

# Service Manual

Digital Camera/Body/Lens Kit/Double Zoom Lens Kit

LUMIX



Model No. **DMC-GF6XEB**

**DMC-GF6XEC**

**DMC-GF6XEE**

**DMC-GF6XEF**

**DMC-GF6XEG**

**DMC-GF6XGC**

**DMC-GF6XGH**

**DMC-GF6XGK**

**DMC-GF6XGN**

**DMC-GF6XGT**

**DMC-GF6WEB**

**DMC-GF6WEC**

**DMC-GF6WEE**

**DMC-GF6WEF**

**DMC-GF6WEG**

**DMC-GF6WGC**

**DMC-GF6WGH**

**DMC-GF6WGK**

**DMC-GF6WGN**

**DMC-GF6WGT**

**DMC-GF6KP**

**DMC-GF6KPC**

**DMC-GF6KPU**

**Panasonic**<sup>®</sup>

**DMC-GF6KEB**  
**DMC-GF6KEC**  
**DMC-GF6KEE**  
**DMC-GF6KEF**  
**DMC-GF6KEG**

**DMC-GF6KGC**  
**DMC-GF6KGD**  
**DMC-GF6K GK**  
**DMC-GF6KGN**  
**DMC-GF6KGT**

Colour

[DMC-GF6K]

(K).....Black Type  
(W).....White Type (except P/PC/PU/GN)  
(R).....Red Type (only EF/GC/GK)  
(T).....Brown Type (only EE/EG/GC/GK)

[DMC-GF6X]

(K).....Black Type  
(W).....White Type (only EF/GH/GK/GT)  
(R).....Red Type (only EF/GH/GK/GT)  
(T).....Brown Type (only GH/GK/GT)

[DMC-GF6W]

(K).....Black Type  
(W).....White Type (only GC/GH/GK/GT)  
(R).....Red Type (only GT)  
(T).....Brown Type (only GH/GT)

DMC-GF6K series: Interchangeable Lens (H-FS1442A) is bundled.

DMC-GF6X series: Interchangeable Lens (H-PS14042) is bundled.

DMC-GF6W series: Interchangeable Lens (H-FS1442A/H-FS45150) are bundled.

 **WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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# 1 Safety Precautions

## 1.1. General Guidelines

### 1. IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by

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

2. An Isolation Transformer should always be used during the servicing of AC Adaptor whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect AC Adaptor from being damaged by accidental shorting that may occur during servicing.
3. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
4. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
5. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

## 1.2. Leakage Current Cold Check

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between  $1\text{ M}\Omega$  and  $5.2\text{ M}\Omega$ . When the exposed metal does not have a return path to the chassis, the reading must be infinity.

## 1.3. 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  $1.5\text{ k}\Omega$ , 10 W resistor, in parallel with a  $0.15\text{ }\mu\text{F}$  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  $1\text{ k}\Omega/\text{V}$  or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 V RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed  $1/2\text{ mA}$ . In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

Hot-Check Circuit

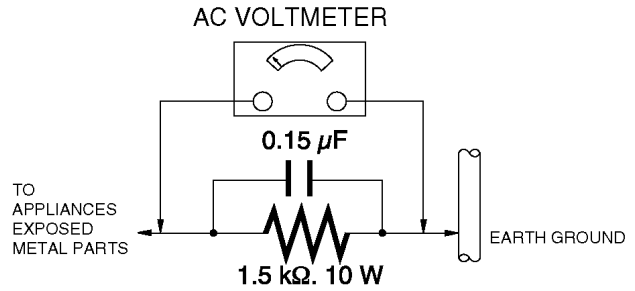


Figure. 1

## 1.4. How to Discharge the E.Capacitor on Flash Sub P.C.B. Unit

### CAUTION:

- Be sure to discharge the E.Capacitor on Flash Sub P.C.B. Unit before disassembling.
- Be careful of the high voltage circuit on Flash Sub P.C.B. Unit when servicing.

### [Discharging Procedure]

1. Remove the Flash Sub P.C.B. Unit.
2. Put the insulation tube on the lead part of resistor (ERG5SJ102:1k $\Omega$  /5W).  
(An equivalent type of resistor may be used.)
3. Put the resistor between both terminals of E.Capacitor on Flash Sub P.C.B. Unit for approx. 5 seconds.
4. After discharging, confirm that the E.Capacitor voltage is lower than 10V by using a voltmeter.

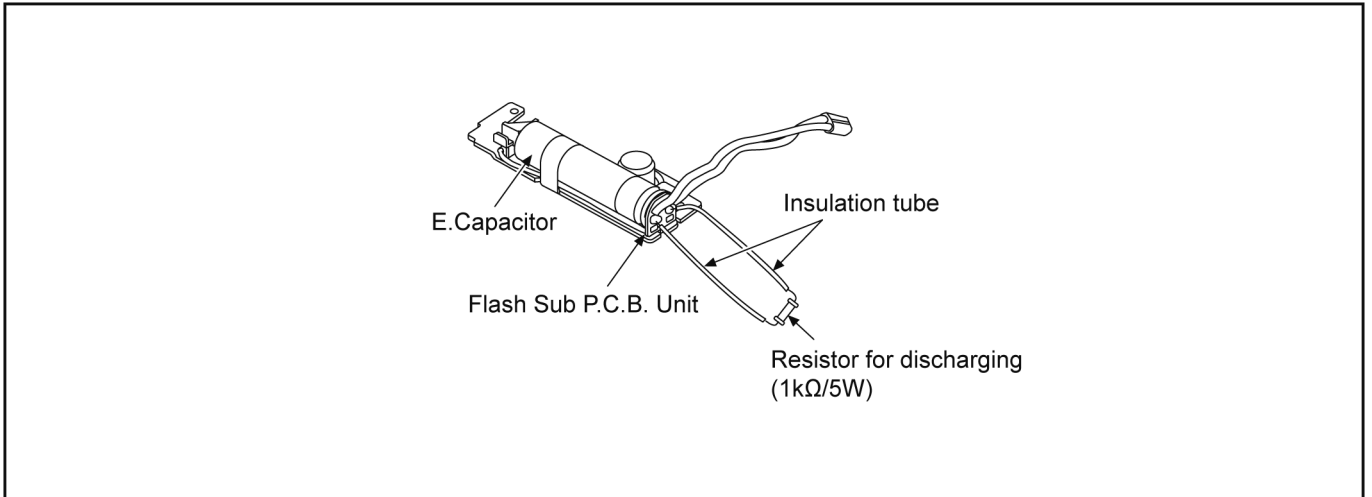


Fig. F1

## 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 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 safely.

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

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

If in any doubt, please consult a qualified electrician.

### 2.3.2.1. Important

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

Blue	Neutral
Brown	Live

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

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

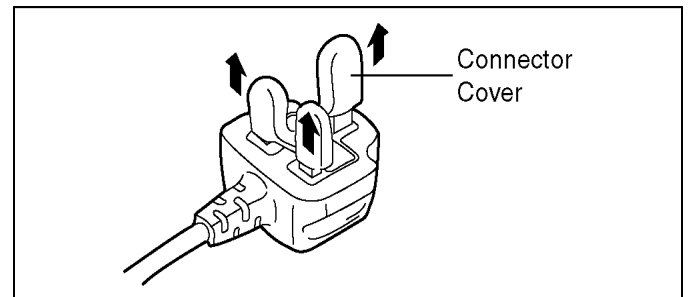
The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

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



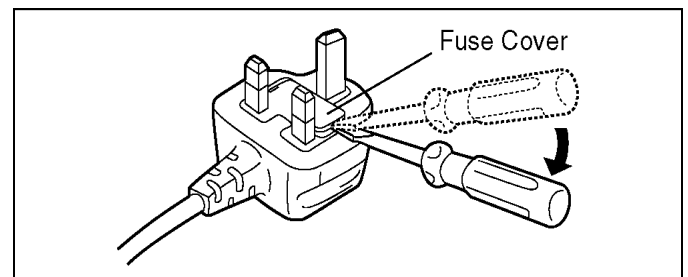
### 2.3.2.2. Before Use

Remove the Connector Cover as follows.

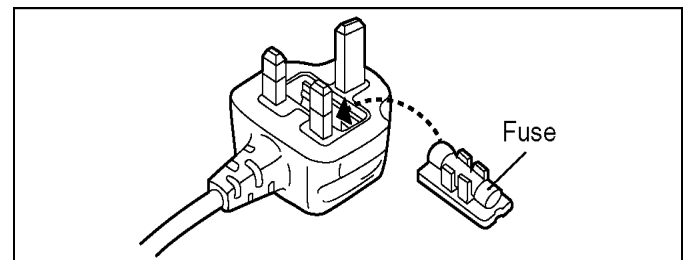


### 2.3.2.3. How to Replace the Fuse

1. Remove the Fuse Cover with a screwdriver.



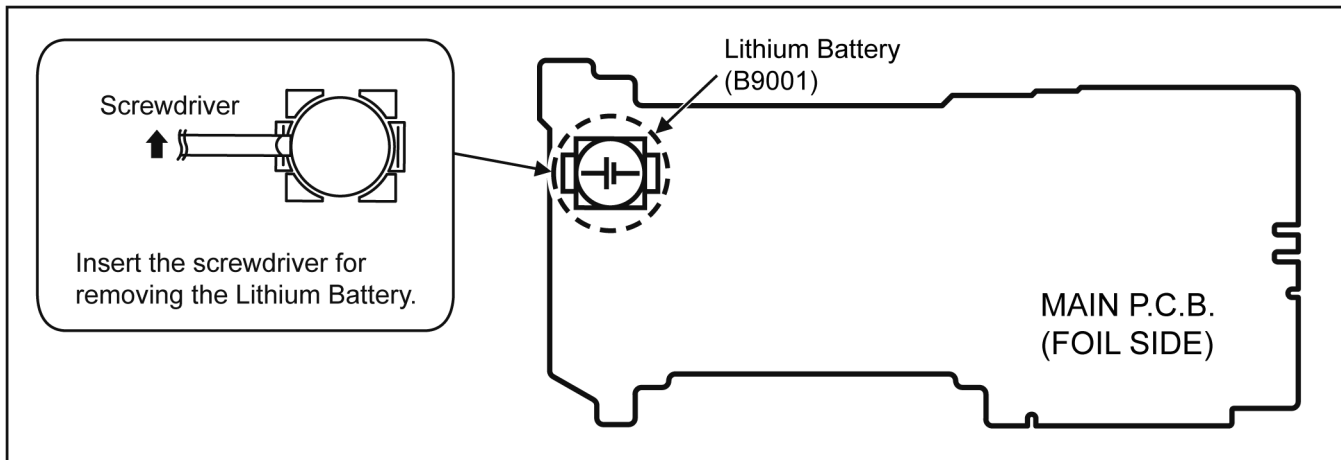
2. Replace the fuse and attach the Fuse cover.



## 2.4. How to Replace the Lithium Battery

### 2.4.1. Replacement Procedure

1. Remove the MAIN P.C.B.. (Refer to Disassembly Procedures.)
2. Remove the Lithium battery (Ref. No. "B9001" at foil side of MAIN P.C.B.) and then replace it into new one.



#### NOTE:

This Lithium battery is a critical component.

(Type No.: ML614 **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-GF6K/GF6X/GF6W 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. About service of bundled lenses

Please refer to the following service manuals about Disassembly and Assembly or Maintenance of bundled lenses.

- H-FS1442APP/E/GK: Order No.DSC1302014CE
- H-FS45150PP/E/GK: Order No.DSC1209040CE
- H-PS14042PP/E/GK: Order No.DSC1110056CE

## 3.3. Important Notice

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

### 3.3.1. Camera Body Unit

#### 3.3.1.1. About Mount Box Unit (Ref. 6)

1. This Service Manual does not contain the following repair service information for “MOUNT BOX UNIT”(Ref.6), because it requires special facilities and equipment.
  - a. Schematic diagram, Block diagram and P.C.B. layout.
  - b. Parts list for individual parts.
2. If the “MOUNT BOX UNIT” is confirmed as defective, exchange the “MOUNT BOX UNIT” as a unit (supplied as service parts size).
3. Before exchanging the “MOUNT BOX UNIT”, the performances must be carefully checked, by following the “7.Troubleshooting Guide” section of this service manual.

**Important:**

1. After replacing the MOUNT BOX UNIT, the mount box data has to be stored to the unit. The mount box unit supplied as service parts has affix the label of own configure data. By inputting these data into the adjustment software and writing these data to Flash-ROM (IC6003), the shutter adjustment becomes needless. In addition, the adjustment software can read data encoded to QR code by using WEB camera with a close-up function. Refer to the adjustment instruction in the adjustment software for details.

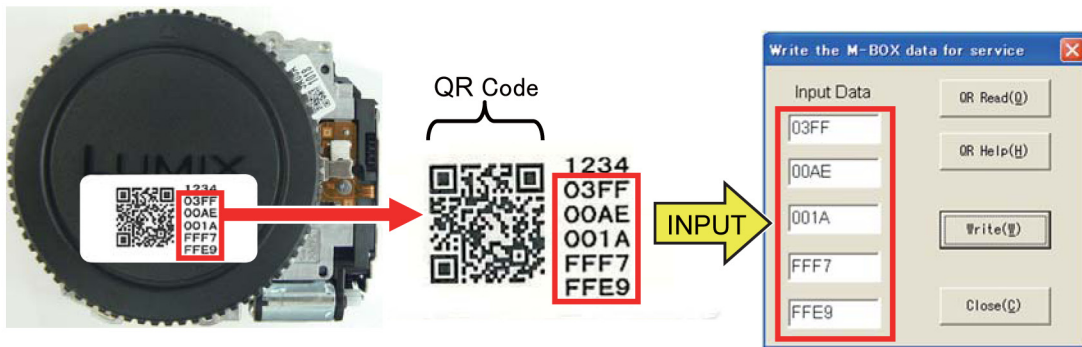


Fig. S1

2. The full adjustment must be performed after replacing the “MOUNT BOX UNIT”, otherwise picture quality can not be meet with specification.

#### 3.3.1.2. About Main P.C.B. (Ref. 1) & Flash-ROM(IC6003)

**Important:**

1. Before exchanging 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. and/or Flash-ROM”, proceed the EEPROM data backup from the unit. After replacing the MAIN P.C.B. and/or Flash-ROM, overwrite the EEPROM data with backup data from the unit first, then proceed the adjustment /inspection.Refer to the adjustment instruction in the adjustment software for details.
3. The full adjustment must be performed after replacing the “MAIN P.C.B. and/or Flash-ROM”, otherwise Picture quality can not be met with specification.

### 3.3.2. Lens Unit (Interchangeable Lens: H-PS14042)

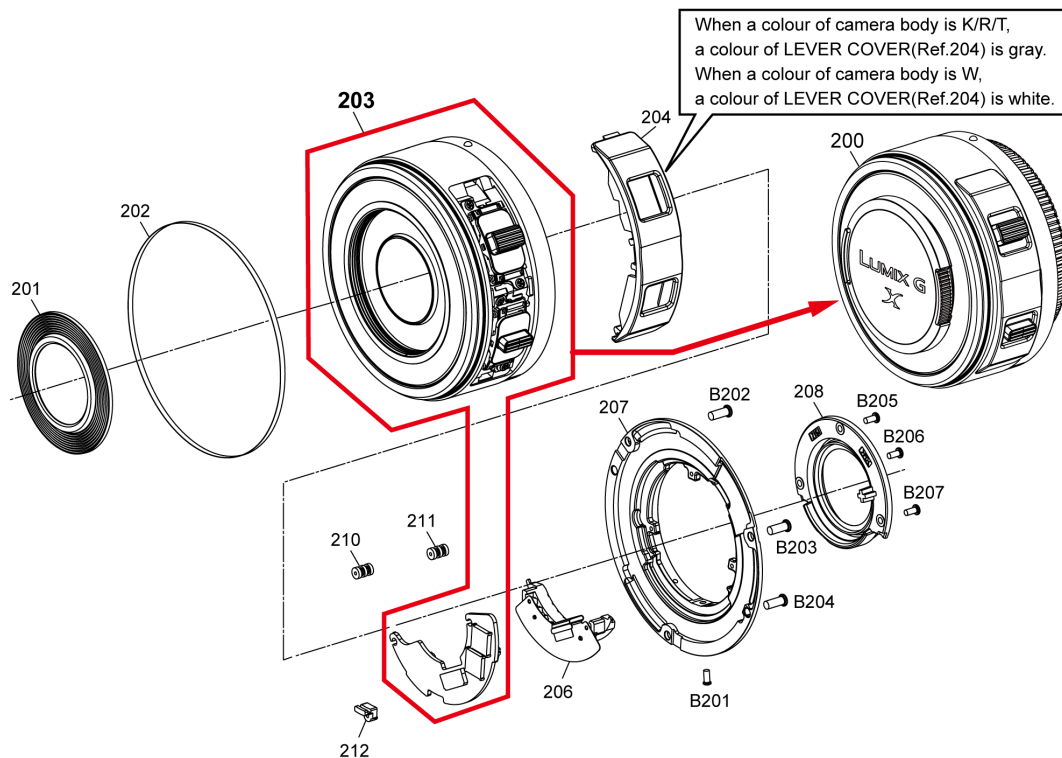
#### 3.3.2.1. About Lens Main Block Unit (Ref. 203)

1. LENS MAIN BLOCK UNIT (Ref. 203) is not supplied due to difficulty of the transportation issue (Fragile, Dust-free packing), and requires critical lens adjustments.

Therefore, any needs of the "LENS MAIN BLOCK UNIT" (Ref. 203), carefully confirm its performance in advance.

2. Once "LENS MAIN BLOCK UNIT" (Ref. 203) is confirmed as defective, place order "LENS Unit" (Ref. 200).

• When the "Ref.203" is necessary to be replaced, replace as a "Ref.200".



**NOTE:**

Keep covering the lens unit with Lens caps (front & rear), other than necessary cases.

Fig. S2

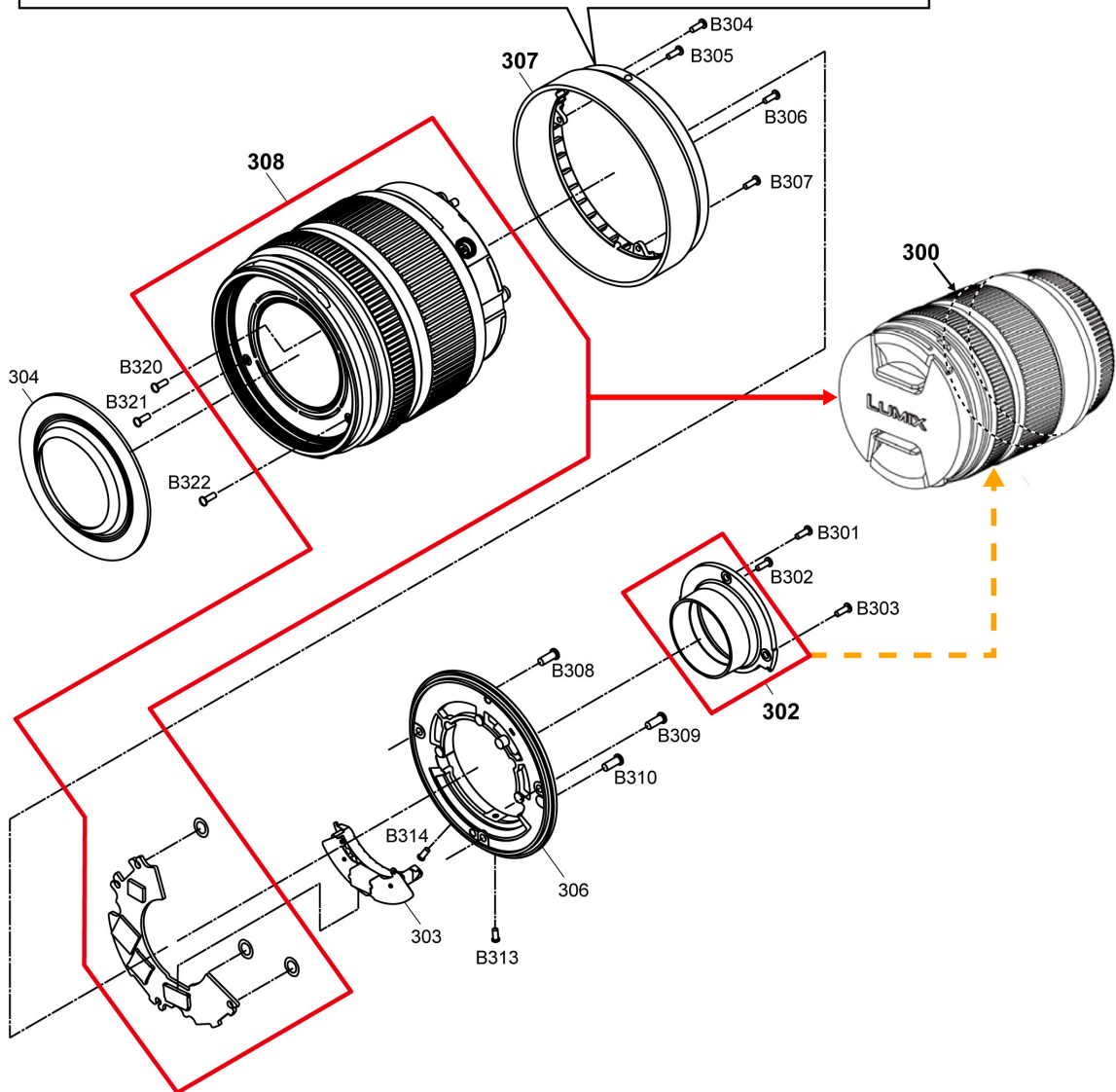
### 3.3.3. Lens Unit (Interchangeable Lens: H-FS1442A)

#### 3.3.3.1. About Lens Main Block Unit (Ref. 308)

1. LENS MAIN BLOCK UNIT (Ref. 308) is not supplied due to difficulty of the transportation issue (Fragile, Dust-free packing), and requires critical lens adjustments.  
Therefore, any needs of the "LENS MAIN BLOCK UNIT" (Ref. 308), carefully confirm its performance in advance.
2. Once "LENS MAIN BLOCK UNIT" (Ref. 308) is confirmed as defective, place order "Lens Unit" (Ref. 300) and replace SHADING FRAME (Ref. 302), to maintain Serial number of owner's original lens.

- When the "Ref.308" is necessary to be replaced, replace as a "Ref.300".
- However, replace "Ref.302", to maintain Serial number of original lens.

When a colour of camera body is **K/T** except **GF6KEG/GF6KEC/GF6KEF/GF6KEE/GF6KGN/GF6WEG/GF6WEC/GF6WEF/GF6WEE/GF6WGN**, a colour of REAR FRAME UNIT(Ref.307) is black.  
When a colour of camera body is **R/W** or the model is **GF6KEG/GF6KEC/GF6KEF/GF6KEE/GF6KGN/GF6WEG/GF6WEC/GF6WEF/GF6WEE/GF6WGN**, a colour of REAR FRAME UNIT(Ref.307) is silver.



**NOTE:**

Keep covering the lens unit with Lens cap (front), other than necessary cases.

Fig. S3

### 3.3.4. Lens Unit (Interchangeable Lens: H-FS45150)

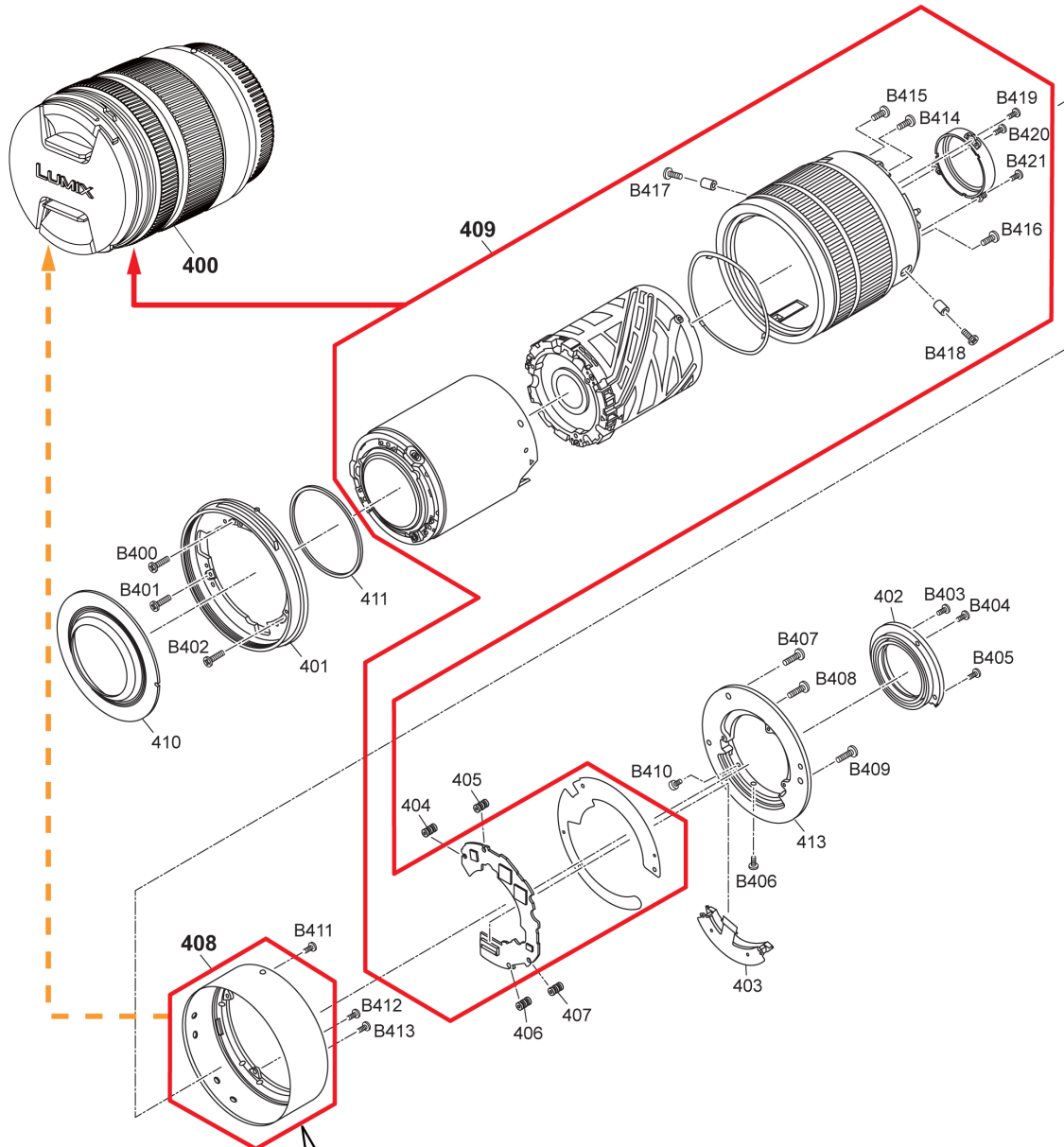
#### 3.3.4.1. About Lens Main Block Unit (Ref. 409)

1. LENS MAIN BLOCK UNIT (Ref. 409) is not supplied due to difficulty of the transportation issue (Fragile, Dust-free packing), and requires critical lens adjustments.

