
2. **How to display**
   The error code can be displayed by ordering the following procedure:
   - Preparation
     Attach the Battery or Battery Charger/AC Adaptor which is connected the DC Cable, and insert the SD memory card.
   - **1. The temporary cancellation of initial setting:**
     Set the Drive mode lever to [SINGLE].
     While keep pressing [DISPLAY] and [FILM MODE] buttons simultaneously, turn the Power on.
   - **2. The display of error code:**
     Press [FILM MODE], [MENU/SET] and "[LEFT] of Cursor buttons" simultaneously with the step 1 condition.
     The display is changed as shown below when the above buttons is pressed simultaneously.
     Normal display → Error code display → Operation history display → Normal display → .....



Example of Error Code Display

• **3. Error Code List:**

The error code consists of 8 bit data and it shows the following information.

Attribute	Main item	Sub item	Error code		Contents (Upper line)	Error Indication	
			High 4 bits	Low 4 bits		Detecting device	Problematic Part/Circuit
LENS	Lens	Communication	18*0	0000 | FFFF	Lens communication error.	(No indication)	(No indication)
HARD	VENUS A/D	Flash	28*0	0000	Flash charging capacitor did not been fully charged within 20 seconds.	STRB CHG	STRB PCB/FPC
	FLASH ROM	Data Area	2B*0	0001	Flash ROM data reading error is detected when the unit turns ON.	FROM RE	FROM
				0002	Flash ROM data writing error is detected when the unit turns OFF.	FROM WR	FROM
		Program Area		0005	Firmware update error.	(No indication)	(No indication)
	SYSTEM IC	Initialization	2C*0	0001	Clock IC initialization failure error.	SYS INIT	MAIN PCB
SOFT	CPU	Reset	30*0	0001 | FFFF	System error (NMI reset).	NMI RST	MAIN PCB
	Recording Media	SD Memory Card	31*0	0001	SD memory card logic error. SD memory card format error. When it is detected, [MEMORY CARD ERROR FORMAT THIS CARD?] is displayed on the screen.	SD CARD	SD CARD/DSP
				0002	SD memory card physical error. During formatting the SD memory card, there is no response from the card. If the mini-SD memory card is used, check the SD memory card adaptor.		SD CARD/DSP
				0004	SD memory card writing error. Check the SD memory card. It might be damage one.	SD WRITE	SD CARD/DSP
	System	System	35*0	0001 | FFFF	System error.	DSP	DSP
			35*1	0000	Though record preprocessing is necessary, it is not called.	(No indication)	(No indication)
			35*2	0000	Though record preprocessing is necessary, it is not completed.		
	Lens	ZOOM	3C*0	0000	Zoom process does not be completed.		
	Camera	System	3B*0	0000	Initialization failure.	INIT	(No indication)
			3E*0	0001	Exposure charging operation failure.	(No indication)	(No indication)
				0002	Failure of the returning operation to the home position.		
	Recording	Motion Image Recording	3F*0	0001	File time out error in recording motion image.		
				0002	File data cue send error in recording motion image.		

Important notice about “Error Code List”

About "*" indication:

The third digit from the left is different as follows.

- In case of 0 (example: 2B**0**01000)
  When the third digit from the left shows “0”, this error occurred under the condition of INITIAL SETTINGS has been completed.
  It means that this error is occurred basically at user side.
- In case of 8 (example: 2B**8**01000)
  When the third digit from the left shows "8", this error occurred under the condition of INITIAL SETTINGS has been released.
  (Example; Factory assembling-line before unit shipment, Service mode etc.)
  It means that this error is occurred at service side.

• **4. How to exit from Error Code display mode:**

Simply, turn the power off. (Since Error Code display mode is executed under the condition of temporary cancellation of “INITIAL SETTINGS”, it wake up with normal condition when turn off the power.)

NOTE:

The error code can not be initialized.

7 Troubleshooting Guide

1.INITIAL (DEFAULT) STATUS OF THE LENS UNIT

The Lens unit which is supplied as a standard accessory for this camera unit (H-VS014140) shows the following status when the Lens is detached from the Camera unit.

NOTE: Although the lens unit is attached it shows the same condition when the Camera turns off.

[1].ZOOM RING ..... When the Zoom ring is rotated, Zoom condition is changing accordingly.
[Focal length : 14mm to 140mm [35mm film camera equivalent: 28mm to 280mm]]

[2].FOCUS RING ..... The Focus condition does not changed although Focus ring is rotated. (Free rotation.)

2.INITIAL INSPECTION TIPS (BEFORE DETERMINE THE UNIT BEING FAULTY/DEFECTIVE):

Since this unit is equipped with various functions/settings, some phenomenon/effect might be caused by miss usage of function and/or settings.

It might be made a miss-judgement caused by miss usage of function & settings although the unit is working properly without fault.

Therefore, check/confirm the followings before concluding/determine the unit being faulty/defective.

NOTE: Refer to the Operating Instructions carefully.

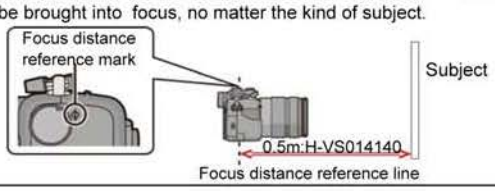
Also, useful hint/tips for this unit is available at following URL, and is updated frequently.
http://panasonic.jp/support/global/cs/dsc/

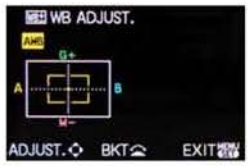
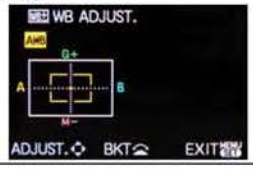
If it is hard to determine whether the resolution is out of specification or not, proceed the **"RESOLUTION INSPECTION"**, before replacing the LENS MAIN BLOCK UNIT and/or MOUNT BOX BLOCK. (The unit might be mishandling, dropping or others.)

[1]. [LENS RELATIVES]

<table>
<tr><th>TITLE</th><th>ITEMS</th><th>DESCRIPTION</th></tr>
<tr><td rowspan="6">LENS</td><td>Aperture size does not changed.
(Although aperture value is changed, the physical size of aperture is never changed.)</td><td>*Although aperture value is changed, the physical size of aperture is never changed (It keeps the maximum aperture condition) until the shutter release button is fully released.
(There is no "aperture stopping down" button and/or function. But instead, there is a shutter speed preview mode.)
!! [CUSTOM] menu (2/5) ---- [PREVIEW HOLD] (ON/OFF)</td></tr>
<tr><td>The Aperture condition does not changed.
(Aperture value shows "F0.0")</td><td>*The Lens & Body are communicating (serial communication) through mount contacts (11pins)].
*Confirm that lens & body mount contacts are not dirty.
*While keep pressing the [Lens release] button, it makes same situation that Lens does not attached.
*Although lens is attached to the body, the Aperture value shows "F0.0" when the communication error is occurred. Also, when the firmware version confirmation mode is executed, the [- -] is displayed as Lens firmware version.
 
Aperture value is fixed at [F0.0]
 
Firmware version shows [LENS FIRMWARE : -.-]
  </td></tr>
<tr><td>Although the Focus ring is rotating, it does not change the Focus condition.</td><td>*The Focus condition is never changed although focus ring is rotated when the Focus mode dial is positioned at AFS or AFC.
(When the [AF + MF] is set to [ON], it is able to fine adjust the focus manually by rotating the focus ring while AF lock.)
!![CUSTOM] menu (3/5)------AF + MF (ON/OFF)</td></tr>
<tr><td>No released without lens attachment.</td><td>*It is able to release the shutter button without attaching the lens unit.
!! [CUSTOM] menu (5/5) ---- [SHOOT W/O LENS] (ON/OFF)</td></tr>
<tr><td>The Dusty and/or dirty of the Lens</td><td>*Define the location of the dirt / dust of the lens first, whether it is outside surface of the lens or not.
If it is outside surface of the lens, order the following procedure in steps.
STEP-1. Blow off the dust certainly with Hand Blower.
STEP-2. Clean and wipe up the Lens surface by using the Lens cleaning Kit (VFK1900BK).
(Read/consult the instruction sheet being included in the Lens cleaning Kit in details.)
[Wiping up the lens surface]
 
Like drawing the circle, wipe up the lens surface centre towards to outside slowly.</td></tr>
<tr><td>It does not become the Shutter speed [B] (Bulb) mode.</td><td>*It is only able to select the shutter speed to [B](Bulb) when mode dial is set to [M] (Manual) and drive mode lever is [SINGLE] position.
([B] mode: the shutter stays open while the shutter button is pressed fully (up to about 4 minutes). The shutter closes if you release the shutter button.)</td></tr>
</table>

[2]. [BODY RELATIVES]

TITLE	ITEMS	DESCRIPTION
FOCUS	The picture is out of focus although the focus is adjusted in MF mode at once.	*In the following conditions, the focus may be out of focus, no matter the kind of subject. Therefore, adjust the focus again by rotating the Focus ring. *After "in-focus" condition, Zoom condition has been changed. *Power switch is turned OFF and ON again. *After releasing the Power save.
	Focus does not become in focus condition.	*If the shooting distance is less than the Minimum requirement distance for focus, the focus may not be brought into focus, no matter the kind of subject. 
	MF(Manual Focus)ASSIST does not work.	*The MF assist function is that the certain area image is able to enrage 5 times to make easier to focus. (It is enraged from 5times to 10 times when the front dial is rotated clockwise.) *It does not activated if the [Focus Mode Dial] is positioned other than [MF] position. *It does not activated when using the Digital Zoom. *It does not activated if [MF ASSIST] is set to OFF. !! [CUSTOM] menu (4/5) ---- [MF ASSIST] (ON/OFF) (To display the MF assist, press Left cursor button then press [MENU/SET].
	Face detection does not work.	*Select AF mode to face detection. (In [IA]mode, it is automatically assigned according with scene.) (Press the left side cursor button to display the AF mode menu.) *It does not activated when using the Digital Zoom. *It does not activated if the focus mode dial set to MF.
	The subject is not focused properly.	*When get a fingerprint, dirt on the lens surface, resulting in the subject being out of focus. *The subject is beyond the focus range of the camera. *There is camera shake (jitter) or the subject is moving slightly. *The focus indication green mark is lights at the top right hand corner on the LCD when the subject is focused. *The shutter speed will become slower and the optical image stabilizer function may not work properly when taking pictures especially in dark places.
	Focus does not change.	*Focus & Exposure condition is locked when the [AF / AE LOCK] button is pressed under the condition of [AF/AE LOCK HOLD] is "On". !![CUSTOM] menu (2/5)------[AF/AE LOCK HOLD] (ON/OFF) *It can be reset when [AF / AE LOCK] button is pressed again.
	Although [AF/AE LOCK] button is pressed, it does not hold the Focus, only Exposure is locked.	*Focus does not hold even if [AF/AE LOCK] button is pressed if the [AF/AE LOCK] is selected [AE]. !![CUSTOM] menu (2/5)------[AF/AE LOCK] (AE, AF, AF/AE) *In the Manual Focus condition, It is only worked as [AE lock] function.
	It does not turn to the "AFC" mode. (Motion prediction does not work.)	*Confirm the setting position of the focus mode dial (AFS / AFC / MF). *Although AFC is effective with burst mode, the focus is fixed on the first picture when subject is dark.
Flash	GN (Guide Number) of the Built in Flash (Specification GN11.0)	*By referring the specification of the built-in flash is GN11.0 (equivalent) * There is a formula : F value X Flash reachable distance = GN [ISO100] (In case of: H-VS014140) ISO100 / Wide edge Aperture is F4.0 / Flash reachable distance is 2.7m [4.0 X Approx 2.7 = 10.8---- "GN11"] ISO100 / Tele edge Aperture is F5.8 / Flash reachable distance is 1.8m [5.8 X Approx 1.8 = 10.44---- "GN11"]
	Some of the Flash setting(s) are not able to select.	*In accordance with the [REC] mode and [FLASH SYNC.] mode, selectable flash settings may be differ.
	[AUTO BRACKET] does not work.	*Only one picture can be taken when the Flash is fired.
	The subject is too bright / too dark with Flash.	*Confirm that the picture is taken within Flash range or not. *Confirm that flash output settings. !![REC] menu (2/5) ------FLASH ADJUST. (1/3 EV Step, -2EV to +2EV)
	The Flash adjustment does not effect.	*Confirm that the picture is taken within Flash range or not.
	White round spots appear on the recording picture	*If you take a picture with flash in a dark place or indoors, white round spots may be appear on the picture caused by the flash reflecting of particles of dust in air. This is not a malfunction. *A characteristic of this is that the number of round spots and their position differ in every picture. 

TITLE	ITEMS	DESCRIPTION
Flash	Colour is strange when the Flash is fired.	*The colour of the subject which is other than Flash reachable distance is not coverage of white balance. *Confirm that [WB Adjustment] setting condition. (Press the cursor [RIGHT] (WB) button, then press the cursor [DOWN]button, in order to execute the [WB ADJUST.] screen. *It also effects to the Flash recording mode as well. 
	The appearance of the light source is strange. (The light source appears ahead the subject.)	*Normally, the light source appears ahead the subject. (This is the effect of the 1st curtain synchro.) *The Flash synchro mode can be selected. !![REC]menu (2/5) ---- [FLASH SYNC.](1ST / 2ND)  <1st Curtain Sync><2nd Curtain Sync>
EXPOSURE	The Exposure condition can not be changed	*Focus & Exposure condition is locked when the [AF/AE LOCK] button is pressed under the condition of [AF / AE LOCK HOLD] is "On". !![CUSTOM] menu (2/5)------AF / AE LOCK HOLD (ON/OFF) *It can be reset when [AF/AE LOCK] button is pressed again.
	Although [AF/AE LOCK] button is pressed, only focus is locked. (AE is not locked)	*Focus does not hold even if [AF/AE LOCK] button is pressed if the [AF/AE LOCK] is set to [AF]. !![CUSTOM] menu (2/5)------[AF/AE LOCK] settings (AE, AF, AF/AE) *In the Manual Focus condition, It is only worked as [AE lock] function, regardless any settings.
	The pictures recorded with [AUTO BRACKET] function are too dark/bright.	*The [AUTO BRACKET] is selected after setting the [EXPOSURE COMPENSATION], the compensated value is effected for its reference value.
	The Exposure condition is changed extremely.	*Spot metering mode is measuring only the limited narrow area on the centre of the screen. *Confirm the setting condition of [EXPOSURE COMPENSATION] (1/3 EV Step, -3EV to +3EV)
CAPTURING	Although shutter is released, no picture is captured.	*Although the shutter button is fully pressed, it can not take a picture until the subject is not focused. (It is able to take a picture when the Focus Priority turns [OFF] although focus condition does not perfect.) OFF is gives priority to the best time to take a picture. !![CUSTOM] menu (3/5)------FOCUS PRIORITY (ON/OFF)
	[AUTO BRACKET] does not work.	*Only single picture is able to captured when flash is fired. *It can not be used in My colour mode. *The exposure may not be compensated with auto bracket depending on the brightness of the subject.
COLOUR REPRODUCTION	Colour is strange.	*There is a possibility that [Finely adjusting the white balance] is selected/shifted. *Confirm that [WB Adjustment] setting condition. (Press the cursor [DOWN] (WB) button, then after choosing the WB mode press the cursor [DOWN](WB) button, in order to execute the [WB ADJUST.] screen.) *It is resumed/memorized although power turns off/on. *Confirm that Film mode, especially, [MY FILM1 &2] settings. 
	Colour is strange. (With Flash)	*The flash light does not reach enough to the subject due to the over than flash reachable distance. In this case, white balance may be other than its coverage.
	The colour is strange (On PC monitor/ Printout image.)	*There is a possibility that the picture is captured with [AdobeRGB] setting. !! [REC] menu (4/5) ---- [COLOUR SPACE] (sRGB/AdobeRGB) *To proceed proper colour reproduction for AdobeRGB, the AdobeRGB capable PC and Printer are necessary. *In accordance with PC environment, it may not be displayed properly when the picture is re-sized with business software.
POWER	The Power is turned off.	*Confirm that the setting condition of [POWER SAVE]. (If the camera has not been used for the time selected on the setting, the power turns off automatically.) !![SETUP] menu (1/5)------[ECONOMY] [POWER SAVE](OFF/1MIN./2 MIN./5 MIN./10 MIN.)
DISPLAY	Abnormal Picture Effect. Certain part of the picture is flashing in Black & White.	*Confirm that the setting condition of [HIGHLIGHT]. !![SETUP] menu (2/5)------[HIGH LIGHT] (ON/OFF) The white saturated areas appear blinking in Black and White.
	Firmware version	*Confirm that the firmware versions of the camera and lens to be checked. !![SETUP] menu (4/5)------[VERSION DISP.]

MENU LIST
(Quick Reference)

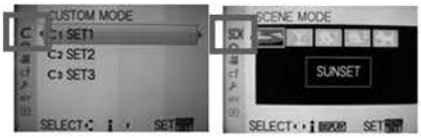
The following menu items are displayed on the LCD monitor.

	[REC]	[MOTION PICTURE]	[CUSTOM MENU]	[SETUP]	[MY MENU]	[PLAYBACK]
1st Pag						
2st Pag						
3st Pag						
4st Pag						
5st Pag						

REMARKS:

*When the mode dial is set to [Intelligent Auto Mode], as for [REC], [MOTION], [CUSTOM MENU] and [SETUP], only the basic item is displayed.

*When the mode dial is set to [CUSTOM] or [SCN(SCENE)], extra-menu groups are displayed.



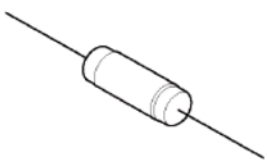
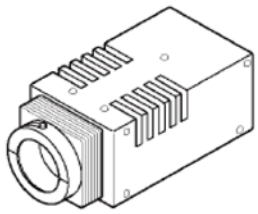
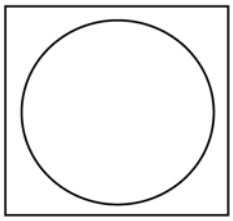
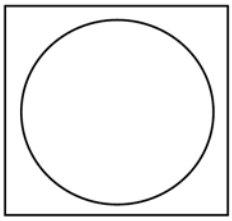
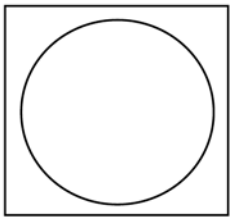
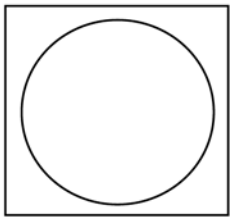
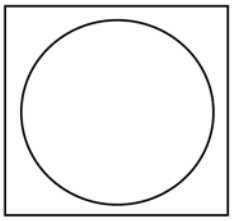
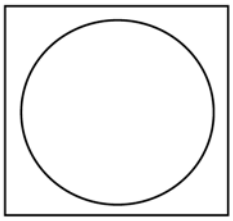
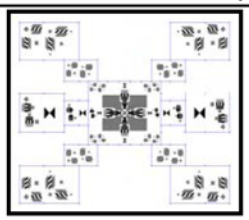
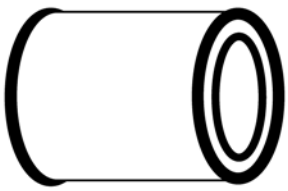
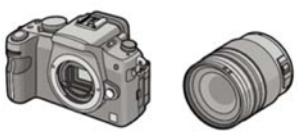
NOTE:

*When set [MENU RESUME] in the [CUSTOM MENU] menu to [ON], the screen shows the last selected menu item when the camera is turned off.

8 Service Fixture & Tools

8.1. Service Fixture and Tools

The following Service Fixture and tools are used for checking and servicing this unit.

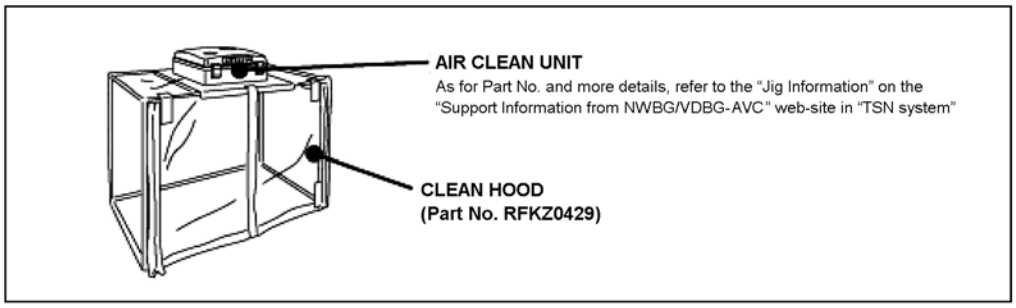
Resistor for Discharging ERG5SJ102	LIGHT BOX VFK1164TDVLB	ND FILTER RFKZ0513
 **An equivalent type of Resistor may be used.**	 **※ with DC Cable**	
CC FILTER 1 RFKZ0511	CC FILTER 2 RFKZ0512	LB FILTER 1 RFKZ0520
		
LB FILTER 2 RFKZ0521	GRAY CARD RFKZ0506	RESOLUTION CHART RFKZ0510
		 ※Supplied as divided chart parts. (Assemble it before use.)
Lens Cleaning Kit (BK) VFK1900BK	NAME RING FIXTURE RFKZ0423	TORQUE DRIVER RFKZ0456
 *** Only supplied as 10 set/box.**		 Spec.:2-30N・cm (Equiv.0.2-3kgf/cm)
Driver VFK1390	DMC-G1K Standard model	
	*Correspond by the marketed commodity. (It does not supply as service fixture and tools.) 	

8.2. Clean Box

- The repair quality is considered, and it is recommended working in the environment of satisfied clean level less than class 10,000 (Federal Standard 209D).
  (When remove the food adaptor and 1st lens frame, it is indispensable.)

[NOTE]

- Work in the environment of satisfied clean level less than class 10,000 (Federal Standard 209D) when remove the food adaptor and 1st lens frame for cleaning.
  *Refer to "11.2. General description (Lens cleaning)" section of this service manual for details.



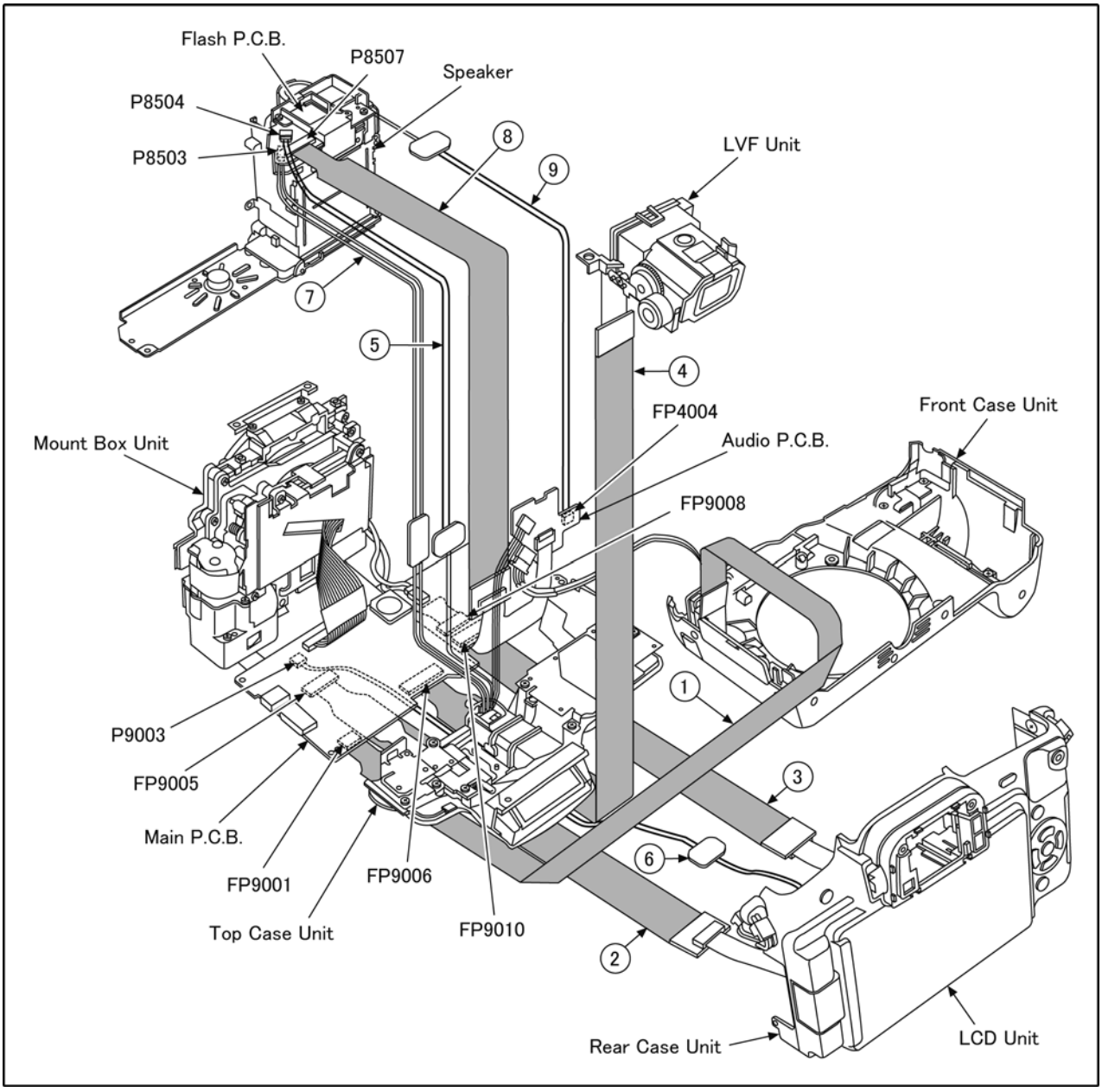
*Refer to the "Jig Information" on the "Support Information from NWBG/VDBG-AVC" web-site in "TSN system" for details.

