Service Manual

Digital Camera/Body/Lens Kit

LUMIX

$\boxed{\text{SD}}^{™}_{XC}$ $^{3}_{I}$ $\boxed{\text{SD}}^{™}_{XC}$ $^{3}_{II}$

SS← (TM SS←® AVCHD™
Progressive

Bluetooth® **WiFi® CERTIFIED**

Wi-Fi PROTECTED SETUP
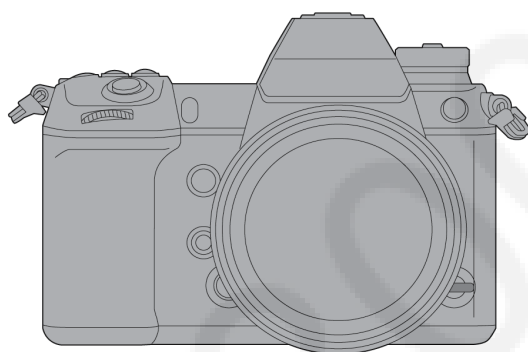
Model No. DC-S1P
DC-S1PP
DC-S1E
DC-S1EE
DC-S1GA
DC-S1GC
DC-S1GD
DC-S1GH
DC-S1GK
DC-S1GN
DC-S1GT
DC-S1MP
DC-S1MPP
DC-S1ME
DC-S1MEE
DC-S1MGA
DC-S1MGC
DC-S1MGD
DC-S1MGH
DC-S1MGK
DC-S1MGN
DC-S1MGT

Panasonic®

Colour
Black Type

DC-S1M series: Interchangeable Lens (S-R24105) is bundled.

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

TABLE OF CONTENTS

1 Safety Precautions

1.1. General Guidelines

1. **IMPORTANT SAFETY NOTICE**

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

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

2. An Isolation Transformer should always be used during the servicing of AC Adaptor whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect AC Adaptor from being damaged by accidental shorting that may occur during servicing.

3. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.

4. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.

5. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

1.2. Leakage Current Cold Check

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.

2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1 MΩ and 5.2 MΩ. When the exposed metal does not have a return path to the chassis, the reading must be infinity.

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

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.

2. Connect a 1.5 kΩ, 10 W resistor, in parallel with a 0.15 μF capacitor, between each exposed metallic part on the set and a good earth ground, as shown in Figure. 1.

3. Use an AC voltmeter, with 1 kΩ/V or more sensitivity, to measure the potential across the resistor.

4. Check each exposed metallic part, and measure the voltage at each point.

5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.

6. The potential at any point should not exceed 0.75 V RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 mA. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.
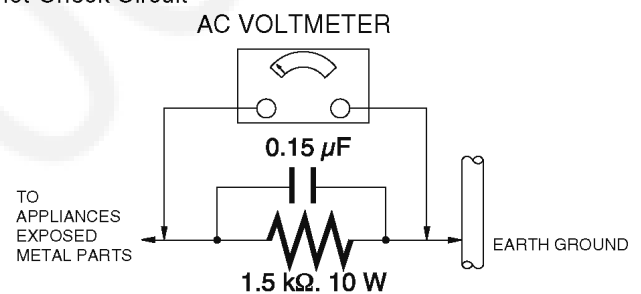
Hot-Check Circuit

Figure. 1

2 Warning

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

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices.

> Examples of typical ES devices are IC (integrated circuits) and some field-effect transistors and semiconductor "chip" components.

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

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an antistatic solder removal device. Some solder removal devices not classified as "antistatic (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
   CAUTION :
   Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

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

ENGLISH

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

FRANÇAIS

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

2.3.   How to Replace the Lithium Battery

2.3.1.   Replacement Procedure

1. Remove the Remote P.C.B.. (Refer to Disassembly Procedures.)
2. Unsolder the each soldering point of electric lead terminal for Lithium battery (Ref. No. "B7531" at component side of Remote 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.
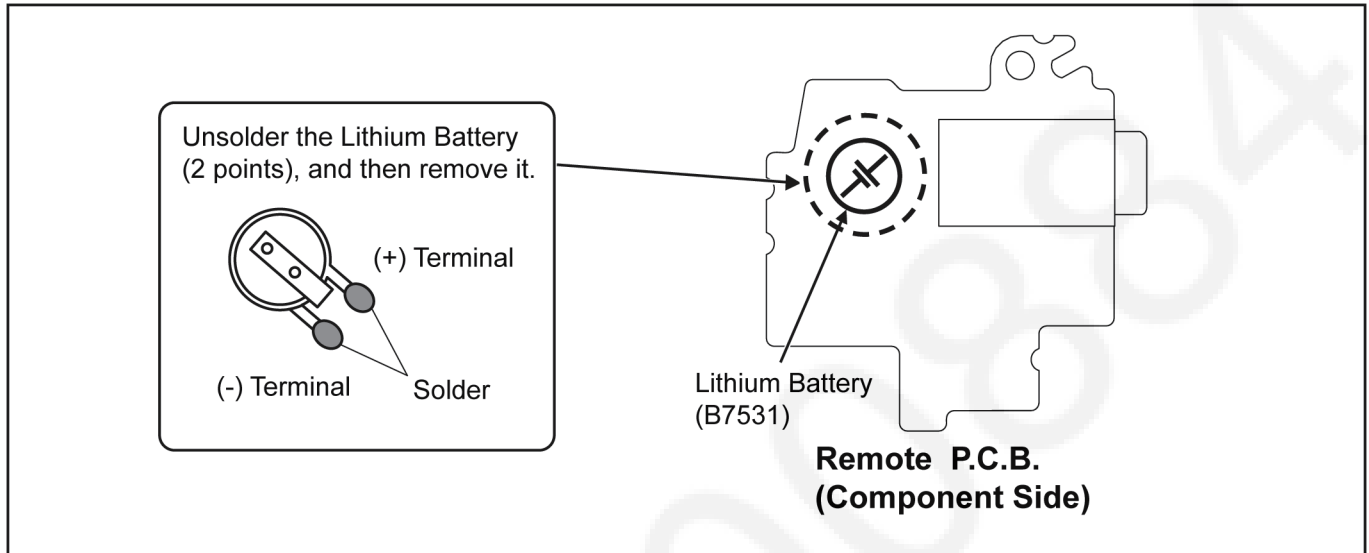
NOTE:
This Lithium battery is a critical component.
It must never be subjected to excessive heat or discharge.
It must therefore only be fitted in requirement designed specifically for its use.
Replacement batteries must be of same type and manufacture.
They must be fitted in the same manner and location 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 DC-S1/S1M series, as well.

2.4. Caution for AC Cord (For E/GA/GC/GH)

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

If a new plug is to be fitted please observe the wiring code as shown below.
If in any doubt, please consult a qualified electrician.

2.4.2.1. 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.   About service of bundled lenses

Please refer to the following service manual about service and maintenance of the bundled lens.
 • S-R24105E/PP/GC/GK: Order No.DSC1903005CE

3.3.   Important Notice

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

3.3.1.   Camera Body Unit

3.3.1.1.   About Main P.C.B. (Addition of the operation of rewriting Serial number)

 • Before exchanging the Main P.C.B., confirm that the symptom and/or phenomenon is not due to the setting of functions.
 • This unit memories the Serial number of camera body in the Flash-ROM (IP2201) of Main P.C.B., and in the case of performing the Main P.C.B. and/or Flash-ROM (IP2201) exchange, it is necessary rewriting to its original Serial number.
   The details of rewriting procedures are refer to the adjustments which is available in Adjustment software

Important:
 • When replacing the Main P.C.B. and/or Flash-ROM (IP2201), carry out any of followings.
   1. When the camera power can be ON, and camera body and adjustment software can be communicated:
      Before replacing the Main P.C.B. and/or Flash-ROM (IP2201), proceed the EEPROM data backup from the unit.
      After replacing the Main P.C.B. and/or Flash-ROM (IP2201), overwrite the EEPROM data with backup data from the unit first, then proceed the adjustment /inspection. (Almost adjustment/inspection items can be omitted.)
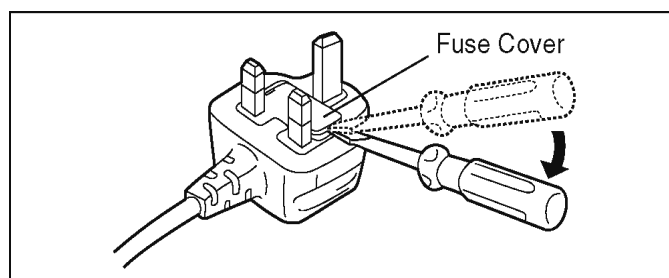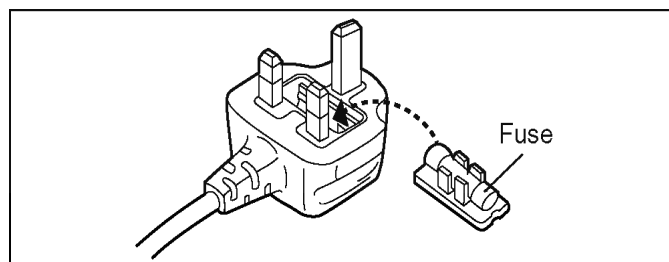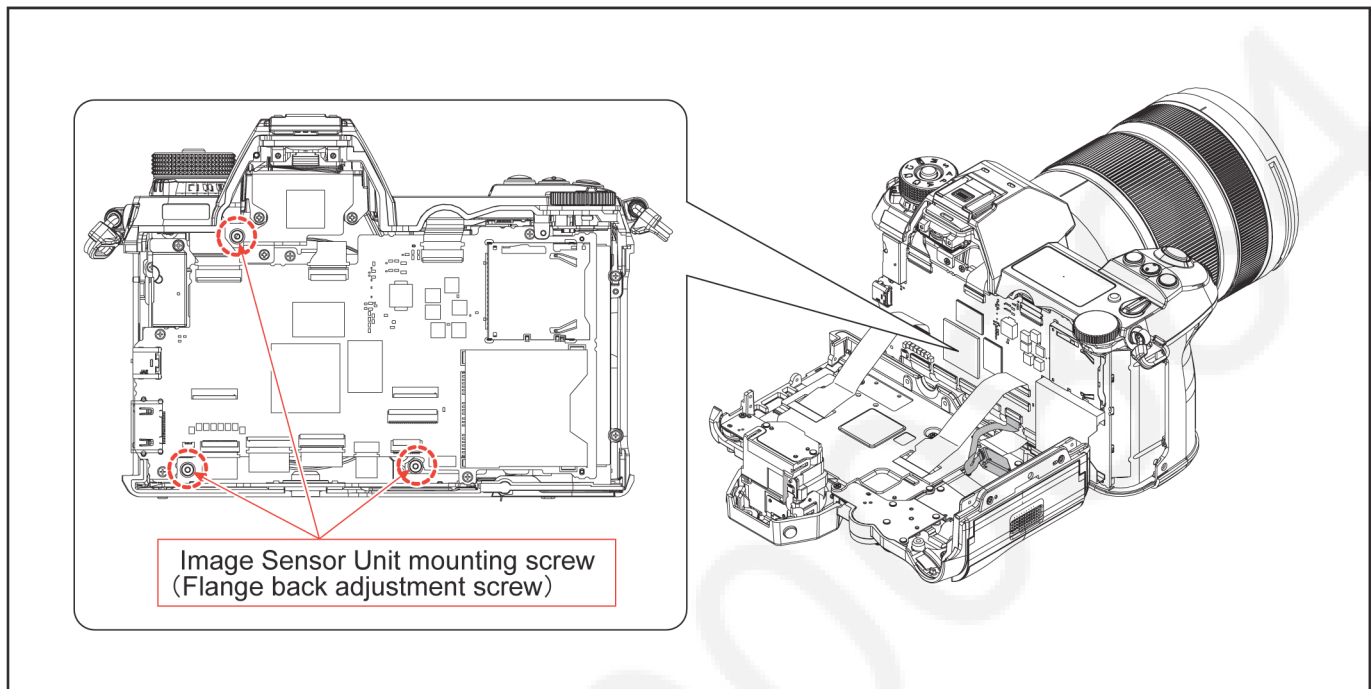   Refer to the adjustment instruction in the adjustment software for details.
   2. When the camera power cannot be ON, or camera body and adjustment software cannot be communicated:
      Almost full adjustment/inspection must be performed after replacing the Main P.C.B. and/or Flash-ROM (IP2201).
      Refer to the adjustment instruction in the adjustment software for details.

Notes after replacement:
 • Make sure the camera body firmware is latest version.

About Serial number (Reference)
 • As this unit's specification, the Serial number of camera body is stored to EXIF date of picture image. So that, the Serial number of camera body is memoried in the Flash-ROM (IP2201) of Main P.C.B..
   Therefore when replacing the Main P.C.B. and/or Flash-ROM (IP2201), this Serial number doesn't coincide and it is necessary rewriting to the Serial number after replacing.

(Image diagram)

3.3.1.2.   About prohibition of reusing Grip Rubber

 • Reusing Grip Rubbers used for this camera is not acceptable as the adhesive force gets weaker once they are peeled off.
   New Grip Rubbers must be used when assembling.
 • Three types of Grip Rubbers : "Rear Grip", "Front Grip (R)",and "Front Grip (L)" are used for this camera.
   As these three types of Grip Rubbers are supplied not only by single item but also by unit as "Grip Kit" (Part No.: 1YE1MC891CSZ), please make use of it.

3.3.1.3.　About Simplicity flange back adjustment

* "Flange back" is the distance from the lens mount level to the Image Sensor level.

When turning the image sensor unit mounting screw even a little or removing, the "simplicity flange back adjustment" is needed.
Perform the "simplicity flange back adjustment" according to contents described in "10 Measurements and Adjustments" section of this service manual.

Image Sensor Unit mounting screw
（Flange back adjustment screw）

3.3.1.4.　About Shutter Mount Base Unit (Ref. 11)

Before exchanging the "shutter mount base unit", confirm that the symptom and/or phenomenon is not due to the setting of functions.
Important:
　　After replacing the shutter mount base unit, the shutter mount base unit data has to be stored to the unit.
　　The shutter mount base unit supplied as service parts has affix the label of own configure data.
　　By inputting second line to fourth line of these data into the adjustment software and writing these data to Flash-ROM (IP2201), the shutter adjustment becomes needless.
　　Refer to the adjustment instruction in the adjustment software for details.

3.3.1.5.　About Firmware Update

The procedure for firmware updating is partly changed for this camera.
For the specific procedure, please confirm the contents that are released at the same time as the firmware for updating is released on the HP of firmware downloading.

3.3.2.　About Flexible Cable and Connector

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

3.4. Service Notes

3.4.1. About Wi-Fi/Bluetooth Function

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

Using the camera Wi-Fi®/Bluetooth® functionality, you can remotely operate the camera from a smartphone, and transfer images to a smartphone by the camera operation.

	You can use the "LUMIX Sync" smartphone app for remote recording and image transfers. (➜ 379)
	You can transfer images to another device, such as a smartphone or PC, by operating the camera. (➜ 403)

This document refers to both smartphones and tablets as **smartphones**.

❖ Wireless Icon Display

During usage of the Wi-Fi/Bluetooth functions, the wireless icon on the status LCD will be lit or blink.

Lights	Wi-Fi/Bluetooth function is on, or connecting
Blinking	Image data from camera operation is being sent

3.4.2. Important Notice of Servicing

This camera unit has the personal information of wireless LAN connection the customer has registered.
For the protection of private information, please erase the personal information after the completion of repair by "Initial 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.

3.5.   General Description About Lead Free Solder (PbF)

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

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

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

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

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

Recommended Lead Free Solder (Service Parts Route.)
- The following 3 types of lead free solder are available through the service parts route.
  SVKZ000001-----------(0.3mm 100g Reel)
  SVKZ000002-----------(0.6mm 100g Reel)
  SVKZ000003-----------(1.0mm 100g Reel)

Note
   * Ingredient: Tin (Sn) 96.5%, Silver (Ag) 3.0%, Copper (Cu) 0.5%. (Flux cored)

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

There are several types of DC-S1 (Camera body unit), regardless of the colours.
- a) DC-S1 (Japan domestic model)
- b) DC-S1P/PP
- c) DC-S1E
- d) DC-S1EE
- e) DC-S1GD
- f) DC-S1GN
- g) DC-S1GT
- h) DC-S1GK
- i) DC-S1GH/GA/GC

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

3.6.1. Defining Methods:

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

a) DC-S1 (Japan domestic model)
The nameplate for this model shows the following Safety registration mark.

b) DC-S1P/PP
The nameplate for these models show the following Safety registration mark.

c) DC-S1E
The nameplate for this model shows the following Safety registration mark.

d) DC-S1EE
The nameplate for this model shows the following Safety registration mark.

e) DC-S1GD
The nameplate for this model shows the following Safety registration mark.

f) DC-S1GN
The nameplate for this model shows the following Safety registration mark.

g) DC-S1GT
The nameplate for this model shows the following Safety registration mark.

h) DC-S1GK
The nameplate for this model shows the following Safety registration mark.

i) DC-S1GH/GA/GC
The nameplate for these models does not show any above Safety registration mark.

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

3.6.2.   Initial Settings:

After replacing the Main P.C.B. 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 "E and EG" models]

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

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

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2. Procedures:
 • Precautions: Read the above "CAUTION" carefully.
 • Preparation:
   Attach the fully charged Battery, and insert the memory card to either slot 1 (XQD) or slot 2 (SD).
   Set the mode dial to [P] (Program AE Mode).

 • **Step 1. The temporary cancellation of "Initial Settings":**
   Set the drive mode dial to [Single], while pressing [Playback] button and [AF ON] 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 ON] button and "[UP] of Cursor buttons" simultaneously, then turn the power off.

   The LCD displays the " ! " mark before the unit powers down.
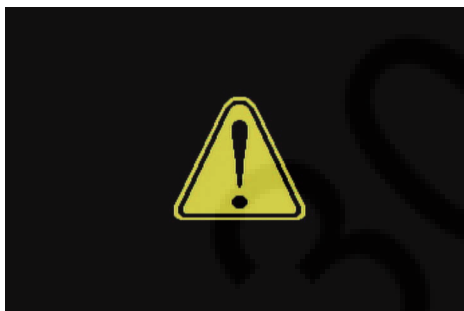
 • **Step 3. Turn the Power On:**
   Set the mode dial to [P] (Program AE Mode) and drive mode dial to [Single], then turn the power on.

- **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.

[CASE 1. After replacing the Main P.C.B. and/or Flash-ROM]
When Main P.C.B. has just been replaced, 14 model suffixes are displayed as follows. (three pages in total)

	INITIAL SETTINGS 【Strict】	
DC-S1 (Japan domestic model) ●–○ S1	NONE(JAPAN)	**00**
(No existent model) ●–○ S1	JPC	**1D**
DC-S1P ●–○ S1	P	**01**
DC-S1PP ●–○ S1	PP	**22**
DC-S1E ●–○ S1	E	**31**
DC-S1EE ●–○ S1	EE	**0A**
⬧ Select	Set ⬧ Exit	

INITIAL SETTINGS 【Strict】		
S1	GD	**04** ○–● **DC-S1GD**
S1	EG(A)	**2A** ○–● (No existent mode
⬧ Select	Set ⬧ Exit	

	INITIAL SETTINGS 【Strict】	
DC-S1GA ●–○ S1	GA(A)	**1B**
DC-S1GC ●–○ S1	GC(A)	**05**
DC-S1GH ●–○ S1	GH	**12**
DC-S1GT ●–○ S1	GT	**06**
DC-S1GK ●–○ S1	GK	**07**
DC-S1GN ●–○ S1	GN	**0B**
⬧ Select	Set ⬧ Exit	

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

<Other than "E/EG" models>

INITIAL SETTINGS 【Strict】	
S1 GC(A)	**05**
⬧ Select	Set ⬧ Exit

<Only "E/EG" models>

INITIAL SETTINGS 【Strict】	
S1 E	**31**
S1 EG(A)	**2A**
⬧ Select	Set ⬧ Exit

• **Step 5. Cancel "Strict" mode:**
  Press the [DISP.] button to cancel "Strict" mode. (Confirm the "Strict" is disappeared.)

