

Service Manual

Digital Camera

LUMIX



AVCHD™
Progressive



PictBridge
USB LAN WLAN
✓ — ✓



Model No. **DMC-FZ1000P**
DMC-FZ1000PC
DMC-FZ1000PU
DMC-FZ1000EB
DMC-FZ1000EE
DMC-FZ1000EF
DMC-FZ1000EG
DMC-FZ1000EP
DMC-FZ1000GN

Colour
(K).....Black Type

WARNING

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

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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

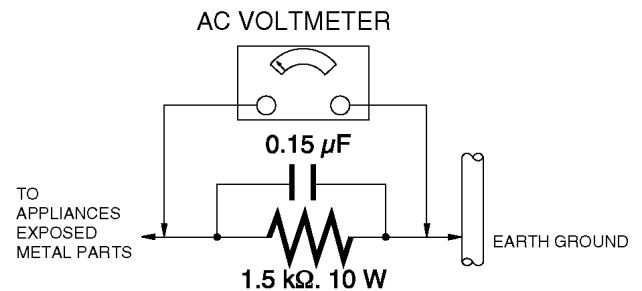


Figure. 1

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

CAUTION:

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

[Discharging Procedure]

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

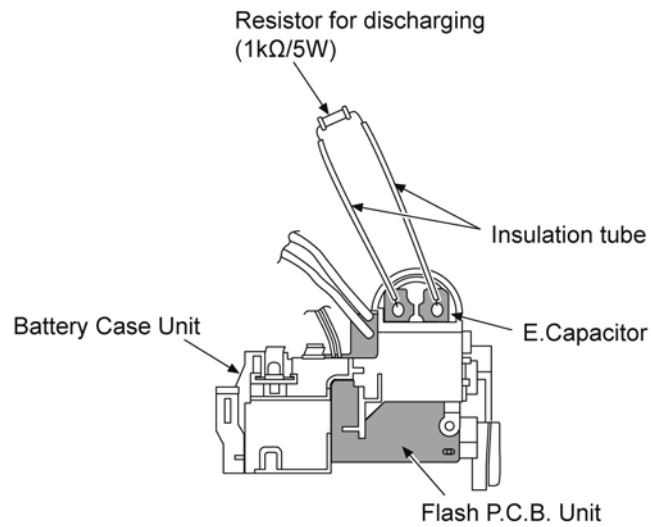


Fig. F1

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 MOS image sensor, IC (integrated circuits) and some field-effect transistors and semiconductor “chip” components.

The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an antistatic solder removal device. Some solder removal devices not classified as “antistatic (ESD protected)” can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION :

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

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

ENGLISH



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

FRANÇAIS



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

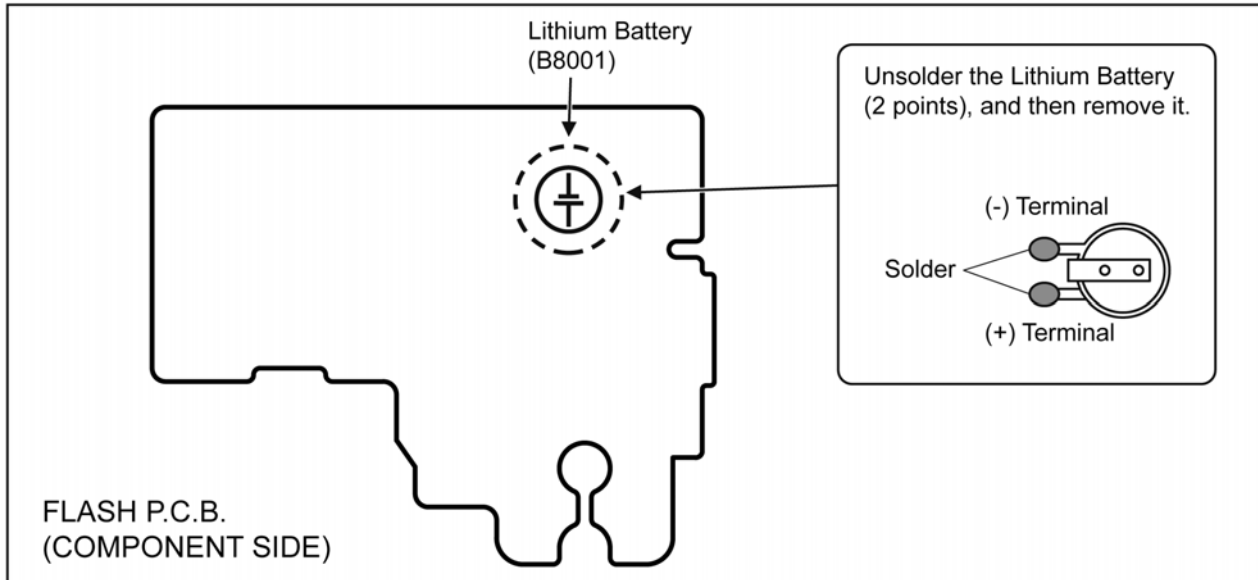
2.3. How to Replace the Lithium Battery

2.3.1. Replacement Procedure

1. Remove the Flash P.C.B.. (Refer to Disassembly Procedures.)
2. Unsolder the each soldering point of electric lead terminal for Lithium battery (Ref. No. "B8001" at component side of Flash P.C.B.) and remove the Lithium battery together with electric lead terminal. Then replace it into new one.

NOTE:

The Lithium battery includes electric lead terminals.



NOTE:

This Lithium battery is a critical component.
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-FZ1000 series, as well.

2.4. Caution for AC Cord (For EB)

2.4.1. 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.

2.4.2. 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.

2.4.2.1. Important

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

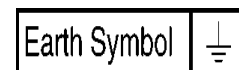
Blue	Neutral
Brown	Live

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.

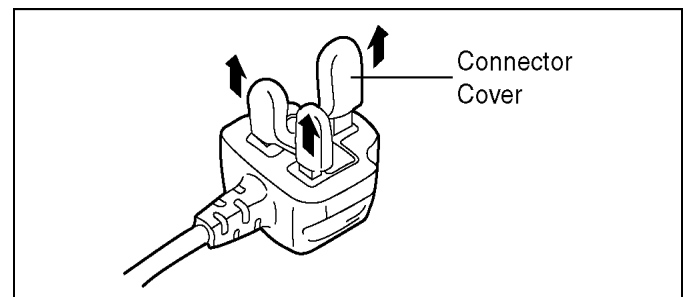
The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

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.



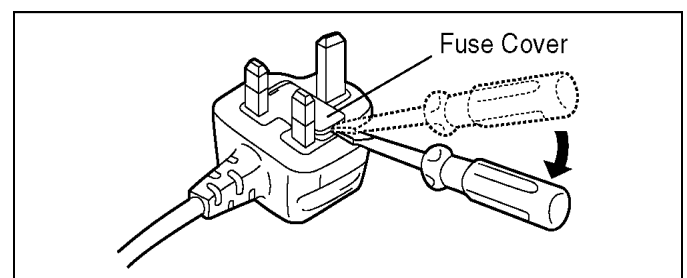
2.4.2.2. Before Use

Remove the Connector Cover as follows.

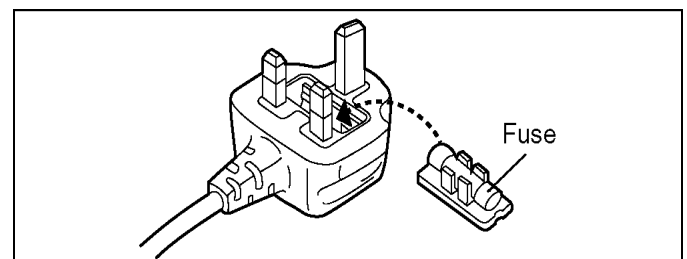


2.4.2.3. How to Replace the Fuse

1. Remove the Fuse Cover with a screwdriver.



2. Replace the fuse and attach the Fuse cover.



3 Service Navigation

3.1. Introduction

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

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

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

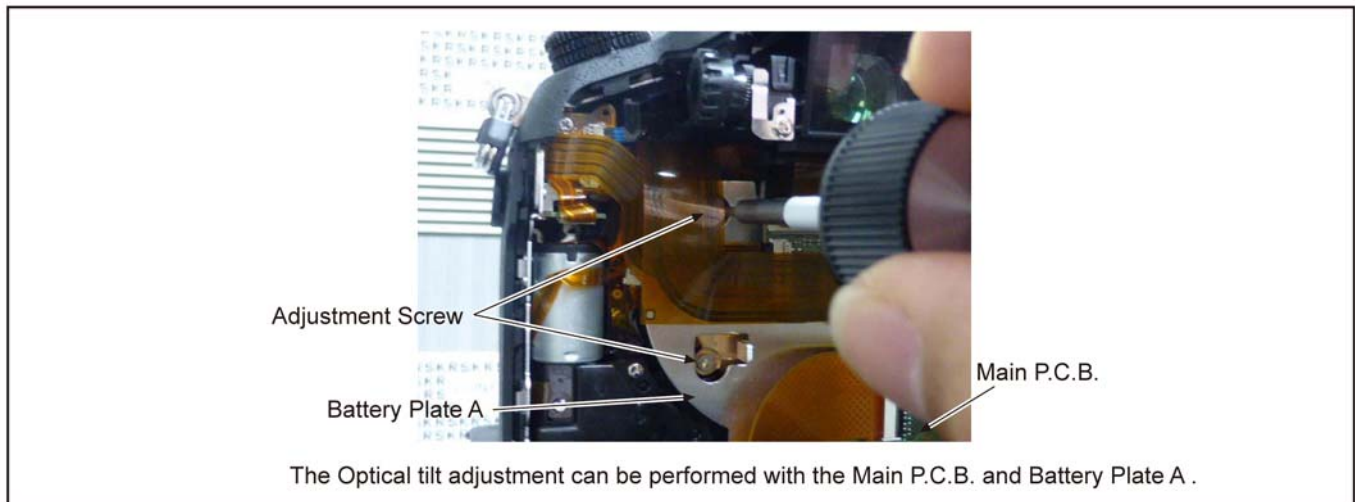
3.2. Important Notice

3.2.1. About Lens Block

The image sensor (MOS) Unit which are connected to the lens unit with 3 screws, after performing the Optical tilt adjustment.

During servicing, if one of MOS Unit fixing screws are loosened, the Optical tilt adjustment must be performed.

(About the Optical tilt adjustment, refer to the "10.3.2. Adjustment Specifications" for details.)



3.2.2. About Venus Engine (IC6001) [Located on the Main P.C.B.]:

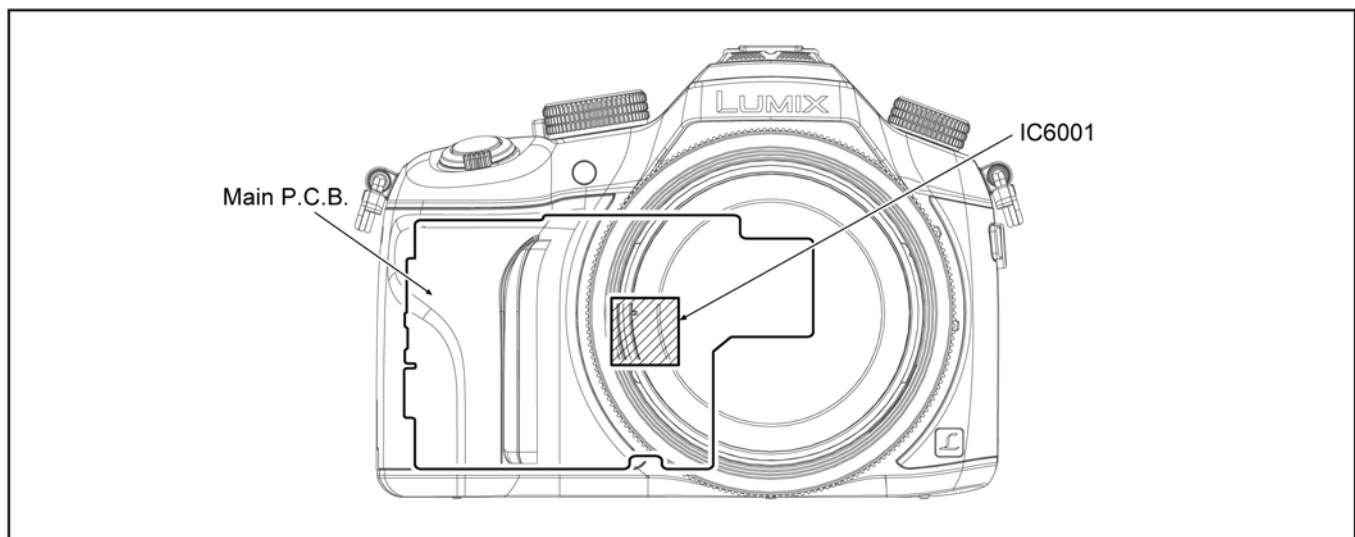
The Venus Engine (IC6001) consists of two IC chips (DRAM and Venus) , which are fixed together with solder.

(It's called, "Package On Package" type IC.)

When replacing, always replace in pairs. (Units of service parts: integrated (one pair) state.)

NOTE:

- During servicing, do not press down hard on the surface of IC6001.



3.2.3. About Flexible Cable and Connector

Do not touch carelessly so that the foreign body should not adhere to the terminal part of flexible cable and connector.

Wipe off with a clean cloth and the cotton bud, etc. when the terminal part is dirty.

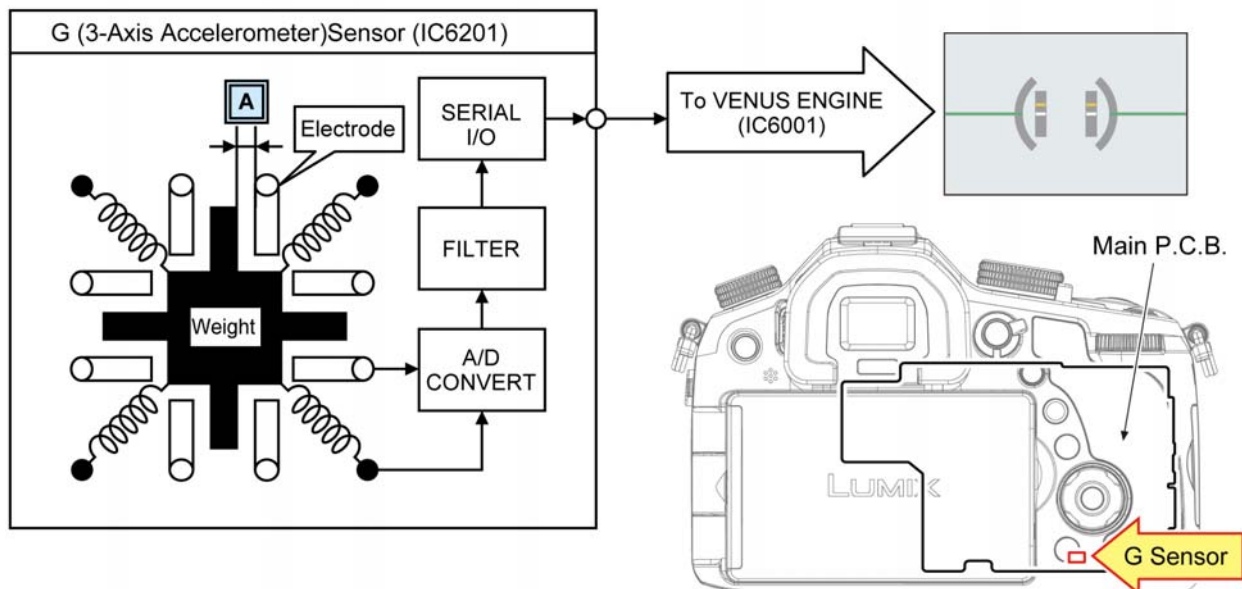
3.3. Service Notes

3.3.1. About Tilt Sensor Display

The unit has the electronic level function using G (3-axis accelerometer) sensor inside the unit.








[Principal of Operation]

1. Movement of "Weight" is detected by capacitance. ----- [A]
2. Each acceleration of the X/Y/Z axis is converted into data and they are output.
3. The VENUS ENGINE converts the data into a horizontal angle and an angle of inclination, and displays them to screen.



3.3.2. About Wi-Fi Function

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

Controlling with a Smartphone/Tablet Recording with a smartphone. Playing back images in the camera. Saving images stored in the camera. Sending images to an SNS. Writing location information on images stored in the camera	
 <div> Easy connection, easy transfer You can use easily by pressing and holding [Wi-Fi] or by using the NFC function. </div> 	P254
 Displaying pictures on a TV	P268
 Printing Wirelessly	P269
 When sending images to AV device You can send pictures and motion pictures to AV devices in your house (home AV devices).	P270
 When sending images to PC	P273
 Using Web services You can send pictures and motion pictures to an SNS, etc. via "LUMIX CLUB". By using [Cloud Sync. Service], you can receive pictures and motion pictures on a PC or smartphone.	P277

3.3.3. 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 Settings".

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.

3.4. 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%

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






There are six kinds of DMC-FZ1000 regardless of the colours.

- a) FZ1000 (Japan domestic model)
- b) FZ1000P/PC
- c) FZ1000EB/EF/EG/EP
- d) FZ1000EE
- e) FZ1000GN
- f) FZ1000PU

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

3.5.1. 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>a) DMC-FZ1000 (Japan domestic model) The nameplate for this model shows the following Safety registration mark.</p> <div style="text-align: center;"></div>
<p>b) DMC-FZ1000P/PC The nameplate for these models show the following Safety registration mark.</p> <div style="text-align: center;"></div>
<p>c) DMC-FZ1000EB/EF/EG/EP The nameplate for these models show the following Safety registration mark.</p> <div style="text-align: center;"></div>
<p>d) DMC-FZ1000EE The nameplate for this model shows the following Safety registration mark.</p> <div style="text-align: center;"></div>
<p>e) DMC-FZ1000GN The nameplate for this model shows the following Safety registration mark.</p> <div style="text-align: center;"></div>
<p>f) DMC-FZ1000PU The nameplate for this model does not show any above Safety registration mark.</p>

NOTE:

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

3.5.2. Initial Settings:

After replacing the Main P.C.B. and/or Flash-ROM, 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. and/or Flash-ROM ---

[Except “EB/EF/EG and EP” models]

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

(Effective model suffix : “P/PC/PU/EE/GN 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.

2. Procedures:

- Precautions: Read the above “CAUTION” carefully.

- Preparation:

Attach the fully charged Battery, and insert the memory card (32MB or more).

Remove the lens cap.

- **Step 1. The Temporary Cancellation of “Initial Settings”:**

Set the [Mode dial] to “[P](Program AE mode)” and [Drive mode dial] to “Single”.

While pressing [DISP.] button and [AF/AE LOCK] button simultaneously, turn the power on.

- **Step 2. The Cancellation of “Initial Settings”:**

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

Press [AF/AE LOCK] 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 Settings:**

While pressing [MENU/SET] button 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. and/or Flash-ROM]

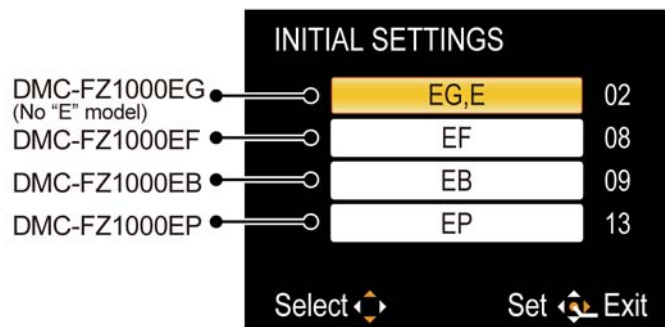
[Except “EB/EF/EG/EP” models: (SEP0093AA is used as a Main P.C.B.)]

When Main P.C.B. has just been replaced, 6 model suffixes are displayed as follows. (Two pages in total)



[Only “EB/EF/EG/EP” models: SEP0093AB 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. (One page in total)



[CASE 2. Other than “After replacing Main P.C.B. and/or Flash-ROM”]

<Other than “EB/EF/EG/EP” models>

<Only “EB/EF/EG/EP” models>



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

[**Caution: After replacing Main P.C.B. and/or Flash-ROM**]

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.

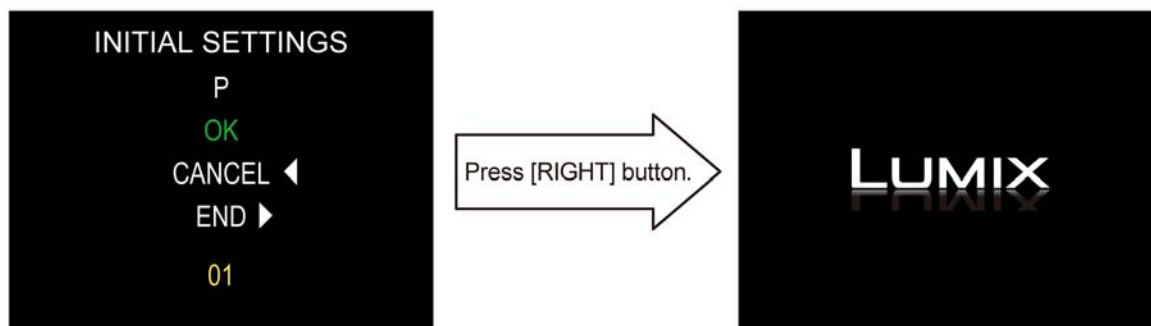
Select the area with pressing “[UP] / [DOWN] of Cursor buttons”.

• **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.

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-FZ1000 (Japan domestic model)	NTSC	Japanese	Year/Month/Date	
b)	DMC-FZ1000P	NTSC	English	Month/Date/Year	
c)	DMC-FZ1000PC	NTSC	English	Month/Date/Year	
d)	DMC-FZ1000PU	NTSC	Spanish	Month/Date/Year	
e)	DMC-FZ1000EB	PAL	English	Date/Month/Year	
f)	DMC-FZ1000EE	PAL	Russian	Date/Month/Year	
g)	DMC-FZ1000EF	PAL	French	Date/Month/Year	
h)	DMC-FZ1000EG	PAL	English	Date/Month/Year	
i)	DMC-FZ1000EP	PAL	English	Date/Month/Year	
j)	DMC-FZ1000GN	PAL	English	Date/Month/Year	

4 Specifications

The following specification is for DMC-FZ1000P.

Some specifications may differ depending on model suffix.

Digital Camera:

Information for your safety

Power Source:	DC 8.4 V
Power Consumption:	2.4 W (When recording with Monitor) 2.8 W (When recording with Viewfinder) 1.7 W (When playing back with Monitor) 1.7 W (When playing back with Viewfinder)
Camera effective pixels	20,100,000 pixels
Image sensor	1" MOS sensor, total pixel number 20,900,000 pixels, Primary color filter
Lens	Optical 16× zoom, f = 9.12 mm to 146 mm (35 mm film camera equivalent: 25 mm to 400 mm) Wide: F2.8 to F8.0 (when recording motion pictures: F2.8 to F11) Tele: F4.0 to F8.0 (when recording motion pictures: F4.0 to F11)
Image Stabilizer	Optical method
Focus range	
AF	30 cm (0.98 feet) (Wide)/1 m (3.3 feet) (Tele) to ∞
AF Macro/MF/ Intelligent Auto/ Motion Picture	3 cm (0.098 feet) (Wide)/1 m (3.3 feet) (Tele) to ∞
Shutter system	Electronic shutter+Mechanical shutter
Minimum Illumination	Approx. 9 lx (when i-Low light is used, the shutter speed is 1/30th of a second)
Shutter speed	
Still picture	B (Bulb) (Max. approx. 120 second), 60 to 1/4000th seconds (with the mechanical shutter) 1 to 1/16000th seconds (with the electronic shutter)
Motion picture	1/25th seconds to 1/16000th of a second (when [FHD/24M/24p] in [AVCHD] is set) 1/2th seconds to 1/16000th of a second (when [M] is selected in Creative Video Mode, MF) 1/30th seconds to 1/16000th of a second (other than the above)
Exposure (AE)	Program AE (P)/Aperture-priority AE (A)/Shutter-priority AE (S)/ Manual exposure (M)/AUTO
Light metering mode	Multiple/Center weighted/Spot
Monitor	3.0" Monitor (3:2) (Approx. 920,000 dots) (field of view ratio about 100%)

Viewfinder	OLED Live Viewfinder (4:3) (Approx. 2,360,000 dots) (field of view ratio about 100%) (with diopter adjustment -4 to +4 diopter)	
Flash	Built-in pop up flash AUTO, AUTO/Red-Eye Reduction, Forced ON, Forced ON/ Red-Eye Reduction, Slow Sync., Slow Sync./Red-Eye Reduction, Forced OFF	
Microphone	Stereo	
Speaker	Monaural	
Recording media	SD Memory Card/SDHC Memory Card*/SDXC Memory Card* (* UHS-I UHS Speed Class 3)	
Recording file format		
Still Picture	RAW/JPEG (based on "Design rule for Camera File system", based on "Exif 2.3" standard, DPOF corresponding)	
Motion pictures	AVCHD Progressive/AVCHD/MP4	
Audio compression	AVCHD	Dolby® Digital (2 ch)
	MP4	AAC (2 ch)
Interface		
Digital	"USB 2.0" (High Speed)	
Analog video/audio	NTSC Audio line output (monaural)	
Terminal		
[MIC]	Ø 3.5 mm jack	
[MIC/REMOTE]	Ø 2.5 mm jack	
[AV OUT/DIGITAL]	Dedicated jack (8 pin)	
[HDMI]	MicroHDMI Type D	
Dimensions	Approx. 136.8 mm (W)×98.5 mm (H)×130.7 mm (D) [5.39" (W)×3.88"(H)×5.15" (D)]	
Mass (weight)	Approx. 831 g/1.83 lb (with card and battery) Approx. 780 g/1.72 lb (excluding card and battery)	
Operating temperature	0 °C to 40 °C (32 °F to 104 °F)	
Operating humidity	10%RH to 80%RH	
Language select	[ENGLISH]/[ESPAÑOL](DMC-FZ1000P) [ENGLISH]/[DEUTSCH]/[FRANÇAIS]/[ESPAÑOL]/ [PORTUGUÊS]/[ITALIANO]/[繁體中文]/[日本語] (DMC-FZ1000PC)	

Wireless transmitter

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

NFC

Compliance standard	ISO/IEC 18092 NFC-F (Passive Mode)
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Battery Charger (Panasonic DE-A79B):

Information for your safety

Input:	~ 110 V to 240 V, 50/60 Hz, 0.2 A
Output:	--- 8.4 V, 0.65 A

Equipment mobility:

Movable

Battery Pack (lithium-ion) (Panasonic DMW-BLC12PP):

Information for your safety

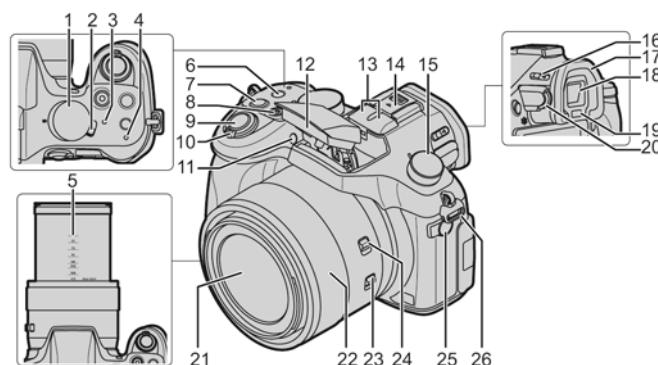
Voltage/capacity:	7.2 V/1200 mAh
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5 Location of Controls and Components

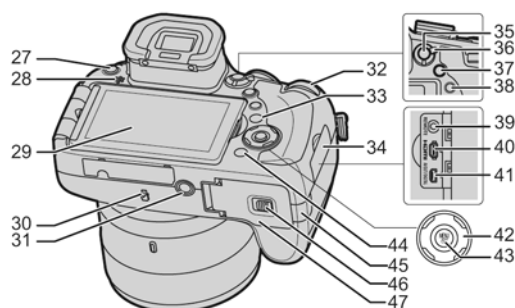
The following description is for DMC-FZ1000P.






Some descriptions may differ depending on model suffix.

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



1	Mode dial (P21)	Hot shoe (Hot shoe cover)
2	Camera ON/OFF switch (P18)	14 • Keep the Hot Shoe Cover out of reach of children to prevent swallowing.
3	Status indicator (P18)	Drive mode dial
4	Wi-Fi® connection lamp (P56)	Single (P46):
5	Focal length scale (35 mm film camera equivalent) • Indicates values for the [3:2] aspect ratio. (When recording motion pictures, refer to the focal length displayed on the screen.)	15 Burst (P47):
		Auto Bracket (P48):
6	[Wi-Fi] button (P56)/[Fn2] button	Self-timer (P49):
7	[Fn1] button	Time Lapse/Animation (P49, 51):
8	Motion picture button (P22)	Flash open lever (P55)
9	Shutter button (P22)	16 • The flash opens, and recording with the flash becomes possible.
10	Zoom lever (P54)	17 Eye Cup
11	Self-timer indicator (P49)/ AF Assist Lamp	18 Viewfinder (P16)
12	Flash (P55)	19 Eye sensor (P16)
13	Stereo microphone • Be careful not to cover the microphone with your finger. Doing so may make sound difficult to record.	20 Diopter adjustment dial (P16)
		21 Lens surface
		22 Manual ring (P41, 54)
		23 O.I.S switch (P53)
		24 Manual ring selector switch (P41, 54)
		25 [MIC] socket
		26 Shoulder strap eyelet (P15)



27	[LVF] button (P16)/[Fn5] button	41	[AV OUT/DIGITAL] socket (P65, 68)
28	Speaker • Be careful not to cover the speaker with your finger. Doing so may make sound difficult to hear.	42	Cursor buttons • This Owner's Manual expresses the up, down, left, and right of the cursor button as ▲/▼/◀/▶. ▲/ISO button (P44) ▶/WB (White Balance) (P37) ◀/AF Mode button (P40) ▼/AF  button (P43)
29	Monitor (P15)	43	[MENU/SET] button (P19)
30	NFC antenna  (P59)	44	 (Delete/Cancel) button (P27)/[Fn4] button
31	Tripod mount • A tripod with a screw length of 5.5 mm (0.22 inch) or more may damage this unit if attached.	45	DC coupler cover • When using an AC adaptor, ensure that the Panasonic DC coupler (DMW-DCC8: optional) and AC adaptor (DMW-AC10PP: optional) are used. • Always use a genuine Panasonic AC adaptor (DMW-AC10PP: optional). • It is recommended to use a fully charged battery or AC adaptor when recording motion pictures. • If while recording motion pictures using the AC adaptor and the power supply is cut off due to a power outage or if the AC adaptor is disconnected etc., the motion picture will not be recorded.
32	Rear dial • This Owner's Manual describes operations of the rear dial as follows: 	46	Release lever (P17)
33	[DISP.] button (P24) • Each time this is pressed, the display on the monitor is switched.	47	Card/Battery door (P17)
34	Terminal cover		
35	[AF/AE LOCK] button (P43)		
36	Focus mode lever (P40, 41)		
37	[Q.MENU] button (P20)/[Fn3] button		
38	 (Playback) button (P25)		
39	[REMOTE] socket		
40	[HDMI] socket (P65)		

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 (32MB or more).