8.3. 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	VFK1441	FP9001 (MAIN) - FP7701 (AF ASSIST), FP7351 (REMOTE)	8PIN 0.5 FFC
2	VFK1950	FP9005 (MAIN) - FP7201 (LCD IF)	33PIN 0.3 FFC
3	VFK1443	FP9008 (MAIN) - REAR OPERATION UNIT	18PIN 0.5 FFC
4	RFKZ0477	FP9006 (MAIN) - LVF UNIT	45PIN 0.3 FFC
5	VFK1576DC202	P8504 (FLASH) - FLASH UNIT	2PIN CONNECTOR
6	VFK1576DC202	P9003 (MAIN) - CL4901/CL4902 (HINGE SW)	2PIN CONNECTOR
7	RFKZ0359	P8503 (FLASH) - FLASH UNIT	2PIN CONNECTOR
8	VFK1282	P8507(FLASH) - FP9010 (MAIN), FP4001 (AUDIO)	22PIN 0.5 FFC
9	VFK1576DC202	FP4004 (AUDIO) - SPEAKER	2PIN CONNECTOR

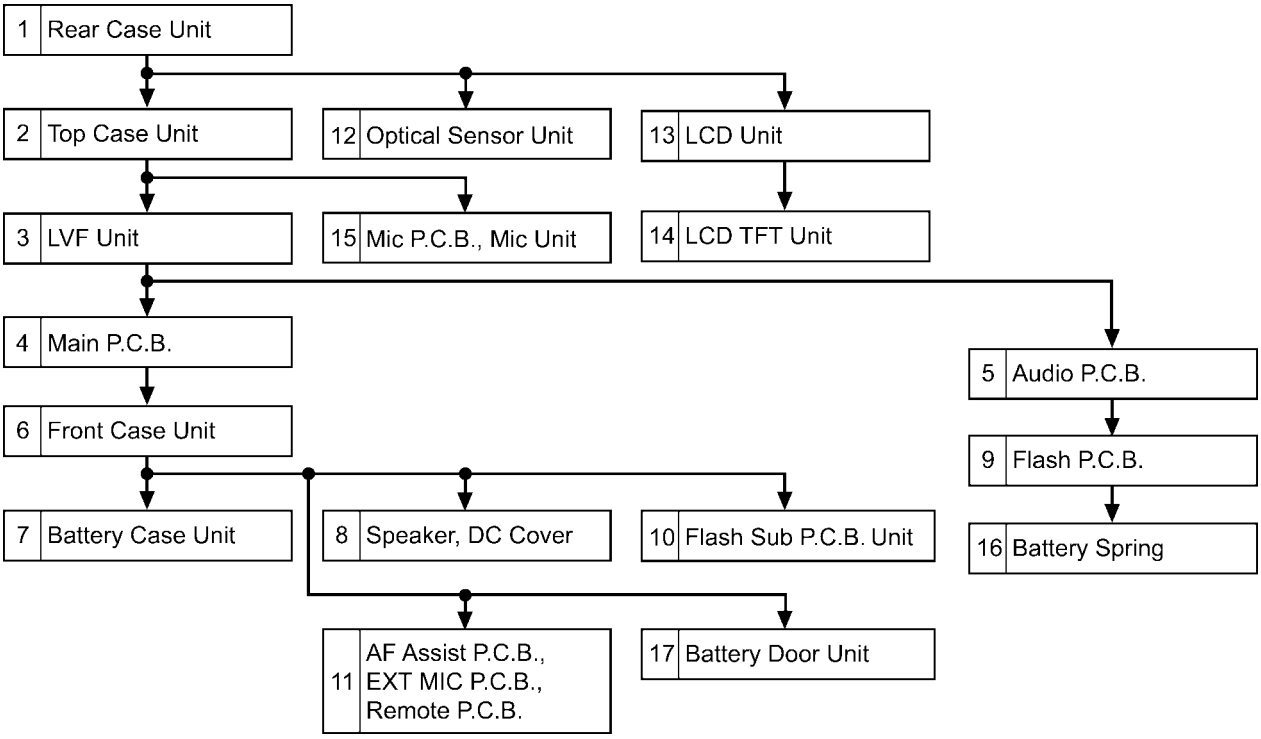


CAUTION-1. (When servicing FLASH SUB PCB)

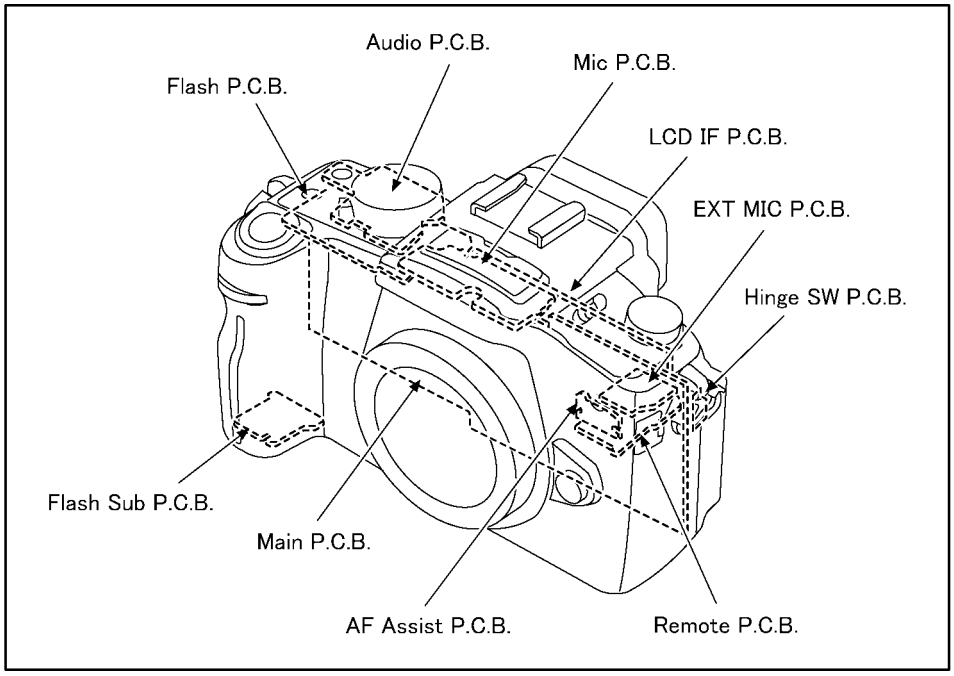
1. Be sure to discharge the capacitor on FLASH SUB PCB.
   Refer to “HOW TO DISCHARGE THE CAPACITOR ON FLASH SUB PCB”.
   The capacitor voltage is not lowered soon even if the AC Cord is unplugged or the battery is removed.
2. Be careful of the high voltage circuit on FLASH SUB PCB.
3. DO NOT allow other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

9 Disassembly and Assembly Instructions

9.1. Disassembly Flow Chart



9.2. PCB Location



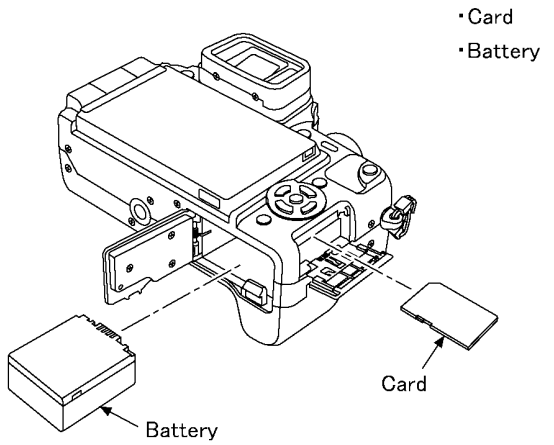
9.3. Disassembly Procedure

No.	Item	Fig	Removal
1	Rear Case Unit	(Fig.D1)	3 Screws (A)
			1 Screw (B)
			3 Screws (C)
			4 Screws (D)
		(Fig.D2)	Eye Cap Unit
			2 Screws (E)
			FP9005(Flex)
			FP9008(Flex)
			P9003(Connector)
			Rear Case Unit
2	Top Case Unit	(Fig.D3)	2 Screws (F)
			FP9002(Flex)
			FP9007(Flex)
			1 Screw (G)
			1 Screw (H)
			FP4002(Connector)
			P8503(Connector)
			P8504(Connector)
			Top Case Unit
3	LVF Unit	(Fig.D4)	FP9006(Flex)
			2 Screws (I)
			LVF Unit
4	Main P.C.B.	(Fig.D5)	1 Screw (J)
			Jack Holder
			FP9001(Flex)
			FP9003(Flex)
			FP9009(Flex)
			FP9010(Flex)
			FP9004(Flex)
			P9001(Connector)
			Main P.C.B.
5	Audio P.C.B.	(Fig.D6)	1 Screw (K)
			FP4001(Flex)
			FP4003(Connector)
			FP4004(Connector)
			Audio P.C.B.
6	Front Case Unit	(Fig.D7)	1 Screw (L)
			Main P.C.B. Flex. Plate
			FP8505(Flex)
		(Fig.D8)	Body Cap
			4 Screws (M)
			1 Screw (N)
			1 Screw (O)
			1 Screw (P)
			Front Case Unit
7	Battery Case Unit	(Fig.D9)	1 Screw (Q)
			Battery Case Unit
8	Speaker DC Cover	(Fig.D10)	2 Screws (R)
			Side Plate (L)
		(Fig.D11)	1 Rib
			Speaker
			DC Cover
9	Flash P.C.B.	(Fig.D12)	2 Screws (S)
			P8507(Flex)
		(Fig.D13)	2 Locking tabs
			Audio P.C.B. Holder
			P8502(Connector)
			Solder (4 points)
			Flash P.C.B.

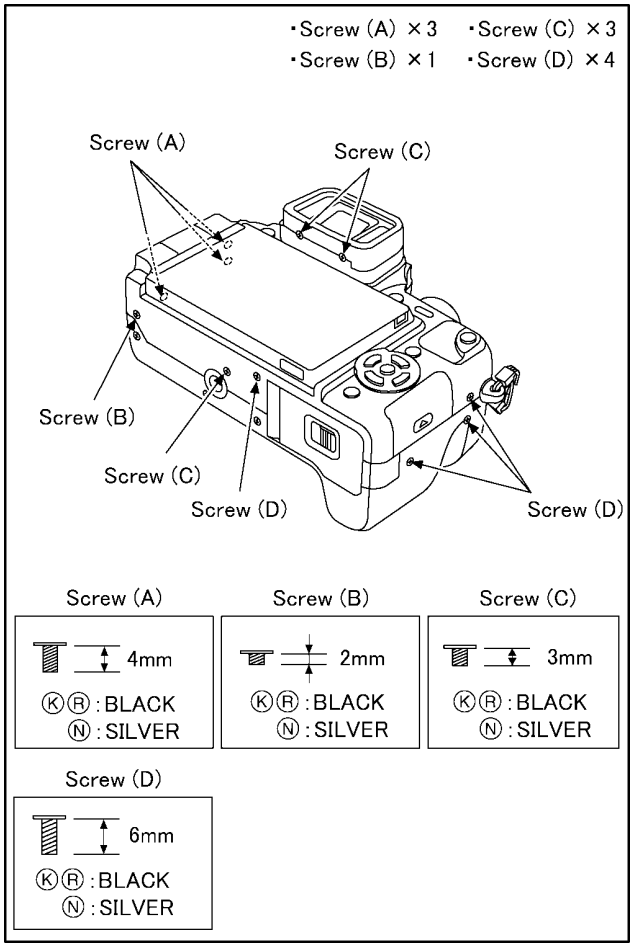
No.	Item	Fig	Removal
10	Flash Sub P.C.B. Unit	(Fig.D14)	1 Rib
			P8502(Connector)
			2 Ribs
		(Fig.D15)	Battery Lock Spring
			Battery Lock Knob
			Flash Sub P.C.B. Unit
11	AF Assist P.C.B. EXT MIC P.C.B. Remote P.C.B.	(Fig.D16)	FP7701(Flex)
			2 Screws (T)
			Jack Cover
			Remote Cover
			AF Light Case
			Side Frame (R)
			AF Assist P.C.B.
		(Fig.D17)	2 Screws (U)
			Remote Holder
			EXT MIC P.C.B.
			Remote P.C.B.
12	Optical Sensor Unit	(Fig.D18)	Flex
			1 Screw (V)
			1 Screw (W)
			Eye Piece Plate
			Optical Sensor Unit
13	LCD Unit	(Fig.D19)	2 Screws (X)
			FPC Cover
			1 Hanging part
		(Fig.D20)	2 Ribs
			Hinge Arm Cover Top
			Hinge Arm Cover Bottom
			2 Screws (Y)
			LCD Unit
14	LCD TFT Unit	(Fig.D21)	2 Screws (Z)
			2 Screws (a)
			LCD Case Bottom
			LCD Hinge Unit
			LCD IF P.C.B.
			LCD BL Bezel Sheet
			LCD Shield Case Unit
			LCD Shield Case Top Unit
			LCD TFT Unit
15	Mic P.C.B. Mic Unit	(Fig.D22)	2 Screws (b)
			2 Locking tabs
			Flash Case Top Unit
			1 Screw (c)
		(Fig.D23)	FP4201(Connector)
			FP4202(Flex)
			1 Screw (d)
			3 Locking tabs
			Mic Dumper
			Mic Plate
			Mic P.C.B.
			Mic Unit
16	Battery Spring	(Fig.D24)	3 Locking tabs
			Battery Plate
			Battery Catcher
			Battery Spring
17	Battery Door Unit	(Fig.D25)	Battery Door Shaft
			Battery Door Spring
			Battery Door Unit

NOTE:

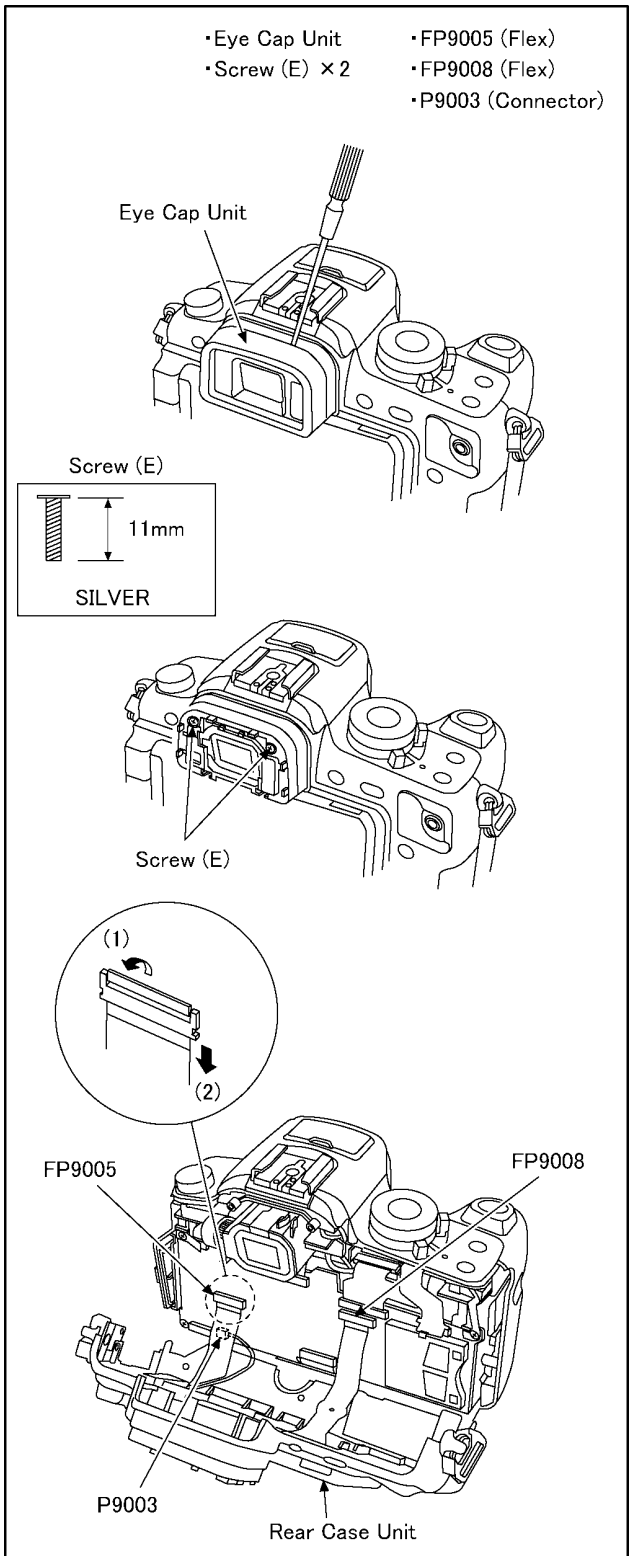
- When servicing and reassembling, remove the card and battery from the unit.
- Install the body cap, except when it is necessary to prevent garbage and dust.



9.3.1. Removal of the Rear Case Unit



(Fig.D1)



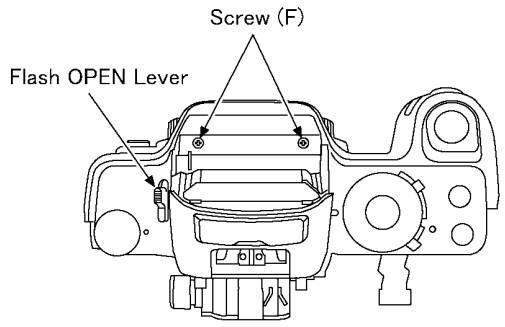
NOTE: (When Replacing)

When remove the flex, pull up the locking tab in the direction of arrow (1), and then remove the flex in the direction of arrow (2).

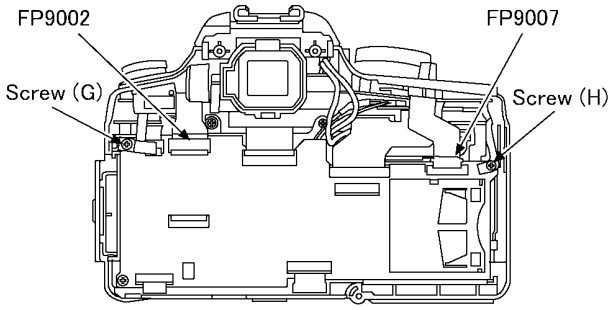
(Fig.D2)

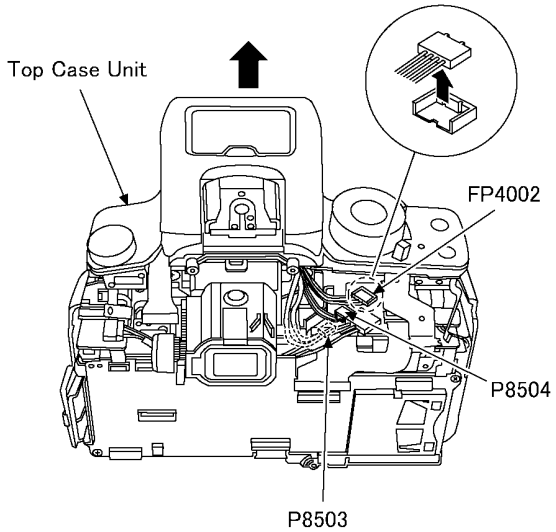
9.3.2. Removal of the Top Case Unit

・Screw (F) × 2
・FP9002(Flex)
・FP9007(Flex)
・Screw (G) × 1
・Screw (H) × 1
・FP4002 (Connector)
・P8503 (Connector)
・P8504 (Connector)



NOTE: (When Replacing)
• Pull the flash open lever, and then open the flash.



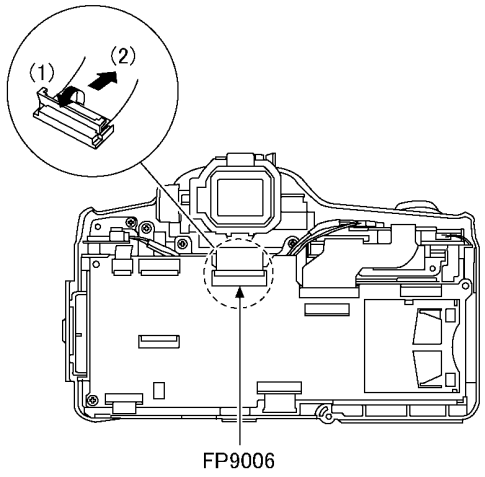


Screw (F)	Screw (G)	Screw (H)
6mm	2mm	4mm
BLACK	SILVER	SILVER

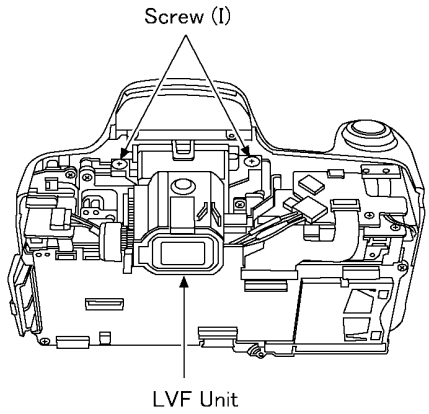
(Fig.D3)

9.3.3. Removal of the LVF Unit

・FP9006 (Flex)
・Screw (I) × 2



NOTE: (When Replacing)
When remove the flex, pull up the locking tab in the direction of arrow (1), and then remove the flex in the direction of arrow (2).

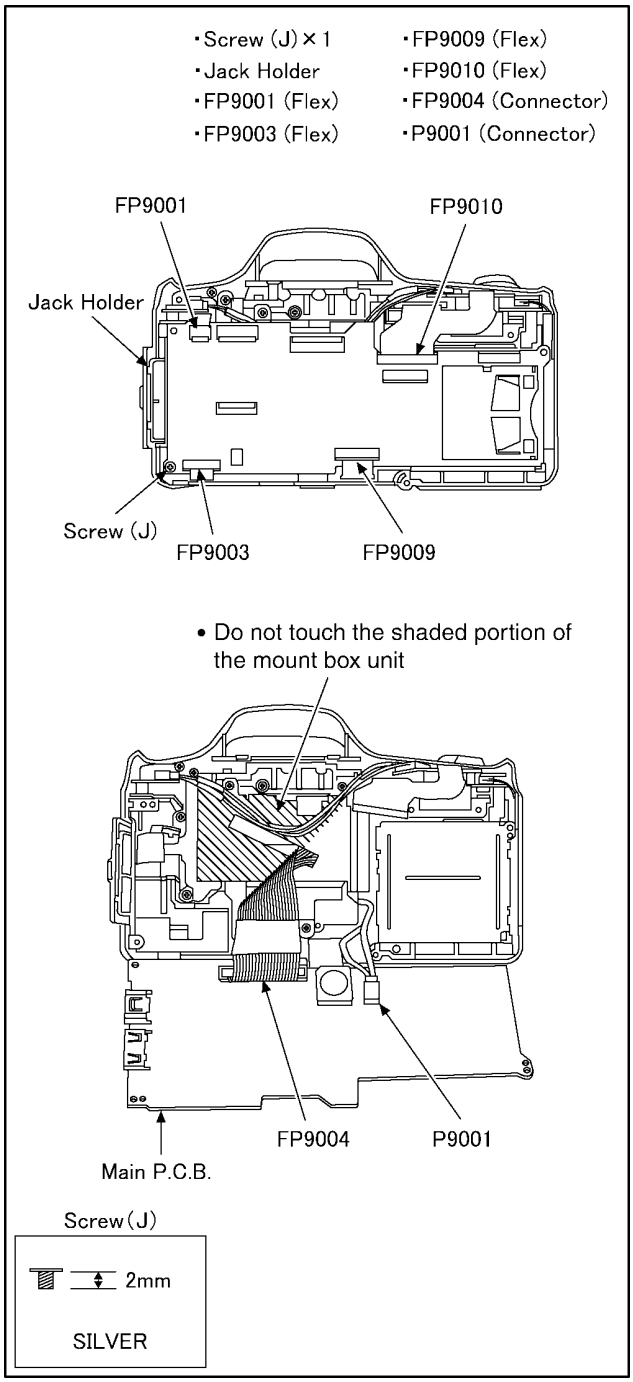


Screw (I)
3mm
SILVER

NOTE: (When Replacing)
• Take care not to put fingerprint of the finder part of LVF unit.

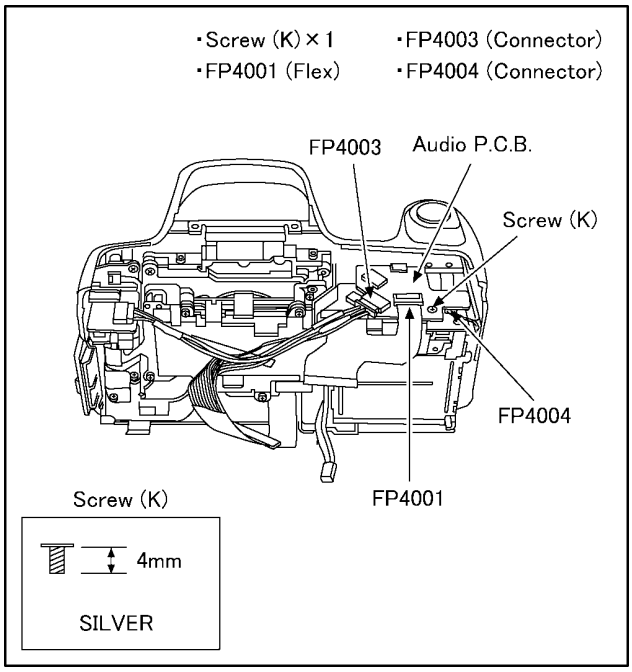
(Fig.D4)

9.3.4. Removal of the Main P.C.B.



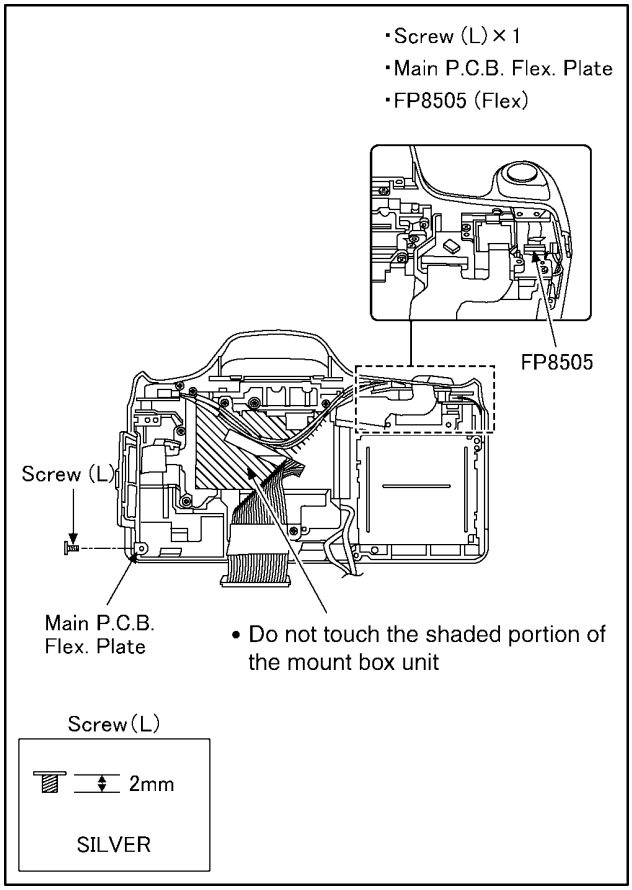
(Fig.D5)

9.3.5. Removal of the Audio P.C.B.

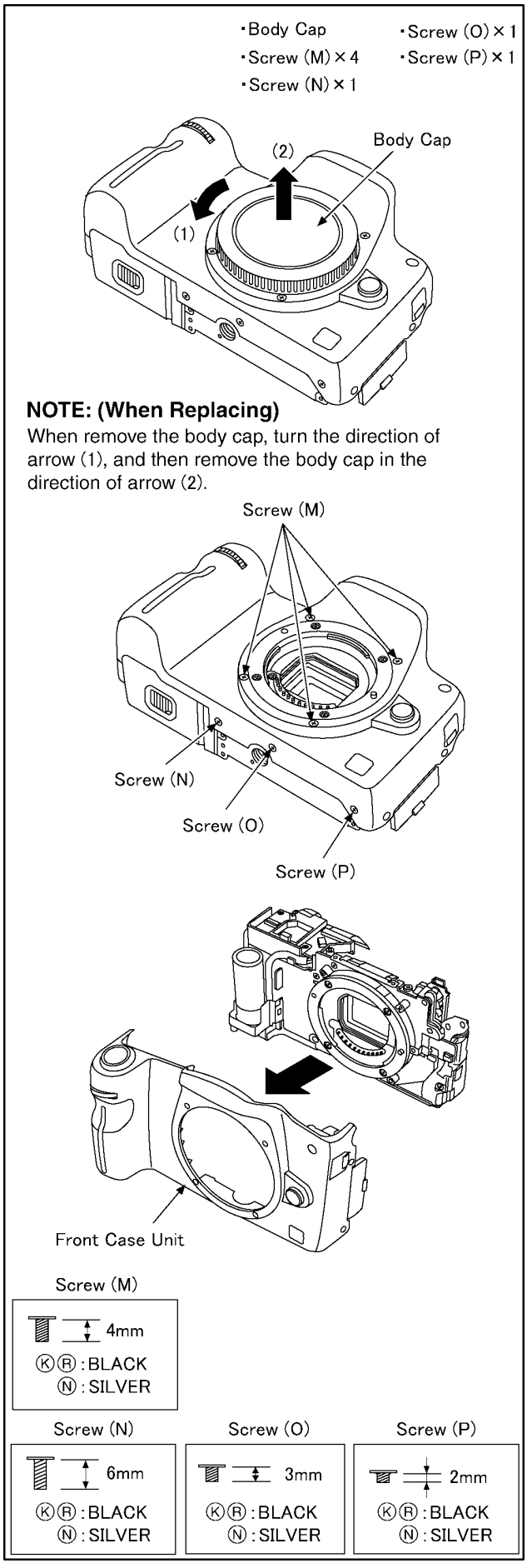


(Fig.D6)