【Strict】

Press [DISP.] button.
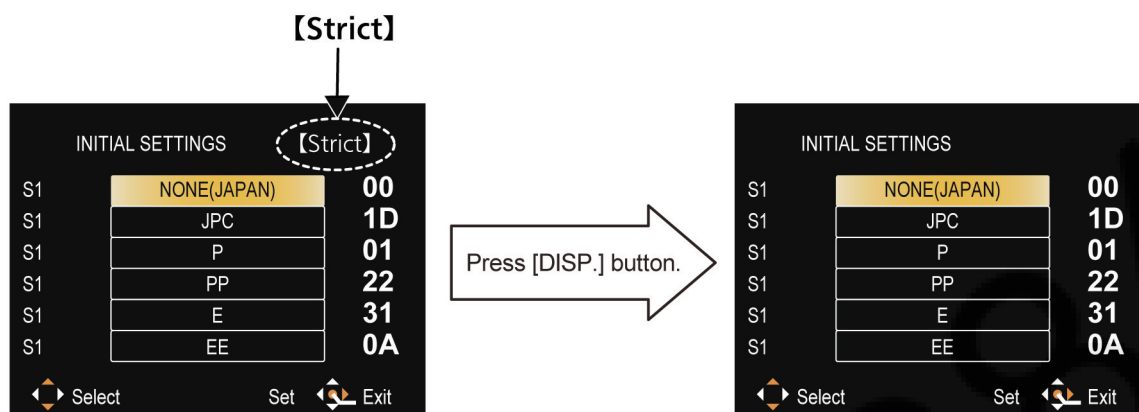
• **Step 6. Choose the Model Suffix in "Initial Settings": (Refer to "CAUTION")**
  [Caution: After replacing the Main P.C.B. and/or Flash-ROM]
       The model suffix can been chosen, **JUST ONE TIME**.
       Once one of the model suffix have been chosen, the model suffix lists will not be displayed, thus, it can not be changed.
       Therefore, select the area carefully.
  Select the area with pressing "[UP] / [DOWN] of Cursor buttons".

• **Step 7. 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.)

Press [RIGHT] button.
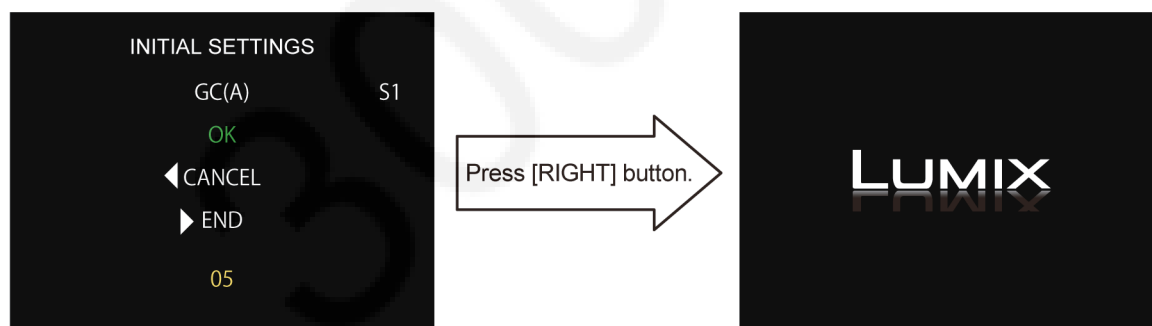
NOTE:
       When the error message such as the following is displayed, cancel "Strict" mode.
       Press [DISP.] button to clear the "Strict" display at the upper right corner of screen.

【Strict】   【Strict】

A few second later.   Press [DISP.] button.

Error
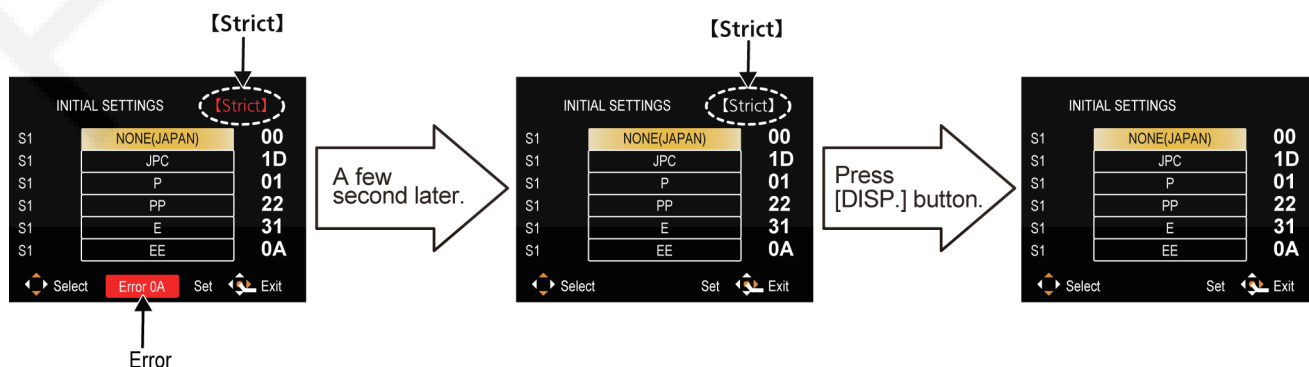
• **Step 8. Confirmation:**
Confirm the display of "PLEASE SET THE CLOCK" in concerned language when the unit is turned on again.
When the unit is connected to PC with USB cable, it is detected as removable media.
(When the "GK" or "GT" model suffix is selected, the display shows "PLEASE SET THE CLOCK" in Chinese.)

As for your reference, major default setting condition is as shown in the following table.
• **Default setting (After "Initial Settings")**

	MODEL	VIDEO OUTPUT	LANGUAGE	DATE	REMARKS
a)	DC-S1 (Japan domestic model)	NTSC	Japanese	Year/Month/Date	
b)	DC-S1P	NTSC	English	Month/Date/Year	
c)	DC-S1PP	NTSC	English	Month/Date/Year	
d)	DC-S1E	PAL	English	Date/Month/Year	
e)	DC-S1EE	PAL	Russian	Date/Month/Year	
f)	DC-S1GA	PAL	English	Date/Month/Year	
g)	DC-S1GC	PAL	English	Date/Month/Year	
h)	DC-S1GD	NTSC	Korean	Year/Month/Date	
i)	DC-S1GH	PAL	English	Date/Month/Year	
j)	DC-S1GK	PAL	Chinese (simplified)	Year/Month/Date	
k)	DC-S1GN	PAL	English	Date/Month/Year	
l)	DC-S1GT	NTSC	Chinese (traditional)	Year/Month/Date	

4 Specifications

The following specification is for DC-S1E.
Some specifications may differ depending on model suffix.
The page number in this chapter does not show the page number of this service manual.

4.1. Camera Body

The specifications are subject to change for performance enhancement.

Digital camera body (DC-S1):

Information for your safety

Power source:	9.0 V===
Power consumption:	6.3 W (when recording with the monitor)
	(When using the interchangeable lens (S-R24105))
	4.6 W (when playing back with the monitor)
	(When using the interchangeable lens (S-R24105))

Type	
Type	Digital Single Lens Mirrorless camera
Recording media	Card slot 1: XQD memory card
	Card slot 2: SD memory card / SDHC memory card∗ / SDXC memory card∗
	∗ Compliant with UHS-I/UHS-II UHS Speed Class 3, UHS-II Video Speed Class 90
	Double slot recording function is available.
Lens mount	Leica Camera AG L-Mount
Image sensor	
Image sensor	35 mm full-frame (35.6 mm×23.8 mm) CMOS sensor, a total of 25,280,000 pixels, primary colour filter
Camera effective pixels	24,200,000 pixels

Recording format for still images	
File format for still images	JPEG (DCF compliant, Exif 2.31 compliant) / RAW / HLG photo (CTA-2072 compliant)
File format for 6K/4K photos	6K photo: MP4 (H.265/HEVC, AAC (2ch)) 4K photo: MP4 (H.264/MPEG-4 AVC, AAC (2ch))
Picture size (pixels)	When the aspect ratio setting is [4:3] 5328×4000 (L) / 3792×2848 (M) / 2688×2016 (S) / 10656×8000 ([High Resolution Mode]) / 4992×3744 (6K photo) / 3328×2496 (4K photo) / 5312×3984 ([HLG Photo]/[Full-Res.]) / 2880×2160 ([HLG Photo]/[4K-Res.]) When the aspect ratio setting is [3:2] 6000×4000 (L) / 4272×2848 (M) / 3024×2016 (S) / 12000×8000 ([High Resolution Mode]) / 5184×3456 (6K photo) / 3504×2336 (4K photo) / 5984×4000 ([HLG Photo]/[Full-Res.]) / 3232×2160 ([HLG Photo]/[4K-Res.]) When the aspect ratio setting is [16:9] 6000×3368 (L) / 4272×2400 (M) / 3024×1704 (S) / 12000×6736 ([High Resolution Mode]) / 3840×2160 (4K photo) / 5888×3312 ([HLG Photo]/[Full-Res.]) / 3840×2160 ([HLG Photo]/[4K-Res.]) When the aspect ratio setting is [1:1] 4000×4000 (L) / 2848×2848 (M) / 2016×2016 (S) / 8000×8000 ([High Resolution Mode]) / 2880×2880 (4K photo) / 4000×4000 ([HLG Photo]/[Full-Res.]) / 2144×2144 ([HLG Photo]/[4K-Res.]) When the aspect ratio setting is [65:24] 6000×2208 (L) When the aspect ratio setting is [2:1] 6000×3000 (L)
Image quality for pictures	Fine / Standard / RAW＋Fine / RAW＋Standard / RAW

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Recording format for video		
Video format	AVCHD Progressive / AVCHD / MP4 / MP4 HEVC	
Audio format	AVCHD	Dolby Audio™ (2ch)
	MP4	AAC (2ch), LPCM (2ch, 48 kHz/16 bit)
	MP4 HEVC	AAC (2ch)
Image quality for videos	[Rec. File Format]: [AVCHD], [MP4], [MP4 HEVC] Refer to page 241 of this document for details. Refer to page 254 of this document for details about High Speed Video.	

Viewfinder / Monitor	
Viewfinder	OLED Live Viewfinder (4:3) (approx. 5,760,000 dots) (a field of view ratio of approx. 100%) (Magnification approx 0.78×, with 50 mm lens at infinity; -1.0 m^{-1}, when the aspect ratio is set to [3:2]) (with dioptre adjustment -4.0 to $+2.0$ dioptre)
Monitor	3.2″ TFT LCD (3:2) (approx. 2,100,000 dots) (a field of view ratio of approx. 100%), touch screen

Focus	
Auto focus type	TTL type based on image detection (Contrast AF)
Focus mode	AFS / AFC / MF
AF mode	Automatic detection (Face/Eye/Body/Animal) / Tracking / 225-Area / Zone (Vertical/Horizontal) / Zone (Square) / Zone (Oval) / 1-Area+Supplementary / 1-Area / Pinpoint / Custom1, 2, 3 (Focus area selection is possible by touching or with the joystick)

Exposure control		
Light metering system, Light metering mode	1728-zone metering, multi-metering / centre-weighted metering / spot metering / highlight-weighted metering	
Metering range	EV 0 to EV 18	
Exposure	Programme AE, Aperture-Priority AE, Shutter-Priority AE, Manual Exposure	
Exposure compensation	1/3 EV steps, ±5 EV	
ISO sensitivity (standard output sensitivity)	1/3 EV steps, AUTO / 100 to 51200 When [Extended ISO] is set: AUTO / 50 to 204800	
Image stabiliser		
Image stabiliser type	Compliant with Image sensor shift type, 5-axis stabiliser, Dual I.S.2	
Image stabiliser effect	6.0 stops Based on the CIPA standard (Yaw/Pitch direction: focal length f=105 mm) (When using the interchangeable lens (S-R24105))	
White balance		
White balance mode	AWB / AWBc / AWBw / Daylight / Cloudy / Shade / Incandescent lights / Flash / White Set 1, 2, 3, 4 / Colour temperature 1, 2, 3, 4	
Shutter		
Shutter type	Focal-plane shutter	
Shutter speed	Pictures: B (Bulb) (max. approx. 30 minutes), 60 seconds to 1/8000 of a second (mechanical shutter) B (Bulb) (max. approx. 30 minutes), 60 seconds to 1/2000 of a second (electronic front curtain) B (Bulb) (max. approx. 60 seconds), 60 seconds to 1/8000 of a second (electronic shutter) Videos: 1/25 of a second to 1/16000 of a second	

Burst recording	
Mechanical shutter/ Electronic front curtain	9 frames/second (high speed, AFS/MF), 6 frames/second (high speed, AFC), 5 frames/second (medium speed), 2 frames/second (low speed)
Electronic shutter	9 frames/second (high speed, AFS/MF), 5 frames/second (high speed, AFC), 5 frames/second (medium speed), 2 frames/second (low speed)
Number of burst picture frames	[FINE] / [STD.]: 999 frames or more [RAW+FINE] / [RAW+STD.]: 70 frames or more [RAW]: 90 frames or more When recording is performed under the test conditions specified by Panasonic

Minimum illumination	
Approx. 6 lx (when the shutter speed is 1/25 of a second) (When using the interchangeable lens (S-R24105))	

Flash (when using an external flash)	
Flash mode	Auto / Auto/Red-Eye / Forced Flash On / Forced On/Red-Eye / Slow Sync. / Slow Sync./Red-Eye / Forced Flash Off
Flash synchronisation speed	Equal to or smaller than 1/320 of a second (The guide number decreases at 1/320 of a second, only during [S]/[M] modes)

Zoom	
Extra Tele Conversion (Picture)	Max. 2× (when a picture size of [S] is selected.)

Microphone / Speaker	
Microphone	Stereo
Speaker	Monaural

Interface	
USB	SuperSpeed USB3.1 GEN1 Type C Supports USB Power Delivery (9.0 V/3.0 A) ∗ Data from the PC cannot be written to the camera using the USB connection cable.
HDMI	HDMI Type A
[REMOTE]	∅ 2.5 mm jack
[MIC]	∅ 3.5 mm jack
Headphones	∅ 3.5 mm jack
Flash Synchro	Yes

Splash Resistant
Yes

Dimensions / Mass	
Dimensions	Approx. 148.9 mm (W)×110.0 mm (H)×96.7 mm (D) (5.86″ (W)×4.33″ (H)×3.81″ (D)) (excluding the projecting parts)
Mass	Approx. 1021 g/2.25 lb (with one XQD memory card and the battery) Approx. 899 g/1.98 lb (camera body)

Operating environment	
Recommended operating temperature	−10 ℃∗ to 40 ℃ (14 °F to 104 °F) ∗ The performance of the battery (number of recordable pictures/operating time) may decrease temporarily when using in a temperature between −10 ℃ and 0 ℃ (14 °F and 32 °F) (cold places such as ski resorts or places at high altitude).
Permissible relative humidity	10%RH to 80%RH

Wi-Fi	
Compliance standard	IEEE 802.11a/b/g/n/ac (standard wireless LAN protocol)
Frequency range used (central frequency)	2412 MHz to 2472 MHz (1 to 13ch) 5180 MHz to 5320 MHz (36/40/44/48/52/56/60/64ch) 5500 MHz to 5700 MHz (100/104/108/112/116/120/124/128/132/136/140ch)
Encryption method	Wi-Fi compliant WPA™ / WPA2™
Access method	Infrastructure mode

Bluetooth	
Compliance standard	Bluetooth v4.2 (Bluetooth Low Energy (BLE))
Frequency range used (central frequency)	2402 MHz to 2480 MHz

Battery charger (Panasonic DMW-BTC14):

Information for your safety

Input:	9.0 V $=$ 3.0 A
Output:	8.4 V $=$ 3.1 A
Operating temperature:	0 °C to 40 °C (32 °F to 104 °F)

AC adaptor (Panasonic DVLV1001Y):

Information for your safety

Input:	100–240 V $\sim$ 50/60 Hz 0.7 A
Output:	5 V $=$ 3.0 A, 9 V $=$ 3.0 A
Operating temperature:	0 °C to 40 °C (32 °F to 104 °F)

Battery pack (lithium-ion) (Panasonic DMW-BLJ31):

Information for your safety

Voltage/capacity:	7.4 V / 3050 mAh

The symbols on this product (including the accessories) represent the following:

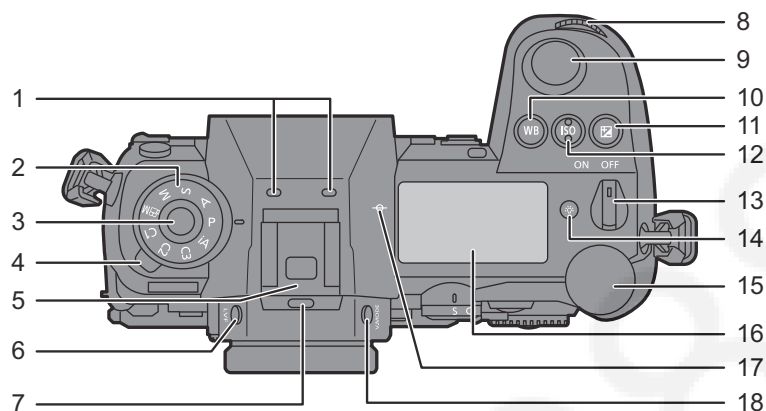|	
$\sim$	AC
$=$	DC
▣	Class II equipment (The construction of the product is double-insulated.)

5 Location of Controls and Components

The following description is for DC-S1E.

Some descriptions may differ depending on model suffix.