Remove the lens cap.

• Step 1. The Temporary Cancellation of "Initial Settings":

Set the [Mode dial] to "[P](Program AE mode)" and [Drive mode dial] to "Single".

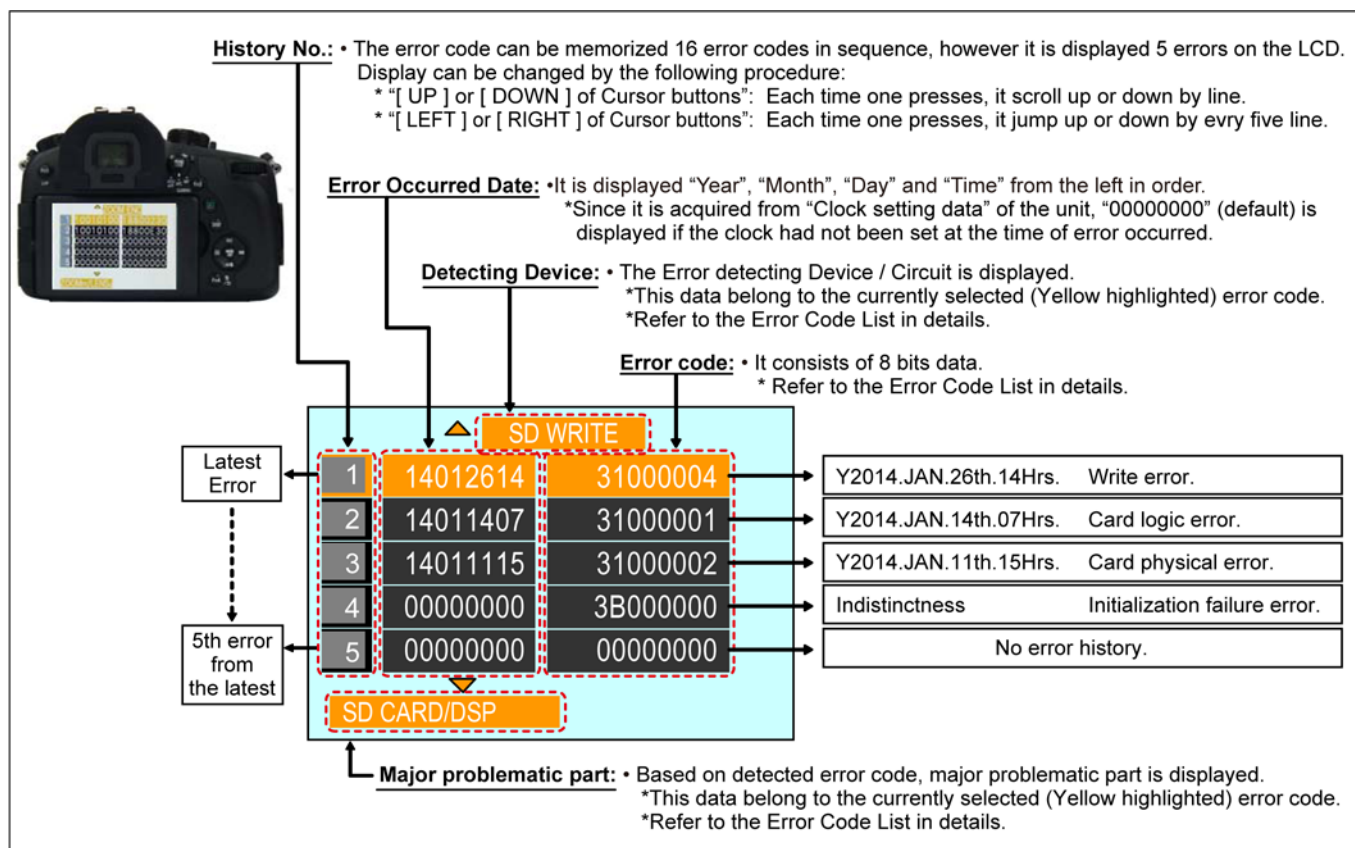
While pressing [DISP.] button and [AF/AE LOCK] button simultaneously, turn the power on.

• Step 2. Execute the Error Code Display Mode:

Press [MENU/SET] button, "[LEFT] of Cursor buttons" and [AF/AE LOCK] button 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 bits data and it shows the following information.

Attribute	Main item	Sub item	Error code		Contents (Upper line)	Error Indication			
			High 4 bits	Low 4 bits	Problematic Part & Check point (Lower line)	Detecting device	Problematic Part/Circuit		
LENS	Lens drive	OIS	1C*0	1000	PSD (X) error. Hall element (X axis) position detect error in OIS unit. OIS Unit	OIS X	LENSu NG		
				2000	PSD (Y) error. Hall element (Y axis) position detect error in OIS unit. OIS Unit	OIS Y			
				3000	GYRO (X) error. Gyro (IC7101: X axis) detect error on MAIN P.C.B.. IC7101 (Gyro element) or IC6001 (VENUS ENGINE)	GYRO X	GYRO NG		
				4000	GYRO (Y) error. Gyro (IC7101: Y axis) detect error on MAIN P.C.B.. IC7101 (Gyro element) or IC6001 (VENUS ENGINE)	GYRO Y			
				6000	Drive voltage (X) error. LENS Unit, LENS flex breaks, IC6001 (VENUS ENGINE) AD value error, etc.	OISX REF	LENSu/LENS FPC		
				7000	Drive voltage (Y) error. LENS Unit, LENS flex breaks, IC6001 (VENUS ENGINE) AD value error, etc.	OISY REF			
				8000	OIS GYRO-Digital communication error IC7101(Gyro element) or IC6001(VENUS ENGINE)	(No indication)	(No indication)		
				Zoom	0?10	Collapsible barrel Low detect error (Collapsible barrel encoder always detects Low.) Mechanical lock, FP9005-(27) signal line or IC6001 (VENUS ENGINE)	ZOOM L	ZOOMm/ LENSu	
						0?20	Collapsible barrel High detect error (Collapsible barrel encoder always detects High.) Mechanical lock, FP9005-(27) signal line or IC6001 (VENUS ENGINE)		ZOOM H
							0?30		Zoom motor sensor error. Mechanical lock, FP9005-(42), (44) signal line or IC6001 (VENUS ENGINE)
					0?40	Zoom motor sensor error. (During monitor mode.) Mechanical lock, FP9005-(42), (44) signal line or IC6001 (VENUS ENGINE)			
						0?50			Zoom motor sensor error. (During monitor mode with slow speed.) Mechanical lock, FP9005-(42), (44) signal line or IC6001 (VENUS ENGINE)
					0?60	Detection of zoom misregistration by impact such as fails. Lens Unit	(No indication)	(No indication)	
					Focus	0?01	HP Low detect error (Focus encoder always detects High, and not becomes Low) Mechanical lock, FP9005-(30) signal line or IC6001 (VENUS ENGINE)	FOCUS L	LENS FPC/ DSP
							0?02	"HP High detect error (Focus encoder always detects Low, and not becomes High)" Mechanical lock, FP9005-(30) signal line or IC6001 (VENUS ENGINE)	
		Lens	1C*1			0000		Power ON time out error. Lens drive system	LENS DRV
					1C*2	0000	Power OFF time out error. Lens drive system		
		Adj. History	OIS			1D*0	2000	OIS adj. Yaw direction amplitude error (small)	OIS ADJ
					3000		OIS adj. Pitch direction amplitude error (small)		
				4000	OIS adj. Yaw direction amplitude error (large)				
				5000	OIS adj. Pitch direction amplitude error (large)				
				8000	OIS adj. Yaw direction off set error				
				9000	OIS adj. Pitch direction off set error				
				A000	OIS adj. Yaw direction gain error				
				B000	OIS adj. Pitch direction gain error				
				C000	OIS adj. Yaw direction position sensor error				
				D000	OIS adj. Pitch direction position sensor error				
		E000	OIS adj. other error						
		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	IC6003 (Flash-ROM) data reading error is detected when the unit turns ON	FROM RE	FROM
						0002	IC6003 (Flash-ROM) data writing error is detected when the unit turns OFF	FROM WR	FROM
				Program Area		0005	Firmware update error	(No indication)	(No indication)
			SOFT	CPU	Reset	30*0	0001 0007	System error (NMI reset)	NMI RST
	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		
	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	**02 **0C	Wi-Fi related errors: *Generally, above are unable to specified the, which cannot be used for malfunction diagnosis.			

Important notice about “Error Code List”

1) About “*” indication:

The third digit from the left is different as follows.

- In case of 0 (example: 18001000)

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: 18801000)

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.

2) About “?” indication: (“18*0 0?01” to “18*0 0?60”):

The third digit from the right shows one of the hexadecimal (“0” to “F”) character.

• Step 3. How to exit from Error Code display mode:

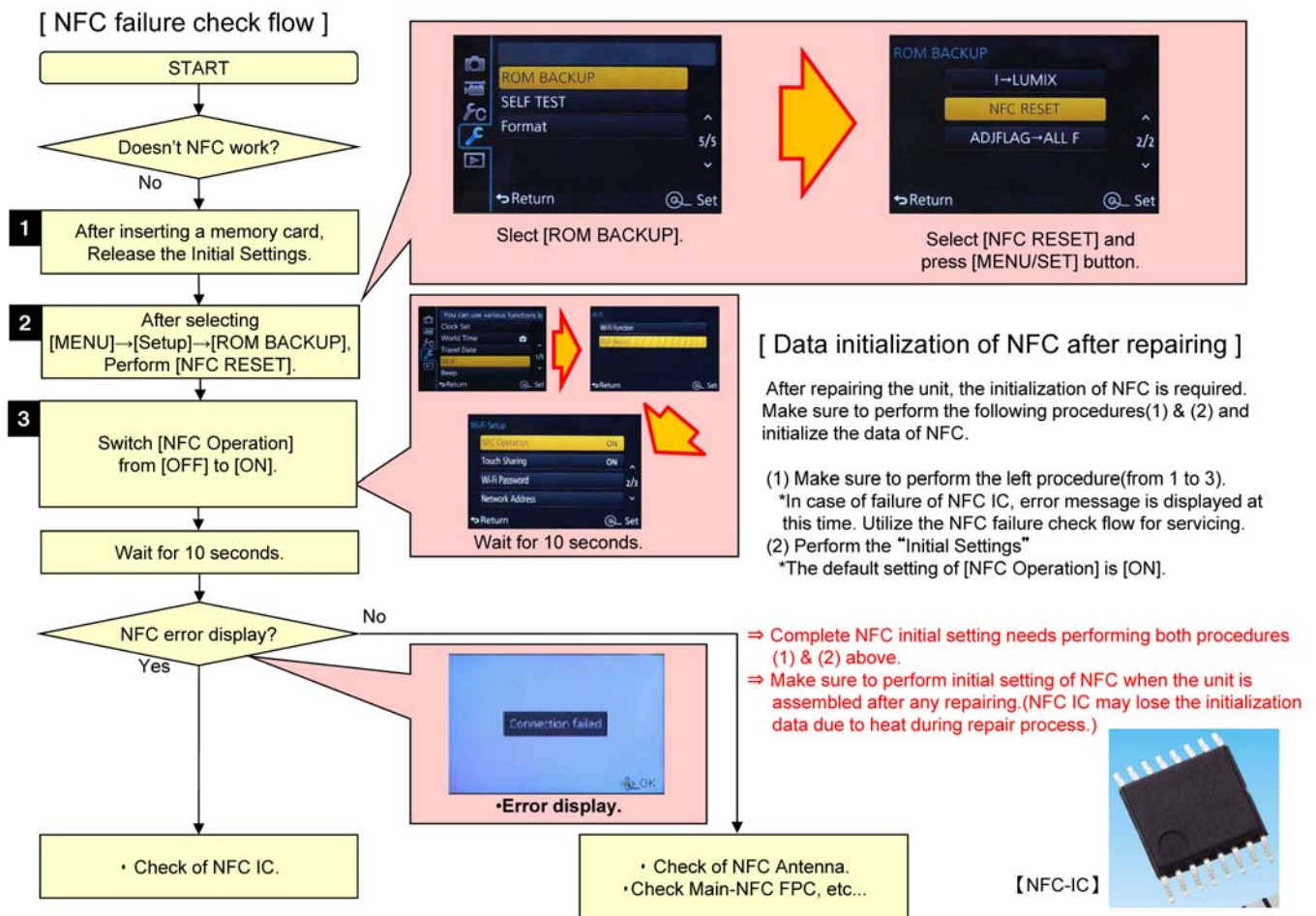
Simply, turn the power off. (Since Error code display mode is executed under the condition of temporary cancellation of “Initial Settings”, it wake up with normal condition when turn off the power.)

NOTE:

The error code can not be initialized.

7 Troubleshooting Guide

7.1. Failure Diagnosis of NFC



7.2. Wi-Fi Module (Flash P.C.B. Unit)

7.2.1. 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, then press the [MENU/SET] button.
- 2) Select [Reset Wi-Fi Settings] by Cursor buttons, then press the [MENU/SET] button.
- 3) Select [YES] and press the [MENU/SET] button.

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

7.2.2. Checking of Trouble Caused by Wi-Fi Module or Not

The Wi-Fi module 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)

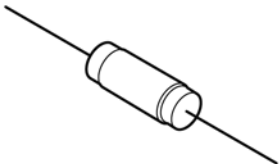
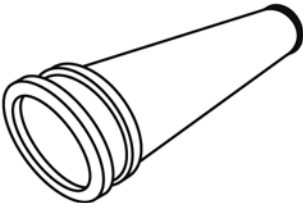
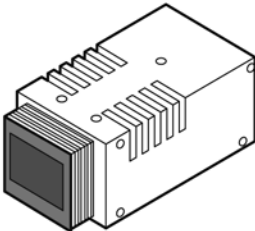
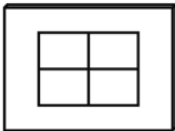

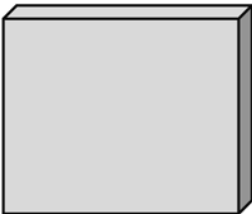
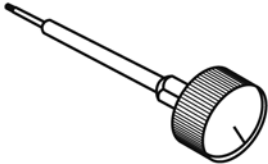
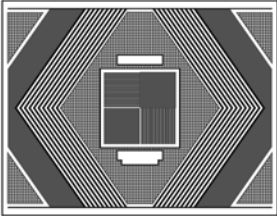
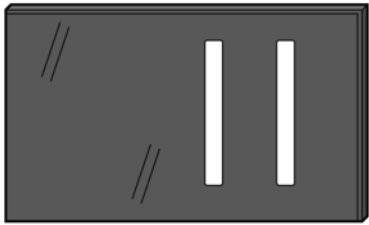
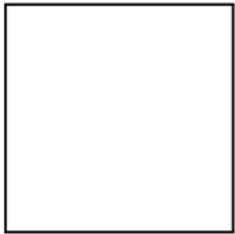

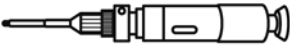
- 1) Press [Wi-Fi] button.
- 2) Select [New Connection] in [Wi-Fi] menu.
- 3) Select optional function in [select a function] menu, then select [Direct] in [Select connection method] menu.
- 4) Select [Manual Connection] in [Select connection method] menu.
- 5) The Wi-Fi module works properly if the wireless access point (broadband router) name (SSID) in use is displayed.

*Change the Flash P.C.B. Unit, when the above checking detected the abnormal of Wi-Fi module.

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 Ω /5W) ERG5SJ102	Collimator (built-in Focus Chart) RFKZ0422	Light Box (with DC Cable) RFKZ0523
 <p>* An equivalent type of resistor may be used.</p>		
TR Chart SUKZ000006	Lens Cleaning Kit (BK) VFK1900BK	Diffuser RFKZ0591
 <p>* Use new one on an about 3-year cycle. (Adjustment accuracy degrades by discoloring caused by long use.)</p>	 <p>* Only supplied 10 set/box.</p>	
Driver (for Optical Axis Adjustment) RFKZ0569	Optical Axis Adjustment Chart RFKZ0570	Camera Stand RFKZ0333J
 <p>* T4 Torx type</p>		
LBB Filter (LBB12) VFK1164LBB12	Gray Card RFKZ0506	Torque Driver RFKZ0542
		

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

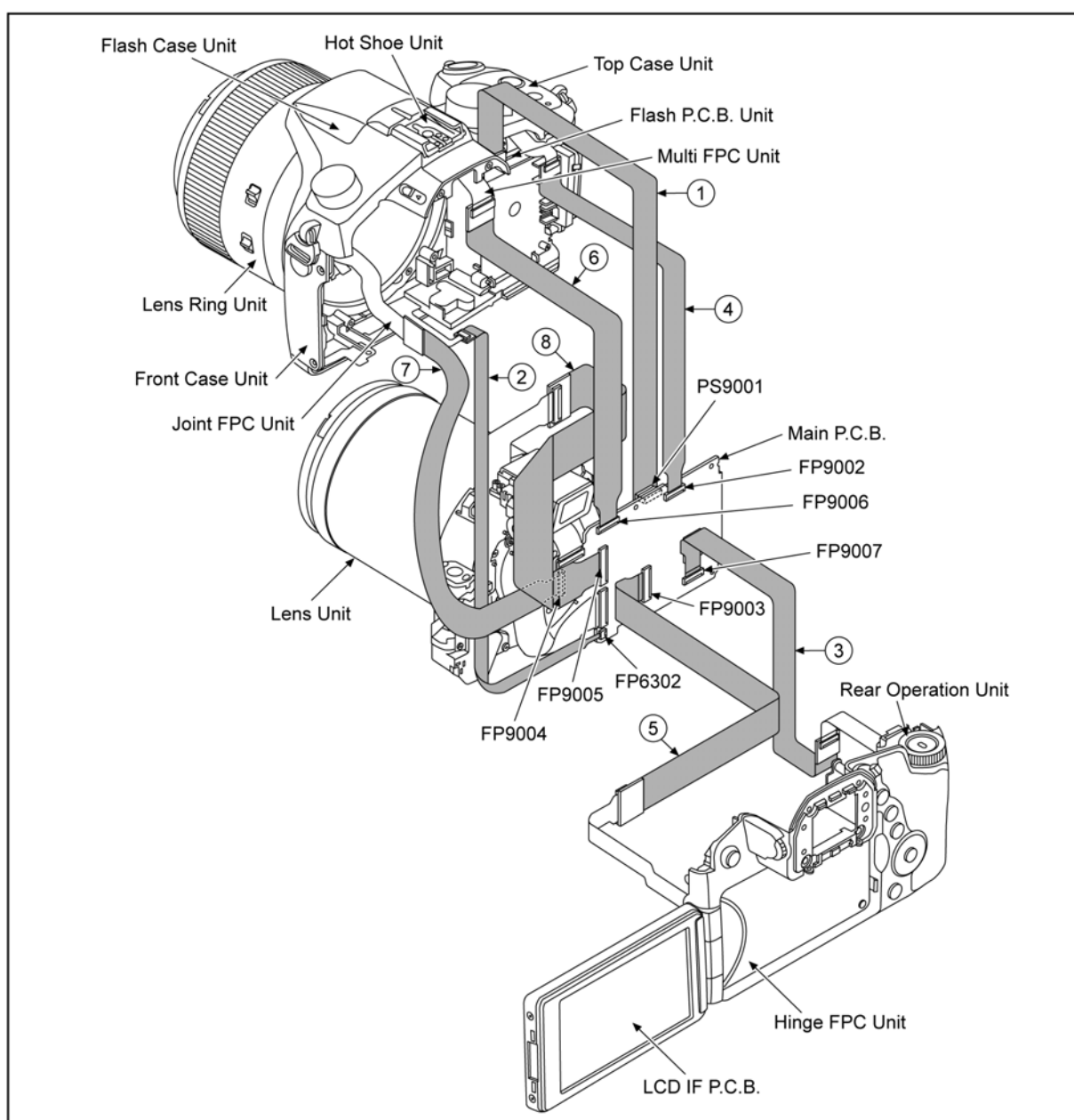
After replacing the Main P.C.B., be sure to achieve adjustment.

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	VFK1870	PS9001(MAIN) ↔ PP8001(FLASH)	30pin B to B
2	VFK1974	FP6302(MAIN) ↔ FRONT CASE UNIT	4pin / 0.5 FFC
3	VFK1175	FP9007(MAIN) ↔ REAR OPERATION UNIT	16pin / 0.5 FFC
4	VFK1175	FP9002(MAIN) ↔ TOP CASE UNIT	16pin / 0.5 FFC
5	RFKZ0477	FP9003(MAIN) ↔ HINGE FPC UNIT-FP4101(LCD IF)	45pin / 0.3 FFC
6	VFK1443	FP9006(MAIN) ↔ MULTI FPC UNIT-HOT SHOE UNIT / FLASH CASE UNIT	18pin / 0.5 FFC
7	VFK1443	FP9004(MAIN) ↔ JOINT FPC UNIT-FP9301(MIC JACK)/ LENS RING UNIT/ TOP CASE UNIT	18pin / 0.5 FFC
8	VFK2024	FP9005(MAIN) ↔ LENS UNIT	51pin / 0.3 FFC



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

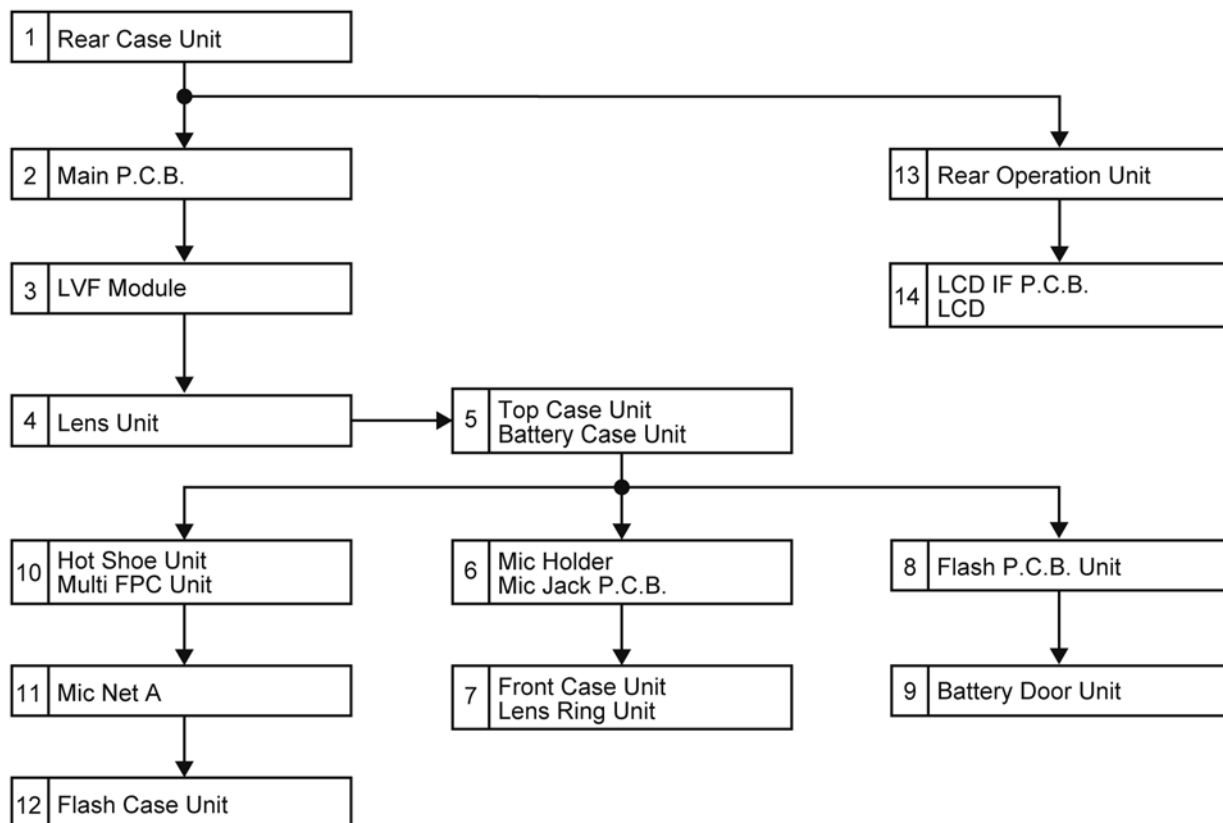
1. Be sure to discharge the E.Capacitor on Flash P.C.B. Unit.
Refer to "How to Discharge the E.Capacitor on Flash P.C.B. Unit."
The E.Capacitor voltage is not lowered soon even if the AC Cord is unplugged or the battery is removed.
2. Be careful of the high voltage circuit on Flash P.C.B. Unit.
3. DO NOT allow other parts to touch the high voltage circuit on Flash P.C.B. Unit.

9 Disassembly and Assembly Instructions

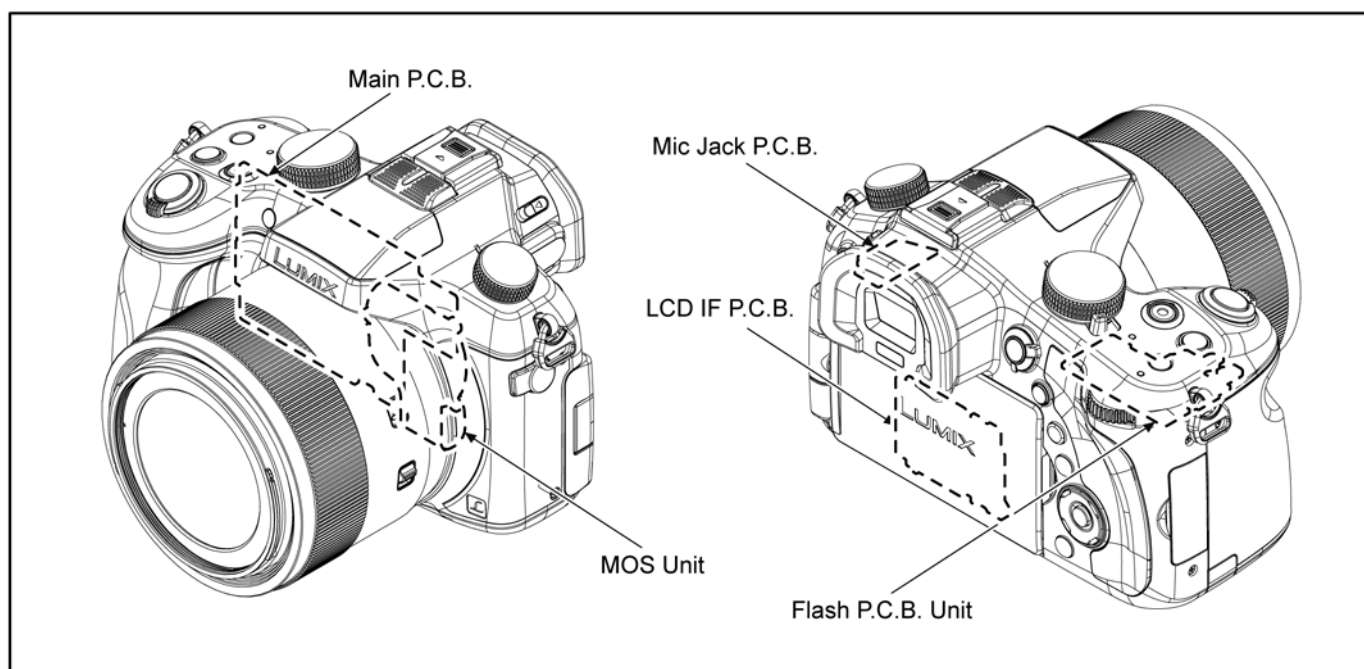
9.1. Disassembly Flow Chart

This is a disassembling chart.

When assembling, perform this chart conversely.