9.3.6. Removal of the Front Case Unit

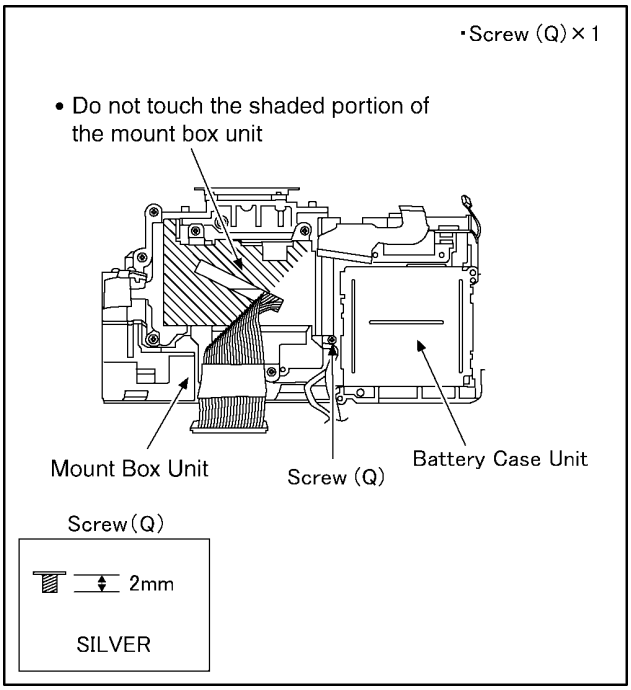


(Fig.D7)



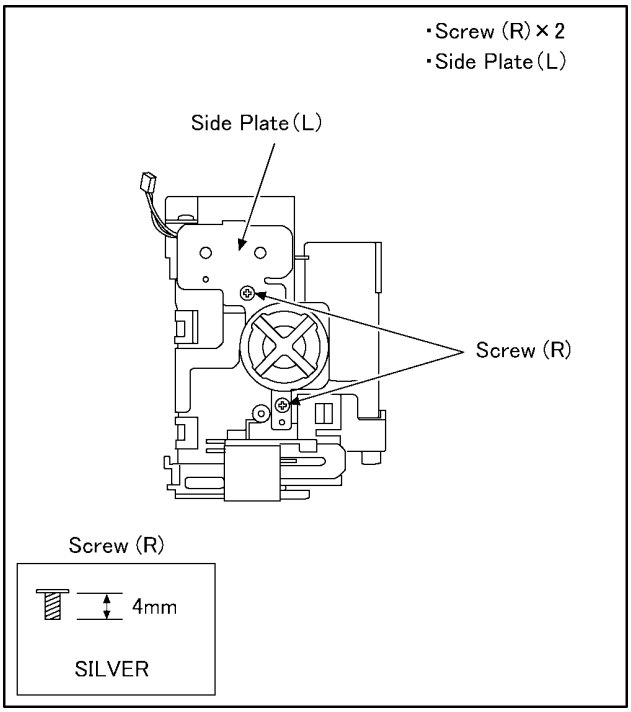
(Fig.D8)

9.3.7. Removal of the Battery Case Unit

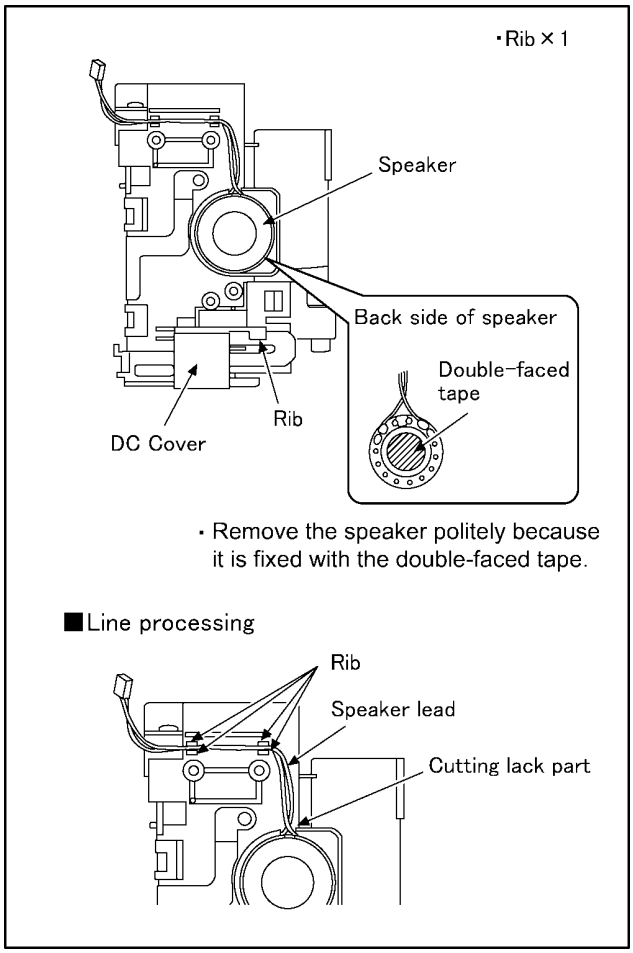


(Fig.D9)

9.3.8. Removal of the Speaker and DC Cover

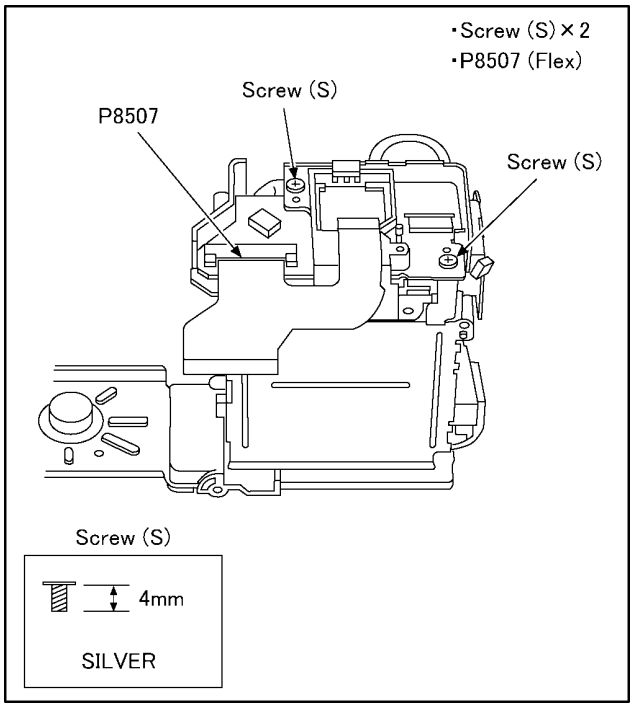


(Fig.D10)

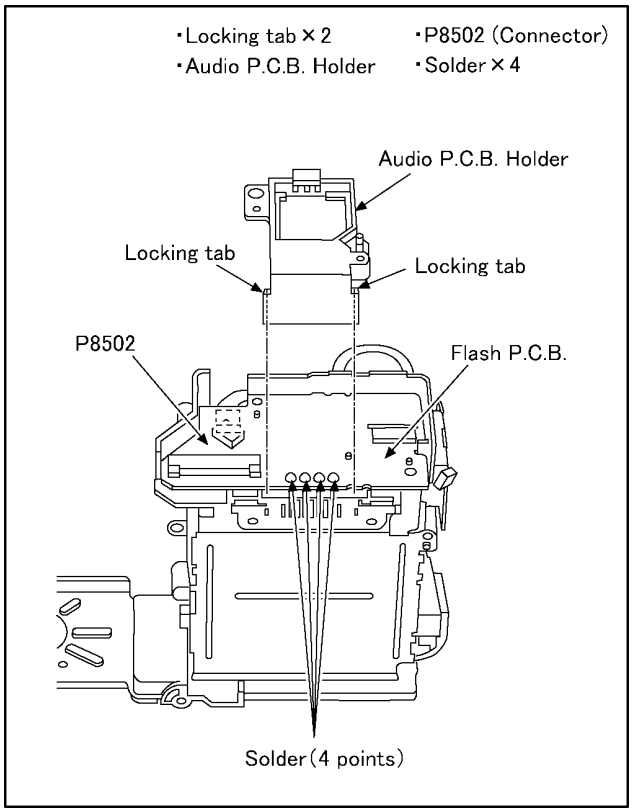


(Fig.D11)

9.3.9. Removal of the Flash P.C.B.



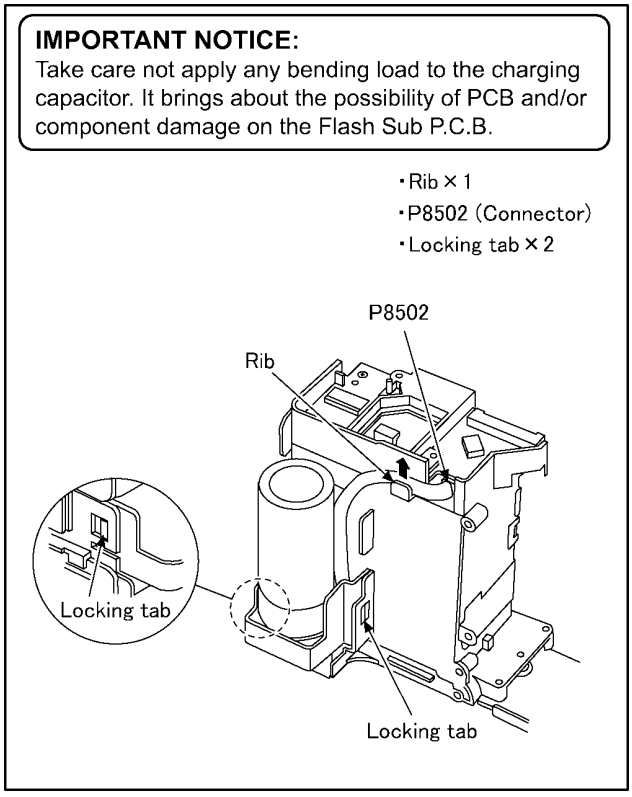
(Fig.D12)



(Fig.D13)

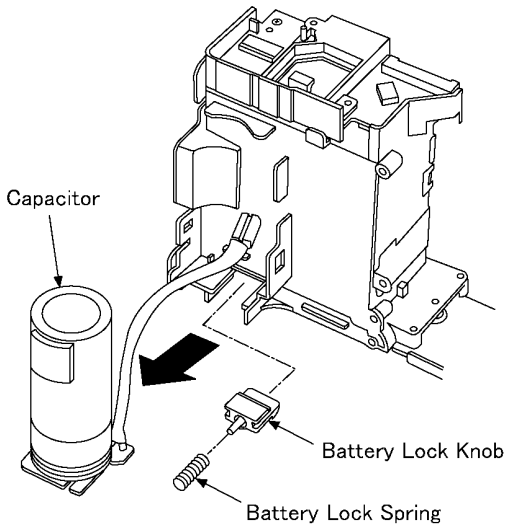
9.3.10. Removal of the Flash Sub P.C.B. Unit

IMPORTANT NOTICE:
Take care not apply any bending load to the charging capacitor. It brings about the possibility of PCB and/or component damage on the Flash Sub P.C.B.



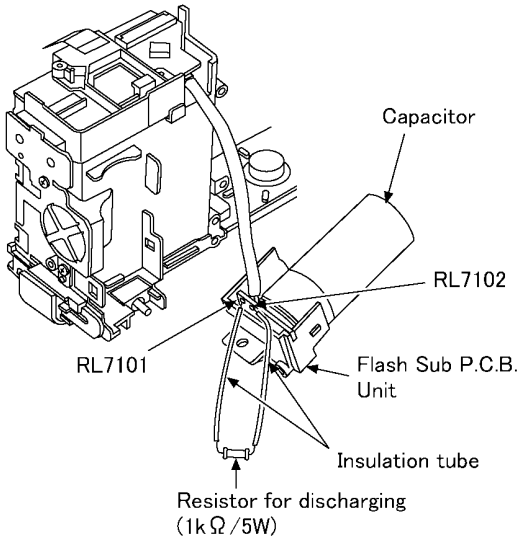
(Fig.D14)

・Battery Lock Spring
・Battery Lock Knob



NOTE: (When Replacing)

• Be careful not to lose parts, it becomes easy to separate from the battery lock spring and the battery lock knob together removing the capacitor.



⚠ CAUTION

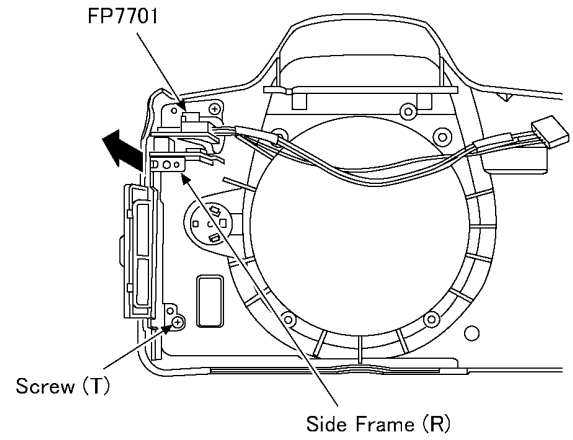
Be sure to discharge the capacitor on Flash Sub P.C.B. before disassembling.

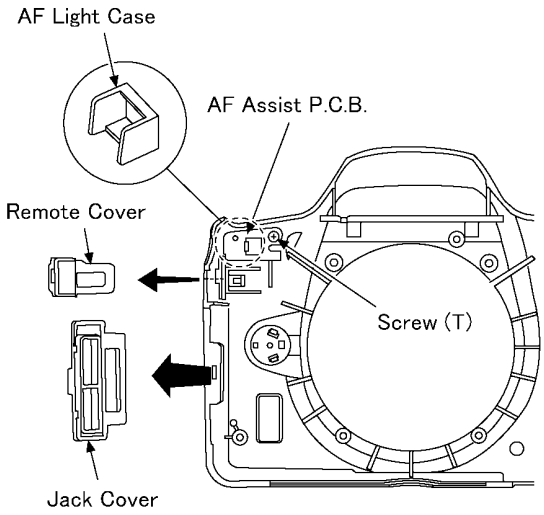
1. Remove the Flash Sub P.C.B. unit.
2. Put the insulation tube on the lead part of resistor (ERG5SJ102:1kΩ/5W).
3. Put the resistor between both installation part of capacitor (RL7101-RL7102) for approx. 5 seconds.

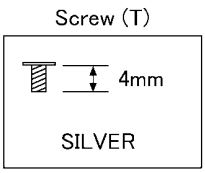
(Fig.D15)

9.3.11. Removal of the AF Assist P.C.B., EXT MIC P.C.B. and Remote P.C.B.

・FP7701(flex)
・Screw (T)×2
・Jack Cover
・Remote Cover
・AF Light Case
・Side Frame (R)



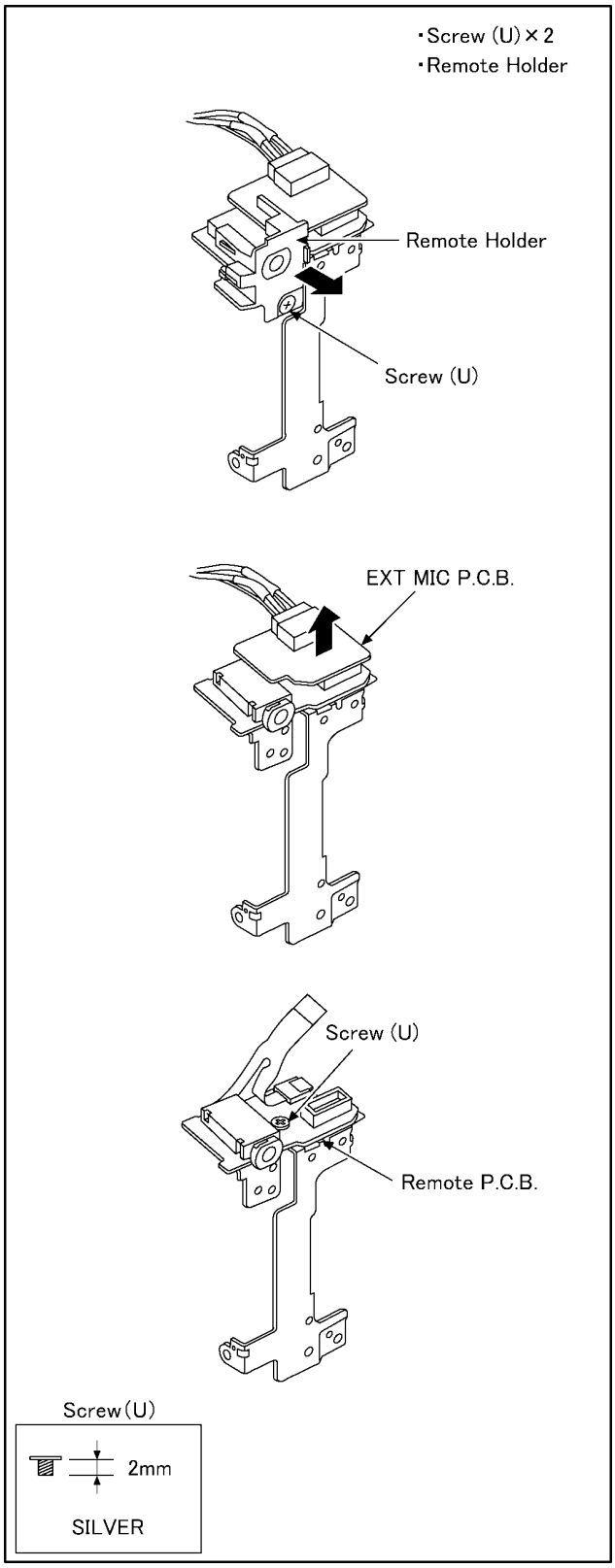




NOTE: (When Replacing)

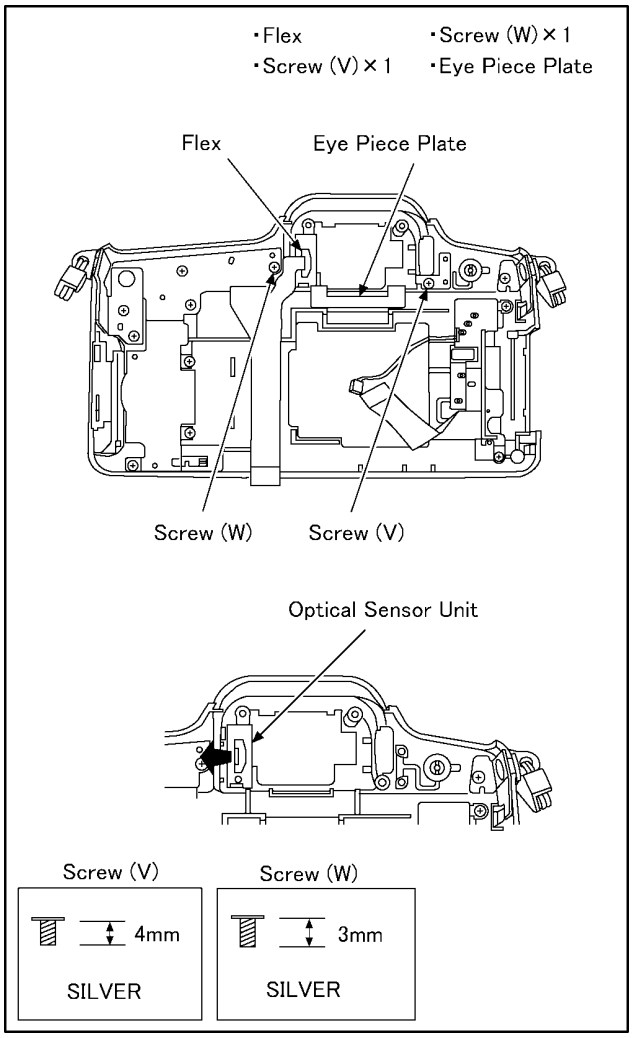
• Be careful not to lose parts, it becomes easy to separate from the AF Light Case together removing the AF Assist P.C.B..

(Fig.D16)



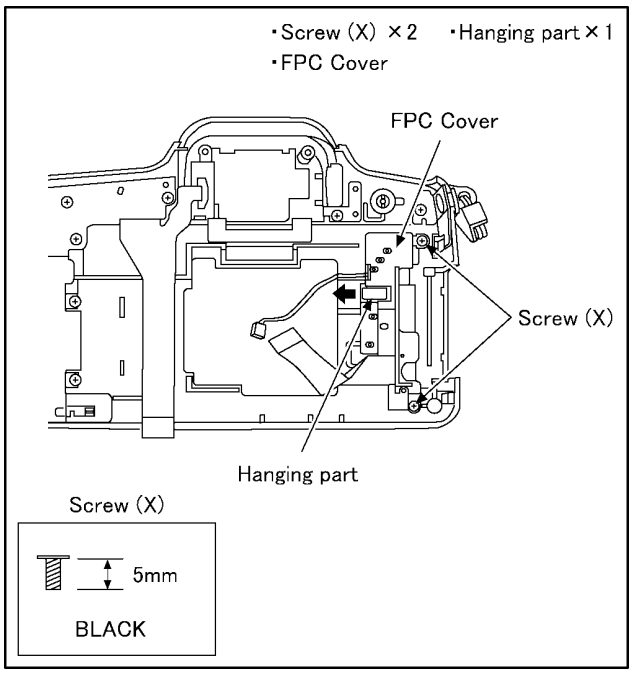
(Fig.D17)

9.3.12. Removal of the Optical Sensor Unit

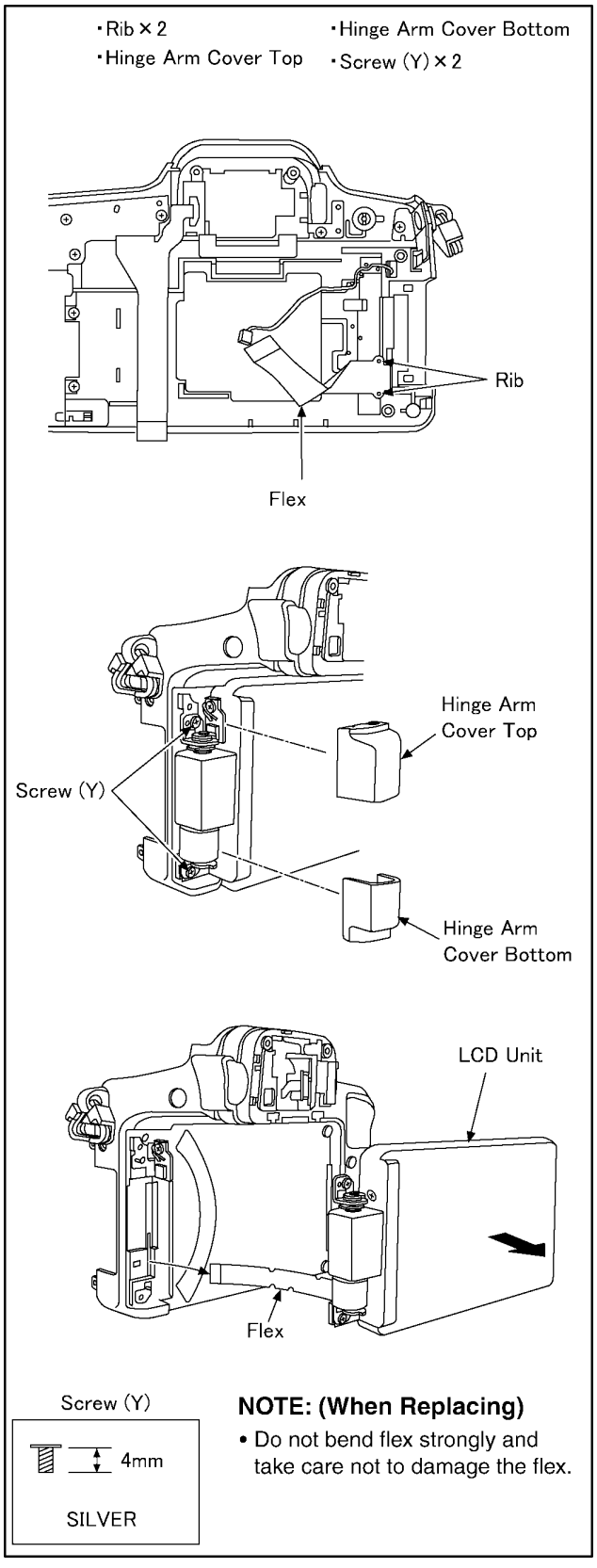


(Fig.D18)

9.3.13. Removal of the LCD Unit

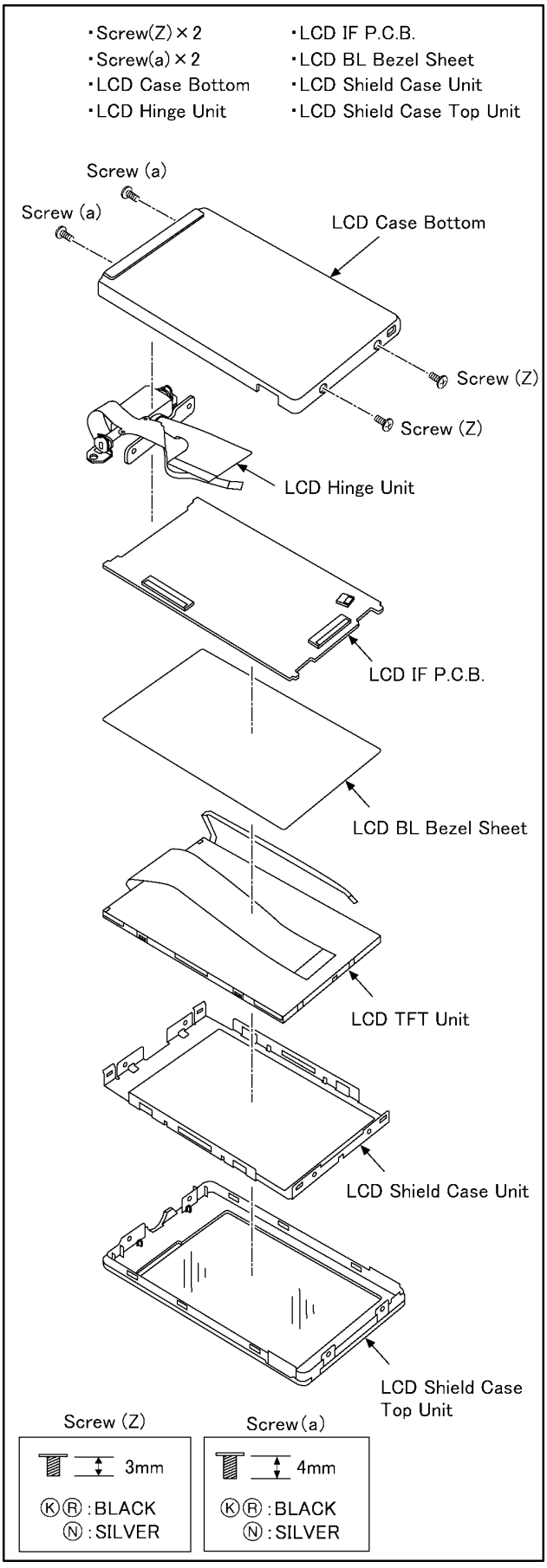


(Fig.D19)