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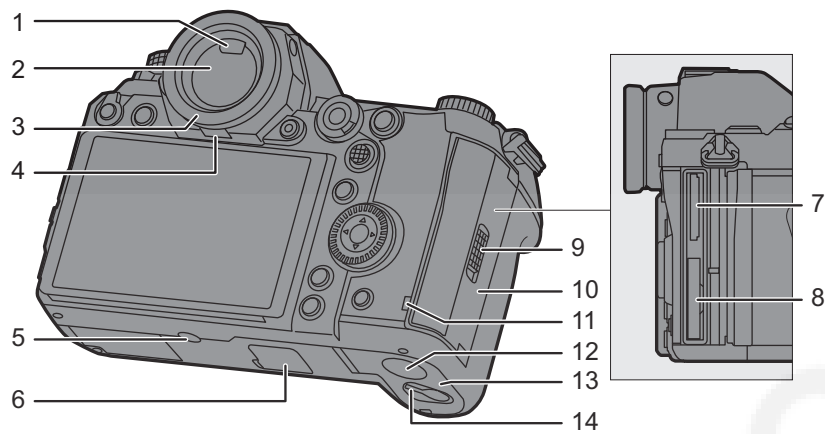
5.1. Camera Body

1	Stereo microphone (→ 250) • Take care not to block the microphone with a finger. Audio will be difficult to record.		**9**	Shutter button (→ 66)
2	Mode dial (→ 68)		**10**	[WB] (White Balance) button (→ 201)
3	Mode dial lock button (→ 68)		**11**	[🔲] (Exposure compensation) button (→ 196)
4	Drive mode dial (→ 132)		**12**	[ISO] (ISO sensitivity) button (→ 199)
5	Hot shoe (hot shoe cover) (→ 223) • Keep the hot shoe cover out of reach of children to prevent swallowing.		**13**	Camera on/off switch (→ 60)
			14	[☀] (Status LCD backlight) button (→ 77, 360)
			15	Rear dial (→ 70)
6	[LVF] button (→ 74)		**16**	Status LCD (→ 37, 360)
7	Speaker (→ 361)		**17**	[-⊖-] (Recording distance reference mark) (→ 127)
8	Front dial (→ 70)		**18**	[V.MODE] button (→ 73)

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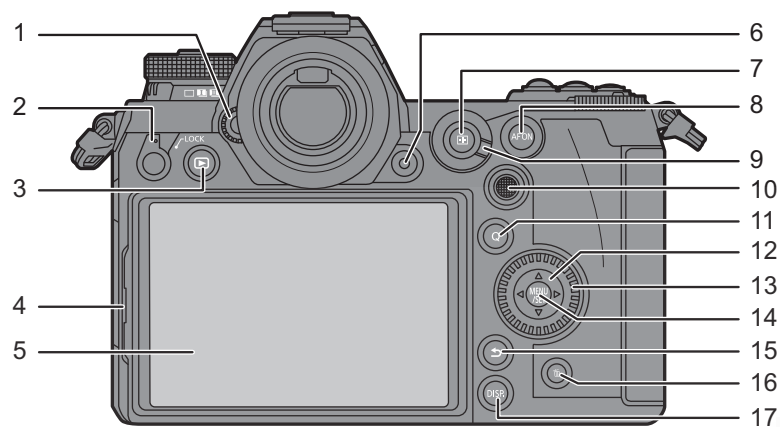
1	Dioptre adjustment dial (→ 73)		**11**	[Q] button (→ 78)
2	Operation lock lever (→ 72)		**12**	Cursor buttons (→ 70)/ Fn buttons (→ 286) ▲: Fn13, ▶: Fn14, ▼: Fn15, ◀: Fn16
3	[▶] (Playback) button (→ 267)			
4	Monitor lock lever (→ 65)			
5	Monitor (→ 456)/ Touch screen (→ 71)		**13**	Control dial (→ 70)
6	Video rec. button (→ 237)		**14**	[MENU/SET] button (→ 70, 80)
7	[⊞] (AF mode) button (→ 99)		**15**	[↰] (Cancel) button (→ 82)
8	[AF ON] button (→ 101)		**16**	[🗑] (Delete) button (→ 277)
9	Focus mode lever (→ 99, 124)		**17**	[DISP.] button (→ 75)
10	Joystick (→ 71)/ Fn buttons (→ 286) Centre: Fn8, ▲: Fn9, ▶: Fn10, ▼: Fn11, ◀: Fn12			

💡 • If you press [☼], the following buttons light.
The lighting timing can be changed in [Illuminated Button] in the [Custom] ([Operation]) menu. (→ 344)
– [▶] button/[Q] button/[↰] button/[🗑] button/[DISP.] button

1	Eye sensor (➜ 74)		**10**	Card door (➜ 53)
2	Viewfinder (➜ 74)		**11**	Card access lamp (➜ 54)
3	Eye cup (➜ 481)		**12**	DC Coupler cover (➜ 455) • When using an AC adaptor, ensure that the Panasonic DC Coupler (DMW-DCC16: optional) and AC Adaptor (DMW-AC10E: optional) are used. • Always use a genuine Panasonic AC Adaptor (DMW-AC10E: optional). • When using an AC Adaptor (optional), use the AC Mains Lead supplied with the AC Adaptor (optional).
4	Eye cup lock lever (➜ 481)			
5	Tripod mount (➜ 486) • If you attempt to attach a tripod with a screw length of 5.5 mm (0.22 inch) or more, you may not be able to securely fix it in place or it may damage the camera.			
6	Battery grip connector (cover for the battery grip connector) (➜ 453) • Keep the cover for the battery grip connector out of reach of children to prevent swallowing.			
7	Card slot 2 (➜ 53)		**13**	Battery door (➜ 43)
8	Card slot 1 (➜ 53)		**14**	Battery door release lever (➜ 43)
9	Card door lock lever (➜ 53)			

25
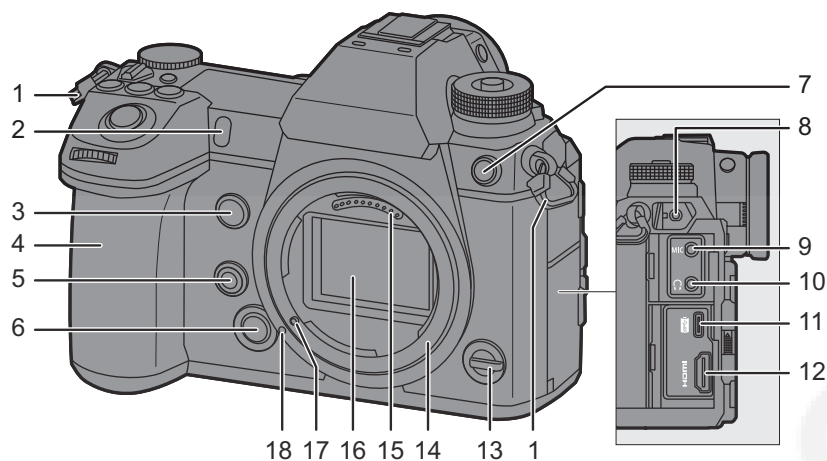
1	Shoulder strap eyelet (➜ 38)
2	Self-timer lamp (➜ 160)/ AF assist lamp (➜ 316)
3	Fn button (Fn1) (➜ 286)
4	Grip
5	Preview button (➜ 195)/ Fn button (Fn2) (➜ 286)
6	Lens release button (➜ 57)
7	Flash synchro socket (flash synchro socket cap) (➜ 224) • Keep the flash synchro socket cap out of reach of children to prevent swallowing.
8	[REMOTE] socket (➜ 454)
9	[MIC] socket (➜ 261)

10	Headphone socket (➜ 265) • Excessive sound pressure from earphones and headphones can cause hearing loss.
11	USB port (➜ 440, 448)
12	[HDMI] socket (➜ 433)
13	Fn lever (➜ 294)
14	Mount
15	Contact points
16	Sensor
17	Lens lock pin
18	Lens fitting mark (➜ 57)

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.

   The error code is memorized to Flash-ROM when the unit has just before powered off.

2. **How to Display**

   There are two types of display methods. (refer to the step 2 below)

   • Preparation

   Attach the fully charged Battery, and insert the memory card to either slot 1 (XQD) or slot 2 (SD).

   Set the mode dial to [P] (Program AE Mode).

   • **Step 1. The temporary cancellation of "Initial Settings":**

   Set the drive mode dial to [Single], while pressing [Playback] button and [AF ON] button simultaneously, turn the power on.

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

   **[Display method by pressing the buttons simultaneously]**

   Press [Playback] button, [MENU/SET] button and "[LEFT] of Cursor buttons" simultaneously under 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 → .....
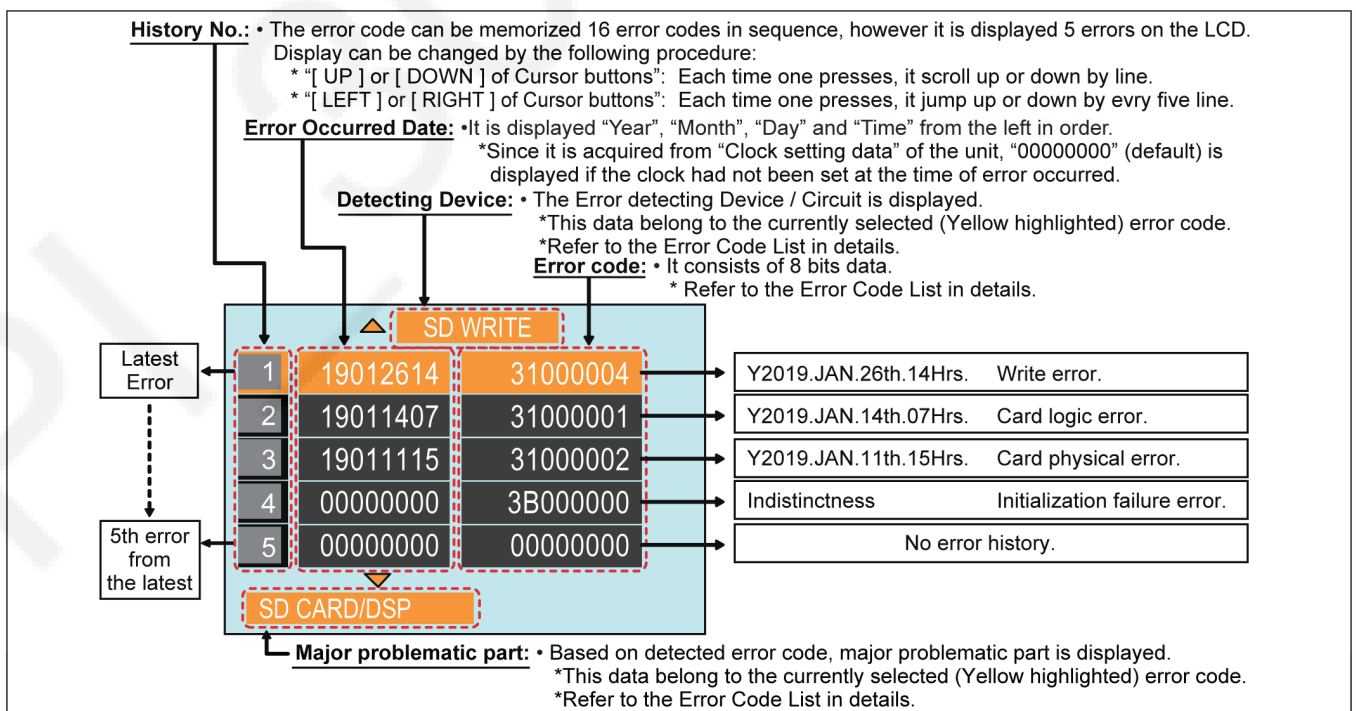
   [Display method from the menu display]

   Select [ERR CODE DISP] from the setup menu and then press [MENU/SET] button under the step 1 condition.
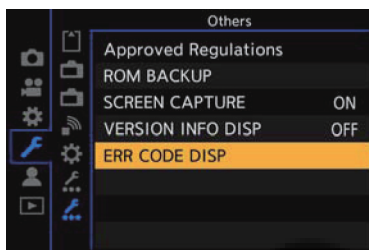
   *The display is changed as shown below when [MENU/SET] button is pressed.

   Menu display → Error code display → Camera information display → Menu display → .....

Example of Error Code Display

Error Code List

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

Attribute	Main item	Sub item	Error code		Contents	Error Indication	
			High 4 bits	Low 4 bits		Detecting device	Problematic Part/Circuit
HARD	Flash	Flash	28*0	0000	Flash charge timeout error (system error indicated)	STRB CHG	STRB PCB/FPC
				0001	EEPROM of External Flash is damaged.	EST EEP	
				0002	ZOOM function of External Flash is damaged.	EST	E.STRB
				0003	Other function of External Flash is damaged.	EST	
	BIS	In Body Image Stabilization	28*0	0010	BIS HP encorder (X) Low detect error	BIS HPL X	
				0020	BIS HP encorder (X) High detect error	BIS HPH X	
				0030	BIS HP encorder (Y) Low detect error	BIS HPL Y	
				0040	BIS HP encorder (Y) High detect error	BIS HPH Y	
				0050	BIS GYRO (X) error	BIS GYRO X	
				0060	BIS GYRO (Y) error	BIS GYRO Y	
				0070	BIS GYRO communication error	BIS GY DIF	
				0080	BIS GYRO (R) error	BIS GYRO R	
				0090	BIS APU timeout error	BIS APU	
				0100	BIS Position sensor (X1) error	BIS POS X1	BIS
				0200	BIS Position sensor (X2) error	BIS POS X2	
				0300	BIS Position sensor (Y) error	BIS POS Y	
				0400	BIS Drive Voltage (X1) error	BIS DRIVE X1	
				0500	BIS Drive Voltage (X2) error	BIS DRIVE X2	
				0600	BIS Drive Voltage (Y) error	BIS DRIVE Y	
				0700	BIS DIFF Signal (X1) error	BIS DIFF X1	
				0800	BIS DIFF Signal (X2) error	BIS DIFF X2	
				0900	BIS DIFF Signal (Y) error	BIS DIFF Y	
	Flash-ROM	Data Area	2B*0	0001	EEPROM data error (During read out)	FROM RE	
				0002	EEPROM data error (During write in)	FROM WR	FROM
		Program Area		0005	Firmware update error	FIRMUP FAIL	
				0006	Firmware update error (USB Micon)	USBFWUP FAIL	USB
				000C	LENS-FPGA firmware update error		
				000D	IMAGE-FPGA firmware update error	FIRMUP FAIL	FPGA
				000E	TC-FPGA firmware update error		
SOFT	CPU	Reset	30*0	0000	System error (NMI reset)	NMI RST	
				0010	Sub micon communication error	VENUS SUB	MAIN PCB
				0020	Sub micon model ID error		
	Recording Media	Memory card	31*0	0002	Memory card physical error	SD CARD	SD CARD/DSP
				0004	Memory card writing error	SD WRITE	
	Lens	Communication	3C11 | 3CF0	****	Lens communication error	LENS COMM	SOFT
	Camera	System	37*0	0001	Activation: Electronic signature hash value mismatch		
				0002	Activation: Serial number mismatch		
				0003	Activation: Model name mismatch		
				0004	Activation: Origin countory mismatch	VLOG	VLOG
				0005	Activation: Firmware version down		
				0006	Activation: Activaton code mismatch		
				0007	Activation: Old firmware		
			3B*0	0000	EEPROM writing during camera initialization	FROM	SOFT
			3D*0	0000	Assert occurrence	ASSERT	SOFT
			3E*0	0001	Exposure charging operation failure		
				0002	Failure of the returning operation to the home position		
				0003	Failure of the mecha shutter sensor		
				0004	Failure of the mecha shutter sensor		
				0005	Failure of the mecha shutter sensor		
				0006	Exposure charging recovery operation failure		
				0011	Failure of the mecha shutter sensor		
				0012	Failure of the mecha shutter sensor		
				0013	Failure of the mecha shutter sensor		
				0014	Abnormal current of shutter drive motor	MSHUT	MSHUT
				0101	Failure of the electromagnetic front curtain open		
				0102	Failure of the electromagnetic front curtain open		
				0111	Failure of the electromagnetic front curtain open		
				0112	Failure of the electromagnetic front curtain open		
				0201	Shutter PI circuit operation failure		
				0202	Failure of current adjustment of single curtain shutter		
				0301	PI1 detection failure of the returning operation to the home position		

| Attribute | Main item | Sub item | Error code | | Contents | Error Indication | |
			High 4 bits	Low 4 bits		Detecting device	Problematic Part/Circuit
SOFT	Camera	System	3E*0	0302	PI2 detection failure of the returning operation to the home position		
				0303	PI3 detection failure of the returning operation to the home position		
				0304	PI4 detection failure of the returning operation to the home position		
				1102	Mechanical shutter front curtain set PI1 detection failure		
				1103	Mechanical shutter front curtain set PI1 detection failure		
				1104	Mechanical shutter front curtain set PI2 detection failure		
				1105	Mechanical shutter front curtain set PI2 detection failure		
				1106	Mechanical shutter front curtain set PI3 detection failure		
				1107	Mechanical shutter front curtain set PI3 detection failure		
				1108	Mechanical shutter front curtain set PI4 detection failure		
				1109	Mechanical shutter front curtain set PI4 detection failure		
				1202	Mechanical shutter exposure control PI1 detection failure		
				1203	Mechanical shutter exposure control PI1 detection failure		
				1204	Mechanical shutter exposure control PI2 detection failure		
				1205	Mechanical shutter exposure control PI2 detection failure		
				1206	Mechanical shutter exposure control PI3 detection failure		
				1207	Mechanical shutter exposure control PI3 detection failure		
				1208	Mechanical shutter exposure control PI4 detection failure	MSHUT	MSHUT
				1209	Mechanical shutter exposure control PI4 detection failure		
				1302	Mechanical shutter release control 1 PI1 detection failure		
				1303	Mechanical shutter release control 1 PI1 detection failure		
				1304	Mechanical shutter release control 1 PI2 detection failure		
				1305	Mechanical shutter release control 1 PI2 detection failure		
				1306	Mechanical shutter release control 1 PI3 detection failure		
				1307	Mechanical shutter release control 1 PI3 detection failure		
				1308	Mechanical shutter release control 1 PI4 detection failure		
				1309	Mechanical shutter release control 1 PI4 detection failure		
				1402	Mechanical shutter release control 2 PI1 detection failure		
				1403	Mechanical shutter release control 2 PI1 detection failure		
				1404	Mechanical shutter release control 2 PI2 detection failure		
				1405	Mechanical shutter release control 2 PI2 detection failure		
				1406	Mechanical shutter release control 2 PI3 detection failure		
				1407	Mechanical shutter release control 2 PI3 detection failure		
				1408	Mechanical shutter release control 2 PI4 detection failure		
				1409	Mechanical shutter release control 2 PI4 detection failure		
				140A	Mechanical shutter release control 2 home position failure		

Attribute	Main item	Sub item	Error code		Contents	Error Indication	
			High 4 bits	Low 4 bits		Detecting device	Problematic Part/Circuit
SOFT	Camera	System	3E*1	5010	Abnormal position after mechanical shutter front curtain setting	MSHUT	MSHUT
				5020	Abnormal position after mechanical shutter front curtain setting		
				5030	Abnormal position after mechanical shutter front curtain setting		
	Recording	Motion Image Recording	3F*0	0001	File time out error in recording motion image	MOVR T.O.	SOFT
				0002	File data cue send error in recording motion image	MOVR FILE	MOVR T.O.
Wi-Fi			3211	****	Wi-Fi/Bluetooth error (Initial Setting error of Wi-Fi.Bluetooth)	WiFi	WiFi
			3A11	0000			
				0001	Wi-Fi's destination setting error		

Important Notice about "Error Code List"

About "*" indication:

The third digit from the left is different as follows.

- In case of 0 (example: 2B**0**01000)

  When the third digit from the left shows "0", this error occurred under the condition of Initial Settings has been completed.

  It means that this error is occurred basically at user side.

- In case of 8 (example: 2B**8**01000)

  When the third digit from the left shows "8", this error occurred under the condition of Initial Settings has been released.

  (Example: Factory assembling-line before unit shipment, Service mode etc.)

  It means that this error is occurred at service side.

• **Step 3. How to Exit from Error Code Display Mode:**

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

NOTE:

The error code can not be initialized.