Therefore, any needs of the "LENS MAIN BLOCK UNIT" (Ref. 409), carefully confirm its performance in advance.

2. Once "LENS MAIN BLOCK UNIT" (Ref. 409) is confirmed as defective, place order "LENS Unit" (Ref. 400) and replace REAR FRAME UNIT (Ref. 408), to maintain Serial number of owner's original lens.

- When the "Ref.409" is necessary to be replaced, replace as a "Ref.400".
- However, replace "Ref.408", to maintain Serial number of original lens.



When the model is GF6WEB-K,GF6WGC-K,GF6WGH-K,GF6WGH-T,GF6WGT-K,GF6WGT-T,GF6WGK-K,  
a colour of REAR FRAME UNIT(Ref.408) is black.  
When the model is GF6WEG-K,GF6WEC-K,GF6WEF-K,GF6WEE-K,GF6WGC-W,GF6WGN-K,GF6WGH-W,  
GF6WGT-R,GF6WGT-W,GF6WGK-W, a colour of REAR FRAME UNIT(Ref.408) is silver.

#### NOTE:

Keep covering the lens unit with Lens caps (front & rear), other than necessary cases.

Fig. S4




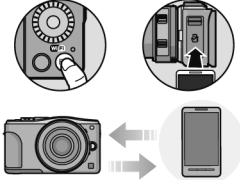




### 3.3.5. About Flexible Cable and Connector

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.

## 3.4. Service Notes

### 3.4.1. About Wi-Fi Function

The page number in this chapter does not show the page number of this service manual.

What you can do		
	<p><b>Controlling with a Smartphone/Tablet</b></p> <p>Recording with a smartphone. Saving images stored in the camera. Sending images to an SNS.</p> 	P227
<div style="border: 1px solid black; padding: 5px;"> <p> <b>Easy connection, easy transfer</b> A connection can be easily established by pressing and holding [Wi-Fi] or by using the NFC function. You can also transfer images easily.</p>  </div>		
	<p><b>Displaying pictures on a TV</b></p>	P238
	<p><b>When sending images to Printer</b></p>	P239
	<p><b>When sending images to AV device</b></p> <p>You can send pictures and motion pictures to AV devices in your house (home AV devices). You can also send them to the devices (external AV devices) of your family or friends living away from you via "LUMIX CLUB".</p>	P240
	<p><b>When sending images to PC</b></p>	P243
	<p><b>Using Web services</b></p> <p>You can send pictures and motion pictures to an SNS, etc. via "LUMIX CLUB". By setting up automatic transfers of pictures and motion pictures to the [Cloud Sync. Service], you can receive the transferred pictures or motion pictures on a PC or smartphone.</p>	P247

### 3.4.2. Important Notice of Servicing

This Camera unit has the personal information of wireless LAN connection the customer has registered.

For the protection of private information, please erase the personal information after the completion of repair by "INITIAL SETTING".

In addition, please print out the following documents, and pass to the customer with the Camera unit.

#### Printing Material [Leaflet for Customer]

[For The Customer]

Before using your camera please check the Wi-Fi settings.

Depending on what was serviced, the settings may have been reset to the factory defaults.

1. If the settings were reset you will need to reenter your Lumix Club login ID and password.

If you have forgotten the login ID and/or Password, please connect to the Lumix Club web site and create a new ones.

2. You may also have to reenter the settings for your local Wi-Fi network settings.

*We recommend consulting the operating manual if you have any questions.*

### 3.5. General Description About Lead Free Solder (PbF)

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

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

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

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

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

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

#### Recommended Lead Free Solder (Service Parts Route.)

- The following 3 types of lead free solder are available through the service parts route.  
RFKZ03D01KS----- (0.3mm 100g Reel)  
RFKZ06D01KS----- (0.6mm 100g Reel)  
RFKZ10D01KS----- (1.0mm 100g Reel)

#### Note

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

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









There are nine kinds of DMC-GF6 (Camera body unit), regardless of the colours.

- a) DMC-GF6 (Japan domestic model)
- b) DMC-GF6P/PC
- c) DMC-GF6EB/EC/EF/EG
- d) DMC-GF6EE
- e) DMC-GF6GD
- f) DMC-GF6GK
- g) DMC-GF6GN
- h) DMC-GF6GT
- i) DMC-GF6PU/GC/GH

What is the difference is that the "INITIAL SETTINGS" data which is stored in Flash-ROM mounted on Main P.C.B..

#### 3.6.1. Defining methods:

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

<p><b>a) DMC-GF6 (Japan domestic model)</b> The nameplate for this model shows the following Safety registration mark.</p> 
<p><b>b) DMC-GF6P/PC</b> The nameplate for these models show the following Safety registration mark.</p> 
<p><b>c) DMC-GF6EB/EC/EF/EG</b> The nameplate for these models show the following Safety registration mark.</p> 
<p><b>d) DMC-GF6EE</b> The nameplate for this model shows the following Safety registration mark.</p> 
<p><b>e) DMC-GF6GD</b> The nameplate for this model shows the following Safety registration mark.</p> 
<p><b>f) DMC-GF6GK</b> The nameplate for this model shows the following Safety registration mark.</p> 
<p><b>g) DMC-GF6GN</b> The nameplate for this model shows the following Safety registration mark.</p> 
<p><b>h) DMC-GF6GT</b> The nameplate for this model shows the following Safety registration mark.</p> 
<p><b>i) DMC-GF6PU/GC/GH</b> The nameplate for these models do not show any above Safety registration mark.</p>

**NOTE:**

After replacing the Main P.C.B., be sure to achieve adjustment.  
Refer to the adjustment instruction in the adjustment software for details.

### 3.6.2. INITIAL SETTINGS:

After replacing the MAIN P.C.B., make 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, make sure to read the following CAUTION.

### CAUTION:(INITIAL SETTINGS)

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

[Except "EB/EC/EF and EG" models : (VEP56180A is used as a Main P.C.B.)]

\*. The model suffix can be chosen **JUST ONE TIME.**

(Effective model suffix : "P/PC/PU/EE/GC/GD/GH/GK/GN/GT 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 "EB/EC/EF and EG" models : (VEP56180B is used as a Main P.C.B.)]

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

#### 2. PROCEDURES:

• Precautions: Read the above "CAUTION" carefully.

• Preparation:

Attach the fully charged Battery, and insert the memory card.

Confirm that it is not intelligent auto mode [ iA ] or intelligent auto plus mode [ iA+ ].

(If the unit is intelligent auto mode [ iA ] or intelligent auto plus mode [ iA+ ], it does not display the initial setting menu.)

• **Step 1. The temporary cancellation of "INITIAL SETTINGS":**

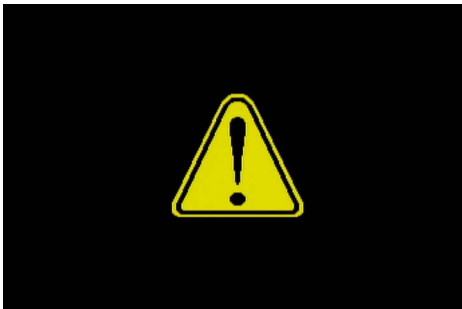
While pressing [ PLAYBACK ] button, [ Q.MENU/Fn1 ] button and "[ RIGHT ] of Cursor buttons" simultaneously, turn the Power on.

• **Step 2. The cancellation of "INITIAL SETTINGS":**

Press the [ PLAYBACK ] button in order to enter the [ PLAYBACK ] mode.

Press [ Q.MENU/Fn1 ] button and "[ UP ] of Cursor buttons" simultaneously, then turn the Power off.

The LCD displays the " ! " mark before the unit powers down.



• **Step 3. Turn the Power on:**

Set the mode dial to [ P ] (Program AE Mode), then turn the Power on.

• **Step 4. Display the INITIAL SETTING:**

While pressing [ MENU/SET ] and “[ RIGHT ] of Cursor buttons” simultaneously, turn the Power off.

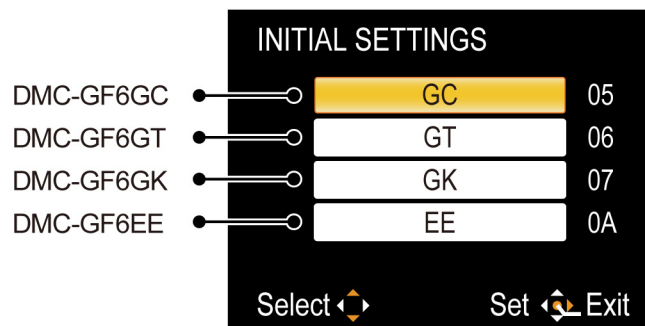
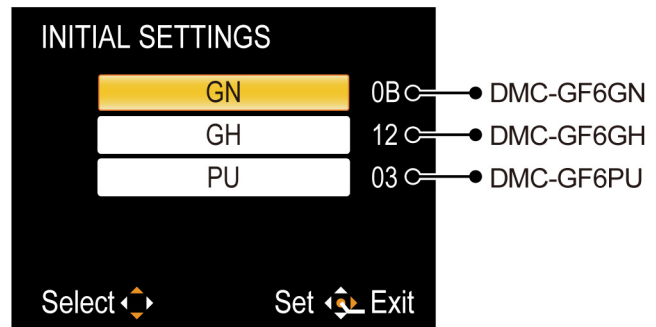
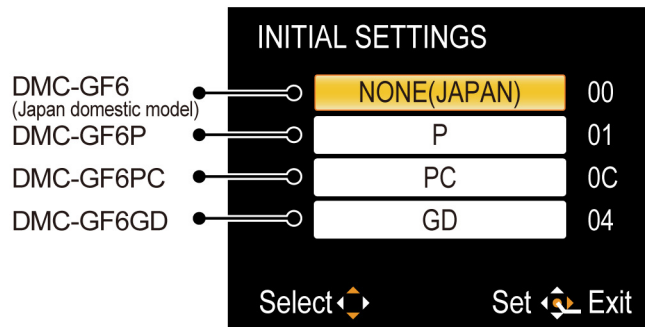
The “INITIAL SETTINGS” menu is displayed.

There are two kinds of “INITIAL SETTINGS” menu form as follows:

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

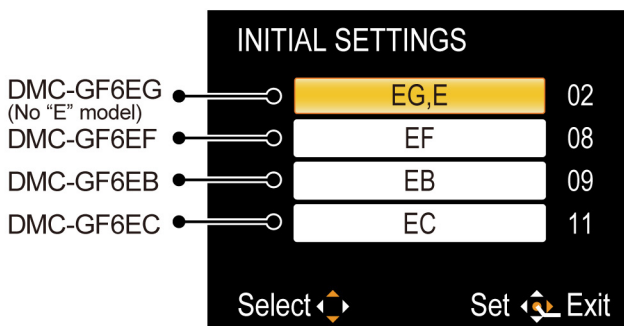
[ Except “EB/EC/EF and EG” models : VEP56180A is used as a Main P.C.B. ]

When Main P.C.B. has just been replaced, 11 model suffixes are displayed as follows. (three pages in total)



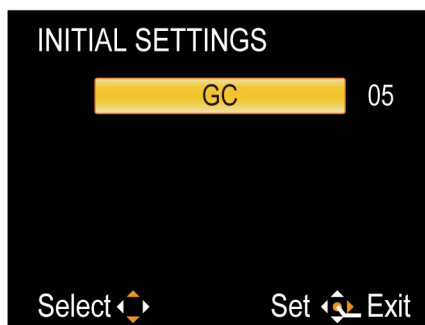
[Only “EB/EC/EF and EG” models : (VEP56180B is used as a Main P.C.B.)]

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

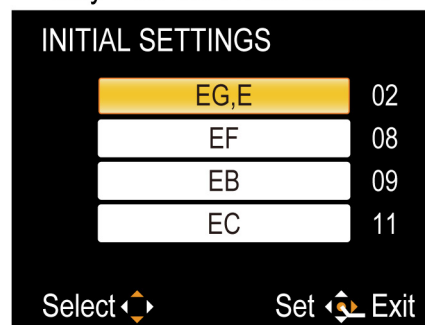


[CASE 2. Other than “After replacing Main P.C.B.”]

<Other than “EB/EC/EF/EG” models>



<Only “EB/EC/EF/EG” models>



• **Step 5. Choose the model suffix in “INITIAL SETTINGS”:** (Refer to “CAUTION”)

**[Caution: After replacing Main P.C.B.]**

The model suffix can be chosen, **JUST ONE TIME**.

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

Therefore, select the area carefully.

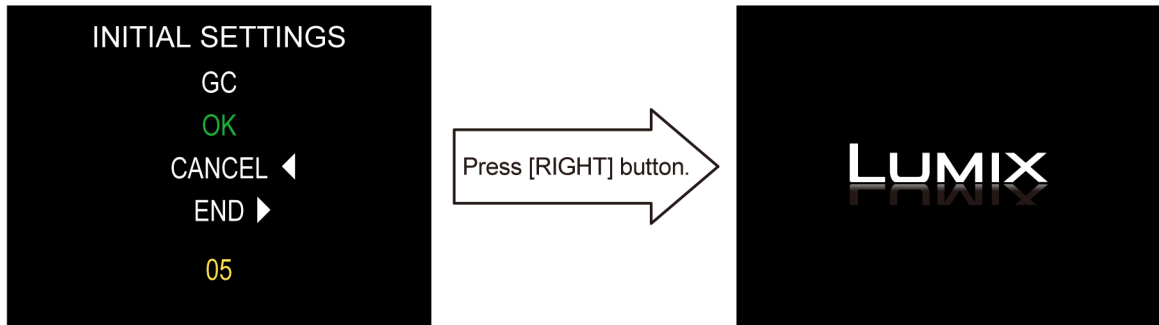
Select the area with pressing “[ UP ] / [ DOWN ] of Cursor buttons”.

• **Step 6. Set the model suffix in “INITIAL SETTINGS”:**

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.)



• **Step 7. CONFIRMATION:**

Confirm the display of “PLEASE SET THE CLOCK” in concerned language when the unit is turned on again.

When the unit is connected to PC with USB cable, it is detected as removable media.

(When the “GK” or “GT” model suffix is selected, the display shows “PLEASE SET THE CLOCK” in Chinese.)

As for your reference, major default setting condition is as shown in the following table.

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

	MODEL	VIDEO OUTPUT	LANGUAGE	DATE	REMARKS
a)	DMC-GF6 (Japan domestic model)	NTSC	Japanese	Year/Month/Date	
b)	DMC-GF6P	NTSC	English	Month/Date/Year	
c)	DMC-GF6PC	NTSC	English	Month/Date/Year	
d)	DMC-GF6PU	NTSC	Spanish	Month/Date/Year	
e)	DMC-GF6EB	PAL	English	Date/Month/Year	
f)	DMC-GF6EC	PAL	English	Date/Month/Year	
g)	DMC-GF6EE	PAL	Russian	Date/Month/Year	
h)	DMC-GF6EF	PAL	French	Date/Month/Year	
i)	DMC-GF6EG	PAL	English	Date/Month/Year	
j)	DMC-GF6GC	PAL	English	Date/Month/Year	
k)	DMC-GF6GD	NTSC	Korean	Year/Month/Date	
l)	DMC-GF6GH	PAL	English	Date/Month/Year	
m)	DMC-GF6GK	PAL	Chinese (simplified)	Year/Month/Date	
n)	DMC-GF6GN	PAL	English	Date/Month/Year	
o)	DMC-GF6GT	NTSC	Chinese (Traditional)	Year/Month/Date	

## 4 Specifications

The following specification is for DMC-GF6XEB/GF6KEB/GF6WEB.

Some specifications may differ depending on model suffix.

### Digital Camera Body (DMC-GF6):

Information for your safety

<b>Power Source:</b>	DC 8.4 V
<b>Power Consumption:</b>	2.5 W (When recording) [When the Interchangeable lens (H-PS14042) is used] 2.4 W (When recording) [When the Interchangeable lens (H-FS1442A) is used] 2.4 W (When recording) [When the Interchangeable lens (H-FS45150) is used] 2.2 W (When playing back) [When the Interchangeable lens (H-PS14042) is used] 2.1 W (When playing back) [When the Interchangeable lens (H-FS1442A) is used] 2.1 W (When playing back) [When the Interchangeable lens (H-FS45150) is used]

<b>Camera effective pixels</b>	16,000,000 pixels
<b>Image sensor</b>	4/3" Live MOS sensor, total pixel number 16,680,000 pixels, Primary colour filter
<b>Digital Zoom</b>	Max. 4×
<b>Extra Tele Conversion</b>	When taking still pictures: Max. 2× (When a picture size of [S] (4 M), aspect ratio of [4:3] is selected.) When recording motion pictures: 3.6×/4.8×
<b>Focus</b>	Auto Focus/Manual Focus, Face Detection/AF Tracking/23-area-focusing/ 1-area-focusing/Pinpoint (Touch focus area selection possible)
<b>Shutter system</b>	Focal-plane shutter
<b>Burst recording</b>	
<b>Burst speed</b>	20 pictures/second (Super high speed), 4.2 pictures/second (High speed), 3 pictures/second (Middle speed), 2 pictures/second (Low speed)
<b>Number of recordable pictures</b>	Max. 7 pictures (when there are RAW files) Depends on the capacity of the card (when there are no RAW files)

<b>ISO sensitivity (Standard Output Sensitivity)</b>	AUTO/ $\square$ ISO/160/200/400/800/1600/3200/6400/12800/25600* (1/3 EV step change possible) * Only available when [Extended ISO] is set.
<b>Minimum Illumination</b>	Approx. 9 lx (when i-Low light is used, the shutter speed is 1/25th of a second) [When the Interchangeable lens (H-PS14042) is used] Approx. 9 lx (when i-Low light is used, the shutter speed is 1/25th of a second) [When the Interchangeable lens (H-FS1442A) is used] Approx. 12 lx (when i-Low light is used, the shutter speed is 1/25th of a second) [When the Interchangeable lens (H-FS45150) is used]
<b>Shutter speed</b>	60 seconds to 1/4000th of a second Taking still pictures during motion picture recording: Motion picture priorities: 1/25th of a second to 1/16000th of a second Still picture priorities: 60 seconds to 1/4000th of a second
<b>Metering range</b>	EV 0 to EV 18
<b>White Balance</b>	Auto White Balance/Daylight/Cloudy/Shade/Incandescent lights/Flash/White set1/White set2/White Balance K set
<b>Exposure (AE)</b>	Programme 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)
<b>Metering Mode</b>	Multiple/Centre weighted/Spot
<b>Monitor</b>	3.0" TFT LCD (3:2) (Approx. 1,040,000 dots) (field of view ratio about 100%) Touch screen
<b>Flash</b>	Built-in pop up flash GN 6.3 equivalent (ISO160·m) [GN 5.0 equivalent (ISO100·m)] Flash range: Approx. 40 cm (1.3 feet) to 5.7 m (19 feet) [When the Interchangeable lens (H-PS14042) is mounted, WIDE, [ISO AUTO] is set] Flash range: Approx. 1.0 m (3.3 feet) to 5.7 m (19 feet) [When the Interchangeable lens (H-FS1442A) is mounted, WIDE, [ISO AUTO] is set] Flash range: Approx. 90 cm (3.0 feet) to 5.0 m (16 feet) [When the Interchangeable lens (H-FS45150) is mounted, WIDE, [ISO AUTO] is set] AUTO, AUTO/Red-Eye Reduction, Forced ON, Forced ON/Red-Eye Reduction, Slow Sync., Slow Sync./Red-Eye Reduction, Forced OFF

<b>Flash synchronisation speed</b>	Equal to or smaller than 1/160th of a second	
<b>Microphone</b>	Stereo	
<b>Speaker</b>	Monaural	
<b>Recording media</b>	SD Memory Card/SDHC Memory Card*/SDXC Memory Card* (* UHS-I-compatible)	
<b>Picture size</b>		
<b>Still picture</b>	When the aspect ratio setting is <b>[4:3]</b> 4592×3448 pixels, 3232×2424 pixels, 2272×1704 pixels When the aspect ratio setting is <b>[3:2]</b> 4592×3064 pixels, 3232×2160 pixels, 2272×1520 pixels When the aspect ratio setting is <b>[16:9]</b> 4592×2584 pixels, 3232×1824 pixels, 1920×1080 pixels When the aspect ratio setting is <b>[1:1]</b> 3424×3424 pixels, 2416×2416 pixels, 1712×1712 pixels	
<b>Recording quality</b>		
<b>Motion pictures</b>	[AVCHD] 1920×1080/50i* (17 Mbps)/1280×720/50p* (17 Mbps) (*Sensor output is 25 frames/sec.) [MP4] 1920×1080/25p (20 Mbps)/1280×720/25p (10 Mbps)/ 640×480/25p (4 Mbps)	
<b>Quality</b>	RAW/RAW+Fine/RAW+Standard/Fine/Standard/MPO+Fine/MPO+Standard	
<b>Recording file format</b>		
<b>Still Picture</b>	RAW/JPEG (based on "Design rule for Camera File system", based on "Exif 2.3" standard, DPOF corresponding)/MPO	
<b>Motion pictures</b>	AVCHD/MP4	
<b>Audio compression</b>	AVCHD	Dolby® Digital (2 ch)
	MP4	AAC (2 ch)
<b>Interface</b>		
<b>Digital</b>	"USB 2.0" (High Speed) * Data from the PC can not be written to the camera using the USB connection cable.	
<b>Analogue video/audio</b>	NTSC/PAL Composite (Switched by menu) Audio line output (monaural)	
<b>Terminal</b>		
<b>[AV OUT/DIGITAL]</b>	Dedicated jack (8 pin)	
<b>[HDMI]</b>	MiniHDMI TypeC	

<b>Dimensions</b>	Approx. 111.2 mm (W)×64.8 mm (H)×38.4 mm (D) [4.378" (W)×2.551"(H)×1.512" (D)] (excluding the projecting parts)
<b>Mass</b>	Approx. 323 g/0.712 lb [with the card and battery] Approx. 281 g/0.619 lb (camera body) Approx. 418 g/0.921 lb [with the Interchangeable lens (H-PS14042), card and battery] Approx. 432 g/0.95 lb [with the Interchangeable lens (H-FS1442A), card and battery] Approx. 523 g/1.15 lb [with the Interchangeable lens (H-FS45150), card and battery]
<b>Operating temperature</b>	0 °C to 40 °C (32 °F to 104 °F)
<b>Operating humidity</b>	10%RH to 80%RH

#### Wireless transmitter

<b>Compliance standard</b>	IEEE 802.11b/g/n (standard wireless LAN protocol)
<b>Frequency range used (central frequency)</b>	2412 MHz to 2462 MHz (1 to 11ch)
<b>Encryption method</b>	Wi-Fi compliant WPA™/WPA2™
<b>Access method</b>	Infrastructure mode

#### Battery Charger (Panasonic DE-A98A):

Information for your safety

<b>Input:</b>	AC ~ 110 V to 240 V, 50/60 Hz, 0.15 A
<b>Output:</b>	DC --- 8.4 V, 0.43 A

#### Battery Pack (lithium-ion) (Panasonic DMW-BLG10E):

Information for your safety

<b>Voltage/capacity:</b>	7.2 V/1025 mAh
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**Interchangeable Lens (H-PS14042)****“LUMIX G X VARIO PZ 14–42 mm/F3.5–5.6 ASPH./POWER O.I.S.”**

<b>Focal length</b>	f=14 mm to 42 mm (35 mm film camera equivalent: 28 mm to 84 mm)
<b>Aperture type</b>	7 diaphragm blades/circular aperture diaphragm
<b>Aperture range</b>	F3.5 (Wide) to F5.6 (Tele)
<b>Minimum aperture value</b>	F22
<b>Lens construction</b>	9 elements in 8 groups (4 aspherical lenses, 2 ED Lens)
<b>Nano surface coating</b>	Yes
<b>In focus distance</b>	0.2 m (0.66 feet) to ∞ (from the focus distance reference line) (focal length 14 mm to 20 mm), 0.3 m (0.98 feet) to ∞ (from the focus distance reference line) (focal length 21 mm to 42 mm)
<b>Maximum image magnification</b>	0.17× (35 mm film camera equivalent: 0.34×)
<b>Optical Image Stabiliser</b>	Available
<b>[O.I.S.] switch</b>	None (Setting of the [Stabilizer] is done in [Rec] menu.)
<b>Mount</b>	“Micro Four Thirds Mount”
<b>Angle of view</b>	75° (Wide) to 29° (Tele)
<b>Filter diameter</b>	37 mm (1.46 inch)
<b>Max. diameter</b>	Approx. 61 mm (2.40 inch)
<b>Overall length</b>	Approx. 26.8 mm (1.06 inch) (from the tip of the lens to the base side of the lens mount when the lens barrel is recessed)
<b>Mass</b>	Approx. 95 g/0.21 lb

**Interchangeable Lens (H-FS1442A)****“LUMIX G VARIO 14–42 mm/F3.5–5.6 II ASPH./MEGA O.I.S.”**

<b>Focal length</b>	f=14 mm to 42 mm (35 mm film camera equivalent: 28 mm to 84 mm)
<b>Aperture type</b>	7 diaphragm blades/circular aperture diaphragm
<b>Aperture range</b>	F3.5 (Wide) to F5.6 (Tele)
<b>Minimum aperture value</b>	F22
<b>Lens construction</b>	9 elements in 8 groups (2 aspherical lenses)

<b>In focus distance</b>	0.2 m (0.66 feet) to $\infty$ (from the focus distance reference line) (focal length 14 mm to 20 mm), 0.3 m (0.98 feet) to $\infty$ (from the focus distance reference line) (focal length 21 mm to 42 mm)
<b>Maximum image magnification</b>	0.17 $\times$ (35 mm film camera equivalent: 0.34 $\times$ )
<b>Optical Image Stabiliser</b>	Available
<b>[O.I.S.] switch</b>	None (Setting of the [Stabilizer] is done in [Rec] menu.)
<b>Mount</b>	"Micro Four Thirds Mount"
<b>Angle of view</b>	75° (Wide) to 29° (Tele)
<b>Filter diameter</b>	46 mm (1.81 inch)
<b>Max. diameter</b>	Approx. 56 mm (2.21 inch)
<b>Overall length</b>	Approx. 49 mm (1.93 inch) (from the tip of the lens to the base side of the lens mount)
<b>Mass</b>	Approx. 110 g/0.24 lb

#### Interchangeable Lens (H-FS45150)

"LUMIX G VARIO 45–150 mm/F4.0–5.6 ASPH./MEGA O.I.S."