9.2. P.C.B. Location



9.3. Disassembly Procedure

No.	Item	Fig.	Removal
1	Rear Case Unit	(Fig. D1)	Memory Card
			Battery
			Screw (A) x 3
			Screw (B) x 1
			Screw (C) x 2
			Screw (D) x 2
		(Fig. D2)	Locking tab x 2
			Eye Cap Unit
			Screw (E) x 2
		(Fig. D3)	FP9003 (Flex)
			FP9007 (Flex)
2	Main P.C.B.	(Fig. D4)	Rear Case Unit
			Screw (F) x 4
			FP6302 (Flex)
			FP9001 (Flex)
			FP9002 (Flex)
			FP9005 (Flex)
			FP9006 (Flex)
			FP9009 (Flex)
			PS9001 (Connector)
			Main P.C.B.
		(Fig. D5)	When Replacing
3	LVF Module	(Fig. D6)	Screw (G) x 1
			Convex x 2
			Hooking part x 2
			LVF Cover Unit
			LVF Unit
			Heat Radiation Pad
			LVF Module
4	Lens Unit	(Fig. D7)	Locking tab x 2
			Battery Plate A
			Screw (H) x 4
		(Fig. D8)	Lens Unit
5	Top Case Unit Battery Case Unit	(Fig. D9)	Screw (I) x 1
			Screw (J) x 1
			Screw (K) x 1
			FP5501 (Flex)
			FP5502 (Flex)
			FP9301 (Flex)
			Hooking part x 1
			Joint FPC Unit
			Grip Piece Front L
		(Fig. D10)	Screw (L) x 1
			Screw (M) x 5
			Top Case Unit
		(Fig. D11)	Battery Case Unit
			When Installing
6	Mic Holder, Mic Jack P.C.B.	(Fig. D13)	Screw (N) x 1
			Side Frame R
			Convex x 2
		(Fig. D14)	Convex x 1
			Screw (O) x 2
			Mic Holder
7	Front Case Unit Lens Ring Unit	(Fig. D15)	Mic Jack P.C.B.
			Screw (P) x 4
			Lens Holder Plate
			Front Case Unit
			Lens Ring Unit

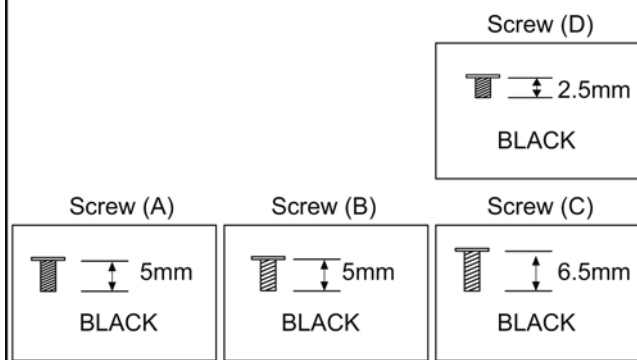
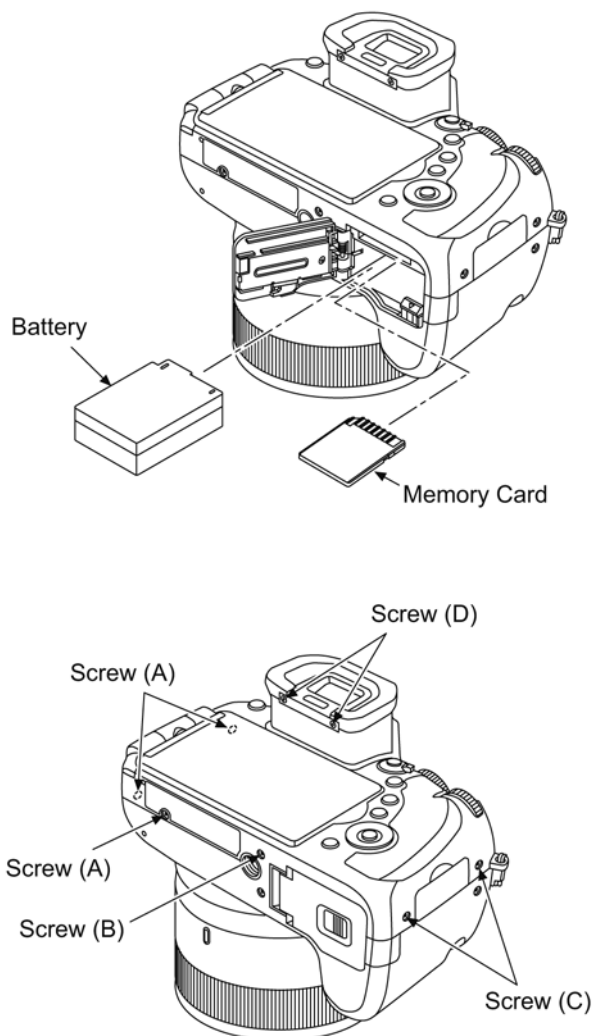
No.	Item	Fig.	Removal
8	Flash P.C.B. Unit	(Fig. D16)	Convex x 1
		(Fig. D17)	Locking tab x 1
			Locking tab x 3
			Capacitor Cover
		(Fig. D18)	Battery Plate B
			Locking tab x 2
9	Battery Door Unit	(Fig. D19)	Solder (4 points)
			Flash P.C.B. Unit
			Battery Door Shaft
10	Hot Shoe Unit, Multi FPC Unit	(Fig. D20)	Battery Door Spring
			Battery Door Unit
			Screw (Q) x 1
			Convex x 2
			Flash Wire Cover
			Screw (R) x 1
			Screw (S) x 1
		(Fig. D21)	Convex x 4
			Flash Earth Plate
			Shoe Spring
			Screw (T) x 4
			Convex x 3
			Hot Shoe Plate B
			Hot Shoe Plate A
11	Mic Net A	(Fig. D22)	Connector x 1
			Convex x 4
			Hooking part x 1
			Solder (4 points)
			Hot Shoe Unit
		(Fig. D23)	Multi FPC Unit
12	Flash Case Unit	(Fig. D24)	Locking tab x 1
			Mic Cushion Top
			Mic Net B
			Mic Tape
		(Fig. D25)	Mic Net A
13	Rear Operation Unit	(Fig. D26)	When Replacing
			Locking tab x 2
			Flash Lock Knob
			Screw (U) x 2
			Screw (V) x 1
		(Fig. D27)	Convex x 2
14	LCD IF P.C.B., LCD	(Fig. D28)	Flash Case Unit
			When Replacing
		(Fig. D29)	Screw (W) x 4
			Convex x 2
			Rear Earth Plate
			Screw (X) x 6
			Convex x 4
		(Fig. D30)	Rear Operation Unit
			Locking tab x 2
			Grip Peace Rear
			When Installing
15	LCD IF P.C.B., LCD	(Fig. D31)	Screw (Y) x 2
			Screw (Z) x 2
			Locking tab x 6
			LCD Case Bottom
		(Fig. D32)	FP4101 (Flex)
			FP4102 (Flex)
			Locking tab x 1
			LCD IF P.C.B.
16	Front Case Unit Lens Ring Unit	(Fig. D33)	LCD Case Top
			LCD Bezel Sheet
			Locking tab x 4
			LCD Bezel
			LCD

9.3.1. Removal of the Rear Case Unit

NOTE:

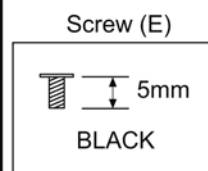
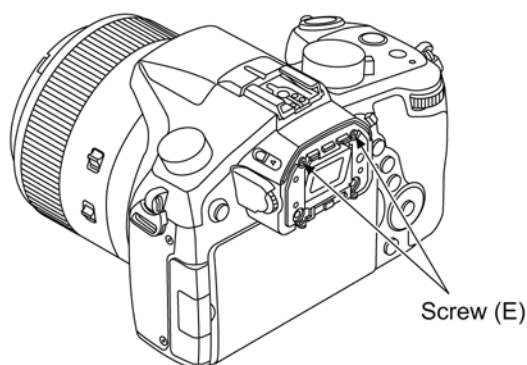
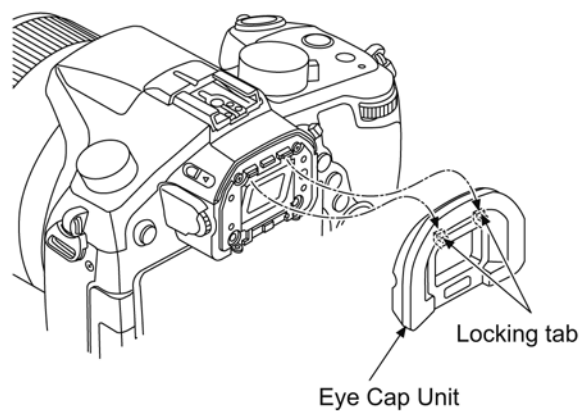
- When servicing and reassembling, remove the memory card and battery from the unit.
- Install the lens cap to prevent garbage and dust except when it is necessary.

- Memory Card
- Battery
- Screw (A) × 3
- Screw (B) × 1
- Screw (C) × 2
- Screw (D) × 2

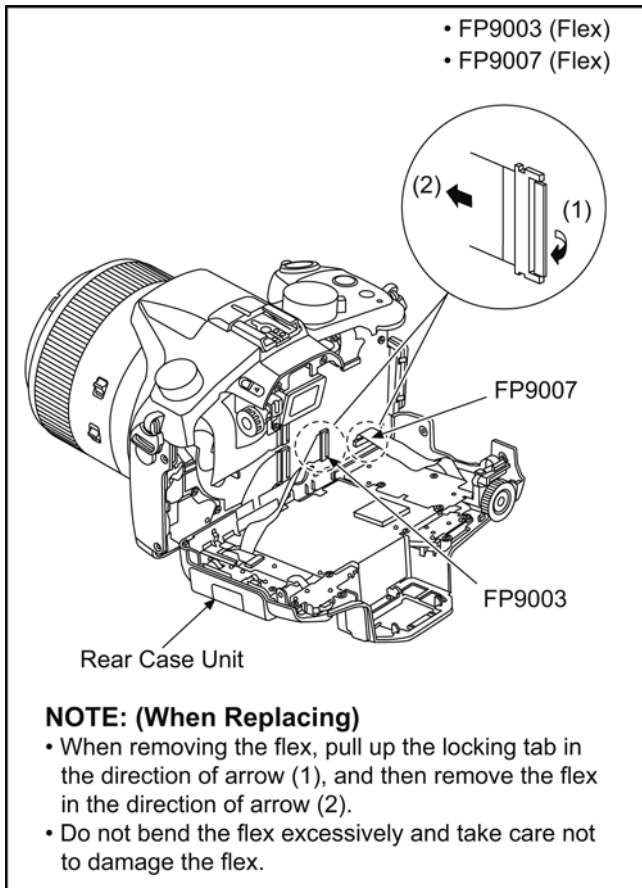


(Fig. D1)

- Locking tab × 2
- Eye Cap Unit
- Screw (E) × 2

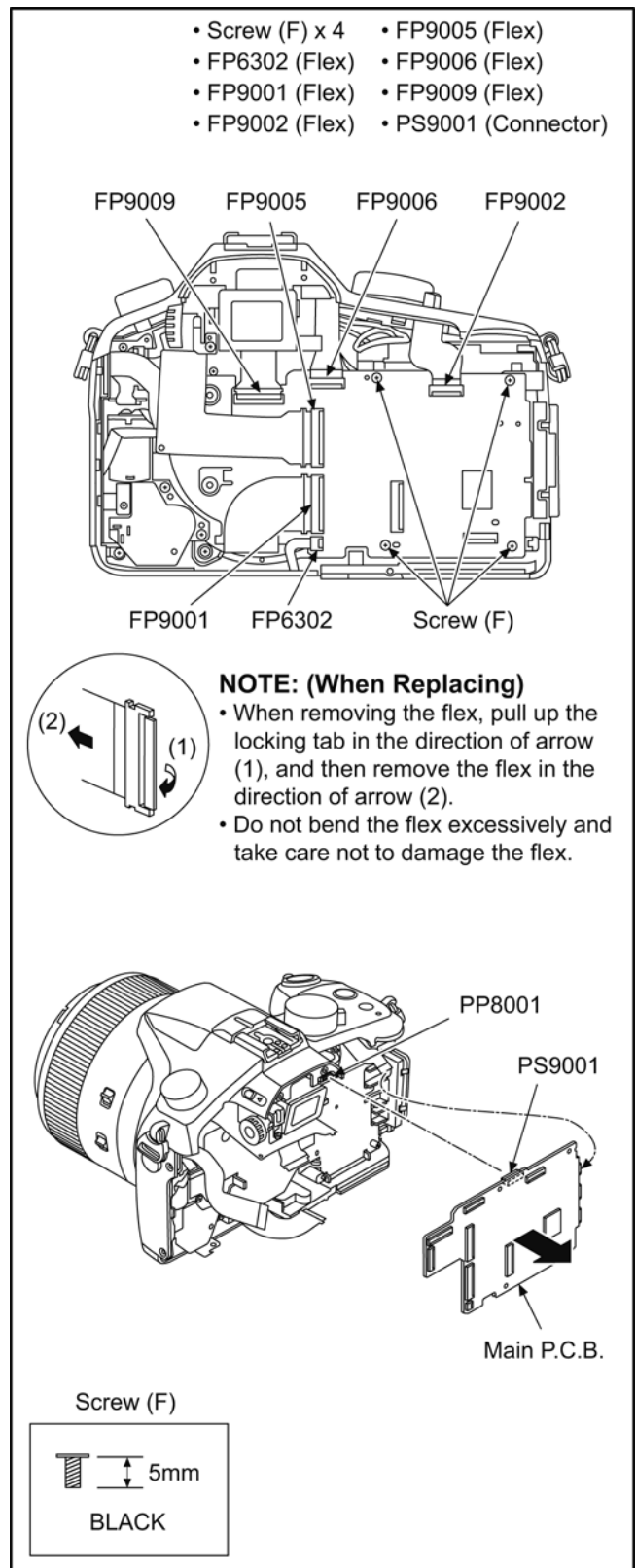


(Fig. D2)



(Fig. D3)

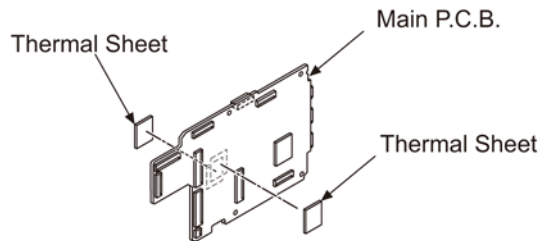
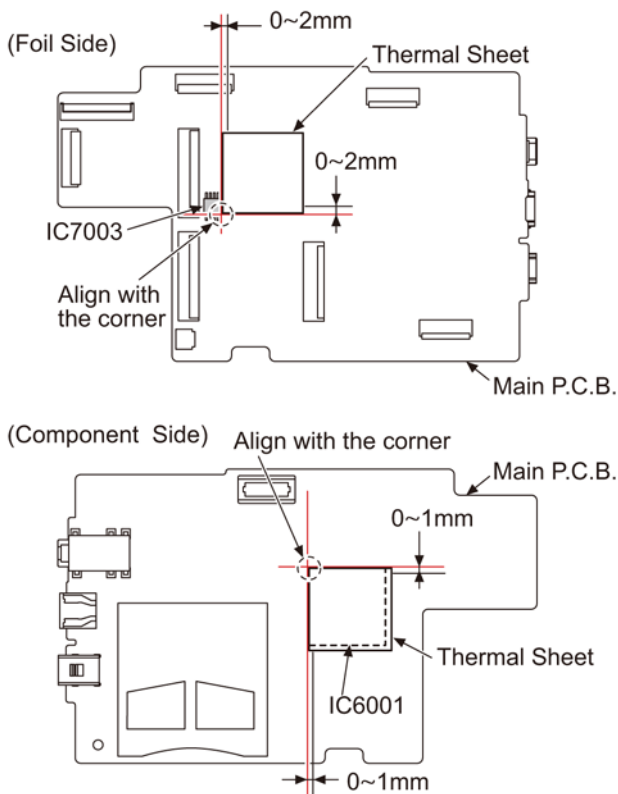
9.3.2. Removal of the Main P.C.B.



(Fig. D4)

NOTE: (When Replacing)

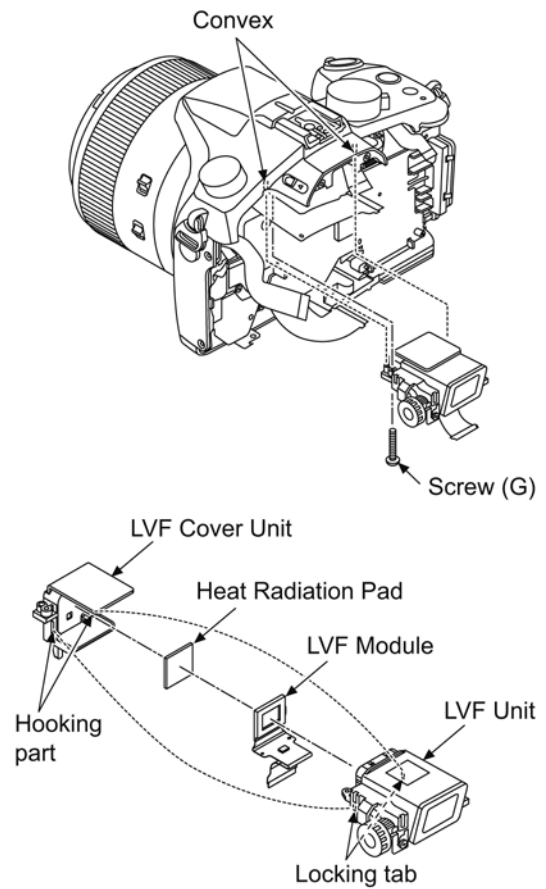
- Paste the Thermal Sheet to the foil and component side.
- When pasting the Thermal Sheet, should not press hard. (Cause damage.)
- When pasting the Thermal Sheet, make sure the paste standard.

**Paste standard (Thermal Sheet)**

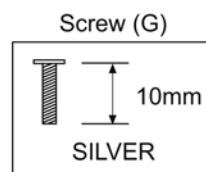
(Fig. D5)

9.3.3. Removal of the LVF Module

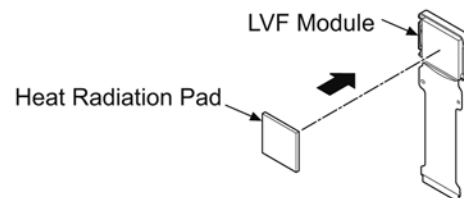
- Screw (G) x 1
- Convex x 2
- Hooking part x 2
- LVF Cover Unit
- LVF Unit
- Heat Radiation Pad

**NOTE: (When Replacing)**

- Take care not to put any fingerprints on the finder part of LVF Unit.

**How to Install**

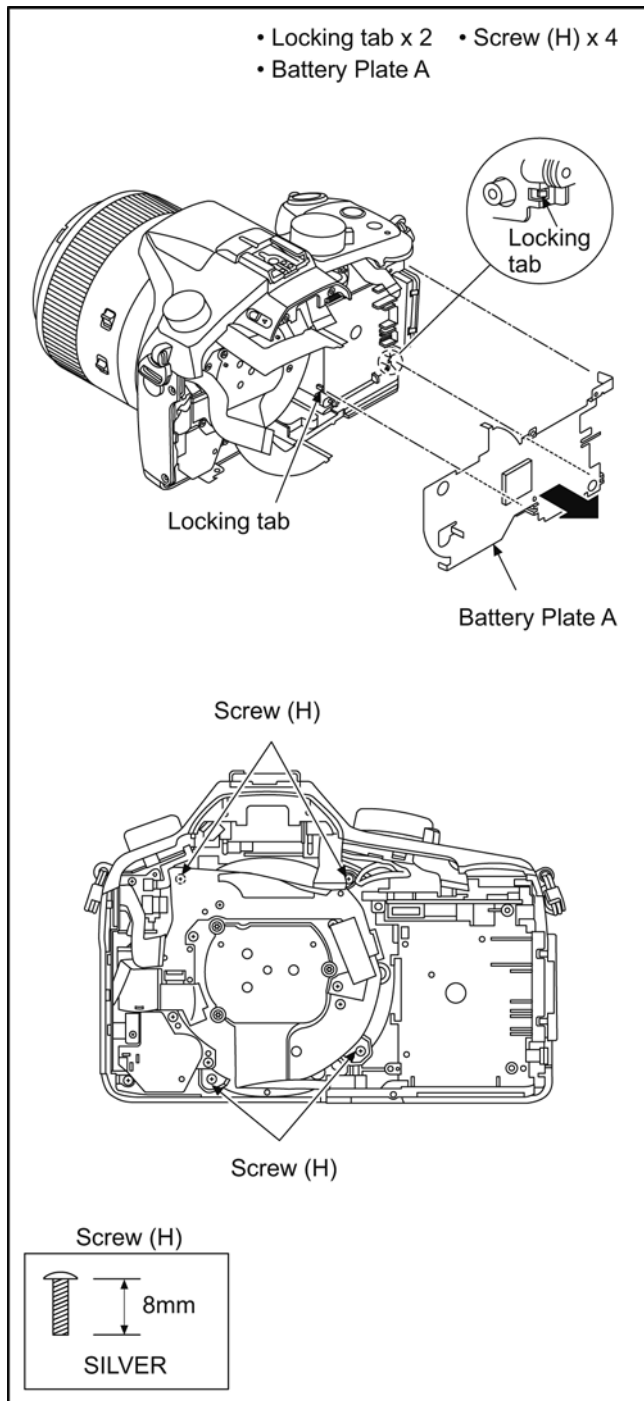
1. Paste the Heat Radiation Pad to the LVF Module. (Do not overlap the P.C.B. of LVF Module.)



2. Install the LVF Module to the LVF Unit. (Heat Radiation Pad is outside.)
3. Install the LVF Cover Unit at the locking tabs. (Do not put in the flex.)

(Fig. D6)

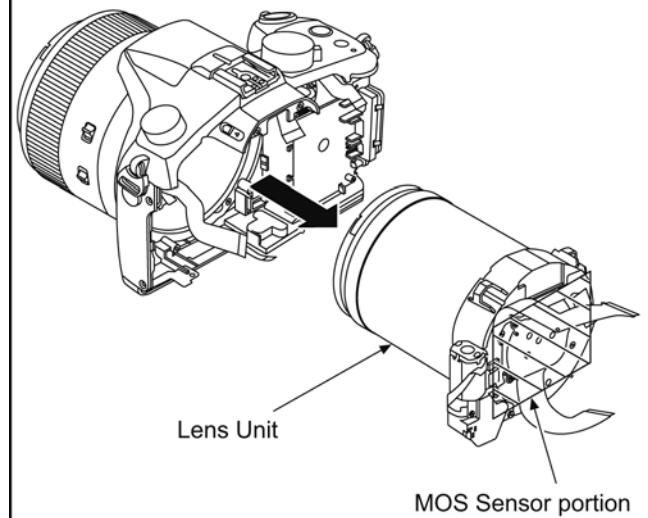
9.3.4. Removal of the Lens Unit



(Fig. D7)

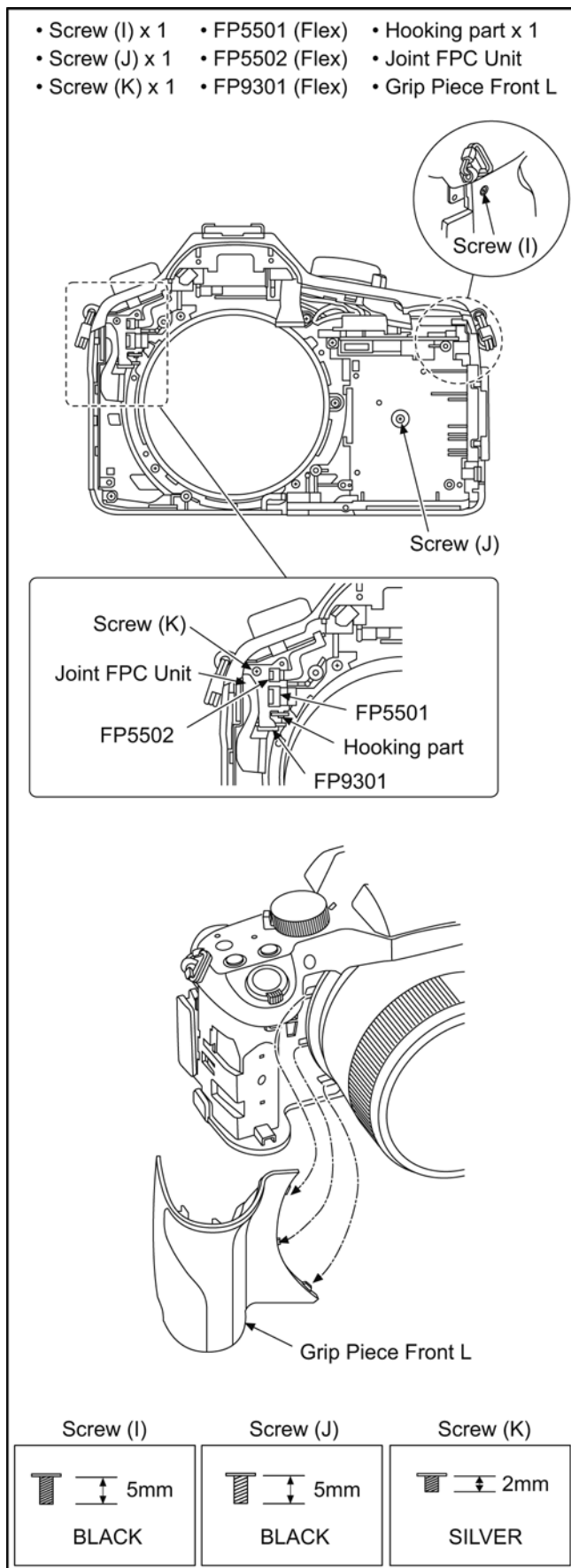
IMPORTANT NOTICE:

- Be careful not to touch the shaded portion of the Lens Unit.

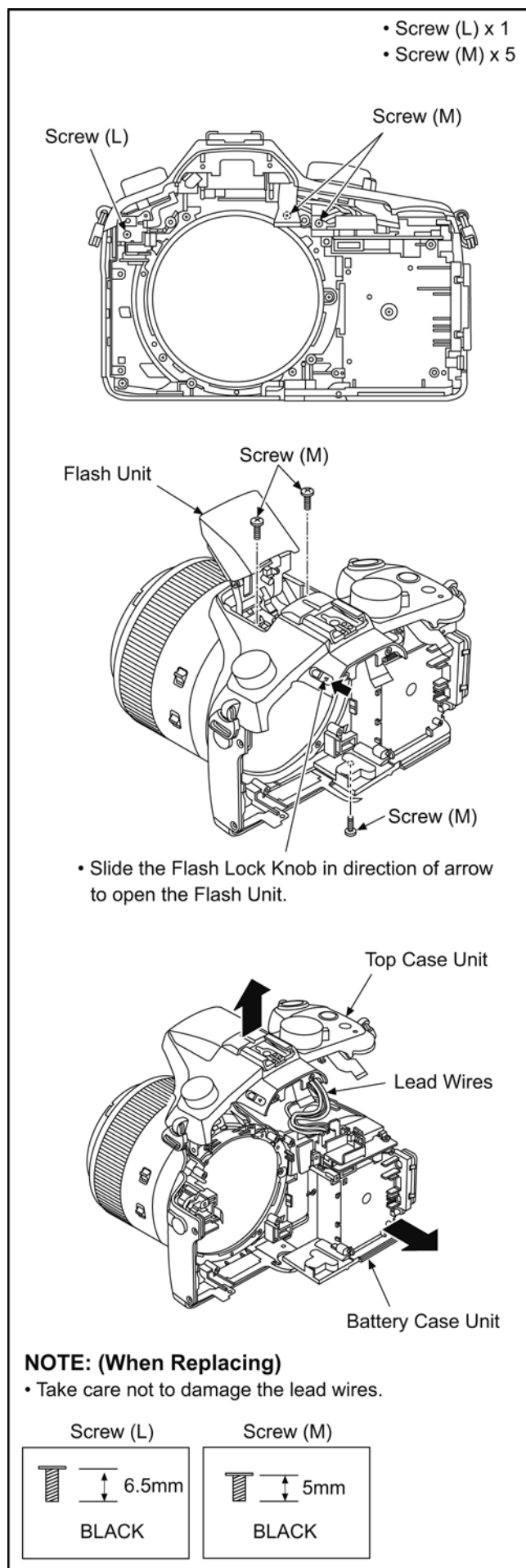


(Fig. D8)

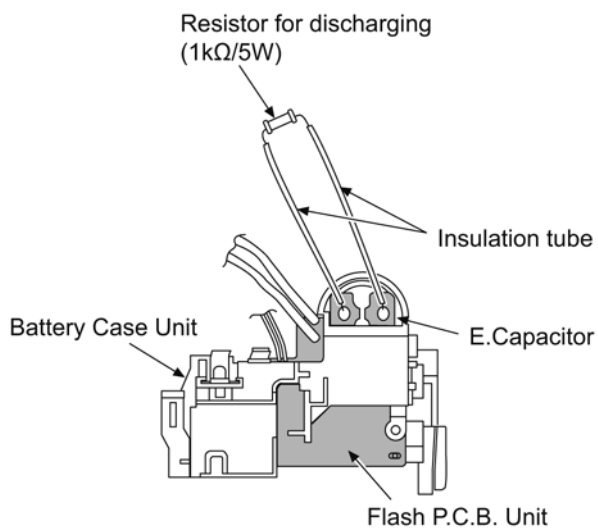
9.3.5. Removal of the Top Case Unit and Battery Case Unit



(Fig. D9)



(Fig. D10)

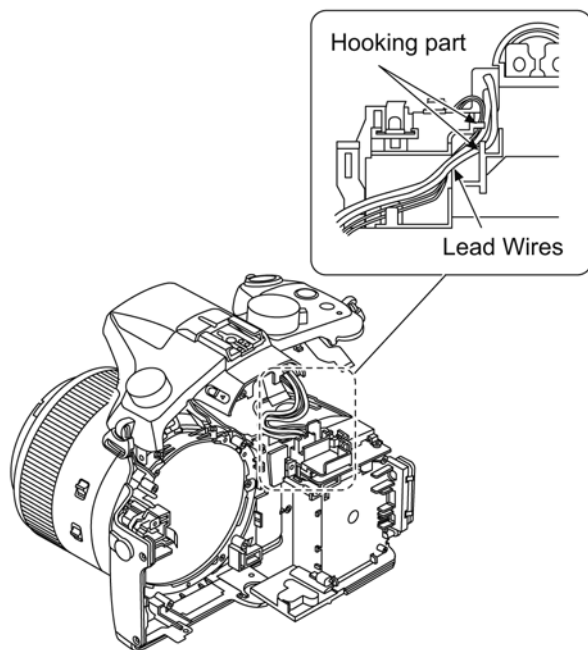


⚠ CAUTION

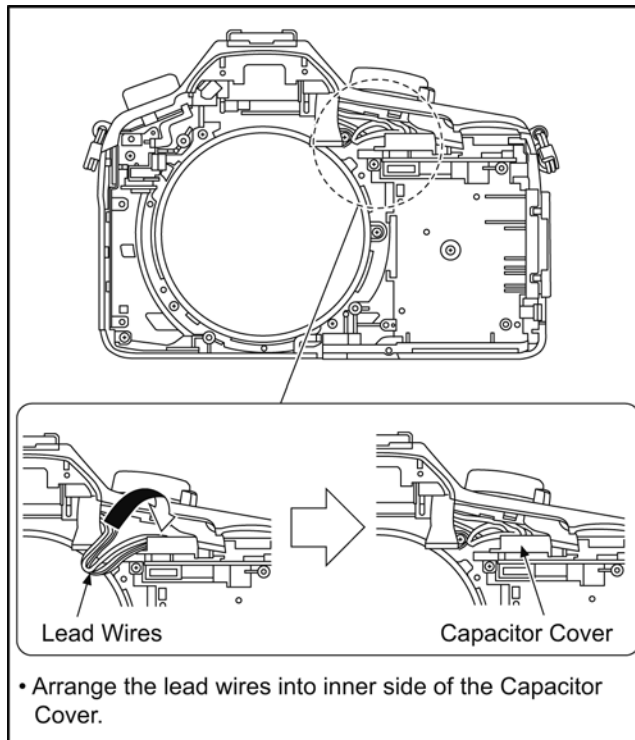
- Be sure to discharge the E.Capacitor on Flash P.C.B. Unit before disassembling. Be careful of the high voltage circuit on Flash P.C.B. Unit when servicing.**
1. Put the insulation tube on the lead part of resistor (ERG5SJ102: 1kΩ / 5W).
(An equivalent type of resistor may be used.)
 2. Put the resistor between both terminals of E.Capacitor on Flash P.C.B. Unit for approx. 5 seconds.
 3. After discharging, confirm that the E.Capacitor voltage is lower than 10V by using a voltmeter.

NOTE: (When Installing)

- Arrange the lead wires under the hooking part.