7 Troubleshooting Guide

7.1.   Checking Method of Body and Interchangeable Lens

1. **Reference information**
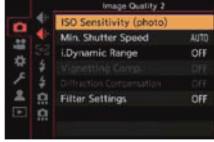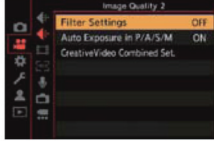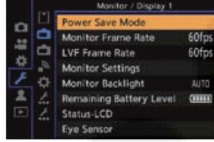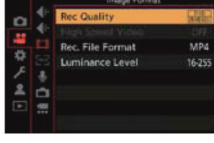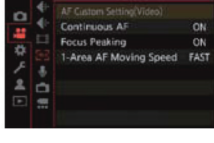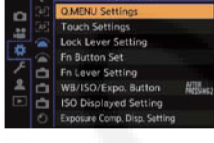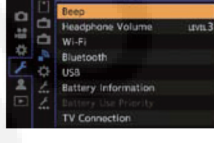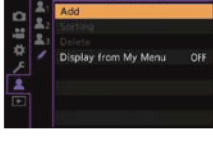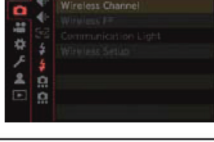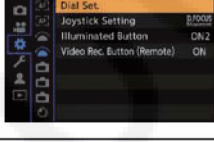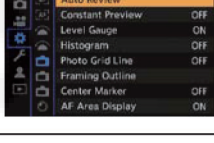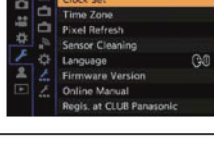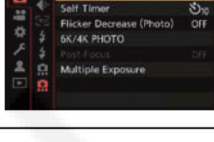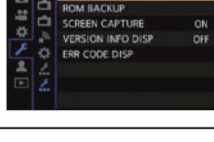
MENU LIST(Quick Reference)
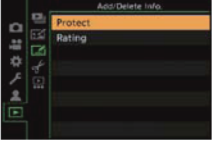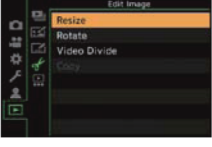
■ Mode Dial

iA	Intelligent Auto Mode	▣M	Creative Video Mode
P	Programme AE Mode	C1	Custom Mode
A	Aperture-Priority AE Mode	C2	Custom Mode
S	Shutter-Priority AE Mode	C3	Custom Mode
M	Manual Exposure Mode		

Pressing the [MENU/SET button] displays the basic menu. All basic menu is not displayed in the red letters mode.
Some menus are displayed in service mode only.

■ Basic Menu

	[PHOTO]	[VIDEO]	[CUSTOM]	[SETUP]	[MY MENU]
1st Page	**Image Quality 1** — Photo Style; Metering Mode; Aspect Ratio 3:2; Picture Quality FINE; Picture Size L 24M; HLG Photo OFF; High Resolution Mode; Long Exposure NR ON	**Image Quality 1** — Exposure Mode; Photo Style; Metering Mode; ISO Sensitivity (video); Flicker Decrease (Video) OFF; i.Dynamic Range OFF; Vignetting Comp.; Diffraction Compensation OFF	**Image Quality** — Photo Style Settings; ISO Increments 1/3EV; Extended ISO OFF; Exposure Offset Adjust.; Color Space sRGB; Exposure Comp. Reset OFF	**Card/File** — Card Format; Double Card Slot Function; Folder / File Settings; File Number Reset; Copyright Information	**Page 1** — No item
2nd Page	**Image Quality 2** — ISO Sensitivity (photo); Min. Shutter Speed AUTO; i.Dynamic Range OFF; Vignetting Comp. OFF; Diffraction Compensation OFF; Filter Settings OFF	**Image Quality 2** — Filter Settings OFF; Auto Exposure in P/A/S/M ON; CreativeVideo Combined Set.	**Focus/Shutter 1** — Focus/Shutter Priority; Focus Switching for Vert / Hor OFF; AF/AE Lock Hold OFF; AF+MF OFF; MF Assist; MF Guide m; Focus Ring Lock OFF; Show/Hide AF Mode	**Monitor / Display 1** — Power Save Mode; Monitor Frame Rate 60fps; LVF Frame Rate 60fps; Monitor Settings; Monitor Backlight AUTO; Remaining Battery Level AUTO; Status-LCD; Eye Sensor	**Page 2** — No item
3rd Page	**Focus** — AF Custom Setting(Photo); AF Assist Light ON; Focus Peaking ON; 1-Area AF Moving Speed FAST	**Image Format** — Rec Quality; High Speed Video OFF; Rec. File Format MP4; Luminance Level 16-255	**Focus/Shutter 2** — Pinpoint AF Setting; AF-Point Scope Setting; Shutter AF ON; Half-Press Sutter OFF; Quick AF OFF; Eye Sensor AF OFF; Looped Focus Frame OFF; AFC Start Point (225-Area) OFF	**Monitor / Display 2** — Level Gauge Adjust.	**Page 3** — No item
4th Page	**Flash 1** — Flash Mode; Firing Mode TTL; Flash Adjust. ±0 EV; Flash Synchro 1st; Manual Flash Adjust.; Auto Exposure Comp. OFF; Red-Eye Removal OFF; Wireless OFF	**Focus** — AF Custom Setting(Video); Continuous AF ON; Focus Peaking ON; 1-Area AF Moving Speed FAST	**Operation 1** — Q.MENU Settings; Touch Settings; Lock Lever Setting; Fn Button Set; Fn Lever Setting; WB/ISO/Expo. Button; ISO Displayed Setting; Exposure Comp. Disp. Setting	**IN/OUT** — Beep; Headphone Volume LEVEL3; Wi-Fi; Bluetooth; USB; Battery Information; Battery Use Priority; TV Connection	**Edit My Menu** — Add; Sorting; Delete; Display from My Menu OFF
5th Page	**Flash 2** — Wireless Channel; Wireless FP; Communication Light; Wireless Setup	**Audio** — Sound Rec Level Disp. OFF; Sound Rec Level Adj. 0dB; Sound Rec Level Limiter; Wind Noise Canceller STANDARD; Mic Socket MIC; Special Mic STEREO; XLR Mic Adaptor Setting; Sound Output REALTIME	**Operation 2** — Dial Set.; Joystick Setting D.FOCUS; Illuminated Button ON2; Video Rec. Button (Remote) ON	**Setting** — Save to Custom Mode; Load Custom Mode; Custom Mode Settings; Save/Restore Camera Setting; Reset; Activate	
6th Page	**Others (Photo) 1** — Bracketing OFF; Silent Mode OFF; Image Stabilizer; Burst Shot 1 Setting H; Burst Shot 2 Setting; Shutter Type MECH.; Shutter Delay OFF; Ex. Tele Conv. OFF	**Monitor / Display** — HDMI Rec Output	**Monitor / Display 1** — Auto Review; Constant Preview OFF; Level Gauge ON; Histogram OFF; Photo Grid Line OFF; Framing Outline; Center Marker; AF Area Display ON	**Others** — Clock Set; Time Zone; Pixel Refresh; Sensor Cleaning; Language; Firmware Version; Online Manual; Regis. at CLUB Panasonic	
7th Page	**Others (Photo) 2** — Time Lapse/Animation; Self Timer; Flicker Decrease (Photo) OFF; 6K/4K PHOTO; Post Focus OFF; Multiple Exposure	**Others (Video)** — Image Stabilizer; Image Area of Video FULL	**Monitor / Display 2** — Live View Boost; Monochrome Live View; Night Mode; LVF/Monitor Disp. Set; Expo.Meter; Focal Length ON; Photo/Video Preview; Photos/Videos Remaining	**Others** — Approved Regulations; ROM BACKUP; SCREEN CAPTURE ON; VERSION INFO DISP OFF; ERR CODE DISP	
8th Page			**Monitor / Display 3** — Show/Hide Monitor Layout; Blinking Highlights; Zebra Pattern OFF; HLG View Assist; Sheer Overlay OFF; I.S. Status Scope OFF		
9th Page			**Lens / Others** — Lens Focus Resume OFF; Focus Ring Control NON-LINEAR		

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	[PLAYBACK]
1st Page	Playback Mode Rotate Disp. ON Picture Sort DATE/TIME Magnify from AF Point OFF HLG View Assist (Monitor) MODE2
2nd Page	Process Image RAW Processing 6K/4K PHOTO Bulk Saving 6K/4K PHOTO Noise Reduction AUTO Time Lapse Video Stop Motion Video
3rd Page	Add/Delete Info. Protect Rating
4th Page	Edit Image Resize Rotate Video Divide Copy
5th Page	Others Delete Confirmation

The menu item which can not be chosen is displayed in gray. When the menu page has no items that can be chosen, the page skips display.
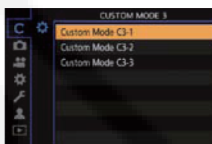
■ Other than Basic Menu

[▯M Creative Video Mode]

[REC] is not displayed.
[VIDEO], [CUSTOM], [SETUP], [MY MEMU] and [PLAYBACK] are the same as above-mentioned
Menu LIST (Quick Referce.))

[C3 Custom Mode]

When Mode Dial is set to Custom Mode, the menu shown below is displayed.

CUSTOM MODE 3
Custom Mode C3-1
Custom Mode C3-2
Custom Mode C3-3

7.2. Wi-Fi Circuit (WIFI BT P.C.B.)

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 Network Settings] for removing Wi-Fi password, then check the operation.

[Reset Procedure of Network Settings]
    1) After selecting [Reset] by Cursor buttons, press the [MENU/SET] button and then select [Reset Network Settings].
    2) Select [YES] and press the [MENU/SET] button.
(The [Reset Network Settings] performs not only resetting Wi-Fi Password but also resetting other all Wi-Fi Settings (Excluding [LUNIX CLUB]) and registered device information in [Bluetooth].)

7.2.2. Checking of trouble caused by Wi-Fi Circuit or not

The Wi-Fi Circuit 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) Select [Wi-Fi] in [Setup] menu.
2) Select [Wi-Fi Function] in [Wi-Fi] menu.
3) Select [New Connection] in [Wi-Fi] menu.
4) Select [Send Images While Recording] menu.
5) Select optional destination in [Select the destination] menu, then select [Via Network] in [Select connection method] menu.
6) Select [From List] in [Select connection method] menu.
7) The Wi-Fi Circuit works properly if the wireless access point (broadband router) name (SSID) in use is displayed.

*Change the WIFI BT P.C.B., when the above checking detected the abnormal of Wi-Fi module.
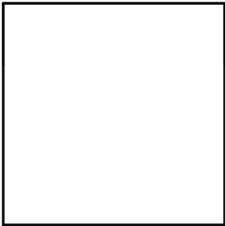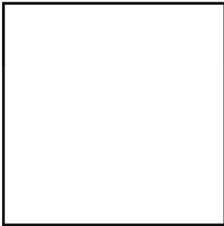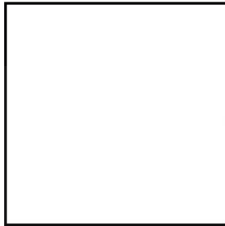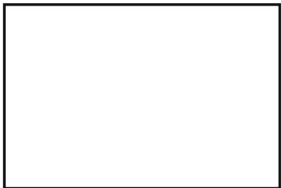
8 Service Fixture & Tools

8.1. Service Fixture and Tools

The following service fixture and tools are shown in the following information.
About the adjustments of simplicity flange back, refer to "8.3. Service Position" section of this service manual for details.

Camera Body **DC-S1 or DC-S1R**	Lens **S-X50**	Shutter Adjustment Collimator **RFKZ0630**
*Correspond by the marketed commodity. (It does not supply as service fixture and tools.)	*Correspond by the marketed commodity. (It does not supply as service fixture and tools.)	
Collimator Attachment **SUKZ000049**	Light Box **SUKZ000050**	Halogen Lamp for Light Box **SUKZ000051**
		* For light box (SUKZ000050)
Lens (Nikon) **SUKZ000052**	Mount Adapter **SUKZ000053**	Lens Holder **SUKZ000054**
	KIPON NIK-SL	* Rubber Sheet included
Gyro Unit **SUKZ000055**	Camera Stand **RFKZ0333J**	Optical Axis Adjustment Chart **RFKZ0570**
ND Filter (ND 0.3) **RFKZ0513**	ND Filter (ND 0.9) **VFK1164ND09**	LBB Filter (LBB12) **VFK1164LBB12**

CC Filter (CC-G2.5) SUKZ000056	CC Filter (CC-Y10) RFKZ0512	CC Filter (CC-Y2.5) SUKZ000057
Gray Card RFKZ0506	Torque Driver RFKZ0456	Hex Driver (Please purchase it, locally)
	∗ Spec. : 2-30N·cm (equiv.0.2-3kgf/cm)	1.5mm
Lens Cleaning Kit (BK) VFK1900BK		
∗ Only supplied 10 set/box.		

8.2.   Clean Box

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

AIR CLEAN UNIT

CLEAN HOOD
(Part No. RFKZ0429)
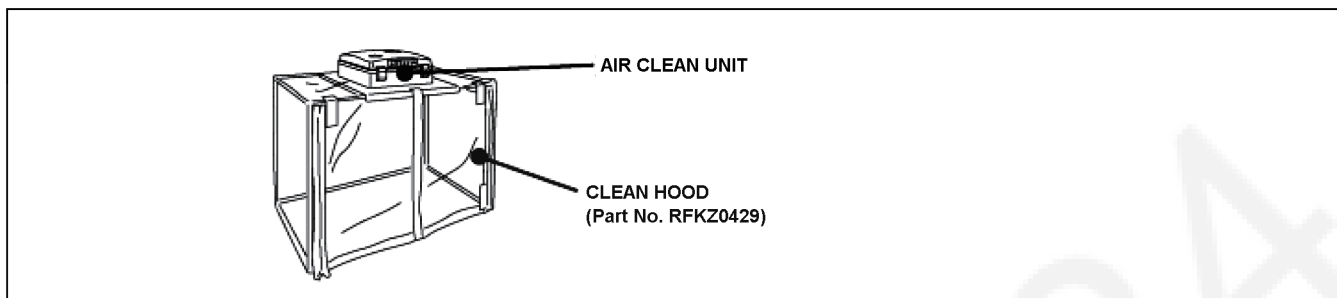
8.3.   When Replacing the Main P.C.B.

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

8.4. Service Position

This unit's service be done in the following service position, and the adjustments of simplicity flange back is executed.

(Adjustments of simplicity flange back)

Gyro Unit
(SUKZ000055)

Image Sensor Unit mounting screw
(Flange back adjustment screw）
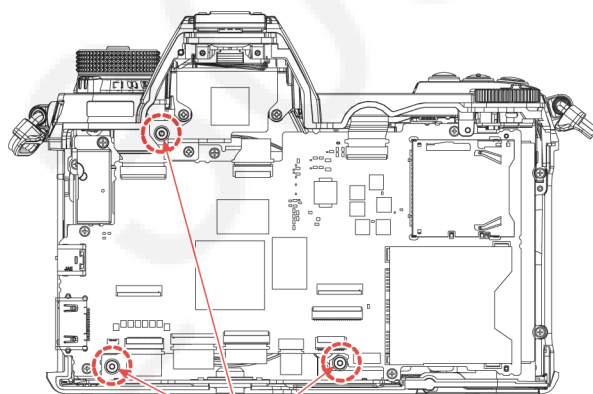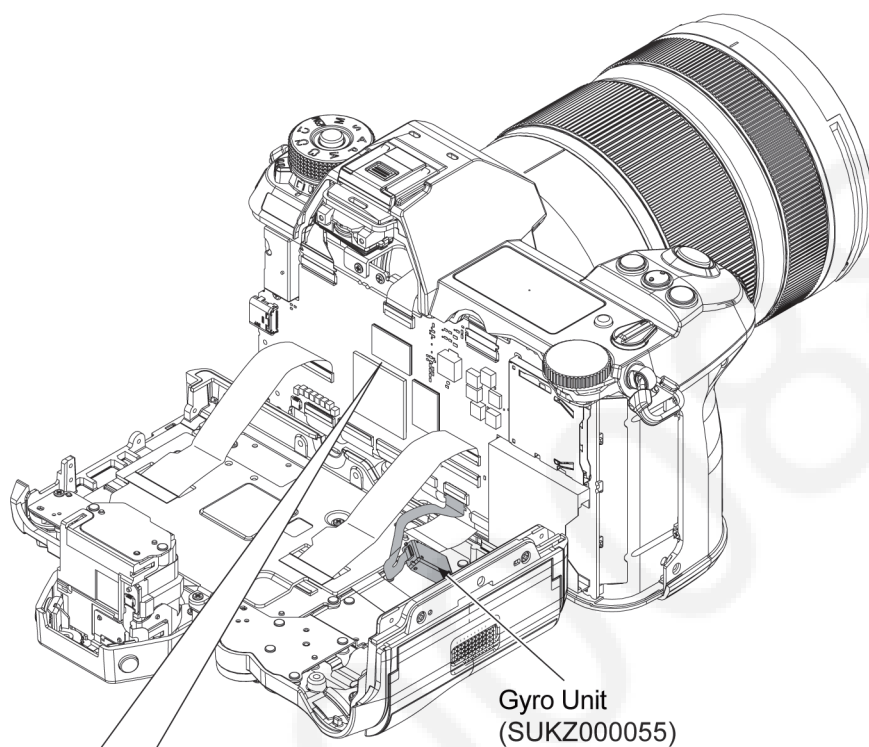
9 Disassembly and Assembly Instructions

9.1. Disassembly Flow Chart

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

2	Rear Case 1 U	→	16	Rear Plate U	→	17	LVF U

- 2 Rear Case 1 U → 16 Rear Plate U → 17 LVF U → 19 LCD U
- → 15 SD Door U
- 19 LCD U → 22 Hinge U
- → 18 Rear IF P.C.B. → 20 Rear Operation FPC U → 21 Rear Case U
- 3 Top 1 U → 13 Shutter Spacer U / Front Dial U
- → 14 Button Battery
- 3 Front 1 U → 4 Main P.C.B. → 5 EXT MIC HP P.C.B. → 6 Main Frame → 7 Tripod → 8 Shutter Mount Base U & Image Sensor U → 9 Battery Case U → 10 WIFI BT P.C.B.
- 8 Shutter Mount Base U & Image Sensor U → 23 Image Sensor U
- → 24 Shutter Mount Base U
- 9 Battery Case U → 11 Battery Door U
- → 12 Battery FPC Plate / Battery FPC U

9.2. P.C.B. Location

EXT. MIC HP P.C.B.

REMOTE P.C.B.

WIFI BT P.C.B.

REAR IF P.C.B.

MAIN P.C.B.

BATTERY DOOR P.C.B.