<b>Focal length</b>	f=45 mm to 150 mm (35 mm film camera equivalent: 90 mm to 300 mm)
<b>Aperture type</b>	7 diaphragm blades/circular aperture diaphragm
<b>Aperture range</b>	F4.0 (Wide) to F5.6 (Tele)
<b>Minimum aperture value</b>	F22
<b>Lens construction</b>	12 elements in 9 groups (2 aspherical lenses, 1 UHR Lens)
<b>In focus distance</b>	0.9 m (3.0 feet) to $\infty$ (from the focus distance reference line)
<b>Maximum image magnification</b>	0.17 $\times$ (35 mm film camera equivalent: 0.35 $\times$ )
<b>Optical Image Stabiliser</b>	Available
<b>[O.I.S.] switch</b>	None (Setting of the [Stabilizer] is done in [Rec] menu.)
<b>Mount</b>	"Micro Four Thirds Mount"
<b>Angle of view</b>	27° (Wide) to 8.2° (Tele)
<b>Filter diameter</b>	52 mm (2.05 inch)
<b>Max. diameter</b>	Approx. 62 mm (2.44 inch)
<b>Overall length</b>	Approx. 73 mm (2.87 inch) (from the tip of the lens to the base side of the lens mount)
<b>Mass</b>	Approx. 200 g/0.44 lb

## 5 Location of Controls and Components

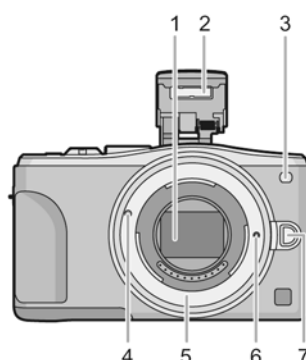
The following description is for DMC-GF6XEB/GF6KEB/GF6WEB.

Some descriptions may differ depending on model suffix.

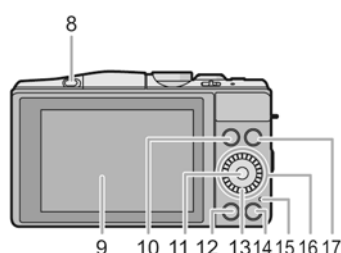
The page number in this chapter does not show the page number of this service manual.

### ■ Camera body

- 1 Sensor
- 2 Flash (P130)
- 3 Self-timer indicator (P170)/  
AF Assist Lamp (P155)
- 4 Lens fitting mark (P21)
- 5 Mount
- 6 Lens lock pin
- 7 Lens release button (P22)



- 8 Flash open button (P130)
  - The flash opens, and recording with the flash becomes possible.
- 9 Touch screen/monitor (P16)
- 10 [▶] (Playback) button (P64)
- 11 [MENU/SET] button (P18, 38)
- 12 [Q.MENU] button (P43)/[Fn1] button (P46)/  
[⏏/↵] (Delete/Cancel) button (P72)
- 13 Control dial (P18)
- 14 [Wi-Fi] button (P224)/[Fn2] button (P46)
- 15 Wi-Fi® connection lamp (P224)
- 16 Cursor buttons (P18)

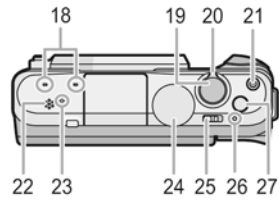


- 16 Cursor buttons (P18)
  - ▲/Exposure Compensation button (P84, 89, 90, 91, 138)
  - ▶/WB (White Balance) (P142)
  - ◀/AF Mode button (P147)
  - ▼/[Drive Mode] button

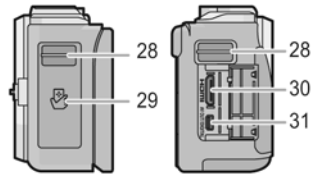
**This button in picture record mode will allow the user to select between the following options.**

**Single (P58)/Burst (P164)/Auto bracket (P167)/Self-timer (P170)**
- 17 [DISP.] button (P62, 70)
  - Each time this is pressed, the display on the monitor is switched.

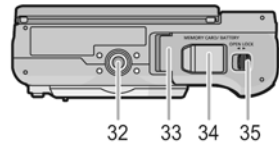
- 18 Stereo microphone (P201)
  - Be careful not to cover the microphone with your finger. Doing so may make sound difficult to record.
- 19 Shutter button (P58)
- 20 Function lever (P19, 124, 138)
- 21 Motion picture button (P194)
- 22 Speaker (P50)
  - Be careful not to cover the speaker with your finger. Doing so may make sound difficult to hear.
- 23 Focus distance reference mark (P160)
- 24 Mode dial (P74)
- 25 Camera ON/OFF switch (P36)
- 26 Status indicator (P36)
- 27 Intelligent Auto button (P78)



- 28 Shoulder strap eyelet (P24)
  - Be sure to attach the shoulder strap when using the camera to ensure that you will not drop it.
- 29 NFC antenna [NFC] (P230)
- 30 [HDMI] socket (P273)
- 31 [AV OUT/DIGITAL] socket (P273, 280, 283, 284)

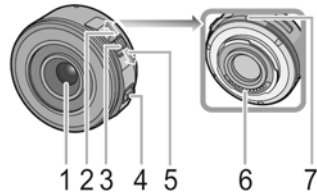


- 32 Tripod mount (P332)
  - A tripod with a screw length of 5.5 mm (0.22 inch) or more may damage this unit if attached.
- 33 Card/Battery door (P30)
- 34 DC coupler cover
  - When using an AC adaptor, ensure that the Panasonic DC coupler (optional) and AC adaptor (optional) are used. (P289)
- 35 Release lever (P30)

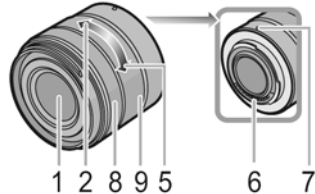


■ Lens

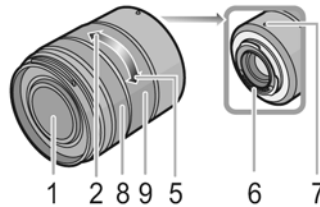
**H-PS14042**  
 (LUMIX G X VARIO PZ 14–42 mm/  
 F3.5–5.6 ASPH./POWER O.I.S.)



**H-FS1442A**  
 (LUMIX G VARIO 14–42 mm/  
 F3.5–5.6 II ASPH./MEGA O.I.S.)



**H-FS45150**  
 (LUMIX G VARIO 45–150 mm/  
 F4.0–5.6 ASPH./MEGA O.I.S.)



- 1 Lens surface
- 2 Tele
- 3 Zoom lever (P124)
- 4 Focus lever (P157)
- 5 Wide
- 6 Contact point
- 7 Lens fitting mark (P21)
- 8 Focus ring (P157)
- 9 Zoom ring (P124)

# 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 fully charged Battery, and insert the memory card.

- **Step 1. The temporary cancellation of "INITIAL SETTINGS":**

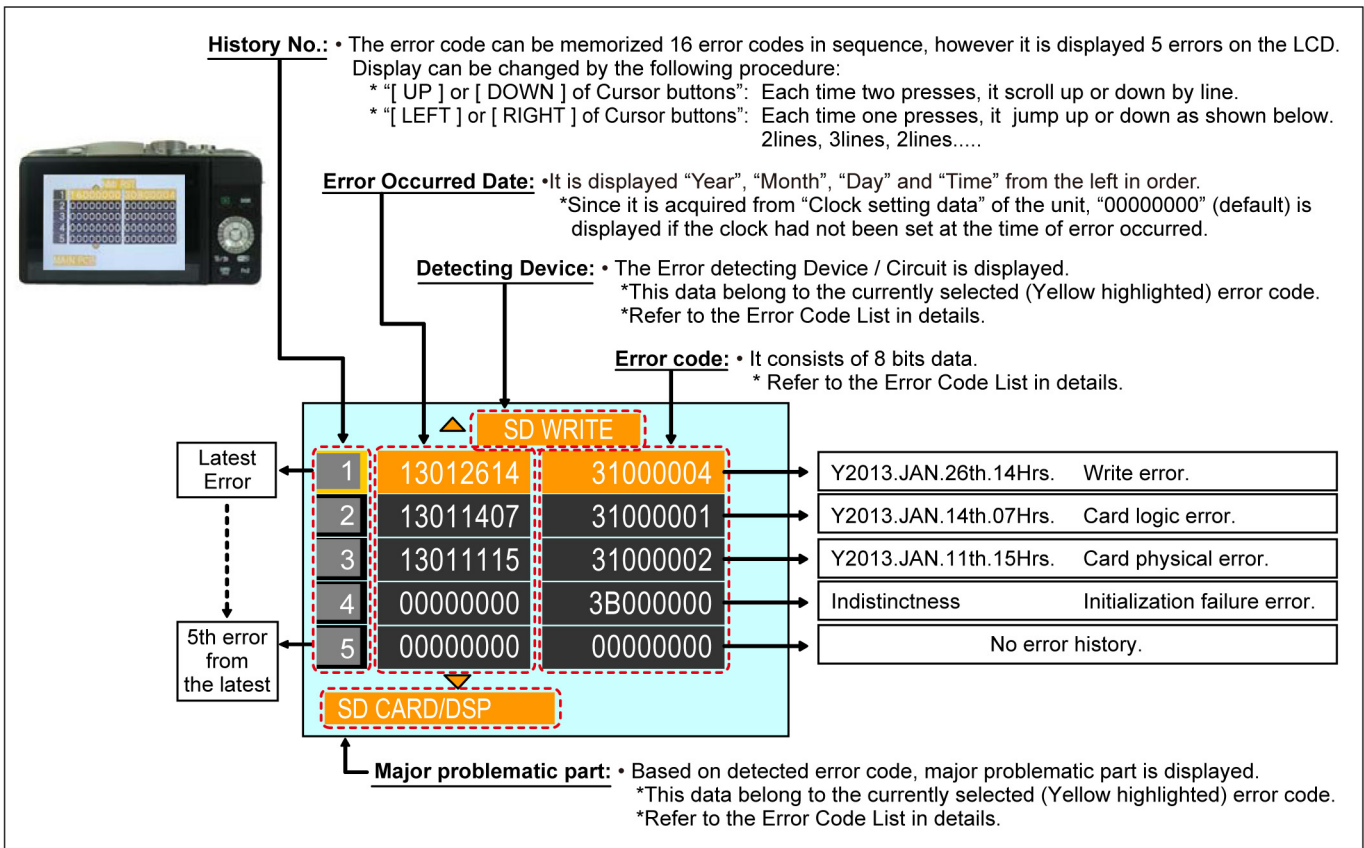
While pressing [ PLAYBACK ] button, [ Q.MENU/Fn1 ] button and "[ RIGHT ] of Cursor buttons" simultaneously, turn the Power on.

- **Step 2. Execute the error code display mode:**

Press [ PLAYBACK ] button, [ MENU/SET ] button and "[ LEFT ] of Cursor buttons" simultaneously with the step 1 condition.

The display is changed as shown below when the above buttons are pressed simultaneously.

Normal display → Error code display → Camera information display → Normal display → .....



Example of Error Code Display

## 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	Error Indication	
			High 4 bits	Low 4 bits		Detecting device	Problematic Part/Circuit
HARD	FLASH	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
		Program Area		0002	Flash ROM data writing error is detected when the unit turns OFF	FROM WR	FROM
					0005	Firmware update error	(No indication)
	SYSTEM IC	Initialization	2C*0	0001	Clock IC initialization failure error	SYS INIT	MAIN PCB
SOFT	CPU	Reset	30*0	0001   0007	System error(NMI reset)	NMI RST	MAIN PCB
	Recording Media	Memory card	31*0	0001	Memory card logic error 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	Memory card physical error During formatting the memory card, there is no response from the memory card If the mini-SD memory card is used, check the SD memory card adaptor		
				0004	Memory card writing error Check the memory card. It might be damage one.	SD WRITE	
	Lens	Communication	3C11   3CF0	****	Lens communication error	ZOOM	ZOOMm/ LENSu
	Camera	System	3B*0	0000	Initialization failure error	INIT	(No indication)
				0001	Exposure charging operation failure(Mount Box Unit)	(No indication)	(No indication)
0002				Failure of the returning operation to the home position(Mount Box Unit)			
			0003	Failure of the mecha shutter sensor(Mount Box Unit)			
Recording	Motion Image Recording	3F*0	0001	File time out error in recording motion image	(No indication)	(No indication)	
			0002	File data cue send error in recording motion image			
Wi-Fi			3211   3214	0001   FFFF	Wi-Fi related errors: *Generally, above are unable to specified the, which cannot be used for malfunction diagnosis.		

### Important notice about “Error Code List”

#### About “\*” indication:

The third digit from the left is different as follows.

- In case of 0 (example: 2B01000)

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: 2B801000)

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.

#### • Step 3. 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

## 7.1. Checking Method of Body and Interchangeable Lens

### 1.INITIAL (DEFAULT) STATUS OF THE LENS UNIT

The Lens unit which is supplied as a standard accessory for this camera unit (H-PS14042, H-FS14042A, H-FS45150) 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.

H-PS14042 (Included in DMC-GF6X):

- [1].ZOOM RING ..... As H-PS14042 is an electric-powered zoom lens, there is no zoom ring. (The lens barrel is retracted.)
- [2].FOCUS RING ..... There is no focus ring.

H-FS1442A (Included in DMC-GF6K, DMC-GF6W):

- [1].ZOOM RING ..... When the Zoom ring is rotated, Zoom condition is changing accordingly.  
(The 1st lens frame moves.)  
[ Focal length : 14mm to 42mm [ 35mm film camera equivalent: 28mm to 84mm ] ]
- [2].FOCUS RING ..... The Focus condition does not changed although Focus ring is rotated. (Free rotation.)

H-FS45150 (Included in DMC-GF6W):

- [1].ZOOM RING ..... When the Zoom ring is rotated, Zoom condition is changing accordingly.  
(The 1st lens frame moves.)  
[ Focal length : 45mm to 150mm [ 35mm film camera equivalent: 90mm to 300mm ] ]
- [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.



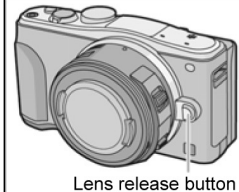

Therefore, check/confirm the followings before concluding/determine the unit being faulty/defective.

NOTE: Refer to the Operating Instructions carefully.

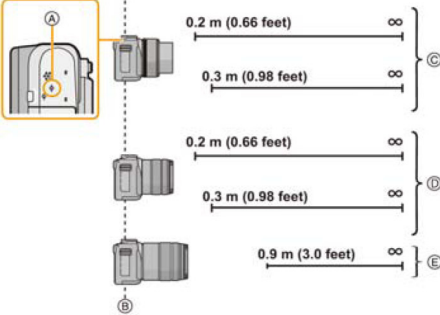
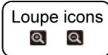

Also, useful hint/tips for this unit is available at following URL, and is updated frequently.  
<http://panasonic.jp/support/global/cs/dsc/>

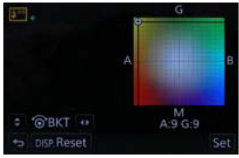


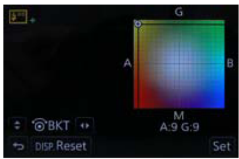
If it is hard to determine whether the resolution is out of specification or not, proceed the "**RESOLUTION INSPECTION**", before replacing the LENS MAIN BLOCK UNIT and/or MOUNT BOX UNIT. (The unit might be mishandling, dropping or others.)

#### [1]. [LENS RELATIVES]

TITLE	ITEMS	DESCRIPTION
LENS	Aperture size does not changed. (Although aperture value is changed, the physical size of aperture is never changed.)	*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.) *By assigning [ Preview ] to [ Q.MENU/Fn1 ], [ Fn2 ], [ Fn3 ] or [ Fn4 ] button, [ Preview ] button will be available. ⇒ [ CUSTOM MENU ] (4/6) ----- [ Fn Button Set ](Fn1, Fn2, Fn3, Fn4) ----- [ Preview ]
	The Aperture condition does not changed. (Aperture value shows "0.0")	*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 F"0.0" 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 [0.0]  Firmware version shows [LENS FIRMWARE : -.- ]  Lens release button
	Although the Focus ring is rotating, it does not change the Focus condition.	*The Focus condition is never changed although focus ring is rotated when the Focus mode is positioned at AFS, AFF 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 ] (2/6) ----- [ AF + MF ] (ON, OFF)
	No released without lens attachment.	*It is able to release the shutter button without attaching the lens unit. ⇒ [ CUSTOM MENU ] (6/6) ----- [ Shoot w/o Lens ] (ON, OFF)
	The Dusty and/or dirty of the Lens	*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).  [ Wiping up the lens surface ] Like drawing the circle, wipe up the lens surface centre towards to outside slowly.
It does not become the Shutter speed [ B ] (Bulb) mode.	This unit has no [ B ](Bulb) mode in selectable shutter speed.	








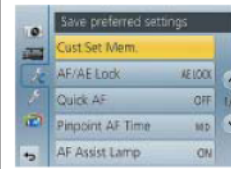


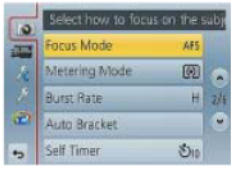
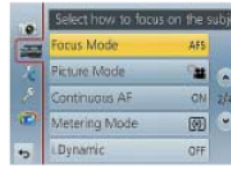
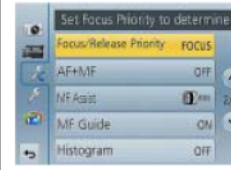

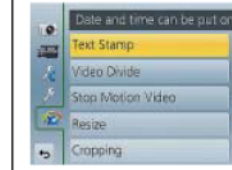
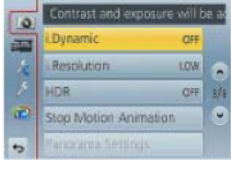


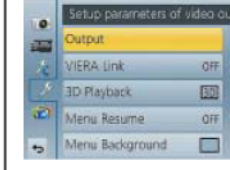

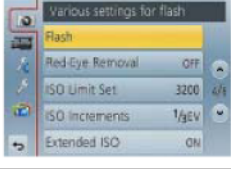


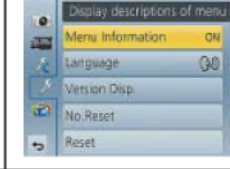
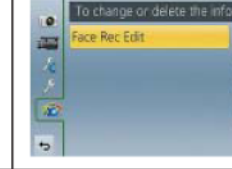
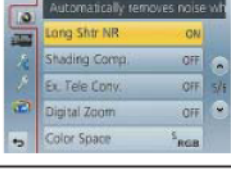
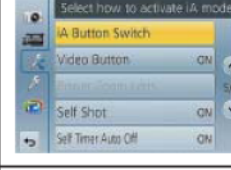

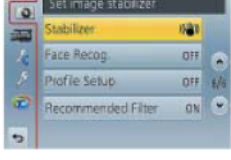
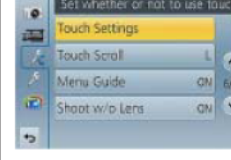
[2]. [BODY RELATIVES]

TITLE	ITEMS	DESCRIPTION
FOCUS	The picture is out of focus although the focus is adjusted in MF mode at once.	<p>*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.</p> <p>*After "in-focus" condition, Zoom condition has been changed.</p> <p>*Power switch is turned OFF and ON again.</p>
	Focus does not become in focus condition.	<p>*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.</p>  <p>                     (A) Focus distance reference mark                      (B) Focus distance reference line                      (C) When the interchangeable lens (H-PS14042) is used                      0.2 m (0.66 feet) (Wide to focal length 20 mm)                      0.3 m (0.98 feet) (focal length 21 mm to Tele)                      (D) When the interchangeable lens (H-FS1442A) is used                      0.2 m (0.66 feet) (Wide to focal length 20 mm)                      0.3 m (0.98 feet) (focal length 21 mm to Tele)                      (E) When the interchangeable lens (H-FS45150) is used                      0.9 m (3.0 feet)                 </p>
	MF(Manual Focus)ASSIST does not work.	<p>*The MF assist function is that the certain area image is able to enlarge about 4/5/10 times to make easier to focus. (It can be changed enlarged value by rotating the rear dial or clicking the loupe icons on display.)</p> <p>*It does not activated if the [ Focus Mode ] is set to other than [ MF ] mode.</p> <p>*It does not activated when using the Digital Zoom or recording motion picture.</p> <p>*It does not activated if [ MF ASSIST ] is set to OFF.</p> <p>⇒ [ CUSTOM MENU ] (2/6) ----- [ MF Assist ]</p> <p>(To display the MF assist, moving the focus lever, rotating the focus ring, or touching the screen.)</p> 
	Face detection does not work.	<p>*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.)</p> <p>*It does not activated when using the Digital Zoom.</p> <p>*It does not activated if the focus mode set to MF.</p>
	The subject is not focused properly.	<p>*When get a fingerprint, dirt on the lens, resulting in the subject being out of focus.</p> <p>*The subject is beyond the focus range of the camera.</p> <p>*There is camera shake (jitter) or the subject is moving slightly.</p> <p>*The focus indication green mark is lights at the top right hand corner on the LCD when the subject is focused.</p> <p>*The shutter speed will become slower and the optical image stabilizer function may not work properly when taking pictures especially in dark places.</p>
	Focus does not change.	<p>*Focus &amp; Exposure condition is locked when the [ AF / AE Lock ] button.</p> <p>⇒ [ CUSTOM MENU ] (1/6) ----- [ AF/AE Lock ] (AE LOCK, AF LOCK, AF/AE LOCK, AF-ON)</p> <p>*It can be reset when [ AF / AE Lock ] button is pressed again.</p> <p>*By assigning [ AF/AE LOCK ] to [ Q.MENU/Fn1 ] or [ Fn2 ] button, [ AF/AE LOCK ] button will be available.</p> <p>⇒ [CUSTOM MENU] (4/6) ----- [ Fn Button Set ](Fn1,Fn2) ----- [ AF/AE LOCK ]</p>
	Although [ AF/AE LOCK ] button is pressed, it does not hold the Focus, only Exposure is locked.	<p>*Focus does not hold even if [ AF/AE Lock ] button is pressed if the [ AF/AE Lock ] is selected [ AE ].</p> <p>⇒ [ CUSTOM MENU ] (1/6) ----- [ AF/AE Lock ] (AE LOCK, AF LOCK, AF/AE LOCK, AF-ON)</p> <p>*AF Lock only is effective when taking pictures in Manual Exposure Mode.</p> <p>*In the Manual Focus condition, it is only worked as [ AE lock ] function.</p>
	It does not turn to the "AFC" mode. (Motion prediction does not work.)	<p>*Confirm the setting of the focus mode (AFS, AFF, AFC, MF).</p> <p>*The focus is fixed on the first picture, when subject is dark or the burst speed is set to [ SH ].</p> <p>*In Panorama Shot Mode, [ AFF ] and [ AFC ] cannot be set.</p>
Flash	Some of the Flash setting(s) are not able to select.	*In accordance with the [ REC ] 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.
	White round spots appear on the recording picture	<p>*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.</p> <p>*A characteristic of this is that the number of round spots and their position differ in every picture.</p> 