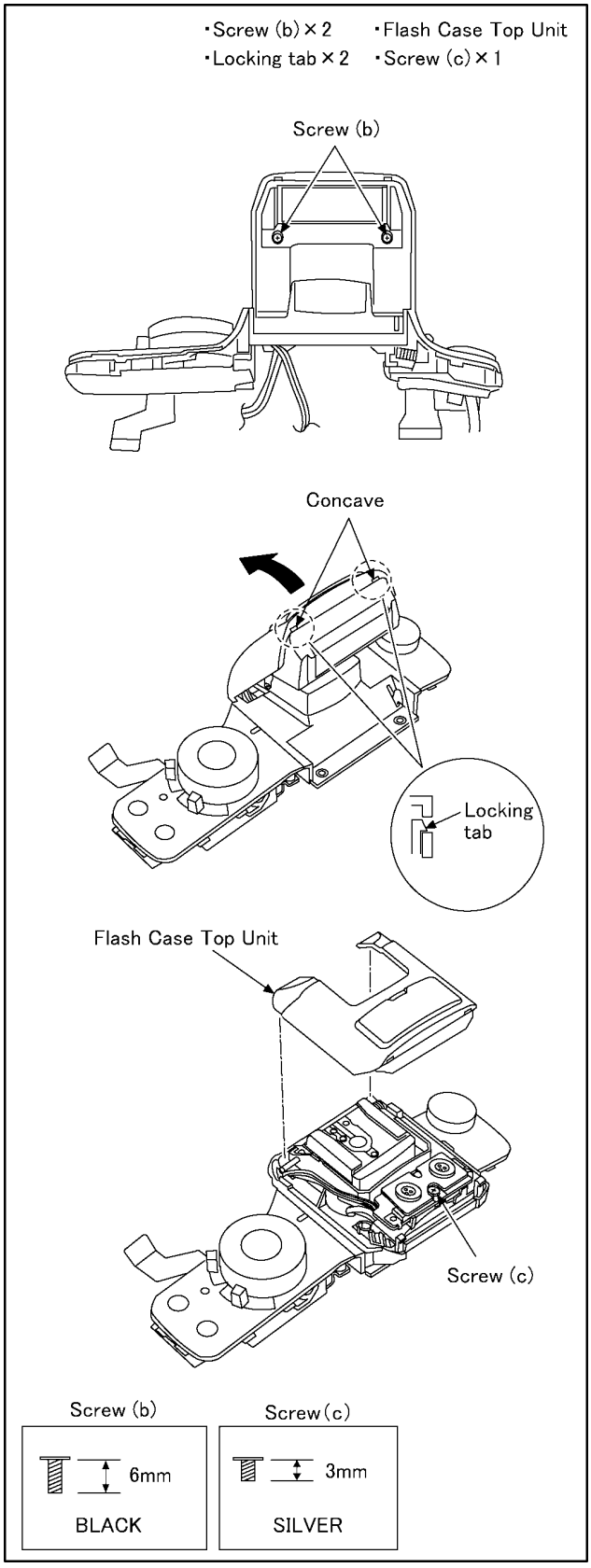
(Fig.D20)

9.3.14. Removal of the LCD TFT Unit

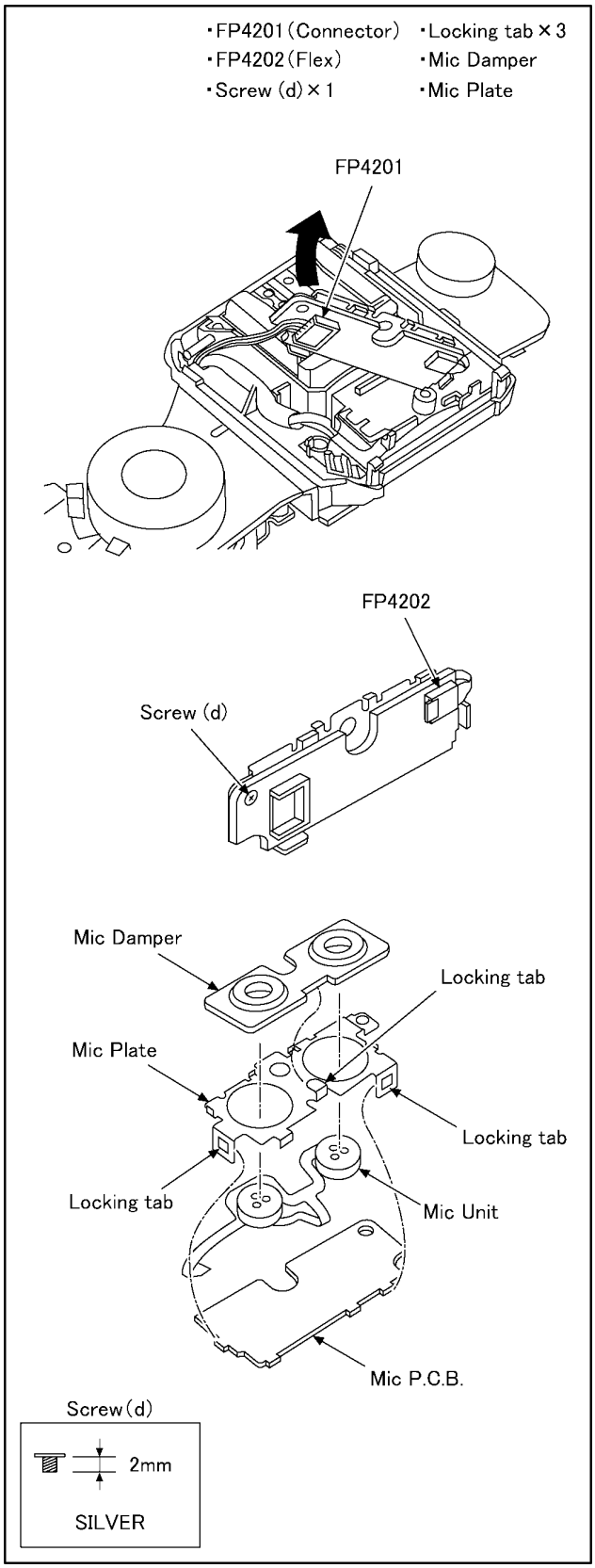


(Fig.D21)

9.3.15. Removal of the Mic P.C.B. and Mic Unit

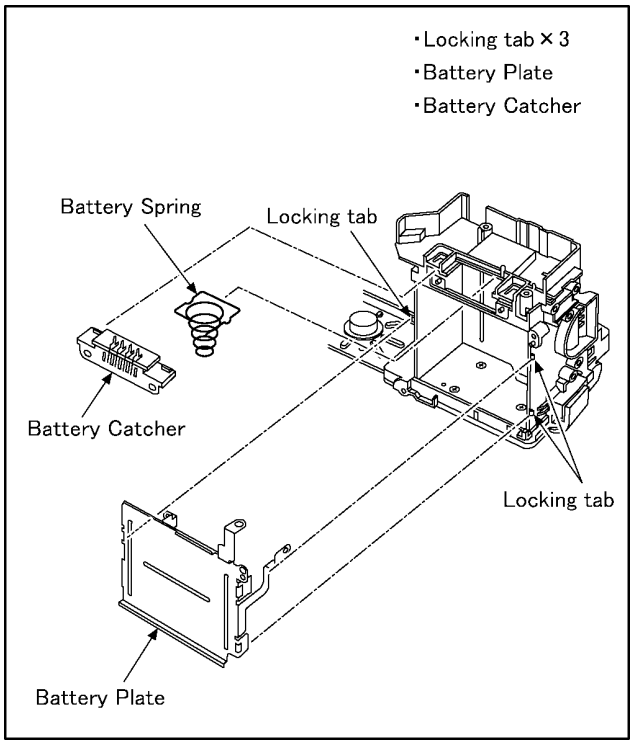


(Fig.D22)



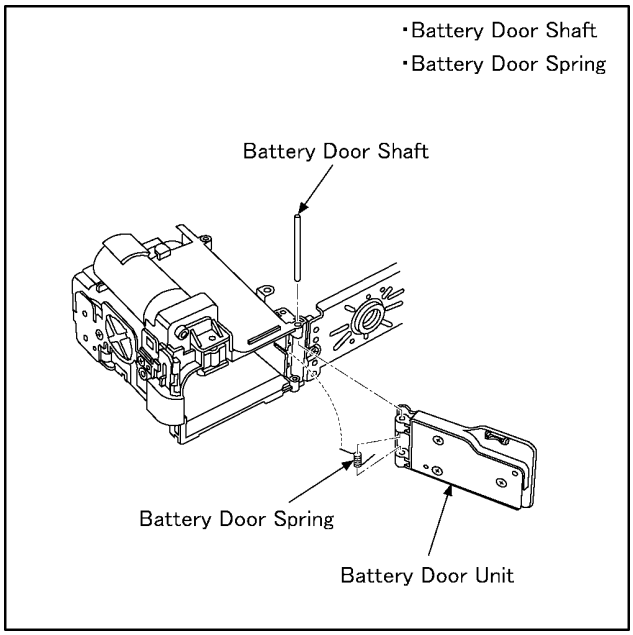
(Fig.D23)

9.3.16. Removal of the Battery Spring



(Fig.D24)

9.3.17. Removal of the Battery Door Unit



(Fig.D25)

NOTE: (When Assembling)

Be sure to confirm the following points when assembling.

- The Screw is tightened enough.
- Assembling conditions are fine. (No distortion, no illegal-space.)
- No dust and/or dirt on every Lens surfaces.
- LCD image is fine. (No dust and dirt on it, and no gradient images.)

9.4. Disassembly and Assemble Procedure for the Lens

Refer to the following table and the illustration for disassembly and assembly.

NOTE:

1. To keep maintaining the dustproof environment, it is recommended dealing with Clean box.
   (Refer to " 8.2. Clean Box " which is found in section "8.Service Fixture & Tools" of this manual.)
2. Do not allow dirt and dust to get into the inside part/component of the unit.
3. Do not touch the surface of the lens glasses with your fingers.
4. Blow off the dust on the surface of the lens with a blower brush.
5. Use lens cleaning KIT (BK)(VFK1900BK).

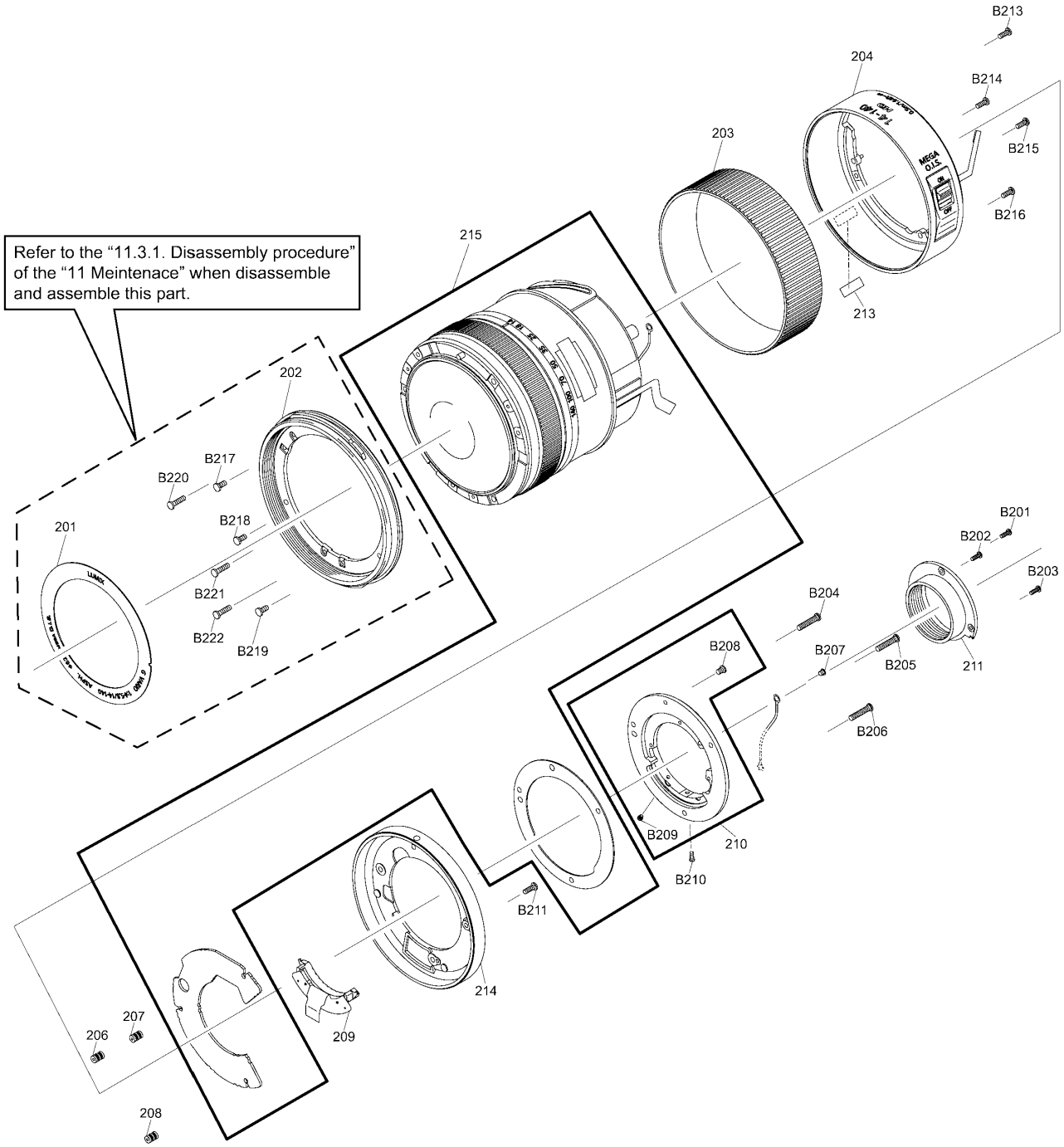
Interchangeable Lens (H-FS014140)

CAUTION:
Keep covering with Lens cap front, Lens cap rear, other than necessary cases.

Concerned parts		screws			Torque value
Part name	Ref. No.	Ref. No.	Color	Length(mm)	
Shading frame	211	B201	Black	2.5 mm	9.8±1.0 N・cm
		B202	Black	2.5 mm	9.8±1.0 N・cm
		B203	Black	2.5 mm	9.8±1.0 N・cm
L mount unit	210	B204	Silver	10 mm	27.4±1.0 N・cm
		B205	Silver	10 mm	27.4±1.0 N・cm
		B206	Silver	10 mm	27.4±1.0 N・cm
		B207	Silver	2.5 mm	9.8±1.0 N・cm
Mount contact unit	209	B210	Silver	3.5 mm	9.8±1.0 N・cm
Cover ring unit	204	B213	Silver	5 mm	14.7±1.0 N・cm
		B214	Silver	5 mm	14.7±1.0 N・cm
		B215	Silver	5 mm	14.7±1.0 N・cm
		B216	Silver	5 mm	14.7±1.0 N・cm

NOTE:

1. .When installing the screws, be sure to use the torque driver (RFKZ0456) and tighten the screws with specified torque, mentioned on the above table.
2. The Ref.B209 is no need to remove/install for disassembly and assembly.
   Use VFK1390 (small driver) when the installation is necessary because the screw was lost.


Refer to the “11.3.1. Disassembly procedure” of the “11 Meintenace” when disassemble and assemble this part.
B213
204
B214
203
B215
B216
215
213
202
B217
B220
B218
201
B221
B222
B219
B201
B202
B203
B204
B208
B207
B205
211
B206
B209
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B210
B211
214
207
206
209
208

10 Measurements and Adjustments

10.1. Matrix Chart for Replaced Part and Necessary Adjustment

The relation between Replaced part and Necessary Adjustment is shown in the following table.
When concerned part is replaced, be sure to achieve the necessary adjustment(s).
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-AVC”.

NOTE:

After adjustments have been terminated, make sure to achieve “INITIAL SETTINGS”.

Adjustment Item		Replaced Part					
		Mount Box (*3)	Main P.C.B. (*2)	Eye sensor	Flash P.C.B.	LCD U/ LVF U	Lens U/ L-Mount/ Rear Frame
Camera Body Section	ISO sensitivity adjustment (ISO)	O	O	–	–	–	–
	High brightness coloration inspection (SEN)	O	O	–	–	–	–
	AWB adjustment (WBL/WBM)	O	O	–	–	–	–
	IMAGE SENSOR white scratch compensation (WKI)	O	O	–	–	–	–
	IMAGE SENSOR black scratch compensation (BKI)	O	O	–	–	–	–
	EYE SENSOR adjustment (EYE)	–	O	O	–	–	–
	Mount Box Adjustment data writing	O	–	–	–	–	–
	AVCHD function inspection	–	O(*4)	–	–	–	–
	Resolution inspection (*1)	O	–	–	–	–	–

***1**

- Inspect it, not only corresponding part is replaced, but also camera body is shocked and/or dropped.
- The DMC-G1K unit (marketed commodity: operates normal) is required as a reference unit.
- Refer to the adjustment instruction in the adjustment software for details.

***2 NOTE: (When exchange the MAIN P.C.B.)**

- Correspond by either the following when exchange the MAIN P.C.B. unavoidably by destruction and damage etc of MAIN P.C.B.
  1. When it can turn on power, and the adjustment software can communicate with the camera body:
     - Before replacing, proceed the FLASH-ROM data backup from the unit. After replacing, overwrite the FLASH-ROM data with backup data from the unit, before proceeding the main body adjustment.
  2. When it cannot turn on power, or the adjustment software cannot communicate with the camera body:
     Compared with above "1", the extra-adjustment (using the light box) is required.
     - Refer to the adjustment instruction in the adjustment software for details.

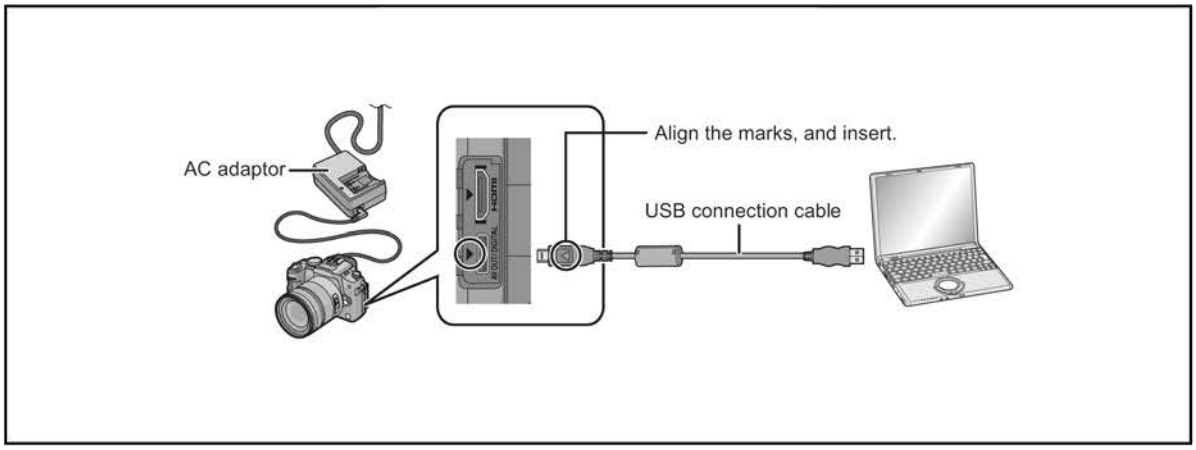
***3 NOTE: (After exchange the mount box unit)**

- After replacing the MOUNT BOX BLOCK, the mount box data has to be stored to the unit.
- Refer to the adjustment instruction in the adjustment software for details.

***4**

- Confirm self recording/playback motion picture of AVCHD mode by the LCD.
- Confirm it on the TV with HDMI socket when repair HDMI relation.

* There are no LCD / LVF adjustment model.



11 Maintenace

11.1. Notice in external cleaning

11.1.1. ABOUT THE BODY

NOTE:

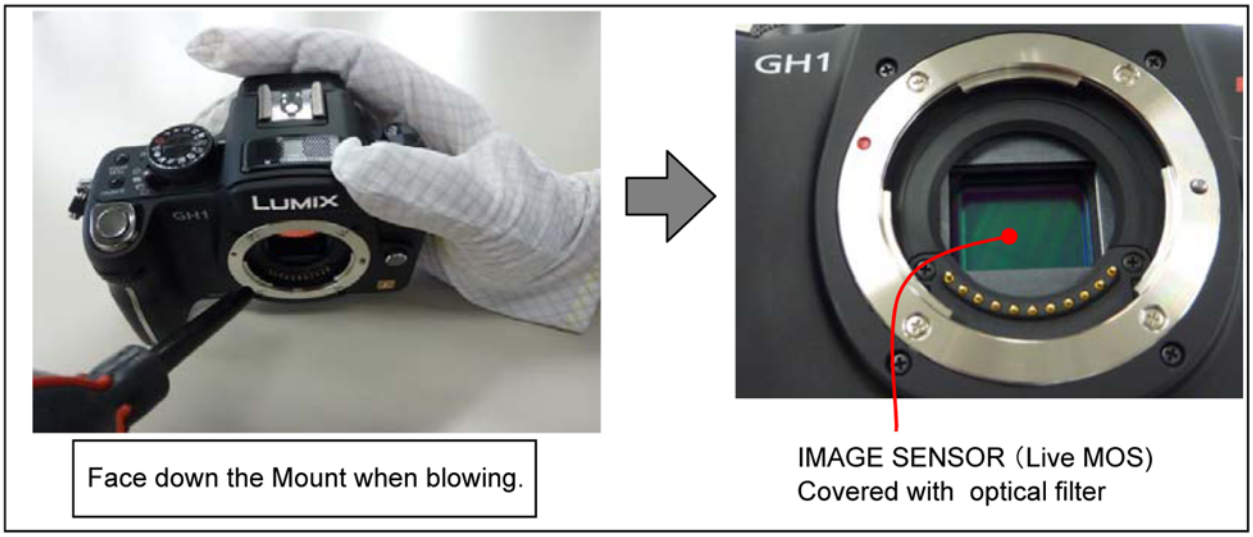
Before cleaning the camera, remove the battery and/or disconnect power plug from the outlet.
Also, remove the SD Memory card and lens unit.

11.1.1.1. DUST/DIRT ON THE OUTER CASING PART (S)

1. Blow off the dust first, then sweep out the dust from narrower spaces with soft cleaning brush.
2. Wipe up fingerprint and/or dirt on the Outer casing part with the dry fuzz-free cloth.

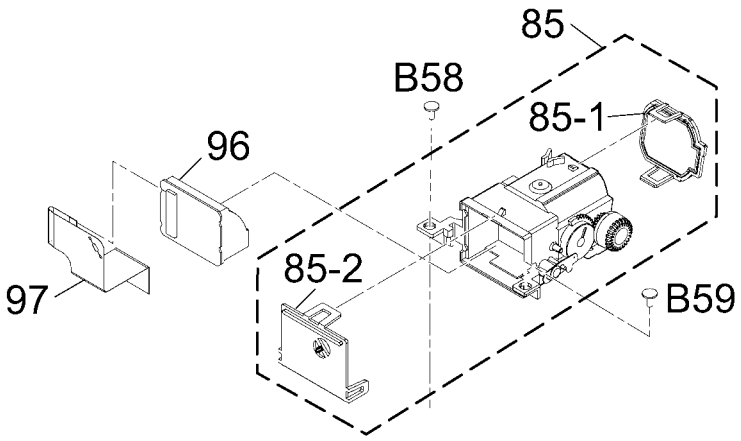
11.1.1.2. DUST/DIRT ON THE IMAGE SENSOR

1. Blow off the dust on the surface of the Image sensor with the Blower. (Refer to the following Figure.)
   - Keep the Mount Facing down condition towards to floor when cleaning.
   - Do not put the Blower further inside than the lens mount.
   - Be careful not to blow too strongly.
2. Wipe off the dirt on the image sensor surface with Lens cleaning KIT(VFK1900BK).



11.1.1.3. ABOUT THE LVF UNIT

1. By referring the Disassembly & Assembly procedures and remove the LVF unit.
2. Disassemble the LVF unit as follows, then blow off the dust with blower.
3. Wipe off the dirt on the surface of glasses with Lens cleaning KIT(VFK1900BK), if necessary.



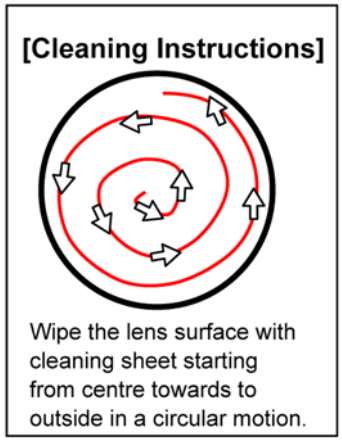
11.1.2. ABOUT THE LENS

11.1.2.1. DUST/DIRT ON THE OUTER CASING PART(S)

1. Blow off the dust first, then sweep out the dust from narrower spaces with soft cleaning brush.
2. Wipe up the Outer casing part with the dry fuzz-free cloth.

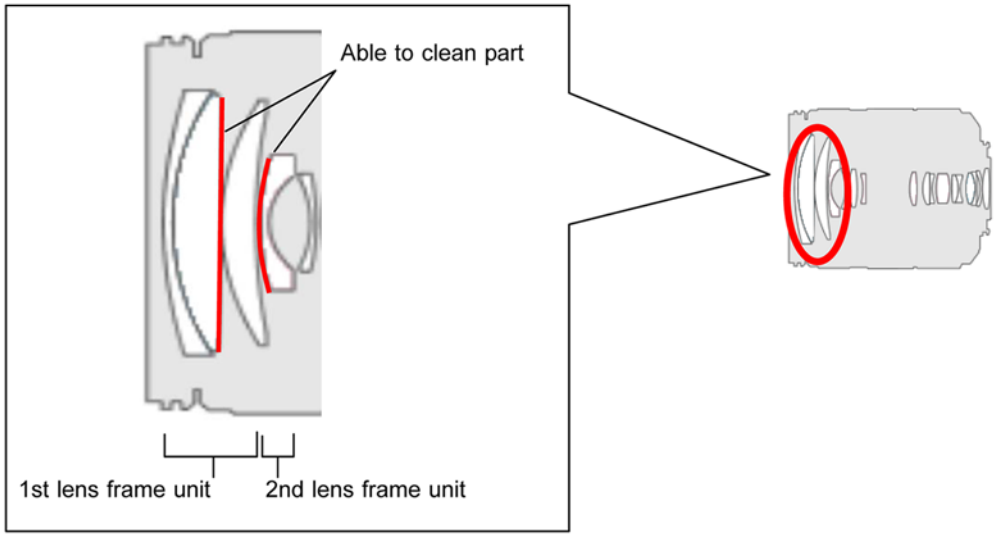
11.1.2.2. DUST/DIRT ON THE LENS GLASSES

- Define the location of the dust/dirt first, whether it is outside lens surface or not.
  1. When it is outside surface of the lens:
     - When the dust and/or dirt gets on the outer side surface of the Lens glasses, order the following procedures.
       a. Blow off the dust on the Lens glass surface with the Blower, gently. (Do not Blow too strongly.)
       b. Wipe out the dirt on the lens glass surface with Lens cleaning KIT (VFK1900BK) if necessary. (Consult the Instruction sheet which is included in the Lens cleaning KIT in details.)
  2. When it is inside of the lens:
     - Refer to the “11.3. Method of cleaning inside of lens (Bundled lens: H-VS014140) “ section of this service manual.



11.2. General description (Lens cleaning)

When there is a dust/dirt inside surface of the 1st lens frame unit and/or subject side surface of the 2nd lens frame unit, remove it by referring the following procedures.



CAUTION

*DO NOT REMOVE 1st LENS FRAME UNIT OTHER THAN INSIDE OF SATISFIED CLEAN LEVEL.
(Satisfied clean level: Less than class 10,000 Federal Standard 209D)

Important:

1. When removing the 1st lens frame unit, it has to be proceed inside of satisfied clean level.
   (Less than class 10,000 Federal Standard 209D)
   As for clean box, refer to the "8.2. CLEAN BOX", in details.
2. When tighten the screws (A), use torque driver (RFKZ0456) with specified torque.
3. To keep the Lens performance, use only the 1st lens frame unit which was fitted as it was.
   Therefore, the 1st lens frame unit is not supplied as spare parts.
   Also do not exchange the 1st lens unit taking from others.