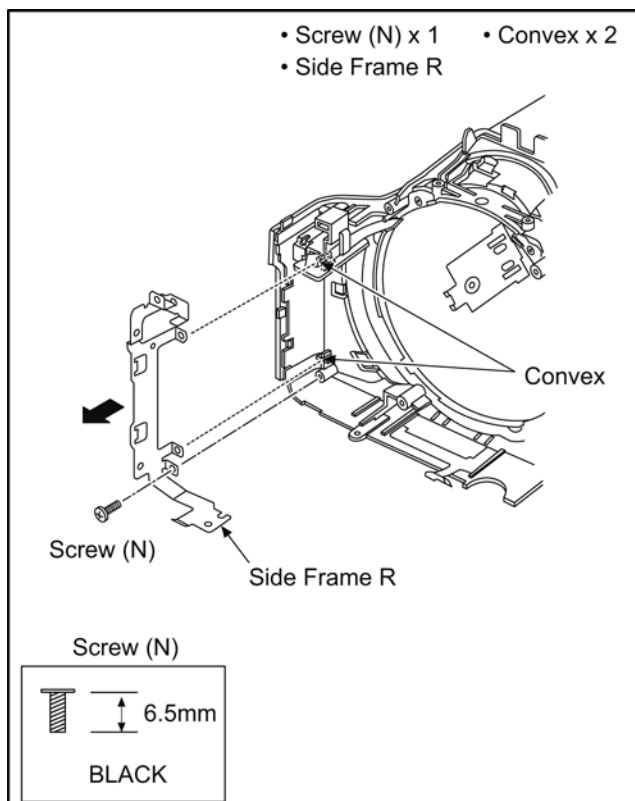


(Fig. D11)

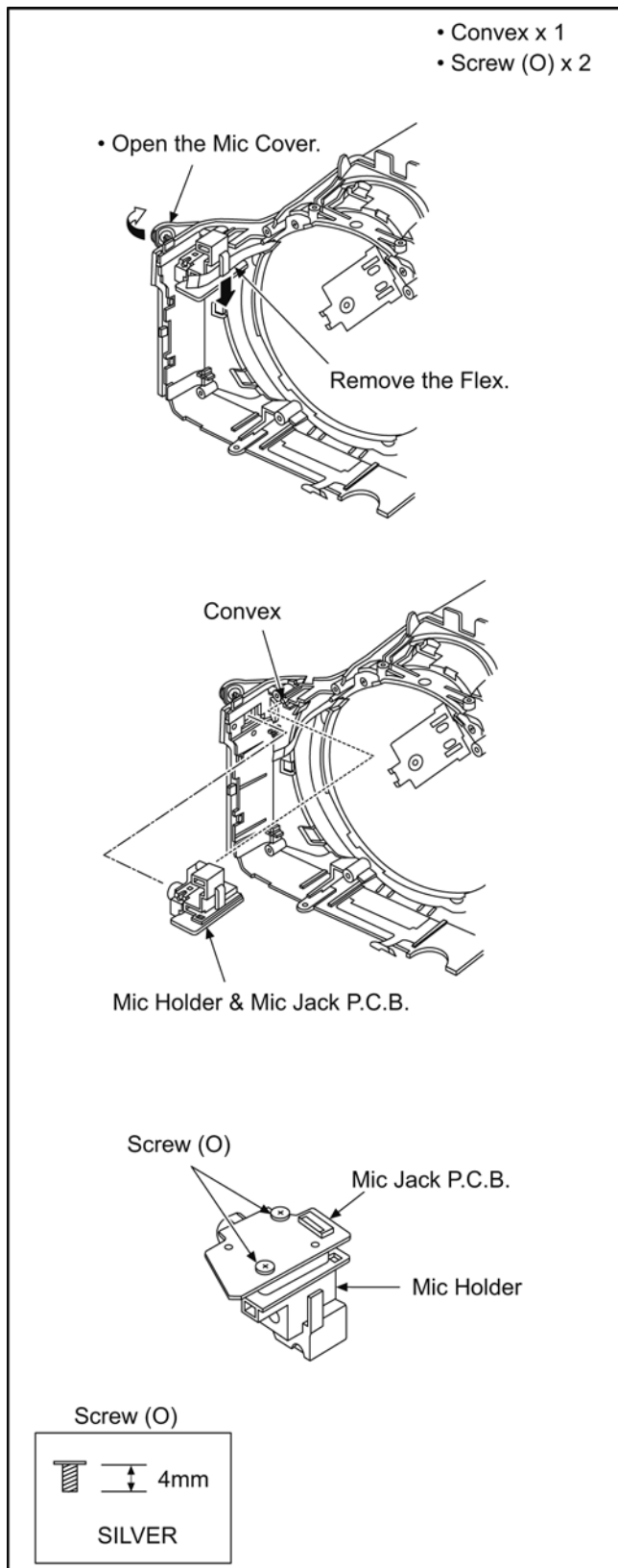


(Fig. D12)

9.3.6. Removal of the Mic Holder and Mic Jack P.C.B.

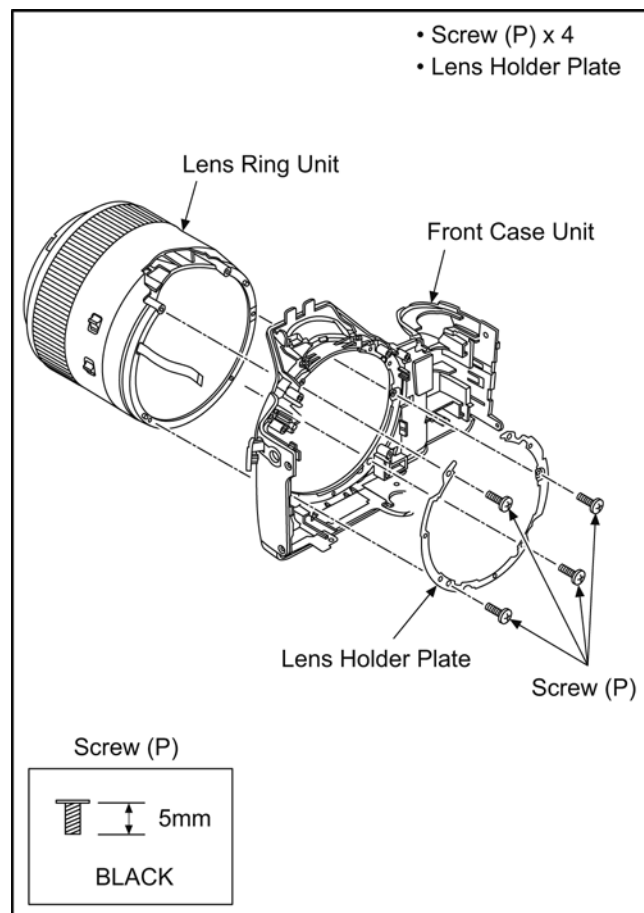


(Fig. D13)



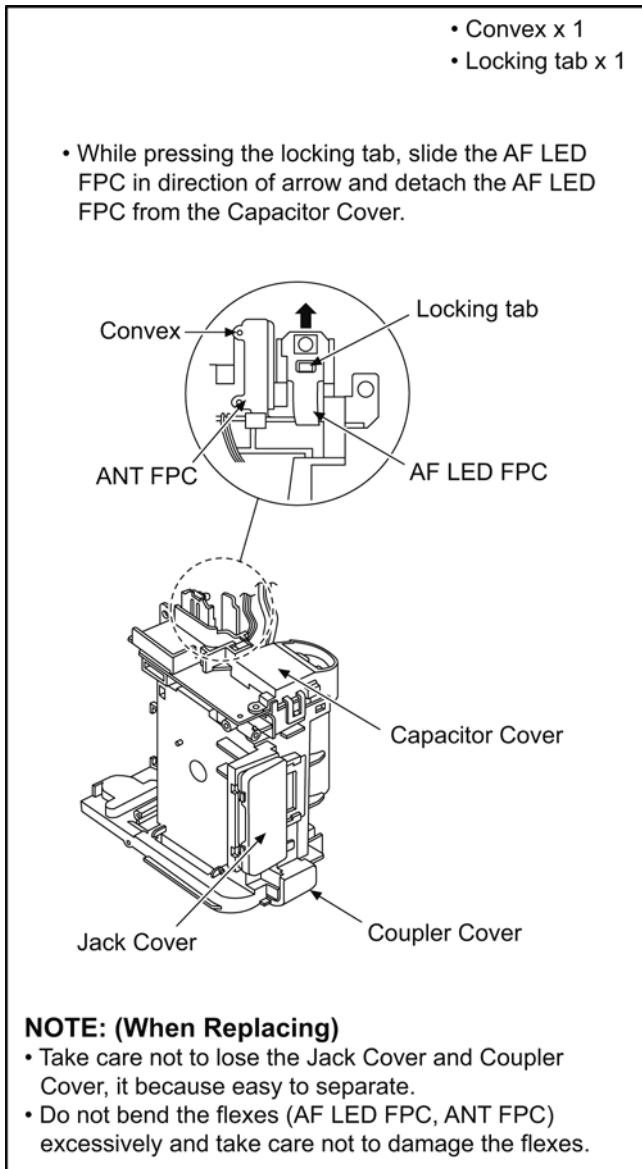
(Fig. D14)

9.3.7. Removal of the Front Case Unit and Lens Ring Unit

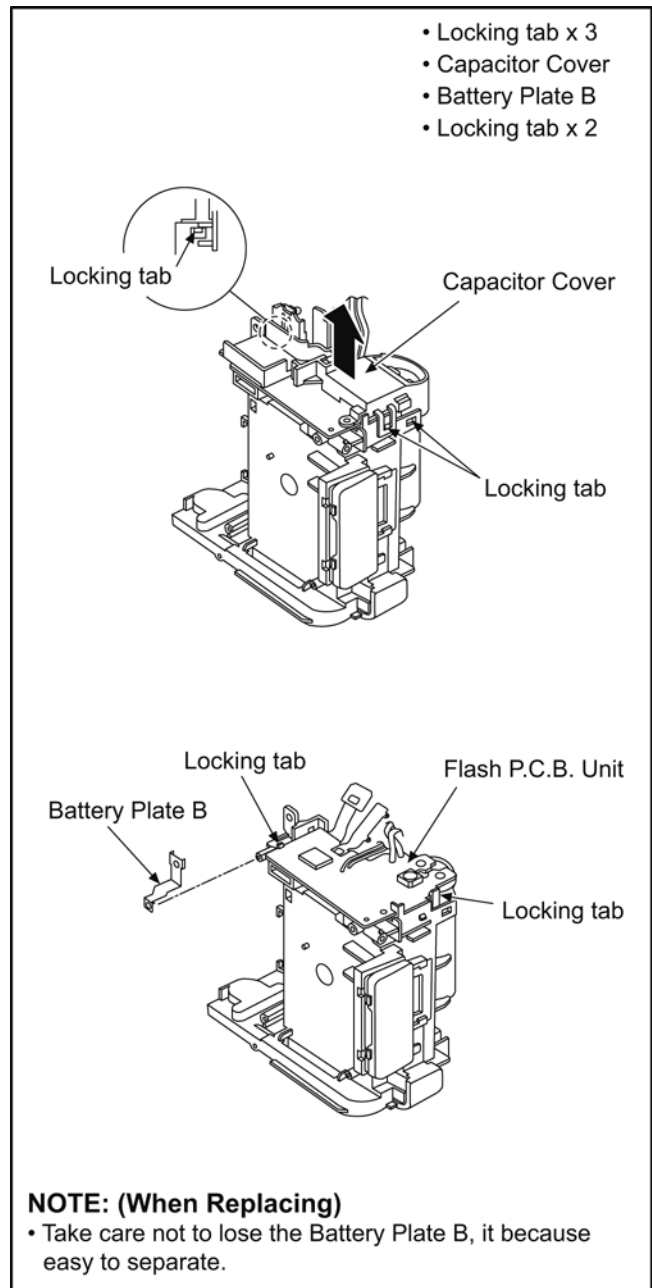


(Fig. D15)

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



(Fig. D16)

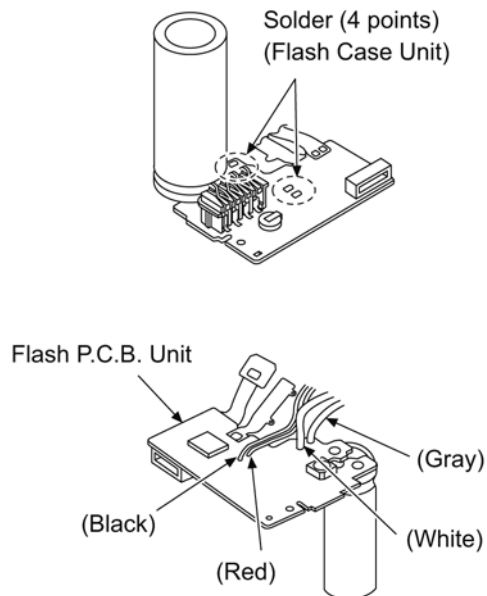


(Fig. D17)

IMPORTANT NOTICE:

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

- Solder (4 points)

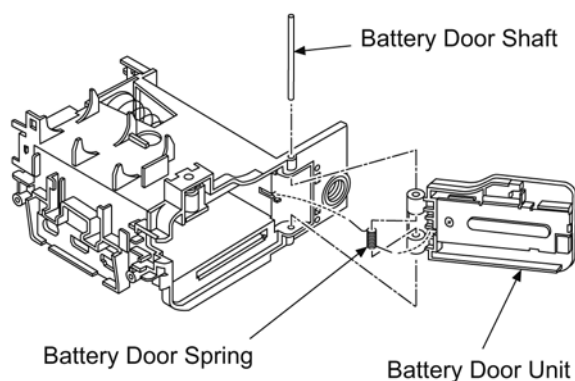
**NOTE: (When Installing)**

- Taking care not to mistake colour, do solder lead wires.

(Fig. D18)

9.3.9. Removal of the Battery Door Unit

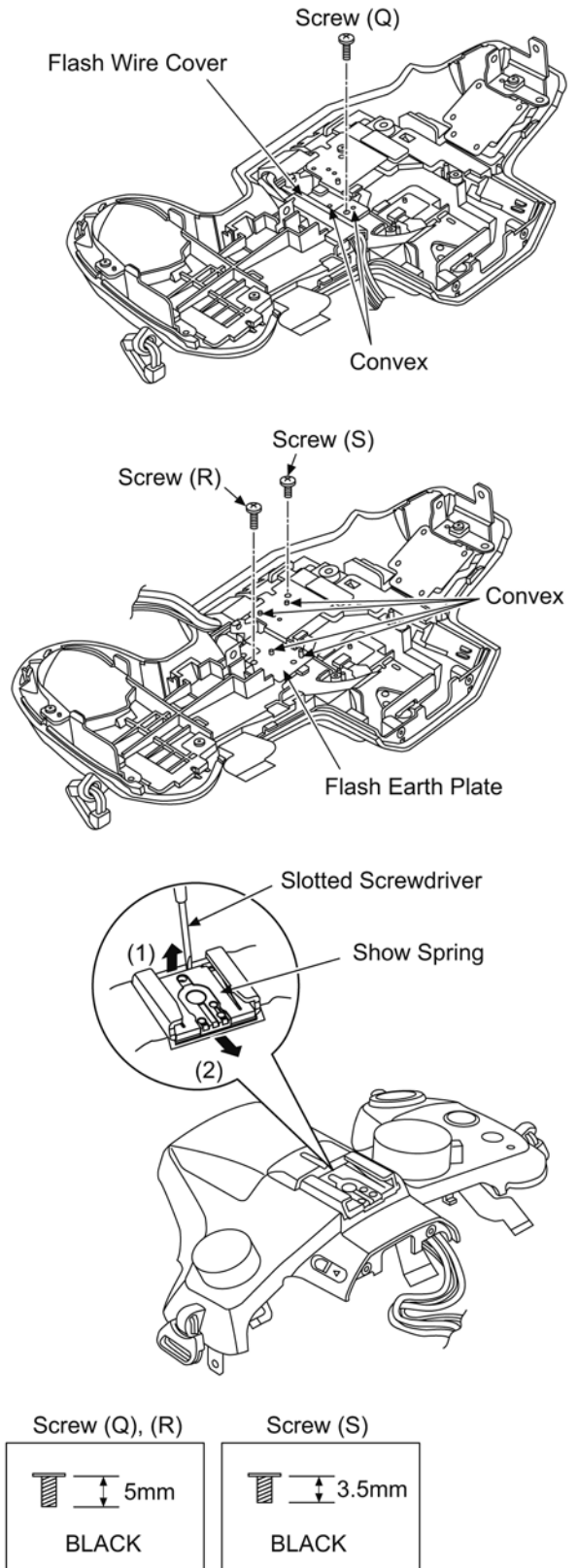
- Battery Door Shaft
- Battery Door Spring



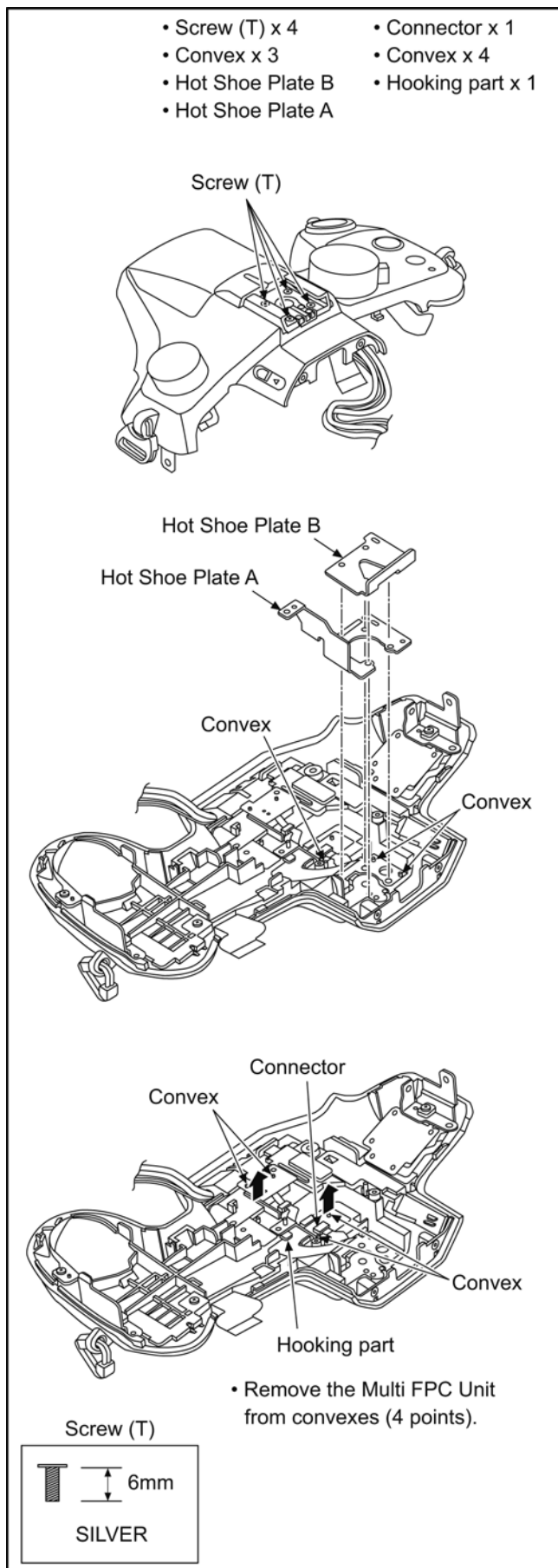
(Fig. D19)

9.3.10. Removal of the Hot Shoe Unit and Multi FPC Unit

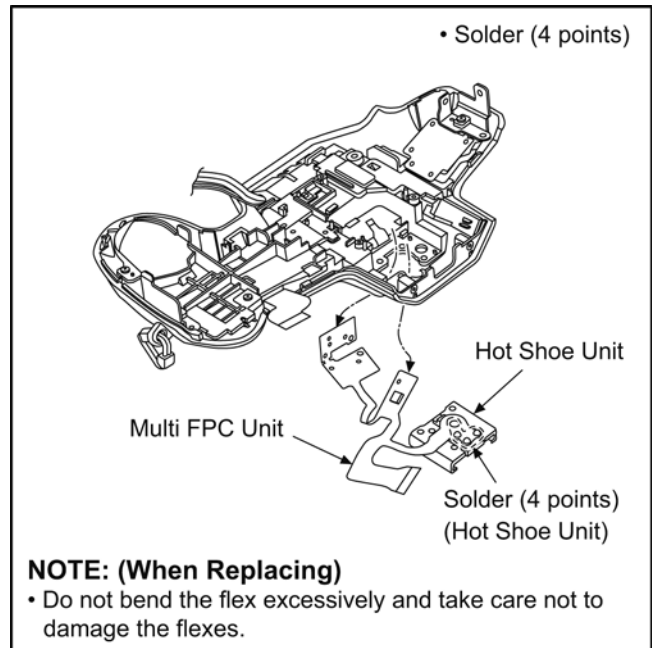
- Screw (Q) x 1
- Convex x 2
- Flash Wire Cover
- Screw (R) x 1
- Screw (S) x 1
- Convex x 4
- Flash Earth Plate
- Shoe Spring



(Fig. D20)

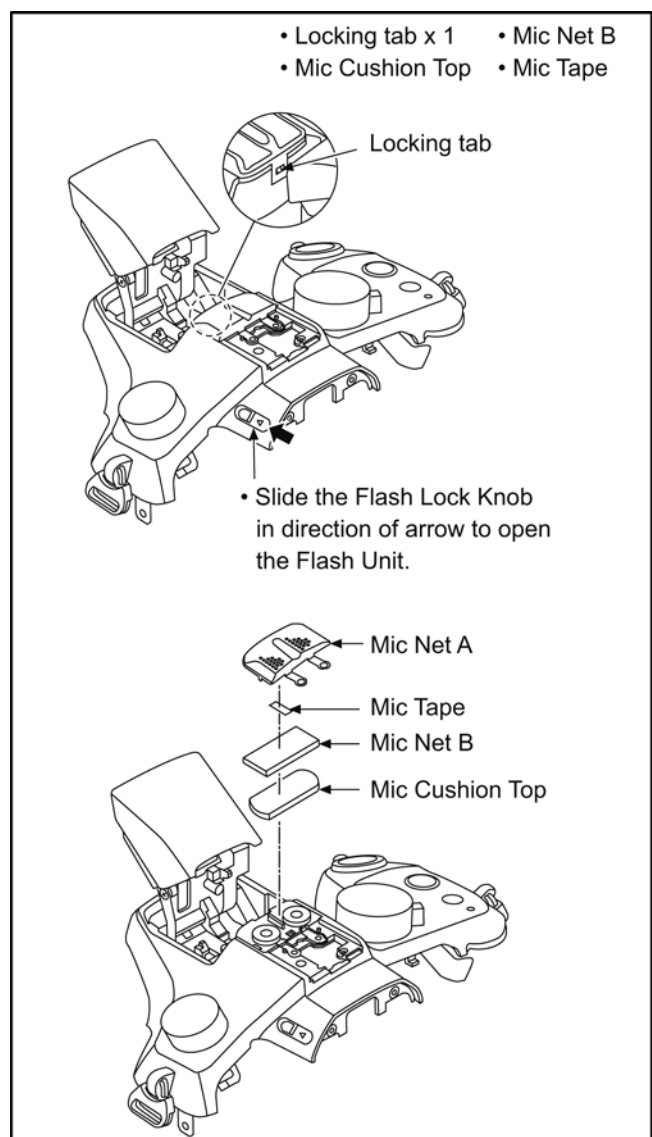


(Fig. D21)



(Fig. D22)

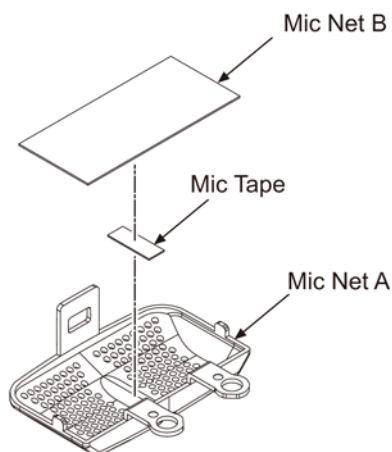
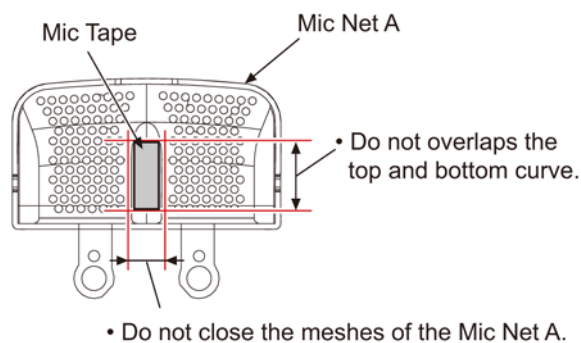
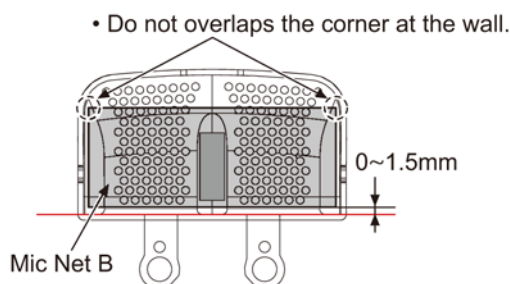
9.3.11. Removal of the Mic Net A



(Fig. D23)

NOTE: (When Replacing)

- When pasting the Mic Tape and Mic Net B, make sure the paste standard.
- Paste the Mic Tape on the Mic Net A, then paste the Mic Net B.

**Paste standard (Mic Tape)****Paste standard (Mic Net B)**

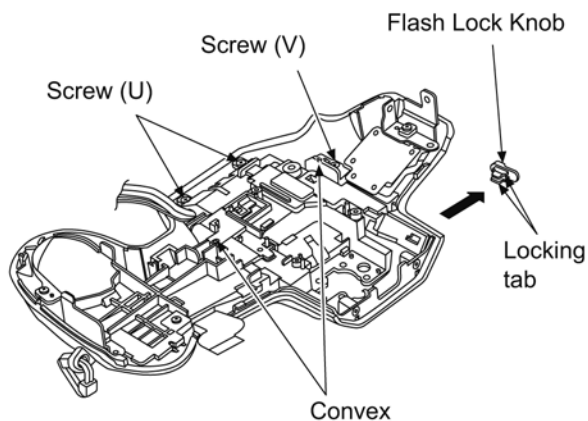
(Fig. D24)

9.3.12. Removal of the Flash Case Unit

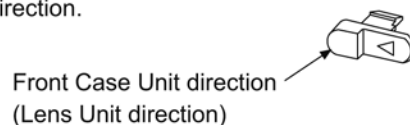
- Locking tab x 2
- Flash Lock Knob
- Screw (U) x 2
- Screw (V) x 1
- Convex x 2

NOTE: (When Replacing)

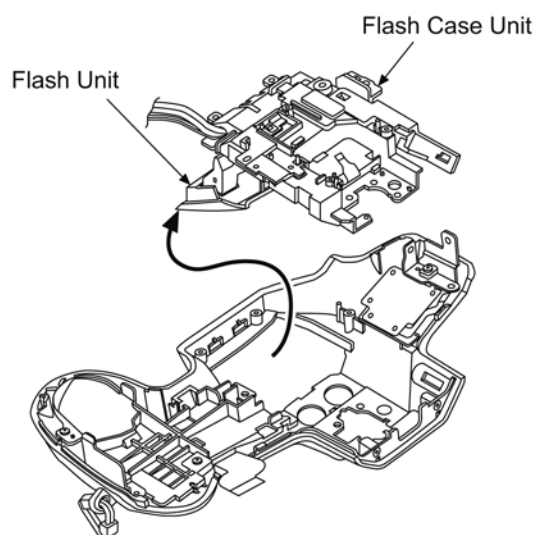
- Pull out the Flash Lock Knob after narrowing the interval of its locking tabs by pressing the tabs of the top and bottom inward.

**NOTE: (When Installing)**

- When installing the Flash Lock Knob, Take care on its installing direction.

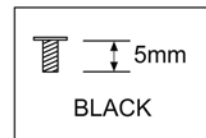
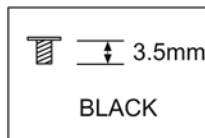
**NOTE: (When Replacing)**

- Before removing the Flash Case Unit, open the Flash Unit.



Screw (U)

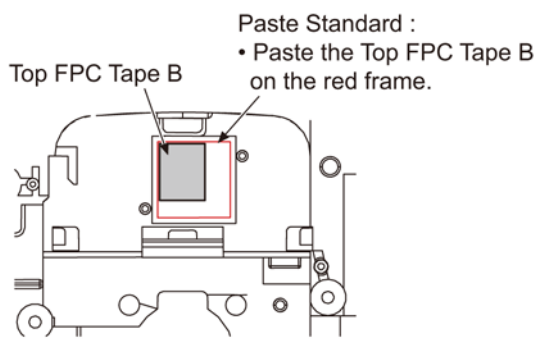
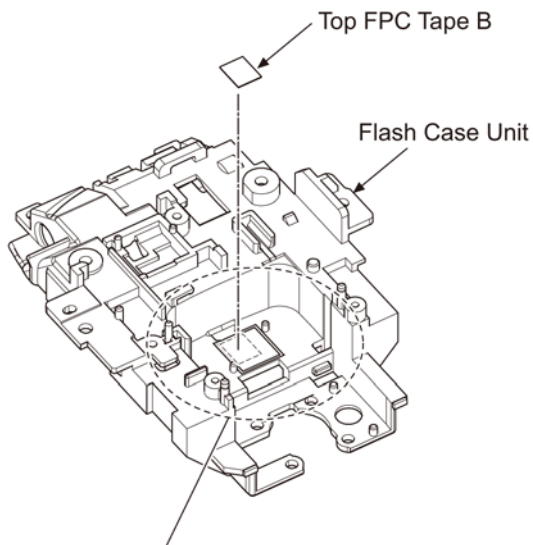
Screw (V)



(Fig. D25)

NOTE: (When Replacing)

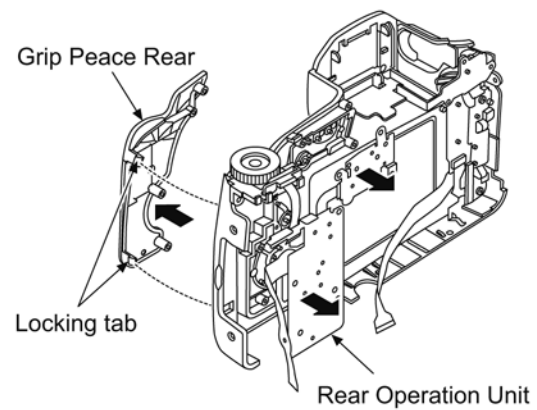
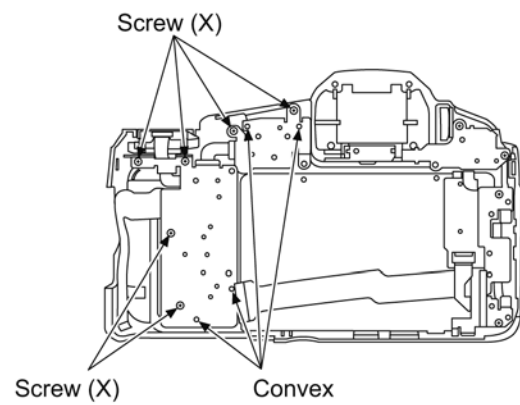
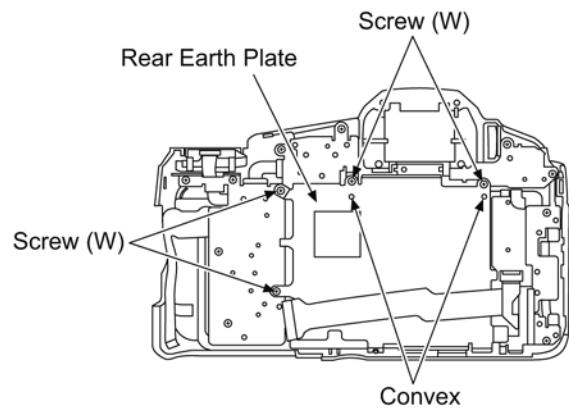
- When pasting the Top FPC Tape B, make sure the paste standard.