TITLE	ITEMS	DESCRIPTION
Flash	Colour is strange when the Flash is fired.	<p>*The colour of the subject which is other than Flash reachable distance is not coverage of white balance.</p> <p>*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.)</p> <p>*It also effects to the Flash recording mode as well.</p> 
	The appearance of the light source is strange. (The light source appears ahead the subject.)	<p>*Normally, the light source appears ahead the subject. (This is the effect of the 1st curtain synchro.)</p>  <p>&lt; 1st Curtain Sync &gt;</p>
EXPOSURE	The Exposure condition can not be changed	<p>*Focus &amp; Exposure condition is locked when the [ AF / AE Lock ] button. ⇒ [ CUSTOM MENU ] (1/6) ----- [ AF/AE Lock ] (AE LOCK, AF LOCK, AF/AE LOCK, AF-ON)</p> <p>*It can be reset when [ AF / AE Lock ] button is pressed again.</p> <p>*By assigning [ AF/AE LOCK ] to [ Q.MENU/Fn1 ] or [ Fn2 ] button, [ AF/AE LOCK ] button will be available. ⇒ [ CUSTOM MENU ] (4/6) ----- [ Fn Button Set ](Fn1, Fn2) ----- [ AF/AE LOCK ]</p>
	Although [ AF/AE LOCK ] button is pressed, only focus is locked. (AE is not locked)	<p>*Focus does not hold even if [ AF/AE Lock ] button is pressed if the [ AF/AE Lock ] is set to [ AF ]. ⇒ [ CUSTOM MENU ] (1/6) ----- [ AF/AE Lock ] (AE LOCK, AF LOCK, AF/AE LOCK, AF-ON)</p> <p>*AF Lock only is effective when taking pictures in Manual Exposure Mode.</p> <p>*In the Manual Focus condition, It is only worked as [ AE lock ] function, regardless any settings.</p>
	The pictures recorded with [ AUTO BRACKET ] function are too dark/bright.	<p>*The [ Auto Bracket ] is selected after setting the [ EXPOSURE COMPENSATION ], the compensated value is effected for its reference value.</p>
	The Exposure condition is changed extremely.	<p>*Spot metering mode is the method to measure the subject in the spot metering target.</p> <p>*Confirm the setting condition of [ EXPOSURE COMPENSATION ] (1/3 EV Step, -3EV to +3EV)</p>  <p>Spot metering target</p>
CAPTURING	Although shutter is released, no picture is captured.	<p>*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 ] (2/6) ----- [ Focus/Release Priority ](FOCUS, RELEASE)</p>
	[ AUTO BRACKET ] does not work.	<p>*Only single picture is able to captured when flash is fired.</p> <p>*Auto Bracket is disabled in the following cases.</p> <ul style="list-style-type: none"> <li>- [ Glistening Water ]/[ Glittering Illuminations ]/[ Soft Image of a Flower ] (Scene Guide Mode)</li> <li>- [ Miniature Effect ]/[ Soft Focus ]/[ Star Filter ]/[ Sunshine ] (Creative Control Mode)</li> <li>- In Self Portrait Mode.</li> <li>- When White Balance Bracket is set.</li> <li>- When recording motion pictures</li> <li>- When recording using the flash</li> <li>- When [ HDR ] is set to [ ON ]</li> <li>- In [ Stop Motion Animation ] (only when [ Auto Shooting ] is set)</li> </ul> <p>*The exposure may not be compensated with auto bracket depending on the brightness of the subject.</p>
COLOUR REPRODUCTION	Colour is strange.	<p>*There is a possibility that [ Finely adjusting the white balance ] is selected/shifted.</p> <p>*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.)</p> <p>*It is resumed/memorized although power turns off/on.</p> 
	Colour is strange. (With Flash)	<p>*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.</p>
	The colour is strange (On PC monitor/ Printout image.)	<p>*There is a possibility that the picture is captured with [ AdobeRGB ] setting. ⇒ [ REC ] (5/6) ----- [ Color Space ] (sRGB, AdobeRGB)</p> <p>*To proceed proper colour reproduction for AdobeRGB, the AdobeRGB capable PC and Printer are necessary.</p> <p>*In accordance with PC environment, it may not be displayed properly when the picture is re-sized with business software.</p>
POWER	The Power is turned off.	<p>*Confirm that the setting condition of [ Sleep Mode ]. (If the camera has not been used for the time selected on the setting, the power turns off automatically.) ⇒ [ SETUP ] (2/5) ----- [ Economy ] [ Sleep Mode ] (10MIN., 5 MIN., 2 MIN., 1 MIN., OFF)</p>
DISPLAY	Abnormal Picture Effect. Certain part of the picture is flashing in Black & White.	<p>*Confirm that the setting condition of [ Highlight ]. ⇒ [ CUSTOM MENU ] (3/6) ----- [ Highlight ] (ON, OFF)</p> <p>The white saturated areas appear blinking in Black and White.</p>
	Firmware version	<p>*Confirm that the firmware versions of the body and lens to be checked. ⇒ [ SETUP ] (4/5) ----- [ Version Disp. ]</p>

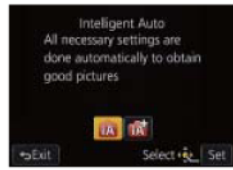
# MENU LIST (Quick Reference)

The following menu items are displayed on the LCD monitor.

	 [REC]	 [MOTION PICTURE]	 [CUSTOM MENU]	 [SETUP]	 [PLAYBACK]
1st Page					
2nd Page					
3rd Page					
4th Page					
5th Page		/			/
6th Page		/		/	/

REMARKS:

Push the Intelligent Auto button to [ Intelligent Auto Mode ], [ Intelligent Auto Mode ] or [ Intelligent Auto Plus Mode ] can be selected.



[ iA mode / iA+ mode ]

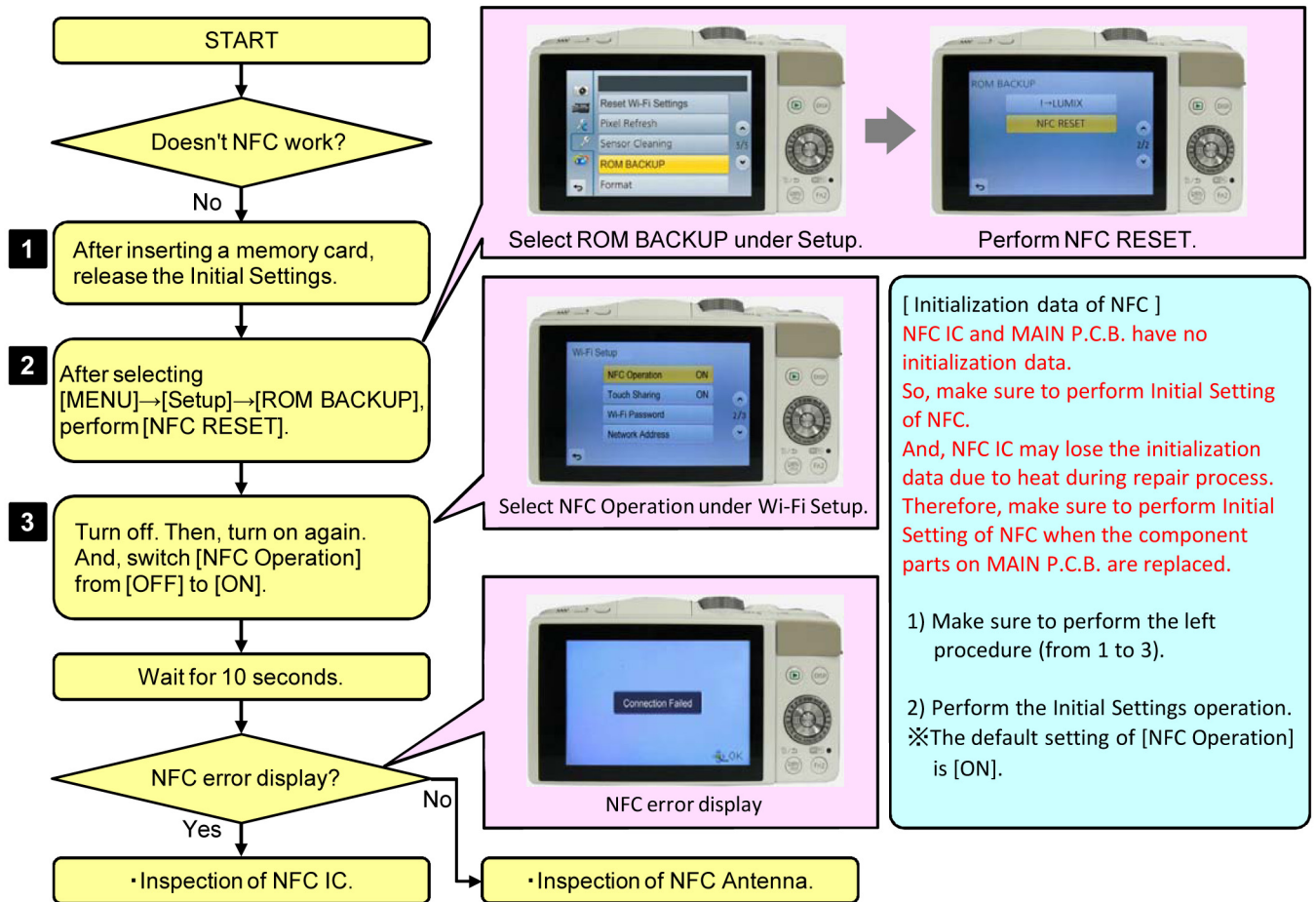
\*When the [Intelligent Auto Mode] and [Intelligent Auto Plus Mode], as for [REC], [MOTION PICTURE] and [CUSTOM MENU], only the basic item is selected. (The menu item which can not be chosen is displayed in gray. When the menu page has no items can be chosen, the page is skipped display.)

	[REC]	[MOTION PICTURE]	[CUSTOM MENU]	[SETUP]	[PLAYBACK]
1st Page				Menu items of [SETUP] mode are same as Normal.	Menu items of [PLAYBACK] mode are same as Normal.
2nd Page					
3rd Page					
4th Page					
5th Page					
6th Page					

NOTE:  
 \*When set [Menu Resume] in the [SETUP MENU] to [ON], the screen shows the last selected menu item when the camera is turned off.  
 ⇒ [SETUP MENU] (3/5) ----- [Menu Resume] (ON/OFF)

## 7.2. Failure Diagnosis of NFC

### [ NFC failure check flow ]



## 7.3. Wi-Fi P.C.B.

### 7.3.1. How to Remove Wi-Fi Password Protection

To prevent incorrect operation or use of the Wi-Fi function by a third party and to protect saved personal information, this unit protects the Wi-Fi function with a password.

It is unable to service with password locked condition. When accepting for repair, the unit has been set the Wi-Fi password by customer, run the [ Reset Wi-Fi Settings ] for removing Wi-Fi password, then check the operation.

#### [Reset Procedure of Wi-Fi Settings]

1) Press the [ MENU/SET ] button, and select the [ SETUP ] mode by Cursor buttons.

Select [ Reset Wi-Fi Settings ] by Cursor buttons, then press the [ MENU/SET ] button.

2) Select [ YES ] and press the [ MENU/SET ] button in several times.

(The [ Reset Wi-Fi Settings ] performs not only resetting Wi-Fi Password but also resetting other all Wi-Fi Settings.)

### 7.3.2. Checking of trouble caused by Wi-Fi P.C.B. or not

The Wi-Fi P.C.B. works properly if the wireless access point (broadband router) name (SSID) in use is displayed on a screen of [ Manual Connection ].

#### (Primary Confirmation)

Confirm that the wireless access point (broadband router) works properly.

#### (Procedure)

1) Press [ Wi-Fi ] button.

2) Select [ New Connection ] in [ Wi-Fi ] menu.

3) Select optional function in [ Select a function ] menu, then select [ Via Network ] in [ Select connection method ] menu.

4) Select [ Manual Connection ] in [ Select connection method ] menu.

5) The Wi-Fi P.C.B. works properly if the wireless access point (broadband router) name (SSID) in use is displayed.

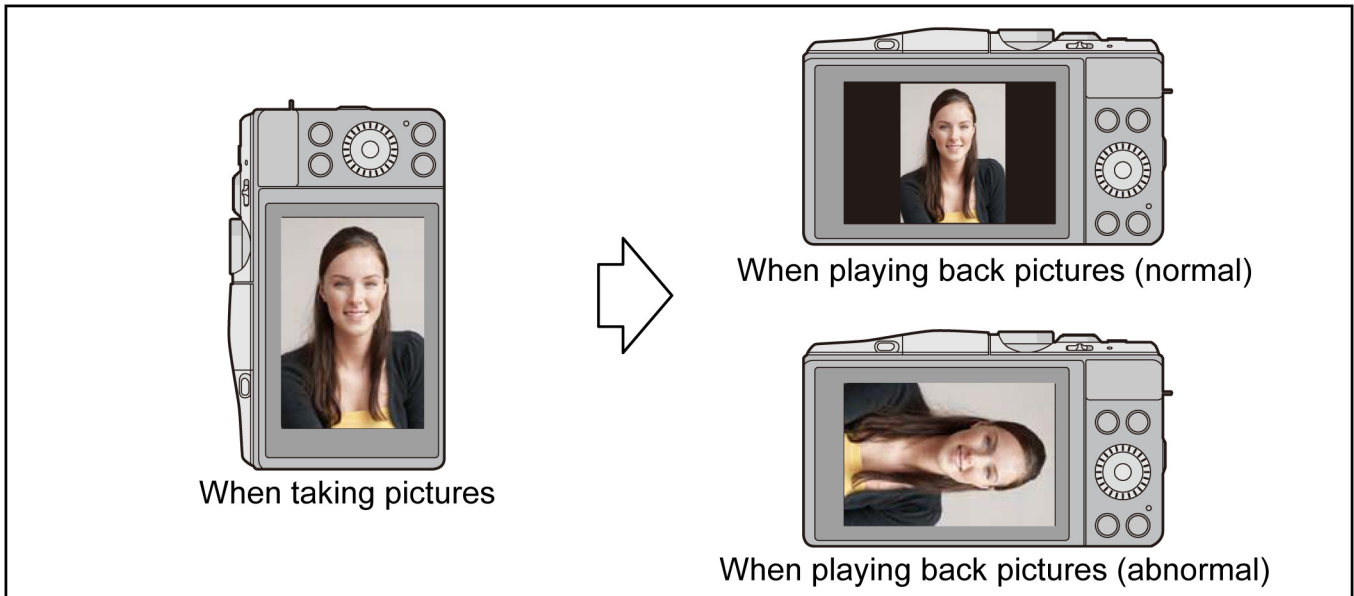
## 7.4. Troubleshooting Guide of the acceleration sensor

Length and width detection which were always detected by OIS by the lens side. This machine is performed by the body side. The acceleration sensor (IC2701) for length and width detection is attached to main P.C.B..

(It is an acceleration sensor for detecting gravity.)

### INSPECTION

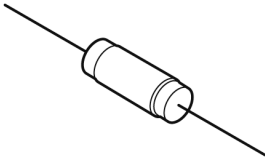
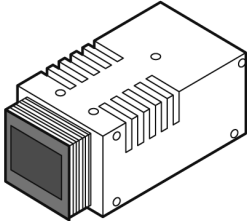
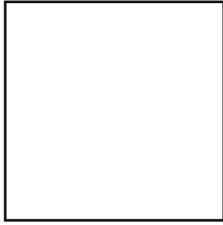
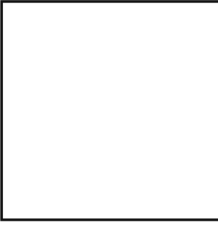
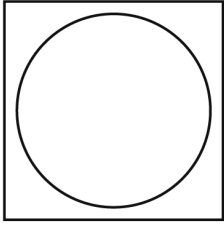
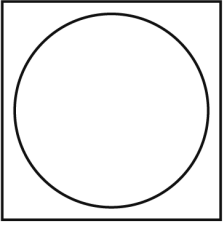
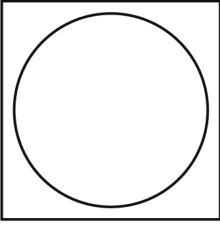
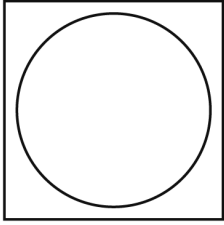

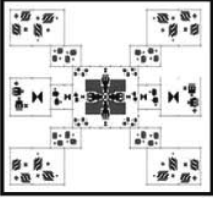
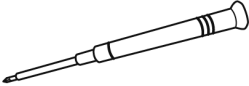

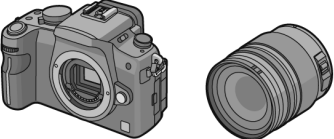

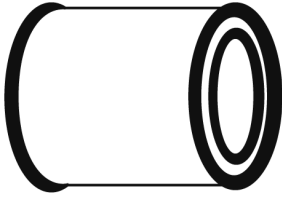
1. Turn the rotation display on.  
→[ PLAYBACK ](3/4)---[Rotate Disp.](ON, OFF)
2. A lens is attached.(The kind of lens to be used is not decided.)
3. A photograph is taken for length.
4. When the taken photograph is reproduced, if displayed for length by the LCD, a problem is not in a acceleration sensor.



## 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 (1k $\Omega$ /5W) <b>ERG5SJ102</b>	LIGHT BOX (with DC Cable) <b>RFKZ0523</b>	ND FILTER 1 (ND 0.9) <b>VFK1164ND09</b>
 <p>* An equivalent type of Resistor may be used.</p>	 <p>* VFK1164TDVLB can be used.</p>	
ND FILTER 2 (ND 0.3) <b>RFKZ0513</b>	CC FILTER 1 (CC-C7.5) <b>RFKZ0511</b>	CC FILTER 2 (CC-Y10) <b>RFKZ0512</b>
		
LB FILTER 1 (LBB2) <b>RFKZ0520</b>	LB FILTER 2 (LBB8) <b>RFKZ0521</b>	TOUCH PEN <b>VGQ0C14</b>
		 <p>* VYQ4370 can be used.</p>
RESOLUTION CHART <b>RFKZ0510</b>	DRIVER <b>VFK1390</b>	TORQUE DRIVER <b>RFKZ0456</b>
 <p>* Supplied as divided chart parts. (Assemble it before use.)</p>		 <p>* Spec. : 2-30N·cm (Equiv.0.2-3kgf/cm)</p>
<b>DMC-G1K</b>	Lens Cleaning Kit (BK) <b>VFK1900BK</b>	NAME RING FIXTURE <b>RFKZ0507</b>
 <p>* Correspond by the marketed commodity. (It does not supply as service fixture and tools.)</p>	 <p>* Only supplied 10 set/box.</p>	

#### About Name Ring Fixture:

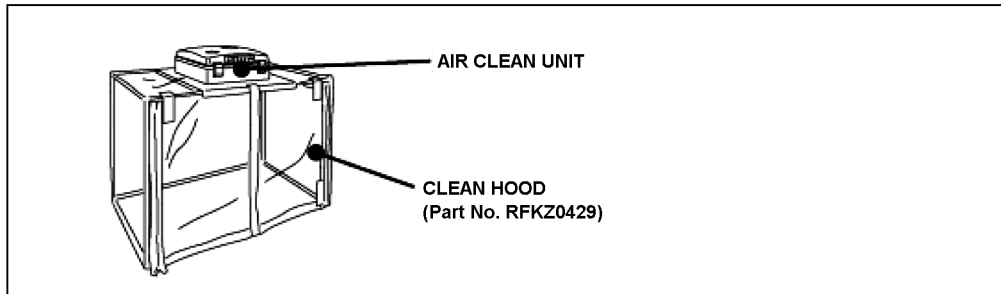
- RFKZ0507 for H-FS45150

## 8.2. Clean Box

- The repair quality is considered, and it is recommended working in the environment of specified clean level less than class 10,000 (Federal Standard 209D).

### [NOTE]

- Work in the environment of specified clean level less than class 10,000 (Federal Standard 209D) when inside cleaning of a lens. Please refer to the following service manuals.
- H-FS1442APP/E/GK: Order No.DSC1302014CE
- H-FS45150PP/E/GK: Order No.DSC1209040CE
- H-PS14042PP/E/GK: Order No.DSC1110056CE

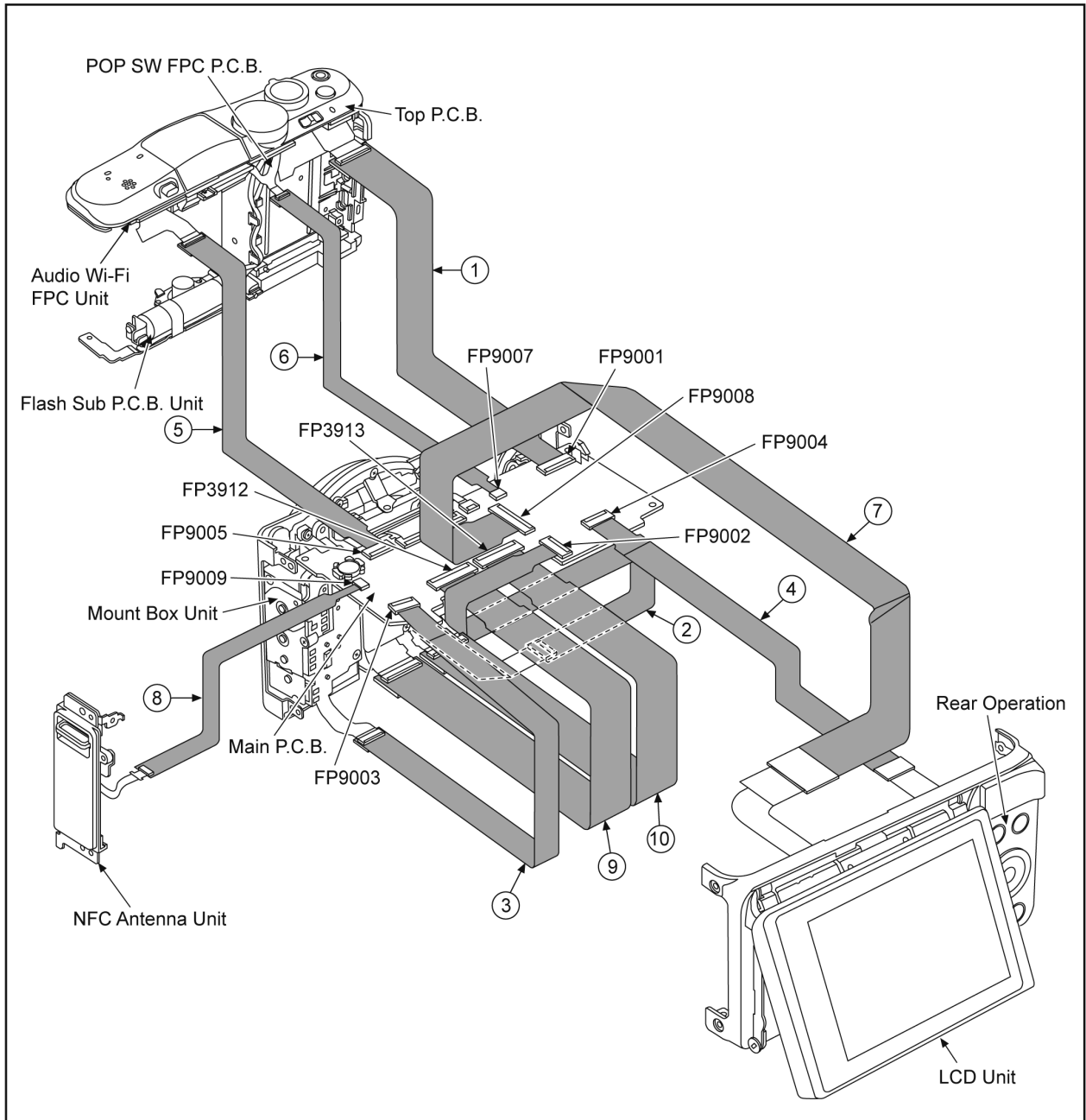


### 8.3. Service Position

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	VFK1950	FP9001(MAIN) ↔ MAIN-TOP FPC - TOP P.C.B.	33pin / 0.3 FFC
2	RFKZ0564	FP9002(MAIN) ↔ MOUNT BOX UNIT	23pin / 0.3 FFC
3	RFKZ0583	FP9003(MAIN) ↔ MOUNT BOX UNIT	19pin / 0.3 FFC
4	VFK1175	FP9004(MAIN) ↔ REAR OPERATION	16pin / 0.5 FFC
5	VFK1716	FP9005(MAIN) ↔ AUDIO Wi-Fi FPC UNIT	25pin / 0.3 FFC
6	VFK1480	FP9007(MAIN) ↔ POP SW FPC P.C.B.	6pin / 0.5 FFC
7	RFKZ0477	FP9008(MAIN) ↔ HINGE FPC UNIT - LCD UNIT	45pin / 0.3 FFC
8	VFK1480	FP9009(MAIN) ↔ NFC ANTENNA UNIT	6pin / 0.5 FFC
9	RFKZ0477	FP3912(MAIN) ↔ MOUNT BOX UNIT	45pin / 0.3 FFC
10	RFKZ0477	FP3913(MAIN) ↔ MOUNT BOX UNIT	45pin / 0.3 FFC



**CAUTION. (When servicing Flash Sub P.C.B. Unit)**

1. Be sure to discharge the E.Capacitor on Flash Sub P.C.B. Unit.  
Refer to "How to Discharge the E.Capacitor on Flash Sub P.C.B. Unit".  
The E.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 P.C.B. Unit.
3. DO NOT allow other parts to touch the high voltage circuit on Flash Sub P.C.B. Unit.