9.3. Disassembly Procedure

No.	Item	Fig.	Removal
2	Rear Case 1 Unit	(Fig.D1)	Screw (A) x 3
			Eye Cup
		(Fig.D2)	Front Grip (L)
			Screw (B) x 2
		(Fig.D3)	Front Grip (R)
			Screw (C) x 2
		(Fig.D4)	Screw (D) x 3
			Convex x 2
			Jack Holder Unit
			Screw (E) x 1
		(Fig.D5)	Screw (F) x 2
			Rear Grip
			Screw (G) x 1
		(Fig.D6)	FP4001 (Flex)
			FP4002 (Flex)
			Rear Case 1 Unit
3	Top 1 Unit	(Fig.D10)	Screw (H) x 2
		(Fig.D11)	Screw (I) x 1
			Front Grip Piece
			FP6001 (Flex)
			FP6004 (Flex)
			Screw (J) x 3
			Radiation Pad Top
		(Fig.D12)	Top 1 Unit
			Front 1 Unit
4	Main P.C.B.	(Fig.D13)	Radiation Pad Main 1
			Gasket Main
			FP6003 (Flex)
			PS6002 (Connector)
			FP3503 (Connector)
		(Fig.D14)	FP3502 (Flex)
			FP3510 (Flex)
			FP3511 (Flex)
			FP3512 (Flex)
			FP3551 (Flex)
			FP6002 (Flex)
			FP6005 (Flex)
			FP6006 (Flex)
			FP6008 (Flex)
			Screw (K) x 4
			Convex x 2
			Main P.C.B.
5	EXT MIC HP P.C.B.	(Fig.D16)	Screw (L) x 2
			Mic Jack Holder
			Convex x 2
			EXT MIC HP P.C.B.
6	Main Frame	(Fig.D17)	Radiation Pad Main 2
			Radiation Pad Rear 2
			Screw (M) x 3
			Screw (N) x 1
			Convex x 1
			Main Frame
7	Tripod	(Fig.D18)	Screw (O) x 3
			Tripod
8	Shutter Mount Base Unit & Image Sensor Unit	(Fig.D19)	Screw (P) x 2
		(Fig.D20)	Screw (Q) x 2
			Screw (R) x 1
			Screw (S) x 2
			Shutter Mount Base Unit & Image Sensor Unit

No.	Item	Fig.	Removal
9	Battery Case Unit	(Fig.D22)	Screw (T) x 1
			Convex x 4
			Locking tab x 2
			Battery Heat Plate
			Radiation Pad
		(Fig.D23)	FP7891 (Flex)
			Screw (U) x 3
			Convex x 2
			Battery Case Unit
10	WIFI BT P.C.B.	(Fig.D24)	Screw (V) x 2
			WIFI Cover
			FP8501 (Flex)
			Screw (W) x 1
			Convex x 2
			WIFI BT P.C.B.
11	Battery Door Unit	(Fig.D25)	Battery Case WP Poron
			Battery Door Shaft
			Battery Door Spring
			Battery Door Unit
12	Battery FPC Plate Battery FPC Unit	(Fig.D26)	Screw (X) x 2
			Locking tab x 2
			Convex x 4
			Battery FPC Plate
			Battery FPC Unit
13	Shutter Spacer Unit Front Dial Unit	(Fig.D27)	FP7511 (Flex)
			Screw (Y) x 2
			Front Dial Unit
			FP7823 (Flex)
			Screw (Z) x 3
			Convex x 2
			Shutter Spacer Unit
14	Replacing of the Button Battery	(Fig.D28)	Screw (a) x 2
			Convex x 2
			Jack Plate
			FP7531 (Flex)
			P7503 (Connector)
			Screw (b) x 1
			Convex x 2
			Remote P.C.B.
		(Fig.D29)	Solder (2 points)
			Button Battery
15	SD Door Unit	(Fig.D30)	FP7251 (Flex)
			Screw (c) x 4
			Convex x 2
			SD Door Unit
16	Rear Plate Unit	(Fig.D31)	Screw (d) x 4
			Convex x 4
			Rear Plate Unit
			Radiation Pad Rear 1 x 2
17	LVF Unit	(Fig.D33)	FP7831 (Flex)
			FP7204 (Flex)
			FP7207 (Flex)
			Screw (e) x 3
			Convex x 2
			LVF Unit
18	Rear IF P.C.B.	(Fig.D34)	FP7201 (Flex)
			Main Rear (R) FPC
			FP7202 (Flex)
			Main Rear (L) FPC
			FP7203 (Flex)
			FP7205 (Flex)
			FP7208 (Flex)
			Screw (f) x 2
			Convex x 2
			Rear IF P.C.B.
			Rear CN PCB Sheet
			Convex x 2

No.	Item	Fig.	Removal
19	LCD Unit	(Fig.D35)	FP7203 (Flex)
			Convex x 2
			Screw (g) x 4
			Convex x 2
			LCD Unit
20	Rear Operation FPC Unit	(Fig.D36)	FP7252 (Flex)
			Screw (h) x 9
			Rear Operation FPC Unit
21	Rear Case Unit	(Fig.D37)	REC Button
			AF ON Button
			Q Menu Button
			Joy Packing
			Joy Button
			Rear 3 Button Unit
			Jog Dial Packing
			Jog Unit
			Rear Case Unit
22	Hinge Unit	(Fig.D38)	Screw (i) x 6
			FP4201 (Flex)
			Hinge Unit
23	Image Sensor Unit	(Fig.D39)	Screw (j) x 3
			Graphite Sheet A
			Adjust Spring x 3
			Adjust Support Spring x 1
			Radiation Sheet
			Image Sensor Unit
24	Shutter Mount Base Unit	(Fig.D41)	Screw (k) x 6
			B Mount Ring
			B Mount
			Mount Spring
			Lens Lock Pin Unit
			Lens Lock Pin Spring
			Shutter Mount Base Unit

9.3.1. Precautions when disassembling / assembling

1. Body cap must remain installed to prevent it from dust, dirt, and so on when assembling / disassembling.
2. Do not reuse the screws tightened to metal materials. New screws must be used when assembling.
3. Do not reuse the Grip Rubbers once being used. New Grip Rubbers must be used when assembling.
   • "Rear Grip", "Front Grip (R)" and "Front Grip (L)" are supplied not only by single item but also by unit as "Grip Kit" (Part No.: 1YE1MC891CSZ).

＜**Preparation**＞
• When servicing and reassembling, remove the memory card and battery pack from the unit.

• Memory Card (SD)
• Memory Card (XQD)
• Battery Pack

Memory Card (SD)

Memory Card (XQD)

Battery Pack
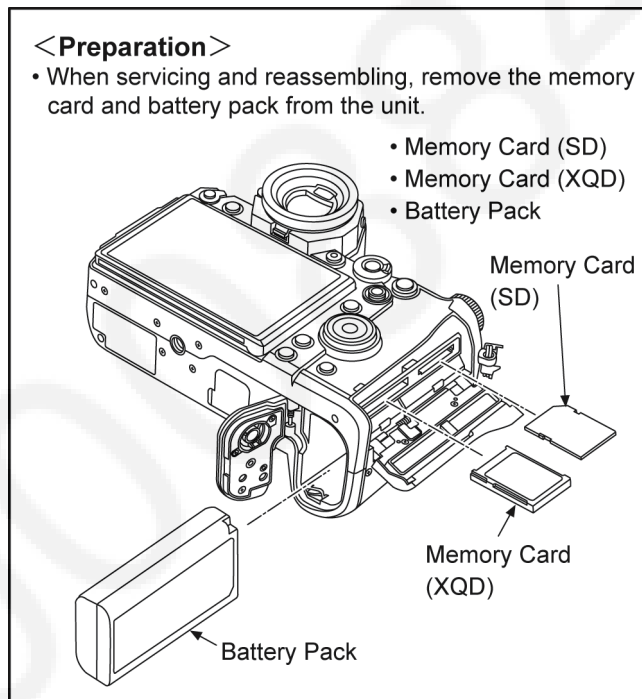
9.3.2. Removal of the Rear Case 1 Unit

• Screw (A) x 3
• Eye Cup

Eye Cup

Lock Release Lever

Screw (A)

Screw (A)

4.0mm

BLACK

NOTE: (When Replacing)
• Hold the Lock Release Lever down and turn the Eye Cup in direction of the arrow.
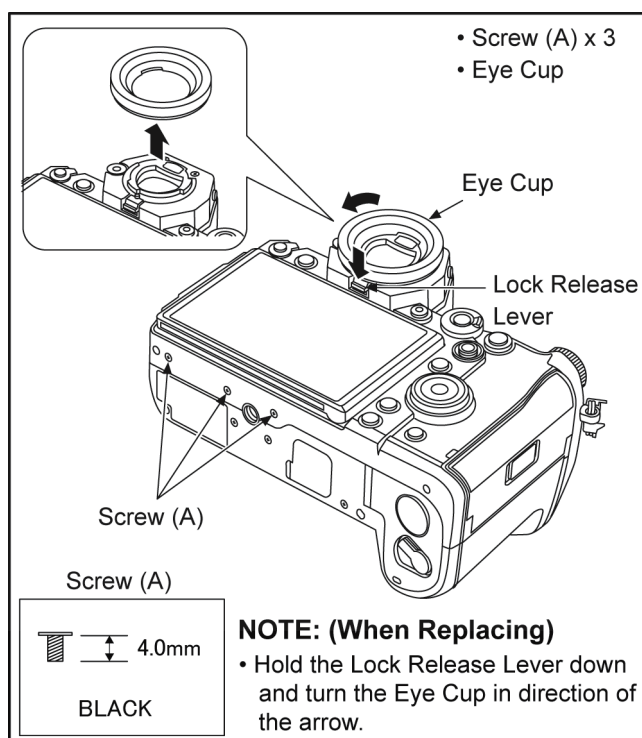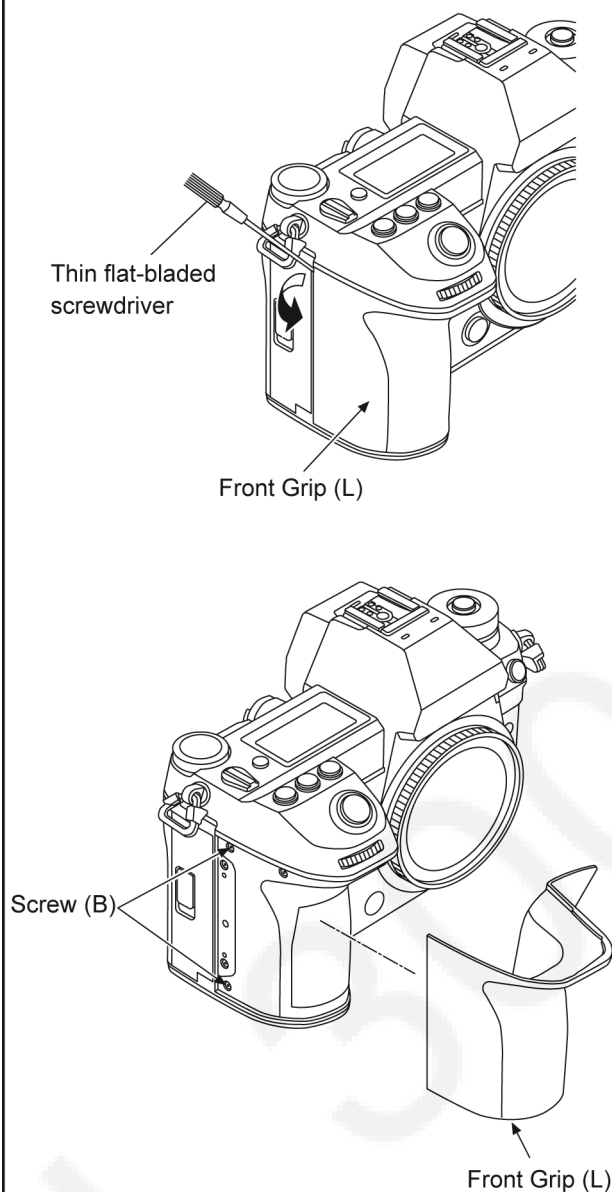
(Fig.D1)

- Front Grip (L)
- Screw (B) x 2

NOTE: (When Replacing)
- Remove the Front Grip (L) slowly and carefully.
  (Use the thin flat-bladed screwdriver.)

Thin flat-bladed
screwdriver

Front Grip (L)

Screw (B)

Front Grip (L)

NOTE: (When Replacing)
* Take care because that screw (B) is hidden under
  the Front Grip (L).
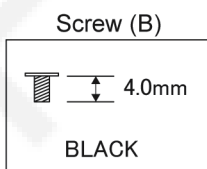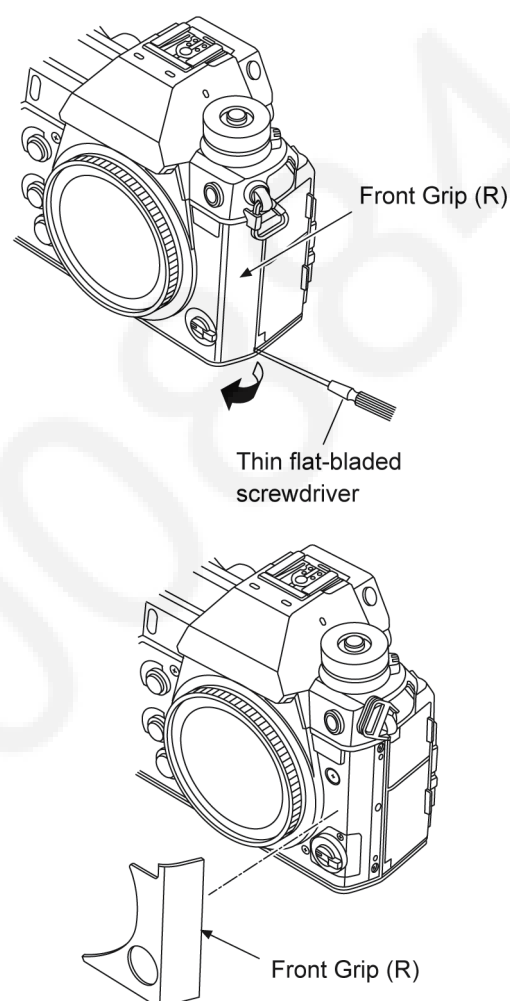
Screw (B)

‡ 4.0mm

BLACK

(Fig.D2)

- Front Grip (R)
- Screw (C) x 2

NOTE: (When Replacing)
- Remove the Front Grip (R) slowly and carefully.
  (Use the thin flat-bladed screwdriver.)

Front Grip (R)

Thin flat-bladed
screwdriver

Front Grip (R)

NOTE: (When Replacing)
* Take care because that screw (C) is hidden under
  the Front Grip (R).

MIC HP Cover

Screw (C)

USB HDMI Cover
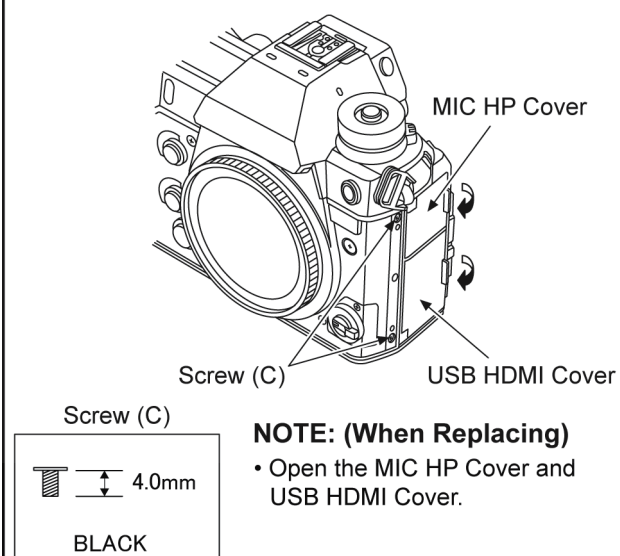
Screw (C)

‡ 4.0mm

BLACK

NOTE: (When Replacing)
- Open the MIC HP Cover and
  USB HDMI Cover.

(Fig.D3)

- Screw (D) x 3   • Screw (E) x 1
- Convex x 2
- Jack Holder Unit

Screw (D)

Screw (E)

Convex

Jack Holder Unit

Screw (D), (E)

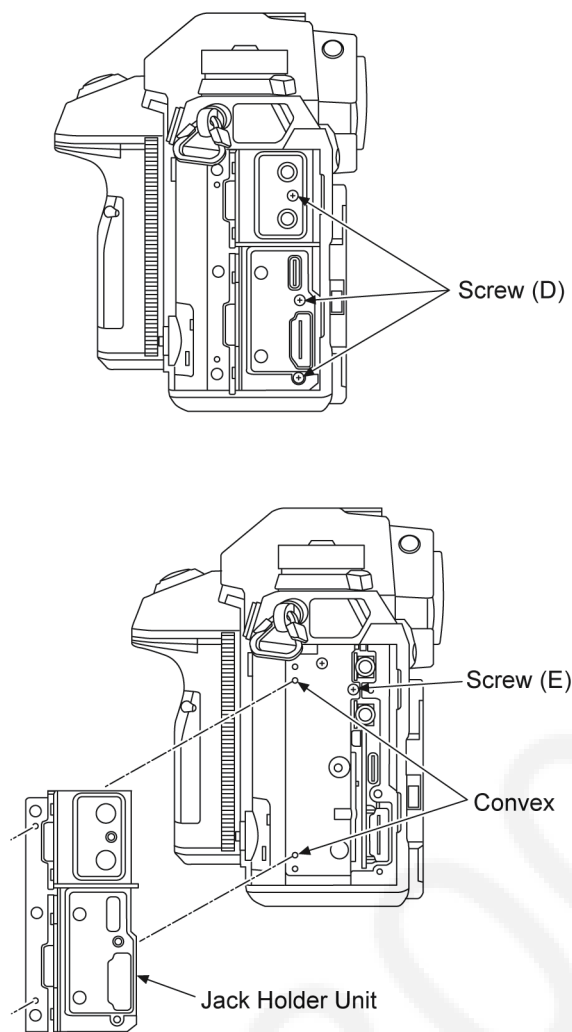|	
🔩	↕ 4.0mm
BLACK	

(Fig.D4)

- Screw (F) x 2
- Rear Grip
- Screw (G) x 1

NOTE: (When Replacing)

- Remove the Rear Grip slowly and carefully.
  (Use the thin flat-bladed screwdriver.)

Rear Grip

Thin flat-bladed
screwdriver

Screw (F)
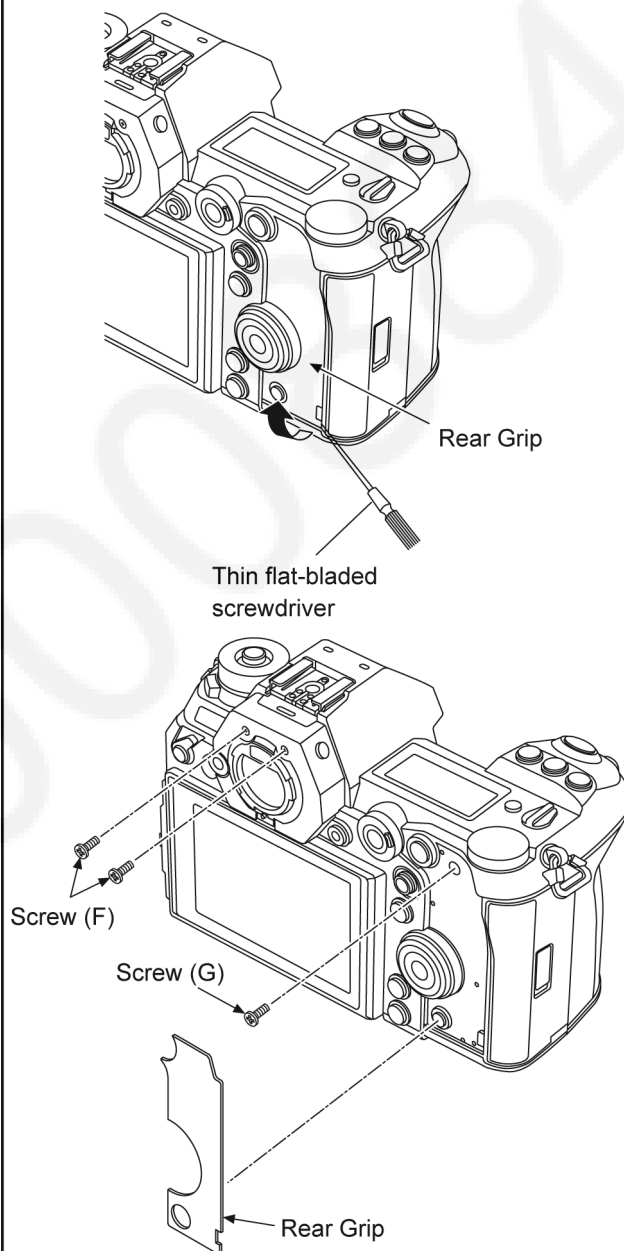
Screw (G)

Rear Grip

NOTE: (When Replacing)

* Take care because that screw (G) is hidden under
  the Rear Grip.