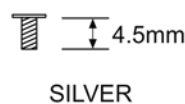
(Fig. D26)

9.3.13. Removal of the Rear Operation Unit

- Screw (W) x 4
- Screw (X) x 6
- Convex x 2
- Convex x 4
- Rear Earth Plate
- Locking tab x 2
- Grip Peace Rear



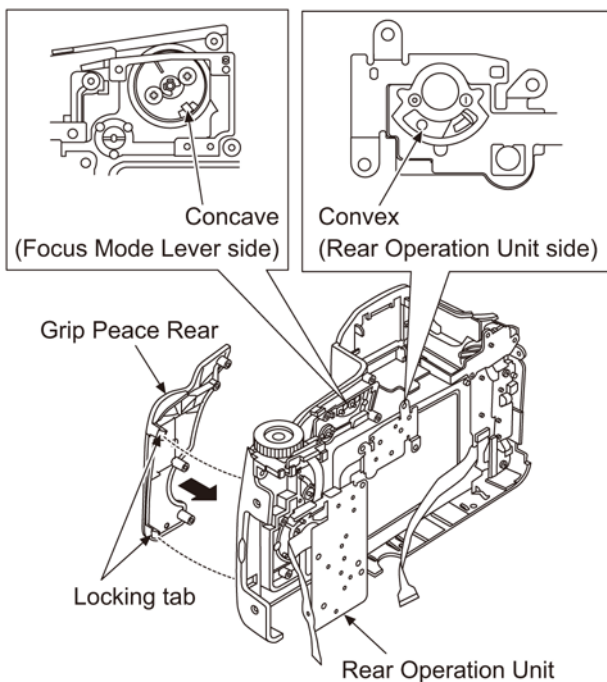
Screw (W), (X)



(Fig. D27)

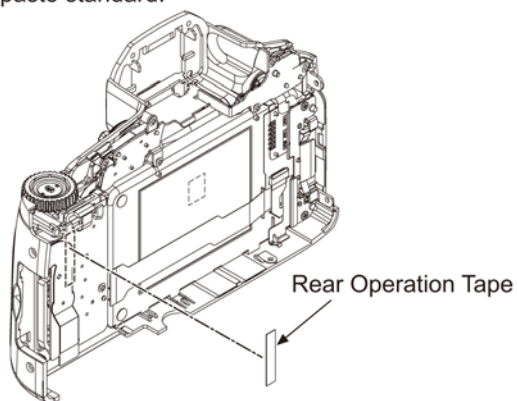
NOTE: (When Installing)

- Align the convex of lever switch (Rear Operation Unit side) and the concave portion of Focus Mode Lever side.

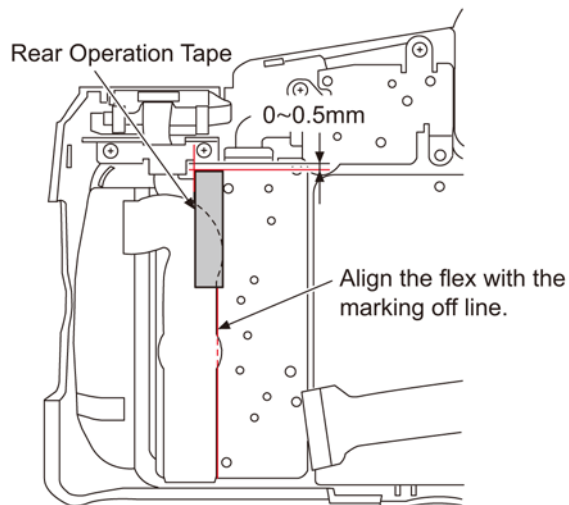


NOTE: (When Replacing)

- When pasting the Rear Operation Tape, make sure the paste standard.



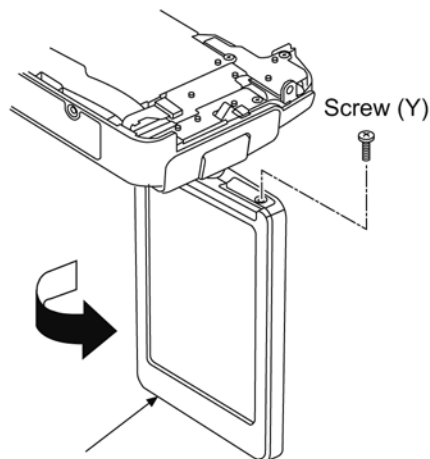
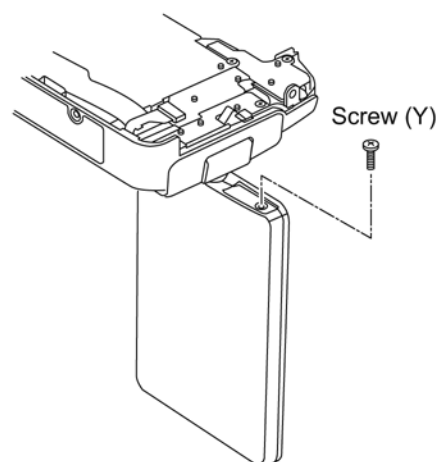
Paste standard (Rear Operation Tape)



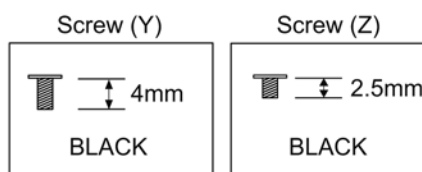
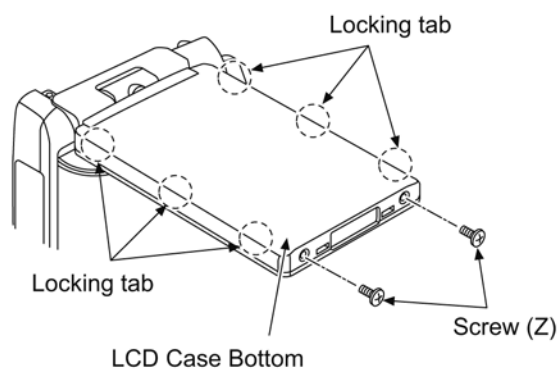
(Fig. D28)

9.3.14. Removal of the LCD IF P.C.B. and LCD

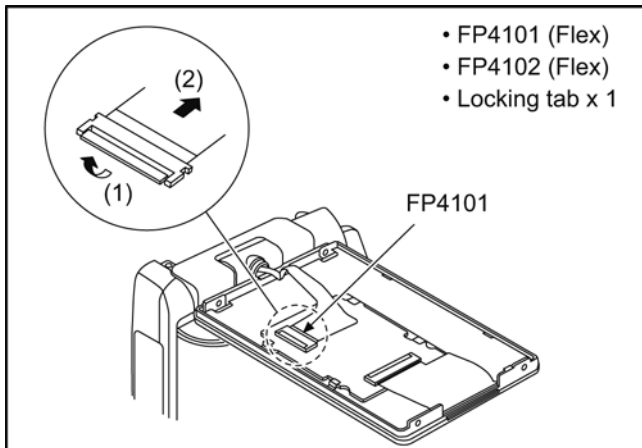
- Screw (Y) x 2
- Screw (Z) x 2
- Locking tab x 6
- LCD Case Bottom



- Turn the LCD case 180 degrees.

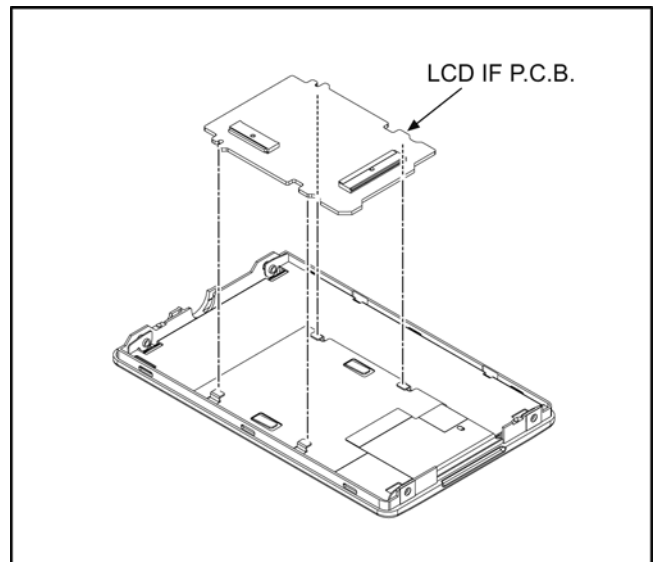


(Fig. D29)

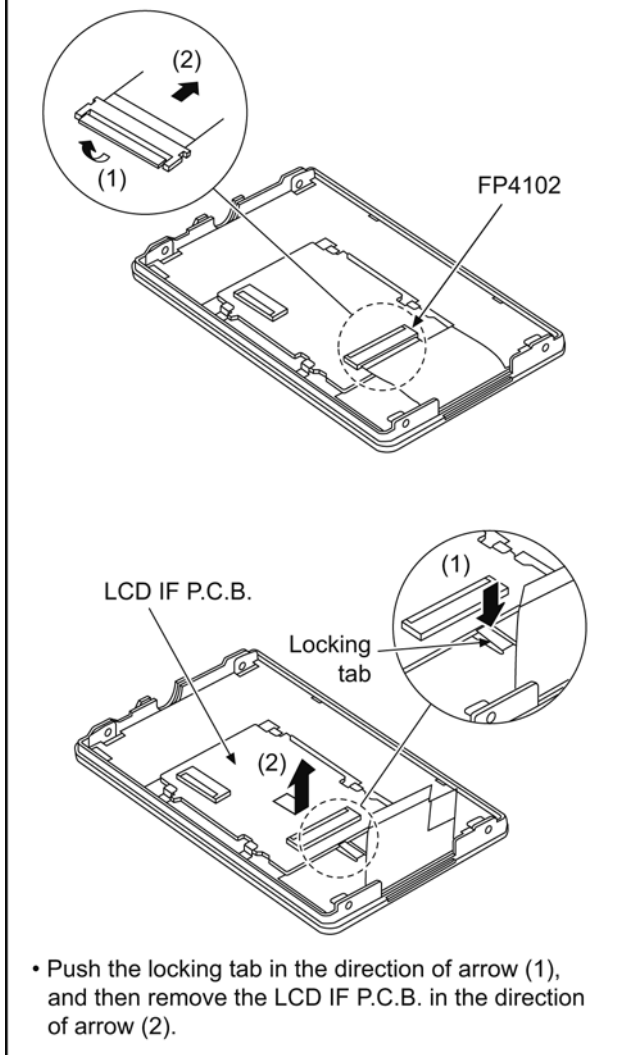


NOTE: (When Replacing)

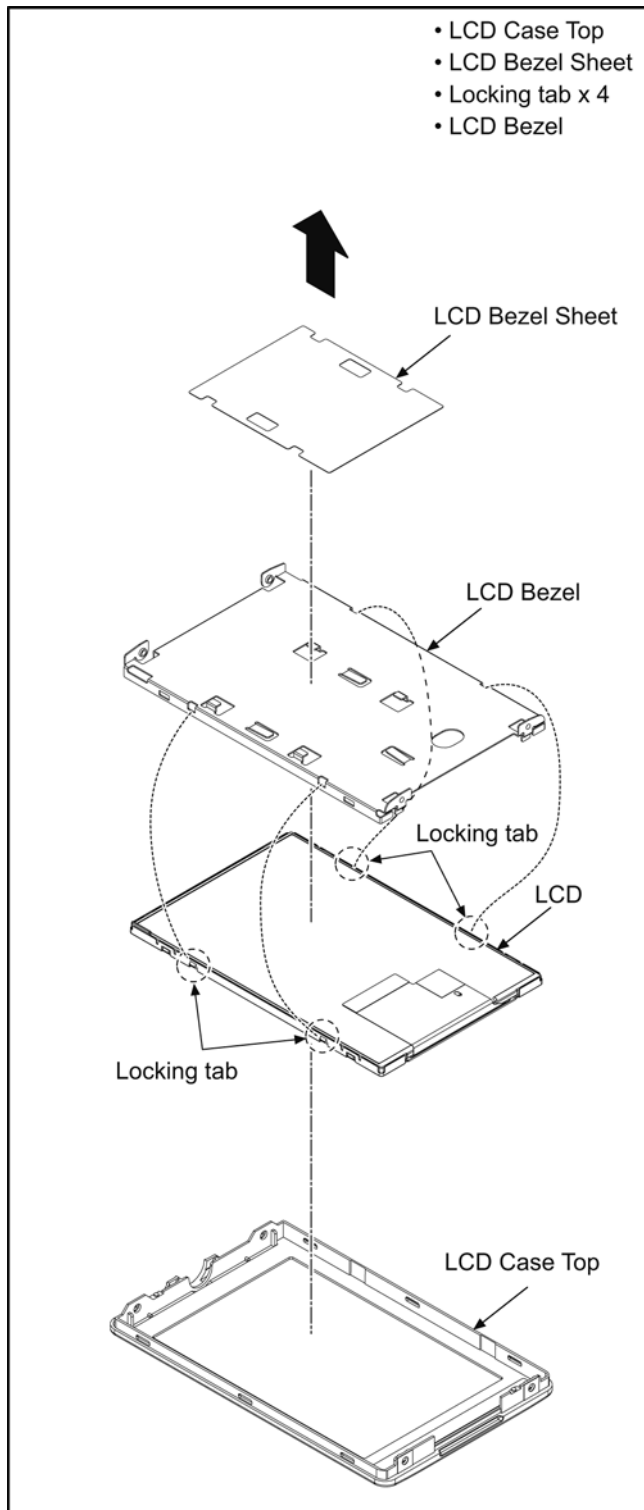
- When removing the flex, pull up the locking tab in the direction of arrow (1), and then remove the flex in the direction of arrow (2).
- Do not bend the flex excessively and take care not to damage the flex.



(Fig. D31)



(Fig. D30)



(Fig. D32)

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/or dirt on it, and no gradient images.)

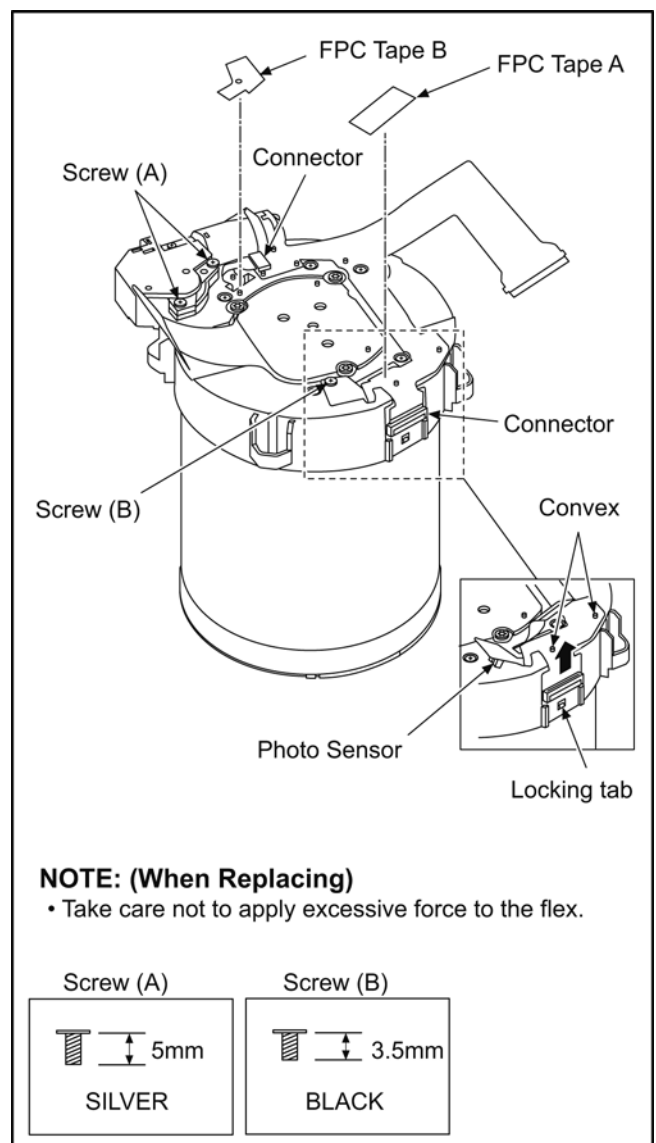
9.4. Lens Disassembly Procedure

Precaution:

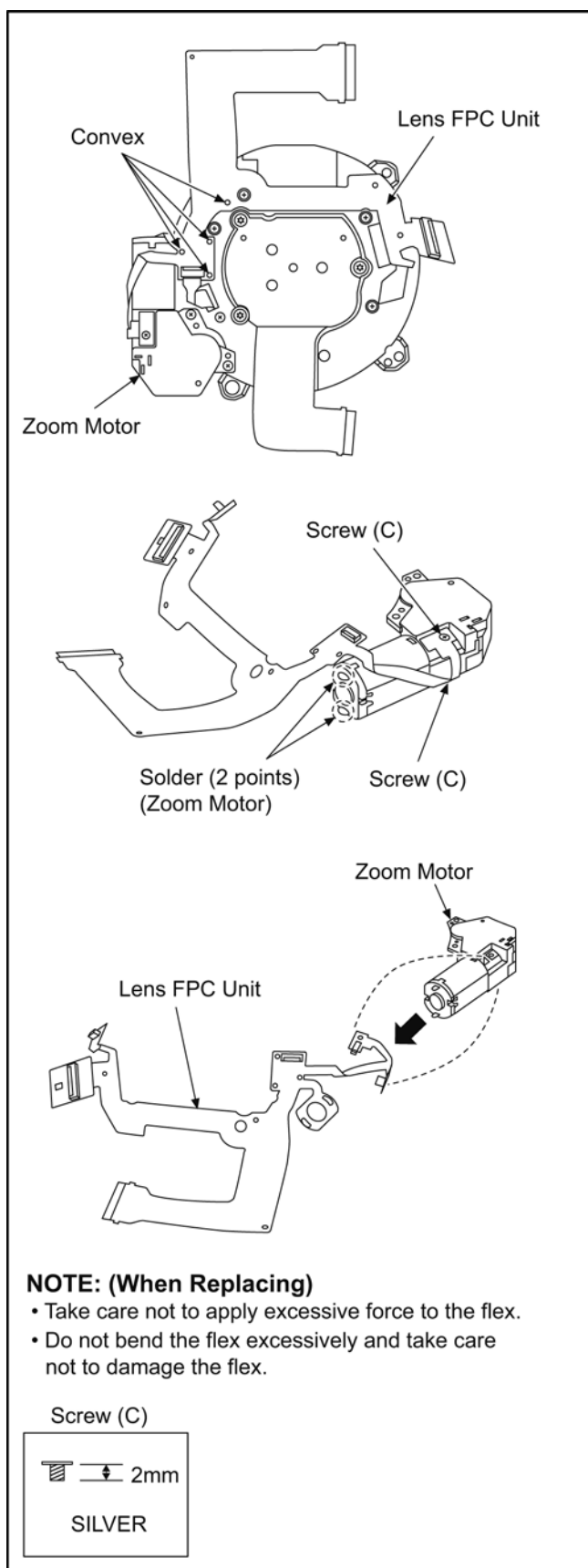
1. Do not remove the MOS Unit when disassembling or reassembling the lens in order to maintain it clean.
When remove it, refer to item "9.6."
2. Keep dust or dirt away from the lens.
To remove dirt or dust from the lens, blow with dry air.
3. Do not touch the lens surface.
4. Use Lens Cleaning Kit (VFK1900BK).

9.4.1. Removal of the Zoom Motor and Lens FPC Unit

1. Peel the FPC Tape A and FPC Tape B.
2. Unscrew the 2 screws (A).
3. Unscrew the screw (B).
4. Remove the Photo Sensor.
5. Disconnect 2 connectors.
6. Unlock the locking tab and remove connector portion.
7. Remove the 2 convexes.

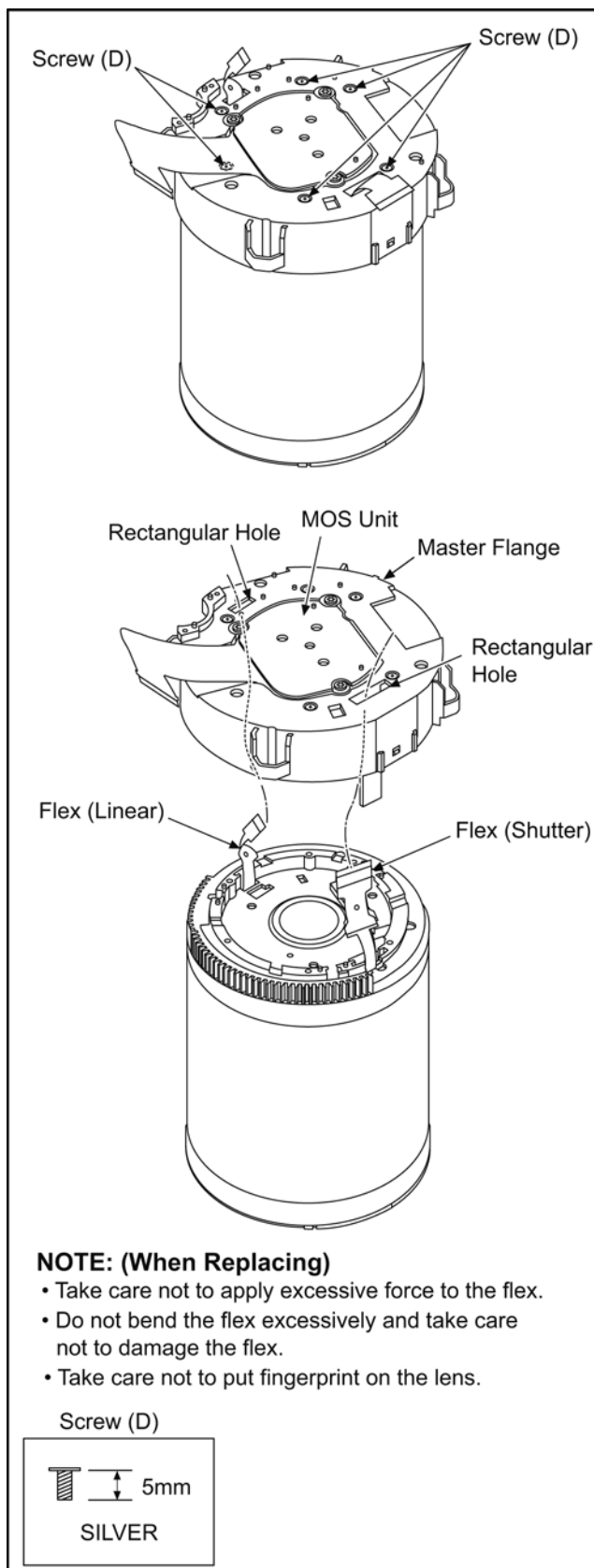


8. Remove the 4 convexas.
9. Remove the Zoom Motor and Lens FPC Unit.
10. Unscrew the 2 screws (C).
11. Unsolder the 2 soldering points.
12. Remove the Lens FPC Unit from the Zoom Motor.



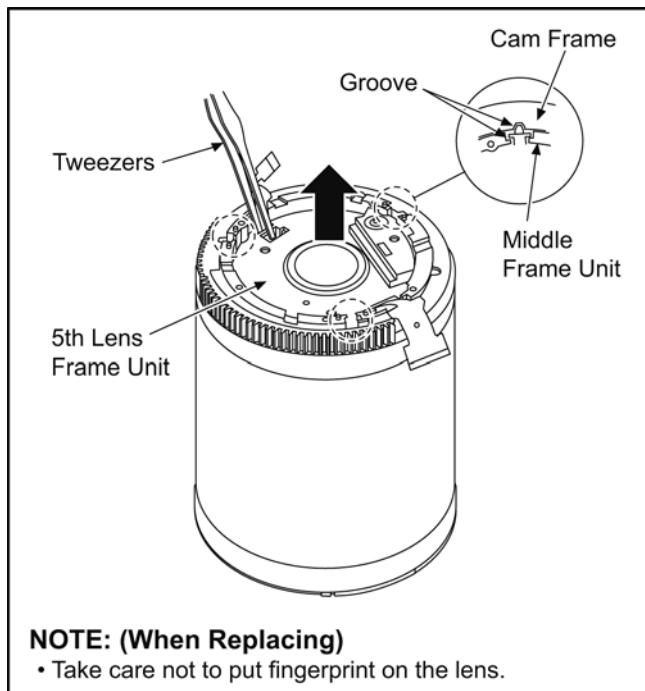
9.4.2. Removal of the Master Flange

1. Unscrew the 6 screws (D).
2. Put the 2 flexes (for shutter and linear) out through each rectangular hole, then remove the Master Flange.



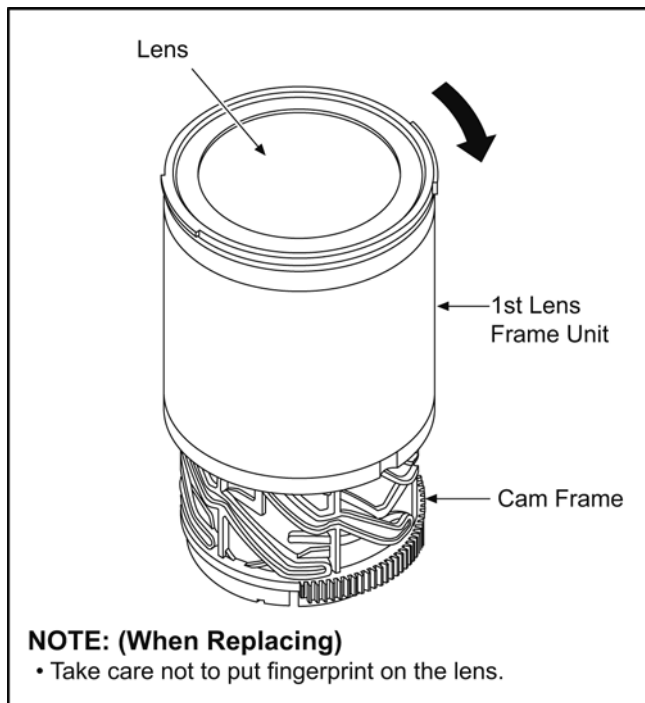
9.4.3. Removal of the 5th Lens Frame Unit

1. Confirm that the groove of Middle Frame Unit and groove of Cam Frame are aligned. (Phase alignment)
2. Remove the 5th Lens Frame Unit by using tweezers, etc..

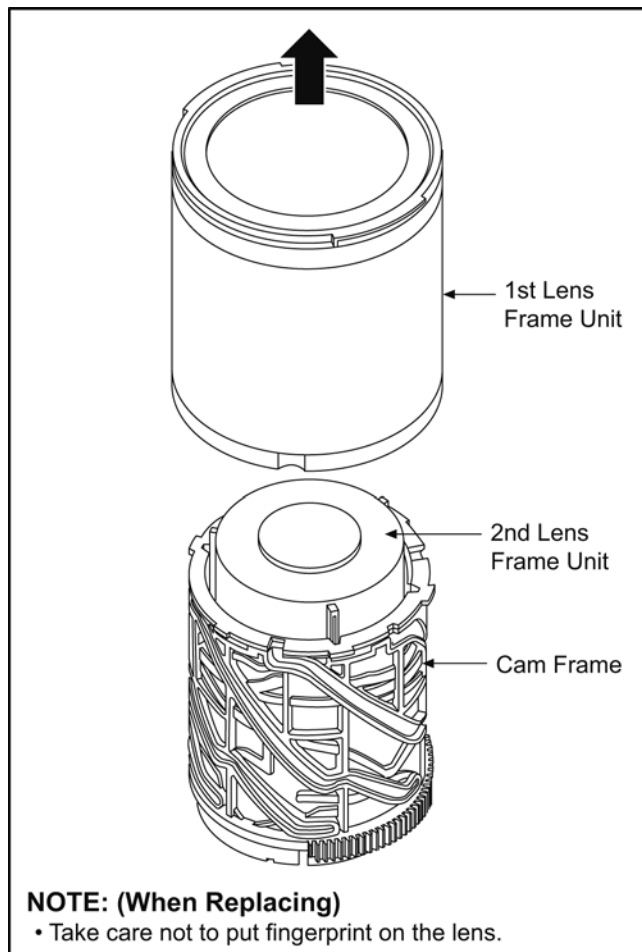


9.4.4. Removal of the 1st Lens Frame Unit

1. Put the lens side up of 1st Lens Frame Unit.
(To prevent dropping of the 2nd Lens Frame Unit)
2. Rotate the 1st Lens Frame Unit clockwise fully.