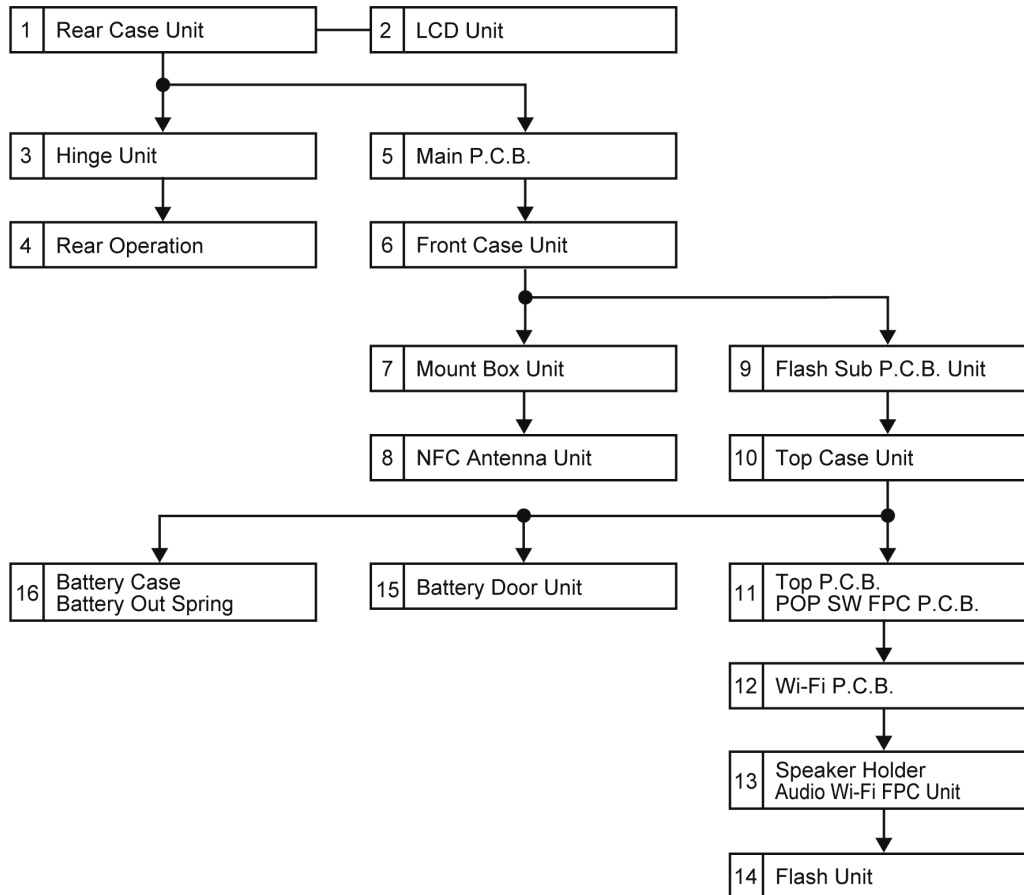
# 9 Disassembly and Assembly Instructions

## 9.1. Camera Body Part

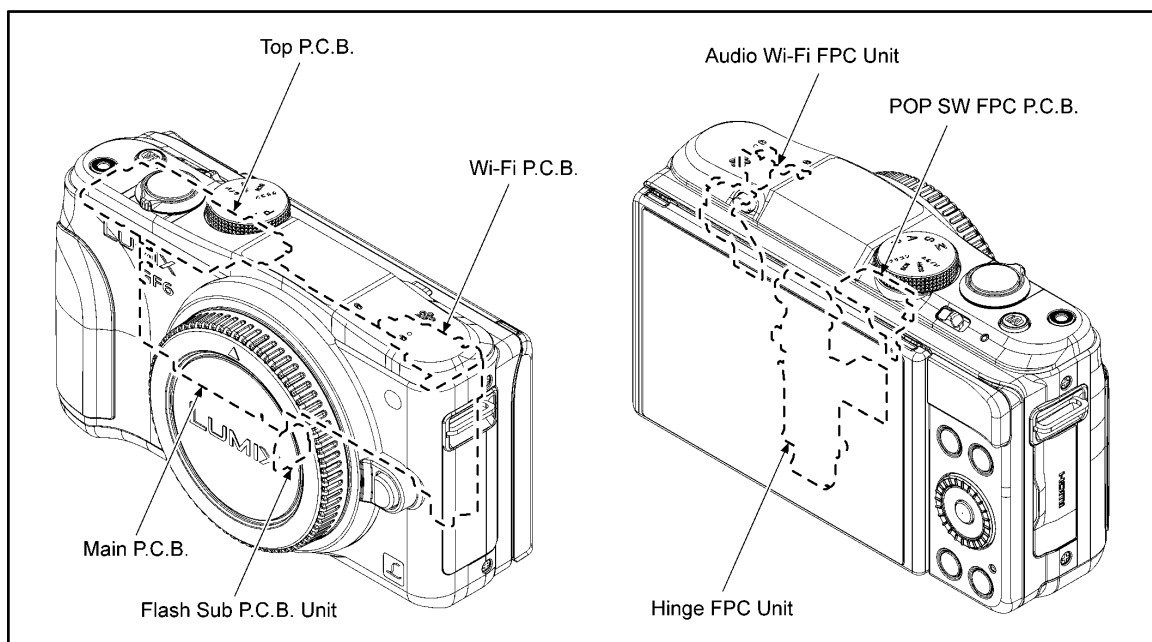
### 9.1.1. Disassembly Flow Chart

This is a disassembling chart.

When assembling, perform this chart conversely.



### 9.1.2. P.C.B. Location



### 9.1.3. Disassembly Procedure

No.	Item	Fig	Removal
1	Rear Case Unit	(Fig. D1)	Memory Card
			Battery
			4 Screws (A)
			3 Screws (B)
			1 Screw (C)
		(Fig. D2)	1 Screw (D)
			FP9004 (Flex)
			FP9008 (Flex)
			Rear Case Unit
2	LCD Unit	(Fig. D3)	2 Screws (E)
			3 Hooking parts
			Connector (A)
			LCD Unit
3	Hinge Unit	(Fig. D4)	2 Screws (F)
			2 Screws (G)
			Hinge Unit
4	Rear Operation	(Fig. D5)	2 Screws (H)
			3 Screws (I)
			Rear Plate
			LCD Lock Piece
			LCD Lock Spring
			Rear Operation
5	Main P.C.B.	(Fig. D6)	3 Screws (J)
			FP3911 (Flex)
			FP3912 (Flex)
			FP3913 (Flex)
			FP9001 (Flex)
			FP9002 (Flex)
			FP9003 (Flex)
			FP9005 (Flex)
			FP9006 (Flex)
			FP9007 (Flex)
			FP9009 (Flex)
			1 Hooking part
			Main P.C.B.
			6
2 Screws (L)			
(Fig. D8)	Jack Door		
	Front Case Unit		
7	Mount Box Unit	(Fig. D9)	Body Cap
			4 Screws (M)
		(Fig. D10)	Mount Box Unit
8	NFC Antenna Unit	(Fig. D11)	(IMPORTANT NOTICE)
			2 Screws (N)
9	Flash Sub P.C.B. Unit	(Fig. D12)	NFC Antenna Unit
			P8002 (Connector)
			2 Hooking parts
			1 Locking tab
			1 Screw (O)
			Capacitor Tape
			Capacitor Holder
			Tripod
			Flash Sub P.C.B. Unit
10	Top Case Unit	(Fig. D13)	1 Screw (P)
			1 Locking tab
			Top Case Unit

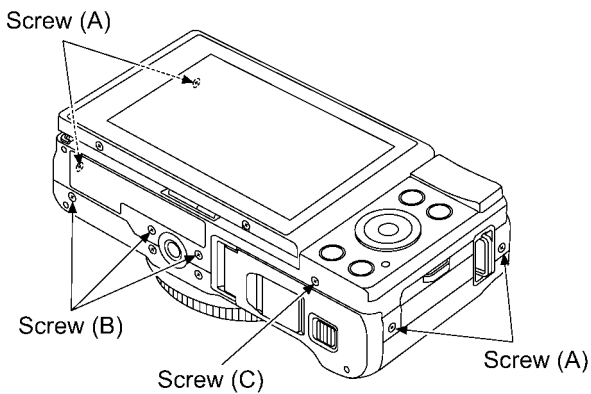
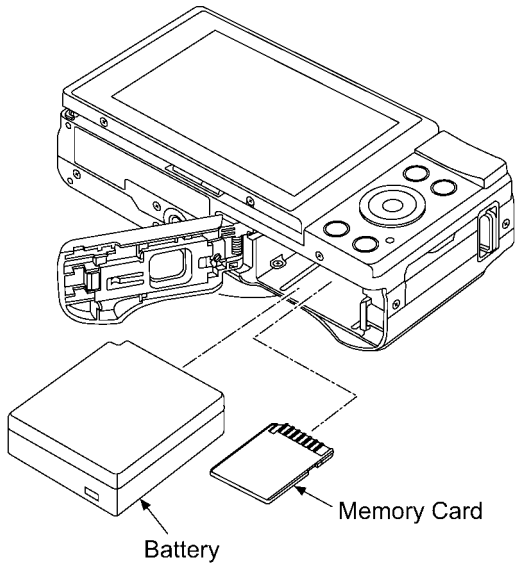
No.	Item	Fig	Removal
11	Top P.C.B. POP SW FPC P.C.B.	(Fig. D14)	1 Screw (Q)
			2 Screws (R)
		(Fig. D15)	Top Plate
			Top Case Tape B
			Solder (4 points)
			2 Screws (S)
			Top Case Piece
			Top PCB Plate
			Top P.C.B.
			Mode Dial Plate
			IA Button Unit
			Power Switch
			Rec Button
			Power LED Panel
		(Fig. D16)	POP SW FPC P.C.B.
			(When Replacing)
12	Wi-Fi P.C.B.	(Fig. D17)	1 Screw (T)
			Connector (B)
			Top Earth Plate
			2 Convexes
13	Speaker Holder Audio Wi-Fi FPC Unit	(Fig. D18)	Wi-Fi P.C.B.
			1 Screw (U)
			Flash Lock Spring
		(Fig. D19)	Flash Lock
			Speaker Holder
			Speaker
(Fig. D20)	2 Mic Dampers		
	1 Positioning Pin		
	Audio Wi-Fi FPC Unit		
	(How to Install)		
14	Flash Unit	(Fig. D21)	Flash Shaft
			Flash Spring A
			Flash 1 Unit
			4 Locking tabs
			Flash Arm Cover
		(Fig. D22)	1 Screw (V)
			Flash Arm
			1 Screw (W)
			2 Locking tabs
			Flash Case Top
15	Battery Door Unit	(Fig. D23)	Flash Case Bottom
			Flash Unit
15	Battery Door Unit	(Fig. D23)	Battery Door Shaft
			Battery Door Spring
			Battery Door Unit
16	Battery Case Battery Out Spring	(Fig. D24)	2 Convexes
			1 Locking tab
		(Fig. D25)	Battery Case
			Battery Lock Knob
			Battery Lock Spring
			1 Hooking part
	Battery Out Spring		




### 9.1.3.1. Removal of the Rear Case Unit

**NOTE:**

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

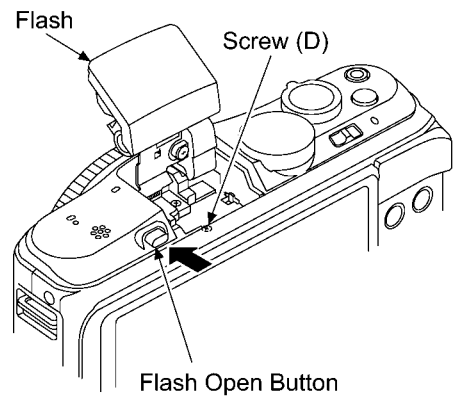
- Memory Card
- Battery
- Screw (A) × 4
- Screw (B) × 3
- Screw (C) × 1



Screw (A)	Screw (B)	Screw (C)
 3.5mm	 2.5mm	 3.5mm
(K)(R)(T): BLACK (W): SILVER	(K)(R)(T): BLACK (W): SILVER	(K)(R)(T): BLACK (W): SILVER

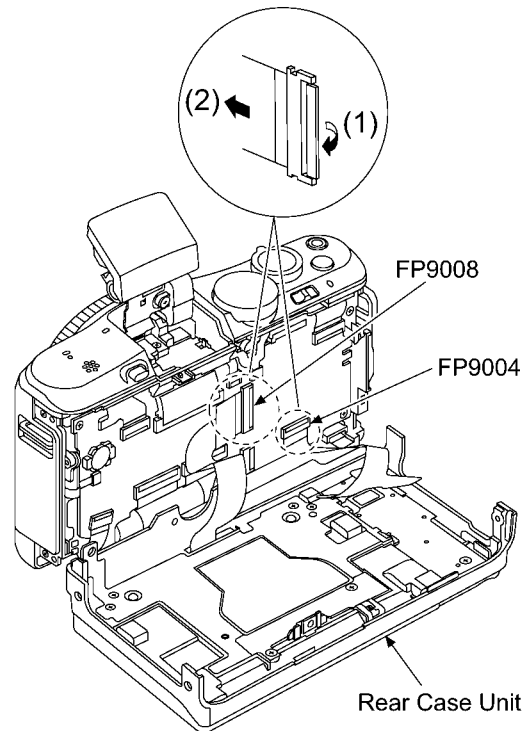
(Fig. D1)

- Screw (D) × 1
- FP9004 (Flex)
- FP9008 (Flex)




**NOTE: (When Replacing)**

- Press the flash open button in the direction of the arrow to open the flash.



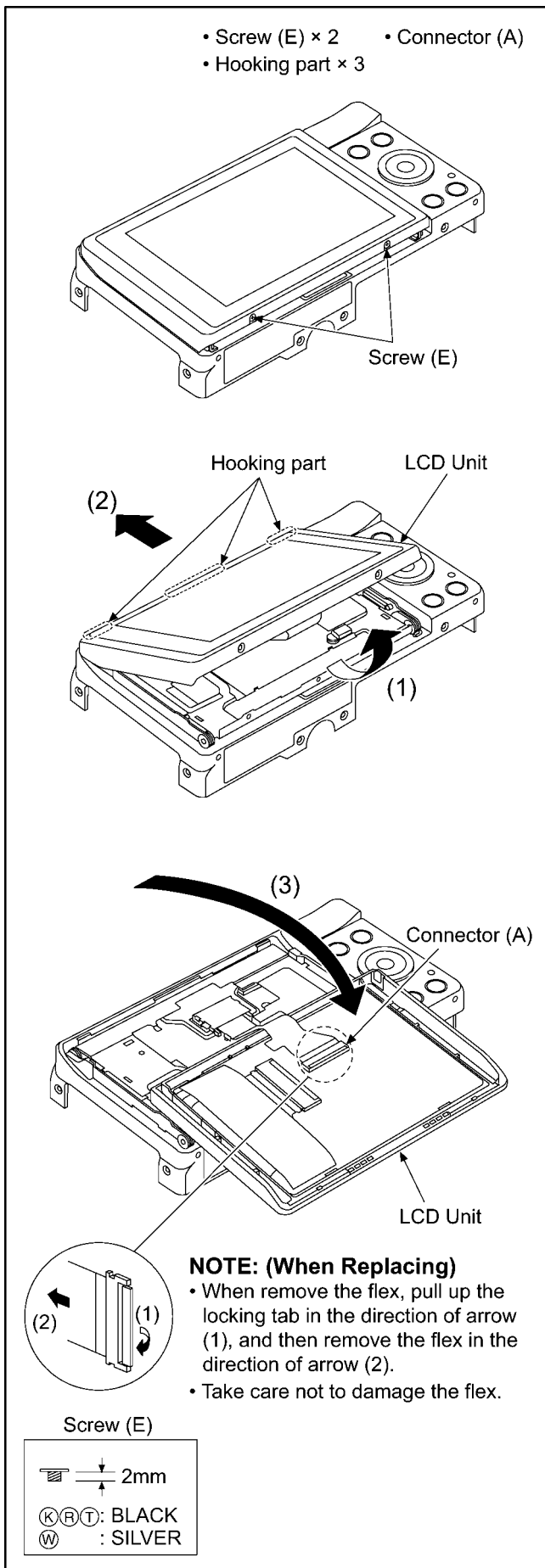
**NOTE: (When Replacing)**

- 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).
- Take care not to damage the flex.

Screw (D)
 2.5mm
SILVER

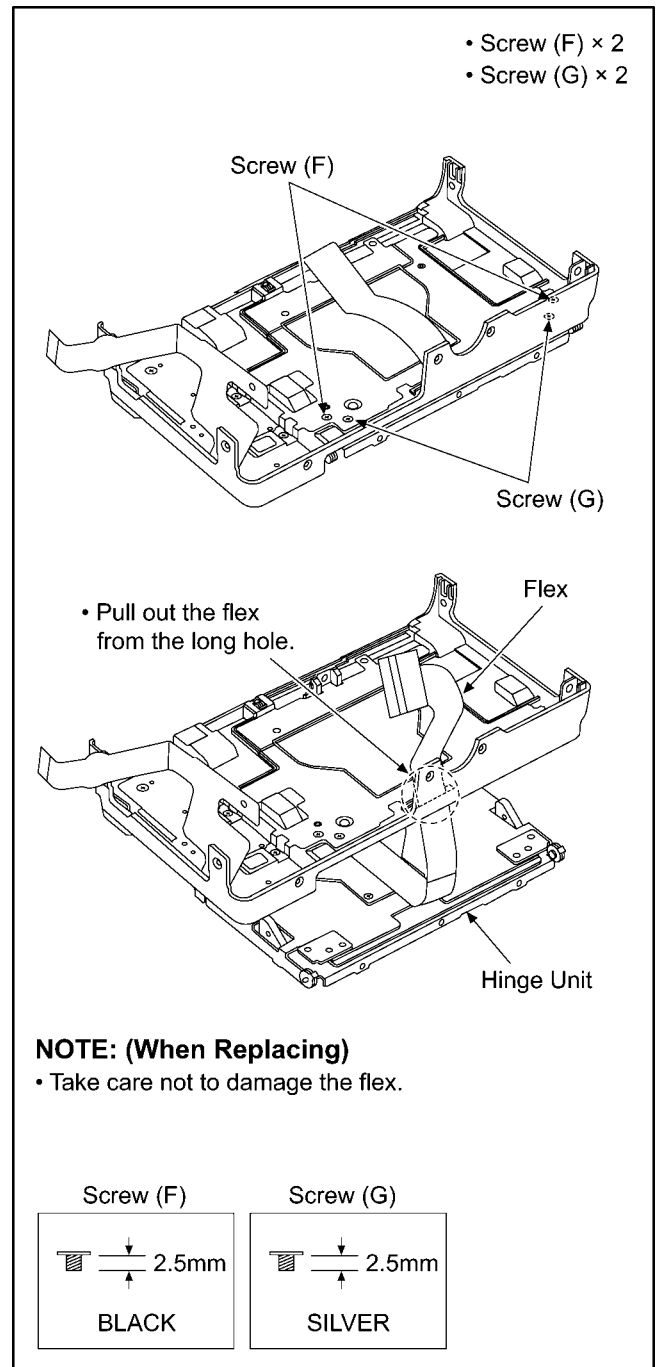
(Fig. D2)

### 9.1.3.2. Removal of the LCD Unit



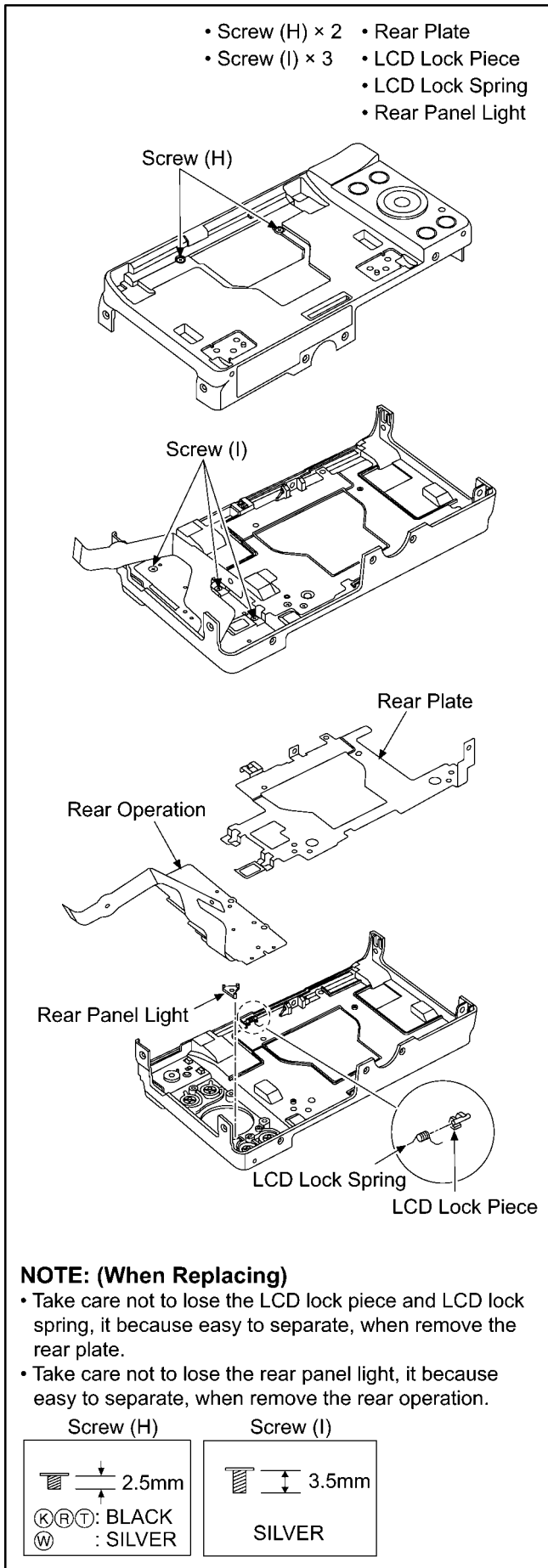
(Fig. D3)

### 9.1.3.3. Removal of the Hinge Unit



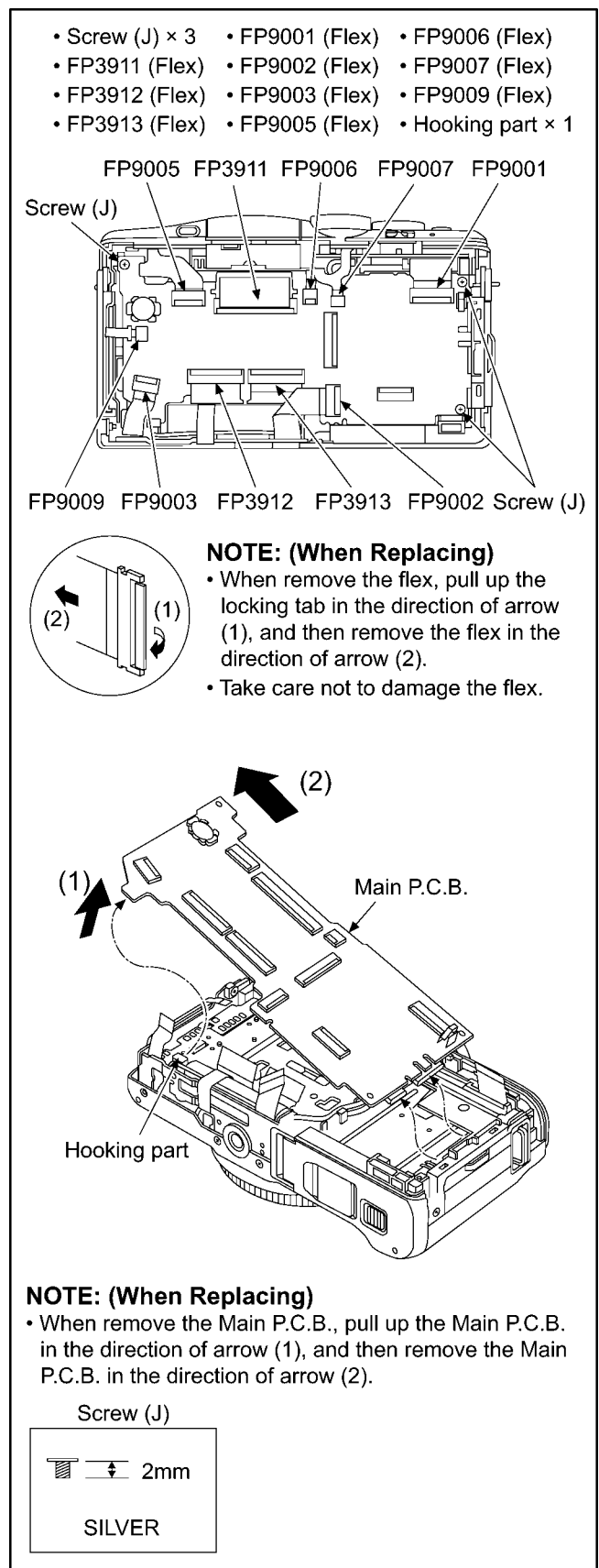
(Fig. D4)