Screw (F)		Screw (G)	
🔩	↕ 5.0mm	🔩	↕ 5.0mm
BLACK		BLACK	

(Fig.D5)

- FP4001 (Flex)
- FP4002 (Flex)

FP4002

FP4001

Rear Case 1 Unit
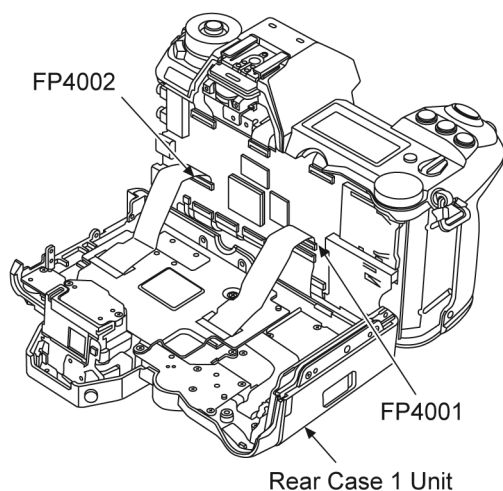
NOTE: (When Replacing)
• Do not bend the flex excessively and take care not to damage the flex.

NOTE: (When Installing)
• Take care that fibers and dust do not adhere to the surface of sealing and packing.

NOTE: (When Assembling the Rear Grip)
• When assembling, the Rear Grip must be replaced with a new one.
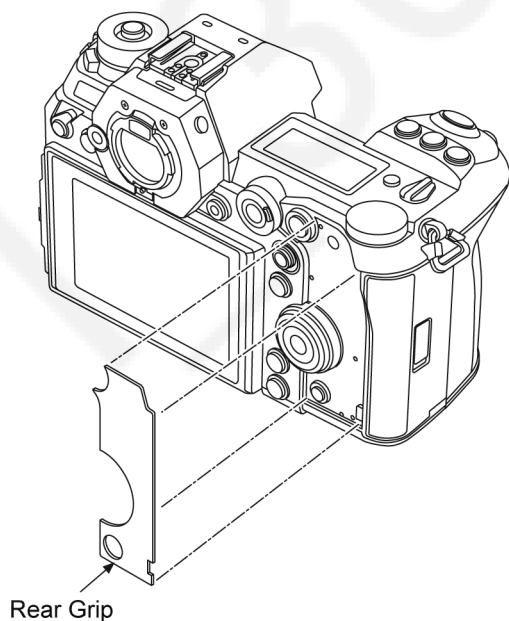
Rear Grip

(Fig.D6)

Align to the corner of recess.
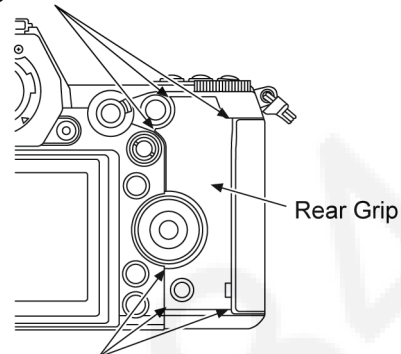
Rear Grip

Align to the corner of recess.

NOTE: (When Installing)
• Install the Rear Grip properly without deviation.

NOTE: (When Assembling the Front Grip (R))
• When assembling, the Front Grip (R) must be replaced with a new one.

Front Grip (R)

Align to the corner of recess.

Front Grip (R)

(Fig.D7)

45

Front Grip (R)

Align to the
corner of recess.
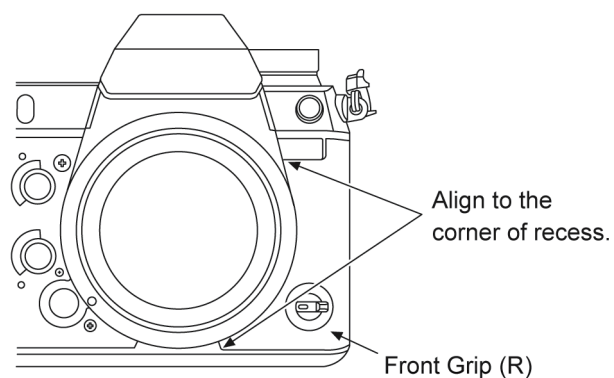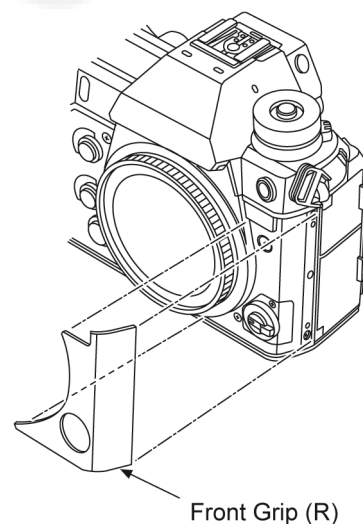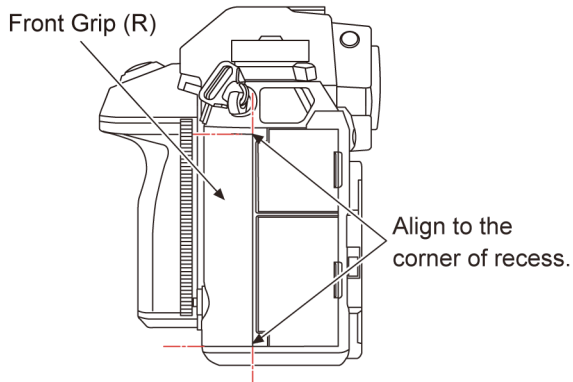
NOTE: (When Installing)
• Install the Front Grip (R) properly without deviation.

NOTE: (When Assembling the Front Grip (L))
• When assembling, the Front Grip (L) must be
  replaced with a new one.
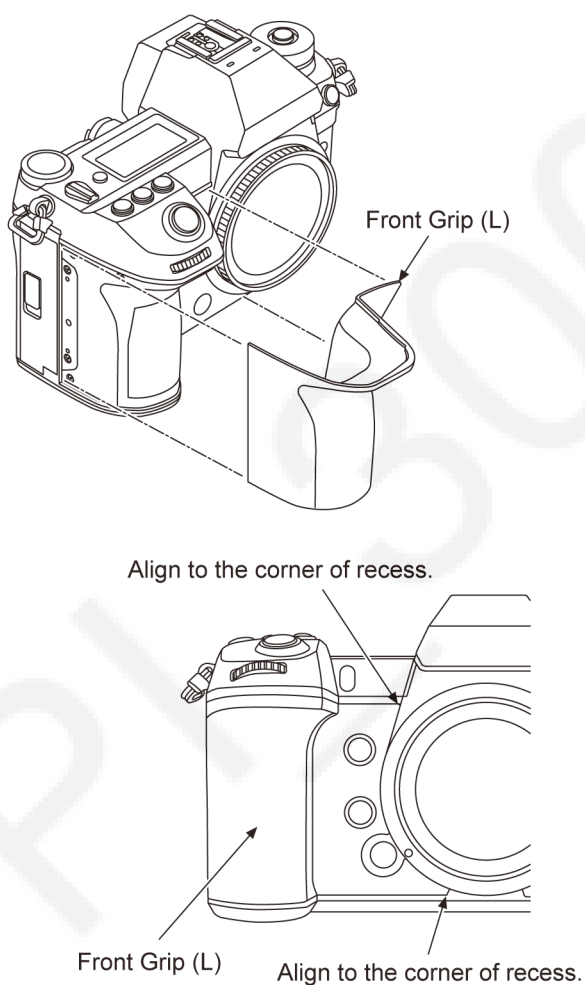
Front Grip (L)

Align to the corner of recess.

Front Grip (L)   Align to the corner of recess.

NOTE: (When Installing)
• Install the Front Grip (L) properly without deviation.

(Fig.D8)

Front Grip (L)

Align to the end surface of recess.
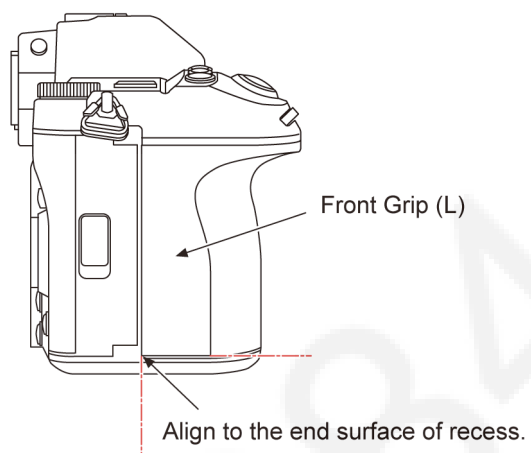
NOTE: (When Installing)
• Install the Front Grip (L) properly without deviation.

(Fig.D9)

9.3.3. Removal of the Top 1 Unit

• Screw (H) x 2

Screw (H)

Screw (H)

Screw (H)

↕ 4.0mm

BLACK

(Fig.D10)

- Screw (I) x 1
- Front Grip Piece
- FP6001 (Flex)
- FP6004 (Flex)
- Screw (J) x 3
- Radiation Pad Top

Front Grip Piece

Screw (I)

FP6001   Screw (J)   FP6004

Radiation Pad Top

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

(2)

(1)

Screw (I)	Screw (J)
8.0mm	4.0mm
BLACK	SILVER

(Fig.D11)

- Front 1 Unit

Top 1 Unit

Front 1 Unit

NOTE: (When Installing)
- Take care that fibers and dust do not adhere to the surface of sealing and packing.

Pasting position srandard

Top Heat Sink

Radiation Pad Top

(Fig.D12)

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

- Radiation Pad Main 1
- Gasket Main
- FP6003 (Flex)
- PS6002 (Connector)
- FP3503 (Connector)

FP6003

PS6002

FP3503

Gasket Main

Radiation Pad Main 1

NOTE: (When Replacing)
- Remove the Radiation Pad Main 1 and Gasket Main slowly and carefully.
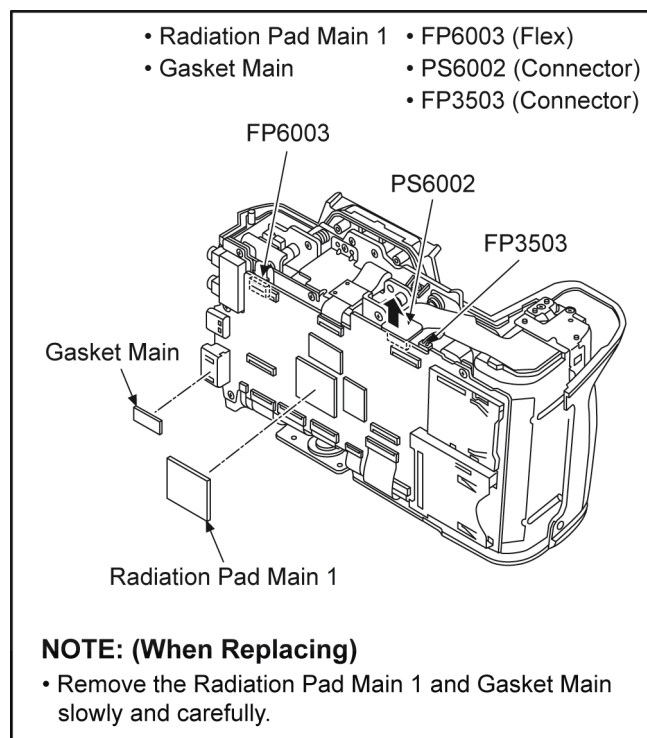
(Fig.D13)

- FP3502 (Flex)
- FP3510 (Flex)
- FP3511 (Flex)
- FP3512 (Flex)
- FP3551 (Flex)
- FP6002 (Flex)
- FP6005 (Flex)
- FP6006 (Flex)
- FP6008 (Flex)
- Screw (K) x 4
- Convex x 2

FP6006 FP3512 FP3551 FP6005

FP3510 FP3511 FP6008 FP6002 FP3502

NOTE: (When Replacing)

(1)

(2)

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

Main P.C.B.   Screw (K)

Screw (K)

Screw (K)

Convex

Screw (K)

4.0mm
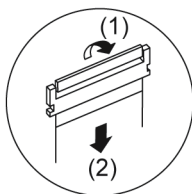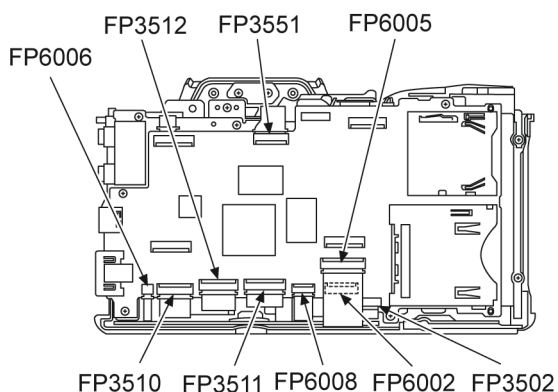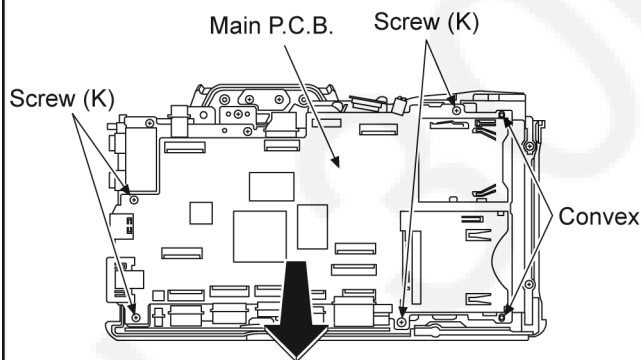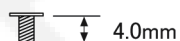
SILVER

(Fig.D14)

Pasting position srandard

Pasting position standard :
Outline of IC ± 0.5mm

Radiation Pad Main 1

Gasket Main

Pasting position standard
(Left and Right) :
End face of the hole ± 0.5mm

Pasting position standard
(UP and Down) : Center of the terminal
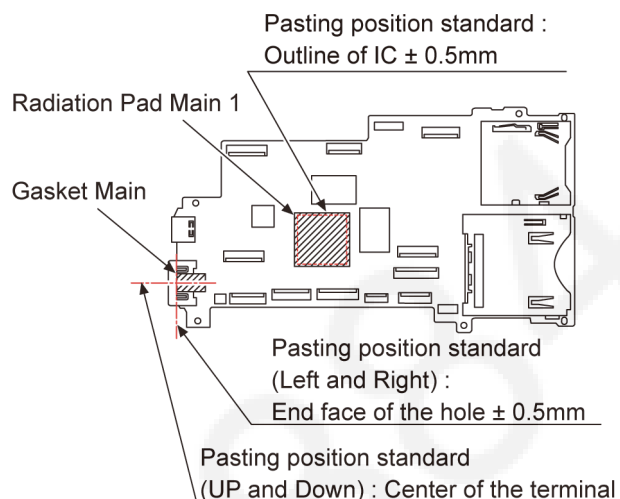
(Fig.D15)

9.3.5.   Removal of the EXT MIC HP P.C.B.

- Screw (L) x 2
- Mic Jack Holder
- Convex x 2

Screw (L)

EXT MIC HP P.C.B.

Convex

Convex

Mic Jack Holder

Screw (L)

3.0mm
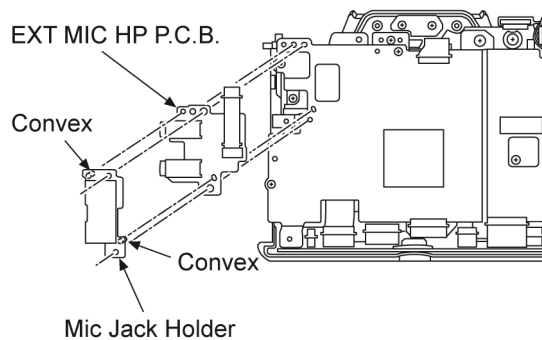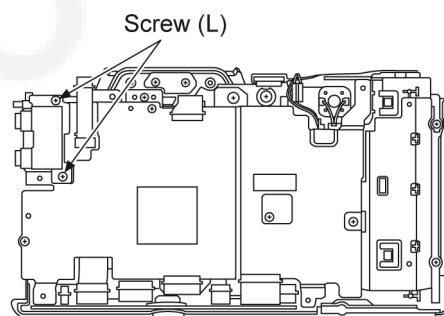
RED

(Fig.D16)

9.3.6.   Removal of the Main Frame

- Radiation Pad Main 2
- Radiation Pad Rear 2
- Screw (M) x 3
- Screw (N) x 1
- Convex x 1

Screw (N)

Screw (M)

Main Frame

Convex

Screw (M)

Screw (M)

Radiation Pad Rear 2

Radiation Pad Main 2

Pasting position srandard

Indentation mark ± 0.5mm

Pasting position standard
Indentation mark ± 0.5mm

Convex portion ± 0.5mm

Pasting position standard

Main Frame

Convex portion ± 0.5mm

Screw (M)	Screw (N)
4.0mm	3.0mm
SILVER	RED

(Fig.D17)

9.3.7.   Removal of the Tripod

- Screw (O) x 3

Screw (O)

Tripod
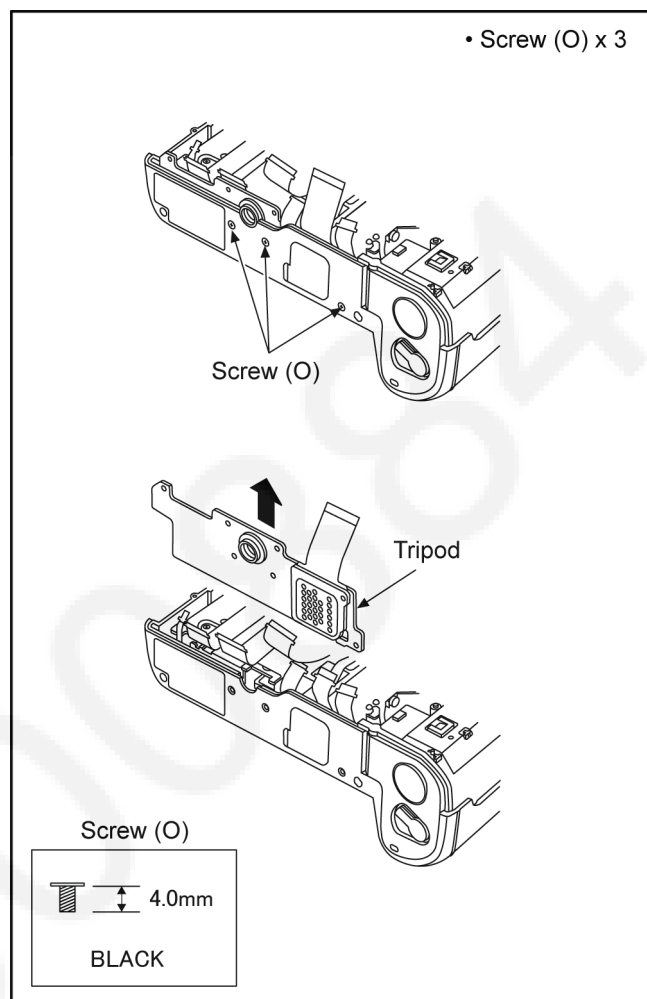
Screw (O)
4.0mm
BLACK

(Fig.D18)