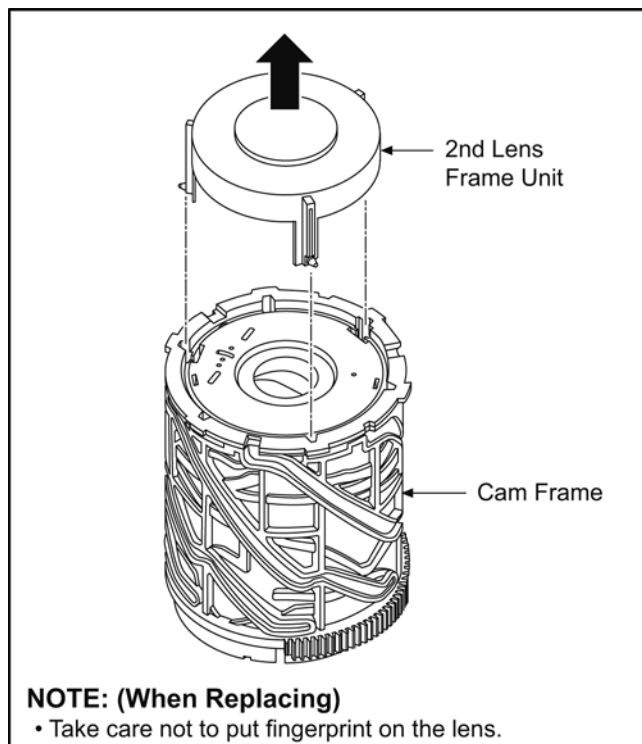


3. Pull up the 1st Lens Frame Unit in direction of arrow, then remove it.



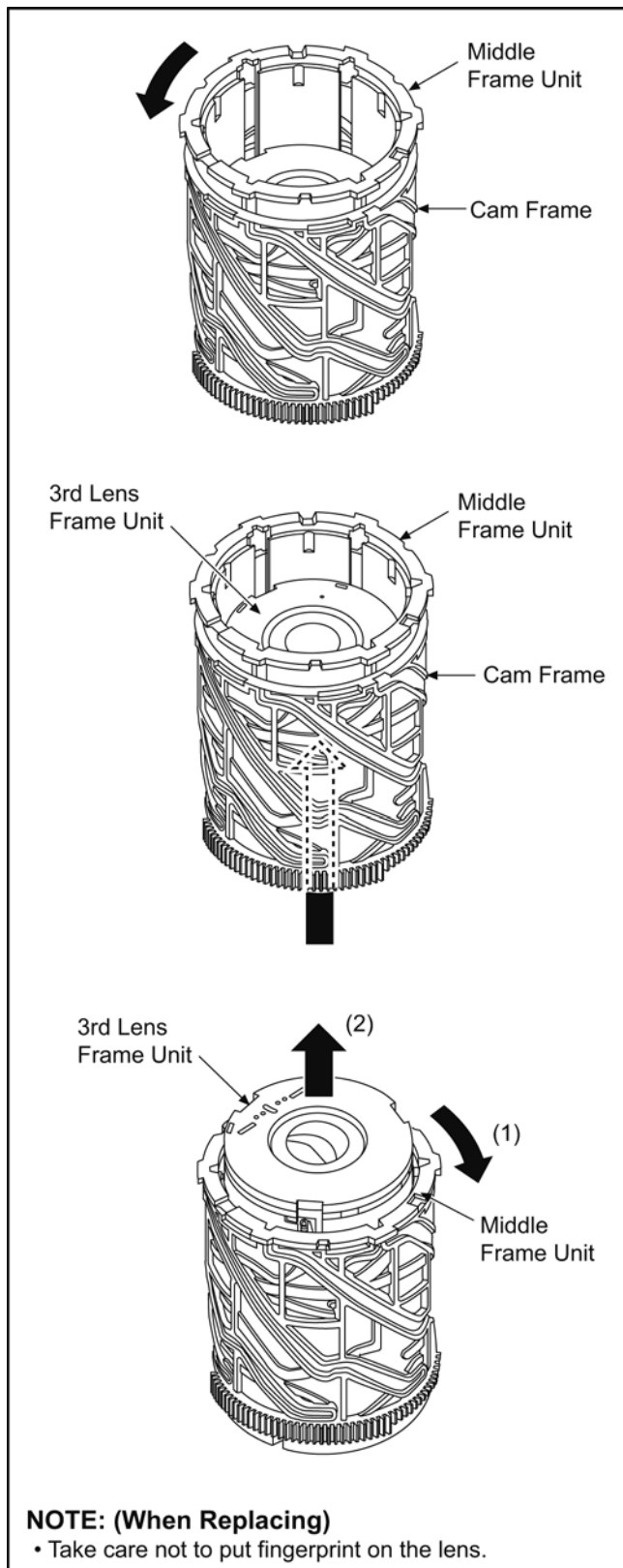
9.4.5. Removal of the 2nd Lens Frame Unit

1. Pull up the 2nd Lens Frame Unit in direction of arrow, then remove it.

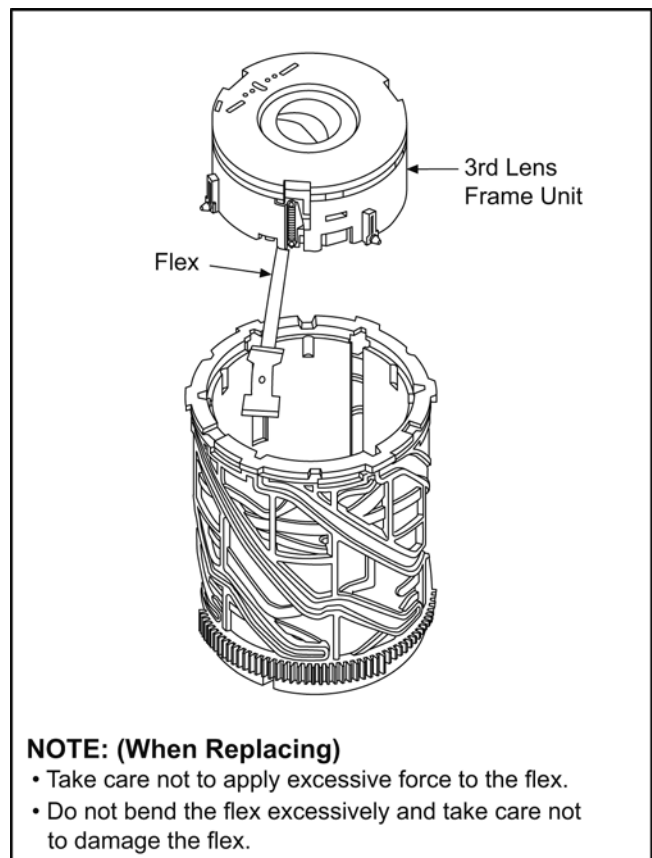


9.4.6. Removal of the 3rd Lens Frame Unit

1. Rotate the Middle Frame Unit counterclockwise fully.
(Until the 3rd Lens Frame Unit stops.)
2. Push up the 3rd Lens Frame Unit fully from the lower side.
3. Rotate the Middle Frame Unit clockwise until the 3rd Lens Frame Unit is automatically little lifted and sounds "click", then lift up the 3rd Lens Frame Unit.

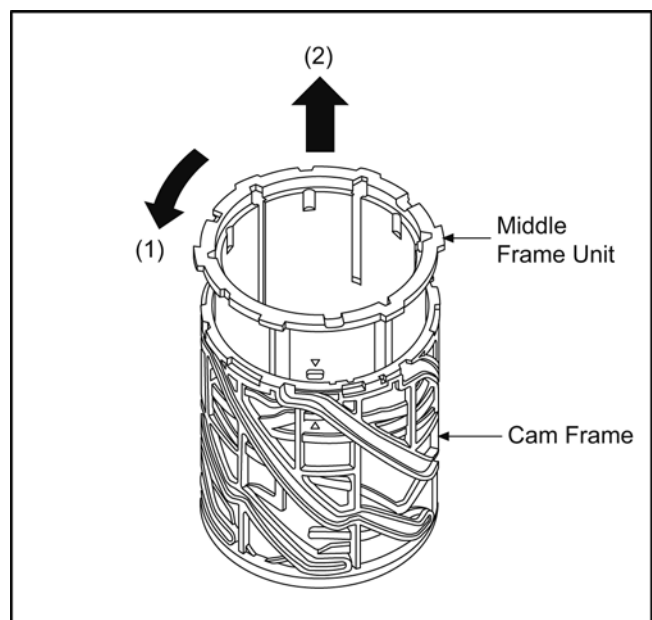


4. Remove the 3rd Lens Frame Unit with care to flex.



9.4.7. Removal of the Middle Frame Unit

1. Rotate the Middle Frame Unit fully counterclockwise, and remove it upward.



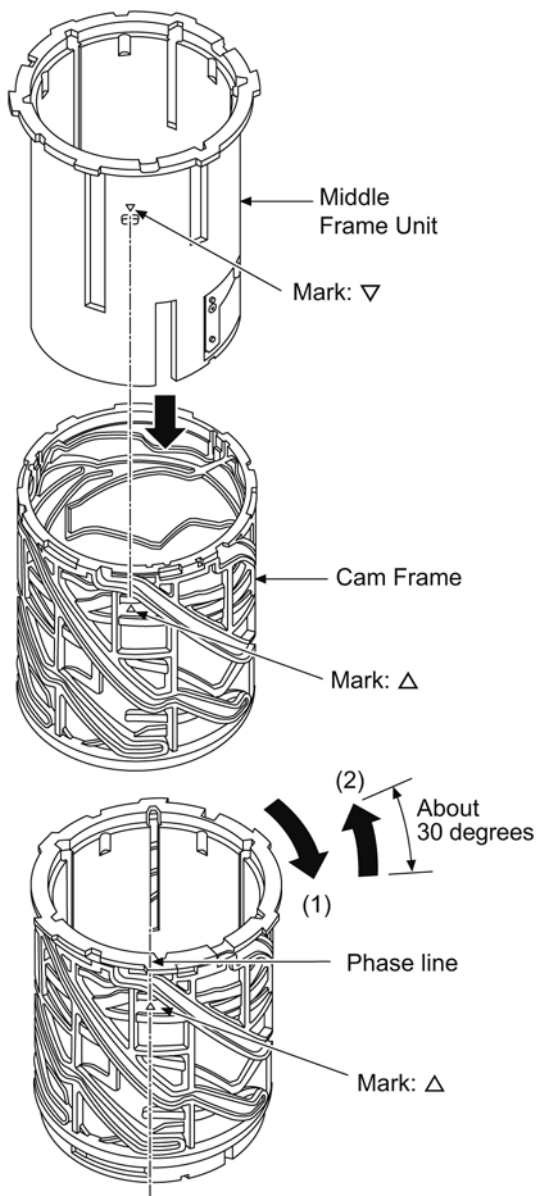
9.5. Assembly Procedure for the Lens (Phase Alignment)

Precaution:

1. Do not remove the MOS Unit when disassembling or reassembling the lens in order to maintain it clean.
When remove it, refer to item "9.6."
2. Keep dust or dirt away from the lens.
To remove dirt or dust from the lens, blow with dry air.
3. Do not touch the lens surface.
4. Use lens cleaning KIT (VFK1900BK).

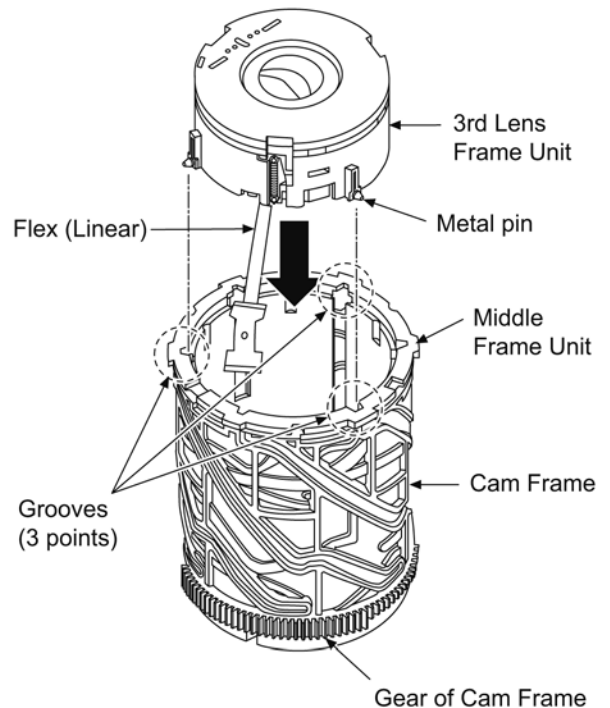
9.5.1. Assembly of the Middle Frame Unit and Cam Frame

1. Align the mark "▽" of Middle Frame Unit and mark "△" of Cam Frame, and then insert Middle Frame Unit into Cam Frame.
2. Rotate the Middle Frame Unit clockwise fully, then put back until the phase line of Middle Frame Unit and the mark "△" of Cam Frame has aligned. (About 30 degrees)

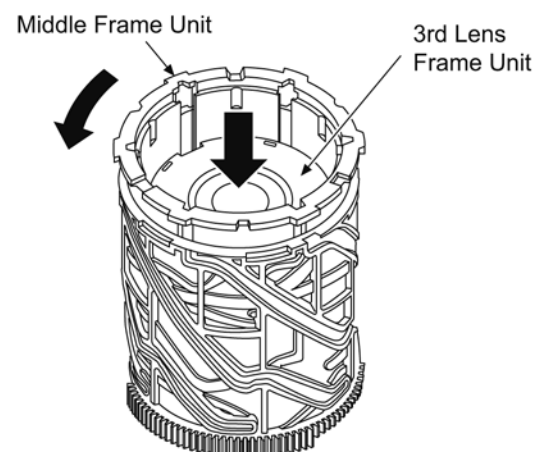


9.5.2. Assembly of the 3rd Lens Frame Unit

1. Align the Middle Frame Unit and 3 grooves of Cam Frame (Phase Alignment).
2. Keep the flex (linear) passed through the Middle Frame Unit.
3. In a state in which the gear of Cam Frame comes to the front, insert the metal pin of the 3rd Lens Frame Unit into the groove of Middle Frame Unit.



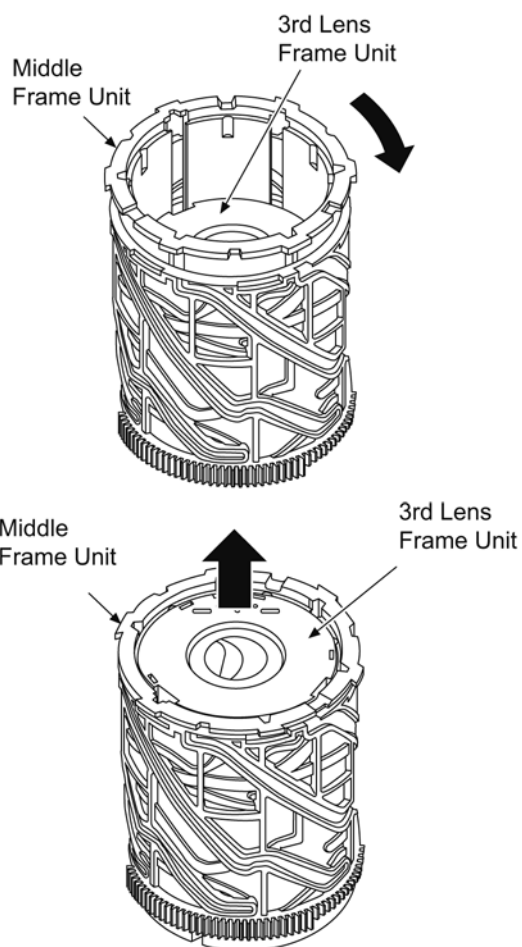
4. Rotate the Middle Frame Unit counterclockwise until the moves of 3rd Lens Frame Unit is stopped, then push down the 3rd Lens Frame Unit.



NOTE: (When Replacing)

- Take care not to apply excessive force to the flex.
- Do not bend the flex excessively and take care not to damage the flex.

5. Rotate the Middle Frame Unit clockwise fully.
(3rd Lens Frame Unit sunken is lifted.)

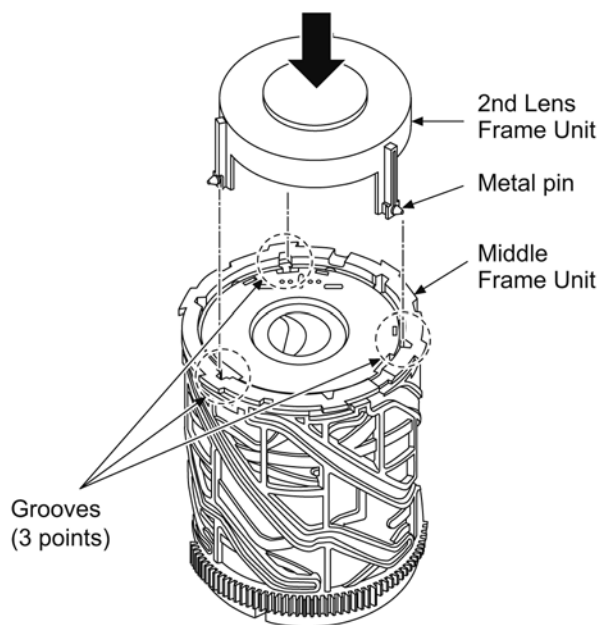


NOTE: (When Replacing)

- Take care not to put fingerprint on the lens.

9.5.3. Assembly of the 2nd Lens Frame Unit

1. In a state in which the gear of Cam Frame comes to the front, insert the metal pin of the 2nd Lens Frame Unit into the groove of Middle Frame Unit.

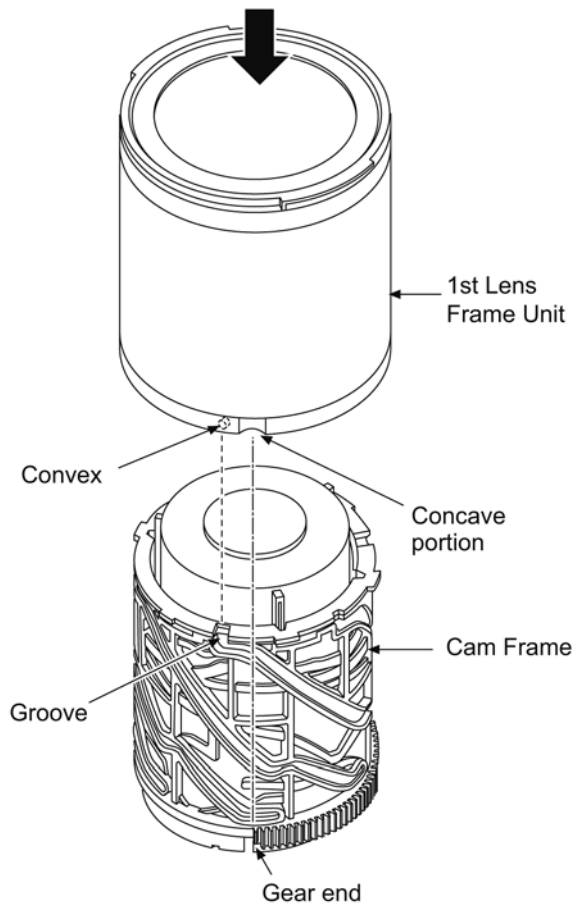


NOTE: (When Replacing)

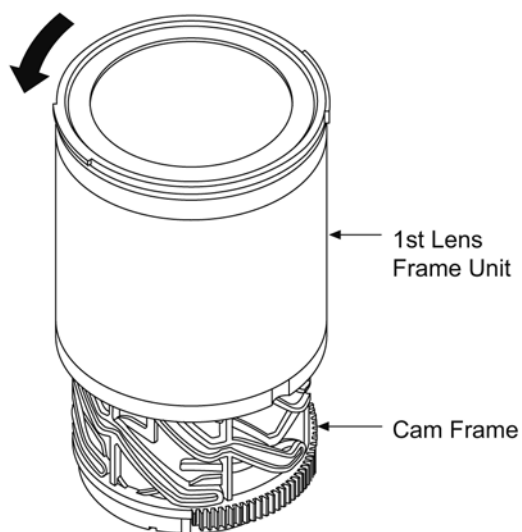
- Take care not to put fingerprint on the lens.

9.5.4. Assembly of the 1st Lens Frame Unit

1. Align the concave portion of 1st Lens Frame Unit and the gear end of Cam Frame.
Then align the convex of 1st Lens Frame Unit and the groove of Cam Frame, and insert 1st Lens Frame Unit.



2. Rotate the 1st Lens Frame Unit counterclockwise fully.

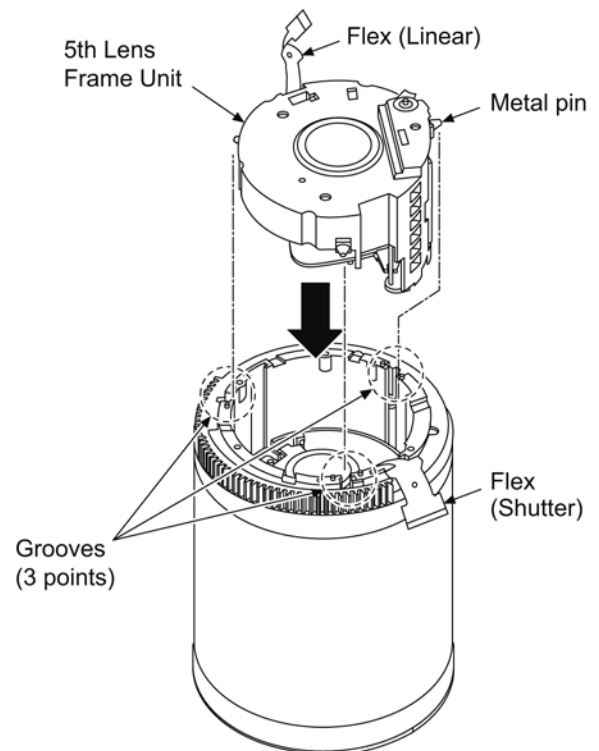


NOTE: (When Replacing)

- Take care not to put fingerprint on the lens.

9.5.5. Assembly of the 5th Lens Frame Unit

1. In a state in which the gear of Cam Frame comes to the front, insert the metal pin of the 5th Lens Frame Unit into the groove of Middle Frame Unit.

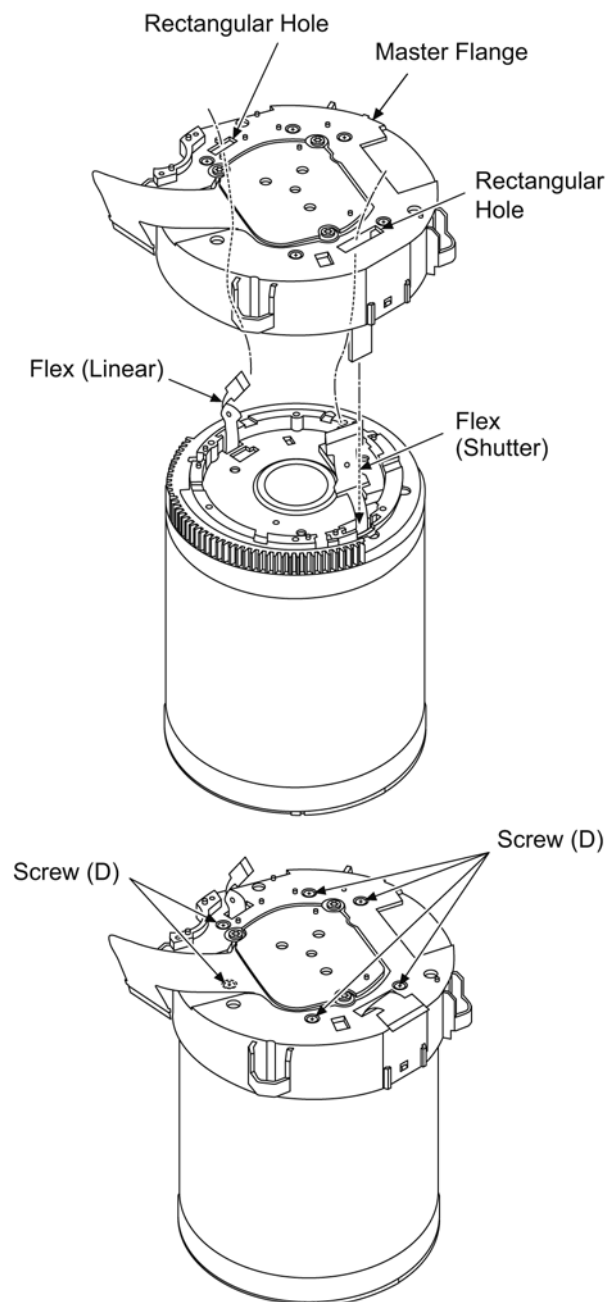


NOTE: (When Replacing)

- Take care not to put fingerprint on the lens.
- Take care not to pinch the flex.

9.5.6. Assembly of the Master Flange

1. Put the 2 flexes (for shutter and linear) out through each rectangular hole.
2. Install the Master Flange.
3. Tighten the 6 Screws (D).



NOTE: (When Replacing)

- Take care not to pinch the flex.
- Do not bend the flex excessively and take care not to damage the flex.
- Take care not to put fingerprint on the lens.

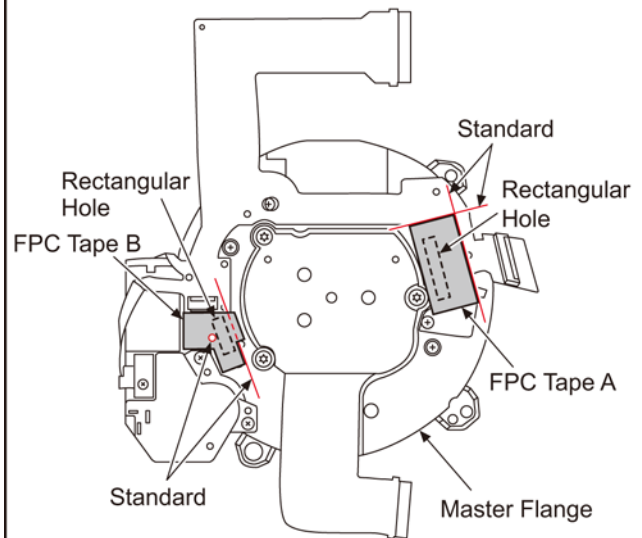
Screw (D)



SILVER

NOTE: (When Replacing)

- When pasting the FPC Tape A and B, make sure the paste standard.
- When pasting the FPC Tape A and B, cover the rectangular hole of Master Flange.



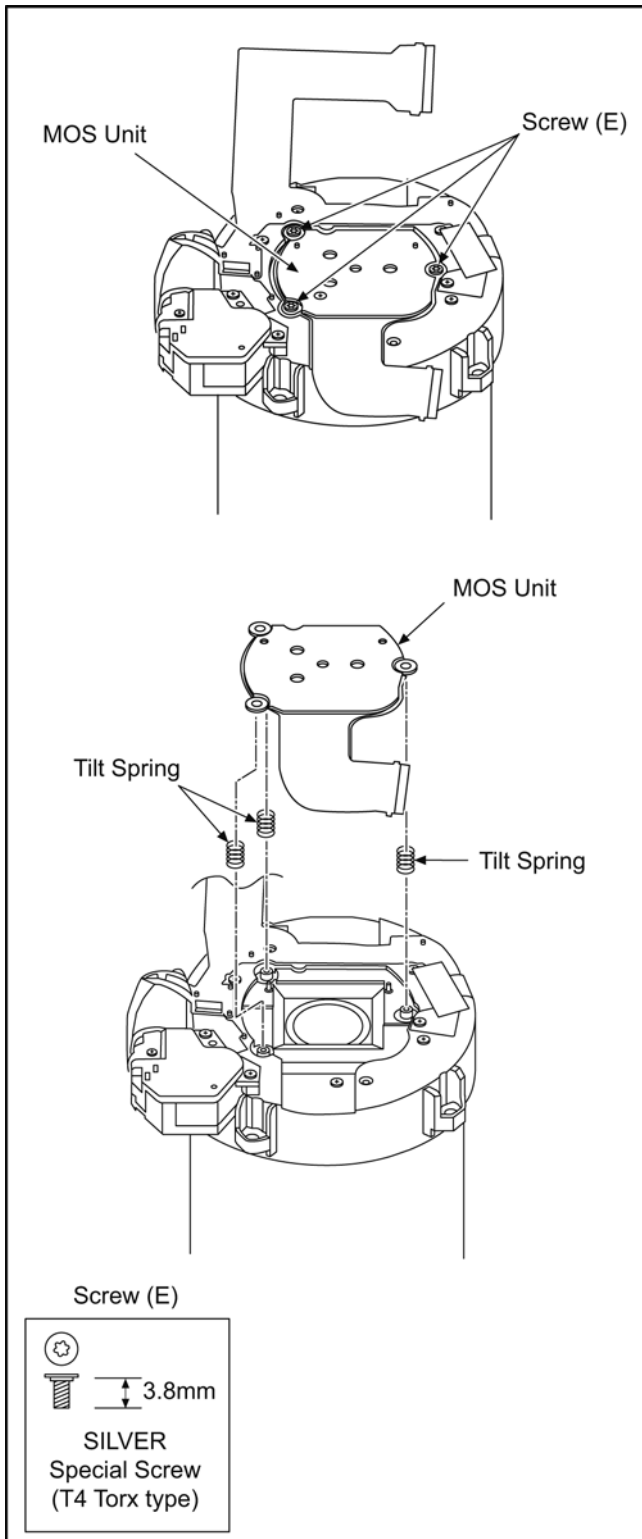
9.6. Removal of the MOS Unit

When remove the MOS Unit once (the screw (E) is loosened even a little), the optical tilt adjustment is required.

When loosen the screw (E), necessary the optical tilt adjustment at the end of assembling. (Refer to item "10.3.2.")

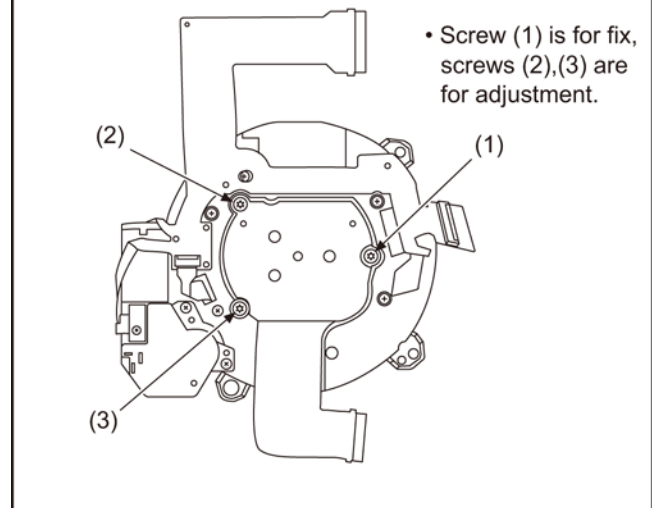
To prevent the MOS Unit from catching the dust and dirt, do not remove the MOS Unit except for replacing.

1. Unscrew the 3 screws (E).
2. Remove the MOS Unit.
3. Remove the 3 Tilt Springs.



NOTE: (When Installing)

- Take new screw.
(Don't reuse the screw)
- Tighten the 3 special screws according to the following.
* Set the bit of optical tilt adjustment driver (RFKZ0569) to the torque driver (RFKZ0542).
[Screw order]: (1)→(2)→(3).
[Screw torque]: $10 \pm 1 \text{ N}\cdot\text{cm}$.
- Be sure to execute the optical tilt adjustment with the screw (2) and (3).
- After the adjustment is finished, the screw locking glue is unnecessary.



10 Measurements and Adjustments

10.1. Introduction

When servicing this unit, make sure to perform the adjustments necessary based on the part (s) replaced.

Before disassembling the unit, it is recommended to back up the camera data stored in Flash-ROM as a data file.

NOTE: (When replacing the Lens unit, Master Flange Unit and MOS Unit)

- When the MOS Unit is unavoidably removed for Lens Unit, Master Flange Unit and MOS Unit replaced, an optical tilt adjustment is necessary after parts are exchanged.
- The adjustment software (DSC_Tilt) is necessary to execute an optical tilt adjustment.
- The adjustment software “DSC_Tilt” is available at “TSN Website”.

NOTE: (When replacing the Main P.C.B.)

- Number of necessary adjustment items decreases by copying the backup data to new Main P.C.B. when adjustment data in old Main P.C.B. can be read by ROM_BACKUP “DSC→SD” in “10.2.2. Flash-ROM Data Backup”.
For more details, please refer an item “Main P.C.B. (to which the backup data was copied)” in the table of “10.3.2. Adjustment Specifications”.

10.2. Before Disassembling the unit

10.2.1. Initial Setting Release

The cameras specification are initially set in accordance with model suffix (such as EB/EG/GN and so on.).

Unless the initial setting is not released, an automatic alignment software in the camera is not able to be executed when the alignment is carried out.

Note:

- The initial setting should be again done after completing the alignment. Otherwise, the camera may not work properly.
Therefore as a warning, the camera display a warning symbol “!” on the LCD monitor every time the camera is turned off.
Refer to the procedure described in “3.5.2. Initial Settings” for details.

[How to Release the camera initial setting]

- Preparation:
Attach the fully charged Battery, and insert the memory card (32MB or more).
Remove the lens cap.
- **Step 1. The temporary cancellation of “Initial Settings”:**
Set the [Mode dial] to “[P](Program AE mode)” and [Drive mode dial] to “Single”.
While pressing [DISP.] button and [AF/AE LOCK] button simultaneously, turn the power on.
- **Step 2. The cancellation of “Initial Settings”:**
Press the [Playback] button in order to enter the [Playback] mode.
Press [AF/AE LOCK] button and “[UP] of Cursor buttons” simultaneously, then turn the power off.