### 9.1.3.4. Removal of the Rear Operation



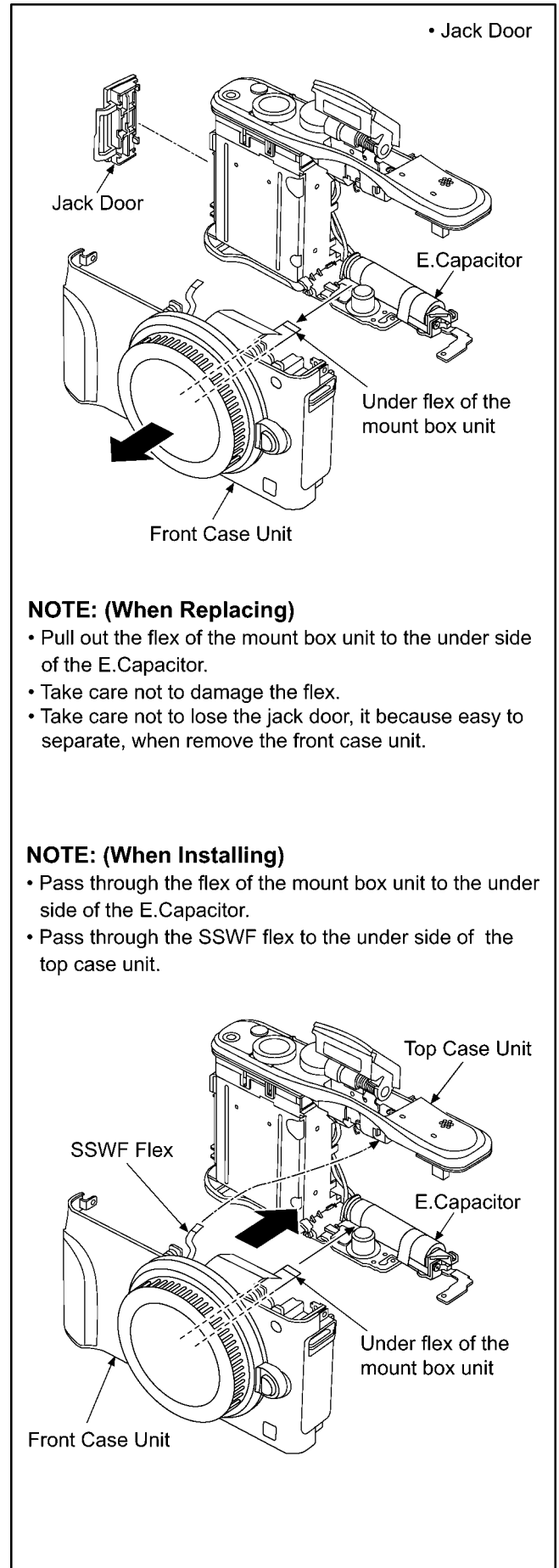
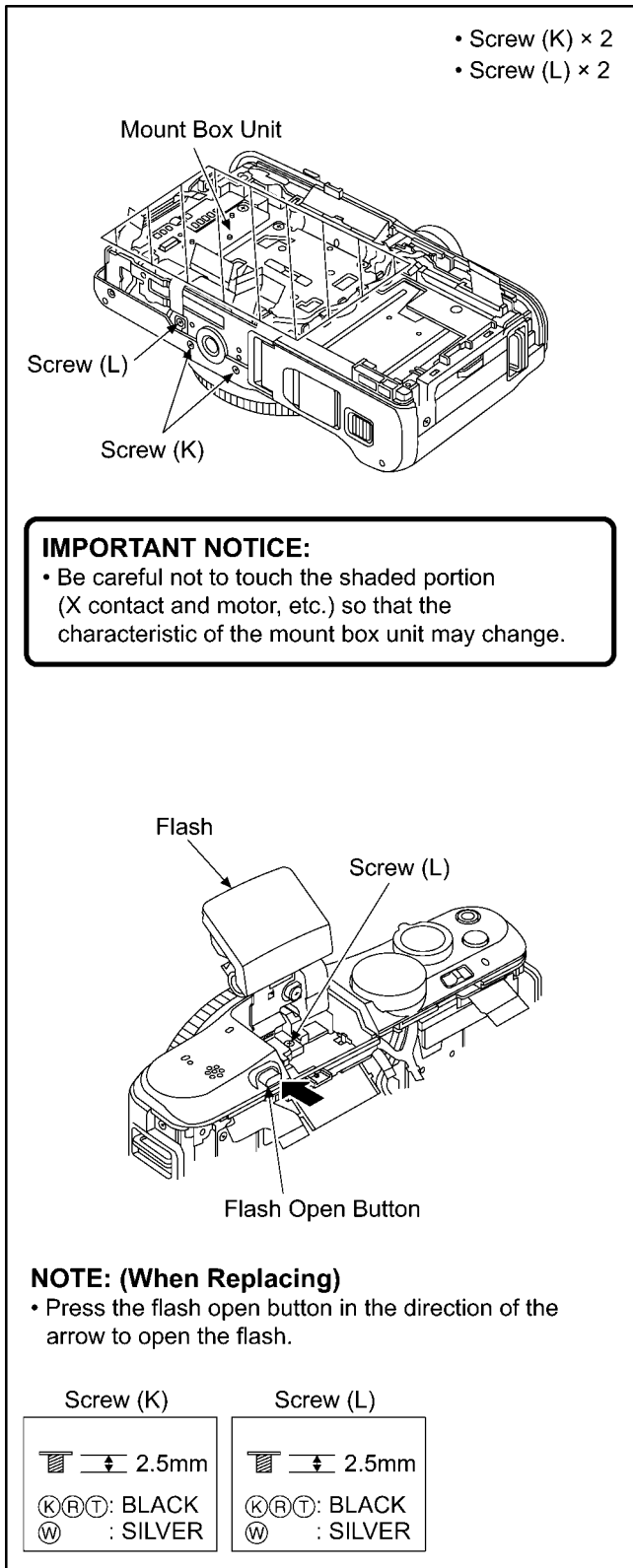
(Fig. D5)

### 9.1.3.5. Removal of the Main P.C.B.

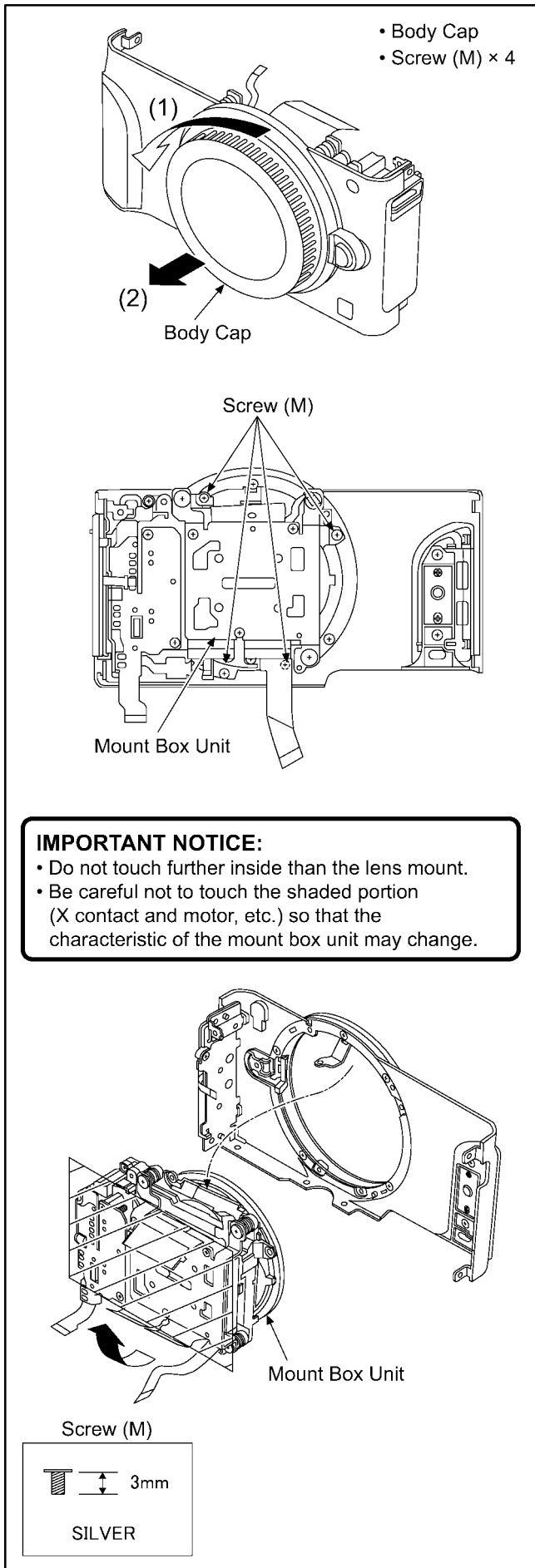


(Fig. D6)

### 9.1.3.6. Removal of the Front Case Unit



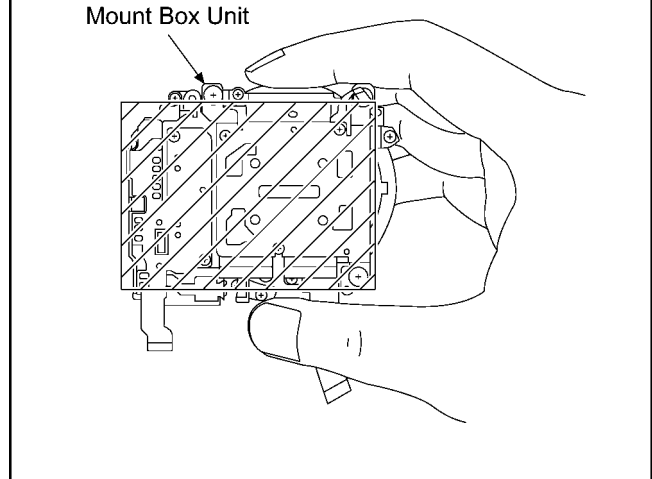
### 9.1.3.7. Removal of the Mount Box Unit



(Fig. D9)

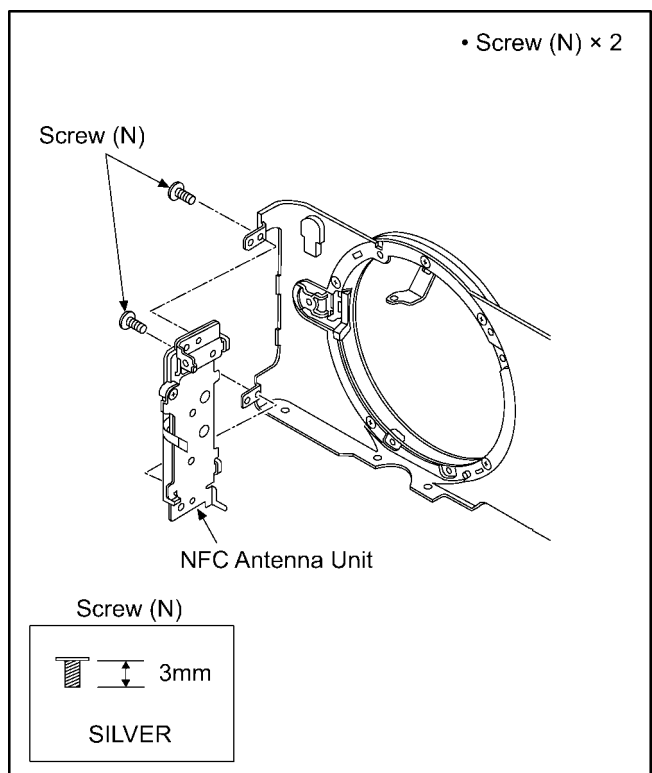
**IMPORTANT NOTICE:**

- Do not touch further inside than the lens mount.
- Be careful not to touch the shaded portion (X contact and motor, etc.) so that the characteristic of the mount box unit may change. (Handle it as shown in the figure below.)



(Fig. D10)

### 9.1.3.8. Removal of the NFC Antenna Unit



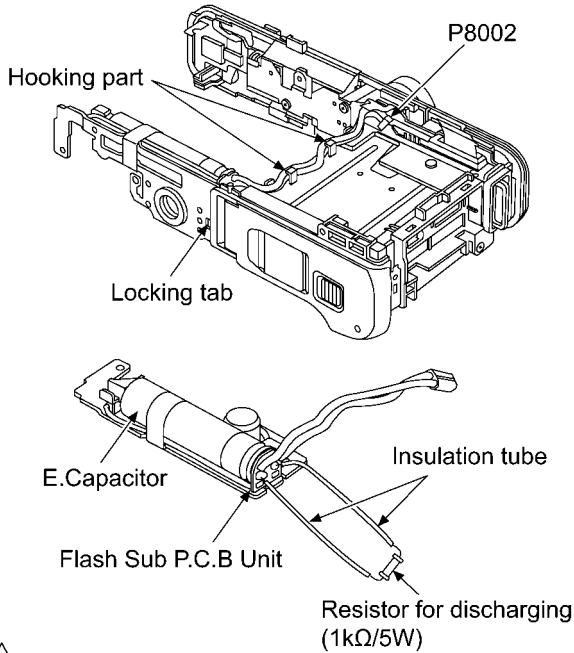
(Fig. D11)

### 9.1.3.9. Removal of the Flash Sub P.C.B. Unit

#### IMPORTANT NOTICE:

- Take care not apply any bending load to the charging E.Capacitor.
- It brings about the possibility of Flash Sub P.C.B. Unit and/or component damage on the Flash Sub P.C.B. Unit.

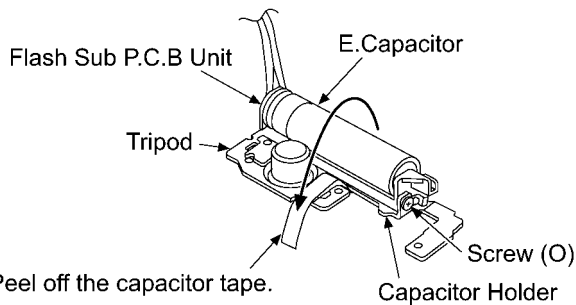
- P8002 (Connector)
- Hooking part × 2
- Locking tab × 1
- Screw (O) × 1
- Capacitor Tape
- Capacitor Holder
- Tripod



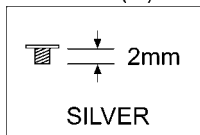
#### CAUTION

Be sure to discharge the E.Capacitor on Flash Sub P.C.B. Unit 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 terminals of E.Capacitor on Flash Sub P.C.B. Unit for approx. 5 seconds.
4. After discharging, confirm that the E.Capacitor voltage is lower than 10V by using a voltmeter.



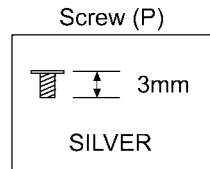
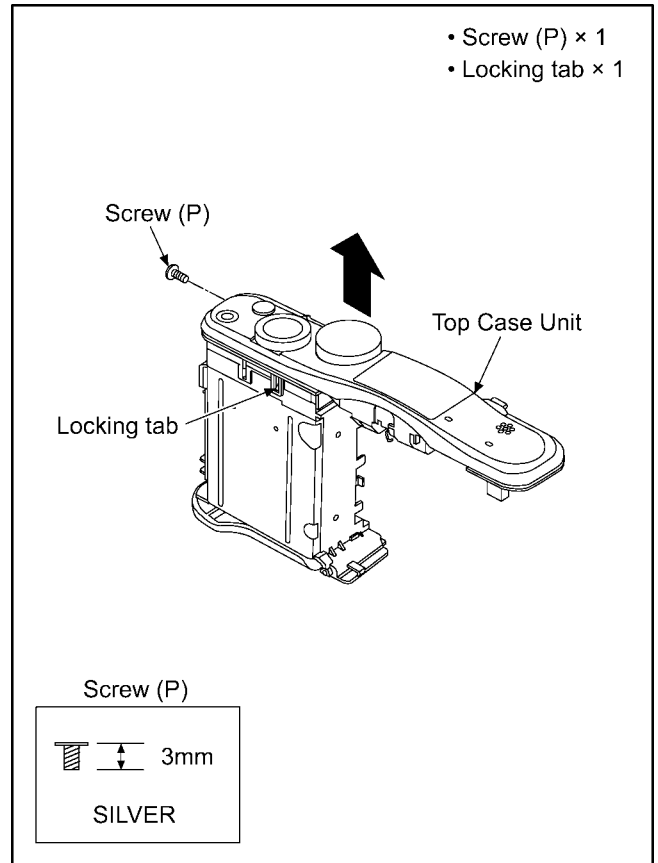
- Peel off the capacitor tape.
- Screw (O)



(Fig. D12)

### 9.1.3.10. Removal of the Top Case Unit

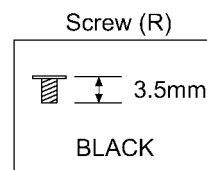
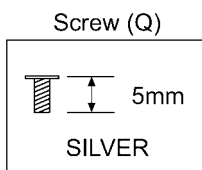
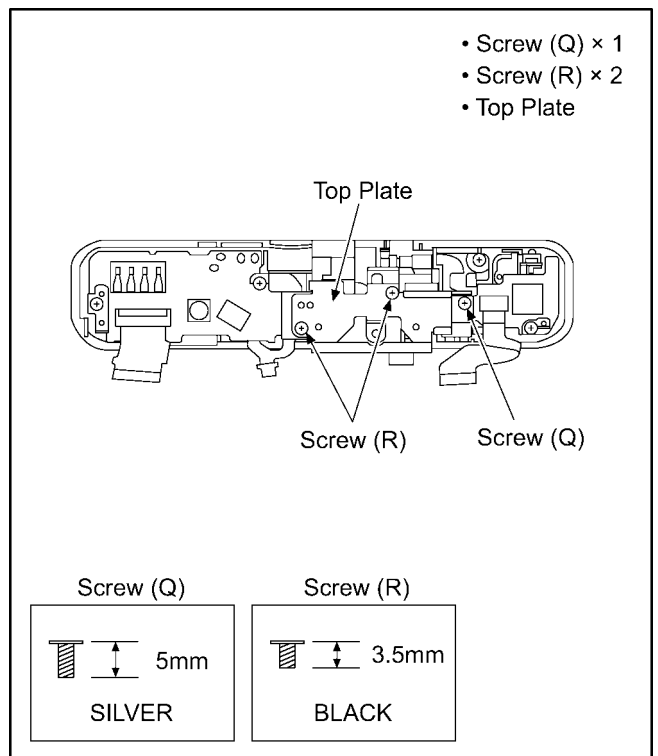
- Screw (P) × 1
- Locking tab × 1



(Fig. D13)

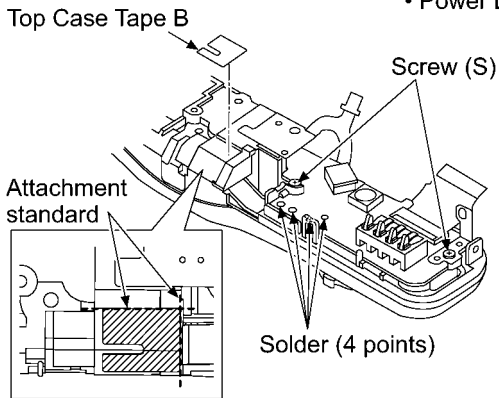
### 9.1.3.11. Removal of the Top P.C.B. and POP SW FPC P.C.B.

- Screw (Q) × 1
- Screw (R) × 2
- Top Plate



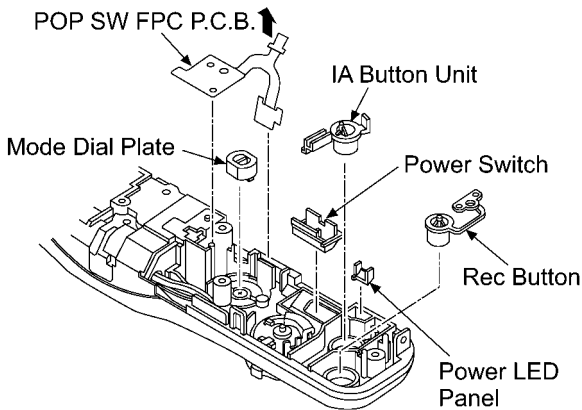
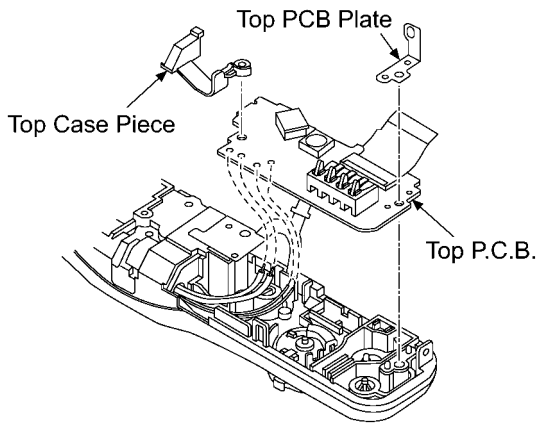
(Fig. D14)

- Top Case Tape B
- Top Case Piece
- IA Button Unit
- Solder (4 points)
- Top PCB Plate
- Power Switch
- Screw (S) × 2
- Mode Dial Plate
- Rec Button
- Power LED Panel



**NOTE: (When Installing)**

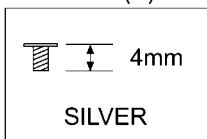
- When paste to the top case tape B, make sure the attachment standard.



**NOTE: (When Replacing)**

- Take care not to lose the power switch, power LED panel, mode dial plate, rec button and IA button unit, it because easy to separate, when remove the Top P.C.B..

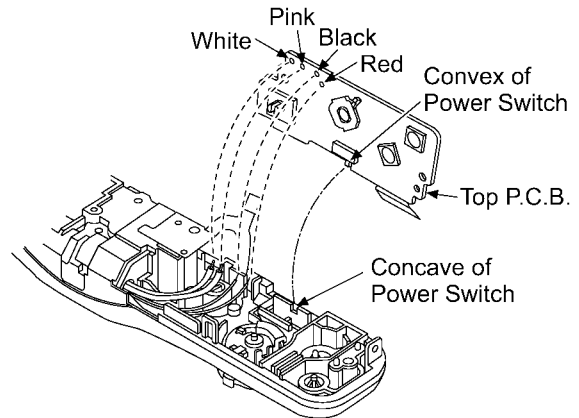
Screw (S)



(Fig. D15)

**NOTE: (When Installing)**

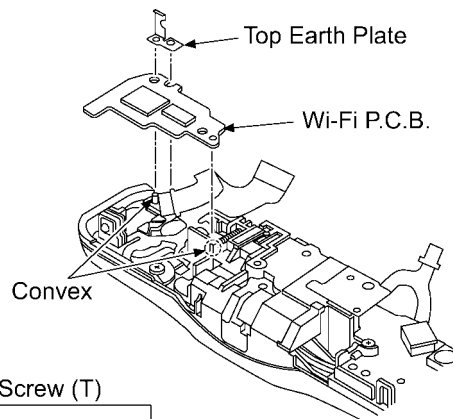
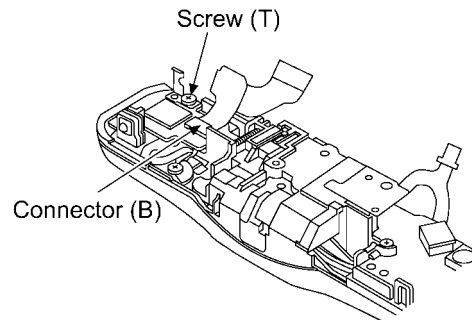
- Align the convex of power switch and the concave of power switch.
- A color is not mistaken, when it solders the lead wire.