11.3. Method of cleaning inside of lens (H-VS014140: Included in DMC-GH1K)

CAUTION

*DO NOT REMOVE 1st LENS FRAME UNIT OTHER THAN INSIDE OF SATISFIED CLEAN LEVEL.
(Satisfied clean level: Less than class 10,000 Federal Standard 209D)

Important:

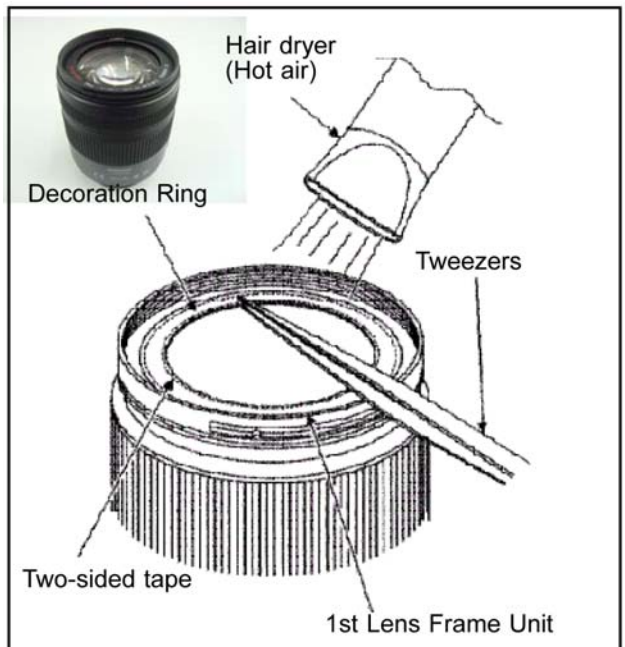
1. When removing the 1st lens frame unit, it has to be proceed inside of satisfied clean level.
   (Less than class 10,000 Federal Standard 209D)
   As for clean box, refer to the "8.2. CLEAN BOX", in details.
2. When tighten the screws (A), use torque driver (RFKZ0456) with specified torque.
3. To keep the Lens performance, use only the 1st lens frame unit which was fitted as it was.
   Therefore, the 1st lens frame unit is not supplied as spare parts.
   Also do not exchange the 1st lens unit taking from others.

11.3.1. Disassembly procedure

11.3.1.1. Removal of the Decoration Ring

NOTE:

Be careful not touch the lens surface with Tweezers when removing the Decoration Ring.



NOTE: (When disassembling)

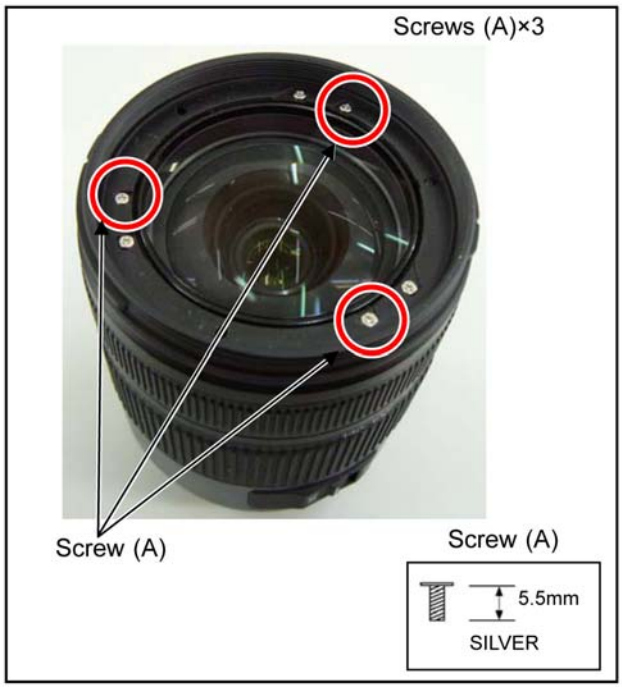
- Decoration Ring is taped to 1st Lens Frame Unit by two-sided tape.
- It can be easy to remove the two-sided tape with sending hot air by hair dryer.
- Insert the tweezers between Decoration Ring and 1st Lens Frame Unit, and then remove the Decoration Ring. (Be careful to lens is not damaged.)

11.3.1.2. Removal of the 1st Lens Frame Unit

Important:

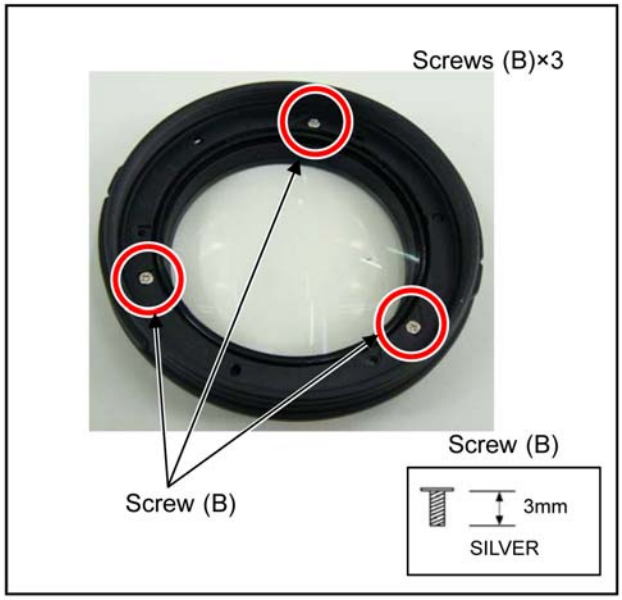
When removing the 1st lens frame unit, it has to be proceed inside of satisfied clean level.(Less than class 10,000 Federal Standard 209D)

1. Remove the 3 screws (A) and then remove the 1st lens frame unit.



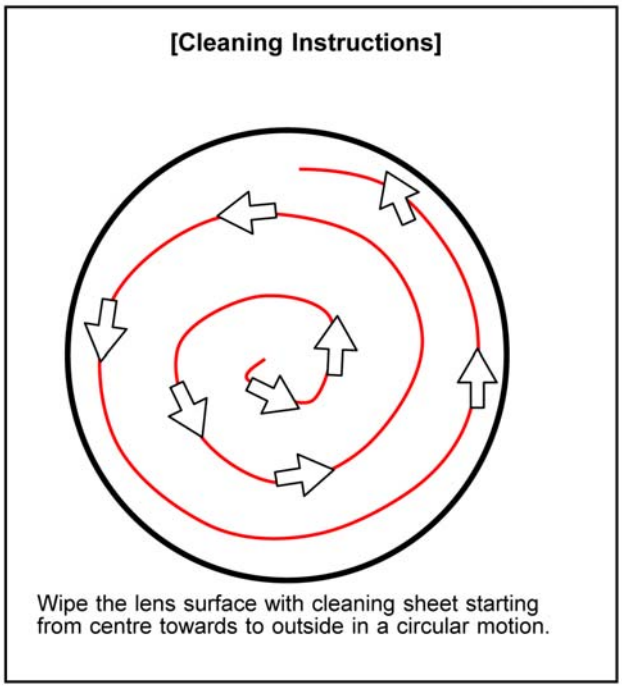
11.3.1.3. Removal of the food adaptor

1. Removal the 3 screws (B) and then remove the food adaptor.



11.3.1.4. Removal of a dust /dirt

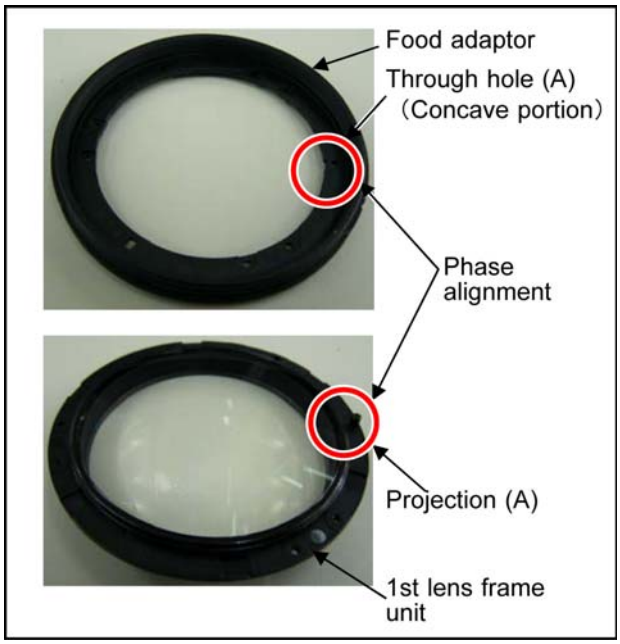
1. Blow off the dust on the Lens glass surface with the Blower, gently.
   (Do not Blow too strongly.)
2. Although after blowing, the dust/dirt does not blow off, wipe out the dirt on the lens glass surface with Lens cleaning KIT (VFK1900BK)
   (Consult the Instruction sheet which is included in the Lens cleaning KIT in details.)



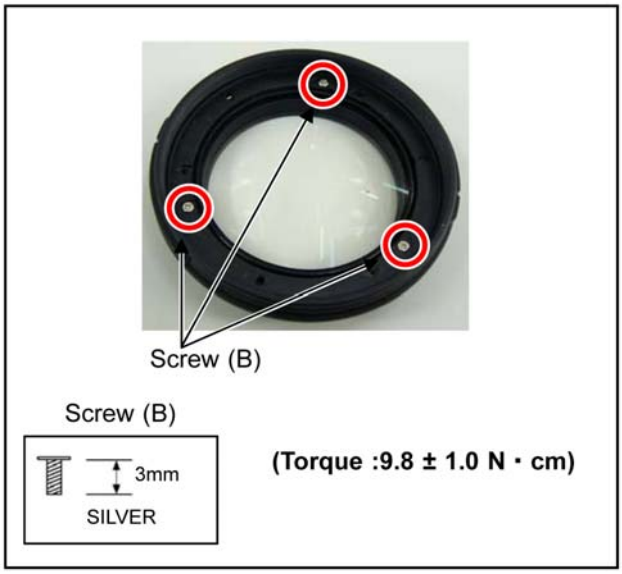
11.3.2. Assembly procedure

11.3.2.1. Installation of the food adaptor

1. Install the food adaptor to meet the through hole (A) with projection (A).



2. Tighten the 3 screws (B) by using torque driver with specified torque.
   (Torque driver : RFKZ0456)
   (Torque : 9.8 ± 1.0N-cm)



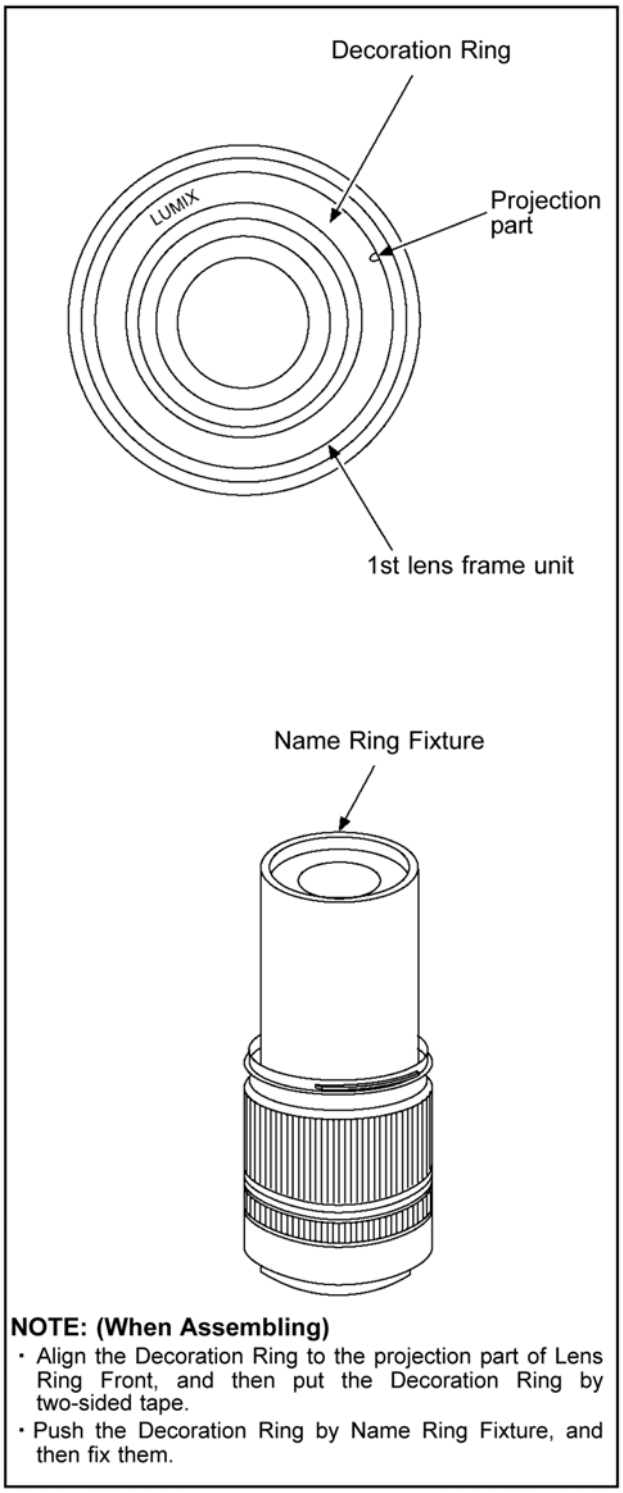
11.3.2.2. Installation of the 1st lens frame unit

1. Install the 1st lens frame unit onto the lens unit to meet the through hole (B) with projection (B).

2. Tighten the 3 screws (A) by using torque driver with specified torque.
   (Torque :11.8 ± 1.0 N-cm)

11.3.2.3. Installation of the Decoration Ring

1. Use the Name Ring fixture (RFKZ0423)
2. Use new Decoration ring. (Do not use the one which is removed.)



DSC0905029CE

Service Manual

Diagrams and Replacement Parts List

Digital Camera/Lens Kit

Model No.

DMC-GH1KPP
DMC-GH1KEB
DMC-GH1KEC
DMC-GH1KEG
DMC-GH1KGC
DMC-GH1KGH
DMC-GH1KGK
DMC-GH1KGN
DMC-GH1KGT

Vol. 1
Colour
(K).....Black Type
(N).....Gold Type (only PP/EC/EG/GC)
(R).....Red Type (only PP/EB/EC/EG/GC)

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.

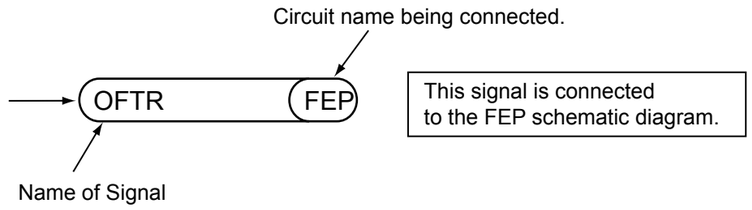
3.The voltage being indicated on the schematic diagram is measured in "Standard-Playback" mode when there is no specify mode is mentioned.

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. EXT Mic P.C.B.

REF No.	PIN No.	POWER ON
Q4401	E	0
Q4401	C	0
Q4401	B	0
Q4402	E	0
Q4402	C	0
Q4402	B	0
Q4403	E	0
Q4403	C	0
Q4403	B	0
Q4404	E	0
Q4404	C	0
Q4404	B	0
Q4405	E	0
Q4405	C	0
Q4405	B	0
Q4406	E	0
Q4406	C	0.3
Q4406	B	0.3
QR4401	E	1.2
QR4401	C	0.2
QR4401	B	5.5

S2.2. Flash P.C.B.

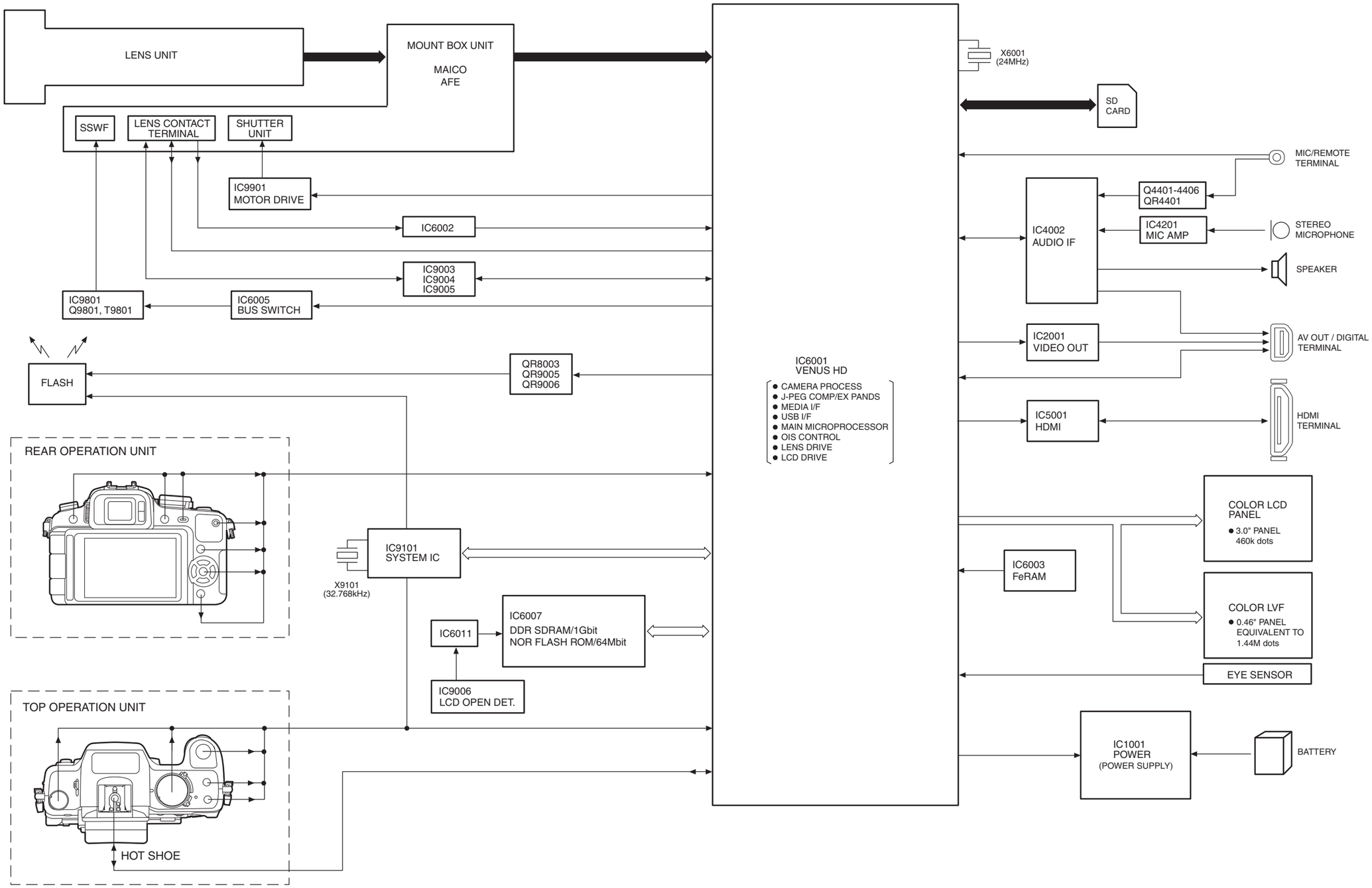
REF No.	PIN No.	POWER ON
Q8501	1	0
Q8501	2	0
Q8501	3	0
Q8501	4	0
Q8501	5	14
Q8501	6	14
Q8501	7	14
Q8501	8	14
Q8502	1	12.6
Q8502	2	12.6
Q8502	3	0
Q8502	4	0
Q8502	5	12.6
Q8502	6	12.6
QR8501	1	0
QR8501	2	8.6
QR8501	3	0
QR8501	4	9.2
QR8501	5	8.6
QR8501	6	0
QR8502	E	0
QR8502	C	8.6
QR8502	B	0
QR8503	E	0
QR8503	C	0
QR8503	B	7.3
QR8504	E	0
QR8504	C	7.3
QR8504	B	0

S2.3. Mic P.C.B.

REF No.	PIN No.	POWER ON
IC4201	1	0
IC4201	2	0.1
IC4201	3	0
IC4201	4	0.1
IC4201	5	0
IC4201	6	0.1
IC4201	7	0.1
IC4201	8	0
IC4201	9	0.1
IC4201	10	0
IC4201	11	0
IC4201	12	0
IC4201	13	0
IC4201	14	0
IC4201	15	0
IC4201	16	0
IC4201	17	0.1
IC4201	18	4
IC4201	19	0.1
IC4201	20	0.1
Q4201	E	3.8
Q4201	C	4
Q4201	B	3.5
Q4202	E	3.9
Q4202	C	4
Q4202	B	3.6
Q4203	E	4
Q4203	C	4.8
Q4203	B	4.8