The LCD displays the “!” mark before the unit powers down.



10.2.2. Flash-ROM Data Backup

Number of necessary adjustment items decreases by copying the backup data to new Main P.C.B. when adjustment data in old Main P.C.B. is usually read by ROM_BACKUP "DSC→SD".

It is recommended to backup the Flash-ROM data as the way of return when trouble occurs before disassembling the unit depending on each case.

[ROM_BACKUP (Method of Non-PC backup)]

1. Insert the memory card into the camera.
2. Set the camera to "Temporary cancellation of the initial settings".
3. Select the "SETUP" menu.

From the "SETUP" menu, select "ROM_BACKUP".

NOTE:

This item is not listed on the customer's "SETUP" menu.

4. When this "ROM_BACKUP" item is selected, the following submenus are displayed.

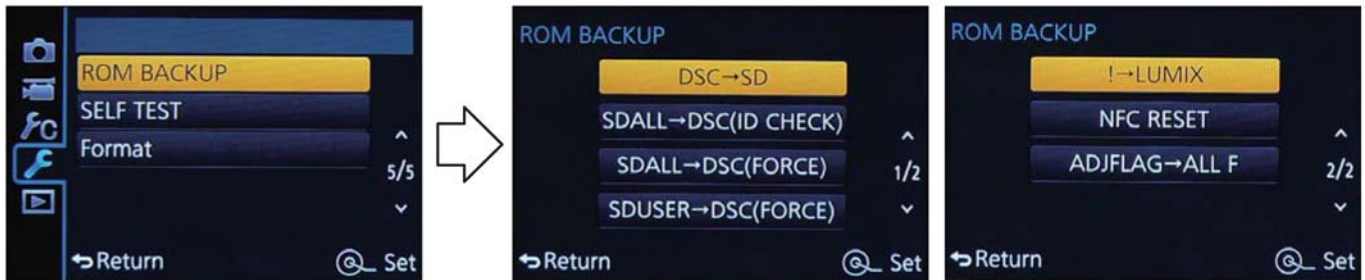


Fig. 2-1

Item	Function	Details
DSC → SD	Save all the DSC's Flash-ROM data to Memory Card	<ul style="list-style-type: none"> DSC's Flash-ROM data is saved to the Memory Card as a data file. (DATA BACKUP) - File location: ROOT DIRECTORY in Memory Card. - File Name: <ul style="list-style-type: none"> 1) User Setup Information data:<Model No.>U.TXT [Depending on the model, more than one file may be generated (e.g. <Model No.>U.TXT and <Model No.>U3.TXT).] 2) Electrical Adjustment data:<Model No.>F.TXT [Depending on the model, more than one file may be generated (e.g. <Model No.>F.TXT and <Model No.>F3.TXT).] - If the concerned file already exists, "OVERWRITE?" message is displayed.
SDALL → DSC (ID CHECK)	Write the all data to DSC's Flash-ROM from Memory Card	<ul style="list-style-type: none"> The backup data stored in the Memory Card is transferred to DSC unit. - ID CHECK: When the model ID is different, data is not transferred. - FORCE: Even if the model ID is different, data is transferred. * If the Main P.C.B. is replaced, select "SDALL→DSC(FORCE)".
SDALL → DSC (FORCE)	Write the all data to DSC's Flash-ROM from Memory Card	
SDUSER → DSC (FORCE)	Only "User setup information" is written from the saved file in the Memory Card to DSC's Flash-ROM	<ul style="list-style-type: none"> Only the user's "setup" setting condition is transferred to DSC unit. FORCE: Even if the model ID is different, the data is not transferred.
! → LUMIX	Shipping set without initializing "User setup information"	<ul style="list-style-type: none"> Initial setting is executed without initializing the user's set up setting condition. * The initial setting must be performed while the Self-timer LED is blinking. * The picture data stored in the built-in memory of the DSC is not erased, with this operation.
ADJFLAG → ALL F	Set all adjustment flags completion	<ul style="list-style-type: none"> Status of the all adjustment flags are changed to "F" (completion).

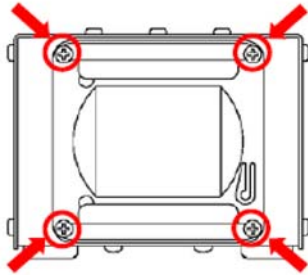
10.2.3. About Light Box

How to remove the Front Hood

In order to utilize maximum of the diffusing surface of light box, some adjustment items need the distance between diffusing surface of light box and camera body becomes several cent-meters.

Before the adjustments, remove the front hood of light box following steps below.

[For RFKZ0523 Light Box]



Unscrew the 4 screws, then remove the front hood.

10.3. Details of Electrical Adjustment

10.3.1. How to execute the Electrical Adjustment

It is not necessary to connect the camera to a PC to perform adjustments.

"Flag reset operation" and "Initial setting operation" are required when carrying out the alignment, follow the procedure below.

10.3.1.1. Startup Electrical Adjustment mode

1. Release the initial settings.
2. Insert a recordable memory card (32MB or more).
(Without a memory card, the automatic adjustment can not executed.)
3. Procedure to set the camera into adjustment mode:
 - a. Set the mode dial to "[P](Program AE mode)".
 - b. Turn the Power on pressing [Q.MENU/Fn3] button, [(Delete/Cancel)/Fn4] button and [Motion picture] button simultaneously.
LCD monitor displays "SERVICE MODE". (Refer to Fig. 3-1)

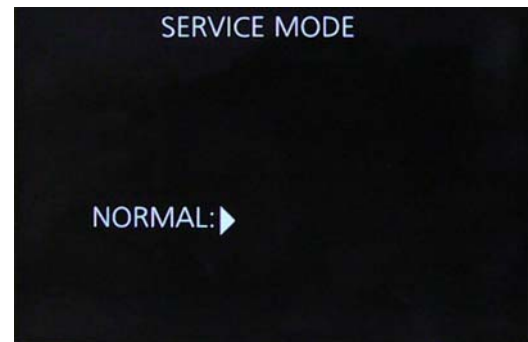


Fig. 3-1

10.3.1.2. Status Adjustment Flag Setting

Reset (Not yet adjusted) the status flag condition.

1. After pressing the [DISP.] button, the LCD monitor displays the Flag status screen. (Refer to Fig.3-2)
2. Select item by pressing the Cursor buttons. (Gray cursor is moved accordingly.)
3. Press the [(Delete/Cancel)/Fn4] button.

NOTE:

The selected item's flag has been changed from "F (green)" to "0 (yellow)".

*Flag conditions:

F (green)

means that the alignment has been completed and the status flag condition is set. In this case, the flag condition should be reset, if you try to carry out the automatic alignment.

0 (yellow)

means that the alignment has been not "completed" and the status flag condition is "reset". In this case, automatic alignment is available.

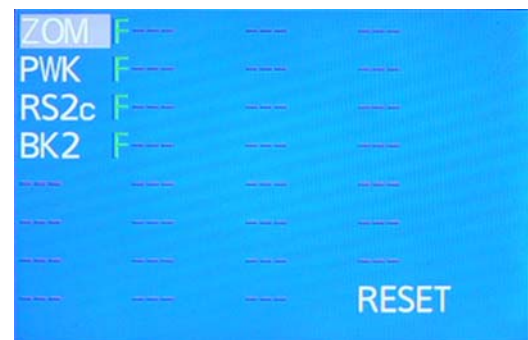
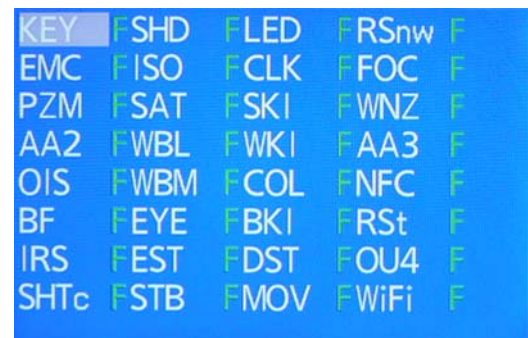


Fig. 3-2

- In case of setting the status flag into set condition again without completion of the alignment, the status flag should be UNDO by using ROM BACKUP function.

10.3.1.3. Execute Adjustment (In case of “OIS Adjustment”)

1. Perform step “10.3.1.1.” to “10.3.1.2.”, to reset the OIS flag status “F” (Set) to “0” (Reset)
2. Press [DISP.] button after Flag reset.
OIS Adjustment screen is displayed on the LCD panel.
(Refer to Fig.3-3)
3. Press the [Shutter] button.
The adjustment will start automatically.



Fig. 3-3

4. When the adjustment is completed successfully, adjustment report menu appears with Green OK on the LCD monitor. (Refer to Fig.3-4)

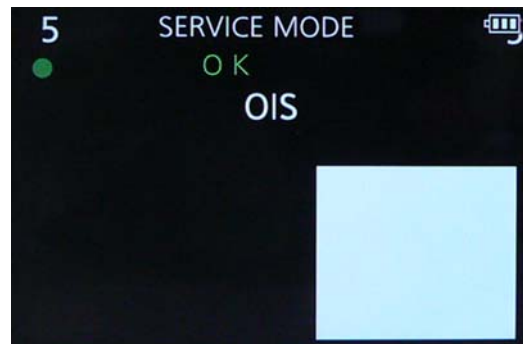


Fig. 3-4

10.3.1.4. Attention point during Adjustment

1. Step “10.3.1.3.” procedure shows OIS adjustment as an example. To perform the adjustment, refer to the “10.3.2. Adjustment Specifications” table which shows key point for each adjustment.
2. Do not move the light box, the camera or the chart while adjusting. If one of these is moved accidentally, start the adjustment again.
3. Do not press any buttons/keys until the default menu (Refer to Fig.3-5) is displayed on the LCD monitor. Otherwise, adjustment data may not be stored properly.
4. If the adjustment is interrupted accidentally, the alignment data may not be properly saved in the Flash-ROM.

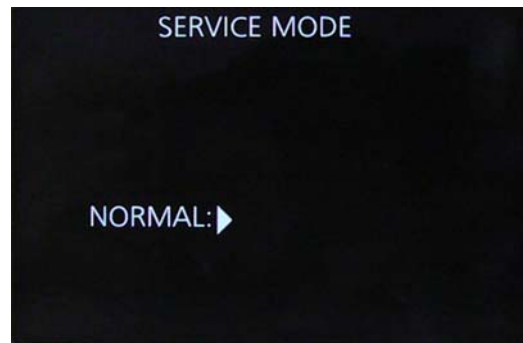


Fig. 3-5

10.3.1.5. Finalizing the Adjustment

1. Several adjustment flags can be reset (“F” into “0”) at the same time. In this case, when the adjustment has been completed, the screen will change showing the adjustment for the next item until all reset items are completed.
Also, when the [Shutter] button is pressed, the screen jump to the next adjustment item.
2. To cancel the adjustment mode while in the process of performing the adjustment, follow this procedures.
3. Operate the following, when escaping the Electrical Adjustment mode on the way.
 - (1) Press “[DISP.] button”.
 - (2) Press “[RIGHT] of Cursor buttons”.

NOTE:

- If adjustment is cancelled with above procedure, adjustment is not completed. Make sure to adjust it later.

10.3.2. Adjustment Specifications

The following matrix table shows the relation between the replaced part and the Necessary Adjustment.

When a part is replaced, make sure to perform the necessary adjustment(s) in the order indicated.

The table below shows all the information necessary to perform each adjustment.

Adjustment order	Adjustment Item	FLAG	Purpose	Replacing Parts									JIG/TOOLS	SETUP	How to Operate
				MAIN P.C.B./Flash-ROM/VENUS ENGINE	MAIN P.C.B. (When written the Backup data)	Lens part (Excluding Image Sensor)	Image Sensor	Microphone	Flash Part	Electronic Level (IC6201)	NFC-IC(IC6301)	Rear Case Unit			
1	Optical Tilt	-	Adjustment of MOS Unit installation angle to the Lens	-	-	○	○	-	-	-	-	-	NOTE: It is necessary to use the "DSC_Tilt" software to allow the "Optical tilt adjustment". The Adjustment software "DSC_Tilt" is available at "TSN Website". • Optical Tilt Adjustment Driver RFKZ0569 : T4 • Optical Tilt Adjustment Chart RFKZ0570 • Camera Stand RFKZ0333J • Torque Driver RFKZ0542 • The screw locking glue is unnecessary, after adjustment.		
2	Venus Zoom	PZM	Venus Zoom Inspection	○	○	-	-	-	-	-	-	-	NONE	NONE	1) Change the flag into the "0", and then proceed to the adjustment mode. 2) Press the shutter button fully. (When a result is OK, it is the completion of an inspection.)
3	OIS sensor	OIS	OIS sensor output level adjustment	○	-	○	○	-	-	-	-	-	NONE	NONE	1) Change the flag into the "0", and then proceed to the adjustment mode. 2) Press the shutter button fully. (When a result is OK, it is the completion of an inspection.)
4	Backfocus / GYRO	BF	To have the focus tracking curve be appropriate shape and GYRO sensor adjustment	○	○	○	○ *1	-	-	○	-	-	• Collimator RFKZ0422	1) Set the camera in front of collimator so that the distance between collimator and camera body becomes 8 cm as shown in Fig.A. (It is not distance between lens barrel top and collimator.) • Set the camera on a tripod to prevent it from falling down.	1) Change the flag into the "0", and then proceed to the adjustment mode. 2) Set the camera angle so that the star chart is displayed to the center, and press the shutter button fully. (When a result is OK, it is the completion of an inspection.)
5	Iris	IRS	Iris adjustment	○	-	○	○	-	-	-	-	-	• Light Box RFKZ0523	1) Set the camera in front of light box so that the distance between diffusing surface of light box and camera body becomes 4.5 cm as shown in Fig.B. (It is not distance between lens barrel top and diffusing surface of light box.)	1) Change the flag into the "0", and then proceed to the adjustment mode. 2) Set the camera angle so that the diffusing surface of light box is displayed on the full of LCD monitor, and press the shutter button fully. (When a result is OK, it is the completion of an inspection.)
6	Shutter	SHTc	Shutter speed adjustment	○	-	○	○	-	-	-	-	-	• Light Box RFKZ0523	1) Set the camera in front of light box so that the distance between diffusing surface of light box and camera body becomes 4.5 cm as shown in Fig.B. (It is not distance between lens barrel top and diffusing surface of light box.)	1) Change the flag into the "0", and then proceed to the adjustment mode. 2) Set the camera angle so that the diffusing surface of light box is displayed on the center of LCD monitor, and press the shutter button fully. (When a result is OK, it is the completion of an inspection.)
		SHD	Do not use "SHD" adjustment flag for this unit. Use "BK2" adjustment flag, instead.												

Adjustment order	Adjustment Item	FLAG	Purpose	Replacing Parts								JIG/TOOLS	SETUP	How to Operate
				MAIN P.C.B./Flash-ROM/VEHUS ENGINE	MAIN P.C.B. (When written the Backup data)	Lens part (Excluding Image Sensor)	Image Sensor	Microphone	Flash Part	Electronic Level (IC6201)	NFC-IC(IC6301)			
7	Shading Compensation and MOS SENSOR Missing Pixels (Black) *3	BK2	Compensation of Shading and Compensation of MOS SENSOR Missing Pixels (Black)	○	—	○	○ *1	—	—	—	—	—	1) Remove the top case of the light box. And put the top case and the bottom case as shown in the following figure. 2) Set the diffuser and LBB12 filter on the edge of light guide frame. (Refer to Fig(b)) 3) Attach the Camera Lens on the LBB12 filter. (Refer to Fig(a)) * Take care not to occur vignetting. * Set the camera on a tripod to prevent it from falling down.	1) Change the flag into the "0", and then proceed to the adjustment mode. (BK2 flag is 2nd pages.) 2) Press the shutter button fully. → Green ● mark is displayed on LCD. 3) Attach the Camera Lens on the LBB12 filter. And set the camera angle so that the diffusing surface of light box is displayed on the full of LCD monitor, and press the shutter button fully. → The 1st adjustment is executed, and then green ● mark is displayed on LCD. 4) Set the camera in front of LBB12 filter so that the distance between LBB12 filter and camera body becomes 6 cm, and press the shutter button fully. → The lens starts zooming and stops automatically, then green ● mark is displayed on LCD. 5) Attach the Camera Lens on the LBB12 filter. And set the camera angle so that the diffusing surface of light box is displayed on the full of LCD monitor, and press the shutter button fully. → The 2nd adjustment is executed, and then green ● mark is displayed on LCD. 6) Set the camera in front of LBB12 filter so that the distance between LBB12 filter and camera body becomes 8 cm, and press the shutter button fully. → The lens starts zooming and stops automatically, then green ● mark is displayed on LCD. 7) Attach the Camera Lens on the LBB12 filter. And set the camera angle so that the diffusing surface of light box is displayed on the full of LCD monitor, and press the shutter button fully. → The 3rd adjustment is executed. When a result is OK, it is the completion of an inspection.
<div>  <p>① Remove the side 8 screws. (Both left and right side.)</p> </div> <div>  <p>② Rotate the light box at this side.</p> </div> <div>  <p>③ Remove the top case.</p> </div> <div>  <p>④ Rotate the top case. And combine top case and bottom case.</p> </div> <div>  <p>a Shade of screw</p> <p>Standard: * Check the LCD Screen.(especially the left lower) If there are shade of screw which sets the light guide frame on it, reset the position.</p> </div> <div>  <p>b Diffusing surface LBB12 filter</p> <p>Standard: * Put the top case in a vertical position of the bottom case.</p> </div> <div>  <p>c Halogen Lamp</p> <p>Standard: * Adjust the bottom case's position to put the halogen lamp at the center position of the light guide frame. * Left-down side of fig.4.</p> </div>														

Adjustment order	Adjustment Item	FLAG	Purpose	Replacing Parts									JIG/TOOLS	SETUP	How to Operate
				MAIN P.C.B./Flash-ROM/VENUS ENGINE	MAIN P.C.B. (When written the Backup data)	Lens part (Excluding Image Sensor)	Image Sensor	Microphone	Flash Part	Electronic Level (IC6201)	NFC-IC(IC6301)	Rear Case Unit			
8	ISO	ISO	ISO sensitivity adjustment	○	-	○	○	-	-	-	-	-	• Light Box RFKZ0523 • TR Chart SUKZ000006	1) Insert the TR chart into the slot of light box as shown in Fig.D. 2) Set the camera in front of light box so that the distance between diffusing surface of light box and camera body becomes 8 cm as shown in Fig.B. * Be careful not to mistake the direction of TR chart.	1) Change the flag into the "0", and then proceed to the adjustment mode. 2) Set the camera angle so that the TR chart is displayed on the center of LCD monitor, and press the shutter button fully. (When a result is OK, it is the completion of an inspection.)
9	Offset gain	SAT	Setting up the offset gain.	○	-	○	○	-	-	-	-				
10	White balance (Low color temp.)	WBL	Setting up the white in low color temperature	○	-	○	○	-	-	-	-				
11	White balance (High color temp.)	WBM	Setting up the white in high color temperature	○	-	○	○	-	-	-	-				
12	Eye sensor	EYE	Inspecting sensitivity of eye sensor	○	-	-	-	-	-	-	-	○	• Gray Card RFKZ0506	1) Set the camera in front of gray card so that the distance between gray card and eye sensor of camera body becomes 4.5 cm as shown in Fig.C.	1) Change the flag into the "0", and then proceed to the adjustment mode. 2) Set the camera so that the attachment side of eye sensor and center of the gray card is perpendicular, and press the shutter button fully. (When a result is OK, it is the completion of an inspection.)
13	Flash adjustment	STB	Flash adjustment	○	○	-	-	-	○	-	-	-	NONE	NONE	1) Change the flag into the "0", and then proceed to the adjustment mode. 2) Press the shutter button fully. 3) Check that a flash shines. (It is different for every model how many times it shines.) * When a flash does not shine, there is a possibility that the flash unit is out of order. 4) Check a test result. * Results of the tests are usually NG. (When a result is OK, it is the completion of an inspection.) 5) When a result is NG, rewrite STB flag to an adjustment using ADJFLG - ALL F of ROM BACKUP. * The flag "STB" is an item which checks shines operation of a flash automatically at a Manufacturing facility. For this reason, except environment for exclusive use, a result will be NG, but it is no problem if shines operation can be checked visually.
14	MOS sensor Temp. white missing pixels *2	SKI	Registration of the Temp. white missing pixels	○	-	○	○	-	-	-	-	-	NONE	NONE	1) Change the flag into the "0", and then proceed to the adjustment mode. 2) Press the shutter button fully. (When a result is OK, it is the completion of an inspection.)
15	MOS sensor FD white missing pixels *2	WKI	Registration of the FD (floating diffusion) white missing pixels	○	-	○	○ *1	-	-	-	-	-	NONE	NONE	1) Change the flag into the "0", and then proceed to the adjustment mode. 2) Press the shutter button fully. (When a result is OK, it is the completion of an inspection.)
16	Color reproduction inspection and Microphone check	COL	Color reproduction inspection and Microphone check	○	-	○	○	○	-	-	-	-	NONE	NONE	1) Change the flag into the "0", and then proceed to the adjustment mode. 2) Press the shutter button fully. 3) Utter the voice for about 5 seconds into the microphone, just before pushing a shutter release. * Utter the voice at the above the LVF. * Comparatively high voice is Ideal. (Standard:about 1KHz) (When a result is OK, it is the completion of an inspection.)
		BKI	Do not use "BKI" adjustment flag for this unit. Use "BK2" adjustment flag, instead. (In case of most DSC models, the adjustment flag for MOS SENSOR Missing Pixels is "BKI". But, in this model, "BK2" the adjustment flag for MOS SENSOR Missing Pixels.)												

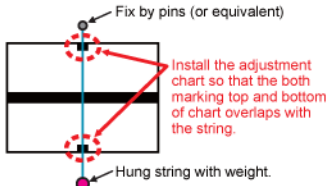
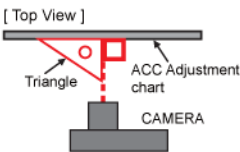

Adjustment order	Adjustment Item	FLAG	Purpose	Replacing Parts							JIG/TOOLS	SETUP	How to Operate
				MAIN P.C.B./Flash-ROM/VEHUS ENGINE	MAIN P.C.B. (When written the Backup data)	Lens part (Excluding Image Sensor)	Image Sensor	Microphone	Flash Part	Electronic Level (IC6201)	NFC-IC(IC6301)	Rear Case Unit	
17	Electronic Level	AA2 + AA3	Electronic Level adjustment	○	○	-	-	-	-	○	-	-	<p>1) Download the "ACC Adjustment chart.pdf" and print it to A3 size (or equivalent size) paper. ("ACC Adjustment chart.pdf" is available at "TSN Website". To download, click on "Support Information from NWBG/VDBG-AVC".)</p> <p>2) Hang in the string with weight, then put the printed ACC adjustment chart on the wall or panel horizontally. (Fig. 1)</p> <p>• After putting the adjustment chart horizontally, remove the string with weight.</p> <p>• Attach the camera to tripod.</p> <p><Setup procedures></p> <p>3-1) Adjust the height of tripod to match the lens of camera and center of the adjustment chart.</p> <p>3-2) Apply the triangle (or equivalent) in center of the chart, then adjust center of the lens of camera on the vertical extension.</p> <p>3-3) Confirm that the chart is displayed on the LCD monitor fully.</p> <p>3-4) Fine adjust the camera angle so that the horizontal bar of chart is displayed horizontally on the LCD monitor and matches the cross guide line of the LCD monitor. (Fig. 2.)</p> <p>1) Change the flag "AA2" and "AA3" into the "0", and then press DISPLAY button and proceed to the adjustment mode.</p> <p><Offset adjustment></p> <p>2) Set the camera to the horizontal position. Then set the distance between adjustment chart and camera body becomes 28 cm. And optical axis of the lens and center of the chart crosses right-angled.(Fig. 3)</p> <p>3) Press the shutter button fully. (When a result is OK, it is the completion of an inspection.)</p> <p><Tilt adjustment></p> <p>4) Rotate the camera to the 90 degrees, so that the grip side down, and press the shutter button.(Fig. 4)</p> <p>5) Set the camera to the horizontal position, and press the shutter button.(Fig. 5)</p> <p>6) Rotate the camera to the 90 degrees, so that the grip side up, and press the shutter button.(Fig. 6)</p> <p>(When a result is OK, it is the completion of an inspection.)</p>
<div> <div>Fig.1: Setting of the adjustment chart horizontally</div> <div>Fig.2: Setting of the camera to the front of adjustment chart</div> <div>Fig.3: [Offset] (Horizontal Position)</div> <div>Fig.4: [Vertical Position] (Grip side Down)</div> <div>Fig.5: [Horizontal Position]</div> <div>Fig.6: [Vertical Position] (Grip side Up)</div> </div> <div>    </div>													
18	NFC Initialization	-	Initial setting of NFC	○	○	-	-	-	-	-	○	-	<p>Perform the following procedures "1)" & "2)", initialize the data of NFC and write to NFC IC.</p> <ul style="list-style-type: none"> • No initial data of NFC function is written in NFC IC and/or repair parts including NFC IC (P.C.B. unit, etc.), therefore, when replacing any of them, make sure to perform NFC initialization and write initial data to NFC IC. • NFC IC may lose the initialization data due to heat during repair process. When replacing NFC IC or P.C.B., make sure to perform NFC initialization and write initial data to NFC IC. <p>< NFC Initialization ></p> <p>1) Reset the NFC operation.</p> <ul style="list-style-type: none"> • After inserting a memory card, release the Initial Settings. • After selecting [MENU]→[Setup]→[ROM BACKUP], perform [NFC RESET]. • [Wi-Fi Setup]→[NFC Operation], and switch [NFC Operation] from [OFF] to [ON]. • When [NFC Operation] is already [ON], once switch to [OFF], then switch to [ON] again. • In case of failure of NFC IC, error message is displayed at this time. Utilize for servicing. <p>2) Perform the "INITIAL SETTINGS".</p> <p>(It is OK in "INITIAL SETTINGS" as usual be performed after repairing.)</p> <ul style="list-style-type: none"> • Complete NFC initial setting needs performing both procedures "1)" & "2)" above. • The default setting of [NFC Operation] is [ON].
	Wi-Fi check	WiFi	Do not use "WiFi" adjustment flag for servicing. This adjustment is for factory procedure. (For confirmation of Wi-Fi function, use the reception level of Wi-Fi access point as usual.)										

Fig.A Distance between Collimator and Camera

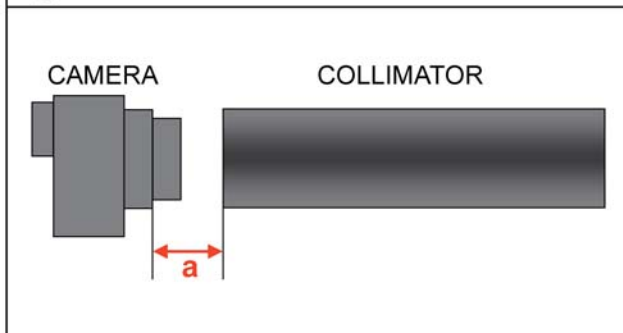


Fig.B Distance between Light Box and Camera

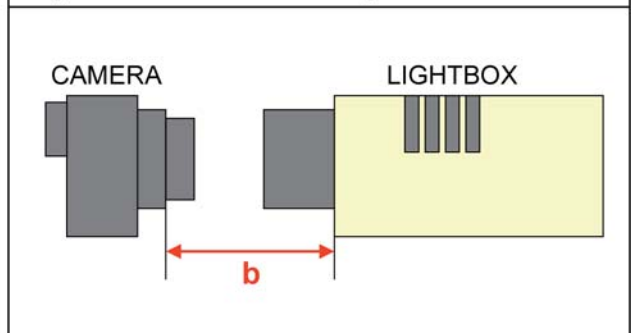


Fig.C Distance between Gray Card and Camera

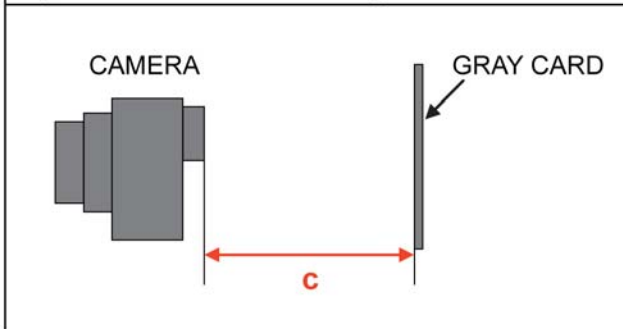
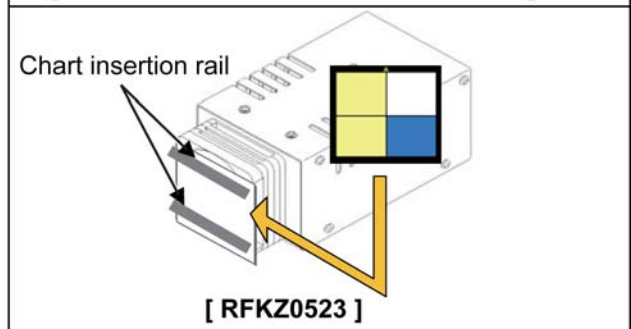


Fig.D How to Insert the TR Chart into Light Box



* 1: This adjustment must be performed not only replacing the MOS Unit, but also simply removing the MOS Unit.

* 2: The pixel that always lights while shaded is called a white wound.

* 3: The pixel that does not light while complete exposed is called a black wound.

IMPORTANT NOTICE: (After replacing the Main P.C.B. (Venus Engine is included) or Venus Engine)

After replacing the Main P.C.B. (Venus Engine is included) or Venus Engine, make sure to perform the "Initial Settings" first, then release the "Initial Settings" in order to proceed the electrical adjustment.

NOTE:

- 1) If electrical adjustment or data re-writing is executed before "Initial Settings", suffix code list is never displayed, and it cannot be chosen suitable suffix code.
- 2) Never remove the battery during initial setting in process.

10.4. After Adjustment

10.4.1. Initial Setting

Since the initial setting has been released to execute the built-in adjustment software, it should be set up again before shipping the camera to the customer.

Refer to the procedure described in “3.5.2. Initial Settings” for details.

[IMPORTANT]

1. The initial setting should be done again after completing the alignment. Otherwise, the camera will not work properly.
Therefore as a warning, the camera display a warning symbol “ ! ” on the LCD monitor every time the camera is turned off.
2. Confirm that status of all adjustment flag show “F”. Even if one of the adjustment flag shows “0”, initial setting programmed is never executed.