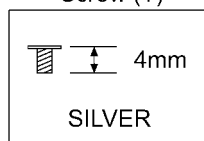
(Fig. D16)

**9.1.3.12. Removal of the Wi-Fi P.C.B.**

- Screw (T) × 1
- Top Earth Plate
- Connector (B)
- Convex × 2

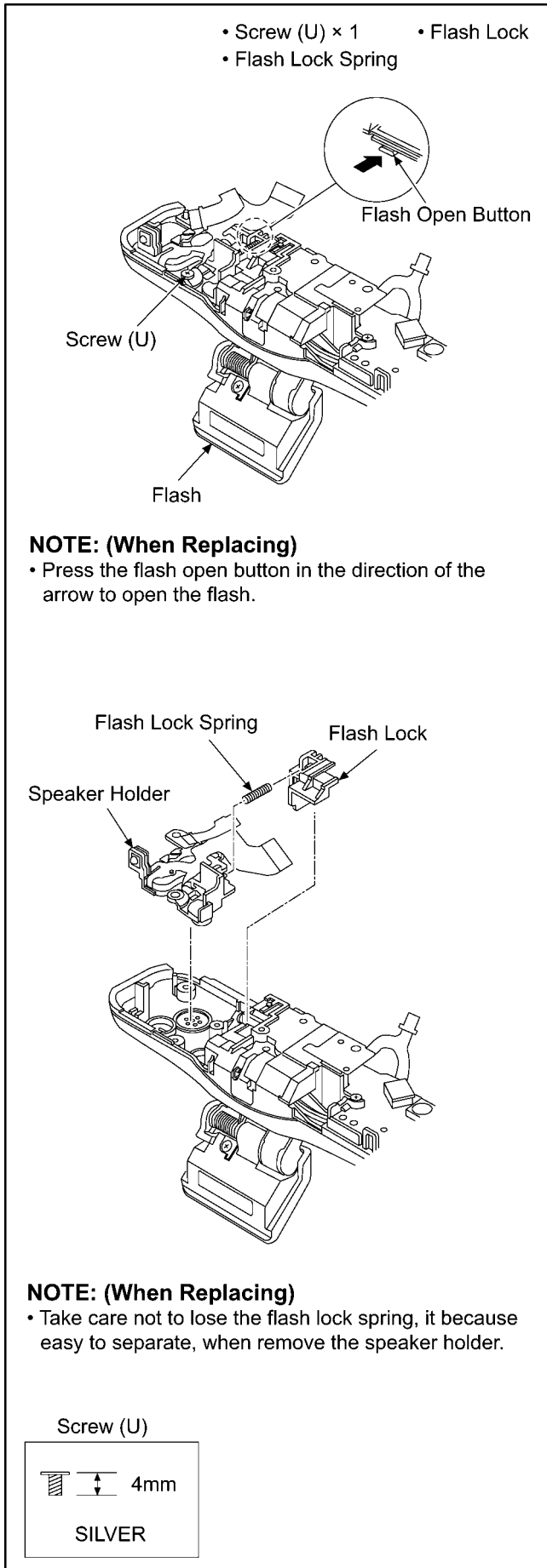


Screw (T)

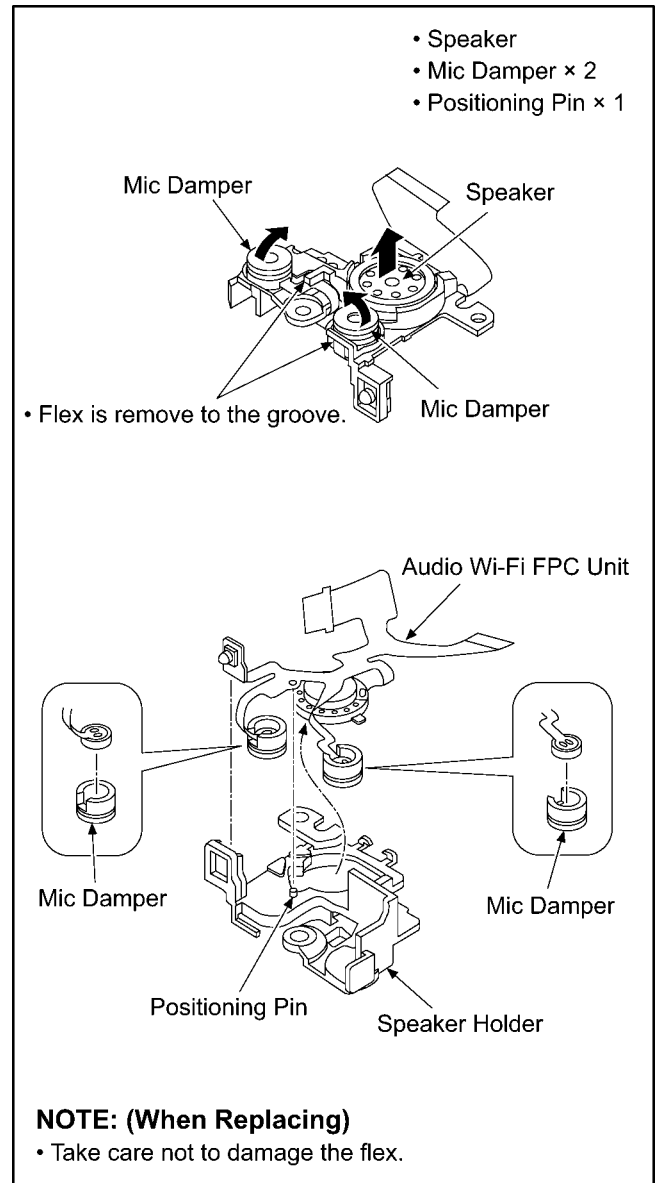


(Fig. D17)

### 9.1.3.13. Removal of the Speaker Holder and Audio Wi-Fi FPC Unit



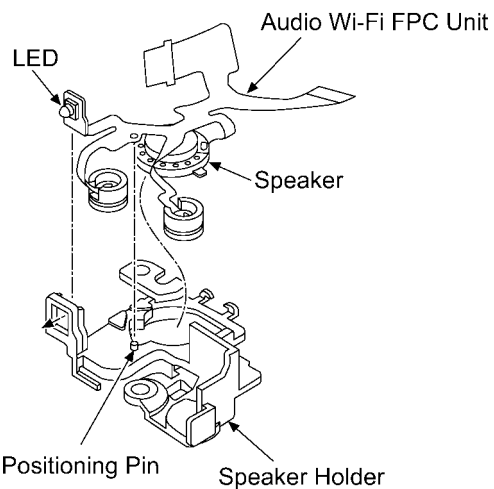
(Fig. D18)



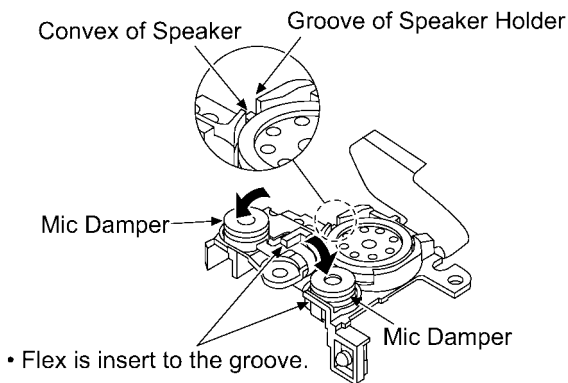
(Fig. D19)

### How to Install

1. Insert the speaker to the speaker holder.
2. Insert the LED to the speaker holder.
3. Insert the hole of audio Wi-Fi FPC unit to the positioning pin of the speaker holder.



4. Bend the FPC, and then set the mic damper to the speaker side of speaker holder.
5. Insert the convex part of speaker to the slot of a speaker holder.



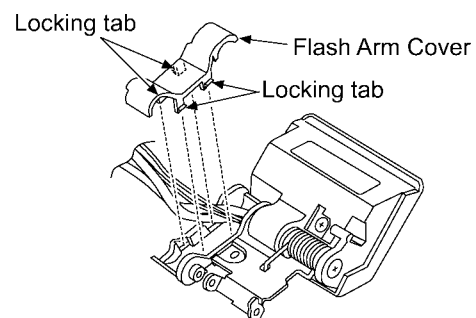
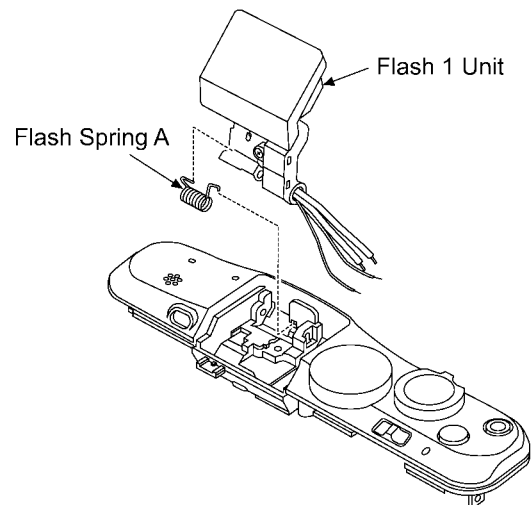
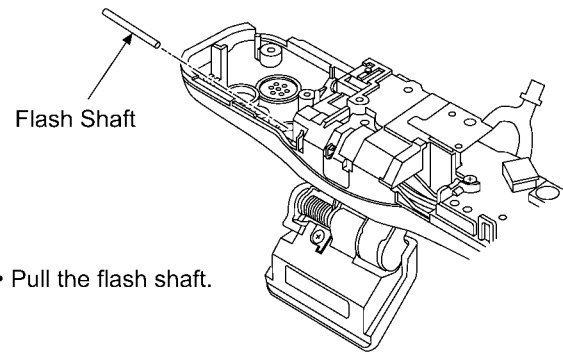
#### NOTE: (When Installing)

- Take care not to damage the flex.

(Fig. D20)

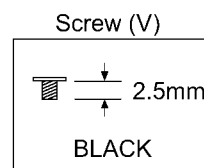
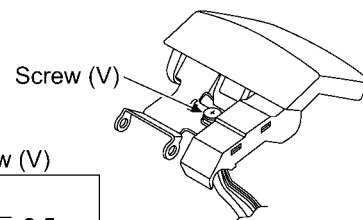
### 9.1.3.14. Removal of the Flash Unit

- Flash Shaft
- Flash Spring A
- Flash 1 Unit
- Locking tab × 4
- Flash Arm Cover
- Screw (V) × 1

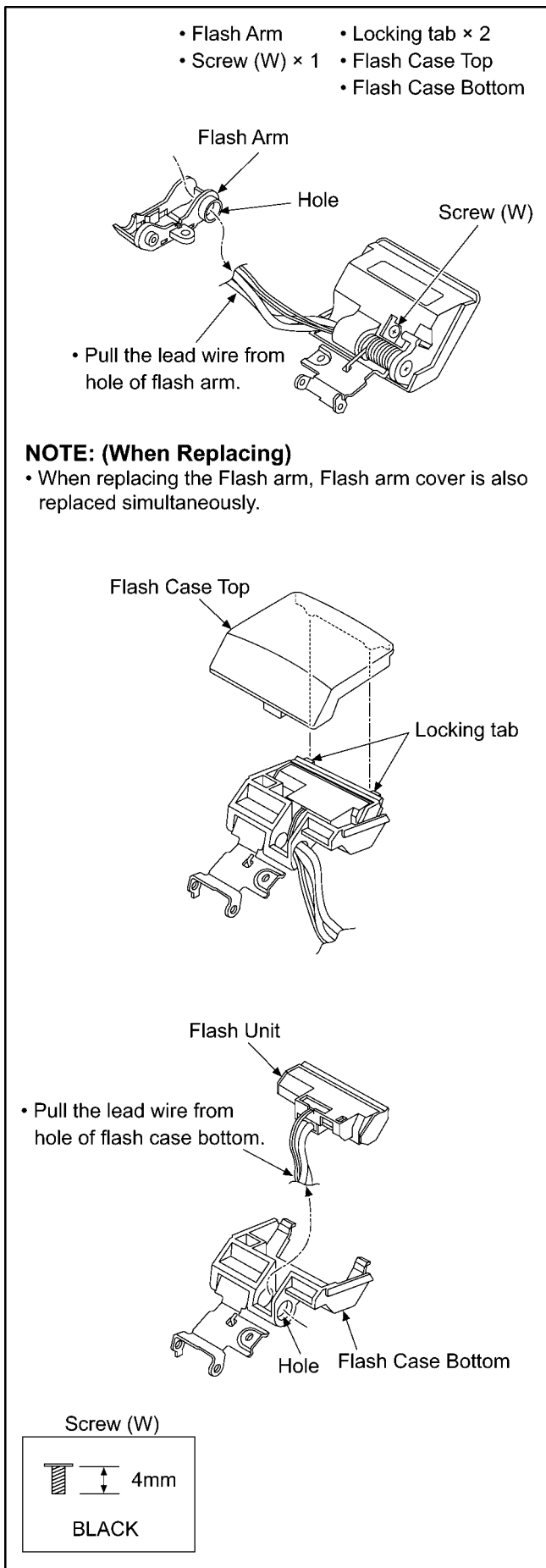


#### NOTE: (When Replacing)

- When replacing the Flash arm cover, Flash arm is also replaced simultaneously.

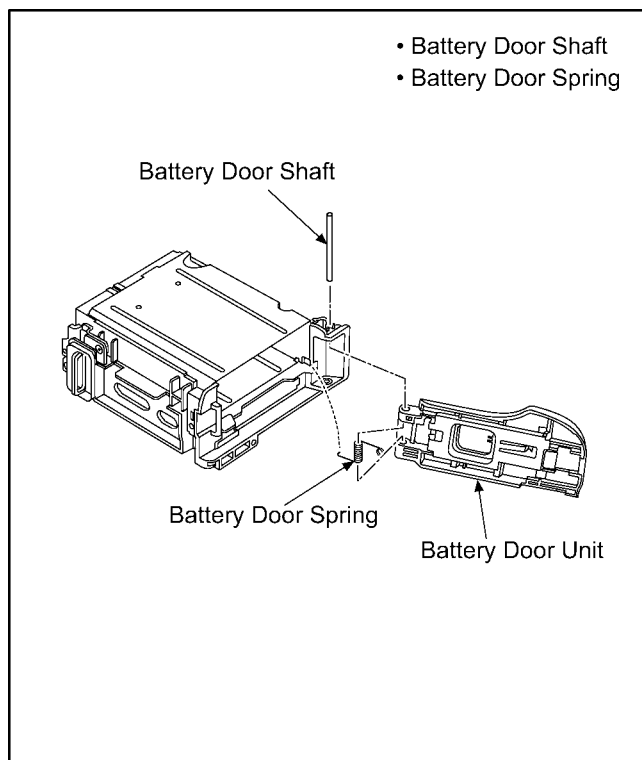


(Fig. D21)



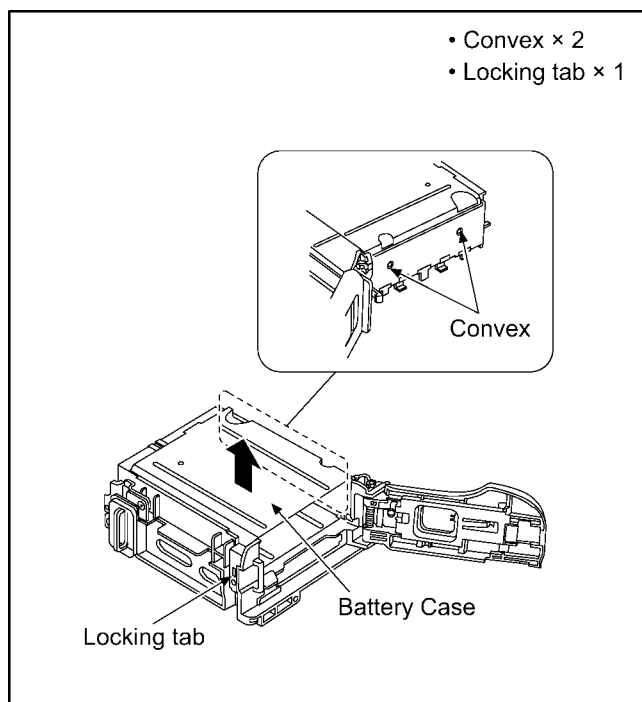
(Fig. D22)

### 9.1.3.15. Removal of the Battery Door Unit



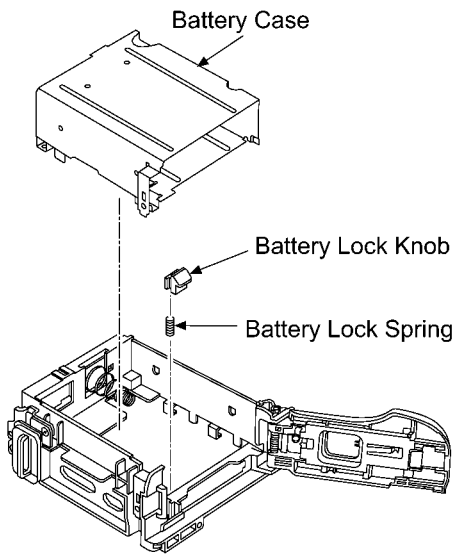
(Fig. D23)

### 9.1.3.16. Removal of the Battery Case and Battery Out Spring



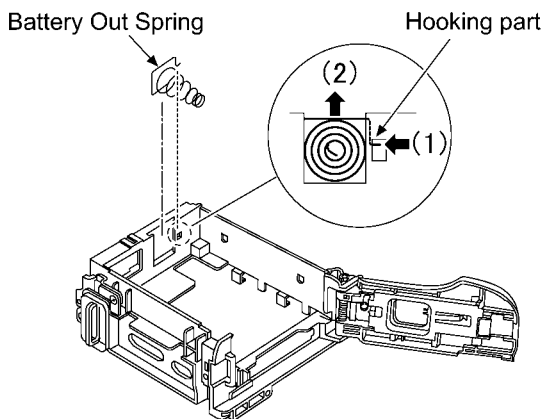
(Fig. D24)

- Battery Lock Knob
- Battery Lock Spring
- Hooking part × 1



**NOTE: (When Replacing)**

- Take care not to lose the battery lock knob and battery lock spring, it because easy to separate, when remove the battery case.



**NOTE: (When Replacing)**

- When remove the battery out spring, push the battery out spring in the direction of arrow (1), and then remove the battery out spring in the direction of arrow (2).

**NOTE: (When Installing)**

Make sure to confirm the following points when installing:

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

(Fig. D25)

## 9.2. Disassembly and Assembly Procedure for the Lens

Please refer to the following service manuals about Disassembly and Assembly of bundled lenses.

- H-FS1442APP/E/GK: Order No.DSC1302014CE
- H-FS45150PP/E/GK: Order No.DSC1209040CE
- H-PS14042PP/E/GK: Order No.DSC1110056CE

# 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.

**NOTE:**

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

After updates it to the latest firmware, the adjustment is executed.

Adjustment Item		Mount Box Unit (*3)	Main P.C.B. (*2)	Flash-ROM (IC6003) (*2)	VENUS ENGINE (IC6001)	·IC2801	·IC2701 ·LCD Unit	
S e c t i o n	C a m e r a	VENUS-ZOOM Inspection (PZM)	—	○	○	○	—	—
		ISO sensitivity adjustment (ISO)	○	○	○	—	—	—
		High brightness coloration inspection (SEN)	○	○	○	—	—	—
		Offset gain adjustment (SAT)	○	○	○	—	—	—
		AWB adjustment (WBL / WBM) (*5)	○	○	○	—	—	—
		IMAGE SENSOR white scratch compensation (WKI)	○	○	○	—	—	—
		IMAGE SENSOR black scratch compensation (BKI)	○	○	○	—	—	—
		Low illumination image quality correction (VSJ)	○	○	○	—	—	—
		Acceleration sensor length and width detection Adjustment (AA2)	—	○	○	—	—	○
		Mount Box Adjustment data writing	○	—	—	—	—	—
		Mount box u readjustment	—	○	○	—	—	—
		AVCHD function inspection	—	○ (*4)	○ (*4)	—	—	—
Defect Part Division/ Inspection	Resolution inspection (*1)	○	—	—	—	—	—	
Initial setting of NFC (*6)		—	○	○	—	○	—	

- \*1
- Inspect it, not only corresponding part is replaced, but also camera body is shocked and/or dropped.
  - The Panasonic camera body in accordance with the Micro Four Thirds system (marketed commodity: operates normal) and a standard zoom lens H-FS014045 (marketed commodity: operates normal) is required as a reference machine.
  - 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 (IC6003) data backup from the unit. After replacing, overwrite the Flash-ROM (IC6003) 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:
    - The readjustment of mount box unit etc. are necessary.
    - Refer to the adjustment instruction in the adjustment software for details.

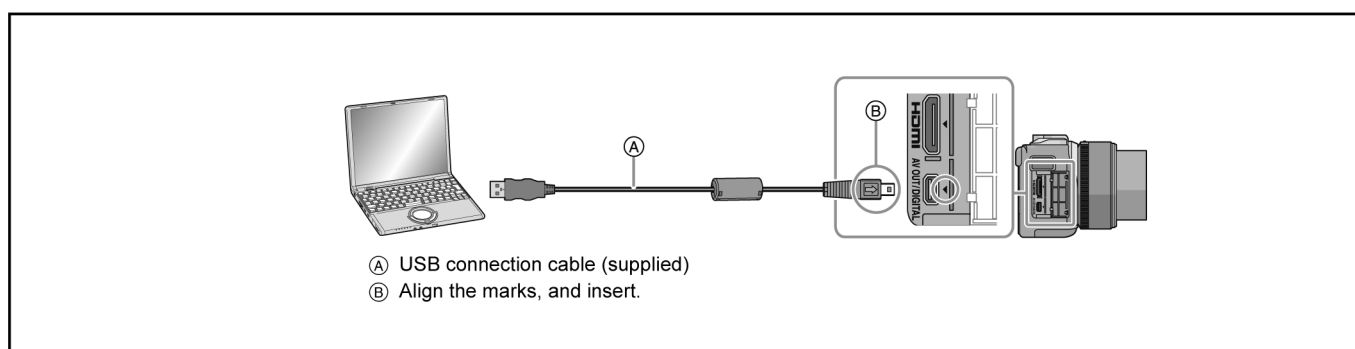
**\*3 NOTE: (After exchange the mount box unit)**

- Execute the resolution inspection by the comparison with the standard model (DMC-G1K etc.: operates normal).
- 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 adjustment model.



**\*5 NOTE: (When AWB adjustment)**

- After change to WB adjustment mode for service with software, the adjustment is executed. After adjusting the AWB adjustment, to cancel the WB adjustment mode for service.
- Details, refer to the instructions in the adjustment software.

**\*6 NOTE: (Initialization data of NFC)**

Make sure to perform the following procedure (from 1 to 4).

\*NFC IC and MAIN P.C.B. have no initialization data.

So, make sure to perform Initial Setting of NFC.

\*NFC IC may lose the initialization data due to heat during repair process.

Therefore, make sure to perform Initial Setting of NFC when the component parts on MAIN P.C.B. are replaced.

1. After inserting a memory card, release the Initial Settings.

2. After selecting [ MENU ]→[ Setup ]→[ ROM BACKUP ]→[ NFC RESET ], turn off. Then, turn on again.

3. Switch [ NFC Operation ] to [ ON ].([ MENU ]→[ Setup ]→[ Wi-Fi ]→[ Wi-Fi Setup ]→[ NFC Operation ])

\*If [ NFC Operation ] is [ ON ], change it to [ OFF ] once. Then, change it to [ ON ].

4. Perform the Initial Settings operation.(Refer to 3.6.2. INITIAL SETTINGS.)

\*The default setting of [ NFC Operation ] is [ ON ].

**About the 3D interchangeable lens (H-FT012) correspondence**

This unit has no special structure (circuit or part) for the 3D interchangeable lens correspondence, only by software is processed the 3D interchangeable lens correspondence.

Therefore, if taken with other lenses as usual, the 3D interchangeable lens is no problem for operation.

# 11 Maintenance

## 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 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(BK)(VFK1900BK).



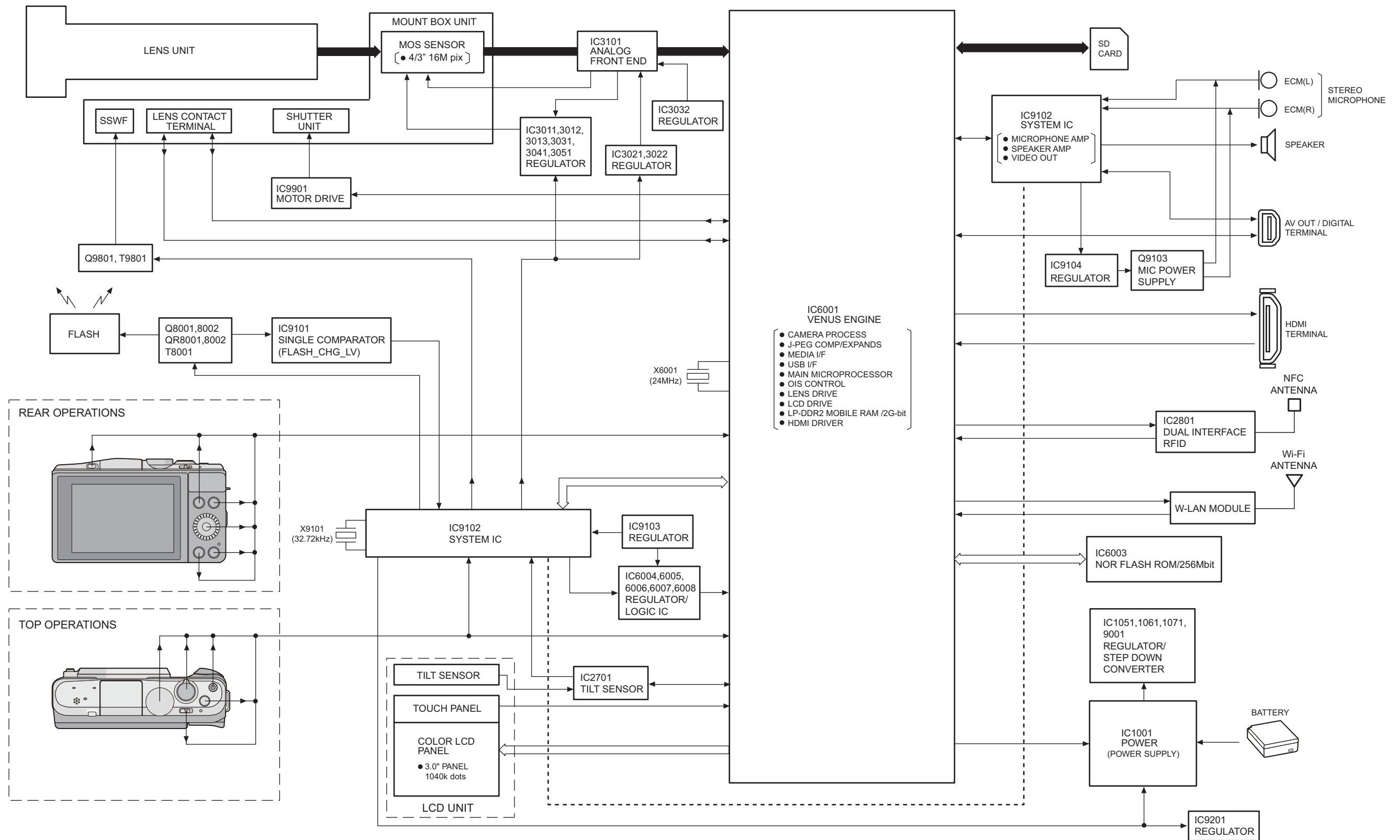
#### 11.1.2. ABOUT THE LENS

Please refer to the following service manuals about Maintenance of bundled lenses.