S3. Block Diagram

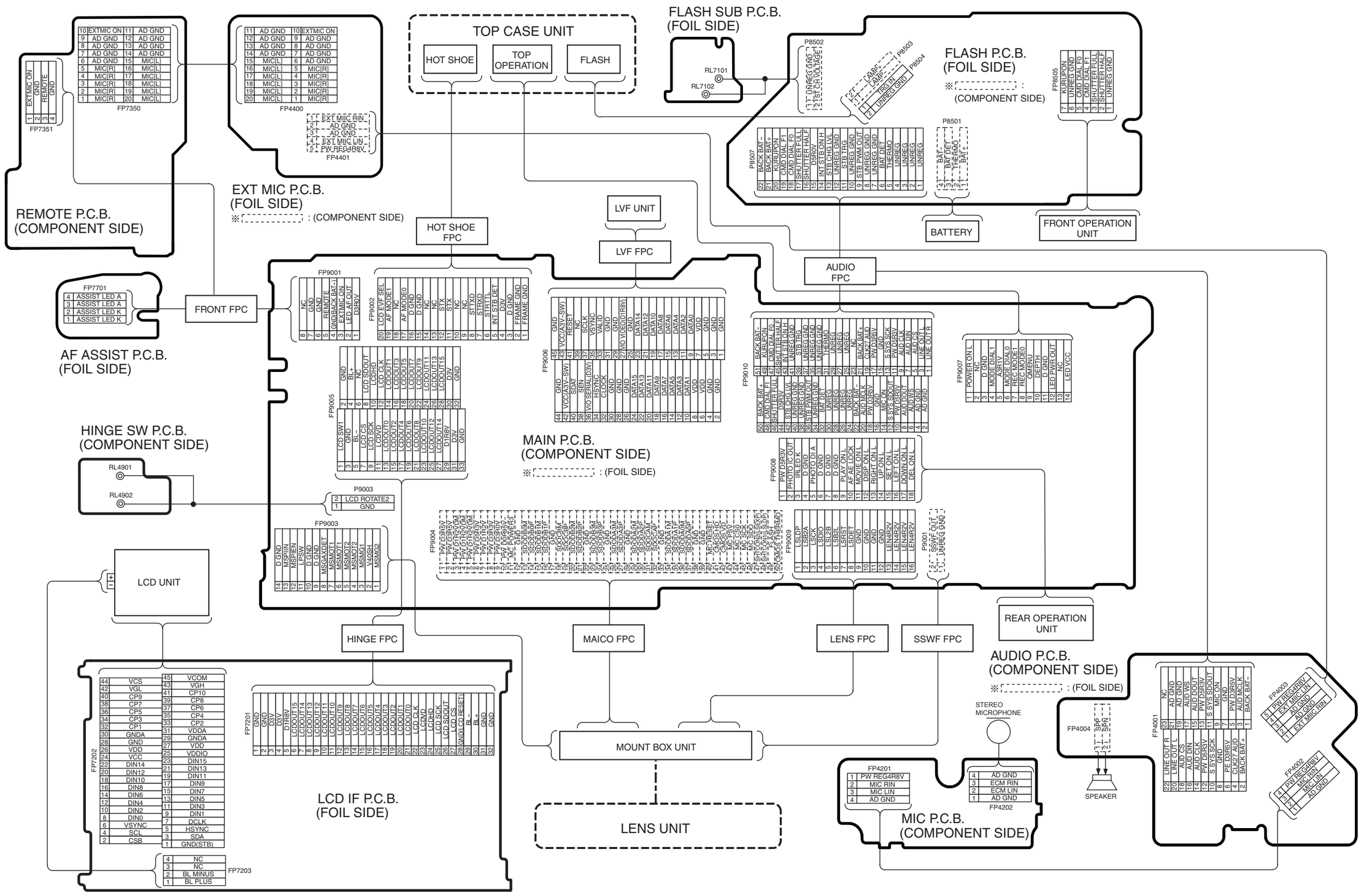
S3.1. Overall Block Diagram



DMC-GH1 OVERALL BLOCK DIAGRAM

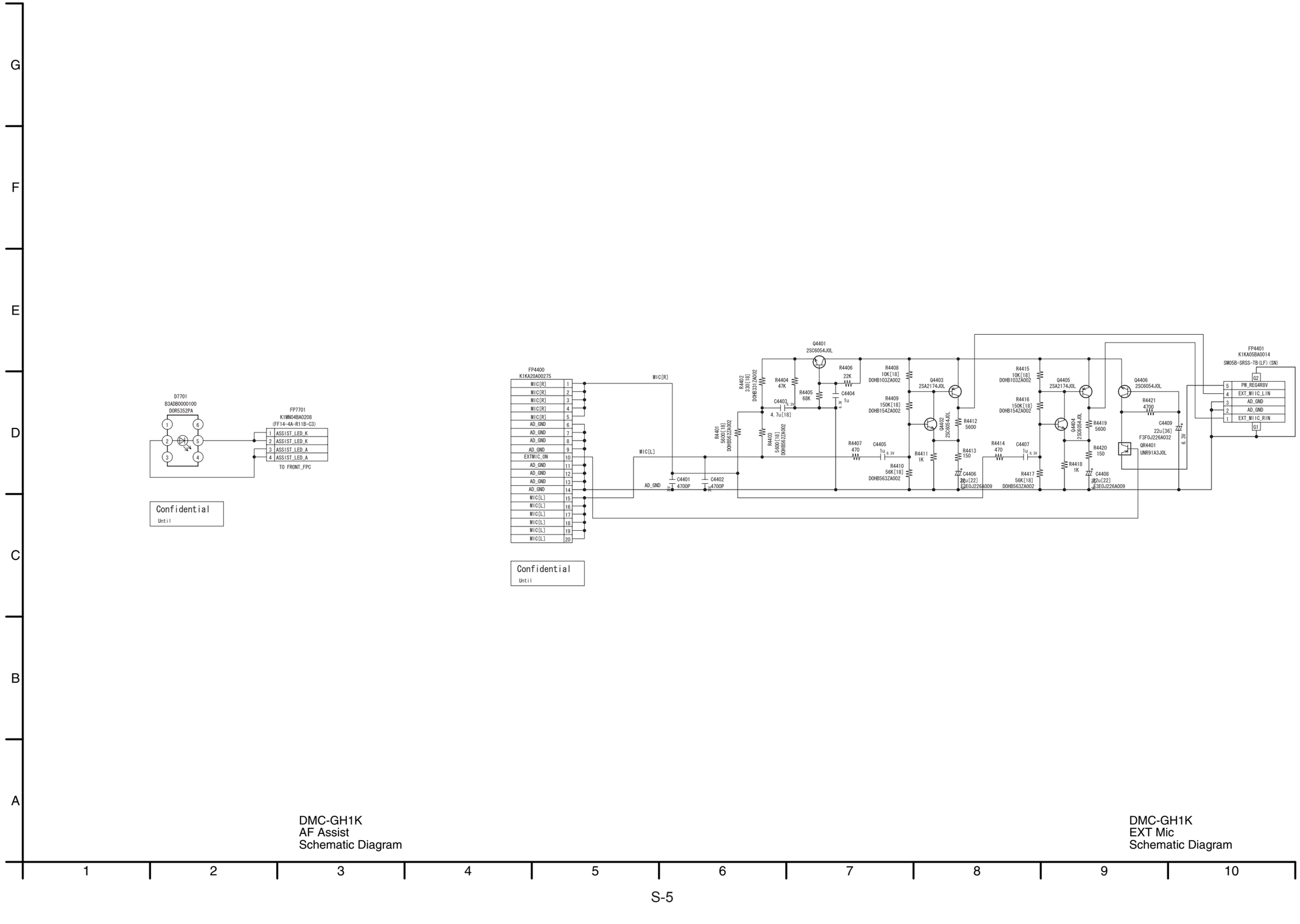
S4. Schematic Diagram

S4.1. Interconnection Diagram

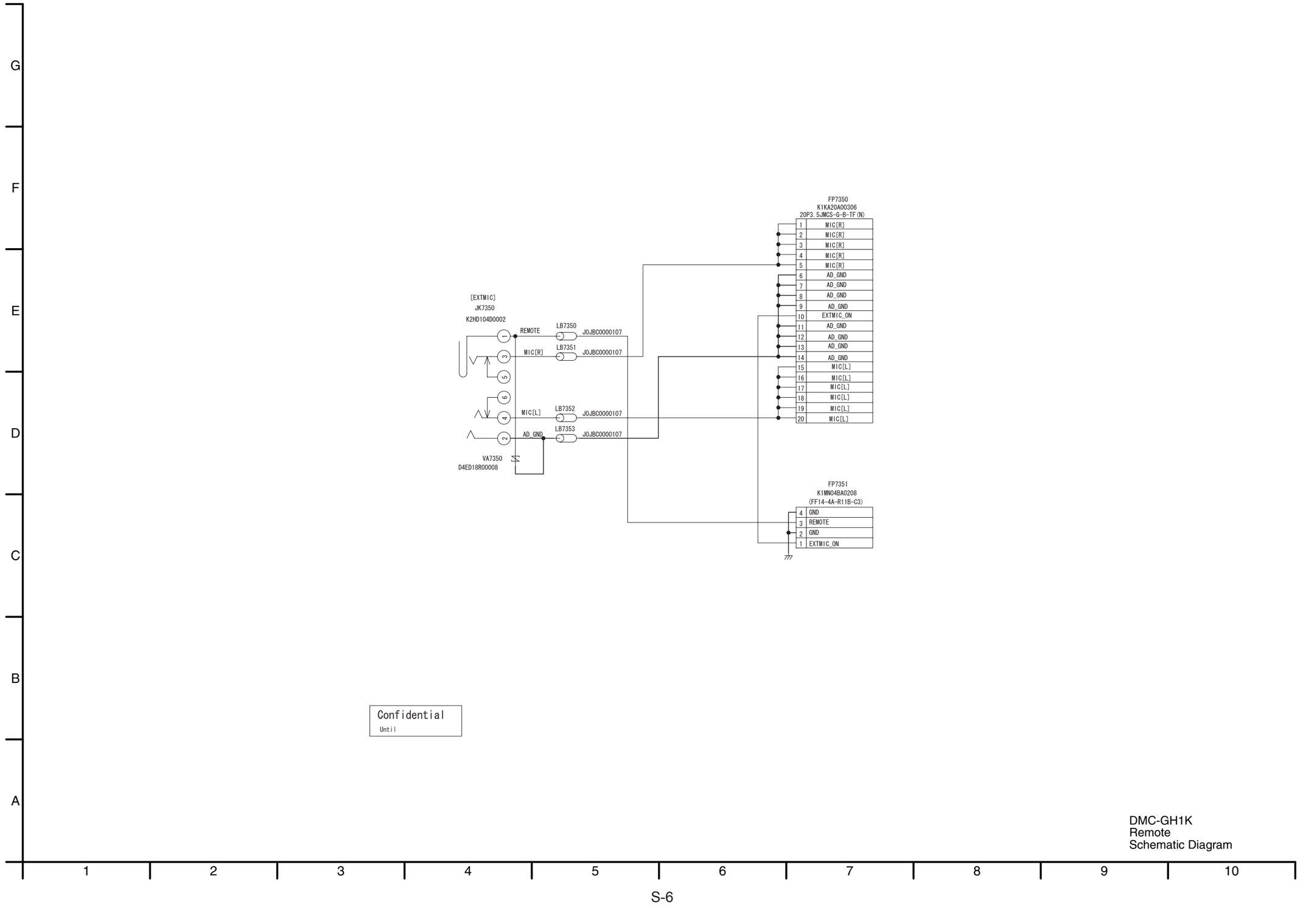


DMC-GH1 INTERCONNECTION DIAGRAM

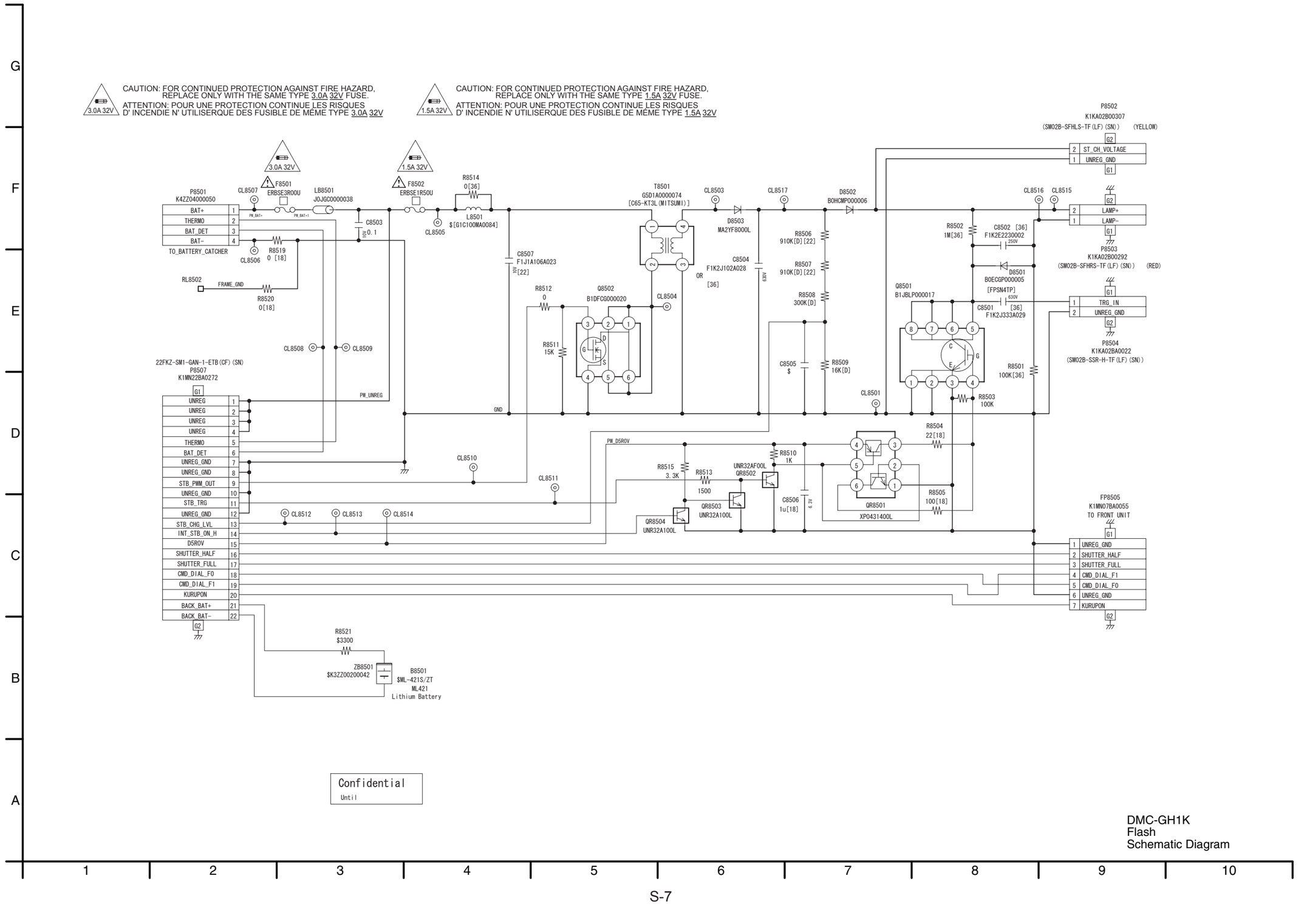
S4.2. AF Assist Schematic Diagram / S4.3. EXT Mic Schematic Diagram



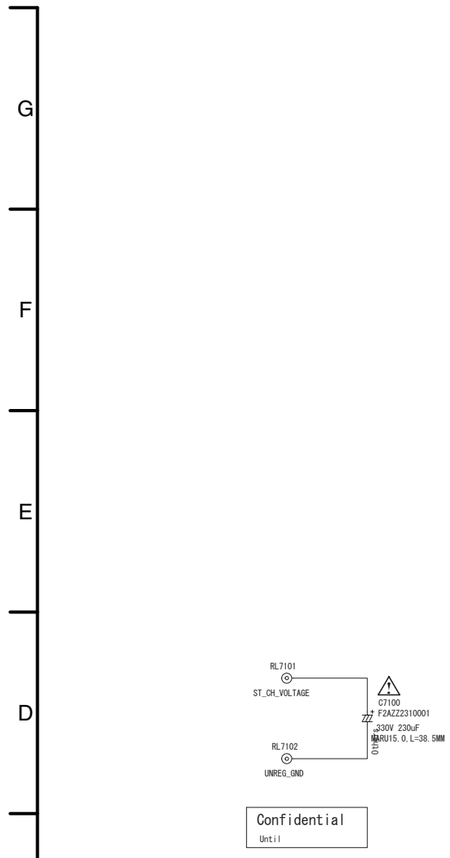
S4.4. Remote Schematic Diagram

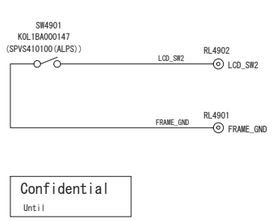


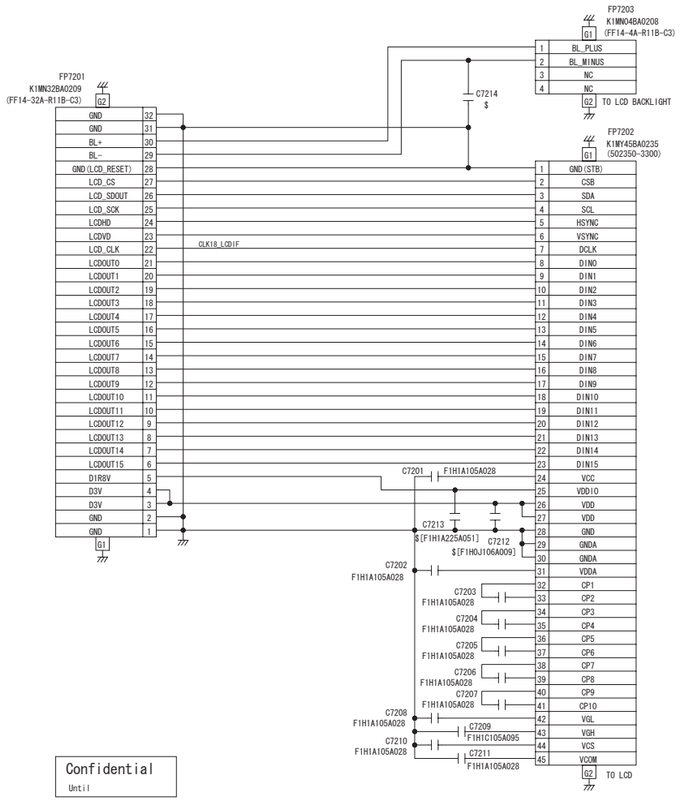
S4.5. Flash Schematic Diagram



S4.6. Flash Sub Schematic Diagram / S4.7. Hinge SW Schematic Diagram / S4.8. LCD IF Schematic Diagram





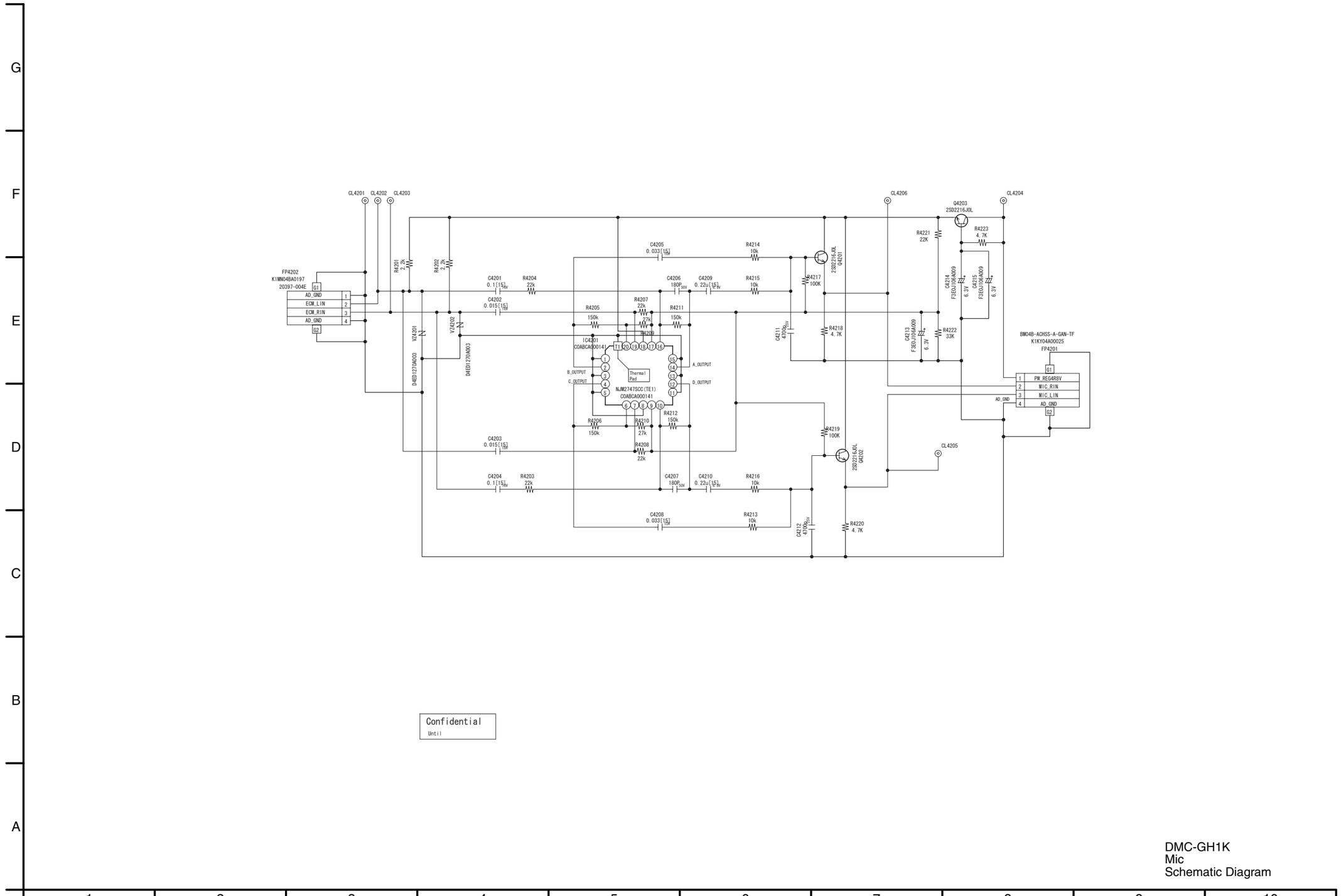


DMC-GH1K
Flash Sub
Schematic Diagram

DMC-GH1K
Hinge SW
Schematic Diagram

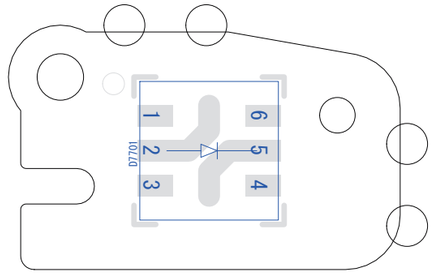
DMC-GH1K
LCD IF
Schematic Diagram

S4.9. Mic Schematic Diagram

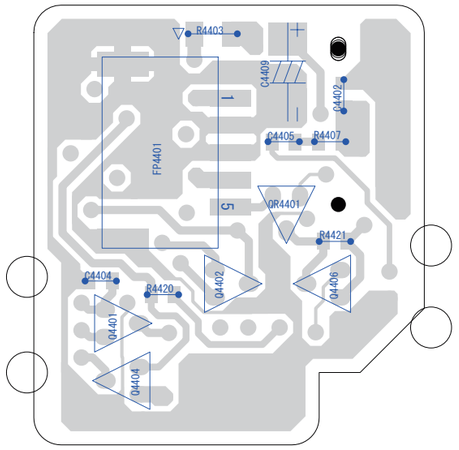


S5. Print Circuit Board

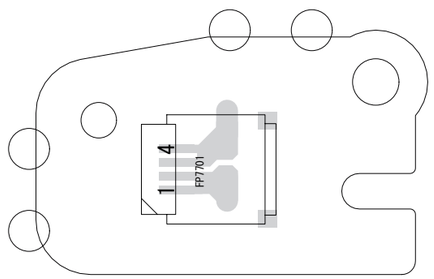
S5.1. AF Assist P.C.B. / S5.2. EXT Mic P.C.B.



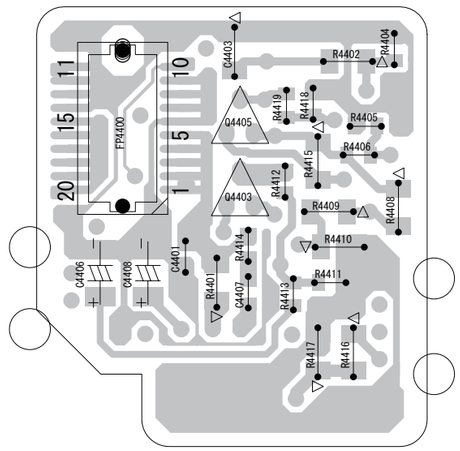
(Component Side)



(Component Side)



(Foil Side)

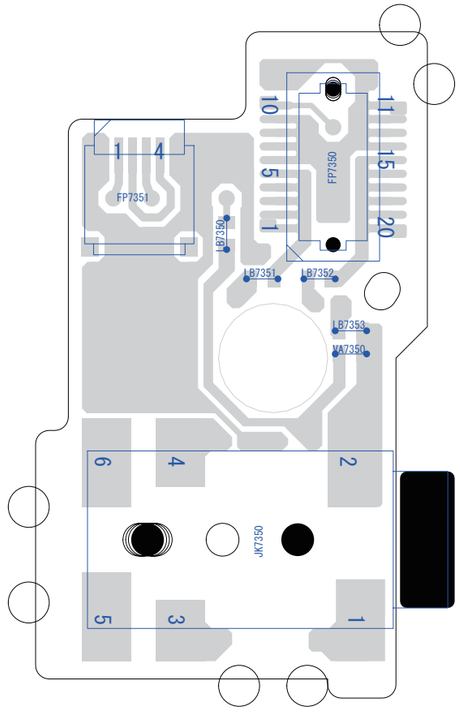


(Foil Side)

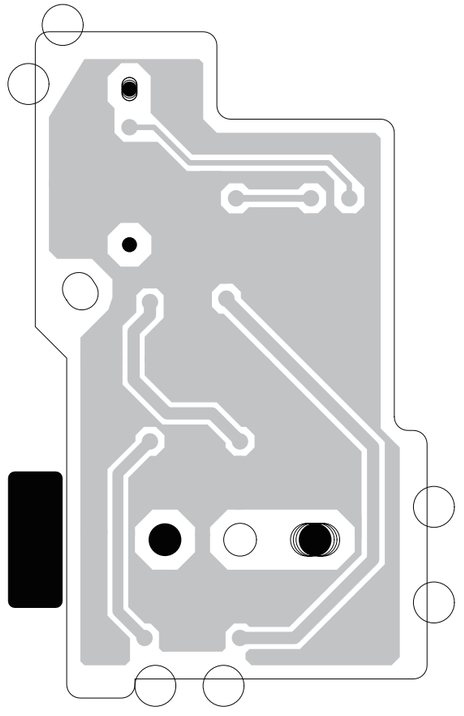
DMC-GH1K
AF Assist P.C.B.

DMC-GH1K
EXT Mic P.C.B.

S5.3. Remote P.C.B.



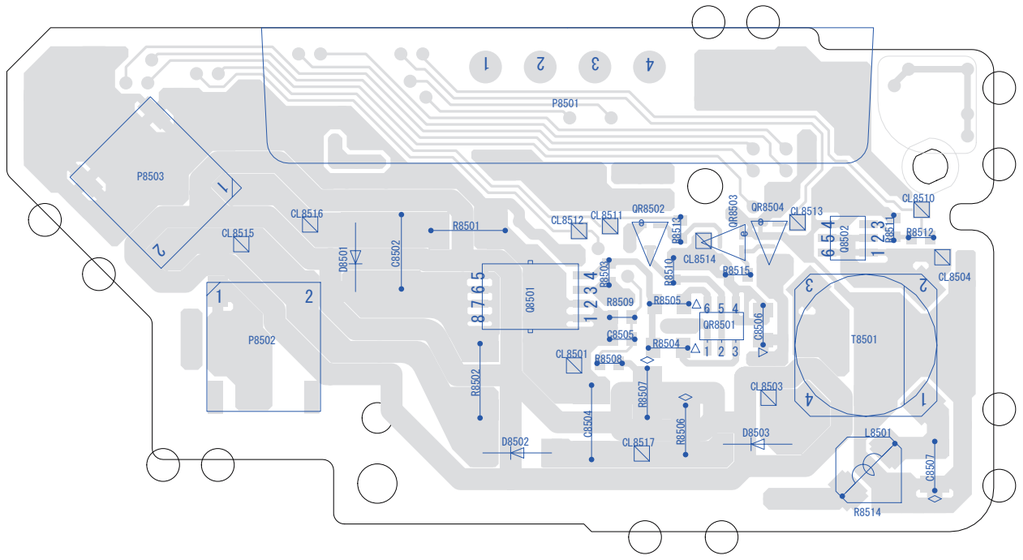
(Component Side)



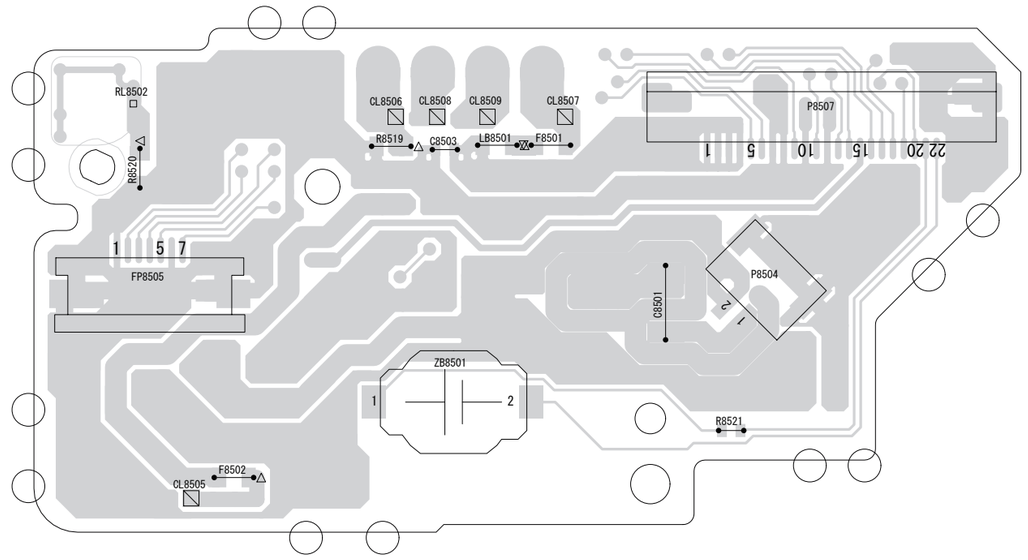
(Foil Side)

DMC-GH1K
Remote P.C.B.

S5.4. Flash P.C.B.



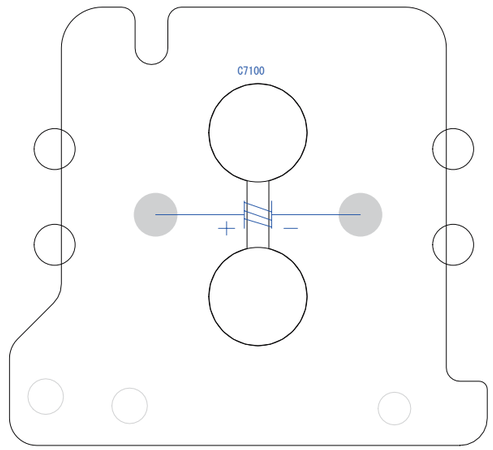
(Component Side)



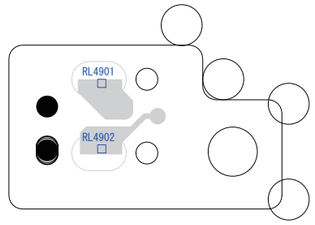
(Foil Side)

DMC-GH1K
Flash P.C.B.

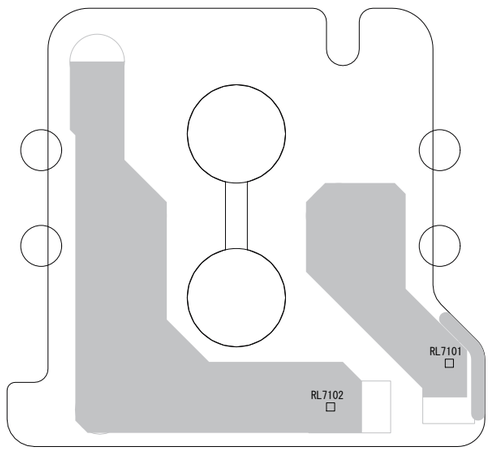
S5.5. Flash Sub P.C.B. / S5.6. Hinge SW P.C.B.