9.3.8.   Removal of the Shutter Mount Base Unit & Image Sensor Unit

- Screw (P) x 2

Screw (P)
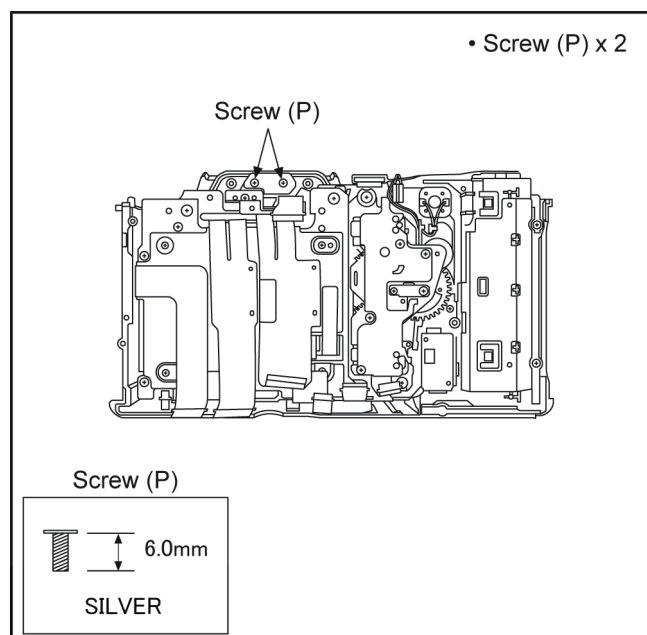
Screw (P)
6.0mm
SILVER

(Fig.D19)

- Screw (Q) x 2
- Screw (S) x 2

Screw (Q)

Screw (S)

Shutter Mount
Base Unit &
Image Sensor Unit

Screw (Q)	Screw (S)
4.2mm	4.5mm
SILVER	SILVER
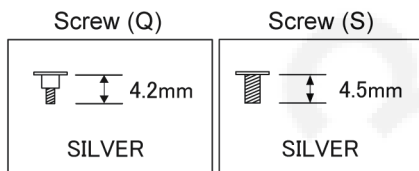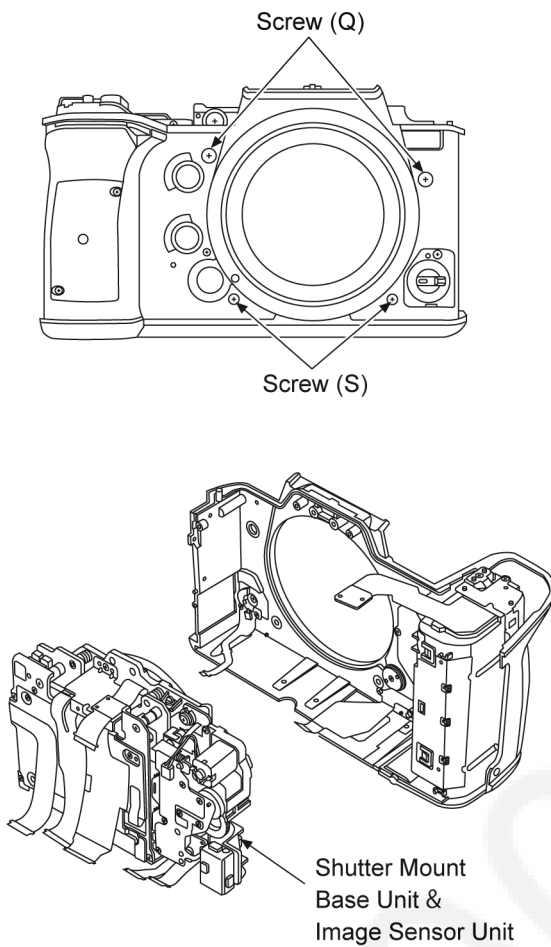
(Fig.D20)

IMPORTANT NOTICE:
- Be careful not to touch the shaded portion (X contact and motor, etc.), because the characteristic of the Shutter Mount Base & Image Sensor Unit may change. (Handle it as shown in the figure below)

Shutter Mount
Base Unit &
Image Sensor Unit

(Fig.D21)

9.3.9. Removal of the Battery Case Unit

- Screw (T) x 1
- Battery Heat Plate
- Convex x 4
- Radiation Pad
- Locking tab x 2

Convex

Convex

Screw (T)

Locking tab

Convex

Convex

Radiation Pad

Battery Heat Plate

Screw (T)
4.0mm
SILVER

(Fig.D22)

- FP7891 (Flex)   • Convex x 2
- Screw (U) x 3

Screw (U)

Convex

Screw (U)

FP7891   Convex

Battery Case Unit

NOTE: (When Installing)
- Take care that fibers and dust do not adhere to the surface of sealing and packing.

Screw (U)

⊤ ↕ 4.0mm

SILVER

Pasting position srandard

Battery Case Unit

Pasting position standard
(Up and Down) :
End face of the hole
0～+2mm

Radiation Pad

⊕
⊖

⊖ ⊕

Pasting position
standard
(Left and Right) :
End face of the hole
-1～+0.5mm

(Fig.D23)

9.3.10. Removal of the WIFI BT P.C.B.

- Screw (V) x 2   • FP8501 (Flex)
- WIFI Cover   • Screw (W) x 1
- Convex x 2

Screw (V)

WIFI Cover

WIFI BT P.C.B.

Convex

Screw (W)

FP8501

Screw (V), (W)

⊤ ↕ 3.0mm

RED

(Fig.D24)

9.3.11. Removal of the Battery Door Unit

• Battery Case WP Poron
• Battery Door Shaft
• Battery Door Spring

Battery Case WP Poron

NOTE: (When Replacing)
• Peel the Battery Case WP Poron slowly and carefully.

Battery Door Spring

Battery Door Shaft

Battery Door Unit

NOTE: (When Installing)
• Take care that fibers and dust do not adhere to the surface of sealing and packing.
• Do not reuse the Battery Case WP Poron. Use a new one.

(Fig.D25)

9.3.12. Removal of the Battery FPC Plate, Battery FPC Unit

• Screw (X) x 2
• Locking tab x 2
• Convex x 4

Screw (X)   Convex

Convex   Screw (X)

Convex

Locking tab

Battery FPC Plate

Battery FPC Unit

Screw (X)

3.0mm

BLACK

(Fig.D26)

9.3.13. Removal of the Shutter Spacer Unit, Front Dial Unit

- FP7511 (Flex)
- Screw (Y) x 2
- FP7823 (Flex)
- Screw (Z) x 3
- Convex x 2

Screw (Y)

FP7511

Front Dial Unit

Top Unit

Screw (Z)   Convex

Shutter Spacer Unit

Double-sided Tape

Convex

FP7823

NOTE: (When Replacing)
- FPC is paseted with the double-sided tape.
  Peel the double-slided tape slowly and carefully.

Screw (Y)	Screw (Z)
5.0mm	3.0mm
SILVER	RED

(Fig.D27)

9.3.14. Replacing of the Button Battery

- Screw (a) x 2
- Convex x 2
- Jack Plate
- FP7531 (Flex)
- P7503 (Connector)
- Screw (b) x 1
- Convex x 2
- Remote P.C.B.

FP7531

Convex

Screw (a)

P7503   Jack Plate

Convex

Screw (a)

Screw (b)

Remote P.C.B.

Convex

Convex   Jack Terminal

NOTE: (When Replacing)
- Remove the Remote P.C.B. by sliding it in direction of the arrow.

Screw (a)	Screw (b)
8.0mm	4.0mm
BLACK	SILVER

(Fig.D28)

[FOIL SIDE]

• Solder (2 points)

Jack Terminal

[COMPONENT SIDE]

Solder (2 points)

Button Battery
(B7531)

Line Processing

Lead Wire

(Fig.D29)

9.3.15. Removal of the SD Door Unit

• FP7251 (Flex)
• Screw (c) x 4
• Convex x 2

FP7251

Screw (c)

Screw (c)

Convex

SD Door Unit

Screw (c)

3.0mm

RED

(Fig.D30)

9.3.16. Removal of the Rear Plate Unit

- Screw (d) x 4
- Convex x 4
- Radiation Pad Rear 1 x 2

Screw (d)

Screw (d)

Convex

Convex

Radiation Pad Rear 1

Radiation Pad Rear 1

Rear Plate Unit

Screw (d)

4.0mm

SILVER

NOTE: (When Replacing)
- Do not bend the flex excessively and take care not to damage the flex.

(Fig.D31)

Pasting position srandard

Rear Plate Unit

Radiation Pad Rear 1

Radiation Pad Rear 1

Convex parts

(Fig.D32)

9.3.17. Removal of the LVF Unit

- FP7831 (Flex)
- FP7204 (Flex)
- FP7207 (Flex)
- Screw (e) x 3
- Convex x 2

FP7831

Screw (e)

LVF Unit

Convex

Convex

FP7207

FP7204

Screw (e)

4.0mm

SILVER

(Fig.D33)

9.3.18.   Removal of the Rear IF P.C.B.

- FP7201 (Flex)
- Main Rear (R) FPC
- FP7202 (Flex)
- Main Rear (L) FPC
- FP7203 (Flex)
- FP7205 (Flex)
- FP7208 (Flex)
- Screw (f) x 2
- Convex x 2
- Rear CN PCB Sheet
- Convex x 2

FP7202   FP7201

Main Rear (L) FPC   Main Rear (R) FPC

(1)
(2)

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

Screw (f) Convex FP7208   Screw (f)

Rear IF P.C.B.

FP7205

Convex

Screw (f)   (1)   FP7203

(2)

3.0mm

RED

Convex

Rear CN PCB Sheet

(Fig.D34)

9.3.19.   Removal of the LCD Unit

- FP7203 (Flex)
- Convex x 2
- Screw (g) x 4
- Convex x 2

(1)
(2)

FP7203

FPC

Convex

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

LCD Unit   Convex

Screw (g)   Screw (g)

Flex

LCD Unit   • Pull out the Flex through the elongated hole.

Screw (g)

4.0mm

BLACK

NOTE: (When Replacing)
- Do not bend the flex excessively and take care not to damage the flex.

(Fig.D35)

9.3.20. Removal of the Rear Operation FPC Unit

- FP7252 (Flex)
- Screw (h) x 9

FP7252

Screw (h)

Screw (h)   Rear Operation FPC Unit

Screw (h)

▱ ⇕ 3.0mm

RED
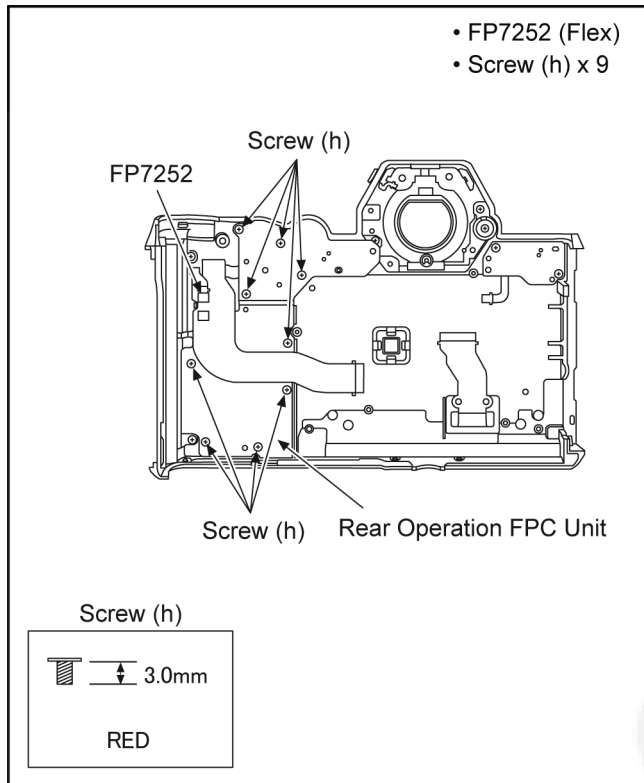
(Fig.D36)

9.3.21. Removal of the Rear Case Unit

- REC Button   • Joy Packing   • Jog Dial Packing
- AF ON Button   • Joy Button   • Jog Unit
- Q Menu Button   • Rear 3 Button Unit

Rear Case Unit

AF ON Button

Joy Button

Joy Packing

REC Button

Q Menu Button

Jog Unit   Rear 3 Button Unit

Jog Dial Packing

NOTE: (When Installing)
- Take care that fibers and dust do not adhere to the surface of sealing and packing.
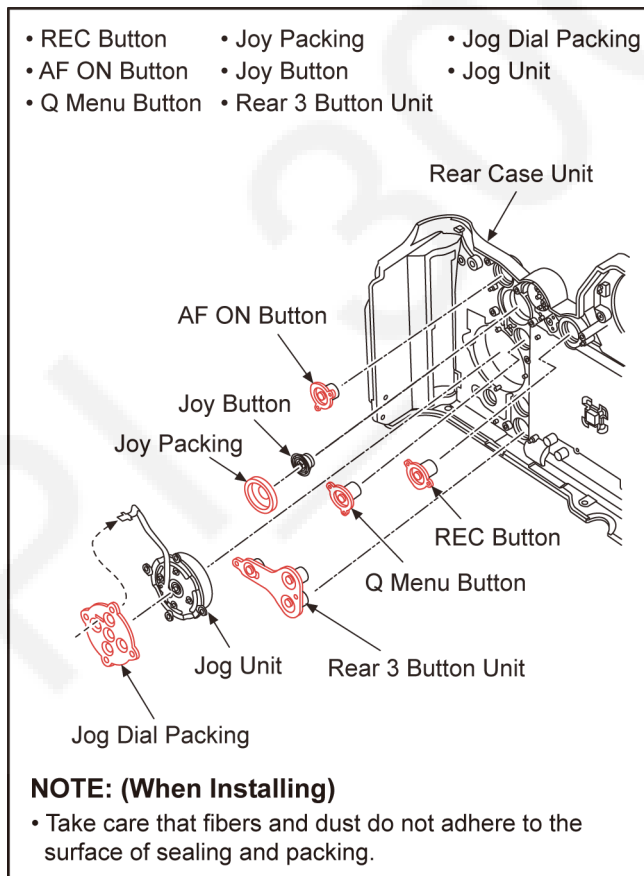
(Fig.D37)

9.3.22. Removal of the Hinge Unit

- Screw (i) x 6
- FP4201 (Flex)

• Raise the Hinge Unit in direction of the arrow.

Screw (i)

Screw (i)

Screw (i)

▱ ⇕ 3.3mm

BLACK

- After removing the 6 screws, put the Hinge Unit back in the previous position.

Slide Lever

- Slide the Slide Lever in direction of the arrow, and then make a half turn of the Hinge Unit in direction of the arrow, and remove the flex of FP4201.

Hinge Unit

FP4201

NOTE: (When Replacing)

(2)

(1)

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

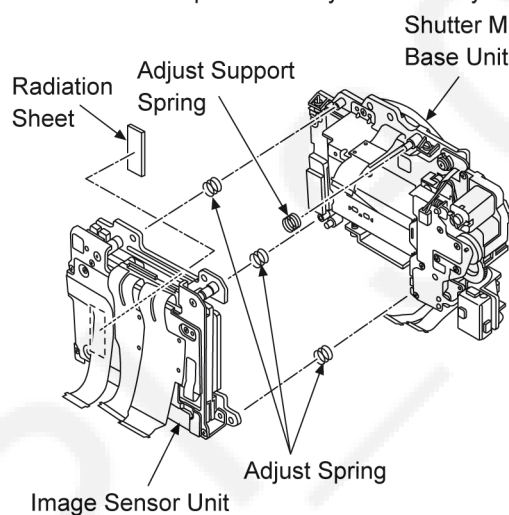(Fig.D38)

9.3.23. Removal of the Image Sensor Unit

IMPORTANT NOTICE:
- When remove or turn the Screw (j), "Simplicity flange back adjustment" is necessary.
  Perform the "Simplicity flange back adjustment" according to contents described in "10 Measurement and Adjustment" of this service manual.

- Screw (j) x 3
- Graphite Sheet A
- Adjust Spring x 3
- Adjust Support Spring x 1
- Radiation Sheet

Screw (j)   Shutter Mount Base Unit
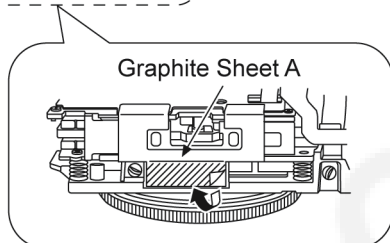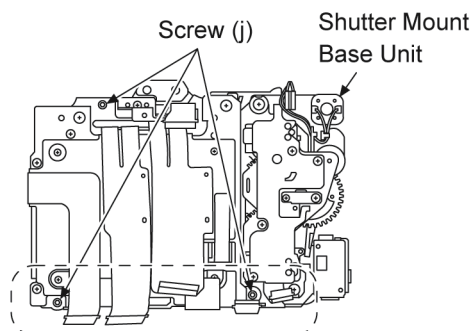
Graphite Sheet A

- Peel the Graphite Sheet A to the shaded portion slowly and carefully.

Radiation Sheet   Adjust Support Spring   Shutter Mount Base Unit

Adjust Spring

Image Sensor Unit

NOTE: (When Replacing)
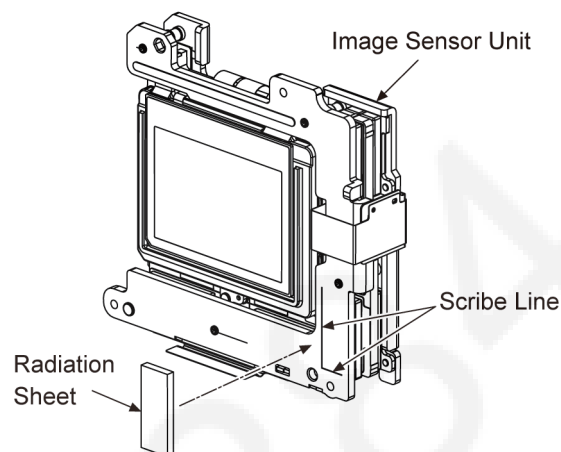- When removing the Image Sensor Unit, take care not to lose the Adjust Springs and Adjust Support Spring.