- H-FS1442APP/E/GK: Order No.DSC1302014CE
- H-FS45150PP/E/GK: Order No.DSC1209040CE
- H-PS14042PP/E/GK: Order No.DSC1110056CE

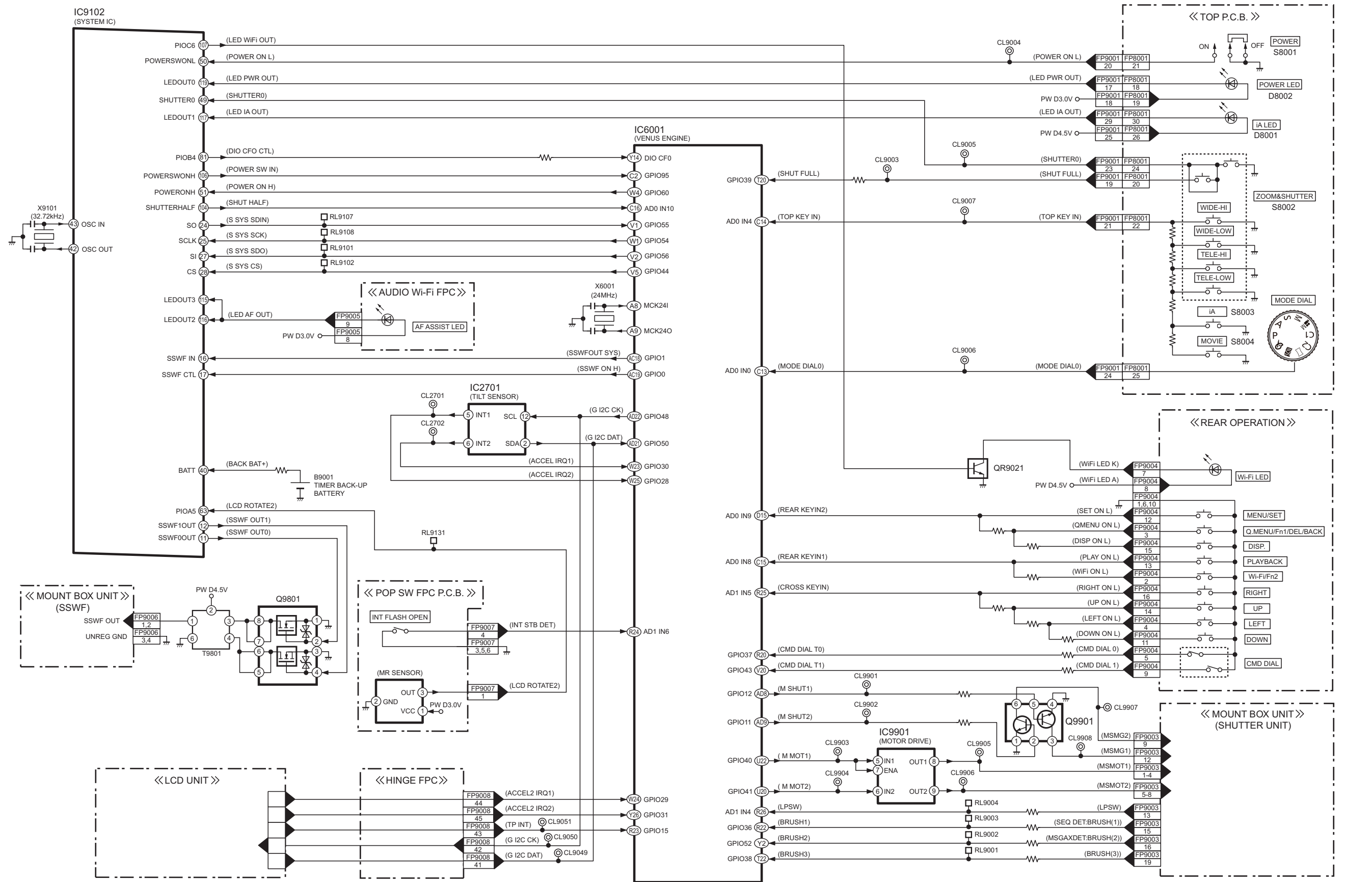
# 12 Block Diagram

## 12.1. Overall Block Diagram



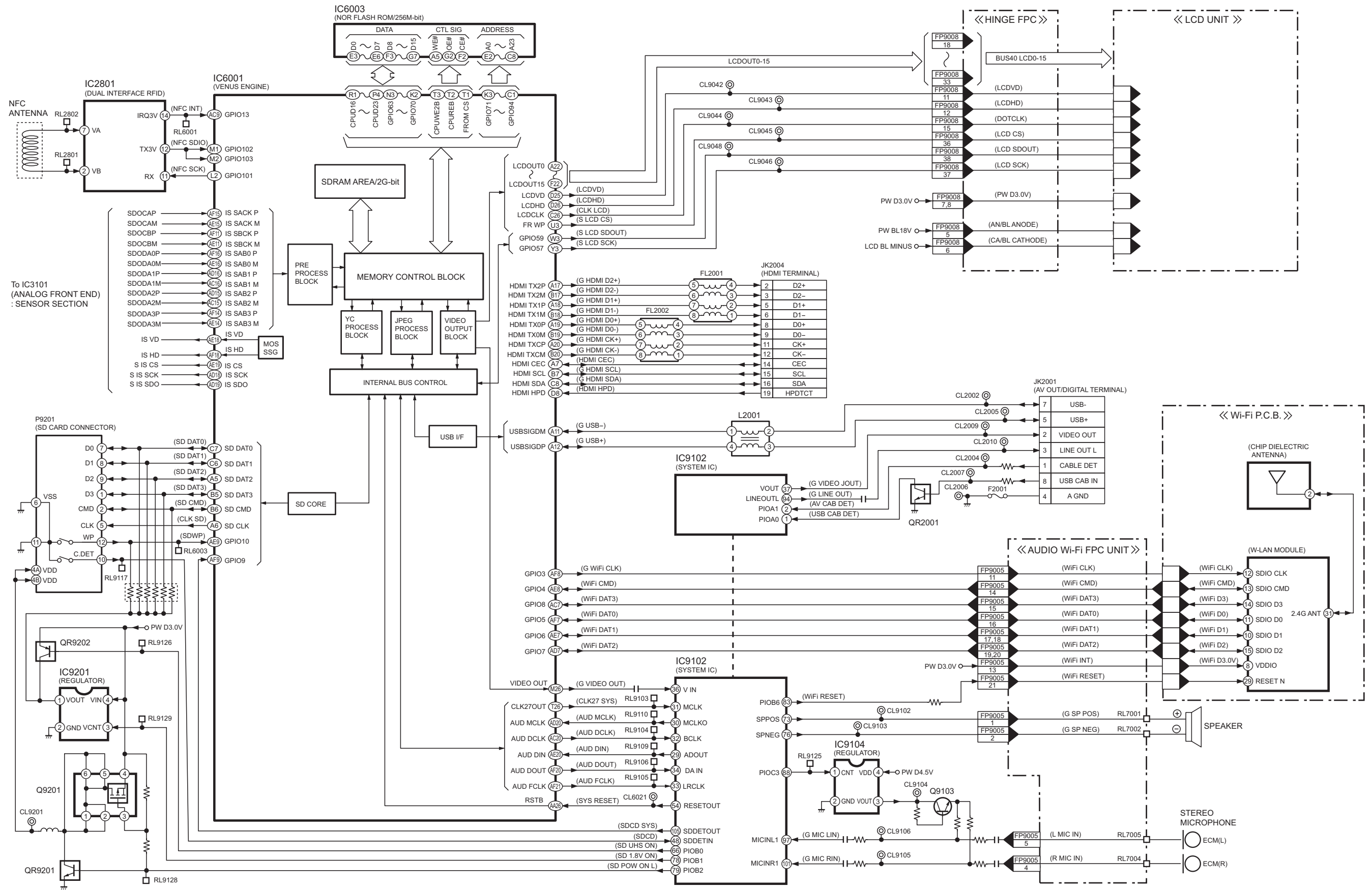
DMC-GF6 OVERALL BLOCK DIAGRAM

## 12.2. System Control Block Diagram



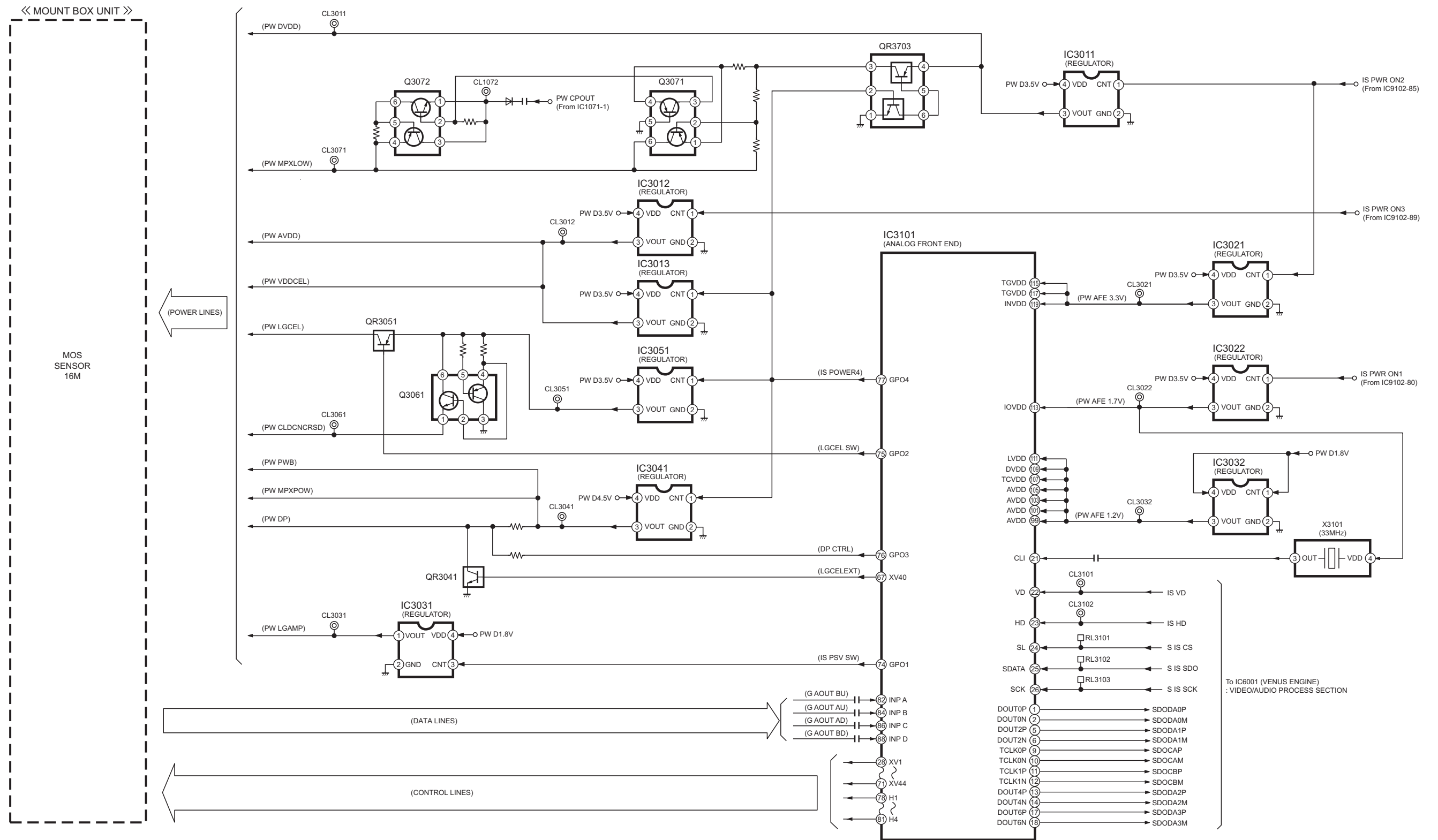
DMC-GF6 SYSTEM CONTROL BLOCK DIAGRAM

### 12.3. Video/Audio Process Block Diagram



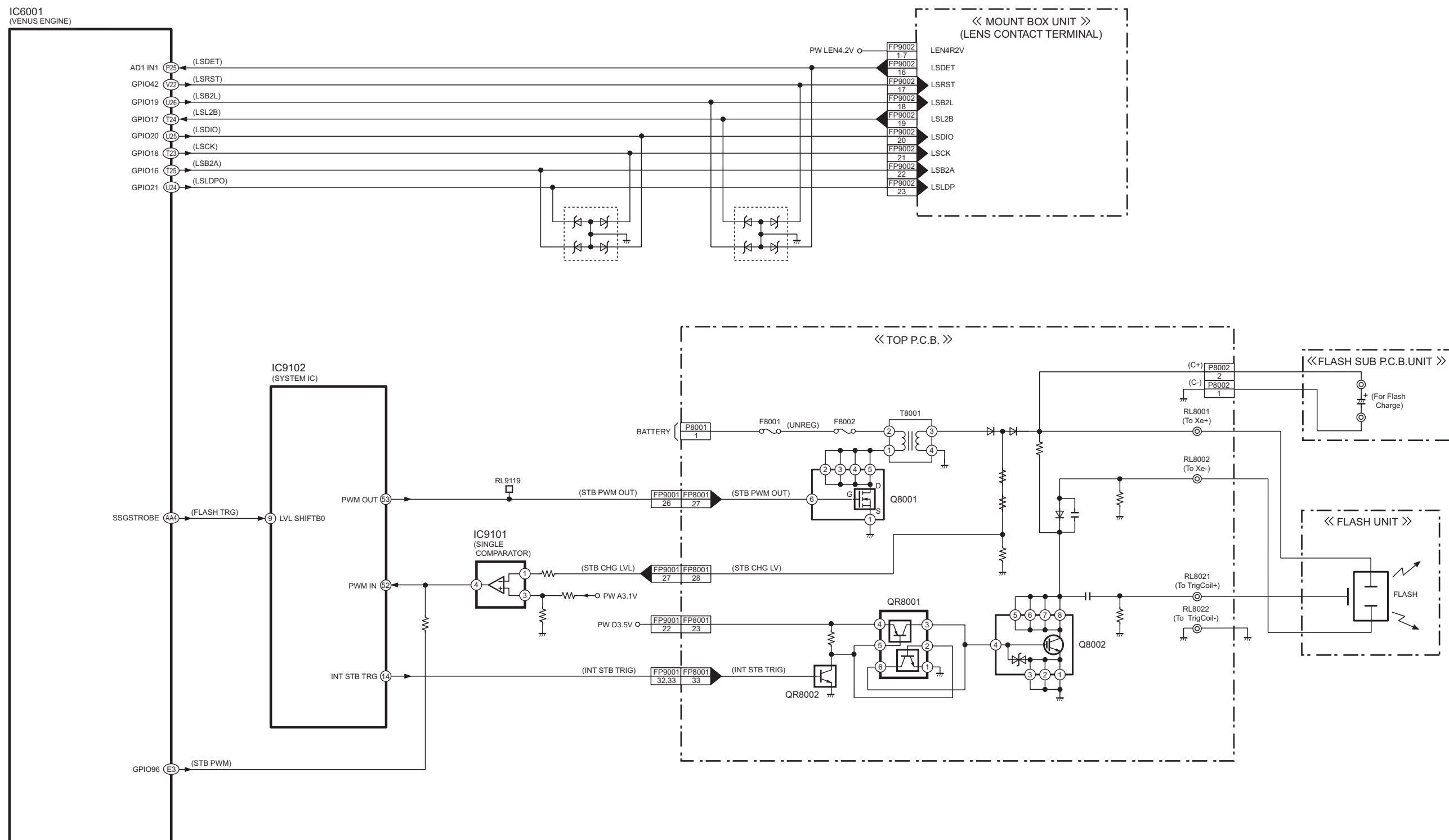
DMC-GF6 VIDEO/AUDIO PROCESS BLOCK DIAGRAM

# 12.4. Sensor Block Diagram

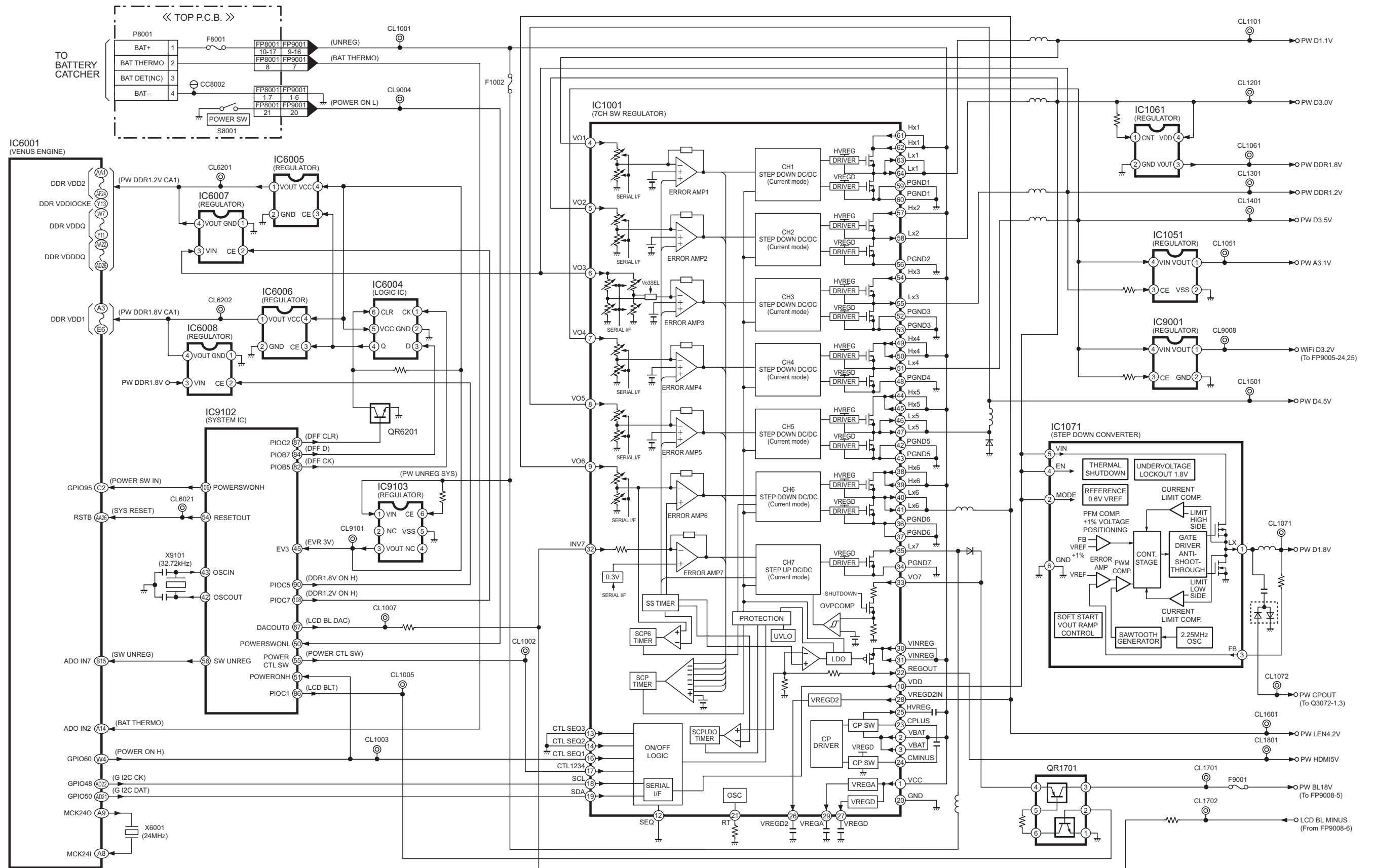


DMC-GF6 SENSOR BLOCK DIAGRAM

## 12.5. Lens/Flash Block Diagram



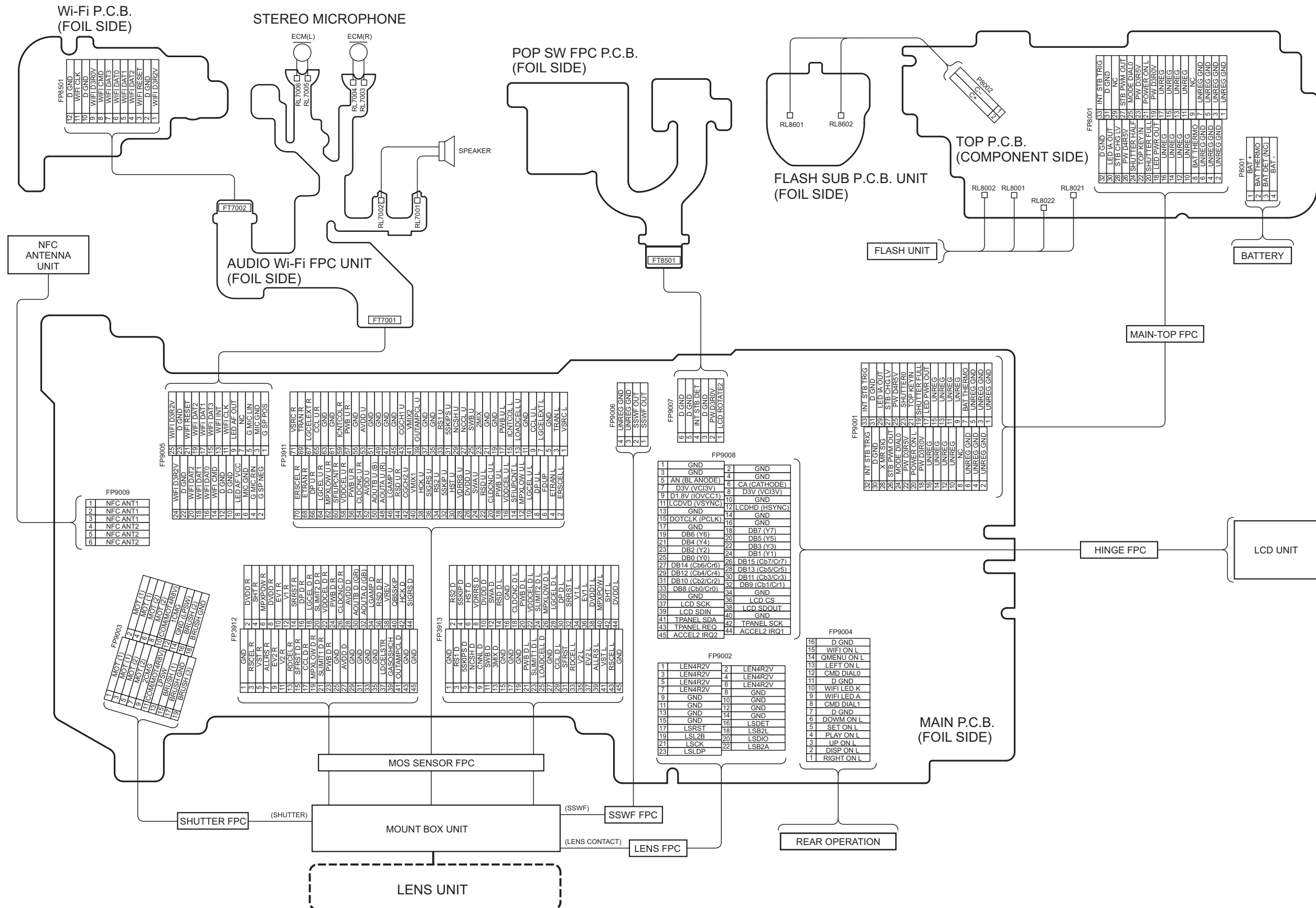
## 12.6. Power Block Diagram



DMC-GF6 POWER BLOCK DIAGRAM

# 13 Wiring Connection Diagram

## 13.1. Interconnection Diagram



DMC-GF6 INTERCONNECTION DIAGRAM