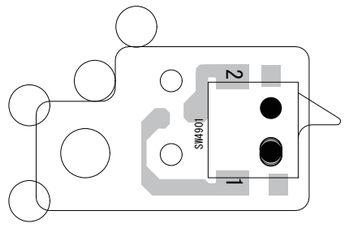
(Component Side)



(Component Side)



(Foil Side)



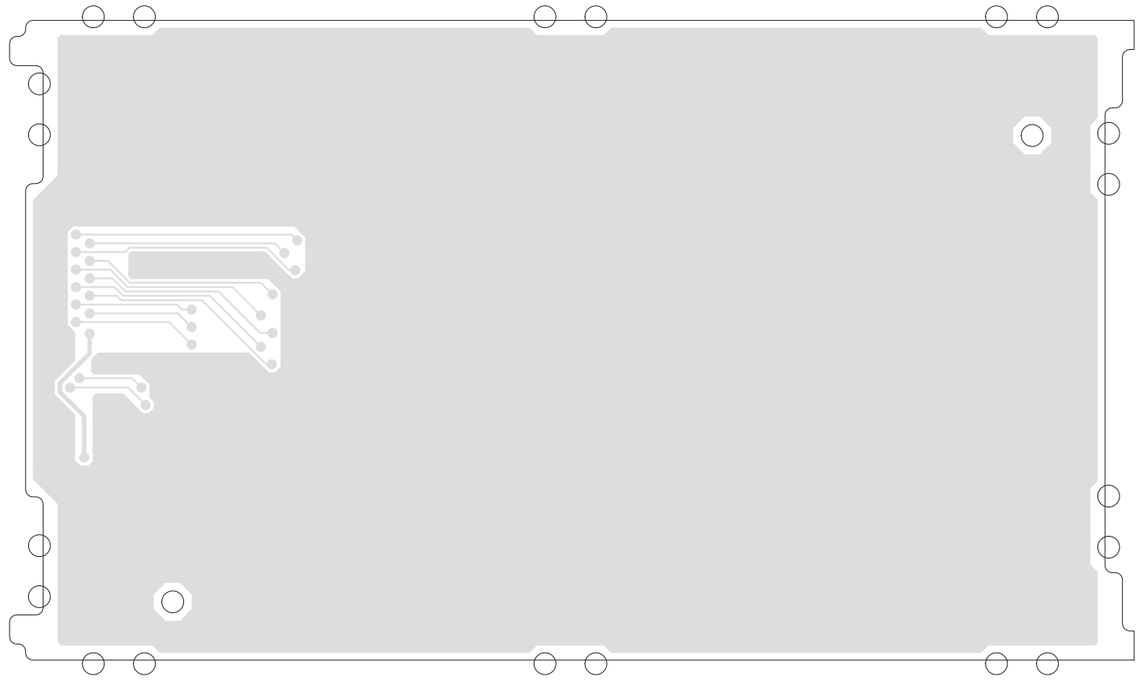
(Foil Side)

DMC-GH1K
Flash Sub P.C.B.

DMC-GH1K
Hinge SW P.C.B.

S5.7. LCD IF P.C.B.

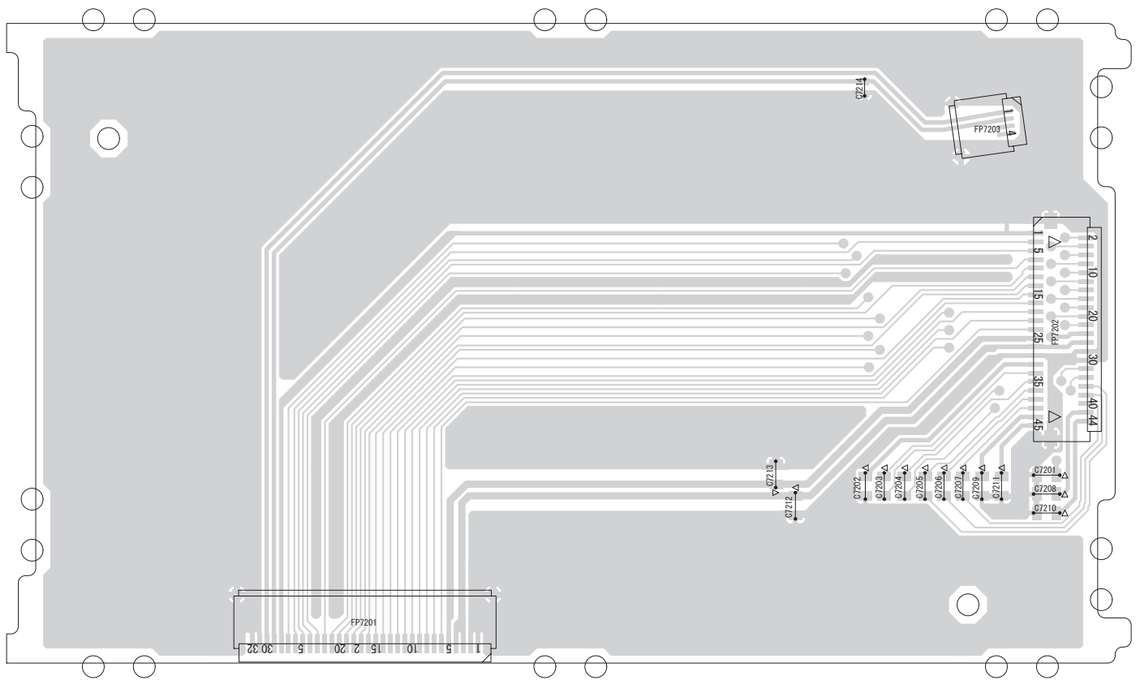
S5.7.1. LCD IF P.C.B. (Component Side)



(Component Side)

DMC-GH1K
LCD IF P.C.B.
(Component Side)

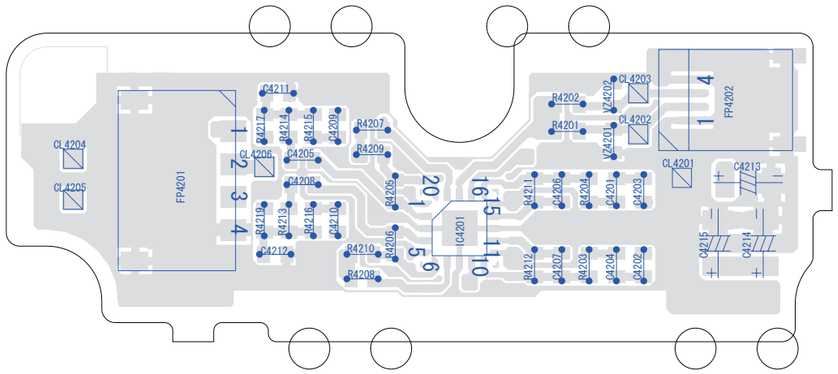
S5.7.2. LCD IF P.C.B. (Foil Side)



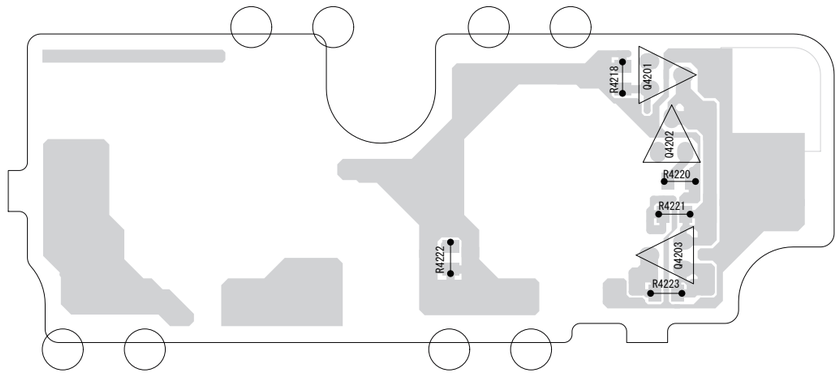
(Foil Side)

DMC-GH1K
LCD IF P.C.B.
(Foil Side)

S5.8. Mic P.C.B.



(Component Side)



(Foil Side)

DMC-GH1K
Mic 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.
5. Supply of CD-ROM, in accordance with license protection, is allowable as replacement parts only for customers who accidentally damaged or lost their own.

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

Definition of Parts supplier:

1. **Parts marked with [Energy] in the remarks column are supplied from Panasonic Corporation Energy Company.**
2. **Parts marked with [PAVCSG] in the remarks column are supplied from Panasonic AVC Networks Singapore Pte. Ltd.**
   Others are supplied from AVC-CSC-SPC.

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
		------ P.C.B. LIST ------		
##	VEP56084A	MAIN P.C.B.	1	PP,GC,GH,GK,GN,GT
				(RTL) E.S.D.
##	VEP56084B	MAIN P.C.B.	1	[PAVCSG]EB,EC,EG (RTL) E.S.D.
##	VEP54012A	AUDIO P.C.B.	1	(RTL) E.S.D.
##	VEP58085A	AF ASSIST P.C.B.	1	[PAVCSG](RTL) E.S.D.
##	VEP54013A	EXT MIC P.C.B.	1	[PAVCSG](RTL) E.S.D.
##	VEP58084A	REMOTE P.C.B.	1	[PAVCSG](RTL)
##	VEP58089A	FLASH P.C.B.	1	[PAVCSG](RTL) E.S.D.
##	VEP58090A	FLASH SUB P.C.B.	1	[PAVCSG](RTL)
##	VEP58086A	HINGE SW P.C.B.	1	[PAVCSG](RTL)
##	VEP59057A	LCD IF P.C.B.	1	[PAVCSG](RTL)
##	VEP54014A	MIC P.C.B.	1	(RTL) E.S.D.
		--- INDIVIDUAL PARTS ---		
⚠ C7100	F2AZZ2310001	E. CAPACITOR	1	
P8501	K4ZZ04000050	BATTERY CATCHER	1	
		--- ELEC. COMPONENTS ---		
##	VEP58085A	AF ASSIST P.C.B.		[PAVCSG](RTL) E.S.D.
D7701	B3ADB0000100	DIODE	1	[PAVCSG]E.S.D.
FP7701	K1MN04BA0208	CONNECTOR 4P	1	[PAVCSG]
##	VEP54013A	EXT MIC P.C.B.		[PAVCSG](RTL) E.S.D.
C4401	ECJ0EB1E472K	C.CAPACITOR CH 25V 4700P	1	[PAVCSG]
C4402	ECJ0EB1E472K	C.CAPACITOR CH 25V 4700P	1	[PAVCSG]
C4403	ECJ1VB0J475K	C.CAPACITOR CH 6.3V 4.7U	1	[PAVCSG]
C4404	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	[PAVCSG]
C4405	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	[PAVCSG]
C4406	F3E0J226A009	E.CAPACITOR CH 6.3V 22U	1	[PAVCSG]
C4407	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	[PAVCSG]
C4408	F3E0J226A009	E.CAPACITOR CH 6.3V 22U	1	[PAVCSG]
C4409	F3F0J226A032	T.CAPACITOR CH 6.3V 22U	1	[PAVCSG]
FP4400	K1KA20A00275	CONNECTOR 20P	1	[PAVCSG]
FP4401	K1KA05BA0014	CONNECTOR 5P	1	[PAVCSG]
Q4401	2SC6054J0L	TRANSISTOR	1	[PAVCSG]E.S.D.
Q4402	2SC6054J0L	TRANSISTOR	1	[PAVCSG]E.S.D.
Q4403	2SA2174J0L	TRANSISTOR	1	[PAVCSG]E.S.D.
Q4404	2SC6054J0L	TRANSISTOR	1	[PAVCSG]E.S.D.
Q4405	2SA2174J0L	TRANSISTOR	1	[PAVCSG]E.S.D.
Q4406	2SC6054J0L	TRANSISTOR	1	[PAVCSG]E.S.D.
QR4401	UNR91A3J0L	TRANSISTOR-RESISTOR	1	[PAVCSG]E.S.D.
R4401	D0HB562ZA002	M.RESISTOR 5.6K	1	[PAVCSG]
R4402	D0HB331ZA002	M.RESISTOR CH 1/10W 330	1	[PAVCSG]
R4403	D0HB562ZA002	M.RESISTOR 5.6K	1	[PAVCSG]
R4404	ERJ2GEJ473X	M.RESISTOR CH 1/16W 47K	1	[PAVCSG]
R4405	ERJ2GEJ683X	M.RESISTOR CH 1/16W 68K	1	[PAVCSG]
R4406	ERJ2GEJ223X	M.RESISTOR CH 1/16W 22K	1	[PAVCSG]
R4407	ERJ2GEJ471X	M.RESISTOR CH 1/16W 470	1	[PAVCSG]
R4408	D0HB103ZA002	M.RESISTOR CH 1/16W 10K	1	[PAVCSG]
R4409	D0HB154ZA002	M.RESISTOR CH 1/16W 150K	1	[PAVCSG]
R4410	D0HB563ZA002	M.RESISTOR CH 1/10W 56K	1	[PAVCSG]
R4411	ERJ2GEJ102X	M.RESISTOR CH 1/16W 1K	1	[PAVCSG]
R4412	ERJ2GEJ562X	M.RESISTOR CH 1/16W 5.6K	1	[PAVCSG]
R4413	ERJ2GEJ151X	M.RESISTOR CH 1/16W 150	1	[PAVCSG]
R4414	ERJ2GEJ471X	M.RESISTOR CH 1/16W 470	1	[PAVCSG]
R4415	D0HB103ZA002	M.RESISTOR CH 1/16W 10K	1	[PAVCSG]
R4416	D0HB154ZA002	M.RESISTOR CH 1/16W 150K	1	[PAVCSG]
R4417	D0HB563ZA002	M.RESISTOR CH 1/10W 56K	1	[PAVCSG]
R4418	ERJ2GEJ102X	M.RESISTOR CH 1/16W 1K	1	[PAVCSG]
R4419	ERJ2GEJ562X	M.RESISTOR CH 1/16W 5.6K	1	[PAVCSG]
R4420	ERJ2GEJ151X	M.RESISTOR CH 1/16W 150	1	[PAVCSG]
R4421	ERJ2GEJ472X	M.RESISTOR CH 1/16W 4.7K	1	[PAVCSG]

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
##	VEP58084A	REMOTE P.C.B.		[PAVCSG](RTL)
FP7350	K1KA20A00306	CONNECTOR 20P	1	[PAVCSG]
FP7351	K1MN04BA0208	CONNECTOR 4P	1	[PAVCSG]
JK7350	K2HD104D0002	JACK	1	[PAVCSG]
LB7350	J0JCC0000415	FILTER	1	[PAVCSG]
LB7351	J0JCC0000415	FILTER	1	[PAVCSG]
LB7352	J0JCC0000415	FILTER	1	[PAVCSG]
LB7353	J0JCC0000415	FILTER	1	[PAVCSG]
VA7350	D4ED18R00008	VARISTOR	1	[PAVCSG]
##	VEP58089A	FLASH P.C.B.		[PAVCSG](RTL) E.S.D.
C8501	F1K2J333A029	C.CAPACITOR 630V 0.033U	1	[PAVCSG]
C8502	F1K2E2230002	C.CAPACITOR 250V 0.022U	1	[PAVCSG]
C8503	ECJ0EB1A104K	C.CAPACITOR CH 10V 0.1U	1	[PAVCSG]
C8504	F1K2J102A028	C.CAPACITOR 630V 1000P	1	[PAVCSG]
C8506	ECJ1VB0J105K	C.CAPACITOR CH 6.3V 1U	1	[PAVCSG]
C8507	F1J1A106A023	C.CAPACITOR CH 10V 10U	1	[PAVCSG]
D8501	B0ECGP000005	DIODE	1	[PAVCSG]E.S.D.
D8502	B0HCMP000006	DIODE	1	[PAVCSG]E.S.D.
D8503	MA2YF8000L	DIODE	1	[PAVCSG]E.S.D.
⚠ F8501	ERBSE3R00U	FUSE 32V 3.0A	1	[PAVCSG]
⚠ F8502	ERBSE1R50U	FUSE 32V 1.5A	1	[PAVCSG]
FP8505	K1MN07BA0055	CONNECTOR 7P	1	[PAVCSG]
LB8501	J0JGC0000038	FILTER	1	[PAVCSG]
P8502	K1KA02B00307	CONNECTOR 2P	1	[PAVCSG]
P8503	K1KA02B00292	CONNECTOR 2P	1	[PAVCSG]
P8504	K1KA02BA0022	CONNECTOR 2P	1	[PAVCSG]
P8507	K1MN22BA0272	CONNECTOR 22P	1	[PAVCSG]
Q8501	B1JBLP000017	TRANSISTOR	1	[PAVCSG]E.S.D.
Q8502	B1DFCG000020	TRANSISTOR	1	[PAVCSG]E.S.D.
QR8501	XP0431400L	DIGITAL TRANSISTOR	1	[PAVCSG]E.S.D.
QR8502	UNR32AF00L	TRANSISTOR RESISTOR	1	[PAVCSG]E.S.D.
QR8503	UNR32A100L	TRANSISTOR-RESISTOR	1	[PAVCSG]E.S.D.
QR8504	UNR32A100L	TRANSISTOR-RESISTOR	1	[PAVCSG]E.S.D.
R8501	ERJ8GEYJ104V	M.RESISTOR CH 1/8W 100K	1	[PAVCSG]
R8502	ERJ8GEYJ105V	M.RESISTOR CH 1/8W 1M	1	[PAVCSG]
R8503	ERJ2GEJ104X	M.RESISTOR CH 1/16W 100K	1	[PAVCSG]
R8504	ERJ3GEYJ220V	M.RESISTOR CH 1/10W 22	1	[PAVCSG]
R8505	ERJ3GEYJ101V	M.RESISTOR CH 1/10W 100	1	[PAVCSG]
R8506	ERJ6RED914V	CHIP RESISTOR	1	[PAVCSG]
R8507	ERJ6RED914V	CHIP RESISTOR	1	[PAVCSG]
R8508	ERJ2RKD304X	M.RESISTOR CH 1/16W 300K	1	[PAVCSG]
R8509	ERJ2RHD163X	M.RESISTOR CH 1/16W 16K	1	[PAVCSG]
R8510	ERJ2GEJ102X	M.RESISTOR CH 1/16W 1K	1	[PAVCSG]
R8511	ERJ2GEJ153X	M.RESISTOR CH 1/16W 15K	1	[PAVCSG]
R8512	ERJ2GE0R00X	M.RESISTOR CH 1/16W 0	1	[PAVCSG]
R8513	ERJ2GEJ152X	M.RESISTOR CH 1/16W 1.5K	1	[PAVCSG]
R8514	ERJ8GEY0R00V	M.RESISTOR CH 1/8W 0	1	[PAVCSG]
R8515	ERJ2GEJ332X	M.RESISTOR CH 1/16W 3.3K	1	[PAVCSG]
R8519	ERJ3GEY0R00V	M.RESISTOR CH 1/10W 0	1	[PAVCSG]
R8520	ERJ3GEY0R00V	M.RESISTOR CH 1/10W 0	1	[PAVCSG]
T8501	G5D1A0000074	TRANSFORMER	1	[PAVCSG]
##	VEP58086A	HINGE SW P.C.B.		[PAVCSG](RTL)
SW4901	K0L1BA000147	SWITCH	1	[PAVCSG]

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
##	VEP59057A	LCD IF P.C.B.		[PAVCSG](RTL)
C7201	F1H1A105A028	C.CAPACITOR CH 10V 1U	1	[PAVCSG]
C7202	F1H1A105A028	C.CAPACITOR CH 10V 1U	1	[PAVCSG]
C7203	F1H1A105A028	C.CAPACITOR CH 10V 1U	1	[PAVCSG]
C7204	F1H1A105A028	C.CAPACITOR CH 10V 1U	1	[PAVCSG]
C7205	F1H1A105A028	C.CAPACITOR CH 10V 1U	1	[PAVCSG]
C7206	F1H1A105A028	C.CAPACITOR CH 10V 1U	1	[PAVCSG]
C7207	F1H1A105A028	C.CAPACITOR CH 10V 1U	1	[PAVCSG]
C7208	F1H1A105A028	C.CAPACITOR CH 10V 1U	1	[PAVCSG]
C7209	F1H1C105A095	C.CAPACITOR CH 16V 1U	1	[PAVCSG]
C7210	F1H1A105A028	C.CAPACITOR CH 10V 1U	1	[PAVCSG]
C7211	F1H1A105A028	C.CAPACITOR CH 10V 1U	1	[PAVCSG]
FP7201	K1MN32BA0209	CONNECTOR 32P	1	[PAVCSG]
FP7202	K1MY45BA0235	CONNECTOR 45P	1	[PAVCSG]
FP7203	K1MN04BA0208	CONNECTOR 4P	1	[PAVCSG]
##	VEP54014A	MIC P.C.B.		(RTL) E.S.D.
C4201	F1G1A104A012	C.CAPACITOR CH 10V 0.1U	1	
C4202	ECJ0EB1C153K	C.CAPACITOR CH 16V 0.015U	1	
C4203	ECJ0EB1C153K	C.CAPACITOR CH 16V 0.015U	1	
C4204	F1G1A104A012	C.CAPACITOR CH 10V 0.1U	1	
C4205	ECJ0EB1A333K	C.CAPACITOR CH 10V 0.033U	1	
C4206	ECJ0EC1H181J	C.CAPACITOR CH 50V 180P	1	
C4207	ECJ0EC1H181J	C.CAPACITOR CH 50V 180P	1	
C4208	ECJ0EB1A333K	C.CAPACITOR CH 10V 0.033U	1	
C4209	F1G0J224A004	C.CAPACITOR CH 6.3V 0.22U	1	
C4210	F1G0J224A004	C.CAPACITOR CH 6.3V 0.22U	1	
C4211	ECJ0EB1E472K	C.CAPACITOR CH 25V 4700P	1	
C4212	ECJ0EB1E472K	C.CAPACITOR CH 25V 4700P	1	
C4213	F3E0J106A009	E.CAPACITOR CH 6.3V 22U	1	
C4214	F3E0J106A009	E.CAPACITOR CH 6.3V 22U	1	
C4215	F3E0J106A009	E.CAPACITOR CH 6.3V 22U	1	
FP4201	K1KY04A00025	CONNECTOR 4P	1	
FP4202	K1MN04BA0197	CONNECTOR 4P	1	
IC4201	C0ABCA000141	IC	1	E.S.D.
Q4201	2SD2216J0L	TRANSISTOR	1	E.S.D.
Q4202	2SD2216J0L	TRANSISTOR	1	E.S.D.
Q4203	2SD2216J0L	TRANSISTOR	1	E.S.D.
R4201	ERJ2GEJ222	M.RESISTOR CH 1/16W 2.2K	1	
R4202	ERJ2GEJ222	M.RESISTOR CH 1/16W 2.2K	1	
R4203	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R4204	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R4205	ERJ2GEJ154	M.RESISTOR CH 1/16W 150K	1	
R4206	ERJ2GEJ154	M.RESISTOR CH 1/16W 150K	1	
R4207	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R4208	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R4209	ERJ2GED273X	M.RESISTOR CH 1/16W 27K	1	
R4210	ERJ2GED273X	M.RESISTOR CH 1/16W 27K	1	
R4211	ERJ2GEJ154	M.RESISTOR CH 1/16W 150K	1	
R4212	ERJ2GEJ154	M.RESISTOR CH 1/16W 150K	1	
R4213	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R4214	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R4215	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R4216	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R4217	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
R4218	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R4219	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
R4220	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R4221	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R4222	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R4223	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
VZ4201	D4ED1270A003	SURGE ABSORBER	1	
VZ4202	D4ED1270A003	SURGE ABSORBER	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	VEP56084A	MAIN P.C.B.	1	PP,GC,GH,GK,GN,GT
				(RTL) E.S.D.
1	VEP56084B	MAIN P.C.B.	1	[PAVCSG]EB,EC,EG (RTL) E.S.D.
⚠ 2	ML-421S/ZTE	BUTTON BATTERY	1	(B4001)[ENERGY]
3	VEP54012A	AUDIO P.C.B.	1	(RTL) E.S.D.
4	VMP9162	MAIN PCB FLEX. PLATE	1	[PAVCSG]
5	VMP9266	FRONT GND PLATE	1	[PAVCSG]
6	VWJ2090	AUDIO FPC	1	[PAVCSG]
7	VXQ1770	MOUNT BOX UNIT	1	
8	VYF3227	EYE CAP UNIT	1	
9	K0RC01000003	FRONT OP UNIT	1	[PAVCSG]
10	VEP58085A	AF ASSIST P.C.B.	1	[PAVCSG](RTL) E.S.D.
11	VGK3530	GRIP PIECE FRONT	1	[PAVCSG]
12	VGQ0A13	AF LIGHT CASE	1	[PAVCSG]
13	VKF4379	REMOTE COVER	1	[PAVCSG](K)
13	VKF4542	REMOTE COVER	1	[PAVCSG](N)
13	VKF4412	REMOTE COVER	1	[PAVCSG](R)
14	VKF4530	JACK COVER	1	[PAVCSG](K)
14	VKF4543	JACK COVER	1	[PAVCSG](N)
14	VKF4548	JACK COVER	1	[PAVCSG](R)
15	VMB4198	LENS RELEASE BUTTON SPRING	1	[PAVCSG]
16	VMP9191	FRONT EARTH PLATE	1	[PAVCSG]
17	VYQ4928	SHUTTER RING UNIT	1	[PAVCSG]
18	VYQ4929	LENS RELEASE BUTTON UNIT	1	[PAVCSG]
19	VEP54013A	EXT MIC P.C.B.	1	[PAVCSG](RTL) E.S.D.
20	VEP58084A	REMOTE P.C.B.	1	[PAVCSG](RTL)
21	VGQ0E37	REMOTE HOLDER	1	[PAVCSG]
22	VGQ0F03	REMOTE PCB SHEET	1	[PAVCSG]
23	VMP9348	SIDE FRAME R	1	[PAVCSG]
24	VWJ2087	FRONT FPC	1	[PAVCSG]
⚠ 25	F2AZZ2310001	E. CAPACITOR	1	[PAVCSG](C7100)
26	K4ZZ04000050	BATTERY CATCHER	1	[PAVCSG](P8501)
27	L0AA01A00039	SPEAKER	1	[PAVCSG]
28	VEE1F10	FLASH HARNESS	1	[PAVCSG]
29	VEP58089A	FLASH P.C.B.	1	[PAVCSG](RTL) E.S.D.
30	VEP58090A	FLASH SUB P.C.B.	1	[PAVCSG](RTL)
31	VGQ0D53	CAPACITOR CUSHION	1	[PAVCSG]
32	VGQ0E38	AUDIO PCB HOLDER	1	[PAVCSG]
33	VGQ0E42	CAPACITOR HOLDER	1	[PAVCSG]
34	VGQ0F84	SPEAKER CUSHION	1	[PAVCSG]
35	VGU0D11	BATTERY LOCK KNOB	1	[PAVCSG]
36	VKF4380	DC COVER	1	[PAVCSG](K)
36	VKF4544	DC COVER	1	[PAVCSG](N)
36	VKF4411	DC COVER	1	[PAVCSG](R)
37	VKM7947	BATTERY CASE	1	[PAVCSG]
38	VMB4199	BATTERY LOCK SPRING	1	[PAVCSG]
39	VMB4201	BATTERY SPRING	1	[PAVCSG]
40	VMB4202	EARTH SPRING	1	[PAVCSG]
41	VMB4214	BATTERY DOOR SPRING	1	[PAVCSG]
42	VMP9349	BATTERY PLATE	1	[PAVCSG]
43	VMP9350	SIDE PLATE L	1	[PAVCSG]
44	VMS7941	BATTERY DOOR SHAFT	1	[PAVCSG]
45	VXK1907	TRIPOD FRAME UNIT	1	[PAVCSG]
46	VYF3224	BATTERY DOOR UNIT	1	[PAVCSG](K)
46	VYF3254	BATTERY DOOR UNIT	1	[PAVCSG](N)
46	VYF3268	BATTERY DOOR UNIT	1	[PAVCSG](R)
47	K0RE01100001	TOP CASE UNIT	1	[PAVCSG]
48	VEK0P00	FLASH UNIT	1	[PAVCSG]
49	VGQ0E41	MIC NET	1	[PAVCSG]
50	VGQ0F87	MIC NET SHEET	1	[PAVCSG]
51	VGQ0G78	FLASH TOP SHEET	1	[PAVCSG]
52	VKM7949	FLASH CASE TOP	1	[PAVCSG]
53	K1PY04Y00101	LEAD WIRE	1	[PAVCSG]
54	VEP54014A	MIC P.C.B.	1	(RTL) E.S.D.
55	VMP9352	MIC PLATE	1	[PAVCSG]
56	VMT1962	MIC DAMPER	1	[PAVCSG]
57	WM-58A601	MICROPHONE UNIT	1	[PAVCSG]
58	VKF4584	FPC COVER	1	
59	VKM8063	HINGE ARM COVER TOP	1	[PAVCSG](K)
59	VKM7993	HINGE ARM COVER TOP	1	[PAVCSG](N)
59	VKM8064	HINGE ARM COVER TOP	1	[PAVCSG](R)
60	VKM8065	HINGE ARM COVER BOTTOM	1	[PAVCSG](K)
60	VKM7994	HINGE ARM COVER BOTTOM	1	[PAVCSG](N)
60	VKM8066	HINGE ARM COVER BOTTOM	1	[PAVCSG](R)
61	K0RC01000002	REAR OP UNIT	1	[PAVCSG]
⚠ 62	L2CH00000028	OPTICAL SENSOR UNIT	1	[PAVCSG]