Screw (j)

7.0mm

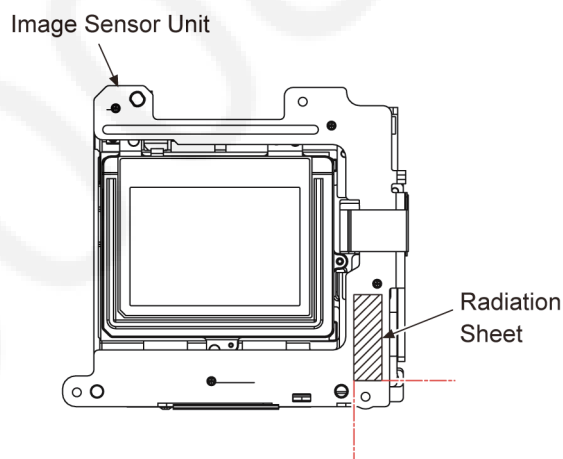SILVER
Hexagon Screwdriver
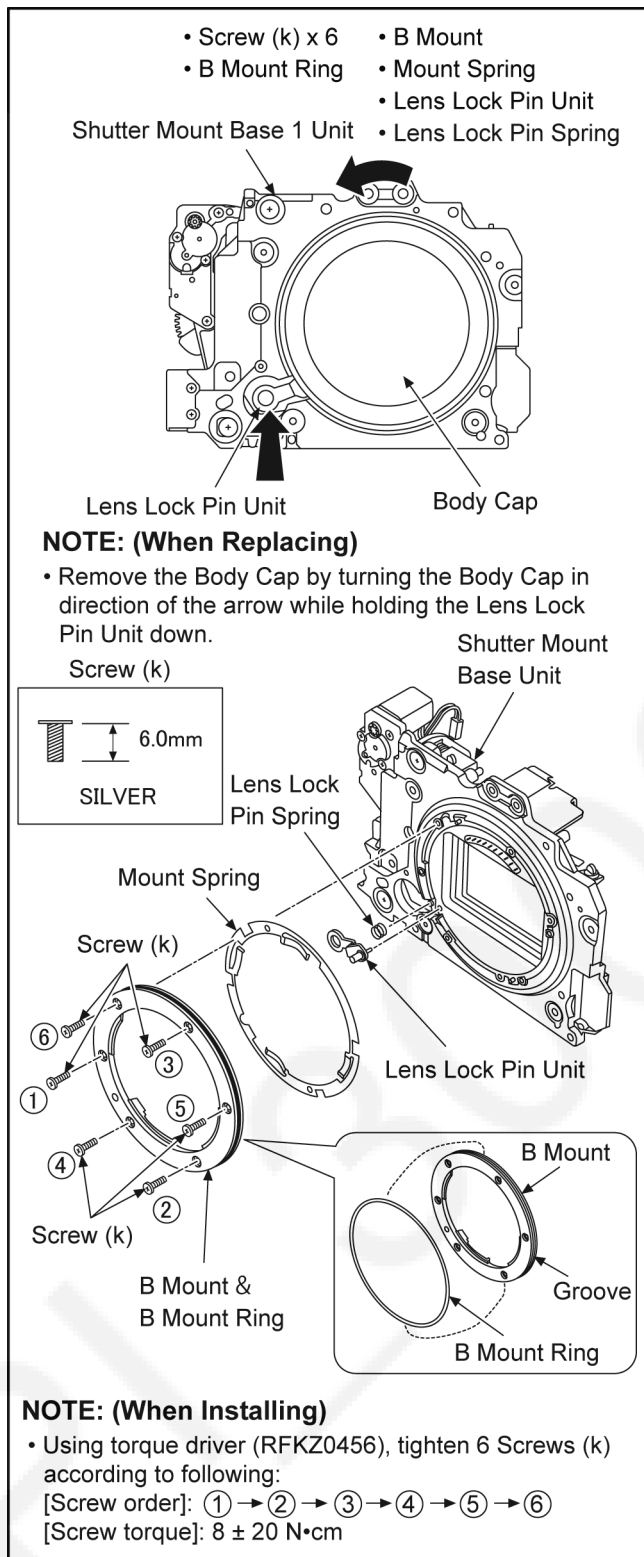(1.5mm)
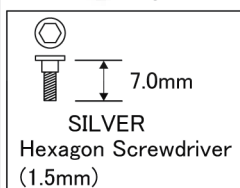
(Fig.D39)

Pasting position srandard

Image Sensor Unit

Scribe Line

Radiation Sheet

- Paste the Radiation Sheet on in accordance with the Scribe Line.

Image Sensor Unit

Radiation Sheet

(Fig.D40)

9.3.24. Removal of the Shutter Mount Base Unit

- Screw (k) x 6
- B Mount Ring
- B Mount
- Mount Spring
- Lens Lock Pin Unit
- Lens Lock Pin Spring

Shutter Mount Base 1 Unit

Lens Lock Pin Unit

Body Cap

NOTE: (When Replacing)

- Remove the Body Cap by turning the Body Cap in direction of the arrow while holding the Lens Lock Pin Unit down.

Screw (k)

6.0mm

SILVER

Shutter Mount Base Unit

Lens Lock Pin Spring

Mount Spring

Screw (k)

⑥
③
①
⑤
④
②

Lens Lock Pin Unit

Screw (k)

B Mount & B Mount Ring

B Mount

Groove

B Mount Ring

NOTE: (When Installing)

- Using torque driver (RFKZ0456), tighten 6 Screws (k) according to following:
  [Screw order]: ① → ② → ③ → ④ → ⑤ → ⑥
  [Screw torque]: 8 ± 20 N•cm

(Fig.D41)

NOTE: (After Assembling)

Make sure to confirm the following points after assembling.

- The screw is tightened enough.
- Installing conditions are fine. (No distortion, no abnormal-space.)
- No dust and/or dirt on image sensor surface. (live mos)
- LCD image is fine. (No dust and/or dirt on it, and no gradient images.)

10 Measurements and Adjustments

10.1. Matrix Chart for Replaced Part and Necessary Adjustment

The relation between Replaced part and Necessary Adjustment is shown in the following table.

When concerned part is replaced, be sure to achieve the necessary adjustment(s).

As for Adjustment condition/procedure, consult the "Adjustment Manual" which is available in Adjustment software.

NOTE:
   After adjustments have been terminated, make sure to achieve "Initial Settings".
   After updates it to the latest firmware, the adjustment is executed.

| FLAG	Adjustment Item	Replacing Parts									
		Main P.C.B./ Flash-ROM (IP2201) (*4)	Main P.C.B./ (When written the Backup data)	VENUS ENGINE (IC2201)	Image sensor unit (*1)	Shutter mount base unit (*3)	G Sensor (IC7291)	Eye sensor (LVF unit)	Gyro sensor (Shutter mount base unit)	Lens mount (B mount , Mount spring etc.)	LCD
---	Simplicity flange back adjustment (*2)	–	–	–	O	O	–	–	O	O	–
AF SS1 SS3	Sensor Area adjustment	O	–	–	O	O	–	–	O	O	–
PZM	VENUS-ZOOM inspection	O	O	O	–	–	–	–	–	–	–
SEN	High ISO Sensitivity adjustment	O	–	–	O	–	–	–	–	–	–
ISO	ISO Sensitivity adjustment	O	–	–	O	–	–	–	–	–	–
SAT	Offset gain adjustment	O	–	–	O	–	–	–	–	–	–
WBL	WB (low color temperature) adjustment	O	–	–	O	–	–	–	–	–	–
WBM	WB (standard color temperature) adjustment	O	–	–	O	–	–	–	–	–	–
SHT	Shutter adjustment	O	O	–	–	O	–	–	–	–	–
SKI	IMAGE SENSOR bleed compensation	O	–	–	O	–	–	–	–	–	–
WKI	IMAGE SENSOR white scratch compensation	O	–	–	O	–	–	–	–	–	–
BKI	IMAGE SENSOR black scratch compensation	O	–	–	O	–	–	–	–	–	–
EYE	Eye sensor sensitivity	O	–	–	–	–	–	O	–	–	–
AA1 AA2 AA3	G sensor adjustment	O	O	–	–	–	O	–	–	–	–
SH2	Electronic first shutter adjustment	O	–	–	–	O	–	–	–	–	–
GYR	Gyro sensitivity / DC offset adjustment	O	O	–	–	O	–	–	O	–	–
---	LCD WB adjustment	O	–	–	–	–	–	–	–	–	O
---	Write S/N (Serial Number)	O	–	–	–	–	–	–	–	–	–

*1 NOTE: (About Image Sensor Unit)
   When remove or turn the flange back adjustment screw, "Simplicity flange back adjustment" [*2] is necessary.

*2 NOTE: (About Simplicity flange back adjustment)

When remove or turn the flange back adjustment screw, "Simplicity flange back adjustment" is necessary.

When remove the flange back adjustment screw, please don't reuse it. Use new one.

[Abstract of "Simplicity flange back adjustment"]

Set the camera in front of the chart and set center of the chart picture on LCD.

When execute software, camera works AF on 5 spots automatically.

Calculate flange back value at 5 spots and display on PC screen.

Adjust flange back value within the specification by the 3 screws.

The details are refer to adjustment manual in adjustment software.

Image Sensor Unit mounting screw
（Flange back adjustment screw）

Measurement spot

Simplicity flange back adjustment PC

Image view (e.g. GX80)
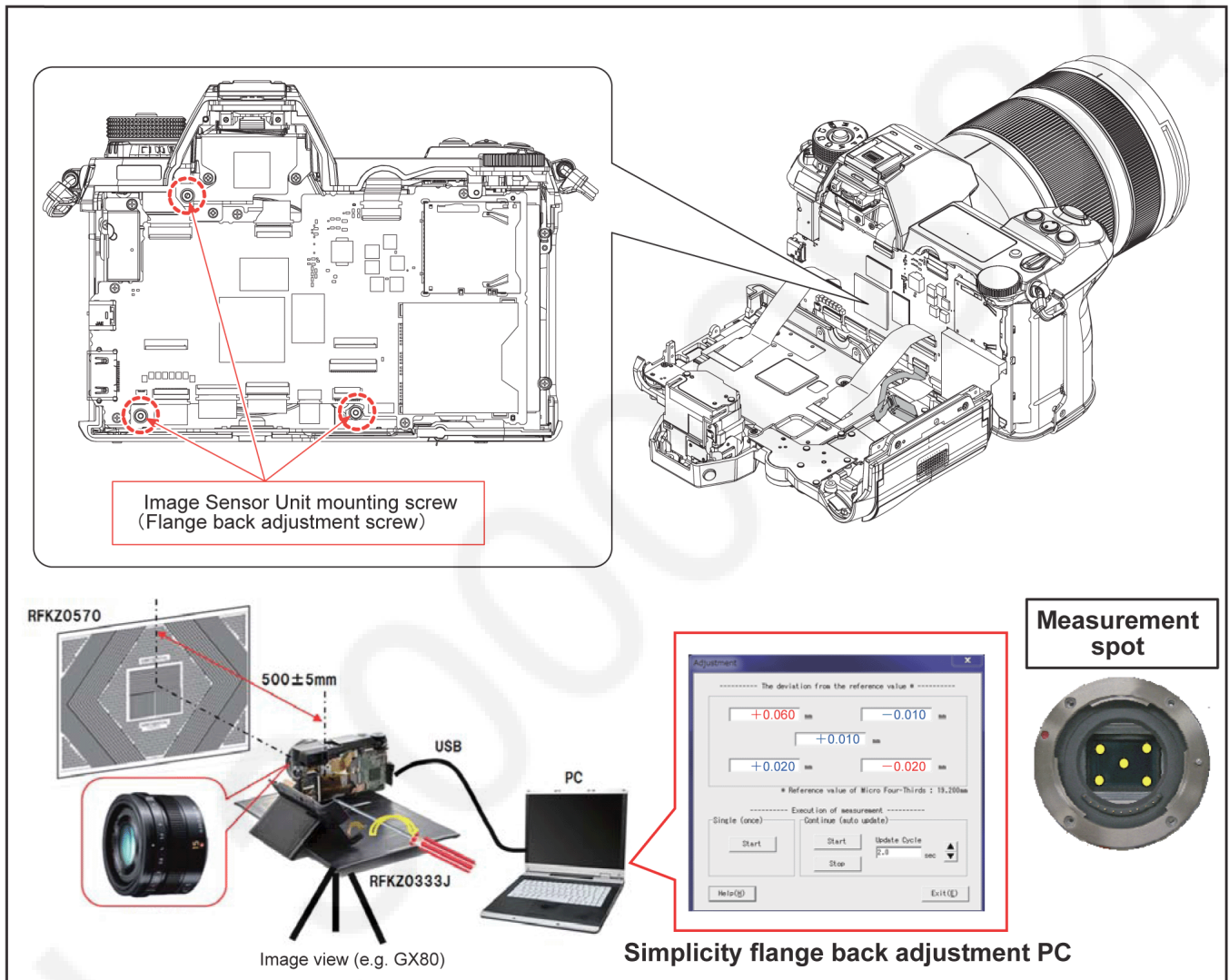
The image sensor of this camera cannot be fixed when power is OFF.

That is why, image sensor adjustment have to do power ON after assembly (state of above).

Stand-alone mount part cannot adjust.

*3 NOTE: (When exchange the Shutter Mount Base Unit)

After replacing the shutter mount base unit, the shutter mount base unit data has to be stored to the Flash-ROM (IP2201) on the Main P.C.B..

The shutter mount base unit supplied as service parts has affix the label of own configure data.

By inputting second line to fourth line of these data into the adjustment software and writing these data to Flash-ROM (IP2201), the shutter adjustment becomes needless.

In addition, the adjustment software can read data encoded to QR Code by using WEB camera with a close-up function.

After that, proceed the main body adjustment.

The details are refer to adjustment manual in adjustment software.

*4 NOTE: (When exchange the Main P.C.B. and/or Flash-ROM (IP2201))
    After exchanging the "Main P.C.B. and/or Flash-ROM", first, execute "Initial Settings" to determine the model suffix,
    and then, cancel the "Initial Settings" and proceed the adjustments.
    When the adjustment data is rewrite without "Initial Settings" execution, may not be able to choose desire model suffix.
    During the "Initial Settings" (When the model suffix select screen is displayed), do not power off or do not remove the battery.
    * Power down during "Initial Settings" may cause not be able to choose desire model suffix.

    When cannot be repaired in the IC exchange, and in the case of performing the "Main P.C.B." exchange, carry out any of following.
    1. When it can turn on power, and the adjustment software can communicate with the camera body:
        Before replacing, proceed the Flash-ROM (IP2201) data backup from the unit.
        After replacing, overwrite the Flash-ROM (IP2201) data with backup data from the unit.
        After that, proceed the main body adjustment. (Almost adjustment/inspection items can be omitted.)
        Refer to the adjustment instruction in the adjustment software for details.
    2. When it cannot turn on power, or the adjustment software cannot communicate with the camera body:
        Almost readjustment fully are necessary.
        The details are refer to adjustment manual in adjustment software.
  • Make sure the camera body firmware is latest version.
  • Please coincide certainly the Serial number of camera body and the Serial number that is memoried in the Main P.C.B.

11 Maintenance

11.1. Notice in External Cleaning

11.1.1. About the Body

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

11.1.1.1. Dust/Dirt on the Outer Casing Part (S)

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

11.1.1.2. Dust/Dirt on the Image Sensor

1. Blow off the dust on the surface of the Image sensor with the Blower.
   • Keep the Mount Facing down condition towards to floor when cleaning.
   • Do not put the Blower further inside than the lens mount.
   • Be careful not to blow too strongly.
2. Wipe off the dirt on the image sensor surface with Lens Cleaning Kit (BK)(VFK1900BK).
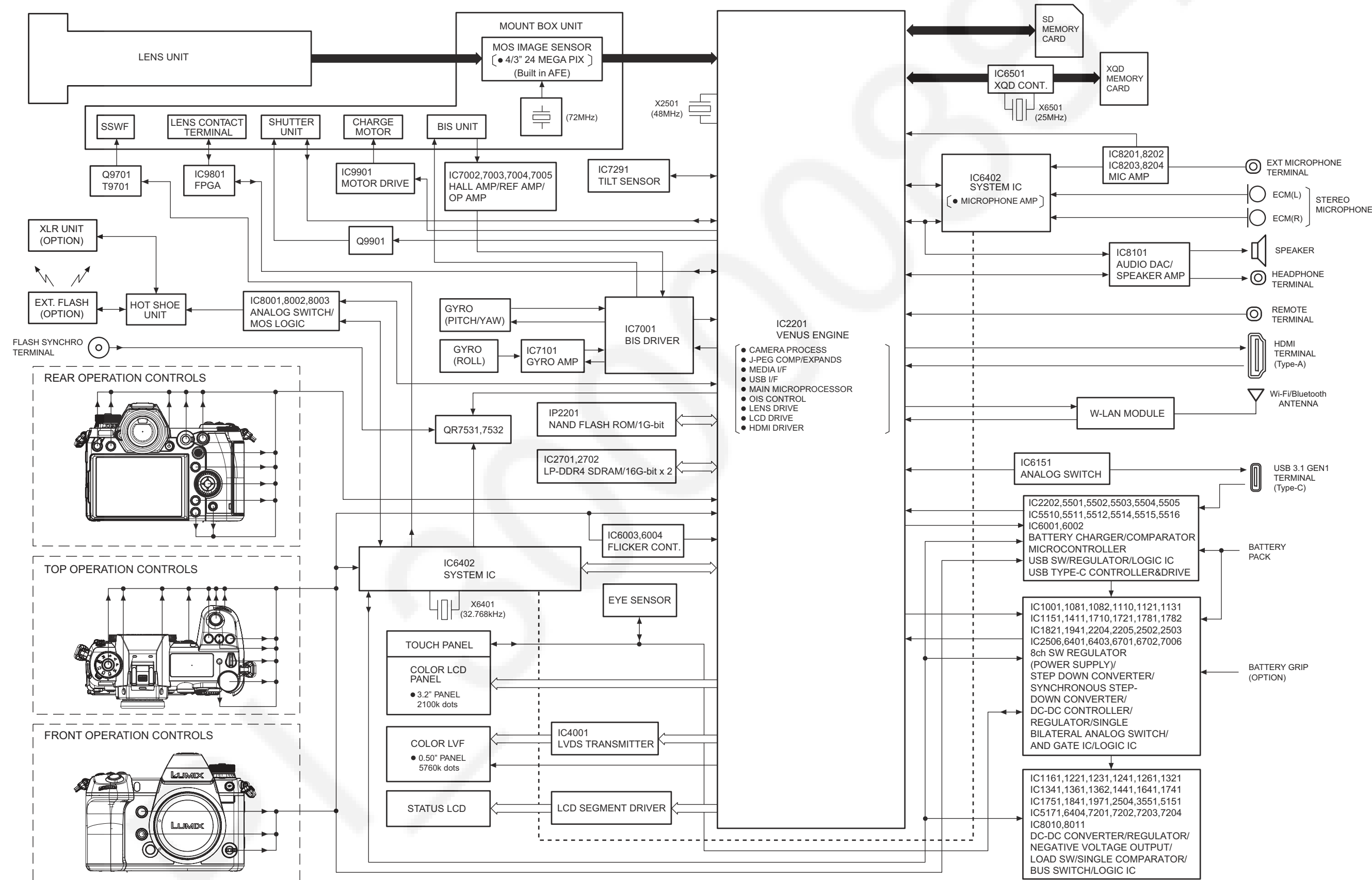
11.1.1.3. About the LVF Unit

[Procedures]
1. Refer to the "Disassembly & Assembly Instructions" and disassemble the LVF Unit.
2. Blow off the dust of LVF Lens Unit with a blower.
3. Wipe off the dirt on the surface of glasses with Lens Cleaning Kit (VFK1900BK), if necessary.

12 Block Diagram

12.1. Overall Block Diagram

DC-S1 OVERALL BLOCK DIAGRAM

13 Wiring Connection Diagram

13.1. Interconnection Diagram

DC-S1 INTERCONNECTION DIAGRAM

14 Schematic Diagram

Please click the radio button for "Diagrams II / Parts List" on the menu bar in XML Service Manual.
If you want to print, please click the icon button for "Print" on the icon bar and select the item.

15 Printed Circuit Board

Please click the radio button for "Diagrams II / Parts List" on the menu bar in XML Service Manual.
If you want to print, please click the icon button for "Print" on the icon bar and select the item.

16 Exploded View and Replacement Parts List

Please click the radio button for "Diagrams II / Parts List" on the menu bar in XML Service Manual.
If you want to print, please click the icon button for "Print" on the icon bar and select the item.