11 Maintenance

11.1. Cleaning Lens and LCD Panel

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

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

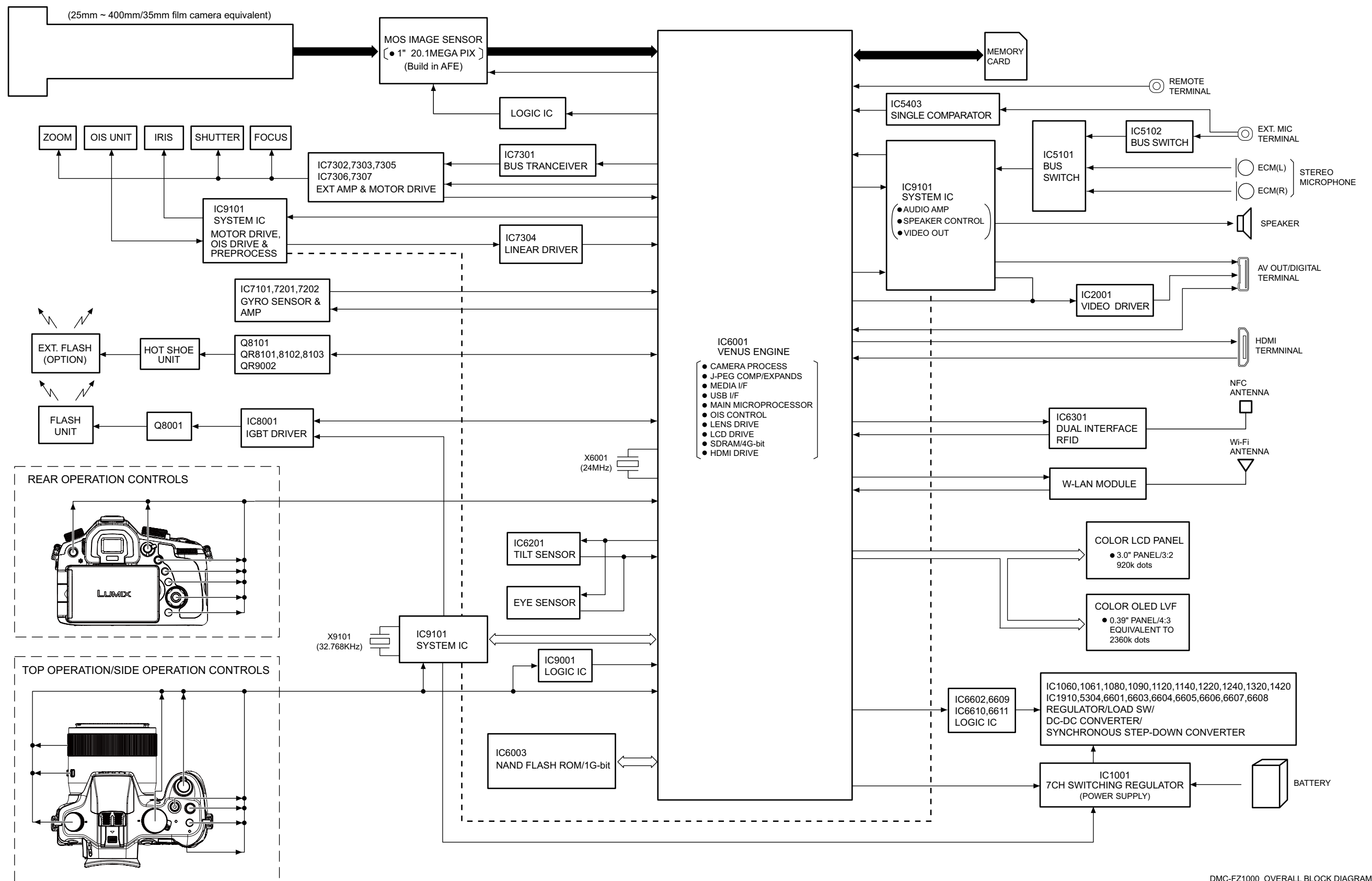
When cleaning the LCD Panel, dampen the lens cleaning paper with lens cleaner, and the gently wipe the its surface.

Note:

The Lens Cleaning Kit ; VFK1900BK (Only supplied as 10 set/Box) is available as Service Aid.

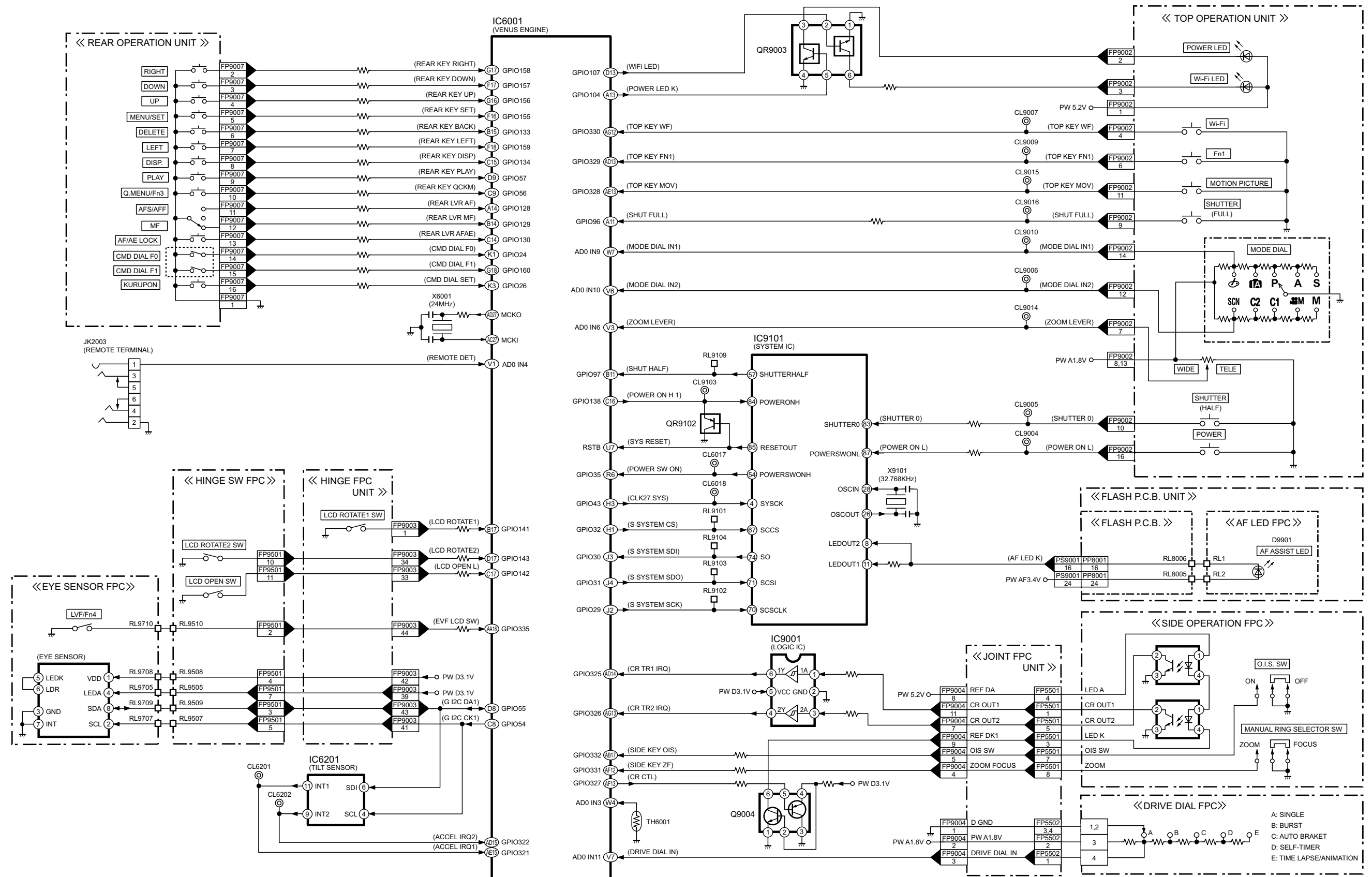
12 Block Diagram

12.1. Overall Block Diagram



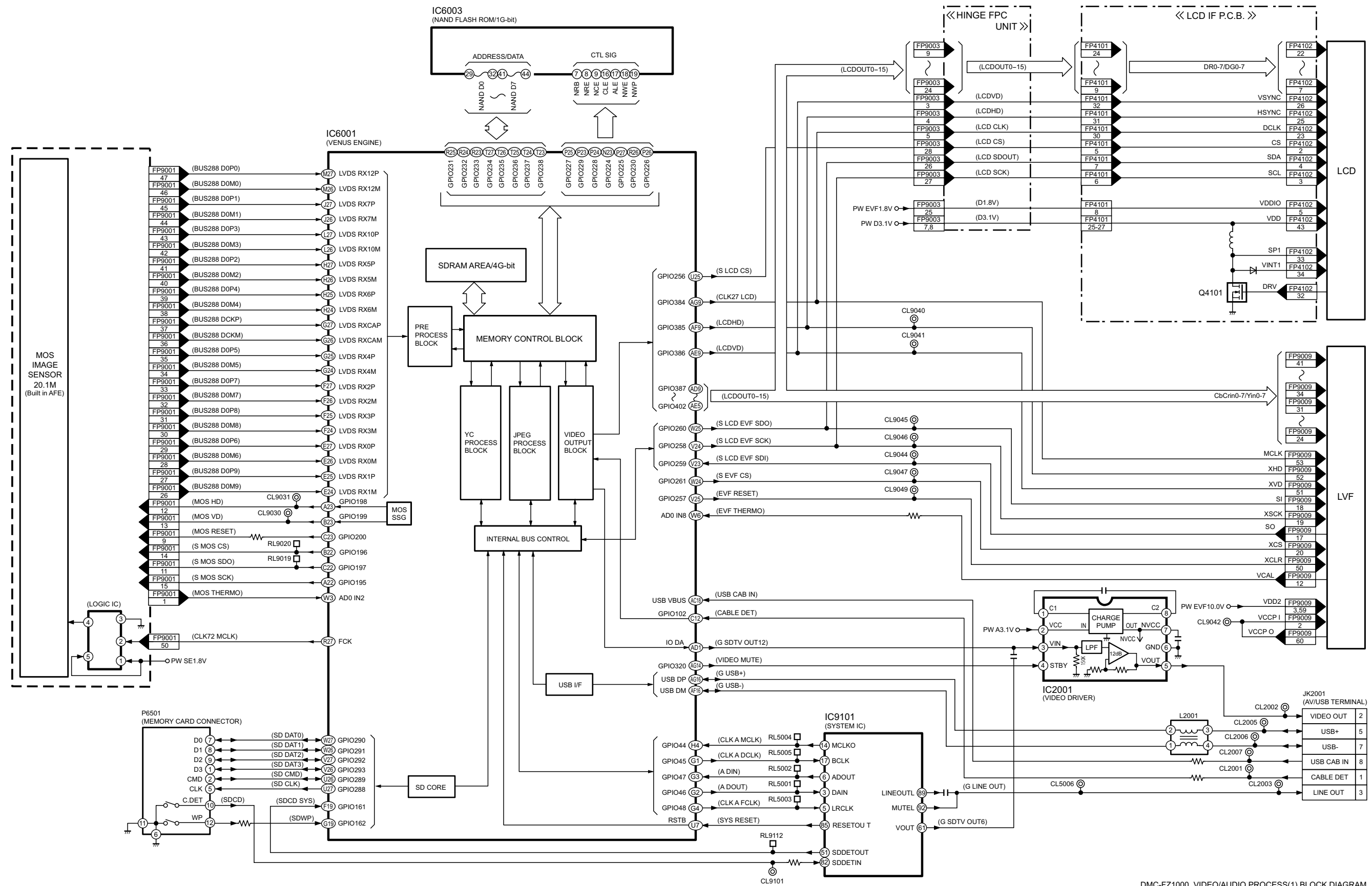
DMC-FZ1000 OVERALL BLOCK DIAGRAM

12.2. System Control Block Diagram



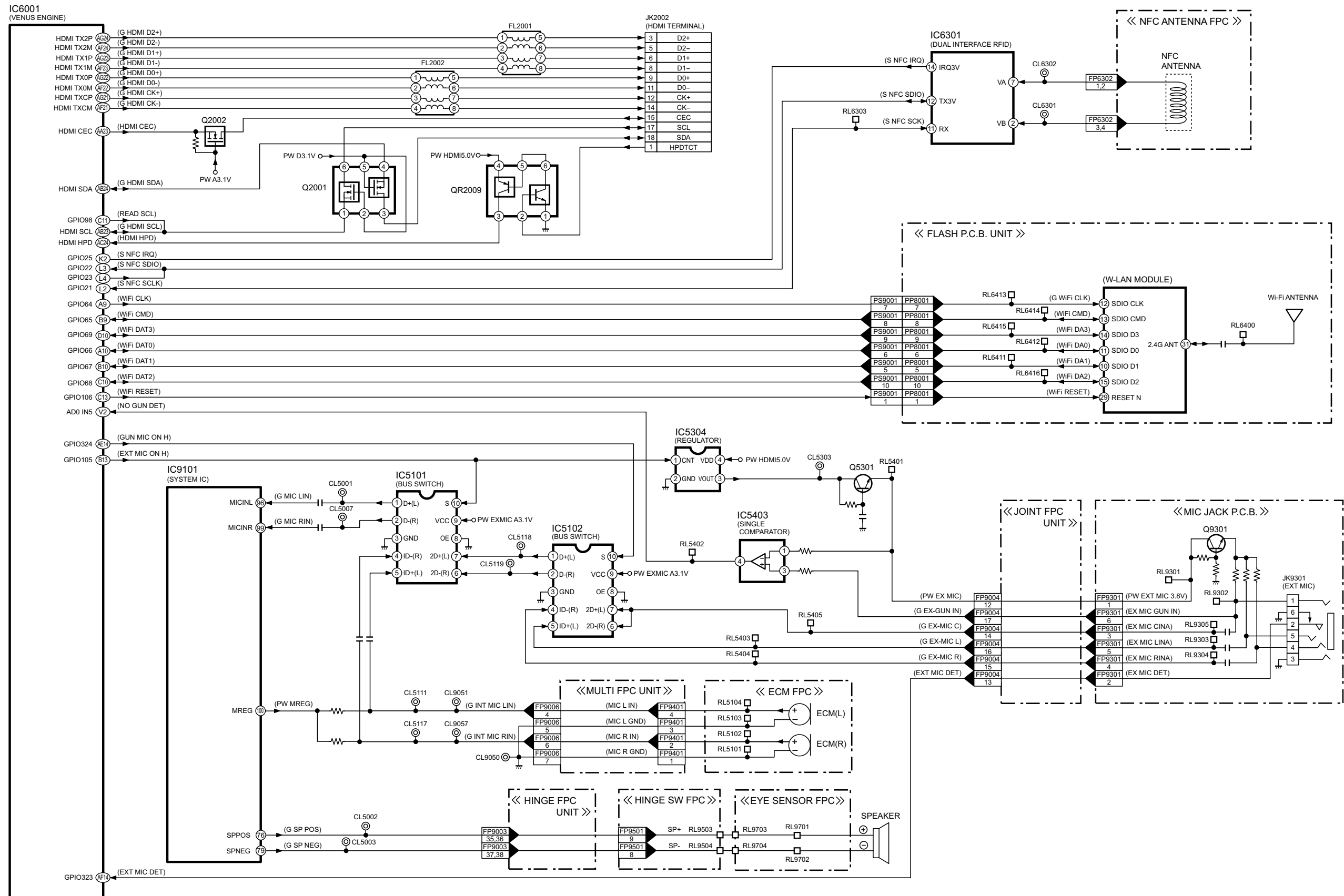
DMC-FZ1000 SYSTEM CONTROL BLOCK DIAGRAM

12.3. Video/Audio Process(1) Block Diagram



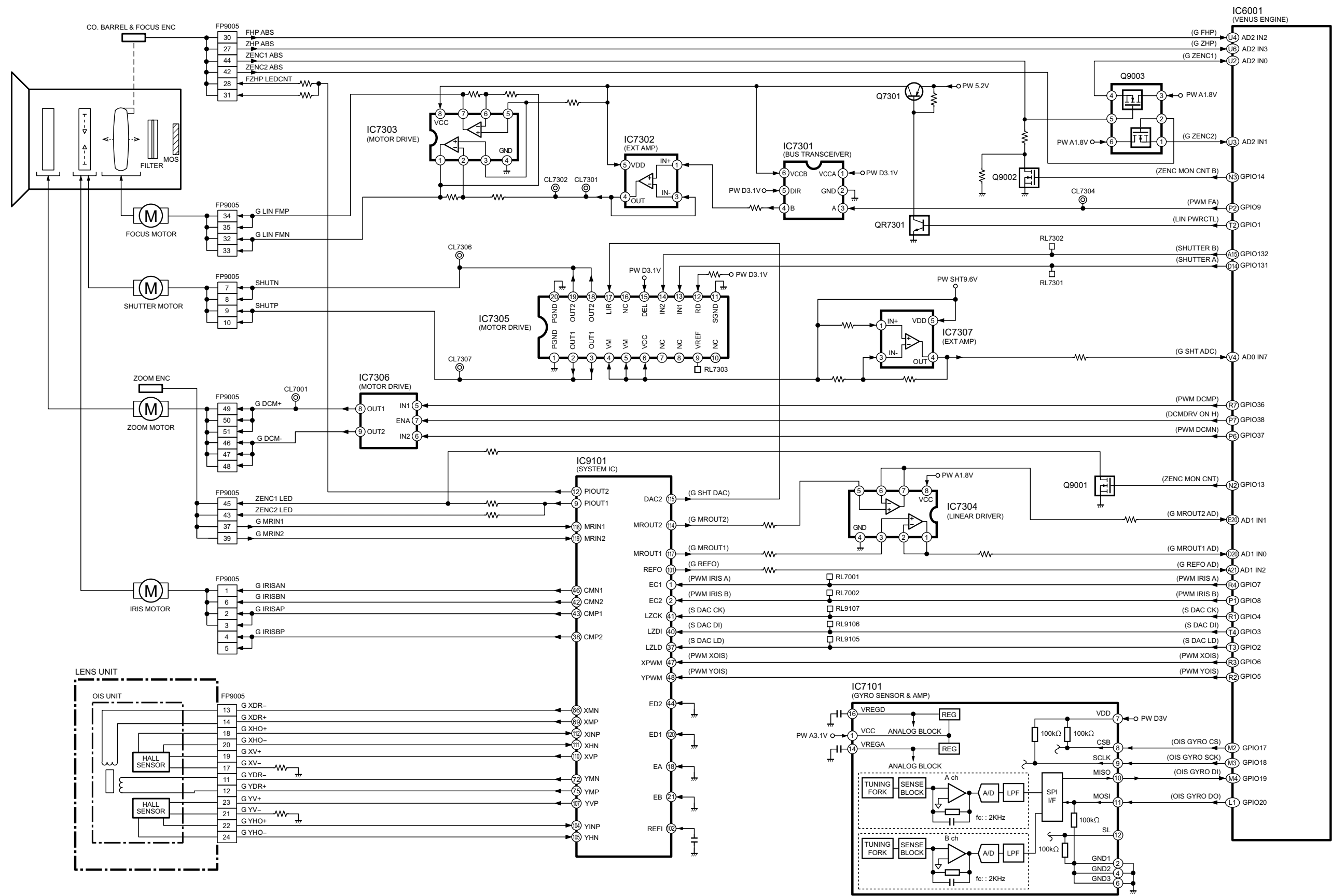
DMC-FZ1000 VIDEO/AUDIO PROCESS(1) BLOCK DIAGRAM

12.4. Video/Audio Process(2) Block Diagram

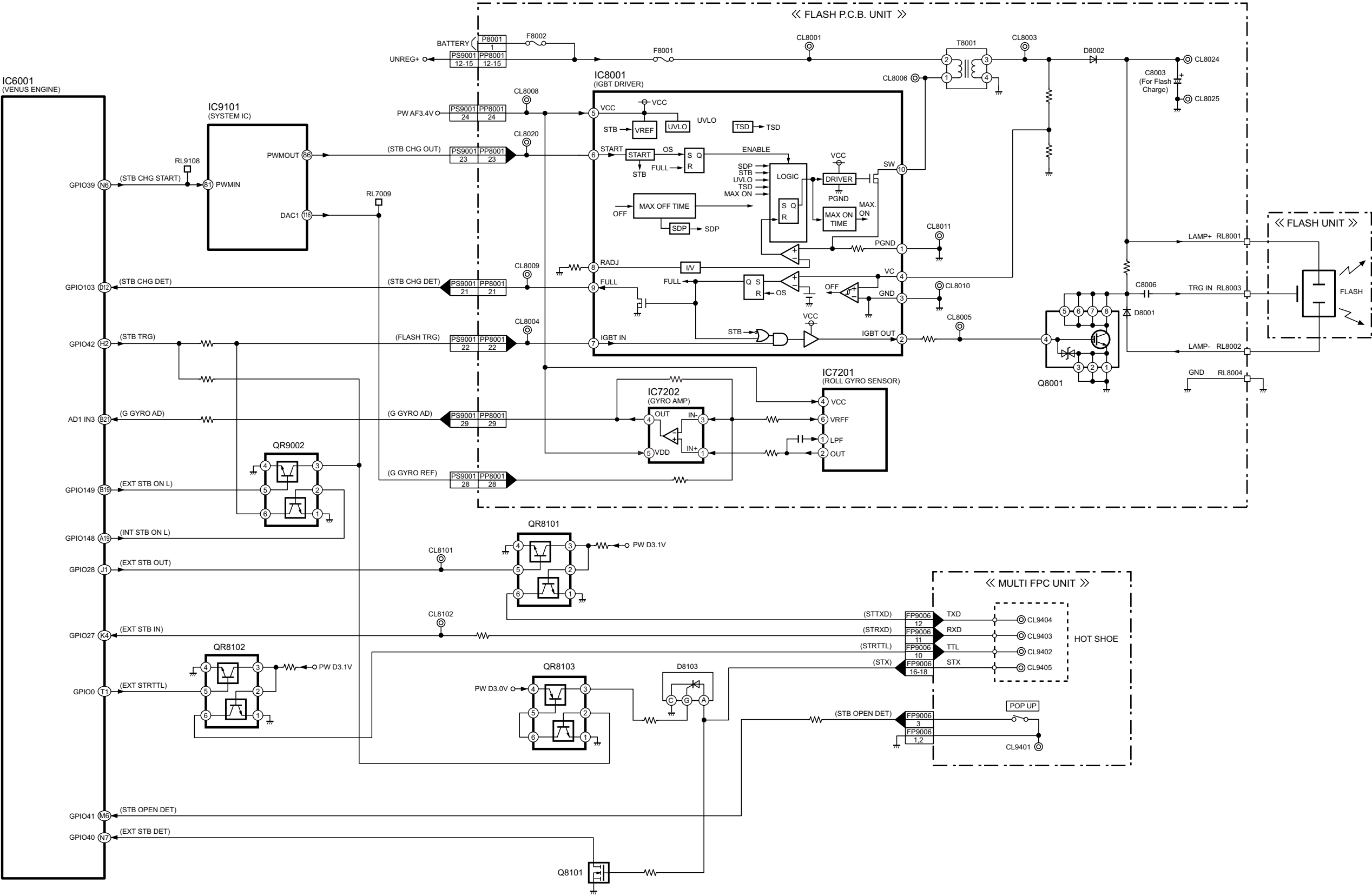


DMC-FZ1000 VIDEO/AUDIO PROCESS(2) BLOCK DIAGRAM

12.5. Lens/Sensor Block Diagram

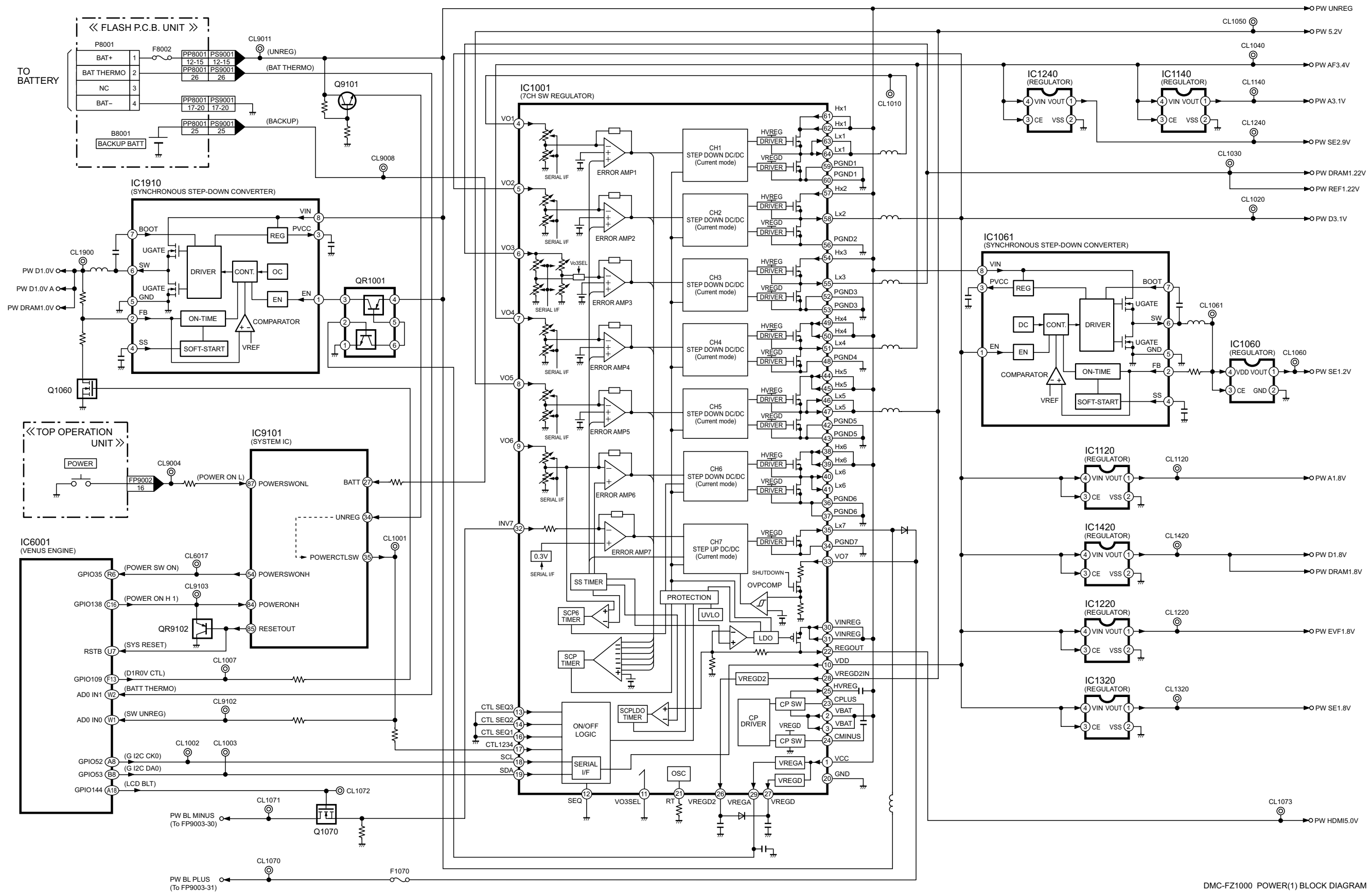


12.6. Flash/Hot Shoe Block Diagram

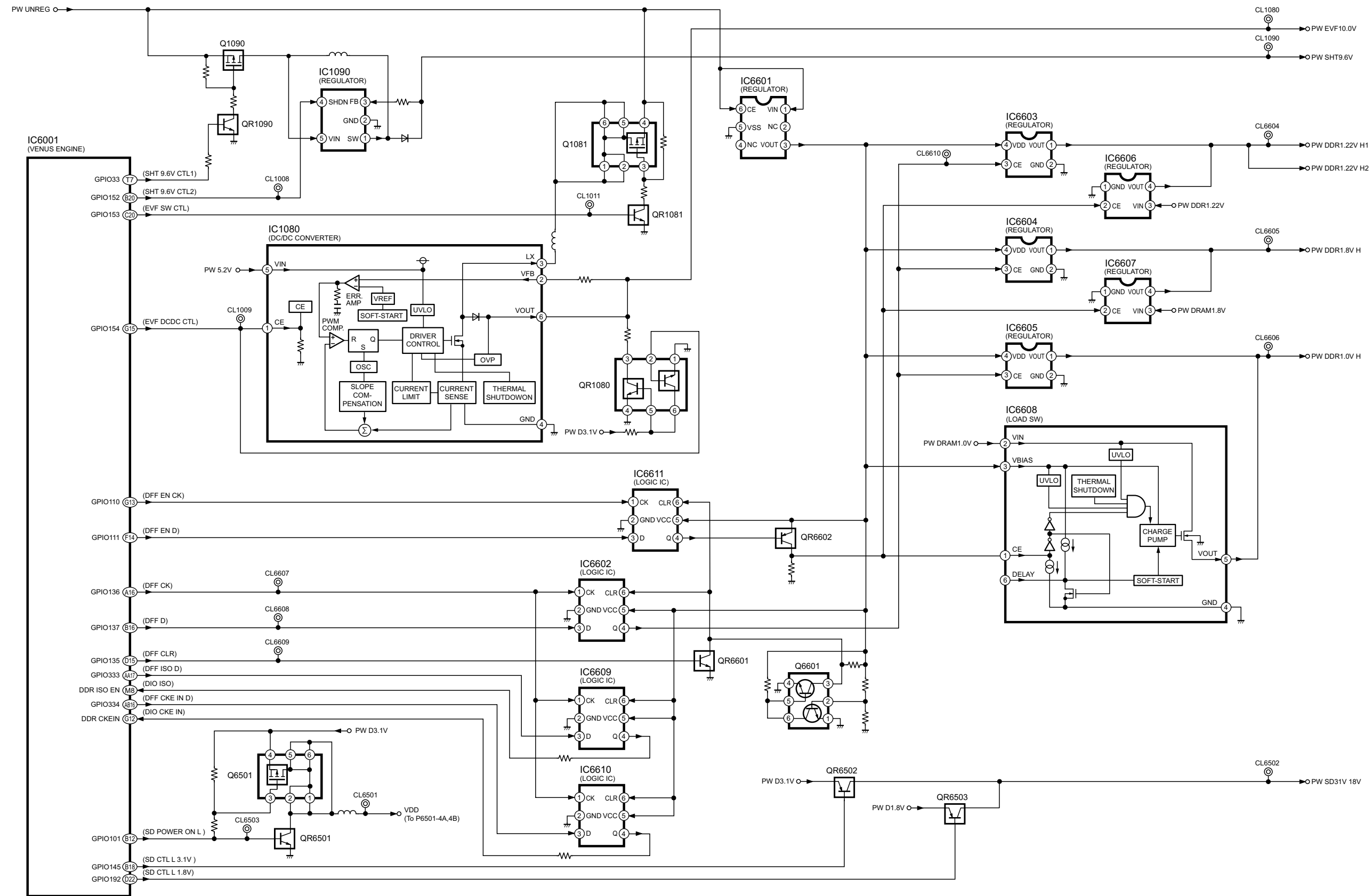


DMC-FZ1000 FLASH/HOT SHOE BLOCK DIAGRAM

12.7. Power(1) Block Diagram



12.8. Power(2) Block Diagram



DMC-FZ1000 POWER(2) BLOCK DIAGRAM

13.1. Interconnection Diagram