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
63	VGQ0A30	LCD LOCK LEVER	1	[PAVCSG]
64	VGQ0E39	GRIP PIECE REAR	1	[PAVCSG]
65	VGU0D13	REAR OP BUTTON	1	[PAVCSG]
66	VGU0D14	PLAYBACK,AF/AE LOCK BUTION	1	[PAVCSG]
67	VGU0D47	LVF/LCD BUTTON	1	[PAVCSG]
68	VGU0E58	MOTION PICTURE BUTTON	1	[PAVCSG]
69	VMB4206	LCD LOCK SPRING	1	[PAVCSG]
70	VMB4207	SD DOOR SPRING	1	[PAVCSG]
71	VMB4263	MOTION PICTURE BUTTON SPRING	1	[PAVCSG]
72	VMP9181	EYEPIECE PLATE	1	[PAVCSG]
73	VMS7944	SD DOOR SHAFT	1	[PAVCSG]
74	VYF3263	SD DOOR UNIT	1	[PAVCSG](K)
74	VYF3255	SD DOOR UNIT	1	[PAVCSG](N)
74	VYF3267	SD DOOR UNIT	1	[PAVCSG](R)
75	VEE1F12	HINGE SW HARNESS	1	[PAVCSG]
76	VEP58086A	HINGE SW P.C.B.	1	[PAVCSG](RTL)
77	VMA0W24	HINGE EARTH PLATE	1	[PAVCSG]
78	VYQ4488-A	STRAP R UNIT	1	[PAVCSG]
79	VYQ4925	STRAP L UNIT	1	[PAVCSG]
80	VEP59057A	LCD IF P.C.B.	1	[PAVCSG](RTL)
81	VGQ0B55	LCD BL BEZEL SHEET	1	[PAVCSG]
82	VKM8069	LCD CASE BOTTOM	1	[PAVCSG](K)
82	VKM7996	LCD CASE BOTTOM	1	[PAVCSG](N)
82	VKM8070	LCD CASE BOTTOM	1	[PAVCSG](R)
83	VMT1964	LCD PCB CUSION	1	[PAVCSG]
84	VYF3261	LCD HINGE UNIT	1	[PAVCSG](K)
84	VYF3256	LCD HINGE UNIT	1	[PAVCSG](N)
84	VYF3262	LCD HINGE UNIT	1	[PAVCSG](R)
85	VYQ4552	LVF UNIT	1	
85-1	VGP6235	LVF PANEL	1	
85-2	VGQ0A40	LVF COVER	1	
86	VYK3H88	FRONT CASE UNIT	1	[PAVCSG](K)
86	VYK3H90	FRONT CASE UNIT	1	[PAVCSG](N)
86	VYK3H89	FRONT CASE UNIT	1	[PAVCSG](R)
87	VYK3H91	REAR CASE UNIT	1	[PAVCSG](K)
87	VYK3H93	REAR CASE UNIT	1	[PAVCSG](N)
87	VYK3H92	REAR CASE UNIT	1	[PAVCSG](R)
88	VYK2Y66	LCD TFT UNIT	1	[PAVCSG]
89	VYK2Y62	LCD CASE TOP UNIT	1	[PAVCSG](K)
89	VYK3G39	LCD CASE TOP UNIT	1	[PAVCSG](N)
89	VYK3J36	LCD CASE TOP UNIT	1	[PAVCSG](R)
90	VYK2Y65	LCD SHILD CASE UNIT	1	[PAVCSG]
91	VEE1G17	EXT MIC HARNESS	1	[PAVCSG]
92	VGQ0E40	JACK HOLDER	1	[PAVCSG]
93	VMT1964	LCD PCB CUSHION	1	[PAVCSG]
94	VMT1964	LCD PCB CUSHION	1	[PAVCSG]
95	VMT1964	LCD PCB CUSHION	1	[PAVCSG]
96	L5EDDXL00001	LVF MODULE	1	
97	VWJ2061	LVF FPC	1	
98	VGQ0H23	BATTERY SIDE L CUSHION	1	[PAVCSG]
99	VGQ0H25	BATT GND SHEET	1	[PAVCSG]
100	VGQ0F03	REMOTE PCB SHEET	1	[PAVCSG]
101	VGQ0H24	FRONT OP SHEET	1	[PAVCSG]
102	VGQ0H61	TOP MIC SHEET	1	[PAVCSG]
103	VGQ0H61	TOP MIC SHEET	1	[PAVCSG]
104	VGQ0H80	HINGE ARM COVER SHEET	1	[PAVCSG]
B1	XQN16+BJ4FN	SCREW	1	[PAVCSG]
B2	XQN16+BJ4FN	SCREW	1	[PAVCSG]
B3	XQN16+BJ4FN	SCREW	1	[PAVCSG]
B4	XQN16+BJ4FN	SCREW	1	[PAVCSG]
B5	XQN16+BJ4FN	SCREW	1	[PAVCSG]
B6	XQN16+B2FN	SCREW	1	[PAVCSG]
B7	XQN16+B2FN	SCREW	1	[PAVCSG]
B8	VHD2062-A	SCREW	1	[PAVCSG]
B9	XQN16+BJ4FN	SCREW	1	[PAVCSG]
B10	XQN16+BJ4FN	SCREW	1	[PAVCSG]
B11	XQN16+BJ4FN	SCREW	1	[PAVCSG]
B12	XQN16+BJ4FN	SCREW	1	[PAVCSG]
B13	XQN16+BJ4FN	SCREW	1	[PAVCSG]
B14	XQN16+BJ4FN	SCREW	1	[PAVCSG]
B15	VHD2062-A	SCREW	1	[PAVCSG]
B16	VHD2062-A	SCREW	1	[PAVCSG]
B17	VHD2062-A	SCREW	1	[PAVCSG]
B18	VHD2062-A	SCREW	1	[PAVCSG]
B19	VHD2062-A	SCREW	1	[PAVCSG]
B20	VHD2062-A	SCREW	1	[PAVCSG]

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
B21	XQN16+B2FN	SCREW	1	[PAVCSG]
B22	XQN16+BJ4FN	SCREW	1	[PAVCSG]
B23	XQN16+BJ4FN	SCREW	1	[PAVCSG]
B24	XQN16+BJ4FN	SCREW	1	[PAVCSG]
B25	XQN16+BJ4FN	SCREW	1	[PAVCSG]
B26	VHD2093	SCREW	1	[PAVCSG](K),(R)
B26	VHD2132	SCREW	1	[PAVCSG](N)
B27	VHD2093	SCREW	1	[PAVCSG](K),(R)
B27	VHD2132	SCREW	1	[PAVCSG](N)
B28	VHD2094	SCREW	1	[PAVCSG](K),(R)
B28	VHD2133	SCREW	1	[PAVCSG](N)
B29	VHD2094	SCREW	1	[PAVCSG](K),(R)
B29	VHD2133	SCREW	1	[PAVCSG](N)
B30	XQN16+BJ4FN	SCREW	1	[PAVCSG]
B31	XQN16+BJ4FN	SCREW	1	[PAVCSG]
B32	XQN16+BJ5FJK	SCREW	1	[PAVCSG]
B33	XQN16+BJ5FJK	SCREW	1	[PAVCSG]
B34	VHD2091	SCREW	1	[PAVCSG]
B35	VHD2091	SCREW	1	[PAVCSG]
B36	XQN16+B2FN	SCREW	1	[PAVCSG]
B37	XQN16+BJ3FN	SCREW	1	[PAVCSG]
B38	VHD2091	SCREW	1	[PAVCSG]
B39	VHD2091	SCREW	1	[PAVCSG]
B40	VHD2091	SCREW	1	[PAVCSG](K),(R)
B40	VHD2130	SCREW	1	[PAVCSG](N)
B41	VHD2091	SCREW	1	[PAVCSG](K),(R)
B41	VHD2130	SCREW	1	[PAVCSG](N)
B42	VHD2091	SCREW	1	[PAVCSG](K),(R)
B42	VHD2130	SCREW	1	[PAVCSG](N)
B43	VHD2091	SCREW	1	[PAVCSG](K),(R)
B43	VHD2130	SCREW	1	[PAVCSG](N)
B44	VHD2091	SCREW	1	[PAVCSG](K),(R)
B44	VHD2130	SCREW	1	[PAVCSG](N)
B45	VHD2092	SCREW	1	[PAVCSG](K),(R)
B45	VHD2131	SCREW	1	[PAVCSG](N)
B46	VHD2092	SCREW	1	[PAVCSG](K),(R)
B46	VHD2131	SCREW	1	[PAVCSG](N)
B47	VHD2093	SCREW	1	[PAVCSG](K),(R)
B47	VHD2132	SCREW	1	[PAVCSG](N)
B48	VHD2093	SCREW	1	[PAVCSG](K),(R)
B48	VHD2132	SCREW	1	[PAVCSG](N)
B49	VHD2093	SCREW	1	[PAVCSG](K),(R)
B49	VHD2132	SCREW	1	[PAVCSG](N)
B50	VHD2093	SCREW	1	[PAVCSG](K),(R)
B50	VHD2132	SCREW	1	[PAVCSG](N)
B51	VHD2094	SCREW	1	[PAVCSG](K),(R)
B51	VHD2133	SCREW	1	[PAVCSG](N)
B52	VHD2094	SCREW	1	[PAVCSG](K),(R)
B52	VHD2133	SCREW	1	[PAVCSG](N)
B53	VHD2094	SCREW	1	[PAVCSG](K),(R)
B53	VHD2133	SCREW	1	[PAVCSG](N)
B54	VHD2094	SCREW	1	[PAVCSG](K),(R)
B54	VHD2133	SCREW	1	[PAVCSG](N)
B55	VHD2094	SCREW	1	[PAVCSG](K),(R)
B55	VHD2133	SCREW	1	[PAVCSG](N)
B56	VHD2094	SCREW	1	[PAVCSG](K),(R)
B56	VHD2133	SCREW	1	[PAVCSG](N)
B57	VHD2094	SCREW	1	[PAVCSG](K),(R)
B57	VHD2133	SCREW	1	[PAVCSG](N)
B58	VHD2128	SCREW	1	[PAVCSG]
B59	VHD2128	SCREW	1	[PAVCSG]
B60	VHD1754-A	SCREW	1	[PAVCSG]
B61	VHD1754-A	SCREW	1	[PAVCSG]
B62	XQN16+B2FN	SCREW	1	[PAVCSG]
B63	XQN16+B2FN	SCREW	1	[PAVCSG]
B64	XQN16+B2FN	SCREW	1	[PAVCSG]
B65	XQN16+B2FN	SCREW	1	[PAVCSG]
B66	XQN16+BJ11FN	SCREW	1	[PAVCSG]
B67	XQN16+BJ11FN	SCREW	1	[PAVCSG]
B68	XQN16+BJ4FN	SCREW	1	[PAVCSG]
B69	XQN16+BJ4FN	SCREW	1	[PAVCSG]

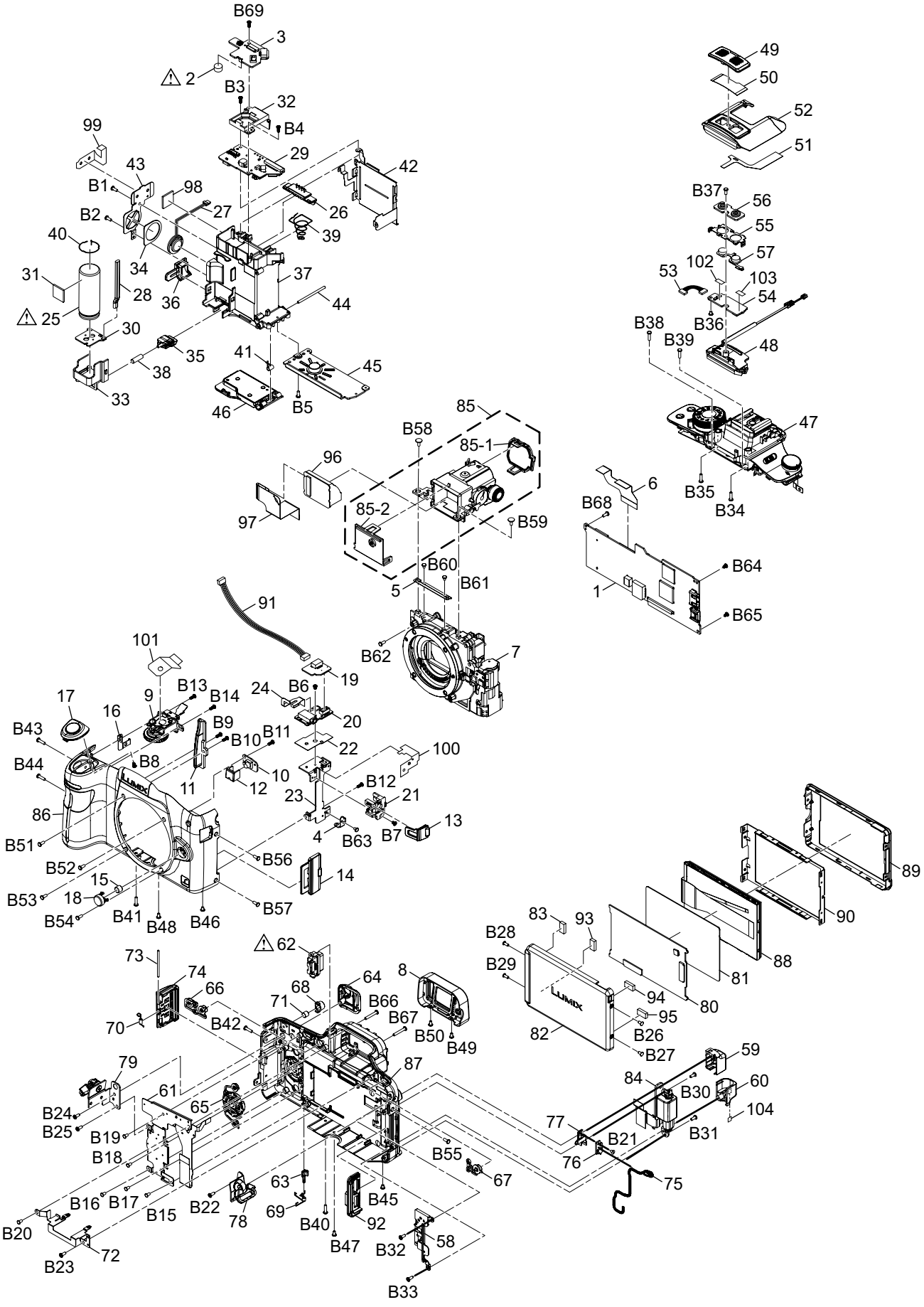
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
201	P05F340	DECORATION RING	1	
202	P05F020	HOOD ADAPTOR	1	
203	P05C010	ZOOM RUBBER RING	1	
204	P057H00	COVER RING UNIT	1	
206	P04F370	FLOATING RUBBER	1	
207	P04F370	FLOATING RUBBER	1	
208	P04F370	FLOATING RUBBER	1	
209	P0579H0	MOUNT CONTACT UNIT	1	
210	P058H50	L MOUNT UNIT	1	
211	9630060	SHADING FRAME	1	
213	VQL1V24	WEEE LABEL	1	
214	-------	REAR COVER	1	
215	-------	LENS MAIN UNIT	1	
B201	0HF4025	SCREW	1	
B202	0HF4025	SCREW	1	
B203	0HF4025	SCREW	1	
B204	0242100	SCREW	1	
B205	0242100	SCREW	1	
B206	0242100	SCREW	1	
B207	0557025	SCREW	1	
B208	0557025	SCREW	1	
B209	9580270	SCREW	1	
B210	0B44035	SCREW	1	
B211	0257050	SCREW	1	
B213	0257050	SCREW	1	
B214	0257050	SCREW	1	
B215	0257050	SCREW	1	
B216	0257050	SCREW	1	
B217	0254030	SCREW	1	
B218	0254030	SCREW	1	
B219	0254030	SCREW	1	
B220	0554055	SCREW	1	
B221	0554055	SCREW	1	
B222	0554055	SCREW	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
				[PAVCSG]
400	VPF1316A	CAMERA BAG	1	[PAVCSG]
⚠ 402	DE-A49BA/SX	BATTERY CHARGER/AC ADAPTOR	1	[PAVCSG]PP
⚠ 402	DE-A49CB/SX	BATTERY CHARGER/AC ADAPTOR	1	[PAVCSG]EB,EC,EG,GC,GH,GN
⚠ 402	DE-A49EA/SX	BATTERY CHARGER/AC ADAPTOR	1	[PAVCSG]GK
⚠ 402	DE-A49DB/SX	BATTERY CHARGER/AC ADAPTOR	1	[PAVCSG]GT
⚠ 403	-----	BATTERY	1	(Not Supplied)
404	K1HA14AD0001	USB CONNECTION CABLE	1	[PAVCSG]
405	K1HA14CD0001	AV CABLE	1	[PAVCSG]
406	VFC4411	SHOULDER STRAP	1	[PAVCSG]
407	VFF0465-S	CD-ROM	1	PP,EB,EC,EG,GC,GH,GN,GT
				See "Notes"
407	VFF0466-S	CD-ROM	1	GK
				See "Notes"
408	VPK3897	PACKING CASE	1	[PAVCSG]PP
408	VPK3898	PACKING CASE	1	[PAVCSG]EB,EC,EG,GC,GH,GN,GT
408	VPK3899	PACKING CASE	1	[PAVCSG]GK
409	VQL1Z67	COLOR LABEL	1	[PAVCSG]PPN
409	VQL1Z66	COLOR LABEL	1	[PAVCSG]PPR
409	VQL1Z70	COLOR LABEL	1	[PAVCSG]ECN,EGN,GCN
409	VQL1Z69	COLOR LABEL	1	[PAVCSG]EBR,ECR,EGR,GCR
411	VPF1132	BAG, POLYETHYLENE	1	[PAVCSG]PP,EC,EG,GC
411	VPF1100	BAG, POLYETHYLENE	1	[PAVCSG]EB,GH,GK,GN,GT
412	VQT2A82	O/I SOFTWARE	1	[PAVCSG]PP
		(ENGLISH/CANADIAN FRENCH/		
		SPANISH/PORTUGUESE)		
412	VQT2A85	O/I SOFTWARE	1	[PAVCSG]EB,GN
		(ENGLISH)		
412	VQT2A84	O/I SOFTWARE	1	[PAVCSG]EC
		(SPANISH/PORTUGUESE/		
		SWEDISH/DANISH)		
412	VQT2A83	O/I SOFTWARE	1	[PAVCSG]EG
		(GERMAN/FRENCH/		
		ITALIAN/DUTCH)		
412	VQT2A86	O/I SOFTWARE	1	[PAVCSG]GC,GH
		(ENGLISH/		
		CHINESE(TRADITIONAL)/		
		RUSSIAN/ARABIC)		
412	VQT2A88	O/I SOFTWARE	1	[PAVCSG]GK
		(CHINESE(SIMPLIFIED))		
412	VQT2A87	O/I SOFTWARE	1	[PAVCSG]GT
		(CHINESE(TRADITIONAL))		
⚠ 414	VQT2A61	INSTRUCTION BOOK	1	[PAVCSG]PP
		(ENGLISH)		
⚠ 414	VQT2A62	INSTRUCTION BOOK	1	[PAVCSG]PP
		(CANADIAN FRENCH)		
⚠ 414	VQT2A63	INSTRUCTION BOOK	1	[PAVCSG]PP
		(SPANISH)		
⚠ 414	VQT2A64	INSTRUCTION BOOK	1	[PAVCSG]PP
		(PORTUGUESE)		
⚠ 414	VQT2A73	INSTRUCTION BOOK	1	[PAVCSG]EB
		(ENGLISH)		
⚠ 414	VQT2A69	INSTRUCTION BOOK	1	[PAVCSG]EC
		(SPANISH)		
⚠ 414	VQT2A70	INSTRUCTION BOOK	1	[PAVCSG]EC
		(PORTUGUESE)		
⚠ 414	VQT2A71	INSTRUCTION BOOK	1	[PAVCSG]EC
		(SWEDISH)		
⚠ 414	VQT2A72	INSTRUCTION BOOK	1	[PAVCSG]EC
		(DANISH)		
⚠ 414	VQT2A65	INSTRUCTION BOOK	1	[PAVCSG]EG
		(GERMAN)		
⚠ 414	VQT2A66	INSTRUCTION BOOK	1	[PAVCSG]EG
		(FRENCH)		
⚠ 414	VQT2A67	INSTRUCTION BOOK	1	[PAVCSG]EG
		(ITALIAN)		
⚠ 414	VQT2A68	INSTRUCTION BOOK	1	[PAVCSG]EG
		(DUTCH)		
⚠ 414	VQT2A74	INSTRUCTION BOOK	1	[PAVCSG]GC,GH
		(ENGLISH)		
⚠ 414	VQT2A75	INSTRUCTION BOOK	1	[PAVCSG]GC,GH
		(CHINESE(TRADITIONAL))		
⚠ 414	VQT2A76	INSTRUCTION BOOK	1	[PAVCSG]GC
		(RUSSIAN)		
⚠ 414	VQT2A77	INSTRUCTION BOOK	1	[PAVCSG]GC
		(ARABIC)		

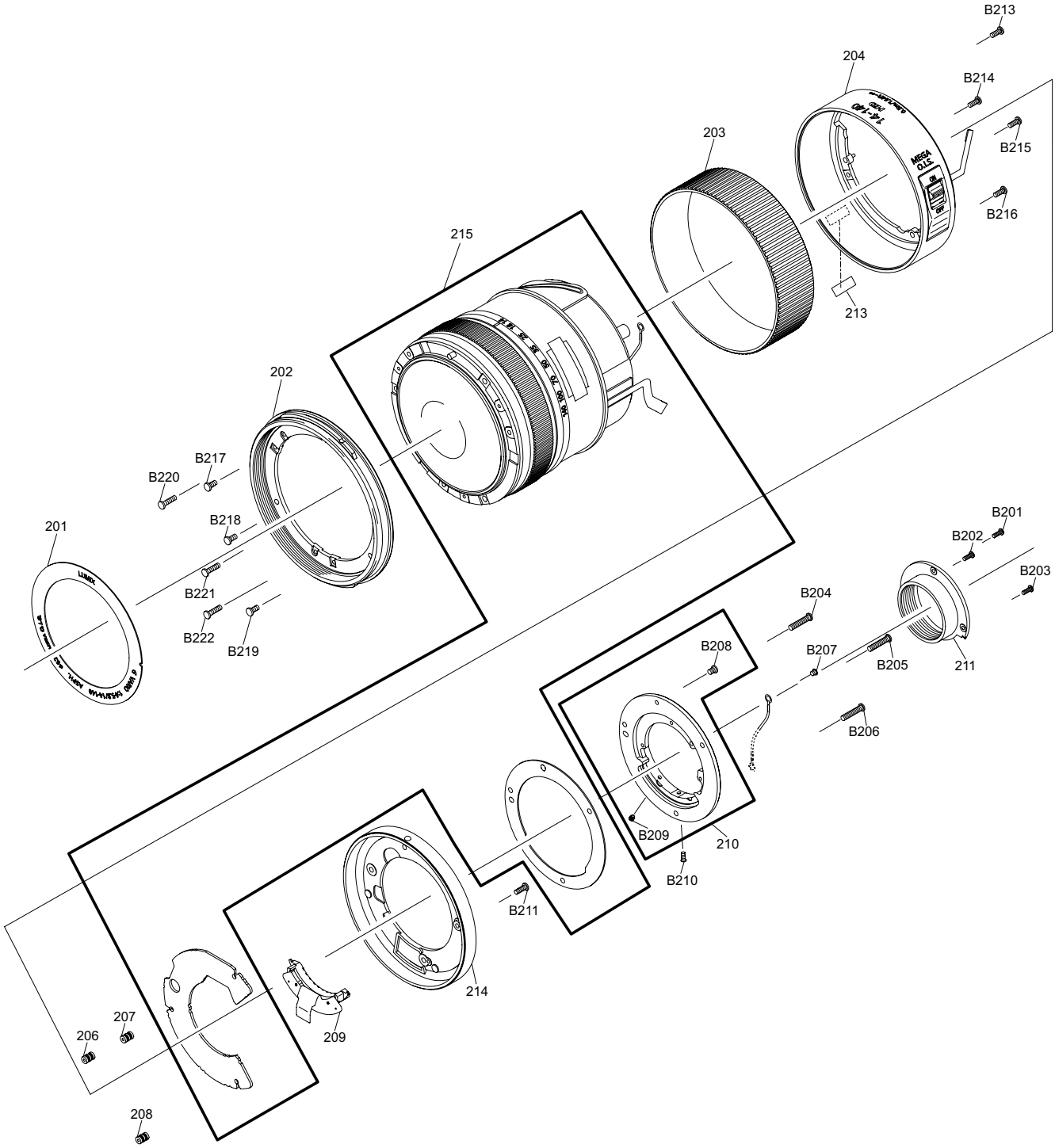
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
⚠ 414	VQT2A79	INSTRUCTION BOOK	1	[PAVCSG]GK
		(CHINESE(SIMPLIFIED))		
⚠ 414	VQT2A80	INSTRUCTION BOOK	1	[PAVCSG]GN
		(ENGLISH)		
⚠ 414	VQT2A78	INSTRUCTION BOOK	1	[PAVCSG]GT
		(CHINESE(TRADITIONAL))		[PAVCSG]
416	VPN6829	CUSHION A	1	[PAVCSG]
417	VPN6830	CUSHION B	1	[PAVCSG]
418	VPN6831	CUSHION C	1	[PAVCSG]
⚠ 420	K2CT3CA00004	AC CORD W/PLUG	1	[PAVCSG]EB,GC,GH
421	VPF1262	LENS BAG	1	
422	VYC0997	LENS HOOD UNIT	1	
423	VFC4430	LENS STORAGE BAG	1	
424	VFC4315	LENS CAP REAR	1	
425	VYF3250	LENS CAP FRONT	1	
⚠ 426	K2CQ2CA00006	AC CORD W/PLUG	1	[PAVCSG]EC,EG,GC
⚠ 428	K2CJ2DA00008	AC CORD W/PLUG	1	[PAVCSG]GN
⚠ 429	K2CA2EA00002	AC CORD W/PLUG	1	[PAVCSG]PP
⚠ 429	K2CA2CA00020	AC CORD W/PLUG	1	[PAVCSG]GK
⚠ 429	K2CA2CA00027	AC CORD W/PLUG	1	[PAVCSG]GT
446	VKF4385	BODY CAP	1	
447	VQL1Z67	COLOR LABEL	1	[PAVCSG]PPN
447	VQL1Z66	COLOR LABEL	1	[PAVCSG]PPR
447	VQL1Z70	COLOR LABEL	1	[PAVCSG]ECN,EGN,GCN
447	VQL1Z69	COLOR LABEL	1	[PAVCSG]EBR,ECR,EGR,GCR
448	VQL1Z67	COLOR LABEL	1	[PAVCSG]PPN
448	VQL1Z66	COLOR LABEL	1	[PAVCSG]PPR
448	VQL1Z70	COLOR LABEL	1	[PAVCSG]ECN,EGN,GCN
448	VQL1Z69	COLOR LABEL	1	[PAVCSG]EBR,ECR,EGR,GCR
449	VPF1328	AIR CAP BAG	1	
450	VEK0N98	DC CABLE	1	[PAVCSG]

S7. Exploded View

S7.1. Frame and Casing Section



S7.2. Camera Lens Section



S7.3. Packing Parts and Accessories Section